OMEGATEK®

COLD-FORMED STEEL PROFILES

FOR STRUCTURAL PURPOSES

361metal

INDEX

361 METAL

Created in 2021, integrated into a market-leading group in metal solutions for construction, 361 Metal combines an experienced and dynamic team with modern production facilities and top-quality raw materials to produce and supply the most efficient solutions in structural metal profiles.

361 Metal has its headquarters and manufacturing facilities in Braga, where it develops its industrial activity in metal forming and steel services.
The network of commercial warehouses and distributors ensures direct sales and logistical distribution from Vila Real, Vila Nova de Gaia and Coimbra.

361 Metal headquarters
Braga, Portugal

Assembly of Omegatek® with architectural façade panel

Certification CE Marking

CE Marking is the form of harmonization and unification of procedures, standards, and legislation aimed at realizing the European internal market.

Since its creation in 1992, CE Marking ensures compliance with product standardization and essential safety, health, and environmental requirements.

CE Marking certifies that 361 Metal manufactures products in accordance with the technical requirements for cold-formed steel elements and structures, for roofs, ceilings, floors, and walls as prescribed in EN 1090 parts 2 and 4.

Thus, CE Marking guarantees that 361 Metal supplies products in complete conformity with their declared performance.

CE

TOP-PADEL BRAGA CENTER
2022 Braga, Portugal

OMEGATEK® PROFILE

The use of cold-formed profiles for structural purposes has been increasing in recent years. Their versatility, speed of production, and high structural performance are the main factors contributing to this trend.

With the evolution of support standards for structural design, which clearly frame the characterization of these sections, designers have increasingly preferred prescribing these solutions over solutions with rolled profiles that involve more complex logistics in manufacturing, transportation, and assembly.

The range of Omegatek® profiles is based on an omega cross-section, with the most common application contexts being:

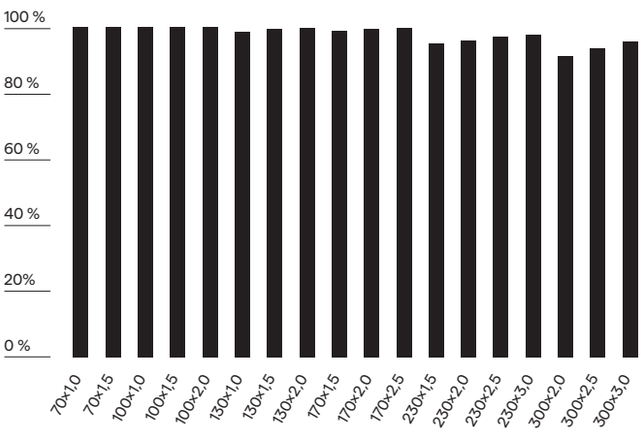
→ Secondary structure for supporting roofs and façades;
→ Structure for partition walls;
→ Secondary structure for supporting coatings in light flooring solutions.

Omegatek® was designed with the objective of maximizing the efficiency of the cross-section and, consequently, its structural performance. To this end, and given the highly slender geometries, the aim was to minimize the ineffective areas of class 4 sections, with the careful definition of longitudinal web stiffeners and edge stiffeners.

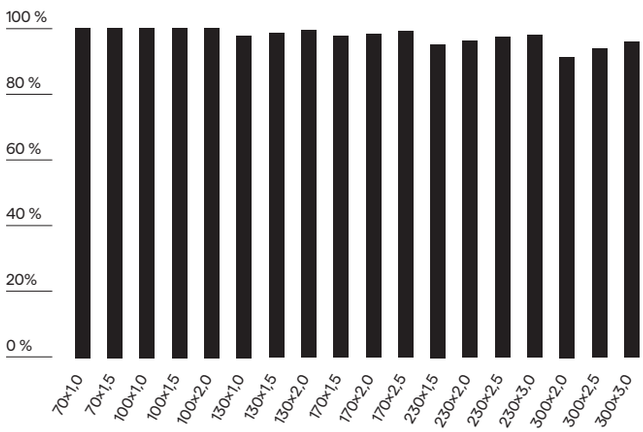
SECTION EFFICIENCY
Graphical representation of the $W_{y,eff}$ / W_y (%) relationship

The graphs below represent the efficiency of Omegatek® sections. In this case, for bending with the greatest inertia, the efficiency is almost always above 90%.

Omegatek® S280GD



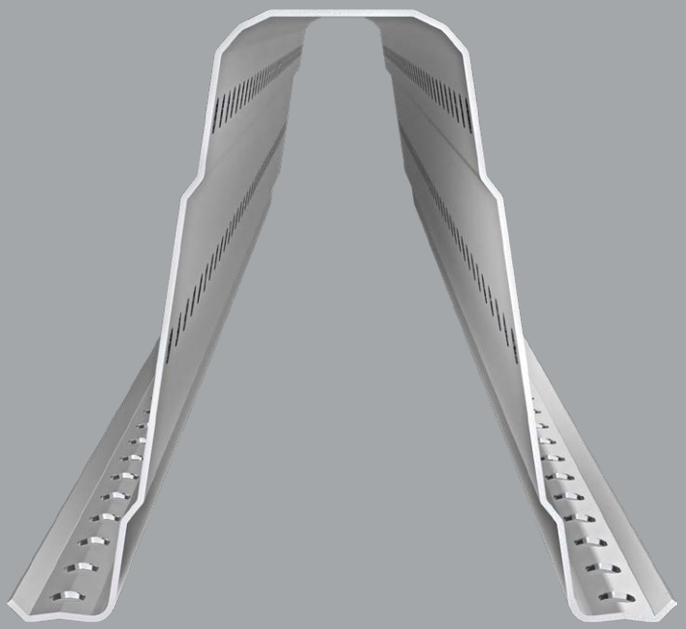
Omegatek® S350GD



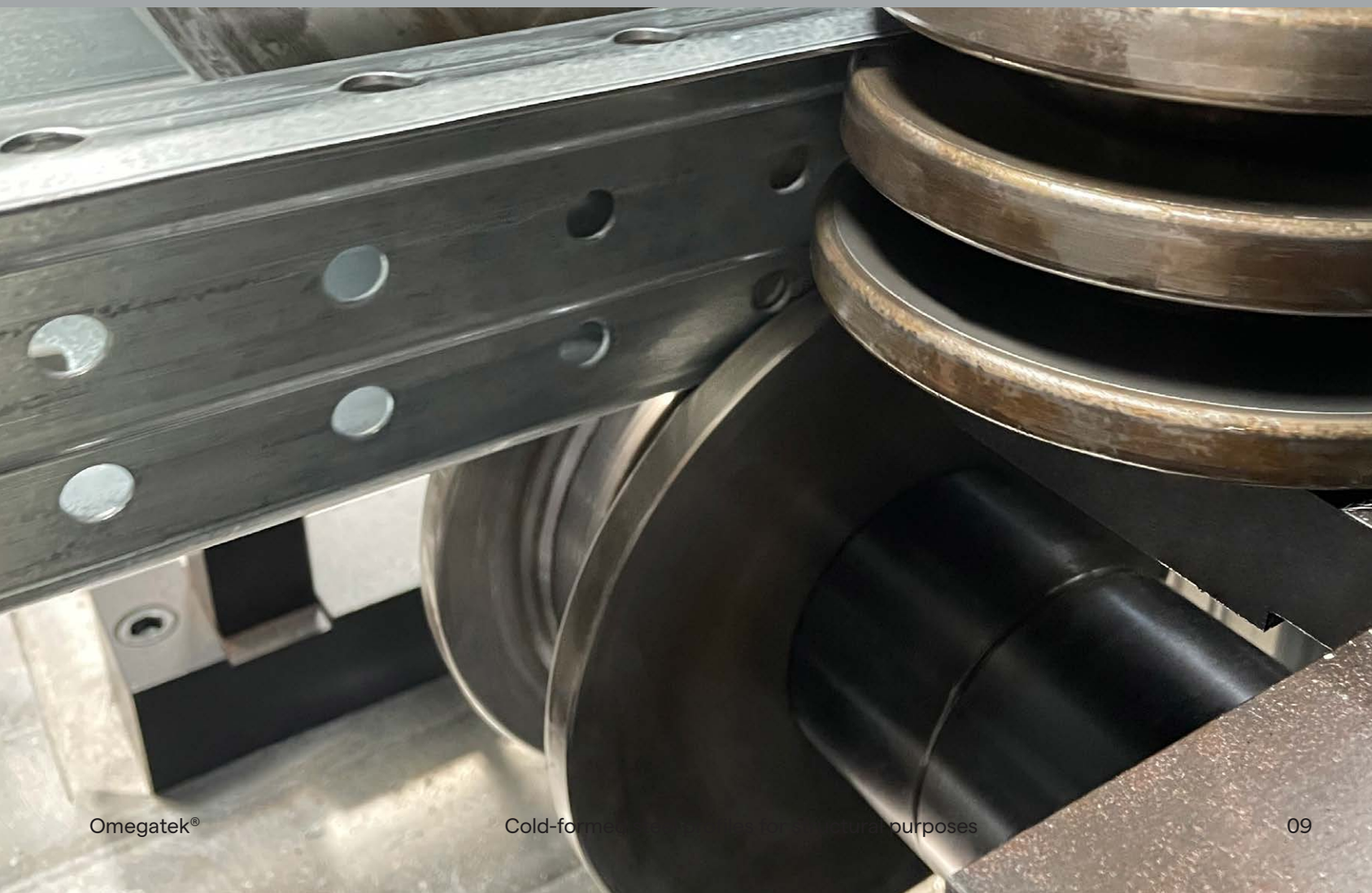
Omegatek® profiles are produced by roll forming structural steel sheets S280GD and S350GD with galvanization Z200 and Z275, respectively. The thickness of the steel used ranges between 1.0 and 3.0 mm.

The roll forming of steel sheets is a cold-forming process in continuous mode with high dimensional precision, allowing for the definition of lengths tailored to the project, with their size being mainly limited by the logistics associated with transport and assembly. The automatic numerical control drilling system also allows for adapting the hole positioning to the designer's specifications.

Omegatek® with continuous drilling



Production line
Braga, Portugal



CHARACTERIZATION AND TESTING

ANALYTICAL CHARACTERIZATION

Cold-formed profiles with reduced thicknesses exhibit significant slenderness levels in their components (flanges, webs, and stiffeners). Therefore, they are sensitive to local and distortional buckling effects, which occur at stress levels below the material's yield stress. As such, they are typically classified as class 4 according to Eurocode 3.

The safety verification procedure provided in Eurocode 3 for this type of metal profiles is defined in Parts 1-3 and 1-5 of the standard, which is based on the concept of effective widths.

The determination of the effective sections of class 4 metal profiles is based on the determination of the reduction factor due to buckling for each component of the cross-section (flanges and webs). This reduction factor depends on the normalized slenderness coefficient and the distribution of normal stresses in each component.

The location and size of the effective areas of the section are defined in clause 5.5.2 of Part 1-3 of Eurocode 3 for internal and external elements.

Assembly of Omegatek®
with 4 spans

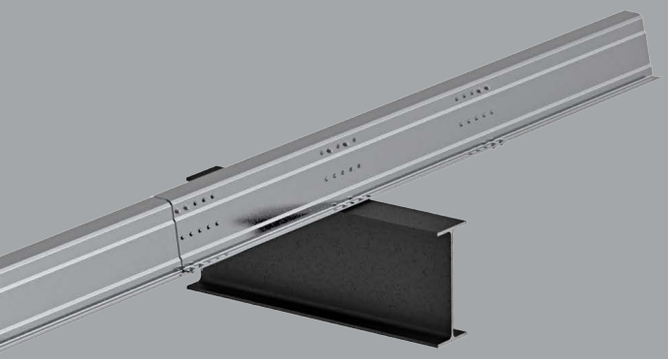
CHARACTERIZATION AND TESTING

EXPERIMENTAL TESTING

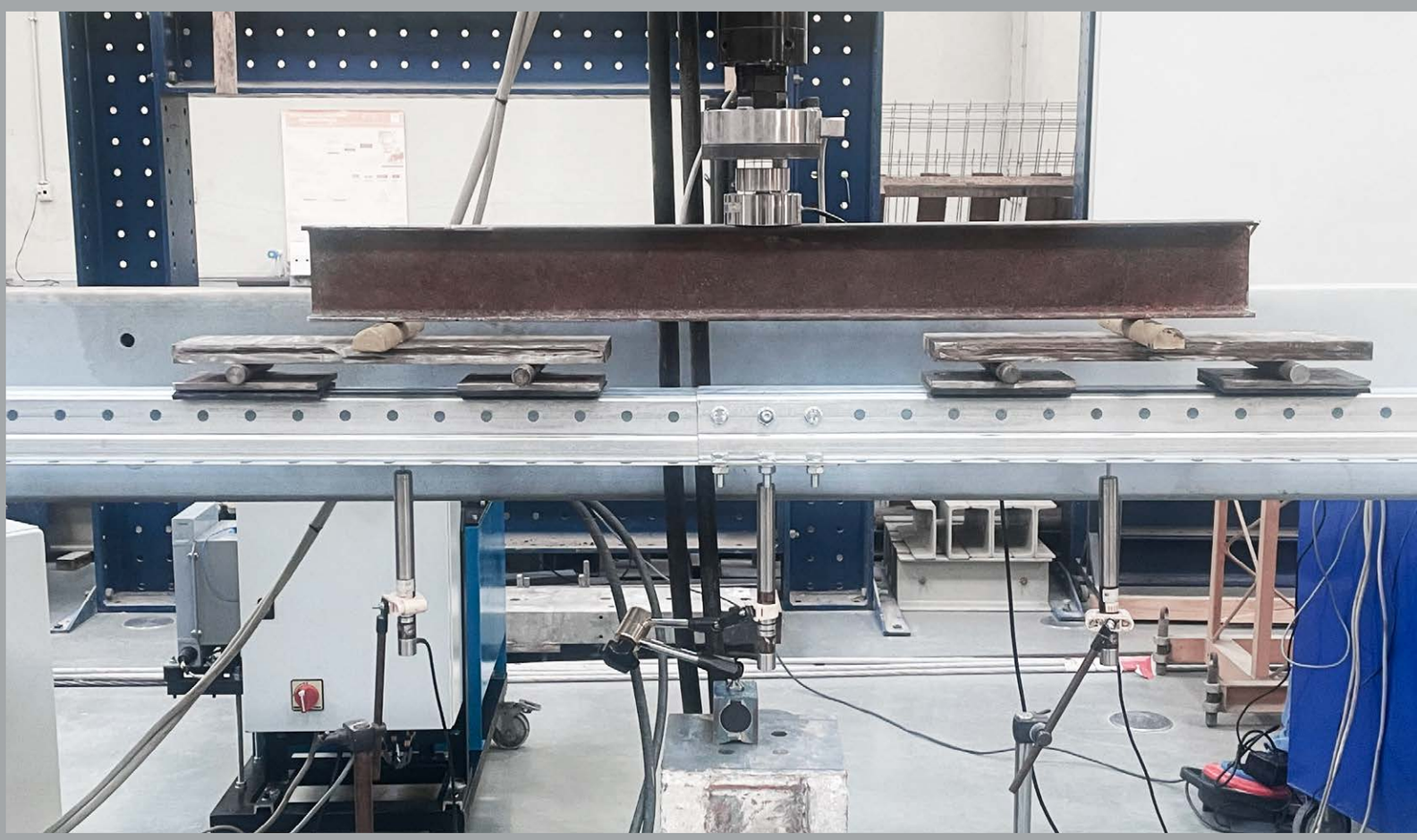
Omegatek® profiles underwent an exhaustive program aimed at fully characterizing their performance.

The process was developed through a partnership between 361 Metal and the Faculty of Engineering of the University of Porto and was based on the methodology summarized below:

→ Definition of geometric properties using the analytical method recommended by Eurocode;
→ Experimental campaign to calibrate numerical models and define global buckling curves;
→ Numerical analysis aimed at standardizing and validating connection, overlap, and joint details.



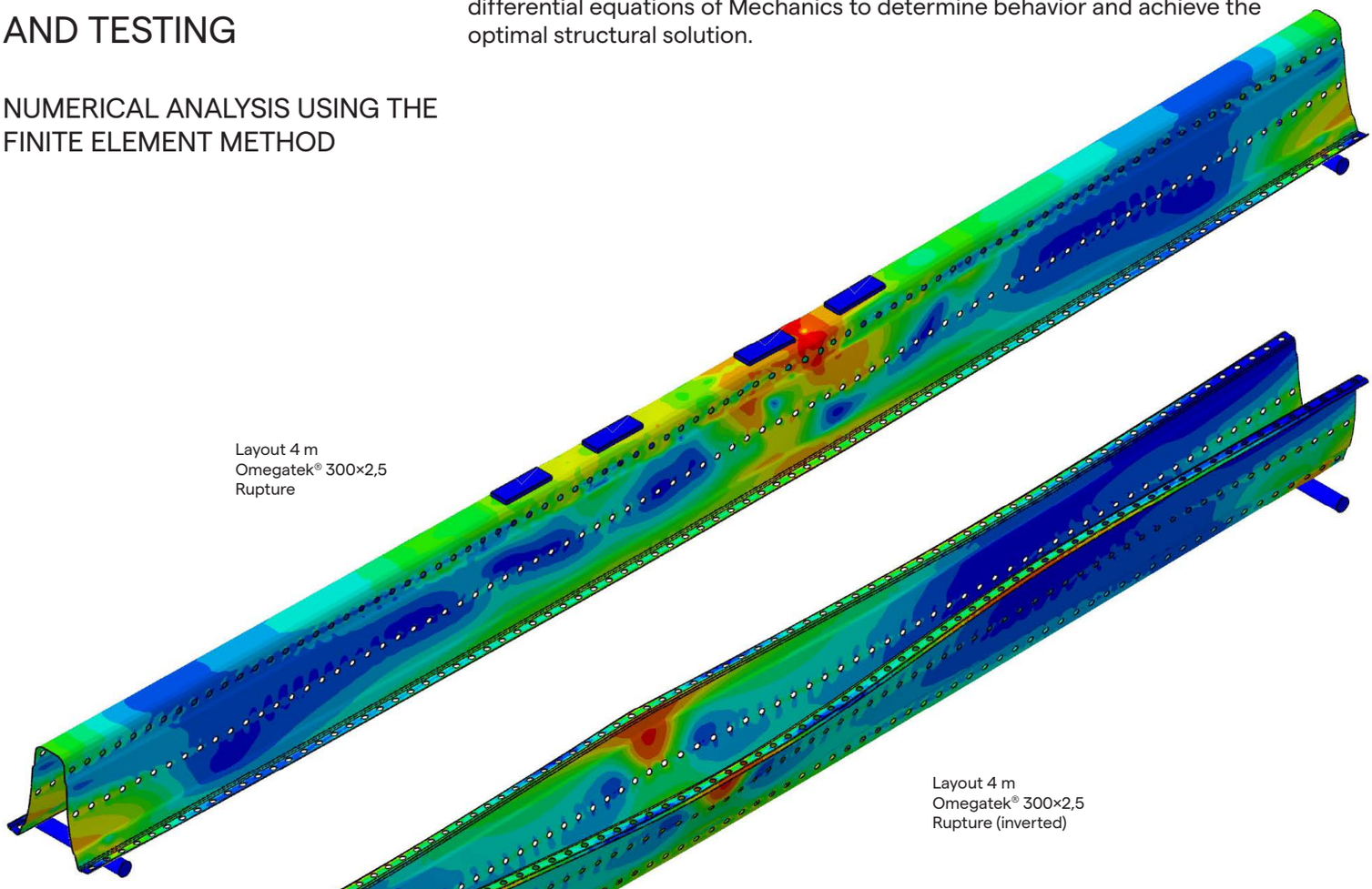
Conducting test
FEUP, Porto



CHARACTERIZATION AND TESTING

The use of FEM applies computational power to solve the complex differential equations of Mechanics to determine behavior and achieve the optimal structural solution.

