

## European Technical Assessment

**ETA-12/0261  
of 14/12/2022**

*English translation prepared by CSTB - Original version in French language*

### General Part

Trade name of the construction  
product:

**G&B Fissaggi GX-L**

Product family to which the  
construction product belongs :

**Plastic anchor for multiple use in concrete and masonry for  
non-structural applications**

Manufacturer:

G&B Fissaggi S.r.l.  
Corso Savona, 22  
10029 Villastellone (TO)  
Italy

Manufacturing plant(s):

G&B Fissaggi S.r.l.  
Corso Savona, 22  
10029 Villastellone (TO)  
Italy

This European Technical  
Assessment contains:

12 pages including 9 pages of 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:

EAD 330284-00-0604 (June 2018): Plastic anchors for  
redundant non-structural systems in concrete and masonry

This Assessment replaces:

ETA-12/0261 of 8/12/2015

## Specific Part

### 1 Technical description of the product

The G&B Fissaggi GX-L is an anchor consisting of a special screw and a polymeric sleeve which passes through the fixture. The special screw is made of galvanized steel or stainless steel, whereas the sleeve consists of polyamide PA6. The polymeric sleeve is expanded by screwing in the expansion element which presses the sleeve against the wall of the drilled hole.

The installed anchor is shown in Annex A.

### 2 Specification of the intended use

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annexes B.

The plastic anchor "G&B Fissaggi GX-L" is intended for anchorages subject to static and quasi-static loading. The applicable base material groups are "a" and "b".

The verifications and assessment methods on which this European Technical Assessment is based on lead to the assumption of a working life of the plastic anchor " G&B Fissaggi GX-L " for the intended use of 50 years when installed in the works provided that the plastic anchor is subject to appropriate installation.

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
Resistance to steel failure under tension loading	See Annex C1
Resistance to steel or polymer failure under shear loading	See Annex C1
Characteristic Resistance of the plastic expansion sleeve in concrete	See Annex C1
Characteristic Resistance of the plastic expansion sleeve in masonry	See Annex C2
Displacements under short-term and long-term loading	See Annex C3
Edge distance and spacing	See Annex B2, B3

#### 3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C1

#### 3.3 Other essential characteristics

Essential characteristic	Performance
Durability	Corrosion of Metal parts
	High alkalinity of plastic sleeve
	for screws see Annex A3 and Annex B1
	No influence of high alkalinity

#### 4 Assessment and verification of constancy of performance (AVCP)

According to the Decision 97/463/EC of the European Commission<sup>1</sup>, as amended, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or Class	System
Plastic anchor for use in concrete and masonry	Plastic anchor for multiple use in concrete and masonry for non-structural applications	—	2+

#### 5 Technical details necessary for the implementation of the AVCP system

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.

