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TOPLINE GREENLINE KONSTRULINE DCSTATIK ETA-08 0264

JOIST HANGERS

JOIST HANGERS BS TOP, TOP M, TOP K

Modern wave profile

Assembly mandrel - your third hand during assembly
- Time-saving quick assembly thanks to an independent hold for further processing
- Easier assembly e.g. for overhead installation

Ring marking at the nail holes for fast and professional partial nail fitting (40 % fewer nails)

Corrugations
The corrugations give the joist hangers additional stability for the highest demands (also 2-axis load)
Approved transverse installation

Connections according to the approval to:
- Timber/timber
- Intermediate layer such as OSB
- Timber boards such as OSB
- Timber/concrete, timber/steel

SPECIALLY FOR TYPE TOP M

Assembly aid
- Always flush and at a right-angle to the main beam
- By pushing in place onceonly, immeditate and dimensionally stable joist hanger position
- Millimetre-precise assembly on the scrible line for different timber cross-sections

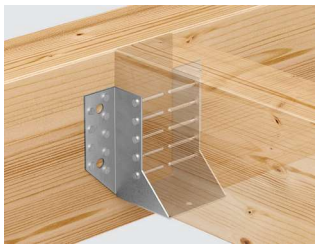
ESPECIALLY FOR TOP K

- Same performance features and dimensions as BS TOP
- Installation depth of just 50 mm
- Specially for concealed installation in the installation level in timber frame construction
- No limitations in load capacity
- Approved connection to timber boards including in the centre of timber frames

JOIST HANGER TYPE 04 COMBI 1.5 + 2.0

Standard joist hanger
Connections according to the approval to:
- Timber/timber
- Over the intermediate layer, such as OSB
- Only to timber boards such as OSB
- Timber/concrete, timber/steel






JOIST HANGER TYPE 05 EXTRA STARK

Konstruline series
- Very strong and clean connection
- Approved for 2-axis load with exterior legs

Connections according to the approval to:
- Timber/timber
- Timber/concrete
- Timber/masonry
- Timber/steel

JOIST HANGERS INSIDE

- Ideal for connection to columns
- Available as type 04 and type 05

Connections according to the approval to:
- Timber/timber
- Timber/concrete
- Timber/masonry
- Timber/steel

JOIST HANGERS CUSTOMISATIONS

We can produce customised sizes with quick turnaround times according to your specifications

CATALOGUE PAGES

Basics of statics & diagrams **From page 21**
Products & statics **From page 30**

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JOIST HANGERS

TECHNICAL FEATURES

Geometry

W (B)	Width (mm)
H	Height (mm)
T (S)	Material thickness (mm)

Tables

nH	Number of holes in main beam
nN	Number of holes in secondary beam
n_H	Number of holes in main beam
n_N	Number of holes in secondary beam
n_v	Full nail fitting
n_T	Partial nail fitting
HT_H	Main beam height
HT_B	Main beam width
NT_H	Secondary beam height
NT_B	Secondary beam width
h_e	Spacing between top of main beam and top connecting element

Connecting element concrete/ steel

n	Number of dowels/bolts
$F_{ax,Ek}$	Characteristic axial load per bolt
$F_{v,Ek}$	Characteristic shearing load per bolt

Design

F_{Rd}	Design value of load capacity
F_{Rk}	Characteristic value of load capacity
K_{mod}	Modification factor
γ_M	Partial safety factor

Load directions

$F_{1,k}$ ↓	Load direction baseplate
$F_{1,k}$ ↑	Load away from baseplate
$F_{2,k}$ ↙	Load vertical to symmetry axis (2-axis)

Timber connecting element

ø (mm)	Diameter
L (mm)	Length
⟵⟶	Grain course

Dowel design

$F_{ax,n,Bo,ED}$	Design load for the stress on a bolt if the joist hanger is fixed with n bolts.
$F_{ax,n=1,Bo,ED}$	Design value of the load acting on a bolt when the joist hanger is fixed with a pair of bolts.
Z_{max}	Spacing of top bolt pair from the lower edge
Z_i	Spacing of xth bolt pair from the lower edge
n	Spacing of used bolt pair
n_j	Number of nails in secondary beam
E_d	Design value of stress
R_d	Design value of load capacity

