

3



03

ANGLE BRACKETS

ANGLE BRACKETS

ANGLE BRACKETS TOP 80 / TOP 120

Advantages

- No bothersome centre rib during processing
- Optimised hole pattern
- Full nail fitting always possible
- High stability due to special, discreet corrugation
- Type 80 as an alternative to the "size 90 bracket"
- GREENLINE = resource-saving manufacturing



Introduction to statics **from page 110** / Products & statics **from page 120**

ANGLE BRACKET 110/170 S

Advantages

- Universal use for higher loads
- 9 bolt holes Ø 13 mm
- Perfectly suited to take loads F_2 and F_3



Introduction to statics **from page 110** / Products & statics **from page 132**

ANGLE BRACKET TOP KR 90E (EXTRA)

Advantages

- 40 % lighter in comparison to 90 x 90 x 65 x 2.5 mm
- High stability due to raised edge on both sides
- Versatile in use
- Alternative to different brackets such as 70 x 70 x 55 mm and 90 x 90 x 65 mm (for use under consideration of the necessary loads)
- Very good for loads due to the outer rib F_2/F_3 and F_1 suitable



Introduction to statics **from page 110** / Products & statics **from page 124**

ANGLE BRACKETS KR

Advantages

- For connections between timber/timber; timber/concrete
For use on timber/masonry etc.
- Due to the ribs in the bending radius, KR angle brackets are very sturdy, economical and affordable in use for extreme loads
- By making use of the Greenline series, you receive products with resource-saving manufacturing. This gives you an ecologically and economic advantage



Introduction to statics **from page 110** / Products & statics **from page 134**

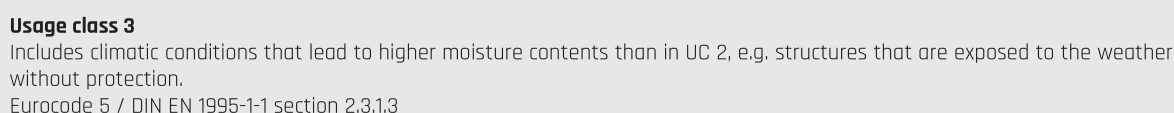
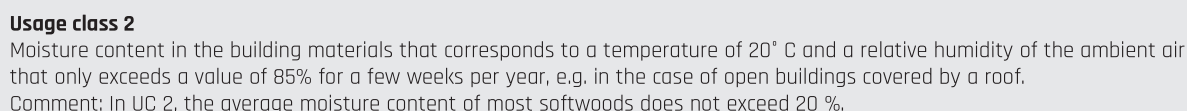
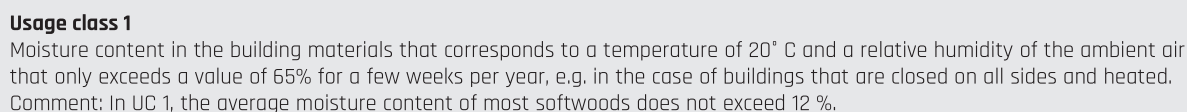
ANGLE BRACKETS

ASSORTMENT

					Height [mm]	Length [mm]	Width [mm]	Basics Statik & Diagramme from page	Products & Statik from page	Products Made of V4A from page
ANGLE BRACKET TOP 80/120										
ANGLE BRACKET 70X70X2.0										
ANGLE BRACKET 70X70 GREENLINE										
ANGLE BRACKET TOP KR90E										
ANGLE BRACKET 90X90X2.5										
ANGLE BRACKET 90X90 GREENLINE										
ANGLE BRACKET 100X100X3.0										
ANGLE BRACKET 100X100 GREENLINE										
STRUT CONNECTOR 135 DEGREES										
ANGLE BRACKET TYPE 110/170L										
ANGLE BRACKET KR 3 MM										
ANGLE BRACKET KR 4 MM										
ANGLE BRACKET TYPE 50/80										
ANGLE BRACKET TYPE 110										
ANGLE BRACKET TYPE 55/80										
ANGLE BRACKET TYPE 60/100										
CONSOLE ANGLE										
ANGLE BRACKET TYPE 40/45										
ANGLE BRACKET TYPE 40/90										
ANGLE BRACKET TYPE 40/120										
ANGLE BRACKET TYPE 692										

