



ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Internet www.etadanmark.dk

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-24/0389 of 2024/09/18

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 TAPCON 5 XTREM

Product family to which the above construction product belongs:

Mechanical fasteners for use in cracked and uncracked concrete

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 13 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 330747-00-0601; Fasteners for use in concrete for redundant non-structural systems

Note:

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product

The SPIT concrete screw TAPCON 5 XTREM is an anchor made of zinc plated steel. The concrete screw comes in size 6 with an embedment depth of 35 mm or 55 mm. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterized by mechanical interlock in the special thread.

The product description is given in Annex A and the intended use specifications of the concrete screw are detailed in Annex B.

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

The performances given in Section 3 are only valid if the anchor 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 50 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.

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

Characteristic	Assessment of characteristic
----------------	------------------------------

3.2 Safety in case of fire (BWR2)

Reaction to fire	Class A1
------------------	----------

Resistance to fire

Fire resistance to steel failure (tension load)	Annex C
---	---------

Fire resistance to pull-out failure (tension load)	Annex C
--	---------

Fire resistance to steel failure (shear load)	Annex C
---	---------

3.3 Hygiene, health and the environment (BWR3)

Content, emission and/or release of dangerous substances	No performance assessed
--	-------------------------

3.4 Safety and accessibility in use (BWR4)

Characteristic resistance to tension load (static and quasi-static loading)

Resistance to steel failure	Annex C
-----------------------------	---------

Resistance to pull-out failure	Annex C
--------------------------------	---------

Resistance to concrete cone failure	Annex C
-------------------------------------	---------

Robustness	Annex C
------------	---------

Minimum edge distance and spacing	Annex B
-----------------------------------	---------

Edge distance to prevent splitting under load	Annex B
---	---------

Characteristic resistance to shear load (static and quasi-static loading)

Resistance to steel failure under shear load	Annex C
--	---------

Resistance to pry-out failure	Annex C
-------------------------------	---------

Resistance to concrete edge failure	Annex C
-------------------------------------	---------

Characteristic resistance for all load directions and modes of failure for simplified design

Characteristic resistance	Annex C
---------------------------	---------

Durability

Durability	Annex B
------------	---------

See additional information in section 3.9

3.9 General aspects related to the performance of the product

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

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

4.1 AVCP system

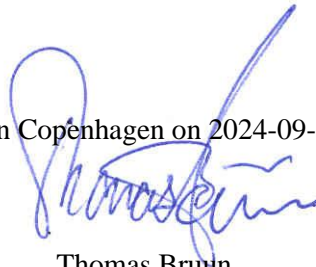
In accordance with European Assessment Documents EAD No. 330747-00-0601, the applicable European legal act is: [97/161/EC].

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

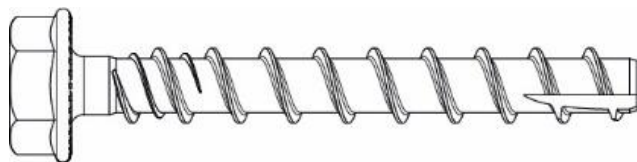
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2024-09-18 by



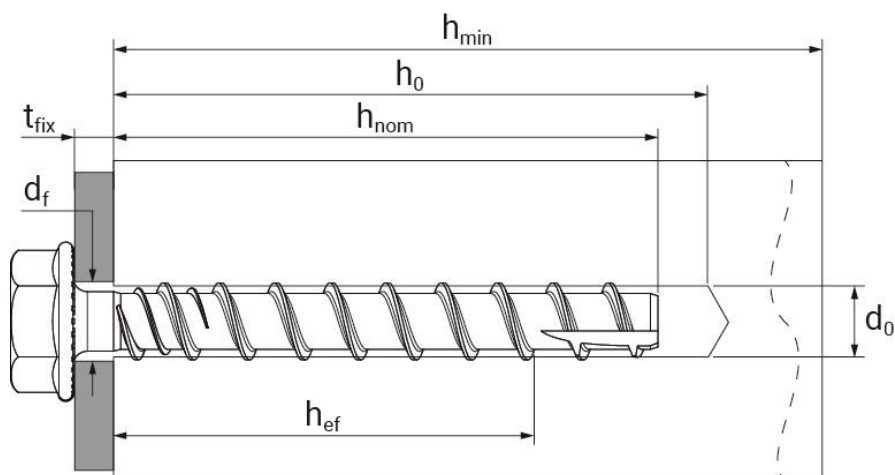
Thomas Bruun
Managing Director, ETA-Danmark

