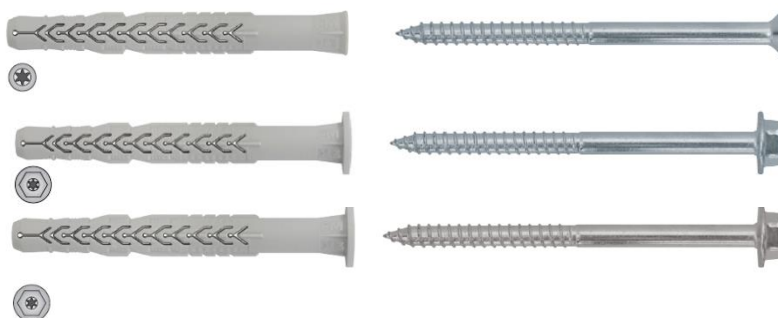


X3 C
X3 H
X3 H A4



PRODUCT DESCRIPTION

High performance long plug for base material categories: A B C D with 3 embedment depths.

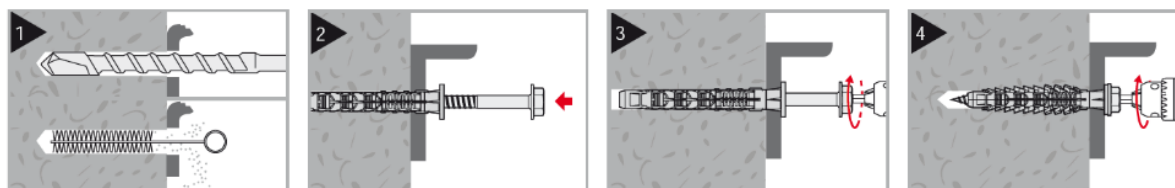
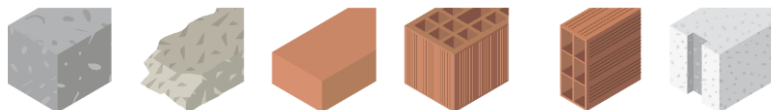
Available in options:

Countersunk plug, countersunk head screw, galvanized - TX 40 socket.

Plug with large flange Ø18 special hex head screw with collar Ø19, SW 13, TX 40 socket, screw made of carbon steel class 6,8 galvanized, or stainless steel A4.

APPLICATION

Long plug anchor for fixing facade sub-construction and light steel or wooden structures to substrate of categories: A B C D acc. to ETAG 020.



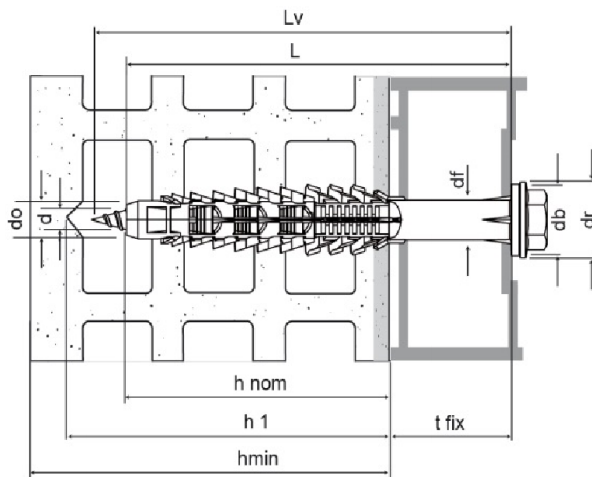
ANCHOR DIMENSION

| ANCHOR DIMENSION | | | | | | | | | | | | | | | | | | |
|------------------|------------------|------------------|------------------|-----------|------------------|------------------|------------------|--------------------------|-----|------------------|---------|---------|---------|---------|--------|---------|------|-----|
| Dimension | tfix* [mm] | | | h1 [mm] | hnom [mm] | | | hmin ⁽³⁾ [mm] | | | do [mm] | df [mm] | db [mm] | dr [mm] | d [mm] | Lv [mm] | Hex. | TX |
| | 1 ⁽¹⁾ | 2 ⁽¹⁾ | 3 ⁽²⁾ | | 1 ⁽¹⁾ | 2 ⁽¹⁾ | 3 ⁽²⁾ | 1 | 2 | 3 ⁽²⁾ | | | | | | | | |
| Ø10x60 | 10 | - | - | hnom + 15 | 50 | - | - | 100 | - | - | 10 | 10,5 | 18 | 19 | 7 | 13 | T40 | |
| Ø10x80 | 30 | 10 | - | | 50 | 70 | - | 100 | 120 | - | | | | | | | | 68 |
| Ø10x100 | 50 | 30 | 10 | | 50 | 70 | 90 | 100 | 120 | 200 | | | | | | | | 108 |
| Ø10x120 | 70 | 50 | 30 | | | | | | | | | | | | | | | 128 |
| Ø10x140 | 90 | 70 | 50 | | | | | | | | | | | | | | | 148 |
| Ø10x160 | 110 | 90 | 70 | | | | | | | | | | | | | | | 168 |

⁽¹⁾ Reference values on all types of base materials.

