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**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-20/0529
of 17 July 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

Peikko BOLDA Column Shoe

Product family
to which the construction product belongs

Column Shoe

Manufacturer

Peikko Group Corporation
Voimakatu 3
15101 LAHTI
FINNLAND

Manufacturing plant

Peikko Manufacturing Plants

This European Technical Assessment
contains

12 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) No 2024/3110, on the basis of

EAD 200102-00-0302

This version replaces

ETA-20/0529 issued on 16 July 2021

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Specific Part

1 Technical description of the product

The Peikko BOLDA Column Shoe consists of a base plate and a side plate of steel, which are welded together. Anchor bars made of reinforcing steel are welded to the side plate.

The product description is given in Annex A.

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

The column shoes serve as connectors of e.g. between a reinforced concrete column and a foundation or between two reinforced concrete columns or between two reinforced concrete beams.

The performances given in section 3 are only valid if the column shoe is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the column shoe 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
Resistance to bending and shear loads	See Annex C1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire – steel temperature as a function of the duration of fire exposure	See Annex C1

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

In accordance with the European Assessment Document EAD 200102-00-0302 the applicable European legal act is Commission Decision 96/582/EC.

The system to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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

The following standards are referred to in this European Technical Assessment:

EN 10025-2:2019	Hot rolled products of structural steels - Part 2: Technical delivery conditions for non-alloy structural steels
EN 10130:2006	Cold rolled low carbon steel flat products for cold forming - Technical delivery conditions
EN 10080:2005	Steel for the reinforcement of concrete - Weldable reinforcing steel - General
EN 1992-1-1:2023	Eurocode 2: Design of concrete structures - Part 1-1: General rules - Rules for buildings, bridges and civil engineering structures
EOTA TR068:2020-03	Design of structural connections with column shoes
EN 206:2013 + A2:2021	Concrete - Specification, performance, production and conformity

