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Part 4: Catalogue of defined gauges

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Railway applications - Gauges - Part 4: Catalogue of defined gauges

Applications ferroviaires - Gabarits - Partie 4 :
Catalogue des gabarits définis

Bahnanwendungen - Lichtraum - Teil 4: Katalog der
Begrenzungslinien

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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 CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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European foreword

This document (prEN 15273-4:2023) has been prepared by Technical Committee CEN/TC 256 “Railway Applications”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This European Standard is one of the series prEN 15273, *Railway applications — Gauges* as listed below:

- prEN 15273-1, *General common rules for Rolling Stock and Infrastructure* gives the general explanations of gauging and defines the sharing of the space between rolling stock and infrastructure;
- prEN 15273-2, *Rolling stock* gives the rules for dimensioning vehicles;
- prEN 15273-3, *Infrastructure* gives the rules for positioning the infrastructure;
- prEN 15273-4, *Catalogue of defined gauges* includes a non-exhaustive list of reference profiles and parameters to be used by infrastructure and rolling stock;
- prCEN/TR 15273-5, *Background, explanation and worked examples*.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Introduction

The aim of this standard is to define the rules for the calculation and verification of the dimensions of rolling stock and infrastructure from a gauging perspective.

This standard describes gauging processes taking into account the relative movements between rolling stock and infrastructure as well as the necessary margins or clearances

This part of the series EN 15273 covers a catalogue of gauges and associated rules and is used in conjunction with the following parts:

- *Part 1: General common rules for Rolling Stock and Infrastructure;*
- *Part 2: Rolling stock;*
- *Part 3: Infrastructure;*
- *Part 5: Background, explanation and worked examples.*

1 Scope

The gauges included in this document have been developed for application on mainline railway networks using various track gauges. Other networks are outside the scope of this document, but the rules may be applied to them.

This document is a catalogue of reference profiles and their associated rules for the defined gauging process. This document is intended to be used with prEN 15273-1:2023, prEN 15273-2:2023 and prEN 15273-3:2023.

This document is not applicable to the gauges “S” and “T” for track gauge 1 520 mm.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

prEN 15273-1:2023, *Railway applications — Gauges — Part 1: General common rules for Rolling stock and Infrastructure*

prEN 15273-2:2023, *Railway applications — Gauges — Part 2: Rolling stock*

prEN 15273-3:2023, *Railway applications — Gauges — Part 3: Infrastructure*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 15273-1:2023 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp/>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Symbols and abbreviations

For the purposes of this document, the symbols and abbreviations given in prEN 15273-1:2023 apply.

5 Static gauges

5.1 Lower parts

5.1.1 Static gauge GI1

5.1.1.1 Reference profile

Figure 1 shows the reference profile for static gauge GI1.



- Figure 1 —Reference profile for static gauge GI1**

Table 1 gives the basic data to be considered for GI1 static gauge calculations.

L m	S_{lim}	l_{nom} m	l_{max} m	R_{min} m	$R_{v\ min}$ m
1,5	0,2	1,435	1,465	150	500

Table 2 gives the lateral projections for the static gauge GI1.

Height	Radius	Formula	
		Inside curve	Outside curve
$h_{CR} \leq 0,43$	$\infty \geq R \geq 250$	$S_{R,a} = S_{R,i} = \frac{2,5}{R}$	
	$250 > R \geq 150$	$S_{R,i} = \frac{50}{R} - 0,190$	$S_{R,a} = \frac{60}{R} - 0,230$
applicable for all heights	applicable for all radii	$S_l = \frac{[l - l_{nom}]_{>0}}{2}$	

5.1.1.4 Vertical projections

Table 3 gives the vertical projections for the static gauge GI1.

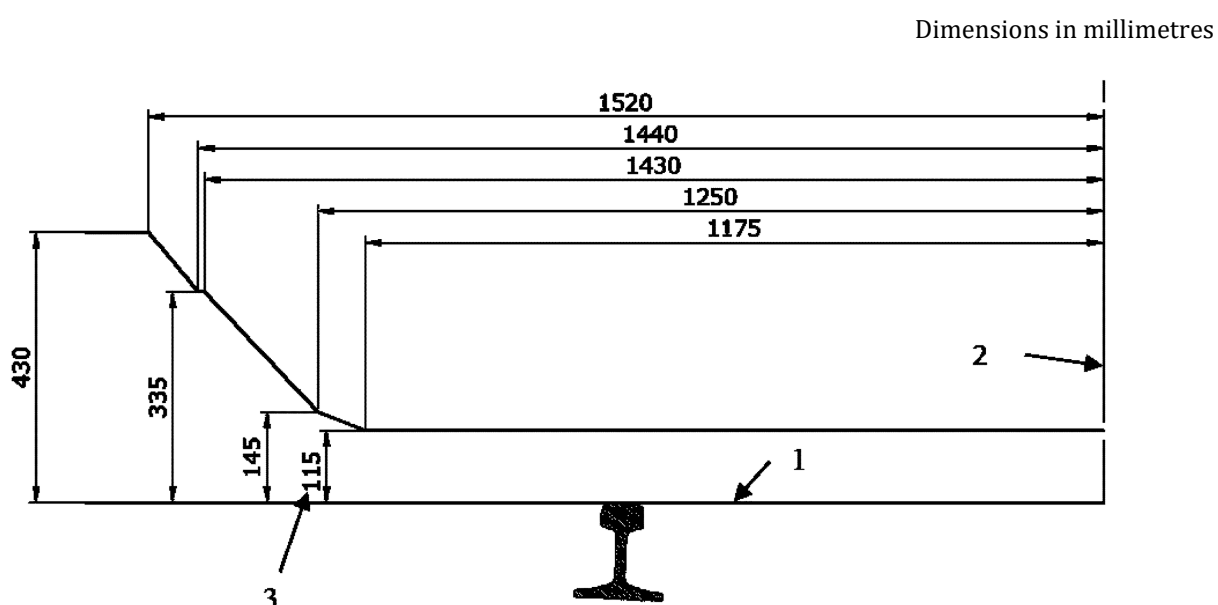
Table 3 — Vertical projections for lower parts

Height	$S_{v,u}$
Applicable for all heights	$\frac{50}{R_v}$

5.1.2 Static gauge GI2

5.1.2.1 Reference profile

Figure 2 shows the static reference profile GI2.



Key

- 1 running plane
- 2 centerline of the reference profile
- 3 for rolling stock, values can be reduced by 15 mm for unsprung parts

Figure 2 — Reference profile for static gauge GI2

5.1.2.2 Basic data

The basic data for the static gauge GI2 are the same as for the static gauge GI1, given in Table 1.

5.1.2.3 Lateral projections

The lateral projections for the static gauge GI2 are the same as for the static gauge GI1, given in Table 2.

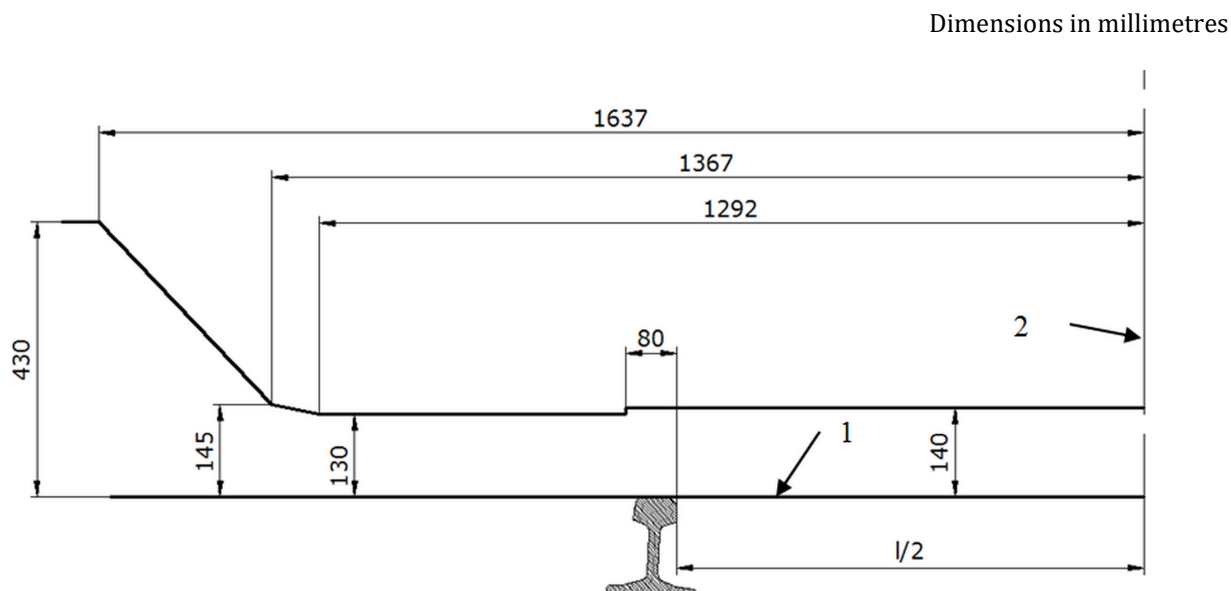
5.1.2.4 Vertical projections

The vertical projections for the static gauge GI2 are the same as for the static gauge GI1, given in Table 3.

