

# SVENSK STANDARD

## SS-EN 16186-1:2014+A1:2018



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### **Järnvägar – Förarhytt – Del 1: Sikt, planering, tillträde**

### **Railway applications – Driver's cab – Part 1: Anthropometric data and visibility**

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Denna standard ersätter SS-EN 16186-1:2014, utgåva 1.

The European Standard EN 16186-1:2014+A1:2018 has the status of a Swedish Standard. This document contains the official version of EN 16186-1:2014+A1:2018.

This standard supersedes the SS-EN 16186-1:2014, edition 1.

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EUROPEAN STANDARD

**EN 16186-1:2014+A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2018

ICS 45.060.10

Supersedes EN 16186-1:2014

English Version

## Railway applications - Driver's cab - Part 1: Anthropometric data and visibility

Applications ferroviaires - Cabines de conduite - Partie  
1: Données anthropométriques et visibilité

Bahnanwendungen - Führerraum - Teil 1:  
Anthropometrische Daten und Sichtbedingungen

This European Standard was approved by CEN on 18 October 2014 and includes Amendment 1 approved by CEN on 26 August 2018.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**SS-EN 16186-1:2014+A1:2018 (E)**

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## European foreword

This document (EN 16186-1:2014+A1:2018) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

This document includes Amendment 1 approved by CEN on 2018-08-26.

This document supersedes EN 16186-1:2014.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC [1].

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

**A1** EN 16186, “*Railway applications — Driver’s cab*” is written as an EN series on all the aspects to be considered when designing a driver’s cab, from anthropometric data and visibility, over the integration of displays, controls and indicators as well as the design of displays to cab layout and access facilities. The background information on the anthropometric data used is provided in CEN/TR 16823. **A1**

EN 16186, *Railway applications — Driver’s cab* consists of the following parts:

- *Part 1: Anthropometric data and visibility;*
- *Part 2: Integration of displays, controls and indicators;*
- *Part 3: Design of displays;*
- **A1** *Part 4: Layout and access* **A1**

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## SS-EN 16186-1:2014+A1:2018 (E)

### 1 Scope

<sup>A1</sup> This part of EN 16186 applies to driver's cabs of Electrical Multiple Unit (EMU), Diesel Multiple Unit (DMU), railcars, locomotives and driving trailers.

NOTE 1 This standard applies to rolling stock in the scope of the Directive 2008/57/EC. <sup>A1</sup>

This part of EN 16186 applies to driver's desks installed on the left, on the right, or in a central position in the driver's cab.

For OTMs, see EN 14033-1 <sup>A1</sup> *deleted text* <sup>A1</sup> and EN 15746-1 <sup>A1</sup> *deleted text* <sup>A1</sup>.

This part of EN 16186 defines:

- anthropometric data;
- visibility conditions from the driver's cab, including forward visibility and the reference positions of line-side signals to be considered;
- assessment methods.

<sup>A1</sup> NOTE 2 Due to railway systems constraints the level of visibility provided to the persons outside the defined anthropometric range may vary. It is up to the operator's safety management system to address the potential restriction of front visibility, if the driver uses extreme seat positions combined with extreme body heights. <sup>A1</sup>

<sup>A1</sup> The actual seating and positioning habits of drivers regarding visibility, whether drivers are in or outside the range of anthropometric data of this standard is outside the scope of this document. <sup>A1</sup>

<sup>A1</sup> This standard is not intended to be applicable for tramways, metros and light rail vehicles. <sup>A1</sup>

### 2 Normative references

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

EN 15152, *Railway applications — Front windscreens for train cabs*

<sup>A1</sup>

EN 15663, *Railway applications — Definition of vehicle reference masses*

EN 50125-1, *Railway applications — Environmental conditions for equipment — Part 1: Rolling stock and on-board equipment* <sup>A1</sup>

### 3 Terms, definitions and abbreviations

#### 3.1 Terms and definitions

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

##### 3.1.1

##### **driver**

person tasked with operating a vehicle or a train by operating controls in a driver's cab or on a remote control unit



### 3.1.2

#### **driver's cab**

compartment of a vehicle which is equipped with controls and instruments with which the driver controls traction unit(s) in the train

### 3.1.3

#### **vision area A**

windscreen vision area represented by the trapezoid defined by the intersection of the lines of sight

Note 1 to entry: See Annex A and Annex B.