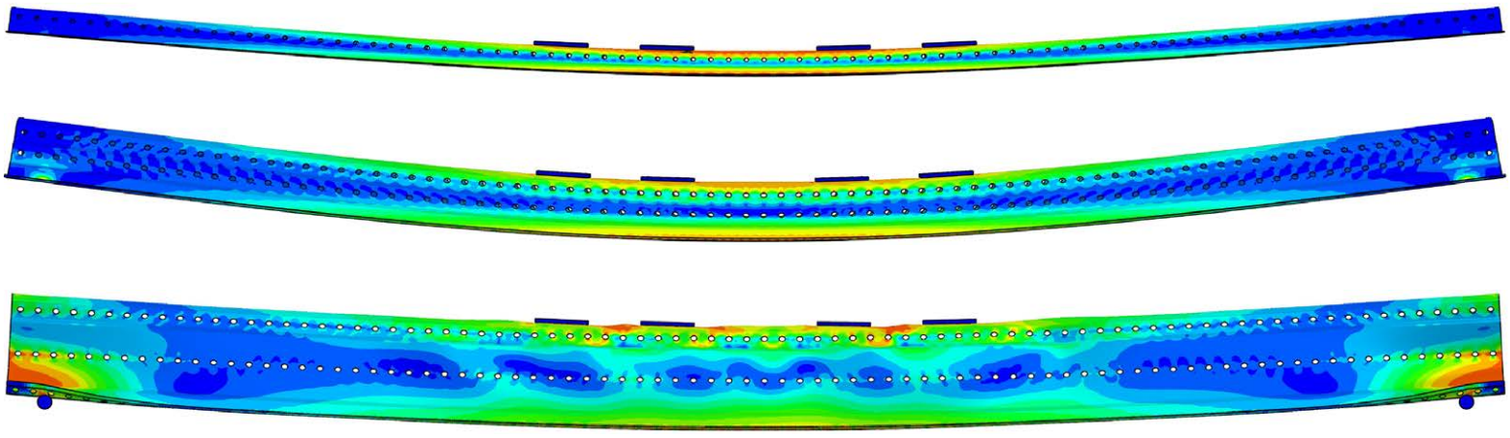
NUMERICAL ANALYSIS USING THE FINITE ELEMENT METHOD



Layout 4 m
Omegatek® 300×2,5
Rupture

Layout 4 m
Omegatek® 300×2,5
Rupture (inverted)

Layout 4 m
Omegatek® 70×1,5 / 170×2,0 / 300×2,5
Deformation

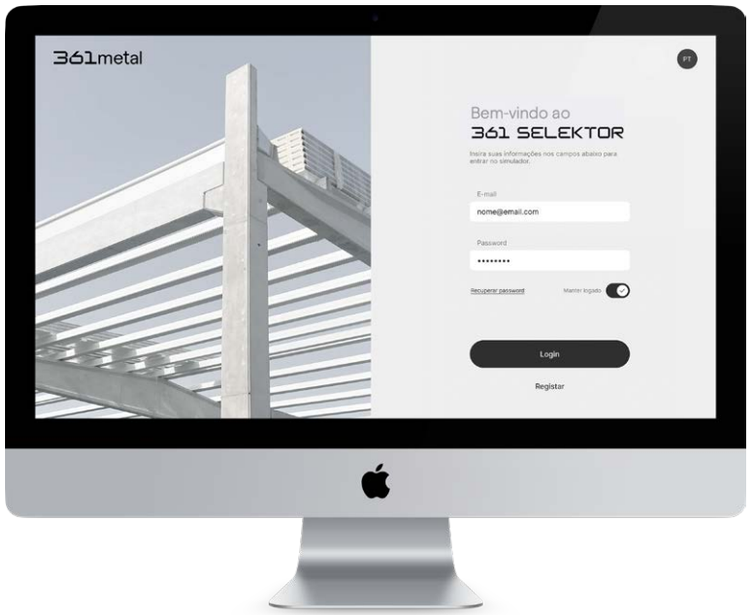


Layout 4 m
Omegatek® 170×2,0
Simple amendment
Deformation

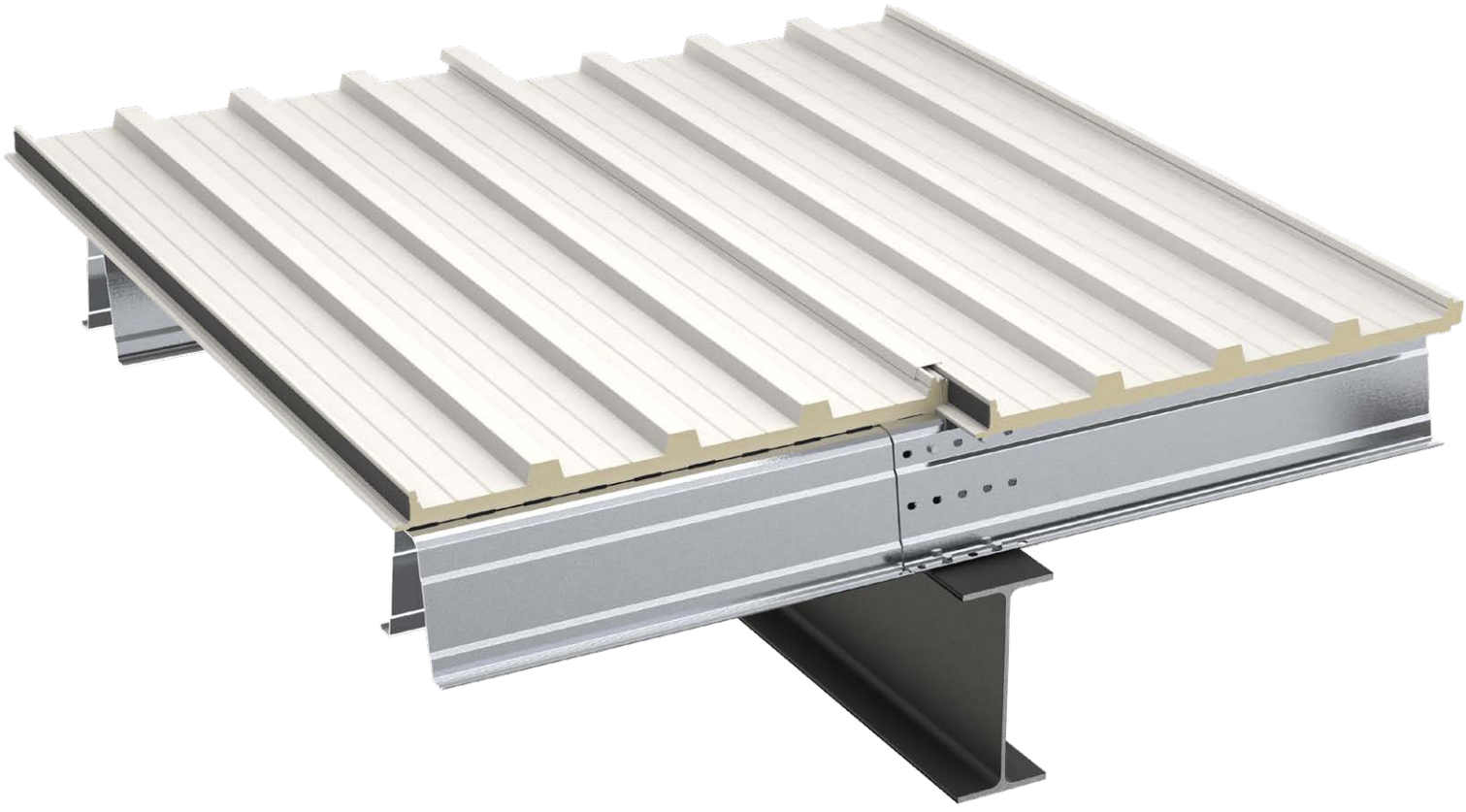
361 SELEKTOR PLATFORM

STRUCTURAL CALCULATION TOOL FOR DESIGNERS

→ Regulatory framework with structural Eurocodes;
→ Capabilities: selection of optimized section, quick design, and issuance of calculation notes;
→ Application available at 361metal.com and 361selektor.com

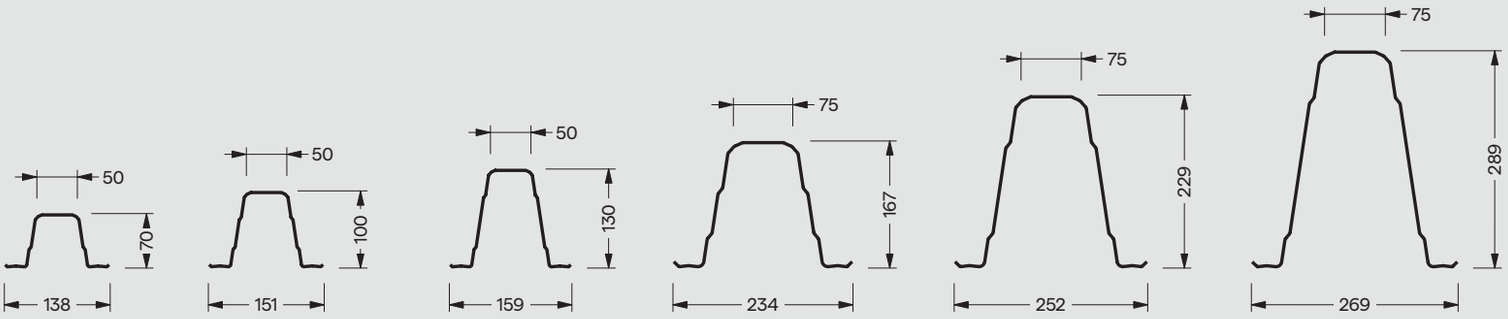


Assembly of Omegatek®
with sandwich roof panel



THE PROFILES

Omegatek® profiles are available on the market in 6 versions, defined by their nominal height ranging from 70 → 100 → 130 → 170 → 230 → 300, each with variants depending on their thickness.
The thickness of the sections varies between 1.0 and 3.0 mm.



SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS
				Nominal
		h	b	t_{nom}
	Kg/m	mm	mm	mm
Omegatek® 70×1,0	1,91	70	138	1,0
Omegatek® 70×1,5	2,90	70	138	1,5
Omegatek® 70×2,0	3,89	70	138	2,0
Omegatek® 100×1,0	2,38	100	151	1,0
Omegatek® 100×1,5	3,62	100	151	1,5
Omegatek® 100×2,0	4,85	100	151	2,0
Omegatek® 130×1,0	2,83	130	159	1,0
Omegatek® 130×1,5	4,31	130	159	1,5
Omegatek® 130×2,0	5,79	130	159	2,0
Omegatek® 170×1,5	5,77	170	234	1,5
Omegatek® 170×2,0	7,75	170	234	2,0
Omegatek® 170×2,5	9,72	170	234	2,5
Omegatek® 230×1,5	7,20	230	252	1,5
Omegatek® 230×2,0	9,67	230	252	2,0
Omegatek® 230×2,5	12,13	230	252	2,5
Omegatek® 230×3,0	14,60	230	252	3,0
Omegatek® 300×2,0	11,53	300	269	2,0
Omegatek® 300×2,5	14,47	300	269	2,5
Omegatek® 300×3,0	17,42	300	269	3,0

MATERIAL

The base material used in the manufacture of Omegatek® profiles is pre-galvanized structural steel of classs S280GD+Z200 and S350GD+Z275 according to standard EN 10346.

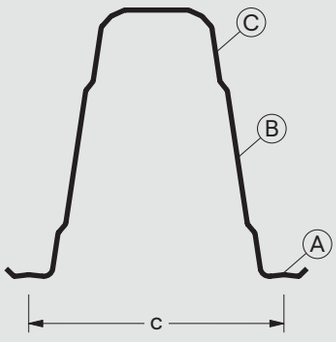
STEEL CLASS	YIELD STRESS	TENSILE STRESS
	Mpa	Mpa
S280GD+Z200	280	360
S350GD+Z275	350	420

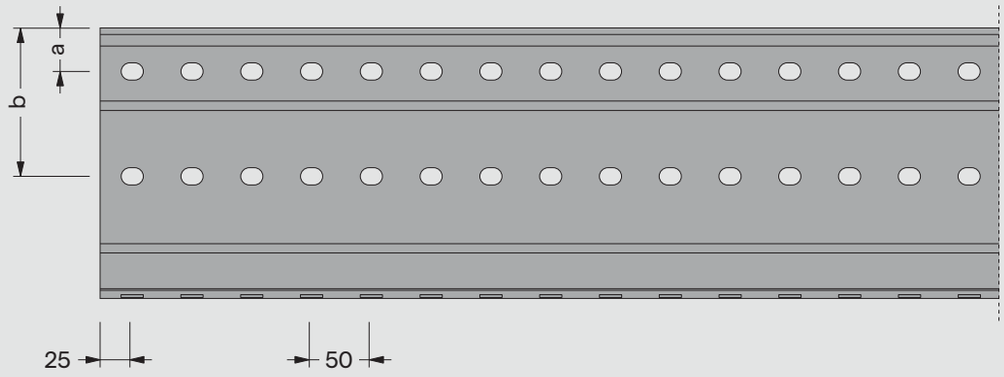
Under conditions to be defined upon request, the profiles can also be supplied with Zinc-Magnesium (Magnelis®) protection or with the desired color, by lacquering with a RAL to be defined.

TYPES OF DRILLING

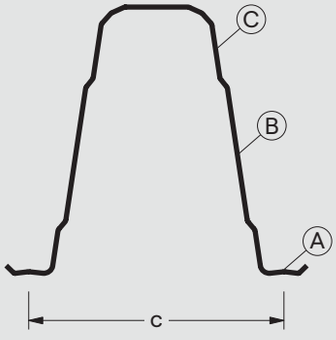
Omegatek® profiles can be supplied with 2 types of drilling:

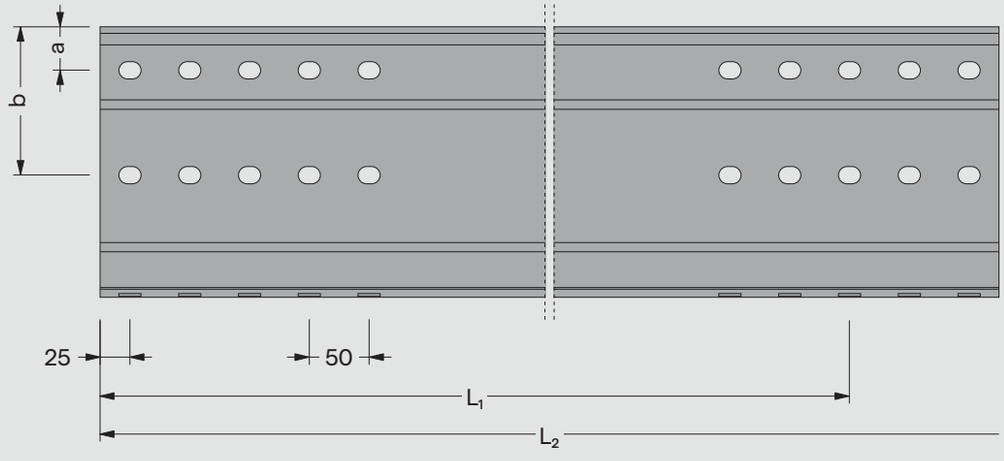
CONTINUOUS DRILLING
Along the entire length of the profile, with a hole spacing of 50 mm and 25 mm at the end.





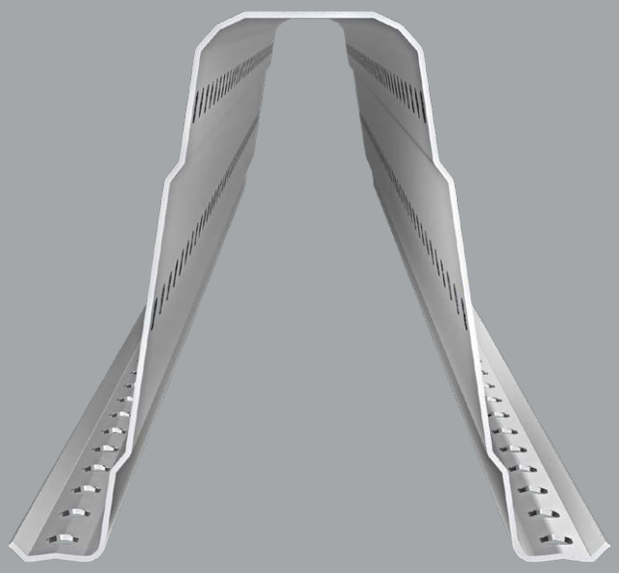
NON-CONTINUOUS DRILLING
According to project specifications, with the definition of positions L_1, L_2 up to L_n, measured from the origin. Hole spacing of 50 mm and 25 mm at the end.





