

LOCK T MINI

CONCEALED TIMBER-TO-TIMBER CONNECTOR



SLENDER STRUCTURES

Can be concealed in wooden elements with narrow widths (from 35 mm). Ideal for small structures, gazebos and furnishings.

OUTDOOR

For outdoor use (Service class 3). Choosing the right screw allows any fastening requirement to be met, even in aggressive environments or in the presence of aggressive timber containing tannin, such as chestnut and oak.

VERSATILE

Easy and quick to install, it can be fastened with a single type of screw. Joint that can be easily disassembled, ideal for the construction of temporary structures. Certified strengths calculated in all directions: vertical, horizontal and axial.



CHARACTERISTICS

FOCUS	joints that can be disassembled indoors and outdoors
TIMBER SECTIONS	from 35 x 80 mm to 140 x 280 mm
STRENGTH	$R_{v,k}$ up to 38 kN
FASTENERS	LBS, HBSPEVO, KKF AISI410

VIDEO

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



MATERIAL

LOCK T MINI made of aluminium alloy.
LOCK T MINI EVO made of aluminium alloy with special coating in graphite black colour.

FIELDS OF USE

Outdoor and indoor timber-to-timber shear joints:

- solid timber and glulam
- CLT, LVL
- aggressive woods (containing tannin)
- chemically treated timbers



OUTDOOR APPLICATIONS

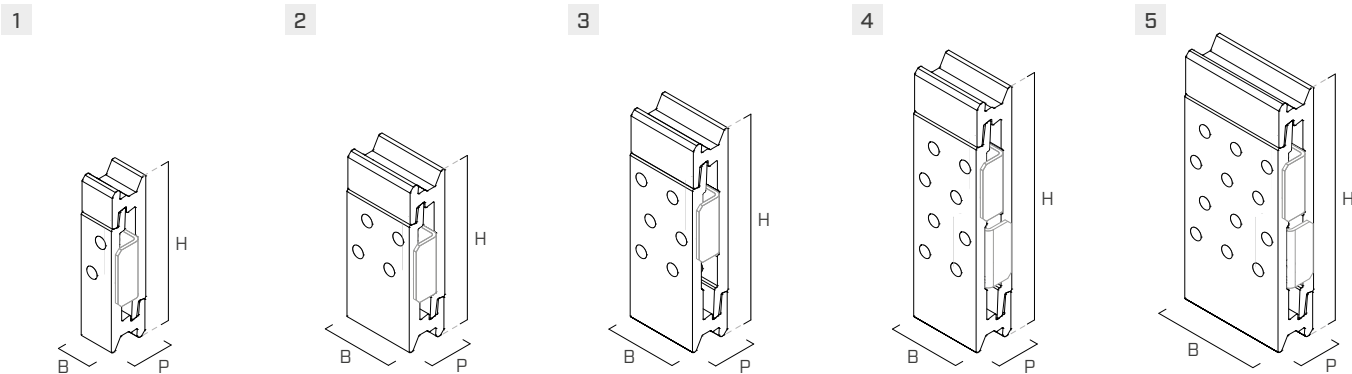
The dual range with or without special coating, coupled with the correct screw allows the connector to be used in service class 3, even on aggressive woods containing tannin such as chestnut and oak.

ASSEMBLY CONNECTOR

Suitable as an assembly connector for prefabricated wall panels and modular building systems. The connector is applied in a groove in one of the two walls without any screwing operations on site.

CODES AND DIMENSIONS

LOCK T MINI - LOCK T MINI EVO



	CODE		B	H	P	$n_{\text{screw}} \times \varnothing^{(1)}$	$n_{\text{LOCKSTOP}} \times \text{type}^{(2)}$	pcs. ⁽³⁾	
	LOCK T MINI	LOCK T MINI EVO							
			[mm]	[mm]	[mm]	pcs			
1	LOCKT1880	LOCKTEVO1880 NEW	17,5	80	20	4 x Ø5	1 x LOCKSTOP5U	50	●
2	LOCKT3580	LOCKTEVO3580	35	80	20	8 x Ø5	2 x LOCKSTOP5/ 1 x LOCKSTOP35	50	●
3	LOCKT35100	LOCKTEVO35100 NEW	35	100	20	12 x Ø5	2 x LOCKSTOP5/ 1 x LOCKSTOP35	50	●
4	LOCKT35120	LOCKTEVO35120	35	120	20	16 x Ø5	4 x LOCKSTOP5/ 2 x LOCKSTOP35	25	●
5	LOCKT53120	LOCKTEVO53120 NEW	52,5	120	20	24 x Ø5	4 x LOCKSTOP5	25	●

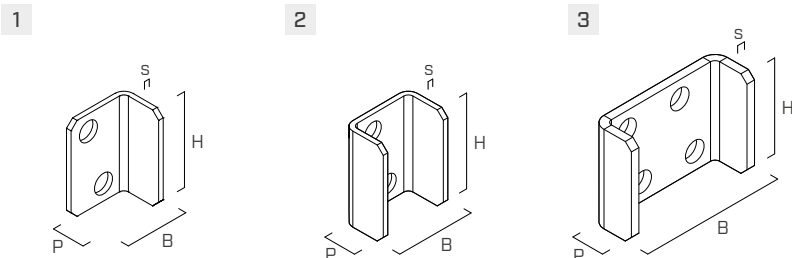
Screws and LOCK STOP are not included in the package.

(1) Number of screws for connector pairs.

(2) The LOCK STOP installation options are indicated on page 6.

(3) Number of connector pairs.

LOCK STOP | LOCKING DEVICE FOR F_{lat}



CODE	description	B	H	P	s	pcs
		[mm]	[mm]	[mm]	[mm]	
1 LOCKSTOP5	carbon steel DX51D+Z275	19,0	27,5	13	1,5	100
2 LOCKSTOP5U	carbon steel DX51D+Z275	21,5	27,5	13	1,5	50
3 LOCKSTOP35 NEW	stainless steel A2 AISI 304	41	28,5	13	2,5	50

MATERIAL AND DURABILITY

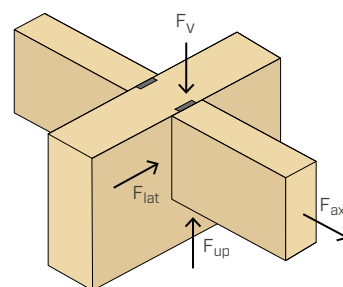
LOCK T MINI - LOCK T MINI EVO: EN AW-6005A aluminium alloy.
To be used in service classes 1, 2 and 3 (EN 1995-1-1).

For information on the application areas of LOCK T MINI and LOCK T MINI EVO with reference to environment service class, atmospheric corrosivity class and timber corrosion class, refer to the website (www.rothoblaas.com).

