HOBSON MTFHDSE10

Z/P SLEEVE ANCHOR

ETA 08/0058 (01/04/2018 - 01/04/2013)

Option 7

† Suitable for use in Non-Cracked Concrete only.

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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

European Technical Assessment ETA-08/00058

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:	TECFI DSE ANCHOR
Product family to which the above construction product belongs:	Mechanical fasteners for use in non-cracked concrete
Manufacturer:	Tecfi SpA Strada Statale Appia, Km. 193 IT-81050 Pastorano (CE) Tel. +39 823 88 33 38 Fax +39 823 88 32 60
Manufacturing plant:	Tecfi SpA Strada Statale Appia, Km. 193 IT-81050 Pastorano (CE)
This European Technical Assessment contains:	15 pages including 3 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 330232-00-0601; Mechanical fasteners for use in concrete
This version replaces:	The previous ETA with the same number issued on 2013-04-01 and expiry on 2018-04-01

II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product
The TECFI DSE ANCHOR in the range from M6 to M12 is an anchor made of steel, with one expansion cone, which is placed into a drilled hole and anchored by torque-controlled expansion. The anchor is supplied with different head types designated DSE01, DSE07, DSE10 and DSE11.

For the installed anchor see drawings given in the Annex A1 to A4.

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 of this European Technical Assessment.

The anchors are intended to be used with embedment depth given in Annex A2, Table A1. For the installed anchor see Figure given in Annex A1. The intended use specifications of the product are detailed in the Annex B1.

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 B1 to B3

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

3.1 Characteristics of product

Mechanical resistance and stability (BWR 1):
The essential characteristics are detailed in the Annex from C1 to C4.

Safety in case of fire (BWR 2):
The essential characteristics are detailed in the Annex C3.

Safety in use (BWR4):
For basic requirement Safety in use the same criteria are valid for Basic Requirement Mechanical resistance and stability (BWR1).

Sustainable use of natural resources (BWR7)
No performance determined

Other Basic Requirements are not relevant.

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 use in the sense of the Basic Works Requirements 1 and 4 has been made in accordance with EAD 330232-00-0601; Mechanical fasteners for use in concrete.

4 Attestation and verification of constancy of performance (AVCP)

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.

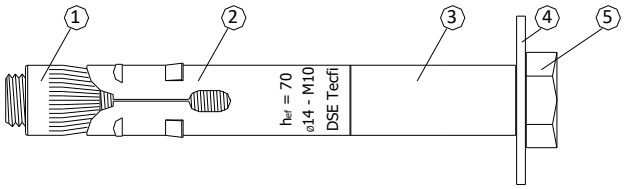
5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

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 by

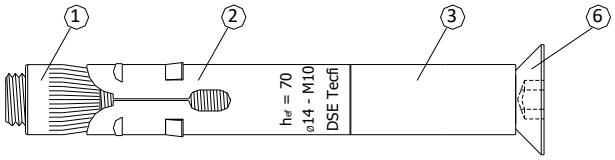
Thomas Bruun
Managing Director, ETA-Danmark

Anchor type DSE01 with hexagon head screw



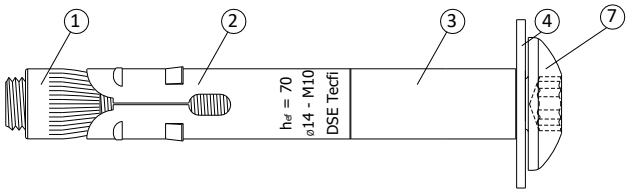
DSE01 (M6-M12)

Anchor type DSE07 with flat countersunk head screw



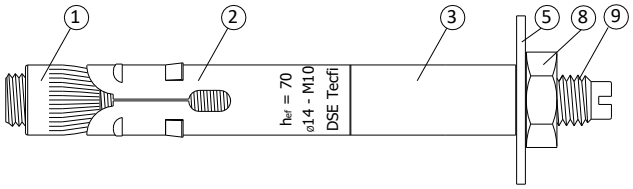
DSE07 (M8-M10)

