

Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point

The European Standard EN ISO 5353:1998 has the status of a
British Standard

ICS 53.100; 65.060.01

National foreword

This British Standard is the English language version of EN ISO 5353:1998. It is identical with ISO 5353:1995. It supersedes BS 5631:1978 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee B/513, Construction equipment and plant, and site safety, to Subcommittee B/513/1, Earth-moving machinery (International), which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement these international or European publications may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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, the EN ISO title page, page 2, the ISO title page, page ii, pages 1 to 5 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.

This British Standard, having been prepared under the direction of the Sector Committee for Building and Civil Engineering, was published under the authority of the Standards Committee and comes into effect on 15 January 1999

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English version

Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point

(ISO 5353:1995)

Engins de terrassement, et tracteurs et matériels agricoles et forestiers — Point repère du siège
(ISO 5353:1995)

Erdbaumaschinen sowie Traktoren und Maschinen für Land- und Forstwirtschaft
Sitzindexpunkt
(ISO 5353:1995)

This European Standard was approved by CEN on 4 September 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

The text of the International Standard from Technical Committee ISO/TC 127 “*Earth moving machinery*” of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 151 “*Construction equipment and building material machines — Safety*”, the secretariat of which is held by DIN.

This European Standard replaces EN 25353:1988.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 1999, and conflicting national standards shall be withdrawn at the latest by March 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 5353:1995 has been approved by CEN as a European Standard without any modification.

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INTERNATIONAL
STANDARD

ISO
5353

Second edition
1995-12-01

**Earth-moving machinery, and tractors and
machinery for agriculture and forestry —
Seat index point**

*Engins de terrassement, et tracteurs et matériels agricoles et
forestiers — Point repère du siège*



Reference number
ISO 5353:1995(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 5353 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety requirements and human factors*.

This second edition cancels and replaces the first edition (ISO 5353:1978), of which it constitutes a technical revision.

Descriptors: Earth-moving equipment, agricultural machinery, agricultural tractors, forest equipment, seats, ground vehicle seats, operator seats, tests, determination, seat index point.

1 Scope

This International Standard specifies a method and the device for use in determining the position of the seat index point (SIP) for any kind of seat designed for earth-moving machinery as defined in ISO 6165, and tractors and machinery for agriculture and forestry as defined in ISO 3339-0.

This provides a uniform method for defining the location of the SIP in relation to a fixing point on the seat. The SIP may be determined on a seat by itself or with the seat located in its operating environment on the machine. The SIP is a characteristic of the seat; therefore, it may be specified by the seat manufacturer.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards. ISO 3339-0:1986, *Tractors and machinery for agriculture and forestry — Classification and terminology — Part 0: Classification system and classification*.

ISO 6165:1987, *Earth-moving machinery — Basic types — Vocabulary*.

3 Definitions

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

3.1

seat index point; (SIP)

point on the central vertical plane of the seat as determined by the device shown in Figure 1, when installed in the seat as specified in 5.3

NOTE 1 The SIP is fixed with respect to the machine and does not move with the seat through its adjustment and/or oscillation range.

NOTE 2 The SIP as established and defined by this International Standard may be considered, for operator work-place design purposes, to be equivalent to the intersection on the central vertical plane through the seat centreline of the theoretical pivot axis between a human torso and thighs.

3.2

fixing point

point specified by the manufacturer to which the SIP is referenced

see Figure 2 and Figure 3 for examples

4 Multiple machine function seats

Some seats are designed to locate and fix an operator to perform more than one function with a given machine. Where a second position of the seat is provided because the machine or tractor has a second set of controls, the SIP of the seat has two locations relative to the machine or tractor, one for each position, as if there were two seats in the machine or tractor. The first location of the SIP shall be used for those International Standards appropriate to the first location and set of controls and the second location of the SIP shall be used for those International Standards appropriate to the second location and set of controls.