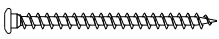
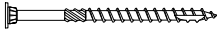
FIELD OF USE

- Timber-to-timber joints between solid timber, glulam, LVL and CLT structural elements

EXTERNAL LOADS



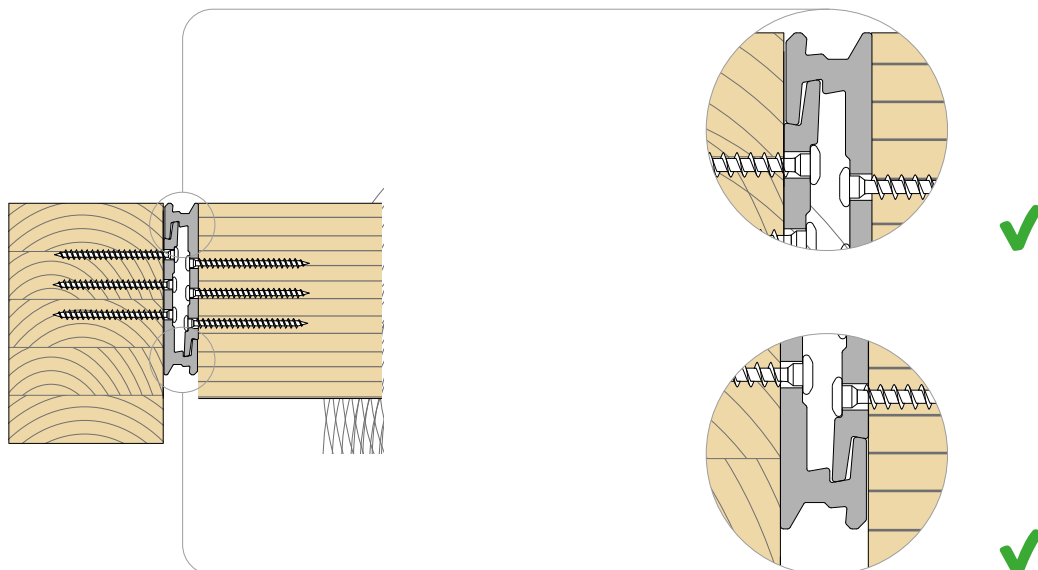
■ ADDITIONAL PRODUCTS - FASTENING

CODE	description	material		d ₁ [mm]	L [mm]	TX	pcs
LBS550	round head screw for plates	bright zinc plated carbon steel		5	50	TX 20	200
LBS570					70		200
HBSPEVO550	pan head screw	carbon steel with C4 EVO coating		5	50	TX 25	200
HBSPEVO570					70		100
KKF550	pan head screw	AISI410 martensitic stainless steel		5	50	TX 25	200
KKF570					70		100

■ INSTALLATION METHODS

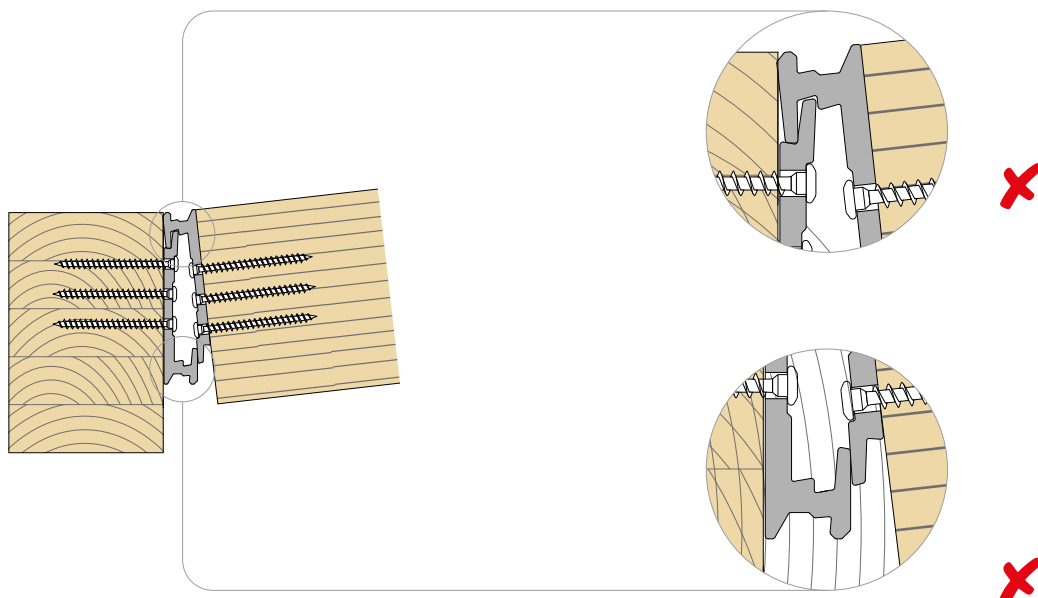
CORRECT INSTALLATION

Install the beam by lowering it from the top, without tilting it. Ensure proper fitting and coupling of the connector at both the top and bottom, as shown in the figure.



INCORRECT INSTALLATION

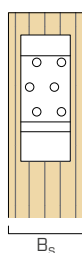
Partial and incorrect coupling of the connector. Ensure that both flanges of the connector are properly seated in their respective seats.



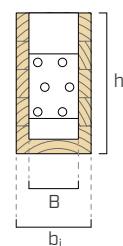
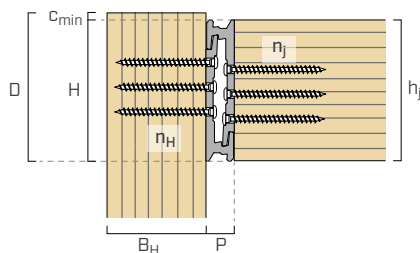
LOCK T MINI - LOCK T MINI EVO INSTALLATION

EXPOSED INSTALLATION ON COLUMN

POST

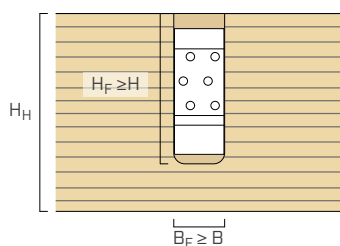


BEAM

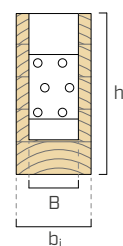
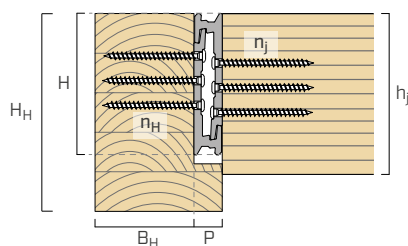


CONCEALED INSTALLATION ON BEAM

PRIMARY BEAM



SECONDARY BEAM



The H_F dimension refers to the minimum height of the rebate at constant width. The milling radius must be taken into account when cutting the rebate.

