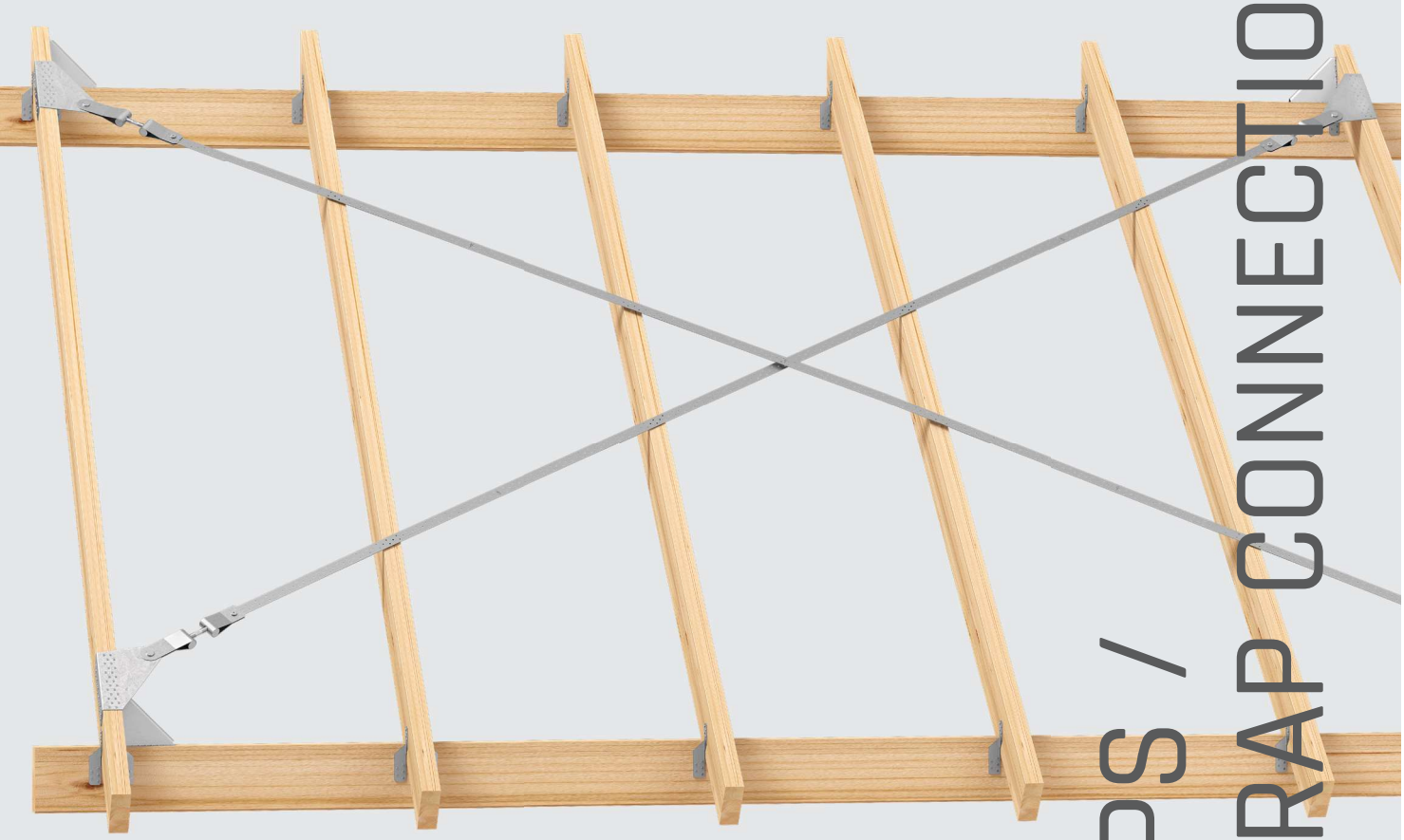

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BRACING STRIPS / ROLLED TIE STRAP CONNECTIONS

10

TOPLINE GREENLINE

BRACING STRIPS / ROLLED TIE STRAP CONNECTIONS

BRACING STRIP TYPE Z

- Metre marking [1]
- Galvanised edges [2]
- 25% less weight [3]
- Higher tensile strength
- CE [4]

[1] Metre marking
GH TOP bracing strips in 40 and 60 sizes in 50 m length have a metre marking from 1 to 50 metres. This eliminates the tedious measuring of the bracing strips and it is always possible to see how many metres are left on the roll, which minimises unnecessary storage costs for opened rolls.

