

Structural steel sections —

Part 1: Specification for hot-rolled sections

ICS 77.140.70

Confirmed December 2011

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ISE/13, Structural steel sections, upon which the following bodies were represented:

- British Constructional Steelwork Association Limited
- Department for Transport — Highways Agency
- Galvanizers Association
- Institute of Healthcare Engineering and Estate Management
- Steel Construction Institute
- UK Steel Association

This British Standard, was published under the authority of the Standards Policy and Strategy Committee and comes into effect on 19 August 2005

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- First published November 1903
- Second edition August 1921
- Third edition March 1932
- Fourth edition February 1962
- Fifth edition January 1972
- Sixth edition November 1980
- Seventh edition December 1993
- Eighth edition August 2005

The following BSI references relate to the work on this British Standard:
Committee reference ISE/13
Draft for comment 05/30128028 DC

Amendments issued since publication

Amd. No.	Date	Comments

ISBN 0 580 46453 9

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Foreword

This part of BS 4 has been prepared by Technical Committee ISE/13. It supersedes BS 4-1:1993, which is withdrawn.

In this revision the former Table 8, Tapered flange channels has been deleted.

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

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 13 and a back cover.

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1 Scope

This part of BS 4 specifies the dimensions and mass of the following hot-rolled structural steel sections:

- universal beams;
- universal columns;
- universal bearing piles;
- joists;
- structural tees cut from universal beams;
- structural tees cut from universal columns;
- parallel flange channels.

Mass, length and depth tolerances for taper flange joists and channels are also given.

NOTE Dimensional, mass, length and straightness tolerances for universal beams, columns and bearing piles are given in BS EN 10034.

2 Normative references

The following referenced documents are indispensable for the application 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.

BS EN 10034, *Structural steel I and H sections — Tolerances on shape and dimensions*.

3 Designation

A section shall be designated by the serial size in millimetres (mm) and the mass per unit length in kilograms per metre (kg/m).

This form of designation shall be used in any enquiry and order.

EXAMPLE

A beam of 920.5 mm × 420.5 mm at 388 kg/m is designated a 914 × 419 × 388 beam.

4 Tolerances on universal beams, columns and bearing piles

Dimensional, mass, length and straightness tolerances on universal beams, columns and bearing piles shall be as given in BS EN 10034.

5 Mass and length tolerances for joists and channels

5.1 Mass

Tolerances shall be applied to the actual mass per unit length of the joist or channel.

The rolling tolerances shall be either:

- a) ± 2.5 % of the actual mass per unit length; or
- b) $+5$ % of the actual mass per unit length where a minimum mass per unit length is ordered.

5.2 Length

Joists or channels ordered as specified or as exact lengths shall be supplied as follows.

- a) *Specified lengths*. When a joist or channel is to be cut to a specified length, it shall be cut to within ± 25 mm of that length. When a minimum length is specified, it shall be cut to within $+50$ mm -0 mm of that minimum length.
- b) *Exact lengths*. When a section is to be cut to an exact length, it shall be cold sawn to within ± 3.2 mm of that length.

6 Tolerance on depth of section for joists and channels

The tolerance on the nominal depth of section shall be as given in Table 1.

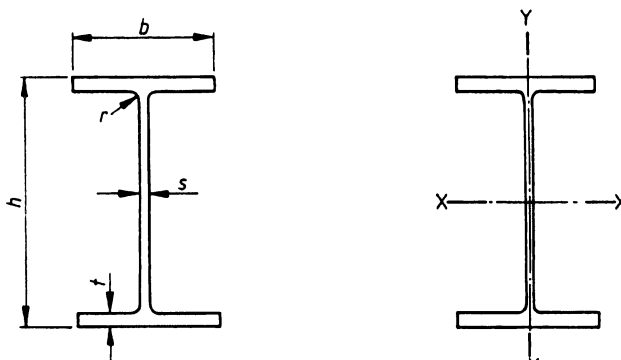
Table 1 — Tolerances on nominal depth of joists and channels

Nominal depth mm	Maximum permissible variation from specified depth mm	
≤ 300	+3.2	−0.8
>300 ≤ 380	+4.0	−1.6
>380 ≤ 430	+4.8	−1.6

7 Dimensions of hot-rolled structural steel sections

The nominal dimensions of hot-rolled structural steel sections shall be as given in Table 2 to Table 8.

Table 2 — Universal beams

						
Section designation	Mass per unit length kg/m	Depth <i>h</i> mm	Width <i>b</i> mm	Web <i>s</i> mm	Flange <i>t</i> mm	Root radius <i>r</i> mm
914 × 419 × 388	388.0	921.0	420.5	21.4	36.6	24.1
914 × 419 × 343	343.3	911.8	418.5	19.4	32.0	24.1
914 × 305 × 289	289.1	926.6	307.7	19.5	32.0	19.1
914 × 305 × 253	253.4	918.4	305.5	17.3	27.9	19.1
914 × 305 × 224	224.2	910.4	304.1	15.9	23.9	19.1
914 × 305 × 201	200.9	903.0	303.3	15.1	20.2	19.1
838 × 292 × 226	226.5	850.9	293.8	16.1	26.8	17.8
838 × 292 × 194	193.8	840.7	292.4	14.7	21.7	17.8
838 × 292 × 176	175.9	834.9	291.7	14.0	18.8	17.8
762 × 267 × 197	196.8	769.8	268.0	15.6	25.4	16.5
762 × 267 × 173	173.0	762.2	266.7	14.3	21.6	16.5
762 × 267 × 147	146.9	754.0	265.2	12.8	17.5	16.5
762 × 267 × 134	133.9	750.0	264.4	12.0	15.5	16.5