



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

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

MEMBER OF EOTA



European Technical Assessment ETA-13/0026 of 24/04/2017

I General Part

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

Trade name of the construction product:

BB Stanz- und Umformtechnik GmbH post bases

Product family to which the above construction product belongs:

Three-dimensional nailing plate (Post bases)

Manufacturer:

BB Stanz- und Umformtechnik
Nordhäuser Str. 44
D-06536 Berga
Tel. +49 34651 2988 0
Fax +49 34651 2988 20
Internet www.bb-berga.de

Manufacturing plant:

BB Stanz- und Umformtechnik

This European Technical Assessment contains:

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

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

Guideline for European Technical Approval (ETAG) No. 015 Three Dimensional Nailing Plates, April 2013, used as European Assessment Document (EAD).

This version replaces:

The ETA issued on 2013-02-01 and expiry on 2018-02-01

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product

The BB Stanz- und Umformtechnik post bases are made from 2.5 mm to 8.0 mm thick steel plates in combination with steel tubes and rods. The post bases are produced of steel grade S235JR according to EN 10025-2:2005-04 with a minimum characteristic yield strength of $R_{eH} = 235 \text{ N/mm}^2$ and a minimum characteristic tensile strength of $R_m = 360 \text{ N/mm}^2$ and steel grade DD11 according to EN 10111-2:2008 with a minimum characteristic yield strength of $R_{eL} = 170 \text{ N/mm}^2$. The steel tubes are produced of steel grade S195T according to DIN EN 10255:2007 with a minimum characteristic yield strength of $R_{eH} = 195 \text{ N/mm}^2$ and a minimum characteristic tensile strength of $R_m = 320 \text{ N/mm}^2$. The steel rods are produced of steel grade S235JRC+C according to EN 10277-2:2008-06 with a minimum characteristic yield strength of $R_{p0.2} = 260 \text{ N/mm}^2$ and a minimum characteristic tensile strength of $R_m = 390 \text{ N/mm}^2$. The threaded rods correspond to property class 4.8 according to DIN EN ISO 898-1:2009-08.

For the connections with metal fasteners dowels $\varnothing 10 \text{ mm}$ (S235) or bolts $\varnothing 10 \text{ mm}$ (4.6) and screws $\varnothing 12 \times 120 \text{ mm}$, $\varnothing 10 \times 100 \text{ mm}$, $\varnothing 10 \times 80 \text{ mm}$; $\varnothing 10 \times 50 \text{ mm}$ or $\varnothing 6 \times 80 \text{ mm}$ according to EN 14592 (DIN 571 and thread according to DIN 7998) with a minimum characteristic tensile strength of $R_m = 360 \text{ N/mm}^2$ or according to an ETA are used. The screws shall be driven into pre-drilled holes according to EN 1995-1-1, 10.4.5 or respectively according to the ETA of the screws.

Dimensions are shown in Annex A and B.

2 Specification of the intended use in accordance with the applicable EAD

The intended use of the post bases is the support of timber columns and posts as load-bearing elements, where requirements for mechanical resistance and stability and safety in use in the sense of the Basic Works Requirements 1 and 4 of Regulation (EU) 305/2011 shall be fulfilled.

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

The timber posts may be of solid timber of strength class C24 or better according to EN 338:2016 or of glued laminated timber according to EN 14080:2013.

Minimum dimensions for the post have to be considered (Annex A).

The post base shall be installed as pictured in the drawings. The cross-section of the timber column shall be positioned centrically and with the end grain plane on the base plate. The end grain of the timber post must in general be plane on the base plate of the post base. Post bases types H have a distance between the end grain of the timber post and the base plate of the post base up to 10 mm due to constructive wood preservation.

The maximum distance between the foundation and the base plate of the post base is given in Annex A, table A.1.

Annex B states the load-carrying capacities of the post bases for solid timber of strength class C24 according to EN 338:2016. The design of the connections shall be in accordance with Eurocode 3 and Eurocode 5 or a similar national code. The anchorage of the post base in the foundation and imperfections exceeding the assumptions in Eurocode 5, 5.4.4 are not part of this ETA.

The post bases are for use in timber structures subject to the service classes 1, 2 and 3 of Eurocode 5 and for connections subject to static or quasi-static loading. In service class 1 and 2 the corrosion protection is given by hot-dip zinc coating Z275 according to EN 10147 or zinc coating according to EN1461 with a minimum thickness of 8 μm . In service class 3 the corrosion protection is given by hot-dip zinc coating Z350 according to EN 10147 or zinc coating according to EN1461 with a minimum thickness of 55 μm .

The metal fasteners must also have a zinc coating according to EN ISO 2081 corresponding to the relevant service class 1, 2 or 3 of EN 1995-1-1. Galvanic zinc coating of the post bases is only suitable for service classes 1 and 2.

The scope of the hangers regarding resistance to corrosion shall be defined according to national provisions that apply at the installation site considering environmental conditions.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the post bases of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

Characteristic	Assessment of characteristic
3.1 Mechanical resistance and stability*) (BWR1)	
Characteristic load-carrying capacity	See Annex B
Stiffness	No performance determined
Ductility in cyclic testing	No performance determined
3.2 Safety in case of fire (BWR2)	
Reaction to fire	The post bases are made from steel classified as Euroclass A1 in accordance with EN 13501-1 and Commission Delegated Regulation 2016/364
3.3 Hygiene, health and the environment (BWR3)	
Influence on air quality	The product does not contain/release dangerous substances specified in TR 034, dated March 2012 0**)
3.7 Sustainable use of natural resources (BWR7)	No Performance Determined
3.8 General aspects related to the performance of the product	The post bases have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service class 1, 2 and 3
Identification	See Annex A

*) See additional information in section 3.9 – 3.11.

**) In addition to the specific clauses relating to dangerous substances contained in this European technical Assessment, 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 Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.9 Mechanical resistance and stability

Safety principles and partial factors

The characteristic load-carrying capacities are based on the characteristic values of the connections with metal fasteners, the steel components and the timber post.

In the case of timber failure or failure of the metal fasteners, the design values shall be calculated according to EN 1995-1-1 by dividing the characteristic values of the load-carrying capacities by different partial factors for the strength properties, and in addition multiplied with the coefficient k_{mod} .

In the case of steel failure, the design value shall be calculated according to EN 1993-1-1 by reducing the characteristic values of the load-carrying capacity with different partial factors.

The design value of the load-carrying capacity is the smaller value of all load-carrying capacities:

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

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

Mechanical resistance and stability

See Annex B for the characteristic load-carrying capacity in the different directions F_1 to F_5 for solid timber of strength class C24 according to EN 338:2016. Using the load-carrying capacities of the post bases, the specifications in Annex A must be fulfilled.

The characteristic capacities of the post bases are determined by a combination of calculation according to Eurocode 3 and Eurocode 5 and testing. They should be used for designs in accordance with Eurocode 3 and Eurocode 5 or a similar national code.

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.

No performance has been determined in relation to the anchorage of the post bases in the foundation. It must be checked by the designer of the structure to ensure it

is not less than the post base capacity and, if necessary, the post base capacity reduced accordingly. Therefore the specifications for the lever arms $e_{F2/F3}$ (for load case F_2 / F_3) and $e_{F4/F5}$ (for load case F_4 / F_5) in annex A have to be considered. The lever arm is the distance between the top edge of the foundation and the load.

3.10 Aspects related to the performance of the product

2.7.1 Corrosion protection in service class 1 and 2.

In accordance with ETAG 015 the post bases are produced from steel grade S235JR according to EN 10025-2:2005-04 with a minimum characteristic yield strength of $R_{eH} = 235 \text{ N/mm}^2$ and a minimum characteristic tensile strength of $R_m = 360 \text{ N/mm}^2$ and steel grade DD11 according to EN 10111-2:2008 with a minimum characteristic yield strength of $R_{eL} = 170 \text{ N/mm}^2$. The steel tubes are produced of steel grade S195T according to DIN EN 10255:2007 with a minimum characteristic yield strength of $R_{eH} = 195 \text{ N/mm}^2$ and a minimum characteristic tensile strength of $R_m = 320 \text{ N/mm}^2$. The steel rods are produced of steel grade S235JRC+C according to EN 10277-2:2008-06 with a minimum characteristic yield strength of $R_{p0,2} = 260 \text{ N/mm}^2$ and a minimum characteristic tensile strength of $R_m = 390 \text{ N/mm}^2$. The threaded rods correspond to property class 4.8 according to DIN EN ISO 898-1:2009-08

The post bases are for use in timber structures subject to the service classes 1, 2 and 3 of Eurocode 5 and for connections subject to static or quasi-static loading. In service class 1 and 2 the corrosion protection is given by hot-dip zinc coating Z275 according to EN 10147 or zinc coating according to EN1461 with a minimum thickness of $8 \mu\text{m}$. In service class 3 the corrosion protection is given by hot-dip zinc coating Z350 according to EN 10147 or zinc coating according to EN1461 with a minimum thickness of $55 \mu\text{m}$.

The metal fasteners must also have a zinc coating according to EN ISO 2081 corresponding to the relevant service class 1, 2 or 3 of EN 1995-1-1.

3.11 General aspects related to the fitness for use of the product

The performances given in this ETA are based on the following:

- The timber post
 - shall be restrained against rotation, and supported at the lower and upper end
 - shall be strength class C24 or better according

to EN 338:2016

- shall be free from wane in the post base
 - must fulfil the requirements regarding minimum dimensions (see Annex A)
 - end grain must in general be plane on the base plate or spacer of the post base or at a maximum distance given in Annex A.
- The post base shall be installed centrically in the cross-section of the timber column.
 - The actual end bearing capacity of the timber member to be used in conjunction with the post base is checked by the designer of the structure to ensure it is not less than the post base capacity and, if necessary, the post base capacity reduced accordingly.
 - There are no specific requirements relating to preparation of the timber members.
 - The minimum insertion depth in the turnbuckles should be the diameter of the rod.
 - The base plates of the post bases with steel tubes as support must in general be plane on the tube's end.
 - The anchorage of the post base in the foundation is not part of this ETA. It must be checked by the designer of the structure to ensure it is not less than the post base capacity and, if necessary, the post base capacity reduced accordingly. Therefore, the specifications for the lever arms $e_{F2/F3}$ (for load case F_2 / F_3) and $e_{F4/F5}$ (for load case F_4 / F_5) in Annex A have to be considered. The lever arm is the distance between the top edge of the foundation and the load.

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

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

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

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

Issued in Copenhagen on 2017-04-24 by



Thomas Bruun
Managing Director, ETA-Danmark

Annex A
Product details and definitions

Table A.1 Specifications of the post bases

Post base		Metal Fasteners**		Post [mm]	Distances [mm]		
Type	Drawing number	Nails/Screws*	Dowels/Bolts	min b/h	max. a	e F2/F3	e F4/F5
A001	BB00 0003001 A	4 x F 12x120mm	-	140/140	110	110	110
A002	540 23 0001	2 x P 10x80mm	-	80 to 160 /140	163	-	-
		4 x P 6x80mm	-	80 to 160 /140	163	-	-
A003	540 23 0002	-	2 x D Ø10 or 2 x Bo Ø10	100/130	163	251	176
A004	541 23 0001	-	1 x Bo M10	120/120	163	-	263
H001	555 23 0000	4 x F 12x120mm	-	130/130	135 to 200	a	a
H002	555 23 0001	4 Nails 4x40mm	-	70 to 170 /116	139 to 204	-	-
H003	555 23 0002	4x F 12x120mm	1 x D Ø10 or 1 x Bo M10	130/130	135 to 200	a + 60	a
H004	555 23 0003	-	2 x D Ø10 or 2 x Bo Ø10	100/130	135 to 200	a + 13	a +100
H100	550 13 0004	4x F 12x120mm	-	130/130	140 to 205	a	a
BRN M20	BB00 0004001 A	4x F 10x100mm	-	120/120	40 to 146	a	a
ASH	BB00-0023-003 BB00-0023-004 BB00-0023-005 BB00-0023-006 BB00-0023-007 BB00-0023-008 BB00-0023-009 BB00-0023-010	2 x F 10x50mm	-	71/71 81/81 91/91 101/101 121/121 141/141 161/161 201/201	10	103	70
ASH r	BB00-0023-011 BB00-0023-012 BB00-0023-013 BB00-0023-014	2 x F 10x50mm	-	Ø80 Ø100 Ø120 Ø140	10	113	60
ASH g	BB00-0049-001	4 x F 10x50mm	-	85/85	10	122	122
	BB00-0049-002	8 x F 10x50mm	-	105/105		139	139
ASH z	BB00-0045-001	2 x F 10x50mm	-	101/85	12	163	65
	BB00-0045-002			121/114	12	163	71
	BB00-0045-003			141/114	12	163	85
	BB00-0045-004			161/114	14	147	88
	BB00-0045-005			201/140	14	137	88

* P = partial thread; F = full thread

** The position of the fasteners shall always be at maximum distance to the end grain of the post.

Continuation of Table A.1 Specifications of the post bases

Post base		Metal Fasteners**		Post [mm]	Distances [mm]		
Type	Drawing number	Screws*	Dowels/Bolts	min b/h	max. a	e _{F2/F3}	e _{F4/F5}
PFTR S	525 32 0000	2 x F 10x50mm	-	71/112	58	130	58
	525 32 0001			81/112			
	525 32 0002			91/112			
	525 32 0003			101/112			
	525 32 0004			121/112			
	525 32 0005			141/112			
PFTR a	520 32 0000	4 x F 10x50mm	-	71/80	16	386	51
	520 32 0001			81/80			
	520 32 0002			91/80			
	520 32 0003			101/80			
	520 32 0004			121/80			
	520 32 0005			141/80			
PFTR 200 U	BB00-0048-001	2 x F 10x50mm	-	71/115	50	140	73
	BB00-0048-002			81/115			
	BB00-0048-003			91/115			
	BB00-0048-004			101/115			
	BB00-0048-005			121/115			
	BB00-0048-006			141/115			
PFTR 250 U	BB00-0048-007	2 x F 10x50mm	-	71/115	100	190	114
	BB00-0048-008			81/115			
	BB00-0048-009			91/115			
	BB00-0048-010			101/115			
	BB00-0048-011			121/115			
	BB00-0048-012			141/115			
PFTR hv	BB00-0035-009	2 x F 12x120mm	-	140/140	122 to 180	a	a
	BB00-0035-013			130/130			

* P = partial thread; F = full thread

** The position of the fasteners shall always be at maximum distance to the end grain of the post.

Table A.2 Specifications of the metal fasteners according to EN 14592

Fastener type	Size (mm)			Material	Finish
	Diameter	Length	Threaded length		
Dowels	10 mm			S235	Galvanic zinc coating
Bolts	10 mm			4.6	Galvanic zinc coating
Nails	4 mm	min 40 mm	-	$f_{u,k} \geq 600 \text{ N/mm}^2$	Galvanic zinc coating
Screws	6 mm	min 80 mm	min 48 mm	$f_{u,k} \geq 360 \text{ N/mm}^2$	Galvanic zinc coating
Screws	10 mm	min 50 mm	min 35 mm	$f_{u,k} \geq 360 \text{ N/mm}^2$	Galvanic zinc coating
Screws	10 mm	min 80 mm	min 48 mm	$f_{u,k} \geq 360 \text{ N/mm}^2$	Galvanic zinc coating
Screws	10 mm	min 100 mm	min 88 mm	$f_{u,k} \geq 360 \text{ N/mm}^2$	Galvanic zinc coating
Screws	12 mm	min 120 mm	min 105 mm	$f_{u,k} \geq 360 \text{ N/mm}^2$	Galvanic zinc coating
The load-carrying-capacities of the metal fasteners were calculated according to Eurocode 5 for lateral loads. The contribution to the load-carrying capacity due to the rope effect was considered according to Eurocode 5.					

Annex B
Characteristic load-carrying capacities

Table B.1 Characteristic load-carrying capacities for post bases in kN

Post Base		F ₁ (Compression)			F ₁ (Tension)		F ₂ /F ₃		F ₄ /F ₅	
Type	Metal Fasteners	Timber	Steel		Timber	Steel	Timber	Steel	Timber	Steel
A001	4 x F 12x120 mm	100,0	100,0	87,8	18,7	8,5	12,0	3,0	12,0	3,0
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
A002	2 x P 10x80 mm	26,3	32,5	-	9,2	2,0	-	-	-	-
	4 x P 6x80 mm	26,3	32,5	-	9,2	2,0	-	-	-	-
		$\gamma_{M(T)}$	$\gamma_{M,o}$	-	$\gamma_{M(C)}$	$\gamma_{M,o}$	-	-	-	-
A003	2 x D Ø10 or 2 x Bo M10	100,7	-	87,8	25,1	7,3	13,1	0,9	2,5	1,7
		$\gamma_{M(T)}$	-	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
A004	1 x D Ø10	91,5	91,5	87,8	6,4	7,3	-	-	5,1	0,9
	1 x Bo M10	91,5	91,5	87,8	7,6	7,3	-	-	6,4	0,9
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M,1}$	$\gamma_{M(J)}$	$\gamma_{M,o}$	-	-	$\gamma_{M(C)}$	$\gamma_{M,o}$
H001	4 x F 12x120 mm	55,9	55,9	57,9	18,7	6,1	12,0	0,8	6,0	1,3
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
H002	4 x N 4x40mm	32,6	30,6	-	5,5	0,9	-	-	-	-
		$\gamma_{M(T)}$	$\gamma_{M,o}$	-	$\gamma_{M(C)}$	$\gamma_{M,o}$	-	-	-	-
H003	4 x F 12x120 mm	44,8	44,8	57,9	18,7	6,1	12,0	0,8	6,0	1,3
	1 x D Ø10	44,8	44,8	57,9	6,4	6,1	5,1	0,5	-	-
	1 x Bo M10	44,8	44,8	57,9	7,6	6,1	6,4	0,5	-	-
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	-	-
H004	2 x D Ø10 or 2 x Bo M10	61,6	61,6	57,9	25,1	6,1	2,5	0,7	13,1	0,9
		$\gamma_{M(T)}$	$\gamma_{M,1}$	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$
H100	4 x F 12x120 mm	55,9	55,9	57,3	18,7	6,1	12,0	0,8	12,0	1,3
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
BRN M20	4 x F 10x100 mm	84,5	-	64,2	14,8	10,0	9,5	1,7	9,5	1,7
		$\gamma_{M(T)}$	-	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$

$\gamma_{M(T)}$ = partial factor for solid timber according to EN 1995-1-1 and national annex

$\gamma_{M(C)}$ = partial factor for connections according to EN 1995-1-1 and national annex

$\gamma_{M,o}$; $\gamma_{M,1}$ = partial factor according to EN 1993-1-1 and national annex

Continuation of Table B.1 Characteristic load-carrying capacities for post bases in kN

Post Base		F ₁ (Compression)		F ₁ (Tension)		F ₂ /F ₃		F ₄ /F ₅	
Type	Size	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel
ASH	71	7,56	37,5	7,56	7,03	7,61	6,77	7,61	6,77
	81	7,56	37,5	7,56	8,81	10,1	10,3	10,1	10,3
	91	7,56	37,5	7,56	13,3	13,0	10,3	13,0	10,3
	101	7,56	37,5	7,56	13,3	15,5	10,3	15,5	10,3
	121	7,56	37,5	7,56	13,3	15,5	10,3	15,5	10,3
	141	7,56	37,5	7,56	13,3	15,5	10,3	15,5	10,3
	161	7,56	37,5	7,56	13,3	15,5	10,3	15,5	10,3
	201	7,56	37,5	7,56	13,3	18,7	12,5	18,7	12,5
		$\gamma_{M(C)}$	$\gamma_{M,2}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$
ASH r	Ø 80	7,56	37,5	7,56	4,54	7,59	3,20	7,59	3,20
	Ø 100	7,56	37,5	7,56	6,40	12,3	5,64	12,3	5,64
	Ø 120	7,56	37,5	7,56	5,26	18,1	5,56	18,1	5,56
	Ø 140	7,56	37,5	7,56	6,29	24,9	7,78	24,9	7,78
		$\gamma_{M(C)}$	$\gamma_{M,2}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$
ASH g	85	15,1	38,9	15,1	12,4	5,04	4,23	5,04	4,23
	105	22,8	59,0	22,8	10,0	10,1	4,74	10,1	4,74
		$\gamma_{M(C)}$	$\gamma_{M,2}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
ASH z	101	21,0	32,2	7,56	5,97	10,8	3,32	6,74	3,89
	121	29,4	45,0	7,56	6,93	10,8	4,61	7,01	3,73
	141	37,8	57,9	7,56	3,85	10,8	2,98	7,31	4,74
	161	50,4	77,2	7,32	18,6	17,3	16,4	11,3	8,69
	201	63,0	96,5	7,32	18,6	17,3	20,5	11,7	9,85
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$
PFTR S	71	7,76	13,3	7,36	7,99	5,41	2,96	3,38	3,26
	81	7,76	13,3	7,36	6,74	5,41	2,71	3,38	3,26
	91	7,76	13,3	7,36	5,83	5,41	2,35	3,38	3,26
	101	7,76	13,3	7,36	5,13	5,41	2,07	3,38	3,26
	121	7,76	13,3	7,36	4,15	5,41	1,67	3,38	3,26
	141	7,76	13,3	7,36	3,48	5,41	1,40	3,38	3,26
		$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$

 $\gamma_{M(T)}$: partial factor for solid timber according to EN 1995-1-1 and national annex $\gamma_{M(C)}$: partial factor for connections according to EN 1995-1-1 and national annex $\gamma_{M,o}$; $\gamma_{M,1}$; $\gamma_{M,2}$: partial factor according to EN 1993-1-1 and national annex

Continuation of Table B.1 Characteristic load-carrying capacities for post bases in kN

Post Base		F ₁ (Compression)		F ₁ (Tension)		F ₂ /F ₃		F ₄ /F ₅	
Type	Size	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel
PFTR a	71	14,6	51,4	7,32	82,9	4,88	6,32	3,55	7,10
	81	14,6	51,4	7,32	82,9	4,88	6,32	3,55	7,10
	91	14,6	51,4	7,32	82,9	4,88	6,32	3,55	7,10
	101	14,6	51,4	7,32	82,9	4,88	6,32	3,55	7,10
	121	14,6	51,4	7,32	82,9	4,88	6,32	3,55	7,10
	141	14,6	51,4	7,32	82,9	4,88	6,32	3,55	7,10
		$\gamma_{M(C)}$	$\gamma_{M,1}$	$\gamma_{M(C)}$	$\gamma_{M,2}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(T)}$	$\gamma_{M,o}$
PFTR 200 U	71	45,9	45,9	7,32	5,59	4,88	2,85	4,70	6,33
	81	45,9	45,9	7,32	4,57	4,88	2,85	4,70	6,33
	91	45,9	45,9	7,32	3,86	4,88	2,85	4,70	6,33
	101	45,9	45,9	7,32	3,35	4,88	2,85	4,70	6,33
	121	45,9	45,9	7,32	2,64	4,88	2,85	4,70	6,33
	141	45,9	45,9	7,32	2,18	4,88	2,85	4,70	6,33
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
PFTR 250 U	71	45,9	45,9	7,32	5,59	4,88	2,18	4,56	4,04
	81	45,9	45,9	7,32	4,57	4,88	2,18	4,56	4,04
	91	45,9	45,9	7,32	3,86	4,88	2,18	4,56	4,04
	101	45,9	45,9	7,32	3,35	4,88	2,18	4,56	4,04
	121	45,9	45,9	7,32	2,64	4,88	2,18	4,56	4,04
	141	45,9	45,9	7,32	2,18	4,88	2,18	4,56	4,04
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$
PFTR hv	80	53,5	53,5	18,7	21,1	12,0	0,92	12,0	0,92
	100	53,5	53,5	18,7	7,53	12,0	0,92	12,0	0,92
		$\gamma_{M(T)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$	$\gamma_{M(C)}$	$\gamma_{M,o}$

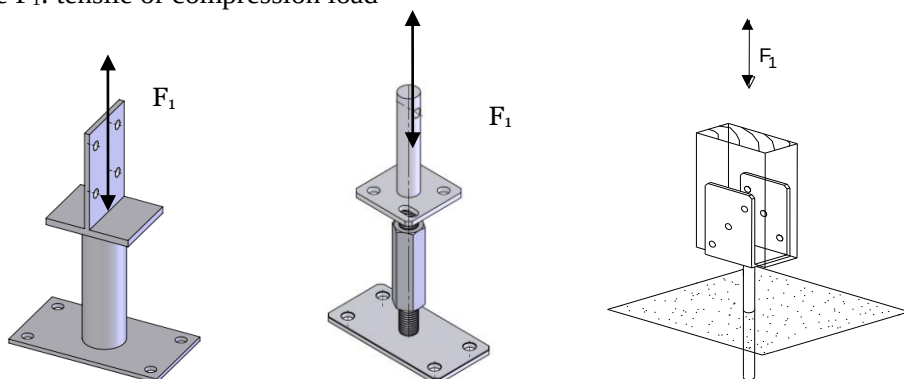
$\gamma_{M(T)}$: partial factor for solid timber according to EN 1995-1-1 and national annex

$\gamma_{M(C)}$: partial factor for connections according to EN 1995-1-1 and national annex

