Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

ETA-17/0429 of 4 December 2025

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	fischer injection system T-Bond PRO.1 - FIS C700 HP PRO.1 masonry
Product family to which the construction product belongs	Metal Injection anchors for use in masonry
Manufacturer	fischerwerke GmbH & Co. KG Klaus-Fischer-Straße 1 72178 Waldachtal DEUTSCHLAND
Manufacturing plant	fischerwerke
This European Technical Assessment contains	68 pages including 3 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 330076-01-0604, Edition 10/2022
This version replaces	ETA-17/0429 issued on 27 October 2017

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Specific Part

1 Technical description of the product

The fischer injection system T-BOND PRO.1 – FIS C700 HP PRO.1 for masonry is a bonded anchor (injection type) consisting of a mortar cartridge with injection mortar fischer T-BOND PRO.1 – FIS C700 HP PRO.1 a perforated sieve sleeve and an anchor rod with hexagon nut and washer or an internal threaded rod. The steel elements are made of zinc coated steel, stainless steel or high corrosion resistant steel.

The anchor rod is placed into a drilled hole filled with injection mortar and is anchored via the bond between steel element, injection mortar and masonry and mechanical interlock.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

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

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastener of at least 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 right 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 static and quasi-static loading	See Annexes B4 to B6, B14, B15, C1 to C44
Characteristic resistance and displacements for seismic loading	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire under tension and shear loading with and without lever arm. Minimum edge distances and spacing	No performance assessed

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content, emission and/or release of dangerous substances	No performance assessed

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

In accordance with the European Assessment Document EAD 330076-01-0604 the applicable European legal act is: [97/177/EC].

The system to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 4 December 2025 by Deutsches Institut für Bautechnik

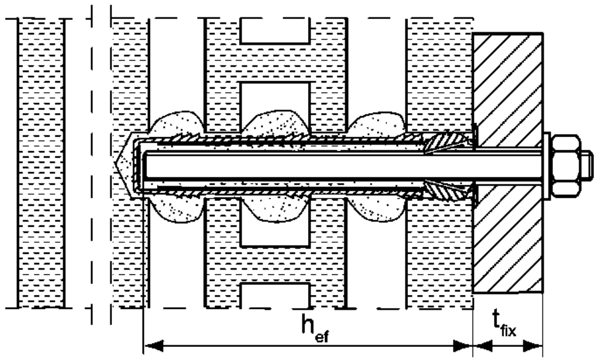
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Baderschneider

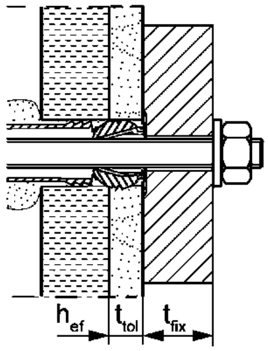
Installation conditions part 1

Anchor rods with perforated sleeve FIS H K; Installation in perforated and solid brick masonry

Pre-positioned installation:



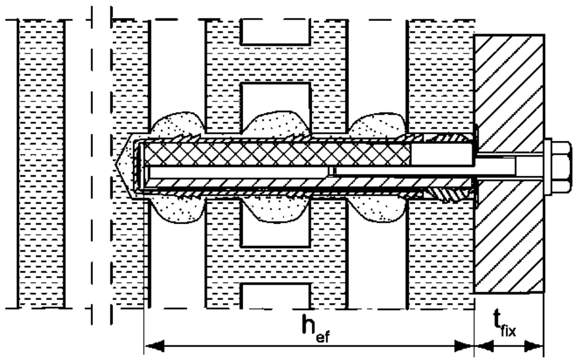
Installation with render bridge



Size of the perforated sleeve:	FIS H 12x50 K	FIS H 16x85 K	FIS H 20x85 K	FIS H 20x200 K
	FIS H 12x85 K	FIS H 16x130 K	FIS H 20x130 K	

Internal threaded anchor FIS E with perforated sleeve FIS H K;
Installation in perforated and solid brick masonry

Pre-positioned installation:



Figures not to scale

h_{ef} = effective anchorage depth

t_{fix} = thickness of fixture

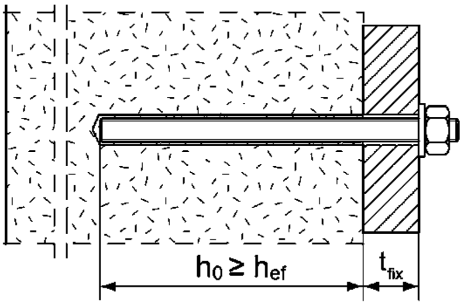
t_{tol} = thickness of unbearing layer (e.g. plaster)

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex A1**
Product description Installation conditions part 1, Anchor rods and internal threaded anchor with perforated sleeve	

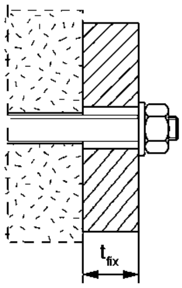
Installation conditions part 2

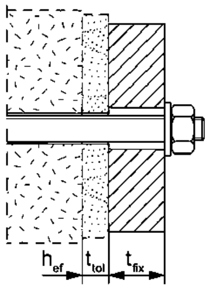
Anchor rods without perforated sleeve FIS H K;
installation in solid brick masonry and autoclaved aerated concrete

Pre-positioned installation:



Push through installation: Annular gap filled with mortar

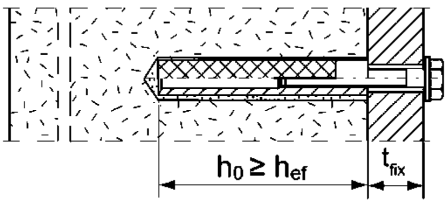




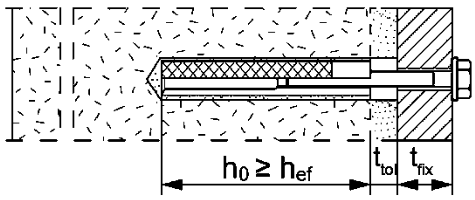
Installation with render bridge

Internal threaded anchors FIS E without perforated sleeve FIS H K;
installation in solid brick masonry and autoclaved aerated concrete

Pre-positioned installation:



Installation with render bridge



Figures not to scale

h_0 = depth of drill hole

h_{ef} = effective anchorage depth

t_{tol} = thickness of unbearing layer (e.g. plaster)

t_{fix} = thickness of fixture

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Product description
Installation conditions part 2, Anchor rods and internal threaded anchor without perforated sleeve / with centring sleeve

