ALBERTS®

DECLARATION OF PERFORMANCE

Number: GAH/LE-001
as required by (EU) regulation 305/2011 - Nr. GAH 6181

1. ETA 08/0171
   GAH joist hangers, type A 1.5 mm and 2 mm and type B
2. Joist hangers type A 2.0 mm construction forms, 320 mm, 380 mm, 440 mm, 500 mm
   Joist hangers type A 1.5 mm construction forms, 260 mm, 320 mm, 380 mm
   Joist hangers type B 2.0 mm construction forms, 238 mm, 260 mm, 320 mm B1, 320 mm, 380 mm, 440 mm, 500 mm
   The joist hangers are labelled with the manufacturer's trade mark, CE marking and the number issued by the Karlsruhe Institute of Technology. All other information, such as the date of manufacture, is specified on the packaging label.
3. The joist hangers are designed for connecting load-bearing wooden components, e.g., for joining wood to wood, wood to concrete or wood to steel; type B is only for joining wood to wood.
4. Gust. Alberts GmbH & Co. KG
   Blumenthal 2
   58849 Herscheid
5. N/A
6. System for assessing constancy of performance: 2+
7. N/A
8. The Karlsruhe Institute of Technology (KIT), NB no. 0769, performed an initial inspection of the plant and factory production control as an well as ongoing monitoring, assessment and evaluation of factory production control in accordance with system 2+ and issued the following document: Certificate of conformity for factory production control, no. 0769-CPR-6181.

9. **Declared performance:**

Essential characteristics	Performance	Standardised technical specification
Characteristic load-bearing capacity	See Annex B of ETA 08/0171	
Stiffness	No performance determined	
Ductility	No performance determined	EN 1350-1
Safety in the event of a fire Fire performance	The joist hangers are made of steel, classified as Euroclass A1 in accordance with EN 1350-1	
Hygiene, health and environmental protection	No hazardous substances contained	
Durability and fitness for purpose	The durability and fitness for purpose of the joist hangers was assessed as satisfactory, provided they are used in timber constructions with wood types described in Eurocode 5, and meet the requirements of service classes 1, 2 and service class 3 for stainless steel.	
Sustainable utilisation of natural resources	No performance determined	
Identification	See appendix A of ETA 08/0171	

ETA 08/0171
ETAG 015 three-dimensional spike plates

10. The product performance as per numbers 1 and 2 corresponds to the declared performance as per number 9. The manufacturer as stated in number 4 is solely responsible for the issuing of this declaration of performance in compliance with the Regulation (EU) No. 305/2011. Signed for and in the name of the manufacturer by:

Peter Feldmann	**Head of Quality Management**
Name	Role
Herscheid 22. May 2018	**i.A.**
Location and date of issue	Signature

ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Fax +45 72 24 59 04
Internet www.etadanmark.dk

Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

European Technical Assessment ETA-08/0171 of 2023/02/14

General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:	GAH Joist Hangers Type A, 1,5 mm and 2,0 mm and type B
Product family to which the above construction product belongs:	Three-dimensional nailing plate (joist hanger for wood to wood connections and wood to concrete or steel connections)
Manufacturer:	Gust. Alberts GmbH & Co KG Blumenthal 2 DE-58849 Herscheid Internet: www.alberts.de
Manufacturing plant:	Gust. Alberts GmbH & Co KG DE-Blumenthal 2 58849 Herscheid
This European Technical Assessment contains:	25 pages including 3 annexes which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 130186-00-0603 for Three dimensional nailing plates
This version replaces:	The ETA with the same number issued on 2014-05-14

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

Technical description of the product
GAH joist hangers type A, 1,5 mm and 2,0 mm and type B are one-piece non-welded, face-fixed joist hangers to be used in timber to timber connections as well as connections between a timber joist and a concrete structure or a steel member. Type B is for timber to timber connections only.

The joist hangers are made from pre-galvanized steel DX51D + Z (min Z275) according to EN 10346:2009 with a minimum R_e of 250 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A_{80} of 22 % with tolerances according to EN 10143

Additionally, all the joist hangers can be made from stainless steel 1.4016, 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2 provided that the yield strength f_y for these steel grades is at least the same as the minimum yield strength of the zinc coated steel normally used for the brackets. The ultimate strength f_u and the ultimate strain A_{80} shall exceed the corresponding minimum values for the zinc coated steel.

Dimensions, hole positions, steel type and typical installations are shown in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

The joist hangers are intended for use in making end-grain to side-grain connections in load bearing timber structures, as a connection between a wood based joist and a solid timber or wood based header, where requirements for mechanical resistance and stability and safety in use in the sense of the Basic Works Requirements 1 and 4 of Regulation 305/2011 (EU) shall be fulfilled. They are also intended for use in making an end-grain connection between a timber joist and a concrete structure or a steel member.

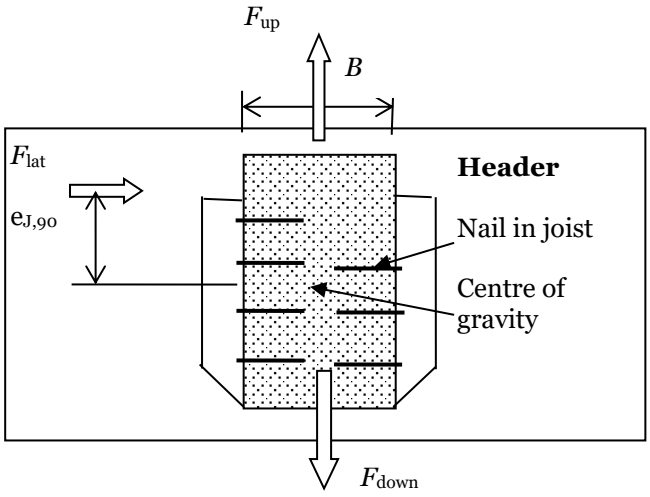
The joist hangers can be installed as connections between wood based members such as:

- Structural solid timber classified to C14-C40 according to EN 338 / EN 14081,
- Glulam classified to GL24-GL36 according to EN 1194 / EN 14080,
- LVL according to EN 14374,
- Parallam PSL,
- Intrallam LSL,
- Duo- and Triobalken,
- Layered wood plates,
- I-beams with backer blocks on both sides of the web in the header and web stiffeners in the joist
- Plywood according to EN 636

However, the calculation methods are only allowed for a characteristic wood density of up to 460 kg/m^3. Even though the wood based material may have a larger density, this must not be used when calculating the load-carrying capacities of the fasteners.

Annex B states the formulas for the characteristic load-carrying capacities of the joist hanger connections. The design of the connections shall be in accordance with Eurocode 5 or a similar national Timber Code.

It is assumed that the forces acting on the joist hanger connection are F_{up}, F_{down} and F_{lat}, as shown in the figure below. The forces F_{up} and F_{down} shall act in the middle of the joist hanger. The force F_{lat} is assumed to act $e_{J,90}$ above the centre of gravity of the nails in the joist. It is assumed that the forces are acting right at the end of the joist.



It is assumed that the header is prevented from rotating. Similarly it is assumed that the concrete structure or the steel member, to which the joist hanger is bolted, does not rotate. If the header beam only has installed a joist hanger on one side, the eccentricity moment $M_v = F_d \cdot (B_H / 2 + 30\text{mm})$ shall be considered. The same applies when the header has joist hanger connections on both sides, but with vertical forces which differ more than 20%.

It is a condition for a force F_{up}, F_{down} and F_{lat} that the joist hanger is connected to a wood-based header with nails either in all holes (full nailing) or in all holes marked for partial nailing.

The joist hangers are intended for use in connections subject to static or quasi static loading.

The scope of the joist hangers regarding resistance to corrosion shall be defined according to national provisions that apply at the installation site considering environmental conditions. Section 3.6 of this ETA contains the corrosion protection for GAH Alberts joist hangers made from carbon steel and the material number of the stainless steel.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the angle brackets of 50 years.
The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

Characteristic	Assessment of characteristic
3.1 Mechanical resistance and stability*) (BWR1)	
Joint Strength - Characteristic load-carrying capacity	See Annex B
Joint Stiffness	See Annex B
Joint ductility	No performance assessed
Resistance to seismic actions	No performance assessed
Resistance to corrosion and deterioration	See section 3.6
3.2 Safety in case of fire (BWR2)	
Reaction to fire	The joist hangers are made from steel classified as Euroclass A1 in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364
3.3 General aspects related to the performance of the product	The joist hangers have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service class 1, 2 and 3
Identification	See Annex A

*) See additional information in section 3.4 – 3.7.