Issued in Marne La Vallée on 14/12/2022 by

*The original French version is signed*

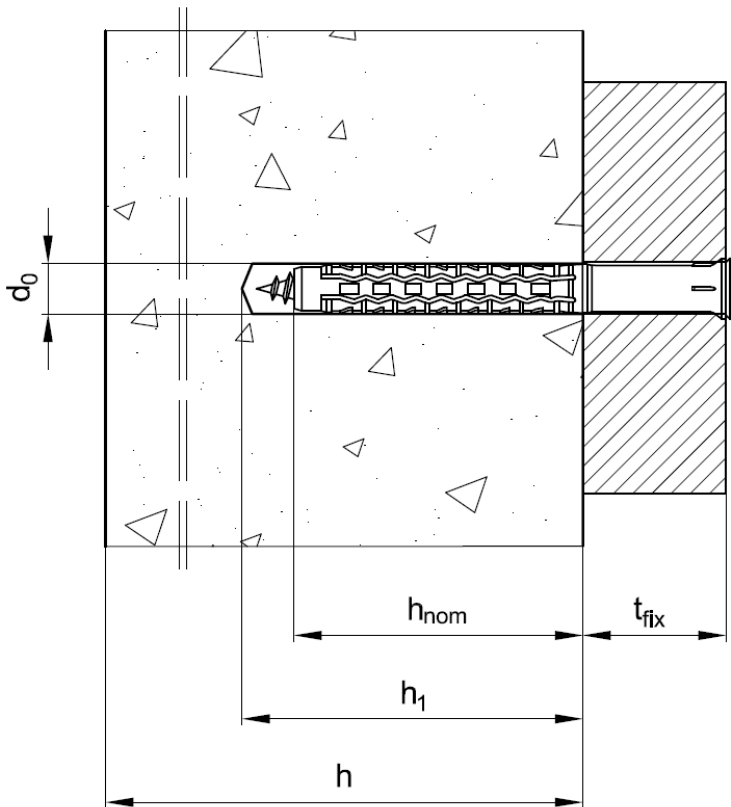
La cheffe de division, Anca CRONOPOL

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<sup>1</sup>

Official Journal of the European Communities L 254 of 08.10.1996

Installed condition

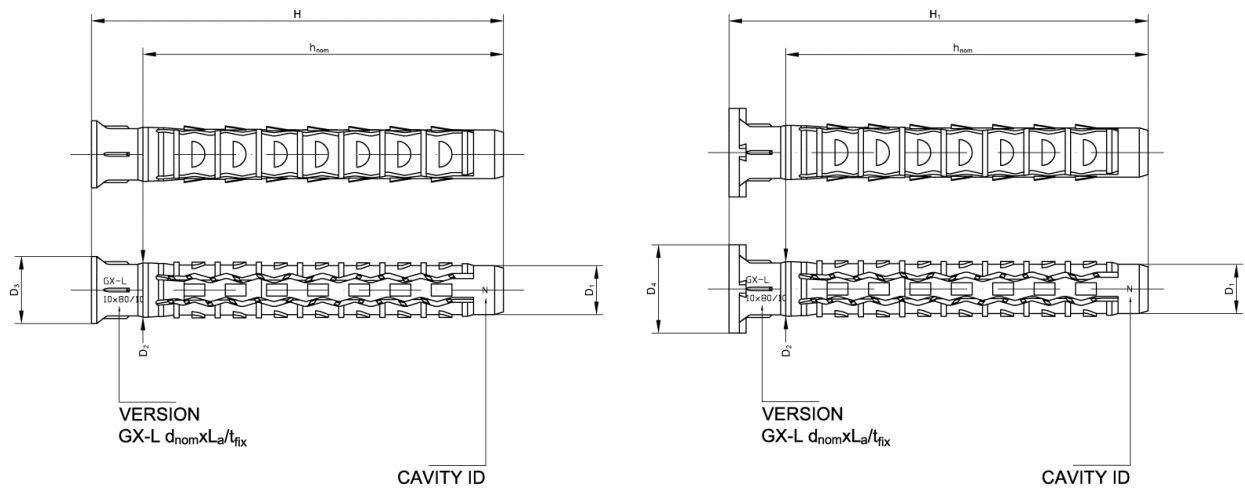


- Legend:**
- $d_0$  = drill hole diameter
  - $h_{nom}$  = overall plastic anchor embedment depth in the base material
  - $h_1$  = depth of the drilled hole to deepest point
  - $h$  = thickness of member
  - $t_{fix}$  = thickness of the fixture

