

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**

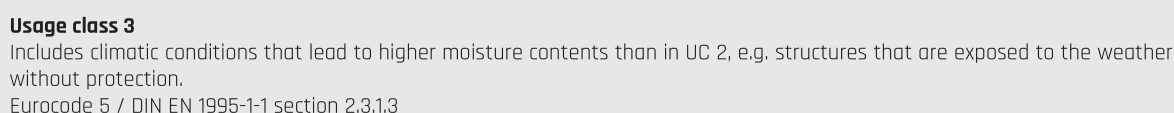
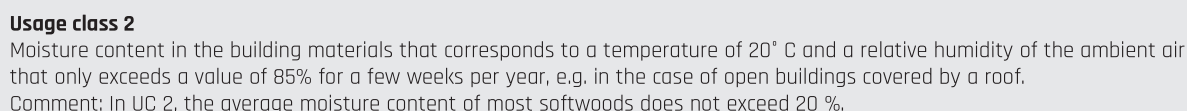
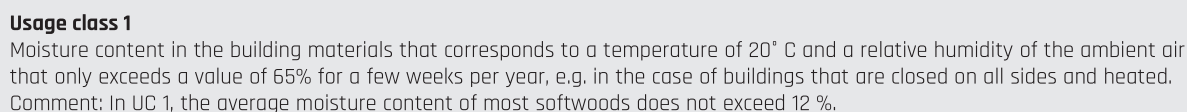
ANGLE BRACKETS

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						80-120	60	55	110	120	
ANGLE BRACKET 70X70X2.0					 	70	70	55	110	122	293
ANGLE BRACKET 70X70 GREENLINE						70	70	55	110	122	
ANGLE BRACKET TOP KR90E						95	85	65	110	124	
ANGLE BRACKET 90X90X2.5					 	90	90	65	110	128	293
ANGLE BRACKET 90X90 GREENLINE						90	90	65	110	126	
ANGLE BRACKET 100X100X3.0					 	100	100	90	110	130	293
ANGLE BRACKET 100X100 GREENLINE						105	105	90	110	130	
STRUT CONNECTOR 135 DEGREES						90-100	90-100	65-90		132	
ANGLE BRACKET TYPE 110/170L						170	110	95	110	132	
ANGLE BRACKET KR 3 MM						95-285	88	65	110	134	
ANGLE BRACKET KR 4 MM						95-285	88	65	110	134	
ANGLE BRACKET TYPE 50/80						90	50	50-80	110	138	
ANGLE BRACKET TYPE 110						90	50	110	110	138	
ANGLE BRACKET TYPE 55/80						80	60	55	110	140	
ANGLE BRACKET TYPE 60/100						100	60	60	110	140	
CONSOLE ANGLE						120-200	54	60	110	142	
ANGLE BRACKET TYPE 40/45						50-90	50-90	40-45	110	144	
ANGLE BRACKET TYPE 40/90					 	90	90	40	110	146	294
ANGLE BRACKET TYPE 40/120						120	95	40	110	146	
ANGLE BRACKET TYPE 692						65	65	90	110	146	

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

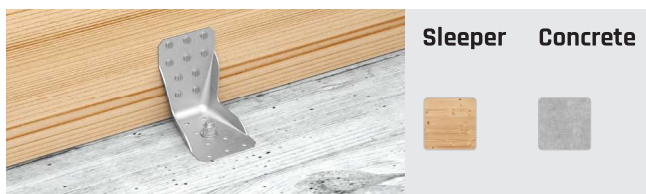
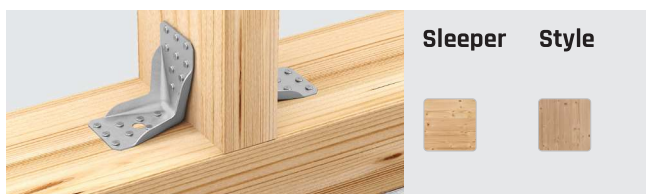
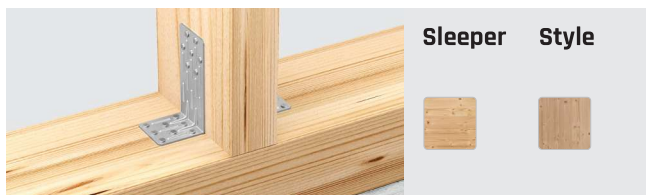
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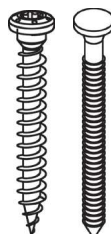
Material thicknesses:

