

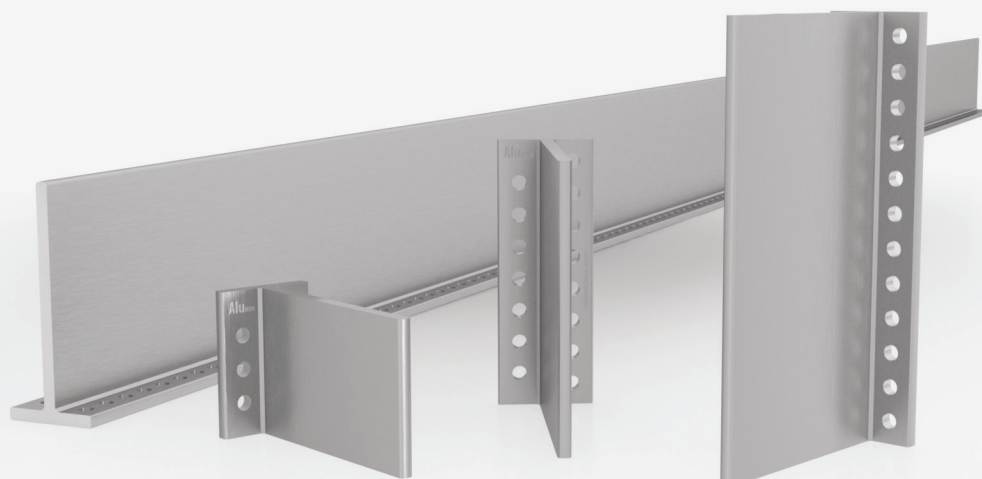
ALUMINI

Concealed beam hanger without holes

Aluminum alloy tridimensional perforated plate

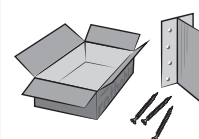


software
myProject



PACKAGING

Screws HBS+evo included in the box



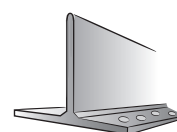
FIELD OF USE

Timber-to-timber shear connections, both perpendicular and inclined to the vertical plane

- solid timber
- glulam (Glued Laminated Timber)
- XLAM (Cross Laminated Timber)
- LVL (Laminated Veneer Lumber)
- wood-based panels

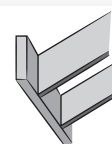
STEEL-ALUMINUM

EN AW-6060 aluminum alloy bracket obtained by extrusion and therefore weld-free



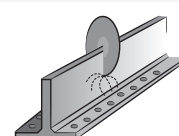
SLENDER STRUCTURES

The small dimensions of the side allows to connect secondary joists with limited width (starting from 45 mm)



ADJUSTABLE

Available in 2165 mm long pieces, to be cut according to the worksite needs





QUICK ASSEMBLING

The fixing, simple and fast, is realized through screws HBS + evo on the main beam and self drilling or smooth dowels on the secondary beam



INVISIBLE

The hidden connection provides a satisfying appearance to the joint and fulfills the fire safety requirements. When adequately protected by timber, it is suitable for outdoor use

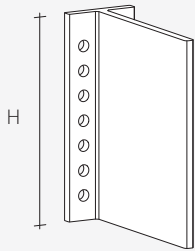


SUITABLE FOR ARBORS

Limited dimensions and aluminum higher corrosion resistance, when compared to steel, make the bracket an optimal solution for any kind of outdoor structure

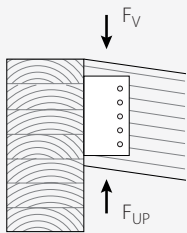
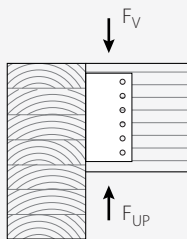
CODES AND DIMENSIONS

ALUMINI



code	type	H [mm]	pcs/box
ALUMINI65	without holes	65	25
ALUMINI95	without holes	95	25
ALUMINI125	without holes	125	25
ALUMINI155	without holes	155	15
ALUMINI185	without holes	185	15
ALUMINI2165	without holes	2165	1

EXTERNAL LOADS



MATERIAL AND DURABILITY

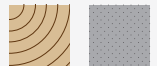
ALUMINI: EN AW-6060 aluminum alloy.

