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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

MEMBER OF EOTA

European Technical Assessment ETA-25/1088 of 2026/01/07

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:	SPIT EPCON C8+ Xtrem
Product family to which the above construction product belongs:	Post-installed rebar connections with mortar with 120 years working life
Manufacturer:	SPIT SAS 150 Avenue de Lyon – BP 104 26501 Bourg-Les-Valence Cedex France
Manufacturing plant:	SPIT SAS 150 Avenue de Lyon – BP 104 26501 Bourg-Les-Valence Cedex France
This European Technical Assessment contains:	19 pages including 14 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 330087-02-0601-v01
This version replaces:	

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

The subject of this assessment are the post-installed connections, by anchoring or overlap connection joint consisting of steel reinforcing bars (rebars) in existing structures made of normal weight concrete, using injection mortar SPIT EPCON C8+ XTREM for rebar in accordance with the regulations for reinforced concrete construction.

Reinforcing bars with diameters from 10 to 32 mm and SPIT EPCON C8+ XTREM injection mortar according to Annex A are used for the post-installed rebar connections covered by this ETA. The steel element is placed into a drilled hole previously injected with a mortar and is anchored by the bond between embedded element, injection mortar and concrete.

The characteristic material values, dimensions and tolerances of the anchors not indicated in Annexes shall correspond to the respective values laid down in the technical documentation[1] of this European Technical Assessment.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (hereinafter EAD)

The performances given in Section 3 are only valid if the rebar connection is used in compliance with the specifications and conditions given in Annex B

The provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor of 120 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

1 The technical documentation of this European Technical Assessment is deposited at ETA-Danmark and, as far as relevant for the tasks of the Notified bodies involved in the attestation of conformity procedure, is handed over to the notified bodies.

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

3.1 Characteristics of product

Mechanical resistance and stability (BWR1):

Essential characteristic	Performance
Characteristic resistance under static and quasi-static loading	
Bond strength of post-installed rebar	See Annex C1
Bond efficiency factor	See Annex C1
Amplification factor for minimum anchorage length	See Annex C1
Characteristic resistance to steel failure for rebar tension anchors	No performance assessed
Characteristic resistance under seismic loading	
Bond strength under seismic loading, seismic bond efficiency factor	See Annex C2
Minimum concrete cover under seismic loading	No performance assessed

Safety in case of fire (BWR2):

Essential characteristic	Performance
Reaction to fire	Anchorages satisfy requirements for Class A1
Resistance to fire	
Bond strength at simulated fire conditions for post-installed rebar assessed for assumed 100 years working life	See Annex C3

3.2 Methods of assessment

The assessment of fitness of the anchor for the intended use in relation to the requirements for mechanical resistance and stability and safety in case of fire in the sense of the Basic Requirements 1 and 2 has been made in accordance with the EAD 330087-02-0601v01, Systems for post-installed rebar connections with mortar – 120 years working life.

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 96/582/EC of the European Commission, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is **1**.

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 2026-01-07 by

Thomas Bruun
Manager, ETA-Danmark

Injection mortar
Epoxy adhesive two components

SPIT EPCON C8+ XTREM

Marking

Trade name
SPIT EPCON C8+ XTREM

Identifying mark of the producer **SPIT**

Expire date
Curing and processing time
Charge code number

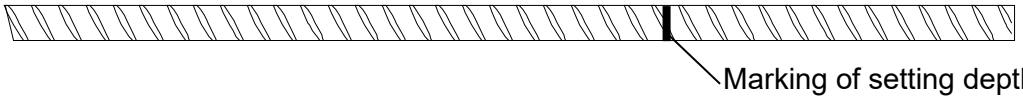
Static mixer

Standard 400-450-900

High flow mixing nozzle

SPIT EPCON C8+ XTREM	
Product description Injection system	**Annex A1**

Ribbed reinforcing bar (rebar):



Properties of the ribbed reinforcing bar (rebar):