CE symbol

Steel with indication of the steel quality and galvanisation

Stainless steel with material number

Timber/timber connection

Timber/concrete-connection

Timber/OSB-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 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 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

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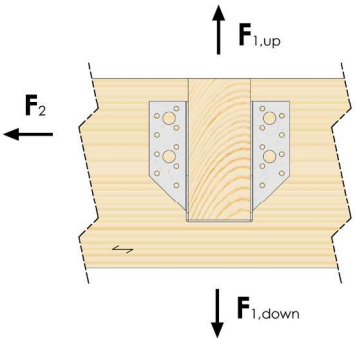
JOIST HANGERS

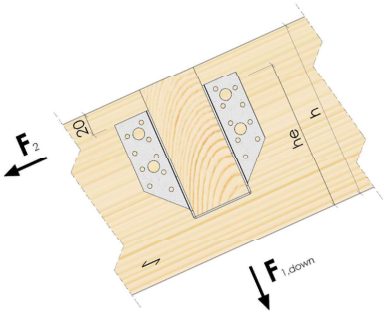
LOAD DIRECTIONS



Two-axis stress

If the load components FZ and FY act simultaneously, the proof of interaction must also be provided in the following form:

$$\left(\frac{F_{Z,Ed}}{F_{Z,Rd}}\right)^2 + \left(\frac{F_{Y,Ed}}{F_{Y,Rd}}\right)^2 \leq 1$$

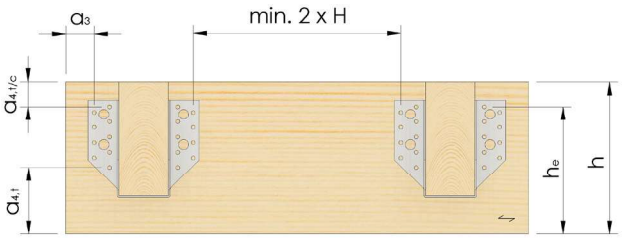


Connection over intermediate layers

If there is an intermediate layer between the joist hangers and the main beam, the length of the connecting centre must be selected so that the fastener is anchored to the main beam at the lengths given above.

Minimum and edge spacing

The regulations according to EN1995-1-1 apply for edge spacing parallel and vertical to the grain. In accordance with DIN 1052:2008-12 it is recommended that the clear distance between the outer connecting element groups of two joist hangers corresponds to 2 times the main beam height. If this is not achieved, the load capacity should be reduced.



		GH threaded nails Ø 4 mm	GH screws Ø 5 mm
$a_{3,t}$	End grain with stress	60 mm	75 mm
$a_{3,c}$	End grain without stress	40 mm	50 mm
$a_{4,t}$	Loaded edge	28 mm	50 mm
$a_{4,c}$	Unloaded edge	20 mm	25 mm

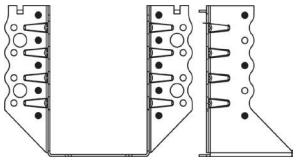
Minimum spacing according to EN 1996-1-1, without pilot drilling, $\rho_k \leq 420$ kg/m³

JOIST HANGERS

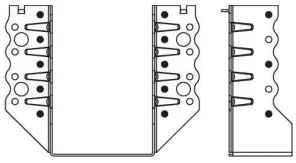
HOLE PATTERNS

Timber/timber connection
Partial and full nail fitting or partial and full screw fitting

