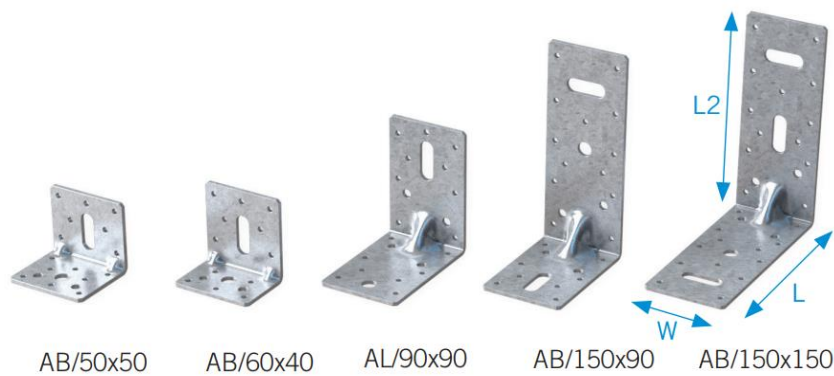


# Angle Brackets

Produced from galvanised steel to BS EN 10346:2009 + G275, or stainless steel grade 304 to BS EN 10088-2 GRADE 1.4301, available to order.



## AB & ABL Angle Brackets

A versatile reinforced bracket for use in 90 degree connections allowing for use of nails, screws and / or bolts and coach screws. Manufactured from 2.5mm thick galvanised steel to BS EN 10346:2009 + G275. Stainless steel grade 304 austenitic to BS EN 10088-2 Grade 1.4301 available from stock in all sizes.

## Test Standard

Tested by BMTRADA to ETAG015

Verified by TZUS to EAD 130186-00-0603. – ETA 20/0915.

Declaration of Performance – Angle Brackets 19-0681-002

## Dimensions

Product code	Dimensions [mm]			Holes no. x Ø [mm]				Box Quantity
	L	L2	W	Plate 1 (L)		Plate 2 (L2)		
				Holes	Slots	Holes	Slots	
AB/60x40*	60	40	60	7 x 4.5	1 x 11.0 x 30.0	5 x 4.5 2 x 7.0	1 x 11.0 x 11.0	100
AB/90x90*	90	90	60	9 x 4.5 2 x 9.0	1 x 11.0 x 30.0	8 x 4.5 2 x 9.0	1 x 11.0 x 11.0	100
AB/150x90*	150	90	60	13 x 4.5 2 x 9.0 1 x 11.0	1 x 11.0 x 30.0	8 x 4.5 2 x 9.0	1 x 11.0 x 30.0	100
AB/150x150*	150	150	60	13 x 4.5 2 x 9.0	2 x 11.0 x 30.0	13 x 4.5 2 x 9.0 1 x 11.0	1 x 11.0 x 30.0	50

\*AB brackets are manufactured with a reinforcing rib in the fold

Product code	Dimensions [mm]			Holes no. x Ø [mm]				Box Quantity
	L	L2	W	Plate 1 (L)		Plate 2 (L2)		
				Holes	Slots	Holes	Slots	
ABL/50x50	50	50	60	7 x 4.5	1 x 11.0 x 30.0	5 x 4.5 2 x 7.0	1 x 11.0 x 30.0	100
ABL/60x40	60	40	60	7 x 4.5	1 x 11.0 x 30.0	5 x 4.5 2 x 7.0	1 x 11.0 x 30.0	100
ABL/90x90	90	90	60	8 x 4.5 2 x 9.0	1 x 11.0 x 30.0	8 x 4.5 2 x 9.0	1 x 11.0 x 30.0	100
ABL/150x90	150	90	60	13 x 4.5 2 x 9.0	2 x 11.0 x 30.0	8 x 4.5 2 x 9.0	1 x 11.0 x 30.0	100
ABL/150x150	150	150	60	13 x 4.5 2 x 9.0	2 x 11.0 x 30.0	13 x 4.5 2 x 9.0	2 x 11.0 x 30.0	50

## Load Data

These properties should be used for design in accordance with EN 1995-1-1:2004/A1 (Eurocode 5) or an appropriate national code. The load-carrying capacities have been derived by calculation or design assisted by testing or by testing.

