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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-23/1017 of 2024/03/26

### 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:**

Wimmer post bases type ISB, Nippel, Uni and Variomax

**Product family to which the above construction product belongs:**

Three-dimensional nailing plate (Post bases)

**Manufacturer:**

Stefan Wimmer GmbH  
Hitzendorferstraße 13  
A-8561 Söding - St. Johann  
Tel. +43 3142 22025-0  
Fax + 43 3142 22025-50  
Internet [www.holzbau-shop.at](http://www.holzbau-shop.at)

**Manufacturing plant:**

Herstellerwerk 1

**This European Technical Assessment contains:**

29 pages including 3 annexes which form an integral part of the document

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

EAD 130186-00-0603 for Three-dimensional nailing plates

**This version replaces:**

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## **II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT**

### **1 Technical description of product**

The post bases are made of steel plates in combination with steel tubes or threaded rods and are available in various types and sizes. The post bases are produced of steel grade S235 according to EN 10025-2. The steel tubes and rods are produced from steel grade S235 according to EN 10277-2 and the threaded rods correspond to property class 4.8 according to EN ISO 898-1. The zinc nickel coating – applied as a corrosion protection – is defined as Fe//ZnNi10//Cn//T2, with a minimum thickness of 10 µm and a nickel content of 10 to 15 M.-%.

For the connections with metal fasteners according to ETA-17/0803 or ETA-12/0471 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 European Assessment Document (hereinafter 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 centrally 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. The corrosion protection is given by zinc nickel coating – applied as a corrosion protection – is defined as Fe//ZnNi10//Cn//T2, with a minimum thickness of 10 µm and a nickel content of 10 to 15 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. 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
<b>3.1 Mechanical resistance and stability*) (BWR1)</b>	
Joint Strength - Characteristic load-carrying capacity	See Annex B
Joint Stiffness	No performance assessed
Joint ductility	No performance assessed
Resistance to seismic actions	No performance assessed
Resistance to corrosion and deterioration	See section 3.6
<b>3.2 Safety in case of fire (BWR2)</b>	
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
Resistance to fire	No performance assessed
<b>3.3 General aspects related to the performance of the product</b>	The angle brackets have been assessed as having satisfactory durability and serviceability when used in timber structures using the timber species described in Eurocode 5 and subject to the conditions defined by service class 1, 2 and 3
Identification	See Annex A

\*) See additional information in section 3.4 – 3.6.

### 3.4 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  $\gamma_M$  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. 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.

### 3.5 Aspects related to the performance of the product

#### 2.7.1 Corrosion protection in service class 1 and 2.

In accordance with EAD 130186-00-0603 the post bases are produced from steel grade S235 according to EN 10025-2 with a minimum characteristic yield strength of  $R_{eH} = 235 \text{ N/mm}^2$  and a minimum characteristic tensile strength of  $R_m = 360 \text{ N/mm}^2$ . The steel tubes and rods are produced from steel grade S235 according to EN 10277-2 and the threaded rods correspond to property class 4.8 according to EN ISO 898-1.

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 zinc nickel coating – applied as a corrosion protection – is defined as Fe//ZnNi10//Cn//T2, with a minimum thickness of 10  $\mu\text{m}$  and a nickel content of 10 to 15 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.

### 3.6 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
  - 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 centrally 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  $e_{F_2/F_3}$  (for load case  $F_2 / F_3$ ) and  $e_{F_4/F_5}$  (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 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base**

##### **4.1 AVCP system**

According to the decision 97/638/EC of the European Commission<sup>1</sup>, 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 provided for 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 2024-03-26 by



Thomas Bruun  
Managing Director, ETA-Danmark

**Annex A**  
**Product details and definitions**

**Type “ISB”**

The post base type “ISB” consists of a rectangular-shaped steel tube (100 x 100 mm,  $t = 4$  mm) with varying length  $l_{\text{tube}}$  (“ISB 160”:  $l_{\text{tube}} = 140$  mm; “ISB 260”:  $l_{\text{tube}} = 240$  mm) and a welded steel plate with 140 x 140 x 10 mm (top) and one with 180 x 180 x 10 mm (bottom) on each end. Thereby, the top plate serves as contact surface to the timber member’s end grain. It consists of a steel slot with  $t = 6$  mm and a length x width of 250 x 80 mm and two boreholes with  $d = 17$  mm, wherein two dowels or bolts can be placed as parts of a steel-to-timber shear connection (two shear planes). With the bottom plate, the post base is connected with the basement. Therefore, four boreholes with  $d = 17$  mm, each close to each corner, are designated.

In table A.1 the main geometrical properties of both considered types are given, the related drawing is shown exemplarily for type ISB 160 in figure A.1.

type	geometry				no. and diameter of dowels/bolts
	bottom plate $l / w / t$ [mm]	top plate $l / w / t$ [mm]	steel tube $l_{\text{tube}} / w / t$ [mm]	steel slot $l / w / t$ [mm]	
ISB 160	180 / 180 / 10	140 / 140 / 10	140 / 100 / 4	250 / 80 / 6	2   $d = 17$ mm
ISB 260			240 / 100 / 4		

Table 1: Denotation and dimensions of the relevant components of the post base types „ISB“

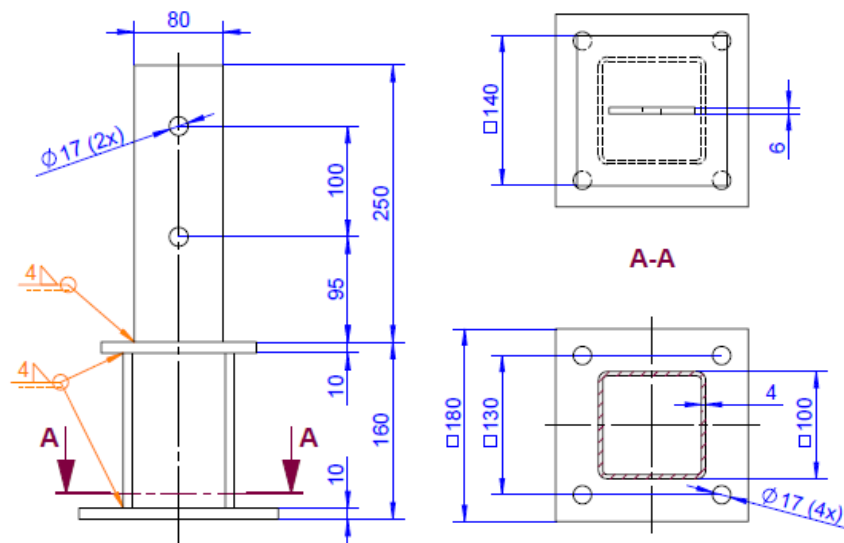


Figure A.1: Drawings of the post base type “ISB 160” (dimensions in [mm])



**Type “Nippel”**

The post base type “Nippel” has a varying height  $h_2 = 131 \div 421$  mm. This is realized by threaded rods M24 with varying length  $h_1$  (type “UT 1” and “UT 2”:  $h_1 = 90$  mm, type “UT 3”:  $h_1 = 250$  mm, type “UT 4”:  $h_1 = 330$  mm) in combination with an adjustable screwed connection between the threaded rod M24 and a circular-shaped steel tube and an inner thread, fitting to the one of the threaded rod. The latter is welded on a steel (bottom) plate with either 100 x 100 x 8 mm (type “UT 1”) or 100 x 160 x 8 mm (types “UT 2”, “UT 3” or “UT 4”). Both plate geometries consist of four boreholes with  $d = 13$  mm, which are closely located to plate’s corners and serve for the connection of the post base with the basement. On its other, unthreaded end the steel tube consists of two boreholes, which are oriented perpendicular to its axis and in which two stud bolts M10 x 12 mm can be anchored. These stud bolts connect the steel tube with a fitting (in German “Nippel”), which is welded on a steel plate with 100 x 100 x 8 mm (“OTN”). This top plate serves as contact surface to the timber member’s end grain. Identical to the bottom plate it consists of four boreholes with  $d = 13$  mm, which are closely located to plate’s corners. They serve for the connection of the post base with the timber member, realized by partially threaded self-tapping timber screws with a washer head and  $d / l_{\text{screw}} = 10 / 100$  mm; according to ETA-17/0803.

In tabale A.2 **Fejl! Henvisningskilde ikke fundet.** the main geometrical properties of the subtypes “UT 1” to “UT 4” are given, the related drawings are shown in figure A.2, exemplarily for type “UT 1”.

subtype	geometry				no. and diameter of self-tapping screws
	height adjustment $h_2$ [mm]	bottom plate $l / w / t$ [mm]	top plate $l / w / t$ [mm]	threaded rod $h_1 / d$ [mm]	
UT 1	131 ÷ 181	100 / 100 / 8	100 / 100 / 8	90 / M24	4   $d = 10$ mm
UT 2	131 ÷ 181	160 / 100 / 8		90 / M24	
UT 3	291 ÷ 341	160 / 100 / 8		250 / M24	
UT 4	371 ÷ 421	160 / 100 / 8		330 / M24	