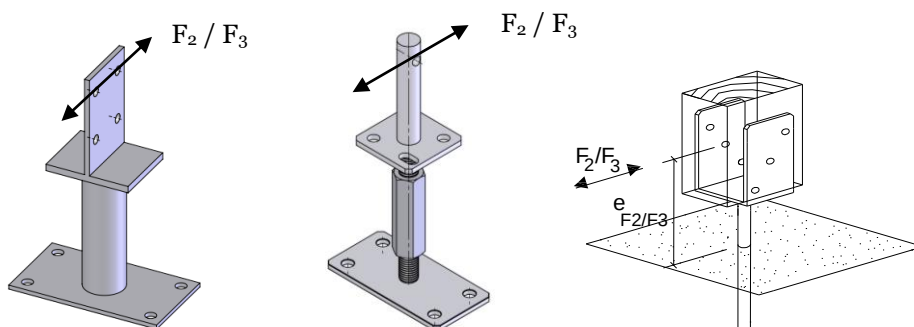
$\gamma_{M,o}$; $\gamma_{M,1}$; $\gamma_{M,2}$: partial factors according to EN 1993-1-1 and national annex

Definitions of forces, their directions and eccentricity

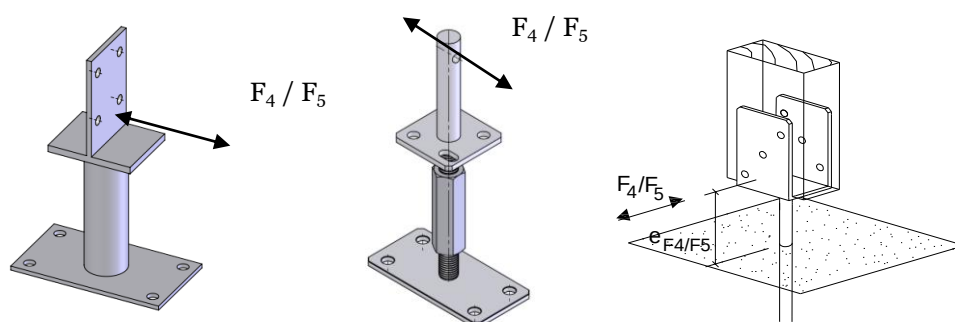
- Force F_1 : tensile or compression load



- Force F_2 / F_3 : horizontal parallel to the ground plate of the post base and perpendicular to the bolts or dowels



- Force F_4 / F_5 : horizontal load parallel to the ground plate of the post base and parallel to the bolts or dowels



Acting forces

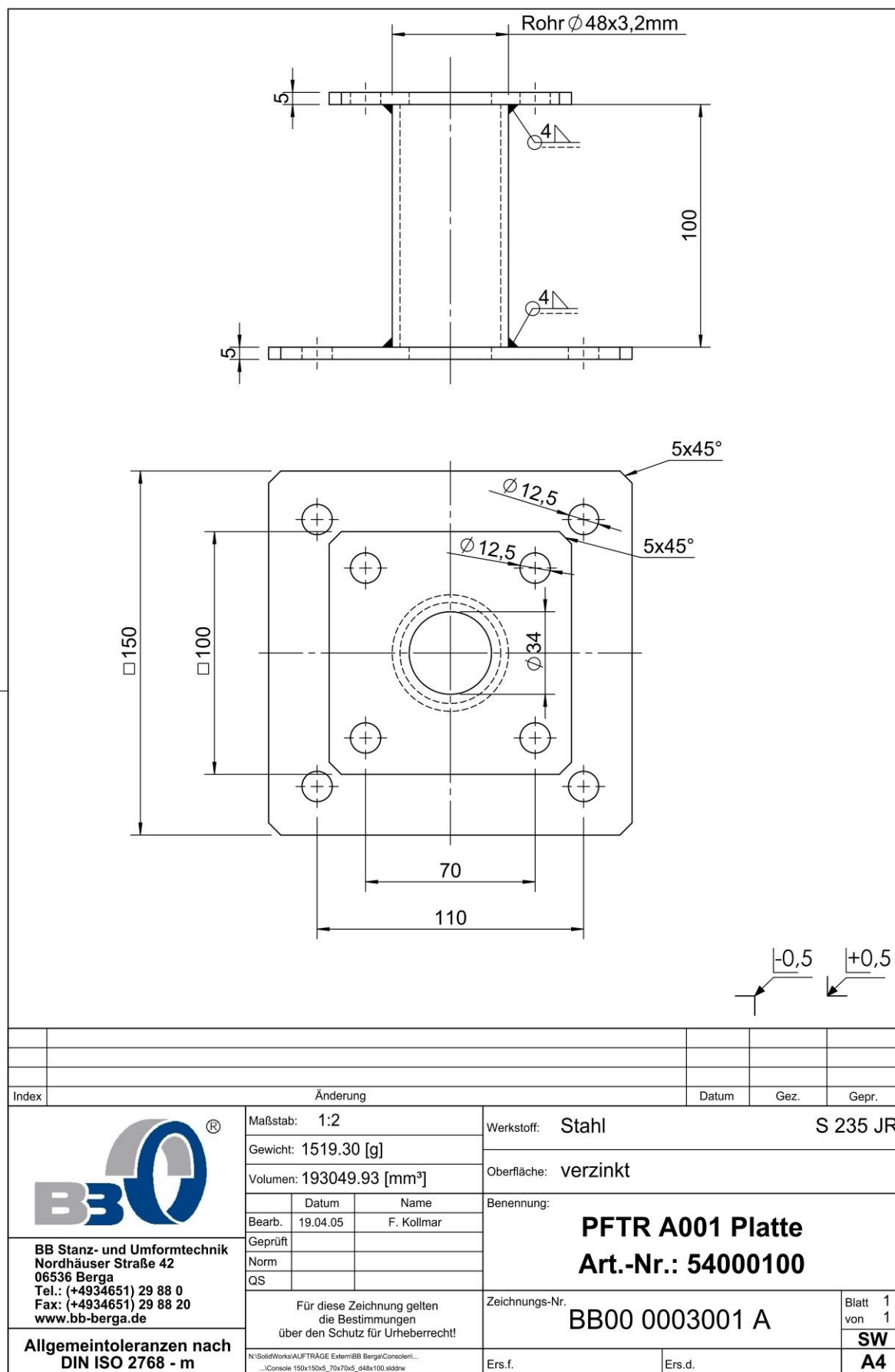
- | | |
|-----------------|--|
| F_1 | axial force (tension or compression) acting along the central axis of the joint |
| F_2 and F_3 | horizontal force perpendicular to the ground plate of the post base acting with the lever arm e_{F_2/F_3} above the foundation |
| F_4 and F_5 | horizontal force parallel to the ground plate of the post base acting with the lever arm e_{F_4/F_5} above the foundation |

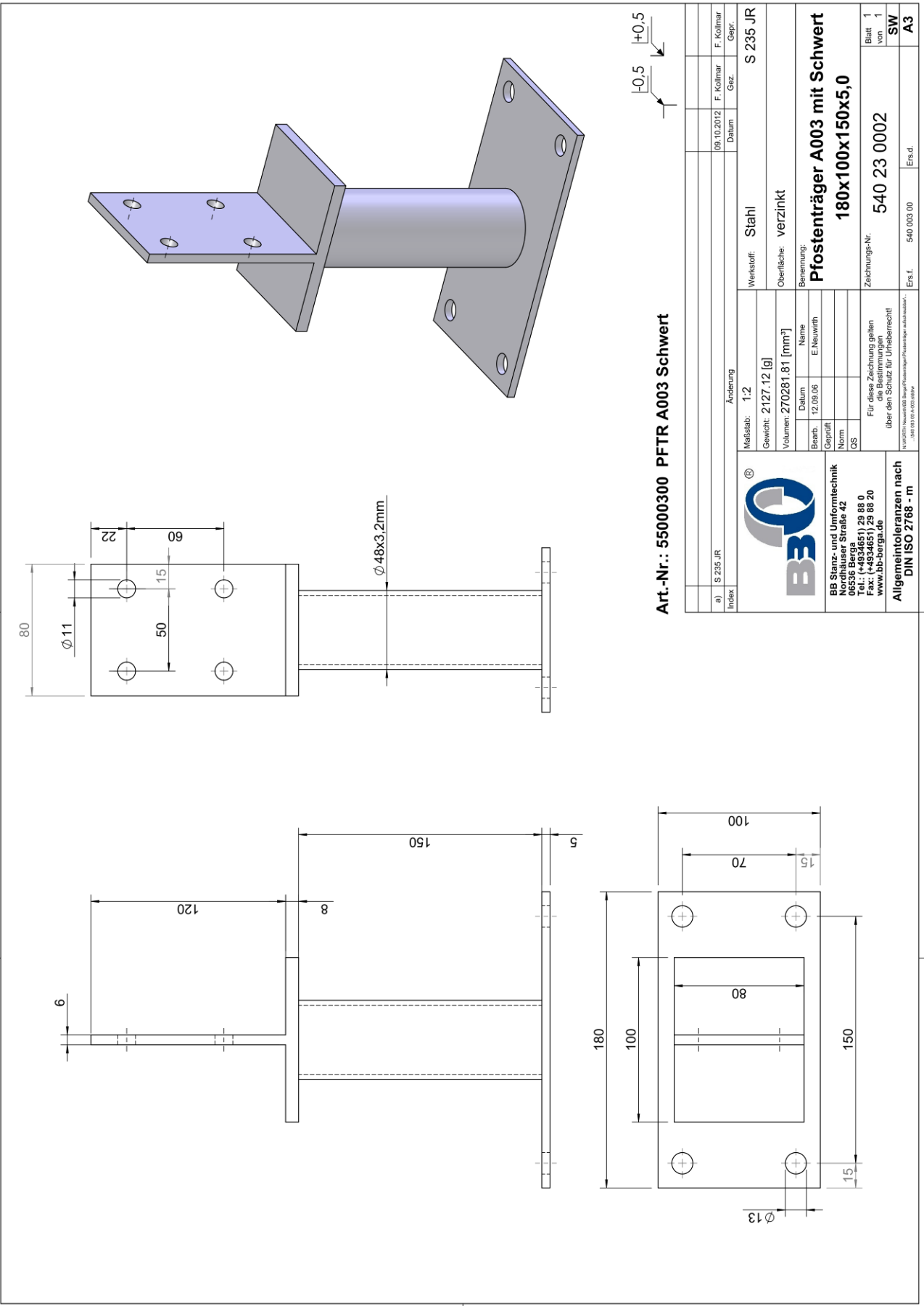
Combined forces

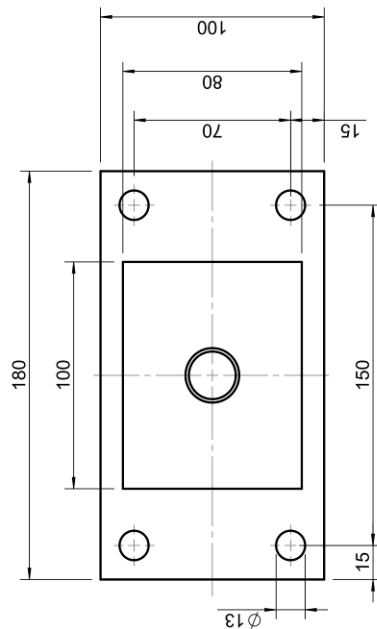
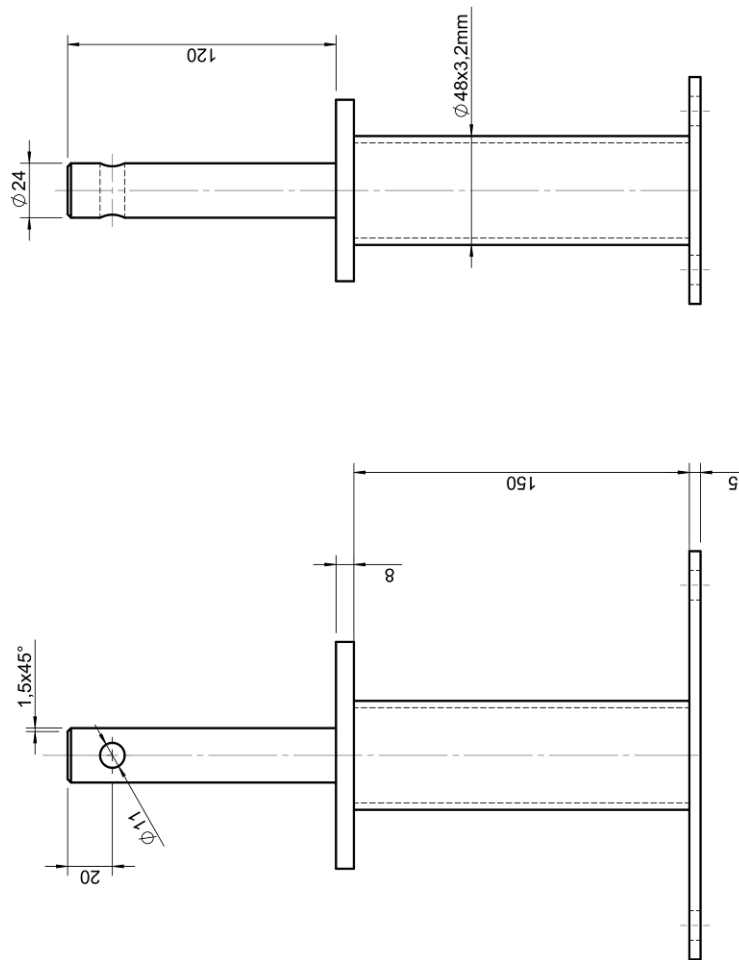
If the forces F_1 and F_2/F_3 or F_4/F_5 act at the same time, the following inequality shall be fulfilled:

$$\sum \frac{F_{i,Ed}}{F_{i,Rd}} \leq 1$$

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 , and F_4 or F_5 , respectively, is able to act simultaneously with F_1 .

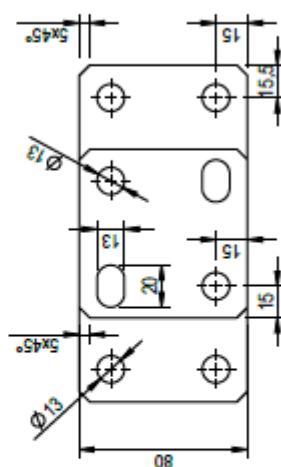
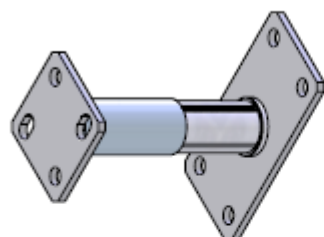
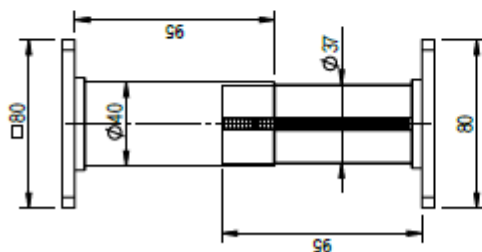
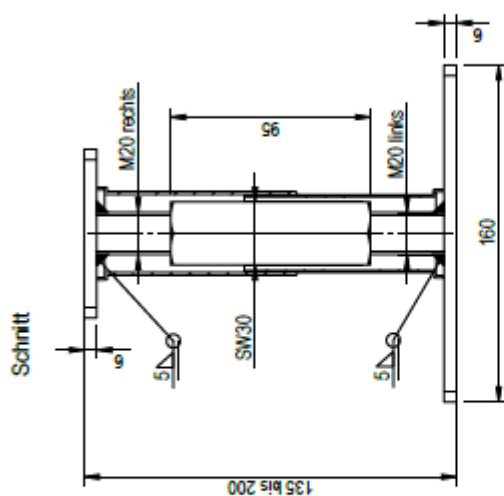


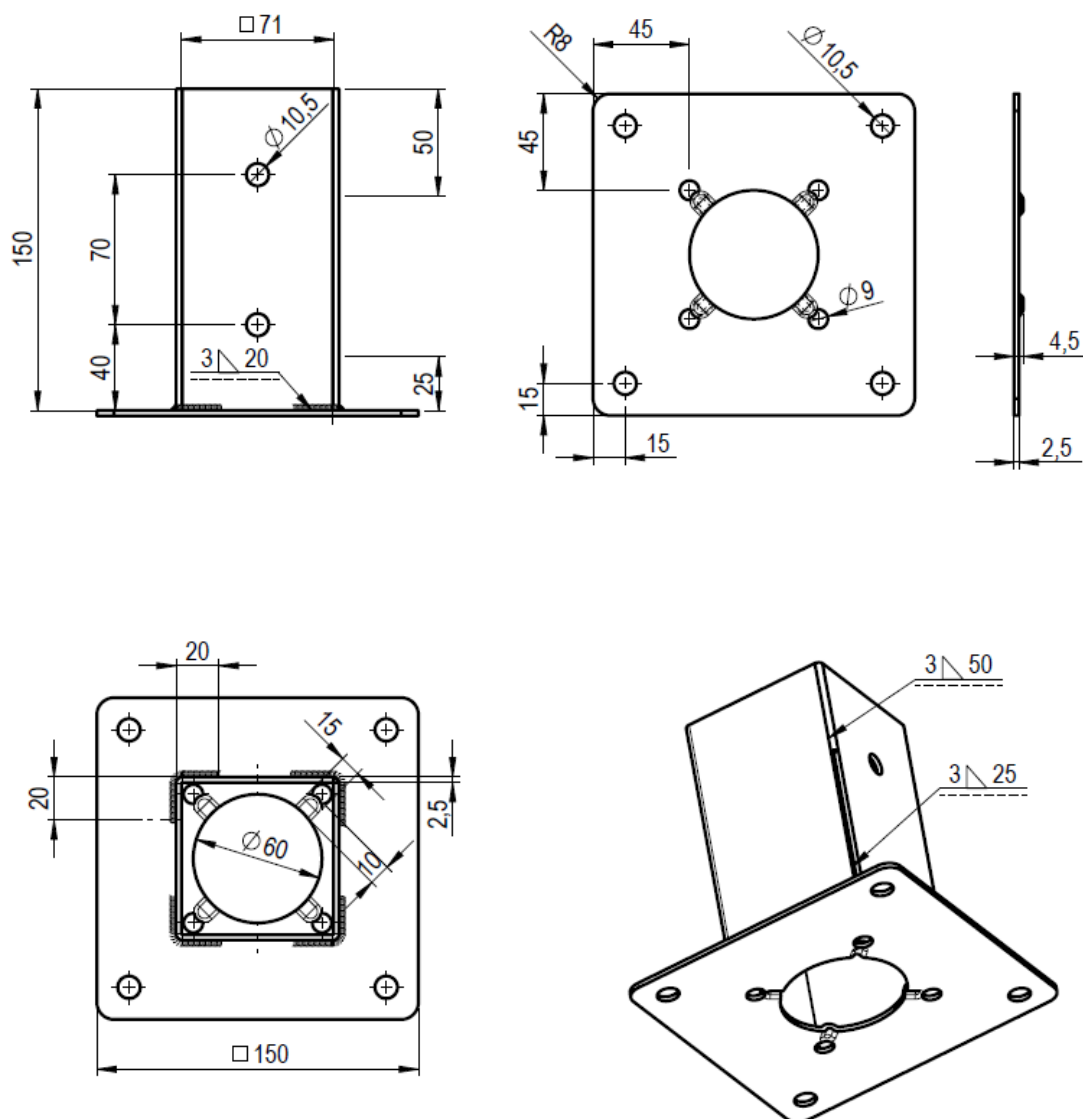




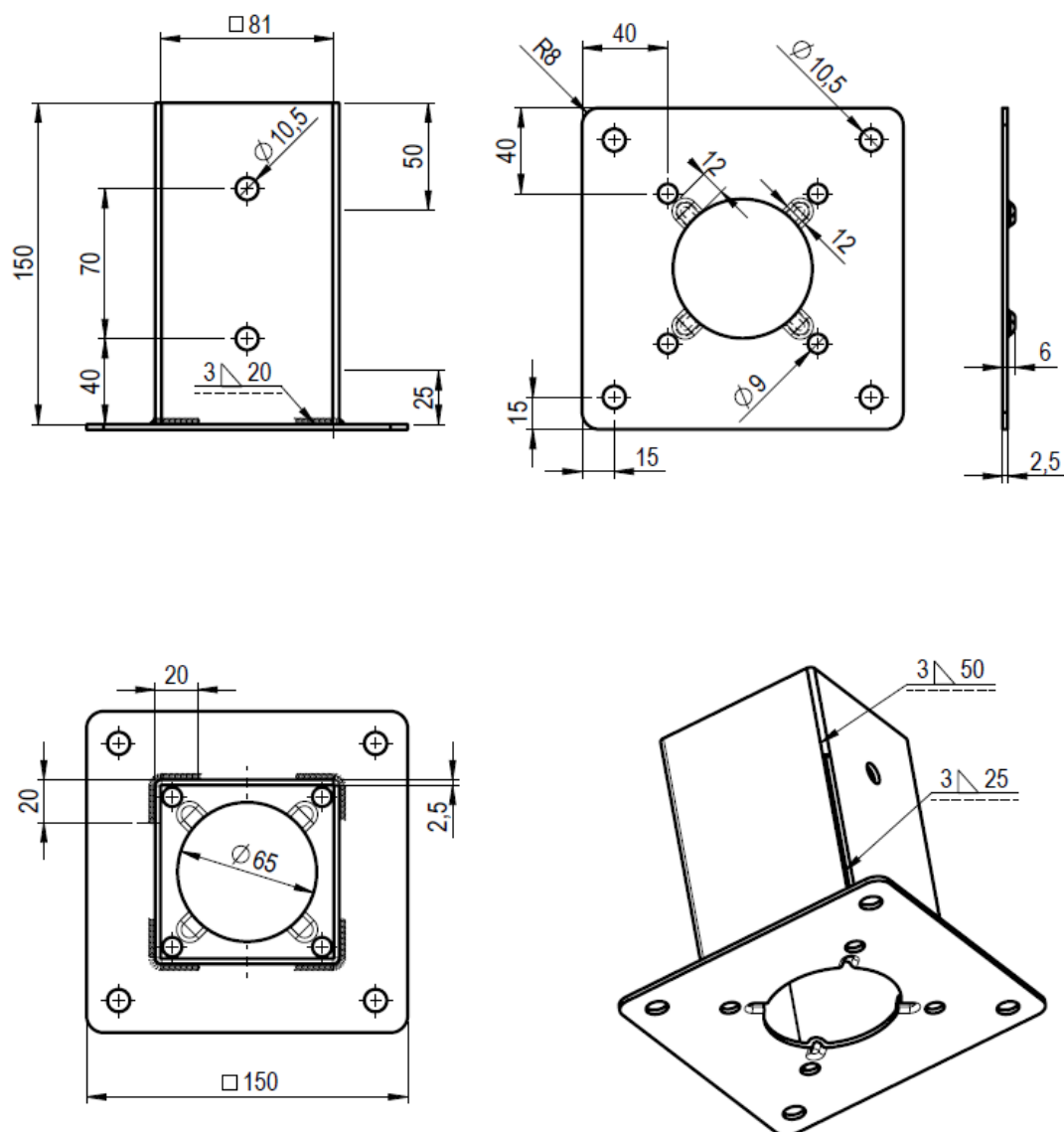
Art.-Nr.: 55000400 PFTR A004 Zapfen

a) S 235 JR		Änderung		Stahl		S 235 JR	
Index		Maßstab:	1:2	Werkstoff:			
		Gewicht:	2100,89 [g]	Oberfläche:	verzinkt		
		Volumen:	266949,30 [mm³]	Benennung:			
		Datum:	09.03.12	Name:			
		Beib.	09.03.12	E.Neuwerth			
		Geprüft		Norm			
		QS					
		Für diese Zeichnung gelten über den Schutz für Urheberrecht					
		www.bb-baergautes					
		Allgemeintoleranzen nach DIN ISO 2768 - m					
		BB Stanz- und Umformtechnik Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 28 88 0 Fax: (+4934651) 28 88 20 www.bb-baergautes					
		Zeichnungs-Nr. 540 23 0003					
		Blatt 1 von 1					
		SW					
		A3					

