Technical Sheet

AKRX3
Angle bracket

These brackets allow optimum connection between wood and other building materials such as concrete and steel. This is an economic connection that can be used in many areas. AKR AKR-L and vary in the screw hole.

AKR bracket is 3 mm thick and the edges are reinforced with rib



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

- Load capacity in all directions
- Optimised capacities for partnailing and fullnailing
- One or two-sided connections
- Possible mounting with distance from the support at tension connections
- Optimised bolt utilisation

Applications

Applicatons

Supporting member:
Concrete, steel
Supported member:
Solid wood, engineered wood

Scope

The AKR brackets allow optimum connection between wood and other building materials such as concrete and steel.

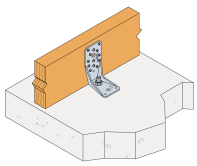
Technical Sheet

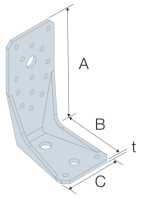
AKRX3
Angle bracket

SIMPSON Strong-Tie

Technical Data

Product Dimensions

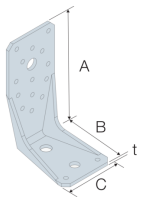


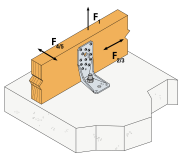


Reference	Connector Dimensions													
	Other				Product Dimensions[mm]				Joist		Flange B			
	Tun / DB nr.	NOB nr.	Qty per Box	Weight[kg]	A[mm]	B[mm]	C[mm]	t[mm]	Round		Round			Obround
									Ø5	Ø13.5[mm]	Ø5[mm]	Ø11[mm]	Ø13.5[mm]	Ø13.5x25[mm]
AKR95X3	1862225	51165902	25.0	0.24	95	85	65	3	9	-	2	1	1	-
AKR95X3L	1870243	-	25.0	0.24	95	85	65	3	9	-	2	1	-	1
AKR135X3	1859299	51165883	25.0	0.3	135	85	65	3	14	1	2	1	1	-
AKR135X3L	1870241	-	25.0	0.3	135	85	65	3	14	1	2	1	-	1
AKR165X3	-	-	25.0	0.37	165	85	65	3	15	1	2	1	1	-
AKR165X3L	-	-	25.0	0.37	165	85	65	3	15	1	2	1	-	1
AKR205X3	-	-	25.0	0.43	205	85	65	3	20	2	2	1	1	-
AKR205X3L	-	-	25.0	0.43	205	85	65	3	20	2	2	1	-	1
AKR245X3	-	-	25.0	0.49	245	85	65	3	22	2	2	1	1	-
AKR245X3L	-	-	25.0	0.49	245	85	65	3	22	2	2	1	-	1
AKR285X3	1862224	51165898	25.0	0.56	285	85	65	3	26	3	2	1	1	-
AKR285X3L	1870242	-	25.0	0.5	285	85	65	3	26	3	2	1	-	1

Below you will find load details to the nail pattern: fullnailing, partnailing and post connection. Further connection options, see the corresponding ETA.

Simplified characteristic capacities - Wood to concrete - Full nailing - 1 bracket per connection





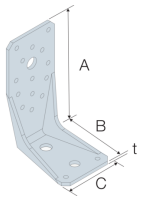
Reference	Holdowns capacity					
	Product capacities - Nail pattern 1					
	Number of Fasteners				Simplified characteristic capacities - 1 angle bracket per connection[kN]	
	Joist		Flange B		$R_{1,k}$***	$R_{2.k} = R_{3.k}$
	Qty	Type	Qty	Type		
AKR95X3L	8.0	CNA*	1.0	Ø12**	8.7	2.8
AKR135X3L	13.0	CNA*	1.0	Ø12**	15.5	4.6
AKR285X3L	25.0	CNA*	1.0	Ø12**	15.3	4.4

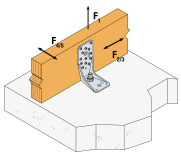
** The bolt design resistance requirement $R_{\#,d}$ is determined from (bolt factor x connection design load $F_{\#,d}$) for the required load direction and fastener. Refer to the Simpson Strong-Tie anchor product range for suitable anchors. Typical anchor solutions are BOAXII, SET-XP, WA, AT-HP, depending on the concrete type, spacing and edge distances.
*** The published characteristic capacity is based on instantaneous load duration and service class 2 according to EC5 (EN 1995) – k_{mod} = 1,1. For other load duration and service class, please refer to the ETA to get more accurate capacities

