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Designated according to Article 29 of Regulation (EU) No 305/2011

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European Technical Assessment

ETA-26/0658
of 20/10/2026

English translation prepared by CSTB - Original version in French language

General Parts

Technical Assessment Body issuing the European Technical Assessment:
Centre Scientifique et Technique du Bâtiment (CSTB)

Trade name:	**AdC-Fix**
Product family:	Cast-in anchor with internal threaded socket
Manufacturer:	AdC Accessoires de Construction 32 Rue Maurice Berteaux 95500 LE THILLAY France
Manufacturing plants:	Plant 1
This European Technical Assessment contains:	10 pages including 7 pages of annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) 2024/3110, on the basis of:	EAD 330012-01-0601 " Cast-in anchor with internal threaded socket"
This version replaces:	-

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Specific Part

1 Technical description of the product

The ADC Fixing Anchor, designated AdC-Fix and available in sizes M10, M12, and M16, is an anchor consisting of an internally threaded socket with a welded plate at one end. The anchor is intended for use in reinforced and unreinforced normal-weight concrete in accordance with EN 206, cracked and non-cracked concrete. The provisions made in this technical assessment are based on an assumed intended working life of the anchor of 50 years.

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 provisions made in this European technical assessment 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 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.

3 Performance of the product

3.1. Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic values for tension loading under static and quasi-static actions	Annex C1
Characteristic values for shear loading under static and quasi-static actions	Annex C2
Characteristic values for seismic performance C1 and C2	No performance assessed

Safety in case of fire

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	Annex C3

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 330012-01-0601, the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

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

Technical details necessary for the implementation of the Assessment and verification of constancy of performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

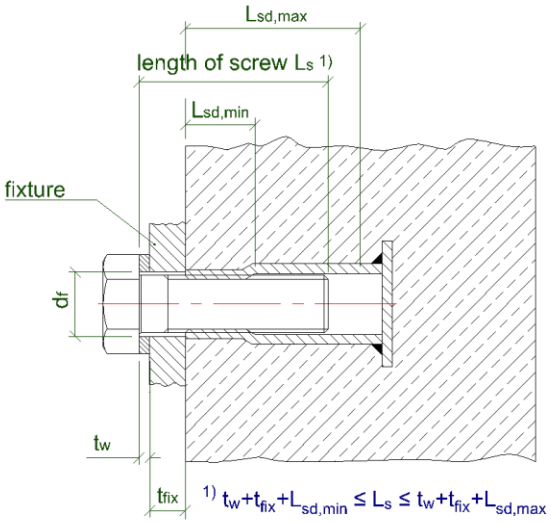
The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of anchors for issuing the certificate of conformity CE based on the control plan.

The original French version is signed by:

