

PRODUCT DATA SHEET

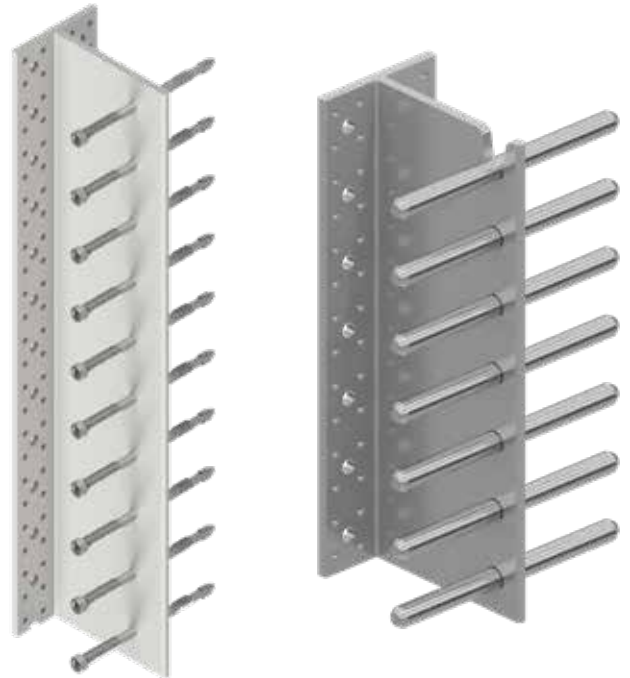
T-TEC SYSTEM

PRODUCT DESCRIPTION

The T-Tec system is a combination of Eurotec's T-profile and the self-drilling EST or smooth dowel. It's an ideal solution to create a hidden connection between main and secondary beams. The double-threaded screw with an innovative arrow drill through wood and aluminium, allowing a fast fix of the joist without predrilling. Whether you opt for horizontal or inclined joints between main and secondary beams, the T-Tec system will ensure a strong long-lasting connection.

ADVANTAGES

- Very high vertical load resistance
- Timber-to-timber and timber-to-concrete connections
- No pre-drilling required with the EST rod dowel
- Pre-cut version with predrilled holes for smooth dowels
- Possibility to completely to achieve a completely hidden connection
- Architecturally aesthetic
- Improved fire resistance if connection is concealed



SERVICE CLASS

- SC1
- SC2

MATERIAL

- Aluminum alloy EN AW-6005A

APPLICATIONS

- Solid timber
- Glued laminated timber
- Cross-laminated timber
- LVL (predrilled)
- Concrete (at least strength class C20)

APPROVAL

- Regulated by European Technical Assessment ETA-21/0710

Note: The ETA approval relates exclusively to the combination of the T-profile and the EST rod anchor. Accordingly, the certification is only authorised for the joint use of the two products!



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T-TEC SYSTEM

PRODUCT TABLE

T-Profil				
Art. no.	Dimensions [mm]	Thickness [mm]	Material	PU
975652	115 x 2000 x 80	6	Aluminum alloy EN AW-6005A	1

EST (Eurotec rod dowel)					
Art. no.	Dimensions Ød x L [mm]	Thread length lg [mm]	Head diameter Ødh [mm]	Drive	PU
800304	7.5 x 73	27/0	12	TX 40 ●	50
800291	7.5 x 93	27/8.5	12	TX 40 ●	50
800305	7.5 x 113	36/12.5	12	TX 40 ●	50
800306	7.5 x 133	36/12.5	12	TX 40 ●	50
800307	7.5 x 153	36/12.5	12	TX 40 ●	50
800287	7.5 x 173	36/12.5	12	TX 40 ●	50
800288	7.5 x 193	36/12.5	12	TX 40 ●	50
800289	7.5 x 213	36/12.5	12	TX 40 ●	50
800290	7.5 x 233	36/12.5	12	TX 40 ●	50

Angle-bracket screw				
Art. no.	Dimensions Ød x L [mm]	Material	Drive	PU
945344	5.0 x 60	Blue galvanized steel	TX20 ●	250

Rock concrete screw				
Art. no.	Dimensions Ød x L [mm]	Material	Drive	PU
110341	7.5 x 80	Blue galvanized steel	SW15	100

Rod dowel			
Art. no.	Dimensions Ød x L [mm]		PU
800212	12 x 98		25
800213	12 x 118		25
800214	12 x 138		25
800215	12 x 158		25
800216	12 x 178		25
800217	12 x 198		25
800218	12 x 218		25
800219	12 x 238		25
800220	12 x 258		25
800221	12 x 278		25
800222	12 x 298		25

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T-TEC SYSTEM

GENERAL NOTES ON STRUCTURAL VERIFICATIONS

- Characteristic resistance values comply with EN 1995-1-1:2014 standard, in accordance with ETA-21/0710 for the aluminum T-profile and EST rod dowels, ETA-11/0024 for wood screws, and ETA-15/0886 for concrete fasteners.
- Dimensioning and validation of timber and concrete elements must be done separately.
- For combined loading, the following equation must be fulfilled:

$$\left(\frac{F_{v,Ed}}{F_{v,Rd}}\right)^2 + \left(\frac{F_{lat,Ed}}{F_{lat,Rd}}\right)^2 + \left(\frac{F_{ax,Ed}}{F_{ax,Rd}}\right)^2 \leq 1$$

$F_{v,Ed}$ comprises forces acting both up and down. Therefore, only one direction can be used on the equation in combination with $F_{ax,Ed}$ and $F_{lat,Ed}$.

