UDC 629.113

Ref. No.: ISO / R 303 - 1963 (E)

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 303

LIGHTING AND SIGNALLING FOR MOTOR VEHICLES AND TRAILERS

1st EDITION
May 1963

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

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.

ISO Recommendation R 303 May 1963

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**

The maximum height above the ground is measured to the highest point of the illuminated area, and the minimum height, to the lowest point.

Heights above the ground of illuminating and signalling lamps refer to the unladen vehicle.*

* 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

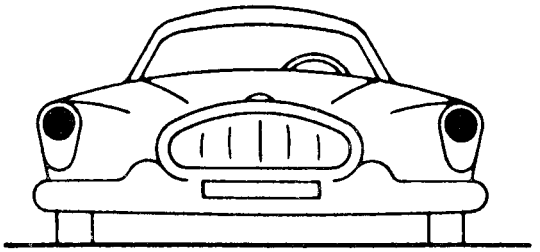


Fig. 15

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

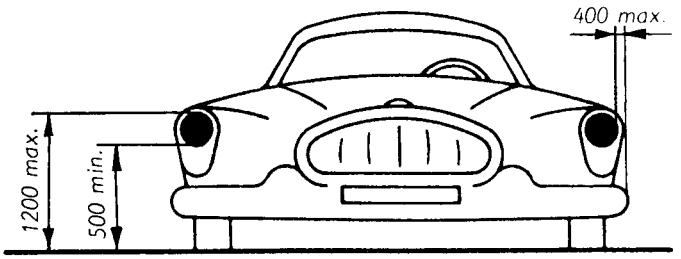


FIG. 2

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: *(a)* American passing beam (SAE Specification), *(b)* British meeting beam (S. M. M. and T. Tentative Standard No. 59 T), *(c)* 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.

3. FOG LIGHT – FOG LAMP

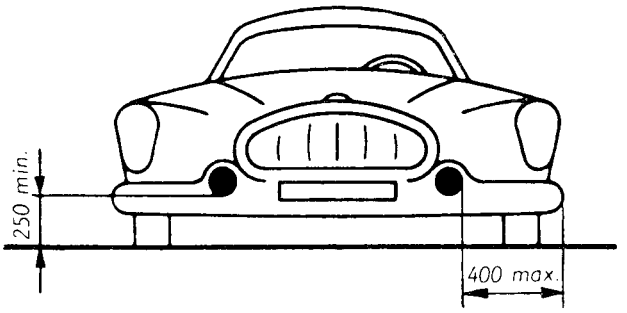


FIG. 14

3.1	**Terminology**	GB Fog light. USA Fog lamp.
3.2	**Symbol**	Not specified.
3.3	**Definition**	Vehicle light enabling the road to be effectively illuminated in fog, snow fall, rain storms or dust clouds.
3.4	**Application**	Optional.
3.5	**Use**	In case of fog, snow fall, rain storms or dust clouds. It should be possible to switch it off when meeting another vehicle.
3.6	**Type**	(See item 6 of preliminary section, "Plan for Study", page 6.)
3.7	**Tell-tale**	Under study.
3.8	**Shape**	Not specified.
3.9	**Dimensions**	Not specified.
3.10	**Number**	Two.
3.11	**Location**	At the front of the vehicle.

3.12	**Height above the ground**	Lowest point of the illuminated area: 250 mm minimum. No point of the illuminated area of the fog light should lie above the highest point of the illuminated area of the meeting beam.
3.13	**Location as regards the width of the vehicle**	The two fog lights 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.
3.14	**Orientation**	Towards the front.
3.15	**Geometrical visibility**	Not needed.
3.16	**Physiological visibility**	Not specified.
3.17	**Photometric characteristics**	Under study.
3.18	**Colour**	White or selective yellow. Both fog lights of a vehicle should be of one and the same colour. Colorimetric characteristics in accordance with Appendix D.