G&B Plastic anchor GX-L	Annex A1
Product description Installed condition	

Product description

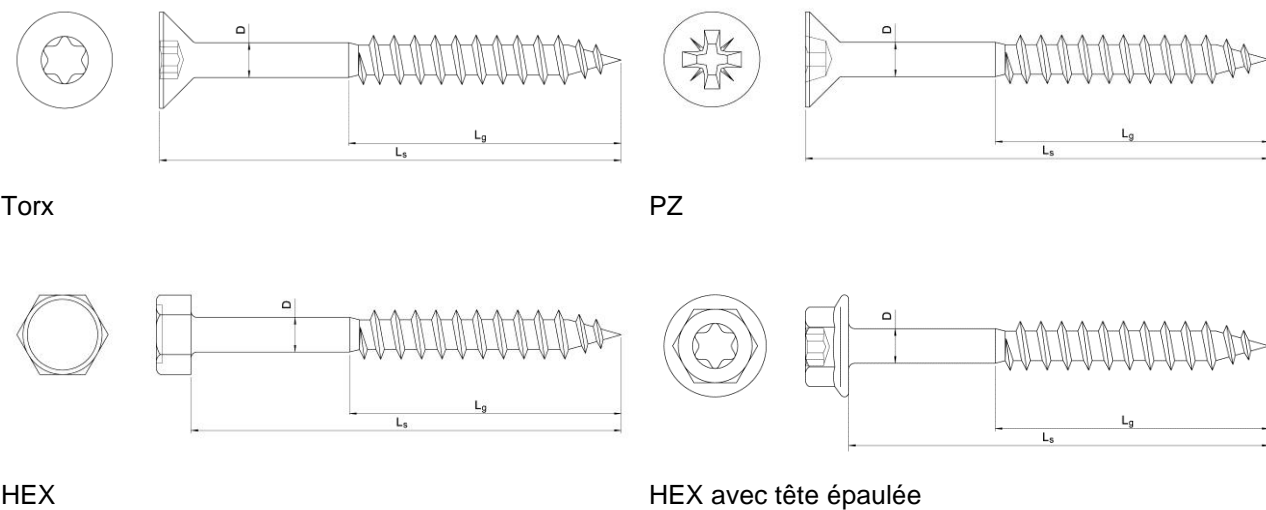
Figure A1: Expansion sleeve of GX-L anchor



Version without collar for size  $\phi 8$  and  $\phi 10$

Version with collar for size  $\phi 10$  only

Figure A2: Special screws



G&B Plastic anchor GX-L	
Product description Expansion sleeve, marking and special screws	Annex A2

**Table A1 : Materials**

Designation	Material
Plastic sleeve	Polyamide PA6, Light grey
Special screw	Carbon steel, Grade 5.8, Galvanized acc. ISO 4042 Carbon steel, Grade 5.8, Hot dip galvanized acc. ISO 10684 Stainless steel AISI 316; 1.4401

**Table A2: Dimensions**

Anchor type	Plastic sleeve								Screw						
	d <sub>nom</sub>	h <sub>nom</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	t <sub>fix,max</sub>	H	D	L <sub>s</sub>	L <sub>g</sub>	Torx	PZ	HEX	HEX Torx Flanged
8x80/10	8	70	7,8	8,5	10,5	-	10	80	5,5	85	55	x	x	x	-
8x100/30							30	100		105		x	x	x	-
8x120/50							50	120		125		x	x	x	-
8x140/70							70	140		145		x	x	x	-
8x170/100							100	170		175		x	x	x	-
8x200/130							130	200		205		x	x	x	-
10x80/10	10	70	9,5	10,5	13,0	17,0	10	80	7,0	85	58-85	x	x	x	x
10x100/30							30	100		105	63-85	x	x	x	x
10x120/50							50	120		125	63-85	x	x	x	x
10x140/70							70	140		145	63-85	x	x	x	x
10x160/90							90	160		165	63-85	x	x	x	x
10x200/130							130	200		205	63-85	x	x	x	x
10x240/170							170	240		245	80-85	x	x	x	x
10x260/190							190	260		260	80-85	x	x	x	x

**Denomination:**

GX-L d<sub>nom</sub> x L<sub>a</sub> / t<sub>fix</sub> : i.e. GX-L 8x80/10

**G&B Plastic anchor GX-L**

**Product description**

Dimensions, Materials, Installation parameters

**Annex A3**

## Specifications of intended use

### Anchorage subject to:

- Static and quasi-static loads,
- Multiple fastening for non-structural applications.