- $F_{lat,Rd}$ is calculated as the minimum value between the timber joist lateral design resistance and the aluminum profile lateral design resistance, as follows:

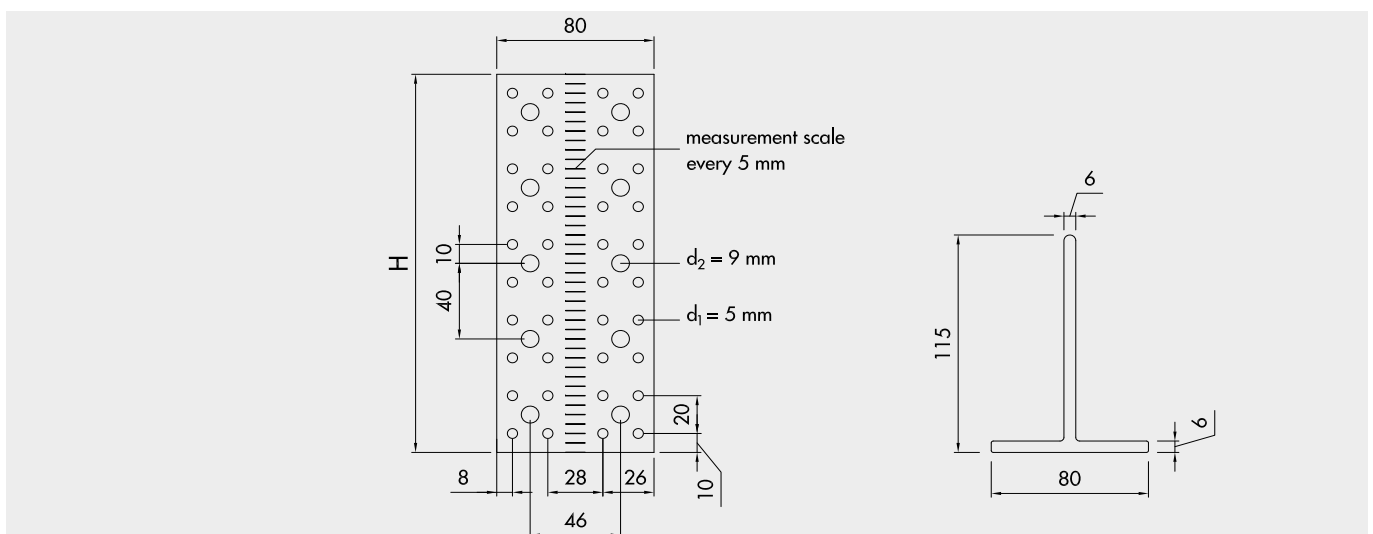
$$F_{lat,Rd} = \min \left\{ \frac{F_{lat,timber,Rk} \cdot k_{mod}}{\gamma_M} \mid \frac{F_{lat,alu,Rk}}{\gamma_{M2}} \right\}$$

In this document, $k_{mod} = 0.8$ and $\gamma_M = 1.25$ are considered, and $\gamma_{M2} = 1.25$ for aluminum as per EN 1999-1-1.

- The $F_{v,Rd}$ resistance value displayed for Timber-to-Concrete application is the minimum between the shear design resistance of the main timber element connection with either partial or total fastening, and the shear design resistance of the concrete connection, as follows:

$$F_{v,Rd} = \min \left\{ \frac{F_{v,timber,Rk} \cdot k_{mod}}{\gamma_M} \mid F_{v,concrete,d} \right\}$$