ASSORTMENT

	CE symbol
	Steel with indication of the steel quality and galvanisation
	Stainless steel with material number
	Timber/timber connection
	Timber/concrete-connection



ANGLE BRACKETS

APPLICATIONS

3

Application:

Timber/timber; timber/concrete, steel connections

Materials:

350
GD
Z275

250
GD
Z275

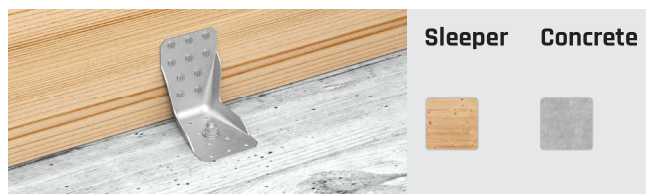
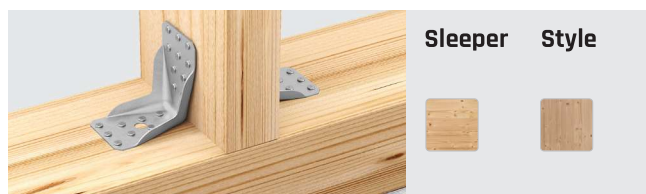
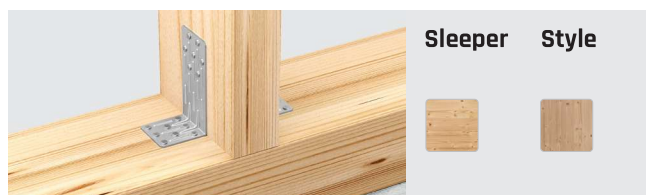
235
JR
feuerverzinkt

A4
1.4571

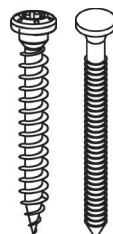
Material thicknesses:

1.5 / 2.0 / 2.5 / 3.0 / 4.0 / 6.0 / 8.0 mm

More on request.



For use in usage classes



Connecting element:

GH threaded nails 4.0 x 35 / 40 / 50 / 60 / 75 / 100 mm

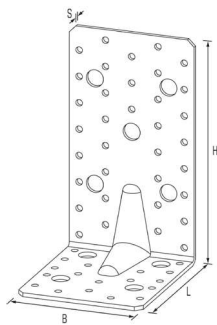
GH screws 5.0 x 25 / 35 / 40 / 50 / 60 / 70 mm

Bolt, dowel or concrete anchor M10, M12

Connecting elements from page 274

ANGLE BRACKETS

TYPE 110/170L



Art. No.	Dimensions [mm]							nN	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 13	4019346	kg				
110170L	170	x	110	x	95	x	3,0	53	9	215593	0.557	1500	25	■	■

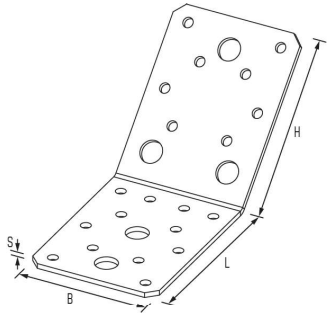
The unequal-legged 3 mm thick angle bracket 110/170 S with its 9 x Ø 13 mm holes can be used very universally for higher loads, e.g. for securing high sleepers. The bracket is also perfect for taking loads F_2 and F_3 . Standard connections such as pole/column, wall bar/column, sleeper/concrete, etc.