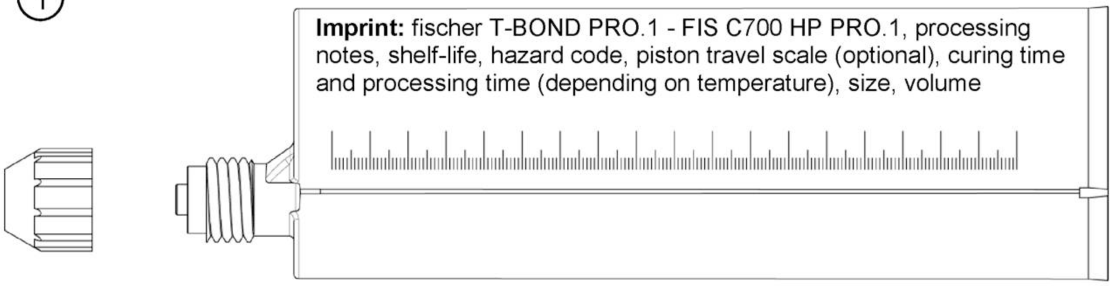
Annex A2

Overview system components part 1

Mortar cartridge (shuttle cartridge) with sealing cap

1

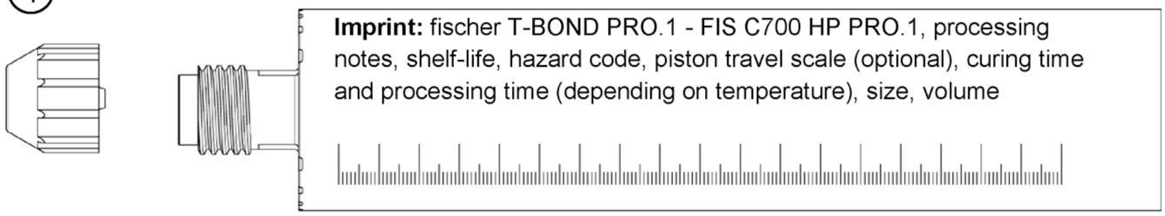
Size: 360 ml, 825 ml



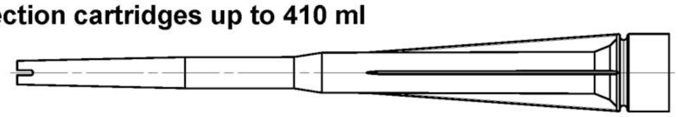
Mortar cartridge (coaxial cartridge) with sealing cap

1

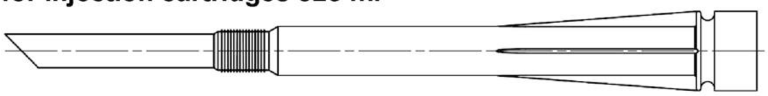
Size: 100 ml, 150 ml, 300 ml, 380 ml, 400 ml, 410 ml



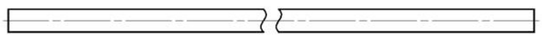
Static mixer fischer MR Plus for injection cartridges up to 410 ml



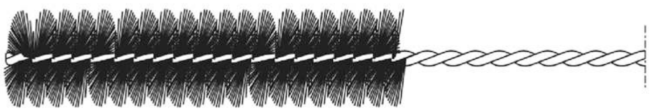
Static mixer fischer FIS JMR for injection cartridges 825 ml



Extension tube Ø 9 for static mixer fischer MR Plus;
Extension tube Ø 9 or Ø 15 for static mixer fischer FIS JMR



Cleaning brush BS



Blow-out pump ABG

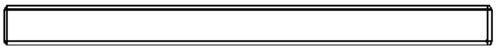
compressed-air cleaning tool ABP

Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex A3**
Product description Overview system components part 1: cartridge / static mixer / cleaning tools	

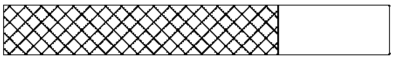
Overview system components part 2

fischer anchor rod

2 

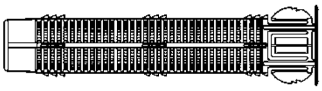
Size: M6, M8, M10, M12, M16

Internal threaded anchor FIS E

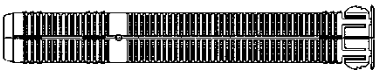
5 

Size: 11x85 M6 / M8
15x85 M10 / M12

Perforated sleeve FIS H K

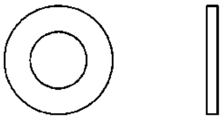
7 

Size: FIS H 12x50 K
FIS H 12x85 K
FIS H 16x85 K
FIS H 20x85 K

7 

Size: FIS H 16x130 K
FIS H 20x130 K
FIS H 20x200 K

Washer

3 

Hexagon nut

4 

Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Product description
Overview system components part 2: steel parts / perforated sleeve

Annex A4

Table A5.1: Materials

Part	Designation	Material		
1	Mortar cartridge	Mortar, hardener; filler		
		Steel	Stainless steel R	High corrosion resistant steel HCR
		zinc plated	acc. to EN 10088-1:2023 Corrosion resistance class CRC III acc. to EN 1993-1-4:2006+A1:2015	acc. to EN 10088-1:2023 Corrosion resistance class CRC V acc. to EN 1993-1-4:2006+A1:2015
2	Anchor rod	Property class 4.6; 4.8; 5.8 or 8.8; EN ISO 898-1: 2013 zinc plated ≥ 5µm, ISO 4042:2022 or hot-dip galvanised EN ISO 10684:2004+AC:2009 f_{uk} ≤ 1000 N/mm^2 A_5 > 8% fracture elongation	Property class 50, 70 or 80 EN ISO 3506-1:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062; 1.4662; 1.4462; EN 10088-1:2023 f_{uk} ≤ 1000 N/mm^2 A_5 > 8% fracture elongation	Property class 50 or 80 EN ISO 3506-1:2020 or property class 70 with f_{yk}= 560 N/mm^2 1.4565; 1.4529 EN 10088-1:2023 f_{uk} ≤ 1000 N/mm^2 A_5 > 8% fracture elongation
3	Washer ISO 7089:2000	zinc plated ≥ 5µm, ISO 4042:2022 or hot-dip galvanised EN ISO 10684:2004+AC:2009	1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	1.4565;1.4529 EN 10088-1:2023
4	Hexagon nut	Property class 5 or 8; EN ISO 898-2:2022 zinc plated ≥ 5µm, ISO 4042:2022 or hot-dip galvanised EN ISO 10684:2004+AC:2009	Property class 50, 70 or 80 EN ISO 3506-2:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	Property class 50, 70 or 80 EN ISO 3506-2:2020 1.4565; 1.4529 EN 10088-1:2023
5	Internal threaded anchor FIS E	Property class 5.8; EN ISO 898-1:2013 zinc plated ≥ 5µm, ISO 4042:2022	Property class 70 EN ISO 3506-1:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	Property class 70 EN ISO 3506-1:2020 1.4565; 1.4529 EN 10088-1:2023
6	Commercial standard screw or threaded rod for internal threaded anchor FIS E	Property class 4.6, 5.8 or 8.8; EN ISO 898-1:2013 zinc plated ≥ 5µm, ISO 4042:2022	Property class 70 EN ISO 3506-1:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	Property class 70 EN ISO 3506-1:2020 1.4565; 1.4529 EN 10088-1:2023
7	Perforated sleeve	PP / PE		

