

LOCK T MINI

CONCEALED TIMBER-TO-TIMBER CONNECTOR

SLENDER STRUCTURES

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

OUTDOOR

For outdoor use (Service class 3). The correct choice of screw enables all fastening requirements to be met, even in aggressive environments.

DISASSEMBLED

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.



USA, Canada and more design values available online.



VIDEO



CALCULATION
TOOL



DESIGN
REGISTERED



ETA-19/0831

SERVICE CLASS

SC1

SC2

SC3

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

MATERIAL

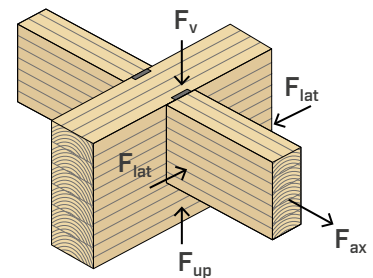


EN AW-6005A aluminium alloy



EVO version with special paint in graphite black colour

EXTERNAL LOADS



VIDEO

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

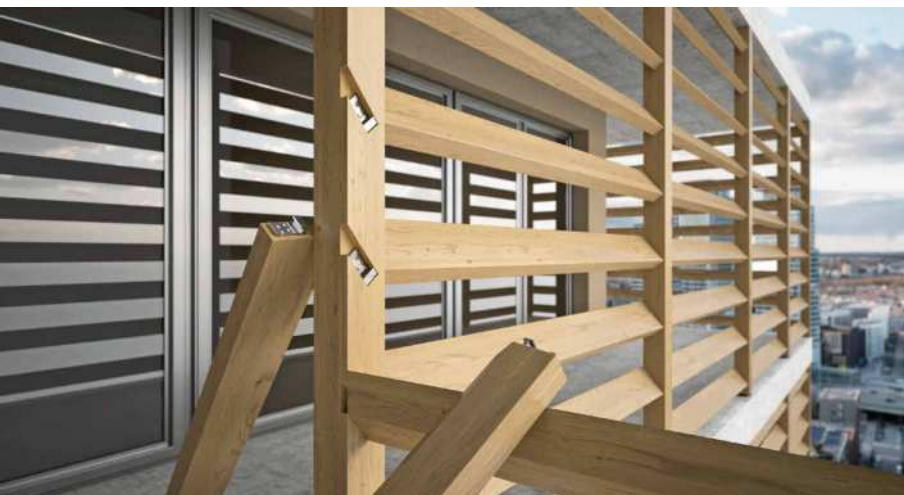


FIELDS OF USE

Concealed joint in timber-to-timber beam configuration, suitable for small structures, gazebos and furniture. Resistant outdoors, with the coated EVO version also in aggressive environments.

Can be applied to:

- solid timber softwood and hardwood
- glulam, LVL



OUTDOOR APPLICATIONS

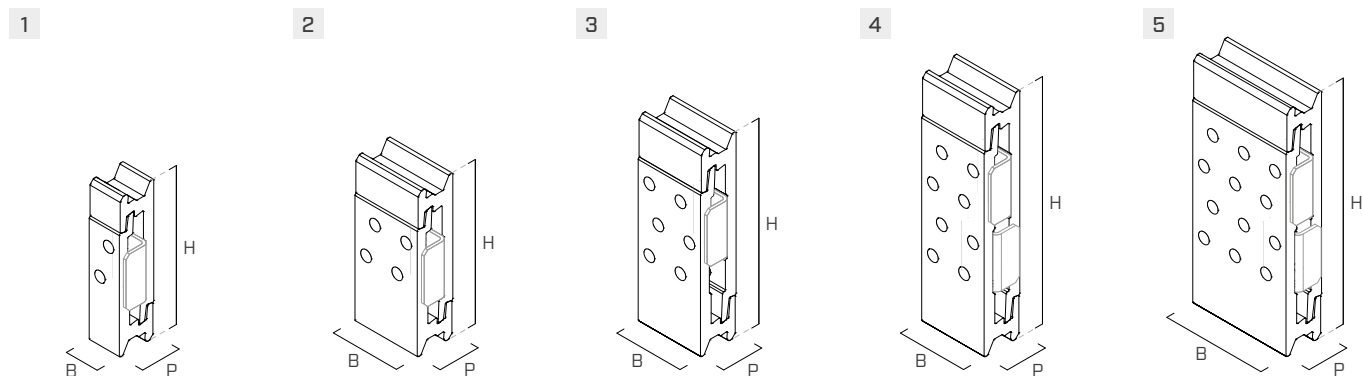
The dual range with or without special coating, coupled with the correct screw allows the connector to be used in service class 3, even in aggressive environments.

FAÇADES

It allows installation on thin beams. Ideal for the construction of façade sunscreen systems.

CODES AND DIMENSIONS

LOCK T MINI-LOCK T MINI EVO



	CODE		B	H	P	B	H	P	n _{screw} x Ø ⁽¹⁾	n _{LOCKSTOP} x type ⁽²⁾		pcs. ⁽³⁾
	LOCK T MINI	LOCK T MINI EVO	[mm]	[mm]	[mm]	[in]	[in]	[in]	[pcs]			
1	LOCKT1880	LOCKTEVO1880	17,5	80	20	11/16	3 1/8	0.79	4 x Ø5 Ø0.20	1 x LOCKSTOP5U	●	50
2	LOCKT3580	LOCKTEVO3580	35	80	20	1 3/8	3 1/8	0.79	8 x Ø5 Ø0.20	2 x LOCKSTOP5/ 1 x LOCKSTOP35	●	50
3	LOCKT35100	LOCKTEVO35100	35	100	20	1 3/8	4	0.79	12 x Ø5 Ø0.20	2 x LOCKSTOP5/ 1 x LOCKSTOP35	●	50
4	LOCKT35120	LOCKTEVO35120	35	120	20	1 3/8	4 3/4	0.79	16 x Ø5 Ø0.20	4 x LOCKSTOP5/ 2 x LOCKSTOP35	●	25
5	LOCKT53120	LOCKTEVO53120	52,5	120	20	2 1/16	4 3/4	0.79	24 x Ø5 Ø0.20	4 x LOCKSTOP5	●	25

