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**European Technical
Assessment**

**ETA-22/0295
dated 02/09/2022**

English translation prepared by CSTB - Original version in French language

General Part

Nom commercial
Trade name

Bremick Pty Ltd

Famille de produit
Product family

Torque-controlled expansion anchor, made of electroplated carbon steel, for use in concrete: sizes M8, M10, M12 and M16.

Titulaire
Manufacturer

Bremick Pty LTD, 88 Dalmeny Avenue,
Rosebery NSW 2018 Australia
www.bremick.com.au / www.bremick.co.nz

Usine de fabrication
Manufacturing plants

Bremick Pty Ltd Plant - 2

Cette évaluation contient:
This assessment contains

11 pages incluant 8 pages d'annexes qui font partie intégrante de cette évaluation

11 pages including 8 pages of annexes which form an integral part of this assessment

Base de l'ETE
Basis of ETA

DEE 330232-01-0601 "Ancrages mécaniques dans le béton"
EAD 330232-01-0601 "Mechanical fasteners for use in concrete"

Cette évaluation remplace:
This assessment replaces

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Specific Part

Technical description of the product

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

The product description is given in Annexes A.

Specification of the intended use

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annexes 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 right products in relation to the expected economically reasonable working life of the works.

Performance of the product

1.1 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 and C2	No performance assessed
Durability	See Annex B1

1.2 Safety in case of fire (BWR 2)

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

1.3 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.

1.4 Safety in use (BWR 4)

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

1.5 Protection against noise (BWR 5)

Not relevant.

1.6 Energy economy and heat retention (BWR 6)

Not relevant.

1.7 Sustainable use of natural resources (BWR 7)

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

1.8 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

Technical details necessary for the implementation of the Assessment and verification of constancy of performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

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

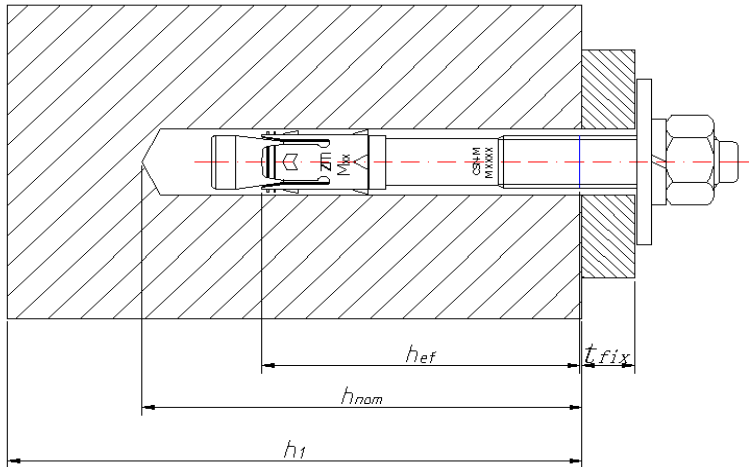
Issued in Marne La Vallée on 02/09/2022 by

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

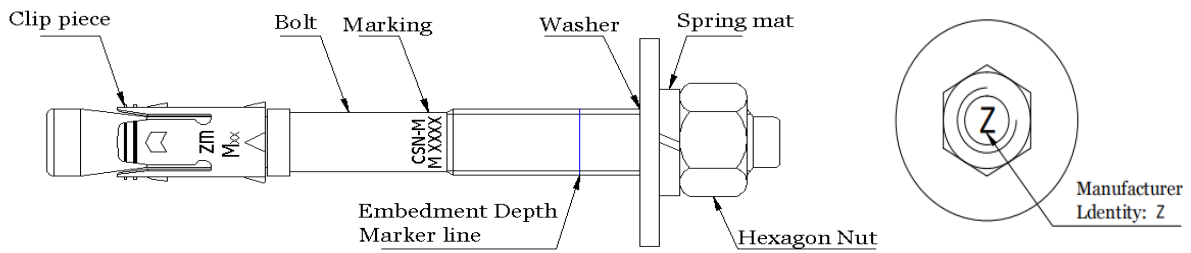
Installed condition



Product description

Figure A1:

Bremick torque controlled expansion anchor



Marking:

e.g.