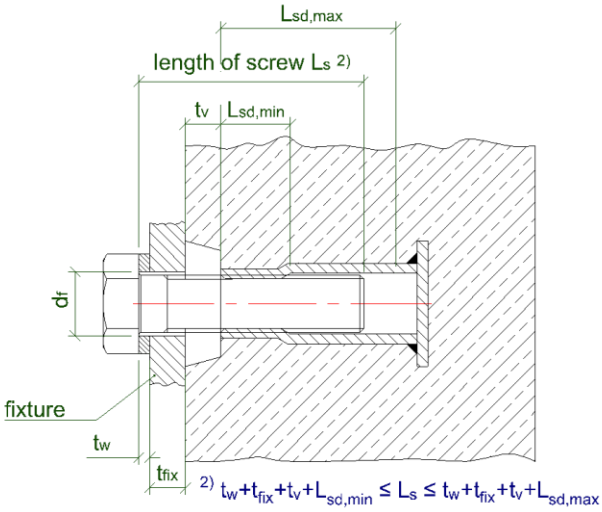
Loic Payet

Head of the Structure, Masonry, Partition Division

Direct contact between fixting and fix anchor

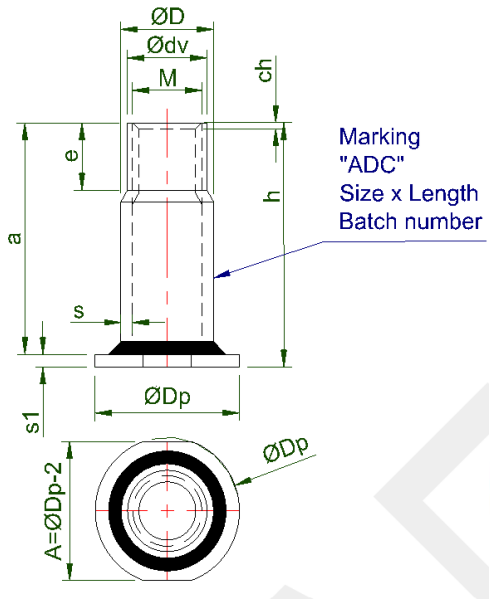


General application



AdC_Fix installation parameters

Thread	d	[mm]	M10	M12	M16
Maximum torque moment	Max T_{inst}	[N.m]	≤8	≤ 10	≤ 30
Minimum screw-in length	$L_{sd,min}$	[mm]	17	20	26
Maximum screw-in length	$L_{sd,max}$	[mm]	37	M12x50: 37	M16x60: 46
				M12x ≥70: 57	M16x≥100: 86
Diameter of clearance hole in fixture	d_f	[mm]	12	14	18





Reference	Designation	M	s	a	e mini	Ødv	ØD	s1	h	ØDp	A	ch
DAF10050	M10× 50	M10× 1.5	1.50	47	10	11.9	13.5	3.0	50	25	23	1.00
DAF10075	M10× 75	M10× 1.5	1.50	72	10	11.9	13.5	3.0	75	25	23	1.00
DAF12050	M12× 50	M12× 1.75	2.00	47	12	15.0	17.0	3.0	50	30	28	1.00
DAF12070	M12× 70	M12× 1.75	2.00	67	12	15.0	17.0	3.0	70	30	28	1.00
DAF12095	M12× 95	M12× 1.75	2.00	92	12	15.0	17.0	3.0	95	30	28	1.00
DAF16060	M16× 60	M16× 2	2.80	56	16	20.1	22.5	4.0	60	35	33	1.00
DAF16100	M16× 100	M16× 2	2.80	96	16	20.1	22.5	4.0	100	35	33	1.00
DAF16125	M16× 125	M16× 2	2.80	121	16	20.1	22.5	4.0	125	35	33	1.00

Designation	Material
Washer	Steel in accordinance with EN 10025:2019, galvanized
Screw	Steel in accordinance with EN 10025:2019, galvanized , strength grade 4.6, 5.6 and 8.8
Additional reinforcement	B500A or B500 B in accordance with 1992-1-1/ 2005 1 en 1992-4:2018
Socket	Socket : Steel in accordance with GB-T8162, steel grade 20 , chemical composition equivalent to EN 10083 steel grade C22E (1.1151) or C22 (1.0402) Plate : Q355B, equivalent to EN 10025-2 grade S355JR (1.0045).

Specifications of intended use

Anchorages subject to:

- Static and quasi-static loading
- Fire exposure

Base materials:

- Reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013+ A1:2016.
- Strength classes C20/25 to C50/60 according to EN 206:2013+A1:2016.
- Cracked and uncracked concrete.

Use conditions (Environmental conditions):

- Structure subjected tp dry internal conditions

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- 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 supports etc.).
- Anchorages under static and quasi-static loads are designed in accordance with EN 1992-4.
- Anchorages under fire exposure are designed in accordance with EN 1992-4, Annex D.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The anchor is installed before concreting in accordance with the manufacturer's installation instructions.

