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imenovan in priglašen skladno z 10. členom direktive Sveta z dne 21. decembra 1988 o približevanju zakonov, podzakonskih predpisov in drugih upravnih aktov držav članic,ki se nanašajo na gradbene proizvode (89/106/EGS)

član EOTA
Member of EOTA

E-046C/08

European Technical Approval ETA-10/0074

[English translation prepared by ZAG – Original version in Slovenian language]

Komercialno ime *Trade name*	**FM-MP3® evo**
Imetnik soglasja *Holder of approval*	**FRIULSIDER S.p.A.** **via Trieste 1** **33048 San Giovanni al Natisone (UD)** **Italy**
Tip gradbenega proizvoda in njegova predvidena uporaba *Generic type and use of construction product*	**Galvansko pocinkano kovinsko sidro velikosti M6, M8, M10 in M12 za nekonstrukcijsko skupinsko uporabo v beton** *Metal anchor made of galvanised steel of sizes M6, M8, M10 and M12 for multiple use for non-structural application in concrete*
Veljavnost *Validity*	od / *from* **06.04.2010** do / *to* **06.04.2015**
Proizvodni obrat *Manufacturing plant*	**FRIULSIDER S.p.A.** **via Trieste 1** **33048 San Giovanni al Natisone (UD)** **Italy**
To Evropsko tehnično soglasje vsebuje *This European Technical Approval contains*	12 strani vključno s 5 prilogami, ki so sestavni del tega soglasja *12 pages including 5 annexes, which form an integral part of the document*

I LEGAL BASES AND GENERAL CONDITIONS

1. This European Technical Approval is issued by the Slovenian National Building and Civil Engineering Institute (ZAG) 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[2] and Regulation (EC) N°1882/2003 of the European Parliament and of the Council[3],

   – Zakon o gradbenih proizvodih (ZGPro)[4],

   – 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", Part 1 "Anchors in General" and Part 6: "Anchors for multiple use for non – structural applications", ETAG 001, edition October 1997, amended November 2006.

2. The Slovenian National Building and Civil Engineering Institute (ZAG) is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. 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 Slovenian National Building and Civil Engineering Institute (ZAG), in particular pursuant to information by the Commission according 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 Slovenian National Building and Civil Engineering Institute (ZAG). 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 fully 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.1

4 Offical Gazette of the Republic of Slovenia, N° 52/00 and N° 110/02

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 FM-MP3® evo in the range of M6, M8, M10 and M12 is an anchor made of galvanised steel, which is placed into a drilled hole and anchored by torque-controlled expansion.

For the installed anchor see Figure given in Annex 1.

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 Requirement 4 of Council Directive 89/106/EEC shall be full filled and failure of the fixture represents an immediate risk to human life. The anchor is to be used only for multiple use for non – structural applications. The definition of multiple use according to the Member States is given in the informative Annex 1 of the ETAG 001, Part 6.

The anchor may be used for anchorages with requirements related to resistance to fire.

The anchor is to be used only for anchorages subjected to static and quasi-static loading in reinforced or non - reinforced normal weight concrete of strength classes C20/25 at minimum to C50/60 at maximum according to EN 206-1:2003. It may be anchored in cracked or non-cracked concrete.

The anchor may only be used in concrete subject to dry internal conditions.

The provisions made in this European Technical Approval 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 manufacturer, 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 corresponds to the drawings and provisions given in Annexes 1 to 2. The characteristic material values, dimensions and tolerances of the anchor not indicated in these Annexes 2 and 3 shall correspond to the respective values laid down in the technical documentation[6] of this European Technical Approval.

Regarding the requirements concerning safety in case of fire it is assumed that anchor meets the requirements of class A1 in relation to reaction to fire in accordance with the stipulations of the Commission decision 96/603/EC, amended by 2000/605/EC.

The characteristic values for the design of anchorages are given in Annex 4, Table 6. The characteristic values for the design of the anchorages regarding resistance to fire are given in Annex 5, Table 7. They are valid for use in a system that is required to provide a specific fire resistance class.

Each anchor is marked with the manufacturer's mark, product name and size of the anchor according to Annex 1.

The anchor shall only be packaged and supplied as a complete unit.

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[6] The technical documentation of this European Technical Approval is deposited at the Slovenian National Building and Civil Engineering Institute (ZAG) and, as far as relevant for the tasks of the approved bodies involved in the attestation of conformity procedure, is handed over the approved bodies.

2.2 Methods of verification

The assessment of fitness of the anchor for the intended use in relation to the requirement for safety in use in the sense of the Essential Requirement 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 6 "Anchors for multiple use in non – structural applications".

The assessment of the anchor for the intended use in relation to the requirement for resistance to fire has been made in accordance with the Technical Report TR 020 "Evaluation of anchorages in concrete concerning resistance to fire".

