

Centre Scientifique et
Technique du
Bâtiment

84 avenue Jean Jaurès
CHAMPS-SUR-MARNE
F-77447 Marne-la-Vallée Cedex 2

Tél. : (33) 01 64 68 82 82
Fax : (33) 01 60 05 70 37

**European Technical
Assessment**

**ETA-23/0084
of 31/03/2023**

English translation prepared by CSTB - Original version in French language

General Part

Technical Assessment Body
issuing the European Technical
Assessment:

Centre Scientifique et Technique du Bâtiment (CSTB)

Trade name of the construction
product:

FIXDEX

Product family to which the
construction product belongs:

Torque-controlled expansion anchor, made of galvanised steel, for use
in concrete: sizes M10, M12 and M16.

Manufacturer:

Hebei Goodfix Industrial co., Ltd
Mid of Guangfu Road Youngnian County Handan City,
Hebei Province,
China

Manufacturing plant:

Hebei Goodfix Plant

This European Technical
Assessment contains:

13 pages including 10 pages of 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 330232-01-0601 "Mechanical fasteners for use in concrete"

This version replaces:

-

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. 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.

Specific Part

1.1 Technical description of the product

The FIXDEX anchor is a torque-controlled expansion anchor made of galvanised steel which is placed into a drilled hole and anchored by torque controlled expansion.

The product description is given in Annexes A.

1.2 Specification of the intended use

Information on the intended use and the requirements for the performance assessment are given in Annex B.

The verifications and assessment methods on which the European Technical Assessment is based lead to the assumption of a working life of the product 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.

Performance of the product

1.3 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading)	See Annex C1
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C2
Displacements	See Annex C3
Characteristic resistance and displacements for seismic performance categories C1	No performance determined
Characteristic resistance and displacements for seismic performance categories C2	No performance determined

1.4 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance determined

1.5 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances contained in this European technical approval, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

1.6 Safety in use (BWR 4)

For Basic requirement Safety in use the same criteria are valid as for Basic Requirement Mechanical resistance and stability.

1.7 Protection against noise (BWR 5)

Not relevant.

1.8 Energy economy and heat retention (BWR 6)

Not relevant.

1.9 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

1.10 General aspects relating to fitness for use

Durability and Serviceability are only ensured if the specifications of intended use according to Annex B1 are kept.

Assessment and verification of constancy of performance (AVCP)

According to the Decision 96/582/EC of the European Commission¹, as amended, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or Class	System
Metal anchors for use in concrete	For fixing and/or supporting to concrete, structural elements (which contributes to the stability of the works) or heavy units	—	1

Technical details necessary for the implementation of the AVCP system

The technical details necessary for the implementation of the system for the assessment and verification of constancy of performance are laid down in the control plan (confidential part of this European Technical Assessment) deposited at Centre Scientifique et Technique du Bâtiment (CSTB).

The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of supporting systems for issuing the certificate of conformity CE based on the control plan.

