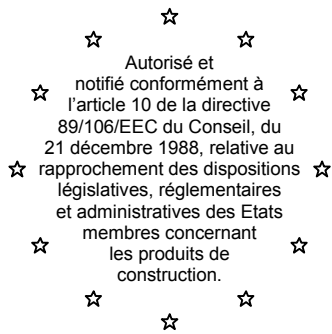


Centre Scientifique et Technique du Bâtiment

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CSTB
le futur en construction

MEMBRE DE L'EOTA

European Technical Approval

ETA-13/0437

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

Nom commercial :

Trade name:

SPIT MULTI-MAX

Titulaire :

Holder of approval:

Société SPIT

Route de Lyon

F-26501 BOURG-LES-VALENCE

France

Type générique et utilisation prévue
du produit de construction :

Cheville à scellement de type "à injection" avec tige
d'ancrage diamètres M8, M10, M12, pour fixation dans les
maçonneries.

**Generic type and use of
construction product:**

**Bonded injection type anchor with anchor rod sizes M8,
M10, M12 for use in masonry.**

Validité du :

au :

Validity from / to:

31/05/2013

31/05/2018

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:**

18 pages incluant 11 annexes faisant partie intégrante du
document.

**18 pages including 11 annexes which form an integral
part of the document.**



Organisation pour l'Agrément Technique Européen

European Organisation for Technical Approvals

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 products¹, modified by the Council Directive 93/68/EEC of 22 July 1993²; and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - Décret n° 92-647 du 8 juillet 1992⁴ 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/EC⁵;
 - Guideline for European Technical Approval of « Metal Injection Anchors for use in Masonry » ETAG 029, edition 2012.
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.
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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.

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 MULTI-MAX is a bonded anchor (injection type) with anchor rod made of galvanised steel or stainless steel which is placed into a drilled hole previously injected with a two components injection mortar using an applicator gun equipped with a special mixing nozzle. The anchor rod is inserted into the resin with a slow and slight twisting motion. The mortar cartridges are available in different sizes 410 ml to 280 ml The SPIT MULTI-MAX is intended to be used in masonry

For the installed anchor see Figure given in Annex 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. The anchor is to be used only for anchorages subject to static or quasi-static loading in solid masonry (use category b) or in hollow or perforated masonry (use category c) according to annexe 6 and 7. The mortar strength class of the masonry has to be M 2,5 according to EN 998-2:2010 at minimum. The anchor may be used in dry or wet structure (category w/w).

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)

Element made of zinc coated steel:

The element made of electroplated steel may only be used in structures subject to dry internal conditions.

Element made of stainless steel:

The element made of stainless steel may be used in structures subject to dry internal conditions and also in concrete 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).

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 and the mortar cartridges correspond to the drawings and provisions given in the annexes. The characteristic material values, dimensions and tolerances of the anchor not indicated in the annexes shall correspond to the respective values laid down in the technical

documentation⁶ of this European Technical Approval. The characteristic anchor values for the design of anchorages are given in Annexes 9 to 11.

The metal parts of the injection anchor are assumed to satisfy the requirement of class A1 of the characteristic reaction to fire in accordance with the provisions of EC decision 96/603/EC, amended by 2000/605/EC. Regarding resistance to fire no performance is determined

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 Injection Anchors for use in Masonry », ETAG029, based on the use categories b and c in respect of the base material and category w/w in respect of installation and use.

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

According to the decision 97/177/EC of the European Commission⁷ System 1 of the attestation of conformity applies. This system of attestation of conformity is defined as follows:

System 1: Certification of conformity of the product by an approved certification body on the basis of:

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.

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 plan⁸. 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

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.

⁷ Official Journal of the European Communities L 073 of 14.03.1997

⁸ 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.

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

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;
- The last two digits of the year in which the CE-marking was affixed;
- ETAG029
- Use category (b,c and w/w);
-
- 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 suitability of the anchor for the intended use is given under the following conditions:

The anchorages are designed in accordance with the ETAG029⁹ "Metal Injection Anchor for use in Masonry" Annex C , Design method A, under the responsibility of an engineer experienced in anchorages and masonry work.

Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage (nature and strength of the base material), the loads to be transmitted and their transmission to the supports of the structures. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to the supports, etc.).

The characteristic resistances are only valid for kind of bricks according to annex 6 and 7. The characteristic resistances for use in solid masonry are also valid for larger brick sizes and larger compressive strength of the masonry unit.

