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Den internationella standarden ISO 10 604:1993 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 10 604:1993.

Motsvarigheten och aktualiteten i svensk standard till de publikationer som omnämns i denna standard framgår av "Katalog över svensk standard", som årligen ges ut av SIS. I katalogen redovisas internationella och europeiska standarder som fastställts som svenska standarder och övriga gällande svenska standarder.

Road vehicles — Measurement equipment for orientation of headlamp luminous beams

The International Standard ISO 10 604:1993 has the status of a Swedish Standard. This document contains the official English version of ISO 10 604:1993.

Swedish Standards corresponding to documents referred to in this Standard are listed in "Catalogue of Swedish Standards", annually issued by SIS. The Catalogue lists, with reference number and year of Swedish approval, International and European Standards approved as Swedish Standards as well as other Swedish Standards.

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Postadress: SIS, Box 3295, 103 66 STOCKHOLM
Telefon: 08 - 613 52 00. *Telefax*: 08 - 11 70 35

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ISO 10604

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Road vehicles — Measurement equipment for orientation of headlamp luminous beams

Véhicules routiers — Équipement de mesure de l'orientation des faisceaux lumineux émis par les projecteurs

Reference number
ISO 10604:1993(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10604 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Sub-Committee SC 8, *Lighting and signalling*.

Annex A of this International Standard is for information only.

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Road vehicles — Measurement equipment for orientation of headlamp luminous beams

1 Scope

This International Standard specifies the dimensional, mechanical and optical quality criteria for equipment to measure or to verify the orientation of the luminous beams emitted by the headlamps installed on road motor vehicles excluding mopeds and motorcycles.

The equipment also allows evaluation of the quality of the luminous beams by visual means. Quality criteria for photometric devices are given in clause 12, and enable a more objective evaluation to be carried out.

This International Standard lays down the requirements for

a) the floor on which the vehicles are placed;

b) the vehicle preparation;

c) equipment using a distant screen;

d) optical equipment with installation and operating instructions;

e) photometric devices (see clause 12).

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1176:1990, *Road vehicles — Masses — Vocabulary and codes.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 test area floor: Delimited area on which the vehicles are placed to measure or to verify the orientation of the luminous beams emitted by their headlamps.

3.2 reference plane: Plane characterizing the test area floor.

3.3 vehicle direction: Direction parallel to the reference plane and to the median longitudinal plane of the vehicle standing on the test area floor.

3.4 headlamp: Lighting device able to emit at least a main beam, a dipped beam or a front fog beam but with a single aiming even if different beams can be emitted.

3.5 beam axis: Reference axis according to beam pattern requirements.

NOTE 1 In the case of reciprocally incorporated lamps, the beam axes of the beams emitted by the same headlamp may be different.

3.6 aiming screen: Screen on which the headlamp beam pattern can be observed.

3.7 optical block: Device focussing the headlamp beam on an aiming screen and allowing a vertical displacement of the aiming screen or of the beam image, calibrated on an inclination scale.

3.8 optical apparatus: Optical block mounted on a frame allowing positioning and alignment of the optical block in front of the headlamp.

3.9 screen reference point: Intersecting point on the aiming screen of a light ray parallel to the vehicle direction originating from the lens centre of the headlamp under test, in the reference position in the case of an optical apparatus.

3.10 reference position of optical apparatus: Position of the optical block and of the inclination scale so that the reference point on the aiming screen represents the vehicle direction.

3.11 inclination: Tangent, expressed in per cent of the up- or downward angle with regard to the vehicle direction.[1)]

3.12 lateral deviation: Tangent, expressed in per cent of the lateral angle with regard to the vehicle direction.[1)]

4 Test area floor

4.1 The test area floor is composed of two rolling tracks which are clearly indicated on the floor.

In the case of use for symmetrical three-wheeled vehicles, the test area floor will need a central rolling track for the third wheel.

4.2 The rolling track minimum dimensions shall be as follows (see figure 1):

a) maximum distance between the tracks 0,9 m

b) minimum overall width:
   — for passenger cars 2 m
   — for any motor vehicle 2,3 m

c) minimum length
   — for passenger cars 4 m
   — for any motor vehicle 8,5 m

However, in the case of equipment intended exclusively for checking one type or certain types of defined vehicles, the dimensions of the rolling tracks may be limited to the useful zones for this type(s) of vehicle.

4.3 The rolling tracks shall be sufficiently level in order not to deviate from the reference plane[2)] by more than the following tolerances (see figure 2):

— over a length of 2 m, the floor may not be lower than 4 mm under the reference plane,

— beyond 2 m, the floor has to be situated between two limiting planes opening out in the form of a wedge with gradients of 2 mm/m.

