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**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-26/0345
of 12 May 2026**

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

GH post base Typ P S-Fix

Product family
to which the construction product belongs

Post base as fastener in timber constructions

Manufacturer

GH Baubeschläge GmbH
Austrasse 34
73235 Weilheim/Teck
GERMANY

Manufacturing plant

HSW 8

This European Technical Assessment
contains

42 pages including 3 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Article 95(4) of
Regulation (EU) 2024/3110, on the basis of

EAD 130186-00-0603

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Specific part

1 Technical description of the product

GH post bases Typ P S-Fix are single- or multi-component timber fasteners made of S235 galvanized steel sheet in accordance with EN 10346¹, which are usually fastened to timber members (see Annex 2) with screws and to concrete members with anchor bolts or by embedding.

Connection to concrete members is achieved for the GH post bases Typ P S-Fix and Typ PV S-Fix through embedding in concrete and for the height-adjustable GH post bases Typ P50 S-Fix, Typ P100 S-Fix, Typ P150 S-Fix, Typ P50 S-Fix extra, Typ P100 S-Fix extra, Typ P50 S-Fix extra2, Typ P100 S-Fix extra2, Typ P50 S-Fix plus, Typ P100 S-Fix plus and Typ P150 S-Fix plus using anchor bolts. For connection to the timber members GH Fix-P VGSScrew Ø5,0x80 or GH Fix-P VGSScrew Ø5,0x80 V2A fully threaded screws are used.

Dimensions, hole pattern and steel grades are given in Annex 1.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if GH post bases Typ P S-Fix are used in compliance with the specifications and conditions given in Annex 1 to 3.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of GH post bases Typ P S-Fix of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Load-carrying capacity	See Annex 3
Stiffness	No performance assessed
Ductility in cyclic testing	No performance assessed
Durability	See Annex 2

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Release of dangerous substances	No performance assessed

¹ EN 10346:2015-10 Continuously hot-dip coated steel flat products – Technical delivery conditions

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 130186-00-0603 the applicable European legal act is: [97/638/EC (EU)].

The system to be applied is: 2+

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

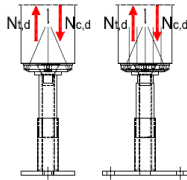
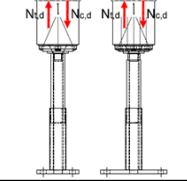
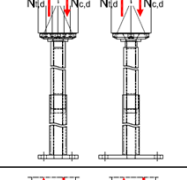
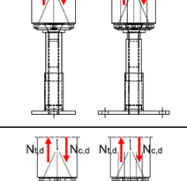
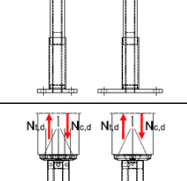
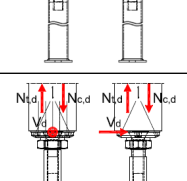
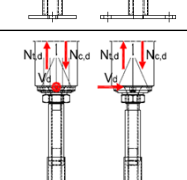
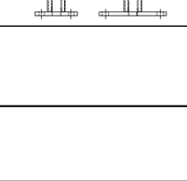
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 12 May 2026 by Deutsches Institut für Bautechnik

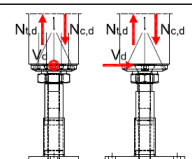
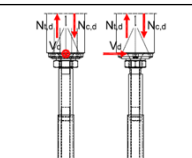
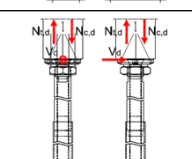
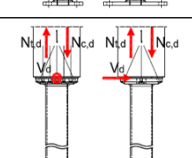
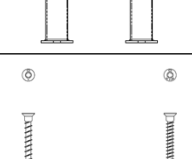
Anja Dewitt
Head of Section

beglaubigt:
Stützer

Annex 1 Technical description of the product

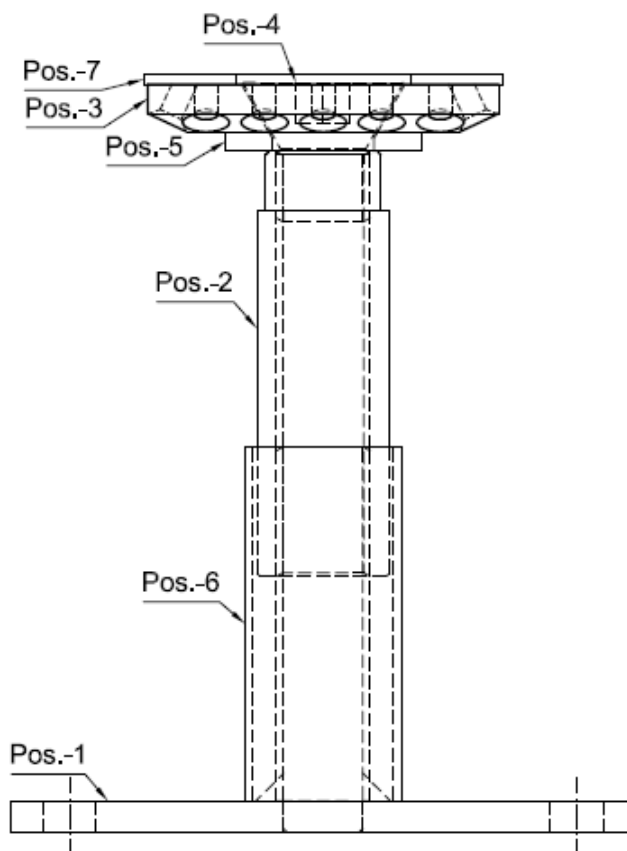
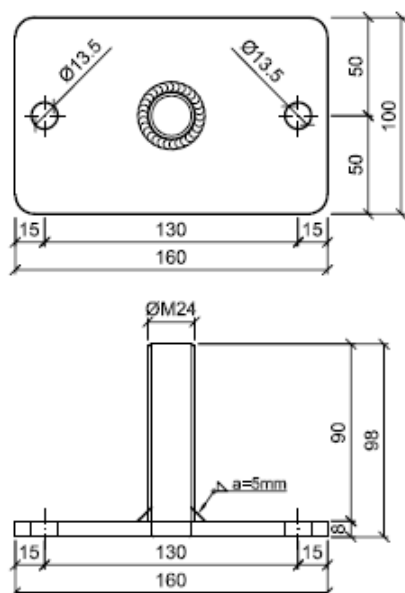
No	Post bases / Screws	Description		Annex 1 Page	Annex 3 Page
1	Typ P50 S-Fix	Height adjustable post base for assembly on concrete		7-8	35
2	Typ P100 S-Fix	Height adjustable post base for assembly on concrete		9-10	35
3	Typ P150 S-Fix	Height adjustable post base for assembly on concrete		11-12	35
4	Typ P50 S-Fix extra	Height adjustable post base for assembly on concrete		13-14	36
5	Typ P150 S-Fix extra	Height adjustable post base for assembly on concrete		15-16	36
6	Typ PV S-Fix	Height-adjustable post base for anchoring in concrete		17-18	36
7	Typ P50 S-Fix extra2	Height adjustable post base for assembly on concrete		19-20	37
8	Typ P100 S-Fix extra2	Height adjustable post base for assembly on concrete		21-22	38

GH post base Typ P S-Fix	Annex 1.1
Overview of the different post bases and screws in annex 1	

No	Post bases / Screws	Description		Annex 1 Page	Annex 3 Page
9	Typ P50 S-Fix plus	Height adjustable post base for assembly on concrete		23-24	39
10	Typ P100 S-Fix plus	Height adjustable post base for assembly on concrete		25-26	40
11	Typ P150 S-Fix plus	Height adjustable post base for assembly on concrete		27-28	41
12	Typ P S-Fix	Post base for anchoring in concrete		29-30	42
13	Fix-P VGSScrew Ø5,0x80 Fix-P VGScrew Ø5,0x80 V2A	Fasteners for GH post bases		31	-

GH post base Typ P S-Fix	Annex 1.2
Overview of the different post bases and screws in annex 1	

Pos.-1 Base plate with threaded bolt



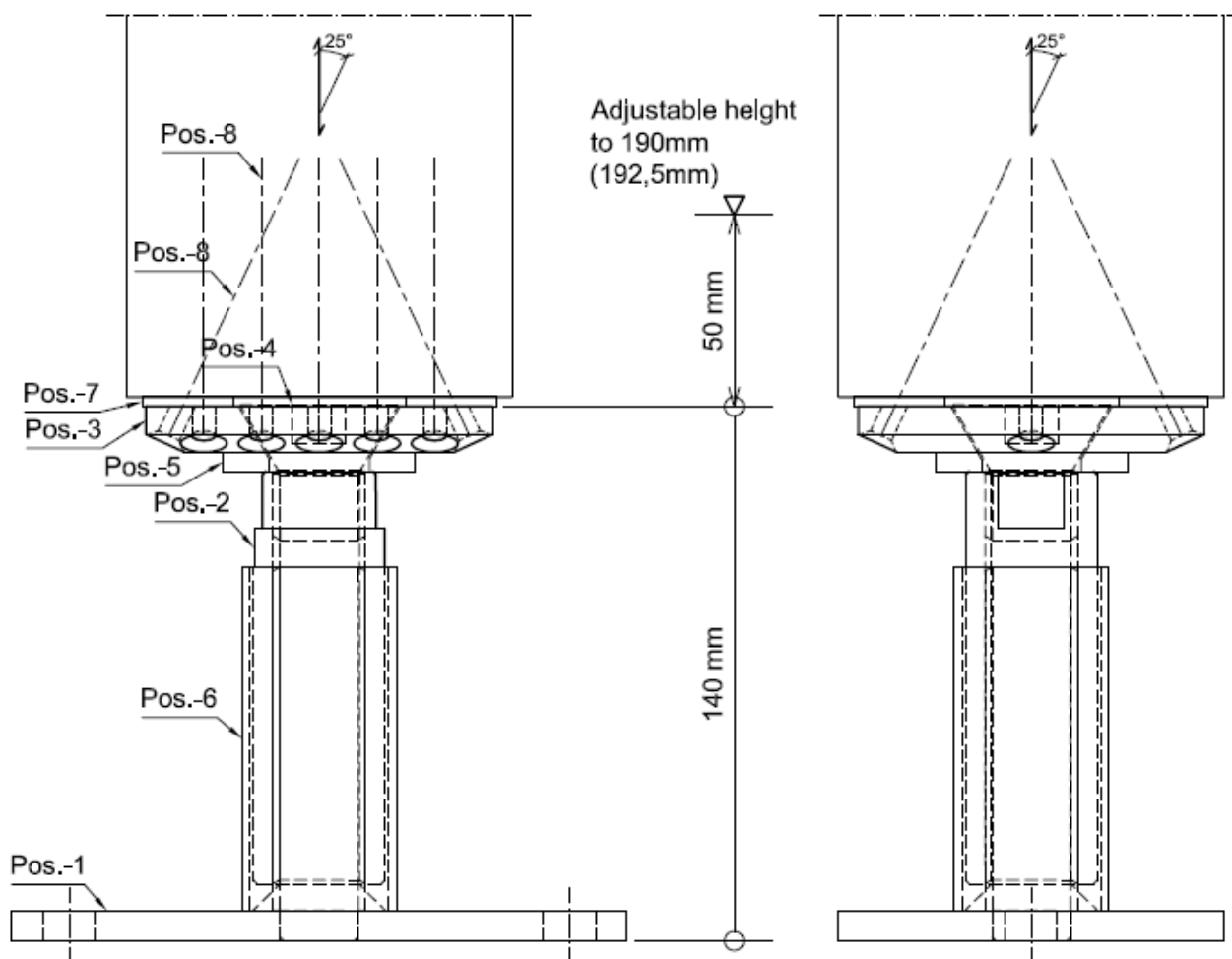
Post base Typ P50 S-Fix, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, S235; and threaded bolt M24, H= 90 mm, 5.6;
2	Threaded sleeve Ø34 mm, Inner thread M24, H= 108 mm, Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35 mm, S235;
5	Steel plate 50/26/5 mm, S235;
6	Protection sleeve Ø40 mm, T= 2 mm, H= 90 mm, S235;
7	EPDM- seal (not subject to this ETA)
8	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P50 S-Fix

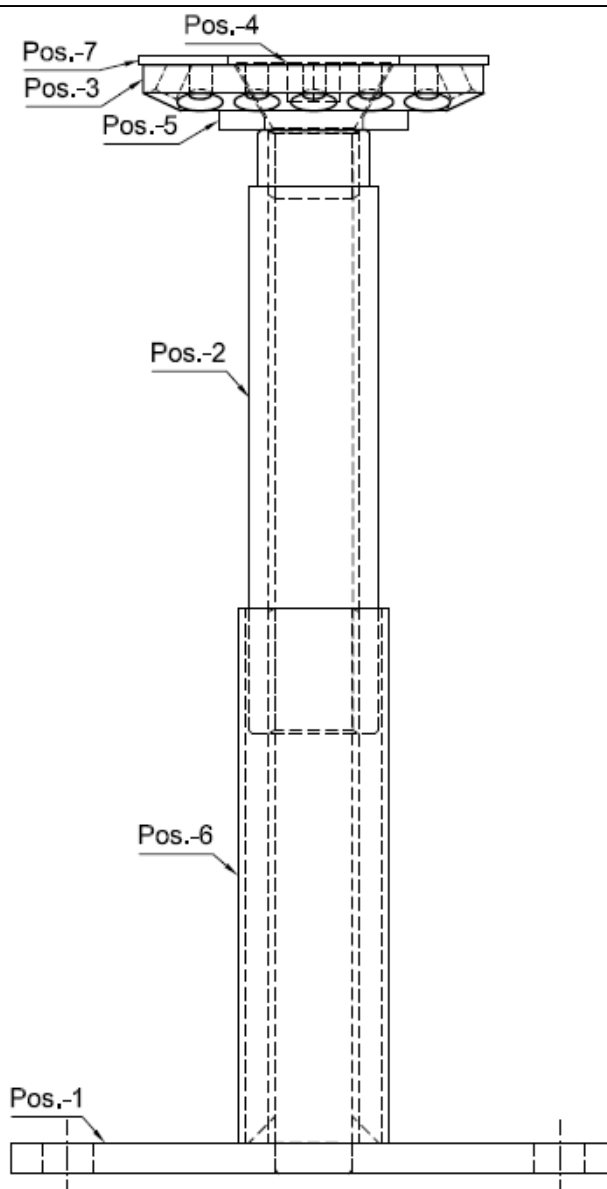
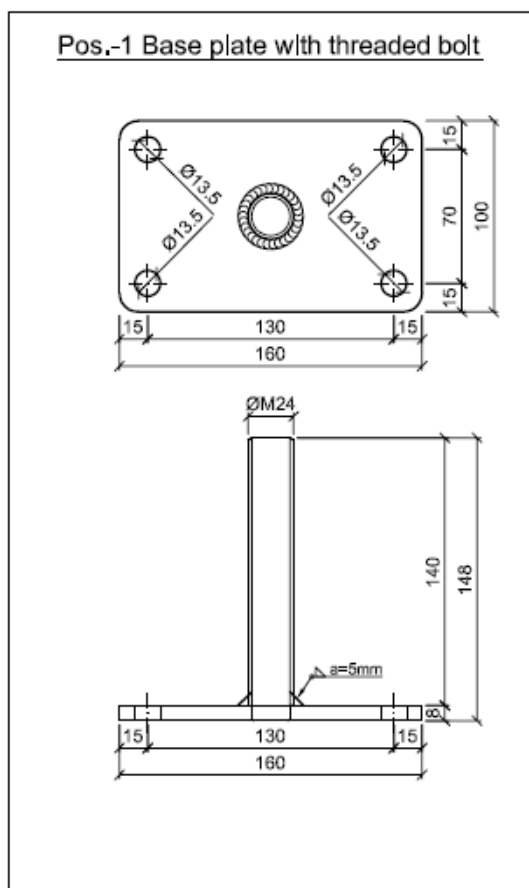
Annex 1.3



GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P50 S-Fix

Annex 1.4



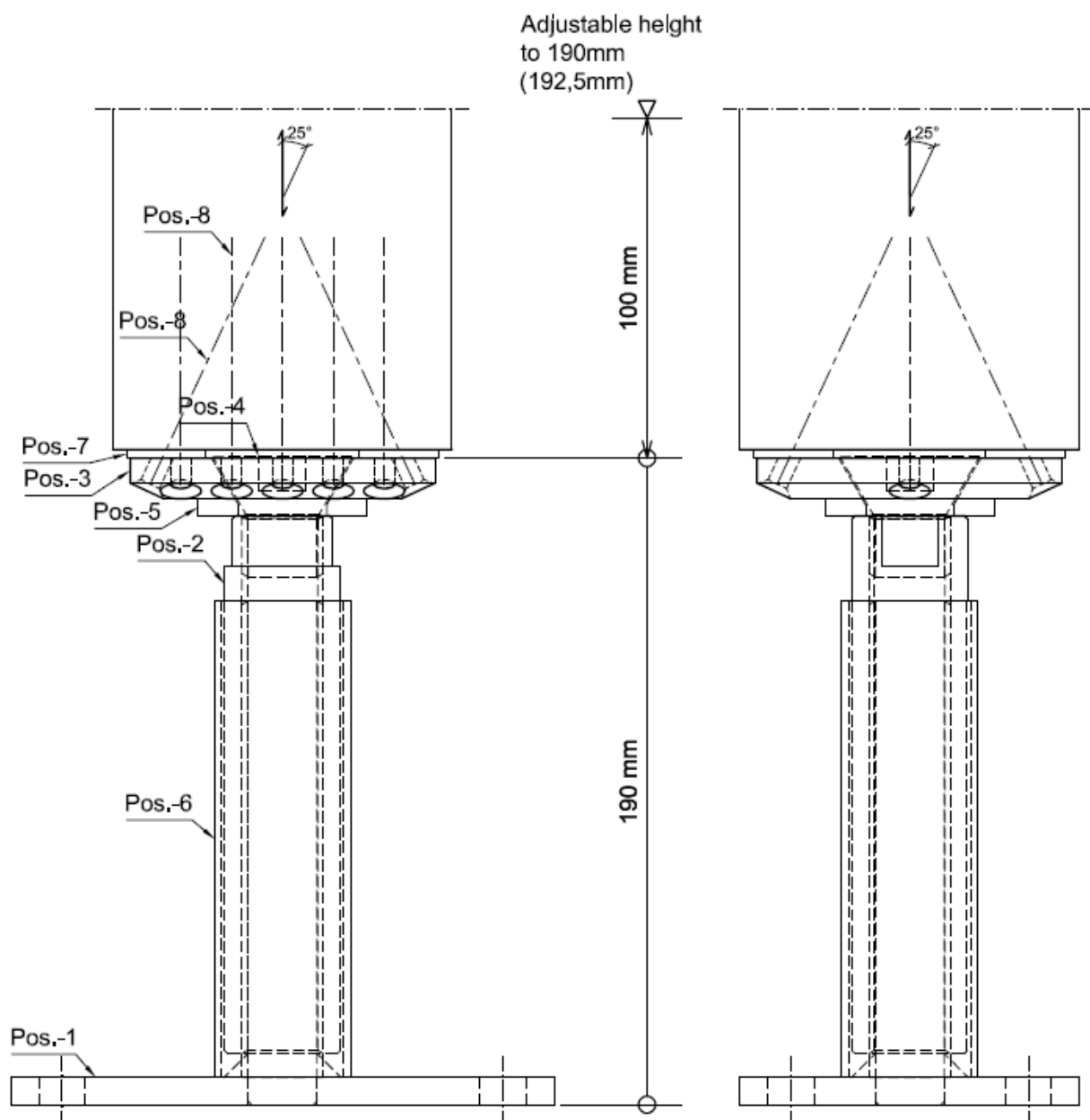
Post base Typ P100 S-Fix, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, S235; and threaded bolt M24, H= 140 mm, 5.6;
2	Threaded sleeve Ø34 mm, Inner thread M24, H= 158 mm, Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/26/5 mm, S235;
6	Protection sleeve Ø40 mm, T= 2 mm, H= 140 mm, S235
7	EPDM- seal (not subject to this ETA)
8	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P100 S-Fix