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 failing within its scope (e.g. European legislation and national laws, regulation and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when they apply.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the decision 97/161/EG of the European Commission[7] the system 2(ii) (referred to as system 2+) of attestation of conformity applies.

This system of attestation of conformity is defined as follows:

System 2+: Certification of the conformity of the product by an approved certification body on the basis of:

a) tasks for the manufacturer:
   (1) initial type-testing of the product;
   (2) factory production control;
   (3) further testing of samples taken at the factory by the manufacturer in accordance with a control plan.

b) tasks for the approved body:
   (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 exercise permanent internal control. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with the European technical approval.

The manufacturer may only use initial/raw/constituent materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the "Control plan" dated 06.04.2010 which is part of the technical documentation of this European technical

[7] Official Journal of the European Communities L 198/31 of 25.7.1997

approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited with at Slovenian National Building and Civil Engineering Institute (ZAG).

The incoming raw materials shall be subject to controls and tests by the manufacturer before acceptance. Check of incoming materials shall include control of the inspection documents presented by the manufacturer of the raw materials (comparison with nominal values) by verifying dimensions and determining the material properties, e.g. tensile strength, hardness, surface finish.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the "Control plan".

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 a section 3.1 in the field of anchors in order to undertake the actions laid down in section 3.2.2. For this purpose the "Control Plan" referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body or bodies involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA–10/0074 issued on 06.04.2010.

3.2.2 Tasks of notified bodies

The notified body shall perform the:

- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control.

in accordance with the provisions laid down in the "Control plan" dated on 06.04.2010, which is part of technical documentation of this European technical approval.

The notified certification body involved by the manufacturer shall issue an EC certificate of conformity of the factory production control stating the conformity with the provisions of this European technical approval.

In cases where the provisions of the European technical approval and its "Control Plan" are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the Slovenian National Building and Civil Engineering Institute (ZAG) without delay.

3.3 CE-Marking

The CE marking shall be affixed on each packaging of anchors. The symbol "CE" shall be followed by the identification number of the certification body, and be accompanied by the following additional information:

- identification number of the certification body;
- name and identifying mark of the producer and manufacturing plant;
- the last two digits of the year in which CE – marking was affixed;
- number of the EC certificate of conformity of Factory Production Control;
- number of the European Technical Approval;
- use category (ETAG 001 – 6);
- size of the anchor.

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

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with the Slovenian National Building and Civil Engineering Institute (ZAG), which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the Slovenian National Building and Civil Engineering Institute (ZAG) before the changes are introduced. The Slovenian National Building and Civil Engineering Institute (ZAG) 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 alternations 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 C under the responsibility of an engineer experienced in anchorages and concrete work.
- The anchor is to be used only for multiple use for non – structural applications, the definition of multiple use according to the Member States is given in the information Annex 1 of ETAG 001 Part 6.
- 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.)
- The design of fixture is such that exposure has to consider the conditions given in the Technical Report TR 020 “Evaluation of anchorages in concrete concerning resistance to fire”. The relevant characteristic values are given in Table 6 of Annex 4 The design method covers anchors with a fire attack from one side only. If the fire attack is from more than one side, the design method may be taken only, if edge distance of the anchor is $c \geq 300$ mm.

4.2.2 Installation of anchors

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

- 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 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 rang given and is not lower than that of the concrete to which the characteristic loads apply.
- Check of concrete being well compacted, e.g. without significant voids.
- Cleaning of the hole of drilling dust.

- Anchor installation ensuring the specified embedment depth.
- 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 or 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.
- Application of the torque moment given in Annex 3 using a calibrated torque wrench.

4.2.3 Responsibility for the manufacturer

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions according to 1 and 2 including Annexes referred to 4.2.1, 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 packaging and/or on an enclosed instruction sheet, preferably using illustration.

The minimum data required are:

- drill bit diameter;
- thread diameter;
- maximum thickness of the fixture;
- minimum installation depth;
- torque moment;
- 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.

Leading expert:	Service for Technical Approvals:
Dušica Drobnič, M.Sc., Research Engineer	Franc Capuder, M.Sc.