The slope of the reference plane (longitudinally as well as laterally) may not exceed 1 %.

4.4 The rigidity of the rolling tracks shall be sufficient to ensure that they stay within the tolerances when the heaviest vehicles are placed on the test area floor.

Dimensions in metres

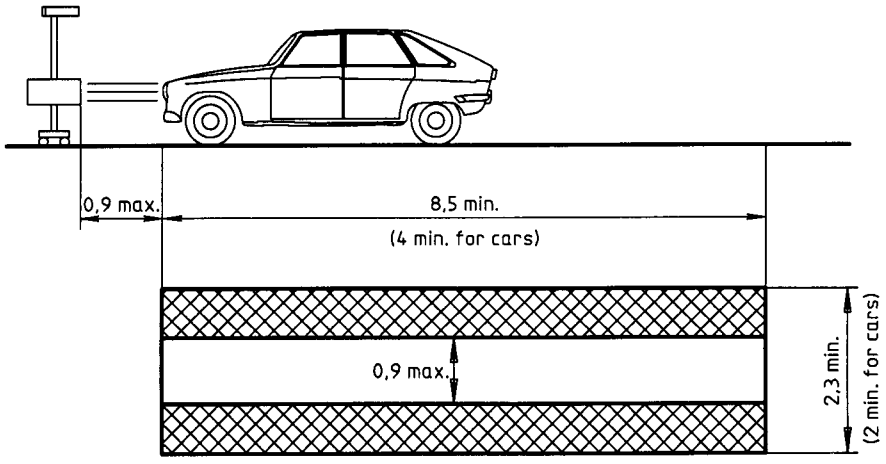

Figure 1 — Test area floor dimensions

1) Inclinations and lateral deviations of light rays emitted by a headlamp can be measured directly on the aiming screen with regard to the reference point: for example, at 10 m in front of the headlamp, 1 % corresponds to a distance of 0,1 m on the screen.

2) The reference plane can, for example, be made of straight sections of 2 m placed on the first part of the rolling tracks and adjusted to have the same slope. The tolerance of 4 mm can thus be checked easily by 4 mm gauges.

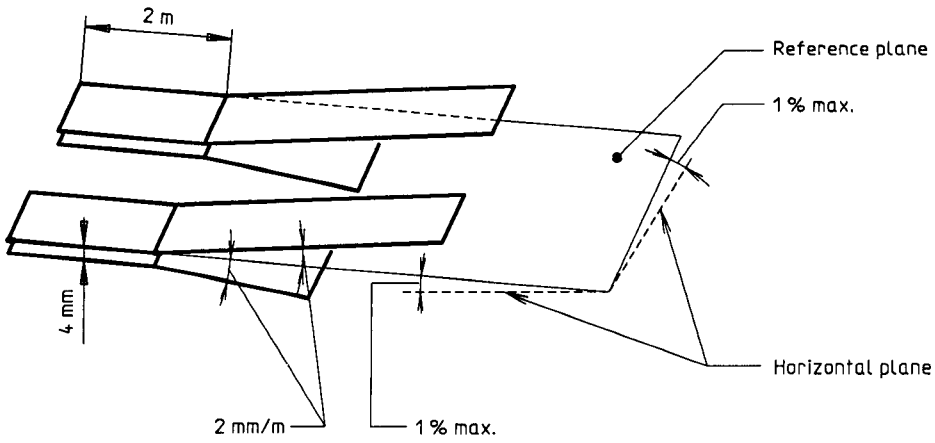

Figure 2 — Test area floor tolerances

5 Vehicle preparation

5.1 Unload the vehicle and fill the fuel tank to attain the complete vehicle kerb mass as specified in ISO 1176.

Except for semi-trailers, disconnect any trailer.

Remove any excessive accumulation of mud, snow or ice which could affect the vehicle attitude.

Check that the headlamps are clean and dry.

Seat a driver of approximately 75 kg on the driver's seat.

Check the tyres and inflate them to the pressure prescribed by the vehicle manufacturer for normal driving conditions on the road.

For vehicles in public or commercial use that have cargo that is generally located in the vehicle when driven, the vehicle should be left with this cargo in its normal location in the vehicle.

5.2 Bring vehicles with pneumatic suspension and seat corrector to the normal road position.

Set any levelling device to the "0"-position.

Drive the vehicle on to the test area floor and bring it gently to a halt on the headlamp checking point with the steering in the straight ahead position.

