**Technical Sheet**

ABR
**ABR 170**

Suitable for joints where you need a larger load, angle of ribs.
material



# Features

## Material

**Steel grade:**

**S250GD + Z275 according to DIN EN10346**

**Corrosion protection:**

**275 g / m galvanized on both sides 20mm**

## Benefits

- **High levels of load in three directions**
- **optimized use of nails needed to install**
- **suitable for connection to the concrete**

# Applications

## Applicable materials

**Wood, wood products, concrete, steel**

## Application area

- **For connections of intersecting beams, purlins and rafters joint, as a substitute for a joist hanger, upper nail 160 mm, concrete screw M10**

**Values for joint wood and wood, two connections**
**** Choose the largest number of nails for combined loads**

***** R4 / 5 s b> e 60 mm and <90 mm. For further dimensions b and e, viz. ETA**

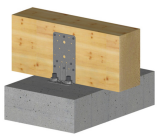
****** R4 / 5 with b> 60 mm and e <150 mm. For further dimensions b and e, viz.ETA**
**Values for wood and concrete joint, two connecting**
**Screws are sold separately.**

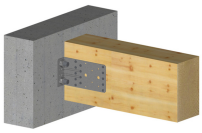
**Load for each pair of screws at an angle are:**

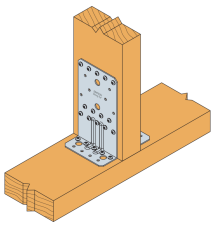


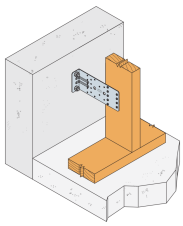












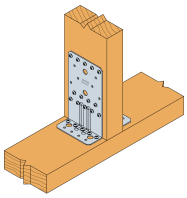
# Technical Sheet

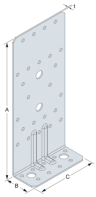
ABR
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SIMPSON Strong-Tie

# Technical Data

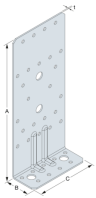
## Product Dimensions





| Reference | Connector Dimensions | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Other | | | | Product Dimensions[mm] | | | | Joist[mm] | | Flange B[mm] | |
| | Tun / DB nr. | NOB nr. | Qty per Box | Weight[kg] | A[mm] | B[mm] | C[mm] | Thickness[mm] | Round | | Round | |
| | | | | | | | | | Ø5[mm] | Ø12 | Ø5[mm] | Ø12 |
| ABR170 | 1611299 | 46163812 | 25.0 | 0.28 | 170 | 40 | 95 | 2 | 20 | 2 | 9 | 2 |
| ABR220 | 1805973 | 51165872 | 25.0 | 0.35 | 220 | 40 | 95 | 2 | 24 | 2 | 9 | 2 |

## Characteristic capacities - timber to timber

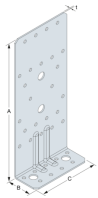


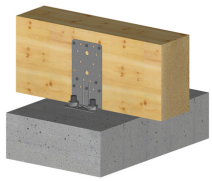
| Reference | Angle bracket capacity | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product capacities - Timber to timber - Full nailing | | | | | | | | | | |
| | Number of Fasteners | | Characteristic capacity - 2 angle brackets per connection - full nailing[kN] | | | | | | | | |
| | Joist | Flange B | $R_{1,k}$ | | | $R_{2,k}=R_{3,k}$ | | | R4/5,k | | |
| | Qty | Qty | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 |
| ABR170 | 14.0 | 9.0 | 7.4 | 9.8 | 12.3 | 16.4 | 19.8 | 21.1 | 9.6/kmod^0.2 | 9.6/kmod^0.2 | 9.6/kmod^0.2 |
| ABR220 | 14.0 | 9.0 | 7.4 | 9.8 | 12.3 | 16.4 | 19.8 | 21.1 | 9.6/kmod^0.2 | 9.6/kmod^0.2 | 9.6/kmod^0.2 |

In cases, where the load direction $F_1$ and/or $F_2$ are acting without load direction $F_{4/5}$, the number of nails can be reduce acc. to the ETA.

# Technical Sheet

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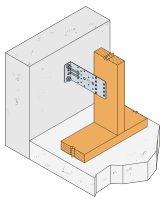


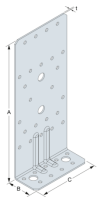


## Characteristic capacities - timber to concrete

| Reference | Angle bracket capacity | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product capacities - Timber to Concrete | | | | | | | | | | | | |
| | Number of Fasteners | | | | Characteristic capacity - 2 angle brackets per connection - full nailing[kN] | | | | | | | | |
| | Joist | | Flange B | | $R_{1,k}$ | | | R4/5,k | | | R2/3,k | | |
| | Qty | Type | Qty | Type | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 |
| ABR170 | 14 | CNA | 2 | Ø10 | min. (33.0 ; 25.2/kmod) | min. (39.8 ; 25.2/kmod) | 25.2/kmod | min (9.15 + 80/e*kmod ; 6.3*b / e*kmod) | min (9.15 + 80/e*kmod ; 6.3*b / e*kmod) | min (9.15 + 80/e*kmod ; 6.3*b / e*kmod) | 19.7 | min. (23.8 ; 24.6/kmod) | min. (25.4 ; 24.6/kmod) |
| ABR220 | 14 | CNA | 2 | Ø10 | min. (33.0 ; 25.2/kmod) | min. (39.8 ; 25.2/kmod) | 25.2/kmod | min (9.15 + 80/e*kmod ; 6.3*b / e*kmod) | min (9.15 + 80/e*kmod ; 6.3*b / e*kmod) | min (9.15 + 80/e*kmod ; 6.3*b / e*kmod) | 19.7 | min. (23.8 ; 24.6/kmod) | min. (25.4 ; 24.6/kmod) |