The Original Document is signed by both signatories

ETA version – for multiple use for non-structural application according to ETAG 001 Part 6 Annex 1

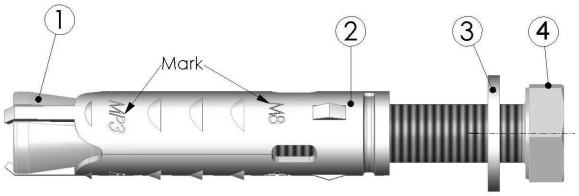
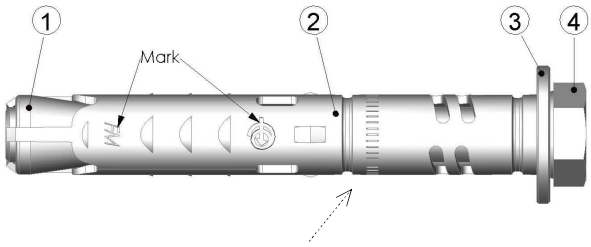


Figure 1: FM-MP3® evo anchor



1 cone
2 sleeve
3 washer
4 screw

Note for FM-MP3® evo LONG:
- Minimum embedded and maximum thickness fixture

Figure 2: FM-MP3® evo LONG anchor

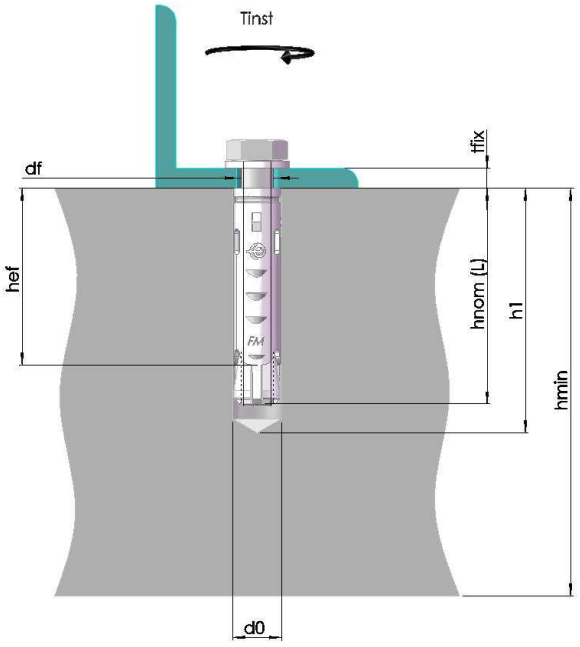


Figure 3: Installed FM-MP3® evo anchor

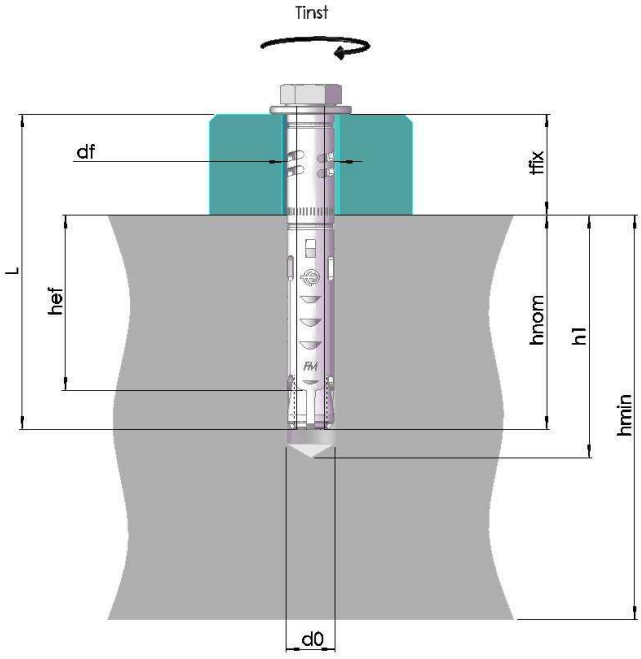


Figure 4: Installed FM-MP3® evo LONG anchor

FM-MP3® evo	**Annex 1** of the European Technical Approval **ETA–10/0074**
Product and intended use	

Table 1: Dimensions

Anchor type	h_{nom} (mm)	L (mm)	d (mm)	d_0 (mm)	L_{screw} (mm)
FM-MP3® evo M6	45	45	6	10	(1)
FM-MP3® evo M8	50	50	8	12	(1)
FM-MP3® evo M10	60	60	10	15	(1)
FM-MP3® evo M12	80	80	12	18	(1)
FM-MP3® evo LONG M6	45	70	6	10	70
FM-MP3® evo LONG M8	50	75	8	12	80
FM-MP3® evo LONG M10	60	85	10	15	90
FM-MP3® evo LONG M12	80	105	12	18	110

h_{nom} overall embedment depth in the concrete
L length of anchor
d diameter of the threaded part of the screw
d_0 external diameter of the sleeve = diameter of the hole
L_{screw} length of the screw
(1) not prescribed by the producer

Table 2: Materials

Part	Description	Material	Protection
1	Cone	Machined or cold formed carbon steel EN 10277	galvanised min. 5µm
2	Sleeve	Cold formed carbon steel EN 10130	galvanised min. 8µm
3	Washer for FM-MP3® evo	Steel to DIN 125-1	galvanised min. 5µm
	Washer for FM-MP3® evo LONG	Steel to EN 10139	galvanised min. 5µm
4	Hexagonal screw	Steel to DIN 933, grade 8.8	galvanised min. 5µm