Bremick

Anchor type (i.e. ZM CSN-M)

Anchor size: M...(i.e.M8/M10/M12/M16)

Anchor length: L (i.e.60-100/70-150/80-200/100-250)

Max. fixture thickness t_{fix}

Bremick torque controlled expansion anchor

Product description
 Installed condition and product description

Annex A1

Table A1: Materials

Designation		Material
Bremick		
1	Bolt	$f_{uk} \geq 800 \text{ N/mm}^2$ $f_{yk} \geq 400 \text{ N/mm}^2$, $A_5 < 8\%$
2	Clip piece	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$
3	Hexagonal nut	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$
4	Washer	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$
5	Spring mat	Carbon steel, electroplated zinc coated $\geq 5\mu\text{m}$

Bremick torque controlled expansion anchor

Product description
Materials

Annex A2

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loading

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.
- Cracked and uncracked concrete.

Use conditions (Environmental conditions):

- 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. Fastenings in stand-off installation or with a grout layer under seismic action are not covered in this European technical assessment (ETA).
- In case of requirements to resistance to fire local spalling of the concrete cover must be avoided.

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.

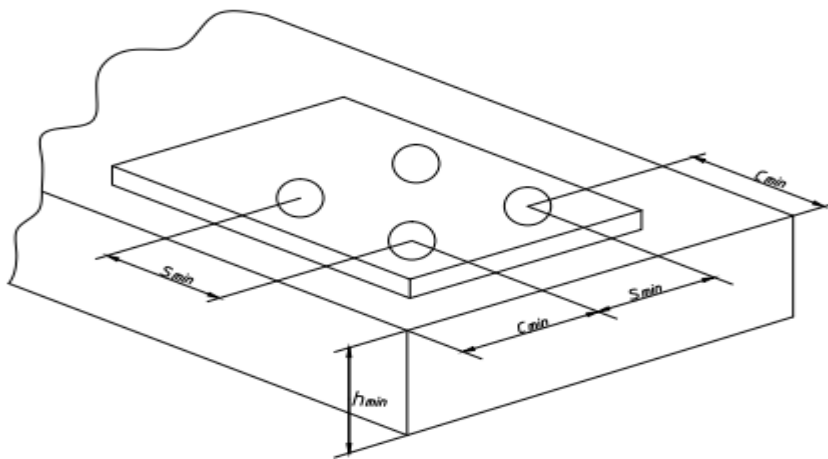
Bremick torque controlled expansion anchor

Annex B1

Intended use
Specifications

Table B1: Installation parameters

Bremick		M8	M10	M12	M16
Nominal diameter of drill bit	d_0 [mm]	8	10	12	16
Max. diameter of clearance hole in the fixture	d_f [mm]	9	12	14	18
Effective anchorage depth	h_{ef} [mm]	53	66	75	94
Min. depth of drill hole	h_1 [mm]	75	90	105	125
Min. thickness of concrete member	h_{min} [mm]	110	140	150	190
Installation torque	T_{inst} [Nm]	20	40	60	100
Uncracked and cracked concrete					
Minimum spacing and minimum edge distance	S_{min} [mm]	50	60	70	100
	C_{min} [mm]	50	60	70	100

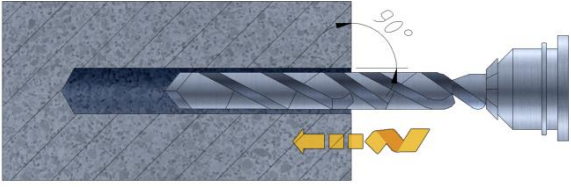
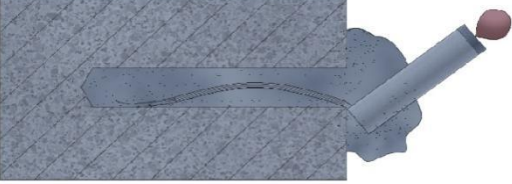
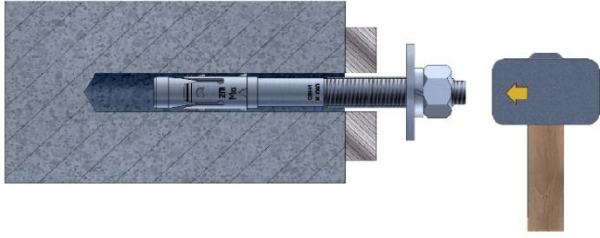




