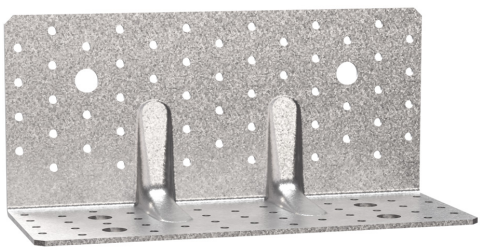
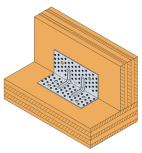
Technical Sheet

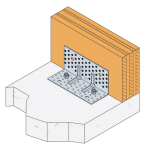
ABR255

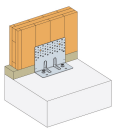
Reinforced Angle Bracket for CLT

Reinforced angle bracket ABR255 has been especially developed to fix CLT panels on wood or concrete support. Very versatile, it is particularly resistant to shear loads thanks to its optimized geometry.











Features

Material

- Galvanized steel S250GD + Z275 according to EN 10346
- Thickness 3 mm

Benefits

- Ideal for use in CLT buildings
- Great versatility: can be installed on wooden support and concrete support
- High performance for horizontal (F_2 / F_3) and vertical (F_1) loads directions

Applications

Suitable On

- **Supporting member:** solid wood, glulam, CLT, concrete, steel
- **Supported member:** solid wood, glulam, CLT

Scope

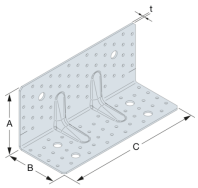
- Solid panels
- Cross laminated panel (CLT)

Technical Sheet

ABR255
Reinforced Angle Bracket for CLT

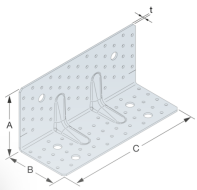
Technical Data

Product dimensions



Reference	Connector Dimensions										
	Other			Product Dimensions[mm]				Joist[mm]		Flange B[mm]	
	Tun / DB nr.	Qty per Box	Weight[kg]	A[mm]	B[mm]	C[mm]	Thickness[mm]	Round		Round	
								Ø5[mm]	Ø14[mm]	Ø5[mm]	Ø14[mm]
ABR255	1901628	10.0	1.2	120	100	255	3	52	2	41	4
ABR255SO	2112422	10.0	1.7	200	100	255	3	56	2	-	4

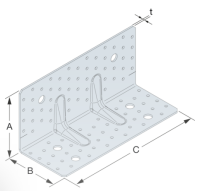
Product characteristic capacities - Timber to timber - 1 angle bracket - Full nailing - Nailing pattern 1



Product characteristic capacities - Timber to timber - 1 angle bracket - Full nailing - Nailing pattern 1
See full table online ➡️

Reference	Number o Fasteners		ing - Nailing pattern 1									
	Joist	Flan B	ngle bracket per conne									
			R5,k									
	Qty	Qty	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CN

Characteristic Capacities - Timber to Timber - 1 Angle Bracket - Full Nailing - Nailing Pattern 1



Characteristic Capacities - Timber to Timber - 1 Angle Bracket - Full Nailing - Nailing Pattern 1
See full table online ➡️

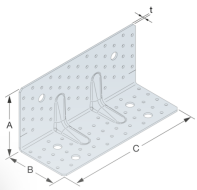
Reference	Number o Fasteners		ing - Nailing Pattern 1									
	Joist	Flan B	ngle brackets per conne									
			R4,k									
	Qty	Qty	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CN

Technical Sheet

ABR255

Reinforced Angle Bracket for CLT

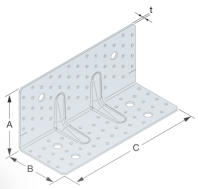
Product characteristic capacities - Timber to timber - 1 angle bracket - Partial nailing - Nailing pattern 2



Product characteristic capacities - Timber to timber - 1 angle bracket - Partial nailing - Nailing pattern 2
See full table online ➡️

