

CONFIRMED  
DECEMBER 1987

Method for

# Establishment of eyellipses for driver's eye location

[ISO title: Road vehicles — Visibility — Method for establishment  
of eyellipses for driver's eye location]

UDC 629.113.018:535.317.24

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# National foreword

This British Standard has been prepared under the direction of the Automobile Standards Committee and is identical with ISO 4513 “Road vehicles — Visibility — Method for establishment of eyellipses for driver’s eye location” published by the International Organization for Standardization (ISO).

**Terminology and conventions.** The text of the International Standard has been approved as suitable for publication, without deviation, as a British Standard. Some terminology and certain conventions are not identical with those used in British Standards; attention is especially drawn to the following. The comma has been used throughout as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words “International Standard” appear, referring to this standard, they should be read as “British Standard”.

**Cross-references**

| International Standard | Corresponding British Standard                                                                                            |
|------------------------|---------------------------------------------------------------------------------------------------------------------------|
| ISO 4130:1978          | BS AU 173:1979 <i>Definitions for a three-dimensional reference system and fiducial marks</i><br>(Technically equivalent) |

There are no corresponding British Standards for the following International Standards. ISO 3409, ISO 3833, ISO 4131, ISO 4514

The technical committee has reviewed the provisions of ISO 3409 and ISO 3833 and has decided that they are acceptable for use in conjunction with this standard.

ISO 4131 and ISO 4514 were in course of preparation at the time of publication of this standard and will be considered for publication as British Standards on completion.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

**Summary of pages**

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

**Amendments issued since publication**

| Amd. No. | Date of issue | Comments |
|----------|---------------|----------|
|          |               |          |
|          |               |          |
|          |               |          |
|          |               |          |

This British Standard, having been prepared under the direction of the Automobile Standards Committee, was published under the authority of the Executive Board and comes into effect on 29 February 1980

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The following BSI references relate to the work on this standard:  
Committee reference AUE/-  
Draft for comment 76/79316 DC

ISBN 0 580 11073 7

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## 0 Introduction

In order to provide a better understanding of this International Standard, a background to the development of the eyellipse is contained in Annex A.

## 1 Scope

This International Standard establishes two-dimensional eyellipses representative of driver eye locations corresponding to the 90th, 95th and 99th percentiles.

## 2 Field of application

The statistical representation of the driver's eye location contained in this International Standard applies as a design tool to those road vehicles referred to in sub-clause 3.1.1 of ISO 3833.<sup>1)</sup>

## 3 References

ISO 3409, *Passenger cars — Lateral spacing of foot controls*.

ISO 3833, *Road vehicles — Types — Terms and definitions*.

ISO 4130, *Road vehicles — Three-dimensional reference system and fiducial marks — Definitions*<sup>2)</sup>.

ISO 4131, *Road vehicles — Dimensional code for passenger cars*<sup>2)</sup>.

ISO 4514, *Road vehicles — Method for describing the driver's field of view*<sup>3)4)</sup>.

ISO . . ., *Road vehicles — Devices for use in defining and measuring seating accommodation*<sup>3)</sup>.

ISO . . ., *Road vehicles — Definition of points H and R*<sup>3)</sup>.

## 4 Definitions

For the purposes of this International Standard the following definitions apply:

### 4.1

#### driver's eye range

a statistical representation of the driver's eye location in a road vehicle

### 4.2

#### eyellipse

the contraction of the words "eye" and "ellipse", describing the elliptical shape of the driver's eye range

the term "eyellipse" should be used solely in this application

### 4.3

#### eyellipse template

a two-dimensional design tool consisting of a plan view and a side view of the driver's left and right eye ranges (see Figure 1 and Annex B) from which sight lines may be constructed for the purpose of describing the location of objects in the field of view of the seated driver

NOTE The co-ordinates of eyellipse tangent points can be located in the actual vehicle three-dimensional reference system to determine design verification.

### 4.4

#### eyellipse locator line — adjustable seat

the side view locator of the eyellipse for horizontally adjustable seats with back angles between 5° and 40° (see Figure 2 and Annex B)

### 4.5

#### sight line

a line which extends from the eyellipse centroid, the left or right eye ellipse centroid, or a tangent point on the eyellipse contour and directed towards a target point or at a given angle from a line drawn parallel to the zero Y plane or ground

in the side view, the plane is seen as a line and is constructed to the upper or lower edge; in the plan view, the plane is seen as a line and is constructed to the left or right edge of either ellipse

the selection of the sight lines relative to the eyellipse is made by the user depending on his design problem

### 4.6 three-dimensional reference system

The relationship of three orthogonal planes established by the manufacturer in the initial design stages of the vehicle and remaining permanent.

The planes are used to determine dimensional relationships within the vehicle and are defined below:

#### 4.6.1

##### zero "Y" plane

a vertical plane which passes through the longitudinal centreline of the vehicle

<sup>1)</sup> V-points may be used in lieu of the complete eyellipse to standardize the driver's field of view for regulation purposes.

<sup>2)</sup> At present at the stage of draft.

<sup>3)</sup> In preparation.

<sup>4)</sup> This proposed International Standard establishes a uniform method of describing the driver's field of view, a method for measuring vehicle window opening for comparison purposes, and a procedure for establishing vision origin points (V-points, P-points and E-points). V-points are points on a sight line constructed from a specific target and tangent to the eyellipse contour.