Bremick torque controlled expansion anchor

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 he required installation torque (see table B1)</p>
	<p>5、 Check installation</p>

Bremick torque controlled expansion anchor

Intended use
 Installation instructions

Annex B3

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

Size		M8	M10	M12	M16
Effective anchorage depth	h_{ef} [mm]	53	66	75	94
Steel failure					
Partial safety factor	$\gamma_{Ms,N}$ [-]	2,4			
Characteristic resistance	$N_{Rk,s}$ [kN]	20,4	32,6	48,7	89,7
Pullout failure					
Characteristic resistance in concrete C20/25					
Installation safety factor	γ_{inst} [-]	1,2			
Uncracked concrete	$N_{Rk,p,uncr}$ [kN]	13	26	32	40
Cracked concrete	$N_{Rk,p,cr}$ [kN]	-	17	20	27
Increasing factor concrete strength	C30/37 [-]	1,22			
	C40/50 [-]	1,41			
	C50/60 [-]	1,58			
Concrete cone and splitting failure					
Installation safety factor	γ_{inst} [-]	1,2			
Factor	$k_1=k_{ucr,N}$ [-]	11,0			
	$k_1=k_{cr,N}$ [-]	7,7			
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]	160	200	250	290
Edge distance (splitting)	$c_{cr,sp}$ [mm]	80	100	120	145

Bremick torque controlled expansion anchor

Performances

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

Annex C1

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

Size		M8	M10	M12	M16
Effective anchorage depth h_{ef}	[mm]	53	66	75	94
Steel failure without lever arm					
Partial safety factor $\gamma_{Ms,V}$	[-]	2,00			
Ductility factor k_7	[-]	0,8			
Characteristic resistance $V_{Rk,s}$	[kN]	11,8	20,3	31,2	60,8
Steel failure with lever arm					
Partial safety factor $\gamma_{Ms,V}$	[-]	1,25			
Ductility factor k_7	[-]	0,8			
Characteristic resistance $M^0_{Rk,s}$	[Nm]	10	53	113	177
Concrete pryout failure					
Pry-out factor k_8	[-]	1,0	2,0	2,0	2,0
Installation safety factor γ_{inst}	[-]	1,2			
Concrete edge failure					
Effective length of anchor $l_f = h_{ef}$	[mm]	53	66	75	94
Diameter of anchor d_{nom}	[mm]	8	10	12	16
Installation safety factor γ_{inst}	[-]	1,2			

1

Bremick torque controlled expansion anchor

Performances

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

Annex C2

Table C3: Displacements under tension load in case of static and quasi-static loading

Size			M8	M10	M12	M16
Tension load in uncracked concrete	N	[kN]	7,14	13,69	19,05	23,81,
Corresponding displacement	δ_{N0}	[mm]	0,29	0,15	0,16	0,11
	$\delta_{N\infty}$	[mm]	1,37	1,37	1,37	1,37
Tension load in cracked concrete	N	[kN]	-	10,1	11,9	16,1
Corresponding displacement	δ_{N0}	[mm]	-	0,30	0,14	0,26
	$\delta_{N\infty}$	[mm]	-	1,3	1,1	1,4

Table C4: Displacements under shear load in case of static and quasi-static loading

Size			M8	M10	M12	M16
Shear load in cracked and uncracked concrete	V	[kN]	6,1	10,3	15,4	30,3
Corresponding displacement	δ_{V0}	[mm]	0,33	0,21	0,33	0,35
	$\delta_{V\infty}$	[mm]	0,50	0,32	0,49	0,53

Bremick torque controlled expansion anchor

Performances
 Displacements

Annex C3