SPIT TAPCON 5 XTREM



Installed condition in concrete

e.g. SPIT TAPCON 5 XTREM concrete screw, with hexagon head and fixture



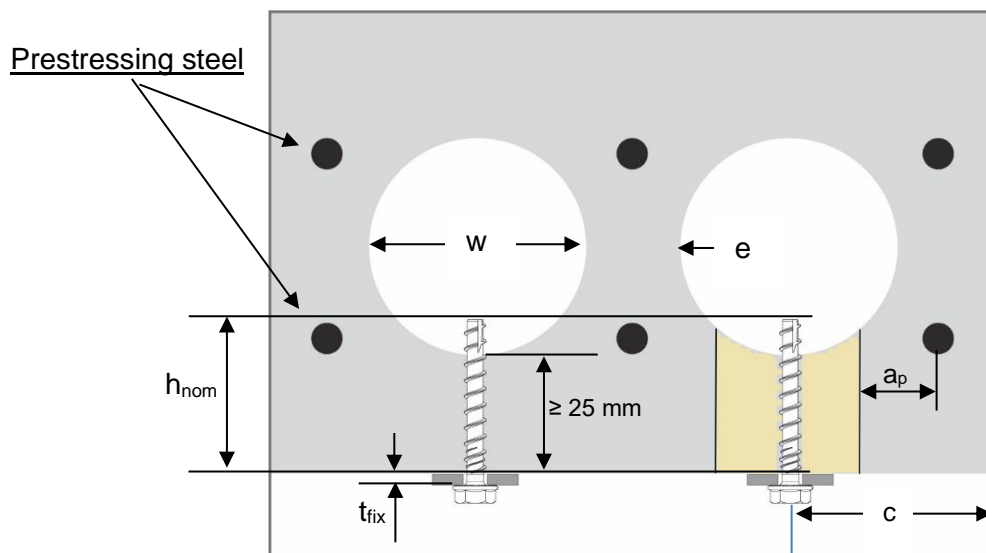
- h_{min} : Minimum thickness of member
- d_0 : Nominal drill hole diameter
- h_0 : Drill hole depth
- d_f : Clearance hole diameter
- h_{nom} : Nominal embedment depth
- h_{ef} : Effective embedment depth
- t_{fix} : Thickness of fixture

SPIT TAPCON 5 XTREM

Product description
Installation condition in concrete

Annex A1

Installed condition in precast prestressed hollow core slabs



w : Core width
 e : Web thickness
 }
 $w/e \leq 4,2$

h_{nom} : Nominal embedment depth
 t_{fix} : Thickness of fixture

c : Minimum edge distance $\geq 100\text{mm}$

a_p : Distance between anchor position and prestressing steel $\geq 50\text{mm}$

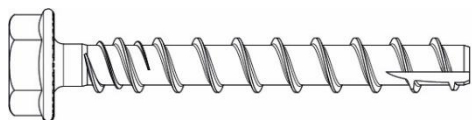
SPIT TAPCON 5 XTREM

Product description

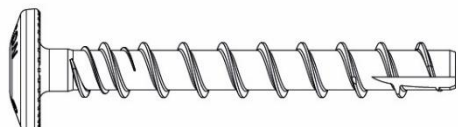
Installation condition in precast prestressed hollow core slabs

Annex A2

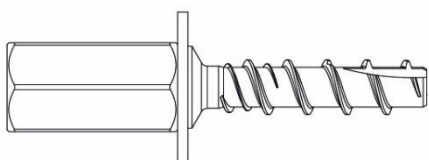
Product versions



HFL Version with washer
Hexagon head SW13 and TORX drive30
e.g. TAPCON 5 XTREM HFL 6x80