- Rebar according to EN 1992-1-1 Annex C
- Bars or de-coiled rods class B or C
- Nominal diameter ϕ: 10 to 32 mm
- Rib height h in the range of $0{,}05\ \phi \le h \le 0{,}07\ \phi$
- Yield strength f_{yk} and k according to NDP or NCL of EN 1992-1-1/NA
- Ultimate strength $f_{uk} = f_{tk} = k \cdot f_{yk}$

SPIT EPCON C8+ XTREM	**Annex A2**
Product description Specification rebar	

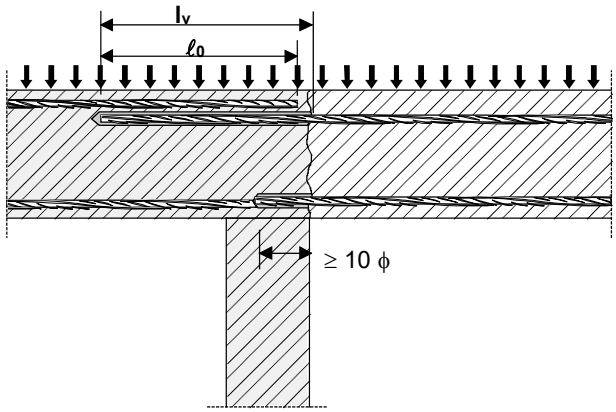


Figure A1: Overlap joint with existing reinforcement for rebar connections of slabs and beams

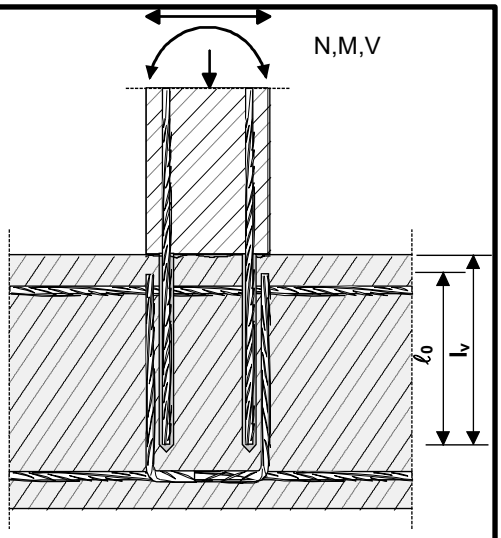


Figure A2: Overlap joint with existing reinforcement at a foundation of a column or wall where the rebars are stressed in tension

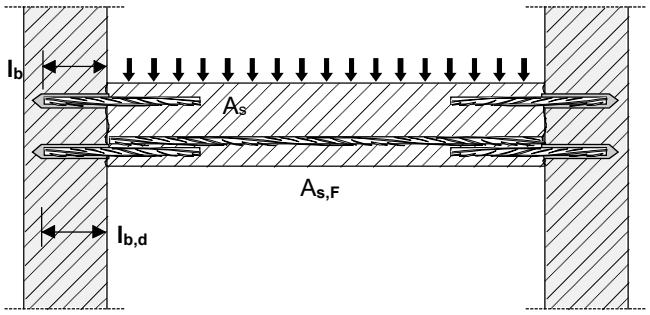


Figure A3: End anchoring of slabs or beams, designed as simply supported

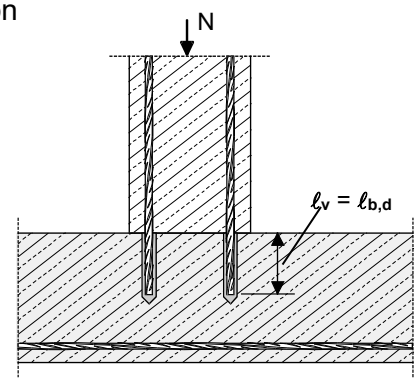


Figure A4: Rebar connection for components stressed primarily in compression. The rebars are stressed in compression