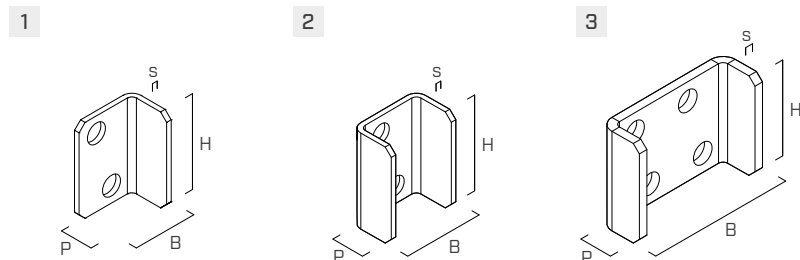
Screws and LOCK STOP are not included in the package.

(1) Number of screws for connector pairs.

(2) The LOCK STOP installation options are indicated on page 23.

(3) Number of connector pairs.

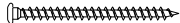
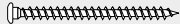
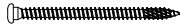
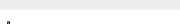
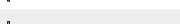
LOCK STOP | LOCKING DEVICE FOR Flat



CODE	description	B	H	P	s	B	H	P	s	pcs
		[mm]	[mm]	[mm]	[mm]	[in]	[in]	[in]	[in]	
1 LOCKSTOP5(*)	carbon steel DX51D+Z275	19,0	27,5	13	1,5	3/4	1 1/16	1/2	0.06	100
2 LOCKSTOP5U(*)	carbon steel DX51D+Z275	21,5	27,5	13	1,5	7/8	1 1/16	1/2	0.06	50
3 LOCKSTOP35	stainless steel A2 AISI 304	41,0	28,5	13	2,5	1 5/8	1 1/8	1/2	0.10	50

(*) Not holding CE marking.

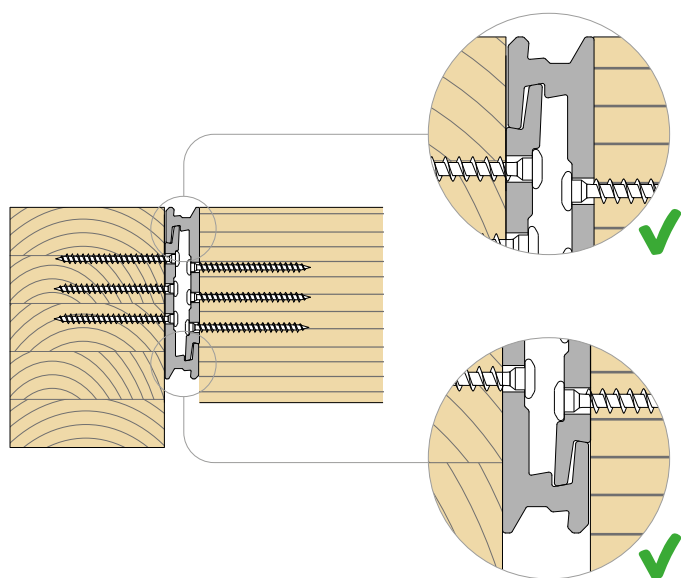
FASTENERS

type	description		d	support	page
			[mm]		
LBS	round head screw		5		571
LBS EVO	C4 EVO round head screw		5		571
LBS HARDWOOD	round head screw on hardwoods		5		572
LBS HARDWOOD EVO	C4 EVO round head screw on hardwoods		5		572
HBS PLATE EVO	C4 EVO pan head screw		5		573
KKF AISI410	pan head screw		5		574

■ INSTALLATION METHODS

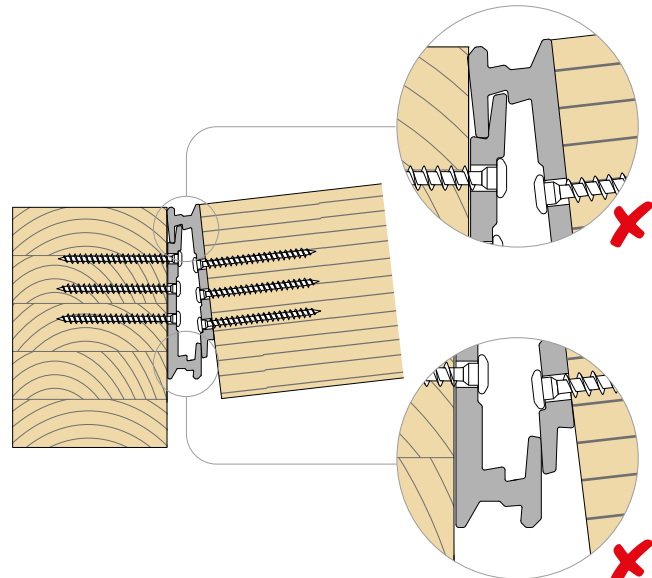
CORRECT INSTALLATION

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



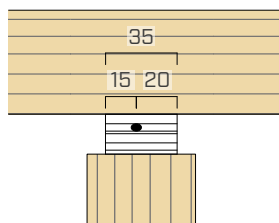
INCORRECT INSTALLATION

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

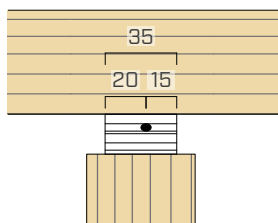


■ OPTIONAL INCLINED SCREW

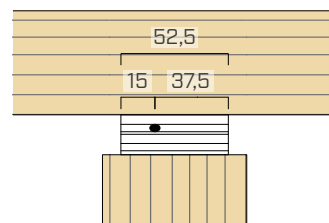
45° inclined holes must be drilled on site using a 5 mm diameter and metal drill bit. The image shows the positions for the optional inclined holes.



