

TITAN PLATE T TIMBER

PLATE FOR SHEAR LOADS



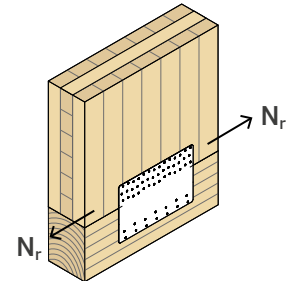
SERVICE CONDITION



MATERIAL

DX51D
Z275 DX51D + Z275 carbon steel

EXTERNAL LOADS



TIMBER-TO-TIMBER

These plates are ideal for the flat connection of the base plate to load-bearing timber panels.

CONTINUOUS CONNECTION

The 1.2 m long TTP1200 version allows the creation of long connections in panel floors, replacing the classic spline joint connection.

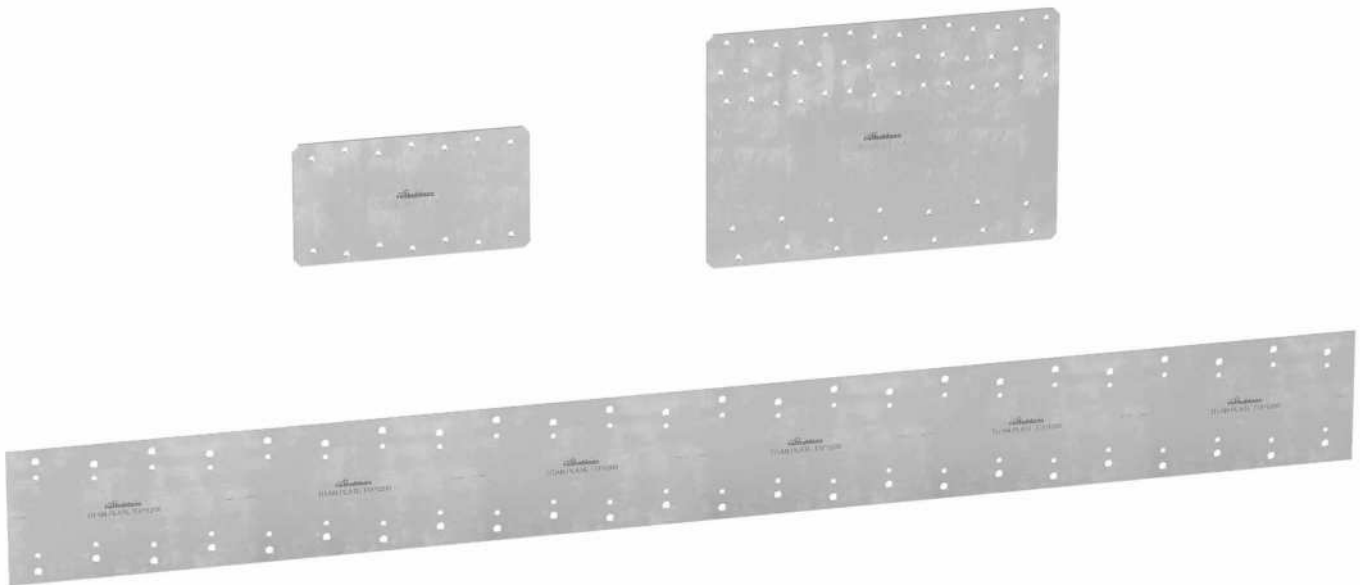
CALCULATED AND CERTIFIED

CE marking according to European standard EN 14545. Available in three versions. TTP300 and TTP1200 versions ideal for CLT.



CANADIAN DESIGN VALUES

USA, EU and more design values available online.



FIELDS OF USE

Shear joints for timber walls or floors.
Timber-to-timber configuration.