**Table A.2: Denotation and dimensions of the relevant components of the post base types „Nippel“**

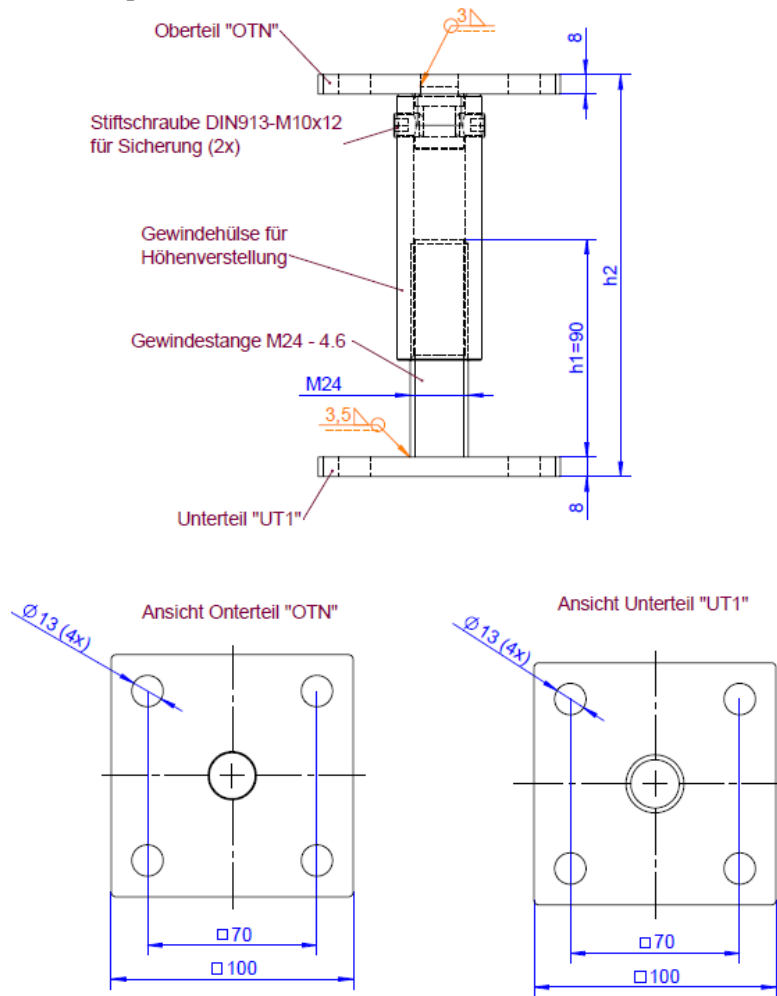


Figure A.2: Drawings of the post base type "Nippel" (dimensions in [mm])

**Type “UNI”**

The post base type “UNI” has a varying height  $h_2 = 59 \div 338$  mm. This is realized by threaded rods M24 with varying length  $h_1$  (type “UT 1” and “UT 2”:  $h_1 = 90$  mm, type “UT 3”:  $h_1 = 250$  mm, type “UT 4”:  $h_1 = 330$  mm) and welded on a steel (bottom) plate with either  $100 \times 100 \times 8$  mm (type “UT 1”) or  $100 \times 160 \times 8$  mm (types “UT 2”, “UT 3” or “UT 4”) in combination with two different types of steel top plates (both  $100 \times 100 \times 8$  mm), denoted as “OTM” and “OTW”. The type “OTM” has a centrally situated hole with circular shape and a nut M24, which is welded on the steel plate. The height adjustment is enabled by screwing the threaded rod through the nut and the hole. In case of type “OTW”, the nut is replaced by a hook-shaped steel angle (in German “Sicherungswinkel”) with a circular hole ( $d = 26$  mm). Thereby the height adjustment / installation is enabled by merging the threaded rods through the steel angle’s and the top plate’s holes, whereby two nuts M24, one below the steel angle and one between the steel angle and the top plate fix the designated adjustment. The borehole design of the top and bottom steel plates to connect with the basement and the timber member is identical to the post base type “Nippel”, see above.

In table A.3 the main geometrical properties of the subtypes “UT 1” to “UT 4” and “OTM” vs. “OTW” respectively are given, the related drawings are shown in figure A.3, exemplarily for type “UT 1”.

subtype	top plate type	geometry				no. and diameter of self-tapping screws
		height adjustment $h_2$ [mm]	bottom plate $l / w / t$ [mm]	top plate $l / w / t$ [mm]	threaded rod $h_1 / d$ [mm]	
UT 1	OTM	59 ÷ 98	100 / 100 / 8	100 / 100 / 8	90 / M24	4   $d = 10$ mm
	OTW	63 ÷ 98				
UT 2	OTM	59 ÷ 98	160 / 100 / 8		90 / M24	
	OTW	63 ÷ 98				
UT 3	OTM	219 ÷ 258	160 / 100 / 8		250 / M24	
	OTW	223 ÷ 258				
UT 4	OTM	299 ÷ 338	160 / 100 / 8		330 / M24	
	OTW	303 ÷ 338				

**Table A.3: Denotation and dimensions of the relevant components of the post base types „UNI“**

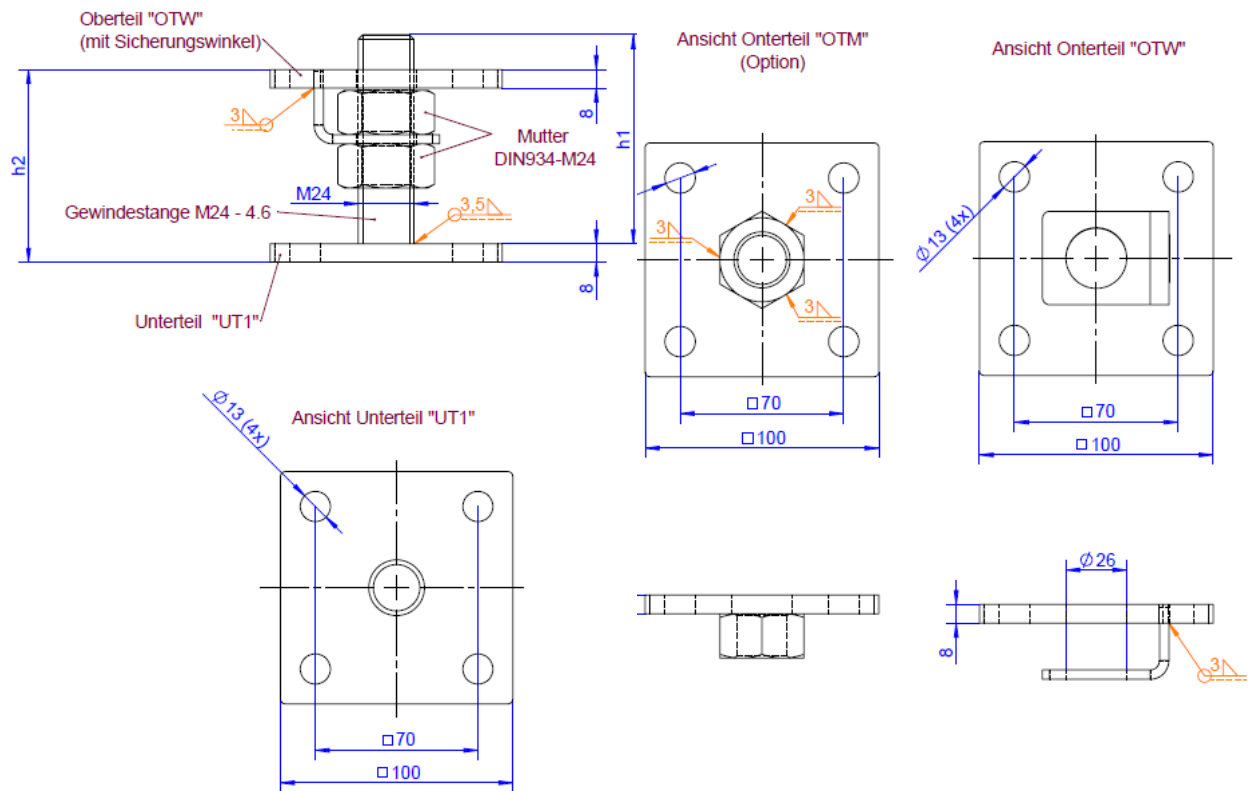


Figure A.3: Drawings of the post base type "UNI" (dimensions in [mm])

**Type “Variomax”**

The post base type “Variomax” has a varying height  $h_2 = 140 \div 437$  mm. This is realized by threaded rods M24 or M30 with varying lengths  $h_1$  (M24: type “UT 2”:  $h_1 = 90$  mm, type “UT 3”:  $h_1 = 250$  mm, type “UT 4”:  $h_1 = 330$  mm | M30: type “UT 5”:  $h_1 = 90$  mm, type “UT 6”:  $h_1 = 250$  mm) and welded on a steel (bottom) plate with  $100 \times 160 \times 8$  mm (identical for all types “UT 2” top “UT 6”) in combination with a circular-shaped steel tube with inner threads, fitting to the ones of the threaded rods. The connection between the steel tube with the steel top plate, given either with a quadratic ( $100 \times 100 \times 8$  mm, denoted as “OTV”) or a circular shape ( $d = 120$  mm, denoted as “OTV-Rund”) is realized via a centrally positioned stud bolt, which is welded on the steel top plate and connected with the steel tube via a union nut. This enables a separate assembly of the top plate on the timber member and of the bottom plate on the basement. While the latter is equal to types “Nippel” and “UNI”, for the connection to the timber member  $n = 4$  (quadratic) vs. 3 (circular) inclined ( $15^\circ$  vs.  $10^\circ$ ) countersunk drillings for  $d = 8$  mm fully threaded self-tapping timber screws with  $l_{\text{screw}} = 160$  mm according to ETA-12/0471 are given.

In table A.4 the main geometrical properties of the subtypes “UT 2” to “UT 6” and “OTV” vs. “OTV-Rund” respectively are given, the related drawings are shown in figure A.4, exemplarily for type “UT 2 / UT 3 / UT 4”.

subtype	top plate type	geometry				no. and diameter of self-tapping screws
		height adjustment $h_2$ [mm]	bottom plate $l / w / t$ [mm]	top plate $l / w / t$ or $d / t$ [mm]	threaded rod $h_1 / d$ [mm]	
UT 2	OTV	140 ÷ 190	160 / 100 / 8	100 / 100 / 8	90 / M24	4   $d = 8$ mm
	OTV-Rund	147 ÷ 197		120 / 8		3   $d = 8$ mm
UT 3	OTV	300 ÷ 350		100 / 100 / 8	250 / M24	4   $d = 8$ mm
	OTV-Rund	307 ÷ 357		120 / 8		3   $d = 8$ mm
UT 4	OTV	380 ÷ 430		100 / 100 / 8	330 / M24	4   $d = 8$ mm
	OTV-Rund	387 ÷ 437		120 / 8		3   $d = 8$ mm
UT 5	OTV	142 ÷ 192		100 / 100 / 8	90 / M30	4   $d = 8$ mm
	OTV-Rund	149 ÷ 199		120 / 8		3   $d = 8$ mm
UT 6	OTV	302 ÷ 352		100 / 100 / 8	250 / M30	4   $d = 8$ mm
	OTV-Rund	309 ÷ 359		120 / 8		3   $d = 8$ mm

