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European Technical Assessment

ETA 04/100 of 07/11/2014

English translation prepared by IETcc. Original version in Spanish language

General Part

Technical Assessment Body issuing the ETA designated according to Art. 29 of Regulation (EU) 305/2011:

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

Trade name of the construction product

INDEX SLVT heavy duty anchor

Product family to which the construction product belongs

Torque controlled expansion anchor made of galvanised steel of sizes M8, M10, M12, M16, M20 and M24 for use in non cracked concrete only.

Manufacturer

Técnicas Expansivas S.L.

Segador 13
26006 Logroño (La Rioja) Spain.
website: www.indexfix.com

Manufacturing plant

Técnicas Expansivas S.L.

Segador 13
26006 Logroño (La Rioja) Spain.

This European Technical Assessment contains

9 pages including 4 annexes which form an integral part of this assessment. **Annex E contains confidential information and is not included in the European Technical Assessment when that assessment is publicly available.**

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

Guideline for European Technical Approval ETAG 001 "Metal anchors for use in concrete", ed. April 2013, Parts 1 and 2 used as European Assessment Document (EAD)

This version replaces

ETA 04/100 issued on 05/07/2011

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SPECIFIC PART

1. Technical description of the product

The Index SLVT heavy duty anchor is an anchor made of galvanised steel in sizes M8, M10, M12, M16, M20 and M24. It is placed into a drilled hole and anchored by torque-controlled expansion.

The INDEX SLVT heavy duty anchor in the range of M8 to M24 corresponds to the pictures and provisions given in annexes A and B. The characteristic material values, dimensions and tolerances of the anchors not indicated in annexes A and B shall correspond to the respective values laid down in the technical documentations⁽¹⁾ of this European Technical Assessment.

For the installation process see figure given in annex C; for the installed anchor see figure given in annex D.

The performance of the anchor, including installation data, characteristic anchor values and displacements for the design of anchorages is given in chapter 3.

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

2. Specification of the intended use in accordance with the applicable EAD.

2.1 Intended use

The anchor is intended to be used for anchorages for which requirements for mechanical resistance and stability and safety and accessibility in use in the sense of the basic requirements 1 and 4 of Construction Product Regulation no 305/21011 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 reinforced or unreinforced normal weight concrete of strength class C20/25 according to EN 206-1. It may be anchored in non-cracked concrete only.

The Index SLVT heavy duty anchor may only be used in concrete subject to dry internal conditions.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 50 years. The assumed working life is the foreseen period of time throughout which the construction product, as installed into the construction work, will keep its performances allowing the construction work, behaving under predictable actions and with normal maintenance, to meet the basic requirements for construction works.

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

The identification tests and the assessment for the intended use of this anchor according to the basic work requirements (BWR) were carried out in compliance with the ETAG 001. The characteristics of the components shall correspond to the respective values laid down in the technical documentation of this ETA, checked by IETcc.

3.1 Mechanical resistance and stability (BWR 1)

Mechanical resistance and stability has been assessed according to ETAG 001 “Metal anchors to be used in concrete”, parts 1 and 2.

(1) The quality plan has been deposited at Instituto de Ciencias de la Construcción Eduardo Torroja and is only made available to the approved bodies involved in the AVCP procedure.

Installation parameters			Performances					
			M8	M10	M12	M16	M20	M24
d_o	Nominal diameter of drill bit:	[mm]	12	15	18	24	28	32
d_f	Fixture clearance hole diameter:	[mm]	14	17	20	26	31	35
T_{inst}	Nominal installation torque:	[Nm]	25	50	80	120	200	230
L_{min}	Total length of the bolt:	[mm]	90	100	115	135	160	170
L_{max}		[mm]	150	170	190	200	250	300
h_{min}	Minimum thickness of concrete member:	[mm]	140	155	180	215	285	310
h_1	Depth of drilled hole:	[mm]	90	100	115	140	175	195
h_{nom}	Overall anchor embed depth in concrete:	[mm]	78	87.5	102	122	156	175
h_{ef}	Effective anchorage depth:	[mm]	70	76.5	89	106	140.5	155
t_{fix}	Thickness of fixture	[mm]	L-80	L-90	L-105	L-125	L-160	L-180
s_{min}	Minimum allowable spacing:	[mm]	100	160	240	240	300	300
c_{min}	Minimum allowable distance:	[mm]	60	70	80	100	150	150

