



European Technical Assessment

ETA 25/0259 of 16/04/2025

General Part

**Technical Assessment Body issuing the
ETA:**

TECNALIA RESEARCH & INNOVATION

Trade name of the construction product

NOXI COLUMN SHOES

**Product family to which the
construction product belongs.**

Column shoe

Manufacturer

NOXIFER S.L.

Carretera de Sarral a Barberá, parcela 21
43424 Sarral
Tarragona (Spain)

Manufacturing plants

Carretera de Sarral a Barberá, parcela 21
43424 Sarral
Tarragona (Spain)

Calle Artesans, 72 D-E
43800 Valls
Tarragona (Spain)

**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 regulation
(EU) No 305/2011, on the basis of**

EAD 200102-00-0302 Column shoes for
structural connections of reinforced
concrete columns.

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Specific parts

1. Technical description of the product.

The NOXI 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.

Column shoe is intended to be used in connection with a specific TN anchor bolt which is not part of the product but shall be considered in its assessment. The specific TN anchor bolt related to each size of assessed column shoes is:

- NOXI 20: associated anchor bolt TN20
- NOXI 24: associated anchor bolt TN24
- NOXI 30: associated anchor bolt TN30
- NOXI 36: associated anchor bolt TN36
- NOXI 39: associated anchor bolt TN39

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 (BWR1)

Essential characteristic	Performance
Resistance to tension 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 2000/606/EC.

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 Assessment and Verification of Constancy of Performance (AVCP) system are laid down in the control plan deposited at Tecnalia Research & Innovation.

The Control Plan is a confidential part of the ETA and is only handed over to the notified body involved in the assessment and verification of constancy of performance.

