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European Technical Assessment ETA-23/1032

(06.03.2024)

Trade name of the construction product
Product family to which the construction product belongs
Manufacturer

23-0893 Manufacturing plant(s)
This European Technican
Assessment contains

Chemical Anchor EASF, EASF-E, EASF-A

Product Area Code: 33

Bonded fasteners for use in concrete

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This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

23 pages including 19 Annexes which forms an integral part of this assessment Annex may contain confidential information and is/are not included in the European Technical Assessment when that assessment is publicly disseminated

EAD 330499-01-0601 Bonded Fasteners for Use In Concrete

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Technical description of the product

METSAN Endüstriyel Yapıştırıcılar Ticaret A.Ş. has formally submitted a request for a Technical Assessment pertaining to bonded anchors, specifically those designed for non-cracked and cracked concrete, denoted as EASF, EASF-E, EASF-A. The comprehensive evaluation was conducted in adherence to the specifications outlined in EAD 330499-00-0601 [1].

The bonded anchor system comprises a cartridge housing injection mortar, with variants available in EASF, EASF-E, EASF-A, in conjunction with a steel element. The steel component is composed of a commercially available threaded rod, complete with a washer and hexagon nut, falling within the specified range of M8 to M30 or rebars from Ø8 to Ø32.

The installation process involves inserting the steel element into a pre-drilled aperture that has been filled with injection mortar. The structural integrity is achieved through the synergistic bond formed among the metal component, injection mortar, and the surrounding concrete medium.

For a comprehensive visual representation and detailed product description, please consult 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 provisions made in this European Technical Assessment are based on an assumed 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, but are to be regarded only as a means for choosing the products in relation to the expected economically reasonable working life of the works.

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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance for tension loads	See Annex C1, Annex C2, Annex C6
Characteristic resistance for shear loads	See Annex C3, Annex C4, Annex C7
Displacement	See Annex C5, Annex C8
Characteristic resistance for tension loads, seismic actions	See Annex C9, Annex C10

3.2 Hygiene, health and environment (BWR 3)

No performance determined.

3.3 Safety in use (BWR 4)

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

3.4 Sustainable use of natural resources (BWR 7)

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

3.5 General aspects relating to fitness for use

Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are kept.

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

According to the Decision 96/582/EC of the European Commission¹ the system of assessment 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	8) = 8	1

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

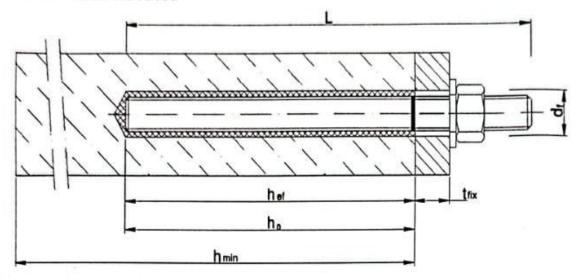
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited by the Technical Assessment Body. The notified product certification body shall visit the factory at least once a year for surveillance of the manufacturer.

Issued in British Board of Agrément BRE Innovation Campus On 06.03.2024

> BY OLIVER BENNETT

Installed condition

Installation threaded rod



d_f = diameter of clearance hole in the fixture

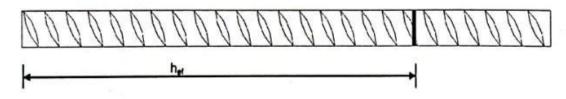
tax = thickness of fixture

her = effective anchorage depth

h₀ = depth of drill hole

h_{min} = minimum thickness of member

Installation rebar



her = effective anchorage depth

Injection system EASF	, EASF-E, EASF-A	Chemical Anchor
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Product description Installed condition Annex A1 of European Technical Assessment ETA-23/1032

Injection system

Cartridge: EASF, EASF-E, EASF-A

Type: Coaxial, 380ml up to 420ml cartridge



Imprint EASF, EASF-E or EASF-A Processing notes for installat

Processing notes for installation, hazard code, curing time, working time depending on temperature

Type: Side-by-side, 345ml up to 360ml



Imprint

EASF, EASF-E or EASF-A

Processing notes for installation, hazard code, curing time, working time depending on temperature

Type: Foil tube, 165ml and 300ml cartridge



Imprint EASF, EASF-E or EASF-A

Processing notes for installation, hazard code, curing time, working time depending on temperature

Static mixer A, B and C





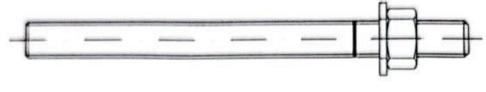


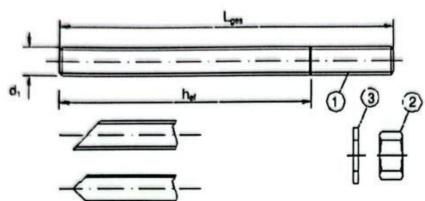
Injection system EASF, EASF-E, EASF-A Chemical Anchor

Product description Injection system Annex A2 of European Technical Assessment ETA-23/1032

Threaded rod

Threaded rod M8, M10, M12, M16, M20, M24, M27, M30 with washer and hexagon nut



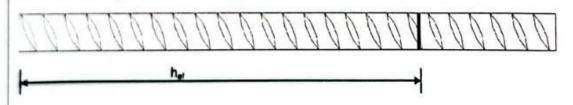


Commercial standard threaded rod with:

- Materials, dimensions, and mechanical properties according to Table A1
- Inspection certificate 3.1 according to EN 10204:2004
- Marking of embedment depth

Reinforcing bar

Reinforcing bar Ø8, Ø10, Ø12, Ø14, Ø16, Ø20, Ø25, Ø28, Ø32



Rebar:

- Minimum value of related rid area f_{R,min} according to EN 1992-1-1:2004+AC:2010
- Rib height of the bar shall be in the rage 0,05°d ≤ h ≤ 0,07°d

(d: Nominal diameter of the bar, h: Rip height of the bar)

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex A3
Product description	of European Technical Assessment
Threaded rod and reinforcing bar	ETA-23/1032