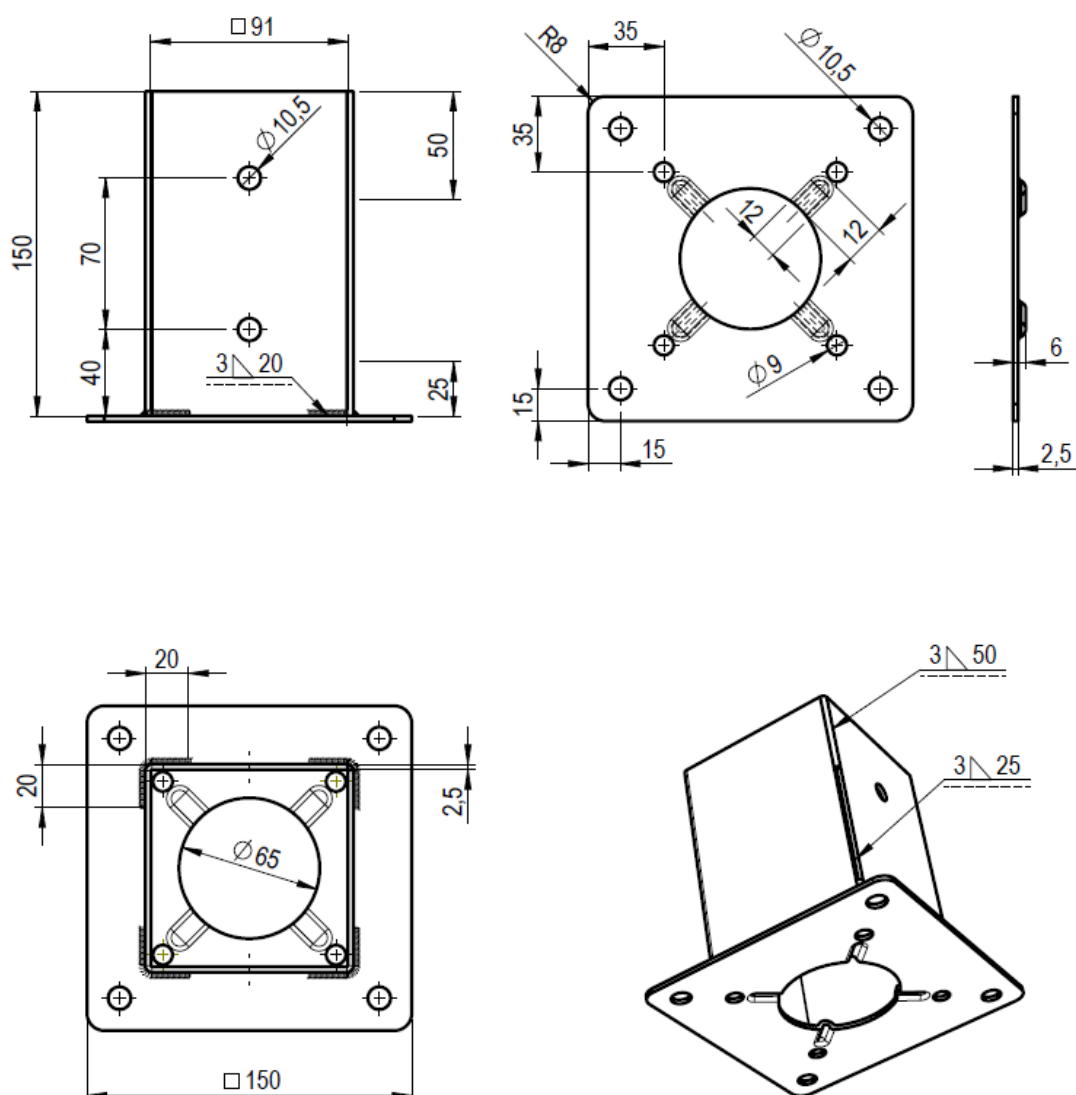
[illegible]



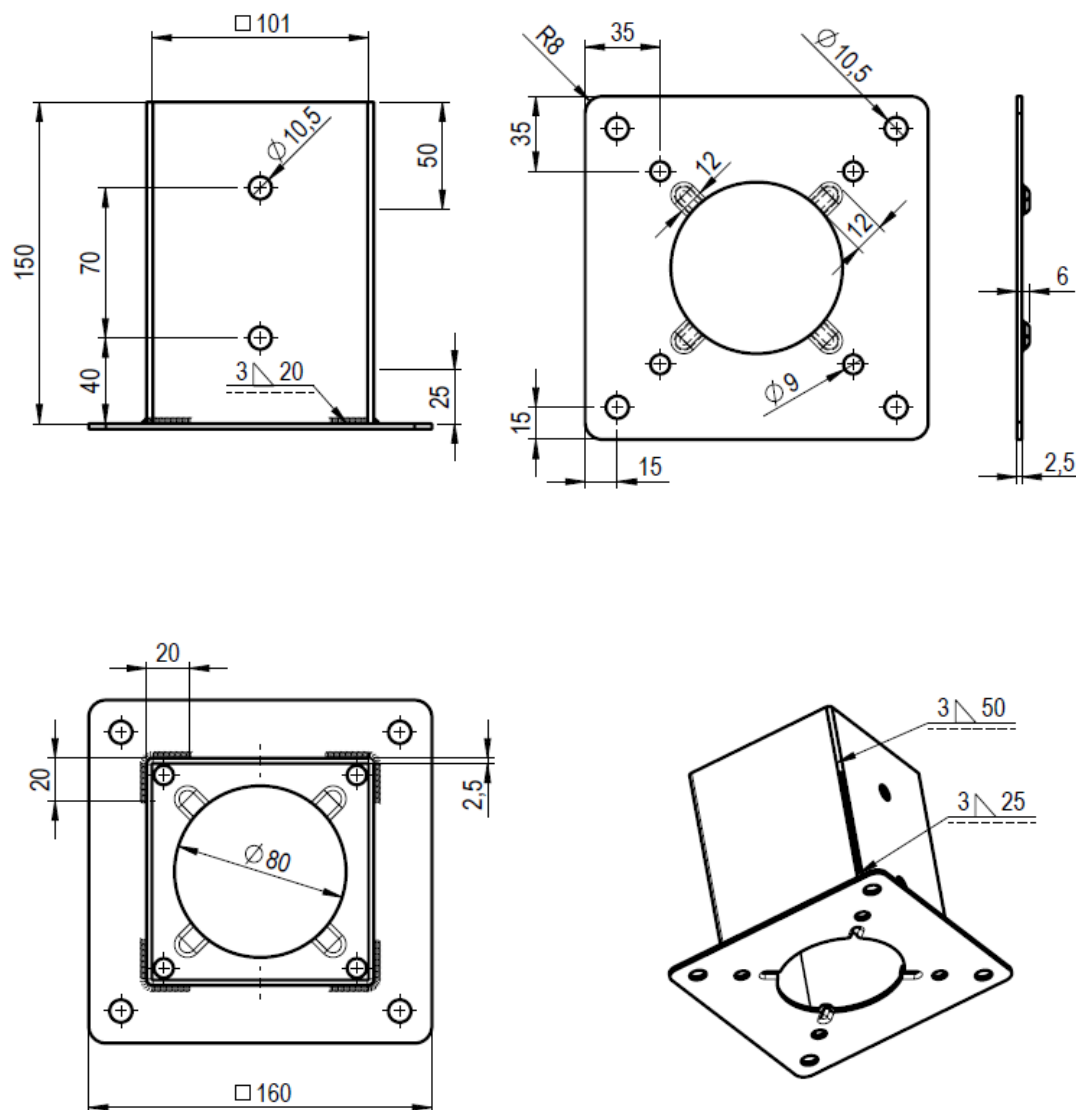
A	Toleranz bei Maß 71 entfernt		13.12.16	E. Neuwirth	S. Donat			
Index	Änderung		Datum	Gez.	Gepr.			
BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab:	1:3		Werkstoff:	Stahl		
		Gewicht:	1224.49 g				Oberfläche:	verzinkt
		Volumen:	155589.71 mm ³					
			Datum	Name	Benennung:	Aufschraubhülse 71x71x150x150x2,5		
		Bearb.	02.03.16	E. Neuwirth				
		Geprüft	02.03.16	A. Krause				
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!			Zeichnungs-Nr.	BB00-0023-003	Blatt 1 von 1	
							SW	
Allgemeintoleranzen nach DIN ISO 2768 - m		D:\BB_Berga\BB00\BB00-0023-A3PH... ...BB00-0023-003-Aufschraubhülse A3H 71x71x150x150x2,5.kldraw		Ers.f.	59507125	Ers.d.	A4	



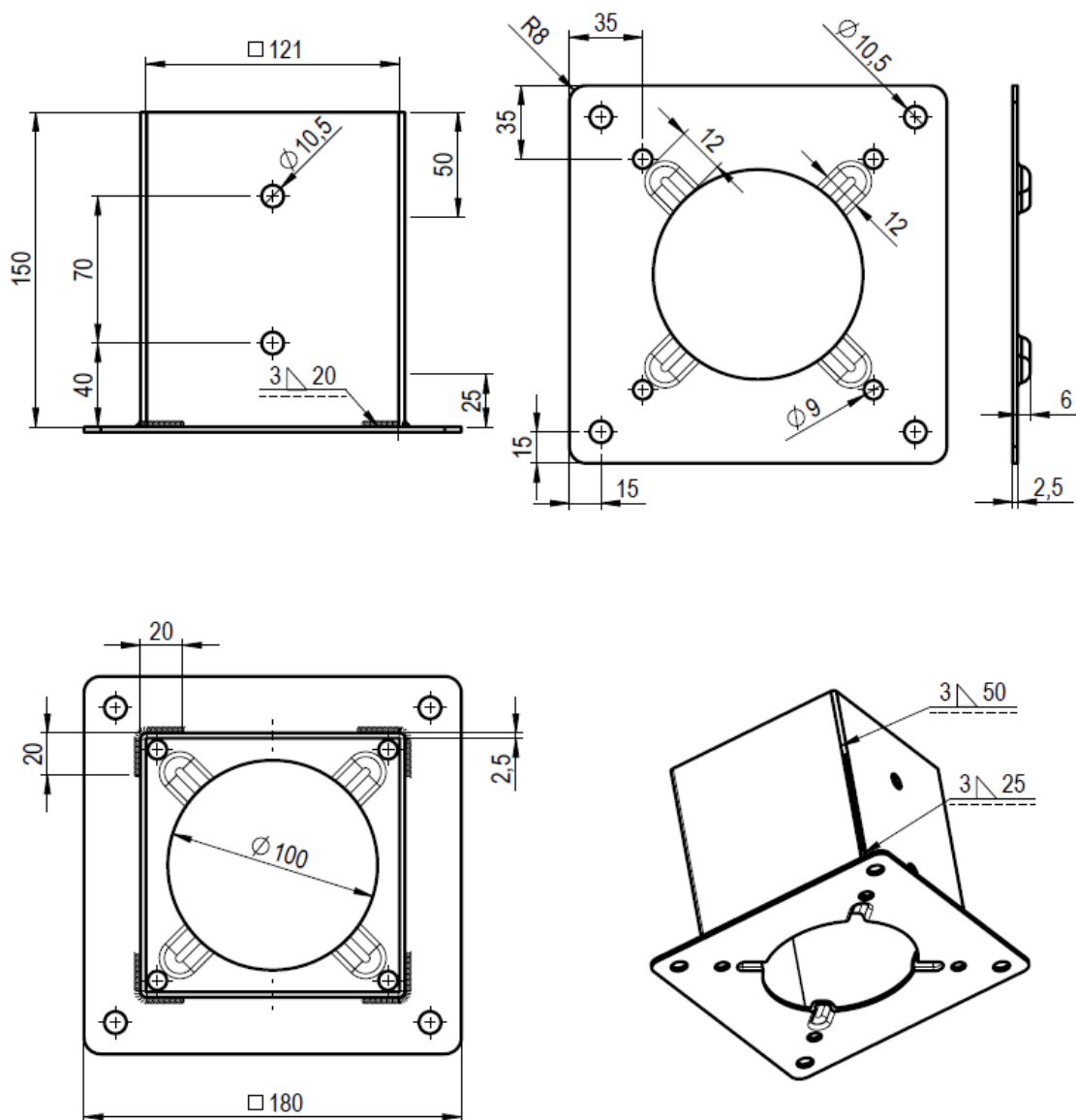
A	Bemaßung der Sicke nachgetragen, Toleranz bei Maß 81 entfernt			13.12.16	E. Neuwirth	S. Donat	
Index	Änderung			Datum	Gez.	Gepr.	
 Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de Allgemeintoleranzen nach DIN ISO 2768 - m		Maßstab: 1:3		Werkstoff: Stahl			
		Gewicht: 1334.85 g		Oberfläche: verzinkt			
		Volumen: 169612.64 mm³		Benennung: Aufsraubhülse 81x81x150x150x2,5			
			Datum				Name
		Bearb.	02.03.16				E. Neuwirth
		Geprüft	02.03.16				A. Krause
				Zeichnungs-Nr. BB00-0023-004			Blatt 1 von 1 SW
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!					
		©/BB Berga\BB00\BB00-0023-AS4\... .../BB00-0023-004 Aufsraubhülse ASH 81x81x150x150x2,5.sldw		Ers.f.	59508125	Ers.d.	A4



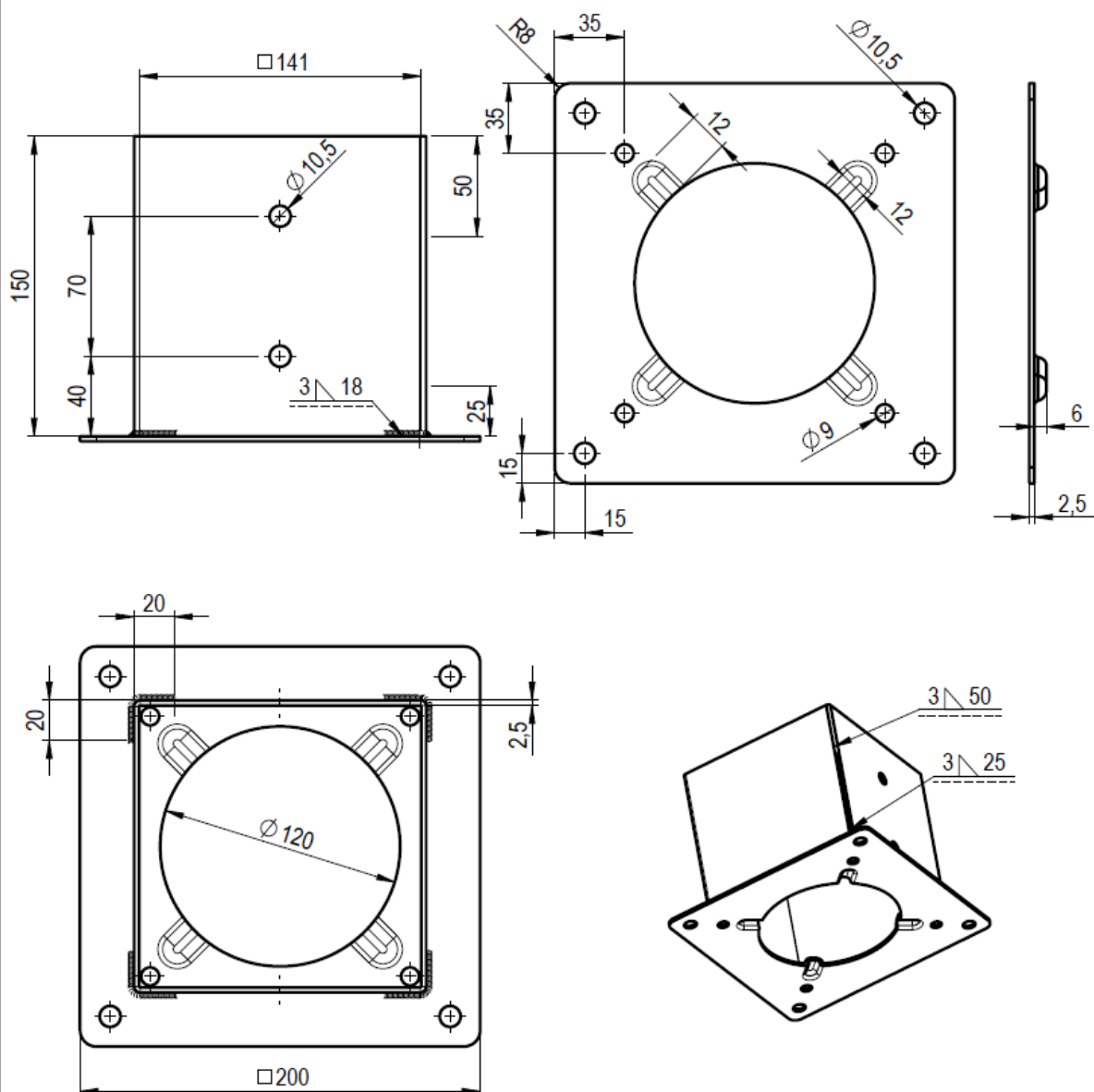
A	Bemaßung der Sicke nachgetragen, Toleranz bei Maß 91 entfernt		13.12.16	E. Neuwirth	S. Donat		
Index	Änderung		Datum	Gez.	Gepr.		
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:3		Werkstoff: Stahl			
		Gewicht: 1455.08 g					
		Volumen: 184889.48 mm ³		Oberfläche: verzinkt			
			Datum	Name	Benennung: Aufschraubhülse 91x91x150x150x2,5		
		Bearb.	02.03.16	E. Neuwirth			
		Geprüft	02.03.16	A. Krause			
Allgemeintoleranzen nach DIN ISO 2768 - m		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Zeichnungs-Nr. BB00-0023-005			
		D:\BB_Berga\BB00\BB00-0023-A3H\... ...BB00-0023-005 Aufschraubhülse A3H 91x91x150x150x2,5.slddw		Ers.f. 59509125	Ers.d.		
				Blatt 1 von 1 SW A4			



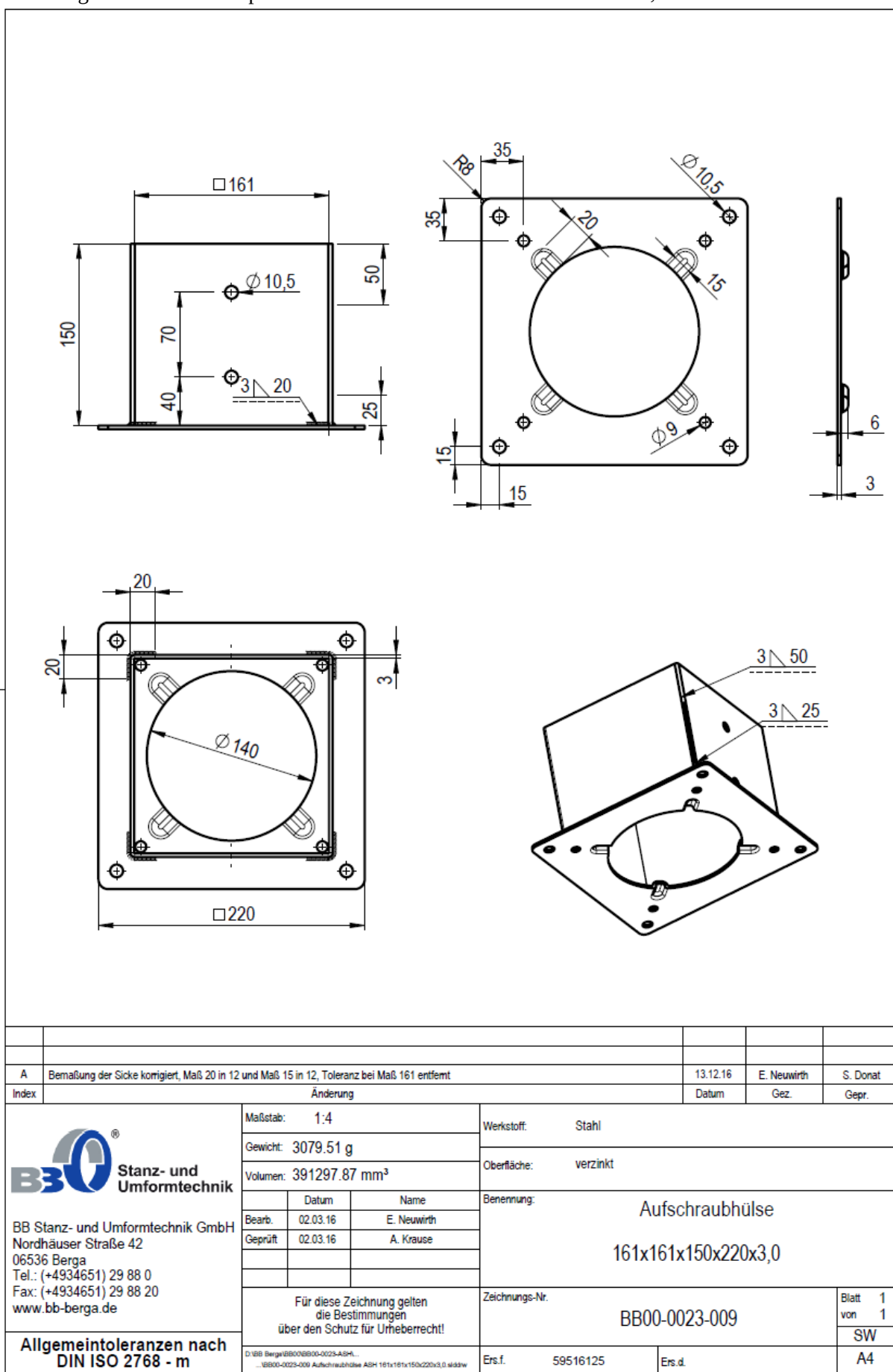
A	Bemaßung der Sicke nachgetragen, Toleranz bei Maß 101 entfernt		13.12.16	E. Neuwirth	S. Donat		
Index	Änderung		Datum	Gez.	Gepr.		
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:3		Werkstoff: Stahl			
		Gewicht: 1599.05 g					
		Volumen: 203183.29 mm³		Oberfläche: verzinkt			
			Datum	Name	Benennung: Aufschraubhülse 101x101x150x160x2,5		
		Bearb.	02.03.16	E. Neuwirth			
		Geprüft	02.03.16	A. Krause			
Allgemeintoleranzen nach DIN ISO 2768 - m		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Zeichnungs-Nr. BB00-0023-006		Blatt 1 von 1	
		D:\BB_Berga\BB00\BB00-0023-ASH\... ... BB00-0023-006 Aufschraubhülse ASH 101x101x150x160x2,5 skidw		Ers.f. 59510125		Ers.d.	SW
						A4	

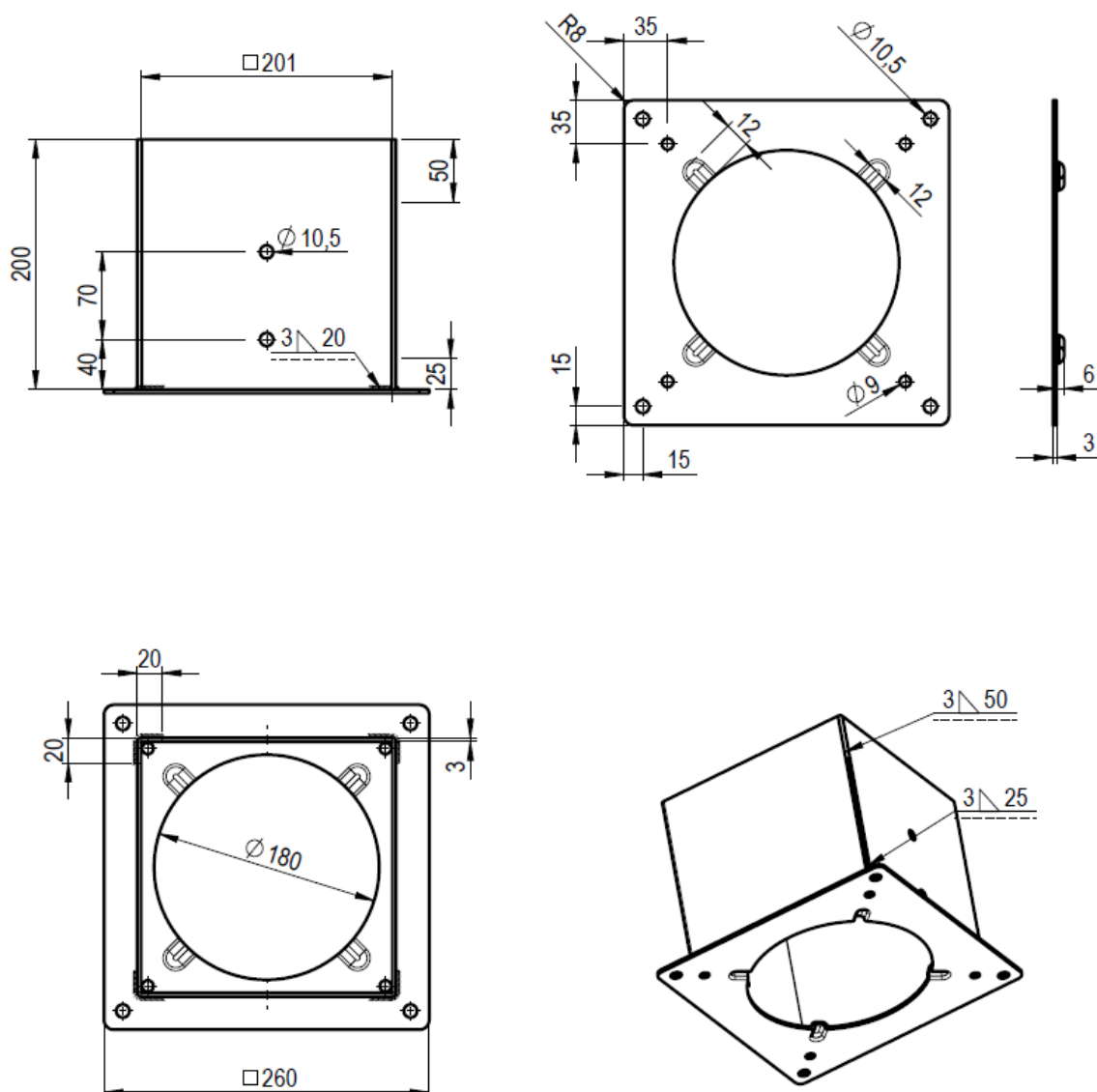


A	Bemaßung der Sicke berichtigt, Maß 20 in 12 und Maß 15 in 12, Toleranz bei Maß 121 entfernt			13.12.16	E. Neuwirth	S. Donat	
Index	Änderung			Datum	Gez.	Gepr.	
 Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:3		Werkstoff: Stahl			
		Gewicht: 1924.82 g		Oberfläche: verzinkt			
		Volumen: 244576.86 mm³		Benennung: Aufschraubhülse 121x121x150x180x2,5			
			Datum				Name
		Bearb.	02.03.16				E. Neuwirth
		Geprüft	02.03.16				A. Krause
					Zeichnungs-Nr. BB00 0023 007		
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!			Blatt 1 von 1		
		Allgemeintoleranzen nach DIN ISO 2768 - m			SW		
A4							
D:\BB_Berge\BB00\BB00-0023-A30H... ... \BB00-0023-007 Aufschraubhülse A30H 121x121x150x180x2,5.sldw		Ers.f.	59512125	Ers.d.			

