AB
Angle brackets

SIMPSON Strong-Tie

AB angle brackets are used for assemblies in supporting wood constructions. The connectors are used in wood-wood assemblies, wood-concrete assemblies, exchanges etc.

Features

Material

- Galvanized steel S250GD + Z275 according to NF EN 10346.
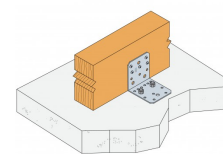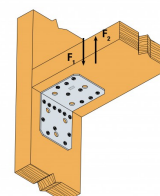
Benefits

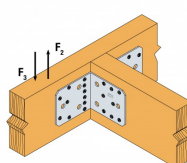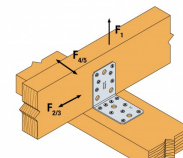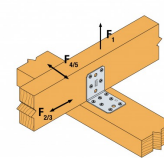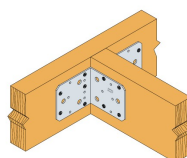**Angle bracket for supporting constructions**

Applications

Suitable On

- **Supporting member**: solid wood, glued-laminated wood, concrete, steel, etc.
- **Supported member**: solid wood, composite lumber, glued-laminated wood, triangular trusses, profiles, etc.
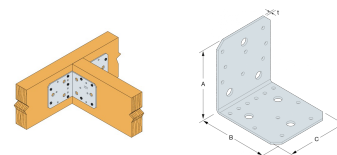
When to Use

- Fastening of small trusses.
- Cladding plates, cladding uprights.
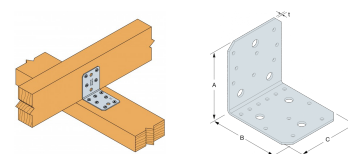- Rafter anchors, cantilevers, headers, etc.

Technical Data

Product Dimensions

References	Tun / DB nr.	NOB nr.	Product Dimensions [mm]				Holes flange A			Holes flange B		
			A	B	C	t	Ø5	Ø8.5	Ø11	Ø5	Ø8.5	Ø11
AB70	7742299	21744552	70	70	55	2	4	2	-	7	1	-
AB90	3779303	21220785	88	88	65	2.5	6	-	3	9	-	2
AB105	3779329	21220801	103	103	90	3	8	-	3	11	-	3

Simplified characteristic capacities - Timber beam to timber beam - Full nailing - Connection with 2 brackets

References	Simplified product capacities - Beam to beam – Full nailing	
	Number of Fasteners	
	Joist	Flange B
	Qty	Qty
AB70	-	-
AB90	6	9
AB105	8	11

The load capacity belongs to a load group with the modification factor k_{mod}.

1) $R_{4/5,k}$ is determined for beam width b = 75 mm and essentricity e = 130 mm. See ETA for other values of b and e.

If the overall structure prevents the rotation of the purlin, the load values $R_{1,k}$ and $R_{2/3,k}$ in an assembly with only one bracket equal to half of the given value in table 2. See ETA if the purlin is able to rotate.

* The published characteristic capacity is based on short term load duration and service class 2 according to EC5 (EN 1995) – k_{mod} = 0.9. For other load duration and service class, please refer to the ETA to get more accurate capacities

To obtain the resistance values for a single bracket, the values in the above table should be divided by two, provided that the supported beam is locked in rotation. Please consult our ETA-06/0106 if the beam is free to rotate.

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Angle brackets

Simplified characteristic capacities - Timber beam to timber beam - Partial nailing - Connection with 2 brackets

References	Simplified product capacities - Timber to timber – Partial nailing												
	Number of Fasteners				Simplified 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	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60
AB70	2	-	3	-	3.2	3.9	-	-	3.4	3.8	5.2	5.6
AB90	4	-	4	-	2.6	3.2	3.6	4.5	5	5.5	6.9	7.3
AB105	4	-	5	-	4.3	5.3	6.1	7.6	3.6	4	7	7.5

To obtain the resistance values for a single bracket, the values in the above table should be divided by two, provided that the supported beam is locked in rotation. Please consult our ETA-06/0106 if the beam is free to rotate.

Simplified characteristic capacities - Timber beam to rigid support - Connection with 2 brackets

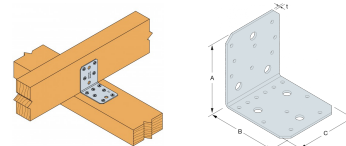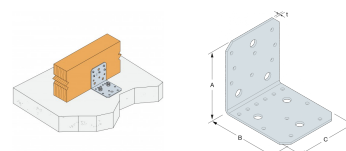| References	Simplified product capacities - Timber beam to Concrete			
	Number of Fasteners			
	Joist		Flange B	
	Qty	Type	Qty	Type
AB90	5	CNA*	2	Ø10
AB105	5	CNA*	2	Ø10

*The published characteristic capacity is based on short term load duration and service class 2 according to EC5 (EN 1995) – k_{mod} = 0.9. For other load duration and service class, please refer to the ETA to get more accurate capacities.
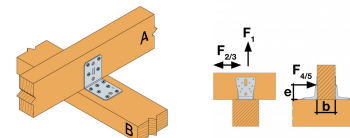
Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.