**Table A.4: Denotation and dimensions of the relevant components of the post base types „Variomax“**

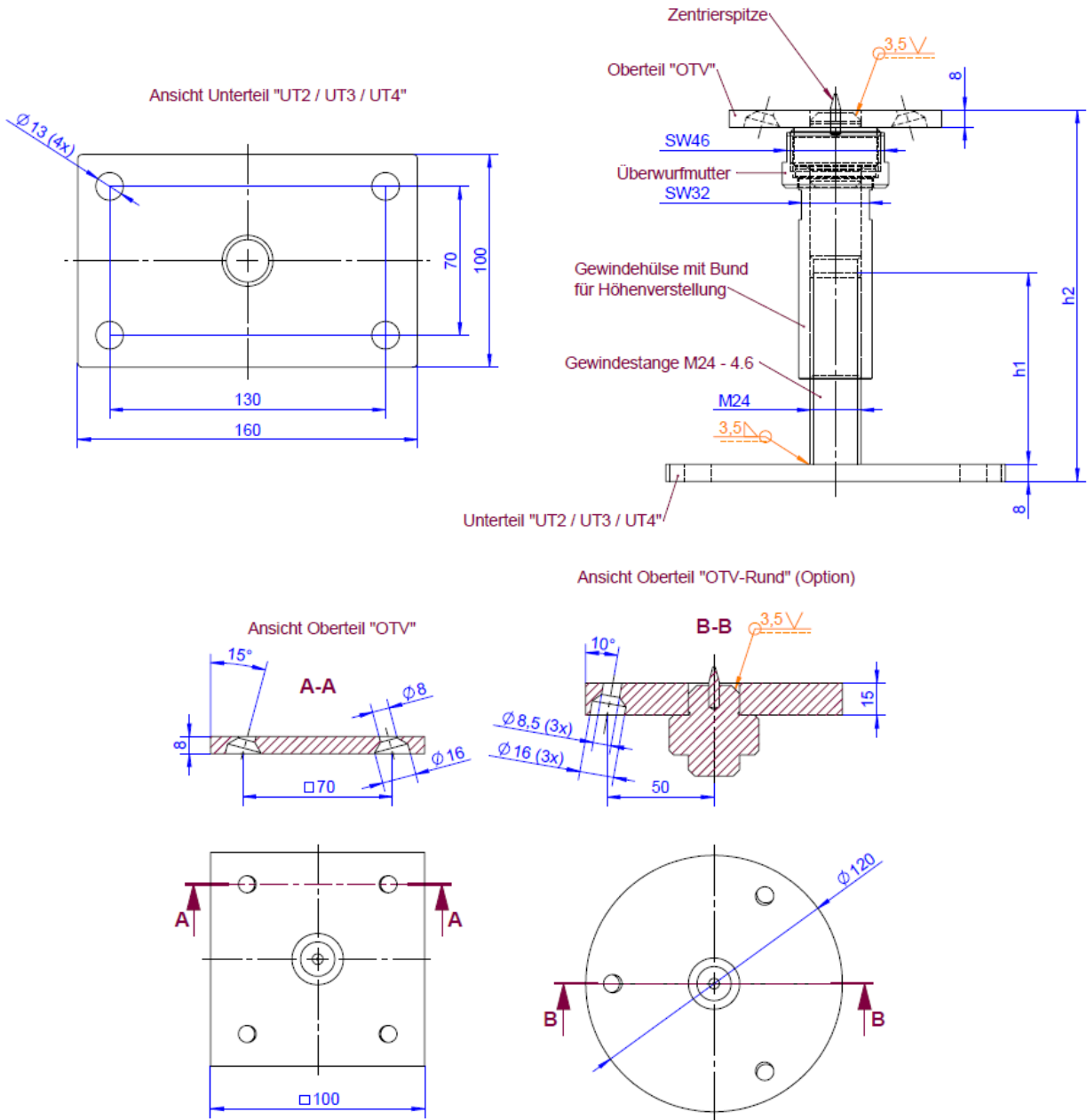


Figure A.4: Drawings of the post base type "Variomax" (dimensions in [mm])

**Annex B**  
**Characteristic load-carrying capacities**

Characteristic load-carrying capacities of post base type “ISB” in dependence of the load type and direction  $F_i$

load type and direction		failure mode				
		timber/connection		steel		
		member (stress)	connection	member (stress)	connection	buckling
		$k_{mod}/\gamma_M$	$k_{mod}/\gamma_{M,C}$	$\gamma_{M,0}$	$\gamma_{M,2}$	$\gamma_{M,1}$
		[kN]	[kN]	[kN]	[kN]	[kN]
$F_{1,c,k}$	compression	292* ÷ 402*	-	350	-	-
$F_{1,t,k}$	tension	-	38.7**	-	122	-
$F_{2/3,k}$	transversal	-	3.22	-	12.4	-
$F_{4/5,k}$	transversal	-	7.01	1.35	-	-
* value depends on $A_{net}$ ; can be adjusted by $f_{c,0,k} / 21$ in case of a strength class different to C24						
** can be adjusted according to ON EN 1995-1-1, Sections 8.2.3, 8.5 and 8.6 in case of strength classes differing from C24 and S235 respectively						

Characteristic load-carrying capacities of post base type “Nippel” in dependence of the load type and direction  $F_i$

load type and direction		failure mode				
		timber/connection		steel		
		member (stress)	connection	member (stress)	connection	buckling
		$k_{mod}/\gamma_M$	$k_{mod}/\gamma_{M,C}$	$\gamma_{M,0} / \gamma_{M,2}$	$\gamma_{M,2}$	$\gamma_{M,1}$
		[kN]	[kN]	[kN]	[kN]	[kN]
$F_{1,c,k}$	compression	199*	-	-	-	87.5
$F_{1,t,k}$	tension	-	17.0	-	-	-
$F_{2/3,k}$ & $F_{4/5,k}$	transversal	-	-	-	1.50	-
* value can be adjusted by $f_{c,0,k} / 21$ in case of a strength class different to C24						

Characteristic load-carrying capacities of post base type “Uni” in dependence of the load type and direction  $F_i$

type	load type and direction		failure mode				
			timber/connection		steel		
			member (stress)	connection	member (stress)	connection	buckling
			$k_{mod}/\gamma_M$	$k_{mod}/\gamma_{M,C}$	$\gamma_{M,0} / \gamma_{M,2}$	$\gamma_{M,2}$	$\gamma_{M,1}$
			[kN]	[kN]	[kN]	[kN]	[kN]
OTM	$F_{1,c,k}$	compression	189*	-	-	-	99.8
OTW			189*	-	-	-	82.0
OTM	$F_{1,t,k}$	tension	-	17.0	-	-	-
OTW			-	7.79	-	-	-
OTM	$F_{2/3,k}$ & $F_{4/5,k}$	transversal	-	-	1.74	-	-
OTW			-	-	-	-	-

\* value can be adjusted by  $f_{c,0,k} / 21$  in case of a strength class different to C24

Characteristic load-carrying capacities of post base type “Variomax M24 / M30” in dependence of the load type and direction  $F_i$

type	load type and direction		failure mode				
			timber/connection		steel		
			member (stress)	connection	member (stress)	connection	buckling
			$k_{mod}/\gamma_M$	$k_{mod}/\gamma_{M,C}$	$\gamma_{M,0} / \gamma_{M,2}$	$\gamma_{M,2}$	$\gamma_{M,1}$
			[kN]	[kN]	[kN]	[kN]	[kN]
OTV	$F_{1,c,k}$	compression	206*	-	-	-	81.1 / 171
OTV-Rund			234*	-	-	-	81.1 / 171
OTV	$F_{1,t,k}$	tension	-	33.0	-	-	-
OTV-Rund			-	27.6	-	-	-
OTV	$F_{2/3,k}$ & $F_{4/5,k}$	transversal	-	-	1.74 / 3.21	-	-
OTV-Rund			-	-	1.80 / 1.93	-	-

\* value can be adjusted by  $f_{c,0,k} / 21$  in case of a strength class different to C24

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

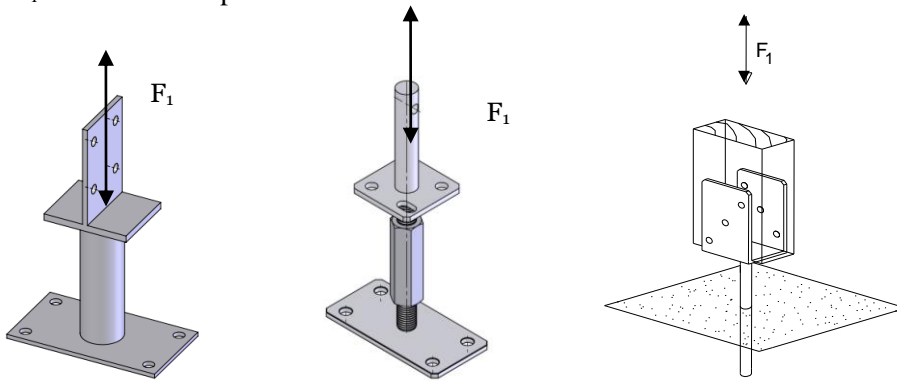
$\gamma_{M(C)}$  : partial factor for connections according to EN 1995-1-1 and national annex

$\gamma_{M,0}$ ;  $\gamma_{M,1}$ ;  $\gamma_{M,2}$  : partial factors according to EN 1993-1-1 and national annex

