

Declaration of Performance

DoP nr. fm-x5

Multi-expansion long plug for Concrete and Masonry


1. Identification of the product:
FM-X5
2. Identification code (art. 11.4), for the batch or serial number see packaging:
FM-X5 countersunk head + screw with countersunk head

d _{nom} ¹⁾	L ²⁾ [mm]	t _{fix} ³⁾ [mm]	Marking	Cod. with screw zinc galvanised 5µm	Cod. with screw grey galvanised 10µm	Cod. with screw Stainless steel A4-70
Ø8	80	10	FM-X5 Ø8x80 - 10	64301b08080	64301c08080	64301008080
	100	30	FM-X5 Ø8x80 - 30	64301b08100	64301c08100	64301008100
	120	50	FM-X5 Ø8x80 - 50	64301b08120	64301c08120	64301008120
	150	70	FM-X5 Ø8x80 - 70	64301b08150	64301c08150	64301008150
	170	100	FM-X5 Ø8x80 - 100	64301b08170	64301c08170	64301008170
Ø10	85	15	FM-X5 Ø10x85 - 15	64301b10085	64301c10085	64301010085
	100	30	FM-X5 Ø10x100 - 30	64301b10100	64301c10100	64301010100
	115	45	FM-X5 Ø10x115 - 45	64301b10115	64301c10115	64301010115
	135	55	FM-X5 Ø10x135 - 55	64301b10135	64301c10135	64301010135
	160	90	FM-X5 Ø10x160 - 90	64301b10160	64301c10160	64301010160
	200	130	FM-X5 Ø10x200 - 130	64301b10200	64301c10200	64301010200
	230	160	FM-X5 Ø10x230 - 160	64301b10230	64301c10230	64301010230

FM-X5 countersunk head + screw with hexagonal head

d _{nom} ¹⁾	L ²⁾ [mm]	t _{fix} ³⁾ [mm]	Marking	Cod. with screw zinc galvanised 5µm	Cod. with screw grey galvanised 10µm	Cod. with screw Stainless steel A4-70
Ø8	80	10	FM-X5 Ø8x80 - 10	64302b08080		
	100	30	FM-X5 Ø8x80 - 30	64302b08100		
	120	50	FM-X5 Ø8x80 - 50	64302b08120		
	150	70	FM-X5 Ø8x80 - 70	64302b08150		
Ø10	85	15	FM-X5 Ø10x85 - 15	64302b10085	64302c10085	64302010085
	100	30	FM-X5 Ø10x100 - 30	64302b10100	64302c10100	64302010100
	115	45	FM-X5 Ø10x115 - 45	64302b10115	64302c10115	64302010115
	135	55	FM-X5 Ø10x135 - 55	64302b10135	64302c10135	64302010135
	160	90	FM-X5 Ø10x160 - 90	64302b10160	64302c10160	64302010160

FM-X5 collar head + screw with hexagonal head

d _{nom} ¹⁾	L ²⁾ [mm]	t _{fix} ³⁾ [mm]	Marking	Cod. with screw zinc galvanised 5µm	Cod. with screw grey galvanised 10µm	Cod. with screw Stainless steel A4-70
Ø10	85	15	FM-X5 Ø10x85 - 15	64402b10085	64402c10085	64402010085
	100	30	FM-X5 Ø10x100 - 30	64402b10100	64402c10100	64402010100
	115	45	FM-X5 Ø10x115 - 45	64402b10115	64402c10115	64402010115
	135	55	FM-X5 Ø10x135 - 55	64402b10135	64402c10135	64402010135
	160	90	FM-X5 Ø10x160 - 90	64402b10160	64402c10160	64402010160

¹⁾ Diameter of anchor sleeve; ²⁾ Length of anchor; ³⁾ Thickness fixture max.

3. Intended use:

Generic type	Plastic anchor for multiple use in concrete and masonry for non-structural applications
Base material (use category)	> A: Normal Weight Concrete acc. to EN 206-1 > B: Solid Masonry acc. to EN 771-1 > C: Hollow or Perforated Masonry acc. to EN 771-1 and EN 771-3 > D: Autoclaved Aerated Concrete acc. to EN 771-4
Material of plug	> Sleeve: Polyamide Pa6 acc. to ISO 1874 > Screw: Steel zinc galvanised 5µm acc. to EN ISO 4042 cl. 5.8-Ø6 and cl.6.8-Ø7 Steel grey galvanised 10µm acc. to EN ISO 4042 cl. 5.8-Ø6 and cl.6.8-Ø7 Stainless steel AISI316 A4-70 acc. to ISO 3506-1
Durability	> Zinc galvanised or grey galvanised steel for dry internal conditions > Stainless Steel AISI316 A4-70 for other environmental conditions
Loading	Multiple use for non-structural applications (static or quasi-static load).
Fire Resistance	F90 for X5 Ø10 in the admissible load [Frk / (YM x YF)] is ≤ 0,8 kN
Fire Reaction	A1 acc. to EN 13501-1 for metal screw (for sleeve part see ETAG020 p.1 sect.5.2.1.)