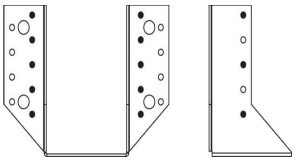
Type Top M / TOP



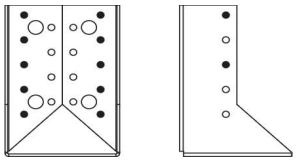
Type TOPK



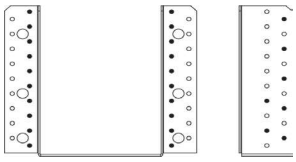
Type 04 1,5 + 2,0



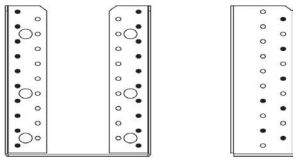
Type 04 I 1,5 + 2,0



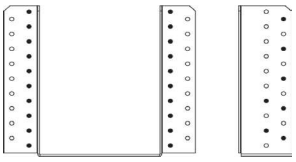
Type 05/2,5 Combi



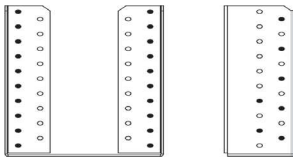
Type 05/2,5 I Combi



Type 05/2,0



Type 05/2,0 I



- **Partial nail fitting/partial screw fitting**

General information on design
The main beam must be mounted torsionally rigid. In the case of a one-sided joist hanger connection or a difference in opposing support forces of more than 20 %, proof of torsion is required (also for connections to concrete or masonry). These support forces on the main beam each generate an offset moment (torsion) of :

$$M_{ec} = F_{Z,E} \cdot \left(\frac{b_{header}}{2} + e_{J,0} \right)$$

b_{header} Width of the main beam

$e_{J,0}$ Spacing of the centre of gravity of the nail pattern in the secondary beam from the shear surface

Proof of the cross-tensile failure in the main and/or secondary beam must be provided separately. For cross-connections with $h_e/h > 0.7$, proof is not required.

For the load-bearing capacity of load component F2, it is assumed in the table values that the position of the line of action is 20 mm below the upper edge of the joist hangers. As the spacing between the line of action of the load and the centre of gravity of the connection on the main beam increases, the load-bearing capacity decreases.

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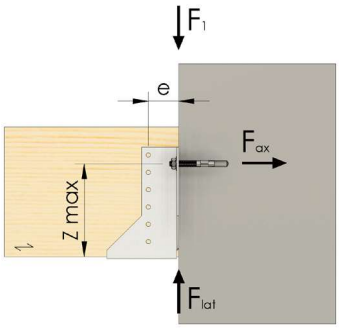
JOIST HANGER CONNECTIONS

MASONRY, CONCRETE, STEEL



The indicated load capacities result for fixing with a dowel, bolt or concrete anchor pair.

If fastening is done with several pairs of dowels, bolts or concrete anchors,the load capacity of the joist hanger and the stress on each dowel, bolt or concrete anchor can be converted.

Example

Load capacity: $F_{Z,down,Ed}$= 30 kN min., k_{mod} = 0.8 (KLED medium)

Joist hanger: Combi 05 160x200x2,5
Full nail fitting
4 dowels/bolts

Threaded nails: 4,0x60 according to ETA-13/0523 $F_{v,Rd}$= 1.45 kN

A quick explanation!

Design tables

The load capacities listed in the tables were determined assuming usage classes 1 and 2. The shear and axial load-bearing capacities of the nails and screws were determined using material grade C24 or GL24c.

The strength parameters for OSB/3 were taken into account for fastening to timber materials.
The tables contain characteristic load capacities.

For design values, the following apply: $F_{Rd} = \frac{k_{mod} \cdot F_{Rk}}{\gamma_M}$

KLED	Constant	Long	Medium	Short	Very briefly	Short/very short
kmod	0.6	0.7	0.8	0.9	1.1	1

With the assumption γ_M =1.3 (e.g. softwood, plywood, laminated veneer wood, etc.)

KLED	Constant	Long	Medium	Short	Very briefly	Short/very short
k_{mod} / g_M	0.46	0.54	0.62	0.69	0.85	0.77

The following conversion factors result for the load duration classes defined in DIN EN 1995-1-1/NA (k_{mod} / γ_M):
For usage class 3, the load-bearing capacities are determined separately, taking into account the material-specific parameters.

