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Authorised and notified according to Article 10 of the Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products

MEMBER OF EOTA

European Technical Approval ETA-09/0323

Trade name:

GH Angle Bracket 55 with and without rib
GH Angle Bracket 65 with and without rib
GH Angle Bracket 90 with and without rib

Holder of approval:

GH Baubeschläge GmbH
Austrasse 34
D-73235 Weilheim / Teck
Tel.: +49 7023 7433 23-11
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Generic type and use of construction product:

Three-dimensional nailing plate (angle bracket for wood to wood connections)

Valid from:
to:

2009-11-12
2014-11-12

Manufacturing plant:

GH Baubeschläge GmbH
Austrasse 34
D-73235 Weilheim / Teck

This European Technical Approval contains:

63 pages including 2 annexes which form an integral part of the document



European Organisation for Technical Approvals

Europæisk Organisation for Tekniske Godkendelser

I LEGAL BASIS AND GENERAL CONDITIONS

1 This European Technical Approval is issued by ETA-Danmark A/S in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products¹⁾, as amended by Council Directive 93/68/EEC of 22 July 1993²⁾.

- Bekendtgørelse 559 af 27-06-1994 (afløser bekendtgørelse 480 af 25-06-1991) om ikrafttræden af EF direktiv af 21. december 1988 om indbyrdes tilnærmelse af medlemsstaternes love og administrative bestemmelser om byggevarer.

- Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC³⁾.

- EOTA Guideline ETAG 015 *Three-dimensional nailing plates*, September 2002 edition.

2 ETA-Danmark A/S is authorized to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1 of this European Technical Approval.

4 This European Technical Approval may be withdrawn by ETA-Danmark A/S pursuant to Article 5(1) of Council Directive 89/106/EEC.

1) Official Journal of the European Communities N° L40, 11 Feb 1989, p 12.

2) Official Journal of the European Communities N° L220, 30 Aug 1993, p 1.

3) Official Journal of the European Communities N° L 17, 20 Jan 1994, p 34.

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6 This European Technical Approval is issued by ETA-Danmark A/S in English. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

I SPECIAL CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

Definition of the product

GH Baubeschläge GmbH angle brackets type 55, 65 and 90 with and without rib are one-piece non-welded, face-fixed angle brackets to be used in timber to timber connections. They are connected to the timber elements by a range of profiled nails or by GH connector screws.

The angle brackets are made from pre-galvanized steel S 250 GD + Z275, S 235 JR + Z275 or DX 51 D + Z275 according to EN 10327:2004 with a minimum yield stress of 235 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A_{80} of 22 % and are available with or without an embossed rib.

Additionally, all the angle brackets can be made from stainless steel 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 with a minimum yield stress of 190 MPa. For all stainless steels a factor of 0.8 must be applied to the load-carrying capacity to accommodate for the difference in yield stress.

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

Intended use

The angle brackets are intended for use in making connections in load bearing timber structures, as a connection between a beam and a purlin, where requirements for mechanical resistance and stability and safety in use in the sense of the Essential Requirements 1 and 4 of Council Directive 89/106/EEC shall be fulfilled.

The connection may be with a single angle bracket or with an angle bracket on each side of the fastened timber member (see Annex A).

The static and kinematic behaviour of the timber members or the supports shall be as described in Annex B.

The wood members can be of solid timber, glued laminated timber and similar glued members, or wood-based structural members with a characteristic density from 290 kg/m³ to 420 kg/m³. This requirement to the material of the wood members can be fulfilled by using the following materials:

- Structural solid timber classified to C24-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,
- Plywood according to EN 636

Annex B states the load-carrying capacities of the angle bracket connections for a characteristic density of 350 kg/m³. For timber or wood based material with a lower characteristic density than 350 kg/m³ the load-carrying capacities shall be reduced by the k_{dens} factor:

$$k_{dens} = \left(\frac{\rho_k}{350} \right)^2$$

Where ρ_k is the characteristic density of the timber in kg/m³.

The design of the connections shall be in accordance with Eurocode 5 or a similar national Timber Code. The wood members shall have a thickness which is larger than the penetration depth of the nails into the members.

The angle brackets are primarily for use in timber structures subject to the dry, internal conditions defined by service class 1 and 2 or wet conditions defined by service class 3 of Eurocode 5 and for connections subject to static or quasi-static loading.

The angle brackets may also be used for connections between a timber member and a member of concrete or steel.

Assumed working life

The assumed intended working life of the angle brackets for the intended use is 50 years, provided that they are subject to appropriate use and maintenance.

The information on the working life should not be regarded as a guarantee provided by the manufacturer or ETA Danmark. An “assumed intended working life” means that it is expected that, when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements.

2 Characteristics of product and assessment

ETAG paragraph	Characteristic	Assessment of characteristic
2.1 Mechanical resistance and stability*)		
6.1.1	Characteristic load-carrying capacity	See Annex B
6.1.2	Stiffness	No performance determined
6.1.3	Ductility in cyclic testing	No performance determined
2.2 Safety in case of fire		
6.2.1	Reaction to fire	The angle brackets are made from steel classified as Euroclass A1 in accordance with EN 1350-1 and EC decision 96/603/EC, amended by EC Decision 2000/605/EC
2.3 Hygiene, health and the environment		
6.3.1	Influence on air quality	No dangerous materials **)
2.4 Safety in use		
2.5 Protection against noise		
2.6 Energy economy and heat retention		
2.7 Related aspects of serviceability		
6.7.1	Durability	The angle brackets 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 and 2
6.7.2	Serviceability	
6.7.3	Identification	

*) See page 5 of this ETA

**) In accordance with <http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm> In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

Safety principles and partial factors

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

According to EN 1990 (Eurocode – Basis of design) paragraph 6.3.5 the design value of load-carrying capacity can 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 $F_{\text{Rk,H}}$ (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 $F_{\text{Rk,S}}$. The design value of the load-carrying capacity is the smaller value of both load-carrying capacities.

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

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.

2.1 Mechanical resistance and stability

See annex B for the characteristic load-carrying capacity in the different directions F_1 to F_5 .

The characteristic capacities of the angle brackets are determined by calculation assisted by testing as described in the EOTA Guideline 015 clause 5.1.2. They should be used for designs in accordance with Eurocode 5 or a similar national Timber Code.

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

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

The load bearing capacities of the brackets has been determined based on the use of connector nails 4,0 x 40 mm and 4,0 mm x 60 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):

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

Where:

$f_{\text{ax,k}}$	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
	$t_{\text{pen}} \geq 31 \text{ mm}$

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

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

Where:

σ_{k}	Characteristic density of the timber in kg/m^3
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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.

4,0 mm threaded nails with a truncated cone below the head are used as fasteners, which are particularly suitable for nailed steel-to-timber connections. The specific shape below the head causes a clamping of nails in the steel plate.

Fully threaded screws in accordance with EN 14592

The capacity of GH Connector screws is in accordance with national German approval no. Z-9.1-375 issued by DIBt, and the load carrying capacities of joints with GH Connector screws apply in areas where the abovementioned national German approval is accepted as basis for the design.

Load bearing capacities for GH Connector screws 5,0x40 and 5,0x60 have been determined. If longer 5,0 mm Connector screws are used the capacities stated for GH Connector screw 5,0x60 are valid.

The design models allow the use of fasteners described in table A.3 on page 10 in Annex A

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.

2.7 Related aspects of serviceability

2.7.1 Corrosion protection in service class 1 and 2.

In accordance with ETAG 015 the angle brackets are made from pre-galvanized steel S 250 GD + Z275, S 235 JR + Z275 or DX 51 D + Z275 according to EN 10327:2004

2.7.2 Corrosion protection in service class 3.

In accordance with Eurocode 5 the joist hangers are made from stainless steel 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 and the nails and screws shall be produced from stainless steel.

3 Attestation of Conformity and CE marking

3.1 Attestation of Conformity system

The system of attestation of conformity is 2+ described in Council Directive 89/106/EEC (Construction Products Directive) Annex III.

- a) Tasks for the manufacturer:
- (1) Factory production control,
 - (2) Initial type testing of the product,
- b) Tasks for the notified body:
- (1) Initial inspection of the factory and the factory production control,
 - (2) Continuous surveillance

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer has a factory production control system in the plant and exercises permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. This production control system ensures that the product is in conformity with the European Technical Approval.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the control plan⁴. The incoming raw materials shall be subject to controls and tests by the manufacturer before acceptance. Check of materials, such as sheet metal, shall include control of the inspection documents presented by suppliers (comparison with nominal values) by verifying dimension and determining material properties, e.g. chemical composition, mechanical properties and zinc coating thickness.

The manufactured components are checked visually and for dimensions.

The control plan, which is part of the technical documentation of this European Technical Approval, includes details of the extent, nature and frequency of

testing and controls to be performed within the factory production control and has been agreed between the approval holder and ETA Danmark.

The results of factory production control are recorded and evaluated. The records include at least the following information:

- Designation of the product, basic material and components;
- Type of control or testing;
- Date of manufacture of the product and date of testing of the product or basic material and components;
- Result of control and testing and, if appropriate, comparison with requirements;
- Signature of person responsible for factory production control.

The records shall be presented to ETA Danmark on request.

3.2.1.1 Initial type testing of the product

For initial type-testing the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type testing has to be agreed between ETA Danmark and the notified body.

3.2.2. Tasks of notified bodies

3.2.2.1 Initial inspection of the factory and the factory production control

The approved body should ascertain that, in accordance with the control plan, the factory, in particular the staff and equipment, and the factory production control, are suitable to ensure a continuous and orderly manufacturing of the angle brackets with the specifications given in part 2.

3.2.2.2 Continuous surveillance

The approved body shall visit the factory at least twice a year for routine inspections. It shall be verified that the system of factory production control and the specified manufacturing processes are maintained, taking account of the control plan.

The results of product certification and continuous surveillance shall be made available on demand by the certification body to ETA Danmark. Where the provisions of the European Technical Approval and the control plan are no longer fulfilled, the certificate of conformity shall be withdrawn by the approved body.

⁴ The control plan has been deposited at ETA-Danmark and is only made available to the approved bodies involved in the conformity attestation procedure.

3.3 CE marking

The CE marking shall be affixed on each packaging of angle brackets. The initials "CE" shall be followed by the identification number of the notified body and shall be accompanied by the following information:

- Name or identifying mark of the manufacturer
- The last two digits of the year in which the marking was affixed
- Number of the European Technical Approval
- Name and size of product
- Number of the ETA Guideline (ETAG no. 015)
- Number of the EC Certificate of Conformity

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

GH angle brackets are manufactured in accordance with the provisions of this European Technical Approval using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

4.2 Installation

The following provisions concerning installation apply:

Angle brackets can be fastened to wood-based members by nails or screws. Angle brackets shall be connected to headers made of wood-based panels using GH connector screws.

There shall be nails or screws in all holes or at least in holes as specified on technical drawings in accordance with this document.

All minimum spacing's and edge/end distances in accordance with Eurocode 5 or an appropriate national code shall be complied with.

The angle bracket connection shall be designed in accordance with Eurocode 5 or an appropriate national code.

The cross section of the connected wooden elements shall have a plane surface against the whole angle bracket.

Angle brackets made from stainless steel should only be fastened with fasteners made from suitable stainless steel.

Zinc-coated angle brackets shall not be fastened with fasteners of stainless steel.

Nails or screws to be used shall have a diameter which fits the holes of the angle brackets.

The structural members – the components 1 and 2 shown in the figure on page 13 - to which the brackets are fixed shall be:

- Restrained against rotation. At a load F_4/F_5 , the component 2 is allowed to be restrained against rotation by the Angle brackets.
- Strength class C24 or better, see section 1 of this ETA
- Free from wane under the bracket.

- The actual end bearing capacity of the timber member to be used in conjunction with the bracket is checked by the designer of the structure to ensure it is not less than the bracket capacity and, if necessary, the bracket capacity reduced accordingly.
- The gap between the timber members does not exceed 3 mm.
- There are no specific requirements relating to preparation of the timber members.

The execution of the connection shall be in accordance with the approval holder's technical literature.

4.3 Maintenance and repair

Maintenance is not required during the assumed intended working life. Should repair prove necessary, it is normal to replace the angle bracket.



Thomas Bruun
Manager, ETA-Danmark

Annex A
Product details and definitions

Table A.1 materials specification

Bracket type	Thickness (mm)	Steel specifications*	Coating specification
55 with rib	2,0	S 250 GD + Z 275	Z 275
55 without rib	2,0	S 250 GD + Z 275	Z 275
65 with rib	2,5	S 250 GD + Z 275	Z 275
65 without rib	2,5	S 250 GD + Z 275	Z 275
90 with rib	3,0	S 250 GD + Z 275	Z 275
90 without rib	3,0	S 250 GD + Z 275	Z 275

Table A.2 Range of sizes

Bracket type	Height (mm)		Width (mm)	
	min	max	min	max
55 with rib	69	71	54	56
55 without rib	69	71	54	56
65 with rib	88	90	63	67
65 without rib	88	90	63	67
90 with rib	98,5	100	89	91
90 without rib	98,5	100	89	91

Table A.3 Fastener specification

Nail type	Nail size (mm)		Finish
	Diameter	Length	
According to EN 14592			
Threaded nail	4,0	40	Electroplated zinc
Threaded nail	4,0	60	Electroplated zinc
GH Connector screw	5,0	40	Electroplated zinc
GH Connector screw	5,0	60	Electroplated zinc

* Additionally, the angle brackets can be made from pre-galvanized steel S 235 JR + Z275 or DX 51 D + Z275 according to EN 10327:2004 with a minimum yield stress of 235 MPa, a minimum tensile strength R_m of 330 MPa and a minimum ultimate strain A_{80} of 22 % or from stainless steel 1.4301, 1.4401, 1.4541 or 1.4571 according to EN 10088-2:2005 with a minimum yield stress of 190 MPa. For all stainless steels a factor of 0.8 must be applied to the load-carrying capacity to accommodate for the difference in yield stress.

