

PERFORATED PLATE

WIDE RANGE

Several versions are available, designed to face all timber construction needs. The LBV plates can create simple beam and joist joints through to the most important inter-story connections.

READY FOR USE

An "off the shelf solution" that meets the most common requirements and minimises installation times. It offers an excellent cost to performance ratio.

EFFICIENCY

The new LBA nails according to ETA-22/0002 achieve excellent strengths with a reduced number of fasteners.



USA, Canada and more design values available online.



SERVICE CLASS



MATERIAL

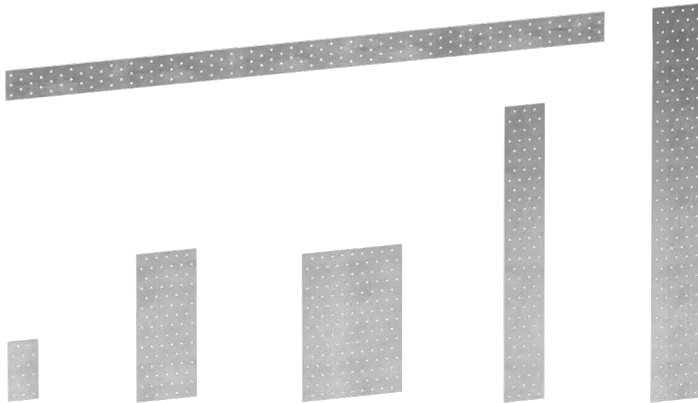
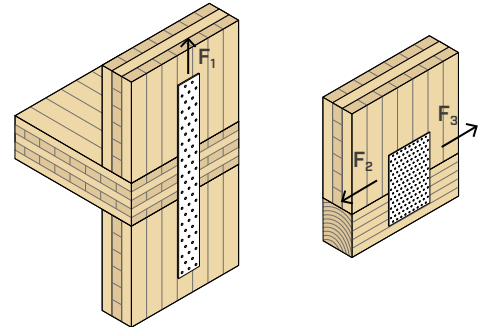


S250GD + Z275 carbon steel

THICKNESS [mm]

1,5 mm | 2,0 mm

EXTERNAL LOADS



FIELD OF USE


Tension joints with small to medium stresses through a simple and cost-effective solution. Timber-to-timber configuration.

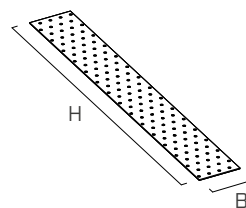
Can be applied to:

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

CODES AND DIMENSIONS


LBV 1,5 mm

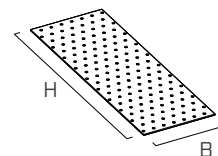
CODE	B	H	s	B	H	s	n Ø5 n Ø0.20 [pcs]		pcs
	[mm]	[mm]	[mm]	[in]	[in]	[in]			
LBV60600	60	600	1,5	2 3/8	23 5/8	0.06	75	●	10
LBV60800	60	800	1,5	2 3/8	31 1/2	0.06	100	●	10
LBV80600	80	600	1,5	3 1/8	23 5/8	0.06	105	●	10
LBV80800	80	800	1,5	3 1/8	31 1/2	0.06	140	●	10
LBV100800	100	800	1,5	4	31 1/2	0.06	180	●	10



