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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-16/0550 of 09/08/2016

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:	GH Post bases
Product family to which the above construction product belongs:	Three-dimensional nailing plate (Post bases)
Manufacturer:	GH-Baubeschläge GmbH Austraße 34 D-73235 Weilheim/Teck Tel. +49 7023 743323 0 Fax +49 7023 743323 90 Internet www.holzverbinder.de
Manufacturing plant:	Werk 1, Werk 2
This European Technical Assessment contains:	53 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:	

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product

The post bases are made from 4.0 mm to 15.0 mm thick steel plates in combination with reinforcing bars, threaded rods and steel tubes. The post bases are produced from steel grade S235JR according to EN 10025-2:2004 with minimum characteristic yield strength of R_{eH} = 235 N/mm² and minimum characteristic tensile strength of R_m = 360 N/mm² and from stainless steel according to EN 10088-2:2005 with minimum characteristic yield strength of $R_{p0,2}$ = 235 N/mm² and minimum characteristic tensile strength of R_m = 360 N/mm². The reinforcing bars are produced from steel grade B 500 A according to EN 10080:2005 with minimum characteristic yield strength of R_{eH} = 500 N/mm². The threaded rods with property class 4.8 according to EN ISO 898-1:2009-08 have a minimum characteristic yield strength of R_{pf} = 320 N/mm².

For the connections with metal fasteners, bolts Ø12 mm (S235), dowels Ø8 mm, Ø10 mm and Ø12 mm (S235) and screws ø12 mm, ø10 mm, ø8 mm, ø4 mm according to EN 14592:2012 (DIN 571 and thread according to DIN 7998) with minimum characteristic tensile strength of R_m = 360 N/mm² are used. The screws shall be driven into the wood after pre-drilling according to EN 1995-1-1, 10.4.5.

The outer diameter for washers of bolts shall not be less than $3 \cdot d_B$, where d_B is the diameter of the bolts. The thickness shall not be less than $0.3 \cdot d_B$.

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 338:2009 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 (distance a).

Annex B states the load-carrying capacities of the post bases for solid timber of strength class C24 according to EN 338:2009. 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. The corrosion protection is given by hot-dip galvanizing with minimum thickness of 55 µm (plate with 3 mm < t ≤ 6 mm) and 70 µm (plate with t >6mm) according to EN ISO 1461:2009, ZiNi coating and passivating with minimum thickness of 10 µm, zinc coating by galvanising (Fe/Zn 25c) or stainless steel.

The metal fasteners must also have a zinc coating for the intended use in service class 3 of EN 1995-1-1 (zinc coating Fe/Zn 25c according to EN ISO 2081:2008).

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 1350-1 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:

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

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 338:2009. Using the load-carrying capacities of the post bases, the specifications in Annex A must be fulfilled. The end grain of the timber post must in general be plane on the base plate of the post base. Post bases type 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 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 10025-2:2004 with minimum characteristic yield strength of R_{eH} = 235 N/mm² and minimum characteristic tensile strength of R_m = 360 N/mm² and from stainless steel according to EN 10088-2:2005 with minimum characteristic yield strength of $R_{p0,2}$ = 235 N/mm² and minimum characteristic tensile strength of R_m = 360 N/mm². The reinforcing bars are produced from steel grade B 500 A according to EN 10080:2005 with minimum characteristic yield strength of R_{eH} = 500 N/mm². The threaded rods with property class 4.8 according to EN ISO 898-1:2009-08 have a minimum characteristic yield strength of R_{pf} = 320 N/mm².

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. The corrosion protection is given by hot-dip galvanizing with minimum thickness of 55 µm (plate with 3 mm < t ≤ 6 mm) and 70 µm (plate with t >6mm) according to EN ISO 1461:2009, ZiNi coating and passivating with minimum thickness of 10 µm, zinc coating by galvanising (Fe/Zn 25c) or stainless steel.

The metal fasteners must also have a zinc coating for the intended use in service class 3 of EN 1995-1-1 (zinc coating Fe/Zn 25c according to EN ISO 2081:2008).

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 338:2009 or of glued laminated timber according to EN 14080:2013, see section 3 of

this evaluation report
- 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 of the post base; Post bases type 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 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

Issued in Copenhagen on 2016-08-09 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		Distances		
Type	Drawing-Nr.	Art.-Nr.	Screws	Bolts	Dowels	min b	min h	max a	$e_{F2/F3}$	$e_{F4/F5}$
			[-]	[-]	[-]	[mm]	[mm]	[mm]	[mm]	[mm]
U60 iB	19800201	19800201	4 Ø10x60 [2)]	-	-	71	113	100	187	102
		19800203	4 Ø10x60 [2)]	-	-	81	113	100	187	102
		19800204	4 Ø10x60 [2)]	-	-	91	113	100	187	102
		19800205	4 Ø10x60 [2)]	-	-	101	113	100	187	102
		19800206	4 Ø10x60 [2)]	-	-	121	113	100	187	102
		19800207	4 Ø10x60 [2)]	-	-	141	113	100	187	102
U70 iB	19800301	19800301	2 Ø 8x70 [3)]	-	-	81	94	100	190	102
		19800302	2 Ø 8x70 [3)]	-	-	91	94	100	190	102
		19800303	2 Ø 8x70 [3)]	-	-	101	94	100	190	102
		19800304	2 Ø 8x70 [3)]	-	-	121	94	100	190	102
U90 iB	19800305	19800305	2 Ø12x80 [4)]	-	-	91	126	100	190	97
		19800306	2 Ø12x80 [4)]	-	-	101	126	100	190	97
		19800307	2 Ø12x80 [4)]	-	-	121	126	100	190	97
		19800308	2 Ø12x80 [4)]	-	-	141	126	100	190	97
L60 iB	19860102	19860102	2 Ø10x60 [2)]	-	-	70	113	100	-	-
T01 iB	19810201	19810201	-	-	4 Ø10	100	100	100	210	120
		19810240	-	-	4 Ø10	100	100	150	260	164
T02 iB	19810203	19810203	-	-	4 Ø10	100	120	100	210	132
		19810211	-	-	4 Ø10	100	120	100	210	132
		19810204	-	-	4 Ø10	100	120	200	310	232
T03 iB	19810206	19810206	-	-	4 Ø10	120	156	200	350	232
		19810212	-	-	4 Ø10	120	156	150	300	182
T04 iB	19810210	19810210	-	-	2 Ø12	140	136	150	230	182
D iB	19620080	19620080	4 Ø10x120 [1)]	-	-	100	100	100	100	100
		19620100	4 Ø10x120 [1)]	-	-	120	120	100	100	100
		19820400	4 Ø10x120 [1)]	-	-	120	120	100	100	100
DS iB	19820220	19820220	4 Ø10x120 [1)]	-	-	120	120	200	200	200
		19820420	4 Ø10x120 [1)]	-	-	120	120	200	200	200
		19820221	4 Ø10x120 [1)]	-	-	120	120	100	100	100
H iB	19840080	19840080	-	2 Ø12	-	100	71	50	190	76
		19840090	-	2 Ø12	-	100	81	50	190	76
		19840100	-	2 Ø12	-	100	91	50	190	76
		19840105	-	2 Ø12	-	100	95	50	190	76
		19840110	-	2 Ø12	-	100	101	50	190	76
		19840111	-	2 Ø12	-	100	111	50	190	76
		19840120	-	2 Ø12	-	100	121	50	190	76
		19840140	-	2 Ø12	-	100	141	50	190	76
		19841120	-	2 Ø12	-	120	121	50	255	117
		19841140	-	2 Ø12	-	120	141	50	255	117
U 70 iBv	19850102	19850102	4 Ø10x60 [2)]	-	-	70-150	100	100	-	-

Post base			Metal Fasteners			Post		Distances		
Type	Drawing-Nr.	Art.-Nr.	Screws	Bolts	Dowels	min b	min h	max a	$e_{F2/F3}$	$e_{F4/F5}$
			[-]	[-]	[-]	[mm]	[mm]	[mm]	[mm]	[mm]
		19850202	4 Ø10x60 2)	-	-	70-150	70	150	-	-
D iBv	19621080	19621080	4 Ø10x120 1)	-	-	100	100	180	180	180
		19621100	4 Ø10x120 1)	-	-	120	120	180	180	180
		19621080	4 Ø10x120 1)	-	-	100	100	300	300	300
		19621100	4 Ø10x120 1)	-	-	120	120	300	300	300
T05 aB	19812210	19812210	-	-	2 Ø12	140	140	148	228	167
D aB	19813210	19813210	4 Ø10x120 1)	-	-	140	140	250	250	250
		19813211	4 Ø10x120 1)	-	-	140	140	250	250	250
P aB	19832060	19832060	4 Ø10x120 1)	-	-	120	120	60	60	60
		19832100	4 Ø10x120 1)	-	-	120	120	100	100	100
		19832150	4 Ø10x120 1)	-	-	120	120	150	150	150
P aB	E1790	E1790	4 Ø10x120 1)	-	-	120	120	100	100	100
		E1791	4 Ø10x120 1)	-	-	120	120	150	150	150
T01 aB	19812301	19812301	-	-	4 Ø10	100	100	70	180	92
		19812302	-	-	4 Ø10	100	100	120	230	139
		19812636	-	-	4 Ø10	100	100	150	260	167
		19812303	-	-	4 Ø10	100	100	200	310	214
		19812638	-	-	4 Ø10	100	100	250	360	263
		19812639	-	-	4 Ø10	100	100	300	410	312
D aBv	19823130	19823130	4 Ø10x120 1)	-	1 Ø10 5)	120	120	210	210	210
		19823180	4 Ø10x120 1)	-	1 Ø10 5)	120	120	260	260	260
		19823230	4 Ø10x120 1)	-	1 Ø10 5)	120	120	310	310	310
		19823280	4 Ø10x120 1)	-	1 Ø10 5)	120	120	360	360	360
D aBv	E1706	E1706	4 Ø10x120 1)	-	1 Ø10 5)	120	120	210	210	210
		E17061	4 Ø10x120 1)	-	1 Ø10 5)	120	120	260	260	260
		E17062	4 Ø10x120 1)	-	1 Ø10 5)	120	120	310	310	310
		E17063	4 Ø10x120 1)	-	1 Ø10 5)	120	120	360	360	360
D aBv	19823134	19823134	4 Ø10x120 1)	-	-	120	120	210	210	210
		19823184	4 Ø10x120 1)	-	-	120	120	260	260	260
		19823234	4 Ø10x120 1)	-	-	120	120	310	310	310
		19823284	4 Ø10x120 1)	-	-	120	120	360	360	360
D aBv	19613201	19613201	4 Ø10x120 1)	-	-	120	120	236	236	236
T01 aB	19613101	19613101	-	-	4 Ø10	100	100	200	310	203
D aBv	19523101	19523101	4 Ø10x120 1)	-	-	100	100	170	170	170
		19620998	4 Ø10x120 1)	-	-	120	120	170	170	170
		19620999	4 Ø10x120 1)	-	-	140	140	170	170	170
		19523101	4 Ø10x120 1)	-	-	100	100	336	336	336
		19620998	4 Ø10x120 1)	-	-	120	120	336	336	336
		19620999	4 Ø10x120 1)	-	-	140	140	336	336	336
D aBv	19623080	19623080	4 Ø10x120 1)	-	1 Ø8 5)	100	100	170	170	170
		19623100	4 Ø10x120 1)	-	1 Ø8 5)	120	120	170	170	170
		19623080	4 Ø10x120 1)	-	-	100	100	356	356	356
		19623100	4 Ø10x120 1)	-	-	120	120	356	356	356
P aBv	19533070	19533070	4 Ø 8x70 3)	-	-	100	90	200	200	200

Post base			Metal Fasteners			Post		Distances		
Type	Drawing-Nr.	Art.-Nr.	Screws	Bolts	Dowels	min b	min h	max a	$e_{F2/F3}$	$e_{F4/F5}$
			[-]	[-]	[-]	[mm]	[mm]	[mm]	[mm]	[mm]
P aBv	19533101	19533101	4 Ø10x120 [1)]	-	-	120	120	210	210	210
U70 aBv	19653201	19653201	4 Ø10x60 [2)]	-	-	70-150	100	200	-	-
PB aBv	19823201	19823161	2 Ø 4x60 [2)]	-	-	90	90	100	-	-
		19823201	4 Ø10x120 [1)]	-	-	100	100	100	100	100
		19823202	4 Ø10x120 [1)]	-	-	100	100	200	200	200
U aBv	19534300	19534300	4 Ø10x60 [2)]	-	-	80-155	100	180	-	-
		19534310	4 Ø10x60 [2)]	-	-	80-155	100	235	-	-
		19534320	4 Ø10x60 [2)]	-	-	80-155	100	285	-	-
D aBv	19823065	19823065	4 Ø10x120 [1)]	-	-	120	120	70	70	70
		19823120	4 Ø10x120 [1)]	-	-	120	120	120	120	120
		19823150	4 Ø10x120 [1)]	-	-	120	120	150	150	150
		19823200	4 Ø10x120 [1)]	-	-	120	120	200	200	200
		19823250	4 Ø10x120 [1)]	-	-	120	120	250	250	250
		19823300	4 Ø10x120 [1)]	-	-	120	120	300	300	300
P aBv	19534100	19534100	4 Ø10x120 [1)]	-	-	100	100	215	215	215
		19534110	4 Ø10x120 [1)]	-	-	100	100	265	265	265
		19534120	4 Ø10x120 [1)]	-	-	100	100	315	315	315
D aBv	19823203	19823203	4 Ø10x120 [1)]	-	-	120	120	150	150	150
D aBv	19523102	19523102	4 Ø10x120 [1)]	-	1 Ø8 [5)]	100	100	170	170	170
		19523102	4 Ø10x120 [1)]	-	-	100	100	336	336	336
D aBv	19623308	19623308	4 Ø10x120 [1)]	-	1 Ø10 [5)]	100	100	170	170	170
		19623310	4 Ø10x120 [1)]	-	1 Ø10 [5)]	120	120	170	170	170
		19623308	4 Ø10x120 [1)]	-	-	100	100	336	336	336
		19623310	4 Ø10x120 [1)]	-	-	120	120	336	336	336

[1)] screws according to EN 14592; threaded length l_{ef} = 100 mm
[2)] screws according to EN 14592; threaded length l_{ef} = 40 mm
[3)] screws according to EN 14592; threaded length l_{ef} = 50 mm
[4)] screws according to EN 14592; threaded length l_{ef} = 60 mm
[5)] dowels necessary in case of load direction F_1 (Tension); distance $a_{3,t}$ to the end grain has to be at least 80 mm

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

Fastener type	Size			Material	Finish
	Diameter	Length	Threaded length		
Screws	4 mm	min 60 mm	min 40 mm	$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Screws	8 mm	min 70 mm	min 50 mm	$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Screws	10 mm	min 60 mm	min 40 mm	$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Screws	10 mm	min 120 mm	min 100 mm	$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Screws	12 mm	min 80 mm	min 60 mm	$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Bolts	10 mm			$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Bolts	12 mm			$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Dowels	8 mm			$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Dowels	10 mm			$f_{u,k} \geq 360$ N/mm^2	Galvanic zinc coating
Dowels	12 mm			$f_{u,k} \geq 360$ 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 $F_{i,Rk}$ [kN]

Post base	F_1 (Compression)			F_1 (Tension)			F_2/F_3			F_4/F_5		
	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel	
U60 iB												
19800201	58,6	38,5	-	7,60	4,73	-	5,09	1,24	3,21	3,88	2,69	18,3
19800203	64,9	38,5	-	7,60	3,91	-	5,09	1,00	3,21	3,88	2,69	18,3
19800204	71,2	38,5	-	7,60	3,33	-	5,09	0,98	3,21	3,88	2,69	18,3
19800205	77,5	38,5	-	7,60	2,90	-	5,09	0,98	3,21	3,88	2,69	18,3
19800206	90,1	38,5	-	7,60	2,31	-	5,09	0,98	3,21	3,88	2,69	18,3
19800207	103	38,5	-	7,60	1,91	-	5,09	0,98	3,21	3,88	2,69	18,3
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
U70 iB												
19800301	75,7	39,4	-	6,17	3,91	-	5,01	1,31	3,09	4,93	2,75	18,2
19800302	83,1	39,4	-	6,17	3,33	-	5,01	1,10	3,09	4,93	2,75	18,2
19800303	90,4	39,4	-	6,17	2,90	-	5,01	1,10	3,09	4,93	2,75	18,2
19800304	105	39,4	-	6,17	2,31	-	5,01	1,10	3,09	4,93	2,75	18,2
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
U90 iB												
19800305	107	39,4	-	10,9	3,33	-	7,95	1,81	3,09	6,36	2,16	13,6
19800306	116	39,4	-	10,9	2,90	-	7,95	1,55	3,09	6,36	2,16	13,6
19800307	135	39,4	-	10,9	2,31	-	7,95	1,41	3,09	6,36	2,16	13,6
19800308	154	39,4	-	10,9	1,91	-	7,95	1,41	3,09	6,36	2,16	13,6
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
L60 iB												
19860102	58,0	38,5	-	3,80	2,42	-	-	-	-	-	-	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	-	-	-	-	-	-
T01 iB												
19810201	75,6	63,5	114	24,8	-	57,1	9,2	2,90	3,11	1,66	4,77	13,2
19810240	75,6	63,5	84,2	24,8	-	57,1	9,2	2,38	3,11	1,60	3,63	16,9
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	-	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
T02 iB												
19810203	75,6	-	108	24,8	-	87,3	12,0	7,53	16,4	2,26	9,50	12,2
19810211	75,6	-	108	24,8	-	87,3	12,0	7,53	16,4	2,26	9,50	12,2
19810204	75,6	-	108	24,8	-	87,3	12,0	5,07	16,4	2,26	6,70	12,2
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	-	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
T03 iB												
19810206	128	-	108	34,9	-	88,6	18,9	4,48	12,3	2,95	6,70	15,2
19810212	128	-	108	34,9	-	88,6	18,9	5,24	12,3	2,95	8,54	15,2
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	-	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
T04 iB												
19810210	213	-	283	36,0	-	111	18,9	26,0	30,0	4,90	10,7	13,7
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	-	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D iB												

Post base	F_1 (Compression)			F_1 (Tension)			F_2/F_3			F_4/F_5		
	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel	
19620080	105	41,2	62,8	16,3	13,0	57,1	6,38	3,33	-	6,38	3,33	-
19620100	176	41,9	62,8	16,3	11,5	57,1	6,94	3,33	-	6,94	3,33	-
19820400	174	38,8	94,3	16,3	10,9	57,1	6,94	5,76	-	6,94	5,76	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-
DS iB												
19820220	174	-	108	16,3	19	-	8,22	8,08	-	8,22	8,08	-
19820420	160	-	108	16,3	15	-	8,22	8,08	-	8,22	8,08	-
19820221	174	-	108	16,3	19	-	8,22	16,9	-	8,22	16,9	-
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-
H iB												
19840080	31,2	-	112	31,2	-	178	8,24	12,9	-	4,70	3,75	-
19840090	31,2	-	112	31,2	-	178	9,40	12,9	-	4,70	3,75	-
19840100	31,2	-	112	31,2	-	178	10,6	12,9	-	4,70	3,75	-
19840105	31,2	-	112	31,2	-	178	11,0	12,9	-	4,70	3,75	-
19840110	31,2	-	112	31,2	-	178	11,7	12,9	-	4,70	3,75	-
19840111	31,2	-	112	31,2	-	178	12,9	12,9	-	4,70	3,75	-
19840120	31,2	-	112	31,2	-	178	14,0	12,9	-	4,70	3,75	-
19840140	31,2	-	112	31,2	-	178	16,4	12,9	-	4,70	3,75	-
19841120	37,0	-	207	37,0	-	252	17,3	23,3	-	8,29	7,76	-
19841140	37,0	-	207	37,0	-	252	20,1	23,3	-	8,29	7,76	-
	$\gamma_{M,C}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	-	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,1}$	-	$\gamma_{M,T}$	$\gamma_{M,0}$	-
U 70 iBv												
19850102	15,9	10,9	-	-	-	-	-	-	-	-	-	-
19850202	15,9	10,9	-	-	-	-	-	-	-	-	-	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	-	-	-	-	-	-	-	-	-
D iBv												
h = 180 mm												
19621080	106	55,7	41,0	16,3	12,6	32,7	6,38	1,53	-	6,38	1,53	-
19621100	178	67,9	41,0	16,3	11,2	32,7	6,94	1,53	-	6,94	1,53	-
h = 300 mm												
19621080	106	55,7	22,9	16,3	12,6	32,7	6,38	0,90	-	6,38	0,90	-
19621100	178	67,9	22,9	16,3	11,2	32,7	6,94	0,90	-	6,94	0,90	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-
T05 aB												
19812210	202	283	-	36,0	-	36,4	19,6	26,2	19,8	4,78	9,77	12,5
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	-	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aB												
19813210	262	-	200	16,3	53,3	-	10,2	15,6	18,4	10,2	12,0	18,4
19813211	262	-	200	16,3	93,7	-	10,2	15,6	18,4	10,2	12,0	18,4
	$\gamma_{M,T}$	-	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
P aB												
19832060	101	93,4	108	16,3	10,6	-	6,94	7,71	-	6,94	7,71	-
19832100	101	93,4	108	16,3	10,6	-	6,94	4,53	-	6,94	4,53	-
19832150	101	93,4	108	16,3	10,6	-	6,94	2,99	-	6,94	2,99	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-