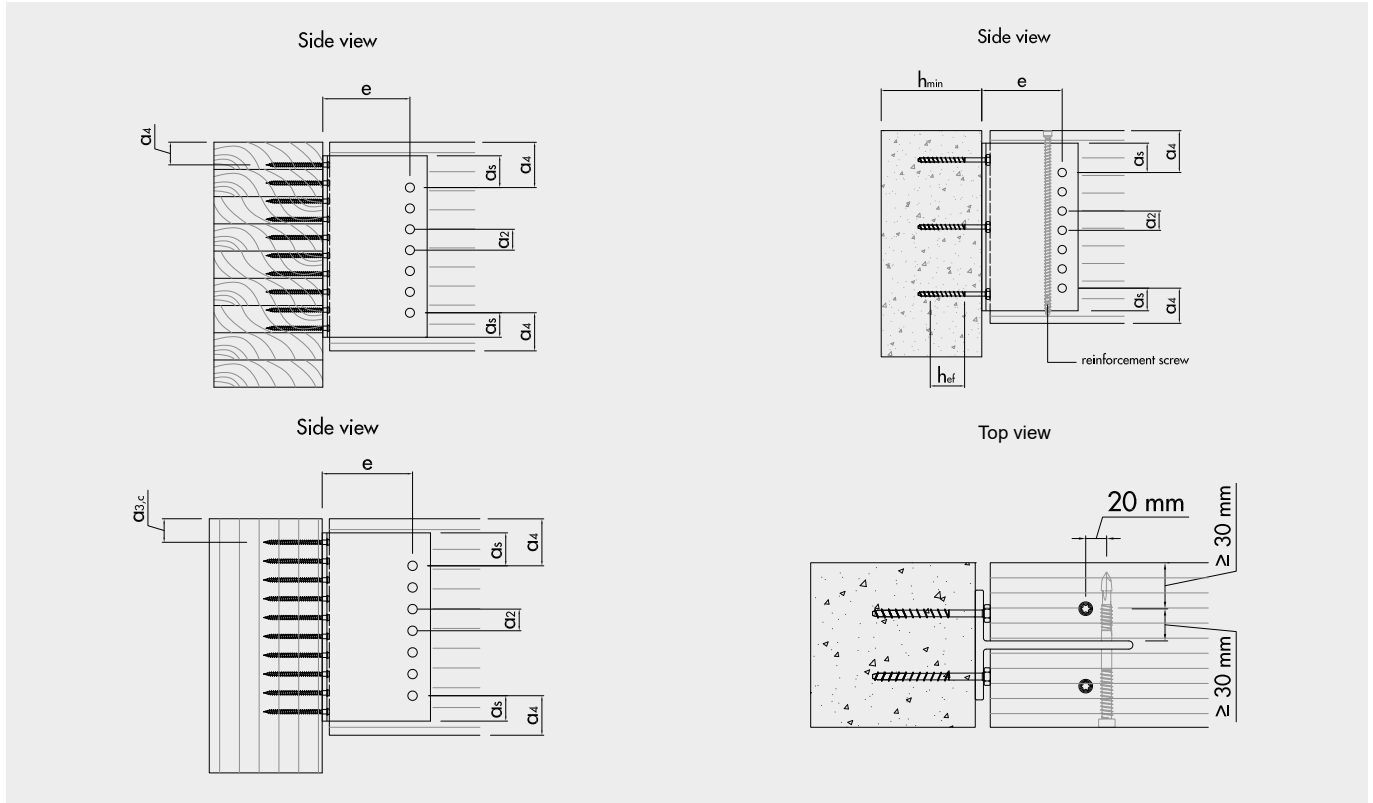
GEOMETRY



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T-TEC SYSTEM

INSTALLATION MINIMUM SPACINGS, DISTANCES, AND DIMENSIONS



T-Tec System				
Secondary beam (timber)		EST rod dowel Ø 7.5 mm		Smooth dowel Ø 12 mm
Dowel spacing	a_2 [mm]	$\geq 3 \cdot d$	≥ 23	≥ 36
Dowel to top/bottom of beam	a_1 [mm]	$\geq 4 \cdot d^{(a)}$	≥ 30	≥ 48
Dowel to profile edge	a_3 [mm]	$\geq 1.2 \cdot d_0^{(b)}$	≥ 10	≥ 16
Dowel to main beam's edge	e [mm]	-	96	96
Main beam (timber)		ABS Ø 5 mm		
Upper fastener to top of beam	a_1 [mm]	$\geq 4 \cdot d$	20	
Upper fastener to column end	$a_{3,c}$ [mm]	$\geq 10 \cdot d$	50	
Main beam (concrete)		Rock concrete screw Ø 7.5 mm		
Minimum component thickness	h_{min} [mm]	100		
Concrete hole predrilling diameter	d_0 [mm]	6		

Notes:

(a) $a_1 = a_{1,c} = a_{1,t}$. Design tables consider load reversion, i.e., vertical load as being equal downwards and upwards.

(b) Minimum edge distance according to EN 1999-1-1: Design of aluminum structures. d_0 : hole diameter or nominal drill diameter.

In Timber-Concrete application, installing a pair of Ø 6.5 mm KonstruX screws, as shown above, prevents tensile cracking perpendicular to the grain.

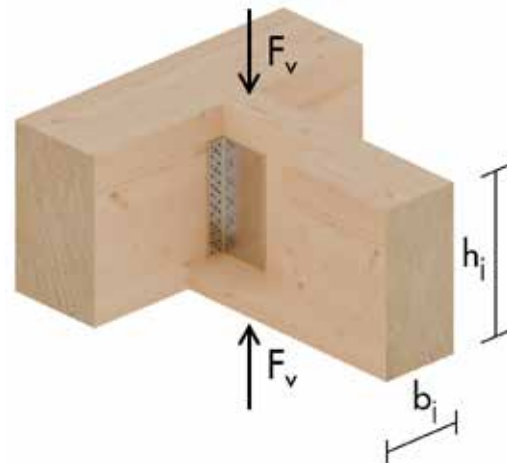
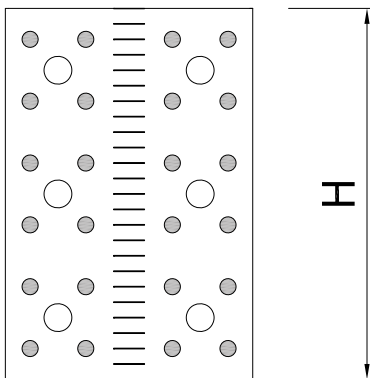
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T-TEC SYSTEM