DOME Version with large pan head
TORX drive 30
e.g. TAPCON 5 XTREM DOME 6x60



ROD Version Hexagon drive SW13
e.g. TAPCON 5 XTREM ROD 6x55 M8/M10

Marking:

- Designation: TAPCON
- Screw size: 6
- Screw length: 80



Material

Table A1: Material

Product name	Material
TAPCON 5 XTREM	Steel EN 10263-4:2017 galvanized acc. to EN ISO 4042:2022

SPIT TAPCON 5 XTREM

Product description
Product versions, Marking and Material

Annex A3

Dimensions

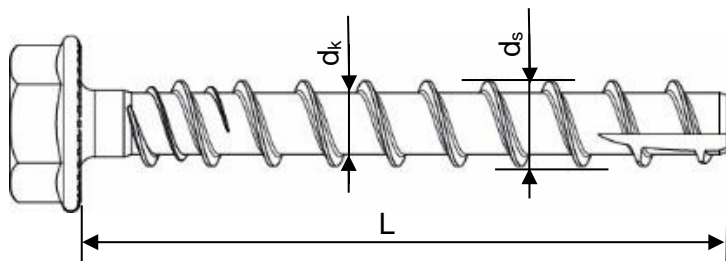


Table A2 : Dimension

Fastener size TAPCON 5 XTREM			6
Screw length	$\leq L$	[mm]	100
Core diameter	d_k	[mm]	5,8
Thread outer diameter	d_s	[mm]	8,0

SPIT TAPCON 5 XTREM

Product description
Dimensions

Annex A4

Specification of Intended use

Anchorage subject to:

- Static and quasi static loads
- Fire exposure in concrete
- Fire exposure in hollow concrete slabs
- Used only for multiple use for redundant non-structural systems according to EAD 330747-00-0601, EN 1992-4:2018

Base materials:

- Compacted reinforced and unreinforced concrete without fibres of concrete Strength classes C20/25 to C50/60 according to EN 206:2013.
- Cracked or uncracked concrete.
- Prestressed hollow core slabs with $w/e \leq 4,2$, and strength classes C45/55 to C50/60

Use conditions (Environmental conditions):

- Concrete screws subject to dry internal conditions: all screw types.

Design:

- Anchorages are designed in accordance with EN 1992-4 : 2018 and EOTA Technical Report TR 055
- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).

Installation:

- Hammer drilling only
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on site.
- In case of aborted hole: new drilling must be drilled at a minimum distance of twice the depth of aborted hole or closer, if the aborted hole is filled with high strength mortar and only if the hole is not in the direction of the oblique tensile or shear load.
- After installation further turning of the anchor must not be possible.
- The head of the anchor is supported in the fixture and is not damaged