Reference	Number of Fasteners		...iling - Nailing pattern 2										
			...ngle bracket per connec										
	Joist	Flange B									R4,k		
	Qty	Qty	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CN

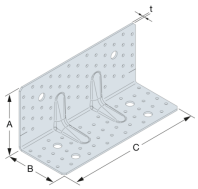
Characteristic Capacities - Timber to Timber - 1 Angle Bracket - Partial Nailing - Nailing Pattern 2



Characteristic Capacities - Timber to Timber - 1 Angle Bracket - Partial Nailing - Nailing Pattern 2
See full table online ➡️

Reference	Number of Fasteners		...iling - Nailing pattern 2										
			...ngle bracket per connec										
	Flange B	Jo									R4,k		
	Qty	Qty	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CNA4.0x50	CNA4.0x60	CNA4.0x35	CNA4.0x40	CN

Product characteristic capacities - Timber to timber - 1 angle bracket - Partial nailing - Nailing pattern 4



Reference	Angle bracket capacity									
	Product capacities - Timber to timber - Partial nailing - Nailing pattern 4									
	Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]								Number of Fasteners	
	$R_{2,k}=R_{3,k}$		$R_{1,k}$		R5,k		R4,k		Joist	Flange B
	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	Qty	Qty
ABR255	28.6	31.4	15,6/kmod^0,4	18,1/kmod^0,4	10.8/kmod^0.3	min (12.7/kmod^0,3 ; 12.8 / kmod)	15.9	18.3	24.0	21.0

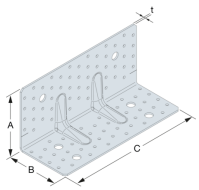
The value in the table above can be used if the panel can't rotate.
Nailing pattern 4 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.

Technical Sheet

ABR255
Reinforced Angle Bracket for CLT

SIMPSON Strong-Tie

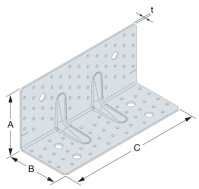
Characteristic Capacities - Timber to Timber - 1 Angle Bracket - Partial Nailing - Nailing Pattern 4



Reference	Angle bracket capacity									
	Product capacities - Timber to timber - Partial nailing - Nailing pattern 4									
	Number of Fasteners		Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]							
	Joist	Flange B	$R_{1,k}$		$R_{2,k}=R_{3,k}$		R5,k		R4,k	
	Qty	Qty	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60
ABR255	24.0	21.0	16.2	18.8	28.6	31.4	11.1	16.7	15.9	18.3

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

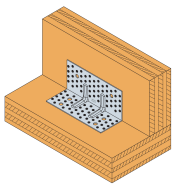
Product characteristic capacities - Timber to timber - 1 angle bracket - Partial nailing - Nailing pattern 5



Reference	Angle bracket capacity			
	Product capacities - Timber to timber - Partial nailing - Nailing pattern 5			
	Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]		Number of Fasteners	
	$R_{2,k}=R_{3,k}$	$R_{1,k}$	Joist	Flange B
	CSA5.0x50	CSA5.0x50	Qty	Qty
ABR255	51.7	23,6 / kmod	46.0	41.0

The value in the table above can be used if the panel can't rotate.
Nailing pattern 5 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.

Product characteristic capacities - Timber to timber - 1 angle bracket - Partial nailing - Nailing pattern 6



Reference	Angle bracket capacity					
	Product capacities - Timber to timber - Partial nailing - Nailing pattern 6					
	Number of Fasteners		Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]			
	Joist	Flange B	$R_{2,k}=R_{3,k}$		$R_{1,k}$	
	Qty	Qty	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60
ABR255	32.0	21.0	36.1	39.2	-	-

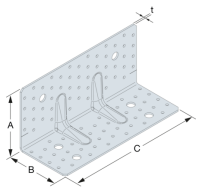
The value in the table above can be used if the panel can't rotate.
Nailing pattern 6 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.