For other bricks in solid masonry and in hollow or perforated masonry, the characteristic resistances of the anchor may be determined by job site tests according to ETAG029, Annex B under consideration of the β -factor according to Annexe 11 , table 10.

4.2.2. Installation of anchors

The fitness for use of the anchor can only be assumed if the following conditions of installation are met:

- anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site;

⁹ ETAG029 "Metal Injection Anchor for use in Masonry" is published in English on EOTA website: www.eota.eu.

- use of the anchor only as supplied by the manufacturer without exchanging any components of the anchor; commercial standard threaded rods, washers and hexagon nuts may be used if the following requirements are fulfilled:
 - o Material, dimensions and mechanical properties according Annex 2
 - o Confirmation of material and mechanical properties by inspection certificate 3.1 according to EN 10204:2004,
 - o Marking of threaded rod with the envisage embedment depth. This may be done by the manufacturer of the rod or the person on job site
- anchor installation in accordance with the manufacturer's specifications and drawings using the tools indicated in this European Technical Approval;
- checks before placing the anchor to ensure that the use category applies and that the characteristic values of the base material in which the anchor is to be placed, is identical with the values, which the characteristic loads apply for;
- edge distance and spacing not less than the specified values without minus tolerance;
- in case of aborted drill hole, the drill hole shall be filled with mortar;
- keeping the installation parameters (Annex 4);
- hole cleaning and anchor installation in accordance with manufacturer's installation instructions (Annexes 3 to 5)
- marking and keeping the effective anchorage depth;
- during curing of the injection mortar the temperature of the masonry must not fall below - 5°C;
- observing the curing time according to Annex 3, Table 4 until the anchor may be loaded;
- application of the torque moment given in Annex 8 using 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 as well as in sections 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 for manual are:

- installation parameters according to Annex 4,
- material and property class of metal parts according to Annex 2, Table 1,
- information on the installation procedure, including cleaning of the hole with the cleaning equipment, preferably by means of an illustration,
- exact volume of injection mortar depend on the relevant installation,
- storage temperature of anchor components, minimum and maximum temperature of the base material, processing time (open time) of the mortar and curing time until the anchor may be loaded according to Annex 9,
- identification of the manufacturing batch,

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

5 Recommendations concerning packaging, transport and storage.

The mortar cartridges shall be protected against sun radiation and shall be stored according to the manufacturer's installation instructions in dry conditions at temperatures of at least 0°C to not more than +35°C. Mortar cartridges with expired shelf life must no longer be used.

The original French version is signed
by
Le Directeur Technique
C. BALOCHE

Product description and intended use

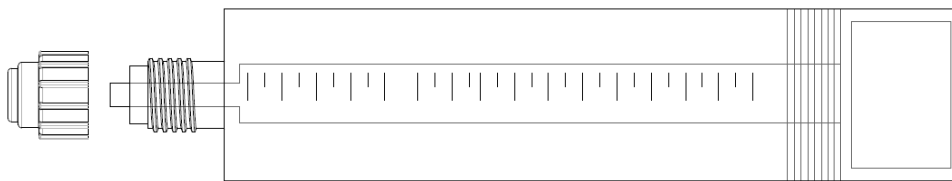
The bonded anchor consists of injection mortar Spit MULTI-MAX, metric threaded rod and plastic anchor sleeve

Injection mortar MULTI-MAX

Cartridge 380 ml and 410 ml



Cartridge 280 ml and 300 ml



Mixing nozzles



Sieve sleeve



iD-ALL sleeve

Commercial standard threaded rods with identifying mark of the embedment depth

Intended use:

- Base material: use category b and c (solid, hollow or perforated masonry)
- Installation and use: category w/w (installation in dry or wet masonry)
- Temperature ranges: -40°C to $+40^{\circ}\text{C}$ (max. short term temperature $+40^{\circ}\text{C}$ and max. long term temperature $+24^{\circ}\text{C}$)