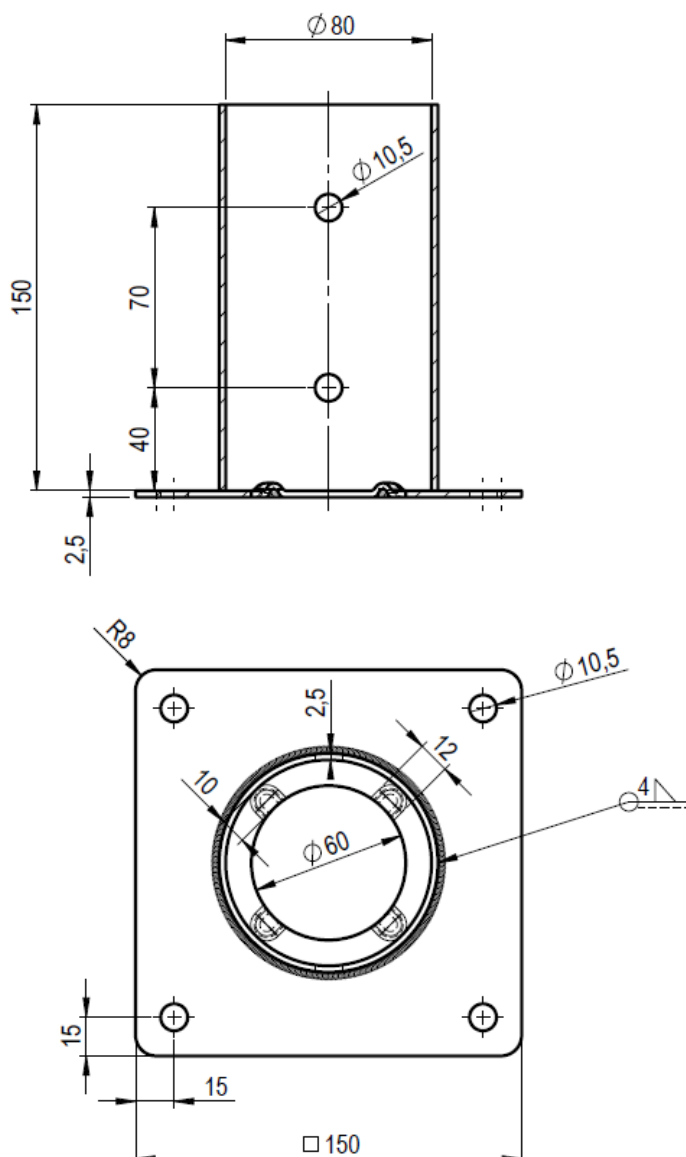


A	Bemaßung der Sicke korrigiert, Maß 20 in 12, Maß 15 in 12 geändert, Toleranz bei Maß 141 entfernt		13.12.16	E. Neuwirth	S. Donat	
Index	Änderung		Datum	Gez.	Gepr.	
BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de Allgemeintoleranzen nach DIN ISO 2768 - m D:\BB_Berga\BB00\BB00-0023-A-SH... ...BB00-0023-008 Aufschraubhülse ASH 141x141x150x200x2,5.sldw		Maßstab: 1:3		Werkstoff: Stahl		
		Gewicht: 2241.50 g		Oberfläche: verzinkt		
		Volumen: 284815.65 mm³		Benennung: Aufschraubhülse 141x141x150x200x2,5		
			Datum			Name
		Bearb.	02.03.16			E. Neuwirth
		Geprüft	02.03.16			A. Krause
				Zeichnungs-Nr. BB00-0023-008		Blatt 1 von 1
						SW
				Ers.f. 59514125	Ers.d.	A4

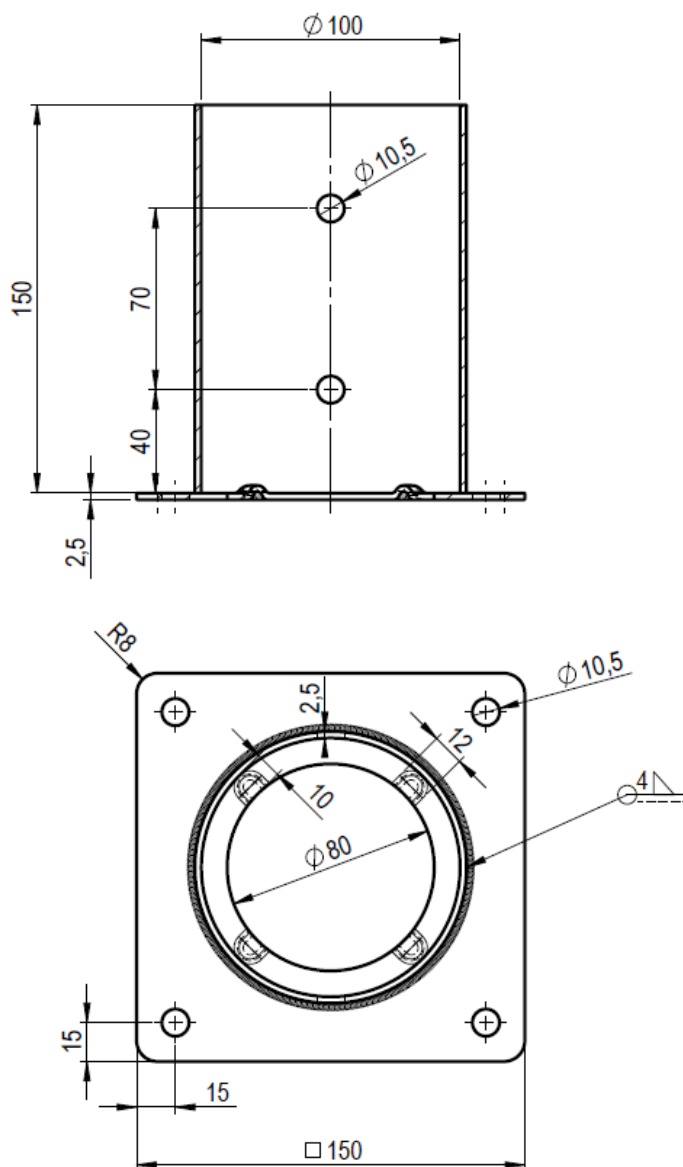




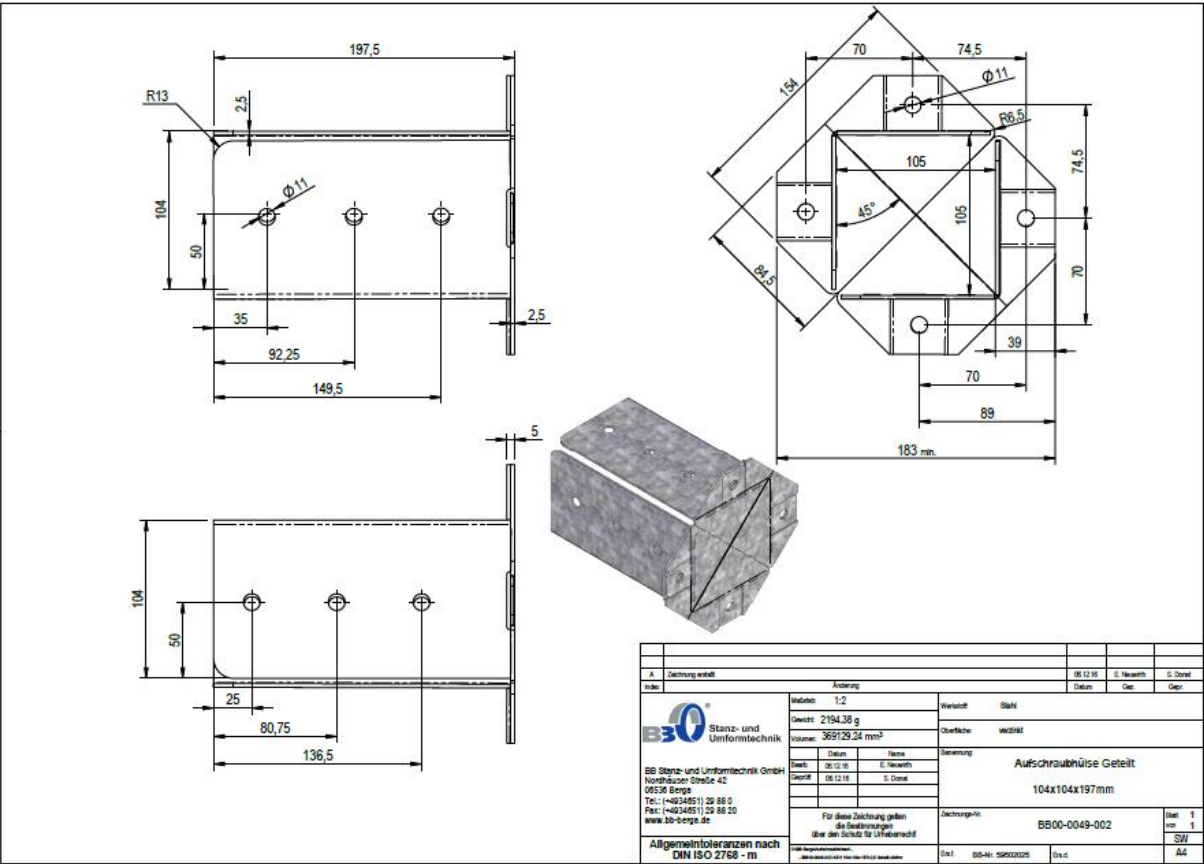
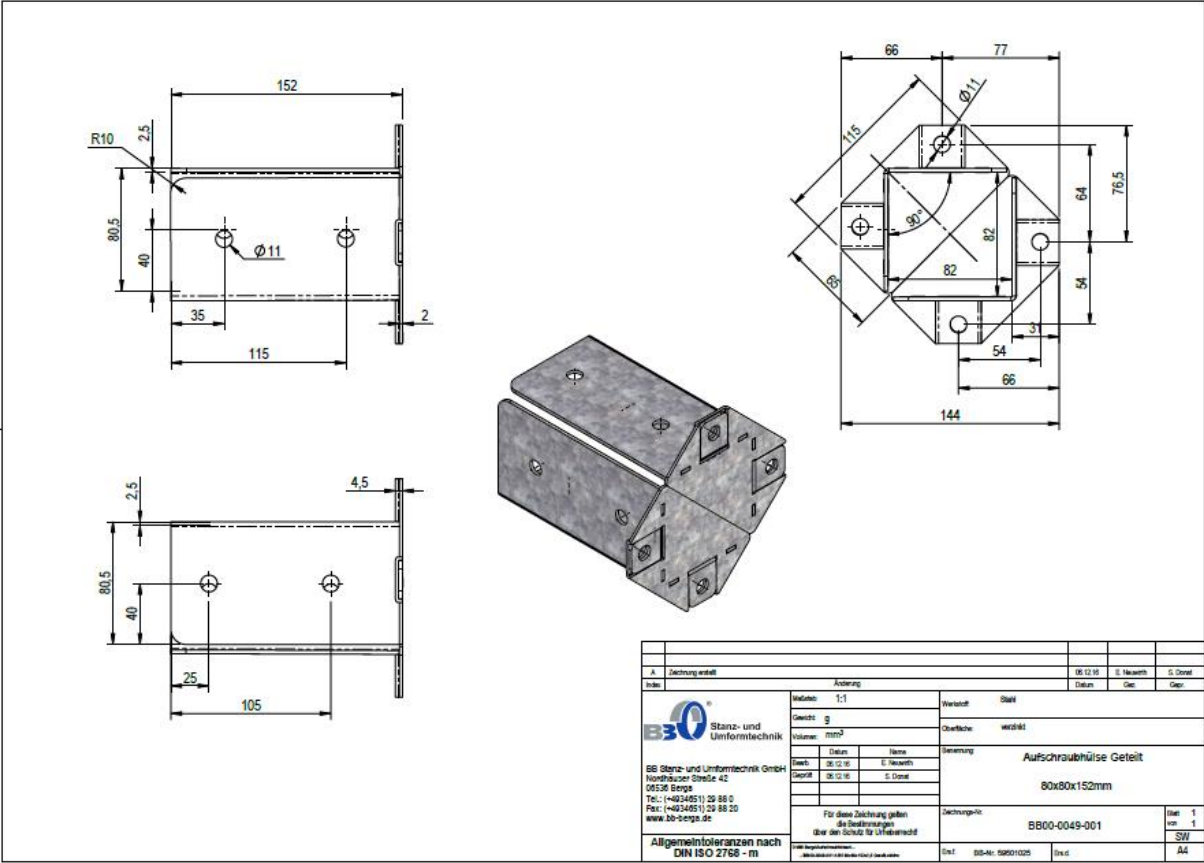
A		Maße für Sicke von 20 in 12 und von 15 in 12 geändert		13.12.16	E. Neuwirth
Index		Änderung		Datum	Gez.
					S. Donat
 BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:5		Werkstoff: Stahl	
		Gewicht: 4818.54 g		Oberfläche: verzinkt	
		Volumen: 612266.22 mm ³		Benennung: Aufsraubhülse 201x201x200x260x3,0	
		Datum	Name		
		Bearb. 02.03.16	E. Neuwirth		
Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Geprüft 02.03.16	A. Krause	Zeichnungs-Nr. BB00-0023-010	
Allgemeintoleranzen nach DIN ISO 2768 - m		D:\BB_Berger\BB00\BB00-0023-ASH... ...BB00-0023-010 Aufsraubhülse ASH 201x201x200x260x3,0.sldraw		Ers.f. 59520130	Ers.d.
				Blatt 1 von 1	SW
					A4

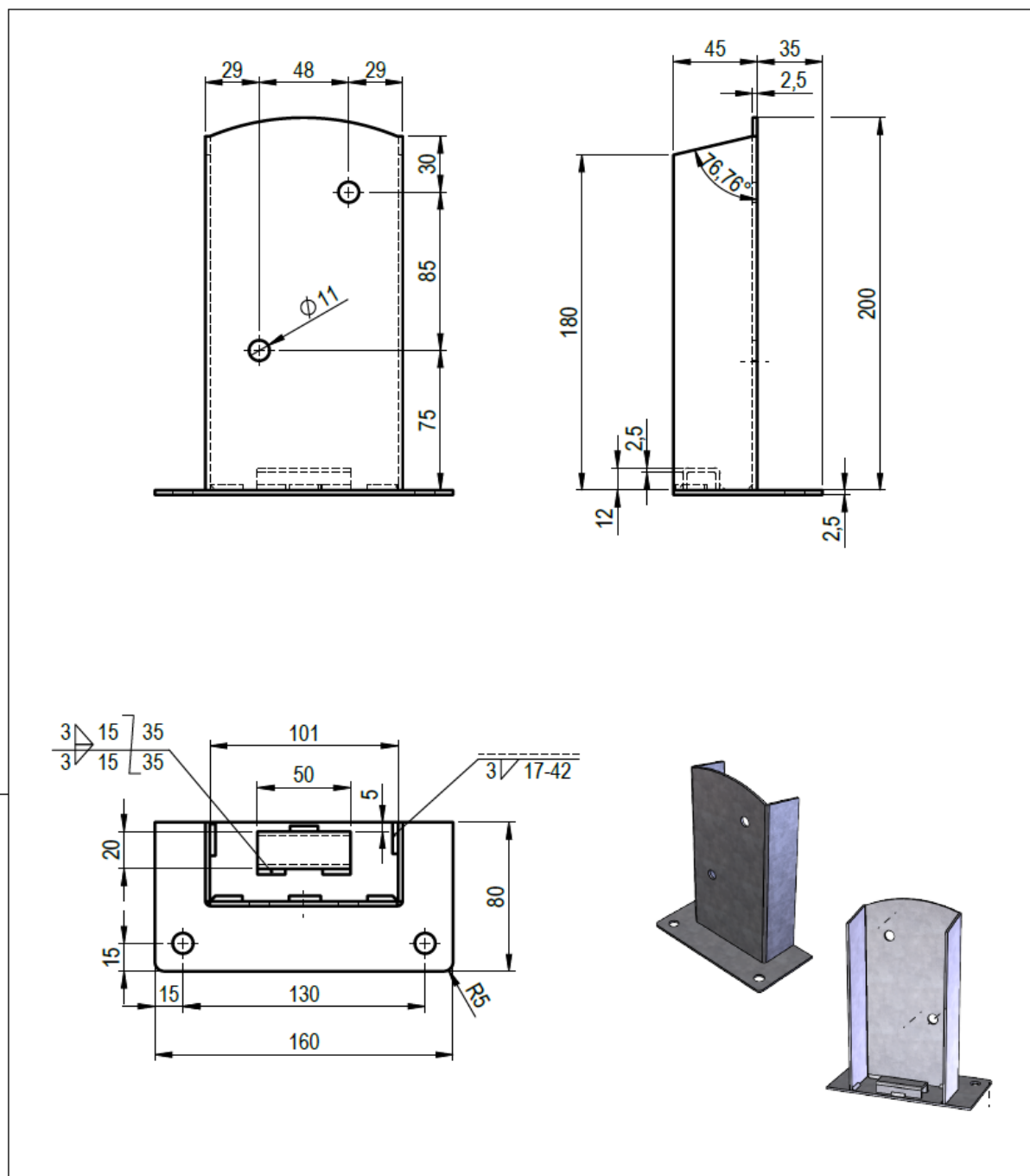


A	Maß 12 und Maß 10 für Sicke hinzugefügt, Innen-ø von 50 in 60 berichtigt, Toleranz bei ø 80 entfernt		13.12.16	E. Neuwirth	S. Donat	
Index	Änderung		Datum	Gez.	Gepr.	
 Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:2,5		Werkstoff: Stahl		
		Gewicht: 1139.12 g		Oberfläche: verzinkt		
		Volumen: 144741.58 mm ³				
			Datum	Name	Benennung: Aufschraubhülse ø 80x150x150x2,5	
		Bearb.	02.03.16	E. Neuwirth		
		Geprüft	02.03.16	A. Krause		
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Zeichnungs-Nr. BB00-0023-011		
Allgemeintoleranzen nach DIN ISO 2768 - m		D:\BB Berga\BB00\BB00-0023-ASH... ...BB00-0023-011 Aufschraubhülse ASH 80x150x150x2,5 rund stldrw		Ers.f. 59508025	Ers.d.	
				Blatt 1 von 1 SW A4		

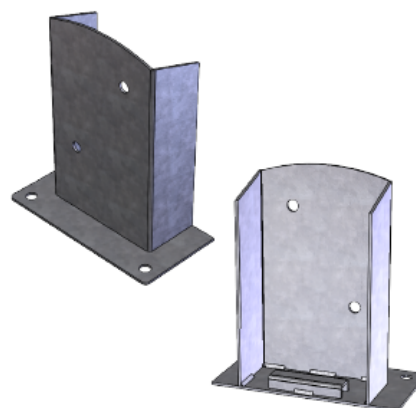
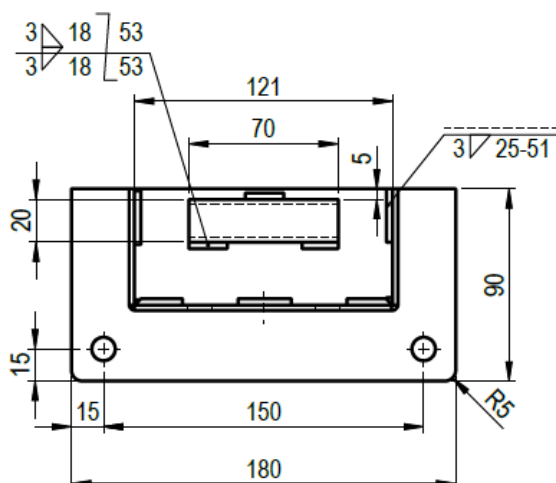
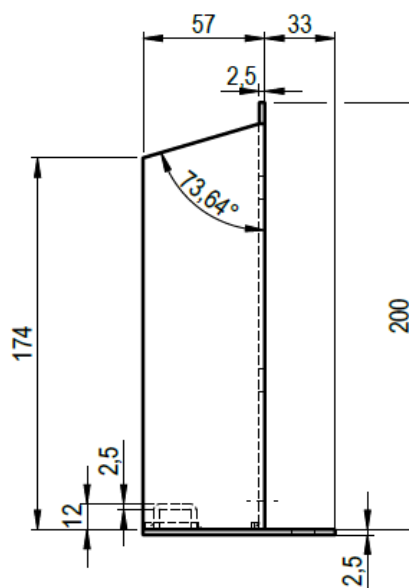
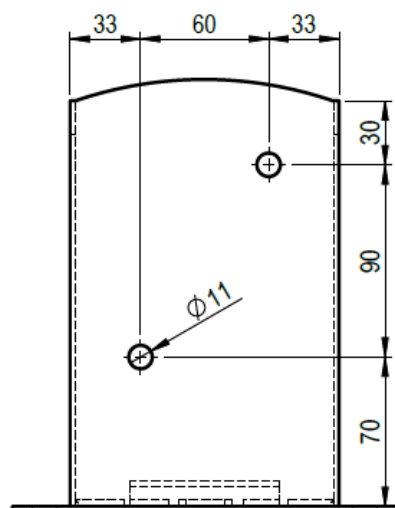


A	Hülsen-ø von Außen- ø 80 in ø100 berichtigt, Innenloch- ø von 50 in ø80 berichtigt, Toleranz bei ø 100 entfernt			13.12.16	E. Neuwirth	S. Donat	
Index	Änderung			Datum	Gez.	Gepr.	
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:2.5		Werkstoff: Stahl			
		Gewicht: 1281.28 g		Oberfläche: verzinkt			
		Volumen: 162805.19 mm³					
			Datum	Name	Benennung: Aufsraubhülse ø 100x150x150x2,5		
		Bearb.	02.03.16	E. Neuwirth			
		Geprüft	02.03.16	A. Krause			
					Zeichnungs-Nr. BB00-0023-012		
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!					
		Allgemeintoleranzen nach DIN ISO 2768 - m		D:\BB Berga\BB00\BB00-0023-A5H1... ...BB00-0023-012 Aufsraubhülse A5H 100x150x150x2,5 rund siddw			Ers.f. 59510025
				A4			

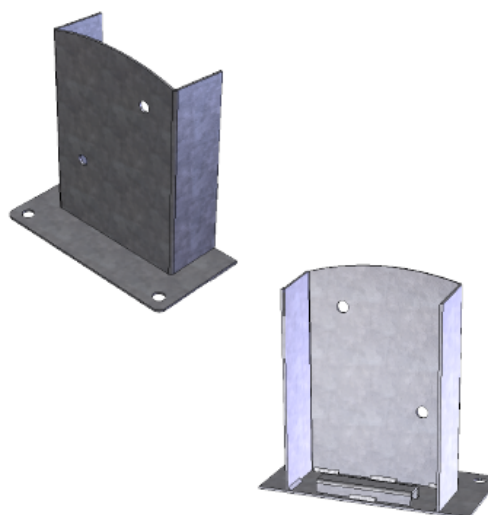
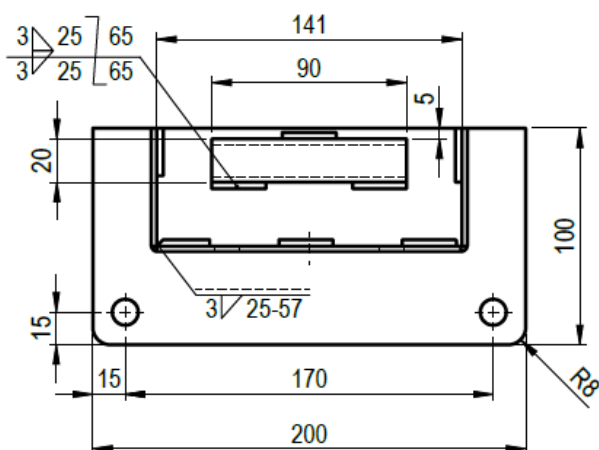
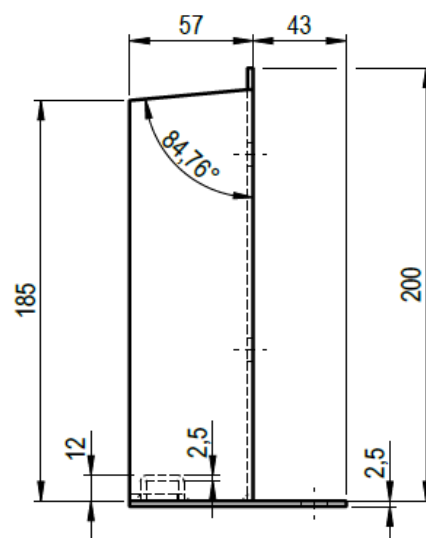
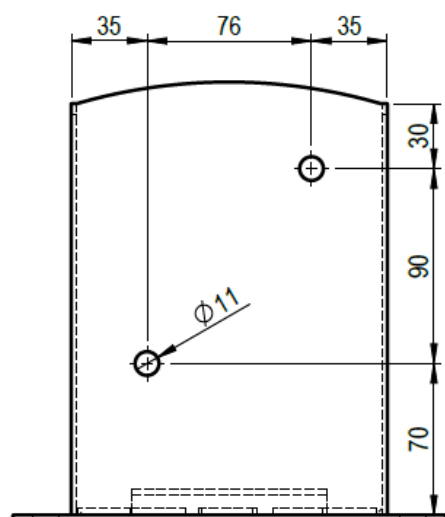