FM-MP3® evo	**Annex 2**
Dimensions of anchors and materials	of the European Technical Approval **ETA–10/0074**

Table 3: Installation data for FM-MP3® evo

FM-MP3® evo		M6	M8	M10	M12
Nominal diameter of drill bit	d_0 [mm]	10	12	15	18
Diameter of clearance hole in the fixture	d_f [mm]	8	10	12	14
Depth of drill hole	$h_1 \geq$ [mm]	60	70	70	100
Effective anchorage depth	h_{ef} [mm]	36	43	50	69
Torque moment	T_{inst} [Nm]	8	15	30	50
Thickness of fixture-maximum	t_{fix} [mm]	(2)	(2)	(2)	(2)

(2) $t_{fix} = L_{screw} - h_{nom}$

Table 4: Installation data for FM-MP3® evo LONG

FM-MP3® evo LONG		M6	M8	M10	M12
Nominal diameter of drill bit	d_0 [mm]	10	12	15	18
Diameter of clearance hole in the fixture	d_f [mm]	12	14	17	20
Depth of drill hole	$h_1 \geq$ [mm]	60	70	70	100
Effective anchorage depth	h_{ef} [mm]	36	43	50	69
Torque moment	T_{inst} [Nm]	8	15	30	50
Thickness of fixture-maximum	t_{fix} [mm]	25	25	25	25

Table 5: Minimum thickness of concrete member, spacing and edge distance

FM-MP3® evo **FM-MP3® evo LONG**		M6		M8		M10	M12
Minimum thickness of concrete member	h_{min} [mm]	100	80	100	90	100	140
Minimum spacing	s_{min} [mm]	35	200	45	200	50	75
Minimum edge distance	c_{min} [mm]	35	100	45	130	50	75

FM-MP3® evo	**Annex 3** of the European Technical Approval **ETA–10/0074**
Installation data	

Table 6: Design method B: Characteristic values of resistances

FM-MP3® evo FM-MP3® evo LONG			**M6**	**M8**	**M10**	**M12**
All load directions						
Characteristic resistance in concrete C20/25 to C50/60	F^0_{Rk}	[kN]	6	12	16	20
Partial safety factor	γ_M [1)]		1,5 [2)]			
Design value in concrete C20/25 to C50/60	F^0_{Rd}	[kN]	4,0	8,0	10,6	13,3
Characteristic spacing	s_{cr}	[mm]	200	200	200	280
Characteristic edge distance	c_{cr}	[mm]	100	130	150	210
Shear load with lever arm						
Characteristic resistance	$M^0_{Rk,s}$ [3)]	[Nm]	12	30	60	105
Partial safety factor	γ_{Ms} [1)]		1,25			

1) In absence of other national regulations;
2) Including installation safety factor $\gamma_2 = 1,0$;
3) Characteristic bending resistance $M^0_{Rk,s}$ according to equation 5.5 in see ETAG 001, annex C.

The anchor is to be used only for multiple use in non-structural applications, the definition of multiple use according to the Member States is given in the informative Annex 1 in ETAG 001, Part 6

FM-MP3® evo	**Annex 4**
Design method B **Characteristic values of resistances**	of the European Technical Approval **ETA–10/0074**

Table 7: Characteristic values under fire exposure in concrete C20/25 to C50/60 in any load direction

Fire resistance class	FM-MP3® evo FM-MP3® evo LONG			M6	M8	M10	M12
	All load directions						
R30	Characteristic resistance in concrete C20/25 to C50/60	$F^0_{Rk,fi}$ [1]	[kN]	0,2	0,4	0,9	1,7
R60				0,2	0,3	0,8	1,3
R90				0,1	0,3	0,6	1,1
R120				0,1	0,2	0,5	0,8
R30 to R120	Spacing [2]	$s_{cr,fi}$	[mm]	≥ 200 mm and $4 \times h_{ef}$			
		$s_{min,fi}$		35	45	50	75
	Edge distance [2]	$c_{cr,fi}$ [3]	[mm]	≥ 100 mm and $3 \times h_{ef}$			
		$c_{min,fi}$ [3]		35	45	50	75

[1] In absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1,0$ is recommended;

[2] For minimum spacing and edge distance depending on minimum thickness of element refer to Table 5 in Annex 3

[3] If the fire attack is from more than one side the edge distance of the anchor shall be $c \geq 300$ mm

FM-MP3® evo	Annex 5
Characteristic values under fire exposure in concrete C20/25 to C50/60	of the European Technical Approval **ETA–10/0074**