Specifications of intended use part 1

Table B1.1: Overview use and performance categories

<table>
<tr><td colspan="2">Anchorages subject to</td><td colspan="2">fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1</td></tr>
<tr><td colspan="2">Hole drilling with hammer drill mode</td><td colspan="2">all bricks;
without C22 to C25, C31 to C32</td></tr>
<tr><td colspan="2">Hole drilling with rotary drill mode</td><td colspan="2">all bricks</td></tr>
<tr><td colspan="2">Static and quasi static load,
in masonry</td><td colspan="2">all bricks</td></tr>
<tr><td rowspan="2">Installation</td><td>Pre-positioned installation</td><td>Anchor rod or
internal threaded anchor
(in solid brick masonry and autoclaved aerated concrete)</td><td>Perforated sleeve with anchor rod or internal threaded anchor
(in perforated and solid brick masonry)
Size: FIS H 12x50 K
FIS H 12x85 K
FIS H 16x85 K
FIS H 16x130 K
FIS H 20x85 K
FIS H 20x130 K
FIS H 20x200 K</td></tr>
<tr><td>Push through installation</td><td colspan="2">Anchor rod; use in cylindrical drill hole
(in solid brick masonry and autoclaved aerated concrete)</td></tr>
<tr><td rowspan="3">Installation and use conditions</td><td>conditions d/d
(dry/dry)</td><td colspan="2" rowspan="3">all bricks</td></tr>
<tr><td>conditions w/d
(wet/dry)</td></tr>
<tr><td>conditions w/w
(wet/wet)</td></tr>
<tr><td colspan="2">Installation direction</td><td colspan="2">D3 (downward and horizontal installation)</td></tr>
<tr><td colspan="2">Installation temperature</td><td colspan="2">$T_{i,min}$ = -5 °C to $T_{i,max}$ = +40 °C</td></tr>
<tr><td rowspan="2">In-service temperature</td><td>Temperature range Tb</td><td>-40 °C to +80 °C</td><td>(max. short term temperature +80 °C
max. long term temperature +50 °C)</td></tr>
<tr><td>Temperature range Tc</td><td>-40 °C to +120 °C</td><td>(max. short term temperature +120 °C;
max. long term temperature +72 °C)</td></tr>
</table>

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex B1**
Intended Use Specifications part 1	

Specifications of intended use part 2

Anchorages subject to:

- Static and quasi-static loads

Base materials:

- Solid brick masonry (base material group b) and autoclaved aerated concrete (base material group d), acc. to Annex B10.
- Hollow brick masonry (base material group c), according to Annex B10.
- For minimum thickness of masonry member is h_{ef}+30mm.
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2016.
- For other bricks in solid masonry, hollow or perforated masonry and autoclaved aerated concrete, the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 053:2022-07 under consideration of the β-factor according to Annex C44, Table C44.1.

  Note (only applies to solid bricks and autoclaved aerated concrete):
  The characteristic resistance is also valid for larger brick sizes, higher compressive strength and higher raw density of the masonry unit.

Temperature Range:

- **Tb:** From - 40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C)
- **Tc:** From -40°C to +120°C (max. short term temperature +120°C and max. long term temperature +72°C)

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc plated steel, stainless steel or high corrosion resistant steel)
- For all other conditions according to EN 1993-1-4:2006+A1:2015 corresponding to corrosion resistance classes to Annex A5, Table A5.1.

Specifications of intended use part 3 continued

Design:

- The anchorages have to be designed in accordance with EOTA Technical Report TR 054:2023-12 (included the dimensioning for fire exposure), Design method A under the responsibility of a designer experienced in anchorages and masonry work.

  Applies to all bricks, if no other values are specified:

  $N_{Rk} = N_{Rk,b} = N_{Rk,p} = N_{Rk,b,c} = N_{Rk,p,c}$

  $V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$

  For the calculation of pulling out a brick under tension loading $\mathbf{N_{Rk,pb}}$ or pushing out a brick under shear loading $\mathbf{V_{Rk,pb}}$ see EOTA Technical Report TR 054:2023-12.

  $\mathbf{N_{Rk,s}}$, $\mathbf{V_{Rk,s}}$ and $\mathbf{M^0_{Rk,s}}$ see annexes C1-C3.

  Factors for job site tests and displacements see annex C44.
- Verifiable calculation notes and drawings have to be prepared taking into 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 to be indicated on the design drawings.

Installation:

- Conditions d/d: - Installation and use in dry structures.
- Conditions w/w:- Installation and use in dry and wet structures.
- Conditions w/d: - Installation in wet structures and use in dry structures.
- Hole drilling see Annex C (drilling method).
- In case of aborted hole: The hole shall be filled with injection mortar T-BOND PRO.1 - FIS C700 HP PRO.1.
- Bridging of unbearing layer (e.g., plaster) is permitted for masonry with solid bricks and cylindrical drill hole. At perforated brick masonry see Annex B6, Table B6.1.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Fastening screws or anchor rods (including nut and washer) must comply with the appropriate material and property class of the fischer internal threaded anchor FIS E mentioned in Annex A5, Table A5.1.
- Minimum curing time see Annex B7, Table B7.3.
- Commercial standard threaded rods, washers and hexagon nuts may also be used if the following requirements are fulfilled:

  Material dimensions and mechanical properties of the metal parts according to the specifications are given in Annex A5, Table A5.1

  Conformation of material and mechanical properties of the metal parts by inspection certificate 3.1 according to EN 10204:2004, the documents shall be stored.

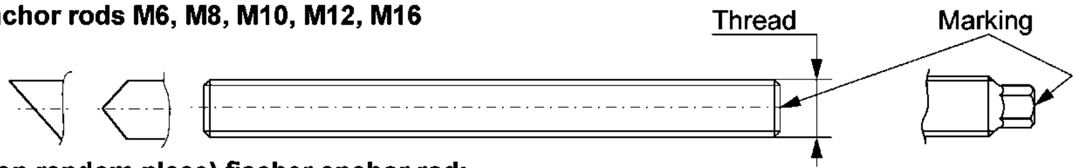
  Marking of the anchor rod with the envisage embedment depth. This may be done by the manufacturer of the rod or by a person on job site.