SECTION	RECOMMENDED HOLE AND SCREW DIMENSIONS	DRILLING POSITION		
		a	b	c
		mm	mm	mm
Omegatek® 70×1,0	Ø 14×12 - M10	22	–	108
Omegatek® 70×1,5	Ø 14×12 - M10	22	–	108
Omegatek® 70×2,0	Ø 14×12 - M10	22	–	108
Omegatek® 100×1,0	Ø 14×12 - M10	22	55	121
Omegatek® 100×1,5	Ø 14×12 - M10	22	55	121
Omegatek® 100×2,0	Ø 14×12 - M10	22	55	121
Omegatek® 130×1,0	Ø 14×12 - M10	22	55	130
Omegatek® 130×1,5	Ø 14×12 - M10	22	55	130
Omegatek® 130×2,0	Ø 14×12 - M10	22	55	130
Omegatek® 170×1,5	Ø 18×14 - M12	38	96	196
Omegatek® 170×2,0	Ø 18×14 - M12	38	96	196
Omegatek® 170×2,5	Ø 18×14 - M12	38	96	196
Omegatek® 230×1,5	Ø 18×14 - M12	38	127	214
Omegatek® 230×2,0	Ø 18×14 - M12	38	127	214
Omegatek® 230×2,5	Ø 18×14 - M12	38	127	214
Omegatek® 230×3,0	Ø 18×14 - M12	38	127	214
Omegatek® 300×2,0	Ø 18×14 - M12	38	157	231
Omegatek® 300×2,5	Ø 18×14 - M12	38	157	231
Omegatek® 300×3,0	Ø 18×14 - M12	38	157	231

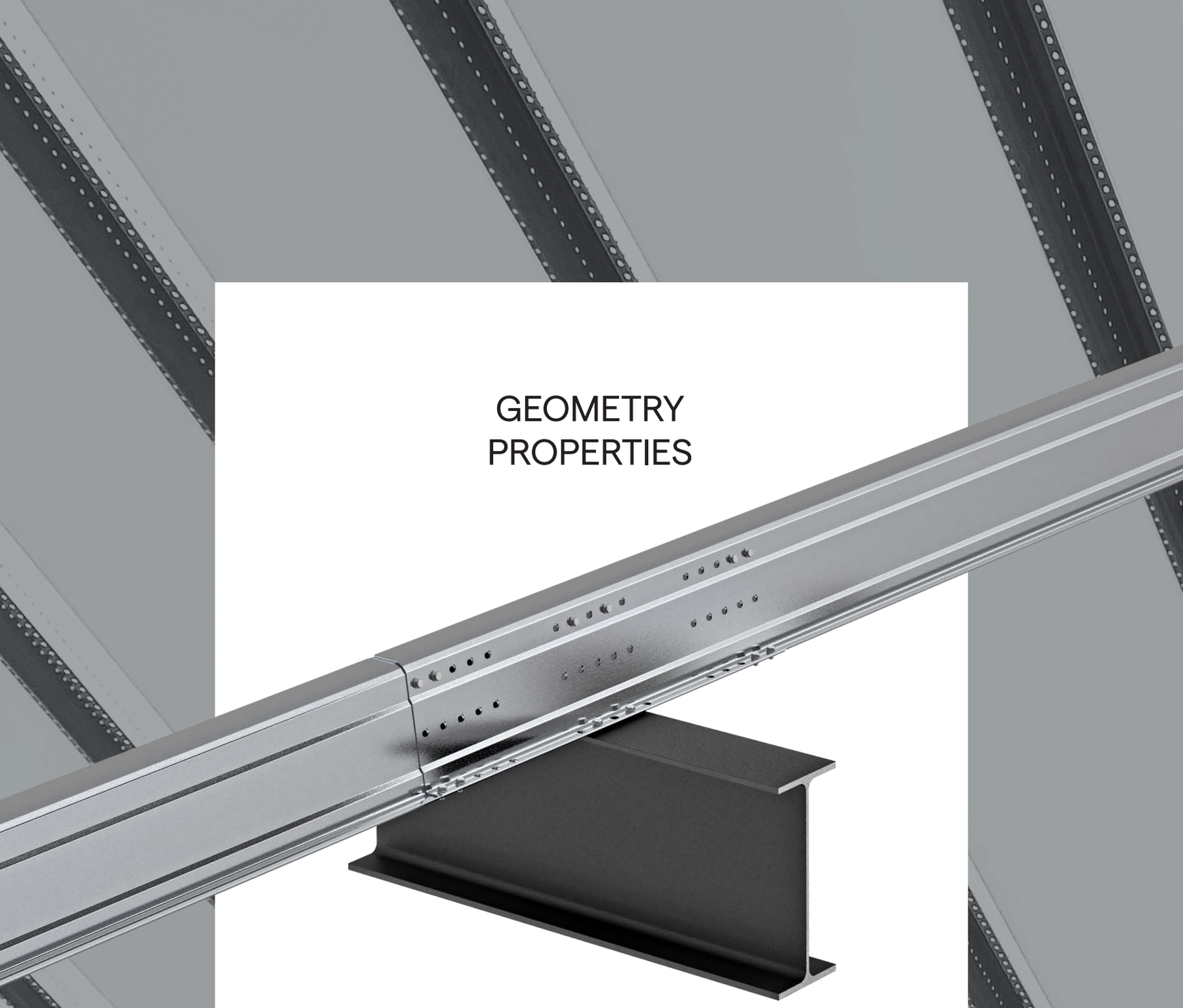
Omegatek® 230
Simple amendment with support



OMEGATEK®
RANGE

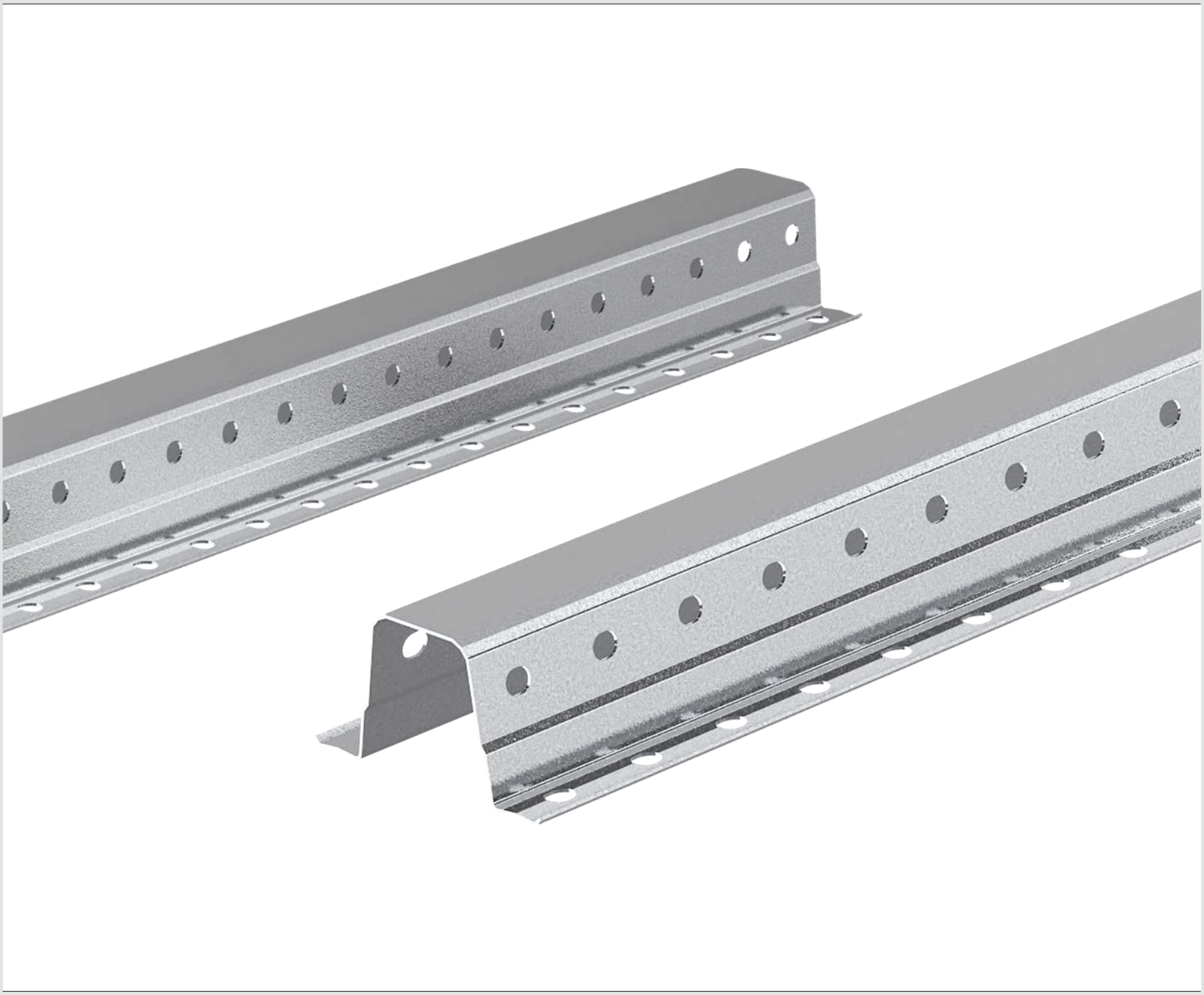
70 → 100 → 130 → 170 → 230 → 300

GEOMETRY
PROPERTIES

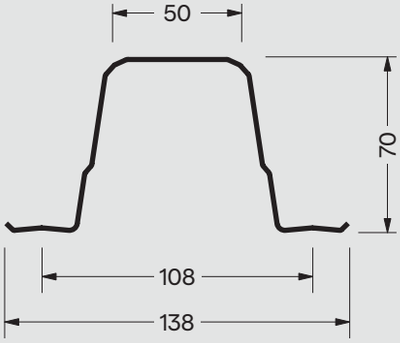


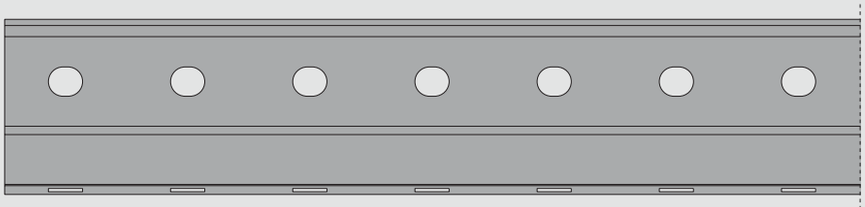
CONNECTIONS
CONSTRUCTION DETAILS

OMEGATEK® 70



SECTION GEOMETRY





GROSS SECTION PROPERTIES

SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS		GROSS SECTION PROPERTIES									
				Nomi.	Effect.										
		h	b	t_{nom}	t_{eff}	A_{bruta}	$I_{y,bruta}$	$I_{z,bruta}$	$W_{y,bruta}$	$W_{z,bruta}$	I_w	I_t	$Y_{cg} = Y_{cc}$	Z_{cg}	Z_{cc}
	Kg/m	mm	mm	mm	mm	mm^2	mm^4	mm^4	mm^3	mm^3	$\times 10^6\ mm^6$	mm^4	mm	mm	mm
Omegatek® 70×1,0	1,91	70	138	1,0	0,96	243	180380	346530	4863	5015	80,3	75	68	34	86
Omegatek® 70×1,5	2,90	70	138	1,5	1,46	370	274400	527030	7349	7608	122,2	263	68	34	86
Omegatek® 70×2,0	3,89	70	138	2,0	1,96	496	368530	707560	9804	10188	164,0	635	68	34	86

Note: the weights indicated in the tables are theoretical weights estimated based on the nominal dimensions of the cross-section, with variations occurring within the tolerances provided in standard EN 10051.

EFFECTIVE SECTION PROPERTIES

S280 GD

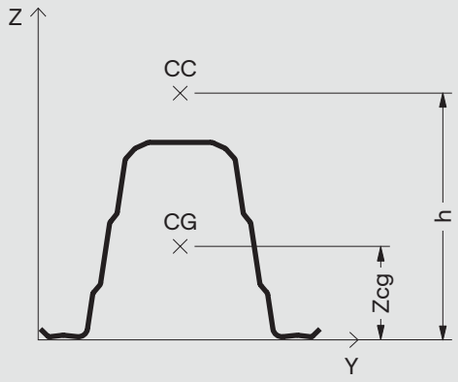
SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 70×1,0	224	69	30	243	180340	4863	69	30	234	176500	4755	69	31	235	334600	4777	70	30
Omegatek® 70×1,5	361	69	30	370	274290	7346	69	30	368	273950	7348	69	30	366	522100	7551	69	30
Omegatek® 70×2,0	496	69	30	461	368260	9797	69	30	461	368280	9797	69	30	496	707570	10188	69	30

S350 GD

SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 70×1,0	214	69	31	243	180340	4863	69	30	230	174230	4836	69	31	230	326950	4617	71	30
Omegatek® 70×1,5	353	69	30	370	274290	7346	69	30	363	271510	7336	69	30	362	518000	7458	69	30
Omegatek® 70×2,0	489	69	30	496	368260	9797	69	30	496	368260	9797	69	30	493	703660	10109	69	30

Subtitles

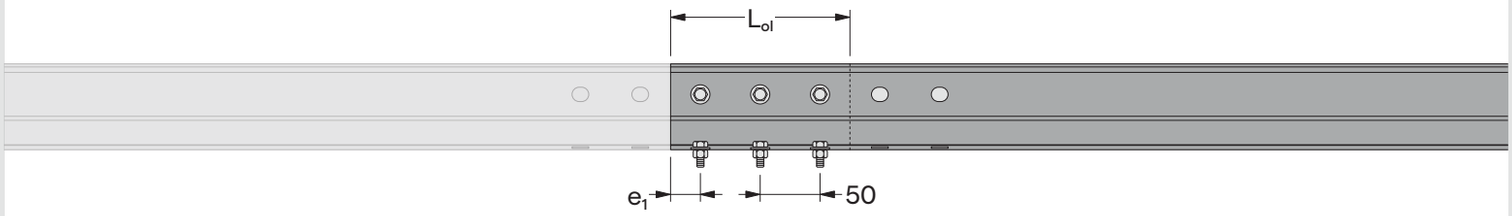
A_{gross}	Gross section area
$I_{y,gross}$	Gross section inertia yy-axis
$I_{z,gross}$	Gross section inertia zz-axis
I_w	Warping constant
I_t	Torsion inertia
CG	Coordinates of the center of gravity
CC	Coordinates of the shear center
A_{eff}	Effective section area
$I_{y,eff}$	Effective section inertia yy-axis
$W_{y,eff}$	Bending modulus of the effective section yy-axis
$I_{z,eff}$	Effective section inertia zz-axis
$W_{z,eff}$	Bending modulus of the effective section zz-axis



OMEGATEK® 70

CONNECTIONS AND CONSTRUCTION DETAILS

01. Simple splice between supports



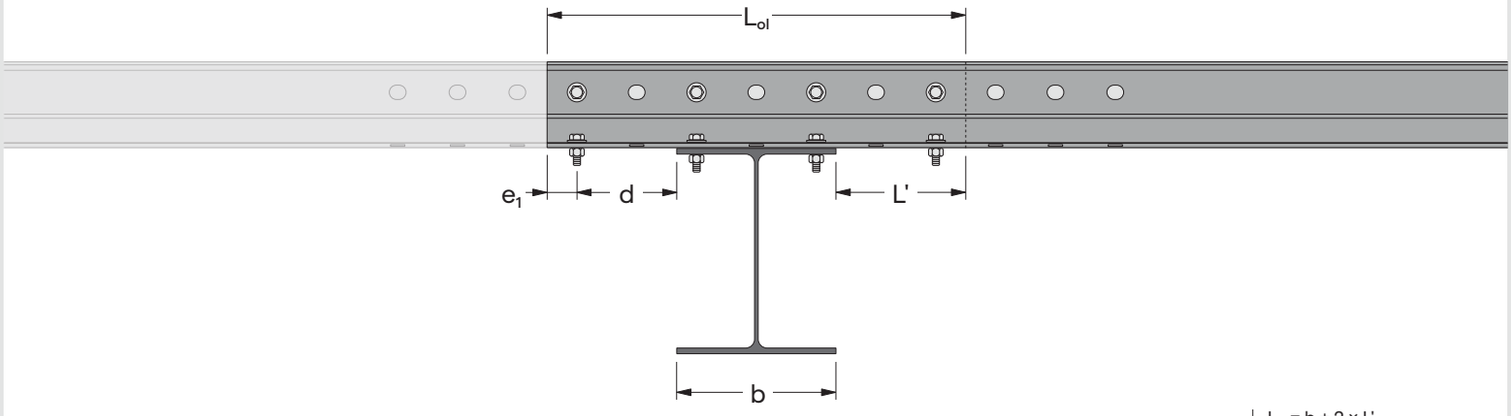
SECTION	e_1	L_{ol}	NR. OF SCREWS	Ø SCREWS*
	mm	mm	Units	mm
Omegatek® 70×1,0	25	150	3	10
Omegatek® 70×1,5	25	150	3	10
Omegatek® 70×2,0	25	150	3	10

*Class 8.8 screws

Subtitles

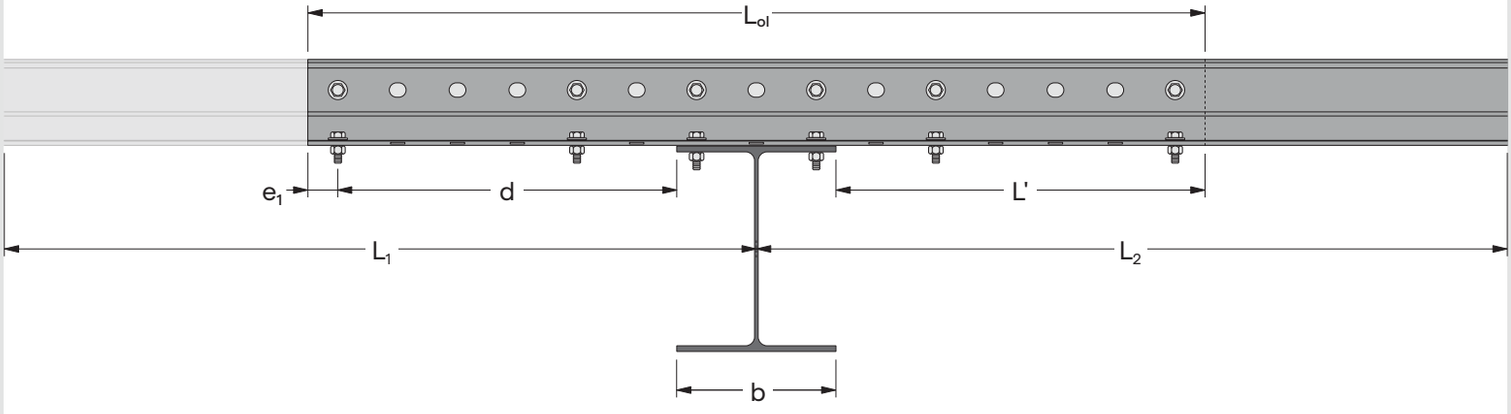
L_{ol} Overlap length
e_1 Distance between the screw center and the end of the profile
Ø Screws diameter

