

BS 11:2015



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Specification for dimensional properties and associated tolerances of railway rails

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Contents

Foreword *ii*

- 1 Scope 1
- 2 Normative references 1
- 3 Dimensions of rail sections 1
- 4 Tolerances 16

Annexes

Annex A (normative) Referee gauge for hole height for 95 RBH rails 18

List of figures

- Figure 1 – BS rail no. 50 “O” 2
- Figure 2 – BS rail section no. 60 R 3
- Figure 3 – BS rail section no. 70 A 4
- Figure 4 – BS rail section no. 75 A 5
- Figure 5 – BS rail section no. 75 R 6
- Figure 6 – BS rail section no. 80 R 7
- Figure 7 – BS rail section no. 80 “O” 8
- Figure 8 – BS rail section no. 90 R 9
- Figure 9 – BS rail section no. 95 A 10
- Figure 10 – BS rail section no. 95 R 11
- Figure 11 – BS rail section no. 95 RBH 12
- Figure 12 – BS rail section no. 95 N 13
- Figure 13 – BS rail section no. 100 A 14
- Figure 14 – BS rail section no. 100 R 15
- Figure 15 – Key to position of fishbolt holes 16
- Figure A.1 – Vertical drilling gauge for 95 RBH rails 18

List of tables

- Table 1 – Tolerances on rail section profiles 16
- Table 2 – Position of fishbolt holes 17
- Table 3 – Tolerances on fishbolt hole dimensions and positions 17
- Table 4 – Rail straightness measured over 1.5 m 17

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 18, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 May 2015. It was prepared by Technical Committee RAE/2, *Railway Applications - Infrastructure*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 11:1985, which is withdrawn.

Information about this document

The revision has been prepared because most of the content concerning rail manufacture, steel grades and some of the rail profiles has been superseded by the new editions of BS EN 13674-1:2011 and BS EN 13674-4:2006. This revision of BS 11 therefore deals only with those aspects not covered by BS EN 13674-1:2011 and BS EN 13674-4:2006 and may therefore be used as a supplement to them.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. "organization" rather than "organisation").

Requirements in this standard are drafted in accordance with *Rules for the structure and drafting of UK standards*, subclause J.1.1, which states, "Requirements should be expressed using wording such as: 'When tested as described in Annex A, the product shall ...'". This means that only those products capable of passing the specified test will be deemed to conform to this standard.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for the dimensional properties and associated tolerances of railway rails of 24.8 kg/m (50 lb/yd) and greater linear mass which are not specified in BS EN 13674-1 or BS EN 13674-4.

For chemical and mechanical properties, grade designation, marking and certification requirements see BS EN 13674-1.

2 Normative references

The following document, in whole or in part, is normatively referenced in this document and is 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.

BS EN 13674-1:2011, *Railway applications – Track – Rail – Part 1: Vignole railway rails 46 kg/m and above*

3 Dimensions of rail sections

Rail section dimensional properties and mass per unit length shall conform to the appropriate values given in Figure 1 to Figure 14.

NOTE The rail sections in this British Standard were designed before the change to SI units was planned. The original imperial dimensions used have been converted to SI dimensions with an accuracy necessary for the retention of the previous imperial profiles and properties of the rails.

Figure 1 BS rail no. 50 "O"

