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European Technical Assessment

ETA 16/0919 of 24/07/2020

Technical Assessment Body issuing the ETA: Technical and Test Institute for Construction Prague	
Trade name of the construction product	G&B Fissaggi Gebofix PRO VE-SF G&B Fissaggi Gebofix PRO VE-SF Summer
Product family to which the construction product belongs	Product area code: 33 Injection anchors for use in masonry
Manufacturer	G&B Fissaggi S.R.L. C.so Savona 22 10029 Villastellone (TO) Italy
Manufacturing plant(s)	G&B Fissaggi S.R.L. Plant 4
This European Technical Assessment contains	14 pages including 11 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 330076-00-0604 Metal injection anchors for use in masonry
This version replaces	ETA 16/0919 issued on 30/11/2016

1. Technical description of the product

The G&B Fissaggi Gebofix PRO VE-SF and G&B Fissaggi Gebofix PRO VE-SF Summer (extended curing time) for masonry is a bonded anchor consisting of a cartridge with injection mortar, a plastic sieve sleeve and an anchor rod with a hexagon nut and a washer. The steel elements are made of galvanized steel or stainless steel.

The sieve sleeve is pushed into a drilled hole and filled with injection mortar before the anchor rod is placed in the sieve sleeve. The steel element is anchored via the bond between metal part, injection mortar and masonry.

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

2. Specification of the intended use in accordance with the applicable EAD

The performances given in Section 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 50 years. 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 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 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Reduction factor for job site tests (β – factor)	See Annex C 1
Characteristic resistance	See Annex C 1
Edge distances and spacing	See Annex B 5
Displacements	See Annex C 1
Durability	See Annex B 1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorages satisfy requirements for Class A1
Resistance to fire	No performance assessed

3.3 Hygiene, health and environment (BWR 3)

No performance determined.

3.4 Safety in use (BWR 4)

For basic requirement safety in use the same criteria are valid as for Basic Requirement Mechanical resistance and stability.

3.5 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

3.6 General aspects relating to fitness for use

Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are kept.

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

According to the Decision 97/177/EC of the European Commission[1] the system of assessment 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
Injection anchors for use in masonry	For fixing and/or supporting to masonry, structural elements (which contributes to the stability of the works) or heavy units	-	1

5. Technical details necessary for the implementation of the AVCP system, as provided in the applicable EAD

5.1 Tasks of the manufacturer

The manufacturer may only use raw materials stated in the technical documentation of this European Technical Assessment.

The factory production control shall be in accordance with the control plan which is a part of the technical documentation of this European Technical Assessment. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Technical and Test Institute for Construction Prague [2] The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

5.2 Tasks of the notified bodies

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified certification body involved by the manufacturer shall issue a certificate of constancy of performance of the product stating the conformity with the provisions of this European Technical Assessment.

In cases where the provisions of the European Technical Assessment and its control plan are no longer fulfilled the notified body shall withdraw the certificate of constancy of performance and inform Technical and Test Institute for Construction Prague without delay.