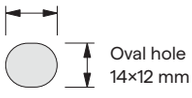
02. Simple splice on intermediate support



$L_{ol} = b + 2 \times L'$
$L' = e_1 + d$
$e_1 = 25$ mm
20 mm < d < 82,5 mm
b ≥ 135 mm
M10 screws 8.8 class

03. Splice with reinforcement on intermediate support





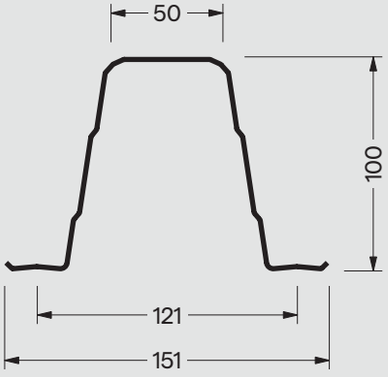
$L_{ol} > 0{,}1 \times L_1 + 0{,}1 \times L_2$
$L' = 0{,}1 \times L_1$ (ou $0{,}1 \times L_2$) + b/2
$e_1 = 25$ mm
$d = L' - e_1$
b ≥ 135 mm
M10 screws 8.8 class

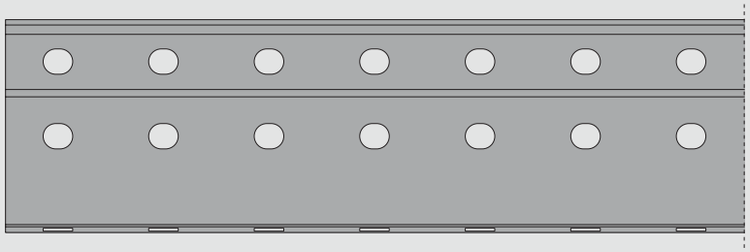
Subtitles

L_{ol}	Overlap length
L'	Distance between the end of the support beam flange and the end of the profile
e_1	Distance between the center of the screw and the end of the profile
d	Distance between the end of the support beam flange and the center of the end screw
b	Width of the upper flange of the support beam
Ø	Screws diameter

OMEGATEK® 100

SECTION GEOMETRY





GROSS SECTION PROPERTIES

SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS		GROSS SECTION PROPERTIES									
				Nomi.	Effect.										
		h	b	t_{nom}	t_{eff}	A_{bruta}	$I_{y,bruta}$	$I_{z,bruta}$	$W_{y,bruta}$	$W_{z,bruta}$	I_w	I_t	$Y_{cg} = Y_{cc}$	Z_{cg}	Z_{cc}
	Kg/m	mm	mm	mm	mm	mm^2	mm^4	mm^4	mm^3	mm^3	$\times 10^6\ mm^6$	mm^4	mm	mm	mm
Omegatek® 100×1,0	2,38	100	151	1,0	0,96	303	420220	510380	8030	6746	182,9	93	75	49	124
Omegatek® 100×1,5	3,62	100	151	1,5	1,46	461	639200	776230	12156	10236	278,2	327	75	49	124
Omegatek® 100×2,0	4,85	100	151	2,0	1,96	618	858310	1042100	16245	13710	373,5	792	75	49	124

Note: the weights indicated in the tables are theoretical weights estimated based on the nominal dimensions of the cross-section, with variations occurring within the tolerances provided in standard EN 10051.

EFFECTIVE SECTION PROPERTIES

S280 GD

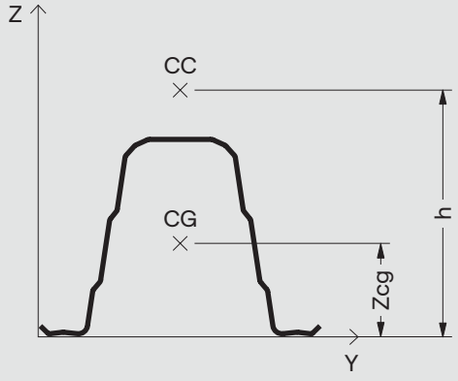
SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 100×1,0	277	75	46	303	420090	8025	75	45	292	407430	7966	75	46	291	487340	6323	77	45
Omegatek® 100×1,5	451	75	45	461	639030	12153	75	45	458	635600	12136	75	45	456	768690	10152	76	45
Omegatek® 100×2,0	618	75	45	618	857920	16239	75	45	618	857920	16239	75	45	618	1042100	13710	75	45

S350 GD

SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 100×1,0	265	75	47	301	419460	7996	75	45	287	401010	7914	75	46	285	475570	6103	78	45
Omegatek® 100×1,5	438	75	45	461	639030	12153	75	44	451	628240	12099	75	45	450	757080	9922	76	45
Omegatek® 100×2,0	612	75	45	618	857920	16239	75	44	618	857920	16239	75	44	615	1037000	13710	76	45

Subtitles

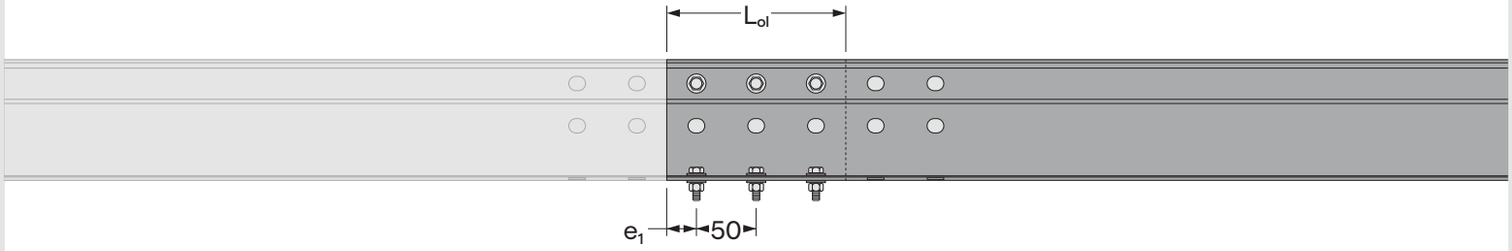
A_{gross} Gross section area
$I_{y,gross}$ Gross section inertia yy-axis
$I_{z,gross}$ Gross section inertia zz-axis
I_w Warping constant
I_t Torsion inertia
CG Coordinates of the center of gravity
CC Coordinates of the shear center
A_{eff} Effective section area
$I_{y,eff}$ Effective section inertia yy-axis
$W_{y,eff}$ Bending modulus of the effective section yy-axis
$I_{z,eff}$ Effective section inertia zz-axis
$W_{z,eff}$ Bending modulus of the effective section zz-axis



OMEGATEK® 100

CONNECTIONS AND CONSTRUCTION DETAILS

01. Simple splice between supports



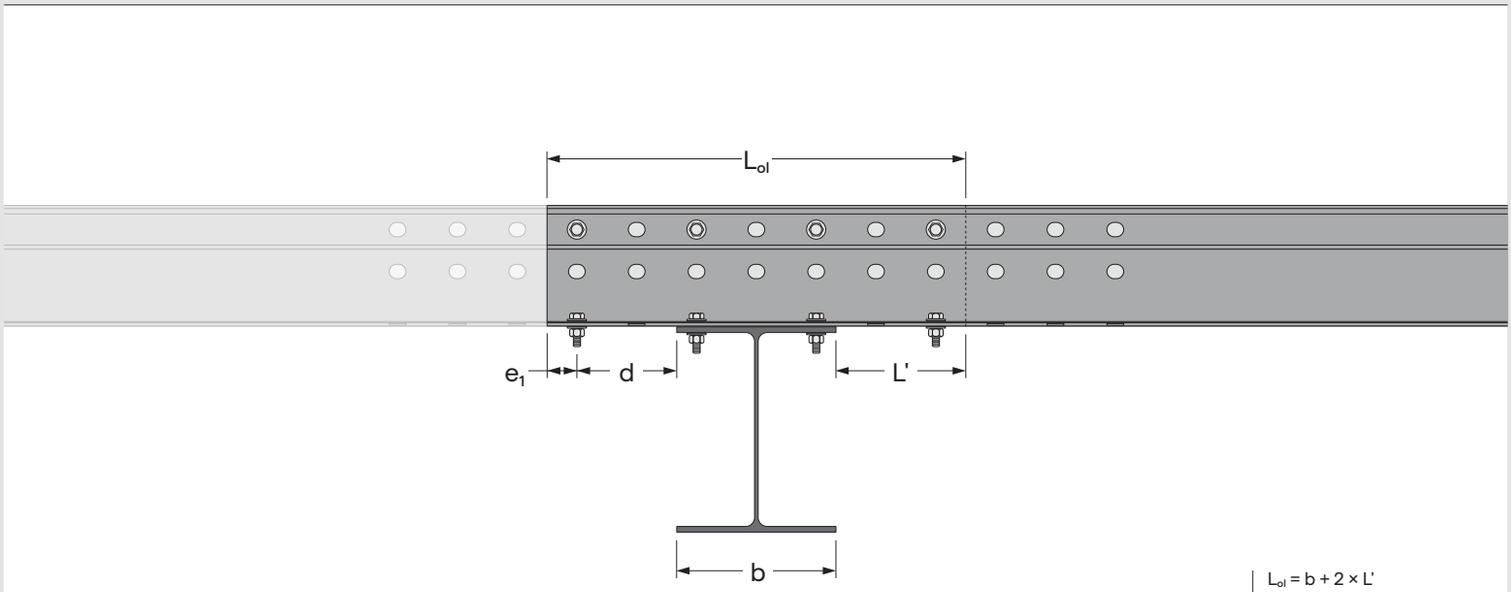
SECTION	e_1	L_{ol}	NR. OF SCREWS	Ø SCREWS*
	mm	mm	Units	mm
Omegatek® 100×1,0	25	150	3	10
Omegatek® 100×1,5	25	150	3	10
Omegatek® 100×2,0	25	150	3	10

*Class 8.8 screws

Subtitles

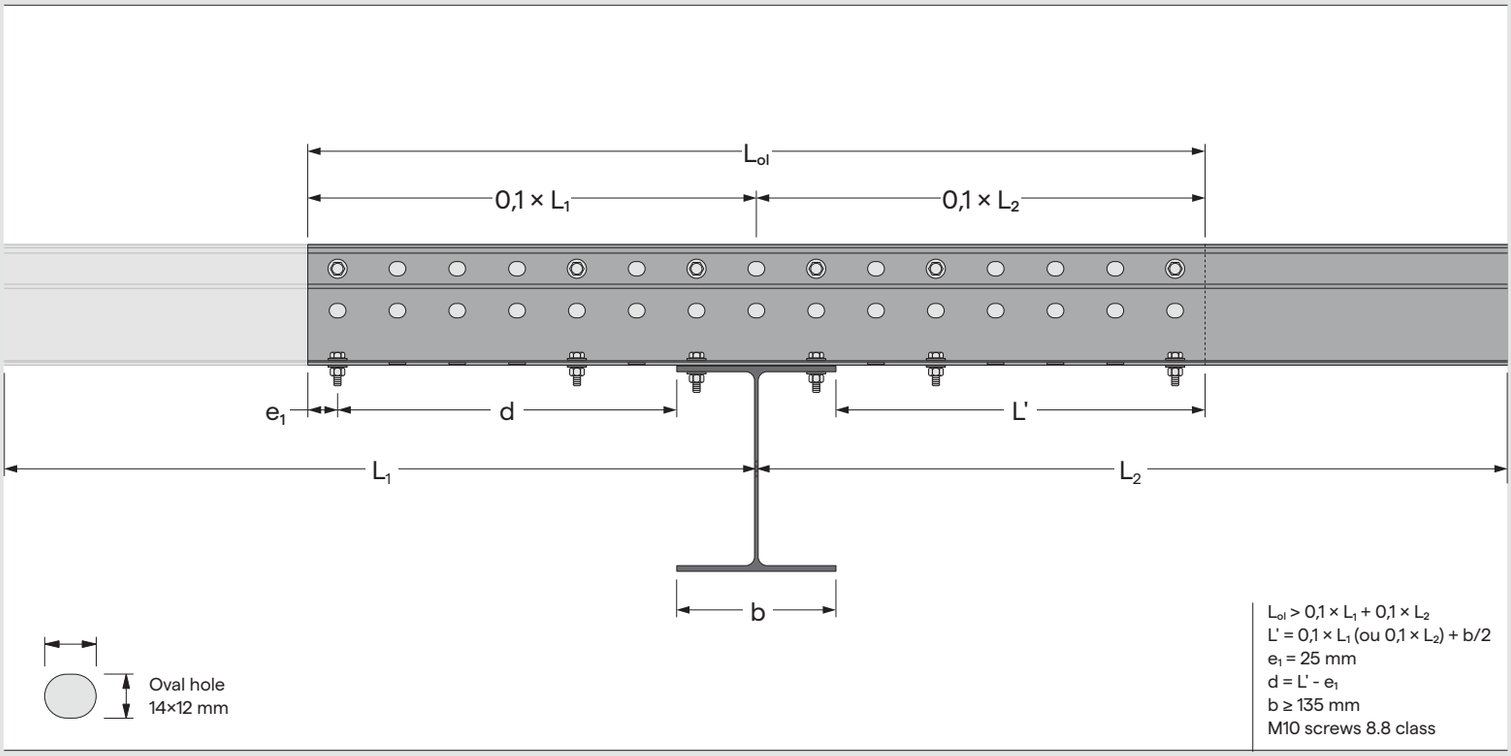
L_{ol} Overlap length
e_1 Distance between the screw center and the end of the profile
Ø Screws diameter

02. Simple splice on intermediate support



$L_{ol} = b + 2 \times L'$
$L' = e_1 + d$
$e_1 = 25$ mm
20 mm < d < 82,5 mm
b ≥ 135 mm
M10 screws 8.8 class

03. Splice with reinforcement on intermediate support



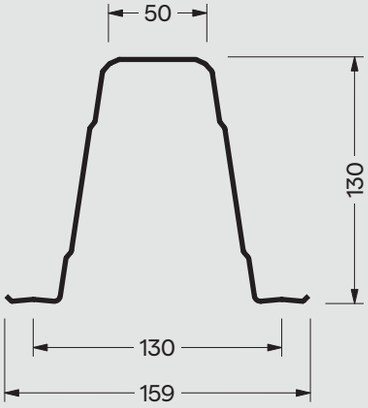
$L_{ol} > 0{,}1 \times L_1 + 0{,}1 \times L_2$
$L' = 0{,}1 \times L_1$ (ou $0{,}1 \times L_2$) + b/2
$e_1 = 25$ mm
$d = L' - e_1$
b ≥ 135 mm
M10 screws 8.8 class

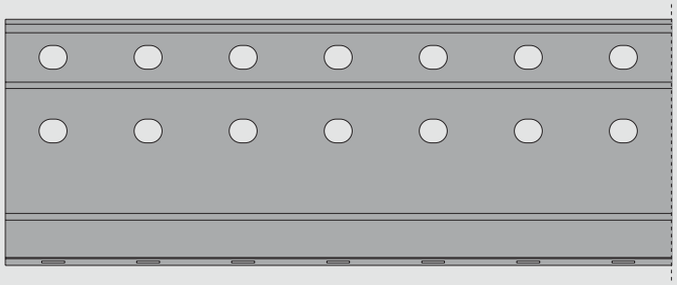
Subtitles

L_{ol}	Overlap length
L'	Distance between the end of the support beam flange and the end of the profile
e_1	Distance between the center of the screw and the end of the profile
d	Distance between the end of the support beam flange and the center of the end screw
b	Width of the upper flange of the support beam
Ø	Screws diameter

OMEGATEK® 130

SECTION GEOMETRY





GROSS SECTION PROPERTIES

SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS		GROSS SECTION PROPERTIES									
				Nomi.	Effect.										
		h	b	t_{nom}	t_{eff}	A_{bruta}	$I_{y,bruta}$	$I_{z,bruta}$	$W_{y,bruta}$	$W_{z,bruta}$	I_w	I_t	$Y_{cg} = Y_{cc}$	Z_{cg}	Z_{cc}
	Kg/m	mm	mm	mm	mm	mm^2	mm^4	mm^4	mm^3	mm^3	$\times 10^6\ mm^6$	mm^4	mm	mm	mm
Omegatek® 130×1,0	2,83	130	159	1,0	0,96	361	796340	671670	11797	8391	353,0	111	79	64	163
Omegatek® 130×1,5	4,31	130	159	1,5	1,46	549	1211200	1021500	17877	12733	536,9	390	79	64	163
Omegatek® 130×2,0	5,79	130	159	2,0	1,96	737	1626300	1371400	23915	17057	720,7	944	79	64	163

Note: the weights indicated in the tables are theoretical weights estimated based on the nominal dimensions of the cross-section, with variations occurring within the tolerances provided in standard EN 10051.