5.1.3 Static gauge GEI1

5.1.3.1 Reference profile

Figure 3 shows the static reference profile GEI1.



Key

- 1 running plane
- 2 centerline of the reference profile

Figure 3 — Reference profile for static gauge GEI1

5.1.3.2 Basic data

Table 4 gives the basic data to be considered for GEI1 static gauge calculations.

Table 4 — Values to be considered for GEI1 static gauge calculations

L m	S_{lim}	l_{nom} m	l_{max} m	R_{min} m	R_{vmin} m
1,733	0,3	1,668	1,698	150	500

5.1.3.3 Lateral projections

The lateral projections for the static gauge GEI1 are the same as for the static gauge GI1, given in Table 2.

5.1.3.4 Vertical projections

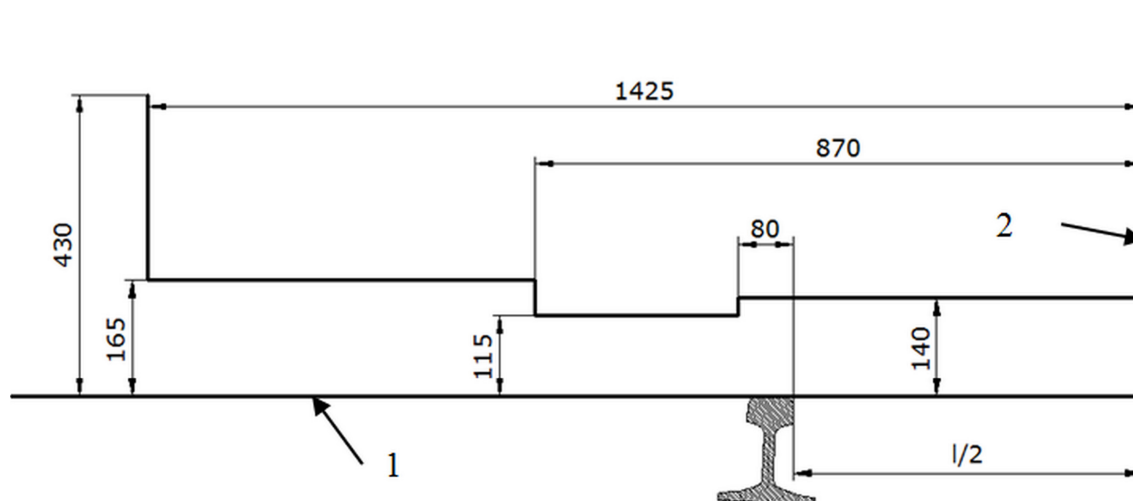
The vertical projections for the static gauge GEI1 are the same as for the static gauge GI1, given in Table 3.

5.1.4 Static gauge GEE10

5.1.4.1 Reference profile

Figure 4 shows the static reference profile GEE10.

Dimensions in millimetres

**Key**

- 1 running plane
- 2 centerline of the reference profile

Figure 4 — Reference profile of static gauge GEE10**5.1.4.2 Basic data**

Table 5 gives the basic data to be considered for GEE10 static gauge calculations.

Table 5 — Values to be considered for GEE10 static gauge calculations

L m	S_{lim}	l_{nom} m	l_{max} m	R_{min} m	$R_{v min}$ m
1,055	0,3	1,000	1,030	80	500

5.1.4.3 Lateral projections

Table 6 gives the lateral projections for the lower part of the static gauge GEE10.

Table 6 — Formulae for the lateral projections of static gauge GEE10

Height	Radius	Formula	
		Inside curve	Outside curve
$h_{CR} \leq 0,43$	$\infty \geq R \geq 100$	$S_{Ri} = S_{Ra} = \frac{1}{R}$	
	$100 > R \geq 80$	$S_{Ri} = \frac{20}{R} - 0,190$	$S_{Ra} = \frac{24}{R} - 0,230$
applicable for all heights	applicable for all radii	$S_l = \frac{[l - l_{nom}]_{>0}}{2}$	

5.1.4.4 Vertical projections

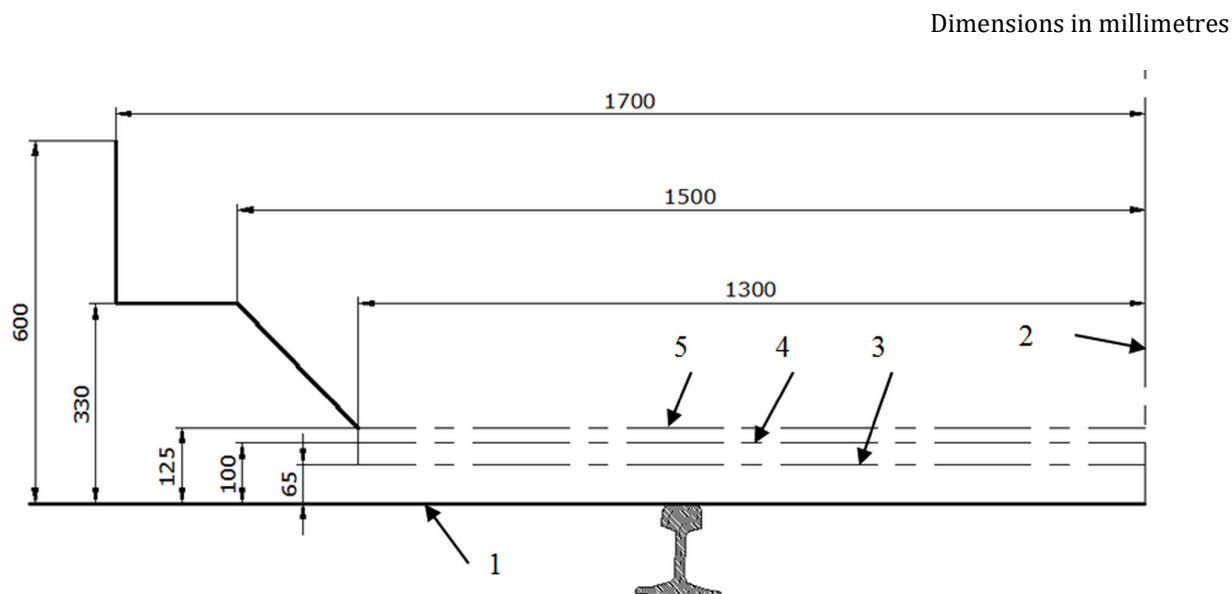
The vertical projections for the static gauge GEE10 are the same as for the static gauge GI1, given in Table 3.

5.1.5 Static gauge FIN1

NOTE The static gauge FIN1 is based on broad gauge lines in Finland.

5.1.5.1 Reference profile

Figure 5 shows the reference profile for the lower part of static gauge FIN1.



Key

- 1 running plane
- 2 centreline of the reference profile
- 3 lowering of the gauge for adoption of a separate regulation to be applied to the lower part of the bogies of traction units that are unable to pass over marshalling humps and rail brakes
- 4 lowering of the gauge for adoption of a separate regulation to be applied to the lower part of the vehicles (except for bogies of traction units, see key 3) that are unable to pass over marshalling humps and rail brakes
- 5 lower part for vehicles that are required to pass over marshalling humps and rail brakes

Figure 5 — Reference profile for lower part of static gauge FIN1

5.1.5.2 Basic data

Table 7 gives the basic data to be considered for FIN1 static gauge calculations.

Table 7 — Values to be considered for FIN1 static gauge calculations

L m	l_{nom} m	l_{max} m	R_{min} m	$R_{\text{v min}}$ m
1,6	1,524	1,544	150	500

5.1.5.3 Lateral projections

Table 8 gives the lateral projections for the static gauge FIN1.

Table 8 — Formulae for lateral projections of the lower part of static gauge FIN1

Height	Radius	Formula
$h_{CR} < 0,6$	$\infty \geq R \geq 150$	$S_{Ri} = S_{Ra} = \frac{36}{R} + 0,060$
applicable only for vehicles running over track brakes:		
$h_{CR} < 0,33$	$\infty \geq R \geq 150$	$S_{Ri} = S_{Ra} = \frac{36}{R}$

5.1.5.4 Vertical projections

There are no vertical projections the lower part of static gauge FIN1.