Anchor type DSE10 with mushroom head screw

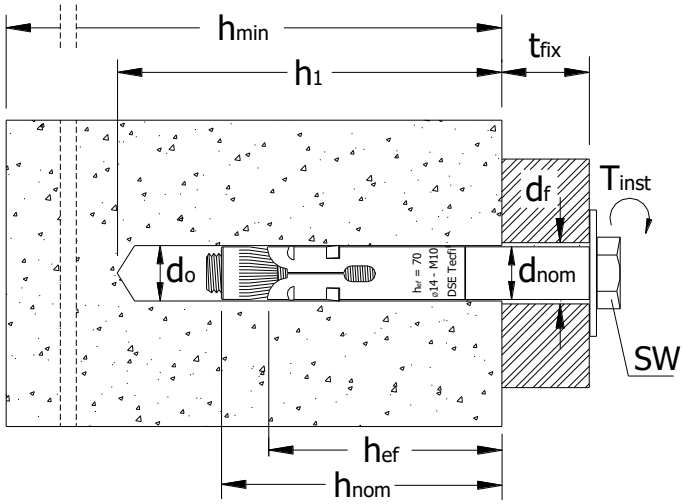


DSE10 (M8-M10)

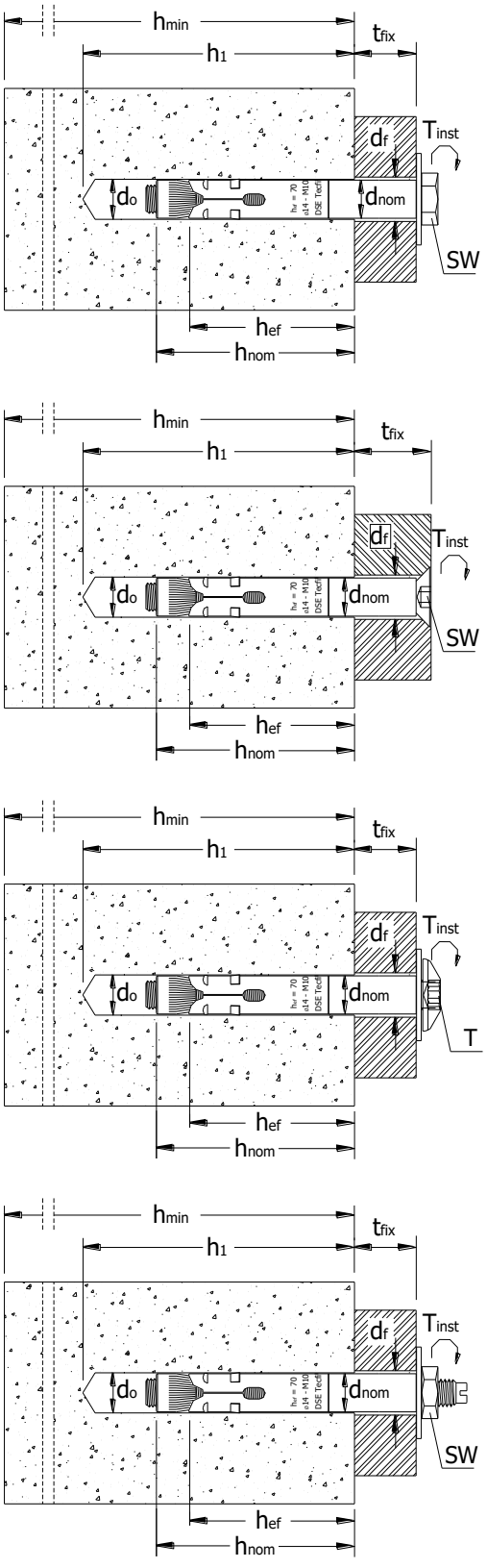
Anchor type DSE11 with threaded stud



DSE11 (M6-M10)

