BS EN 10056-1:2017

BSI Standards Publication

Structural steel equal and unequal leg angles

Part 1: Dimensions

bsi.

National foreword

This British Standard is the UK implementation of EN 10056-1:2017. It supersedes BS EN 10056-1:1999 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/103, Structural Steels Other Than Reinforcements.

A list of organizations represented on this committee can be obtained on request to its secretary.

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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English Version

Structural steel equal and unequal leg angles - Part 1: Dimensions

Cornières à ailes égales et inégales en acier de construction - Partie 1: Dimensions

Gleichschenklige und ungleichschenklige Winkel aus Stahl - Teil 1: Maße

This European Standard was approved by CEN on 14 November 2016.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 10056-1:2017) has been prepared by Technical Committee ECISS/TC 103 “Structural steels other than reinforcements”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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This document supersedes EN 10056-1:1998.

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1 Scope

This European Standard specifies requirements for the nominal dimensions of hot-rolled equal and unequal leg angles. This European Standard does not apply to angles with square roots. These requirements do not apply to equal and unequal leg angles rolled from stainless steel.

2 Normative references

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

EN 10025-2, *Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels*

EN 10025-3, *Hot rolled products of structural steels - Part 3: Technical delivery conditions for normalized/normalized rolled weldable fine grain structural steels*

EN 10025-4, *Hot rolled products of structural steels - Part 4: Technical delivery conditions for thermomechanical rolled weldable fine grain structural steels*

EN 10025-5, *Hot rolled products of structural steels - Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance*

EN 10056-2, *Structural steel equal and unequal leg angles - Part 2: Tolerances on shape and dimensions*

EN 10079, *Definition of steel products*

3 Terms and definitions

For the purposes of this document, the definitions given in EN 10079 apply.

4 Designation

The designation of the hot-rolled equal and unequal leg angles shall comprise:

1) the number of this European Standard;

2) the letter L for angles;

3) the leg length a (in mm);

4) the leg length a or b (in mm);

5) the leg thickness t (in mm);

6) reference to the material standard;

7) steel name or steel number.

Example of designation for an equal angle with leg length of a = 70 mm and leg thickness of 7 mm made from steel of grade S235JR (material number 1.0038) as specified in EN 10025-2:

EN 10056-1 — L 70 × 70 × 7 – EN 10025-2 — S235JR

or

EN 10056-1 — L 70 × 70 × 7 – EN 10025-2 — 1.0038

Example of designation for an unequal angle with leg length of a = 50 mm and leg length b = 30 and leg thickness of 5 mm made from steel of grade S235JR (material number 1.0038) as specified in EN 10025-2:

EN 10056-1 — L 50 × 30 × 5 – EN 10025-2 — S235JR

or

EN 10056-1 — L 50 × 30 × 5 – EN 10025-2 — 1.0038

5 Dimensions

Dimensions of hot-rolled equal and unequal leg angles given in Table 1 and Table 2 and illustrated in Figure 1 and Figure 2 within this European standard are preferred dimensions. Other sizes may be ordered according to this standard, the corresponding dimensions shall be provided at the time of the order.

In the production of structural shapes, the dimensions and weights may vary slightly from the published nominal figures. However, they remain within the permissible tolerance.

Roll wear may also slightly affect the radii of fillets and rounded edges.

6 Tolerances on shape and dimensions

Tolerances on shape and dimensions shall be as given in EN 10056-2.

7 Material

Angles covered by this standard shall preferably be made of one of the steel grades specified in EN 10025-2 to EN 10025-5. Other steel grades as given in EN 10273, EN 10225 and EN 10028-2 may also be used for specific applications. The desired steel grade shall be specified at the time of ordering.

Table 1 — Dimensions and sectional properties of hot-rolled equal-leg angles

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
20x20x3	0,88	1,12	20	3	3,5	0,60	1,41	0,85	0,39	0,59	0,28	0,62	0,74	0,17	0,38	0,20
25x25x3	1,12	1,42	25	3	3,5	0,72	1,77	1,02	0,80	0,75	0,45	1,27	0,95	0,33	0,48	0,33
25x25x4	1,45	1,85	25	4	3,5	0,76	1,77	1,08	1,02	0,74	0,59	1,61	0,93	0,43	0,48	0,40
25x25x5	1,78	2,27	25	5	4	0,80	1,77	1,13	1,20	0,73	0,71	1,89	0,91	0,52	0,48	0,46
30x30x3	1,36	1,74	30	3	5	0,84	2,12	1,18	1,40	0,90	0,65	2,22	1,13	0,59	0,58	0,50
30x30x4	1,78	2,27	30	4	5	0,88	2,12	1,24	1,80	0,89	0,85	2,85	1,12	0,75	0,58	0,61
30x30x5	2,18	2,78	30	5	5	0,92	2,12	1,30	2,16	0,88	1,04	3,42	1,11	0,91	0,57	0,70
35x35x3	1,60	2,04	35	3	5	0,96	2,47	1,36	2,29	1,06	0,90	3,64	1,34	0,94	0,68	0,70
35x35x3,5	1,85	2,35	35	3,5	5	0,98	2,47	1,39	2,63	1,06	1,04	4,18	1,33	1,08	0,68	0,78
35x35x4	2,09	2,67	35	4	5	1,00	2,47	1,42	2,95	1,05	1,18	4,68	1,32	1,23	0,68	0,87
35x35x5	2,57	3,28	35	5	5	1,04	2,47	1,48	3,56	1,04	1,45	5,64	1,31	1,49	0,67	1,01
38x38x4,5	2,56	3,26	38	4,5	6	1,09	2,69	1,54	4,21	1,14	1,55	6,68	1,43	1,74	0,73	1,13
38x38x6	3,33	4,24	38	6	6	1,15	2,69	1,63	5,35	1,12	2,02	8,45	1,41	2,25	0,73	1,38
40x40x3	1,84	2,35	40	3	6	1,07	2,83	1,52	3,45	1,21	1,18	5,47	1,53	1,42	0,78	0,94
40x40x4	2,42	3,08	40	4	6	1,12	2,83	1,58	4,47	1,21	1,55	7,09	1,52	1,86	0,78	1,17
40x40x5	2,97	3,79	40	5	6	1,16	2,83	1,64	5,43	1,20	1,91	8,60	1,51	2,26	0,77	1,38
40x40x6	3,52	4,48	40	6	6	1,20	2,83	1,70	6,31	1,19	2,26	9,99	1,49	2,64	0,77	1,55
45x45x3	2,09	2,66	45	3	7	1,18	3,18	1,67	4,93	1,36	1,49	7,81	1,71	2,04	0,88	1,22
45x45x4	2,74	3,49	45	4	7	1,23	3,18	1,75	6,43	1,36	1,97	10,2	1,71	2,65	0,87	1,51
45x45x4,5	3,06	3,90	45	4,5	7	1,25	3,18	1,78	7,14	1,35	2,20	11,4	1,71	2,94	0,87	1,65
45x45x5	3,38	4,30	45	5	7	1,28	3,18	1,81	7,84	1,35	2,43	12,5	1,70	3,24	0,87	1,79
45x45x6	4,00	5,09	45	6	7	1,32	3,18	1,87	9,16	1,34	2,88	14,5	1,69	3,81	0,86	2,04
45x45x7	4,60	5,86	45	7	7	1,36	3,18	1,92	10,4	1,33	3,31	16,4	1,67	4,36	0,86	2,27
50x50x3	2,33	2,96	50	3	7	1,31	3,54	1,85	6,86	1,52	1,86	10,9	1,92	2,84	0,98	1,54
50x50x4	3,06	3,89	50	4	7	1,36	3,54	1,92	8,97	1,52	2,46	14,2	1,91	3,73	0,98	1,94