Table B4.1: Installation parameters for anchor rods in solid bricks and autoclaved aerated concrete without perforated sleeves

Anchor rod	**Thread**	**M6**	**M8**	**M10**	**M12**	**M16**
Nominal drill hole diameter	d_0 [mm]	8	10	12	14	18
Effective anchorage depth h_{ef} 1) in AAC cylindrical drill hole	$h_{0,min} \geq h_{ef,min}$ [mm]	100				
	$h_{0,max} \geq h_{ef,max}$ [mm]	h-30, ≤200				
Effective anchorage depth h_{ef} 1) in solid brick (depth of drill hole $h_0 \geq h_{ef}$)	$h_{ef,min}$ [mm]	50				
	$h_{ef,max}$ [mm]	h-30, ≤200				
Diameter of clearance hole in the fixture	pre-positioning $d_f \leq$ [mm]	7	9	12	14	18
	push through $d_f \leq$ [mm]	9	11	14	16	20
Diameter of cleaning brush	$d_b \geq$ [mm]	see Table B7.1				
Maximum installation torque	T_{inst} [Nm]	see parameters of brick				

1) $h_{ef,min} \leq h_{ef} \leq h_{ef,max}$ is possible.

fischer anchor rods M6, M8, M10, M12, M16



Marking (on random place) fischer anchor rod:

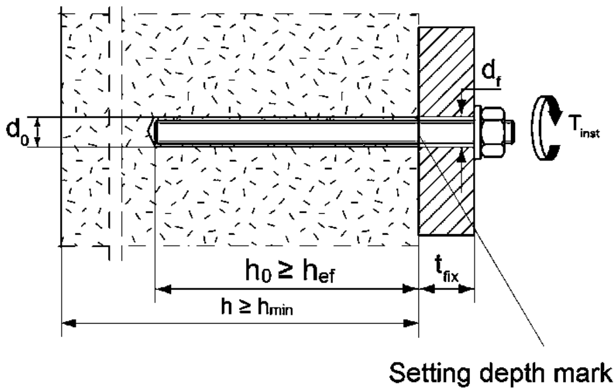
Steel zinc plated PC1) 8.8	• or +	Steel hot-dip galvanised PC1) 8.8	•
High corrosion resistant steel HCR PC1) 50	•	High corrosion resistant steel HCR PC1) 70	–
High corrosion resistant steel HCR PC1) 80	(	Stainless steel R property class 50	~
Stainless steel R property class 80	∗		

Alternatively: Colour coding according to DIN 976-1: 2016; property class 4.6 marking according to EN ISO 898-1:2013

1) PC = property class

Installation conditions:

Anchor rod in cylindrical drill hole

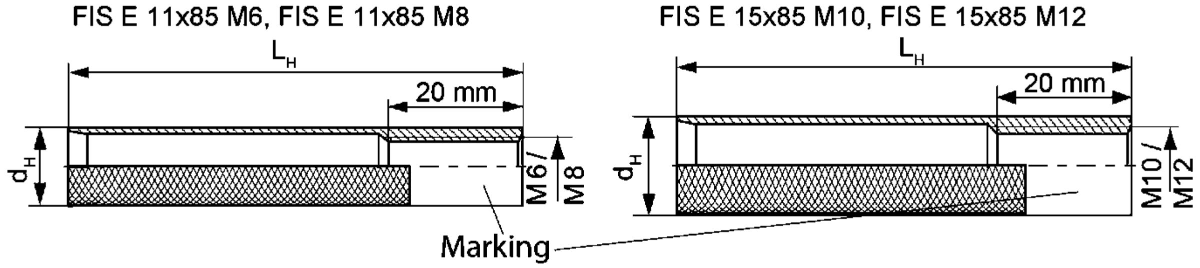


Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex B4**
Intended Use Installation parameters for anchor rods without perforated sleeve	

Table B5.1:	Installation parameters for internal threaded anchors FIS E in solid bricks and autoclaved aerated concrete without perforated sleeves				
Internal threaded anchor FIS E		**11x85 M6**	**11x85 M8**	**15x85 M10**	**15x85 M12**
Diameter of anchor	d_H [mm]	11		15	
Nominal drill hole diameter	d_0 [mm]	14		18	
Length of anchor	L_H [mm]	85			
Effective anchorage depth	$h_0 \geq h_{ef}$ [mm]	85			
Diameter of cleaning brush	$d_b \geq$ [mm]	see Table B7.1			
Maximum installation torque	T_{inst} [Nm]	see parameters of brick			
Diameter of clearance hole in the fixture	d_f [mm]	7	9	12	14
Screw-in depth	$l_{E,min}$ [mm]	6	8	10	12
	$l_{E,max}$ [mm]	60			

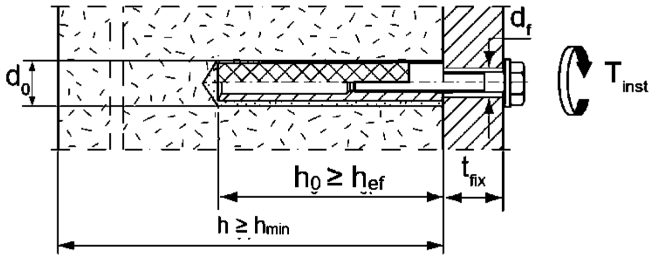
fischer Internal threaded anchor FIS E



Marking:
Size, e.g. **M8**, Stainless steel: R, e.g. **M8 R**, High corrosion resistant steel: HCR, e.g. **M8 HCR**

Installation conditions:

Internal threaded anchor in cylindrical drill hole



Figures not to scale

Deutsches Institut für Bautechnik DIBt

Table B6.1: Installation parameters for anchor rods and internal threaded anchors FIS E with perforated sleeves

perforated sleeve FIS H K		**12x50**	**12x85** [2)]	**16x85**	**16x130** [2)]	**20x85**	**20x130** [2)]	**20x200** [2)]
Nominal drill hole diameter $d_0 = D_{sleeve,nom}$	d_0 [mm]	12		16		20		
Depth of drill hole	h_0 [mm]	55	90	90	135	90	135	205
Effective anchorage depth	$h_{ef,min}$ [mm]	50	65	85	110	85	110	180
	$h_{ef,max}$ [mm]	50	85	85	130	85	130	200
Size of threaded rod	[-]	M6 and M8		M8 and M10		M12 and M16		
Size of internal threaded anchor FIS E		-	-	11x85	-	15x85	-	-
Diameter of cleaning brush[1)]	$d_b \geq$ [mm]	see Table B7.1						
Maximum installation torque	T_{inst} [Nm]	see parameters of brick						

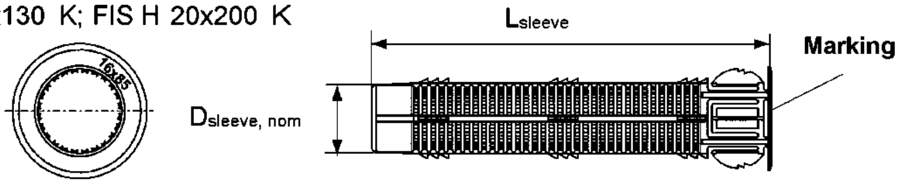
[1)] Only for solid areas in hollow bricks and solid bricks.

[2)] Bridging of unbearing layer (e.g. plaster) is possible. When reducing the effective anchorage depth $h_{ef,\,min}$, the values of the next shorter perforated sleeve of the same diameter must be used. The smaller value of charastereristic resistance must be taken.