5 Technical requirements

5.1 Device for seat index point (SIP) determination

The device for determining the SIP shall comply with Figure 1. The mass of the device shall be $6 \text{ kg} \pm 1 \text{ kg}$. The work surfaces of the device shall be of hardwood (sanded with 200 or finer grit paper or equivalent and polished) or equivalent material with the same performance to provide minimum friction with the muslin cloth in 5.3.1.

5.2 Adjustments when determining the seat index point (SIP)

When the relevant adjustments are a part of the seat and its suspension, the seat shall be adjusted according to the following sequential steps before determining the SIP.

5.2.1 Seat adjustment

All fore, aft, vertical and angular adjustments shall be placed in their centre position. When no centre position is possible, the nearest adjustment that will move the SIP device upward or rearward of centre shall be used.

5.2.2 Suspension system

Block the suspension system according to the manufacturer's instruction. If such instruction is not provided, block the suspension system at the midpoint of its oscillation range.

Non-adjustable suspension shall be blocked in the vertical position attained with the weighted device in place.

5.3 Seat index point (SIP) determination

The SIP shall be determined by using the device illustrated in Figure 1 and applying the following procedures.

5.3.1 Seat preparation

Allow sufficient time to ensure that the seat reaches a room temperature of $20\text{ °C} \pm 2\text{ °C}$ before starting the measurement procedure.

Place the seat on a level surface.

Seat a $75\text{ kg} \pm 10\text{ kg}$ person in the seat twice for 1 min periods to flex the seat and back cushions. Allow the seat to remain unloaded for a minimum period of 5 min before starting the measurement procedure.

Cover the seat with a single layer of muslin cloth of sufficient size to prevent direct contact and minimize friction between the cushion surfaces and the measurement device. Take care to prevent the cloth from influencing the positioning of the device.

5.3.2 Device placement

Place the SIP device, without additional masses, laterally central on the seat cushion pushing against the back cushion (see Figure 2). Ensure that the device is laterally controlled and level on the seat.

Add masses to bring the total mass of the device from $6\text{ kg} \pm 1\text{ kg}$ to $26\text{ kg} \pm 1\text{ kg}$; the vertical force centre of the added masses shall be 40 mm in front of the SIP mark on the horizontal section of the device (see Figure 1).

To obtain a good fit between the seat cushion, the back cushion, and the SIP measuring device, alternately apply and release a horizontal rearward force of approximately 100 N at the location noted in Figure 1, and rock the device from side to side.

Add further masses to bring the total mass of the device from $26\text{ kg} \pm 1\text{ kg}$ to $65\text{ kg} \pm 1\text{ kg}$ such that the vertical force centre of the additional masses is 40 mm in front of the SIP mark on the horizontal section of the device (see Figure 1).

NOTE 3 A 75 kg operator approximates the 65 kg weighted device on the seat.

Repeat the alternate loading and releasing, and the rocking of the device, checking to make sure the device is laterally central and level on the seat.

5.3.3 Measurement

Make measurements on each side of the SIP measuring device at points an equal distance from the central vertical plane (see Figure 2). Average the values. Record within $\pm 1\text{ mm}$ the coordinate dimensions of the SIP from the fixing point on the seat assembly (see Figure 3) that is defined by the manufacturer.

Some machines have seats which fulfil multiple functions, usually by rotating the seat. Functions may include using machine equipment or operating the machine in travel mode. For these cases, it may not be possible readily to calculate the location of the different SIPs relative to the fixing point. In these cases, repeat 5.2 and 5.3 for each of the positions.

5.4 Report

The test report shall include the following information:

- a) reference to this International Standard;
- b) a full description of any test conditions or adjustments different from those specified in this International Standard;
- c) a drawing or sketch of the seat assembly showing the coordinate dimensions between the fixing point and the SIP (see Figure 3 for an example);
- d) description of the seat adjustment ranges available relevant to 5.2.