EFFECTIVE SECTION PROPERTIES

S280 GD

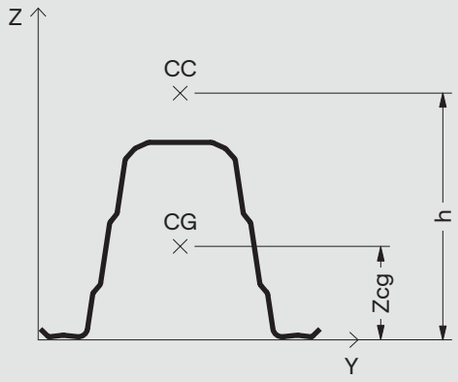
SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 130×1,0	262	80	63	352	788140	11550	80	59	335	746450	11160	80	63	312	571440	6628	86	61
Omegatek® 130×1,5	457	80	61	546	1207800	17776	80	59	530	1179000	17764	80	61	505	941020	11302	83	60
Omegatek® 130×2,0	668	80	60	737	1625800	23908	80	59	718	1594900	23809	80	60	702	1309500	16020	82	60

S350 GD

SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 130×1,0	247	80	64	349	784580	11444	80	58	326	728250	10705	80	64	305	552250	6320	87	61
Omegatek® 130×1,5	430	80	62	541	1203700	17653	80	59	521	1159200	17524	80	62	491	909040	10749	85	60
Omegatek® 130×2,0	638	80	61	736	1624300	23862	80	59	718	1594900	23809	80	60	688	1282300	15517	83	60

Subtitles

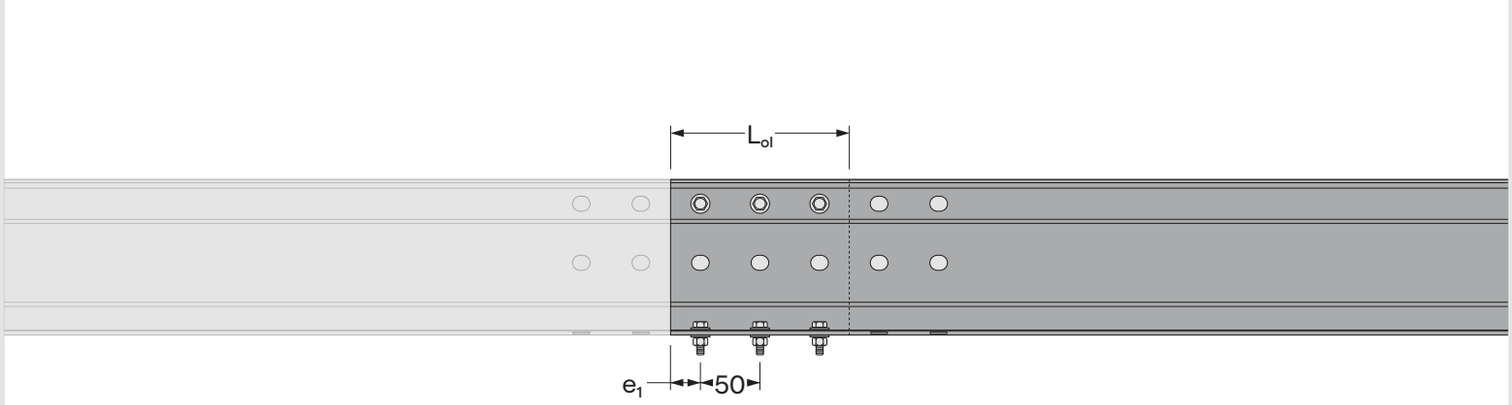
A_{gross}	Gross section area
$I_{y,gross}$	Gross section inertia yy-axis
$I_{z,gross}$	Gross section inertia zz-axis
I_w	Warping constant
I_t	Torsion inertia
CG	Coordinates of the center of gravity
CC	Coordinates of the shear center
A_{eff}	Effective section area
$I_{y,eff}$	Effective section inertia yy-axis
$W_{y,eff}$	Bending modulus of the effective section yy-axis
$I_{z,eff}$	Effective section inertia zz-axis
$W_{z,eff}$	Bending modulus of the effective section zz-axis



OMEGATEK® 130

CONNECTIONS AND CONSTRUCTION DETAILS

01. Simple splice between supports



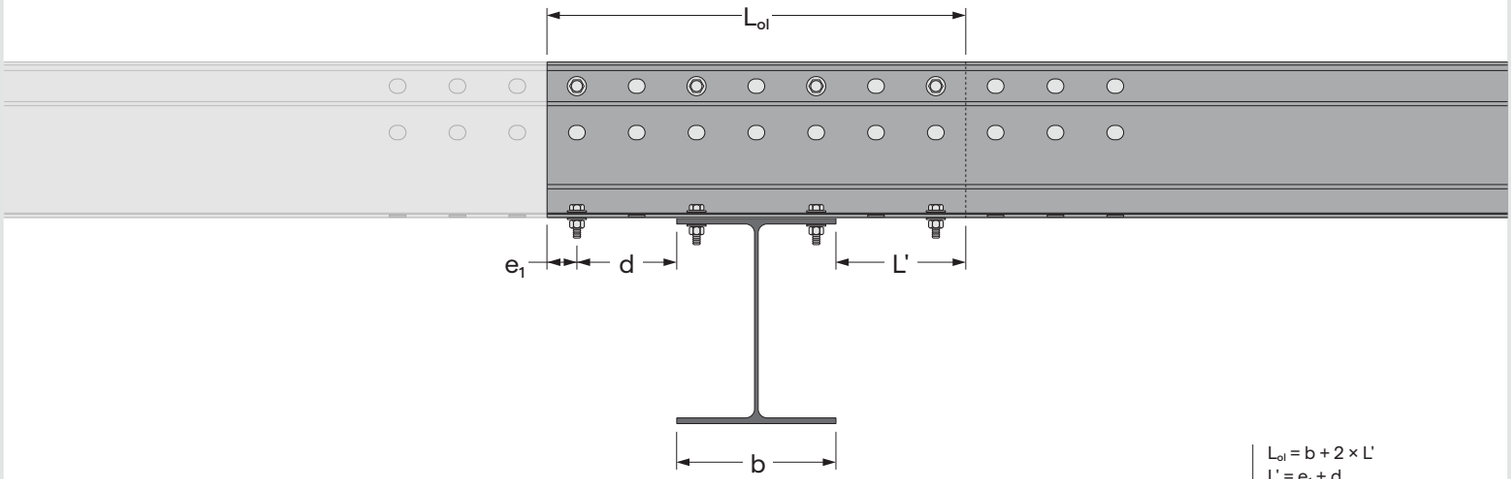
SECTION	e_1	L_{ol}	NR. OF SCREWS	Ø SCREWS*
	mm	mm	Units	mm
Omegatek® 130×1,0	25	150	3	10
Omegatek® 130×1,5	25	150	3	10
Omegatek® 130×2,0	25	150	3	10

*Class 8.8 screws

Subtitles

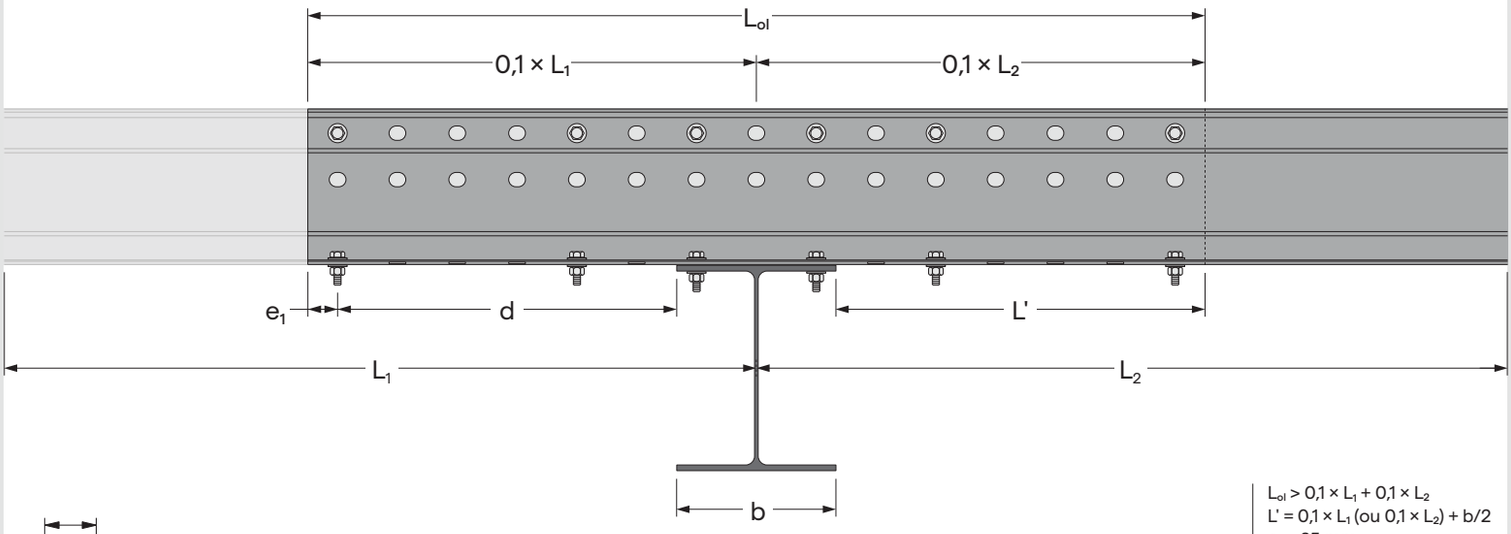
L_{ol} Overlap length
e_1 Distance between the screw center and the end of the profile
Ø Screws diameter

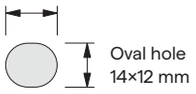
02. Simple splice on intermediate support



$L_{ol} = b + 2 \times L'$
$L' = e_1 + d$
$e_1 = 25$ mm
20 mm < d < 82,5 mm
b ≥ 135 mm
M10 screws 8.8 class

03. Splice with reinforcement on intermediate support



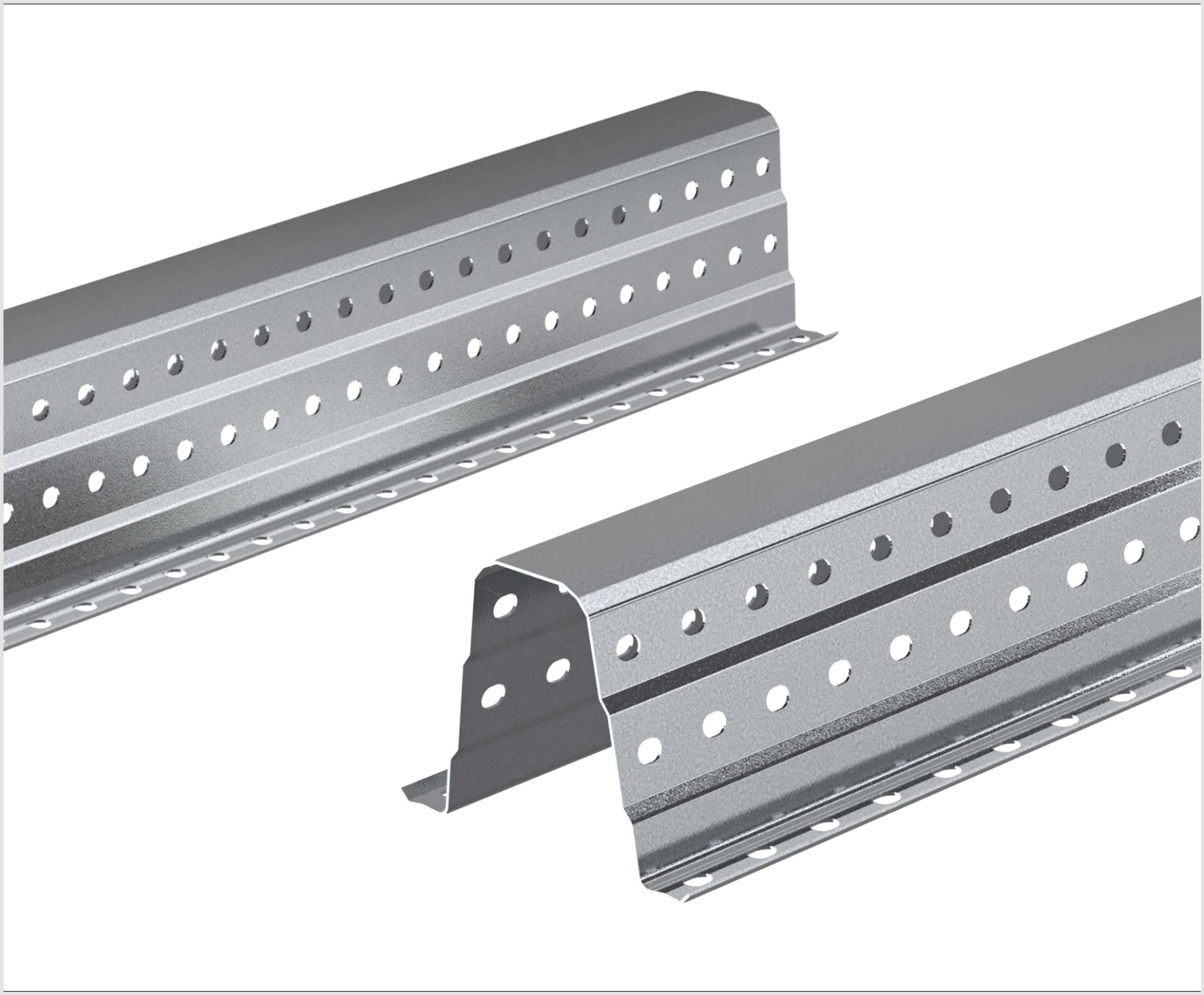


$L_{ol} > 0{,}1 \times L_1 + 0{,}1 \times L_2$
$L' = 0{,}1 \times L_1$ (ou $0{,}1 \times L_2$) + b/2
$e_1 = 25$ mm
$d = L' - e_1$
b ≥ 135 mm
M10 screws 8.8 class

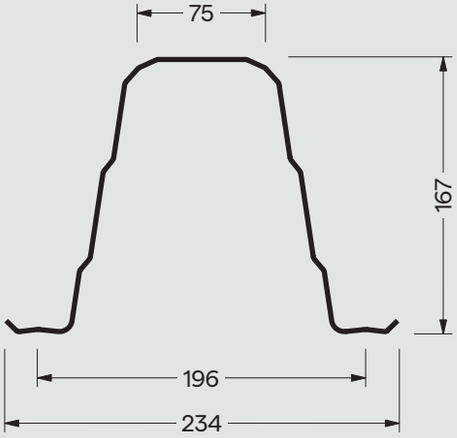
Subtitles

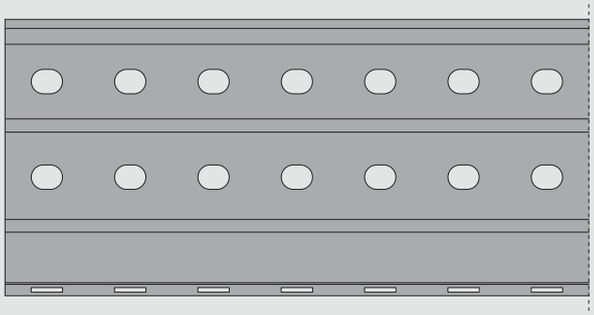
L_{ol}	Overlap length
L'	Distance between the end of the support beam flange and the end of the profile
e_1	Distance between the center of the screw and the end of the profile
d	Distance between the end of the support beam flange and the center of the end screw
b	Width of the upper flange of the support beam
Ø	Screws diameter

OMEGATEK® 170



SECTION GEOMETRY





GROSS SECTION PROPERTIES

SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS		GROSS SECTION PROPERTIES									
				Nomi.	Effect.										
		h	b	t_{nom}	t_{eff}	A_{bruta}	$I_{y,bruta}$	$I_{z,bruta}$	$W_{y,bruta}$	$W_{z,bruta}$	I_w	I_t	$Y_{cg} = Y_{cc}$	Z_{cg}	Z_{cc}
	Kg/m	mm	mm	mm	mm	mm^2	mm^4	mm^4	mm^3	mm^3	$\times 10^6\ mm^6$	mm^4	mm	mm	mm
Omegatek® 170×1,5	5,77	167	234	1,5	1,46	735	2722000	3150600	31507	26822	2241,4	523	117	75	208
Omegatek® 170×2,0	7,75	167	234	2,0	1,96	987	3654500	4229600	42179	35954	3009,0	1265	117	75	208
Omegatek® 170×2,5	9,72	167	234	2,5	2,46	1239	4587300	5308700	52792	45059	3776,6	2501	117	75	208

Note: the weights indicated in the tables are theoretical weights estimated based on the nominal dimensions of the cross-section, with variations occurring within the tolerances provided in standard EN 10051.