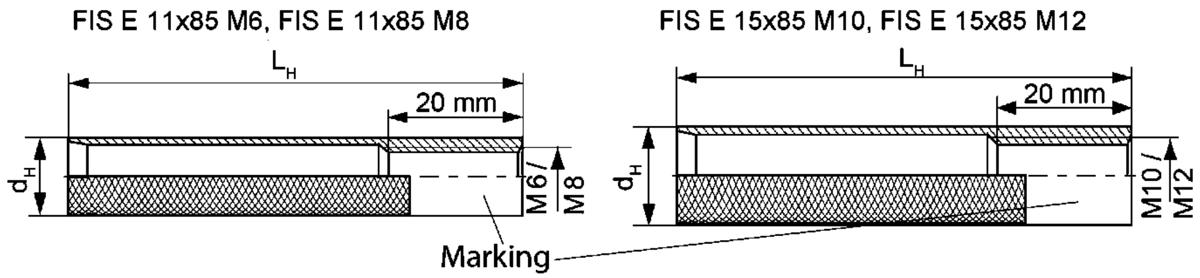
Perforated sleeve

FIS H 12x50 K; FIS H 12x85 K; FIS H 16x85 K; FIS H 16x130 K;
FIS H 20x85 K; FIS H 20x130 K; FIS H 20x200 K

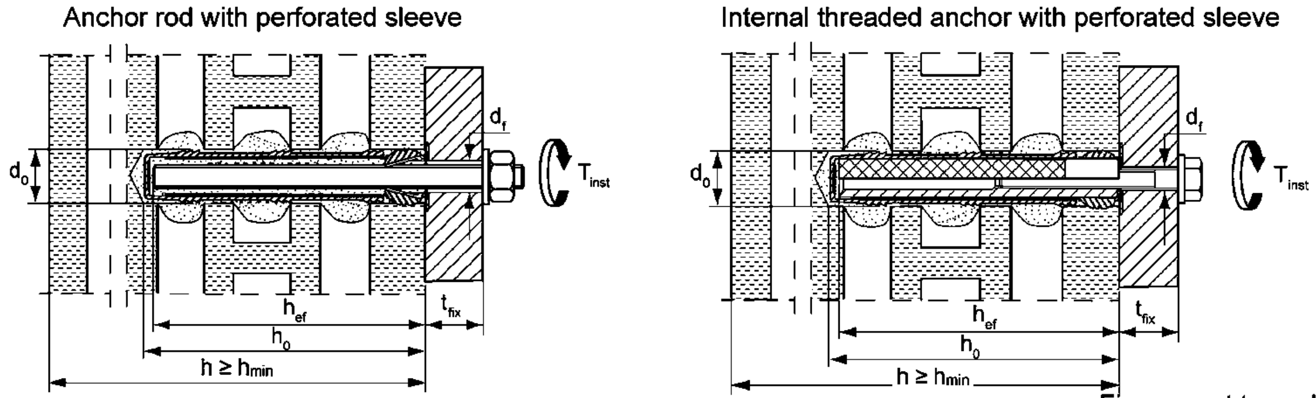
Marking:
Size $D_{sleeve,\,nom}$ x L_{sleeve}
(e.g.: 16x85)



fischer Internal threaded anchor FIS E



Installation conditions:



Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

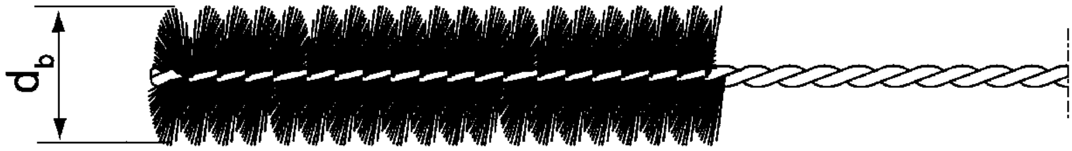
Intended Use
Installation parameters for anchor rods and internal threaded anchors FIS E with perforated sleeve

Annex B6

Table B7.1: Parameters of the cleaning brush BS (steel brush with steel bristles)

The size of the cleaning brush refers to the drill hole diameter

Drill hole diameter	d_0 [mm]	8	10	12	14	16	18	20	22
Brush diameter	d_b [mm]	9	11	14	16	20	20	25	25



Only for solid bricks and autoclaved aerated concrete or solid areas of perforated bricks and hollow blocks

Table B7.2: Conditions for use static mixer without an extension tube

Nominal drill hole diameter		d_0	[mm]	10	12	14	16	18	20	22
Drill hole depth h_0 by using	FIS MR Plus		[mm]	≤90		≤120	≤140	≤150	≤160	≤170
	FIS JMR		[mm]	-		≤90			≤260	

Table B7.3: Maximum processing times and minimum curing times
(During the curing time of the mortar the masonry temperature may not fall below the listed minimum temperature)

Temperature at anchoring base [°C]	Maximum processing time [2] t_{work}	Minimum curing time [1), 2)] t_{cure}
	T-BOND PRO.1 - FIS C700 HP PRO.1	T-BOND PRO.1 - FIS C700 HP PRO.1
> -5 to 0	-	24 h
> 0 to 5	13 min	3 h
> 5 to 10	9 min	90 min
> 10 to 20	5 min	60 min
> 20 to 30	4 min	45 min
> 30 to 40	2 min	35 min

1) For wet bricks the curing time must be doubled.

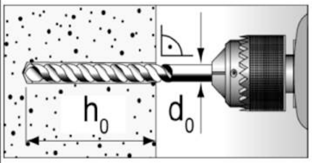
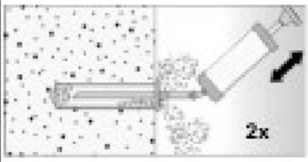
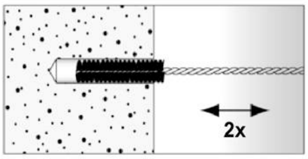
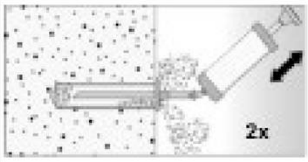
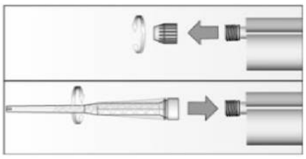
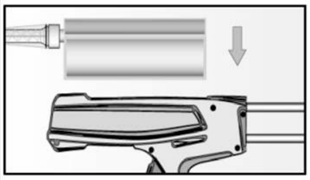
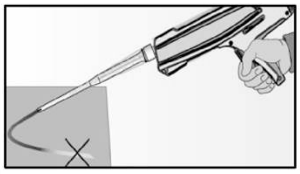
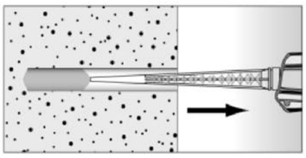
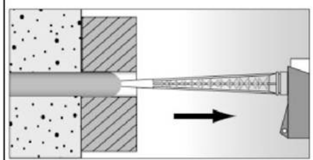
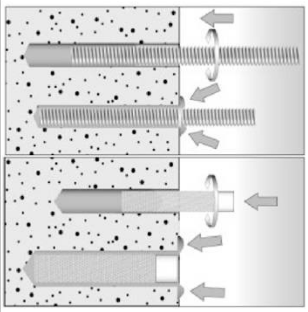
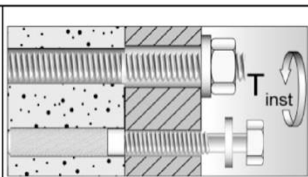
2) Minimum cartridge temperature +5°C.

Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex B7**
Intended Use Cleaning brush (steel brush) Maximum processing times and minimum curing times	

Installation instruction part 1

Installation in solid brick and autoclaved aerated concrete (without perforated sleeve)

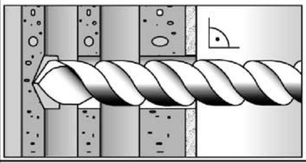
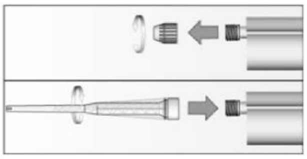
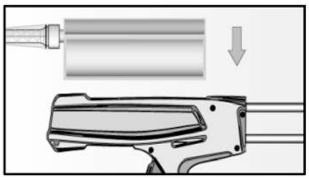
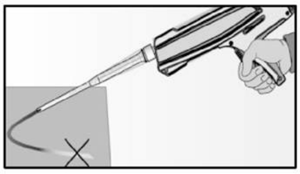
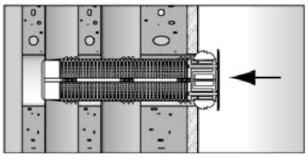
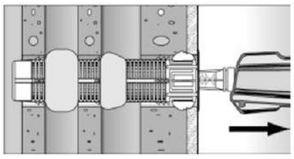
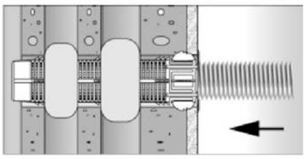
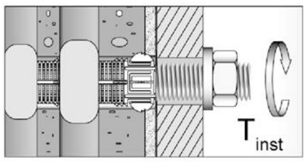
1		Drill the hole (drilling method see Annex C of the respective brick) depth of drill hole $\mathbf{h_0}$ and drill hole diameter $\mathbf{d_0}$ see **Table B4.1; B5.1**.		
2				Blow out the drill hole twice. Brush twice and blow out twice again.
3		Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible).		
4		Place the cartridge into a suitable dispenser.		Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of.
5		Fill approximetly 2/3 of the drill hole with mortar beginning from the bottom of the hole[1]. Avoid bubbles!		For push through installation fill the annular clearance with mortar.
6		Only use clean and oil-free metal parts. Mark the anchor rod for setting depth. Insert the anchor rod or internal threaded anchor FIS E by hand using light turning motions. When reaching the setting depth marking, excess mortar must emerge from the mouth of the drill hole.		
7		Do not touch. Minimum curing time see **Table B7.3**.		Mounting the fixture. max T_{inst} see parameter of brick in **Annex C**.

[1] Exact volume of mortar see manufacturer´s specification.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex B8**
Intended Use Installation instruction (without perforated sleeve) part 1	

Installation instruction part 2

Installation in perforated or solid brick with perforated sleeve

1		Drill the hole (drilling method see Annex C of the respective brick). depth of drill hole $\mathbf{h_0}$ and drill hole diameter $\mathbf{d_0}$ see **Table B6.1**	When install perforated sleeves in solid bricks or solid areas of hollow bricks, also clean the hole by blowing out and brushing.	
2		Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible).		
3		Place the cartridge into a suitable dispenser.		Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of.
4		Insert the perforated sleeve flush with the surface of the masonry or plaster.		Fill the perforated sleeve completely with mortar beginning from the bottom of the hole[1].
5		Only use clean and oil-free metal parts. Mark the ancher rod for setting depth. Insert the anchor rod or the internal threaded anchor FIS E by hand using light turning motions until reaching the setting depth marking (anchor rod) or flush with the surface (internal threaded anchor).		
6		Do not touch. Minimum curing time see **Table B7.3**		Mounting the fixture. max T_{inst} see parameter of brick in **Annex C**.

[1] Exact volume of mortar see manufacturer´s specification.

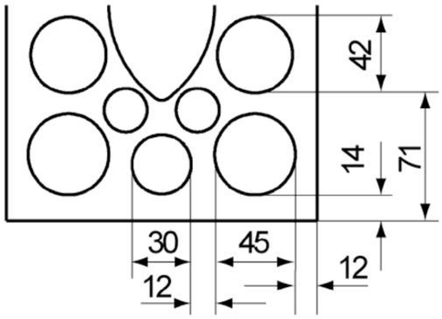
fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex B9**
Intended Use Installation instruction (with perforated sleeve) part 2	

Table B10.1: Overview of assessed bricks

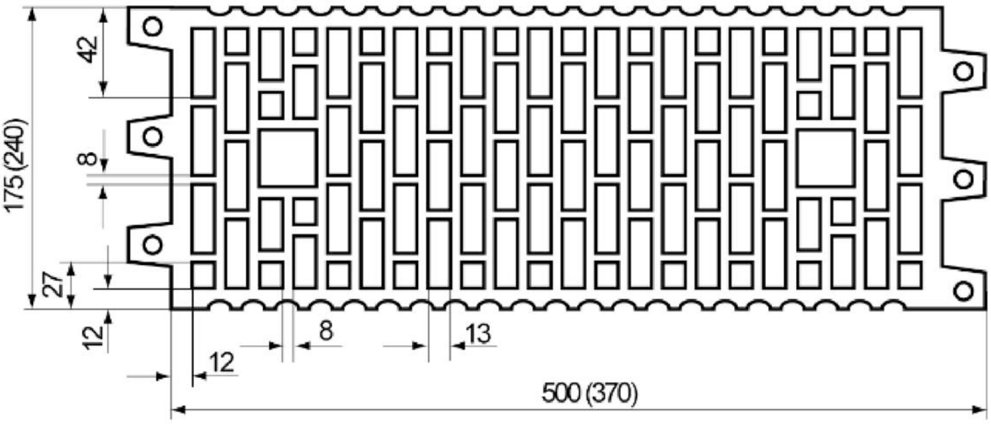
Kind of masonry	Brick format [mm]		Mean compressive strength [N/mm²]	Main country of origin	Mean gross density ρ [kg/dm³]	Annex
Solid brick Mz						
Solid brick Mz	**NF**	≥240x115x71	15 / 25 / 35	Germany	≥1,8	C4 – C7
	2DF	≥240x115x113	12,5 / 20	Germany	≥1,8	C8 / C9
		≥ 245x118x54	12,5 / 25	Italy	≥1,8	C10 / C11
Solid calcium silicate (sand- lime) brick KS / perforated calcium silicate (sand- lime) brick KSL						
Solid calcium silicate brick KS	**NF**	≥240x115x71	15 / 25 / 35	Germany	≥2,0	C12 / C13
		≥ 240x115x113	12,5 / 25	Germany	≥1,8	C14 / C15
Perforated calcium silicate brick KSL	**3DF**	240x175x113	10 / 12,5 / 15 / 20 / 25	Germany	≥1,4	C16 / C17
Vertical perforated brick HLz						
Vertical perforated brick HLz		370x240x237	5 / 7,5 / 10 / 12,5 / 15	Germany	≥1,0	C18 / C19
		500x175x237	5 / 7,5 / 10 / 12,5 / 15	Germany	≥1,0	C18 / C19
	2DF	240x115x113	7,5 / 12,5 / 20 / 25 / 35	Germany	≥1,4	C20 / C21
		248x365x249	10 / 12,5 / 15	Germany	≥0,7	C22 / C23
		248x425x248	5 / 7,5 / 10	Germany	≥0,8	C24 / C25
		255x120x118	2,5 / 5 / 8 / 10 / 12,5 / 15	Italy	≥1,0	C26 – C28
		253x300x240	2,5 / 5 / 8	Austria	≥0,8	C29 / C30
		250x440x250	8 / 10 / 12,5	Austria	≥0,7	C31 / C32
		365x248x245	10	Austria	≥0,6	C33 / C34
		240x175x113	12,5	Germany	≥0,9	C35 / C36
Horizontal perforated brick LLz						
Horizontal perforated brick LLz		248x78x250	2,5 / 5 / 8	Italy	≥0,7	C37 / C38
Light-weight concrete hollow block Hbl						
Light-weight concrete hollow block Hbl		362x240x240	2,5 / 5	Germany	≥1,0	C39 / C40
Autoclaved aerated concrete (AAC)						
PP2 / AAC	-		2,5	Germany	0,35	C41 – C43
PP4 / AAC	-		5	Germany	0,5	C41 – C43
PP6 / AAC	-		8	Germany	0,65	C41 – C43