CODE	connector		fasteners		main element		secondary beam	
	B x H		LBS HBS PLATE EVO KKF		column ⁽¹⁾	beam	b _{J,min} x h _{J,min}	
	[mm]		n _H + n _J - Ø x L		B _{S,min} x B _{H,min}	B _{H,min} x H _{H,min}	with pre-drilling hole [mm]	without pre-drilling hole [mm]
LOCKT1880	17,5 x 80		2 + 2 - Ø5 x 50		35 x 50	50 x 95	35 x 80	43 x 80
LOCKTEVO1880			2 + 2 - Ø5 x 70		35 x 70	70 x 95		
LOCKT3580	35 x 80		4 + 4 - Ø5 x 50		53 x 50	50 x 95	53 x 80	61 x 80
LOCKTEVO3580			4 + 4 - Ø5 x 70		53 x 70	70 x 95		
LOCKT35100	35 x 100		6 + 6 - Ø5 x 50		53 x 50	50 x 115	53 x 100	61 x 100
LOCKTEVO35100			6 + 6 - Ø5 x 70		53 x 70	70 x 115		
LOCKT35120	35 x 120		8 + 8 - Ø5 x 50		53 x 50	50 x 135	53 x 120	61 x 120
LOCKTEVO35120			8 + 8 - Ø5 x 70		53 x 70	70 x 135		
LOCKT53120	52,5 x 120		12 + 12 - Ø5 x 50		70 x 50	50 x 135	70 x 120	78 x 120
LOCKTEVO53120			12 + 12 - Ø5 x 70		70 x 70	70 x 135		
2 x LOCKT35100	70 x 100 ⁽²⁾		12 + 12 - Ø5 x 50		88 x 50	50 x 115	88 x 100	96 x 100
2 x LOCKTEVO35100			12 + 12 - Ø5 x 70		88 x 70	70 x 115		
2 x LOCKT35120	70 x 120 ⁽²⁾		16 + 16 - Ø5 x 50		88 x 50	50 x 135	88 x 120	96 x 120
2 x LOCKTEVO35120			16 + 16 - Ø5 x 70		88 x 70	70 x 135		
1 x LOCKT35120 + 1 x LOCKT53120	87,5 x 120 ⁽²⁾		20 + 20 - Ø5 x 50		105 x 50	50 x 135	105 x 120	113 x 120
1 x LOCKTEVO35120 + 1 x LOCKTEVO53120			20 + 20 - Ø5 x 70		105 x 70	70 x 135		

⁽¹⁾ The screws must be installed in the column with pre-drilled holes.

⁽²⁾ Measurement obtained by coupling two connectors with the same height H. For example, LOCK T 70 x 120 mm is obtained by placing two LOCK T 35 x 120 mm connectors side by side.

CONNECTOR POSITIONING

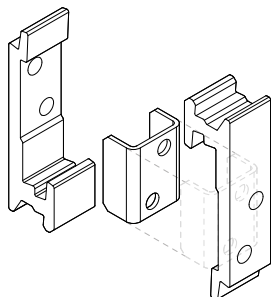
CODE		c _{min} [mm]	D [mm]
LOCKT1880	LOCKTEVO1880	7,5	87,5
LOCKT3580	LOCKTEVO3580	7,5	87,5
LOCKT35100	LOCKTEVO35100	5,0	105,0
LOCKT35120	LOCKTEVO35120	2,5	122,5
LOCKT53120	LOCKTEVO53120	2,5	122,5

The connector on column must be lowered by an amount c_{min} from the top of the beam to meet the minimum distance of the screws from the unloaded end of the column. It is recommended to use dimension "D" for positioning the connector on column.

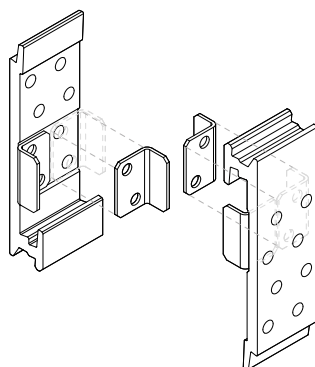
Alignment between the top of column and beam can be achieved by lowering the connector by an amount c_{min} relative to the top of beam (minimum beam height $h_j + c_{min}$).

LOCK STOP INSTALLATION ON LOCK T MINI

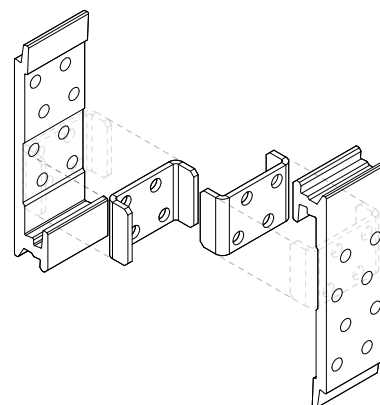
LOCKT1880 + 1 x LOCKSTOP5U



LOCKT35120 + 4 x LOCKSTOP5
LOCKT3580 + 2 x LOCKSTOP5 |
LOCKT35100 + 2 x LOCKSTOP5 |
LOCKT53120 + 4 x LOCKSTOP5



LOCKT35120 + 2 x LOCKSTOP35
LOCKT3580 + 1 x LOCKSTOP35 |
LOCKT35100 + 1 x LOCKSTOP35

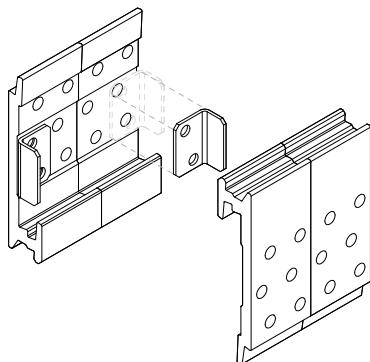


LOCK STOP| assembly

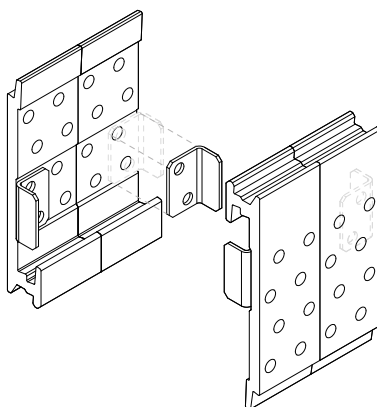
connector ⁽¹⁾		assembly configuration					
CODE	B x H [mm]	LOCKSTOP5		LOCKSTOP5U		LOCKSTOP35	
		application	pcs	application	pcs	application	pcs
LOCKT1880	17,5 x 80	-	-	●	x 1	-	-
LOCKT3580	35 x 80	●	x 2	-	-	●	x 1
LOCKT35100	35 x 100	●	x 2	-	-	●	x 1
LOCKT35120	35 x 120	●	x 4	-	-	●	x 2
LOCKT53120	52,5 x 120	●	x 4	-	-	-	-

LOCK STOP INSTALLATION ON LOCK T MINI COUPLED

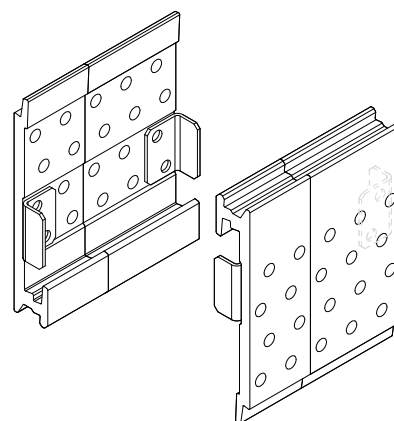
LOCKT70100 + 2 x LOCKSTOP5



LOCKT70120 + 4 x LOCKSTOP5



LOCKT88120 + 4 x LOCKSTOP5



LOCK STOP| assembly

connector ⁽¹⁾		assembly configuration					
CODE	B x H [mm]	LOCKSTOP5		LOCKSTOP5U		LOCKSTOP35	
		application	pcs	application	pcs	application	pcs
LOCKT70100 (LOCKT35100 + LOCKT35100)	70 x 100	●	x 2	-	-	-	-
LOCKT70120 (LOCKT35120 + LOCKT35120)	70 x 120	●	x 4	-	-	-	-
LOCKT88120 (LOCKT35120 + LOCKT53120)	87,5 x 120	●	x 4	-	-	-	-

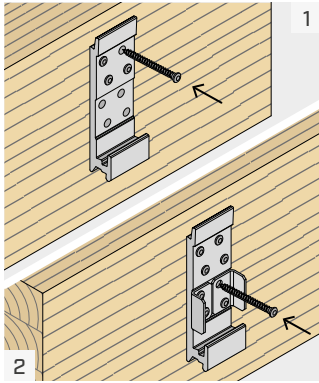
NOTES:

⁽¹⁾ Assembly configuration also valid for the corresponding LOCK EVO connectors.