Technical Sheet

AKRX3
Angle bracket

Simplified characteristic capacities - Wood to concrete - Partial nailing - 1 bracket per connection

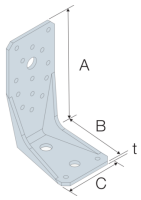


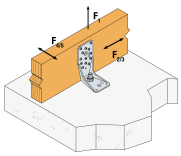


Reference	Holdowns capacity					
	Product capacities - Nail pattern 3					
	Number of Fasteners				Simplified characteristic capacities - 1 angle bracket per connection[kN]	
	Joist		Flange B		$R_{1,k}$***	$R_{2,k} = R_{3,k}$
	Qty	Type	Qty	Type		
AKR95X3L	5	CNA*	1.0	Ø12**	5.1	3.6
AKR135X3L	9	CNA*	1.0	Ø12**	10.7	6.6
AKR285X3L	14	CNA*	1.0	Ø12**	13.2	5.5

** The bolt design resistance requirement $R_{\#,d}$ is determined from (bolt factor x connection design load $F_{\#,d}$) for the required load direction and fastener. 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.
*** The published characteristic capacity is based on instantaneous load duration and service class 2 according to EC5 (EN 1995) – k_{mod} = 1,1. For other load duration and service class, please refer to the ETA to get more accurate capacities

Simplified characteristic capacities - Post mounting to concrete - 1 bracket per connection





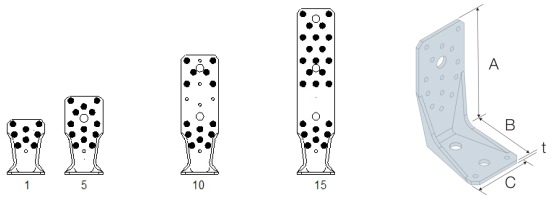
Reference	Holdowns capacity						
	Product capacities - Nail pattern 2						
	Simplified characteristic capacities - 1 angle bracket per connection	Number of Fasteners				Simplified characteristic capacities - 1 angle bracket per connection[kN]	
		Joist		Flange B		$R_{1,k}$***	
		Qty	Type	Qty	Type		
AKR95X3L	3.9	5.0	CNA*	1.0	Ø12**	5.8	
AKR135X3L	6.2	8.0	CNA*	1.0	Ø12**	10.6	
AKR285X3L	5.6	22.0	CNA*	1.0	Ø12**	13.2	

** The bolt design resistance requirement R#,d is determined from (bolt factor x connection design load F#,d) for the required load direction and fastener. 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.
*** The published characteristic capacity is based on instantaneous load duration and service class 2 according to EC5 (EN 1995) – k_{mod} = 1,1. For other load duration and service class, please refer to the ETA to get more accurate capacities