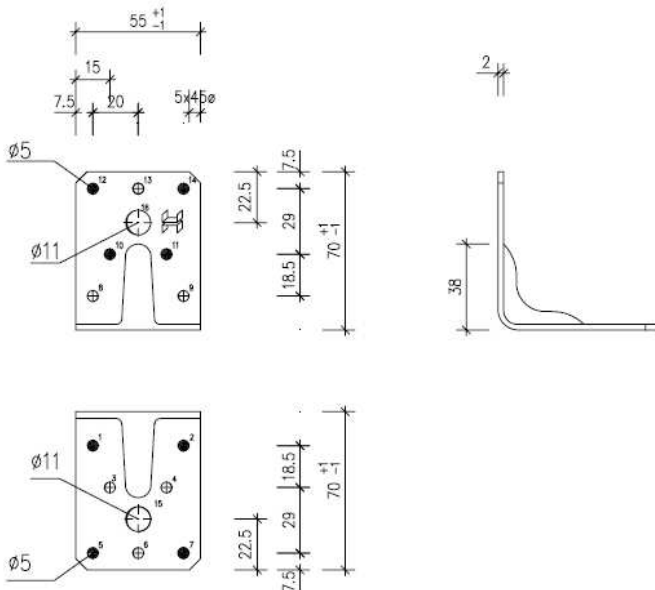


Figure A.1 Dimensions of Angle Bracket 55 with rib

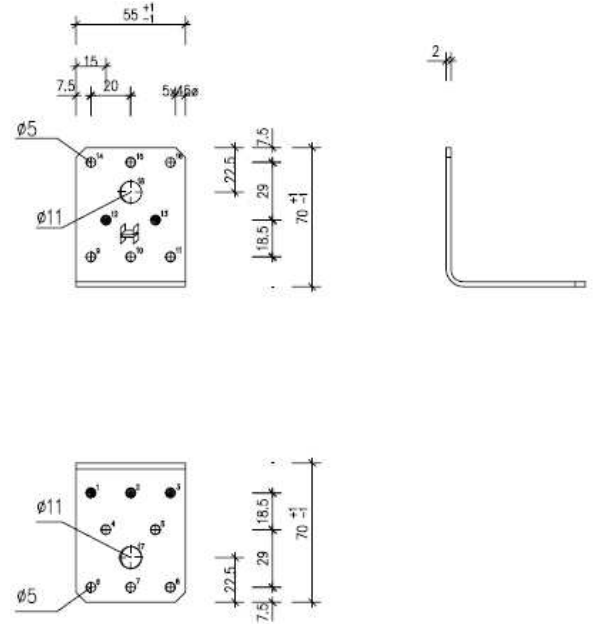


Figure A.2 Dimensions of Angle Bracket 55 without rib

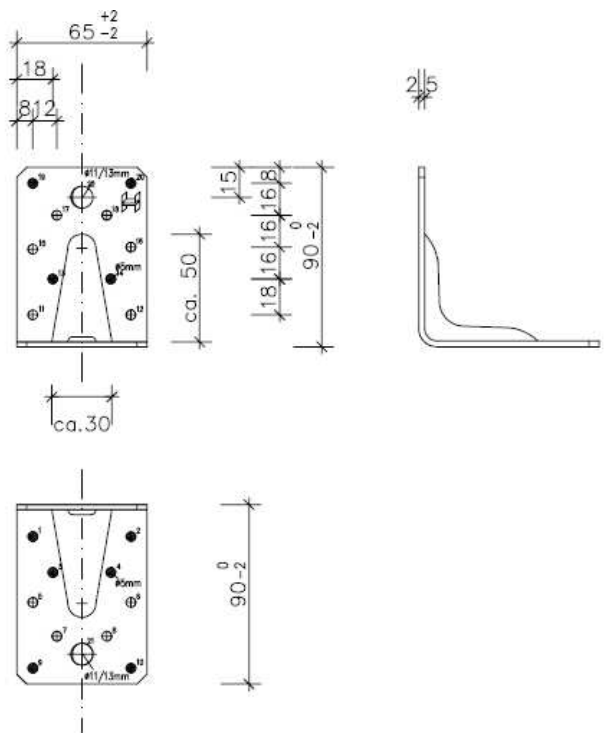


Figure A.3 Dimensions of Angle Bracket 65 with rib

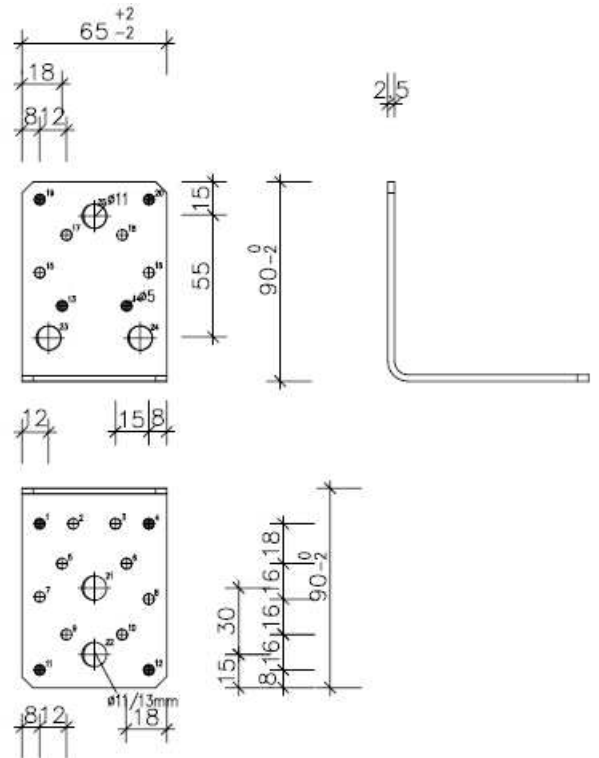


Figure A.4 Dimensions of Angle Bracket 65 without rib

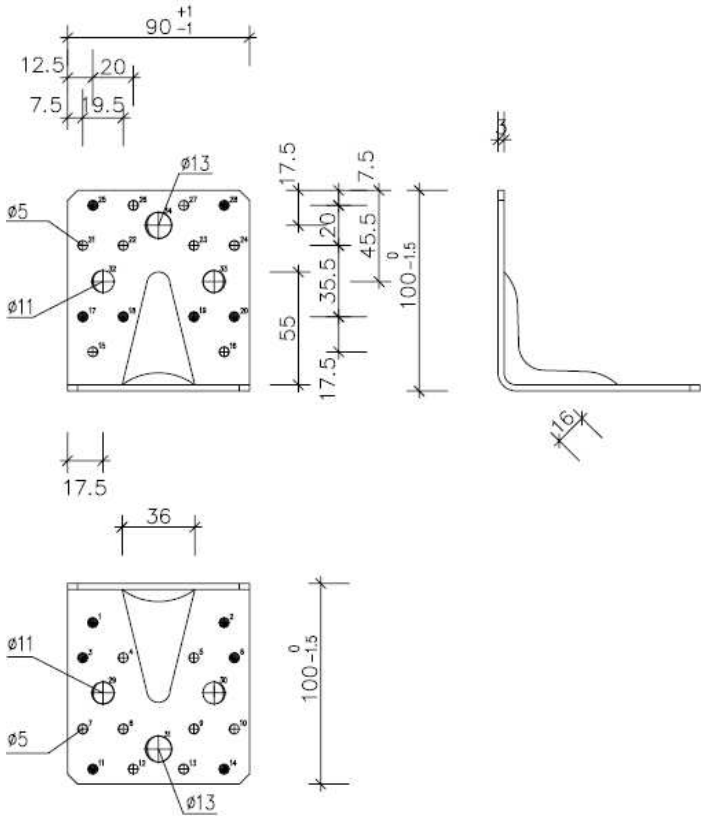


Figure A.5 Dimensions of Angle Bracket 90 with rib

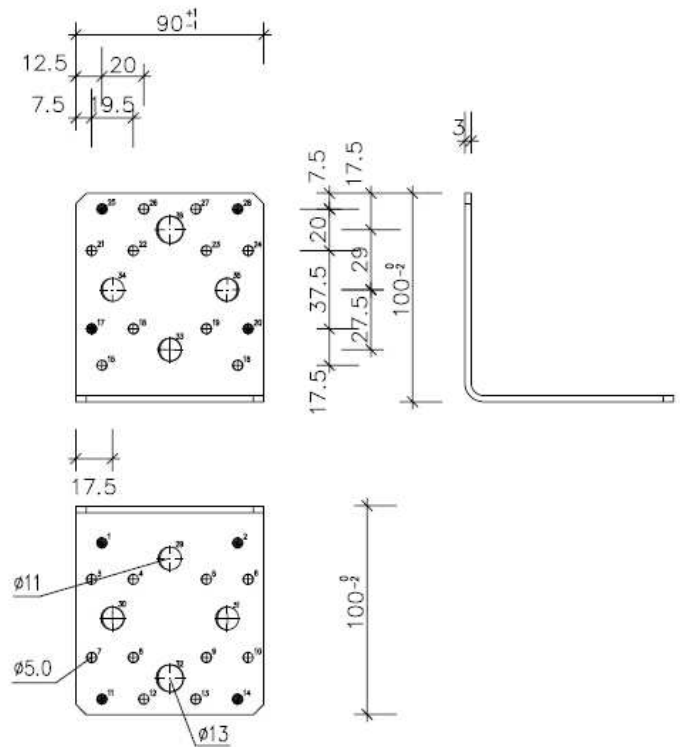


Figure A.6 Dimensions of Angle Bracket 90 without rib

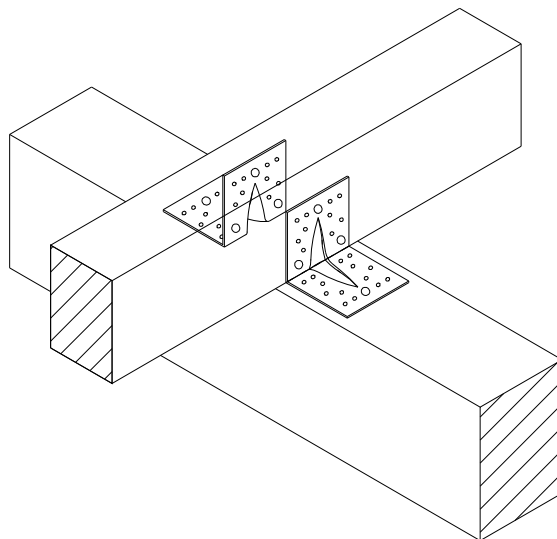
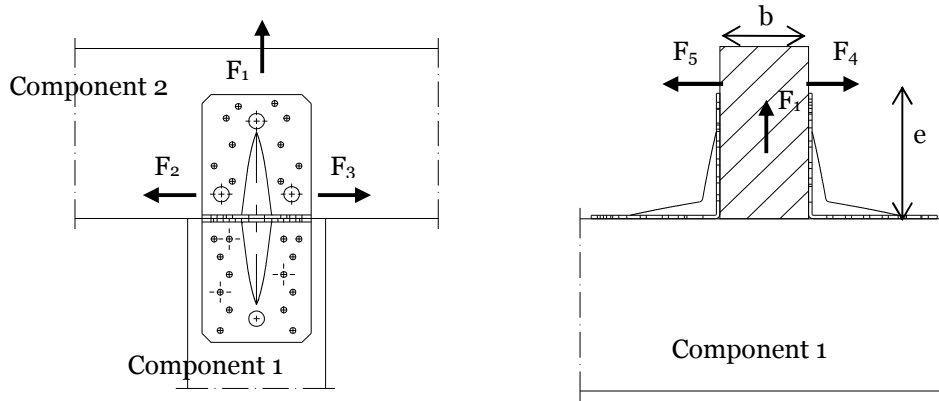


Figure A.7 Typical installation

Annex B Characteristic load-carrying capacities

Definitions of forces, their directions and eccentricity

Forces - Beam to beam connection



Fastener specification

Holes are marked with numbers referring to the nailing pattern in the following tables. The holes which have to be nailed are given in the following tables for the different forces.

Double angle brackets per connection

The angle brackets must be placed at each side opposite each other, symmetric to the component axis.

Acting forces

- F_1 Lifting force acting along the central axis of the joint.
- F_2 and F_3 Lateral force acting in the joint between the component 2 and component 1 in the component 2 direction
- F_4 and F_5 Lateral force acting in the component 1 direction along the central axis of the joint. If the load is applied with an eccentricity e , a design for combined loading is required. The calculations applied for this ETA already contain the necessary input for eccentric loading

Single angle bracket per connection

Acting forces

- F_1 Lifting force acting in the central axis of the angle bracket. The component 2 shall be prevented from rotation. If the component 2 is prevented from rotation the load-carrying capacity will be half of a connection with double angle brackets.
- F_2 and F_3 Lateral force acting in the joint between the component 2 and the component 1 in the component 2 direction. The component 2 shall be prevented from rotation. If the component 2 is prevented from rotation the load-carrying capacity will be half of a connection with double angle brackets.
- F_4 and F_5 Lateral force acting in the component 1 direction in the height of the top edge of component 2. F_4 is the lateral force towards the angle bracket; F_5 is the lateral force away from the angle bracket.

Wane

Wane is not allowed, the timber has to be sharp-edged in the area of the angle brackets.

Timber splitting

For the lifting force F_1 it must be checked in accordance with Eurocode 5 or a similar national Timber Code that splitting will not occur.

Combined forces

If the forces F_1 and F_2/F_3 or F_4/F_5 act at the same time, the following inequality shall be fulfilled:

$$\left(\frac{F_{1,d}}{F_{Rd,1}}\right)^2 + \left(\frac{F_{2,d}}{F_{Rd,2}}\right)^2 + \left(\frac{F_{3,d}}{F_{Rd,3}}\right)^2 + \left(\frac{F_{4,d}}{F_{Rd,4}}\right)^2 + \left(\frac{F_{5,d}}{F_{Rd,5}}\right)^2 \leq 1$$

The forces F_2 and F_3 or F_4 and F_5 are forces with opposite direction. Therefore only one force F_2 or F_3 , respectively, and F_4 or F_5 , respectively, is able to act simultaneously with F_1 , while the other shall be set to zero.

The below table indicates the nailing patterns in the horizontal and vertical leg of the brackets for full and partial nailing. The numbers refer to the hole numbers indicated in the drawings in annex A.

Name	Connectors / Application	Horizontal bracket	Vertical bracket
55-01-S	Maximum	1-2-3-4-5-6-7	10-11-12-13-14
55-01-S	Partial	1-2-5-7	10-11-12-14
55-02-S	Maximum	1-2-3-4-5-6-7-8	12-13-14-15-16
55-02-S	Partial	1-2-3	12-13
65-03-S	Maximum	1-2-3-4-5-6-7-8-9-10	13-14-15-16-17-18-19-20
65-03-S	Partial	1-2-3-4-9-10	13-14-19-20
65-04-S	Maximum	1-2-3-4-5-6-7-8-9-10-11-12	13-14-15-16-19-20
65-04-S	Partial	1-4-11-12	13-14-19-21
65-03-S13	Maximum	1-2-3-4-5-6-7-8-9-10	13-14-15-16-17-18-19-20
65-03-S13	Partial	1-2-3-4-9-10	13-14-19-20
65-04-S13	Maximum	1-2-3-4-5-6-7-8-9-10	13-14-15-16-17-18-19-20
65-04-S13	Partial	1-2-3-4-9-10	13-14-19-20
90-03-S	Maximum	1-2-3-4-5-6-7-8-9-10-11-12-13-14	17-18-19-20-21-22-23-24-25-26-27-28
90-03-S	Partial	1-2-3-6-11-14	17-18-19-20-25-28
90-04-S	Maximum	1-2-3-4-5-6-7-8-9-10-11-12-13-14	17-18-19-20-21-22-23-24-25-26-27-28
90-04-S	Partial	1-2-11-14	17-20-25-28

The characteristic capacities for connection with the angle brackets given in the following tables are based on calculations presuming brackets made from pre-galvanized steel S 2250 GD + Z275 with a minimum yield stress 235 MPa. For all stainless steels a factor of 0.8 must be applied to the load-carrying capacity to accommodate for the difference in yield stress.

The below figure describes the geometric factors used in the following tables for the load-carrying capacities.

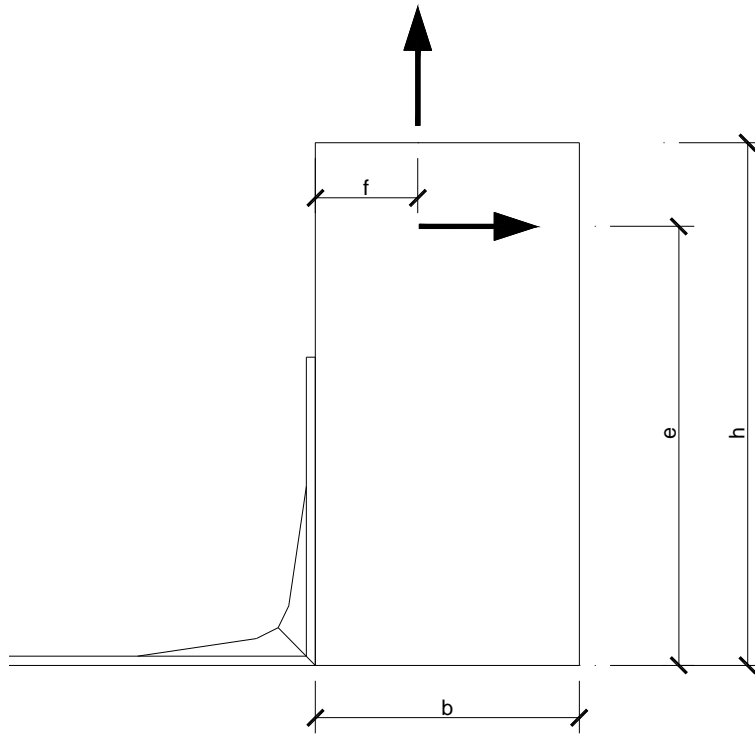


Table B.1 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: Nails 4,0x40 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	1005	331	165	110	83	66	55	47	41	37	33	30	28

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	2011

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	33,5
$F_{2/3}$ [N]	3100

$F_{2/3,k}$ - two angle brackets

Δs [mm]	33,5
$F_{2/3}$ [N]	6201

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	7166	1910	955	301	158	107	81	65	54	47	41	36	33	30	27	25	23

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0	174	174	174	174	174	174	174	174	174	174	174	174	174	
20	368	368	368	368	368	368	368	368	368	368	368	368	368	
40	1231	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
60	821	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
80	616	1404	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
100	492	1123	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
120	410	936	1405	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
140	352	802	1204	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
160	308	702	1053	1412	1470	1470	1470	1470	1470	1470	1470	1470	1470	
180	274	624	936	1255	1470	1470	1470	1470	1470	1470	1470	1470	1470	
200	246	562	843	1129	1419	1470	1470	1470	1470	1470	1470	1470	1470	
220	224	510	766	1027	1290	1470	1470	1470	1470	1470	1470	1470	1470	
240	205	468	702	941	1182	1424	1470	1470	1470	1470	1470	1470	1470	
260	189	432	648	869	1091	1315	1470	1470	1470	1470	1470	1470	1470	
280	176	401	602	807	1013	1221	1429	1470	1470	1470	1470	1470	1470	
300	164	374	562	753	946	1140	1334	1470	1470	1470	1470	1470	1470	
320	154	351	527	706	887	1068	1251	1433	1470	1470	1470	1470	1470	

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0		7341	7341	7341	7341	7341	7341	7341	7341	7341	7341	7341	7341	
20		1005	2011	3016	4021	5026	6032	7037	7185	7202	7216	7227	7236	
40		503	1005	1508	2011	2513	3016	3518	4021	4524	5026	5529	6032	
60		335	670	1005	1340	1675	2011	2346	2681	3016	3351	3686	4021	
80		251	503	754	1005	1257	1508	1759	2011	2262	2513	2764	3016	
100		201	402	603	804	1005	1206	1407	1608	1809	2011	2212	2413	
120		168	335	503	670	838	1005	1173	1340	1508	1675	1843	2011	
140		144	287	431	574	718	862	1005	1149	1292	1436	1580	1723	
160		126	251	377	503	628	754	880	1005	1131	1257	1382	1508	
180		112	223	335	447	558	670	782	894	1005	1117	1229	1340	
200		101	201	302	402	503	603	704	804	905	1005	1106	1206	
220		91	183	274	366	457	548	640	731	822	914	1005	1097	
240		84	168	251	335	419	503	586	670	754	838	921	1005	
260		77	155	232	309	387	464	541	619	696	773	851	928	
280		72	144	215	287	359	431	503	574	646	718	790	862	
300		67	134	201	268	335	402	469	536	603	670	737	804	
320		63	126	188	251	314	377	440	503	565	628	691	754	

Table B.2 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: Nails 4,0x60 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	1675	551	276	184	138	110	92	79	69	61	55	50	46

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	3351

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	30,2
$F_{2/3}$ [N]	3858

$F_{2/3,k}$ - two angle brackets

Δs [mm]	30,2
$F_{2/3}$ [N]	7717


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	8357	3183	1592	501	263	178	134	108	90	78	68	61	55	50	46	42	39

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	290	290	290	290	290	290	290	290	290	290	290	290	290
20	613	613	613	613	613	613	613	613	613	613	613	613	613
40	2052	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
60	1368	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
80	1026	2340	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
100	821	1872	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
120	684	1560	2341	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
140	586	1337	2006	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
160	513	1170	1756	2353	2450	2450	2450	2450	2450	2450	2450	2450	2450
180	456	1040	1561	2091	2450	2450	2450	2450	2450	2450	2450	2450	2450
200	410	936	1405	1882	2364	2450	2450	2450	2450	2450	2450	2450	2450
220	373	851	1277	1711	2149	2450	2450	2450	2450	2450	2450	2450	2450
240	342	780	1170	1569	1970	2374	2450	2450	2450	2450	2450	2450	2450
260	316	720	1080	1448	1819	2191	2450	2450	2450	2450	2450	2450	2450
280	293	668	1003	1345	1689	2035	2382	2450	2450	2450	2450	2450	2450
300	274	624	936	1255	1576	1899	2223	2450	2450	2450	2450	2450	2450
320	256	585	878	1176	1478	1781	2084	2384	2450	2450	2450	2450	2450

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		8647	8647	8647	8647	8647	8647	8647	8647	8647	8647	8647	8647
20		1675	3351	5026	6702	8357	8404	8438	8464	8484	8500	8513	8524
40		838	1675	2513	3351	4189	5026	5864	6702	7539	8357	8383	8404
60		558	1117	1675	2234	2792	3351	3909	4468	5026	5585	6143	6702
80		419	838	1257	1675	2094	2513	2932	3351	3770	4189	4607	5026
100		335	670	1005	1340	1675	2011	2346	2681	3016	3351	3686	4021
120		279	558	838	1117	1396	1675	1955	2234	2513	2792	3072	3351
140		239	479	718	957	1197	1436	1675	1915	2154	2393	2633	2872
160		209	419	628	838	1047	1257	1466	1675	1885	2094	2304	2513
180		186	372	558	745	931	1117	1303	1489	1675	1862	2048	2234
200		168	335	503	670	838	1005	1173	1340	1508	1675	1843	2011
220		152	305	457	609	762	914	1066	1218	1371	1523	1675	1828
240		140	279	419	558	698	838	977	1117	1257	1396	1536	1675
260		129	258	387	516	644	773	902	1031	1160	1289	1418	1547
280		120	239	359	479	598	718	838	957	1077	1197	1316	1436
300		112	223	335	447	558	670	782	894	1005	1117	1229	1340
320		105	209	314	419	524	628	733	838	942	1047	1152	1257

**Table B.3 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: GH Connector screw 5,0x40 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	2107	1250	625	417	313	250	208	179	156	139	125	114	104

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	4214

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	25,6
$F_{2/3}$ [N]	5197

$F_{2/3,k}$ - two angle brackets

Δs [mm]	25,6
$F_{2/3}$ [N]	10394


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	14811	4003	2002	700	367	249	188	151	126	109	95	85	76	69	64	59	55

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	405	405	405	405	405	405	405	405	405	405	405	405	405
20	856	856	856	856	856	856	856	856	856	856	856	856	856
40	2868	5058	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556
60	1912	3372	4901	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556
80	1434	2529	3676	4839	5556	5556	5556	5556	5556	5556	5556	5556	5556
100	1147	2023	2941	3871	4807	5556	5556	5556	5556	5556	5556	5556	5556
120	956	1686	2451	3226	4006	4789	5556	5556	5556	5556	5556	5556	5556
140	819	1445	2101	2765	3434	4105	4777	5450	5556	5556	5556	5556	5556
160	717	1265	1838	2419	3005	3592	4180	4769	5358	5556	5556	5556	5556
180	637	1124	1634	2151	2671	3193	3715	4239	4763	5287	5556	5556	5556
200	574	1012	1470	1936	2404	2873	3344	3815	4287	4758	5231	5556	5556
220	521	920	1337	1760	2185	2612	3040	3468	3897	4326	4755	5184	5556
240	478	843	1225	1613	2003	2394	2787	3179	3572	3965	4359	4752	5146
260	441	778	1131	1489	1849	2210	2572	2935	3297	3660	4023	4387	4750
280	410	723	1050	1383	1717	2052	2389	2725	3062	3399	3736	4073	4411
300	382	674	980	1290	1602	1916	2229	2543	2858	3172	3487	3802	4117
320	358	632	919	1210	1502	1796	2090	2384	2679	2974	3269	3564	3859

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		15216	15216	15216	15216	15216	15216	15216	15216	15216	15216	15216	15216
20		2107	4214	6321	8428	10535	12641	14748	14859	14897	14929	14954	14976
40		1053	2107	3160	4214	5267	6321	7374	8428	9481	10535	11588	12641
60		702	1405	2107	2809	3512	4214	4916	5618	6321	7023	7725	8428
80		527	1053	1580	2107	2634	3160	3687	4214	4741	5267	5794	6321
100		421	843	1264	1686	2107	2528	2950	3371	3792	4214	4635	5057
120		351	702	1053	1405	1756	2107	2458	2809	3160	3512	3863	4214
140		301	602	903	1204	1505	1806	2107	2408	2709	3010	3311	3612
160		263	527	790	1053	1317	1580	1844	2107	2370	2634	2897	3160
180		234	468	702	936	1171	1405	1639	1873	2107	2341	2575	2809
200		211	421	632	843	1053	1264	1475	1686	1896	2107	2318	2528
220		192	383	575	766	958	1149	1341	1532	1724	1915	2107	2298
240		176	351	527	702	878	1053	1229	1405	1580	1756	1931	2107
260		162	324	486	648	810	972	1134	1297	1459	1621	1783	1945
280		150	301	451	602	752	903	1053	1204	1354	1505	1655	1806
300		140	281	421	562	702	843	983	1124	1264	1405	1545	1686
320		132	263	395	527	658	790	922	1053	1185	1317	1448	1580

**Table B.4 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: GH Connector screw 5,0x60 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	2107	1380	1004	669	502	402	335	287	251	223	201	183	167

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	4214

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	23,7
$F_{2/3}$ [N]	5649

$F_{2/3,k}$ - two angle brackets

Δs [mm]	23,7
$F_{2/3}$ [N]	11299

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	16127	4003	2002	700	367	249	188	151	126	109	95	85	76	69	64	59	55

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	405	405	405	405	405	405	405	405	405	405	405	405	405
20	856	856	856	856	856	856	856	856	856	856	856	856	856
40	2868	5058	7352	8924	8924	8924	8924	8924	8924	8924	8924	8924	8924
60	1912	3372	4901	6452	8012	8924	8924	8924	8924	8924	8924	8924	8924
80	1434	2529	3676	4839	6009	7183	8360	8924	8924	8924	8924	8924	8924
100	1147	2023	2941	3871	4807	5747	6688	7630	8573	8924	8924	8924	8924
120	956	1686	2451	3226	4006	4789	5573	6359	7144	7931	8718	8924	8924
140	819	1445	2101	2765	3434	4105	4777	5450	6124	6798	7472	8147	8822
160	717	1265	1838	2419	3005	3592	4180	4769	5358	5948	6538	7128	7719
180	637	1124	1634	2151	2671	3193	3715	4239	4763	5287	5812	6336	6861
200	574	1012	1470	1936	2404	2873	3344	3815	4287	4758	5231	5703	6175
220	521	920	1337	1760	2185	2612	3040	3468	3897	4326	4755	5184	5614
240	478	843	1225	1613	2003	2394	2787	3179	3572	3965	4359	4752	5146
260	441	778	1131	1489	1849	2210	2572	2935	3297	3660	4023	4387	4750
280	410	723	1050	1383	1717	2052	2389	2725	3062	3399	3736	4073	4411
300	382	674	980	1290	1602	1916	2229	2543	2858	3172	3487	3802	4117
320	358	632	919	1210	1502	1796	2090	2384	2679	2974	3269	3564	3859