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
50x50x5	3,77	4,80	50	5	7	1,40	3,54	1,99	11,0	1,51	3,05	17,4	1,90	4,55	0,97	2,29
50x50x6	4,47	5,69	50	6	7	1,45	3,54	2,04	12,8	1,50	3,61	20,3	1,89	5,34	0,97	2,61
50x50x7	5,15	6,56	50	7	7	1,49	3,54	2,10	14,6	1,49	4,16	23,1	1,88	6,09	0,96	2,90
50x50x8	5,82	7,41	50	8	7	1,52	3,54	2,16	16,3	1,48	4,68	25,7	1,86	6,85	0,96	3,17
50x50x9	6,47	8,24	50	9	7	1,56	3,54	2,21	17,9	1,47	5,20	28,1	1,85	7,61	0,96	3,44
55x55x4	3,38	4,31	55	4	8	1,47	3,89	2,08	12,0	1,67	2,98	19,1	2,10	4,95	1,07	2,38
55x55x5	4,18	5,32	55	5	8	1,52	3,89	2,15	14,7	1,66	3,70	23,4	2,10	6,06	1,07	2,82
55x55x6	4,95	6,31	55	6	8	1,56	3,89	2,21	17,3	1,66	4,39	27,4	2,09	7,13	1,06	3,23
60x60x4	3,70	4,71	60	4	8	1,60	4,24	2,26	15,8	1,83	3,58	25,0	2,31	6,51	1,18	2,88
60x60x5	4,57	5,82	60	5	8	1,64	4,24	2,32	19,4	1,82	4,45	30,7	2,30	8,03	1,17	3,46
60x60x6	5,42	6,91	60	6	8	1,69	4,24	2,39	22,8	1,82	5,29	36,1	2,29	9,44	1,17	3,96
60x60x7	6,26	7,98	60	7	8	1,73	4,24	2,45	26,1	1,81	6,10	41,3	2,28	10,8	1,16	4,39
60x60x8	7,09	9,03	60	8	8	1,77	4,24	2,50	29,2	1,80	6,89	46,1	2,26	12,2	1,16	4,86
60x60x10	8,69	11,1	60	10	8	1,85	4,24	2,61	34,9	1,78	8,41	55,1	2,23	14,8	1,15	5,66
63x63x5	4,82	6,14	63	5	9	1,71	4,45	2,42	22,4	1,91	4,88	35,6	2,41	9,24	1,23	3,82
63x63x6	5,72	7,29	63	6	9	1,75	4,45	2,48	26,4	1,90	5,82	42,0	2,40	10,9	1,22	4,39
63x63x6,5	6,17	7,85	63	6,5	9	1,78	4,45	2,51	28,4	1,90	6,27	45,1	2,40	11,7	1,22	4,66
65x65x4	4,02	5,13	65	4	9	1,71	4,60	2,41	20,1	1,98	4,19	31,9	2,49	8,32	1,27	3,45
65x65x5	4,97	6,34	65	5	9	1,76	4,60	2,49	24,7	1,98	5,22	39,3	2,49	10,2	1,27	4,09
65x65x6	5,91	7,53	65	6	9	1,80	4,60	2,55	29,2	1,97	6,21	46,4	2,48	12,0	1,26	4,71
65x65x7	6,83	8,70	65	7	9	1,85	4,60	2,62	33,4	1,96	7,18	53,1	2,47	13,8	1,26	5,27
65x65x8	7,73	9,85	65	8	9	1,89	4,60	2,67	37,5	1,95	8,13	59,5	2,46	15,5	1,26	5,81
65x65x9	8,62	11,0	65	9	9	1,93	4,60	2,73	41,4	1,94	9,05	65,5	2,44	17,2	1,25	6,31
65x65x10	9,49	12,1	65	10	9	1,97	4,60	2,78	45,1	1,93	9,94	71,3	2,43	18,9	1,25	6,80
65x65x11	10,3	13,2	65	11	9	2,00	4,60	2,83	48,6	1,92	10,8	76,7	2,41	20,6	1,25	7,27
70x70x5	5,37	6,84	70	5	9	1,88	4,95	2,66	31,2	2,14	6,10	49,6	2,69	12,9	1,37	4,83
70x70x6	6,38	8,13	70	6	9	1,93	4,95	2,73	36,9	2,13	7,27	58,5	2,68	15,3	1,37	5,60