3.4 Methods of verification

Safety principles and partial factors

The characteristic load-carrying capacities are based on the characteristic values of the nail connections and the joist hangers. To obtain design values the capacities have to be divided by different partial factors for the material properties, the nail connection in addition multiplied with the coefficient k_{mod}.

According to EN 1990 (Eurocode – Basis of design) paragraph 6.3.5 the design value of load-carrying capacity may be determined by reducing the characteristic values of the load-carrying capacity with different partial factors.

Thus, the characteristic values of the load–carrying capacity are determined also for timber failure $F_{Rk,H}$ (obtaining the embedment strength of nails subjected to shear or the withdrawal capacity of the most loaded nail, respectively) as well as for steel plate failure $F_{Rk,S}$. The design value of the load–carrying capacity is the smaller value of both load–carrying capacities.

$$F_{Rd} = \min\left\{\frac{k_{mod} \cdot F_{Rk,H}}{\gamma_{M,H}}; \frac{F_{Rk,S}}{\gamma_{M,S}}\right\}$$

Therefore, for timber failure the load duration class and the service class are included. The different partial factors γ_M for steel or timber, respectively, are also correctly taken into account.

3.5 Mechanical resistance and stability

See annex B for characteristic load-carrying capacities of the joist hangers.

The characteristic capacities of the joist hangers are determined by calculation assisted by testing as described in the EAD 130186-00-0603. They should be used for designs in accordance with Eurocode 5 or a similar national Timber Code.

The design models allow the use of fasteners described in the table on page 10 in Annex A.

Threaded nails (ringed shank nails) in accordance to EN 14592

In the formulas in Annex B the capacities for threaded nails calculated from the formulas of Eurocode 5 are used assuming a thick steel plate when calculating the lateral nail load-carrying-capacity.

Further, the joist hangers type A 2,0 mm may be fastened to a concrete structure or steel member by bolts with a diameter of 8 mm in holes with a diameter of 10mm and by bolts with a diameter of 10 mm in holes with a diameter of 11 mm, respectively. The joist hangers type A 1,5 mm can be fastened to a concrete structure or steel member by bolts with a diameter of 10 mm in holes with a diameter up to 2 mm larger than the bolt.

The load bearing capacities of the brackets has been determined based on the use of connector nails 4,0 x 40 mm in accordance with the German national approval for the nails.

The characteristic withdrawal capacity of the nails has to be determined by calculation in accordance with EN 1995-1-1: 2004, paragraph 8.3.2 (head pull-through is not relevant):

$$F_{ax,Rk} = f_{ax,k} \times d \times t_{pen}$$

Where:

$f_{ax,k}$	Characteristic value of the withdrawal parameter in N/mm^2
d	Nail diameter in mm
t_{pen}	Penetration depth of the profiles shank in mm $t_{pen} \geq 31$ mm for 2,0 mm brackets and $t_{pen} \geq 25$ mm for 1,5 mm brackets

Based on tests by Versuchsanstalt für Stahl, Holz und Steine, University of Kalrsruhe, the characteristic value of the withdrawal resistance for the threaded nails used can be calculated as:

$$f_{ax,k} = 50 \times 10^{-6} \times \sigma_k^2$$

Where:

σ_k	Characteristic density of the timber in kg/m^3

The shape of the nail directly under the head shall be in the form of a truncated cone with a diameter under the nail head which exceeds the hole diameter.

No performance has been determined in relation to ductility of a joint under cyclic testing. The contribution to the performance of structures in seismic zones, therefore, has not been assessed.

No performance has been determined in relation to the joint's stiffness properties - to be used for the analysis of the serviceability limit state.

3.6 Aspects related to the performance of the product

3.6.1 Corrosion protection in service class 1 and 2.

In accordance with EAD 130186-00-0603 the joist hangers are made from pre-galvanized steel DX 51 D / Z 275 according to EN 10346:2009 with minimum yield strength R_e of 250 MPa, a minimum tensile strength R_m

of 330 MPa and a minimum ultimate strain A_{80} of 22 % .

3.6.2 Corrosion protection in service class 3.
In accordance with Eurocode 5 the angle brackets are made from stainless steel 1.4016, 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 and the nails shall be produced from stainless steel.

3.7 General aspects related to the use of the product
GAH joist hangers A 1,5 mm and 2,0 mm and type B are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

Joist hanger connections
A joist hanger connection is deemed fit for its intended use provided:

Header – support conditions
- The header beam shall be restrained against rotation and be free from wane under the joist hanger.

  If the header carries joists only on one side the eccentricity moment from the joists $M_{ec} = R_{joist}$ ($b_{header}/2+e_{nail}$) shall be considered at the strength verification of the header.

  R_{joist} Reaction force from the joists
  b_{header} Width of header
  e_{nail} Distance from the nails in the joist to the surface of the header
- For a header with joists from both sides but with different reaction forces a similar consideration applies.

Wood to wood connections
- Joist hangers may be fastened to wood-based members by nails.
- There shall be nails in all holes or a partial nailing pattern as prescribed in Annex A-D can be used.
- The characteristic capacity of the joist hanger connection is calculated according to the manufacturer's technical documentation, dated 2008- 07-15, 2009-05-02 and 2014-01-02.
- The joist hanger connection is designed in accordance with Eurocode 5 or an appropriate national code.
- The gap between the end of the joist and the surface, where contact stresses can occur during loading shall be limited. This means that for joist hangers with inward flaps shall the gap between the surface of the nail heads in the inward flaps and the end of the joist be maximum 8 mm.
- For GAH joist hangers type A 2,0 mm with overlapping nails in the joist (see figure 8.5 in EN 1995-1-1) the width of the joist shall be at least l+4d, where l is the length of the nails and d is the diameter of the nails in the joist.
- For joist hangers with staggered nails in the joist the width shall be at least the penetration length of the nails.
- For joist hangers type A 1.5 mm and type B the width of the joist shall be at least the penetration length of the fasteners.
- The cross section of the joist at the joist hanger connection shall have sharp edges at the lower side against the bottom plate, i.e. it shall be without wane.
- The cross section of the header shall have a plane surface against the whole joist hanger.
- The width B_J of the joist shall correspond to that of the joist hanger. B_J shall not be smaller than B-3 mm, where B is the inner width of the joist hanger.
- The depth of the joist shall be so large that the top of the joist is at least 20 mm above the upper fastener in the joist.
- Nails to be used shall have a diameter, which fit the holes of the joist hangers. Nails shall have a diameter which is not smaller than the diameter of the hole minus 1 mm.

Wood to concrete or steel
The above mentioned rules for wood to wood connections are applicable also for the connection between the joist and the joist hanger.

- The joist hanger shall be in close contact with the concrete or steel over the whole face. There shall be no intermediate layers in between.
- The gap between the end of the joist and the surface, where contact stresses can occur during loading shall be limited. This means that the gap between the surface of the end of the joist and that of the concrete or steel shall not exceed 3 mm.
- The bolt shall have a diameter not less than the hole diameter minus 2 mm.
- The bolts shall be placed symmetrically about the vertical symmetry line. There shall always be bolts in the 2 upper holes.
- The upper bolts shall have washers according to EN ISO 7094.

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 97/638/EC of the European Commission1, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is 2+.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

