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Autorisé et notifié conformément à l'article 10 de la directive 89/106/EEC du Conseil, du 21 décembre 1988, relative au rapprochement des dispositions législatives, réglementaires et administratives des Etats membres concernant les produits de construction.

CSTB le futur en construction

MEMBRE DE L'EOTA

European Technical Approval ETA-03/0008

(English language translation, the original version is in French language)

Nom commercial : **Trade name:**	**SPIT MAXIMA**
Titulaire : **Holder of approval:**	**Société SPIT** **Route de Lyon** **F-26501 BOURG-LES-VALENCE** **France**
Type générique et utilisation prévue du produit de construction : **Generic type and use of construction product:**	Cheville à scellement pour fixation dans le béton non fissuré : diamètres M8, M10, M12, M16, M20, M24 et M30. **Bonded anchor for use in non-cracked concrete: sizes M8, M10, M12, M16, M20, M24 and M30.**
Validité du : au : **Validity from / to:**	**15/06/2013** **15/06/2018**
Usine de fabrication : **Manufacturing plant:**	**Société SPIT** **Route de Lyon** **F-26501 BOURG-LES-VALENCE** **France**
Le présent Agrément technique européen contient : **This European Technical Approval contains:**	13 pages incluant 5 annexes faisant partie intégrante du document. **13 pages including 5 annexes which form an integral part of the document.**

Cet Agrément Technique Européen remplace l'Agrément ETA-03/0008 valide du 17/03/2008 au 17/03/2013
This European Technical Approval replaces ETA-03/0008 with validity from 17/03/2008 to 17/03/2013

I LEGAL BASES AND GENERAL CONDITIONS

1. This European Technical Approval is issued by the Centre Scientifique et Technique du Bâtiment in accordance with:

   - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by the Council Directive 93/68/EEC of 22 July 1993[2]; and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council [3]
   - Décret n° 92-647 du 8 juillet 1992[4] concernant l'aptitude à l'usage des produits de construction;
   - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EC[5];
   - Guideline for European Technical Approval of « Metal Anchors for use in Concrete » ETAG 001, edition 1997, Part 1 « Anchors in general » and Part 5 « Bonded anchors».

2. The Centre Scientifique et Technique du Bâtiment is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant (for example concerning the fulfilment of assumptions made in this European Technical Approval with regard to manufacturing). Nevertheless, the responsibility for the conformity of the products with the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3. This European Technical Approval is not to be transferred to manufacturers or agents of manufacturer other than those indicated on page 1; or manufacturing plants other than those indicated on page 1 of this European Technical Approval.

4. This European Technical Approval may be withdrawn by the Centre Scientifique et Technique du Bâtiment pursuant to Article 5 (1) of the Council Directive 89/106/EEC.

5. Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of the Centre Scientifique et Technique du Bâtiment. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6. The European Technical Approval is issued by the approval body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

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1 Official Journal of the European Communities n° L 40, 11.2.1989, p. 12
2 Official Journal of the European Communities n° L 220, 30.8.1993, p. 1
3 Official Journal of the European Union n° L 284, 31.10.2003, p. 25
4 Journal officiel de la République française du 14 juillet 1992
5 Official Journal of the European Communities n° L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1. Definition of product

The SPIT MAXIMA adhesive system with threaded rod (galvanized steel / stainless steel) is a bonded anchor system consisting of an adhesive capsule MAXIMA and a threaded rod with hexagon nut and washer in sizes M8 to M30.
The standard threaded rod is placed into a rotary percussive hammer drilled hole filled with a MAXIMA glass capsule containing resin, hardener and quartz sand. The threaded rod is screwed into the capsule with a drilling machine . The threaded rod is available with a helical end (M8 to M16), with a one side 45° chamfer (M8 to M30) and with a two sides 45° chamfer (M8 to M30). The rotation of the threaded rod allows the mixing of the different capsule elements.
For the installed anchor see Figure given in Annex 1 and 2.

1.2. Intended use

The anchor is intended to be used for anchorages for which requirements for mechanical resistance and stability and safety in use in the sense of the Essential Requirements 1 and 4 of Council Directive 89/106/EEC 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. Safety in case of fire (Essential Requirement 2) is not covered in this ETA. The anchor is to be used only for anchorages subject to static or quasi-static loading in reinforced or unreinforced normal weight concrete of strength classes C 20/25 at least to C50/60 at most according to ENV 206: 2000-12. It may be anchored in non-cracked concrete only.