To be used in Service Class 1 and 2 (EN 1995:2008).

FIELD OF USE

Timber to timber joints

Timber to concrete joints *



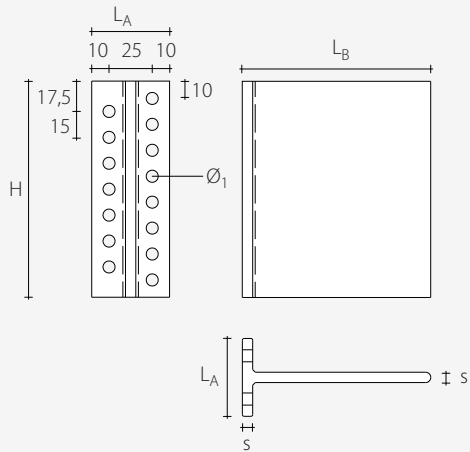
ADDITIONAL PRODUCTS - FIXINGS

type	description		d [mm]	support	page
HBS+evo	screw for timber		5		368
WS	self-drilling dowel		7		368
SBS	self-drilling screw for timber-metal		4,8 - 6,3		368
SPP	self-drilling screw for timber-metal		6,3		368
STA	smooth dowel		8		50

It is recommended to perform the assembly of the system by using the CHAIN MORTISER described in chapter 9 of the catalogue "Tools for wooden construction (pag. 147)

* For additional information please contact rothoblaas technical office.

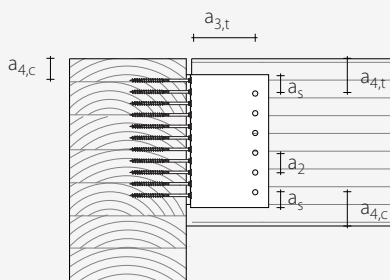
GEOMETRY



AluMINI			
Thickness	s	[mm]	6
Flange width	L _A	[mm]	45
Web length	L _B	[mm]	109,9
Small flange-holes	Ø ₁	[mm]	7,0

INSTALLATION

MINIMUM DISTANCES

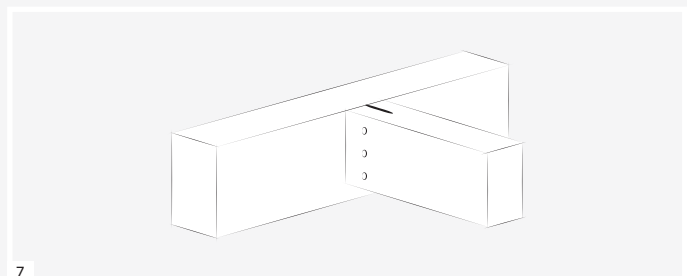
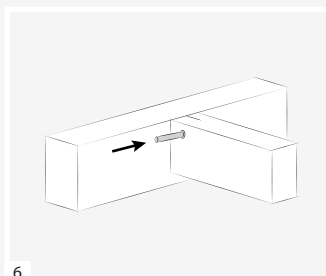
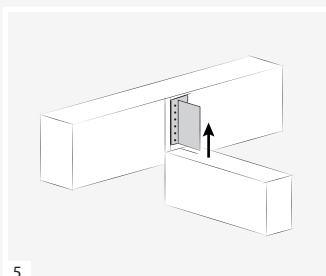
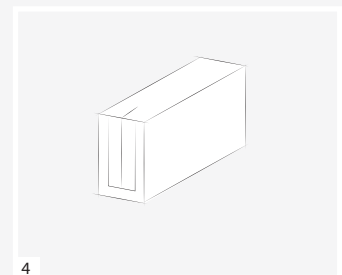
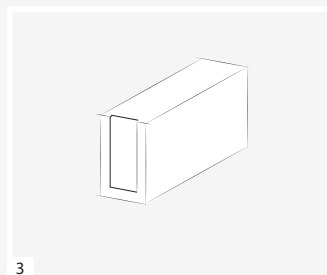
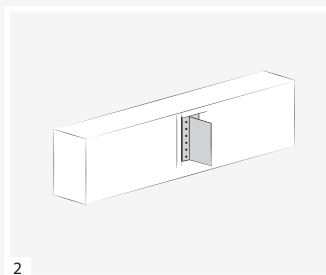
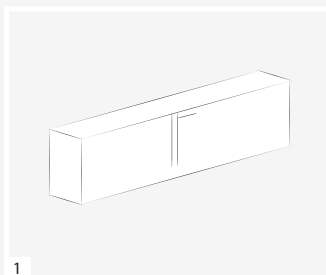