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LBV 2,0 mm

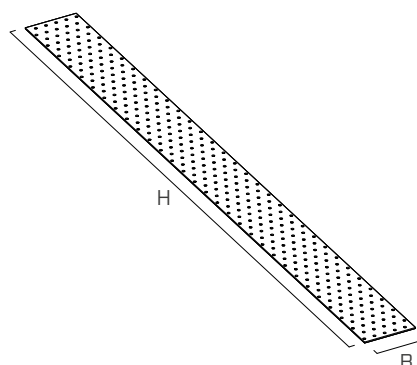
CODE	B	H	s	B	H	s	n Ø5 n Ø0.20 [pcs]		pcs
	[mm]	[mm]	[mm]	[in]	[in]	[in]			
LBV40120	40	120	2,0	1 9/16	4 3/4	0.08	9	●	200
LBV40160	40	160	2,0	1 9/16	6 1/4	0.08	12	●	50
LBV60140	60	140	2,0	2 3/8	5 1/2	0.08	18	●	50
LBV60200	60	200	2,0	2 3/8	8	0.08	25	●	100
LBV60240	60	240	2,0	2 3/8	9 1/2	0.08	30	●	100
LBV80200	80	200	2,0	3 1/8	8	0.08	35	●	50
LBV80240	80	240	2,0	3 1/8	9 1/2	0.08	42	●	50
LBV80300	80	300	2,0	3 1/8	11 3/4	0.08	53	●	50
LBV100140	100	140	2,0	4	5 1/2	0.08	32	●	50
LBV100200	100	200	2,0	4	8	0.08	45	●	50
LBV100240	100	240	2,0	4	9 1/2	0.08	54	●	50
LBV100300	100	300	2,0	4	11 3/4	0.08	68	●	50
LBV100400	100	400	2,0	4	15 3/4	0.08	90	●	20
LBV100500	100	500	2,0	4	19 3/4	0.08	112	●	20
LBV120200	120	200	2,0	4 3/4	8	0.08	55	●	50
LBV120240	120	240	2,0	4 3/4	9 1/2	0.08	66	●	50
LBV120300	120	300	2,0	4 3/4	11 3/4	0.08	83	●	50
LBV140400	140	400	2,0	5 1/2	15 3/4	0.08	130	●	15
LBV160400	160	400	2,0	6 1/4	15 3/4	0.08	150	●	15
LBV200300	200	300	2,0	8	11 3/4	0.08	142	●	15



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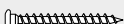

LBV 2,0 x 1200 mm

CODE	B	H	s	B	H	s	n Ø5 n Ø0.20 [pcs]		pcs
	[mm]	[mm]	[mm]	[in]	[in]	[in]			
LBV401200	40	1200	2,0	1 9/16	47 1/4	0.08	90	●	20
LBV601200	60	1200	2,0	2 3/8	47 1/4	0.08	150	●	20
LBV801200	80	1200	2,0	3 1/8	47 1/4	0.08	210	●	20
LBV1001200	100	1200	2,0	4	47 1/4	0.08	270	●	10
LBV1201200	120	1200	2,0	4 3/4	47 1/4	0.08	330	●	10
LBV1401200	140	1200	2,0	5 1/2	47 1/4	0.08	390	●	10
LBV1601200	160	1200	2,0	6 1/4	47 1/4	0.08	450	●	10
LBV1801200	180	1200	2,0	7 1/8	47 1/4	0.08	510	●	10
LBV2001200	200	1200	2,0	8	47 1/4	0.08	570	●	5
LBV2201200	220	1200	2,0	8 5/8	47 1/4	0.08	630	●	5
LBV2401200	240	1200	2,0	9 1/2	47 1/4	0.08	690	●	5
LBV2601200	260	1200	2,0	10 1/4	47 1/4	0.08	750	●	5
LBV2801200	280	1200	2,0	11	47 1/4	0.08	810	●	5
LBV3001200	300	1200	2,0	11 3/4	47 1/4	0.08	870	●	5
LBV4001200	400	1200	2,0	15 3/4	47 1/4	0.08	1170	●	5

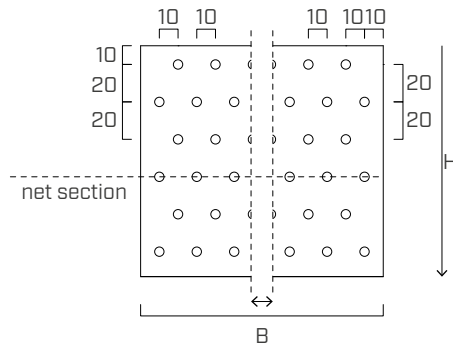


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FASTENERS

type	description		d [mm]	support 	page
LBA	high bond nail		4		570
LBS	round head screw		5		571