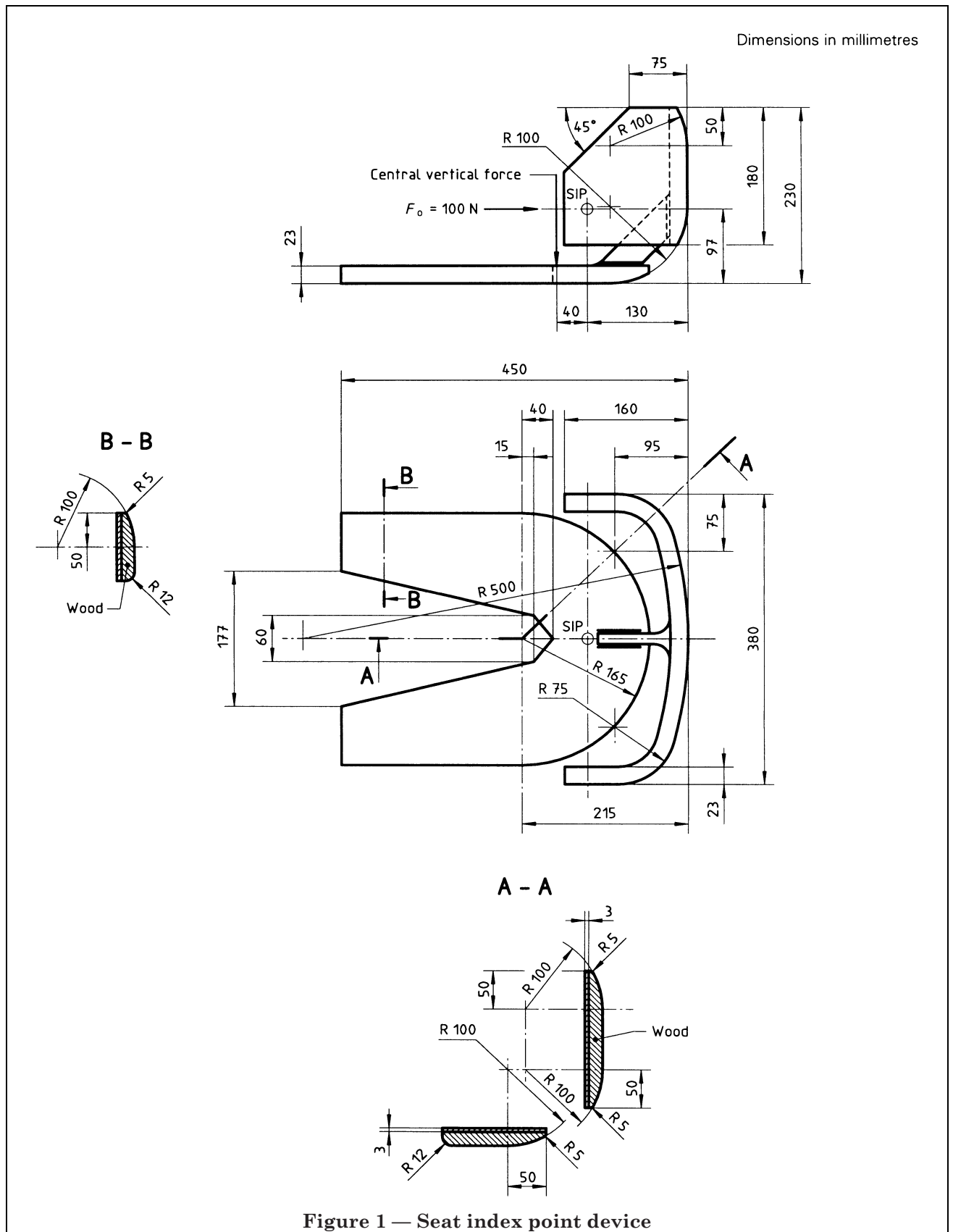
