ALUMAXI

MY PROJECT SOFTWARE | VIDEO | CE ETA 09/0361

CONCEALED BRACKET WITH AND WITHOUT HOLES

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

STEEL-ALUMINUM
EN AW-6005A high strength aluminium alloy bracket, obtained by extrusion and therefore weld-free.

FAST FASTENING
Certified strengths calculated in all directions: vertical, horizontal and axial. Certified fastening with LBS screws and SBD self-drilling dowels.

CHARACTERISTICS

FOCUS	concealed joints
TIMBER SECTIONS	from 160 x 432 mm to 280 x 1200 mm
	from 6 5/16 x 17 inch to 11 x 47 1/4 inch
STRENGTH	$R_{v,k}$ up to 345 kN
	adjusted load carrying capacity up to 26585 lbs
FASTENERS	LBA, LBS, SBD, STA, VIN-FIX PRO

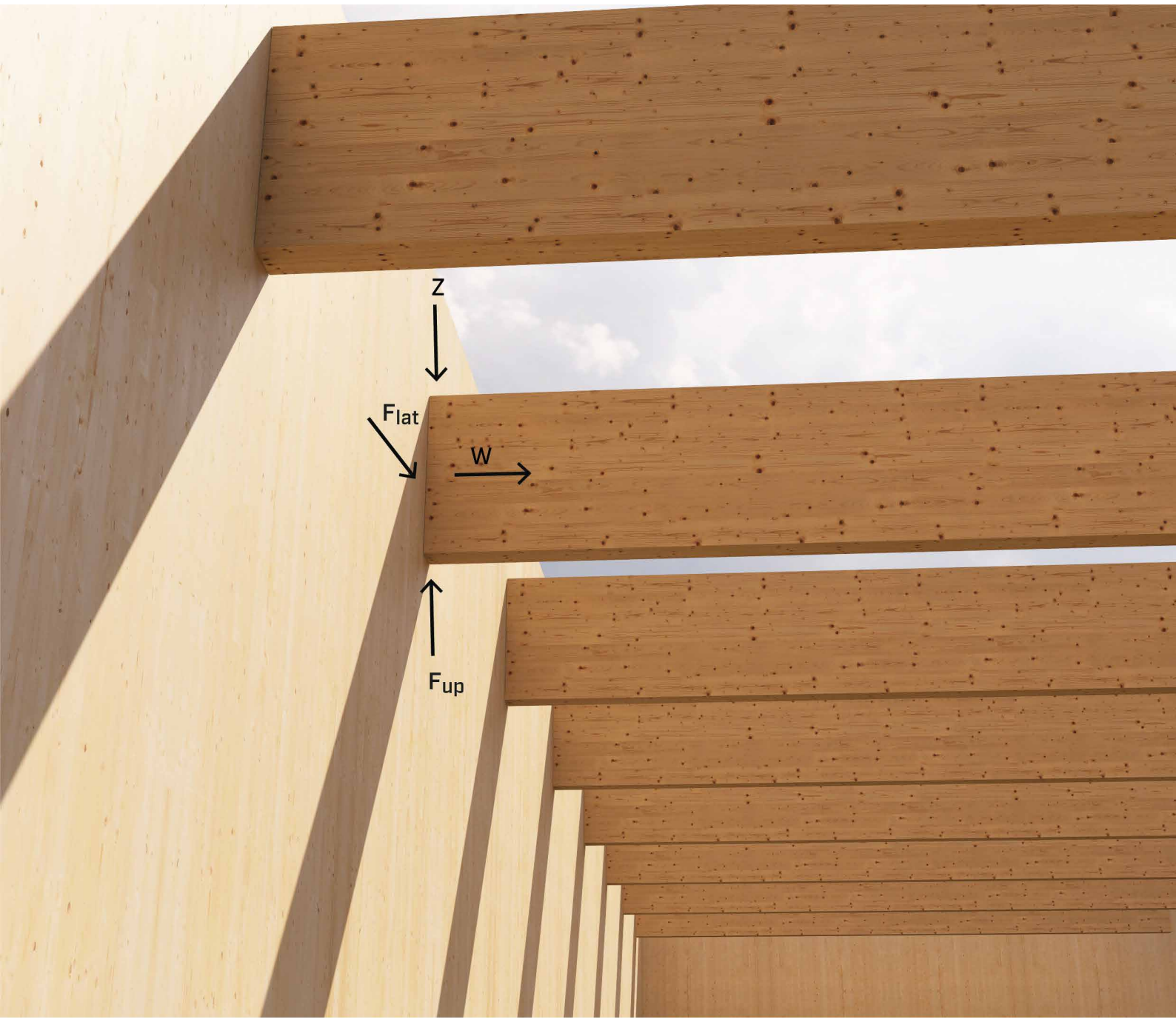
VIDEO
Scan the QR Code and watch the video on our YouTube channel

MATERIAL

Aluminium alloy three dimensional perforated plate.