Technical Sheet

ABR255
Reinforced Angle Bracket for CLT

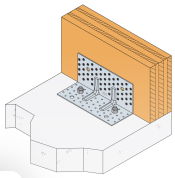
SIMPSON Strong-Tie

Characteristic Capacities - CLT Beam to CLT Beam - Ø12 Connector Screws - 1 Angle Bracket



Reference	Angle bracket capacity					
	Product capacities - CLT beam to CLT beam - Ø12 connector screws - 2 angle brackets					
	Number of Fasteners				Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]	
	Joist		Flange B		$R_{2,k}=R_{3,k}$	$R_{1,k}$
	Qty	Type	Qty	Type	SSH12x80	SSH12x80
ABR255	2.0	SSH	4.0	SSH	16.6	13.4

Product characteristic capacities - Timber to rigid support - 1 angle bracket - Full nailing - Nailing pattern 1

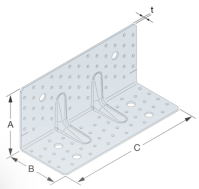


Product characteristic capacities - Timber to rigid support - 1 angle bracket - Full nailing - Nailing pattern 1
See full table online ➡

Characteristic Capacities - Timber to Rigid Support - 1 Angle Bracket - Full Nailing - Nailing Pattern 1

Characteristic Capacities - Timber to Rigid Support - 1 Angle Bracket - Full Nailing - Nailing Pattern 1
See full table online ➡

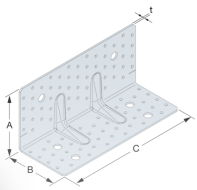
Product characteristic capacities - Timber to rigid support - 1 angle bracket - Partial nailing - Nailing pattern 2



Product characteristic capacities - Timber to rigid support - 1 angle bracket - Partial nailing - Nailing pattern 2
See full table online ➡

Technical Sheet

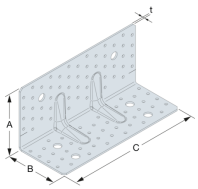
ABR255
Reinforced Angle Bracket for CLT



Characteristic Capacities - Timber to Rigid Support - 1 Angle Bracket - Partial Nailing - Nailing Pattern 2

Characteristic Capacities - Timber to Rigid Support - 1 Angle Bracket - Partial Nailing - Nailing Pattern 2
See full table online ➡️

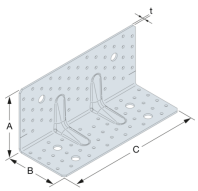
Reference												
	CNA4.0x3									.0x40	CNA4.0x50	CNA
ABR255	15.94	18.8	24.4	24.4	21.6	23.7	29.3	32	20.3	20.3	20.3	



Product characteristic capacities - Timber to rigid support - 1 angle bracket - Partial nailing - Nailing pattern 4

Reference	Angle bracket capacity											
	Product capacities - Timber to Concrete - Partial Nailing - Nailing pattern 4											
	Number of Fasteners				Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]							
	Joist		Flange B		$R_{1,k}$		$R_{2,k}=R_{3,k}$		R4,k		R5,k	
	Qty	Type	Qty	Type	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60
ABR255SO	26.0	CNA	2.0	Ø12	22,9/kmod	22,9/kmod	21.7	-	18,2/kmod^0,66	18,2/kmod^0,66	5,05/kmod	5,05/kmod

The value in the table above can be used if the panel can't rotate.
The anchor capacities must be checked separatly by multiplying the F1 load by a factor 1.1, F2 load by a factor of 1 and F5 by a factor of 2.2.
Nailing pattern 4 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.



Characteristic Capacities - Timber to Rigid Support - 1 Angle Bracket - Partial Nailing - Nailing Pattern 4

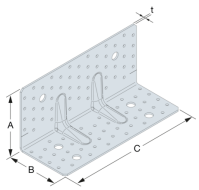
Reference	Angle bracket capacity											
	Product capacities - Timber to concrete - Partial nailing - Nailing pattern 4											
	Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]								Number of Fasteners			
	$R_{1,k}$		$R_{2,k}=R_{3,k}$		R4,k		R5,k		Joist		Flange B	
	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	Qty	Type	Qty	Type
ABR255SO	20.8	20.8	21.7	-	17.1	17.1	4.6	4.6	26.0	CNA	2.0	Ø12

