

CONCEALED BEAM HANGER WITH AND WITHOUT HOLES

SUPERIOR STRENGTH STANDARD

Standard connection system developed to guarantee higher values of design strength. All values are calculated and certified.

STEEL - ALUMINUM

EN AW-6005A high strength aluminum alloy, obtained by extrusion thus weld-free.

SPARES MANAGEMENT

Versions without holes available in 2176 mm long pieces with notches every 64 mm, to be cut onsite according to the worksite needs.



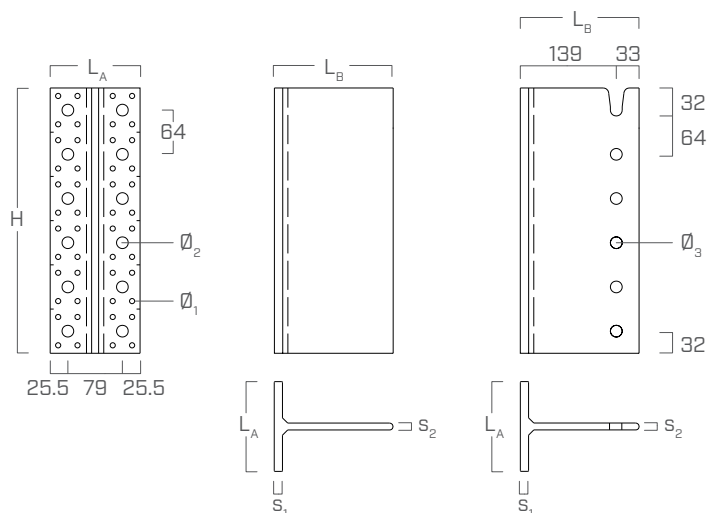
VIDEO



SOFTWARE

ALUMAXI WITHOUT HOLES

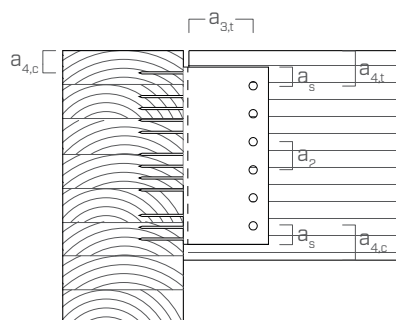
ALUMAXI WITH HOLES



GEOMETRY

			ALUMAXI without holes	ALUMAXI with holes
Flange thickness	s_1	[mm] [inch]	12 15/32"	12 15/32"
Web thickness	s_2	[mm] [inch]	10 25/64"	10 25/64"
Flange width	L_A	[mm] [inch]	130 5 1/8"	130 5 1/8"
Web length	L_B	[mm] [inch]	172 6 49/64"	172 6 49/64"
Small flange-holes	$\varnothing_1$	[mm] [inch]	7.5 19/64"	7.5 19/64"
Large flange-holes	$\varnothing_2$	[mm] [inch]	17.0 43/64"	17.0 43/64"
Web holes (dowels)	$\varnothing_3$	[mm] [inch]	- -	17.0 43/64"

■ INSTALLATION: MINIMUM DISTANCES



SECONDARY BEAM - TIMBER			smooth dowel STA Ø16
Dowel - Dowel	a_2	$\begin{matrix} [\text{mm}] \\ [\text{inch}] \end{matrix}$	$\begin{matrix} \geq 3 d \\ \geq 57/64'' \end{matrix}$
Dowel - Beam extrados	$a_{4,t}$	$\begin{matrix} [\text{mm}] \\ [\text{inch}] \end{matrix}$	$\begin{matrix} \geq 64 \\ \geq 2 \ 33/64'' \end{matrix}$
Dowel - Beam intrados	$a_{4,c}$	$\begin{matrix} [\text{mm}] \\ [\text{inch}] \end{matrix}$	$\begin{matrix} \geq 48 \\ \geq 57/64'' \end{matrix}$
Dowel - Beam end	$a_{3,t}$	$\begin{matrix} [\text{mm}] \\ [\text{inch}] \end{matrix}$	$\begin{matrix} \geq \{7d; 80\} \\ \geq 4 \ 13/32'' \end{matrix}$
Dowel - Bracket edge	a_s	$\begin{matrix} [\text{mm}] \\ [\text{inch}] \end{matrix}$	$\begin{matrix} \geq 21 \\ \geq 4 \ 53/64'' \end{matrix}$

MAIN BEAM - TIMBER			anker nail LBA Ø6
First connector – Beam extrados	$a_{4,c}$	$\begin{matrix} [\text{mm}] \\ [\text{inch}] \end{matrix}$	$\begin{matrix} \geq 5 d \\ \geq 1 \ 3/16'' \end{matrix}$

GENERAL PRINCIPLES:

The characteristic values comply with the EN 1995:2008 standard in accordance with ETA-09/0361.

