Technical and Test Institute for Construction Prague
Prosecká 811/76a
190 00 Prague
Czech Republic
eota@tzus.cz

Member of EOTA
www.eota.eu

European Technical Assessment

ETA 15/0527 of 04/08/2015

(English language translation, the original version in Czech language)

Technical Assessment Body issuing the ETA: Technical and Test Institute for Construction Prague

Trade name of the construction product	B+BTec Injection System BIS-P
Product family to which the construction product belongs	Product area code: 33 Injection anchors for use in masonry
Manufacturer	B+BTec Munterij 8 4762 AH Zevenbergen Netherlands
Manufacturing plant(s)	B+BTec, Plant 1
This European Technical Assessment contains	17 pages including 13 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	ETAG 029, edition 2013, used as European Assessment Document (EAD)

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

1. Technical description of the product

The B+BTec Injection System BIS-P polyester resin styrene-free for masonry is bonded anchor consisting of cartridge with injection mortar, a steel element and a plastic sieve sleeve. The steel elements are the commercial threaded rods with hexagon nut and washer. The steel elements are made of galvanized steel or stainless steel.

The anchor is pushed into a drilled hole filled with injection mortar. 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
Characteristic resistance for tension and shear loads	See Annex C 1
Reduction factor for job site tests (β – factor)	See Annex C 2
Characteristic resistance for bending moments	See Annex C 3
Displacement under shear and tension loads	See Annex C 3
Edge distances and spacing	See Annex C 4

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 determined

3.3 Hygiene, health and environment (BWR 3)

Regarding dangerous substances contained in this European Technical Assessment, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Regulation (EU) No 305/2011), these requirements need also to be complied with, when and where they apply.

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 shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European Technical Assessment.

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.

The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in the field of anchors in order to undertake the actions laid down in section 5.2. For this purpose, the control plan referred to in this section and section 5.2 shall be handed over by the manufacturer to the notified body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European Technical Assessment.

---

[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.

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.