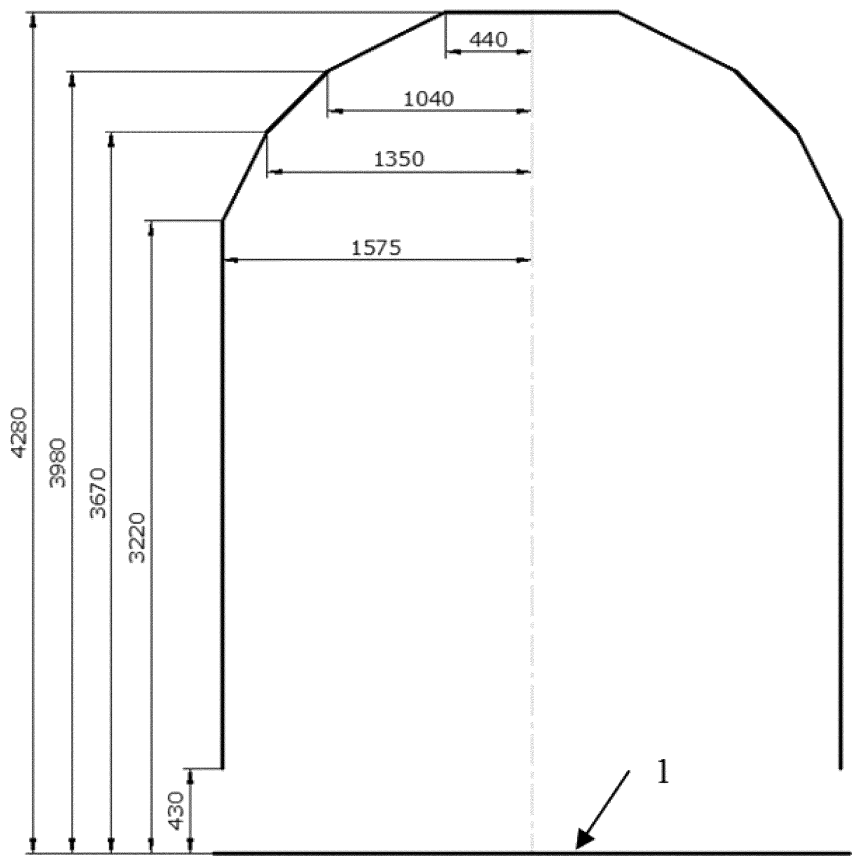
5.2 Upper parts

5.2.1 Static gauge G1

5.2.1.1 Reference profile

Figure 6 shows the reference profile for static gauge G1.

Dimensions in millimetres



Key

running plane

Figure 6 — Reference profile for static gauge G1

5.2.1.2 Basic data

Table 9 gives the basic data to be considered for G1 static gauge calculations.

Table 9 — Values to be considered for G1 static gauge calculations

L m	s_{lim}	l_{nom} m	l_{max} m	R_{min} m	$R_{v\,min}$ m
1,5	0,2	1,435	1,465	150	500

5.2.1.3 Lateral projections

Table 10 gives the lateral projections for the static gauge G1.

Table 10 — Lateral projections of static gauge G1

Height	Radius	Formula	
		Inside curve	Outside curve
$h_{CR} > 0,43$	$\infty \geq R \geq 250$	$S_{R,i} = S_{R,a} = \frac{3,75}{R} + 0,045$	
	$250 > R \geq 150$	$S_{R,i} = \frac{50}{R} - 0,140$	$S_{R,a} = \frac{60}{R} - 0,180$
applicable for all heights	applicable for all radii	$S_l = \frac{[l - l_{nom}]_{>0}}{2}$	

5.2.1.4 Vertical projections

Table 11 gives the vertical projections for the static gauge G1.

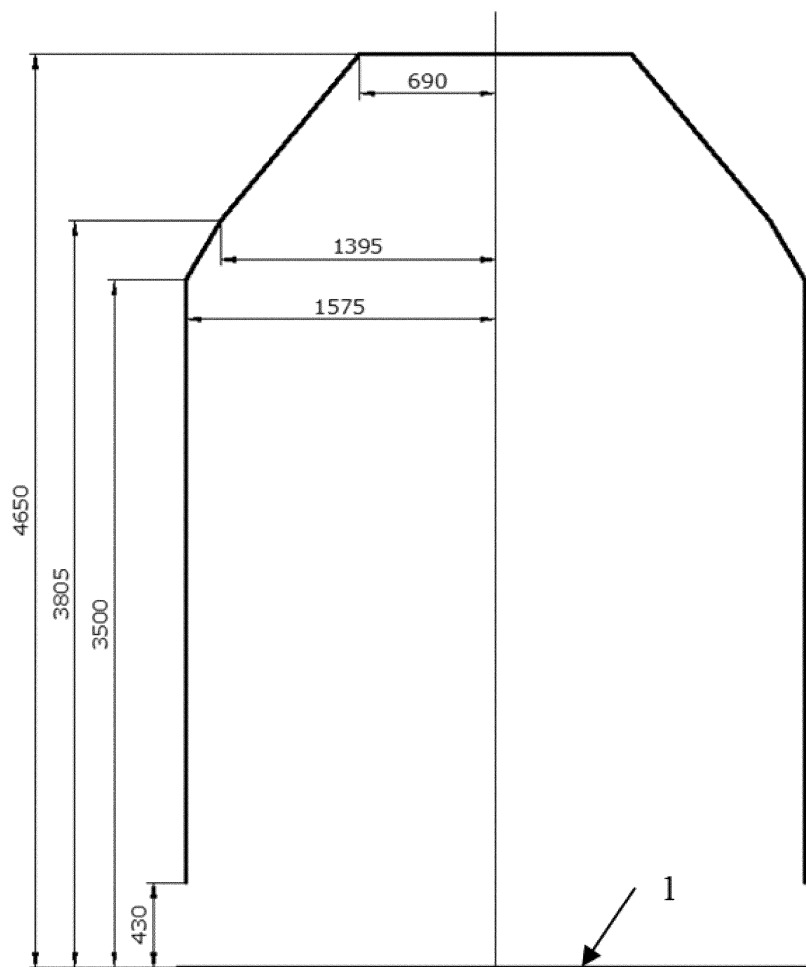
Table 11 — Vertical projections of static gauge G1

$S_{v,u}$	$S_{v,o}$
$\frac{50}{R_v}$	$\frac{50}{R_v}$

5.2.2 Static gauge G2

5.2.2.1 Reference profile

Figure 7 shows the reference profile for static gauge G2.

**Key**

running plane

Figure 7 — Reference profile for static gauge G2**5.2.2.2 Basic data**

The basic data for the static gauge G2 are the same as for the static gauge G1, given in Table 9.

5.2.2.3 Lateral projections

The lateral projections for the static gauge G2 are the same as for the static gauge G1, given in Table 10.

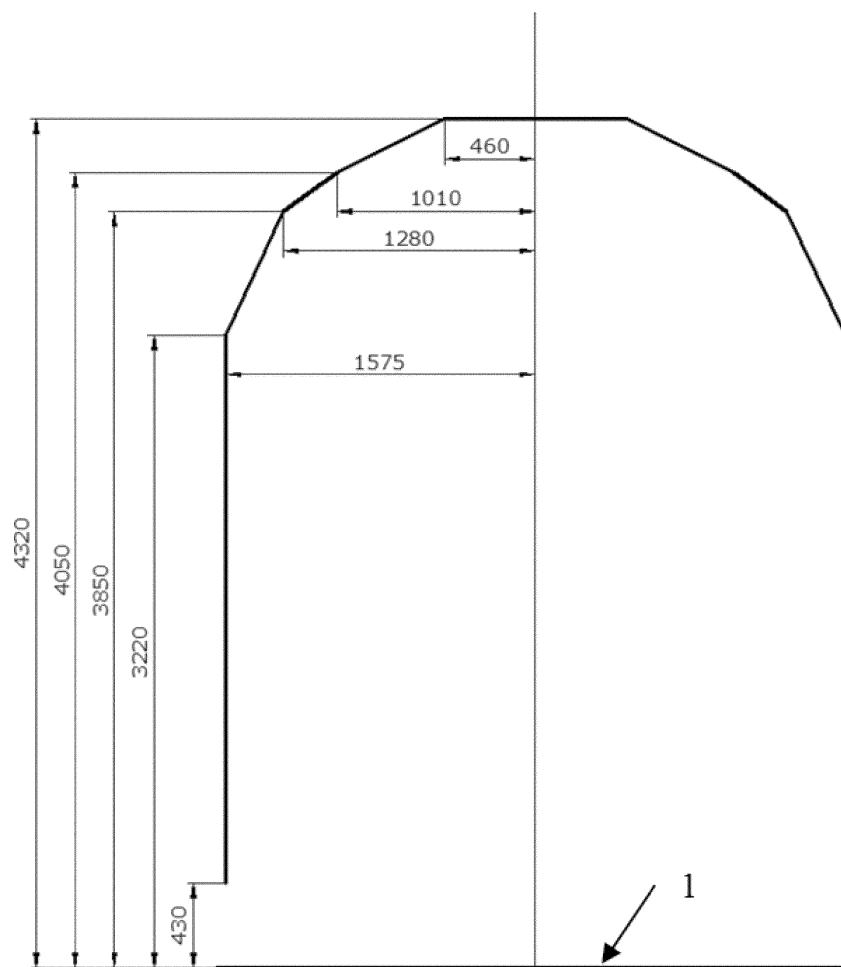
5.2.2.4 Vertical projections

The vertical projections for the static gauge G2 are the same as for the static gauge G1, given in Table 11.