4. Manufacturer (art. 11.5):

Friulsider SpA via trieste,1 - 33048 San Giovanni al Natisone (Udine) - Italy

5. Authorised representative (art. 12.2):

Not Relevant

6. System of Assessment AVCP (annex V):

System 2+

7/8. Harmonised Specification & Notified Body:

	Name of Body	System of Assessment	Reference	EAD / hEN Document
Technical Specification Document	ZAG _[TAB]	2+	ETA-10/0425	ETAG020
Factory Product Control	ZAG nr.1404 _[NB]	2+	1404-CPR-2257	ETAG020

9. Declared Performance:

See Annexes

10. The performance of the product identified in points 1 and 2 is in conformity with declared performance in point 9. This declaration of performance is issued under the sole responsibility of Friulsider SpA. Signed for and behalf of the manufacturer by:

Function	Name	Signature	Place and date of issue
Technical Manager	Michele Franzoso	<i>Michele Franzoso</i>	San Giovanni al Natisone, 22-05-2018
C.E.O	Claudio Peleson	<i>Claudio Peleson</i>	

ANNEX I°

Declared Performances acc. to **ETA-10/0425** - ETAG020 parts 1, 2, 3 and 4

Design method acc. to ETAG020 Annex C

ESSENTIAL CHARACTERISTICS				PERFORMANCE	
Installation parameters				FM-X5 Ø8	FM-X5 Ø10
d ₀	Nominal diameter of drill bit	[mm]		8	10
h _{nom}	Minimum installation depth	[mm]		70	70
h _{min}	Minimum thickness of the concrete member C12/15 - C16/20	[mm]		100	100
s _{min}	Minimum spacing C12/15	[mm]		80	80
c _{min}	Minimum edge distance C12/15	[mm]		80	80
C _{cr,N}	Characteristic Edge distance C12/15	[mm]		140	140
s _{min}	Minimum spacing C16/20	[mm]		60	60
c _{min}	Minimum edge distance C16/20	[mm]		60	60
C _{cr,N}	Characteristic Edge distance C16/20	[mm]		100	100
h _{min}	Minimum thickness of the masonry member and AAC	[mm]		≥ 106 see under	
s _{min}	Minimum spacing in masonry and AAC - single anchor	[mm]		250	250
c _{min}	Minimum edge distance in masonry and AAC - single anchor	[mm]		100	100
s _{1min}	Spacing perpendicular to free edge in masonry and AAC - anchor group	[mm]		200	200
s _{2min}	Spacing parallel to free edge in masonry and AAC - anchor group	[mm]		400	400
c _{min}	Minimum edge distance in masonry and AAC - anchor group	[mm]		100	100
Characteristic Bending resistance screw in Concrete, masonry and Autoclaved Aerated Concrete (AAC)					
M _{Rk,s}	Characteristic bending resistance <u>Galvanised Steel</u>	[Nm]		8,6	16,8
	Characteristic bending resistance <u>Stainless Steel A4-70</u>	[Nm]		13,6	24,8
γ _{Ms} ¹⁾	Partial safety factor <u>Galvanised Steel</u>	[-]		1,25	
	Partial safety factor <u>Stainless Steel A4-70</u>	[-]		1,56	
Characteristic TENSION Resistance failure of screw for use in CONCRETE					
N _{Rk,s}	Tension Steel characteristic failure <u>Galvanised Steel</u>	[kN]		11,0	18,1
	Tension Steel characteristic failure <u>Stainless Steel A4-70</u>	[kN]		16,5	25,0
γ _{ms,N} ¹⁾	Partial safety factor for tension steel failure <u>Galvanised Steel</u>	[-]		1,5	
	Partial safety factor for tension steel failure <u>Stainless Steel A4-70</u>	[-]		1,9	
Characteristic SHEAR Resistance failure of screw for use in CONCRETE					
V _{Rk,s}	Shear Steel characteristic failure <u>Galvanised Steel</u>	[kN]		5,5	9,0
	Shear Steel characteristic failure <u>Stainless Steel A4-70</u>	[kN]		8,2	12,5
γ _{ms,V} ¹⁾	Partial safety factor for shear steel failure <u>Galvanised Steel</u>	[-]		1,25	
	Partial safety factor for shear steel failure <u>Stainless Steel A4-70</u>	[-]		1,56	
PULL-OUT failure in CONCRETE (plastic anchor)				FM-X5 Ø8	FM-X5 Ø10
N _{Rk,p}	Tension characteristic load in cracked concrete C12/15	24°C ²⁾ / 40° C ³⁾	[kN]	1,5	2,5
	Tension characteristic load in cracked concrete C12/15	50°C ²⁾ / 80° C ³⁾	[kN]	0,75	1,5
	Tension characteristic load in cracked concrete C16/20	24°C ²⁾ / 40° C ³⁾	[kN]	2,5	3,5
	Tension characteristic load in cracked concrete C16/20	50°C ²⁾ / 80° C ³⁾	[kN]	1,2	2,5
γ _{mc} ¹⁾	Partial safety factor	[-]		1,8	
Displacement under TENSION and SHEAR loading in CONCRETE					
N	Service tension load in concrete C16/20	[kN]		1,0	1,4
δ _{N0}	Short term displacement under tension load	[mm]		3,8	1,7
δ _{N∞}	Long term displacement under tension load	[mm]		7,5	3,6
V	Service shear load in concrete	[kN]		1,0	1,4
δ _{V0}	Short term displacement under shear load	[mm]		1,6	0,9
δ _{V∞}	Long term displacement under tension load	[mm]		2,4	1,35

