

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 303

LIGHTING AND SIGNALLING
FOR MOTOR VEHICLES AND TRAILERS

1st EDITION

May 1963

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BRIEF HISTORY

The ISO Recommendation R 303, *Lighting and Signalling for Motor Vehicles and Trailers*, was drawn up by Technical Committee ISO/TC 22, *Automobiles*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1947, taking into account the studies which had been made by the former International Federation of the National Standardizing Associations (ISA), and led, in 1953, to the adoption of a Draft ISO Recommendation.

This first Draft ISO Recommendation (N° 38) was circulated to all the ISO Member Bodies for enquiry in June 1954. As the results of this consultation were not considered satisfactory, the Technical Committee successively put forward a second and a third Draft ISO Recommendation, which were circulated in May 1958 and in April 1960 respectively.

This third Draft was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Belgium	Greece	Poland
Burma	Ireland	Romania
Colombia	Italy	Spain
Czechoslovakia	Japan	Sweden
Denmark	Netherlands	Switzerland
France	New Zealand	United Kingdom
		Yugoslavia

Three Member Bodies opposed the approval of the Draft:
Germany, U.S.A., U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in May 1963, to accept it as an ISO RECOMMENDATION.

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* To be included at a later date.

LIGHTING AND SIGNALLING FOR MOTOR VEHICLES AND TRAILERS

INTRODUCTION

PURPOSE

This ISO Recommendation deals with the main characteristics of *Lighting and Signalling for Motor Vehicles and Trailers*.

Attention is drawn to the fact that some of the provisions are likely to be modified and amplified to take into account technical advances and progressive changes in regulations.

SCOPE

The provisions of this ISO Recommendation cover motor vehicles for general purposes and their trailers. They do not apply to

- (a) vehicles of special design intended for purposes other than the transport of people or goods;
- (b) motor cycles.

These provisions deal mainly with emitted light. However, on account of the close relationship between the light and the emitting device, in certain cases some data concerning mechanical or electrical features of lighting or signalling equipment have been specified.

These data are given in the appendices.

Photometric characteristics of certain lights are not dealt with in this document, being at present under study.*

PLAN FOR STUDY

This document is arranged according to the approved plan explained below.

The numbers of the items are repeated throughout the document for the numbers of the corresponding clauses of the various sections.

Item 1. Terminology General definitions. A vehicle is fitted with lighting devices, the purpose of which is to show "lights".

According to their uses, these lights are divided into two classes:

- (a) Illuminating lights, the purpose of which is to illuminate the road ahead for a distance that will make safe driving possible;

* Photometric characteristics are being dealt with by a joint Working Group which was appointed jointly by the International Organization for Standardization (Technical Committee ISO/TC 22, *Automobiles*) and the International Commission on Illumination (Committee C.I.E./E/3/3/5).

This Working Group met for the first time in Brussels, in 1952, and has been named "Groupe de Travail Bruxelles 1952 (G. T. B.)".

A small group, called the "Committee of Experts", is responsible for preparing the work of the G. T. B.

(b) Signalling lights, the purpose of which is to warn other road users that the vehicle is on the road, that it is slackening speed or altering its course.

Thus, the lighting devices may be also divided into two classes:

- (a) Illumination lamps, e.g. headlamps;
- (b) Signal lamps.

The name of each light is given under clause 1 of the corresponding section.*

The terms designating the various lights and signals in languages of those ISO Member countries which have communicated them are given in the Multilingual Terminology (Appendix A).

Sometimes, these terms do not refer to the light, but to the lamp or to the emitting device (e.g. reflex reflector).

Item 2.	Symbol	Conventional sign which should be stamped on the knob which controls the light.
Item 3.	Definition	Explains briefly the purpose of the light.
Item 4.	Application	Compulsory or not.
Item 5.	Use	Any recommendations regarding circumstances and conditions of use.
Item 6.	Type	Indications concerning some main characteristics of the device which shows the light. In general, every lighting or signalling device comprises three essential parts, namely: (1) A light source, which may be combined with an optical system that directs and distributes the emitted light; (2) An illuminated area, a transparent or translucent panel through which the light is emitted from the device; (3) A housing, a compartment into which the light source and optical system are fitted. These parts can be arranged in any one of the following ways: (a) Separate lamps: separate illuminated areas, separate sources of light, separate housing. (b) Grouped lamps: separate illuminated areas, separate sources of light, same housing. (c) Combined lamps: separate illuminated areas, same source of light, same housing.