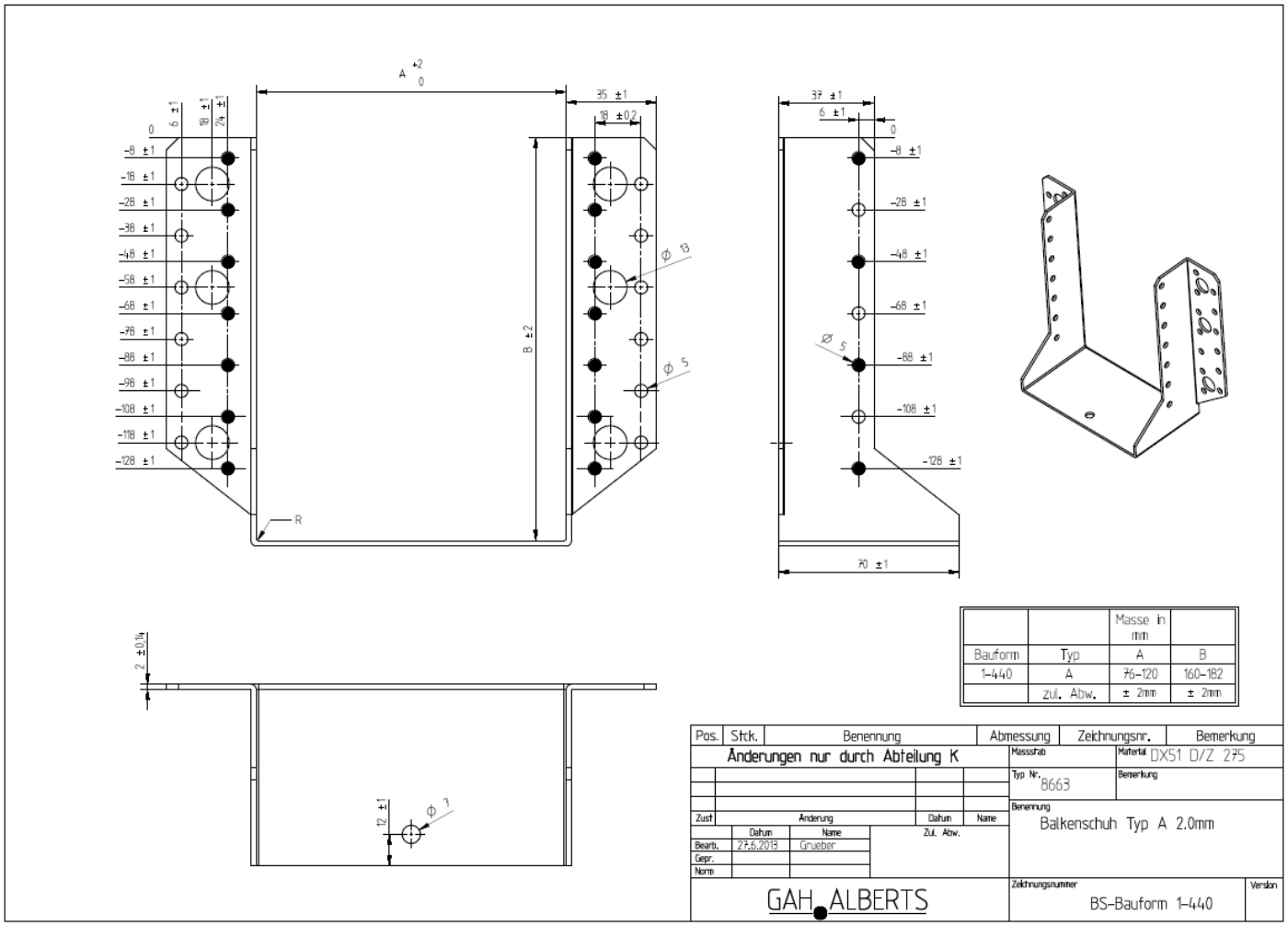
Issued in Copenhagen on 2023-02-24 by

Thomas Bruun
Managing Director, ETA-Danmark

Annex A
Product details and definitions

Joist hangers 260 A, 320 A, 380 A, 440 A and 500 A: Face mount hanger with exterior flanges
2.0 mm thick pre-galvanised steel DX51D + Z (min Z275) according to EN 10346:2009 with a minimum yield strength R_{eH} of 250 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A_{80} of 22 % with tolerances according to EN 10143:1993.

Additionally, the joist hanger can be made from stainless steel 1.4016, 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 with tolerances according to EN 10143:2006 provided that the yield strength f_y for these steel grades is at least the same as the minimum yield strength of the zinc coated steel normally used for the brackets. The ultimate strength f_u and the ultimate strain A_{80} shall exceed the corresponding minimum values for the zinc coated steel.

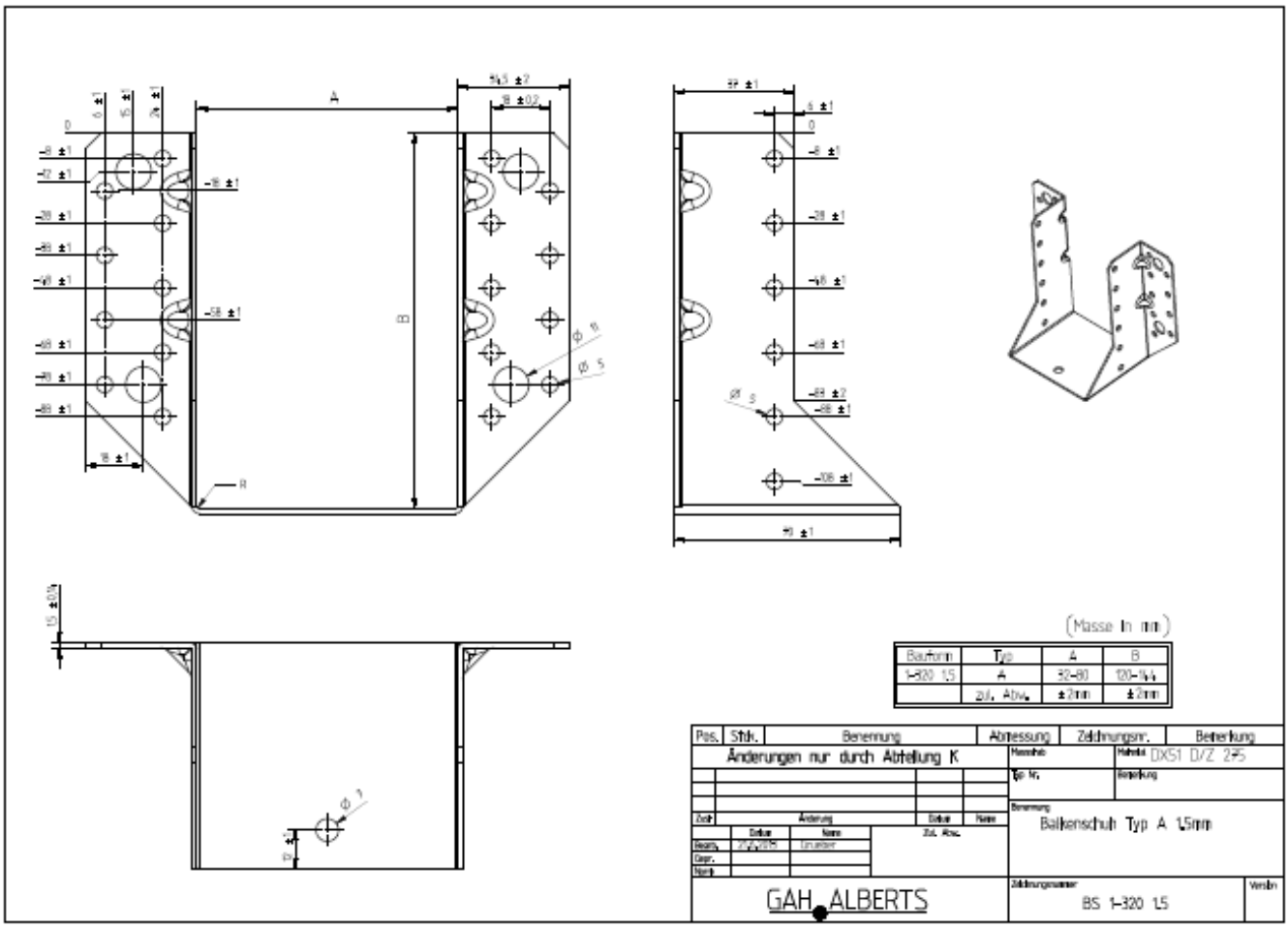


- Partial nailing; Drawing: Blank 440 A

Blank	Total n° of nail holes		Width interval		Height interval	
	n_H	n_J	min	max	min	max
260	14	8	32	65	96	114
320	18	10	32	80	120	143
380	22	12	54	100	140	163
440	26	14	76	120	160	182
500	30	16	100	140	180	200

Joist hanger type A 1.5 mm: Face mount hanger with external flanges
1,5 mm thick pre-galvanised steel DX51D + Z (min Z275) according to EN 10346:2009 with a minimum yield strength R_{eH} of 250 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A_{80} of 22 % with tolerances according to EN 10143:1993.

Additionally, the joist hanger can be made from stainless steel 1.4016, 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 with tolerances according to EN 10143:2006 provided that the yield strength f_y for these steel grades is at least the same as the minimum yield strength of the zinc coated steel normally used for the brackets. The ultimate strength f_u and the ultimate strain A_{80} shall exceed the corresponding minimum values for the zinc coated steel.