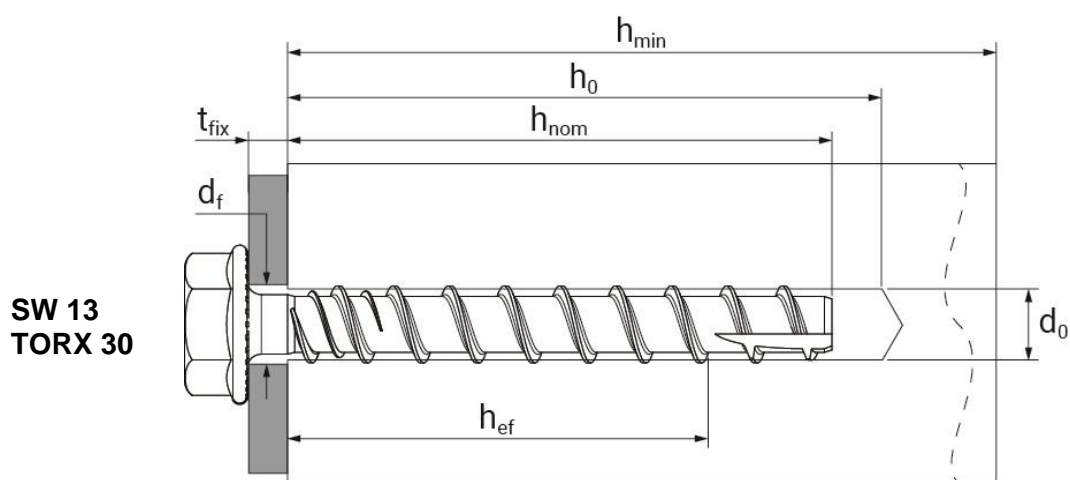
SPIT TAPCON 5 XTREM

Intended use
Specification

Annex B1

Table B1: Setting data in concrete for TAPCON 5 XTREM

Fastener size TAPCON 5 XTREM			6					
Type			HFL	DOME	ROD	HFL	DOME	ROD
Nominal embedment depth		h_{nom}	h_{nom1}			h_{nom2}		
		[mm]	35			55		
Nominal drill hole diameter	d_0	[mm]	6					
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6,40					
Drill hole depth	$h_0 \geq$	[mm]	40			65		
Clearance hole diameter	$d_f \leq$	[mm]	9					
Wrench size	SW	[mm]	13	-	13	13	-	13
Torx Size	TX	[-]	30	30	-	30	30	-
Torque impact screw driver (Max. torque according to manufacturer's instructions)		[Nm]	160			210		