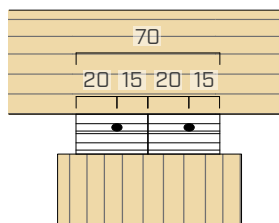
LOCKT3580 | LOCKTEV03580
LOCKT35120 | LOCKTEV035120



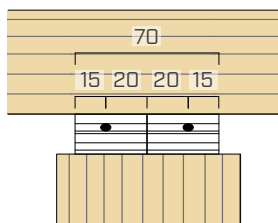
LOCKT35100 | LOCKTEV035100



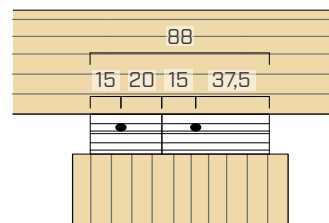
LOCKT53120 | LOCKTEV053120



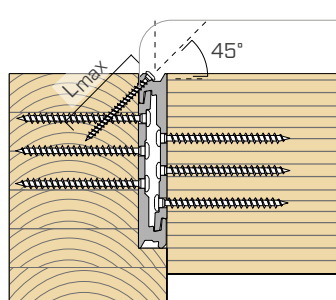
2 x LOCKT35100 | LOCKTEV035100



2 x LOCKT35120 | LOCKTEV035120



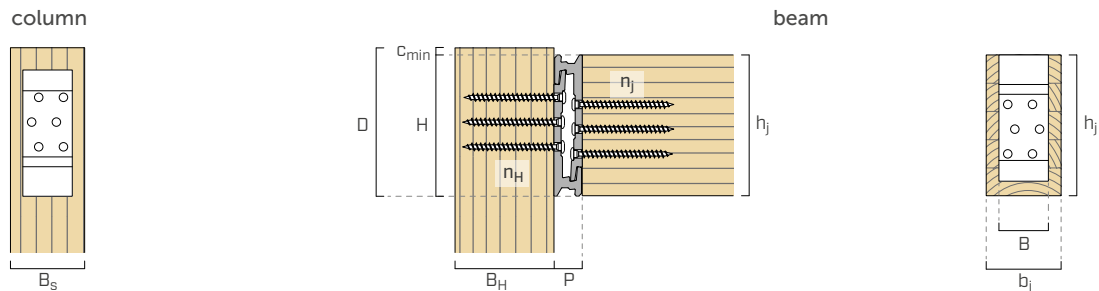
1 x LOCKT35120 | LOCKTEV035120
1 x LOCKT53120 | LOCKTEV053120



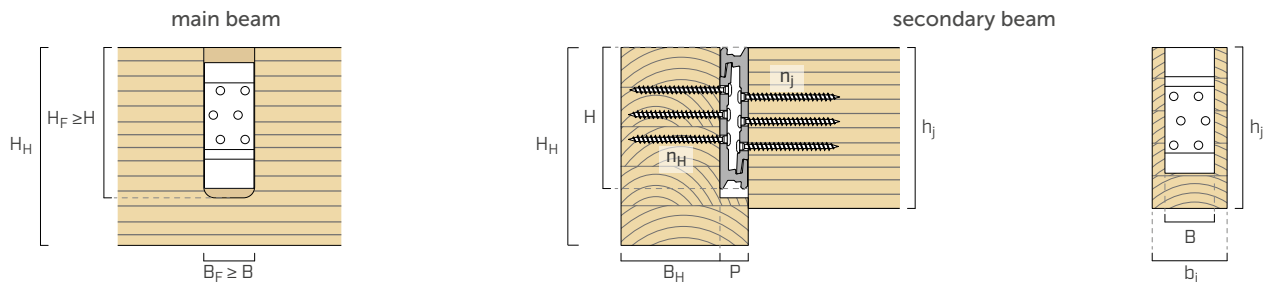
optional screw $\varnothing 5$ mm - $L_{\max} = 50$ mm

■ INSTALLATION | LOCK T MINI-LOCK T MINI EVO

EXPOSED INSTALLATION ON COLUMN



CONCEALED INSTALLATION ON BEAM



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

connector	fasteners LBS LBS EVO KKF HBS PLATE EVO		main element		secondary beam	
	B x H	$n_H + n_j - \varnothing \times L$	column ⁽¹⁾	beam	$b_j \times h_j$	
			$B_s \times B_H$	$B_H \times H_H$	with pre-drilling hole	without pre-drilled hole
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
LOCKT1880 LOCKTEVO1880	17,5 x 80	2 + 2 - $\varnothing 5 \times 50$ 2 + 2 - $\varnothing 5 \times 70$	35 x 50 35 x 70	50 x 95 70 x 95	35 x 80	43 x 80
LOCKT3580 LOCKTEVO3580	35 x 80	4 + 4 - $\varnothing 5 \times 50$ 4 + 4 - $\varnothing 5 \times 70$	53 x 50 53 x 70	50 x 95 70 x 95	53 x 80	61 x 80
LOCKT35100 LOCKTEVO35100	35 x 100	6 + 6 - $\varnothing 5 \times 50$ 6 + 6 - $\varnothing 5 \times 70$	53 x 50 53 x 70	50 x 115 70 x 115	53 x 100	61 x 100
LOCKT35120 LOCKTEVO35120	35 x 120	8 + 8 - $\varnothing 5 \times 50$ 8 + 8 - $\varnothing 5 \times 70$	53 x 50 53 x 70	50 x 135 70 x 135	53 x 120	61 x 120
LOCKT53120 LOCKTEVO53120	52,5 x 120	12 + 12 - $\varnothing 5 \times 50$ 12 + 12 - $\varnothing 5 \times 70$	70 x 50 70 x 70	50 x 135 70 x 135	70 x 120	78 x 120
2 x LOCKT35100 2 x LOCKTEVO35100	70 x 100 ⁽²⁾	12 + 12 - $\varnothing 5 \times 50$ 12 + 12 - $\varnothing 5 \times 70$	88 x 50 88 x 70	50 x 115 70 x 115	88 x 100	96 x 100
2 x LOCKT35120 2 x LOCKTEVO35120	70 x 120 ⁽²⁾	16 + 16 - $\varnothing 5 \times 50$ 16 + 16 - $\varnothing 5 \times 70$	88 x 50 88 x 70	50 x 135 70 x 135	88 x 120	96 x 120
1 x LOCKT35120 + 1 x LOCKT53120 1 x LOCKTEVO35120 + 1 x LOCKTEVO53120	87,5 x 120 ⁽²⁾	20 + 20 - $\varnothing 5 \times 50$ 20 + 20 - $\varnothing 5 \times 70$	105 x 50 105 x 70	50 x 135 70 x 135	105 x 120	113 x 120