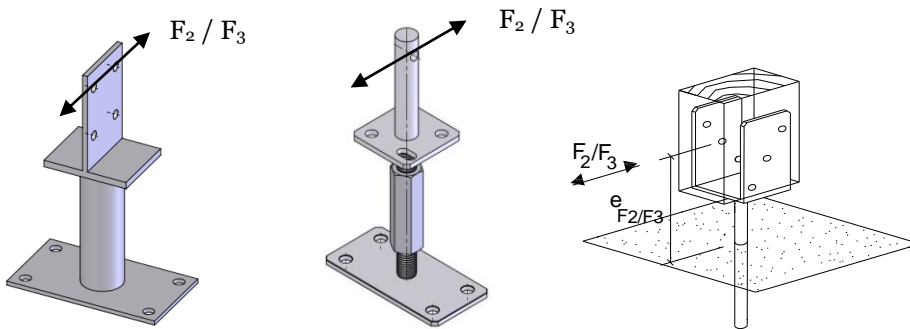


### Definitions of forces, their directions and eccentricity

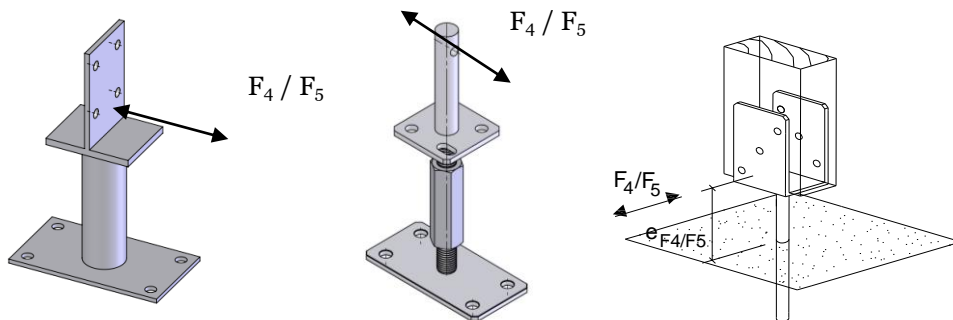
- Force  $F_1$ : tensile or compression load



- 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  $e_{F2/F3}$  above the foundation
- $F_4$  and  $F_5$  horizontal force parallel to the ground plate of the post base acting with the lever arm  $e_{F4/F5}$  above the foundation

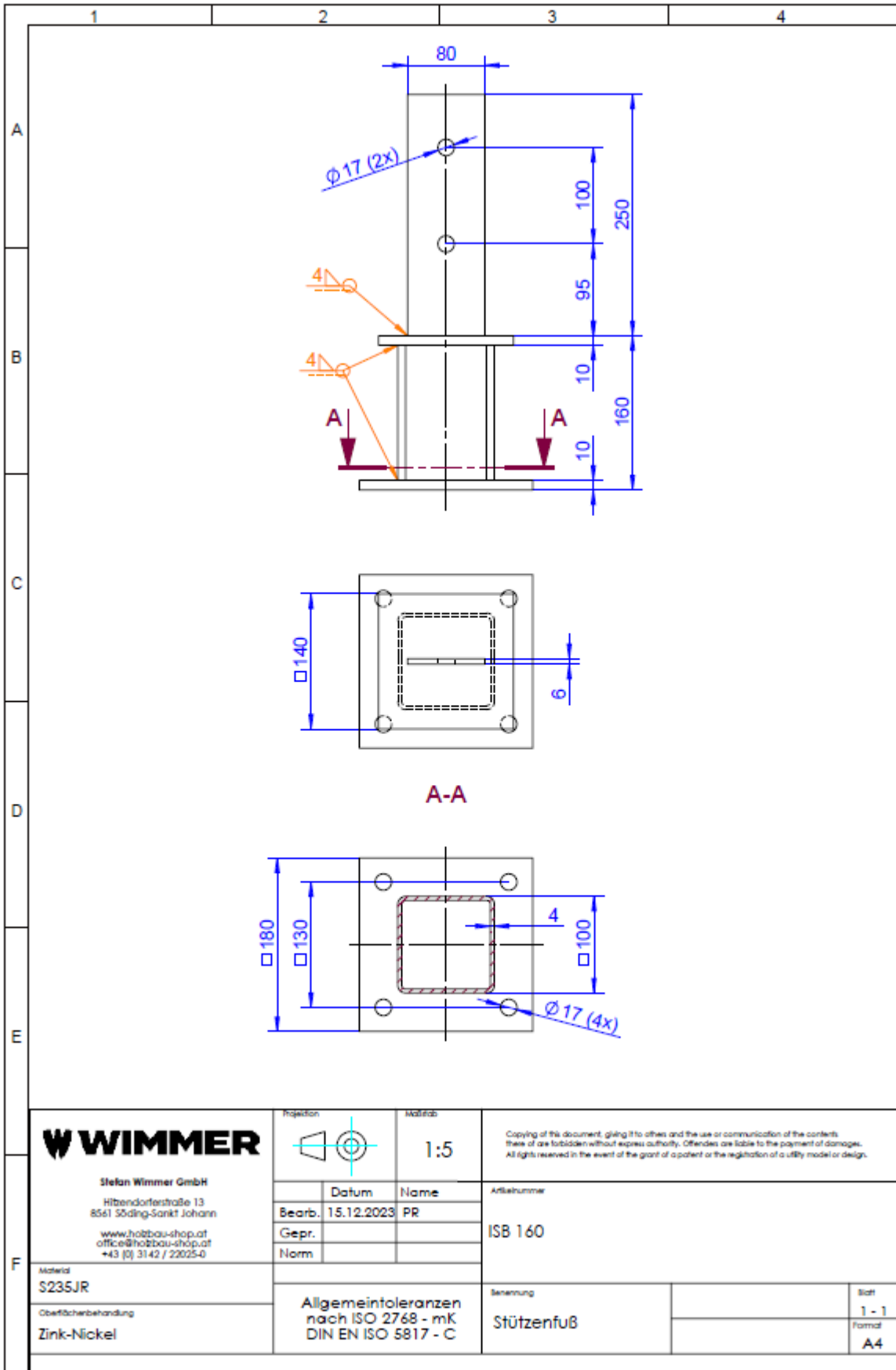
**Combined forces**

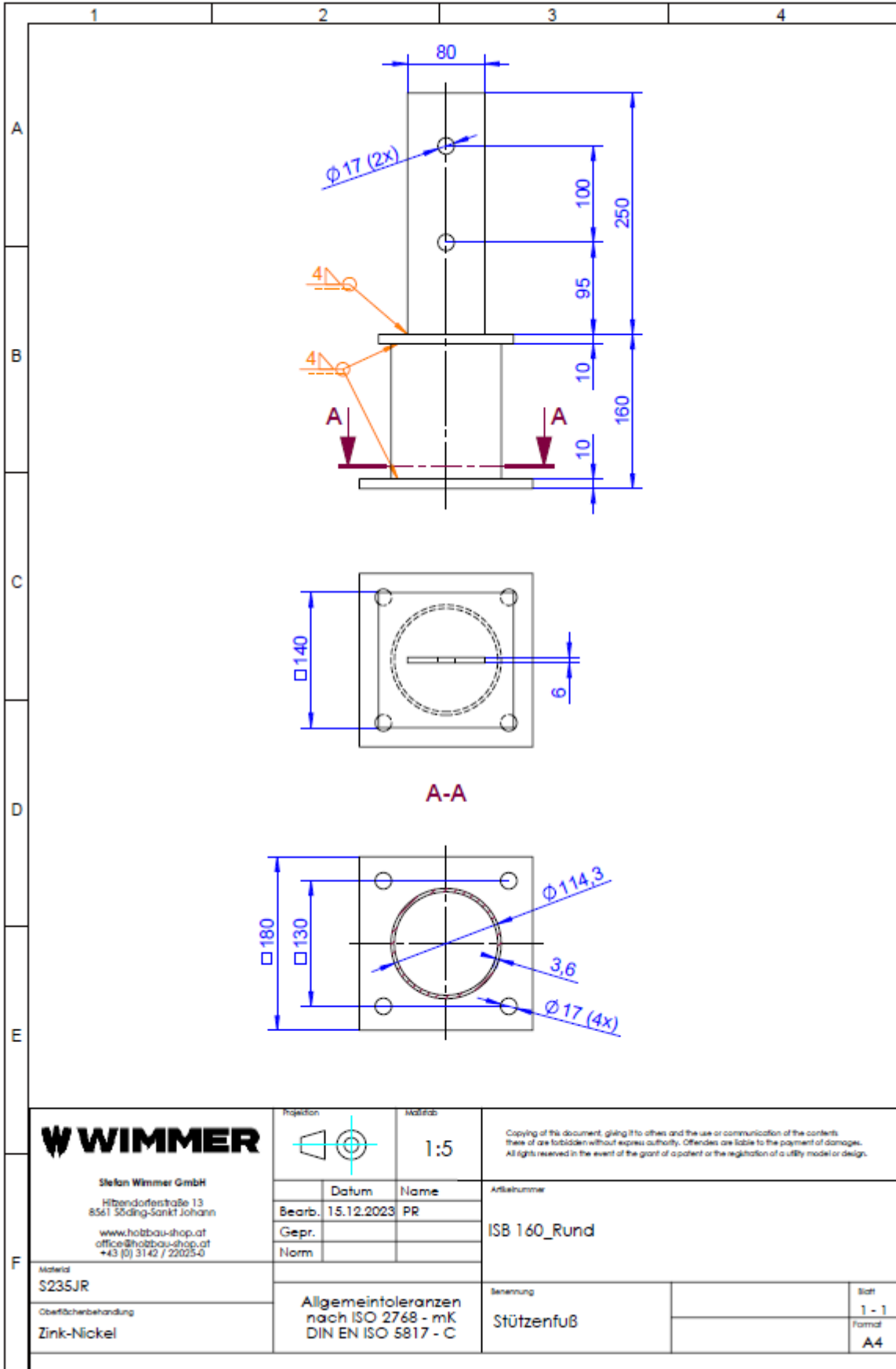
If the forces  $F_1$  and  $F_2/F_3$  or  $F_4/F_5$  act at the same time, the following inequality shall be fulfilled:

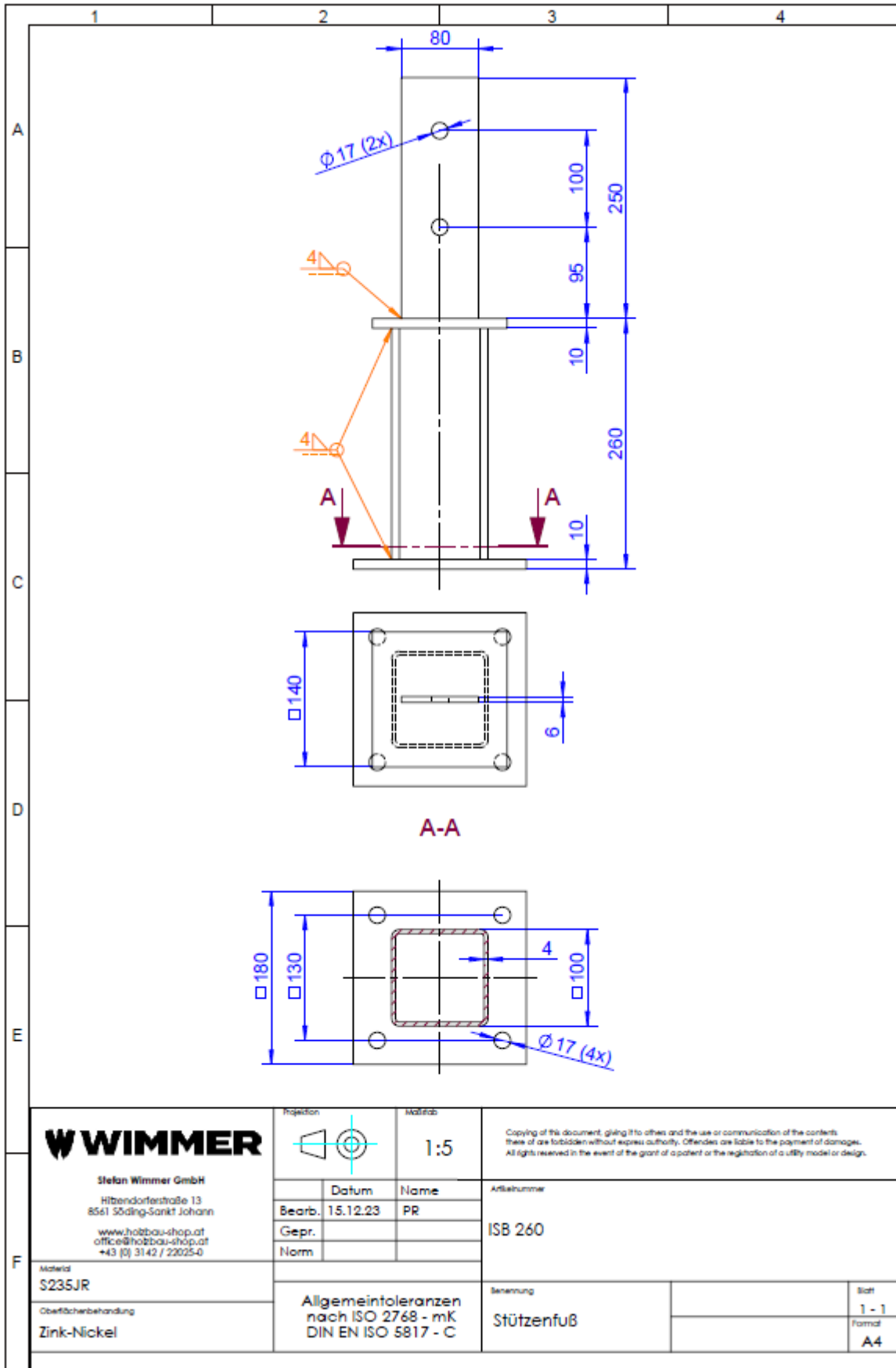
$$\sum \frac{F_{i,Ed}}{F_{i,Rd}} \leq 1$$

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  $F_1$ .