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:

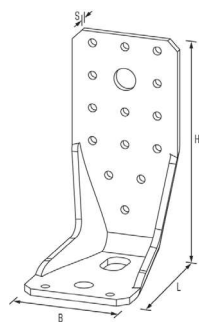
GH threaded nails 4.0 x 35 / 40 / 50 / 60 / 75 / 100 mm
GH screws 5.0 x 25 / 35 / 40 / 50 / 60 / 70 mm

Bolt, dowel or concrete anchor M10, M12

Connecting elements from page 274

ANGLE BRACKETS

KR SLOTTED HOLE 3.0 GREENLINE



Art. No.	Dimensions [mm]						H _{nN}	H _{nBo}	L _{nN}	L _{nBo}	L _{nBo}	EAN	Weight kg	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 13,5	Ø 5	13x24,5	Ø 11	4019346				
1100953L	95	x	88	x	65	x	3,0	11	-	2	1	1	110997	0.242	1200	25	■
1101353L	135	x	88	x	65	x	3,0	16	1	2	1	1	111000	0.304	1200	25	■
1102853L	285	x	88	x	65	x	3,0	28	3	2	1	1	111017	0.522	600	25	■

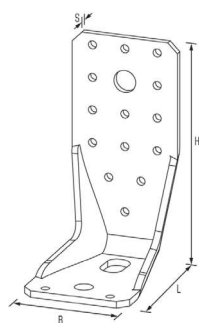


GREENLINE KR brackets in 3 mm are statically almost identical to the KR brackets in 4 mm.

KR brackets in 3 and 4 mm with round hole or slotted hole are used for connections between wood/wood; wood/concrete; wood/steel and wood/masonry. Due to the ribs in the bending radius, KR connectors are extremely sturdy and can be used cost-effectively for high loads. These properties are primarily required for connections to columns, sleepers, timber trusses and beams. The 4 mm KR brackets are subsequently galvanised.

ANGLE BRACKETS

KR SLOTTED HOLE 4.0



Art. No.	Dimensions [mm]						H _{nN}	H _{nBo}	L _{nN}	L _{nBo}	L _{nBo}	EAN	Weight kg	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 13,5	Ø 5	13x24,5	Ø 11	4019346				
110095L	95	x	88	x	65	x	4,0	11	-	2	1	1	110911	0.319	1200	25	■
110135L	135	x	88	x	65	x	4,0	16	1	2	1	1	110935	0.398	1200	25	■
110285L	285	x	88	x	65	x	4,0	28	3	2	1	1	110959	0.722	600	25	■

KR SLOTTED HOLE 3.0

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}			
1100953L	95	88	65	3,0	9	Full	4.0x40	17,01	2,63	2,74	2,40	1,00	-	-	-	-	-	-	-	-	-	-	-	-			
							4.0x60	21,28	2,63	2,74	3,56	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-		
					3	Partial	4.0x40	5,67	2,63	2,74	0,79	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
							4.0x60	7,09	2,63	2,74	1,14	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1101353L	135	88	65	3,0	14	Full	4.0x40	26,46	2,63	2,74	3,84	1,00	-	-	-	-	-	-	-	-	-	-	-	-			
							4.0x60	33,10	2,63	2,74	5,62	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-		
					6	Partial	4.0x40	11,34	2,63	2,74	1,71	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
							4.0x60	14,18	2,63	2,74	2,50	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1102853L	285	88	65	3,0	14	Full	4.0x40	26,46	2,63	2,74	4,08	1,00	-	-	-	-	-	-	-	-	-	-	-	-			
							4.0x60	33,10	2,63	2,74	5,88	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					10	Partial	4.0x40	18,90	2,63	2,74	3,08	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							4.0x60	23,64	2,63	2,74	4,67	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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,v,k} F_{1,ax,k} F_{2/3,v,k} halved.

