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European Technical Assessment

**ETA-12/0457
of 20/03/2018**

General Part

Technical Assessment Body issuing the European Technical Assessment

Instytut Techniki Budowlanej

Trade name of the construction product

FX-N

Product family to which the construction product belongs

Nailed-in plastic anchors for fixing of external thermal insulation composite systems with rendering and prefabricated units for external wall insulation in concrete and masonry

Manufacturer

RAWLPLUG S.A.
ul. Kwidzyńska 6
PL 51-416 Wrocław
Poland

Manufacturing plant(s)

Plant no. 3

This European Technical Assessment contains

11 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 330196-01-0604 "Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering"

This version replaces

ETA-12/0457 issued on 27/06/2013

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Specific Part

1 Technical description of the product

The FX-N nailed-in plastic anchors consists of a plastic expansion sleeve with a collar and a steel nail as an expansion pin. The anchor sleeve is made of polyamide (PA). The nail is made of galvanized steel.

The collar is made in three versions (FX-N-..L.., FX-N-..K.., FX-N-..C..).

The plastic anchor sleeve is expanded by hammering in a nail, which press the sleeve against the wall of the drilled hole.

The illustration and the description of the product are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The performances given in clause 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 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, 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 and references to the methods used for its assessment

3.1 Performance of the product

3.1.1 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	Annex C1
Displacements	Annex C1
Edge distances and spacings	Annex B2

3.1.2 Energy economy and heat retention (BWR 6)

No performance assessed.

3.2 Methods used for the assessment

The assessment of the product for the declared intended use has been made in accordance with the EAD 330196-01-0604 "Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering".

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

According to the Decision 97/463/EC of the European Commission the system 2+ of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) applies.

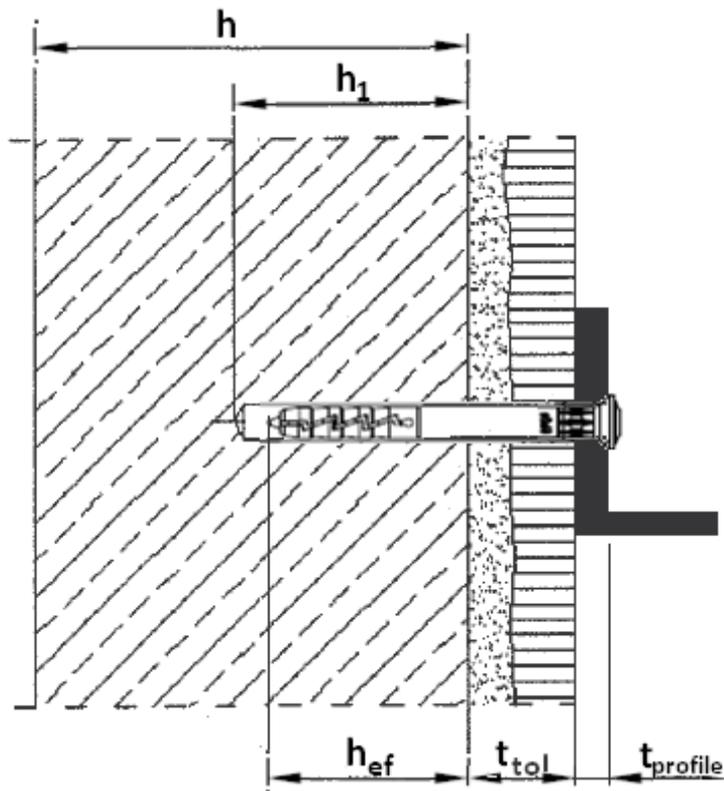
5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For the 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 Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 20/03/2018 by Instytut Techniki Budowlanej

