

Public-law institution jointly founded by the
federal states and the Federation

**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-23/0760
of 8 June 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

TOGE concrete screw TSM high performance LT

Product family
to which the construction product belongs

Fasteners for use in concrete for redundant non-structural
systems

Manufacturer

TOGE Dübel GmbH & Co. KG
Illesheimer Straße 10
90431 Nürnberg
GERMANY

Manufacturing plant

TOGE Dübel GmbH & Co. KG

This European Technical Assessment
contains

17 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 330747-00-0601

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 36(3) of Regulation (EU) No 2024/3110.

Specific Part

Specific Part

1 Technical description of the product

The TOGE concrete screw TSM LT of size 6 mm is an anchor made of stainless steel. 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 characterised by mechanical interlock in the special thread.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable 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 verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor 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 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C4

3.2 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading)	See Annex B2, C1 and C2
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C1 and C2
Characteristic resistance for all load directions and modes of failure for simplified design (for precast pre-stressed hollow core slabs)	See Annex C3
Durability	See Annex B1

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

In accordance with European Assessment Document 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 European Assessment Document

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

Issued in Berlin 8 June 2026 by Deutsches Institut für Bautechnik

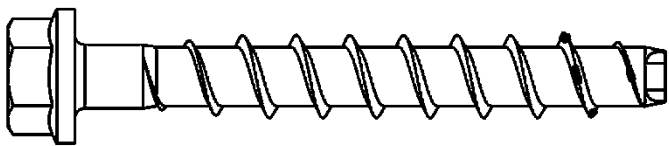
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Tempel

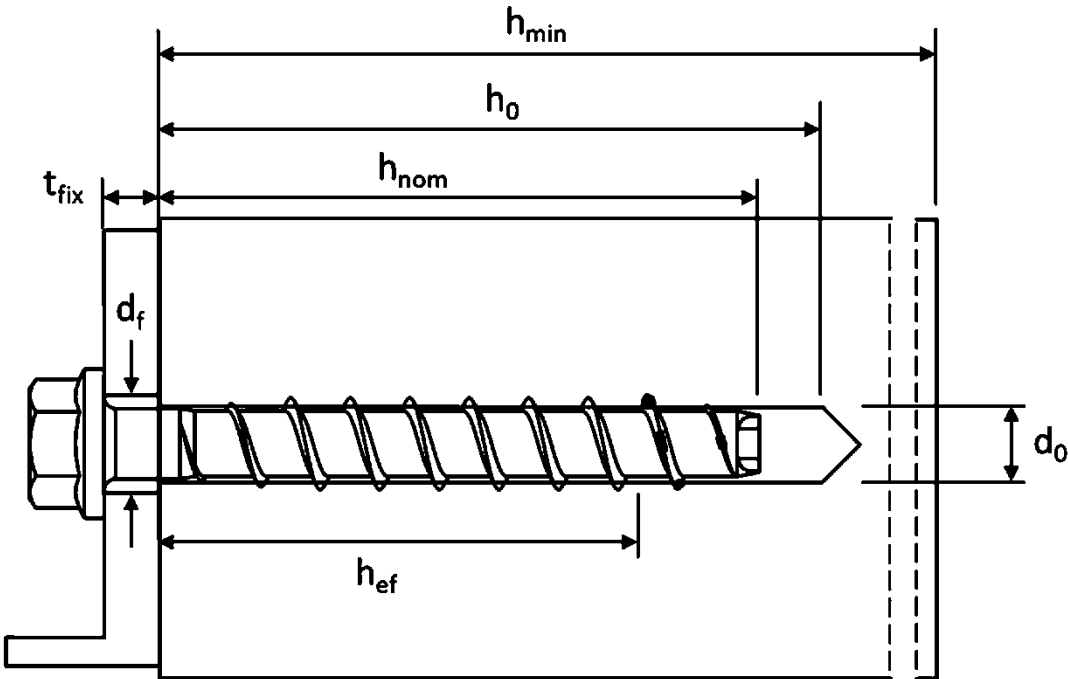
Product in installed condition

TOGE concrete screw TSM high performance LT (TSM 6)