Table B11.1: Overview dimensions of perforated and hollow bricks part 1

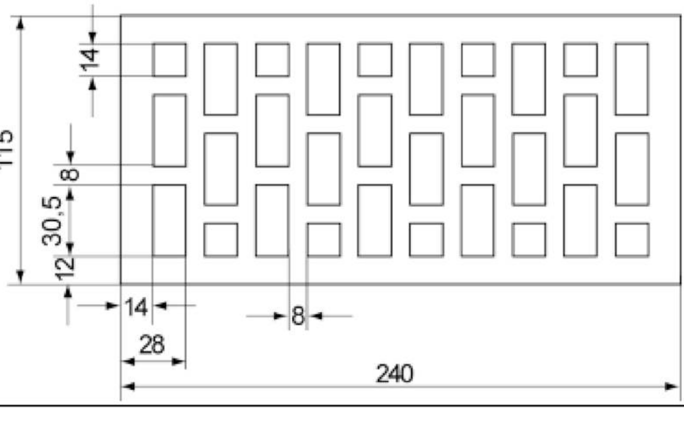
Perforated calcium silicate brick KSL, 3DF,
EN 771-2:2011+A1:2015; e.g. KS Wemding according to Annex C16



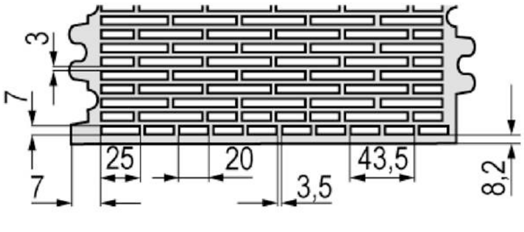
Vertical perforated brick HLz, EN 771-1:2011+A1:2015: e.g. Wienerberger, Poroton according to Annex C18



Vertical perforated brick HLz, 2DF,
EN 771-1:2011+A1:2015; e.g. Wienerberger according to Annex C20



Vertical perforated brick HLz, T10, T11,
EN 771-1:2011+A1:2015; according to Annex C22



Measures in [mm]
Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Intended Use
Overview dimensions of perforated and hollow bricks part 1

Annex B11

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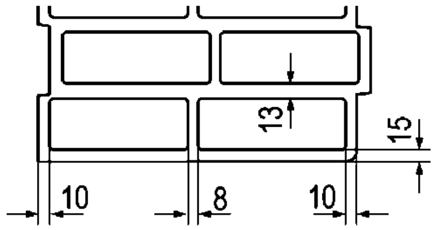
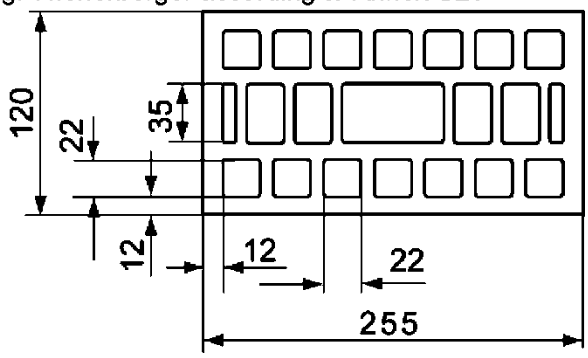
Table B12.1: Overview dimensions of perforated and hollow bricks part 2

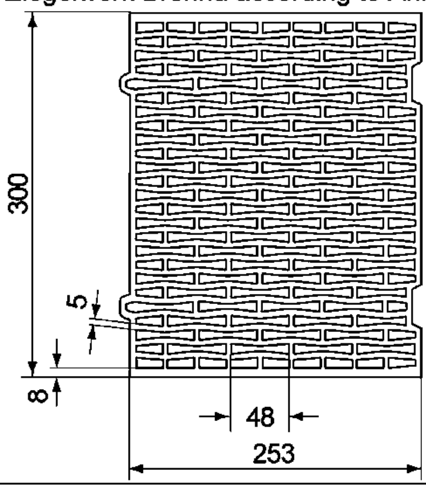
Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2015; according to Annex C24



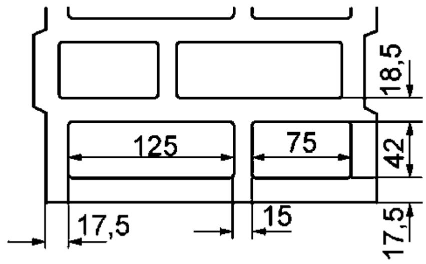
Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Wienerberger according to Annex C26



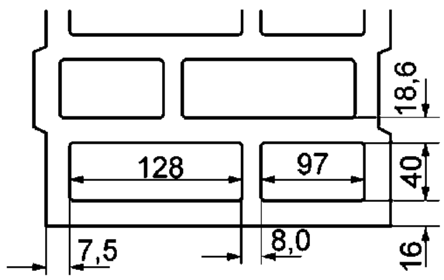
Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Ziegelwerk Brenna according to Annex C29



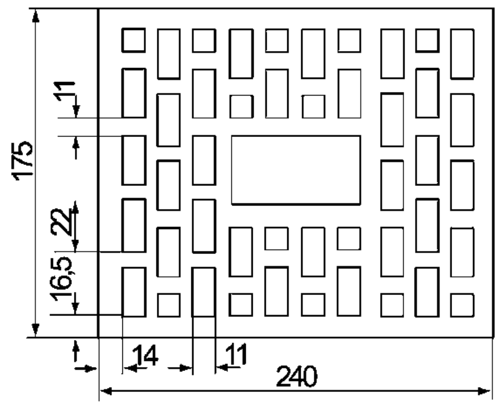
Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool, EN 771-1:2011+A1:2015 according to Annex C31