For calculation of $R_{4/5}$, it is to use: e ≥ 50 mm





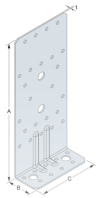
## Simplified characteristic capacities - Timber to concrete

| Reference | Angle bracket capacity | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Simplified product capacities - Timber to Concrete | | | | | | | | | |
| | Number of Fasteners | | | | Characteristic Capacities - Timber C24 - 2 Angle Brackets per Connection[kN] | | | | | |
| | Joist | | Flange B | | $R_{1,k}$ | | | $R_{2,k}=R_{3,k}$ | | |
| | Qty | Type | Qty | Type | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 | CNA4.0x40 | CNA4.0x50 | CNA4.0x60 |
| ABR170 | 14.0 | CNA | 2.0 | Ø10 | 28 | 28 | 28 | 19.7 | 23.8 | 25.4 |
| ABR220 | 14.0 | CNA | 2.0 | Ø10 | 28 | 28 | 28 | 19.7 | 23.8 | 25.4 |

** Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.*
*Refer to the Simpson Strong-Tie anchor product range for suitable anchors. Typical anchor solutions depend on the concrete type, spacing and edge distances.*
*** The published characteristic capacity is based on short term load duration and service class 2 according to EC5 (EN 1995) – kmod = 0,9. For other load duration and service class, please refer to the ETA to get more accurate capacities*

# Technical Sheet

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## Characteristic capacities - timber to facade

**Characteristic capacities - timber to facade**
See full table online ➡️

| Reference | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | R6,k | | | |
| | CNA4.0x35 | | | | | | | | .0x40 | CNA4.0x50 | CN | |
| ABR170 | 10.2 | min. (11,8 ; 12,1/kmod) | min.(14,9 ; 12,1/kmod) | min. (16,9 ; 12,1/kmod) | 3.5 | 3.8 | 4.7 | 4.9 | min. (14,9; 11,0/kmod) | min. (16,5; 11,0/kmod) | min. (20; 11,0/kmod) | mi 11 |

## Allowable capacities - Timber to facade - CSTB Cahier 3316

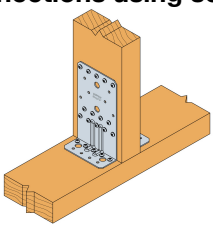
| Reference | Angle bracket capacity | | | | | | |
|---|---|---|---|---|---|---|---|
| | Product allowable capacities - Timber to Concrete - CSTB Cahier 3316 | | | | | | |
| | Number of Fasteners | | | | Product capacities, beam to facade, full nailing, 1 ABR per connection[daN] | | |
| | Joist | | Flange B | | R1,d | R2/3,d | |
| | Qty | Type | Qty | Type | | 1 mm | 3 mm |
| ABR170 | 9.0 | CSA | 1.0 | M10 | 450 | 67.7 | 76.3 |
| ABR220 | 9.0 | CSA | 1.0 | M10 | 450 | 33.3 | 80 |

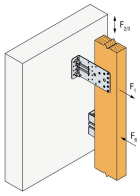
The capacities are given for one ABR, in the case, that in total more ABR are placed alternate opposite on the beam.
Only the upper bolt has to be installed on the ABR.
The distance of the beam to the support shall be less than 132 mm for ABR220, and less than 86 mm for ABR170.

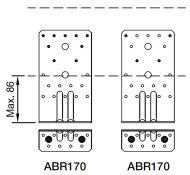
# Installation

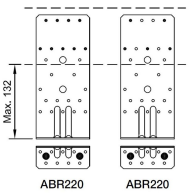
## Installation

- **connections using screws or nails CSA5,0xl CNA4,0xl**







# Technical Notes

## Technical info

**Particular situation with two angle brackets per assembly positioned opposite to each other**
**F1 Continious force in the central axis of the purlin.**
**F2 and F3 Lateral force that works between the purlin and the beam in the purlin direction.**
**F4 and F5 Lateral force that works in the center of the angle brackets in the beam direction positioned e above the beam.**
**Particular situation with only one angle bracket per assembly**
**F1 Continious force in the central axis of the purlin with a distance f between the vertical contact surface. If the overall structure prevents the rotation of the purlin or the post, the tensile strength is equal to half of the given value for two angle-brackets.**
**F2 and F3 Lateral force that works between the purlin and the beam in the purlin direction.**
**F4 Lateral force that works in the center of the angle brackets in the beam direction. Works towards the bracket positioned e above the beam.**
**F5 Lateral force that works in the center of the angle brackets in the beam direction. Works away from the bracket positioned e above the beam.**

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