⁽²⁾ Values only for Autoclaved aerated concrete AAC.

⁽³⁾ Reference values on concrete.



t fix – fixture thickness

do – drill hole diameter

h1 – minimum hole depth

hnom – nominal embedment depth

hmin – minimum thickness of base material

d – screw diameter

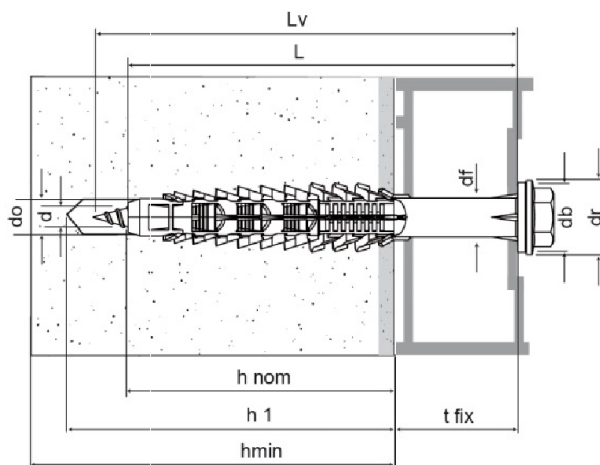
db – flange diameter

df – hole diameter in fixing element

dr – washer diameter

L – anchor length

Lv – screw length



EUROPEAN TECHNICAL APPROVAL ETA-19/0245

| INSTALATION AND LOADS CHARACTERISTIC | | | | |
|---|---|------|-----------------|---------------------|
| ESSENTIAL CHARACTERISTICS | | | PERFORMANCE | |
| Installation parameters | | | X3 Ø10 | |
| d₀ | Nominal diameter of drill bit | [mm] | 10 | |
| h_{nom} | Minimum embedment depth | [mm] | 50 | 70 90 |
| h_{min} | Minimum thickness of concrete member C12/15 - C16/20 | [mm] | 100 | 120 - |
| s_{min} | Minimum spacing C12/15 | [mm] | 180 | 180 - |
| c_{min} | Minimum edge distance C12/15 | [mm] | 70 | 70 - |
| c_{cr,N} | Characteristic edge distance C12/15 | [mm] | 140 | 140 |
| s_{cr,N} | Characteristic spacing C12/15 | [mm] | 100 | 100 - |
| s_{min} | Minimum spacing C16/20 | [mm] | 150 | 150 - |
| c_{min} | Minimum edge distance C16/20 | [mm] | 50 | 50 - |
| c_{cr,N} | Characteristic edge distance C16/20 | [mm] | 100 | 100 |
| s_{cr,N} | Characteristic spacing C16/20 | [mm] | 80 | 80 - |
| h_{min} | Minimum thickness of the masonry - single anchor | [mm] | ≥ 120 See under | |
| s_{min} | Minimum spacing in masonry – single anchor | [mm] | 250 | 250 - |
| c_{min} | Minimum edge distance in masonry- single anchor | [mm] | 100 | 120 - |
| s_{1min} | Spacing perpendicular to free edge in masonry – anchor group | [mm] | 200 | 200 - |
| s_{2min} | Spacing parallel to free edge in masonry – anchor group | [mm] | 400 | 400 - |
| c_{min} | Minimum Edge distance in masonry – anchor group | [mm] | 100 | 120 - |
| h_{min} | Minimum thickness of the AAC 2 -AAC 6 support | [mm] | - | 240 |
| s_{min} | Minimum spacing distance 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 AAC 2 -AAC 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 <u>Galvanized Steel</u> | [Nm] | 22,71 | |
| | Characteristic bending resistance <u>Stainless Steel A4-70</u> | [Nm] | 25,92 | |
| γ_{Ms}¹⁾ | Partial safety factor <u>Galvanized 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>Galvanized Steel</u> | [kN] | 19,3 | |
| | Tension Steel characteristic failure <u>Stainless Steel A4-70</u> | [kN] | 22,5 | |
| γ_{ms,N}¹⁾ | Partial safety factor <u>Galvanized Steel</u> | [-] | 1,5 | |
| | Partial safety factor <u>Stainless Steel A4-70</u> | [-] | 1,9 | |
| V_{Rk,s} | Shear Steel characteristic failure <u>Galvanized Steel</u> | [kN] | 8,6 | |
| | Shear Steel characteristic failure <u>Stainless Steel A4-70</u> | [kN] | 10,1 | |
| γ_{ms,V}¹⁾ | Partial safety factor <u>Galvanized Steel</u> | [-] | 1,25 | |
| | Partial safety factor <u>Stainless Steel A4-70</u> | [-] | 1,56 | |