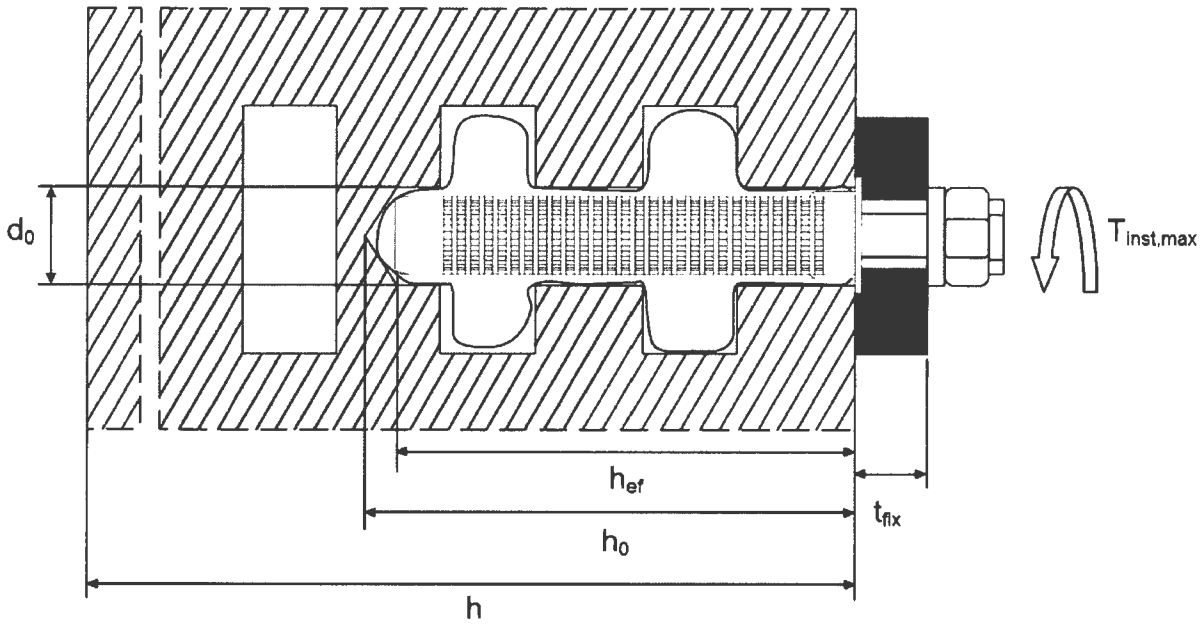
Issued in Prague on 04.08.2015

By

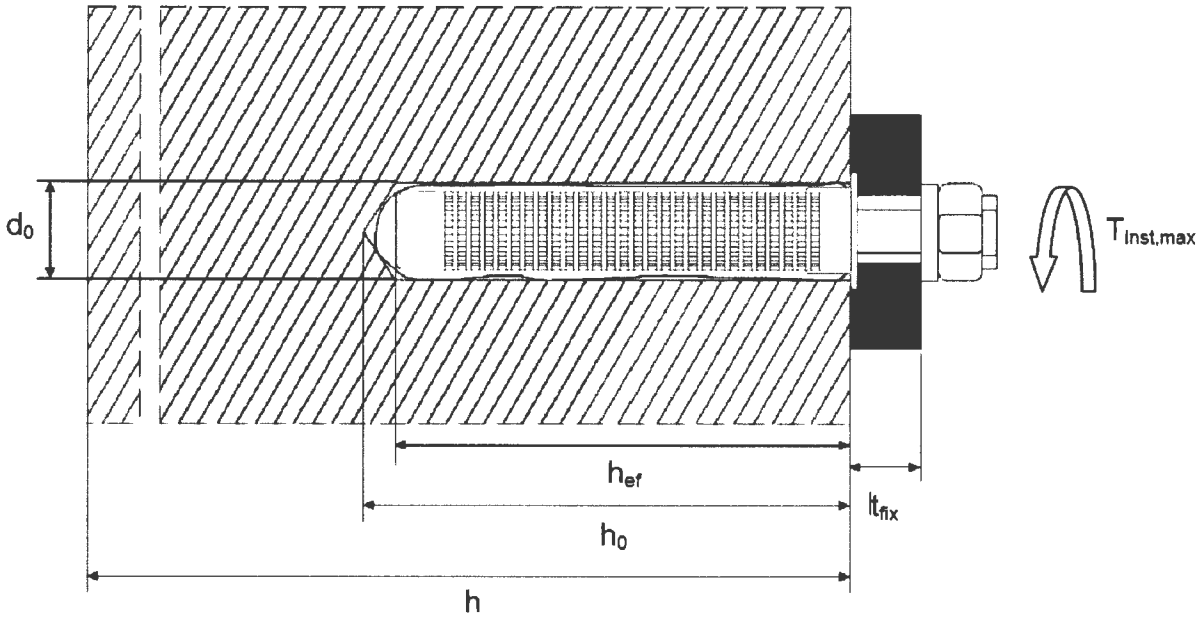
Ing. Mária Schaan

Head of the Technical Assessment Body

Installation in hollow brick; threaded rod with sleeve



Installation in solid brick; threaded rod with or without sleeve



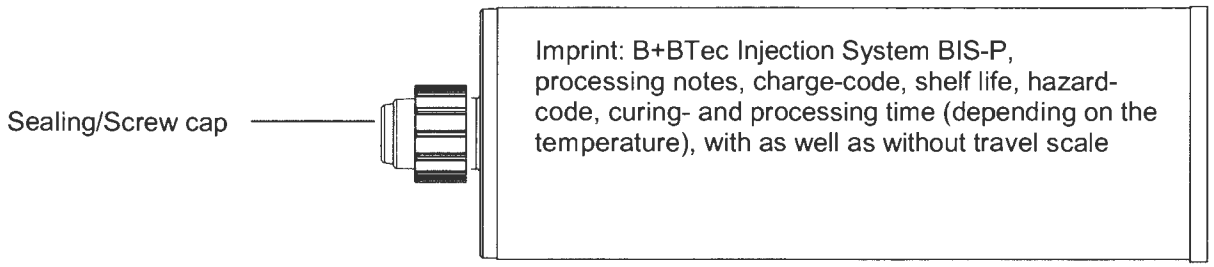
h_{ef} = effective setting depth
h_0 = bore hole depth
t_{fix} = thickness of fixture

d_0 = bore hole diameter
T_{inst} = torque moment

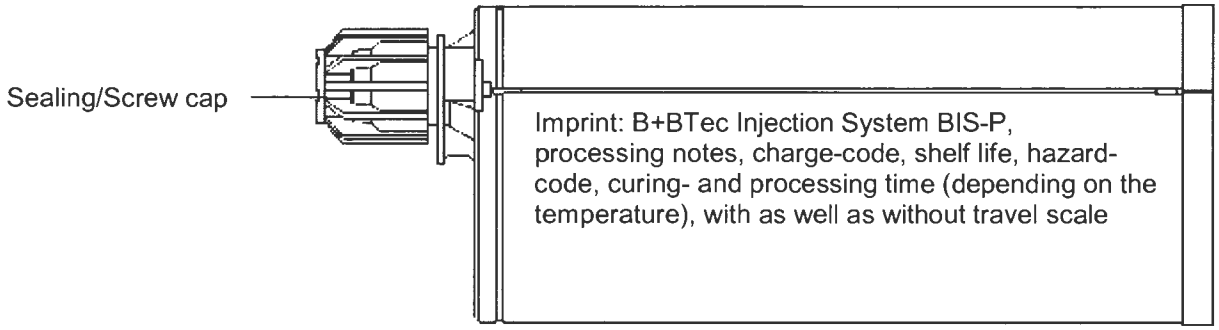
B+BTec Injection System BIS-P for masonry	Annex A 1
Product description Installation	

Cartridge: B+BTec Injection System BIS-P

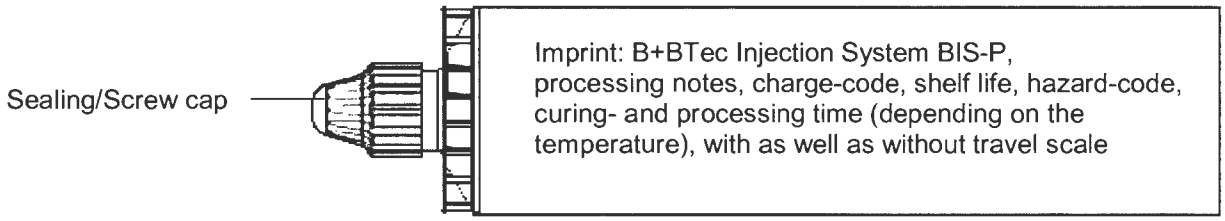
150 ml, 280 ml, 300 ml, 330 ml, 380 ml, 410 ml and 420 ml cartridge (Type: coaxial)