SPIT TAPCON 5 XTREM

Intended use
Installation parameters

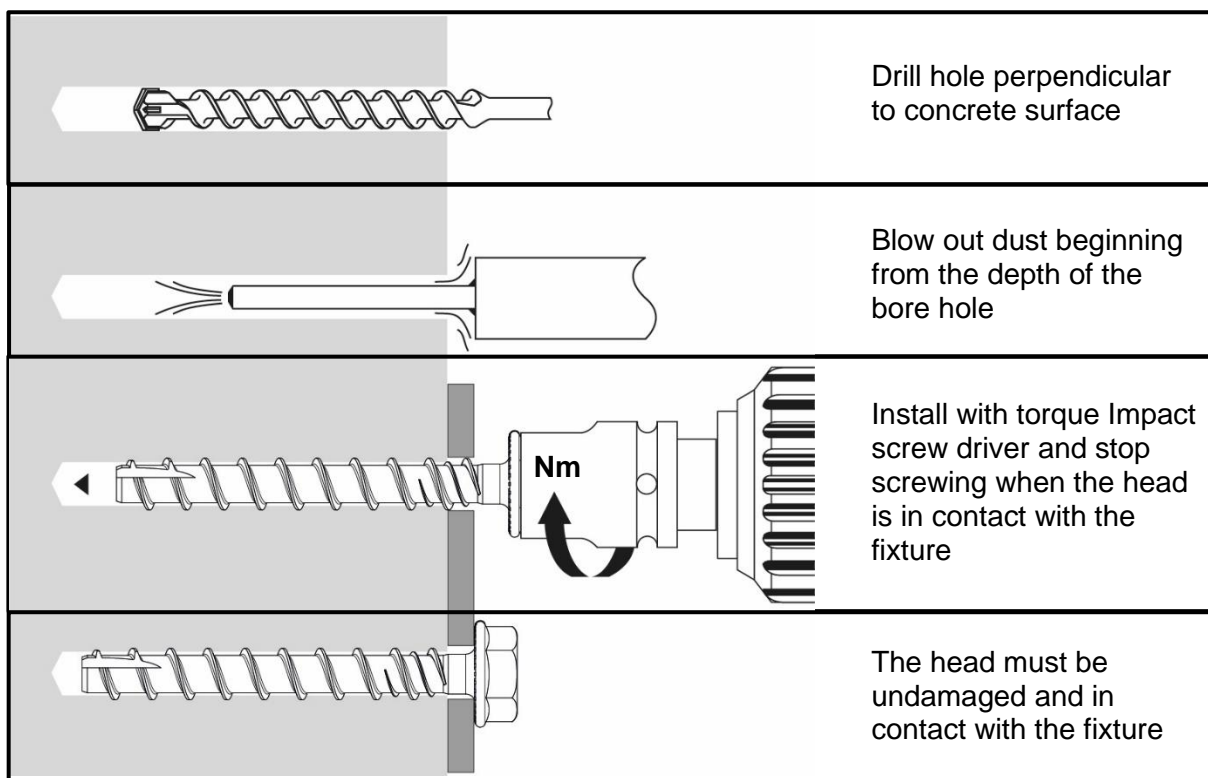
Annex B2

Installation parameters for anchorages in concrete

Table B2: Minimum thickness of member, minimum edge distance and minimum spacing in concrete

Fastener size TAPCON 5 XTREM			6	
Nominal embedment depth	h_{nom1}	[mm]	h_{nom1}	h_{nom2}
			35	55
Minimum thickness of member	h_{min}	[mm]	80	100
Minimum edge distance	c_{min}	[mm]	35	40
Minimum spacing	s_{min}	[mm]	35	40

Installation Instructions in concrete

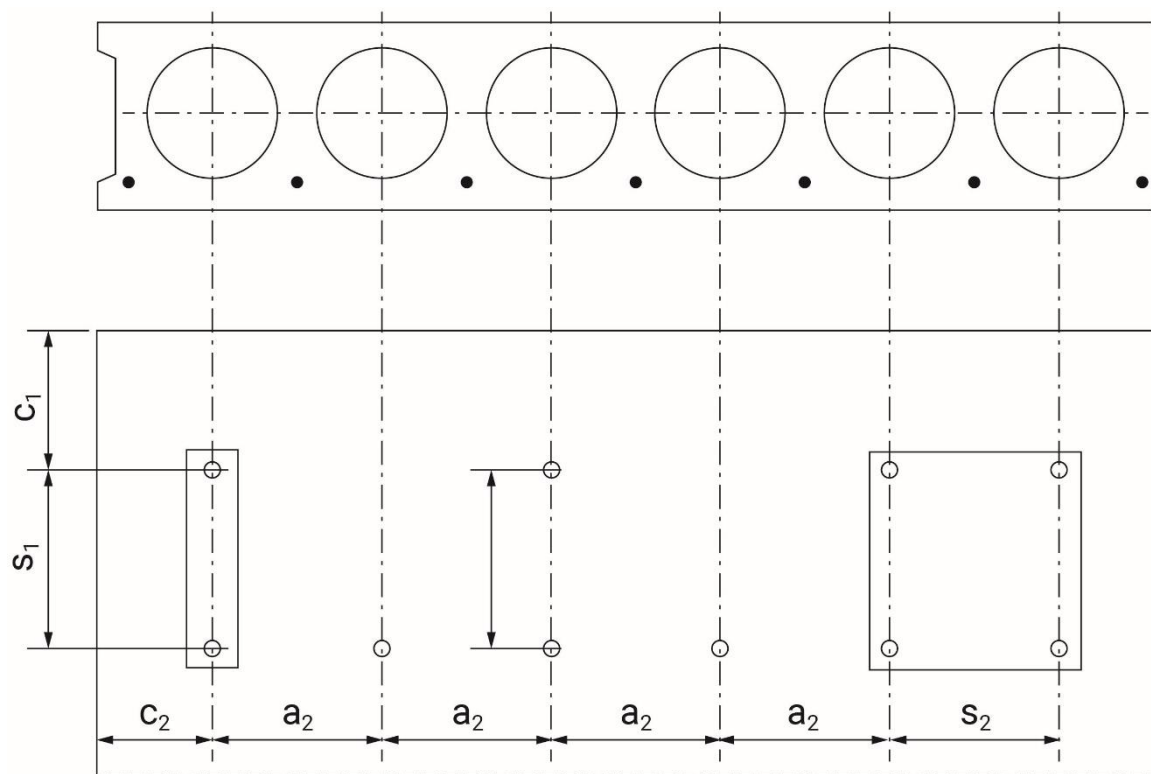


SPIT TAPCON 5 XTREM

Intended use
Installation instructions for anchorages in concrete

Annex B3

Installation parameters for anchorages in precast prestressed hollow core slabs



- c_1, c_2 : Edge distance
- s_1, s_2 : Anchor spacing
- a_1, a_2 : Distance between anchor groups

