Rolling Tolerances BS EN 10056-2: 1993

This European Standard specifies tolerances on shape dimensions and mass of hot-rolled structural steel equal and unequal leg angles.

Tolerances on shapes and dimensions
Leg length (a or b)
The deviation from nominal on leg length shall be within the tolerance given in Table 1(a). For unequal leg angles the longer leg length (a) shall be used to determine the tolerance band.

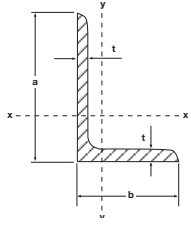
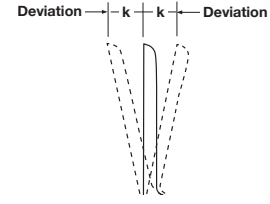


Table 1 (a) Dimensional tolerances

Leg length (a) mm	Tolerance mm
Up to and including 50	± 1.0
Greater than 50 up to and including 100	± 2.0
Greater than 100 up to and including 150	± 3.0
Greater than 150 up to and including 200	± 4.0
Greater than 200	+ 6.0 / -4.0

Table 1 (b) Thickness tolerances

Thickness (a) mm	Tolerance mm
Up to and including 5	± 0.50
Greater than 5 up to and including 10	± 0.75
Greater than 10 up to and including 15	± 1.0
Greater than 15	± 1.20



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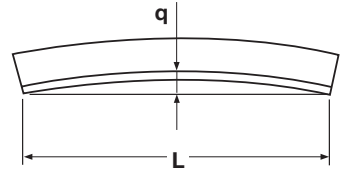
Out-of-square (k)
Out-of-squareness of the section shall not exceed the maximum given in Table 1(c). For unequal leg angles, the longer leg length (a) shall be used to determine the tolerance band.

Table 1 (c) Squareness tolerances

Leg length (a) mm	Tolerance mm
Up to and including 100	1.0
Greater than 100 up to and including 150	1.5
Greater than 150 up to and including 200	2.0
Greater than 200	3.0



Straightness (q)
The deviation from straightness shall not exceed the tolerances given in Table 1(d). For unequal leg angles, the longer leg length (a) shall be used to determine the tolerance band.

Table 1 (d) Straightness tolerances.

Tolerances			
	Over full bar length	Over any part bar length	
Leg length (a)	Deviation (q)	Length considered	Deviation (q)
mm	mm	mm	mm
Up to and including 150	0.4% L	1,500	6.0
Greater than 150 up to and including 200	0.2% L	2,000	3.0
Greater than 200	0.1% L	3,000	3.0

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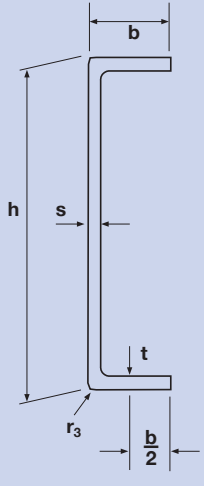
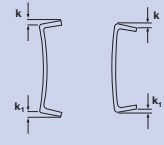
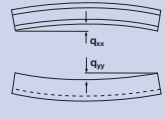
Tolerance on mass
The deviation from the nominal mass of any individual piece shall not exceed:
a) ± 6% for thickness for t 4mm or
b) ± 4% for thickness for t > 4mm.
The deviation from the nominal mass is the difference between the actual mass of the piece and the calculated mass. The calculated mass shall be determined using a density of 7850kg/m3.

Tolerance on length
The tolerance on ordered length shall be either:
a) ± 50mm; or
b) -0, +100mm where minimum lengths are required.

Table 1: Tolerances for Parallel Flange Channels

Designation	Property mm	Range mm	Tolerance mm
	HEIGHT h	h ⩽ 65 65<h ⩽ 200 200<h ⩽ 400 400<h	±1.5 ±2.0 ±3.0 ±4.0
	FLANGE WIDTH b	b ⩽ 50 50<b ⩽100 100<b ⩽125 125<b	±1.5 ±2.0 ±2.5 ±3.0
	WEB THICKNESS s	s ⩽ 10 10<s ⩽ 15 15<s	±0.5 ±0.7 ±1.0
	FLANGE THICKNESS t	t ⩽ 10 10<t ⩽ 15 15<t	a -0.5 a -1.0 a -1.5
	HEEL RADIUS r_3	All Sizes	⩽ 0.3t

Designation	Property mm	Range mm	Tolerance mm
	OUT OF SQUARENESS k + k_1	b ⩽ 100 100<b	2.0 2.5% of b
	WEB FLATNESS f	h ⩽ 100 100<h ⩽ 200 200<h ⩽ 400 400<h	±0.5 ±1.0 ±1.5 ±1.5
	STRAIGHTNESS q_{xx}	h ⩽ 150 150<h ⩽300 300<h	±0.3% of L ±0.2% of L ±0.15% of L
	q_{yy}	h ⩽ 150 150<h ⩽300 300<h	±0.5% of L ±0.3% of L ±0.2% of L
	STANDARD ALTERNATIVE STANDARD MASS PER UNIT LENGTH	LENGTH (L) LENGTH (L) Kg/m	All All h ⩽ 125 125<h	-0 +100 ±50 ± 6% ± 4%