Anna Panek, MSc
Deputy Director of ITB



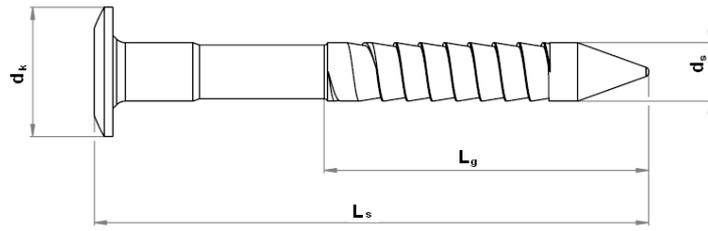
Intended Use

Multiple fixing of profiles for external thermal insulation composite systems (ETICS) according to ETAG 004 or prefabricated units for external wall insulation (Veture Kits) according to ETAG 017, in concrete and masonry

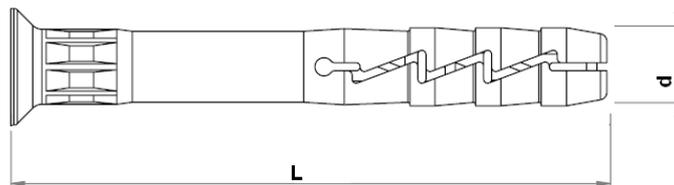
Legend

- h_{ef} = effective anchorage depth
- h_1 = depth of drill hole in base material
- h = thickness of base material
- t_{tol} = thickness of equalizing and/or non-load-bearing layer
- $t_{profile}$ = thickness of profile
- t_{fix} = thickness of fixture ($t_{tol} + t_{profile}$)

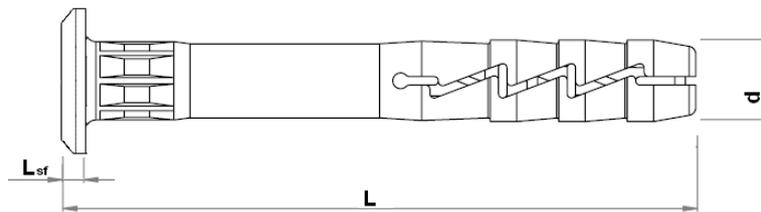
FX-N	Annex A1 of European Technical Assessment ETA-12/0457
Product description Installation conditions	



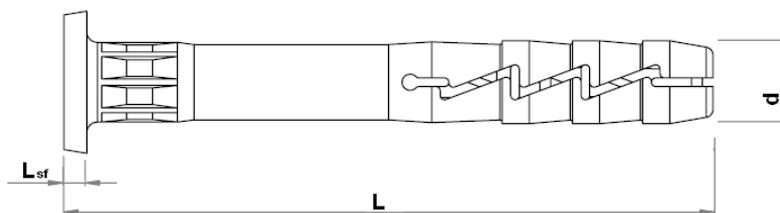
FX-N nail screw



FX-N-..L.. sleeve



FX-N-..K.. sleeve



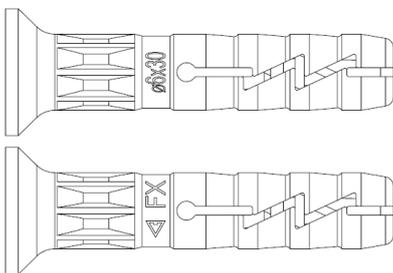
FX-N-..C.. sleeve

FX-N	Annex A2 of European Technical Assessment ETA-12/0457
Product description Types of expansion pins and expansion sleeves	