T-11-		Matarial	-
Lable	A1:	Material	5

Part	Designation	Material
	, zinc plated ≥ 5 µm according to EN ISO 4 , hot-dip galvanised ≥ 40 µm according to	042:1999 or EN ISO 1461:2009 and EN ISO 10684:2004+AC:2009
1	Anchor rod	Steel, EN 10087:1998 or EN 10263:2001 Property class 4.6, 4.8, 5.8, 8.8, EN 1993-1-8:2005+AC:2009
2	Hexagon nut, EN ISO 4032:2012	Steel according to EN 10087:1998 or EN 10263:2001 Property class 4 (for class 4.6 or 4.8 rod) EN ISO 898-2:2012 Property class 5 (for class 5.8 rod) EN ISO 898-2:2021 Property class 8 (for class 8.8 rod) EN ISO 898-2:2021
3	Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000 or EN ISO 7094:2000	Steel, zinc plated or hot-dip galvanised
Stain	less steel	
1	Anchor rod	Material 1.4401 / 1.4404 / 1.4571, EN 1088-1:2005 Property class 70 and 80, EN ISO 3506-1:2009
2	Hexagon nut, EN ISO 4032:2012	Material 1.4401 / 1.4404 / 1.4571, EN 1088-1:2005 Property class 70 and 80, EN ISO 3506-2:2009
3	Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000 or EN ISO 7094:2000	Material 1.4401 / 1.4404 / 1.4571, EN 1088-1:2005
High	corrosion resistance steel	
1	Anchor rod	Material 1.4529 / 1.4565 / 1.4547, EN 1088-1:2005 Property class 70 EN ISO 3506-1:2009
2	Hexagon nut, EN ISO 4032:2012	Material 1.4529 / 1.4565 / 1.4547, EN 1088-1:2005 Property class 70 EN ISO 3506-2:2009
3	Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000 or EN ISO 7094:2000	Material 1.4529 / 1.4565 / 1.4547, EN 1088-1:2005
Reba	ırs	
1	Rebar EN 1992-1-1:2004+AC:2010, Annex C	Bars and de-coiled rods class B or C fyk and k according to NDP or NCL of EN 1992-1-1/NA:2013 fuk = ftk = k*fyk

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex A4
Product description	of European Technical Assessment
Table A1: Materials	ETA-23/1032

Specifications of intended use

Anchorages subject to:

- Static and quasi-static loads: M8 to M30 and Ø8 to Ø32
- Seismic load (C1): M8 to M30 and Ø8 to Ø32

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C20/25 to C50/60 according to EN 206-1:2000.
- Cracked and Non-cracked concrete: M8 to M30 and Ø8 to Ø32

Temperature range:

- I: -40°C to +40°C (max long-term temperature + 24 °C max short-term temperature + 40 °C)
- II: -40°C to +80°C (max long-term temperature + 50 °C max short-term temperature + 80 °C)

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (all materials)
- For the other environmental conditions according to EN 1993-1-2:2006+A1 2015 corresponding corrosion resistance classes:
 - Stainless steel A2 according to Annex A 4, Table A1: CRC II
 - Stainless steel A4 according to Annex A 4, Table A1: CRC III
 - High corrosion resistance steel HCR according to Annex A 4, Table A1: CRC V

Design:

- 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 are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Anchorages under static or quasi-static actions are designed in accordance with:
 - EOTA Technical Report TR 029 "Design of bonded anchors", Edition September 2010 or
 - CEN/TS 1992-4:2009

Installation:

- Dry, wet and flooded holes(not sea water)
- Hole drilling by hammer or compressed air drill mode.
- Overhead installation allowed.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex A5
Intended use	of European Technical
Threaded rod and reinforcing bar	Assessment ETA-23/1032

Installation parameters

Table B1A: Installation parameters for threaded rod

Anchor size			M8	M10	M12	M16	M20	M24	M27	M30
Diameter of anchor bolt or thread diameter	d	mm	8	10	12	16	20	24	27	30
Nominal diameter of drill bit	do	mm	10	12	14	18	24	28	32	35
Diameter of clearance hole in the fixture (≤)	dr	mm	9	12	14	18	22	26	30	33
Diameter of steel brush (≥)	d₀	mm	12	14	16	20	26	30	34	37
Minimum effective anchorage depth	het,min	mm	60	60	70	80	90	96	108	120
Maximum effective anchorage depth (20*d)	h _{ef,max}	mm	160	200	240	320	400	480	540	600
Minimum thickness of the concrete member	h _{min}	mm	h _{er} +30mm ≥100mm h _{ef} + 2*d ₀				er er			
Nominal torque moment	Tinst	Nm	10	- 20	40	80	120	160	180	200
Thickness of the fixture	trix	mm	0 < t _{fix} < 1500							
Minimum spacing	Smin	mm	40	50	60	80	100	120	135	150
Minimum edge distance	Cmin	mm	40	50	60	80	100	120	135	150

Table B1B: Installation parameters for reinforcing bar

Anchor size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
Diameter of anchor	d	mm	8	10	12	14	16	20	25	28	32
Nominal diameter of drill bit	d ₀	mm	12	14	16	18	20	24	32	35	40
Diameter of steel brush (≥)	dь	mm	14	16	18	20	22	26	34	37	41
Minimum effective anchorage depth	hef,min	mm	60	60	70	75	80	90	100	112	128
Maximum effective anchorage depth	h _{ef,max}	mm	160	200	240	280	320	400	500	560	640
Minimum thickness of the concrete member	h _{min}	mm	h _{er} +30mm h _{ef} + 2*d₀								
Minimum spacing	Smin	mm	40	50	60	70	80	100	125	140	160
Minimum edge distance	Cmin	mm	40	50	60	70	80	100	125	140	160

Injection system EASF, EASF-E, EASF-A Chemical Anchor

Intended use
Installation parameters

Annex B1
of European Technical
Assessment
ETA-23/1032

Cleaning and setting tools

Cleaning brush (steel brush with steel bristles)



Table B2: Cleaning and setting parameters

Threaded Rod	ed Rod do db db,min		Piston Plug	
mm	mm	mm	mm	#
M8	10	12	10,5	
M10	12	14	12,5	Not required to use
M12	14	16	14,5	piston plug
M16	18	20	18,5	
M20	24	26	24,5	24
M24	28	30	28,5	28
M27	32	34	32,5	32
M30	35	37	35,5	35

Reinforcing Bar	d ₀	d₀	d _{b,min}	Piston Plug
mm	mm	mm	mm	#
Ø8	12	14	12,5	
Ø10	14	16	14,5	_
Ø12	16	18	16,5	Not required to use
Ø14	18	20	18,5	piston plug
Ø16	20	22	20,5	7
Ø20	24	26	24,5	24
Ø25	32	34	32,5	32
Ø28	35	37	35,5	35
Ø32	40	41	40,5	40



Compressed air tool

do between 10mm to 40mm



Hand operated blowing pump

do between 10mm to 20mm

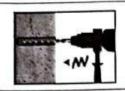


Piston plug for overhead and horizontal installation

do between 24mm to 40mm

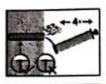
Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex B2
Intended use	of European Technical Assessment
Cleaning and setting tools	ETA-23/1032

Installation instructions

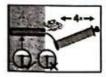


 Drill with hammer drill a hole into the base material to the size and embedment depth required by the selected anchor (Table B1A or Table B1B In case of aborted drill hole: the drill hole shall be filled with mortar.

a.