FIELDS OF USE

Timber-to-timber and timber-to-concrete shear joints, both perpendicular and inclined
- solid timber and glulam
- CLT, LVL
- timber based panels



FIRE RESISTANCE

The low weight of the steel-aluminium alloy facilitates easy transportation and on-site movements, while guaranteeing a very high strength.
Being a concealed joint, it satisfies the fire safety requirements.

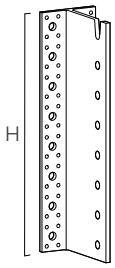
LARGE SCALE STRUCTURES

Ideal for joints between oversize beams or when high strength is required. The version without holes provides free choice when positioning the dowels.

CODES AND DIMENSIONS

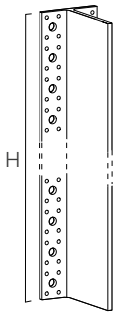
ALUMAXI WITH HOLES

CODE	type	H		pcs
		[mm]	[in]	
ALUMAXI384L	with holes	384	15.12	1
ALUMAXI512L	with holes	512	20.16	1
ALUMAXI640L	with holes	640	25.20	1
ALUMAXI768L	with holes	768	30.24	1
ALUMAXI2176L	with holes	2176	85.67	1



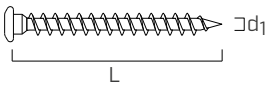
ALUMAXI WITHOUT HOLES

CODE	type	H		pcs
		[mm]	[in]	
ALUMAXI2176	without holes	2176	85.67	1



LBS

CODE	d_1		L		b		TX	pcs
	[mm]	[in]	[mm]	[in]	[mm]	[in]		
LBS760	7	0.28	60	2 3/8	55	2 3/16	TX30	100
LBS780	7	0.28	80	3 1/8	75	2 15/16	TX30	100
LBS7100	7	0.28	100	4	95	3 3/4	TX30	100



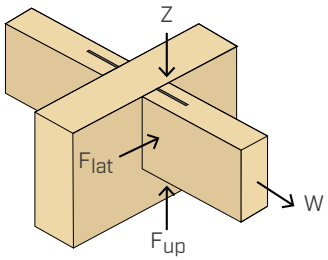
MATERIAL AND DURABILITY

ALUMAXI: EN AW-6005A aluminium alloy.
To be used in dry service conditions.

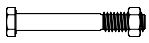
FIELDS OF USE

- Timber-to-timber, timber-to-concrete and timber-to-steel joints
- Secondary beam on main beam or on column
- Perpendicular and inclined joints

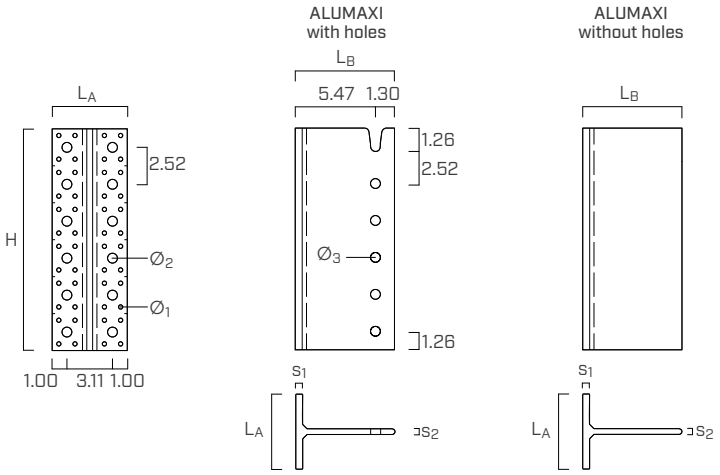
EXTERNAL LOADS



ADDITIONAL PRODUCTS - FASTENING

type	description		d		support
			[mm]	[in]	
LBA	Anker nail		6	0.24	
LBS	screw for plates		7	0.28	
SBD	self-drilling dowel		7,5	0.30	
STA	smooth dowel		16	0.63	
KOS	bolt		M16	0.63	
VIN-FIX PRO	chemical anchor		M16	0.63	
EPO-FIX PLUS	chemical anchor		M16	0.63	