Can be applied to:

- solid timber and glulam
- timber frame
- CLT and LVL panels



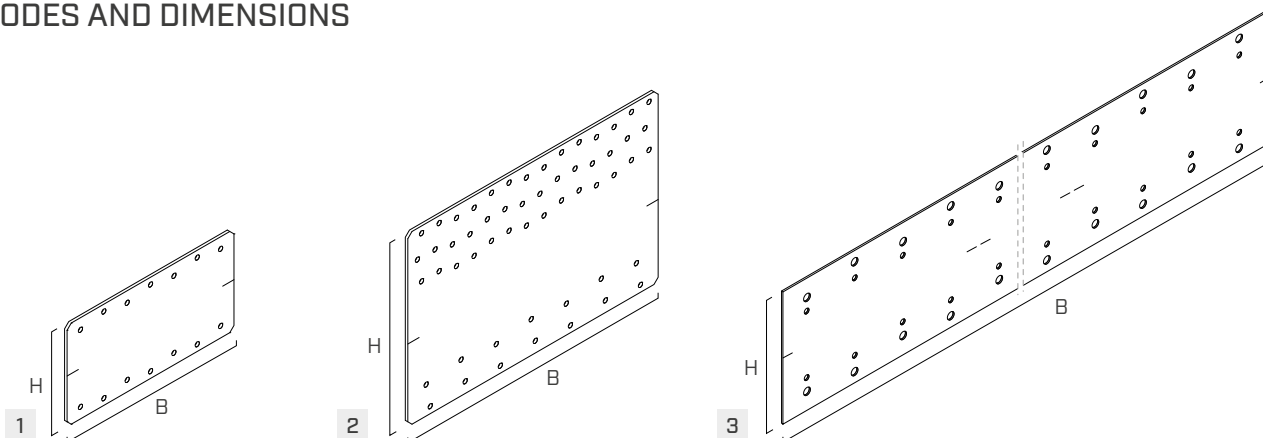
SPLINE STRAP

Ideal for the construction of floors with diaphragm behaviour, restoring shear continuity between the different panels that make up the floor.

FASTENING PATTERNS

The 300 mm version, with asymmetrical nailing, allows fastening on both beams and CLT with optimised fastening patterns.

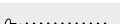
CODES AND DIMENSIONS



CODE	B	H	s	B	H	s	$n_{V1} \varnothing 5$ $n_{V1} \varnothing 0.20$	$n_{V2} \varnothing 5$ $n_{V2} \varnothing 0.20$	$n_{V1} \varnothing 7$ $n_{V1} \varnothing 0.28$	$n_{V2} \varnothing 7$ $n_{V2} \varnothing 0.28$		pcs
	[mm]	[mm]	[mm]	[in]	[in]	[in]	[pcs]	[pcs]	[pcs]	[pcs]		
1 TTP200	200	105	2,5	8	4 1/8	0.10	7	7	-	-	●	10
2 TTP300	300	200	3	11 3/4	8	0.12	42	14	-	-	●	5
3 TTP1200(*)	1200	120	1,5	47 1/4	4 3/4	0.06	48	48	48	48	●	5