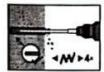


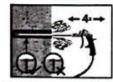


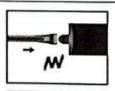


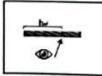
b.













2. Hole cleaning

Attention! Standing water in the bore hole must be removed before cleaning.

- a. Clean the hole with brush and hand pump:
- starting from the drill hole bottom blow the hole at least 4 times using the hand pump.
- using the specified brush, mechanically brush out the hole at least 4 times,
- starting from the drill hole bottom, blow at least 4 times with the hand pump.

The hand-pump can only be used for anchor sizes in non-cracked concrete up to bore hole diameter 20mm or embedment depth up to 240mm.

- b. Cleaning hole with compressed air:
- starting from the drill hole bottom blow the hole at least 4 times by compressed air (6 atm),
- using the specified brush, mechanically brush out the hole at least 4 times.
- blow the hole at least 4 times by compressed air (6 atm),

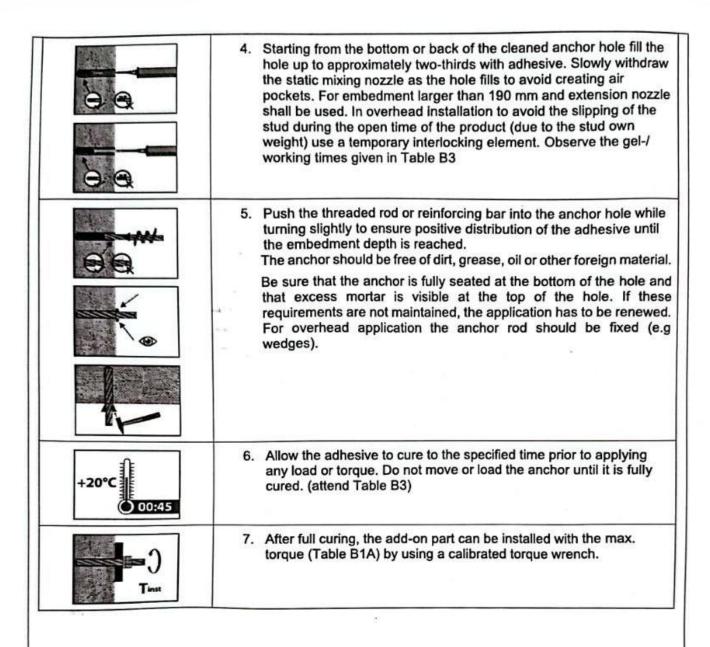
Compressed air (min.6 bar) can be used for all sizes in cracked and non-cracked concrete.

After cleaning, the bore hole has to be protected against recontamination in an appropriate way, until dispensing the mortar in the bore hole. If necessary, the cleaning repeated has to be directly before dispensing the mortar. In-flowing water must not contaminate the bore hole again.

Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. Cut off the foil tube clip before use.

For every working interruption longer than the recommended working time (Table B3) as well as for new cartridges, a new static-mixer shall be used.

Dispense to waste until even colour is obtained (min. 10 cm).



Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex B3
Intended use	of European Technical Assessment
Installation instructions	ETA-23/1032

Curing time

Table B3: Maximum working time and minimum curing time of EASF, EASF-E, EASF-A Chemical Anchor

A CONTRACTOR OF THE PARTY OF TH		ure of		erat	ure of	Maximu	m worki twork	ng time	0.00	ım curing ad or tcu	
Dase	ma	teriai	Ca	uic	ye	EASF-A	EASF	EASF-E	EASF-A	EASF	EASF-E
-20°C	to	-11°C	-20°C	to	-11°C	45	-		960	-	
-10°C	to	-1°C	-10°C	to	-1°C	20			360		77
0°C	to	+4°C	0°C	to	+4°C	6	-		240		
+5°C	to	+9°C	+5°C	to	+9°C	3	10		75	150	
+10°C	to	+19°C	+10°C	to	+19°C	1,5	6	15	45	80	300
+20°C	to	+24°C	+20°C	to	+24°C	1	5 .	10	30	45	150
+25°C	to	+29°C	+25°C	to	+29°C		3	7,5		35	85
+30°C	to	+34°C	+30°C	to	+34°C	-	-	5			50
+35°C	to	+39°C	+35°C	to	+39°C		-	3,5	-	-	40
+40°C	to	+45°C	+40°C	to	+45°C	-	2	2,5	2	-	35

¹⁾ In wet or water filled holes the curing times must be doubled.

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex B4
Intended use	of European Technical Assessment
Curing time	ETA-23/1032