TIMBER-TO-TIMBER

Vertical load-carrying capacity of connector F_v

TOTAL FASTENING



T-profile with total fastening

T-Profile H [mm]	Main beam	Secondary beam						
		ABS Ø 5 x 60 [pcs]	$b_j \times h_j$ [mm x mm]	Fastening with EST rod dowels			Fastening with smooth dowels	
	EST dowel Ø 7.5 [pcs - L]			F_v, R_k [kN]	F_v, R_d [kN]	Smooth dowel Ø 12 [pcs - L]	F_v, R_d [kN]	F_v, R_d [kN]
100	20	120 x 140	3 - 113	19.3	11.9	-	-	-
120	24	120 x 160	3 - 113	27.3	16.8	2 - 118	27.4	16.9
140	28	120 x 200	4 - 113	36.3	22.3	3 - 118	36.3	22.3
160	32	120 x 200	5 - 113	45.5	28.0	3 - 118	41.9	25.8
180	36	120 x 240	6 - 113	54.6	33.6	4 - 118	55.9	34.4
200	40	120 x 240	7 - 113	63.7	39.2	5 - 118	66.9	41.2
220	44	120 x 240	8 - 113	72.8	44.8	5 - 118	69.8	43.0
240	48	120 x 280	9 - 133	81.9	50.4	6 - 118	83.8	51.6
260	52	140 x 280	10 - 133	99.8	61.4	6 - 138	91.4	56.2
280	56	140 x 320	10 - 133	99.8	61.4	7 - 138	106.6	65.6
300	60	140 x 360	11 - 133	109.8	67.5	8 - 138	121.9	75.0
320	64	140 x 360	12 - 133	119.7	73.7	8 - 138	121.9	75.0
340	68	160 x 400	12 - 153	131.4	80.9	8 - 158	133.0	81.9
360	72	160 x 400	13 - 153	142.4	87.6	9 - 158	149.7	92.1
380	76	160 x 440	15 - 153	164.3	101.1	10 - 158	166.3	102.3
400	80	160 x 440	16 - 153	175.2	107.8	10 - 158	166.3	102.3
420	84	160 x 480	17 - 153	186.2	114.6	11 - 158	182.9	112.6
440	88	160 x 480	18 - 153	197.1	121.3	11 - 158	182.9	112.6
460	92	180 x 480	18 - 173	212.5	130.7	11 - 178	199.2	122.6
480	96	180 x 600	19 - 173	223.3	137.4	12 - 178	217.3	133.7

Notes:

Calculated according to EN 1995-1-1, with non-predrilled holes and wood density $\rho_k = 385 \text{ kg/m}^3$.

Tabulated values are also valid for T-profile with predrilled holes for the corresponding "H" lengths.

Design values calculated considering $k_{mod} = 0.8$ and $v_m = 1.3$.

Please note: these are planning aids. Projects must be calculated only by authorized professionals.

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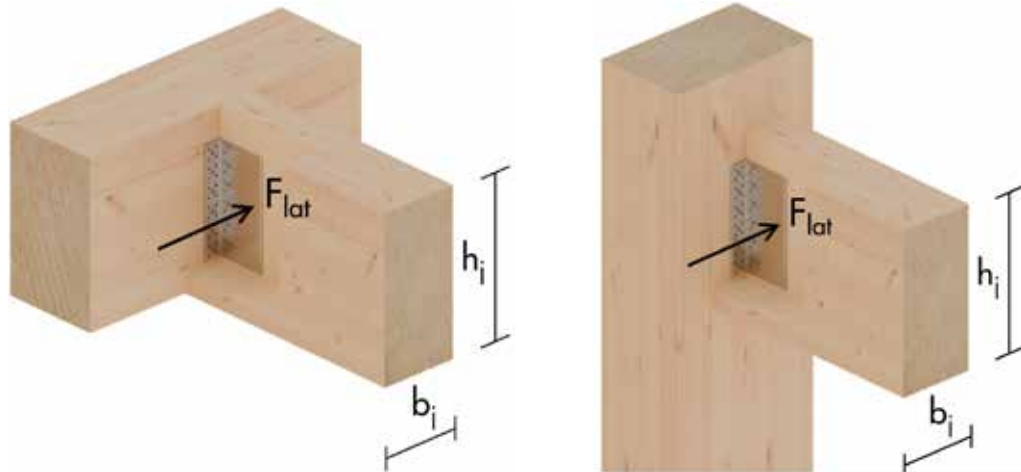
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T-TEC SYSTEM

TIMBER-TO-TIMBER

Lateral load-carrying capacity of connector F_{lat}

TOTAL AND PARTIAL FASTENING



T-profile with EST rod dowels or M12 smooth dowels and total or partial fastening