The anchor with galvanized steel threaded rod may only be used in concrete subject to dry internal conditions. Characteristic values in Annexes 4 and 5.

The anchor with stainless steel threaded rod may be used in structures subject to dry internal conditions and also in structures subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist. Such particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used). Characteristic values in Annexes 4 and 5.

The anchor may be installed in dry or wet concrete or in flooded holes excepting sea water (use category 2) for diameters from M12 to M30, and only in dry or wet concrete for diameter M8 and M10 (use category 1).

Installation	Substrate		
	Dry concrete	Wet concrete	Flooded hole
M8 and M10	Yes	Yes	No
M12 to M30	Yes	Yes	Yes

All the diameters (i.e. from M8 to M30) may be used overhead.

The anchor may be used in the following temperature ranges :

Temperature range : -40°C to +40°C (max short term temperature +40°C and

max long term temperature +24°C)
Temperature range : -40°C to +80°C (max short term temperature +80°C and
max long term temperature +50°C)

The provisions made in this European Technical Approval 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, 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.

2 Characteristics of product and methods of verification

2.1. Characteristics of product

The anchor in the sizes of M8 to M30 corresponds to the drawings and provisions given in Annexes 1 to 3. The characteristic material values, dimensions and tolerances of the anchor not indicated in Annexes 2 and 3 shall correspond to the respective values laid down in the technical documentation[6] of this European Technical Approval. The characteristic anchor values for the design of anchorages are given in Annexes 4 and 5.

Each threaded rod is marked with the letter S (company label), the nominal diameter of the threaded part of the rod and thickness of the fixture according to the description given in annex 1. Each capsule is marked with the product name, the nominal diameter of the threaded rod (metric and inch) and the diameter and length of the drilled hole according to the description given in Annex 1.

The anchor shall only be packaged and supplied as a complete unit, capsules being packed separately from threaded rods, washers and nuts.

2.2. Methods of verification

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 Essential Requirements 1 and 4 has been made in accordance with the « Guideline for European Technical Approval of Metal Anchors for use in Concrete », Part 1 « Anchors in general » and Part 5 « Bonded anchors », on the basis of Option 7.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other 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 UE Construction Products Directive, these requirements need also to be complied with, when and where they apply.

3 Evaluation of Conformity and CE marking

3.1. Attestation of conformity system

The system of attestation of conformity 2 (i) (referred to as system 1) according to Council Directive 89/106/EEC Annex III laid down by the European Commission provides:

a) tasks for the manufacturer:
   1. factory production control,
   2. further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan.

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6 The technical documentation of this European Technical Approval is deposited at the Centre Scientifique et Technique du Bâtiment and, as far as relevant for the tasks of the approved bodies involved in the attestation of conformity procedure, is handed over to the approved bodies.

b) tasks for the approved body:
3. initial type-testing of the product,
4. initial inspection of factory and of factory production control,
5. continuous surveillance, assessment and approval of factory production control.

3.2. Responsibilities

3.2.1. Tasks of the manufacturer

3.2.1.1. Factory production control

The manufacturer shall have a factory production control system in the plant and shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. This production control system ensures that the product is in conformity with the European Technical Approval.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the prescribed test plan[7]. The incoming raw materials shall be subject to controls and tests by the manufacturer before acceptance. Check of incoming materials such as nuts, washers, threaded rods, resin, hardeners… shall include control of the inspection documents presented by suppliers (comparison with nominal values) by verifying dimension and determining material properties.

The frequency of controls and tests conducted during production is laid down in the prescribed test plan taking account of the automated manufacturing process of the anchor.

The results of factory production control are recorded and evaluated.

The records shall be presented to the inspection body during the continuous surveillance. On request, they shall be presented to the Centre Scientifique et Technique du Bâtiment.

Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to the prescribed test plan which is part of the technical documentation of this European Technical Approval.

3.2.1.2. Other tasks of the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved. The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

3.2.2. Tasks of approved bodies

3.2.2.1. Initial type-testing of the product

For initial type-testing the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed between the Centre Scientifique et Technique du Bâtiment and the approved bodies involved.

3.2.2.2. Initial inspection of factory and of factory production control

[7] The prescribed test plan has been deposited at the Centre Scientifique et Technique du Bâtiment and is only made available to the approved bodies involved in the conformity attestation procedure.