Refer to the Simpson Strong-Tie anchor product range for suitable anchors. Typical anchor solutions are BOAXII, SET-XP, WA, AT-HP, depending on the concrete type, spacing and edge distances.

To obtain the resistance values for a single bracket, the values in the above table should be divided by two, provided that the supported beam is locked in rotation. Please consult our ETA-06/0106 if the beam is free to rotate.

Wood/wood connection beam/beam type - assembly with 2 angle brackets

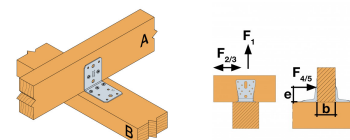| References	Number of Fasteners		Product capacities - Beam to beam - Full nailing								
			Characteristic Capacities - Timber C24 - 2 angle brackets per connection [kN]								
	Joist	Flange B	R1.k (Tensile)				R2.k = R3.k (Shear)				R4.k
	Qty	Qty	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40
AB70	4	7	3.1/kmod^0.3	3.9/kmod^0.3	5.0/kmod^0.3	-	4.8	5.3	7	7.5	1.4/kmod^0
AB90	6	9	4.2/kmod^0.3	5.1/kmod^0.3	6.7/kmod^0.3	7.5/kmod^0.3, max: 6.9/kmod	6.8	7.1	9.4	10.4	1.9/kmod^0
AB105	8	11	7.0/kmod^0.3	8.5/kmod^0.3	11.2/kmod^0.3	12.7/kmod^0.3	12.2	13.3	16.9	18.1	3.3/kmod^0

The load capacity belongs to a load group with the modification factor k_{mod}.

1) $R_{4/5,k}$ is determined for beam width b = 75 mm and essentricity e = 130 mm. See ETA for other values of b an

If the overall structure prevents the rotation of the purlin, the load values $R_{1,k}$ and $R_{2/3,k}$ in an assembly with onl

bracket equal to half of the given value in table 2. See ETA if the purlin is able to rotate.

Characteristic capacities - Timber beam to timber beam - Partial nailing - Connection with 2 brackets

References	Number of Fasteners		Capacities wood-wood connection / partialnailing					
			Characteristic capacities - Timber C24 - 2 angle brackets per connection [kN]					
	Joist	Flange B	$R_{1.k}$		$R_{2.k} = R_{3.k}$		$R_{4.k} = R_{5.k}$[(1)]	
	Qty	Qty	CNA4.0x40	CNA4.0x60	CNA4.0x40	CNA4.0x60	CNA4.0x40	CNA4.0x60
AB70	2	3	3.9/kmod^0.3	-	3.8	5.6	1.4/kmod^0.3	-
AB90	4	4	3.1/kmod^0.3	4.4/kmod^0.3	5.5	7.3	1.2/kmod^0.5	1.7/kmod^0.3
AB105	4	5	5.4/kmod^0.3	7.4/kmod^0.3	4	7.5	2.1/kmod^0.5	2.9/kmod^0.4

The load capacity belongs to a load group with the modification factor k_{mod}.

1) $R_{4/5,k}$ is determined for beam width b = 75 mm and essentricity e = 130 mm. See ETA for other values of b and e.
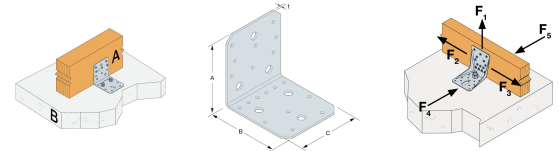
If the overall structure prevents the rotation of the purlin, the load values $R_{1,k}$ and $R_{2/3},k$ in an assembly with only one bracket equal to half of the given value in table 2. See ETA if the purlin is able to rotate.
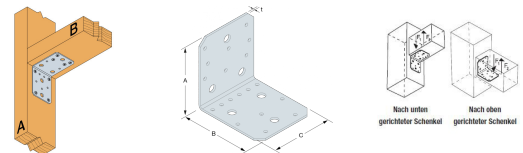
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Angle brackets

Characteristic capacities - Timber beam to rigid support - Connection with 2 brackets