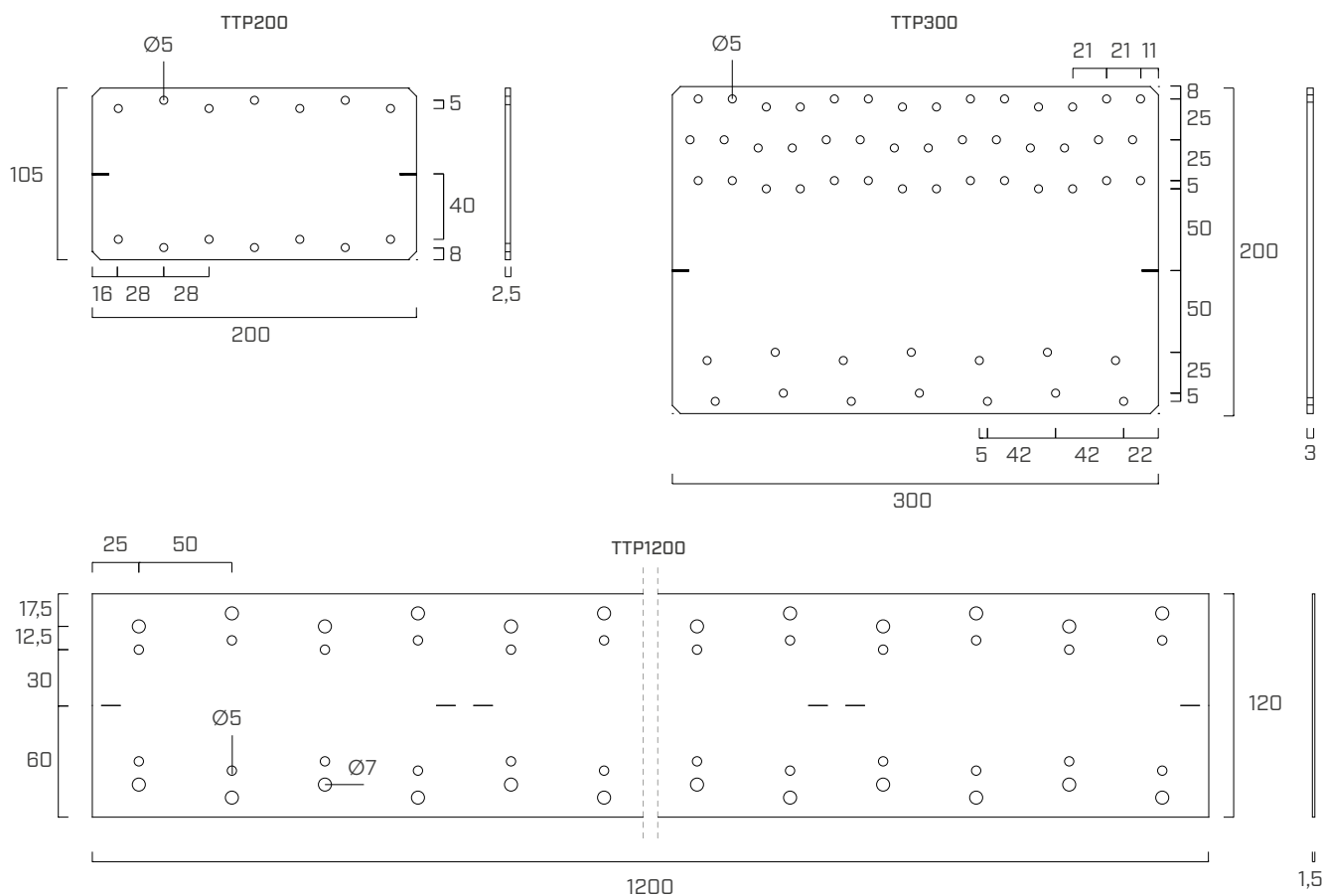
(*)Not holding UKCA marking.

FASTENERS

type	description		d	support
			[mm]	
LBA	high bond nail		4	
LBS	round head screw		5 - 7	

For proper installation of screws, it is recommended to refer to the "TIMBER SCREWS AND DECK FASTENING" catalogue.

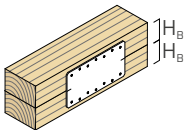
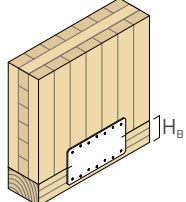
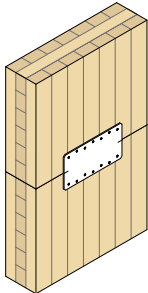
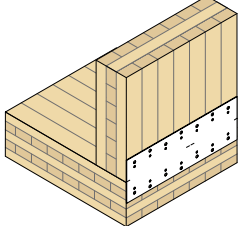
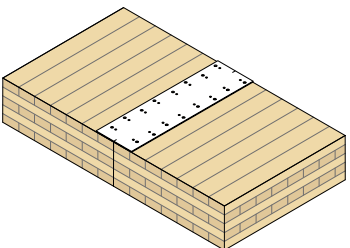
GEOMETRY



■ INSTALLATION

TITAN PLATE T plates can be used on both CLT and solid timber/glulam elements and must be positioned with the assembly notches at the timber-to-timber interface.