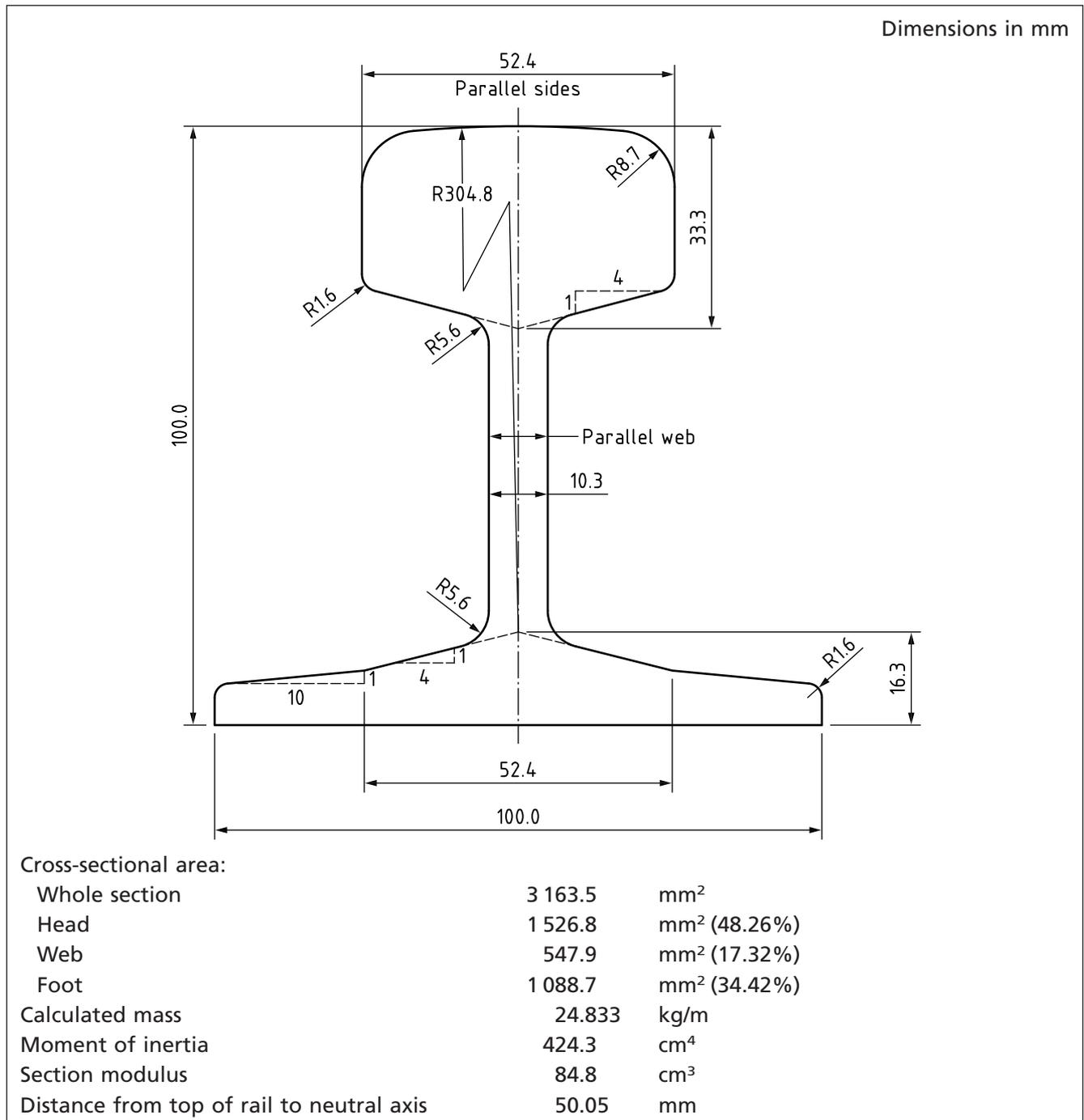


Figure 2 BS rail section no. 60 R

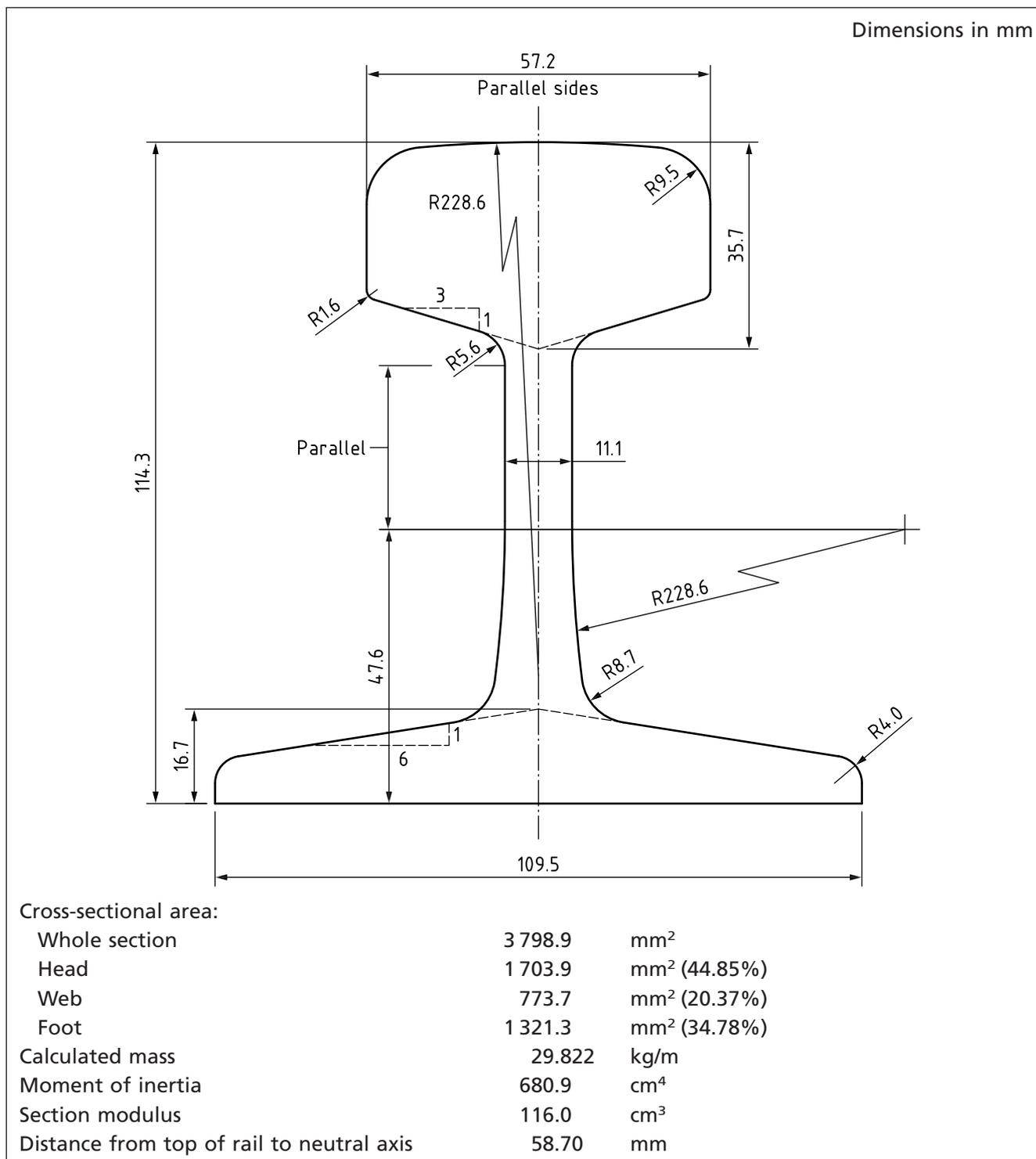


Figure 3 BS rail section no. 70 A

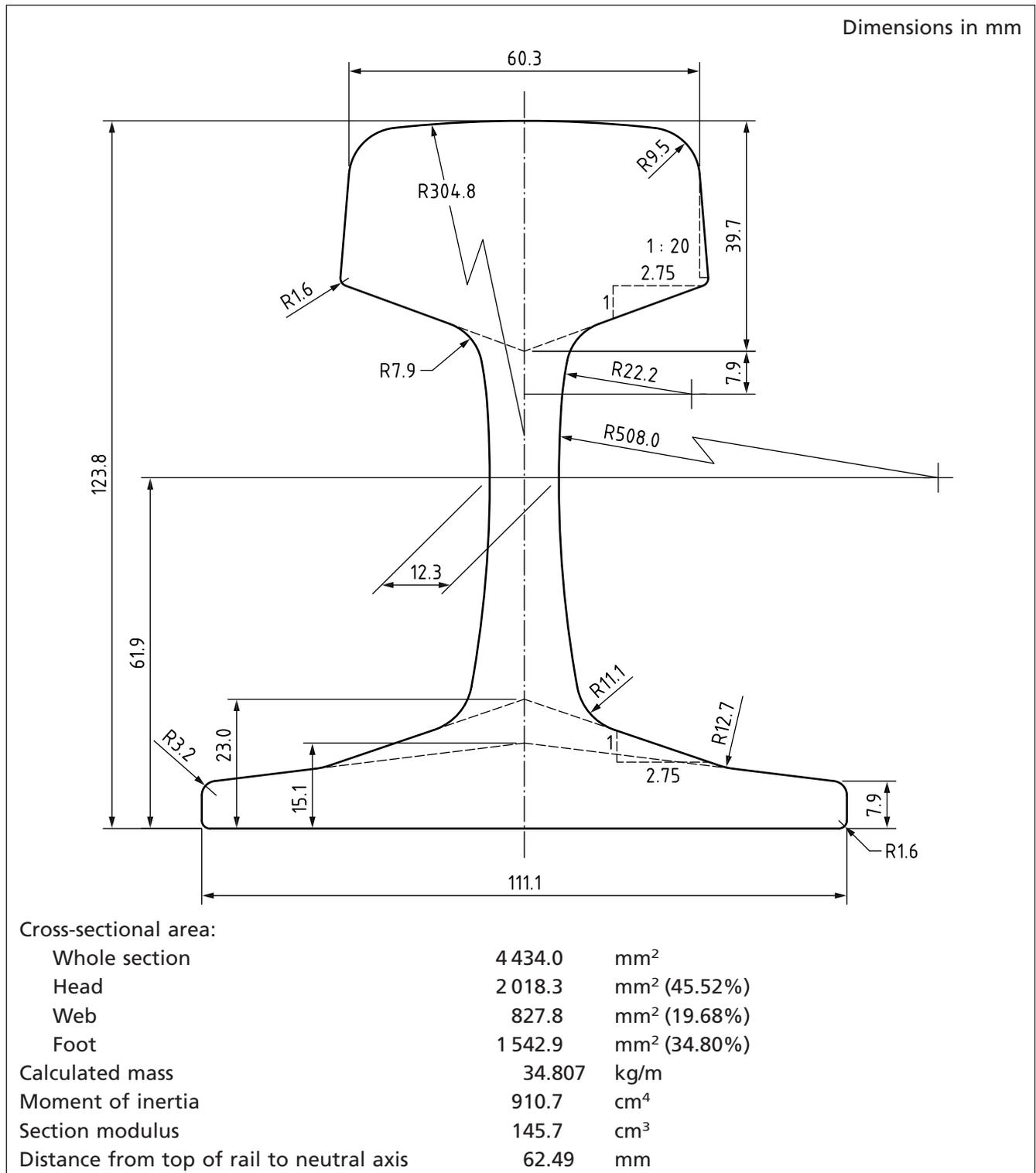