Characteristic values of resistance to tension loads of design method A			Performances					
			M8	M10	M12	M16	M20	M24
Tension loads: steel failure								
$N_{Rk,s}$	Characteristic resistance:	[kN]	29.3	46.4	67.4	125.6	203.4	293.0
$\gamma_{M,s}$	Partial safety factor: ^{*)}	[-]	1.5					
Tension loads: pull-out failure in concrete								
$N_{Rk,p}$	Characteristic resistance	[kN]	-- *)	-- *)	-- *)	-- *)	-- *)	-- *)
$\gamma_{M,p}$	Partial safety factor: ^{**)}	[-]	--	--	--	--	--	--
Tension loads: concrete cone and splitting failure								
h_{ef}	Effective anchorage depth:	[mm]	70	76.5	89	106	140.5	155
$s_{cr,N}$	Spacing:	[mm]	210.0	229.5	267.0	318.0	421.5	465.0
$s_{cr,sp}$		[mm]	420.0	459.0	534.0	636.0	843.0	930.0
$c_{cr,N}$	Edge distance:	[mm]	105.0	114.8	133.5	159.0	210.8	232.5
$c_{cr,sp}$		[mm]	210.0	229.5	267.0	318.0	421.5	465.0
$\gamma_{M,c}$	Partial safety factor: ^{**)}	[-]	1.5					

*) Pull out failure is not decisive

**) In absence of other national regulations

Displacements under tension loads			Performances						
			M8	M10	M12	M16	M20	M24	
Tension load in non cracked concrete:			[kN]	14.0	16.1	20.2	26.2	40.0	46.3
δ_{N0}	Displacement:	[mm]	0.1	0.2	0.2	0.3	0.5	0.5	
$\delta_{N\infty}$		[mm]	0.2	0.2	0.3	0.3	0.5	0.5	

Characteristic values of resistance to shear loads of design method A			Performances					
			M8	M10	M12	M16	M20	M24
Steel failure without lever arm								
$V_{Rk,s}$	Characteristic resistance:	[kN]	21.9	48.7	78.3	76.4	112.1	129.3
$\gamma_{M,s}$	Partial safety factor: ^{*)}	[-]	1.25					
Steel failure with lever arm								
$M^0_{Rk,s}$	Characteristic bending moment:	[Nm]	30	60	105	266	519	898
$\gamma_{M,s}$	Partial safety factor: ^{*)}	[-]	1.25					
Concrete pryout failure								
k	Factor in equation (5.6) of ETAG, Annex C §5.2.3.3:	[-]	2.0	2.0	2.0	2.0	2.0	2.0
$\gamma_{M,c}$	Partial safety factor: ^{*)}	[-]	1.5					
Concrete edge failure								
l_f	Effective length of anchor under shear loads:	[mm]	70	76.5	89	106	140.5	155
d_{nom}	Outside diameter of anchor:	[mm]	12.0	15.0	18.0	24.0	28.0	32.0
$\gamma_{M,c}$	Partial safety factor: ^{*)}	[-]	1.5					

*) In absence of other national regulations

Displacements under shear loads		Performances					
		M8	M10	M12	M16	M20	M24
Shear load in non cracked concrete:	[kN]	12.5	27.8	40.3	43.7	64.1	73.9
δ_{N0}	Displacement:	1.5	2.0	3.4	4.9	5.2	5.4
		[mm]	(+1.9)	(+1.9)	(+1.9)	(+1.9)	(+2.4)
$\delta_{N\infty}$	Displacement:	2.3	3.5	4.5	6.3	7.9	8.2
		[mm]	(+1.9)	(+1.9)	(+1.9)	(+1.9)	(+2.4)

3.2 Safety in case of fire (BWR 2)

Reaction to fire has been assessed according to Commission Decision 96/603/EC, amended by 2000/605/EC. See class in table below:

Reaction to fire	M8	M10	M12	M16	M20	M24
Reaction to fire	Class A1					

Resistance to fire: No Performance Determined

3.3 Hygiene, health and the environment (BWR 3)

This requirement is not relevant for the anchors.

3.4 Safety in use (BWR 4)

Requirements with respect to the safety in use are not included in this Essential Requirement but are treated under the Essential Requirement Mechanical Resistance and Stability (see section 3.1)

3.5 Protection against noise (BWR 5)

This requirement is not relevant for the anchors.

3.6 Energy economy and heat retention (BWR 6)

This requirement is not relevant for the anchors.