- stainless steel A4
- high corrosion resistant steel HCR



e.g. TSM high performance LT, with hexagon head and fixture

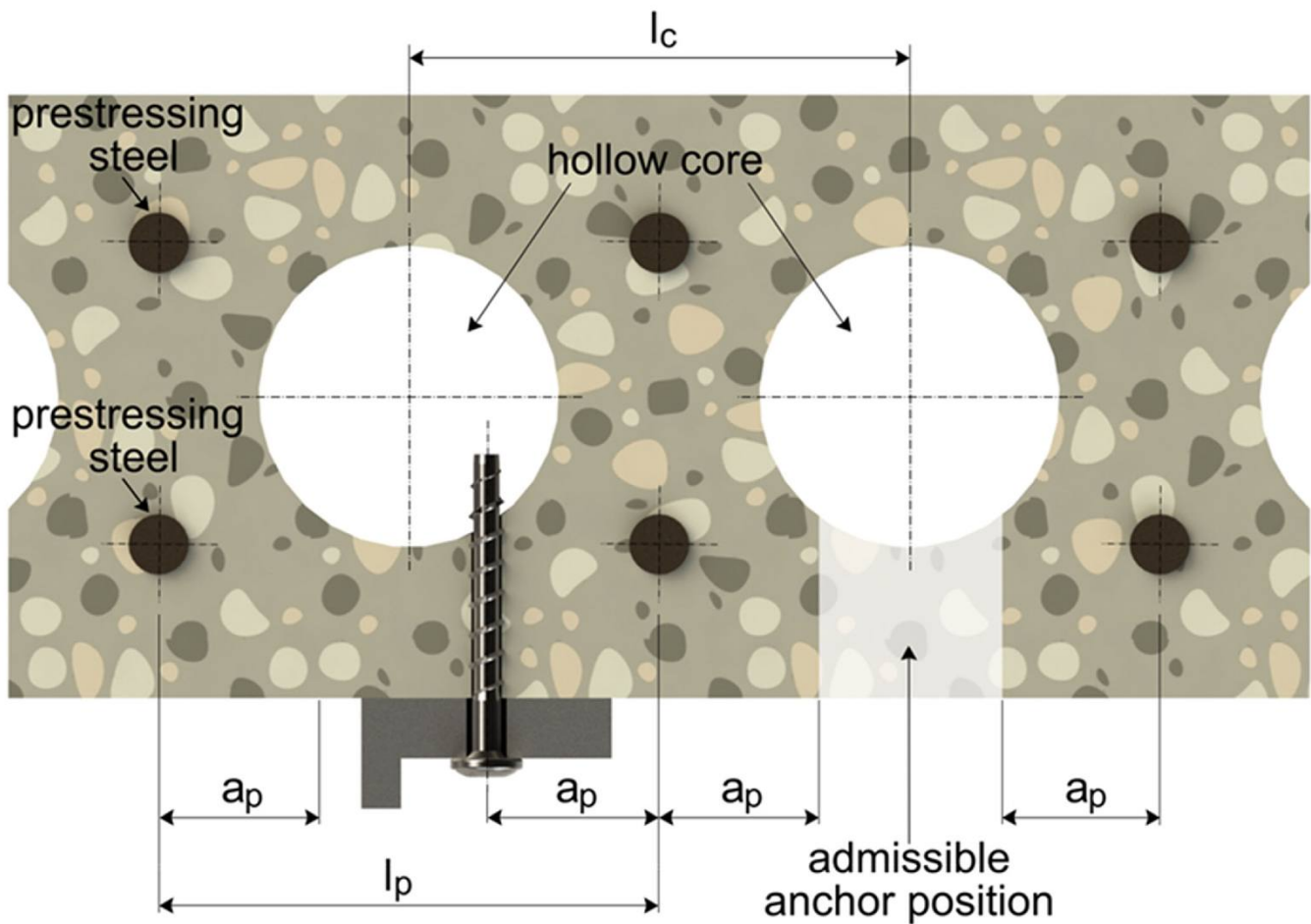


d_0 = nominal drill hole diameter
 t_{fix} = thickness of fixture
 d_f = clearance hole diameter

h_{min} = minimum thickness of member
 h_{nom} = nominal embedment depth
 h_0 = drill hole depth
 h_{ef} = effective embedment depth

TOGE concrete screw TSM high performance LT		Annex A1
Product description Product in installed condition		