Figure 4 BS rail section no. 75 A

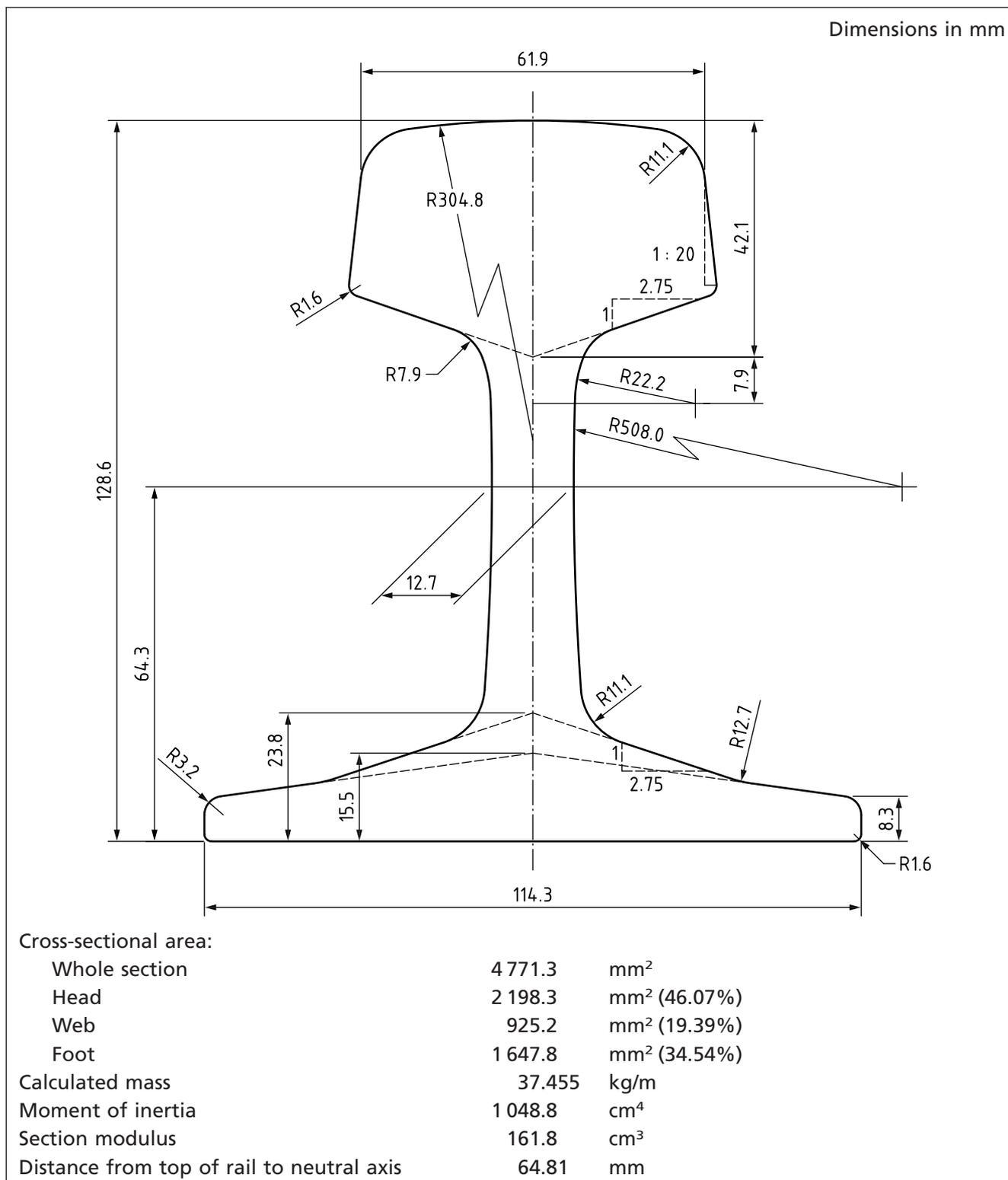


Figure 6 BS rail section no. 80 R

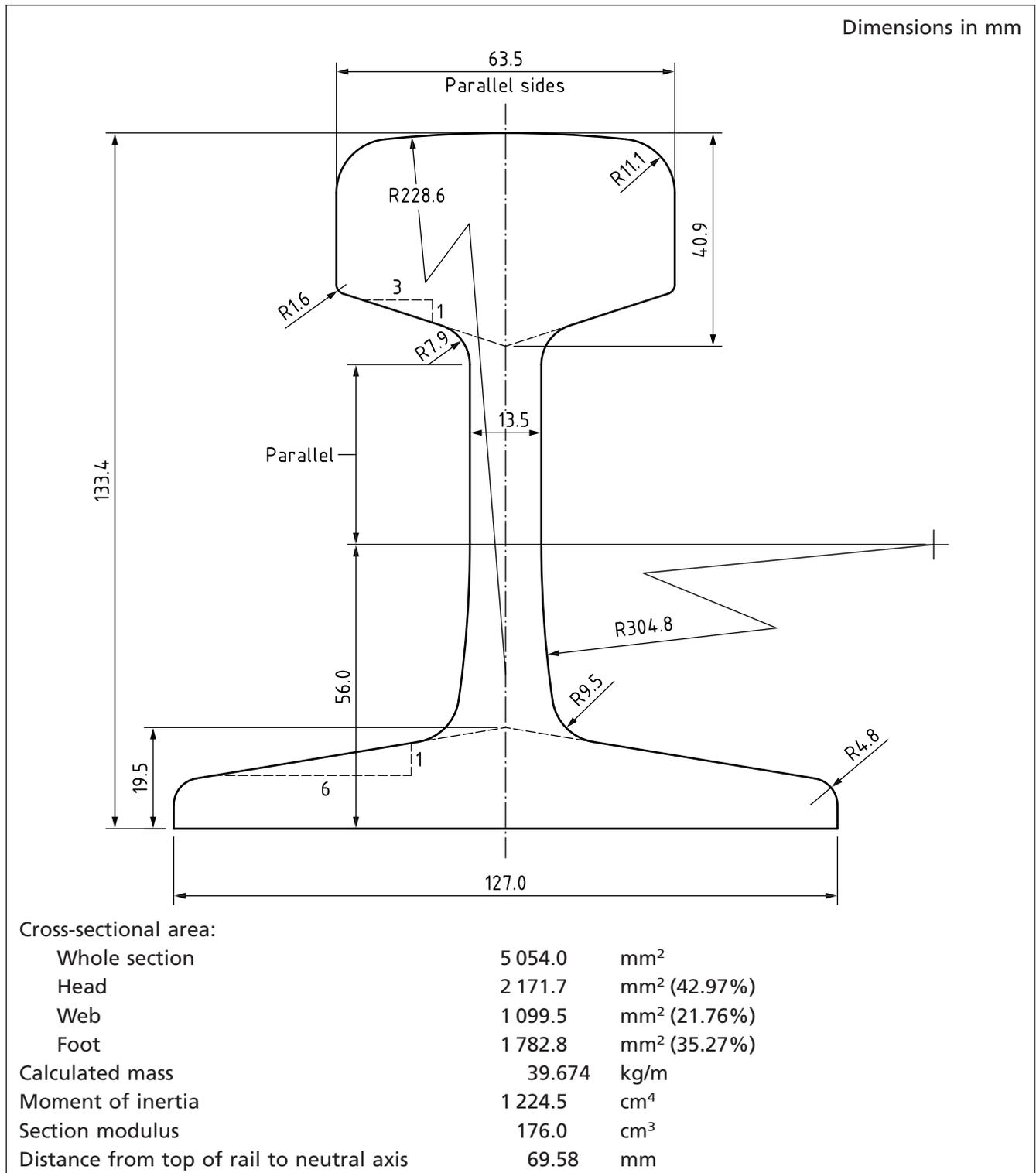


Figure 7 BS rail section no. 80 "O"