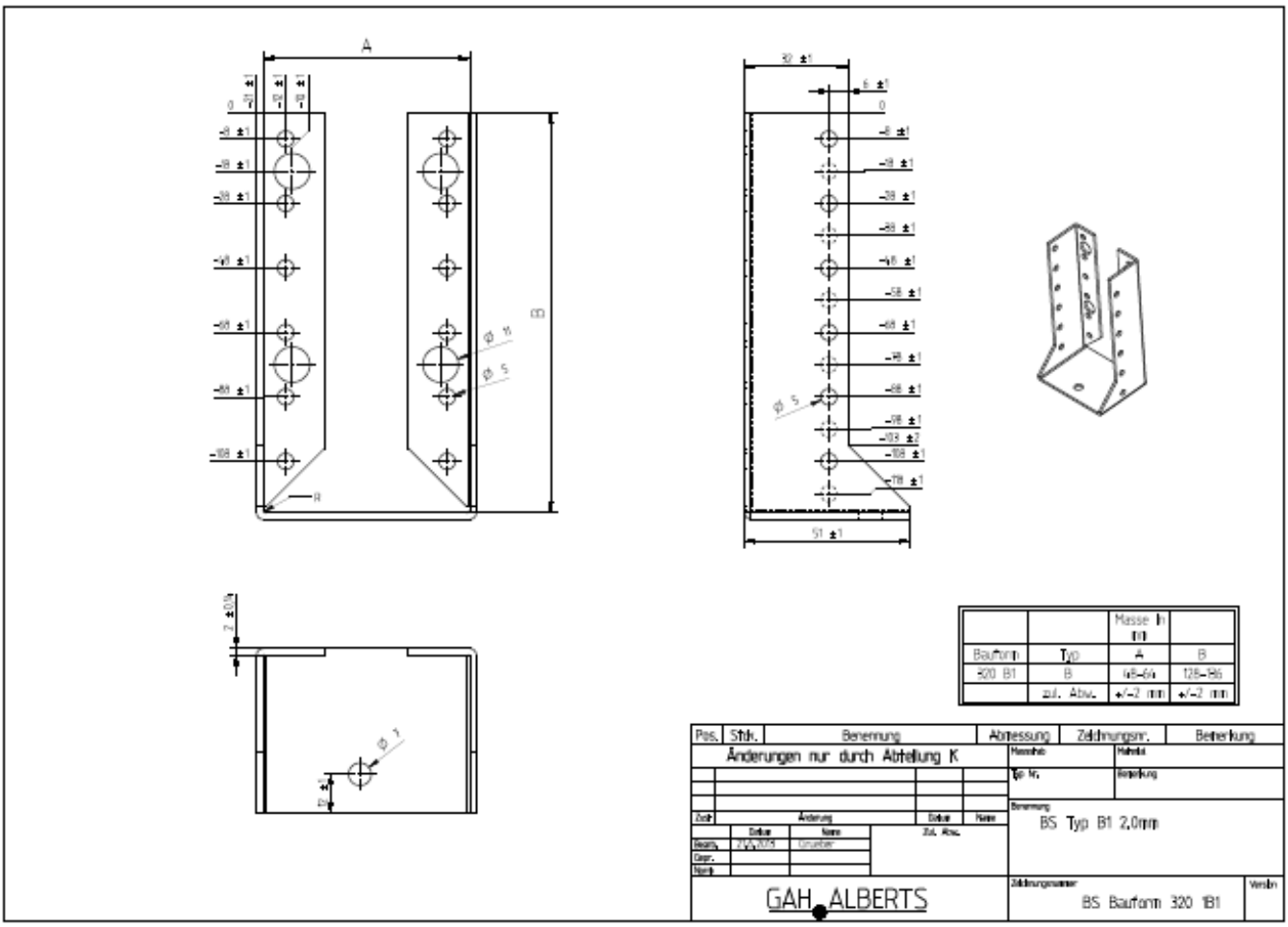
- Partial nailing; Drawing: blank 320;

Blank	Total n° of holes		Width interval		Height interval		A
	n_H	n_J	min	max	min	max	
260	14	8	32	65	98	114	= B + 69
320	18	10	32	80	120	144	= B + 69
380	22	12	60	100	140	160	= B + 69

Joist hanger's height = (blank – width)/2

Joist hangers 238 B, 260 B and 320 1B1: Face mount hanger with interior flanges
2.0 mm thick pre-galvanized steel DX51D according to EN 10346:2009 with minimum yield strength R_e of 250 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A80 of 22 % with tolerances according to EN 10143:1993.

Additionally, the joist hanger can be made from stainless steel 1.4016, 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 with tolerances according to EN 10143:2006 provided that the yield strength f_y for these steel grades is at least the same as the minimum yield strength of the zinc coated steel normally used for the brackets. The ultimate strength f_u and the ultimate strain A_{80} shall exceed the corresponding minimum values for the zinc coated steel.



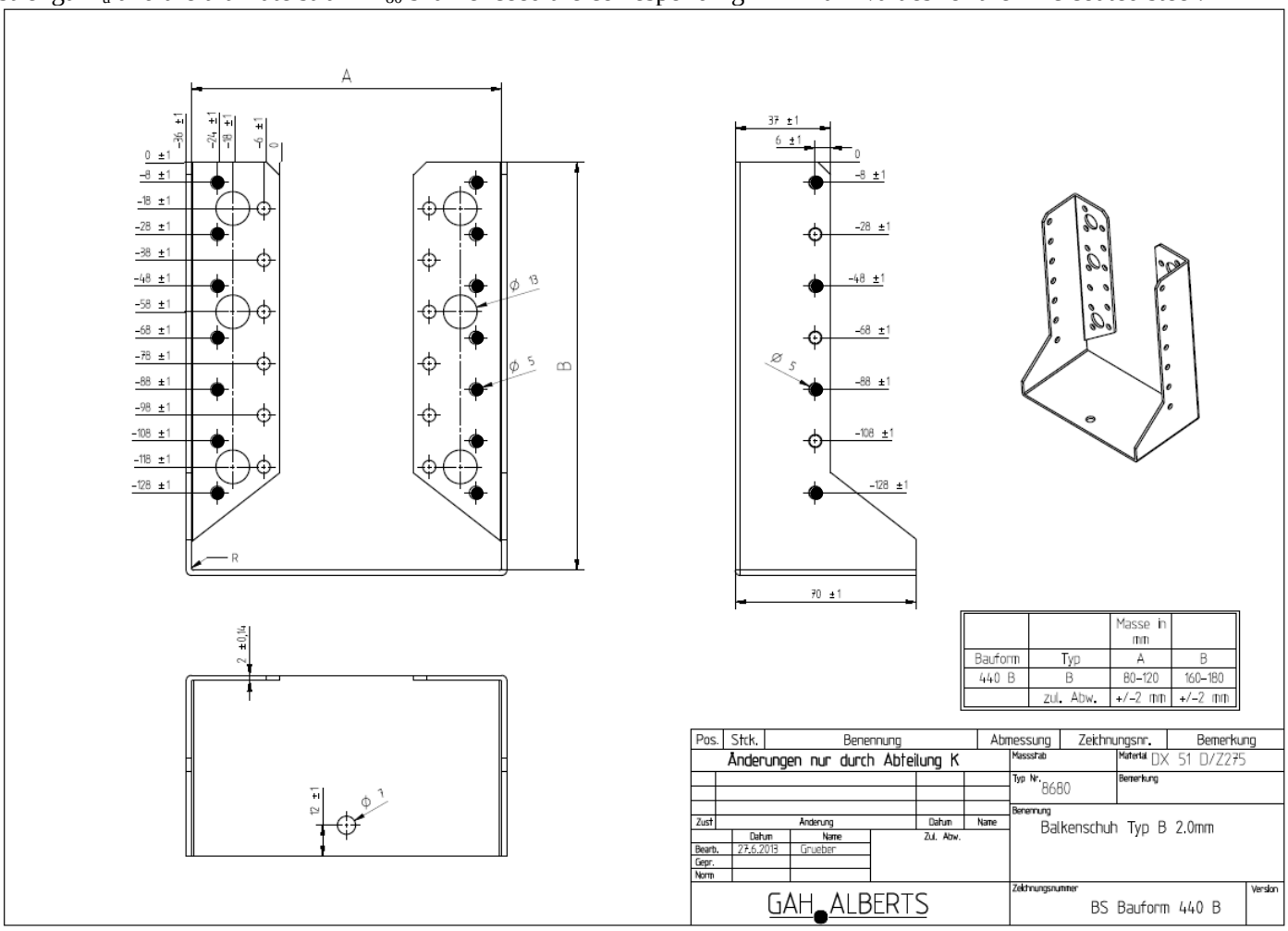
- Partial nailing; Drawing: Blank 320 1B1

Blank	Total n° of nail holes		Width interval		Height interval	
	n_H	n_J	min	max	min	max
238	8	8	45	51	93	96
260	8	8	40	64	98	110
320	12	12	48	64	128	136

Joist hanger's height = (blank – width)/2

Joist hangers 320 B, 380 B, 440 B and 500 B: Face mount hanger with interior flanges
2.0 mm thick pre-galvanized steel DX51D according to EN 10346:2009 with minimum yield strength R_e of 250 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A80 of 22 % with tolerances according to EN 10143:1993.

