Handbook

Handbook of building construction tolerances—Extracts from building products and structures Standards

Standards Australia

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Housing Industry Association

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PREFACE

This Handbook was prepared by Standards Australia. Its purpose is to identify, for persons in the building design and construction industries, those Clauses in building Standards that relate to tolerances. Extracts from available Commentaries are also included. Clause numbers of the Commentaries correspond to those in the Standard to which they refer and are prefixed by the letter 'C'. It does not purport to be exhaustive in this respect and the full Standards should be referred to for cross-referenced Clauses not included herein.

The Standards from which these extracts have been taken are currently available editions at the time of publication of this Handbook. At some later time, those Standards may be revised or amended. Users of the Handbook should, therefore, check on the status of the original Standards before applying any of the extracts. Users should also consult original Standards that are cited but not included in these extracts.

Since this Handbook is intended for use by design and construction personnel, it is expected that the nominal sizes of components will be obtained by designers from manufacturer's catalogues and that they will be determined by constructors generally from the drawings. Thus nominal sizes or ranges of sizes are not included for components with tolerances quoted in this Handbook (unless the 'tolerance' Clauses are cross-referenced to the 'sizes' Clauses).

As it is not intended that this Handbook be used by fabricators, the tolerances on materials used for fabrication are not included unless those tolerances are likely to be evident in finished products.

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Australian Standard

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SECTION 14 FABRICATION

14.4 TOLERANCES

14.4.1 General

The tolerance limits of this Clause shall be satisfied after fabrication is completed and any corrosion protection has been applied. Unless otherwise specified, the tolerance on all structural dimensions shall be ±2 mm.

14.4.2 Notation

For the purpose of this Clause —

a_0, a_1 = out-of-square dimensions of flanges

a_2, a_3 = Diagonal dimensions of a box section

b = Lesser dimensions of a web panel

b_f = Width of a flange

d = Depth of a section

d_0 = Overall depth of a member including out-of-square dimensions

d_1 = Clear depth between flanges ignoring fillets or welds

e = web off-centre dimension

l = Member length

Δ_f = out-of-flatness of a flange plate

Δ_v = Deviation from verticality of a web at a support

Δ_w = out-of-flatness of a web

14.4.3 Cross-section

After fabrication, the tolerances on any cross-section of a rolled section or a plate shall be those specified in AS/NZS 3678 or AS/NZS 3679.1, as appropriate, in respect of depth, flange width, flange thickness, web thickness, out-of square, and web off-centre.

For any built-up section, the deviations from the specified dimensions of the cross-section shall not exceed the following:

(a) Depth of a section (d) (see Figure 14.4.3(1))

for $d \leq 900$,	±3 mm
for $900 < d \leq 1800$,	$\pm \left[3 + \frac{(d - 900)}{300}\right]$ mm
for $d > 1800$	± 6 mm

(b) Width of a flange (b_f) (see Figure 14.4.3(1))

for all b_f, ± 6 mm

(c) Out-of-square of an individual flange (a_0 or a_1) (see Figure 14.4.3(1))

for $b_f \leq 600$ mm, ± 3 mm

for $b_f > 600$ mm, $\pm \left(\frac{b_f}{200} \right)$ mm

(d) Total out-of-square of two flanges ($a0 + a1$) (see Figure 14.4.3(1))