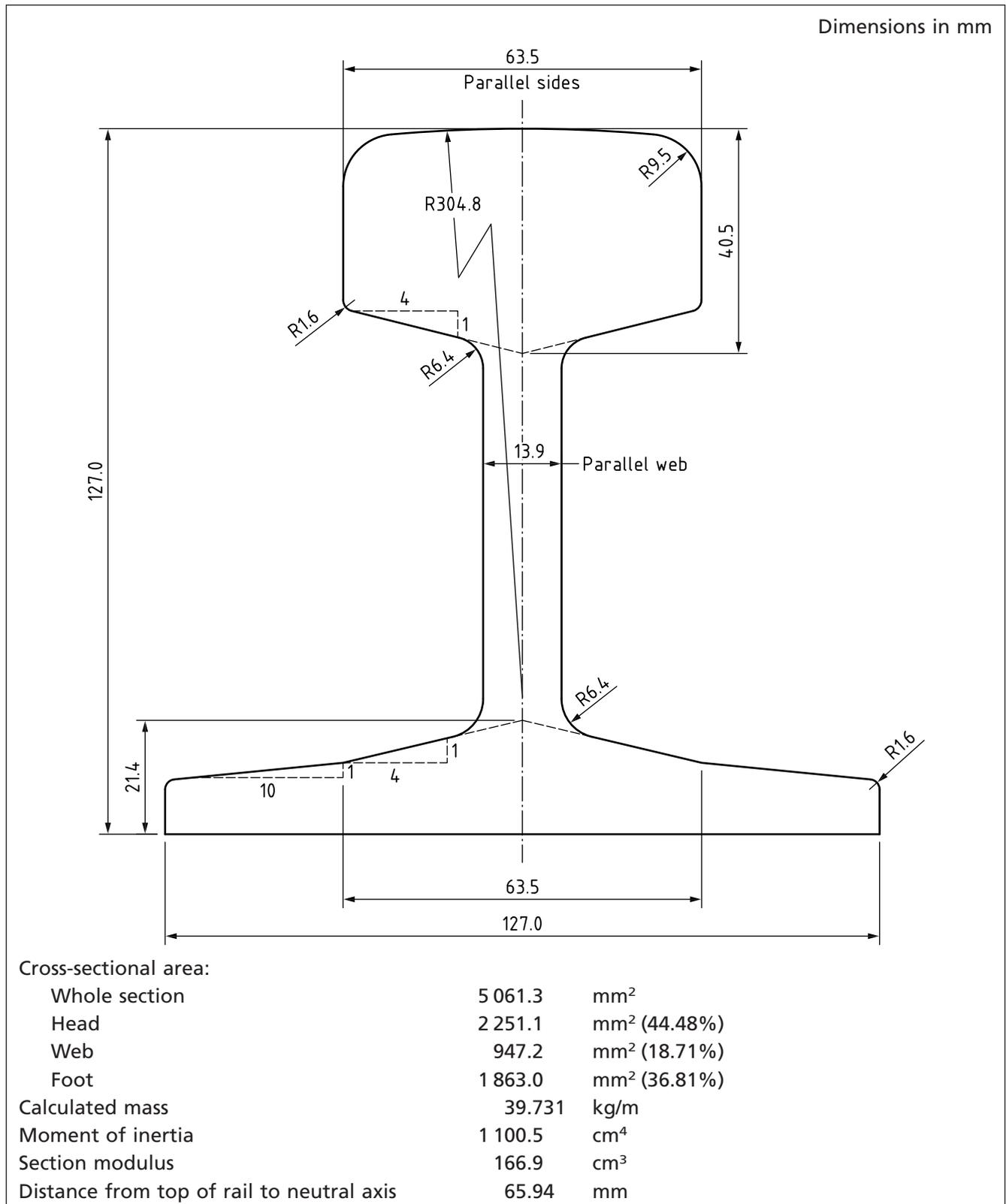


Figure 8 BS rail section no. 90 R

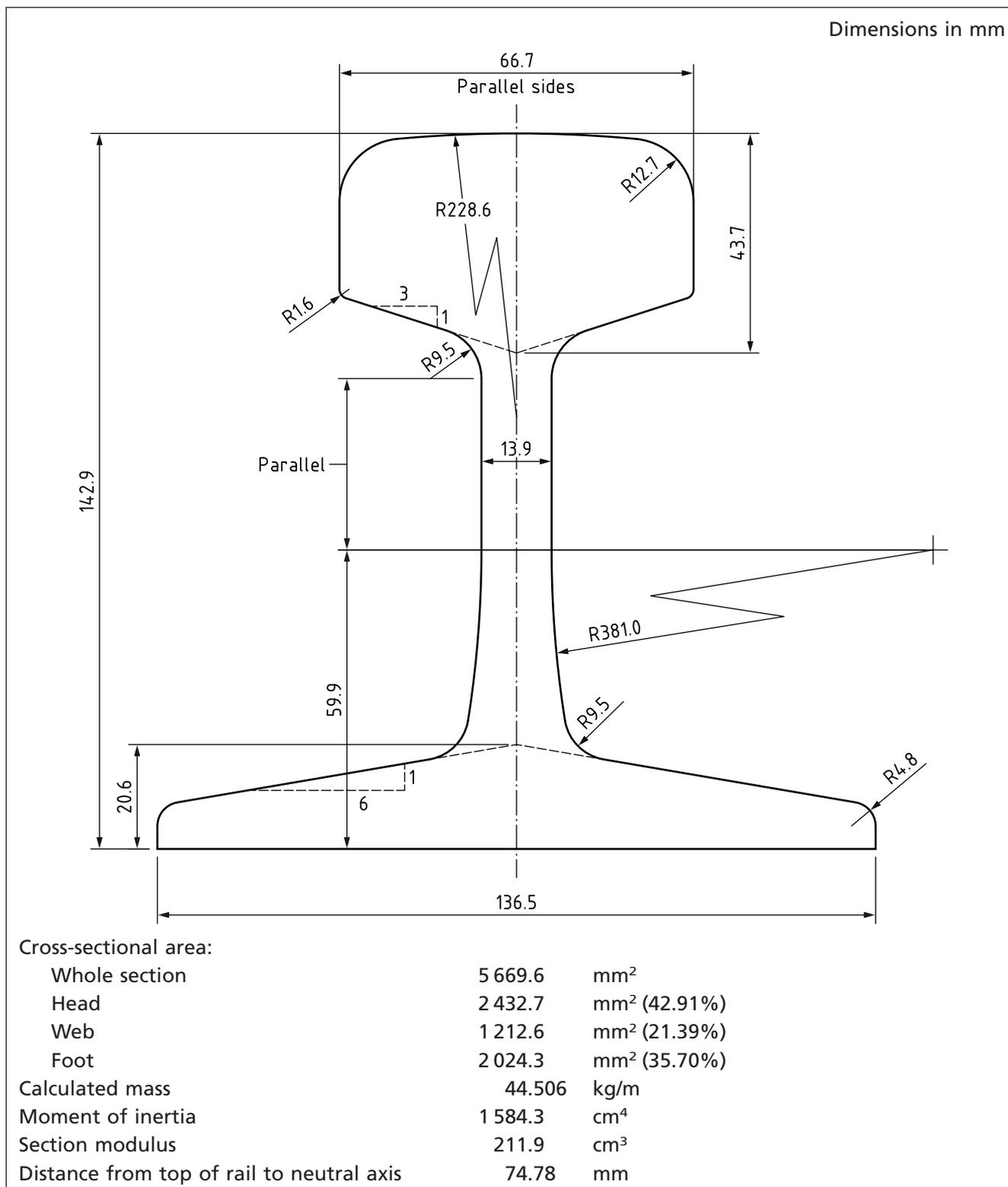


Figure 9 BS rail section no. 95 A