SPIT MULTI-MAX

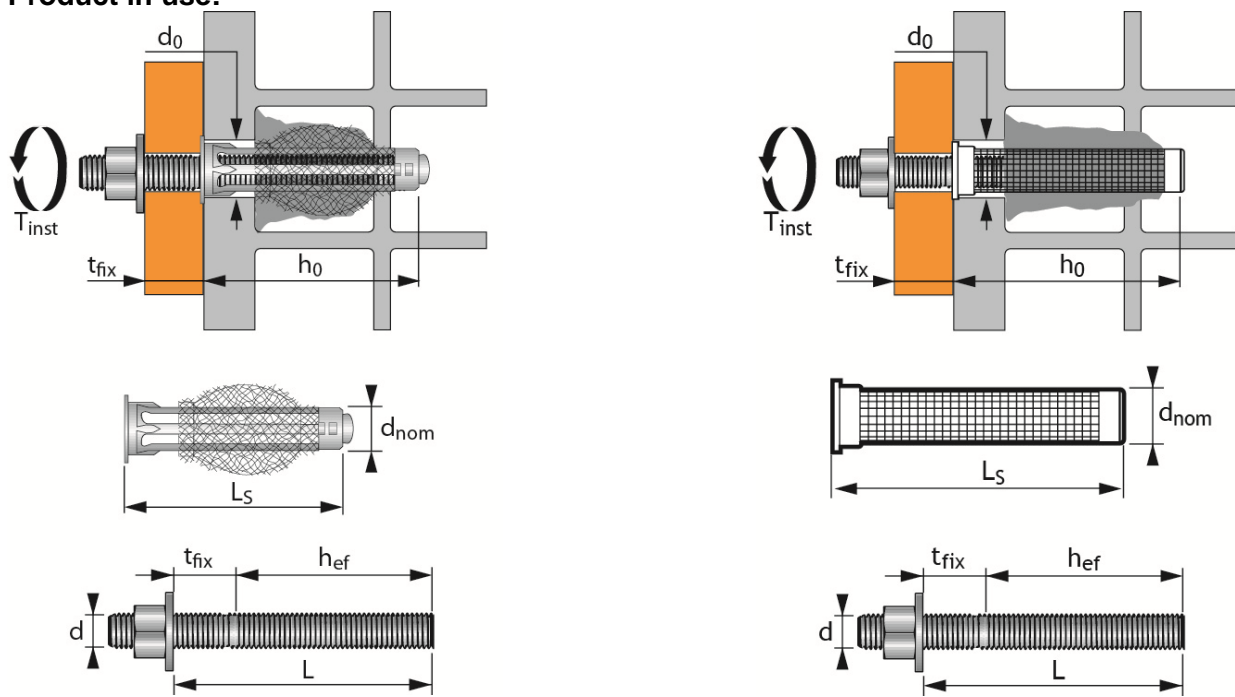
Product and intended use

**Annex 1
 of European Technical
 Approval
 ETA-13/0437**

Table 1: Materials

Designation	Material
Injection mortar	Methacrylate resin, hardener and inorganic agents
Elements made of zinc coated steel	
Threaded rod M8 – M12 (standard commercial rods)	Strength class 5.8, 6.8, 8.8, 10.9 EN ISO 898-1, Zinc coating $\geq 5\mu\text{m}$ NF E25-009,
Washer	Steel DIN 513 Zinc coating $\geq 5\mu\text{m}$ NF E25-009,
Nut	Steel, EN 20898-2 Grade 6 or 8 Zinc coating $\geq 5\mu\text{m}$ NF E25-009,
Elements made of stainless steel A4	
Threaded rod M8 – M12	Stainless steel A4-70: 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 acc. EN 10088
Washer	Stainless steel A4-70: 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088
Nut	Strength class 80 EN ISO 3506-2 Stainless steel 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 acc. EN 10088
Elements made of high corrosion resistant stainless steel	
Threaded rod M8 – M12	Stainless steel HCR $R_m \geq 650$ MPa Acc. EN 10088, 1.4529 / 1.4565
Washer	Stainless steel HCR Acc. EN 10088, 1.4529 / 1.4565
Nut	Stainless steel HCR $R_m \geq 650$ MPa Acc. EN 10088, 1.4529 / 1.4565

Product in use:



SPIT MULTI-MAX	Annex 2 of European Technical Approval ETA-13/0437
Material	

Table 2 : Cleaning method for solid masonry

	Standard cleaning
Nominal diameter	All diameters
Cleaning method	4 blows+ 4 brushing operation + 4 blows Blowing operation: using a hand pump, blow 4 times. Brushing operation: using the relevant brush, starting from the top of the hole, move downward to the bottom of the hole then move upward to the top of the hole.