5.2.3 Static gauge GA**5.2.3.1 Reference profile**

Figure 8 shows the reference profile for static gauge GA.

Dimensions in millimetres

**Key**

1 running plane

Figure 8 — Reference profile for static gauge GA**5.2.3.2 Basic data**

Table 12 gives the basic data to be considered for GA static gauge calculations. The value for k_h is given in Table 13.

Table 12 — Values to be considered for GA static gauge calculations

L m	s_{lim}	l_{nom} m	l_{max} m	R_{min} m	R_{vmin} m
1,5	$0,2 + 0,1 \cdot k_h$	1,435	1,465	150	500

Table 13 — Parameter k_h for static gauge GA

Height	k_h
$h_{CR} \geq 3,85$	1
$3,22 \leq h_{CR} < 3,85$	$\frac{h_{CR} - 3,22}{0,63}$
$h_{CR} < 3,22$	0

5.2.3.3 Lateral projections

Table 14 gives the lateral projections for the static gauge GA.

Table 14 — Lateral projections of static gauge GA

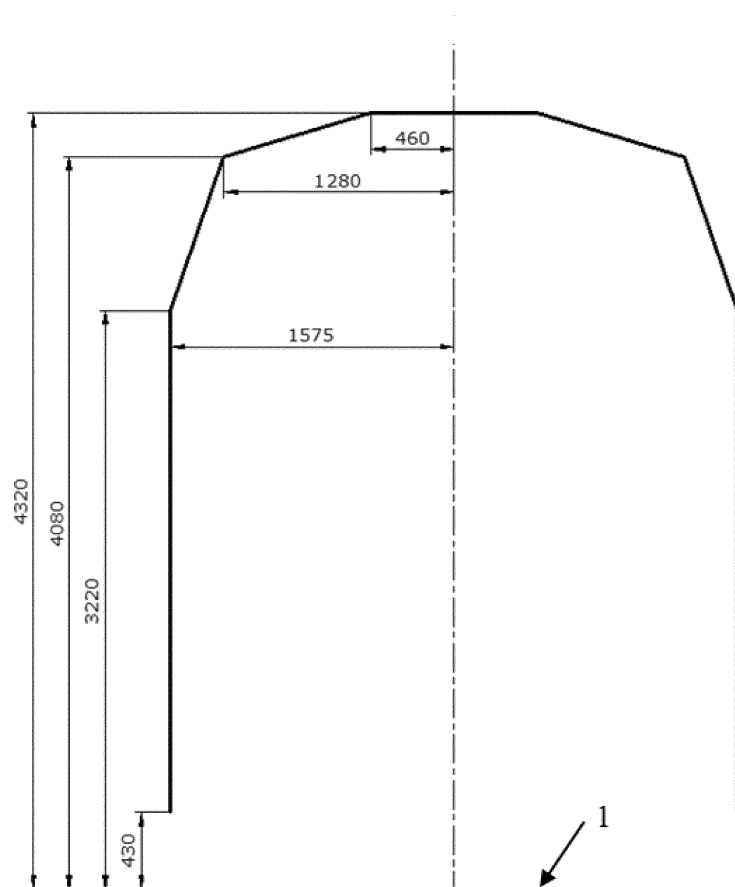
Height	Radius	Formula	
		Inside curve	Outside curve
$h_{CR} \geq 0,43$	$\infty \geq R \geq 250$	$S_{R,i} = S_{R,a} = \frac{3,75}{R} + \frac{16,25 \cdot k_h}{R} + 0,045$	
	$250 > R \geq 150$	$S_{R,i} = \frac{50}{R} - 0,140 + 0,065 \cdot k_h$	$S_{R,a} = \frac{60}{R} - 0,180 + k_h \left(0,105 - \frac{10}{R} \right)$

5.2.3.4 Vertical projections

The vertical projections for the static gauge GA are the same as for the static gauge G1, given in Table 11.

5.2.4 Static gauge GB**5.2.4.1 Reference profile**

Figure 9 shows the reference profile for static gauge GB.

**Key**

running plane

Figure 9 — Reference profile for static gauge GB**5.2.4.2 Basic data**

The basic data to be considered for the GB static gauge calculations are the same as for the static gauge GA, given in Table 12. The value for k_h is given in Table 15.

Table 15 — Parameter k_h for static gauge GB

Height	k_h
$h_{CR} \geq 4,08$	1
$3,22 \leq h_{CR} < 4,08$	$\frac{h_{CR} - 3,22}{0,86}$
$h_{CR} < 3,22$	0

5.2.4.3 Lateral projections

The lateral projections are the same as for the static gauge GA, given in Table 14.

5.2.4.4 Vertical projections

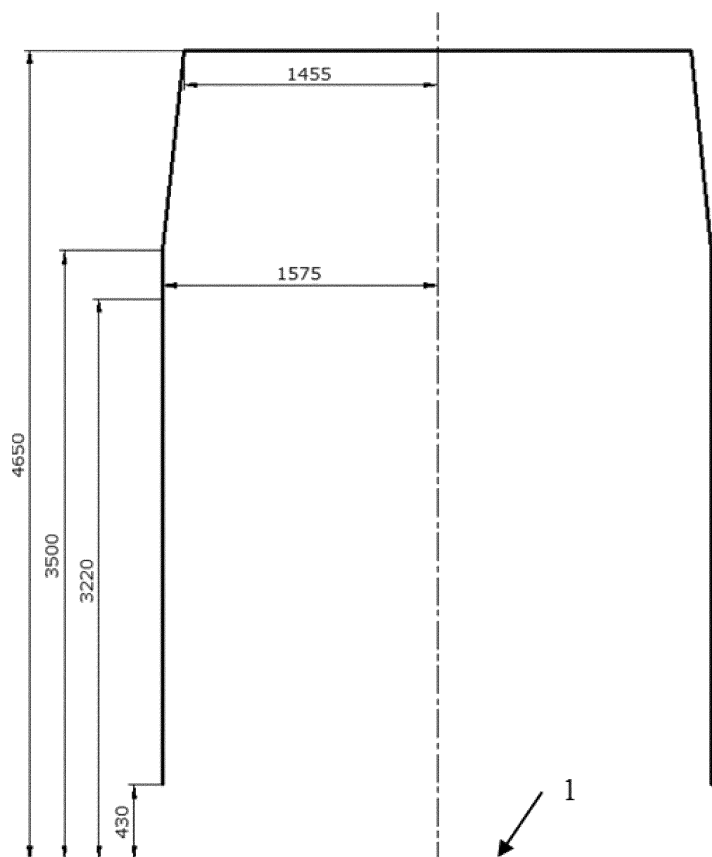
The vertical projections for the static gauge GB are the same as for the static gauge G1, given in Table 11.

5.2.5 Static gauge GC

5.2.5.1 Reference profile

Figure 10 shows the reference profile for static gauge GC.

Dimensions in millimetres



Key

1 running plane

Figure 10 — Reference profile for static gauge GC

5.2.5.2 Basic data

Table 16 gives the basic data to be considered for GC static gauge calculations.

Table 16 — Values to be considered for GC static gauge calculations

L m	s_{lim}	l_{nom} m	l_{max} m	R_{min} m	$R_{v,in}$ m
1,5	0,3	1,435	1,465	150	500

5.2.5.3 Lateral projections

The lateral projections are the same as for the static gauge G1, given in Table 10.

5.2.5.4 Vertical projections

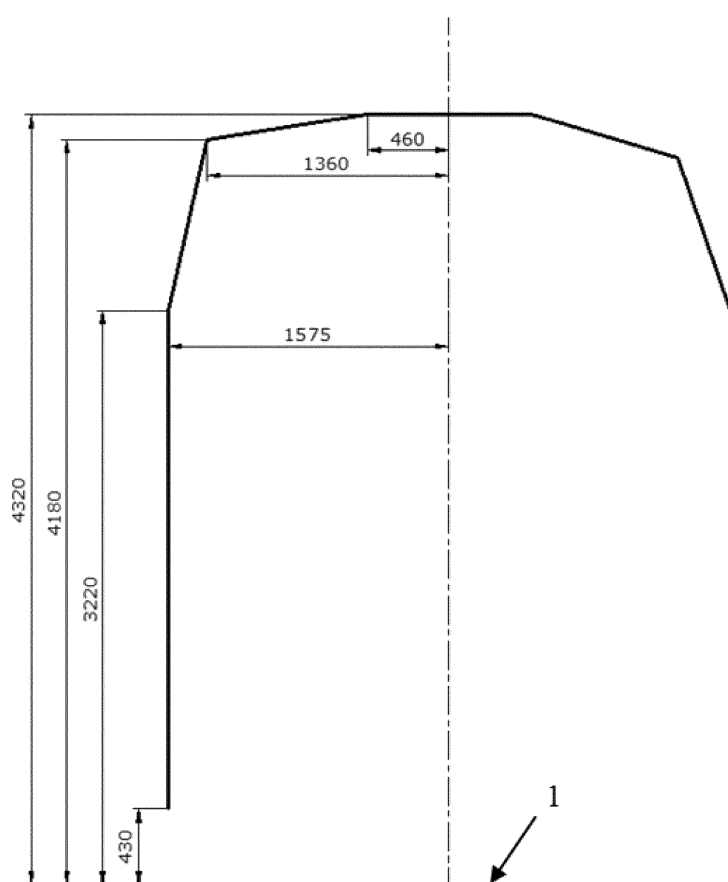
The vertical projections for the static gauge GC are the same as for the static gauge G1, given in Table 11.