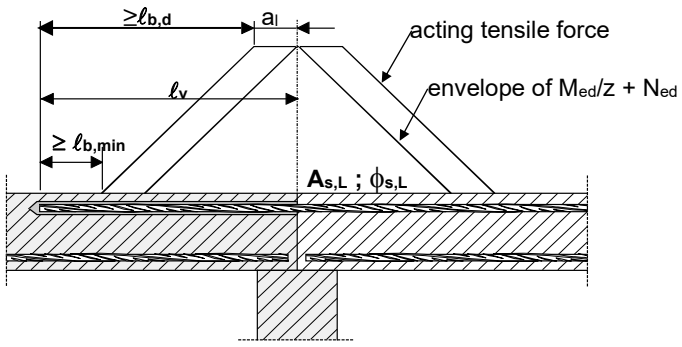


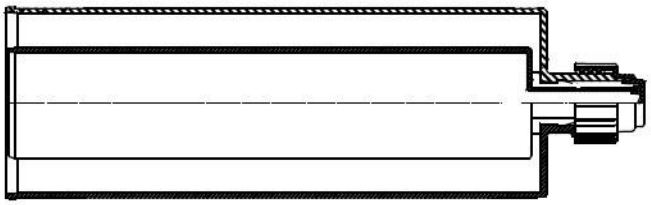
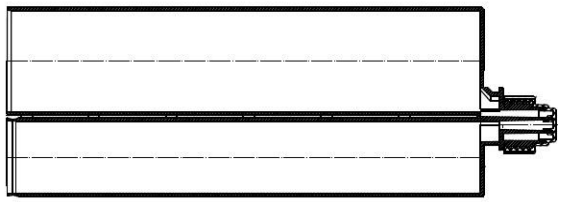
Figure A5: Anchoring of reinforcement to cover the line of acting tensile force

Note to Figure A1 to A5:

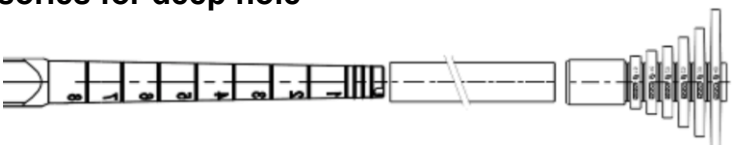
- In the Figures no transverse reinforcement is plotted, the transverse reinforcement as required by EN 1992-1-1 or EN 1998-1 shall be present.
- The shear transfer between existing and new concrete shall be designed according to EN 1992-1-1 or EN 1998-1
- Preparing of joints according to Annex B2.

SPIT EPCON C8+ XTREM	**Annex A3**
Product description Specification rebar	

Cartridges

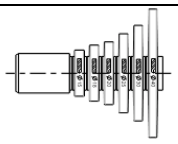
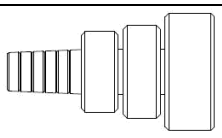
600 ml coaxial cartridge	
450ml side by side cartridge	

Injection accessories for deep hole



Plastic extension must be use for hole deeper h_0 > 250 mm

Piston plug must be use for hole deeper h_0 > 350 mm and for overhead installations

Cartridge volume	Mixing Nozzle	Extension for piston plug	Piston plug
All cartridges	Standard mixing nozzle or High flow mixing nozzle	Ø13x1000	 

Specifications of intended use

Anchorages subject to:

- Static and quasi static loading : rebar Ø10 to Ø32
- Seismic loading : rebar Ø10 to Ø32
- Fire exposure : rebar Ø10 to Ø32

Base material:

- Compacted Reinforced or unreinforced normal weight concrete without fibres according to EN 206
- Strength classes C12/15 to C50/60 according to EN 206 for static and quasi static loading and under fire exposure
- Strength classes C16/20 to C50/60 according to EN 206 for seismic loading
- Maximum chloride content of 0,40 % (CL 0.40) related to the cement content according to EN 206:2013+A1:2016
- Non-carbonated concrete

Note: In case of a carbonated surface of the existing concrete structure the carbonated layer shall be removed in the area of the post-installed rebar connection with a diameter of ϕ + 60 mm prior to the installation of the new rebar. The depth of concrete to be removed shall correspond to at least the minimum concrete cover in accordance with EN 1992-1-1.The foregoing may be neglected if building components are new and not carbonated and if building components are in dry conditions.