[2] Galvanised edges
We also have the possibility to supply bracing strips in size 40 or 60 in a length of 50 metres with galvanised edges.

[3] 25% less weight
In comparison to the standard bracing strip in 2 mm thickness, we have 25% reduction in weight.
This makes work on the building site easier as well as in stocking and commissioning.

[4] CE
GH bracing strips are EN 14595 CE-certified.

Basics of statics **from page 264**
Products & statics **from page 266**

ROLLED STRAP TIES

- For optimum introduction of the load into the roof or timber construction

Products **from page 270**

BRACING STRIPS / ROLLED STRAP TIES

ASSORTMENT

								Basics Statics from page	Products & Statics from page
BRACING STRIP TYPE Z	GREENLINE		CE	350 GD Z275	NKL 2			264	266
BRACING STRIP 3.0 MM			CE	250 GD Z275	NKL 2			264	268
MOUNTING STRIP IN PLASTIC BOX				250 GD Z275	NKL 2				268
ROLLED STRAP TIES	TOPLINE			250 GD Z275	NKL 2				270

10

CE symbol

Steel with indication of the steel quality and galvanisation

Timber/timber connection

Timber/concrete-connection

Usage class 1
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 65% for a few weeks per year, e.g. in the case of buildings that are closed on all sides and heated.
Comment: In UC 1, the average moisture content of most softwoods does not exceed 12 %.

Usage class 2
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 85% for a few weeks per year, e.g. in the case of open buildings covered by a roof.
Comment: In UC 2, the average moisture content of most softwoods does not exceed 20 %.

Usage class 3
Includes climatic conditions that lead to higher moisture contents than in UC 2, e.g. structures that are exposed to the weather without protection. Eurocode 5 / DIN EN 1995-1-1 section 2.3.1.3

INSERT WIND BRACING STRIP

TECHNICAL FEATURES

Geometry

W(B)	Width [mm]
L	Length [mm]
T(S)	Material thickness [mm]

Tables

VM	Connecting element Ø x length [mm]
$R_{1,k}$	Characteristic load capacity VM [kN]
$R_{1,d}$	Design value of load capacity VM [kN]
$R_{t,k}$ [kN]	Characteristic tension load capacity [kN]
$R_{t,d}$ [kN]	Design value of tension load capacity

Load directions

F_1 →	Tensile load

Timber connecting element

GH threaded nails ETA-13/0523 Ø 4.0xL [mm]
GH wood connector screws ETA-13/0523 Ø 5.0xL [mm]

10

350 GD Z275 **Steel with indication of the steel quality and galvanisation**

Timber/timber connection

Timber/concrete-connection

NKL 1 **Usage class 1**
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 65% for a few weeks per year, e.g. in the case of buildings that are closed on all sides and heated.
Comment: In UC 1, the average moisture content of most softwoods does not exceed 12 %.

NKL 2 **Usage class 2**
Moisture content in the building materials that corresponds to a temperature of 20° C and a relative humidity of the ambient air that only exceeds a value of 85% for a few weeks per year, e.g. in the case of open buildings covered by a roof.
Comment: In UC 2, the average moisture content of most softwoods does not exceed 20 %.

NKL 3 **Usage class 3**
Includes climatic conditions that lead to higher moisture contents than in UC 2, e.g. structures that are exposed to the weather without protection. Eurocode 5 / DIN EN 1995-1-1 section 2.3.1.3

INSERT WIND BRACING STRIP

APPLICATIONS

Application:
Bracing strips are used to diagonally brace roof and wall constructions.