Table B3: Limiting distances for application in precast prestressed hollow core slabs

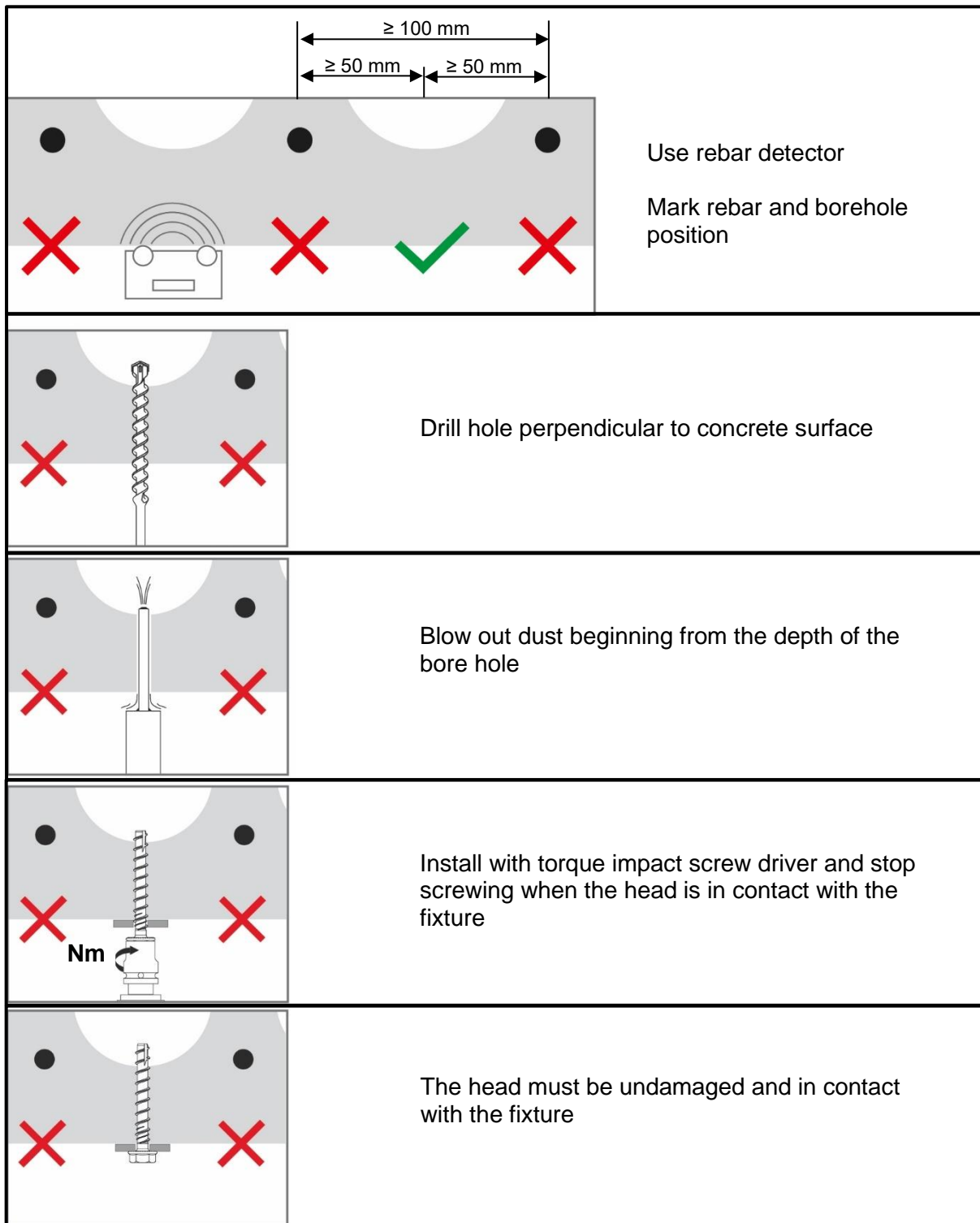
Distances for application in precast prestressed hollow core slabs			
Minimum edge distance	c_{min}	[mm]	≥ 100
Minimum anchor spacing	s_{min}	[mm]	≥ 200
Minimum distance between anchor groups	a_{min}	[mm]	≥ 100
Distance of prestressing steel	l_p	[mm]	≥ 100
Distance between anchor position and prestressing steel	a_p	[mm]	≥ 50