Table 3 : Brush sizes

	Threaded rods		
Anchor size	M8	M10	M12
Brush diameter [mm]	11	13	15

Brush for cleaning the drill hole



Nota: For hollow bricks cleaning of the hole is not necessary

Table 4: Processing and curing time

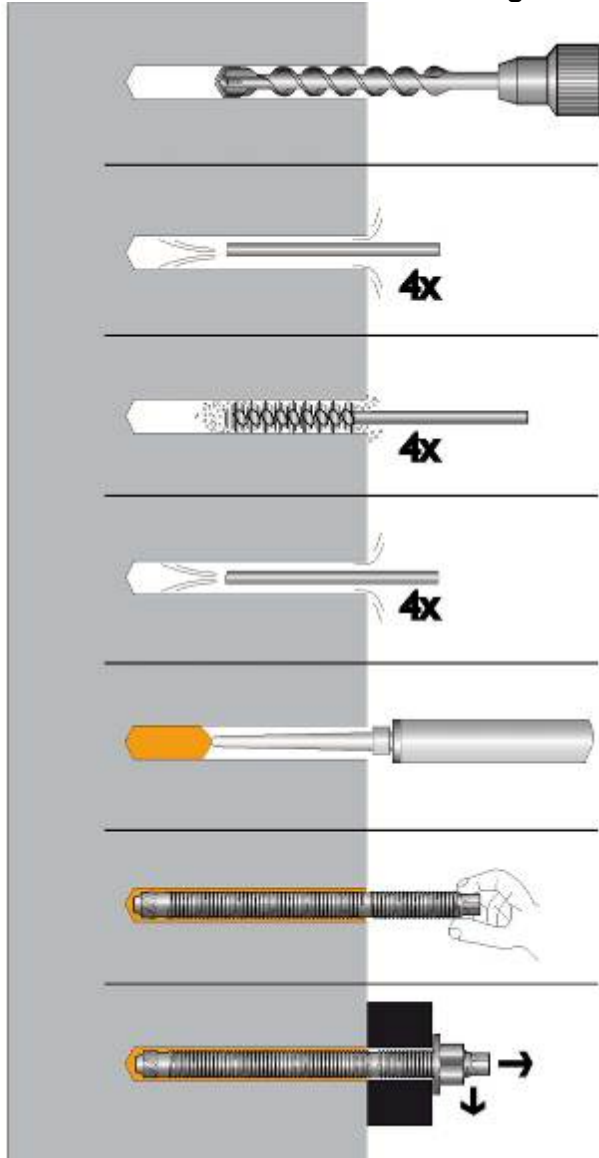
Temperature of base material				Gel time	Curing time in dry concrete
-5°C	>	T	to 0°C	-	360 min
0°C	>	T _{base material}	to 5°C	18 min	180 min
5°C	>	T _{base material}	to 10°C	12 min	90 min
10°C	>	T _{base material}	to 20°C	6 min	60 min
20°C	>	T _{base material}	to 30°C	4 min	45 min
30°C	>	T _{base material}	to 40°C	2 min	35 min

SPIT MULTI-MAX

Cleaning methods

**Annex 3
 of European Technical Approval
 ETA-13/0437**

Instruction For Use: Standard cleaning in solid masonry



Drill hole of diameter (d_0) and depth (h_0) with a hammer drill set in rotation-hammer mode using an appropriately carbide drill bit.

4 strokes with SPIT blow-out pump from the back of the hole until return air stream is free of noticeable dust.

4 times with the specified brush size (brush diameter \geq borehole diameter d_0) by inserting the SPIT steel wire brush to the back of the hole with a twisting motion and removing.

4 strokes with SPIT blow-out pump from the back of the hole until return air stream is free of noticeable dust.

Screw the mixing nozzle onto the cartridge and dispense the first part to waste until an even colour is achieved for each new cartridge or mixing nozzle. Use tube extensions for holes deeper than 250 mm. Starting from the bottom of the hole fill uniformly. In order to avoid air pocket, withdraw slowly the mixing nozzle while injecting the resin. Fill the hole until 1/2 full.

Insert the rod or rebar, slowly and with a slight twisting motion in respect of the gel time indicated in table 4. Remove excess resin from around the mouth of the hole before it sets. Control the embedment depth

Do not disturb anchor between specified cure time (acc. to table 4)
 Attach the fixture and tight the nut at the specified torque