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		16533	16533	16533	16533	16533	16533	16533	16533	16533	16533	16533	16533
20		2107	4214	6321	8428	10535	12641	14748	16145	16187	16221	16249	16272
40		1053	2107	3160	4214	5267	6321	7374	8428	9481	10535	11588	12641
60		702	1405	2107	2809	3512	4214	4916	5618	6321	7023	7725	8428
80		527	1053	1580	2107	2634	3160	3687	4214	4741	5267	5794	6321
100		421	843	1264	1686	2107	2528	2950	3371	3792	4214	4635	5057
120		351	702	1053	1405	1756	2107	2458	2809	3160	3512	3863	4214
140		301	602	903	1204	1505	1806	2107	2408	2709	3010	3311	3612
160		263	527	790	1053	1317	1580	1844	2107	2370	2634	2897	3160
180		234	468	702	936	1171	1405	1639	1873	2107	2341	2575	2809
200		211	421	632	843	1053	1264	1475	1686	1896	2107	2318	2528
220		192	383	575	766	958	1149	1341	1532	1724	1915	2107	2298
240		176	351	527	702	878	1053	1229	1405	1580	1756	1931	2107
260		162	324	486	648	810	972	1134	1297	1459	1621	1783	1945
280		150	301	451	602	752	903	1053	1204	1354	1505	1655	1806
300		140	281	421	562	702	843	983	1124	1264	1405	1545	1686
320		132	263	395	527	658	790	922	1053	1185	1317	1448	1580

Table B.5 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: Nails 4,0x40 mm, partially nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	890	331	165	110	83	66	55	47	41	37	33	30	28

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	1779

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	38,5
$F_{2/3}$ [N]	2703

$F_{2/3,k}$ - two angle brackets

Δs [mm]	38,5
$F_{2/3}$ [N]	5406

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	3188	1691	845	301	158	107	81	65	54	47	41	36	33	30	27	25	23

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0	174	174	174	174	174	174	174	174	174	174	174	174	174	
20	368	368	368	368	368	368	368	368	368	368	368	368	368	
40	247	841	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
60	165	561	1008	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
80	123	421	756	1105	1461	1470	1470	1470	1470	1470	1470	1470	1470	
100	99	337	605	884	1169	1456	1470	1470	1470	1470	1470	1470	1470	
120	82	280	504	737	974	1214	1454	1470	1470	1470	1470	1470	1470	
140	71	240	432	632	835	1040	1247	1454	1470	1470	1470	1470	1470	
160	62	210	378	553	731	910	1091	1272	1454	1470	1470	1470	1470	
180	55	187	336	491	649	809	970	1131	1293	1455	1470	1470	1470	
200	49	168	303	442	584	728	873	1018	1163	1309	1455	1470	1470	
220	45	153	275	402	531	662	793	925	1058	1190	1323	1456	1470	
240	41	140	252	368	487	607	727	848	969	1091	1213	1334	1456	
260	38	129	233	340	450	560	671	783	895	1007	1119	1232	1344	
280	35	120	216	316	417	520	623	727	831	935	1039	1144	1248	
300	33	112	202	295	390	485	582	679	776	873	970	1067	1165	
320	31	105	189	276	365	455	545	636	727	818	909	1001	1092	

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0		3362	3362	3362	3362	3362	3362	3362	3362	3362	3362	3362	3362	
20		890	1779	2669	3205	3235	3256	3271	3282	3290	3297	3303	3308	
40		445	890	1335	1779	2224	2669	3114	3205	3222	3235	3246	3256	
60		297	593	890	1186	1483	1779	2076	2373	2669	2966	3192	3205	
80		222	445	667	890	1112	1335	1557	1779	2002	2224	2447	2669	
100		178	356	534	712	890	1068	1246	1424	1602	1779	1957	2135	
120		148	297	445	593	741	890	1038	1186	1335	1483	1631	1779	
140		127	254	381	508	636	763	890	1017	1144	1271	1398	1525	
160		111	222	334	445	556	667	779	890	1001	1112	1223	1335	
180		99	198	297	395	494	593	692	791	890	989	1087	1186	
200		89	178	267	356	445	534	623	712	801	890	979	1068	
220		81	162	243	324	404	485	566	647	728	809	890	971	
240		74	148	222	297	371	445	519	593	667	741	816	890	
260		68	137	205	274	342	411	479	548	616	684	753	821	
280		64	127	191	254	318	381	445	508	572	636	699	763	
300		59	119	178	237	297	356	415	475	534	593	652	712	
320		56	111	167	222	278	334	389	445	500	556	612	667	

Table B.6 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: Nails 4,0x60 mm, partially nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	1483	551	276	184	138	110	92	79	69	61	55	50	46

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	2966

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	36,6
$F_{2/3}$ [N]	3250

$F_{2/3,k}$ - two angle brackets

Δs [mm]	36,6
$F_{2/3}$ [N]	6501


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	3717	2818	1409	501	263	178	134	108	90	78	68	61	55	50	46	42	39

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	290	290	290	290	290	290	290	290	290	290	290	290	290
20	613	613	613	613	613	613	613	613	613	613	613	613	613
40	411	1402	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
60	274	935	1681	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
80	206	701	1260	1842	2435	2450	2450	2450	2450	2450	2450	2450	2450
100	165	561	1008	1474	1948	2427	2450	2450	2450	2450	2450	2450	2450
120	137	467	840	1228	1623	2023	2424	2450	2450	2450	2450	2450	2450
140	118	401	720	1053	1392	1734	2078	2423	2450	2450	2450	2450	2450
160	103	351	630	921	1218	1517	1818	2120	2423	2450	2450	2450	2450
180	91	312	560	819	1082	1348	1616	1885	2154	2424	2450	2450	2450
200	82	280	504	737	974	1214	1454	1696	1939	2182	2425	2450	2450
220	75	255	458	670	886	1103	1322	1542	1763	1983	2205	2426	2450
240	69	234	420	614	812	1011	1212	1414	1616	1818	2021	2224	2427
260	63	216	388	567	749	933	1119	1305	1491	1678	1865	2053	2240
280	59	200	360	526	696	867	1039	1212	1385	1558	1732	1906	2080
300	55	187	336	491	649	809	970	1131	1293	1455	1617	1779	1942
320	51	175	315	461	609	758	909	1060	1212	1364	1516	1668	1820

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		4007	4007	4007	4007	4007	4007	4007	4007	4007	4007	4007	4007
20		1483	2966	3762	3821	3857	3881	3898	3912	3922	3931	3937	3943
40		741	1483	2224	2966	3707	3762	3795	3821	3840	3857	3870	3881
60		494	989	1483	1977	2471	2966	3460	3734	3762	3785	3804	3821
80		371	741	1112	1483	1854	2224	2595	2966	3337	3707	3741	3762
100		297	593	890	1186	1483	1779	2076	2373	2669	2966	3262	3559
120		247	494	741	989	1236	1483	1730	1977	2224	2471	2719	2966
140		212	424	636	847	1059	1271	1483	1695	1907	2118	2330	2542
160		185	371	556	741	927	1112	1298	1483	1668	1854	2039	2224
180		165	330	494	659	824	989	1153	1318	1483	1648	1812	1977
200		148	297	445	593	741	890	1038	1186	1335	1483	1631	1779
220		135	270	404	539	674	809	944	1078	1213	1348	1483	1618
240		124	247	371	494	618	741	865	989	1112	1236	1359	1483
260		114	228	342	456	570	684	798	913	1027	1141	1255	1369
280		106	212	318	424	530	636	741	847	953	1059	1165	1271
300		99	198	297	395	494	593	692	791	890	989	1087	1186
320		93	185	278	371	463	556	649	741	834	927	1019	1112

**Table B.7 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: GH Connector screw 5,0x40 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3363	1250	625	417	313	250	208	179	156	139	125	114	104

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	6726

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	34
$F_{2/3}$ [N]	4147

$F_{2/3,k}$ - two angle brackets

Δs [mm]	34
$F_{2/3}$ [N]	8293


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	4540	4540	2868	700	367	249	188	151	126	109	95	85	76	69	64	59	55

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	405	405	405	405	405	405	405	405	405	405	405	405	405
20	856	856	856	856	856	856	856	856	856	856	856	856	856
40	933	3181	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556
60	622	2120	3811	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556
80	466	1590	2859	4178	5523	5556	5556	5556	5556	5556	5556	5556	5556
100	373	1272	2287	3343	4418	5504	5556	5556	5556	5556	5556	5556	5556
120	311	1060	1906	2786	3682	4587	5498	5556	5556	5556	5556	5556	5556
140	267	909	1633	2388	3156	3932	4712	5496	5556	5556	5556	5556	5556
160	233	795	1429	2089	2761	3440	4123	4809	5496	5556	5556	5556	5556
180	207	707	1270	1857	2455	3058	3665	4274	4886	5498	5556	5556	5556
200	187	636	1143	1671	2209	2752	3299	3847	4397	4948	5500	5556	5556
220	170	578	1039	1519	2008	2502	2999	3497	3997	4498	5000	5502	5556
240	155	530	953	1393	1841	2293	2749	3206	3664	4123	4583	5044	5504
260	144	489	880	1286	1699	2117	2537	2959	3382	3806	4231	4656	5081
280	133	454	817	1194	1578	1966	2356	2748	3141	3534	3928	4323	4718
300	124	424	762	1114	1473	1835	2199	2565	2931	3299	3667	4035	4403
320	117	398	715	1045	1381	1720	2062	2404	2748	3093	3437	3783	4128

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		4946	4946	4946	4946	4946	4946	4946	4946	4946	4946	4946	4946
20		3363	4665	4755	4801	4829	4848	4862	4872	4880	4887	4892	4897
40		1682	3363	4578	4665	4718	4755	4781	4801	4817	4829	4840	4848
60		1121	2242	3363	4484	4612	4665	4703	4732	4755	4773	4788	4801
80		841	1682	2522	3363	4204	4578	4627	4665	4694	4718	4738	4755
100		673	1345	2018	2690	3363	4036	4554	4599	4635	4665	4689	4709
120		561	1121	1682	2242	2803	3363	3924	4484	4578	4612	4641	4665
140		480	961	1441	1922	2402	2883	3363	3843	4324	4561	4593	4621
160		420	841	1261	1682	2102	2522	2943	3363	3783	4204	4547	4578
180		374	747	1121	1495	1868	2242	2616	2989	3363	3737	4110	4484
200		336	673	1009	1345	1682	2018	2354	2690	3027	3363	3699	4036
220		306	611	917	1223	1529	1834	2140	2446	2752	3057	3363	3669
240		280	561	841	1121	1401	1682	1962	2242	2522	2803	3083	3363
260		259	517	776	1035	1293	1552	1811	2070	2328	2587	2846	3104
280		240	480	721	961	1201	1441	1682	1922	2162	2402	2642	2883
300		224	448	673	897	1121	1345	1569	1794	2018	2242	2466	2690
320		210	420	631	841	1051	1261	1471	1682	1892	2102	2312	2522

**Table B.8 Characteristic load-carrying capacities angle brackets type 55 with rib
Fastener: GH Connector screw 5,0x60 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	4629	2008	1004	669	502	402	335	287	251	223	201	183	167

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	9257

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	33
$F_{2/3}$ [N]	4392

$F_{2/3,k}$ - two angle brackets

Δs [mm]	33
$F_{2/3}$ [N]	8784

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	7163	5735	2868	700	367	249	188	151	126	109	95	85	76	69	64	59	55

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	405	405	405	405	405	405	405	405	405	405	405	405	405
20	856	856	856	856	856	856	856	856	856	856	856	856	856
40	1498	5108	7862	7549	7313	7163	7163	7163	7163	7163	7163	7163	7163
60	999	3406	6121	7549	7313	7163	7163	7163	7163	7163	7163	7163	7163
80	749	2554	4591	6711	7313	7163	7163	7163	7163	7163	7163	7163	7163
100	599	2043	3673	5369	7096	7163	7163	7163	7163	7163	7163	7163	7163
120	499	1703	3061	4474	5913	7163	7163	7163	7163	7163	7163	7163	7163
140	428	1460	2623	3835	5068	6282	7163	7163	7163	7163	7163	7163	7163
160	375	1277	2295	3355	4435	5496	6452	7163	7163	7163	7163	7163	7163
180	333	1135	2040	2983	3942	4886	5735	6585	7163	7163	7163	7163	7163
200	300	1022	1836	2684	3548	4397	5162	5927	6691	7163	7163	7163	7163
220	272	929	1669	2440	3225	3997	4693	5388	6083	6778	7163	7163	7163
240	250	851	1530	2237	2957	3664	4302	4939	5576	6213	6851	7163	7163
260	231	786	1413	2065	2729	3382	3971	4559	5147	5735	6324	6912	7163
280	214	730	1312	1917	2534	3141	3687	4233	4780	5326	5872	6418	6964
300	200	681	1224	1790	2365	2931	3441	3951	4461	4971	5481	5990	6500
320	187	639	1148	1678	2217	2748	3226	3704	4182	4660	5138	5616	6094

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		7569	7569	7569	7569	7569	7569	7569	7569	7569	7569	7569	7569
20		4629	7251	7354	7406	7438	7460	7475	7487	7496	7503	7509	7514
40		2314	4629	6943	7251	7312	7354	7384	7406	7424	7438	7450	7460
60		1543	3086	4629	6171	7191	7251	7295	7328	7354	7375	7392	7406
80		1157	2314	3471	4629	5786	6943	7208	7251	7285	7312	7335	7354
100		926	1851	2777	3703	4629	5554	6480	7176	7217	7251	7279	7302
120		771	1543	2314	3086	3857	4629	5400	6171	6943	7191	7223	7251
140		661	1322	1984	2645	3306	3967	4629	5290	5951	6612	7169	7201
160		579	1157	1736	2314	2893	3471	4050	4629	5207	5786	6364	6943
180		514	1029	1543	2057	2571	3086	3600	4114	4629	5143	5657	6171
200		463	926	1389	1851	2314	2777	3240	3703	4166	4629	5091	5554
220		421	842	1262	1683	2104	2525	2945	3366	3787	4208	4629	5049
240		386	771	1157	1543	1929	2314	2700	3086	3471	3857	4243	4629
260		356	712	1068	1424	1780	2136	2492	2848	3204	3560	3917	4273
280		331	661	992	1322	1653	1984	2314	2645	2976	3306	3637	3967
300		309	617	926	1234	1543	1851	2160	2469	2777	3086	3394	3703
320		289	579	868	1157	1446	1736	2025	2314	2604	2893	3182	3471

Table B.9 Characteristic load-carrying capacities angle brackets type 55 without rib
Fastener: Nails 4,0x40 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	246	110	55	37	28	22	18	16	14	12	11	10	9

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	492

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	29,8
$F_{2/3}$ [N]	3336

$F_{2/3,k}$ - two angle brackets

Δs [mm]	29,8
$F_{2/3}$ [N]	6672


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	10953	215	108	46	26	18	14	11	9	8	7	6	6	5	5	4	4

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	33	33	33	33	33	33	33	33	33	33	33	33	33
20	77	77	77	77	77	77	77	77	77	77	77	77	77
40	646	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
60	431	1005	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
80	323	754	1185	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
100	259	603	948	1293	1470	1470	1470	1470	1470	1470	1470	1470	1470
120	215	503	790	1077	1364	1470	1470	1470	1470	1470	1470	1470	1470
140	185	431	677	923	1169	1416	1470	1470	1470	1470	1470	1470	1470
160	162	377	592	808	1023	1239	1454	1470	1470	1470	1470	1470	1470
180	144	335	527	718	910	1101	1293	1470	1470	1470	1470	1470	1470
200	129	302	474	646	819	991	1163	1336	1470	1470	1470	1470	1470
220	118	274	431	588	744	901	1058	1214	1371	1470	1470	1470	1470
240	108	251	395	539	682	826	969	1113	1257	1400	1470	1470	1470
260	99	232	365	497	630	762	895	1027	1160	1293	1425	1470	1470
280	92	215	339	462	585	708	831	954	1077	1200	1323	1446	1470
300	86	201	316	431	546	661	776	890	1005	1120	1235	1350	1465
320	81	188	296	404	512	619	727	835	942	1050	1158	1266	1373

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		10986	10986	10986	10986	10986	10986	10986	10986	10986	10986	10986	10986
20		246	492	739	985	1231	1477	1723	1970	2216	2462	2708	2954
40		123	246	369	492	615	739	862	985	1108	1231	1354	1477
60		82	164	246	328	410	492	574	657	739	821	903	985
80		62	123	185	246	308	369	431	492	554	615	677	739
100		49	98	148	197	246	295	345	394	443	492	542	591
120		41	82	123	164	205	246	287	328	369	410	451	492
140		35	70	106	141	176	211	246	281	317	352	387	422
160		31	62	92	123	154	185	215	246	277	308	339	369
180		27	55	82	109	137	164	191	219	246	274	301	328
200		25	49	74	98	123	148	172	197	222	246	271	295
220		22	45	67	90	112	134	157	179	201	224	246	269
240		21	41	62	82	103	123	144	164	185	205	226	246
260		19	38	57	76	95	114	133	152	170	189	208	227
280		18	35	53	70	88	106	123	141	158	176	193	211
300		16	33	49	66	82	98	115	131	148	164	181	197
320		15	31	46	62	77	92	108	123	138	154	169	185

**Table B. 10 Characteristic load-carrying capacities angle brackets type 55 without rib
Fastener: Nails 4,0x60 mm, fully nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	246	115	75	56	44	37	31	26	23	20	18	17	15

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	492

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	25,6
$F_{2/3}$ [N]	4255

$F_{2/3,k}$ - two angle brackets

Δs [mm]	25,6
$F_{2/3}$ [N]	8510


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	14218	215	108	46	26	18	14	11	9	8	7	6	6	5	5	4	4

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	33	33	33	33	33	33	33	33	33	33	33	33	33
20	77	77	77	77	77	77	77	77	77	77	77	77	77
40	646	1508	2370	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
60	431	1005	1580	2154	2450	2450	2450	2450	2450	2450	2450	2450	2450
80	323	754	1185	1616	2046	2450	2450	2450	2450	2450	2450	2450	2450
100	259	603	948	1293	1637	1982	2327	2450	2450	2450	2450	2450	2450
120	215	503	790	1077	1364	1652	1939	2226	2450	2450	2450	2450	2450
140	185	431	677	923	1169	1416	1662	1908	2154	2400	2450	2450	2450
160	162	377	592	808	1023	1239	1454	1669	1885	2100	2316	2450	2450
180	144	335	527	718	910	1101	1293	1484	1675	1867	2058	2250	2441
200	129	302	474	646	819	991	1163	1336	1508	1680	1853	2025	2197
220	118	274	431	588	744	901	1058	1214	1371	1528	1684	1841	1998
240	108	251	395	539	682	826	969	1113	1257	1400	1544	1687	1831
260	99	232	365	497	630	762	895	1027	1160	1293	1425	1558	1690
280	92	215	339	462	585	708	831	954	1077	1200	1323	1446	1569
300	86	201	316	431	546	661	776	890	1005	1120	1235	1350	1465
320	81	188	296	404	512	619	727	835	942	1050	1158	1266	1373

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		14251	14251	14251	14251	14251	14251	14251	14251	14251	14251	14251	14251
20		246	492	739	985	1231	1477	1723	1970	2216	2462	2708	2954
40		123	246	369	492	615	739	862	985	1108	1231	1354	1477
60		82	164	246	328	410	492	574	657	739	821	903	985
80		62	123	185	246	308	369	431	492	554	615	677	739
100		49	98	148	197	246	295	345	394	443	492	542	591
120		41	82	123	164	205	246	287	328	369	410	451	492
140		35	70	106	141	176	211	246	281	317	352	387	422
160		31	62	92	123	154	185	215	246	277	308	339	369
180		27	55	82	109	137	164	191	219	246	274	301	328
200		25	49	74	98	123	148	172	197	222	246	271	295
220		22	45	67	90	112	134	157	179	201	224	246	269
240		21	41	62	82	103	123	144	164	185	205	226	246
260		19	38	57	76	95	114	133	152	170	189	208	227
280		18	35	53	70	88	106	123	141	158	176	193	211
300		16	33	49	66	82	98	115	131	148	164	181	197
320		15	31	46	62	77	92	108	123	138	154	169	185

**Table B.11 Characteristic load-carrying capacities angle brackets type 55 without rib
Fastener: GH Connector screw 5,0x40 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	246	115	75	56	44	37	31	27	24	22	20	18	17

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	492

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	19,2
$F_{2/3}$ [N]	6055

$F_{2/3,k}$ - two angle brackets

Δs [mm]	19,2
$F_{2/3}$ [N]	12110

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	18014	215	108	46	26	18	14	11	9	8	7	6	6	5	5	4	4

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	33	33	33	33	33	33	33	33	33	33	33	33	33
20	77	77	77	77	77	77	77	77	77	77	77	77	77
40	646	1508	2370	3231	4093	4955	5556	5556	5556	5556	5556	5556	5556
60	431	1005	1580	2154	2729	3303	3878	4452	5026	5556	5556	5556	5556
80	323	754	1185	1616	2046	2477	2908	3339	3770	4201	4631	5062	5493
100	259	603	948	1293	1637	1982	2327	2671	3016	3361	3705	4050	4395
120	215	503	790	1077	1364	1652	1939	2226	2513	2800	3088	3375	3662
140	185	431	677	923	1169	1416	1662	1908	2154	2400	2647	2893	3139
160	162	377	592	808	1023	1239	1454	1669	1885	2100	2316	2531	2747
180	144	335	527	718	910	1101	1293	1484	1675	1867	2058	2250	2441
200	129	302	474	646	819	991	1163	1336	1508	1680	1853	2025	2197
220	118	274	431	588	744	901	1058	1214	1371	1528	1684	1841	1998
240	108	251	395	539	682	826	969	1113	1257	1400	1544	1687	1831
260	99	232	365	497	630	762	895	1027	1160	1293	1425	1558	1690
280	92	215	339	462	585	708	831	954	1077	1200	1323	1446	1569
300	86	201	316	431	546	661	776	890	1005	1120	1235	1350	1465
320	81	188	296	404	512	619	727	835	942	1050	1158	1266	1373