Issued in Prague on 24.07.2020

By

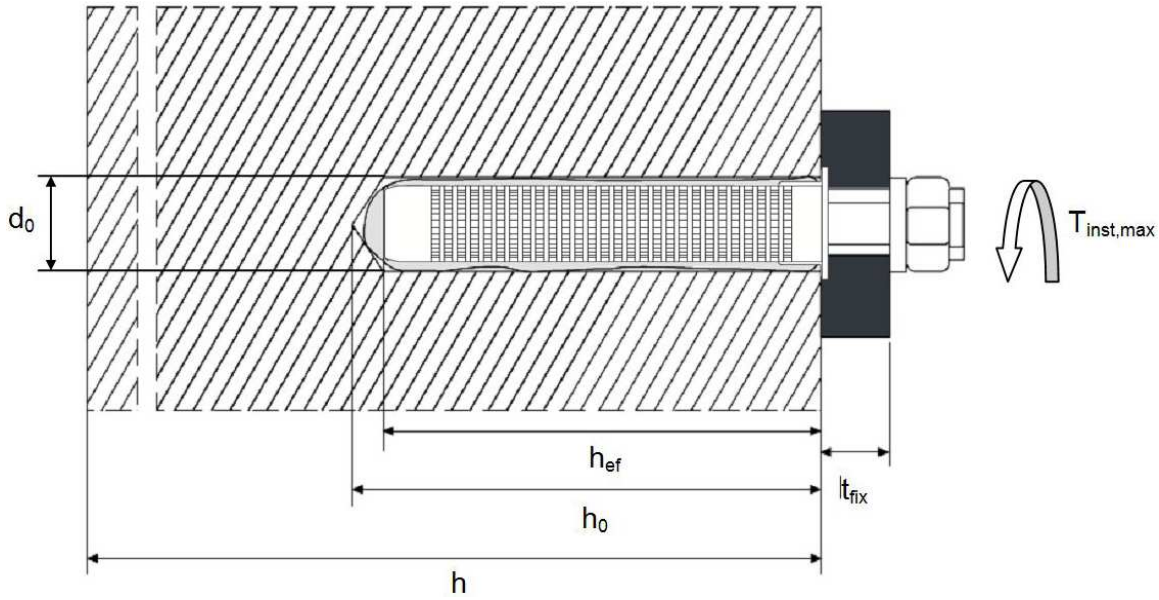
Ing. Mária Schaan
Head of the TAB

[1] Official Journal of the European Communities L 073 of 14.03.1997

[2] The control plan is a confidential part of the documentation of the European technical assessment, but not published together with the ETA and only handed over to the approved body involved in the procedure of AVCP.