Design example

The following proof must be kept:

The following proof must be kept:
$F_{Z,Rd,NT} = (n_J+2) \times F_{v,J,Rd}$
$F_{Z,Rd,NT} = (22 + 2) \times 1{,}45 = \underline{34{,}8\ kN} > OK$

Main beam load capacity:
$F_{Z,Rd,HT} = n_{bolt} / 2 \times F_{1,RK,Stahl} / \gamma_{M2}$
$F_{Z,Rd,HT} = 4 / 2 \times 19.8 / 1.25 = \underline{31{,}7\ kN} > Ok$

Lateral stress of a dowel/bolt:
$F_{lat,bolt} = F/n_{bolt}$
$F_{lat,bolt} = 30\ kN / 4 = \underline{7{,}5\ kN}$

Axial stress that affect the top dowel, bolt or concrete anchor:
$F_{ax,bolt} = \frac{F \times e}{2 \times z_{max}}$ $F_{ax,bolt} = 30\ kN \times (44{,}4) / (2 \times (162)) = \underline{4{,}11\ kN}$ (with e_j aus ETA-08/0264 table C4)

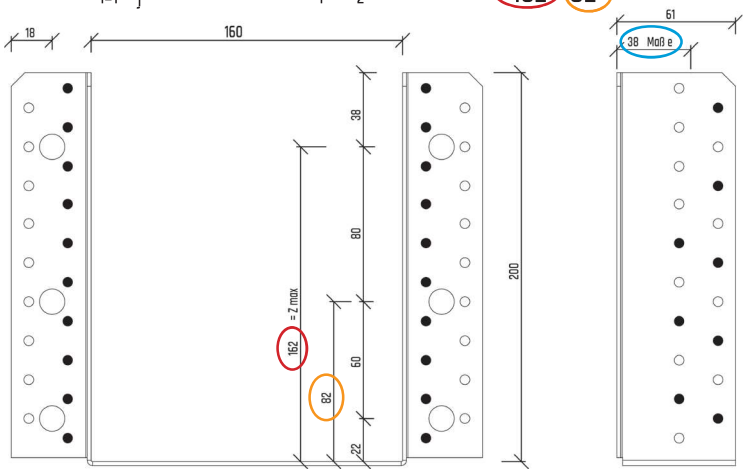
Table C4 (contd.): Joist hanger type 05 combi with external flanges
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{j,0}$

W [mm]	H [mm]	nH	nj	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]	$e_{j,0}$ [mm]	nH	nj	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]	$e_{j,0}$ [mm]
160	200	38	22	54	52.2	5917	4631	44.4	20	12	26.9	26.1	2739	2595	48

			Timber / Timber								Timber / Concrete											
			Full nail fitting [kN]								Partial nail fitting [kN]								Dowels/bolts			
			GH 4.0x40					GH 4.0x60			GH 4.0x40				GH 4.0x60				Ø13	1 pair of dowels		
W	H	T	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{3,k}$ ←	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{3,k}$ ←	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{3,k}$ ←	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{3,k}$ ←	n_H	F_{1K} ↓	$F_{V,EK}$ ↓	$F_{ax,Ek}$ ←
160	200	2.5	38	(22)	40.1	39.2	15.3	-	56.7	52.0	22.4	-	20	12	20.3	19.9	8.4	-	30.7	28.4	12.3	-	6	19.8	9.9	2.9

If fastening is done with several pairs of dowels, bolts or concrete anchors, the axial stress on each dowel, bolt or concrete anchor can be converted as follows:

$$F_{ax,n,Bo,Ed} = \frac{z^2_{max}}{\Sigma_{i=1}^{n} z_j^2} \cdot F_{ax,n=1Bo,Ed} = \frac{z^2_{max}}{\Sigma z_1^2 + z_2^2} \cdot F_{ax,1,Bo,Ed} = \frac{(162)^2}{(162)^2 + (82)^2} \cdot (4{,}11) = \underline{3{,}27\ kN}$$