II. SIGNALLING LIGHTS

(a) Lights used by day and by night

4. DIRECTION INDICATOR – TURN SIGNAL LIGHT

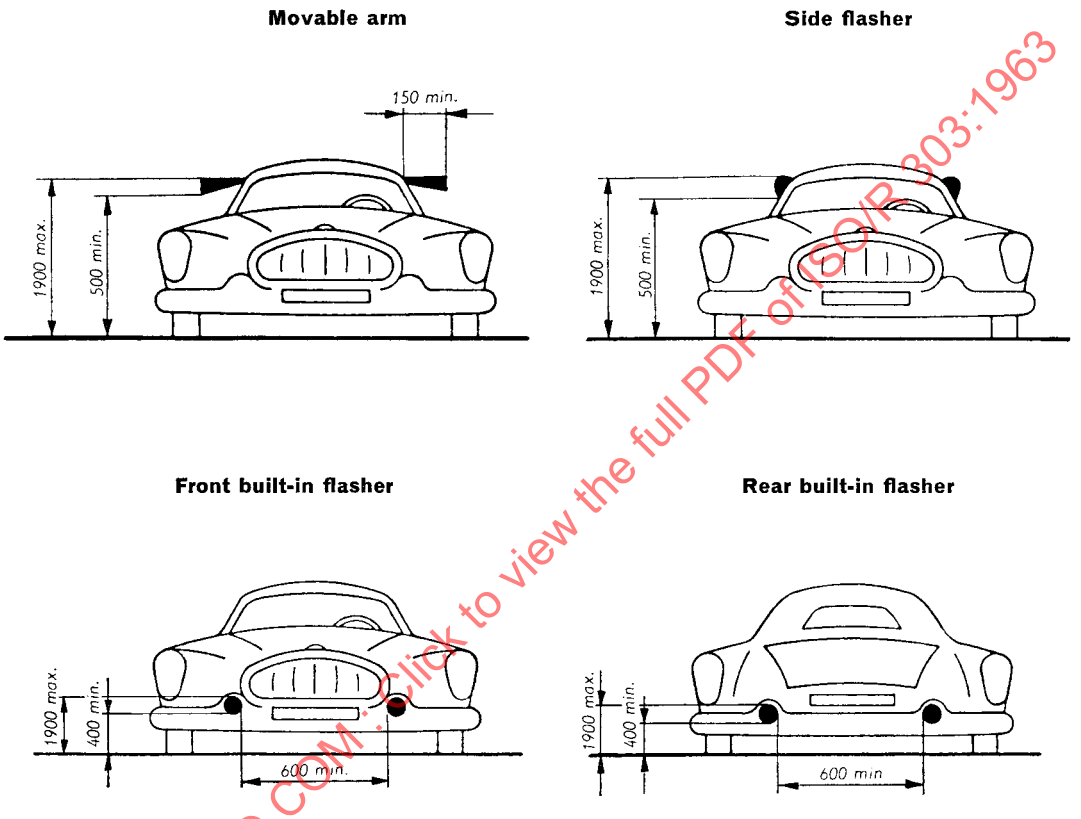


FIG. 3

4.1	**Terminology**	GB	Direction indicator.
		USA	Turn signal light.
4.2	**Symbol**	Not specified.	
4.3	**Definition**	Light used on a vehicle for signalling an intention to change direction to the right or to the left.	

4.4 Application — Compulsory, except for vehicles without coach-work.

4.5 Use — To indicate by day and by night the intention to change direction to the right or to the left.

4.6 Type — Two types are available:

(a) Movable arm,
(1) the arm is fixed when operating
(2) the arm oscillates when operating
} and the light is steady,
(3) the arm is fixed when operating and is fitted with a flashing light, which complies with the provisions of paragraph *(b)* below.

(b) Fixed position with flashing light, frequency 90 ± 30 cycles per minute.

Operating time-lag: The switching-on of the light should be followed by the appearance of the light within one second at most and by the first extinction of the light, within one second and a half at most.

When a flashing rear direction indicator light and a stop light are emitted through the same illuminated area, the connections should be so arranged that the stop light cannot be lit, when the flashing light associated with it is operating.

(See item 6 of preliminary section, "Plan for Study", page 6.)

4.7 Tell-tale — Indispensable, if the direction indicator cannot be seen by the driver. The tell-tale should show clearly whether the direction indicator is operating correctly.

The tell-tale may be optical or acoustic.

Colour recommended for an optical tell-tale: green.

4.8 Shape — Not specified.

4.9 Dimensions — Length of the movable arm: 150 mm minimum. (The arm should project by this amount beyond the extreme maximum width of the vehicle at the mounting height of the indicator.)

4.10 Number — The equipment of a motor vehicle may consist of one of the following arrangements:

(a) Two side indicators;
(b) Two front-and-side indicators,
Two rear indicators;
(c) Two front indicators,
Two side indicators,
Two rear indicators;
(d) Two front indicators,
Two rear indicators.

The equipment of a trailer consists of:

(e) Two rear indicators.

Whatever combination of equipment is adopted for a motor vehicle or a trailer, there should be one indicator of each type used on each side of the vehicle.

4.11 Location

Movable arm indicators are located only on the sides of the vehicle.

Flashing indicators are located at the front, at the rear and on the sides of the vehicle.

Any direction indicator should be so located that the light emitted by it complies with the geometrical visibility requirements stated in clause 4.15 below.

4.12 Height above the ground

Lowest point of the illuminated area:

500 mm minimum for movable-arm indicators and side flashing indicators,
400 m minimum for other flashing indicators (front and rear).

Highest point of the illuminated area:

1900 mm maximum for all kinds of direction indicators.
(If the construction of the vehicle demands it, the maximum height may *in exceptional cases* be increased to 2100 mm.)

4.13 Location as regards the width of the vehicle

The illuminated areas should be symmetrical in relation to the longitudinal plan of symmetry of the vehicle. The maximum distance from the extreme outside edge of the vehicle to the outside edge of an illuminated area should not exceed 400 mm. Where this is not possible, the direction indicators should be placed as near as possible to the outside edge of the vehicle. Minimum spacing between the inner edges of the two illuminated areas: 600 mm.