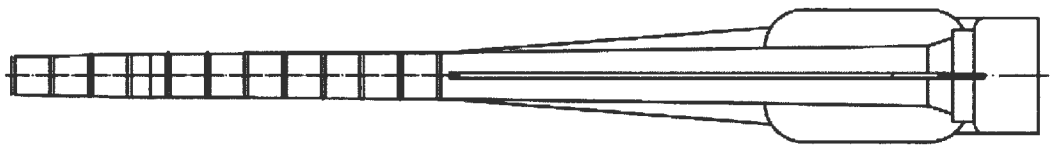
235 ml, 345 ml and 825 ml cartridge (Type: "side-by-side")



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



Static mixer



B+BTec Injection System BIS-P for masonry	Annex A 2
Product description Injection system	

Threaded rod M8, M10, M12, M16

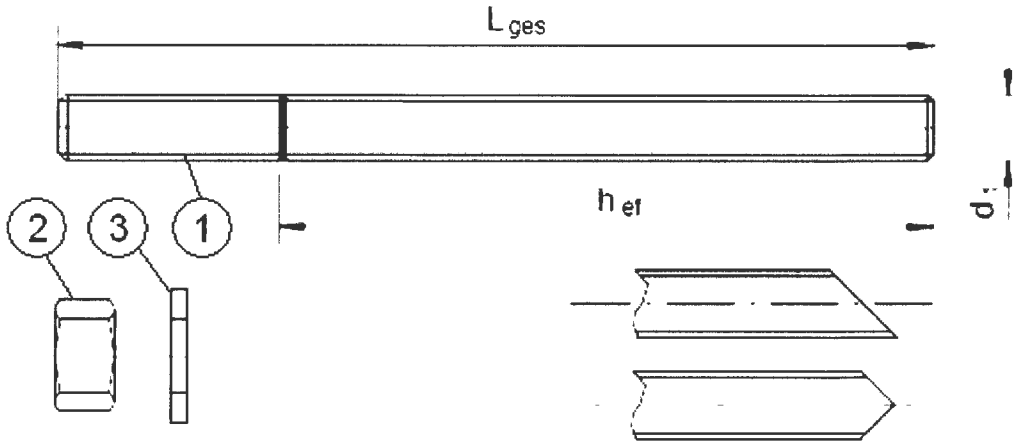


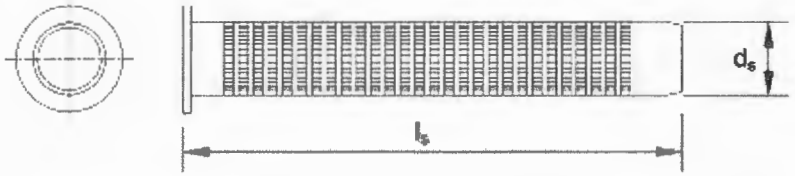
Table A1: Materials

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		
1	Anchor rod	Steel, EN 10087 or EN 10263 Property class 4.8, 5.8, 8.8, EN ISO 898-1:1999
2	Hexagon nut, EN ISO 4032	EN 20898-2
3	Washer, EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	Steel, zinc plated or hot-dip galvanised
Stainless steel		
1	Anchor rod	Material: A4-70, A4-80, EN ISO 3506
2	Hexagon nut, EN ISO 4032	Material: A4-70, A4-80, EN ISO 3506
3	Washer, EN ISO 887, EN ISO 7089, EN ISO 7093 or EN ISO 7094	Material: A4-70, A4-80, EN ISO 3506

B+BTec Injection System BIS-P for masonry	**Annex A 3**
Product description Threaded rod and materials	

Sleeve (Plastic)

SH 12x80, SH 16x85, SH 16x130 and SH 20x85



SH 16x130/200

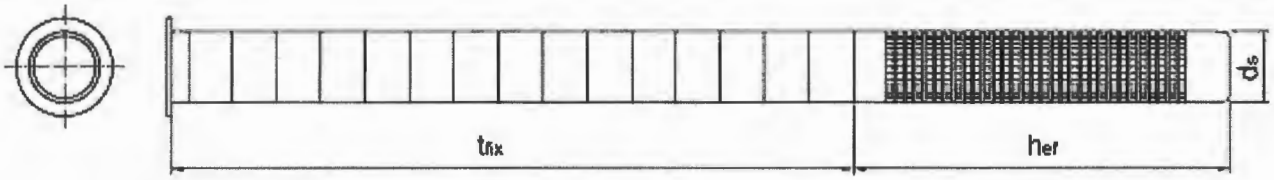


Table A2: Sizes threaded rod and sleeve (mm)

Threaded rods					Sleeves		
Size	d_1	h_{ef}	L_{min}	L_{max}	Size	d_s	l_s
[mm]						[mm]	[mm]
M8	8	80	100	500	SH12x80	12	80
M10	10	90	110	500	SH16x85	16	85
					SH16x130	16	130
					SH16x130/200	16	330
M12	12	100	110	500	SH20x85	20	85
M16	16	100	110	500	SH20x85	20	85

B+BTec Injection System BIS-P for masonry	Annex A 4
Product description Sleeves	

Specifications of intended use

Anchorages subject to:
- Static and quasi-static load.