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
70x70x7	7,38	9,40	70	7	9	1,97	4,95	2,79	42,3	2,12	8,41	67,1	2,67	17,5	1,36	6,28
70x70x8	8,37	10,7	70	8	10	2,01	4,95	2,84	47,3	2,10	9,46	75,0	2,65	19,5	1,35	6,87
70x70x9	9,32	11,9	70	9	9	2,05	4,95	2,9	52,5	2,10	10,6	83,2	2,65	21,8	1,35	7,50
70x70x10	10,3	13,1	70	10	9	2,09	4,95	2,96	57,2	2,09	11,7	90,6	2,63	23,9	1,35	8,07
75x75x4	4,65	5,93	75	4	9	1,96	5,30	2,76	31,4	2,30	5,67	49,9	2,90	13,0	1,48	4,71
75x75x5	5,76	7,34	75	5	9	2,01	5,30	2,84	38,8	2,30	7,06	61,6	2,90	16,0	1,47	5,62
75x75x6	6,85	8,73	75	6	9	2,05	5,30	2,90	45,8	2,29	8,41	72,7	2,89	18,9	1,47	6,53
75x75x7	7,93	10,1	75	7	9	2,10	5,30	2,96	52,6	2,28	9,74	83,6	2,88	21,6	1,46	7,30
75x75x8	8,99	11,4	75	8	9	2,14	5,30	3,02	59,1	2,27	11,0	93,8	2,86	24,5	1,46	8,09
75x75x9	10,0	12,8	75	9	9	2,18	5,30	3,08	65,4	2,26	12,3	104	2,85	27,0	1,45	8,78
75x75x10	11,1	14,1	75	10	9	2,22	5,30	3,13	71,4	2,25	13,5	113	2,83	29,7	1,45	9,48
76x76x5	5,84	7,44	76	5	9	2,03	5,37	2,87	40,4	2,33	7,26	64,2	2,94	16,6	1,50	5,78
76x76x6,5	7,49	9,54	76	6,5	9	2,10	5,37	2,97	51,4	2,32	9,34	81,6	2,92	21,1	1,49	7,10
76x76x8	9,11	11,6	76	8	9	2,16	5,37	3,06	61,7	2,30	11,3	97,9	2,90	25,4	1,48	8,30
76x76x9,5	10,7	13,6	76	9,5	9	2,22	5,37	3,14	71,4	2,29	13,3	113	2,88	29,6	1,47	9,43
80x80x5	6,17	7,86	80	5	10	2,12	5,66	3,00	47,1	2,45	8,02	74,8	3,09	19,5	1,57	6,48
80x80x6	7,34	9,35	80	6	10	2,17	5,66	3,07	55,8	2,44	9,57	88,7	3,08	23,0	1,57	7,48
80x80x7	8,49	10,8	80	7	10	2,21	5,66	3,13	64,2	2,44	11,1	102	3,07	26,4	1,56	8,43
80x80x8	9,63	12,3	80	8	10	2,26	5,66	3,19	72,2	2,43	12,6	115	3,06	29,9	1,56	9,37
80x80x9	10,8	13,7	80	9	10	2,30	5,66	3,25	80,0	2,42	14,0	127	3,05	33,0	1,55	10,2
80x80x10	11,9	15,1	80	10	10	2,34	5,66	3,30	87,5	2,41	15,4	139	3,03	36,4	1,55	11,0
90x90x5	6,97	8,88	90	5	11	2,35	6,36	3,33	67,7	2,76	10,2	107	3,48	28,0	1,78	8,40
90x90x6	8,30	10,6	90	6	11	2,41	6,36	3,40	80,3	2,76	12,2	128	3,47	33,1	1,77	9,73
90x90x7	9,61	12,2	90	7	11	2,45	6,36	3,47	92,6	2,75	14,1	147	3,46	38,3	1,77	11,0
90x90x8	10,9	13,9	90	8	11	2,50	6,36	3,53	104	2,74	16,1	166	3,45	43,1	1,76	12,2
90x90x9	12,2	15,5	90	9	11	2,54	6,36	3,59	116	2,73	17,9	184	3,44	47,9	1,76	13,3
90x90x10	13,4	17,1	90	10	11	2,58	6,36	3,65	127	2,72	19,8	201	3,42	52,6	1,75	14,4

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity		Sectional properties about axes							
								axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
90x90x11	14,7	18,7	90	11	11	2,62	6,36	3,70	138	2,71	21,6	218	3,42	56,9	1,74	15,4
90x90x16	20,7	26,4	90	16	11	2,81	6,36	3,97	186	2,66	30,1	294	3,34	79,4	1,74	20,0
100x100x6	9,26	11,8	100	6	12	2,64	7,07	3,74	111	3,07	15,1	176	3,87	45,8	1,97	12,2
100x100x7	10,7	13,7	100	7	12	2,69	7,07	3,81	128	3,06	17,5	204	3,86	52,7	1,96	13,8
100x100x8	12,2	15,5	100	8	12	2,74	7,07	3,87	145	3,06	19,9	230	3,85	59,9	1,96	15,5
100x100x9	13,6	17,3	100	9	12	2,78	7,07	3,93	161	3,05	22,3	256	3,84	66,1	1,95	16,8
100x100x10	15,0	19,2	100	10	12	2,82	7,07	3,99	177	3,04	24,6	280	3,83	73,0	1,95	18,3
100x100x11	16,4	20,9	100	11	12	2,86	7,07	4,05	192	3,03	26,9	305	3,81	79,1	1,94	19,5
100x100x12	17,8	22,7	100	12	12	2,90	7,07	4,11	207	3,02	29,1	328	3,80	85,7	1,94	20,9
100x100x13	19,2	24,5	100	13	12	2,94	7,07	4,16	221	3,01	31,3	350	3,78	91,7	1,94	22,0
100x100x14	20,6	26,2	100	14	12	2,98	7,07	4,22	235	3,00	33,5	372	3,77	97,9	1,93	23,2
100x100x15	21,9	27,9	100	15	12	3,02	7,07	4,27	249	2,98	35,6	393	3,75	104	1,93	24,4
100x100x16	23,2	29,6	100	16	12	3,06	7,07	4,32	262	2,97	37,7	413	3,74	110	1,93	25,5
110x110x6	10,2	13,0	110	6	12	2,89	7,78	4,09	150	3,39	18,4	237	4,27	61,6	2,18	15,1
110x110x7	11,8	15,1	110	7	12	2,94	7,78	4,16	173	3,39	21,4	274	4,27	70,9	2,17	17,1
110x110x8	13,4	17,1	110	8	12	2,99	7,78	4,22	195	3,38	24,4	311	4,26	80,1	2,16	19,0
110x110x9	15,0	19,1	110	9	12	3,03	7,78	4,28	217	3,37	27,3	346	4,25	89,1	2,16	20,8
110x110x10	16,6	21,2	110	10	13	3,06	7,78	4,33	238	3,35	30,0	378	4,23	97,7	2,15	22,6
110x110x11	18,2	23,2	110	11	13	3,11	7,78	4,39	259	3,34	32,8	411	4,21	106	2,14	24,2
110x110x12	19,7	25,1	110	12	13	3,15	7,78	4,45	279	3,33	35,5	443	4,20	115	2,14	25,8