It is suggested that the distance between the edges of the illuminated areas of a front direction indicator and the nearest meeting projector should be not less than 75 mm.

4.14 Orientation

Depends on the combination of equipment adopted for the vehicle (see clause 4.10 above and clause 4.15 below).

4.15 Geometrical visibility

See Figure 4, page 18.

Horizontal angles of geometrical visibility.

Minimum values of horizontal angles of geometrical visibility are shown on Figure 4.
These provisions are applicable to articulated vehicles.

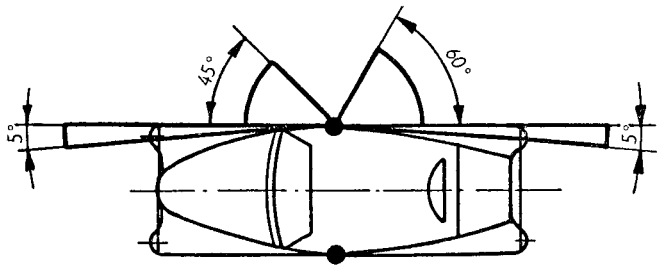
Vertical angle of geometrical visibility.

For all types of direction indicators:

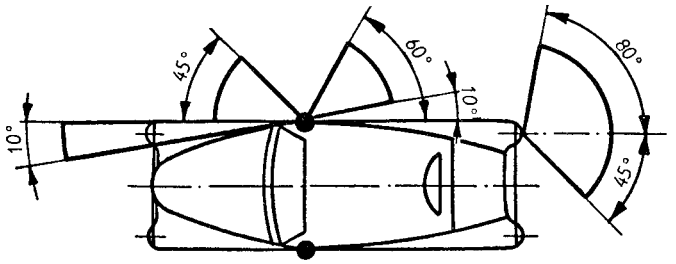
$$30^\circ \left\{ \begin{matrix} 15^\circ \text{ above} \\ 15^\circ \text{ below} \end{matrix} \right\} \text{ the horizontal.}$$

FIG. 4

Type A

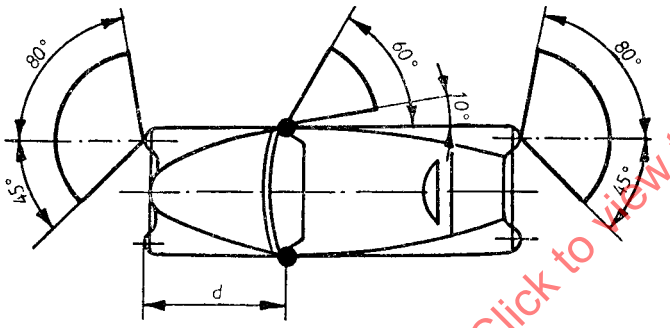


Type B



The figure of 10°, given for the rearward dead angle of visibility of the side indicator, is the maximum value.

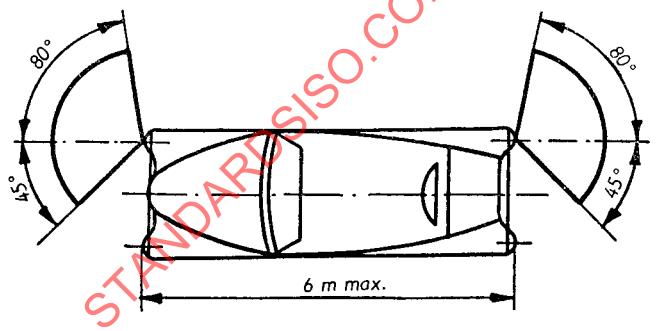
Type C



Dimension *d* should be not more than one-third of the overall length of the vehicle.

d is the distance between the illuminated area of the side indicator and the forward extremity of the overall length of the vehicle.

Type D



This type is suitable only for vehicles in which the distance between the illuminated areas of the front and rear direction indicators is less than 6 m.

4.16	**Physiological visibility**	Visible at 30 m in sunshine and at 300 m at night in clear weather. Should not be dazzling at night for other road users.
4.17	**Photometric characteristics**	Under study.
4.18	**Colour**	Towards the front: white or, preferably, amber. Towards the rear: red or, preferably, amber.