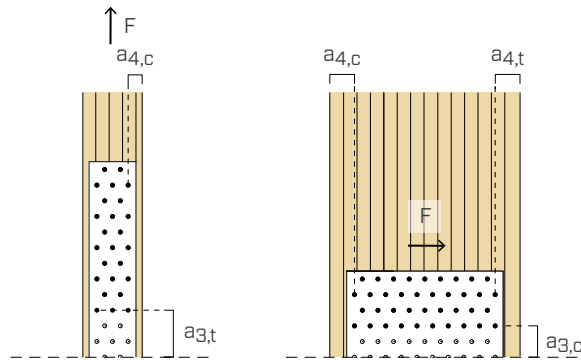
GEOMETRY



B	net area holes	B	net area holes	B	net area holes
[mm]	pcs	[mm]	[pcs]	[mm]	[pcs]
40	2	140	7	240	12
60	3	160	8	260	13
80	4	180	9	280	14
100	5	200	10	300	15
120	6	220	11	400	20

INSTALLATION

MINIMUM DISTANCES



load-to-grain angle $\alpha = 0^\circ$		nail	screw		
		LBA Ø4	LBS Ø5		
lateral connector - unloaded edge	$a_{4,c}$ [mm]	≥ 20	≥ 25		
connector - loaded end	$a_{3,t}$ [mm]	≥ 60	≥ 75		
load-to-grain angle $\alpha = 90^\circ$		nail	screw		
		LBA Ø4	LBS Ø5		
		lateral connector - loaded edge	$a_{4,t}$ [mm]	≥ 28	≥ 50
		lateral connector - unloaded edge	$a_{4,c}$ [mm]	≥ 20	≥ 25
connector - unloaded end	$a_{3,c}$ [mm]	≥ 40	≥ 50		

STRUCTURAL VALUES | TIMBER-TO-TIMBER | F₁

STRENGTH OF THE SYSTEM

The tensile strength of the R_{1,d} system is the minimum between the R_{ax,d} plate side tensile strength and the shear resistance of the connectors used for fastening n_{tot} R_{v,d}. If the connectors are placed in several consecutive rows and the load direction is parallel to the grain, the following sizing criteria must be applied.

$$R_{1,d} = \min \left\{ \begin{array}{l} R_{ax,d} \\ \sum m_i \cdot n_i^k \cdot R_{v,d} \end{array} \right. \quad k = \begin{cases} 0,85 & LBA \quad \varnothing = 4 \\ 0,75 & LBS \quad \varnothing = 5 \end{cases}$$

Where m_i is the number of rows of connectors parallel to the grain and n_i is the number of connectors arranged in the same row.

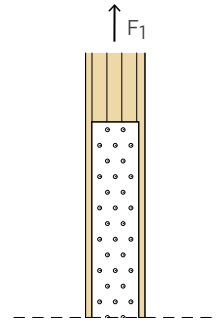


PLATE - TENSILE STRENGTH

type	B	s	net area holes	R _{ax,k}
	[mm]	[mm]	[pcs]	[kN]
LBV 1,5 mm	60	1,5	3	20,0
	80	1,5	4	26,7
	100	1,5	5	33,4
LBV 2,0 mm	40	2,0	2	17,8
	60	2,0	3	26,7
	80	2,0	4	35,6
	100	2,0	5	44,6
	120	2,0	6	53,5
	140	2,0	7	62,4
	160	2,0	8	71,3
	180	2,0	9	80,2
	200	2,0	10	89,1
	220	2,0	11	98,0
	240	2,0	12	106,9
	260	2,0	13	115,8
	280	2,0	14	124,7
	300	2,0	15	133,7
	400	2,0	20	178,2

CALCULATION EXAMPLE | TIMBER-TO-TIMBER JOINT

An example of joint type calculation is shown in the figure on page 339, using also a perforated strap LBB in comparison.

GENERAL PRINCIPLES

- The plate design strength values can be obtained as follows:

$$R_{ax,d} = \frac{R_{ax,k}}{\gamma_{M2}}$$

The coefficient γ_{M2} should be taken according to the current regulations used for the calculation.

- Dimensioning and verification of the timber elements must be carried out separately.

- It is recommended to place the connectors symmetrically with respect to the load direction.