Temperature range:

- At installation : 0°C to +40°C
- In service : - 40°C to +40°C, max short term temperature +40°C, max long term temperature +24°C

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the forces to be transmitted.
- Design under static or quasi-static loading in accordance with EN 1992-1-1 and under seismic action in accordance with EN 1998-1 and Annex B2
- The actual position of the reinforcement in the existing structure shall be determined on the basis of the construction documentation and taken into account when designing.

Installation:

- Drilling technique:

- Hammer drilling technique: sizes ϕ10- ϕ32
- Compressed air drilling: sizes ϕ10- ϕ32

- Use category:

- Dry or wet concrete (not in flooded holes) for Hammer drilling and compressed air drilling technique
- Installation direction downwards, horizontal and overhead

- The installation of post-installed rebar shall be done only by suitable trained installer and under supervision on site; the conditions under which an installer may be considered as suitable trained and the conditions for supervision on site are up to the Member States in which the installation is done.
- Check the position of the existing rebars (if the position of existing rebars is not known, it shall be determined using a rebar detector suitable for this purpose as well as on the basis of the construction documentation and then marked on the building component for the overlap joint).

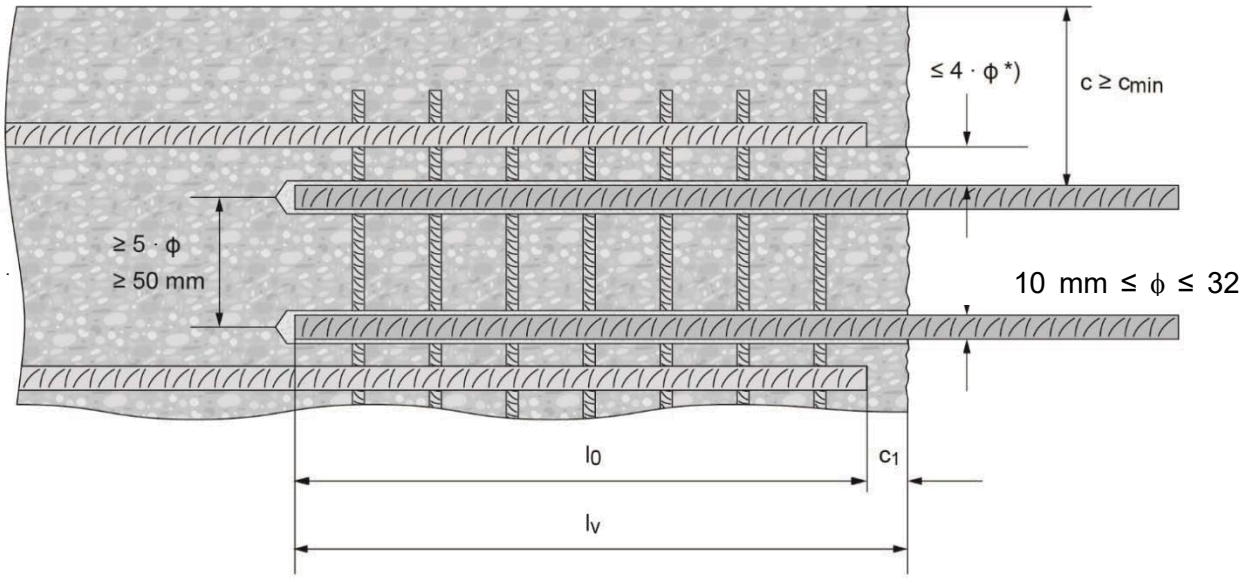
SPIT EPCON C8+ XTREM	**Annex B1**
Intended Use Specifications	

Figure B1: Construction rules for post-installed rebars

▪ Only tension forces in the axis of the rebar may be transmitted.

▪ The transfer of shear forces between new concrete and existing structure shall be designed additionally according to EN 1992-1-1.

▪ The joints for concreting must be roughened to at least such an extent that aggregate protrude.