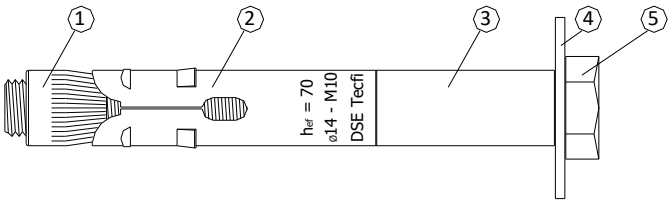


TECFI DSE ANCHOR	**Annex A1** of European Technical Assessment ETA-08/0058
Product and intended use	



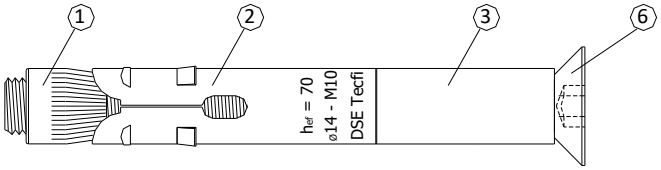
TECFI DSE ANCHOR	Annex A2 of European Technical Assessment ETA-08/0058
Product and intended use	

Anchor type DSE01 with hexagon head screw



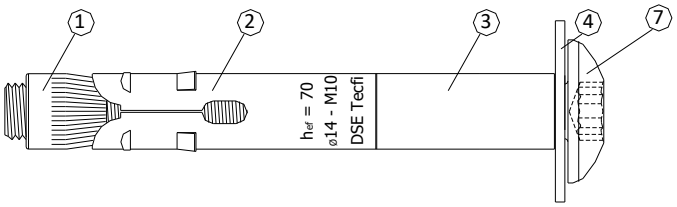
DSE01 (M6-M12)

Anchor type DSE07 with flat countersunk head screw



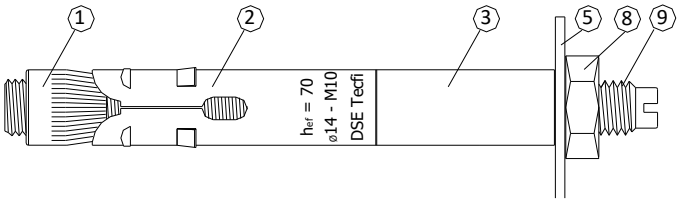
DSE07 (M8-M10)

Anchor type DSE10 with mushroom head screw



DSE10 (M8-M10)

Anchor type DSE11 with threaded stud



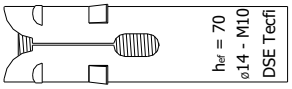
DSE11 (M6-M10)

Marking

Expansion sleeve :

- Identifiyng mark of producer
- Trade name
- Anchor diameter
- Screw diameter
- Effective embedment depth

e.g : h_{ef} = 70
DSE - Tecfi
ϕ14 - M10



TECFI DSE ANCHOR	**Annex A3** of European Technical Assessment ETA-08/0058
Anchors and dimensions	

Table A1: Anchor dimensions

Denomination		DSE[1] M6/Φ8	DSE[2] M8/Φ10	DSE[3] M10/Φ12	DSE[4] M10/Φ14	DSE[5] M12/Φ16
Nominal drill hole diameter	d_o = [mm]	8	10	12	14	16
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8.45	10.45	12.50	14.50	16.50
Effective anchorage depth	h_{ef} = [mm]	45	60	60	70	90
Depth of drill hole	h_1 = [mm]	70	90	90	95	125
Diameter of clearance in the fixture	d_f = [mm]	9	12	14	16	18
Overall anchor embedment depth in the concrete	h_{nom} = [mm]	55	70	70	80	100
Required torque moment	T_{inst} = [Nm]	20	30	50	60	100
Outside diameter of anchor	d_{nom} = [mm]	8	10	12	14	16
Minimum thickness of concrete member	h_{min} = [mm]	100	120	120	140	180
Minimum edge distance	c_{min} = [mm]	67.5	90	90	105	135
Minimum spacing	s_{min} = [mm]	90	120	120	140	180

[1] Valid for head types DSE01-DSE11
[2] Valid for head types DSE01-DSE07-DSE10-DSE11
[3] Valid for head types DSE01-DSE07-DSE10-DSE11
[4] Valid for head types DSE01-DSE07-DSE10-DSE11
[5] Valid for head type DSE01