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		18047	18047	18047	18047	18047	18047	18047	18047	18047	18047	18047	18047
20		246	492	739	985	1231	1477	1723	1970	2216	2462	2708	2954
40		123	246	369	492	615	739	862	985	1108	1231	1354	1477
60		82	164	246	328	410	492	574	657	739	821	903	985
80		62	123	185	246	308	369	431	492	554	615	677	739
100		49	98	148	197	246	295	345	394	443	492	542	591
120		41	82	123	164	205	246	287	328	369	410	451	492
140		35	70	106	141	176	211	246	281	317	352	387	422
160		31	62	92	123	154	185	215	246	277	308	339	369
180		27	55	82	109	137	164	191	219	246	274	301	328
200		25	49	74	98	123	148	172	197	222	246	271	295
220		22	45	67	90	112	134	157	179	201	224	246	269
240		21	41	62	82	103	123	144	164	185	205	226	246
260		19	38	57	76	95	114	133	152	170	189	208	227
280		18	35	53	70	88	106	123	141	158	176	193	211
300		16	33	49	66	82	98	115	131	148	164	181	197
320		15	31	46	62	77	92	108	123	138	154	169	185

**Table B. 12 Characteristic load-carrying capacities angle brackets type 55 without rib
Fastener: GH Connector screw 5,0x60 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	246	115	75	56	44	37	31	27	24	22	20	18	17

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	492

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	16,3
$F_{2/3}$ [N]	6807

$F_{2/3,k}$ - two angle brackets

Δs [mm]	16,3
$F_{2/3}$ [N]	13613


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	18848	215	108	46	26	18	14	11	9	8	7	6	6	5	5	4	4

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	33	33	33	33	33	33	33	33	33	33	33	33	33
20	77	77	77	77	77	77	77	77	77	77	77	77	77
40	646	1508	2370	3231	4093	4955	5816	6678	7540	8401	8924	8924	8924
60	431	1005	1580	2154	2729	3303	3878	4452	5026	5601	6175	6750	7324
80	323	754	1185	1616	2046	2477	2908	3339	3770	4201	4631	5062	5493
100	259	603	948	1293	1637	1982	2327	2671	3016	3361	3705	4050	4395
120	215	503	790	1077	1364	1652	1939	2226	2513	2800	3088	3375	3662
140	185	431	677	923	1169	1416	1662	1908	2154	2400	2647	2893	3139
160	162	377	592	808	1023	1239	1454	1669	1885	2100	2316	2531	2747
180	144	335	527	718	910	1101	1293	1484	1675	1867	2058	2250	2441
200	129	302	474	646	819	991	1163	1336	1508	1680	1853	2025	2197
220	118	274	431	588	744	901	1058	1214	1371	1528	1684	1841	1998
240	108	251	395	539	682	826	969	1113	1257	1400	1544	1687	1831
260	99	232	365	497	630	762	895	1027	1160	1293	1425	1558	1690
280	92	215	339	462	585	708	831	954	1077	1200	1323	1446	1569
300	86	201	316	431	546	661	776	890	1005	1120	1235	1350	1465
320	81	188	296	404	512	619	727	835	942	1050	1158	1266	1373

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		18881	18881	18881	18881	18881	18881	18881	18881	18881	18881	18881	18881
20		246	492	739	985	1231	1477	1723	1970	2216	2462	2708	2954
40		123	246	369	492	615	739	862	985	1108	1231	1354	1477
60		82	164	246	328	410	492	574	657	739	821	903	985
80		62	123	185	246	308	369	431	492	554	615	677	739
100		49	98	148	197	246	295	345	394	443	492	542	591
120		41	82	123	164	205	246	287	328	369	410	451	492
140		35	70	106	141	176	211	246	281	317	352	387	422
160		31	62	92	123	154	185	215	246	277	308	339	369
180		27	55	82	109	137	164	191	219	246	274	301	328
200		25	49	74	98	123	148	172	197	222	246	271	295
220		22	45	67	90	112	134	157	179	201	224	246	269
240		21	41	62	82	103	123	144	164	185	205	226	246
260		19	38	57	76	95	114	133	152	170	189	208	227
280		18	35	53	70	88	106	123	141	158	176	193	211
300		16	33	49	66	82	98	115	131	148	164	181	197
320		15	31	46	62	77	92	108	123	138	154	169	185

**Table B.17 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: Nails 4,0x40 mm, fully nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	1919	1485	1211	1023	877	701	585	501	438	390	351	319	292

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	3838

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	38,9
$F_{2/3}$ [N]	4604

$F_{2/3,k}$ - two angle brackets

Δs [mm]	38,9
$F_{2/3}$ [N]	9207

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	10880	6572	3286	2191	1643	1314	1095	939	767	629	533	463	409	366	332	303	279

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024	1024
20	1446	1446	1446	1446	1446	1446	1446	1446	1446	1446	1446	1446	1446
40	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461	2461
60	1708	3500	5291	7083	8252	8252	8252	8252	8252	8252	8252	8252	8252
80	1344	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
100	1075	2171	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
120	896	1809	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
140	768	1551	2334	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
160	672	1357	2042	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
180	597	1206	1815	2424	2470	2470	2470	2470	2470	2470	2470	2470	2470
200	537	1085	1634	2182	2470	2470	2470	2470	2470	2470	2470	2470	2470
220	489	987	1485	1983	2470	2470	2470	2470	2470	2470	2470	2470	2470
240	448	905	1361	1818	2275	2470	2470	2470	2470	2470	2470	2470	2470
260	413	835	1257	1678	2100	2470	2470	2470	2470	2470	2470	2470	2470
280	384	775	1167	1558	1950	2341	2470	2470	2470	2470	2470	2470	2470
300	358	724	1089	1454	1820	2185	2470	2470	2470	2470	2470	2470	2470
320	336	678	1021	1363	1706	2049	2391	2470	2470	2470	2470	2470	2470

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		11904	11904	11904	11904	11904	11904	11904	11904	11904	11904	11904	11904
20		1919	3838	5757	7676	9595	10932	11061	11160	11238	11301	11353	11397
40		959	1919	2878	3838	4797	5757	6716	7676	8635	9595	10554	10932
60		640	1279	1919	2559	3198	3838	4477	5117	5757	6396	7036	7676
80		480	959	1439	1919	2399	2878	3358	3838	4318	4797	5277	5757
100		384	768	1151	1535	1919	2303	2686	3070	3454	3838	4222	4605
120		320	640	959	1279	1599	1919	2239	2559	2878	3198	3518	3838
140		274	548	822	1097	1371	1645	1919	2193	2467	2741	3015	3290
160		240	480	720	959	1199	1439	1679	1919	2159	2399	2639	2878
180		213	426	640	853	1066	1279	1492	1706	1919	2132	2345	2559
200		192	384	576	768	959	1151	1343	1535	1727	1919	2111	2303
220		174	349	523	698	872	1047	1221	1396	1570	1744	1919	2093
240		160	320	480	640	800	959	1119	1279	1439	1599	1759	1919
260		148	295	443	590	738	886	1033	1181	1328	1476	1624	1771
280		137	274	411	548	685	822	959	1097	1234	1371	1508	1645
300		128	256	384	512	640	768	895	1023	1151	1279	1407	1535
320		120	240	360	480	600	720	840	959	1079	1199	1319	1439

Table B.18 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: Nails 4,0x60 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3112	2409	1965	1659	1436	1169	974	835	731	649	585	531	487

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	6224

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	36,1
$F_{2/3}$ [N]	5630

$F_{2/3,k}$ - two angle brackets

Δs [mm]	36,1
$F_{2/3}$ [N]	11261


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	13778	10659	5329	3553	2665	2132	1776	1523	1278	1048	889	772	682	610	553	505	465

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	1707	
20	2410	2410	2410	2410	2410	2410	2410	2410	2410	2410	2410	2410	2410	
40	4102	4102	4102	4102	4102	4102	4102	4102	4102	4102	4102	4102	4102	
60	2847	4953	6716	8370	10047	11736	13435	13753	13753	13753	13753	13753	13753	
80	2239	3828	4116	4116	4116	4116	4116	4116	4116	4116	4116	4116	4116	
100	1791	3062	4030	4116	4116	4116	4116	4116	4116	4116	4116	4116	4116	
120	1493	2552	3358	4116	4116	4116	4116	4116	4116	4116	4116	4116	4116	
140	1280	2187	2878	3587	4116	4116	4116	4116	4116	4116	4116	4116	4116	
160	1120	1914	2519	3139	3767	4116	4116	4116	4116	4116	4116	4116	4116	
180	995	1701	2239	2790	3349	3912	4116	4116	4116	4116	4116	4116	4116	
200	896	1531	2015	2511	3014	3521	4030	4116	4116	4116	4116	4116	4116	
220	814	1392	1832	2283	2740	3201	3664	4116	4116	4116	4116	4116	4116	
240	746	1276	1679	2093	2512	2934	3359	3785	4116	4116	4116	4116	4116	
260	689	1178	1550	1932	2318	2708	3100	3494	3888	4116	4116	4116	4116	
280	640	1094	1439	1794	2153	2515	2879	3244	3610	3977	4116	4116	4116	
300	597	1021	1343	1674	2009	2347	2687	3028	3370	3712	4055	4116	4116	
320	560	957	1259	1569	1884	2201	2519	2839	3159	3480	3801	4116	4116	

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0		15485	15485	15485	15485	15485	15485	15485	15485	15485	15485	15485	15485	
20		3112	6224	9336	12448	13954	14188	14360	14491	14595	14680	14749	14808	
40		1556	3112	4668	6224	7780	9336	10892	12448	13803	13954	14081	14188	
60		1037	2075	3112	4149	5187	6224	7261	8299	9336	10374	11411	12448	
80		778	1556	2334	3112	3890	4668	5446	6224	7002	7780	8558	9336	
100		622	1245	1867	2490	3112	3734	4357	4979	5602	6224	6847	7469	
120		519	1037	1556	2075	2593	3112	3631	4149	4668	5187	5705	6224	
140		445	889	1334	1778	2223	2667	3112	3557	4001	4446	4890	5335	
160		389	778	1167	1556	1945	2334	2723	3112	3501	3890	4279	4668	
180		346	692	1037	1383	1729	2075	2420	2766	3112	3458	3804	4149	
200		311	622	934	1245	1556	1867	2178	2490	2801	3112	3423	3734	
220		283	566	849	1132	1415	1697	1980	2263	2546	2829	3112	3395	
240		259	519	778	1037	1297	1556	1815	2075	2334	2593	2853	3112	
260		239	479	718	958	1197	1436	1676	1915	2155	2394	2633	2873	
280		222	445	667	889	1111	1334	1556	1778	2001	2223	2445	2667	
300		207	415	622	830	1037	1245	1452	1660	1867	2075	2282	2490	
320		195	389	584	778	973	1167	1362	1556	1751	1945	2140	2334	

**Table B.19 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: GH Connector screw 5,0x40 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3112	2409	1965	1659	1436	1265	1131	1022	933	858	794	739	691

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	6224

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	32,4
$F_{2/3}$ [N]	7214

$F_{2/3,k}$ - two angle brackets

Δs [mm]	32,4
$F_{2/3}$ [N]	14429


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	21677	10659	5329	3553	2665	2132	1776	1523	1332	1184	1066	969	858	768	696	635	585

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148
20	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033
40	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162
60	3582	5104	6716	8370	10047	11736	13435	15139	16848	17308	17308	17308	17308
80	2687	3828	5037	6278	7535	8802	9193	9193	9193	9193	9193	9193	9193
100	2149	3062	4030	5022	6028	7042	8061	9083	9193	9193	9193	9193	9193
120	1791	2552	3358	4185	5023	5868	6717	7570	8424	9193	9193	9193	9193
140	1535	2187	2878	3587	4306	5030	5758	6488	7220	7954	8689	9193	9193
160	1343	1914	2519	3139	3767	4401	5038	5677	6318	6960	7602	8246	8890
180	1194	1701	2239	2790	3349	3912	4478	5046	5616	6186	6758	7330	7902
200	1075	1531	2015	2511	3014	3521	4030	4542	5054	5568	6082	6597	7112
220	977	1392	1832	2283	2740	3201	3664	4129	4595	5062	5529	5997	6465
240	896	1276	1679	2093	2512	2934	3359	3785	4212	4640	5068	5497	5927
260	827	1178	1550	1932	2318	2708	3100	3494	3888	4283	4678	5074	5471
280	768	1094	1439	1794	2153	2515	2879	3244	3610	3977	4344	4712	5080
300	716	1021	1343	1674	2009	2347	2687	3028	3370	3712	4055	4398	4741
320	672	957	1259	1569	1884	2201	2519	2839	3159	3480	3801	4123	4445

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		23825	23825	23825	23825	23825	23825	23825	23825	23825	23825	23825	23825
20		3112	6224	9336	12448	15560	18672	21687	21933	22128	22287	22418	22529
40		1556	3112	4668	6224	7780	9336	10892	12448	14004	15560	17116	18672
60		1037	2075	3112	4149	5187	6224	7261	8299	9336	10374	11411	12448
80		778	1556	2334	3112	3890	4668	5446	6224	7002	7780	8558	9336
100		622	1245	1867	2490	3112	3734	4357	4979	5602	6224	6847	7469
120		519	1037	1556	2075	2593	3112	3631	4149	4668	5187	5705	6224
140		445	889	1334	1778	2223	2667	3112	3557	4001	4446	4890	5335
160		389	778	1167	1556	1945	2334	2723	3112	3501	3890	4279	4668
180		346	692	1037	1383	1729	2075	2420	2766	3112	3458	3804	4149
200		311	622	934	1245	1556	1867	2178	2490	2801	3112	3423	3734
220		283	566	849	1132	1415	1697	1980	2263	2546	2829	3112	3395
240		259	519	778	1037	1297	1556	1815	2075	2334	2593	2853	3112
260		239	479	718	958	1197	1436	1676	1915	2155	2394	2633	2873
280		222	445	667	889	1111	1334	1556	1778	2001	2223	2445	2667
300		207	415	622	830	1037	1245	1452	1660	1867	2075	2282	2490
320		195	389	584	778	973	1167	1362	1556	1751	1945	2140	2334

**Table B.20 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: GH Connector screw 5,0x60 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3112	2409	1965	1659	1436	1265	1131	1022	933	858	794	739	691

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	6224

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	30,9
$F_{2/3}$ [N]	7736

$F_{2/3,k}$ - two angle brackets

Δs [mm]	30,9
$F_{2/3}$ [N]	15471

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	23291	10659	5329	3553	2665	2132	1776	1523	1332	1184	1066	969	858	768	696	635	585

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148	2148
20	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033	3033
40	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162	5162
60	3582	5104	6716	8370	10047	11736	13435	15139	16848	17308	17308	17308	17308
80	2687	3828	5037	6278	7535	8802	10076	11354	12636	13919	14851	14851	14851
100	2149	3062	4030	5022	6028	7042	8061	9083	10109	11136	12164	13194	14224
120	1791	2552	3358	4185	5023	5868	6717	7570	8424	9280	10137	10995	11853
140	1535	2187	2878	3587	4306	5030	5758	6488	7220	7954	8689	9424	10160
160	1343	1914	2519	3139	3767	4401	5038	5677	6318	6960	7602	8246	8890
180	1194	1701	2239	2790	3349	3912	4478	5046	5616	6186	6758	7330	7902
200	1075	1531	2015	2511	3014	3521	4030	4542	5054	5568	6082	6597	7112
220	977	1392	1832	2283	2740	3201	3664	4129	4595	5062	5529	5997	6465
240	896	1276	1679	2093	2512	2934	3359	3785	4212	4640	5068	5497	5927
260	827	1178	1550	1932	2318	2708	3100	3494	3888	4283	4678	5074	5471
280	768	1094	1439	1794	2153	2515	2879	3244	3610	3977	4344	4712	5080
300	716	1021	1343	1674	2009	2347	2687	3028	3370	3712	4055	4398	4741
320	672	957	1259	1569	1884	2201	2519	2839	3159	3480	3801	4123	4445

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		25438	25438	25438	25438	25438	25438	25438	25438	25438	25438	25438	25438
20		3112	6224	9336	12448	15560	18672	21784	23418	23627	23796	23937	24055
40		1556	3112	4668	6224	7780	9336	10892	12448	14004	15560	17116	18672
60		1037	2075	3112	4149	5187	6224	7261	8299	9336	10374	11411	12448
80		778	1556	2334	3112	3890	4668	5446	6224	7002	7780	8558	9336
100		622	1245	1867	2490	3112	3734	4357	4979	5602	6224	6847	7469
120		519	1037	1556	2075	2593	3112	3631	4149	4668	5187	5705	6224
140		445	889	1334	1778	2223	2667	3112	3557	4001	4446	4890	5335
160		389	778	1167	1556	1945	2334	2723	3112	3501	3890	4279	4668
180		346	692	1037	1383	1729	2075	2420	2766	3112	3458	3804	4149
200		311	622	934	1245	1556	1867	2178	2490	2801	3112	3423	3734
220		283	566	849	1132	1415	1697	1980	2263	2546	2829	3112	3395
240		259	519	778	1037	1297	1556	1815	2075	2334	2593	2853	3112
260		239	479	718	958	1197	1436	1676	1915	2155	2394	2633	2873
280		222	445	667	889	1111	1334	1556	1778	2001	2223	2445	2667
300		207	415	622	830	1037	1245	1452	1660	1867	2075	2282	2490
320		195	389	584	778	973	1167	1362	1556	1751	1945	2140	2334

Table B.21 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: Nails 4,0x40 mm, partially nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	1687	1306	1065	845	634	507	423	362	317	282	254	231	211

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	3374

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	37,3
$F_{2/3}$ [N]	3178

$F_{2/3,k}$ - two angle brackets

Δs [mm]	37,3
$F_{2/3}$ [N]	6355


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	5229	5229	2889	1926	1444	1156	963	709	554	455	386	335	296	265	240	219	202

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0	740	740	740	740	740	740	740	740	740	740	740	740	740	
20	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	1046	
40	1250	1779	1779	1779	1779	1779	1779	1779	1779	1779	1779	1779	1779	
60	833	1887	2851	3808	4774	4745	4645	4563	4492	4431	4378	4331	4289	
80	625	1415	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
100	500	1132	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
120	417	943	1426	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
140	357	809	1222	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	
160	312	708	1069	1428	1470	1470	1470	1470	1470	1470	1470	1470	1470	
180	278	629	950	1269	1470	1470	1470	1470	1470	1470	1470	1470	1470	
200	250	566	855	1143	1432	1470	1470	1470	1470	1470	1470	1470	1470	
220	227	515	778	1039	1302	1470	1470	1470	1470	1470	1470	1470	1470	
240	208	472	713	952	1193	1436	1470	1470	1470	1470	1470	1470	1470	
260	192	435	658	879	1102	1325	1470	1470	1470	1470	1470	1470	1470	
280	179	404	611	816	1023	1231	1439	1470	1470	1470	1470	1470	1470	
300	167	377	570	762	955	1149	1343	1470	1470	1470	1470	1470	1470	
320	156	354	535	714	895	1077	1259	1442	1470	1470	1470	1470	1470	

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0		5969	5969	5969	5969	5969	5969	5969	5969	5969	5969	5969	5969	
20		1687	3374	5061	5379	5488	5562	5617	5659	5692	5718	5740	5759	
40		843	1687	2530	3374	4217	5061	5304	5379	5439	5488	5528	5562	
60		562	1125	1687	2249	2812	3374	3936	4498	5061	5275	5331	5379	
80		422	843	1265	1687	2109	2530	2952	3374	3796	4217	4639	5061	
100		337	675	1012	1350	1687	2024	2362	2699	3036	3374	3711	4049	
120		281	562	843	1125	1406	1687	1968	2249	2530	2812	3093	3374	
140		241	482	723	964	1205	1446	1687	1928	2169	2410	2651	2892	
160		211	422	633	843	1054	1265	1476	1687	1898	2109	2320	2530	
180		187	375	562	750	937	1125	1312	1499	1687	1874	2062	2249	
200		169	337	506	675	843	1012	1181	1350	1518	1687	1856	2024	
220		153	307	460	613	767	920	1073	1227	1380	1534	1687	1840	
240		141	281	422	562	703	843	984	1125	1265	1406	1546	1687	
260		130	260	389	519	649	779	908	1038	1168	1298	1427	1557	
280		120	241	361	482	602	723	843	964	1084	1205	1325	1446	
300		112	225	337	450	562	675	787	900	1012	1125	1237	1350	
320		105	211	316	422	527	633	738	843	949	1054	1160	1265	

**Table B.22 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: Nails 4,0x60 mm, partially nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	2812	2176	1775	1409	1057	845	704	604	528	470	423	384	352