*) If the clear distance between lapped bars exceeds 4.ϕ, then the lap length shall be increased by the difference between the clear bar distance and 4.ϕ

- c: concrete cover of post-installed rebar
- c_1: concrete cover at end-face of existing rebar
- c_{min}: minimum concrete cover according to Table B1 and to EN 1992-1-1, Section 4.4.1.2
- ϕ: diameter of post-installed rebar
- l_0: lap length, according to EN 1992-1-1, Section 8.7.3 for static loading, and according to EN 1998-1, Section 5.6.3 for seismic loading
- l_v: effective embedment depth ≥ $l_0 + c_1$
- d_0 nominal drill bit diameter, see Annex B3
- Minimum spacing between two post-installed bars a = 50 mm ≥ 5ϕ

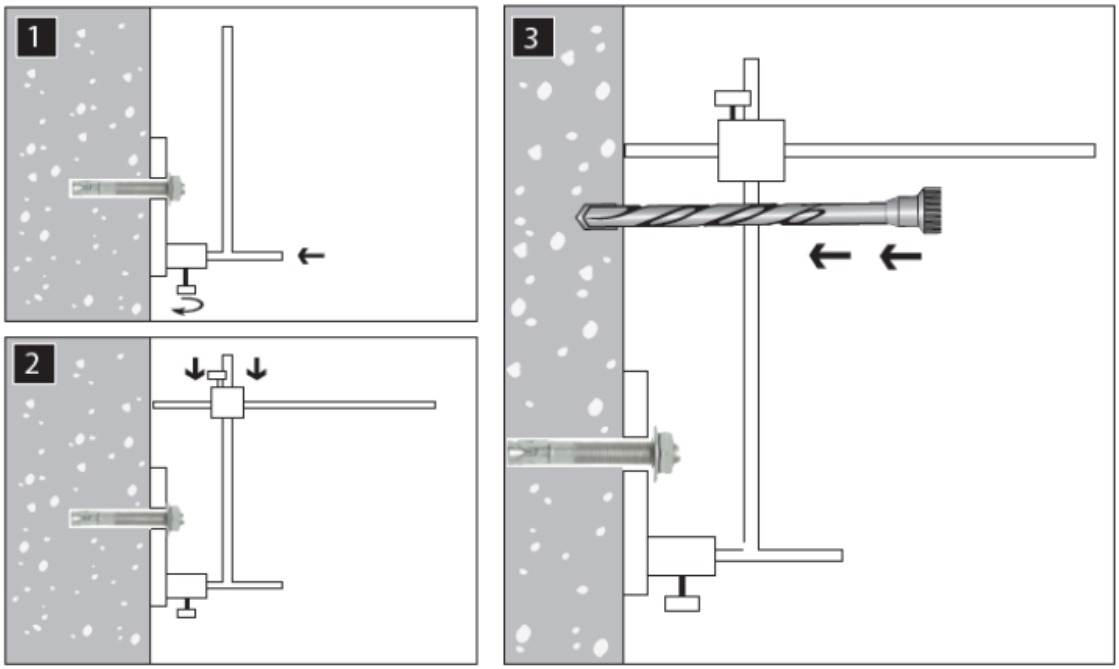
SPIT EPCON C8+ XTREM	**Annex B2**
Intended used General construction rules for post-installed rebars	

Table B1: Minimum concrete cover c_{min} [1] of post-installed rebar

Drilling method	Bar diameter ϕ	Minimum concrete cover c_{min} [1] [mm]	
		Without drilling aid	With drilling aid
Hammer drilling	< 25 mm	$30 + 0{,}06\ l_v \geq 2\phi$	$30 + 0{,}02\ l_v \geq 2\phi$
	≥ 25 mm	$40 + 0{,}06\ l_v \geq 2\phi$	$40 + 0{,}02\ l_v \geq 2\phi$
Compressed air drilling	< 25 mm	$50 + 0{,}08\ l_v \geq 2\phi$	$50 + 0{,}02\ l_v \geq 2\phi$
	≥ 25 mm	$60 + 0{,}08\ l_v \geq 2\phi$	$60 + 0{,}02\ l_v \geq 2\phi$

[1] See Annex B2, Figure B1
Note: The minimum concrete cover as specified in EN 1992-1-1 must be observed for static, quasi-static and seismic actions.