- *The published characteristic capacity is based on short term load duration and service class 2 according to EC5 (EN 1995) where k_{mod} = 0.9.*
- *For other load duration and service class, please refer to the ETA*
- *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 SET-XP and AT-HP, depending on the concrete type, spacing and edge distances.*

Technical Sheet

ABR255
Reinforced Angle Bracket for CLT

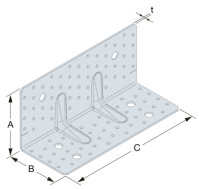
Product characteristic capacities - Timber to rigid support - 1 angle bracket - Partial nailing - Nailing pattern 7



Reference	Angle bracket capacity							
	Product capacities - Timber to concrete - Partial nailing - Nailing pattern 7							
	Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]				Number of Fasteners			
	$R_{1,k}$		$R_{2,k}=R_{3,k}$		Flange B		Joist	
	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	Qty	Type	Qty	Type
ABR255	-	-	39.8	42.5	2.0	Ø12	30.0	CNA
ABR255SO	-	-	-	-	-	-	-	-

The value in the table above can be used if the panel can't rotate.
The anchor capacities must be checked separatly by multiplying the F_2 load by a factor of 1.
Nailing pattern 7 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.

Product characteristic capacities - Timber to rigid support - 1 angle bracket - Partial nailing - Nailing pattern 8



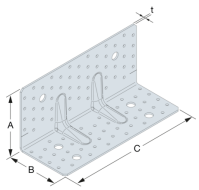
Reference	Angle bracket capacity											
	Product capacities - Timber to Concrete - Partial Nailing - Nailing pattern 8											
	Number of Fasteners				Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]							
	Joist		Flange B		$R_{1,k}$		$R_{2,k}=R_{3,k}$		R4,k		R5,k	
	Qty	Type	Qty	Type	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60
ABR255	17.0	CNA	2.0	Ø12	20	20	24.9	26.5	18.3/kmod^0.7	18.3/kmod^0.7	5.9/kmod^0.6	6.7/kmod^0.5
ABR255SO	30.0	CNA	2.0	Ø12	22,9/kmod	22,9/kmod	26.1	-	18,2/kmod^0,66	18,2/kmod^0,66	5,05/kmod	5,05/kmod

The value in the table above can be used if the panel can't rotate.
The anchor capacities must be checked separatly by multiplying the F_1 load by a factor 1.1, F_2 load by a factor of 1 and F5 by a factor of 2.2.
Nailing pattern 8 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.

Technical Sheet

ABR255
Reinforced Angle Bracket for CLT

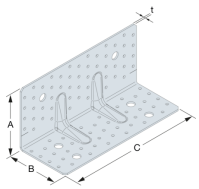
Characteristic Capacities - Timber to Rigid Support - 1 Angle Bracket - Partial Nailing - Nailing Pattern 8



Reference	Angle bracket capacity											
	Product capacities - Timber to concrete - Partial nailing - Nailing pattern 8											
	Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]								Number of Fasteners			
	$R_{1,k}$		$R_{4,k}$		$R_{2,k}=R_{3,k}$		$R_{5,k}$		Joist		Flange B	
	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	CNA4.0x50	CNA4.0x60	Qty	Type	Qty	Type
ABR255	23.4	25.8	19.7	19.7	24.9	26.5	6.2	7	17.0	CNA	2.0	Ø12
ABR255SO	20.8	20.8	17.1	17.1	26.1	-	4.6	4.6	56.0	CNA	2.0	Ø12

- *The published characteristic capacity is based on short term load duration and service class 2 according to EC5 (EN 1995) where $k_{mod} = 0.9$.*
- *For other load duration and service class, please refer to the ETA*
- *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 SET-XP and AT-HP, depending on the concrete type, spacing and edge distances.*

Product characteristic capacities - Timber to rigid support - 1 angle bracket - Partial nailing - Nailing pattern 9



