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to Article 29 of the Regulation (EU)  
No 305/2011 of the European  
Parliament and of the Council of 9  
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MEMBER OF EOTA



## European Technical Assessment ETA-10/0422 of 2024/06/11

### 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:**

Rotho Blaas GmbH/srl post bases type F10, F20, F30, F40, F50, F60, F70, FD10, FD20, FD30, FD40, FD50, FD60, M10, M20, M30, M50, M60, M70, P10, P20, R10, R20, R30, R40, R50, R60, R70, R80, R90, S10, S20, S30, S40, S50, FI10, FI50, RI40, MI20 and XS10

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

Three-dimensional nailing plate (Post bases for the support of timber columns and posts as load-bearing elements)

**Manufacturer:**

ROTHO BLAAS SRL  
Via dell'Adige 2/1  
IT-38040 Cortaccia (BZ)  
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Internet [www.rothoblaas.com](http://www.rothoblaas.com)

**Manufacturing plant:**

ROTHO BLAAS SRL  
Manufacturing Plants: 1P, 2P

**This European Technical Assessment contains:**

98 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:**

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

**This version replaces:**

The ETA with the same number issued on 2019-11-16

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## II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

### 1 Technical description of product

The Rotho Blaas post bases are made of 2.0 mm to 16.0 mm thick steel plates in combination with steel tubes or threaded rods. The post bases are produced of steel grade S235JR according to EN 10025-2 with a minimum characteristic yield strength of  $R_{eH} = 235$  N/mm<sup>2</sup> and a minimum characteristic tensile strength of  $R_m = 360$  N/mm<sup>2</sup> or of steel grade S355JR according to EN 10025-2 with a minimum characteristic yield strength of  $R_{eH} = 355$  N/mm<sup>2</sup> and a minimum characteristic tensile strength of  $R_m = 510$  N/mm<sup>2</sup> or of stainless steel according to EN 10088-3 with at least minimum characteristic yield strength of  $R_{p0.2} = 235$  N/mm<sup>2</sup> and minimum characteristic tensile strength of  $R_m = 500$  N/mm<sup>2</sup>. The threaded rods correspond to property class 4.8 according to EN ISO 898-1.

For the connections with metal fasteners bolts  $\varnothing 10$  mm and  $\varnothing 12$  mm and dowels  $\varnothing 12$  mm according to EN 14592 and self-tapping dowels SBD  $\varnothing 7.5$  mm according to EN 14592, screws HBS Plate  $\varnothing 6$  mm and  $\varnothing 8$  mm and fully threaded screws  $\varnothing 7.0$  mm according to ETA-11/0030 are used. The screws shall be driven without pre-drilling or after pre-drilling according to the ETA-11/0030. The outer diameter for washers of bolts shall be not less than  $3 \cdot d_B$ , where  $d_B$  is the diameter of the bolts. The thickness shall be not less than  $0,3 \cdot d_B$ .

For anchorage in the foundation reinforcement bars or steel profiles are used, as well as metal anchors. 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 requirements for construction works 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 C20 or better according to EN 338 or of glued laminated timber according to EN 14080. Minimum dimensions for the post have to be considered (Annex A). The cross-section of the timber column shall be positioned centrally and with the end grain plane on the base plate. Post bases type M20, M50 and F70 have a clearance between the end grain of the timber post and the base plate or ground plate, respectively, due to the geometry of the post bases. In order to avoid fungal attack due to permanent high moisture content, the end grain of timber posts with contact or only a very small distance to the foundation (post bases type F10, F20, F30, F40, F70, FD30, FD50, FD60, M30, M70 and XS10) should be protected from humidity by other means.

The maximum distance between the foundation and the base plates' lower edge of the post base shall in general be 100 mm. The maximum distance between the foundation and the base plates' lower edge plate of the post base is given in Annex A, table A.1 (distance a). For post bases type P10, P20, R20, R30, R40; R50, R60; R80, R90, S10, S20, S30, S50 and RI40 larger distances are allowed.

Annex B states the load-carrying capacities of the post bases for solid timber of strength class C24 according to EN 338. Thus, when solid timber of strength class C20 is used, the characteristic load-carrying capacities of timber should be reduced by a factor of 0,9.

For timber or wood base material with higher characteristic density than 350 kg/m<sup>3</sup> the load-carrying capacities shall taken as that for 350 kg/m<sup>3</sup> unless detailed analyses are conducted. 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 (except for type M70) 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 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 according to EN1995-1-1, or by equivalent measures.

In service class 3 the corrosion protection is given according to EN1995-1-1 or by stainless steel or zinc coating with minimum thickness of 55  $\mu$ m according to EN ISO 1461, or by equivalent measures. Alternatively, a Zn-Al flake coating with minimum thickness 8  $\mu$ m (DAC8 also called Dac Coat) can be used as corrosion protection in service class 3.

The metal fasteners must also be of stainless steel or have a coating for the intended use in service class 3 of EN 1995-1-1.

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

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

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

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Characteristic	Assessment of characteristic
<b>3.1 Mechanical resistance and stability (BWR 1)*)</b>	
Joint Strength - Characteristic load-carrying capacity	See Annex B
Joint Stiffness	See Annex B
Joint ductility	No performance assessed
Resistance to seismic actions	No performance assessed
Resistance to corrosion and deterioration	See section 3.6
<b>3.2 Safety in case of fire (BWR 2)</b>	
Reaction to fire	The post bases are made from steel classified as <b>Euroclass A1</b> 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 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 classes 1, 2 and 3

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\*) See additional information in section 3.4 – 3.7.

### 3.4 Methods of verification

The characteristic load-carrying capacities are based on the characteristic values of the connections with metal fasteners, the steel plates, the timber post and the foundation (only for type M70).

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.

In the case of foundation failure, the design value shall be calculated according to EN 1997-1 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:

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

Therefore, for timber failure or failure of the metal fasteners the load duration class and the service class are included. The different partial factors for steel  $\gamma_{Mi,S}$ , timber  $\gamma_{M,T}$ , connections  $\gamma_{M,C}$  or foundation  $\gamma_{Ri,B}$  failure, respectively, have to be correctly taken into account.

### 3.5 Mechanical resistance and stability

See Annex B for the characteristic load-carrying capacity in the different directions  $F_1$  to  $F_5$  and  $M_2$  to  $M_5$  for solid timber of strength class C24 according to EN 338. Solid timber of strength class C20 may be included by a reducing factor of 0,9 for the characteristic load-carrying capacity of timber. 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 M20, M50 and F70 have a clearance between the end grain of the timber post and the base plate or foot plate, respectively, due to the geometry of the post bases.

The characteristic capacities of the post bases are assessed by calculation according to Eurocode 3 and Eurocode 5. They should be used for designs in accordance with Eurocode 3 and Eurocode 5 or a similar national code. For post base type M70 the characteristic capacities of the foundation are determined by calculation according to Eurocode 7 on condition that following soil characteristics are provided: bulk density

$\gamma=18$  kN/m<sup>3</sup>, angle of shearing resistance  $\varphi=30^\circ$ , cohesion  $c=5$  kN/m<sup>2</sup>. The characteristic capacities of post bases type R10 and R30 were assessed by using test results of Holzforschung Austria.

For timber or wood base material with higher characteristic density than 350 kg/m<sup>3</sup> the load-carrying capacities shall taken as that for 350 kg/m<sup>3</sup> unless detailed analyses are conducted

No performance has been assessed 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 assessed 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 (except for type M70). 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.

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

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

The corrosion protection is given according to EN1995-1-1, or by equivalent measures.

The requirement is fulfilled also by post bases with a corrosion protection FeZn12c or hot dip galvanized of approximately 55  $\mu$ m according to EN ISO 1461, or by equivalent measures. See section II.1 for characteristics of the steel.

#### 3.6.2. Corrosion protection in service class 3

In service class 3 the corrosion protection is given according to EN1995-1-1, or by equivalent measure.

The requirement is fulfilled by post bases with a corrosion protection stainless steel according to EN 10088-3 or hot-dip galvanized of approximately 55  $\mu$ m according to EN ISO 1461, or by equivalent measures. Alternatively, a Zn-Al flake coating with minimum thickness 8  $\mu$ m (DAC8 also called Dac Coat) can be used as corrosion protection in service class 3. See section II.1 for characteristics of the steel.

### 3.7 General aspects related to the fitness for use of the product

Rotho Blaas post bases are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

- The timber post
  - shall be restrained against rotation, and supported at the lower and upper end
  - shall be strength class C20 according to EN 338 or better
  - 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 M20, M50 and F70 have a clearance between the end grain of the timber post and the base plate or foot plate, respectively, due to the geometry of the post bases.
- 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.
- To provide for constructive wood preservation, appropriate measures should be taken to protect the end grain of timber posts with contact or little distance to the foundation (post bases type F10, F20, F30, F40, F70, FD30, FD50, FD60, M30, M70 and XS10).
- There are no specific requirements relating to preparation of the timber members.
- The maximum distance between the foundation and the base plates' lower edge of the post base shall in general be 100 mm. For post bases type P10, P20, R20, R30, R40; R50, R60; R80, R90, S10, S20, S30, S50 and RI40 larger distances are allowed.
- In case of post base type M70 the characteristic capacities of the foundation are determined by calculation according to Eurocode 7 on condition that following soil characteristics are provided: bulk density  $\gamma = 18 \text{ kN/m}^3$ , angle of shearing resistance  $\varphi = 30^\circ$ , cohesion  $c = 5 \text{ kN/m}^2$ .
- The anchorage of the post base in the foundation – except for post base type M70 - 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.

- Due to the design of the post bases F70 and XS10, the wood cross-sections are sensitive to splitting under horizontal or moment load. Above the inner steel plates, fully threaded screws against splitting should be arranged in case of horizontal or moment load (2 per direction).

#### **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 2024-06-11 by



Thomas Bruun  
Managing Director, ETA-Danmark



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

Table A.1: Specifications of the post bases

Post base			Quantity	Metal Fasteners	Post [mm]	Distances [mm]		
Type	Art.-No.	Configuration				min b/h	max. a	ef2/F3
F10	F10_1	-	1	2x HBS PLATE ø8x60mm	71/71	-	77	77
	F10_2	-	1	4x HBS PLATE ø8x40mm	91/91	-	77	77
F20	F20_1	-	1	4x HBS PLATE ø8x40mm	ø81	-	77	77
	F20_2	-	1		ø101	-	77	77
	F20_3	-	1	4x HBS PLATE ø8x60mm	ø121	-	77	77
	F20_4	-	1		ø141	-	77	77
F30	F30_1	-	1	4x HBS PLATE ø8x60mm	71/71	-	122	122
	F30_2	-	1	4x HBS PLATE ø8x40mm	91/91	-	122	122
F40	F40_1	-	1	4x HBS PLATE ø8x60mm	71/71	-	122	122
	F40_2	-	1	4x HBS PLATE ø8x40mm	91/91	-	122	122
F50	F50_1	-	1	4x HBS PLATE ø8x60mm	101/101	-	83	83
	F50_2	-	1		121/121	-	83	83
	F50_3	-	1		141/141	-	83	83
	F50_4	-	1		161/161	-	108	108
	F50_5	-	1		181/181	-	108	108
	F50_6	-	1		201/201	-	108	108
F60	F60_1	-	1	4x HBS PLATE ø8x60mm	121/120	-	119	84
	F60_2	-	1		141/140	-	119	84
	F60_3	-	1		161/160	-	119	109
	F60_4	-	1		201/200	-	119	109
	F60_5	-	1		161/160	-	119	84
	F60_6	-	1		201/200	-	119	84
F70 <sup>1)</sup>	F70_1	F70_1-4SBD 75 100	1	4x SBD ø7,5x75mm	100/100 <sup>3)</sup>	21 <sup>2)</sup>	136	33
		F70_1-4SBDS 95 100	1	4x SBDS ø7,5x95mm	100/100 <sup>3)</sup>	21 <sup>2)</sup>	136	33
		F70_1-2STA80/ BOLT120 100	1	2x SD ø12,0x80mm or 2x Bo M12x120mm	100/100 <sup>3)</sup>	21 <sup>2)</sup>	136	33
	F70_2	F70_2-6SBD 95 120	1	6x SBD ø7,5x95mm	120/120 <sup>4)</sup>	21 <sup>2)</sup>	146	38
		F70_2-6SBDS 95 120	1	6x SBDS ø7,5x95mm	120/120 <sup>4)</sup>	21 <sup>2)</sup>	146	38
		F70_2-4STA120/ BOLT160 140	1	4x SD ø12,0x120mm or 4x Bo M12x160mm	140/140 <sup>5)</sup>	21 <sup>2)</sup>	146	38
	F70_3	F70_3-8SBD 115 160	1	8x SBD ø7,5x115mm	160/160 <sup>6)</sup>	23 <sup>2)</sup>	203	43
		F70_3-8SBDS 115 160	1	8x SBDS ø7,5x115mm	160/160 <sup>6)</sup>	23 <sup>2)</sup>	203	43
		F70_3-6STA140/ BOLT180 160	1	6x SD ø12,0x140mm or 6x Bo M12x180mm	160/160 <sup>6)</sup>	23 <sup>2)</sup>	210	43
	F70_4	F70_4-12SBD 160	1	12x SBD ø7,5x155mm	200/160 <sup>6)</sup>	40 <sup>2)</sup>	253	-
		F70_4-12SBDS 160	1	12x SBDS ø7,5x155mm	200/160 <sup>6)</sup>	40 <sup>2)</sup>	253	-
		F70_4-8STA160/ BOLT180 160	1	6x SD ø12,0x160mm or 6x Bo M12x180mm	200/160 <sup>6)</sup>	40 <sup>2)</sup>	253	-
	F70_5	F70_5-16SBD 175	1	16x SBD ø7,5x175mm	200/240 <sup>6)</sup>	40 <sup>2)</sup>	253	-
		F70_5-16SBDS 175	1	16x SBDS ø7,5x175mm	200/240 <sup>6)</sup>	40 <sup>2)</sup>	253	-
		F70_4-12STA180 /BOLT220 200	1	12x SD ø12,0x200mm or 12x Bo M12x220mm	200/240 <sup>6)</sup>	40 <sup>2)</sup>	253	-
FD10	FD10_1	-	2	4x HBS PLATE ø8x60mm	121/120	-	108	40
	FD10_2	-	2		141/131	-	108	40
	FD10_3	-	2		161/151	-	108	40
	FD10_4	-	2		181/171	-	108	40
	FD10_5	-	2		201/191	-	108	40

Post base			Quantity	Metal Fasteners	Post [mm]	Distances [mm]		
Type	Art.-No.	Configuration				min b/h	max. a	e <sub>F2/F3</sub>
FD20	FD20_1	-	2	4x HBS PLATE ø8x60mm	121/76	-	94	41
	FD20_2	-	2		141/92	-	94	41
	FD20_3	-	2		161/106	-	94	41
	FD20_4	-	2		201/140	-	94	41
FD30	FD30_1	-	2	4x HBS PLATE ø8x40mm	80/120	-	-	38
	FD30_2	-	2		80/120	-	-	38
FD30 internal	FD30_1	-	2	2x Bo M10mm	80/120	-	-	38
	FD30_2	-	2	2x Bo M10mm	80/120	-	-	38
FD40	FD40_1	-	2	4x HBS PLATE ø8x40mm	80/120	-	-	46
	FD40_2	-	2		80/120	-	-	46
FD40 internal	FD40_1	-	2	2x Bo M10mm	80/120	-	-	43
	FD40_2	-	2	2x Bo M10mm	80/120	-	-	43
FD50	FD50_1	-	2 / 4	4x HBS PLATE ø8x60mm	82/82	-	-	-
	FD50_2	-	2 / 4		127/127	-	90	90
FD60	FD60_1	-	2 / 4	4x HBS PLATE ø8x60mm	82/82	-	-	-
	FD60_2	-	2 / 4		112/112	-	89	89
M10	M10_1	-	1	4x HBS PLATE ø8x40mm	71/71	-	45	14
	M10_2	-	1	2x HBS PLATE ø8x60mm	91/91	-	45	14
M20	M20_1	-	1	5x HBS PLATE ø8x60mm	71/114	-	139	72
	M20_2	-	1		91/114	-	139	72
	M20_3	-	1		101/114	-	139	72
	M20_4	-	1	6x HBS PLATE ø8x60mm	121/114	-	139	72
M30	M30_1	-	1	2x HBS PLATE ø8x60mm	71/80	-	185	30
	M30_2	-	1	4x HBS PLATE ø8x40mm	81/80	-	185	30
	M30_3	-	1		91/80	-	185	30
	M30_4	-	1		101/80	-	185	30
	M30_5	-	1	4x HBS PLATE ø8x60mm	121/80	-	185	30
M50	M50_1	-	1	5x HBS PLATE ø8x60mm	71/114	100	235	77
	M50_2	-	1		91/114	100	235	77
	M50_3	-	1		101/114	100	235	77
	M50_4	-	1	6x HBS PLATE ø8x60mm	121/114	100	235	77
M60	M60_1	-	1	4x Bo M10mm	80/120	100	218	30
M70	M70_1	-	1	2x HBS PLATE ø8x60mm	71/71	-	-	-
	M70_2	-	1	4x HBS PLATE ø8x40mm	91/91	-	-	-
	M70_3	-	1		ø81	-	-	-
	M70_4	-	1		ø101	-	-	-
P10 <sup>10)</sup>	P10_1	-	1	4x HBS PLATE ø8x80mm	100/100 ø100	150	-	-
	P10_2	-	1		100/100 ø100	250	-	-
	P10_1 Alt	-	1		100/100 ø100	150	-	-
	P10_2 Alt	-	1		100/100 ø100	250	-	-
P20 <sup>10)</sup>	P20_1	-	1	4x HBS PLATE ø8x80mm	100/100	218	-	-
	P20_2	-	1		100/100	318	-	-
R10	R10_1	-	1	4x HBS PLATE ø6x90mm	80/80	136	-	-
	R10_2	-	1	4x HBS PLATE ø8x100mm	100/100	209	-	-
	R10_3	-	1	4x HBS PLATE ø8x100mm	140/140	257	-	-
R10	R10_1M	-	1	4x HBS PLATE EVO ø6; HBS ø8+HUS; VGS ø9/ VGS EVO ø9 +HUS EVO	80/80	133	-	-
	R10_2L	-	1	4x HBS PLATE ø8/HBS PLATE EVO ø8; HBS ø10+HUS; VGS ø11+HUS/ VGS EVO ø11+HUS	100/100	232	-	-
	R10_2XL	-	1		100/100	332	-	-
	R10_3L	-	1		140/140	232	-	-
	R10_3XL	-	1		140/140	260	-	-
R20	R20_1	-	1	4x HBS PLATE ø6x90mm	80/80	136	-	-
	R20_2	-	1	4x HBS PLATE ø8x100mm	100/100	209	-	-
	R20_3	-	1	4x HBS PLATE ø8x100mm	140/140	257	-	-

Post base			Quantity	Metal Fasteners	Post [mm]	Distances [mm]		
Type	Art.-No.	Configuration				min b/h	max. a	eF2/F3
R20	R20_1M	-	1	4x HBS PLATE EVO ø6; HBS ø8+HUS; VGS ø9/ VGS EVO ø9 +HUS EVO	80/80	133	-	-
	R20_2L	-	1	4x HBS PLATE ø8/HBS PLATE EVO ø8; HBS ø10+HUS; VGS ø11+HUS/ VGS EVO ø11+HUS	100/100	232	-	-
	R20_2XL	-	1		100/100	332	-	-
	R20_3L	-	1		140/140	232	-	-
	R20_3XL	-	1		140/140	260	-	-
R30	R30_1	-	1	8x full thread ø6x60mm	120/120	155	-	-
	R30_2	-	1	16x full thread ø6x90mm	160/160	215	-	-
	R30_1	with Disc Flat 80	1	10 x full thread screws ø7x60mm	120	150	-	-
	R30_2	with Disc Flat 120	1	18 x full thread screws ø7x80mm	160	210	-	-
	R30_1	with Disc Flat Stainless 80	1	10 x partial thread screws ø6x80mm	150	150	-	-
R30_2	with Disc Flat Stainless 120	1	18 x partial thread screws ø6x80mm	160	210	-	-	
R40	R40_1	-	1	4x HBS PLATE	70/70	105	-	-
	R40_2	-	1		80/80	97	-	-
	R40_3	-	1		100/100	150	-	-
	R40_4	-	1		100/100	250	-	-
R50	R50_1	-	1	2x HBS PLATE	100/100	277	-	-
	R50_2	-	1		100/100	202	-	-
R60	R60_1	-	1	4x HBS PLATE	100/100	194	-	-
	R60_1M	-	1	4x HBS PLATE EVO ø6; HBS ø8+HUS; VGS ø9/ VGS EVO ø9 +HUS EVO	100/100	175	-	-
	R60_2L	-	1	4x HBS PLATE ø8/HBS PLATE EVO ø8; HBS ø10+HUS; VGS ø11+HUS/ VGS EVO ø11+HUS	100/100	235	-	-
R70	R70_1	-	1	4x HBS PLATE	100/100	100	-	-
	R70_2	-	1		140/140	100	-	-
	R70_3	-	1		100/100	100	-	-
R80	R80_1	R80_1	1	2-4x HBS PLATE	80/80	195	-	-
R90	R90_1	R90_1	1	4x HBS PLATE	100/100	164	-	-
S10	S10_1	S10_1	1	4x HBS PLATE	ø140	118	-	-
	S10_2	S10_2	1		ø140	153	-	-
S20	S20_1	S20_1	1	2x HBS PLATE	100/100	118	-	-
	S20_2	S20_2	1		100/100	153	-	-
S30	S30_1	S30_1	1	4x HBS PLATE	100/100	166	-	-
	S30_2	S30_2	1		140/140	168	-	-
	S30_3	S30_3	1		100/100	166	-	-
	S30_4	S30_4	1		140/140	168	-	-
S40	S40_1	S40_1	1	5x HBS PLATE	71/98	-	86	-
	S40_2	S40_2	1		91/98	-	86	-
S50	S50_1	-	1	4x HBS PLATE ø8/HBS PLATE EVO ø8; HBS ø10+HUS; VGS ø11+HUS/ VGS EVO ø11+HUS	120x120	132	-	-
	S50_2	-	1		120x120	192	-	-
	S50_3	-	1		160x160	196	-	-
	S50_4	-	1		160x160	256	-	-
	S50_1 Alt	-	1	4x HBS PLATE ø8/HBS PLATE EVO ø8; HBS ø10+HUS; VGS ø11+HUS/ VGS EVO ø11+HUS	120x120	132	-	-
	S50_2 Alt	-	1		120x120	192	-	-
	S50_3 Alt	-	1		160x160	196	-	-
S50_4 Alt	-	1	160x160	256	-	-		
FI10	FI10_1	-	1	2x HBS PLATE	71/71	-	107	77
	FI10_2	-	1		91/91	-	107	77
FI50	FI50_1	-	1	4x HBS PLATE	101/101	-	83	83
	FI50_2	-	1		121/121	-	83	83
	FI50_3	-	1		141/141	-	83	83
	FI50_4	-	1		161/161	-	108	108
	FI50_6	-	1		201/201	-	108	108
RI40	RI40_3	-	1	4x HBS PLATE	100/100	150	-	-
	RI40_4	-	1		100/100	250	-	-

Post base			Quantity	Metal Fasteners	Post [mm]	Distances [mm]		
Type	Art.-No.	Configuration				min b/h	max. a	e <sub>F2/F3</sub>
MI20	MI20 1	-	1	5x HBS PLATE	71/114	-	139	72
	MI20 2	-	1		91/114	-	139	72
	MI20 3	-	1		101/114	-	139	72
	MI20 4	-	1	6x HBS PLATE	121/114	-	139	72
XS10	XS10_1	XS10_1-16SBD 115 160	1	16x SBD ø7,5x115mm	160x160 <sup>8)</sup>	40	250	250
		XS10_1-16SBD 95 140	1	16x SBD ø7,5x95mm	140x140 <sup>7)</sup>	40	232	232
		XS10_1-16SBD 115 140	1	16x SBD ø7,5x115mm	140x140 <sup>7)</sup>	40	232	232
		XS10_1-16SBD 135 160	1	16x SBD ø7,5x135mm	160x160 <sup>8)</sup>	40	232	232
		XS10_1- 8STA120_160	1	8x SD ø12,0x120mm	160x160 <sup>8)</sup>	40	230	230
	XS10_2	XS10_2-16SBD 115 160	1	16x SBD ø7,5x115mm	160x160 <sup>8)</sup>	42	252	252
		XS10_2-16SBD 115 160 Alt	1	16x SBD ø7,5x115mm	160x160 <sup>8)</sup>	42	235	235
		XS10_2-16SBD 135 160	1	16x SBD ø7,5x135mm	160x160 <sup>8)</sup>	42	235	235
		XS10_2-16SBD 155 200	1	16x SBD ø7,5x155mm	200x200 <sup>9)</sup>	42	235	235
		XS10_2- 8STA120 160	1	8x SD ø12,0x120mm	160x160 <sup>8)</sup>	42	227	227
		XS10_2-12STA 120 160	1	12x SD ø12,0x120mm	160x160 <sup>8)</sup>	42	227	227
		XS10_2- 8STA120 200	1	8x SD ø12,0x120mm	200x200 <sup>9)</sup>	42	227	227
		XS10_2-12STA 160 200	1	12x SD ø12,0x120mm	200x200 <sup>9)</sup>	42	227	227

<sup>1)</sup> Pre-holes on the inner steel plate are optional (in case of bolts or dowels)

<sup>2)</sup> Maximum distance between the top edge of the foundation and the end grain of the post.

<sup>3)</sup> Tensile reinforcement perpendicular to the grain, loaded by force  $F_{4/5}$ : 2x fully threaded screws ø7.0x100mm and above the inner steel plate

<sup>4)</sup> Tensile reinforcement perpendicular to the grain, loaded by force  $F_{4/5}$ : 2x fully threaded screws ø7.0x120mm and above the inner steel plate

<sup>5)</sup> Tensile reinforcement perpendicular to the grain, loaded by force  $F_{4/5}$ : 2x fully threaded screws ø7.0x140mm and above the inner steel plate

<sup>6)</sup> Tensile reinforcement perpendicular to the grain, loaded by force  $F_{4/5}$ : 2x fully threaded screws ø7.0x160mm and above the inner steel plate

<sup>7)</sup> Tensile reinforcement perpendicular to the grain, loaded by force  $F_{2/3}$  or  $F_{4/5}$  or moment  $M_{2/3}$  or  $M_{4/5}$ : 4x fully threaded screws ø7.0x140mm; 2x fully threaded screws installed parallel to the each load direction and above the inner steel plate

<sup>8)</sup> Tensile reinforcement perpendicular to the grain loaded by force  $F_{2/3}$  or  $F_{4/5}$  or moment  $M_{2/3}$  or  $M_{4/5}$ : 4x fully threaded screws ø7.0x160mm; 2x fully threaded screws installed parallel to the each load direction and above the inner steel plate

<sup>9)</sup> Tensile reinforcement perpendicular to the grain loaded by force  $F_{2/3}$  or  $F_{4/5}$  or moment  $M_{2/3}$  or  $M_{4/5}$ : 4x fully threaded screws ø7.0x200mm; 2x fully threaded screws installed parallel to the each load direction and above the inner steel plate

<sup>10)</sup> Encased in concrete

**Table A.2:** Specifications of the metal fasteners according to EN 14592 or ETA

Fastener type	Size (mm)			Material	Finish
	Diameter	Length	Thickness		
Screws HBS PLATE	8 mm	40/60/80/100/ 160 mm		ETA-11/0030	Galvanic zinc / EVO coating
Screws HBS PLATE	6 mm	90 mm		ETA-11/0030	Galvanic zinc / EVO coating
Partially threaded screws	6 mm	80 mm		ETA-11/0030 or EN 14592	Stainless steel
Fully threaded screws	7 mm	60-80 mm		ETA-11/0030 or EN 14592	Galvanic zinc / EVO coating
Fully threaded screws	7 mm	100/120/140/160/200 mm		ETA-11/0030	Galvanic zinc / EVO coating
Bolts	10/12 mm			Min 4.6 according to EN ISO 4016 or EN ISO 4017 or EN ISO 4018 or EN ISO 898 or EN 14592	Galvanic zinc coating
Dowels	12 mm			S235 according to EN 10025-2 and EN 14592	Galvanic zinc coating
Self-tapping dowels SBD	7.5 mm			$f_{u,k} \geq 742 \text{ N/mm}^2$ , $M_{y,Rk} = 42.000 \text{ Nmm}$ according to specification of the manufacturer and EN 14592	Galvanic zinc coating
Self-tapping dowels SBDS	7.5 mm			$M_{y,Rk} = 75.000 \text{ Nmm}$ according to specification of the manufacturer and EN 14592	Galvanic zinc coating
Washers	30/36 mm		3,0/3,6 mm	according to EN ISO 7091 or EN ISO 7093 or EN ISO 7094	Galvanic zinc coating
HUS Washers	8/10 mm		5,5/6,5 mm	according to ETA-11/0030	Galvanic zinc / EVO 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 (forces) for post bases in kN

Post base			F <sub>1,c,Rk</sub> (Compression)			F <sub>1,t,Rk</sub> (Tension)			F <sub>2/3,Rk</sub> (Horizontal)			F <sub>4/5,Rk</sub> (Horizontal)				
Type	Art.-No.	Configuration	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel		
F10	F10_1	-	50,8	-	-	6,2	4,3	-	5,0	-	4,5	-	7,6	-	9,5	-
	F10_2	-	84,8	-	-	8,2	3,8	-	9,9	-	4,7	-	13,3	-	10,2	-
		-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
F20	F20_1	-	17,2	-	-	7,4	4,1	-	6,5	-	2,4	-	8,1	-	3,1	-
	F20_2	-	62,5	-	-	7,4	8,8	-	3,2	-	6,6	-	12,8	-	8,4	-
	F20_3	-	99,1	-	-	11,0	10,0	-	9,9	-	8,9	-	18,4	-	11,4	-
	F20_4	-	142	-	-	11,0	11,1	-	9,9	-	11,5	-	25,3	-	14,7	-
		-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
F30	F30_1	-	50,8	-	-	7,1	6,5	-	7,6	-	2,9	-	7,6	-	2,9	-
	F30_2	-	84,8	-	-	9,5	13,0	-	7,6	-	2,9	-	7,6	-	2,9	-
		-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
F40	F40_1	-	50,8	-	-	7,1	7,7	-	7,6	-	5,4	-	7,6	-	5,4	-
	F40_2	-	84,8	-	-	9,5	21,8	-	13,3	-	7,9	-	13,3	-	7,9	-
		-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
F50	F50_1	-	29,4	29,1	-	7,1	-	-	17,2	-	9,0	-	17,2	-	9,0	-
	F50_2	-	33,6	33,3	-	7,1	11,5	-	17,2	-	8,7	-	17,2	-	8,7	-
	F50_3	-	42,0	41,6	-	7,1	-	-	17,2	-	11,9	-	17,2	-	11,9	-
	F50_4	-	42,0	41,6	-	7,1	13,8	-	20,4	-	10,6	-	20,4	-	10,6	-
	F50_5	-	42,0	41,6	-	7,1	16,1	-	20,4	-	13,9	-	20,4	-	13,9	-
	F50_6	-	46,2	45,7	-	7,1	17,3	-	21,0	-	14,4	-	21,0	-	14,4	-
		-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
F60	F60_1	-	33,6	32,7	-	7,0	34,2	-	17,3	-	11,7	-	8,7	-	-	6,8
	F60_2	-	37,8	36,8	-	7,0	37,6	-	20,6	-	15,0	-	10,2	-	-	6,8
	F60_3	-	42,0	40,8	-	7,0	41,0	-	22,6	-	16,5	-	11,3	-	15,2	-
	F60_4	-	54,6	53,1	-	7,0	24,1	-	22,6	-	16,5	-	11,3	-	13,0	-
	F60_5	-	42,0	40,8	-	7,0	41,0	-	32,9	-	23,3	-	11,3	-	-	15,6
	F60_6	-	54,6	54,4	-	7,0	24,1	-	32,9	-	23,3	-	11,3	-	18,4	-
		-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	γ <sub>M,2</sub>
F70	F70_1	F70_1-4SBD75 100	29,6	-	32,7	17,9	18,3	-	13,3	14,0	3,44	-	1,79	-	2,49	-
		F70_1-4SBDS95 100	29,6	-	32,7	17,9	18,3	-	13,3	14,0	3,44	-	1,79	-	2,49	-
		F70_1-2STA80/BOLT120 100	21,1	-	32,7	14,3	18,3	-	13,2	10,9	3,44	-	1,86	-	2,49	-
	F70_2	F70_2-6SBD95 120	52,6	-	67,8	52,6	15,7	-	18,2	45,0	3,83	-	2,02	-	6,12	-
		F70_2-6SBDS95 120	59,7	-	67,8	59,7	15,7	-	18,2	54,4	3,83	-	2,02	-	6,12	-
		F70_2-4STA120/BOLT160 140	55,7	-	67,8	55,7	15,7	-	25,5	50,5	3,83	-	2,95	-	6,12	-
	F70_3	F70_3-8SBD115 160	87,7	-	103	87,7	25,7	-	36,3	65,2	6,45	-	3,07	-	13,5	-
		F70_3-8SBDS115 160	94,8	-	103	94,8	25,7	-	36,3	74,5	6,45	-	3,07	-	13,5	-
		F70_3-6STA140/BOLT180 160	104	-	103	104	25,7	-	34,0	82,1	6,24	-	2,88	-	13,5	-

Post base			F <sub>1,c,Rk</sub> (Compression)			F <sub>1,t,Rk</sub> (Tension)			F <sub>2/3,Rk</sub> (Horizontal)				F <sub>4/5,Rk</sub> (Horizontal)			
Type	Art.-No.	Configuration	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel		
	F70_4	F70_4-12SBD 160	123	-	246	123	172	-	44,0	119	25,9	-	-	-	-	
		F70_4-12SBDS 155	130	-	246	130	172	-	44,0	127	25,9	-	-	-	-	
		F70_4-8STA160/ BOLT180 160-	115	-	246	115	172	-	42,9	121	25,9	-	-	-	-	
	F70_5	F70_5--16SBD 175	164	-	307	164	237	-	65,7	175	45,1	-	-	-	-	
		F70_5--16SBDS 175	190	-	307	190	237	-	65,7	181	45,1	-	-	-	-	
		F70_4-12STA180 /BOLT220 200	173	-	307	173	237	-	62,3	198	45,1	-	-	-	-	
		-	γ <sub>M,C</sub>	-	γ <sub>M,1</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
FD10	FD10 1	-	33,6	33,5	-	7,1	4,7	-	20,9	-	2,6	-	10,2	-	10,4	-
	FD10 2	-	37,8	37,6	-	7,1	5,0	-	24,4	-	3,3	-	11,5	-	11,4	-
	FD10 3	-	42,0	41,8	-	7,1	5,6	-	24,4	-	4,1	-	12,7	-	12,5	-
	FD10 4	-	46,2	46,0	-	7,1	6,1	-	24,4	-	5,0	-	14,0	-	13,5	-
	FD10 5	-	54,6	54,4	-	7,1	6,0	-	24,4	-	6,0	-	15,3	-	14,0	-
			-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>
FD20	FD20 1	-	33,6	33,5	-	7,0	11,8	-	22,9	-	3,7	-	16,1	-	19,4	-
	FD20 2	-	37,8	37,6	-	7,0	13,3	-	31,6	-	4,7	-	17,7	-	21,4	-
	FD20 3	-	42,0	41,8	-	7,0	14,6	-	32,9	-	5,9	-	19,3	-	23,3	-
	FD20 4	-	54,6	54,4	-	7,0	17,0	-	27,5	-	2,6	-	17,0	-	27,2	-
			-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>
FD30	FD30 1	-	77,6	71,9	-	7,0	4,7	-	-	-	-	-	9,3	-	3,2	-
	FD30 2	-	115	95,9	-	7,3	3,6	-	-	-	-	-	9,0	-	4,0	-
			-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
FD30 internal	FD30 1	-	77,6	12,5	-	13,5	4,7	-	-	-	-	-	2,1	-	3,2	-
	FD30 2	-	115	16,7	-	13,5	3,6	-	-	-	-	-	2,6	-	4,0	-
			-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
FD40	FD40 1	-	7,0	6,3	-	4,5	6,3	-	-	-	-	-	8,2	-	5,0	-
	FD40 2	-	7,3	8,4	-	9,0	8,4	-	-	-	-	-	8,6	-	6,5	-
			-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
FD40 internal	FD40 1	-	19,8	12,5	-	13,5	6,3	-	-	-	-	-	2,1	-	5,1	-
	FD40 2	-	20,7	16,7	-	13,5	8,4	-	-	-	-	-	2,6	-	5,2	-
			-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-
FD50 <sup>1)</sup>	FD50 1	-	69,4	-	-	-	-	-	-	-	-	-	-	-	-	-
	FD50 2	-	203	-	-	7,8	10,0	-	-	-	-	-	-	-	-	-
			-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-
FD60 <sup>2)</sup>	FD60 1	-	75,6	-	-	-	-	-	-	-	-	-	-	-	-	-
	FD60 2	-	263	-	-	7,8	17,7	-	-	-	-	-	-	-	-	-
			-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-
M10	M10 1	-	6,1	14,0	-	3,5	10,0	-	7,6	-	5,9	-	7,6	-	-	5,8
	M10 2	-	12,2	14,4	-	7,1	11,5	-	13,0	-	5,9	-	13,0	-	-	5,4
			-	γ <sub>M,C</sub>	γ <sub>M,1</sub>	-	γ <sub>M,C</sub>	γ <sub>M,1</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	-
M20	M20 1	-	7,4	-	8,1	7,4	7,8	8,1	5,5	-	1,5	-	8,2	-	3,0	-
	M20 2	-	7,4	-	8,1	7,4	5,4	8,1	5,5	-	1,5	-	8,2	-	3,0	-
	M20 3	-	7,4	-	8,1	7,4	4,7	8,1	5,5	-	1,5	-	8,2	-	3,0	-
	M20 4	-	7,4	-	8,1	7,4	3,8	8,1	5,5	-	1,5	-	8,2	-	3,0	-
			-	γ <sub>M,C</sub>	-	γ <sub>M,2</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>
M30	M30_1	-	89,2	-	-	3,7	12,9	-	2,7	-	1,2	-	8,5	-	5,9	-
	M30_2	-	101	-	-	5,1	21,8	-	3,7	-	1,2	-	9,7	-	5,6	-
	M30_3	-	114	-	-	5,1	21,8	-	3,7	-	1,2	-	10,9	-	5,6	-
	M30_4	-	127	-	-	5,1	21,8	-	3,7	-	1,2	-	12,1	-	5,6	-
	M30_5	-	152	-	-	7,4	21,8	-	5,5	-	1,2	-	14,0	-	5,9	-
			-	γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>
M50	M50_1	-	7,4	7,8	8,5	7,8	7,8	-	5,5	-	1,8	2,7	8,6	-	3,3	-
	M50_2	-	7,4	5,5	8,5	7,8	5,5	-	5,5	-	1,8	2,7	8,6	-	3,3	-
	M50_3	-	7,4	4,8	8,5	7,8	4,8	-	5,5	-	1,6	2,7	8,6	-	3,3	-
	M50_4	-	7,4	3,8	8,5	7,8	3,8	-	5,5	-	1,2	2,7	8,6	-	3,3	-
			-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>