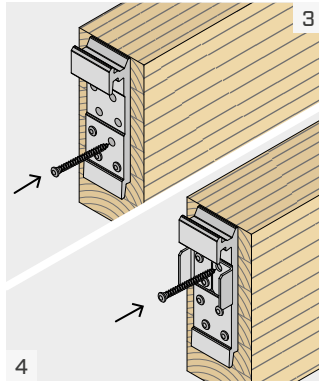
INSTALLATION



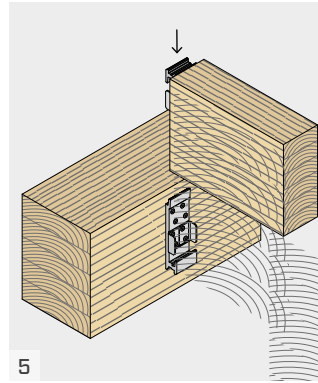
EXPOSED INSTALLATION WITH LOCK STOP



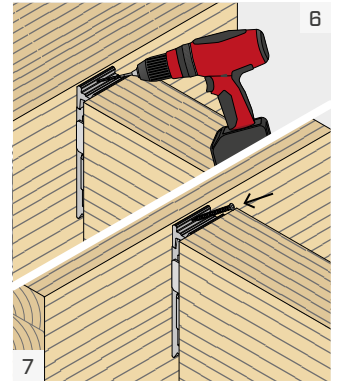
Place the connector on the main element and fasten the upper screws. When using LOCK STOP, position LOCK STOP and fasten the remaining screws.



Place the connector on the secondary beam and fasten the lower screws. When using LOCK STOP, position LOCK STOP and fasten the remaining screws.

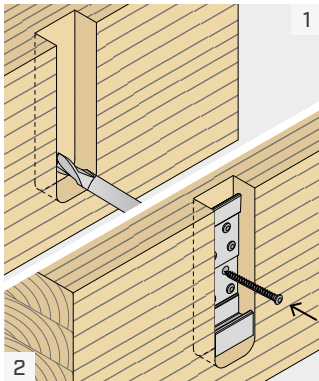


Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.

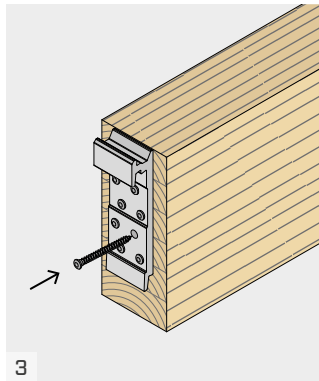


It is possible to install an up-lift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be inserted in the hole.

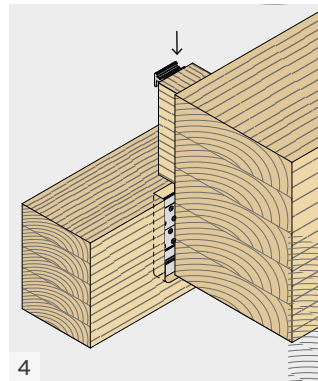
CONCEALED INSTALLATION



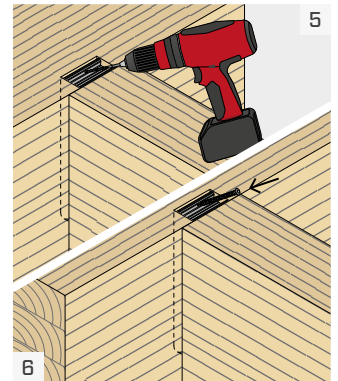
Carry out the rebate on the main element. Place the connector on the main element and fasten all screws.



Place the connector on the secondary beam and fasten all screws.

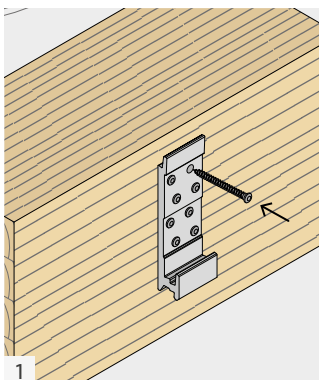


Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.

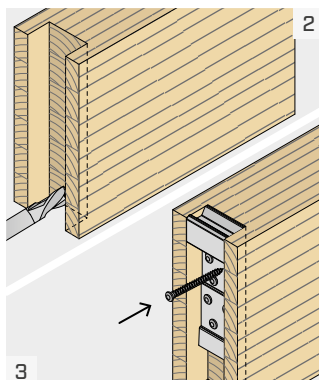


It is possible to install an up-lift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be inserted in the hole.

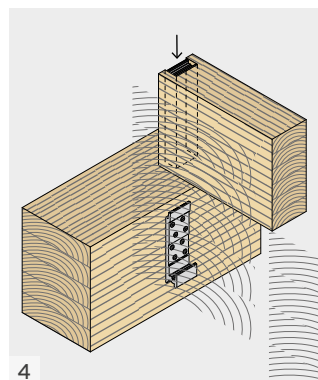
SEMI-CONCEALED INSTALLATION - CONNECTOR VISIBLE FROM BELOW



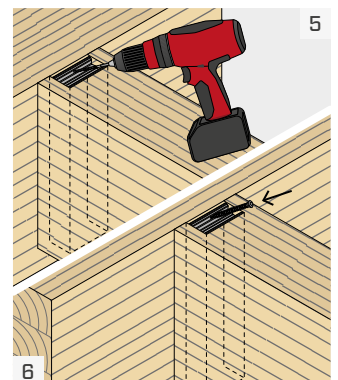
Place the connector on the main element and fasten all screws.



Cut a full depth rebate on the secondary beam. Position the connector and fasten all screws.

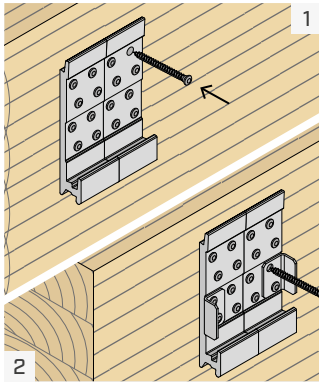


Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.