Figure B2: Drilling aid system



SPIT EPCON C8+ XTREM

Annex B3

Intended used
Minimum concrete cover c_{min}

Table B2: Maximum embedment depth $l_{v,max}$

Rebar diameter ϕ	Maximum embedment length $l_{v,max}$ [mm]	
	Manuel applicator	Pneumatic applicator
	450 ml 600 ml	450 ml 600 ml
ϕ10-ϕ32	750	1500

Table B3: Installation parameters
Dimensions of drill diameter and cleaning tools for reinforcing bars (rebars)

Rebar diameter ϕ	Nominal drilling diameter d_{cut} [mm]	Ø Brush[1)] [mm]	Ø Plastic extension for compressed air cleaning
ϕ10	12	13	9
ϕ12	15	16	9
ϕ14	18	20	13
ϕ16	20	22	13
ϕ20	25	26	13
ϕ22	28	30	13
ϕ24	30	32	13
ϕ25	30	32	13/20
ϕ28	35	37	13/20
ϕ32	40	42	13/20

[1)] The diameter of the round steel brush shall be checked before use. The minimum brush diameter has to be at least equal to the borehole diameter d_0. The round steel brush shall produce natural resistance as it enters the drill hole. If this is not the case, please use a new brush or a brush with a larger diameter.

Table B4: Gel time and curing time

Temperature of base material	Working time	Curing time[1)]
5°C to 9°C	45 min	48 h
10°C to 14°C	35 min	22 h
15°C to 19°C	22 min	14 h
20°C to 24°C	14 min	7 h
25°C to 29°C	8 min	5 h
30°C to 34°C	6 min	4 h
35°C to 40°C	4 min	3 h

[1)] For wet concrete, the curing time must be doubled

Safety precaution:

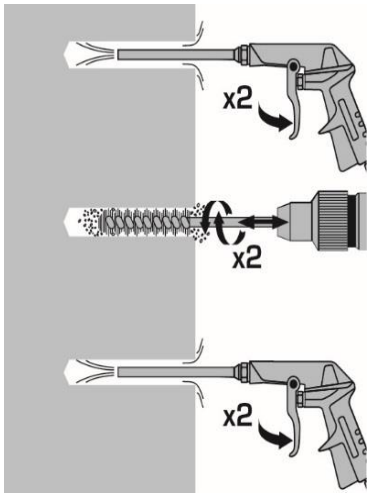
The safety data sheet must be read before using the product and the safety instructions followed.

- Storage temperature of cartridge +5°C to +35 °C
- Cartridge temperature at time of installation: Must be ≥ +5°C
- Base material temperature at time of installation: Must be between 5°C and +40°C
- Check the date of expiry of the cartridge

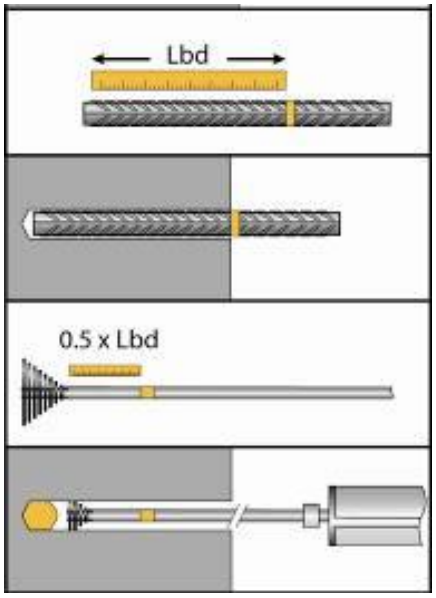
Drilling the hole:

	Rotary hammer drilling or compressed air drilling

Cleaning the hole:

Hammer drilling technique	
	1. Using compress air cleaning (min 6 bars), use the appropriate plastic extension for compressed air cleaning, starting from the top of the hole blow out at least 2 times by moving downward to the bottom of the hole then moving upward to the top of the hole and until no dust is evacuated. (not less than 10s per each blowing). 2. Using the relevant brush and extension fitted on a SPIT drilling machine, starting from the top of the hole, move downward to the bottom of the hole then moving upward to the top of the hole. Repeat this operation. 3.Using compress air cleaning (min 6 bars), use the appropriate extension, starting from the top of the hole blow out at least 2 times by moving downward to the bottom of the hole then moving upward to the top of the hole and until no dust is evacuated. (not less than 10s per each blowing).