Connection methods

- Timber/timber
- Timber/concrete, masonry
- Timber/steel
- Timber/Halfen rail

STRUT CONNECTORS

135 DEGREE



Art. No.	Dimensions [mm]							nN	nN	nBo	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 7	Ø 11	Ø 13	4019346	kg				
1867	90	x	90	x	65	x	2,5	20	8	2	-	130124	0.190	4500	100	■	■
2197	100	x	100	x	90	x	3,0	28	-	6	2	130131	0.352	2400	40	■	■



Strut connectors have an angle of 135° and are used to connect timber constructions.

TYPE 110/170L

3

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	F _{2/3,T,Rk}	F _{4,T,Rk}	F _{4,S,Rk}	F _{5,T,Rk}	F _{5,S,Rk}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}
110170L	170	110	95	3,0	35	Full	4,0x40	2,44	5,89	10,36	3,59	8,71	2,83	9,06	4,87	11,77
							4,0x60	4,07	5,89	13,28	5,97	8,71	4,71	9,06	8,11	11,77
					22	Partial	4,0x40	1,84	6,01	5,87	2,70	8,90	0,16	0,66	3,67	12,02
							4,0x60	3,07	6,01	7,71	4,48	8,90	0,27	0,66	6,10	12,02

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $\rho_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.

For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.

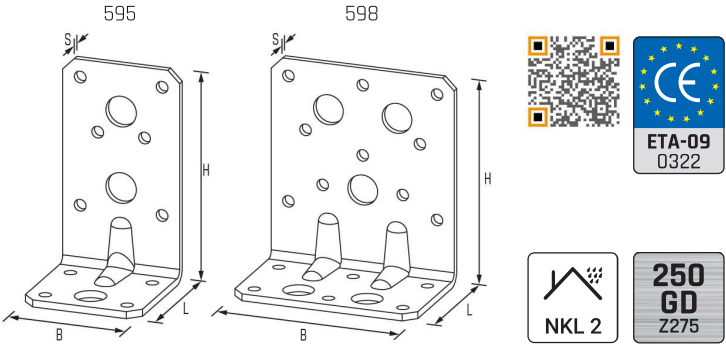
Timber														Concrete										
Art. No.	H	L	B	S	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	k _{1,t,ax}	F _{2/3,T,RK}	k _{2/3,t,v}	F _{4,T,Rk}	F _{4,S,Rk}	k _{4,t,v}	k _{4,t,ax}	F _{5,T,Rk}	F _{5,S,Rk}	k _{5,t,v}	k _{5,t,ax}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}	k _{4/5,t,v}	k _{4/5,t,ax}
110170L	170	110	95	3,0	17	Full	4,0x40	32,13	14,55	0,77	7,04	0,25	-	11,83	0,25	0,52	2,83	9,06	0,25	0,20	27,63	29,09	0,25	0,39
							4,0x60	40,19	14,55	0,77	9,61	0,25	-	11,83	0,25	0,52	4,71	9,06	0,25	0,20	51,00	29,09	0,25	0,39
					11	Partial	4,0x40	20,79	14,55	0,77	4,45	0,50	-	11,83	0,50	0,52	0,16	0,66	0,50	0,20	17,88	29,09	0,50	0,39
							4,0x60	26,00	14,55	0,77	5,64	0,50	-	11,83	0,50	0,52	0,27	0,66	0,50	0,20	27,86	29,09	0,50	0,39

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $\rho_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.

For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled and the values $F_{1,k}$, $F_{1,0,k}$, $F_{2/3,k}$ halved.

ANGLE BRACKETS

TYPE 50/80

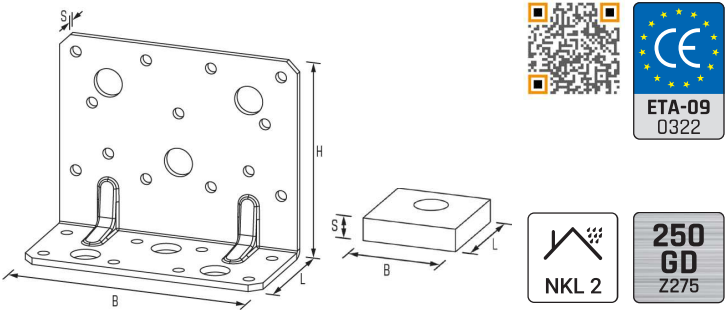


Art. No.	Dimensions [mm]							nN	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 13	4019346	kg				
595	90	x	50	x	50	x	3,0	10	3	110096	0,144	6000	100	■	■
598	90	x	50	x	80	x	3,0	16	5	110300	0,231	3000	100	■	■

Angle brackets type 50 and type 80 are strong unequal-legged brackets and are suitable for timber/timber connections or for fastening timber constructions to concrete/steel or masonry.