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 and in hollow or perforated masonry, the characteristic resistance of the anchor may be determined by job site tests according to ETAG 029, Annex B under consideration of the β-factor to Annex C 2, Table C4.

Temperature range:
- -40°C to +40°C (max. short. term temperature +40°C and max. long term temperature +24°C)

Use conditions (Environmental conditions)
- Dry and wet structures (regarding injection mortar).
- Structures subject to dry internal conditions (zinc coated steel, stainless steel).
- Structures subject to external atmospheric exposure including industrial and marine environment (stainless steel).
- Structures subject to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).
  Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Use categories:
- w/w - installation and use in structures subject to dry or wet environmental conditions.

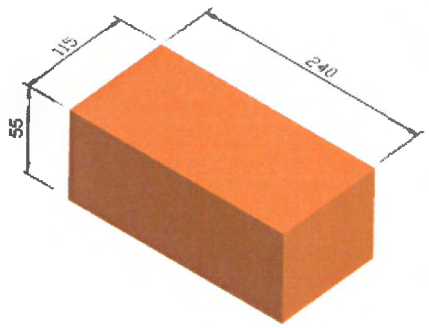
Design:
- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorage are designed in accordance with the ETAG 029, Annex C, Design method A under the responsibility of an engineer experienced in anchorages and masonry work.

Installation:
- Dry and wet structures.
- Hole drilling by rotary drill mode.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

B+BTec Injection System BIS-P for masonry	Annex B 1
Intended use Specifications	

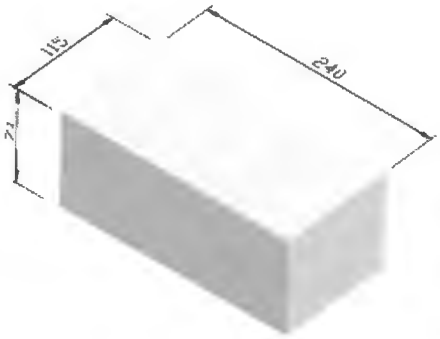
Types of brick and dimensions (Dimensions in mm)

Brick No. 1



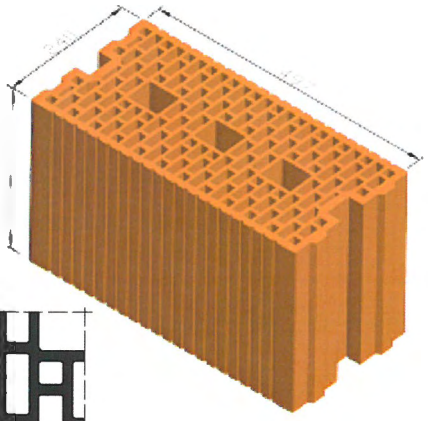
Clay masonry
MZ DF
acc. to EN 771-1
$\rho \geq 1{,}8$ [kg/dm³]
$f_b \geq 28$ [N/mm²]

Brick No. 2

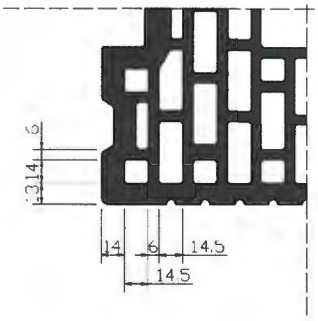


Calcium silicate masonry
KS 20 – 2,0 – NF
acc. to EN 771-1
$\rho \geq 2{,}0$ [kg/dm³]
$f_b \geq 20$ [N/mm²]

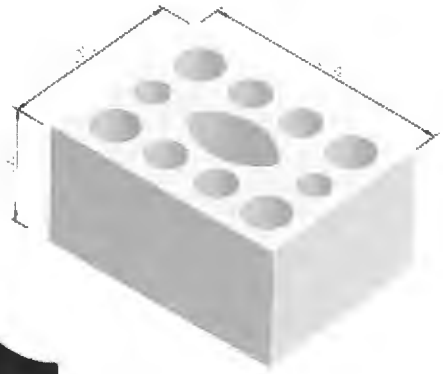
Brick No. 3



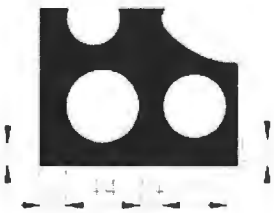
Clay masonry
16 DF
acc. to EN 771-1
$\rho \geq 0{,}9$ [kg/dm³]
$f_b \geq 12$ [N/mm²]



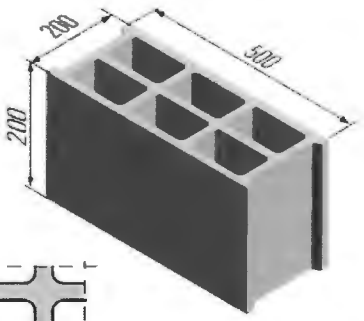
Brick No. 4



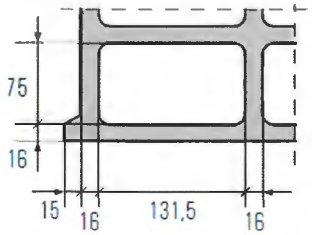
Calcium silicate masonry
KSL 12 -1,4- 3DF
acc. to EN 771-1
$\rho \geq 1{,}4$ [kg/dm³]
$f_b \geq 12$ [N/mm²]