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	5623

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	32,7
$F_{2/3}$ [N]	3990

$F_{2/3,k}$ - two angle brackets

Δs [mm]	32,7
$F_{2/3}$ [N]	7979


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	6147	6147	4815	3210	2407	1926	1605	1182	924	758	643	558	493	441	400	365	336

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234	1234
20	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743	1743
40	2083	2966	2966	2966	2966	2966	2966	2966	2966	2966	2966	2966	2966
60	1388	2627	3867	5106	5722	5578	5461	5364	5281	5210	5147	5092	5042
80	1041	1971	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
100	833	1576	2320	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
120	694	1314	1933	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
140	595	1126	1657	2188	2450	2450	2450	2450	2450	2450	2450	2450	2450
160	521	985	1450	1915	2379	2450	2450	2450	2450	2450	2450	2450	2450
180	463	876	1289	1702	2115	2450	2450	2450	2450	2450	2450	2450	2450
200	417	788	1160	1532	1903	2275	2450	2450	2450	2450	2450	2450	2450
220	379	717	1055	1392	1730	2068	2406	2450	2450	2450	2450	2450	2450
240	347	657	967	1276	1586	1896	2206	2450	2450	2450	2450	2450	2450
260	320	606	892	1178	1464	1750	2036	2322	2450	2450	2450	2450	2450
280	298	563	829	1094	1360	1625	1891	2156	2422	2450	2450	2450	2450
300	278	525	773	1021	1269	1517	1765	2012	2260	2450	2450	2450	2450
320	260	493	725	957	1190	1422	1654	1887	2119	2351	2450	2450	2450

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		7381	7381	7381	7381	7381	7381	7381	7381	7381	7381	7381	7381
20		2812	5623	6439	6651	6786	6878	6946	6997	7038	7071	7098	7121
40		1406	2812	4217	5623	6279	6439	6559	6651	6725	6786	6836	6878
60		937	1874	2812	3749	4686	5623	6213	6338	6439	6522	6592	6651
80		703	1406	2109	2812	3514	4217	4920	5623	6176	6279	6365	6439
100		562	1125	1687	2249	2812	3374	3936	4498	5061	5623	6154	6240
120		469	937	1406	1874	2343	2812	3280	3749	4217	4686	5154	5623
140		402	803	1205	1607	2008	2410	2812	3213	3615	4016	4418	4820
160		351	703	1054	1406	1757	2109	2460	2812	3163	3514	3866	4217
180		312	625	937	1250	1562	1874	2187	2499	2812	3124	3436	3749
200		281	562	843	1125	1406	1687	1968	2249	2530	2812	3093	3374
220		256	511	767	1022	1278	1534	1789	2045	2300	2556	2812	3067
240		234	469	703	937	1171	1406	1640	1874	2109	2343	2577	2812
260		216	433	649	865	1081	1298	1514	1730	1946	2163	2379	2595
280		201	402	602	803	1004	1205	1406	1607	1807	2008	2209	2410
300		187	375	562	750	937	1125	1312	1499	1687	1874	2062	2249
320		176	351	527	703	879	1054	1230	1406	1581	1757	1933	2109

**Table B.23 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: GH Connector screw 5,0x40 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	4510	4510	3732	3147	2360	1888	1573	1349	1180	1049	944	858	787

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	9021

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	25,4
$F_{2/3}$ [N]	5421

$F_{2/3,k}$ - two angle brackets

Δs [mm]	25,4
$F_{2/3}$ [N]	10841

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	9198	9198	5374	3582	2687	2149	1791	1535	1343	1194	1075	977	896	827	768	716	672

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756
20	3893	3893	3893	3893	3893	3893	3893	3893	3893	3893	3893	3893	3893
40	4651	6624	6624	6624	6624	6624	6624	6624	6624	6624	6624	6624	6624
60	3101	4604	6108	7611	9115	10259	10243	10230	10218	10208	10200	10193	10186
80	2326	3453	4581	5472	5472	5472	5472	5472	5472	5472	5472	5472	5472
100	1861	2763	3665	4567	5469	5472	5472	5472	5472	5472	5472	5472	5472
120	1550	2302	3054	3806	4557	5309	5472	5472	5472	5472	5472	5472	5472
140	1329	1973	2618	3262	3906	4551	5195	5472	5472	5472	5472	5472	5472
160	1163	1727	2290	2854	3418	3982	4546	5109	5472	5472	5472	5472	5472
180	1034	1535	2036	2537	3038	3539	4041	4542	5043	5472	5472	5472	5472
200	930	1381	1832	2283	2734	3185	3636	4088	4539	4990	5441	5472	5472
220	846	1256	1666	2076	2486	2896	3306	3716	4126	4536	4946	5356	5472
240	775	1151	1527	1903	2279	2655	3030	3406	3782	4158	4534	4910	5286
260	716	1063	1409	1756	2103	2450	2797	3144	3491	3838	4185	4532	4879
280	664	987	1309	1631	1953	2275	2597	2920	3242	3564	3886	4208	4530
300	620	921	1222	1522	1823	2124	2424	2725	3026	3326	3627	3928	4228
320	581	863	1145	1427	1709	1991	2273	2555	2837	3118	3400	3682	3964

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		11954	11954	11954	11954	11954	11954	11954	11954	11954	11954	11954	11954
20		4510	9021	9932	10370	10653	10850	10995	11106	11194	11266	11325	11375
40		2255	4510	6766	9021	9606	9932	10178	10370	10525	10653	10759	10850
60		1503	3007	4510	6014	7517	9021	9474	9726	9932	10103	10247	10370
80		1128	2255	3383	4510	5638	6766	7893	9021	9401	9606	9781	9932
100		902	1804	2706	3608	4510	5412	6314	7217	8119	9021	9356	9528
120		752	1503	2255	3007	3759	4510	5262	6014	6766	7517	8269	9021
140		644	1289	1933	2577	3222	3866	4510	5155	5799	6443	7088	7732
160		564	1128	1691	2255	2819	3383	3947	4510	5074	5638	6202	6766
180		501	1002	1503	2005	2506	3007	3508	4009	4510	5012	5513	6014
200		451	902	1353	1804	2255	2706	3157	3608	4059	4510	4961	5412
220		410	820	1230	1640	2050	2460	2870	3280	3690	4100	4510	4920
240		376	752	1128	1503	1879	2255	2631	3007	3383	3759	4134	4510
260		347	694	1041	1388	1735	2082	2429	2776	3123	3470	3816	4163
280		322	644	967	1289	1611	1933	2255	2577	2900	3222	3544	3866
300		301	601	902	1203	1503	1804	2105	2406	2706	3007	3308	3608
320		282	564	846	1128	1409	1691	1973	2255	2537	2819	3101	3383

**Table B.24 Characteristic load-carrying capacities angle brackets type 65 with rib
Fastener: GH Connector screw 5,0x60 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	5911	4575	3732	3151	2687	2149	1791	1535	1343	1194	1075	977	896

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	11822

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	21,7
$F_{2/3}$ [N]	6045

$F_{2/3,k}$ - two angle brackets

Δs [mm]	21,7
$F_{2/3}$ [N]	12089

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	12811	10747	5374	3582	2687	2149	1791	1535	1343	1194	1075	977	896	827	768	716	672

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	3184	3184	3184	3184	3184	3184	3184	3184	3184	3184	3184	3184	3184
20	4497	4497	4497	4497	4497	4497	4497	4497	4497	4497	4497	4497	4497
40	5374	7653	7653	7653	7653	7653	7653	7653	7653	7653	7653	7653	7653
60	3582	6256	8936	11613	13051	13043	13036	13031	13027	13023	13021	13018	13016
80	2687	4692	6702	8710	8840	8840	8840	8840	8840	8840	8840	8840	8840
100	2149	3754	5362	6968	8574	8840	8840	8840	8840	8840	8840	8840	8840
120	1791	3128	4468	5806	7145	8483	8840	8840	8840	8840	8840	8840	8840
140	1535	2681	3830	4977	6124	7271	8419	8840	8840	8840	8840	8840	8840
160	1343	2346	3351	4355	5359	6363	7366	8370	8840	8840	8840	8840	8840
180	1194	2085	2979	3871	4763	5656	6548	7440	8332	8840	8840	8840	8840
200	1075	1877	2681	3484	4287	5090	5893	6696	7499	8302	8840	8840	8840
220	977	1706	2437	3167	3897	4627	5357	6087	6817	7547	8278	8840	8840
240	896	1564	2234	2903	3572	4242	4911	5580	6249	6919	7588	8257	8840
260	827	1444	2062	2680	3298	3915	4533	5151	5769	6386	7004	7622	8240
280	768	1341	1915	2488	3062	3636	4209	4783	5357	5930	6504	7077	7651
300	716	1251	1787	2323	2858	3393	3929	4464	4999	5535	6070	6606	7141
320	672	1173	1676	2177	2679	3181	3683	4185	4687	5189	5691	6193	6695

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		15995	15995	15995	15995	15995	15995	15995	15995	15995	15995	15995	15995
20		5911	11822	13560	14096	14439	14677	14852	14986	15091	15177	15248	15308
40		2956	5911	8867	11822	13159	13560	13861	14096	14285	14439	14568	14677
60		1970	3941	5911	7881	9852	11822	12995	13307	13560	13770	13946	14096
80		1478	2956	4433	5911	7389	8867	10344	11822	12905	13159	13375	13560
100		1182	2364	3547	4729	5911	7093	8276	9458	10640	11822	12849	13063
120		985	1970	2956	3941	4926	5911	6896	7881	8867	9852	10837	11822
140		844	1689	2533	3378	4222	5067	5911	6756	7600	8444	9289	10133
160		739	1478	2217	2956	3694	4433	5172	5911	6650	7389	8128	8867
180		657	1314	1970	2627	3284	3941	4598	5254	5911	6568	7225	7881
200		591	1182	1773	2364	2956	3547	4138	4729	5320	5911	6502	7093
220		537	1075	1612	2149	2687	3224	3762	4299	4836	5374	5911	6448
240		493	985	1478	1970	2463	2956	3448	3941	4433	4926	5418	5911
260		455	909	1364	1819	2273	2728	3183	3638	4092	4547	5002	5456
280		422	844	1267	1689	2111	2533	2956	3378	3800	4222	4644	5067
300		394	788	1182	1576	1970	2364	2759	3153	3547	3941	4335	4729
320		369	739	1108	1478	1847	2217	2586	2956	3325	3694	4064	4433

Table B.25 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: Nails 4,0x40 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	397	184	92	61	46	37	31	26	23	20	18	17	15

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	795

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	30,5
$F_{2/3}$ [N]	5207

$F_{2/3,k}$ - two angle brackets

Δs [mm]	30,5
$F_{2/3}$ [N]	10414


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	12648	368	184	123	81	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	285	1108	2174	2470	2470	2470	2470	2470	2470	2470	2470	2470	2470
60	190	738	1450	2246	2470	2470	2470	2470	2470	2470	2470	2470	2470
80	143	554	1087	1685	2320	2470	2470	2470	2470	2470	2470	2470	2470
100	114	443	870	1348	1856	2383	2470	2470	2470	2470	2470	2470	2470
120	95	369	725	1123	1547	1986	2436	2470	2470	2470	2470	2470	2470
140	81	316	621	963	1326	1702	2088	2470	2470	2470	2470	2470	2470
160	71	277	544	842	1160	1489	1827	2171	2470	2470	2470	2470	2470
180	63	246	483	749	1031	1324	1624	1930	2239	2470	2470	2470	2470
200	57	222	435	674	928	1192	1462	1737	2015	2296	2470	2470	2470
220	52	201	395	613	844	1083	1329	1579	1832	2087	2344	2470	2470
240	48	185	362	562	773	993	1218	1447	1679	1913	2149	2386	2470
260	44	170	335	518	714	917	1124	1336	1550	1766	1983	2202	2422
280	41	158	311	481	663	851	1044	1240	1439	1640	1842	2045	2249
300	38	148	290	449	619	794	975	1158	1343	1530	1719	1908	2099
320	36	138	272	421	580	745	914	1085	1259	1435	1611	1789	1968

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		12744	12744	12744	12744	12744	12744	12744	12744	12744	12744	12744	12744
20		397	795	1192	1589	1986	2384	2781	3178	3576	3973	4370	4768
40		199	397	596	795	993	1192	1391	1589	1788	1986	2185	2384
60		132	265	397	530	662	795	927	1059	1192	1324	1457	1589
80		99	199	298	397	497	596	695	795	894	993	1093	1192
100		79	159	238	318	397	477	556	636	715	795	874	954
120		66	132	199	265	331	397	464	530	596	662	728	795
140		57	114	170	227	284	341	397	454	511	568	624	681
160		50	99	149	199	248	298	348	397	447	497	546	596
180		44	88	132	177	221	265	309	353	397	441	486	530
200		40	79	119	159	199	238	278	318	358	397	437	477
220		36	72	108	144	181	217	253	289	325	361	397	433
240		33	66	99	132	166	199	232	265	298	331	364	397
260		31	61	92	122	153	183	214	244	275	306	336	367
280		28	57	85	114	142	170	199	227	255	284	312	341
300		26	53	79	106	132	159	185	212	238	265	291	318
320		25	50	74	99	124	149	174	199	223	248	273	298

**Table B. 26 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: Nails 4,0x60 mm, fully nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	403	194	127	95	76	61	51	44	38	34	31	28	26

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	806

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	25,5
$F_{2/3}$ [N]	6633

$F_{2/3,k}$ - two angle brackets

Δs [mm]	25,5
$F_{2/3}$ [N]	13267


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	20767	373	186	124	81	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	475	1846	3624	4116	4116	4116	4116	4116	4116	4116	4116	4116	4116
60	317	1231	2416	3744	4116	4116	4116	4116	4116	4116	4116	4116	4116
80	238	923	1812	2808	3580	4116	4116	4116	4116	4116	4116	4116	4116
100	190	738	1450	2246	2864	3461	4057	4116	4116	4116	4116	4116	4116
120	158	615	1208	1872	2387	2884	3381	3878	4116	4116	4116	4116	4116
140	136	527	1035	1604	2046	2472	2898	3324	3751	4116	4116	4116	4116
160	119	462	906	1404	1790	2163	2536	2909	3282	3655	4028	4116	4116
180	106	410	805	1248	1591	1923	2254	2586	2917	3249	3580	3912	4116
200	95	369	725	1123	1432	1730	2029	2327	2625	2924	3222	3520	3819
220	86	336	659	1021	1302	1573	1844	2116	2387	2658	2929	3200	3472
240	79	308	604	936	1193	1442	1691	1939	2188	2436	2685	2934	3182
260	73	284	558	864	1102	1331	1561	1790	2020	2249	2479	2708	2938
280	68	264	518	802	1023	1236	1449	1662	1875	2088	2301	2515	2728
300	63	246	483	749	955	1154	1352	1551	1750	1949	2148	2347	2546
320	59	231	453	702	895	1081	1268	1454	1641	1827	2014	2200	2387

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		20863	20863	20863	20863	20863	20863	20863	20863	20863	20863	20863	20863
20		403	806	1209	1613	2016	2419	2822	3225	3628	4032	4435	4838
40		202	403	605	806	1008	1209	1411	1613	1814	2016	2217	2419
60		134	269	403	538	672	806	941	1075	1209	1344	1478	1613
80		101	202	302	403	504	605	706	806	907	1008	1109	1209
100		81	161	242	323	403	484	564	645	726	806	887	968
120		67	134	202	269	336	403	470	538	605	672	739	806
140		58	115	173	230	288	346	403	461	518	576	634	691
160		50	101	151	202	252	302	353	403	454	504	554	605
180		45	90	134	179	224	269	314	358	403	448	493	538
200		40	81	121	161	202	242	282	323	363	403	443	484
220		37	73	110	147	183	220	257	293	330	367	403	440
240		34	67	101	134	168	202	235	269	302	336	370	403
260		31	62	93	124	155	186	217	248	279	310	341	372
280		29	58	86	115	144	173	202	230	259	288	317	346
300		27	54	81	108	134	161	188	215	242	269	296	323
320		25	50	76	101	126	151	176	202	227	252	277	302

**Table B.27 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: GH Connector screw 5,0x40 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	403	194	127	95	76	63	54	47	42	38	34	31	29

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	806

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	17,8
$F_{2/3}$ [N]	9220

$F_{2/3,k}$ - two angle brackets

Δs [mm]	17,8
$F_{2/3}$ [N]	18439


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	26720	373	186	124	81	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	1061	2685	4177	5668	7160	8652	9193	9193	9193	9193	9193	9193	9193
60	708	1790	2785	3779	4773	5768	6762	7757	8751	9193	9193	9193	9193
80	531	1343	2088	2834	3580	4326	5072	5818	6563	7309	8055	8801	9193
100	425	1074	1671	2267	2864	3461	4057	4654	5251	5847	6444	7041	7638
120	354	895	1392	1889	2387	2884	3381	3878	4376	4873	5370	5867	6365
140	303	767	1193	1620	2046	2472	2898	3324	3751	4177	4603	5029	5455
160	265	671	1044	1417	1790	2163	2536	2909	3282	3655	4028	4401	4773
180	236	597	928	1260	1591	1923	2254	2586	2917	3249	3580	3912	4243
200	212	537	835	1134	1432	1730	2029	2327	2625	2924	3222	3520	3819
220	193	488	759	1031	1302	1573	1844	2116	2387	2658	2929	3200	3472
240	177	448	696	945	1193	1442	1691	1939	2188	2436	2685	2934	3182
260	163	413	643	872	1102	1331	1561	1790	2020	2249	2479	2708	2938
280	152	384	597	810	1023	1236	1449	1662	1875	2088	2301	2515	2728
300	142	358	557	756	955	1154	1352	1551	1750	1949	2148	2347	2546
320	133	336	522	709	895	1081	1268	1454	1641	1827	2014	2200	2387

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		26817	26817	26817	26817	26817	26817	26817	26817	26817	26817	26817	26817
20		403	806	1209	1613	2016	2419	2822	3225	3628	4032	4435	4838
40		202	403	605	806	1008	1209	1411	1613	1814	2016	2217	2419
60		134	269	403	538	672	806	941	1075	1209	1344	1478	1613
80		101	202	302	403	504	605	706	806	907	1008	1109	1209
100		81	161	242	323	403	484	564	645	726	806	887	968
120		67	134	202	269	336	403	470	538	605	672	739	806
140		58	115	173	230	288	346	403	461	518	576	634	691
160		50	101	151	202	252	302	353	403	454	504	554	605
180		45	90	134	179	224	269	314	358	403	448	493	538
200		40	81	121	161	202	242	282	323	363	403	443	484
220		37	73	110	147	183	220	257	293	330	367	403	440
240		34	67	101	134	168	202	235	269	302	336	370	403
260		31	62	93	124	155	186	217	248	279	310	341	372
280		29	58	86	115	144	173	202	230	259	288	317	346
300		27	54	81	108	134	161	188	215	242	269	296	323
320		25	50	76	101	126	151	176	202	227	252	277	302

**Table B. 28 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: GH Connector screw 5,0x60 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	403	194	127	95	76	63	54	47	42	38	34	31	29

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	806

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	14
$F_{2/3}$ [N]	10396

$F_{2/3,k}$ - two angle brackets

Δs [mm]	14
$F_{2/3}$ [N]	20791


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	28225	373	186	124	81	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	1193	2685	4177	5668	7160	8652	10144	11635	13127	14619	14851	14851	14851
60	796	1790	2785	3779	4773	5768	6762	7757	8751	9746	10740	11735	12729
80	597	1343	2088	2834	3580	4326	5072	5818	6563	7309	8055	8801	9547
100	477	1074	1671	2267	2864	3461	4057	4654	5251	5847	6444	7041	7638
120	398	895	1392	1889	2387	2884	3381	3878	4376	4873	5370	5867	6365
140	341	767	1193	1620	2046	2472	2898	3324	3751	4177	4603	5029	5455
160	298	671	1044	1417	1790	2163	2536	2909	3282	3655	4028	4401	4773
180	265	597	928	1260	1591	1923	2254	2586	2917	3249	3580	3912	4243
200	239	537	835	1134	1432	1730	2029	2327	2625	2924	3222	3520	3819
220	217	488	759	1031	1302	1573	1844	2116	2387	2658	2929	3200	3472
240	199	448	696	945	1193	1442	1691	1939	2188	2436	2685	2934	3182
260	184	413	643	872	1102	1331	1561	1790	2020	2249	2479	2708	2938
280	170	384	597	810	1023	1236	1449	1662	1875	2088	2301	2515	2728
300	159	358	557	756	955	1154	1352	1551	1750	1949	2148	2347	2546
320	149	336	522	709	895	1081	1268	1454	1641	1827	2014	2200	2387

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		28321	28321	28321	28321	28321	28321	28321	28321	28321	28321	28321	28321
20		403	806	1209	1613	2016	2419	2822	3225	3628	4032	4435	4838
40		202	403	605	806	1008	1209	1411	1613	1814	2016	2217	2419
60		134	269	403	538	672	806	941	1075	1209	1344	1478	1613
80		101	202	302	403	504	605	706	806	907	1008	1109	1209
100		81	161	242	323	403	484	564	645	726	806	887	968
120		67	134	202	269	336	403	470	538	605	672	739	806
140		58	115	173	230	288	346	403	461	518	576	634	691
160		50	101	151	202	252	302	353	403	454	504	554	605
180		45	90	134	179	224	269	314	358	403	448	493	538
200		40	81	121	161	202	242	282	323	363	403	443	484
220		37	73	110	147	183	220	257	293	330	367	403	440
240		34	67	101	134	168	202	235	269	302	336	370	403
260		31	62	93	124	155	186	217	248	279	310	341	372
280		29	58	86	115	144	173	202	230	259	288	317	346
300		27	54	81	108	134	161	188	215	242	269	296	323
320		25	50	76	101	126	151	176	202	227	252	277	302