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
120x120x7	12,9	16,5	120	7	13	3,18	8,49	4,49	226	3,70	25,6	358	4,66	92,8	2,37	20,7
120x120x8	14,7	18,7	120	8	13	3,23	8,49	4,56	255	3,69	29,1	406	4,65	105	2,37	23,0
120x120x9	16,5	21,0	120	9	13	3,27	8,49	4,62	285	3,68	32,6	452	4,64	117	2,36	25,3
120x120x10	18,2	23,2	120	10	13	3,31	8,49	4,69	313	3,67	36,0	497	4,63	129	2,36	27,5
120x120x11	19,9	25,4	120	11	13	3,36	8,49	4,75	341	3,66	39,4	542	4,62	140	2,35	29,4
120x120x12	21,6	27,5	120	12	13	3,40	8,49	4,80	368	3,65	42,7	584	4,60	152	2,35	31,6
120x120x13	23,3	29,7	120	13	13	3,44	8,49	4,86	394	3,64	46,0	626	4,59	162	2,34	33,4
120x120x14	25,0	31,8	120	14	13	3,48	8,49	4,92	420	3,63	49,3	666	4,58	173	2,33	35,2
120x120x15	26,6	33,9	120	15	13	3,51	8,49	4,97	445	3,62	52,4	706	4,56	184	2,33	37,1
120x120x16	28,3	36,0	120	16	13	3,55	8,49	5,02	469	3,61	55,6	744	4,54	195	2,33	38,8
130x130x8	16,0	20,4	130	8	14	3,46	9,19	4,9	327	4,00	34,3	519	5,05	134	2,57	27,4
130x130x9	17,9	22,8	130	9	14	3,51	9,19	4,96	364	4,00	38,4	579	5,04	150	2,56	30,1
130x130x10	19,8	25,2	130	10	14	3,55	9,19	5,03	401	3,99	42,5	638	5,03	165	2,55	32,7
130x130x11	21,7	27,6	130	11	14	3,6	9,19	5,09	437	3,98	46,5	695	5,02	179	2,55	35,2
130x130x12	23,6	30,0	130	12	14	3,64	9,19	5,15	472	3,97	50,4	750	5,00	194	2,54	37,7
130x130x13	25,4	32,3	130	13	14	3,68	9,19	5,20	507	3,96	54,4	805	4,99	208	2,54	40,0
130x130x14	27,2	34,7	130	14	14	3,72	9,19	5,26	540	3,95	58,2	858	4,98	222	2,53	42,3
130x130x15	29,0	37,0	130	15	14	3,76	9,19	5,32	573	3,94	62,0	909	4,96	236	2,53	44,4
130x130x16	30,8	39,3	130	16	14	3,80	9,19	5,37	605	3,93	65,8	960	4,94	250	2,53	46,6
140x140x9	19,3	24,6	140	9	15	3,75	9,90	5,30	458	4,31	44,7	728	5,44	188	2,76	35,5
140x140x10	21,4	27,2	140	10	15	3,79	9,90	5,37	504	4,30	49,4	802	5,43	207	2,76	38,5
140x140x11	23,4	29,8	140	11	15	3,84	9,90	5,43	550	4,29	54,1	875	5,41	226	2,75	41,5
140x140x12	25,4	32,4	140	12	15	3,88	9,90	5,49	595	4,28	58,8	946	5,40	244	2,74	44,4
140x140x13	27,5	35,0	140	13	15	3,92	9,90	5,55	639	4,27	63,4	1015	5,39	262	2,74	47,2
140x140x14	29,4	37,5	140	14	15	3,96	9,90	5,61	681	4,26	67,9	1083	5,37	280	2,73	49,9
140x140x15	31,4	40,0	140	15	15	4,00	9,90	5,66	723	4,25	72,4	1149	5,36	298	2,73	52,6
140x140x16	33,3	42,5	140	16	15	4,04	9,90	5,72	764	4,24	76,8	1214	5,34	315	2,72	55,1

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
140x140x18	37,2	47,4	140	18	15	4,12	9,90	5,83	844	4,22	85,4	1338	5,31	350	2,72	60,0
150x150x10	23,0	29,3	150	10	16	4,03	10,6	5,71	624	4,62	56,9	990	5,82	258	2,97	45,1
150x150x11	25,2	32,1	150	11	16	4,08	10,6	5,77	681	4,61	62,4	1083	5,81	279	2,95	48,4
150x150x12	27,3	34,8	150	12	16	4,12	10,6	5,83	737	4,60	67,7	1170	5,80	303	2,95	52,0
150x150x13	29,5	37,6	150	13	16	4,17	10,6	5,89	792	4,59	73,1	1259	5,79	325	2,94	55,1
150x150x14	31,6	40,3	150	14	16	4,21	10,6	5,95	845	4,58	78,3	1344	5,77	347	2,93	58,3
150x150x15	33,8	43,0	150	15	16	4,25	10,6	6,01	898	4,57	83,5	1430	5,76	370	2,93	61,6
150x150x16	35,9	45,7	150	16	16	4,29	10,6	6,06	950	4,56	88,7	1509	5,74	391	2,92	64,5
150x150x17	38,0	48,4	150	17	16	4,33	10,6	6,12	1000	4,55	93,7	1588	5,73	412	2,92	67,4
150x150x18	40,1	51,0	150	18	16	4,37	10,6	6,17	1050	4,54	98,7	1666	5,71	434	2,92	70,3
150x150x19	42,1	53,7	150	19	16	4,40	10,6	6,23	1099	4,52	104	1742	5,70	455	2,91	73,0
150x150x20	44,2	56,3	150	20	16	4,44	10,6	6,28	1146	4,51	109	1817	5,68	476	2,91	75,8
160x160x12	29,3	37,3	160	12	17	4,36	11,3	6,17	900	4,91	77,3	1431	6,20	369	3,15	59,8
160x160x13	31,6	40,2	160	13	17	4,41	11,3	6,23	968	4,90	83,5	1538	6,18	397	3,14	63,6
160x160x14	33,9	43,2	160	14	17	4,45	11,3	6,29	1034	4,89	89,5	1644	6,17	424	3,13	67,4
160x160x15	36,2	46,1	160	15	17	4,49	11,3	6,35	1100	4,88	95,6	1750	6,15	453	3,14	71,3
160x160x16	38,4	49,0	160	16	17	4,53	11,3	6,41	1163	4,87	101	1848	6,14	478	3,12	74,5
160x160x17	40,7	51,8	160	17	17	4,57	11,3	6,46	1225	4,86	107	1947	6,13	504	3,12	78,0
160x160x18	42,9	54,7	160	18	17	4,61	11,3	6,52	1287	4,85	113	2043	6,11	530	3,11	81,3
160x160x19	45,1	57,5	160	19	17	4,65	11,3	6,58	1347	4,84	119	2138	6,10	557	3,11	84,6
160x160x20	47,3	60,3	160	20	17	4,69	11,3	6,63	1407	4,83	124	2231	6,08	582	3,11	87,8
180x180x13	35,7	45,5	180	13	18	4,9	12,7	6,93	1396	5,54	107	2220	6,99	572	3,55	82,5
180x180x14	38,3	48,8	180	14	18	4,94	12,7	6,99	1493	5,53	114	2375	6,98	611	3,54	87,5
180x180x15	40,9	52,1	180	15	18	4,98	12,7	7,05	1589	5,52	122	2527	6,96	651	3,53	92,3
180x180x16	43,5	55,4	180	16	18	5,02	12,7	7,11	1680	5,51	130	2690	6,96	679	3,50	95,5
180x180x17	46,0	58,7	180	17	18	5,06	12,7	7,16	1775	5,50	137	2822	6,94	728	3,52	102
180x180x18	48,6	61,9	180	18	18	5,10	12,7	7,22	1866	5,49	145	2965	6,92	766	3,52	106