Dispensing into the hole:



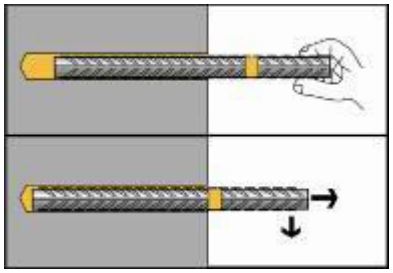
1. Put the anchorage depth mark on the rebar

2. Check the anchorage depth

3. Cut the piston plug at the relevant diameter. The volume of resin that needs to be injected in the hole must be indicated on the mixing nozzle or its extension. The marking must be placed at 0.5 times the anchorage depth

4. Dispense the first part to waste until an even colour is achieved (≈ 20cm). Insert the nozzle to the far end of the hole, and inject the resin, withdrawing the nozzle as the hole fills in order to avoid trapping air bubbles. Fill the hole until the mark appears. For pneumatic dispenser, the maximum pressure is 6 bars.

Inserting the rebar:



1. Immediately insert the rebar, slowly and with a slight twisting motion. Remove excess resin from around the mouth of the hole before it sets. Control the embedment depth during the working time (See Annex B5 Table B4) which varies according to
temperature of base material.

2. Leave the rebar undisturbed until the curing time has elapsed.
(See Annex B5 Table B4)

Essential characteristic under static and quasi static loading

Minimum anchorage length and minimum lap length for a working life of 120 years for hammer drilling and compressed air drilling

The minimum anchorage length $l_{b,min}$ and minimum lap length $l_{0,min}$ according to EN 1992-1-1 shall be multiplied by the relevant amplification factor $\alpha_{lb,120y}$ given in Table C1.

The design values of the bond strength $\mathbf{f_{bd,PIR,120y}}$ are given in Table C3 considering the concrete strength classes and the rebar diameter for good bond conditions according to EN 1992-1-1. For all other bond conditions multiply the values by 0,7.

$\mathbf{f_{bd,PIR,120y} = k_{b,120y} \bullet f_{bd}}$ with bond efficiency factor $k_{b,100y}$ according to Table C2

Table C1: Amplification factor $\alpha_{lb,120y}$

Rebar diameter	Amplification factor $\alpha_{lb,120y}$ [-]								
	Concrete strength class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ32	1,0								

Table C2: Bond efficiency factor $k_{b,120y}$

Rebar diameter	Bond efficiency factor $k_{b,120y}$ [-]								
	Concrete strength class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ32	1,0								

Table C3: Design values of the bond strength $f_{bd,PIR,120y}$

	Bond strength $f_{bd,PIR,120y}$ [N/mm²]								
Rebar diameter	Concrete strength class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ32	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3

Essential characteristic under seismic loading

Minimum anchorage length and minimum lap length for Hammer drilling and compressed air drilling for working life of 120 years

The minimum anchorage length $l_{b,min}$ and minimum lap length $l_{0,min}$ according to EN 1992-1-1 shall be multiplied by the relevant amplification factor $\alpha_{lb,seis,120y}$ given in Table C4.

The design values of the bond strength $\mathbf{f_{bd,PIR,seis,120y}}$ are given in Table C6 considering the concrete strength classes and the rebar diameter for good bond conditions according to EN 1992-1-1. For all other bond conditions multiply the values by 0,7.

$\mathbf{f_{bd,PIR,seis,120y} = k_{b,seis,120y} \bullet f_{bd}}$ with seismic bond efficiency factor $k_{b;seis,120y}$ according to Table C5

Table C4: Amplification factor $\alpha_{lb,seis,120y}$

Rebar diameter	Amplification factor $\alpha_{lb,seis,120y}$ [-]							
	Concrete strength class							
	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ32	1,0							

Table C5: Bond efficiency factor $k_{b,seis,120y}$

Rebar diameter	Bond efficiency factor $k_{b,seis,120y}$ [-]							
	Concrete strength class							
	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ32	1,0							