References	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	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60
AB90	5	CNA*	2	Ø10	5.4/kmod	5.4/kmod	5.4/kmod	5.4/kmod	4.73	5.03	6.3	6.66
AB105	5	CNA*	2	Ø10	min (12.3 ; 11.3/kmod)	min (13.7 ; 11.3/kmod)	min (17.5 ; 11.3/kmod)	min (19.7 ; 11.3/kmod)	4.8	5.1	6.4	6.8

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 are BOAXII, SET-XP, WA, AT-HP, depending on the concrete type, spacing and edge distances.
To obtain the resistance values for a single bracket, the values in the above table should be divided by two, provided that the supported beam is locked in rotation. Please consult our ETA-06/0106 if the beam is free to rotate.
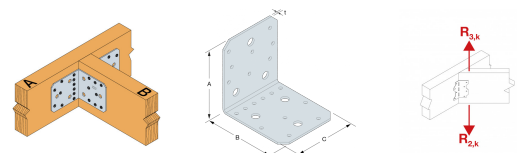
Characteristic capacities - Timber beam to timber column - Connection with 1 bracket

References	Number of Fasteners		Characteristic Capacities [kN]					
	Joist	Flange B	$R_{1.k}$				$R_{2.k}$	
	Qty	Qty	Flap turned downwards		Flap turned upwards		CNA4.0x40	CNA4.0x60
			CNA4.0x40	CNA4.0x60	CNA4.0x40	CNA4.0x60		
AB90	4	4	5.2/ kmod^0.55	5.2/ kmod^0.55	4.0/ kmod^0.5	4.0/ kmod^0.5	0.7/ kmod	0.7/ kmod
AB105	6	5	10,0; max:9,8/ kmod	9.4/ kmod^0.6	8.1/ kmod^0.75	8.1/ kmod^0.75	1.4/ kmod	1.4/ kmod

The load capacity belongs to a load group with the modification factor k_{mod}

Characteristic capacities - Trimmer - Connection with 2 brackets

References	Number of Fasteners		Characteristic capacities - Timber C24 - 2 brackets per connection [kN]	
	Joist	Flange B	$R_{2.k} = R_{3.k}$	
	Qty	Qty	CNA4.0x40	CNA4.0x60
AB90	9	6	7.2	10.2
AB105	11	8	13.3	18.1

Installation

Fixing

Wood:

- CNA annular ring-shank nails dia. 4.0 x 35 or dia. 4.0 x 50 mm.
- CSA screws dia. 5.0 x 35 mm or CSA screws dia. 5.0 x 40 mm.
- Bolts.
- LAG screws.

Concrete:
Concrete substrate

- *Mechanical anchor*: WA M10-78/5 OR WA M12-104/5 pin.
- *Chemical anchor*: AT-HP resin + LMAS M10-120/25 or LMAS M12-150/35 threaded rod.

Hollow masonry substrate:

- *Chemical anchor*: AT-HP or POLY-GP resin + LMAS M12-150/35 threaded rod + SH M16-130 screen.

On steel:

- Bolts.

Technical information

F1: tensile force in the central axis of the angle-bracket
Particular situation of a fastening with only one angle-bracket:

- 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.
- Otherwise, the connection resistance depends on the « f » distance between the vertical contact surface and the point of load application.

F2 and F3: shear lateral force
Particular situation of a connection with only one angle-bracket:

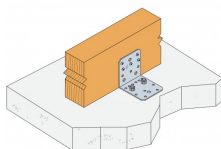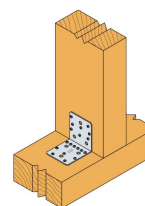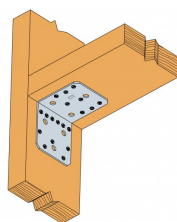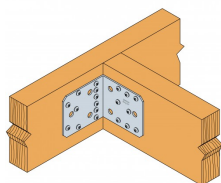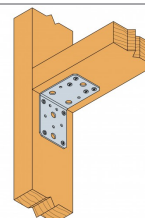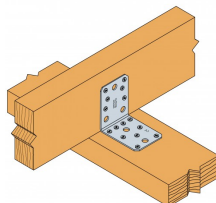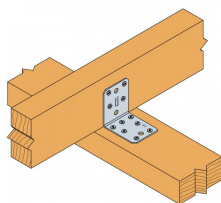- The resistance value to consider is equal to half of the one given for two angle-brackets.

F4 and F5: transversal force directed towards or opposite the angle-bracket

- The connection resistance depends on the « e » distance between the base of the angle-bracket and the point of load application.
- To consult corresponding loads, contact us.

Only F1, F2 and F3 forces for connections with 2 angle-brackets are present on this sheet.
For more information, contact us.