Possible fastening configurations are shown below:

configuration		fasteners	TTP200	TTP300	TTP1200
	timber-to-timber	LBA Ø4	●	●	-
		LBS Ø5	-	●	-
	CLT - timber	LBA Ø4	●	●	-
		LBS Ø5	-	●	-
	CLT - CLT lateral face - lateral face	LBA Ø4	●	●	-
		LBS Ø5	●	●	●
		LBS Ø7	-	-	●
	CLT - CLT lateral face - narrow face	LBA Ø4	-	-	-
		LBS Ø5	-	-	-
		LBS Ø7	-	-	●
	CLT - CLT lateral face - lateral face	LBA Ø4	●	●	●
		LBS Ø5	●	●	●
		LBS Ø7	-	-	●

MINIMUM HEIGHT OF H_B ELEMENTS

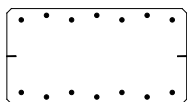
In the case of fastening on beam/platform beam, the relative minimum H_B height of the elements is shown in the table with reference to the installation diagrams.

configuration	fasteners	$H_{B\min}$ [mm]		
		TTP200 total	TTP300 partial	TTP300 total
timber-to-timber	LBA Ø4	75	110	-
	LBS Ø5	-	130	-
CLT - timber	LBA Ø4	75	110	100
	LBS Ø5	-	130	105

The H_B height is determined taking into account the minimum distances for solid timber or glulam consistent with EN 1995:2014 considering a timber density $\rho_k \leq 420 \text{ kg/m}^3$.