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
180x180x19	51,1	65,1	180	19	18	5,14	12,7	7,27	1955	5,48	152	3106	6,91	804	3,51	111
180x180x20	53,7	68,3	180	20	18	5,18	12,7	7,33	2043	5,47	159	3244	6,89	541	3,51	115
200x200x13	39,8	50,7	200	13	18	5,40	14,1	7,63	1939	6,19	133	3085	7,80	793	3,96	104
200x200x14	42,7	54,4	200	14	18	5,44	14,1	7,69	2075	6,18	143	3302	7,79	848	3,95	110
200x200x15	45,6	58,1	200	15	18	5,48	14,1	7,75	2209	6,17	152	3516	7,78	903	3,94	117
200x200x16	48,5	61,8	200	16	18	5,52	14,1	7,81	2430	6,16	162	3740	7,76	960	3,94	123
200x200x17	51,4	65,5	200	17	18	5,56	14,1	7,87	2472	6,14	171	3932	7,75	1011	3,93	128
200x200x18	54,3	69,1	200	18	18	5,60	14,1	7,92	2600	6,13	181	4150	7,75	1050	3,90	133
200x200x19	57,1	72,7	200	19	18	5,64	14,1	7,98	2726	6,12	190	4335	7,72	1117	3,92	140
200x200x20	59,9	76,3	200	20	18	5,68	14,1	8,04	2850	6,11	199	4530	7,70	1170	3,92	146
200x200x21	62,8	79,9	200	21	18	5,72	14,1	8,09	2973	6,10	208	4725	7,69	1221	3,91	151
200x200x22	65,6	83,5	200	22	18	5,76	14,1	8,15	3094	6,09	217	4915	7,67	1273	3,9	156
200x200x23	68,3	87,1	200	23	18	5,80	14,1	8,20	3213	6,08	226	5102	7,66	1324	3,9	161
200x200x24	71,1	90,6	200	24	18	5,84	14,1	8,26	3330	6,06	235	5280	7,64	1380	3,90	167
200x200x25	73,9	94,1	200	25	18	5,88	14,1	8,31	3446	6,05	244	5467	7,62	1426	3,89	172
200x200x26	76,6	97,6	200	26	18	5,91	14,1	8,36	3560	6,04	253	5644	7,61	1476	3,89	177
200x200x27	79,3	101	200	27	18	5,95	14,1	8,42	3673	6,03	261	5819	7,59	1527	3,89	181
200x200x28	82,0	105	200	28	18	5,99	14,1	8,47	3784	6,02	270	5991	7,57	1576	3,88	186
250x250x17	64,4	82,1	250	17	18	6,79	17,7	9,60	4893	7,72	269	7789	9,74	1997	4,93	208
250x250x18	68,1	86,7	250	18	18	6,83	17,7	9,66	5156	7,71	284	8208	9,73	2104	4,93	218
250x250x19	71,7	91,4	250	19	18	6,87	17,7	9,72	5417	7,70	299	8622	9,71	2212	4,92	228
250x250x20	75,3	96,0	250	20	18	6,91	17,7	9,78	5674	7,69	314	9031	9,70	2318	4,91	237
250x250x21	78,9	101	250	21	18	6,96	17,7	9,84	5929	7,68	329	9435	9,69	2423	4,91	246
250x250x22	82,5	105	250	22	18	7,00	17,7	9,89	6180	7,67	343	9833	9,67	2528	4,9	256
250x250x23	86,1	110	250	23	18	7,03	17,7	9,95	6429	7,66	358	10230	9,66	2632	4,9	265
250x250x24	89,7	114	250	24	18	7,07	17,7	10,0	6674	7,64	372	10610	9,64	2735	4,89	274
250x250x25	93,2	119	250	25	18	7,11	17,7	10,1	6917	7,63	387	11000	9,63	2837	4,89	282

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
250x250x26	96,7	123	250	26	18	7,15	17,7	10,1	7156	7,62	401	11370	9,61	2939	4,88	291
250x250x27	101	128	250	27	18	7,19	17,7	10,2	7393	7,61	415	11750	9,59	3040	4,88	299
250x250x28	104	133	250	28	18	7,24	17,7	10,2	7700	7,62	433	12200	9,61	3170	4,89	309
250x250x29	107	137	250	29	18	7,27	17,7	10,3	7858	7,59	443	12480	9,56	3241	4,87	315
250x250x30	111	141	250	30	18	7,30	17,7	10,3	8087	7,57	457	12830	9,54	3340	4,87	323
250x250x31	114	145	250	31	18	7,34	17,7	10,4	8313	7,56	471	13190	9,53	3439	4,86	331
250x250x32	118	150	250	32	18	7,38	17,7	10,4	8536	7,55	484	13540	9,51	3538	4,86	339
250x250x33	121	154	250	33	18	7,42	17,7	10,5	8757	7,54	498	13880	9,49	3636	4,86	347
250x250x34	124	158	250	34	18	7,45	17,7	10,5	8975	7,53	512	14220	9,47	3734	4,86	354
250x250x35	128	163	250	35	18	7,50	17,7	10,6	9260	7,54	529	14700	9,48	3860	4,87	364
300x300x25	112	143	300	25	18	8,35	21,2	11,8	12150	9,23	561	19370	11,7	4930	5,88	418
300x300x26	116	148	300	26	18	8,39	21,2	11,9	12590	9,22	583	20060	11,6	5115	5,87	431
300x300x27	121	154	300	27	18	8,43	21,2	11,9	13020	9,20	604	20750	11,6	5294	5,87	444
300x300x28	125	159	300	28	18	8,47	21,2	12,0	13450	9,19	625	21420	11,6	5475	5,87	457
300x300x29	129	165	300	29	18	8,50	21,2	12,0	13870	9,18	645	22090	11,6	5650	5,86	470
300x300x30	133	170	300	30	18	8,54	21,2	12,1	14290	9,17	666	22750	11,6	5828	5,86	482
300x300x31	138	175	300	31	18	8,58	21,2	12,1	14700	9,16	686	23400	11,6	5999	5,85	494
300x300x32	142	181	300	32	18	8,62	21,2	12,2	15120	9,15	707	24050	11,5	6184	5,85	507
300x300x33	146	186	300	33	18	8,66	21,2	12,2	15520	9,13	727	24690	11,5	6351	5,84	519

Designation	Mass	Sectional area	Dimensions			Distances of centre of gravity			Sectional properties about axes							
									axis y-y / axis z-z			axis u-u		axis v-v		
			$a = b$	t	r_{root}	$c_y = c_z$	c_u	c_v	$I_y = I_z$	$i_y = i_z$	$W_{el,y} = W_{el,z}$	I_u	i_u	I_v	i_v	$W_{el,v}$
	kg/m	cm²	mm	mm	mm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	cm³
300x300x34	150	191	300	34	18	8,70	21,2	12,3	15930	9,12	748	25320	11,5	6532	5,84	531
300x300x35	154	197	300	35	18	8,73	21,2	12,4	16320	9,11	767	25950	11,5	6696	5,83	542

NOTE 1 The sectional area has been calculated using the formula

$$A = \left[t(2a - t) + 0{,}2146\left(r_{root}^2 - 2r_{toe}^2\right)\right] \times \frac{1}{100}$$

where

A is the sectional area, in square centimetres;

t is the thickness, in millimetres;

r_{root} is the root radius, in millimetres;

r_{toe} is the toe radius, in millimetres; (sectional properties have been calculated assuming a toe radius equal to half the root radius);

$a = b$ is the leg length, in millimetres.