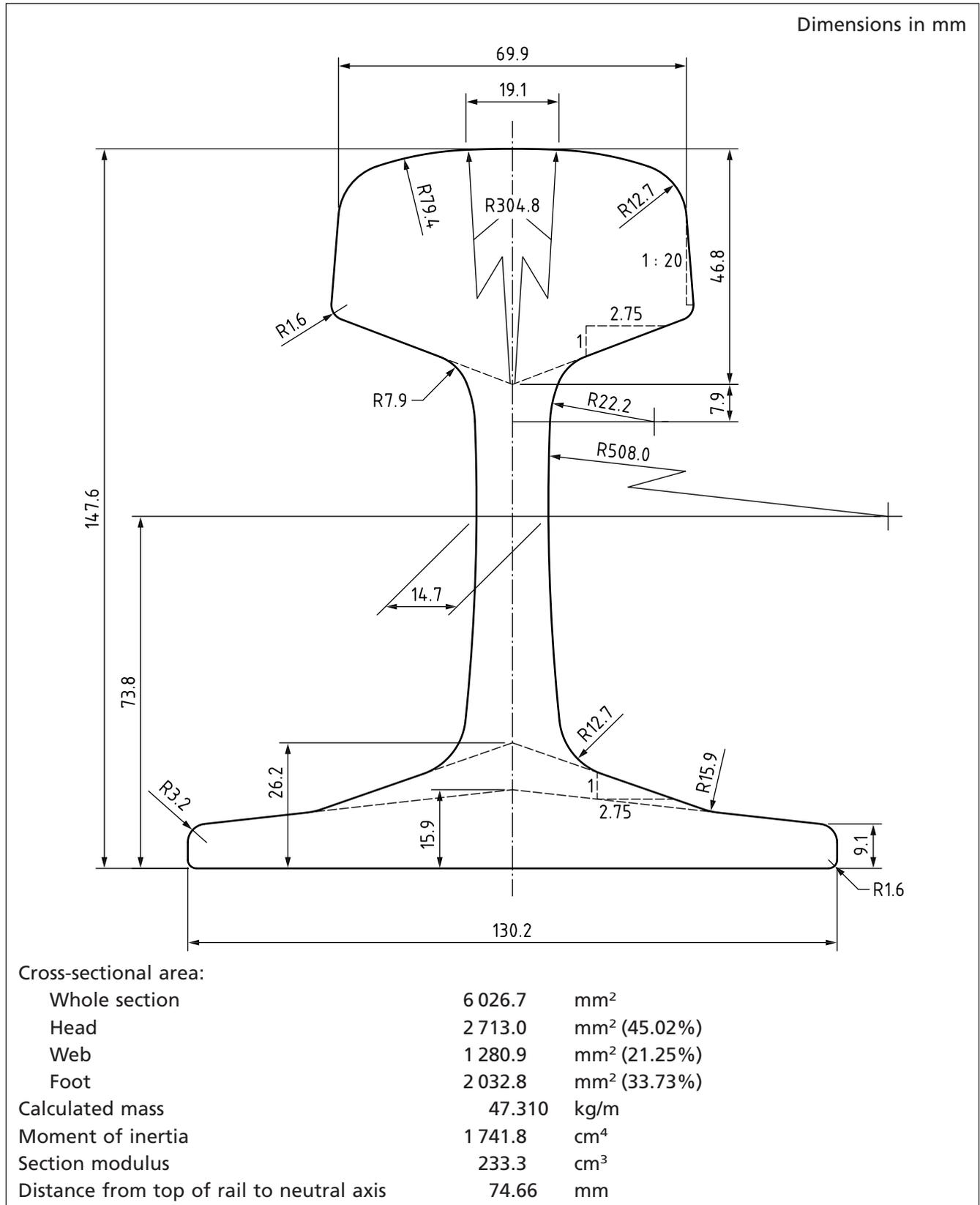


Figure 10 BS rail section no. 95 R

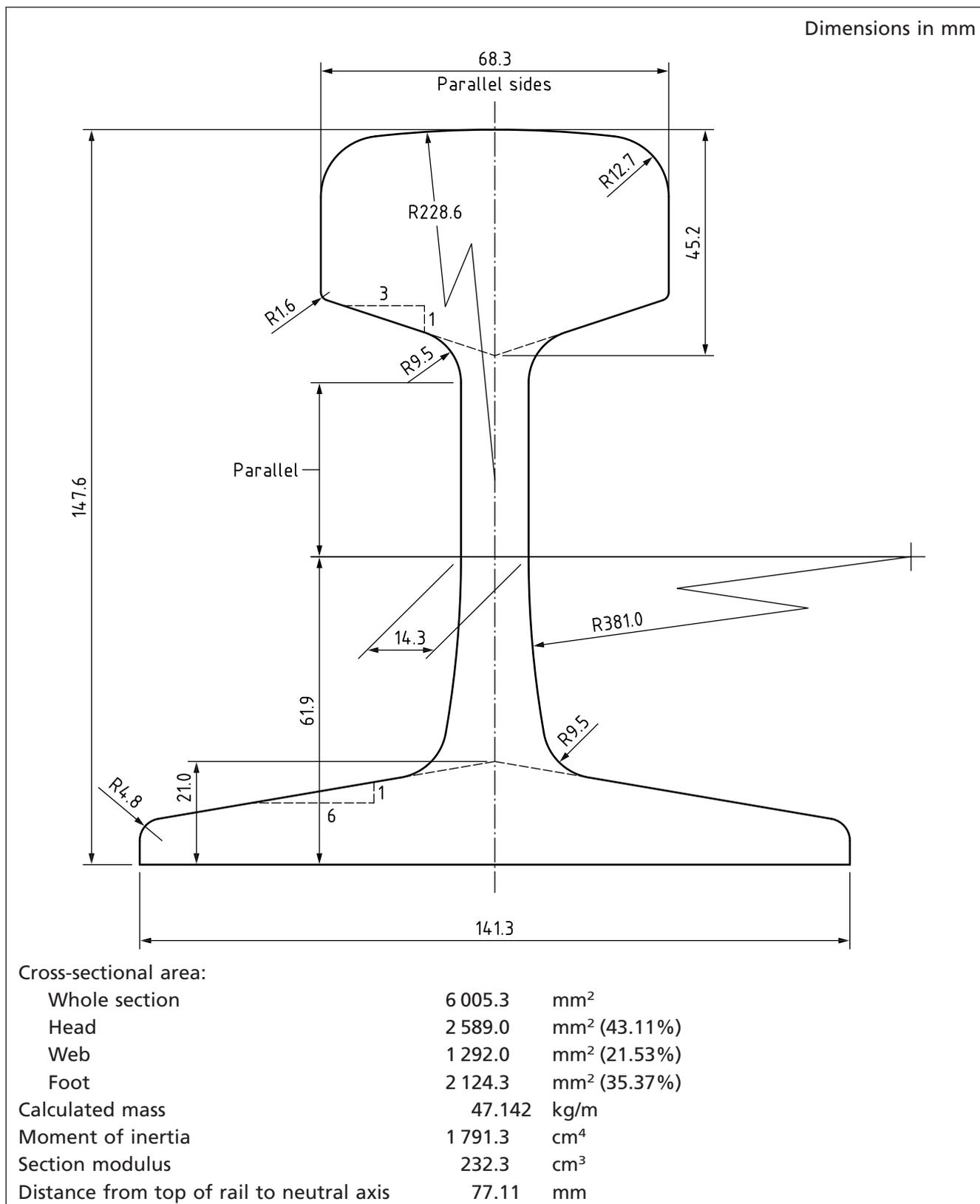