Installed condition in precast pre-stressed hollow core slabs



Important ratio: $\frac{w}{e} \leq 4,2$

w = core width

e = web thickness

l_c = core distance ≥ 100 mm

l_p = prestressing steel distance ≥ 100 mm

a_p = distance between anchor position and prestressing steel ≥ 50 mm

TOGE concrete screw TSM high performance LT

Product description

Installed condition in precast pre-stressed hollow core slabs

Annex A2

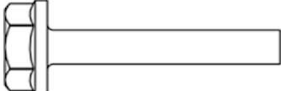
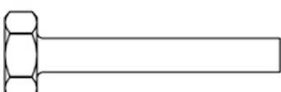
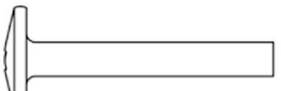
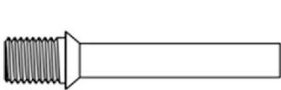
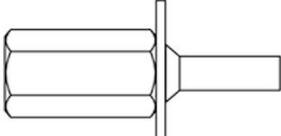
		Configuration with metric connection thread and hexagon drive e.g. TSM 8x105 M10 SW7, Typ ST
		Configuration with washer and hexagon head e.g. TSM 8x80 SW13 VZ 40, Typ S
		Configuration with washer, hexagon head and TORX drive e.g. TSM 8x80 SW13, Typ S
		Configuration with hexagon head e.g. TSM 8x80 SW13 OS, Typ S
		Configuration with countersunk head and TORX drive e.g. TSM 8x80 C VZ 40, Typ SK
		Configuration with pan head and TORX drive e.g. TSM 8x80 P VZ 40, Typ P
		Configuration with large pan head and TORX drive e.g. TSM 8x80 LP VZ 40, Typ P
		Configuration with countersunk head and connection thread e.g. TSM 6x55 AG M8, Typ ST-6
		Configuration with hexagon drive and connection thread e.g. TSM 6x55 M8 SW10, Typ ST-6
		Configuration with internal thread and hexagon drive e.g. TSM 6x55 IM M8/10, Typ I
TOGE concrete screw TSM high performance LT		
Product description Screw types		Annex A3

Table 1: Material

Part	Product name	Material		
all types	TSM high performance LT A4	1.4401; 1.4404; 1.4571; 1.4578		
	TSM high performance LT HCR	1.4529		
Part	Product name	Nominal characteristic steel		Rupture elongation A_5 [%]
		Yield strength f_{yk} [N/mm ²]	Ultimate strength f_{uk} [N/mm ²]	
all types	TSM high performance LT A4	560	700	≤ 8
	TSM high performance LT HCR			

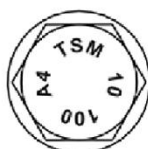
Table 2: Dimensions

TSM concrete screw size			6
Nominal embedment depth	h_{nom}		h_{nom1}
	[mm]		35
Screw length	$\leq L$	[mm]	500
Core diameter	d_k	[mm]	5,1
Threaded outer diameter	d_s	[mm]	7,6

Marking:

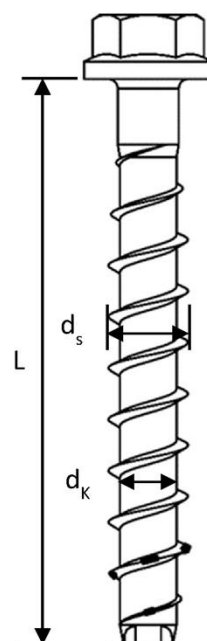
TSM high performance LT A4

Screw type: TSM
Screw size: 10
Screw length: 100
Material: A4



TSM high performance LT HCR

Screw type: TSM
Screw size: 10
Screw length: 100
Material: HCR



TOGE concrete screw TSM high performance LT

Product description

Material, dimensions and markings

Annex A4

Specification of Intended use

Anchorage subject to:

- Static and quasi static load
- Only for redundant non-structural systems according to EN 1992-4:2018
- Fire exposure (not for using in pre-stressed hollow core slabs)

Base materials:

- Compacted reinforced and unreinforced concrete without fibers according to EN 206:2013
- Strength classes C20/25 to C50/60 according to EN 206:2013
- Cracked and uncracked concrete.
- In pre-stressed hollow core slabs of strength classes C30/37 to C50/60

Use conditions (Environmental conditions):

- Concrete screws subject to dry internal conditions: all screw types
- For all other conditions corresponding to corrosion resistance classes CRC according to EN 1993-1-4:2006 + A1:2015:
Stainless steel according to Annex A4, screw with marking A4: CRC III
High corrosion resistant steel according to Annex A4, screw with marking HCR: CRC V

Design:

- Anchorages are to be 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.).
- Anchorages are designed according to EN 1992-4:2018 and EOTA Technical Report TR 055, Edition February 2018.
- The design for shear load according to EN 1992-4:2018, Section 6.2.2 applies for all specified diameters of clearance hole d_f in the fixture in Annex B2, Table 3.