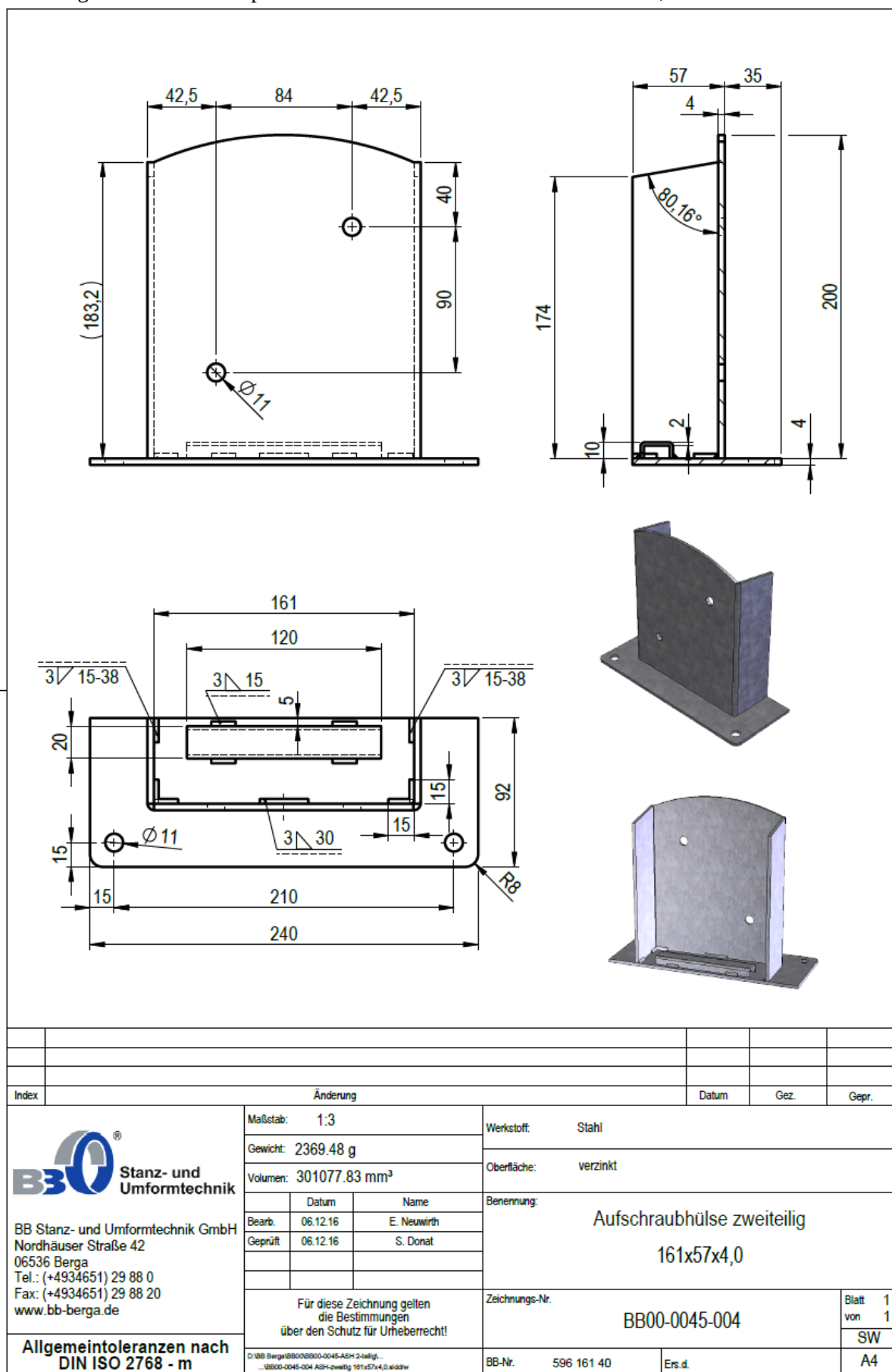
A	Position und Bemaßung der Schweißnähte berichtigt	08.12.16	E. Neuwirth	S. Donat	
Index	Änderung	Datum	Gez.	Gepr.	
 Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:3		Werkstoff: Stahl	
		Gewicht: 998.89 g		Oberfläche: verzinkt	
		Volumen: 126923.20 mm³		Benennung: Aufschraubhülse zweiteilig 101x45x2,5	
		Datum	Name		
		Bearb. 06.12.16	E. Neuwirth		
		Geprüft 06.12.16	S. Donat	Zeichnungs-Nr. BB00-0045-001	
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Blatt 1 von 1	
				SW	
Allgemeintoleranzen nach DIN ISO 2768 - m		BB-Nr 596 101 25		Ers.d.	
				A4	

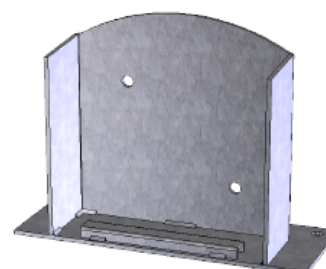
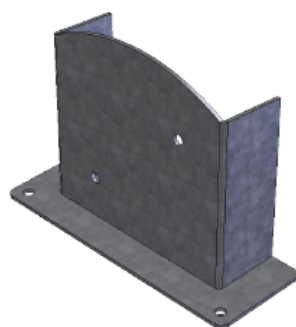
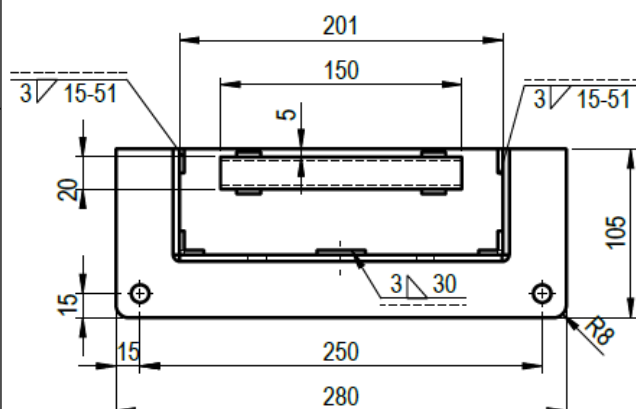
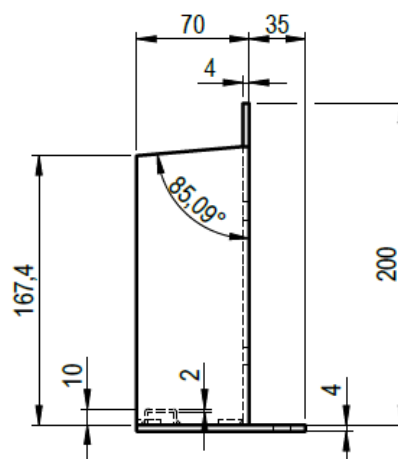
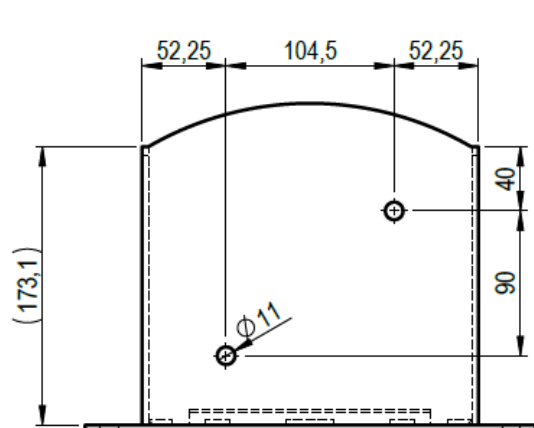


A	Position und Bemaßung der Schweißnähte berichtigt			08.12.16	E. Neuwirth	S. Donat	
Index	Änderung			Datum	Gez.	Gepr.	
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:3		Werkstoff: Stahl			
		Gewicht: 1240.46 g		Oberfläche: verzinkt			
		Volumen: 157618.78 mm³		Benennung: Aufsraubhülse zweiteilig 121x57x2,5			
			Datum				Name
		Bearb.	06.12.16				E. Neuwirth
		Geprüft	06.12.16				S. Donat
					Zeichnungs-Nr. BB00-0045-0002		
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!					
Allgemeintoleranzen nach DIN ISO 2768 - m		D:\BB Berga\BB00\BB00-0045-ASH 2-teilig... ...BB00-0045-002 ASH-zweitig 121x57x2,5.sldprt		BB-Nr. 596 121 25	Ers.d.	Blatt 1 von 1 SW A4	

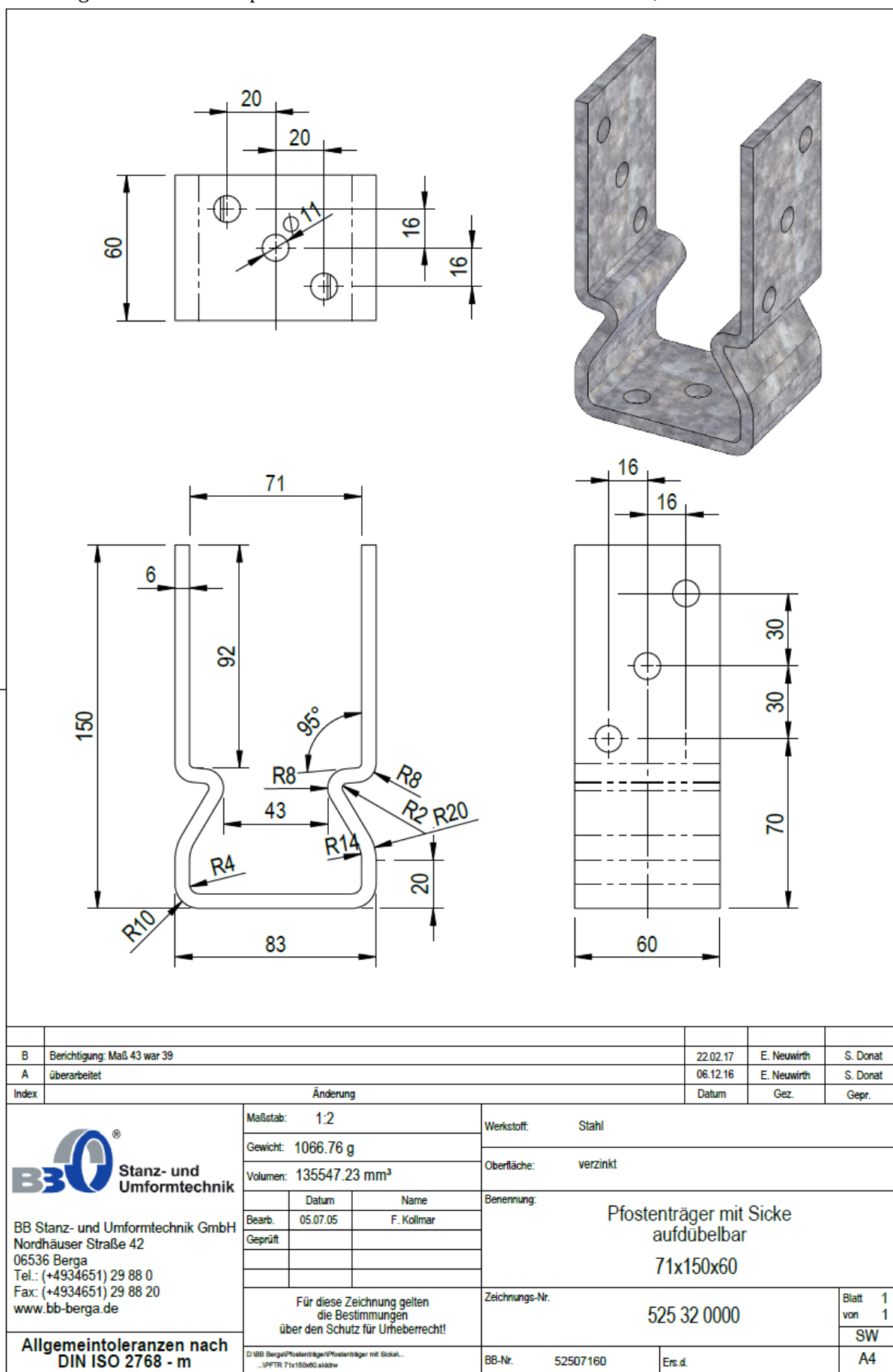


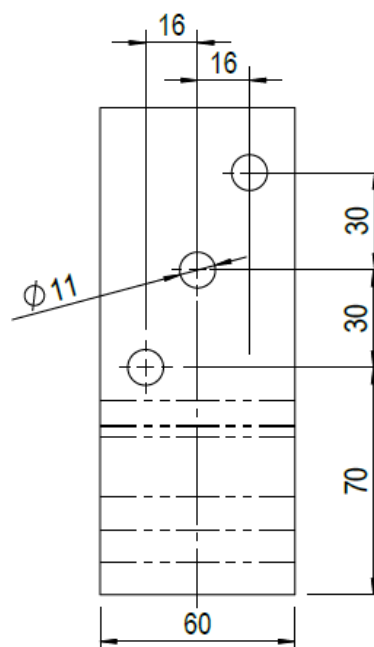
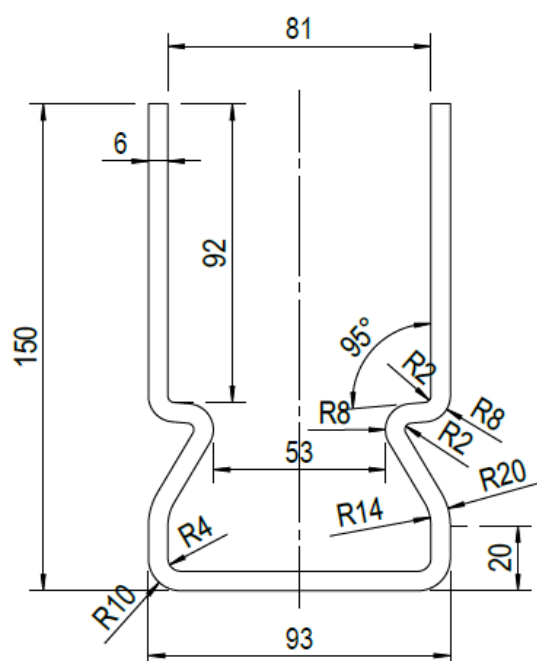
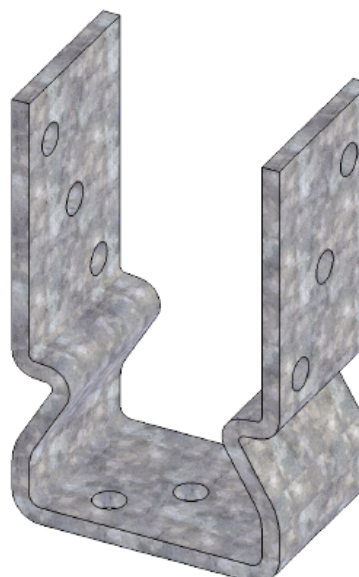
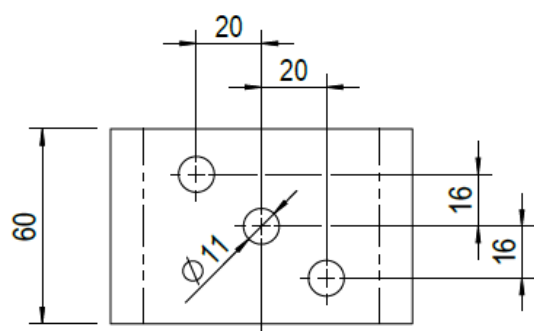
A		Bemaßung der Schweißnähte berichtigt	08.12.16	E. Neuwirth
Index	Änderung		Datum	Gez.
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:3	Werkstoff: Stahl	
		Gewicht: 1418.88 g	Oberfläche: verzinkt	
		Volumen: 180289.09 mm³	Benennung: Aufschraubhülse zweiteilig 141x57x2,5	
		Datum	Name	
		Bearb.	06.12.16	E. Neuwirth
		Geprüft	06.12.16	S. Donat
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		
		Zeichnungs-Nr. BB00-0045-003		Blatt 1 von 1
		BB-Nr. 596 141 25		SW
		Ers.d.		A4



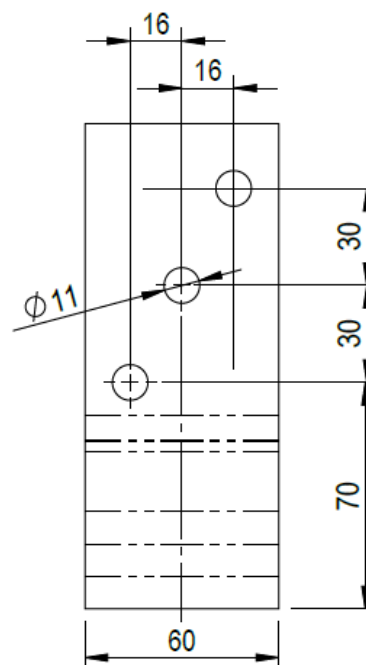
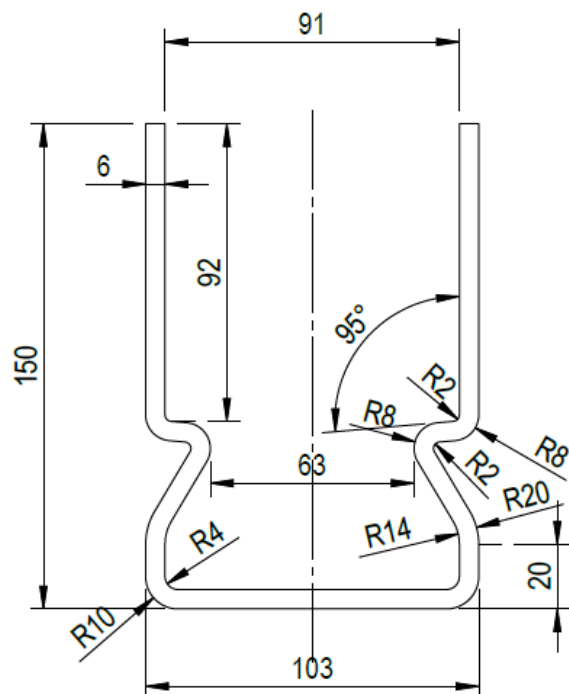
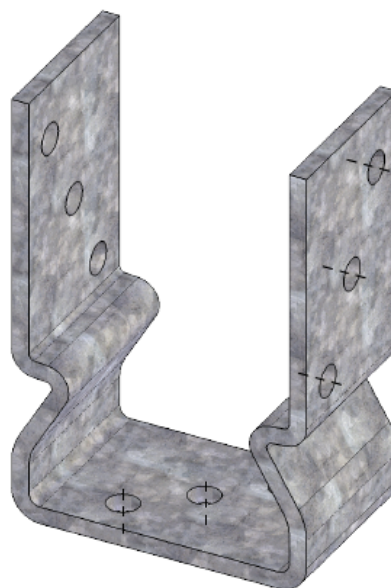
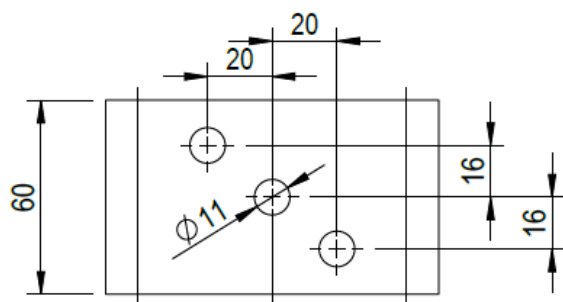


Index	Änderung			Datum	Gez.	Gepr.	
 Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de	Maßstab: 1:4		Werkstoff: Stahl				
	Gewicht: 2950.26 g		Oberfläche: verzinkt				
	Volumen: 374874.83 mm³						
		Datum	Name	Benennung: Aufschraubhülse zweiteilig 201x70x4,0			
	Bearb.	06.12.16	E. Neuwirth				
	Geprüft	06.12.16	S. Donat				
	Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!			Zeichnungs-Nr. BB00-0045-005		Blatt von	1 1
	Allgemeintoleranzen nach DIN ISO 2768 - m					SW	
				A4			
D:\BB Berga\BB00\BB00-0045-ASH 3-teilig... ...BB00-0045-005 ASH-zweitg 201x70x4,0 skidnw			BB-Nr.	596 201 40	Ers.d.		

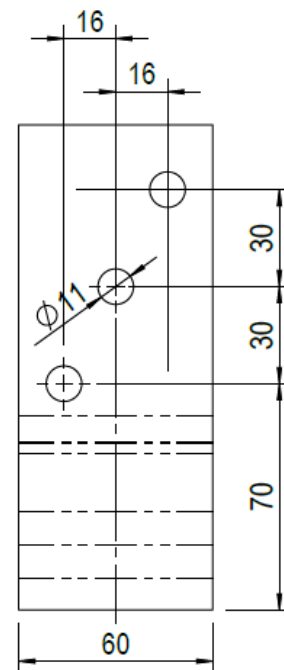
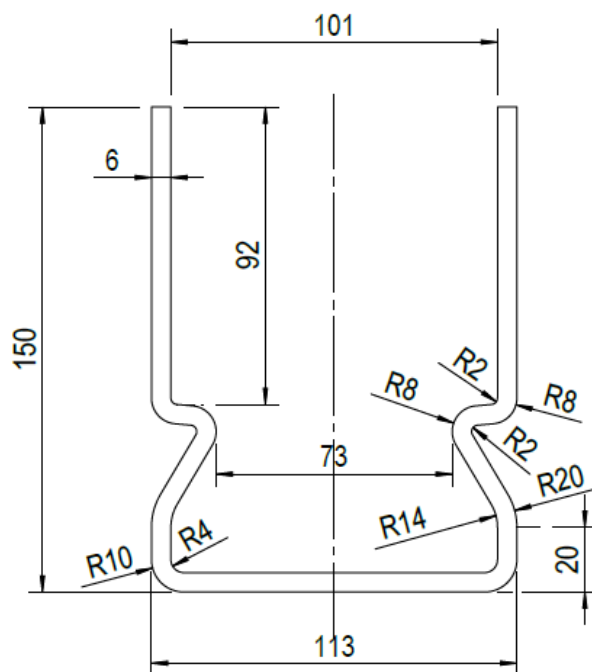
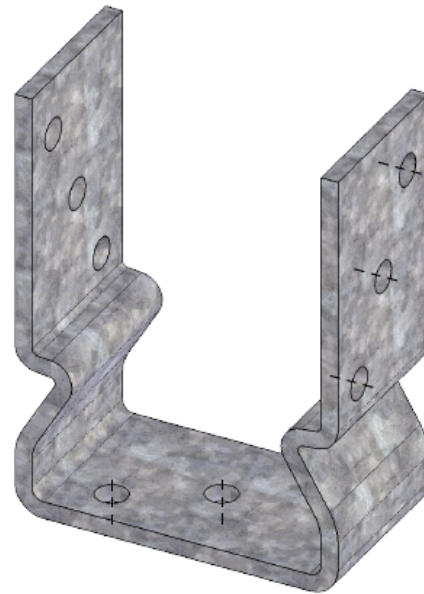
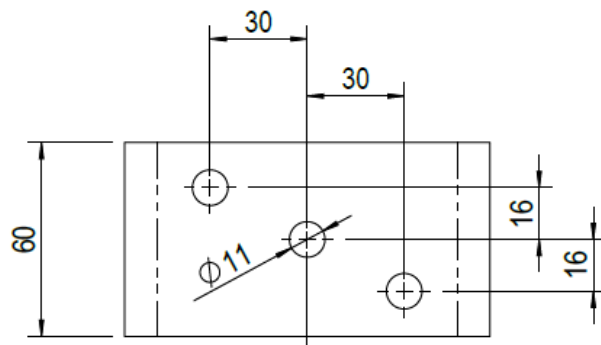




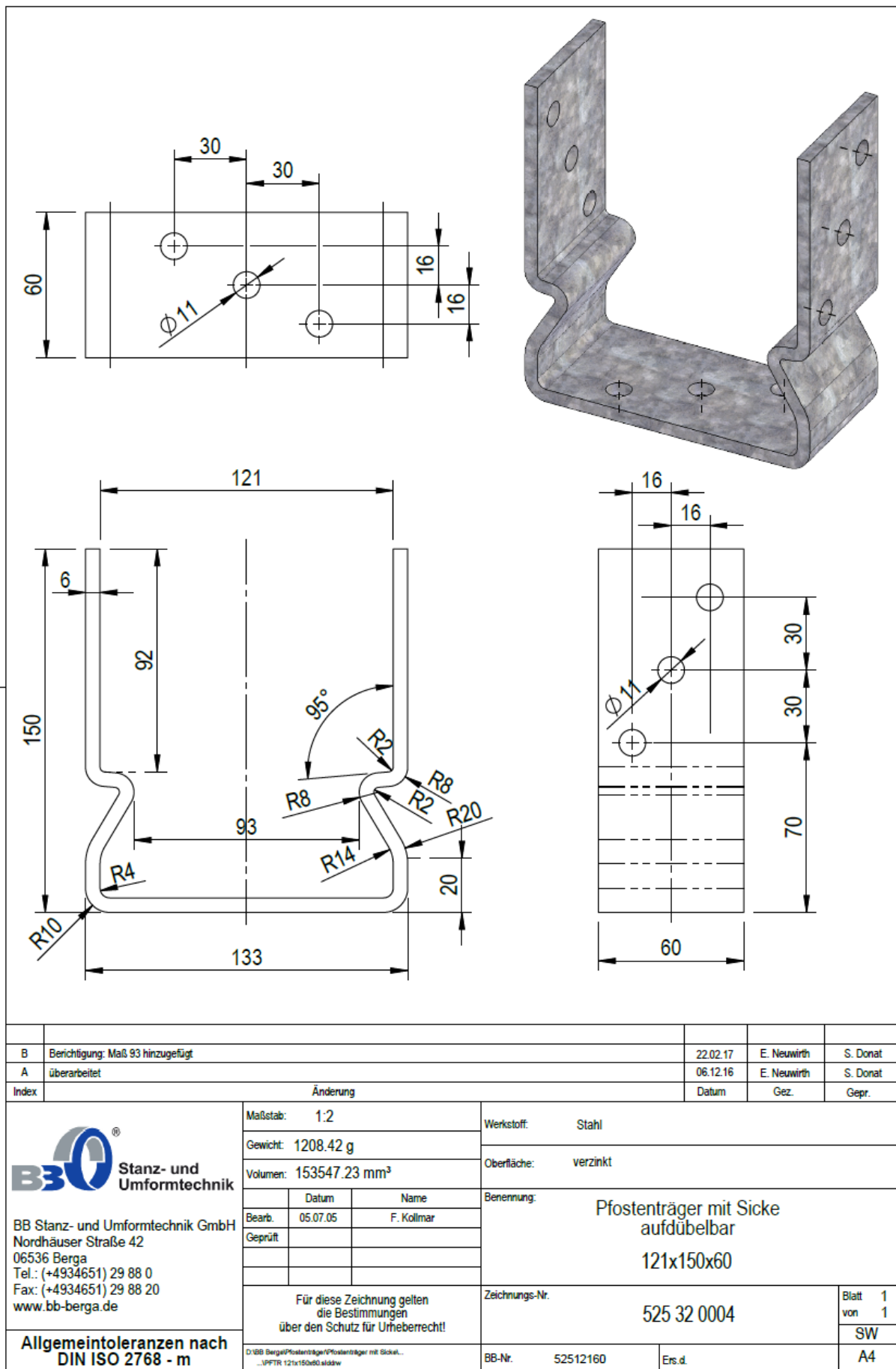
C	Berichtigung: Maß 53 hinzugefügt	22.02.17	E. Neuwirth	S. Donat		
B	überarbeitet	06.12.16	E. Neuwirth	S. Donat		
A	Abstand der Löcher mit 16mm war 19 mm bzw. 16,5mm	04.11.15	E. Neuwirth	A. Krause		
Index	Änderung	Datum	Gez.	Gepr.		
 BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:2		Werkstoff: Stahl		
		Gewicht: 1095.09 g		Oberfläche: verzinkt		
		Volumen: 139147.23 mm³				
			Datum	Name	Benennung: Pfostenträger mit Sicke aufdübelbar 81x150x60	
		Bearb.	05.07.05	F. Kollmar		
		Geprüft				
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!			Zeichnungs-Nr. 525 32 0001	
Allgemeintoleranzen nach DIN ISO 2768 - m					SW	
					A4	
D/BB Berge/Pfostenträger/Pfostenträger mit Sicke... ...PPT8 81x150x60.allddw			BB-Nr. 52508160	Ers.d.		