Table A3: Dimensions

Anchor index			Anchor sleeve		Expansion nail			t_{fix}
FX-N-..L..	FX-N-..K..	FX-N-..C..	L	d	L_s	d_s	d_k	–
			mm	mm	mm	mm	mm	mm
FX-N-05L025	–	FX-N-05C025	25	4,9	28	3,3	8,0	≤ 1
FX-N-05L030	FX-N-05K030	FX-N-05C030	30	4,9	33	3,3	8,0	≤ 5
FX-N-05L035	FX-N-05K035	FX-N-05C035	35	4,9	38	3,3	8,0	≤ 10
FX-N-05L040	FX-N-05K040	FX-N-05C040	40	4,9	43	3,3	8,0	≤ 15
FX-N-05L050	FX-N-05K050	FX-N-05C050	50	4,9	54	3,3	8,0	≤ 25
FX-N-06L030	FX-N-06K030	FX-N-06C030	30	5,9	34	3,8	9,0	≤ 1
FX-N-06L035	FX-N-06K035	FX-N-06C035	35	5,9	39	3,8	9,0	≤ 6
FX-N-06L040	FX-N-06K040	FX-N-06C040	40	5,9	44	3,8	9,0	≤ 11
FX-N-06L045	FX-N-06K045	FX-N-06C045	45	5,9	49	3,8	9,0	≤ 16
FX-N-06L050	FX-N-06K050	FX-N-06C050	50	5,9	54	3,8	9,0	≤ 21
FX-N-06L055	FX-N-06K055	FX-N-06C055	55	5,9	59	3,8	9,0	≤ 26
FX-N-06L060	FX-N-06K060	FX-N-06C060	60	5,9	64	3,8	9,0	≤ 31
FX-N-06L070	FX-N-06K070	FX-N-06C070	70	5,9	74	3,8	9,0	≤ 41
FX-N-06L080	FX-N-06K080	FX-N-06C080	80	5,9	84	3,8	9,0	≤ 51
FX-N-08L045	FX-N-08K045	FX-N-08C045	45	7,9	51	4,8	11,0	≤ 5
FX-N-08L060	FX-N-08K060	FX-N-08C060	60	7,9	66	4,8	11,0	≤ 20
FX-N-08L080	FX-N-08K080	FX-N-08C080	80	7,9	86	4,8	11,0	≤ 40
FX-N-08L100	FX-N-08K100	FX-N-08C100	100	7,9	106	4,8	11,0	≤ 60
FX-N-08L120	FX-N-08K120	FX-N-08C120	120	7,9	126	4,8	11,0	≤ 80
FX-N-08L140	FX-N-08K140	FX-N-08C140	140	7,9	146	4,8	11,0	≤ 100
FX-N-08L160	FX-N-08K160	FX-N-08C160	160	7,9	166	4,8	11,0	≤ 120

Marking:



KOELNER identifying mark

FX

anchor trade name

ø6x30

diameter x length (e.g. ø6 x 30 mm)

FX-N

Product description
Dimensions and marking

Annex A3
of European
Technical Assessment
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Table A4: Materials

Designation	Material
Anchor sleeve	Polyamide (PA6), grey or blue, virgin material
Expansion pin made of steel	Carbon steel ($f_{y,k} \geq 285$ MPa, $f_{u,k} \geq 330$ MPa) galvanized $\geq 5 \mu\text{m}$ according to EN ISO 4042

FX-N

Product description
Materials

Annex A4
of European
Technical Assessment
ETA-12/0457

Specification of intended use

Anchorage subject to:

- Wind suction loads.
Note: The anchor shall not be used for the transmission of dead loads of the external thermal insulation composite system (ETICS) or prefabricated units for external wall insulation (Veture Kits).

Base materials:

- Normal weight concrete (use category A), according to Annex C1.
- Solid masonry (use category B), according to Annex C1.
- Hollow or perforated masonry (use category C), according to Annex C1.
- Lightweight aggregate concrete (use category D), according to Annex C1.
- Autoclaved aerated concrete (use category E), according to Annex C1.
- For other base materials of the use categories A, B, C, D and E, the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051, edition December 2016.

Temperature range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C).

Design:

- The anchorages are designed under the responsibility of an engineer experiences in anchorages and masonry work with the partial safety factors $\gamma_M = 2,0$ and $\gamma_F = 1,5$, if there are no other national regulations.
- Verifiable calculation notes and drawings with anchor positions are prepared taking into account of the loads to be anchored.
- Fasteners are only to be used for multiple fixings of profiles for external thermal insulation composite system (ETICS) according to ETAG 004 or prefabricated units for external wall insulation (Veture Kits) according to ETAG 017.

Installation:

- Drill method according to Annex C1.
- Anchor installation shall be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation shall be executed in temperature from 0°C to +40°C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering by the mortar shall not exceed 6 weeks.