Post base			F <sub>1,c,Rk</sub> (Compression)			F <sub>1,t,Rk</sub> (Tension)			F <sub>2/3,Rk</sub> (Horizontal)			F <sub>4/5,Rk</sub> (Horizontal)							
Type	Art.-No.	Configuration	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel						
M60	M60_1	-	51,0	55,1	-	26,4	-	65,3	11,8	-	2,8	3,6	2,2	-	5,7	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,2</sub>	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-			
Type	Art.-No.	Configuration	Timber	Steel	Foun.	Timber	Steel	Foun.	Timber	Steel	Foun.	Timber	Steel	Foun.					
M70	M70_1	-	6,1	12,1	1,6	-	-	-	7,6	-	7,6	5,2	7,6	-	7,6	5,2			
	M70_2	-	8,6	9,4	3,0	-	-	-	10,1	-	6,7	9,9	10,1	-	6,7	9,9			
	M70_3	-	8,1	-	2,3	-	-	-	8,1	-	6,5	3,3	8,1	-	6,5	3,3			
	M70_4	-	8,1	-	3,1	-	-	-	10,3	-	6,9	3,8	10,3	-	6,9	3,8			
		-	-	γ <sub>M,C</sub>	γ <sub>M,2</sub>	γ <sub>R,v</sub>	-	-	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	γ <sub>R,c</sub>	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	γ <sub>R,c</sub>		
Type	Art.-No.	Configuration	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel						
P10	P10_1	-	109	125	107	n <sub>screw</sub> · F <sub>ax,Rk</sub>	17,7	-	-	-	-	-	-	-	-	-			
	P10_2	-	109	125	99,3		17,7	-	-	-	-	-	-	-	-	-	-		
	P10_1 Alt	-	98,6	78,7	107		17,7	-	-	-	-	-	-	-	-	-	-		
	P10_2 Alt	-	98,6	78,7	99,3		17,7	-	-	-	-	-	-	-	-	-	-		
		-	-	γ <sub>M,T</sub>	γ <sub>M,0</sub>		γ <sub>M,1</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-	-	
P20	P20_1	-	93,7	59,5	106	-	-	-	-	-	-	-	-	-	-	-			
	P20_2	-	93,7	59,5	106	-	-	-	-	-	-	-	-	-	-	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-	-	-			
R10	R10_1	-	71,2	-	48,3	-	-	-	-	-	-	-	-	-	-	-			
	R10_2	-	111	-	75,4	-	-	-	-	-	-	-	-	-	-	-			
	R10_3	-	222	-	108	-	-	-	-	-	-	-	-	-	-	-			
	R10_1M	-	128	66,0	66,0	n <sub>screw</sub> · F <sub>ax,Rk</sub>	11,6	-	n <sub>screw</sub> · F <sub>v,Rk</sub>	-	1,57	-	n <sub>screw</sub> · F <sub>v,Rk</sub>	-	1,57	-			
	R10_2L	-	201	98,4	98,4		10,6	-		-	2,11	-		-	2,11	-			
	R10_2XL	-	201	71,8	71,8		10,6	-		-	1,30	-		-	1,30	-			
	R10_3L	-	403	107	107		17,7	-		-	2,50	-		-	2,50	-			
	R10_3XL	-	403	107	107		17,7	-		-	1,69	-		-	1,69	-			
	-	-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>		γ <sub>M,C</sub>	γ <sub>M,0</sub>		-	γ <sub>M,C</sub>	-		γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-
R20	R20_1	-	55,8	-	48,3		-	-		-	-	-		-	-	-	-	-	-
	R20_2	-	90,4	-	75,4		-	-		-	-	-		-	-	-	-	-	-
	R20_3	-	189	-	108	-	-	-	-	-	-	-	-	-	-	-			
	R20_1M	-	122	66,3	66,3	n <sub>screw</sub> · F <sub>ax,Rk</sub>	11,6	-	n <sub>screw</sub> · F <sub>v,Rk</sub>	-	1,57	-	n <sub>screw</sub> · F <sub>v,Rk</sub>	-	1,57	-			
	R20_2L	-	192	98,4	98,4		10,6	-		-	2,11	-		-	2,11	-			
	R20_2XL	-	192	71,8	71,8		10,6	-		-	1,30	-		-	1,30	-			
	R20_3L	-	391	119	119		17,7	-		-	2,50	-		-	2,50	-			
	R20_3XL	-	391	119	119		17,7	-		-	1,76	-		-	1,76	-			
	-	-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>		γ <sub>M,C</sub>	γ <sub>M,0</sub>		-	γ <sub>M,C</sub>	-		γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-
R30	R30_1	-	-	-	48,3		18,7	24,3		-	-	-		-	-	-	-	-	-
	R30_2	-	-	-	75,4		62,4	36,4		-	-	-		-	-	-	-	-	-
	R30_1	With Disc Flat 80	-	-	48,3	24,2	24,3	-	-	-	-	-	-	-	-	-			
	R30_2	With Disc Flat 120	-	-	75,4	65,5	36,4	-	-	-	-	-	-	-	-	-			
	R30_1	With stainless Disc Flat 80	-	-	48,3	22,0	24,3	-	-	-	-	-	-	-	-	-			
	R30_2	With stainless Disc Flat 120	-	-	75,4	41,8	36,4	-	-	-	-	-	-	-	-	-			
	-	-	-	γ <sub>M,1</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-	-	-			
R40	R40_1	-	50,7	23,3	39,6	-	-	-	-	-	-	-	-	-	-	-			
	R40_2	-	64,0	38,1	100	-	-	-	-	-	-	-	-	-	-	-			
	R40_3	-	99,9	41,9	57,1	-	-	-	-	-	-	-	-	-	-	-			
	R40_4	-	100	50,7	65,3	-	-	-	-	-	-	-	-	-	-	-			
		-	-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-	-	-		
R50	R50_1	-	56,5	50,7	88,7	-	-	-	-	-	-	-	-	-	-	-			
	R50_2	-	56,5	50,7	92,0	-	-	-	-	-	-	-	-	-	-	-			
	-	-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-	-	-			
R60	R60_1	-	117	66,9	66,4	-	-	-	-	-	-	-	-	-	-	-			
	R60_1M	-	126	38,6	38,6	n <sub>screw</sub> · F <sub>ax,Rk</sub>	13,2	-	n <sub>screw</sub> · F <sub>v,Rk</sub>	-	2,42	2,99	n <sub>screw</sub> · F <sub>v,Rk</sub>	-	2,42	2,99			
	R60_2L	-	202	62,3	62,3		11,9	-		-	1,98	3,36		-	1,98	3,36			
	-	-	γ <sub>M,T</sub>	γ <sub>M,1</sub>	γ <sub>M,2</sub>		γ <sub>M,C</sub>	γ <sub>M,0</sub>		-	γ <sub>M,C</sub>	-		γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	γ <sub>M,2</sub>



Post base			F <sub>1,c,Rk</sub> (Compression)			F <sub>1,t,Rk</sub> (Tension)			F <sub>2/3,Rk</sub> (Horizontal)			F <sub>4/5,Rk</sub> (Horizontal)					
Type	Art.-No.	Configuration	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel				
R70	R70_1	-	108	66,9	66,4	-	-	-	-	-	-	-	-	-			
	R70_2	-	210	79,5	99,8	-	-	-	-	-	-	-	-	-			
	R70_3	-	106	54,0	39,6	-	-	-	-	-	-	-	-	-			
			γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-			
R80	R80_1	-	125	69,7	107	-	-	-	-	-	-	-	-	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-			
R90	R90_1	-	71,6	42,6	39,7	-	-	-	-	-	-	-	-	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-			
S10	S10_1	-	88,3	49,2	-	-	-	-	-	-	-	-	-	-			
	S10_2	-	88,3	49,2	-	-	-	-	-	-	-	-	-	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-	-	-			
S20	S20_1	-	88,3	49,2	-	-	-	-	-	-	-	-	-	-			
	S20_2	-	88,3	49,2	-	-	-	-	-	-	-	-	-	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-	-	-			
S30	S30_1	-	104	100	-	-	-	-	-	-	-	-	-	-			
	S30_2	-	214	212	-	-	-	-	-	-	-	-	-	-			
	S30_3	-	104	100	-	-	-	-	-	-	-	-	-	-			
	S30_4	-	214	212	-	-	-	-	-	-	-	-	-	-			
		-	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	-	-	-	-	-	-	-	-	-			
Type	Dimension	Angle	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel				
S40	S40_1	0°	7,4	6,6	8,5	7,4	6,6	8,5	5,5	-	2,1	5,5	-	-	-		
		15°	7,4	3,5	8,1	7,4	3,5	8,1	5,5	-	1,9	5,0	-	-	-		
		30°	7,4	2,5	6,1	7,4	2,5	6,1	5,5	-	1,9	4,9	-	-	-		
		45°	7,4	2,1	5,2	7,4	2,1	5,2	5,5	-	2,1	5,2	-	-	-		
	S40_2	60°	7,4	1,9	4,9	7,4	1,9	4,9	5,5	-	2,5	6,1	-	-	-		
		0°	7,4	6,6	8,5	7,4	6,6	8,5	5,5	-	2,1	5,5	-	-	-		
		15°	7,4	3,5	8,1	7,4	3,5	8,1	5,5	-	1,9	5,0	-	-	-		
		30°	7,4	2,5	6,1	7,4	2,5	6,1	5,5	-	1,9	4,9	-	-	-		
			45°	7,4	2,1	5,2	7,4	2,1	5,2	5,5	-	2,1	5,2	-	-	-	
			60°	7,4	1,9	4,9	7,4	1,9	4,9	5,5	-	2,5	6,1	-	-	-	
				γ <sub>M,C</sub>	γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	γ <sub>M,2</sub>	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	γ <sub>M,2</sub>	-	-	-	
	Type	Art.-No.	Configuration	Timber	Steel		Timber	Steel		Timber	Steel		Timber	Steel			
S50	S50_1	-	200	157	277	n <sub>screw</sub>	61,0	-	n <sub>screw</sub>	-	94,6	-	n <sub>screw</sub>	-	94,6	-	
	S50_2	-	200	157	277		61,0	-		66,0	-	66,0		-			
	S50_3	-	334	268	351		· F <sub>ax,Rk</sub>	94,4		-	· F <sub>v,Rk</sub>	-		101	-	101	-
	S50_4	-	334	268	351		94,4	-		77,7	-	77,7		-			
	S50_1 Alt	-	193	127	277	n <sub>screw</sub>	61,0	-	n <sub>screw</sub>	-	94,6	-	n <sub>screw</sub>	-	94,6	-	
	S50_2 Alt	-	193	127	277		61,0	-		66,0	-	66,0		-			
	S50_3 Alt	-	324	247	351		· F <sub>ax,Rk</sub>	94,4		-	· F <sub>v,Rk</sub>	-		101	-	101	-
	S50_4 Alt	-	324	247	351		94,4	-		77,7	-	77,7		-			
			γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>		
FI10	FI10_1	-	50,8	-	-	3,5	3,5	-	5,0	-	3,0	-	7,6	-	7,7	-	
	FI10_2	-	84,8	-	-	3,5	3,1	-	5,0	-	3,7	-	13,0	-	9,1	-	
			γ <sub>M,T</sub>	-	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	
FI50	FI50_1	-	29,4	24,0	-	-	-	-	15,5	-	7,3	-	15,5	-	7,3	-	
	FI50_2	-	33,6	26,7	-	7,2	9,3	-	15,5	-	7,0	-	15,5	-	7,0	-	
	FI50_3	-	42,0	33,3	-	7,2	-	-	15,5	-	10,7	-	15,5	-	10,7	-	
	FI50_4	-	42,0	33,3	-	7,2	11,2	-	18,4	-	8,6	-	18,4	-	8,6	-	
	FI50_6	-	46,2	36,7	-	7,2	14,0	-	18,9	-	13,0	-	18,9	-	13,0	-	
			γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,T</sub>	-	γ <sub>M,0</sub>	-	
RI40	RI40_3	-	99,9	38,8	47,8	-	-	-	-	-	-	-	-	-	-	-	
	RI40_4	-	100	47,1	57,0	-	-	-	-	-	-	-	-	-	-	-	
			γ <sub>M,T</sub>	γ <sub>M,0</sub>	γ <sub>M,1</sub>	-	-	-	-	-	-	-	-	-	-	-	
MI20	MI20_1	-	7,4	-	11,2	7,4	6,3	-	5,5	-	1,2	-	8,2	-	2,4	-	
	MI20_2	-	7,4	-	8,1	7,4	4,4	-	5,5	-	1,2	-	8,2	-	2,4	-	
	MI20_3	-	7,4	-	8,1	7,4	3,8	-	5,5	-	1,2	-	8,2	-	2,4	-	
	MI20_4	-	7,4	-	8,1	7,4	3,0	-	5,5	-	1,2	-	8,2	-	2,4	-	
			γ <sub>M,C</sub>	-	γ <sub>M,2</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	-	γ <sub>M,0</sub>	-	

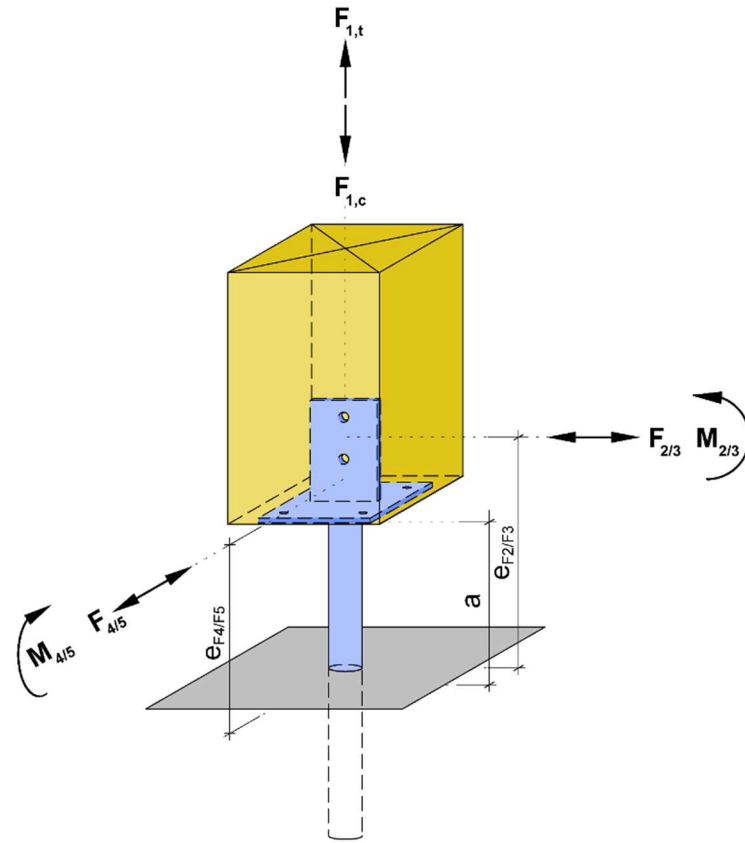
Post base			F <sub>1,c,Rk</sub> (Compression)			F <sub>1,t,Rk</sub> (Tension)			F <sub>2/3,Rk</sub> (Horizontal)			F <sub>4/5,Rk</sub> (Horizontal)				
Type	Art.-No.	Configuration	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel	Timber	Steel		
XS10	XS10_1	XS10_1-16SBD115_160	122	-	225	87,8	32,6	-	32,9	34,7	3,68	-	32,9	34,7	3,68	-
		XS10_1-16SBDS115_160		-	225		32,6	-		34,7	3,68	-		34,7	3,68	-
		XS10_1-16SBD95_140	118	-	225	96,9	32,6	-	45,0	25,7	3,97	-	45,0	25,7	3,97	-
		XS10_1-16SBDS95_140	134	-	225	110	32,6	-	54,4	25,7	3,97	-	54,4	25,7	3,97	-
		XS10_1-16SBD115_140	133	-	225	109	32,6	-	49,3	25,7	3,97	-	49,3	25,7	3,97	-
		XS10_1-16SBDS115_140	143	-	225	117	32,6	-	56,2	25,7	3,97	-	56,2	25,7	3,97	-
		XS10_1-16SBD135_160	149	-	225	122	32,6	-	54,3	34,7	3,97	-	54,3	34,7	3,97	-
		XS10_1-16SBDS135_160	154	-	225	127	32,6	-	59,3	34,7	3,97	-	59,3	34,7	3,97	-
	XS10_1-8STA120_160	125	-	225	125	32,6	-	23,8	16,2	4,01	-	23,8	16,2	4,01	-	
	XS10_2	XS10_2-16SBD115_160	116	-	464	86,7	59,0	-	32,6	33,8	7,45	-	32,6	33,8	7,45	-
		XS10_2-16SBDS115_160	125	-	464	93,7	59,0	-	55,9	33,8	7,45	-	55,9	33,8	7,45	-
		XS10_2-16SBD115_160 Alt	175	-	464	132	59,0	-	48,9	33,8	7,99	-	48,9	33,8	7,99	-
		XS10_2-16SBDS115_160 Alt	190	-	464	142	59,0	-	55,9	33,8	7,99	-	55,9	33,8	7,99	-
		XS10_2-16SBD135_160	197	-	464	148	59,0	-	53,8	33,8	7,99	-	53,8	33,8	7,99	-
		XS10_2-16SBDS135_160	205	-	464	154	59,0	-	58,9	33,8	7,99	-	58,9	33,8	7,99	-
		XS10_2-16SBD155_200	213	-	464	160	59,0	-	59,2	55,4	7,99	-	59,2	55,4	7,99	-
		XS10_2-16SBDS155_200	224	-	464	168	59,0	-	62,9	49,2	7,99	-	62,9	49,2	7,99	-
		XS10_2-8STA120_160	112	-	464	112	59,0	-	22,8	15,8	8,29	-	22,8	15,8	8,29	-
		XS10_2-12STA120_160	151	-	464	151	59,0	-	150	27,3	8,29	-	150	27,3	8,29	-
		XS10_2-8STA120_200	124	-	464	124	59,0	-	50,0	51,3	8,29	-	50,0	51,3	8,29	-
		XS10_2-12STA160_200	182	-	464	182	59,0	-	180	51,3	8,29	-	180	51,3	8,29	-
				γ <sub>M,C</sub>	-	γ <sub>M,1</sub>	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,T</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,T</sub>	γ <sub>M,0</sub>

<sup>1)</sup> When 4 post bases are used, the characteristic load-carrying capacities may be increased by a factor of 2,0.

<sup>2)</sup> When 4 post bases are used, the characteristic load-carrying capacities for F<sub>1</sub> (Tension), F<sub>23</sub> and F<sub>45</sub> may be increased by a factor of 2,0.

**Table B.2:** Characteristic load-carrying capacities (moments) for post bases in kNm and rotational stiffness values in kNm/rad

Type	Post base		M <sub>2/3,Rk</sub> (Moment)		K <sub>2/3ser</sub> (Moment)	M <sub>4/5,Rk</sub> (Moment)		K <sub>4/5ser</sub> (Moment)	
	Art.-No.	Configuration	Timber	Steel		Timber	Steel		
F70	F70_1	F70_1-4SBD75_100	1,08	0,46	-	-	-	-	
		F70_1-2STA80/BOLT120_100	-	-	-	-	-	-	
	F70_2	F70_2-6SBD95_120	1,98	2,01	60	-	-	-	
		F70_2-4STA120/BOLT160_140	2,46	2,01	50	-	-	-	
	F70_3	F70_3-8SBD115_160	4,22	3,50	190	-	-	-	
		F70_3-6STA140/BOLT180_160	4,88	3,50	190	-	-	-	
	F70_4	F70_4-12SBD 160	11,3	6,53	640	-	-	-	
		F70_4-8STA160/BOLT180_160	10,6	6,53	580	-	-	-	
	F70_5	F70_5-16SBD 175	17,2	11,4	900	-	-	-	
		F70_4-12STA180/BOLT220_200	18,0	11,4	700	-	-	-	
		γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-		
XS10	XS10_1	XS10_1-16SBD115_160	3,08	5,93	55	3,08	5,93	55	
		XS10_1-16SBD95_140	2,75	5,93	55	2,75	5,93	55	
		XS10_1-16SBD115_140	3,03	5,93	55	3,03	5,93	55	
		XS10_1-16SBD135_160	3,34	5,93	55	3,34	5,93	55	
		XS10_1-16SBD195_200	5,93	5,93	55	5,93	5,93	55	
		XS10_1-8STA120_160	2,09	5,93	140	2,09	5,93	140	
	XS10_2	XS10_2-16SBD115_160	3,03	11,5	350	3,03	11,5	350	
		XS10_2-16SBD115_160 Alt	3,01	11,5	350	3,01	11,5	350	
		XS10_2-16SBD135_160	3,33	11,5	350	3,33	11,5	350	
		XS10_2-16SBD155_200	3,68	11,5	350	3,68	11,5	350	
		XS10_2-16SBD195_200	11,5	11,5	350	11,5	11,5	350	
		XS10_2-8STA120_160	1,74	11,5	130	1,74	11,5	130	
		XS10_2-12STA120_160	4,19	11,5	160	4,19	11,5	160	
		XS10_2-8STA120_200	4,65	11,5	130	4,65	11,5	130	
		XS10_2-12STA160_200	6,74	11,5	160	6,74	11,5	160	
				γ <sub>M,C</sub>	γ <sub>M,0</sub>	-	γ <sub>M,C</sub>	γ <sub>M,0</sub>	-



### Acting forces and moments

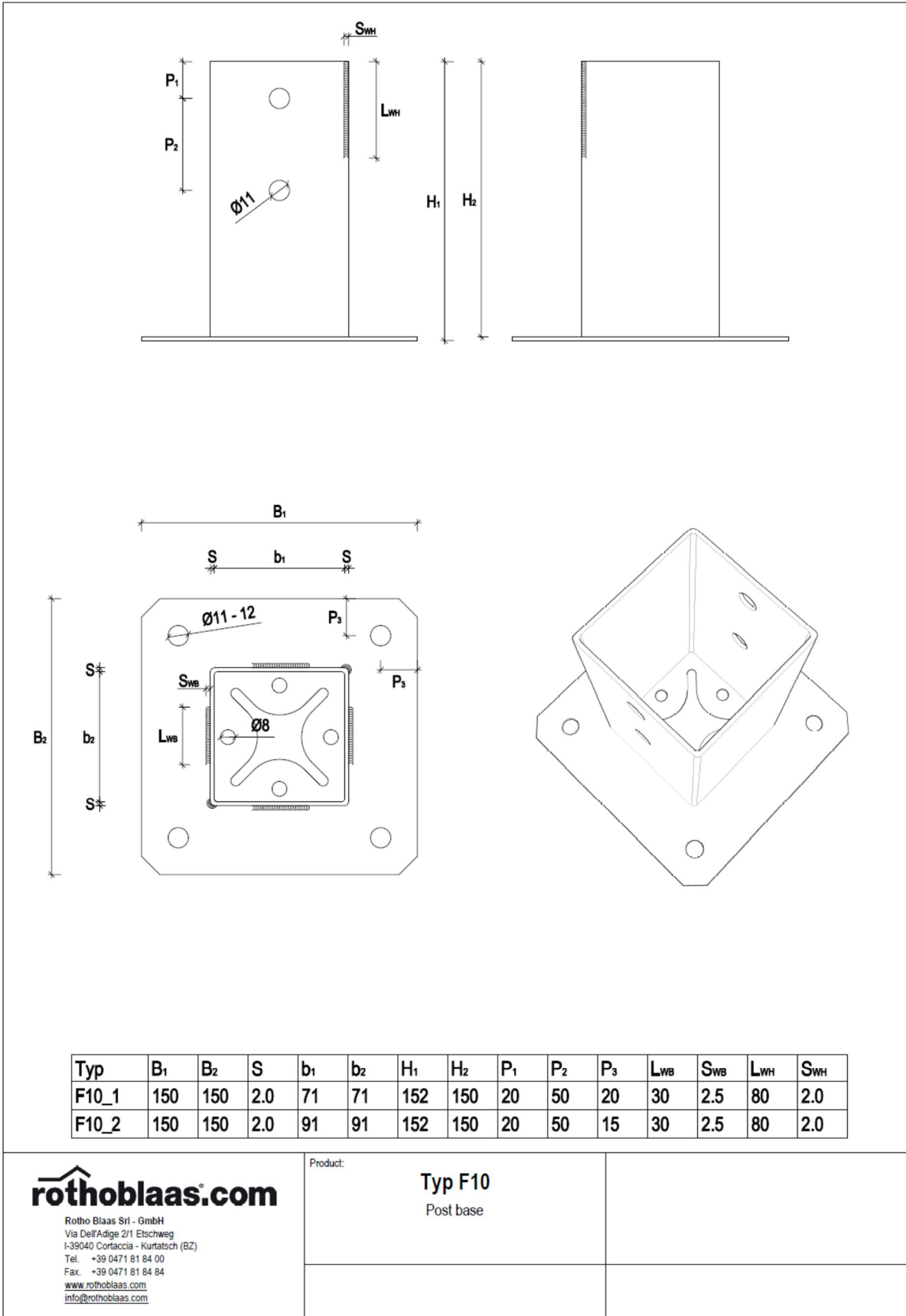
- $F_1$  axial force (tension or compression) acting along the central axis of the joint
- $F_2$  and  $F_3$  horizontal force parallel to the inner steel plate of the post base acting with the lever arm  $e_{F2/F3}$  above the foundation
- $F_4$  and  $F_5$  horizontal force perpendicular to the inner steel plate of the post base acting with the lever arm  $e_{F4/F5}$  above the foundation
- $M_2$  and  $M_3$  moment parallel to the inner steel plate of the post base
- $M_4$  and  $M_5$  moment perpendicular to the inner steel plate of the post base

### Combined forces

If the forces  $F_1$ ,  $F_2 / F_3$  and  $F_4 / F_5$  and moments  $M_2 / M_3$  and  $M_4 / M_5$  act at the same time, the following inequality shall be fulfilled:

$$\sum \frac{E_{i,d}}{R_{i,d}} = \left( \frac{F_{1,t,Ed}}{F_{1,t,Rd}} \right) + \left( \frac{F_{1,c,Ed}}{F_{1,c,Rd}} \right) + \left( \frac{F_{2/3,Ed}}{F_{2/3,Rd}} \right) + \left( \frac{F_{4/5,Ed}}{F_{4/5,Rd}} \right) + \left( \frac{M_{2/3,Ed}}{M_{2/3,Rd}} \right) + \left( \frac{M_{4/5,Ed}}{M_{4/5,Rd}} \right) \leq 1$$

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  $F_1$ . This applies analogously to the moments.

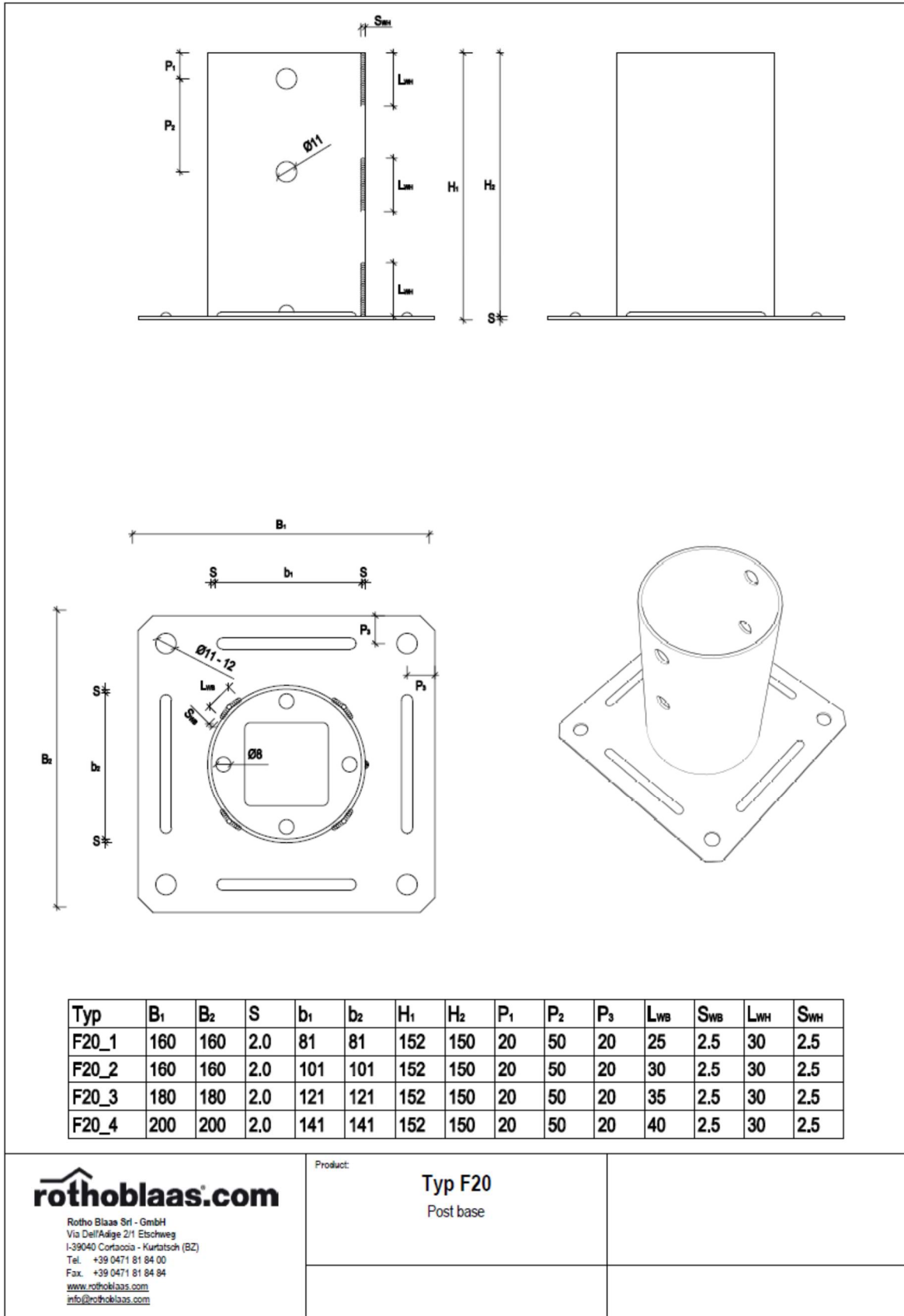


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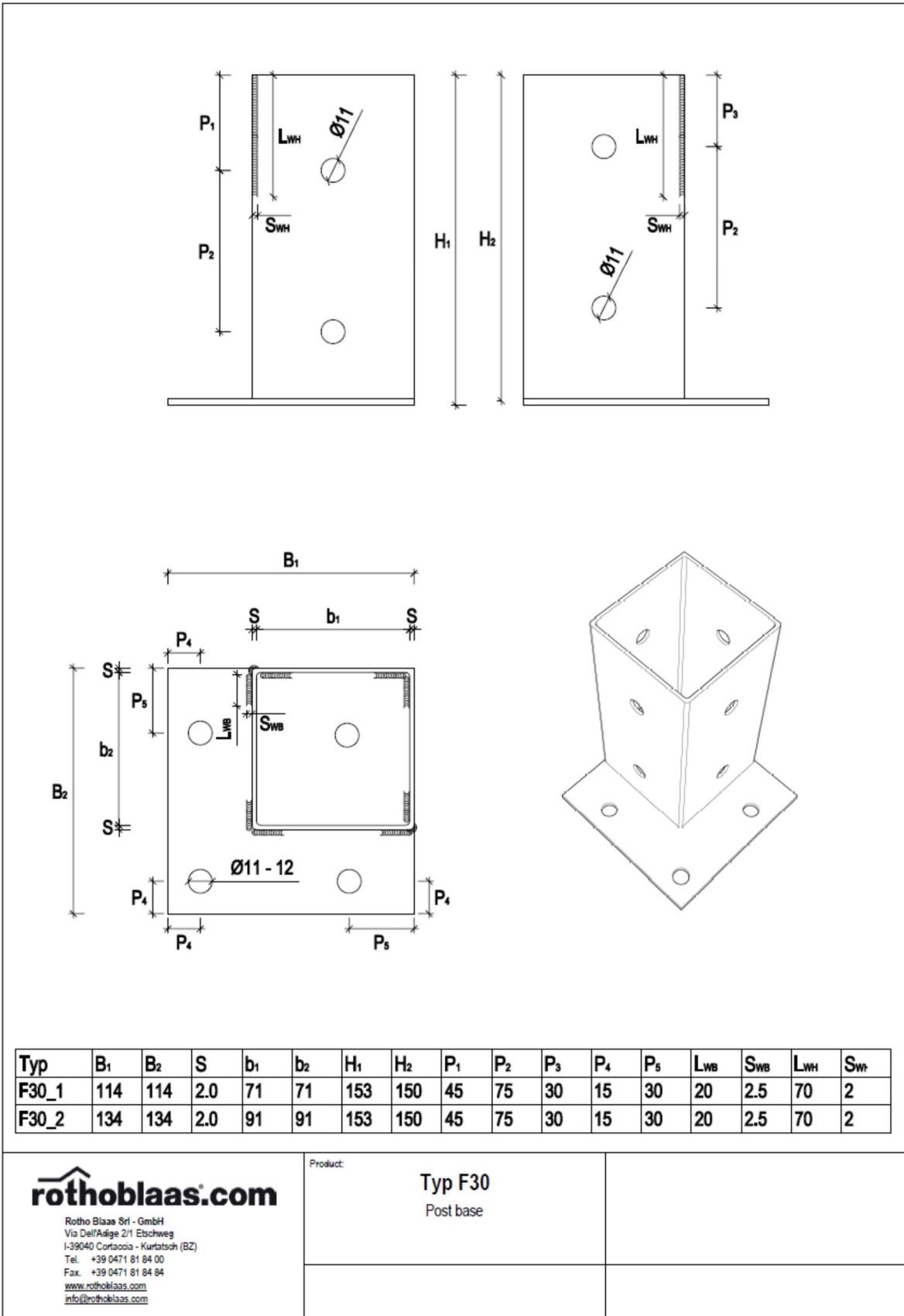
Product:

**Typ F10**  
 Post base



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Product: **Typ F20**  
 Post base

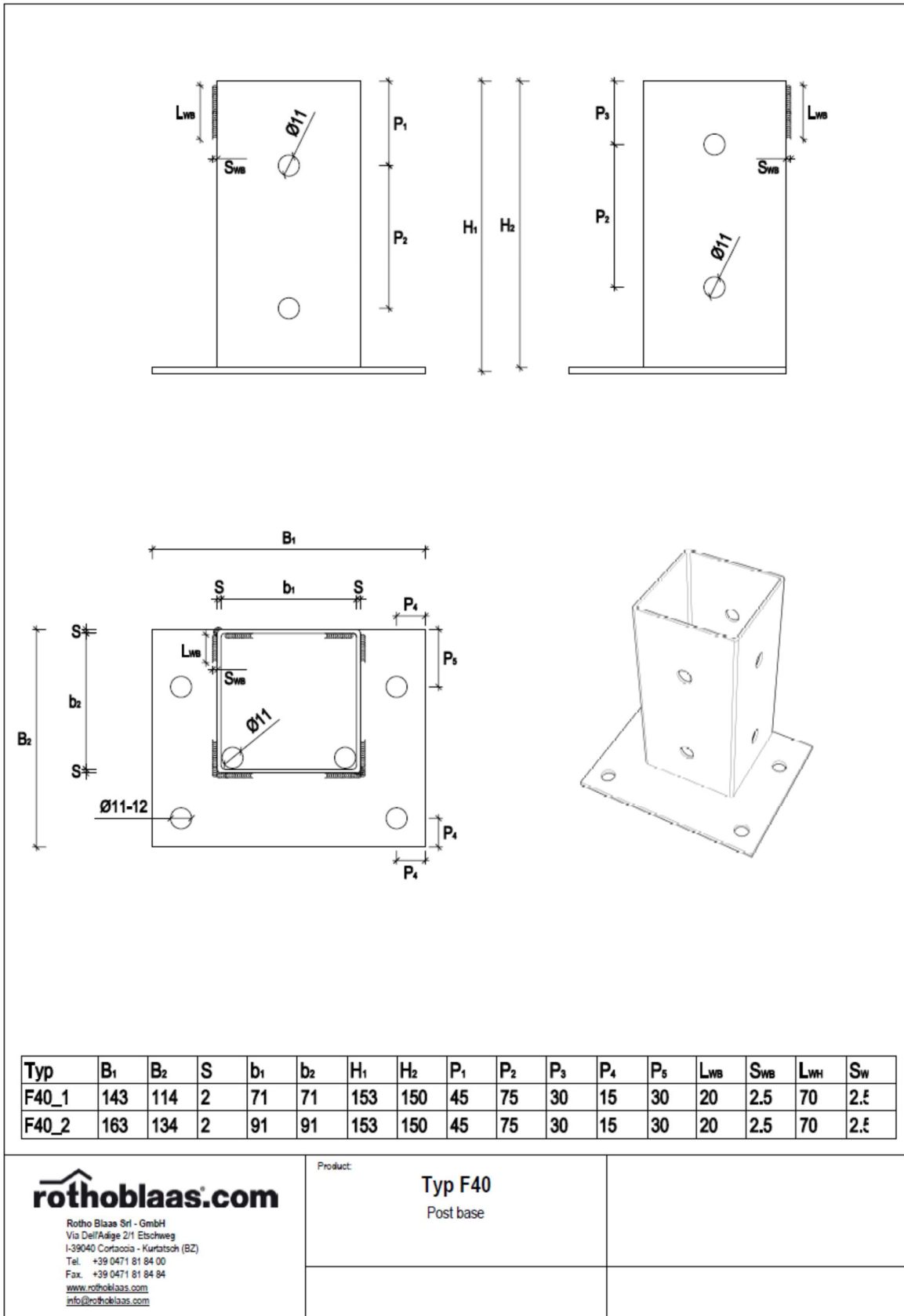


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Product:

Typ F30  
 Post base



Typ	$B_1$	$B_2$	S	$b_1$	$b_2$	$H_1$	$H_2$	$P_1$	$P_2$	$P_3$	$P_4$	$P_5$	$L_{WB}$	$S_{WB}$	$L_{WH}$	$S_W$
F40_1	143	114	2	71	71	153	150	45	75	30	15	30	20	2.5	70	2.5
F40_2	163	134	2	91	91	153	150	45	75	30	15	30	20	2.5	70	2.5

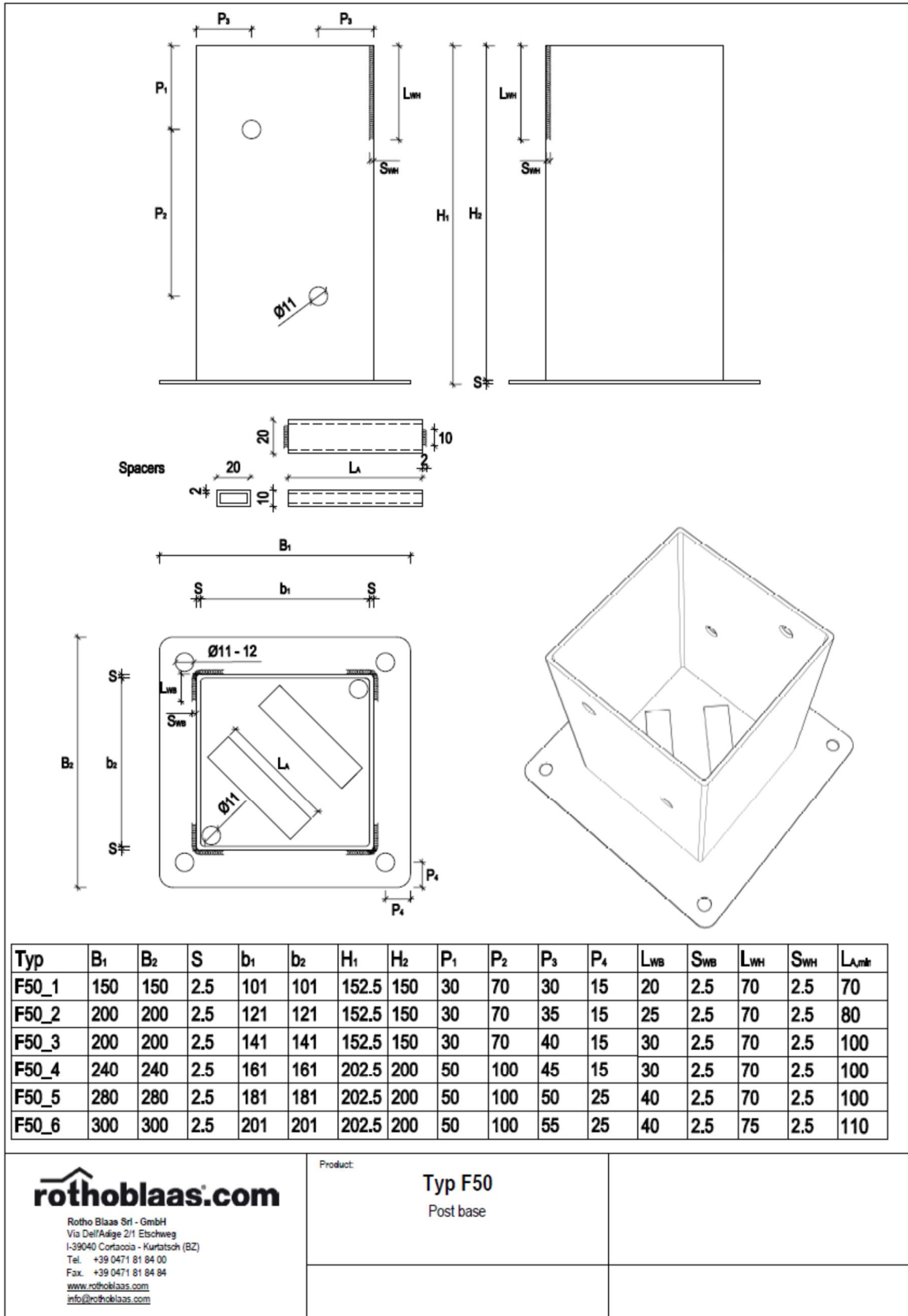
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Product:

Typ F40  
 Post base



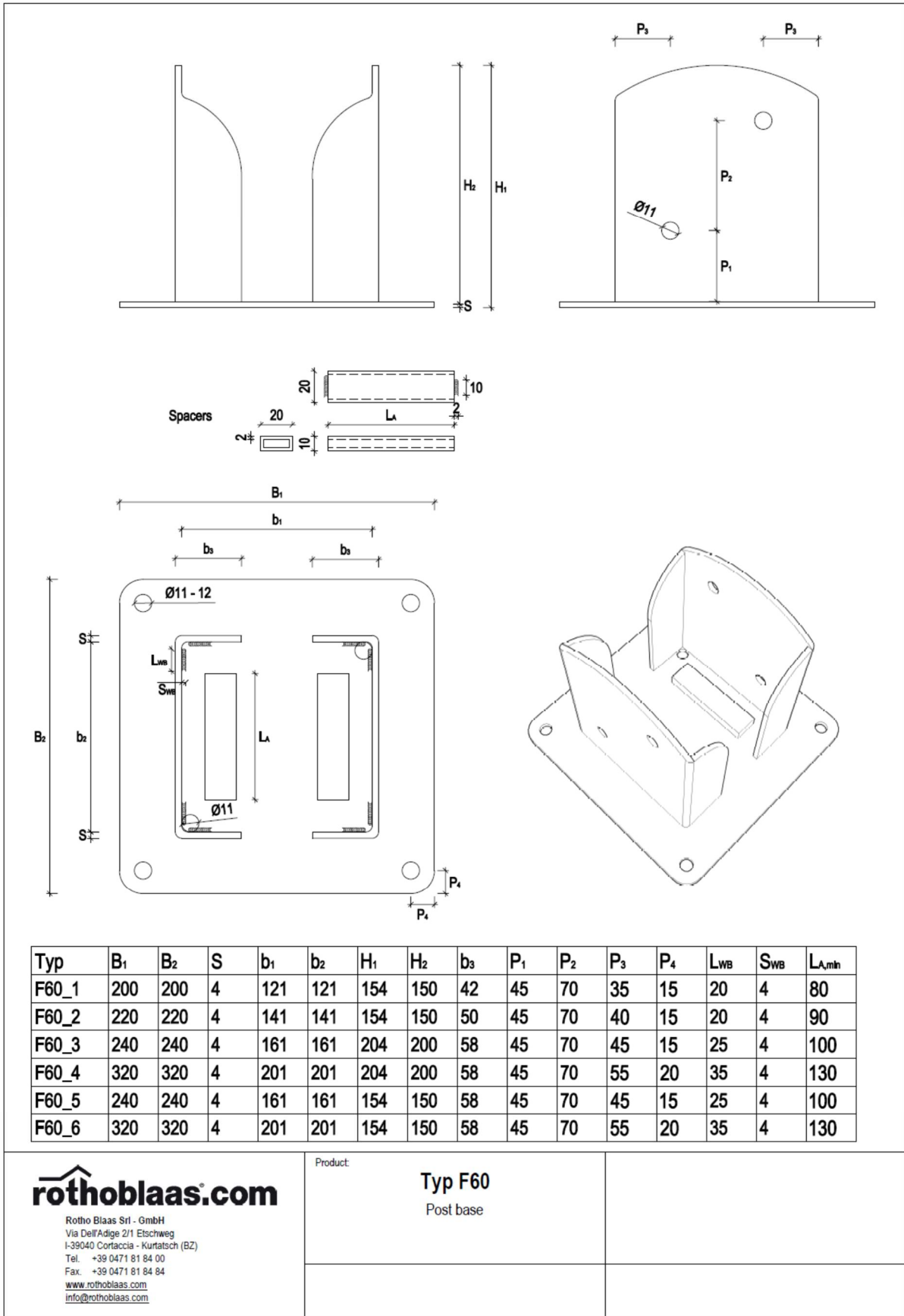


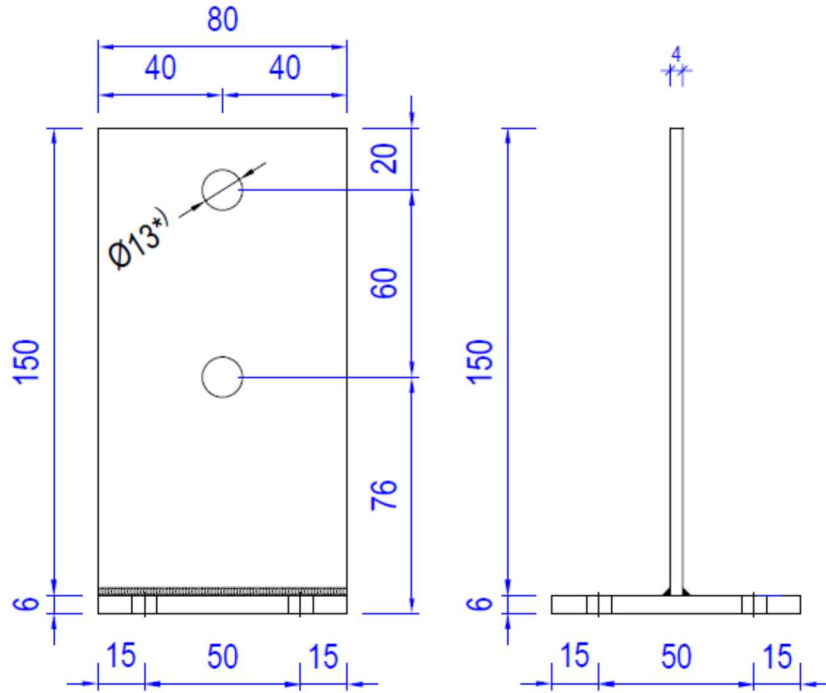
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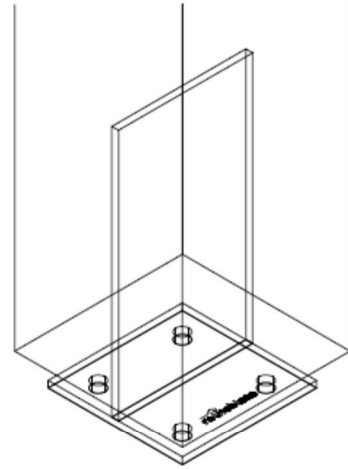
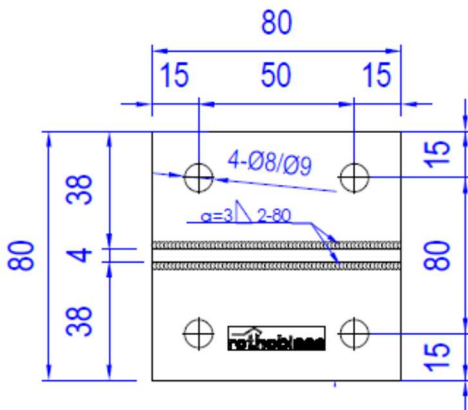
Product

Typ F50  
 Post base





\*) Holes Ø13 mm on vertical flange are optional



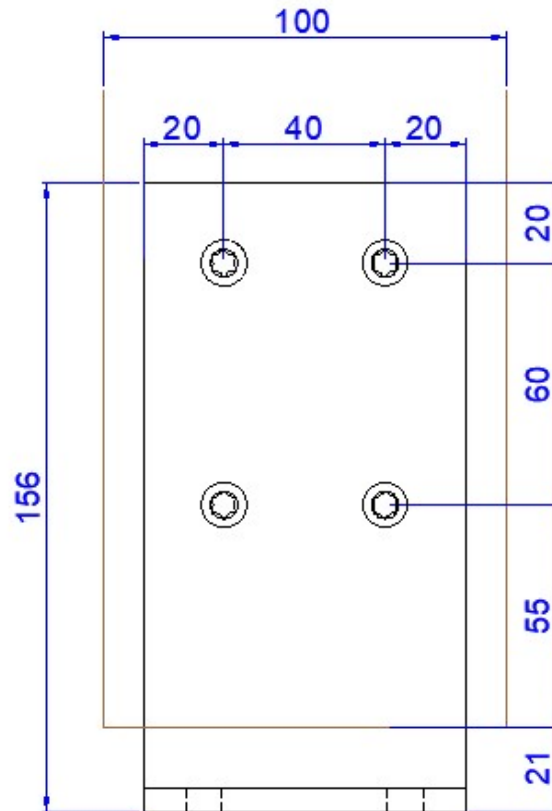
All dimension in mm



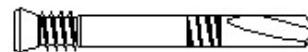
Object:

Postbase F70\_1


4 self-tapping dowels  $\varnothing 7,5 \times 75$   
Post MIN 100x100



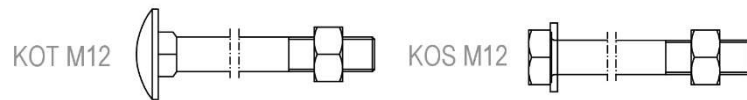
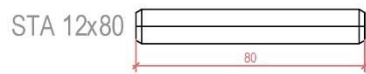
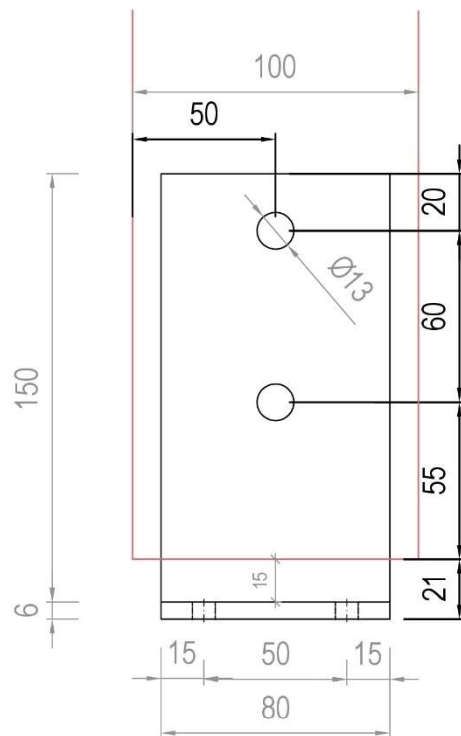
SBD/SBDS - 7.5x75



Object: Postbase F70\_1

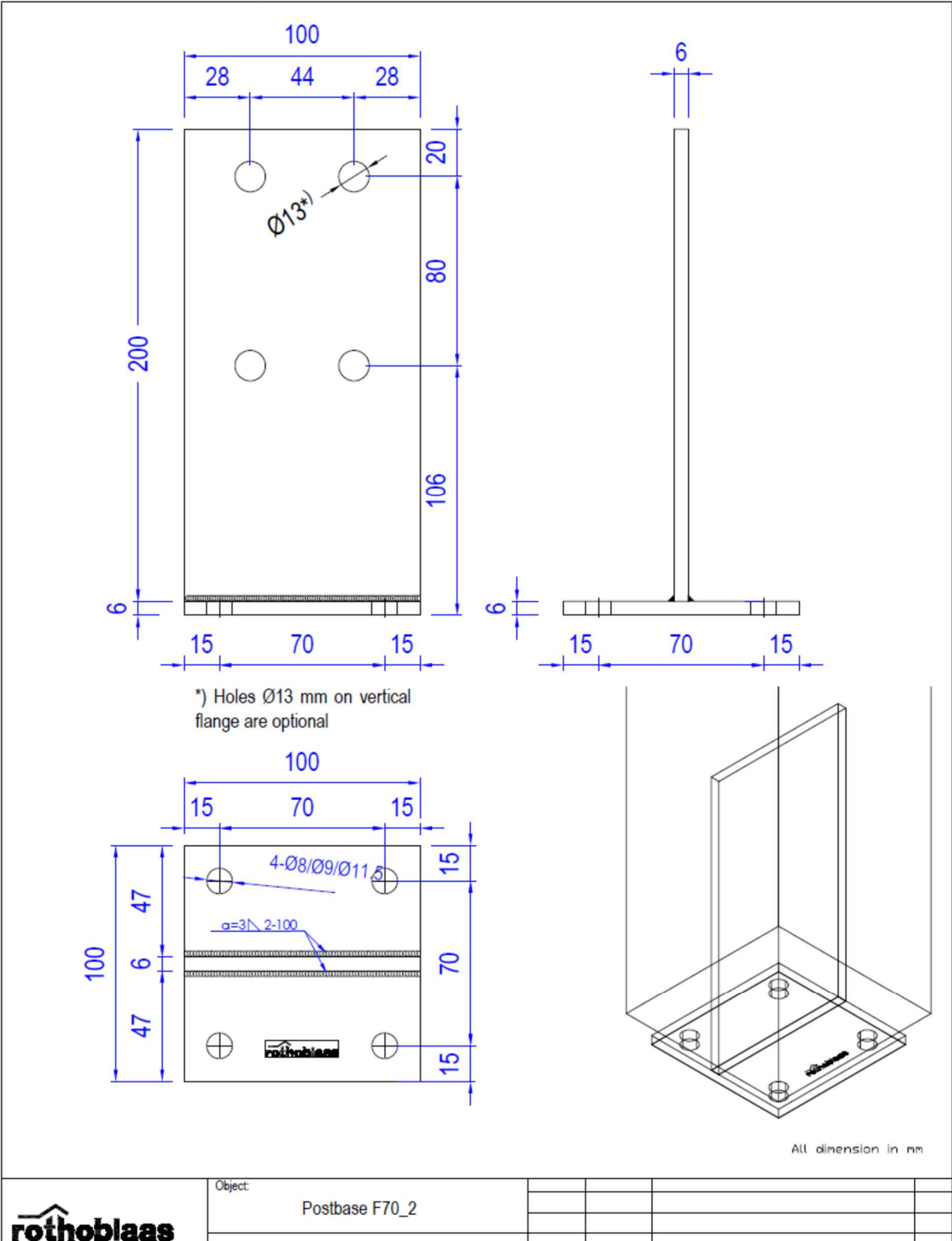
Configuration: F70\_1-4SBD75\_100 / F70\_1-4SBDS75\_100

2 smooth dowels STA Ø12 x 80  
or 2 bolts M12 x 120  
Post MIN 100x100 mm



Object: Postbase F70\_1

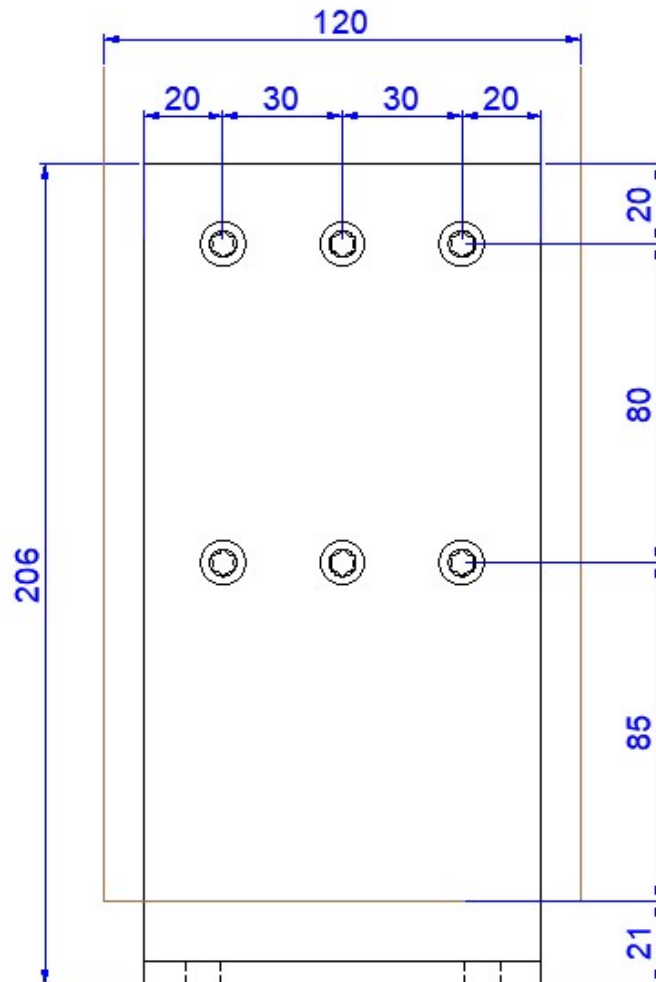
Configuration: F70\_1-2STA80/BOLT120\_100



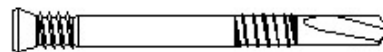
Object:

Postbase F70\_2


6 self-tapping dowels  $\varnothing 7,5 \times 95$   
Post MIN 120x120



SBD/SBDS - 7.5x95

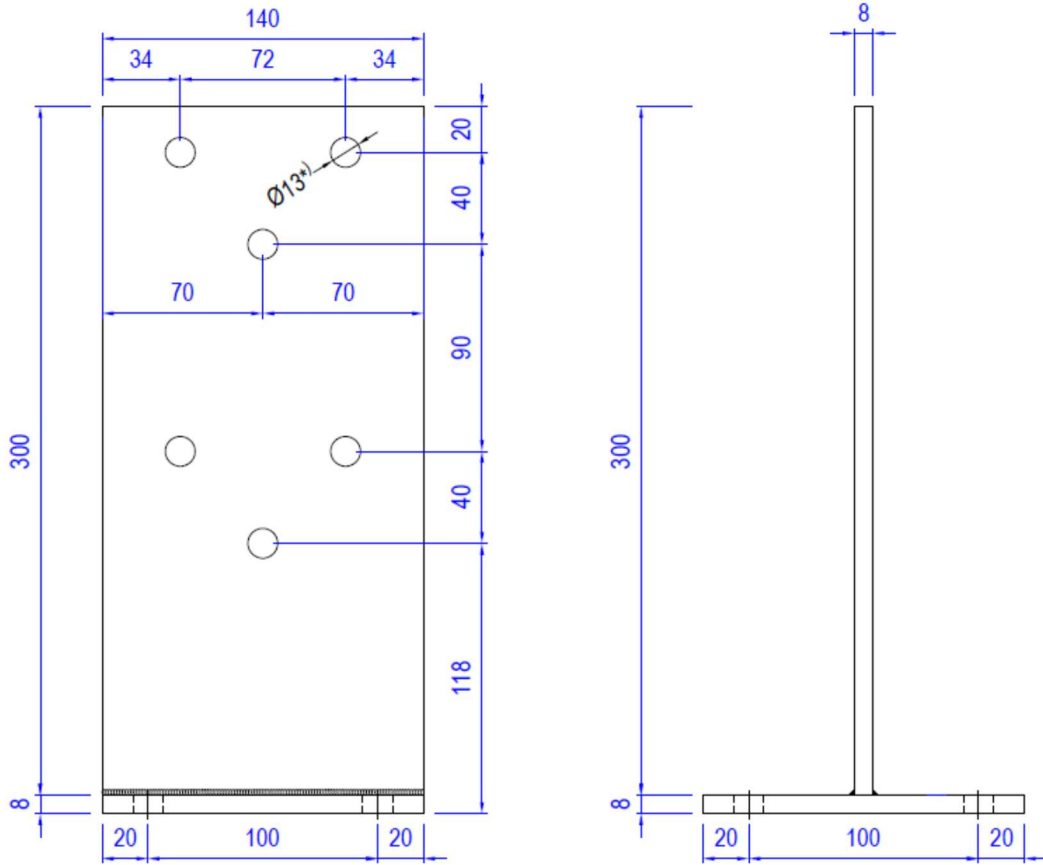


Object: Postbase F70\_2

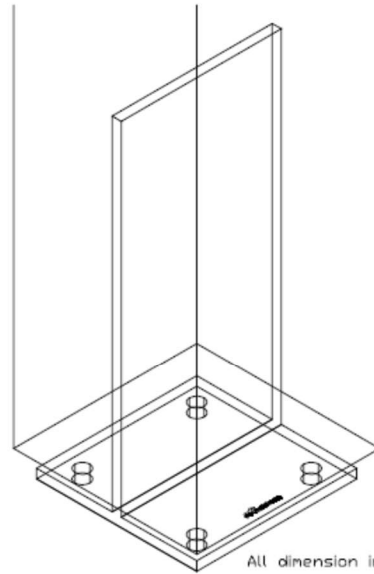
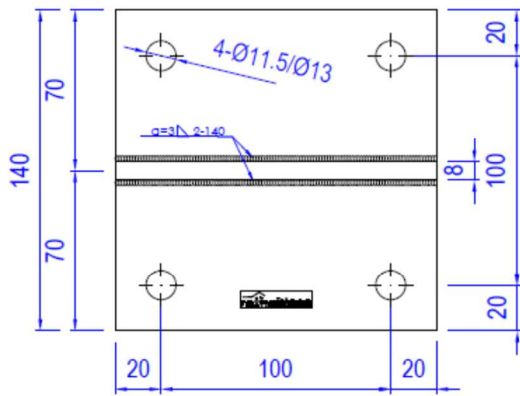
Configuration: F70\_2-6SBD95\_120 / F70\_2-6SBDS95\_120







\*) Holes Ø13 mm on vertical flange are optional



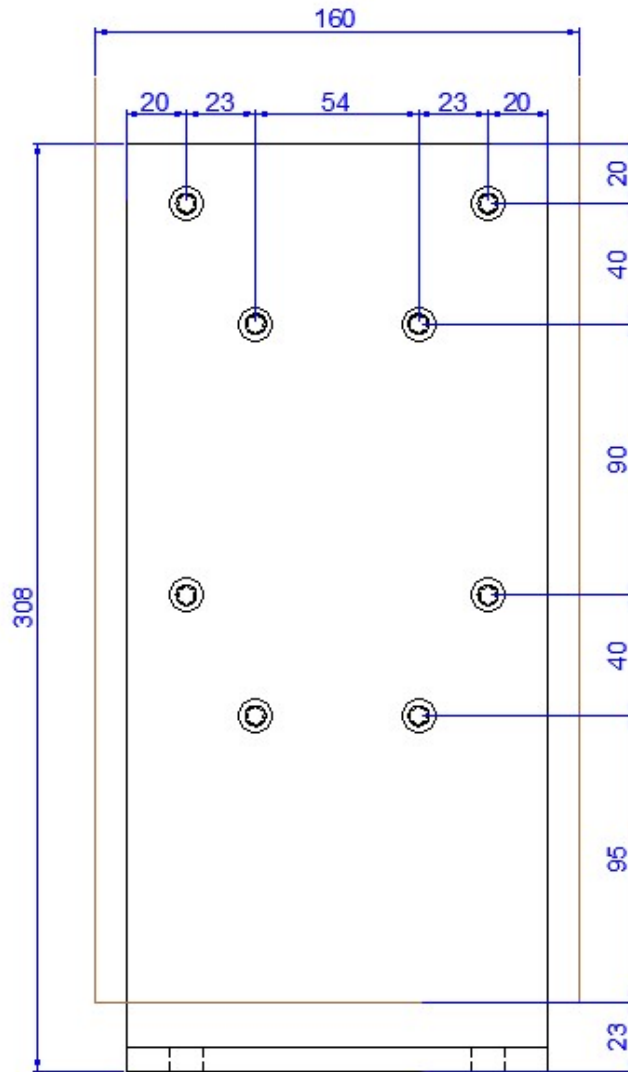
All dimension in mm



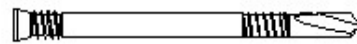
Object:

Postbase F70\_3


8 self-tapping dowels  $\varnothing 7,5 \times 115$   
Post MIN 160x160



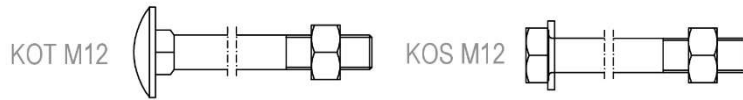
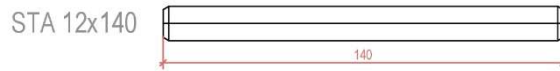
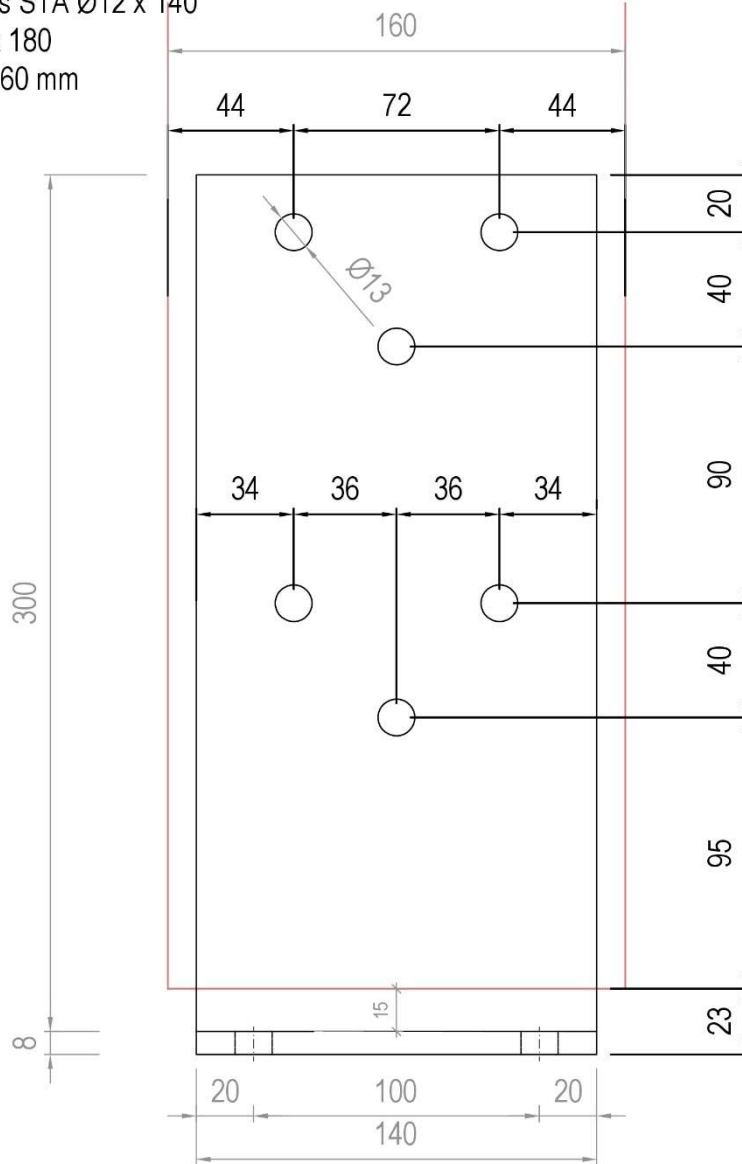
SBD/SBDS - 7.5x115



Object: Postbase F70\_3

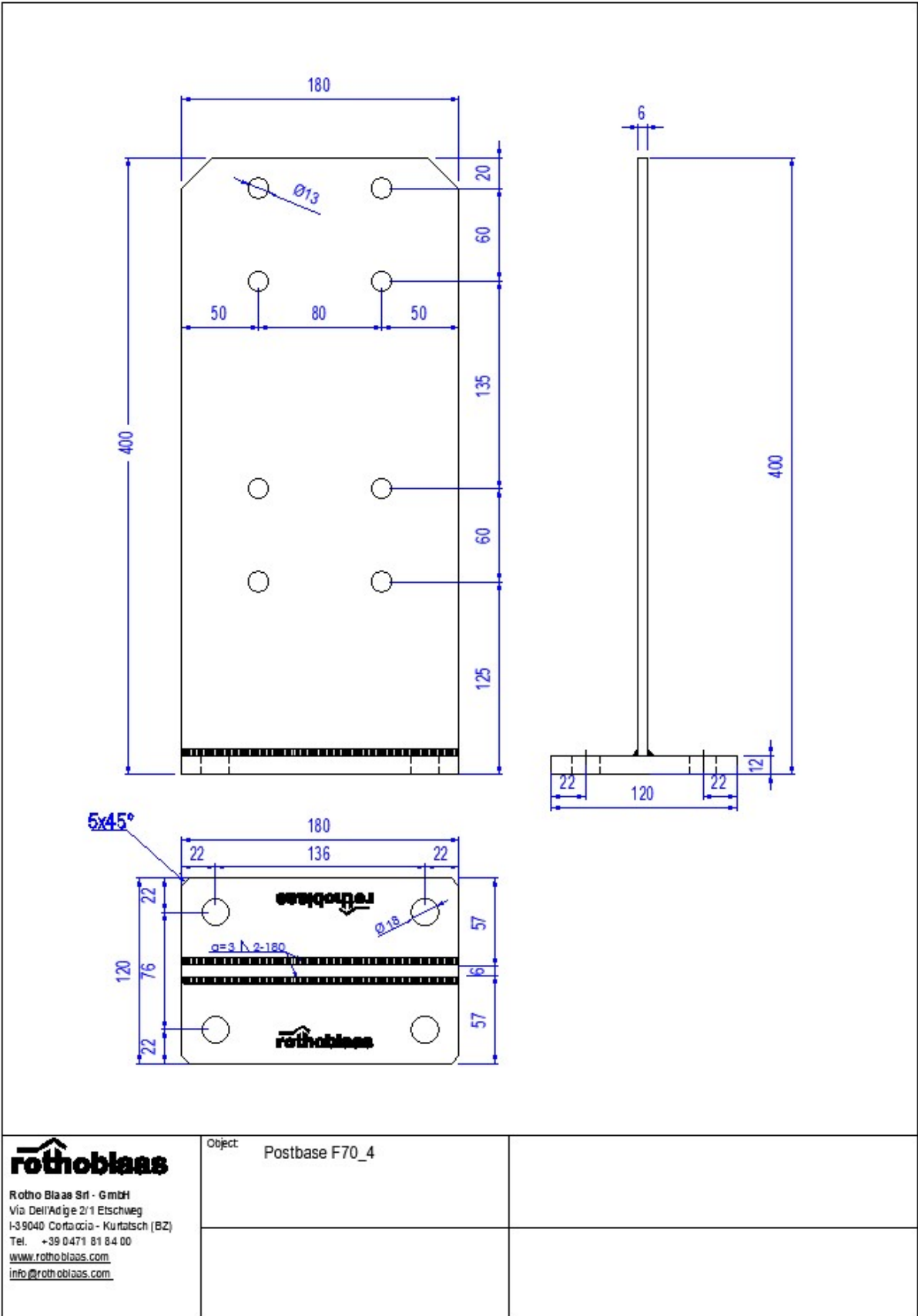
Configuration: F70\_3-8SBD115\_160 / F70\_3-8SBDS115\_160

6 smooth dowels STA  $\varnothing 12 \times 140$   
or 6 bolts M12 x 180  
Post MIN 160x160 mm



Object: Postbase F70\_3

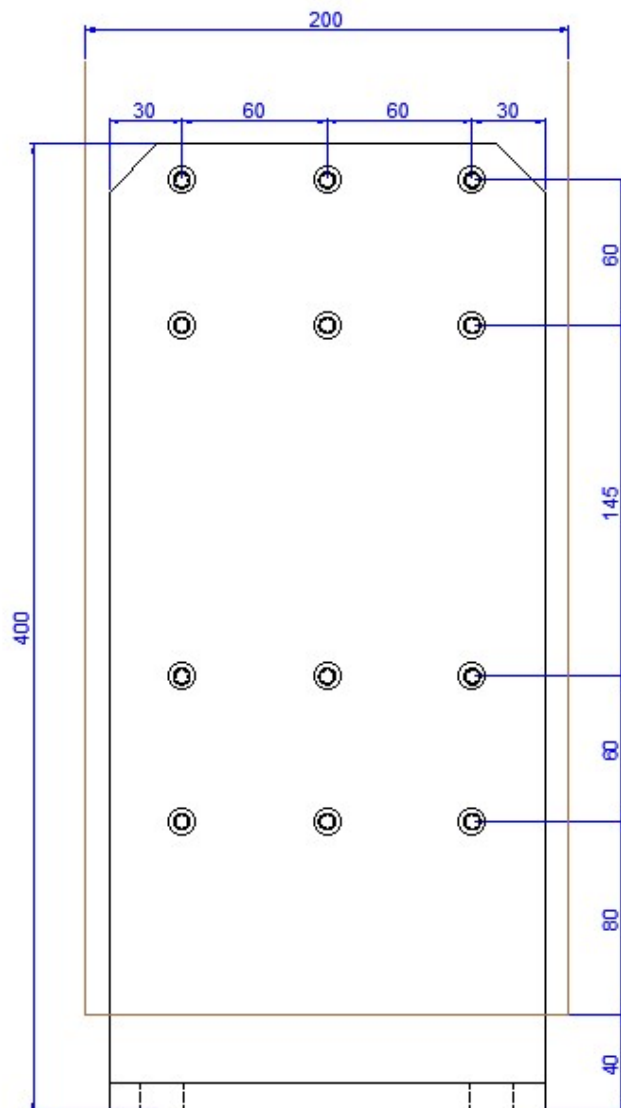
Configuration: F70\_3-6STA140/BOLT180\_160



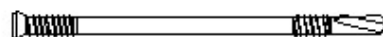
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Object Postbase F70\_4

12 self-tapping dowels  $\varnothing 7,5 \times 155$   
Post MIN 160x200

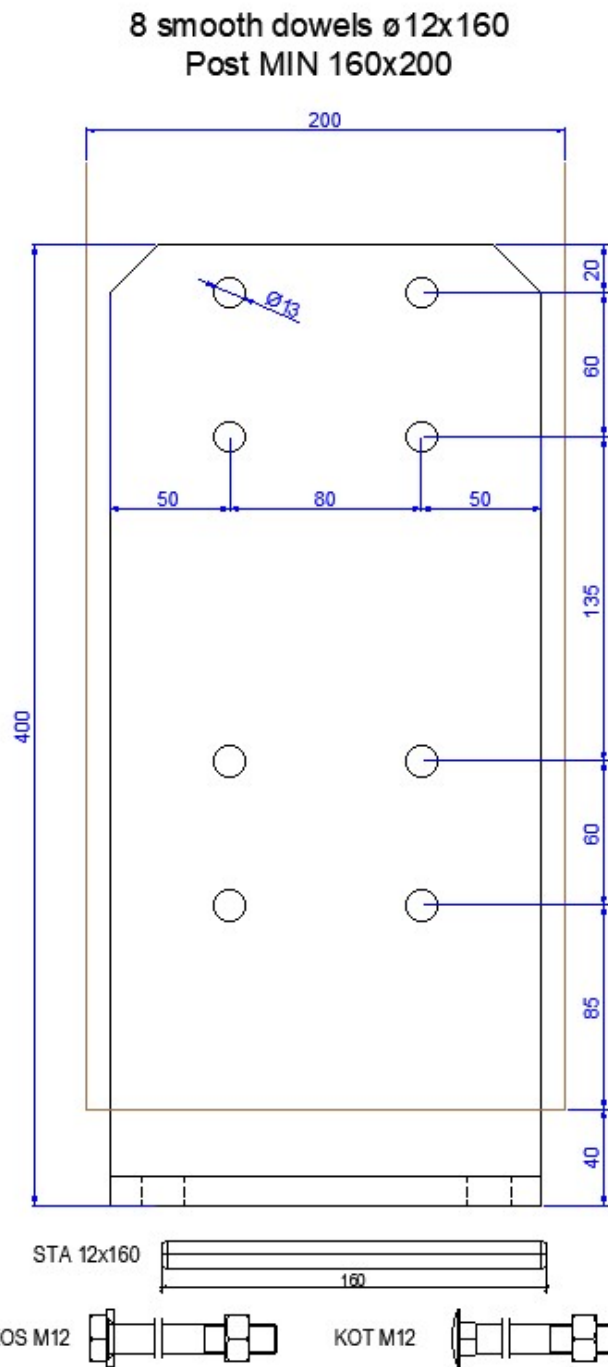


SBD/SBDS - 7.5x155



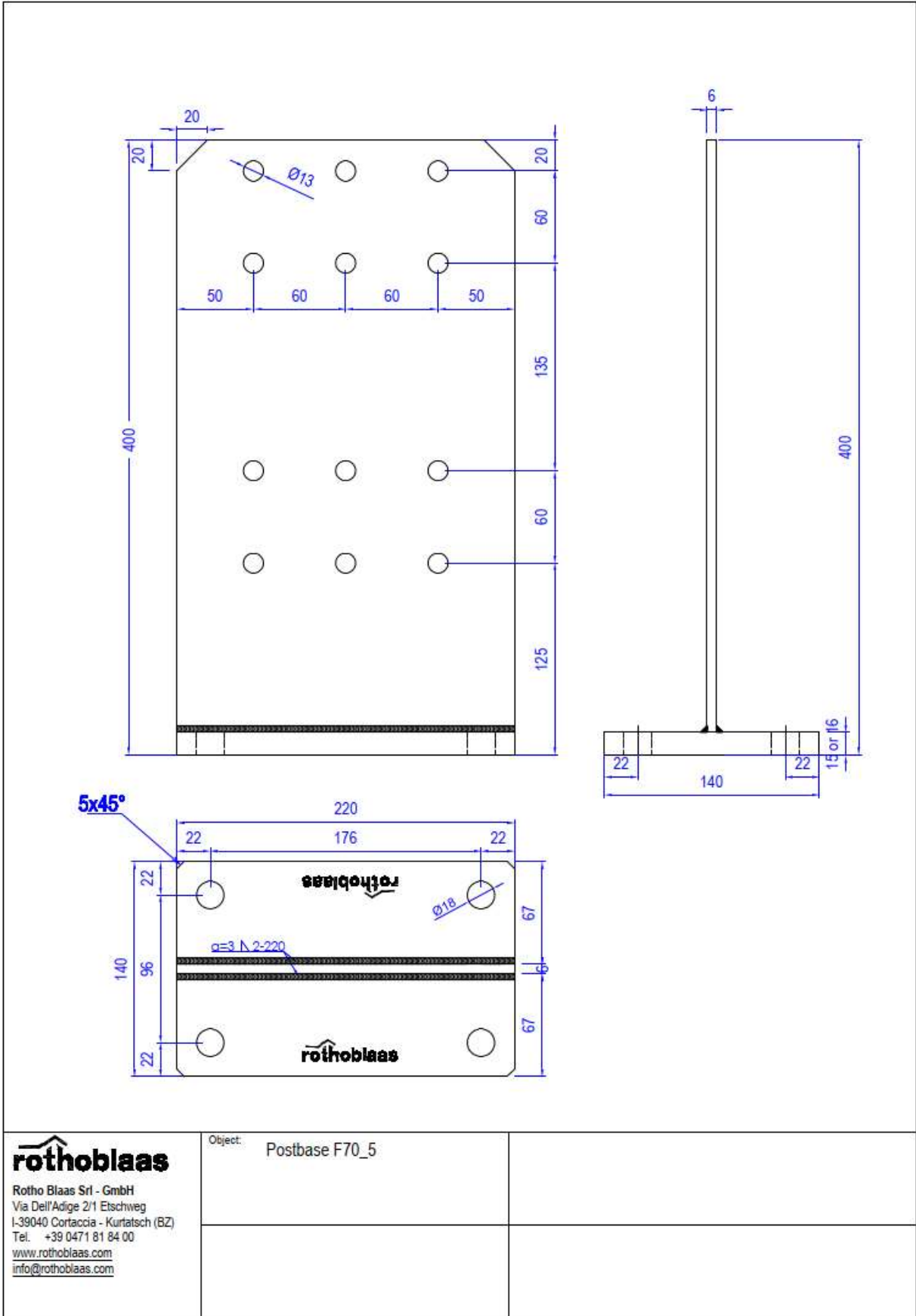
Object: Postbase F70\_4

Configuration: F70\_4-12SBD155 / F70\_4-12SBDS155



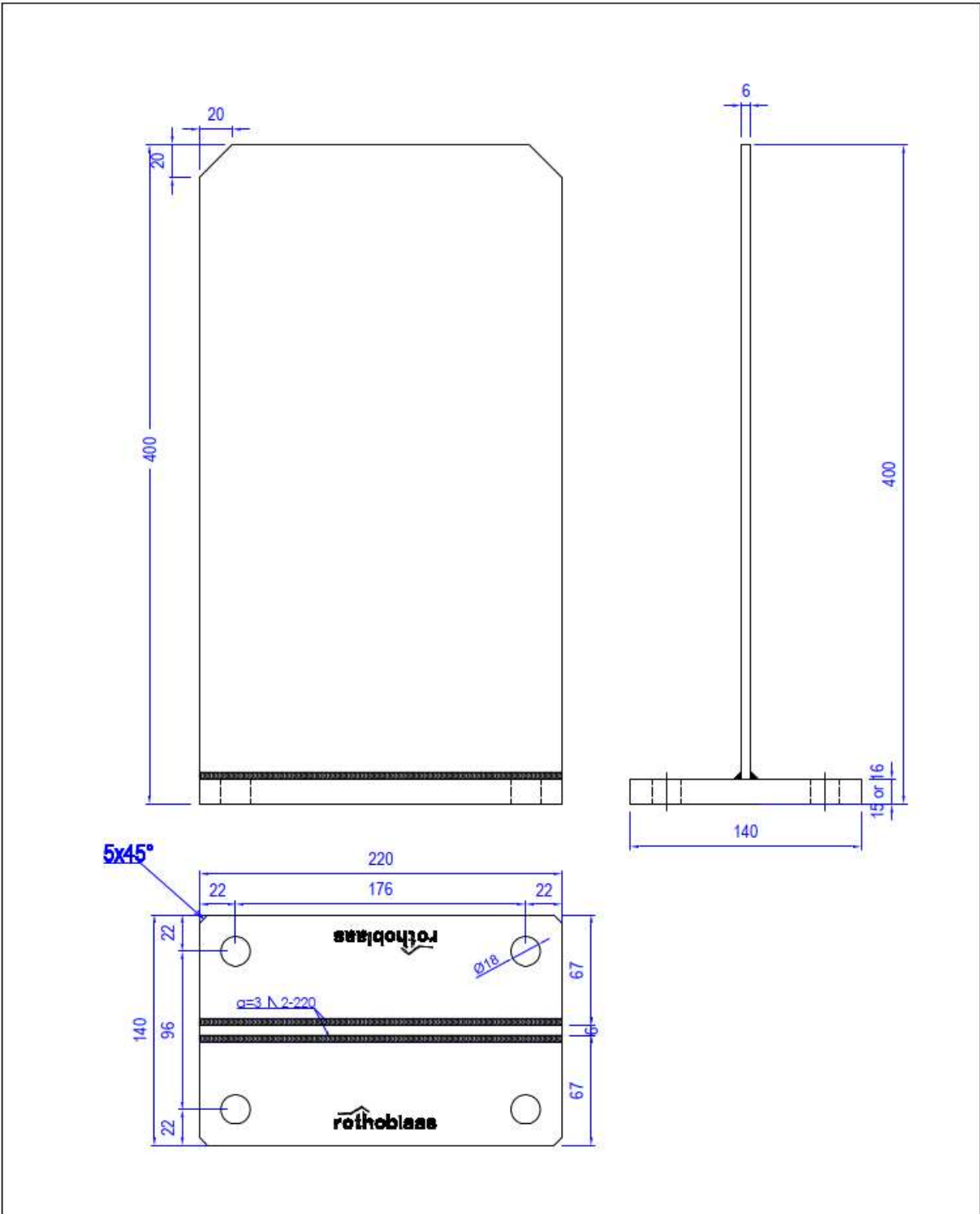
Object: Postbase F70\_4


Configuration: F70\_4-8STA160 / BOLT180\_160



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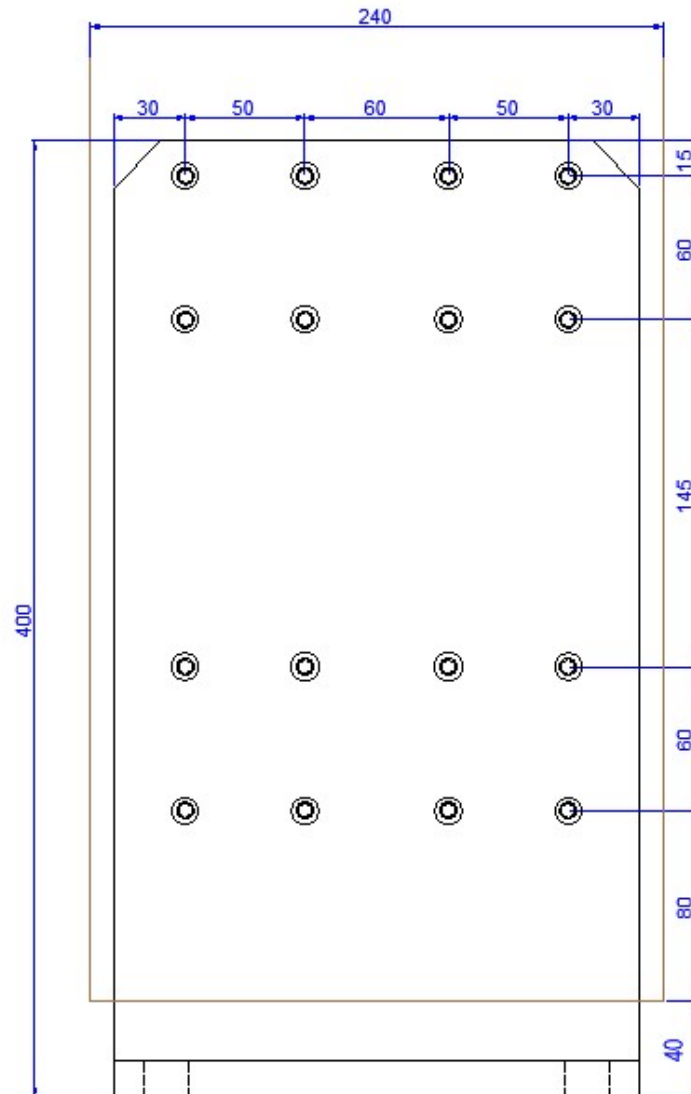
Object: Postbase F70\_5