Table 5: Setting parameters

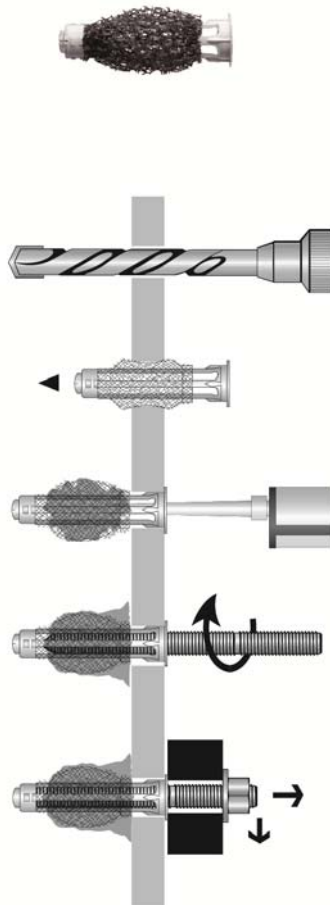
Sleeve		-			iD-ALL		Sieve sleeves 15x130		Sieve sleeves 20x85
		M8	M10	M12	M8	M10	M8	M10	M12
Threaded rod		M8	M10	M12	M8	M10	M8	M10	M12
Drill hole diameter	mm	10	12	14	16	16	15	15	20
Depth of drilled hole	mm	80	80	80	70	70	135	135	90
Overall embedment depth	mm	80	80	80	70	70	135	135	90
Torque moment	N.m	See annex 8							

SPIT MULTI-MAX

Instruction For Use: Standard cleaning in solid masonry

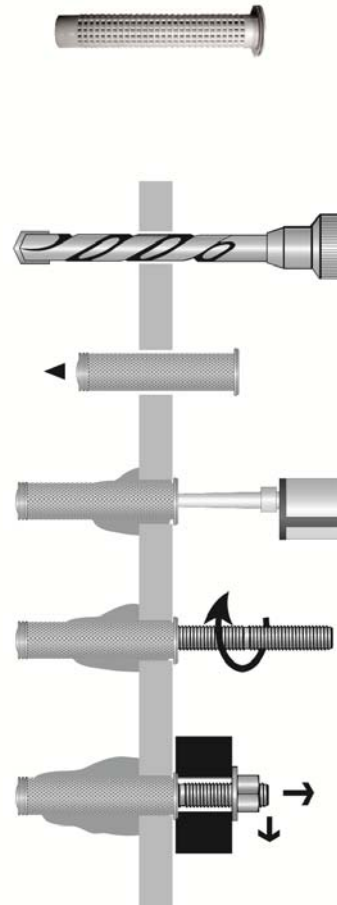
**Annex 4
 of European Technical Approval
 ETA-13/0437**

Installation method for iD-ALL system



- The substrate should be perforated:
 - using rotation/percussion for bricks 1, 5 and 6,
 - using rotation only for bricks 2, 3 and 4.
- Manually position the iD-ALL system in the hole until the flange presses against the exterior wall of the masonry.
- Close the centering plug.
- After inserting the iD-ALL nozzle onto the cartridge, push the nozzle all the way in and inject the resin by pressing the gun six times.
- Using rotation, insert the threaded stud all the way in.
- After the resin hardens, install the item being mounted and tighten to the recommended torque.

Installation method for sieve sleeve

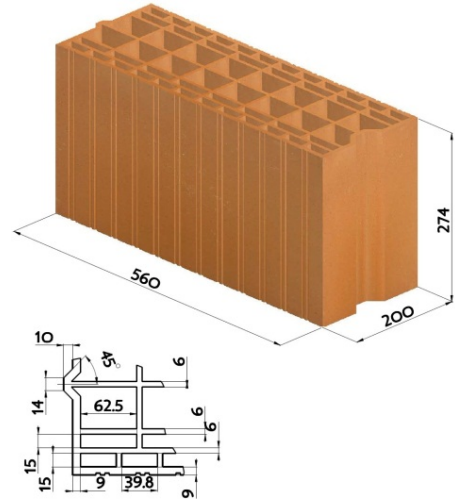
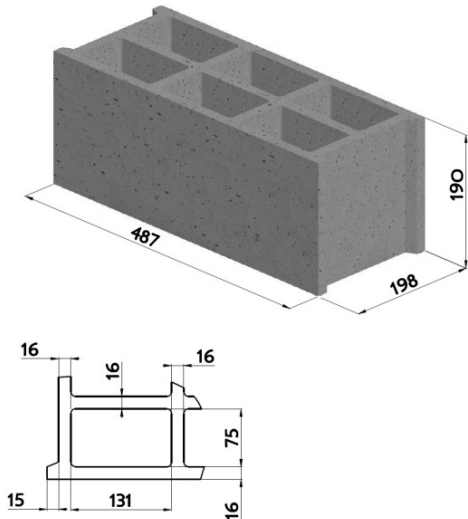


- The substrate should be perforated:
 - using rotation/percussion for bricks 1, 5 and 6,
 - using rotation only for bricks 2, 3 and 4.
- Manually position the sieve sleeve in the hole until the flange presses against the exterior wall of the masonry.
- Close the centering plug.
- After inserting the nozzle onto the cartridge, push the nozzle all the way in and inject the resin by pressing the gun four times, then move the nozzle backwards and press four more times.
- Using rotation, insert the threaded stud all the way in.
- After the resin hardens, install the item being mounted and tighten to the recommended torque.