Issued in Marne La Vallée on 31/03/2023 by

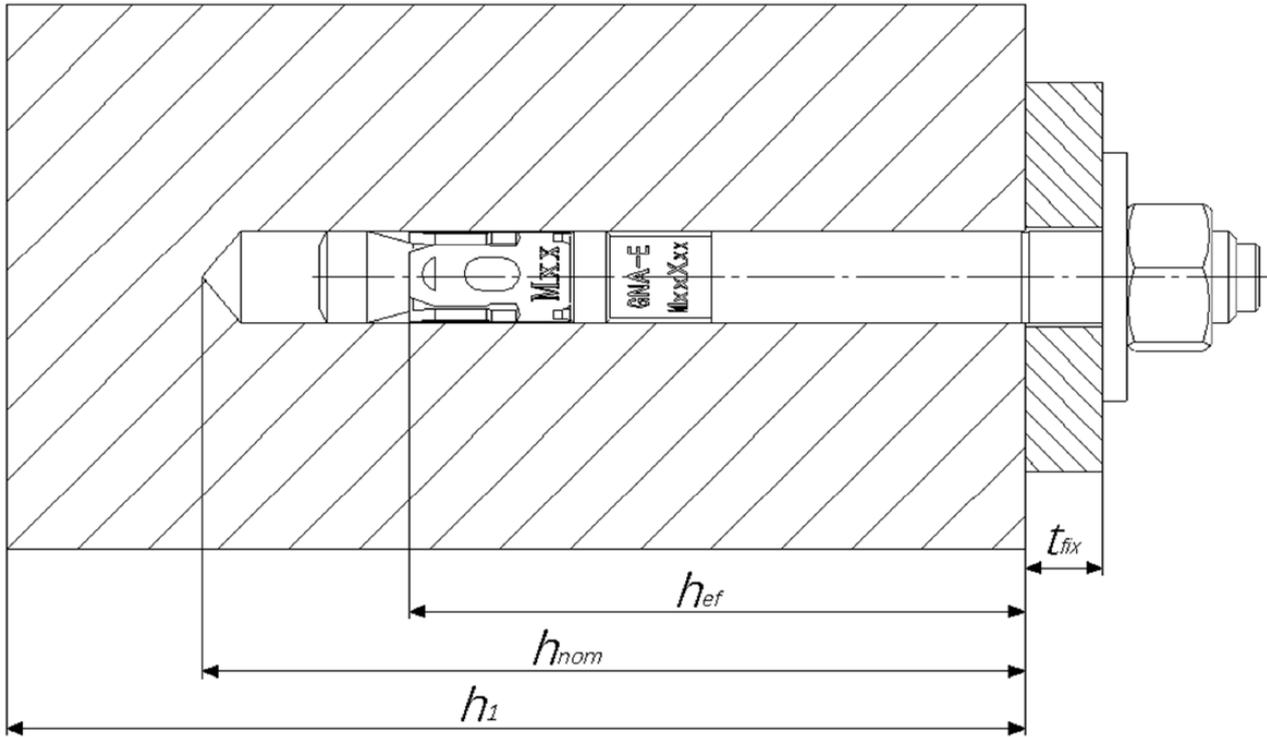
The original French version is signed

La cheffe de division, Anca CRONOPOL

¹ Official Journal of the European Communities L 254 of 08.10.1996

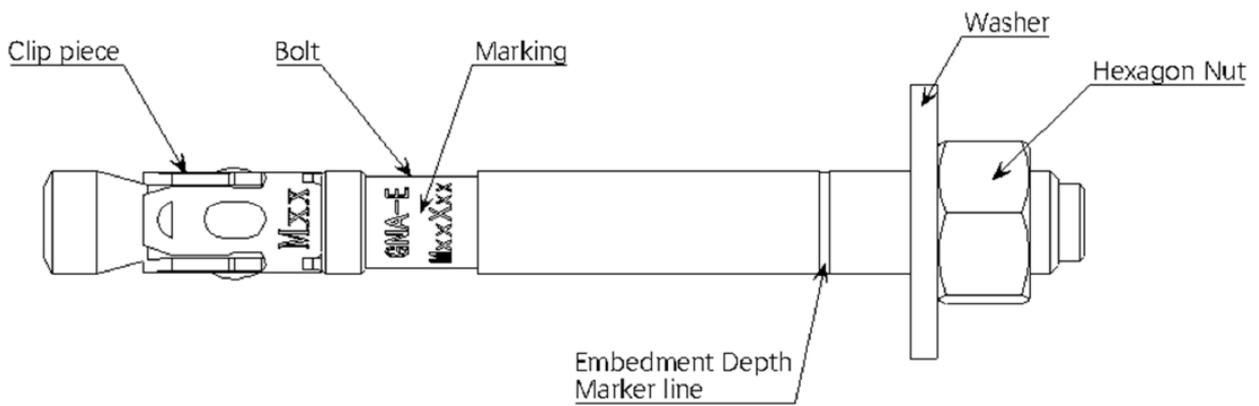
Installed condition

