BT
Concealed joist hanger BT

SIMPSON
Strong-Tie

The beam hanger are used as concealed connections of secondary beams on main beams or on posts.

Features

Material

Steel quality:
S 250 GD + Z 275 according to DIN EN 10346

Corrosion protection:
275 g / m galvanized on both sides 20mm

Benefits

- Connections with inclinations up to 45 ° can be executed.
- The mounting slot allows a safe and convenient hanging of the secondary beam.
- With this type of mounting, additional supports are no longer required.
- Fire protection according to DIN 4102.

Applications
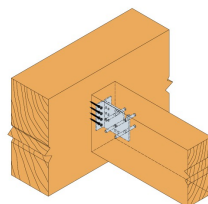
Applicatons

Supporting member:
Solid wood, engineered wood
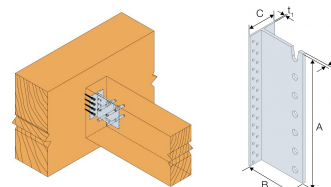**Supported member:**
Solid wood, engineered wood

When to Use

• for connecting secondary beams of wood or wooden materials to the main support structure of wood / wood materials.
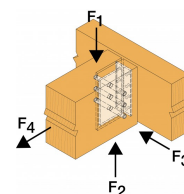
Technical Data

Product Dimensions

References	Joist Size [mm]		Product Dimensions [mm]					Header holes	Joist holes	Box Quantity	Weight [kg]
	Width	Height	A	B	C	t₁	t₂	Ø5	Ø13		
	Min	Min β=0									
BT280-B	60	312	280	106	62	3	6	52	7	10	1.8
BT320-B	60	352	320	106	62	3	6	60	8	10	2
BT360-B	60	392	360	106	62	3	6	68	9	8	2.3
BT440-B	60	472	440	106	62	3	6	84	11	6	2.8
BT480-B	60	512	480	106	62	3	6	92	12	6	3
BT560-B	60	592	560	106	62	3	6	108	14	5	3.5
BT600-B	60	632	600	106	62	3	6	116	15	5	3.8

Combined load:

$$\sum \frac{F_{i,d}}{R_{i,d}} \leq 1$$

Wood/wood fastening- Characteristic values in kn

References	Number of Fasteners				Product Capacities											
	Header		Joist		Product characteristic capacities - Timber C24 [kN]											
					R₁,ₖ						R₂,ₖ					
	Qty	Type	Qty	Type	Dowels length [mm]						Dowels length [mm]					
					60	80	100	120	140	160	60	80	100	120	140	160
BT280-B	52	CNA4.0x50	7	STD12	64.6	68	71.7	76.4	81.7	87.2	55.4	58.3	61.5	65.5	70	74.7
BT320-B	60	CNA4.0x50	8	STD12	77	81	85.5	91.2	97.5	104.1	67.4	70.9	74.8	79.8	85.3	91.1
BT360-B	68	CNA4.0x50	9	STD12	89.1	93.8	99	105.8	113.3	121.1	79.2	83.4	88	94	100.7	107.6
BT440-B	84	CNA4.0x50	11	STD12	112.1	118	125.2	134.4	144.4	154.7	101.9	107.3	113.8	122.2	131.3	140.6
BT480-B	92	CNA4.0x50	12	STD12	122.8	129.3	137.7	148.2	159.7	171.3	112.6	118.5	126.2	135.8	146.4	157
BT560-B	108	CNA4.0x50	12	STD12	122.8	129.3	138.4	150.7	164.9	179.1	122.8	129.3	138.4	150.7	164.9	179.1
BT600-B	116	CNA4.0x50	12	STD12	122.8	129.3	138.4	150.7	164.9	180.4	122.8	129.3	138.4	150.7	164.9	180.4

The joist shall have as minimum a width = length of steel dowel.
For beams with a slope β the capacities shall be multiply with the factor.

β	0°	15°	30°	45°
factor	1.0	0.95	0.9	0.85

$R_{2,k}$ capacities are calculated as $R_{2,k} = R_{1,k}$ x (nb of dowels - 1) / (nb of dowels).
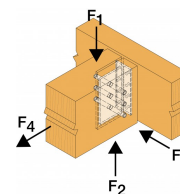The top dowel is not considered for the uplift capacities as it is placed in an open hole.
More detailed information are given in the ETA.