**Table B. 29 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: Nails 4,0x40 mm, partially nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	199	95	63	47	37	31	27	23	21	19	17	15	14

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	397

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	47,6
$F_{2/3}$ [N]	2779

$F_{2/3,k}$ - two angle brackets

Δs [mm]	47,6
$F_{2/3}$ [N]	5558

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	3162	184	92	61	46	37	31	26	23	20	18	17	15	14	13	12	11

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	588	1323	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
60	392	882	1372	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
80	294	662	1029	1397	1470	1470	1470	1470	1470	1470	1470	1470	1470
100	235	529	823	1117	1411	1470	1470	1470	1470	1470	1470	1470	1470
120	196	441	686	931	1176	1421	1470	1470	1470	1470	1470	1470	1470
140	168	378	588	798	1008	1218	1428	1470	1470	1470	1470	1470	1470
160	147	331	515	698	882	1066	1250	1433	1470	1470	1470	1470	1470
180	131	294	457	621	784	947	1111	1274	1437	1470	1470	1470	1470
200	118	265	412	559	706	853	1000	1147	1294	1441	1470	1470	1470
220	107	241	374	508	641	775	909	1042	1176	1310	1443	1470	1470
240	98	221	343	466	588	711	833	956	1078	1201	1323	1446	1470
260	90	204	317	430	543	656	769	882	995	1108	1221	1334	1447
280	84	189	294	399	504	609	714	819	924	1029	1134	1239	1344
300	78	176	274	372	470	568	666	764	862	960	1058	1156	1254
320	74	165	257	349	441	533	625	717	809	900	992	1084	1176

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		3258	3258	3258	3258	3258	3258	3258	3258	3258	3258	3258	3258
20		199	397	596	795	993	1192	1391	1589	1788	1986	2185	2384
40		99	199	298	397	497	596	695	795	894	993	1093	1192
60		66	132	199	265	331	397	464	530	596	662	728	795
80		50	99	149	199	248	298	348	397	447	497	546	596
100		40	79	119	159	199	238	278	318	358	397	437	477
120		33	66	99	132	166	199	232	265	298	331	364	397
140		28	57	85	114	142	170	199	227	255	284	312	341
160		25	50	74	99	124	149	174	199	223	248	273	298
180		22	44	66	88	110	132	155	177	199	221	243	265
200		20	40	60	79	99	119	139	159	179	199	219	238
220		18	36	54	72	90	108	126	144	163	181	199	217
240		17	33	50	66	83	99	116	132	149	166	182	199
260		15	31	46	61	76	92	107	122	138	153	168	183
280		14	28	43	57	71	85	99	114	128	142	156	170
300		13	26	40	53	66	79	93	106	119	132	146	159
320		12	25	37	50	62	74	87	99	112	124	137	149

**Table B. 30 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: Nails 4,0x60 mm, partially nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	331	159	105	78	62	52	44	39	34	31	28	26	24

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	662

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	45,6
$F_{2/3}$ [N]	3349

$F_{2/3,k}$ - two angle brackets

Δs [mm]	45,6
$F_{2/3}$ [N]	6698


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	3717	306	153	102	77	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	980	2205	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
60	653	1470	2287	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
80	490	1103	1715	2328	2450	2450	2450	2450	2450	2450	2450	2450	2450
100	392	882	1372	1862	2352	2450	2450	2450	2450	2450	2450	2450	2450
120	327	735	1143	1552	1960	2368	2450	2450	2450	2450	2450	2450	2450
140	280	630	980	1330	1680	2030	2380	2450	2450	2450	2450	2450	2450
160	245	551	858	1164	1470	1776	2083	2389	2450	2450	2450	2450	2450
180	218	490	762	1034	1307	1579	1851	2123	2396	2450	2450	2450	2450
200	196	441	686	931	1176	1421	1666	1911	2156	2401	2450	2450	2450
220	178	401	624	846	1069	1292	1515	1737	1960	2183	2405	2450	2450
240	163	368	572	776	980	1184	1388	1593	1797	2001	2205	2409	2450
260	151	339	528	716	905	1093	1282	1470	1658	1847	2035	2224	2412
280	140	315	490	665	840	1015	1190	1365	1540	1715	1890	2065	2240
300	131	294	457	621	784	947	1111	1274	1437	1601	1764	1927	2091
320	123	276	429	582	735	888	1041	1194	1348	1501	1654	1807	1960

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		3813	3813	3813	3813	3813	3813	3813	3813	3813	3813	3813	3813
20		331	662	993	1324	1655	1986	2318	2649	2980	3311	3642	3723
40		166	331	497	662	828	993	1159	1324	1490	1655	1821	1986
60		110	221	331	441	552	662	773	883	993	1104	1214	1324
80		83	166	248	331	414	497	579	662	745	828	910	993
100		66	132	199	265	331	397	464	530	596	662	728	795
120		55	110	166	221	276	331	386	441	497	552	607	662
140		47	95	142	189	236	284	331	378	426	473	520	568
160		41	83	124	166	207	248	290	331	372	414	455	497
180		37	74	110	147	184	221	258	294	331	368	405	441
200		33	66	99	132	166	199	232	265	298	331	364	397
220		30	60	90	120	150	181	211	241	271	301	331	361
240		28	55	83	110	138	166	193	221	248	276	303	331
260		25	51	76	102	127	153	178	204	229	255	280	306
280		24	47	71	95	118	142	166	189	213	236	260	284
300		22	44	66	88	110	132	155	177	199	221	243	265
320		21	41	62	83	103	124	145	166	186	207	228	248

**Table B. 31 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: GH Connector screw 5,0x40 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	403	194	127	95	76	63	54	47	42	38	34	31	29

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	806

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	42,9
$F_{2/3}$ [N]	4205

$F_{2/3,k}$ - two angle brackets

Δs [mm]	42,9
$F_{2/3}$ [N]	8411


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	8291	373	186	124	81	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	1193	2685	4177	5472	5472	5472	5472	5472	5472	5472	5472	5472	5472
60	796	1790	2785	3779	4773	5472	5472	5472	5472	5472	5472	5472	5472
80	597	1343	2088	2834	3580	4326	5072	5472	5472	5472	5472	5472	5472
100	477	1074	1671	2267	2864	3461	4057	4654	5251	5472	5472	5472	5472
120	398	895	1392	1889	2387	2884	3381	3878	4376	4873	5370	5472	5472
140	341	767	1193	1620	2046	2472	2898	3324	3751	4177	4603	5029	5455
160	298	671	1044	1417	1790	2163	2536	2909	3282	3655	4028	4401	4773
180	265	597	928	1260	1591	1923	2254	2586	2917	3249	3580	3912	4243
200	239	537	835	1134	1432	1730	2029	2327	2625	2924	3222	3520	3819
220	217	488	759	1031	1302	1573	1844	2116	2387	2658	2929	3200	3472
240	199	448	696	945	1193	1442	1691	1939	2188	2436	2685	2934	3182
260	184	413	643	872	1102	1331	1561	1790	2020	2249	2479	2708	2938
280	170	384	597	810	1023	1236	1449	1662	1875	2088	2301	2515	2728
300	159	358	557	756	955	1154	1352	1551	1750	1949	2148	2347	2546
320	149	336	522	709	895	1081	1268	1454	1641	1827	2014	2200	2387

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		8388	8388	8388	8388	8388	8388	8388	8388	8388	8388	8388	8388
20		403	806	1209	1613	2016	2419	2822	3225	3628	4032	4435	4838
40		202	403	605	806	1008	1209	1411	1613	1814	2016	2217	2419
60		134	269	403	538	672	806	941	1075	1209	1344	1478	1613
80		101	202	302	403	504	605	706	806	907	1008	1109	1209
100		81	161	242	323	403	484	564	645	726	806	887	968
120		67	134	202	269	336	403	470	538	605	672	739	806
140		58	115	173	230	288	346	403	461	518	576	634	691
160		50	101	151	202	252	302	353	403	454	504	554	605
180		45	90	134	179	224	269	314	358	403	448	493	538
200		40	81	121	161	202	242	282	323	363	403	443	484
220		37	73	110	147	183	220	257	293	330	367	403	440
240		34	67	101	134	168	202	235	269	302	336	370	403
260		31	62	93	124	155	186	217	248	279	310	341	372
280		29	58	86	115	144	173	202	230	259	288	317	346
300		27	54	81	108	134	161	188	215	242	269	296	323
320		25	50	76	101	126	151	176	202	227	252	277	302

**Table B. 32 Characteristic load-carrying capacities angle brackets type 65 without rib
Fastener: GH Connector screw 5,0x60 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	403	194	127	95	76	63	54	47	42	38	34	31	29

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	806

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	41,8
$F_{2/3}$ [N]	4471

$F_{2/3,k}$ - two angle brackets

Δs [mm]	41,8
$F_{2/3}$ [N]	8941

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	9176	373	186	124	81	55	42	34	28	24	21	19	17	16	14	13	12

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	96	96	96	96	96	96	96	96	96	96	96	96	96
20	213	213	213	213	213	213	213	213	213	213	213	213	213
40	1193	2685	4177	5668	7160	8652	8840	8840	8840	8840	8840	8840	8840
60	796	1790	2785	3779	4773	5768	6762	7757	8751	8840	8840	8840	8840
80	597	1343	2088	2834	3580	4326	5072	5818	6563	7309	8055	8801	8840
100	477	1074	1671	2267	2864	3461	4057	4654	5251	5847	6444	7041	7638
120	398	895	1392	1889	2387	2884	3381	3878	4376	4873	5370	5867	6365
140	341	767	1193	1620	2046	2472	2898	3324	3751	4177	4603	5029	5455
160	298	671	1044	1417	1790	2163	2536	2909	3282	3655	4028	4401	4773
180	265	597	928	1260	1591	1923	2254	2586	2917	3249	3580	3912	4243
200	239	537	835	1134	1432	1730	2029	2327	2625	2924	3222	3520	3819
220	217	488	759	1031	1302	1573	1844	2116	2387	2658	2929	3200	3472
240	199	448	696	945	1193	1442	1691	1939	2188	2436	2685	2934	3182
260	184	413	643	872	1102	1331	1561	1790	2020	2249	2479	2708	2938
280	170	384	597	810	1023	1236	1449	1662	1875	2088	2301	2515	2728
300	159	358	557	756	955	1154	1352	1551	1750	1949	2148	2347	2546
320	149	336	522	709	895	1081	1268	1454	1641	1827	2014	2200	2387

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		9272	9272	9272	9272	9272	9272	9272	9272	9272	9272	9272	9272
20		403	806	1209	1613	2016	2419	2822	3225	3628	4032	4435	4838
40		202	403	605	806	1008	1209	1411	1613	1814	2016	2217	2419
60		134	269	403	538	672	806	941	1075	1209	1344	1478	1613
80		101	202	302	403	504	605	706	806	907	1008	1109	1209
100		81	161	242	323	403	484	564	645	726	806	887	968
120		67	134	202	269	336	403	470	538	605	672	739	806
140		58	115	173	230	288	346	403	461	518	576	634	691
160		50	101	151	202	252	302	353	403	454	504	554	605
180		45	90	134	179	224	269	314	358	403	448	493	538
200		40	81	121	161	202	242	282	323	363	403	443	484
220		37	73	110	147	183	220	257	293	330	367	403	440
240		34	67	101	134	168	202	235	269	302	336	370	403
260		31	62	93	124	155	186	217	248	279	310	341	372
280		29	58	86	115	144	173	202	230	259	288	317	346
300		27	54	81	108	134	161	188	215	242	269	296	323
320		25	50	76	101	126	151	176	202	227	252	277	302

Table B.33 Characteristic load-carrying capacities angle brackets type 95 with rib
Fastener: Nails 4,0x40 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	2287	1806	1492	1271	1107	980	880	798	718	638	575	522	479

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	4574

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	52
$F_{2/3}$ [N]	7373

$F_{2/3,k}$ - two angle brackets

Δs [mm]	52
$F_{2/3}$ [N]	14746

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	16072	8576	4288	2859	2144	1715	1429	1225	1072	953	858	780	697	621	561	511	469

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	1532	1532	1532	1532	1532	1532	1532	1532	1532	1532	1532	1532	1532
20	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090	2090
40	3284	3284	3284	3284	3284	3284	3284	3284	3284	3284	3284	3284	3284
60	3364	6667	7662	7662	7662	7662	7662	7662	7662	7662	7662	7662	7662
80	3358	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440
100	2687	4000	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440
120	2239	3333	4433	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440
140	1919	2857	3800	4440	4440	4440	4440	4440	4440	4440	4440	4440	4440
160	1679	2500	3325	4178	4440	4440	4440	4440	4440	4440	4440	4440	4440
180	1493	2222	2955	3714	4440	4440	4440	4440	4440	4440	4440	4440	4440
200	1343	2000	2660	3342	4038	4440	4440	4440	4440	4440	4440	4440	4440
220	1221	1818	2418	3038	3671	4312	4440	4440	4440	4440	4440	4440	4440
240	1119	1667	2216	2785	3365	3953	4440	4440	4440	4440	4440	4440	4440
260	1033	1539	2046	2571	3106	3649	4177	4440	4440	4440	4440	4440	4440
280	960	1429	1900	2387	2885	3388	3879	4352	4440	4440	4440	4440	4440
300	896	1333	1773	2228	2692	3162	3620	4062	4440	4440	4440	4440	4440
320	840	1250	1662	2089	2524	2965	3394	3808	4224	4440	4440	4440	4440

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		17605	17605	17605	17605	17605	17605	17605	17605	17605	17605	17605	17605
20		2287	4574	6861	9148	11435	13722	16009	16244	16385	16499	16594	16674
40		1144	2287	3431	4574	5718	6861	8005	9148	10292	11435	12579	13722
60		762	1525	2287	3049	3812	4574	5336	6099	6861	7624	8386	9148
80		572	1144	1715	2287	2859	3431	4002	4574	5146	5718	6289	6861
100		457	915	1372	1830	2287	2744	3202	3659	4117	4574	5032	5489
120		381	762	1144	1525	1906	2287	2668	3049	3431	3812	4193	4574
140		327	653	980	1307	1634	1960	2287	2614	2940	3267	3594	3921
160		286	572	858	1144	1429	1715	2001	2287	2573	2859	3145	3431
180		254	508	762	1016	1271	1525	1779	2033	2287	2541	2795	3049
200		229	457	686	915	1144	1372	1601	1830	2058	2287	2516	2744
220		208	416	624	832	1040	1247	1455	1663	1871	2079	2287	2495
240		191	381	572	762	953	1144	1334	1525	1715	1906	2096	2287
260		176	352	528	704	880	1056	1231	1407	1583	1759	1935	2111
280		163	327	490	653	817	980	1144	1307	1470	1634	1797	1960
300		152	305	457	610	762	915	1067	1220	1372	1525	1677	1830
320		143	286	429	572	715	858	1001	1144	1286	1429	1572	1715

Table B.34 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: Nails 4,0x60 mm, fully nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3812	3009	2486	2118	1844	1634	1466	1330	1197	1064	958	871	798

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	7624

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	50,3
$F_{2/3}$ [N]	8935

$F_{2/3,k}$ - two angle brackets

Δs [mm]	50,3
$F_{2/3}$ [N]	17871


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	19050	14294	7147	4765	3574	2859	2382	2042	1787	1588	1429	1261	1108	989	892	813	747

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439
20	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325
40	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226
60	5353	7323	9405	11543	12193	12193	12193	12193	12193	12193	12193	12193	12193
80	4015	5492	7054	7401	7401	7401	7401	7401	7401	7401	7401	7401	7401
100	3212	4394	5643	6926	7401	7401	7401	7401	7401	7401	7401	7401	7401
120	2677	3661	4703	5772	6856	7401	7401	7401	7401	7401	7401	7401	7401
140	2294	3138	4031	4947	5877	6815	7401	7401	7401	7401	7401	7401	7401
160	2007	2746	3527	4329	5142	5963	6788	7401	7401	7401	7401	7401	7401
180	1784	2441	3135	3848	4571	5300	6034	6770	7401	7401	7401	7401	7401
200	1606	2197	2822	3463	4114	4770	5430	6093	6758	7401	7401	7401	7401
220	1460	1997	2565	3148	3740	4337	4937	5539	6144	6750	7356	7401	7401
240	1338	1831	2351	2886	3428	3975	4525	5078	5632	6187	6743	7300	7401
260	1235	1690	2170	2664	3164	3669	4177	4687	5199	5711	6225	6739	7253
280	1147	1569	2015	2474	2938	3407	3879	4352	4827	5303	5780	6257	6735
300	1071	1465	1881	2309	2742	3180	3620	4062	4505	4950	5395	5840	6286
320	1004	1373	1763	2164	2571	2981	3394	3808	4224	4640	5057	5475	5893

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		21489	21489	21489	21489	21489	21489	21489	21489	21489	21489	21489	21489
20		3812	7624	11435	15247	19051	19418	19689	19898	20063	20197	20308	20401
40		1906	3812	5718	7624	9529	11435	13341	15247	17153	19051	19250	19418
60		1271	2541	3812	5082	6353	7624	8894	10165	11435	12706	13976	15247
80		953	1906	2859	3812	4765	5718	6671	7624	8576	9529	10482	11435
100		762	1525	2287	3049	3812	4574	5336	6099	6861	7624	8386	9148
120		635	1271	1906	2541	3176	3812	4447	5082	5718	6353	6988	7624
140		545	1089	1634	2178	2723	3267	3812	4356	4901	5445	5990	6534
160		476	953	1429	1906	2382	2859	3335	3812	4288	4765	5241	5718
180		424	847	1271	1694	2118	2541	2965	3388	3812	4235	4659	5082
200		381	762	1144	1525	1906	2287	2668	3049	3431	3812	4193	4574
220		347	693	1040	1386	1733	2079	2426	2772	3119	3465	3812	4158
240		318	635	953	1271	1588	1906	2224	2541	2859	3176	3494	3812
260		293	586	880	1173	1466	1759	2052	2346	2639	2932	3225	3519
280		272	545	817	1089	1361	1634	1906	2178	2450	2723	2995	3267
300		254	508	762	1016	1271	1525	1779	2033	2287	2541	2795	3049
320		238	476	715	953	1191	1429	1668	1906	2144	2382	2621	2859

**Table B.35 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: GH Connector screw 5,0x40 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3936	3108	2567	2187	1905	1687	1514	1373	1256	1158	1074	1001	937

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	7873

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	48,5
$F_{2/3}$ [N]	10975

$F_{2/3,k}$ - two angle brackets

Δs [mm]	48,5
$F_{2/3}$ [N]	21951


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	29943	14761	7381	4920	3690	2952	2460	2109	1845	1640	1463	1261	1108	989	892	813	747

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439
20	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325
40	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226
60	5353	7323	9405	11543	12193	12193	12193	12193	12193	12193	12193	12193	12193
80	4015	5492	7054	8657	10284	11925	13576	15233	16275	16275	16275	16275	16275
100	3212	4394	5643	6926	8227	9540	10861	12187	13516	14849	16184	16275	16275
120	2677	3661	4703	5772	6856	7950	9051	10156	11264	12374	13486	14600	15715
140	2294	3138	4031	4947	5877	6815	7758	8705	9655	10606	11560	12514	13470
160	2007	2746	3527	4329	5142	5963	6788	7617	8448	9281	10115	10950	11786
180	1784	2441	3135	3848	4571	5300	6034	6770	7509	8249	8991	9733	10477
200	1606	2197	2822	3463	4114	4770	5430	6093	6758	7424	8092	8760	9429
220	1460	1997	2565	3148	3740	4337	4937	5539	6144	6750	7356	7964	8572
240	1338	1831	2351	2886	3428	3975	4525	5078	5632	6187	6743	7300	7858
260	1235	1690	2170	2664	3164	3669	4177	4687	5199	5711	6225	6739	7253
280	1147	1569	2015	2474	2938	3407	3879	4352	4827	5303	5780	6257	6735
300	1071	1465	1881	2309	2742	3180	3620	4062	4505	4950	5395	5840	6286
320	1004	1373	1763	2164	2571	2981	3394	3808	4224	4640	5057	5475	5893

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		32381	32381	32381	32381	32381	32381	32381	32381	32381	32381	32381	32381
20		3936	7873	11809	15745	19682	23618	27554	30054	30296	30492	30655	30792
40		1968	3936	5904	7873	9841	11809	13777	15745	17713	19682	21650	23618
60		1312	2624	3936	5248	6561	7873	9185	10497	11809	13121	14433	15745
80		984	1968	2952	3936	4920	5904	6889	7873	8857	9841	10825	11809
100		787	1575	2362	3149	3936	4724	5511	6298	7085	7873	8660	9447
120		656	1312	1968	2624	3280	3936	4592	5248	5904	6561	7217	7873
140		562	1125	1687	2249	2812	3374	3936	4499	5061	5623	6186	6748
160		492	984	1476	1968	2460	2952	3444	3936	4428	4920	5412	5904
180		437	875	1312	1749	2187	2624	3062	3499	3936	4374	4811	5248
200		394	787	1181	1575	1968	2362	2755	3149	3543	3936	4330	4724
220		358	716	1074	1431	1789	2147	2505	2863	3221	3578	3936	4294
240		328	656	984	1312	1640	1968	2296	2624	2952	3280	3608	3936
260		303	606	908	1211	1514	1817	2120	2422	2725	3028	3331	3634
280		281	562	843	1125	1406	1687	1968	2249	2530	2812	3093	3374
300		262	525	787	1050	1312	1575	1837	2099	2362	2624	2887	3149
320		246	492	738	984	1230	1476	1722	1968	2214	2460	2706	2952