Post base	F_1 (Compression)			F_1 (Tension)			F_2/F_3			F_4/F_5		
	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel	
P aB												
E1790	86,6	62,2	108	16,3	4,22	-	6,40	1,86	-	6,40	1,86	-
E1791	86,6	62,2	108	16,3	4,22	-	6,40	1,23	-	6,40	1,23	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	-
T01 aB												
19812301 *)	75,6	-	108	24,8	6,88	-	9,22	1,87	11,0	2,24	4,61	13,2
19812302 *)	75,6	-	108	24,8	6,88	-	9,22	1,45	8,58	2,19	3,05	14,0
19812636 *)	75,6	-	108	24,8	6,88	-	9,22	1,28	7,57	2,16	2,53	11,6
19812303 *)	75,6	-	108	24,8	6,88	-	9,22	1,07	6,33	2,10	1,98	9,06
19812638 *)	75,6	-	108	24,8	6,88	-	9,22	0,92	5,44	2,08	1,61	7,38
19812639 *)	75,6	-	108	24,8	6,88	-	9,22	0,81	4,77	1,99	1,36	6,22
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
19823130 *)	129	82,3 8)	95,5	6,36**)	6,66**)	-	7,67 5)	2,01	9,23	7,67 5)	1,55	9,23
19823180 *)	129	82,3 8)	95,5	6,36**)	6,66**)	-	7,67 5)	1,63	7,45	7,67 5)	1,25	7,45
19823230 *)	129	82,3 8)	95,5	6,36**)	6,66**)	-	7,67 5)	1,36	6,25	7,67 5)	1,05	6,25
19823280 *)	129	82,3 8)	95,5	6,36**)	6,66**)	-	7,67 5)	1,18	5,38	7,67 5)	0,90	5,38
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
E1706 *)	169	82,3 8)	95,5	6,36**)	6,66**)	-	8,22 5)	2,01	9,23	8,22 5)	1,55	9,23
E17061 *)	169	82,3 8)	95,5	6,36**)	6,66**)	-	8,22 5)	1,63	7,45	8,22 5)	1,25	7,45
E17062 *)	169	82,3 8)	95,5	6,36**)	6,66**)	-	8,22 5)	1,36	6,25	8,22 5)	1,05	6,25
E17063 *)	169	82,3 8)	95,5	6,36**)	6,66**)	-	8,22 5)	1,18	5,38	8,22 5)	0,90	5,38
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
19823134 *)	114	67,9 6)	95,5	16,3	6,66	-	7,67 5)	2,01	9,23	7,67 5)	1,55	9,23
19823184 *)	114	67,9 6)	95,5	16,3	6,66	-	7,67 5)	1,63	7,45	7,67 5)	1,25	7,45
19823234 *)	114	67,9 6)	95,5	16,3	6,66	-	7,67 5)	1,36	6,25	7,67 5)	1,05	6,25
19823284 *)	114	67,9 6)	95,5	16,3	6,66	-	7,67 5)	1,18	5,38	7,67 5)	0,90	5,38
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
19613201 *)	129	59,2 1)	44,3	16,3	6,66	-	8,36 5)	1,86	1,66	8,36 5)	1,43	1,66
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
T01 aB												
19613101	75,6	-	28,7	24,8	6,66	-	9,22	0,63	1,19	0,93	0,96	1,31
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
h = 170 mm												
19523101 *)	107	59,8 7)	36,8	16,3	6,66	32,7	7,55 5)	1,60	1,64	7,55 5)	2,01	1,64
19620998 *)	191	69,1 3)	62,7	16,3	6,66	32,7	8,22 5)	2,61	2,34	8,22 5)	2,01	2,34
19620999 *)	278	122 4)	118	16,3	6,66	32,7	8,75 5)	2,61	3,70	8,75 5)	2,01	3,70
h = 336 mm												
19523101 *)	107	59,8 7)	13,8	16,3	6,66	32,7	7,55 5)	0,79	0,81	7,55 5)	0,99	0,81
19620998 *)	191	69,1 3)	26,6	16,3	6,66	32,7	8,22 5)	1,36	1,15	8,22 5)	0,99	1,15
19620999 *)	278	122 4)	60,0	16,3	6,66	32,7	8,75 5)	1,29	1,83	8,75 5)	0,99	1,83

Post base	F_1 (Compression)			F_1 (Tension)			F_2/F_3			F_4/F_5		
	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel	
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
h = 170 mm												
19623080	117	58,2	50,7	4,25**)	6,66**)	-	6,38	2,21	2,01	6,38	1,99	2,01
19623100	193	72,9	50,7	4,25**)	6,66**)	-	6,94	2,21	2,01	6,94	1,99	2,01
h = 356 mm												
19623080	117	58,2	18,7	-	-	-	6,38	1,03	0,94	6,38	0,93	0,94
19623100	193	72,9	18,7	-	-	-	6,94	1,03	0,94	6,94	0,93	0,94
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
P aBv												
19533070	93,4	35,1	33,2	7,8	3,84	-	3,38	1,05	1,37	3,38	0,81	1,37
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
P aBv												
19533101 *)	202	70,3 2)	56,7	16,3	6,66	-	8,22 5)	2,09	1,87	8,22 5)	1,61	1,87
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
U70 aBv												
19653201	15,9	8,89	-	-	-	-	-	-	-	-	-	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	-	-	-	-	-	-	-	-	-
PB aBv												
19823161	89,6	41,7	30,8	-	-	-	-	-	-	-	-	-
19823201	118	54,6	54,4	-	-	-	6,38	2,75	2,83	6,38	2,75	2,83
19823202	118	54,6	30,0	-	-	-	6,38	1,33	1,37	6,38	1,33	1,37
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	-	-	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
U aBv												
19534300	14,5	8,59	-	-	-	-	-	-	-	-	-	-
19534310	14,5	8,59	-	-	-	-	-	-	-	-	-	-
19534320	14,5	8,59	-	-	-	-	-	-	-	-	-	-
	$\gamma_{M,T}$	$\gamma_{M,0}$	-	-	-	-	-	-	-	-	-	-
D aBv												
19823065	169	-	138	16,3	6,88	-	6,68	6,61	30,3	6,68	5,09	30,3
19823120	169	-	138	16,3	6,88	-	6,68	3,71	17,0	6,68	2,86	17,0
19823150	169	-	138	16,3	6,88	-	6,68	2,94	13,5	6,68	2,26	13,5
19823200	169	-	138	16,3	6,88	-	6,68	2,18	9,99	6,68	1,68	9,99
19823250	169	-	138	16,3	6,88	-	6,68	1,73	7,94	6,68	1,33	7,94
19823300	169	-	138	16,3	6,88	-	6,68	1,44	6,59	6,68	1,11	6,59
	$\gamma_{M,T}$	-	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
P aBv												
19534100 *)	126	53,2 7)	54,1	16,3	6,66	-	7,55 5)	1,99	6,91	7,55 5)	1,53	6,91
19534110 *)	126	53,2 7)	54,1	16,3	6,66	-	7,55 5)	1,61	5,60	7,55 5)	1,24	5,60
19534120 *)	126	53,2 7)	54,1	16,3	6,66	-	7,55 5)	1,35	4,70	7,55 5)	1,04	4,70
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
19823203	194	42,0	40,8	16,3	1,66	36,4	6,40	1,49	1,82	6,40	1,49	1,82

Post base	F_1 (Compression)			F_1 (Tension)			F_2/F_3			F_4/F_5		
	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel	
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
h = 170 mm												
19523102	107	54,6	36,4	4,32**)	6,66**)	-	6,38	1,58	1,62	6,38	1,58	1,62
h = 336 mm												
19523102	107	54,6	13,7	-	-	-	6,38	0,78	0,81	6,38	0,78	0,81
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$
D aBv												
h = 170 mm												
19623308	103	46,2	62,1	5,58**)	6,66**)	-	6,38	2,58	2,31	6,38	1,99	2,31
19623310	174	51,9	62,1	5,58**)	6,66**)	-	6,94	2,58	2,31	6,94	1,99	2,31
h = 336 mm												
19623308	103	46,2	26,4	-	-	-	6,38	1,28	1,15	6,38	0,99	1,15
19623310	174	51,9	26,4	-	-	-	6,94	1,28	1,15	6,94	0,99	1,15
	$\gamma_{M,T}$	$\gamma_{M,0}$	$\gamma_{M,1}$	$\gamma_{M,C}$	$\gamma_{M,0}$	-	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$

*) Characteristic load-carrying capacities for post bases are valid for base plates with t = 8 mm. In case of a thinner base plate t = 6 mm the marked values have to be multiplied by the reduction factors given in Table B.2. For post bases type 19812301, 19812302, 19812636, 19812303, 19812638, 19812639 a thinner base plate t = 6 mm does not have reducing effects on the characteristic load-carrying capacities.

**) Characteristic load-carrying capacities are only valid with installed dowels in case of load direction F_1 (Tension), independent of the adjustable height of the post base. Distance $a_{3,t}$ to the end grain has to be at least 80 mm.

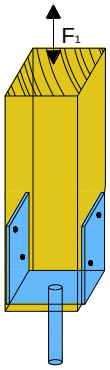
$\gamma_{M,T}$ = partial factor for solid timber according to EN 1995-1-1 and national annex
$\gamma_{M,C}$ = partial factor for connections according to EN 1995-1-1 and national annex
$\gamma_{M,0}; \gamma_{M,1}; \gamma_{M,2}$ = partial factor according to EN 1993-1-1 and national annex

Table B.2 Reduction factor for the characteristic load-carrying capacities in case of base plates with t = 6 mm

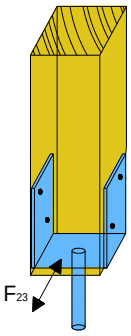
1)	2)	3)	4)	5)	6)	7)	8)
0,67	0,72	0,75	0,81	0,84	0,86	0,90	0,93

Definitions of forces, their directions and eccentricity

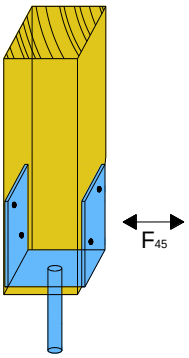
- Force F_1: tensile or compression load



- Force F_2 / F_3 horizontal load parallel to the side plates /inner plate of the post base and perpendicular to the fasteners



- Force F_4 / F_5 horizontal load perpendicular to the side plates / inner plate of the post base and parallel to the fasteners



Acting forces

F_1	axial force (tension or compression) acting along the central axis of the joint
F_2 and F_3	horizontal force parallel to the side plates of the post base acting with the lever arm $e_{F2/F3}$ above the foundation
F_4 and F_5	horizontal force perpendicular to the side plates of the post base acting with the lever arm $e_{F4/F5}$ 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.

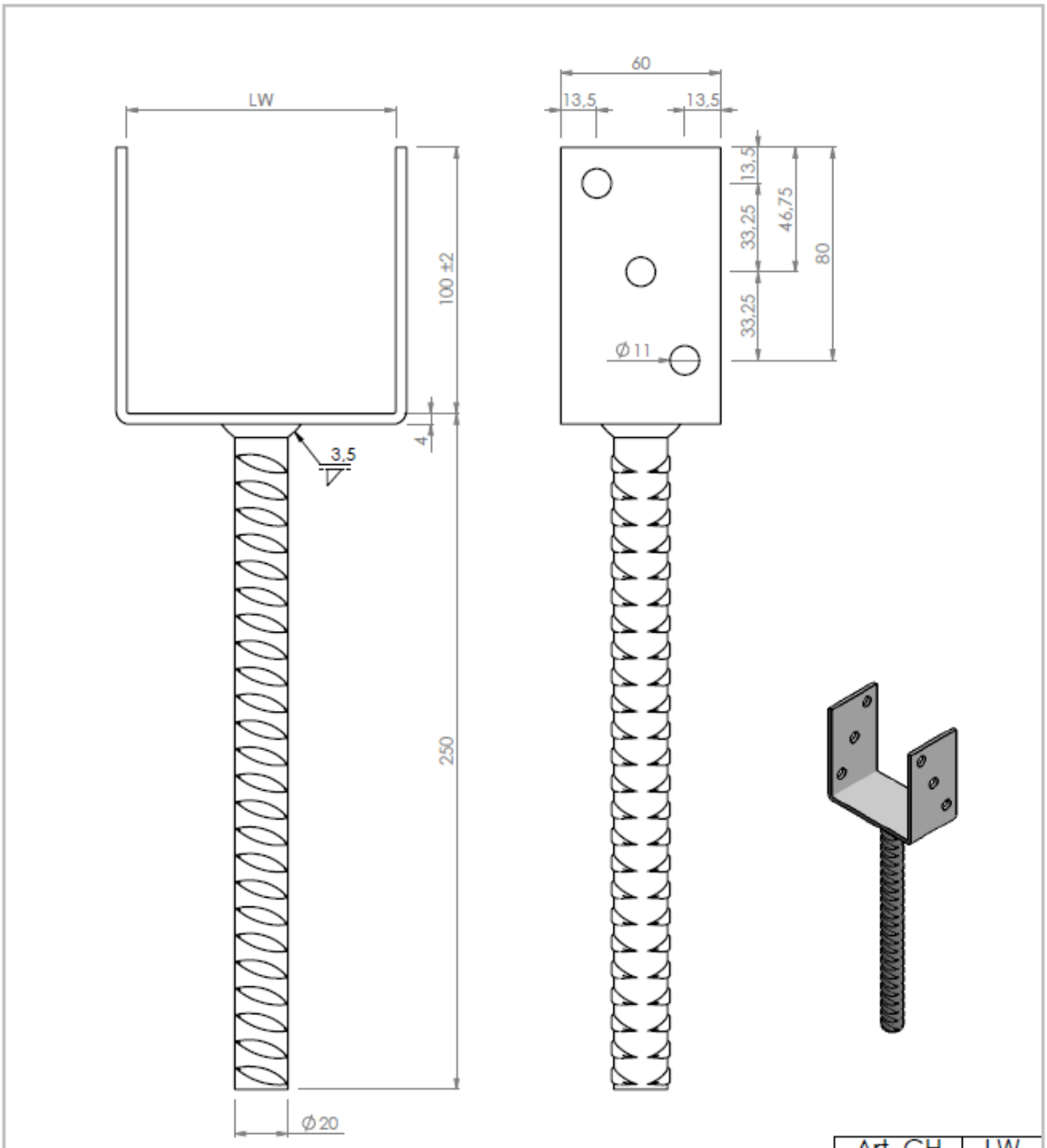
Threaded length of screws

Post bases with screws Ø10x120 mm ordered in the base plate the characteristic load-carrying capacity of the screw connection in load case F_1 - tension load may be calculated as following, if screws with a threaded length exceeding $l_{ef,ref}$=100 mm are used:

$$F_{1,T,T} = F_{1,T,T,ref} \cdot \left(\frac{\ell_{ef}}{\ell_{ef,ref}} \right)^{0,9}$$

Where $F_{1,T,T,ref}$=16,3 kN is the characteristic load-carrying capacity of the connection with 4 screws with a threaded length of $l_{ef,ref}$=100 mm.

B.1 Type U60 in concrete



Art. GH	LW
19800201	71
19800203	81
19800204	91
19800205	101
19800206	121
19800207	141

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		20.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ U-60 in Beton

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73235 Weilheim/Teck
Tel +49 (0)7023/743323-0
Fax +49 (0)7023/743323-29
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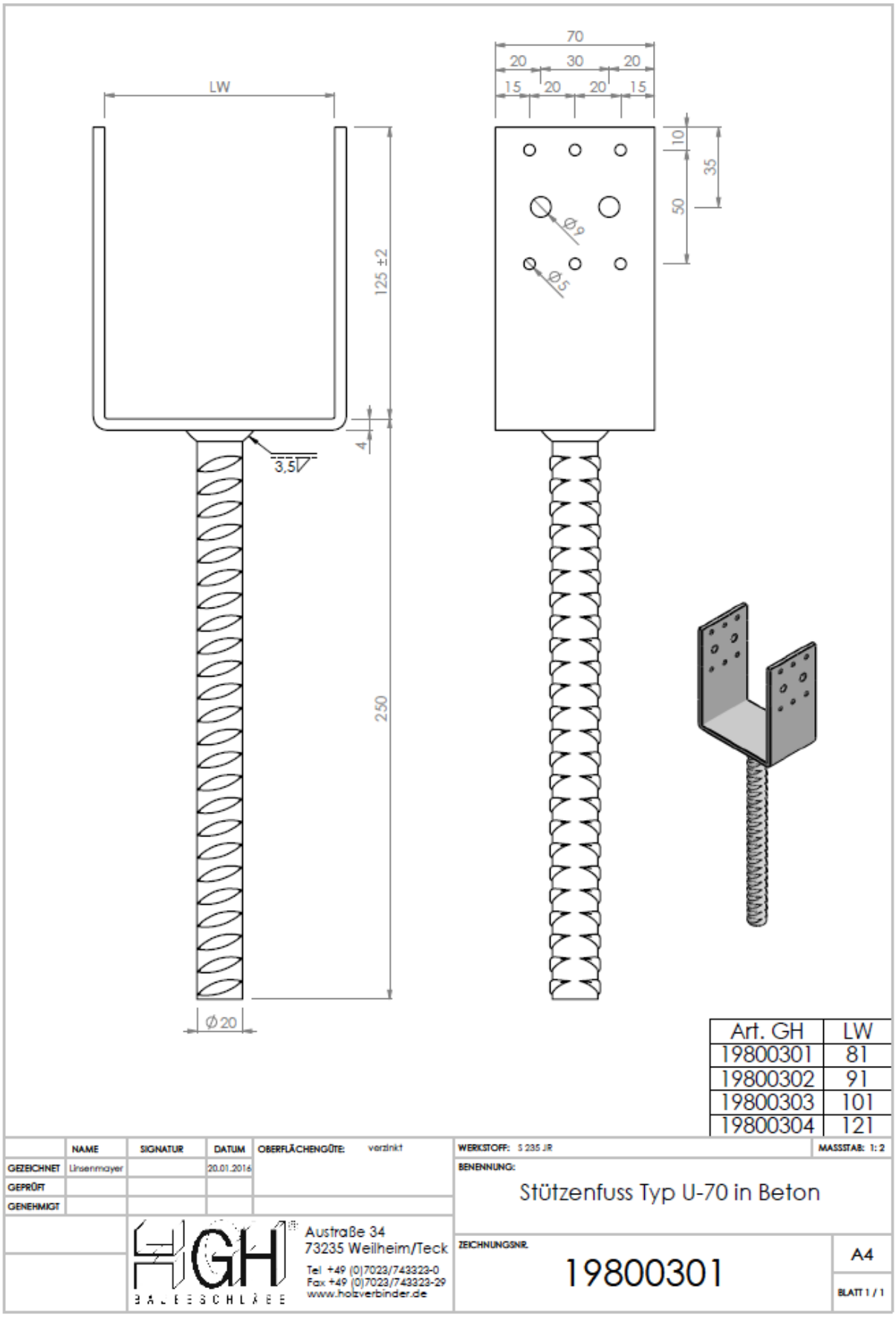
ZEICHNUNGSNR. 19800201

A4

BLATT 1 / 1

B.2 Type U70 in concrete



Art. GH	LW
19800301	81
19800302	91
19800303	101
19800304	121

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		20.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ U-70 in Beton

ZEICHNUNGSNR.