T-Profile H [mm]	Secondary beam	$F_{lat, timber, Rk}$	$F_{lat, olt, Rk}$	$F_{lat, Rd}$
	$b_i \times h_j$ [mm x mm]	GL24h [kN]	[kN]	[kN]
100	120 x 140	10.2	4.3	3.4
120	120 x 160	11.6	5.1	4.1
140	120 x 200	11.6	6.0	4.8
160	120 x 200	14.6	6.9	5.5
180	120 x 240	17.5	7.7	6.2
200	120 x 240	17.5	8.6	6.9
220	120 x 240	17.5	9.4	7.6
240	120 x 280	20.4	10.3	8.2
260	140 x 280	23.9	11.2	8.9
280	140 x 320	27.3	12.0	9.6
300	140 x 360	30.8	12.9	10.3
320	140 x 360	30.8	13.7	11.0
340	160 x 400	39.1	14.6	11.7
360	160 x 400	39.1	15.4	12.4
380	160 x 440	43.0	16.3	13.0
400	160 x 440	43.0	17.2	13.7
420	160 x 480	46.9	18.0	14.4
440	160 x 480	46.9	18.9	15.1
460	180 x 480	52.6	19.7	15.8
480	180 x 600	65.8	20.6	16.5

Notes:

Calculated according to EN 1995-1-1, with non-predrilled holes and wood density $\rho_k = 385 \text{ kg/m}^3$.

Tabulated values are also valid for T-profile with predrilled holes for the corresponding "H" lengths.

Design values calculated considering $k_{mod} = 0.8$ and $\gamma_m = 1.3$.

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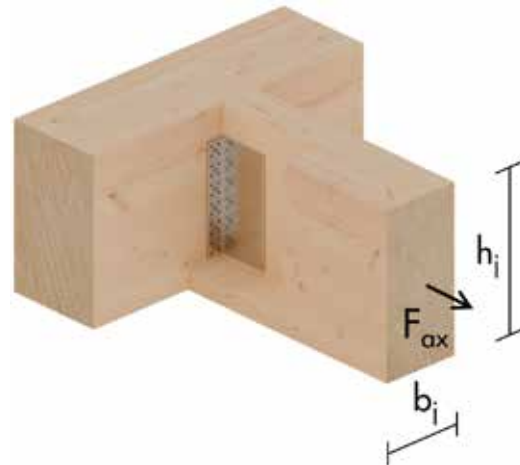
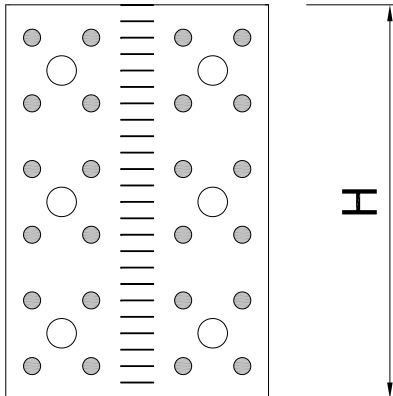
PRODUCT DATA SHEET

T-TEC SYSTEM

TIMBER-TO-TIMBER

Axial load-carrying capacity of connector F_{ax}

TOTAL FASTENING



T-profile with total fastening

T-Profile H [mm]	Main beam ABS Ø 5 x 60 [pcs]	Secondary beam						
		$b_j \times h_j$ [mm x mm]	Fastening with EST rod dowels			Fastening with smooth dowels		
			EST dowel Ø 7.5 [pcs - L]	$F_{ax,Rk}$ [kN]	$F_{ax,Rd}$ [kN]	Smooth dowel Ø 12 [pcs - L]	$F_{ax,Rk}$ [kN]	$F_{ax,Rd}$ [kN]
100	20	120 x 140	3 - 113	18.3	11.3	-	-	-
120	24	120 x 160	3 - 113	18.3	11.3	2 - 118	19.4	11.9
140	28	120 x 200	4 - 113	24.4	15.0	3 - 118	29.1	17.9
160	32	120 x 200	5 - 113	30.5	18.8	3 - 118	29.1	17.9
180	36	120 x 240	6 - 113	36.6	22.5	4 - 118	38.8	23.9
200	40	120 x 240	7 - 113	42.7	26.3	5 - 118	48.5	29.8
220	44	120 x 240	8 - 113	48.8	30.0	5 - 118	48.5	29.8
240	48	120 x 280	9 - 133	61.4	37.8	6 - 118	58.2	35.8
260	52	140 x 280	10 - 133	68.2	42.0	6 - 138	64.8	39.9
280	56	140 x 320	10 - 133	68.2	42.0	7 - 138	74.6	45.9
300	60	140 x 360	11 - 133	75.1	46.2	8 - 138	79.9	49.2
320	64	140 x 360	12 - 133	81.9	50.4	8 - 138	85.2	52.5
340	68	160 x 400	12 - 153	90.4	55.6	8 - 158	90.6	55.7
360	72	160 x 400	13 - 153	95.9	59.0	9 - 158	95.9	59.0
380	76	160 x 440	15 - 153	101.2	62.3	10 - 158	101.2	62.3
400	80	160 x 440	16 - 153	106.6	65.6	10 - 158	106.6	65.6
420	84	160 x 480	17 - 153	111.9	68.9	11 - 158	111.9	68.9
440	88	160 x 480	18 - 153	117.2	72.1	11 - 158	117.2	72.1
460	92	180 x 480	18 - 173	122.5	75.4	11 - 178	122.5	75.4
480	96	180 x 600	19 - 173	127.9	78.7	12 - 178	127.9	78.7

Notes:

Calculated according to EN 1995-1-1, with non-predrilled holes and wood density $\rho_k = 385 \text{ kg/m}^3$.