Table A2: Anchor materials

Part	Description	Materials galvanised ≥ 5µm according to ISO 4042
1	Conical nut	Steel, EN 10263-2
2	Expansion sleeve	Steel, EN 10130
3	Distance sleeve	Steel, EN 10263-2
4	Washer	Steel, EN 10025, ISO 7093-1
5	Hexagonal head screw	Steel, Strength class 8.8, EN ISO 898-1
6	Flat Countersunk head screw	Steel, Strength class 8.8, EN ISO 898-1
7	Mushroom head screw	Steel, Strength class 8.8, EN ISO 898-1
8	Hexagonal nut	Steel, Strength class 8, EN ISO 898-2
9	Threaded stud	Steel, Strength class 8.8, EN SO 898-1

Use:
The anchors are intended to be used for anchorages for which requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 and 4 of Regulation 305/2011 (EU) shall be fulfilled and failure of anchorages made with these products would compromise the stability of the works, cause risk to human life and/or lead to considerable economic consequences.

Anchors subject to:
- Static and quasi-static loads: sizes M6, M8, M10 and M12.

Base materials:
- Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum to C50/60 at maximum according to EN 206-1.
- Non-cracked concrete: sizes M6, M8, M10, M12 and M16.

Temperature range:
The anchors may be used in the following temperature range:
- Normal internal temperature ranges

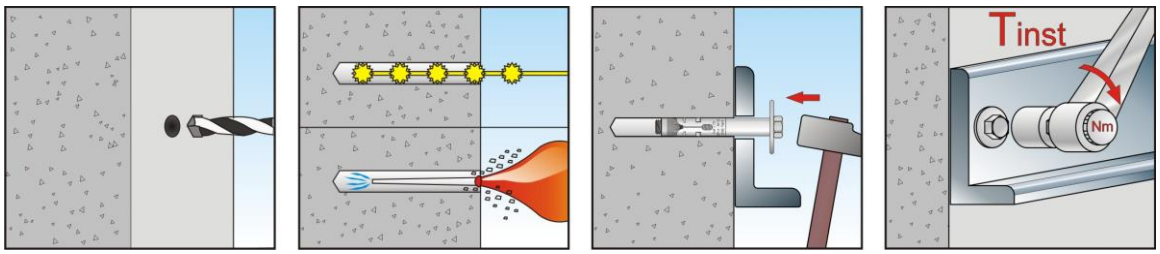
Use conditions (Environmental conditions):
- The anchors may be used in structures subject to dry internal conditions only.

Installation:
- The anchors may be installed in:
- Dry concrete: sizes M6, M8, M10, M12 and M16.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the
- appropriate tools.
- Check before placing the anchor to ensure that the strength class of the concrete, in which the anchor is to be placed, is identical with the values which the characteristic loads apply.
- Check of concrete being well compacted, e.g. without significant voids.
- Edge distances and spacings not less than the specified values without minus tolerances.
- Positioning of the drill holes without damaging the reinforcement.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of load application.
- Hole shall be clear.
- Anchor installation such that the effective anchorage depth is complied with; the compliance is ensured if the thickness of the fixture is not larger than the maximum values given in Annex B2.
- Anchor expansion by impact on the wedge of the anchor; the anchor is properly set if the wedge is fully dropped in.

Proposed design methods:
- 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 loads to be transmitted. 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 under static and quasi-static loads are designed in accordance with EOTA TR 055 or FprEN 1992-4:2016