Size		WALL THE L	M8	M10	M12	M16	M20	M24	M27	M30
Steel fallure (1)		ALESS PROPERTY	things to	uni Par		MINUTE:	(TU)	100000	2.18.3	
Steel failure with standard threaded re	od grade 5.8				State of					
Characteristic resistance	NRA	[kN]	18	29	42	78	122	176	228	280
Partial safety factor	YME	[-]				1	,50			
Steel failure with standard threaded re										
Characteristic resistance	Nexa	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	YMs	[-]				1	,50			
Steel failure with standard threaded r					-		T	0.50		
Characteristic resistance	Nexa	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	YMa	[-]	Same	ACCUPATION OF			,40			
Steel failure with standard threaded r					1 404	400	T 204	104		
Characteristic resistance	Nece	[kN]	44	70	101	188	294	424	551	673
Partial safety factor	ум.	[-]		No.			,40			
Steel failure with standard stainless s		-			1 50	1 440	1 470	047	1 224	
Characteristic resistance	Nexa	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	ума	[-]			www.	1	,87			
Steel failure with standard stainless s	Annual Service Control of the Control			1 46		400	1 400	000	1 000	
Characteristic resistance	Nexa	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	YMs	[-]			-	1	,60			
Steel failure with standard high corro						440	1 470	0.17		
Characteristic resistance	Nexa	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γMs	[-]	-	-		1	,87	Different Marie		
Combined pull-out and concrete cone	tallure (work	ing life 50)		SE HOLE	Service Sur	美				000
Characteristic bond resistance in non	-cracked con-	crete C20/25, v	working I	ife 50 yea	ars					
Temperature range I: 40°C/24°C	TRAJUCY,50	[N/mm²]	15	13	12	12	11	10	9,5	8,5
Temperature range II: 80°C/50°C		D. 1/2 20	40		- 40	40	0.0	7.5		
Temperature range II. 60 C/50 C	TRA,uar,50	[N/mm ²]	12	10	10	10	9,0	7,5	6,5	6,5
Characteristic bond resistance in cra	cked concrete	C20/25, work	ing life 5	0 vears				7		20
Temperature range I: 40°C/24°C		[N/mm²]	10	9,0	8,5	8,5	7,5	7,0	6,5	6,0
	1 Rk, cr,50	The state of the	- 0	3,0	0,5	(P. 192)	1,5		0,5	
Temperature range II: 80°C/50°C	TFBL07,50	[N/mm ²]	8,0	7,0	7,0	7,0	6,0	5,5	5,0	5,0
Factors for cracked and non-cracked	concrete C20	125		- 13 - 1			-	-		
	concrete C20		-		C. Lewis		والكالور	4		
Reduction factor for concrete	Ψ ⁰ eus,50	40°C/24°C				0	,77			
	V 804,50	80°C/50°C		0.75		0	,70			
ncreasing factor for concrete	7.	C30/37	W			1	,04		The same	
	Vc.	C40/50	100			1	,07	CIVAL		
1) in the absence of national regulation		C50/60	Land Friday	المراسات		1	,09			
Injection syste	m EASF, E	ASF-E, EAS	F-A CI	nemical	Ancho	r	of E	Europea Asses	ex C1 in Techr ssment 23/1032	nical
Characteristic resistance unde	Perform		racked	concre	te (Thre	aded	1			

Concrete cone fallure			2000			元 进行1000000000000000000000000000000000000			
Factor for non-cracked concret	•	KurN	[-]		11,0				
Factor for cracked concrete	NOVEMBER OF THE	Ko,N	[-]		7,7				
Edge distance	National Designation	Can	[mm]	1,5 · hu					
Specing		S _{cz,N}	[mm]	3,0 · he					
Splitting fallure	NO SECOND	William Control							
	Cor,sp for hom	1	[mm]	2,5 · he	2,0 · hr	1,5 · he			
Edge distance	Cor.up for h	0 ≥ 2 · her	[mm]	m] Cor.Mp					
Spacing	S.	7.80	[mm]		2,0 · Co.sp				
Installation safety factors for	combined pull-out, c	oncrete co	ne and spli	ting fallure	Manager State				
Installation safety factors for dry	y and wet concrete	Aune	[-]	1500	1,2				
Installation safety factors for flo	oded bore hole	Yest	[-]		1,4				

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex C2 of European Technical
Performances Characteristic resistance under tension loads in non-cracked concrete -(Threaded Rod-rebar)	Assessment ETA-23/1032

Sire		(C) [2]	M8	M10	M12	M16	M20	M24	M27	M30
Steel failure with standard threaded rod	grade 5.8	And the second	10000			S STORY		进场2	STATE OF	100 m. 100
Characteristic resistance	V ⁰ rik,a	[kN]	7	11	15	28	43	62	80	99
Partial safety factor	yue	[-]				1,2	5			
Ductility factor	kı	[-]	he said			0,1	В			
Steel failure with standard threaded rod	grade 8.8		SIN SI			EW PE	9 35 %	(Section)	1000	
Characteristic resistance	V ⁰ Ra,a	[kN]	10	16	24	44	69	99	129	157
Partial safety factor	уме	[-]		MALE	100	1,2	5	3000	ALLEY.	
Ductility factor	kı	[-]	TANCOC.		200	0,1	В			
Steel failure with standard threaded rod	grade 10.9			AND LES		理器管	STATE OF		WILL ST	
Characteristic resistance	V°ROLE	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	yw.	[-]	1			1,5	0	1936	54100	
Ductility factor	k ₇	[-]	L-SCIP	250	San British	0.0	8		THE L	
Steel failure with standard threaded rod	grade 12.9		SEENSE !			16	A216 3	層為問題		
Characteristic resistance	V ⁰ Ra,s	[kN]	15	24	35	66	103	148	193	236
Partial safety factor	Yue	[-]	175-1-1	Trans.	Jr v. Ci.	1,5	0	10.5		
Ductility factor	k ₇	[-]	1,7072	1		0,0	В	No.	2:23	
Steel fallure with standard stainless stee	ol threaded rod A4-70					10 M		が紅色	12/2 Se	
Characteristic resistance	V ⁰ Fb,s	[kN]	9	14	21	39	60	87	113	137

[-]

[-]

[kN]

[-]

[kN]

[-]

[-]

k₇

YME

k7

10

9

16

14

1,56

0,8

1,33

8,0

1,56

8,0

69

44

39

224

21

129

113

99

87

157

137

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex C3 of European
Performances Characteristic resistance under shear loads in non-cracked concrete (Threaded Rod)	Technical Assessment ETA-23/1032

Partial safety factor

Partial safety factor

Partial safety factor

Characteristic resistance

Characteristic resistance

Steel fallure with standard stainless steel threaded rod A4-80

Steel failure with high corrosion stainless steel threaded rod grade 70

Ductility factor

Ductility factor

Ductility factor

Size	The same of the sa		M8	M10	M12	M16	M20	M24	M27	M30
Steel fallure with standard threaded	rod grade 5.8	mt. S. S.	140,533		2.62000	Mague	Selfer	192/5	West To	1 95
Characteristic resistance	M ^b reca	[Nm]	19	38	66	166	325	561	832	1125
Partial safety factor	yus	[-]		Sant		1,2	5			
Steel fallure with standard threaded	rod prade 8.8	NEW YORK	Aug TH	THE REAL PROPERTY.	6 4 7 7		1 DE 1		10 PM	2007
Characteristic resistance	M ⁰ ra.s	[Nm]	30	60	105	266	519	898	1331	1799
Partial safety factor	yus	[-)			OM.MA	1,2	5			
Steel fallure with standard threaded	rod grade 10.9				. 50	TO BE	A STATE	かわれ	190	282
Characteristic resistance	M ⁰ rs.s	[Nm]	37	75	131	333	649	1123	1665	2249
Partial safety factor	yus	[-]	Talkin.	The Avenue	AU PHILIP	1,5	0			
Steel fallure with standard threaded	rod grade 12.9		3837		C.E.	TO REAL PROPERTY.	TO LANCE	Ago	DAIL D	200
Characteristic resistance	M ⁰ Rs,s	[Nm]	45	90	157	400	779	1347	1998	2699
Partial safety factor	YME	[-]				1,5	0			
Steel failure with standard stainless	steel threaded rod A47	0	18/00			TRANS		1060	10-10-10	ille!
Characteristic resistance	M ⁰ ra.s	[Nm]	26	52	92	233	455	786	11165	1574
Partial safety factor	YM	[-]			HALL ST	1,5	6			
Steel failure with standard stainless	steel threaded rod A4-8	0		K STORY		4			ECE.	1200
Characteristic resistance	M ⁰ Rk,s	[Nm]	30	60	105	266	519	898	1332	1799
Partial safety factor	YM	[-]	No. of the	119	BEE	1,3	3			
Steel fallure with high corrosion stale	nless steel threaded ro	d grade 70				4 62	6/6/06	10	4	X 27
Cheracteristic resistance	M ⁰ Rk,s	[Nm]	26	52	92	233	454	786	1165	1574
Partial safety factor	YMs	[-]		W	10-21-	1.5	6	1-1-15		