Tabulated values are also valid for T-profile with predrilled holes for the corresponding "H" lengths.

Design values calculated considering $k_{mod} = 0.8$ and $\gamma_m = 1.3$.

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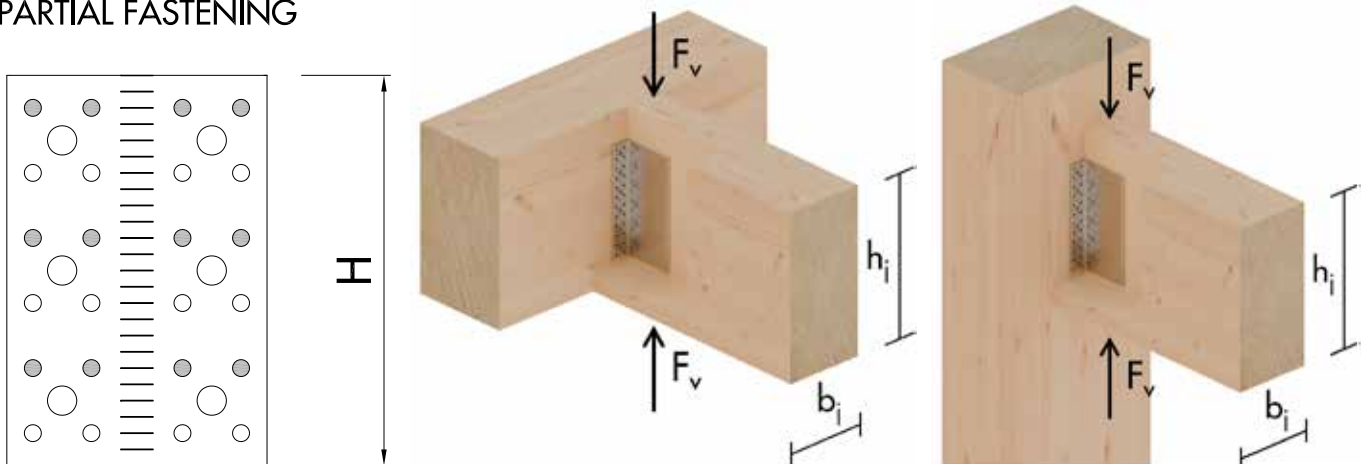
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T-TEC SYSTEM

TIMBER-TO-TIMBER

Vertical load-carrying capacity of connector F_v

PARTIAL FASTENING



T-profile with partial fastening

T-Profile H [mm]	Main element ABS Ø 5 x 60 [pcs]	Secondary element						
		b _j x h _j [mm x mm]	Fastening with EST rod dowels			Fastening with smooth dowels		
			EST dowel Ø 7.5 [pcs - L]	F _{v,Rk} [kN]	F _{v,Rd} [kN]	Smooth dowel Ø 12 [pcs - L]	F _{v,Rk} [kN]	F _{v,Rd} [kN]
100	12	120 x 140	3 - 113	12.7	7.8	-	-	-
120	12	120 x 160	3 - 113	16.4	10.1	2 - 118	16.4	10.1
140	16	120 x 200	4 - 113	22.0	13.5	3 - 118	22.0	13.5
160	16	120 x 200	5 - 113	25.9	15.9	3 - 118	25.9	15.9
180	20	120 x 240	6 - 113	32.4	19.9	4 - 118	32.4	19.9
200	20	120 x 240	7 - 113	36.2	22.3	5 - 118	36.2	22.3
220	24	120 x 240	8 - 113	43.4	26.7	5 - 118	43.4	26.7
240	24	120 x 280	9 - 133	47.0	28.9	6 - 118	47.0	28.9
260	28	140 x 280	10 - 133	54.8	33.7	6 - 138	54.8	33.7
280	28	140 x 320	10 - 133	57.9	35.6	7 - 138	57.9	35.6
300	32	140 x 360	11 - 133	66.2	40.7	8 - 138	66.2	40.7
320	32	140 x 360	12 - 133	69.0	42.5	8 - 138	69.0	42.4
340	36	160 x 400	12 - 153	77.6	47.8	8 - 158	77.6	47.7
360	36	160 x 400	13 - 153	80.0	49.2	9 - 158	80.0	49.2
380	40	160 x 440	15 - 153	88.9	54.7	10 - 158	88.9	54.7
400	40	160 x 440	16 - 153	91.0	56.0	10 - 158	91.0	56.0
420	44	160 x 480	17 - 153	100.1	61.6	11 - 158	100.1	61.6
440	44	160 x 480	18 - 153	102.0	62.8	11 - 158	102.0	62.8
460	48	180 x 480	18 - 173	111.3	68.5	11 - 178	111.3	68.5
480	48	180 x 600	19 - 173	112.9	69.5	12 - 178	112.9	69.5

Notes:

Calculated according to EN 1995-1-1, with non-predrilled holes and wood density $\rho_k = 385 \text{ kg/m}^3$.