Table B1: Installation data

	Denomination		DSE M6/Φ8	DSE M8/Φ10	DSE M10/Φ12	DSE M10/Φ14	DSE M12/Φ16
DSE 01	Thickness of fixture	$t_{fix,min}$ = [mm]	5	10	10	5	10
		$t_{fix,max}$ = [mm]	65	70	80	70	50
	Wrench size	SW = [mm]	10	13	17	17	19
DSE 07	Thickness of fixture	$t_{fix,min}$ = [mm]		15	10	5	
		$t_{fix,max}$ = [mm]		55	60	45	
	Size of hexagonal socket	SW = [mm]		5	6	6	
DSE 10	Thickness of fixture	$t_{fix,min}$ = [mm]		10	10	10	
		$t_{fix,max}$ = [mm]		50	50	50	
	6 lobe recess	T		40	40	40	
DSE 11	Thickness of fixture	$t_{fix,min}$ = [mm]	25	10	30	20	
		$t_{fix,max}$ = [mm]	25	70	80	40	
	Wrench size		10	13	17	17	



a. Make a drill hole with a hammer drilling.

b. Clean the drill hole with a brush.

c. Put the anchor into the drill hole.

d. Apply the required installation torque.

TECFI DSE ANCHOR	**Annex B2** of European Technical Assessment ETA-08/0058
Installation parameters	

Table C1: Characteristic strength value and safety coefficients for tension loads design method A

Type of anchor / Size			DSE[3] M6/Φ8	DSE[4] M8/Φ10	DSE[5] M10/Φ12	DSE[6] M10/Φ14	DSE[7] M12/Φ16
Steel Failure							
Characteristic Resistance	$N_{Rk,s}$	[kN]	16	29	46	46	67
Partial safety factor	γ_{Ms} [1]		1.5				
Pull-out failure							
Effective embedment depth	h_{ef}	[mm]	45	60	60	70	90
Characteristic Resistance in non-cracked concrete C20/25	$N_{Rk,p}$	[kN]	3	12	16	25	30
Increasing factors for $N_{Rk,p}$ for non-cracked concrete	Ψ_c	C30/37	1.22				
		C40/50	1.41				
		C50/60	1.55				
Partial safety factor	γ_{Mp} [1]		1.8 [2]				
Concrete cone failure and splitting failure							
Effective embedment depth	h_{ef}	[mm]	45	60	60	70	90
Spacing	$s_{cr,N}$	[mm]	180	240	240	280	360
Edge distance	$c_{cr,N}$	[mm]	135	180	180	210	270
Spacing (splitting)	$s_{cr,sp}$	[mm]	180	240	240	280	360
Edge distance (splitting)	$c_{cr,sp}$	[mm]	135	180	180	210	270

[1] In absence of other national regulations.
[2] The partial safety factor γ_2=1 is included.
[3] Valid for head types DSE01-DSE11
[4] Valid for head types DSE01-DSE07-DSE10-DSE11
[5] Valid for head types DSE01-DSE07-DSE10-DSE11
[6] Valid for head types DSE01-DSE07-DSE10-DSE11
[7] Valid for head type DSE01

Table C2: Displacements under tension loads

Type of anchor / Size			DSE[1] M6/Φ8	DSE[2] M8/Φ10	DSE[3] M10/Φ12	DSE[4] M10/Φ14	DSE[5] M12/Φ16
Service tension load in non-cracked concrete C20/25	N	[kN]	1.4	4.8	6.3	9.9	11.9
Displacements	δ_{N0}	[mm]	0.14	0.32	0.40	0.62	0.70
	$\delta_{N\infty}$	[mm]	-	-	1.95	-	-

[1] Valid for head types DSE01-DSE11
[2] Valid for head types DSE01-DSE07-DSE10-DSE11
[3] Valid for head types DSE01-DSE07-DSE10-DSE11
[4] Valid for head types DSE01-DSE07-DSE10-DSE11
[5] Valid for head type DSE01

Table C3: Characteristic strength value and safety coefficients for shear loads design method A