⁽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

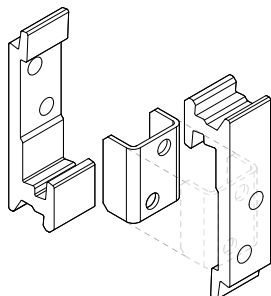
CODE		c_{min} [mm]	D [mm]
LOCKT1880	LOCKTEVO1880	7,5	87,5
LOCKT3580	LOCKTEVO3580	7,5	87,5
LOCKT35100	LOCKTEVO35100	5,0	105,0
LOCKT35120	LOCKTEVO35120	2,5	122,5
LOCKT53120	LOCKTEVO53120	2,5	122,5

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.

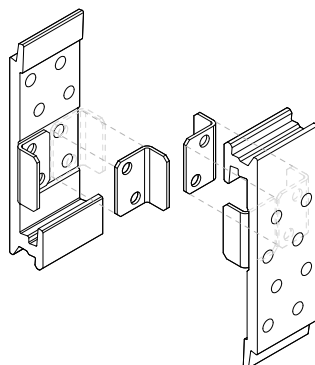
Alignment between the top of column and beam can be achieved by lowering the connector by an amount c_{min} relative to the top of beam (minimum beam height $h_j + c_{min}$).

■ INSTALLATION | LOCK STOP ON LOCK T MINI

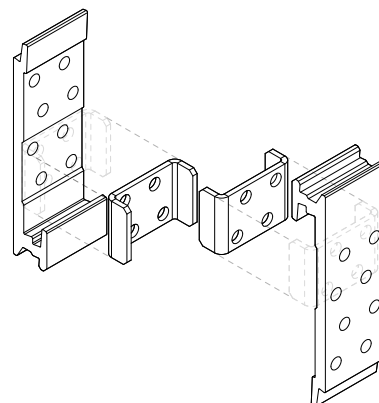
LOCKT1880 + 1 x LOCKSTOP5U



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

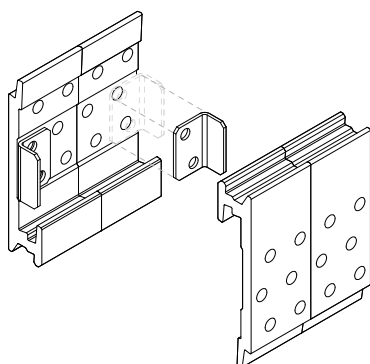


LOCK STOP| assembly

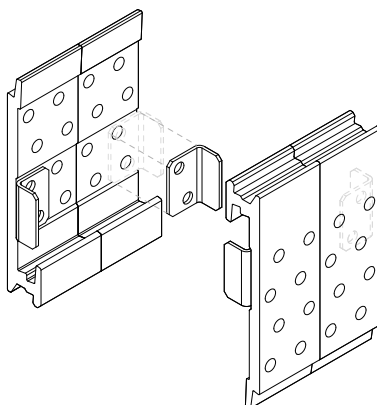
connector ⁽¹⁾	B x H [mm]	assembly configurations		
		LOCKSTOP5 [pcs]	LOCKSTOP5U [pcs]	LOCKSTOP35 [pcs]
LOCKT1880	17,5 x 80	-	x 1	-
LOCKT3580	35 x 80	x 2	-	x 1
LOCKT35100	35 x 100	x 2	-	x 1
LOCKT35120	35 x 120	x 4	-	x 2
LOCKT53120	52,5 x 120	x 4	-	-