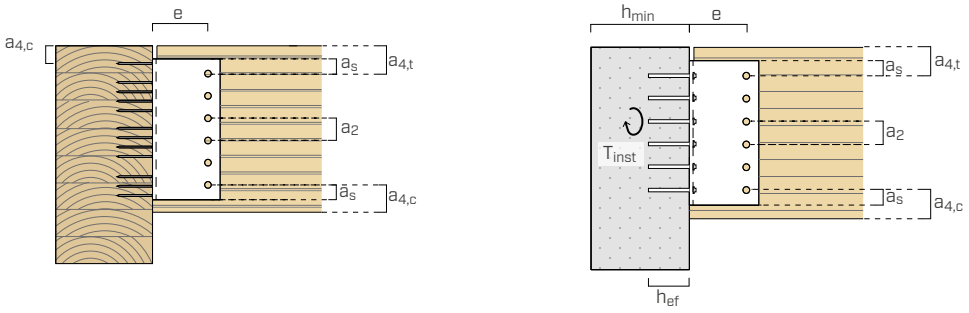
GEOMETRY



ALUMAXI			[mm]	[in]
flange thickness	s_1	[mm]	12	0.47
web thickness	s_2	[mm]	10	0.39
wing width	L_A	[mm]	130	5.12
web length	L_B	[mm]	172	6.77
small flange-holes	$Ø_1$	[mm]	7,5	0.29
large flange-holes	$Ø_2$	[mm]	17,0	0.70
web holes (dowels)	$Ø_3$	[mm]	17,0	0.70

INSTALLATION

MINIMUM DISTANCES



secondary beam-timber				self-drilling dowel SBD Ø0.30	smooth dowel STA Ø0.63
dowel-dowel	a_2	[in]	≥ 3 d	≥ 0.90	≥ 1.89
dowel-top of beam	$a_{4,t}$	[in]	≥ 4 d	≥ 1.18	≥ 2.52
dowel-bottom of beam	$a_{4,c}$	[in]	≥ 3 d	≥ 0.90	≥ 1.89
dowel-bracket edge	a_s	[in]	≥ 1,2 d_0 (1)	≥ 0.39	≥ 0.83
dowel-dowel	a_1 (2)	[in]	≥ 3 d	≥ 0.90	-
dowel-main beam	e	[in]		3,62 ÷ 5,47	5.47

(1) Hole diameter.
(2) Spacing between dowels parallel to the grain for force-fibre angle α = 90° for application with SBD.

main beam-timber				Anker nail LBA Ø0.24	screw LBS Ø0.28
first connector-top of beam	$a_{4,c}$	[in]	≥ 5 d	≥ 1.18	≥ 1.38

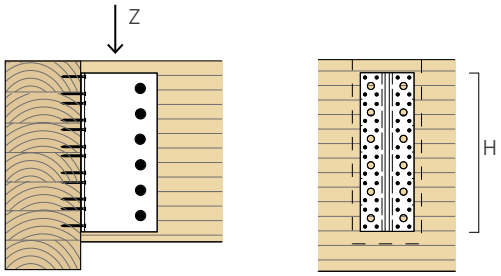
The minimum spacing and distances of Rotho Blaas fasteners are according to the European Technical Assessment ETA-09/0361 and to the Eurocode 5. The values from ETA-09/0361 are based on experimental tests carried out according to ETAG015 for several configurations. The values from Eurocode 5 are based on extensive research studies.

main beam-concrete			chemical anchor VIN-FIX PRO Ø0.63
minimum support thickness	h_{min}	[in]	h_{ef} + 1.18 ≥ 3.94
concrete hole diameter	d_0	[in]	0.71
tightening torque	T_{inst}	[ft·lb]	59.00

h_{ef} = effective anchoring depth in concrete

ADJUSTED DESIGN VALUES | TIMBER-TO-TIMBER JOINT

FULL NAILING - CONNECTION WITH NAILS PERPENDICULAR TO THE GRAIN



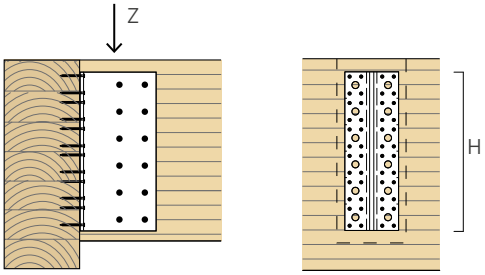
ALUMAXI with STA dowels and LBA nails - full nailing