Issued in Berlin on 17 July 2026 by Deutsches Institut für Bautechnik

Dipl.- Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Müller

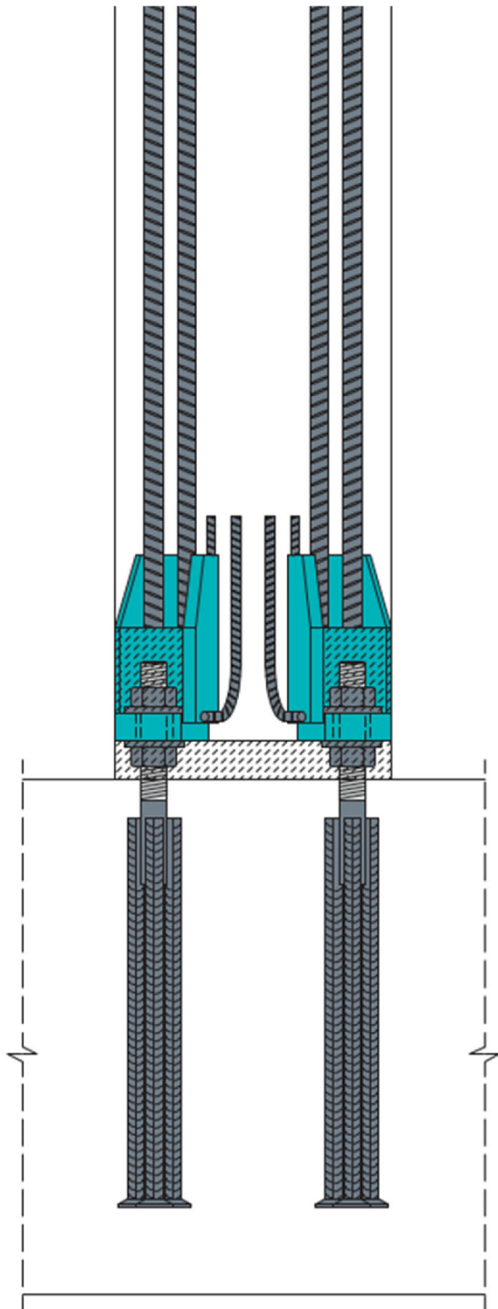


Figure A1. Application example



Figure A2. BOLDA Column Shoe

Peikko BOLDA Column Shoe	Annex A1
Product description Application example	

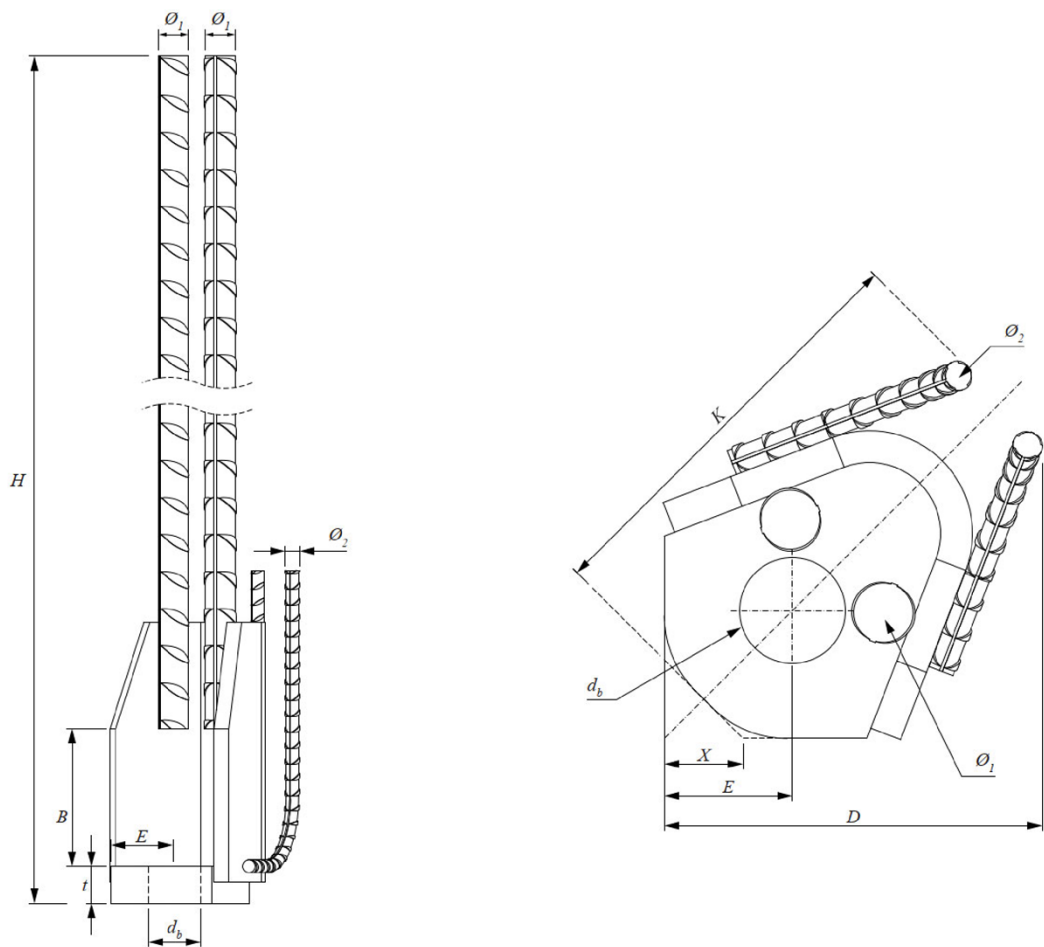


Figure A3. Dimensions of BOLDA Column Shoes

Table A1: Dimensions All values are specified in mm units.