Reference	Angle bracket capacity					
	Product capacities - Timber to Concrete - Partial nailing - Nailing pattern 9					
	Number of Fasteners				Characteristic capacities - Timber C24 - 1 angle bracket per connection[kN]	
	Joist		Flange B		$R_{1,k}$	$R_{2,k}=R_{3,k}$
	Qty	Type	Qty	Type	CSA5.0x50	CSA5.0x50
ABR255	35.0	CSA	2.0	Ø12	min (79,5 ; 22 / kmod)	min (58 ; 57,6 / kmod)
ABR255SO	-	-	-	-	-	-

The value in the table above can be used if the panel can't rotate.
The anchor capacities must be checked separatly by multiplying the F_1 load by a factor 1.1 and F_2 load by a factor of 1.
Nailing pattern 9 has been specifically developed for CLT application. It can be used for applications with other timber based materials provided that the materials comply with the spacing and distances of fasteners in CLT.

Technical Sheet

ABR255

Reinforced Angle Bracket for CLT

Installation

Fasteners

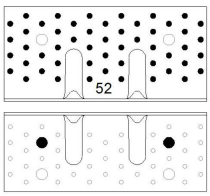
<u>On wood</u> :

- CNA annular ring shank nails
- CSA screws

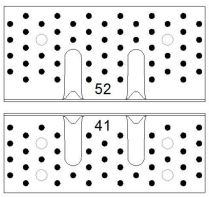
<u>On concrete</u> :

- *Mechanical anchor:* M12
- *Chemical anchor:* SET-XP or AT-HP resin + LMAS M12-150/35 threaded rod.

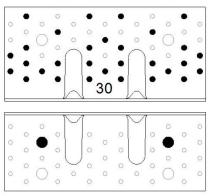
NP1 timber-concrete



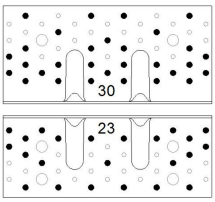
NP1 timber-timber



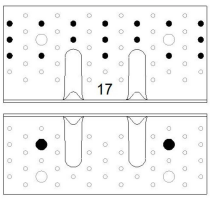
NP2 timber-concrete



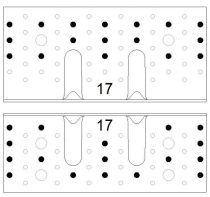
NP2 timber-timber



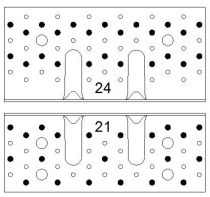
NP3 timber-concrete

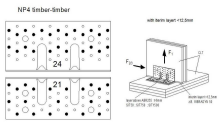


NP3 timber-timber

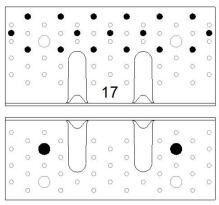


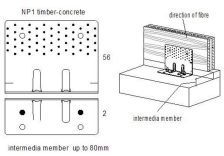
NP4 timber-timber

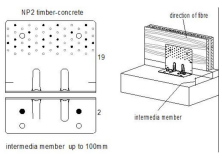


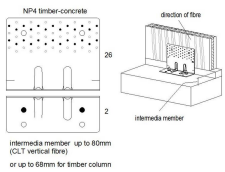


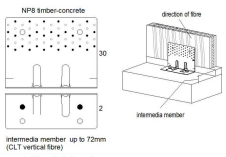
NP8 timber-concrete





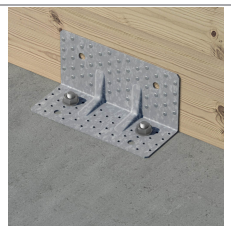
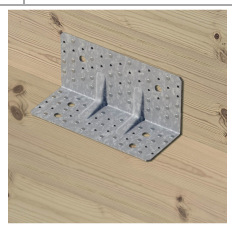
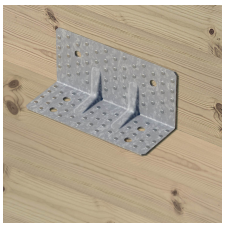






Technical Sheet

ABR255
Reinforced Angle Bracket for CLT

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