Injection system EASF, EASF-E, EASF-A Chemical Anchor	Annex C4 of European Technical
Performances Characteristic resistance under shear loads in non-cracked concrete (Threaded Rod)	Assessment ETA-23/1032

Table C5: Concrete edge for Size	STATE OF THE PARTY.	THE PARTY NAMED IN	M8	M10	M12	M16	M20	M24	M27	M30
Concrete edge failure			1000	24.53						
Outside diameter of anchor	dnon	[mm]	8	10	12	16	20	24	27	30
Effective length of anchor shear loading	h	(mm)				min (he	12dnam)		
Installation Factor	Y in						1		13.6	
Table C6: Concrete pry-ou	t failure									
Factor	ke				300		2			
Installation Factor	Ym	3.00					1			
Table C7: Displacement un	der tension	load								
Size	der terision		M8	M10	M12	M16	M20	M24	M27	M30
Characteristic displacement in	non-cracked C	20/25 to C50/60 cond	crete	Seat.	165 B		150			Sec.
	δ No. tector	[mm/(N/mm²)]	0,02	0,03	0,04	0,04	0,04	0,05	0,06	0,06
Temperature Range I : 40°C/24°C	δ NoSector	[mm/(N/mm²)]	0,03	0,05	0,05	0,05	0,06	0,06	0,07	0,07
	δNO-factor	[mm/(N/mm²)]	0,05	0,05	0,06	0,06	0,07	0,07	0,08	0,12
Temperature Range II: 80°C/50°C	δNe-factor	[mm/(N/mm²)]	0,07	0,07	0,08	0,08	0,09	0,11	0,12	0,14
Characteristic displacement in				12003		通信				100
Characteristic displacement in	δηριτακον	[mm/(N/mm²)]	0,09	0,09	0,06	0,06	0,06	0,06	0,06	0,06
Temperature Range I : 40°C/24°C		[mm/(N/mm²)]	0,10	0,10	0,16	0,16	0,16	0,16	0,16	0.16
	δNe-factor	franchamm M	0,10	0,10	.,	7,1		100		
		Imm//N/mm²)1	0.22	0.22	0 18	0.18	0.18	0.18	0.18	0.18
	δNo-factor δNo-factor ino-factor · T', δN =	[mm/(N/mm ²)] [mm/(N/mm ²)] $\delta_{\text{Ne-factor}} \cdot \tau ; (\tau - \text{action})$	0,22 0,28 bond stres	0,22 0,28 as for ter	0,18 0,26 nsion)	0,18	0,18	0,18	0,18	
Calculation of displacement: $\delta_{N0} = \delta$	δNe-factor inO-factor · T', δN =	[mm/(N/mm ²)] $\delta_{\text{Ne-factor}} \cdot \tau ; (\tau - \text{action})$	0,28	0,28	0,26		1000		1000	
Calculation of displacement: δ _{NO} = δ	δNe-factor inO-factor · T', δN =	[mm/(N/mm ²)] $\delta_{\text{Ne-factor}} \cdot \tau ; (\tau - \text{action})$	0,28	0,28	0,26		1000		1000	0,26
Calculation of displacement: δ _{N0} = δ Table C8: Displacement un	δην-ductor ονο-ductor · τ', δη =	[mm/(N/mm ²)] $\delta_{\text{Ne-factor}} \cdot \tau ; (\tau - \text{action})$ and s load	0,28 h bond stres	0,28	0,26	0,26	0,26	0,26	0,26	0,26
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in	δην-ductor ονο-ductor · τ', δη =	[mm/(N/mm ²)] $\delta_{\text{Ne-factor}} \cdot \tau ; (\tau - \text{action})$ and s load	0,28 h bond stres	0,28	0,26	0,26 M16	0,26 M20	0,26	0,26	0,26 M30
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature	δ _{No-dector} · τ', δ _N =	[mm/(N/mm²)] δ New Auction · τ ; (τ – action and ads load	0,28 h bond stres	0,28 as for ter	0,26 nsion)	0,26 M16	0,26 M20	0,26 M24	0,26	0,26 M30
Calculation of displacement: δ _{N0} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges)	δNo-factor SNO-factor · T', δN = oder shear ic non-cracked C δνο-factor δνο-factor	[mm/(N/mm²)] δ Newbodor · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)]	0,28 h bond stres M8 0,07 0,08	0,28 is for tel	0,26 nsion) M12	0,26 M16	0,26 M20 0,04	0,26 M24 0,04	0,26 M27	0,18 0,26 M30 0,03 0,04
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in	δNo-factor SNO-factor · T', δN = oder shear ic non-cracked C δνο-factor δνο-factor	[mm/(N/mm²)] δ Newbodor · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)]	0,28 h bond stres M8 0,07 0,08	0,28 is for tel	0,26 nsion) M12	0,26 M16	0,26 M20 0,04	0,26 M24 0,04	0,26 M27	0,26 M30
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature	δNo-factor SNO-factor · T; δN = Inder shear lo Svo-factor δνο-factor Cracked C20/2 δνο-factor	[mm/(N/mm²)] δ Ne-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] 5 to C50/60 concrete [mm/(kN)]	0,28 h bond stres M8 crete 0,07 0,08	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08	0,26 M16 0,05 0,07	0,26 M20 0,04 0,06	0,26 M24 0,04 0,05	0,26 M27 0,03 0,04	0,26 M30 0,03 0,04
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature ranges)	δNo-factor SNO-factor · T; δN = Inder shear lo SVO-factor δνο-factor δνο-factor δνο-factor δνο-factor δνο-factor	[mm/(N/mm²)] δ Ne-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] 5 to C50/60 concrete [mm/(kN)]	0,28 h bond stres M8 crete 0,07 0,08 0,14 0,20	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08	0,26 M16 0,05 0,07	0,26 M20 0,04 0,06	0,26 M24 0,04 0,05	0,26 M27 0,03 0,04	0,26 M30 0,03 0,04
Temperature range II: 80°C/50°C Calculation of displacement: δ _{NO} = 8 Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature ranges)	δNo-factor SNO-factor · T; δN = Inder shear lo Svo-factor δνο-factor Cracked C20/2 δνο-factor	[mm/(N/mm²)] δ Ne-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] 5 to C50/60 concrete [mm/(kN)]	0,28 h bond stres M8 crete 0,07 0,08	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08	0,26 M16 0,05 0,07	0,26 M20 0,04 0,06	0,26 M24 0,04 0,05	0,26 M27 0,03 0,04	0 0
Calculation of displacement: δ _{N0} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature	δNo-factor SNO-factor · T; δN = Inder shear lo SVO-factor δνο-factor δνο-factor δνο-factor δνο-factor δνο-factor	[mm/(N/mm²)] δ Ne-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] 5 to C50/60 concrete [mm/(kN)]	0,28 h bond stres M8 crete 0,07 0,08 0,14 0,20	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08	0,26 M16 0,05 0,07	0,26 M20 0,04 0,06	0,26 M24 0,04 0,05	0,26 M27 0,03 0,04	0,0 0,0 0,0
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature ranges)	δNo-factor SNO-factor · T; δN = Inder shear lo SVO-factor δνο-factor δνο-factor δνο-factor δνο-factor δνο-factor	[mm/(N/mm²)] δ Ne-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] 5 to C50/60 concrete [mm/(kN)]	0,28 h bond stres M8 crete 0,07 0,08 0,14 0,20	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08	0,26 M16 0,05 0,07	0,26 M20 0,04 0,06	0,26 M24 0,04 0,05	0,26 M27 0,03 0,04	0,2 M3
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature ranges) Calculation of the displacement: δ _{NO}	δNo-factor SNO-factor · T; δN = Inder shear lo SNO-factor δνο-factor δνο-factor δνο-factor δνο-factor δνο-factor ε δηνο-factor ε δηνο-factor · V; δ	[mm/(N/mm²)] δ Ne-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] 5 to C50/60 concrete [mm/(kN)]	0,28 h bond stress h M8 crete 0,07 0,08 0,14 0,20 oplied shear	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08 0,12 0,16	0,26 M16 0,05 0,07	0,26 M20 0,04 0,06	0,26 M24 0,04 0,05 0,09 0,10	0,26 M27 0,03 0,04 0,07 0,09	0,26 M36 0,03 0,04
Calculation of displacement: δ _{NO} = δ Table C8: Displacement un Size Characteristic displacement in Displacement (All temperature ranges) Characteristic displacement in Displacement (All temperature ranges) Calculation of the displacement: δ _{NO}	δNo-factor SNO-factor · T; δN = Inder shear lo SNO-factor δνο-factor δνο-factor δνο-factor δνο-factor δνο-factor ε δηνο-factor ε δηνο-factor · V; δ	[mm/(N/mm²)] δ Nec-Sector · τ ; (τ – action ads load 20/25 to C50/60 conc [mm/(kN)] [mm/(kN)] [mm/(kN)] [mm/(kN)] [mm/(kN)]	0,28 h bond stress h M8 crete 0,07 0,08 0,14 0,20 oplied shear	0,28 ss for terms of the state	0,26 nsion) M12 0,06 0,08 0,12 0,16	0,26 M16 0,05 0,07	0,26 0,04 0,06 0,10 0,11	0,26 M24 0,04 0,05 0,09 0,10 Anno of Eur Tech	0,26 M27 0,03 0,04 0,07 0,09 ex C5 ropear	0,00 0,00 0,00