ASD DESIGN VALUES

ALUMAXI H		dowels STA Ø16 mm | 0.63"	nails LBA Ø6 x 60 mm | 0.24 x 2 3/8"	full Z'
[mm]	[in]	[pcs. - L]	[pcs.]	[lbs]
384	15.12	6 - 160 mm | 6 1/3"	48	10634
448	17.64	7 - 160 mm | 6 1/3"	56	12407
512	20.16	8 - 160 mm | 6 1/3"	64	14179
576	22.68	9 - 160 mm | 6 1/3"	72	15951
640	25.20	10 - 200 mm | 7 7/8"	80	17724
704	27.72	11 - 200 mm | 7 7/8"	88	19496
768	30.24	12 - 200 mm | 7 7/8"	96	21268
832	32.76	13 - 200 mm | 7 7/8"	104	23041
896	35.28	14 - 200 mm | 7 7/8"	112	24813
960	37.80	15 - 200 mm | 7 7/8"	120	26585

C_d, C_M, C_T = 1
Specific gravity = 0.49

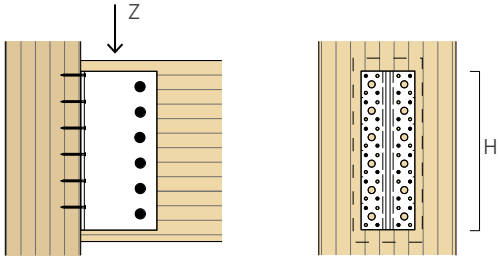
OTHER CONFIGURATION AVAILABLE



ALUMAXI with SBD dowels and LBA nails - full nailing

ADJUSTED DESIGN VALUES | TIMBER-TO-TIMBER JOINT

PARTIAL NAILING - CONNECTION WITH NAILS PARALLEL TO THE GRAIN



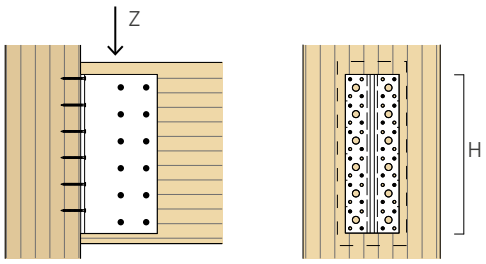
ALUMAXI with STA dowels and LBA nails - partial nailing

ASD DESIGN VALUES

ALUMAXI H [mm]	ALUMAXI H [in]	dowels STA Ø16 mm | 0.63" [pcs. - L]	nails LBA Ø6 x 60 mm | 0.24 x 2 3/8" [pcs.]	partial Z' [lbs]
384	15.12	6 - 160 mm | 6 1/3"	24	6432
448	17.64	7 - 160 mm | 6 1/3"	27	7392
512	20.16	8 - 160 mm | 6 1/3"	32	8834
576	22.68	9 - 160 mm | 6 1/3"	36	10021
640	25.20	10 - 200 mm | 7 7/8"	40	11201
704	27.72	11 - 200 mm | 7 7/8"	44	12376
768	30.24	12 - 200 mm | 7 7/8"	48	13546
832	32.76	13 - 200 mm | 7 7/8"	52	14714
896	35.28	14 - 200 mm | 7 7/8"	56	15880
960	37.80	15 - 200 mm | 7 7/8"	60	17043

C_d, C_M, C_T = 1
Specific gravity = 0.49

OTHER CONFIGURATION AVAILABLE



ALUMAXI with SBD dowels and LBA nails - partial nailing

NOTES:

- Download the latest version of this document from www.rothoblaas.com.
- Concerning the provisions of table 12.5.1F of the NDS: the space between the outer rows of bolts in a steel knife plate should be maximum 10" unless special detailing is provided to accomodate cross-grain shrinkage of the member.
  In dry timber, as proven by the many examples with dry glulam at 12%, the splitting of the timber section does not occour or it is not a structural issue.
  In case the ALU is inserted in wet timber, to mitigate the splitting of the timber member, it is possible to insert full threaded screws perpendicular to the grain.

GENERAL PRINCIPLES:

- Contact Rothoblaas' technical office for more information about the product.
- 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.
- All reference lateral design values are calculated in accordance with the NDS. The analytical model is outlined in ETA-09/0361.