Table C1 : Characteristic resistance values under static and quasi-static tension loading

				M10	M12	M16
Steel failure (steel grade 4.6)						
Characteristic resistance		$N_{RK,s}$	[kN]	17,3	33,7	57,2
Parial safety factor		γ_{Ms}	[-]	2,0		
Steel failure (steel grade 5.6)						
Characteristic resistance		$N_{RK,s}$	[kN]	17,3	37,7	57,2
Parial safety factor		γ_{Ms}	[-]	2,0		
Steel failure (steel grade 8.8)						
Characteristic resistance		$N_{RK,s}$	[kN]	17,3	37,7	57,2
Parial safety factor		γ_{Ms}	[-]	2,0		
Pull out failure						
Characteristic resistance in uncracked concrete	C20/25	$N_{RK,p}$	[kN]	73,0	100,8	118,5
Characteristic resistance in cracked concrete	C20/25	$N_{RK,p}$	[kN]	52,2	72,0	84,7
Increasing factor for $N_{RK,p}$	C25/30	ψ_c	[-]	1,12		
	C30/37	ψ_c	[-]	1,22		
	C35/45	ψ_c	[-]	1,32		
	C40/45	ψ_c	[-]	1,41		
	C45/55	ψ_c	[-]	1,50		
	C50/60	ψ_c	[-]	1,58		
Parial safety factor		γ_{Mp}	[-]	1,50		

Table C1 (continued)

Concrete cone failure (not influenced by adjacent anchors or edges of concrete member)											
Anchor size				**M10**		**M12**			**M16**		
Effective anchorage depth		h_{ef}	[mm]	47	72	47	67	92	56	96	121
Characteristic resistance in uncracked concrete	C20/25	$N_{RK,c}$	[kN]	18,3	34,7	18,3	31,1	50,1	23,8	53,4	75,6
Characteristic resistance in cracked concrete	C20/25	$N_{RK,c}$	[kN]	12,8	24,3	12,8	21,8	35,1	16,7	37,4	53,0
Increasing factor for $N_{RK,c}$	C25/30	ψ_c	[-]	1,12							
	C30/37	ψ_c	[-]	1,22							
	C35/45	ψ_c	[-]	1,32							
	C40/45	ψ_c	[-]	1,41							
	C45/55	ψ_c	[-]	1,50							
	C50/60	ψ_c	[-]	1,58							
Characteristic spacing		$S_{cr,N}$	[mm]	$3,0.h_{ef}$							
Characteristic edge distance		$C_{cr,N}$	[mm]	$1,5.h_{ef}$							
Parial safety factor		γ_{Mc}	[-]	1,5							
Splitting failure											
				M10		**M12**			**M16**		
Effective anchorage depth		h_{ef}	[mm]	47	72	47	47	72	47	47	72
Characteristic spacing		$S_{cr,sp}$	[mm]	$3,0.h_{ef}$							
Characteristic edge distance		$C_{cr,sp}$	[mm]	$1,5.h_{ef}$							
Partial safety factor		γ_{Msp}	[-]	1,5							

Displacement under static and quasi-static tension loading

			M10	**M12**	**M16**
The displacements under short-term tension loading	δ_{N0}	[mm]	0,5	0,5	0,5
The displacements under long-term tension loading	$\delta_{N\infty}$ [1)]	[mm]	1	1	1

[1)] The displacements $\delta_{N\infty}$ under long-term tension loading are assumed to be approximately equal to 2,0 times the value δ_{N0}.

