

## METAL HANGER WITH INTERNAL WINGS

- Thanks to the internal wings, the junction is almost entirely “concealed”
- Possibility of fastening the beam rotated in relation to its axis, with simultaneous application of vertical and lateral force
- Standardized, certified, fast and inexpensive system. Also suitable for fastening on OSB



### BSIS

standard

CODE	B [mm]	H [mm]	s [mm]	Anker nail LBA	n <sub>H</sub> <sup>(1)</sup> [pcs]	n <sub>J</sub> <sup>(2)</sup> [pcs]		pcs
BSIS40110	40	110	2,0	Ø4 x 40	8	4	●	50
HT60100I	60	100	2,0	Ø4 x 40	8	4	●	50
BSIS60160	60	160	2,0	Ø4 x 40	12	6	●	50
HT70125I	70	125	2,0	Ø4 x 40	10	6	●	50
HT80120I	80	120	2,0	Ø4 x 40	18	10	●	50
BSIS80150	80	150	2,0	Ø4 x 40	22	12	●	50
BSIS80180	80	180	2,0	Ø4 x 40	26	14	●	25
BSIS90145	90	145	2,0	Ø4 x 40	22	12	●	50
HT10090I	100	90	2,0	Ø4 x 60	12	6	●	50
HT100120I	100	120	2,0	Ø4 x 60	16	10	●	50
HT100140I	100	140	2,0	Ø4 x 60	22	12	●	50
BSIS100170	100	170	2,0	Ø4 x 60	26	14	●	50
BSIS100200	100	200	2,0	Ø4 x 60	30	16	●	25
BSIS120120	120	120	2,0	Ø4 x 60	18	10	●	25
HT120160I	120	160	2,0	Ø4 x 60	26	14	●	25
BSIS120190	120	190	2,0	Ø4 x 60	30	16	●	25
BSIS140140	140	140	2,0	Ø4 x 60	22	12	●	25
BSIS140180	140	180	2,0	Ø4 x 60	30	16	●	25

<sup>(1)</sup> n<sub>H</sub> number of fasteners on the main beam

<sup>(2)</sup> n<sub>J</sub> number of fasteners on the secondary beam

### BSIG

large size

CODE	B [mm]	H [mm]	s [mm]	Anker nail LBA	n <sub>H</sub> <sup>(1)</sup> [pcs]	n <sub>J</sub> <sup>(2)</sup> [pcs]		pcs
BSIG120240	120	240	2,5	Ø4 x 60	46	30	●	20
BSIG140240	140	240	2,5	Ø4 x 60	46	30	●	20
BSIG160160	160	160	2,5	Ø4 x 60	30	18	●	15
BSIG160200	160	200	2,5	Ø4 x 60	38	22	●	15
BSIG180220	180	220	2,5	Ø4 x 60	42	26	●	10
BSIG200200	200	200	2,5	Ø4 x 60	38	22	●	10
BSIG200240	200	240	2,5	Ø4 x 60	46	30	●	10

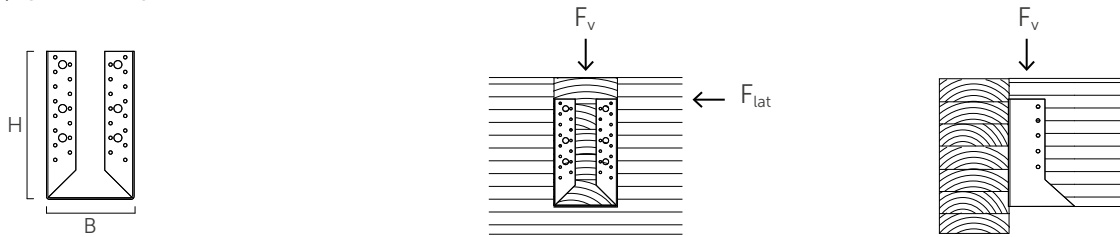
<sup>(1)</sup> n<sub>H</sub> number of fasteners on the main beam