The approved body shall ascertain that, in accordance with the prescribed test plan, the factory and the factory production control are suitable to ensure continuous and orderly manufacturing of the anchor according to the specifications mentioned in 2.1. as well as to the Annexes to the European Technical Approval.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval.

3.2.2.3. Continuous surveillance

The approved certification body involved by the manufacturer shall visit the factory at least once a year for regular inspection. It has to be verified that the system of factory production control and the specified automated manufacturing process are maintained taking account of the prescribed test plan.

Continuous surveillance and assessment of factory production control have to be performed according to the prescribed test plan.

The results of product certification and continuous surveillance shall be made available on demand by the certification body or inspection body, respectively, to the Centre Scientifique et Technique du Bâtiment. In cases where the provisions of the European Technical Approval and the prescribed test plan are no longer fulfilled the conformity certificate shall be withdrawn and CSTB informed without delay.

3.3. CE-Marking

The CE marking shall be affixed on each packaging of anchors. The symbol « CE » shall be accompanied by the following information:

- Commercial name;
- Name or identifying mark of the producer and manufacturing plant;
- Name of approval body and ETA number;
- Identification number of the certification body;
- Number of the EC certificate of conformity;
- Use category (ETAG 001-5 Option 7);
- The last two digits of the year in which the CE-marking was affixed;
- Size.

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1. Manufacturing

The anchor is manufactured in accordance with the provisions of the European Technical Approval using the automated manufacturing process as identified during inspection of the plant by the Centre Scientifique et Technique du Bâtiment and the approved body and laid down in the technical documentation. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the Centre Scientifique et Technique du Bâtiment before the changes are introduced. The Centre Scientifique et Technique du Bâtiment will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

4.2. Installation

4.2.1. Design of anchorages

The fitness of the anchors for the intended use is given under the following conditions:
The anchorages are designed in accordance with the « Guideline for European Technical Approval of Metal Anchors for Use in Concrete », Annex C, Method A, for bonded anchors under the responsibility of an engineer experienced in anchorages and concrete work.
For the verifications given below according to annex C the following shall be observed :
- For the verification "concrete cone failure" (clause 5.2.2.4, Annex C of the ETAG, $N_{Rk,c}$ shall be determined according to (1) and (2) : the smaller of the values according to (1) and (2) is decisive.

(1) $N_{Rk,c}$ according to equation (5.2), Annex C of the ETAG
where : $N^0_{Rk,c}$ according to Table 6 Annex 4
$s_{cr,N}$ and $c_{cr,N}$ according to Table 6 Annex 4
$\psi_{ucr,N} = 1,0$

(2) $N_{Rk,c}$ according to equation (5.2), Annex C of the ETAG
where : $N^0_{Rk,c} = 0,75 \times 15,5 \times h_{ef}^{1,5} \times f_{ck,cube}^{0,5}$
$s_{cr,n} = 3\ h_{ef}$ and $c_{cr,n} = 1,5\ h_{ef}$
$\psi_{ucr,N} = 1,0$

- For the verification "splitting failure due to loading" (clause 5.2.2.6, Annex C of the ETAG), $N_{Rk,sp}$ shall be determined according to (3).

(3) $N_{Rk,sp}$ according to equation (5.3), Annex C of the ETAG
where : $N^0_{Rk,c}$ according to Table 6 Annex 4
$s_{cr,sp}$ and $c_{cr,sp}$ according to Table 6 Annex 4
$\psi_{ucr,N} = 1,0$ and $\psi_{h,sp} = 1,0$

- For the verification "concrete pryout failure" (clause 5.2.3.3, Annex C of the ETAG), $N_{Rk,c}$ for equation (5.6), Annex C of the ETAG shall be determined according to (1).

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 support, etc.).