Technical Sheet

AKRX3
Angle bracket

Characterisitic capacities - Full nailing

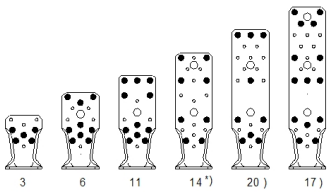


Reference	Holdowns capacity										
	Product capacities - Nail pattern 1										
	Number of Fasteners				Characteristic capacities- 2 brackets per connection[kN]						
	Joist		Flange B		$R_{1,k}$			R2/3,k			R4/5,k
	Qty	Type	Qty	Type	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40/50/60
AKR95X3	8.0	CNA*	1.0	Ø12*	min (17.55 ; 25.04/kmod + 13.2)	min (22.64 ; 25.04/kmod + 17.6)	min (26.48 ; 25.04/kmod + 22)	5	6.2	6.9	15.75 / kmod
AKR95X3L	8.0	CNA*	1.0	Ø12**	min (13.31 ; 25.04/kmod + 8.92)	min (17.4 ; 25.04/kmod + 11.89)	min (20.89 ; 25.04/kmod + 14.87)	4.4	5.6	6.4	-
AKR135X3	13.0	CNA*	1.0	Ø12**	min (31.78 ; 25.04/kmod + 8.69)	min (40.69 ; 25.4/kmod + 11.58)	min (46.92 ; 25.04/kmod + 14.48)	8	10.1	11.2	15.75 / kmod
AKR135X3L	13.0	CNA*	1.0	Ø12**	min (24.88 ; 25.04/kmod + 5.87)	min (32.34 ; 25.4/kmod + 7.83)	min (38.36 ; 25.04/kmod + 9.78)	7.2	9.1	10.4	-
AKR165X3	-	-	-	-	-	-	-	-	-	-	-
AKR165X3L	-	-	-	-	-	-	-	-	-	-	-
AKR205X3	14.0	CNA*	1.0	Ø12**	min (33.42 ; 25.04/kmod + 8.68)	min (42.86 ; 25.04/kmod + 11.58)	min (49.6 ; 25.04/kmod + 14.48)	7.8	10.1	11.8	15.75 / kmod
AKR205X3L	14.0	CNA*	1.0	Ø12**	min (25.96 ; 25.04/kmod + 5.86)	min (33.78 ; 25.04/kmod + 7.82)	min (40.2 ; 25.04/kmod + 9.78)	6.1	8	9.6	-
AKR245X3	-	-	-	-	-	-	-	-	-	-	-
AKR245X3L	-	-	-	-	-	-	-	-	-	-	-
AKR285X3	25.0	CNA*	1.0	Ø12**	min (45.25 ; 25.04/kmod + 8.69)	min (58.98 ; 25.04/kmod + 11.58)	min (70.31 ; 25.04/kmod + 14.48)	8.9	11.6	14.1	15.75 / kmod
AKR285X3L	25.0	CNA*	1.0	Ø12**	min (32.96 ; 25.04/kmod + 5.87)	min (43.42 ; 25.04/kmod + 7.83)	min (52.87 ; 25.04/kmod + 9.78)	6.6	8.7	10.7	-

* Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.
** The bolt design resistance requirement $R_{\#,d}$ is determined from (bolt factor x connection design load $F_{\#,d}$) for the required load direction and fastener. 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.

Technical Sheet

AKRX3
Angle bracket



Characteristic capacities - Partial nailing

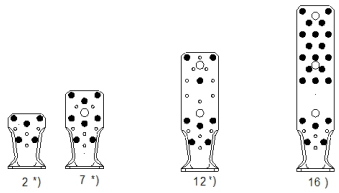
Reference	Holdowns capacity										
	Product capacities - Nail pattern 3										
	Number of Fasteners				Characteristic capacities- 2 brackets per connection[kN]						
	Joist		Flange B		$R_{1,k}$			R2/3,k			R4/5,k
	Qty	Type	Qty	Type	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40/50/60
AKR95X3	5	CNA*	1.0	Ø12**	min (10.3 ; 25.04/kmod + 12.62)	min (13.34 ; 25.04/kmod + 16.82)	min (15.72 ; 25.04/kmod + 21.04)	3.2	4	4.5	15.75 / kmod
AKR95X3L	5	CNA*	1.0	Ø12**	min (7.7 ; 25.04/kmod + 8.52)	min (10.1 ; 25.04/kmod + 11.36)	min (12.18 ; 25.04/kmod + 14.22)	2.9	3.6	4.1	-
AKR135X3	9	CNA*	1.0	Ø12**	min (21.19 ; 25.04/kmod + 8.69)	min (27.21 ; 25.04/kmod + 11.58)	min (31.54 ; 25.04/kmod + 11.58)	5.9	7.5	8.4	15.75 / kmod
AKR135X3L	9	CNA*	1.0	Ø12**	min (16.39 ; 25.04/kmod + 5.87)	min (21.35 ; 25.04/kmod + 7.83)	min (25.45 ; 25.04/kmod + 9.78)	5.2	6.6	7.6	-
AKR165X3	11	CNA*	1.0	Ø12**	min (29.22 ; 25.04/kmod + 8.68)	min (37.14 ; 25.04/kmod + 11.58)	min (42.32 ; 25.04/kmod + 14.48)	7.1	9	10.4	15.75 / kmod
AKR165X3L	11	CNA*	1.0	Ø12**	min (23.62 ; 25.04/kmod + 5.86)	min (30.5 ; 25.04/kmod + 7.82)	min (35.76 ; 25.04/kmod + 9.78)	5.8	7.5	8.8	-
AKR205X3	8	CNA*	1.0	Ø12**	min (17.08 ; 25.04/kmod + 1.6)	min (22.08 ; 25.04/kmod + 2.14)	min (25.9 ; 25.04/kmod + 2.68)	5.5	7	8	15.75 / kmod
AKR205X3L	8	CNA*	1.0	Ø12**	min (12.86 ; 25.04/kmod + 1.08)	min (16.84 ; 25.04/kmod + 1.44)	min (20.28 ; 25.04/kmod + 1.82)	4.6	5.9	6.9	-
AKR245X3	9	CNA*	1.0	Ø12**	min (14.28 ; 25.04/kmod + 3.14)	min (18.7 ; 25.04/kmod + 4.18)	min (22.54 ; 25.04/kmod + 5.22)	5.7	7.4	8.8	15.75 / kmod
AKR245X3L	9	CNA*	1.0	Ø12**	min (10.22 ; 25.04/kmod + 2.12)	min (13.5 ; 25.04/kmod + 2.82)	min (16.54 ; 25.04/kmod + 3.52)	4.5	5.9	7.1	-
AKR285X3	14	CNA*	1.0	Ø12**	min (27.93 ; (25.04/kmod + 3.93)	min (36.23 ; 25.04/kmod + 5.24)	min (42.8 ; 25.04/kmod + 6.55)	5.5	7.3	8.8	15.75 / kmod
AKR285X3L	14	CNA*	1.0	Ø12**	min (20.71 ; (25.04/kmod + 2.66)	min (27.2 ; 25.04/kmod + 3.54)	min (32.91 ; 25.04/kmod + 4.43)	4.1	5.5	6.7	-

* Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.
** The bolt design resistance requirement $R_{\#,d}$ is determined from (bolt factor x connection design load $F_{\#,d}$) for the required load direction and fastener. 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.

Technical Sheet

AKRX3
Angle bracket

Characteristic capacities - Post connection



Reference	Holdowns capacity										
	Product capacities - Nail pattern 2										
	Number of Fasteners				Characteristic capacities- 2 brackets per connection[kN]						
	Joist		Flange B		$R_{1,k}$			R2/3,k			R4/5,k
	Qty	Type	Qty	Type	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40/50/60
AKR95X3	5.0	CNA*	1.0	Ø12**	min (11.5 ; 25.04/kmod + 5.97)	min (14.78 ; 25.04/kmod + 7.97)	min (17.19 ; 25.04/kmod + 9.96)	3.5	4.4	5	15.75 / kmod
AKR95X3L	5.0	CNA*	1.0	Ø12**	min (8.83 ; 25.04/kmod + 4.04)	min (11.52 ; 25.04/kmod + 5.38)	min (13.76 ; 25.04/kmod + 6.73)	3.1	3.9	4.5	-
AKR135X3	8.0	CNA*	1.0	Ø12**	min (20.49 ; 25.04/kmod + 3.93)	min (26.13 ; 25.04/kmod + 5.24)	min (29.94 ; 25.04/kmod + 6.55)	5.6	7	7.9	15.75 / kmod
AKR135X3L	8.0	CNA*	1.0	Ø12**	min (16.31 ; 25.04/kmod + 2.66)	min (21.13 ; 25.04/kmod + 3.54)	min (24.91 ; 25.04/kmod + 4.43)	4.9	6.2	7.1	-
AKR165X3	-	-	-	-	-	-	-	-	-	-	-
AKR165X3L	-	-	-	-	-	-	-	-	-	-	-
AKR205X3	8.0	CNA*	1.0	Ø12**	min (14.3 ; 25.04/kmod + 3.94)	min (18.64 ; 25.04/kmod + 5.24)	min (22.24 ; 25.04/kmod + 6.56)	4.8	6.2	7.2	15.75 / kmod
AKR205X3L	8.0	CNA*	1.0	Ø12**	min (10.4 ; 25.04/kmod + 2.66)	min (13.7 ; 25.04/kmod + 3.54)	min (16.68 ; 25.04/kmod + 4.42)	3.8	5	5.9	-
AKR245X3	-	-	-	-	-	-	-	-	-	-	-
AKR245X3L	-	-	-	-	-	-	-	-	-	-	-
AKR285X3	22.0	CNA*	1.0	Ø12**	min (41.66 ; 25.04/kmod + 3.93)	min (54.19 ; 25.04/kmod + 5.24)	min (64.34 ; 25.04/kmod + 6.55)	5.8	7.6	9.3	15.75 / kmod
AKR285X3L	22.0	CNA*	1.0	Ø12**	min (30.58 ; 25.04/kmod + 2.66)	min (40.23 ; 25.04/kmod + 3.54)	min (48.85 ; 25.04/kmod + 4.43)	4.2	5.6	6.9	-