19800301

A4

BLATT 1 / 1

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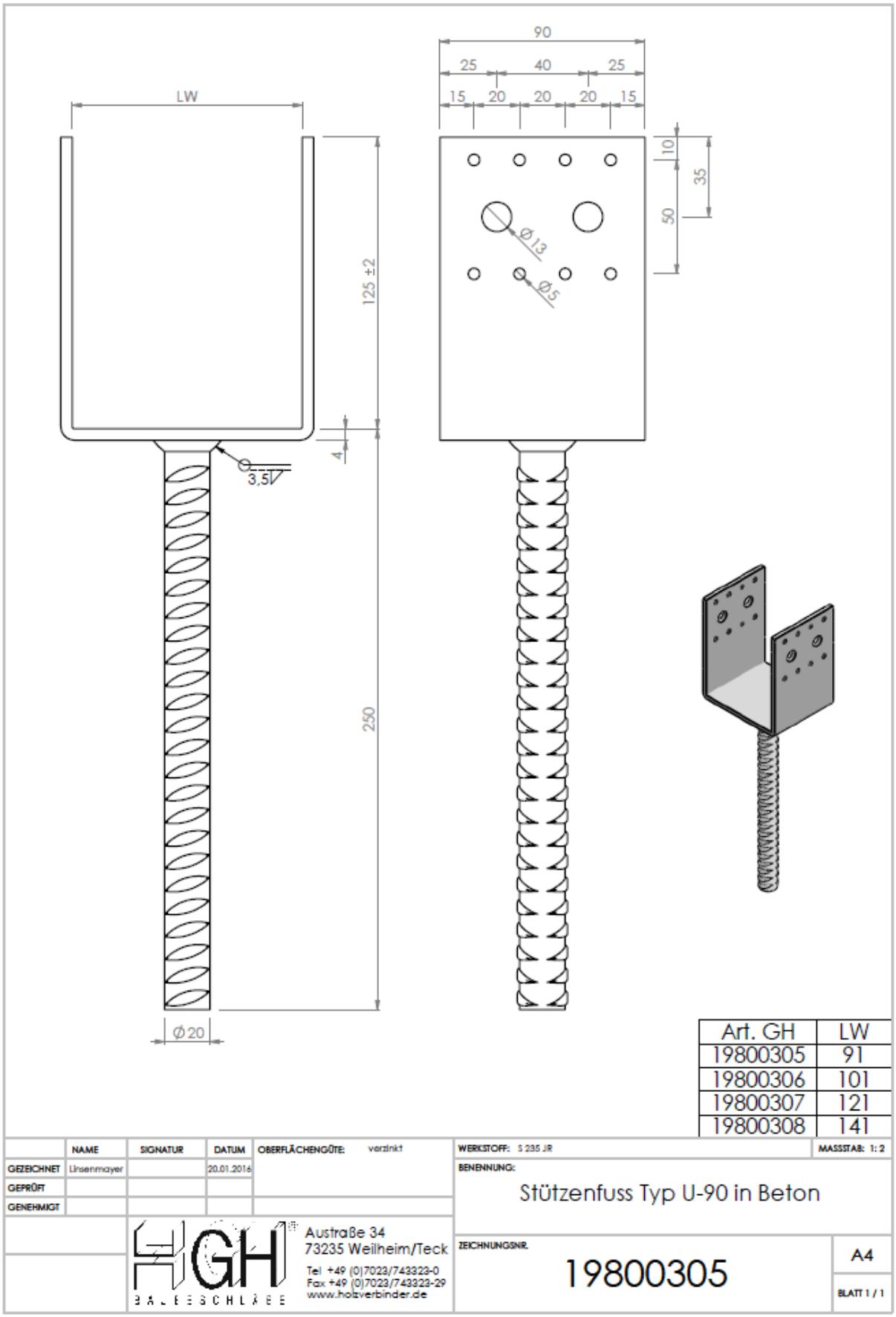
B.3 Type U90 in concrete



Art. GH	LW
19800305	91
19800306	101
19800307	121
19800308	141

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		20.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ U-90 in Beton

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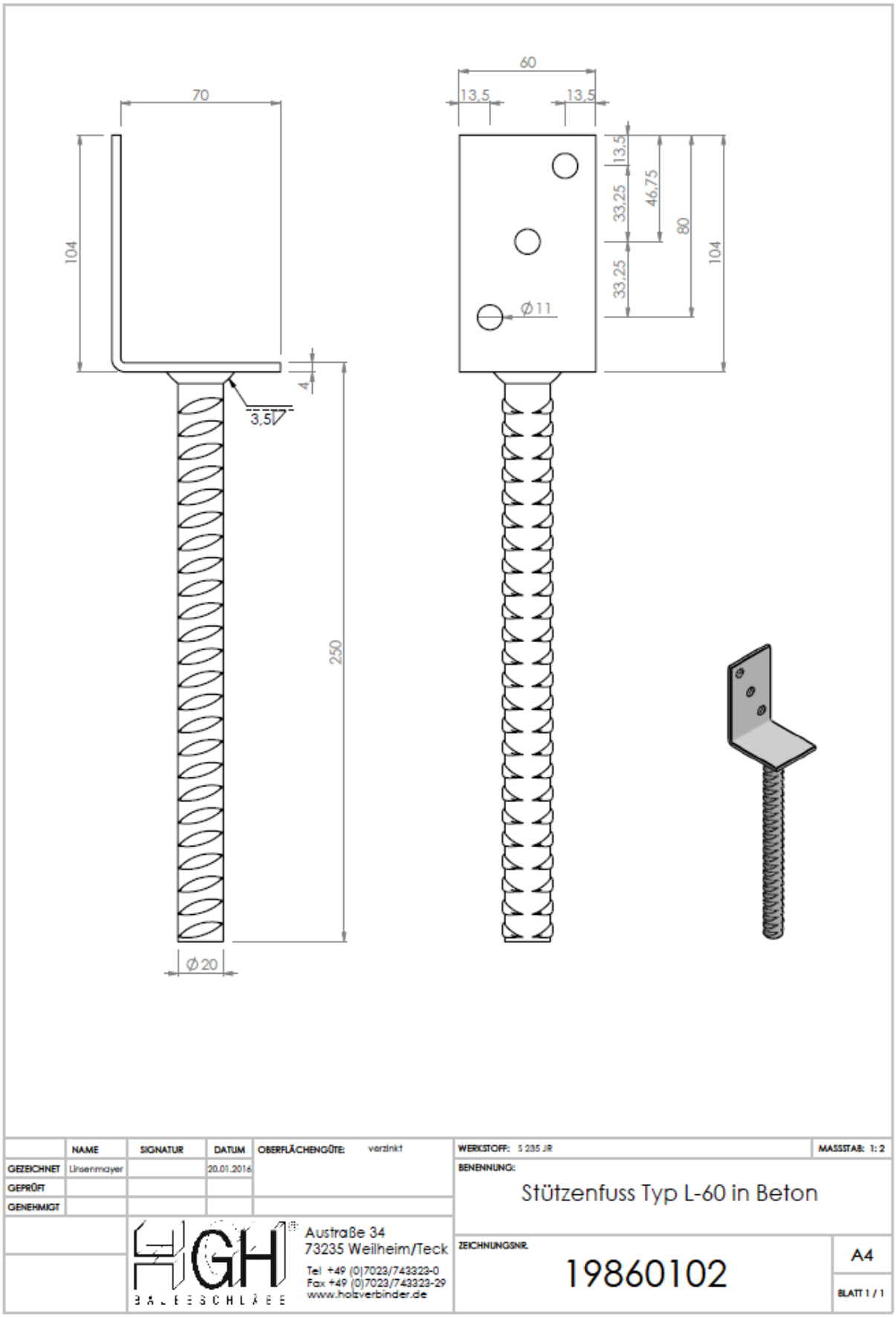
ZEICHNUNGSNR. 19800305

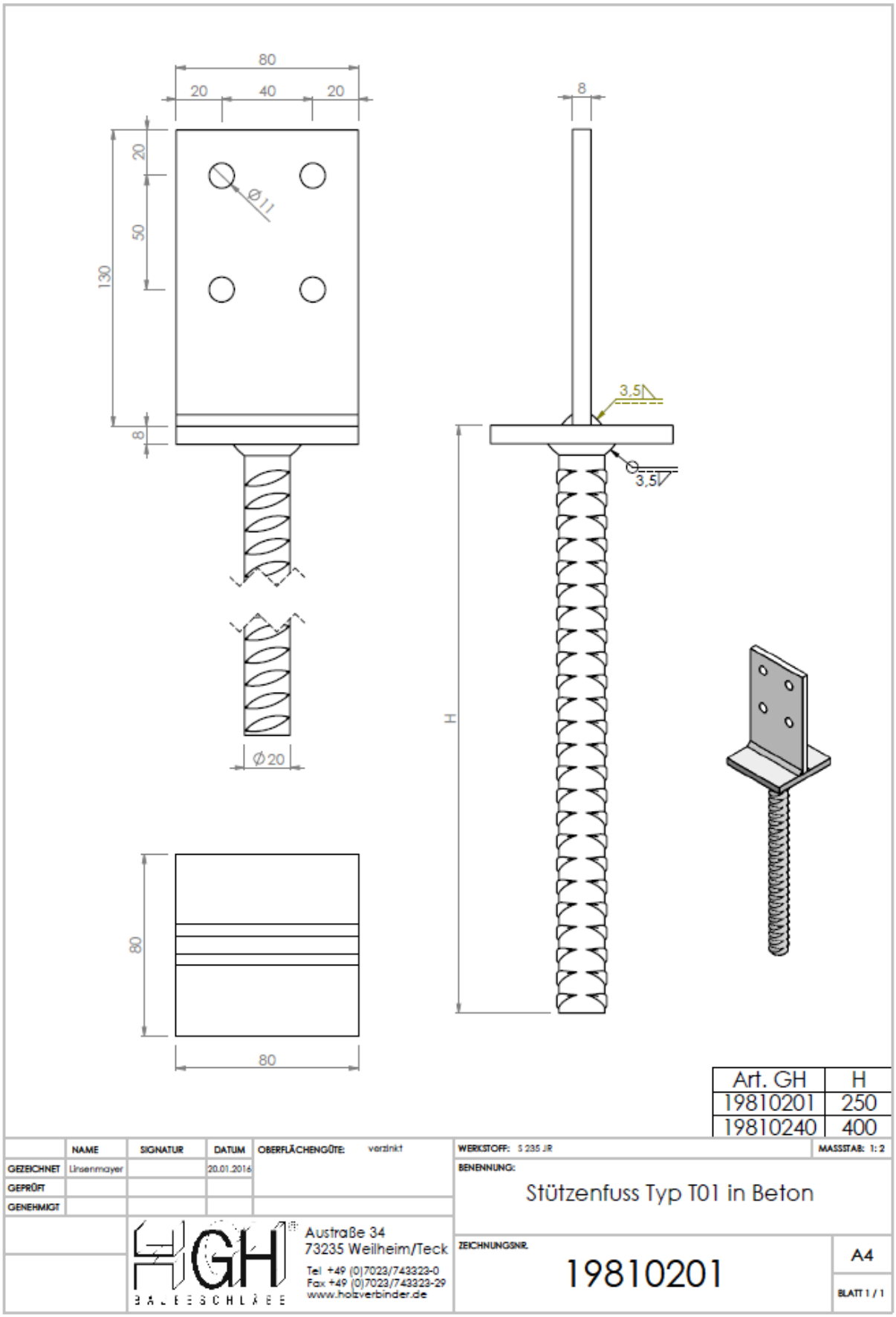
A4

BLATT 1 / 1

B.4 Type L60 in concrete



B.5 Type T01 in concrete



Art. GH	H
19810201	250
19810240	400

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		20.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ T01 in Beton

GH BAUBESCHLÄGE
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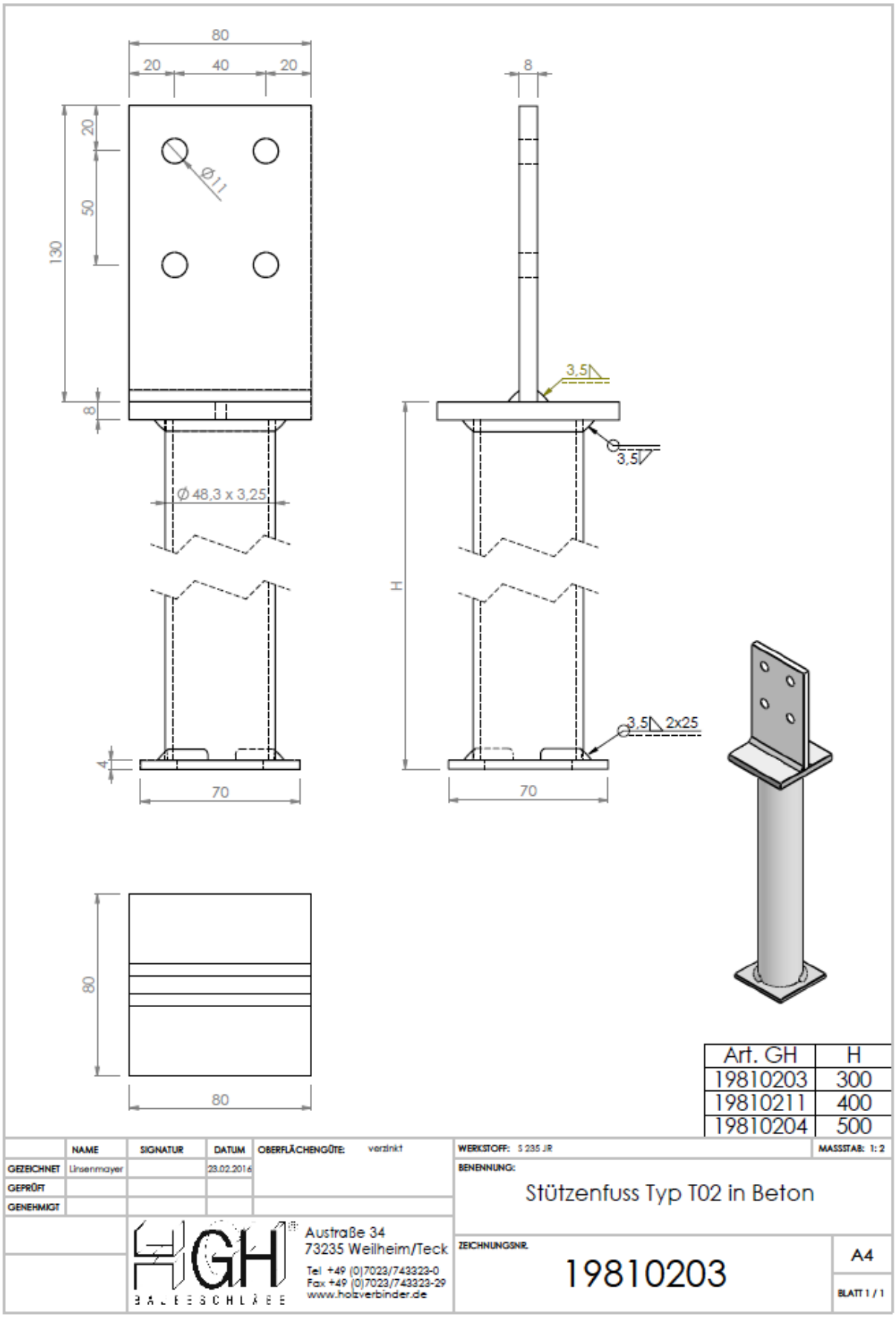
ZEICHNUNGSNR. 19810201

A4

BLATT 1 / 1

B.6 Type T02 in concrete



Art. GH	H
19810203	300
19810211	400
19810204	500

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		23.02.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ T02 in Beton

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Fax +49 (0)7023/743323-29
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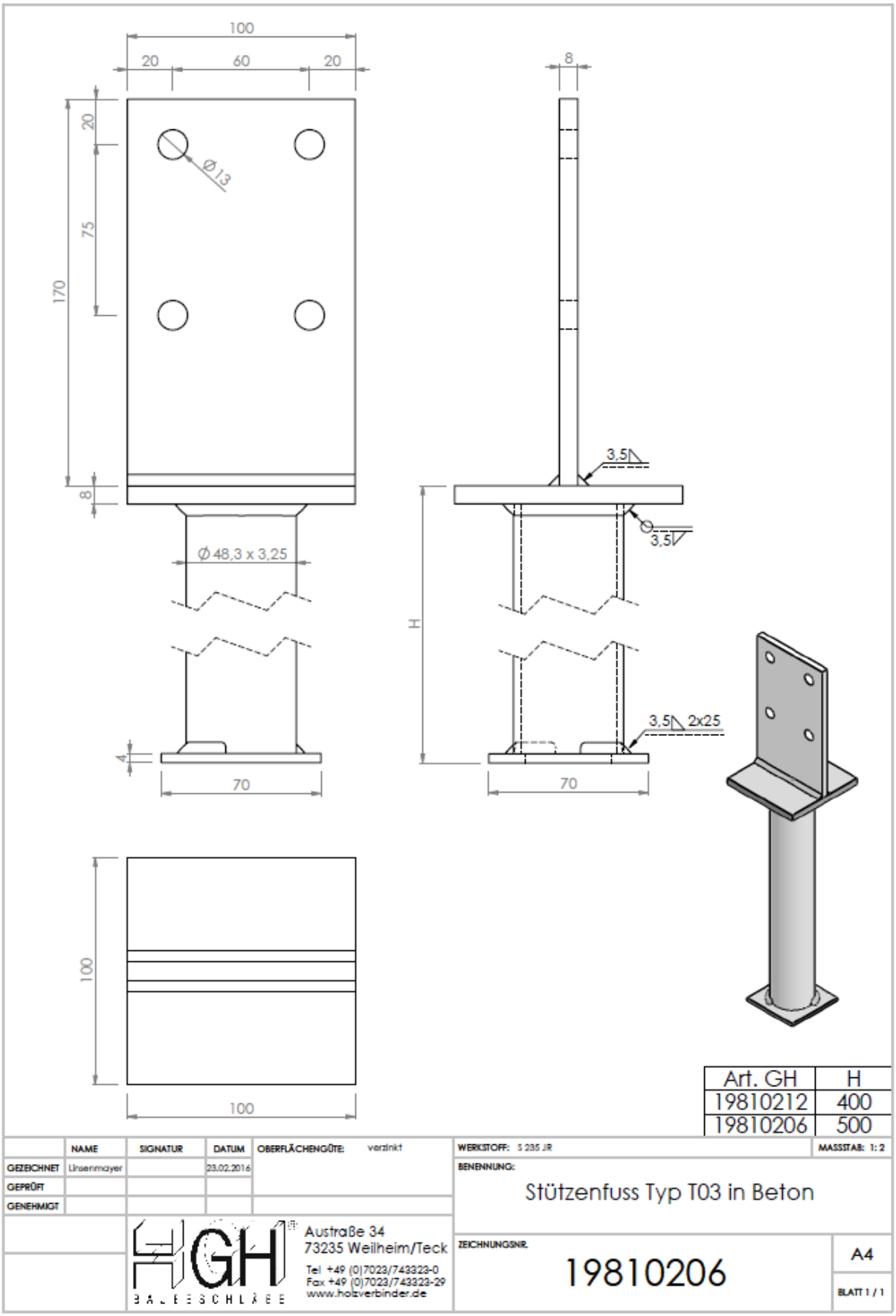
ZEICHNUNGSNR. 19810203

A4

BLATT 1 / 1

B.7 Type T03 in concrete



Art. GH	H
19810212	400
19810206	500

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		23.02.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ T03 in Beton

GH BALKENSCHLÄBE
Austraße 34
73235 Weilheim/Teck
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Fax +49 (0)7023/743323-29
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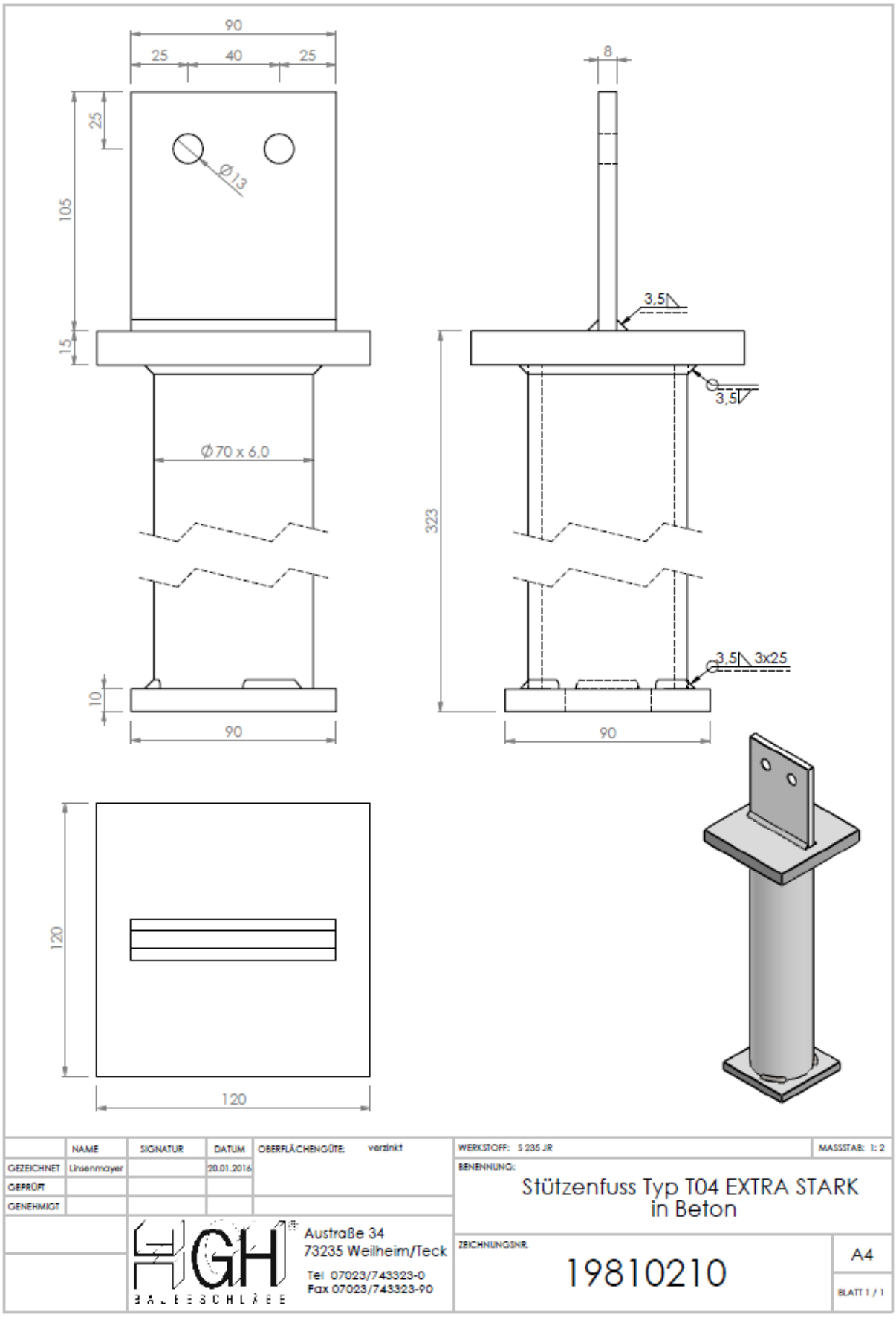
ZEICHNUNGSNR. 19810206