Brick No. 5



Hollow brick
Bloc creux B40
acc. to EN 771-3
$\rho \geq 1{,}0$ [kg/dm³]
$f_b \geq 4$ [N/mm²]



B+BTec Injection System BIS-P for masonry	
Intended use Types of bricks and dimensions	**Annex B 2**

Installation

Steel brush

Table B1: Installation parameters in solid masonry (without sleeve)

Threaded rod			M8	M10	M12	M16
Nominal drill hole diameter	d_0	[mm]	10	12	14	18
Embedmend depth	h_{ef}	[mm]	80	90	100	100
Bore hole depth	h_0	[mm]	80	90	100	100
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9	11	13	17
Diameter of nylon brush	$d_b \geq$	[mm]	11	14	16	18
Torque moment	T_{inst}	[Nm]	2			

Table B2: Installation parameters M8, M10 in solid masonry (with sleeve)
M8, M10, M12, M16 in hollow masonry (with sleeve)

Threaded rod			M8	M10			M12	M16
Sleeve			SH12x80	SH16x85	SH16x130	SH16x130/200	SH20x85	SH20x85
Nominal drill hole diameter	d_0	[mm]	12	16	16	16	20	20
Embedmend depth sleeve	h_{nom}	[mm]	80	85	130	130	85	85
Embedmend depth rod	h_{ef}	[mm]	80	85	130	130	85	85
Bore hole depth	h_0	[mm]	85	90	135	$135+t_{fix}$ [1)]	90	90
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9	11	11	11	13	17
Diameter of nylon brush	$d_b \geq$	[mm]	14	18	18	18	22	22
Torque moment	T_{inst}	[Nm]	2					

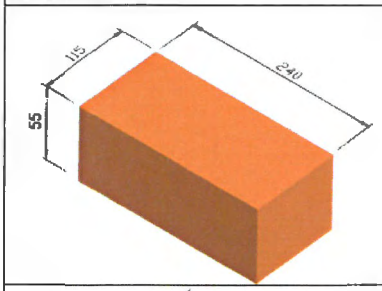
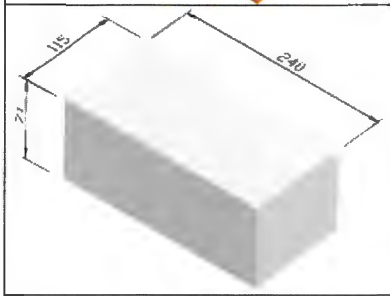
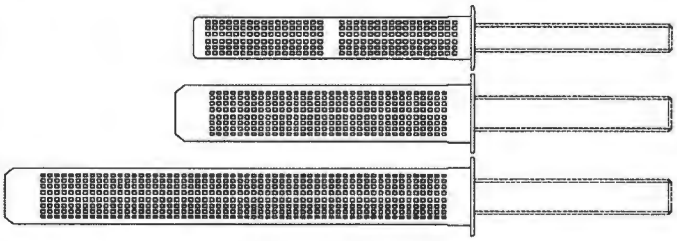
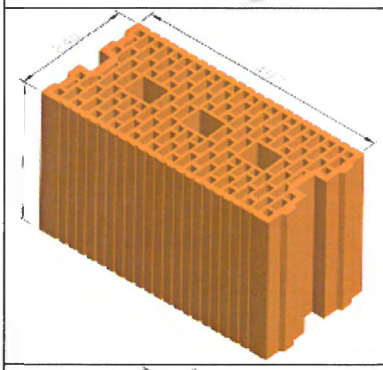
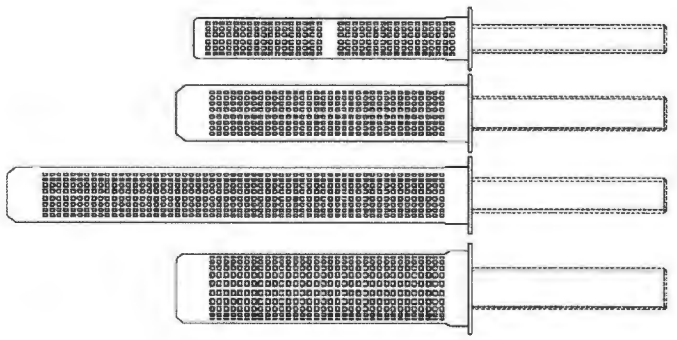
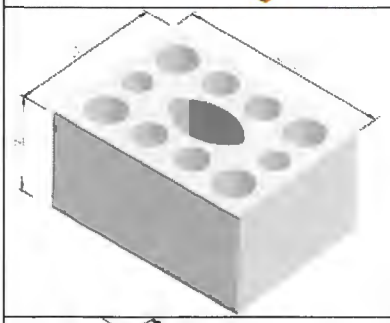
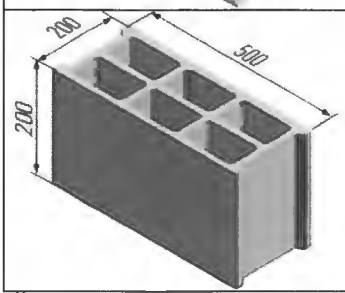
[1)] $t_{fix} < 200$ mm