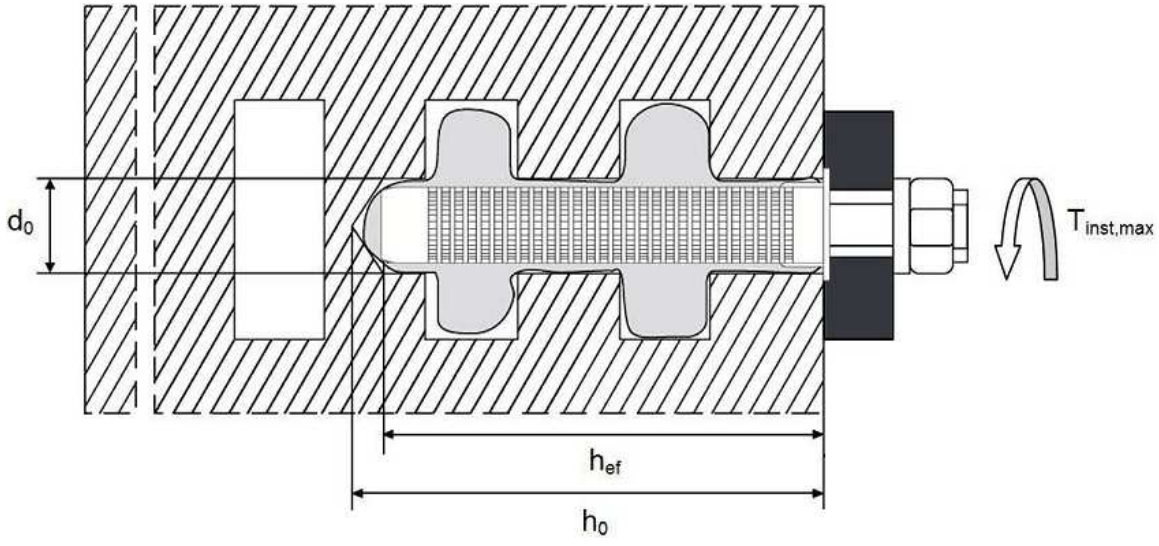
Installation in solid brick masonry

Installation of anchor rod with sieve sleeve



Installation in hollow or perforated brick masonry

Installation of anchor rod with sieve sleeve



d_0 = drill hole diameter

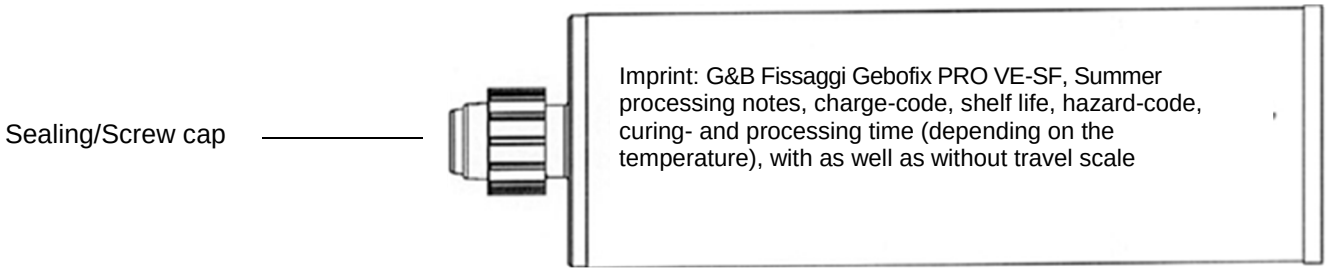
h_{ef} = effective setting depth

h_0 = bore hole depth

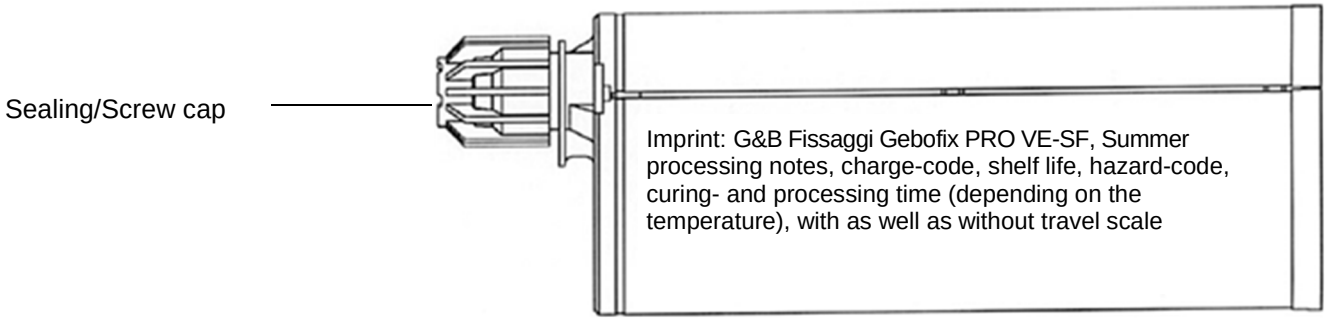
G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer for masonry	**Annex A 1**
Product description Installed condition	

Cartridge: G&B Fissaggi Gebofix PRO VE-SF, Summer

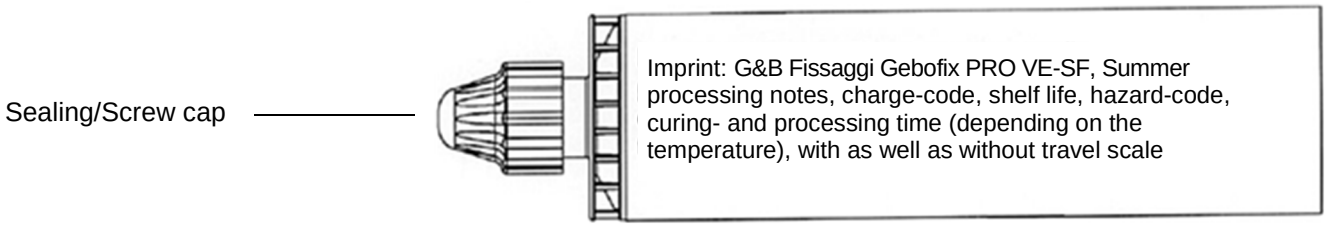
150 ml, 280 ml, 300 ml up to 330 ml and 380 ml up to 420 ml cartridge (Type: coaxial)