* The code used to designate the countries is taken from the list of distinguishing signs of vehicles shown in Annex 4 of the Convention of 19 September 1949 on Road Traffic.

(d) Lamps incorporated with each other:

- same illuminated area,
- separate sources of light or one single source of light operating under different conditions,
- same housing.

Information under the heading "Type" of a lighting device refers to characteristics other than those with which the above definitions deal.

- | | | |
|----------|-------------------|--|
| Item 7. | Tell-tale | Some lights require to be fitted with a tell-tale, an optical or an acoustical signal by means of which the driver is warned whether the light is on or off. |
| Item 8. | Shape | The illuminated area of some lights may have a characteristic geometrical shape. |
| Item 9. | Dimensions | Refer to geometrical characteristics of the illuminated area. |
| Item 10. | Number | Number of similar lights on a vehicle. |

Combined light

It is possible to consider as one single light two lights of the same colour emitted by two items of equipment, the projections of whose illuminated areas onto a vertical plane perpendicular to the longitudinal plane of symmetry of the vehicle occupy at least 50 per cent of the surface of the smallest rectangle circumscribed around the projections of the two illuminated areas mentioned above.

If the light, which is thus considered to be a single light, is an illuminating light (driving beam, meeting beam, fog light), its light distribution should be in accordance with the relevant specification.

If the light, which is thus considered to be a single light, is a signalling light, its photometric characteristics should not exceed the maximum values laid down by the specification for the single light of the same denomination, and the photometric characteristics of each of the constituent lights should not be less than the minimum values laid down in this same specification.

For the checking of the photometric characteristics of a light considered to be a single light, although it is emitted by two different items of equipment, the axis of reference of the combined light should be defined by the manufacturer of the equipment.

- | | | |
|----------|--------------------------------|---|
| Item 11. | Location | Place where the light is located on the vehicle. |
| Item 12. | Height above the ground | <p>The maximum height above the ground is measured to the highest point of the illuminated area, and the minimum height, to the lowest point.</p> <p>Heights above the ground of illuminating and signalling lamps refer to the unladen vehicle.*</p> |

* In some countries, the regulations apply to a loaded vehicle.

Item 13.	Location as regards the width of the vehicle	Dimensions defining location in relation to the width of the vehicle.
Item 14.	Orientation	Direction of the luminous beam.
Item 15.	Geometrical visibility	This is a purely geometrical concept. There should be no obstacle capable of obstructing light between the illuminated area and an observer's eye located in the space common to the following two dihedral angles, the apices of which pass through the centre of the illuminated area: (a) A dihedral angle whose apex is vertical and whose planes are at specified minimum angles to the longitudinal plane of symmetry of the vehicle; the aperture of this dihedral angle is the horizontal angle of geometrical visibility. (b) A dihedral angle whose apex is horizontal and whose planes are at specified minimum angles to the horizontal; the aperture of this dihedral angle is the vertical angle of geometrical visibility. In general, the bisecting plane of this dihedral angle is horizontal. The geometrical visibility of a light is thus specified in minimum values of horizontal and vertical angles of visibility, together with their orientation in relation to the vehicle.
Item 16.	Physiological visibility	Indicates the distance from which a light is visible or the distance effectively illuminated by it.
Item 17.	Photometric characteristics	Specification which deals with spatial distribution of the luminous flux. Photometric characteristics of illuminating lights are given in Appendix B.
Item 18.	Colour	Colorimetric definition of the light in accordance with the International Commission on Illumination (C. I. E.) trichromatic system. Colorimetric characteristics of illuminating and signalling lights are given in Appendix D. NOTE. – Whenever it is deemed necessary, the above may be extended and additional clauses inserted.

I. ILLUMINATING LIGHTS

1. DRIVING BEAM – UPPER BEAM

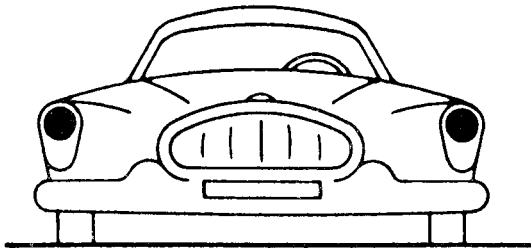


Fig. 15

1.1	Terminology	GB	Driving beam.
		USA	Upper beam.
1.2	Symbol	Not specified.	
1.3	Definition	Vehicle light intended to illuminate the road over a great distance ahead of the vehicle.	
1.4	Application	Compulsory for all vehicles capable of exceeding a speed of 30 km/h on the level.	
1.5	Use	To illuminate the road ahead of the vehicle, in circumstances where the lighting of vehicles is required, in accordance with the regulations of the country, when no other vehicle (cycles included) is coming toward it.*	
1.6	Type	(See item 6 of preliminary section, “Plan for Study”, page 6.)	
1.7	Tell-tale	Under study.	
1.8	Shape	Not specified.	
1.9	Dimensions	Not specified.	
1.10	Number	At least two.	