Table B3: Minimum curing time

Base material temperature [°C]	Gelling- / working time [mm]	Minimum curing time [min]
-5 to 0	90	360
0 to +5	45	180
+5 to +10	25	120
+10 to +20	15	80
+20 to +30	6	45
+30 to +35	4	25
+35	2	20

B+BTec Injection System BIS-P for masonry	
Intended use Installation parameters and cleaning brush Gelling and curing time	**Annex B 3**

Table B4: Allocation of anchor rods[1)], sleeves[1)] and bricks

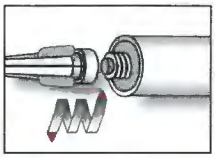
Bricks	Valid anchor rods and sleeves
No 1 	 **M8; M10; M12; M16**
No 2 	 **SH 12x80** **SH 16x85** **SH 16x130**
No 3 	 **SH 12x80** **SH 16x85** **SH 16x130** **SH 20x85**
No 4 	 **SH 16x130/200**
No 5 	

[1)] Other combinations can be used after job site test acc. to ETAG 029, Annex B
The β-factors for this job site test are given in Table C4

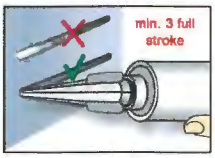
B+BTec Injection System BIS-P for masonry	**Annex B 4**
Intended use Allocation of anchor rods, sleeves and bricks	

Assembly instructions

Preparation of cartridge

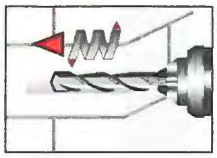


1. Remove the cap and attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. Cut off the foil tube clip before use. For every working interruption longer than the recommended working time (Table B3) as well as for new cartridges, a new static-mixer shall be used.

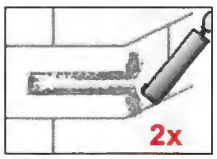


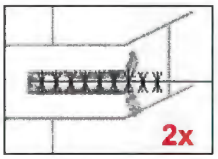
2. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

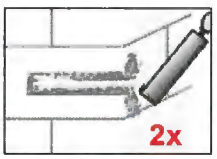
Installation in solid masonry (without sleeve)



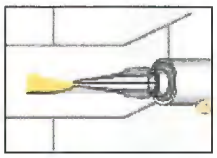
3. Drill a hole into the base material to the size and embedment depth required by the selected anchor (Table B1).



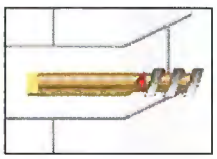




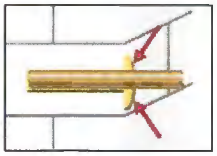
4. Blow from the bottom of the bore hole two times. Brush the hole clean two times, and finally blow out the hole again two times.



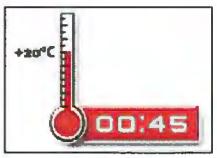
5. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets.
Observe the gel-/ working times given in Table B3.



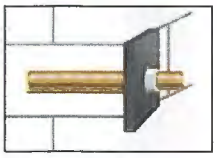
6. Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached.
The anchor should be free of dirt, grease, oil or other foreign material.



7. Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.



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 B3).

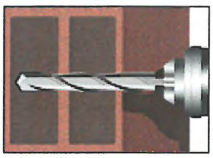


9. After full curing, the add-on part can be installed with the max. torque (Table B1) by using a calibrated torque wrench.

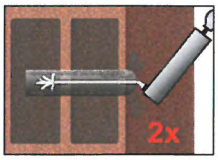
B+BTec Injection System BIS-P for masonry	Annex B 5
Intended use Installation instruction (solid brick)	

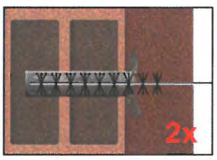
Assembly Instructions (continuation)

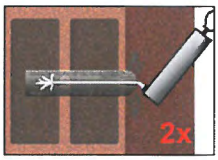
Installation in solid and hollow masonry (with sleeve)



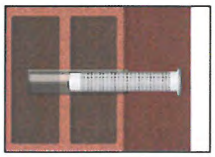
3. Drill a hole into the base material to the size and embedment depth required by the selected anchor (Table B2).



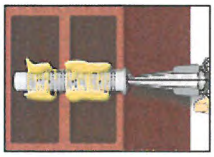




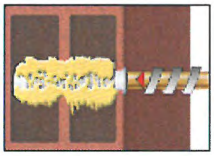
4. Blow from the bottom of the bore hole two times. Brush the hole clean two times, and finally blow out the hole again two times.



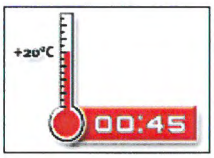
5. Insert the sleeve into the bore hole.



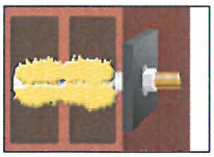
6. Starting from the bottom or back fill the sleeve completely with adhesive. For exact quantity of mortar attend cartridge label.
   Observe the gel-/ working times given in Table B3.



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 B3).



9. After full curing, the add-on part can be installed with the max. torque (Table B3) by using a calibrated torque wrench.

