

PERFORATED STRAP

TWO THICKNESSES

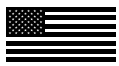
Simple and effective system to achieve floor bracing. It is available in thicknesses of 1,5 and 3,0 mm.

SPECIAL STEEL

Made with S350GD high strength steel. The 1,5 mm thick version offers extreme performance to tensile forces with minimal thickness.

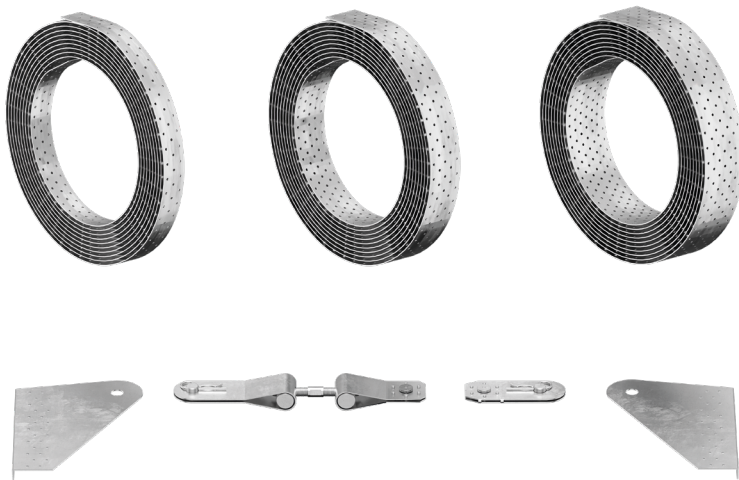
TENSIONING

The CLIPFIX60 accessory allows the strap to be tensioned and anchored firmly at the ends. By using a GEKO or SKORPIO panel pullers together with the CLAMP1 accessory, the perforated strap can be tensioned.



USA DESIGN VALUES

CANADA, EU and more design values available online.



SERVICE CONDITION



MATERIAL



LBB 1,5 mm: S350GD + Z275 carbon steel

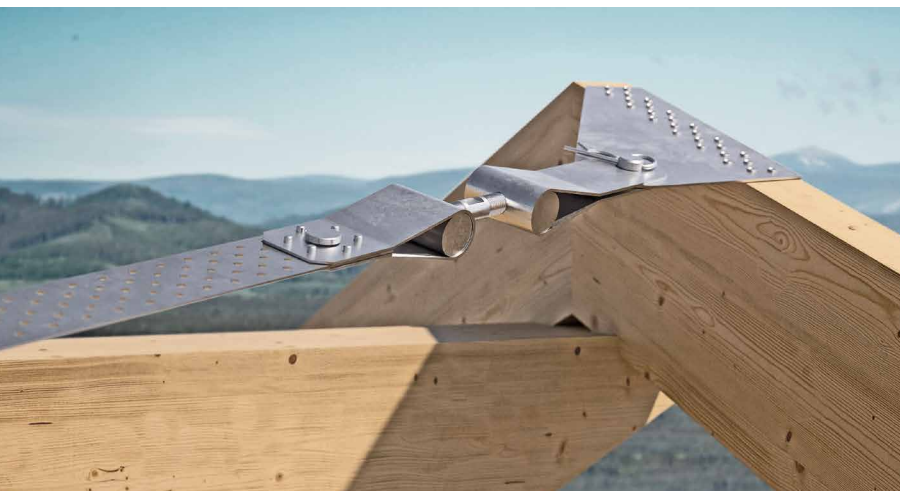
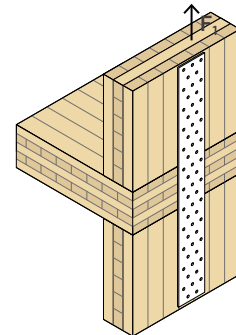


LBB 3,0 mm: S250GD + Z275 carbon steel

THICKNESS [mm] [in]

1,5 mm (0.06 in) | 3,0 mm (0.12 in)

EXTERNAL LOADS



FIELD OF USE

Economical solution for tensile joints with small to medium stress.
Rolls of 82 ft (25 m) or 164 ft (50 m) instead allow for very long connections.
Timber-to-timber configuration.
To be used in dry condition.