Issued in Azpeitia, on 16/04/2025



Miguel Mateos

Innovation and Conformity Assessment Point

Tecnalia Research & Innovation

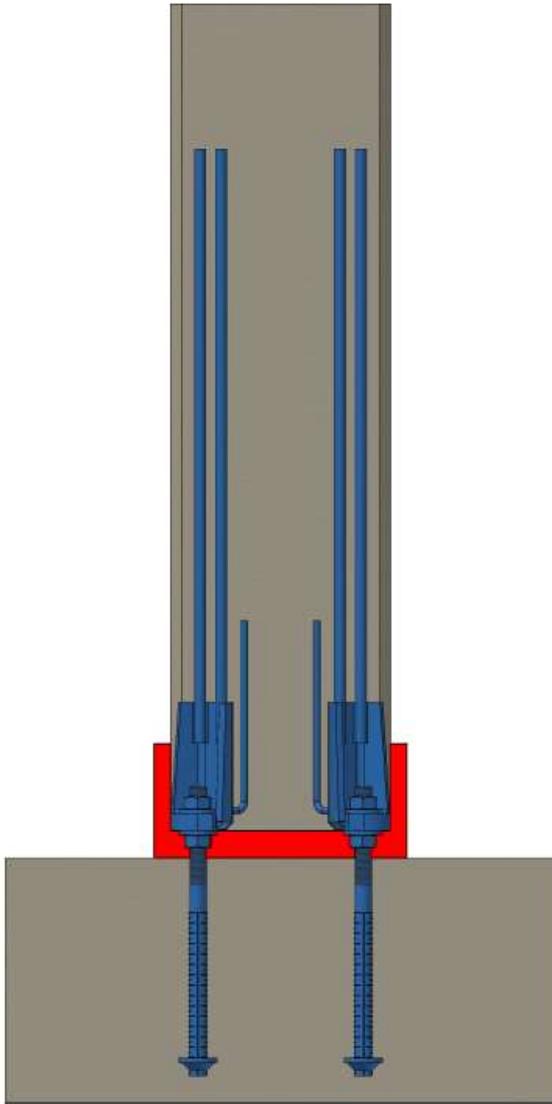


Figure A.1: Application example

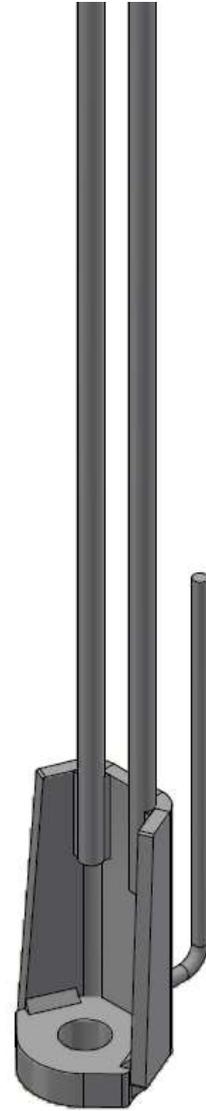
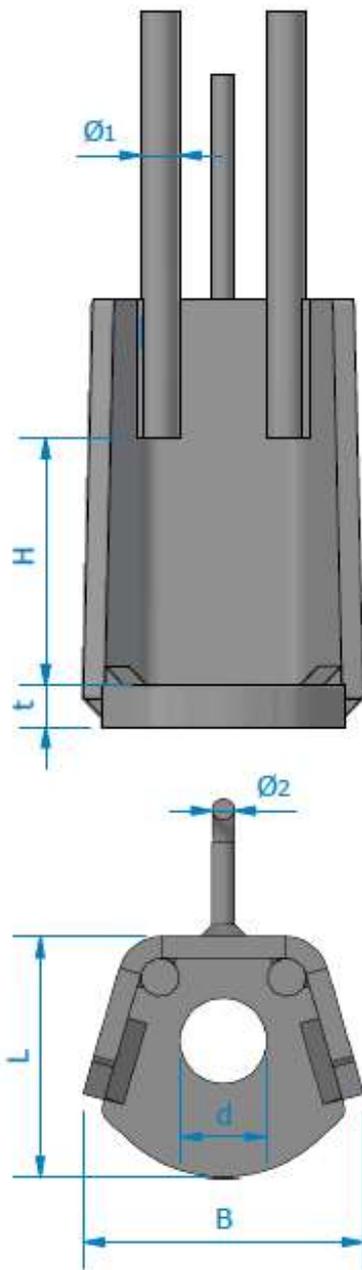


Figure A.2: Column shoe

PRODUCT DESCRIPTION
Application example

Annex A1





NOXI column shoe	d	B	L	t	H	Ø1	Ø2
NOXI20	31	101	88	15	90	14	8
NOXI24	35	113	91	25	110	16	8
NOXI30	40	132	105	30	130	20	12
NOXI36	55	156	124	35	143	25	12
NOXI39	55	161	127	40	140	25	16

Table A.1: Dimensions (All values are specified in mm)

PRODUCT DESCRIPTION
Dimensions

Annex A2



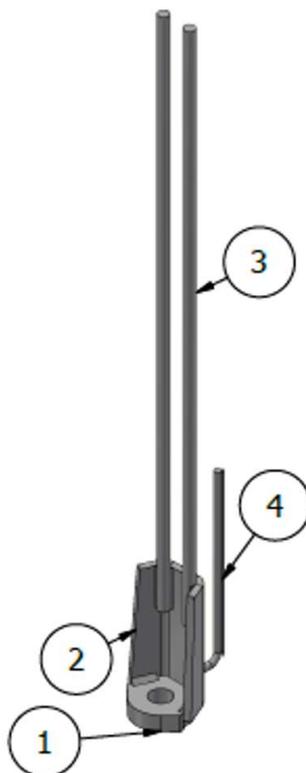


Figure A.3: NOXI Column shoe.

Item	Part	Material	Standards
1	Base plate	Steel S355JR/J0/J2	EN 10025-2:2019
2	Side plate	Steel S355JR/J0/J2	EN 10025-2:2019
3	Anchor bar	Reinforcing steel B500B or B500C	EN 1992-1-1:2004+AC2010, Annex C
4	Rear bar	Reinforcing steel B500B or B500C	EN 1992-1-1:2004+AC2010, Annex C

Table A.2: Materials of NOXI column shoes

General	All requirements set in EN 10080:2005 and EN1992-1-1:2004+AC2010, Annex C for the reinforcing steel of class B or Class C, strength class 500 MPa.
Additional	The steel shall be weldable

Table A.3: Minimum requirements for reinforcing steel.

PRODUCT DESCRIPTION Materials	Annex A3
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Specifications of intended use

Loading of anchor bolts subject to:

- Static and quasi-static load.
- Tension loads, compression loads and shear loads or combination.

Anchoring Base materials.

- Reinforced normal weight concrete of strength class C30/37 to C70/85 acc. to EN 1992-1-1:2004+AC:2010.
- Cracked or uncracked concrete.