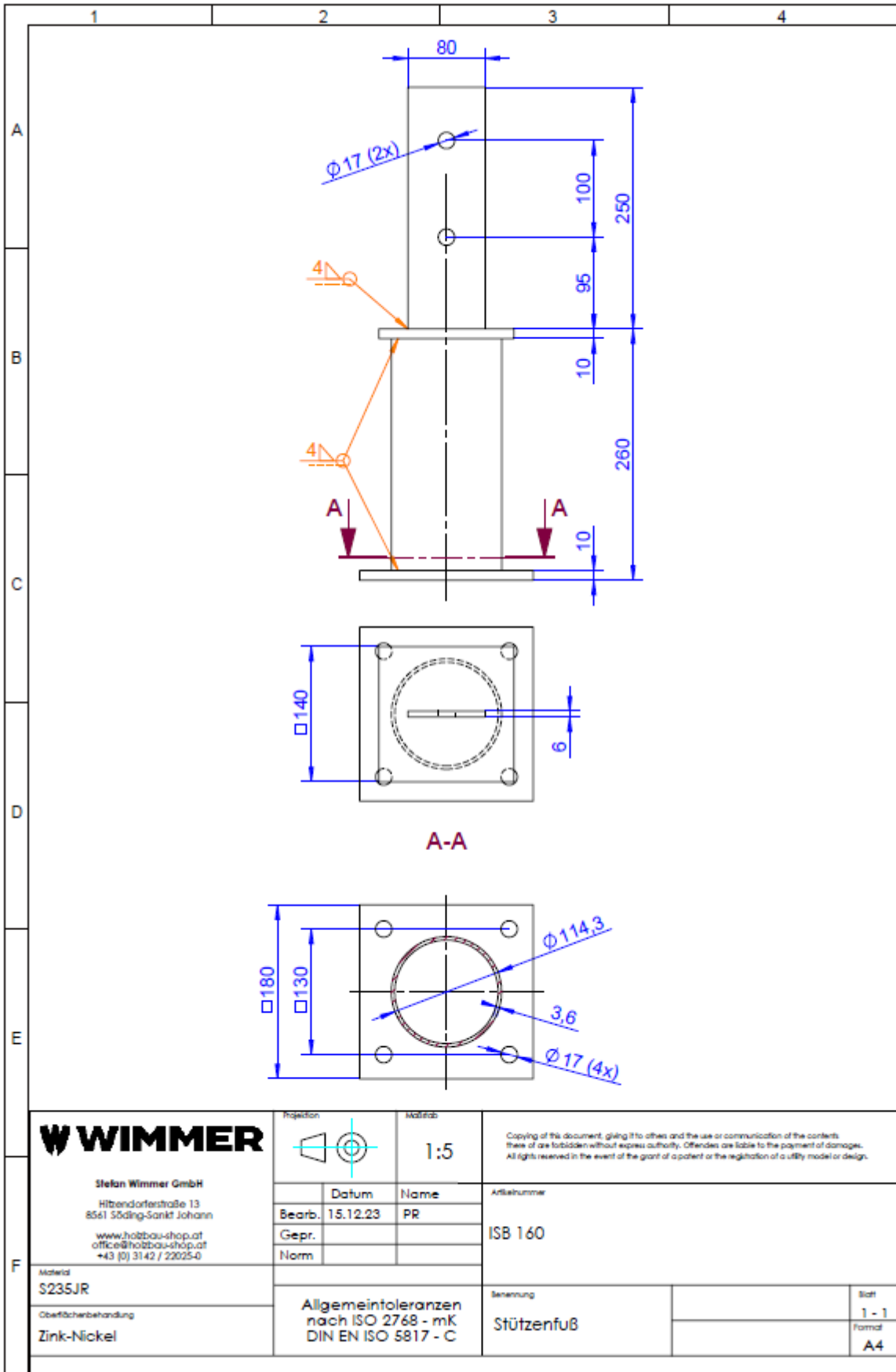
### Annex C Product drawings

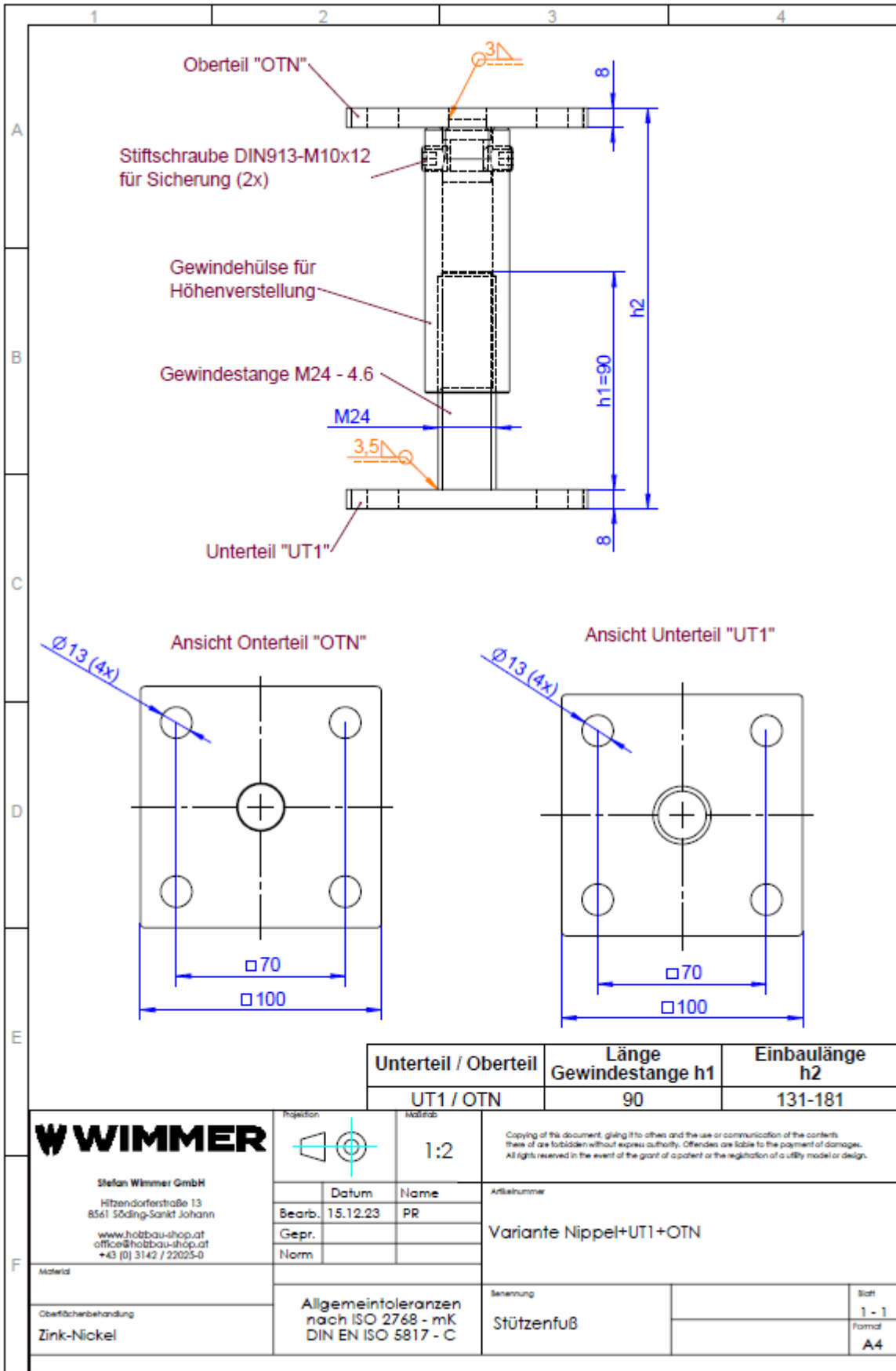


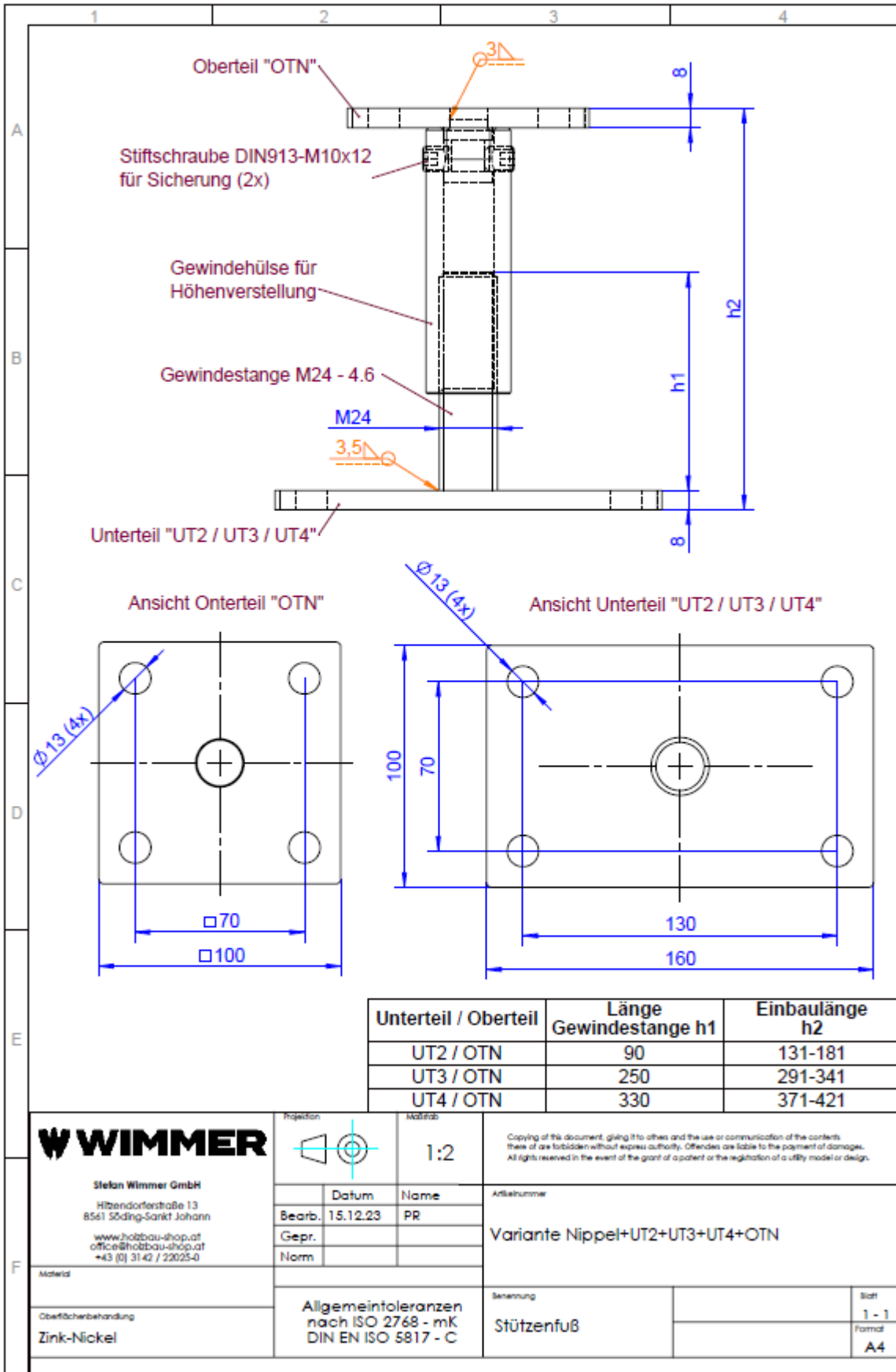




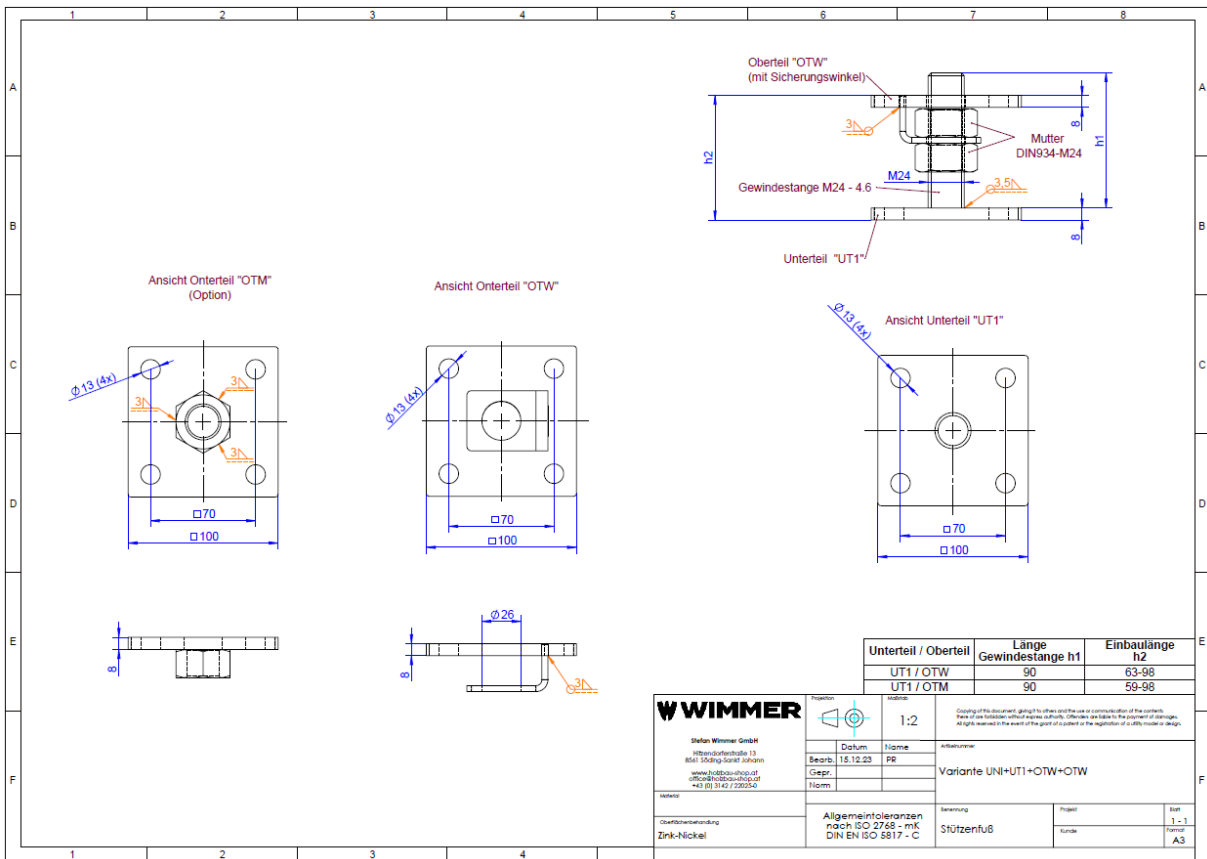
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		Bearb. 15.12.23	PR	ISB 260	
	Gepr.				
	Norm				
Material S235JR	Allgemeintoleranzen nach ISO 2768 - mK DIN EN ISO 5817 - C		Benennung	Blatt	
Oberflächenbehandlung Zink-Nickel			Stützenfuß	1 - 1	
			Format	A4	