SECONDARY BEAM - TIMBER				self-drilling dowel WS Ø7	smooth dowel STA Ø8
Dowel - Dowel	a ₂	[mm]	≥ 3 d	≥ 21	≥ 24
Dowel - Beam extrados	a _{4,t}	[mm]	≥ 4 d	≥ 28	≥ 32
Dowel - Beam intrados	a _{4,c}	[mm]	≥ 3 d	≥ 21	≥ 24
Dowel - Beam end	a _{3,t}	[mm]	≥ {7 d; 80}	≥ 80	≥ 80
Dowel - Bracket edge	a _s	[mm]	≥ 1,2 d ₀ ⁽¹⁾	≥ 10	≥ 12

⁽¹⁾ hole diameter

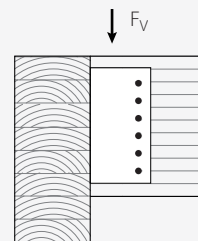
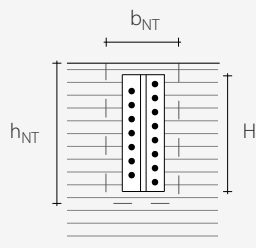
MAIN BEAM - TIMBER			screw HBS+ evo Ø5
First fastener - Beam extrados	a _{4,c}	[mm]	≥ 5 d
			≥ 25

ASSEMBLY



STATIC VALUES - TIMBER-TO-TIMBER JOINT - RIGHT ANGLE

AluMINI



SECONDARY BEAM				MAIN BEAM	CHARACTERISTIC VALUES	ADMISSIBLE VALUES
AluMINI H [mm]	b_{NT} [mm]	h_{NT} [mm]	dowels WS Ø7 ⁽¹⁾ [pcs - Ø x L]	screws HBS+ evo Ø5 x 60 [pcs]	EN 1995:2008 $R_{V,k}$ [kN]	DIN 1052:1988 V_{adm} [kg]
65	80	90	2 - Ø7 x 73	7	2,2	100
95	80	120	3 - Ø7 x 73	11	5,6	380
125	80	150	4 - Ø7 x 73	15	10,3	620
155	80	180	5 - Ø7 x 73	19	16,1	850
185	80	210	6 - Ø7 x 73	23	20,1	1090

SECONDARY BEAM				MAIN BEAM	CHARACTERISTIC VALUES	ADMISSIBLE VALUES
AluMINI H [mm]	b_{NT} [mm]	h_{NT} [mm]	dowels STA Ø8 ⁽²⁾ [pcs - Ø x L]	screws HBS+ evo Ø5 x 60 [pcs]	EN 1995:2008 $R_{V,k}$ [kN]	DIN 1052:1988 V_{adm} [kg]
65	70	90	2 - Ø8 x 70	7	2,2	100
95	70	120	3 - Ø8 x 70	11	5,6	380
125	70	150	4 - Ø8 x 70	15	10,3	620
155	70	180	5 - Ø8 x 70	19	16,1	850
185	70	210	6 - Ø8 x 70	23	23,0	1090

GENERAL PRINCIPLES

- Characteristic values are consistent with EN 1995:2008 and in accordance with ETA-09/0361.
- Design values can be obtained from characteristic values as follows:

$$R_d = \frac{R_k \cdot k_{mod}}{\gamma_m}$$

Coefficients γ_m and k_{mod} must be taken according to the current Standard adopted for the design.

