FRIULSIDER YOUR FIXING FACTORY

Declaration of Performance

DoP nr. x3

High performance long plug

CE

1. Identification of the product:: **X3**

2. Identification code (art. 11.4): **See Annexes *I*** - for the batch or serial number see packaging:

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. 6.8 - Ø6 and Ø7 Steel grey galvanised 10µm acc. to EN ISO 4042 cl. 6.8 - Ø6 and Ø7 Stainless steel AISI316 A4-70 acc.to ISO 3506-1 - Ø6 and Ø7
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 almost-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	EN Norm or EAD Document
Technical Specification Document	ZAG [TAB]	2+	**ETA-19/0245**	**ETAG020**
Factory Product Control	ZAG 1404 [NB]	2+	**1404-CPR 3283**	ETAG020

9. Declared Performance: **See Annexes *II***

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	Raffaele Palmieri	Raffaele Palmieri	San Giovanni al Natisone, 06-05-2020

ANNEX *I*

X3 countersunk head + screw with countersunk head Pozidrive recess

d_{nom} [1]	L [2] [mm]	t_{fix} [3] [mm]	Marking	Cod. with screw zinc galvanised 5µm
Ø8	60	20 - 10	X3 Ø8x60	64601b08060
	80	40 - 30	X3 Ø8x80	64601b08080
	100	60 -50	X3 Ø8x100	64601b08100
	120	80 - 70	X3 Ø8x120	64601b08120
Ø10	60	10	X3 Ø10x60	64601b10060
	80	30 -10	X3 Ø10x80	64601b10080
	100	50 - 30 -10	X3 Ø10x100	64601b10100
	120	70 – 50 - 30	X3 Ø10x120	64601b10120
	140	90 – 70 - 50	X3 Ø10x140	64601b10140
	160	110 – 90 - 70	X3 Ø10x160	64601b10160

[1] Diameter of anchor sleeve; [2] Length of anchor; [3] Max fixable thickness (see support table).

X3 countersunk head + screw with countersunk head Torx recess

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	60	20 - 10	X3 Ø8x60	64602b08060	64602c08060	64602008060
	80	40 - 30	X3 Ø8x80	64602b08080	64602c08080	64602008080
	100	60 -50	X3 Ø8x100	64602b08100	64602c08100	64602008100
	120	80 - 70	X3 Ø8x120	64602b08120	64602c08120	64602008120
Ø10	60	10	X3 Ø10x60	64602b10060	64602c10060	64602010060
	80	30 -10	X3 Ø10x80	64602b10080	64602c10080	64602010080
	100	50 - 30 -10	X3 Ø10x100	64602b10100	64602c10100	64602010100
	120	70 – 50 - 30	X3 Ø10x120	64602b10120	64602c10120	64602010120
	140	90 – 70 - 50	X3 Ø10x140	64602b10140	64602c10140	64602010140
	160	110 – 90 - 70	X3 Ø10x160	64602b10160	64602c10160	64602010160
	260	210-190-170	X3 Ø10x260	64602b10260	64602c10260	-
	290	240-220-200	X3 Ø10x290	64602b10290	64602c10290	-

[1] Diameter of anchor sleeve; [2] Length of anchor; [3] Max fixable thickness (see support table).

X3 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
Ø10	60	10	X3 Ø10x60	64603b10060	64603c10060	64603010060
	80	30 -10	X3 Ø10x80	64603b10080	64603c10080	64603010080
	100	50 - 30 -10	X3 Ø10x100	64603b10100	64603c10100	64603010100
	120	70 – 50 - 30	X3 Ø10x120	64603b10120	64603c10120	64603010120
	140	90 – 70 - 50	X3 Ø10x140	64603b10140	64603c10140	64603010140
	160	110 – 90 - 70	X3 Ø10x160	64603b10160	64603c10160	64603010160

[1] Diameter of anchor sleeve; [2] Length of anchor; [3] Max fixable thickness (see support table).

X3 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	60	10	X3 Ø10x60	64703b10060	64703c10060	64703010060
	80	30 -10	X3 Ø10x80	64703b10080	64703c10080	64703010080
	100	50 - 30 -10	X3 Ø10x100	64703b10100	64703c10100	64703010100
	120	70 – 50 - 30	X3 Ø10x120	64703b10120	64703c10120	64703010120
	140	90 – 70 - 50	X3 Ø10x140	64703b10140	64703c10140	64703010140
	160	110 – 90 - 70	X3 Ø10x160	64703b10160	64703c10160	64703010160

[1] Diameter of anchor sleeve; [2] Length of anchor; [3] Max fixable thickness (see support table).