[kN] [kN] [-] [kN] [-]	21 22 24	33	48	65	85 1,50 87 1,50	132	206	Ø28 258 265	Ø32 338
[-] [kN] [-]	22	34			1,50				
[-] [kN] [-]	22	34			1,50				
[kN] [-)			49	66	87	135	211	265	346
(-)			49	66	1000	135	211	265	346
(-)			49	66	1000	135	211	265	346
[kN]	24			4	1,50			-	
	24			-					-
	24	00	brook of market but	Maria de la constanta de la co					
[-]		38	54	74	96	151	236	298	386
	Salvania S			4	1,50				
The state of		A second				4			
[kN]	25	39	57	77	101	157	246	308	402
[-]			3	17.7	1,50		1		
Salah da					2550	1.0			
[kN]	28	43	62	85	111	173	270	339	442
[-]	Lys-1			8-31	1,50	The second	31,12,16		
pull-out and c	oncrete	cone fai	lure (wo	rking life	50)	And the		P. 2 150	Sellin
concrete C20/	of work	las IIIs E	A	et e to de to					200
The second of the second of the second	patched the	The Parket			- 40	100			
[N/mm-j	15	13	12	12	12	11	11	9,5	8,0
[N/mm²]	12	10	10	10	10	9,0	7,0	6,5	6,0
rete C20/25, w	orking i	lfe 50 ye	ars						
[N/mm ²]	10	9,0	8,5	8,5	8,5	7,5	7,0	6,0	5,5
[N/mm²]	8,0	7,0	7,0	7,0	7,0	6,0	5,5	5,0	4,5
C20/25			112			371			
A Mark Market		CONSTRUCT AUTOMOBILE		ACTURE NO.	0,77				
A 1 THE PARTY OF THE PARTY.	+ wife(0.5		-77.	and so the	+1.00	365			
The second secon	200	S.Fabruar.		2-12	1000	900			
EXCIDE O'ANT, STREET	e str			K 75 WAI					
C50/60					1,09		EN V	51.5	
	[kN] [-] pull-out and concrete C20/2 [N/mm²] [N/mm²] crete C20/25, w [N/mm²]	[kN] 28 [-] pull-out and concrete concrete C20/25, work [N/mm²] 15 [N/mm²] 12 crete C20/25, working I [N/mm²] 10 [N/mm²] 8,0 C20/25 40°C/24°C 80°C/50°C C30/37 C40/50	[kN] 28 43 [-] pull-out and concrete cone fall concrete C20/25, working life 5 [N/mm²] 15 13 [N/mm²] 12 10 crete C20/25, working life 50 ye [N/mm²] 10 9,0 [N/mm²] 8,0 7,0 C20/25 40°C/24°C 80°C/50°C C30/37 C40/50	[kN] 28 43 62 [-] pull-out and concrete cone failure (wo concrete C20/25, working life 50 years [N/mm²] 15 13 12 [N/mm²] 12 10 10 rete C20/25, working life 50 years [N/mm²] 10 9,0 8,5 [N/mm²] 8,0 7,0 7,0 C20/25 40°C/24°C 80°C/50°C C30/37 C40/50	[kN] 28 43 62 85 [-] pull-out and concrete cone failure (working life concrete C20/25, working life 50 years [N/mm²] 15 13 12 12 [N/mm²] 12 10 10 10 10 10 10 10 10	[kN] 28 43 62 85 111 [-] 1,50 pull-out and concrete cone failure (working life 50) concrete C20/25, working life 50 years [N/mm²] 15 13 12 12 12 [N/mm²] 12 10 10 10 10 erete C20/25, working life 50 years [N/mm²] 10 9,0 8,5 8,5 8,5 [N/mm²] 8,0 7,0 7,0 7,0 7,0 C20/25 40°C/24°C 0,70 80°C/50°C 0,70 C30/37 1,04 C40/50 1,07	[kN] 28 43 62 85 111 173 [-] 1,50 pull-out and concrete cone failure (working life 50) concrete C20/25, working life 50 years [N/mm²] 15 13 12 12 12 11 11 [N/mm²] 12 10 10 10 10 10 9,0 crete C20/25, working life 50 years [N/mm²] 10 9,0 8,5 8,5 8,5 7,5 [N/mm²] 8,0 7,0 7,0 7,0 7,0 7,0 6,0 C20/25	[kN] 28 43 62 85 111 173 270 [-] 1,50 pull-out and concrete cone failure (working life 50) concrete C20/25, working life 50 years [N/mm²] 15 13 12 12 12 11 11 [N/mm²] 12 10 10 10 10 9,0 7,0 crete C20/25, working life 50 years [N/mm²] 10 9,0 8,5 8,5 8,5 7,5 7,0 [N/mm²] 8,0 7,0 7,0 7,0 7,0 6,0 5,5 C20/25	[kN] 28 43 62 85 111 173 270 339 [-] 1,50 pull-out and concrete cone failure (working life 50) concrete C20/25, working life 50 years [N/mm²] 15 13 12 12 12 11 11 9,5 [N/mm²] 12 10 10 10 10 9,0 7,0 6,5 crete C20/25, working life 50 years [N/mm²] 10 9,0 8,5 8,5 8,5 7,5 7,0 6,0 [N/mm²] 8,0 7,0 7,0 7,0 7,0 6,0 5,5 5,0 C20/25