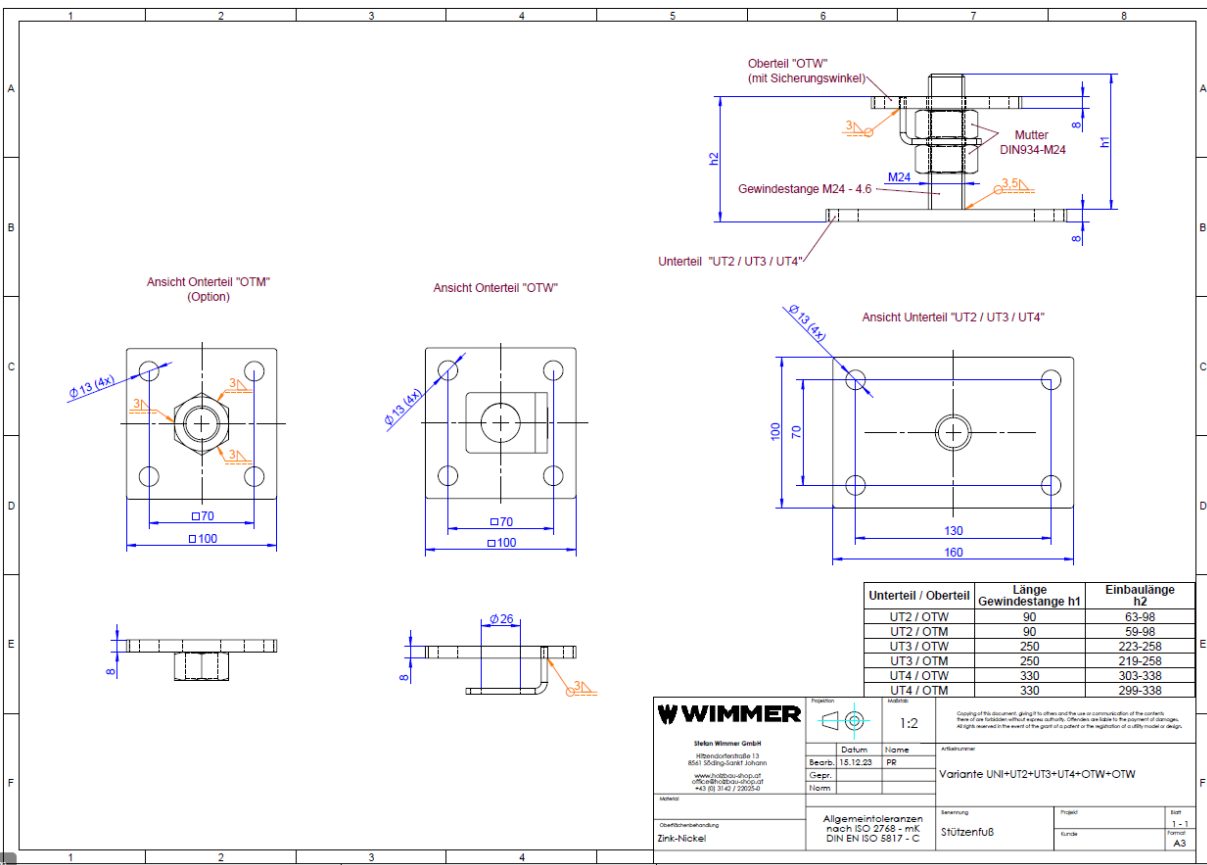




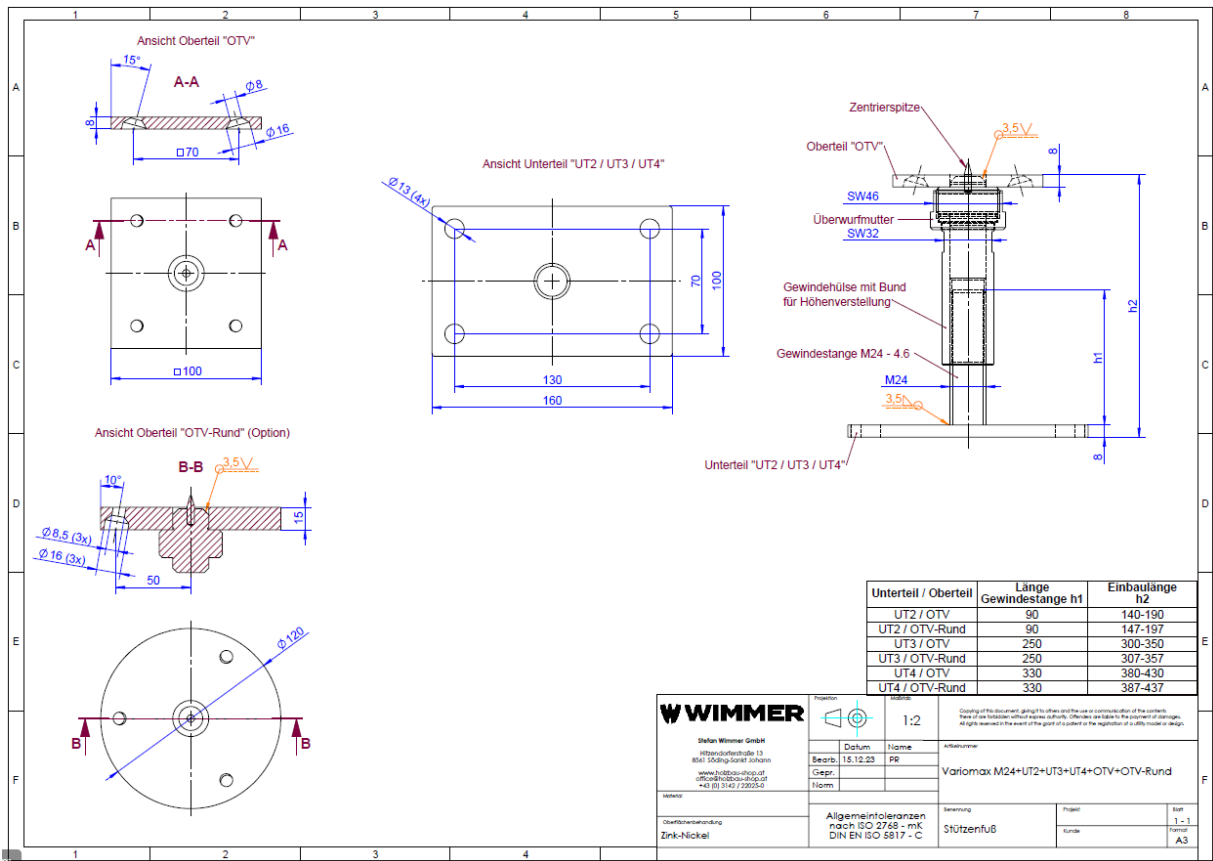
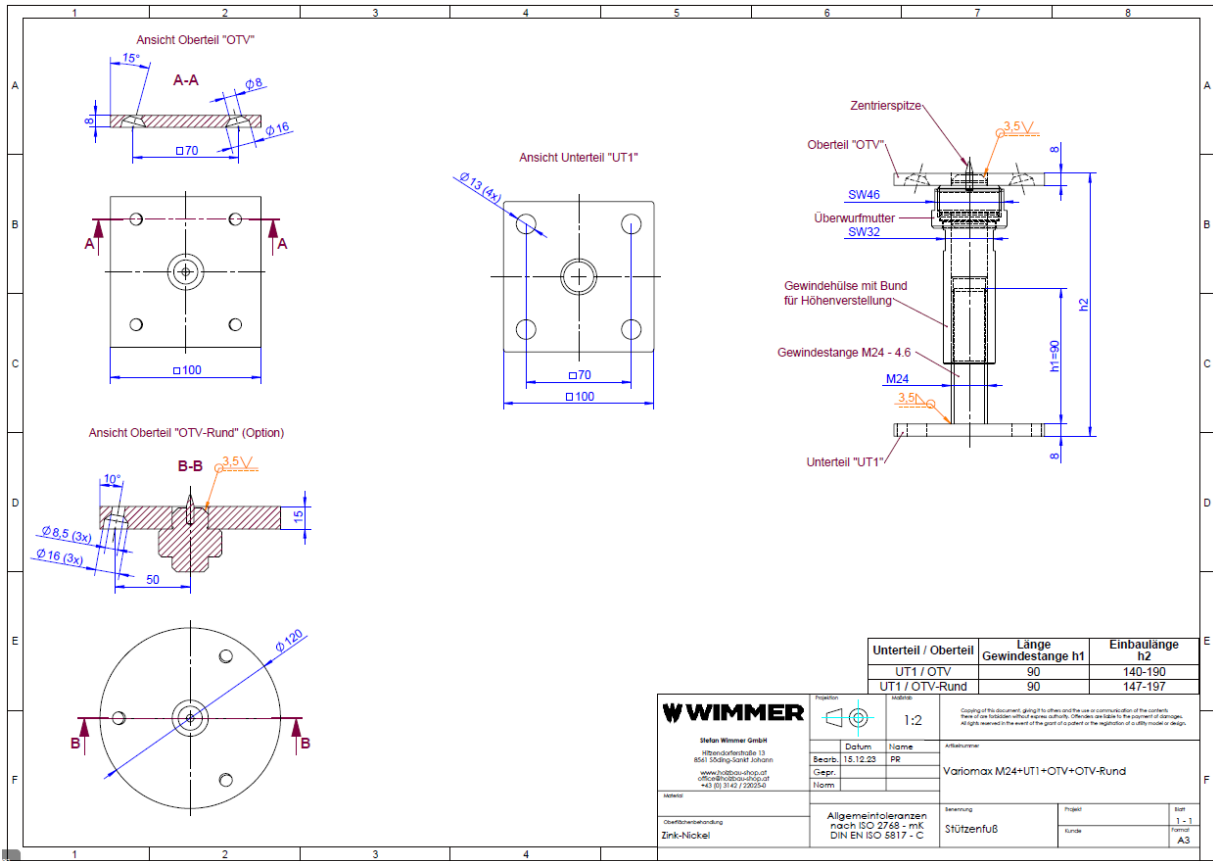