FX-N	Annex B1 of European Technical Assessment ETA-12/0457
Intended use Specifications	

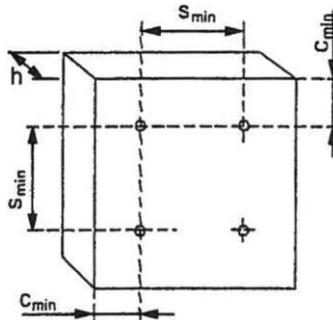
Table B1: Installation characteristics

Anchor type		FX-N-05	FX-N-06	FX-N-08
Nominal diameter	d_{nom} [mm]	5,0	6,0	8,0
Nominal diameter of drill bit	d_o [mm]	5,0	6,0	8,0
Cutting diameter of drill bit	d_{cut} [mm]	$\leq 5,40$	$\leq 6,40$	$\leq 8,45$
Depth of drill hole	h_1 [mm]	≥ 35	≥ 40	≥ 50
Effective anchorage depth	h_{ef} [mm]	25	29	40

Table B2: Minimum thickness of base material, edge distance and anchor spacing

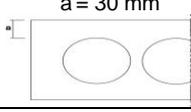
Anchor type		FX-N
Minimum thickness of base material	h_{min} [mm]	100
Minimum spacing	s_{min} [mm]	100
Minimum edge distance	c_{min} [mm]	100

Diagram of spacing



FX-N	Annex B2 of European Technical Assessment ETA-12/0457
Intended use Installation characteristics, minimum thickness of base material, edge distance and spacing	

Table C1: Characteristic resistance to tension loads N_{RK} in concrete and masonry for single anchor

Base material	Reference standard	Bulk density [kg/dm ³]	Compressive strength [N/mm ²]	Drilling method	N_{RK} [kN]		
					FX-N-05	FX-N-06	FX-N-08
Concrete C12/15	EN 206-1	–	–	hammer drilling	0,2	0,2	0,3
Concrete C20/25 to C50/60	EN 206-1	–	–		0,3	0,3	0,5
Solid clay brick 	EN 771-1	≥ 1,7	≥ 30,0	hammer drilling	0,2	0,2	0,5
Solid calcium silicate brick (e.g. KS NF 20-2.0) 	EN 771-2	≥ 2,0	≥ 20,0	hammer drilling	0,2	0,4	0,4
Calcium silicate hollow block (eg. KS L-R(P) 8 DF) a = 30 mm 	EN 771-2	≥ 1,6	≥ 12,0	rotary drilling	0,3	0,3	–
Lightweight concrete hollow block Hbl a = 30 mm 	DIN 18151	≥ 0,8	≥ 2,0	rotary drilling	0,2	0,3	0,3
Lightweight concrete block LAC 20	EN 771-3	≥ 1,56	≥ 20,0	rotary drilling	0,2	0,3	0,5
Autoclaved aerated concrete block AAC 2	EN 771-4	≥ 0,35	≥ 2,0	rotary drilling	–	0,1	0,1
Partial safety factor γ_M ¹⁾	2,0						

¹⁾ in absence of national regulations

Table C2: Displacements behavior

Base material	$\frac{N_{RK}}{3}$ [kN]			δ (for $\frac{N_{RK}}{3}$) [mm]		
	FX-N-05	FX-N-06	FX-N-08	FX-N-05	FX-N-06	FX-N-08
Concrete C12/15	0,07	0,07	0,10	0,20	0,13	0,27
Concrete C20/25 to C50/60	0,10	0,10	0,17	0,26	0,26	0,40
Solid clay brick	0,07	0,07	0,17	0,19	0,32	0,70
Solid calcium silicate brick	0,07	0,13	0,13	0,30	0,21	0,16
Calcium silicate hollow block	0,10	0,10	–	0,28	0,32	–
Lightweight concrete hollow block	0,07	0,10	0,10	0,36	0,35	0,73
Lightweight concrete block LAC 20	0,07	0,10	0,17	0,21	0,42	0,14
Autoclaved aerated concrete block AAC 2	–	0,03	0,03	–	0,08	0,08

FX-N	Annex C1 of European Technical Assessment ETA-12/0457
Performances Characteristic resistance and displacements	