Additionally, the joist hanger can be made from stainless steel 1.4016, 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 with tolerances according to EN 10143:2006 provided that the yield strength f_y for these steel grades is at least the same as the minimum yield strength of the zinc coated steel normally used for the brackets. The ultimate strength f_u and the ultimate strain A_{80} shall exceed the corresponding minimum values for the zinc coated steel.



- Partial nailing; Drawing: Blank 440

Blank	Total n° of nail holes		Width interval		Height interval	
	n_H	n_J	min	max	min	max
320	18	12	70	80	120	125
380	22	12	70	100	140	155
440	26	14	80	120	160	180
500	30	16	80	140	180	210

Joist hanger's height = (blank – width)/2

Fastener types and sizes

NAIL diameter	Length Min – max	Nail type
4.0	40 - 100	Ringed shank nails according to EN 14592

Annex B
Characteristic values of load-carrying-capacities

B.1 Characteristic capacities of timber-to-timber joist hanger connections.

The downward and the upward directed forces are assumed to act in the middle of the joist. The lateral force is assumed to act at a distance $e_{J,90}$ above the centre of gravity of the fasteners in the joist. The axial force is assumed to act in the centre of gravity of the header connection.

For joist hangers with nail holes, two nailing patterns are specified. A full nailing pattern, where there are nails in all the holes and a partial nailing pattern, where the number of nails in the joist and the header are at least half the numbers specified for full nailing. The nails in the joist may be staggered. The nails in the header shall be put in the holes closest to the bend line.

For GAH joist hangers the width of the joist shall be at least the penetration length of the nails.

Joist hangers with inward flaps and fastened with nails in torsionally restrained timber header beams

Force downward toward the bottom plate:

$$F_{Z,Rd} = \min \begin{cases} (n_J + n_p) \cdot F_{v,J,Rd} \\ \dfrac{1}{\sqrt{\left(\dfrac{1}{n_H \cdot F_{v,H,Rd}}\right)^2 + \left(\dfrac{1}{k_{H,1} \cdot F_{ax,H,Rd}}\right)^2}} \end{cases} \quad \text{(B.1.1)}$$

Force upward away from the bottom plate:

$$F_{Z,Rd} = \min \begin{cases} n_J \cdot F_{v,J,Rd} \\ \dfrac{1}{\sqrt{\left(\dfrac{1}{n_H \cdot F_{v,H,Rd}}\right)^2 + \left(\dfrac{1}{k_{H,2} \cdot F_{ax,H,Rd}}\right)^2}} \end{cases} \quad \text{(B.1.2)}$$

Lateral force:

$$F_{Y,Rd} = \min \begin{cases} \dfrac{n_J \cdot F_{v,J,Rd}}{\sqrt{\left(\dfrac{2 \cdot \sqrt{e_{J,0}^2 + e_{J,90}^2}}{b_J}\right)^2 + \left(\dfrac{F_{v,J,Rd}}{F_{ax,J,Rd}}\right)^2}} \\ \dfrac{F_{v,H,Rd}}{\sqrt{\left(\dfrac{1}{n_H} + \dfrac{e_H}{e_1}\right)^2 + \left(\dfrac{e_H}{e_2}\right)^2}} \end{cases} \quad \text{(B.1.3)}$$

n_J total number of nails in both sides of the joist

n_H total number of nails in the side of the header

n_p fictitious number of fastener shear planes to account for the bottom plate (see Table B.1)

$F_{v,Rd}$ Design lateral load-carrying capacity of the fasteners in the joist or in the header indicated by the indices J or H

$F_{ax,Rd}$ Design axial load-carrying capacity of the fasteners in the joist or in the header indicated by the indices J or H

b_J width of the joist hanger, see figure B1.

$e_{J,90}$ distance of the lateral force above the centre of gravity of the nails in the joist, see figure B1.

$e_{J,0}$ distance from the nails in the joist to the surface of the header, see figure B1.

e_H distance of the lateral force above the centre of gravity of the nails in the header.
e_1 joist hanger dimension
e_2 joist hanger dimension
$k_{H,1}$ form factor
$k_{H,2}$ form factor

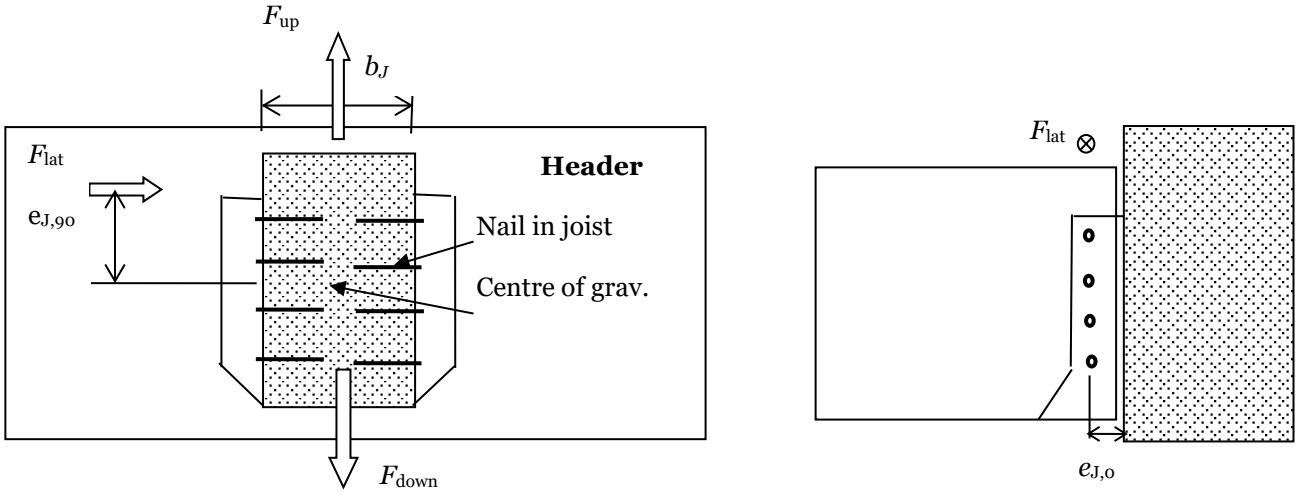


Figure B.1: Definition of $e_{J,90}$ and $e_{J,0}$

Table B.1: Number n_p of additional nails in equation B.1.1

Joist hanger GAH	Bottom plate length ℓ [mm]	n_p
238 B, 260 B, 320 1B1	51	3
260 A, 320 A, 380 A, 440 A, 500 A	70	4
320 B, 380 B, 440 B, 500 B	70	4

Combined forces

In case of combined forces shall the following inequality be fulfilled:

$$\left(\frac{F_{Y,Ed}}{F_{Y,Rd}}\right)^2 + \left(\frac{F_{Z,Ed}}{F_{Z,Rd}}\right)^2 \leq 1 \qquad \text{(B.1.4)}$$

Annex C
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{J,0}$

Table C1: Joist hanger type A 2,0 mm Blank 260
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{J,0}$

Nailing pattern	B [mm]	H [mm]	n_H	n_J	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]	$e_{J,0}$ [mm]
T	32	114	8	4	13,1	3,76	328	364	31,0
T	34	113	8	4	12,8	3,80	342	367	31,0
T	36	112	8	4	12,6	3,84	358	370	31,0
T	38	111	8	4	12,4	3,88	373	373	31,0
T	40	110	8	4	12,2	3,93	390	377	31,0
T	42	109	8	4	12,0	3,97	406	381	31,0
T	44	108	8	4	11,8	4,01	424	385	31,0
T	46	107	8	4	11,5	4,06	442	390	31,0
T	48	106	8	4	11,3	4,11	460	394	31,0
T	50	105	8	4	11,1	4,15	479	399	31,0
T	52	104	8	4	10,9	4,20	498	404	31,0
T	54	103	8	4	10,7	4,25	518	409	31,0
T	56	102	8	4	10,5	4,30	539	415	31,0
T	58	101	8	4	10,3	4,35	560	420	31,0
T	60	100	8	4	10,1	4,41	582	426	31,0
T	62	99	8	4	9,88	4,46	604	431	31,0
T	65	98	8	4	9,58	4,54	638	440	31,0
V	32	114	14	8	22,4	6,12	786	524	31,0
V	34	113	14	8	22,0	6,18	819	534	31,0
V	36	112	14	8	21,6	6,25	853	544	31,0
V	38	111	14	8	21,2	6,31	887	555	31,0
V	40	110	14	8	20,8	6,38	923	565	31,0
V	42	109	14	8	20,5	6,45	960	576	31,0
V	44	108	14	8	20,1	6,52	997	587	31,0
V	46	107	14	8	19,7	6,60	1036	598	31,0
V	48	106	14	8	19,3	6,67	1075	609	31,0
V	50	105	14	8	18,9	6,75	1115	620	31,0
V	52	104	14	8	18,6	6,83	1157	631	31,0
V	54	103	14	8	18,2	6,91	1199	642	31,0
V	56	102	14	8	17,8	6,99	1242	654	31,0
V	58	101	14	8	17,5	7,07	1286	665	31,0
V	60	100	14	8	17,1	7,16	1331	677	31,0
V	62	99	14	8	16,7	7,25	1377	689	31,0
V	65	98	14	8	16,2	7,38	1448	706	31,0
T = partial nailing, V = full nailing									