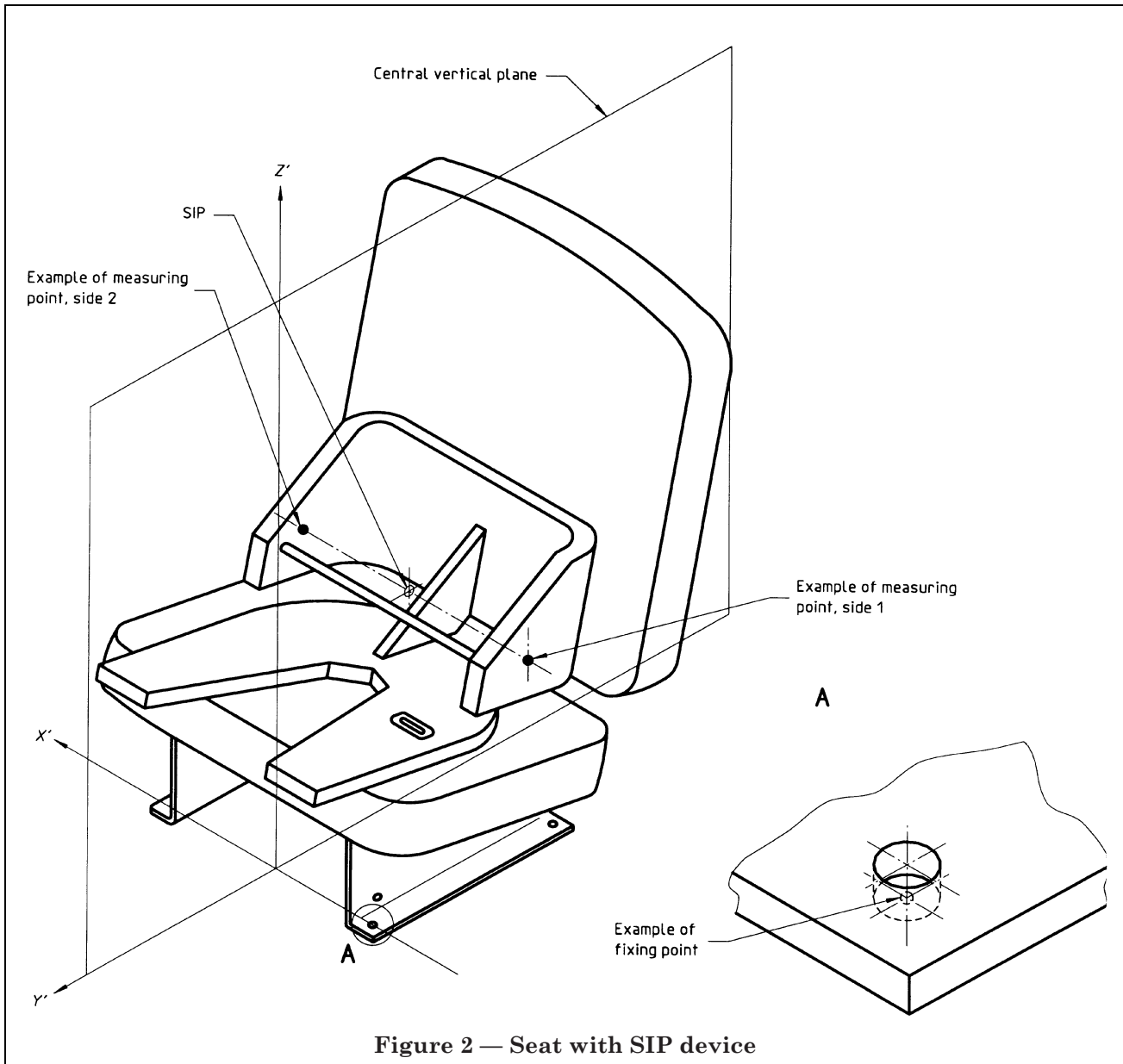