B+BTec Injection System BIS-P for masonry	Annex B 6
Intended use Assembly instructions (hollow brick)	

Table C1: Characteristic values for tension and shear load

Brick No.		Sleeve	Anchor size	Effective embedment depth h_{ef} [mm]	Characteristic resistance	
					N_{Rk} [1)] [kN]	V_{Rk} [2,3)] [kN]
1	Density $\rho \geq 1{,}8$ [kg/dm³] Compressive strength $f_b \geq 28$ [N/mm²]	without	M8	80	3,0	3,0
		without	M10	90	3,0	3,0
		without	M12	100	2,5	2,5
		without	M16	100	4,5	4,5
		SH 12x80	M8	80	3,5	3,5
		SH 16x85	M10	85	3,5	3,5
		SH 16x130	M10	130	5,0	4,0
		SH 16x130/200	M10	130	5,0	4,0
2	Density $\rho \geq 2{,}0$ [kg/dm³] Compressive strength $f_b \geq 20$ [N/mm²]	without	M8	80	6,0	4,0
		without	M10	90	6,0	3,5
		without	M12	100	7,0	5,0
		without	M16	100	6,0	5,0
		SH 12x80	M8	80	5,0	5,0
		SH 16x85	M10	85	5,0	4,0
		SH 16x130	M10	130	5,0	5,0
		SH 16x130/200	M10	130	5,0	5,0
3	Density $\rho \geq 0{,}9$ [kg/dm³] Compressive strength $f_b \geq 12$ [N/mm²]	SH 12x80	M8	80	1,5	1,5
		SH 16x85	M10	85	2,0	2,0
		SH 16x130	M10	130	3,0	2,5
		SH 16x130/200	M10	130	3,0	2,5
		SH 20x85	M12	85	3,5	2,5
		SH 20x85	M16	85	3,5	2,5
4	Density $\rho \geq 1{,}4$ [kg/dm³] Compressive strength $f_b \geq 12$ [N/mm²]	SH 12x80	M8	80	3,5	2,5
		SH 16x85	M10	85	3,0	2,5
		SH 16x130	M10	130	4,5	2,5
		SH 16x130/200	M10	130	4,5	2,5
		SH 20x85	M12	85	3,0	2,5
		SH 20x85	M16	85	3,0	2,5
5	Density $\rho \geq 1{,}0$ [kg/dm³] Compressive strength $f_b \geq 4$ [N/mm²]	SH 12x80	M8	80	0,4	0,4
		SH 16x85	M10	85	0,4	0,4
		SH 16x130	M10	130	2,0	2,0
		SH 16x130/200	M10	130	2,0	2,0
		SH 20x85	M12	85	0,9	0,9
		SH 20x85	M16	85	0,75	0,75
Partial safety factor γ_M					2,5 [4)]	

1) For design according to ETAG 029, Annex C: $N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,s}$; $N_{Rk,pb}$ according to ETAG 029, Annex C

2) For design according to ETAG 029, Annex C: $V_{Rk} = V_{Rk,b} = V_{Rk,s}$

3) hollow masonry: $V_{Rk,c} = V_{Rk}$; solid masonry: $V_{Rk,c}$ according to ETAG 029, Annex C

4) In absence of national regulations

Table C2: β-factors for job side tests according to ETAG 029, Annex B

Brick-No.	Installation & use	β-factor
1	w/w (incl. w/d)	0,72
2		
3		
4		
5		

B+BTec Injection System BIS-P for masonry

Performances
Characteristic tension load and shear load values
β-factors for job side tests

Annex C 1

Table C3: Characteristic values bending moments

			M8	M10	M12	M16
Characteristic bending moment, Steel, property class 4.8	$M_{Rk,s}$	[Nm]	15	30	52	133
Partial safety factor	$\gamma_{Ms,V}$ [1)]		1,25			
Characteristic bending moment, Steel, property class 5.8	$M_{Rk,s}$	[Nm]	19	37	66	166
Partial safety factor	$\gamma_{Ms,V}$ [1)]		1,25			
Characteristic bending moment, Steel, property class 8.8	$M_{Rk,s}$	[Nm]	30	60	105	266
Partial safety factor	$\gamma_{Ms,V}$ [1)]		1,25			
Characteristic bending moment, Stainless steel A4, property class 70	$M_{Rk,s}$	[Nm]	26	52	92	233
Partial safety factor	$\gamma_{Ms,V}$ [1)]		1,56			
Characteristic bending moment, Stainless steel A4, property class 80	$M_{Rk,s}$	[Nm]	30	60	105	266
Partial safety factor	$\gamma_{Ms,V}$ [1)]		1,33			