Column Shoe	BOLDA 30	BOLDA 36	BOLDA 39	BOLDA 45	BOLDA 52
H	1058	1365	1600	1852	2190
t	30	35	40	50	55
B	100	130	130	140	170
E	50	60	60	60	70
d _b	40	50	55	60	70
ø 1	25	28	28	32	40
ø 2	10	12	14	16	16
X	30	37	37	37	42
D	153	178	195	217	245
K	173	200	220	250	269

Peikko BOLDA Column Shoe	Annex A2
Product description Dimensions	

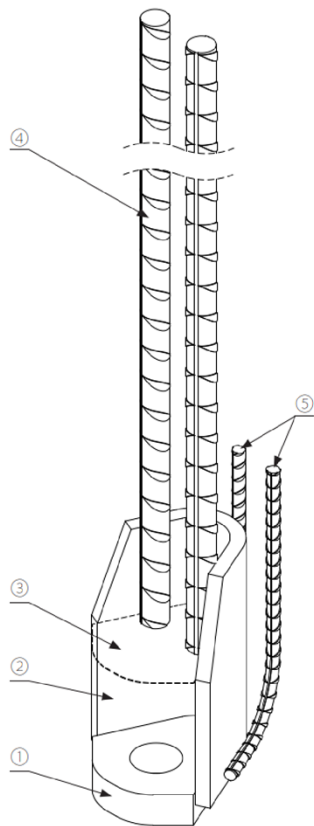


Figure A4. Materials of BOLDA Column Shoes

Table A2: Materials

Item	Component	Steel	Optional Steel	Standards
1	Base plate	S355J2+N	S355K2+N; S420J2+N	EN 10025-2
2	Side plate	S355J2+N	S355K2+N; S420J2+N	EN 10025-2
3	Top plate (option)	S235JR	DC01	EN 10025-2, EN 10130
4	Anchor bar	Table A3	B500C	EN 10080 and EN 1992-1-1, Annex C
5	Rear bar	Table A3	B500C	EN 10080 and EN 1992-1-1, Annex C

Peikko BOLDA Column Shoe

Product description
Materials

Annex A3

Specifications of intended use

Design value of loads

- Static and quasi-static tension, shear or combination of tension and shear
- Fire exposure

Anchoring base material

- Reinforced normal weight concrete according to EN 206
- Strength class C35/45 to C70/85 according to EN 206
- Cracked or uncracked concrete

Use conditions (environmental conditions)

- Column shoes flush with the outer surface of the concrete members (without concrete cover) for use in structures subject to dry internal conditions only.
- Column shoes with concrete cover according to EN 1992-1-1 for use in structures subject to appropriate exposition relating to the concrete cover.
- The lowest temperature in use is -20°C .

Design

- Column shoe connections are designed under the responsibility of an engineer experienced in the field of structural design and reinforced concrete constructions.
- Column shoe connections are designed according to EOTA TR 068.
- Factors for resistances to bending and shear loads according Table C1 apply up to maximum design value for tension of column shoes according Table B0.
- Verifiable calculations and construction drawings are prepared taking into account the loads to be transferred.
- The position of the column shoes including the reinforcement required according to Annex B (for additional splicing reinforcement see Annex B2) is specified on the construction drawings.
- The splice laps between main reinforcement bars and anchor bars of BOLDA Column Shoes are designed according to the EN 1992-1-1.
- The dimensioning and design of connected structural concrete members shall be done according to the EN 1992-1-1.
- The load bearing resistances of the column connections with BOLDA Column Shoes under fire exposure is based on the Technical Report TR 068.

Table B0: Maximum design value for tension of column shoes for factors according Table C1

All values are specified in kN units.

Column Shoe	BOLDA 30	BOLDA 36	BOLDA 39	BOLDA 45	BOLDA 52
N_{Ed}	299	436	521	697	938

Peikko BOLDA Column Shoe

Intended use
Specifications

Annex B1

- ① Stirrups for BOLDA Column Shoe acc. to table B1, Stirrup flush with BOLDA side plate
- ② Stirrup for BOLDA Column Shoe acc. to table B1, when installing column shoes on straight column sides
- ③ Stirrups in splicing area acc. to EN 1992-1-1