for $b_f \leq 600$ mm, ± 6 mm

for $b_f > 600$ mm, $\pm \left(\frac{b_f}{100} \right)$ mm

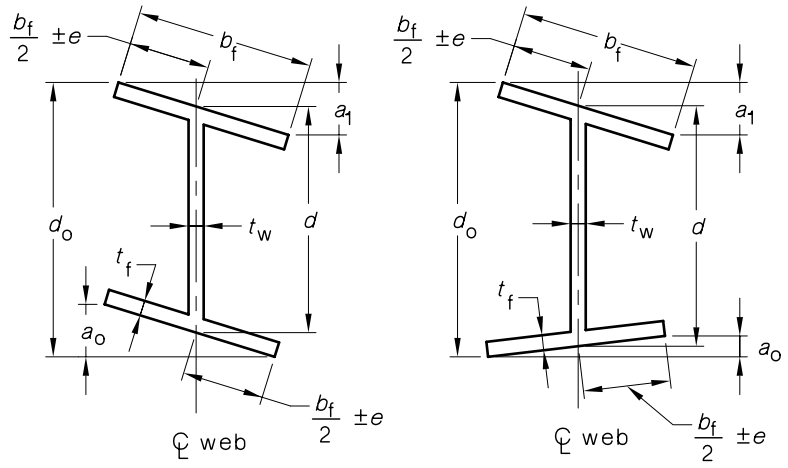

FIGURE 14.4.3(1) TOLERANCES ON A CROSS-SECTION

NOTES

1 Dimension d, d_0, a_0 and a_1 are measured parallel to the centreline of the web. Dimensions b_f and ($0.5b_f \pm e$) are measured parallel to the plane of the flange.

2 Dimension d is measured at the centreline of the web.

(e) Out-of-flatness a of web (Δ_w) (see Figure 14.4.3(2))

$d_1/150$ mm for unstiffened web,

$b/100$ mm for stiffened web with intermediate stiffeners,

(f) Deviation from verticality of a web at a support (Δ_v) (see Figure 14.4.3.(2))

for $d \leq 900$ mm ± 3 mm

for $d > 900$ mm, $\pm \left(\frac{d}{200} \right)$ mm

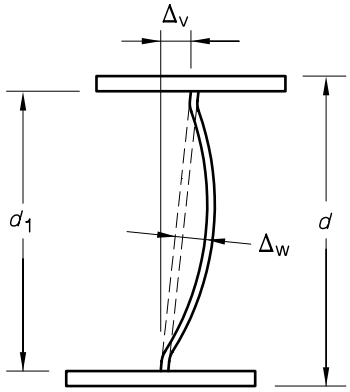

FIGURE 14.4.3.(2) TOLERANCES OF A WEB

(g) Tolerance on shape of a built-up box section (see Figure 14.4.3.(3))

A built-up box section shall not deviate at the diaphragm from the prescribed shape by more than ±5 mm or ± [(a_2 + a_3)/400] mm, whichever is greater, unless connection requirements necessitate more stringent tolerances.

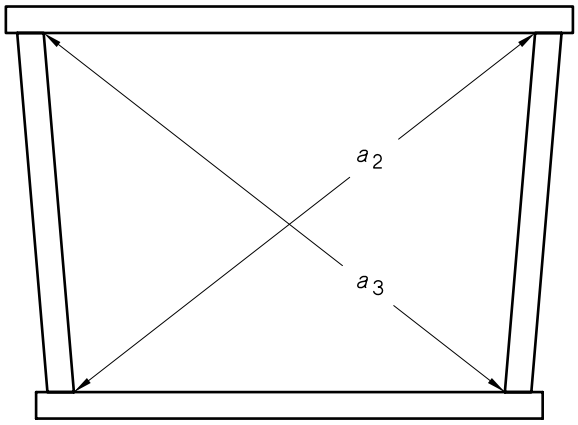

FIGURE 14.4.3(3) TOLERANCE ON SHAPE OF A BOX SECTION

(h) Off-centre of a web (e) (see Figure 14.4.3(4)) ±6 mm

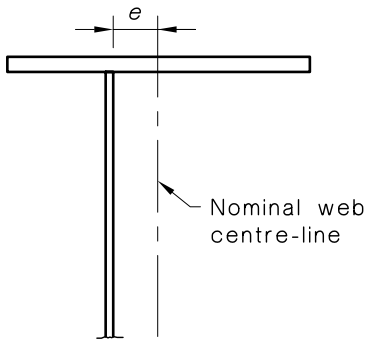

FIGURE 14.4.3(4) TOLERANCE ON OFF-CENTRE OF A WEB

(i) Out-of-flatness of a flange (Δ_f) (see Figure 14.4.3(5))

for $b_f \leq 450$ mm $\pm \left(\frac{b_r}{150}\right)$ mm

for $b_f > 450$ mm ± 3 mm