5.2.6 Static gauge GB1

5.2.6.1 Reference profile

Figure 11 shows the reference profile for static gauge GB1.

Dimensions in millimetres



Key

1 running plane

Figure 11 — Reference profile for static gauge GB1

5.2.6.2 Basic data

The basic data to be considered for the GB1 static gauge calculations are the same as for the static gauge GA, given in Table 12. The value for k_h is given in Table 17.

Table 17 — Parameter k_h for static gauge GB1

Height	k_h
$h_{CR} \geq 4,18$	1
$3,22 \leq h_{CR} < 4,18$	$\frac{h_{CR} - 3,22}{0,6}$
$h_{CR} < 3,22$	0

5.2.6.3 Lateral projections

The lateral projections are the same as for the static gauge GA, given in Table 14.

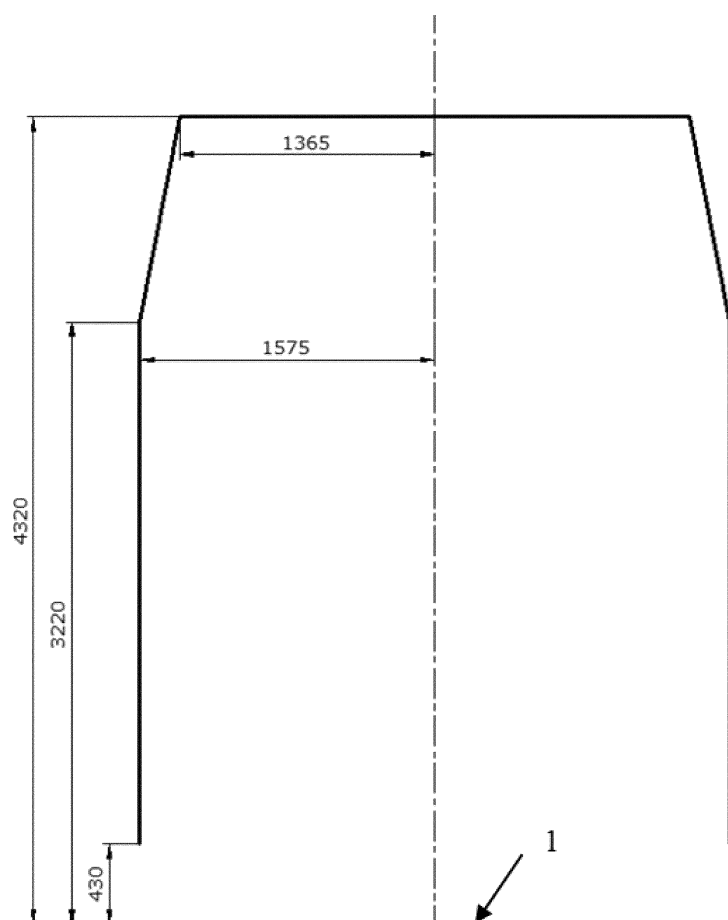
5.2.6.4 Vertical projections

The vertical projections for the static gauge GB1 are the same as for the static gauge G1, given in Table 11.

5.2.7 Static gauge GB2**5.2.7.1 Reference profile**

Figure 12 shows the reference profile for static gauge GB2.

Dimensions in millimetres

**Key**

1 running plane

Figure 12 — Reference profile for static gauge GB2**5.2.7.2 Basic data**

The basic data to be considered for the GB2 static gauge calculations are the same as for the static gauge GA, given in Table 12. The value for k_h is given in Table 18.

Table 18 — Parameter k_h for static gauge GB2

Height	k_h
$h_{CR} \geq 4,32$	1
$3,22 \leq h_{CR} < 4,32$	$\frac{h_{CR} - 3,22}{1,1}$
$h_{CR} < 3,22$	0

5.2.7.3 Lateral projections

The lateral projections are the same as for the static gauge GA, given in Table 14.

5.2.7.4 Vertical projections

The vertical projections for the static gauge GB2 are the same as for the static gauge G1, given in Table 11.

5.2.8 Static gauge GHE16

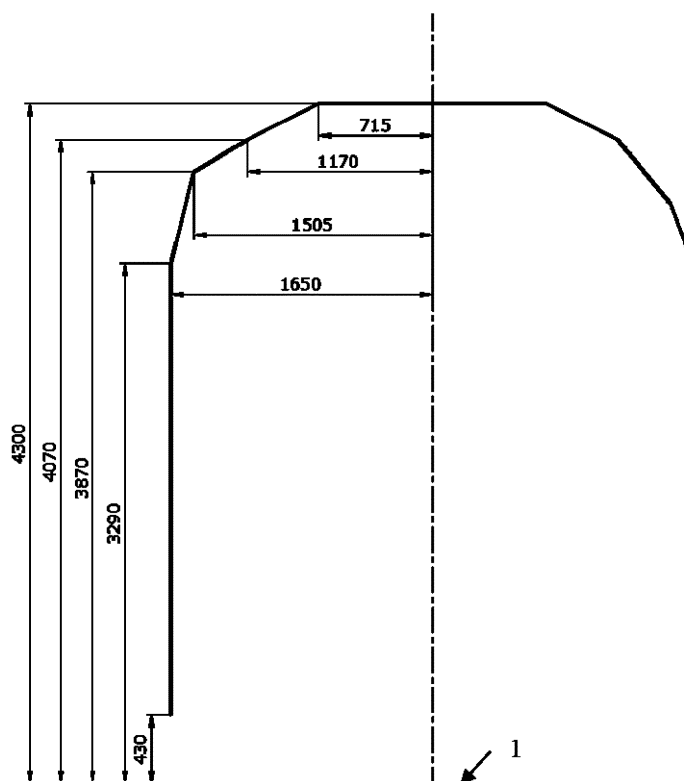
5.2.8.1 General

NOTE The static gauge GHE16 is based on broad gauge lines in Spain.

5.2.8.2 Reference profile

Figure 13 shows the upper part of the reference profile for the static gauge GHE16.

Dimensions in millimetres



Key

1 running plane

Figure 13 — Reference profile for static gauge GHE16

5.2.8.3 Basic data

Table 19 gives the basic data to be considered for GHE16 static gauge calculations.

Table 19 — Values to be considered for GHE16 static gauge calculations

L m	s_{lim}	l_{nom} m	l_{max} m	R_{min} m	$R_{v,min}$ m
1,733	0,3	1,668	1,698	150	500

5.2.8.4 Lateral projections

The lateral projections for the static gauge GHE16 are the same as for the static gauge G1, given in Table 14.

5.2.8.5 Vertical projections

The vertical projections for the static gauge GHE16 are the same as for the static gauge G1, given in Table 11.