Figure A1: Anchor after installation



Product description

Figure A2: Torque controlled expansion anchor FIXDEX



FIXDEX

Product description
 Installed condition and product description

Annex A1

Product description

Figure A3: FIXDEX M10

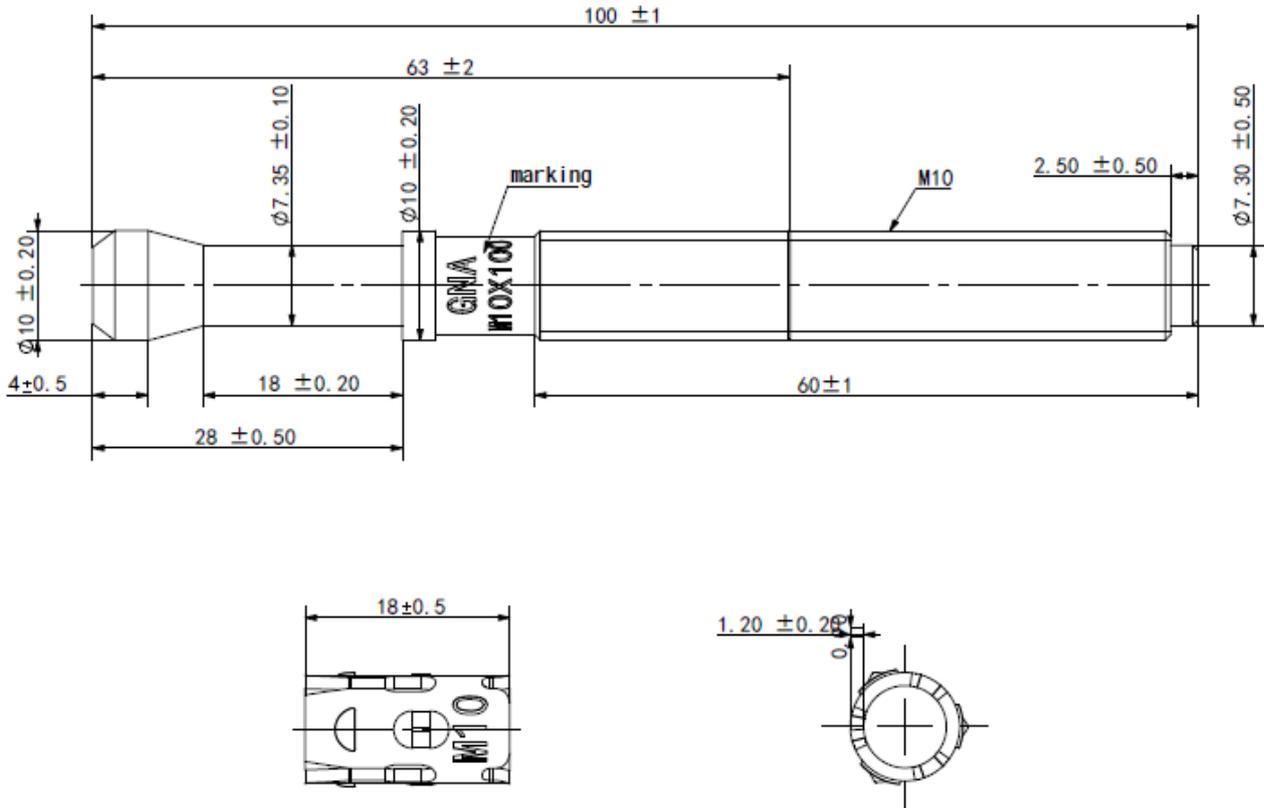
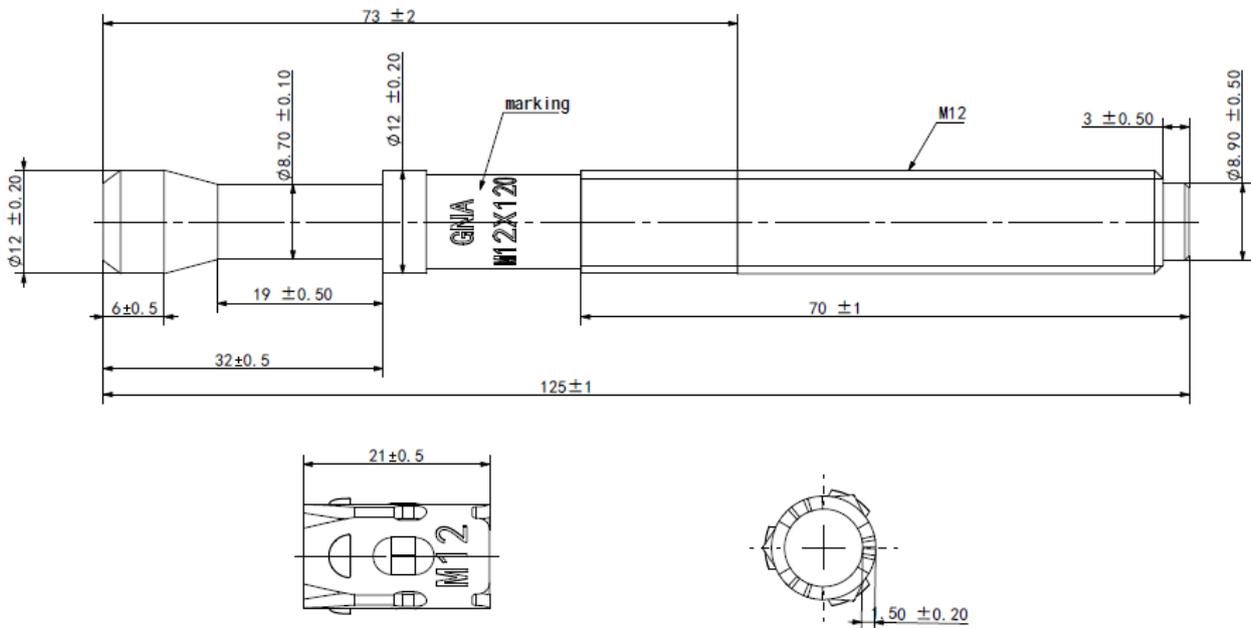