SPIT MULTI-MAX

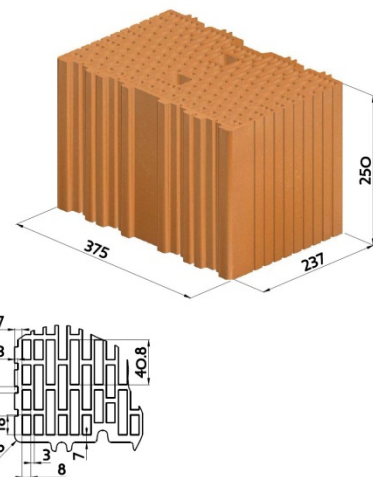
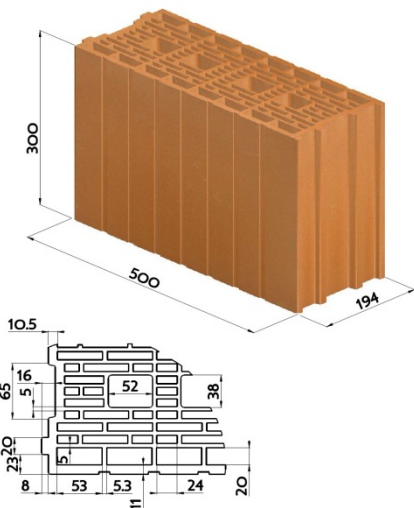
Instruction For Use: Installation in hollow substrate with iD-ALL and sieve sleeves

**Annex 5
 of European Technical Approval
 ETA-13/0437**



Brick #1: Concrete hollow block B40
 NF P 14-301 & EN 771-3
 $f_b \geq 6,0$ [N/mm²]
 $\rho \geq 1$ kg/dm³

Brick #2: Clay masonry OPTIBRIC PV 3+
 NF EN 771-1 CN
 $f_b \geq 9,0$ [N/mm²]
 $\rho = 0,66$ kg/dm³



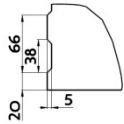
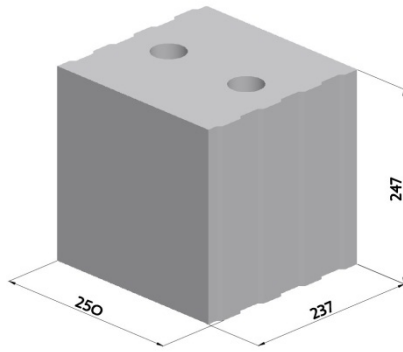
Brick #3: Clay masonry
 POROTHERM GF R20 Th+
 NF EN 771-1 CN
 $f_b \geq 10,0$ [N/mm²]
 $\rho = 0,67$ kg/dm³

Brick #4: Clay masonry
 POROTHERM R37
 NF EN 771-1 CN
 $f_b \geq 8,0$ [N/mm²]
 $\rho = 0,79$ kg/dm³

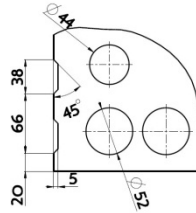
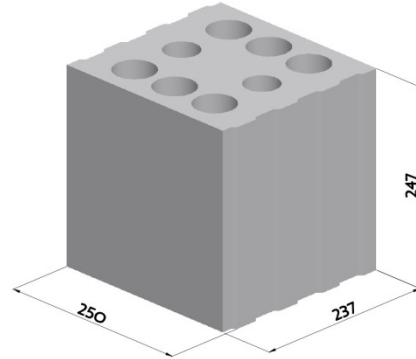
SPIT MULTI-MAX

Types of bricks and dimensions

**Annex 6
 of European Technical
 Approval
 ETA-13/0437**



Brick #5: Calcium silicate masonry
 KSL-R (P) 20-2,0-8 DF (240)
 DIN EN 771-2
 $f_b \geq 20.0$ [N/mm²]
 $\rho = 2$ kg/dm³



Brick #6: Calcium silicate masonry
 KSL -R (P) 12-1,6-8 DF (240)
 DIN EN 771-2
 $f_b \geq 12.0$ [N/mm²]
 $\rho = 1,6$ kg/dm³