Table C2 : Characteristic resistance values under static and quasi-static shear loading

			M10	M12	M16
Resistance to steel failure for shear load Without lever arm					
Steel failure (steel grade 4.6)					
Characteristic resistance	$V_{RK,s}$	[kN]	13,1	20,2	37,7
Parial safety factor	γ_{Ms}	[-]	1,67		
Steel failure (steel grade 5.6)					
Characteristic resistance	$V_{RK,s}$	[kN]	13,1	22,7	39,4
Parial safety factor	γ_{Ms}	[-]	1,67		
Steel failure (steel grade 8.8)					
Characteristic resistance	$V_{RK,s}$	[kN]	13,1	22,7	39,4
Parial safety factor	γ_{Ms}	[-]	1,67		
Resistance to steel failure for shear load With lever arm					
Steel failure (steel grade 4.6)					
Characteristic resistance	$M^0_{RK,s}$	[Nm]	47,1	81,4	193,0
Parial safety factor	γ_{Ms}	[-]	1,67		
Steel failure (steel grade 5.6)					
Characteristic resistance	$M^0_{RK,s}$	[Nm]	54,5	101,8	241,3
Parial safety factor	γ_{Ms}	[-]	1,67		
Steel failure (steel grade 8.8)					
Characteristic resistance	$M^0_{RK,s}$	[Nm]	54,5	118,2	280,0
Parial safety factor	γ_{Ms}	[-]	1,67		

Table C2 (continued)

Concrete edge failure without supplementary reinforcement										
Anchor size			**M10**		**M12**			**M16**		
			M10x 50	M10x 75	M12x 50	M12x 70	M12 x95	M16 x60	M16x 100	M16x 125
Effective length	l_f	[mm]	47	72	47	67	92	56	96	121
Effective outside diameter	d_{nom}	[mm]	13,5	13,5	17,0	17,0	17,0	22,5	22,5	22,5
Parial safety factor	γ_{Mce}	[-]	1,5							
Pry-out failure										
Factor	k_8	[-]	1	2	1	2	2	1	2	2
			h_{ef} <60 mm : k_8=1 $h_{ef} \geq$ 60 mm: k_8=2							
Parial safety factor	γ_{Mcp}	[-]	1,5							

Table C3 : Characteristic resistance values under fire exposure

				M10	M12	M16
Characteristic tension resistance of steel under fire exposure						
Characteristic resistance	30 min	$N_{RK,s,fi}$	[kN]	0,9	1,7	3,1
	60 min	$N_{RK,s,fi}$	[kN]	0,7	1,3	2,4
	90 min	$N_{RK,s,fi}$	[kN]	0,6	1,1	2,0
	120 min	$N_{RK,s,fi}$	[kN]	0,5	0,8	1,6
Parial safety factor		γ_{Ms}	[-]	1		
Characteristic tension resistance to pullout failure under fire exposure						
Characteristic resistance	≤ 90 min	$N_{RK,p,fi}$	[kN]	$N_{RK,p,fi(90)} = 0{,}25 \cdot N_{RK,p}$		
	120 min	$N_{RK,p,fi}$	[kN]	$N_{RK,p,fi(120)} = 0{,}20 \cdot N_{RK,p}$		
Parial safety factor		γ_{Ms}	[-]	1		
Characteristic shear resistance to steel under fire exposure (without lever arm)						
Characteristic resistance	30 min	$V_{RK,s,fi}$	[kN]	0,9	1,7	3,1
	60 min	$V_{RK,s,fi}$	[kN]	0,7	1,3	2,4
	90 min	$V_{RK,s,fi}$	[kN]	0,6	1,1	2,0
	120 min	$V_{RK,s,fi}$	[kN]	0,5	0,8	1,6
Parial safety factor		γ_{Ms}	[-]	1		
Characteristic shear resistance to steel under fire exposure (with lever arm)						
Characteristic resistance	30 min	$M^0_{RK,s,fi}$	[Nm]	1,8	4,1	9,7
	60 min	$M^0_{RK,s,fi}$	[Nm]	1,5	3,1	7,2
	90 min	$M^0_{RK,s,fi}$	[Nm]	1,2	2,6	6,3
	120 min	$M^0_{RK,s,fi}$	[Nm]	0,9	2,0	4,8
Parial safety factor		γ_{Ms}	[-]	1		