¹⁾ In absence of other national regulations;

| PULL-OUT FAILURE IN CONCRETE (PLASTIC ANCHOR) | | | | |
|--|---|-----------------------|------|------|
| ESSENTIAL CHARACTERISTICS | | X3 Ø10 | | |
| | | 50 | 70 | |
| | | h _{nom} [mm] | | |
| N _{Rk,p} | Tension characteristic load in cracked concrete C12/15 24°C ²⁾ / 40°C ³⁾ | [kN] | 3,0 | 4,5 |
| | Tension characteristic load in cracked concrete C12/15 50°C ²⁾ / 80°C ³⁾ | [kN] | 2,5 | 3,5 |
| | Tension characteristic load in cracked concrete ≥ C16/20 24°C ²⁾ / 40°C ³⁾ | [kN] | 4,0 | 6,5 |
| | Tension characteristic load in cracked concrete ≥ C16/20 50°C ²⁾ / 80°C ³⁾ | [kN] | 3,5 | 5,0 |
| 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] | 1,6 | 2,6 |
| δ _{NO} | Short term displacement under tension load | [mm] | 0,01 | 0,15 |
| δ _{N∞} | Long term displacement under tension load | [mm] | 0,61 | 0,87 |
| V | Service shear load in concrete ≥ C16/20 | [kN] | 1,6 | 2,6 |
| δ _{VO} | Short term displacement under shear load | [mm] | 0,70 | 1,14 |
| δ _{V∞} | Long term displacement under shear load | [mm] | 1,05 | 1,71 |

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

| CHARACTERISTICS RESISTANCE IN AUTOCLAVED AERATED CONCRETE (AAC) | | | | | |
|--|---------------------------|---|-----------------|-----|-----|
| ESSENTIAL CHARACTERISTICS | | X3 Ø10 | | | |
| | | 70 | 90 | | |
| | | h _{nom} [mm] | | | |
| Characteristic Resistance for single anchor in AAC 2 f _b ≥ 2,0 [MPa] ρ ≥ 0,35 [kg/dm ³] 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 | [-] | Rotary drilling | | |
| Characteristic Resistance for single anchor in AAC 6 f _b ≥ 6,0 [MPa] ρ ≥ 0,65 [kg/dm ³] 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 | [-] | Rotary drilling | | |

| CHARACTERISTICS RESISTANCE IN MASONRY | | | | | |
|--|---------------------------|---------------------------------------|------|-----------------|------|
| WŁAŚCIWOŚCI ZASADNICZE | | | | X3 Ø10 | |
| | | | | 50 | 70 |
| h _{nom} [mm] | | | | | |
| Characteristic Resistance for single anchor in clay Brick Mz 2,0/20 3DF f_b ≥ 20 [MPa] ρ ≥ 2,0 [kg/dm³] h_{min} ≥ 175 mm | | | | | |
| F _{Rk} | Characteristic resistance | 24°C ² / 40°C ³ | [kN] | 4,0 | - |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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] | 2,0 | 1,5 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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 f_b ≥ 12 [MPa] ρ ≥ 0,96 [kg/dm³] h_{min} ≥ 450 mm | | | | | |
| F _{Rk} | Characteristic resistance | 24°C ² / 40°C ³ | [kN] | 2,0 | 2,0 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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] | 2,0 | 2,0 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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 | 0,9 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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] | 0,9 | 0,9 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 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] | 0,9 | 0,9 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 0,9 | 0,9 |
| γ _{Mm} ¹⁾ | Partial safety factor | | | 2,5 | |
| | Drill method | | | Rotary drilling | |
| Characteristic Resistance for single anchor in Hollow clay Brick light weight concreto f_b ≥ 4 [MPa] ρ ≥ 0,95 [kg/dm³] h_{min} ≥ 200 mm | | | | | |
| F _{Rk} | Characteristic resistance | 24°C ² / 40°C ³ | [kN] | 1,5 | 1,5 |
| | Characteristic resistance | 50°C ² / 80°C ³ | [kN] | 1,2 | 1,5 |
| γ _{Mm} ¹⁾ | Partial safety factor | | | 2,5 | |
| | Drill method | | | Hammer drilling | |

OTHER FEATURES

| | | |
|--|-------------------------------|---|
| <i>Type of anti-corrosion protection</i> | <i>Galvanized</i> | <i>Stainless steel A4</i> |
| <i>Plug diameter</i> | $\varnothing 10$ | $\varnothing 10$ |
| <i>Screw material</i> | <i>Carbon steel class 6.8</i> | <i>Stainless steel AISI 316 (A4 70)</i> |
| <i>Plug Material</i> | <i>Polyamide PA6</i> | |
| <i>Coating thickness</i> | 5 μm ISO 4042 | - |



DOP/DWU

* Acc. to TR 020 $N_{Rd} \leq 0,8 \text{ kN}$