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Product characteristic capacities - Timber beam to timber beam - $R_{3,k}$ and $R_{4,k}$

References	Number of Fasteners				Product characteristic capacities - Timber C24 [kN]							
	Header		Joist		$R_{3,k}$							$R_{4,k}$
					Dowels length [mm]							
	Qty	Type	Qty	Type	60	80	100	120	140	160		
BT280-B	52	CNA4.0x50	7	STD12	4.8	6.1	7.3	8.5	9.9	11.3		22.8
BT320-B	60	CNA4.0x50	8	STD12	5.5	6.8	8.3	9.7	11.1	12.9		26.2
BT360-B	68	CNA4.0x50	9	STD12	6.1	7.6	9.2	10.9	12.4	14.4		29.6
BT440-B	84	CNA4.0x50	11	STD12	7.3	9.1	11	13.2	15.2	17.2		36.5
BT480-B	92	CNA4.0x50	12	STD12	7.9	9.8	11.9	14.3	16.6	18.7		39.9
BT560-B	108	CNA4.0x50	12	STD12	9.2	11.3	13.8	16.5	19.1	21.5		46.7
BT600-B	116	CNA4.0x50	12	STD12	9.8	12.1	14.7	17.6	20.4	23		50.1

The joist shall have as minimum a width = length of steel dowel.
The capacities R_4 are for all length of steel dowel.

Product characteristic capacities - Timber beam to timber post

References	Number of Fasteners				Post width	Product characteristic capacities - Timber C24 [kN]												
	Header		Joist		Min	$R_{1,k}$						$R_{2,k}$					
						Dowels length [mm]						Dowels length [mm]					
	Qty	Type	Qty	Type		60	80	100	120	140	160	60	80	100	120	140	160
BT280-B	28	CNA4.0x50	7	STD12	96	52	54.7	57.5	60.5	62	62	44.6	46.9	49.3	51.9	53.1	53.1
BT320-B	32	CNA4.0x50	8	STD12	96	61.8	65.1	68.1	70.7	70.9	70.9	54.1	57	59.6	61.9	62	62
BT360-B	36	CNA4.0x50	9	STD12	96	71.7	75.5	78.5	79.8	79.8	79.8	63.7	67.1	69.8	70.9	70.9	70.9
BT440-B	44	CNA4.0x50	11	STD12	96	91	95.8	97.5	97.5	97.5	97.5	82.7	87.1	88.6	88.6	88.6	88.6
BT480-B	48	CNA4.0x50	12	STD12	96	100.3	105.6	106.4	106.4	106.4	106.4	91.9	96.8	97.5	97.5	97.5	97.5
BT560-B	56	CNA4.0x50	12	STD12	96	109.9	115.7	120.3	124	124.1	124.1	109.9	115.7	120.3	124	124.1	124.1
BT600-B	60	CNA4.0x50	12	STD12	96	113.8	119.8	125	130.5	133	133	113.8	119.8	125	130.5	133	133

The joist shall have as minimum a width = length of steel dowel.
For beams with a slope β the capacities shall be multiply with the factor.

β	0°	15°	30°	45°
factor	1.0	0.95	0.9	0.85

The capacities from this table are also valid for partial nailing beam to beam.
$R_{2,k}$ capacities are calculated as $R_{2,k} = R_{1,k}$ x (nb of dowels - 1) / (nb of dowels).
The top dowel is not considered for the uplift capacities as it is placed in an open hole.
More detailed information are given in the ETA.

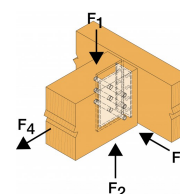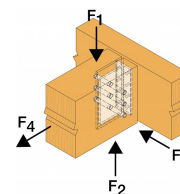# Technical data sheet

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Product characteristic capacities - Timber beam to timber post - $R_{3,k}$ and $R_{4,k}$

References	Number of Fasteners				Post width	Product characteristic capacities - Timber C24 [kN]							
	Header		Joist		Min	$R_{3,k}$						$R_{4,k}$
	Qty	Type	Qty	Type		Dowels length [mm]						
						60	80	100	120	140	160	
BT280-B	28	CNA4.0x50	7	STD12	96	4.5	5.6	6.7	7.7	8.9	10.1	13.7
BT320-B	32	CNA4.0x50	8	STD12	96	5.2	6.4	7.7	8.8	10.2	11.5	15.7
BT360-B	36	CNA4.0x50	9	STD12	96	5.8	7.2	8.6	9.9	11.5	12.9	17.6
BT440-B	44	CNA4.0x50	11	STD12	96	7.1	8.8	10.5	12.1	14	15.8	21.6
BT480-B	48	CNA4.0x50	12	STD12	96	7.7	9.5	11.5	13.2	15.3	17.2	23.5
BT560-B	56	CNA4.0x50	12	STD12	96	9	11.1	13.4	15.4	17.8	20.1	27.4
BT600-B	60	CNA4.0x50	12	STD12	96	9.7	11.9	14.4	16.5	19.1	21.5	29.4

The joist shall have as minimum a width = length of steel dowel.
The capacities $R_{4,k}$ are for all length of steel dowel.

Installation

Fasteners

- CNA4,0xl threaded nails
- or CSA5,0xl screws and rod dowels Ø12mm