A4

BLATT 1 / 1

B.8 Type T04 in concrete

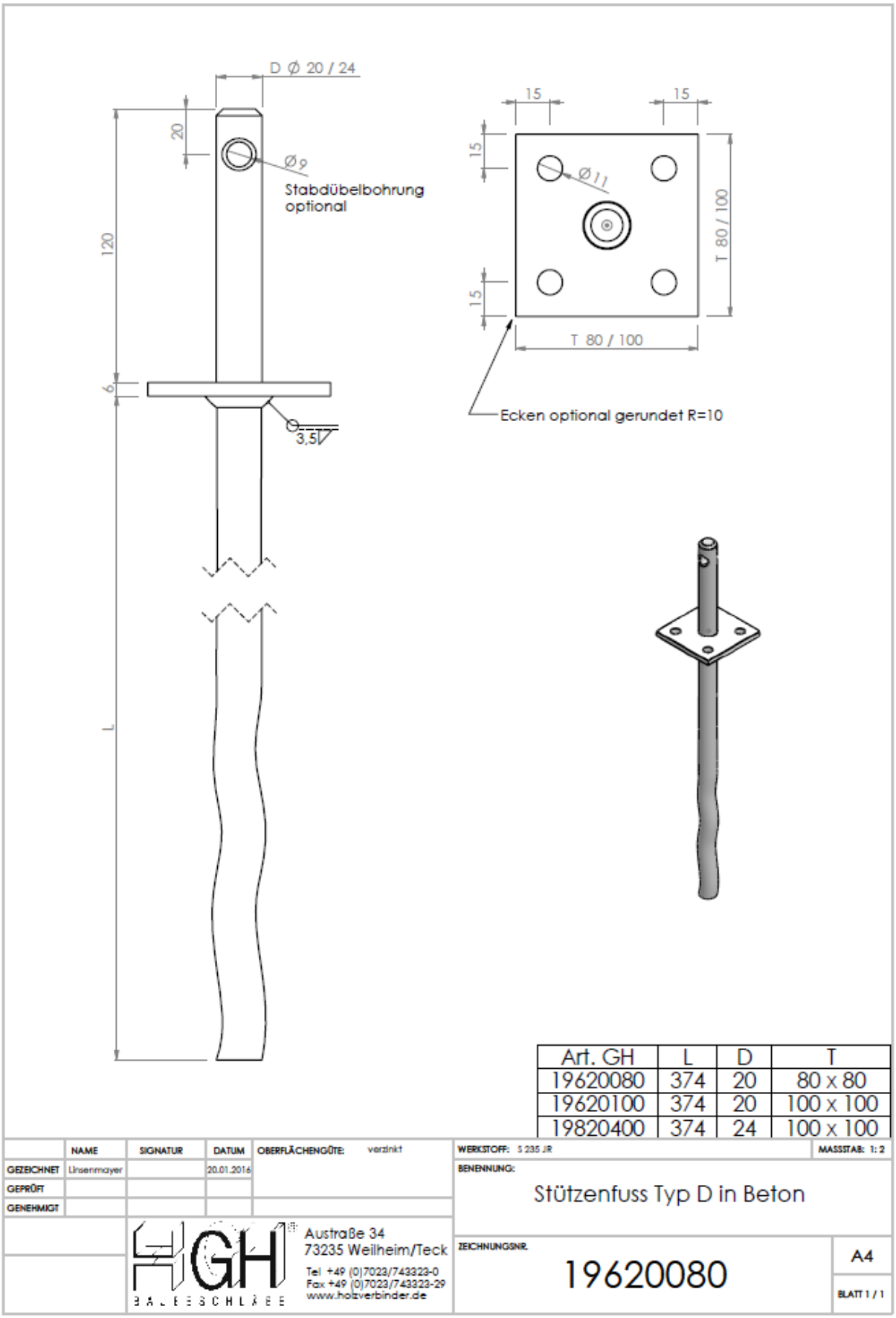


	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt	WERKSTOFF: S 235 JR	MASSSTAB: 1: 2
GEZEICHNET	Linsenmayer		20.01.2016		BENENNUNG: Stützenfuss Typ T04 EXTRA STARK in Beton	
GEPRÜFT						
GENEHMIGT						

GH BALLESCHLÄGE
Austraße 34
73235 Weilheim/Teck
Tel 07023/743323-0
Fax 07023/743323-90

ZEICHNUNGSNR. 19810210 | A4 | BLATT 1 / 1

B.9 Type D in concrete



Art. GH	L	D	T
19620080	374	20	80 x 80
19620100	374	20	100 x 100
19820400	374	24	100 x 100

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		20.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ D in Beton

GH BAUBESCHLÄGE
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73235 Weilheim/Teck
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Fax +49 (0)7023/743323-29
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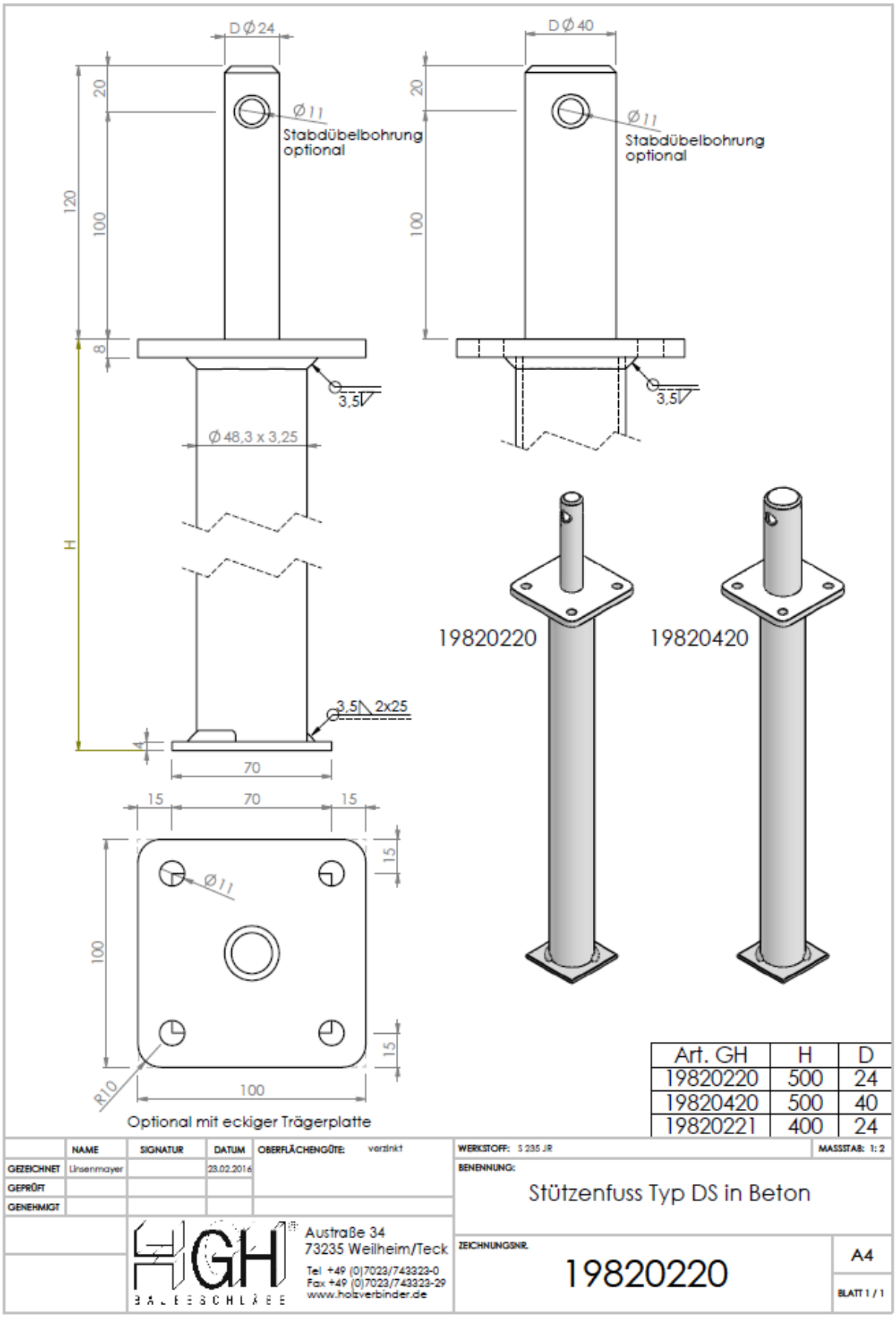
ZEICHNUNGSNR.

19620080

A4

BLATT 1 / 1

B.10 Type DS in concrete



Art. GH	H	D
19820220	500	24
19820420	500	40
19820221	400	24

	NAME	SIGNATUR	DATUM
GEZEICHNET	Linsenmayer		23.02.2016
GEPRÜFT			
GENEHMIGT			

OBERFLÄCHENGÜTE: verzinkt

WERKSTOFF: S 235 JR

MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ DS in Beton

ZEICHNUNGSNR.

19820220

A4

BLATT 1 / 1

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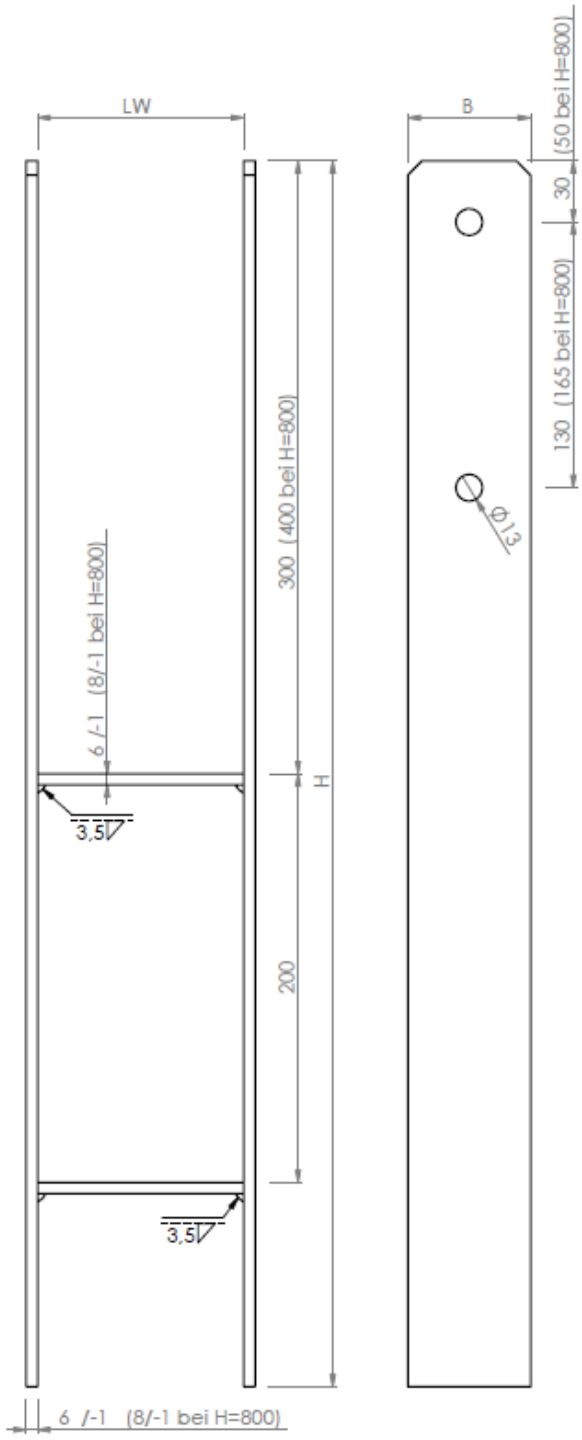
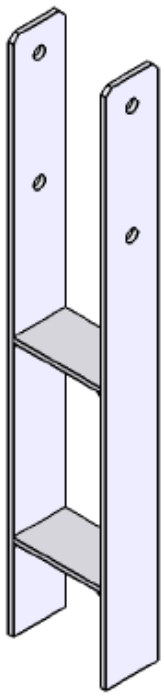
B.11 Type H in concrete





Art. GH	LW	B	H
19840080	71	60	600
19840090	81	60	600
19840100	91	60	600
19840105	95	60	600
19840110	101	60	600
19840111	111	60	600
19840120	121	60	600
19840140	141	60	600
19841120	121	80	800
19841140	141	80	800

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		20.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Gruppe S Typ H in Beton

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Fax +49 (0)7023/743323-29
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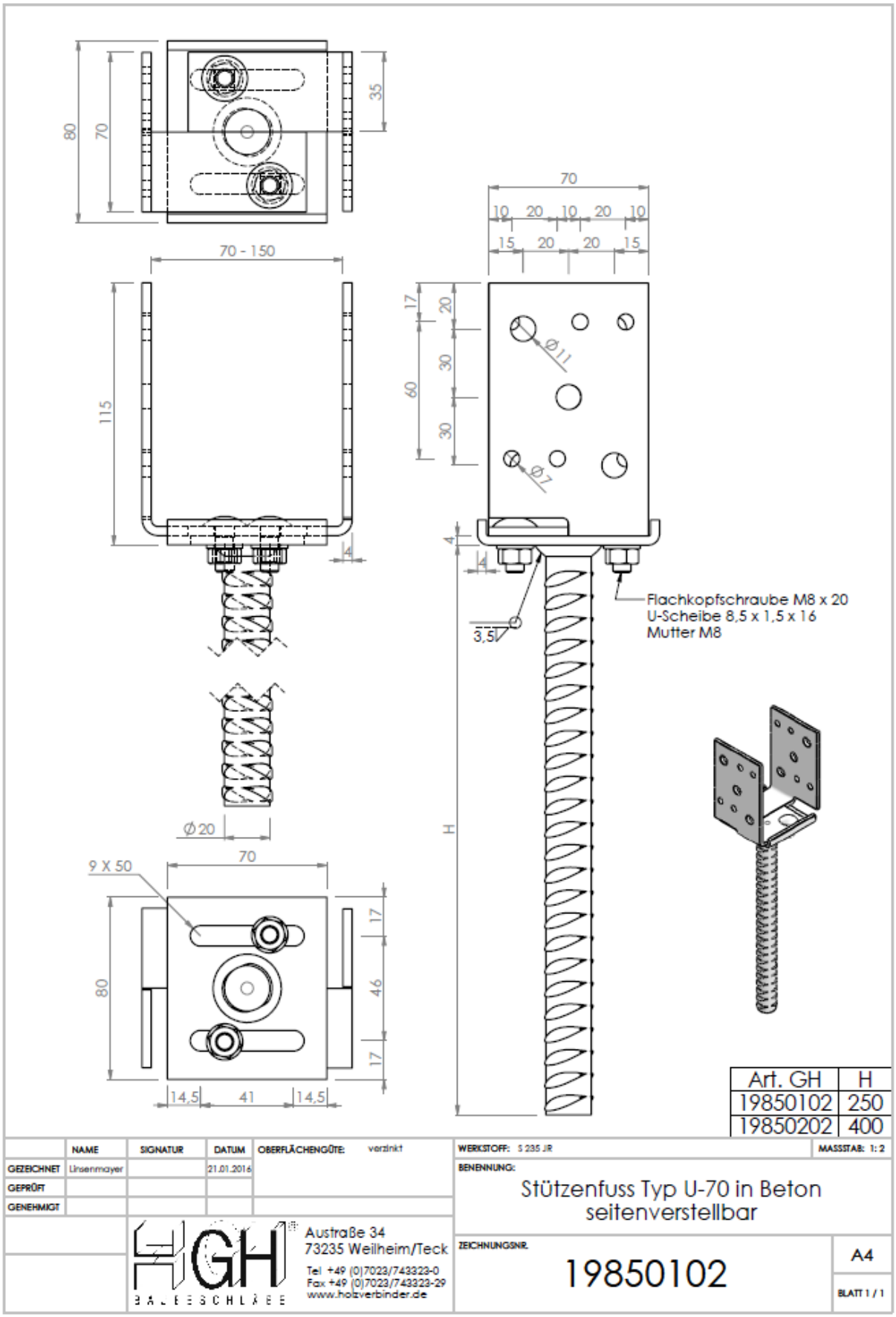
ZEICHNUNGSNR. 19840080