Figure A4: FIXDEX M12



FIXDEX

Product description
 Anchor geometry

Annex A2

Figure A5: FIXDEX M16

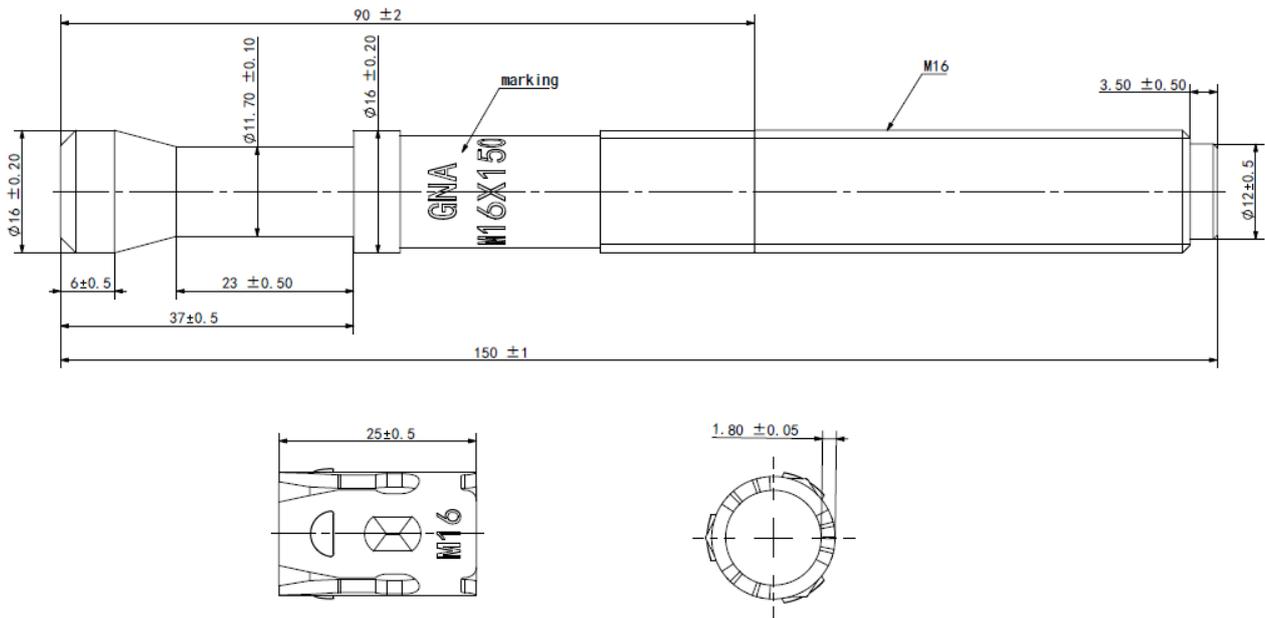


Table A1: Fastener dimensions

Fastener size		FIXDEX		
		M10	M12	M16
Width across hexagon nut	SW [mm]	17	19	24
Length of fastener	L [mm]	70-150	80-200	90-250

FIXDEX

Product description
 Anchor geometry

Annex A3

Table A2: Materials

Designation	Material
Anchor body	Carbon steel, $f_{uk} \geq 760\text{N/mm}^2$, $f_{yk} \geq 448\text{N/mm}$ electroplated zinc coated $\geq 5\mu\text{m}$, elongation at failure $A_5 \leq 8\%$
Hexagonal nut	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$
Washer	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$
Expansion sleeve	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$
Distance sleeve	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$

FIXDEX

Product description
Materials

Annex A4

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loading: all sizes.