Installation:

- Hammer drilling or hollow drilling.
- 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.

TOGE concrete screw TSM high performance LT

Intended use
Specification

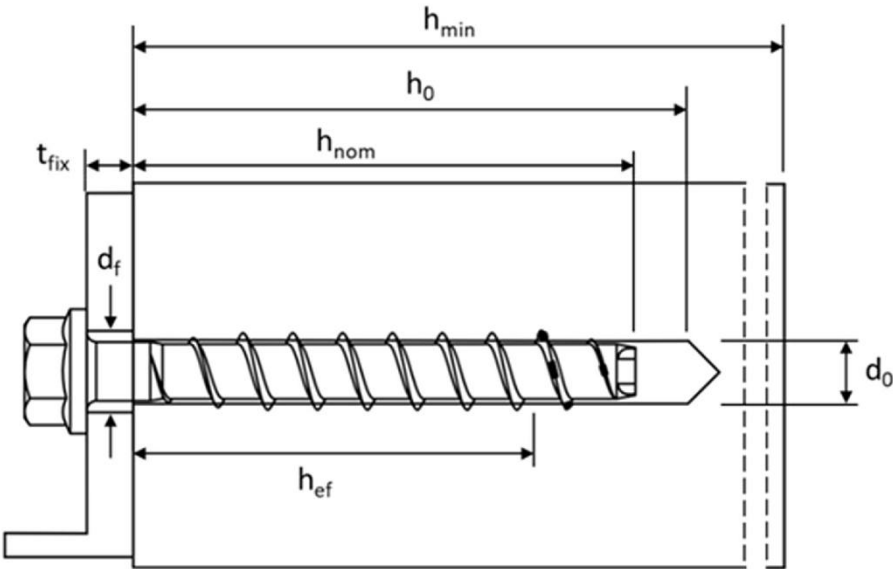
Annex B1

Table 3: Installation parameters

TSM concrete screw size			6
Nominal embedment depth	h_{nom}		h_{nom1}
	[mm]		35
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
Clearance hole diameter	$d_f \leq$	[mm]	8
Installation torque (version with connection thread)	$T_{inst} \leq$	[Nm]	10
Recommended impact screwdriver	[Nm]	Max. torque according to manufacturer's instructions	
		160	

Table 4: Minimum thickness of member, minimum edge distance and minimum spacing

TSM concrete screw size			6
Nominal embedment depth	h_{nom}		h_{nom1}
	[mm]		35
Minimum thickness of member	h_{min}	[mm]	80
Minimum edge distance	c_{min}	[mm]	35
Minimum spacing	s_{min}	[mm]	35