$F_{ax,n,Bo,Ed}$	Design value of the load acting on a dowel, bolt or concrete anchor when the joist hangers are fixed with with n pairs of dowels, bolts or concrete anchors.
$F_{ax,n=1,Bo,Ed}$	Design value of the load acting on a dowel, bolt or concrete anchor when the joist hangers are fixed with with n pairs of dowels, bolts or concrete anchors (table value).
z_{max}	Spacing of the top pair of dowels, bolts or concrete anchors from the lower edge of the joist hangers minus 10 mm.
z_i	Spacing of the x^{th} pair of dowels, bolts or concrete anchors from the lower edge of the joist hangers minus 10 mm.
n	Number of dowels, bolts or concrete anchor pairs with which the joist hanger is fixed.
n_J	Number of nails in secondary beam
E_d	Design value of stress
R_d	Design value of load capacity

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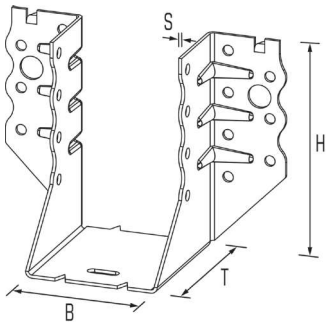
JOIST HANGER

TYPE TOP M



TOPLINE GREENLINE DCSTATIK ETA-08 0264

NKL 2 250 GD Z275

Art. No.	Dimensions [mm]							nH	nN	nH	EAN	Weight	Pallet	PU			
	W(B)	x	H	x	D(T)	x	T(S)	Ø 5	Ø5	Ø 11	4019346	kg					
30601TOPM	40	x	110	x	70	x	1,5	14	8	2	122495	0.187	1200	50	■	■	■
■ 30502TOPM	60	x	100	x	70	x	1,5	14	8	2	122501	0.187	1200	50	■	■	■
30609TOPM	60	x	130	x	70	x	1,5	18	10	4	122587	0.231	1200	50	■	■	■
30611TOPM	70	x	125	x	70	x	1,5	18	10	4	122600	0.231	1200	50	■	■	■
■ 30505TOPM	80	x	120	x	70	x	1,5	18	10	4	122518	0.231	1200	50	■	■	■
30620TOPM	80	x	150	x	70	x	1,5	22	12	4	122631	0.274	1200	50	■	■	■
■ 30508TOPM	100	x	140	x	70	x	1,5	22	12	4	122525	0.274	1200	50	■	■	■
30628TOPM	100	x	170	x	70	x	1,5	26	14	4	122662	0.317	1200	50	■	■	■
■ 30511TOPM	120	x	160	x	70	x	1,5	26	14	4	122532	0.317	1200	50	■	■	■