EFFECTIVE SECTION PROPERTIES

S280 GD

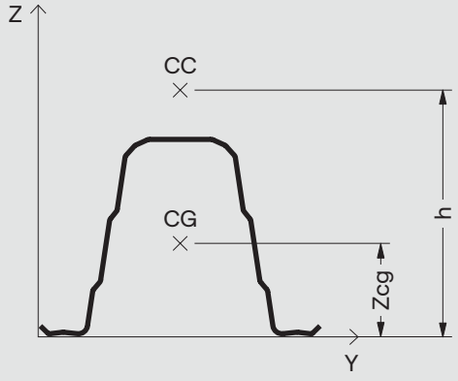
SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 170×1,5	683	117	75	715	2701400	30967	117	74	724	2696900	31508	117	76	710	3049500	25585	119	75
Omegatek® 170×2,0	958	117	75	975	3643500	41885	117	74	986	3654000	42179	117	75	973	4177000	35234	118	75
Omegatek® 170×2,5	1232	117	75	1237	4587400	52786	117	75	1240	4587300	52792	117	75	1236	5298000	45059	117	75

S350 GD

SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 170×1,5	653	117	76	705	2690800	30698	117	74	712	2661000	31398	117	76	697	2991100	24841	120	75
Omegatek® 170×2,0	929	117	75	964	3617000	41583	117	74	976	3633100	42206	117	75	959	4118000	34660	119	75
Omegatek® 170×2,5	1205	117	110	1225	4574500	52458	117	75	1239	4587300	45285	117	75	1223	5248400	44557	118	75

Subtitles

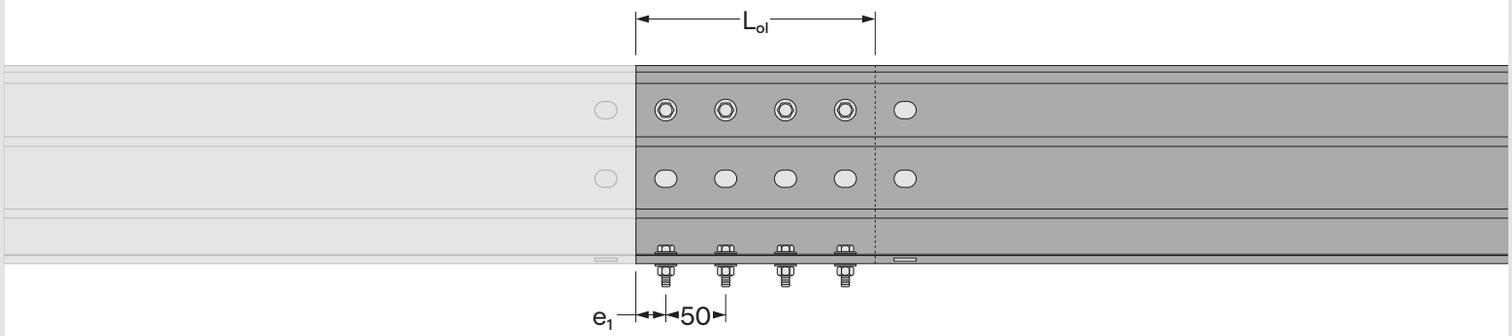
A_{gross} Gross section area
$I_{y,gross}$ Gross section inertia yy-axis
$I_{z,gross}$ Gross section inertia zz-axis
I_w Warping constant
I_t Torsion inertia
CG Coordinates of the center of gravity
CC Coordinates of the shear center
A_{eff} Effective section area
$I_{y,eff}$ Effective section inertia yy-axis
$W_{y,eff}$ Bending modulus of the effective section yy-axis
$I_{z,eff}$ Effective section inertia zz-axis
$W_{z,eff}$ Bending modulus of the effective section zz-axis



OMEGATEK® 170

CONNECTIONS AND CONSTRUCTION DETAILS

01. Simple splice between supports



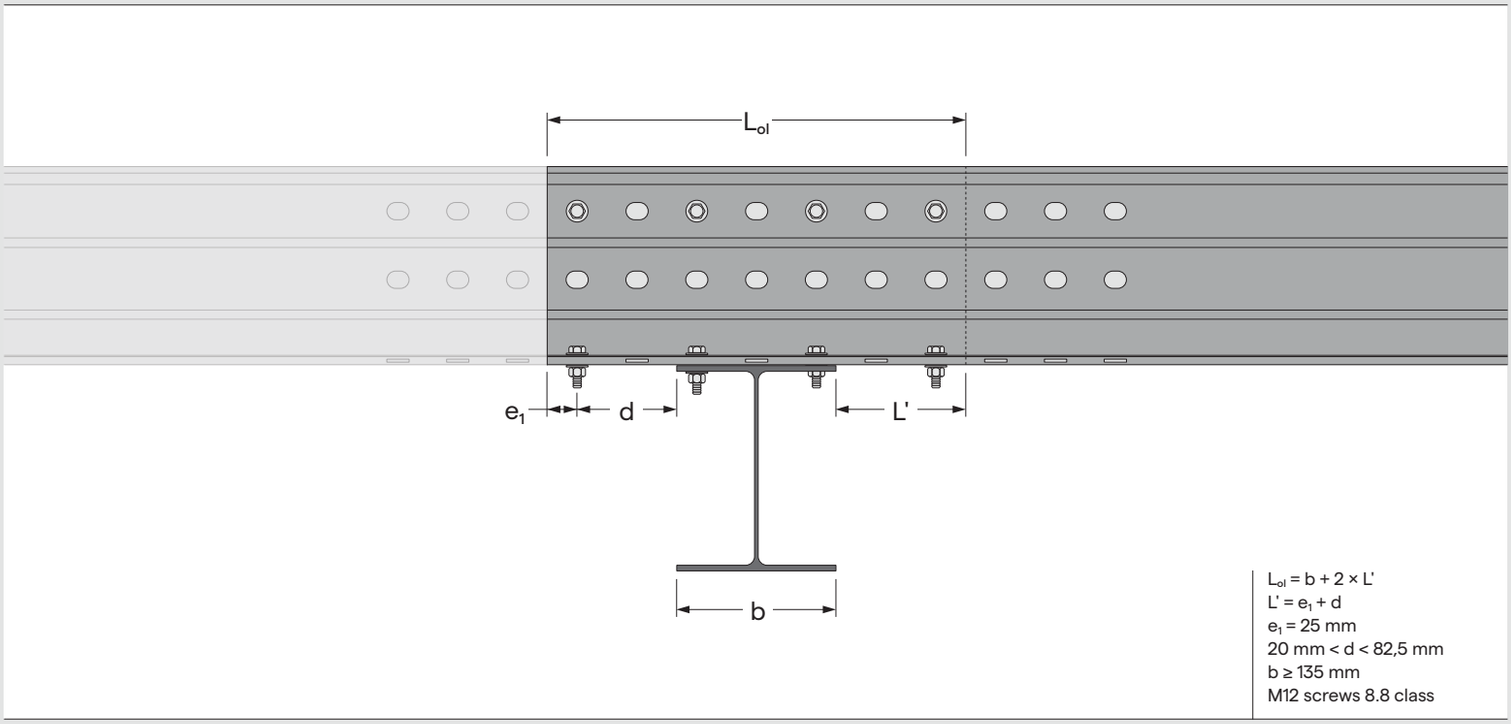
SECTION	e_1	L_{ol}	NR. OF SCREWS	Ø SCREWS*
	mm	mm	Units	mm
Omegatek® 170×1,0	25	200	4	12
Omegatek® 170×1,5	25	200	4	12
Omegatek® 170×2,0	25	200	4	12

*Class 8.8 screws

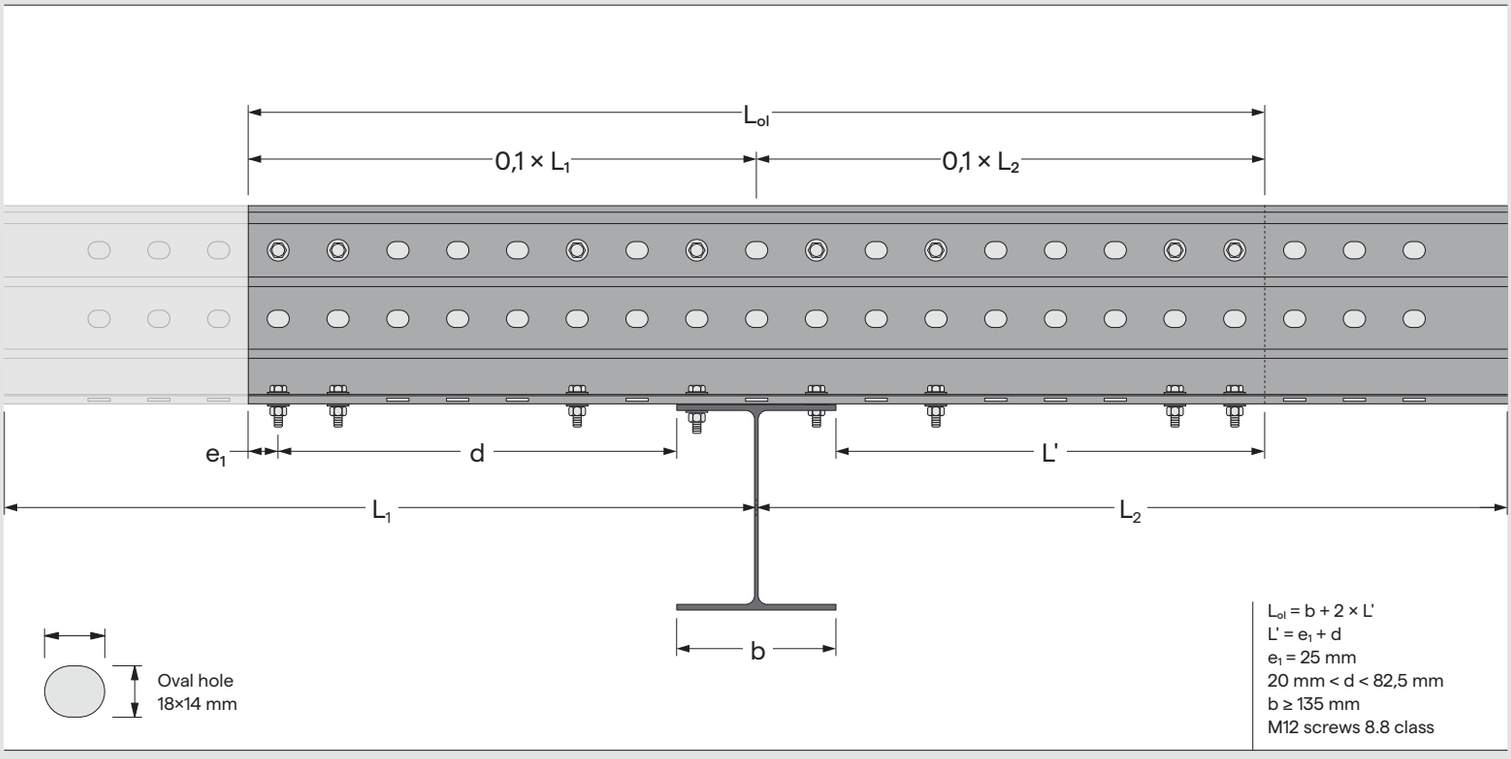
Subtitles

L_{ol} Overlap length
e_1 Distance between the screw center and the end of the profile
Ø Screws diameter

02. Simple splice on intermediate support



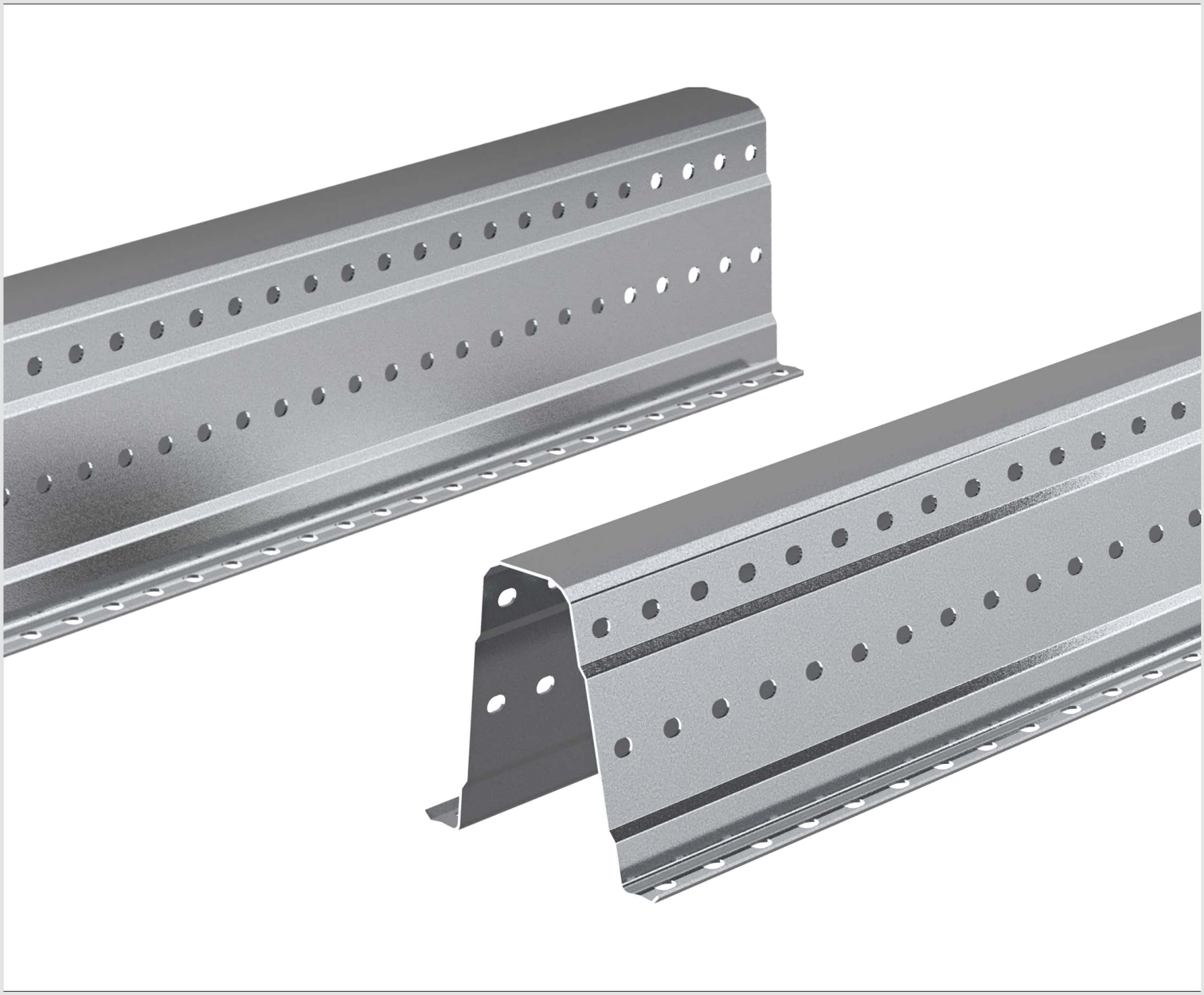
03. Splice with reinforcement on intermediate support



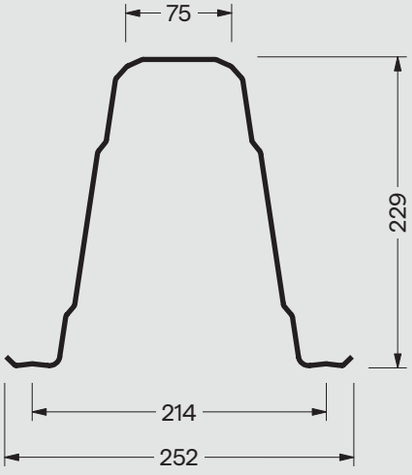
Subtitles

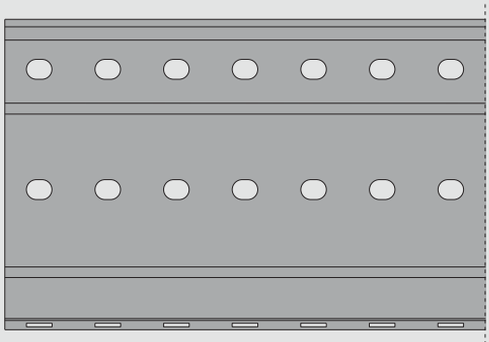
L_{ol}	Overlap length
L'	Distance between the end of the support beam flange and the end of the profile
e_1	Distance between the center of the screw and the end of the profile
d	Distance between the end of the support beam flange and the center of the end screw
b	Width of the upper flange of the support beam
Ø	Screws diameter

OMEGATEK® 230



SECTION GEOMETRY





GROSS SECTION PROPERTIES

SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS		GROSS SECTION PROPERTIES									
				Nomi.	Effect.										
		h	b	t_{nom}	t_{eff}	A_{bruta}	$I_{y,bruta}$	$I_{z,bruta}$	$W_{y,bruta}$	$W_{z,bruta}$	I_w	I_t	$Y_{cg} = Y_{cc}$	Z_{cg}	Z_{cc}
	Kg/m	mm	mm	mm	mm	mm²	mm⁴	mm⁴	mm³	mm³	×10⁶ mm⁶	mm⁴	mm	mm	mm
Omegatek® 230×1,5	7,20	229	252	1,5	1,46	917	5941500	4510900	50702	35709	5091,4	652	126	113	289
Omegatek® 230×2,0	9,67	229	252	2,0	1,96	1231	7976700	6055800	67924	47871	6835,1	1577	126	113	289
Omegatek® 230×2,5	12,13	229	252	2,5	2,46	1545	10012000	7600900	84508	60001	8578,7	3118	126	113	289
Omegatek® 230×3,0	14,60	229	252	3,0	2,96	1860	12048000	9146000	102160	72097	10322,0	5431	126	113	289

Note: the weights indicated in the tables are theoretical weights estimated based on the nominal dimensions of the cross-section, with variations occurring within the tolerances provided in standard EN 10051.