Table C2: Joist hanger type A 2,0 mm Blank 320
Form factor $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{J,0}$

Nailing pattern	**B [mm]**	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**$e_{J,0}$ [mm]**
T	32	144	10	6	21,0	6,14	382	566	31,0
T	34	143	10	6	20,7	6,19	396	566	31,0
T	36	142	10	6	20,4	6,24	410	566	31,0
T	38	141	10	6	20,2	6,29	425	567	31,0
T	40	140	10	6	19,9	6,35	440	568	31,0
T	42	139	10	6	19,6	6,40	456	570	31,0
T	44	138	10	6	19,4	6,45	472	572	31,0
T	46	137	10	6	19,1	6,51	489	575	31,0
T	48	136	10	6	18,8	6,56	506	579	31,0
T	50	135	10	6	18,6	6,62	524	582	31,0
T	52	134	10	6	18,3	6,67	542	586	31,0
T	54	133	10	6	18,0	6,73	561	591	31,0
T	56	132	10	6	17,8	6,79	580	595	31,0
T	58	131	10	6	17,5	6,85	600	600	31,0
T	60	130	10	6	17,2	6,91	620	605	31,0
T	62	129	10	6	17,0	6,97	641	610	31,0
T	64	128	10	6	16,7	7,04	662	616	31,0
T	66	127	10	6	16,5	7,10	684	622	31,0
T	68	126	10	6	16,2	7,17	706	628	31,0
T	70	125	10	6	15,9	7,24	729	634	31,0
T	72	124	10	6	15,7	7,30	752	640	31,0
T	74	123	10	6	15,4	7,37	776	647	31,0
T	76	122	10	6	15,2	7,44	800	653	31,0
T	78	121	10	6	14,9	7,52	825	660	31,0
T	80	120	10	6	14,7	7,59	850	667	31,0
T = partial nailing, V = full nailing									

Table C3: Joist hanger type A 2,0 mm Blank 320
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{J,0}$

Nailing pattern	**B [mm]**	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**$e_{J,0}$ [mm]**
V	32	144	18	10	37,2	9,42	887	789	31,0
V	34	143	18	10	36,7	9,50	919	799	31,0
V	36	142	18	10	36,2	9,57	952	810	31,0
V	38	141	18	10	35,7	9,65	986	822	31,0
V	40	140	18	10	35,2	9,73	1020	833	31,0
V	42	139	18	10	34,7	9,81	1056	845	31,0
V	44	138	18	10	34,2	9,89	1092	857	31,0
V	46	137	18	10	33,7	9,98	1130	869	31,0
V	48	136	18	10	33,2	10,1	1168	882	31,0
V	50	135	18	10	32,7	10,1	1207	894	31,0
V	52	134	18	10	32,2	10,2	1247	907	31,0
V	54	133	18	10	31,8	10,3	1288	920	31,0
V	56	132	18	10	31,3	10,4	1330	933	31,0
V	58	131	18	10	30,8	10,5	1373	947	31,0
V	60	130	18	10	30,3	10,6	1416	960	31,0
V	62	129	18	10	29,9	10,7	1461	974	31,0
V	64	128	18	10	29,4	10,8	1506	988	31,0
V	66	127	18	10	28,9	10,9	1553	1002	31,0
V	68	126	18	10	28,4	11,0	1600	1016	31,0
V	70	125	18	10	28,0	11,1	1648	1030	31,0
V	72	124	18	10	27,5	11,2	1697	1044	31,0
V	74	123	18	10	27,1	11,3	1747	1059	31,0
V	76	122	18	10	26,6	11,4	1798	1073	31,0
V	78	121	18	10	26,1	11,5	1850	1088	31,0
V	80	120	18	10	25,7	11,6	1902	1103	31,0
T = partial nailing, V = full nailing									

Table C4: Joist hanger type A 2,0 mm Blank 380
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{J,0}$

Nailing pattern	**B [mm]**	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**$e_{J,0}$ [mm]**
T	54	163	12	6	27,2	9,8	627	824	31,0
T	56	162	12	6	26,9	9,9	645	827	31,0
T	58	161	12	6	26,6	9,9	664	830	31,0
T	60	160	12	6	26,3	10,0	683	833	31,0
T	62	159	12	6	25,9	10,1	703	837	31,0
T	64	158	12	6	25,6	10,1	724	842	31,0
T	66	157	12	6	25,3	10,2	745	846	31,0
T	68	156	12	6	25,0	10,3	766	851	31,0
T	70	155	12	6	24,7	10,4	788	856	31,0
T	72	154	12	6	24,4	10,4	810	862	31,0
T	74	153	12	6	24,1	10,5	833	868	31,0
T	76	152	12	6	23,8	10,6	856	874	31,0
T	78	151	12	6	23,4	10,7	880	880	31,0
T	80	150	12	6	23,1	10,8	904	887	31,0
T	82	149	12	6	22,8	10,8	929	893	31,0
T	84	148	12	6	22,5	10,9	954	900	31,0
T	86	147	12	6	22,2	11,0	980	907	31,0
T	88	146	12	6	21,9	11,1	1006	915	31,0
T	90	145	12	6	21,6	11,2	1033	922	31,0
T	92	144	12	6	21,3	11,3	1060	930	31,0
T	94	143	12	6	21,0	11,4	1087	937	31,0
T	96	142	12	6	20,7	11,4	1115	945	31,0
T	98	141	12	6	20,4	11,5	1144	953	31,0
T	100	140	12	6	20,2	11,6	1173	962	31,0
T = partial nailing, V = full nailing									

Table C5: Joist hanger type A 2,0 mm Blank 380
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2 and $e_{J,0}$

Nailing pattern	**B [mm]**	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**$e_{J,0}$ [mm]**
V	54	163	22	12	49,1	16,2	1414	1262	31,0
V	56	162	22	12	48,5	16,4	1455	1276	31,0
V	58	161	22	12	47,9	16,5	1497	1290	31,0
V	60	160	22	12	47,3	16,6	1540	1305	31,0
V	62	159	22	12	46,7	16,7	1583	1319	31,0
V	64	158	22	12	46,1	16,8	1628	1334	31,0
V	66	157	22	12	45,5	16,9	1673	1350	31,0
V	68	156	22	12	45,0	17,1	1720	1365	31,0
V	70	155	22	12	44,4	17,2	1767	1381	31,0
V	72	154	22	12	43,8	17,3	1815	1396	31,0
V	74	153	22	12	43,2	17,4	1864	1412	31,0
V	76	152	22	12	42,7	17,6	1914	1428	31,0
V	78	151	22	12	42,1	17,7	1965	1445	31,0
V	80	150	22	12	41,5	17,8	2016	1461	31,0
V	82	149	22	12	41,0	18,0	2069	1478	31,0
V	84	148	22	12	40,4	18,1	2122	1495	31,0
V	86	147	22	12	39,8	18,3	2177	1512	31,0
V	88	146	22	12	39,3	18,4	2232	1529	31,0
V	90	145	22	12	38,7	18,5	2288	1546	31,0
V	92	144	22	12	38,2	18,7	2345	1563	31,0
V	94	143	22	12	37,6	18,8	2403	1581	31,0
V	96	142	22	12	37,1	19,0	2461	1598	31,0
V	98	141	22	12	36,5	19,1	2521	1616	31,0
V	100	140	22	12	36,0	19,3	2581	1634	31,0
T = partial nailing, V = full nailing									

Table C6: Joist hanger type A 1.5 mm with external flanges:
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2; $e_{J,0}$ = 31 mm