- Admissible values are obtained according to DIN 1052:1988. For the calculation process a timber density $\rho_k = 380 \text{ kg/m}^3$ has been considered.
- Dimensioning and verification of the timber elements must be carried out separately.
- Strength values of the connection system are valid under the calculation hypotheses listed in the table.
- For different configurations the free software myProject is available (www.rothoblaas.com)

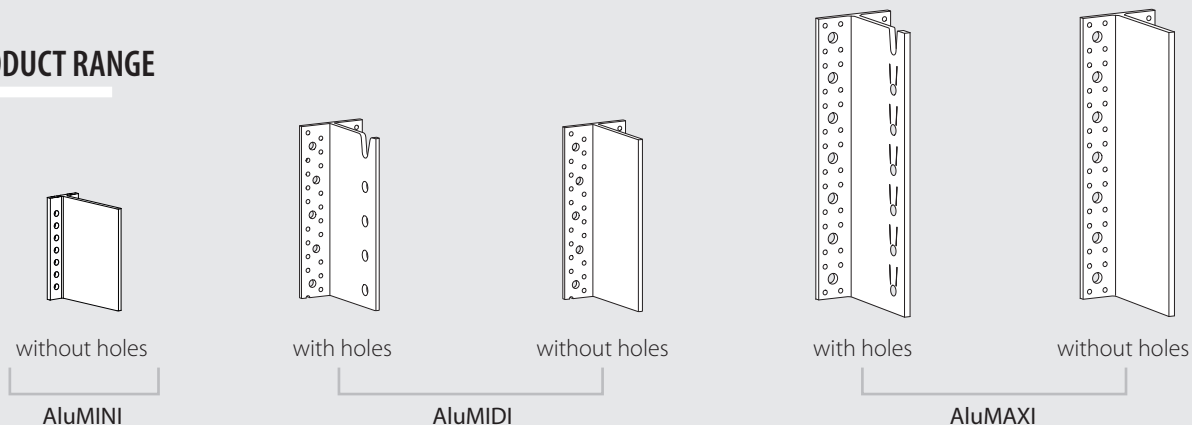
NOTES

⁽¹⁾ Self-drilling dowels WS Ø7 ($f_{u,k} = 550 \text{ N/mm}^2$)

⁽²⁾ Smooth dowels STA Ø8 ($f_{u,k} = 360 \text{ N/mm}^2$)

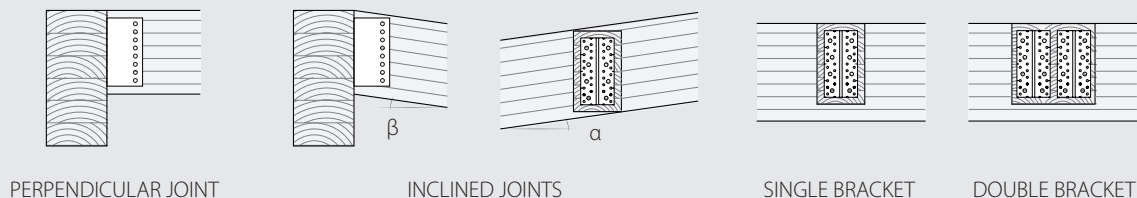
JOINTS WITH ALU BRACKETS

PRODUCT RANGE



APPLICATIONS

GEOMETRY



MATERIAL



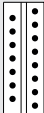
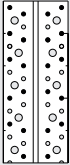
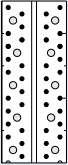
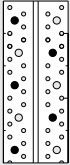
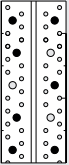
INSTALLATION – Minimum dimensions for timber elements in hidden bracket joints