### Base materials:

- Use category « a » : Reinforced or unreinforced normal weight concrete, cracked or non-cracked, with strength class  $\geq$  C12/15, according to EN 206, see Annex C1;
- Solid brick masonry, base material group “b”, as per EN 771-1 or EN 771-2, see Annex C2;
- Hollow or perforated masonry, base material group “c”, as per EN 771-1 or EN 771-2, see Annex C2;
- Mortar strength class of the masonry  $\geq$  M 2,5 according to EN 998-2.
- For other comparable base materials of the base material group “a”, “b” or “c”, the characteristic resistance of the anchor may be determined by job site tests in accordance with TR 051.

### Temperature range:

- a : -20 °C to + 40°C (max. short term temperature +40°C et max. long term temperature +24°C)

### Use conditions (Environmental conditions):

- Structure subject to dry internal conditions: screw made of zinc coated steel or stainless steel.
- Structures subject to external atmospheric exposure (including industrial and marine environments) if no particular aggressive conditions [e.g. permanent, alternating immersion in seawater or the splash zone of sea water, chloride atmosphere of indoor swimming pools or atmosphere with extrem chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing material are used)] exist (stainless steel).

### Design:

- The anchorages are designed in accordance with TR 064 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple use for non-structural application in accordance with TR 064.

### Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings prepared for that purpose and using the appropriate tools.
- Checks before placing the anchor to ensure that the characteristic values of the base material in which the anchor is to be placed are identical to the values to which the characteristic loads apply;
- Observation of the drilling method using rotary drilling or hammer / impact drilling as given in Annex C2 (drill bits acc. to ISO 5468).
- Placing drilled holes without damaging the reinforcement and holes must be cleaned of drilling dust;
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar.
- The plastic sleeve is inserted through the fixture by slight hammer blows and the special screw is screwed in until the head of the screw touches the sleeve. The anchor is correct mounted, if there is no turn-through of the plastic sleeve in the drill hole and if slightly move is impossible after the complete turn-in of the screw.
- Temperature during the installation of the anchor  $\geq$  0°C;
- Protection to UV exposure due to solar radiation of the anchor not protected.

**G&B Plastic anchor GX-L**

**Intended Use**  
Specifications

**Annex B1**

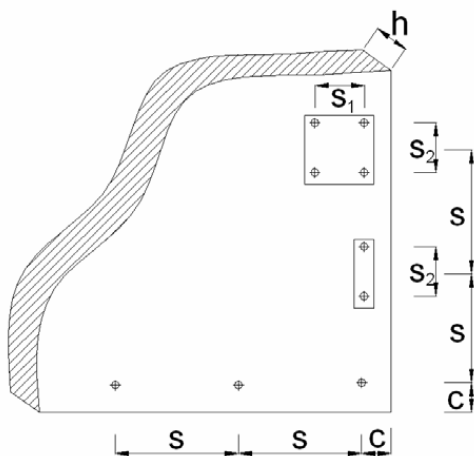
**Table B1: Installation Parameters**

Denomination			GX-L 8	GX-L 10
Drill hole diameter	$d_0$	= [mm]	8	10
Cutting diameter of drill bit	$d_{cut}$	= [mm]	[8,25 – 8,45]	[10,25 – 10,45]
Depth of drill hole to deepest point	$h_1$	≥ [mm]	80	80
Plastic anchor embedment depth in the base material	$h_{nom}$	≥ [mm]	70	70
Diameter of the clearance hole in the fixture	$d_f$	≤ [mm]	8,5	10,5

**Table B2: Minimum thickness of member, edge distance and anchor spacing in concrete**

Anchor size	Concrete	$h_{min}$	$C_{cr,N}$	$C_{min}$	$S_{min}$
		[mm]	[mm]	[mm]	[mm]
GX-L 8	Concrete C12/15	100	100	70	70
	Concrete ≥ C16/20	100	70	50	50
GX-L 10	Concrete C12/15	100	140	70	85
	Concrete ≥ C16/20	100	100	50	60