Annex 1.5

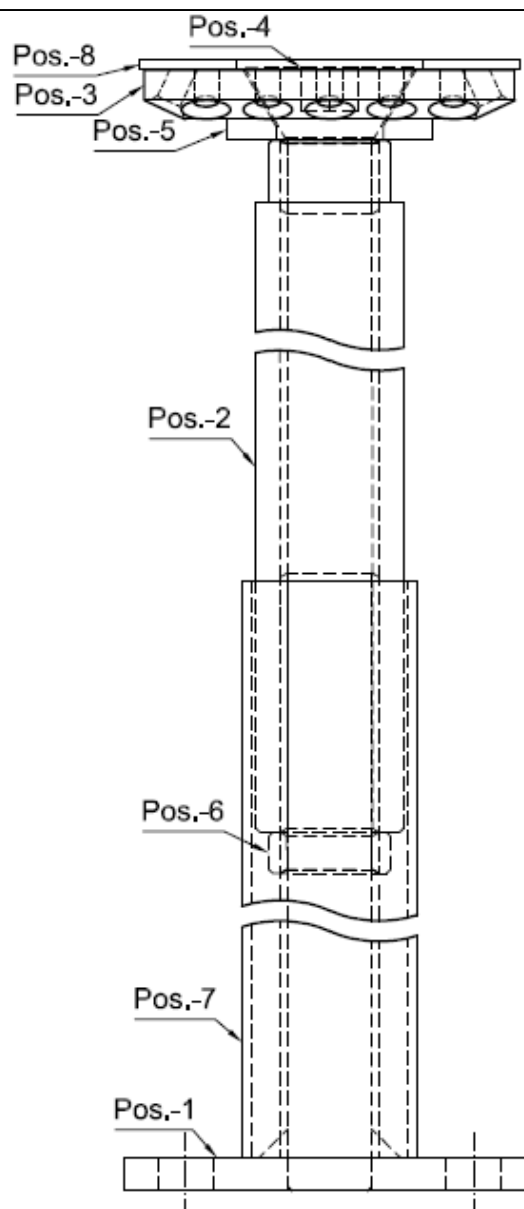
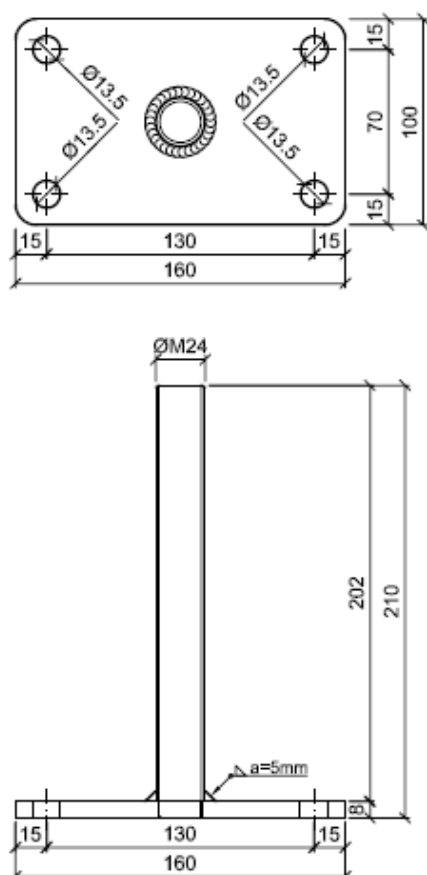


GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P100 S-Fix

Annex 1.6

Pos.-1 Base plate with threaded bolt



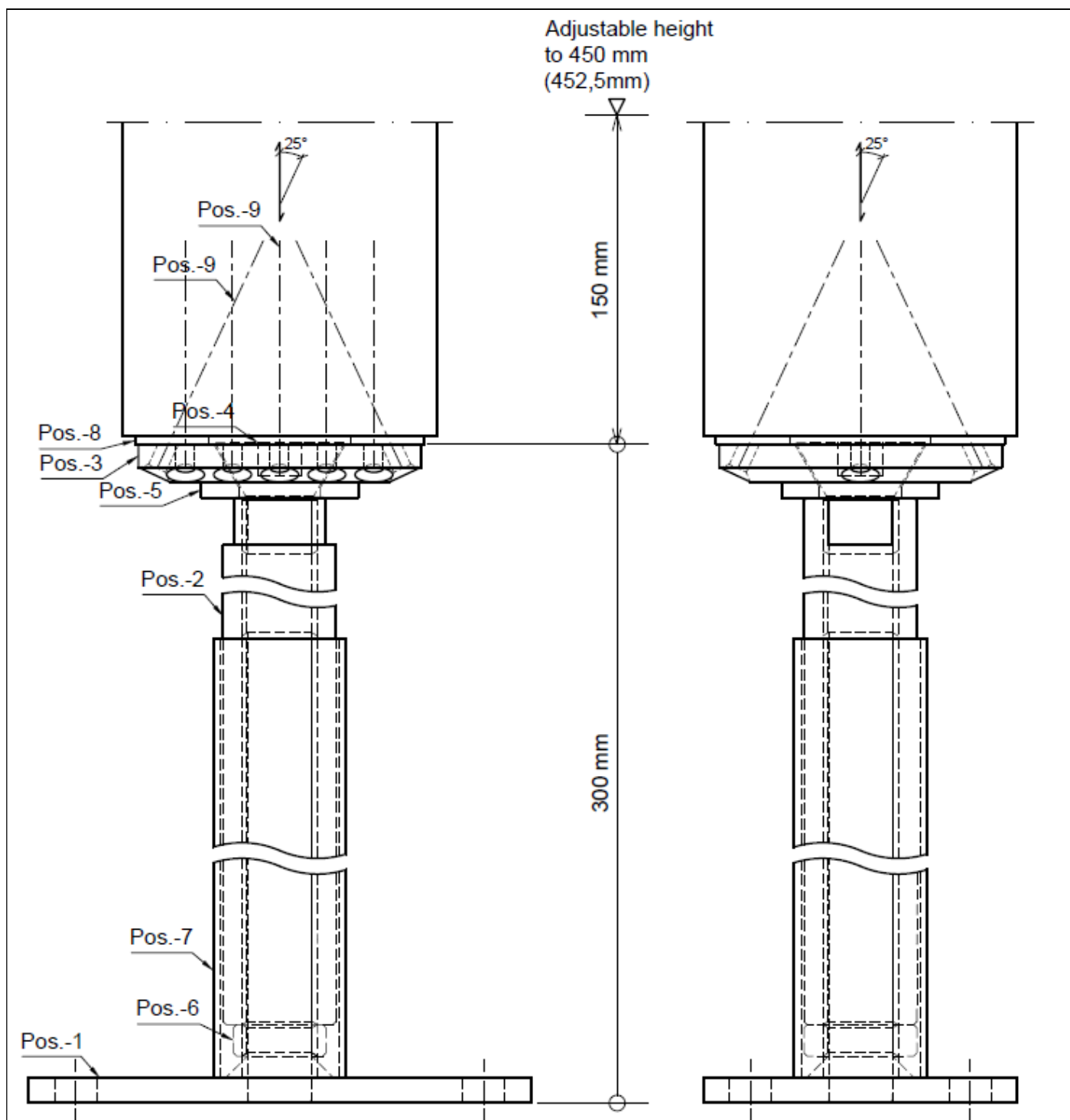
Post base Typ P150 S-Fix, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, S235; and threaded bolt M24, H= 202 mm, 5.6;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 258 mm, Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/26/5 mm, S235;
6	Threaded sleeve lock nut M24, H= 10 mm; Wrench size 30, S235;
7	Protection sleeve Ø40 mm, T= 2,3 mm, H= 200 mm, S235
8	EPDM- seal (not subject to this ETA)
9	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P150 S-Fix

Annex 1.7

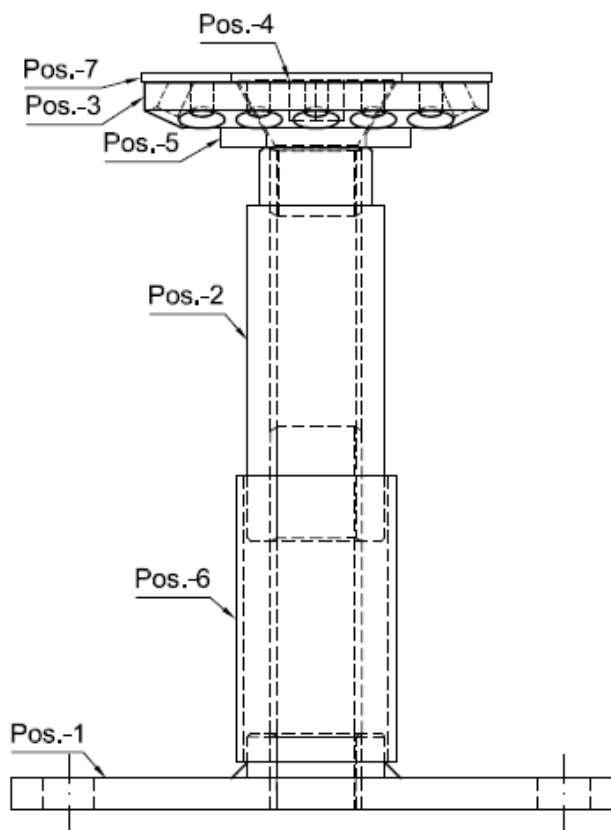
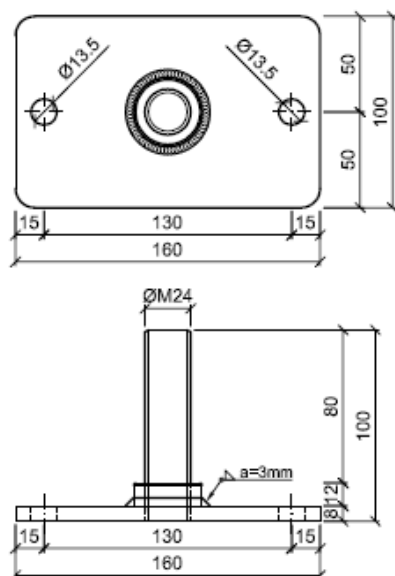


GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P150 S-Fix

Annex 1.8

Pos.-1 Base plate with threaded bolt



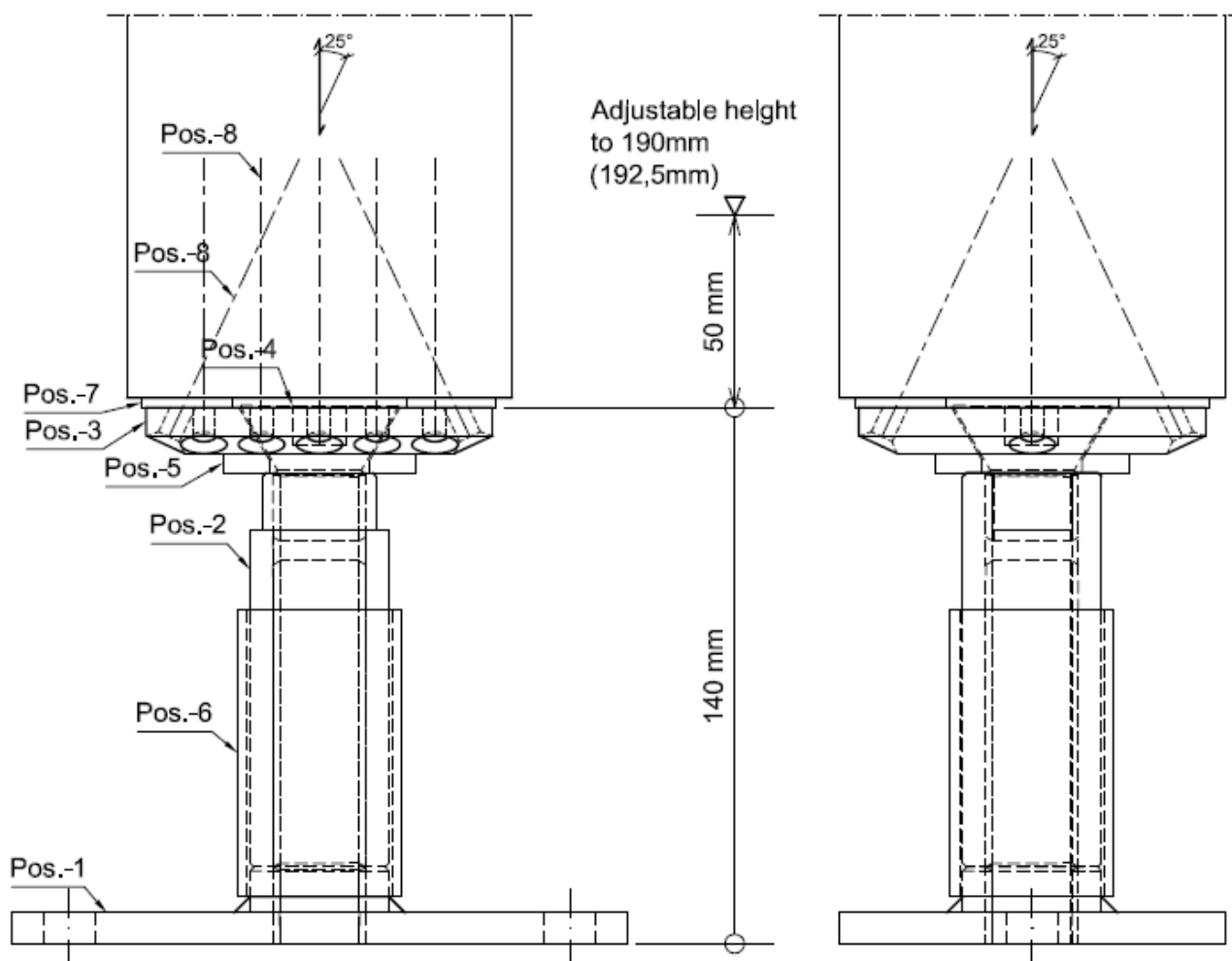
Post base Typ P50 S-Fix extra2, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, Threaded ring M24 Ø36x12 mm, S235; Threaded bolt M24, H= 80 mm, 8.8;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 103 mm, Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/26/5 mm, S235;
6	Protection sleeve Ø42,4 mm, T= 2,3 mm, H= 75 mm, S235;
7	EPDM- seal (not subject to this ETA)
8	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P50 S-Fix extra2