### 3.1.4

#### **vision area B**

windscreen vision area outside area A through which the driver may also be required to look

### 3.1.5

#### **technical specification**

document describing specific parameters and/or product requirements, which have to be agreed by contracting parties

### 3.1.6

#### **seat reference point**

##### **SRP**

reference point at the back pan of a new seat design with a horizontal distance of 135 mm and a vertical distance of 98 mm from the H point according to ISO 20176:2011  $\text{A}_1$  [5]  $\text{A}_1$

Note 1 to entry: See Figure 2.

Note 2 to entry: For existing seat designs, the SRP may be defined as an alternative via Directive 78/764/EEC  $\text{A}_1$  [6]  $\text{A}_1$ .

## 3.2 Abbreviations

For the purposes of this document, the following abbreviations are used.

DMU	Diesel Multiple Unit
EMU	Electric Multiple Unit
OTM	On-Track Machine

## 4 Driver's anthropometric data

### 4.1 General

This clause defines the anthropometric data on which the requirements for cab forward visibility are based.

The background on these anthropometric data will be provided in CEN/TR 16823.

### 4.2 Data

Figure 1 and Figure 2 give the body size measures.

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Dimensions in millimetres

	Min.	Max.
$a^a$	1 580	1 940
$b^a$	1 480	1 815
$c$	820	985
$d$	710	860
$e$	545	665
$f^a$	510	635
$g^a$	405	510
$h$	120	180
$i$	440	525

<sup>a</sup> Includes 30 mm allowance for shoes.

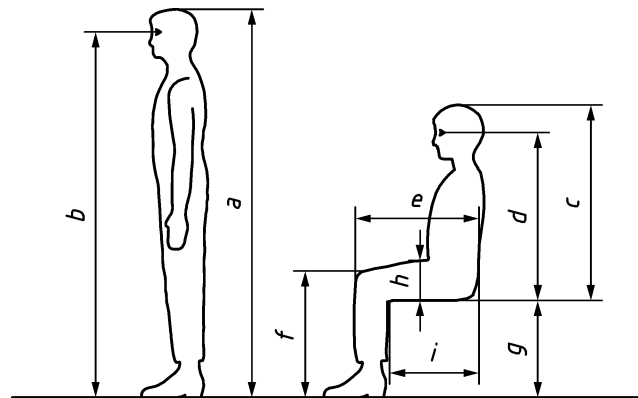
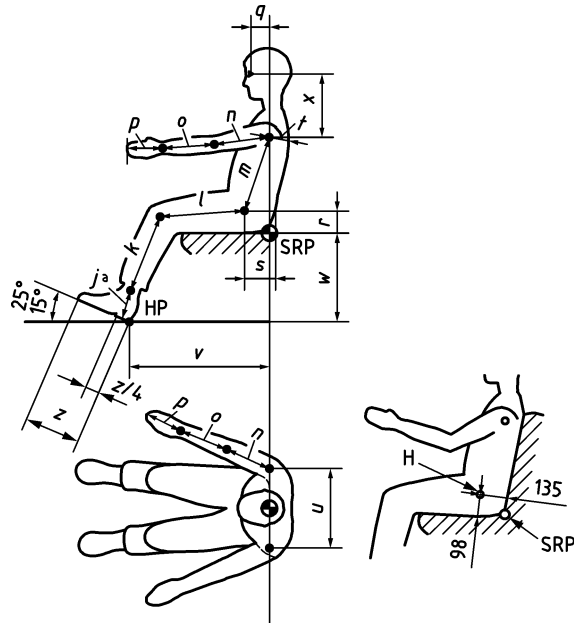


Figure 1 — Principal body size measures

Dimensions in millimetres

	Min.	Max.
<i>j</i> <sup>a</sup>	107	126
<i>k</i>	353	457
<i>l</i>	377	473
<i>m</i>	411	498
<i>n</i>	257	312
<i>o</i>	223	266
<i>p</i>	170	221
<i>q</i>	78	90
<i>r</i>	75	101
<i>s</i>	105	121
<i>t</i>	104	131
<i>u</i>	295	387
<i>v</i>	450 to 550	600 to 700
<i>w</i>	390 to 405	470 to 510
<i>x</i>	232	261
<i>z</i>	220	290
<sup>a</sup> Includes 30 mm allowance for shoes.		



**Key**

- H source for hip point: ISO 20176:2011
- HP heel point (lowest rear point of the heel)
- SRP seat reference point
- z/4 non-flexible part of the shoe pad

**Figure 2 — Additional body size measures**

**5 Forward visibility**

**5.1 General**

For the seated driving position the forward visibility requirements of 5.2.1 shall be ensured (see also Annex A and Annex B).

The horizontal distance from the driver's eye to the windscreen in seated position shall be a minimum of 500 mm and an absolute maximum of 1 715 mm. It is recommended to have a maximum of 1 500 mm.