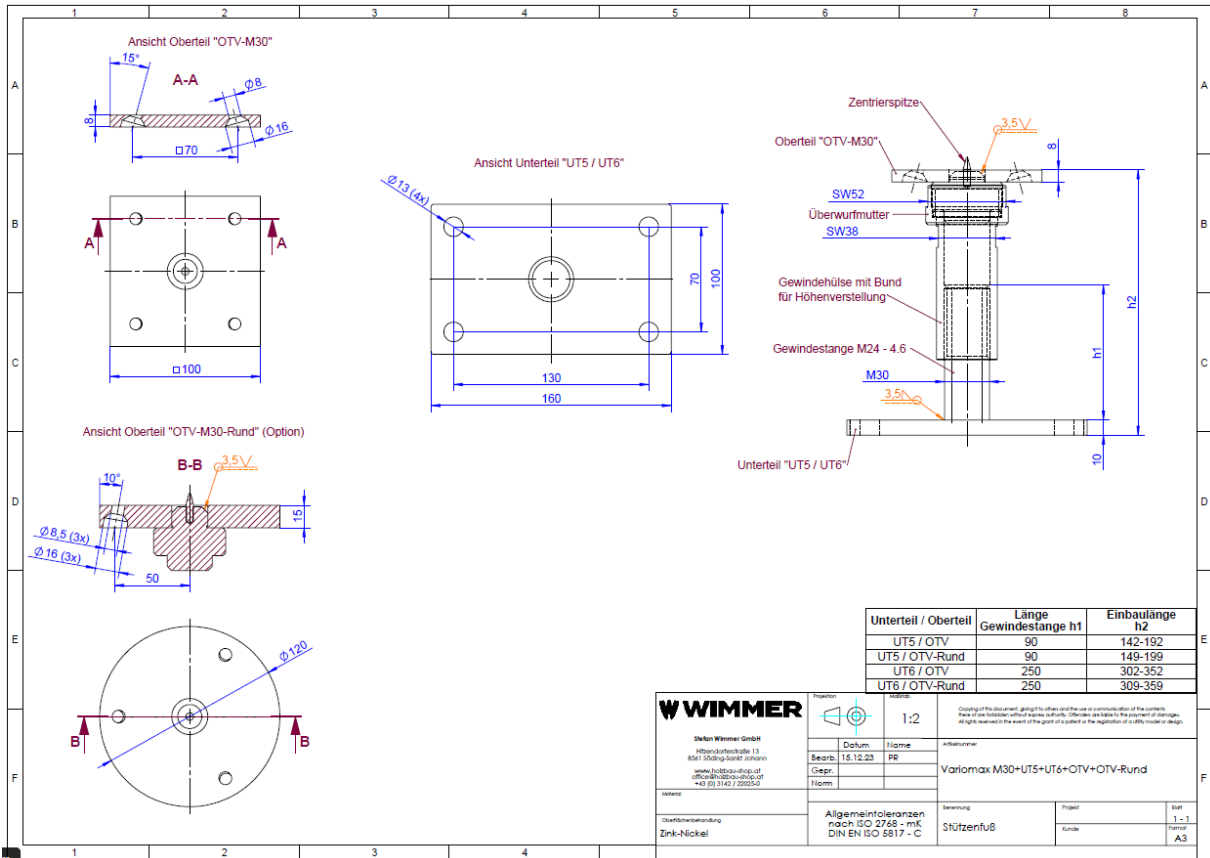


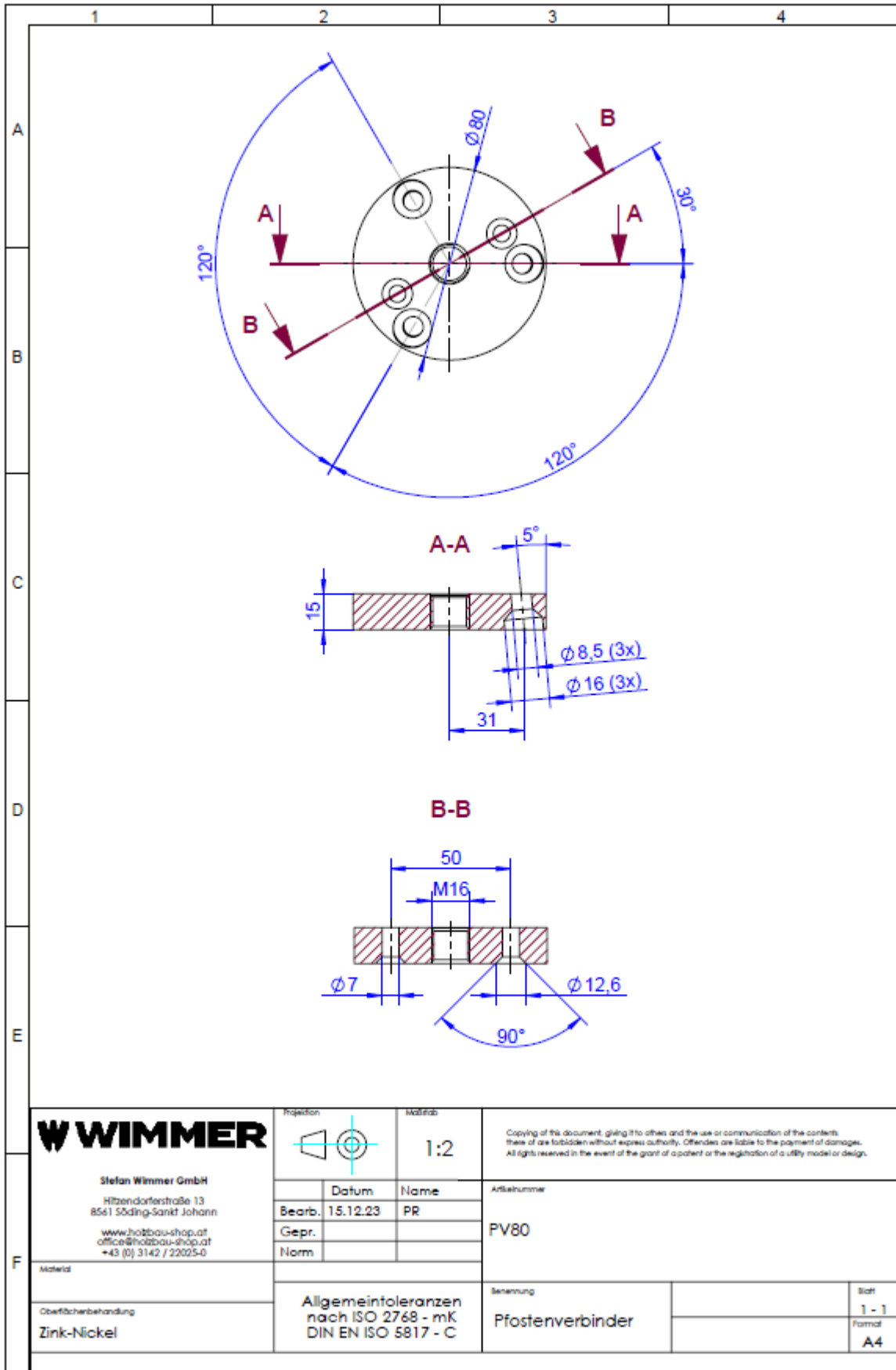
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	Oberflächenelement: Zink-Nickel	Allgemeine Toleranzen nach ISO 2768 - m/k DIN EN ISO 5817 - C	Bezeichnung: Stützenfuß	Projekt: 1 - 1 Kunde: normal Blatt: A3



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	Oberflächenelement: Zink-Nickel	Allgemeine Toleranzen nach ISO 2768 - m/k DIN EN ISO 5817 - C	Bezeichnung: Stützenfuß	Projekt: 1 - 1 Kunde: normal Blatt: A3

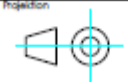






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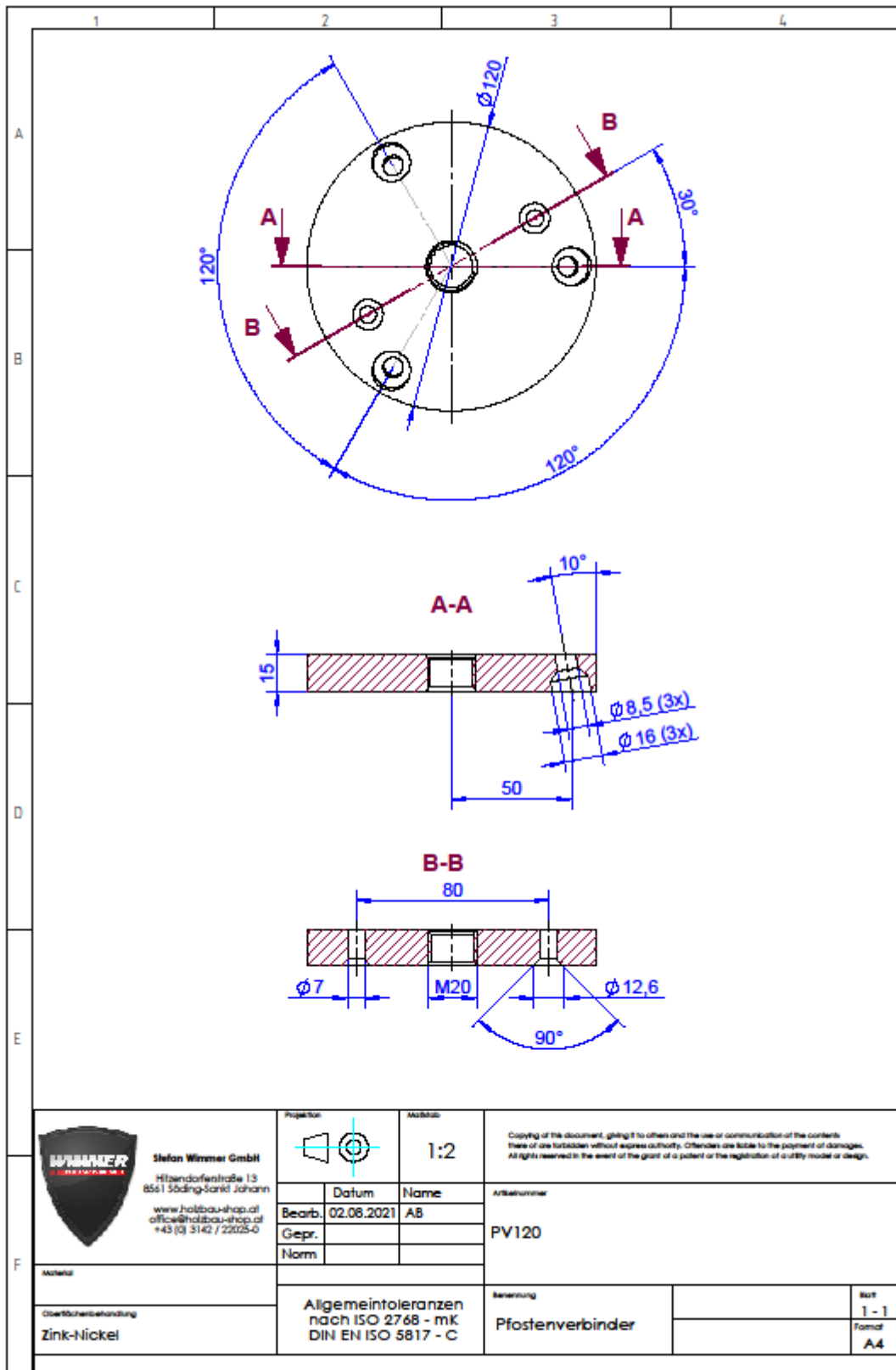
PV80



Material  
 Oberflächenbehandlung  
 Zink-Nickel

Allgemeintoleranzen  
 nach ISO 2768 - mK  
 DIN EN ISO 5817 - C

Benennung  
 Pfostenverbinder

Blatt  
 1 - 1  
 Format  
 A4



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			Gepr.			
			Norm			
Material <b>Zink-Nickel</b>	Allgemeintoleranzen nach ISO 2768 - mK DIN EN ISO 5817 - C			Benennung <b>Pfostenverbinder</b>	Blatt <b>1 - 1</b> Format <b>A4</b>	