3.7 Sustainable use of natural resources (BWR 7)

No Performance Determined

4. System of assessment and verification of constancy of performance

According to the decision 96/582/EC of the European Commission ⁽²⁾ the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies:

Product	Intended use	Level or class	System
Index SLVT heavy duty anchor	To be used for fixing and/or supporting structural elements	All / any	1

The system 1 referred above is described in Construction Products Regulation (EU) no. 305/2011 Annex V §. 1.3 as follows:

a) The manufacturer shall carry out:

(2) Published in the Official Journal of the European Union (OJEU) L254 of 24.06.1996 See www.new.eur-lex.europa.eu/oj/direct-access.html

- (i.) Factory production control.
 - (ii.) Further testing of samples taken at the factory by the manufacturer in accordance with the prescribed quality plan;
- b) The notified production control certification body shall issue the certificate of constancy of performance on the basis of:
- (i.) Determination of the product-type on the basis of type testing (including sampling) calculation, tabulated values of descriptive documentation of the product:
 - (ii.) Initial inspection of factory and of factory production control.
 - (iii.) Continuous surveillance, assessment and evaluation of factory production

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

The ETA is issued for these anchors on the basis of agreed data/information which identifies the product that has been assessed and judged. Detailed description and conditions of the manufacturing process of the anchors, and all the relevant design and installation criteria of these anchors are specified in the manufacturer's technical documentation deposited with the IETcc. The main aspects of this information are specified in the following sections. It is the manufacturer's responsibility to make sure that all those who use the anchors are appropriately informed of specific conditions according to sections 1, 2, 4 and 5 including the annexes of this ETA.

5.1 Tasks of the manufacturer

5.1.1 Factory production control

The manufacturer has a factory production control system and shall exercise permanent internal control of production. 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 this ETA.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the quality plan⁽³⁾. The incoming raw materials shall be subjected to controls by the manufacturer before acceptance. Check of materials shall include control of the inspection documents presented by suppliers by verifying dimension and material properties, e.g. chemical composition, mechanical properties etc. The manufactured components are checked visually, for dimensions and properties, where appropriate.

The quality plan which is part of the Technical Documentation of this ETA, includes details of the extent, nature and frequency of testing and controls to be performed within the factory production control and has been agreed between the assessment holder and IETcc. The results of factory production control shall be recorded and evaluated in accordance with the provisions of the quality plan. The records include at least the following information:

- Designation of the product, the basic materials and components;
- Type of control or testing and minimum frequencies of them;
- Date of manufacture of the product and date testing of the product or basic material and components;
- Results of controls and testing and, if appropriate, comparison with requirements;
- Signature of person responsible for factory production control.

⁽³⁾ the quality plan has been deposited at IETcc and is only made available to the approval bodies involved in the ACVP procedure.

The records shall be presented to the notified body involved in the continuous surveillance. On request, they shall be presented to the IETcc.

5.2 Tasks of notified bodies

5.2.1 Determination of the product-type on the basis of type testing

For type-testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between ETA holder and the notified body.

5.2.2 Initial inspection of factory and of factory production control

The notified body shall ascertain that, in accordance with the quality plan, the factory and the factory production control are suitable to ensure continuous and orderly manufacturing of the product according to the specifications mentioned in Annexes of this the European Technical Assessment.

5.2.3 Continuous surveillance, assessment and evaluation of factory production control

The notified body shall visit the factory at least once a year for regular inspection.

This continuous surveillance and assessment of factory production control have to be performed according to the quality plan. The system of factory production control and the specified manufacturing process have to be verified that they are maintained as the quality plan defined. The results of product certification and continuous surveillance shall be made available on demand by the product certification body or factory production control body, respectively, to IETcc. In cases where the provisions of the European Technical Assessment and the quality plan are no longer fulfilled the certificate of constancy of performance shall be withdrawn.



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On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja
Madrid, 7th November 2014

Marta M^a Castellote Armero
Director

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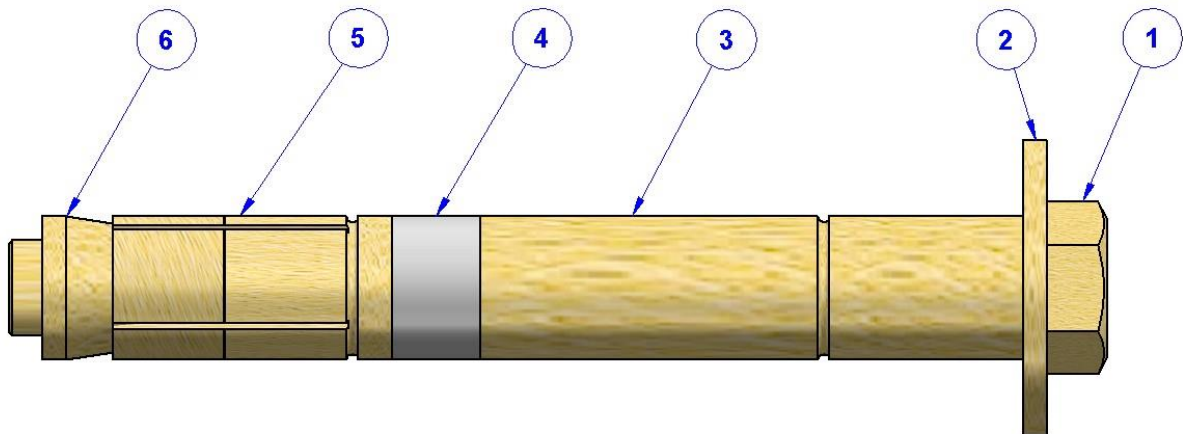
Annex A: Assembled anchor