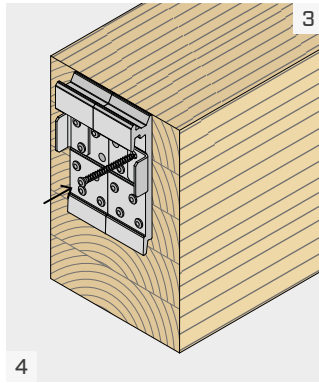


It is possible to install an up-lift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be inserted in the hole.

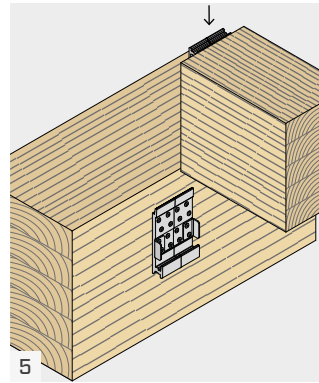
COUPLED ON LOCK T MINI INSTALLATION



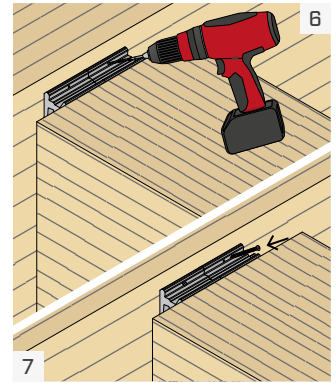
Place the connectors on the main element and fasten the top screws, making sure the connectors are aligned with each other. When using LOCK STOP, position LOCK STOP and fasten the remaining screws.



Place the connectors on the secondary beam and fasten the lower screws, making sure the connectors are aligned with each other. When using LOCK STOP, position LOCK STOP and fasten the remaining screws.



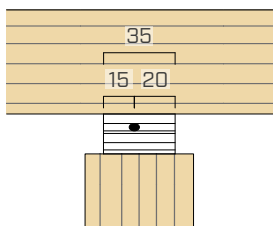
Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.



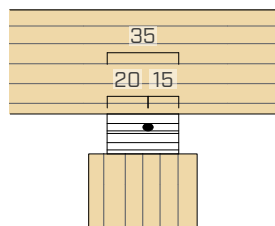
It is possible to install an up-lift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be inserted in the hole.

OPTIONAL INCLINED SCREW

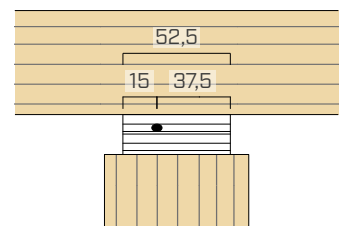
The holes inclined at 45° must be drilled on site using a drill and iron drill bit with a diameter of 5 mm. The image shows the positions for the optional inclined holes.



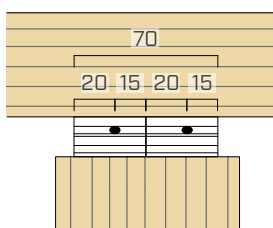
LOCKT3580 | LOCKTEVO3580
LOCKT35120 | LOCKTEVO35120



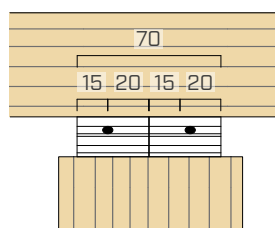
LOCKT35100 | LOCKTEVO35100



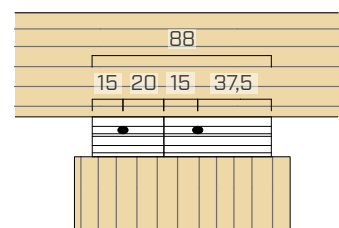
LOCKT53120 | LOCKTEVO53120



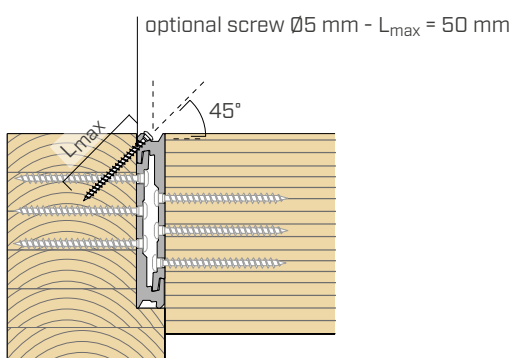
2 x LOCKT35100 | LOCKTEVO35100

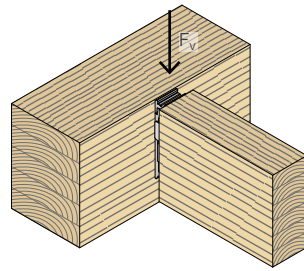


2 x LOCKT35120 | LOCKTEVO35120



1 x LOCKT35120 | LOCKTEVO35120
1 x LOCKT53120 | LOCKTEVO53120





connector		fasteners		TIMBER			ALUMINIUM
CODE	B x H [mm]	type	$n_H + n_j - \varnothing \times L$ [mm]	C24 [kN]	$R_{v,k}$ timber GL24h [kN]	C50 [kN]	$R_{v,k}$ alu [kN]
LOCKT1880 LOCKTEVO1880	17,5 x 80	LBS	2 + 2 - $\varnothing 5 \times 50$	2,3	2,5	3,2	10
		HBSPEVO KKF		1,9	2,1	2,8	
		LBS	2 + 2 - $\varnothing 5 \times 70$	2,8	3,0	3,8	
		HBSPEVO KKF		2,4	2,5	3,1	
LOCKT3580 LOCKTEVO3580	35 x 80	LBS	4 + 4 - $\varnothing 5 \times 50$	4,5	4,9	6,4	20
		HBSPEVO KKF		3,9	4,3	5,6	
		LBS	4 + 4 - $\varnothing 5 \times 70$	5,7	6,0	7,5	
		HBSPEVO KKF		4,8	5,1	6,2	
LOCKT35100 LOCKTEVO35100	35 x 100	LBS	6 + 6 - $\varnothing 5 \times 50$	6,8	7,4	9,6	20
		HBSPEVO KKF		5,8	6,4	8,5	
		LBS	6 + 6 - $\varnothing 5 \times 70$	8,5	9,0	11,3	
		HBSPEVO KKF		7,2	7,6	9,3	
LOCKT35120 LOCKTEVO35120	35 x 120	LBS	8 + 8 - $\varnothing 5 \times 50$	9,1	9,9	12,8	20
		HBSPEVO KKF		7,8	8,5	11,3	
		LBS	8 + 8 - $\varnothing 5 \times 70$	11,4	12,0	15,1	
		HBSPEVO KKF		9,6	10,2	12,4	
LOCKT53120 LOCKTEVO53120	52,5 x 120	LBS	12 + 12 - $\varnothing 5 \times 50$	13,8	15,0	19,3	30
		HBSPEVO KKF		11,8	12,9	16,9	
		LBS	12 + 12 - $\varnothing 5 \times 70$	17,1	17,9	22,7	
		HBSPEVO KKF		14,4	15,3	18,7	
2 x LOCKT35100 2 x LOCKTEVO35100	70 x 100 ⁽¹⁾	LBS	12 + 12 - $\varnothing 5 \times 50$	13,6	14,8	19,2	40
		HBSPEVO KKF		11,7	12,8	16,9	
		LBS	12 + 12 - $\varnothing 5 \times 70$	17,0	17,9	22,6	
		HBSPEVO KKF		14,4	15,2	18,7	
2 x LOCKT35120 2 x LOCKTEVO35120	70 x 120 ⁽¹⁾	LBS	16 + 16 - $\varnothing 5 \times 50$	18,1	19,8	25,6	40
		HBSPEVO KKF		15,6	17,0	22,6	
		LBS	16 + 16 - $\varnothing 5 \times 70$	22,8	23,9	30,2	
		HBSPEVO KKF		19,2	20,4	24,9	
1 x LOCKT35120 + 1 x LOCKT53120 1 x LOCKTEVO35120 + 1 x LOCKTEVO53120	87,5 x 120 ⁽¹⁾	LBS	20 + 20 - $\varnothing 5 \times 50$	22,9	25,0	32,1	50
		HBSPEVO KKF		19,6	21,4	28,2	
		LBS	20 + 20 - $\varnothing 5 \times 70$	28,5	29,9	37,8	
		HBSPEVO KKF		24,0	25,5	31,1	