Scheme of distance and spacing



**G&B Plastic anchor GX-L**

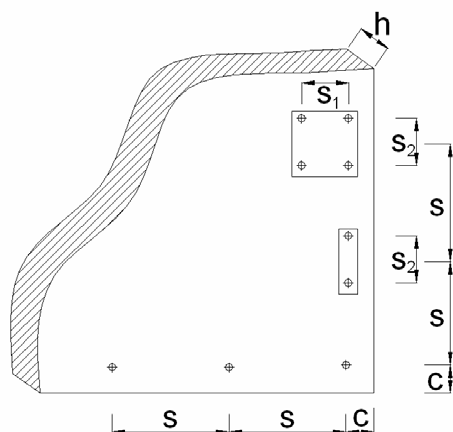
**Installation parameters (concrete and masonry)**  
**Minimum member thickness, edge distance and spacing in concrete**

**Annex B2**



Base material	Minimum thickness of member  $h_{min}$ [mm]	Edge distance  $c_{min}$ [mm]	Spacing		
			Single anchor  $s_{min}$ [mm]	Anchor group	
				Perpendicular to free edge  $s_{1,min}$ [mm]	Parallel to free edge  $s_{2,min}$ [mm]
Solid clay brick, EN 771-1	115	100	250	200	400
Solid sand-lime brick, EN 771-2	115	100	250	200	400
Vertically perforated clay brick, EN 771-1 <i>e.g.: Wienerberger Doppio Uni</i>	115	100	250	200	400
Hollow clay brick, EN 771-1 <i>e.g.: Imerys Optibric PV</i>	200	100	250	200	400
Vertically perforated clay brick, EN 771-1 <i>e.g.: Bergmann HLZ 12</i>	115	100	250	200	400
Sand-lime perforated brick, KSL-R 8DF or DIN 106 / EN 771-2	240	100	250	200	400

- ### Scheme of distances and spacing



## Annex B3

### Minimum thickness, edge distances and spacings in masonry

**Table C1: Characteristic steel resistance of the screw in concrete and masonry**

Designation			Galvanized steel		Stainless steel	
			GX-L 8	GX-L 10	GX-L 8	GX-L 10
Screw diameter	$d_s$	[mm]	5,5	7,0	5,5	7,0
Characteristic tension resistance	$N_{Rk,s}$	[kN]	9,6	12,8	6,0	12,3
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,50	1,49	2,86	2,86
Characteristic shear resistance	$V_{Rk,s}$	[kN]	4,8	6,4	3,0	6,2
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,50	2,38	2,38
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	5,6	10,7	3,5	10,3
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,50	2,38	2,38

<sup>1)</sup> In absence of other national regulations

**Table C2: Characteristic resistance due to pull-out failure in concrete**

Pull-out failure			GX-L 8	GX-L 10
Characteristic resistance, concrete $\geq$ C16/20	$N_{Rk,p}$	[kN]	2,0	3,0
Characteristic resistance, concrete C12/15	$N_{Rk,p}$	[kN]	1,2	2,0
Partial safety factor	$\gamma_{Mc}^{1)}$	[-]	1,8	1,8

<sup>1)</sup> In absence of other national regulations




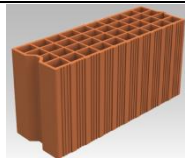


For fastening of façade systems the load bearing behaviour of the GX-L 10,  $F_{Rk,fi,90}$  [kN] = 0,8kN (no permanent centric tension load, shear load without lever arm) can be assumed.