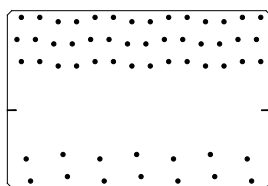
FASTENING PATTERNS

TTP200

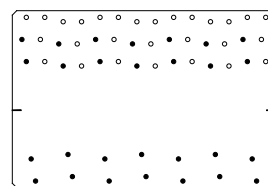


total fastening

TTP300

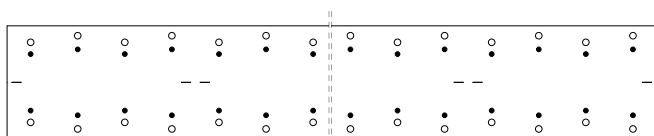


total fastening

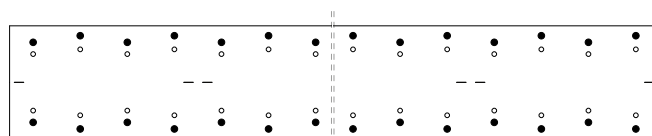


partial fastening

TTP1200



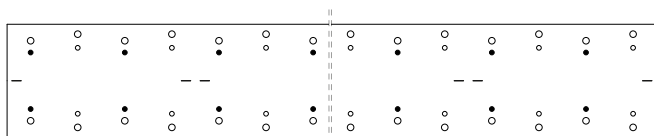
LBA Ø4 - LBS Ø5



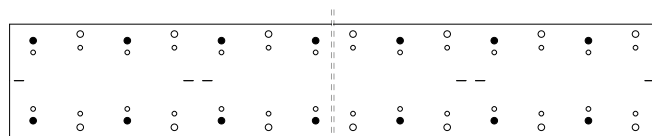
LBS Ø7

total fastening

24+24 fasteners - spacing 50 mm



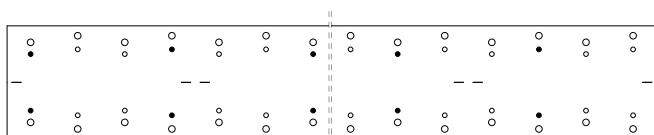
LBA Ø4 - LBS Ø5



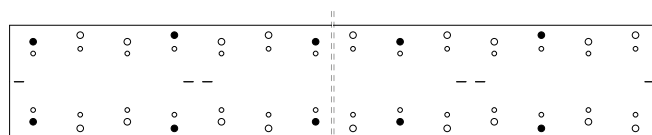
LBS Ø7

partial fastening

12+12 fasteners - spacing 100 mm



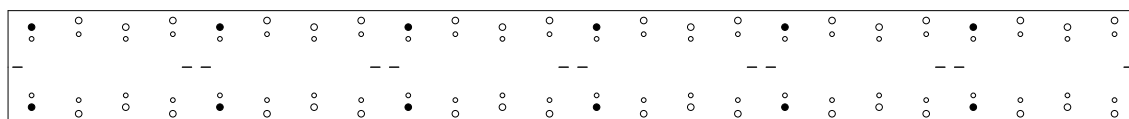
LBA Ø4 - LBS Ø5



LBS Ø7

partial fastening

8+8 fasteners - spacing 150 mm

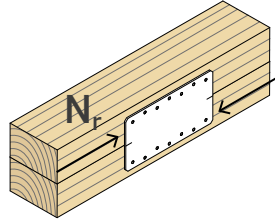


LBS Ø7

partial fastening

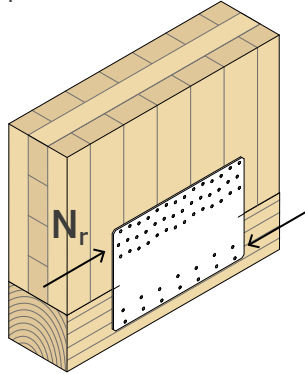
6+ 6 fasteners - spacing 200 mm

STRUCTURAL VALUES | TTP200 | N_r



configuration	type	fastening holes			factored lateral resistance $N_r^{(1)(2)}$ ($K_D=1.15$)			
		$\varnothing \times L$ [mm]	n_{V1} [pcs]	n_{V2} [pcs]	G=0.35 [kN]	G=0.42 [kN]	G=0.49 [kN]	G=0.55 [kN]
total fastening	LBA	$\varnothing 4 \times 60$	7	7	5,7	6,7	7,7	8,5

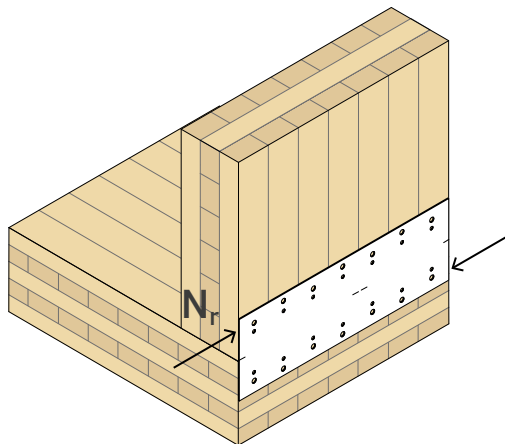
STRUCTURAL VALUES | TTP300 | N_r



configuration	type	fastening holes			factored lateral resistance $N_r^{(1)(2)(3)}$ ($K_D=1.15$)			
		$\varnothing \times L$ [mm]	n_{V1} [pcs]	n_{V2} [pcs]	G=0.35 [kN]	G=0.42 [kN]	G=0.49 [kN]	G=0.55 [kN]
total fastening	LBA	$\varnothing 4 \times 60$	42	14	16,6	19,5	22,4	24,8
	LBS	$\varnothing 5 \times 60$	42	14	33,2	39,0	44,7	49,5
partial fastening	LBA	$\varnothing 4 \times 60$	14	14	10,1	11,8	13,6	15,0
	LBS	$\varnothing 5 \times 60$	14	14	20,1	23,7	27,1	30,0

STRUCTURAL VALUES | TTP1200 | N_r

CLT - CLT
lateral face - narrow face

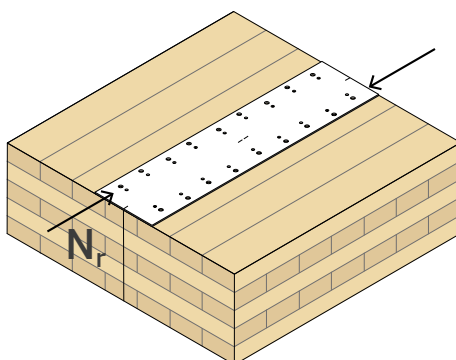


configuration	type	fastening holes			factored lateral resistance $N_r^{(1)(2)(3)(4)}$ ($K_D=1.15$)					
		$\varnothing \times L$ [mm]	n_{V1} [pcs]	n_{V2} [pcs]	G=0.35		G=0.42		G=0.49	
total fastening 24+24 fasteners spacing 50 mm	LBS	$\varnothing 7 \times 100$	24	24	61,3	51,1	67,6	56,3	73,9	61,6
partial fastening 12+12 fasteners spacing 100 mm	LBS	$\varnothing 7 \times 100$	12	12	30,9	25,7	34,0	28,3	37,2	31,0

It is possible to cut the plate into modules with a length of 600 mm. The strength in kN/m remains unchanged.