**Table B.36 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: GH Connector screw 5,0x60 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	3936	3108	2567	2187	1905	1687	1514	1373	1256	1158	1074	1001	937

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	7873

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	48
$F_{2/3}$ [N]	11717

$F_{2/3,k}$ - two angle brackets

Δs [mm]	48
$F_{2/3}$ [N]	23434

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	32595	14761	7381	4920	3690	2952	2460	2109	1845	1640	1463	1261	1108	989	892	813	747

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439	2439
20	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325	3325
40	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226	5226
60	5353	7323	9405	11543	12193	12193	12193	12193	12193	12193	12193	12193	12193
80	4015	5492	7054	8657	10284	11925	13576	15233	16896	18561	20230	21900	23573
100	3212	4394	5643	6926	8227	9540	10861	12187	13516	14849	16184	17520	18858
120	2677	3661	4703	5772	6856	7950	9051	10156	11264	12374	13486	14600	15715
140	2294	3138	4031	4947	5877	6815	7758	8705	9655	10606	11560	12514	13470
160	2007	2746	3527	4329	5142	5963	6788	7617	8448	9281	10115	10950	11786
180	1784	2441	3135	3848	4571	5300	6034	6770	7509	8249	8991	9733	10477
200	1606	2197	2822	3463	4114	4770	5430	6093	6758	7424	8092	8760	9429
220	1460	1997	2565	3148	3740	4337	4937	5539	6144	6750	7356	7964	8572
240	1338	1831	2351	2886	3428	3975	4525	5078	5632	6187	6743	7300	7858
260	1235	1690	2170	2664	3164	3669	4177	4687	5199	5711	6225	6739	7253
280	1147	1569	2015	2474	2938	3407	3879	4352	4827	5303	5780	6257	6735
300	1071	1465	1881	2309	2742	3180	3620	4062	4505	4950	5395	5840	6286
320	1004	1373	1763	2164	2571	2981	3394	3808	4224	4640	5057	5475	5893

Load capacity $F_{4+5,k}$ [N] - two angle bracket



















beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		35034	35034	35034	35034	35034	35034	35034	35034	35034	35034	35034	35034
20		3936	7873	11809	15745	19682	23618	27554	31491	32777	32990	33166	33314
40		1968	3936	5904	7873	9841	11809	13777	15745	17713	19682	21650	23618
60		1312	2624	3936	5248	6561	7873	9185	10497	11809	13121	14433	15745
80		984	1968	2952	3936	4920	5904	6889	7873	8857	9841	10825	11809
100		787	1575	2362	3149	3936	4724	5511	6298	7085	7873	8660	9447
120		656	1312	1968	2624	3280	3936	4592	5248	5904	6561	7217	7873
140		562	1125	1687	2249	2812	3374	3936	4499	5061	5623	6186	6748
160		492	984	1476	1968	2460	2952	3444	3936	4428	4920	5412	5904
180		437	875	1312	1749	2187	2624	3062	3499	3936	4374	4811	5248
200		394	787	1181	1575	1968	2362	2755	3149	3543	3936	4330	4724
220		358	716	1074	1431	1789	2147	2505	2863	3221	3578	3936	4294
240		328	656	984	1312	1640	1968	2296	2624	2952	3280	3608	3936
260		303	606	908	1211	1514	1817	2120	2422	2725	3028	3331	3634
280		281	562	843	1125	1406	1687	1968	2249	2530	2812	3093	3374
300		262	525	787	1050	1312	1575	1837	2099	2362	2624	2887	3149
320		246	492	738	984	1230	1476	1722	1968	2214	2460	2706	2952

Table B.37 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: Nails 4,0x40 mm, partially nailed

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	1671	1319	1090	928	808	716	643	583	533	491	456	425	398

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	3341

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	48,7
$F_{2/3}$ [N]	5082

$F_{2/3,k}$ - two angle brackets

Δs [mm]	48,7
$F_{2/3}$ [N]	10165


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	5089	5089	3133	2088	1566	1253	1044	895	783	696	627	570	522	482	448	418	392

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490	1490
20	2031	2031	2031	2031	2031	2031	2031	2031	2031	2031	2031	2031	2031
40	1737	3101	3192	3192	3192	3192	3192	3192	3192	3192	3192	3192	3192
60	1158	2067	3013	3973	4786	4670	4575	4496	4429	4370	4319	4274	4233
80	869	1550	2260	2940	2940	2940	2940	2940	2940	2940	2940	2940	2940
100	695	1240	1808	2384	2940	2940	2940	2940	2940	2940	2940	2940	2940
120	579	1034	1506	1986	2470	2940	2940	2940	2940	2940	2940	2940	2940
140	496	886	1291	1703	2117	2533	2940	2940	2940	2940	2940	2940	2940
160	434	775	1130	1490	1852	2216	2581	2940	2940	2940	2940	2940	2940
180	386	689	1004	1324	1647	1970	2294	2619	2940	2940	2940	2940	2940
200	347	620	904	1192	1482	1773	2065	2357	2650	2940	2940	2940	2940
220	316	564	822	1084	1347	1612	1877	2143	2409	2675	2940	2940	2940
240	290	517	753	993	1235	1478	1721	1964	2208	2453	2697	2940	2940
260	267	477	695	917	1140	1364	1588	1813	2039	2264	2489	2715	2940
280	248	443	646	851	1058	1266	1475	1684	1893	2102	2312	2521	2731
300	232	413	603	795	988	1182	1377	1572	1767	1962	2157	2353	2549
320	217	388	565	745	926	1108	1291	1473	1656	1839	2023	2206	2389

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		6578	6578	6578	6578	6578	6578	6578	6578	6578	6578	6578	6578
20		1671	3341	5012	5379	5583	5727	5835	5919	5985	6040	6085	6123
40		835	1671	2506	3341	4177	5012	5243	5379	5490	5583	5661	5727
60		557	1114	1671	2228	2784	3341	3898	4455	5012	5190	5292	5379
80		418	835	1253	1671	2088	2506	2924	3341	3759	4177	4594	5012
100		334	668	1002	1337	1671	2005	2339	2673	3007	3341	3676	4010
120		278	557	835	1114	1392	1671	1949	2228	2506	2784	3063	3341
140		239	477	716	955	1193	1432	1671	1909	2148	2387	2625	2864
160		209	418	627	835	1044	1253	1462	1671	1880	2088	2297	2506
180		186	371	557	743	928	1114	1299	1485	1671	1856	2042	2228
200		167	334	501	668	835	1002	1169	1337	1504	1671	1838	2005
220		152	304	456	608	759	911	1063	1215	1367	1519	1671	1823
240		139	278	418	557	696	835	975	1114	1253	1392	1531	1671
260		129	257	386	514	643	771	900	1028	1157	1285	1414	1542
280		119	239	358	477	597	716	835	955	1074	1193	1313	1432
300		111	223	334	446	557	668	780	891	1002	1114	1225	1337
320		104	209	313	418	522	627	731	835	940	1044	1149	1253

**Table B.38 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: Nails 4,0x60 mm, partially nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	2784	2198	1816	1547	1347	1193	1071	971	889	819	759	708	663

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	5569

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	48
$F_{2/3}$ [N]	6073

$F_{2/3,k}$ - two angle brackets

Δs [mm]	48
$F_{2/3}$ [N]	12145


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	6031	6031	5221	3481	2610	2088	1740	1492	1305	1160	1044	949	870	803	746	696	653

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0	2483	2483	2483	2483	2483	2483	2483	2483	2483	2483	2483	2483	2483	
20	3385	3385	3385	3385	3385	3385	3385	3385	3385	3385	3385	3385	3385	
40	2896	5168	5320	5320	5320	5320	5320	5320	5249	5180	5119	5066	5018	
60	1930	3445	5022	5847	5673	5535	5423	5329	5249	5180	5119	5066	5018	
80	1448	2584	3766	4900	4900	4900	4900	4900	4900	4900	4900	4900	4900	
100	1158	2067	3013	3973	4787	4900	4900	4900	4900	4900	4900	4900	4900	
120	965	1723	2511	3311	3989	4609	4900	4900	4900	4900	4900	4900	4900	
140	827	1477	2152	2838	3419	3950	4481	4900	4900	4900	4900	4900	4900	
160	724	1292	1883	2483	2992	3456	3921	4386	4850	4900	4900	4900	4900	
180	643	1148	1674	2207	2659	3072	3485	3898	4312	4725	4900	4900	4900	
200	579	1034	1506	1986	2393	2765	3137	3509	3880	4252	4624	4900	4900	
220	526	940	1370	1806	2176	2514	2852	3190	3528	3866	4203	4541	4879	
240	483	861	1255	1655	1995	2304	2614	2924	3234	3543	3853	4163	4473	
260	445	795	1159	1528	1841	2127	2413	2699	2985	3271	3557	3843	4129	
280	414	738	1076	1419	1710	1975	2241	2506	2772	3037	3303	3568	3834	
300	386	689	1004	1324	1596	1843	2091	2339	2587	2835	3083	3330	3578	
320	362	646	942	1242	1496	1728	1961	2193	2425	2658	2890	3122	3355	

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]													
	0	20	40	60	80	100	120	140	160	180	200	220	240	
0		8514	8514	8514	8514	8514	8514	8514	8514	8514	8514	8514	8514	
20		2784	5569	6563	6962	7226	7413	7552	7660	7747	7817	7876	7925	
40		1392	2784	4177	5569	6276	6563	6786	6962	7106	7226	7326	7413	
60		928	1856	2784	3713	4641	5569	6160	6381	6563	6717	6849	6962	
80		696	1392	2088	2784	3481	4177	4873	5569	6098	6276	6430	6563	
100		557	1114	1671	2228	2784	3341	3898	4455	5012	5569	6059	6208	
120		464	928	1392	1856	2320	2784	3249	3713	4177	4641	5105	5569	
140		398	796	1193	1591	1989	2387	2784	3182	3580	3978	4376	4773	
160		348	696	1044	1392	1740	2088	2436	2784	3133	3481	3829	4177	
180		309	619	928	1238	1547	1856	2166	2475	2784	3094	3403	3713	
200		278	557	835	1114	1392	1671	1949	2228	2506	2784	3063	3341	
220		253	506	759	1013	1266	1519	1772	2025	2278	2531	2784	3038	
240		232	464	696	928	1160	1392	1624	1856	2088	2320	2552	2784	
260		214	428	643	857	1071	1285	1499	1714	1928	2142	2356	2570	
280		199	398	597	796	994	1193	1392	1591	1790	1989	2188	2387	
300		186	371	557	743	928	1114	1299	1485	1671	1856	2042	2228	
320		174	348	522	696	870	1044	1218	1392	1566	1740	1914	2088	

**Table B.39 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: GH Connector screw 5,0x40 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	6124	4834	3994	3402	2963	2624	2355	2136	1954	1784	1606	1460	1338

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	12247

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	47,2
$F_{2/3}$ [N]	7349

$F_{2/3,k}$ - two angle brackets

Δs [mm]	47,2
$F_{2/3}$ [N]	14699


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	7233	7233	7233	5353	4015	3212	2677	2294	2007	1784	1606	1460	1338	1235	1147	1071	1004

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398
20	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998
40	6368	7672	7287	7012	6803	6638	6503	6390	6294	6211	6139	6075	6017
60	4245	7577	7287	7012	6803	6638	6503	6390	6294	6211	6139	6075	6017
80	3184	5682	7287	7012	6803	6638	6503	6390	6294	6211	6139	6075	6017
100	2547	4546	6626	7012	6803	6638	6503	6390	6294	6211	6139	6075	6017
120	2123	3788	5522	7012	6803	6638	6503	6390	6294	6211	6139	6075	6017
140	1819	3247	4733	6241	6803	6638	6503	6390	6294	6211	6139	6075	6017
160	1592	2841	4141	5461	6789	6638	6503	6390	6294	6211	6139	6075	6017
180	1415	2526	3681	4854	6035	6638	6503	6390	6294	6211	6139	6075	6017
200	1274	2273	3313	4369	5432	6476	6503	6390	6294	6211	6139	6075	6017
220	1158	2066	3012	3971	4938	5887	6503	6390	6294	6211	6139	6075	6017
240	1061	1894	2761	3640	4526	5397	6208	6390	6294	6211	6139	6075	6017
260	980	1748	2548	3360	4178	4982	5731	6390	6294	6211	6139	6075	6017
280	910	1624	2366	3120	3880	4626	5321	6017	6294	6211	6139	6075	6017
300	849	1515	2209	2912	3621	4317	4967	5616	6265	6211	6139	6075	6017
320	796	1421	2071	2730	3395	4048	4656	5265	5874	6211	6139	6075	6017

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		11631	11631	11631	11631	11631	11631	11631	11631	11631	11631	11631	11631
20		6124	8558	9384	9860	10170	10387	10549	10673	10771	10851	10918	10974
40		3062	6124	7865	8558	9035	9384	9650	9860	10030	10170	10287	10387
60		2041	4082	6124	7559	8128	8558	8893	9163	9384	9569	9726	9860
80		1531	3062	4593	6124	7387	7865	8246	8558	8817	9035	9222	9384
100		1225	2449	3674	4899	6124	7276	7687	8027	8314	8558	8768	8952
120		1021	2041	3062	4082	5103	6124	7144	7559	7865	8128	8357	8558
140		875	1750	2624	3499	4374	5249	6124	6998	7462	7740	7982	8197
160		765	1531	2296	3062	3827	4593	5358	6124	6889	7387	7640	7865
180		680	1361	2041	2722	3402	4082	4763	5443	6124	6804	7326	7559
200		612	1225	1837	2449	3062	3674	4286	4899	5511	6124	6736	7276
220		557	1113	1670	2227	2783	3340	3897	4454	5010	5567	6124	6680
240		510	1021	1531	2041	2551	3062	3572	4082	4593	5103	5613	6124
260		471	942	1413	1884	2355	2826	3297	3768	4239	4710	5181	5653
280		437	875	1312	1750	2187	2624	3062	3499	3937	4374	4811	5249
300		408	816	1225	1633	2041	2449	2858	3266	3674	4082	4491	4899
320		383	765	1148	1531	1914	2296	2679	3062	3445	3827	4210	4593

**Table B.40 Characteristic load-carrying capacities angle brackets type 90 with rib
Fastener: GH Connector screw 5,0x60 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	7533	5947	4913	4185	3645	3212	2677	2294	2007	1784	1606	1460	1338

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	15066

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	47
$F_{2/3}$ [N]	7811

$F_{2/3,k}$ - two angle brackets

Δs [mm]	47
$F_{2/3}$ [N]	15622


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	11623	11623	8030	5353	4015	3212	2677	2294	2007	1784	1606	1460	1338	1235	1147	1071	1004

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398	4398
20	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998	5998
40	8030	9425	9425	9425	9425	9425	9425	9425	9425	9425	9425	9425	9425
60	5353	8941	12046	12029	12015	12004	11995	11987	11981	11976	11971	11967	11964
80	4015	6706	9482	12029	12015	12004	11995	11987	11981	11976	11971	11967	11964
100	3212	5365	7586	9830	12015	12004	11995	11987	11981	11976	11971	11967	11964
120	2677	4471	6322	8192	10071	11955	11995	11987	11981	11976	11971	11967	11964
140	2294	3832	5419	7022	8632	10247	11864	11987	11981	11976	11971	11967	11964
160	2007	3353	4741	6144	7553	8966	10381	11798	11981	11976	11971	11967	11964
180	1784	2980	4214	5461	6714	7970	9228	10487	11747	11976	11971	11967	11964
200	1606	2682	3793	4915	6043	7173	8305	9438	10572	11707	11971	11967	11964
220	1460	2439	3448	4468	5493	6521	7550	8580	9611	10643	11674	11967	11964
240	1338	2235	3161	4096	5035	5977	6921	7865	8810	9756	10702	11648	11964
260	1235	2063	2918	3781	4648	5518	6389	7260	8133	9005	9878	10752	11625
280	1147	1916	2709	3511	4316	5124	5932	6742	7552	8362	9173	9984	10795
300	1071	1788	2529	3277	4028	4782	5537	6292	7048	7805	8561	9318	10075
320	1004	1676	2371	3072	3777	4483	5191	5899	6608	7317	8026	8736	9445

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		16021	16021	16021	16021	16021	16021	16021	16021	16021	16021	16021	16021
20		7533	12401	13411	13981	14346	14600	14788	14931	15045	15137	15214	15278
40		3767	7533	11300	12401	12988	13411	13731	13981	14181	14346	14484	14600
60		2511	5022	7533	10044	11865	12401	12815	13144	13411	13633	13821	13981
80		1883	3767	5650	7533	9417	11300	12013	12401	12720	12988	13215	13411
100		1507	3013	4520	6027	7533	9040	10547	11738	12097	12401	12661	12886
120		1256	2511	3767	5022	6278	7533	8789	10044	11300	11865	12151	12401
140		1076	2152	3229	4305	5381	6457	7533	8609	9686	10762	11681	11951
160		942	1883	2825	3767	4708	5650	6592	7533	8475	9417	10358	11300
180		837	1674	2511	3348	4185	5022	5859	6696	7533	8370	9207	10044
200		753	1507	2260	3013	3767	4520	5273	6027	6780	7533	8287	9040
220		685	1370	2055	2739	3424	4109	4794	5479	6164	6848	7533	8218
240		628	1256	1883	2511	3139	3767	4394	5022	5650	6278	6905	7533
260		579	1159	1738	2318	2897	3477	4056	4636	5215	5795	6374	6954
280		538	1076	1614	2152	2690	3229	3767	4305	4843	5381	5919	6457
300		502	1004	1507	2009	2511	3013	3516	4018	4520	5022	5524	6027
320		471	942	1412	1883	2354	2825	3296	3767	4237	4708	5179	5650

**Table B.41 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: Nails 4,0x40 mm, fully nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	35	17	12	9	7	6	5	4	4	3	3	3	3

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	70

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	52
$F_{2/3}$ [N]	7373

$F_{2/3,k}$ - two angle brackets

Δs [mm]	52
$F_{2/3}$ [N]	14746

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	19824	35	17	12	9	7	6	5	4	4	3	3	3	3	2	2	2

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	34	34	34	34	34	34	34	34	34	34	34	34	34
20	73	73	73	73	73	73	73	73	73	73	73	73	73
40	717	1452	2187	2922	2940	2940	2940	2940	2940	2940	2940	2940	2940
60	478	968	1458	1948	2438	2928	2940	2940	2940	2940	2940	2940	2940
80	358	726	1093	1461	1828	2196	2563	2931	2940	2940	2940	2940	2940
100	287	581	875	1169	1463	1757	2051	2345	2639	2933	2940	2940	2940
120	239	484	729	974	1219	1464	1709	1954	2199	2444	2689	2934	2940
140	205	415	625	835	1045	1255	1465	1675	1885	2095	2305	2515	2725
160	179	363	547	730	914	1098	1282	1465	1649	1833	2017	2200	2384
180	159	323	486	649	813	976	1139	1303	1466	1629	1793	1956	2119
200	143	290	437	584	731	878	1025	1172	1319	1466	1613	1760	1907
220	130	264	398	531	665	798	932	1066	1199	1333	1467	1600	1734
240	119	242	364	487	609	732	854	977	1099	1222	1344	1467	1589
260	110	223	336	449	563	676	789	902	1015	1128	1241	1354	1467
280	102	207	312	417	522	627	732	837	942	1047	1152	1257	1362
300	96	194	292	390	488	586	684	782	880	978	1076	1174	1272
320	90	181	273	365	457	549	641	733	825	916	1008	1100	1192

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		19859	19859	19859	19859	19859	19859	19859	19859	19859	19859	19859	19859
20		35	70	104	139	174	209	244	278	313	348	383	418
40		17	35	52	70	87	104	122	139	157	174	191	209
60		12	23	35	46	58	70	81	93	104	116	128	139
80		9	17	26	35	44	52	61	70	78	87	96	104
100		7	14	21	28	35	42	49	56	63	70	77	84
120		6	12	17	23	29	35	41	46	52	58	64	70
140		5	10	15	20	25	30	35	40	45	50	55	60
160		4	9	13	17	22	26	30	35	39	44	48	52
180		4	8	12	15	19	23	27	31	35	39	43	46
200		3	7	10	14	17	21	24	28	31	35	38	42
220		3	6	9	13	16	19	22	25	28	32	35	38
240		3	6	9	12	15	17	20	23	26	29	32	35
260		3	5	8	11	13	16	19	21	24	27	29	32
280		2	5	7	10	12	15	17	20	22	25	27	30
300		2	5	7	9	12	14	16	19	21	23	26	28
320		2	4	7	9	11	13	15	17	20	22	24	26

**Table B. 42 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: Nails 4,0x60 mm, fully nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	61	31	20	15	12	10	9	8	7	6	6	5	5

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	123

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	50,3
$F_{2/3}$ [N]	8935

$F_{2/3,k}$ - two angle brackets

Δs [mm]	50,3
$F_{2/3}$ [N]	17871

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	22304	61	31	20	15	12	10	9	8	7	6	6	5	5	4	4	4