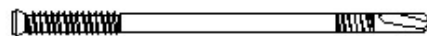
 <p>Rotho Blaas Srl - GmbH          Via Dell'Adige 2/1 Etschweg          I-39040 Cortaccia - Kurtatsch (BZ)          Tel. +39 0471 81 84 00  <a href="http://www.rothoblaas.com">www.rothoblaas.com</a>  <a href="mailto:info@rothoblaas.com">info@rothoblaas.com</a></p>	Object: Postbase F70_5	



**16 self-tapping dowels  $\varnothing 7,5 \times 175$   
Post MIN 200x240**



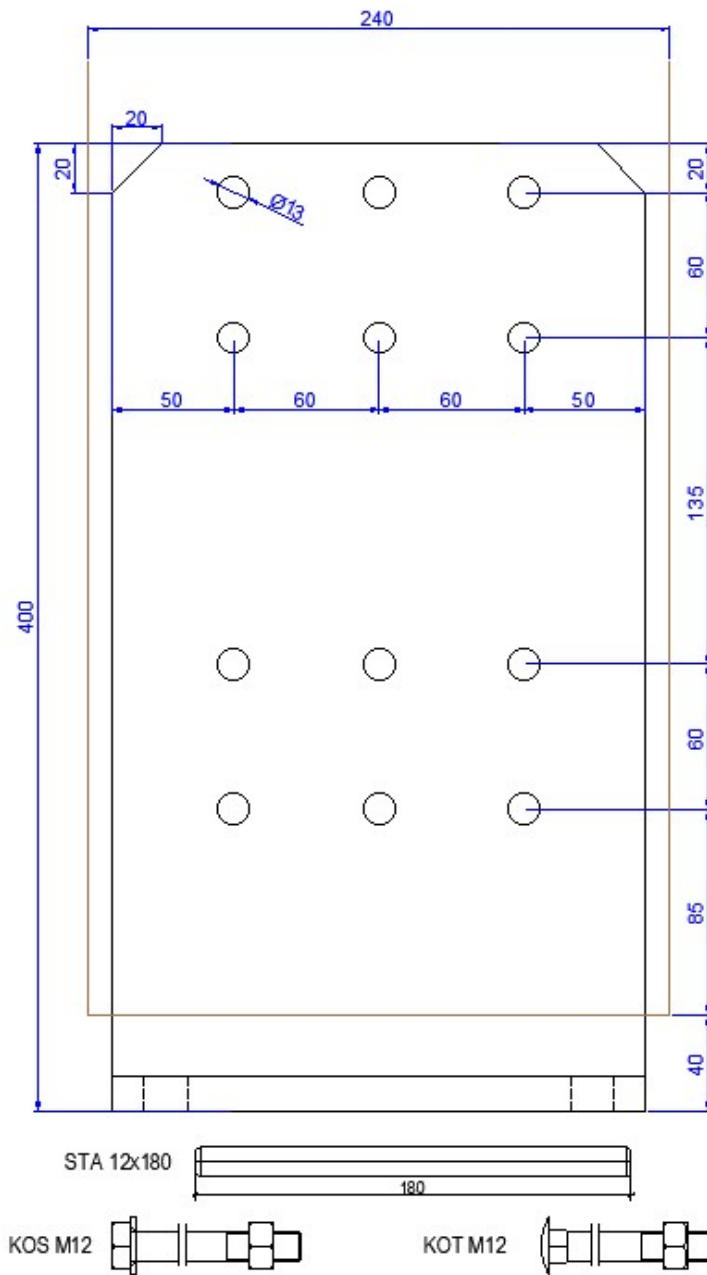
SBD/SBDS - 7.5x175



Object: Postbase F70\_5

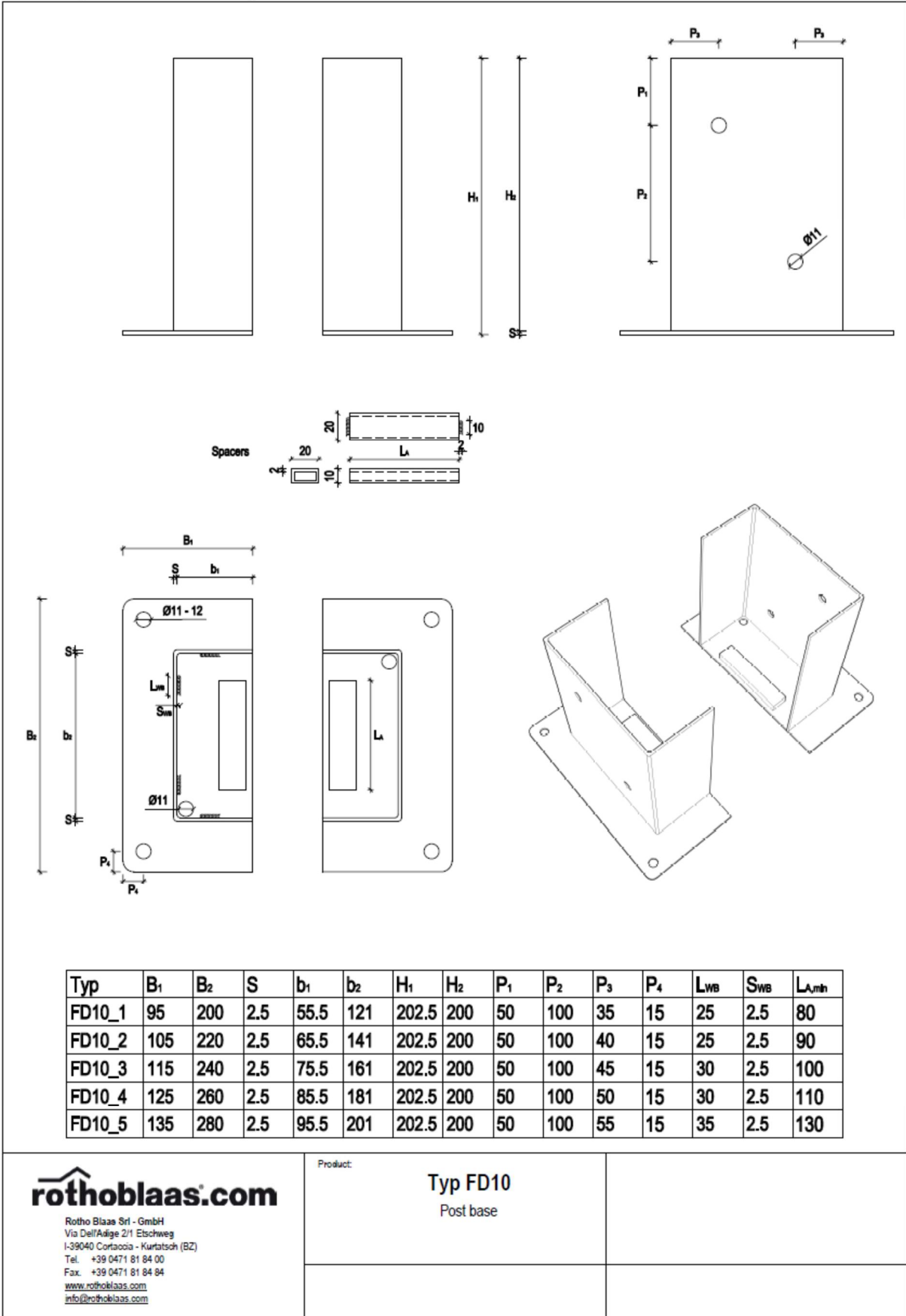
Configuration: F70\_5-16SBD175 / F70\_5-16SBDS175

12 smooth dowels  $\varnothing 12 \times 180$   
Post MIN 200x240



Object: Postbase F70\_5

Configuration: F70\_5-12STA180 / BOLT220\_200

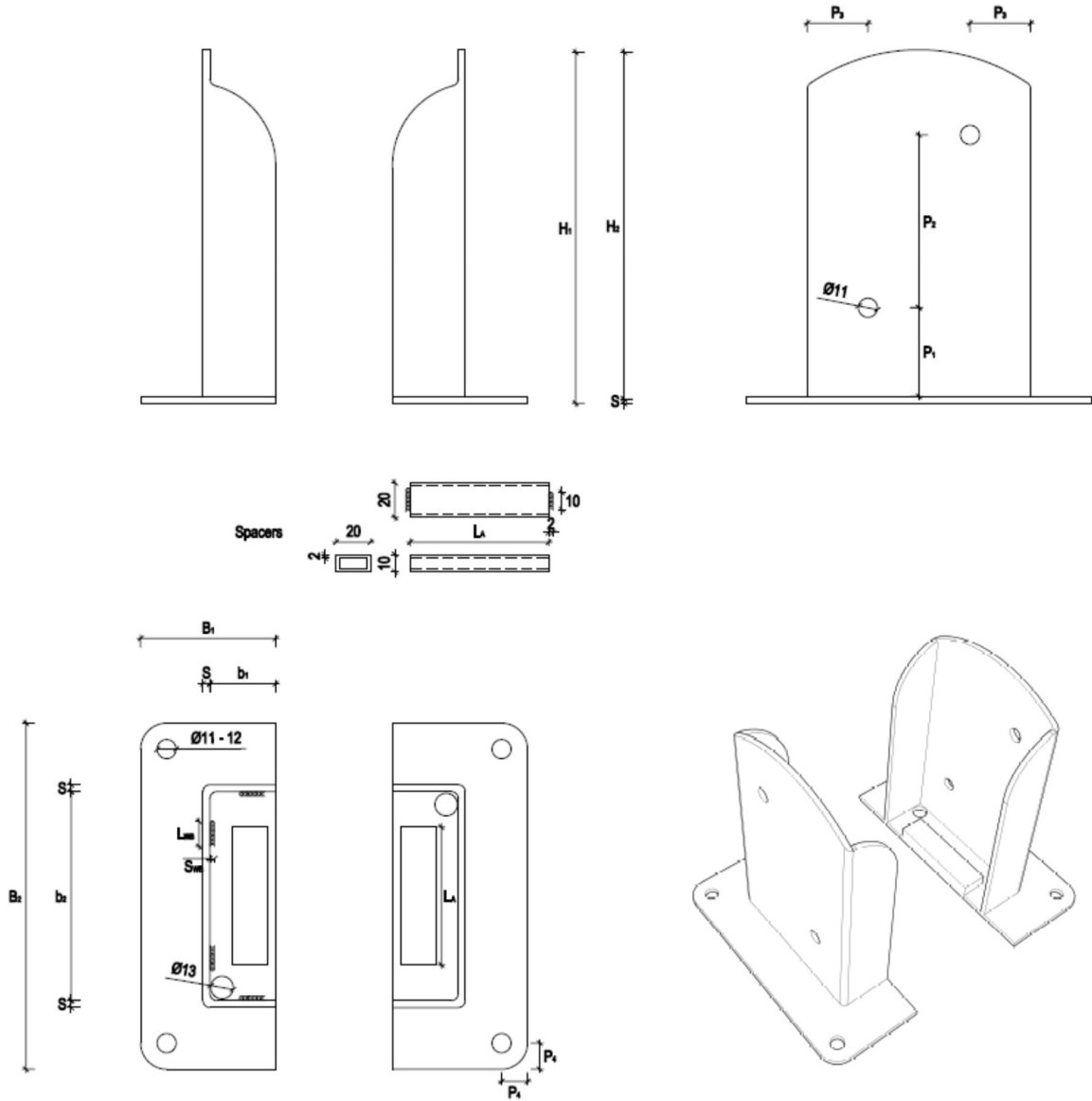


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Product:

**Typ FD10**  
 Post base



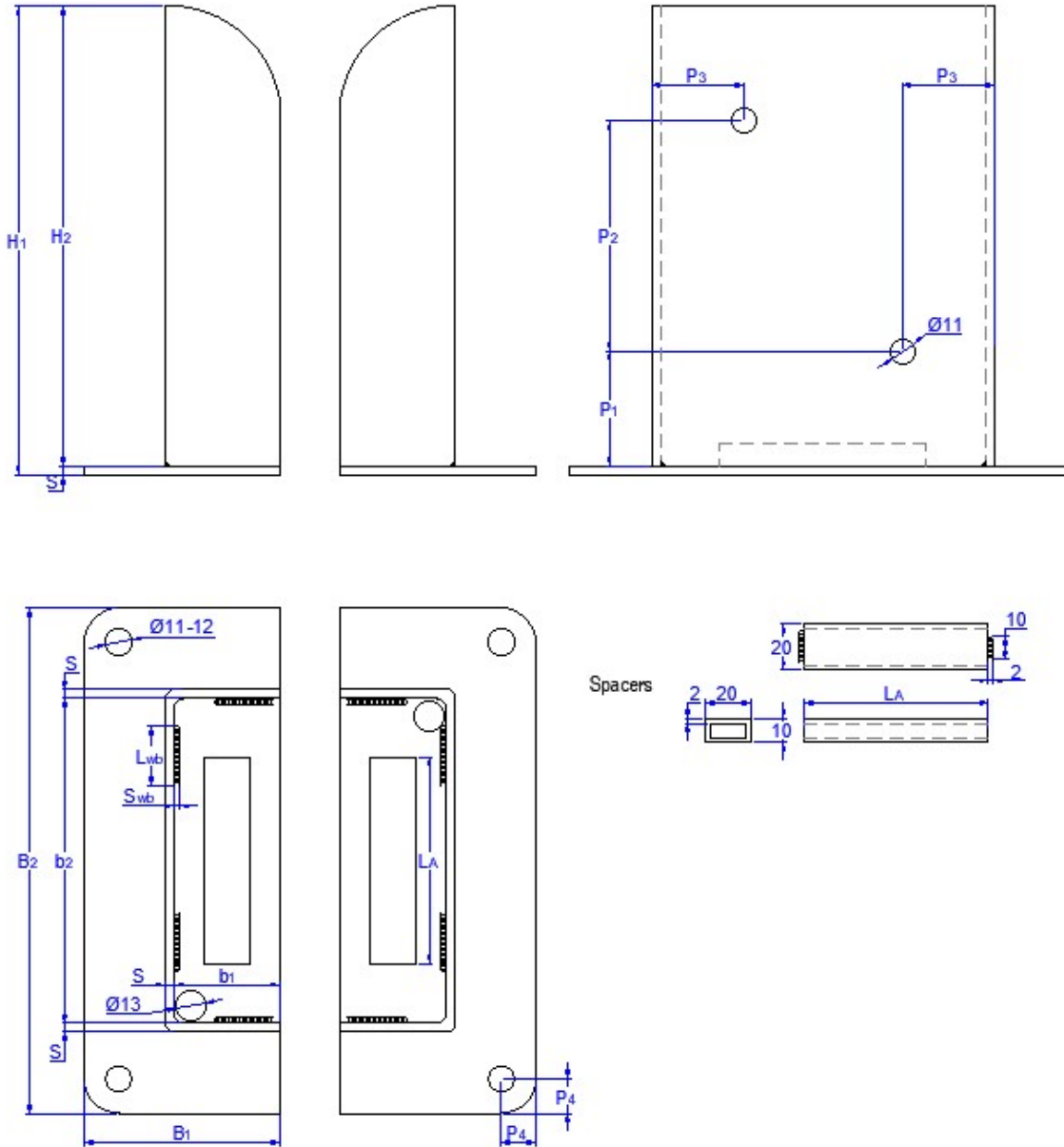
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	L <sub>WB</sub>	S <sub>WB</sub>	L <sub>Amin</sub>
FD20_1	78	200	4	38	121	204	200	50	100	35	15	20	4	80
FD20_2	85	220	4	46	141	204	200	50	100	40	15	25	4	90
FD20_3	92	240	4	54	161	204	200	50	100	45	15	30	4	100
FD20_4	105	280	4	66	201	204	200	50	100	55	15	35	4	130

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[info@rothoblaas.com](mailto:info@rothoblaas.com)

Product:

Typ FD20  
 Post base

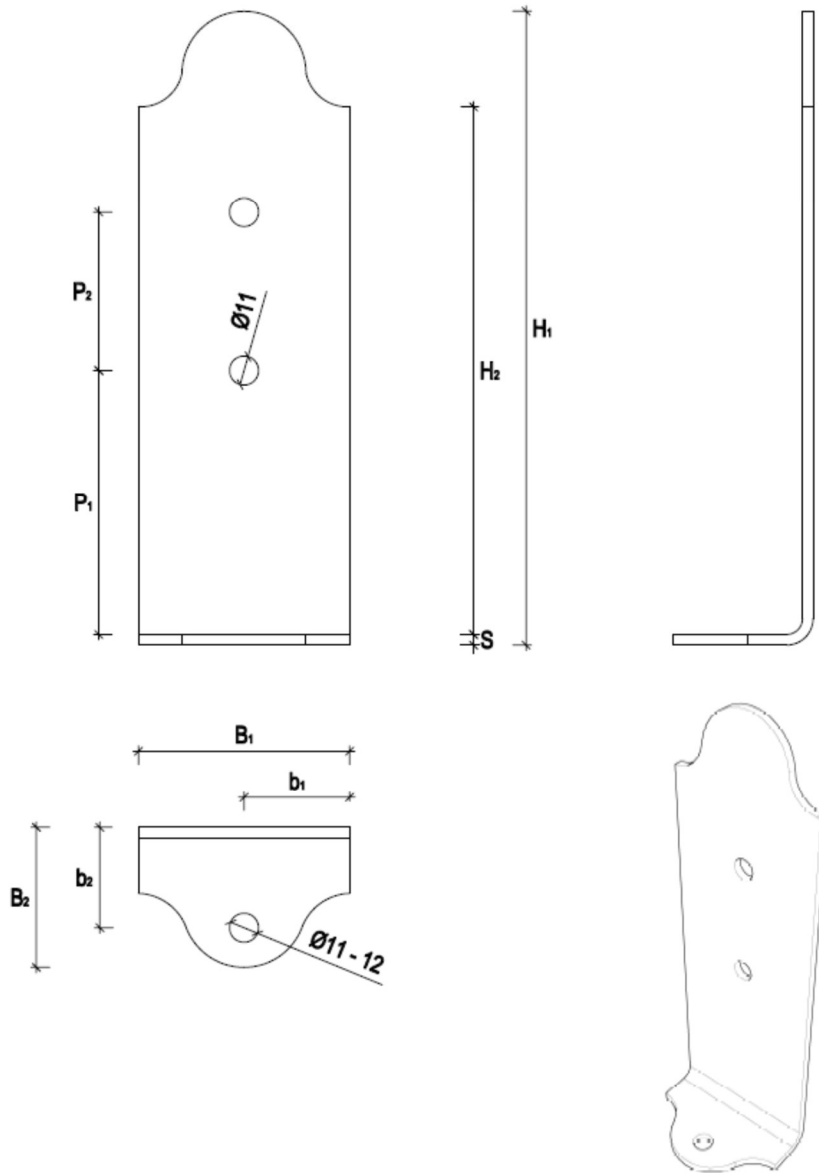


	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	L <sub>wb</sub>	S <sub>wb</sub>	L <sub>A,min</sub>
FD20_1 Alt	78	200	4	38	121	204	200	50	100	35	15	20	4	80
FD20_2 Alt	85	220	4	46	141	204	200	50	100	40	15	25	4	90
FD20_3 Alt	92	240	4	54	161	204	200	50	100	45	15	30	4	100
FD20_4 Alt	105	280	4	66	201	204	200	50	100	55	15	35	4	130

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Objekt: Postbase FD20\_Alt



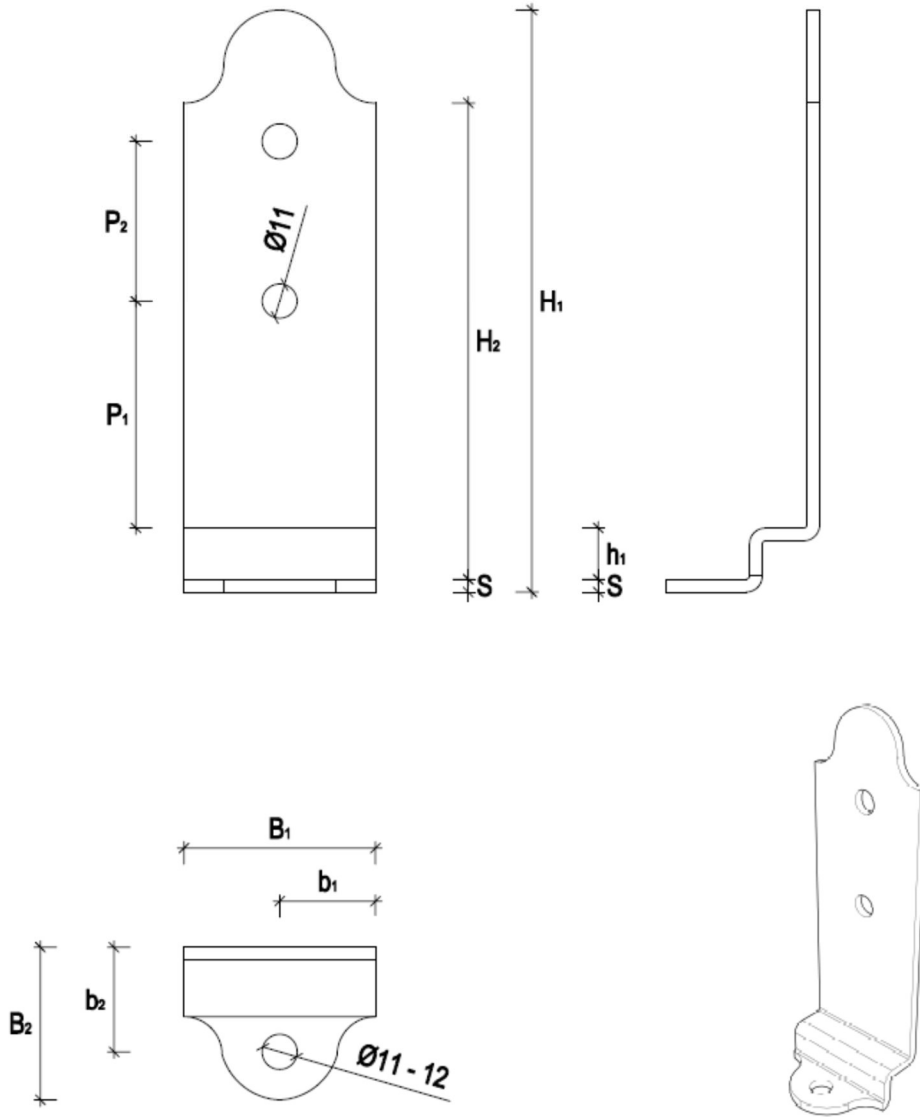
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>
FD30_1	60	50	4.0	30	30	180	150	85	50
FD30_2	80	50	4.0	40	38	240	200	100	60

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Product:

Typ FD30  
 Post base



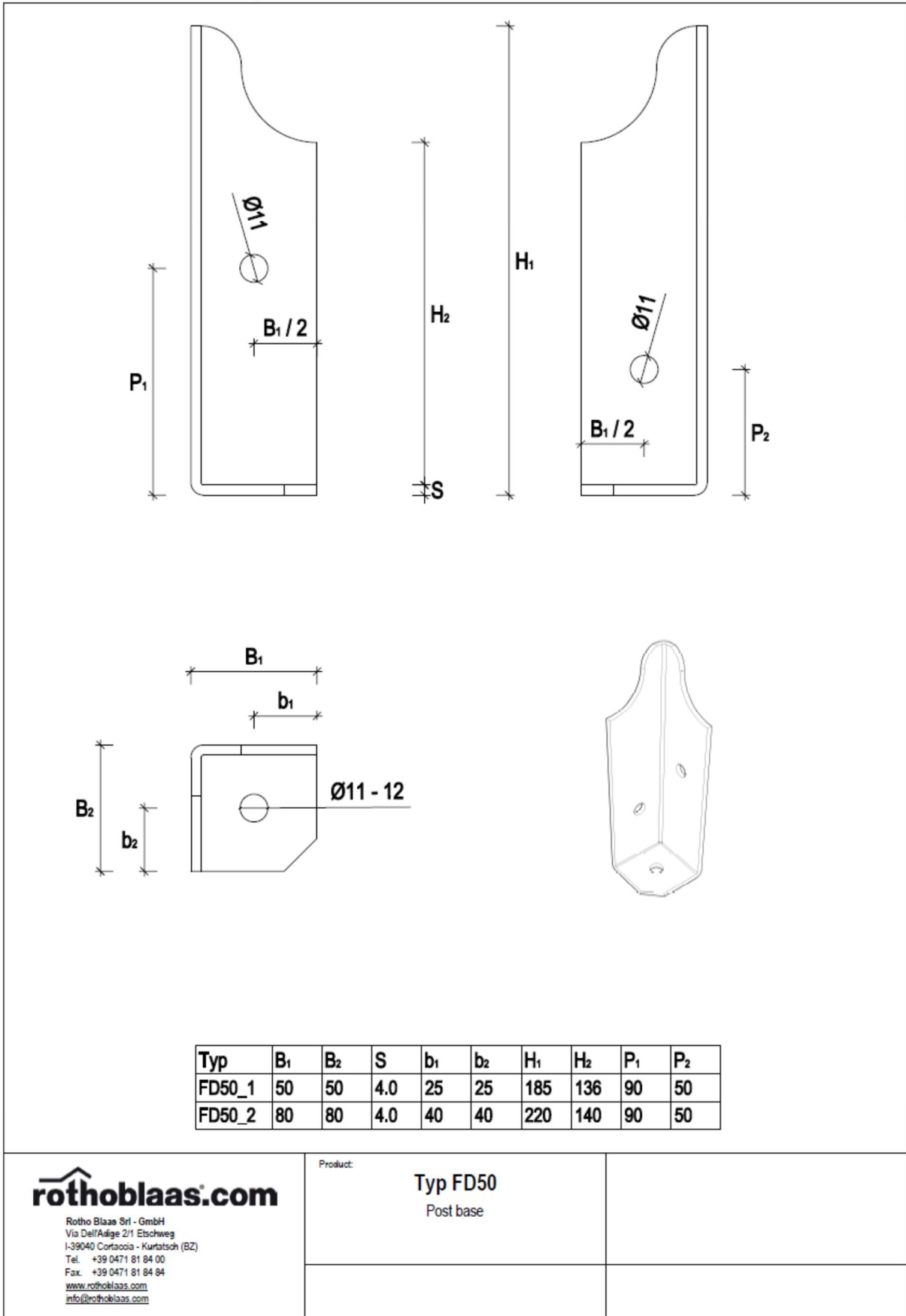
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	h <sub>1</sub>	P <sub>1</sub>	P <sub>2</sub>
FD40_1	60	50	4.0	30	33	180	150	16	70	50
FD40_2	80	60	4.0	40	40	240	200	16	85	60

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Product:

**Typ FD40**  
 Post base



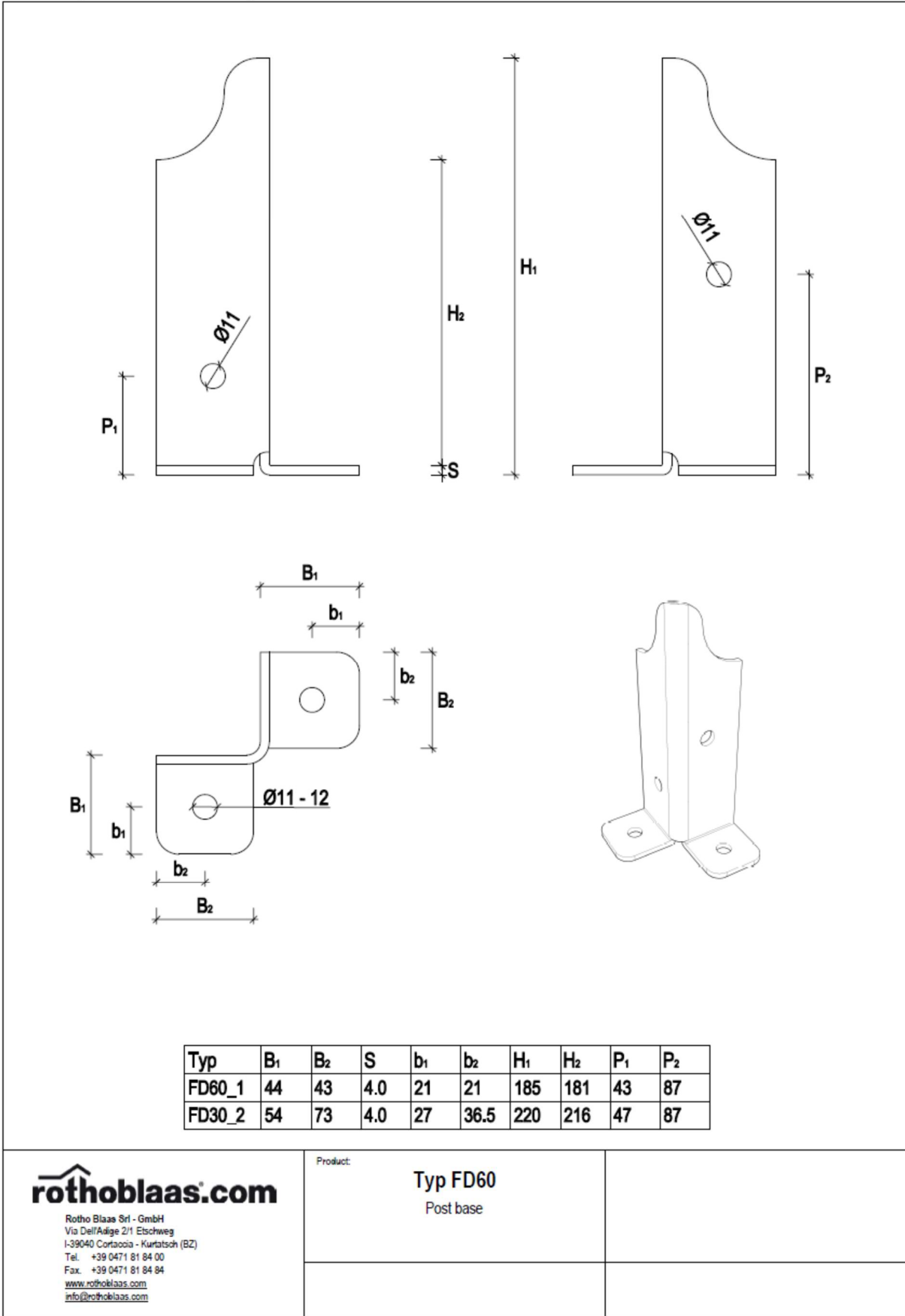
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Product:

**Typ FD50**  
 Post base



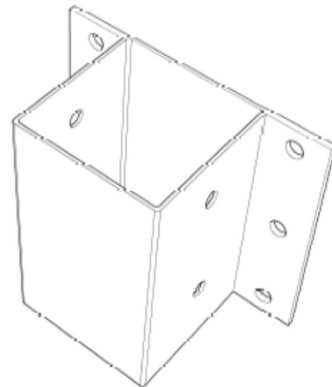
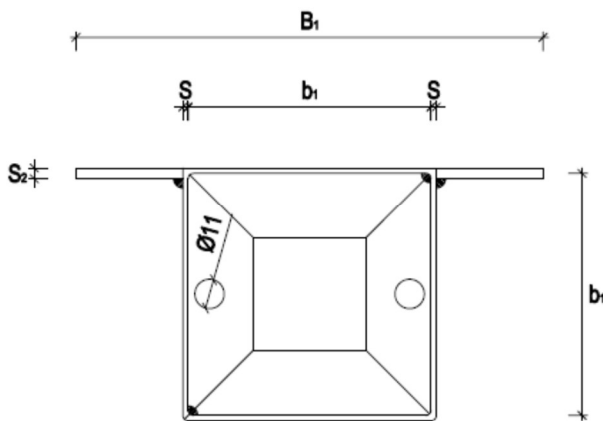
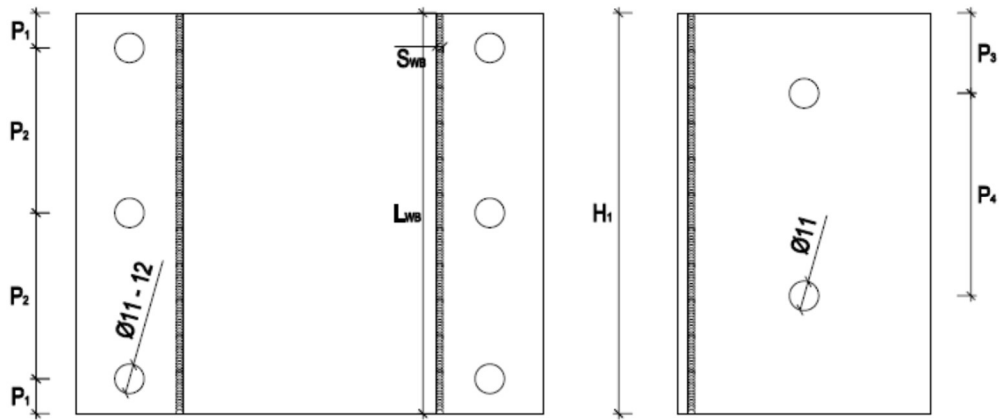


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Product:

**Typ FD60**  
 Post base



Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	S <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	L <sub>WB</sub>	S <sub>WB</sub>	L <sub>WH</sub>	S <sub>WH</sub>
M10_1	151	-	2	71	4	150	-	15	60	30	75	150	2.5	-	-
M10_2	175	-	2	91	4	150	-	15	60	30	75	150	2.5	-	-

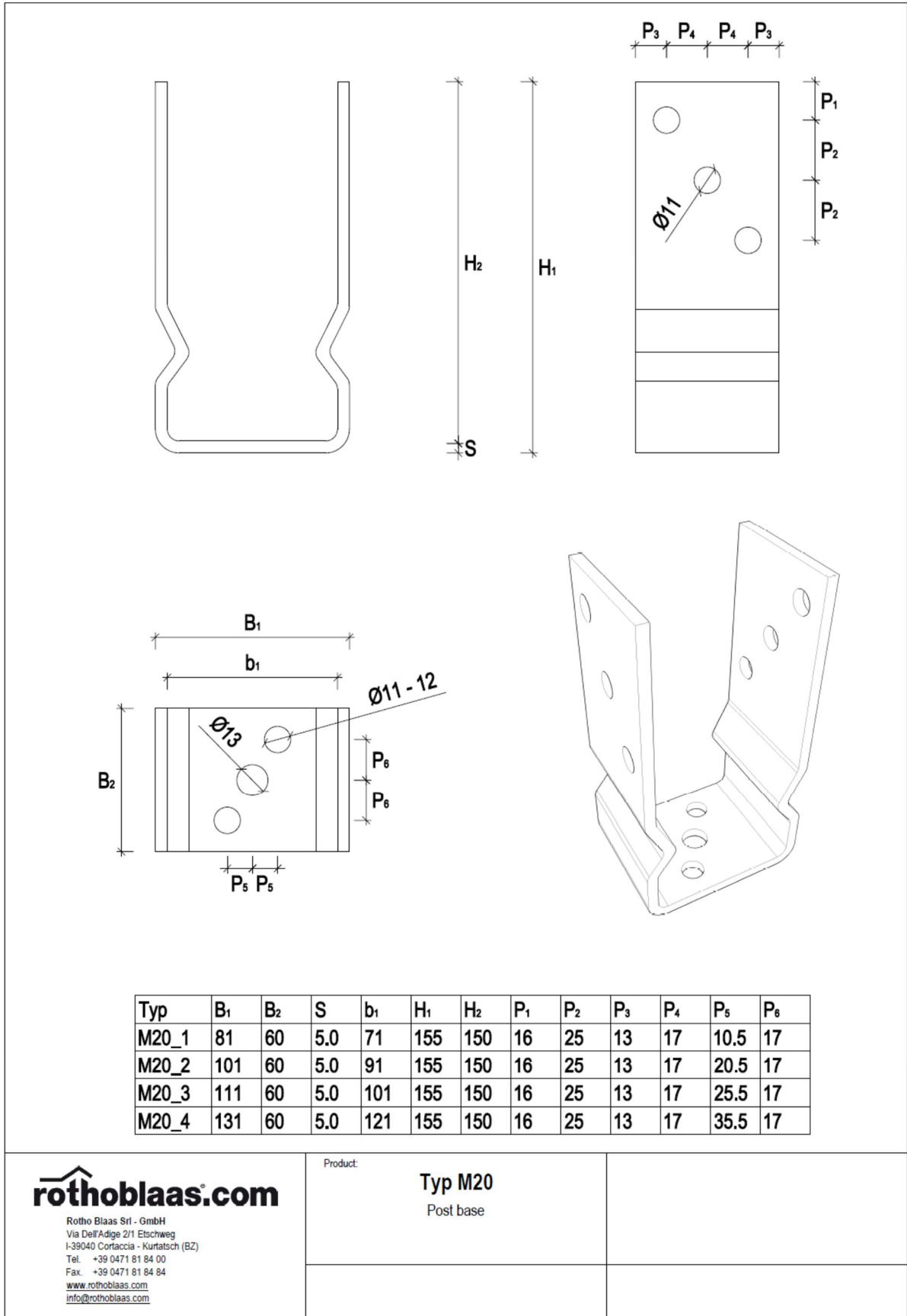
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Product