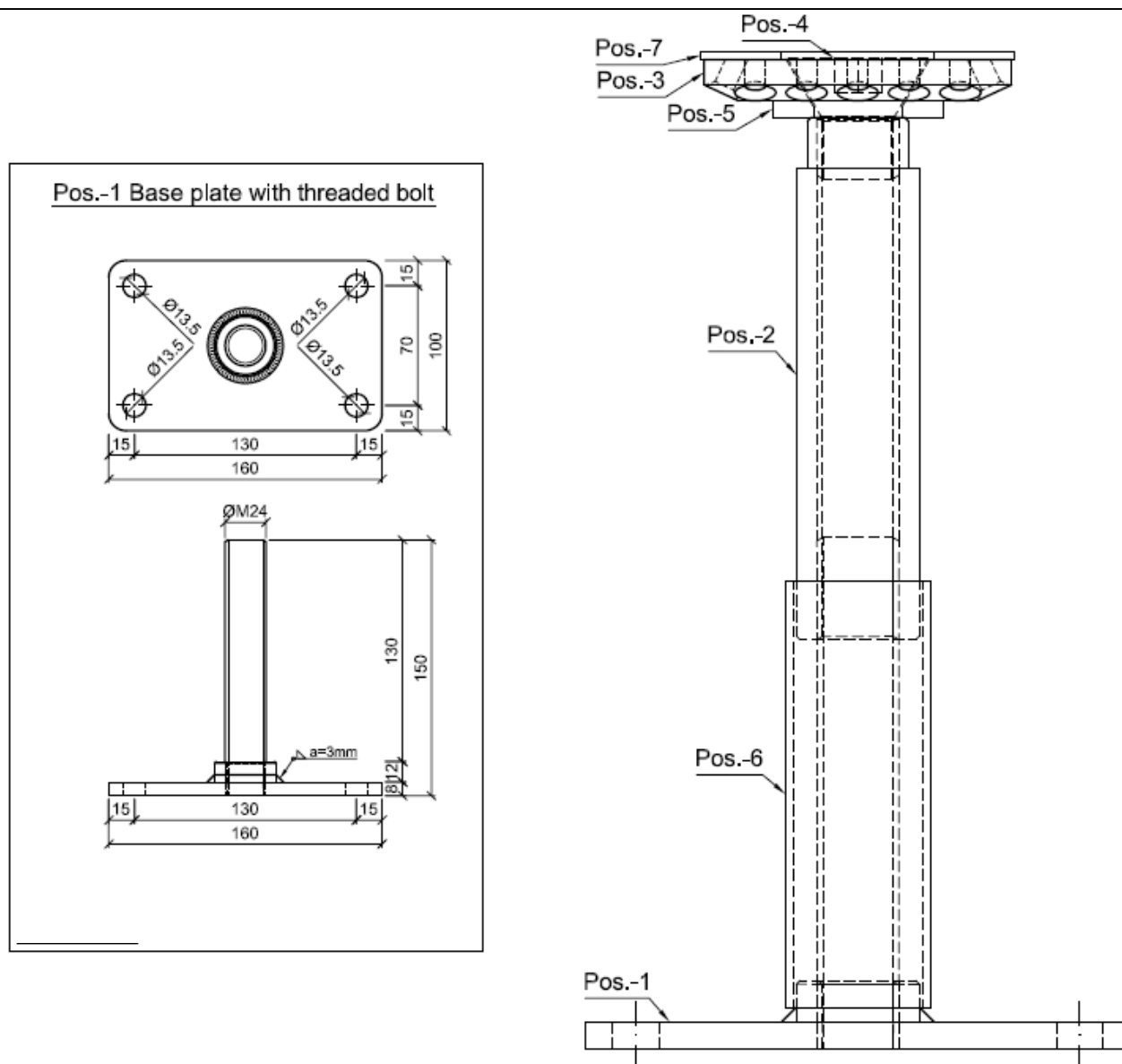
Annex 1.9



GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P50 S-Fix extra2

Annex 1.10



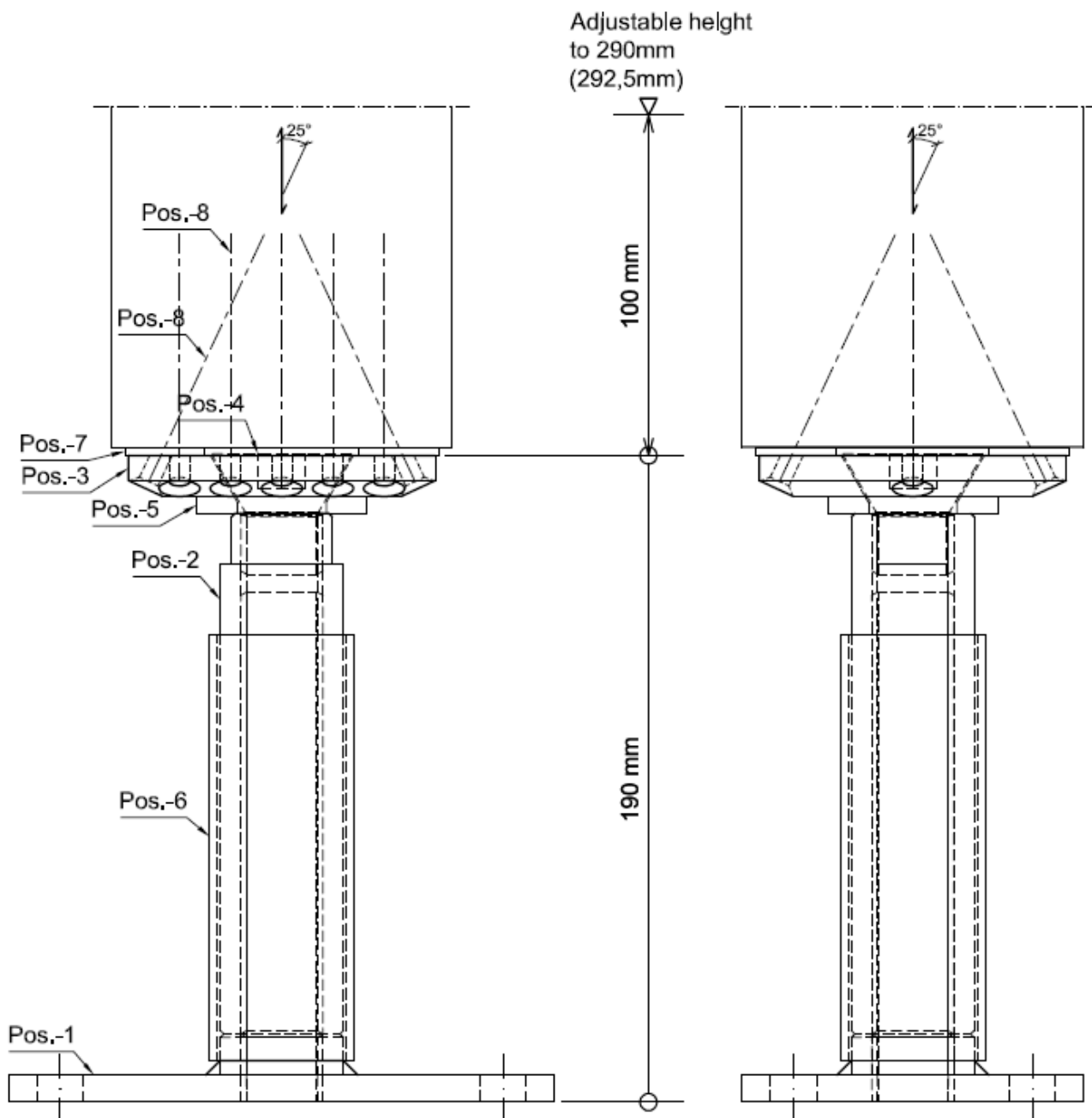
Post base Typ P100 S-Fix extra, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, Threaded ring M24 Ø36x12 mm, S235; Threaded bolt M24, H= 130 mm, 8.8;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 153 mm, Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/26/5 mm, S235;
6	Protection sleeve Ø42,4 mm, T= 2,3 mm, H= 125 mm, S235;
7	EPDM- seal (not subject to this ETA)
8	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P100 S-Fix extra

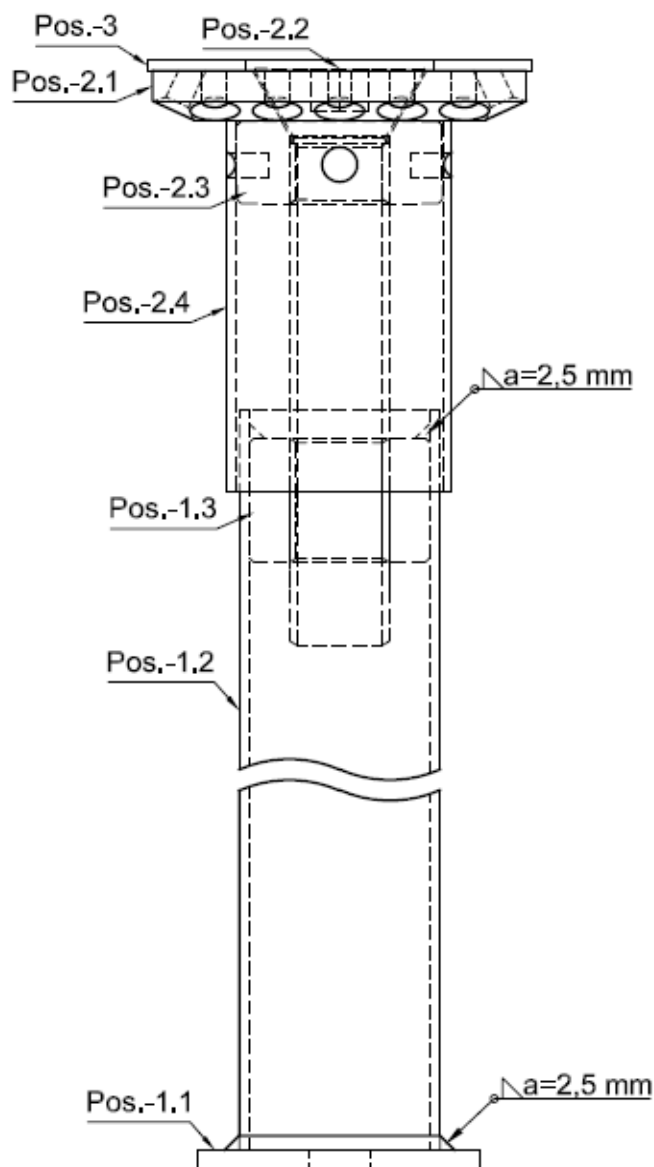
Annex 1.11



GH post base Typ P S-Fix

Adjustable post base for assembly on concrete
Typ P100 S-Fix extra

Annex 1.12



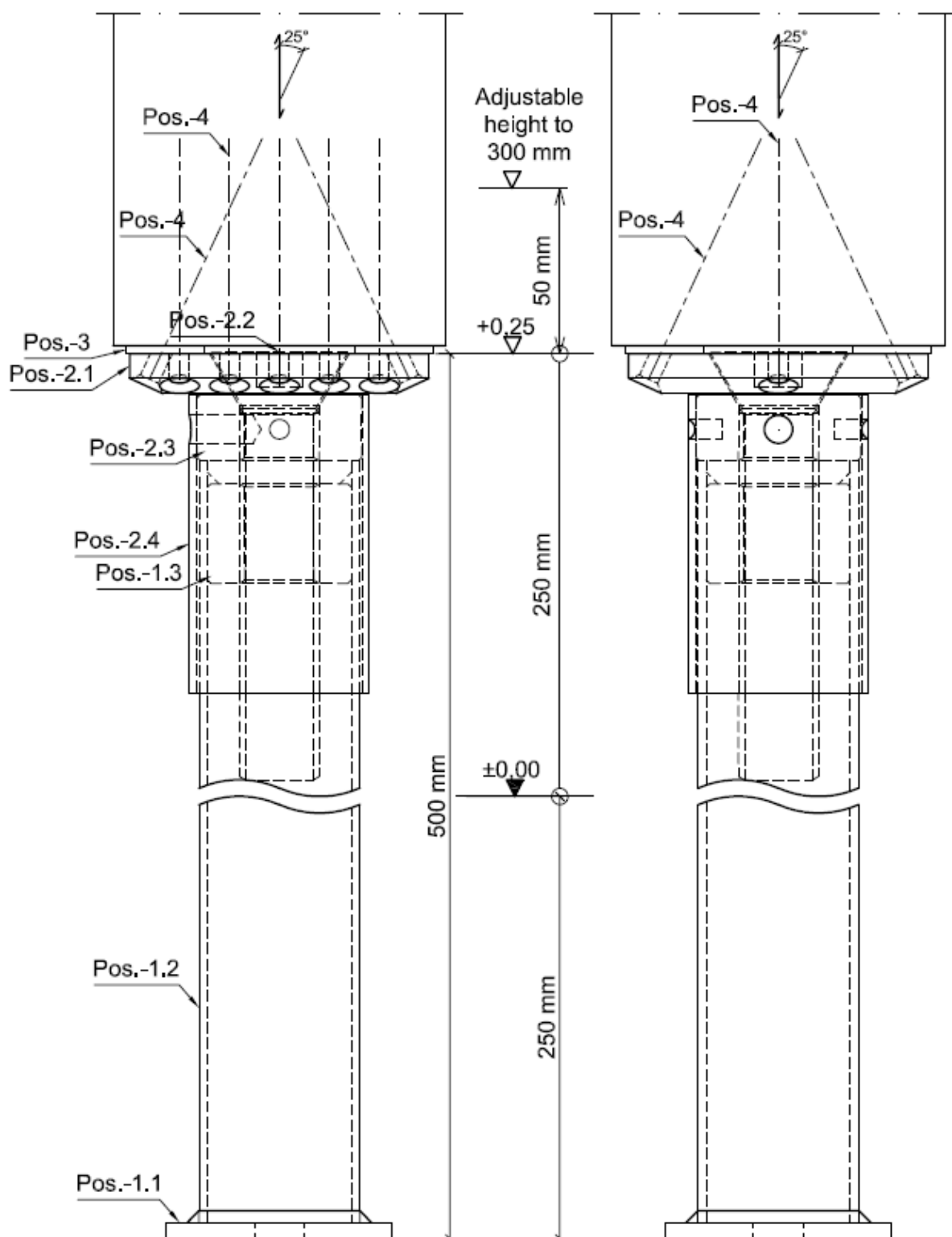
Post base Typ PV S-Fix, hot-dip galvanized

Pos.-Nr.	Designation
1.1	Steel plate Ø68x15x5 mm, S235;
1.2	Steel tube Ø48, T= 2,5 mm, H= 463 mm, S235;
1.3	Threaded sleeve Ø43x30 mm, S235;
2.1	Head plate 90x90x12 mm, S235;
2.2	Countersunk head screw M24x140, S235;
2.3	Threaded sleeve Ø49,5x20 mm, M24, S235;
2.4	Protection sleeve Ø54x90x2
3	EPDM- seal (not subject to this ETA)
4	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Height adjustable post base for anchoring in concrete
Typ PV S-Fix

Annex 1.13

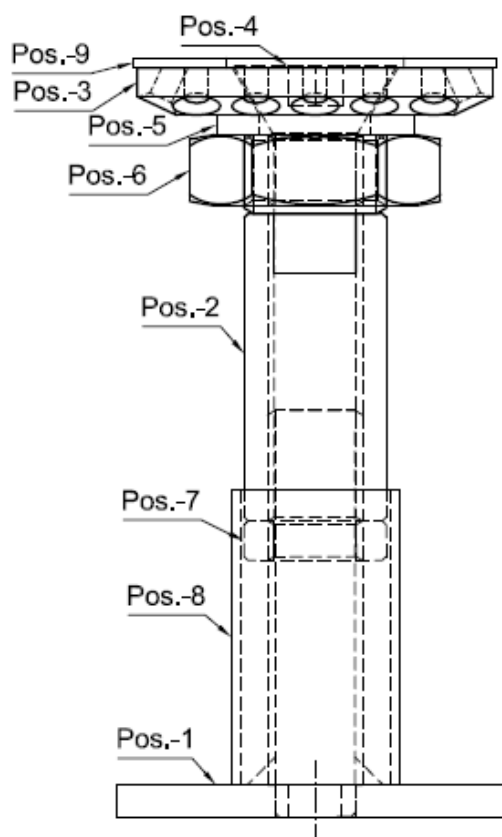
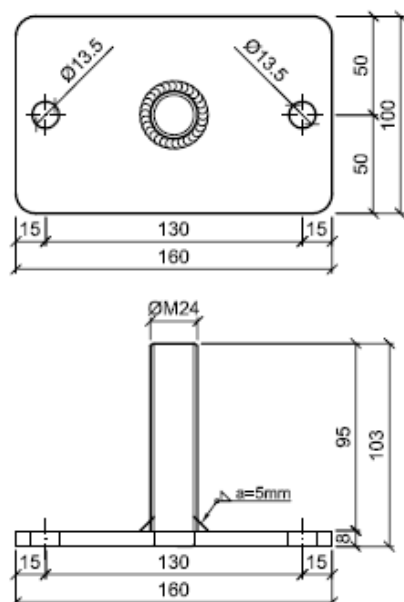


GH post base Typ P S-Fix

Height adjustable post base for anchoring in concrete
Typ PV S-Fix

Annex 1.14

Pos.-1 Base plate with threaded bolt



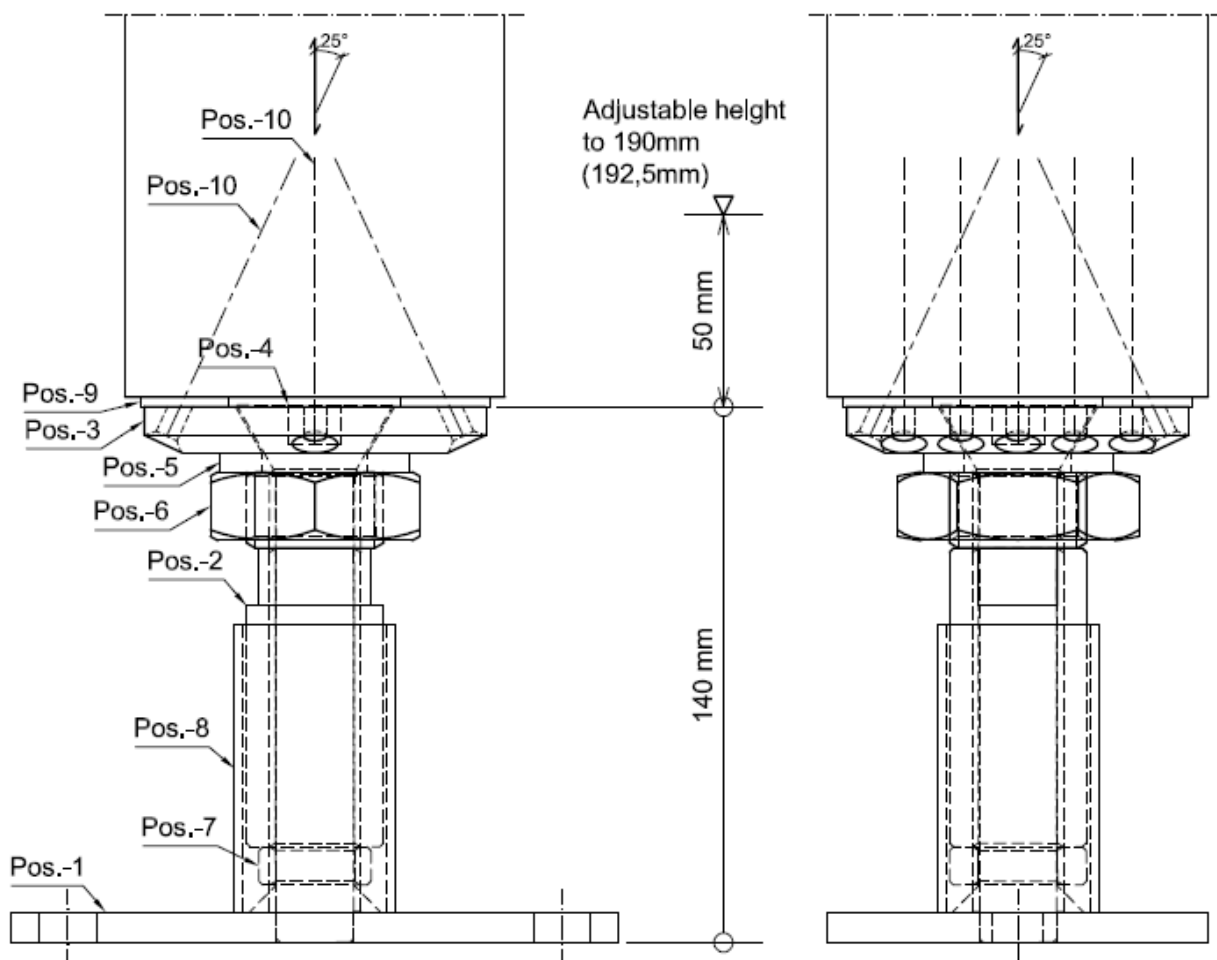
Post base Typ P50 S-Fix extra2, hot-dip galvanized