ANNEX II

Declared Performances acc. to ETA - 19/0245 - ETAG020 parts 1, 2, 3 and 4 Design method acc. to ETAG020 Annex C								
ESSENTIAL CHARACTERISTICS			**PERFORMANCE**					
Installation parameters			**X3 Ø8**		**X3 Ø10**			
d_0	Nominal diameter of drill bit	[mm]	**8**		**10**			
h_{nom}	Minimum installation depth	[mm]	**40**	**50**	**50**	**70**	**90**	
h_{min}	Minimum thickness of the concrete member C12/15 - C16/20	[mm]	100		100	120	-	
s_{min}	Minimum spacing C12/15	[mm]	80	80	180	180	-	
c_{min}	Minimum edge distance C12/15	[mm]	70	70	70	70	-	
$C_{cr,N}$	Characteristic Edge distance C12/15	[mm]	80	80	140	140		
$S_{cr,N}$	Characteristic spacing C12/15	[mm]	70	70	100	100	-	
s_{min}	Minimum spacing C16/20	[mm]	60	60	150	150	-	
c_{min}	Minimum edge distance C16/20	[mm]	50	50	50	50	-	
$C_{cr,N}$	Characteristic Edge distance C16/20	[mm]	60	60	100	100		
$S_{cr,N}$	Characteristic spacing C12/15	[mm]	65	65	80	80	-	
h_{min}	Minimum thickness of the Masonry support	[mm]	≥ 120 see under					
s_{min}	Minimum spacing in Masonry - single anchor	[mm]	-	250	250	250	-	
c_{min}	Minimum edge distance in Masonry - single anchor	[mm]	-	100	100	120	-	
s_{1min}	Spacing perpendicular to free edge in Masonry - anchor group	[mm]	-	200	200	200	-	
s_{2min}	Spacing parallel to free edge in Masonry - anchor group	[mm]	-	400	400	400	-	
c_{min}	Minimum edge distance in Masonry - anchor group	[mm]	-	100	100	120	-	
h_{min}	Minimum thickness of the AAC 2 -AAC 6 support	[mm]	-	-	-	240		
s_{min}	Minimum spacing in AAC 2 -AAC 6 - single anchor	[mm]	-	-	-	250		
c_{min}	Minimum edge distance in AAC 2 -AAC 6 - single anchor	[mm]	-	-	-	100		
s_{1min}	Spacing perpendicular to free edge in ACC 2-ACC 6 - anchor group	[mm]	-	-	-	120		
s_{2min}	Spacing parallel to free edge in AAC 2 -AAC 6 - anchor group	[mm]	-	-	-	120		
c_{min}	Minimum edge distance in AAC 2 -AAC 6 - anchor group	[mm]	-	-	-	100		
Characteristic Bending resistance screw in Concrete, masonry and Autoclaved Aerated Concrete (AAC)								
$M_{Rk,s}$	Characteristic bending resistance Galvanised Steel	[Nm]	**14,14**		**22,71**			
	Characteristic bending resistance Stainless Steel A4-70	[Nm]	**12,98**		**25,92**			
γ_{Ms} [1)]	Partial safety factor Galvanised Steel	[-]	**1,25**					
	Partial safety factor Stainless Steel A4-70	[-]	**1,56**					
Characteristic TENSION Resistance failure of screw for use in CONCRETE								
$N_{Rk,s}$	Tension Steel characteristic failure Galvanised Steel	[kN]	**12,7**		**19,3**			
	Tension Steel characteristic failure Stainless Steel A4-70	[kN]	**14,9**		**22,5**			
$\gamma_{ms,N}$ [1)]	Partial safety factor for tension steel failure Galvanised Steel	[-]	**1,5**					
	Partial safety factor for tension steel failure Stainless Steel A4-70	[-]	**1,9**					
Characteristic SHEAR Resistance failure of screw for use in CONCRETE								
$V_{Rk,s}$	Shear Steel characteristic failure Galvanised Steel	[kN]	**6**		**8,6**			
	Shear Steel characteristic failure Stainless Steel A4-70	[kN]	**7**		**10,1**			
$\gamma_{ms,V}$ [1)]	Partial safety factor for shear steel failure Galvanised Steel	[-]	**1,25**					
	Partial safety factor for shear steel failure Stainless Steel A4-70	[-]	**1,56**					

[1)] In absence of other national regulations;

ANNEX II

Declared Performances acc. to ETA - 19/0245 - ETAG020 parts 1, 2, 3 and 4 PULL-OUT failure in CONCRETE (plastic anchor) Design method acc. to ETAG020 Annex C						
ESSENTIAL CHARACTERISTICS			**PERFORMANCE**			
			X3 Ø8		**X3 Ø10**	
		hnom [mm]	**40**	**50**	**50**	**70**
$N_{Rk,p}$	Tension characteristic load in cracked concrete **C12/15** 24°C[2] / 40°C[3]	[kN]	**1,2**	**1,5**	**3,0**	**4,5**
	Tension characteristic load in cracked concrete **C12/15** 50°C[2] / 80°C[3]	[kN]	**0,9**	**1,2**	**2,5**	**3,5**
	Tension characteristic load in cracked concrete **≥ C16/20** 24°C[2] / 40°C[3]	[kN]	**1,5**	**2,0**	**4,0**	**6,5**
	Tension characteristic load in cracked concrete ≥ C16/20 50°C[2] / 80°C[3]	[kN]	**1,5**	**2,0**	**3,5**	**5,0**
γ_{mc} [1]	Partial safety factor	[-]	**1,8**		**1,8**	
Displacement under TENSION and SHEAR loading in CONCRETE						
N	Service tension load in concrete **≥ C16/20**	[kN]	**0,6**	**0,8**	**1,6**	**2,6**
δ_{N0}	Short term displacement under tension load	[mm]	0,01	0,02	0,01	0,15
$\delta_{N\infty}$	Long term displacement under tension load	[mm]	0,45	0,60	0,61	0,87
V	Service shear load in concrete **≥ C16/20**	[kN]	**0,6**	**0,8**	**1,6**	**2,6**
δ_{V0}	Short term displacement under shear load	[mm]	0,31	0,42	0,70	1,14
$\delta_{V\infty}$	Long term displacement under tension load	[mm]	0,47	0,62	1,05	1,71

