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DE LA CONSTRUCCIÓN
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European Technical Assessment

**ETA 22/0098
of 03/02/2022**

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:

Novipro drop-in anchor SA-X

Product family to which the construction product belongs:

Deformation controlled anchor made of galvanized steel or stainless steel or stainless steel of sizes M6, M8, M10, M12 and M16 for use in concrete for redundant non-structural systems

Manufacturer:

Dahl Sverige AB
Bryggerivägen 9
168 67 Bromma. Sweden.
website: www.dahl.se

Manufacturing plant:

Dahl Sverige AB plant 1

This European Technical Assessment contains:

10 pages including 3 annexes which form an integral part of this assessment.

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

European Assessment Document EAD 330747-00-0601, "Fasteners for use in concrete for redundant non-structural systems", ed. May 2018.

English translation prepared by IETcc

This European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to article 25 (3) of Regulation (EU) No 305/2011.

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SPECIFIC PART

1. Technical description of the product

The Novipro drop-in anchor SA-X, in the range of M6 to M16, is an anchor made of galvanised steel. It is placed into a drilled hole and anchored by deformation-controlled expansion. The anchorage is characterised by friction between the sleeve and concrete.

Product and installation descriptions are given in annexes A1 and A2.

2. Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 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 mean to choosing the right products in relation to the expected economically reasonable working life of the works.

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

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfies requirements for class A1 according to EN 13501-1
Resistance to fire	See annex C3

3.2 Safety in use (BWR 4)

Essential characteristic	Performance
Essential characteristics under static or quasi static loading	See annex C3

4. Assessment and Verification of Constancy of Performances (hereinafter AVCP) system applied, with reference to its legal base

The applicable European legal act for the system of Assessment and Verification of Constancy of Performances (see annex V to Regulation (EU) No 305/2011) is 97/161/EC.

The system to be applied is 2+.

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

The technical details necessary for the implementation of the AVCP system are laid down in the quality plan deposited at Instituto de Ciencias de la Construcción Eduardo Torroja.



Instituto de Ciencias de la Construcción Eduardo Torroja
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On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja
Madrid, 3rd of February 2022

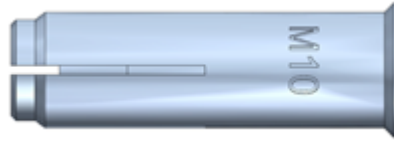


Director IETcc - CSIC

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Product

SA-X anchor



Identification on sleeve: Novipro logo + “SA-X” + Metric; e.g: SA-X M6

Table A1: Dimensions

Anchor dimensions		M6	M8	M10	M12	M16
ØD: External diameter	[mm]	8	10	12	15	20
Ød: internal diameter	[mm]	M6	M8	M10	M12	M16
L: total length	[mm]	25	30	40	50	65

Table A2: Materials

Item	Designation	Material for SA-X
1	Sleeve	Carbon steel, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 Zn5/An/T0
2	Cone	Carbon steel, zinc plated $\geq 5 \mu\text{m}$ ISO 4042 Zn5/An/T0
3	Retention disc	Plastic