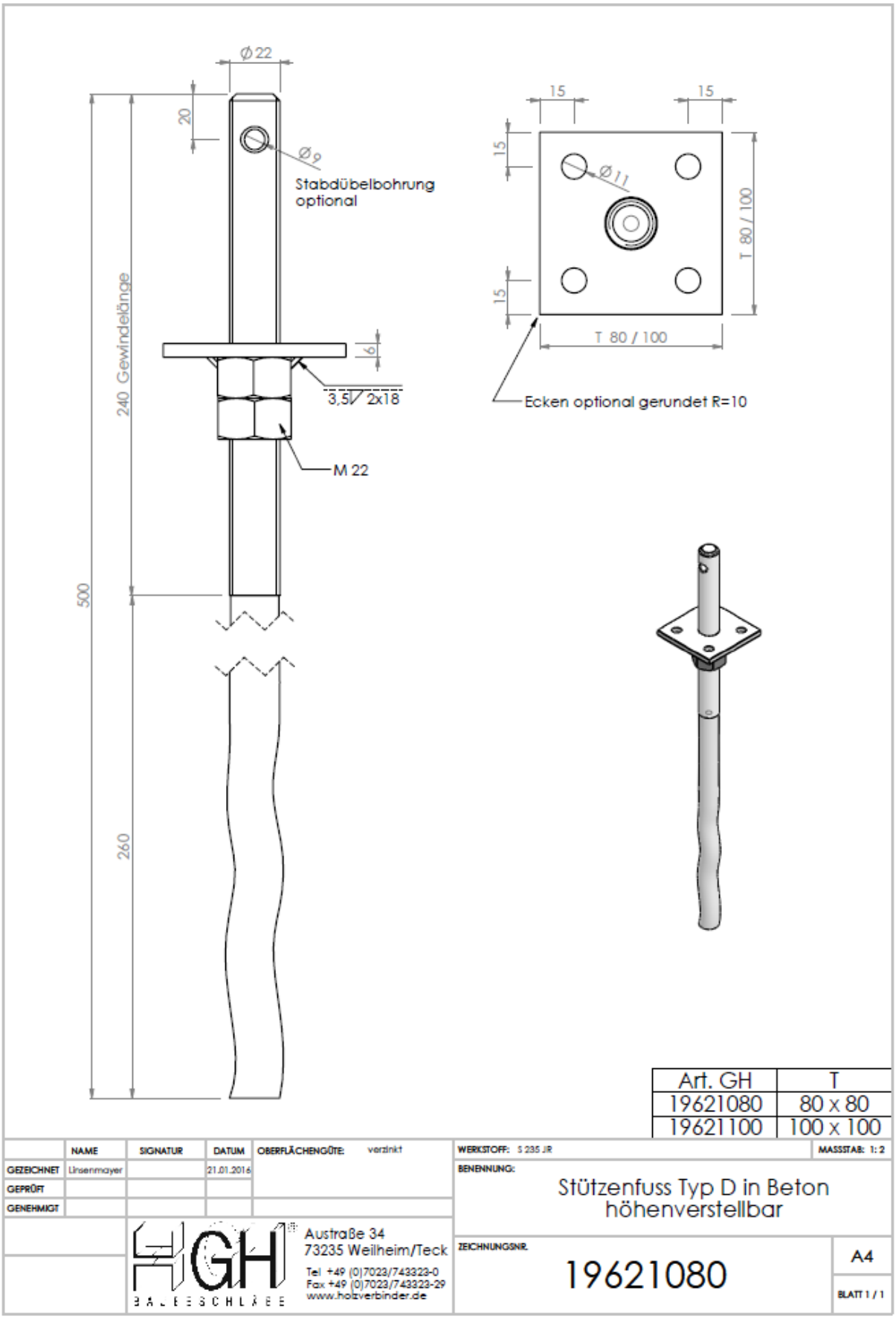
A4

BLATT 1 / 1

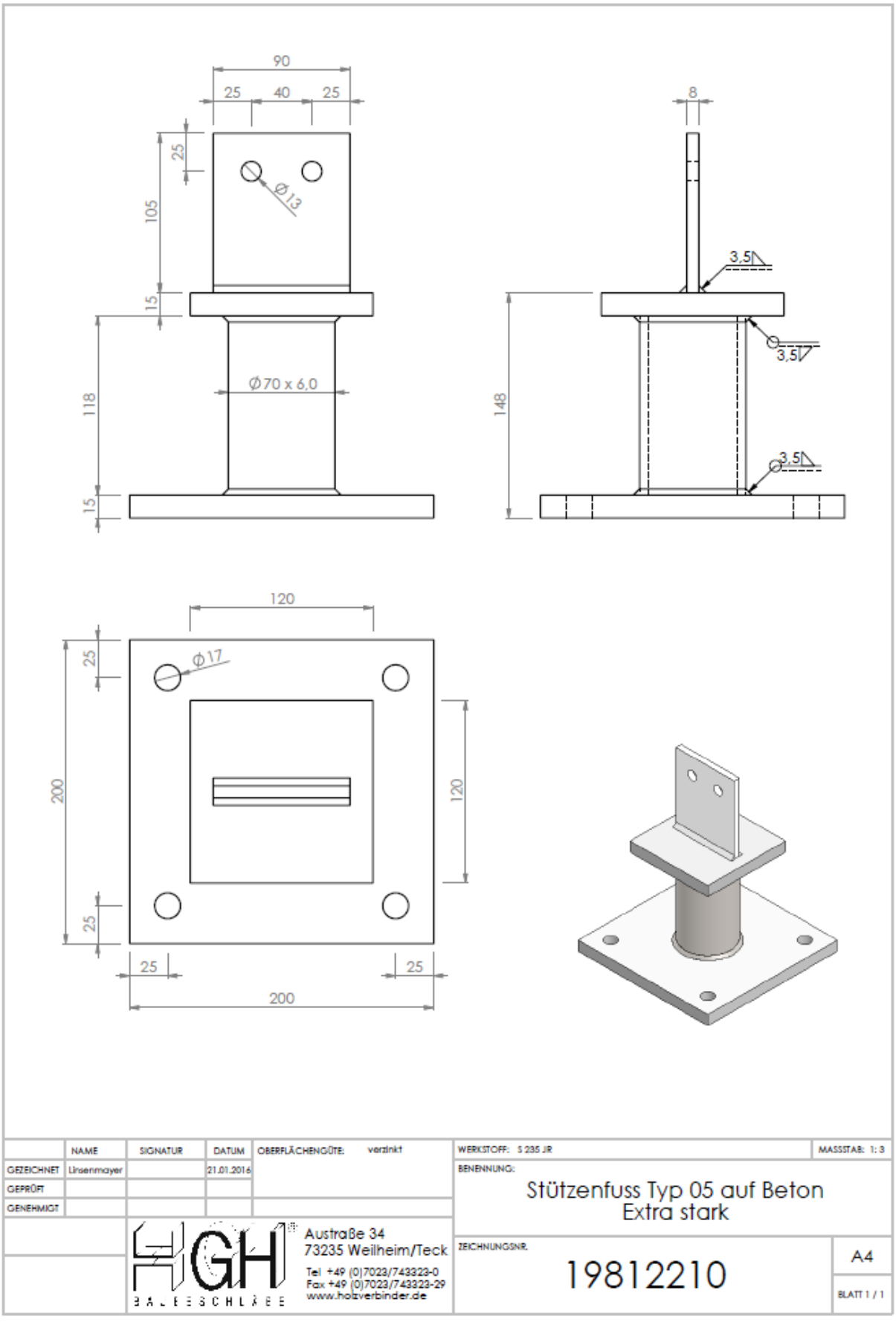
B.12 Type U70 in concrete



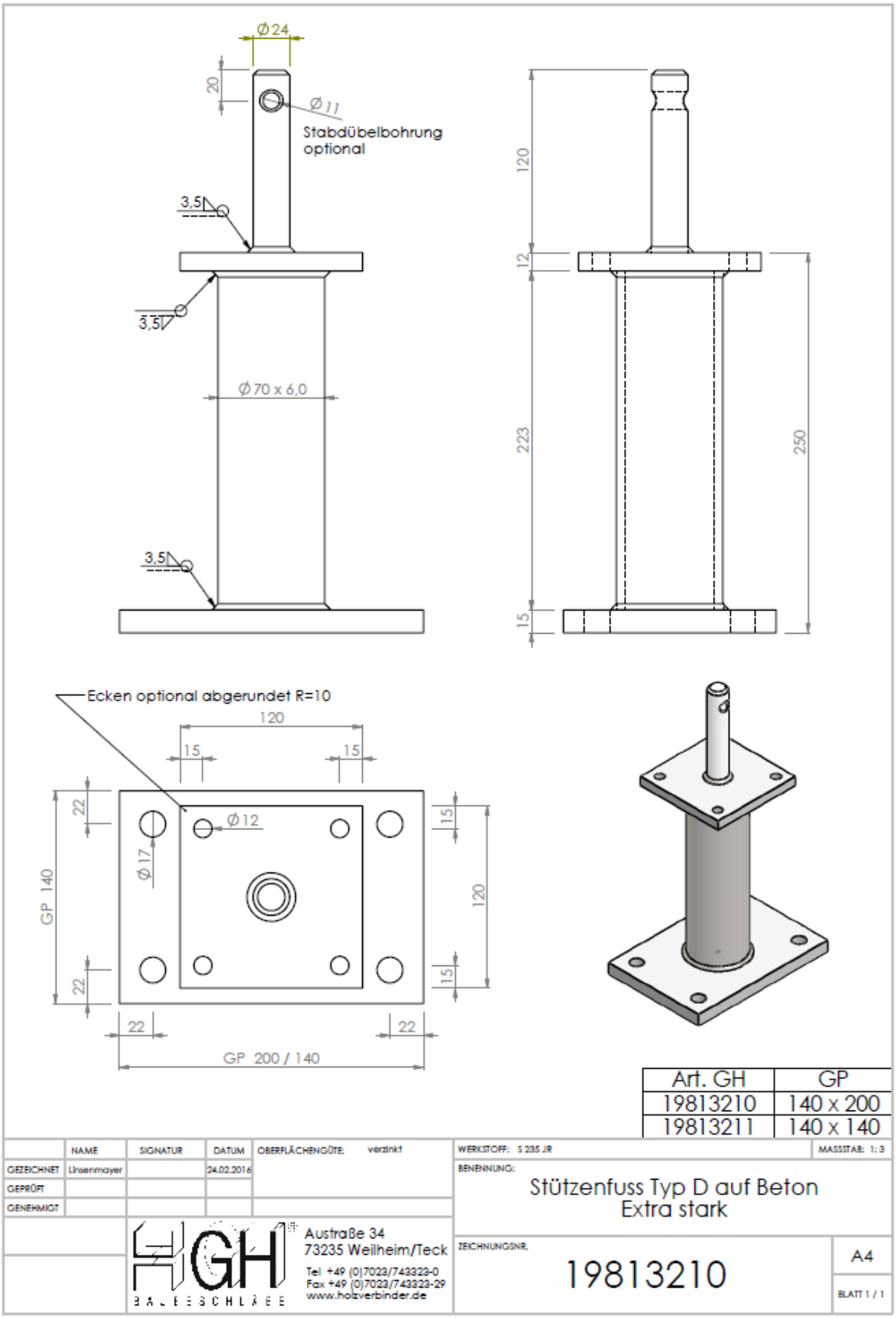
B.13 Type D in concrete, adjustable



B.14 Type T05 on concrete



B.15 Type D on concrete



Art. GH	GP
19813210	140 x 200
19813211	140 x 140

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		24.02.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 3

BENENNUNG:

Stützenfuss Typ D auf Beton
Extra stark

GH BALKENSCHLÄGE
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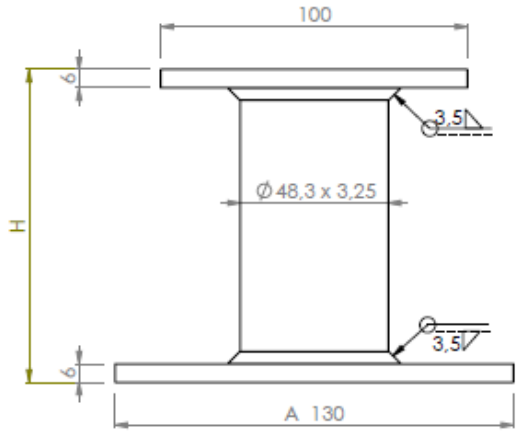
ZEICHNUNGSNR.

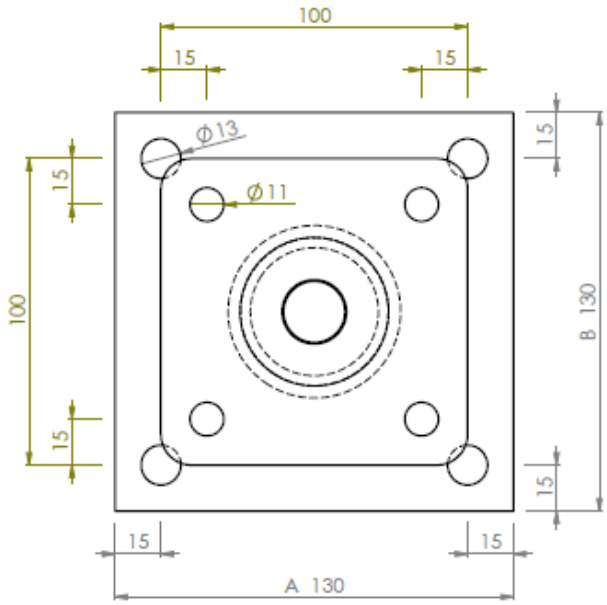
19813210

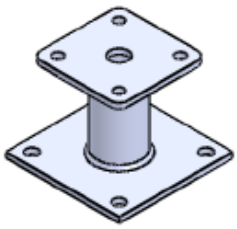
A4

BLATT 1 / 1

B.16 Type P on concrete







Var. Grundplatte A x B
130 x 130
150 x 150
180 x 100

Art. GH	H
19832060	60
19832100	100
19832150	150

	NAME	SIGNATUR	DATUM
GEZEICHNET	Linsenmayer		04.03.2016
GEPRÜFT			
GENEHMIGT			

OBERFLÄCHENGÜTE: verzinkt

WERKSTOFF: S 235 JR

MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ P auf Beton

GH BAUBESCHLÄGE
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Fax +49 (0)7023/743323-29
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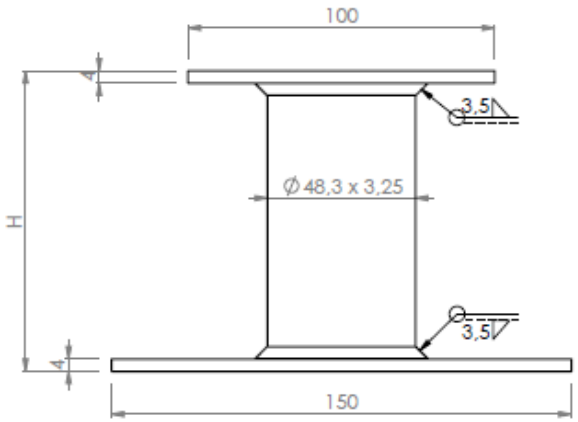
ZEICHNUNGSNR.

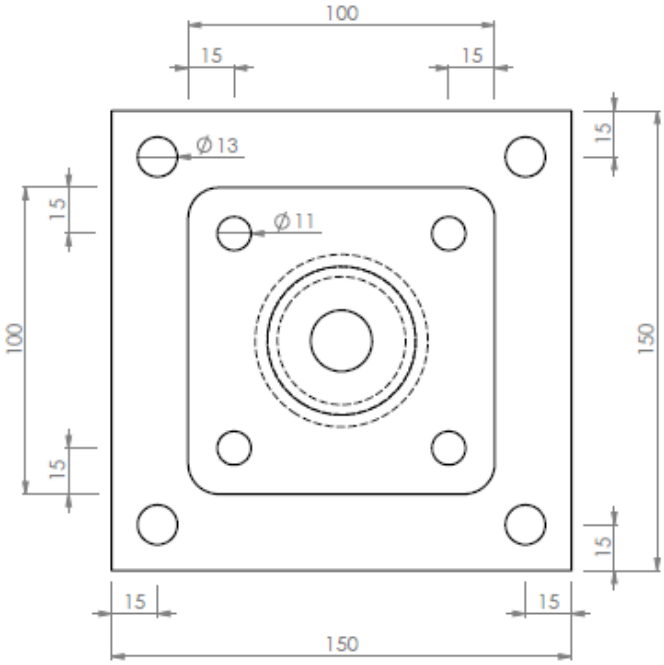
19832060

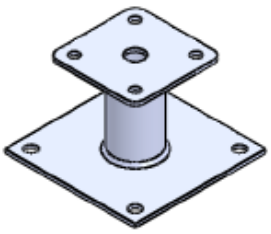
A4

BLATT 1 / 1

B.17 Type P on concrete







Art. GH	H
1790	100
1791	150

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		04.03.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ P auf Beton

GH BAUBESCHLÄGE
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73235 Weilheim/Teck
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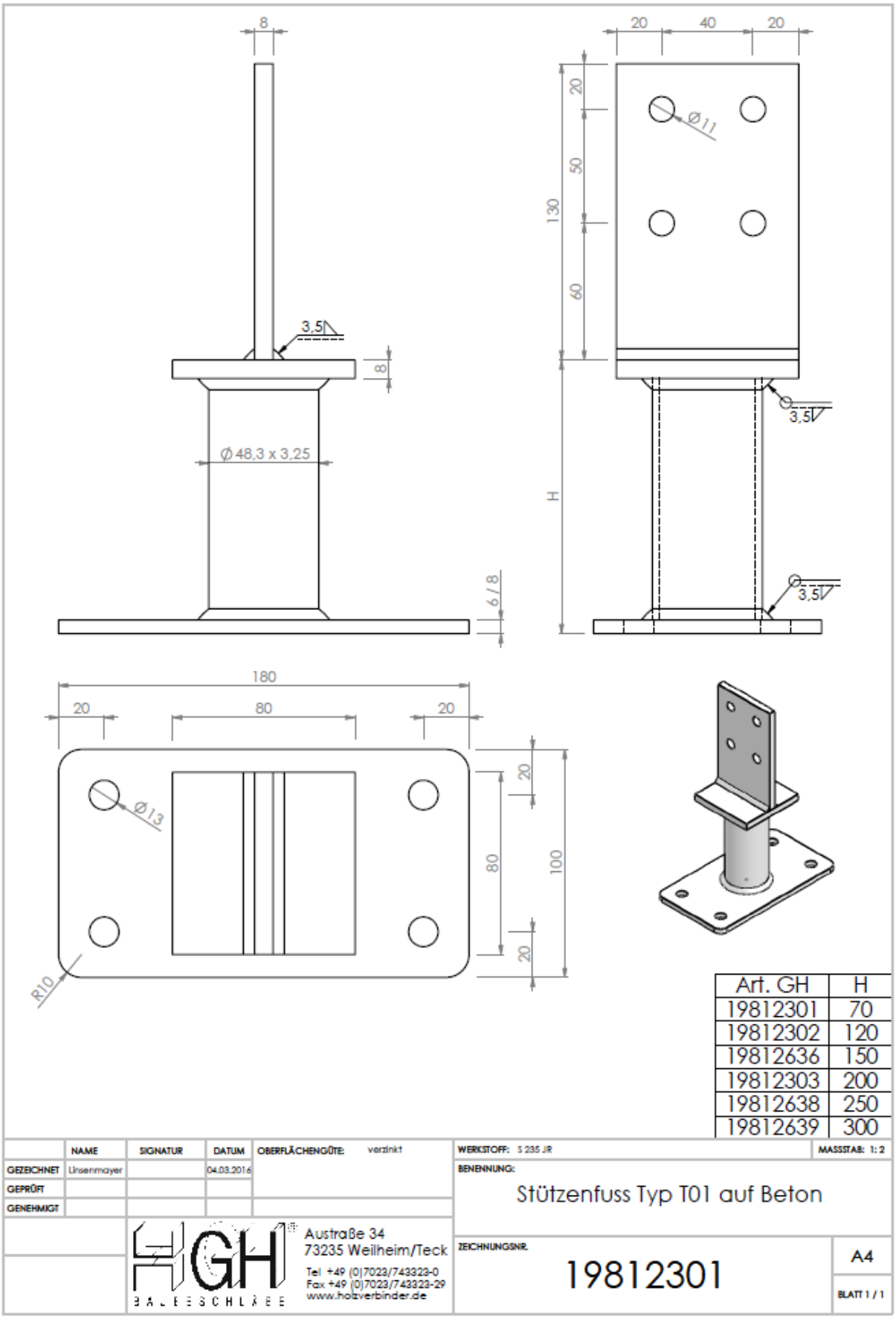
ZEICHNUNGSNR. 1790

A4

BLATT 1 / 1

B.18 Type T01 on concrete



Art. GH	H
19812301	70
19812302	120
19812636	150
19812303	200
19812638	250
19812639	300

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		04.03.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ T01 auf Beton

ZEICHNUNGSNR.

19812301

A4

BLATT 1 / 1

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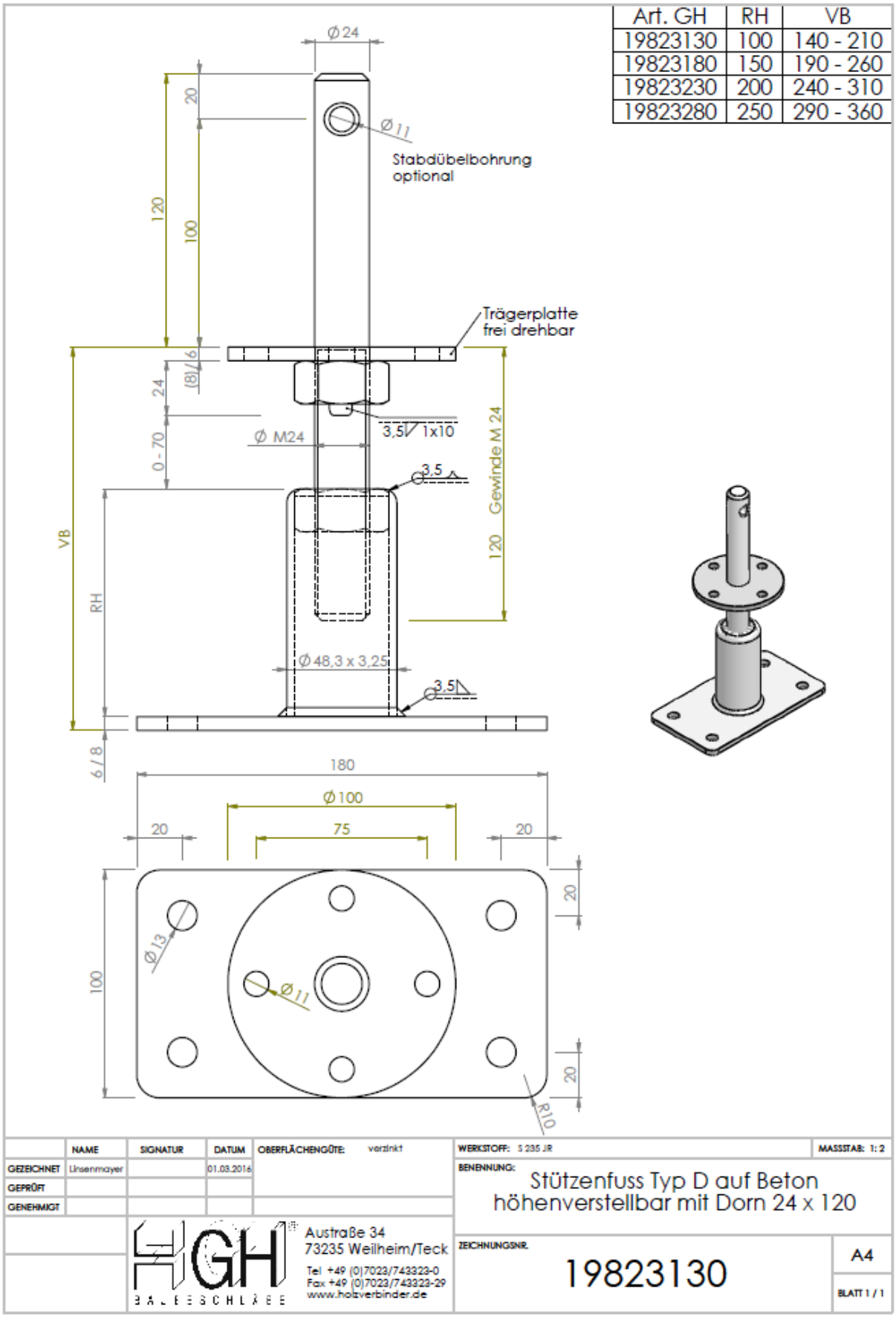
B.19 Type D on concrete, adjustable

Art. GH	RH	VB
19823130	100	140 - 210
19823180	150	190 - 260
19823230	200	240 - 310
19823280	250	290 - 360



	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		01.03.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG: Stützenfuss Typ D auf Beton höhenverstellbar mit Dorn 24 x 120