6 Distant aiming screen

6.1 A wall or panel approximately perpendicular, within ± 5°, to the rolling tracks may be used as an aiming screen, provided that it satisfies the following conditions.

a) The reflectivity shall be sufficient and the ambient lighting low enough to be able to observe the luminous beams on the screen clearly.

b) The distance in front of the headlamp shall be at least 7,5 m, the most practical distance being 10 m because a 1 % inclination then corresponds to 0,1 m on the screen.

c) The screen height shall be at least 1,5 m and its width at least 3 m for a fixed screen at 10 m; movable screens can be smaller but at least 0,6 m by 1,8 m.

6.2 Clearly indicate either the intersection with the reference plane or a line parallel to it with the indication of its height above the reference plane on the aiming screen (see figure 3).

6.3 For each vehicle placed on the test area floor, draw the intersection with the median longitudinal plane on the aiming screen.

The marking of the median longitudinal plane on the aiming screen can be done by indicating the intersecting points of two symmetrical axes of vision and by drawing this line in the middle between them. It is necessary to check whether the references on the vehicle body used for the vision are still symmetrical and have not moved as a result of collisions or repairs. If the references are based on the wheels, these shall be equipped with tyres of the same make and type, and the same degree of wear per axle.

6.4 Draw two vertical lines symmetrically on the screen, the distance between them being equal to the distance between the lens centres of the headlamps to be measured.

The heights of the lens centres above the reference plane marked on these vertical lines above the reference plane indicate the screen reference points.

6.5 Draw the characteristic lines of the beam patterns to be verified or measured with reference to these reference points, taking into account the inclination prescriptions for these luminous beams.

6.6 If a movable screen is used, follow a similar procedure in order to align the reference point in the correct position for each headlamp.

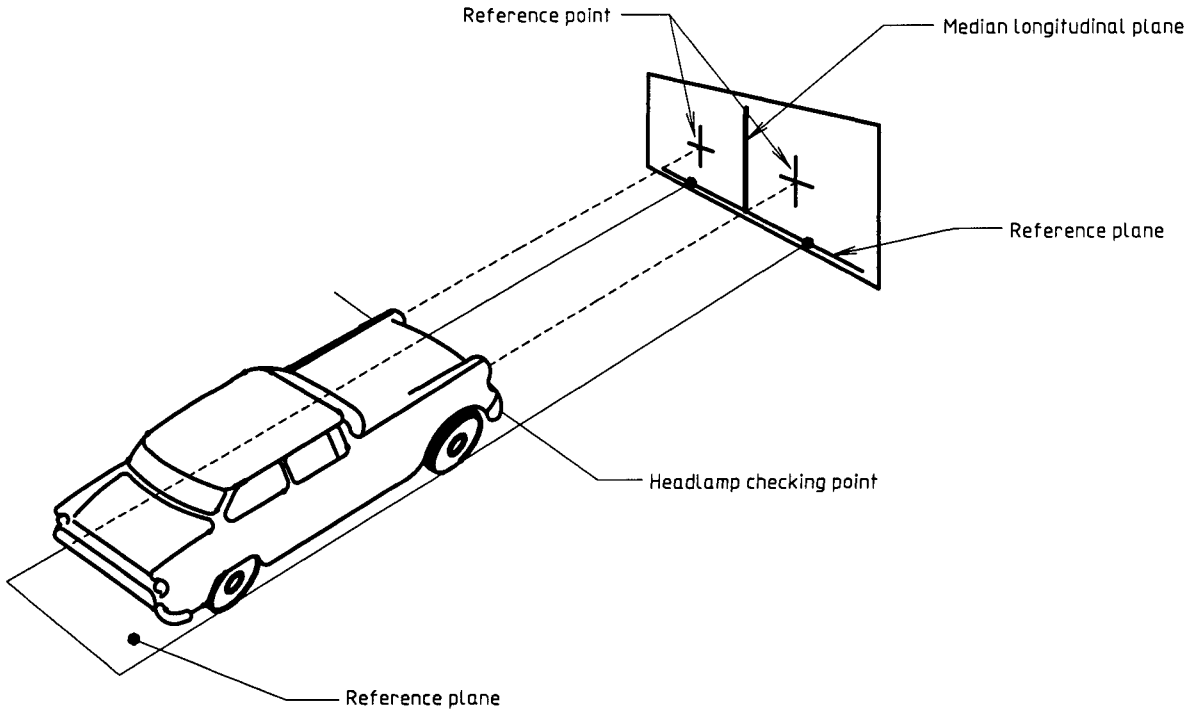

Figure 3 — Alignment on distant aiming screen