[1)] If no other national regulations exist

Table C4: Displacement under shear and tension load

Brick No.	Sleeve	Anchor size	Tension			Shear		
			Load	Displacement		Load	Displacement	
			F	δ_{N0}	$\delta_{N\infty}$	F	δ_{V0}	$\delta_{V\infty}$
			[kN]	[mm]		[kN]	[mm]	
1	without	M8	$\frac{N_{Rk}}{1,4 \cdot \gamma_M}$	0,1	0,2	$\frac{V_{Rk}}{1,4 \cdot \gamma_M}$	0,4	0,6
	without	M10		0,1	0,2		0,7	1,1
	without	M12		0,2	0,4		0,4	0,7
	without	M16		0,2	0,3		0,5	0,7
	SH 12x80	M8		0,2	0,3		2,3	3,4
	SH 16x85	M10		0,2	0,3		0,5	0,7
	SH 16x130	M10		0,2	0,3		1,1	1,6
	SH 16x130/200	M10		0,2	0,3		1,1	1,6
2	without	M8		0,2	0,3		1,6	2,4
	without	M10		0,2	0,5		1,5	2,3
	without	M12		0,2	0,3		1,1	1,6
	without	M16		0,2	0,3		1,1	1,6
	SH 12x80	M8		0,2	0,3		3,1	4,6
	SH 16x85	M10		0,2	0,3		1,5	2,2
	SH 16x130	M10		0,2	0,3		1,2	1,8
	SH 16x130/200	M10		0,2	0,3		1,2	1,8
3	SH 12x80	M8		0,3	0,6		1,1	1,6
	SH 16x85	M10		0,6	1,1		1,6	2,4
	SH 16x130	M10		0,2	0,4		0,9	1,3
	SH 16x130/200	M10		0,2	0,4		0,9	1,3
	SH 20x85	M12		0,2	0,4		1,6	2,4
	SH 20x85	M16		0,1	0,2		1,7	2,6
4	SH 12x80	M8		0,6	1,2		0,9	1,3
	SH 16x85	M10		0,7	1,4		1,3	1,9
	SH 16x130	M10		1,7	3,4		2,0	3,0
	SH 16x130/200	M10		1,7	3,4		2,0	3,0
	SH 20x85	M12		1,5	2,9		1,3	2,0
	SH 20x85	M16		1,6	3,3		0,6	0,9
5	SH 12x80	M8		0,2	0,3		0,3	0,4
	SH 16x85	M10		0,2	0,4		0,1	0,1
	SH 16x130	M10		0,5	1,0		0,6	0,9
	SH 16x130/200	M10		0,5	1,0		0,6	0,9
	SH 20x85	M12		0,5	0,9		0,1	0,2
	SH 20x85	M16		0,3	0,5		0,2	0,3

B+BTec Injection System BIS-P for masonry

Performances
Characteristic values bending moments
Displacement under shear and tension load

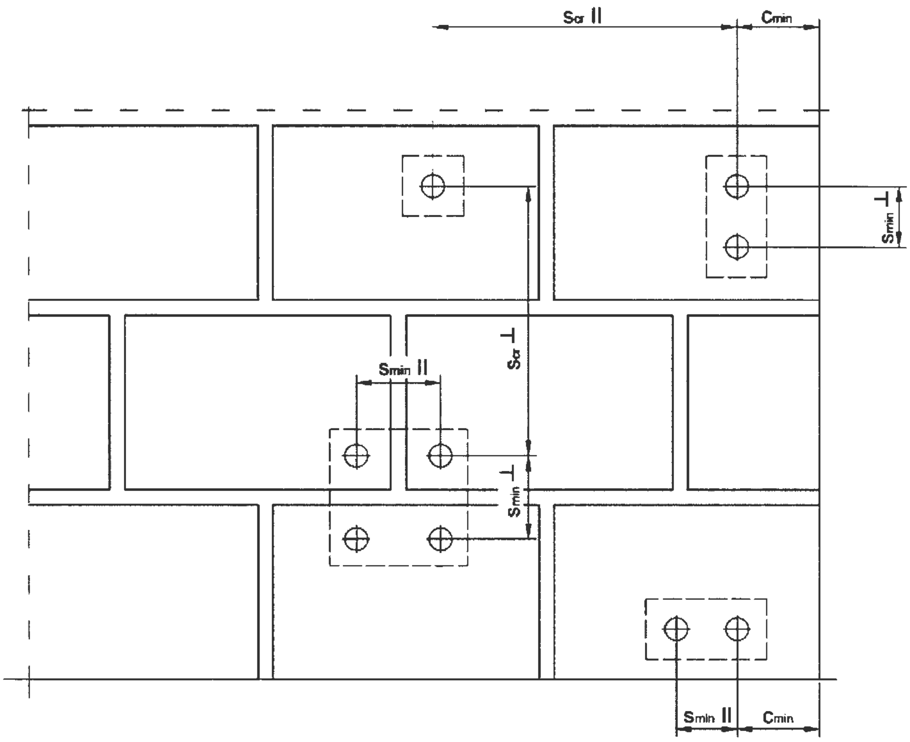
Annex C 2

Table C5: Edge and axial distances

Without sleeve												
Anchor size	M8			M10			M12			M16		
Brick No.	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]
1	120	240	240	135	270	270	150	300	300	150	300	300
2	120	240	240	135	270	270	150	300	300	150	300	300

With sleeve												
Sleeve	SH 12x80			SH 16x85			SH 16x130 SH 16x130/200			SH 20x85		
Anchor size	M8			M10			M10			M12 and M16		
Brick No.	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]	c_{min} = c_{cr} [mm]	$s_{min,II}$ = $s_{cr,II}$ 1) [mm]	$s_{min,\perp}$ = $s_{cr,\perp}$ 2) [mm]
1	120	240	240	128	255	255	195	390	390	-	-	-
2	120	240	240	128	255	255	195	390	390	-	-	-
3	100	497	238	100	497	238	100	497	238	120	497	238
4	100	240	113	100	240	113	100	240	113	120	240	113
5	100	500	200	100	500	200	100	500	200	120	500	200

1) s_{II}: Spacing parallel to the bearing joint
2) $s_{\perp}$: Spacing perpendicular to the bearing joint



B+BTec Injection System BIS-P for masonry

Performances
Edge and axial distances

Annex C 3