INTERNATIONAL STANDARD

ISO 4148

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Road vehicles — Special warning lamps — Dimensions

Véhicules routiers — Feux spéciaux d'avertissement — Dimensions

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4148 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 8, *Lighting and signalling*.

This fourth edition cancels and replaces the third edition (ISO 4148:1998), which has been technically revised. It also incorporates the Draft amendment ISO 4148:1998/DAmd1.

Road vehicles — Special warning lamps — Dimensions

1 Scope

This International Standard specifies the dimensions of special warning lamps for road vehicles, in order to ensure interchangeability and accurate positioning, bearing in mind the rapid change of light intensity from such devices in a vertical cross-section of the projected beam.

It also specifies (see Annex A) methods for testing the magnetic-base mountings used to install special warning lamps directly on the steel sheet of the roof or body of a vehicle (special warning lamps of Category D).

NOTE In certain countries and international bodies, the term “light” is sometimes used instead of “lamp”.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20 degrees, 60 degrees and 85 degrees*

ISO 4091, *Road vehicles — Connectors for the electrical connection of towing and towed vehicles — Definitions, tests and requirements*

ISO 4130, *Road vehicles — Three-dimensional reference system and fiducial marks — Definitions*

ISO 4165, *Road vehicles — Electrical connections — Double-pole connection*

ISO 4892 (all parts), *Plastics — Methods of exposure to laboratory light sources*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
magnetic holder
device used to fix the lamp by magnetic forces on an unalloyed steel surface

3.2
magnetic system
combination of one or more permanent magnets with additional magnetic flux reluctance material for the concentration of the magnetic flux to the holding surface

NOTE Such additional materials could be pots, pole shoes, etc. of unalloyed steel.

3.3
lifting force
F_a
force perpendicular to the holding surface required to detach the magnetic-base mounting from the mounting surface

3.4
horizontal force
F_b
force applied during testing to simulate the horizontal component of any external loading in the X-plane or Y-plane as defined in ISO 4130

NOTE The force is applied at a distance from the mounting surface equating to 50 % of the combined height of the magnetic-base mounting and lamp.

3.5
reference axis
axis perpendicular to the surface on which the unladen vehicle stands

3.6
vertical angle
α
angle above and below the horizontal plane passing through the centre of the light source within which light intensities are specified

4 Categories of special warning lamps

This International Standard defines five categories of special warning lamps:

— Category A: tube-mounted lamp (see Figures 1 to 3);

— Category B: flat-base-mounted lamp (see Figure 4);

— Category C: single-stem-mounted lamp (see Figure 5);

— Category D: magnetic-base-mounted lamp (see Figure 6);

— Category E: warning signal unit (see Figure 7).

5 Intermediate quick-release devices

An intermediate quick-release device may be used if it accepts warning lamps of Categories A, B or C, if it yields the desired accuracy, and if national requirements so permit.

6 Requirements for mounting

6.1 Interchangeability

The warning lamps shall comply with the requirements of Figures 1 to 7, as appropriate.

6.2 Mounting accuracy

When mounted correctly, each lamp shall be within 1° of the position specified. In the case of intermediate quick-release devices, the mounting shall be made on a fixture representing the fixing zone for which it is

intended. To check mounting accuracy, the lamp shall be mounted five times on an appropriate test fixture, and its attitude determined. In no case shall the inclination vary by more than 1° from the mounting plane for Categories B, C and D or from a plane perpendicular to the mounting tube axis for Category A.

6.3 Geometric visibility

The apparent surface of a warning lamp shall be visible within the field defined by the following angles of geometric visibility:

a) horizontal angle: 360°;

b) vertical angle α:

   1) $\alpha = 4°$ for blue special warning lamps,

   2) $\alpha = 8°$ for amber special warning lamps.

The vertical angle below the horizontal plane may be smaller if the geometric visibility of the lamp is met at points located 1 m above the surface on which the vehicle stands and at 20 m from the vehicle.

In the case where more than one lamp is fitted, the requirements of this International Standard are met if at least one lamp is visible under the conditions specified.