■ INSTALLATION | LOCK STOP ON LOCK T MINI COUPLED

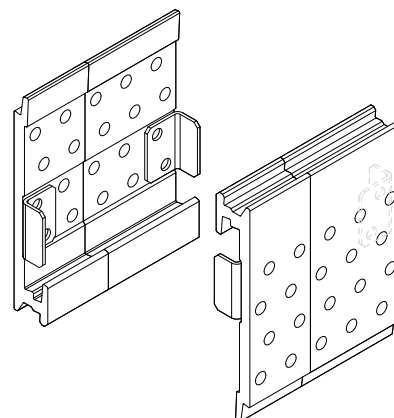
LOCKT70100 + 2 x LOCKSTOP5



LOCKT70120 + 4 x LOCKSTOP5



LOCKT88120 + 4 x LOCKSTOP5



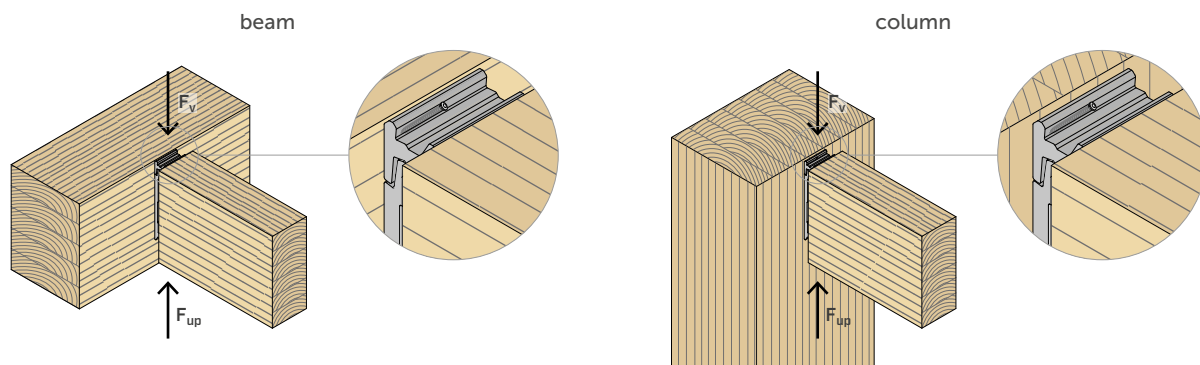
LOCK STOP| assembly

connector ⁽¹⁾	B x H [mm]	assembly configurations		
		LOCKSTOP5 [pcs]	LOCKSTOP5U [pcs]	LOCKSTOP35 [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

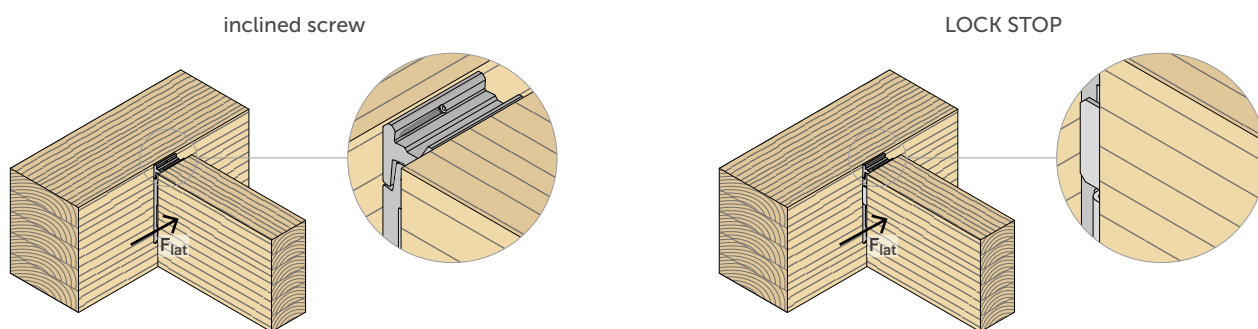
⁽¹⁾ Configurations are valid for LOCK T MINI EVO connectors.

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



connector	B x H [mm]	fasteners screw LBS LBS EVO $n_H + n_j - \varnothing \times L$ [mm]	$R_{v,k \text{ timber}}$			$R_{v,k \text{ alu}}$ [kN]	fasteners 45° screws LBS LBS EVO $n_H + n_j - \varnothing \times L$ [mm]	$R_{up,k \text{ timber}}$ [kN]
			C24 [kN]	GL24h [kN]	C50 [kN]			
LOCKT1880 LOCKTEVO1880	18 x 80	2 + 2 - $\varnothing 5 \times 50$ 2 + 2 - $\varnothing 5 \times 70$	2,3 2,8	2,5 3,0	3,2 3,8	10	-	-
LOCKT3580 LOCKTEVO3580	35 x 80	4 + 4 - $\varnothing 5 \times 50$ 4 + 4 - $\varnothing 5 \times 70$	4,5 5,7	4,9 6,0	6,4 7,5	20	1 - $\varnothing 5 \times 50$	2,1
LOCKT35100 LOCKTEVO35100	35 x 100	6 + 6 - $\varnothing 5 \times 50$ 6 + 6 - $\varnothing 5 \times 70$	6,8 8,5	7,4 9,0	9,6 11,3	20	1 - $\varnothing 5 \times 50$	2,1
LOCKT35120 LOCKTEVO35120	35 x 120	8 + 8 - $\varnothing 5 \times 50$ 8 + 8 - $\varnothing 5 \times 70$	9,1 11,4	9,9 12,0	12,8 15,1	20	1 - $\varnothing 5 \times 50$	2,1
LOCKT53120 LOCKTEVO53120	53 x 120	12 + 12 - $\varnothing 5 \times 50$ 12 + 12 - $\varnothing 5 \times 70$	13,8 17,1	15,0 17,9	19,3 22,7	30	1 - $\varnothing 5 \times 50$	2,1

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



connector	B x H [mm]	fasteners screw LBS LBS EVO $n_H + n_j - \varnothing \times L$ [mm]	inclined screw		LOCK STOP	
			fasteners 45° screws LBS LBS EVO $n_H + n_j - \varnothing \times L$ [mm]	$R_{lat,k \text{ timber}}$ C24 [kN]	fasteners $n_{LOCKSTOP} - \text{type}$ [mm]	$R_{lat,k \text{ steel}}$ [kN]
LOCKT1880 LOCKTEVO1880	18 x 80	2 + 2 - $\varnothing 5 \times 50$ 2 + 2 - $\varnothing 5 \times 70$	-	-	1 - LOCKSTOP5U	0,2
LOCKT3580 LOCKTEVO3580	35 x 80	4 + 4 - $\varnothing 5 \times 50$ 4 + 4 - $\varnothing 5 \times 70$	1 - $\varnothing 5 \times 50$	1,0 1,3	2 - LOCKSTOP5 1 - LOCKSTOP35	0,2 0,7
LOCKT35100 LOCKTEVO35100	35 x 100	6 + 6 - $\varnothing 5 \times 50$ 6 + 6 - $\varnothing 5 \times 70$	1 - $\varnothing 5 \times 50$	1,3 1,8	2 - LOCKSTOP5 1 - LOCKSTOP35	0,2 0,7
LOCKT35120 LOCKTEVO35120	35 x 120	8 + 8 - $\varnothing 5 \times 50$ 8 + 8 - $\varnothing 5 \times 70$	1 - $\varnothing 5 \times 50$	1,8 2,1	4 - LOCKSTOP5 2 - LOCKSTOP35	0,5 1,4
LOCKT53120 LOCKTEVO53120	53 x 120	12 + 12 - $\varnothing 5 \times 50$ 12 + 12 - $\varnothing 5 \times 70$	1 - $\varnothing 5 \times 50$	2,1 2,1	4 - LOCKSTOP5	0,5