Type of anchor / Size			DSE[3] M6/Φ8	DSE[4] M8/Φ10	DSE[5] M10/Φ12	DSE[6] M10/Φ14	DSE[7] M12/Φ16
Steel Failure without level arm							
Characteristic Resistance	$V_{Rk,s}$	[kN]	8	14.6	23.2	23.2	33.7
Partial safety factor	γ_{Ms} [1]		1.25				
Steel Failure with level arm							
Characteristic bending moment	$M^0_{Rk,s}$	[Nm]	12	30	60	60	105
Partial safety factor	γ_{Ms} [1]		1.25				
Concrete pryout failure							
Effective embedment depth	h_{ef}	[mm]	45	60	60	70	90
Factor in equation (5.6) of the guideline Annex C, Section 5.2.3.3	K		1	2	2	2	2
Partial safety factor	γ_{Mp} [1]		1.5 [2]				
Concrete edge failure							
Effective anchorage legth	l_{ef}	[mm]	45	60	60	70	90
Effective external diameter anchor	d_{nom}	[mm]	8	10	12	14	16
Partial safety factor	γ_{Mc} [1]		1.5 [2]				

[1] In absence of other national regulations
[2] The partial safety factor γ_2 is included
[3] Valid for head types DSE01-DSE11
[4] Valid for head types DSE01-DSE07-DSE10-DSE11
[5] Valid for head types DSE01-DSE07-DSE10-DSE11
[6] Valid for head types DSE01-DSE07-DSE10-DSE11
[7] Valid for head type DSE01

Table C4 : Displacements under shear loads

Type of anchor / Size			DSE[2] M6/Φ8	DSE[3] M8/Φ10	DSE[4] M10/Φ12	DSE[5] M10/Φ14	DSE[6] M12/Φ16
Service shear load in cracked and uncracked concrete C20/25	$V^{(1)}$	[kN]	7.7	12.3	21.0	23.3	52.5
Displacements	δ_{N0}	[mm]	2.4	2.6	2.5	3.0	4.0
	$\delta_{N\infty}$	[mm]	3.6	3.9	3.8	4.5	6.0

[1] The load V is evaluated according to point 6.1.2.2.8 ETAG001 – part 1
[2] Valid for head types DSE01-DSE11
[3] Valid for head types DSE01-DSE07-DSE10-DSE11
[4] Valid for head types DSE01-DSE07-DSE10-DSE11
[5] Valid for head types DSE01-DSE07-DSE10-DSE11
[6] Valid for head type DSE01

Table C5: Resistance to fire

ESSENTIAL CHARACTERISTICS	PERFORMANCE
Resistance to fire	No Performance assessed

Table C6: Reaction to fire

ESSENTIAL CHARACTERISTICS	PERFORMANCE
Reaction to fire	The metal parts of metal anchors are assumed to satisfy the requirements for Class A1 of the characteristic reaction to fire, in accordance with the provisions of EC Decision 96/603/EC (as amended) without the need for testing

Table C5: Terminology and symbols

TERMINOLOGY AND SYMBOLS	
d	Diameter of anchor bolt or thread diameter
d_0	Drill hole diameter
d_{fix}	Diameter of clearance hole in the fixture
h_{ef}	Effective anchorage depth
h_1	Depth of the drilling hole
h_{min}	Minimum thickness of concrete member
T_{inst}	Torque moment to installation
t_{fix}	Thickness to be fixed
S_{min}	Minimum allowable spacing
C_{min}	Minimum allowable edge distance
$S_{cr,sp}$	Spacing for ensuring the transmission of the characteristic tensile resistance of a single anchor without spacing and edge effects in case of splitting failure
$C_{cr,sp}$	Edge distance for ensuring the transmission of the characteristic tensile resistance of a single anchor without spacing and edge effects in case of splitting failure
$\tau_{Rk,ucr}$	Characteristic bond resistance in un-cracked concrete class C20/25
$\tau_{Rk,cr}$	Characteristic bond resistance in cracked concrete class C20/25
γ_2	Partial safety factors for installation
$\psi_{c,ucr}$	Increasing factor for un-cracked concrete
$\psi_{c,cr}$	Increasing factor for cracked concrete
k	Factor for concrete edge failure
F	Service load in un-cracked (ucr) or cracked concrete (cr)
δ_0	Short term displacement under service load in un-cracked (uncr) or cracked concrete (cr)
δ_∞	Long term displacement under service load in un-cracked (uncr) or cracked concrete (cr)
seis	Seismic action
NPD	No declared performance