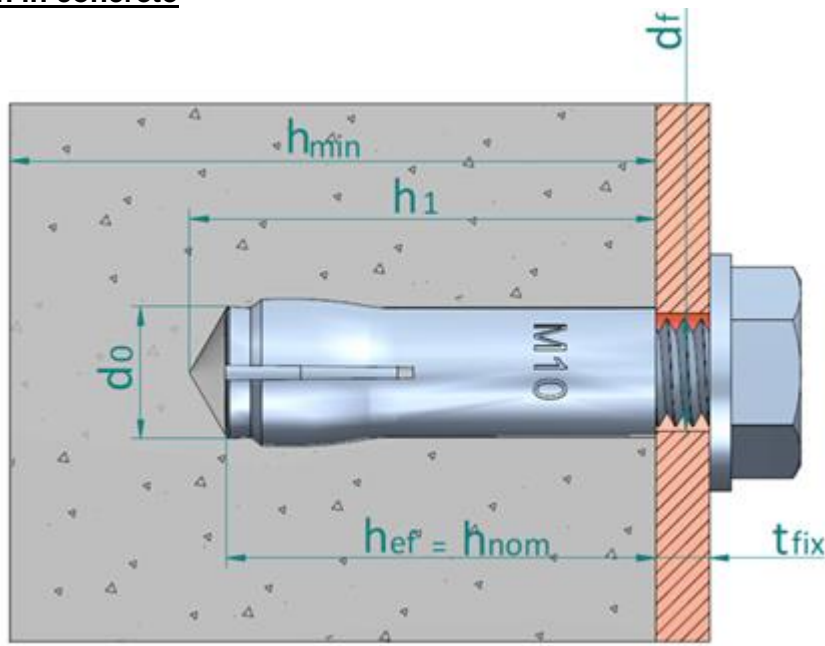
SA-X anchor

Product description

Product and materials

Annex A1

Installed condition in concrete



- 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

Setting tool



Setting tool can be assembled with a plastic handle for hand protection purposes

Table A3: Setting tool dimensions

Setting tool dimensions	M6	M8	M10	M12	M16
$\varnothing D_1$ [mm]	8.0	10.0	12.0	15.0	20.0
$\varnothing D_2$ [mm]	4.9	6.4	8.2	10.0	13.5
L_s [mm]	15.0	18.0	21.0	30.0	36.0

SA-X anchor

Product description

Installed condition in concrete and setting tool

Annex A2

Specifications of intended use

Anchorage subjected to:

- Static or quasi static loads for redundant non-structural systems.
- Use for anchorages with requirements related to resistance of fire (not for using in prestressed hollow core slabs).
- The anchor may only be used if in the design and installation specifications for the fixture the excessive slip or failure of one anchor will not result in a significant violation of the requirements on the fixture in the serviceability and ultimate state.

Base materials:

- Reinforced or unreinforced normal weight concrete without fibres according to EN 206-1:2013+A1:2016.
- Strength classes C12/15 to C50/60 according to EN 206-1:2013+A1:2016.
- Cracked or uncracked concrete.

Use conditions (environmental conditions):

- Anchorages subjected to dry internal conditions.

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete.
- Verifiable calculation rules and drawings are prepared taking into account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static or quasi-static actions are designed for design method B in accordance with EN 1992-4:2018
- Anchorages under fire exposure are designed in accordance to EN 1992-4:2018. It must be ensured that local spalling of the concrete cover does not occur.

Installation:

- Hole drilling by rotary plus hammer mode.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of aborted hole or smaller distance if the aborted hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.
- The bolt or threaded rod to be used shall be property class 4.6, 5.6, 5.8, 6.8 or 8.8 according to ISO 898-1.
- The length of the bolt shall be determined as:
 - Minimum bolt length = $t_{fix} + l_{s,min}$
 - Maximum bolt length = $t_{fix} + l_{s,max}$

SA-X anchor	Annex B1
Intended use	
Specifications	

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Table C1: Installation parameters in concrete for SA-X anchor

Installation parameters			Performances				
			M6	M8	M10	M12	M16
d_0	Nominal diameter of drill bit:	[mm]	8	10	12	15	20
D	Thread diameter:	[mm]	M6	M8	M10	M12	M16
d_f	Fixture clearance hole diameter \leq	[mm]	7	9	12	14	18
T_{inst}	Maximum installation torque:	[Nm]	4	11	17	38	60
$l_{s,min}$	Minimum screwing depth:	[mm]	6	8	10	12	16
$l_{s,max}$	Maximum screwing depth:	[mm]	10	13	17	21	27
h_1	Depth of drilled hole:	[mm]	27	33	43	54	70
h_{nom}	Overall anchor embedment depth:	[mm]	25	30	40	50	65
h_{ef}	Effective anchorage depth:	[mm]	25	30	40	50	65
h_{min}	Minimum thickness of concrete member:	[mm]	100	100	100	100	130
s_{min}	Minimum allowable spacing:	[mm]	60	60	80	100	130
c_{min}	Minimum allowable distance:	[mm]	105	105	140	175	230