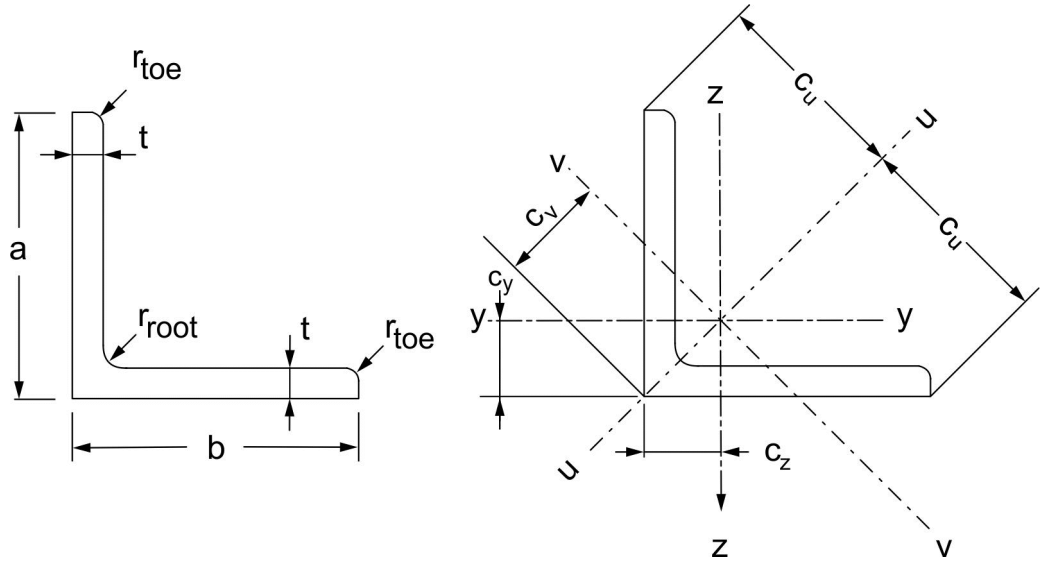
I = moment of inertia

W = the section modulus

i = the radius of gyration (the subscripts y, z, u and v denote the relevant axis)

NOTE 2 Mass is calculated on the basis of density of steel of 7850 kg/m³.

NOTE 3 The values of the sectional properties may be different between producers depending on the rounded outside corner of the heel (L250 and L300), the toe and the root radius.



NOTE L250 and L300 angles may have rounded outside corner of the heel and doubly rounded toes.

Figure 1 — Equal leg angles

Table 2 — Dimensions and sectional properties of hot-rolled unequal leg angles

Designation	Mass	Sectional area	Dimensions				Distances of centre of gravity				Sectional properties about axes										Inclination of V-V axis tan α
											axis y-y			axis z-z			axis u-u		axis v-v		
			a	b	t	r_{root}	c_y	c_z	c_u	c_v	I_y	i_y	$W_{el,y}$	I_z	i_z	$W_{el,z}$	I_u	i_u	I_v	i_v	
	kg/m	cm²	mm	mm	mm	mm	cm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	
30 × 20 × 3	1,12	1,43	30	20	3	4	0,99	0,50	2,05	1,04	1,25	0,94	0,62	0,44	0,55	0,29	1,43	1,00	0,26	0,42	0,43
30 × 20 × 4	1,46	1,86	30	20	4	4	1,03	0,54	2,02	1,04	1,59	0,93	0,81	0,53	0,55	0,38	1,81	0,99	0,33	0,42	0,42
40 × 20 × 4	1,77	2,26	40	20	4	4	1,47	0,48	2,58	1,17	3,59	1,26	1,42	0,60	0,51	0,39	3,80	1,30	0,39	0,42	0,25
40 × 25 × 4	1,93	2,46	40	25	4	4	1,36	0,62	2,69	1,35	3,89	1,26	1,47	1,16	0,69	0,62	4,35	1,33	0,70	0,53	0,38
45 × 30 × 4	2,25	2,87	45	30	4	4,5	1,48	0,74	3,07	1,58	5,78	1,42	1,91	2,05	0,85	0,91	6,65	1,52	1,18	0,64	0,44
50 × 30 × 5	2,96	3,78	50	30	5	5	1,73	0,74	3,33	1,65	9,36	1,57	2,86	2,51	0,82	1,11	10,3	1,65	1,54	0,64	0,35
60 × 30 × 5	3,36	4,28	60	30	5	5	2,17	0,68	3,88	1,77	15,6	1,91	4,07	2,63	0,78	1,14	16,5	1,97	1,71	0,63	0,26
60 × 40 × 5	3,76	4,79	60	40	5	6	1,96	0,97	4,10	2,11	17,2	1,89	4,25	6,11	1,13	2,02	19,7	2,03	3,54	0,86	0,43
60 × 40 × 6	4,46	5,68	60	40	6	6	2,00	1,01	4,08	2,10	20,1	1,88	5,03	7,12	1,12	2,38	23,1	2,02	4,16	0,86	0,43
65 × 50 × 5	4,35	5,54	65	50	5	6	1,99	1,25	4,53	2,39	23,2	2,05	5,14	11,9	1,47	3,19	28,8	2,28	6,32	1,07	0,58
70 × 50 × 6	5,41	6,89	70	50	6	7	2,23	1,25	4,83	2,52	33,4	2,20	7,01	14,2	1,43	3,78	39,7	2,40	7,92	1,07	0,50
75 × 50 × 6	5,65	7,19	75	50	6	7	2,44	1,21	5,12	2,64	40,5	2,37	8,01	14,4	1,42	3,81	46,6	2,55	8,36	1,08	0,44
75 × 50 × 8	7,39	9,41	75	50	8	7	2,52	1,29	5,08	2,62	52,0	2,35	10,4	18,4	1,40	4,95	59,6	2,52	10,8	1,07	0,43
80 × 40 × 6	5,41	6,89	80	40	6	7	2,85	0,88	5,20	2,38	44,9	2,55	8,73	7,59	1,05	2,44	47,6	2,63	4,93	0,85	0,26
80 × 40 × 8	7,07	9,01	80	40	8	7	2,94	0,96	5,14	2,34	57,6	2,53	11,4	9,61	1,03	3,16	60,9	2,60	6,34	0,84	0,25
80 × 60 × 7	7,36	9,38	80	60	7	8	2,51	1,52	5,55	2,92	59,0	2,51	10,7	28,4	1,74	6,34	72,0	2,77	15,4	1,28	0,55
100 × 50 × 6	6,84	8,71	100	50	6	8	3,51	1,05	6,55	3,00	89,9	3,21	13,8	15,4	1,33	3,89	95,4	3,31	9,92	1,07	0,26
100 × 50 × 8	8,97	11,40	100	50	8	8	3,60	1,13	6,48	2,96	116	3,19	18,2	19,7	1,31	5,08	123	3,28	12,8	1,06	0,26
100 × 65 × 7	8,77	11,2	100	65	7	10	3,23	1,51	6,83	3,49	113	3,17	16,6	37,6	1,83	7,53	128	3,39	22,0	1,40	0,42
100 × 65 × 8	9,94	12,7	100	65	8	10	3,27	1,55	6,81	3,47	127	3,16	18,9	42,2	1,83	8,54	144	3,37	24,8	1,40	0,41
100 × 65 × 9	11,1	14,1	100	65	9	10	3,32	1,59	6,78	3,42	141	3,20	21,1	46,7	1,82	9,52	160	3,36	27,4	1,39	0,41
100 × 65 × 10	12,3	15,6	100	65	10	10	3,36	1,63	6,76	3,45	154	3,14	23,2	51,0	1,81	10,5	175	3,35	30,1	1,39	0,41
100 × 65 × 11	13,4	17,1	100	65	11	10	3,40	1,67	6,74	3,41	167	3,10	25,3	55,1	1,80	11,4	189	3,33	32,6	1,38	0,41
100 × 65 × 12	14,5	18,5	100	65	12	10	3,44	1,71	6,72	3,40	180	3,10	27,4	59,1	1,80	12,3	203	3,32	35,2	1,38	0,41
100 × 75 × 8	10,6	13,5	100	75	8	10	3,10	1,87	6,95	3,65	133	3,14	19,3	64,1	2,18	11,4	162	3,47	34,6	1,60	0,55
100 × 75 × 10	13,0	16,6	100	75	10	10	3,19	1,95	6,92	3,65	162	3,12	23,8	77,6	2,16	14,0	197	3,45	42,2	1,59	0,54
100 × 75 × 12	15,4	19,7	100	75	12	10	3,27	2,03	6,89	3,65	189	3,10	28,0	90,2	2,14	16,5	230	3,42	49,5	1,59	0,54