¹⁾ In absence of other national regulations;²⁾ Maximum long term temperature;³⁾ Maximum short term temperature.

ANNEX II°

Declared Performances acc. to ETA-10/0425 - ETAG020 parts 1, 2, 3 and 4

Design method acc. to ETAG020 Annex C

ESSENTIAL CHARACTERISTICS				PERFORMANCE	
Installation parameters				FM-X5 Ø8	FM-X5 Ø10
Characteristic Resistance for single anchor in Solid clay Brick $f_b \geq 43,8$ [MPa] $\rho \geq 1,8$ [kg/dm ³] $h_{min} \geq 120$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	3,5	3,5
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	2,0	2,5
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Hammer drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Bimattone $f_b \geq 27,3$ [MPa] $\rho \geq 0,9$ [kg/dm ³] $h_{min} \geq 120$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	1,5	1,5
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,9	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Alveolater Swiss heavy $f_b \geq 13,8$ [MPa] $\rho \geq 0,9$ [kg/dm ³] $h_{min} \geq 250$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	1,5	1,5
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,6	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Alveolater Incastro 35 $f_b \geq 10,9$ [MPa] $\rho \geq 0,8$ [kg/dm ³] $h_{min} \geq 350$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	1,5	1,5
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,75	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Blocco Leggero $f_b \geq 7$ [MPa] $\rho \geq 0,5$ [kg/dm ³] $h_{min} \geq 120$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	0,9	0,9
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,4	0,6
$\gamma_{Mm}^{4)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Poroton $f_b \geq 22$ [MPa] $\rho \geq 0,9$ [kg/dm ³] $h_{min} \geq 250$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	1,5	2,0
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,9	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Leopard BP category 1HD $f_b \geq 30$ [MPa] $\rho \geq 1,3$ [kg/dm ³] $h_{min} \geq 106$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	2,0	1,5
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,9	0,9
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Hollow Brick light weight concrete BC 203 $f_b \geq 4$ [MPa] $\rho \geq 0,95$ [kg/dm ³] $h_{min} \geq 200$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	0,75	0,6
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,3	0,6
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,5	
	Drill Method		[-]	Rotary drilling	
Characteristic Resistance for single anchor in Autoclaved Aerated Concrete (AAC) $f_b \geq 2,5$ [MPa] $\rho \geq 0,5$ [kg/dm ³] $h_{min} \geq 200$ mm					
F_{Rk}	Characteristic Resistance	24°C ²⁾ / 40°C ³⁾	[kN]	0,6	0,6
	Characteristic Resistance	50°C ²⁾ / 80°C ³⁾	[kN]	0,6	0,5
$\gamma_{Mm}^{1)}$	Partial safety factor		[-]	2,0	
	Drill Method		[-]	Hammer drilling	

¹⁾ In absence of other national regulations;²⁾ Maximum long term temperature;³⁾ Maximum short term temperature.