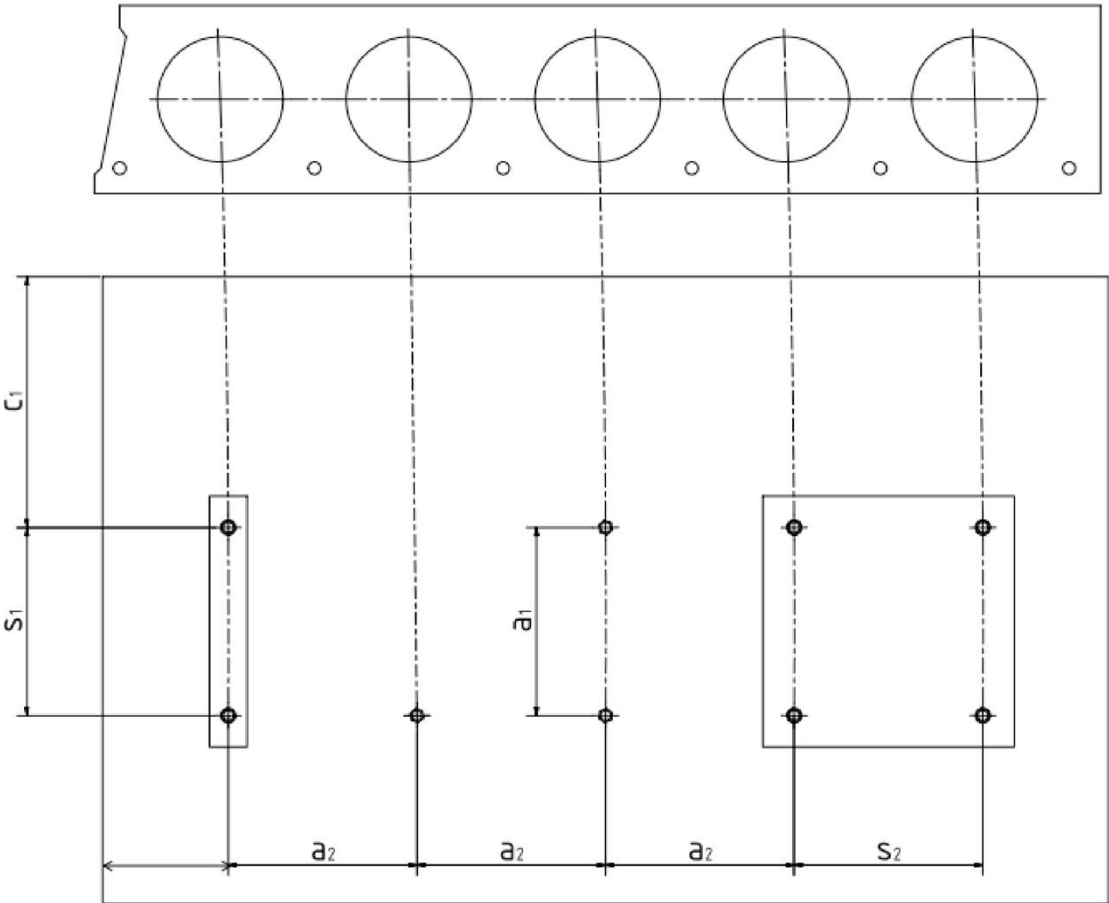
TOGE concrete screw TSM high performance LT

Intended use

Installation parameters, minimum thickness of member, minimum edge distance and minimum spacing

Annex B2

Installation parameters for anchorages in precast pre-stressed hollow core slabs

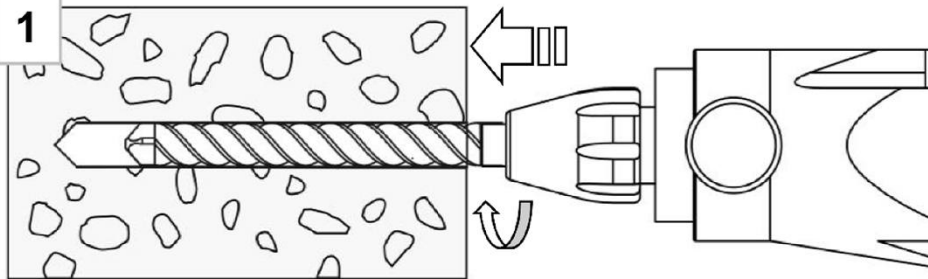


- c_1, c_2 = edge distance
- s_1, s_2 = anchor spacing
- a_1, a_2 = distance between anchor groups
- c_{min} = minimum edge distance ≥ 100 mm
- s_{min} = minimum anchor spacing ≥ 100 mm
- a_{min} = minimum distance between anchor groups ≥ 100 mm

TOGE concrete screw TSM high performance LT		Annex B3
Intended use Installation parameters for anchorages in precast pre-stressed hollow slabs		