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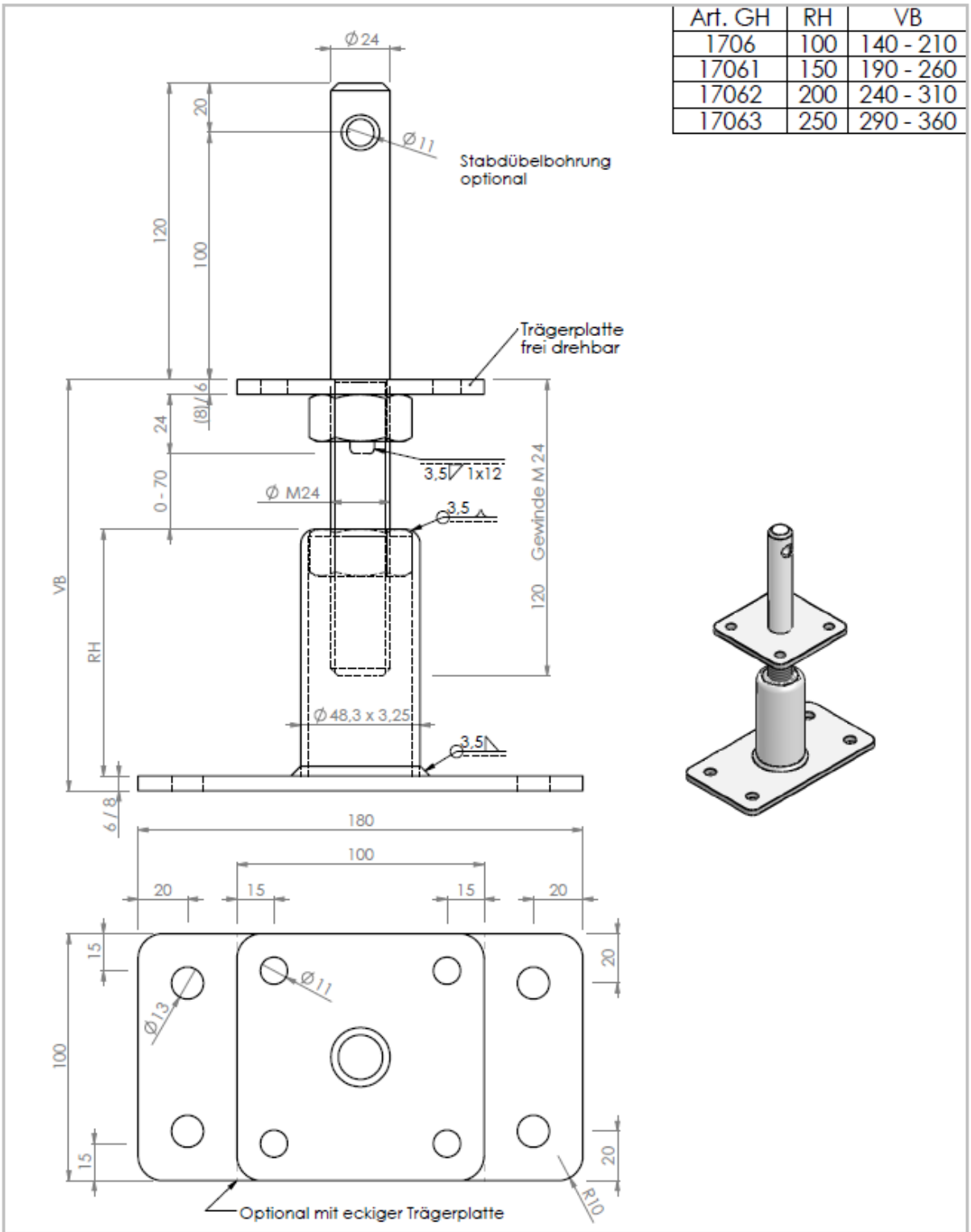
ZEICHNUNGSNR. 19823130

A4

BLATT 1 / 1

B.20 Type D on concrete, adjustable

Art. GH	RH	VB
1706	100	140 - 210
17061	150	190 - 260
17062	200	240 - 310
17063	250	290 - 360



	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt	WERKSTOFF: S 235 JR	MASSSTAB: 1: 2
GEZEICHNET	Linsenmayer		02.03.2016		BENENNUNG: Stützenfuss Typ D auf Beton höhenverstellbar mit Dorn 24 x 120	
GEPRÜFT						
GENEHMIGT						

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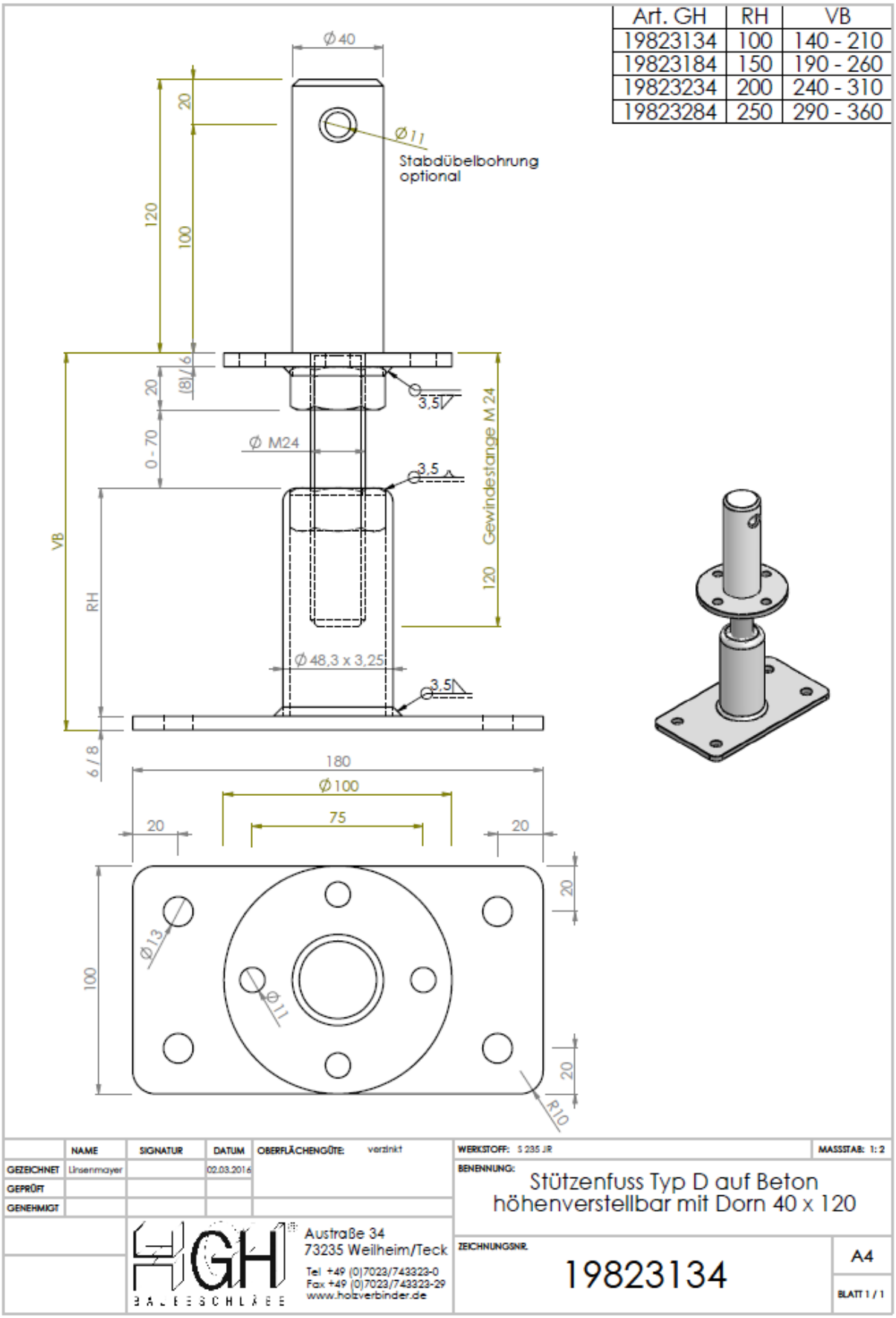
ZEICHNUNGSNR. 1706

A4

BLATT 1 / 1

B.21 Type D on concrete, adjustable

Art. GH	RH	VB
19823134	100	140 - 210
19823184	150	190 - 260
19823234	200	240 - 310
19823284	250	290 - 360



	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt	WERKSTOFF: S 235 JR	MASSSTAB: 1: 2
GEZEICHNET	Linsenmayer		02.03.2016		BENENNUNG: Stützenfuss Typ D auf Beton höhenverstellbar mit Dorn 40 x 120	
GEPRÜFT						
GENEHMIGT						

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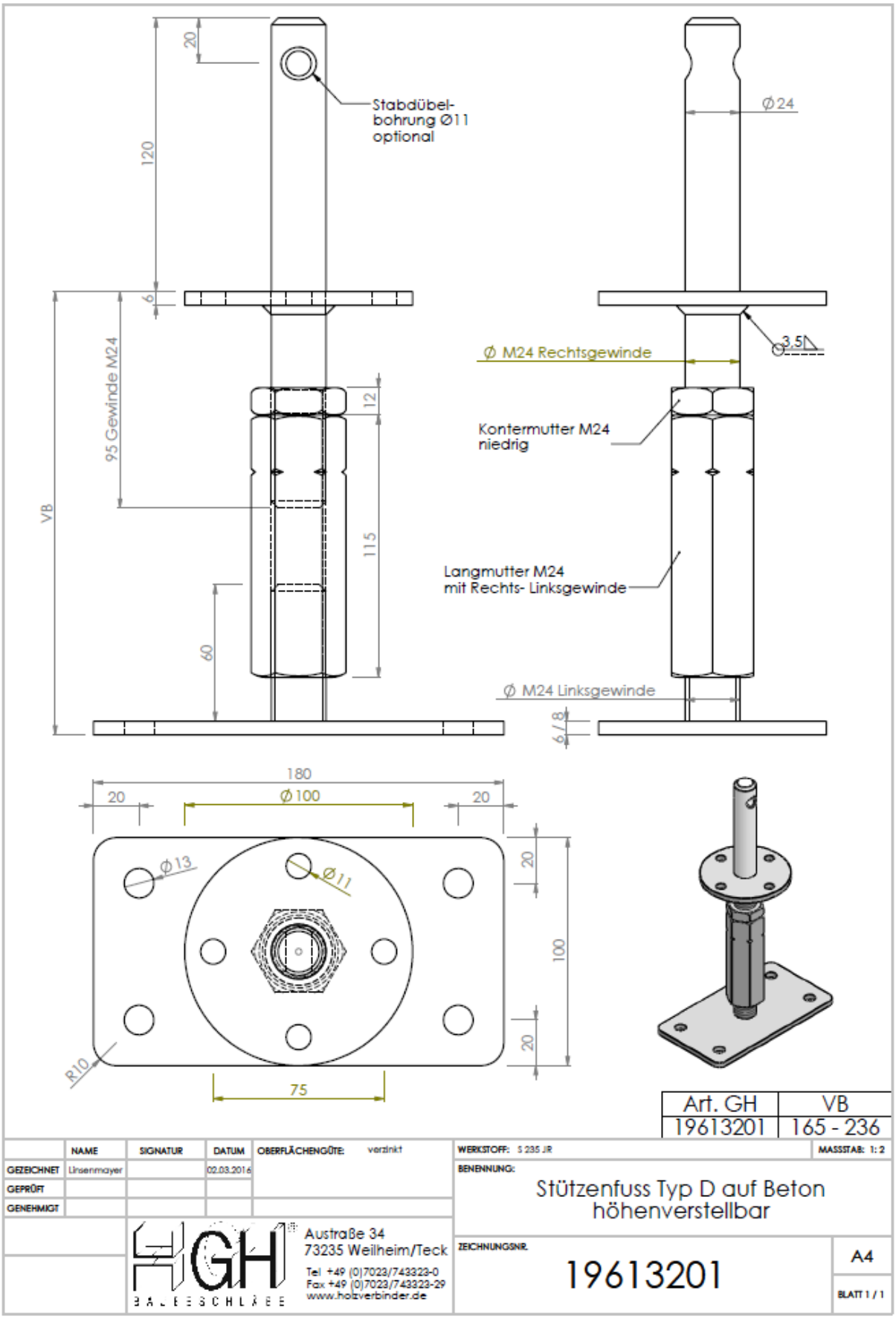
ZEICHNUNGSNR. 19823134

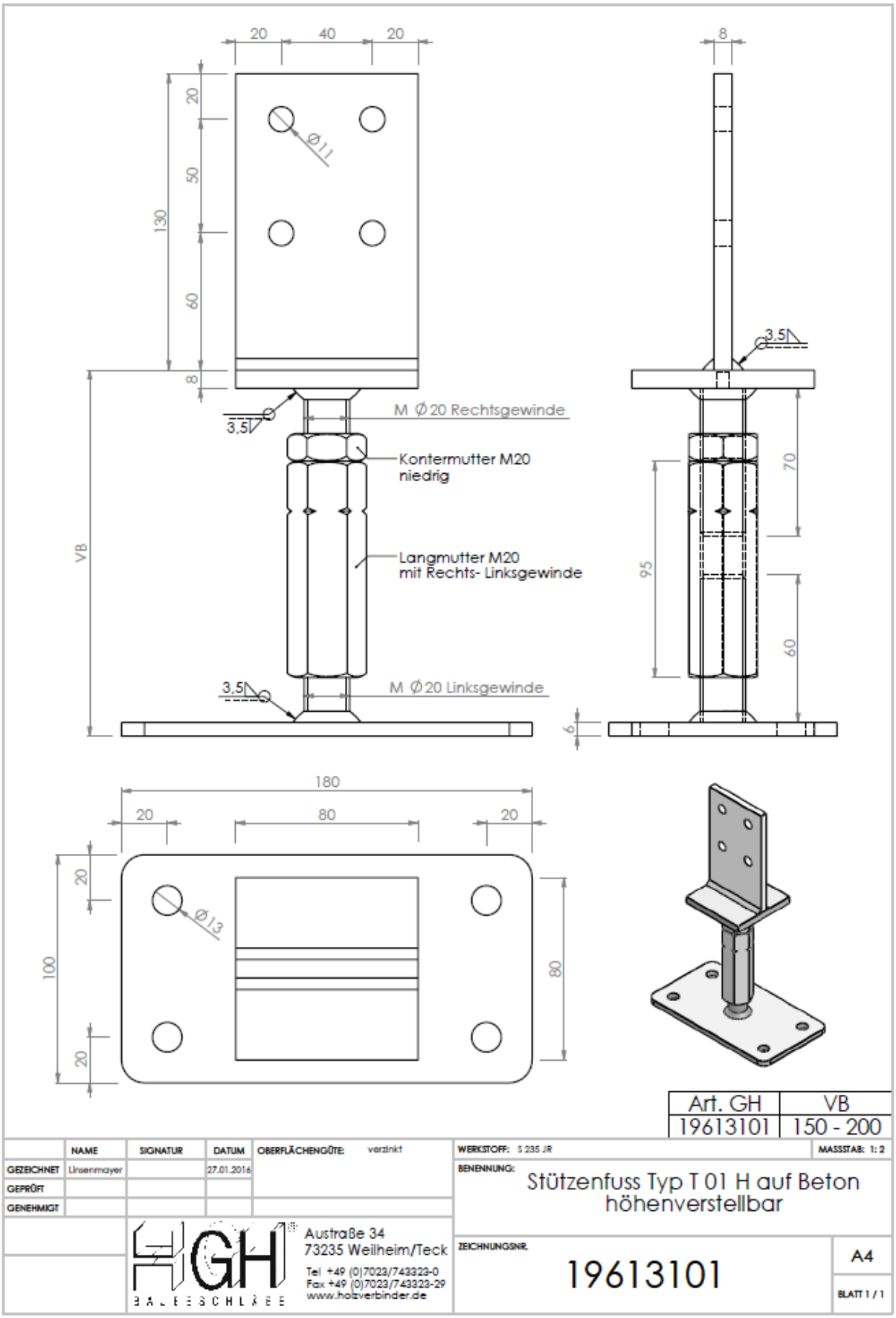
A4

BLATT 1 / 1

B.22 Type D on concrete, adjustable



B.23 Type T01 on concrete, adjustable



Art. GH	VB
19613101	150 - 200

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		27.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG: Stützenfuss Typ T 01 H auf Beton höhenverstellbar

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ZEICHNUNGSNR. 19613101

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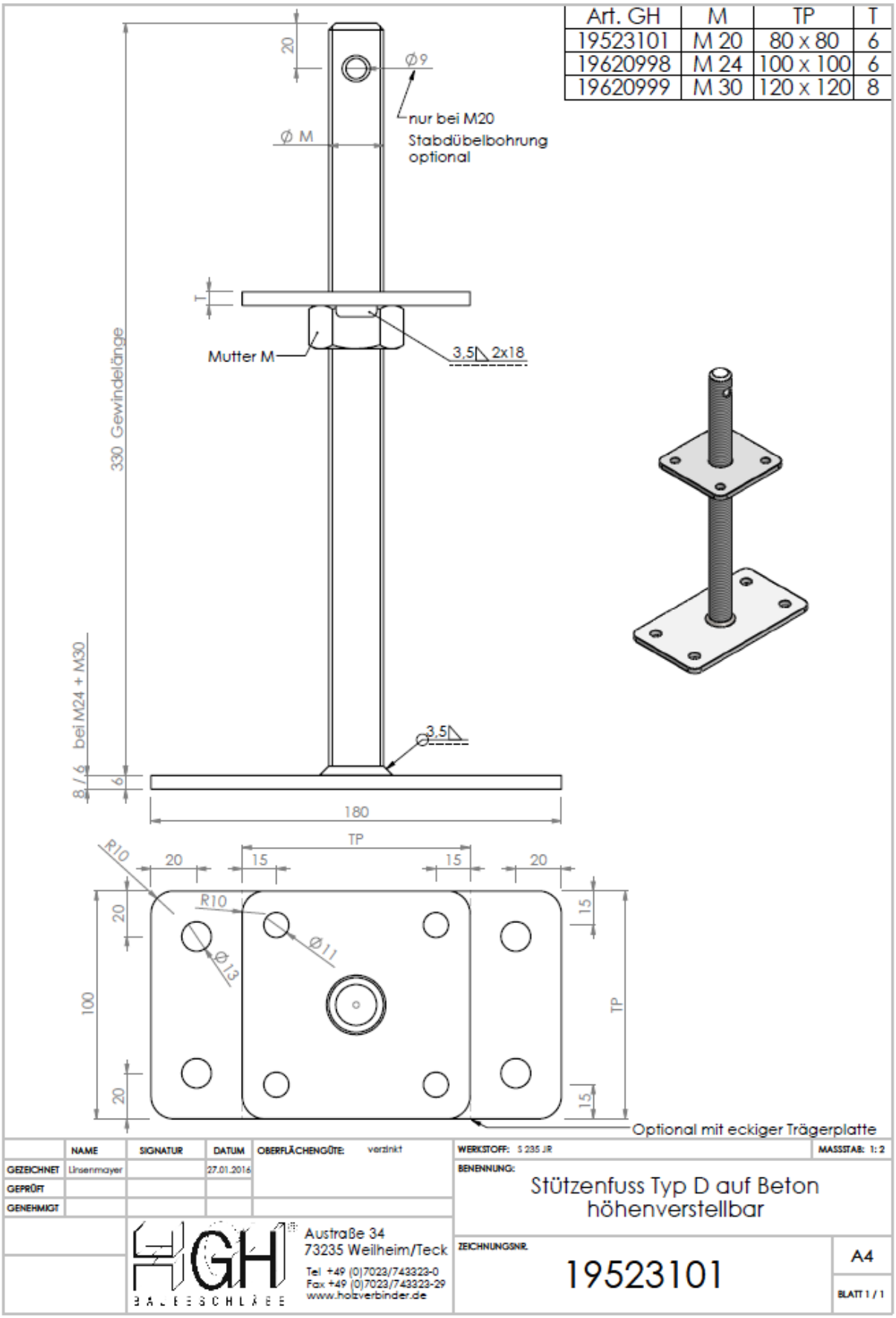
BLATT 1 / 1

B.24 Type D on concrete, adjustable

Art. GH	M	TP	T
19523101	M 20	80 x 80	6
19620998	M 24	100 x 100	6
19620999	M 30	120 x 120	8



	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		27.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ D auf Beton höhenverstellbar

ZEICHNUNGSNR.

