



**INSTITUTO DE CIENCIAS
DE LA CONSTRUCCIÓN
EDUARDO TORROJA**

C/ Serrano Galvache n. 4 28033 Madrid (Spain)
Tel.: (34) 91 302 04 40 Fax: (34) 91 302 07 00
direccion.ietcc@csic.es <https://dit.ietcc.csic.es>

European Technical Assessment

**ETA 21/0891
of 13/12/2021**

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:

DLXTM-S drop in anchor

Product family to which the construction product belongs:

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

Manufacturer:

ICCONS
383 Frankston Dandenong Road
Dandenong South, VIC 3175 Australia.
website: www.iccons.com.au

Manufacturing plant:

ICCONS plant 1

This European Technical Assessment contains:

12 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

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This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to article 25 (3) of Regulation (EU) No 305/2011.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 ICCONS DLXTM-S, in the range of M8 to M12, is an anchor made of zinc plated 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 EN13501-1
Resistance to fire	See annex C4

3.2 Safety in use (BWR 4)

Essential characteristic	Performance
Essential characteristics under static or quasi static loading	See annexes C3 and C4

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
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

C/ Serrano Galvache n.º 4. 28033 Madrid.
Tel: (+34) 91 302 04 40 Fax. (+34) 91 302 07 00

<https://dit.ietcc.csic.es>



On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja
Madrid, 13th of December 2021



Director IETcc - CSIC

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Product



Identification on sleeve: ICCONS logo + Metric-length; e.g: M10-25

Table A1: Dimensions

Anchor dimensions		DLXTM0825-S	DLXTM1025-S	DLXTM1225-S
ØD: External diameter	[mm]	10	12	15
Ød: internal diameter	[mm]	M8	M10	M12
L: total length	[mm]	25	25	25

Table A2: Materials

Item	Designation	Material for DLXTM-S
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

DLXTM-S Drop in anchor

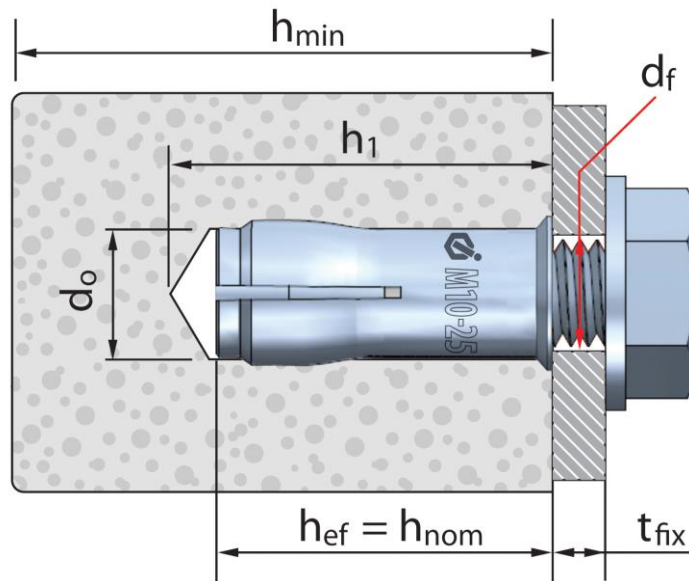
Product description

Product and materials

Annex A1

English translation prepared by IETcc

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_o : Nominal diameter of drill bit
- d_f : Fixture clearance hole diameter

Setting tool



Setting tool may include a plastic hanger for hand protection purposes

Table A3: Setting tool dimensions

Setting tool dimensions	DLST0825-S	DLST1025-S	DLST1225-S
$\varnothing D_1$ [mm]	10.0	12.0	15.0
$\varnothing D_2$ [mm]	6.4	8.2	10.0
L_s [mm]	15.0	16.0	10.4