4.2.2. Installation of anchors

The fitness for use of the anchor can only be assumed if the anchor is installed as follows:

- anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site;
- use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor;
- anchor installation in accordance with the manufacturer's specifications and drawings prepared for that purpose and using the appropriate tools;
- checks before placing the anchor to ensure that the strength class of the concrete in which the anchor is to be placed is in the range;
- check of concrete being well compacted, e.g. without significant voids;
- clearing the hole of drilling dust : the hole shall be cleaned by at least four blowing operations for M8 to M12 and by 2 blows + 2 blowing operations + 2 blows for M16 to M30.
- anchor installation ensuring the specified embedment depth, that is the appropriate depth marking of the anchor not exceeding the concrete surface or embedment depth control;
- keeping of the edge distance and spacing to 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, at a smaller distance if the aborted drill hole is filled with high strength mortar

and if under shear or oblique tension load it is not to the anchor in the direction of load application;
- capsule insertion into the drilled hole; connection of the anchor rod with the percussion drill and driving of the anchor rod into the drilled hole with appropriate percussion/rotary action of the drill, using some pressure until the marked line of the anchor rod is reached; during curing time, the temperature of the concrete must not fall below -5°C.
- application of the torque moment given in Annex 3 using a calibrated torque wrench.

4.2.3. Responsibility of the manufacturer

It is the manufacturer's responsibility to ensure that the information on the specific conditions according to 1 and 2 including Annexes referred to in 4.2.1. and 4.2.2. is given to those who are concerned. This information may be made by reproduction of the respective parts of the European Technical Approval. In addition all installation data shall be shown clearly on the package and/or on an enclosed instruction sheet, preferably using illustration(s).

The minimum data required are:
- drill bit diameter,
- thread diameter,
- maximum thickness of the fixture,
- minimum installation depth,
- required torque moment,
- admissible service temperature range,
- curing time of the bonding material depending on the installation temperature,
- information on the installation procedure, including cleaning of the hole, preferably by means of an illustration,
- reference to any special installation equipment needed,
- identification of the manufacturing batch.

All data shall be presented in a clear and explicit form.

5 Recommendations concerning packaging, transport and storage.

The packaging of capsules in corrugated cardboards is intended to prevent them from knocking against one another and breaking in case of light impacts due normal handling.

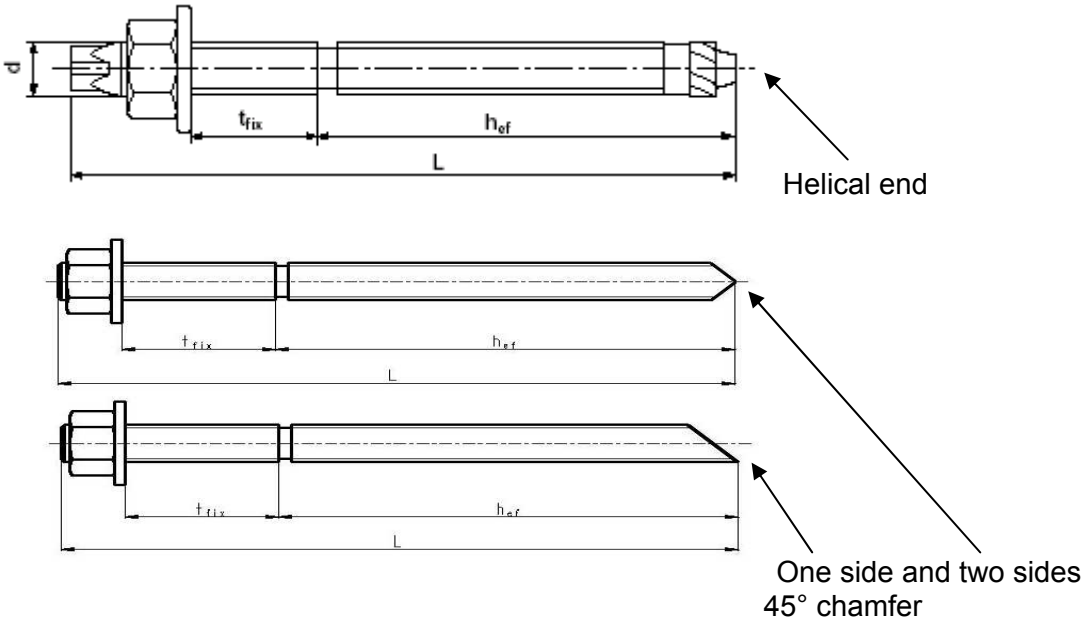
To preserve the product characteristics, capsules shall be stocked sheltered from the UV light and within a range of temperatures between 0°C and +35°C. All the data concerning storage shall appear clearly on the packaging.

The installation data appearing on the capsules packaging shall indicate that the capsules can be used only with the corresponding threaded rods of the manufacturer and vice versa.