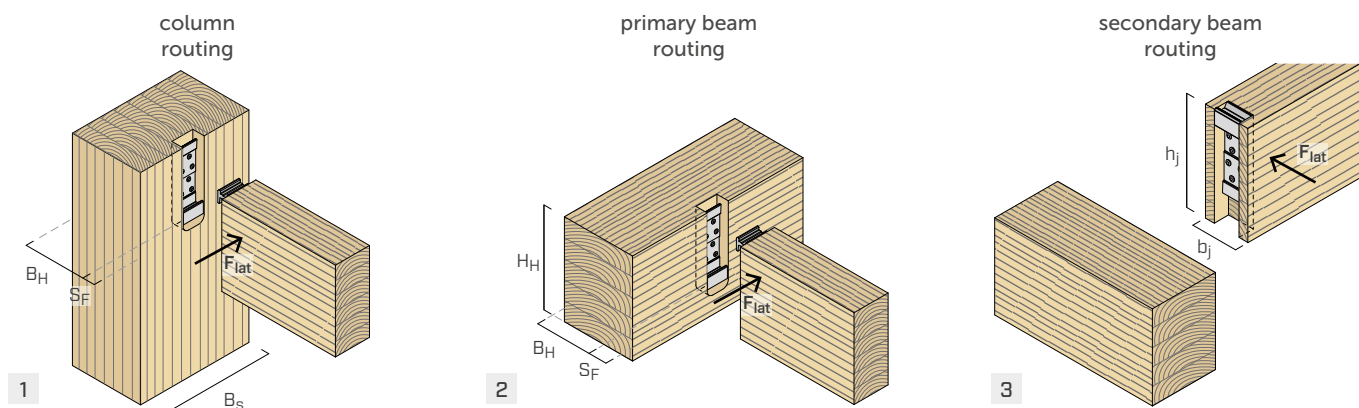
NOTES

The structural values given in the table are valid for fastening on the main beam and column. Screws on a column must be inserted with pre-drilling holes, with the exception of the inclined screw.

GENERAL PRINCIPLES

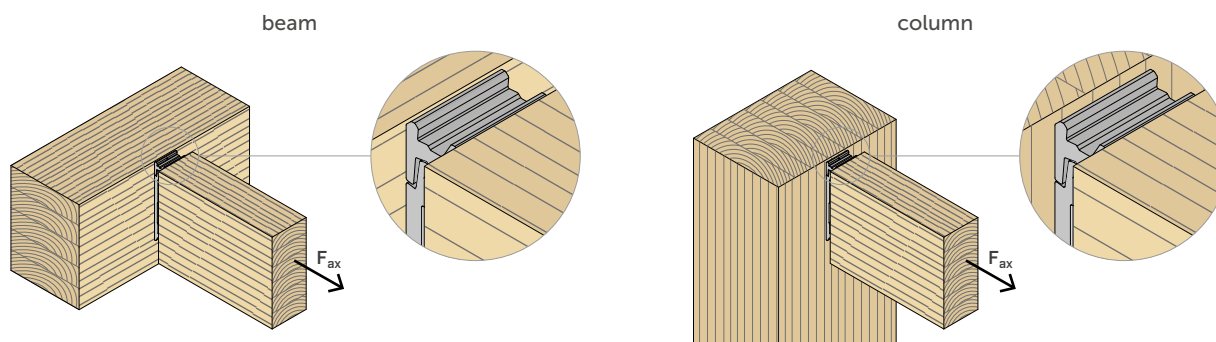
For the GENERAL PRINCIPLES of calculation, see page 27.

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



connector	$B \times H$ [mm]	fasteners screw LBS LBS EVO $n_H + n_j - \varnothing \times L$ [mm]	$R_{lat,k}$ timber column routing ⁽¹⁾ $B_S \times B_H$ [mm]	1 [kN]	$R_{lat,k}$ timber primary beam routing $B_H \times H_H$ [mm]	2 [kN]	$R_{lat,k}$ timber secondary beam routing ⁽²⁾ $b_j \times h_j$ [mm]	3 [kN]
LOCKT1880	18 x 80	2 + 2 - $\varnothing 5 \times 50$	60 x 50	0,5	50 x 95	0,5	60 x 80	1,1
LOCKTEVO1880	18 x 80	2 + 2 - $\varnothing 5 \times 70$	60 x 70	0,7	70 x 95	0,7	60 x 80	1,3
LOCKT3580	35 x 80	4 + 4 - $\varnothing 5 \times 50$	80 x 50	1,2	50 x 95	1,9	80 x 80	2,5
LOCKTEVO3580	35 x 80	4 + 4 - $\varnothing 5 \times 70$	80 x 70	1,2	70 x 95	2,4	80 x 80	2,5
LOCKT35100	35 x 100	6 + 6 - $\varnothing 5 \times 50$	80 x 50	1,5	50 x 115	2,9	80 x 100	3,1
LOCKTEVO35100	35 x 100	6 + 6 - $\varnothing 5 \times 70$	80 x 70	1,5	70 x 115	3,7	80 x 100	3,1
LOCKT35120	35 x 120	8 + 8 - $\varnothing 5 \times 50$	80 x 50	1,8	50 x 135	4,3	80 x 120	3,7
LOCKTEVO35120	35 x 120	8 + 8 - $\varnothing 5 \times 70$	80 x 70	1,8	70 x 135	5,6	80 x 120	3,7
LOCKT53120	53 x 120	12 + 12 - $\varnothing 5 \times 50$	100 x 50	1,8	50 x 135	7,6	100 x 120	3,7
LOCKTEVO53120	53 x 120	12 + 12 - $\varnothing 5 \times 70$	100 x 70	1,8	70 x 135	9,5	100 x 120	3,7