19523101

A4

BLATT 1 / 1

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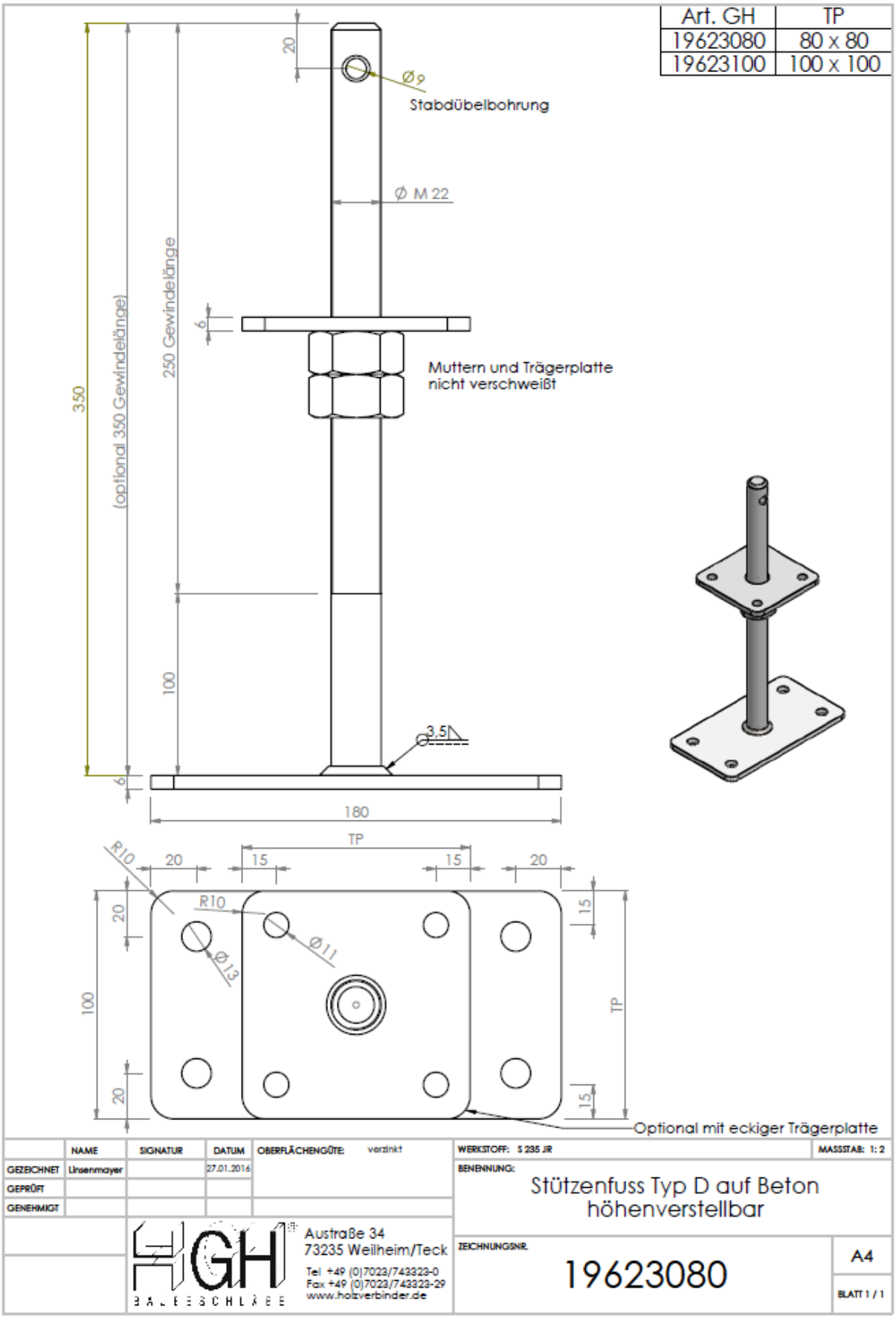
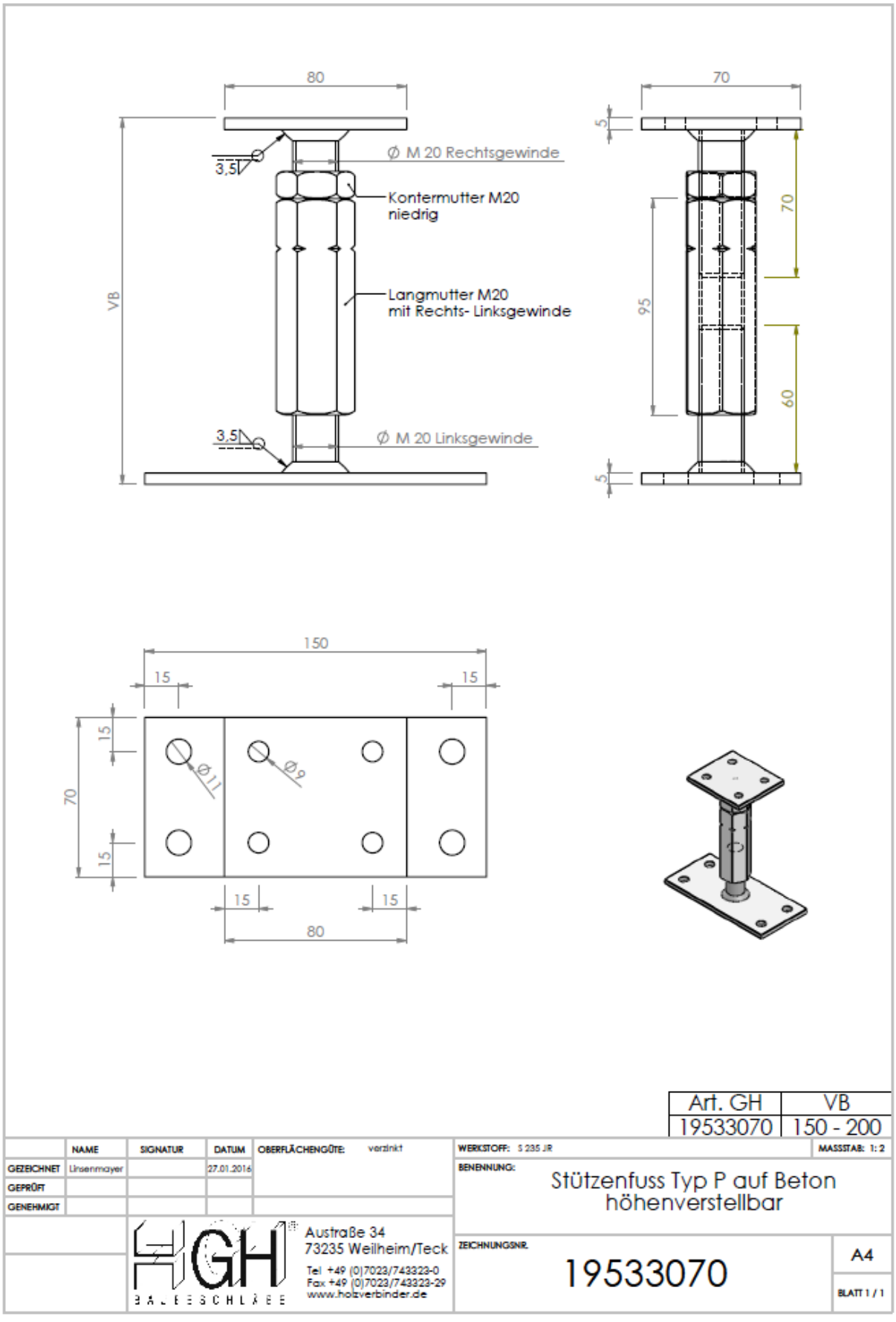
B.25 Type D on concrete, adjustable



B.26 Type P on concrete, adjustable



Art. GH	VB
19533070	150 - 200

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		27.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG: Stützenfuss Typ P auf Beton höhenverstellbar

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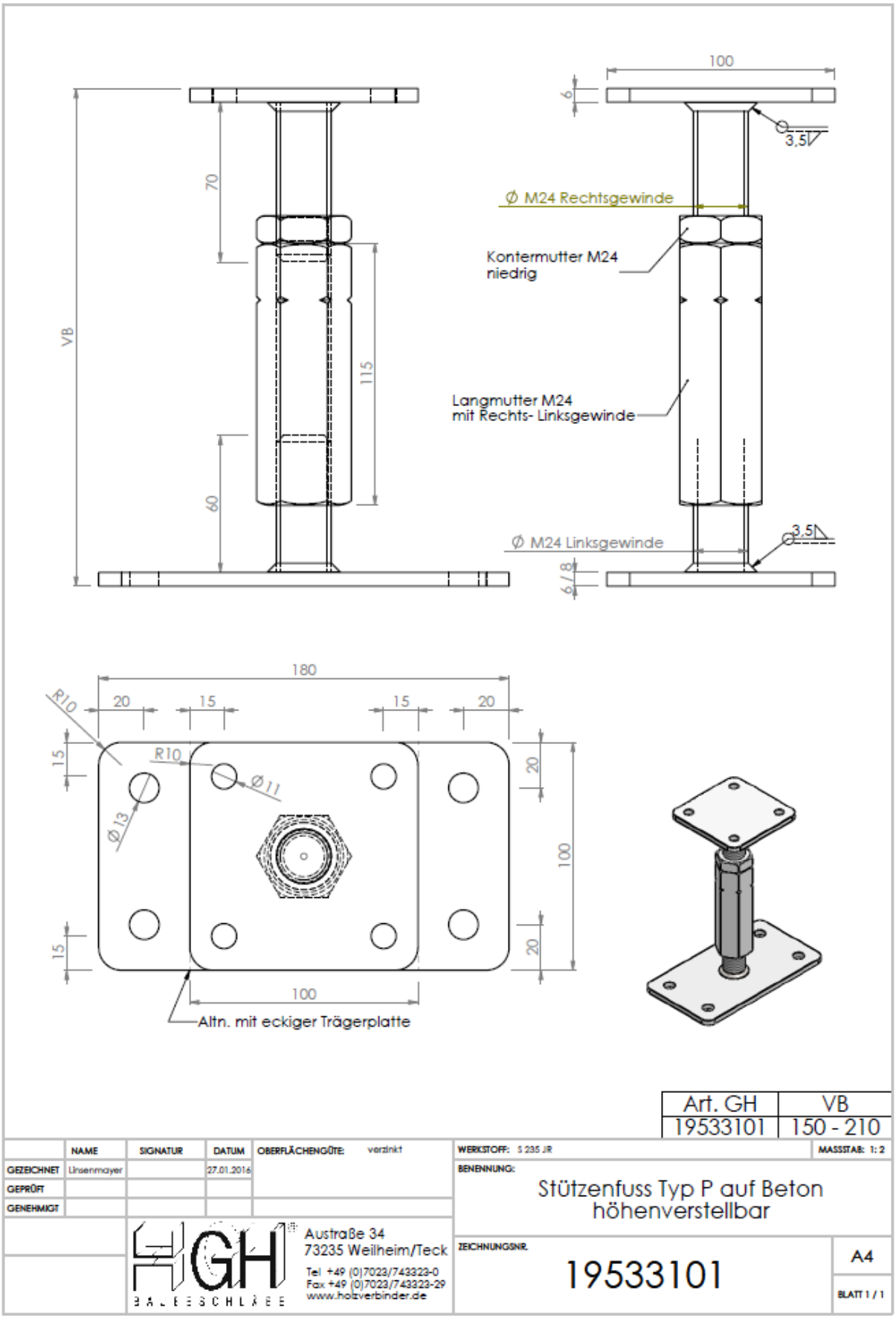
ZEICHNUNGSNR. 19533070 — A4 — BLATT 1 / 1

B.27 Type P on concrete, adjustable



Art. GH	VB
19533101	150 - 210

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		27.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ P auf Beton höhenverstellbar

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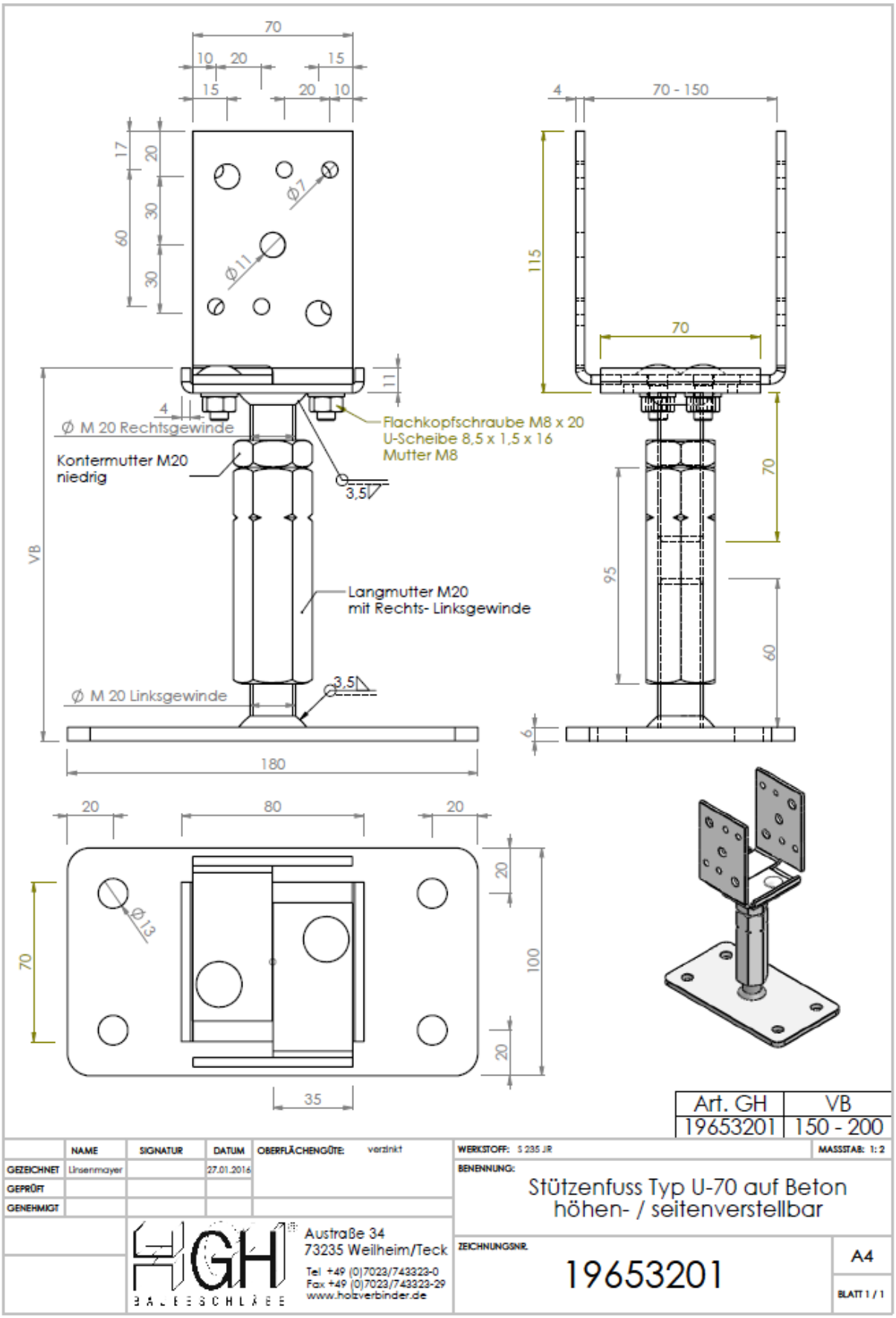
ZEICHNUNGSNR. 19533101

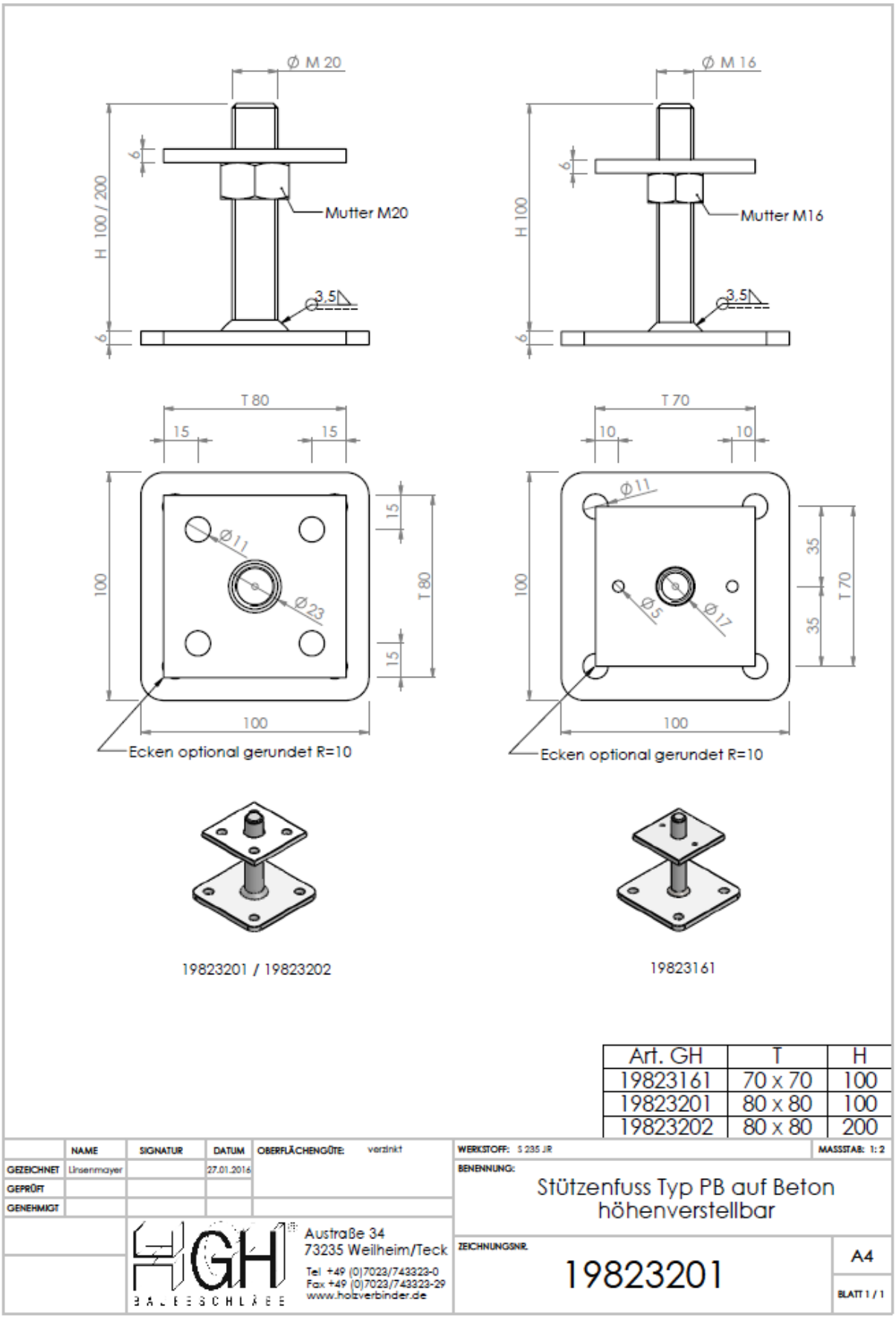
A4

BLATT 1 / 1

B.28 Type U70 on concrete, adjustable



B.29 Type PB on concrete, adjustable



Art. GH	T	H
19823161	70 x 70	100
19823201	80 x 80	100
19823202	80 x 80	200

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		27.01.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ PB auf Beton höhenverstellbar

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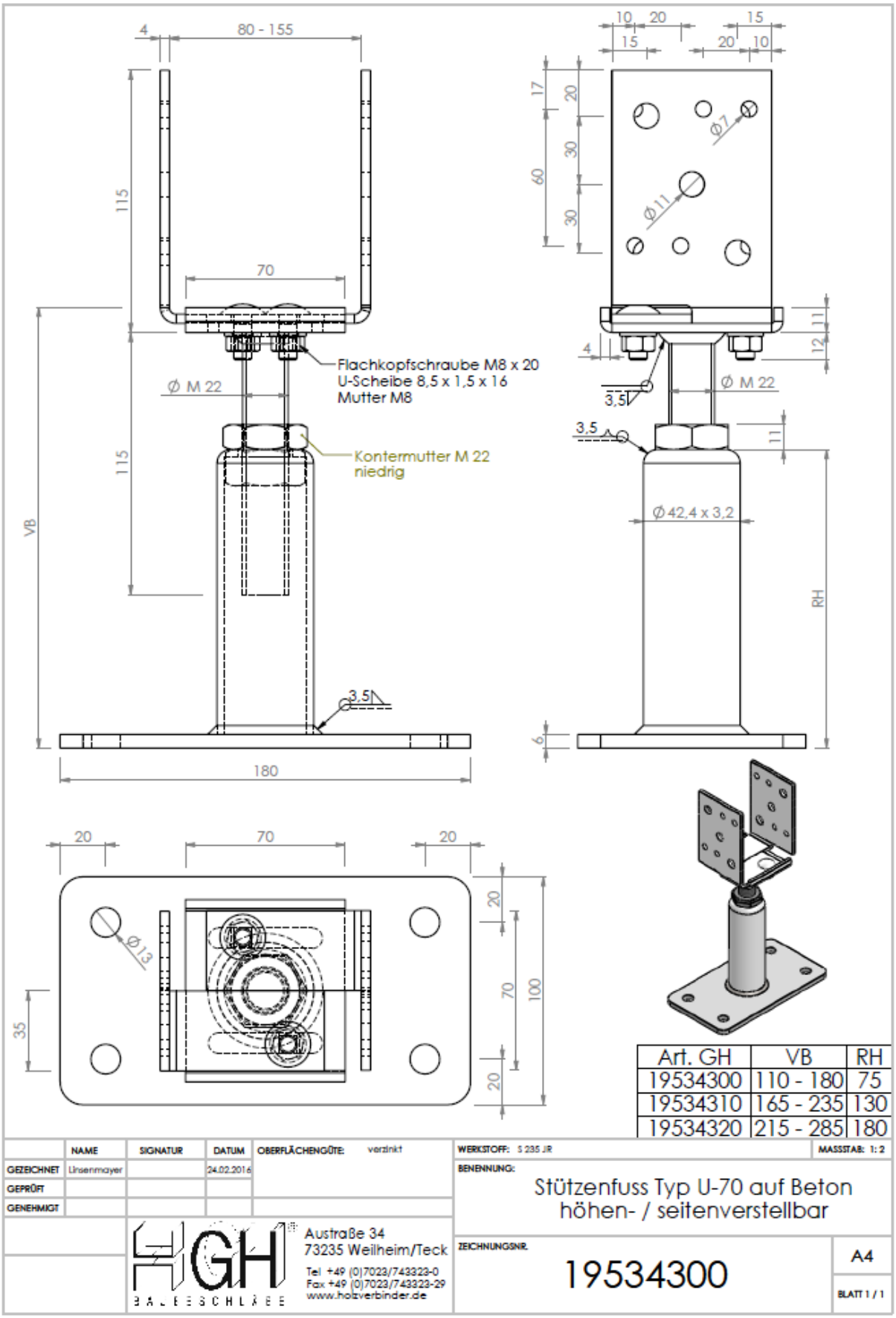
ZEICHNUNGSNR. 19823201

A4

BLATT 1 / 1

B.30 Type U on concrete, adjustable



Art. GH	VB	RH
19534300	110 - 180	75
19534310	165 - 235	130
19534320	215 - 285	180

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		24.02.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ U-70 auf Beton
höhen- / seitenverstellbar

ZEICHNUNGSNR.