5. STOP LIGHT – STOP LAMP

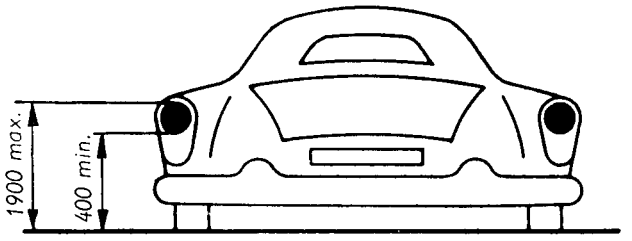


FIG. 5

5.1	**Terminology**	GB Stop light. USA Stop lamp.
5.2	**Symbol**	Not needed.
5.3	**Definition**	Brake-operated signalling rear light on a vehicle, intended to give warning of the slowing down or the stopping of the vehicle.
5.4	**Application**	Compulsory for all vehicles capable of exceeding a speed of 20 km/h on the level.
5.5	**Use**	To indicate by day and by night, for the benefit of all road users concerned, that the vehicle is slowing down or stopping under the action of the service brakes.
5.6	**Type**	Should in no case be a flashing light. (See also item 6 of preliminary section, "Plan for Study", page 6). Nevertheless, a flashing light indicating a change of direction may be substituted for the stop light located on the side to which the turn is being made, for the duration of the turn. In practice, when a rear flashing direction indicator light and a stop light are emitted through one and the same illuminated area, the connections are so arranged that the stop light cannot be lit when the flashing light associated with it is operating.
5.7	**Tell-tale**	Under study.
5.8	**Shape**	Not specified.
5.9	**Dimensions**	Not specified.
5.10	**Number**	Two (taking into account the definition of the combined light, see item 10 of preliminary section, "Plan for study", page 7).
5.11	**Location**	At the rear of the vehicle.
5.12	**Height above the ground**	Lowest point of the illuminated area: 400 mm minimum. Highest point of the illuminated area: 1900 mm maximum.

5.13 Location as regards the width of the vehicle

The two stop lights should be symmetrical in relation to the longitudinal plane of symmetry of the vehicle.

5.14 Orientation

Towards the rear.

5.15 Geometrical visibility

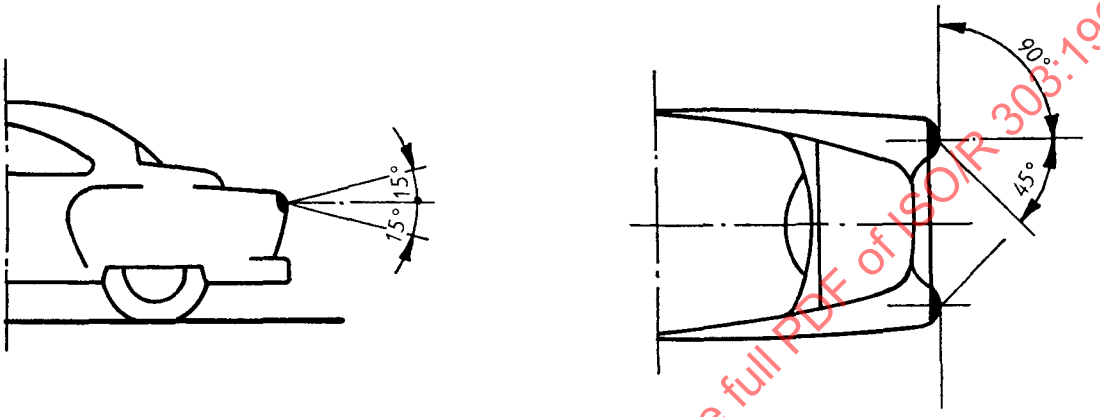


FIG. 6

Horizontal angle of geometrical visibility:

$$90° \begin{cases} 45° \text{ outwards,} \\ 45° \text{ inwards.} \end{cases}$$

Vertical angle of geometrical visibility:

$$30° \begin{cases} 15° \text{ above} \\ 15° \text{ below} \end{cases} \text{ the horizontal.}$$

5.16 Physiological visibility

Visible at 30 m in sunshine and at 300 m at night in clear weather.

Should not be dazzling at night for other road users.

5.17 Photometric characteristics

Under study.*

When the stop signal is provided by intensifying the red tail light, the ratio of intensity necessary for avoiding any confusion between these two lights will be defined.

5.18 Colour

Red or amber.*

Colorimetric characteristics in accordance with Appendix D.

* Determination of the photometric characteristics will show whether a choice should be made between the colours proposed.

(b) Lights used generally by night

6. REAR NUMBER PLATE LIGHT – REAR LICENCE PLATE LAMP

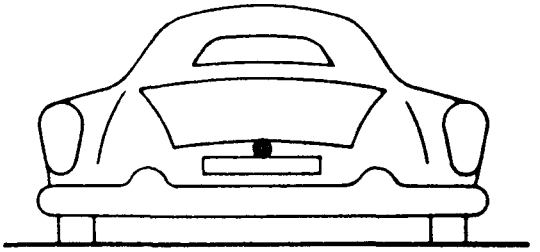


FIG. 1

6.1	**Terminology**	GB Rear number plate light. USA Rear licence plate lamp.
6.2	**Symbol**	Not needed.
6.3	**Definition**	Light intended to illuminate the rear number plate.
6.4	**Application**	Compulsory.
6.5	**Use**	To illuminate the rear number plate in all circumstances where lighting of vehicles is required.
6.6	**Type**	(See item 6 of preliminary section, "Plan for Study", page 6.)
6.7	**Tell-tale**	Not needed.
6.8	**Shape**	Not specified.
6.9	**Dimensions**	Not specified.
6.10	**Number**	Not specified.
6.11	**Location**	At the rear of the vehicle.
6.12	**Height above the ground**	Depends upon the location of the number plate.
6.13	**Location as regards the width of the vehicle**	Depends upon the location of the number plate.
6.14	**Orientation**	The light source should not normally be visible from the rear.