CLT - CLT

lateral face - lateral face



configuration	fastening holes				factored lateral resistance N _r ⁽¹⁾⁽²⁾⁽³⁾					
	type	Ø x L [mm]	n _{v1} [pcs]	n _{v2} [pcs]	(K _D =1.15)		G=0.42		G=0.49	
					G=0.35	G=0.35	G=0.42	G=0.42	G=0.49	G=0.49
					[kN]	[kN/m]	[kN]	[kN/m]	[kN]	[kN/m]
total fastening 24+24 fasteners spacing 50 mm	LBA	Ø4 x 60	24	24	27,2	22,7	32,0	26,7	36,6	30,5
	LBS	Ø5 x 60	24	24	51,5	42,9	55,3	46,1	59,1	49,2
	LBS	Ø7 x 100	24	24	91,5	76,3	100,9	84,1	110,2	91,9
partial fastening 12+12 fasteners spacing 100 mm	LBA	Ø4 x 60	12	12	13,7	11,4	16,0	13,4	18,4	15,3
	LBS	Ø5 x 60	12	12	25,8	21,5	27,7	23,1	29,6	24,7
	LBS	Ø7 x 100	12	12	46,1	38,4	50,8	42,3	55,5	46,2
partial fastening 8+8 fasteners spacing 150 mm	LBA	Ø4 x 60	8	8	9,1	7,6	10,7	8,9	12,2	10,2
	LBS	Ø5 x 60	8	8	17,2	14,3	18,5	15,4	19,7	16,4
	LBS	Ø7 x 100	8	8	30,6	25,5	33,7	28,1	36,9	30,7
partial fastening 6+6 fasteners spacing 200 mm	LBS	Ø7 x 100	6	6	23,1	19,2	25,4	21,2	27,8	23,2

It is possible to cut the plate into modules with a length of 600 mm. The strength in kN/m remains unchanged.

STRUCTURAL VALUES

GENERAL PRINCIPLES

- The steel plate made of DX51D + Z275 carbon steel has a specified tensile strength equal to 330 MPa.
- The specified bending yield strength values are as follows: LBA with a diameter of 4mm has $f_{yb} = 645$ MPa, LBS/LBS EVO with a diameter of 5 mm has $f_{yb} = 1066$ MPa, and LBS/LBS EVO with a diameter of 7 mm has $f_{yb} = 1102$ MPa.
- G is the mean relative density according to Table A.11. Most common wood species are assumed such as Northern species (G = 0.35), Spruce-Pine-Fir (G = 0.42), Douglas Fir (G = 0.49), and Southern Pine (G = 0.55).
- It is admitted that the distance between the center of mass of the two nailed parts generates a transport moment that is already absorbed by the fasteners in the calculated values. For TTP300, the rotational stiffness of the upper section is much greater, therefore the moment was distributed only on this portion of the steel plate.
- Dimensioning and verification of the timber elements must be carried out separately.

NOTES

- (1) Strength values are valid for all full/partial configurations indicated in the INSTALLATION section.
- (2) The reference factored lateral resistance for nails and wood screws has been determined following the guidelines in Clauses 12.9 and 12.11 of the CSA-O86 2019. Listed values are based on short term load duration factor ($K_D = 1.15$), dry service condition factor ($K_{SF} = 1.0$), and treatment factor ($K_T = 1.0$). J factors affecting the resistance where taken as 1.0. Applicable adjustment factors shall be applied according to CSA-O86 2019. The listed values are independent of the grain direction as per CSA-O86 Clause 12.9 for nails and Clause 12.11 for wood screws.
- (3) $J_x = 0.9$ factor has been used for CLT connections. When using LBS EVO screws, the strength values are equivalent to the specified LBS values listed in the tables.
- (4) $J_E = 0.67$ factor for fastening into end grain has been considered in the calculations of the narrow face connection.

INTELLECTUAL PROPERTY

- TITAN PLATE T plates are protected by the following Registered Community Designs:
 - RCD 008254353-0015;
 - RCD 008254353-0016;
 - RCD 015051914-0006.