19534300

A4

BLATT 1 / 1

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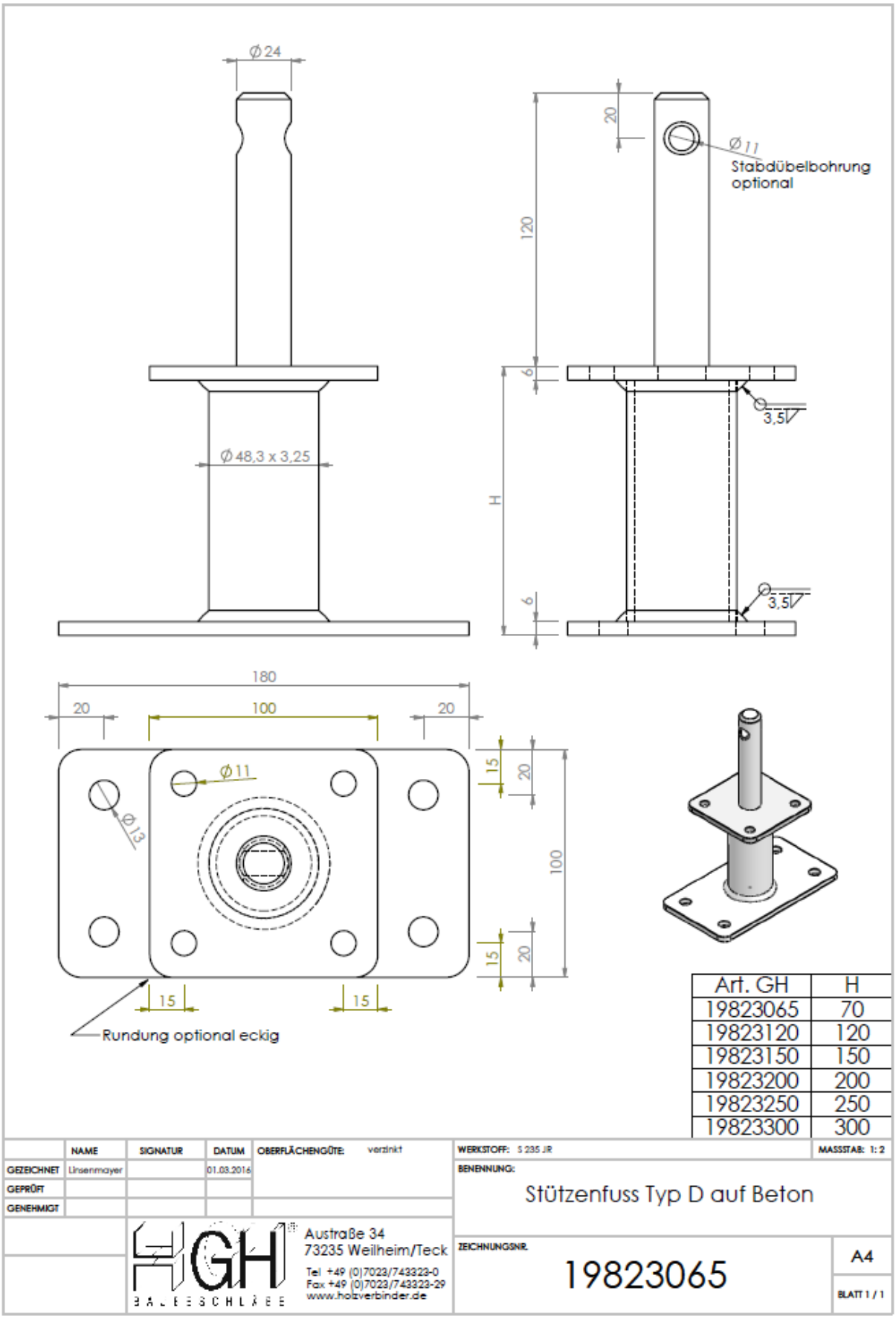
B.31 Type D on concrete, adjustable



Art. GH	H
19823065	70
19823120	120
19823150	150
19823200	200
19823250	250
19823300	300

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		01.03.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR | MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ D auf Beton

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ZEICHNUNGSNR. 19823065

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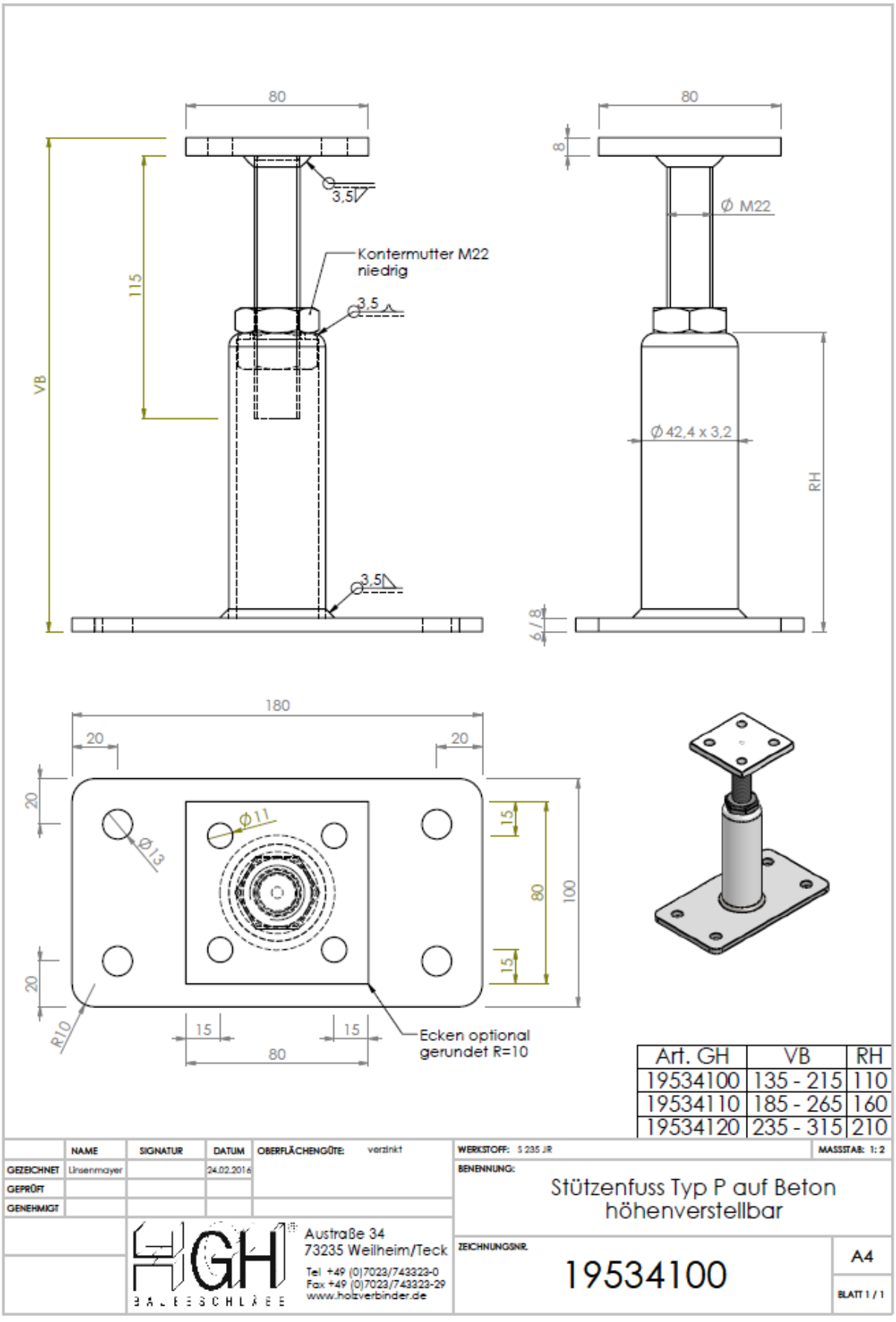
BLATT 1 / 1

B.32 Type P on concrete, adjustable



Art. GH	VB	RH
19534100	135 - 215	110
19534110	185 - 265	160
19534120	235 - 315	210

	NAME	SIGNATUR	DATUM	OBERFLÄCHENGÜTE: verzinkt
GEZEICHNET	Linsenmayer		24.02.2016	
GEPRÜFT				
GENEHMIGT				

WERKSTOFF: S 235 JR — MASSSTAB: 1: 2

BENENNUNG:

Stützenfuss Typ P auf Beton höhenverstellbar

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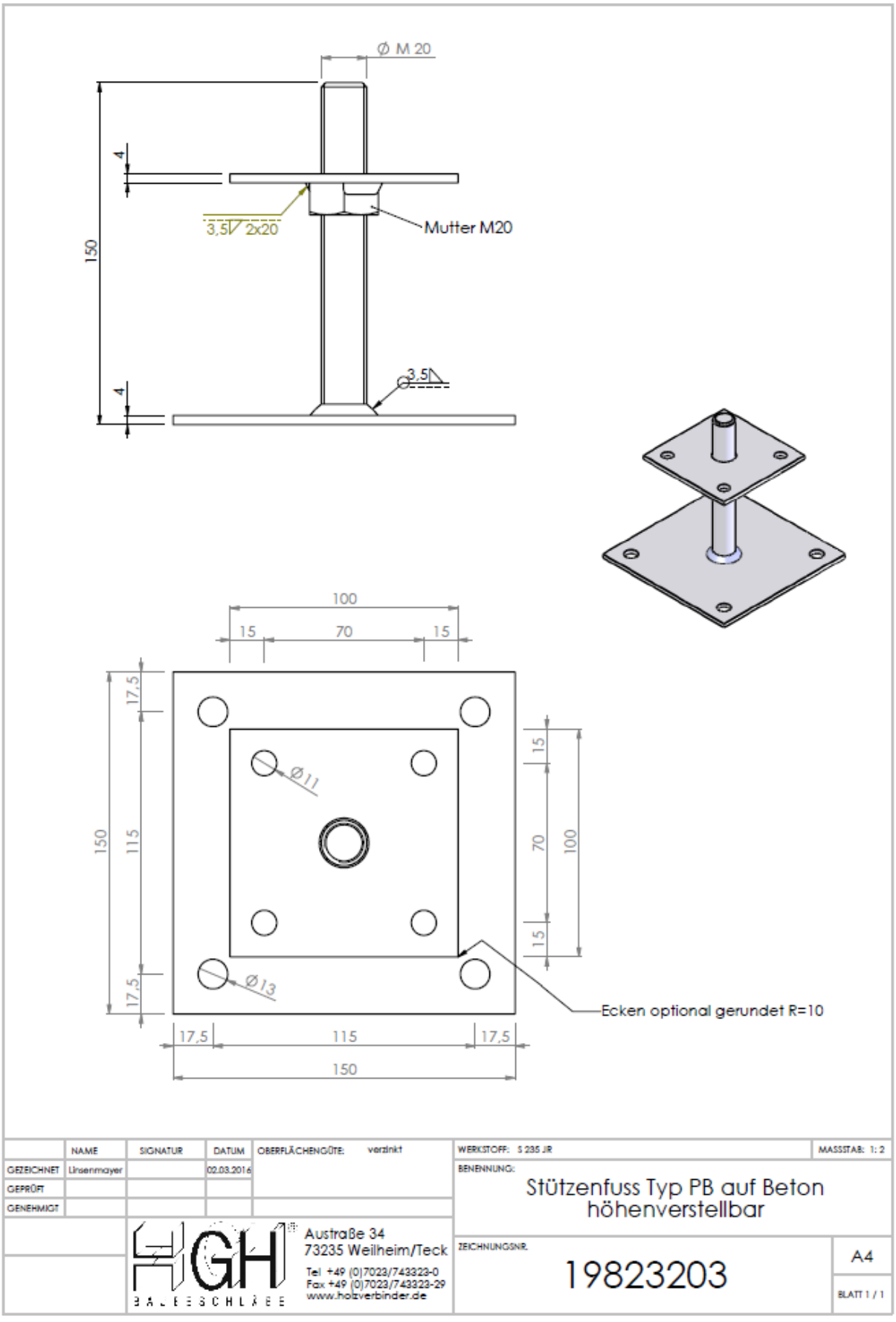
ZEICHNUNGSNR. 19534100

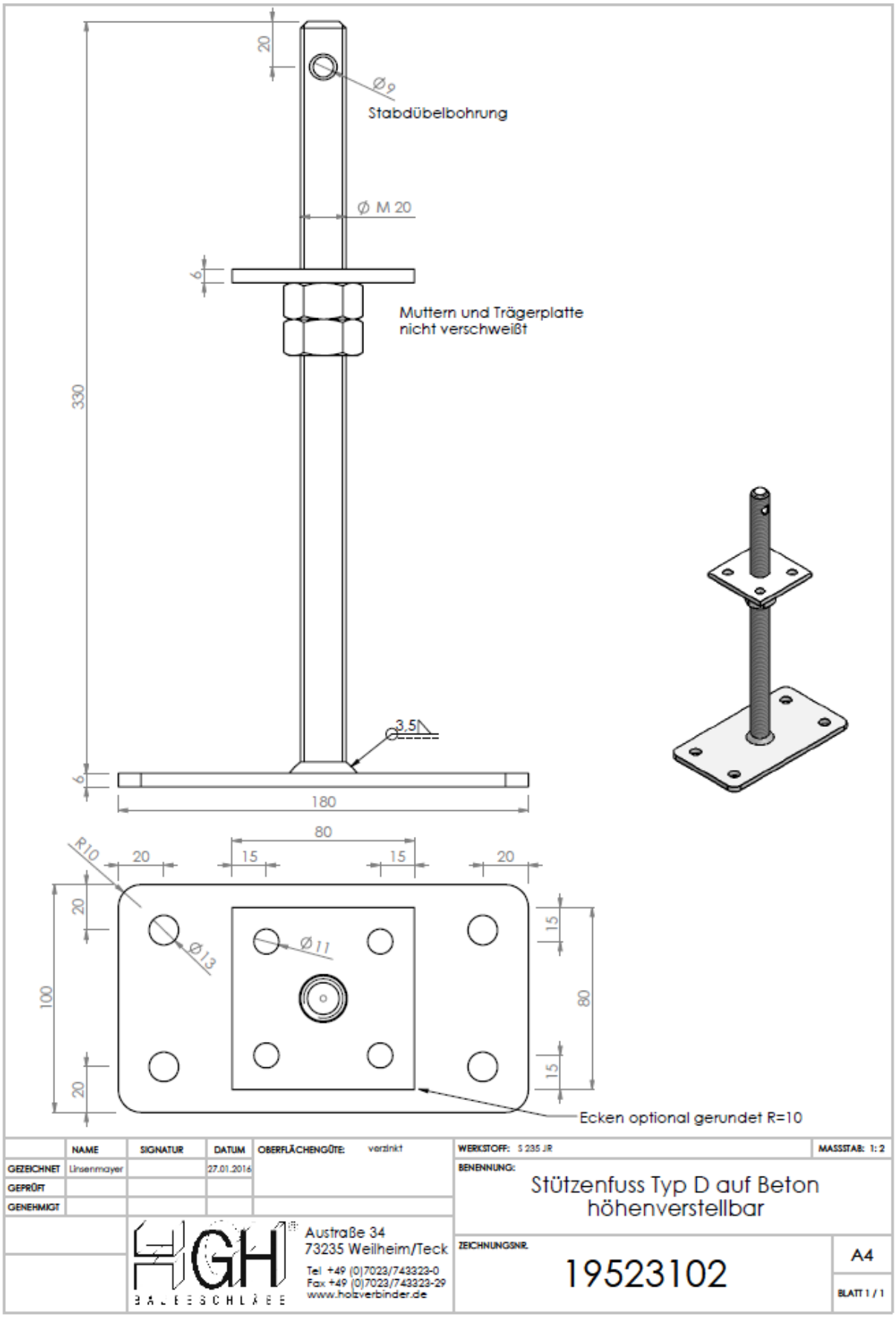
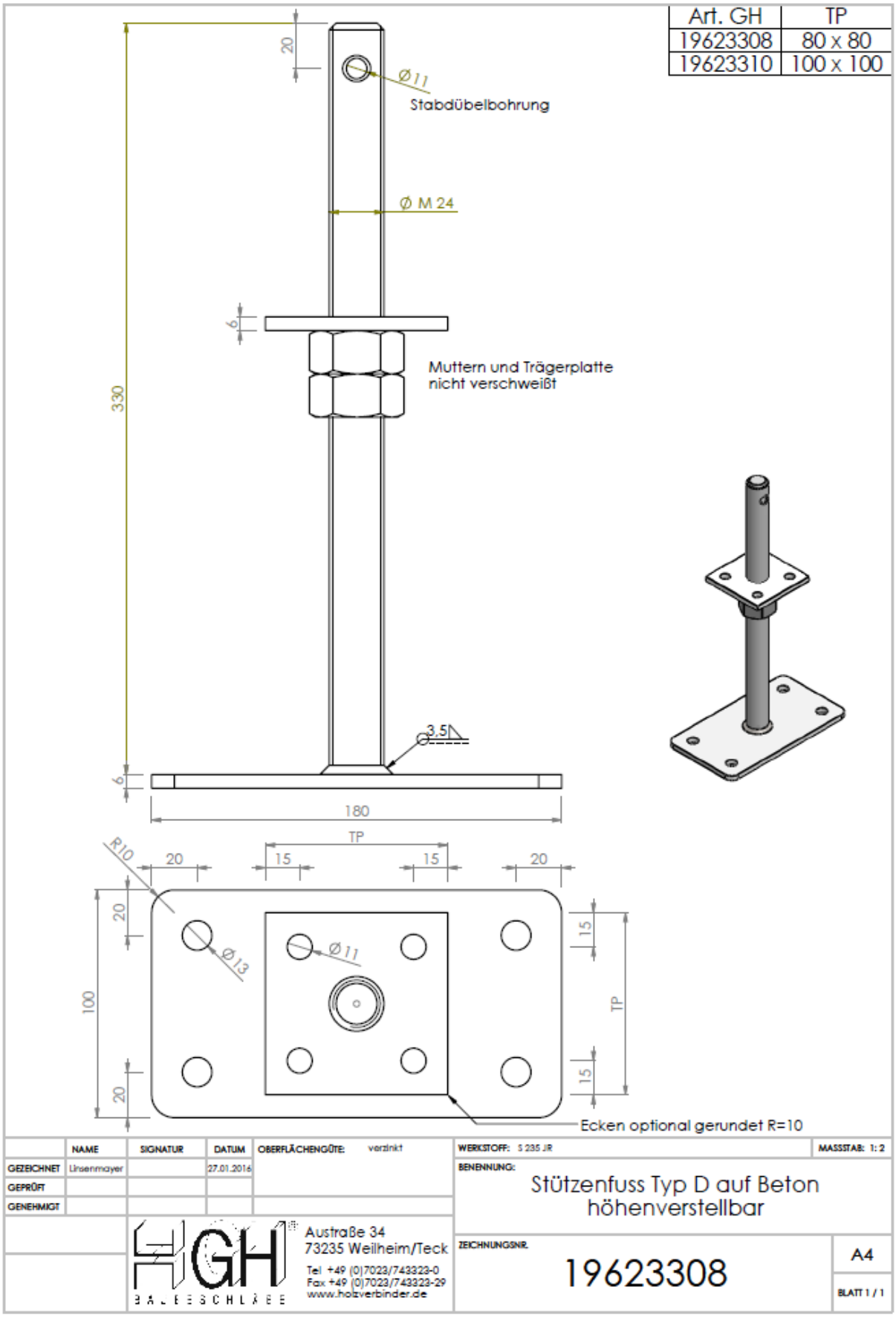
A4

BLATT 1 / 1

B.33 Type D on concrete, adjustable



B.34 Type D on concrete, adjustable



B.35 Type D on concrete, adjustable