ANGLE BRACKETS

TYPE 110



Art. No.	Dimensions [mm]							nN	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	B	x	S	Ø 5	Ø 13	4019346	kg				
5911	90	x	50	x	110	x	3,0	21	6	110317	0,317	1500	50	■	■
59114	-	x	40	x	43	x	10,0	-	1xØ14	217740	0,107	5000	50	■	■

Angle bracket type 110 is a strong unequal-legged bracket and suitable for timber/timber connections or for fastening timber constructions to concrete/steel or masonry.
With an additional pressure plate, even higher load absorptions are possible.

TYPE 50/80

3

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	F _{2/3,T,Rk}	F _{4,T,Rk}	F _{4,S,Rk}	F _{5,T,Rk}	F _{5,S,Rk}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}
595	90	50	50	3,0	10	Full	4,0x40	0,83	1,29	3,49	0,47	0,37	1,26	0,98	1,65	2,59
							4,0x60	1,38	1,29	4,43	0,79	0,37	2,10	0,98	2,77	2,59
					8	Partial	4,0x40	0,83	1,29	3,24	0,47	0,37	1,26	0,98	1,65	2,59
							4,0x60	1,38	1,29	4,14	0,79	0,37	2,10	0,98	2,77	2,59
598	90	50	80	3,0	14	Full	4,0x40	1,25	2,21	5,64	0,47	0,63	1,26	1,68	2,48	4,42
							4,0x60	2,08	2,21	7,26	0,79	0,63	2,10	1,67	4,11	4,42
					8	Partial	4,0x40	1,25	2,21	4,07	0,47	0,63	1,26	1,68	2,46	4,42
							4,0x60	2,08	2,21	5,22	0,79	0,63	2,10	1,67	4,06	4,42

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN. For 2 opposite
For angle brackets, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.

Timber													Concrete											
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	k _{1,t,αx}	F _{2/3,T,RK}	k _{2/3,t,v}	F _{4,T,Rk}	F _{4,S,Rk}	k _{4,t,v}	k _{4,t,αx}	F _{5,T,Rk}	F _{5,S,Rk}	k _{5,t,v}	k _{5,t,αx}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}	k _{4/5,t,v}	k _{4/5,t,αx}
595	90	50	50	3,0	6	Full	4.0x40	11,34	0,15	6,77	1,84	1,00	0,47	0,17	1,00	6,15	1,26	0,98	1,00	0,34	10,8	0,31	1,00	3,38
							4.0x60	14,18	0,15	6,77	2,74	1,00	0,79	0,17	1,00	6,15	2,10	0,98	1,00	0,34	18,00	0,31	1,00	3,38
					4	Partial	4.0x40	7,56	0,15	6,77	1,45	1,00	0,47	0,17	1,00	6,15	1,26	0,98	1,00	0,34	7,20	0,31	1,00	3,38
							4.0x60	9,46	0,15	6,77	2,21	1,00	0,79	0,17	1,00	6,15	2,10	0,98	1,00	0,34	12,00	0,31	1,00	3,38
598	90	50	80	3,0	8	Full	4.0x40	15,12	0,26	3,38	3,51	0,50	0,47	0,29	0,50	3,08	1,26	1,68	0,50	0,17	14,40	0,53	0,50	1,69
							4.0x60	18,91	0,26	3,38	4,92	0,50	0,79	0,29	0,50	3,08	2,10	1,67	0,50	0,17	24,00	0,53	0,50	1,69
					4	Partial	4.0x40	7,56	0,26	3,38	2,36	0,50	0,47	0,29	0,50	3,08	1,25	1,68	0,50	0,17	7,20	0,53	0,50	1,69
							4.0x60	9,46	0,26	3,38	3,41	0,50	0,79	0,29	0,50	3,08	2,10	1,67	0,50	0,17	12,00	0,53	0,50	1,69

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled and the values $F_{1,v,k}$, $F_{1,α,k}$, $F_{2/3,v,k}$ halved.