6.15	**Geometrical visibility**	Not needed.
6.16	**Physiological visibility**	Number readable at 20 m by night in clear weather.
6.17	**Photometric characteristics**	Under study.
6.18	**Colour**	White. Colorimetric characteristics in accordance with Appendix D. NOTE. – It is recommended that the number plate should have adequate contrast between the background and the symbols (light coloured symbols on a dark ground or vice versa), avoiding any specular effect.

7. SIDE LIGHT – PARKING LAMP

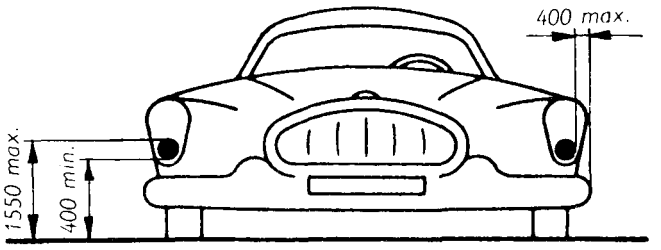


FIG. 7

7.1	**Terminology**	GB Side light. USA Parking lamp, side light.
7.2	**Symbol**	Not specified.
7.3	**Definition**	Light emitted by a lighting device, indicating the presence of a vehicle when seen from in front, and intended to show the width of the vehicle.
7.4	**Application**	Compulsory.
7.5	**Use**	To indicate the front of the vehicle in circumstances where the lighting of vehicles is required, while it is stationary or in all cases where the use of meeting lights is not permitted.
7.6	**Type**	The side lights may be incorporated with other front lights, subject to the provisions of clauses 7.12 and 7.13 below. (See item 6 of preliminary section, "Plan for Study", page 6.)
7.7	**Tell-tale**	No provision made.
7.8	**Shape**	Not specified.
7.9	**Dimensions**	Not specified.

7.10	**Number**	Two (taking into account the definition of the combined light, see item 10 of preliminary section, "Plan for Study", page 7).
7.11	**Location**	At the front of the vehicle.
7.12	**Height above the ground**	Lowest point of the illuminated area: 400 mm minimum. Highest point of the illuminated area: 1550 mm maximum.
7.13	**Location as regards the width of the vehicle**	The two side lights should be symmetrical with 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.
7.14	**Orientation**	Towards the front.
7.15	**Geometrical visibility**	

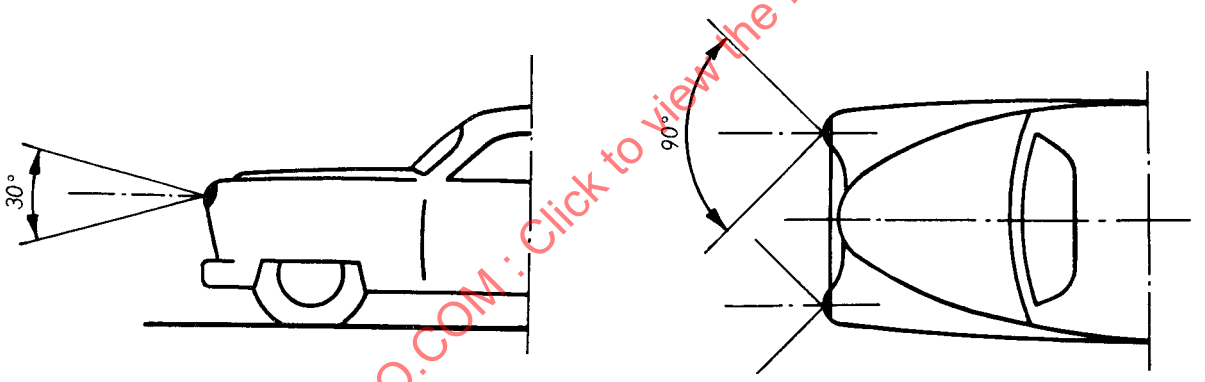


FIG. 8

Horizontal angle of geometrical visibility: 90°.
Vertical angle of geometrical visibility: 30°.

7.16	**Physiological visibility**	Visible at 300 m in clear weather, in circumstances where the lighting of vehicles is required. Should not be dazzling at night for other road users.
7.17	**Photometric characteristics**	Under study.
7.18	**Colour**	White. Colorimetric characteristics in accordance with Appendix D.