EFFECTIVE SECTION PROPERTIES

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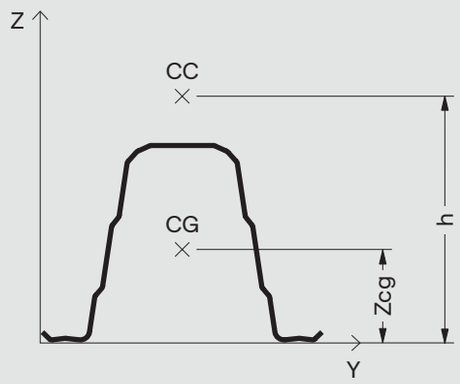
SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm²	mm	mm	mm²	mm⁴	mm³	mm	mm	mm²	mm⁴	mm³	mm	mm	mm²	mm⁴	mm³	mm	mm
Omegatek® 230×1,5	635	126	109	860	5751300	47622	126	102	861	5638600	47579	126	110	778	3774600	27412	138	107
Omegatek® 230×2,0	944	126	107	1181	7811700	65242	126	104	1186	7747000	66299	126	109	1091	5346000	39792	134	106
Omegatek® 230×2,5	1279	126	107	1505	9897500	82920	126	104	1511	9839600	84734	126	107	1418	6981700	52992	132	106
Omegatek® 230×3,0	1635	126	106	1831	11953000	100630	126	105	1838	11941000	101940	126	107	1747	8613800	66229	130	106

S350 GD

SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm²	mm	mm	mm²	mm⁴	mm³	mm	mm	mm²	mm⁴	mm³	mm	mm	mm²	mm⁴	mm³	mm	mm
Omegatek® 230×1,5	593	126	110	843	5692400	46698	126	102	831	5487800	45407	126	113	760	3636600	26026	140	107
Omegatek® 230×2,0	883	126	108	1162	7747700	64223	126	103	1165	7627800	64560	126	110	1059	5156900	37746	137	107
Omegatek® 230×2,5	1202	126	107	1484	9811000	81818	126	104	1490	9732800	83177	126	108	1378	6759900	50496	134	106
Omegatek® 230×3,0	1543	126	107	1809	11881000	99560	126	104	1816	11828000	101640	126	108	1705	8389100	63631	132	106

Subtitles

A_{gross}	Gross section area
$I_{y,gross}$	Gross section inertia yy-axis
$I_{z,gross}$	Gross section inertia zz-axis
I_w	Warping constant
I_t	Torsion inertia
CG	Coordinates of the center of gravity
CC	Coordinates of the shear center
A_{eff}	Effective section area
$I_{y,eff}$	Effective section inertia yy-axis
$W_{y,eff}$	Bending modulus of the effective section yy-axis
$I_{z,eff}$	Effective section inertia zz-axis
$W_{z,eff}$	Bending modulus of the effective section zz-axis



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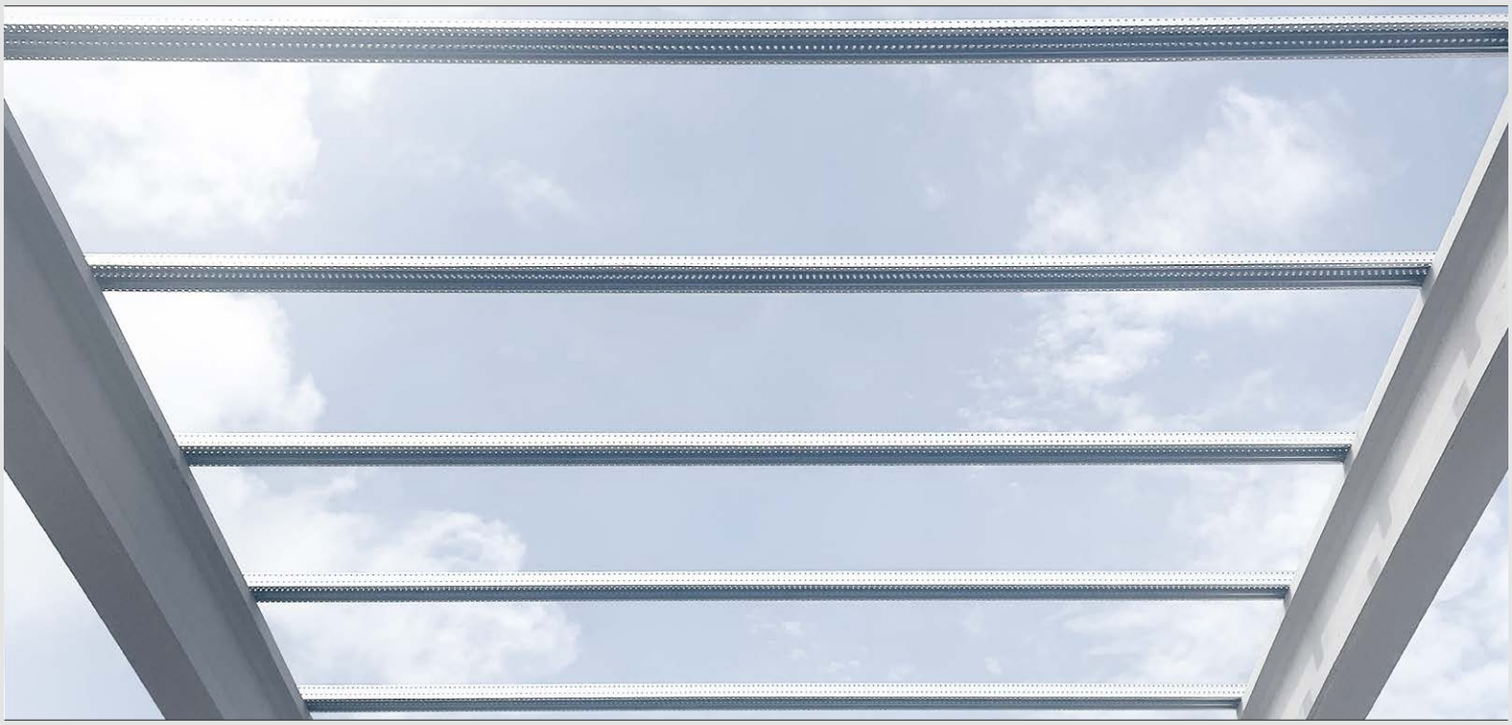
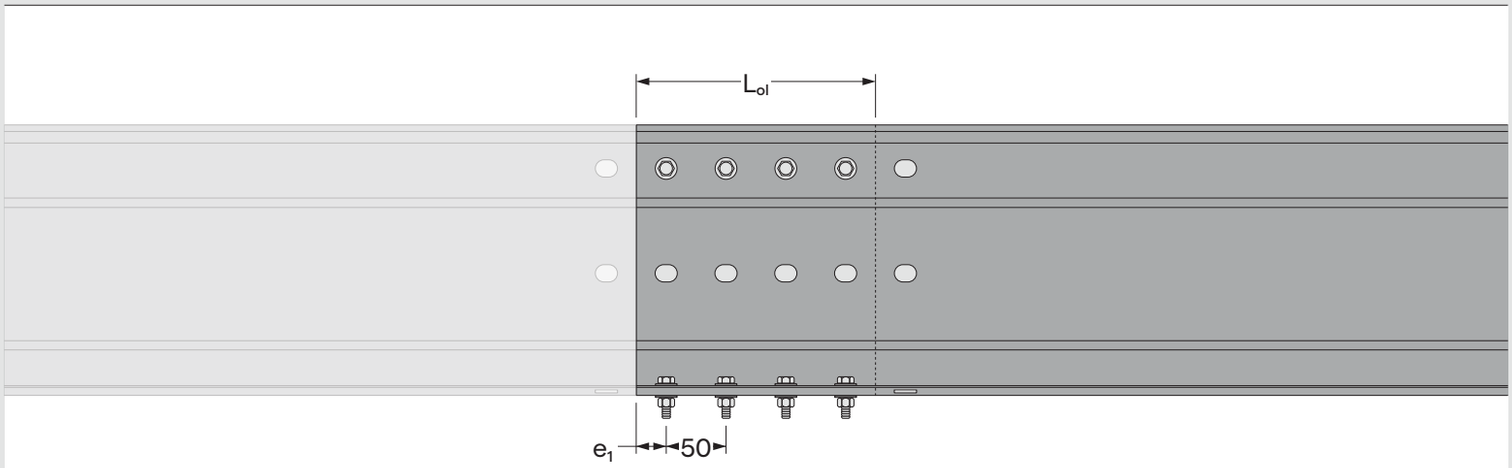
CONNECTIONS AND CONSTRUCTION DETAILS



01. Simple splice between supports



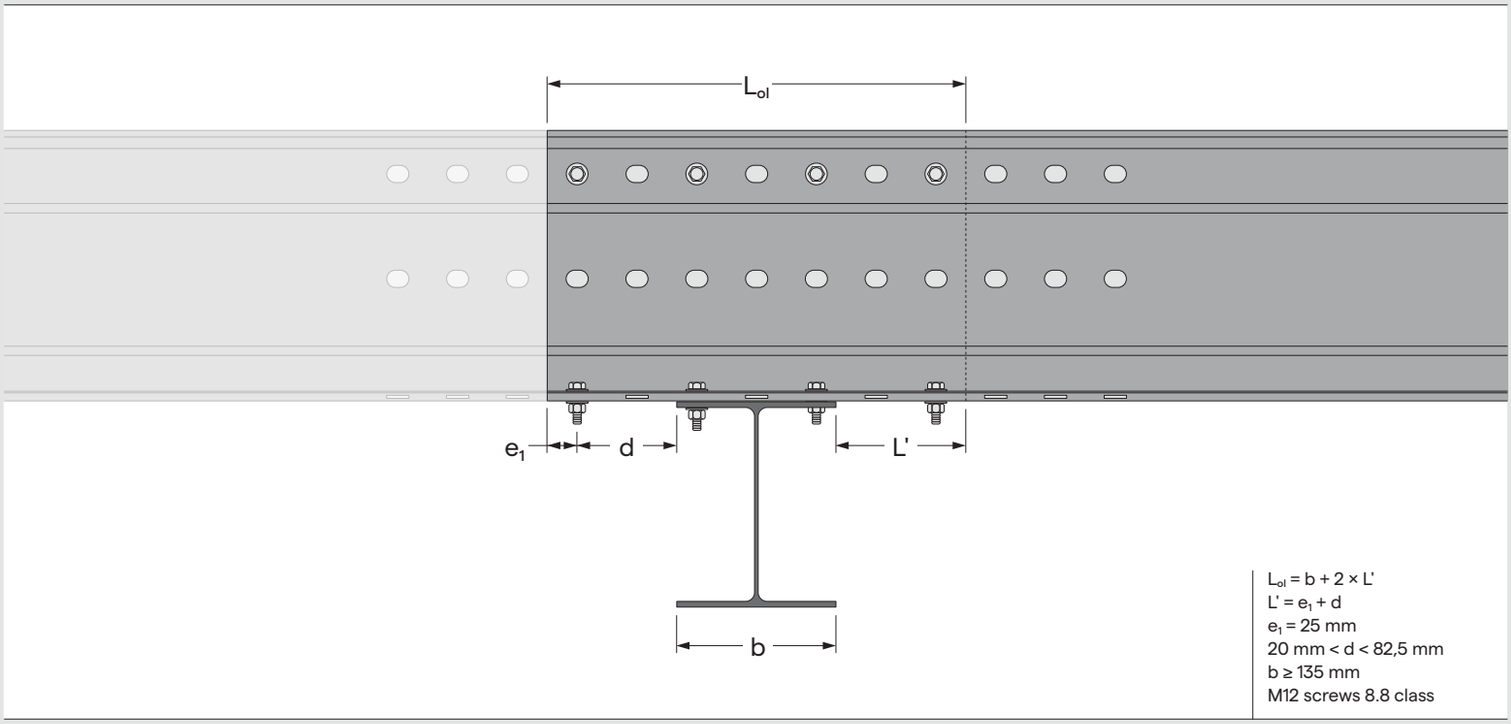
SECTION	e_1	L_{ol}	NR. OF SCREWS	Ø SCREWS*
	mm	mm	Units	mm
Omegatek® 230×1,0	25	200	4	12
Omegatek® 230×1,5	25	200	4	12
Omegatek® 230×2,0	25	200	4	12

*Class 8.8 screws

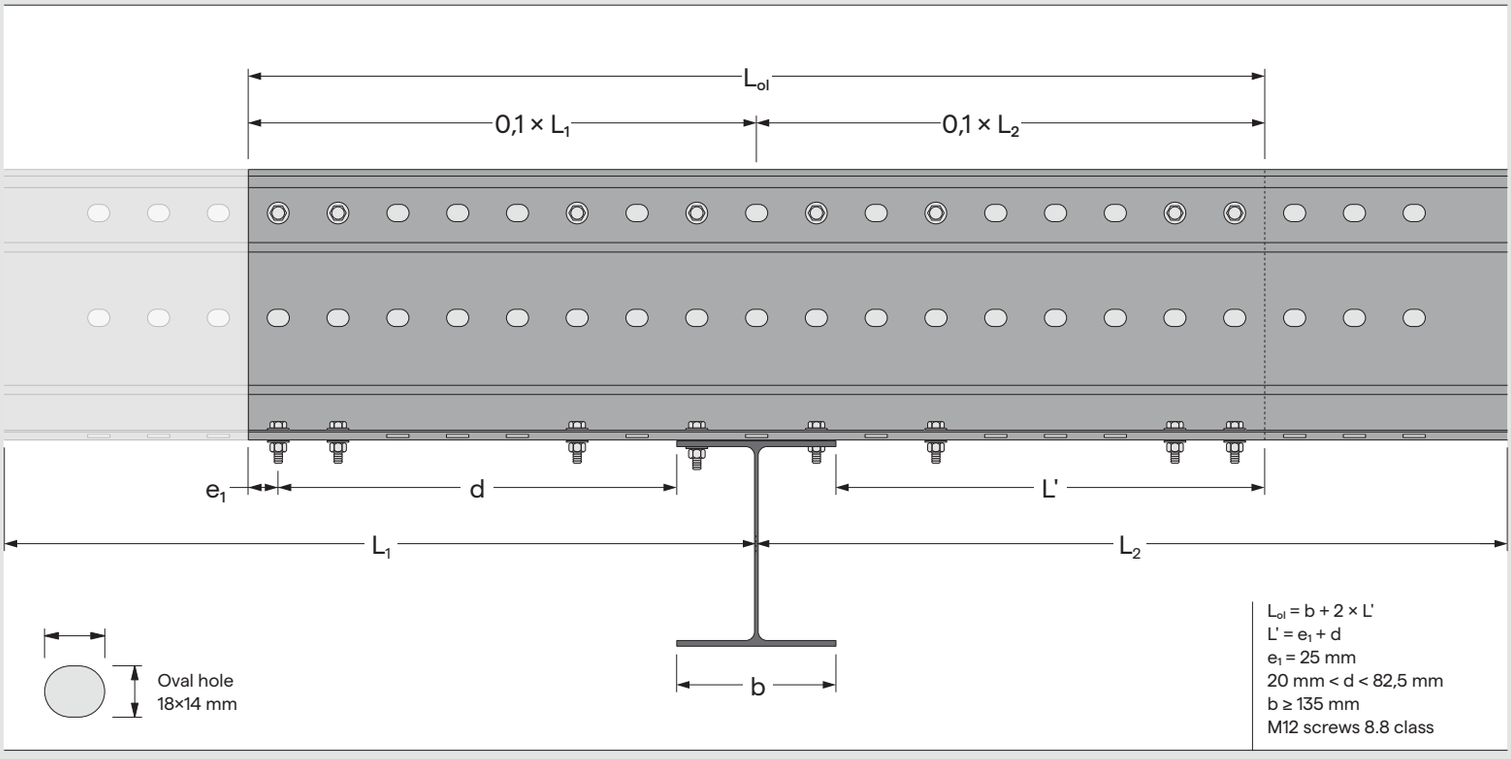
Subtitles

L_{ol} Overlap length
e_1 Distance between the screw center and the end of the profile
Ø Screws diameter

02. Simple splice on intermediate support



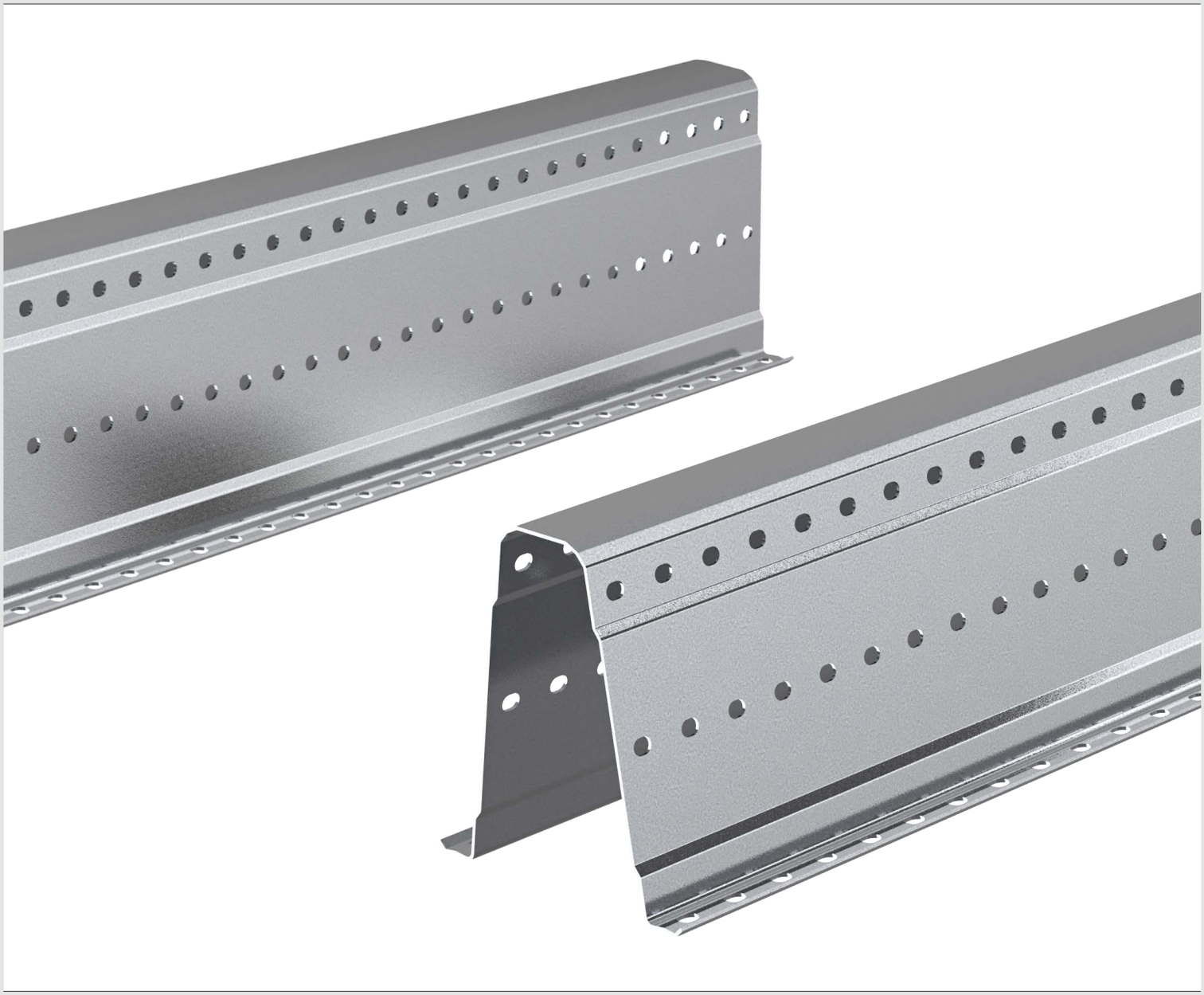
03. Splice with reinforcement on intermediate support



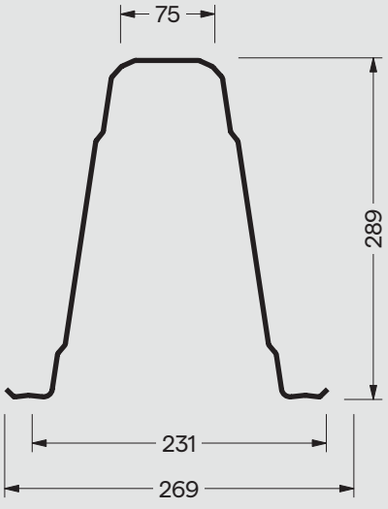
Subtitles

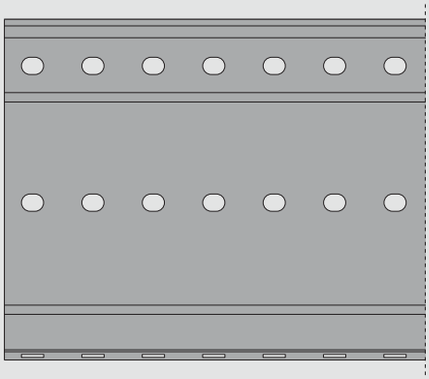
L_{ol}	Overlap length
L'	Distance between the end of the support beam flange and the end of the profile
e_1	Distance between the center of the screw and the end of the profile
d	Distance between the end of the support beam flange and the center of the end screw
b	Width of the upper flange of the support beam
Ø	Screws diameter

OMEGATEK® 300



SECTION GEOMETRY





GROSS SECTION PROPERTIES

SECTION	WEIGHT	HEIGHT	WIDTH	THICKNESS		GROSS SECTION PROPERTIES									
				Nomi.	Effect.										
		h	b	t_{nom}	t_{eff}	A_{bruta}	$I_{y,bruta}$	$I_{z,bruta}$	$W_{y,bruta}$	$W_{z,bruta}$	I_w	I_t	$Y_{cg} = Y_{cc}$	Z_{cg}	Z_{cc}
	Kg/m	mm	mm	mm	mm	mm^2	mm^4	mm^4	mm^3	mm^3	$\times 10^6\ mm^6$	mm^4	mm	mm	mm
Omegatek® 300×2,0	11,53	289	269	2,0	1,96	1469	14441000	8223800	97948	60837	12457,0	1882	134	144	367
Omegatek® 300×2,5	14,47	289	269	2,5	2,46	1844	18126000	10311000	122730	76258	15635,0	3720	134	144	367
Omegatek® 300×3,0	17,42	289	269	3,0	2,96	2219	21812000	12420000	147740	91640	18813,0	6481	134	144	367

Note: the weights indicated in the tables are theoretical weights estimated based on the nominal dimensions of the cross-section, with variations occurring within the tolerances provided in standard EN 10051.