Materials:

350 GD Z275

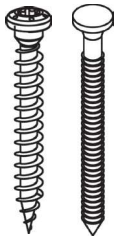
250* GD Z275

Material thicknesses:
1.5 and *3.0 mm

For use in usage classes

NKL 1

NKL 2



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

Connecting elements from page 274

Minimum and edge spacing

		Force parallel to the grain	Force at a right angle to the grain	Angle	
a_1	in grain direction	10d	5d	$0° \le \alpha \le 360°$	$(5+5\cos\alpha)d$
a_2	Right angle to the grain direction	5d	5d	$0° \le \alpha \le 360°$	5d
$a_{3,t}$	End grain with stress	15d	10d	$-90° \le \alpha \le 90°$	$(10+5\cos\alpha)d$
$a_{3,c}$	End grain without stress	10d	10d	$90° \le \alpha \le 270°$	10d
$a_{4,t}$	Loaded edge	5d	7d	$0° \le \alpha \le 180°$	$(5+2\sin\alpha)d$
$a_{4,c}$	Unloaded edge	5d	5d	$180° \le \alpha \le 360°$	5d
See EN 1995-1-1 Tab.8.2 for more brackets between force and grain					

Minimum spacing according to EN 1995-1-1 for threaded nails and wood connector screws

General information
In the standardised application of roof reinforcement, the number of nails under compliance with the edge and axis spacing at the end points is decisive in accordance with Eurocode 5. By using GH connection plates page 271 and the corresponding connectors, more nails can be used and therefore higher load capacities achieved.

For a one-sided load on connection points, these must be protected against twisting, such as with GH cantilever brackets from **page 246** In case of higher loads, several bracing strips can be arranged next to each other.

For tensioning the bracing strip, the bracing strip tensioner art. no. 33000117, **page 371**, or the bracing strip tensioner with thread, art. no 33000121, **page 371**, for the GH joist tensioner must be used.

Design tables
The tables contain characteristic load capacities in kN. The load capacities of the connecting elements have been determined on the basis of ETA-13/0523 for GH connecting elements.


METRE MARKING
01
CE

TOP BRACING STRIP

"METRE MARK 1 - 50 METRES"

ADVANTAGES

- With CE symbol
- With optional galvanised edges
- Metre marking of 1 - 50 metres (size 40 and 60 in 50 m length)
- Installation without metre dimension
- Easier work due to low weight
- 25% less weight (freight cost savings)
- Easy unwinding and bracing
- Suitable for existing unrolling and tensioning systems

GREENLINE TOPLINE

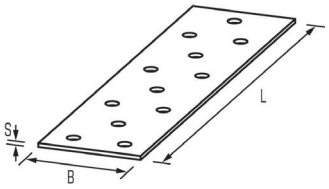
APPLICATION

Bracing strips are for diagonal bracing of roof constructions.

The bracing strip can be attached directly to the top or bottom of the rafter. The narrow thickness prevents any obstruction to the fastening of the roof battens, plasterboard, formwork or the like. At least 2 GH threaded nails 4.0 x 40 are necessary at each crosspoint with the timber construction.

If one bracing strip is not enough due to static reasons, 2 or more bracing strips can be arranged next to each other.

BRACING STRIP



TOPLINE GREENLINE EN 14545

NKL 2 350 GD Z275

Art. No.	Dimensions [mm]					EAN	Weight	Pallet	PU		
	W(B)	x	L	x	T(S)	4019346	kg				
4215	40	x	25000	x	1,5	017852	10.296	30	1	■	
4515* **	40	x	50000	x	1,5	140055	20.100	30	1	■	
6515* **	60	x	50000	x	1,5	140062	30.150	20	1	■	
8215	80	x	25000	x	1,5	140079	20.100	10	1	■	
453	40	x	50000	x	3,0	140017	40.500	10	1	■	

* With metre marking

** With optional galvanised edges

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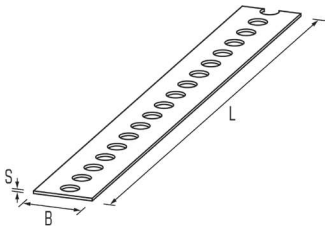
ASSEMBLY STRIP

IN PLASTIC BOX



NKL 2 250 GD Z275

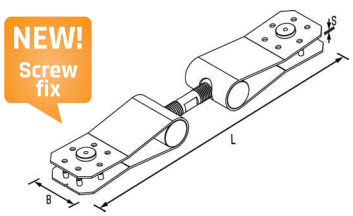
Art. No.	Dimensions [mm]						EAN	Weight	Pallet	PU		
	W(B)	x	L	x	T(S)	Ø	4019346	kg				
1101275	12	x	10000	x	0,75	5,2	046500	0.674	360	5	■	■
1101775	17	x	10000	x	0,75	6,5	046517	0.942	360	5	■	■
1102575	25	x	10000	x	0,75	8,5	046524	1.371	360	5	■	■