Pos.-Nr.	Designation
1	Base plate 160x100x8 mm, S235; and threaded bolt M24; H= 95 mm, 5.6;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 98 mm; Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/28/5 mm, S235;
6	Lock nut M36, 4.6;
7	Threaded sleeve lock nut M24, H= 10 mm; Wrench size 30, S235;
8	Protection sleeve Ø42,4 mm, T= 2,3 mm, H= 75 mm, S235;
9	EPDM- seal (not subject to this ETA)
10	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P50 S-Fix extra2

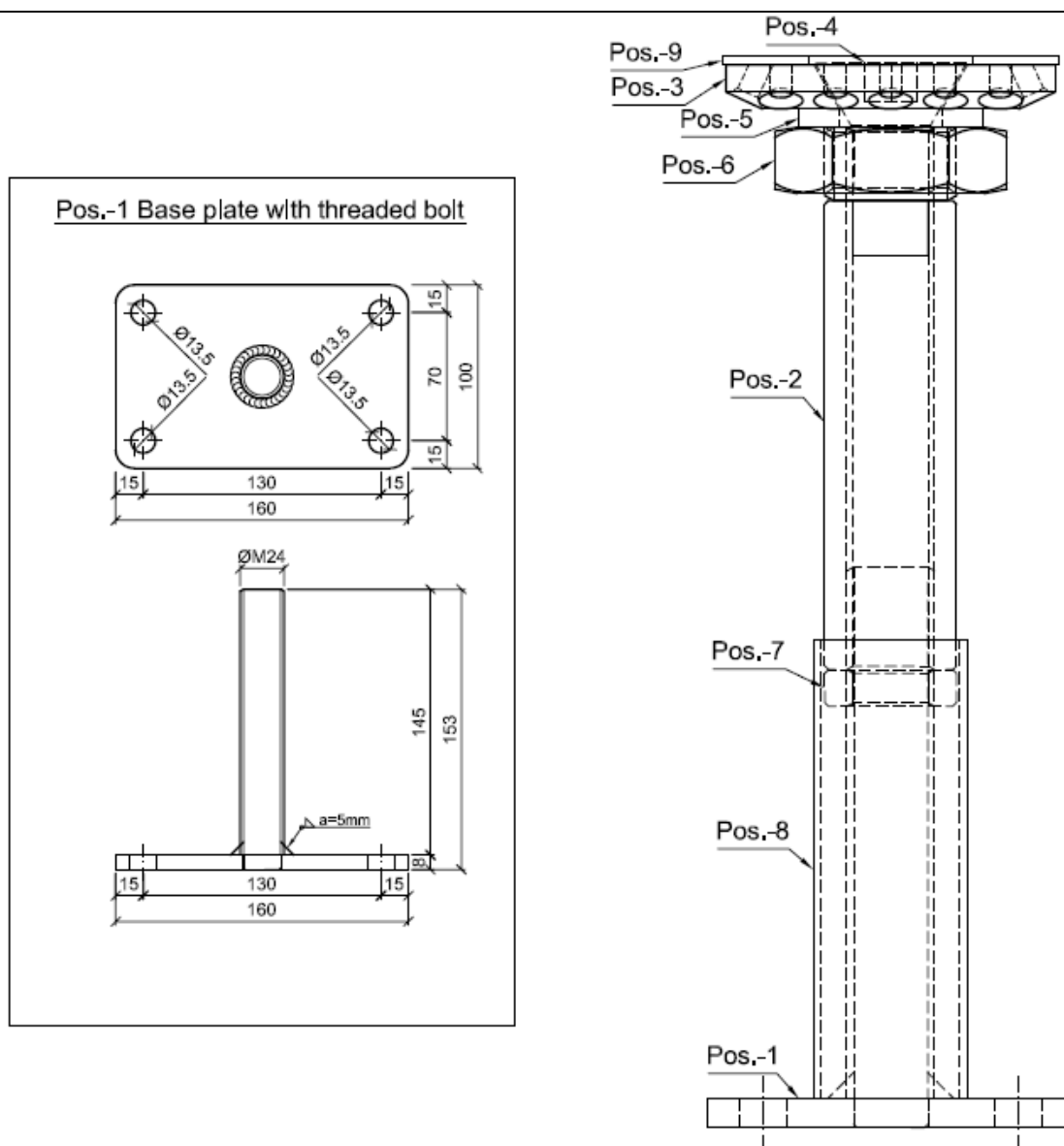
Annex 1.15



GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P50 S-Fix extra2

Annex 1.16



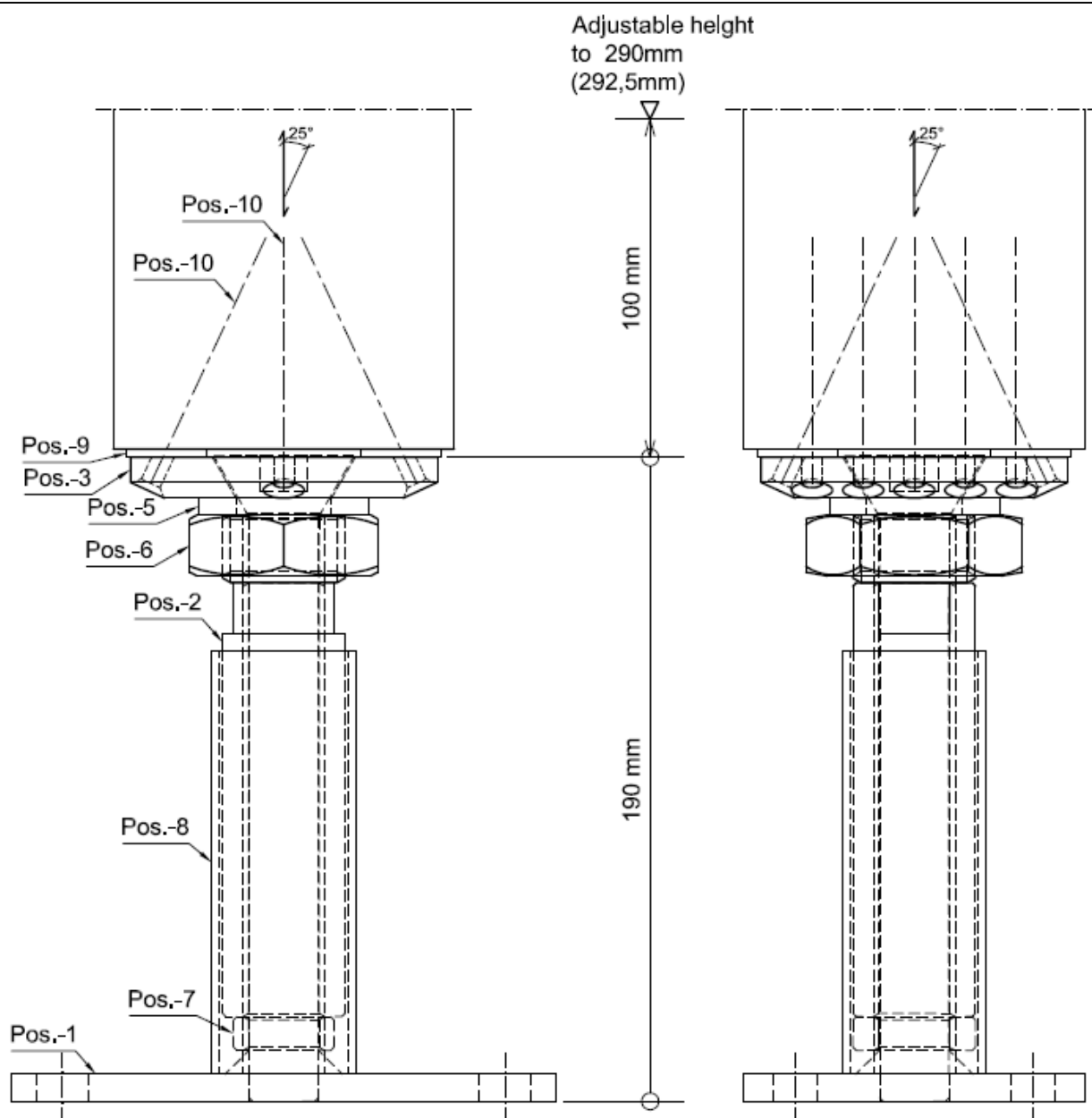
Post base Typ P100 S-Fix extra2, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, S235; and threaded bolt M24; H= 148 mm, 5.6;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 98 mm; Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/28/5 mm, S235;
6	Lock nut M36, 4.6;
7	Threaded sleeve lock nut M24, H= 10 mm; Wrench size 30, S235;
8	Protection sleeve Ø42,4, T= 2,3 mm, H= 125 mm, S235;
9	EPDM- seal (not subject to this ETA)
10	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P100 S-Fix extra2

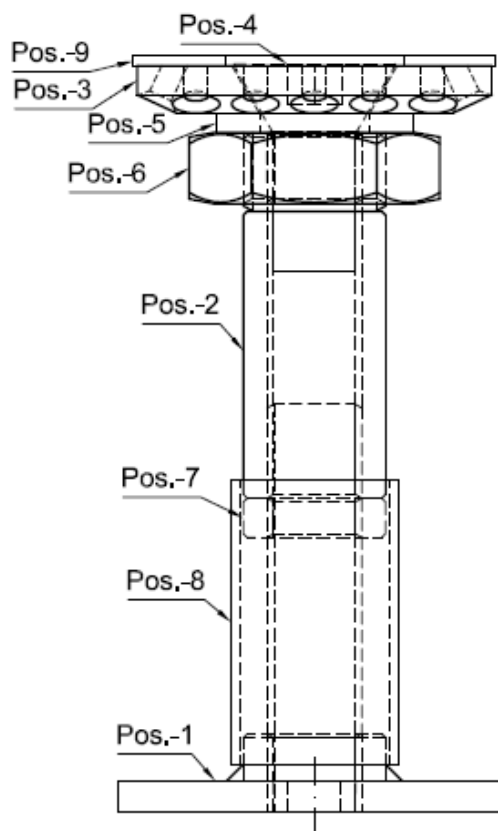
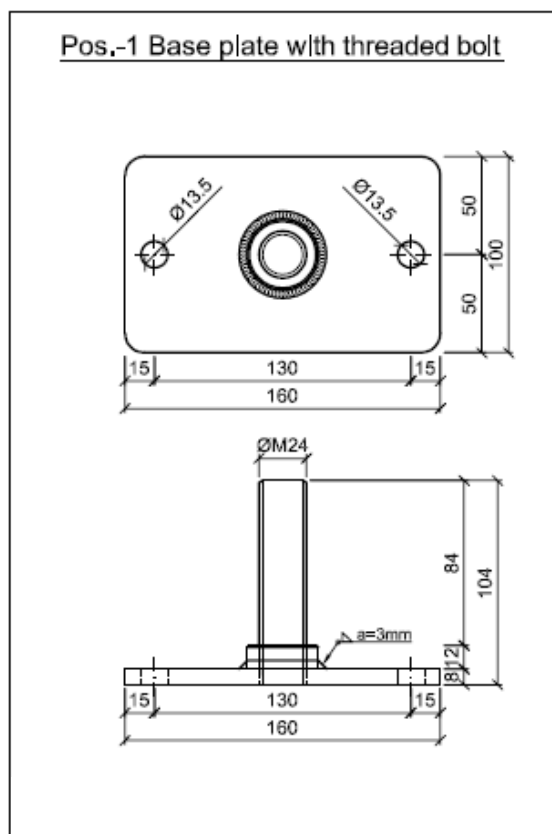
Annex 1.17



GH	post	base	Typ	P	S-Fix
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
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80	0	0	0	0	0
81	0	0	0	0	

Adjustable post base for assembly on concrete
Typ P100 S-Fix extra2

Annex 1.18



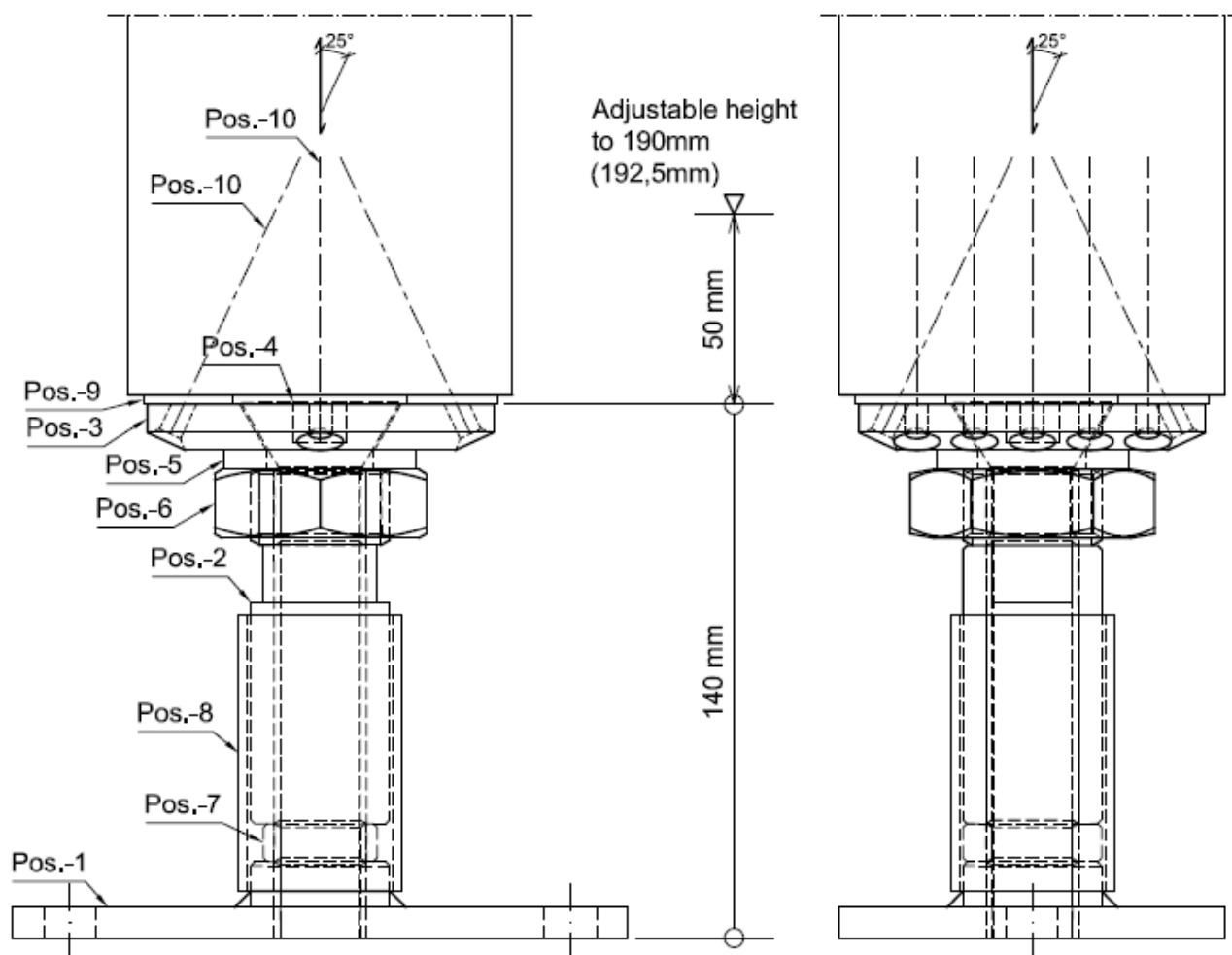
Post base Typ P50 S-Fix plus, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, Threaded ring M24 Ø36x12 mm, S235; Threaded bolt M24, H= 84 mm, 8.8;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 93 mm; Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/28/5 mm, S235;
6	Lock nut M36, 4.6;
7	Threaded sleeve lock nut M24, H= 10 mm; Wrench size 30, S235;
8	Protection sleeve Ø42,4 mm, T= 2,3 mm, H= 72,5 mm, S235;
9	EPDM- seal (not subject to this ETA)
10	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P50 S-Fix plus