Figure 11 BS rail section no. 95 RBH

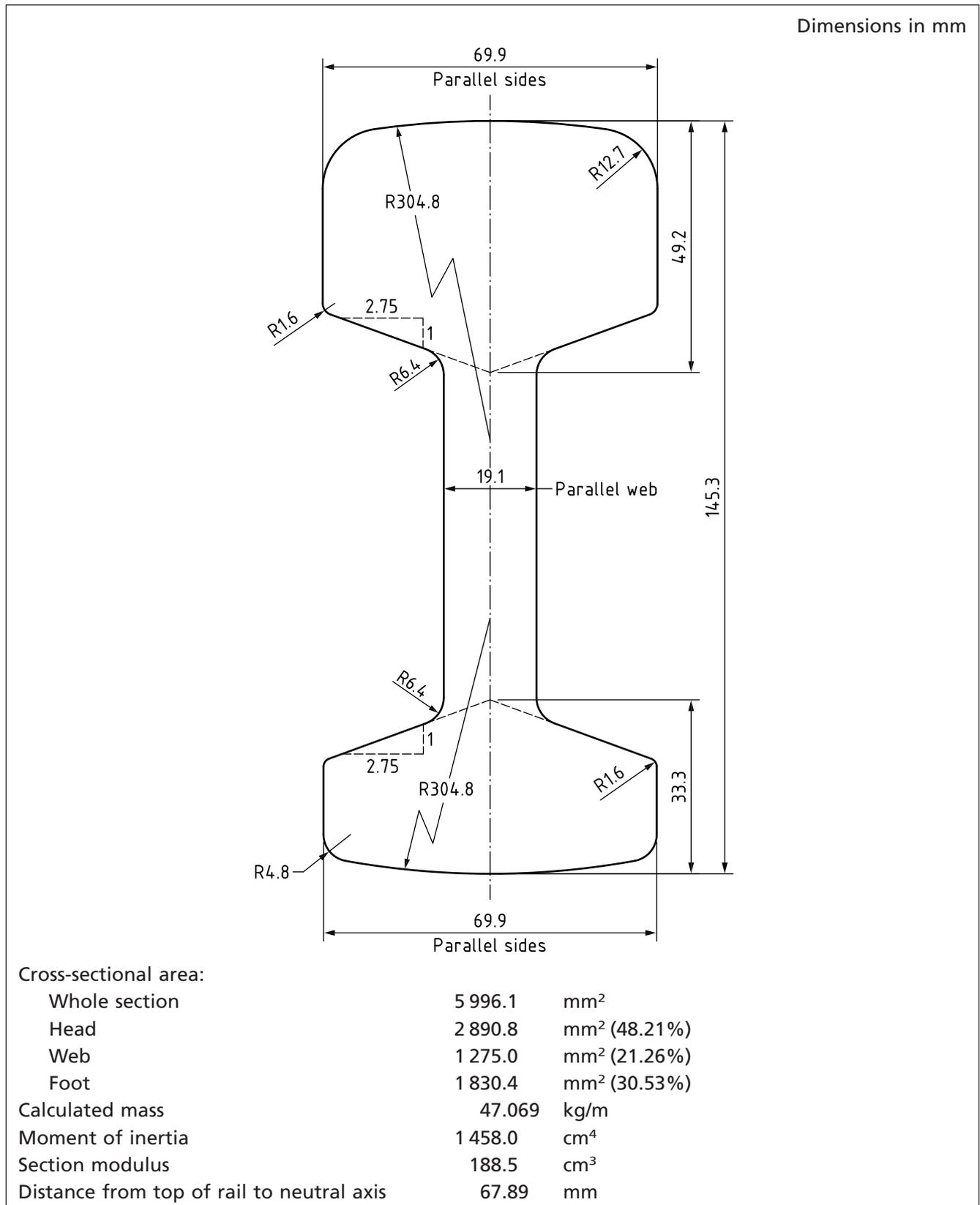


Figure 12 BS rail section no. 95 N

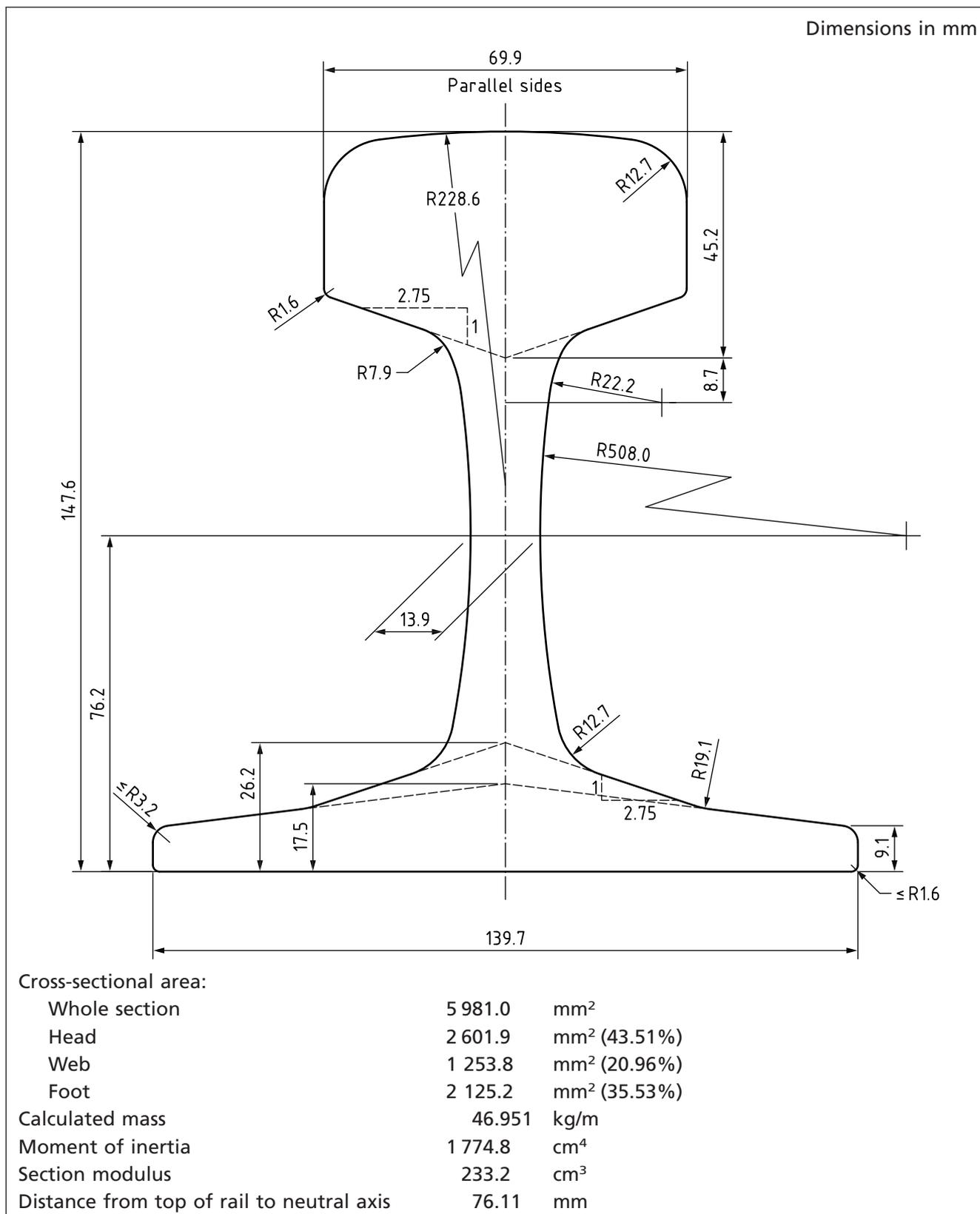