Technical Sheet

AKRX3
Angle bracket

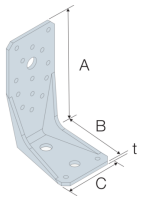
Reference	Holdowns capacity										
	Product capacities - Nail pattern 2										
	Number of Fasteners				Characteristic capacities- 2 brackets per connection[kN]						
	Joist		Flange B		$R_{1,k}$			$R2/3,k$			R4/5,k
	Qty	Type	Qty	Type	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x40/50/60

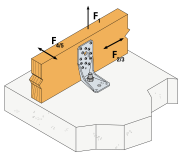
* Refer to Characteristic Capacity table columns for type of fasteners that can be used in Flange A. Capacities vary depending on fastener type used.
** The bolt design resistance requirement $R_{\#,d}$ is determined from (bolt factor x connection design load $F_{\#,d}$) for the required load direction and fastener. 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.

Factor for bolt calculation at 2 AKR connections		
Load direction	k_{ax}	k_{lat}
F_1 Bolt 1 and 2	0,5	0
$F_{2/3}$ Bolt 1 and 2	0,2	0,5
$F_{4/5}$ Bolt 1 from $F_{1,d}$	1	0
$F_{4/5}$ Bolt 2	0,5	1

<u>For load direction F4/5 applies:</u> An additional tensile load ($F_{1,d}$) must be received and verified for the left AKR, and for both bolts.
F^*_{1,d} = \frac{F_{4/5,d}\times(e-16,5mm)} {b+83mm}
<u>Combined load:</u>
\sqrt{\left (\frac {F_{1,d}} {R_{1,d}} + \frac {F_{4/5,d}}{R_{4/5,d}} \right)^2 + \left (\frac{F_{2/3,d}}{R_{2/3,d}} \right)} \le 1

Characteristic capacities - Timber beam to concrete - Ø12 connector screws - 1 angle bracket





Reference	Holdowns capacity					
	Product capacities - Timber beam to rigid support - Ø12 connector screws - 1 angle bracket					
	Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]		Number of Fasteners			
	$R_{2,k}=R_{3,k}$	$R_{1,k}$	Flange B		Joist	
	SSH12x80	SSH12x80	Qty	Type	Qty	Type
AKR285X3L	-	13.3	1.0	Ø12	3.0	SSH

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.

Technical Sheet

AKRX3
Angle bracket

Characteristic Capacities - UK

Reference	Holdowns capacity	
	Characteristic Values - C24 Timber on Concrete	
	Number of Fasteners	
	Flange B	Joist
	Qty	Qty
AKR95X3L	1 x Ø12	5.0
AKR135X3L	1 x Ø12	8.0
AKR285X3L	1 x Ø12	22.0

The published characteristic capacity is based on short term load duration and service class 2 according to EC5 (EN 1995) – kmod = 1.1. For other load duration and service class, please refer to the ETA.

Characteristic capacities - Timber post to concrete slab - 1 angle bracket

Reference	Holdowns capacity									
	Product capacities - Timber post to concrete slab - 1 angle bracket									
	Nail pattern	Number of Fasteners				Characteristic Capacities[kN]				
		Joist		Flange B		$R_{1,k}$	$R_{2,k} = R_{3,k}$	$R_{4,k}$	$R_{5,k}$	R6,k
		Qty	Type	Qty	Type					
AKR205X3L	22.0	-	-	2.0	Ø12	6,1/kmod	0,4/kmod	5,4/kmod	0,61/kmod	1,2/kmod
AKR245X3L	22.0	-	-	2.0	Ø12	6,1/kmod	0,4/kmod	5,4/kmod	0,61/kmod	1,2/kmod
AKR285X3L	22.0	1	Ø10	2.0	Ø12	6,1/kmod	0,4/kmod	5,4/kmod	0,61/kmod	1,2/kmod

Several assumpotions are considered for the values shown in the table above (refer to ETA-07/0285 p 135 - Annex D61 - Characteristic Capacities for nailing pattern 22 - tables D61-11 to 15 for further details and other values) :

For $R_{1,k}$ capacities:

- Ø10 fastener in timber post (flange B) is placed in the upper hole => distance e between timber fasteners and AKR horizontal flange is 65 mm
- distance X1 between timber and concrete is 5 mm

For $R_{2,k}$=$R_{3,k}$ capacities:

- Ø10 fastener in timber post (flange B) is placed in the upper hole => distance e between timber fasteners and AKR horizontal flange is 65 mm

For $R_{4,k}$ capacities:

- distance X1 between timber and concrete is 5 mm

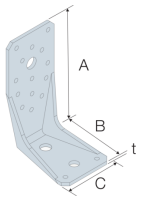
For $R_{6,k}$ capacities:

- Timber post width in contact with AKR is considered as 30 mm larger than the AKR width

Technical Sheet

AKRX3
Angle bracket

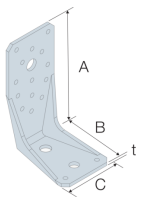
Simplified characteristic capacities - Timber to Timber - Partial nailing - 1 bracket per connection



Reference	Holdowns capacity						
	Simplified characteristic capacities - Timber to timber - Partial nailing - 1 angle bracket[kN]						Simplified characteristic capacities - Post to timber - 1 angle bracket
	Number of Fasteners				Characteristic Capacities[kN]		Nail pattern
	Joist		Flange B		$R_{1,k}$***	$R_{2.k} = R_{3.k}$	
	Qty	Type	Qty	Type			
AKR95X3L	2.0	CNA4.0x50	1.0	SSH12.0	5.8	-	2.0
AKR135X3L	8.0	CNA4.0x50	1.0	SSH12.0	10.6	-	7.0
AKR285X3L	14.0	CNA4.0x50	1.0	SSH12.0	13.2	-	17.0

*** The published characteristic capacity is based on instantaneous load duration and service class 2 according to EC5 (EN 1995) – kmod = 1,1. For other load duration and service class, please refer to the ETA to get more accurate capacities. The capacity of SSH12.0 screw has to be checked.

SImplified Characteristic capacities - Timber post to timber - 1 angle bracket



Reference	Holdowns capacity						
	Simplified characteristic capacities - Post to timber - 1 angle bracket						
	Nail pattern	Number of Fasteners					Characteristic Capacities
		Joist		Flange B			$R_{1,k}$***[kN]
		Qty	Type	Qty	Type	Thread length in support[mm]	
AKR95X3L	2.0	5.0	CNA4.0X50	1.0	SSH12.0	85	5.8
AKR135X3L	7.0	8.0	CNA4.0X50	1.0	SSH12.0	85	10.6
AKR285X3L	17.0	14.0	CNA4.0X50	1.0	SSH12.0	110	13.2

The connection can be made with a gap between the bottom flange of the bracket and timber, but the whole threaded part of the screw shall be in the substructure.
The connection is redundant, the full capacity of the screw may be considered. If the connection is isolated, then half the capacity of the screw shall be considered for AKR135X3L and AKR285X3L.
*** The published characteristic capacity is based on instantaneous load duration and service class 1 according to EC5 (EN 1995) – kmod = 1,1. For other load duration and service class, please refer to the ETA to get more accurate capacities.

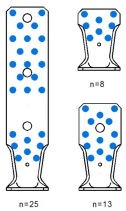
Installation

Fasteners

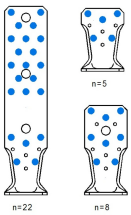
- The fixing needs to be done with CNA4,0xl threaded nails or CSA5,0xl screws.
- On concrete or steel by an wedge anchor M12 and a washer Ø24.
- SSH Ø 12 x 80 mm (timber to concrete)
- It is possible to single or double sided connections.

Installation

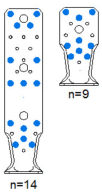
- **Fasten nails or screws CNA4,0xl CSA5,0xl.Pro installation in concrete anchor bolt M12**

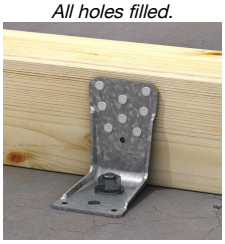


All holes filled.



Nailing on beams



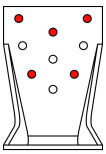


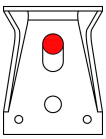
Fastening beams to concrete



Fastening with SDS screws

Options





Reinforced bracket AKR95X3L

Reinforced bracket AKR285X3L

Copyright by Simpson Strong-Tie®