Typ M10

Post base

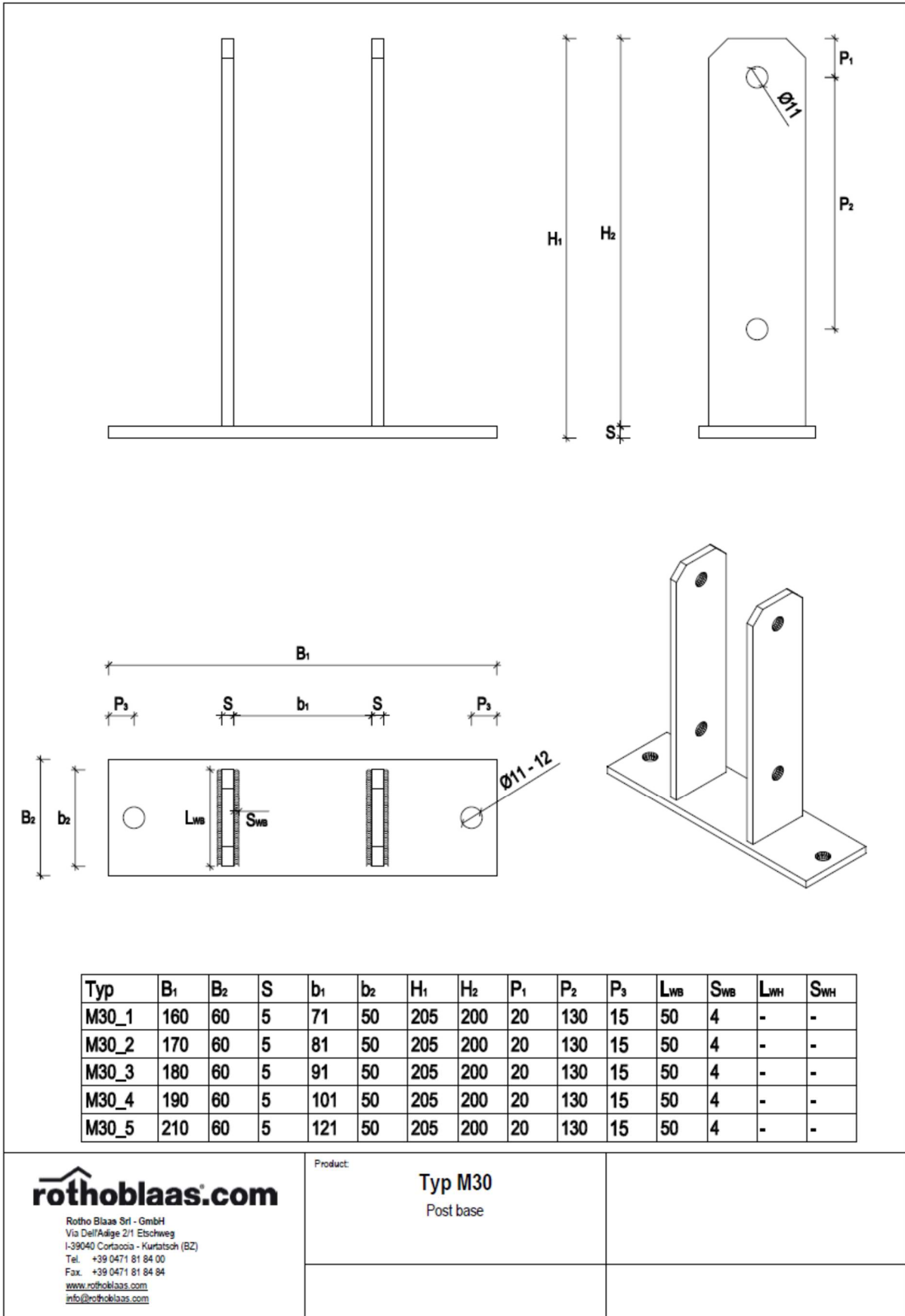


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Product:

Typ M20  
 Post base

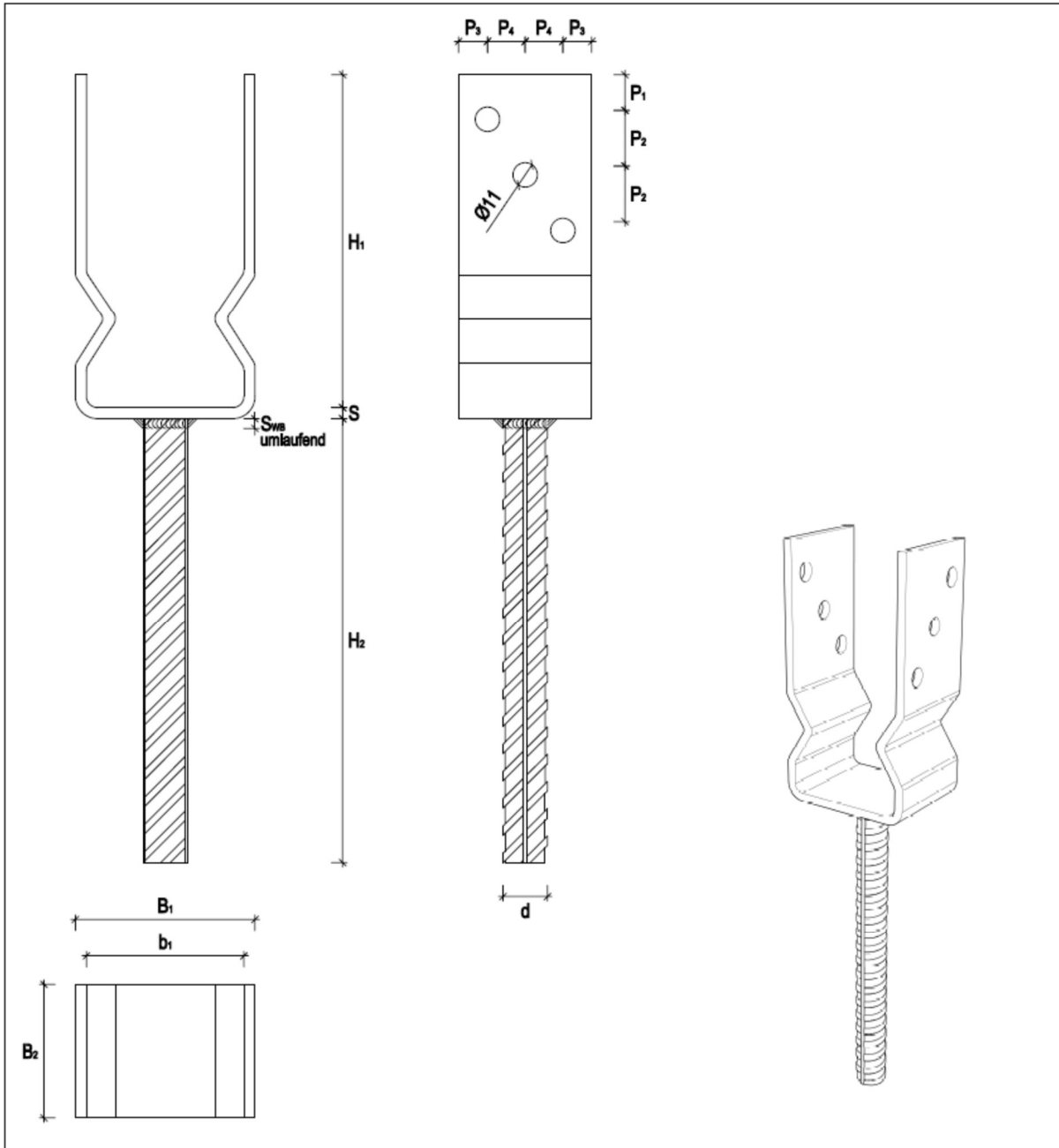


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Product:

**Typ M30**  
 Post base



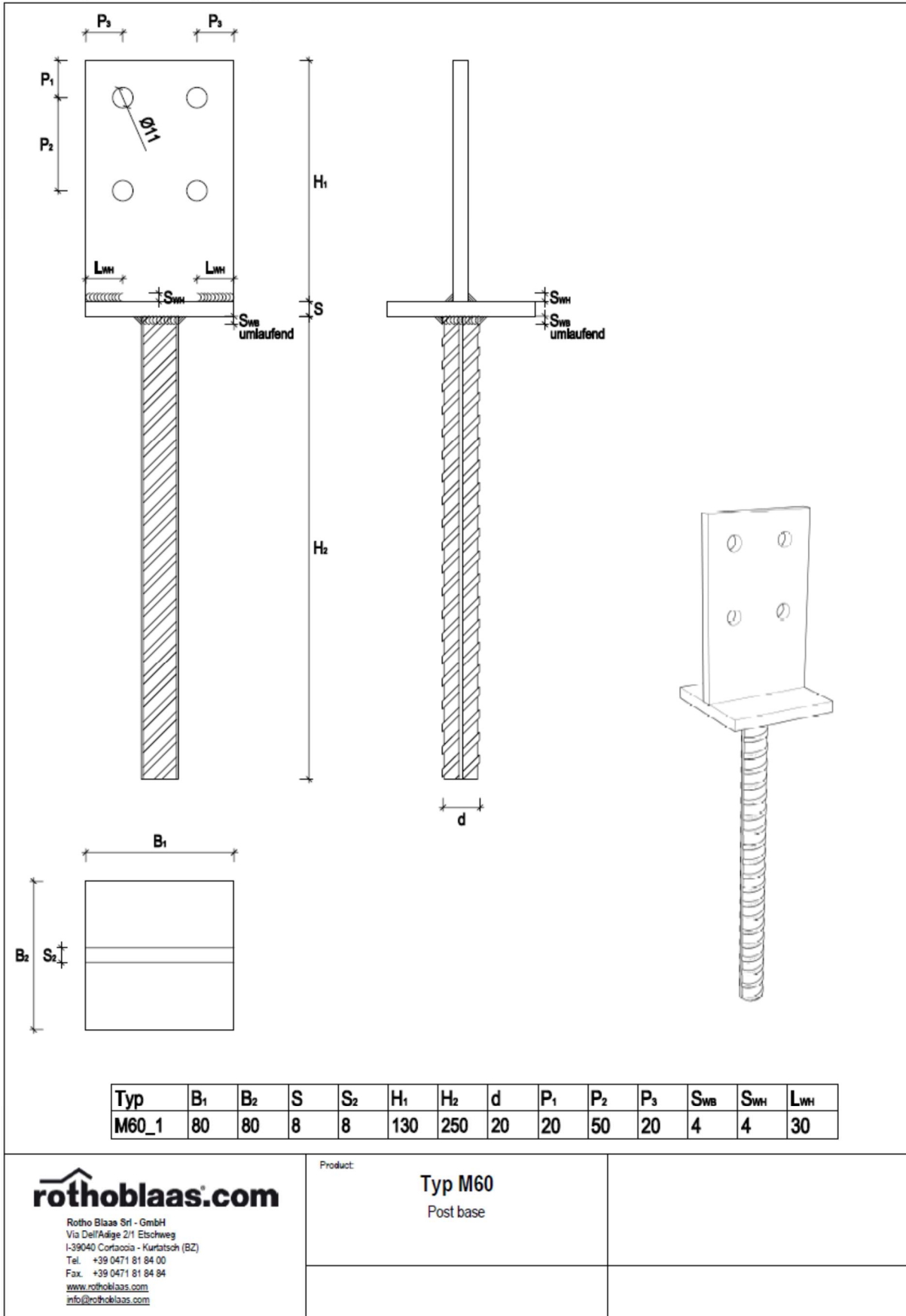
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	d	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	S <sub>WB</sub>
M50_1	81	60	5.0	71	150	200	20	16	25	13	17	4
M50_2	101	60	5.0	91	150	200	20	16	25	13	17	4
M50_3	111	60	5.0	101	150	200	20	16	25	13	17	4
M50_4	131	60	5.0	121	150	200	20	16	25	13	17	4

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Product:

**Typ M50**  
 Post base

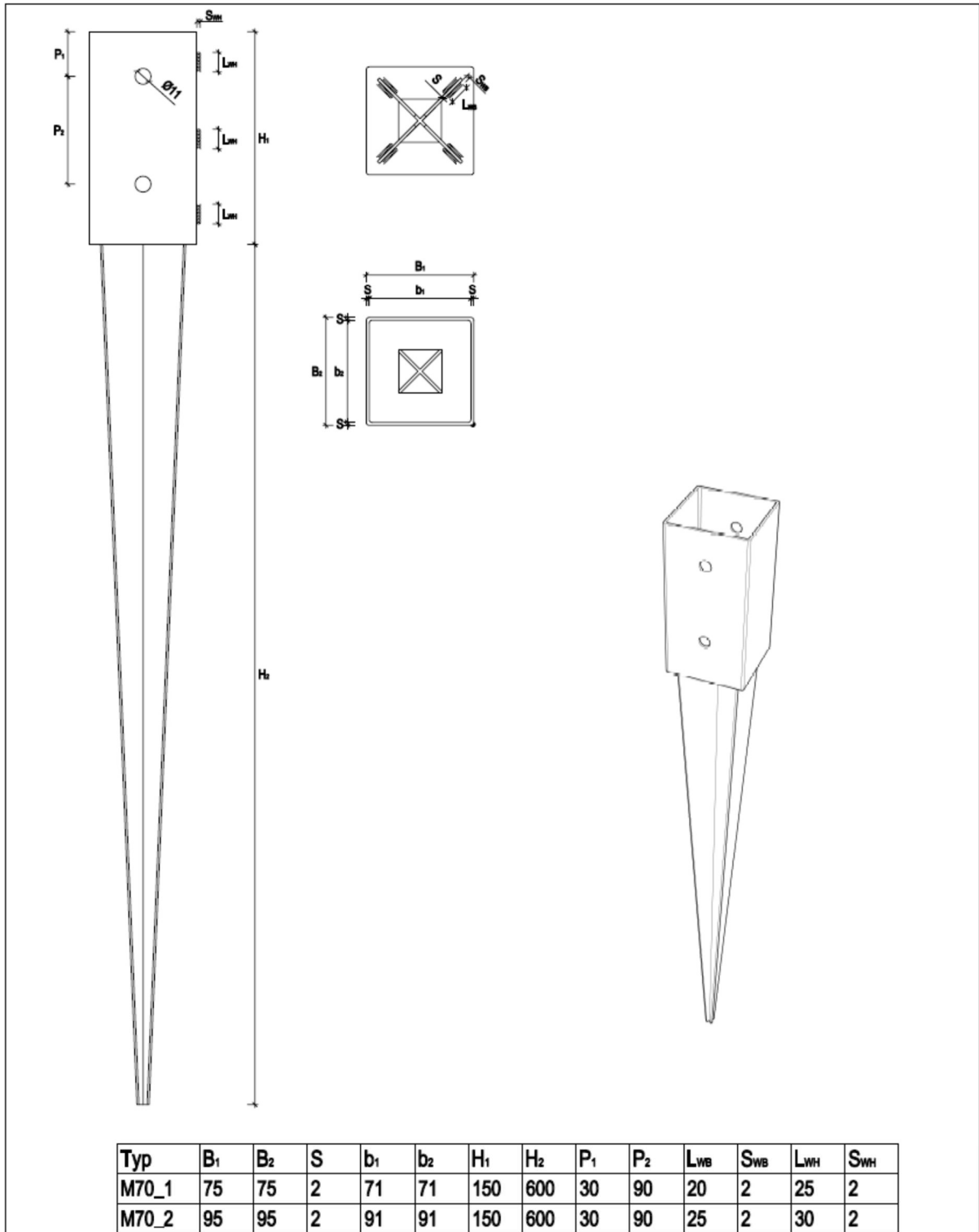



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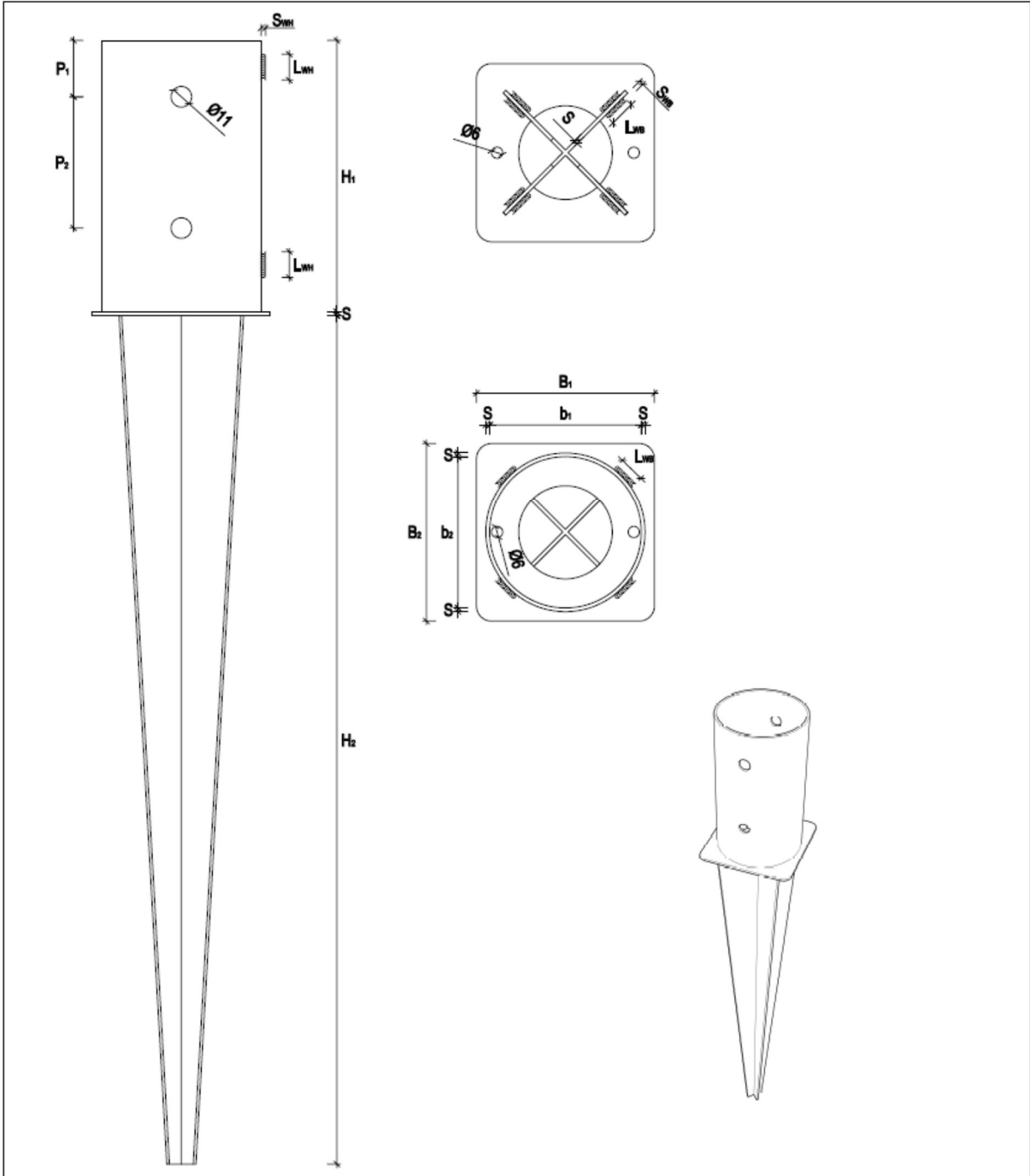
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Product:

**Typ M60**  
 Post base



 <p>Rotho Blaas Srl - GmbH Via Dell'Aviige 2/1 Etschweg I-39040 Cortaccia - Kurtatsch (BZ) Tel. +39 0471 81 84 00 Fax. +39 0471 81 84 84 <a href="http://www.rothoblaas.com">www.rothoblaas.com</a> <a href="mailto:info@rothoblaas.com">info@rothoblaas.com</a></p>	Product:	Typ M70_1, M70_2



Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	L <sub>wb</sub>	S <sub>wb</sub>	L <sub>wh</sub>	S <sub>wh</sub>
M70_3	95	95	2	81	81	145	453	30	70	20	2.5	25	3
M70_4	110	110	2	101	101	145	453	30	70	30	2.5	35	3

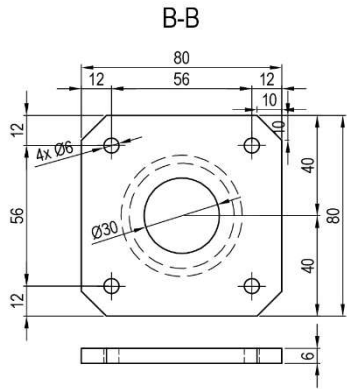
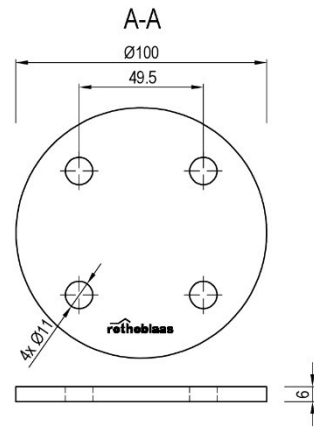
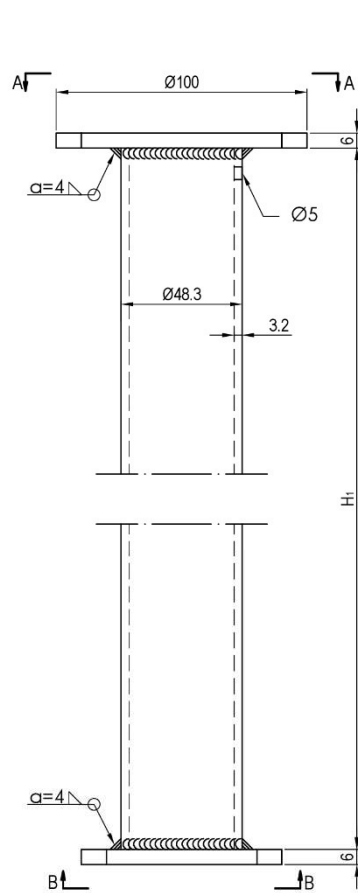
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Product:

Typ M70\_3, M70\_4





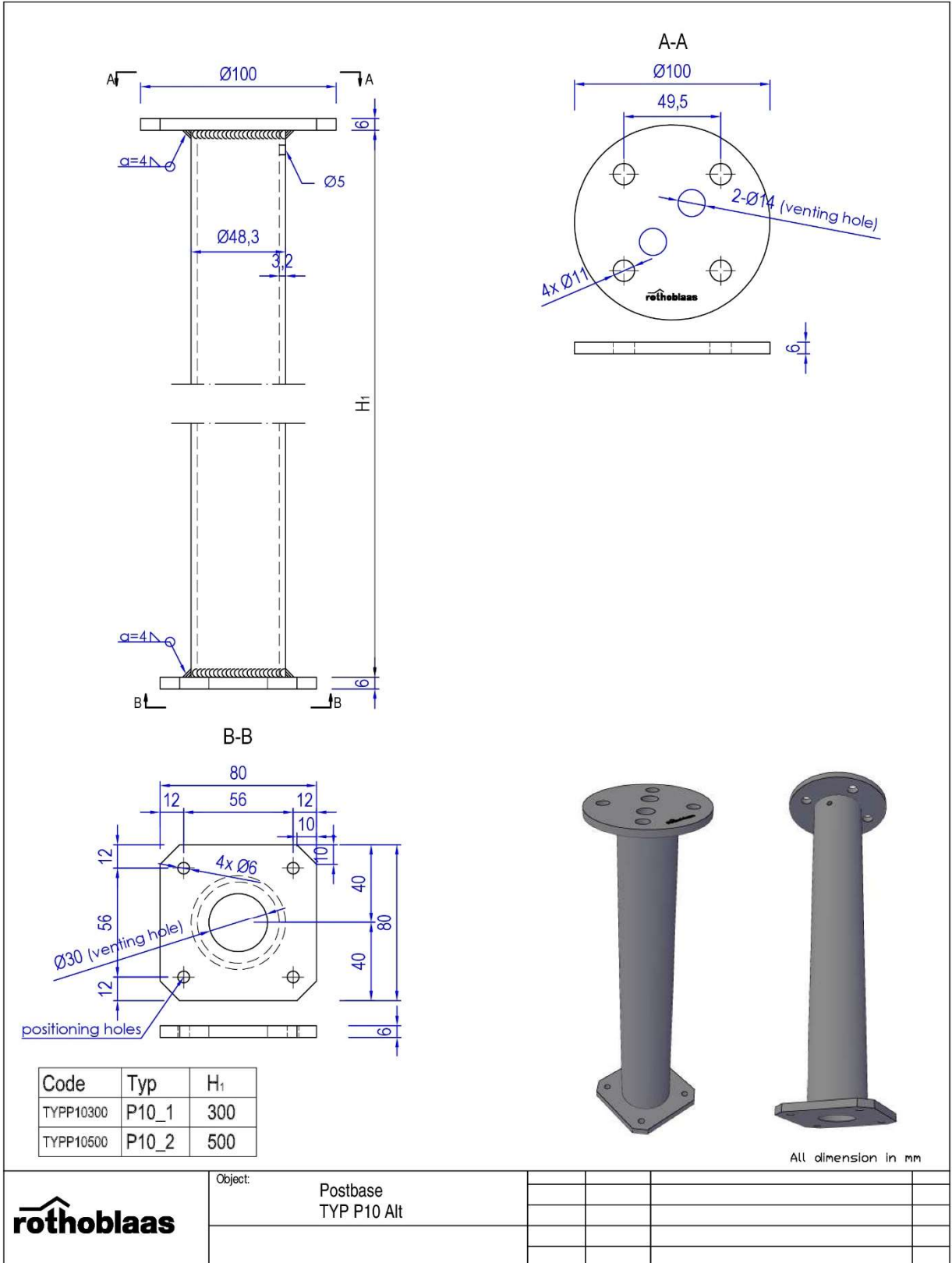
Code	Typ	H <sub>1</sub>
TYPP10300	P10_1	300
TYPP10500	P10_2	500

All dimension in mm

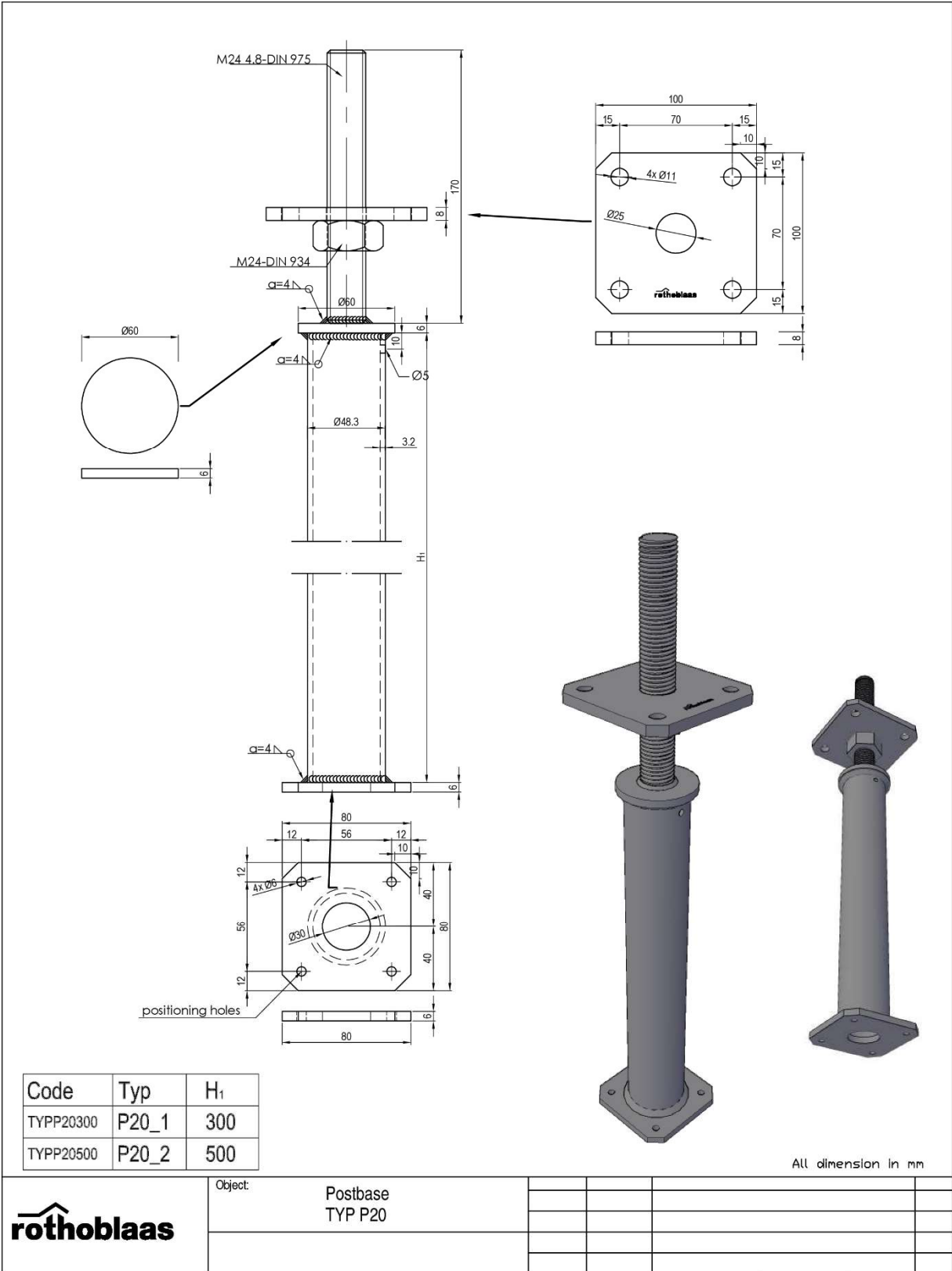


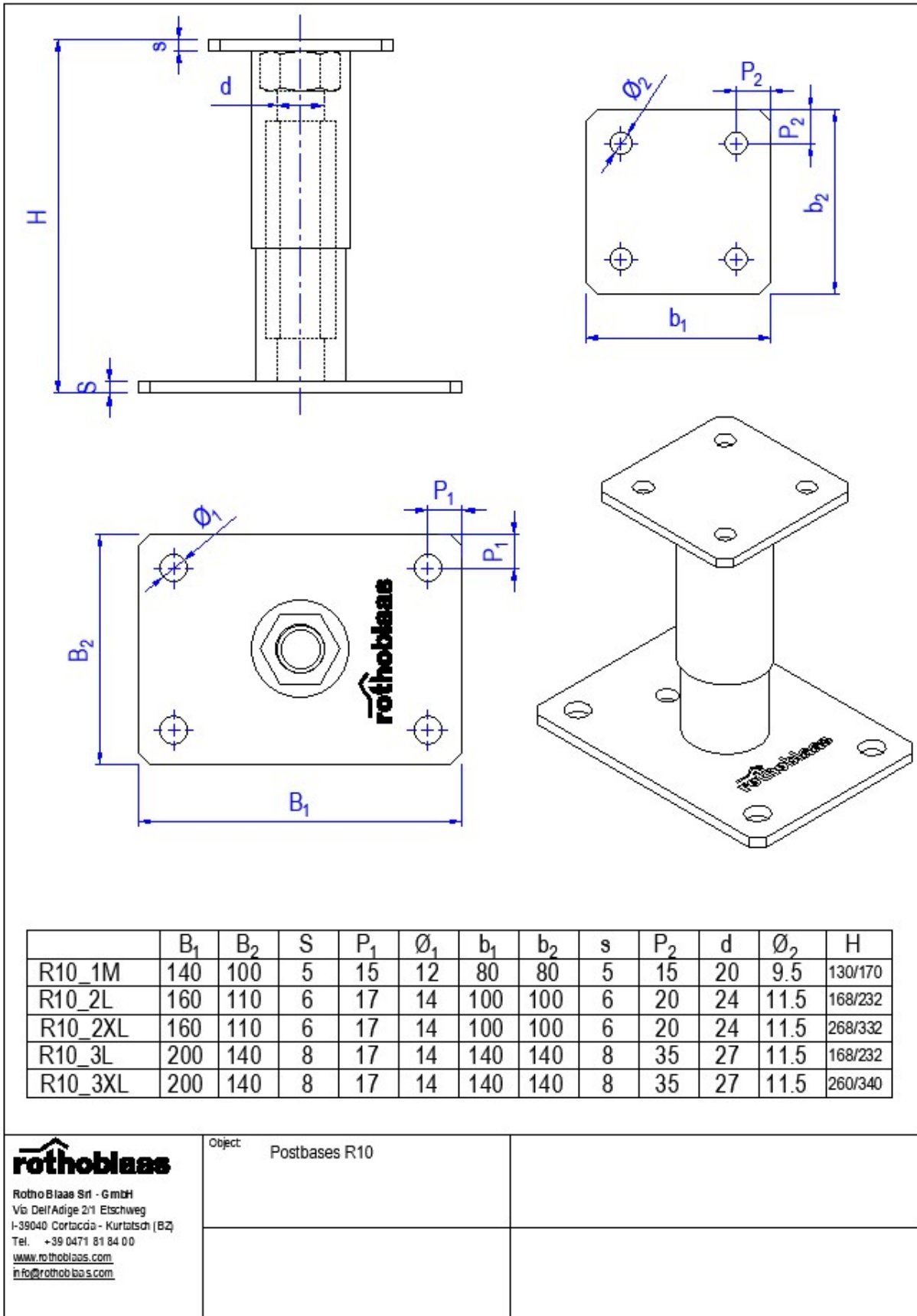
Object:

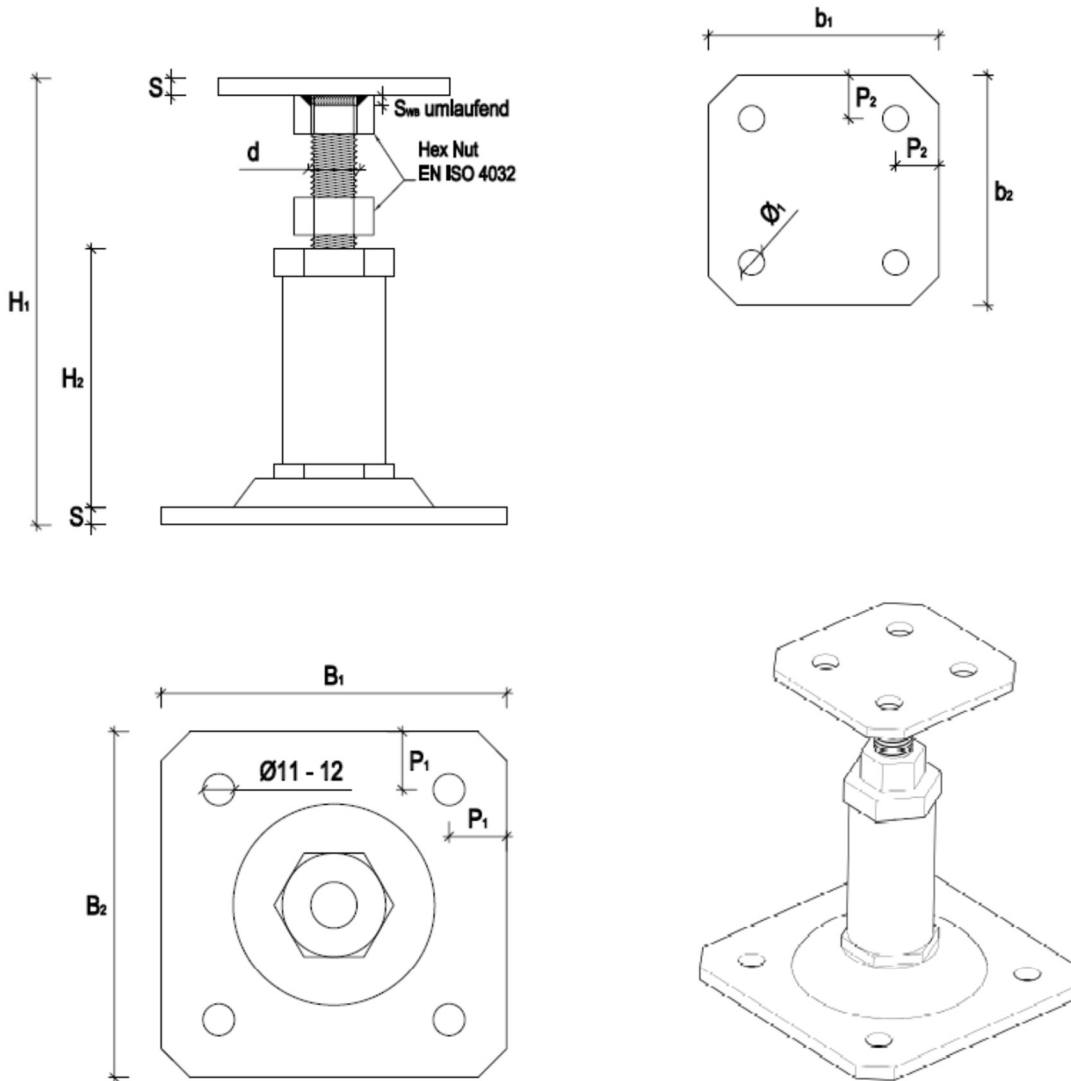
Postbase  
TYP P10

Post base type P10\_1 Alt and P10\_2 Alt







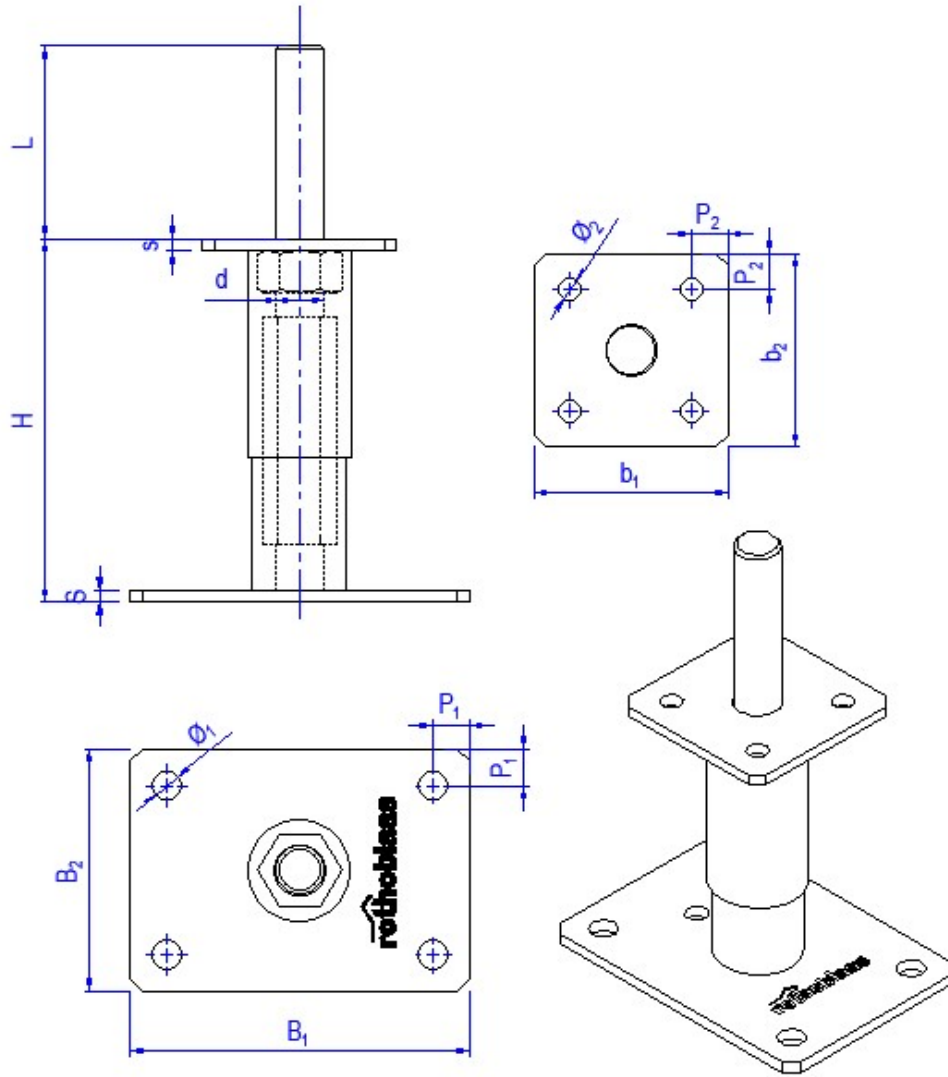
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	d	P <sub>1</sub>	P <sub>2</sub>	Ø <sub>1</sub>	S <sub>WS</sub>
R10_1	120	120	6	80	80	130/165	90	16	20	15	9	4
R10_2	160	160	6	100	100	160/205	110	20	20	20	11	4
R10_3	200	200	8	140	140	190/250	130	24	20	20	11	4

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Product:

**Typ R10**  
 Adjustable Post base

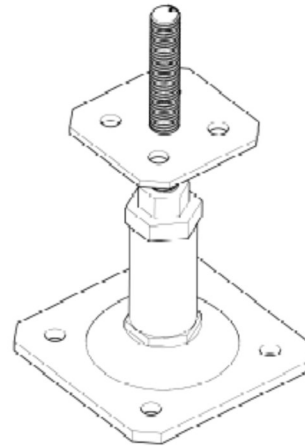
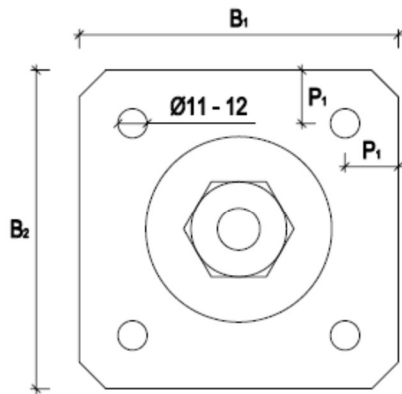
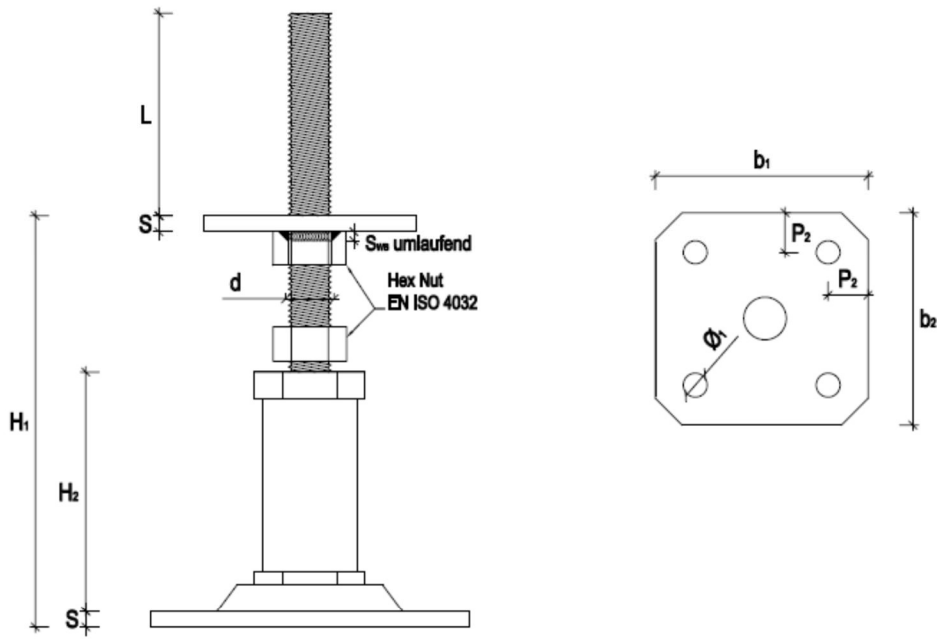


	B <sub>1</sub>	B <sub>2</sub>	S	Ø <sub>1</sub>	P <sub>1</sub>	b <sub>1</sub>	b <sub>2</sub>	s	P <sub>2</sub>	d	Ø <sub>2</sub>	L	H
R20_1M	140	100	5	12	15	80	80	5	15	20	9.5	80	130/170
R20_2L	160	110	6	14	17	100	100	6	20	24	11.5	120	168/232
R20_2XL	160	110	6	14	17	100	100	6	20	24	11.5	120	268/332
R20_3L	200	140	8	14	17	140	140	8	35	27	11.5	150	168/232
R20_3XL	200	140	8	14	17	140	140	8	35	27	11.5	150	260/340



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Object Postbases R20



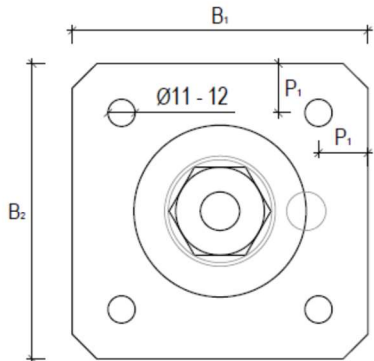
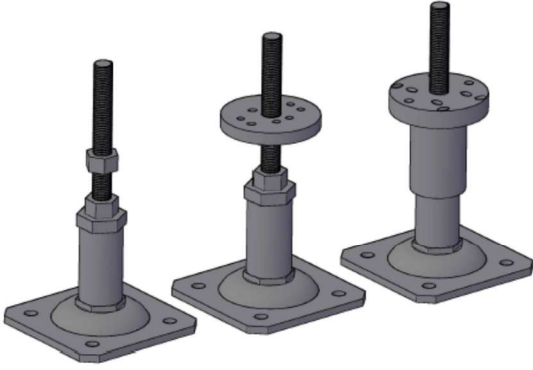
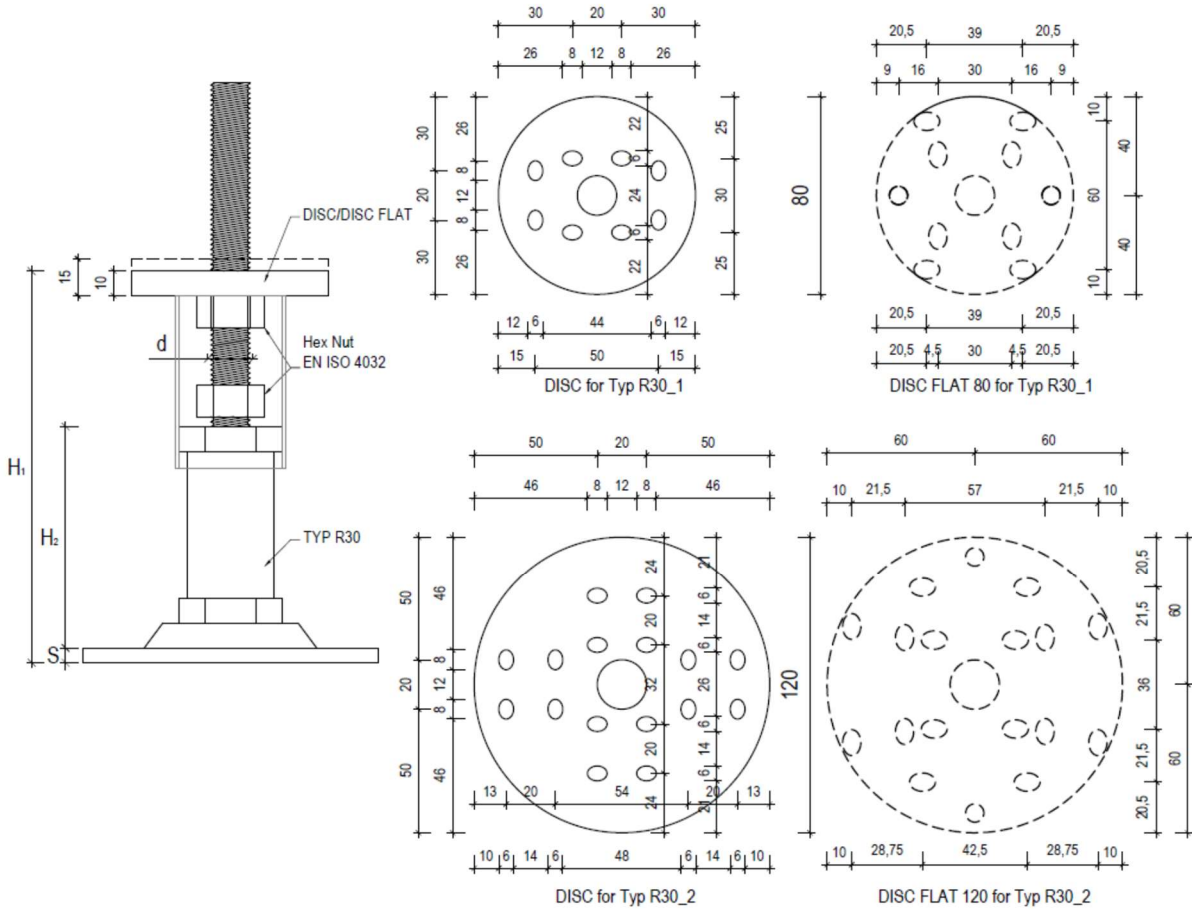
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	d	P <sub>1</sub>	P <sub>2</sub>	Ø <sub>1</sub>	L	S <sub>we</sub>
R20_1	120	120	6	80	80	130/165	90	16	20	15	9	80	4
R20_2	160	160	6	100	100	160/205	110	20	20	20	11	120	4
R20_3	200	200	8	140	140	190/250	130	24	20	20	11	150	4

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Product:

**Typ R20**  
 Adjustable Post base



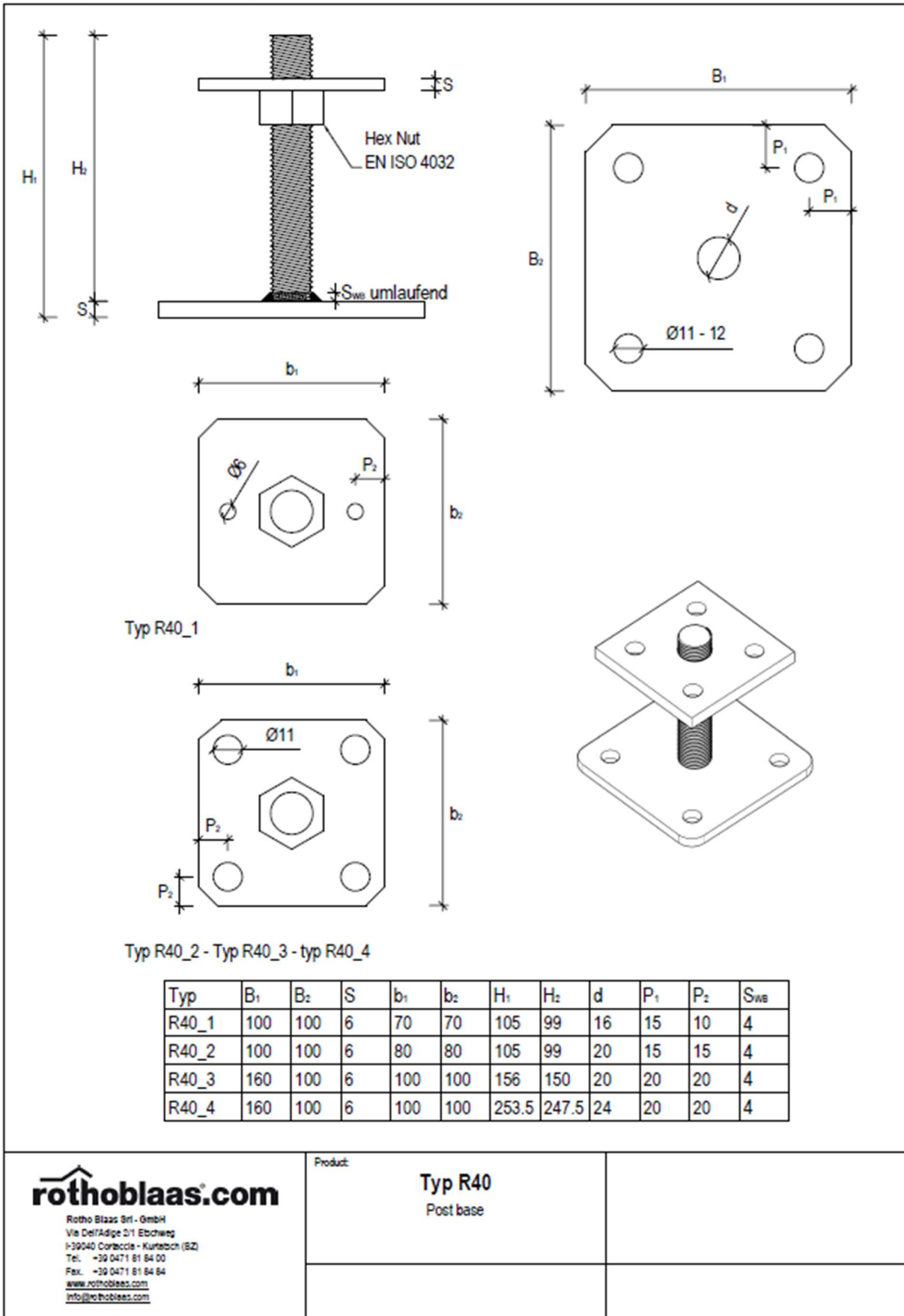
Typ	B <sub>1</sub>	B <sub>2</sub>	S	H <sub>1</sub>	H <sub>2</sub>	d	P <sub>1</sub>	S <sub>WB</sub>
R30_1	120	120	6	135/170	90	16	20	4
R30_2	160	160	6	165/210	110	20	20	4

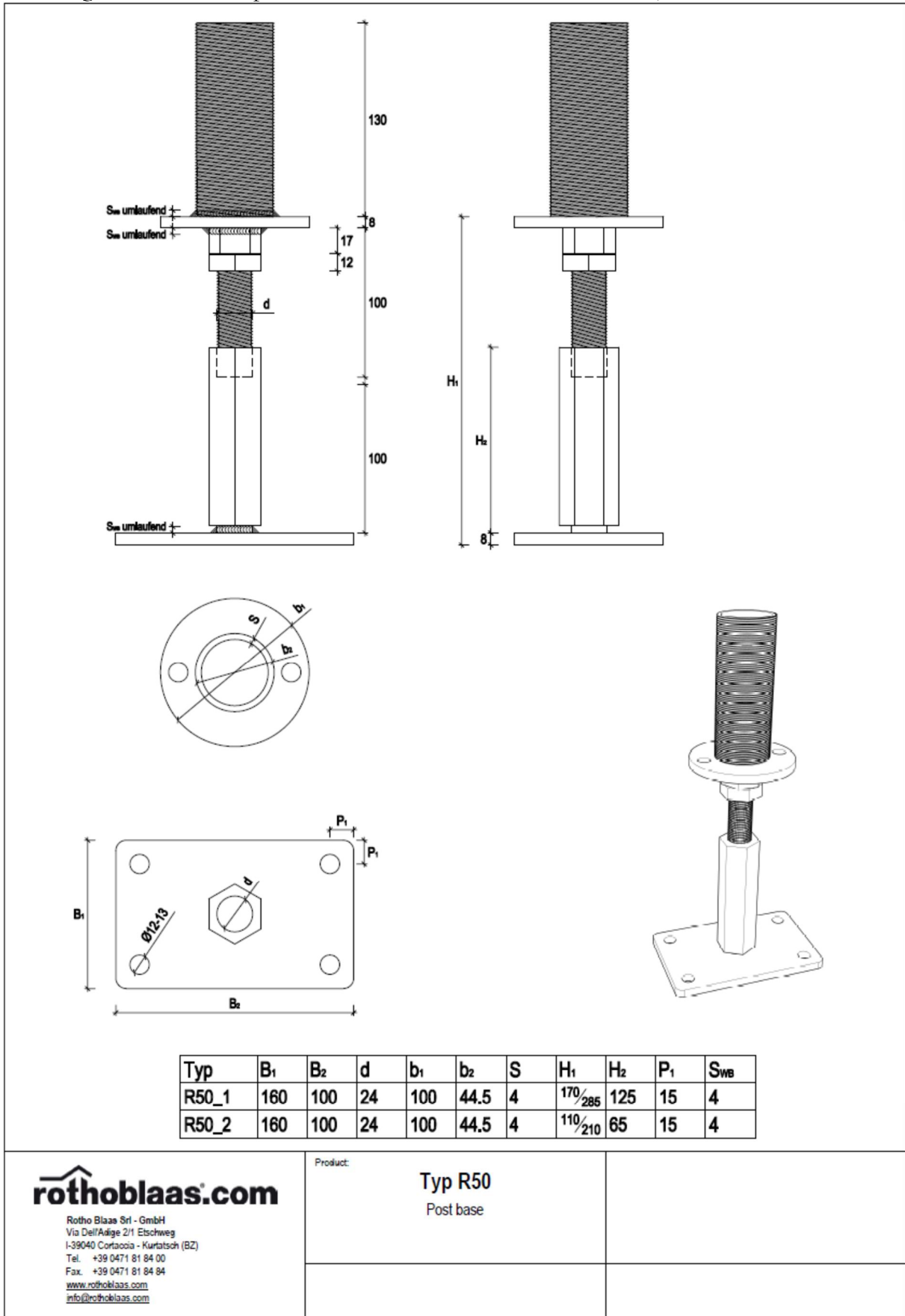
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Product  
**Typ R30**  
**with Disc or Disc Flat**  
 Adjustable Post base





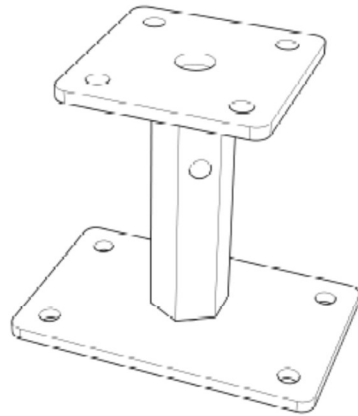
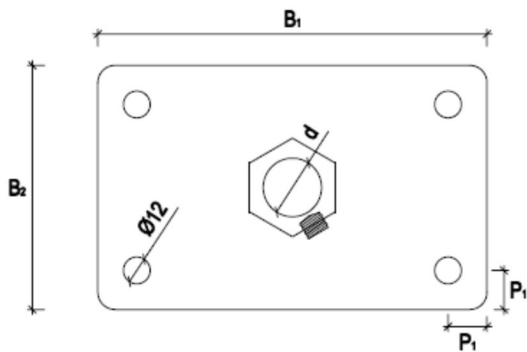
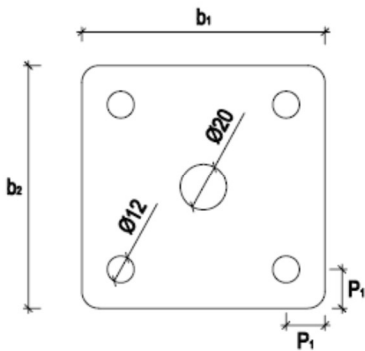
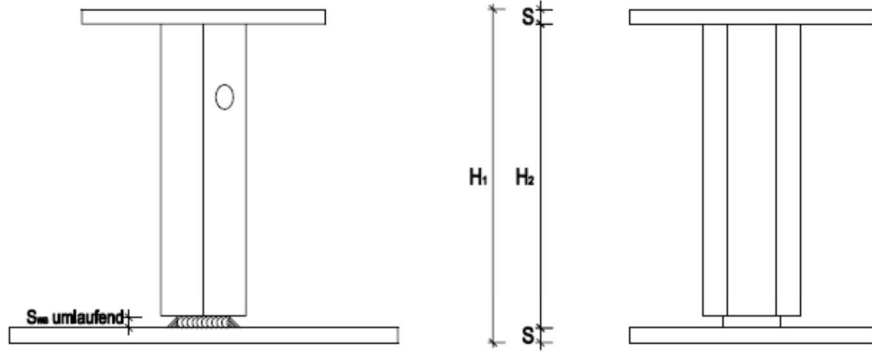


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Product:

**Typ R50**  
 Post base



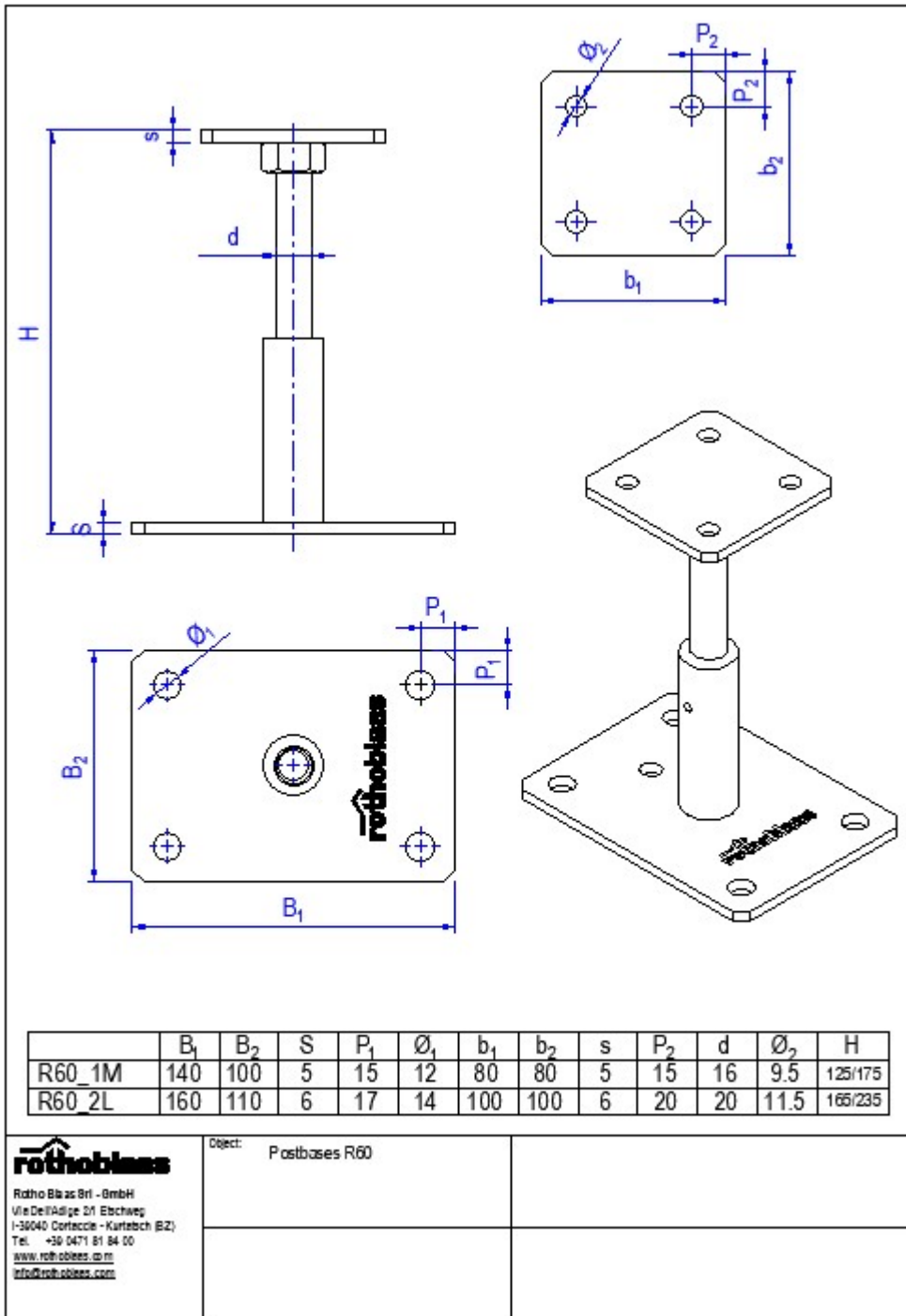
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	d	P <sub>1</sub>	S <sub>WB</sub>
R60_1	160	100	6	100	100	140/200	125	24	15	3

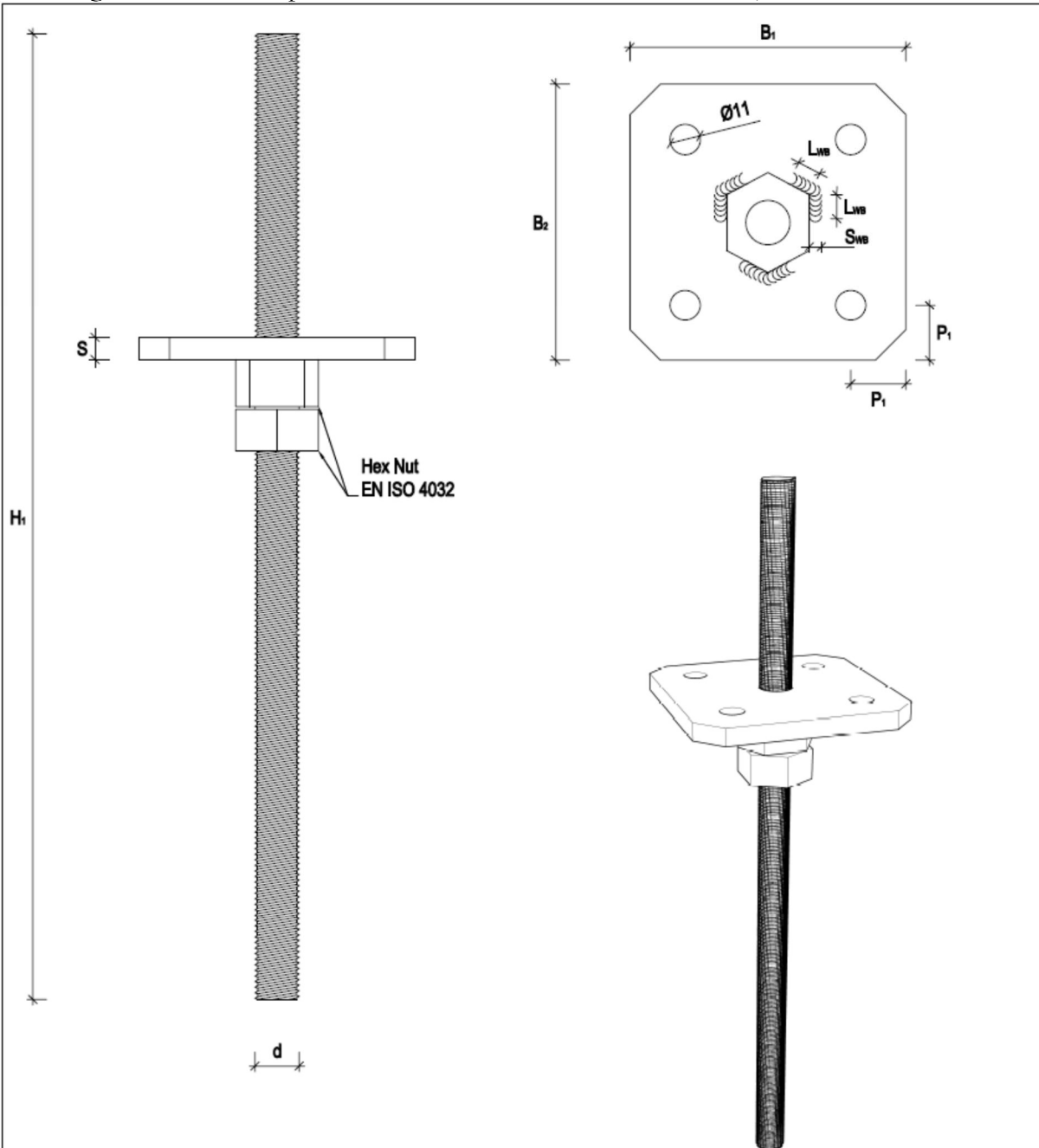
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Product:

Typ R60  
 Post base





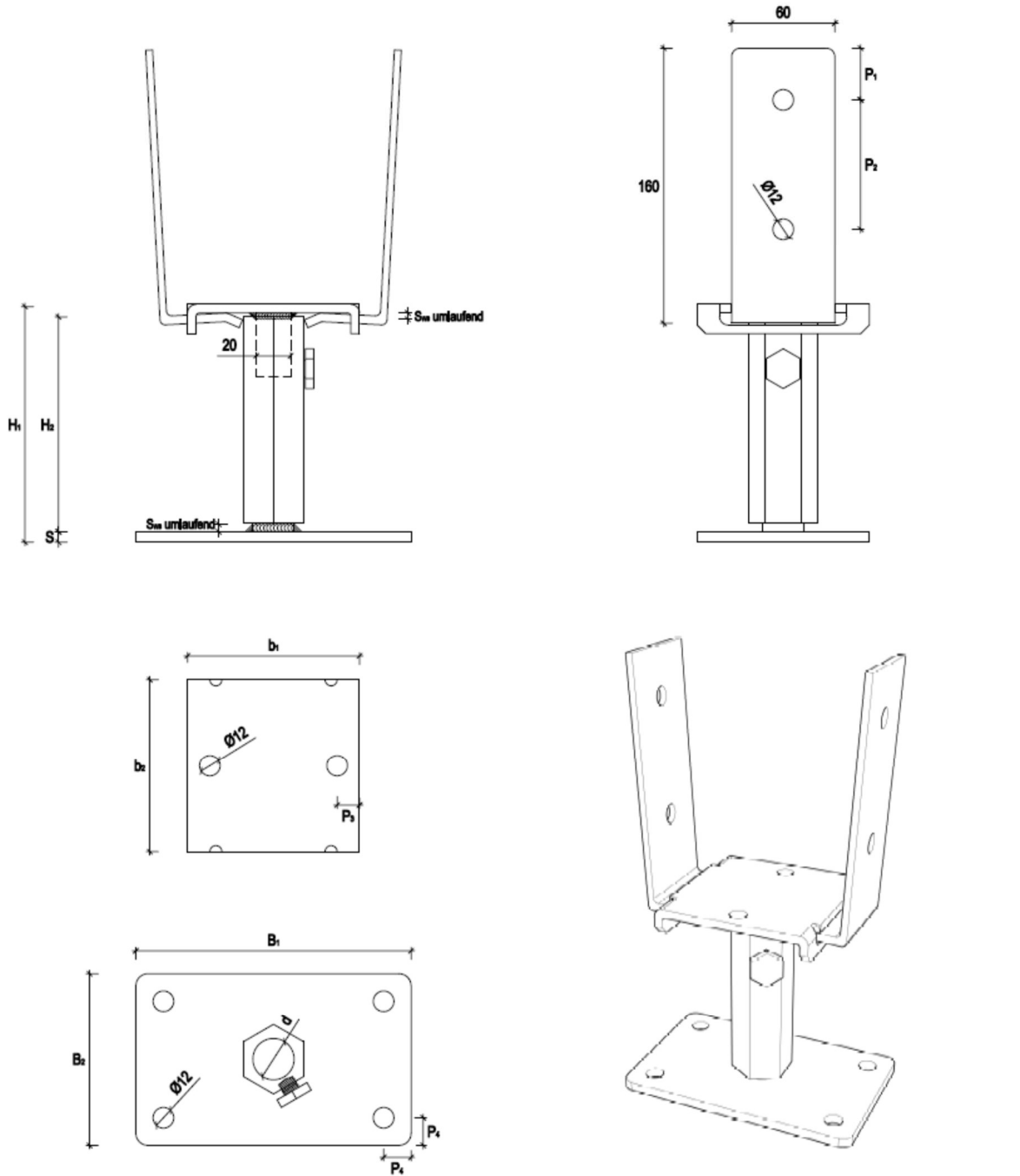
Typ	B <sub>1</sub>	B <sub>2</sub>	S	H <sub>1</sub>	d	P <sub>1</sub>	S <sub>WB</sub>	L <sub>WB</sub>
R70_1	100	100	8	350	20	20	4	5
R70_2	140	140	8	450	24	20	4	8
R70_3	100	100	8	350	16	20	4	5

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[info@rothoblaas.com](mailto:info@rothoblaas.com)

Product:

Typ R70  
 Post base



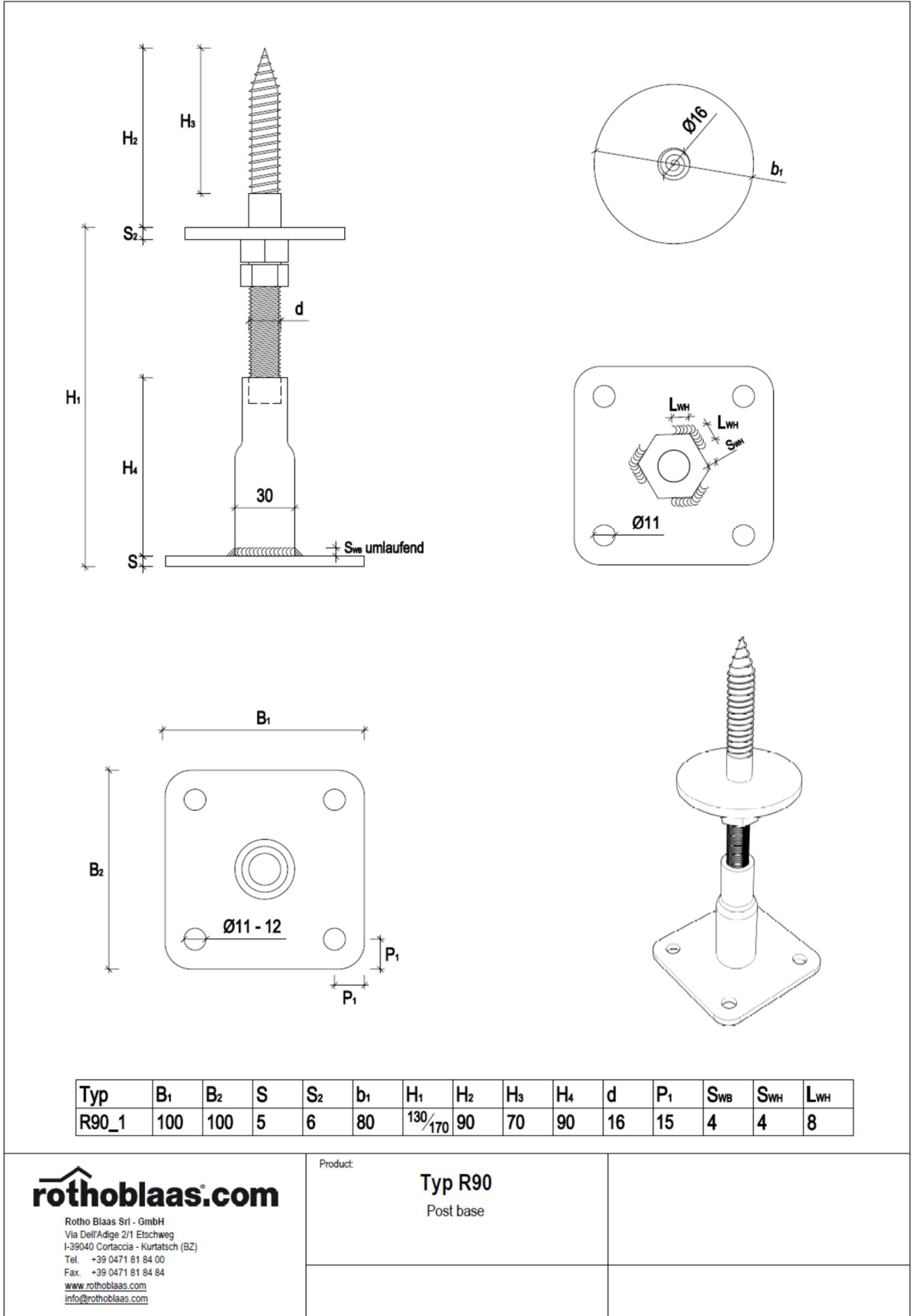
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	d	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	S <sub>sw</sub>
R80_1	160	100	6	100	100	140/200	125	24	30	75	15	15	4

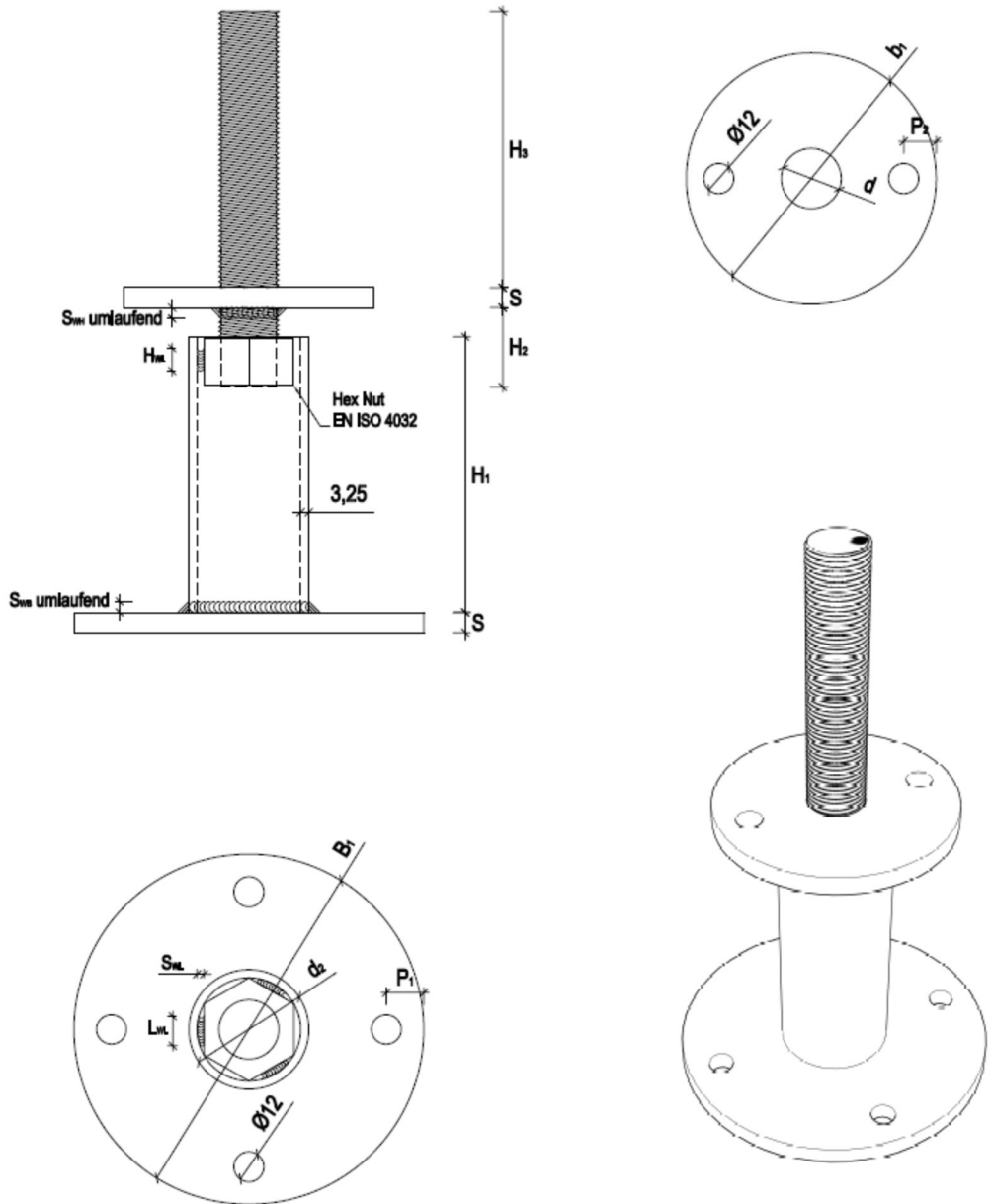
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Product:

Typ R80  
 Post base





Typ	B <sub>1</sub>	S	b <sub>1</sub>	d	d <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	P <sub>1</sub>	P <sub>2</sub>	S <sub>WB</sub>	S <sub>WH</sub>	S <sub>WL</sub>	H <sub>WL</sub>	L <sub>WL</sub>
S10_1	140	8	100	24	48,3	110	35	110	15	15	5	5	5	10	10
S10_2	140	8	100	24	48,3	145	35	110	15	15	5	5	5	10	10

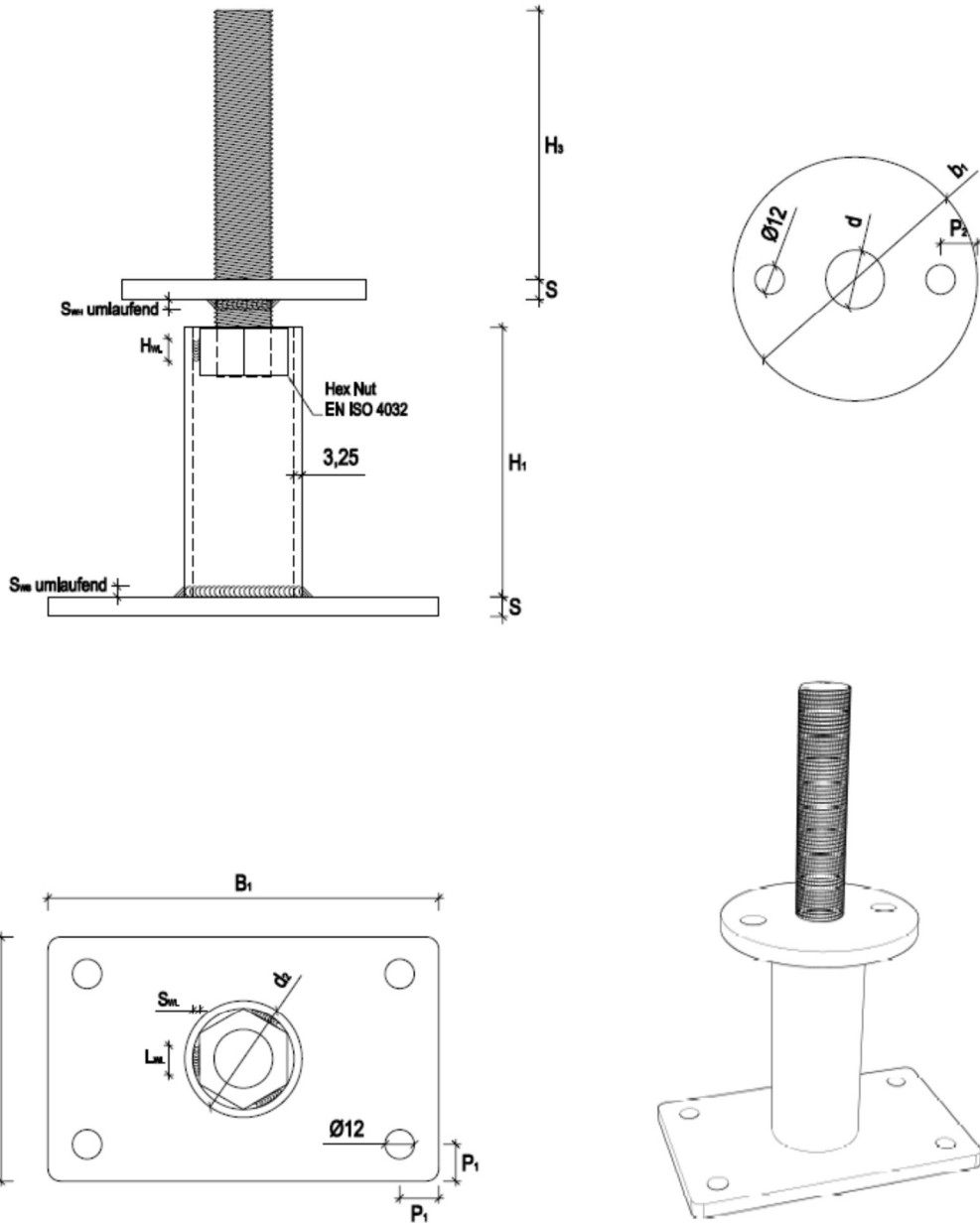
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Product:

Typ S10  
 Post base





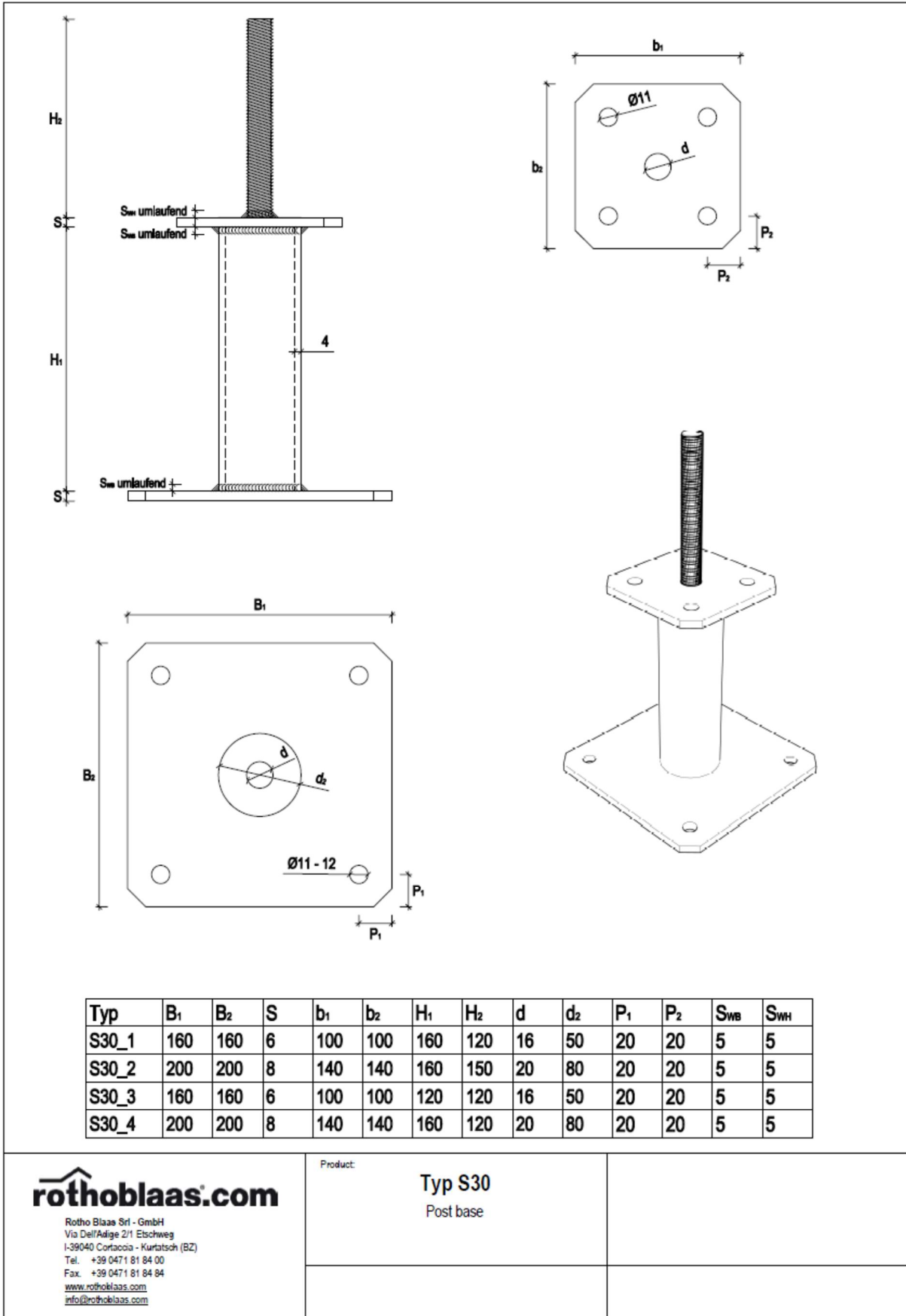
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	d	d <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	P <sub>1</sub>	P <sub>2</sub>	S <sub>WB</sub>	S <sub>WH</sub>	S <sub>WL</sub>	H <sub>WL</sub>	L <sub>WL</sub>
S20_1	160	100	8	100	24	48.3	110	35	110	15	15	5	5	5	10	10
S20_2	160	100	8	100	24	48.3	145	35	110	15	15	5	5	5	10	10

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Product:

Typ S20  
 Post base

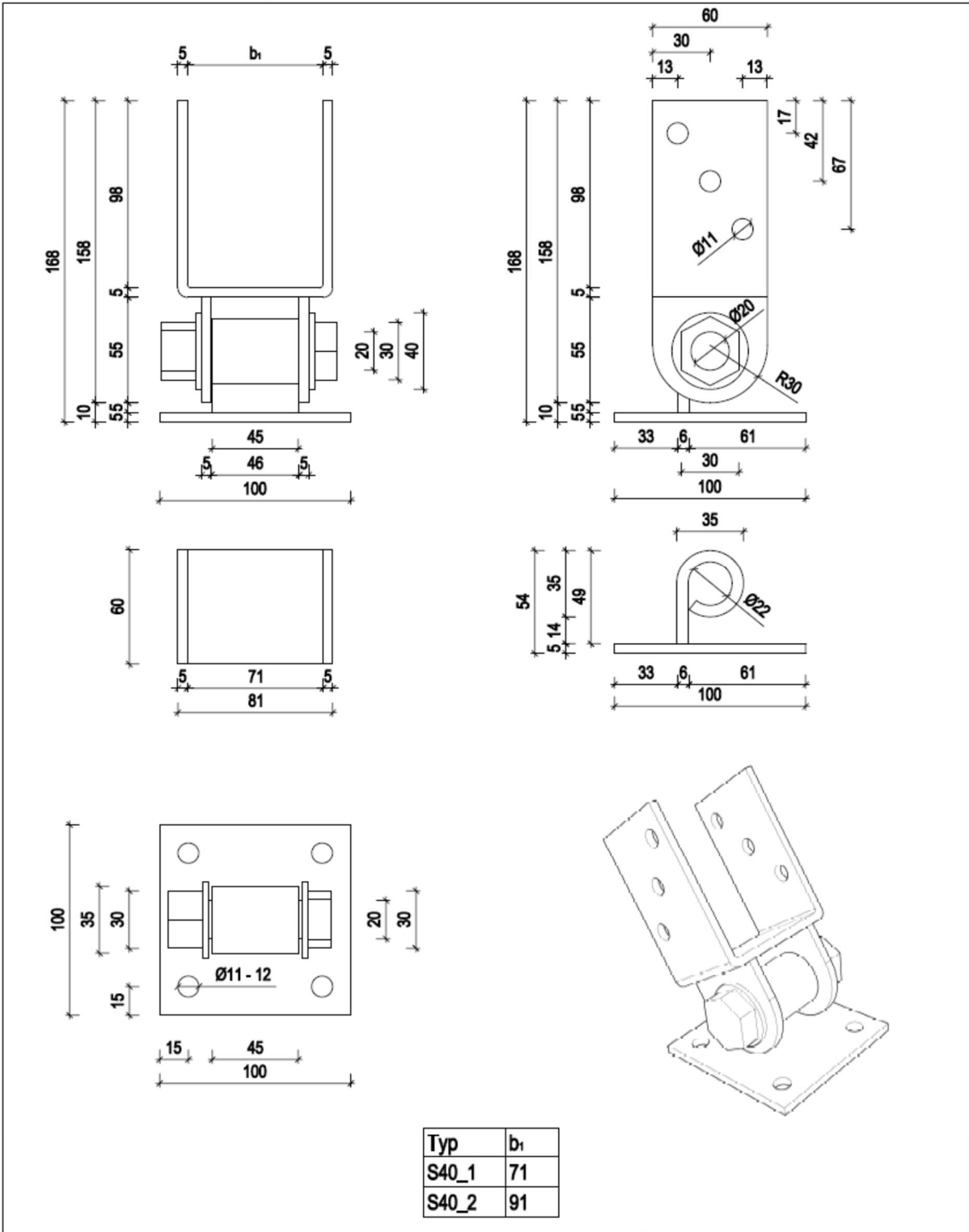


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Product:

**Typ S30**  
 Post base

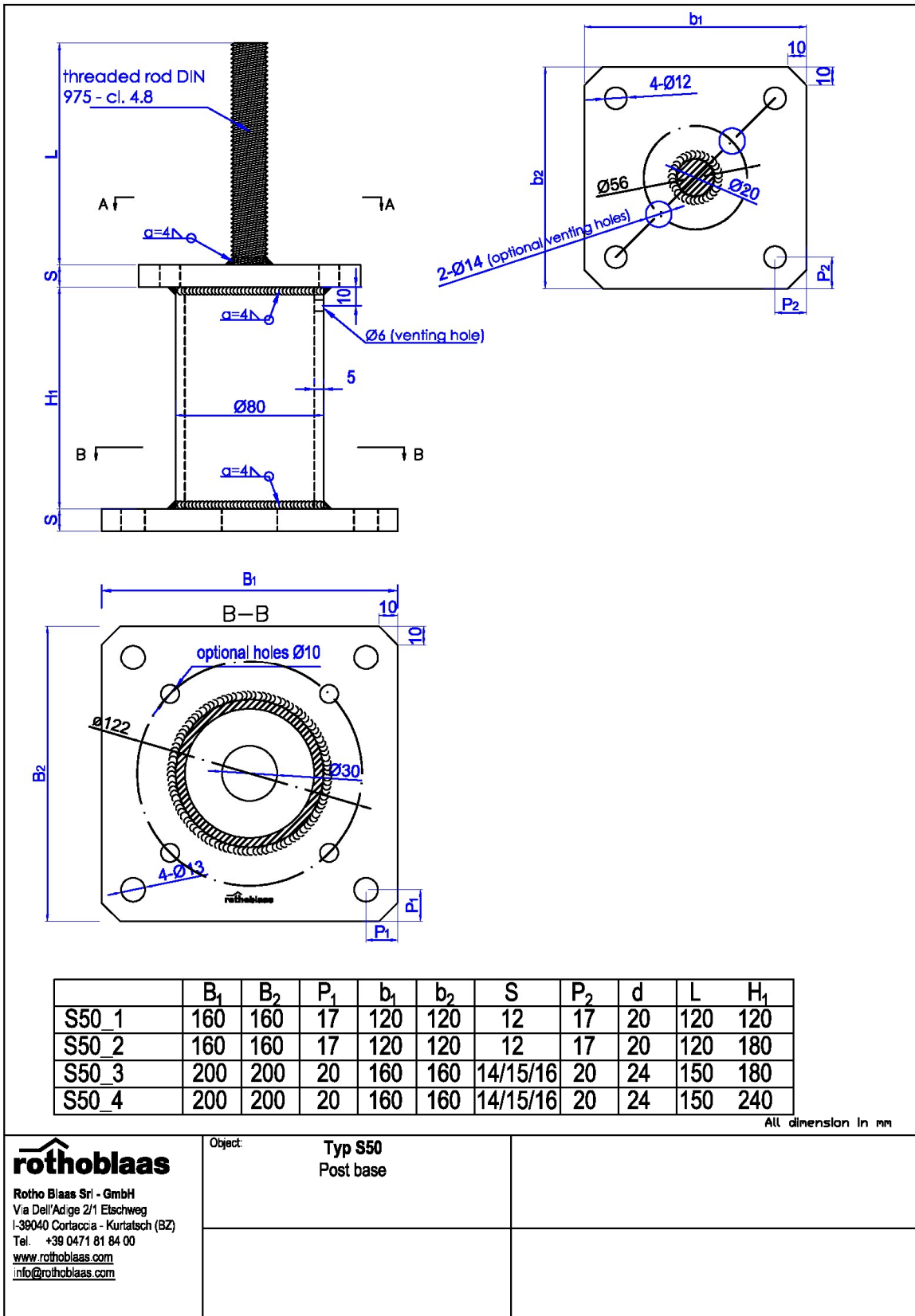


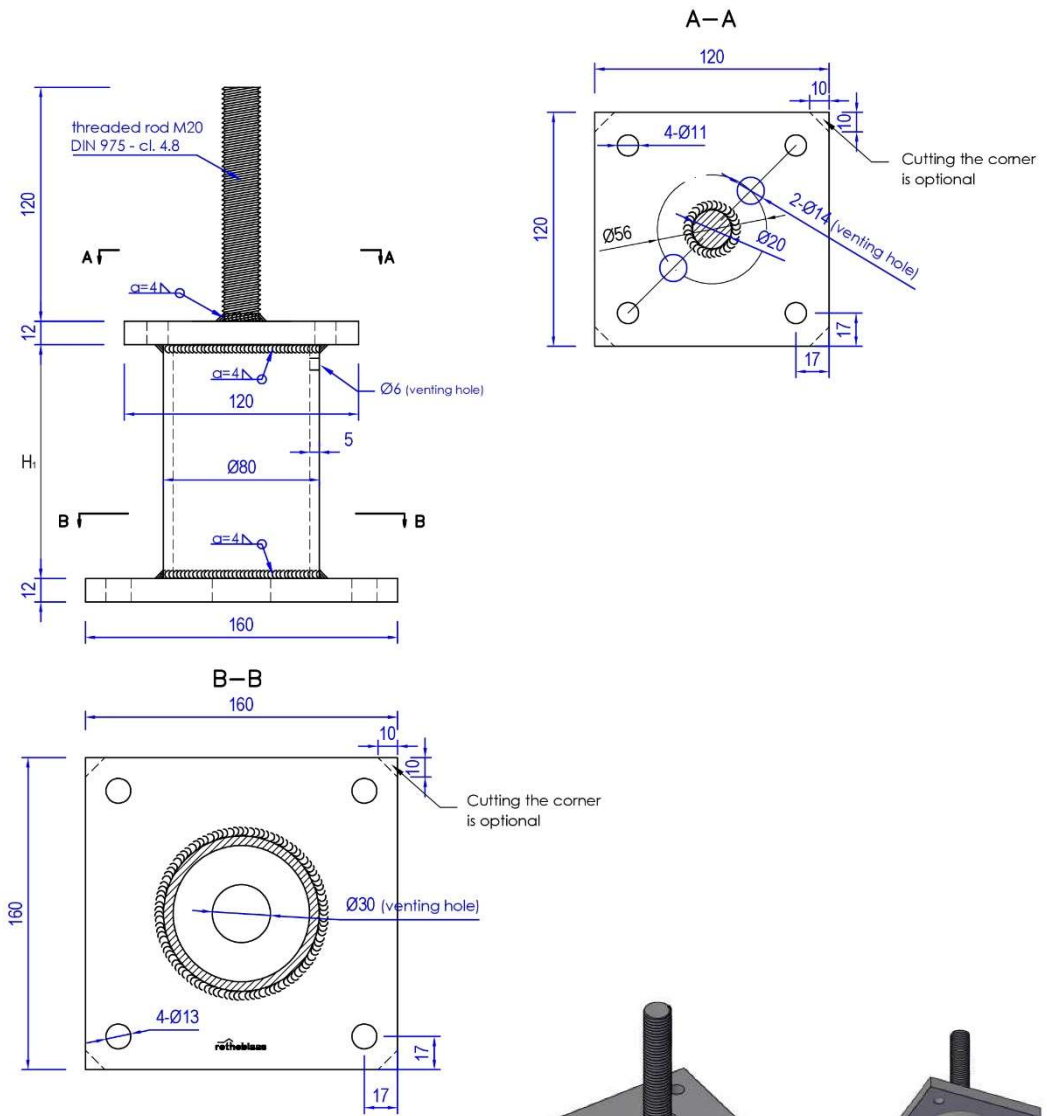
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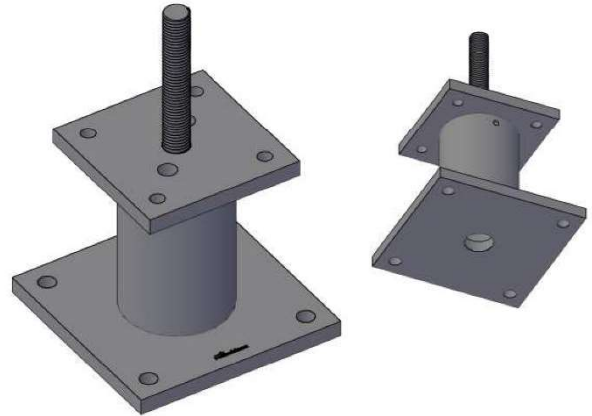
Product:

**Typ S40**  
 Post base





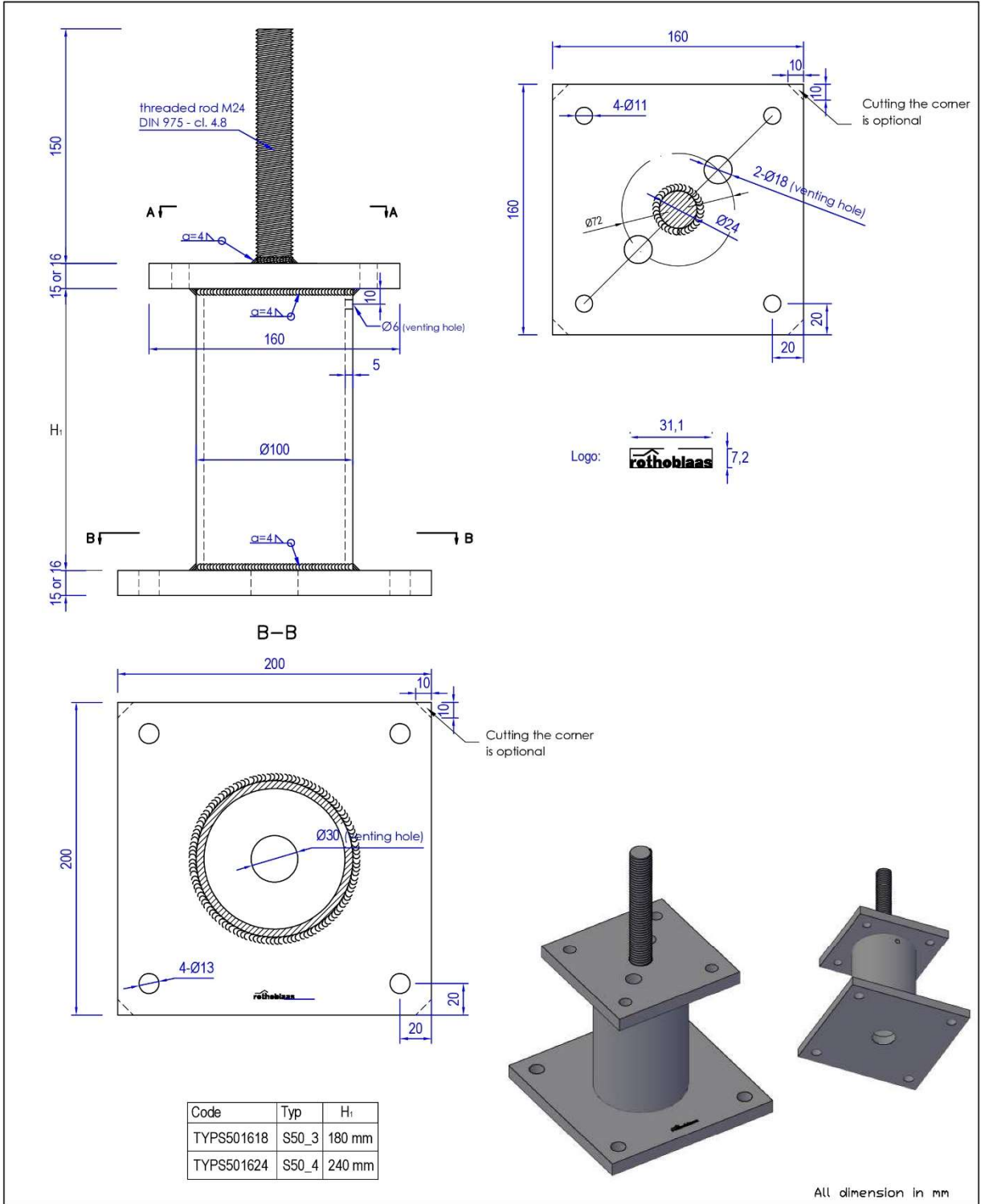
Code	Typ	H <sub>i</sub>
TYPS501212	S50_1	120 mm
TYPS501218	S50_2	180 mm



All dimension in mm



Object: Postbase  
TYP S50\_1 Alt and TYP S50\_2 Alt

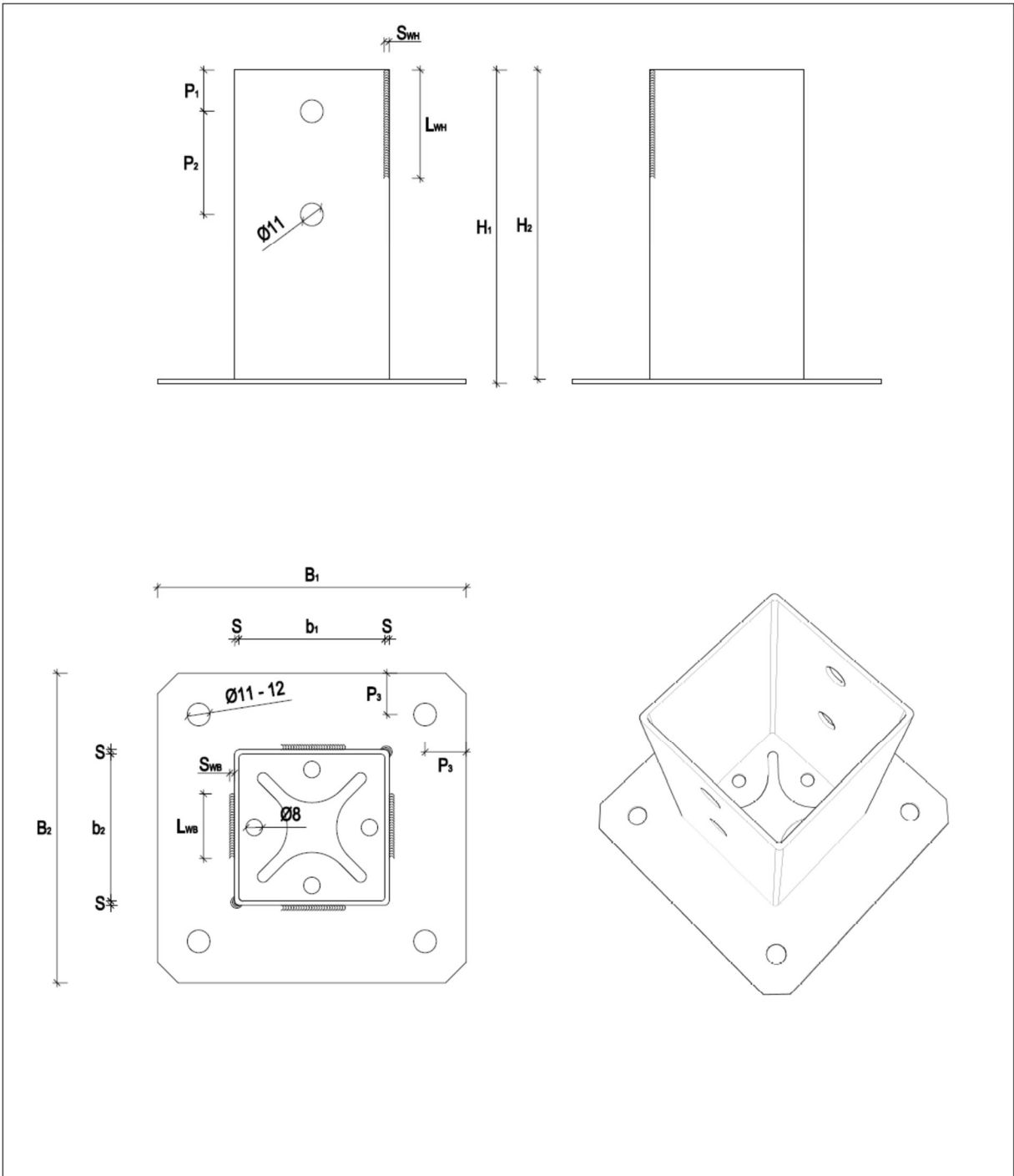



Code	Typ	H <sub>i</sub>
TYP S501618	S50_3	180 mm
TYP S501624	S50_4	240 mm


All dimension in mm

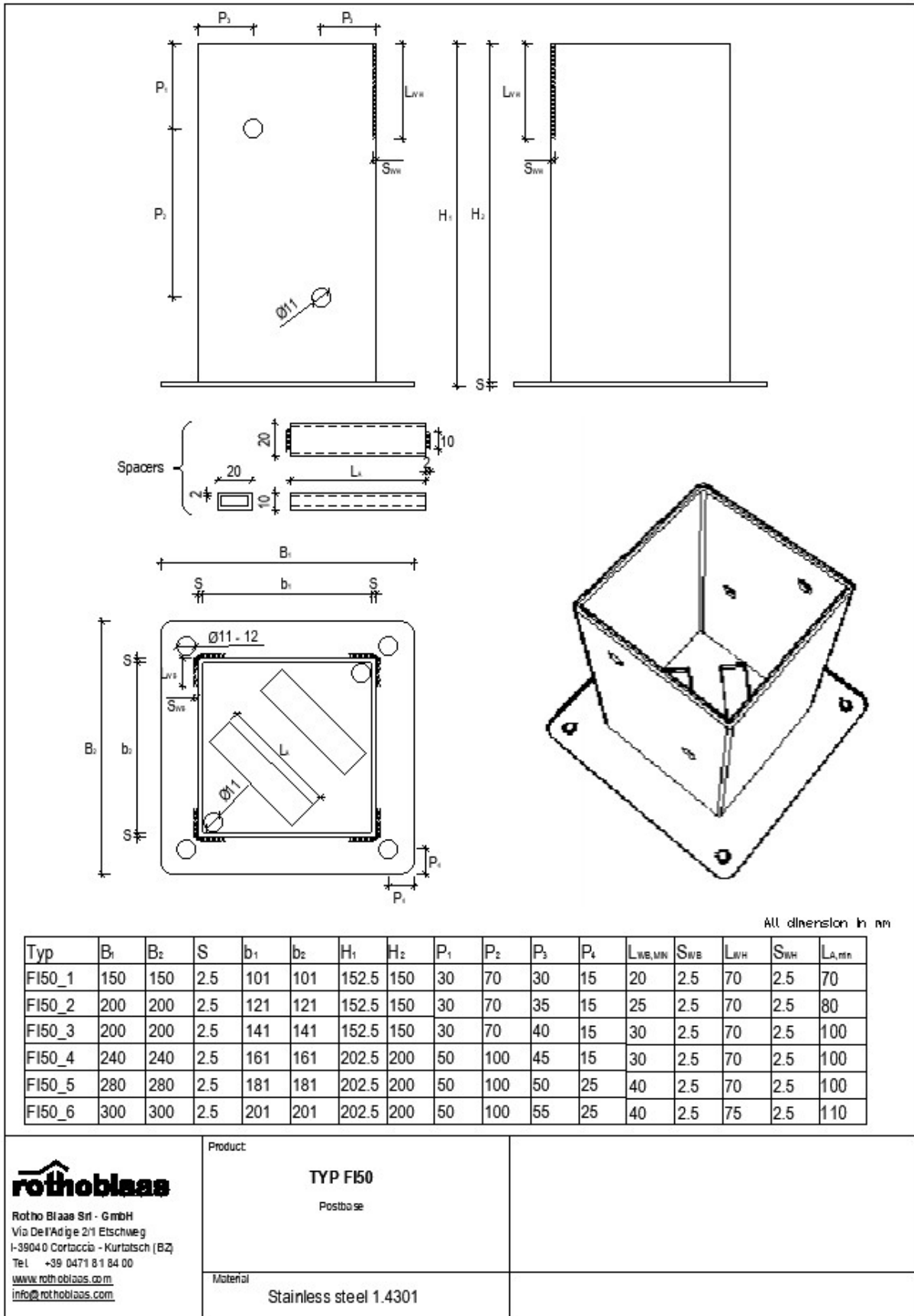



Object: Postbase  
TYP S50\_3 Alt and TYP S50\_4 Alt

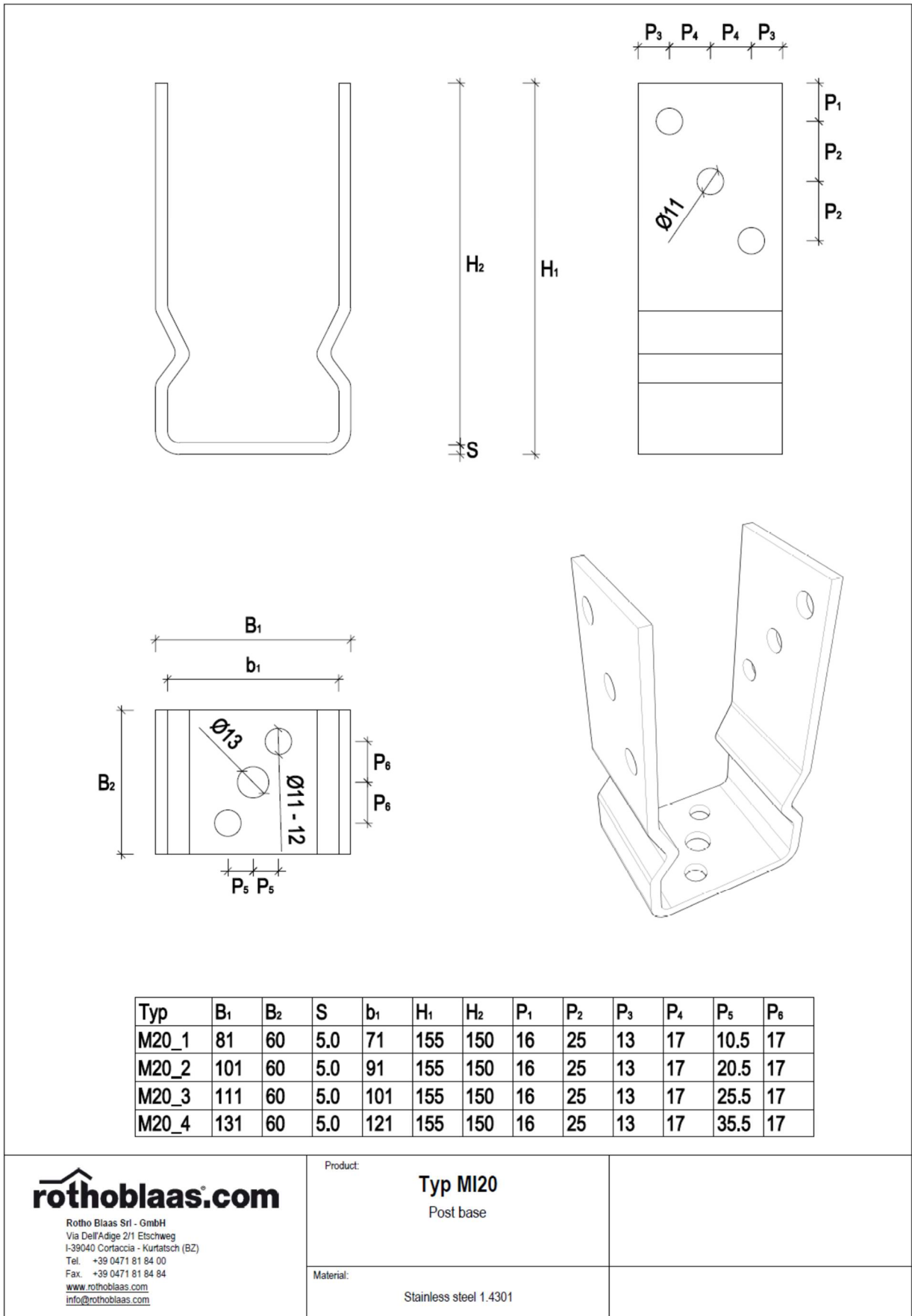
Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	b <sub>2</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	L <sub>WB</sub>	S <sub>WB</sub>	L <sub>WH</sub>	S <sub>WH</sub>
F10_1	150	150	2.0	71	71	152	150	20	50	20	30	2.5	80	2.0
F10_2	150	150	2.0	91	91	152	150	20	50	15	30	2.5	80	2.0

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	Material: <p style="text-align: center;">Stainless steel 1.4301</p>	



 <p>Rotho Blaas Srl - GmbH Via Dell'Adige 2/1 Etschweg I-39040 Cortaccia - Kurtatsch (BZ) Tel. +39 0471 81 84 00 <a href="http://www.rothoblaas.com">www.rothoblaas.com</a> <a href="mailto:info@rothoblaas.com">info@rothoblaas.com</a></p>	<p>Product</p> <p style="text-align: center;"><b>TYP F50</b> Postbase</p>	
	<p>Material</p> <p style="text-align: center;">Stainless steel 1.4301</p>	





Typ	B <sub>1</sub>	B <sub>2</sub>	S	b <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>	P <sub>5</sub>	P <sub>6</sub>
M20_1	81	60	5.0	71	155	150	16	25	13	17	10.5	17
M20_2	101	60	5.0	91	155	150	16	25	13	17	20.5	17
M20_3	111	60	5.0	101	155	150	16	25	13	17	25.5	17
M20_4	131	60	5.0	121	155	150	16	25	13	17	35.5	17

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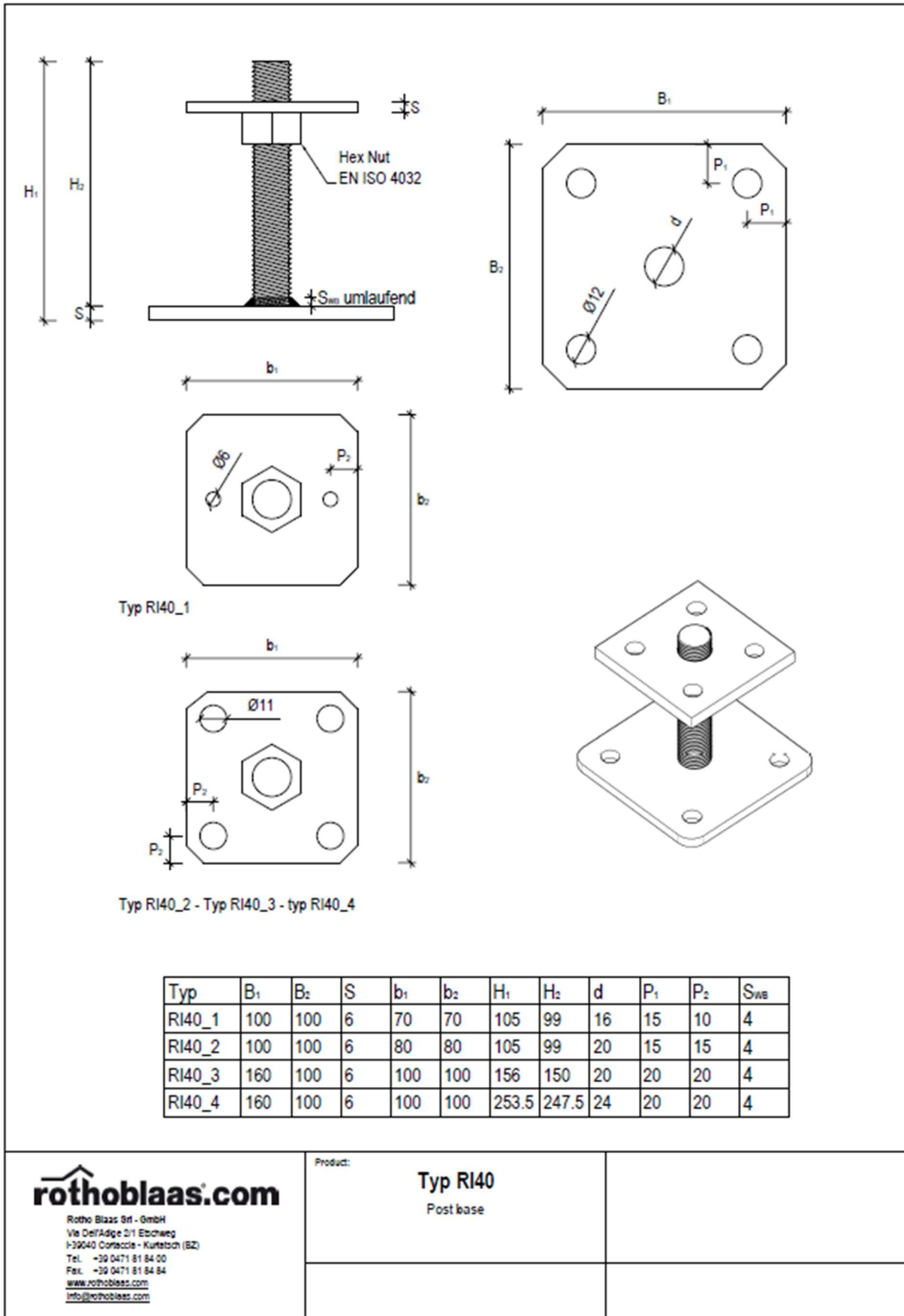
Product:

**Typ MI20**

Post base

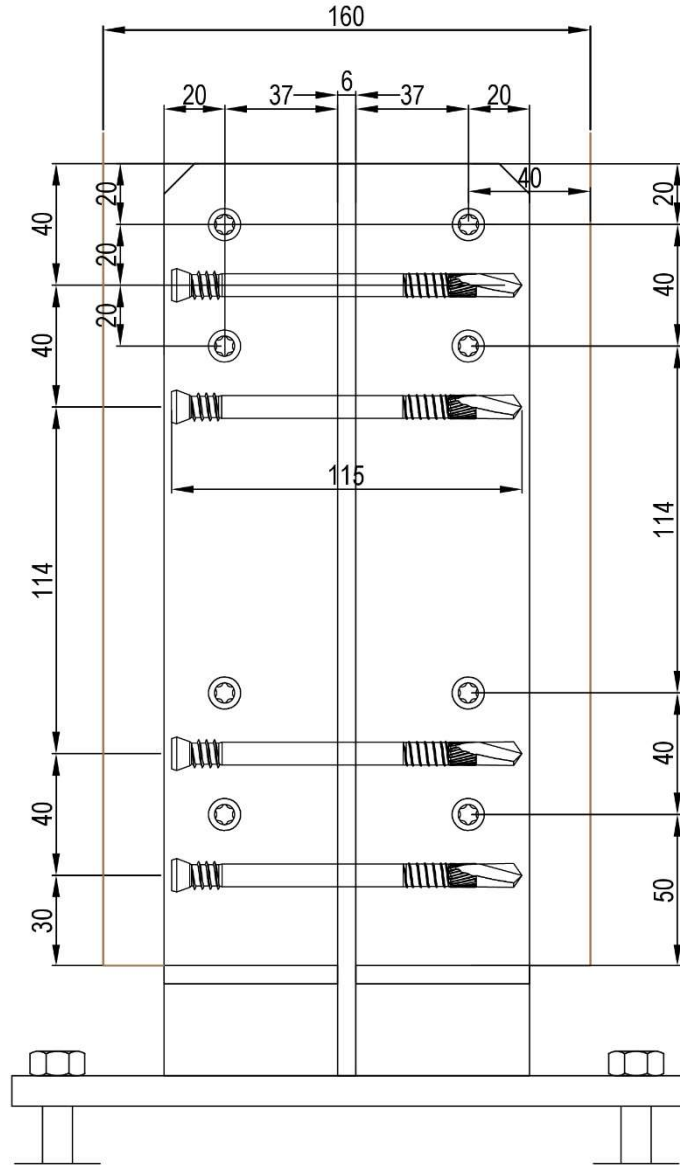
Material:

Stainless steel 1.4301





16 selftapping dowels SBD  $\text{\O}7,5 \times 115$   
Post MIN 160x160 mm

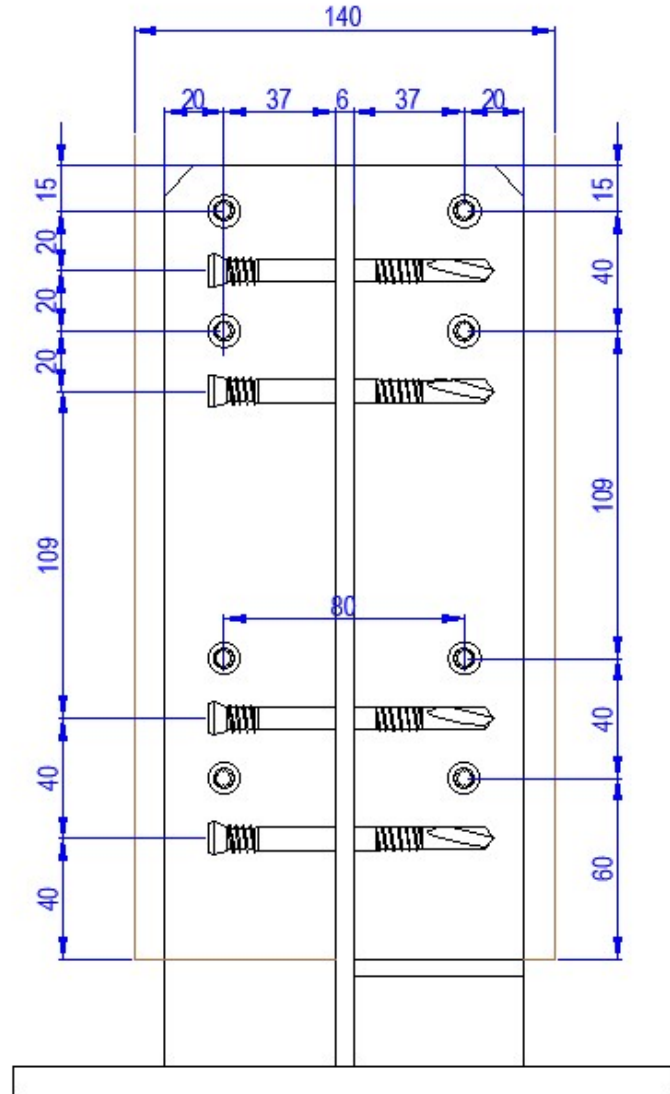


holes for concrete bolts  $\text{\O}13$

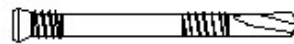
Object: Postbase TYP XS10\_1

Configuration: XS10\_1-16SBD115\_160

# 16 - self-tapping dowels $\varnothing 7.5 \times 95$ Post MIN 140x140



SBD/SBDS - 7.5x95

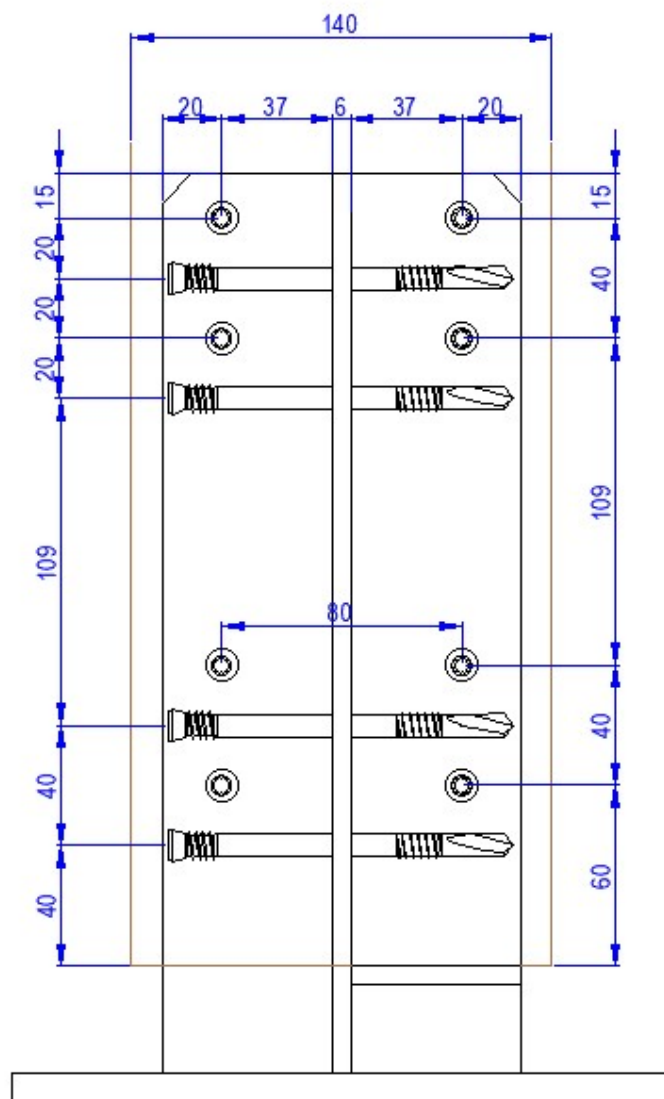


All dimension in mm

Object: Postbase XS10\_1

Configuration: XS10\_1-16SBD95\_140 / XS10\_1-16SBDS95\_140

## 16 - self-tapping dowels $\varnothing 7.5 \times 115$ Post MIN 140x140

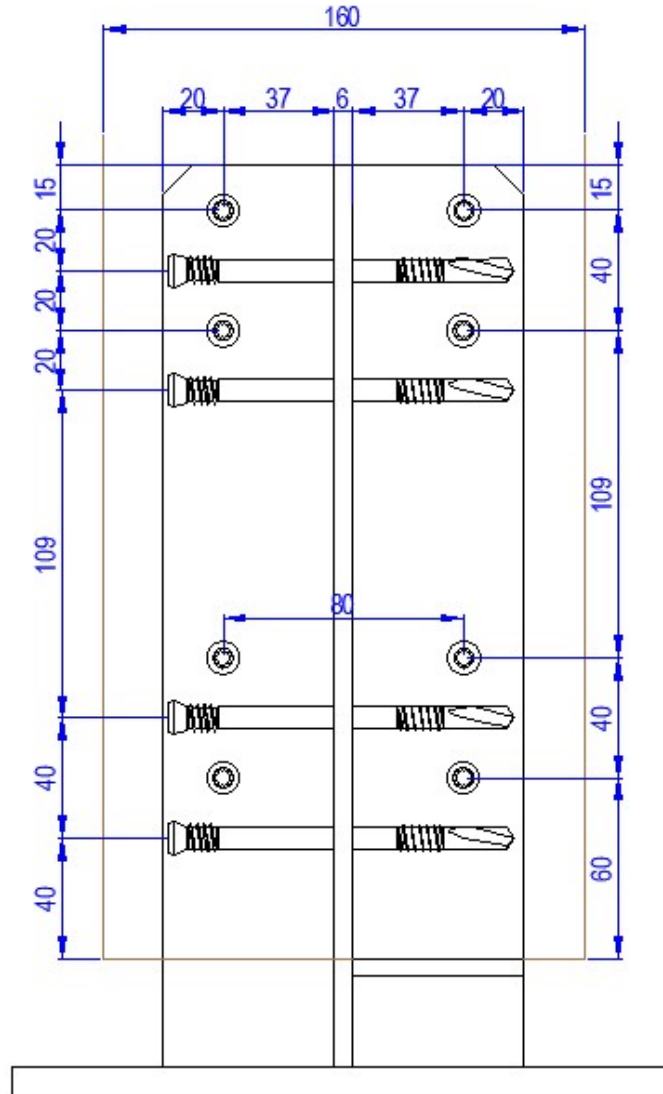


All dimension in mm

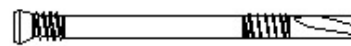
Object: Postbase XS10\_1

Configuration: XS10\_1-16SBD115\_140 / XS10\_1-16SBDS115\_140

# 16 - self-tapping dowels $\varnothing 7.5 \times 115$ Post MIN 160x160



SBD/SBDS - 7.5x115

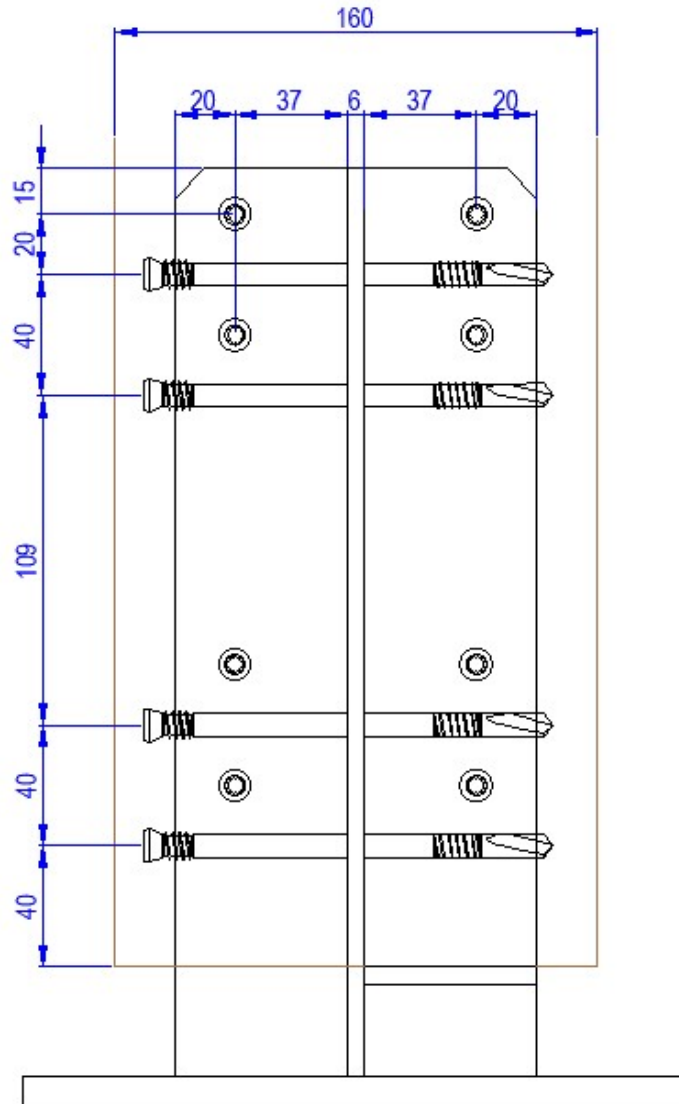


All dimension in mm

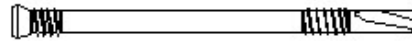
Object: Postbase XS10\_1

Configuration: XS10\_1-16SBD115\_160 / XS10\_1-16SBDS115\_160

# 16 - self-tapping dowels $\varnothing 7.5 \times 135$ Post MIN 160x160



SBD/SBDS - 7.5x135



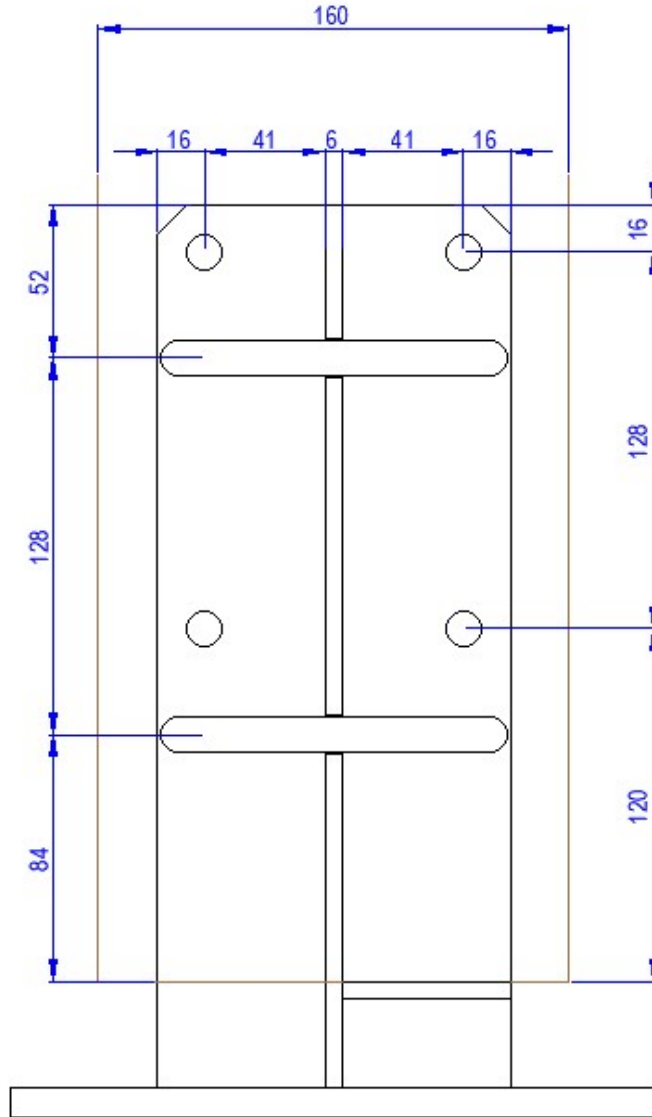
All dimension in mm

Object: Postbase XS10\_1

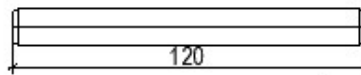
Configuration: XS10\_1-16SBD135\_160 / XS10\_1-16SBDS135\_160



# 8 - smooth dowels $\varnothing 12 \times 120$ Post MIN 160x160



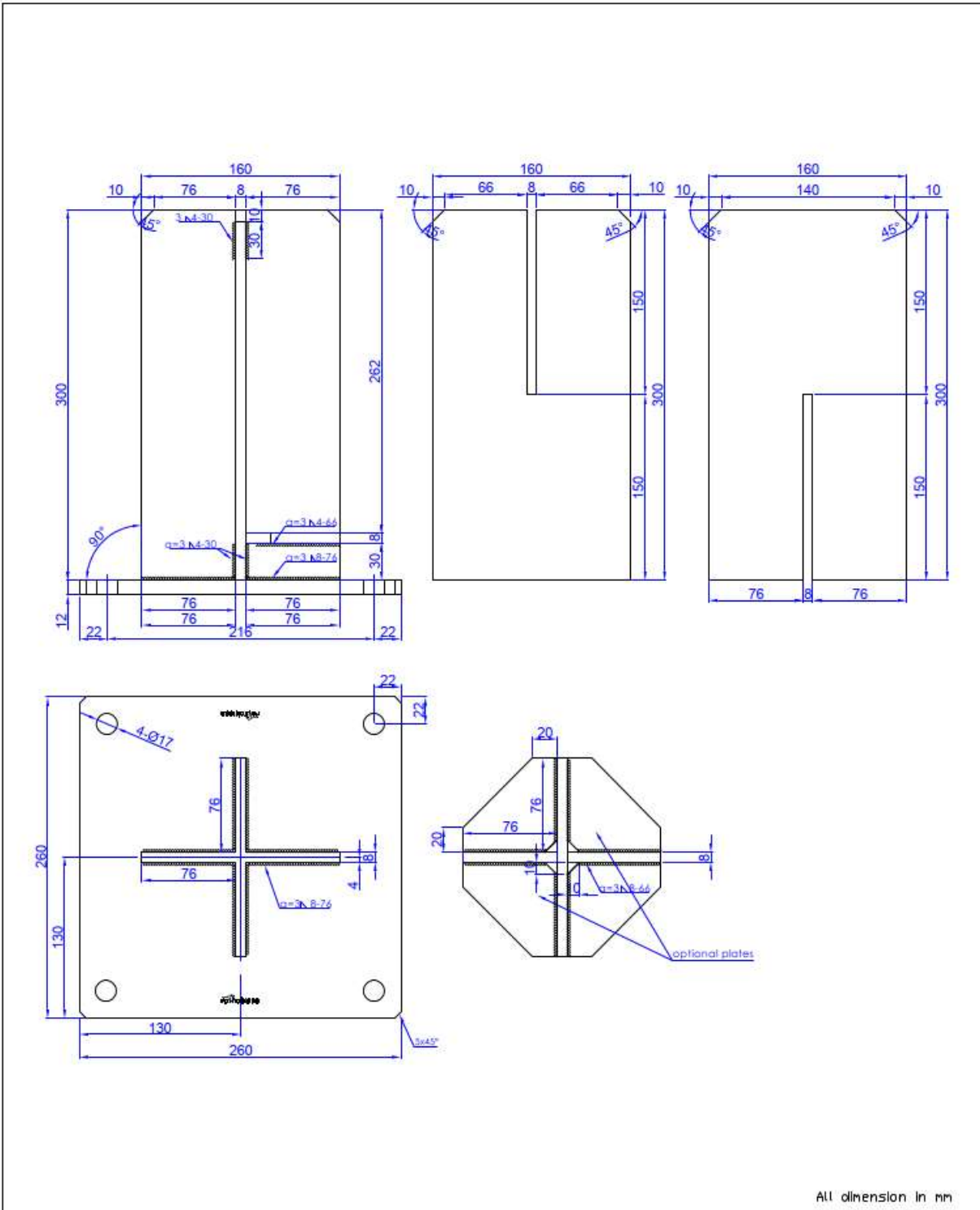
STA 12x120



All dimension in mm

Object: Postbase XS10\_1

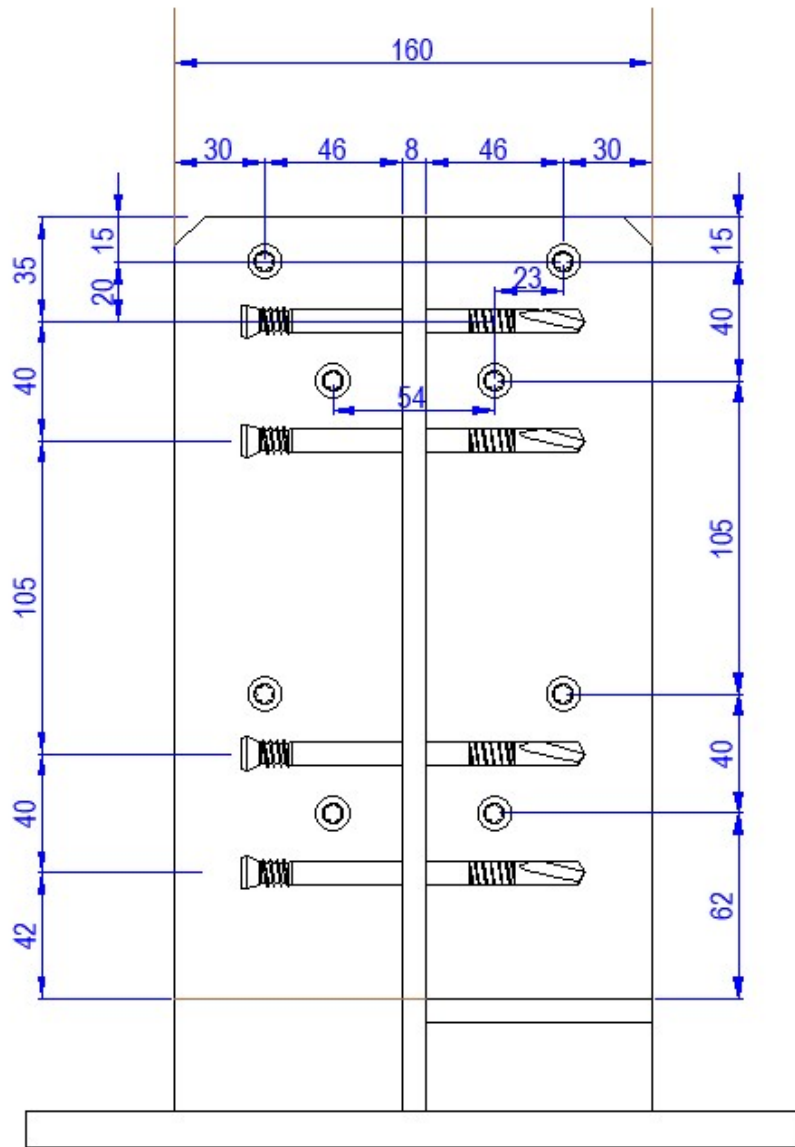
Configuration: XS10\_1-8STA120\_160



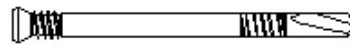
All dimension in mm

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------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------	--

# 16 - self tapping dowels $\text{\O}7.5 \times 115$ Post MIN160x160 mm



SBD/SBDS - 7.5x115

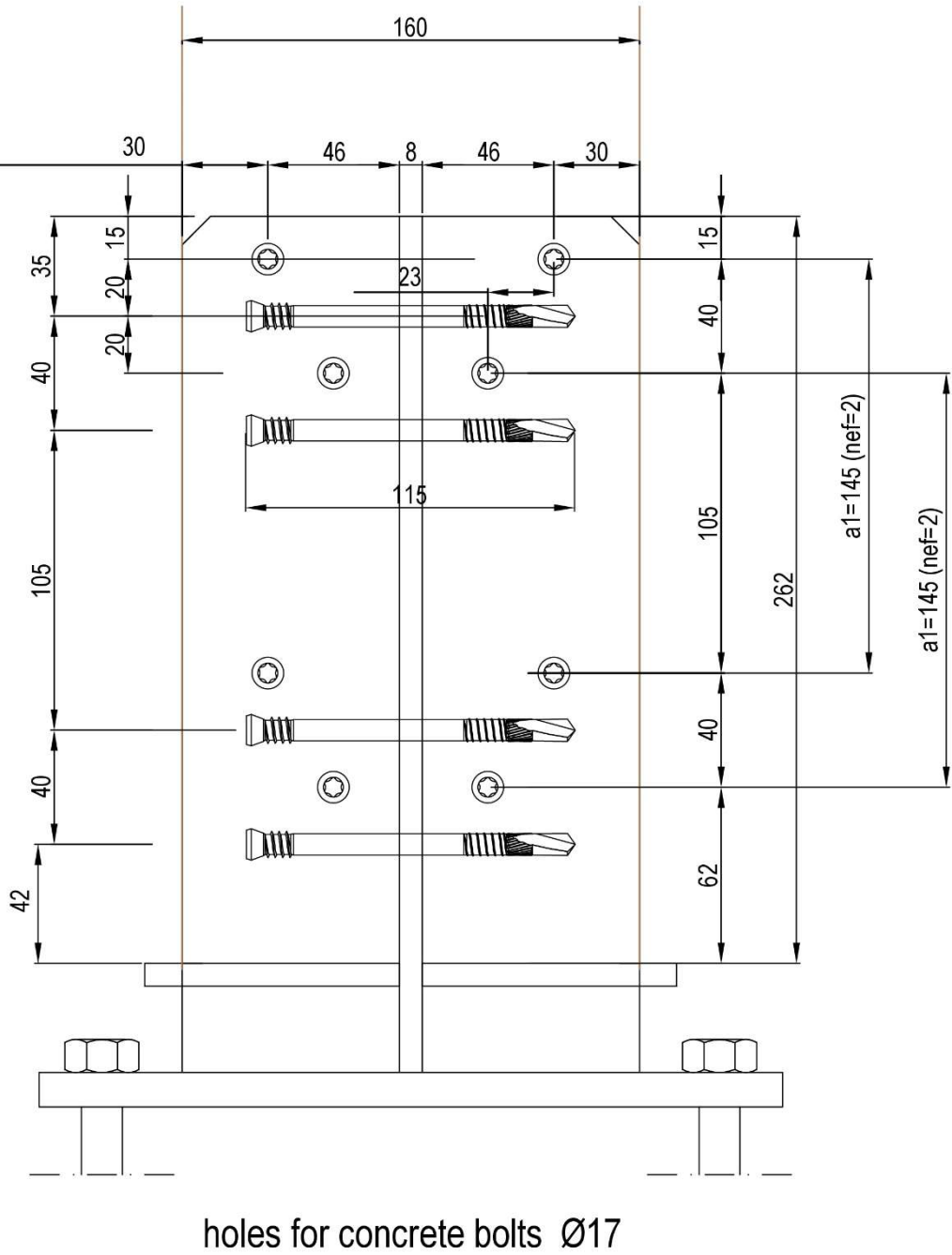


All dimensions in mm

Object: Postbase XS10\_2

Configuration: XS10\_2-16SBD115\_160 / XS10\_2-16SBDS115\_160

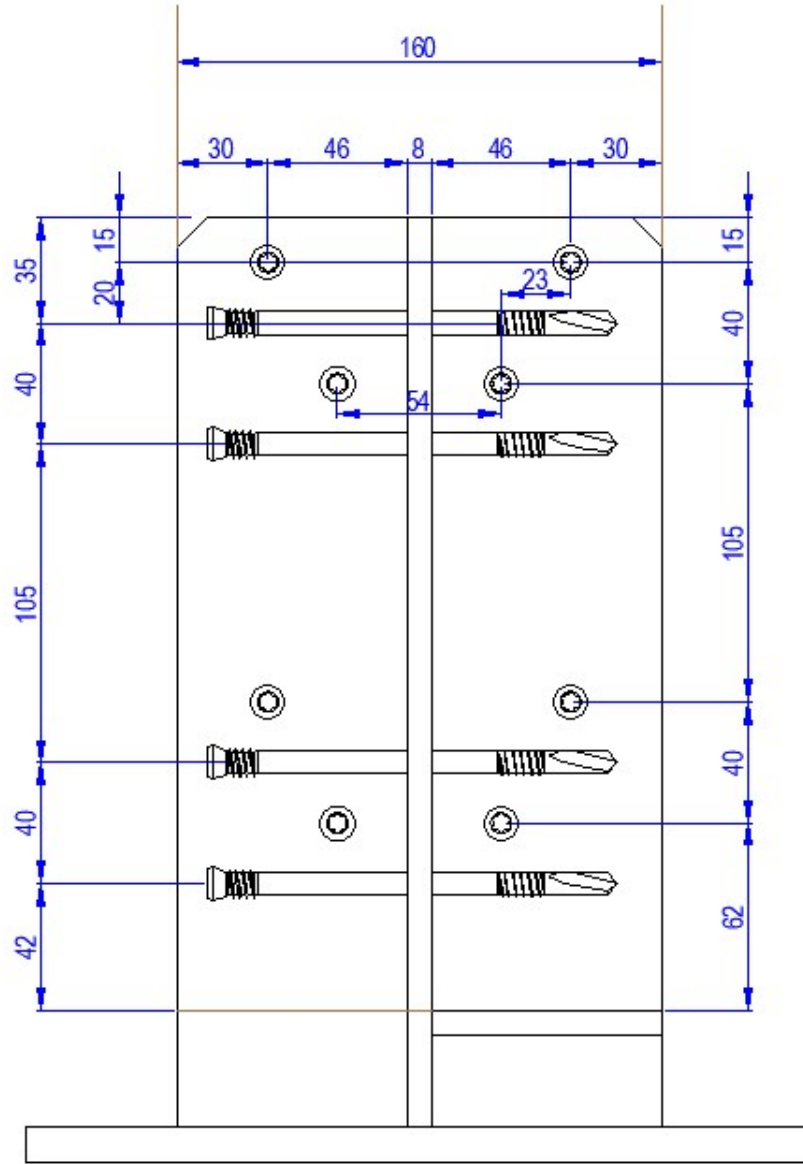
16 selftapping dowels SBD  $\text{Ø}7,5 \times 115$   
Post MIN160x160 mm



Object: Postbase TYP XS10\_2

Configuration: XS10\_2-16SBD115\_160 Alt

# 16 - self tapping dowels $\text{Ø}7.5 \times 135$ Post MIN160x160 mm

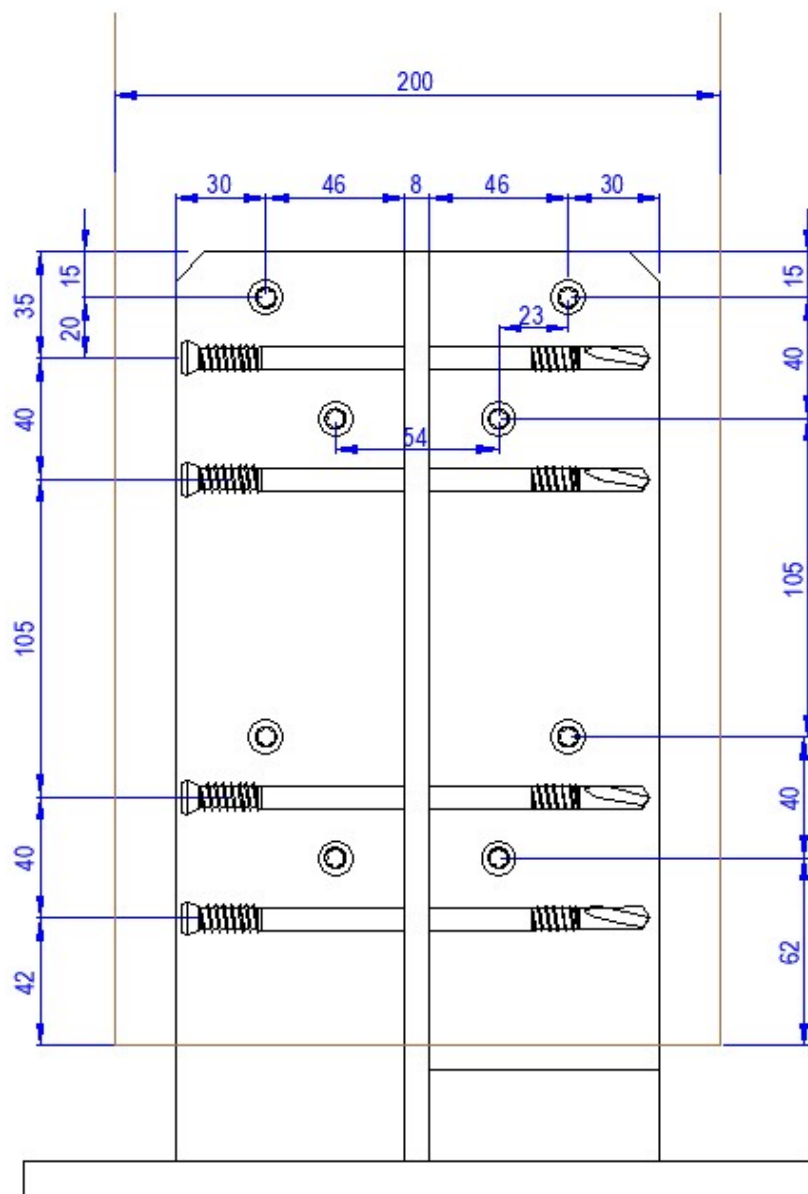


All dimension in mm

Object: Postbase XS10\_2

Configuration: XS10\_2-16SBD135\_160 / XS10\_2-16SBDS135\_160

## 16 - self tapping dowels $\text{\O}7.5 \times 155$ Post MIN 200x200 mm

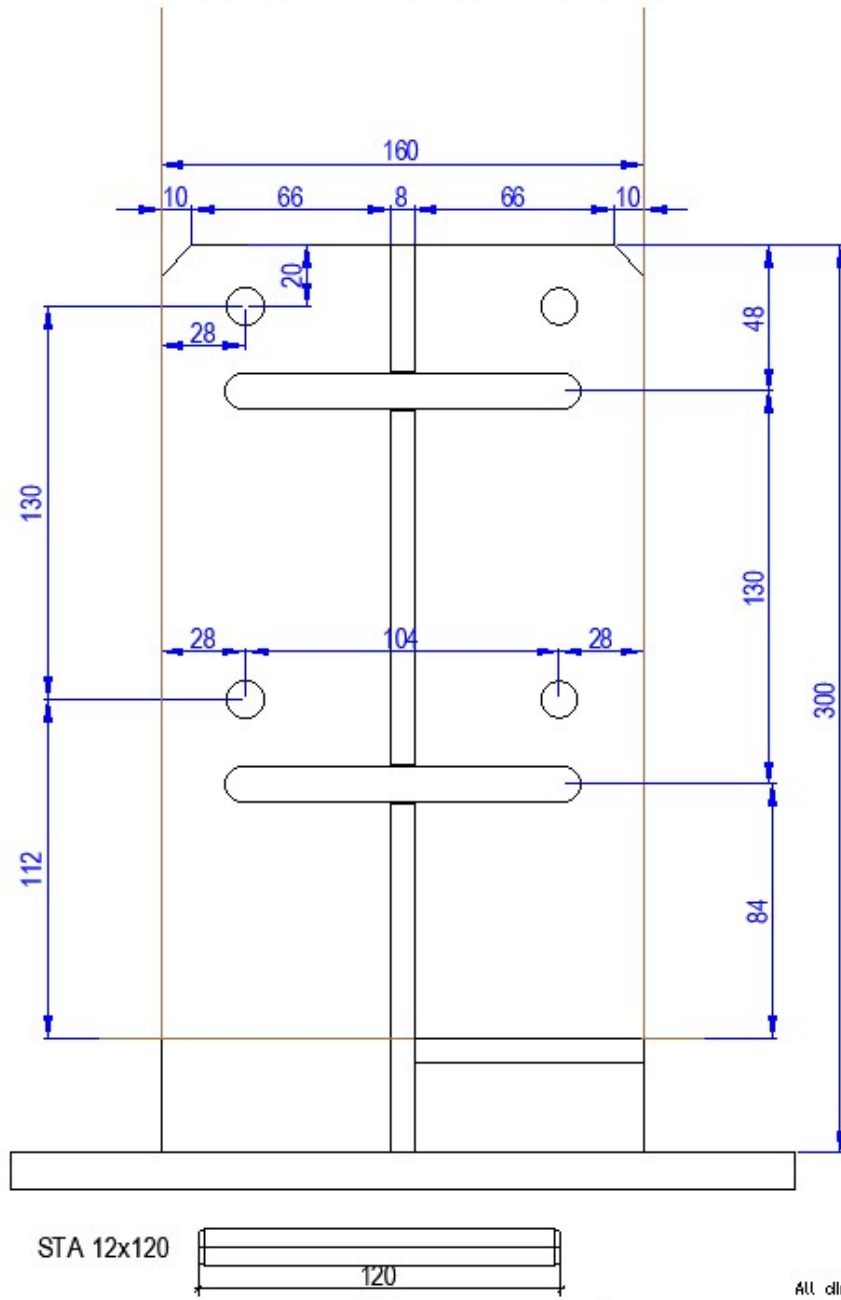


All dimension in mm

Object: Postbase XS10\_2

Configuration: XS10\_2-16SBD155\_200 / XS10\_2-16SBDS155\_200

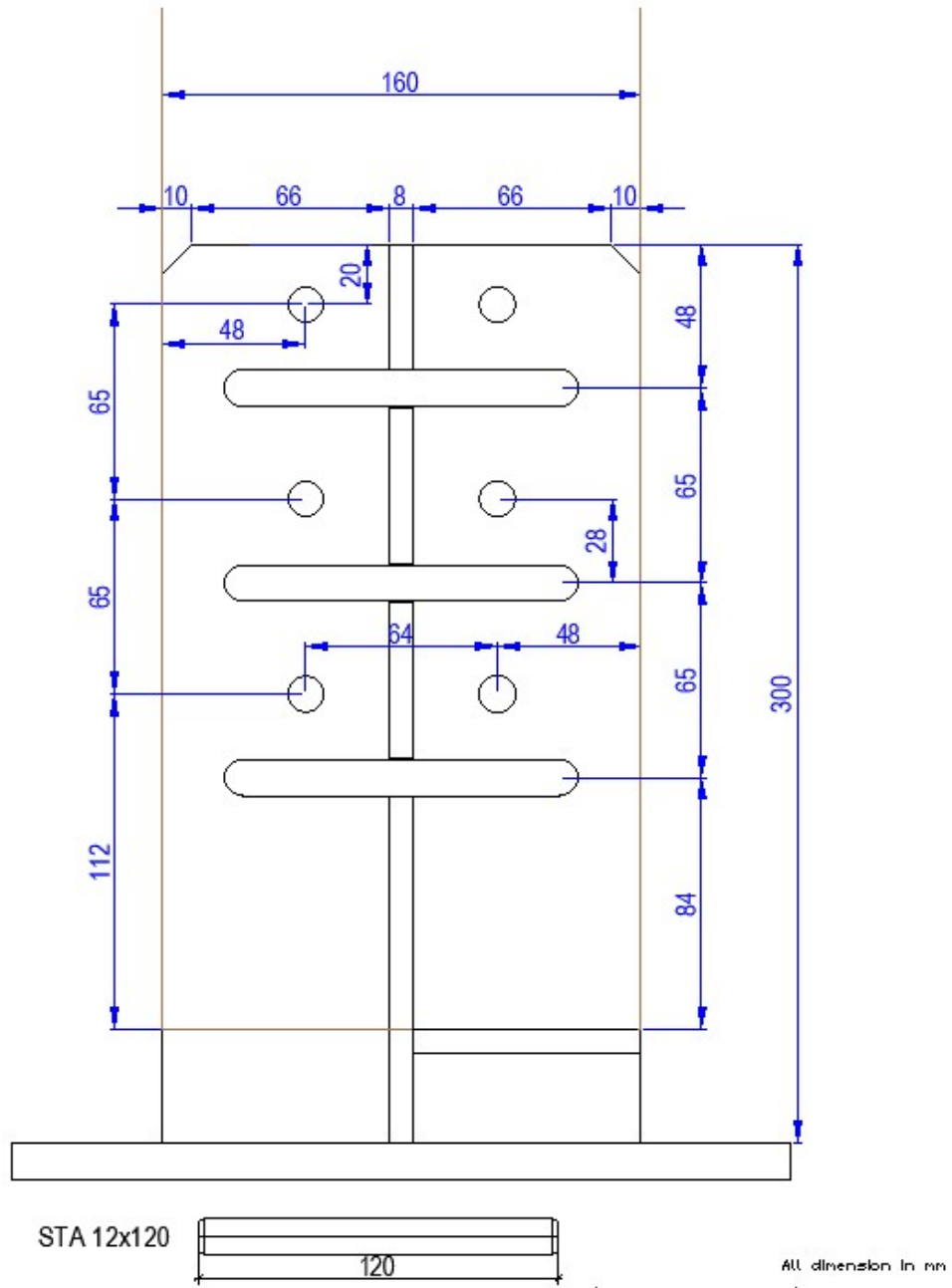
# 8 - smooth dowels $\text{Ø}12 \times 120$ Post MIN 160x160 mm



Object: Postbase XS10\_2

Configuration: XS10\_2-8STA120\_160

# 12 - smooth dowels $\text{Ø}12 \times 120$ Post MIN 160x160 mm

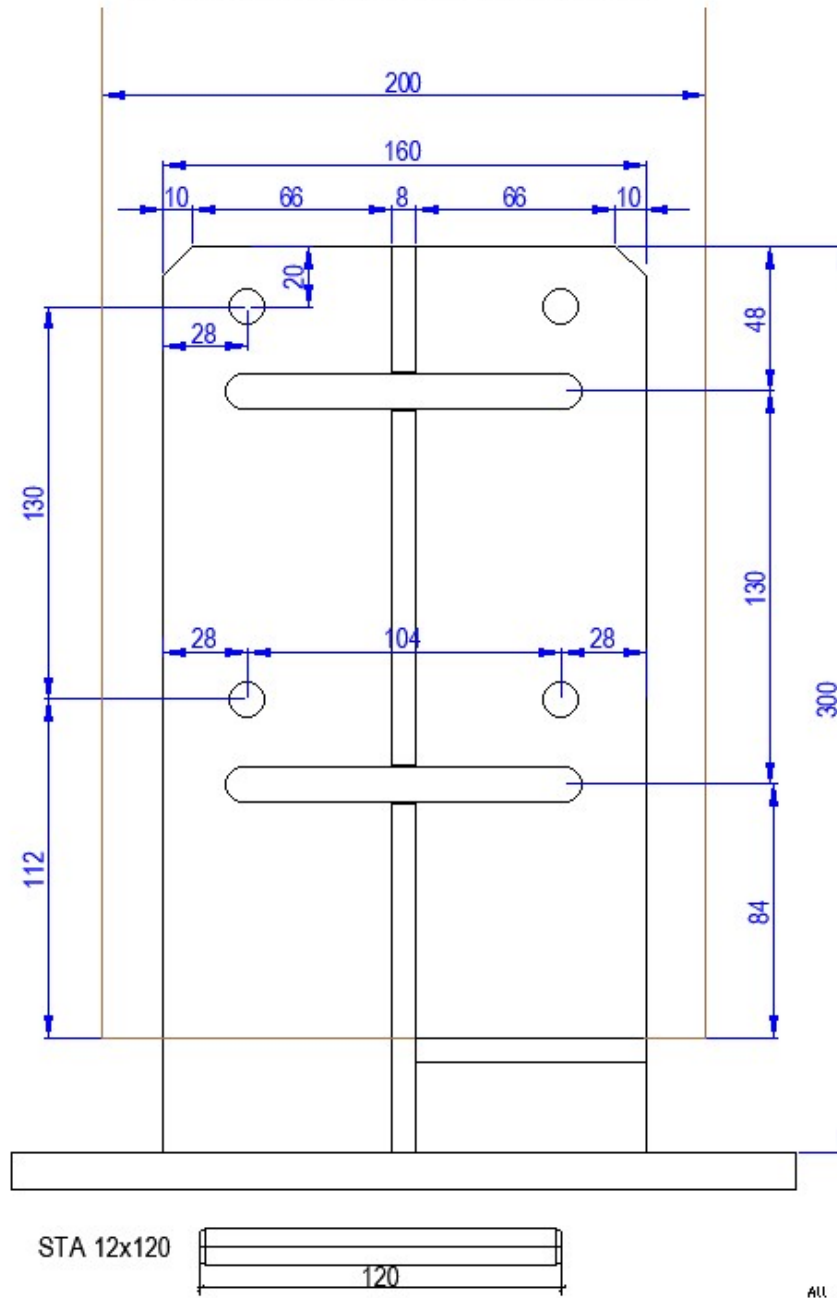


Object: Postbase XS10\_2

Configuration: XS10\_2-12STA120\_160



# 8 - smooth dowels $\text{Ø}12 \times 120$ Post MIN 200x200 mm



Object: Postbase XS10\_2

Configuration: XS10\_2-8STA120\_200