EFFECTIVE SECTION PROPERTIES

S280 GD

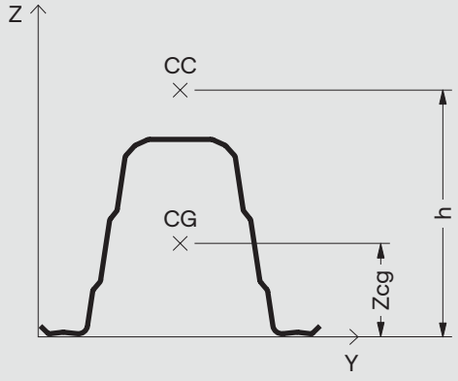
SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 300×2,0	872	134	141	1360	13708000	89225	134	130	1355	13392000	88029	134	144	1176	6312900	41440	152	138
Omegatek® 300×2,5	1184	134	139	1744	17458000	114720	134	132	1744	17199000	114600	134	142	1521	8303250	55200	150	137
Omegatek® 300×3,0	1543	134	139	2130	21223000	140350	134	133	2131	21009000	141170	134	140	1881	10395000	68003	147	136

S350 GD

SECTION	COMPRESSION			Y-AXIS POSITIVE FLEXION					Y-AXIS NEGATIVE FLEXION					Z-AXIS FLEXION				
	A_{eff}	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{y,eff}$	$W_{y,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$	A_{eff}	$I_{z,eff}$	$W_{z,eff}$	$Y_{cg,eff}$	$Z_{cg,eff}$
	mm^2	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm	mm^2	mm^4	mm^3	mm	mm
Omegatek® 300×2,0	827	134	143	1330	13487000	86719	134	128	1284	12858000	82135	134	148	1154	6129600	39797	154	138
Omegatek® 300×2,5	1108	134	141	1711	17227000	112050	134	130	1709	16861000	110920	134	144	1483	7981300	52547	152	138
Omegatek® 300×3,0	1421	134	140	2095	20983000	137540	134	132	2094	20660000	137300	134	142	1830	9977800	66346	150	137

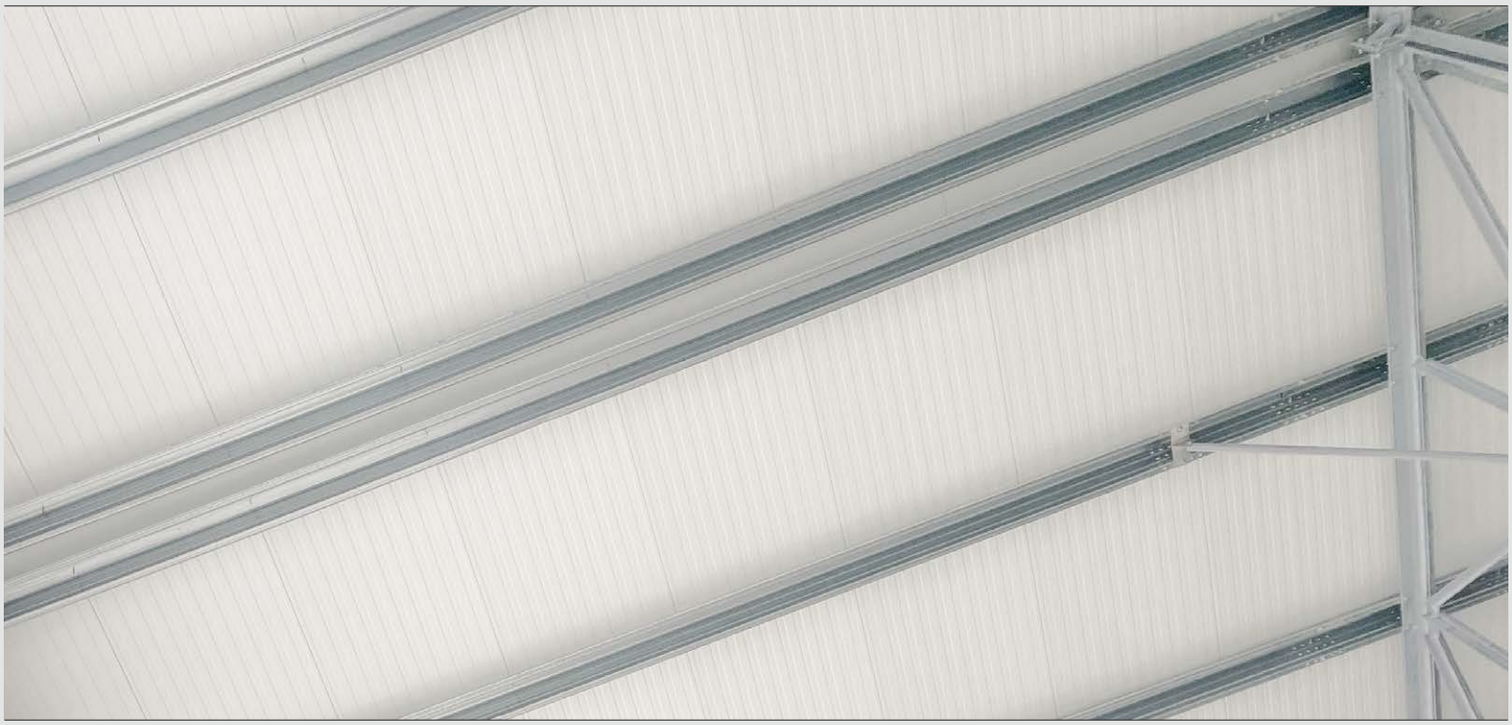
Subtitles

A_{gross}	Gross section area
$I_{y,gross}$	Gross section inertia yy-axis
$I_{z,gross}$	Gross section inertia zz-axis
I_w	Warping constant
I_t	Torsion inertia
CG	Coordinates of the center of gravity
CC	Coordinates of the shear center
A_{eff}	Effective section area
$I_{y,eff}$	Effective section inertia yy-axis
$W_{y,eff}$	Bending modulus of the effective section yy-axis
$I_{z,eff}$	Effective section inertia zz-axis
$W_{z,eff}$	Bending modulus of the effective section zz-axis

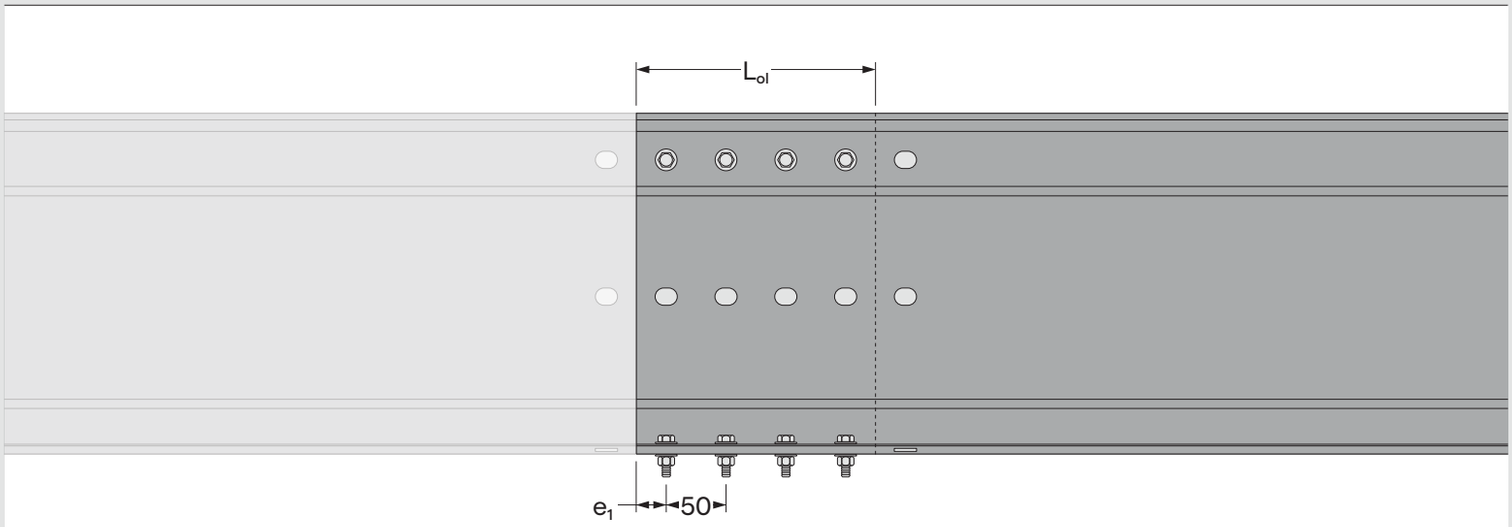


OMEGATEK® 300

CONNECTIONS AND CONSTRUCTION DETAILS



01. Simple splice between supports



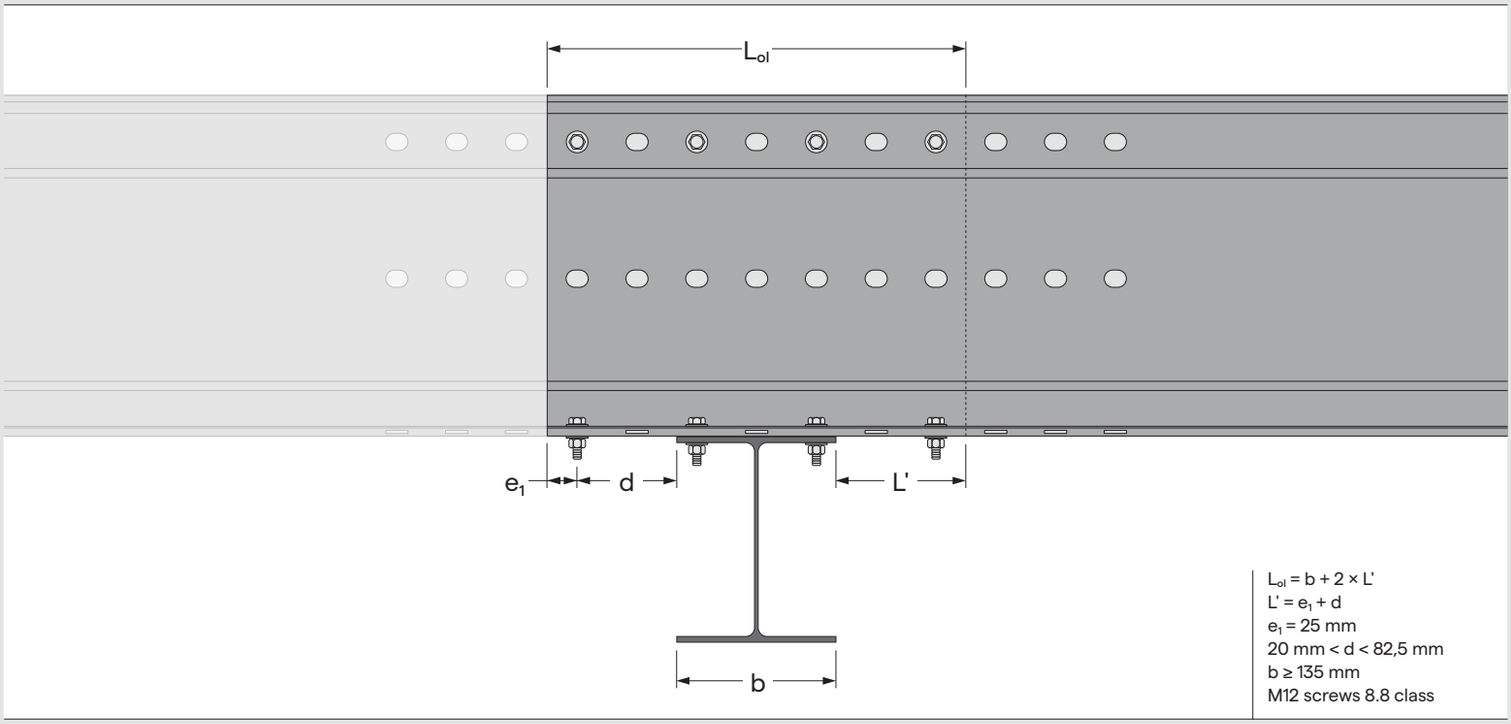
SECTION	e_1	L_{ol}	NR. OF SCREWS	Ø SCREWS*
	mm	mm	Units	mm
Omegatek® 300×1,0	25	200	4	12
Omegatek® 300×1,5	25	200	4	12

*Class 8.8 screws

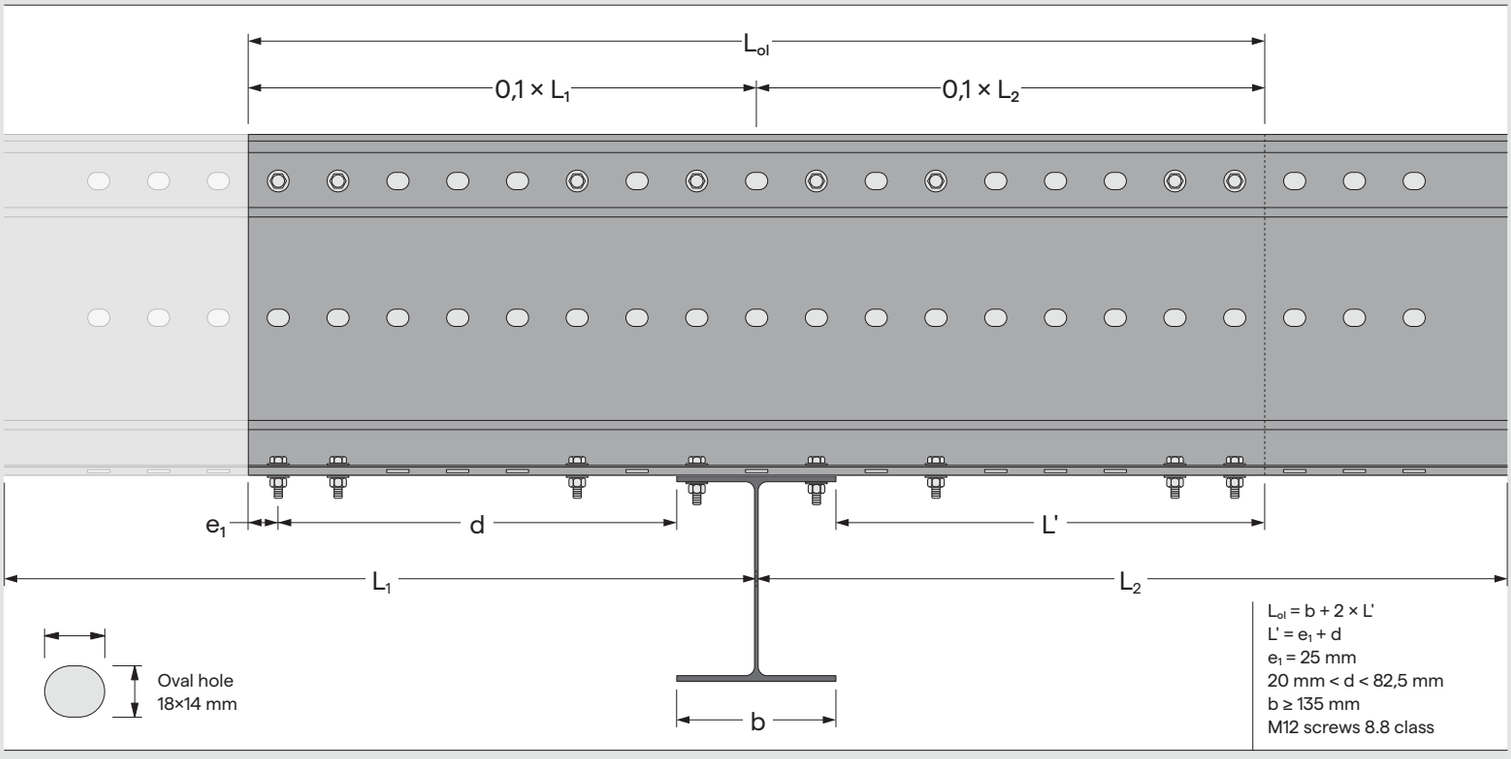
Subtitles

L_{ol} Overlap length
e_1 Distance between the screw center and the end of the profile
Ø Screws diameter

02. Simple splice on intermediate support



03. Splice with reinforcement on intermediate support



Subtitles

L_{ol}	Overlap length
L'	Distance between the end of the support beam flange and the end of the profile
e_1	Distance between the center of the screw and the end of the profile
d	Distance between the end of the support beam flange and the center of the end screw
b	Width of the upper flange of the support beam
Ø	Screws diameter

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ED—JUL.2023

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