TYPE 110

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	F _{2/3,T,Rk}	F _{4,T,Rk}	F _{4,S,Rk}	F _{5,T,Rk}	F _{5,S,Rk}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}
5911	90	50	110	3,0	19	Full	4,0x40	1,66	2,77	9,28	0,95	0,79	4,20	2,10	3,30	5,54
							4,0x60	2,77	2,77	11,71	1,58	0,79	2,52	2,10	5,48	5,54
					12	Partial	4,0x40	1,66	2,77	6,93	0,95	0,79	4,20	2,10	3,29	5,54
							4,0x60	2,77	2,77	8,99	1,58	0,79	2,10	2,10	5,44	5,54

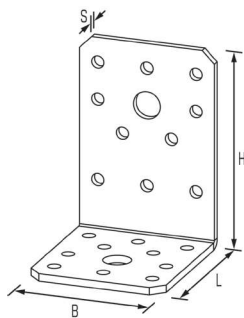
Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.

Timber													Concrete											
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	k _{1,t,αx}	F _{2/3,T,Rk}	k _{2/3,t,v}	F _{4,T,Rk}	F _{4,S,Rk}	k _{4,t,v}	k _{4,t,αx}	F _{5,T,Rk}	F _{5,S,Rk}	k _{5,t,v}	k _{5,t,αx}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}	k _{4/5,t,v}	k _{4/5,t,α}
5911	90	50	110	3,0	11	Full	4.0x40	20,79	1,44	3,25	7,81	1,00	0,95	0,79	1,00	5,00	2,52	2,10	1,00	0,41	19,80	2,87	1,00	1,62
							4.0x60	26,00	1,44	3,25	10,14	1,00	1,58	0,79	1,00	5,00	4,20	2,10	1,00	0,41	33,00	2,87	1,00	1,62
					6	Partial	4.0x40	11,34	1,44	3,25	5,12	1,00	0,95	0,79	1,00	5,00	2,52	2,10	1,00	0,41	10,80	2,87	1,00	1,62
							4.0x60	14,18	1,44	3,25	6,67	1,00	1,58	0,79	1,00	5,00	4,20	2,10	1,00	0,41	18,00	2,87	1,00	1,62

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled and the values $F_{1,v,k}$, $F_{1,α,k}$, $F_{2/3,v,k}$ halved.

ANGLE BRACKETS

TYPE 55/80

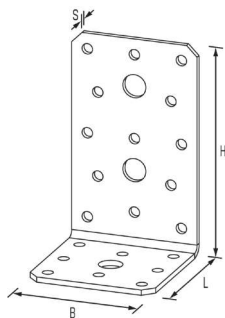


Art. No.	Dimensions [mm]							nN	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 11	4019346	kg				
653	80	x	60	x	55	x	3,0	20	2	110249	0,159	4800	100	■	■

The type 55/80 angle bracket is an unequal-leg bracket with a wide range of applications and is suitable for timber/timber, timber/concrete, timber/masonry and timber/steel connections.

ANGLE BRACKETS

TYPE 60/100



Art. No.	Dimensions [mm]							nN	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 11	4019346	kg				
16625	100	x	60	x	60	x	2,5	21	3	101780	0,163	2400	100	■	■

The type 60/100 angle bracket is an unequal-leg bracket and is suitable for timber/timber, timber/concrete, timber/masonry and timber/steel connections.

