

---

---

**Road vehicles — Location of hand controls,  
indicators and tell-tales in motor vehicles**

*Véhicules routiers — Emplacement des commandes manuelles, des  
indicateurs et des témoins sur les véhicules à moteur*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 4040:2001](#)

[https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-  
aa72a78c9e45/iso-4040-2001](https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-aa72a78c9e45/iso-4040-2001)



Reference number  
ISO 4040:2001(E)

© ISO 2001

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 4040:2001

<https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-aa72a78c9e45/iso-4040-2001>

© ISO 2001

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.ch](mailto:copyright@iso.ch)  
Web [www.iso.ch](http://www.iso.ch)

Printed in Switzerland

## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4040 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 13, *Ergonomics applicable to road vehicles*.

This fourth edition cancels and replaces the third edition (ISO 4040:1997), which has been technically revised.

ITEH STANDARD PREVIEW  
(standards.iteh.ai)  
<https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-aa72a78c9e45/iso-4040-2001>

## Introduction

There is a recognized potential for errors in the selection of controls essential to the safe operation of a vehicle if these controls are not similarly located in all vehicles. Therefore, the standardization of these control locations must be considered a logical and beneficial design objective, especially considering that drivers have an ever-increasing opportunity to change from one vehicle to another.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 4040:2001](https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-aa72a78c9e45/iso-4040-2001)

<https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-aa72a78c9e45/iso-4040-2001>

# Road vehicles — Location of hand controls, indicators and tell-tales in motor vehicles

## 1 Scope and field application

This International Standard specifies the location of the controls in motor vehicles by subdividing the space within reach of drivers into specific zones to which certain controls essential to the safe operation of vehicles are assigned. It also specifies certain combinations of functions for multifunction controls and the degree to which certain indicators and tell-tales are to be visible.

This International Standard is applicable to hand-operated controls, to indicators and to tell-tales in all motor vehicles, excluding motorcycles and mopeds, as defined in ISO 3833.

NOTE A specification for a control indicator or tell-tale does not imply that the item must be fitted.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards. <https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-ea72e78e9e45/iso-4040-2001>

ISO 2575:2000, *Road vehicles — Symbols for controls, indicators and tell-tales*

ISO 3833:1977, *Road vehicles — Types — Terms and definitions*

ISO 3958:1996, *Passenger cars — Driver hand-control reach*

ISO 4513:1978, *Road vehicles — Visibility — Method for establishment of eyellipses for driver's eye location*

ISO 6549:1999, *Road vehicles — Procedure for H- and R-point determination*

SAE J941:1997, *Motor Vehicle Drivers' Eye Locations*

## 3 Terms and definitions

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

### 3.1

#### reference plane

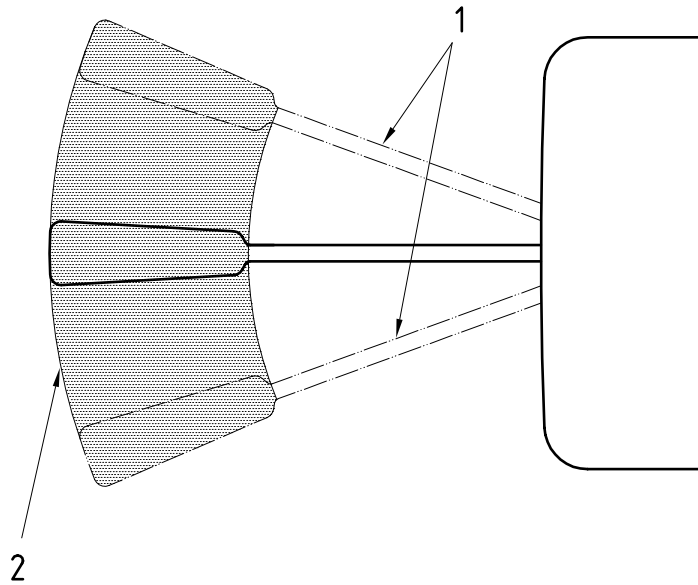
vertical plane parallel to the longitudinal axis of the motor vehicle, passing through the steering wheel axis and within a zone 50 mm to either side of the centre of the designated seating position for the driver at the R-point as defined in ISO 6549

### 3.2

#### operational area of control

area swept by those parts of a control activated by the hand while the possible modes or positions are selected in the manner intended by the designer

EXAMPLE See Figure 1.



- Key**
- 1 Extreme location of the control
  - 2 Operational area of the control

**Figure 1 — Example of operational area of a control**  
(standards.iteh.ai)

**3.3 display area of indicator or tell-tale**

area including the identification of the quantity displayed and those portions required to determine its level at any point within the usable capacity of the instrumentation

EXAMPLE See Figure 2.

NOTE It need not include, for example, bezels or the manufacturer's type number.