235 ml, 345 ml up to 360 ml and 825 ml cartridge (Type: "side-by-side")



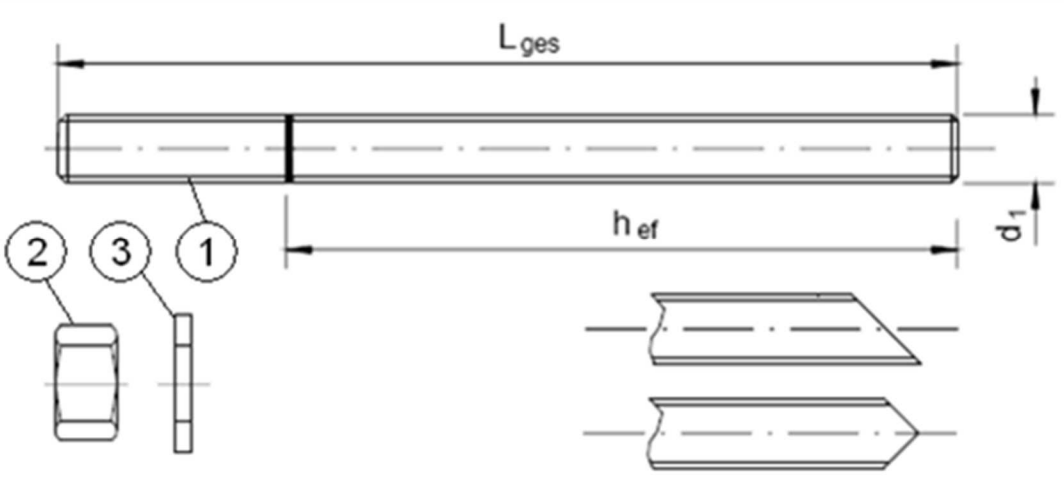
165 ml up to 175 ml and 300 ml cartridge (Type: "foil tube")



Static mixer

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer **For masonry**	**Annex A 2**
Product description Injection system	

Threaded rod M8, M10, M12



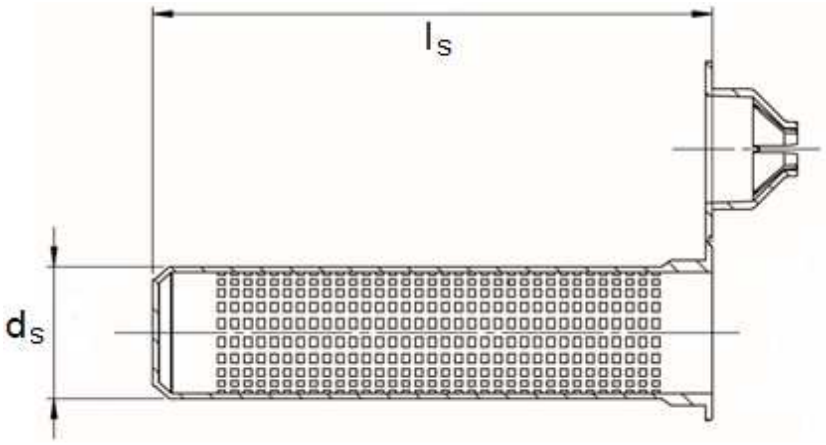
Standard commercial threaded rod with marked embedment depth

Part	Designation	Material
Steel, zinc plated ≥ 5 µm acc. to EN ISO 4042 or Steel, Hot-dip galvanized ≥ 40 µm acc. to EN ISO 1461 and EN ISO 10684 or Steel, zinc diffusion coating ≥ 15 µm acc. to EN 13811		
1	Anchor rod	Steel, EN 10087 or EN 10263 Property class 5.8, 8.8, 10.9* EN ISO 898-1
2	Hexagon nut EN ISO 4032	According to threaded rod, EN 20898-2
3	Washer EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	According to threaded rod
Stainless steel		
1	Anchor rod	Material: A2-70, A4-70, A4-80, EN ISO 3506
2	Hexagon nut EN ISO 4032	According to threaded rod
3	Washer EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	According to threaded rod
High corrosion resistant steel		
1	Anchor rod	Material: 1.4529, 1.4565, EN 10088-1
2	Hexagon nut EN ISO 4032	According to threaded rod
3	Washer EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	According to threaded rod