Design values for wood-side are obtained from characteristic values as follows: $R_d = R_k \cdot DMF$

DMF: design modification factor based on k_{mod} (modification factor according to EN 1995-1-1) and for γ_M (partial factors for material properties and resistances according to EN 1995-1-1 - $M = 1.3$)

Load case	Load Combination		Design Modification Factor DMF
	Principal Load	Companion Load	
1	1.4D	-	0.46
2	(1.25D or 0.9D) + 1.5L	1.0S or 0.4W	0.62 *
3	(1.25D or 0.9D) + 1.5S	1.0L or 0.4W	0.62
4	(1.25D or 0.9D) + 1.4W	0.5L or 0.5S	0.69
5	1.0D + 1.0E	0.5L or 0.25S	0.69

* If Live Load L is associated with long term loads such as storage, equipment areas etc., use 0.54

In the calculations, the density of the wood elements was considered equal to $\rho_k = 370 \text{ kg/m}^3$ (S-P-F sawn lumber). Wood densities conversion (mean oven-dry relative density to 5th-percentile density 12% MC wt & vol) as proposed in chapter 4. of Wood Handbook. Characteristic resistances can also be considered as valid for higher densities, for the purposes of safety

All strength values of the connection system are valid for the calculation hypotheses listed in the table. For different configurations the free software myProject is available (www.rothoblaas.com)

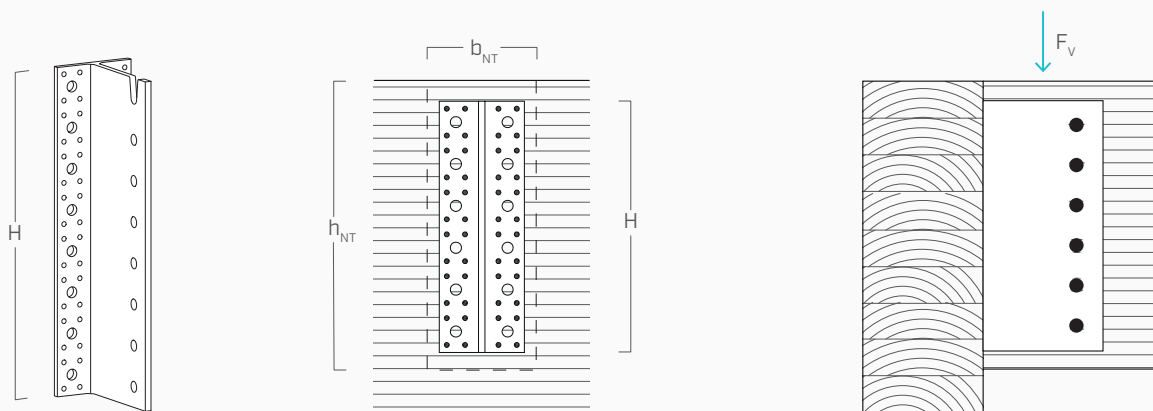
Sizing and verification of wood elements must be done separately. In some cases the connection shear strength $R_{V,k}$ is notably high and may be higher than the secondary joist shear strength. Particular attention should be paid to the shear stress of the reduced timber cross-section in correspondence with the bracket location

NOTES:

⁽¹⁾ Hole diameter

⁽²⁾ Smooth dowels STA Ø16 ($f_{u,k} = 470 \text{ N/mm}^2$).