User conditions (environmental conditions).

- Normal application when NOXI column shoes are installed normally to the concrete surface without any additional measures or surface treatments and when applications fall within the scope of the EN 1992-1-1:2004+AC:2010 series. In applications where particular special aggressive considerations apply, e.g. marine environment or chemical exposure environment, modifications can be necessary.
- EN 1992-1-1:2004+AC:2010, section 4 applies to column shoes, that are planned to be installed with concrete cover.
- The lowest temperature in use is -20°C.

Design

- The design of the column shoe connections is carried out under the responsibility of an engineer experienced in the field of structural design and concrete constructions.
- The design is based on the TR 068.
- Verifiable calculations and construction drawings are made considering the actions to be transferred.
- The position of the column shoe including the additional reinforcement specified in this ETA is specified in the construction drawings.
- Laps with the welded reinforcing steel bars are designed acc. to EN 1992-1-1:2004+AC:2010.
- The design of the connected concrete members is done acc. to EN 1992-1-1:2004+AC:2010.
- The load bearing capacity of the column shoe connections under fire is verified in accordance with the TR 068: *Design of Structural Connections with Column Shoes*.

INTENDED USE
Specifications

Annex B1





Installation

- Installation of the column shoe is carried out by appropriately qualified workers under the supervision of the person responsible for the technical matters on site.
- Usage of the column shoes are supplied by the manufacturer without any manipulation and exchanging of the components.
- Installation of the column shoes in accordance with the manufacturers product installation instructions given in Annex B3-B4.
- The column shoes have to be fixed to the formwork so that no movement occurs during the time of laying the reinforcement and of placing and compacting the concrete.
- Correct compaction of the concrete in the area of the column shoes.
- The column shoes have to be protected against penetration of concrete, water and oil.
- The spacing between column shoes must be selected so that concreting is possible.
- The columns shoes may be used in any cross-section form, for example: square, rectangle, L-form.

INTENDED USE
Specifications

Annex B2



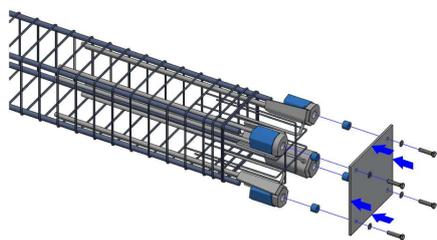


Installation instructions.



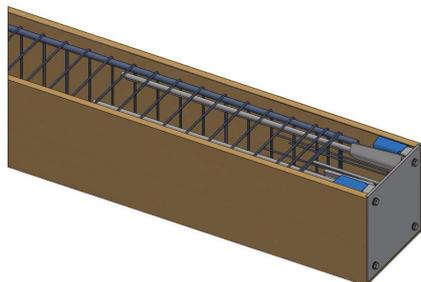
Identification of the Column Shoe and verification that it is the correct one according to the project drawings.

- Column Shoe model (20, 24, 30, 36 or 39)
- Correspondence with TN Anchor bolt to be used (e.g. NOXI30 to be used with TN30)



Place the Column Shoes on the column reinforcement according to the layout shown on the project drawings.

Position the installation boxes on the Column Shoes and fix the assemblies to the template using centring positioners, screws and washers.

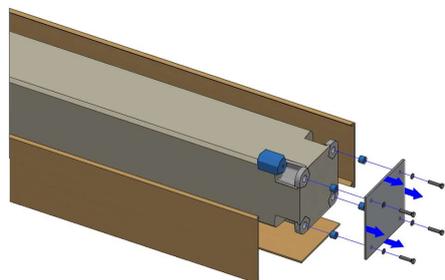


Place the reinforcement and Column Shoes on the formwork.

Carefully pour in concrete with special attention to the built-in parts.

Compact the concrete correctly without any contact between the Column Shoes and the vibration device.

Do not damage or move NOXI Column Shoes.



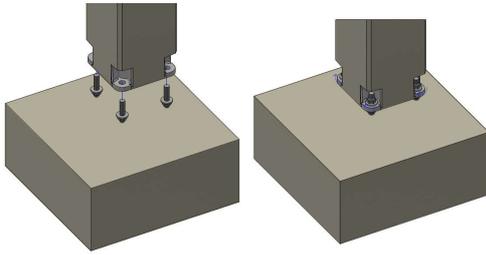
Once the concrete has hardened, loosen the screws of the Column Shoe and remove the recess boxes, centring positioners, washers and template.