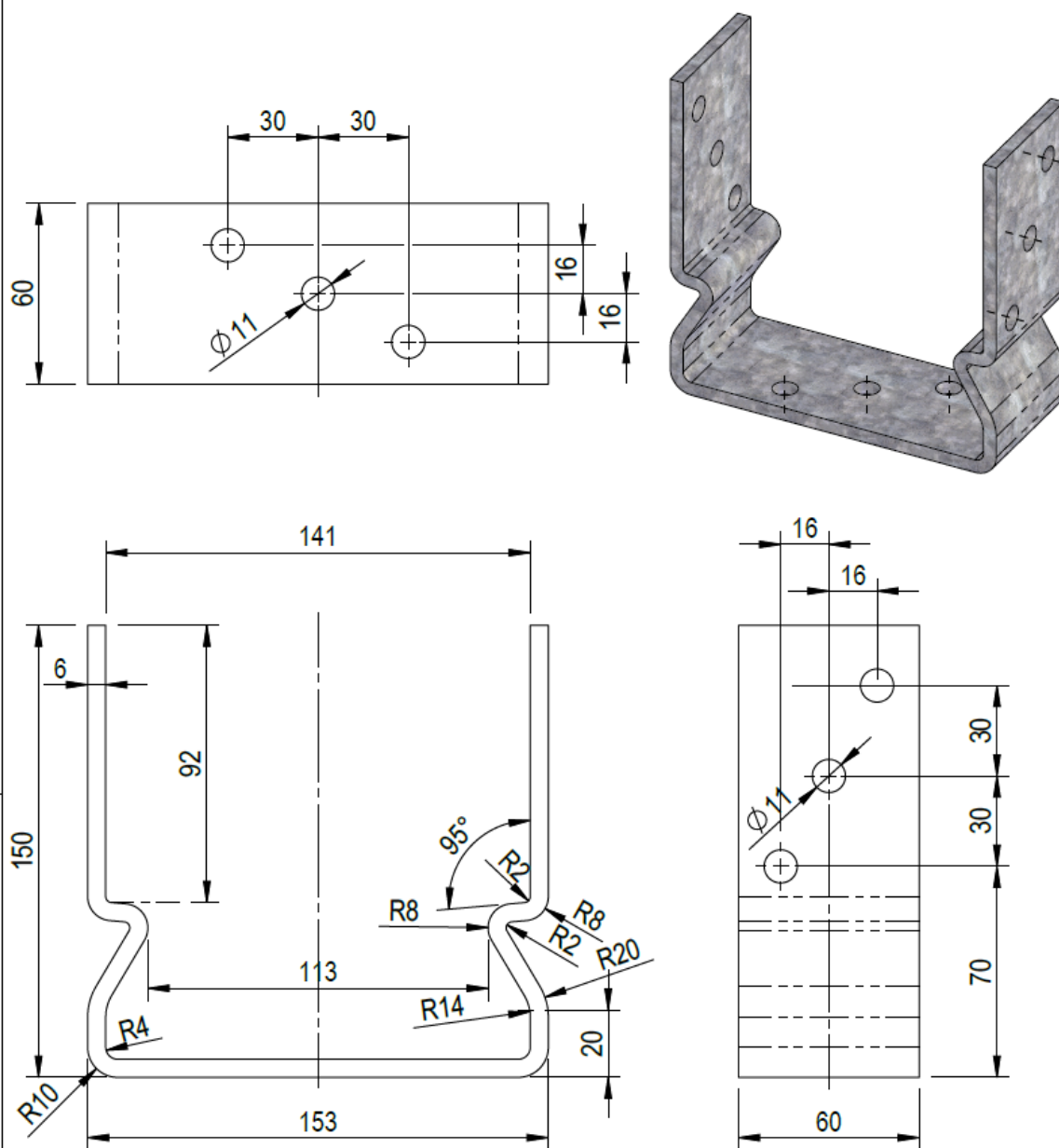


B	berichtigung: Maß 63 hinzugefügt			22.02.17	E. Neuwirth	S. Neuwirth			
A	überarbeitet			06.12.16	E. Neuwirth	S. Donat			
Index	Änderung			Datum	Gez.	Gepr.			
BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de Allgemeintoleranzen nach DIN ISO 2768 - m				Maßstab: 1:2		Werkstoff: Stahl			
				Gewicht: 1123.42 g		Oberfläche: verzinkt			
				Volumen: 142747.23 mm³		Benennung: Pfostenträger mit Sicke aufdübelfar 91x150x60			
					Datum			Name	
				Bearb.	05.07.05			F. Kollmar	
				Geprüft					
							Zeichnungs-Nr. 525 32 0002		Blatt 1 von 1 SW
				Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!					
				D:\BB\Berge\Pfostenträger\Pfostenträger mit Sicke... ...VPFTR 91x150x60.dwg					

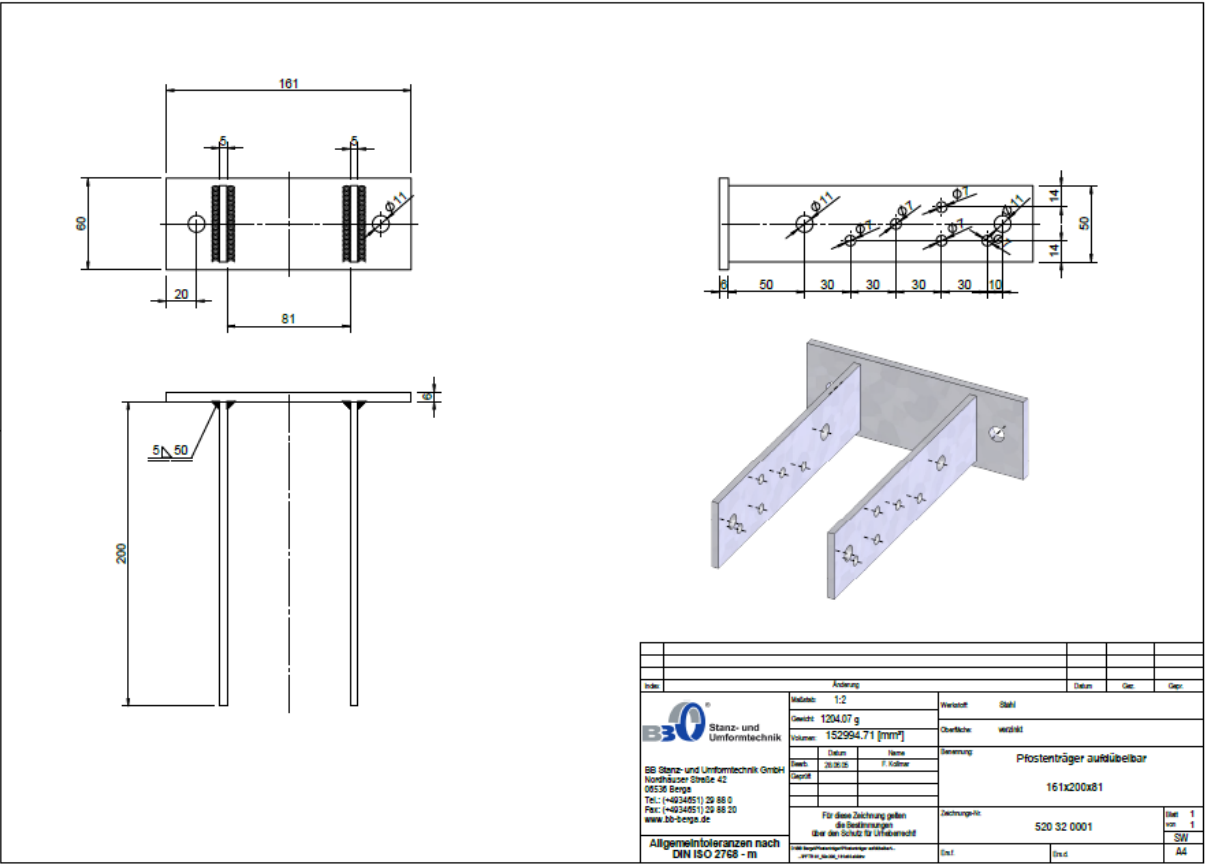
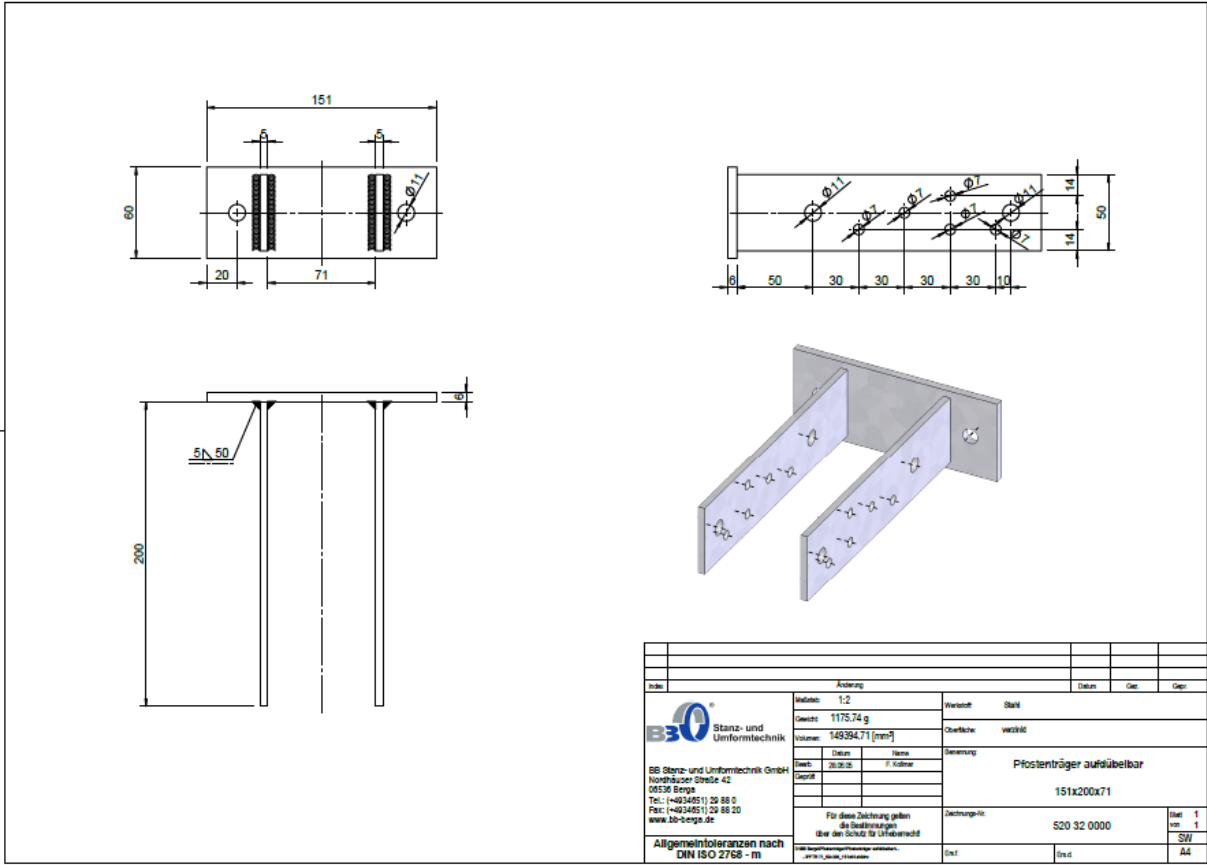


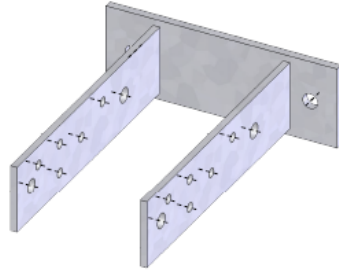
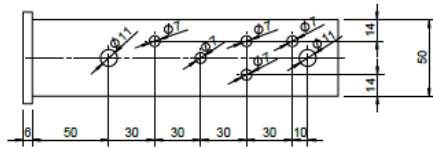
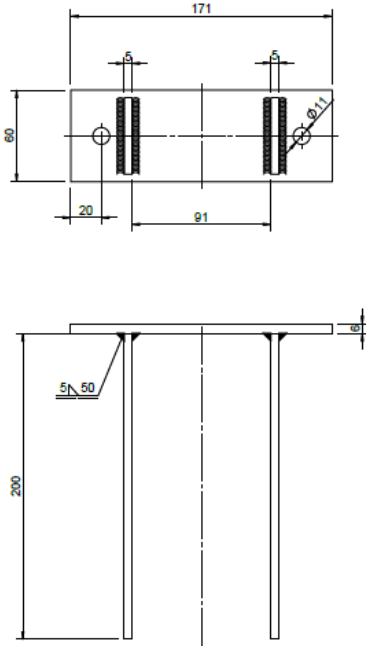
B	Berichtigung: Maß 73 hinzugefügt.	22.02.17	E. Neuwirth	S. Donat		
A	überarbeitet	06.12.16	E. Neuwirth	S. Donat		
Index	Änderung		Datum	Gez.	Gepr.	
BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de Allgemeintoleranzen nach DIN ISO 2768 - m		Maßstab: 1:2		Werkstoff: Stahl		
		Gewicht: 1151.75 g				
		Volumen: 146347.23 mm³		Oberfläche: verzinkt		
			Datum	Name	Benennung: Pfostenträger mit Sicke aufdübelbar 101x150x60	
		Bearb.	05.07.05	F. Kollmar		
		Geprüft				
				Zeichnungs-Nr.		Blatt 1 von 1
		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		525 32 0003		SW
		©/BB Berga/Pfostenträger/Pfostenträger mit Sicke... ...LPFTR 101x150x60.sldwtw		BB-Nr.	52510160	Ers.d.



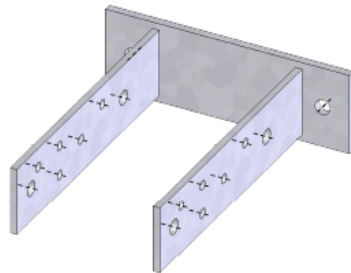
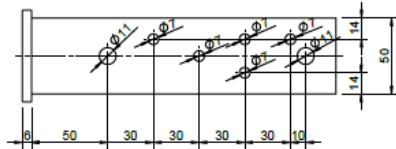
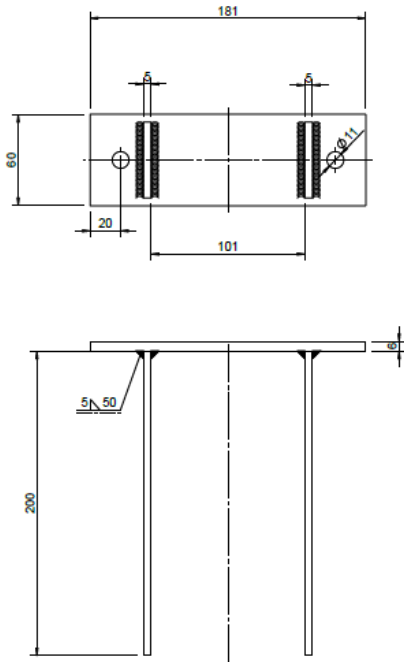


B	Berichtigung: Maß 113 hinzugefügt	22.02.17	E. Neuwirth	S. Donat
A	überarbeitet	06.12.16	E. Neuwirth	S. Donat
Index	Änderung	Datum	Gez.	Gepr.
 Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de				
Maßstab: 1:2		Werkstoff: Stahl		
Gewicht: 1265.08 g		Oberfläche: verzinkt		
Volumen: 160746.59 mm³		Benennung: Pfostenträger mit Sicke aufdübelbar 141x150x60		
	Datum			
Bearb.	05.07.05			
Geprüft				
Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Zeichnungs-Nr. 525 32 0005		Blatt 1 von 1
Allgemeintoleranzen nach DIN ISO 2768 - m		BB-Nr. 52512160		SW
D:\BB Berga\Pfostenträger\Pfostenträger mit Sicke... ...UFTR 141x150x60.sldw		Ers.d.		A4

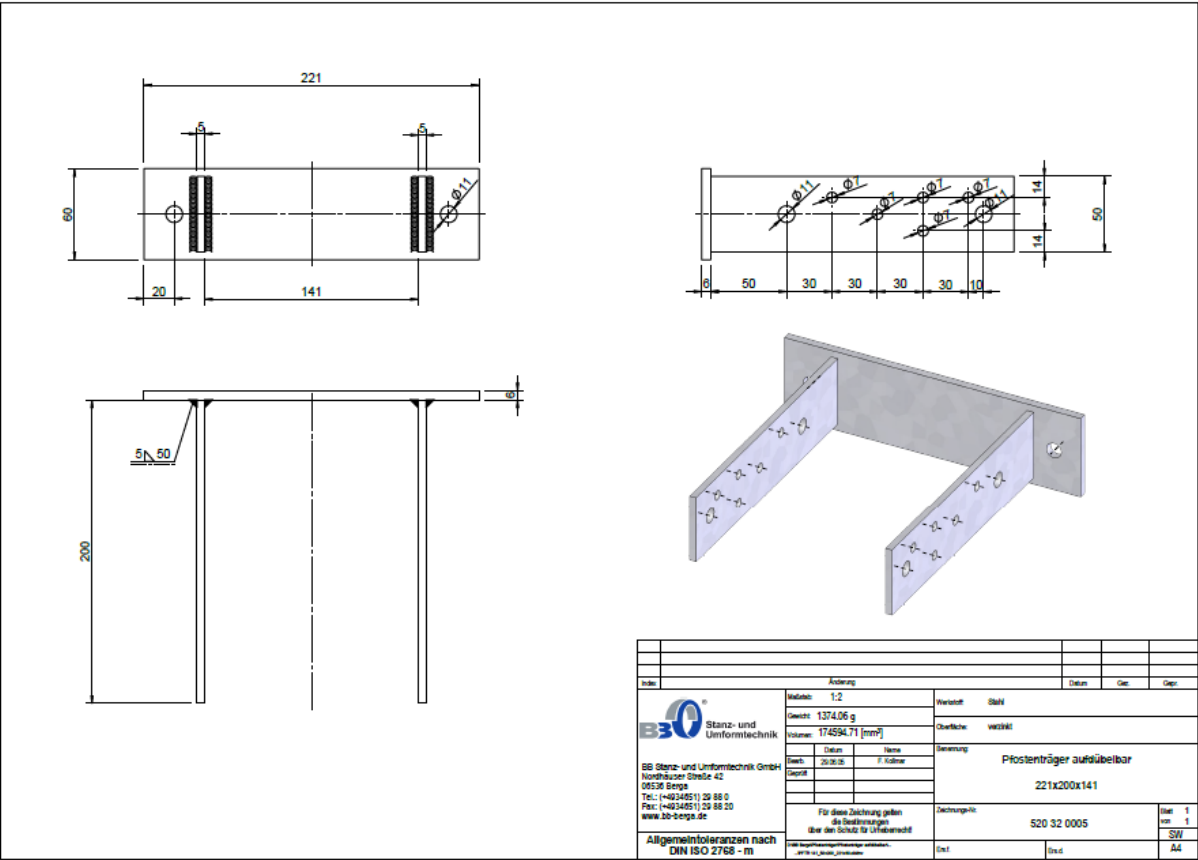
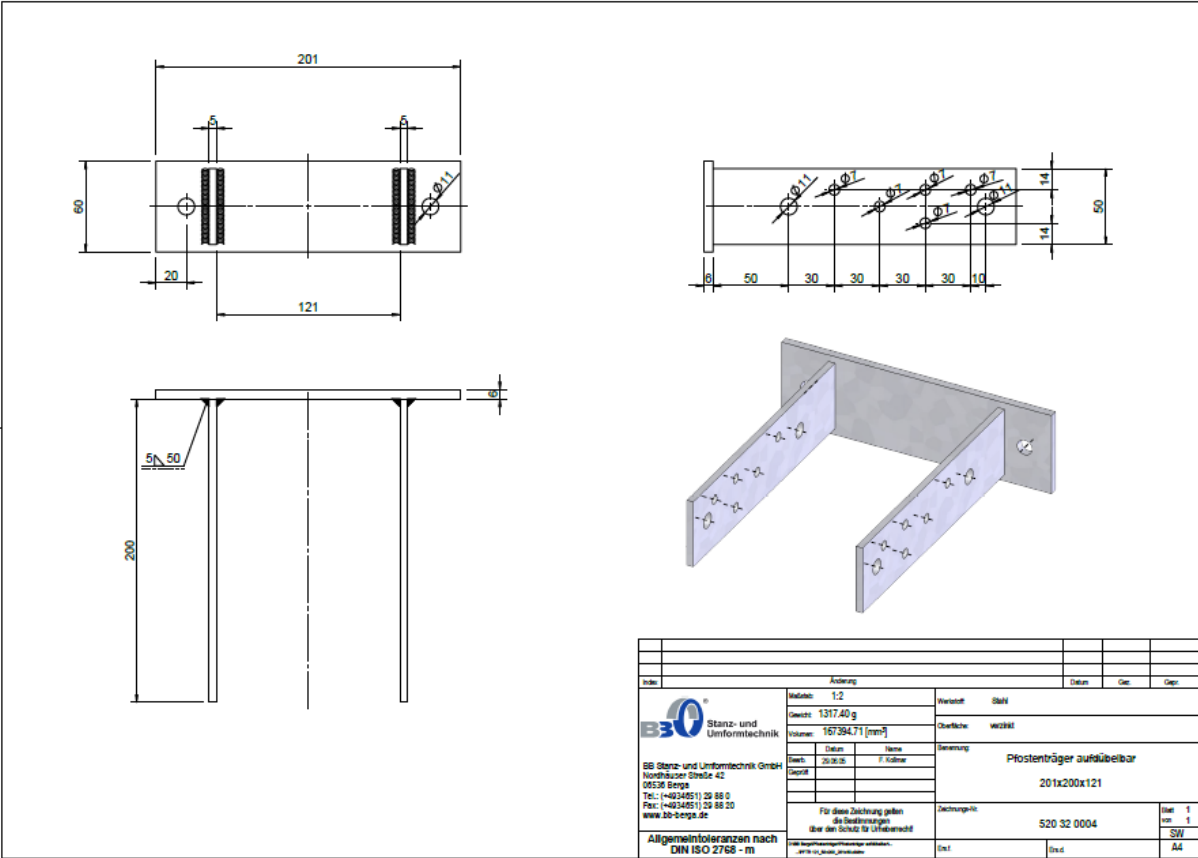