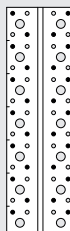
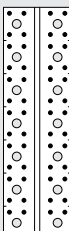
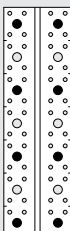
			self-drilling dowel WS			smooth dowel STA		
			AluMINI	AluMIDI	AluMAXI	AluMINI	AluMIDI	AluMAXI
wing width	L_A	[mm]	45	80	130	45	80	130
bracket - timber edge	a_L	[mm]	≥ 10	≥ 10	≥ 15	≥ 10	≥ 10	≥ 15
joist width ⁽¹⁾	b_J	[mm]	≥ 80	≥ 100 ⁽²⁾	≥ 160	≥ 70	≥ 100 ⁽²⁾	≥ 150
dowel	$\emptyset$	[mm]	7			8	12	16
	L	[mm]	length to be evaluated based on aesthetic requirements and fire resistance					

⁽¹⁾ Recommended minimum width of the secondary beam to accommodate the grooving while ensuring that the connection remains completely hidden

⁽²⁾ Lateral distance to the edge of the timber element < 10 mm, thus particular care is suggested when realizing the grooving

INSTALLATION – Fixing types and positioning

APPLICATION	AluMINI	AluMIDI			
	TIMBER - TIMBER	TIMBER - TIMBER		TIMBER - CEMENT	
FIXINGS main joist	screw HBS+ evo Ø5	nail LBA Ø4 / screw LBS Ø5		SKR Ø10	VINYLPRO M8
FIXINGS secondary joist	WS Ø7 / STA Ø8	self-drilling dowel WS Ø7 / smooth dowel STA Ø12			
NAILING / DOWELLING main joist	total nailing	partial nailing	total nailing	dowelling SKR	dowelling VINYLPRO
					

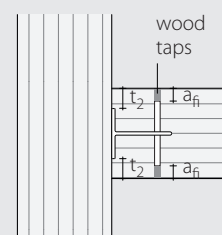
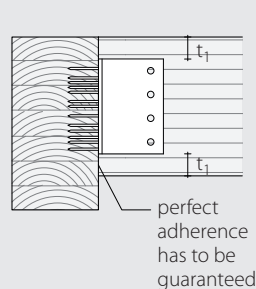
AluMAXI			
APPLICATION	TIMBER - TIMBER		TIMBER - CONCRETE
FIXINGS main joists	nail LBA Ø6		VINYLPRO M16
FIXINGS secondary joists	self-drilling dowel WS Ø7 / liscio STA Ø16		
NAILING /DOWELLING main joist	partial nailing	total nailing	dowelling VINYLPRO
			

FIRE RESISTANCE - Connections (EN1995-1-2 §6.2.1)

ALU bracket allows the realization of a completely hidden connection system. High fire-rated performance can also be achieved if the minimum bracket-timber edge distances are observed (eg. with wood taps, available in the catalogue "Tools for wooden constructions") and adherence between elements is ensured.

Minimum covering required for protected joints ⁽³⁾

fire resistance	t ₁ min [mm]	t ₂ min [mm]	a _{fi} [mm]	
			glulam GL	solid wood C
R20	20 ⁽⁴⁾	10	0 ⁽⁵⁾	0 ⁽⁵⁾
R30	20 ⁽⁴⁾	10	10,5	12
R60	30	30	42	48



⁽³⁾ Strength check under fire condition must be carried out separately

⁽⁴⁾ Possible reduction to 10 mm if minimum bracket-timber edge distances for dowel are observed

⁽⁵⁾ Unprotected joint: L dowel > 100 mm