**3.4 steering-wheel plane**

plane tangential to the upper surface of the steering-wheel rim in the design condition, as designated by the vehicle manufacturer, and with the vehicle wheels in the straight-ahead position

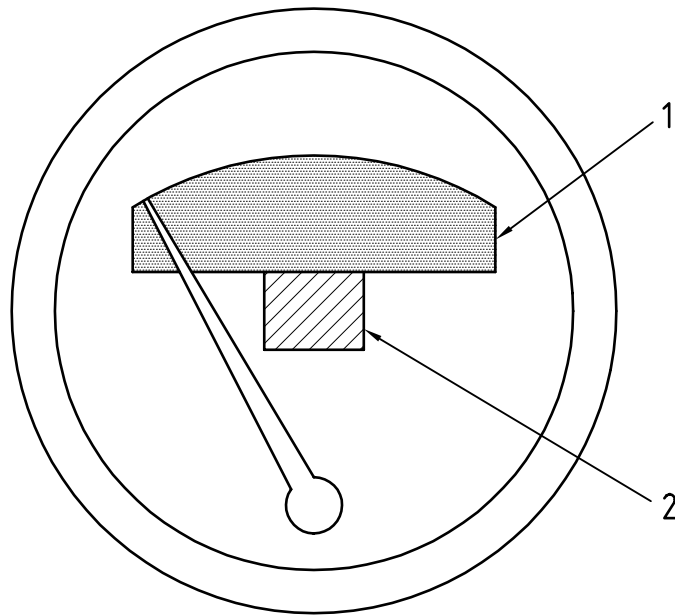
**3.5 steering-wheel axis**

line at right angles to the steering-wheel plane, passing through the centre of rotation of the steering-wheel rim

**3.6 zone 1**

volume to the left of the reference plane bounded by the following surfaces (see Figure 3):

- a plane parallel to the steering-wheel plane and 20 mm above it;
- a plane parallel to the steering-wheel plane and 170 mm below it;
- a cylinder extending 100 mm beyond the periphery of the steering-wheel rim whose axis is on the steering-wheel axis;
- a cylinder lying 130 mm inside the periphery of the steering-wheel rim whose axis is on the steering-wheel axis;
- two planes intersecting along the steering-wheel axis, at 40° and 130° from the reference plane.

**Key**

- 1 Sub-area A: display of information given by pointer.  
 2 Sub-area B: example of display area for other information.

**Figure 2 — Example of display area of indicators**  
 (standards.iteh.ai)

**3.7****zone 2**

volume bounded by the following surfaces (see Figure 3):

- a plane parallel to the steering-wheel plane and 20 mm above it;
- a plane parallel to the steering-wheel plane and 170 mm below it;
- a cylinder of 50 mm radius whose axis is on the steering-wheel axis.

**3.8****zone 3**

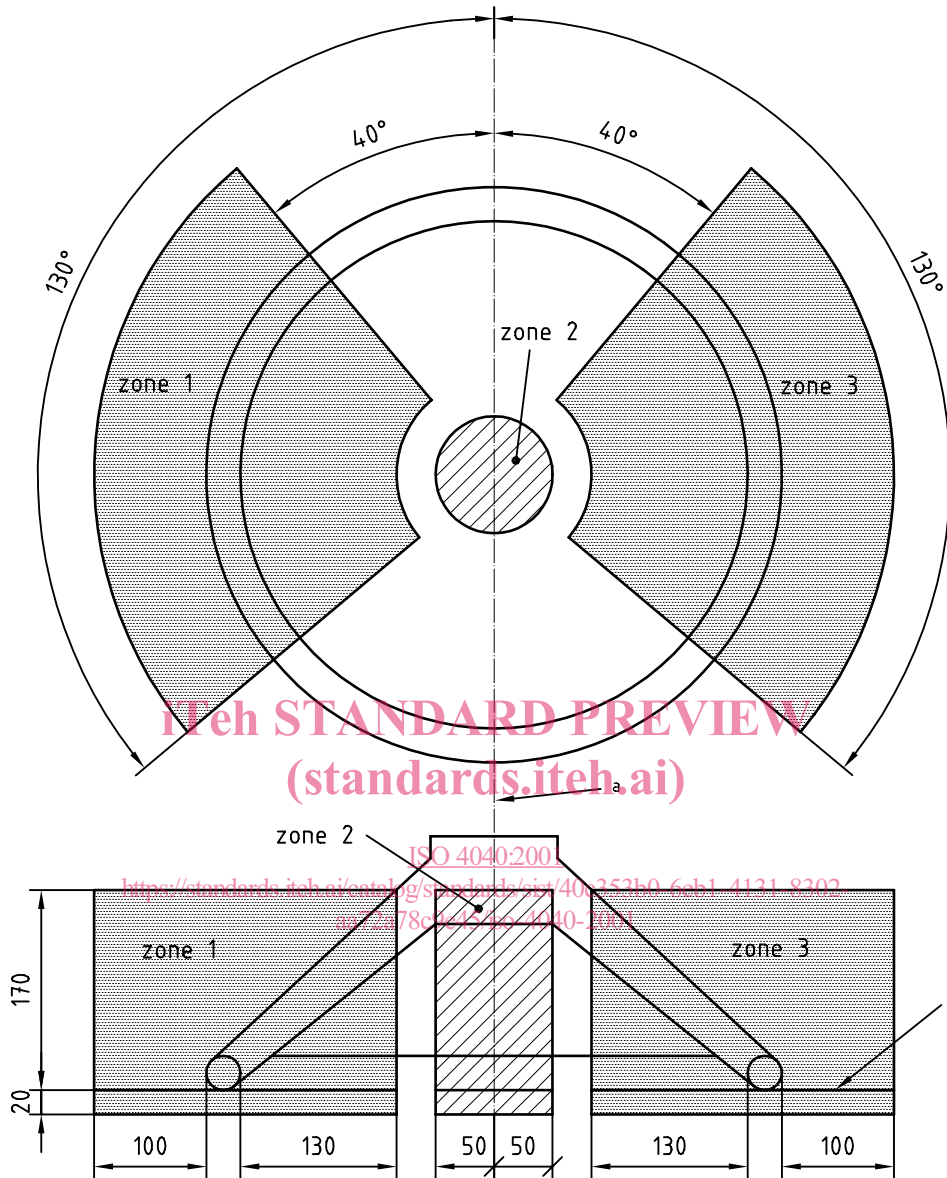
volume to the right of the reference plane bounded by the following surfaces (see Figure 3):