SPIT TAPCON 5 XTREM

Intended use
Installation parameters for anchorages
in precast prestressed hollow slabs

Annex B4

Installation Instructions in prestressed hollow core slabs



SPIT TAPCON 5 XTREM

Intended use

Installation instructions for anchorages in precast prestressed hollow slabs

Annex B5

Table C1: Characteristic values for static and quasi-static loading

Fastener size TAPCON 5 XTREM HFL / DOME / ROD			6	
Nominal embedment depth	h_{nom}		h_{nom1}	h_{nom2}
	[mm]		35	55
Steel failure for tension and shear loading				
Characteristic tension load	$N_{Rk,s}$	[kN]	23,6	
Partial factor tension load	$\gamma_{Ms,N}$	[-]	1,4	
Characteristic shear load	$V_{Rk,s}$	[kN]	3,4	8,5
Partial factor shear load	$\gamma_{Ms,V}$	[-]	1,5	
Ductility factor	k_7	[-]	0,98	
Characteristic bending load	$M^0_{Rk,s}$	[Nm]	22,9	
Pull-out failure				
Characteristic tension load in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	5,0	12,0
Increasing factor for $N_{Rk,p}$	C25/30	ψ_c	[-]	1,10
	C30/37			1,19
	C40/50			1,34
	C50/60			1,47
Characteristic tension load in cracked concrete C20/25	$N_{Rk,p}$	[kN]	3,0	10,0
Increasing factor for $N_{Rk,p}$	C25/30	ψ_c	[-]	1,05
	C30/37			1,09
	C40/50			1,16
	C50/60			1,21
Installation safety factor	γ_{inst}	[-]	1,2	1,2
Concrete cone failure and splitting failure				
Effective embedment depth	h_{ef}	[mm]	27,3	44,3
k-factor	cracked	$k_{cr,N}$	[-]	7,7
	uncracked	$k_{ucr,N}$	[-]	11,0
Concrete cone failure	spacing	$s_{cr,N}$	[mm]	$3 h_{ef}$
	edge distance	$c_{cr,N}$	[mm]	$1,5 h_{ef}$
Splitting failure	Resistance	$N^0_{Rk,sp}$	[kN]	$N_{Rk,p}$
	spacing	$s_{cr,sp}$	[mm]	180
	edge distance	$c_{cr,sp}$	[mm]	90
Installation safety factor	γ_{inst}	[-]	1,2	1,2
Concrete pryout failure				
Factor for pry-out failure	k_8	[-]	1,0	
Installation factor	γ_{inst}	[-]	1,0	
Concrete edge failure				
Effective length in concrete	$l_f = h_{ef}$	[mm]	27,3	44,3
Nominal outer diameter of screw	d_{nom}	[mm]	6	
Installation safety factor	γ_{inst}	[-]	1,0	

SPIT TAPCON 5 XTREM
Performances in concrete
 Characteristic values for static and quasi-static loading
Annex C1

**Table C2: Characteristic values of resistance
in precast prestressed hollow core slabs C45/55 to C50/60**

Fastener size TAPCON 5 XTREM HFL / DOME / ROD			6
Bottom flange thickness	d_b	[mm]	≥ 25
Characteristic resistance	F^0_{Rk}	[kN]	2,5
Spacing and edge distance	S_{cr}	[mm]	200
	C_{cr}	[mm]	100
Installation safety factor	γ_{inst}	[-]	1,2