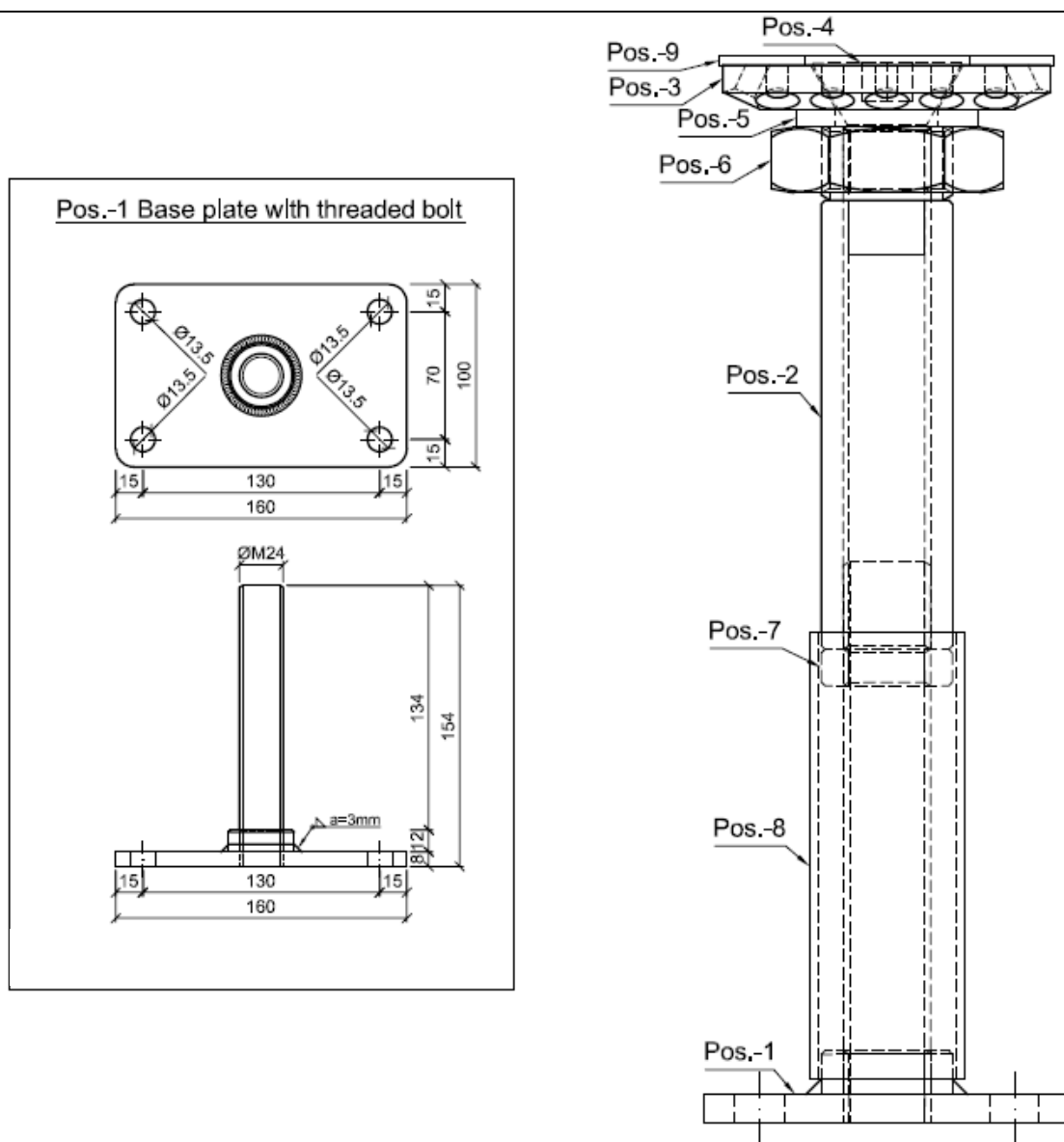
Annex 1.19



GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P50 S-Fix plus

Annex 1.20



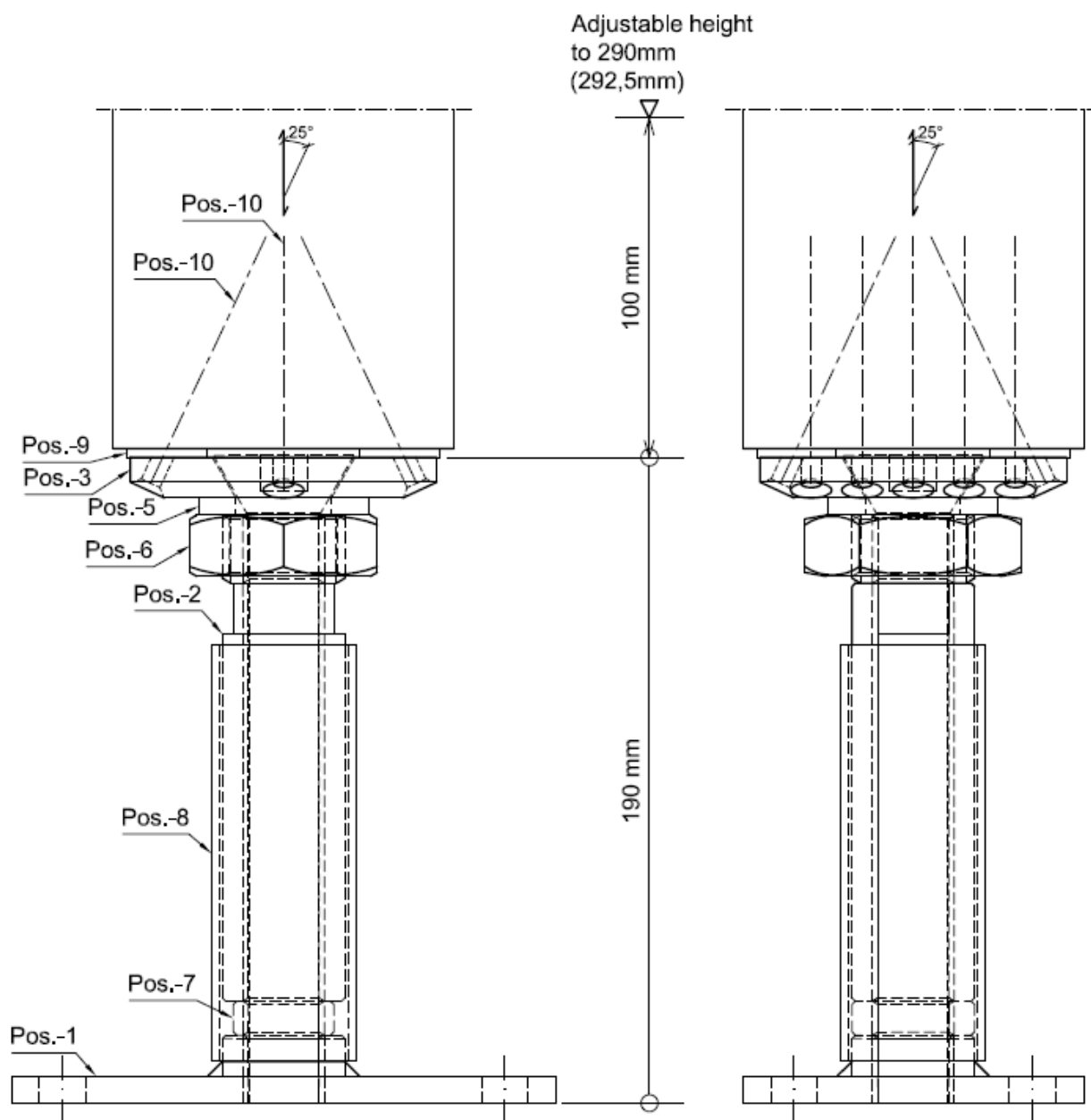
Post base Typ P100 S-Fix plus, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, Threaded ring M24 Ø36x12 mm, S235; Threaded bolt M24, H= 134 mm, 8.8;
2	Threaded sleeve Ø36 mm, Inner thread M24, H= 143 mm; Wrench size 30, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M24x35, S235;
5	Steel plate 50/28/5 mm, S235;
6	Lock nut M36, 4.6;
7	Threaded sleeve lock nut M24, H= 10 mm; Wrench size 30, S235;
8	Protection sleeve Ø42,4 mm, T= 2,3 mm, H= 122,5 mm, S235;
9	EPDM- seal (not subject to this ETA)
10	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P100 S-Fix plus

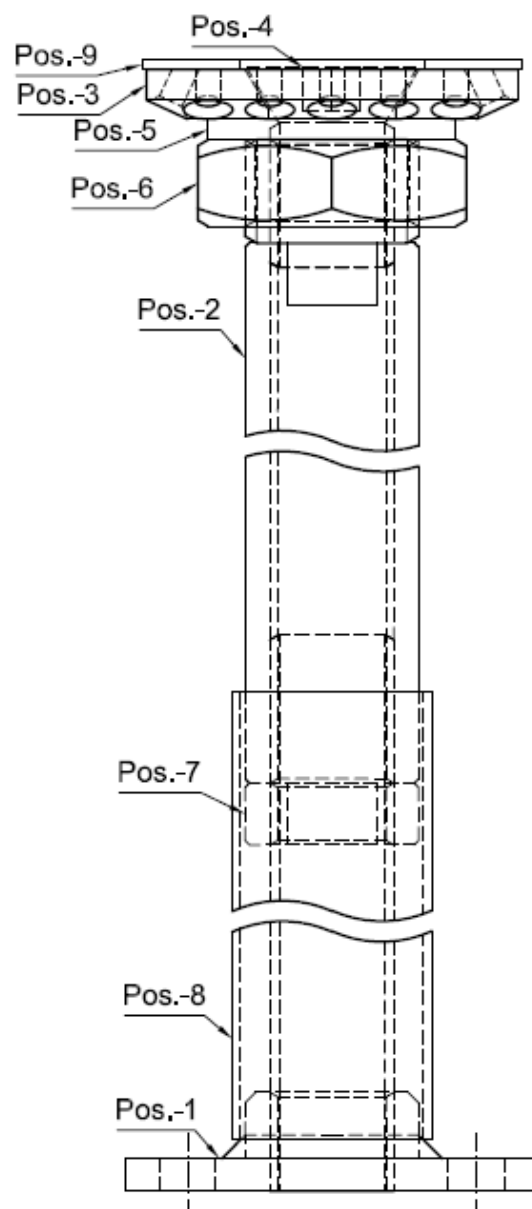
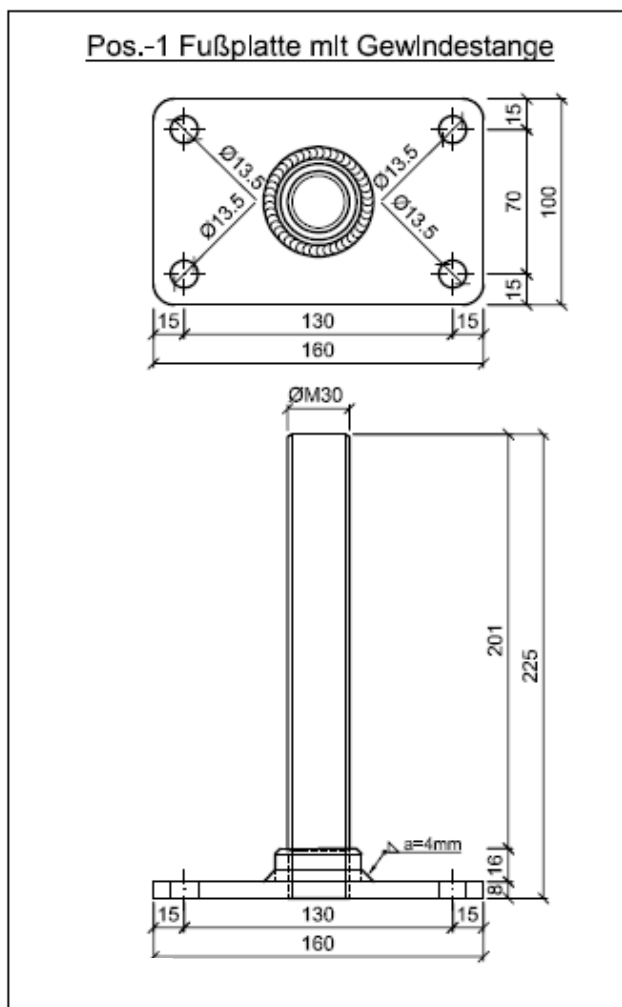
Annex 1.21



GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P100 S-Fix plus

Annex 1.22



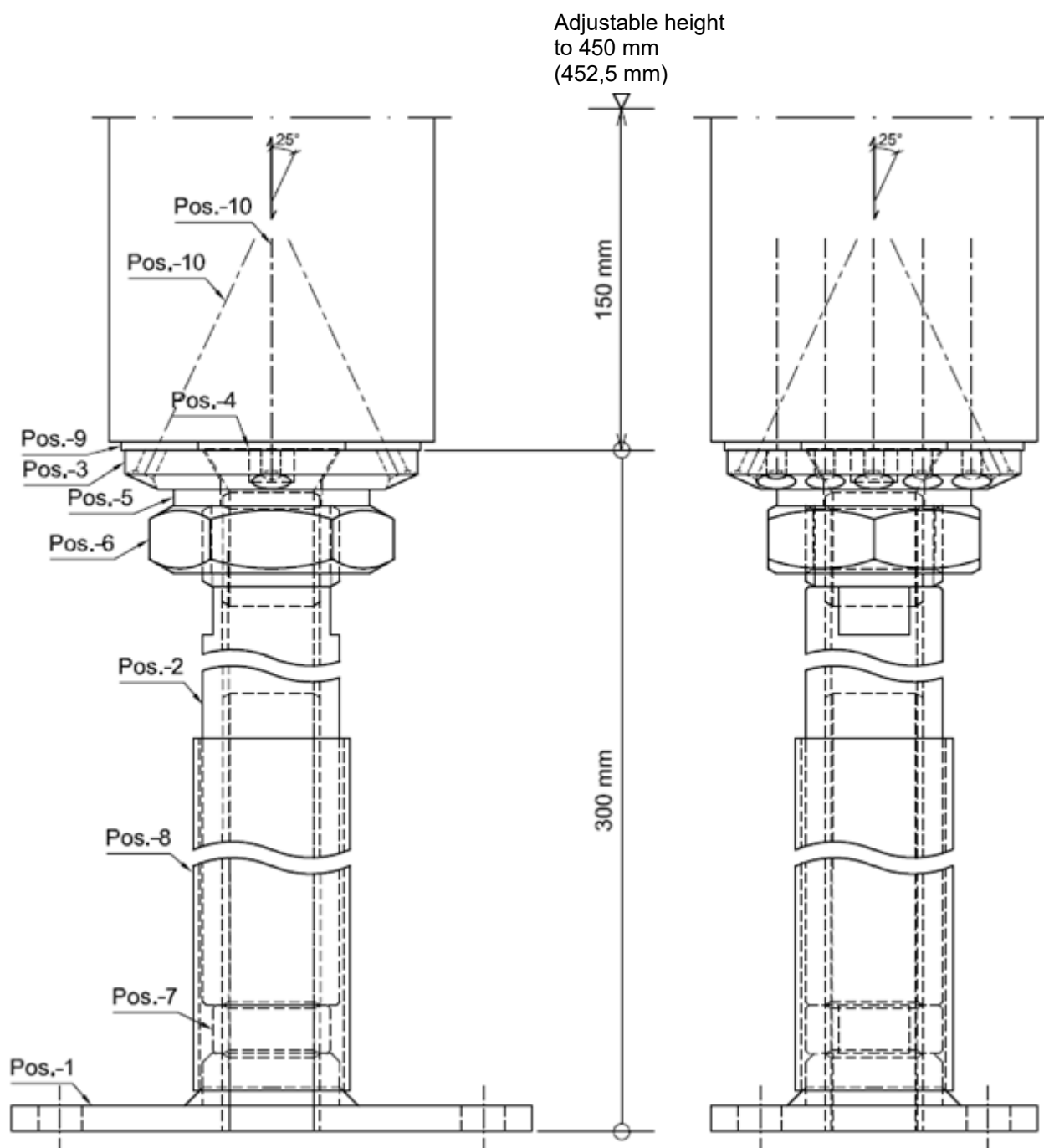
Post base Typ P150 S-Fix plus, hot-dip galvanized

Pos.-No.	Designation
1	Base plate 160x100x8 mm, Threaded ring M30 Ø42x16 mm, S235; Threaded bolt M30, H= 201 mm, 8.8;
2	Threaded sleeve Ø42 mm, Inner thread M30, H= 244 mm; Wrench size 36, S235;
3	Head plate 90x90x12 mm, S235;
4	Countersunk head screw M30x48, S235;
5	Steel plate 60/31/5 mm, S235;
6	Lock nut M42, 4.6;
7	Threaded sleeve lock nut M30, H= 15 mm; Wrench size 36, S235;
8	Protection sleeve Ø48,3 mm, T= 2,3 mm, H= 200 mm, S235;
9	EPDM- seal (not subject to this ETA)
10	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix

Height adjustable post base for assembly on concrete
Typ P150 S-Fix plus

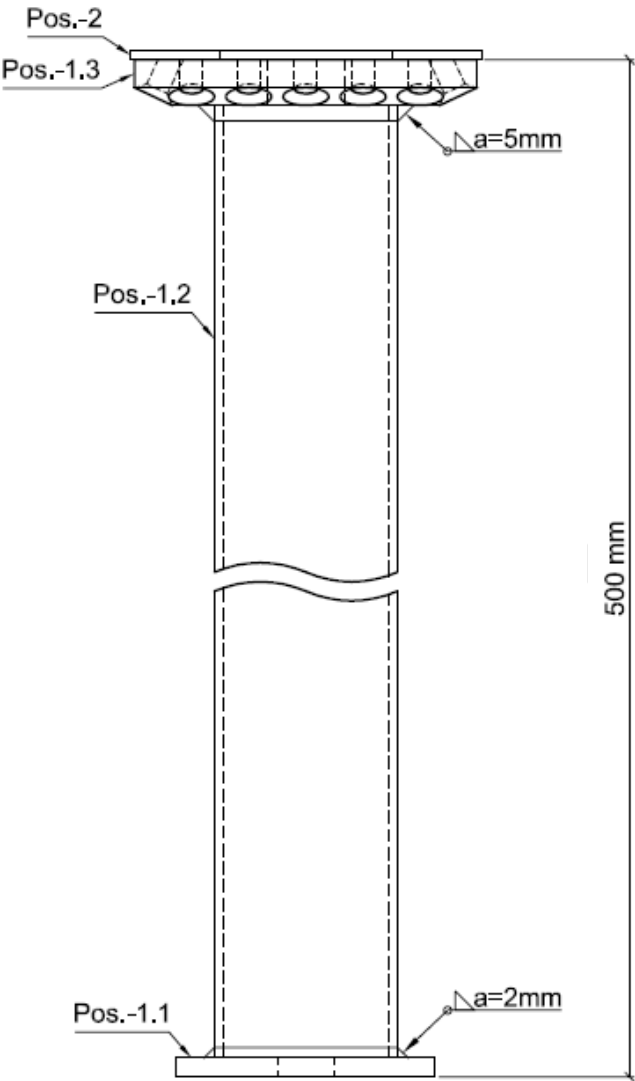
Annex 1.23



GH post base Typ P S-Fix

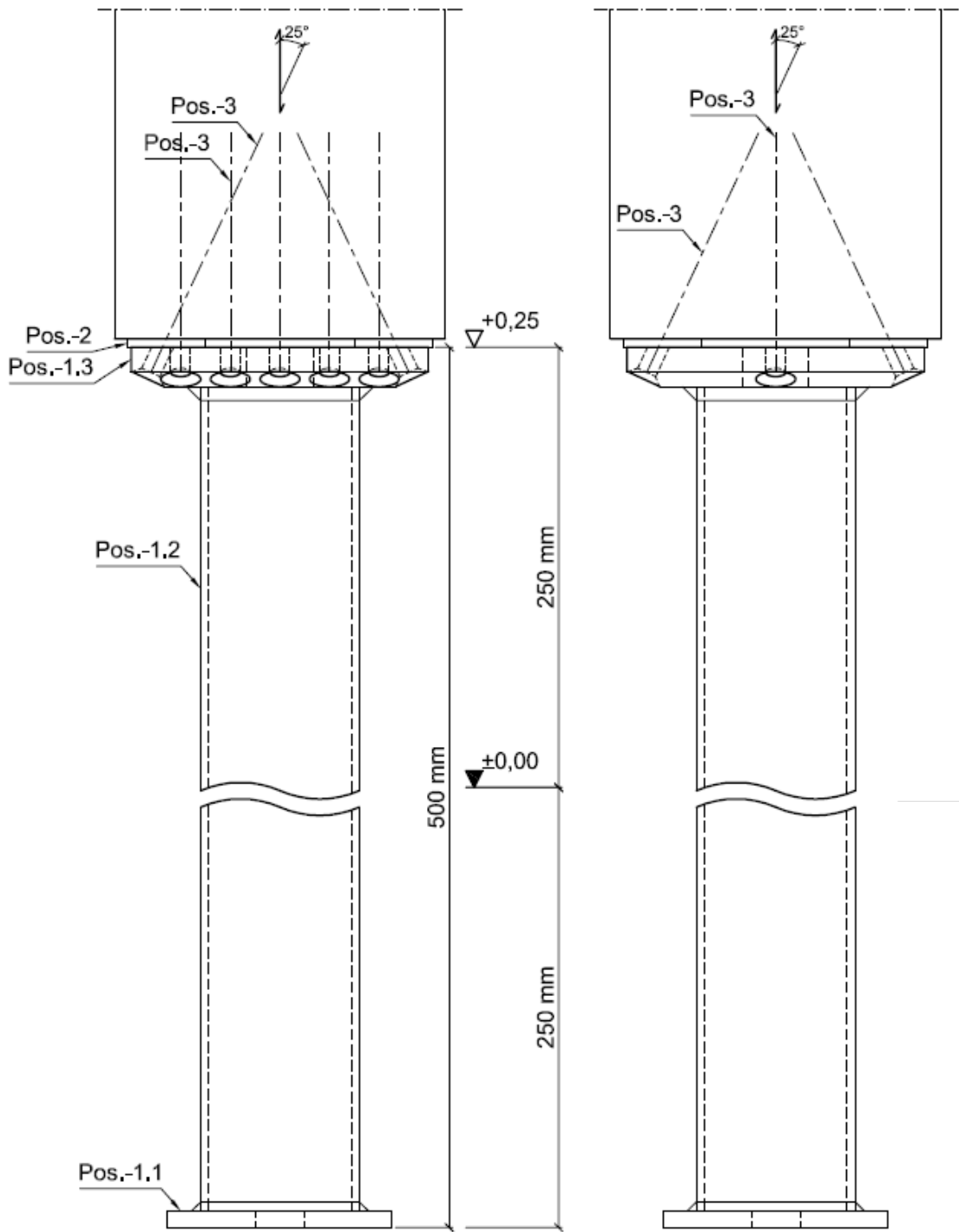
Height adjustable post base for assembly on concrete
Typ P150 S-Fix plus

Annex 1.24



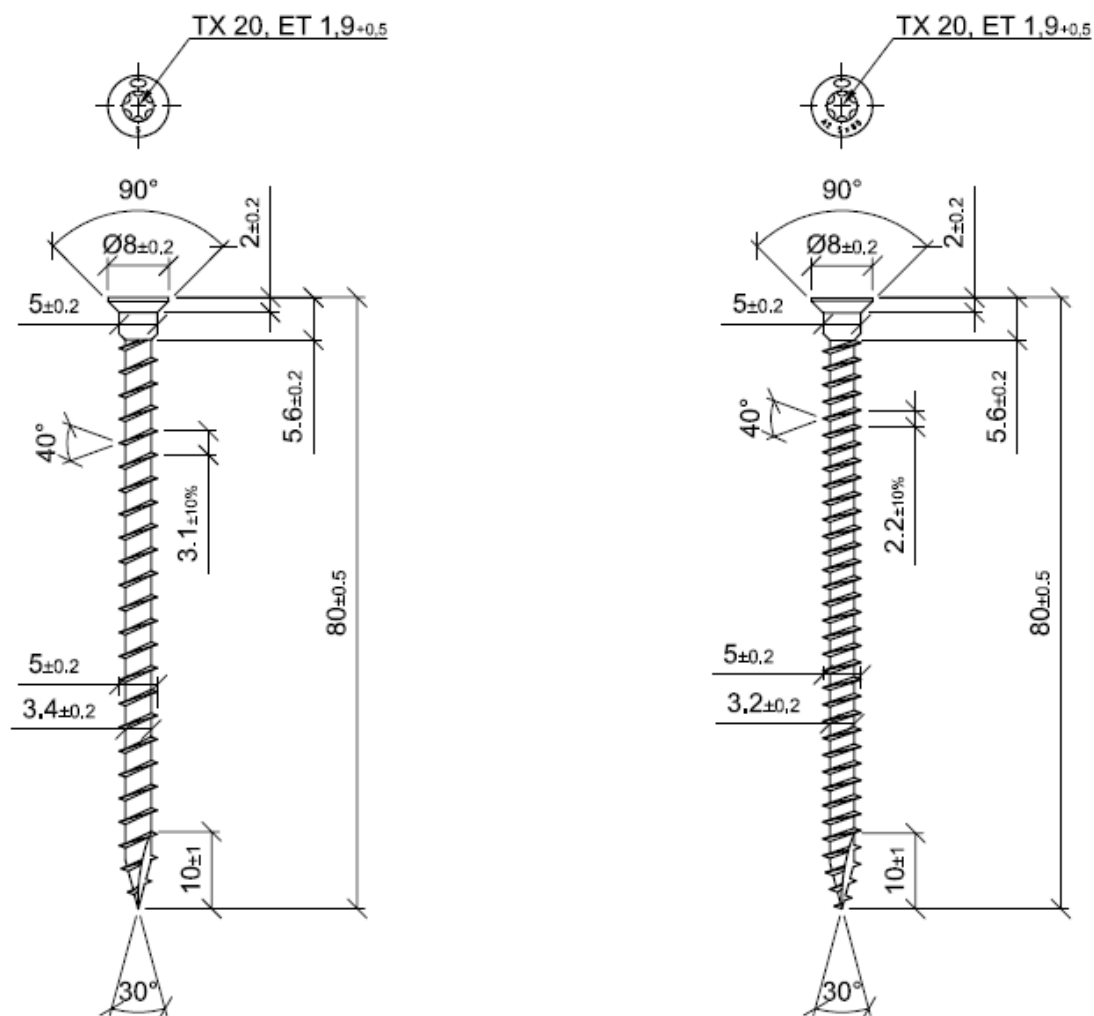
Post base Typ P S-Fix, hot-dip galvanized	
Pos.-No.	Designation
1.1	Steel plate Ø68x15x5 mm, S235;
1.2	Steel tube Ø48 mm, T= 2,5 mm, H= 483 mm, S235;
1.3	Head plate 90x90x12 mm, S235;
2	EPDM- seal (not subject to this ETA)
3	GH Fix-P VGScrew Ø5,0x80 Carbon Steel-Special coated/ Stainless Steel A2-Special coated

GH post base Typ P S-Fix	Annex 1.25
Post base for anchoring in concrete Typ P S-Fix	



GH post base Typ P S-Fix	Annex 1.26
Post base for anchoring in concrete Typ P S-Fix	

Carbon steel: SAE 1018, SAE 1022, SAE 10B21; Austenitic stainless steel: 1.4301 (SAE 304);
Special coated Special coated



Scale 1:1

GH post base Typ P S-Fix

Fasteners for GH Typ PXX post base
GH Fix-P VGSScrew Ø5,0x80
GH Fix-P VGSScrew Ø5,0x80 V2A

Annex 1.27

Annex 2 Specifications of intended use

A.2.1 Intended use

The post bases are intended to be used for structural timber-to-concrete connections in timber constructions.

The structural behaviour of the construction elements and the support conditions correspond to the indications given in Annex 3. The post bases may be used in service classes 1, 2 and 3 in accordance with EN 1995-1-1¹.

Fasteners with the designation "V" are only intended to be loaded vertically (V) and those with the designation "HV" are to be loaded horizontally (H) and vertically (V).

A.2.2 Loading

- Non-fatigue-relevant static and quasi-static actions

A.2.3 Connection materials

A.2.3.1 Timber

The timber members are made of solid timber, glued laminated timber or similarly glued wood-based members. The following softwood materials are suitable for connections with GH post bases Typ P S-Fix:

- solid timber (softwood) of strength class $\geq$ C24 in accordance with EN 338² / EN 14081-1³, with a characteristic density $\rho_k \geq 350 \text{ kg/m}^3$,
- glued laminated timber in accordance with EN 14080⁴ as well as
- similarly glued members with minimum dimensions of $w \times h = 10 \text{ cm} \times 10 \text{ cm}$.

Characteristic values of load-carrying capacities for connections with post bases (see Annex 3) have been determined for a characteristic density of timber components of 350 kg/m^3 . For load-carrying capacities the density higher than 350 kg/m^3 must not be taken into account when determining the load capacities.

A.2.3.2 Concrete

- strength class $\geq$ C20/25.

A.2.4 Use conditions (Environmental conditions)

A.2.4.1 Durability against corrosion

The steel components of the post base and their connections are hot-dip galvanised with a minimum contact length of $25 \mu\text{m}$ according to Z350 of EN 10346⁵.

The allowable ambient atmospheric conditions in accordance with EN ISO 12944-2⁶ are to be observed.

Coated fully threaded screws made of carbon steel are used for connecting the top plate to the timber member in service classes 1 and 2. Corrosion protection through use of a metallic coating is foreseen.

Fully threaded screws made of stainless steel 1.4301 are used in service class 3 conditions. The allowable ambient atmospheric conditions in accordance with EN ISO 12944-2 have been considered. Coating of the fully threaded screws is foreseen to prevent bimetallic corrosion.

1	EN 1995-1-1:2010-12 + A2:2014-07	Eurocode 5: Design of timber structures – Part 1-1: Common rules and rules for buildings
2	EN 338:2006-11	Structural timber – Strength classes
3	EN 14081-1:2011-05	Timber structures – Strength graded structural timber with rectangular cross section – Part 1: General requirements
4	EN 14080:2013-09	Timber structures – Glued laminated timber – Requirements
5	EN 10346:2015-10	Continuously hot-dip coated steel flat products for cold forming – Technical delivery conditions
6	EN ISO 12944-2:2018-04	Paint and varnishes – Corrosion protection of steel structures by protective paint systems – Part 2: Classification of environments

GH post base Typ P S-Fix	Annex 2.1
Specifications of intended use Intended use, loading, connection materials, use conditions (corrosion)	

A.2.4.2 Wood preservative

It is assumed that a possible wood preservative treatment is taken into account and that effects of wood preservative on corrosion resistance are taken into consideration.

A.2.5 Installation

General

The connection of timber and concrete members using post bases is considered to be suitable for the intended purpose provided that the following conditions are met:

- Screws, screw arrangement, alignment of post base
all holes in the top plate of the post base are supplied with screws. Only screws (with a coating if applicable) with the following properties are used:
 - geometry according to Annex 1.27,
 - mechanical strengths: characteristic tensile capacity $f_{\text{tens,k}} = 4.3 \text{ kN}$; characteristic yield moment $M_{y,k} = 3.2 \text{ Nm}$; characteristic torsional strength $F_{\text{tor,k}} = 3.4 \text{ Nm}$; ratio torsional strength to insertion moment $f_{\text{tor,k}} / R_{\text{tor,mean}} \geq 1.5$.

Corresponding to the shear resistance the experimentally determined bending capacity applies under the condition that the horizontal force acts perpendicularly to the two screw rows of the connection, resulting in bending about the major axis of the connection such that 5 screws are subjected to tensile stress in the axial direction.

As shown in the free-body diagrams (see Annexes 1.1/1.2 pages 5/6) the longitudinal direction of the base plate of the post base on the concrete is parallel to the horizontal load. Horizontal loading of the post bases parallel to the screw rows is not allowed. In addition during assembly it is ensured that the M36 hex nut under the top plate is tightened to at least $M_{\text{preload}} \geq 250 \text{ Nm}$. To ensure a permanent preload the product manufacturer supplements the connection or the joint with suitable thread locking measures.

Wane

Only timber without wane is used. The timber post's end face fully contacts the top plate of the post base.

Storage conditions

The construction elements connected by post bases are secured against rotation.

Base plates

The base plates are connected to the supporting substructure by means of anchor bolts or through embedding into concrete. For the anchorage of the base plates of post base Typ P S-Fix extra2 + Typ P S-Fix plus the minimum load-bearing capacity for tension (equations B5 / B7 Annex 3.1, page 34) is taken into account depending on vertical and horizontal loads. The connection is not subject to this European Technical Assessment.

The members have a thickness exceeding the penetration depth of the screws into the member.

GH post base Typ P S-Fix	Annex 2.2
Specifications of intended use Use conditions (wood preservative), Installation	

Annex 3 Load-bearing capacity of post bases

The load bearing capacities for tension, compression and lateral force shall be calculated in accordance with the national regulations with the partial safety factors according to equations B1, B2 and B3.

For Germany the following partial safety factors apply:

Timber $\gamma_M = 1.30$

Steel $\gamma_{M0} = 1.00$, $\gamma_{M1} = 1.10$, $\gamma_{M2} = 1.25$

Concrete $\gamma_C = 1.50$

$$\text{Tensile stress} \quad N_{t,d} = \min \left\{ \frac{k_{\text{mod}} \times N_{t,k,\text{Timber}}}{\gamma_M}, \frac{N_{t,k,\text{Steel}}}{\gamma_{M0}}, \frac{N_{t,k,\text{Steel}}}{\gamma_{M1}}, \frac{N_{t,k,\text{Steel}}}{\gamma_{M2}}, \frac{N_{t,k,\text{Concret}}}{\gamma_C} \right\} \quad (\text{B1})$$

$$\text{Compressive stress} \quad N_{c,d} = \min \left\{ \frac{k_{\text{mod}} \times N_{c,k,\text{Timber}}}{\gamma_M}, \frac{N_{c,k,\text{Steel}}}{\gamma_{M0}}, \frac{N_{c,k,\text{Steel}}}{\gamma_{M1}}, \frac{N_{c,k,\text{Steel}}}{\gamma_{M2}}, \frac{N_{c,k,\text{Concret}}}{\gamma_C} \right\} \quad (\text{B2})$$

$$\text{Lateral force stress} \quad V_d = \min \left\{ \frac{k_{\text{mod}} \times V_{k,\text{Timber}}}{\gamma_M}, \frac{V_{k,\text{Steel}}}{\gamma_{M0}}, \frac{V_{k,\text{Steel}}}{\gamma_{M1}}, \frac{V_{k,\text{Steel}}}{\gamma_{M2}} \right\} \quad (\text{B3})$$

In case of simultaneous loading by a vertical load N_d and a horizontal load V_d for the components threaded bolt, steel tube, head and foot plate and the connection steel-timber shall be proven, that

$$\frac{N_d}{N_{Rd}} + \frac{V_d}{V_{Rd}} \leq 1 \quad (\text{B4})$$

For the connection of the post bases to the concrete in case of the foot plate being aligned lengthwise to the horizontal load it shall be verified, that the load bearing capacity of an anchor bolt on tensile force is at least:

for post bases Typ P50 S-Fix extra2 and Typ P50 S-Fix plus:

$$F_{B,Rd} = 0,76 \times V_d + 0,50 \times N_d \quad (\text{B5})$$

for post bases Typ P100 S-Fix and Typ P100 S-Fix plus:

$$F_{B,Rd} = 0,58 \times V_d + 0,25 \times N_d \quad (\text{B6})$$

for post base Typ P150 S-Fix plus:

$$F_{B,Rd} = 0,90 \times V_d + 0,25 \times N_d \quad (\text{B7})$$

To calculate the design values, the characteristic load-carrying capacities given in Annex 3 shall be divided by partial safety factors for the material property and multiplied by the coefficient k_{mod} for the screw connection and the timber components with regard to the load duration and the service class defined in EN 1995-1-1.

In accordance with the standard EN 1990:2002 paragraph 6.3.5 the design value of the load-carrying capacity can be determined by reducing the values of the load-carrying capacity with the material-specific partial safety factors.