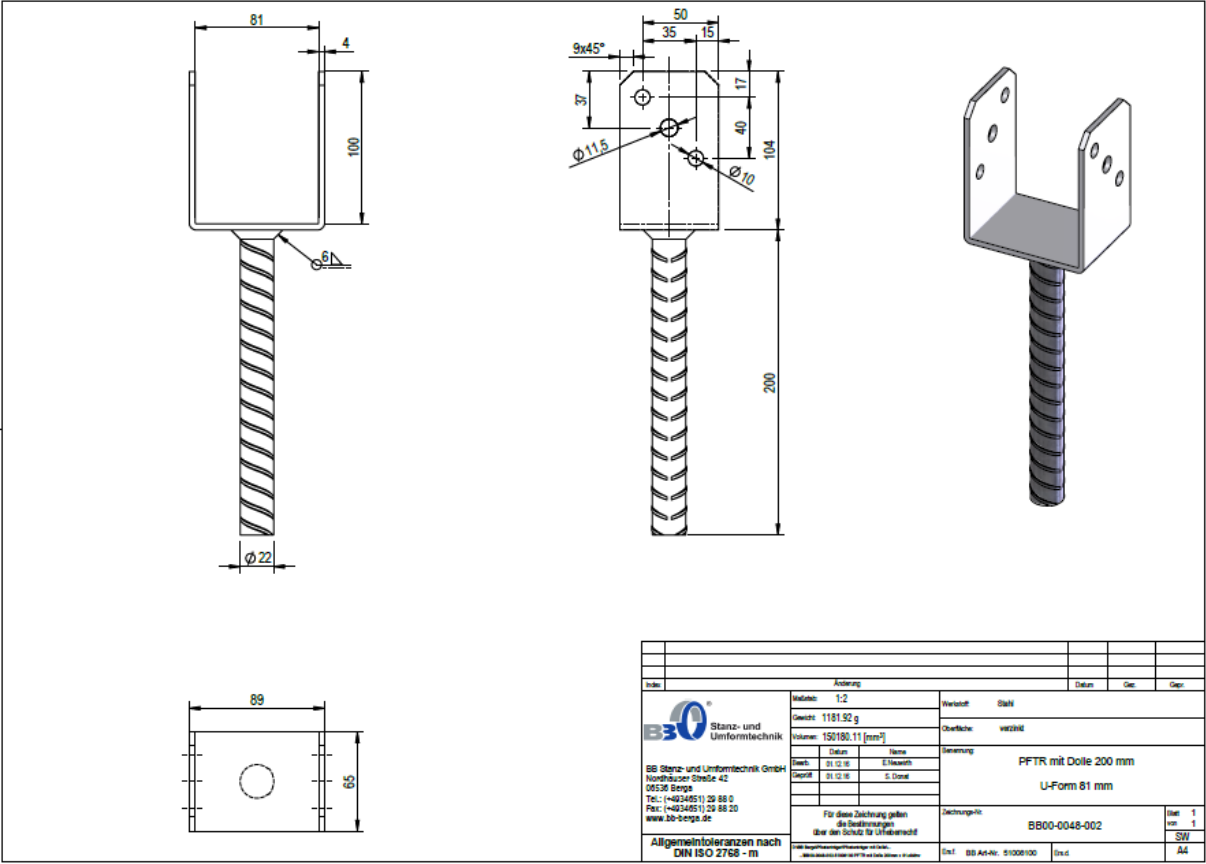
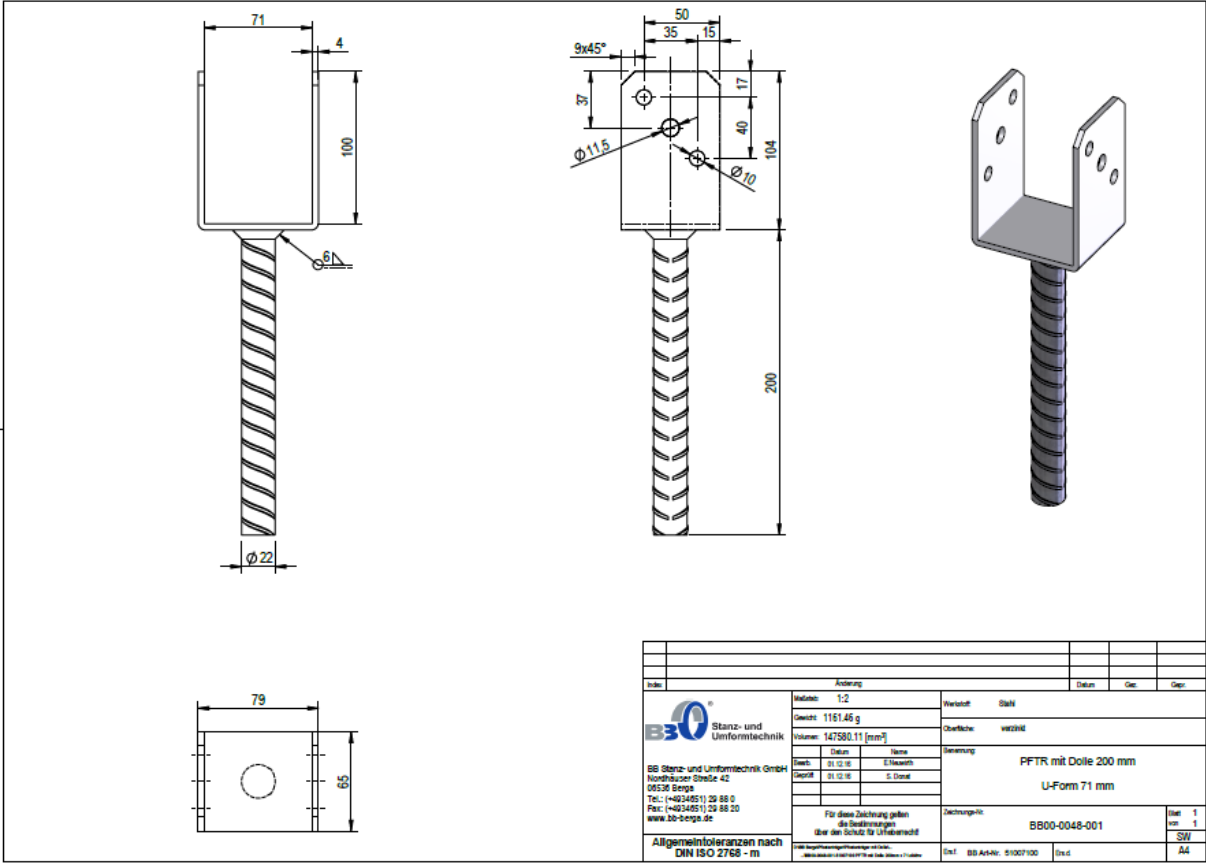


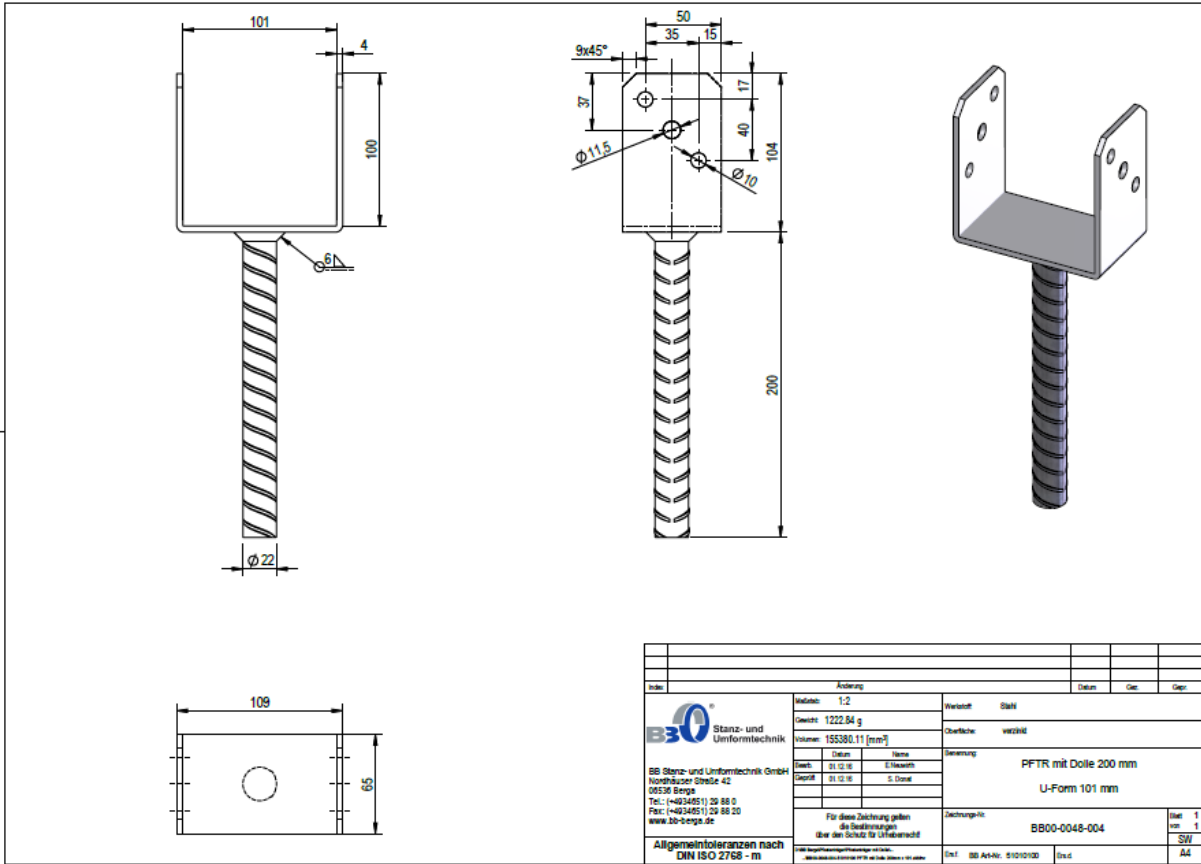
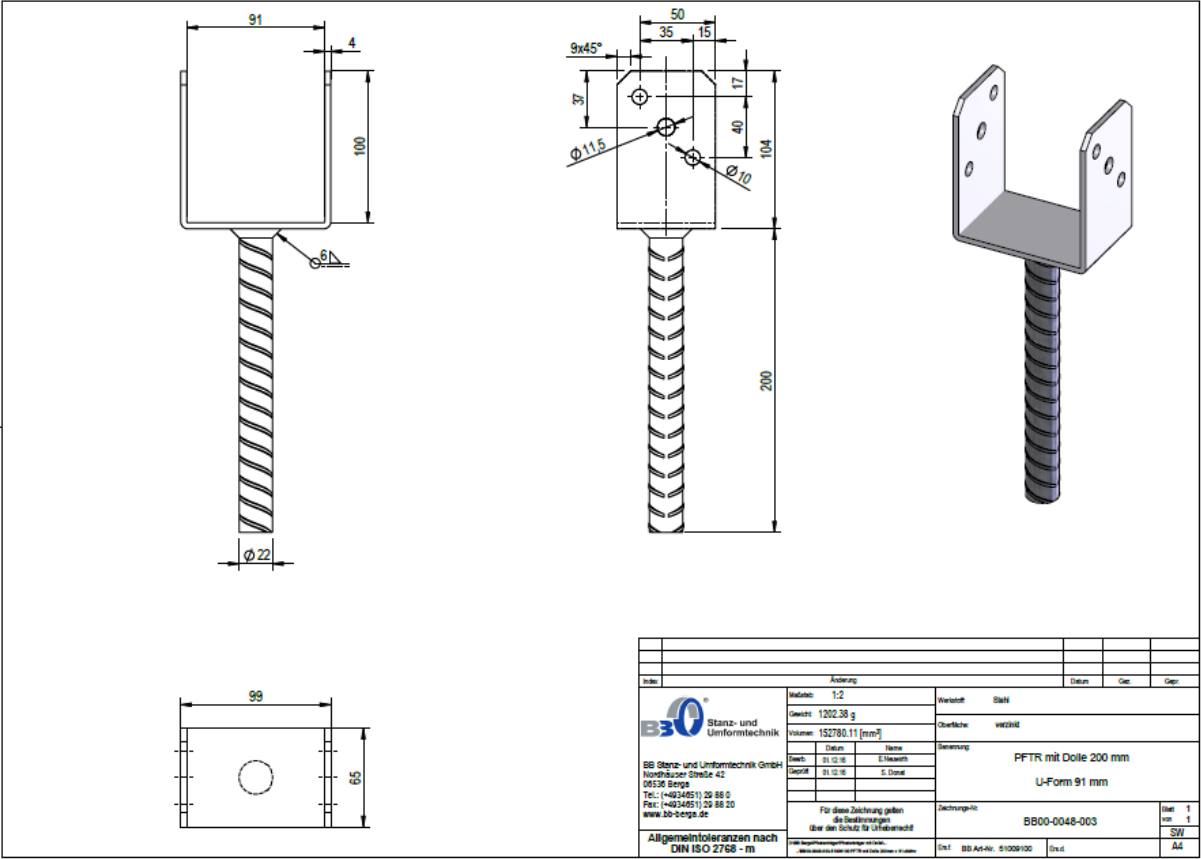
Änderung						Datum	Gez.	Gep.
Index								
 B30 Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berge Tel.: (+4934451) 29 88 0 Fax: (+4934451) 29 88 20 www.b30-berg.de			Maßstab: 1:2		Material:	Stahl		
			Gewicht: 1232,40 g		Oberfläche:	verzinkt		
			Volumen: 156594,71 [mm³]					
			Datum: 20.08.20					
			Name: F. Köhler					
Gezeichnet:		Benennung:		Pfostenbräger aufstellbar				
Geprüft:		171x200x51						
		Für diese Zeichnung gelten die Bedingungen über den Schutz für Urheberrecht.		Zeichnungs-Nr.		520 32 0002	Blatt von 1	
		Alle Angehörigen/Vertragspartner sind davon in Kenntnis zu setzen.					SW	
		B30 Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berge		Gez.		Gep.	A4	
Allgemeintoleranzen nach DIN ISO 2768 - m								

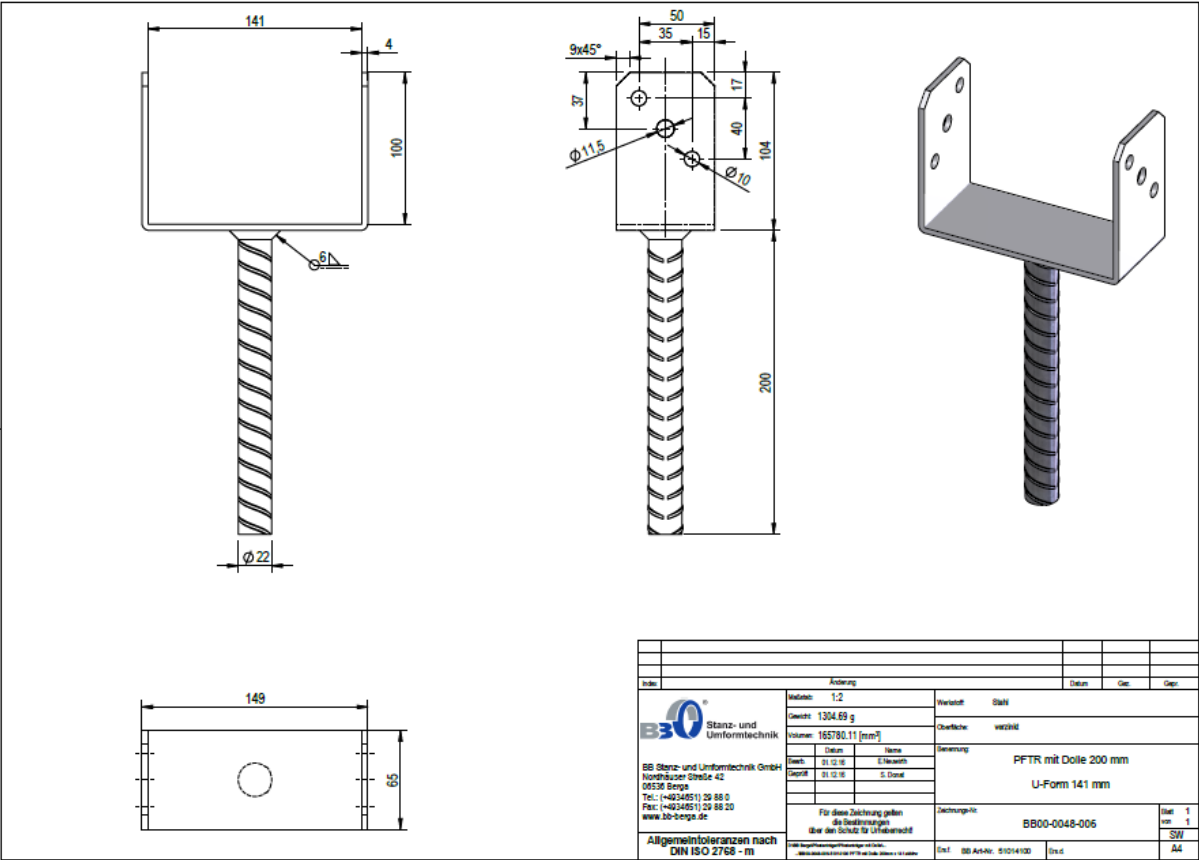
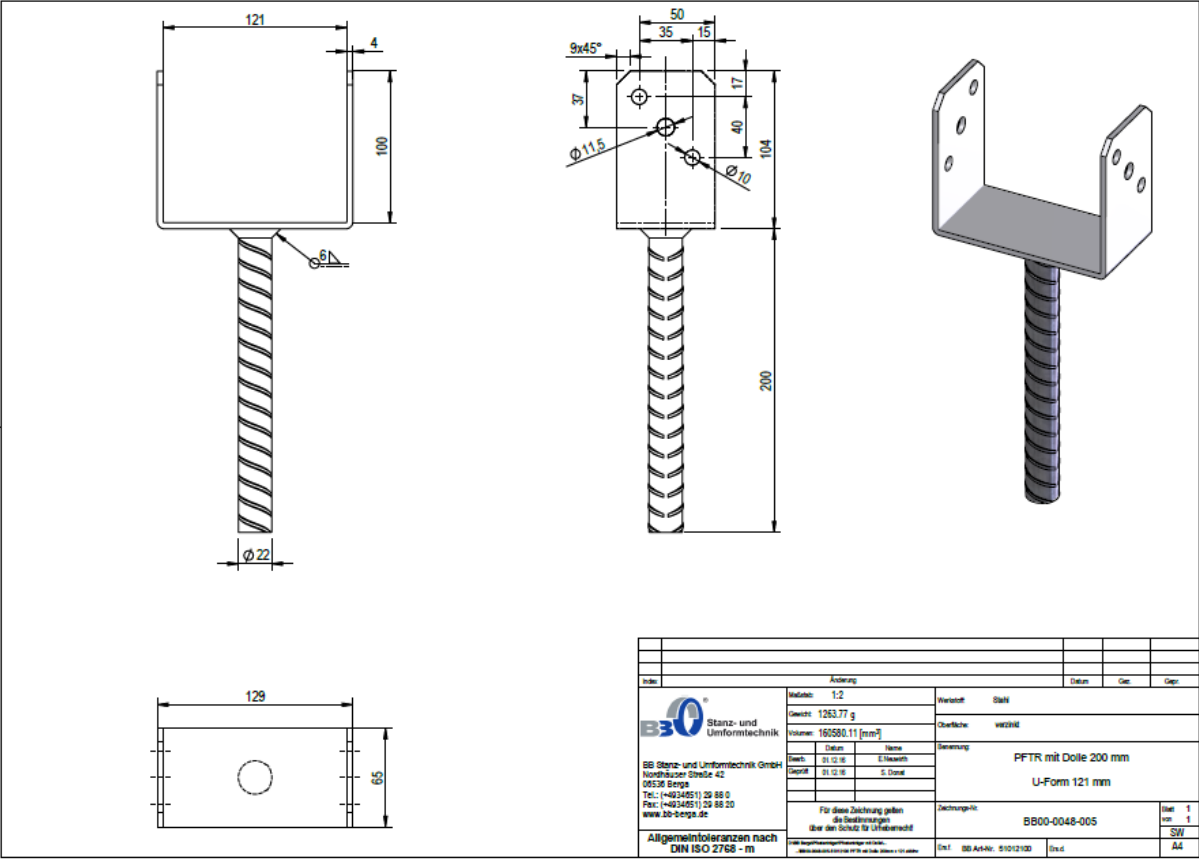


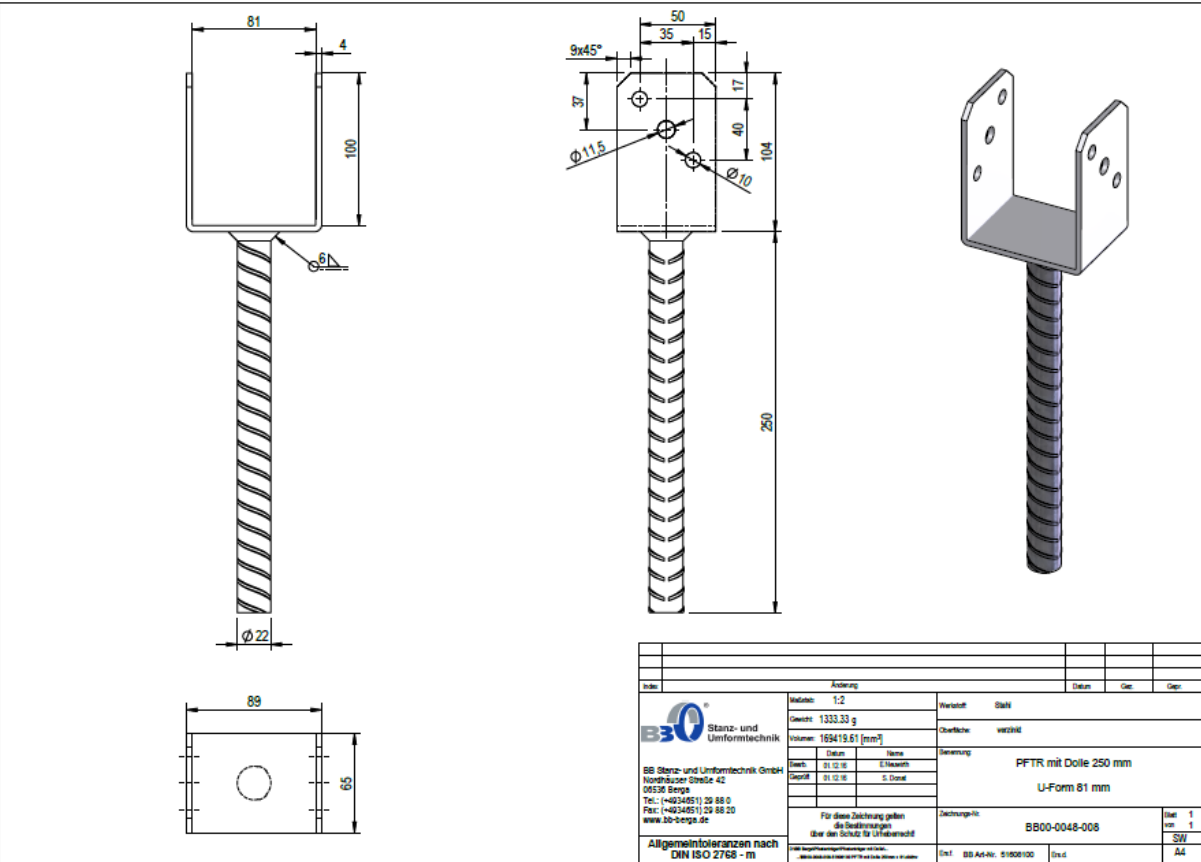
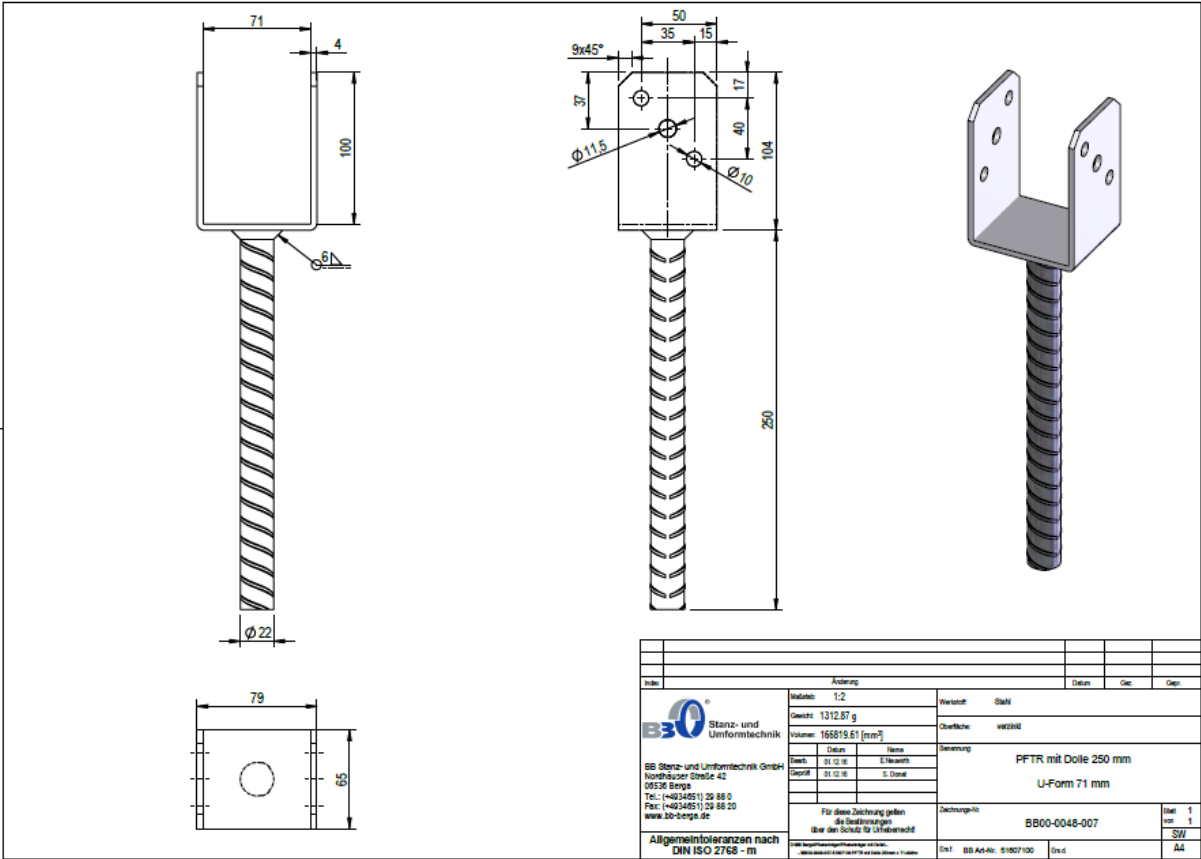
Änderung							
Index					Datum	Gez.	Gep.
 Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berge Tel.: (+4934451) 29 88 0 Fax: (+4934451) 29 88 20 www.b30-berg.de	Maßstab: 1:2		Material: Stahl				
	Gewicht: 1260,73 g		Oberfläche: verzinkt				
	Volumen: 160194,71 [mm³]		Benennung: Pfostenbräger aufstellbar				
	Datum: 20.08.20		Name: F. Köhler		181x200x101		
	Gezeichnet:						
Für diese Zeichnung gelten die Bedingungen über den Schutz für Urheberrecht.				Zeichnungs-Nr.: 520 32 0003		Blatt von: 1	
Allgemeintoleranzen nach DIN ISO 2768 - m				Gez.	Gep.	SW A4	