Tabulated values are also valid for T-profile with predrilled holes for the corresponding "H" lengths.

Design values calculated considering $k_{mod} = 0.8$ and $\gamma_m = 1.3$.

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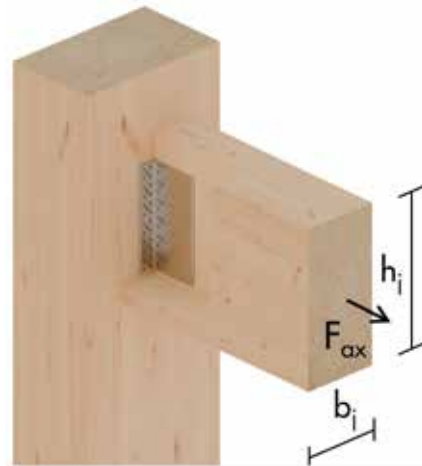
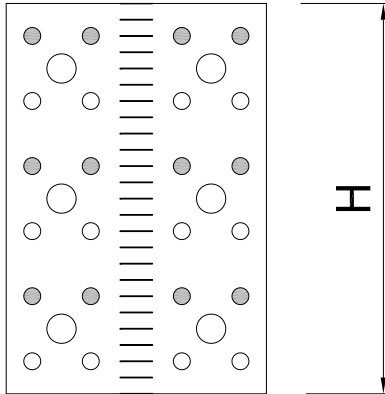
PRODUCT DATA SHEET

T-TEC SYSTEM

TIMBER-TO-TIMBER

Axial load-carrying capacity of connector F_{ax}

PARTIAL FASTENING



T-profile with partial fastening

T-Profile H [mm]	Main beam	Secondary beam						
		ABS Ø 5 x 60 [pcs]	$b_j \times h_j$ [mm x mm]	Fastening with EST rod dowels			Fastening with smooth dowels	
	EST dowel Ø 7.5 [pcs - L]			$F_{ax,Rk}$ [kN]	$F_{ax,Rd}$ [kN]	Smooth dowel Ø 12 [pcs - L]	$F_{ax,Rk}$ [kN]	$F_{ax,Rd}$ [kN]
100	12	120 x 140	3 - 113	16.0	9.8	-	-	-
120	12	120 x 160	3 - 113	16.0	9.8	2 - 118	16.0	9.8
140	16	120 x 200	4 - 113	21.3	13.1	3 - 118	21.3	13.1
160	16	120 x 200	5 - 113	21.3	13.1	3 - 118	21.3	13.1
180	20	120 x 240	6 - 113	26.6	16.4	4 - 118	26.6	16.4
200	20	120 x 240	7 - 113	26.6	16.4	5 - 118	26.6	16.4
220	24	120 x 240	8 - 113	32.0	19.7	5 - 118	32.0	19.7
240	24	120 x 280	9 - 133	32.0	19.7	6 - 118	32.0	19.7
260	28	140 x 280	10 - 133	37.3	23.0	6 - 138	37.3	23.0
280	28	140 x 320	10 - 133	37.3	23.0	7 - 138	37.3	23.0
300	32	140 x 360	11 - 133	42.6	26.2	8 - 138	42.6	26.2
320	32	140 x 360	12 - 133	42.6	26.2	8 - 138	42.6	26.2
340	36	160 x 400	12 - 153	48.0	29.5	8 - 158	48.0	29.5
360	36	160 x 400	13 - 153	48.0	29.5	9 - 158	48.0	29.5
380	40	160 x 440	15 - 153	53.3	32.8	10 - 158	53.3	32.8
400	40	160 x 440	16 - 153	53.3	32.8	10 - 158	53.3	32.8
420	44	160 x 480	17 - 153	58.6	36.1	11 - 158	58.6	36.1
440	44	160 x 480	18 - 153	58.6	36.1	11 - 158	58.6	36.1
460	48	180 x 480	18 - 173	63.9	39.3	11 - 178	63.9	39.3
480	48	180 x 600	19 - 173	63.9	39.3	12 - 178	63.9	39.3

Notes:

Calculated according to EN 1995-1-1, with non-predrilled holes and wood density $\rho_k = 385 \text{ kg/m}^3$.

Tabulated values are also valid for T-profile with predrilled holes for the corresponding "H" lengths.

Design values calculated considering $k_{mod} = 0.8$ and $\gamma_m = 1.3$.