*Galvanized rod of high strength are sensitive to hydrogen induced brittle failure

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer For masonry	**Annex A 3**
Product description Threaded rod and materials	

Sieve sleeve



G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer **For masonry**	**Annex A 4**
Product description Sleeve	

Specifications of intended use

Anchorages subject to:
- Static and quasi-static loads

Base materials
- Solid brick masonry (Use category b), according to Annex B2
- Hollow brick masonry (Use category c), according to Annex B2.
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2010.
- For other bricks in solid masonry or hollow or perforated masonry, the characteristic resistance of the anchor may be determined by job site tests according to TR 053 under consideration of the β-factor to Annex C1, Table C4.

Temperature range:
- $\mathbf{T_b}$: -40°C to +80°C (max. short. term temperature +80°C and max. long term temperature +50°C)

Use conditions (Environmental conditions)
- (X1) Structures subject to dry internal conditions (zinc coated steel)

Use categories in respect of installation and use:
- Category d/d (dry/dry)
- Category w/d (wet/dry)

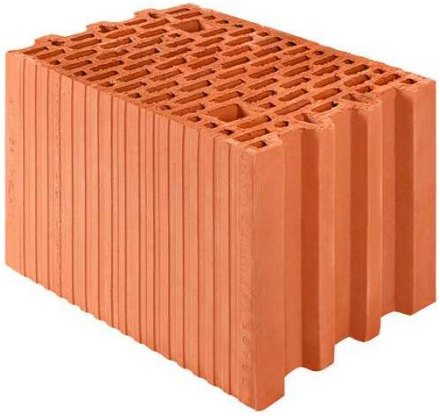
Design:
- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorage are designed in accordance with the TR 054, Design method B under the responsibility of an engineer experienced in anchorages and masonry work.

Installation:
- Dry or wet structures
- Anchor Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer For masonry	**Annex B 1**
Intended use Specifications	

Table B1: Types and dimensions of block and bricks

Brick Type 1



Hollow clay brick Porotherm P+W
according to EN 771-1
L/W/H = 373/250/238 mm
$f_b \geq 12$ N/mm^2
$\rho \geq 0.9$ kg/dm^3

Brick Type 2

Hollow clay brick Hueco Doble
according to EN 771-1
L/W/H = 245/110/88 mm
$f_b \geq 2.5$ N/mm^2
$\rho \geq 0.74$ kg/dm^3

Brick Type 3

Solid clay brick Mz-NF
according to EN 771-1
L/W/H = 240/115/71 mm
$f_b \geq 20$ N/mm^2
$\rho \geq 1,9$ kg/dm^3

Brick Type 4

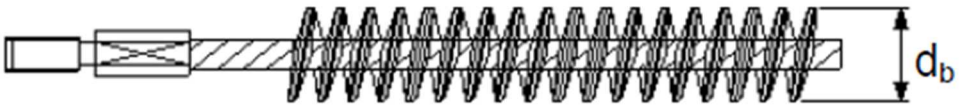
Solid calcium silicate brick KSV-NF
according to EN 771-2
L/W/H = 240/115/71 mm
$f_b \geq 25$ N/mm^2
$\rho \geq 1,8$ kg/dm^3

Brick Type 5

Perforated calcium silicate brick KSL-R-12-1,2-16DF
according to EN 771-2
L/W/H = 239/248/239 mm
$f_b \geq 15$ N/mm^2
$\rho \geq 1,3$ kg/dm^3

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer **For masonry**	**Annex B 2**
Intended use Brick types and properties	

Steel brush

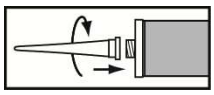


Cleaning pump

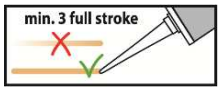
G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer **For masonry**	**Annex B 3**
Intended use Cleaning brush, Cleaning pump	

Assembly instructions

Preparation of cartridge

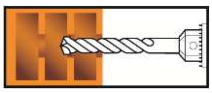


1. Remove the cap and attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. Cut off the foil tube clip before use. For every working interruption longer than the recommended working time (Table B4) as well as for new cartridges, a new static-mixer shall be used.