Figure 1 — Seat index point device



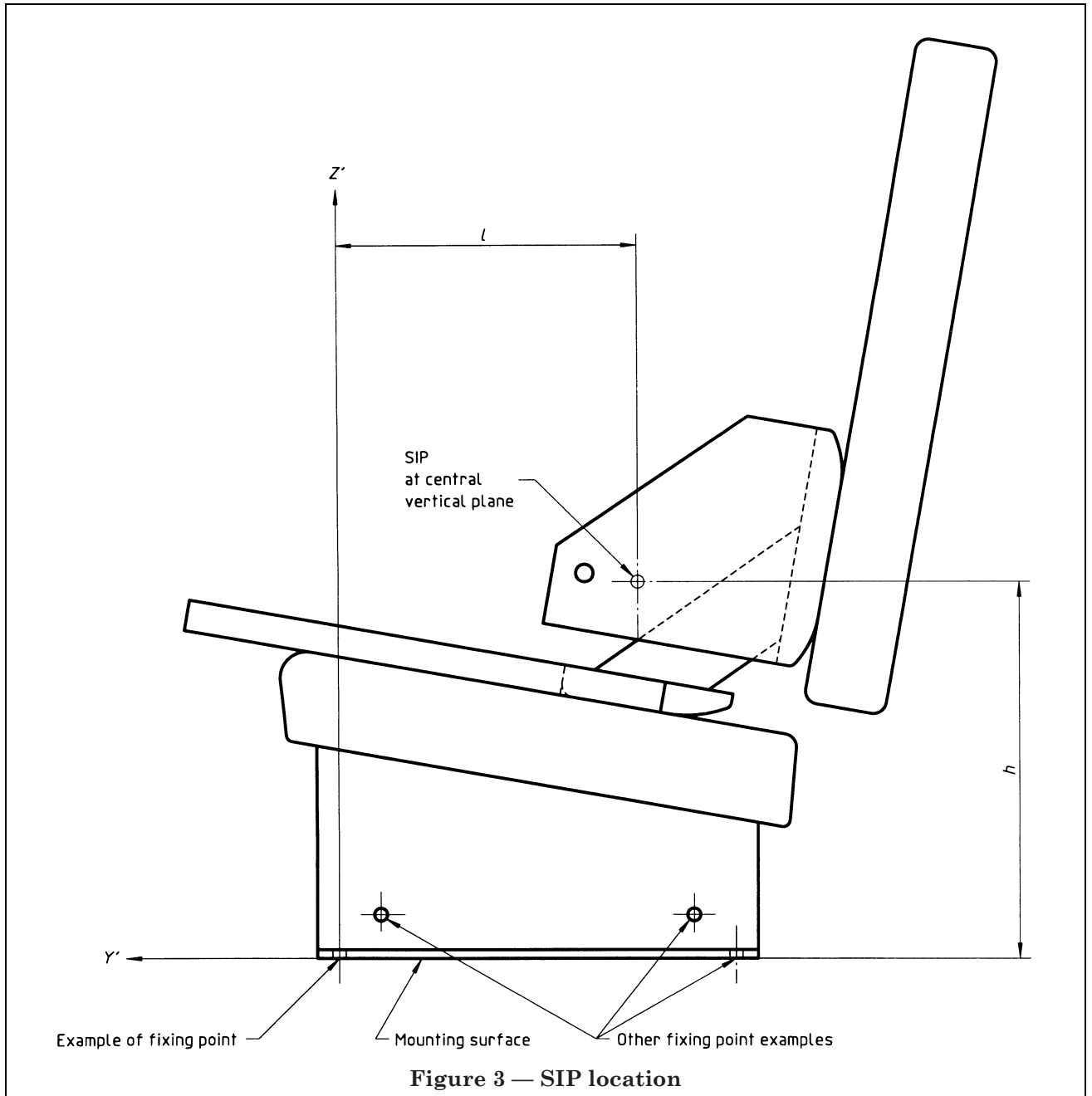


Figure 3 — SIP location

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