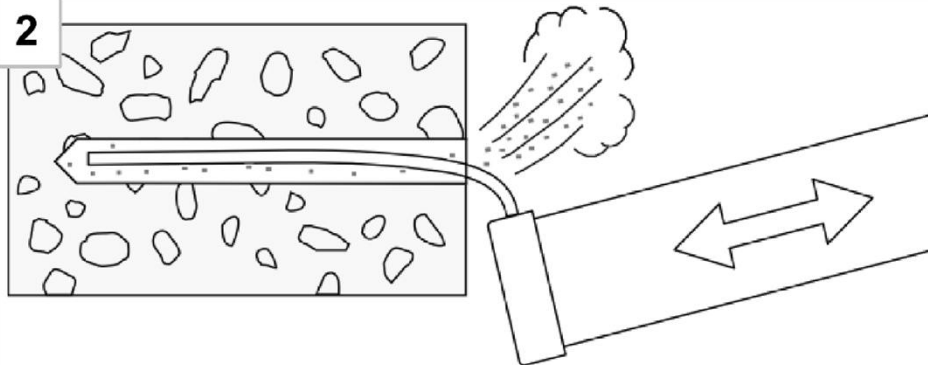
Installation Instructions

1



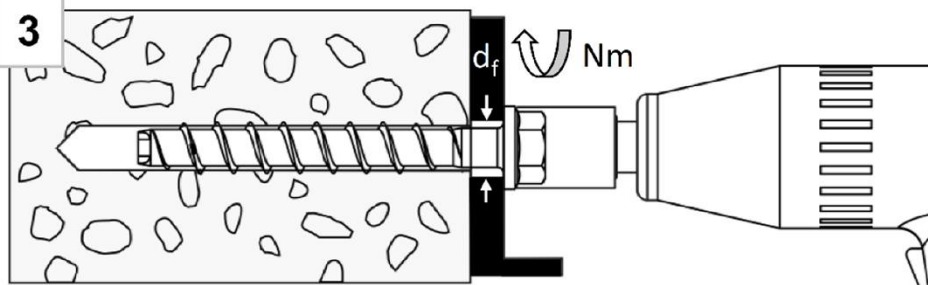
Create hammer drilled or hollow drilled borehole

2



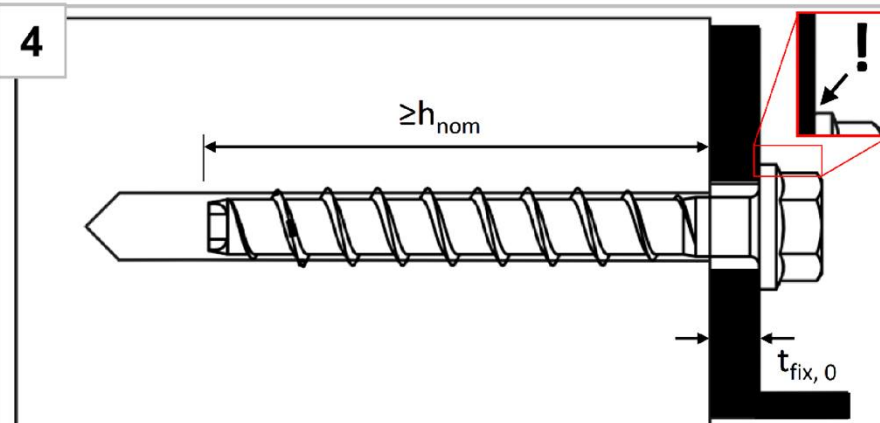
Remove drill dust by vacuuming or blowing out