8. TAIL LIGHT – TAIL LAMP

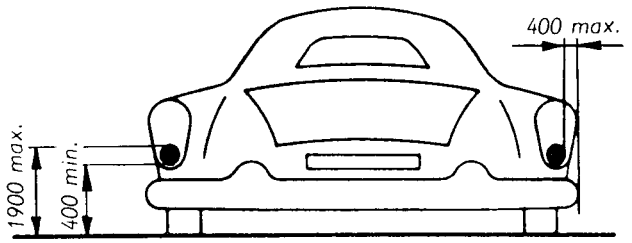


FIG. 9

8.1	**Terminology**	GB Tail light. USA Tail lamp.
8.2	**Symbol**	Not needed.
8.3	**Definition**	Red light emitted by a lighting device, indicating the presence of a vehicle when seen from the rear, and intended to show the width of the vehicle.
8.4	**Application**	Compulsory.
8.5	**Use**	To indicate the rear of a vehicle or of the last trailer in circumstances where the lighting of vehicles is required. The tail light should be on at the same time as any of the following lights: rear number plate light, meeting beam, side light, driving beam.
8.6	**Type**	(See item 6 of preliminary section, "Plan for Study", page 6.)
8.7	**Tell-tale**	Under study.
8.8	**Shape**	Not specified.
8.9	**Dimensions**	Not specified.
8.10	**Number**	Two.
8.11	**Location**	At the rear of the vehicle.
8.12	**Height above the ground**	Lowest point of the illuminated area: 400 mm minimum. Highest point of the illuminated area: 1900 mm maximum.

8.13 Location as regards the width of the vehicle

The two tail lights should be symmetrical with respect to the longitudinal plane of symmetry of the vehicle.

The illuminated area's farthest point 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.

8.14 Orientation

Towards the rear.

8.15 Geometrical visibility

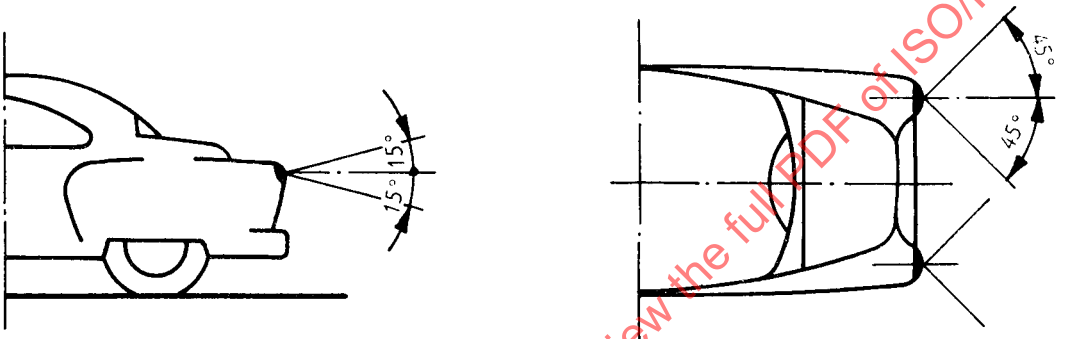


FIG. 10

Horizontal angle of geometrical visibility:

$$135° \begin{cases} 90° \text{ outwards,} \\ 45° \text{ inwards.} \end{cases}$$

Vertical angle of geometrical visibility:

$$30° \begin{cases} 15° \text{ above} \\ 15° \text{ below} \end{cases} \text{ the horizontal.}$$

8.16 Physiological visibility

Visible at 300 m in clear weather, in circumstances where the lighting of vehicles is required.

Should not be dazzling at night for other road users.

8.17 Photometric characteristics

Under study.

8.18 Colour

Red.

Colorimetric characteristics in accordance with Appendix D.

9. PARKING LIGHT

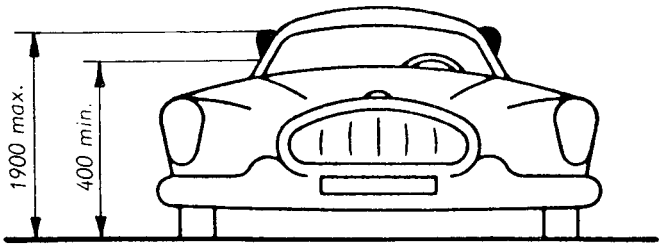


FIG. 11

9.1	**Terminology**	GB Parking light.
9.2	**Symbol**	Not specified.
9.3	**Definition**	Light emitted by a lighting device mounted on a vehicle to indicate that it is parked.
9.4	**Application**	Optional.
9.5	**Use**	In circumstances where the lighting of vehicles is required, to give warning of the presence of a stationary vehicle in a built-up area, all other lights on the vehicle being switched off. The light located on the side of the vehicle opposite to that which is adjacent to the kerb should be lit.
9.6	**Type**	(See item 6 of preliminary section, "Plan for Study", page 6.)
9.7	**Tell-tale**	Not needed.
9.8	**Shape**	Not specified.
9.9	**Dimensions**	Not specified.
9.10	**Number**	Such that the conditions of geometrical visibility are complied with.
9.11	**Location**	On the sides of the vehicle, provided that conditions of geometrical visibility are complied with.