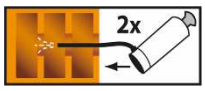


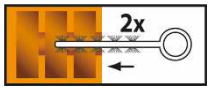
2. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

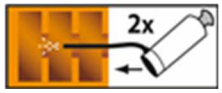
Installation in solid and hollow masonry (with sleeve)



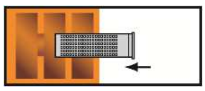
3. Drill a hole into the base material to the size and embedment depth required by the selected anchor (Table B2).



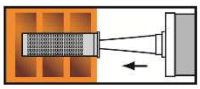




4. Blow from the bottom of the bore hole two times. Brush the hole clean two times, and finally blow out the hole again two times.

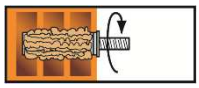


5. Insert the sleeve into the bore hole.



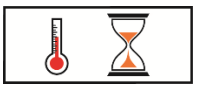
6. Starting from the bottom or back fill the sleeve completely with adhesive. For exact quantity of mortar attend cartridge label.

   Observe the gel-/ working times given in Table B4.

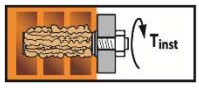


7. Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached.

   The anchor should be free of dirt, grease, oil or other foreign material.



8. Allow the adhesive to cure to the specified time prior to applying any load or torque. Do not move or load the anchor until it is fully cured (attend Table B4).



9. After full curing, the add-on part can be installed with the max. torque by using a calibrated torque wrench.

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer **For masonry**	**Annex B 4**
Intended use Installation instructions	

Table B2: Sizes of threaded rod and sleeve (mm)

Anchor Rods							Sleeves		
Size	d_0	d_b	h_0	h_{ef}	$d_f \leq$	$T_{inst} \leq$	Type	l_s	d_s
[mm]						[Nm]	-	[mm]	
M8	16	$18^{\pm1}$	90	85	9	2	CB01	85	16
M10	16	$18^{\pm1}$	90	85	12	2	CB01	85	16
M12	20	$22^{\pm1}$	90	85	14	2	CB03	85	20

Table B3: Edge distances and spacing

Brick Type[1)]	Anchor Rods								
	M8			M10			M12		
	c_{min}	$s_{min\ II}$	$s_{min\ \perp}$	c_{min}	$s_{min\ II}$	$s_{min\ \perp}$	c_{min}	$s_{min\ II}$	$s_{min\ \perp}$
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Brick Nº. 1	100	373	238	100	373	238	120	373	238
Brick Nº. 2	100	245	110	100	245	110	120	245	110
Brick Nº. 3	128	255	255	128	255	255	128	255	255
Brick Nº. 4	128	255	255	128	255	255	125	255	255
Brick Nº. 5	100	239	248	100	239	248	120	239	248

1) Brick Nº according to Annex B2

2) $c_{cr} = c_{min}$, $s_{cr\ II} = s_{min\ II}$, $s_{cr\ \perp} = s_{min\ \perp}$

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer
For masonry

Intended use
Installation parameters

Annex B 5

Table B4.1: Minimum curing time G&B Fissaggi Gebofix PRO VE-SF

Base material temperature	Gelling (working time)	Minimum curing time in dry base material[1)]
+5°C to +9°C	10 min	145 min
+10°C to +19°C	6 min	85 min
+20°C to +29°C	4 min	50 min
+30°C	4 min	40 min
Cartridge temperature	+5°C to +20°C	