STRUCTURAL VALUES | TIMBER-TO-TIMBER | F_{ax}



connector	$B \times H$ [mm]	fasteners screw LBS LBS EVO $n_H + n_j - \varnothing \times L$ [mm]	$R_{ax,k}$ timber		
			C24 [kN]	GL24h [kN]	C50 [kN]
LOCKT1880	18 x 80	2 + 2 - $\varnothing 5 \times 50$	1,1	1,1	1,3
LOCKTEVO1880	18 x 80	2 + 2 - $\varnothing 5 \times 70$	1,6	1,7	1,8
LOCKT3580	35 x 80	4 + 4 - $\varnothing 5 \times 50$	2,1	2,3	2,5
LOCKTEVO3580	35 x 80	4 + 4 - $\varnothing 5 \times 70$	3,1	3,4	3,7
LOCKT35100	35 x 100	6 + 6 - $\varnothing 5 \times 50$	2,6	2,9	3,1
LOCKTEVO35100	35 x 100	6 + 6 - $\varnothing 5 \times 70$	3,9	4,2	4,6
LOCKT35120	35 x 120	8 + 8 - $\varnothing 5 \times 50$	2,9	3,1	3,4
LOCKTEVO35120	35 x 120	8 + 8 - $\varnothing 5 \times 70$	4,3	4,6	5,0
LOCKT53120	53 x 120	12 + 12 - $\varnothing 5 \times 50$	4,4	4,8	5,2
LOCKTEVO53120	53 x 120	12 + 12 - $\varnothing 5 \times 70$	6,4	6,9	7,6

NOTES

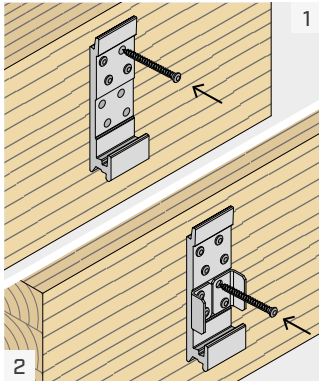
⁽¹⁾ The screws must be installed in the column with pre-drilled holes.

⁽²⁾ Strength values can be accepted as valid, for higher safety standards, for fastening on column.

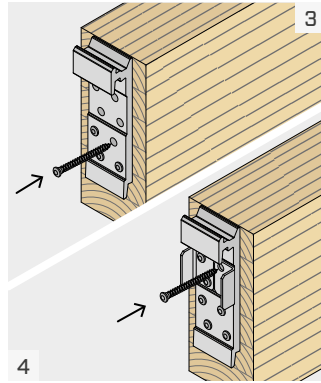
GENERAL PRINCIPLES

For the GENERAL PRINCIPLES of calculation, see page 27.

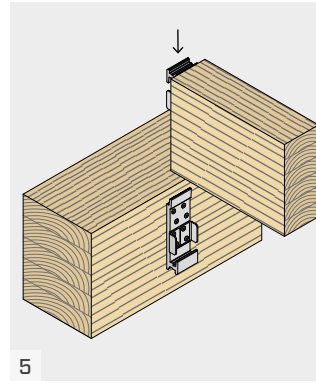
EXPOSED INSTALLATION WITH LOCK STOP



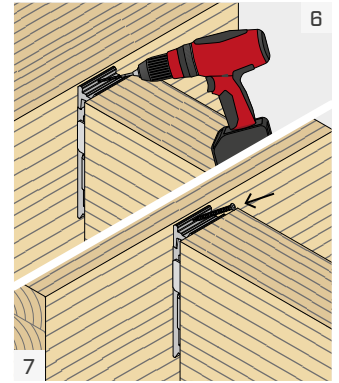
Place the connector on the main element and fasten the upper screws. When using LOCK STOP, position LOCK STOP and fasten the remaining screws.



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

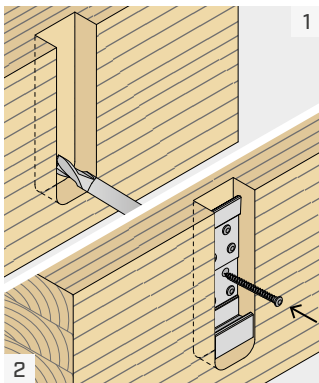


Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.

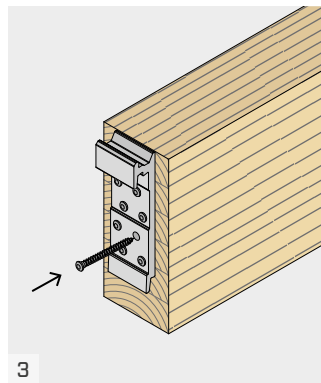


It is possible to install an uplift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be installed in the hole.

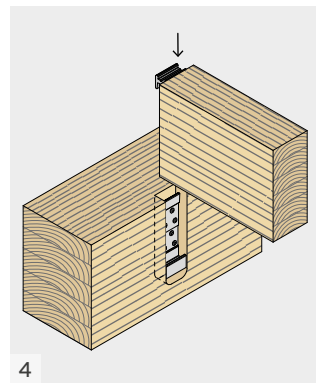
CONCEALED INSTALLATION



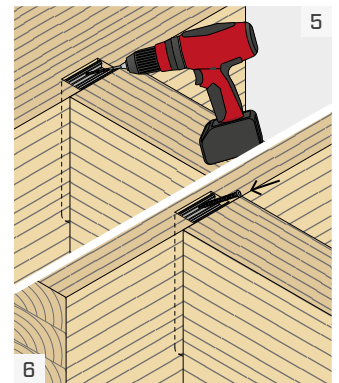
Carry out the routing on the main element. Place the connector on the main element and fasten all screws.