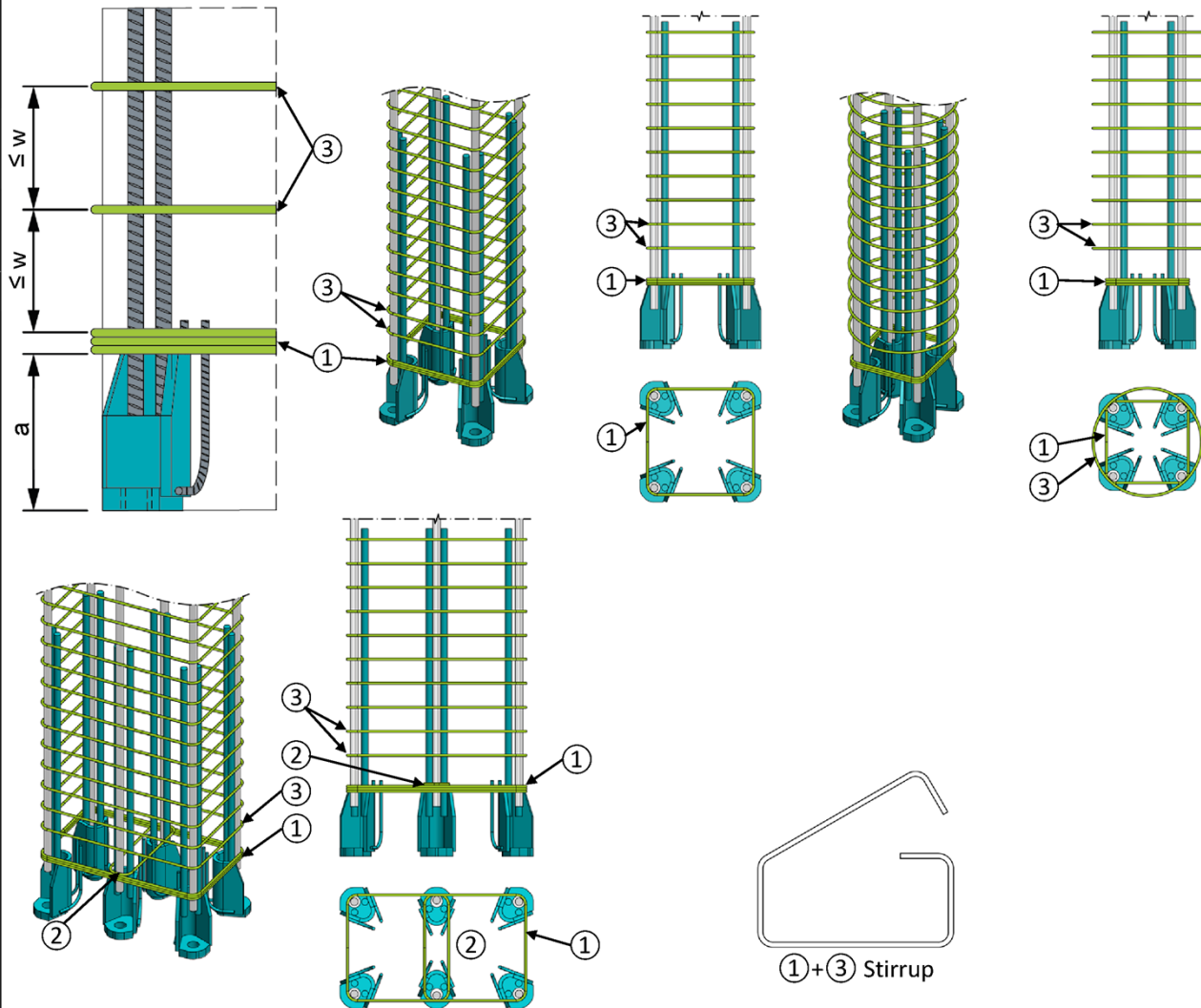


Figure B1. Additional splicing reinforcement (B500B or B500C)

Table B1: Sizes of stirrups and maximum distances [mm]

	BOLDA 30	BOLDA 36	BOLDA 39	BOLDA 45	BOLDA 52
① Stirrup	2Ø10	3Ø10	3Ø12	4Ø12	4Ø12
② Stirrup	2Ø10	3Ø10	3Ø12	4Ø12	4Ø12
③ Stirrup	Ø10	Ø10	Ø12	Ø12	Ø12
a	210	265	280	310	385
w	100	100	100	100	100