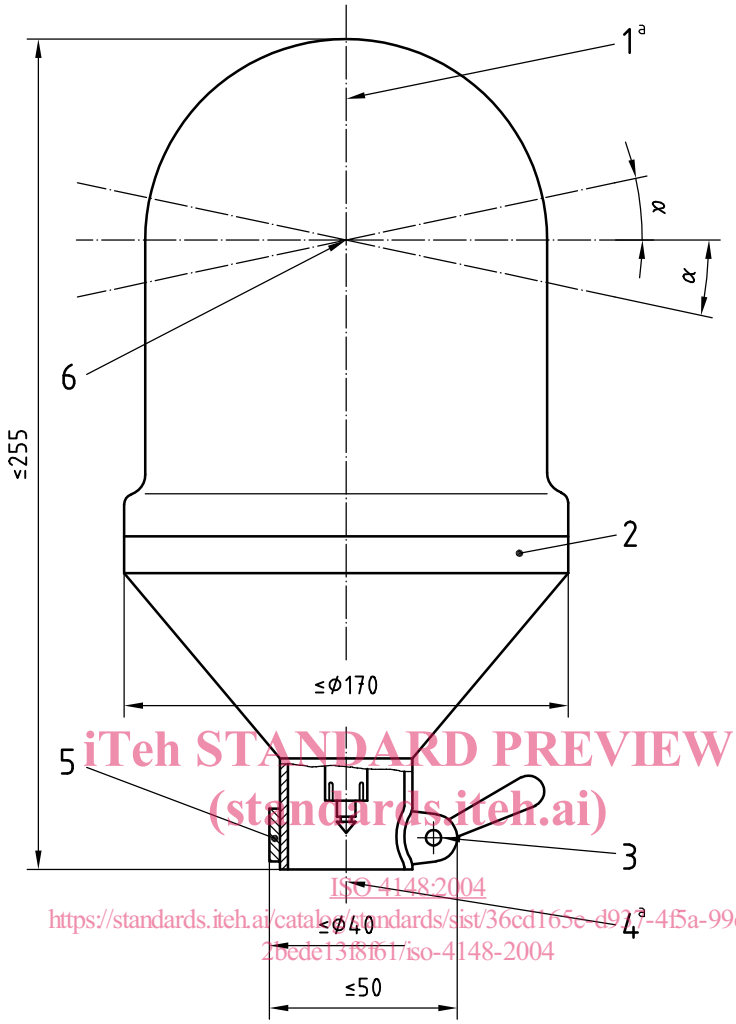
7 Identification

Identification shall include the following:

a) the manufacturer's name, the model number and the category of device;

b) the colour and any special conditions (insulated return, ADR, etc.).

Dimensions in millimetres



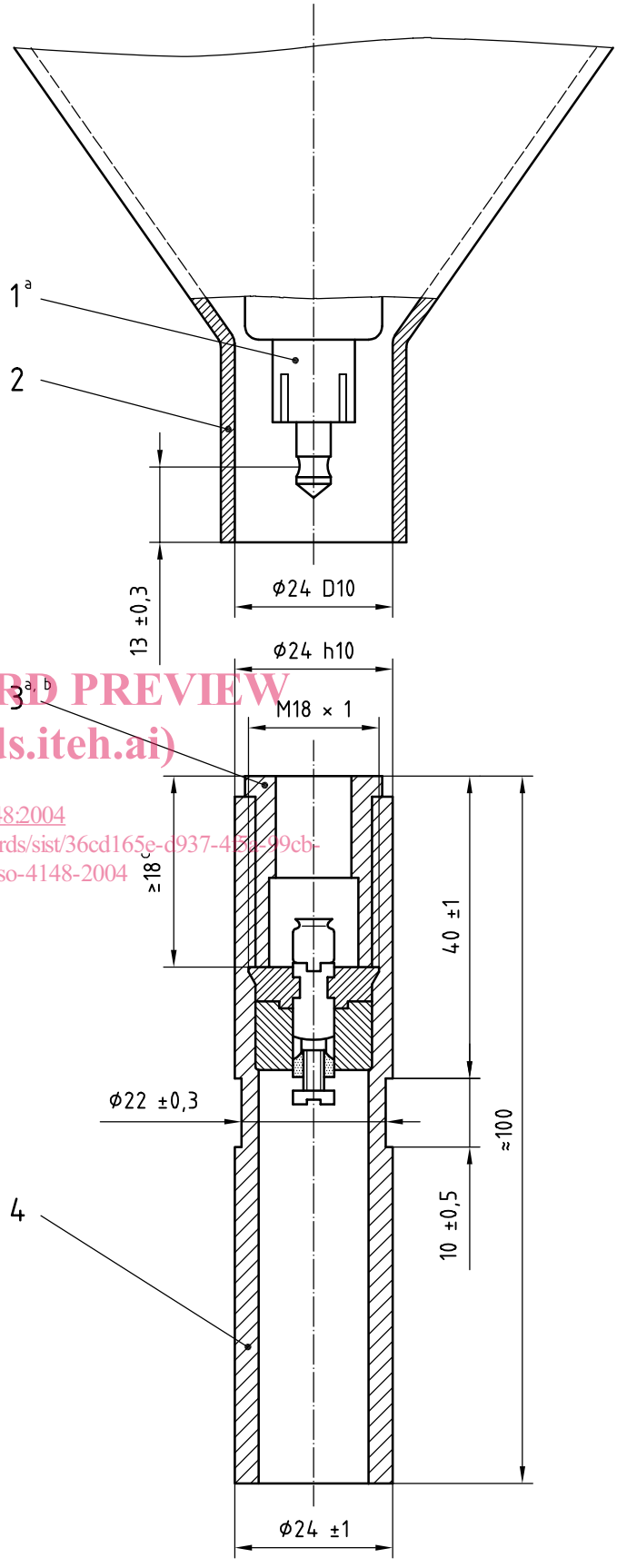
Key

1 reference axis
2 housing
3 fixing device
4 mounting tube axis
5 mounting
6 reference centre (centre of the light source)

[a] The mounting tube axis shall be parallel to the reference axis.