9.12	**Height above the ground**	Lowest point of the illuminated area: 400 mm minimum. Highest point of the illuminated area: 1900 mm maximum.
9.13	**Location as regards the width of the vehicle**	Not needed.
9.14	**Orientation**	Ahead and astern.
9.15	**Geometrical visibility**	

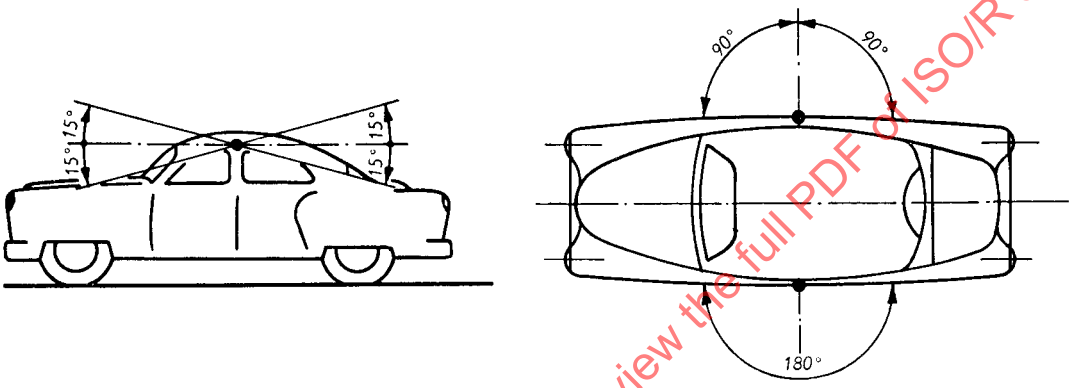


FIG. 12

Horizontal angle of geometrical visibility:

$$180° \left\{ \begin{matrix} 90° \text{ ahead} \\ 90° \text{ astern} \end{matrix} \right\} \text{ and outwards.}$$

Vertical angle of geometrical visibility:

$$30° \left\{ \begin{matrix} 15° \text{ above} \\ 15° \text{ below} \end{matrix} \right\} \text{ the horizontal.}$$

9.16	**Physiological visibility**	Visible at 300 m in clear weather, in circumstances where the lighting of the vehicle is required. Should not be dazzling at night for other road users.
9.17	**Photometric characteristics**	Under study.
9.18	**Colour**	White towards the front. Red towards the rear. Colorimetric characteristics in accordance with Appendix D.

10. REAR REFLEX REFLECTOR – REAR RED REFLEX REFLECTOR

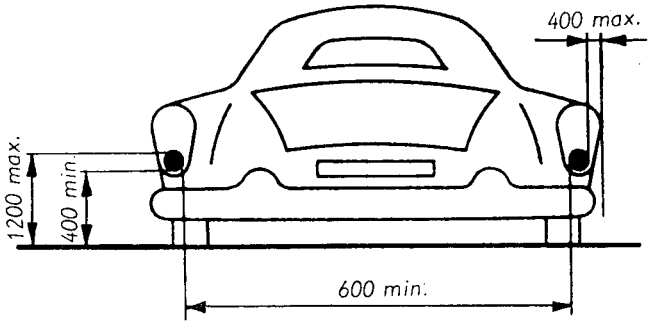


FIG. 13

10.1	**Terminology**	GB Rear reflex reflector USA Rear red reflex reflector.
10.2	**Symbol**	Not needed.
10.3	**Definition**	Device indicating the rear of a motor vehicle by reflection of the light emanating from a light source unconnected with that vehicle, the observer being positioned near this source.
10.4	**Application**	Compulsory.
10.5	**Use**	Not needed.
10.6	**Type**	(See item 6 of preliminary section, "Plan for study", page 6.)
10.7	**Tell-tale**	Not needed.
10.8	**Shape**	Should not be triangular.
10.9	**Dimensions**	Such as to comply with the geometrical visibility and photometric requirements.
10.10	**Number**	Two.
10.11	**Location**	At the rear of the vehicle.

10.12	**Height above the ground**	Lowest point of the reflecting area: 400 mm minimum. Highest point of the reflecting area: 1200 mm maximum.
10.13	**Location as regards the width of the vehicle**	The two reflex reflectors should be symmetrical in relation to the longitudinal plane of symmetry of the vehicle. Minimum spacing between the inner edges of the reflex reflectors: 600 mm. The farthest point of the reflecting 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.
10.14	**Orientation**	The reference direction of the reflex reflector is horizontal, parallel to the longitudinal plane of symmetry of the vehicle and facing to the rear. If the reflex reflector is fixed to the vehicle by means of an articulated support permitting some movement, the preceding requirement applies to reflex reflectors in the rest position.
10.15	**Geometrical visibility**	Such that the photometric characteristics are not impaired, when the rear reflex reflector is mounted on the vehicle.
10.16	**Physiological visibility**	Visible at 150 m in clear weather, in conditions of illumination to be specified on the occasion of study of the photometric characteristics.
10.17	**Photometric characteristics**	Under study.
10.18	**Colour**	Red (colour of reflected light). Colorimetric characteristics in accordance with Appendix D.