Peikko BOLDA Column Shoe	Annex B2
Intended use Specifications for additional splicing reinforcement	

Installation

- Installation of the BOLDA Column Shoes in accordance with Annex B4 and Annex B5 is carried out by appropriately qualified workers under the supervision of the person responsible for technical matters on site.
- Usage of the BOLDA Column Shoes as supplied by the manufacturer without any manipulations, repositioning or exchanging of the components.
- Installation of the BOLDA Column Shoes in accordance with the manufacturer's specifications given in Annex B4 and Annex B5.
- BOLDA Column Shoes have to be fixed to the formwork so that no movement occurs during the time of laying reinforcement and casting and compacting the concrete.
- Correct and proper compaction of the concrete in the area of the BOLDA Column Shoes.
- The BOLDA Column Shoes have to be protected against penetration of concrete, water and oil.
- The spacing and clear distances between BOLDA Column Shoes must be selected according to EN 1992-1-1 and shall be such that the concrete can be placed and compacted satisfactorily for the development of adequate bond.
- Examples of spacings and arrangements of BOLDA Column Shoes are given in Fig. B2 and Table B2.
- The BOLDA Column Shoes may be used in any cross section of concrete columns, for example: square, rectangle, L-form, oval and circle.

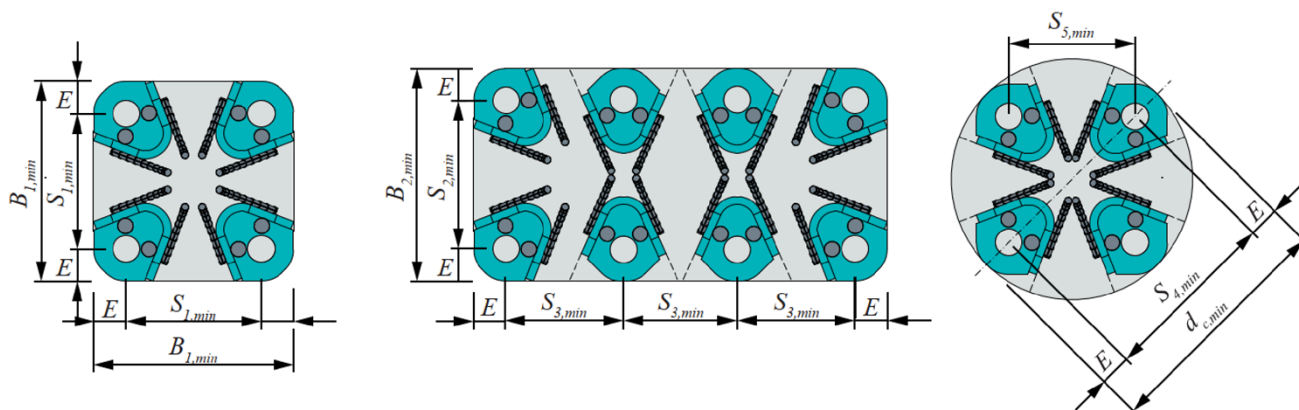


Figure B2. Examples of geometries and minimum spacings of BOLDA Column Shoes

Table B2: Minimum distances

All values are specified in mm units.

Column Shoe	BOLDA 30	BOLDA 36	BOLDA 39	BOLDA 45	BOLDA 52
$B_{1,min}$	310	360	395	440	500
$B_{2,min}$	350	405	450	510	550
$S_{1,min}$	210	240	275	320	360
$S_{2,min}$	250	285	330	390	410
$S_{3,min}$	160	180	205	230	275
$S_{4,min}$	300	340	390	455	510
$S_{5,min}$	212	240	276	322	361
E	50	60	60	60	70
$d_{c,min}$	400	460	510	575	650