TYPE 55/80

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	F _{2/3,T,Rk}	F _{4,T,Rk}	F _{4,S,Rk}	F _{5,T,Rk}	F _{5,S,Rk}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}
653	80	60	55	3,0	14	Full	4,0x40	0,45	0,39	4,93	0,17	0,15	1,52	0,73	0,90	0,78
							4,0x60	0,75	0,39	6,17	0,28	0,15	2,53	0,73	1,50	0,78
					-	Partial	4,0x40	-	-	-	-	-	-	-	-	-
							4,0x60	-	-	-	-	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, pk = 350 kg/m³, f = 0 mm, e = 40 mm, b = 80 mm, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values F_{1,T,Rk} F_{1,S,Rk} F_{2/3,T,Rk} can be doubled.

Timber													Concrete													
Art. No.	H	L	B	S	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	k _{1,t,ax}	F _{2/3,T,Rk}	k _{2/3,t,v}	F _{4,T,Rk}	F _{4,S,Rk}	k _{4,t,v}	k _{4,t,ax}	F _{5,T,Rk}	F _{5,S,Rk}	k _{5,t,v}	k _{5,t,ax}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}	k _{4/5,t,v}	k _{4/5,t,ax}		
653	80	60	55	3,0	8	Full	4.0x40	15,12	0,11	7,36	2,69	1,00	0,45	0,11	1,00	7,27	1,52	0,73	1,00	0,35	14,40	0,23	1,00	3,68		
							4.0x60	18,91	0,11	7,36	4,05	1,00	0,75	0,11	1,00	7,27	2,53	0,73	1,00	0,35	24,00	0,23	1,00	3,68		
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							4.0x60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, pk = 350 kg/m³, f = 0 mm, e = 40 mm, b = 80 mm, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values F_{1,T,Rk} F_{1,S,Rk} F_{2/3,T,Rk} can be doubled and the values F_{1,t,ax} F_{1,ax,t} F_{2/3,t,v} halved.

TYPE 60/100

Timber								Timber		
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{2/3,T,Rk}	*F _{4/5,T,Rk}
16625	100	60	60	2,5	19	Full	4.0x40	1,35	5,56	3,78
							4.0x60	1,35	7,16	3,93
					-	Partial	4.0x40	-	-	-
							4.0x60	-	-	-

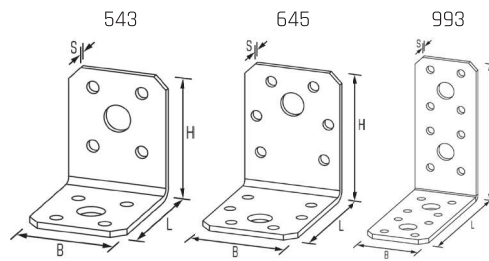
Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, pk = 350 kg/m³, f = 0 mm, e = 40 mm, b = 80 mm, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values F_{1,T,Rk} F_{1,S,Rk} F_{2/3,T,Rk} can be doubled.

Timber									Concrete					
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,Bo,ax,rk}	F _{2/3,T,RK}	F _{2/3,Bo,sx,rk}	*F _{4/5,T,Rk}	F _{4/5,Bo,ax,rk}	F _{4/5,Bo,sx,rk}
16625	100	60	60	2,5	10	Full	4.0x40	-	-	3,22	3,22	3,35	0,57	2,55
							4.0x60	-	-	4,62	4,62	3,47	0,62	2,53
					5	Partial	4.0x40	0,54	0,70	-	-	-	-	-
							4.0x60	0,54	0,70	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, pk = 350 kg/m³, f = 0 mm, e = 40 mm, b = 80 mm, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values F_{1,T,Rk} F_{1,S,Rk} F_{2/3,T,Rk} can be doubled and the values F_{1,t,ax} F_{1,ax,t} F_{2/3,t,v} halved.