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206:2013+ A1:2016.
- Strength classes C20/25 to C50/60 according to EN 206:2013+A1:2016.
- Uncracked concrete.

Use conditions (Environmental conditions):

- FIXDEX anchors made of electroplated carbon steel:
Structures subject to dry internal conditions.

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 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 under static or quasi-static loading are designed in accordance with EN 1992-4
- Anchorages shall be positioned outside of critical regions (e.g. plastic hinges) of the concrete structure.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The anchor may only be set once.
- Drilling technique: Hammer Drilling
- Cleaning the hole of drilling dust.
- In case of aborted hole, drilling of new hole at a minimum distance of twice the depth of the aborted hole, or smaller distance provided the aborted drill hole is filled with high strength mortar and no shear or oblique tension loads in the direction of aborted hole.

FIXDEX

Intended use
Specifications

Annex B1

Table B1: Installation parameters FIXDEX

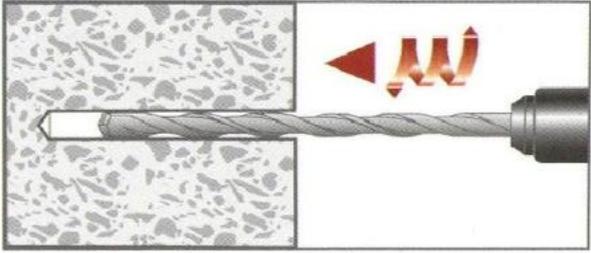
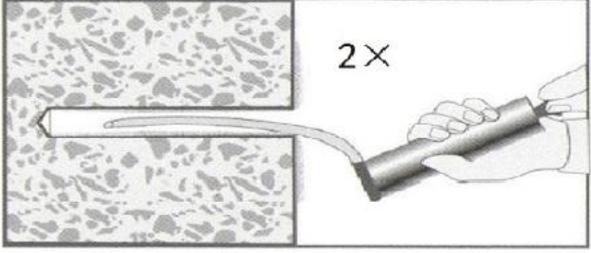
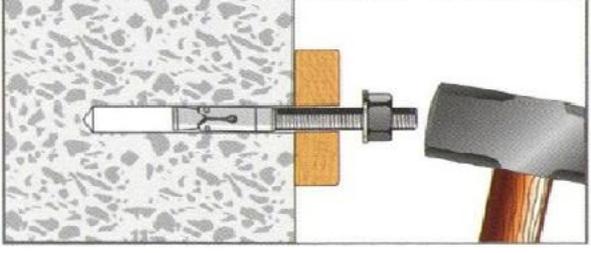
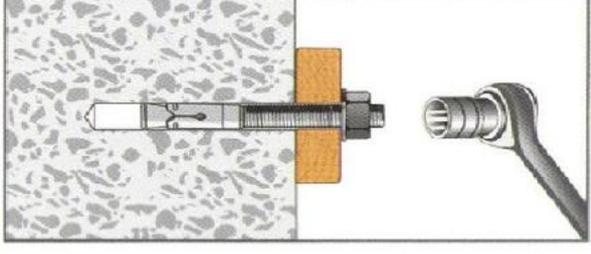
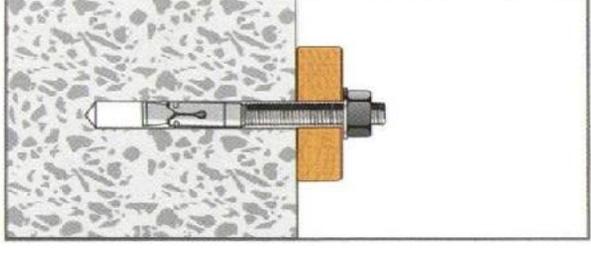
FIXDEX	M10	M12	M16
Nominal diameter of drill bit d_0 [mm]	10	12	16
Max. diameter of clearance hole in the fixture d_f [mm]	12	14	18
Fixture thickness t_{fix} [mm]	0-50	0-90	0-120
Effective anchorage depth h_{ef} [mm]	55	63	80
Min. depth of drill hole h_1 [mm]	70	80	100
Min. thickness of concrete member h_{min} [mm]	120	160	175
Installation torque T_{inst} [Nm]	40	60	120
Uncracked concrete			
Minimum edge distance and spacing	s_{min} [mm]	70	200
	c_{min} [mm]	80	160