■ Standard dimensions

Further dimensions available on request

TYPE TOP M

Art. No				Timber / Timber															Timber / OSB								Timber / Concrete			
				Full nail fitting									Partial nail fitting						Full screw fitting				Partial screw fitting							
						GH 4.0x40			GH 4.0x60					GH 4.0x40			GH 4.0x60			GH 5.0x25				GH 5.0x25				Ø11	1 pair of dowels		
	W	H	T	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{2,k}$ ↙	n_H	$F_{1,k}$ ↓	$F_{v,Ek}$ ↓	$F_{ax,Ek}$ ←
30601TOPM	40	110	1,5	14	8	11,3	5,5	2,1	-	-	-	8	4	8,8	3,4	1,9	-	-	-	14	8	1,4	1,0	8	4	1,4	1,0	2	9,9	5,0	1,9
30502TOPM	60	100	1,5	14	8	13,2	5,8	2,3	14,2	9,5	3,5	8	4	7,7	3,8	2,5	11,8	6,1	3,5	14	8	2,9	2,3	8	4	1,4	1,4	2	9,9	5,0	2,2
30609TOPM	60	130	1,5	18	10	21,2	9,9	5,8	16,5	11,8	4,0	10	5	11,9	5,8	2,9	16,5	9,3	4,0	18	10	4,4	3,1	10	5	2,2	1,5	4	9,9	5,0	1,5
30611TOPM	70	125	1,5	18	10	20,2	10,3	6,3	16,5	11,8	4,5	10	5	11,4	6,0	3,2	16,5	9,7	4,5	18	10	4,4	3,5	10	5	2,2	1,7	4	9,9	5,0	1,6
30505TOPM	80	120	1,5	18	10	19,0	10,8	6,7	28,4	17,3	9,7	10	5	10,8	6,3	3,4	16,1	10,1	4,8	18	10	4,4	3,9	10	5	2,2	1,9	4	9,9	5,0	1,7
30620TOPM	80	150	1,5	22	12	26,5	15,4	7,7	33,1	24,4	10,8	12	6	15,1	8,7	3,8	18,9	13,8	5,4	22	12	6,3	4,2	12	6	3,2	2,1	4	9,9	5,0	1,3
30508TOPM	100	140	1,5	22	12	25,4	16,5	8,4	33,1	26,0	12,3	12	6	14,1	9,3	4,2	18,9	14,2	6,2	22	12	6,3	5,0	12	6	3,2	2,5	4	9,9	5,0	1,4
30628TOPM	100	170	1,5	26	14	30,2	21,8	9,4	37,8	33,1	13,5	14	7	17,0	12,2	4,7	21,3	16,5	6,8	26	14	8,3	5,4	14	7	4,1	2,7	4	9,9	5,0	1,1
30511TOPM	120	160	1,5	26	14	30,2	23,1	10,1	37,8	33,1	15,0	14	7	17,0	12,8	5,1	21,3	16,5	7,5	26	14	8,3	6,2	14	7	4,1	3,1	4	9,9	5,0	1,2

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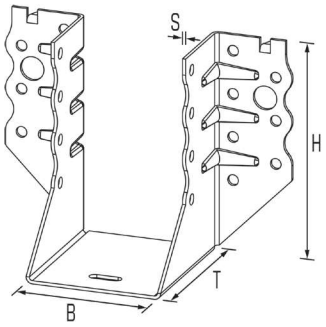
JOIST HANGER

TYPE TOP



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NKL 2 250 GD Z275

	Art. No.	Dimensions [mm]							nH	nN	nH	EAN	Weight	Pallet	PU			
		W(B)	x	H	x	D(T)	x	T(S)	Ø 5	Ø5	Ø 11	4019346	kg					
	30601TOP	40	x	110	x	70	x	1,5	14	8	2	122723	0.187	1200	50	■	■	■
■	30502TOP	60	x	100	x	70	x	1,5	15	8	2	122686	0.187	1200	50	■	■	■
	30609TOP	60	x	130	x	70	x	1,5	18	10	4	122808	0.231	1200	50	■	■	■
	30616TOP	60	x	160	x	70	x	1,5	22	12	4	122877	0.274	1200	50	■	■	■
	30624TOP	60	x	190	x	70	x	1,5	26	14	4	122952	0.317	1200	50	■	■	■
■	30505TOP	80	x	120	x	70	x	1,5	18	10	4	122693	0.231	1200	50	■	■	■
	30620TOP	80	x	150	x	70	x	1,5	22	12	4	122914	0.274	1200	50	■	■	■
	30627TOP	80	x	180	x	70	x	1,5	26	14	4	122983	0.317	1200	50	■	■	■
■	30508TOP	100	x	140	x	70	x	1,5	22	12	4	122709	0.274	1200	50	■	■	■
	30628TOP	100	x	170	x	70	x	1,5	26	14	4	122990	0.317	1200	50	■	■	■
■	30511TOP	120	x	160	x	70	x	1,5	26	14	4	122716	0.317	1200	50	■	■	■