Designation	Mass	Sectional area	Dimensions				Distances of centre of gravity				Sectional properties about axes										Inclination of V-V axis tan α
											axis y-y			axis z-z			axis u-u		axis v-v		
			a	b	t	r_{root}	c_y	c_z	c_u	c_v	I_y	i_y	$W_{el,y}$	I_z	i_z	$W_{el,z}$	I_u	i_u	I_v	i_v	
	kg/m	cm²	mm	mm	mm	mm	cm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	
110 × 70 × 10	13,4	17,1	110	70	10	10	3,69	1,72	7,43	3,73	207	3,50	28,3	65,1	2,00	12,3	233	3,69	38,5	1,50	0,40
110 × 70 × 12	15,9	20,3	110	70	12	10	3,77	1,79	7,38	3,72	242	3,50	33,4	75,5	1,90	14,5	272	3,66	45,2	1,49	0,39
120 × 80 × 8	12,2	15,5	120	80	8	11	3,83	1,87	8,23	4,23	226	3,82	27,6	80,8	2,28	13,2	260	4,10	46,6	1,74	0,44
120 × 80 × 10	15,0	19,1	120	80	10	11	3,92	1,95	8,19	4,21	276	3,80	34,1	98,1	2,26	16,2	317	4,07	56,8	1,72	0,44
120 × 80 × 12	17,8	22,7	120	80	12	11	4,00	2,03	8,15	4,20	323	3,77	40,4	114	2,24	19,1	371	4,04	66,7	1,71	0,43
125 × 75 × 8	12,2	15,5	125	75	8	11	4,14	1,68	8,44	4,14	247	4,00	29,6	67,6	2,09	11,6	274	4,21	40,9	1,63	0,36
125 × 75 × 10	15,0	19,1	125	75	10	11	4,23	1,76	8,39	4,17	302	3,97	36,5	82,1	2,07	14,3	334	4,18	49,9	1,61	0,36
125 × 75 × 12	17,8	22,7	125	75	12	11	4,31	1,84	8,33	4,15	354	3,95	43,2	95,5	2,05	16,9	391	4,15	58,5	1,61	0,35
130 × 90 × 10	16,6	21,2	130	90	10	11	4,16	2,19	8,93	4,62	360	4,10	40,7	142	2,60	20,8	422	4,46	79,9	1,94	0,47
130 × 90 × 12	19,7	25,1	130	90	12	11	4,24	2,26	8,90	4,59	420	4,10	48,0	165	2,60	24,4	492	4,42	93,3	1,93	0,47
130 × 90 × 14	22,8	29,0	130	90	14	11	4,33	2,34	8,85	4,61	481	4,10	55,5	188	2,60	28,2	562	4,40	107	1,93	0,46
135 × 65 × 8	12,2	15,5	135	65	8	11	4,78	1,34	8,79	3,95	291	4,34	33,4	45,2	1,71	8,75	307	4,45	29,4	1,38	0,25
135 × 65 × 10	15,0	19,1	135	65	10	11	4,88	1,42	8,72	3,91	356	4,31	41,3	54,7	1,69	10,8	375	4,43	35,9	1,37	0,24
140 × 90 × 8	14,0	17,9	140	90	8	11	4,49	2,03	9,56	4,83	360	4,50	37,9	118	2,60	17,0	409	4,78	68,9	1,96	0,41
140 × 90 × 10	17,4	22,1	140	90	10	11	4,58	2,11	9,52	4,81	441	4,50	46,8	144	2,60	20,9	501	4,76	84,2	1,95	0,41
140 × 90 × 12	20,6	26,3	140	90	12	11	4,66	2,19	9,47	4,79	518	4,40	55,5	168	2,50	24,7	588	4,73	98,9	1,94	0,41
140 × 90 × 14	23,8	30,4	140	90	14	11	4,74	2,27	9,43	4,78	592	4,40	64,0	191	2,50	28,4	670	4,70	113	1,93	0,40
150 × 75 × 9	15,4	19,6	150	75	9	12	5,26	1,57	9,82	4,50	455	4,82	46,7	77,9	1,99	13,1	483	4,96	50,2	1,60	0,26
150 × 75 × 10	17,0	21,7	150	75	10	12	5,31	1,61	9,79	4,48	501	4,81	51,6	85,6	1,99	14,5	531	4,95	55,1	1,60	0,26
150 × 75 × 12	20,2	25,7	150	75	12	12	5,40	1,69	9,72	4,44	588	4,78	61,3	99,6	1,97	17,1	623	4,92	64,7	1,59	0,26
150 × 75 × 15	24,8	31,7	150	75	15	12	5,52	1,81	9,63	4,40	713	4,75	75,2	119	1,94	21,0	753	4,88	78,6	1,58	0,25
150 × 90 × 10	18,2	23,2	150	90	10	12	5,00	2,04	10,1	5,03	533	4,80	53,3	146	2,51	21,0	591	5,05	88,3	1,95	0,36
150 × 90 × 11	19,9	25,3	150	90	11	12	5,04	2,08	10,1	4,95	581	4,80	58,3	159	2,50	22,9	644	5,04	95,7	1,94	0,36
150 × 90 × 12	21,6	27,5	150	90	12	12	5,08	2,12	10,1	5,00	627	4,77	63,3	171	2,49	24,8	694	5,02	104	1,94	0,36
150 × 90 × 15	26,6	33,9	150	90	15	12	5,21	2,23	9,98	4,98	761	4,74	77,7	205	2,46	30,4	841	4,98	126	1,93	0,35
150 × 100 × 10	19,0	24,2	150	100	10	12	4,81	2,34	10,3	5,29	553	4,79	54,2	199	2,87	25,9	637	5,13	114	2,17	0,44
150 × 100 × 12	22,5	28,7	150	100	12	12	4,89	2,42	10,2	5,28	651	4,76	64,4	233	2,85	30,7	749	5,11	134	2,16	0,44
150 × 100 × 14	26,1	33,2	150	100	14	12	4,98	2,50	10,2	5,22	744	4,70	74,3	265	2,80	35,3	856	5,08	153	2,15	0,43