Size	计图形数			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32		
Steel failure without lever arm										78.00				
Characteristic resistance	V ⁰ Rks	III.	[kN]					0,5 x A ₄ x	fuk 1		Part le			
Crosssection Area	As		[mm²]	50	79	113	154	201	314	491	616	804		
Partial safety factor	γMs		[-]					1,5 ²						
Ductulity factor	kı		[-]	la vice				1,0	115					
Steel fallure with lever arm	SC-5/47-47-48		NAME OF STREET	2/2		1000			No.		V 19 10 10 10 10 10 10 10 10 10 10 10 10 10	The state of the s		
Characteristic bending moment	M ⁰ Rk,s	Sign	[Nm]					1,2 x W.	x fuk	7-7-7				
Crosssection Area	As		[mm³]	50	98	170	269	402	785	1534	2155	3217		
Partial safety factor	YMs,V		[-]					1,5 ²						
		126 500					S. 1941.	9740112022						
Table C11: Concrete edge fai	lure	STATE STATE	Processor Comment		Le Pro-			440	420	dor	420	420		
Size			美国	Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32		
Concrete edge failure							A total							
Outside diameter of anchor	d _{nom}			8	10	12	16	20	24	27	30	32		
Effective length of anchor shear loading				min (her, 12 x d _{nom})					min (hef; 12 x 300mm)					
Installation Factor	Y ins		[-]					1	1					
Table C12: Concrete pry-out	failure	101 - 10										-21		
Factor	k _B	-	100 mg/s				. 2	2						
Installation Factor	γ ins	-				er i ku	1							
²⁾ in the absence of national regulations	\$\frac{1}{2}													
Injection syste	Performa	nce	5					·	of Euro As	nnex (pean T sessm A-23/1	echnica ent	al		
Characteristic values of under									17.75.75	CARLON PARTIES	30000797			

The second secon	副基础		ф8	ф10	ф12	ф14	ф16	ф20	ф25	ф28	ф32
	Ch	aracteristic displa	ement in	non-crac	ked C20	25 to C50)/60 conc	rete	A CONTRACTOR	Grant Control	G SA
Temperature Range I :	δ _{NO} -	[mm/(N/mm²)]	0,02	0,03	0,03	0,03	0,04	0,05	0,05	0,05	0,06
40°C/24°C	δ _{Ne} -	[mm/(N/mm²)]	0,04	0,04	0,05	0,05	0,05	0,06	0,06	0,06	0,06
Temperature range II:	δνο.	[mm/(N/mm²)]	0,04	0,05	0,07	0,08	0,08	0,09	0,11	0,12	0,13
80°C/50°C	δ _{Nec} -	[mm/(N/mm²)]	0,07	0,07	0,09	0,11	0,13	0,15	0,17	0,17	0,18
	Actor	haracteristic disp	lacement	In crack	d C20/2	to C50/6	0 concre	te			
Day of the same of	δΝο	[mm/(N/mm²)]	0,02	0,03	0,03	0,04	0,04	0,05	0,06	0,06	0,0
Temperature Rande I : 40°C/24°C	δNe	[mm/(N/mm²)]	0,04	0,04	0,05	0,05	0,05	0,06	0,06	0,06	0,0
	δno.	[mm/(N/mm²)]	0,20	0,20	0,18	0,18	0,18	0,18	0,18	0,18	0,1
Temperature range II: 80°C/50°C	factor δ _{Nex} -	[mm/(N/mm²)]	0,30	0,30	0,26	0,26	0,26	0,26	0,26	0,26	0,2
	factor			THE STATE OF					W. Arrest		,,,,
Calculation of the displace	ment: δ _{N0} =	$= \delta_{NO\text{-factor}} \cdot \tau; \delta_N = \delta_N$	e-factor · τ;	(T – action	bond stre	ess for ten	sion)				
Table C14: Displace	ment un	der shear loads	load								
Size			ф8	ф10	ф12	ф14	ф16	ф20	ф25	ф28	ф3
	Cha	aracteristic displac	ement in	non-crac	ked C20	/25 to C5	0/60 cond	rete	4		
Displacement (All temperature ranges)	δvo.	[mm/(kN)]	0,07	0,06	0,60	0,05	0,04	0,04	0,03	0,03	0,02
	δγ _ю -	[mm/(kN)]	0,09	0,09	0,08	0,07	0,07	0,07	0,06	0,05	0,0
	CHARLES THE RESIDENCE	haracteristic disp	lacement	in crack	d C20/2	to C50/6	0 concre	te			
Displacement (All	δνο	[mm/(kN)]	0,11	0,11	0,09	0,09	0,08	0,08	0,07	0,06	0,0
temperature ranges)	factor δνω-	[mm/(kN)]	0,17	0,17	0,02	0,15	0,13	0,13	0,11	0,11	0,0
CHARLES WAY OF CAPE	factor		446		1.700-307	L-MARKET.	10000000				
Calculation of the displacer											