■ Standard dimensions

Further dimensions available on request

STATICS

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TYPE TOP

Art. No.				Timber / Timber															Timber / OSB								Timber / Concrete			
				Full nail fitting									Partial nail fitting						Full screw fitting				Partial screw fitting							
				GH 4.0x40				GH 4.0x60			GH 4.0x40				GH 4.0x60			GH 5.0x25				GH 5.0x25				Ø11 1 pair of dowels			
	W	H	T	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{2,k}$ ↙	n_H	$F_{1,k}$ ↓	$F_{v,Ek}$ ↓	$F_{ax,Ek}$ ←
30601TOP	40	110	1,5	14	4	11,3	5,5	1,9	-	-	-	8	4	8,8	3,4	1,9	-	-	-	14	4	1,4	1,0	8	4	1,4	1,0	2	9,9	5,0	1,9
30502TOP	60	100	1,5	14	8	13,2	6,1	5,0	14,2	9,5	3,5	8	4	7,7	3,8	2,5	11,8	6,1	3,5	14	8	2,9	2,7	8	4	1,4	1,4	2	9,9	5,0	2,2
30609TOP	60	130	1,5	18	10	21,2	9,9	5,8	16,5	11,8	4,0	10	5	11,9	5,8	2,9	16,5	9,3	4,0	18	10	4,4	3,1	10	5	2,2	1,5	4	9,9	5,0	1,5
30616TOP	60	160	1,5	22	12	26,5	14,5	6,5	18,9	14,2	4,4	12	6	15,1	8,2	3,2	18,9	13,1	4,4	22	12	6,3	3,3	12	6	3,2	1,7	4	9,9	5,0	1,2
30624TOP	60	190	1,5	26	14	30,2	19,7	7,1	21,3	16,5	4,8	14	7	17,0	11,0	3,5	21,3	16,5	4,8	26	14	8,3	3,5	14	7	4,1	1,8	4	9,9	5,0	1,0
30505TOP	80	120	1,5	18	10	19,0	10,8	6,7	28,4	17,3	9,7	10	5	10,8	6,3	3,4	16,1	10,1	4,8	18	10	4,4	3,9	10	5	2,2	1,9	4	9,9	5,0	1,7
30620TOP	80	150	1,5	22	12	26,5	15,4	7,7	33,1	24,4	10,8	12	6	15,1	8,7	3,8	18,9	13,8	5,4	22	12	6,3	4,2	12	6	3,2	2,1	4	9,9	5,0	1,3
30627TOP	80	180	1,5	26	14	30,2	20,7	8,4	37,8	32,4	11,8	14	7	17,0	11,5	4,2	21,3	16,5	5,9	26	14	8,3	4,5	14	7	4,1	2,3	4	9,9	5,0	1,0
30508TOP	100	140	1,5	22	12	25,4	16,5	8,4	33,1	26,0	12,3	12	6	14,1	9,3	4,2	18,9	14,2	6,2	22	12	6,3	5,0	12	6	3,2	2,5	4	9,9	5,0	1,4
30628TOP	100	170	1,5	26	14	30,2	21,8	9,4	37,8	33,1	13,6	14	7	17,0	12,2	4,7	21,3	16,5	6,8	26	14	8,3	5,4	14	7	4,1	2,7	4	9,9	5,0	1,1
30511TOP	120	160	1,5	26	14	30,2	23,1	10,1	37,8	33,1	15,0	14	7	17,0	12,8	5,1	21,3	16,5	7,5	26	14	8,3	6,2	14	7	4,1	3,1	4	9,9	5,0	1,2

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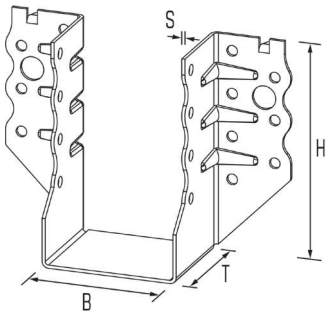
JOIST HANGER