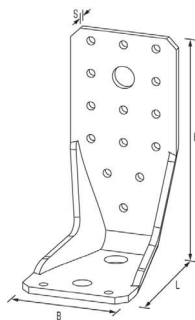
KR SLOTTED HOLE 4.0

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}			
110095L	95	88	65	4,0	9	Full	4.0x40	17,01	3,58	2,74	2,40	1,00	-	-	-	-	-	-	-	-	-	-	-	-			
							4.0x60	21,28	3,58	2,74	3,56	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-		
					3	Partial	4.0x40	5,67	3,58	2,74	0,79	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
							4.0x60	7,09	3,58	2,74	1,14	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
110135L	135	88	65	4,0	14	Full	4.0x40	26,46	3,58	2,74	3,84	1,00	-	-	-	-	-	-	-	-	-	-	-	-			
							4.0x60	33,1	3,58	2,74	5,62	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-		
					6	Partial	4.0x40	11,34	3,58	2,74	1,71	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
							4.0x60	14,18	3,58	2,74	2,50	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
110285L	285	88	65	4,0	14	Full	4.0x40	26,46	3,58	2,74	4,08	1,00	-	-	-	-	-	-	-	-	-	-	-	-			
							4.0x60	33,10	3,58	2,74	5,88	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					10	Partial	4.0x40	18,90	3,58	2,74	3,08	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							4.0x60	23,64	3,58	2,74	4,67	1,00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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,v,k} F_{1,ax,k} F_{2/3,v,k} halved.

ANGLE BRACKETS

KR ROUND HOLE 3.0 GREENLINE



Art. No.	Dimensions [mm]						H _{nN}	H _{nBo}	L _{nN}	L _{nBo}	L _{nBo}	EAN	Weight kg	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 13,5	Ø 5	Ø 13,5	Ø 11	4019346				
1100953	95	x	88	x	65	x	3,0	11	-	2	1	1	110966	0.245	1200	25	■
1101353	135	x	88	x	65	x	3,0	16	1	2	1	1	110973	0.308	1200	25	■
1102853	285	x	88	x	65	x	3,0	28	3	2	1	1	110980	0.534	600	25	■



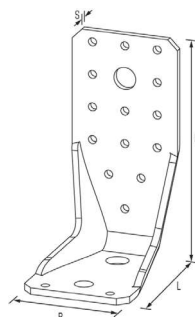
GREENLINE

GREENLINE KR brackets in 3 mm are statically almost identical to the KR brackets in 4 mm.

KR brackets in 3 and 4 mm with round hole or slotted hole are used for connections between wood/wood; wood/concrete; wood/steel and wood/masonry. Due to the ribs in the bending radius, KR connectors are extremely sturdy and can be used cost-effectively for high loads. These properties are primarily required for connections to columns, sleepers, timber trusses and beams. The 4 mm KR brackets are subsequently galvanised.

ANGLE BRACKETS

KR ROUND HOLE 4.0



Art. No.	Dimensions [mm]						H _{nN}	H _{nBo}	L _{nN}	L _{nBo}	L _{nBo}	EAN	Weight kg	Pallet	PU		
	H	x	L	x	W(B)	x	T(S)	Ø 5	Ø 13,5	Ø 5	Ø 13,5	Ø 11	4019346				
110095	95	x	88	x	65	x	4,0	11	-	2	1	1	110904	0.319	1200	25	■
110135	135	x	88	x	65	x	4,0	16	1	2	1	1	110928	0.398	1200	25	■
110285	285	x	88	x	65	x	4,0	28	3	2	1	1	110942	0.722	600	25	■