* A later recommendation of the Groupe de Travail Bruxelles 1952 (G.T.B.) will specify in what conditions it may be beneficial to use the driving beams by day (in fog, snow fall, rain storms, dust clouds).

1.11	Location	At the front of the vehicle.
1.12	Height above the ground	Not specified.
1.13	Location as regards the width of the vehicle	Not specified.
1.14	Orientation	Towards the front.
1.15	Geometrical visibility	Not needed.
1.16	Physiological visibility	Effective illumination of the road for at least 100 m in front of the vehicle.
1.17	Photometric characteristics	See Appendix B.
1.18	Colour	White or selective yellow, according to the regulations of the country in which the vehicle is registered. The driving beams of a vehicle should be of one and the same colour. Colorimetric characteristics in accordance with Appendix D.

2. MEETING BEAM - LOWER BEAM

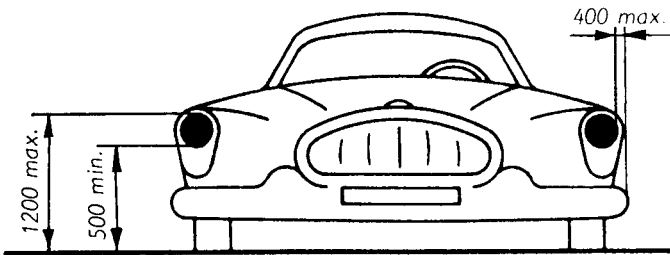


FIG. 2

2.1	Terminology	GB Meeting beam. USA Lower beam.
2.2	Symbol	Not specified.
2.3	Definition	Lighting specially designed to ensure safety, when vehicles meet. In the present state of technique: beam illuminating only a specified limited part of the road, in order to reduce dazzle for an observer approaching ahead of the vehicle.
2.4	Application	Compulsory on all motor vehicles.
2.5	Use	To illuminate the road ahead of the vehicle, when meeting or before passing other road users and, if necessary, in built-up areas, according to local practice. This light may also be used in other circumstances specified by the regulations of the country concerned (by day in fog, snow fall, rain storms and dust clouds).
2.6	Type	Emitted by a headlamp similar to a type whose photometric characteristics are acceptable under the regulations of the country concerned. At present, there are two recognized prototypes: (a) The European type, characterized by an asymmetrical beam with a sharp cut-off, to suit the right-hand or left-hand rule of the road; (b) The Anglo-American type, characterized by an asymmetrical beam with a gradual cut-off, to suit the right-hand or left-hand rule of the road. (See also item 6 of preliminary section, “Plan for Study”, page 6.)
2.7	Tell-tale	Under study.
2.8	Shape	Not specified.

2.9 Dimensions	Not specified.
2.10 Number	Two, taking into account the definition of the combined light (see item 10 of preliminary section, "Plan for Study", page 7).
2.11 Location	At the front of the vehicle.
2.12 Height above the ground	Recommended minimum height above ground of the lowest part of the illuminated area: 500 mm. Recommended maximum height above ground of the highest part of the illuminated area: 1200 mm (see item 12 of preliminary section, "Plan for Study", page 7.)
2.13 Location as regards the width of the vehicle	The two meeting beams should be symmetrical in relation to the longitudinal plane of symmetry of the vehicle. The farthest point of the illuminated area from the longitudinal plane of symmetry of the vehicle should be as near as possible to, and in any case not more than 400 mm from, the extreme maximum width of the vehicle.
2.14 Orientation	Forwards.
2.15 Geometrical visibility	Not needed.
2.16 Physiological visibility	Efficient illumination of the road over a distance of at least 30 m in front of the vehicle.
2.17 Photometric characteristics	Specifications for meeting beams are given in Appendix B. These specifications comprise three sections: <i>(a)</i> American passing beam (SAE Specification), <i>(b)</i> British meeting beam (S. M. M. and T. Tentative Standard No.59 T), <i>(c)</i> Unified European passing beam.
2.18 Colour	White or selective yellow, according to the regulations of the country in which the vehicle is registered. Both meeting beams of a vehicle should be of one and the same colour. Colorimetric characteristics in accordance with Appendix D.