SPIT MULTI-MAX

Types of bricks and dimensions

**Annex 7
 of European Technical
 Approval
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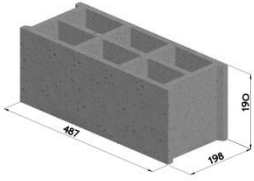



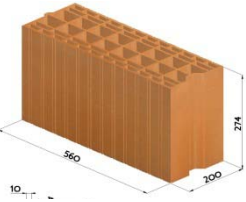



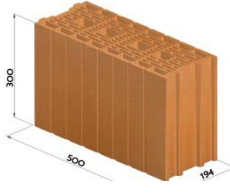



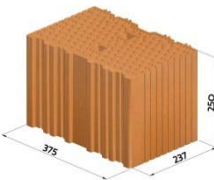



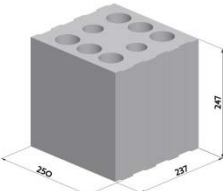



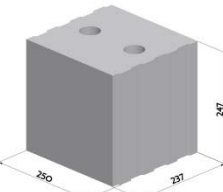
Brick n°1 		M8- M10	
		M8- M10	$T_{inst} = 2.0 \text{ N.m}$
		M12	
Brick n°2 		M8- M10	
		M8- M10	$T_{inst} = 2.0 \text{ N.m}$
		M12	
Brick n°3 		M8- M10	
		M8- M10	$T_{inst} = 3.0 \text{ N.m}$
		M12	
Brick n°4 		M8- M10	
		M8- M10	$T_{inst} = 3.0 \text{ N.m}$
		M12	
Brick n°6 		M8- M10	
		M8- M10	$T_{inst} = 3.0 \text{ N.m}$
		M12	
Brick n°5 	-	M8- M10- M12	$T_{inst} = 3.0 \text{ N.m}$
SPIT MULTI-MAX Allocation of anchors, sleeves and bricks for SPIT MULTI-MAX		Annex 8 of European Technical Approval ETA-13/0437	

Table 6: Characteristic values for tension and shear load

Brick N°	Comp strength [N/mm ²]	sleeve	Anchor size	Effective embedment depth h _{ef} [mm]	Characteristic resistance	
					N _{Rk} ¹⁾ [kN]	V _{Rk} ^{2) 3)} [kN]
1	6,0	iD-ALL	M8	70	2.0	2.5
			M10	70	2.0	2.5
		15x130	M8	135	1.5	3.0
			M10	135	1.5	3.0
		20x85	M12	90	1.5	2.0
		2	9,0	iD-ALL	M8	70
M10	70				1.5	1.5
15x130	M8			135	1.5	1.5
	M10			135	1.5	1.5
20x85	M12			90	2.5	3.5
3	10,0			iD-ALL	M8	70
		M10	70		0.9	4.0
		15x130	M8	135	1.2	3.5
			M10	135	1.2	3.5
		20x85	M12	90	2.5	3.0
		4	8,0	iD-ALL	M8	70
M10	70				1.2	0.9
15x130	M8			135	2.0	1.5
	M10			135	2.0	1.5
20x85	M12			90	0.9	4.0
5	20,0			-	M8	80
		-	M10	80	12.0	9.0
		-	M12	80	12.0	12.0
6	12,0	iD-ALL	M8	70	1.5	9.0
			M10	70	1.5	11.0
		15x130	M8	135	3.0	9.0
			M10	135	3.0	12.0
		20x85	M12	90	3.5	10.0
		Partial safety factor γ _M				

1) For design according to ETAG 029, Annex C: N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,pb} = N_{Rk,s}

2) Failure of the metal part and local brick failure: design according to ETAG 029, Annex C:

V_{Rk} = V_{Rk,b} = V_{Rk,s}

3) Brick edge failure: V_{Rk,c} according to ETAG 029, Annex C

4) In absence of national regulations

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Design method A
Characteristic values for tension and shear load

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Table 7: Characteristic bending moment

				M8	M10	M12	
Characteristic bending moment	$M_{Rk,s}$	Property class	5.8	[N.m]	18.7	37.4	65.5
			8.8	[N.m]	30.0	59.8	104.8
			A4-70	[N.m]	26.2	52.3	91.7
Partial safety factor	$\gamma_{Ms,v}^{1)}$	Property class	5.8	[-]	1.25		
			8.8	[-]	1.25		
			A4-70	[-]	1.56		