The assembly strip is suitable for fixing to timber and concrete/masonry

Art. No.	W(B)	L	T(S)		F1,Rt,k	F1,Rt,d
				Timber / Timber		
4215	40	25000	1,5		17,00	13,60
4515	40	50000	1,5		17,00	13,60
6515	60	50000	1,5		25,50	20,40
8215	80	25000	1,5		34,00	27,20
453	40	50000	3,0		26,70	21,40

Load capacity per GH threaded nail

	T(S)=1.5				T(S)=3.0			
	character.	Constant	Medium	Short	character.	Constant	Medium	Short
VM [mm]	$R_{1,k}$ [kN]	$R_{1,d}$ [kN]			$R_{1,k}$ [kN]	$R_{1,d}$ [kN]		
4.0 x 40	1,890	0,872	1,163	1,308	1,852	0,855	1,140	1,282
4.0 x 50	2,214	1,022	1,362	1,533	2,214	1,022	1,362	1,533
4.0 x 60	2,364	1,091	1,455	1,637	2,364	1,091	1,455	1,637
4.0 x 75	2,514	1,160	1,547	1,740	2,514	1,160	1,547	1,740



TOPLINE

NKL 2

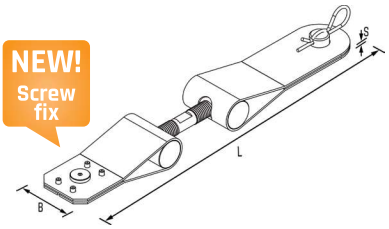
250 GD Z275

ROLLED STRAP TIE SYSTEM

SCREW FIX TENSIONER FOR BRACING STRIP

Art. No.	Type	Dimensions [mm]					nN	Thread	EAN	Weight	Pallet	PU
		W(B)	x	L	x	T(S)	Ø 5		4019346	kg		
110814	S40	40	x	300 bis 350	x	2,0	5+5	M12/SW10	025505	0.700	240	4
110816	S60	60	x	300 bis 375	x	2,0	7+7	M16/SW12	025512	1.325	240	4
110818	S80	80	x	300 bis 375	x	2,0	11+11	M16/SW12	025529	1.779	240	4

Incl. knurled nuts



TOPLINE

NKL 2

250 GD Z275

ROLLED STRAP TIE SYSTEM

SCREW FIX TENSIONER FOR CONNECTION PLATES

Art. No.	Type	Dimensions [mm]					nN	Thread	EAN	Weight	Pallet	PU
		W(B)	x	L	x	T(S)	Ø 5		4019346	kg		
1108211	SK40/60	60	x	300-350	x	2,0	5	M16/SW12	025567	1.597	192	4

For bracing strip 40 x 1.5/2.0 mm and 60 x 1.5/2.0 mm I incl. knurled nuts/bolts/spring plugs

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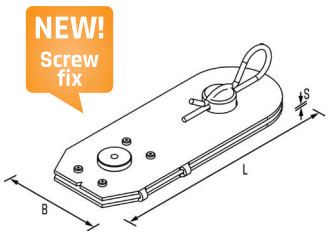


TOPLINE

NKL 2

250 GD Z275

ROLLED STRAP TIE SYSTEM

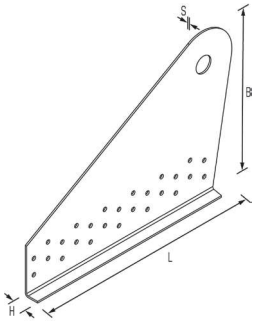
SCREW FIX COMBI CONNECTORS FOR CONNECTION PLATES

Art. No.	Type	Dimensions [mm]					nN	Thread	EAN	Weight	Pallet	PU
		W(B)	x	L	x	T(S)	Ø 5		4019346	kg		
1108201	KK40/60	60	x	157	x	2	5	-	025550	0.364	192	4

For bracing strip 40 x 1.5/2.0 mm and 60 x 1.5/2.0 mm I incl. knurled nuts/bolts/spring plugs