NOTES:

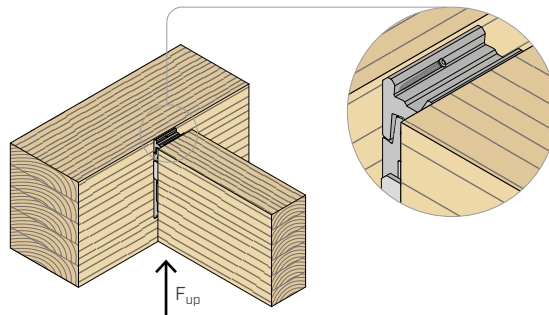
⁽¹⁾ Measurement obtained by coupling two connectors with the same height H.

GENERAL PRINCIPLES:

- For the general principles of calculation, see page 15.

■ STRUCTURAL VALUES | TIMBER-TO-TIMBER JOINT | F_{up}

INCLINED SCREW



CODE	connector	fasteners inclined screw - LBS n - Ø x L [mm]	TIMBER
	B x H [mm]		$R_{up,k \text{ timber}}^{(1)}$ [kN]
LOCKT3580 LOCKTEVO3580	35 x 80	1 - Ø5 x 50	2,1
LOCKT35100 LOCKTEVO35100	35 x 100	1 - Ø5 x 50	2,1
LOCKT35120 LOCKTEVO35120	35 x 120	1 - Ø5 x 50	2,1
LOCKT53120 LOCKTEVO53120	52,5 x 120	1 - Ø5 x 50	2,1
2 x LOCKT35100 2 x LOCKTEVO35100	70 x 100 ⁽²⁾	2 - Ø5 x 50	3,9
2 x LOCKT35120 2 x LOCKTEVO35120	70 x 120 ⁽²⁾	2 - Ø5 x 50	3,9
1 x LOCKT35120 + 1 x LOCKT53120 1 x LOCKTEVO35120 + 1 x LOCKTEVO53120	87,5 x 120 ⁽²⁾	2 - Ø5 x 50	3,9

NOTES:

⁽¹⁾ For the configurations shown in the table, the static values are independent of the type of screw in the primary beam and secondary beam.

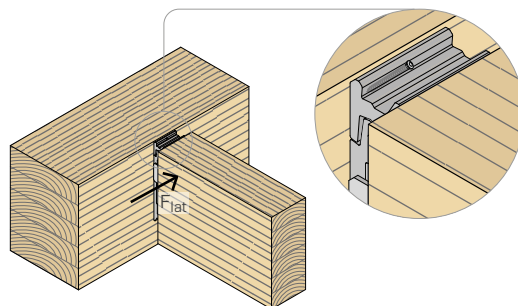
⁽²⁾ Measurement obtained by coupling two connectors with the same height H.

GENERAL PRINCIPLES:

- For the general principles of calculation, see page 15.

STRUCTURAL VALUES | TIMBER-TO-TIMBER JOINT | F_{lat}

INCLINED SCREW



connector		fasteners		TIMBER
CODE	B x H [mm]	HBSPEVO KKF n _H + n _j - Ø x L [mm]	inclined screw - LBS n - Ø x L [mm]	R _{lat,k timber} ⁽¹⁾ [kN]
LOCKT3580 LOCKTEVO3580	35 x 80	4 + 4 - Ø5 x 50 4 + 4 - Ø5 x 70	1 - Ø5 x 50	0,8 1,0
LOCKT35100 LOCKTEVO35100	35 x 100	6 + 6 - Ø5 x 50 6 + 6 - Ø5 x 70	1 - Ø5 x 50	1,0 1,3
LOCKT35120 LOCKTEVO35120	35 x 120	8 + 8 - Ø5 x 50 8 + 8 - Ø5 x 70	1 - Ø5 x 50	1,4 1,8
LOCKT53120 LOCKTEVO53120	52,5 x 120	12 + 12 - Ø5 x 50 12 + 12 - Ø5 x 70	1 - Ø5 x 50	2,2 2,2
2 x LOCKT35100 2 x LOCKTEVO35100	70 x 100 ⁽²⁾	12 + 12 - Ø5 x 50 12 + 12 - Ø5 x 70	2 - Ø5 x 50	2,1 2,7
2 x LOCKT35120 2 x LOCKTEVO35120	70 x 120 ⁽²⁾	16 + 16 - Ø5 x 50 16 + 16 - Ø5 x 70	2 - Ø5 x 50	2,9 3,5
1 x LOCKT35120 + 1 x LOCKT53120 1 x LOCKTEVO35120 + 1 x LOCKTEVO53120	87,5 x 120 ⁽²⁾	20 + 20 - Ø5 x 50 20 + 20 - Ø5 x 70	2 - Ø5 x 50	3,5 3,5

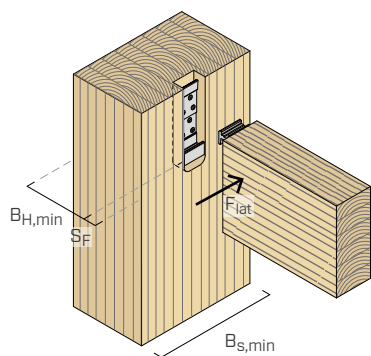
NOTES:

⁽¹⁾ Strength values can be accepted as valid, for higher safety standards, for LBS screws.

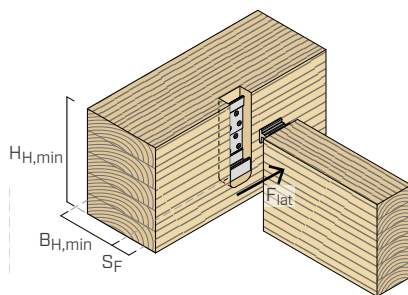
⁽²⁾ Measurement obtained by coupling two connectors with the same height H.