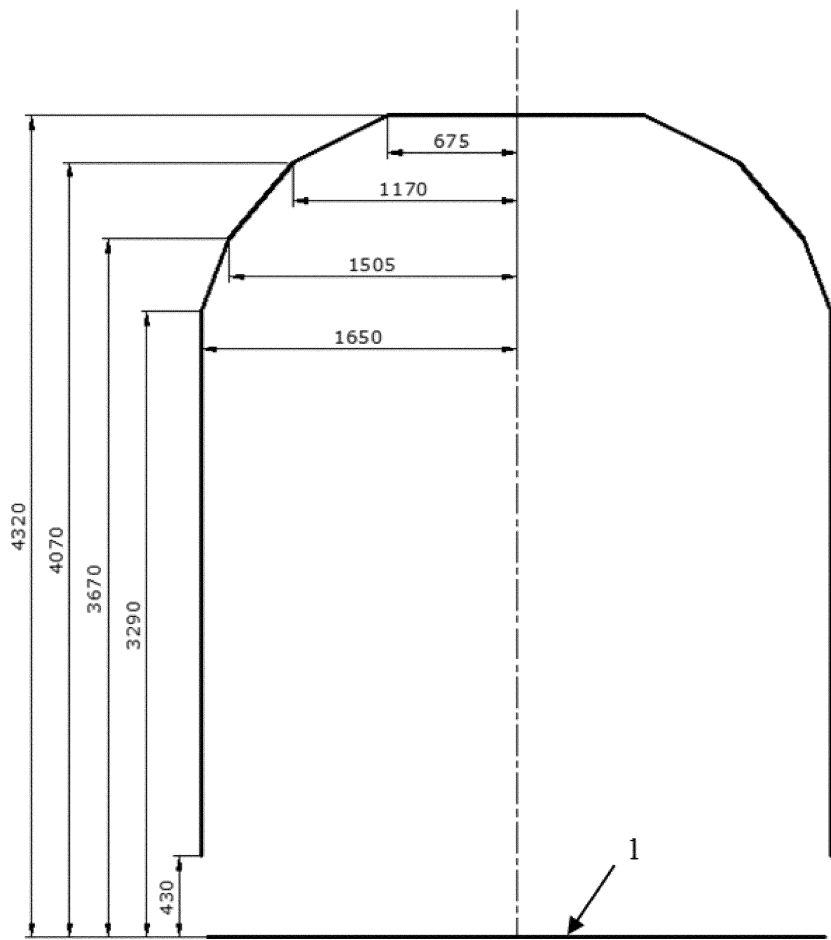
5.2.9 Static gauge GEA16

5.2.9.1 General

NOTE The static gauge GEA16 is based on broad gauge lines in Spain.

5.2.9.2 Reference profile

Figure 14 shows the upper part of the reference profile for the static gauge GEA16.



Key
1 running plane

Figure 14 — Reference profile for static gauge GEA16

5.2.9.3 Basic data

The basic data to be considered for the GEA16 static gauge calculations are the same as for the static gauge GHE16, given in Table 19. The value for k_h is given in Table 20.

Table 20 — Parameter k_h for static gauge GEA16

Height	k_h
$h_{CR} \geq 3,67$	1
$3,29 \leq h_{CR} < 3,67$	$\frac{h_{CR} - 3,29}{0,38}$
$h_{CR} < 3,29$	0

5.2.9.4 Lateral projections

The lateral projections are the same as for the static gauge GA, given in Table 14.

5.2.9.5 Vertical projections

The vertical projections for the static gauge GEA16 are the same as for the static gauge G1, given in Table 11.

5.2.10 Static gauge GEB16

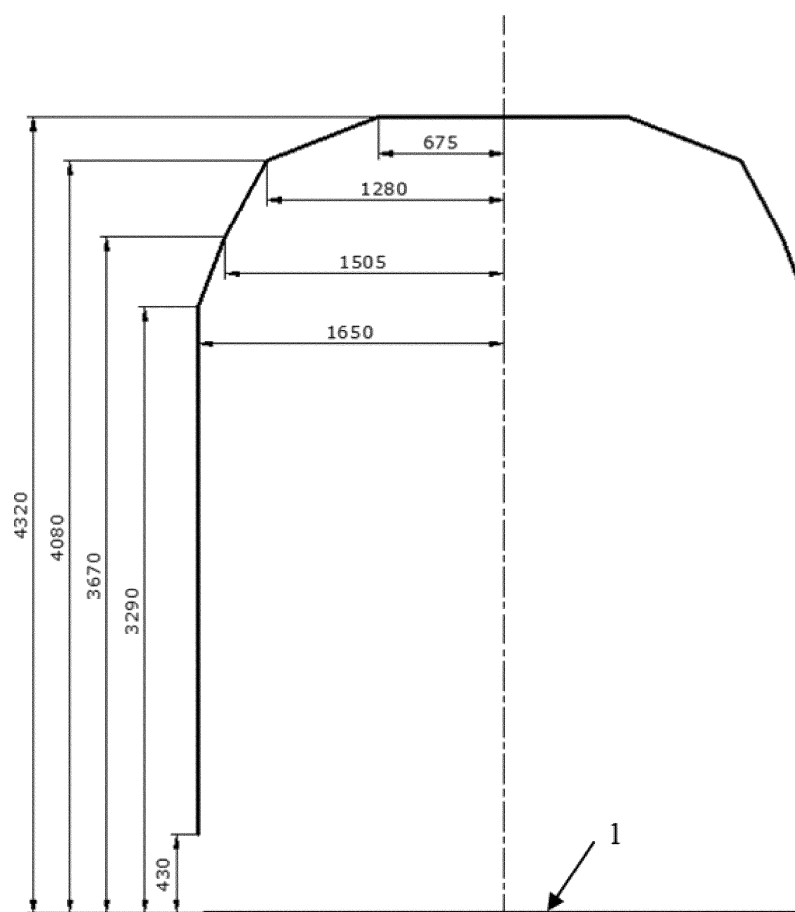
5.2.10.1 General

NOTE The static gauge GEB16 is based on broad gauge lines in Spain.

5.2.10.2 Reference profile

Figure 15 shows the upper part of the reference profile for the static gauge GEB16.

Dimensions in millimetres



Key

1 running plane

Figure 15 — Reference profile for static gauge GEB16

5.2.10.3 Basic data

The basic data to be considered for the GEB16 static gauge calculations are the same as for the static gauge GHE16, given in Table 19. The value for k_h is given in Table 21.

Table 21 — Parameter k_h for static gauge GEB16

Height	k_h
$h_{CR} \geq 4,08$	1
$3,29 \leq h_{CR} < 4,08$	$\frac{h_{CR} - 3,29}{0,79}$
$h_{CR} < 3,29$	0

5.2.10.4 Lateral projections

The lateral projections are the same as for the static gauge GA, given in Table 14.

5.2.10.5 Vertical projections

The vertical projections for the static gauge GEB16 are the same as for the static gauge G1, given in Table 11.

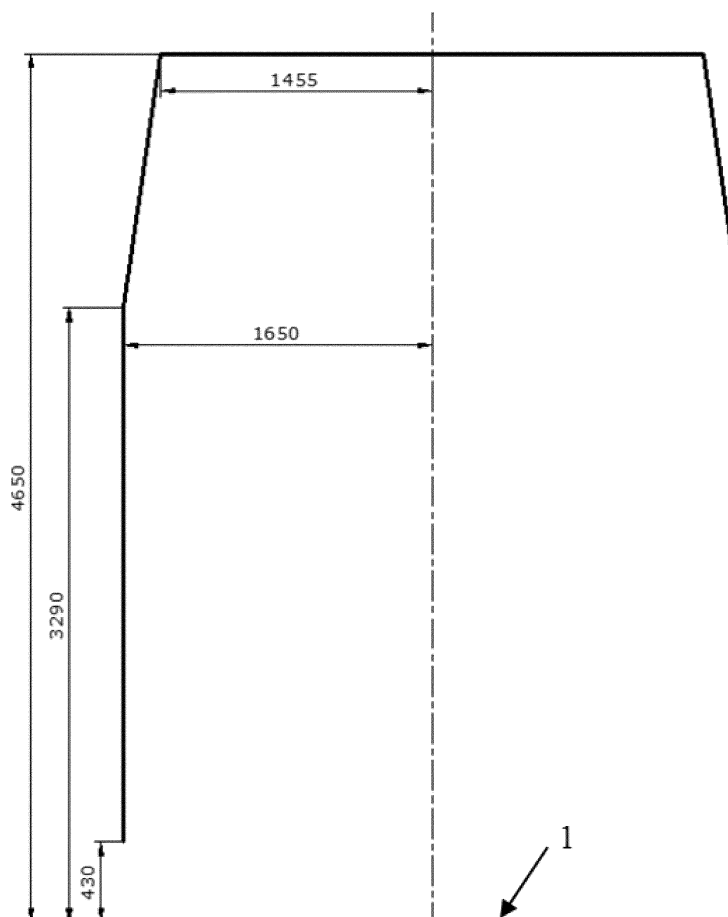
5.2.11 Static gauge GEC16**5.2.11.1 General**

NOTE The static gauge GEC16 is based on broad gauge lines in Spain

5.2.11.2 Reference profile

Figure 16 shows the upper part of the reference profile for the static gauge GEC16.

Dimensions in millimetres

**Key**

1 running plane

Figure 16 — Reference profile for static gauge GEC16**5.2.11.3 Basic data**

The basic data of static gauge GEC16 are the same than those of the static gauge GHE16, shown in Table 19.

5.2.11.4 Lateral projections

The lateral projections of the static gauge GEC16 are the same that those of the static gauge G1, shown in Table 10.

5.2.11.5 Vertical projections

The vertical projections for the static gauge GEC16 are the same as for the static gauge G1, given in Table 11.