Subsequently, remove the formwork and check the condition of the column and the NOXI Column Shoes.

INTENDED USE
Installation instructions

Annex B3

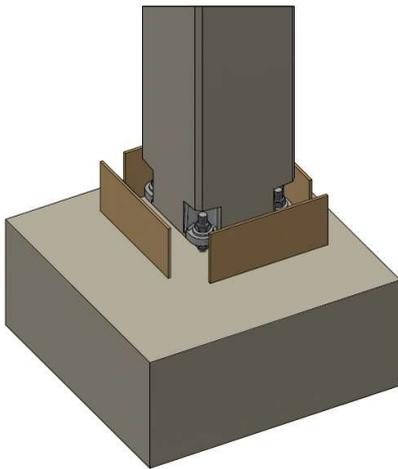




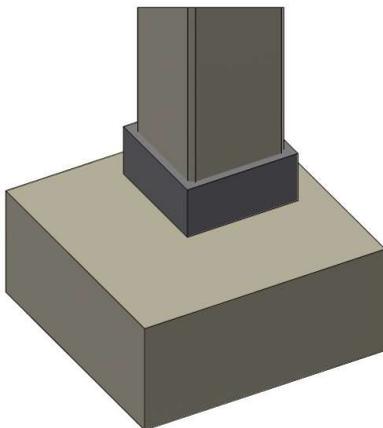
Level the washers and lower nuts at the correct height of the Anchor Bolts.

Place the column in the Anchor Bolts, followed by washers and upper nuts.

Level the column in the proper position and tight the top nuts.



When the nuts are properly tightened on the Anchor bolts, place the formwork at the base of the column to fill the joint with non-shrink mortar (Grout type).



Once the non-shrink mortar (Grout type) has hardened, remove the formwork and the connection will be completed.

INTENDED USE
Installation instructions

Annex B4



Basic Works Requirement 1: Mechanical resistance and stability

Table C1: Resistance to tension and shear loads under static and quasi-static loading

Column shoes NOXI		NOXI20	NOXI24	NOXI30	NOXI36	NOXI39
Steel failure						
Characteristic resistance	$N_{Rd,s(component)}$ [kN]	96,23	138,56	220,36	321,03	383,52
	$N_{Rd,s(bolt)}$ [kN]	93,98	135,20	215,02	299,63	357,95
	$N_{Rd,S(shoe)}$ [kN]	93,98	135,20	215,02	299,63	357,95
Bending resistance factor	η_d	1				
Bending stiffness factor	k_L	1				
Shear resistance factor	k_s	1				

Note:

- 1) Laps with the welded reinforcing steel bars (item 3 acc. to Annex A3) are designed according to EN 1992-1-1:2004+AC2010
- 2) $N_{Rd,S(shoe)}$ Acc. to EAD 200102-00-0302 (Edition 06/2023), Annex D Equation D.2.1 and Equation D.2.2:

$$N_{Rd,S(shoe)} = \min (N_{Rd,S(component)} ; N_{Rd,S(bolt)})$$

$$N_{Rd,S(bolt)} = \frac{f_{uk(bolt)} \times A_{s,nom(bolt)}}{\gamma_{Ms}}$$

where

- $f_{uk(bolt)}$ = characteristic ultimate strength of the anchor bolt
- $A_{s,nom(bolt)}$ = nominal stress area in thread of the anchor bolt
- γ_{Ms} = 1,5

Basic Works Requirement 2: Safety in case of fire

Table C2: Resistance to fire-steel temperature as a function of the duration of fire exposure - $T_{cr}(t_i)$ [°C]

Time t_i (min)	NOXI20 Minimum column size 300x300	NOXI24 Minimum column size 300x300	NOXI30 Minimum column size 300x300	NOXI36 Minimum column size 400x400	NOXI39 Minimum column size 400x400
Steel temperature as a function of the duration of fire exposure - $T_{cr}(t_i)$ [°C]					
15	121	109	121	87	109
30	217	194	212	151	186
45	328	287	327	229	269
60	430	380	419	294	342
90	583	528	570	399	462
120	684	633	681	488	556
180	826	778	832	625	697

PERFORMANCES

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

Annex C1