Figure 13 BS rail section no. 100 A

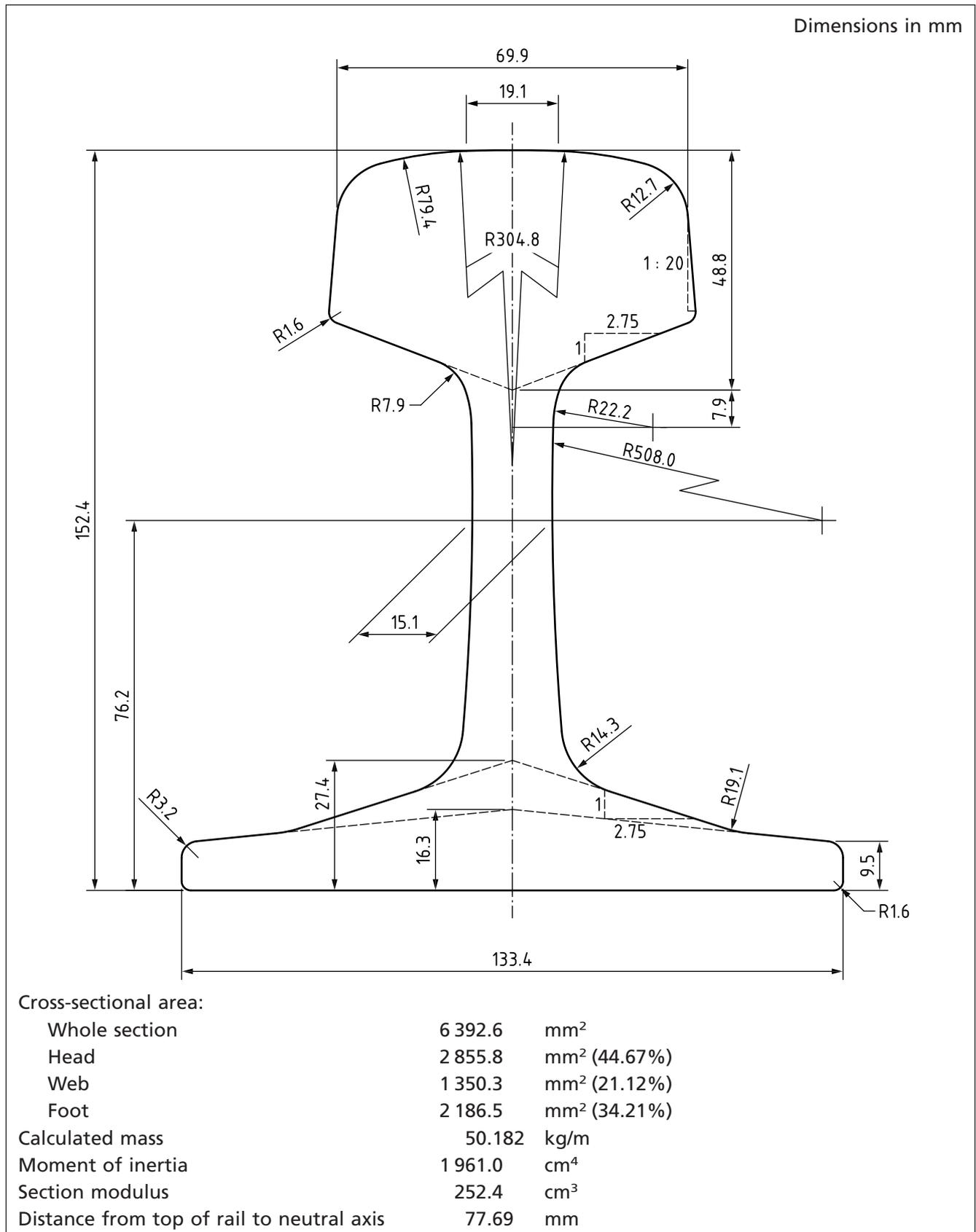
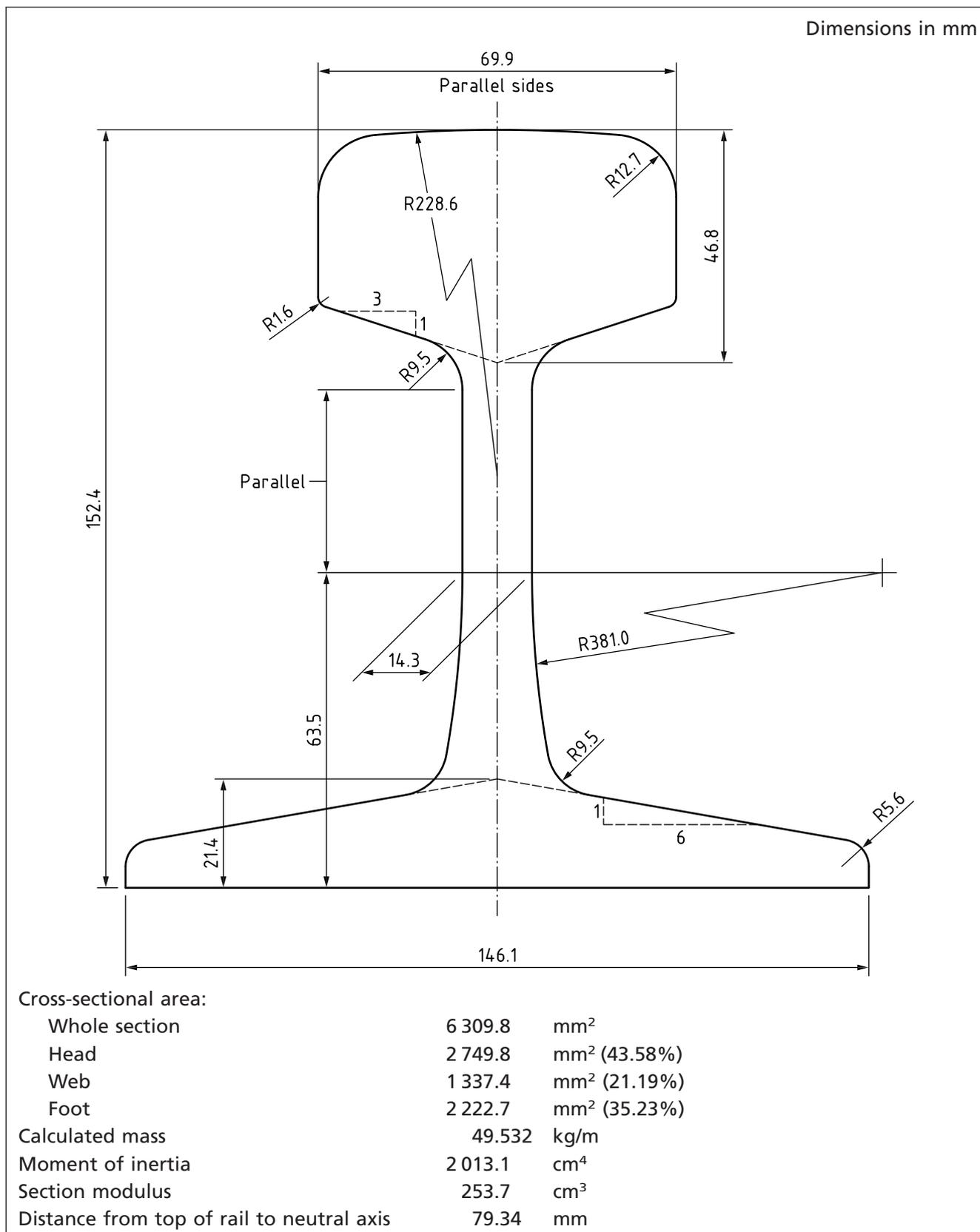