SPIT TAPCON 5 XTREM

Performances in precast prestressed hollow core slabs
Characteristic values for static and quasi-static loading

Annex C2

Table C3: Fire exposure – characteristic values of resistance in concrete

Fastener size TAPCON 5 XTREM				6	
Nominal embedment depth		h_{nom}		h_{nom1}	h_{nom2}
		[mm]		35	55
Steel failure for tension and shear load					
Characteristic resistance	R30	$N_{Rk,s,fi30}$	[kN]	1,00	1,50
	R60	$N_{Rk,s,fi60}$	[kN]	1,00	1,28
	R90	$N_{Rk,s,fi90}$	[kN]	0,70	0,84
	R120	$N_{Rk,s,fi120}$	[kN]	0,54	0,62
	R30	$V_{Rk,s,fi30}$	[kN]	1,00	1,50
	R60	$V_{Rk,s,fi60}$	[kN]	1,00	1,28
	R90	$V_{Rk,s,fi90}$	[kN]	0,70	0,84
	R120	$V_{Rk,s,fi120}$	[kN]	0,54	0,62
	R30	$M^0_{Rk,s,fi30}$	[kNm]	0,76	1,14
	R60	$M^0_{Rk,s,fi60}$	[kNm]	0,76	0,97
	R90	$M^0_{Rk,s,fi90}$	[kNm]	0,53	0,64
	R120	$M^0_{Rk,s,fi120}$	[kNm]	0,41	0,47
Pull-out failure					
Characteristic resistance	R30-90	$N_{Rk,p,fi}$	[kN]	0,60	1,4
	R120	$N_{Rk,p,fi}$	[kN]	0,50	1,1
Concrete cone failure					
Characteristic resistance	R30-90	$N_{Rk,c,fi}$	[kN]	1,2	2,9
	R120	$N_{Rk,c,fi}$	[kN]	1,0	2,3
Edge distance					
R30 - R120		$C_{cr,N,fi}$	[mm]	$2 \times h_{ef}$	
In case of fire attack from more than one side, the minimum edge distance shall be ≥ 300 mm.					
Spacing distance					
R30 - R120		$S_{cr,N,fi}$	[mm]	$4 \times h_{ef}$	
Pryout failure					
R30 - R120		k_8	[-]	1,0	1,0
Characteristic resistance	R30-90	$V_{Rk,cp,fi}$	[kN]	1,2	2,9
	R120	$V_{Rk,cp,fi}$	[kN]	1,0	2,3
The anchorage depth has to be increased for wet concrete by at least 30 mm compared to the given value.					

SPIT TAPCON 5 XTREM
Fire exposure in concrete
 Characteristic values of resistance
Annex C3

Table C4: Fire exposure – characteristic values of resistance in hollow concrete slab

Fastener size TAPCON 5 XTREM				6
Bottom flange thickness	d_b	[mm]	≥ 25	
Steel failure for tension and shear load				
Characteristic resistance	R30	$F_{Rk,s,fi30}$	[kN]	0,72
	R60	$F_{Rk,s,fi60}$	[kN]	0,62
	R90	$F_{Rk,s,fi90}$	[kN]	0,53
	R120	$F_{Rk,s,fi120}$	[kN]	0,48
	R30	$M^0_{Rk,s,fi30}$	[kNm]	0,54
	R60	$M^0_{Rk,s,fi60}$	[kNm]	0,47
	R90	$M^0_{Rk,s,fi90}$	[kNm]	0,40
	R120	$M^0_{Rk,s,fi120}$	[kNm]	0,36
Pull-out failure				
Characteristic resistance	R30-90	$F_{Rk,p,fi}$	[kN]	0,60
	R120	$F_{Rk,p,fi}$	[kN]	0,50
Spacing and distance edge				
Spacing	R30-R120	$S_{cr,N,fi}$	[mm]	200
Edge distance	R30-R120	$C_{cr,N,fi}$	[mm]	100

SPIT TAPCON 5 XTREM
Fire exposure in precast prestressed hollow core slabs
Characteristic values of resistance
Annex C4