**G&B Plastic anchor GX-L**

**Characteristic resistance in concrete**

**Annex C1**

**Table C3: Characteristic resistance in masonry**

Base material	Picture / Measures [mm]	Drill method <sup>1)</sup>	Density class [kg/dm <sup>3</sup> ]	Compressive strength class [N/mm <sup>2</sup> ]	F <sub>rk</sub> <sup>2)</sup> [kN]	
					GX-L 8	GX-L 10
Solid clay brick, EN 771-1	 247x118x73	H	>2,1	f <sub>b</sub> ≥ 75 <sup>3)</sup>	3,5	4,0
				f <sub>b</sub> ≥ 20 <sup>3)</sup>	1,5	1,2
Solid sand-lime brick, EN 771-2	 240x114x71	H	>1,9	f <sub>b</sub> ≥ 30 <sup>3)</sup>	1,5	2,5
Vertically perforated clay brick, EN 771-1 <i>e.g.: Wienerberger Doppio Uni</i>	 120x250x120	H	>0,91	15	0,5	0,75
Hollow clay brick, EN 771-1 <i>e.g.: Imerys Optibric PV</i>	 560x200x274	R	>0,60	7,5	0,3	0,5
Vertically perforated clay brick, EN 771-1 <i>e.g.: Bergmann HLZ 12</i>	 240x115x113	H	>0,90	12	0,5	0,9
Sand-lime perforated brick, KSL-R 8DF DIN 106 / EN 771-2	 250x240x238	H	>1,3	15	0,5	1,2
Partial safety factor	γ <sub>Mm</sub> <sup>4)</sup>	2,5				

<sup>1)</sup> H= Hammer drilling; R= Rotary drilling

<sup>2)</sup> Characteristic resistance F<sub>rk</sub> for tension, shear or combined tension and shear loading.

The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with a spacing equal or larger than the minimum spacing s<sub>min</sub> according to Table B3, Annex B3.

<sup>3)</sup> f<sub>b</sub> = minimum mean compressive strength.

<sup>4)</sup> In absence of other national regulations.

**G&B Plastic anchor GX-L**

**Characteristic resistance in masonry**

**Annex C2**

**Table C4: Displacement under tension / shear loading in concrete**

Anchor size	Tension load			Shear load		
	F [kN]	$\delta_{N0}$ [mm]	$\delta_{N\infty}$ [mm]	F [kN]	$\delta_{N0}$ [mm]	$\delta_{N\infty}$ [mm]
<b>GX-L 8</b>	0,79	0,46	0,21	1,14	0,74	1,11
<b>GX-L 10</b>	1,19	0,35	0,47	1,71	1,57	2,35

**Table C5: Displacements under tension / shear loading in masonry**

Base material <sup>1)</sup>	Displacement									
	GX-L 8					GX-L 10				
	F [kN]	Tension $\delta_{N0}$ $\delta_{N\infty}$		Shear $\delta_{V0}$ $\delta_{V\infty}$		F [kN]	Tension $\delta_{N0}$ $\delta_{N\infty}$		Shear $\delta_{V0}$ $\delta_{V\infty}$	
Solid clay brick, EN 771-1	1,00	0,20	0,40	0,83	1,25	1,14	0,39	0,78	0,95	1,43
Solid sand-lime brick, EN 771-2	0,43	0,17	0,34	0,35	0,54	0,71	0,13	0,26	0,59	0,88
Vertically perforated clay brick, EN 771-1 <i>e.g.: Wienerberger Doppio Uni</i>	0,14	0,15	0,30	0,12	0,18	0,21	0,11	0,22	0,18	0,27
Hollow clay brick, EN 771-1 <i>e.g.: Imerys Optibric PV</i>	0,09	0,09	0,18	0,07	0,11	0,14	0,10	0,20	0,12	0,18
Vertically perforated clay brick, EN 771-1 <i>e.g.: Bergmann HLZ 12</i>	0,14	0,10	0,20	0,12	0,18	0,26	0,27	0,54	0,22	0,33
Sand-lime perforated brick, KSL-R 8DF DIN 106 / EN 771-2	0,14	0,13	0,26	0,12	0,18	0,34	0,15	0,30	0,29	0,43

<sup>1)</sup> Information for masonry base material : see Annex C2, Table C3

**G&B Plastic anchor GX-L**

**Displacements in concrete and masonry**

**Annex C3**