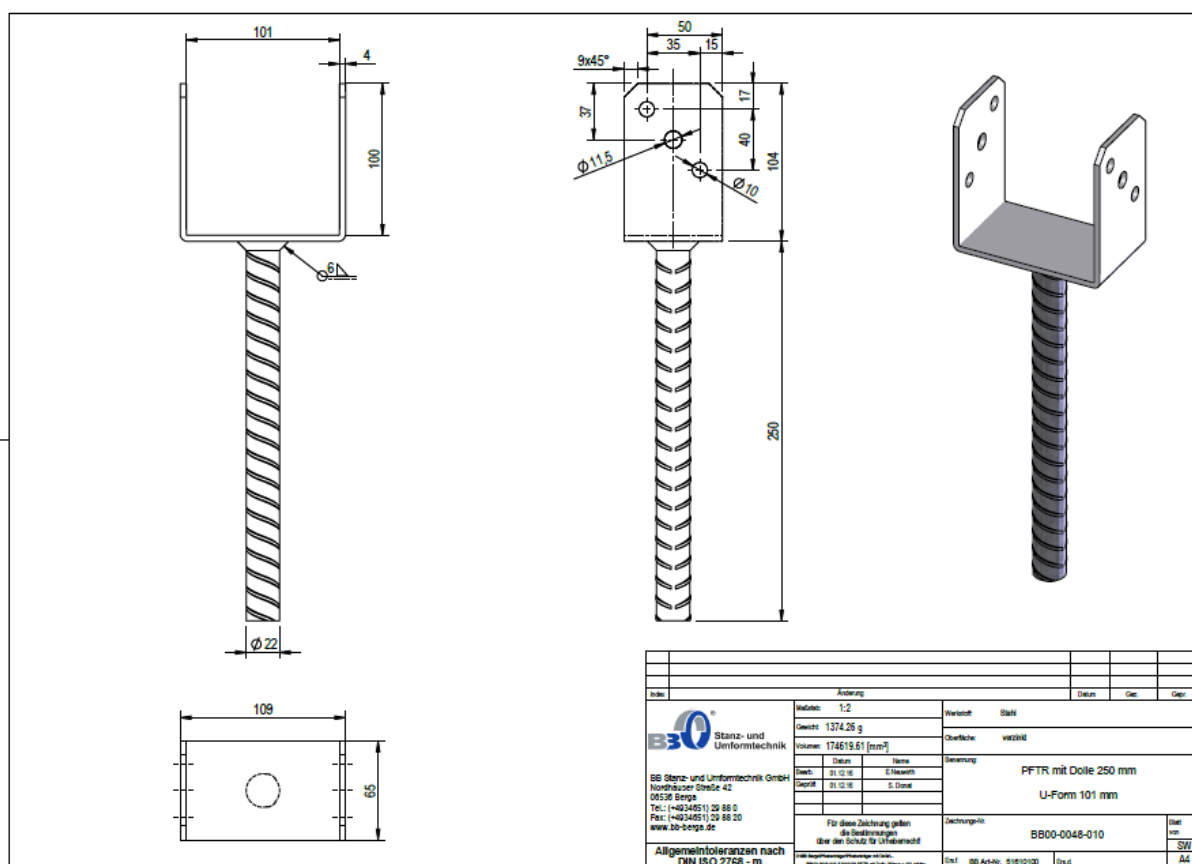
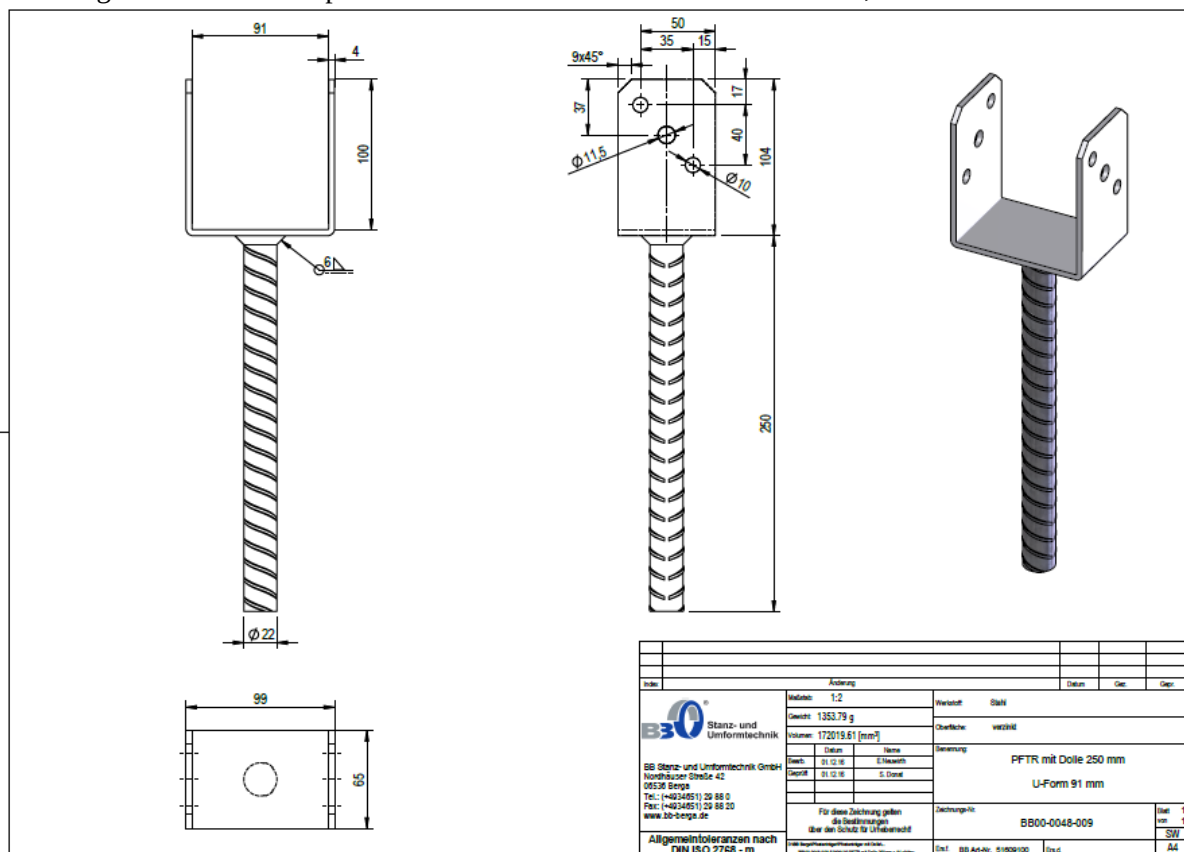


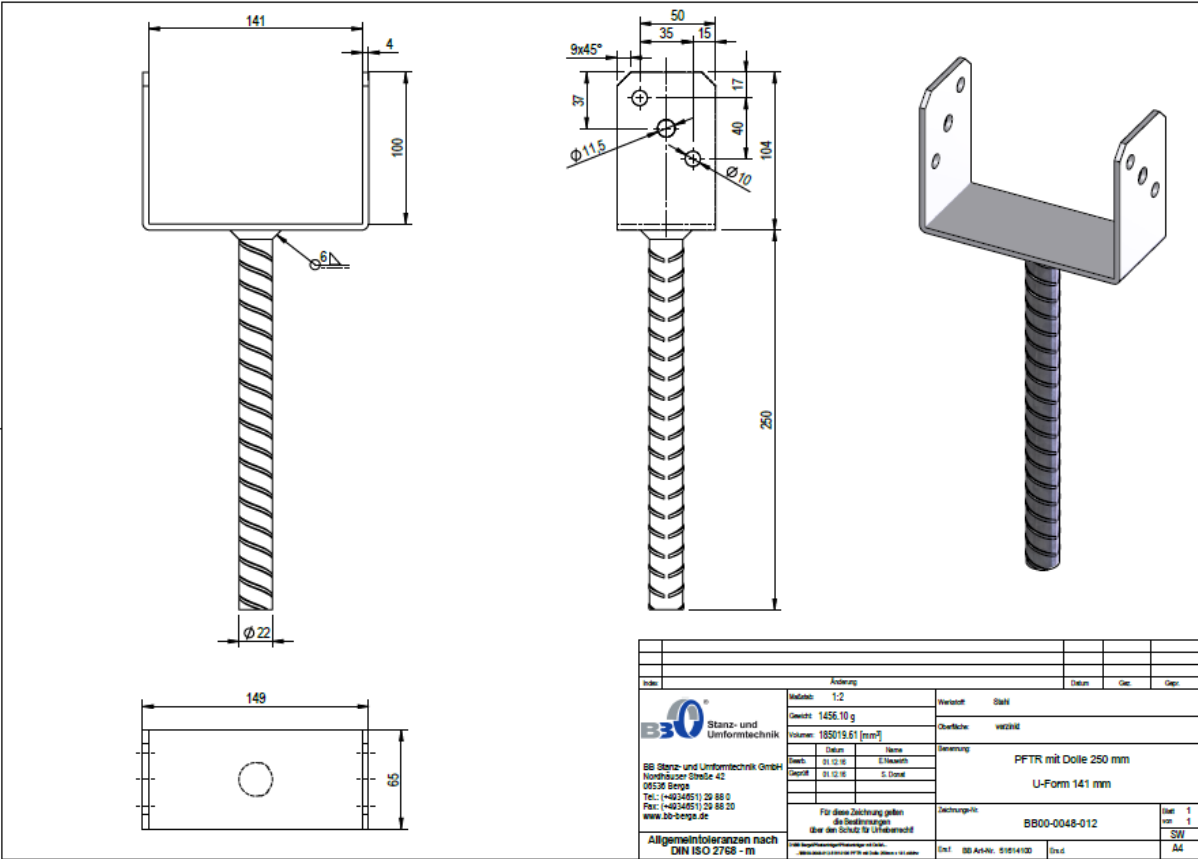
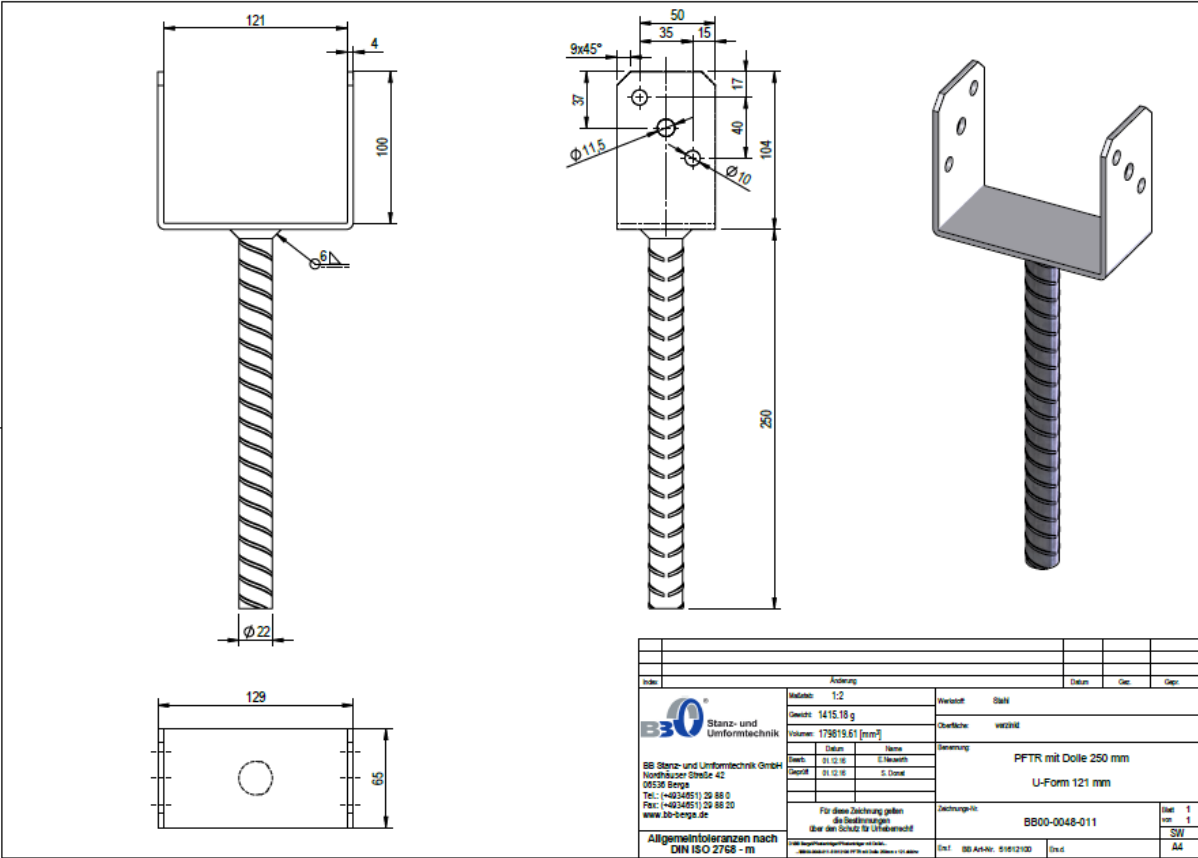


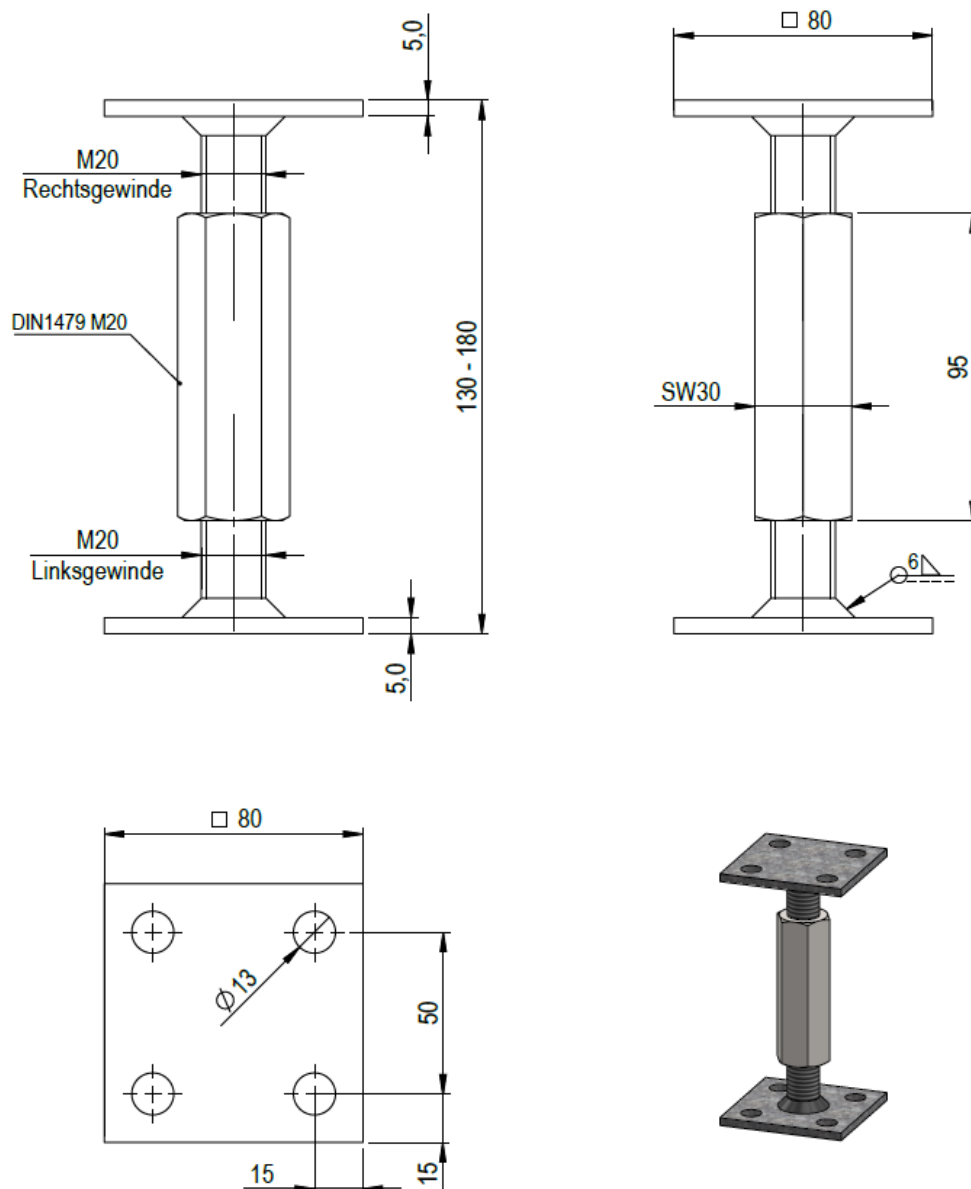




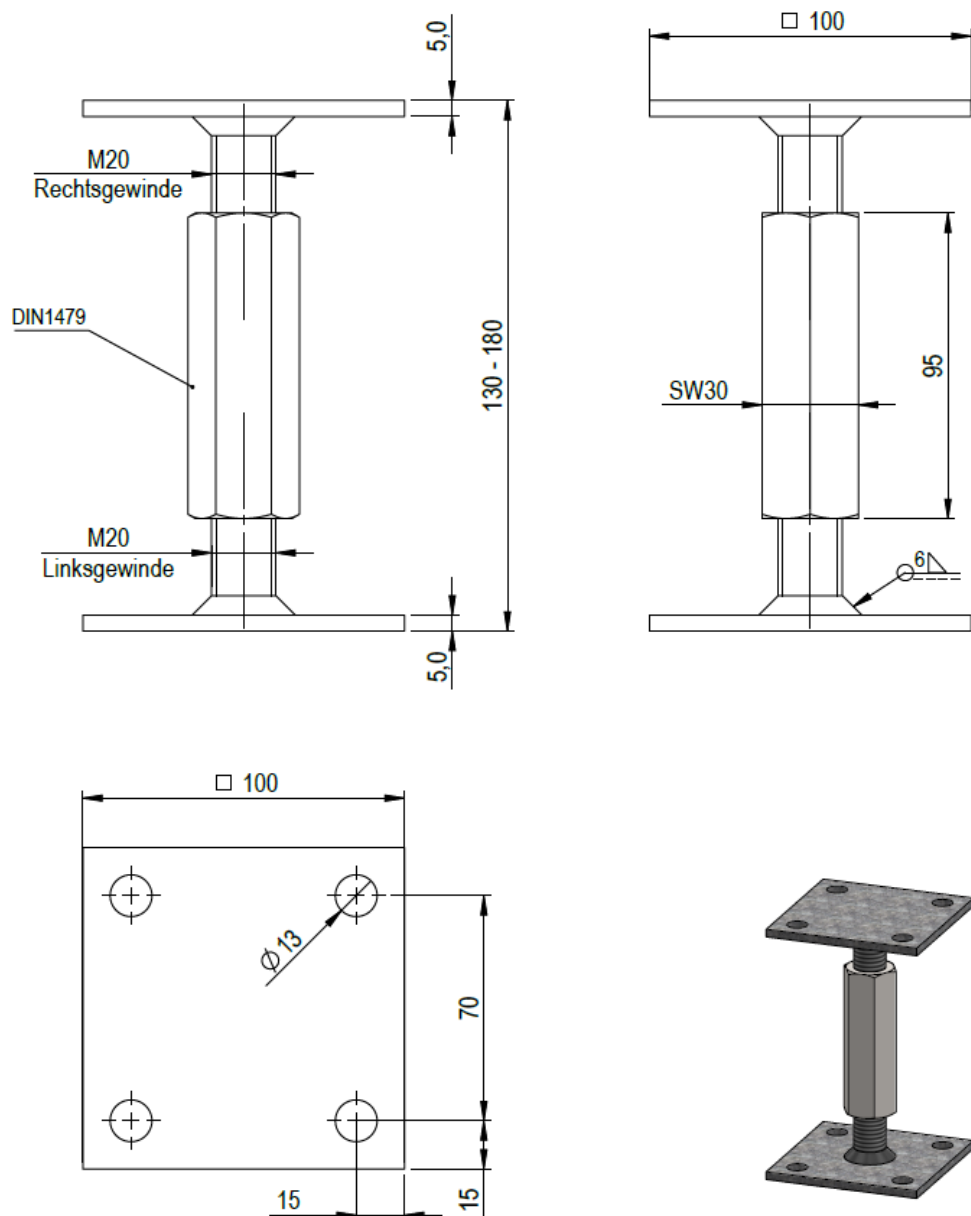








A	Toleranzen entfernt		13.12.16	E. Neuwirth	S. Donat		
Index	Änderung		Datum	Gez.	Gepr.		
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:2		Werkstoff: Stahl			
		Gewicht: 1159,63 g		Oberfläche: verzinkt			
		Volumen: 147781,53mm ³					
			Datum	Name	Benennung: Pfostenträger höhenverstellbar Art.Nr. 162462 80x80x5x130/180		
		Bearb.	28.09.16	E. Neuwirth			
		Geprüft	14.10.16	A. Schröder			
						Zeichnungs-Nr. BB00-0035-009	
		Allgemeintoleranzen nach DIN ISO 2768 - m		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Blatt 1 von 1	
				SW			
D:\BB Berga\BB00\BB00-0035-PFTR höhenverstellbar\... ...BB00-0035-009-PFT 80x80x5 162462.sldw				Ers.f.	Ers.d.	A4	



A	Toleranzen entfernt	13.12.16	E. Neuwirth	S. Donat
Index	Änderung	Datum	Gez.	Gepr.
 BB Stanz- und Umformtechnik BB Stanz- und Umformtechnik GmbH Nordhäuser Straße 42 06536 Berga Tel.: (+4934651) 29 88 0 Fax: (+4934651) 29 88 20 www.bb-berga.de		Maßstab: 1:2	Werkstoff: Stahl	
		Gewicht: 1442,92 g	Oberfläche: verzinkt	
		Volumen: 183781,53 mm³	Benennung: Pfostenträger höhenverstellbar Art Nr. 33640 100x100x5x130/180	
		Bearb. 28.09.16 E. Neuwirth		
		Geprüft 14.10.16 A. Schröder		
Allgemeintoleranzen nach DIN ISO 2768 - m		Für diese Zeichnung gelten die Bestimmungen über den Schutz für Urheberrecht!		Zeichnungs-Nr. BB00-0035-013 Blatt 1 von 1 SW
		D:\BB_Berger\BB000000-0035-PFTR höhenverstellbar... ...BB00-0035-013-PPT 100x100x5 33640 stldbw		Ers.f. Ers.d. A4