SA-X anchor

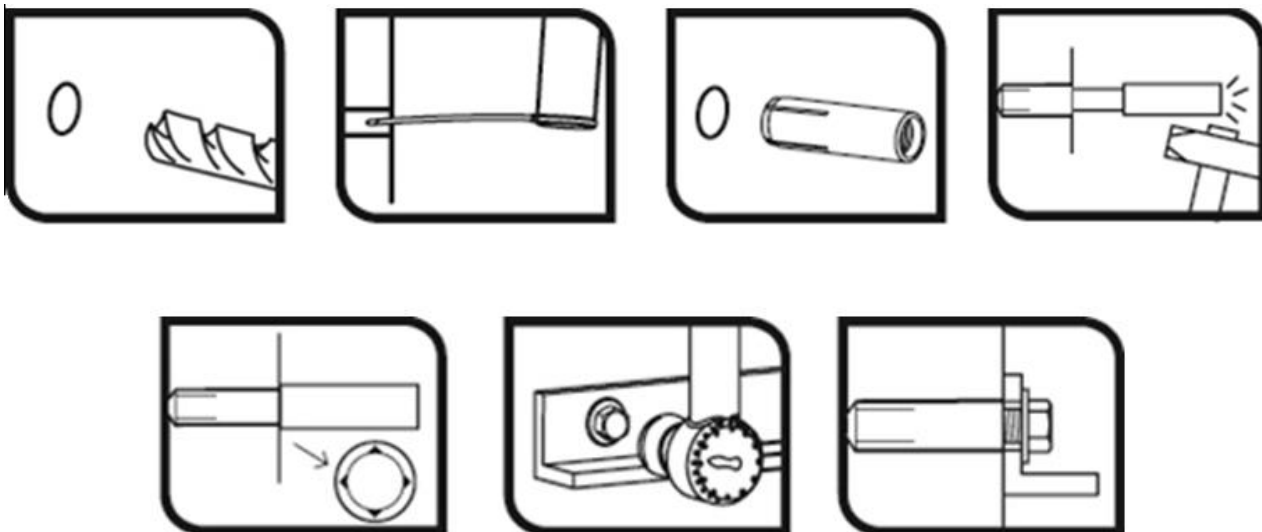
Performances

Installation parameters in concrete

Annex C1

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Installation process



SA-X anchor

Performances

Installation procedure

Annex C2

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Table C2: Essential characteristics in concrete to loads of design method B according to EN 1992-4 for SA-X anchor

Essential characteristics of resistance to loads of design method B			Performances				
			M6	M8	M10	M12	M16
Any load direction							
F_{Rk}^0	Characteristic resistance in C12/15 concrete:	[kN]	1.5	3.0	4.0	6.0	9.0
F_{Rk}^0	Characteristic resistance in C20/25 to C50/60 concrete:	[kN]	2.0	3.0	5.0	7.5	12.0
γ_{ins}	Installation safety factor:	[-]	1.2	1.2	1.4	1.4	1.4
s_{cr}	Critical spacing:	[mm]	75	90	120	150	195
c_{cr}	Critical edge distance:	[mm]	40	45	60	75	100
Shear loads: steel failure with lever arm							
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.6	[Nm]	6.1	15.0	29.9	52.4	133.3
$\gamma_{Ms}^{(1)}$	Partial safety factor:	[-]	1.67				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.8	[Nm]	6.1	15.0	29.9	52.4	133.3
$\gamma_{Ms}^{(1)}$	Partial safety factor:	[-]	1.25				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.6	[Nm]	7.6	18.8	37.4	65.5	166.6
$\gamma_{Ms}^{(1)}$	Partial safety factor:	[-]	1.67				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.8	[Nm]	7.6	18.8	37.4	65.5	166.6
$\gamma_{Ms}^{(1)}$	Partial safety factor:	[-]	1.25				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 6.8	[Nm]	9.2	22.5	44.9	78.7	199.9
$\gamma_{Ms}^{(1)}$	Partial safety factor:	[-]	1.25				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 8.8	[Nm]	12.2	30.0	59.9	104.9	266.6
$\gamma_{Ms}^{(1)}$	Partial safety factor:	[-]	1.25				

¹⁾ In absence of other national regulations

Table C3: Essential characteristics under fire exposure in concrete C20/25 to C50/50 in any load direction according to EN 1992-4 for SA-X anchor

Essential characteristics under fire exposure in concrete C20/25 to C50/60 in any load direction			Performances				
			M6	M8	M10	M12	M16
R30	Characteristic resistance: $F_{Rk,fi30}^0$	¹⁾ [kN]	0.2	0.4	0.9	1.7	3.1
R60	Characteristic resistance: $F_{Rk,fi60}^0$	¹⁾ [kN]	0.2	0.3	0.8	1.3	2.4
R90	Characteristic resistance: $F_{Rk,fi90}^0$	¹⁾ [kN]	0.1	0.3	0.6	1.1	2.0
R120	Characteristic resistance: $F_{Rk,fi120}^0$	¹⁾ [kN]	0.1	0.2	0.5	0.8	1.6
R30 to R120	Spacing	$s_{cr,fi}$ [mm]	4 x h_{ef}				
	Edge distance	$c_{cr,fi}$ [mm]	2 x h_{ef}				

¹⁾ in absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1.0$ is recommended
If fire attack is from more than one side, the design method may be taken if edge distance of the anchor is $c \geq 300$ mm

SA-X anchor	Annex C3
Performances	
Essential characteristics in concrete and under fire exposure	