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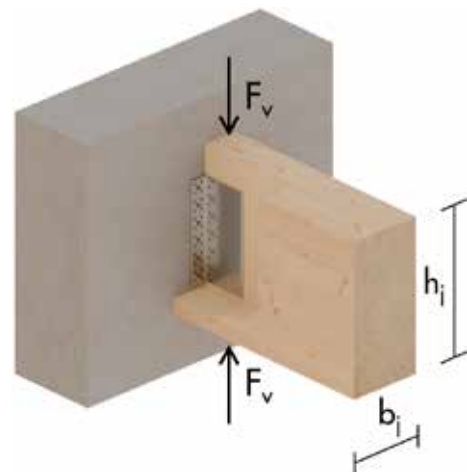
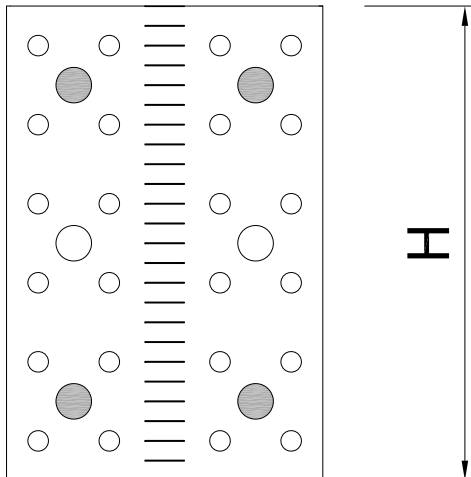
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PRODUCT DATA SHEET

T-TEC SYSTEM

TIMBER-TO-CONCRETE

Vertical load-carrying capacity of connector F_v



T-profile with Rock concrete screws

T-Profile H [mm]	Secondary beam		Main beam	
	$b_j \times h_j$ [mm x mm]	EST dowel $\varnothing 7.5$ [pcs - L]	Rock concrete screw $\varnothing 7.5 \times 80$ [pcs]	$F_{v,Rd}$ [kN]
100	120 x 140	3 - 113	2	7
120	120 x 160	3 - 113	4	7.5
140	120 x 160	4 - 113	4	10.0
160	120 x 200	5 - 113	6	12.5
180	120 x 240	6 - 113	6	15.0
200	120 x 240	7 - 113	6	17.6
220	120 x 260	8 - 113	6	20.1
240	140 x 280	9 - 133	6	24.6
260	140 x 320	10 - 133	6	26.1
280	160 x 320	10 - 153	6	27.4
300	160 x 360	11 - 153	6	29.1
320	160 x 360	12 - 153	6	31.4
340	160 x 400	13 - 153	6	31.7
360	160 x 400	14 - 153	6	32.0
380	160 x 440	15 - 153	6	32.2
400	160 x 440	16 - 153	6	32.5
420	180 x 480	16 - 173	8	32.7
440	180 x 480	17 - 173	8	33.0
460	180 x 520	18 - 173	8	33.2
480	180 x 520	19 - 173	8	33.4

Notes:

Calculated according to EN 1995-1-1, with non-predrilled holes and wood density $\rho_v = 385 \text{ kg/m}^3$.

The two uppermost header screws are placed 50 mm below the upper end of the connector. The subsequent header screws below are spaced at 120 mm.

Tabulated values are also valid for T-profile with predrilled holes for the corresponding "H" lengths.

Design values calculated considering $k_{mod} = 0.8$ and $\gamma_m = 1.3$.

Please note: these are planning aids. Projects must be calculated only by authorized professionals.

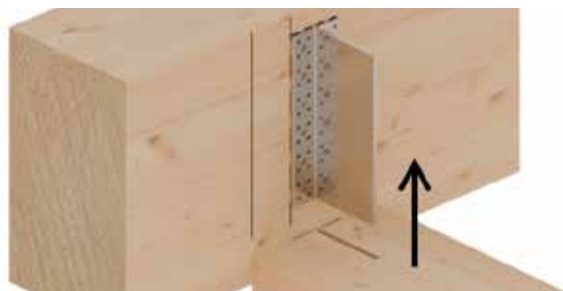
PRODUCT DATA SHEET

T-TEC SYSTEM

The tools needed for the assembly of the T-Tec System are the basics for a carpentry job: measure square and tape, pencil, surface milling machine, electric drill, chainsaw, and level. Tip: Eurotec's Beam Grip might be useful for achieving a perfect beam-joist match.



First, mark the dimensions of the joist and t-profile on the beam using the measure square, measure tape and pencil. Then, mark the position of the t-profile on the joist end-grain face (Step 1). Mill the joist at 8 mm of depth to comfortably house the t-profile in. Then make the cut for the t-profile's web with a chainsaw (Step 2; this step can be skipped in case of having milled with a CNC).



Install the ABS 5x60 mm on the beam through the t-profile's flange, then carefully insert the joist, and verify flush edges with the level (Step 3). Install the required quantity of EST rod dowels (using a drill driver) or M12 smooth dowels (using a hammer) through the joist and t-profile's web (Step 4). For all steps, ensure that the minimum distances specified in the product data sheet on page 4 are observed for all steps.



Final verification with the level and cleansing of the finished joint (Step 5). Alternatively, it can also be installed on a timber column or concrete bearing element.

If you are not familiar with how this product is used, and particularly with the product's intended use, please contact our Application Technology department (Technik@eurotec.team).