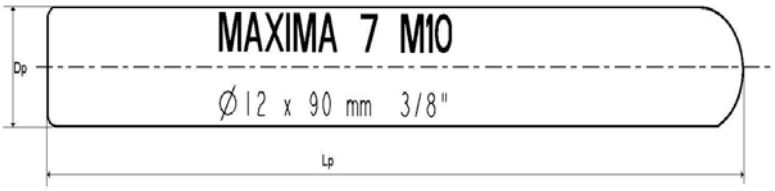
The original French version is signed by

Le Directeur Technique
C. BALOCHE

Assembled anchor, capsule resin and schema of the anchor in use :

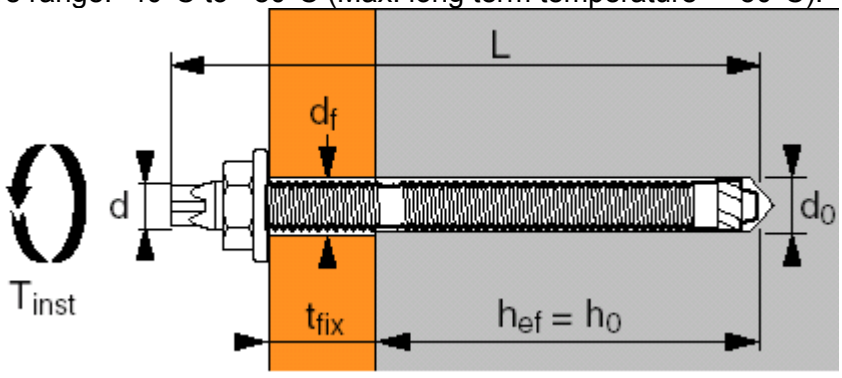


Marking on the threaded rod : letter S, bolt diameter and maximum thickness of the fixture :
Ex: SM10 / 20 A4



Marking on the capsule resin : product name, bolt diameter (metric and inch), diameter and length of the drilled hole.

Intended use :
Use category 1: Installation in dry or wet concrete and in flooded holes (depending on diameter).
Use in internal condition or external atmospheric exposure.
Temperature range: -40°C to +80°C (Max. long term temperature= +50°C).

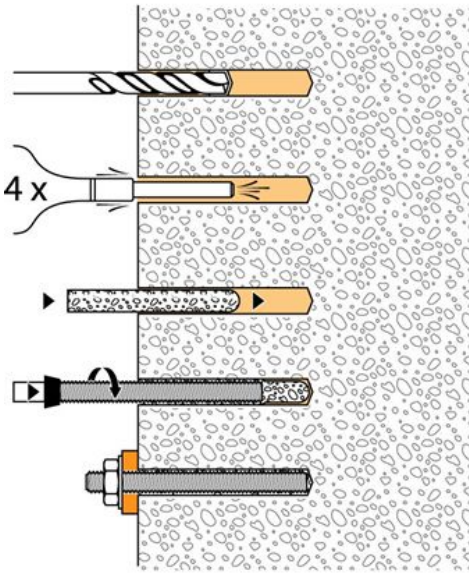


SPI MAXIMA	**Annex 1**
Product and intended use	of European Technical Approval **ETA-03/0008**

Table 1 : Materials

Type		Size	Material and EN/ISO reference
Capsule with methyl polymethacrilat resin, hardener and quartz sand			
Galvanized steel	Threaded rod	M8	Cold formed steel: DIN 1654 part 2 or 4 or NF A35-053; Zinc coating 5µm min. NF E25-009
		M10 to M16	Cold formed steel: NF A35-053; Zinc coating 5µm min. NF E25-009
		M20 to M30	11SMnPb37 : NF A35-561; Zinc coating 5µm min. NF E25-009
	Nut		Steel, EN 20898-2; Grade 6 or 8; Zinc coating 5µm min. NF E25-009
	Washer		Steel DIN 513; Zinc coating 5µm min. NF E25-009
Stainless steel	Threaded rod	M8 to M24	A4-70 acc. ISO 3506-1
		M30	A4-50 acc. ISO 3506-1
	Nut		Stainless steel A4-80; NF EN 10088-3
	Washer		Stainless steel A4; NF EN 20898-2