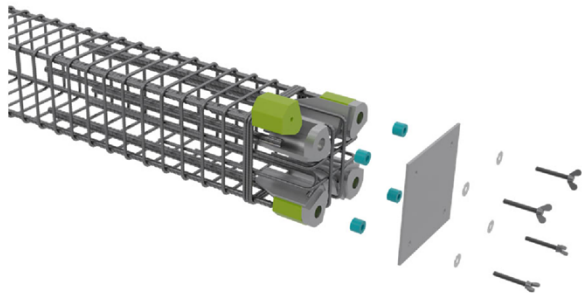
Peikko BOLDA Column Shoe

Intended use
Installation and spacing parameters

Annex B3

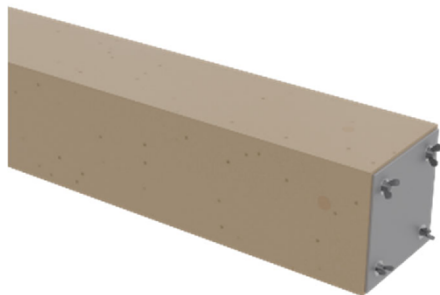
Installation instructions

1. Positioning



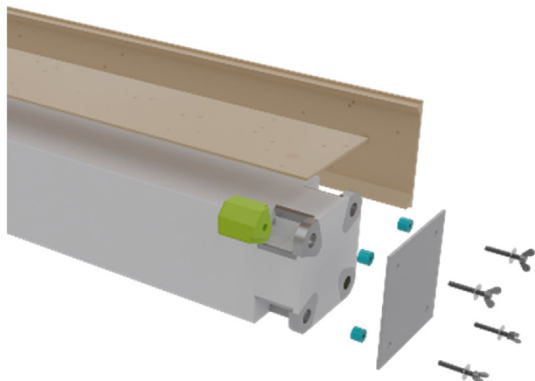
1. The BOLDA Column Shoes are placed into the reinforcement of the column into planned location and fixed through the holes of their base plates to the end plate of the formwork with recess boxes and wing screws.
2. Additional splicing reinforcement must be placed at the area of column shoes, according to drawings.
3. Fasten and tie the anchor bars of the BOLDA Column Shoes to the main reinforcement of column.

2. Casting and compacting



1. Carefully pour in concrete paying attention to built-in BOLDA Column Shoes and reinforcements.
 2. Compact concrete properly, avoid contact between vibrating device and BOLDA Column Shoes and reinforcements.
- Do not move or damage BOLDA Column Shoes.

3. Removal from formwork

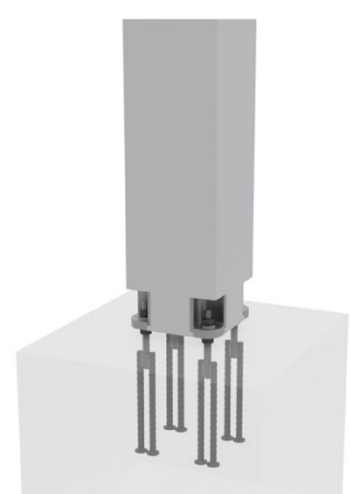
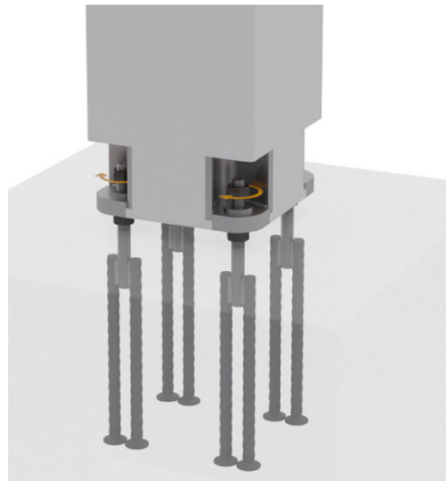
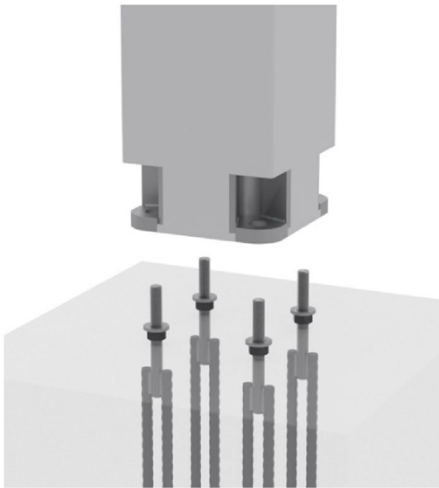


1. Loosen the wing screws of the BOLDA Column Shoes.
2. Remove formwork.
3. Check the adjacent concrete for gravel pockets etc.
4. Remove the concrete slurry on the column shoes.