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

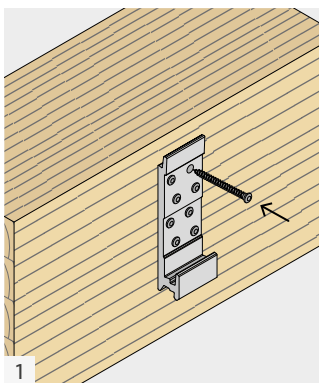


Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.

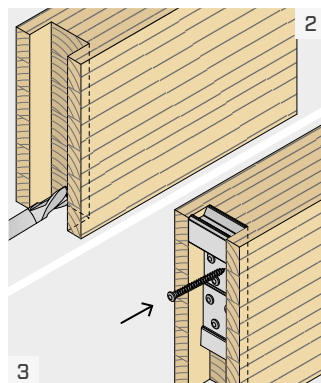


It is possible to install an uplift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be installed in the hole.

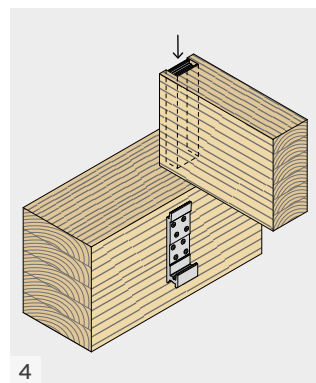
SEMI-CONCEALED INSTALLATION - CONNECTOR VISIBLE FROM BELOW



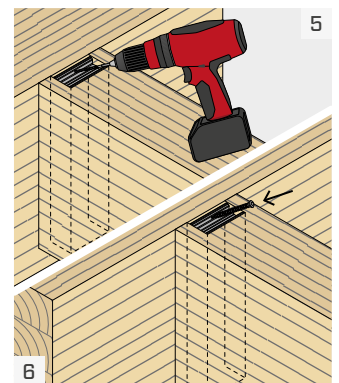
Place the connector on the main element and fasten all screws.



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

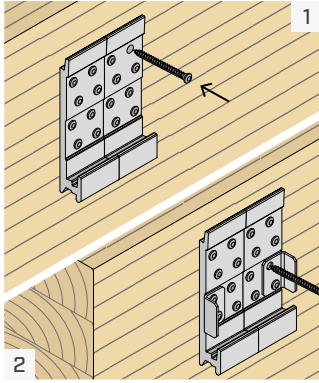


Hang the secondary beam from the main member by lowering it into place. Make sure that the two LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.

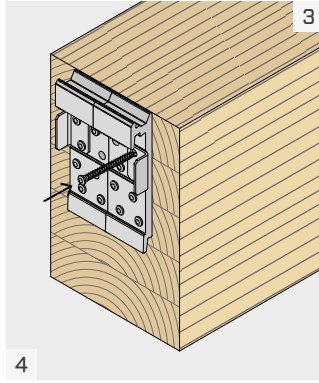


It is possible to install an uplift screw for F_{up} by drilling one hole $\varnothing 5$ inclined at 45° in the upper part of the connector. A $\varnothing 5$ screw must be installed in the hole.

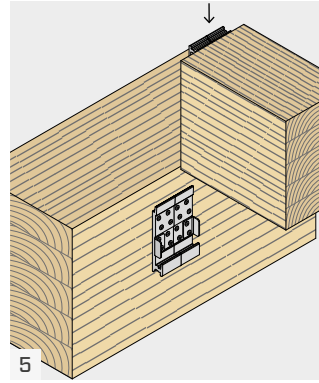
COUPLED LOCK T MINI INSTALLATION



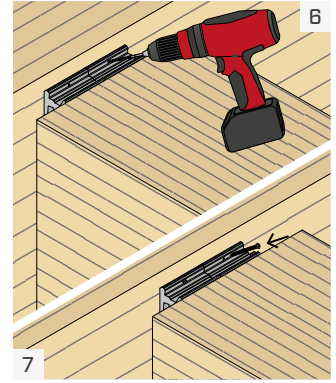
Place the connectors on the main element and fasten the top screws, making sure the connectors are aligned with each other. When using LOCK STOP, position LOCK STOP and fasten the remaining screws.



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 LOCK connectors are parallel to each other and avoid subjecting them to excessive strain during installation.



It is possible to install an uplift 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 installed in the hole.

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. Screws with the same length must be used for each connector half.
- Screws must always be inserted with pre-drilling holes in the column.
- Screws must be inserted with pre-drilling hole on main or secondary beam with density $\rho_k > 420 \text{ kg/m}^3$.
- Structural values are calculated assuming a constant thickness of the metal element, including the thickness of the LOCK STOP.
- The coefficients k_{mod} and γ_M should be taken according to the current regulations used for the calculation.
- The following verification shall be satisfied for combined loading:

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

$F_{v,d}$ 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_{lat}

- Characteristic values calculated according to EN 1995:2014 and ETA-19/0831 for screws without pre-drilling hole and C24 timber elements with density of $\rho_k = 350 \text{ kg/m}^3$.
 - Special care must be taken in the execution of cutting the routing in the main element or secondary beam to limit the lateral sliding of the connection.
 - The configurations for F_{lat} strength (column routing, primary beam routing, secondary beam routing, 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

$$R_{lat,d} = \frac{R_{lat,k \text{ steel}}}{\gamma_{M2}}$$

where:

- γ_{M2} is the partial safety coefficient of steel material according to EN 1993.

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

- C24 and GL24h: Characteristic values calculated according to EN 1995:2014 and ETA-19/0831 for screws without pre-drilling hole on secondary beam and screws with pre-drilling hole on column. $\rho_k = 350 \text{ kg/m}^3$ for C24 and $\rho_k = 385 \text{ kg/m}^3$ for GL24h have been considered for calculations.
- C50: characteristic values calculated according to EN 1995:2014 and ETA-19/0831 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:

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

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

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

where:

- γ_{M2} is the partial safety coefficient of the aluminium material subject to tensile stress, to be taken according to the national standards 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.

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 nominal diameter of the screw 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.

INTELLECTUAL PROPERTY

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