KR ROUND HOLE 3.0

Timber														Concrete										
Art.-Nr.	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}
1100953	95	88	65	3,0	9	Full	4.0x40	17,01	7,32	1,62	3,11	1,00	-	7,43	1,00	1,00	2,27	4,23	1,00	0,38	14,63	14,64	1,00	0,81
							4.0x60	21,28	7,32	1,62	3,98	1,00	-	7,43	1,00	1,00	3,79	4,23	1,00	0,38	27,00	14,63	1,00	0,81
					3	Partial	4.0x40	5,67	7,32	1,62	0,98	1,00	-	7,43	1,00	1,00	0,15	0,36	1,00	0,38	4,87	14,64	1,00	0,81
							4.0x60	7,09	7,32	1,62	1,31	1,00	-	7,43	1,00	1,00	0,25	0,36	1,00	0,38	7,60	14,64	1,00	0,81
1101353	135	88	65	3,0	14	Full	4.0x40	26,46	7,32	1,62	4,92	1,00	-	7,43	1,00	1,00	2,47	3,49	1,00	0,38	25,20	14,63	1,00	0,81
							4.0x60	33,10	7,32	1,62	6,38	1,00	-	7,43	1,00	1,00	4,12	3,49	1,00	0,38	42,00	14,63	1,00	0,81
					6	Partial	4.0x40	11,34	7,32	1,62	2,19	1,00	-	7,43	1,00	1,00	0,22	0,36	1,00	0,38	9,75	14,64	1,00	0,81
							4.0x60	14,18	7,32	1,62	2,80	1,00	-	7,43	1,00	1,00	0,37	0,36	1,00	0,38	15,78	14,63	1,00	0,81
1102853	285	88	65	3,0	14	Full	4.0x40	26,46	7,32	1,62	4,95	1,00	-	7,43	1,00	1,00	1,22	4,21	1,00	0,38	25,20	14,63	1,00	0,81
							4.0x60	33,10	7,32	1,62	6,50	1,00	-	7,43	1,00	1,00	2,04	4,21	1,00	0,38	42,00	14,63	1,00	0,81
					10	Partial	4.0x40	18,90	7,32	1,62	4,20	1,00	-	7,43	1,00	1,00	1,22	4,21	1,00	0,38	18,00	14,63	1,00	0,81
							4.0x60	23,64	7,32	1,62	5,95	1,00	-	7,43	1,00	1,00	2,04	4,21	1,00	0,38	30,00	14,63	1,00	0,81

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 $F_{1,v,k}$, $F_{1,0,k}$, $F_{2/3,v,k}$ halved.

KR ROUND HOLE 4.0

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}
110095	95	88	65	4,0	9	Full	4.0x40	17,01	9,96	1,62	3,11	1,00	-	10,12	1,00	1,00	2,27	5,76	1,00	0,38	14,63	19,92	1,00	0,81
							4.0x60	21,28	9,96	1,62	3,98	1,00	-	10,12	1,00	1,00	3,79	5,76	1,00	0,38	26,09	19,92	1,00	0,81
					3	Partial	4.0x40	5,67	9,96	1,62	0,98	1,00	-	10,12	1,00	1,00	0,15	0,49	1,00	0,38	4,87	19,92	1,00	0,81
							4.0x60	7,09	9,96	1,62	1,31	1,00	-	10,12	1,00	1,00	0,25	0,49	1,00	0,38	7,60	19,92	1,00	0,81
110135	135	88	65	4,0	14	Full	4.0x40	26,46	9,96	1,62	4,92	1,00	-	10,12	1,00	1,00	2,47	4,75	1,00	0,38	25,20	19,92	1,00	0,81
							4.0x60	33,10	9,96	1,62	6,38	1,00	-	10,12	1,00	1,00	4,12	4,75	1,00	0,38	42,00	19,92	1,00	0,81
					6	Partial	4.0x40	11,34	9,96	1,62	2,19	1,00	-	10,12	1,00	1,00	0,22	0,49	1,00	0,38	9,75	19,92	1,00	0,81
							4.0x60	14,18	9,96	1,62	2,80	1,00	-	10,12	1,00	1,00	0,37	0,49	1,00	0,38	15,2	19,92	1,00	0,81
110285	285	88	65	4,0	14	Full	4.0x40	26,46	9,96	1,62	4,95	1,00	-	10,12	1,00	1,00	1,22	5,73	1,00	0,38	25,2	19,92	1,00	0,81
							4.0x60	33,10	9,96	1,62	6,50	1,00	-	10,12	1,00	1,00	2,04	5,73	1,00	0,38	42,00	19,92	1,00	0,81
					10	Partial	4.0x40	18,90	9,96	1,62	4,20	1,00	-	10,12	1,00	1,00	1,22	5,73	1,00	0,38	16,25	19,92	1,00	0,81
							4.0x60	23,64	9,96	1,62	5,95	1,00	-	10,12	1,00	1,00	2,04	5,73	1,00	0,38	30,00	19,92	1,00	0,81

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 $F_{1,v,k}$, $F_{1,0,k}$, $F_{2/3,v,k}$ halved.