Product code	Characteristic Capacity [kN] - Per pair																	
	C16 timber						C24 timber						TR26 timber					
	Type A nails			Type B nails			Type A nails			Type B nails			Type A nails			Type B nails		
	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>
AB/60x40	4.10	2.09	5.67	4.78	3.81	7.59	4.54	2.36	6.31	5.31	4.14	7.53	4.76	2.49	6.63	5.58	4.26	7.86
AB/90x90	8.26	2.75	7.84	9.65	4.62	8.77	9.15	3.49	8.64	10.72	4.90	9.34	9.59	3.60	8.83	11.25	5.04	9.55
AB/150x90	8.26	2.96	7.95	9.65	4.62	8.77	9.15	3.49	8.64	10.72	4.90	9.34	9.59	3.60	8.83	11.25	5.04	9.55
AB/150x150	8.26	3.38	8.15	9.65	4.62	8.77	9.15	3.49	8.64	10.72	4.90	9.34	9.59	3.60	8.83	11.25	5.04	9.55

Product code	Characteristic Capacity [kN] - Per pair																	
	C16 timber						C24 timber						TR26 timber					
	Type A nails			Type B nails			Type A nails			Type B nails			Type A nails			Type B nails		
	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>	F <sub>x,k</sub>	F <sub>y,k</sub>	F <sub>z,k</sub>
ABL/50x50	3.41	2.09	5.67	3.99	3.81	7.03	3.78	2.36	6.31	4.43	4.30	7.72	3.96	2.49	6.63	4.65	4.55	8.06
ABL/60x40	4.10	2.09	5.67	4.78	3.42	6.63	4.54	2.36	6.31	5.31	3.66	7.29	4.76	2.49	6.63	5.58	3.78	7.62
ABL/90x90	8.26	2.88	7.90	9.65	4.04	8.48	9.15	3.09	8.43	10.72	4.32	9.05	9.59	3.19	8.62	11.25	4.46	9.25
ABL/150x90	8.26	2.88	7.90	9.65	4.07	8.50	9.15	3.09	8.43	10.72	4.36	9.07	9.59	3.19	8.62	11.25	4.50	9.27
ABL/150x150	8.26	2.88	7.90	9.65	4.07	8.50	9.15	3.09	8.43	10.72	4.36	9.07	9.59	3.19	8.62	11.25	4.50	9.27

The characteristics load-carrying capacities stated above refer to brackets used in pairs, in timber to timber connectors.

## Fixings

Values are also valid for bolted connections. The header thickness should be checked by an engineer.

Fix using either Type A, 30 x 3.75mm Sherardised Square Twist Nails OR Type B, 35 x 3.75mm Sherardised Square Twist nails in all pre-punched holes.

Type	Description	d <sup>1</sup> (mm)	l (mm)	f <sub>ax,k</sub> <sup>2</sup> (N/mm <sup>2</sup> )	f <sub>u</sub> (N/mm <sup>2</sup> )
A	Square twist nails Sherardized finish Normally supplied loose for manual fixing	3.4	30	4.78	600
B	Square twist nails Sherardized finish Normally supplied collated for a nail gun	3.4	35	4.3	700

<sup>1</sup> This diameter is the minimum cross-section dimension in accordance with EN 14592. Square twist nails are often described in the market by their largest cross-section dimension, so that a 3.4 mm diameter nail will be sold as being 3.75 mm diameter.

<sup>2</sup> In timber with a characteristic density  $\rho_k$  of 350 kg/m<sup>3</sup>, i.e. C24 timber. At other values of  $\rho_k$  the value is modified so  $f_{ax,k} = f_{ax,k} \cdot \min\left(\frac{\rho_k}{350}, 1.1\right)$



## Installation

BPC Connectors are deemed fit for their intended use provided:

- The joints are designed in accordance with Eurocode 5 or an appropriate National Code using the characteristic values given in the Annexes. Design and detailing of structures should be carried out by suitably experienced persons in accordance with the manufacturer's instructions.
- Sides of the hanger should be at least 60% of the timber height to prevent rotation.
- Joist ends to be cut square with no more than 6mm gap from the rear of the hanger.
- Verifiable calculation, notes and drawings are prepared taking account of the loads to be carried.
- The widths of the joist narrower than the exact joist hanger width does not exceed the tolerance of +0/-4mm to the joist hanger width
- The header supporting the joist is adequately restrained against rotation.
- Specified fasteners are installed in all available holes of the same diameter.
- Timber should be free of wane in the connectors.
- The actual maximum bearing capacity of the joist itself is checked separately by the designer of the structure.
- The eccentricity of the acting forces relative to the axis of the connection is not excessive.
- The connectors have been installed correctly by appropriately qualified personnel using adequate tools, in accordance with the relevant building regulations, the manufacturer's specifications and the drawing prepared for that purpose.