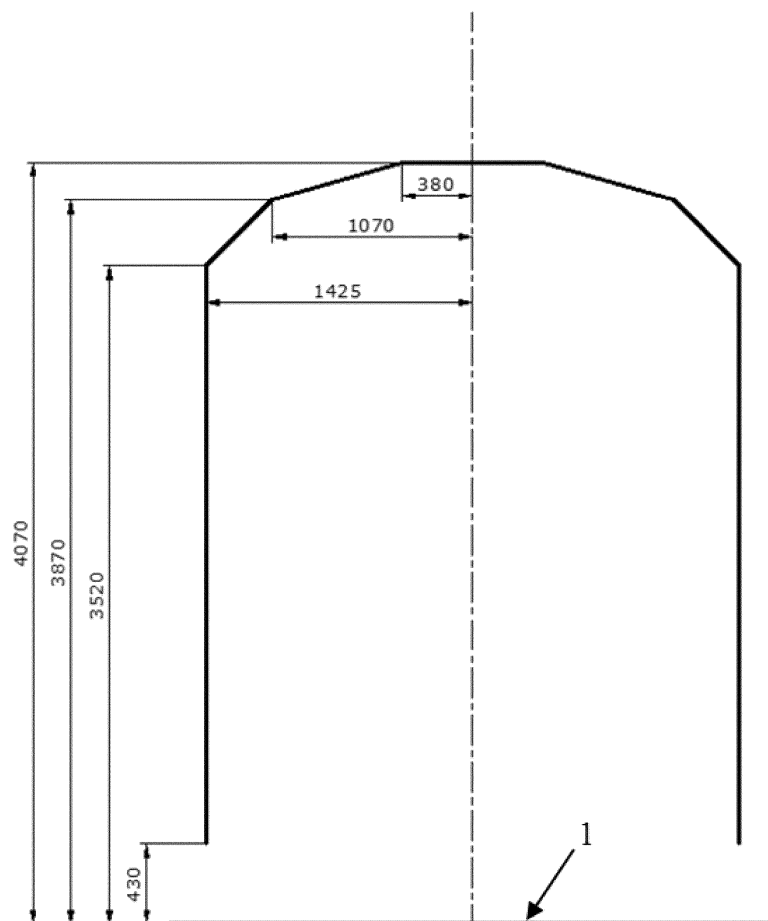
5.2.12 Static gauge GEE10**5.2.12.1 General**

NOTE The static gauge GEE10 is based on narrow gauge lines in Spain.

5.2.12.2 Reference profile

Figure 17 shows the upper part of the reference profile for static gauge GEE10.

Dimensions in millimetres



Key

1 running plane

Figure 17 — Reference profile for static gauge GEE10

5.2.12.3 Basic data

Table 22 gives the basic data to be considered for GEE10 static gauge calculations.

Table 22 — Values to be considered for GEE10 static gauge calculations

L m	s_{lim}	l_{nom} m	l_{max} m	R_{min} m	R_{vmin} m
1,055	0,3	1,000	1,030	80	500

5.2.12.4 Lateral projections

Table 23 gives the lateral projections for the lower part of the static gauge GEE10.

Table 23 — Formulae for lateral projections of static gauge GEE10

Height	Radius	Formula	
		Inside curve	Outside curve
$h_{CR} > 0,43$	$\infty \geq R \geq 100$	$S_{R,i} = S_{R,a} = \frac{1,5}{R} + 0,045$	
	$100 > R \geq 80$	$S_{R,i} = \frac{20}{R} - 0,140$	$S_{R,a} = \frac{24}{R} - 0,180$
applicable for all heights	applicable for all radii	$S_l = \frac{[l - l_{nom}]_{>0}}{2}$	

5.2.12.5 Vertical projections

The vertical projections for the static gauge GEE10 are the same as for the static gauge G1, given in Table 11.

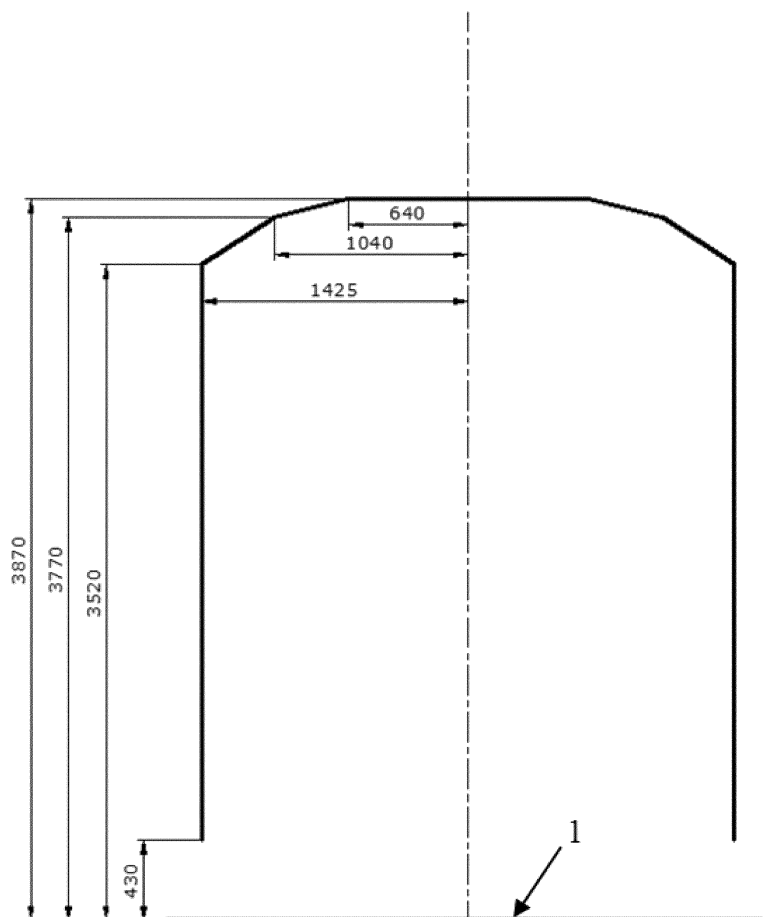
5.2.13 Static gauge GED10

5.2.13.1 General

NOTE The static gauge GED16 is based on narrow gauge lines in Spain.

5.2.13.2 Reference profile

Figure 18 shows the upper part of the reference profile for static gauge GED10.

**Key**

1 running plane

Figure 18 — Reference profile for static gauge GED10**5.2.13.3 Basic data**

The basic data to be considered for GED10 static gauge calculations are the same as for the static gauge GEE10, shown in Table 22.

5.2.13.4 Lateral projections

The lateral projections of the static gauge GED10 are the same as those of the static gauge GEE10, shown in Table 23.

5.2.13.5 Vertical projections

The vertical projections for the static gauge GED10 are the same as for the static gauge G1, given in Table 11.

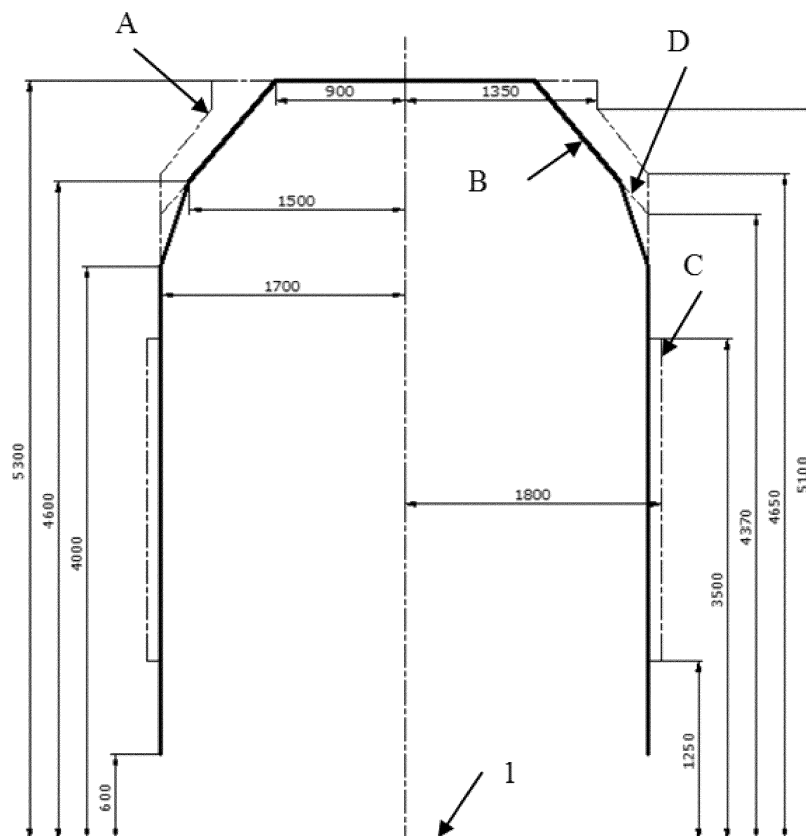
5.2.14 Static gauge FIN1**5.2.14.1 General**

NOTE The static gauge FIN is based on broad gauge lines in Finland.

5.2.14.2 Reference profile

Figure 19 shows the static reference profile FIN1.