3



Install with impact screwdriver or wrench

4



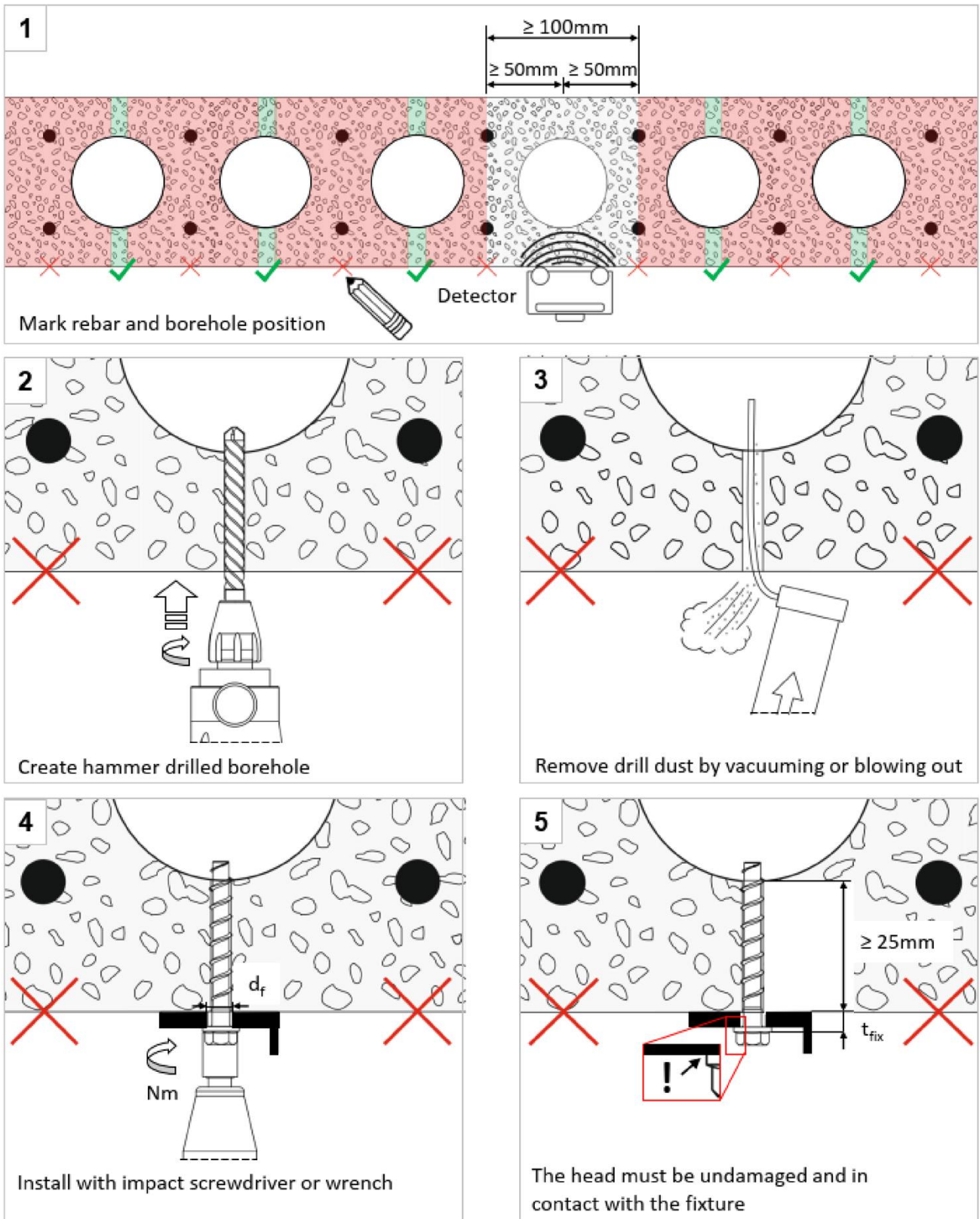
The head must be undamaged and in contact with the fixture

TOGE concrete screw TSM high performance LT

Intended use
Installation instructions

Annex B4

Installation Instructions for anchorages in pre-stressed hollow slabs



TOGE concrete screw TSM high performance LT

Intended use

Installation instructions for anchorages in pre-pressed hollow slabs

Annex B5

Table 5: Characteristic values for static and quasi-static loading

TSM concrete screw size			6	
Nominal embedment depth	h_{nom}	h_{nom1}		
	[mm]	35		
Steel failure for tension and shear loading				
Characteristic resistance	$N_{Rk,s}$	[kN]	14,0	
Partial factor	$\gamma_{Ms,N}$	[-]	1,5	
Characteristic resistance	$V_{Rk,s}$	[kN]	7,0	
Partial factor	$\gamma_{Ms,V}$	[-]	1,25	
Ductility factor	k_7	[-]	0,8	
Characteristic bending load	$M^0_{Rk,s}$	[Nm]	10,9	
Pull-out failure in uncracked concrete				
Characteristic resistance in C20/25	$N_{Rk,p}$	[kN]	3,5	
Increasing factor for $N_{Rk,p} = N_{Rk,p (C20/25)} \cdot \psi_c$ with $\psi_c = \left(\frac{f_{ck}}{20}\right)^m$	C25/30	m	[-]	0,35
	C30/37			0,35
	C40/50			0,35
	C50/60			0,35
Pull-out failure in cracked concrete				
Characteristic resistance in C20/25	$N_{Rk,p}$	[kN]	2,5	
Increasing factor for $N_{Rk,p} = N_{Rk,p (C20/25)} \cdot \psi_c$ with $\psi_c = \left(\frac{f_{ck}}{20}\right)^m$	C25/30	m	[-]	0,41
	C30/37			0,41
	C40/50			0,40
	C50/60			0,41
Installation factor	γ_{inst}	[-]	1,0	