Figure 14 BS rail section no. 100 R



4 Tolerances

4.1 Rail section profile

The dimensional tolerances shall conform to Table 1. Profile conformity gauges shall conform to BS EN 13674-1:2011, Annex E.

Table 1 Tolerances on rail section profiles

Characteristic	1	2
	Flat bottom sections	Bull head sections
	mm	mm
Overall height of rail measured at the rail end	±0.50	+0.80 −0.40
Width of head	±0.50	±0.40
Width of foot	±1.00	±0.40
Thickness of web	+1.00 −0.50	±0.40
Verticality: maximum deviation at rail head	0.50	0.40
Foot base: flat to maximum concavity deviation from nominal profile	0.50 —	— ±0.50
Fishing surfaces: maximum stand off of fishing template (see BS EN 13674-1:2011, Figure E.8): from web	1.20	1.20
maximum clearance from fishing surface	0.15	0.13
Asymmetry of rail section	0.50	0.40
Asymmetry of rail section as checked by means of combined verticality and asymmetry gauge: flat bottom rails only	1.25	(see Note)

NOTE The gauge shown in BS EN 13674-1:2011 is not applicable to bull head rails. This British Standard does not specify a symmetry gauge for 95 RBH.

4.2 Fishbolt hole sizes and positions

The sizes and positions of fishbolt holes shall conform to Figure 15 and Table 2 with tolerances as given in Table 3. In case of dispute, the fishbolt holes in the rail shall be checked with templates and gauges of the type given in Annex A and BS EN 13674-1:2011, Figure E.12 and Figure E.13.

Figure 15 Key to position of fishbolt holes

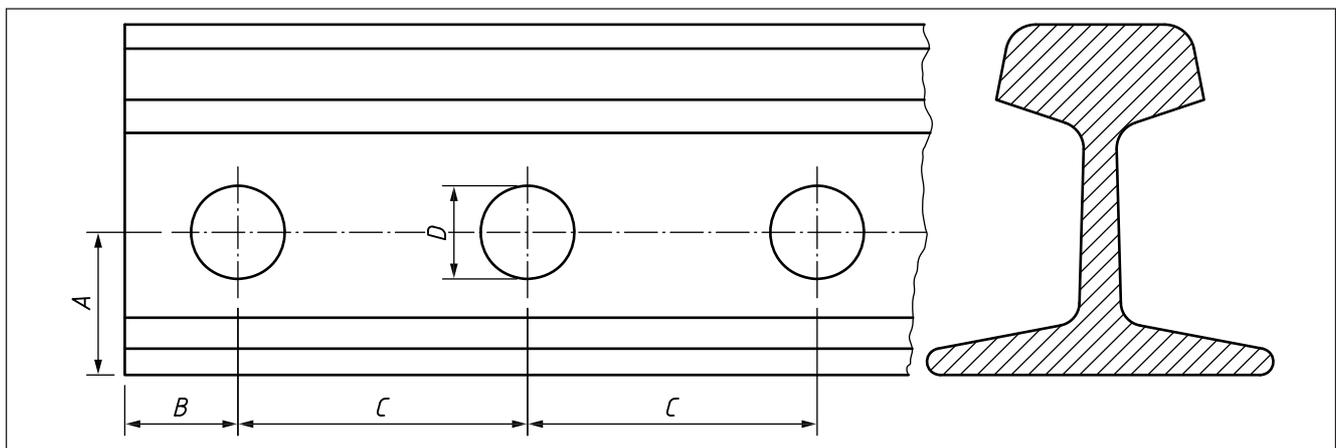


Table 2 Position of fishbolt holes

BS rail section number	Dimensions			
	A	B	C	D
	Height of centreline of hole from foot of rail mm	Distance of centreline of 1 st hole from end of rail mm	Pitch of hole centres mm	Diameter of holes ^{A)} mm
50 "O"	41.5	47.6	101.6	23.8
60 R	47.6	47.6	101.6	25.4
70 A	50.8	47.6	101.6	27.0
75 A	52.4	47.6	101.6	28.6
75 R	54.0	47.6	101.6	28.6
80 R	56.0	47.6	101.6	28.6
80 "O"	54.0	60.3	127.0	28.6
90 R	59.9	54.0	114.3	30.2
95 A	58.7	54.0	114.3	31.8
95 R	61.9	54.0	114.3	31.8
95 RBH	64.7	60.3	114.3	28.6
95 N	64.3	54.0	114.3	31.8
100 A	60.3	54.0	114.3	31.8
100 R	63.5	54.0	114.3	31.8

^{A)} Where circumstances call for different size holes, these may be ordered.

Table 3 Tolerances on fishbolt hole dimensions and positions

Fishbolt holes	Tolerances	
	Diameter ≤ 30 mm	Diameter > 30 mm
Diameter of fishbolt holes	± 0.5 mm	± 0.7 mm
Centre position of fishbolt holes vertically and horizontally	± 0.5 mm	± 0.7 mm

4.3 Straightness

After cold straightening a finished rail shall, when standing on its base or lying on its side, be capable of being pulled into a straight line and of retaining that position.

When checked using a 1 500 mm straight edge, the straightness of the rail shall conform to Table 4, measured as the maximum gap between the rail and the straight edge.

Table 4 Rail straightness measured over 1.5 m

Dimensional property	Rail position	Maximum gap
Horizontal and vertical straightness	Body	0.8 mm
Horizontal straightness	End	0.8 mm
Vertical straightness	End	0.8 mm upturned 0.2 mm downturned

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