B [mm]	**H [mm]**	n_H	n_J	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]	n_H	n_J	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]
		Full nailing						Partial nailing					
32	114	14	8	22,4	6,12	770	519	8	4	13,1	3,76	321	393
34	113	14	8	22,0	6,18	802	529	8	4	12,8	3,80	335	394
36	112	14	8	21,6	6,25	836	539	8	4	12,6	3,84	350	396
38	111	14	8	21,2	6,31	870	549	8	4	12,4	3,88	365	399
40	110	14	8	20,8	6,38	905	560	8	4	12,2	3,93	381	401
42	109	14	8	20,5	6,45	941	570	8	4	12,0	3,97	398	405
44	108	14	8	20,1	6,52	978	581	8	4	11,8	4,01	415	408
46	107	14	8	19,7	6,60	1016	592	8	4	11,5	4,06	433	412
48	106	14	8	19,3	6,67	1055	603	8	4	11,3	4,11	451	416
50	105	14	8	18,9	6,75	1095	614	8	4	11,1	4,15	469	420
52	104	14	8	18,6	6,83	1136	625	8	4	10,9	4,20	489	425
54	103	14	8	18,2	6,91	1178	637	8	4	10,7	4,25	508	430
56	102	14	8	17,8	7,0	1220	648	8	4	10,5	4,30	529	434
58	101	14	8	17,5	7,1	1264	659	8	4	10,3	4,35	549	440
60	100	14	8	17,1	7,2	1309	671	8	4	10,1	4,41	571	445
62	99	14	8	16,7	7,2	1354	683	8	4	9,88	4,46	593	450
64	98	14	8	16,4	7,3	1400	694	8	4	9,68	4,52	615	456
65	98	14	8	16,2	7,4	1424	700	8	4	9,58	4,54	626	458
32	144	18	10	37,2	10,4	872	783	10	6	21,0	6,14	376	613
34	143	18	10	36,7	10,5	903	794	10	6	20,7	6,19	389	610
36	142	18	10	36,2	10,6	936	805	10	6	20,4	6,24	403	608
38	141	18	10	35,7	10,7	969	816	10	6	20,2	6,29	418	607
40	140	18	10	35,2	10,8	1003	827	10	6	19,9	6,35	433	607
42	139	18	10	34,7	10,9	1038	839	10	6	19,6	6,40	448	608
44	138	18	10	34,2	11,0	1074	851	10	6	19,4	6,45	464	609
46	137	18	10	33,7	11,1	1111	863	10	6	19,1	6,51	481	610
48	136	18	10	33,2	11,2	1149	875	10	6	18,8	6,56	498	612
50	135	18	10	32,7	11,2	1188	888	10	6	18,6	6,62	515	615
52	134	18	10	32,2	11,3	1227	901	10	6	18,3	6,67	533	618
54	133	18	10	31,8	11,4	1268	914	10	6	18,0	6,73	552	621
56	132	18	10	31,3	11,5	1309	927	10	6	17,8	6,79	571	625
58	131	18	10	30,8	11,6	1351	940	10	6	17,5	6,85	590	629
60	130	18	10	30,3	11,8	1395	954	10	6	17,2	6,91	610	634
62	129	18	10	29,9	11,9	1439	967	10	6	17,0	6,97	631	639
64	128	18	10	29,4	12,0	1484	981	10	6	16,7	7,04	652	644
66	127	18	10	28,9	12,1	1530	995	10	6	16,5	7,10	673	649
68	126	18	10	28,4	12,2	1576	1009	10	6	16,2	7,17	695	654
70	125	18	10	28,0	12,3	1624	1023	10	6	15,9	7,24	718	660
72	124	18	10	27,5	12,4	1673	1037	10	6	15,7	7,30	741	666
74	123	18	10	27,1	12,5	1722	1052	10	6	15,4	7,37	764	672
76	122	18	10	26,6	12,7	1773	1066	10	6	15,2	7,44	788	678
78	121	18	10	26,1	12,8	1824	1081	10	6	14,9	7,52	813	684
80	120	18	10	25,7	12,9	1876	1095	10	6	14,7	7,59	838	691

Table C6 (cont.): Joist hanger type A 1.5 mm with external flanges:
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2; $e_{J,0}$ = 31 mm

B [mm]	**H [mm]**	n_H	n_J	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]	n_H	n_J	$k_{H,1}$	$k_{H,2}$	e_1 [mm]	e_2 [mm]
		Full nailing						Partial nailing					
60	160	22	12	47,3	17,5	1518	1298	12	6	26,3	10,0	674	875
62	159	22	12	46,7	17,6	1561	1312	12	6	25,9	10,1	693	878
64	158	22	12	46,1	17,7	1606	1327	12	6	25,6	10,1	714	881
66	157	22	12	45,5	17,9	1651	1342	12	6	25,3	10,2	734	885
68	156	22	12	45,0	18,0	1697	1357	12	6	25,0	10,3	755	889
70	155	22	12	44,4	18,1	1743	1373	12	6	24,7	10,4	777	893
72	154	22	12	43,8	18,3	1791	1388	12	6	24,4	10,4	799	898
74	153	22	12	43,2	18,4	1840	1404	12	6	24,1	10,5	822	903
76	152	22	12	42,7	18,5	1889	1420	12	6	23,8	10,6	845	908
78	151	22	12	42,1	18,7	1939	1437	12	6	23,4	10,7	868	914
80	150	22	12	41,5	18,8	1991	1453	12	6	23,1	10,8	892	920
82	149	22	12	41,0	19,0	2043	1469	12	6	22,8	10,8	917	926
84	148	22	12	40,4	19,1	2096	1486	12	6	22,5	10,9	942	932
86	147	22	12	39,8	19,3	2149	1503	12	6	22,2	11,0	967	939
88	146	22	12	39,3	19,4	2204	1520	12	6	21,9	11,1	993	946
90	145	22	12	38,7	19,6	2260	1537	12	6	21,6	11,2	1019	953
92	144	22	12	38,2	19,7	2316	1554	12	6	21,3	11,3	1046	960
94	143	22	12	37,6	19,9	2374	1572	12	6	21,0	11,4	1074	967
96	142	22	12	37,1	20,0	2432	1589	12	6	20,7	11,4	1101	975
98	141	22	12	36,5	20,2	2491	1607	12	6	20,4	11,5	1130	982
100	140	22	12	36,0	20,4	2551	1625	12	6	20,2	11,6	1158	990

Table C7: Joist hanger 440 A with exterior flanges:
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2; $e_{J,0}$ = 31 mm

B [mm]	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**
		Full nailing						Partial nailing					
76	182	26	14	62,5	34,9	2065	1849	14	8	34,2	19,6	934	1143
78	181	26	14	61,8	34,9	2115	1866	14	8	33,8	19,6	957	1148
80	180	26	14	61,1	34,9	2166	1883	14	8	33,5	19,6	980	1153
82	179	26	14	60,4	34,9	2218	1901	14	8	33,1	19,6	1004	1159
84	178	26	14	59,8	34,9	2270	1919	14	8	32,7	19,6	1029	1165
86	177	26	14	59,1	34,9	2324	1937	14	8	32,4	19,6	1054	1171
88	176	26	14	58,4	34,9	2378	1955	14	8	32,0	19,6	1079	1177
90	175	26	14	57,7	34,9	2434	1973	14	8	31,7	19,6	1105	1184
92	174	26	14	57,1	34,9	2490	1992	14	8	31,3	19,6	1131	1191
94	173	26	14	56,4	34,9	2547	2011	14	8	31,0	19,6	1158	1198
96	172	26	14	55,7	34,9	2605	2030	14	8	30,6	19,6	1186	1206
98	171	26	14	55,1	34,9	2663	2049	14	8	30,3	19,6	1213	1213
100	170	26	14	54,4	34,9	2723	2068	14	8	29,9	19,6	1242	1221
102	169	26	14	53,8	34,9	2784	2088	14	8	29,6	19,6	1270	1229
104	168	26	14	53,1	34,9	2845	2107	14	8	29,2	19,6	1299	1238
106	167	26	14	52,5	34,9	2907	2127	14	8	28,9	19,6	1329	1246
108	166	26	14	51,8	34,9	2970	2147	14	8	28,5	19,6	1359	1255
110	165	26	14	51,2	34,9	3034	2167	14	8	28,2	19,6	1390	1263
112	164	26	14	50,5	34,9	3099	2188	14	8	27,8	19,6	1421	1272
114	163	26	14	49,9	34,9	3165	2208	14	8	27,5	19,6	1452	1281
116	162	26	14	49,3	34,9	3231	2229	14	8	27,1	19,6	1484	1291
118	161	26	14	48,6	34,9	3299	2249	14	8	26,8	19,6	1517	1300
120	160	26	14	48,0	34,9	3367	2270	14	8	26,5	19,6	1550	1309