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

Declared Performances acc. to ETA - 19/0245 - ETAG020 parts 1, 2, 3 and 4 **AAC Autoclaved Aerated Concrete** Design method acc. to ETAG020 Annex C						
ESSENTIAL CHARACTERISTICS				**PERFORMANCE**		
				X3 Ø10		
			hnom [mm]	**70**	**90**	
Characteristic Resistance for single anchor in AAC 2 fb ≥ 2,0 [MPa] ρ ≥ 0,35 [kg/dm³] h_{min} ≥ 240 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	**0,4**	**0,6**	
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	**0,3**	**0,3**	
γ_{Mm} [1]	Partial safety factor		[-]	**2,0**		
	Drill Method		[-]	Hammer drilling		
Characteristic Resistance for single anchor in AAC 6 fb ≥ 6,0 [MPa] ρ ≥ 0,65 [kg/dm³] h_{min} ≥ 240 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	**2,0**	**2,5**	
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	**1,2**	**1,5**	
γ_{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.

ANNEX II

Declared Performances acc. to ETA - 19/0245 - ETAG020 parts 1, 2, 3 and 4

MASONRY

Design method acc. to ETAG020 Annex C

ESSENTIAL CHARACTERISTICS				PERFORMANCE		
				X3 8	X3 10	
			hnom [mm]	50	50	70
Characteristic Resistance for single anchor in Solid clay Brick Mz 2,0/20 3DF fb ≥ 20 [MPa] ρ ≥2,0 [kg/dm³] h_{min} ≥ 175mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	3,5	4,0	-
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	3,5	4,0	-
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Hammer drilling		
Characteristic Resistance for single anchor in Hollow clay Brick POROTON P800 f_b ≥ 10,5 [MPa] ρ ≥ 0,9 [kg/dm³] h_{min} ≥ 250 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,5	2,0	1,5
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,5	1,5	1,5
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Rotary drilling		
Characteristic Resistance for single anchor in Hollow clay Brick BIO PLAN 45-25/19,9 fb ≥ 12 [MPa] ρ≥ 0,96 [kg/dm³] h_{min} ≥ 450 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,5	2,0	2,0
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,5	1,5	1,5
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Rotary drilling		
Characteristic Resistance for single anchor in Hollow clay Brick Doppi UNI 12x25x12 f_b ≥ 22 [MPa] ρ ≥ 0,94 [kg/dm³] h_{min} ≥ 120 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,5	2,0	2,0
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,5	1,5	1,5
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Rotary drilling		
Characteristic Resistance for single anchor in Hollow clay Brick BIO PLAN 45-25/19,9T-0,09 f_b ≥7 [MPa] ρ ≥0,5 [kg/dm³] h_{min} ≥120 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,5	1,5	0,9
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,5	1.5	0,9
γ_{Mm} [4]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Rotary drilling		
Characteristic Resistance for single anchor in Hollow clay Brick SM B 15/19 f_b ≥ 28 [MPa] ρ ≥ 0,9 [kg/dm³] h_{min} ≥ 150 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	2,0	2,0	2,0
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,5	1,5	1,5
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Rotary drilling		
Characteristic Resistance for single anchor in Hollow clay Brick Leggero f_b ≥ 8,0 [MPa] ρ ≥ 0,56 [kg/dm³] h_{min} ≥120mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,2	0,9	0,9
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	0,9	0,9	0,75
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Rotary drilling		
Characteristic Resistance for single anchor in Hollow clay Brick Poroton P700 TS inc.35 f_b ≥11 [MPa] ρ ≥ 0,56 [kg/dm³] h_{min} ≥ 350 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,5	0,9	0,9
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,5	0,9	0,9
γ_{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 ≥ 4 [MPa] ρ ≥ 0,95 [kg/dm³] h_{min} ≥ 200 mm						
F_{Rk}	Characteristic Resistance	24°C[2] / 40° C[3]	[kN]	1,2	1,5	1,5
	Characteristic Resistance	50°C[2] / 80° C[3]	[kN]	1,2	1,2	1,5
γ_{Mm} [1]	Partial safety factor		[-]	2,5		
	Drill Method		[-]	Hammer drilling		

[1] In absence of other national regulations;

[2] Maximum long term temperature;

[3] Maximum short term temperature.