GENERAL PRINCIPLES:

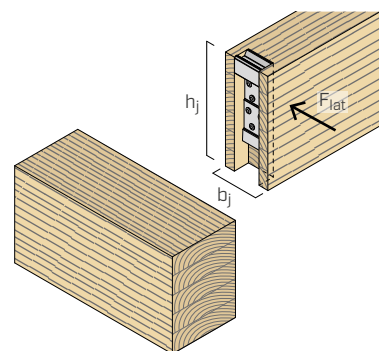
- For the general principles of calculation, see page 15.



1. COLUMN REBATE



2. PRIMARY BEAM REBATE



3. SECONDARY BEAM REBATE

connector		fasteners	R _{lat} , k timber ⁽¹⁾					
CODE		HBSPEVO KKF	column rebate ⁽²⁾	1	primary beam rebate	2	secondary beam rebate	3
	B x H [mm]	n _H + n _J - Ø x L [mm]	B _{S,min} x B _{H,min} [mm]	[kN]	B _{H,min} x H _{H,min} [mm]	[kN]	b _{J,min} x h _{J,min} [mm]	[kN]
LOCKT1880	17,5 x 80	2 + 2 - Ø5 x 50	60 x 50	0,4	50 x 95	0,4	60 x 80	0,9
LOCKTEVO1880		2 + 2 - Ø5 x 70	60 x 70	0,5	70 x 95	0,5		1,1
LOCKT3580	35 x 80	4 + 4 - Ø5 x 50	80 x 50	1,2	50 x 95	1,5	80 x 80	2,5
LOCKTEVO3580		4 + 4 - Ø5 x 70	80 x 70	1,2	70 x 95	1,9		2,5
LOCKT35100	35 x 100	6 + 6 - Ø5 x 50	80 x 50	1,5	50 x 115	2,4	80 x 100	3,1
LOCKTEVO35100		6 + 6 - Ø5 x 70	80 x 70	1,5	70 x 115	3,0		3,1
LOCKT35120	35 x 120	8 + 8 - Ø5 x 50	80 x 50	1,8	50 x 135	3,6	80 x 120	3,7
LOCKTEVO35120		8 + 8 - Ø5 x 70	80 x 70	1,8	70 x 135	4,5		3,7
LOCKT53120	52,5 x 120	12 + 12 - Ø5 x 50	100 x 50	1,8	50 x 135	6,4	100 x 120	3,7
LOCKTEVO53120		12 + 12 - Ø5 x 70	100 x 70	1,8	70 x 135	7,8		3,7
2 x LOCKT35100	70 x 100 ⁽³⁾	12 + 12 - Ø5 x 50	120 x 50	1,5	50 x 115	4,7	120 x 100	3,1
2 x LOCKTEVO35100		12 + 12 - Ø5 x 70	120 x 70	1,5	70 x 115	5,9		3,1
2 x LOCKT35120	70 x 120 ⁽³⁾	16 + 16 - Ø5 x 50	120 x 50	1,8	50 x 135	7,2	120 x 120	3,7
2 x LOCKTEVO35120		16 + 16 - Ø5 x 70	120 x 70	1,8	70 x 135	9,0		3,7
1 x LOCKT35120 + 1 x LOCKT53120	87,5 x 120 ⁽³⁾	20 + 20 - Ø5 x 50	140 x 50	1,8	50 x 135	10,0	140 x 120	3,7
1 x LOCKTEVO35120 + 1 x LOCKTEVO53120		20 + 20 - Ø5 x 70	140 x 70	1,8	70 x 135	12,4		3,7

NOTES:

⁽¹⁾ Strength values can be accepted as valid, for higher safety standards, for LBS screws.

⁽²⁾ The screws must be installed in the column with pre-drilled holes.

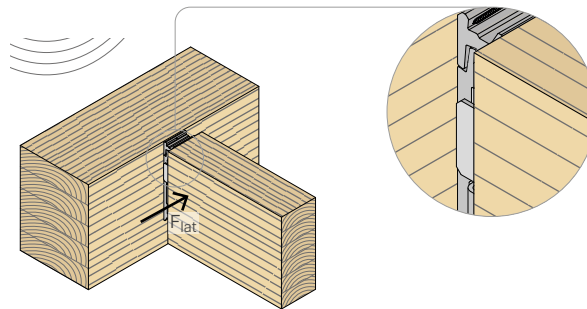
⁽³⁾ Measurement obtained by coupling two connectors with the same height H.

GENERAL PRINCIPLES:

- For the general principles of calculation, see page 15.

■ STRUCTURAL VALUES | TIMBER-TO-TIMBER JOINT | F_{lat}

LOCK STOP



CODE	connector	LOCK STOP	
	B x H [mm]	$n_{LOCKSTOP}$ x type	$R_{lat,k steel}^{(1)}$ [kN]
LOCKT1880 LOCKTEVO1880	17,5 x 80	1 x LOCKSTOP5U	0,2
LOCKT3580 LOCKTEVO3580	35 x 80	2 x LOCKSTOP5 1 x LOCKSTOP35	0,2 0,7
LOCKT35100 LOCKTEVO35100	35 x 100	2 x LOCKSTOP5 1 x LOCKSTOP35	0,2 0,7
LOCKT35120 LOCKTEVO35120	35 x 120	4 x LOCKSTOP5 2 x LOCKSTOP35	0,5 1,4
LOCKT53120 LOCKTEVO53120	52,5 x 120	4 x LOCKSTOP5	0,5
2 x LOCKT35100 2 x LOCKTEVO35100	70 x 100 ⁽²⁾	2 x LOCKSTOP5	0,2
2 x LOCKT35120 2 x LOCKTEVO35120	70 x 120 ⁽²⁾	4 x LOCKSTOP5	0,5
1 x LOCKT35120 + 1 x LOCKT53120 1 x LOCKTEVO35120 + 1 x LOCKTEVO53120	87,5 x 120 ⁽²⁾	4 x LOCKSTOP5	0,5

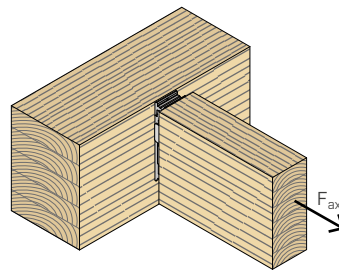
NOTES:

⁽¹⁾ For the configurations shown in the table, the static values are independent of the type of screw and the fastening to column or beam.

⁽²⁾ Measurement obtained by coupling two connectors with the same height H.