Annex B. Materials

Annex C. Installation process

Annex D. Schema of the anchor in use

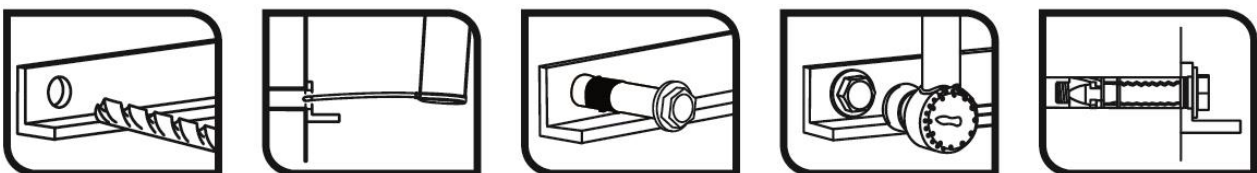
Annex A: Assembled anchor



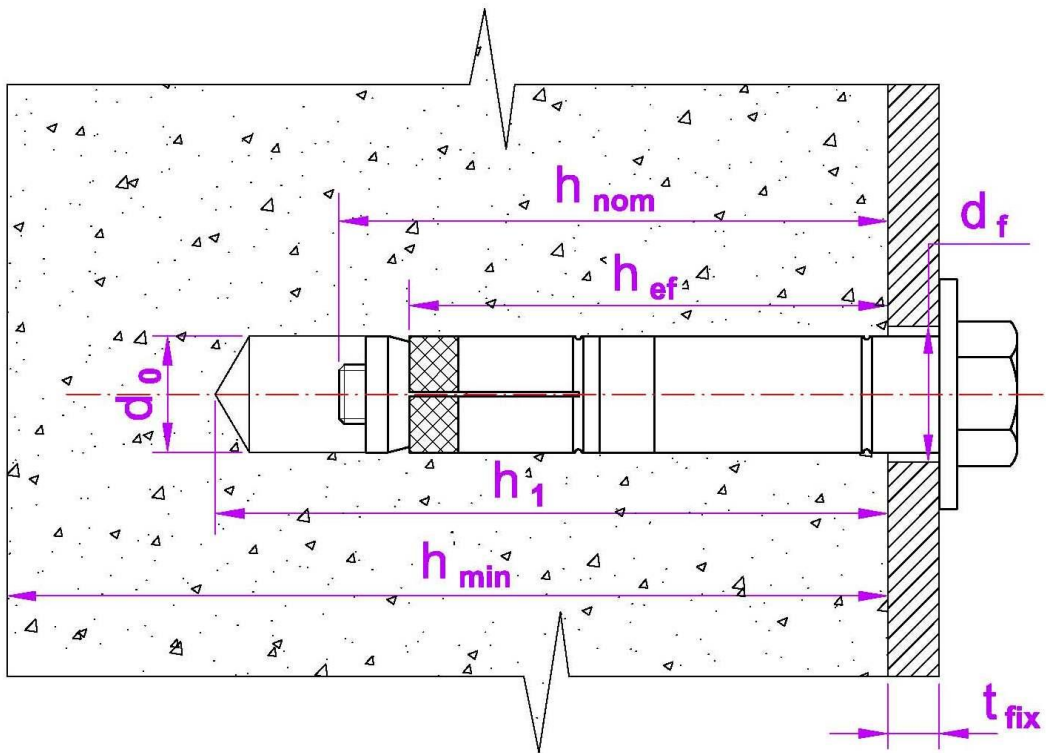
Annex B. Materials

Item	Designation	Material SLVT anchor
1	Bolt	Class 8.8 ISO 898-1, ISO 4042 A2
2	Washer	DIN 9021, ISO 4042 A2
3	Sleeve	Carbon steel, ISO 4042 A2
4	Antirotation device	Polyamide 6.6
5	Expansion sleeve	Carbon steel, ISO 4042 A2
6	Cone	Carbon steel, ISO 4042 A2

Annex C. Installation process



Annex D. Schema of the anchor in use



- h_{ef} : Effective anchorage depth
- h_1 : Depth of drilled hole
- h_{nom} : Overall anchor embedment depth in the concrete
- h_{min} : Minimum thickness of concrete member
- t_{fix} : Thickness of fixture
- d_0 : Nominal diameter of drill bit
- d_f : Fixture clearance hole diameter