Figure 1 — Tube-mounted special warning lamp (Category A)

Dimensions in millimetres



Key

1 plug
2 mounting tube
3 socket
4 acceptor

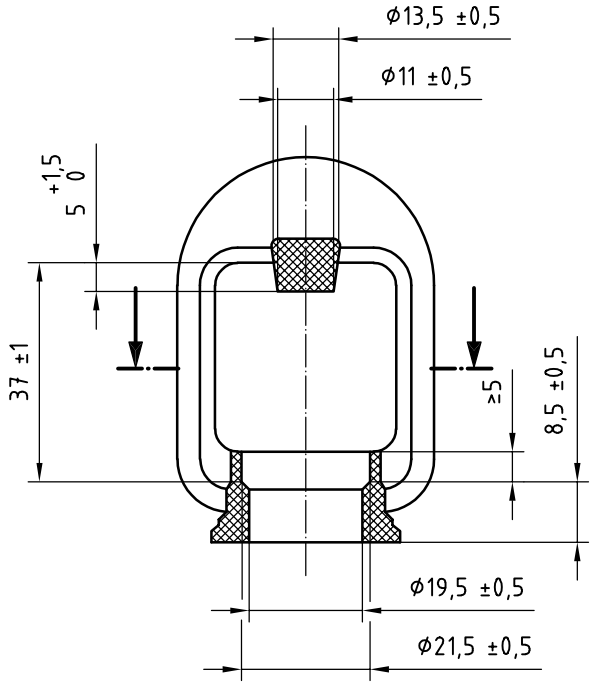
a Plug and socket dimensions shall meet the requirements of ISO 4165.

b A rubber cover shall be used when the special warning lamp is not mounted (see Figure 3).

c Internal thread reach.

Figure 2 — Tube-mounted special warning lamp (category A) — Mounting tube and acceptor dimensions

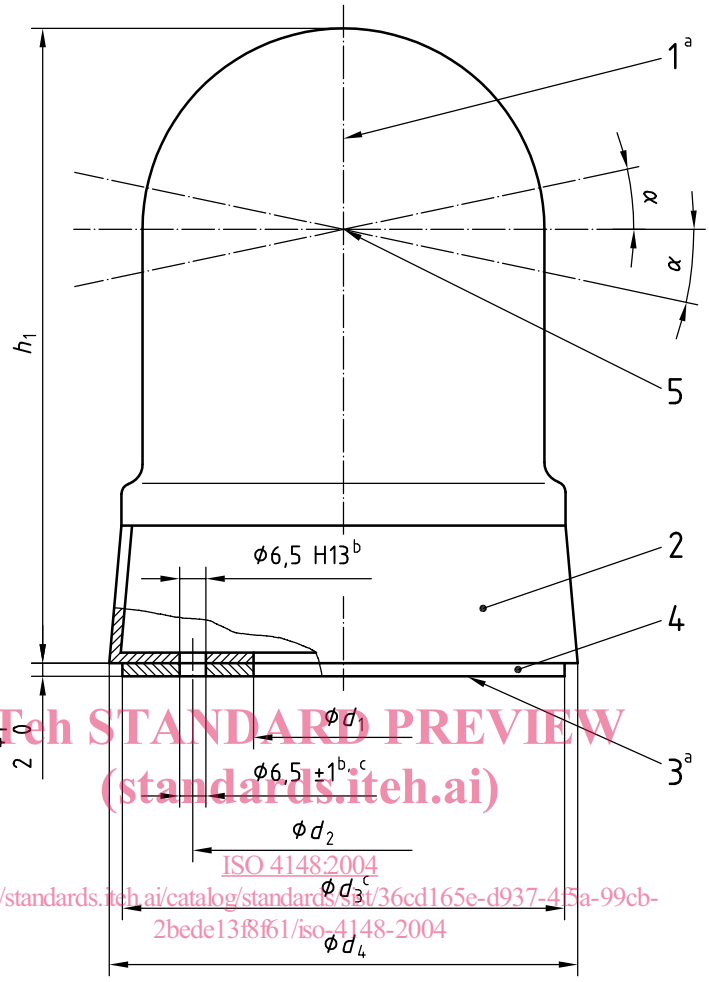
Dimensions in millimetres



NOTE Other solutions are acceptable if they give comparable protection.

Figure 3 — Example of rubber cover for use on when special warning lamp Category A is not mounted

Dimensions in millimetres



Key

1 reference axis
2 housing
3 mounting plane
4 sealing ring
5 reference centre (centre of light source)

a The mounting plane of the lamp shall be perpendicular to the reference axis.

b Three holes, 120° apart.

c The hole diameter 6,5 ± 1, dimension d_3 and the thickness 2^{+1}_{0} apply only to separate sealing rings; they are not relevant to sealing integral with the body.

Size	d_1 min.	d_2 [a]	d_3 min.	d_4 min.	h_1 min.
1	108	130	145	190	235
2	170	200	220	240	255

[a] Tolerances:

— for the housing: ± 0,5;

— for a separate sealing ring: ± 1.

Figure 4 — Flat-base-mounted special warning lamp (Category B)