Dimensions in millimetres



Key

- 1 running plane
- A widening of the upper part of the gauge; additional information on the application can be found in the Network statement published by Finnish Transport Infrastructure Agency
- B vehicle gauge
- C lights and rear-view mirrors
- D widening of the upper part of the gauge, for the adoption of a separate regulation to be applied

Figure 19 — Reference profile for static gauge FIN1

5.2.14.3 Basic data

The basic data to be considered for FIN1 static gauge calculations is given in Table 7.

5.2.14.4 Lateral projections

Table 24 gives the lateral projections for the upper part of the static gauge FIN1.

Table 24 — Formulae for lateral projections of upper part of gauge FIN1

Height	Radius	Formula
$h_{CR} \geq 0,6$	$\infty \geq R \geq 150$	$S_{R,a} = S_{R,i} = \frac{36}{R} + 0,075$

5.2.14.5 Vertical projections

There are no vertical projections the upper part of static gauge FIN1.

5.3 Gauges based on Russian state standards

As these gauges and their associated rules are subjects of a standard which is not managed by CEN the gauges based on Russian state standards (GOST) are not included in this standard.

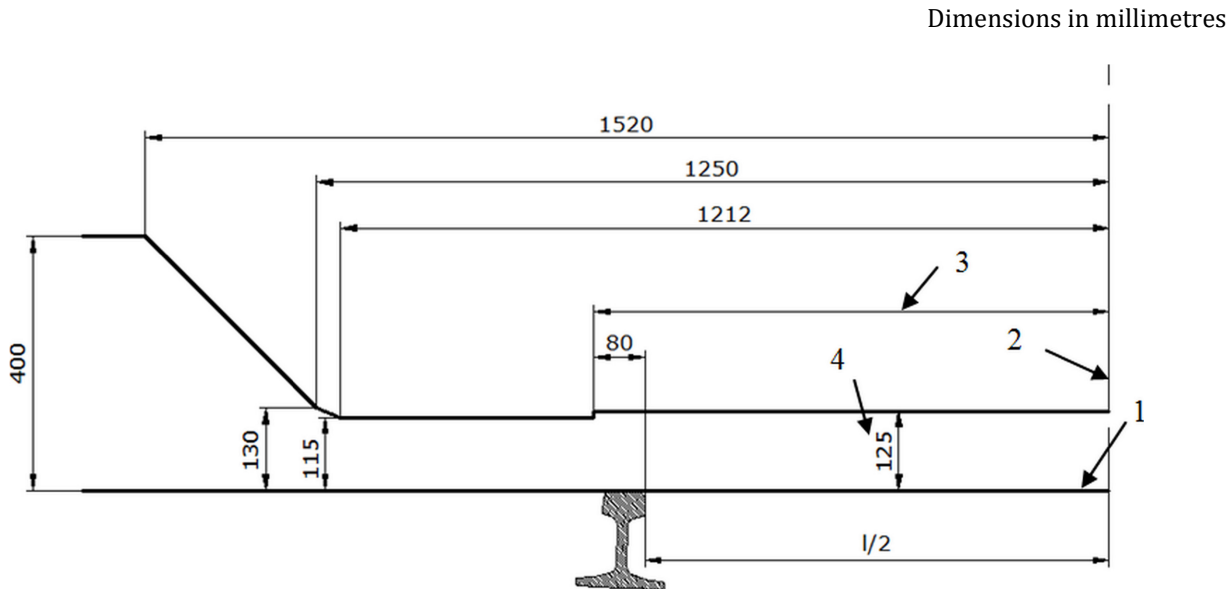
6 Kinematic gauges

6.1 Lower parts

6.1.1 Kinematic gauge GI1

6.1.1.1 Reference profile

Figure 20 shows the kinematic reference profile GI1.



Key

- 1 running plane
- 2 centerline of the reference profile
- 3 widening for projection of standardized retarders
- 4 this dimension also shows the maximum height of standardized retarders

Figure 20 — Reference profile for kinematic gauge GI1

6.1.1.2 Basic data

Table 25 gives the basic data to be considered for GI1 kinematic gauge calculations.

Table 25 — Values to be considered for GI1 kinematic gauge calculations

L m	D_0 m	I_0 m	h_{c0} m	s_0	$\eta_{0,r}^\circ$	D_{max} m	I_{max} m	l_{nom} m	l_{max} m	R_{min} m	$R_{v,min}$ m
1,5	0,05	0,05	0,5	0,4	1	0,2	0,2	1,435	1,465	150	500

6.1.1.3 Lateral projections

Table 26 gives the lateral projections for the gauge GI1.

Table 26 — Formulae for lateral projections of kinematic gauge GI1

Height	Radius	Formula	
		Inside curve	Outside curve
$h_{CR} \leq 0,40$	$\infty \geq R \geq 250$	$S_{R,i} = S_{R,a} = \frac{2,5}{R}$	
	$250 > R \geq 150$	$S_{R,i} = \frac{50}{R} - 0,190$	$S_{R,a} = \frac{60}{R} - 0,230$
applicable for all heights	applicable for all radii	$S_l = \frac{[l - l_{nom}]_{>0}}{2}$	

6.1.1.4 Vertical projections

The vertical projections for the kinematic gauge GI1 are given in Table 27.

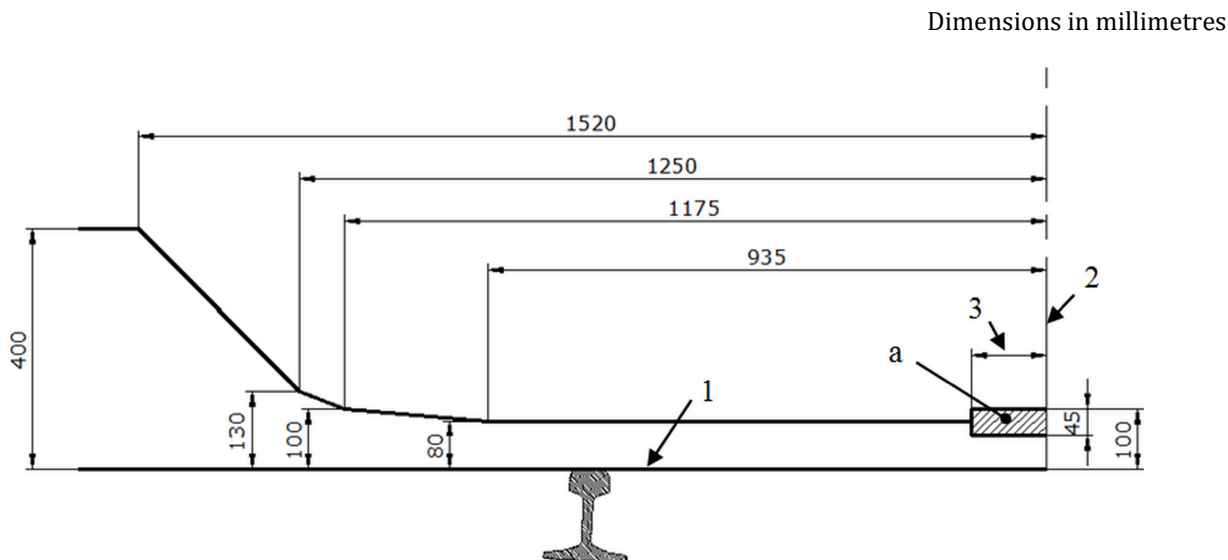
Table 27 — Vertical projections for lower parts of kinematic gauge GI1

Height	$S_{v,u}$
Applicable for all heights	$\frac{50}{R_v}$

6.1.2 Kinematic gauge GI2

6.1.2.1 Reference profile

Figure 21 shows the kinematic reference profile GI2.



Key

- a zone for contact ramp brushes (for vehicles intended to run on networks with contact ramps)
- 1 running plane
- 2 centerline of the reference profile
- 3 when the vehicle is on a track of curve radius $R = 250$ m (minimum radius for contact ramp installation) and a track gauge of 1 465 mm, no part of the vehicle likely to fall below 0,100 m above the running plane, except for the contact brush, shall be less than 0,125 m from the track centerline. For parts located on the bogies, this dimension is 0,150 m.

Figure 21 — Reference profile for kinematic gauge GI2

6.1.2.2 Basic data

The basic data for the kinematic gauge GI2 are the same as for the kinematic gauge GI1, given in Table 25.

6.1.2.3 Lateral projections

The lateral projections for the kinematic gauge GI2 are the same as for the kinematic gauge GI1, given in Table 26.

6.1.2.4 Vertical projections

The vertical projections for the kinematic gauge GI2 are given in Table 28.

Table 28 — Vertical projections for lower parts of kinematic gauge GI2

Height	$S_{v,u}$
Applicable for all heights	$\min\left(h_{CR}, \frac{50}{R_v}\right)$

The vertical projection shall not exceed the value of h_{CR} .