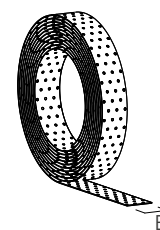
Can be applied to:

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

CODES AND DIMENSIONS

LBB 1,5 mm

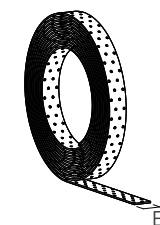
CODE	B [mm]	H [m]	s [mm]	B [in]	H [in]	s [in]	n Ø5 n Ø.20 [pcs]		pcs
LBB40	40	50	1,5	1 9/16	1 15/16	0.06	75/m 23 / ft.	●	1
LBB60	60	50	1,5	2 3/8	1 15/16	0.06	125/m 38 / ft.	●	1
LBB80	80	25	1,5	3 1/8	1 15/16	0.06	175/m 53 / ft.	●	1



S350
2275

LBB 3,0 mm

CODE	B [mm]	H [m]	s [mm]	B [in]	H [in]	s [in]	n Ø5 n Ø.20 [pcs]		pcs
LBB4030	40	50	3	1 9/16	1 15/16	0.12	75/m 23 / ft.	●	1



S250
2275

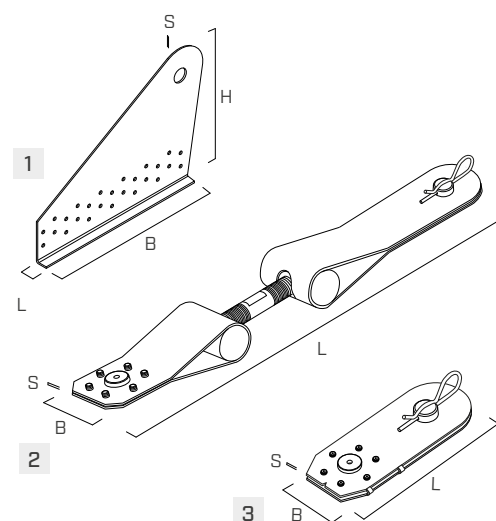
CLIPFIX

CODE	LBB type	LBB width	pcs
CLIPFIX60	LBB40 LBB60	40 mm 60 mm 1 9/16 in 2 3/8 in	1

SET COMPRISED OF:	B [mm] [in]	H [mm] [in]	L [mm] [in]	s [mm] [in]	n Ø5 n Ø.20 pcs	pcs
1 Terminal plate	289 11 3/8	198 7 13/16	15 9/16	2 0.08	26	4 ⁽¹⁾
2 Clip-Fix tensioner	60 2 3/8	-	300-350 11 3/4 - 13 3/4	2 0.08	7	2
3 Clip-Fix Terminal	60 2 3/8	-	157 6 3/16	2 0.08	7	2

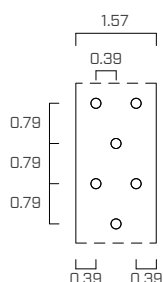
(1)The set includes two right-hand and two left-hand plates.

The Clip-Fix tensioners and terminals are compatible for installation of the LBB40 and LBB60 perforated straps.

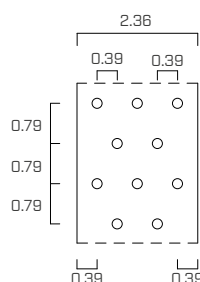


GEOMETRY

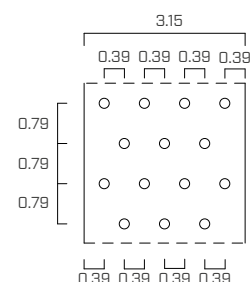
LBB40 / LBB4030



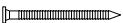
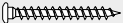
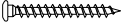
LBB60



LBB80



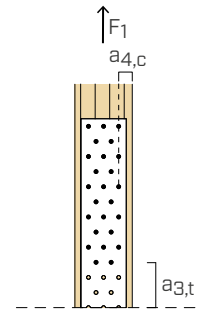
FASTENERS

type	description		d [mm] [in]	support
LBA	high bond nail		4 0.157	
LBS	round head screw		5 0.197	
LBS EVO	C4 EVO round head screw		5 0.197	

■ INSTALLATION

MINIMUM DISTANCES

TIMBER minimum distances		nails LBA Ø4	screws LBS Ø5
Lateral connector - unloaded edge	$a_{4,c}$ [mm] [in]	10 0.39	12.5 0.49
Connector - loaded end	$a_{3,t}$ [mm] [in]	40 1.57	50 1.97



■ STRUCTURAL VALUES | TIMBER-TO-TIMBER | F_1

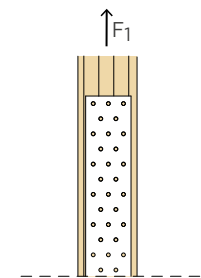
STRENGTH OF THE SYSTEM

The tensile strength of the F_1 system is the minimum between the F_{ax} plate side tensile strength and the shear resistance of the connectors used for fastening n_{tot} .