TYPE TOP K 50



TOPLINE GREENLINE DCSTATIK ETA-08 0264

NKL 2 250 GD Z275

	Art. No.	Dimensions [mm]							nH	nN	nH	EAN	Weight	Pallet	PU			
		W(B)	x	H	x	D(T)	x	T(S)	Ø 5	Ø5	Ø 11	4019346	kg					
■	30502TOPK	60	x	100	x	50	x	1,5	14	8	2	503461	0.187	1200	50	■	■	■
	30613TOPK	76	x	122	x	50	x	1,5	18	10	4	501474	0.231	1200	50	■	■	■
■	30505TOPK	80	x	120	x	50	x	1,5	18	10	4	502105	0.231	1200	50	■	■	■
	30620TOPK	80	x	150	x	50	x	1,5	22	12	4	502112	0.274	1200	50	■	■	■
	30627TOPK	80	x	180	x	50	x	1,5	26	14	4	502129	0.317	1200	50	■	■	■
■	30508TOPK	100	x	140	x	50	x	1,5	22	12	4	502150	0.274	1200	50	■	■	■
	30628TOPK	100	x	170	x	50	x	1,5	26	14	4	502167	0.317	1200	50	■	■	■
■	30511TOPK	120	x	160	x	50	x	1,5	26	14	4	502181	0.317	1200	50	■	■	■

■ Standard dimensions

Further dimensions available on request

TYPE TOP K 50

Art. No.				Timber / Timber														Timber / OSB								Timber / Concrete			
				Full nail fitting								Partial nail fitting						Full screw fitting				Partial screw fitting							
				GH 4.0x40				GH 4.0x60				GH 4.0x40				GH 4.0x60		GH 5.0x25				GH 5.0x25				Ø11 1 pair of dowels			
	W	H	T	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	$F_{1,k}$ ↓	$F_{1,k}$ ↑	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{2,k}$ ↙	n_H	n_N	$F_{1,k}$ ↓	$F_{2,k}$ ↙	n_H	$F_{1,k}$ ↓	$F_{v,Ek}$ ↓	$F_{ax,Ek}$ ←
30502TOPK	60	100	1,5	14	8	13,2	6,1	5,0	14,2	9,5	3,5	8	4	7,7	3,8	2,5	11,8	6,1	3,5	14	8	2,9	2,7	8	4	1,4	1,4	2	9,9	5,0	2,2
30613TOPK	76	122	1,5	18	10	19,5	10,6	6,6	28,4	17,0	9,4	10	5	11,0	6,2	3,3	16,4	9,9	4,7	18	10	4,4	3,7	10	5	2,2	1,9	4	9,9	5,0	1,7
30505TOPK	80	120	1,5	18	10	19,0	10,8	6,7	28,4	17,3	9,7	10	5	10,8	6,3	3,4	16,1	10,1	4,8	18	10	4,4	3,9	10	5	2,2	1,9	4	9,9	5,0	1,7
30620TOPK	80	150	1,5	22	12	26,5	15,4	7,7	33,1	24,4	10,8	12	6	15,1	8,7	3,8	18,9	13,8	5,4	22	12	6,3	4,2	12	6	3,2	2,1	4	9,9	5,0	1,3
30627TOPK	80	180	1,5	26	14	30,2	20,7	8,4	37,8	32,4	11,8	14	7	17,0	11,5	4,2	21,3	16,5	5,9	26	14	8,3	4,5	14	7	4,1	2,3	4	9,9	5,0	1,0
30508TOPK	100	140	1,5	22	12	25,4	16,5	8,4	33,1	26,0	12,3	12	6	14,1	9,3	4,2	18,9	14,2	6,2	22	12	6,3	5,0	12	6	3,2	2,5	4	9,9	5,0	1,4
30628TOPK	100	170	1,5	26	14	30,2	21,8	9,4	37,8	33,1	13,6	14	7	17,0	12,2	4,7	21,3	16,5	6,8	26	14	8,3	5,4	14	7	4,1	2,7	4	9,9	5,0	1,1
30511TOPK	120	160	1,5	26	14	30,2	23,1	10,1	37,8	33,1	15,0	14	7	17,0	12,8	5,1	21,3	16,5	7,5	26	14	8,3	6,2	14	7	4,1	3,1	4	9,9	5,0	1,2