FIXDEX

Intended use
 Installation parameters

Annex B2

Installation instruction

	<p>1、 Hammer drilling</p>
	<p>2、 Blow borehole until no dust comes out</p>
	<p>3、 Set anchor in the borehole using a hammer</p>
	<p>4、 Tighten the anchor to the required installation torque</p>
	<p>5、 Check installation</p>

FIXDEX

Intended use
Installation instructions

Annex B3

Table C1: Characteristic values of resistance under tension load in case of static and quasi-static loading

Size		M10	M12	M16
Effective anchorage depth	h_{ef} [mm]	55	63	80
Steel failure				
Partial safety factor	$\gamma_{Ms,N}$ [-]	2,0		
Characteristic resistance	$N_{Rk,s}$ [kN]	32,2	45,2	81,7
Pullout failure				
Characteristic resistance in concrete C20/25				
Installation safety factor	γ_{inst} [-]	1,2	1,0	1,2
Uncracked concrete	$N_{Rk,p,uncl}$ [kN]	20	23	42
Characteristic resistance in concrete C20/25				
Increasing factor concrete strength ψ_c	C30/37 [-]	1,13	1,18	1,22
	C40/50 [-]	1,23	1,32	1,41
	C50/60 [-]	1,32	1,44	1,58
Concrete cone and splitting failure				
Installation safety factor	γ_{inst} [-]	1,2	1,0	1,2
Factor	$k_{ucr,N}$ [-]	11,0		
Characteristic resistance	$N^0_{Rk,sp}$ [kN]	$\min(N^0_{Rk,c}; N_{Rk,p})$		
Spacing	$s_{cr,N}$ [mm]	$3 \cdot h_{ef}$		
Edge distance	$c_{cr,N}$ [mm]	$1,5 \cdot h_{ef}$		
Spacing (splitting)	$s_{cr,sp}$ [mm]	180	200	300
Edge distance (splitting)	$c_{cr,sp}$ [mm]	90	100	150

FIXDEX

Performances
 Characteristic resistance under tension load

Annex C1

Table C2: Characteristic values of resistance under shear load in case of static and quasi-static loading

Size			M10	M12	M16
Effective anchorage depth	h_{ef}	[mm]	55	63	80
Steel failure without lever arm					
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,7	1,7	1,7
Ductility factor	k_7	[-]	0,8	0,8	0,8
Characteristic resistance	$V_{Rk,s}$	[kN]	12,1	18,8	46,1
Steel failure with lever arm					
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,7	1,7	1,7
Characteristic resistance	$M^0_{Rk,s}$	[Nm]	89,5	154,7	366,7
Concrete pryout failure					
Pry-out factor	k_8	[-]	2,0	2,0	2,0
Installation safety factor	γ_{inst}	[-]	1,2	1,0	1,2
Concrete edge failure					
Installation safety factor	γ_{inst}	[-]	1,2	1,0	1,2

FIXDEX

Performances
 Characteristic resistance under shear load

Annex C2

Table C3: Displacements under tension load in case of static and quasi-static loading, C20/25 concrete

Size			M10	M12	M16
Tension load in uncracked concrete	N	[kN]	7,9	10,9	16,6
Corresponding displacement	δ_{N0}	[mm]	0,02	0,07	0,09
	$\delta_{N\infty}$	[mm]	1,0	1,0	1,0

Table C4: Displacements under tension load in case of static and quasi-static loading, C50/60 concrete

Size			M10	M12	M16
Tension load in uncracked concrete	N	[kN]	10,4	15,7	26,2
Corresponding displacement	δ_{N0}	[mm]	0,14	0,21	0,32
	$\delta_{N\infty}$	[mm]	1,0	1,0	1,0

Table C5: Displacements under shear load in case of static and quasi-static loading

Size			M10	M12	M16
Shear load in uncracked concrete	V	[kN]	4,0	6,2	15,3
Corresponding displacement	δ_{v0}	[mm]	0,29	0,95	1,27
	$\delta_{v\infty}$	[mm]	0,44	1,43	1,91

FIXDEX

Performances
Displacements

Annex C3