■ STATIC VALUES - TIMBER-TO-TIMBER JOINT - RIGHT ANGLE - TOTAL NAILING



						SECONDARY BEAM	MAIN BEAM	CHARACTERISTIC VALUES		DESIGN VALUES (FACTORED RESISTANCE)					
H		b _{NT}		h _{NT}		dowels STA ⁽²⁾ Ø16	nails LBA Ø6 x 100	R _{v,k}		R _{v,d} Load Case 1		R _{v,d} Load Case 2&3		R _{v,d} Load Case 4&5	
[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[pcs - Ø x L]	[pcs]	[kN]	[lbf]	[kN]	[lbf]	[kN]	[lbf]	[kN]	[lbf]
384	15 1/8"	160	6 1/4"	432	17"	6 - Ø16 x 160	48	126.7	28,474	58.5	13,142	77.9	17,523	87.7	19,713
448*	17 5/8"	160	6 1/4"	496	19 4/8"	7 - Ø16 x 160	56	158.0	35,515	72.9	16,392	97.2	21,856	109.4	24,588
512	20 3/16"	160	6 1/4"	560	22 1/16"	8 - Ø16 x 160	64	180.5	40,587	83.3	18,732	111.1	24,977	125.0	28,099
576*	22 11/16"	160	6 1/4"	624	24 9/16"	9 - Ø16 x 160	72	203.1	45,661	93.7	21,074	125.0	28,099	140.6	31,611
640	25 3/16"	160	6 1/4"	688	27 1/16"	10 - Ø16 x 160	80	225.7	50,735	104.2	23,416	138.9	31,221	156.2	35,124
704*	27 11/16"	160	6 1/4"	752	29 10/16"	11 - Ø16 x 160	88	248.3	55,809	114.6	25,758	152.8	34,344	171.9	38,637
768	30 1/4"	160	6 1/4"	816	32 1/4"	12 - Ø16 x 160	96	270.8	60,883	125.0	28,100	166.7	37,466	187.5	42,150
832*	32 3/4"	160	6 1/4"	880	34 3/4"	13 - Ø16 x 160	104	293.4	65,954	135.4	30,441	180.5	40,587	203.1	45,661
896*	35 1/4"	160	6 1/4"	944	37 1/4"	14 - Ø16 x 160	112	316.0	71,028	145.8	32,782	194.4	43,710	218.7	49,173
960*	37 13/16"	160	6 1/4"	1008	39 11/16"	15 - Ø16 x 160	120	322.3	72,447	148.7	33,437	198.3	44,583	223.1	50,156

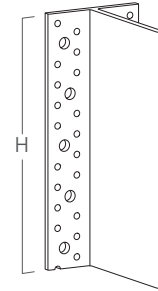
* dimension obtainable from ALUMAXI2176L or ALUMAXI2176

ALUMIDI

CODES AND DIMENSIONS

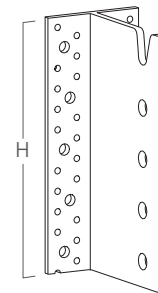
ALUMIDI WITHOUT HOLES

CODE	type	H [mm]	H [inch]	pcs.
ALUMIDI80	without holes	80	3 1/8"	25
ALUMIDI120	without holes	120	4 3/4"	25
ALUMIDI160	without holes	160	6 1/4"	25
ALUMIDI200	without holes	200	7 7/8"	15
ALUMIDI240	without holes	240	9 1/2"	15
ALUMIDI2200	without holes	2200	86 13/32"	1



ALUMIDI WITH HOLES

CODE	type	H [mm]	H [inch]	pcs.
ALUMIDI120L	with holes	120	4 3/4"	25
ALUMIDI160L	with holes	160	6 1/4"	25
ALUMIDI200L	with holes	200	7 7/8"	15
ALUMIDI240L	with holes	240	9 1/2"	15
ALUMIDI280L	with holes	280	11"	15
ALUMIDI320L	with holes	320	12 5/8"	8
ALUMIDI360L	with holes	360	14 1/4"	8

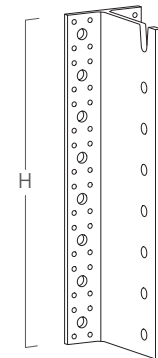


ALUMAXI

CODES AND DIMENSIONS

ALUMAXI WITH HOLES

CODE	type	H [mm]	H [inch]	pcs.
ALUMAXI384L	with holes	384	15 1/8"	1
ALUMAXI512L	with holes	512	20 3/16"	1
ALUMAXI640L	with holes	640	25 3/16"	1
ALUMAXI768L	with holes	768	30 1/4"	1
ALUMAXI2176L	with holes	2176	85 43/64"	1



ALUMAXI WITHOUT HOLES

CODE	type	H [mm]	H [inch]	pcs.
ALUMAXI2176	without holes	2176	85 43/64"	1