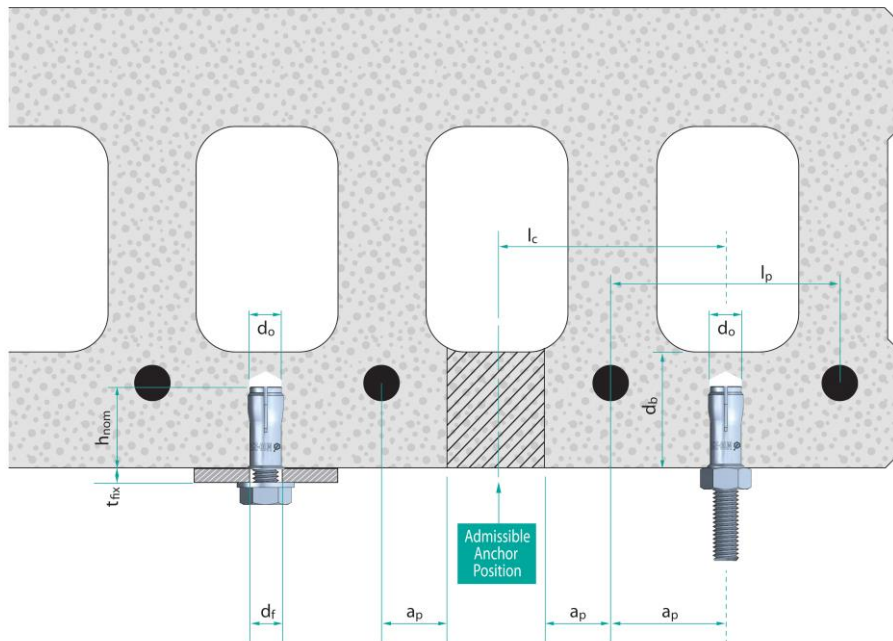
DLXTM-S Drop in anchor

Product description

Installed condition in concrete and setting tool

Annex A2

Installed condition in precast prestressed hollow core concrete slabs



- d_o: Nominal diameter of drill bit
- d_f: Fixture clearance hole diameter
- d_b: Bottom flange thickness
- a_p: Distance between anchor position and prestressing steel ≥ 50 mm
- l_c: Core distance ≥ 100 mm
- l_p: Steel reinforcement distance ≥ 100 mm
- t_{fix}: Fixture thickness
- c: Edge distance

DLXTM-S Drop in anchor

Product description

Installed condition in precast prestressed hollow core concrete slabs

Annex A3

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 C20/25 to C50/60 according to EN 206-1:2013+A1:2016.
- Cracked or uncracked concrete.
- Precast, prestressed hollow core concrete slabs, strength C30/37 to C50/60 according to EN 206:2013+A1:2016

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 = $t_{fix} + l_{s,max}$

DLXTM-S Drop in anchor

Intended use

Specifications of intended use

Annex B1

Table C1: Installation parameters in concrete for DLXTM-S anchor

Installation parameters in concrete			Performances		
			DLXTM0825-S	DLXTM1025-S	DLXTM1225-S
d ₀	Nominal diameter of drill bit:	[mm]	10	12	15
D	Thread diameter:	[mm]	M8	M10	M12
d _f	Fixture clearance hole diameter ≤	[mm]	9	12	14
T _{inst}	Maximum installation torque:	[Nm]	11	17	38
l _{s,min}	Minimum screwing depth:	[mm]	7	8	10
l _{s,max}	Maximum screwing depth:	[mm]	12	13	13
h ₁	Depth of drilled hole:	[mm]	28	28	29
h _{nom}	Overall anchor embedment depth:	[mm]	25	25	25
h _{ef}	Effective anchorage depth:	[mm]	25	25	25
h _{min}	Minimum thickness of concrete member:	[mm]	80	80	80
S _{min}	Minimum allowable spacing:	[mm]	75	75	75
C _{min}	Minimum allowable distance:	[mm]	60	60	60

Table C2: Installation parameters in prestressed hollow core concrete slabs for DLXTM-S anchor

Installation parameters in prestressed hollow core concrete slabs			Performances		
			DLXTM0825-S	DLXTM1025-S	DLXTM1225-S
d ₀	Nominal diameter of drill bit:	[mm]	10	12	15
D	Thread diameter:	[mm]	M8	M10	M12
d _f	Fixture clearance hole diameter ≤	[mm]	9	12	14
T _{inst}	Maximum installation torque:	[Nm]	11	17	38
l _{s,min}	Minimum screwing depth:	[mm]	7	8	10
l _{s,max}	Maximum screwing depth:	[mm]	12	13	13
h ₁	Depth of drilled hole:	[mm]	28	28	29
h _{nom}	Overall anchor embedment depth:	[mm]	25	25	25
h _{ef}	Effective anchorage depth:	[mm]	25	25	25
h _{min}	Minimum thickness of concrete member:	[mm]	35	35	35
S _{min}	Minimum allowable spacing:	[mm]	200	200	200
C _{min}	Minimum allowable distance:	[mm]	150	150	150

DLXTM-S Drop in anchor

Performances

Installation parameters

Annex C1

English translation prepared by IETcc

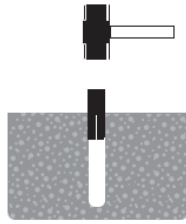
Installation Instructions



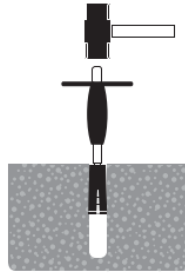
With the correct diameter drill bit, drill a hole to the correct depth.



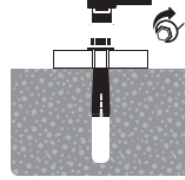
Clean dust and other material from the hole.



Insert with internal thread facing up, tap in anchor until seated and flush with surface of base material.