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	34	34	34	34	34	34	34	34	34	34	34	34	34
20	73	73	73	73	73	73	73	73	73	73	73	73	73
40	1194	2419	3644	4869	4900	4900	4900	4900	4900	4900	4900	4900	4900
60	796	1613	2430	3246	4063	4880	4900	4900	4900	4900	4900	4900	4900
80	597	1210	1822	2435	3047	3660	4272	4885	4900	4900	4900	4900	4900
100	478	968	1458	1948	2438	2928	3418	3908	4398	4888	4900	4900	4900
120	398	806	1215	1623	2031	2440	2848	3256	3665	4073	4481	4890	4900
140	341	691	1041	1391	1741	2091	2441	2791	3141	3491	3841	4191	4541
160	299	605	911	1217	1524	1830	2136	2442	2749	3055	3361	3667	3974
180	265	538	810	1082	1354	1627	1899	2171	2443	2715	2988	3260	3532
200	239	484	729	974	1219	1464	1709	1954	2199	2444	2689	2934	3179
220	217	440	663	885	1108	1331	1554	1776	1999	2222	2444	2667	2890
240	199	403	607	812	1016	1220	1424	1628	1832	2037	2241	2445	2649
260	184	372	561	749	938	1126	1315	1503	1691	1880	2068	2257	2445
280	171	346	521	696	871	1046	1221	1396	1571	1746	1921	2096	2271
300	159	323	486	649	813	976	1139	1303	1466	1629	1793	1956	2119
320	149	302	456	609	762	915	1068	1221	1374	1527	1681	1834	1987

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		22338	22338	22338	22338	22338	22338	22338	22338	22338	22338	22338	22338
20		61	123	184	245	306	368	429	490	551	613	674	735
40		31	61	92	123	153	184	214	245	276	306	337	368
60		20	41	61	82	102	123	143	163	184	204	225	245
80		15	31	46	61	77	92	107	123	138	153	168	184
100		12	25	37	49	61	74	86	98	110	123	135	147
120		10	20	31	41	51	61	71	82	92	102	112	123
140		9	18	26	35	44	53	61	70	79	88	96	105
160		8	15	23	31	38	46	54	61	69	77	84	92
180		7	14	20	27	34	41	48	54	61	68	75	82
200		6	12	18	25	31	37	43	49	55	61	67	74
220		6	11	17	22	28	33	39	45	50	56	61	67
240		5	10	15	20	26	31	36	41	46	51	56	61
260		5	9	14	19	24	28	33	38	42	47	52	57
280		4	9	13	18	22	26	31	35	39	44	48	53
300		4	8	12	16	20	25	29	33	37	41	45	49
320		4	8	11	15	19	23	27	31	34	38	42	46

**Table B.43 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: GH Connector screw 5,0x40 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	122	61	41	31	24	20	17	15	14	12	11	10	9

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	244

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	48,5
$F_{2/3}$ [N]	10975

$F_{2/3,k}$ - two angle brackets

Δs [mm]	48,5
$F_{2/3}$ [N]	21951


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	28634	122	61	41	30	21	16	13	10	9	8	7	6	6	5	5	5

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	34	34	34	34	34	34	34	34	34	34	34	34	34
20	73	73	73	73	73	73	73	73	73	73	73	73	73
40	2379	4820	7260	9701	10776	10776	10776	10776	10776	10776	10776	10776	10776
60	1586	3213	4840	6467	8094	9721	10776	10776	10776	10776	10776	10776	10776
80	1190	2410	3630	4850	6070	7291	8511	9731	10776	10776	10776	10776	10776
100	952	1928	2904	3880	4856	5833	6809	7785	8761	9737	10713	10776	10776
120	793	1607	2420	3234	4047	4860	5674	6487	7301	8114	8928	9741	10555
140	680	1377	2074	2772	3469	4166	4863	5561	6258	6955	7652	8350	9047
160	595	1205	1815	2425	3035	3645	4255	4866	5476	6086	6696	7306	7916
180	529	1071	1613	2156	2698	3240	3783	4325	4867	5410	5952	6494	7036
200	476	964	1452	1940	2428	2916	3404	3892	4380	4869	5357	5845	6333
220	433	876	1320	1764	2207	2651	3095	3539	3982	4426	4870	5313	5757
240	397	803	1210	1617	2023	2430	2837	3244	3650	4057	4464	4871	5277
260	366	742	1117	1492	1868	2243	2619	2994	3370	3745	4120	4496	4871
280	340	689	1037	1386	1734	2083	2432	2780	3129	3478	3826	4175	4523
300	317	643	968	1293	1619	1944	2270	2595	2920	3246	3571	3896	4222
320	297	602	908	1213	1518	1823	2128	2433	2738	3043	3348	3653	3958

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		28669	28669	28669	28669	28669	28669	28669	28669	28669	28669	28669	28669
20		122	244	366	488	610	732	854	976	1098	1220	1342	1464
40		61	122	183	244	305	366	427	488	549	610	671	732
60		41	81	122	163	203	244	285	325	366	407	447	488
80		31	61	92	122	153	183	214	244	275	305	336	366
100		24	49	73	98	122	146	171	195	220	244	268	293
120		20	41	61	81	102	122	142	163	183	203	224	244
140		17	35	52	70	87	105	122	139	157	174	192	209
160		15	31	46	61	76	92	107	122	137	153	168	183
180		14	27	41	54	68	81	95	108	122	136	149	163
200		12	24	37	49	61	73	85	98	110	122	134	146
220		11	22	33	44	55	67	78	89	100	111	122	133
240		10	20	31	41	51	61	71	81	92	102	112	122
260		9	19	28	38	47	56	66	75	84	94	103	113
280		9	17	26	35	44	52	61	70	78	87	96	105
300		8	16	24	33	41	49	57	65	73	81	89	98
320		8	15	23	31	38	46	53	61	69	76	84	92

**Table B. 44 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: GH Connector screw 5,0x60 mm, fully fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	122	61	41	31	24	20	17	15	14	12	11	10	9

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	244

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	48
$F_{2/3}$ [N]	11717

$F_{2/3,k}$ - two angle brackets

Δs [mm]	48
$F_{2/3}$ [N]	23434

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	32285	122	61	41	30	21	16	13	10	9	8	7	6	6	5	5	5

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	34	34	34	34	34	34	34	34	34	34	34	34	34
20	73	73	73	73	73	73	73	73	73	73	73	73	73
40	2379	4820	7260	9701	12141	14581	17022	17511	17511	17511	17511	17511	17511
60	1586	3213	4840	6467	8094	9721	11348	12975	14602	16229	17511	17511	17511
80	1190	2410	3630	4850	6070	7291	8511	9731	10951	12171	13392	14612	15832
100	952	1928	2904	3880	4856	5833	6809	7785	8761	9737	10713	11689	12666
120	793	1607	2420	3234	4047	4860	5674	6487	7301	8114	8928	9741	10555
140	680	1377	2074	2772	3469	4166	4863	5561	6258	6955	7652	8350	9047
160	595	1205	1815	2425	3035	3645	4255	4866	5476	6086	6696	7306	7916
180	529	1071	1613	2156	2698	3240	3783	4325	4867	5410	5952	6494	7036
200	476	964	1452	1940	2428	2916	3404	3892	4380	4869	5357	5845	6333
220	433	876	1320	1764	2207	2651	3095	3539	3982	4426	4870	5313	5757
240	397	803	1210	1617	2023	2430	2837	3244	3650	4057	4464	4871	5277
260	366	742	1117	1492	1868	2243	2619	2994	3370	3745	4120	4496	4871
280	340	689	1037	1386	1734	2083	2432	2780	3129	3478	3826	4175	4523
300	317	643	968	1293	1619	1944	2270	2595	2920	3246	3571	3896	4222
320	297	602	908	1213	1518	1823	2128	2433	2738	3043	3348	3653	3958

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		32319	32319	32319	32319	32319	32319	32319	32319	32319	32319	32319	32319
20		122	244	366	488	610	732	854	976	1098	1220	1342	1464
40		61	122	183	244	305	366	427	488	549	610	671	732
60		41	81	122	163	203	244	285	325	366	407	447	488
80		31	61	92	122	153	183	214	244	275	305	336	366
100		24	49	73	98	122	146	171	195	220	244	268	293
120		20	41	61	81	102	122	142	163	183	203	224	244
140		17	35	52	70	87	105	122	139	157	174	192	209
160		15	31	46	61	76	92	107	122	137	153	168	183
180		14	27	41	54	68	81	95	108	122	136	149	163
200		12	24	37	49	61	73	85	98	110	122	134	146
220		11	22	33	44	55	67	78	89	100	111	122	133
240		10	20	31	41	51	61	71	81	92	102	112	122
260		9	19	28	38	47	56	66	75	84	94	103	113
280		9	17	26	35	44	52	61	70	78	87	96	105
300		8	16	24	33	41	49	57	65	73	81	89	98
320		8	15	23	31	38	46	53	61	69	76	84	92

**Table B. 45 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: Nails 4,0x40 mm, partially nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	37	18	12	9	7	6	5	5	4	4	3	3	3

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	74

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	56,9
$F_{2/3}$ [N]	3161

$F_{2/3,k}$ - two angle brackets

Δs [mm]	56,9
$F_{2/3}$ [N]	6321

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	3136	37	18	12	9	7	6	5	5	4	4	3	3	3	3	2	2

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	20	20	20	20	20	20	20	20	20	20	20	20	20
20	42	42	42	42	42	42	42	42	42	42	42	42	42
40	717	1452	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
60	478	968	1458	1470	1470	1470	1470	1470	1470	1470	1470	1470	1470
80	358	726	1093	1461	1470	1470	1470	1470	1470	1470	1470	1470	1470
100	287	581	875	1169	1463	1470	1470	1470	1470	1470	1470	1470	1470
120	239	484	729	974	1219	1464	1470	1470	1470	1470	1470	1470	1470
140	205	415	625	835	1045	1255	1465	1470	1470	1470	1470	1470	1470
160	179	363	547	730	914	1098	1282	1465	1470	1470	1470	1470	1470
180	159	323	486	649	813	976	1139	1303	1466	1470	1470	1470	1470
200	143	290	437	584	731	878	1025	1172	1319	1466	1470	1470	1470
220	130	264	398	531	665	798	932	1066	1199	1333	1467	1470	1470
240	119	242	364	487	609	732	854	977	1099	1222	1344	1467	1470
260	110	223	336	449	563	676	789	902	1015	1128	1241	1354	1467
280	102	207	312	417	522	627	732	837	942	1047	1152	1257	1362
300	96	194	292	390	488	586	684	782	880	978	1076	1174	1272
320	90	181	273	365	457	549	641	733	825	916	1008	1100	1192

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156
20		37	74	110	147	184	221	257	294	331	368	404	441
40		18	37	55	74	92	110	129	147	165	184	202	221
60		12	25	37	49	61	74	86	98	110	123	135	147
80		9	18	28	37	46	55	64	74	83	92	101	110
100		7	15	22	29	37	44	51	59	66	74	81	88
120		6	12	18	25	31	37	43	49	55	61	67	74
140		5	11	16	21	26	32	37	42	47	53	58	63
160		5	9	14	18	23	28	32	37	41	46	51	55
180		4	8	12	16	20	25	29	33	37	41	45	49
200		4	7	11	15	18	22	26	29	33	37	40	44
220		3	7	10	13	17	20	23	27	30	33	37	40
240		3	6	9	12	15	18	21	25	28	31	34	37
260		3	6	8	11	14	17	20	23	25	28	31	34
280		3	5	8	11	13	16	18	21	24	26	29	32
300		2	5	7	10	12	15	17	20	22	25	27	29
320		2	5	7	9	11	14	16	18	21	23	25	28

**Table B. 46 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: Nails 4,0x60 mm, partially nailed**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	61	31	20	15	12	10	9	8	7	6	6	5	5

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	123

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	56
$F_{2/3}$ [N]	3780

$F_{2/3,k}$ - two angle brackets

Δs [mm]	56
$F_{2/3}$ [N]	7559

Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	3717	61	31	20	15	12	10	9	8	7	6	6	5	5	4	4	4

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	33	33	33	33	33	33	33	33	33	33	33	33	33
20	70	70	70	70	70	70	70	70	70	70	70	70	70
40	1194	2419	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
60	796	1613	2430	2450	2450	2450	2450	2450	2450	2450	2450	2450	2450
80	597	1210	1822	2435	2450	2450	2450	2450	2450	2450	2450	2450	2450
100	478	968	1458	1948	2438	2450	2450	2450	2450	2450	2450	2450	2450
120	398	806	1215	1623	2031	2440	2450	2450	2450	2450	2450	2450	2450
140	341	691	1041	1391	1741	2091	2441	2450	2450	2450	2450	2450	2450
160	299	605	911	1217	1524	1830	2136	2442	2450	2450	2450	2450	2450
180	265	538	810	1082	1354	1627	1899	2171	2443	2450	2450	2450	2450
200	239	484	729	974	1219	1464	1709	1954	2199	2444	2450	2450	2450
220	217	440	663	885	1108	1331	1554	1776	1999	2222	2444	2450	2450
240	199	403	607	812	1016	1220	1424	1628	1832	2037	2241	2445	2450
260	184	372	561	749	938	1126	1315	1503	1691	1880	2068	2257	2445
280	171	346	521	696	871	1046	1221	1396	1571	1746	1921	2096	2271
300	159	323	486	649	813	976	1139	1303	1466	1629	1793	1956	2119
320	149	302	456	609	762	915	1068	1221	1374	1527	1681	1834	1987

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		3750	3750	3750	3750	3750	3750	3750	3750	3750	3750	3750	3750
20		61	123	184	245	306	368	429	490	551	613	674	735
40		31	61	92	123	153	184	214	245	276	306	337	368
60		20	41	61	82	102	123	143	163	184	204	225	245
80		15	31	46	61	77	92	107	123	138	153	168	184
100		12	25	37	49	61	74	86	98	110	123	135	147
120		10	20	31	41	51	61	71	82	92	102	112	123
140		9	18	26	35	44	53	61	70	79	88	96	105
160		8	15	23	31	38	46	54	61	69	77	84	92
180		7	14	20	27	34	41	48	54	61	68	75	82
200		6	12	18	25	31	37	43	49	55	61	67	74
220		6	11	17	22	28	33	39	45	50	56	61	67
240		5	10	15	20	26	31	36	41	46	51	56	61
260		5	9	14	19	24	28	33	38	42	47	52	57
280		4	9	13	18	22	26	31	35	39	44	48	53
300		4	8	12	16	20	25	29	33	37	41	45	49
320		4	8	11	15	19	23	27	31	34	38	42	46

**Table B. 47 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: GH Connector screw 5,0x40 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	122	61	41	31	24	20	17	15	14	12	11	10	9

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	244

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	54,9
$F_{2/3}$ [N]	4583

$F_{2/3,k}$ - two angle brackets

Δs [mm]	54,9
$F_{2/3}$ [N]	9165


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	6346	122	61	41	30	21	16	13	10	9	8	7	6	6	5	5	5

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	34	34	34	34	34	34	34	34	34	34	34	34	34
20	73	73	73	73	73	73	73	73	73	73	73	73	73
40	2379	4820	5388	5388	5388	5388	5388	5388	5388	5388	5388	5388	5388
60	1586	3213	4840	5388	5388	5388	5388	5388	5388	5388	5388	5388	5388
80	1190	2410	3630	4850	5388	5388	5388	5388	5388	5388	5388	5388	5388
100	952	1928	2904	3880	4856	5388	5388	5388	5388	5388	5388	5388	5388
120	793	1607	2420	3234	4047	4860	5388	5388	5388	5388	5388	5388	5388
140	680	1377	2074	2772	3469	4166	4863	5388	5388	5388	5388	5388	5388
160	595	1205	1815	2425	3035	3645	4255	4866	5388	5388	5388	5388	5388
180	529	1071	1613	2156	2698	3240	3783	4325	4867	5388	5388	5388	5388
200	476	964	1452	1940	2428	2916	3404	3892	4380	4869	5357	5388	5388
220	433	876	1320	1764	2207	2651	3095	3539	3982	4426	4870	5313	5388
240	397	803	1210	1617	2023	2430	2837	3244	3650	4057	4464	4871	5277
260	366	742	1117	1492	1868	2243	2619	2994	3370	3745	4120	4496	4871
280	340	689	1037	1386	1734	2083	2432	2780	3129	3478	3826	4175	4523
300	317	643	968	1293	1619	1944	2270	2595	2920	3246	3571	3896	4222
320	297	602	908	1213	1518	1823	2128	2433	2738	3043	3348	3653	3958

Load capacity $F_{4+5,k}$ [N] - two angle bracket


beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		6380	6380	6380	6380	6380	6380	6380	6380	6380	6380	6380	6380
20		122	244	366	488	610	732	854	976	1098	1220	1342	1464
40		61	122	183	244	305	366	427	488	549	610	671	732
60		41	81	122	163	203	244	285	325	366	407	447	488
80		31	61	92	122	153	183	214	244	275	305	336	366
100		24	49	73	98	122	146	171	195	220	244	268	293
120		20	41	61	81	102	122	142	163	183	203	224	244
140		17	35	52	70	87	105	122	139	157	174	192	209
160		15	31	46	61	76	92	107	122	137	153	168	183
180		14	27	41	54	68	81	95	108	122	136	149	163
200		12	24	37	49	61	73	85	98	110	122	134	146
220		11	22	33	44	55	67	78	89	100	111	122	133
240		10	20	31	41	51	61	71	81	92	102	112	122
260		9	19	28	38	47	56	66	75	84	94	103	113
280		9	17	26	35	44	52	61	70	78	87	96	105
300		8	16	24	33	41	49	57	65	73	81	89	98
320		8	15	23	31	38	46	53	61	69	76	84	92

**Table B. 48 Characteristic load-carrying capacities angle brackets type 90 without rib
Fastener: GH Connector screw 5,0x60 mm, partially fastened**

Load capacity $F_{1,k}$ - one angle bracket

f [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240
F_1 [N]	122	61	41	31	24	20	17	15	14	12	11	10	9

$F_{1,k}$ - two angle brackets

f [mm]	
F_1 [N]	244

Load capacity $F_{2/3,k}$ - one angle bracket

Δs [mm]	54,6
$F_{2/3}$ [N]	4874

$F_{2/3,k}$ - two angle brackets

Δs [mm]	54,6
$F_{2/3}$ [N]	9748


















Load capacity $F_{4,k}$ - one angle bracket

e [mm]	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320
F_4 [N]	8651	122	61	41	30	21	16	13	10	9	8	7	6	6	5	5	5

Load capacity $F_{5,k}$ [N] - one angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0	34	34	34	34	34	34	34	34	34	34	34	34	34
20	73	73	73	73	73	73	73	73	73	73	73	73	73
40	2379	4820	7260	8651	8651	8651	8651	8651	8651	8651	8651	8651	8651
60	1586	3213	4840	6467	8094	8651	8651	8651	8651	8651	8651	8651	8651
80	1190	2410	3630	4850	6070	7291	8511	8651	8651	8651	8651	8651	8651
100	952	1928	2904	3880	4856	5833	6809	7785	8651	8651	8651	8651	8651
120	793	1607	2420	3234	4047	4860	5674	6487	7301	8114	8651	8651	8651
140	680	1377	2074	2772	3469	4166	4863	5561	6258	6955	7652	8350	8651
160	595	1205	1815	2425	3035	3645	4255	4866	5476	6086	6696	7306	7916
180	529	1071	1613	2156	2698	3240	3783	4325	4867	5410	5952	6494	7036
200	476	964	1452	1940	2428	2916	3404	3892	4380	4869	5357	5845	6333
220	433	876	1320	1764	2207	2651	3095	3539	3982	4426	4870	5313	5757
240	397	803	1210	1617	2023	2430	2837	3244	3650	4057	4464	4871	5277
260	366	742	1117	1492	1868	2243	2619	2994	3370	3745	4120	4496	4871
280	340	689	1037	1386	1734	2083	2432	2780	3129	3478	3826	4175	4523
300	317	643	968	1293	1619	1944	2270	2595	2920	3246	3571	3896	4222
320	297	602	908	1213	1518	1823	2128	2433	2738	3043	3348	3653	3958

Load capacity $F_{4+5,k}$ [N] - two angle bracket

beam height [mm]	beam width [mm]												
	0	20	40	60	80	100	120	140	160	180	200	220	240
0		8685	8685	8685	8685	8685	8685	8685	8685	8685	8685	8685	8685
20		122	244	366	488	610	732	854	976	1098	1220	1342	1464
40		61	122	183	244	305	366	427	488	549	610	671	732
60		41	81	122	163	203	244	285	325	366	407	447	488
80		31	61	92	122	153	183	214	244	275	305	336	366
100		24	49	73	98	122	146	171	195	220	244	268	293
120		20	41	61	81	102	122	142	163	183	203	224	244
140		17	35	52	70	87	105	122	139	157	174	192	209
160		15	31	46	61	76	92	107	122	137	153	168	183
180		14	27	41	54	68	81	95	108	122	136	149	163
200		12	24	37	49	61	73	85	98	110	122	134	146
220		11	22	33	44	55	67	78	89	100	111	122	133
240		10	20	31	41	51	61	71	81	92	102	112	122
260		9	19	28	38	47	56	66	75	84	94	103	113
280		9	17	26	35	44	52	61	70	78	87	96	105
300		8	16	24	33	41	49	57	65	73	81	89	98
320		8	15	23	31	38	46	53	61	69	76	84	92