250 GD Z275

NKL 2



ROLLED STRAP TIE SYSTEM

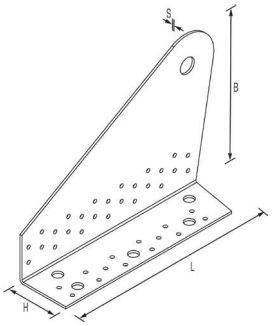
CONNECTION PLATE

Art. No.	Type	Dimensions [mm]							n	EAN	Weight	Pallet	*PU		
		W(B)	x	L	x	H	x	T(S)	Ø 21	4019346	kg		PAAR		
110931	A40	198	x	289	x	15	x	2,0	1,00	025451	1.368	48	1	■	

*1 x left / 1 x right

250 GD Z275

NKL 2



ROLLED STRAP TIE SYSTEM

CONNECTION PLATE

Art. No.	Type	Dimensions [mm]							n	EAN	Weight	Pallet	*PU		
		W(B)	x	L	x	H	x	T(S)	Ø 21	4019346	kg		PAAR		
110932	A60	198	x	289	x	63	x	3,0	1,00	025468	2.557	48	1	■	■

*1 x left / 1 x right

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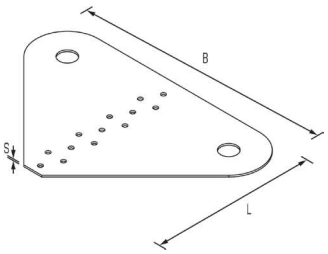
250 GD Z275

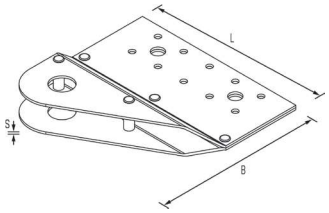
NKL 2



ROLLED STRAP TIE SYSTEM

CONNECTION PLATE

Art. No.	Type	Dimensions [mm]							n	EAN	Weight	Pallet	PU		
		W(B)	x	L	x	H	x	T(S)	Ø 21	4019346	kg				
110933	A40/60	190	x	290	x	2	x	2,0	2	025475	0.575	240	10	■	



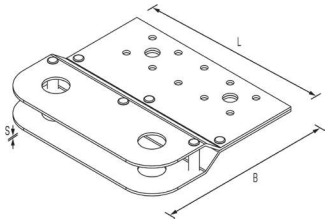
NKL 2

250 GD Z275

ROLLED STRAP TIE SYSTEM

CONNECTION

Art. No.	Type	Dimensions [mm]					n	EAN	Weight	Pallet	PU		
		W(B)	x	L	x	T(S)	Ø 17	4019346	kg				
110934	B1	216	x	238	x	3	2	025482	2.125	96	4	■	



NKL 2

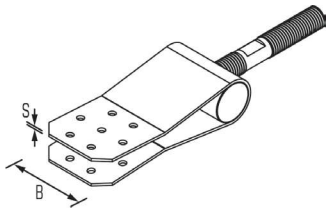
250 GD Z275

ROLLED STRAP TIE SYSTEM

CONNECTION

Art. No.	Type	Dimensions [mm]					n	EAN	Weight	Pallet	PU		
		W(B)	x	L	x	T(S)	Ø 17	4019346	kg				
110935	B2	216	x	238	x	3	2	025499	2.700	96	4	■	

The rolled strap tie is used in the system as a static construction element for roofs and halls, to absorb or dissipate wind and suction loads. The GH tensioning units and GH connection plates are suitable for rolled strap ties with material thicknesses 1.5/2.0 and 3.0 mm.



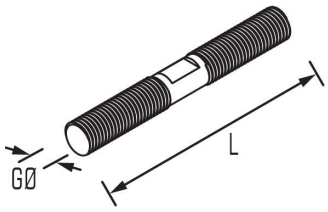
250 GD Z275

NKL 2

ROLLED STRAP TIE SYSTEM

CONNECTION

Art. No.	Type	Dimensions [mm]		nN	GØ	EAN	Weight	Pallet	PU		
		W(B)	T(S)	Ø 5		4019346	kg				
110940	B1/B2	40	2	7	16	026106	0.813	384	8	■	



250 GD Z275

NKL 2

ROLLED STRAP TIE SYSTEM

CONNECTION

Art. No.	Type	Dimensions [mm]	GØ	EAN	Weight	Pallet	PU		
		L		4019346	kg				
110941	Thread left+right	150	16	026113	0.550	560	8	■	

For connections to type B1 and B2 with threaded rods M16