1) In absence of national regulations

Table 8: Displacement under tension and shear load

Brick N°	sleeve	Anchor size	Tension			Shear		
			Load F	Displacement		Load F	Displacement	
				δ_{N0}	$\delta_{N\infty}$		δ_{V0}	$\delta_{V\infty}$
			[kN]	[mm]	[mm]	[kN]	[mm]	[mm]
1	iD-ALL	M8	$\frac{N_{Rk}}{1,4 \times \gamma_M}$	0.3	0.6	$\frac{V_{Rk}}{1,4 \times \gamma_M}$	1.1	2.3
		M10		0.3	0.6		1.1	2.3
	15x130	M8		0.2	0.4		4.7	9.4
		M10		0.2	0.4		4.7	9.4
	20x85	M12		0.2	0.5		1.2	2.4
2	iD-ALL	M8		0.1	0.2		1.0	2.1
		M10		0.1	0.2		1.0	2.1
	15x130	M8		0.1	0.2		1.3	2.7
		M10		0.1	0.2		1.3	2.7
	20x85	M12		0.5	1.0		7.2	14.3
3	iD-ALL	M8	0.1	0.2	2.4	4.8		
		M10	0.1	0.2	2.4	4.8		
	15x130	M8	0.2	0.3	2.6	5.1		
		M10	0.2	0.3	2.6	5.1		
	20x85	M12	0.2	0.4	4.9	9.9		
4	iD-ALL	M8	0.7	1.4	0.5	0.9		
		M10	0.7	1.4	0.5	0.9		
	15x130	M8	0.2	0.5	2.3	4.7		
		M10	0.2	0.5	2.3	4.7		
	20x85	M12	0.1	0.2	2.1	4.2		
5	-	M8	0.2	0.5	0.8	1.6		
	-	M10	0.4	0.8	0.5	1.0		
	-	M12	0.2	0.5	1.3	2.6		
6	iD-ALL	M8	0.2	0.3	2.5	4.9		
		M10	0.2	0.3	2.5	4.9		
	15x130	M8	0.3	0.5	1.8	3.5		
		M10	0.3	0.5	1.8	3.5		
	20x85	M12	0.1	0.2	0.5	1.1		

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Design method A
Characteristic bending moments
Displacements

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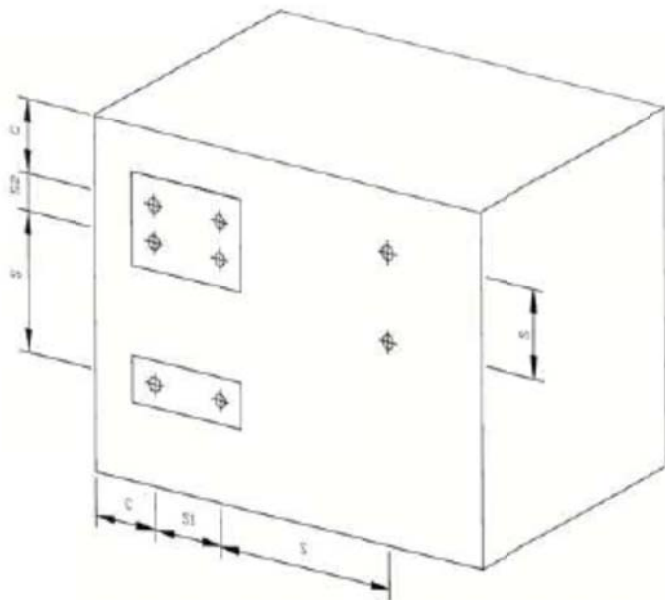
Table 9: β factor for tests to be carried out on construction works

Bricks	Installation and use	Sleeves	sizes	β factor
All types	w/w	iD-ALL	M8 & M10	0.826
		15 x 130	M8 & M10	0.826
		20 x 85	M12	0.776

Table 10: Edge distances and spacing

Brick n°	Anchor size								
	M8			M10			M12		
	C_{min} [mm]	$S_{min,\perp}$ [mm]	$S_{min,\parallel}$ [mm]	C_{min} [mm]	$S_{min,\perp}$ [mm]	$S_{min,\parallel}$ [mm]	C_{min} [mm]	$S_{min,\perp}$ [mm]	$S_{min,\parallel}$ [mm]
1	100	190	487	100	190	487	120	190	487
2	100	274	560	100	274	560	120	274	560
3	100	300	500	100	300	500	120	300	500
4	100	250	237	100	250	237	120	250	237
5	120	240	240	120	240	240	120	240	240
6	100	247	250	100	247	250	120	247	250

Nota: $s_{min} = s_{cr}$ and $c_{min} = c_{cr}$



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Design method A
 β factor
 Edge distances and spacing

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