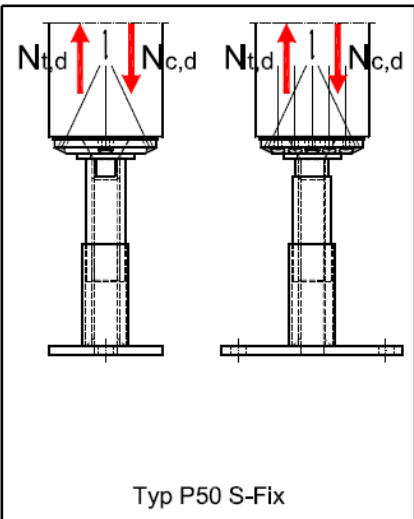
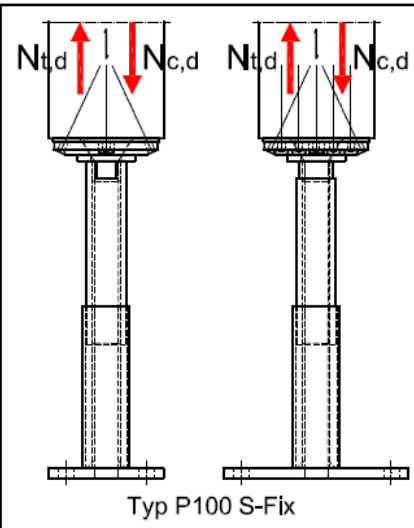
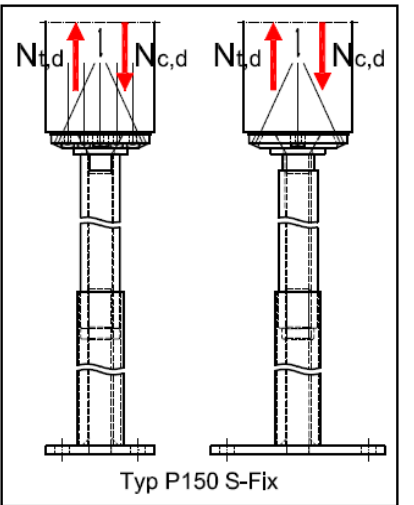
The characteristic values of the load-carrying capacity were determined for the failure of timber member $F_{Rk,H}$ (reaching the load-carrying capacity of screws subjected to shear) as well as for the steel sheet failure $F_{Rk,S}$ (reaching the tensile or bending strength of the sheet metal or the bending strength of the base plate) and also for the failure of concrete $F_{Rk,C}$. The design value of the load-carrying capacity F_{Rd} is the minimum value as determined by formula (B1) up to (B3).

Therefore, for timber member failure the load duration class and the service class are taken into account. The various partial safety factors γ_M for steel and timber member as well as γ_C for concrete are also taken into account.

GH post base Typ P S-Fix

Load-bearing capacity of post bases

Annex 3.1

 Typ P50 S-Fix	Table B-1: Characteristic values and corresponding partial safety factors (γ) for post base Typ P50 S-Fix <table><tr><th>Post base</th><th>Tension $N_{t,k}$ [kN]</th><th>Compression $N_{c,k}$ [kN]</th></tr><tr><td>Typ P50 S-Fix</td><td>9.2 (γ_{M0})</td><td>48 (γ_{M0})</td></tr></table>	Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Typ P50 S-Fix	9.2 (γ_{M0})	48 (γ_{M0})
Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]					
Typ P50 S-Fix	9.2 (γ_{M0})	48 (γ_{M0})					
 Typ P100 S-Fix	Table B-2: Characteristic values and corresponding partial safety factors (γ) for post base Typ P100 S-Fix <table><tr><th>Post base</th><th>Tension $N_{t,k}$ [kN]</th><th>Compression $N_{c,k}$ [kN]</th></tr><tr><td>Typ P100 S-Fix</td><td>9.2 (γ_{M0})</td><td>34 (γ_{M1})</td></tr></table>	Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Typ P100 S-Fix	9.2 (γ_{M0})	34 (γ_{M1})
Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]					
Typ P100 S-Fix	9.2 (γ_{M0})	34 (γ_{M1})					
 Typ P150 S-Fix	Table B-3: Characteristic values and corresponding partial safety factors (γ) for post base Typ P150 S-Fix <table><tr><th>Post base</th><th>Tension $N_{t,k}$ [kN]</th><th>Compression $N_{c,k}$ [kN]</th></tr><tr><td>Typ P150 S-Fix</td><td>9.2 (γ_{M0})</td><td>17.8 (γ_{M1})</td></tr></table>	Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Typ P150 S-Fix	9.2 (γ_{M0})	17.8 (γ_{M1})
Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]					
Typ P150 S-Fix	9.2 (γ_{M0})	17.8 (γ_{M1})					
GH post base Typ P S-Fix		Annex 3.2					
Characteristic values and corresponding partial safety factors							

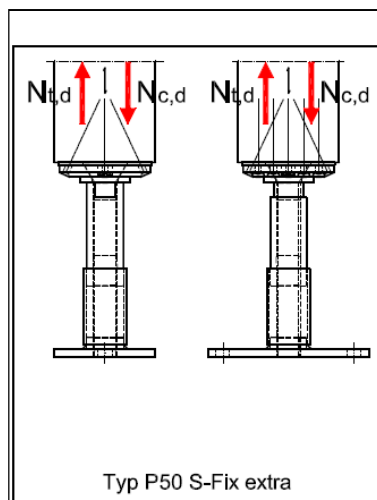


Table B-4: Characteristic values and corresponding partial safety factors (γ) for post base Typ P50 S-Fix extra

Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]
Typ P50 S-Fix extra	9,2 (γ_{M0})	48 (γ_{M0})

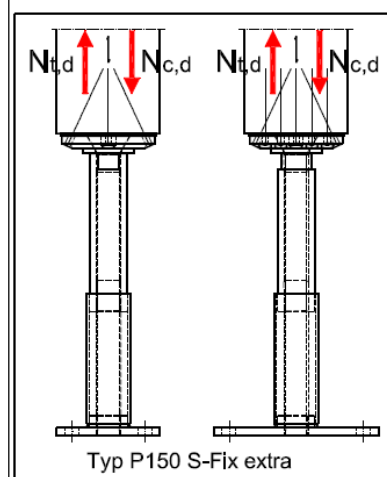


Table B-5: Characteristic values and corresponding partial safety factors (γ) for post base Typ P100 S-Fix extra

Post base	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]
Typ P100 S-Fix extra	9,2 (γ_{M0})	39 (γ_{M1})

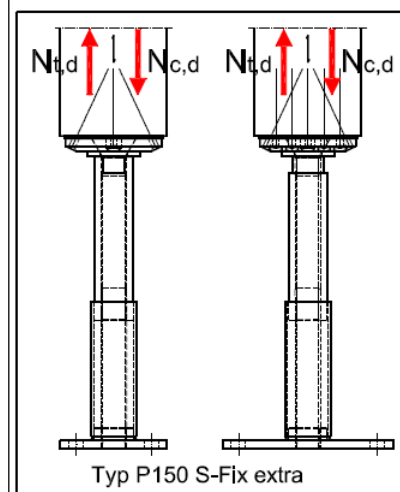


Table B-6: Characteristic values and corresponding partial safety factors (γ) for post base Typ P150 S-Fix extra

Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]
Typ P150 S-Fix extra	Connection steel-timber	46 (γ_M)	141 (γ_M)
	Connection head plate - Countersunk head screw	23 (γ_{M0})	86 (γ_{M2})
	Countersunk head screw	78 (γ_{M0})	56.7 (γ_{M1})
	Connection Steel tube - Concret	36 (γ_C)	67.4 (γ_C)

GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

Annex 3.3

Table B-7: Characteristic values and corresponding partial safety factors (γ) for post base Typ P50 S-Fix extra2

Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Lateral Force V_k [kN]
Typ P50 S-Fix extra2	Connection steel-timber	46 (γ_M)	141 (γ_M)	5.7 (γ_M)
	Head plate	23 (γ_{M0})	48 (γ_{M0})	8.5 (γ_{M0})
	Threaded bolt	97 (γ_{M0})	57 (γ_{M1})	3.2 (γ_{M2})
	Base plate	9.2 (γ_{M0})	-	6.3 (γ_{M0})

The interaction condition according to equation B4 shall be observed.

Illustration B-1: Load-bearing capacities of the post base Typ P50 S-Fix extra2 in interaction with tension and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$

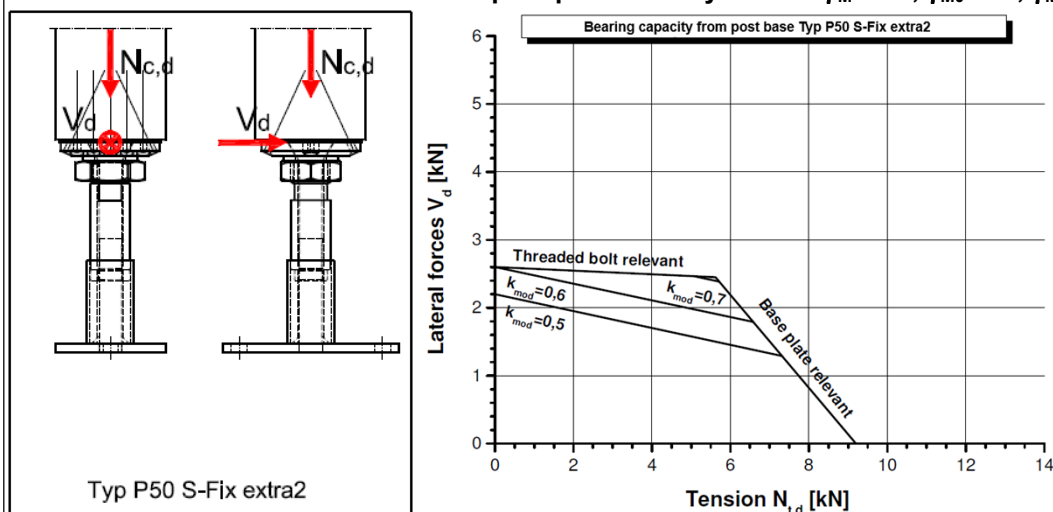
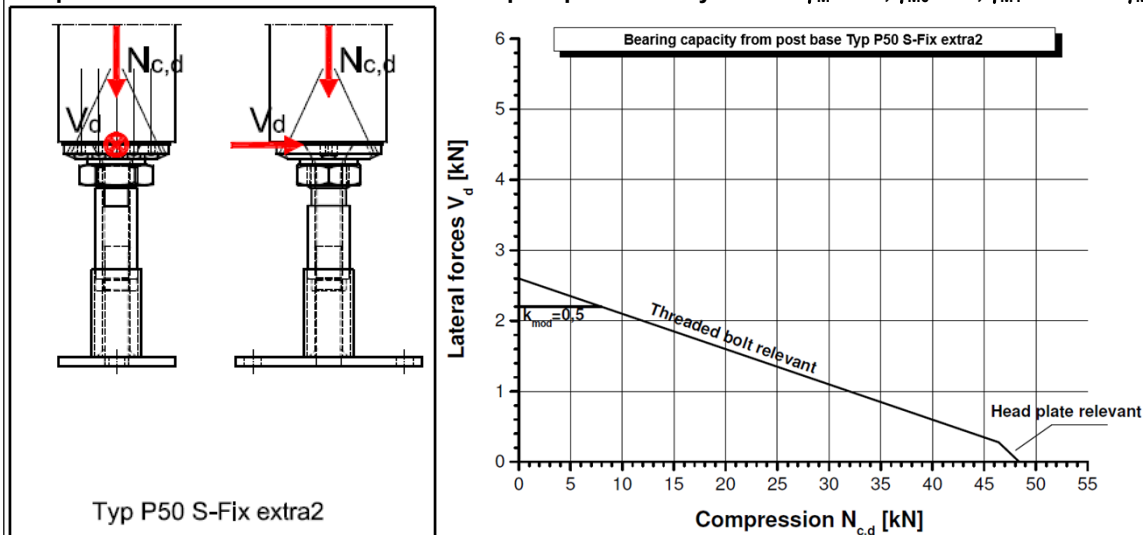


Illustration B-2: Bearing capacity from post base Typ P50 S-Fix extra2 in interaction with compression and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.



GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

Annex 3.4

Table B-8: Characteristic values and corresponding partial safety factors (γ) for post base Typ P100 S-Fix extra2

Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Lateral Force V_k [kN]
Typ P100 S-Fix extra2	Connection steel-timber	46 (γ_M)	141 (γ_M)	4.8 (γ_M)
	Head plate	23 (γ_{M0})	48 (γ_{M0})	5.6 (γ_{M0})
	Threaded bolt	97 (γ_{M0})	34 (γ_{M1})	2.1 (γ_{M2})
	Base plate	9.2 (γ_{M0})	-	4.1 (γ_{M0})

The interaction condition according to equation B4 shall be observed.

Illustration B-3: Load-bearing capacities of the post base Typ P100 S-Fix extra2 in interaction with tension and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.

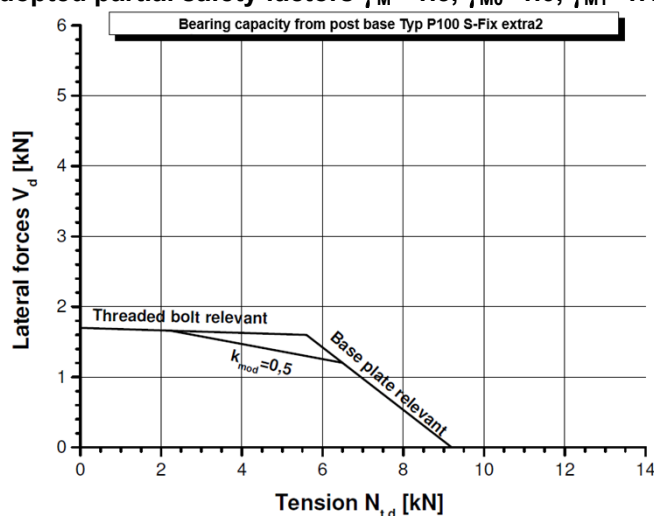
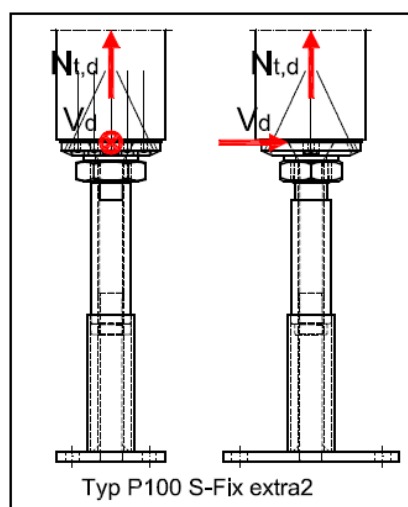
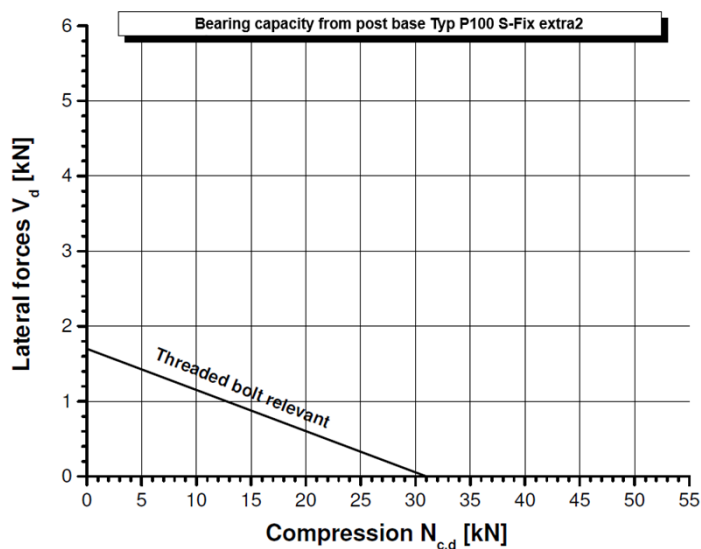
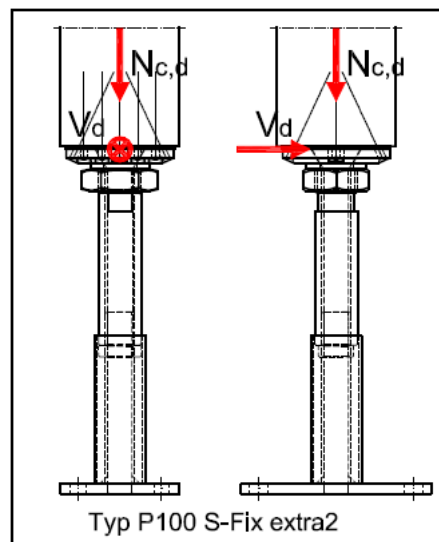


Illustration B-4: Load-bearing capacities of the post base Typ P100 S-Fix extra2 in interaction with compression and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.



GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

Annex 3.5

Table B-9: Characteristic values and corresponding partial safety factors (γ) for post base Typ P50 S-Fix plus

Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Lateral Force V_k [kN]
Typ P50 S-Fix plus	Connection steel-timber	46 (γ_M)	141 (γ_M)	5.7 (γ_M)
	Head plate	23 (γ_{M0})	48 (γ_{M0})	8.5 (γ_{M0})
	Threaded bolt	207 (γ_{M0})	77 (γ_{M1})	6.9 (γ_{M2})
	Base plate	9.2 (γ_{M0})	-	6.0 (γ_{M0})

The interaction condition according to equation B4 shall be observed.

Illustration B-5: Load-bearing capacities of the post base Typ P50 S-Fix plus in interaction with tension and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.