MAXIMA M8 M12



MAXIMA M16 M30

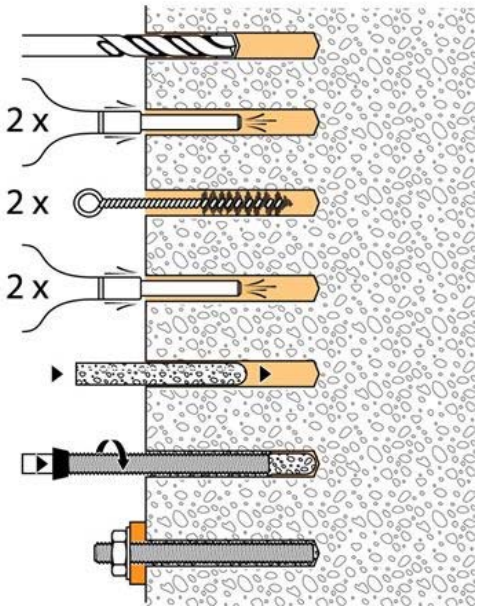


Table 2 : Cleaning method

Nominal diameter	M8 to M12	M16 to M30
Cleaning method	Clean the hole with 4 blows	2 blows+ 2 brushing operation + 2 blows

Anchor size	M16	M20	M24	M30
Brush diameter [mm]	18	25	28	35

Ambient temperature	-5°C<T≤0°C	0°C<T≤10°C	10°C<T<20°	T≥20°C
Dry concrete	5 h	1 h	30 min.	20 min.
Wet concrete	10 h	2 h	1 h	40 min.

SPIT MAXIMA	**Annex 2**
Materials and setting process	of European Technical Approval **ETA-03/0008**

Table 3: Dimensions

Threaded rod					Capsule		
Name	d	h_{ef}	L	t_{fix}	L_p*	D_p**	Name
M8	8	80	110	15	80	9,25	**MAXIMA M8**
M10	10	90	130	20	85	10,75	**MAXIMA M10**
M12	12	110	160	25	105	12,25	**MAXIMA M12**
M16	16	125	190	35	105	16,75	**MAXIMA M16**
M20	20	170	260	65	160	23	**MAXIMA M20**
M24	24	210	300	63	200	23	**MAXIMA M24**
M30	30	280	380	70	260	27,5	**MAXIMA M30**

***** ± 3 mm ** ± 0,2 mm

Table 4: Installation data

Nominal diameter	Ø d_0 Nominal diameter of the drill bit	h_0 depth of the hole	h_{ef} effective anchoring depth	T_{inst} Tightening torque	h_{min} minimum thickness of the concrete slab	d_f Clearance hole in the fixture
	[mm]	[mm]	[mm]	[N.m]	[mm]	[mm]
M8	10	80	80	10	110	9
M10	12	90	90	20	120	12
M12	14	110	110	30	150	14
M16	18	125	125	60	160	18
M20	25	170	170	120	220	22
M24	28	210	210	200	300	26
M30	35	280	280	400	350	33

Table 5 : Minimum spacing and edge distances

			M8	**M10**	**M12**	**M16**	**M20**	**M24**	**M30**
Minimum spacing	s_{min}	mm	40	45	55	65	85	105	140
Minimum edge distance	c_{min}	mm	40	45	55	65	85	105	140