[1)] in wet base material the curing time must be doubled

Table B4.2: Minimum curing time G&B Fissaggi Gebofix PRO VE-SF Summer

Base material temperature	Gelling (working time)	Minimum curing time in dry base material[1)]
+15°C to +19°C	15 min	5 h
+20°C to +24°C	10 min	2.5 h
+25°C to +29°C	7 min	1.5 h
+30°C to +34°C	5 min	60 min
+35°C to +39°C	3 min	45 min
Cartridge temperature	+15°C	

[1)] in wet base material the curing time must be doubled

Table C1: Characteristic resistance under tension and shear loading

Brick N°.	Density, ρ [kg/dm³] Compressive Strength, f_b [N/mm²]	Anchor Size	Sleeve	Effective Embedment Depth [mm]	Characteristic Resistance			
					Use Category			
					dry/dry		wet/dry	
					50°C / 80°C		50°C / 80°C	
					N_{Rk}[1)]	V_{Rk}[1)]	N_{Rk}[1)]	V_{Rk}[1)]
					[kN]		[kN]	
1	$f_b \geq 12$ $\rho \geq 0.9$	M8	CB01	85	2.0	2.0	2.0	2.0
		M10	CB01	85	2.0	2.0	2.0	2.0
		M12	CB03	85	2.5	2.5	2.5	2.5
2	$f_b \geq 2.5$ $\rho \geq 0.74$	M8	CB01	85	0.9	0.9	0.9	0.9
		M10	CB01	85	1.2	1.2	1.2	1.2
		M12	CB03	85	1.5	1.5	1.5	1.5
3	$f_b \geq 20$ $\rho \geq 1.9$	M8	CB01	85	3.0	3.0	3.0	3.0
		M10	CB01	85	3.0	3.0	3.0	3.0
		M12	CB03	85	3.0	3.0	3.0	3.0
4	$f_b \geq 25$ $\rho \geq 1.8$	M8	CB01	85	3.0	3.0	3.0	3.0
		M10	CB01	85	3.0	3.0	3.0	3.0
		M12	CB03	85	3.0	3.0	3.0	3.0
5	$f_b \geq 15$ $\rho \geq 1.3$	M8	CB01	85	2.0	2.0	2.0	2.0
		M10	CB01	85	2.0	2.0	2.0	2.0
		M12	CB03	85	2.5	2.5	2.5	2.5

1) For design according TR 054: $N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,s}$; $N_{Rk,pb}$ according to TR 054
For $V_{Rk,s}$ see Annex C1, Table C2; Calculation of $V_{Rk,pb}$ and $V_{Rk,c}$ according to TR 054

Table C2: Characteristic shear resistance of threaded rod

Size			**M8**	**M10**	**M12**
Characteristic shear resistance	$V_{Rk,s}$	[kN]	0.5 x A_s x f_{uk}		
Characteristic bending moment	$M_{Rk,s}$	[N.m]	1.2 x W_{el} x f_{uk}		

Table C3: Displacements under tension and shear load

Brick N°.	F [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
Brick N°. 1	$\frac{N_{Rk}}{(1.4 * \gamma_M)}$	0.5	1.0	1.0[1)]	1.5[1)]
Brick N°. 2					
Brick N°. 3		0.06	0.12	0.7	1.0
Brick N°. 4		0.12	0.24	0.9	1.4
Brick N°. 5		0.1	0.2	0.9	1.4

1) The hole gap between bolt and fixture shall be considered additionally

Table C4: β – factors for job site tests according to TR 053

Brick N°.	Use Category	β - Factor
		50°C / 80°C
Brick N°. 1	dry/dry	0.83
Brick N°. 2		0.78
Brick N°. 3		0,85
Brick N°. 4		0,85
Brick N°. 5		0,85
Brick N°. 1	wet/dry	0.83
Brick N°. 2		0.78
Brick N°. 3		0,85
Brick N°. 4		0,85
Brick N°. 5		0,85

G&B Fissaggi Gebofix PRO VE-SF, Gebofix PRO VE-SF Summer
For masonry

Performances
Characteristic resistance, displacement
β-factors for job site testing under tension load

Annex C 1