With the correct setting tool strike with a heavy hammer until tool is seated with the top of the anchor.



Place fixture in position and insert machined bolt and tighten until firm (do not exceed recom. torque).



For threaded rod installations wind in rod until firm, do not over tighten.

DLXTM-S Drop in anchor

Performances

Installation procedure

Annex C2

English translation prepared by IETcc

Table C3: Essential characteristics in concrete to loads of design method B according to EN 1992-4 for DLXTM-S anchor

Essential characteristics of resistance to loads of design method B, any load direction		Performances		
		DLXTM0825-S	DLXTM1025-S	DLXTM1225-S
Any load direction				
F_{Rk}^0	Characteristic resistance in C20/25 to C50/60 concrete: [kN]	2.5	4.0	4.0
γ_{ins}	Installation safety factor: [-]	1.2	1.2	1.2
S_{cr}	Critical spacing: [mm]	120	120	120
C_{cr}	Critical edge distance: [mm]	60	60	60
Shear loads: steel failure with lever arm				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.6 [Nm]	15.0	29.9	52.4
$\gamma_{Ms}^{(1)}$	Partial safety factor: [-]	1.67		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.8 [Nm]	15.0	29.9	52.4
$\gamma_{Ms}^{(1)}$	Partial safety factor: [-]	1.25		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.6 [Nm]	18.8	37.4	65.5
$\gamma_{Ms}^{(1)}$	Partial safety factor: [-]	1.67		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.8 [Nm]	18.8	37.4	65.5
$\gamma_{Ms}^{(1)}$	Partial safety factor: [-]	1.25		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 6.8 [Nm]	22.5	44.9	78.7
$\gamma_{Ms}^{(1)}$	Partial safety factor: [-]	1.25		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 8.8 [Nm]	30.0	59.9	104.9
$\gamma_{Ms}^{(1)}$	Partial safety factor: [-]	1.25		

1) In absence of other national regulations

DLXTM-S Drop in anchor

Performances

Essential characteristics in concrete

Annex C3

English translation prepared by IETcc

Table C4: Essential characteristic in precast prestressed hollow core slabs to loads of design method B according to EN 1992-4 for DLXTM-S anchor

Essential characteristics of resistance to loads of design method B, any load direction		Performances		
		DLXTM0825-S	DLXTM1025-S	DLXTM1225-S
Any load direction				
F_{Rk}^0	Characteristic resistance in C30/37 to C50/60 concrete: [kN]	5,5	6,0	6,5
γ_{ins}	Installation safety factor: [-]	1.2	1.4	1.4
S_{cr}	Critical spacing: [mm]	200	200	200
C_{cr}	Critical edge distance: [mm]	150	150	150
Shear loads: steel failure with lever arm				
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.6 [Nm]	15.0	29.9	52.4
$\gamma_{Ms}^{1)}$	Partial safety factor: [-]	1.67		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 4.8 [Nm]	15.0	29.9	52.4
$\gamma_{Ms}^{1)}$	Partial safety factor: [-]	1.25		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.6 [Nm]	18.8	37.4	65.5
$\gamma_{Ms}^{1)}$	Partial safety factor: [-]	1.67		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 5.8 [Nm]	18.8	37.4	65.5
$\gamma_{Ms}^{1)}$	Partial safety factor: [-]	1.25		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 6.8 [Nm]	22.5	44.9	78.7
$\gamma_{Ms}^{1)}$	Partial safety factor: [-]	1.25		
$M_{Rk,s}^0$	Characteristic bending moment, steel class 8.8 [Nm]	30.0	59.9	104.9
$\gamma_{Ms}^{1)}$	Partial safety factor: [-]	1.25		

1) In absence of other national regulations

Table C5: Essential characteristics under fire exposure in concrete C20/25 to C50/50 in any load direction according to EN 1992-4 for DLXTM-S anchor

Essential characteristics under fire exposure in concrete C20/25 to C50/60 in any load direction		Performances		
		DLXTM0825-S	DLXTM1025-S	DLXTM1225-S
R30	Characteristic resistance: $F_{Rk,fi30}^0$ 1) [kN]	0.54	0.54	0.54
R60	Characteristic resistance: $F_{Rk,fi60}^0$ 1) [kN]	0.54	0.54	0.54
R90	Characteristic resistance: $F_{Rk,fi90}^0$ 1) [kN]	0.44	0.54	0.54
R120	Characteristic resistance: $F_{Rk,fi120}^0$ 1) [kN]	0.37	0.43	0.43
R30 to R120	Spacing $S_{cr,fi}$ [mm]	4 x hef-		
R30 to R120	Edge distance $C_{cr,fi}$ [mm]	2 x hef		

DLXTM-S Drop in anchor

Performances

Essential characteristics in precast prestressed hollow core concrete slabs.
Essential characteristics under fire exposure

Annex C4