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.

$$F_1 = \min \left\{ \begin{array}{l} F_{ax} \\ \sum m_i \cdot n_i^k \cdot F_v \\ n_{tot} \end{array} \right. \quad k = \begin{cases} 0,85 & \text{LBA } \varnothing = 4 \\ 0,75 & \text{LBS } \varnothing = 5 \end{cases}$$

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.



TAPE - TENSILE STRENGTH

type	B		s		net area holes	F_{ax}
	[mm]	[in]	[mm]	[in]	[pcs]	[lbf]
LBB 1,5 mm	40	1 9/16	1,5	0.06	2	1593
	60	2.375	1,5	0.06	3	2390
	80	3 1/8	1,5	0.06	4	3186
LBB 3,0 mm	40	1 9/16	3,0	0.12	2	2503

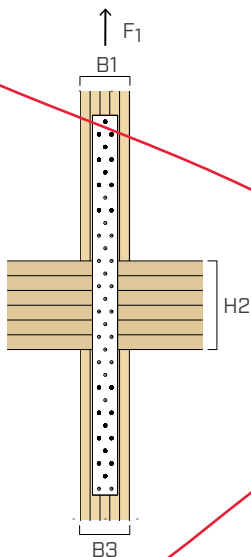
CONNECTORS SHEAR RESISTANCE

For the strength F_v of the LBA Anker nails and of the LBS screws, refer to the "TIMBER SCREWS AND DECK FASTENING" catalogue.

GENERAL PRINCIPLES

- 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.

CALCULATION EXAMPLE | DETERMINING RESISTANCE R_1



Project data

Axial load	f_1	1400 lbf
Service class		dry condition
Load duration		short ⁽¹⁾
Solid timber SPF		
Element 1	B1	3.5 in
Element 2	H2	5.5 in
Element 3	B3	3.5 in

perforated strap LBB40

B = 1.57 in
s = 0.06 in

perforated plate LBV401200⁽²⁾

B = 1.57 in
s = 0.08 in
H = 23.62 in

Anker nail LBA440⁽²⁾

d_1 = 0.157 in
L = 1.57 in

Anker nail LBA440⁽²⁾

d_1 = 0.157 in
L = 1.57 in

EVALUATION OF THE STRENGTH OF THE SYSTEM

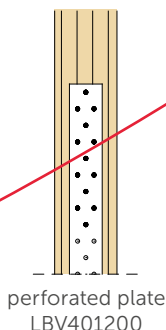
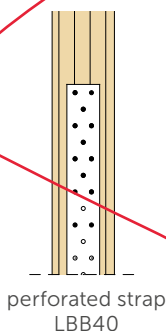
TAPE/PLATE - TENSILE STRENGTH

perforated strap LBB40

F_{ax} = 1593 lbf

perforated plate LBV401200⁽³⁾

F_{ax} = 2124 lbf



CONNECTOR - SHEAR STRENGTH

perforated strap LBB40

F_v = 140 lbf
 n_{tot} = 13 pcs
 n_1 = 5 pcs
 m_1 = 2 lines
 n_2 = 3 pcs
 m_2 = 1 lines
 k_{LBA} = 0,85
 $\sum m_i \cdot n_i^k \cdot F_v$ = 1410 lbf

perforated plate LBV401200⁽²⁾

F_v = 140 lbf
 n_{tot} = 13 pcs
 n_1 = 4 pcs
 m_1 = 2 lines
 n_2 = 5 pcs
 m_2 = 1 lines
 k_{LBA} = 0,85
 $\sum m_i \cdot n_i^k \cdot F_v$ = 1767.6 lbf

STRENGTH OF THE SYSTEM

perforated strap LBB40

F_1 = 1410 lbf

perforated plate LBV401200⁽²⁾

F_1 = 1767 lbf

$$F_1 = \min \begin{cases} F_{ax} \\ \sum m_i \cdot n_i^k \cdot F_v \end{cases}$$

VERIFICATION

$$R_1 \geq F_1$$

1410 lbf $\geq$ 1400 lbf ✓

verification passed

1767 lbf $\geq$ 1400 lbf ✓

verification passed

NOTES

- ⁽¹⁾ For short term loading. Load duration factor C_d = 1.6 was used.
⁽²⁾ In the calculation example LBA Anker nails are used. The fastening can also be made with LBS screws (page 574).
⁽³⁾ Plate LBV401200 is considered cut to length 600 mm.

GENERAL PRINCIPLES

- To optimize the connection system, it is recommended to use a number of connectors which can provide a shear capacity that does not exceed the tensile strength of the tape/plate.
- It is recommended to place the connectors symmetrically with respect to the load direction.