Performances Displacement (Rebar)

			M8	M10	M12	M16	M20	M24	M27	M30			
	CONTRACTOR OF THE PARTY OF THE	Steel fallu	ILO (1)			The second				1000			
Steel failure with standard threaded rod grad	e 5.8												
Characteristic resistance	N _{Rk,s}	[kN]	18	29	42	78	122	176	228	280			
Partial safety factor	YMs	[-]			-	1,6	50		6077777				
Steel failure with standard threaded rod grad	e 8.8												
Characteristic resistance	NRICE	[kN]	29	46	67	126	196	282	367	449			
Partial safety factor	ума	[-]				1,5	50						
Steel fallure with standard threaded rod grad	e 10.9												
Characteristic resistance	NRA	[kN]	37	58	84	157	245	353	459	561			
Partial safety factor	умь	[-]	O WILLIAM			10							
Steel fallure with standard threaded rod grad	e 12.9												
Characteristic resistance	Nexa	[kN]	44	70	101	188	294	424	551	673			
Partial safety factor	YME	[-]				1,4	10						
Steel failure with standard stainless steel thr	eaded rod A4-7	0											
Characteristic resistance	NRKs	[kN]	26	41	59	110	172	247	321	393			
Partial safety factor	уме	[-]				1,8	37						
Steel failure with standard stainless steel thr	eaded rod A4-8	0											
Characteristic resistance	Nexa	[kN]	29	46	67	126	196	282	367	449			
Partial safety factor	γмь	[-]		1.00		1,6	50						
Steel failure with standard high corrosion thr	eaded rod grad	le 70			W 75			- 8					
Characteristic resistance	NRKs	[kN]	26	41	59	110	172	247	321	393			
Partial safety factor	YMs	[-]				1,8	37						
emperature range II: 80°C/50°C	TRIL,eq.C1	[N/mm²]	3.39	3.83	3.49	3.08	2.72	2.79	2.40	2.6			
Installation factor dry and wet condition		[-]				1,	2						
Installation factor flooded hole condition	Vire	0.0				1,	,4						
Increasing factor for concrete	1000	C30/37	1,04										
	Ψc	C40/50	1,07										
		C50/60	1,09										
				ic acti	on. (C1)			OTT AND	-1,11			
	shear loads	under -	- seism	no acti	Me V B								
Table C17: Characteristic values of s Steel failure Characteristic Shear Resistance			- selsm	iic acti	ate in	0.7 x ¹	∕° Rk.	-					
Steel failure Characteristic Shear Resistance	VRk,s,eq,C1	[kN]	- seism			0,7 x \		C3					
Steel failure Characteristic Shear Resistance Partial factor			- seism	ilo deti		0,7 x \		C3					
Steel failure Characteristic Shear Resistance	VRk,s,eq,C1	[kN]	- selsm				3 - Table	С3					
Steel failure Characteristic Shear Resistance Partial factor 1) in the absence of national regulations	VRk,s,eq,C1	[kN]	- selsm			Annex C	3 - Table	С3					

Table C18: Characteristic values of tension loads under - seismic action. (C1)

Size	医侧侧 的		ф8	ф10	ф12	ф14	ф16	ф20	ф25	ф28	ф32
经验证的证明的证明的证明的	经国际基础	Steel fall	ure (1)	STATE OF	HARM	No.	学, 原門	1014	No.	10.595	20170
Steel failure	(barrella										COLUMN TO SERVICE
Characteristic resistance	NRKs,eq,C1	[-]	0,5 x A ₀ x f _{1/6} 1)								
Cross section area	A.	[mm²]	50	79	113	154	201	314	491	616	804
Partial safety factor	YMa, N	(-)	14.4			0.16	1,5 2)		71.00		
	Combined p	ull-out and	concret	e cone	fallure	The H	Marie Land	MOTO	25-12	72 R 2	176
Characteristic bond resistance in non-cra	cked and crack	ed concret	e C20/2	5				227 10 10 1			
Temperature range I: 40°C/24°C	TRILING.C1	[N/mm²]	4.24	4.11	3.96	3.53	3.96	3.81	3.35	3.12	3.12
Temperature range II: 80°C/50°C	TRIL,eq,C1	[N/mm²]	3.39	3.20	3.03	2.86	3.22	2.79	2.63	2.60	2.34
Installation factor dry and wet condition		.,		V.		W SY	1,2			14	
Installation factor flooded hole condition	Ψm	[-]	100	·	211		1,4	70.77			
Increasing factor for concrete		C30/37	E.		411	W/ E	1,04				
	Ψe	C40/50	FENE			JE A	1,07	Sire.			
		C50/60	100	40/19	AND IN	120	1,09		STREET,		

Table C19: Characteristic values of shear loads under - seismic action. (C1)

Steel failure

Characteristic Shear Resistance	VRk,s,eq,C1	[kN]	0.35 x A ₄ x f _{sk} ¹										
Cross section area	A	[mm²]	50	79	113	154	201	314	491	616	804		
Partial factor	YM	[-]	1,5 ²⁾										
Factor for annular gap	αρρ	[-]				(,5 (1,0)	3)					

¹⁾ fuk shall be taken from specification of rebar

Injection system EASF, EASF-E, EASF-A Chemical Anchor Annex C10 of European Technical Assessment **Performances** ETA-23/1032 Characteristic resistance in tension and shear loads. Performance Category C1

in the absence of national regulations

3) Value in brackets valid for filled annular gap between anchor and clearance in the fixture.

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