Table C7 (contd.): Joist hanger 500 A with exterior flanges:
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2; $e_{J,0}$ = 31 mm

B [mm]	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**
		Full nailing						Partial nailing					
100	200	30	16	76,6	46,8	2899	2568	16	8	41,5	25,8	1331	1527
102	199	30	16	75,9	46,8	2959	2589	16	8	41,1	25,8	1359	1534
104	198	30	16	75,1	46,8	3019	2609	16	8	40,7	25,8	1387	1541
106	197	30	16	74,3	46,8	3081	2630	16	8	40,3	25,8	1416	1549
108	196	30	16	73,6	46,8	3144	2651	16	8	39,9	25,8	1446	1557
110	195	30	16	72,8	46,8	3207	2672	16	8	39,5	25,8	1476	1565
112	194	30	16	72,0	46,8	3271	2694	16	8	39,1	25,8	1506	1573
114	193	30	16	71,3	46,8	3336	2715	16	8	38,7	25,8	1537	1582
116	192	30	16	70,5	46,8	3402	2737	16	8	38,3	25,8	1568	1591
118	191	30	16	69,8	46,8	3469	2759	16	8	37,9	25,8	1600	1600
120	190	30	16	69,0	46,8	3536	2781	16	8	37,5	25,8	1632	1609
122	189	30	16	68,3	46,8	3605	2804	16	8	37,1	25,8	1665	1619
124	188	30	16	67,6	46,8	3674	2826	16	8	36,7	25,8	1698	1628
126	187	30	16	66,8	46,8	3744	2849	16	8	36,3	25,8	1732	1638
128	186	30	16	66,1	46,8	3816	2872	16	8	36,0	25,8	1766	1648
130	185	30	16	65,3	46,8	3887	2895	16	8	35,6	25,8	1800	1658
132	184	30	16	64,6	46,8	3960	2918	16	8	35,2	25,8	1835	1668
134	183	30	16	63,9	46,8	4034	2941	16	8	34,8	25,8	1871	1679
136	182	30	16	63,2	46,8	4108	2965	16	8	34,4	25,8	1907	1689
138	181	30	16	62,4	46,8	4184	2988	16	8	34,0	25,8	1943	1700
140	180	30	16	61,7	46,8	4260	3012	16	8	33,7	25,8	1980	1711

Table C8: Joist hanger 440 B with interior flanges:
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2; $e_{J,0}$ = 31 mm

B [mm]	**H [mm]**	$\mathbf{n_H}$	$\mathbf{n_J}$	$\mathbf{k_{H,1}}$	$\mathbf{k_{H,2}}$	$\mathbf{e_1}$ **[mm]**	$\mathbf{e_2}$ **[mm]**	$\mathbf{n_H}$	$\mathbf{n_J}$	$\mathbf{k_{H,1}}$	$\mathbf{k_{H,2}}$	$\mathbf{e_1}$ **[mm]**	$\mathbf{e_2}$ **[mm]**
		Full nailing						Partial nailing					
80	180	26	14	61,1	34,9	827	1711	14	8	33,5	19,6	570	1178
82	179	26	14	60,4	34,9	845	1691	14	8	33,1	19,6	583	1167
84	178	26	14	59,8	34,9	865	1674	14	8	32,7	19,6	598	1157
86	177	26	14	59,1	34,9	885	1659	14	8	32,4	19,6	612	1148
88	176	26	14	58,4	34,9	906	1647	14	8	32,0	19,6	627	1141
90	175	26	14	57,7	34,9	928	1637	14	8	31,7	19,6	643	1135
92	174	26	14	57,1	34,9	950	1629	14	8	31,3	19,6	659	1130
94	173	26	14	56,4	34,9	974	1623	14	8	31,0	19,6	676	1126
96	172	26	14	55,7	34,9	998	1619	14	8	30,6	19,6	693	1123
98	171	26	14	55,1	34,9	1024	1616	14	8	30,3	19,6	710	1121
100	170	26	14	54,4	34,9	1050	1615	14	8	29,9	19,6	728	1120
102	169	26	14	53,8	34,9	1077	1615	14	8	29,6	19,6	747	1120
104	168	26	14	53,1	34,9	1105	1617	14	8	29,2	19,6	766	1120
106	167	26	14	52,5	34,9	1133	1619	14	8	28,9	19,6	785	1121
108	166	26	14	51,8	34,9	1163	1623	14	8	28,5	19,6	805	1123
110	165	26	14	51,2	34,9	1194	1628	14	8	28,2	19,6	825	1125
112	164	26	14	50,5	34,9	1225	1633	14	8	27,8	19,6	846	1128
114	163	26	14	49,9	34,9	1257	1640	14	8	27,5	19,6	867	1131
116	162	26	14	49,3	34,9	1290	1647	14	8	27,1	19,6	889	1135
118	161	26	14	48,6	34,9	1324	1655	14	8	26,8	19,6	911	1139
120	160	26	14	48,0	34,9	1359	1664	14	8	26,5	19,6	934	1143

Table C8 (cont.): Joist hanger 500 B with interior flanges:
Form factors $k_{H,1}$ and $k_{H,2}$ and dimensions e_1, e_2; $e_{J,0}$ = 31 mm

B [mm]	**H [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**	**n_H**	**n_J**	**$k_{H,1}$**	**$k_{H,2}$**	**e_1 [mm]**	**e_2 [mm]**
		Full nailing						Partial nailing					
80	210	30	16	84,4	46,8	1016	2453	16	8	45,7	25,8	672	1623
82	209	30	16	83,6	46,8	1035	2414	16	8	45,2	25,8	686	1600
84	208	30	16	82,9	46,8	1053	2379	16	8	44,8	25,8	700	1580
86	207	30	16	82,1	46,8	1073	2348	16	8	44,4	25,8	714	1562
88	206	30	16	81,3	46,8	1094	2320	16	8	44,0	25,8	729	1546
90	205	30	16	80,5	46,8	1115	2296	16	8	43,6	25,8	744	1532
92	204	30	16	79,7	46,8	1138	2276	16	8	43,2	25,8	760	1520
94	203	30	16	78,9	46,8	1161	2258	16	8	42,8	25,8	776	1509
96	202	30	16	78,2	46,8	1185	2242	16	8	42,3	25,8	793	1500
98	201	30	16	77,4	46,8	1210	2229	16	8	41,9	25,8	810	1492
100	200	30	16	76,6	46,8	1236	2218	16	8	41,5	25,8	828	1486
102	199	30	16	75,9	46,8	1263	2209	16	8	41,1	25,8	846	1480
104	198	30	16	75,1	46,8	1290	2202	16	8	40,7	25,8	864	1476
106	197	30	16	74,3	46,8	1318	2197	16	8	40,3	25,8	883	1472
108	196	30	16	73,6	46,8	1348	2194	16	8	39,9	25,8	903	1469
110	195	30	16	72,8	46,8	1378	2192	16	8	39,5	25,8	923	1468
112	194	30	16	72,0	46,8	1409	2191	16	8	39,1	25,8	943	1467
114	193	30	16	71,3	46,8	1440	2192	16	8	38,7	25,8	964	1466
116	192	30	16	70,5	46,8	1473	2194	16	8	38,3	25,8	985	1467
118	191	30	16	69,8	46,8	1507	2197	16	8	37,9	25,8	1007	1468
120	190	30	16	69,0	46,8	1541	2201	16	8	37,5	25,8	1029	1470
122	189	30	16	68,3	46,8	1576	2207	16	8	37,1	25,8	1051	1472
124	188	30	16	67,6	46,8	1612	2213	16	8	36,7	25,8	1075	1475
126	187	30	16	66,8	46,8	1649	2220	16	8	36,3	25,8	1098	1478
128	186	30	16	66,1	46,8	1687	2228	16	8	36,0	25,8	1122	1482
130	185	30	16	65,3	46,8	1726	2237	16	8	35,6	25,8	1147	1486
132	184	30	16	64,6	46,8	1765	2247	16	8	35,2	25,8	1171	1491
134	183	30	16	63,9	46,8	1806	2257	16	8	34,8	25,8	1197	1496
136	182	30	16	63,2	46,8	1847	2268	16	8	34,4	25,8	1223	1501
138	181	30	16	62,4	46,8	1889	2280	16	8	34,0	25,8	1249	1507
140	180	30	16	61,7	46,8	1932	2292	16	8	33,7	25,8	1276	1513