ANGLE BRACKETS

TYPE 40/45



3

Art. No.	Dimensions [mm]							nN	nBo	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 11	4019346	kg				
543	50	x	50	x	40	x	2,5	8	2	110058	0.069	10800	150	■	■
645	60	x	60	x	45	x	2,5	12	2	110232	0.093	3600	50	■	■
993	90	x	90	x	40	x	3,0	16	4	110065	0.148	5100	100	■	■



Angle brackets type 40 and type 45 are equal-legged brackets and are suitable for timber/timber connections or for fastening timber constructions to concrete/steel or masonry.

TYPE 40/45

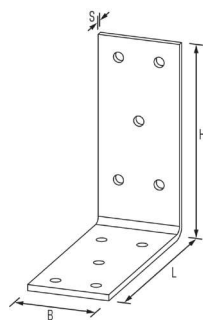
3

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	F _{2/3,T,Rk}	F _{4,T,Rk}	F _{4,S,Rk}	F _{5,T,Rk}	F _{5,S,Rk}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}
543	50	50	40	2,5	6	Full	4.0x40	0,21	0,09	1,51	0,11	0,05	0,90	0,17	0,43	0,19
							4.0x60	0,36	0,09	2,10	0,19	0,05	1,50	0,17	0,71	0,19
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-
							4.0x60	-	-	-	-	-	-	-	-	-
645	60	60	45	2,5	8	Full	4.0x40	0,22	0,11	2,51	0,11	0,06	1,58	0,41	0,44	0,22
							4.0x60	0,37	0,11	3,25	0,19	0,06	2,62	0,41	0,73	0,22
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-
							4.0x60	-	-	-	-	-	-	-	-	-
993	90	90	40	3,0	10	Full	4.0x40	0,21	0,14	2,48	0,11	0,07	0,90	0,25	0,43	0,27
							4.0x60	0,36	0,14	3,27	0,19	0,07	1,50	0,25	0,71	0,27
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $\rho_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.

Timber													Concrete												
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{1,S,Rk}	k _{1,t,ax}	F _{2/3,T,RK}	k _{2/3,t,v}	F _{4,T,Rk}	F _{4,S,Rk}	k _{4,t,v}	k _{4,t,ax}	F _{5,T,Rk}	F _{5,S,Rk}	k _{5,t,v}	k _{5,t,ax}	*F _{4/5,T,Rk}	*F _{4/5,S,Rk}	k _{4/5,t,v}	k _{4/5,t,ax}	
543	50	50	40	2,5	2	Full	4.0x40	3,78	0,07	6,64	0,48	1,00	-	0,07	1,00	7,27	0,90	0,17	1,00	0,36	3,60	0,14	1,00	3,32	
							4.0x60	4,73	0,07	6,64	0,72	1,00	-	0,07	1,00	7,27	1,50	0,17	1,00	0,36	6,00	0,14	1,00	3,32	
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							4.0x60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
645	60	60	45	2,5	4	Full	4.0x40	7,56	0,04	8,82	1,05	1,00	1,80	0,05	1,00	7,27	1,58	0,41	1,00	0,33	7,20	0,09	1,00	4,41	
							4.0x60	9,46	0,04	8,82	1,60	1,00	3,00	0,05	1,00	7,27	2,62	0,41	1,00	0,33	12,00	0,09	1,00	4,41	
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							4.0x60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
993	90	90	40	3,0	4	Full	4.0x40	7,56	0,11	6,45	1,03	1,00	-	0,10	1,00	7,27	0,90	0,25	1,00	0,36	7,20	0,22	1,00	3,23	
							4.0x60	9,46	0,11	6,45	1,57	1,00	-	0,10	1,00	7,27	1,50	0,25	1,00	0,36	12,00	0,22	1,00	3,23	
					-	Partial	4.0x40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							4.0x60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $\rho_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled and the values $F_{1,k,t}$, $F_{1,k,v}$, $F_{2/3,k,t}$ halved.