- a plane parallel to the steering-wheel plane and 20 mm above it;
- a plane parallel to the steering-wheel plane and 170 mm below it;
- a cylinder extending 100 mm beyond the periphery of the steering-wheel rim whose axis is on the steering-wheel axis;
- a cylinder lying 130 mm inside the periphery of the steering-wheel rim whose axis is on the steering-wheel axis;
- two planes intersecting along the steering-wheel axis at 40° and 130° from the reference plane.

**3.9****visible**

seen with either eye and not necessarily both eyes simultaneously, from all positions within the 95th percentile eyellipses [see ISO 4513 and SAE J941<sup>1)</sup>], with the gear selector in top gear or drive position and the steering wheel in the straight-ahead position adjusted according to the manufacturer's specification

1) Eyellipses are defined for passenger cars only in ISO 4513. Eyellipses are defined for commercial vehicles and buses in SAE J941:1997, Section 5. Reference to SAE J941 will continue to be made for the commercial vehicle and bus eyellipse until reference to commercial vehicle and bus eyellipses is included in ISO 4513.



- a Steering-wheel axis
- b Steering-wheel plane

Figure 3 — Location of zones

**3.10 head movement**

movement required to overcome a geometric obstruction

NOTE For the purposes of this International Standard, it does not include movement when the target is more than 30° from the line of sight.

**3.11 identification**

symbol according to ISO 2575, written label or some portion of the pointer and scale by which a driver can distinguish the characteristic displayed by the control, indicator or tell-tale



**3.12****passive restraint readiness indicator**

tell-tale or indicator indicating a malfunction that will prevent or impede the operation of a passive restraint in the designed manner, or indicating that the passive restraint is disabled

**3.13****stalk control**

rigid, elongated control device with a visible length at least five times as great as the smallest cross-sectional dimension

NOTE This device may be fixed or movable and located on the steering column or instrument panel. The operational area is located within reach of the driver (see ISO 3958 and 4.1).

**3.14****touch control**

control requiring minimal displacement to operate

**3.15****proximity control**

control requiring no displacement to actuate

**3.16****operational surface**

area on the control surface for the user to grasp/touch in order to activate the controlled function

**3.17****secondary operational surface**

operational surface mounted on, and external to, another operational surface

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

NOTE This does not include buttons on the end of a stalk control (see Figure 4).

<https://standards.iteh.ai/catalog/standards/sist/40c353b0-6eb1-4131-8302-aa72a79c9e45/iso-4040-2001>

**4 Requirements for location of controls**

**4.1** For passenger cars, the controls listed in this clause (4.2 to 4.9) shall be located within the restrained reach of drivers as defined in ISO 3958.

For commercial vehicles and buses, these controls shall be located within reach of drivers wearing a lap belt, unrestrained reach as defined in ISO 3958.

**4.2** The operational areas of the following controls shall be located in zone 1:

- headlamp beam switching;
- headlamp optical warning;
- turn signal direction indicator.

See 4.7.

**4.3** The operational area of the master lighting control shall be located

- to the left of the reference plane for left-hand drive vehicles, or
- to the right of the reference plane, if panel mounted, for right-hand drive vehicles.

**4.4** A portion of the operational area of a control for the audible warning (horn) shall be located either in zone 1 or zone 2.

Additional audible warning controls may be located elsewhere, or may have operational areas extending beyond these zones.