Table 6: Characteristic values of resistance to tension loads of design method A

			M8	M10	M12	M16	M20	M24	M30
Steel failure									
Galvanized steel									
Characteristic resistance	$N_{Rk,s}$	[kN]	22	34	50	94	118	170	271
Partial safety factor	γ_{Ms}	-	1,71	1,71	1,71	1,71	1,49	1,49	1,49
Stainless steel									
Characteristic resistance	$N_{Rk,s}$	[kN]	23	37	54	102	159	229	261
Partial safety factor	γ_{Ms}	-	1,87	1,87	1,87	1,87	1,87	1,87	2,86
Pullout and concrete cone failure in non-cracked concrete C20/25 to C50/60 Use category 1[1)2)]									
Characteristic resistance C20/25 T = - 40°C to + 40°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	16	25	40	60	75	115	140
Characteristic resistanceC20/25 T = - 40°C to + 80°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	9	16	25	40	50	75	95
Characteristic resistanceC50/60 T = - 40°C to + 40°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	16	25	40	60	115	170	250
Characteristic resistanceC50/60 T = - 40°C to + 80°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	9	16	25	40	60	95	140
Partial safety factor	$\gamma_{Mp} = \gamma_{Mc}$	-	1,8	1,8	1,8	1,8	1,8	1,8	1,8
Pullout and concrete cone failure in non-cracked concrete C20/25 to C50/60 Use category 2[1)2)]									
Characteristic resistance C20/25 T = - 40°C to + 40°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	-	-	40	60	75	115	140
Characteristic resistance C20/25 T = - 40°C to + 80°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	-	-	25	40	50	75	95
Characteristic resistance C50/60 T = - 40°C to + 40°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	-	-	40	60	115	170	250
Characteristic resistance C50/60 T = - 40°C to + 80°C	$N_{Rk,p} = N^0_{Rk,c}$	[kN]	-	-	25	40	60	95	140
Partial safety factor	$\gamma_{Mp} = \gamma_{Mc}$	-	-	-	2,1	2,1	2,1	2,1	2,1
Splitting failure									
Effective anchorage depth	h_{ef}	[mm]	80	90	110	125	170	210	280
Partial safety factor (Use category 1)	$\gamma_{M,sp}$	-	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Partial safety factor (Use category 2)	$\gamma_{M,sp}$	-	-	-	2,1	2,1	2,1	2,1	2,1
Spacing	$s_{cr,N}$	[mm]	160	180	220	250	340	420	560
	$s_{cr,sp}$	[mm]	160	230	330	450	340	420	560
Edge distance	$c_{cr,N}$	[mm]	80	90	110	125	170	210	280
	$c_{cr,sp}$	[mm]	80	115	165	225	170	210	280

1) resistance in concrete strength class from C20/25 to C50/60 using interpolation
2) according to equation (6.19) ETAG 001 part 5.

SPIT MAXIMA	**Annex 4**
Characteristic resistance under tension loads – design method A	of European Technical Approval **ETA-03/0008**

Table 7: Characteristic values of resistance to shear loads of design method A

			M8	M10	M12	M16	M20	M24	M30
Steel failure without lever arm									
Galvanized steel									
Characteristic resistance	$V_{Rk,s}$	[kN]	9,6	13,6	17,4	34	58	80	136
Partial safety factor	γ_{Ms}	-	1,43	1,43	1,43	1,43	1,50	1,50	1,50
Stainless steel									
Characteristic resistance	$V_{Rk,s}$	[kN]	9,6	13,6	17,4	34	58	80	136
Partial safety factor	γ_{Ms}	-	1,55	1,55	1,55	1,55	1,55	1,55	2,38
Steel failure with lever arm									
Galvanized steel									
Characteristic resistance			22	45	78	200	301	520	1052
Partial safety factor			1,43	1,43	1,43	1,43	1,50	1,50	1,50
Stainless steel									
Characteristic resistance	$M^0_{Rk,s}$	[N.m]	22	45	80	207	405	700	1011
Partial safety factor	γ_{Ms}	-	1,55	1,55	1,55	1,55	1,55	1,55	2,38
Pry out failure									
Factor in equation (5.6)	k	-	2	2	2	2	2	2	2
Partial safety factor	γ_{Mp}	-	1,50	1,50	1,50	1,50	1,50	1,50	1,50
Concrete edge failure									
Effective length of anchor under shear loading	lf	[mm]	80	90	110	125	170	210	280
Outside diameter of anchor	d_{nom}	[mm]	10	12	14	18	25	28	35
Partial safety factor	γ_{Mc}	-	1,50	1,50	1,50	1,50	1,50	1,50	1,50

Table 8: Characteristic displacements under axial tension loads

Characteristic displacement in non-cracked C 20/25 concrete		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M30**
Admissible service load :N	[kN]	6,0	8,5	12,4	18,9	20,9	31,0	31,1
δ_{N0} short term	[mm]	0,1	0,1	0,1	0,1	0,1	0,1	0,2
$\delta_{N\infty}$ long term	[mm]	0,1	0,1	0,1	0,1	0,1	0,1	0,2

Table 9: Characteristic displacements under shear loads

Characteristic displacement in non-cracked C 20/25 concrete		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M30**
Admissible service load : V	[kN]	5,5	8,7	12,6	23,6	28,1	40,5	64,7
δ_{N0} short term	[mm]	2,3	2,3	2,3	2,4	2,5	2,6	2,7
$\delta_{N\infty}$ long term	[mm]	3,4	3,4	3,5	3,6	3,7	3,8	4,1