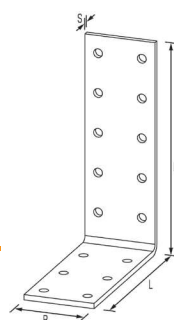


ANGLE BRACKETS

TYPE 40/90

Art. No.	Dimensions [mm]							nN	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	4019346	kg				
994	90	x	90	x	40	x	3,0	10	110102	0,179	5100	100	■	

The angle bracket type 40/90 is a 3.0 mm thick equal-legged bracket.
Applications include purlins on laminated timber beams, wall bars on columns, etc.

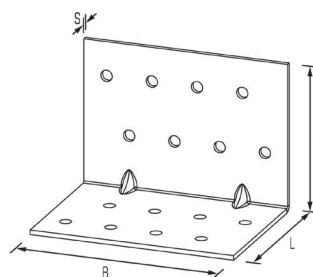


ANGLE BRACKETS

TYPE 40/120

Art. No.	Dimensions [mm]							nN	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	4019346	kg				
1293	120	x	95	x	40	x	3,0	16	110331	0,177	5100	100	■	

The angle bracket type 40/120 is a 3.0 mm thick unequal-legged bracket.
Applications include purlins on laminated timber beams, in timber constructions,
Pole connections on the sleeper, etc.



ANGLE BRACKETS

TYPE 692

Art. No.	Dimensions [mm]							nN	EAN	Weight	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	4019346	kg				
692	65	x	65	x	90	x	2,0	16	110348	0,161	4000	100	■	

The angle bracket type 692 is a versatile bracket.
It is particularly suited to loads in the $F_{2/3}$ and $F_{4/5}$ direction due to the ribs.

TYPE 40/90

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n_a	NB	VM	$F_{1,T,Rk}$	$F_{1,S,Rk}$	$F_{2/3,T,Rk}$	$F_{4,T,Rk}$	$F_{4,S,Rk}$	$F_{5,T,Rk}$	$F_{5,S,Rk}$	$*F_{4/5,T,Rk}$	$*F_{4/5,S,Rk}$
994	90	90	40	3,0	8	Full	4,0x40	0,20	0,12	2,12	0,11	0,07	0,45	0,53	0,40	0,23
							4,0x60	0,33	0,12	2,79	0,19	0,07	0,75	0,53	0,67	0,23
					-	Partial	4,0x40	-	-	-	-	-	-	-	-	-
							4,0x60	-	-	-	-	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.

TYPE 40/120

Timber / Timber																
Art. No.	H	L	W(B)	T(S)	n_a	NB	VM	$F_{1,T,Rk}$	$F_{1,S,Rk}$	$F_{2/3,T,Rk}$	$F_{4,T,Rk}$	$F_{4,S,Rk}$	$F_{5,T,Rk}$	$F_{5,S,Rk}$	$*F_{4/5,T,Rk}$	$*F_{4/5,S,Rk}$
1293	120	95	40	3,0	12	Full	4,0x40	0,16	0,08	3,18	0,11	0,05	0,90	0,25	0,33	0,15
							4,0x60	0,27	0,08	4,04	0,19	0,05	1,50	0,25	0,55	0,15
					-	Partial	4,0x40	-	-	-	-	-	-	-	-	-
							4,0x60	-	-	-	-	-	-	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.

TYPE 692

Timber / Timber										
Art. No.	H	L	W(B)	T(S)	n _a	NB	VM	F _{1,T,Rk}	F _{2/3,T,Rk}	*F _{4/5,T,Rk}
692	65	65	90	2,0	12	Full	4.0x40	0,67	3,82	5,01
							4.0x60	0,67	5,19	5,13
					-	Partial	4.0x40	-	-	-
							4.0x60	-	-	-

Values are valid for 1 angle bracket (* 2 angle brackets opposite each other), GH nail, $p_k = 350 \text{ kg/m}^3$, $f = 0 \text{ mm}$, $e = 40 \text{ mm}$, $b = 80 \text{ mm}$, unit of length in mm, unit for force in kN.
For 2 angle brackets opposite each other, the values $F_{1,T,Rk}$, $F_{1,S,Rk}$, $F_{2/3,T,Rk}$ can be doubled.