11. TRAILER REFLEX REFLECTOR

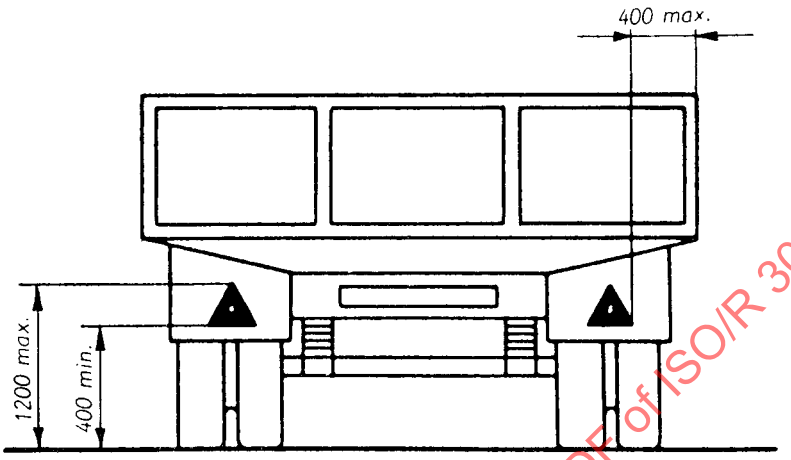


FIG. 16

11.1 Terminology GB and USA Trailer reflex reflector.

11.2 Symbol Not needed.

11.3 Definition Device indicating the rear of a trailer vehicle by reflection of the light emanating from a light source unconnected with that vehicle, the observer being positioned near this source.

11.4 Application Compulsory for all trailers and semi-trailers.

11.5 Use Not needed.

11.6 Type (See item 6 of preliminary section, "Plan for Study", page 6.)

11.7 Tell-tale Not needed.

11.8 Shape Equilateral triangle, one side of which is horizontal and the opposite apex situated above this side.

Two forms may be considered:

either a continuous reflecting surface (with or without a central triangular hole), or
an assembly of separate reflex reflector elements, at least four each side, no particular shape being specified for these elements.

11.9 Dimensions

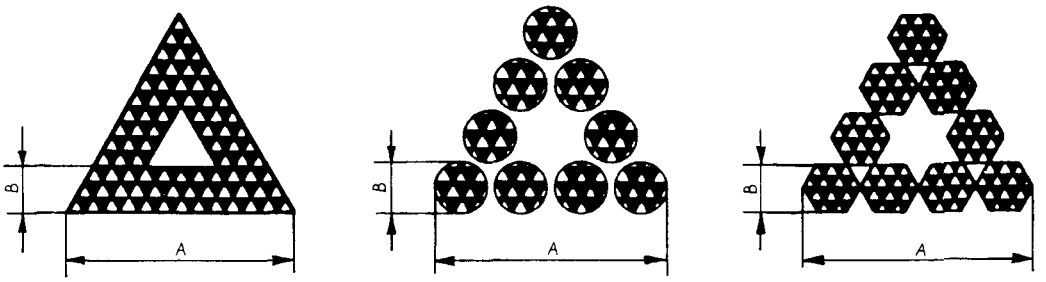


FIG. 17

Length A of the side of the triangle: 150 mm minimum,
200 mm maximum.

If the triangle is hollow, the width B of the strip forming each side should be at least equal to 18 per cent of the length of the side.

11.10	**Number**	Two.
11.11	**Location**	At the rear of the vehicle.
11.12	**Height above the ground**	Lowest point of the reflecting surface: 400 mm minimum. Highest point of the reflecting surface: 1200 mm maximum.*
11.13	**Location as regards the width of the vehicle**	The two reflex reflectors should be symmetrical in relation to the longitudinal plane of symmetry of the vehicle. Minimum spacing between the inner edges of the reflex reflectors: 600 mm, provided the width of the trailer allows it. The farthest point of the reflecting 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.
11.14	**Orientation**	The reference direction of the reflex reflector is horizontal, parallel to the longitudinal plane of symmetry of the vehicle and facing to the rear.
11.15	**Geometrical visibility**	Such that the photometric characteristics are not impaired, when the Trailer reflex reflector is mounted on the vehicle.
11.16	**Physiological visibility**	Visible at 150 m in clear weather, in conditions of illumination to be specified on the occasion of study of the photometric characteristics.
11.17	**Photometric characteristics**	**Under study.**
11.18	**Colour**	Red (colour of reflected light). Colorimetric characteristics in accordance with Appendix D.

* The maximum height may need to be altered, if the study of photometric characteristics shows this to be necessary.