Peikko BOLDA Column Shoe	Annex B4
Intended use Installation instructions	

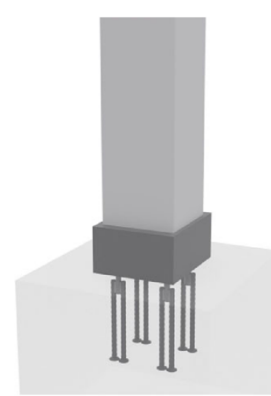
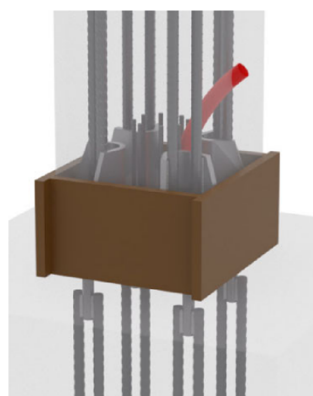
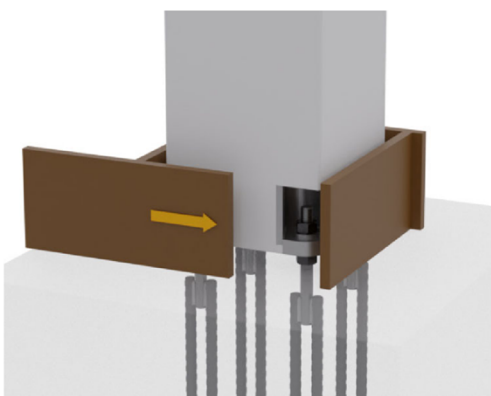
Installation instructions - precast element

1. Column is installed directly on the pre-levelled washers and the lower nuts.
2. Upper washers are installed on the base plate and upper nuts are screwed on the bolts.
3. After the upper nuts are tightened, the crane hook and lifting slings can be released.



NOTE ! Joint has to be grouted with non-shrink mortar (grout) and grout has to reach the designed strength before the column is loaded by other structures.

4. Install formwork for grouting joint and recesses, joint has to be grouted with non-shrink mortar (grout).
5. Alternative (filling pipe for grouting) where grouting is aligned with column face.
6. The finalized connection after grouting has hardened.



Peikko BOLDA Column Shoe

Intended use
Installation instructions

Annex B5

Table C1: Factors for resistances to bending and shear loads under static and quasi-static loading according TR 068 ¹⁾

			BOLDA 30	BOLDA 36	BOLDA 39	BOLDA 45	BOLDA 52
Bending resistance factor	η_d	[-]	1,0				
Bending stiffness factor	k_L	[-]	1,0				
Shear resistance factor	k_s	[-]	1,0				

¹⁾ Factors apply up to maximum design value for tension of column shoes according Table B0

Note:

Laps with the welded reinforcing steel bars (Pos. 4 according to Annex A3) are designed according EN 1992-1-1.

Table C2: Steel temperature timetable under fire exposure - $T_{cr}(t_i)$ [°C]

Time	BOLDA 30	BOLDA 36	BOLDA 39	BOLDA 45	BOLDA 52
t_i [min]	Minimum column size 310x310	Minimum column size 360x360	Minimum column size 395x395	Minimum column size 440x440	Minimum column size 500x500
30	206	171	182	178	147
60	387	336	349	340	293
90	530	475	488	470	412
120	641	588	594	571	508

Peikko BOLDA Column Shoe

Performances

Resistances to tension and shear loads under static and quasi-static loading
Fire resistances

Annex C1