<sup>(2)</sup> n<sub>J</sub> number of fasteners on the secondary beam



## STRUCTURAL VALUES

### TIMBER-TO-TIMBER JOINT PARTIAL/TOTAL NAILING<sup>(1)</sup>



#### BSIS - STANDARD

			PARTIAL NAILING				FULL NAILING			
B	H	LBA nails	fastening number		characteristic values		fastening number		characteristic values	
			$n_H^{(2)}$	$n_J^{(3)}$	$R_{v,k}$	$R_{lat,k}$	$n_H^{(2)}$	$n_J^{(3)}$	$R_{v,k}$	$R_{lat,k}$
[mm]	[mm]	d x L [mm]	pcs	pcs	[kN]	[kN]	pcs	pcs	[kN]	[kN]
40 <sup>(*)</sup>	110	Ø4 x 40	8	4	<b>8,7</b>	1,9	-	-	-	-
60 <sup>(*)</sup>	100	Ø4 x 40	8	4	<b>7,6</b>	2,6	-	-	-	-
60 <sup>(*)</sup>	160	Ø4 x 40	12	6	<b>15,0</b>	3,4	-	-	-	-
70 <sup>(*)</sup>	125	Ø4 x 40	10	6	<b>10,5</b>	3,7	-	-	-	-
80	120	Ø4 x 40	10	6	<b>10,4</b>	4,0	18	10	<b>18,3</b>	6,7
80	150	Ø4 x 40	12	6	<b>14,8</b>	4,0	22	12	<b>26,3</b>	7,6
80	180	Ø4 x 40	14	8	<b>12,8</b>	4,8	26	14	<b>30,0</b>	8,4
90	145	Ø4 x 40	12	6	<b>14,2</b>	4,2	22	12	<b>25,7</b>	8,0
100	90	Ø4 x 60	6	4	<b>8,7</b>	4,8	12	6	<b>16,8</b>	7,2
100	120	Ø4 x 60	10	6	<b>16,5</b>	7,7	16	10	<b>28,4</b>	12,5
100	140	Ø4 x 60	12	6	<b>18,9</b>	6,5	22	12	<b>33,1</b>	12,3
100	170	Ø4 x 60	14	8	<b>23,6</b>	7,7	26	14	<b>37,8</b>	13,5
100	200	Ø4 x 60	16	8	<b>23,6</b>	7,7	30	16	<b>42,5</b>	14,6
120	120	Ø4 x 60	10	6	<b>15,6</b>	7,0	18	10	<b>27,5</b>	11,7
120	160	Ø4 x 60	14	8	<b>23,6</b>	8,5	26	14	<b>37,8</b>	14,9
120	190	Ø4 x 60	16	8	<b>23,6</b>	8,5	30	16	<b>42,5</b>	16,2
140	140	Ø4 x 60	12	6	<b>18,9</b>	7,4	22	12	<b>33,1</b>	14,3
140	180	Ø4 x 60	16	8	<b>23,6</b>	9,1	30	16	<b>42,5</b>	17,5

<sup>(\*)</sup> It cannot be to completely nailed

#### BSIG - LARGE SIZE

			PARTIAL NAILING				FULL NAILING			
B	H	LBA nails	fastening number		characteristic values		fastening number		characteristic values	
			$n_H^{(2)}$	$n_J^{(3)}$	$R_{v,k}$	$R_{lat,k}$	$n_H^{(2)}$	$n_J^{(3)}$	$R_{v,k}$	$R_{lat,k}$
[mm]	[mm]	d x L [mm]	pcs	pcs	[kN]	[kN]	pcs	pcs	[kN]	[kN]
120	240	Ø4 x 60	24	16	<b>40,7</b>	12,3	46	30	<b>75,6</b>	22,9
140	240	Ø4 x 60	24	16	<b>40,7</b>	13,3	46	30	<b>75,6</b>	25,6
160	160	Ø4 x 60	16	10	<b>21,2</b>	11,1	30	18	<b>41,6</b>	19,9
160	200	Ø4 x 60	20	12	<b>30,7</b>	12,3	38	22	<b>56,7</b>	22,4
180	220	Ø4 x 60	22	14	<b>35,7</b>	15,2	42	26	<b>66,2</b>	27,0
200	200	Ø4 x 60	20	12	<b>30,7</b>	13,7	38	22	<b>56,7</b>	25,0
200	240	Ø4 x 60	24	16	<b>40,7</b>	16,9	46	30	<b>75,6</b>	31,6

#### NOTES

<sup>(1)</sup> For total or partial nailing patterns please refer to the guidelines reported at page 3.

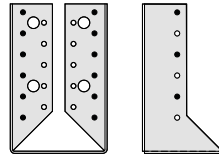
<sup>(2)</sup>  $n_H$  = number of fasteners on the main beam.

<sup>(3)</sup>  $n_J$  = number of fasteners on the secondary beam.

General calculation principles see page 3.

## INSTALLATION - FASTENERS

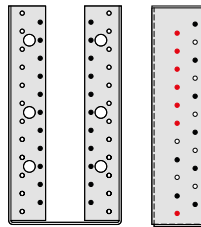
### TIMBER-TO-TIMBER



BSIS

	main beam ( $n_H$ )	secondary beam ( $n_J$ )
<b>PARTIAL NAILING ●</b>	$n_H$ nails positioned on the column closest to the lateral wing of the hanger	$n_J$ nails with alternate pattern
<b>FULL NAILING ●+○</b>	$n_H$ nails in all the holes	$n_J$ nails in all the holes

### TIMBER-TO-TIMBER | large size



BSIG

	main beam ( $n_H$ )	secondary beam ( $n_J$ )
<b>PARTIAL NAILING ●</b>	$n_H$ nails positioned on the column closest to the lateral wing of the hanger	● $n_J$ nails with alternate pattern, avoiding the holes marked in red
<b>FULL NAILING ●+○</b>	$n_H$ nails in all the holes	● $n_J$ nails with alternate pattern, avoiding the holes marked in red

### GENERAL PRINCIPLES

- Characteristic values are consistent with EN 1995-1-1 and in accordance with ETA.
- Design values can be obtained from characteristic values as follows:

$$R_{d} = \frac{R_k \cdot k_{mod}}{\gamma_M}$$

The coefficients  $\gamma_M$  and  $k_{mod}$  should be taken according to the current regulations used for the calculation.

- For the calculation process a timber characteristic density  $\rho_k = 350 \text{ kg/m}^3$  has been considered.
- Dimensioning and verification of the timber elements must be carried out separately.
- In case of  $F_{v,k}$  parallel to the grain, partial nailing is required.
- In case of combined loading the following verification shall be satisfied:

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