GENERAL PRINCIPLES:

- For the general principles of calculation, see page 15.



connector		fasteners		$R_{ax,k \text{ timber}}$
CODE	B x H [mm]	type	$n_H + n_J - \varnothing \times L$ [mm]	[kN]
LOCKT1880 LOCKTEVO1880	17,5 x 80	LBS	2 + 2 - $\varnothing 5 \times 50$	1,1
		HBSPEVO KKF		0,7
		LBS	2 + 2 - $\varnothing 5 \times 70$	1,6
		HBSPEVO KKF		1,0
LOCKT3580 LOCKTEVO3580	35 x 80	LBS	4 + 4 - $\varnothing 5 \times 50$	2,1
		HBSPEVO KKF		1,5
		LBS	4 + 4 - $\varnothing 5 \times 70$	3,1
		HBSPEVO KKF		2,0
LOCKT35100 LOCKTEVO35100	35 x 100	LBS	6 + 6 - $\varnothing 5 \times 50$	2,6
		HBSPEVO KKF		1,8
		LBS	6 + 6 - $\varnothing 5 \times 70$	3,9
		HBSPEVO KKF		2,5
LOCKT35120 LOCKTEVO53120	35 x 120	LBS	8 + 8 - $\varnothing 5 \times 50$	2,9
		HBSPEVO KKF		2,0
		LBS	8 + 8 - $\varnothing 5 \times 70$	4,3
		HBSPEVO KKF		2,7
LOCKT53120 LOCKTEVO53120	52,5 x 120	LBS	12 + 12 - $\varnothing 5 \times 50$	4,4
		HBSPEVO KKF		3,0
		LBS	12 + 12 - $\varnothing 5 \times 70$	6,4
		HBSPEVO KKF		4,1
2 x LOCKT35100 2 x LOCKTEVO35100	70 x 100 ⁽¹⁾	LBS	12 + 12 - $\varnothing 5 \times 50$	5,3
		HBSPEVO KKF		3,7
		LBS	12 + 12 - $\varnothing 5 \times 70$	7,8
		HBSPEVO KKF		4,9
2 x LOCKT35120 2 x LOCKTEVO35120	70 x 120 ⁽¹⁾	LBS	16 + 16 - $\varnothing 5 \times 50$	5,8
		HBSPEVO KKF		4,1
		LBS	16 + 16 - $\varnothing 5 \times 70$	8,5
		HBSPEVO KKF		5,4
1 x LOCKT35120 + 1 x LOCKT53120 1 x LOCKTEVO35120 + 1 x LOCKTEVO53120	87,5 x 120 ⁽¹⁾	LBS	20 + 20 - $\varnothing 5 \times 50$	7,3
		HBSPEVO KKF		5,1
		LBS	20 + 20 - $\varnothing 5 \times 70$	10,7
		HBSPEVO KKF		6,8

NOTES:

⁽¹⁾ Measurement obtained by coupling two connectors with the same height H.

GENERAL PRINCIPLES:

- For the general principles of calculation, see page 15.

GENERAL PRINCIPLES:

- Dimensioning and verification of the timber elements must be carried out separately. In particular, for loads perpendicular to the beam axis, it is recommended to perform a splitting check in both wooden elements.
- If coupled connectors are used, special care must be taken in alignment during installation to avoid different stresses in the two connectors.
- The connector must always be fully fastened using all the holes.
- Fastening with partial nailing is not allowed. Screws with the same length must be used for each connector half.
- The pre-drill is not required for screws on primary or secondary beam, with characteristic density $\rho_k \leq 420 \text{ kg/m}^3$. The pre-drill is mandatory on primary or secondary beam with characteristic density $\rho_k > 420 \text{ kg/m}^3$. For screws on column, pre-drilling is always mandatory.
- Static values were calculated assuming a constant thickness of the metal element, including the thickness of the LOCK STOP.
- In case of combined loading the following verification shall be satisfied:

$$\left(\frac{F_{ax,d}}{R_{ax,d}}\right)^2 + \left(\frac{F_{v,d}}{R_{v,d}}\right)^2 + \left(\frac{F_{up,d}}{R_{up,d}}\right)^2 + \left(\frac{F_{lat,d}}{R_{lat,d}}\right)^2 \leq 1$$

$F_{v,d}$ and $F_{up,d}$ are forces acting in opposite directions. Therefore only one of the forces $F_{v,d}$ and $F_{up,d}$ can act in combination with the forces $F_{ax,d}$ or $F_{lat,d}$.

STRUCTURAL VALUES | F_v | F_{up} | F_{ax}

- C24 and GL24h: values calculated according to ETA-19/0831, ETA-11/0030 and EN 1995-1-1 for screws without pre-drilling hole. The strength value can be accepted as valid, for higher safety standards, even in the presence of pre-drill $\rho_k = 350 \text{ kg/m}^3$ for C24 (F_v , F_{up} and F_{ax}) and $\rho_k = 385 \text{ kg/m}^3$ for GL24h (F_v) have been taken in consideration in the calculation.
- C50 (F_v): values calculated according to ETA-19/0831, ETA-11/0030 and EN 1995-1-1 for screws with pre-drilling hole $\rho_k = 430 \text{ kg/m}^3$ has been taken in consideration in the calculation.
- Design values can be obtained from characteristic values as follows:

$$R_{v,d} = \min \begin{cases} R_{v,d \text{ timber}} = \frac{R_{v,k \text{ timber}} \cdot k_{mod}}{\gamma_M} \\ R_{v,d \text{ alu}} = \frac{R_{v,k \text{ alu}}}{\gamma_{M2}} \end{cases}$$

where:

- γ_M is the partial safety coefficient of timber.
- γ_{M2} is the partial safety coefficient of the aluminum material subject to tensile stress, to be taken according to the current standard used for calculation. If there are no other provisions, it is suggested to use the value provided by EN 1999-1-1, equal to $\gamma_{M2} = 1,25$.
- For configurations for which only the timber-side strength is reported, the aluminium-side overstrength can be assumed.

STRUCTURAL VALUES | F_{lat}

- Values calculated according to ETA-19/0831, ETA-11/0030 and EN 1995-1-1 for screws without pre-drilling hole and C24 timber elements with a density of $\rho_k = 350 \text{ kg/m}^3$.
- Special care must be taken in the execution of cutting the rebate in the main element or secondary beam to limit the lateral sliding of the connection.
- The F_{lat} strength with inclined screw for coupled connectors was calculated considering the effective number of screws arranged parallel to the fibre according to EN 1995-1-1.
- The configurations for F_{lat} strength (column rebate, primary beam rebate, secondary beam rebate, LOCK STOP and inclined screw) have different stiffness levels. Therefore, combining two or more configurations in order to increase the strength is not allowed.
- Design values can be obtained from characteristic values as follows:

Housing in the column, primary beam or secondary beam and inclined screw

$$R_{lat,d} = \frac{R_{lat,k \text{ timber}} \cdot k_{mod}}{\gamma_M}$$

LOCK STOP

$$R_d = \min \begin{cases} R_{lat,d \text{ timber}} = \frac{R_{lat,k \text{ timber}} \cdot k_{mod}}{\gamma_M} \\ R_{lat,d \text{ steel}} = \frac{R_{lat,k \text{ steel}}}{\gamma_{steel}} \end{cases}$$

where:

- γ_M is the partial safety coefficient of timber
- γ_{steel} is the partial safety coefficient of steel

CONNECTION STIFFNESS | F_v

- Connection stiffness can be calculated according to ETA-19/0831, with the following equation:

$$K_{v,ser} = \frac{n \cdot \rho_m^{1,5} \cdot d^{0,8}}{30} \text{ N/mm}$$

where:

- d is the diameter of the screw thread in the secondary beam, in mm;
- ρ_m is the average density of the secondary beam, in kg/m^3 ;
- n is the number of screws in the secondary beam.