Table C6: Design values of the bond strength $f_{bd,PIR,seis,120y}$

	Bond strength $f_{bd,PIR,seis,120y}$ [N/mm²]							
Rebar diameter	Concrete strength class							
	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
ϕ10 - ϕ32	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3

Essential characteristics under fire exposure

Bond strength $f_{bd,fi,120y}$ at increased temperature for concrete strength classes C12/15 to C50/60

The bond strength $f_{bk,fi,120y}$ at increased temperature has to be calculated by the following equation:

$$f_{bd,fi,120y} = k_{fi}(\theta) \bullet f_{bd,PIR,120y} \bullet \gamma_c / \gamma_{M,fi}$$

where

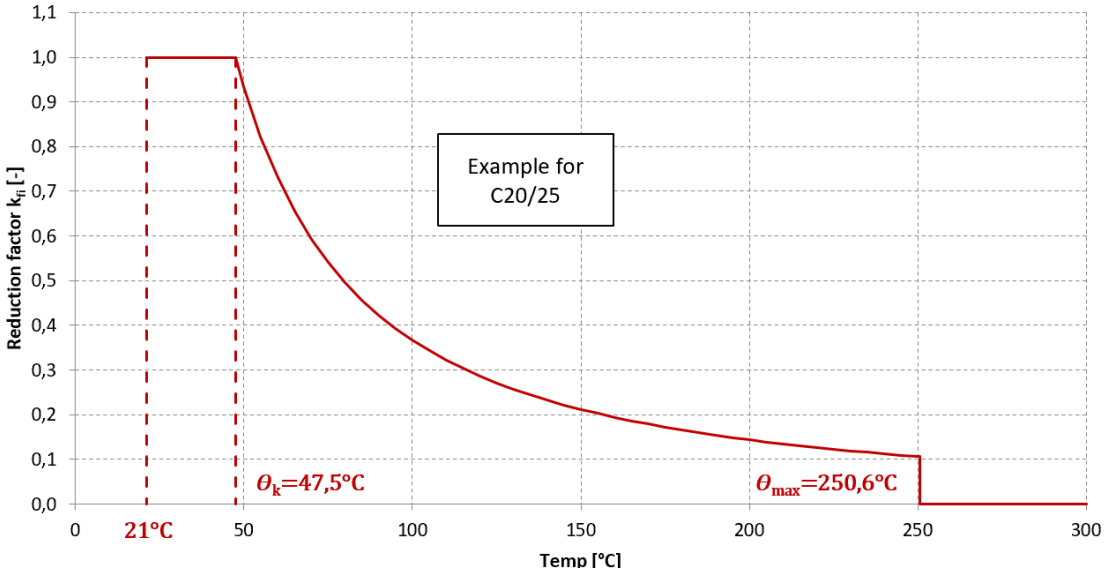
$\theta < 250{,}6$ °C: $k_{fi}(\theta) = \min \{1{,}0;\ 1813{,}93651 \cdot \theta^{-1{,}34963} / (f_{bd,PIR,120y} \bullet 4{,}3)\}$

$\theta > 250{,}6$ °C: $k_{fi}(\theta) = 0$

$f_{bk,fi,120y}$	Bond strength at increased temperature in N/mm² for a working life of 120 years
(θ)	Temperature in °C in the mortar layer
$k_{fi,120y}(\theta)$	Reduction factor at increased temperature
$f_{bd,PIR}$	Design values of the bonds strength in N/mm² according to Tables C3, considering the concrete classes, the rebar diameter, the drilling method and the bond condition according to EN 1992-1-1
γ_c	Partial factor according to EN 1992-1-1
$\gamma_{M,fi}$	Partial factor according to EN 1992-1-2

For evidence at increased temperature the anchorage length shall be calculated according to EN 1992-1-1, Equation 8.3 using the temperature-dependent bond strength $f_{bk,fi,120y}$.

Figure C1: Example graph of reduction factor $k_{b,fi}(\theta)$ for concrete strength class C20/25 for good bond conditions



SPIT EPCON C8+ XTREM	**Annex C3**
Performance Bond strength at increased temperature	