

Structural steel sections —

Part 1: Specification for hot-rolled sections

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- BEAMA Ltd.
- British Constructional Steelwork Association Ltd.
- British Steel Industry
- Health and Safety Executive
- National Association of Steel Stockholders

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Foreword

This part of BS 4 has been prepared under the direction of the Iron and Steel Standards Policy Committee and is a revision of BS 4-1:1980 which is withdrawn. The major reason for this revision is to delete the requirements for tolerances on beams, columns and bearing piles which are now contained in BS EN 10034, published simultaneously with this standard. The opportunity has also been taken to delete derived properties from the tables in the previous edition of this standard.

The dimensions and masses of beams, columns and bearing piles have also been amended slightly to correct anomalies in Table 5 to Table 7 of BS 4-1:1980.

Amendment No. 1 has been added to take into account UK requirements for parallel flange channels.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 14, an inside back cover 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
- taper flange channels
- 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 reference

This part of BS 4 incorporates, by reference, provisions from another publication. The normative reference is cited at the appropriate point in the text and the publication is given on the inside back cover. Subsequent amendments to, or revisions of, this publication apply to this part of BS 4 only when incorporated in it by updating or revision.

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 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 $+^{50}_0$ 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.

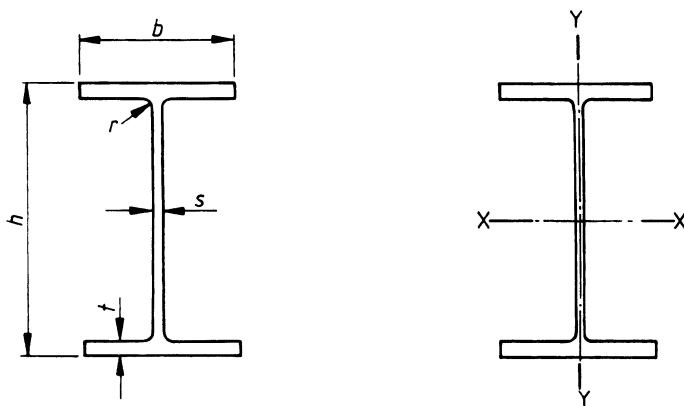
Table 1 — Tolerances on nominal depth of joists and channels

Nominal depth		Maximum permissible variation from specified depth	
Over mm	Up to and including mm	mm	mm
—	305	+ 3.2	– 0.8
305	381	+ 4.0	– 1.6
381	432	+ 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 9.

Table 2 — Universal beams

						
Section designation	Mass per unit length kg/m	Depth h mm	Width b mm	Web s mm	Flange t mm	Root radius r 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
686 × 254 × 170	170.2	692.9	255.8	14.5	23.7	15.2
686 × 254 × 152	152.4	687.5	254.5	13.2	21.0	15.2
686 × 254 × 140	140.1	683.5	253.7	12.4	19.0	15.2
686 × 254 × 125	125.2	677.9	253.0	11.7	16.2	15.2
610 × 305 × 238	238.1	635.8	311.4	18.4	31.4	16.5
610 × 305 × 179	179.0	620.2	307.1	14.1	23.6	16.5
610 × 305 × 149	149.1	612.4	304.8	11.8	19.7	16.5
610 × 229 × 140	139.9	617.2	230.2	13.1	22.1	12.7
610 × 229 × 125	125.1	612.2	229.0	11.9	19.6	12.7
610 × 229 × 113	113.0	607.6	228.2	11.1	17.3	12.7
610 × 229 × 101	101.2	602.6	227.6	10.5	14.8	12.7