TOGE concrete screw TSM high performance LT

Performances

Characteristic values for static and quasi-static loading

Annex C1

Table 6: Characteristic values for static and quasi-static loading, continuation

TSM concrete screw size			6
Nominal embedment depth	h_{nom}		h_{nom1}
	[mm]		35
Concrete failure: Splitting failure, concrete cone failure and pry-out failure			
Effective embedment depth		h_{ef} [mm]	25
k-factor	cracked	k_{cr} [-]	7,7
	uncracked	k_{ucr} [-]	11,0
Concrete cone failure	spacing	$s_{cr,N}$ [mm]	$3 \times h_{ef}$
	edge distance	$c_{cr,N}$ [mm]	$1,5 \times h_{ef}$
Splitting failure	resistance	$N_{Rk,Sp}^0$ [kN]	3,5
	spacing	$s_{cr,Sp}$ [mm]	120
	edge distance	$c_{cr,Sp}$ [mm]	60
Factor for pry-out failure		k_8 [-]	1,0
Installation factor		γ_{inst} [-]	1,0
Concrete edge failure			
Effective length in concrete		$l_f = h_{nom}$ [mm]	35
Nominal outer diameter of screw		d_{nom} [mm]	6

TOGE concrete screw TSM high performance LT

Performances

Characteristic values for static and quasi-static loading continuation

Annex C2

Table 7: Characteristic values of resistance in precast pre-stressed hollow core slabs C30/37 to C50/60

TSM concrete screw size			6		
Bottom flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 35
Characteristic resistance	F_{Rk}^0	[kN]	1	2	3
Edge distance	c_{cr}	[mm]	100		
Spacing	s_{cr}	[mm]	200		
Installation factor	γ_{inst}	[-]	1,0		

Table 8: Limiting distances for application in precast pre-stressed hollow core slabs

Distances for application in precast pre-stressed hollow core slabs			
Minimum edge distance	c_{min}	[mm]	≥ 100
Minimum anchor spacing	s_{min}	[mm]	≥ 100
Minimum distance between anchor groups	a_{min}	[mm]	≥ 100
Core distance	l_c	[mm]	≥ 100
Prestressing steel distance	l_p	[mm]	≥ 100
Distance between anchor position and prestressing steel	a_p	[mm]	≥ 50

TOGE concrete screw TSM high performance LT

Performances

Characteristic values and limiting distances in precast pre-stressed hollow core slabs

Annex C3

Table 9: Fire exposure – characteristic values of resistance ¹⁾

TSM concrete screw size				6
Nominal embedment depth		h_{nom}	h_{nom1}	
		[mm]	35	
Steel failure for tension and shear load ($F_{Rk,s,fi} = N_{Rk,s,fi} = V_{Rk,s,fi}$)				
Characteristic resistance	R30	$F_{Rk,s,fi30}$	[kN]	0,9
	R60	$F_{Rk,s,fi60}$	[kN]	0,8
	R90	$F_{Rk,s,fi90}$	[kN]	0,6
	R120	$F_{Rk,s,fi120}$	[kN]	0,4
	R30	$M^0_{Rk,s,fi30}$	[Nm]	0,7
	R60	$M^0_{Rk,s,fi60}$	[Nm]	0,6
	R90	$M^0_{Rk,s,fi90}$	[Nm]	0,5
	R120	$M^0_{Rk,s,fi120}$	[Nm]	0,3
Pull-out failure				
Characteristic resistance	R30-R90	$N_{Rk,p,fi}$	[kN]	0,6
	R120	$N_{Rk,p,fi}$	[kN]	0,5
Concrete cone failure				
Characteristic resistance	R30-R90	$N^0_{Rk,c,fi}$	[kN]	0,5
	R120	$N^0_{Rk,c,fi}$	[kN]	0,4
Edge distance				
R30 - R120		$C_{cr,fi}$	[mm]	$2 \times h_{ef}$
In case of fire attack from more than one side, the minimum edge distance shall be $\geq 300\text{mm}$.				
Spacing				
R30 - R120		$S_{cr,fi}$	[mm]	$4 \times h_{ef}$
The anchorage depth has to be increased for wet concrete by at least 30 mm compared to the given value.				

¹⁾ Not for application in pre-stressed hollow core slabs

TOGE concrete screw TSM high performance LT

Performances

Characteristic values under fire exposure

Annex C4