Designation	Mass	Sectional area	Dimensions				Distances of centre of gravity				Sectional properties about axes										Inclination of V-V axis tan α
											axis y-y			axis z-z			axis u-u		axis v-v		
			a	b	t	r_{root}	c_y	c_z	c_u	c_v	I_y	i_y	$W_{el,y}$	I_z	i_z	$W_{el,z}$	I_u	i_u	I_v	i_v	
	kg/m	cm²	mm	mm	mm	mm	cm	cm	cm	cm	cm⁴	cm	cm³	cm⁴	cm	cm³	cm⁴	cm	cm⁴	cm	
200 × 100 × 10	23,0	29,2	200	100	10	15	6,93	2,01	13,2	6,05	1220	6,46	93,2	210	2,68	26,3	1290	6,65	135	2,15	0,26
200 × 100 × 12	27,3	34,8	200	100	12	15	7,03	2,10	13,1	6,00	1440	6,43	111	247	2,67	31,3	1530	6,63	159	2,14	0,26
200 × 100 × 14	31,6	40,3	200	100	14	15	7,12	2,18	13,0	5,85	1654	6,41	128	282	2,70	36,1	1755	6,60	182	2,12	0,26
200 × 100 × 15	33,8	43,0	200	100	15	15	7,16	2,22	13,0	5,84	1758	6,40	137	299	2,64	38,5	1864	6,59	193	2,12	0,26
200 × 100 × 16	35,9	45,7	200	100	16	15	7,20	2,26	13,0	5,82	1861	6,38	145	316	2,60	40,8	1972	6,57	204	2,11	0,26
200 × 150 × 12	32,0	40,8	200	150	12	15	6,08	3,61	13,9	7,34	1650	6,36	119	803	4,44	70,5	2030	7,04	430	3,25	0,55
200 × 150 × 15	39,6	50,5	200	150	15	15	6,21	3,73	13,9	7,33	2022	6,33	147	979	4,40	86,9	2476	7,00	526	3,23	0,55

NOTE 1 The sectional area has been calculated using the formula

$$A = \left[t(a+b-t) + 0{,}2146\left(r_{root}^{2} - 2r_{toe}^{2} \right) \right] \times \frac{1}{100}$$

where

A is the sectional area, in square centimetres;

t is the thickness, in millimetres;

r_{root} is the root radius, in millimetres;

r_{toe} is the toe radius, in millimetres; (sectional properties have been calculated assuming a toe radius equal to half the root radius)

a and b are the leg lengths, in millimetres

I = moment of inertia

W = the section modulus

i = the radius of gyration (the subscripts y, z, u and v denote the relevant axis)

NOTE 2 Mass is calculated on the basis of density of steel of 7850 kg/m³.

NOTE 3 The values of the sectional properties may be different between producers depending on the toe and the root radius.

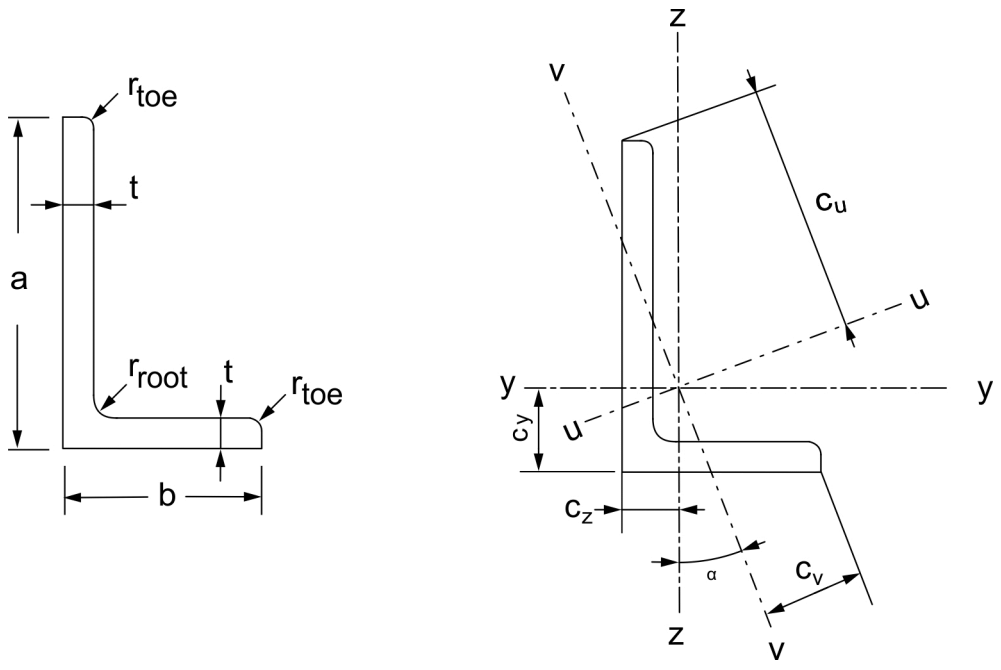


Figure 2 — Unequal leg angles

Annex A
(informative)

Comparison of symbols used in this document with those in EN 1993-1-1

The symbols used in this standard are in accordance with the tolerance standard EN 10056-2. The comparison with the relevant symbols used in the Eurocode 3 standard EN 1993-1-1 are indicated in Table A.1 for equal and unequal leg angles.

Table A.1 — Comparison with the symbols used in EN 1993–1–1

		EN 10056–1 EN 10056–2	EN 1993–1–1
Equal leg angles	Leg length	*a*	*h*
	Leg length	*b*	*h*
	Section thickness	*t*	*t*
Unequal leg angles	Leg length	*a*	*h*
	Leg length	*b*	*b*
	Section thickness	*t*	*t*

Bibliography

[1] EN 10225, *Weldable structural steels for fixed offshore structures - Technical delivery conditions*

[2] EN 10273, *Hot rolled weldable steel bars for pressure purposes with specified elevated temperature properties*

[3] EN 10028-2, *Flat products made of steels for pressure purposes - Part 2: Non-alloy and alloy steels with specified elevated temperature properties*

[4] EN 1993-1-1, *Eurocode 3: Design of steel structures - Part 1-1: General rules and rules for buildings*

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