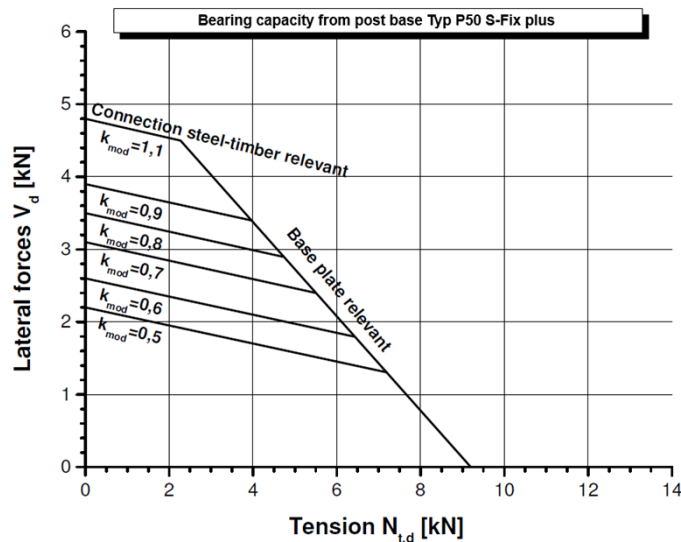
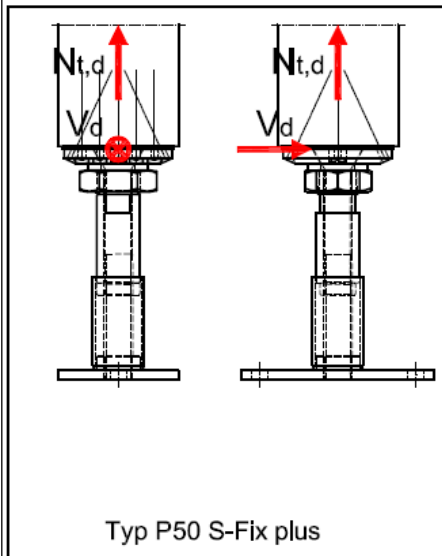
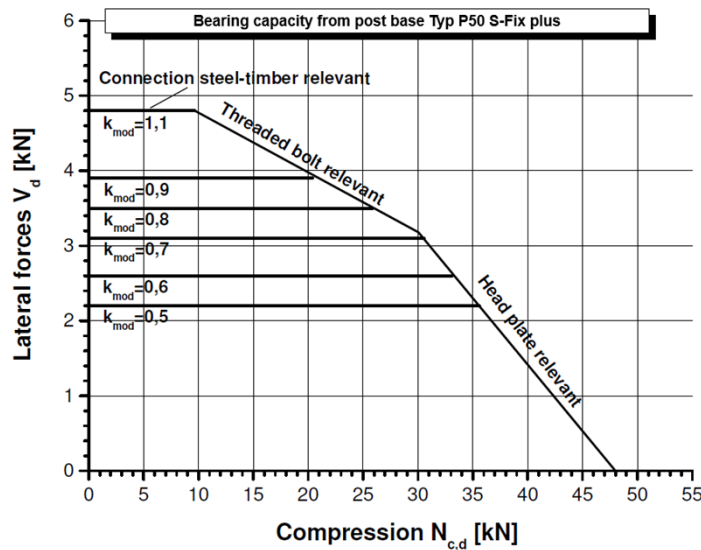
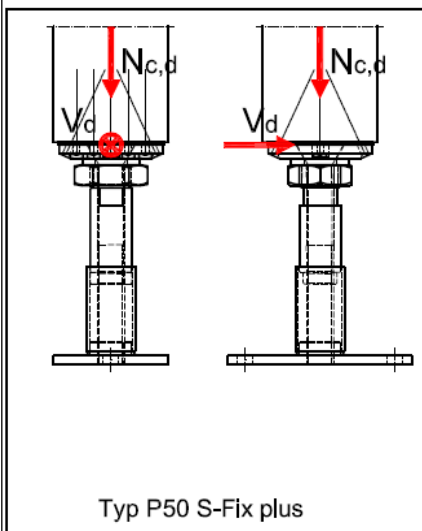


Illustration B-6: Bearing capacity from post base Typ P50 S-Fix plus in interaction with compression and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.



GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

Annex 3.6

Table B-10: Characteristic values and corresponding partial safety factors (γ) for post base Typ P100 S-Fix plus

Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Lateral Force V_k [kN]
Typ P100 S-Fix plus	Connection steel-timber	46 (γ_M)	141 (γ_M)	4.8 (γ_M)
	Head plate	23 (γ_{M0})	48 (γ_{M0})	5.6 (γ_{M0})
	Threaded bolt	207 (γ_{M0})	39 (γ_{M1})	4.5 (γ_{M2})
	Base plate	9.2 (γ_{M0})	-	3.9 (γ_{M0})

The interaction condition according to equation B4 shall be observed.

Illustration B-7: Load-bearing capacities of the post base Typ P100 S-Fix plus in interaction with tension and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.

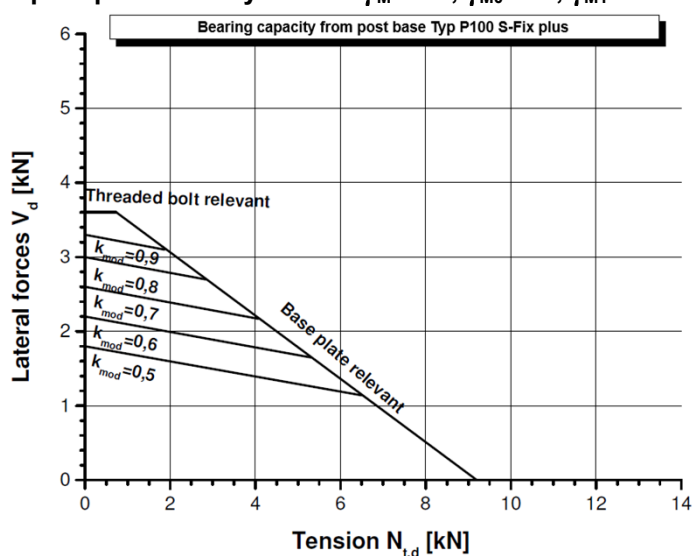
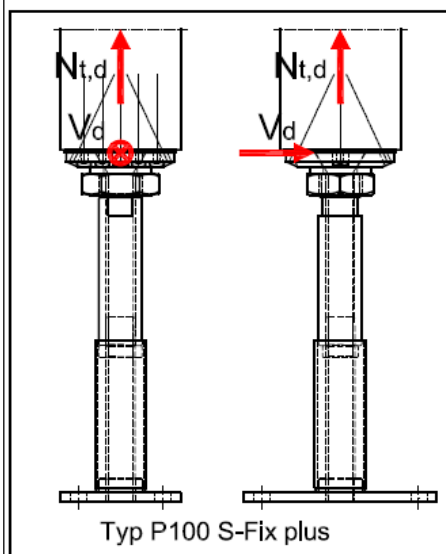
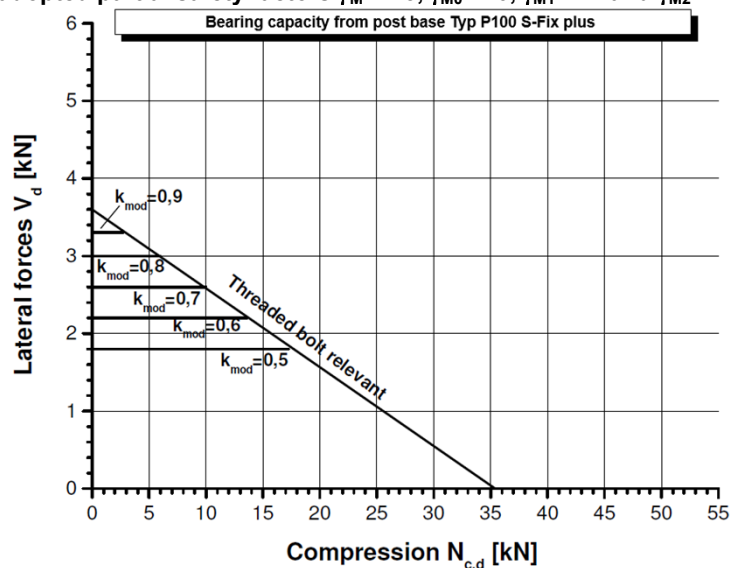
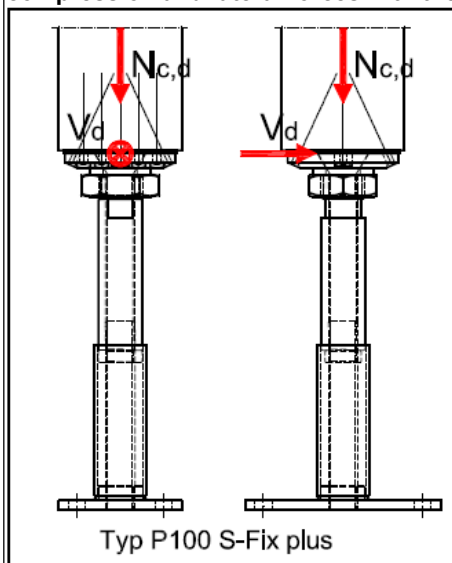


Illustration B-8: Load-bearing capacities of the post base Typ P100 S-Fix plus in interaction with compression and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.



GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

Annex 3.7

Table B-11: Characteristic values and corresponding partial safety factors (γ) for post base Typ P150 S-Fix plus

Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Lateral Force V_k [kN]
Typ P150 S-Fix plus	Connection steel-timber	46 (γ_M)	141 (γ_M)	3.7 (γ_M)
	Head plate	23 (γ_{M0})	70 (γ_{M0})	3.6 (γ_{M0})
	Threaded bolt	332 (γ_{M0})	38 (γ_{M1})	5.9 (γ_{M2})
	Base plate	8.6 (γ_{M0})	-	2.3 (γ_{M0})

The interaction condition according to equation B4 shall be observed.

Illustration B-9: Load-bearing capacities of the post base Typ P150 S-Fix plus in interaction with tension and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.

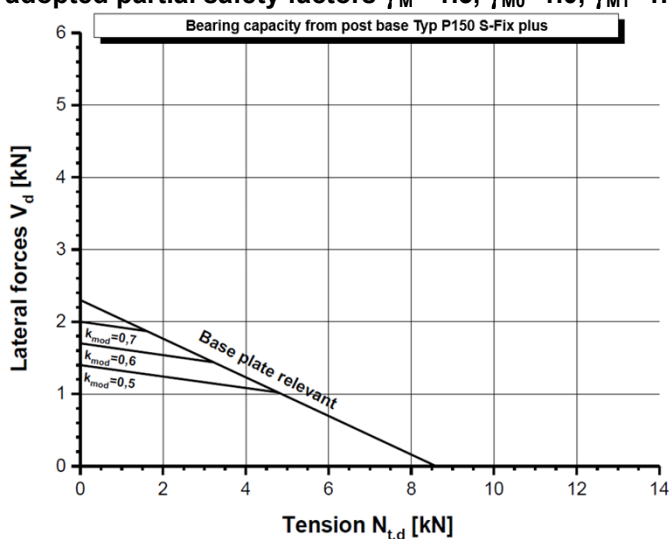
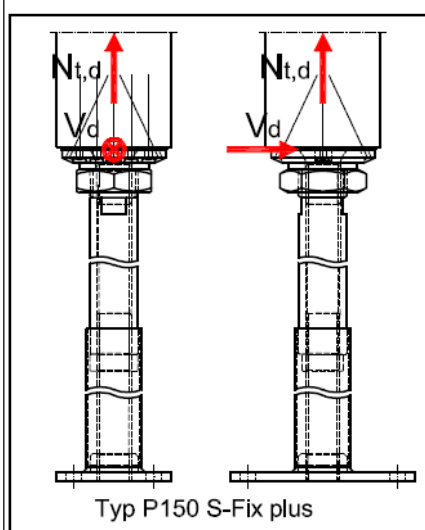
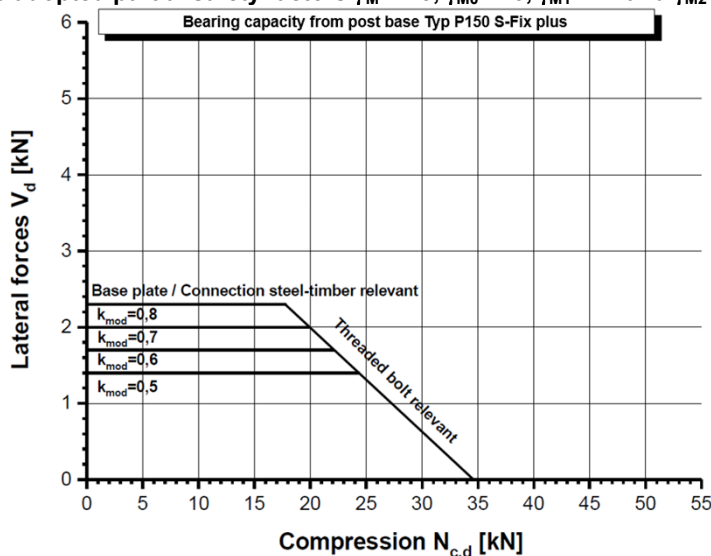
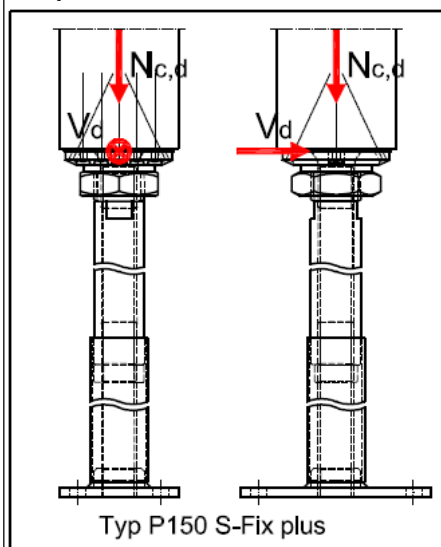


Illustration B-10: Load-bearing capacities of the post base Typ P150 S-Fix plus in interaction with compression and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.25$.



GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

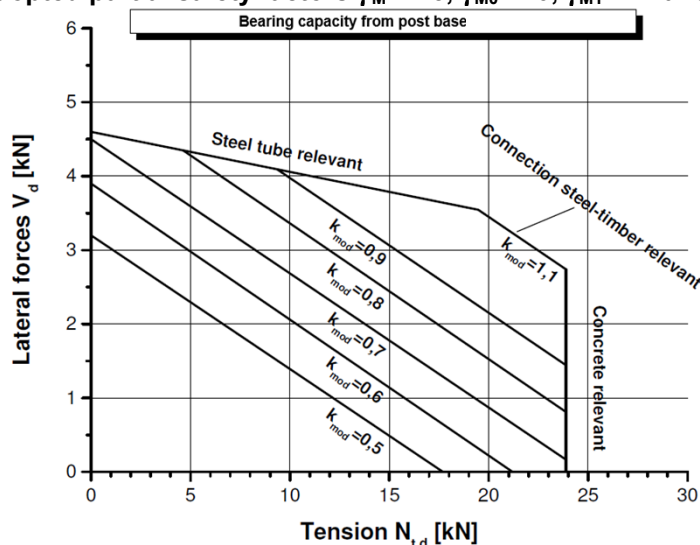
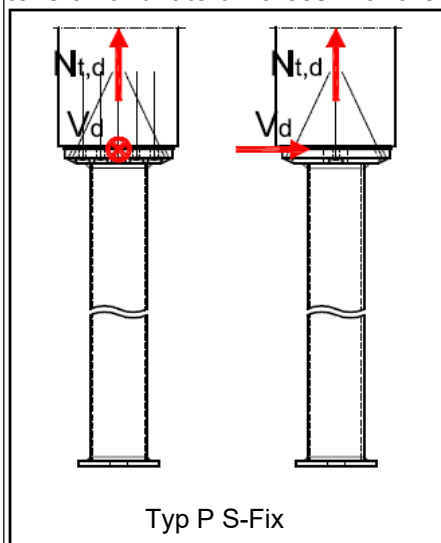
Annex 3.8

**Table B-12: Characteristic values and corresponding partial safety factors (γ) for post base
Typ P S-Fix**

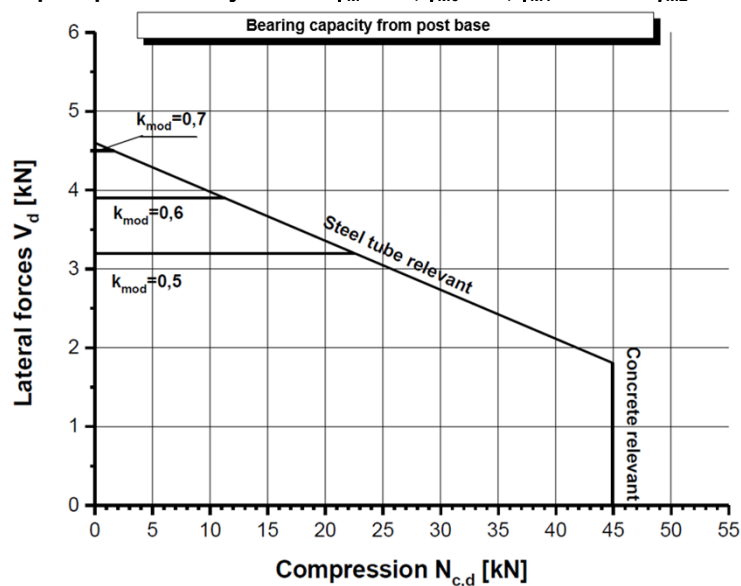
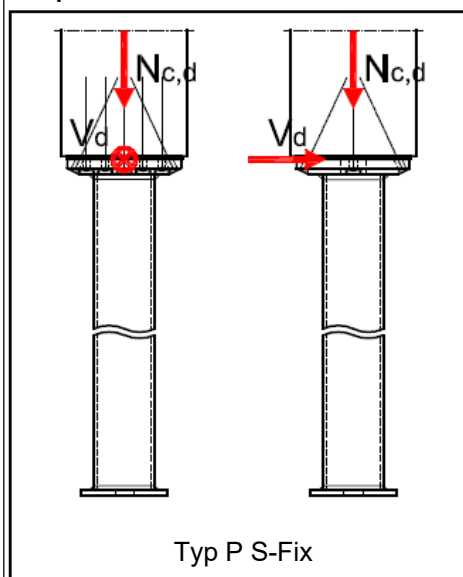
Post base	Component / Connection	Tension $N_{t,k}$ [kN]	Compression $N_{c,k}$ [kN]	Lateral Force V_k [kN]
Typ P S-Fix	Connection steel-timber	46 (γ_M)	170 (γ_M)	8.4 (γ_M)
	Steel tube	84 (γ_{M0})	81 (γ_{M1})	4.6 (γ_{M0})
	Concrete	36 (γ_C)	67.4 (γ_C)	-

The interaction condition according to equation B4 shall be observed.

**Illustration B-11: Load-bearing capacities of the post base Typ P S-Fix in interaction with
tension and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.50$**



**Illustration B-12: Load-bearing capacities of the post base Typ P S-Fix in interaction with
compression and lateral forces with the adopted partial safety factors $\gamma_M=1.3$, $\gamma_{M0}=1.0$, $\gamma_{M1}=1.1$ and $\gamma_{M2}=1.50$**



GH post base Typ P S-Fix

Characteristic values and corresponding partial safety factors

Annex 3.9