Vertical perforated brick filled with mineral wool, EN 771-1:2011+A1:2015; according to Annex C33



Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Wienerberger according to Annex C35



Measures in [mm]
Figures not to scale

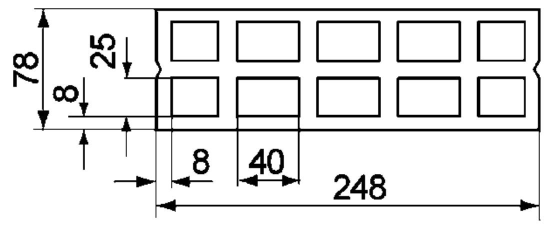
fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Intended Use
Overview dimensions of perforated and hollow bricks part 2

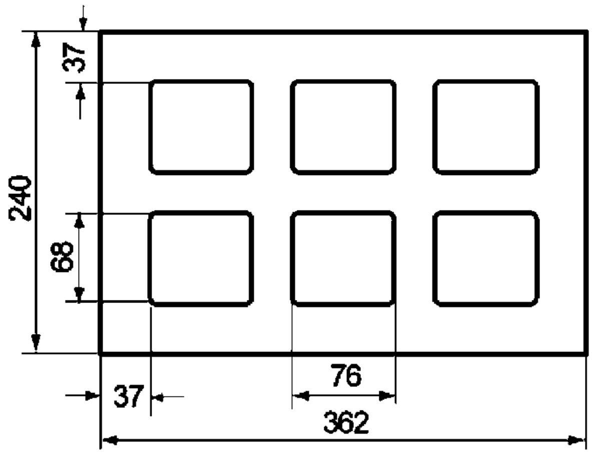
Annex B12

Table B13.1: Overview dimensions of perforated and hollow bricks part 3

Horizontal perforated brick LLz,
EN 771-1:2011+A1:2015; according to Annex C37



Light-weight concrete hollow block Hbl,
EN 771-3:2011+A1:2015; according to Annex C39



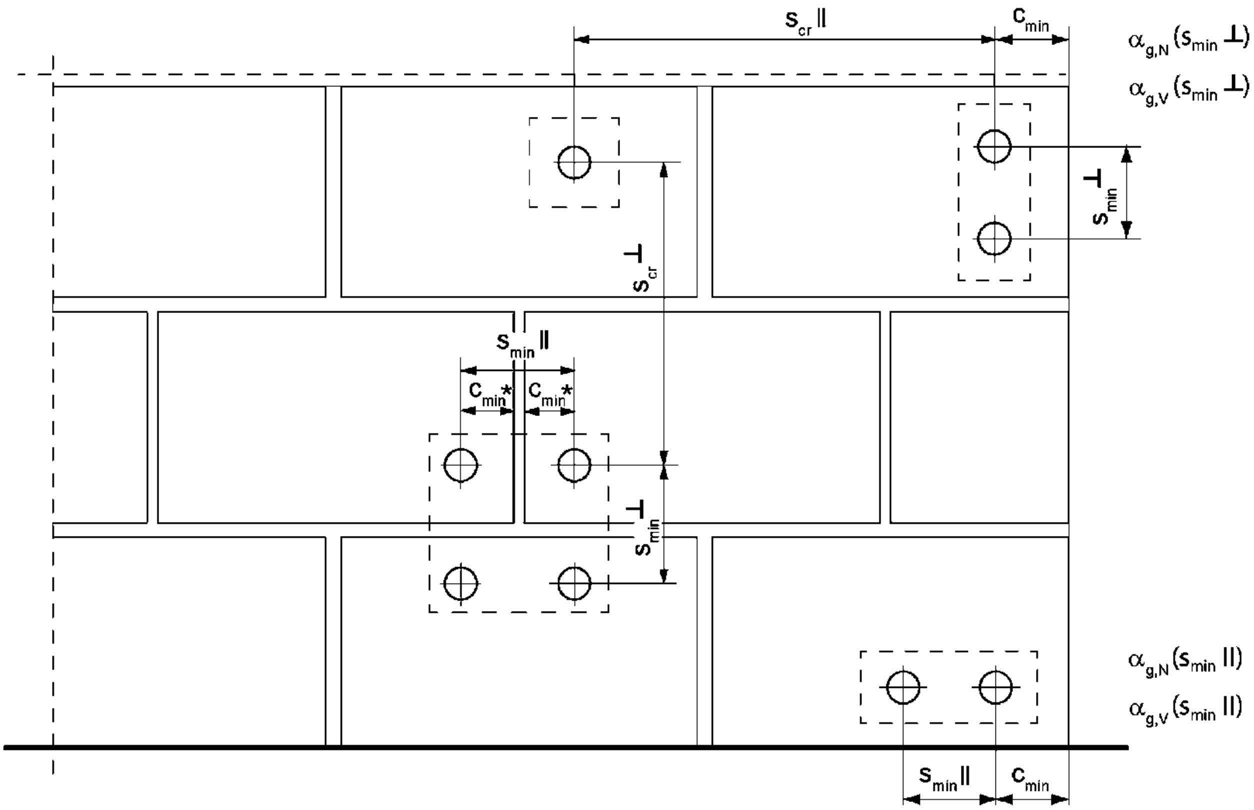
Measures in [mm]
Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Intended Use
Overview dimensions of perforated and hollow bricks part 3

Annex B13

Spacing and edge distance part 1



* Only, if vertical joints are not completely filled with mortar

s_{min} II	=	Minimum spacing parallel to horizontal joint
s_{min} ⊥	=	Minimum spacing perpendicular to horizontal joint
s_{cr} II	=	Characteristic spacing parallel to horizontal joint
s_{cr} ⊥	=	Characteristic spacing perpendicular to horizontal joint
$c_{cr} = c_{min}$	=	Edge distance
$\alpha_{g,N}$ (s_{min} II)	=	Group factor for tension load, anchor group parallel to horizontal joint
$\alpha_{g,V}$ (s_{min} II)	=	Group factor for shear load, anchor group parallel to horizontal joint
$\alpha_{g,N}$ (s_{min} ⊥)	=	Group factor for tension load, anchor group perpendicular to horizontal joint
$\alpha_{g,V}$ (s_{min} ⊥)	=	Group factor for shear load, anchor group perpendicular to horizontal joint

Figures not to scale

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	Annex B14
Intended Use Spacing and edge distance part 1	

Spacing and edge distance part 2

For $s \geq s_{cr}$: $\alpha_g = 2$

For $s_{min} \leq s < s_{cr}$: α_g according to installation parameters of brick Annex C

Group of 2 anchors

$N^g_{Rk} = \alpha_{g,N} \bullet N_{Rk}$; $V^g_{Rk,b} = V^g_{Rk,c,II} = V^g_{Rk,c,\perp} = \alpha_{g,V} \bullet V_{Rk}$

Group of 4 anchors

$N^g_{Rk} = \alpha_{g,N}\ (s_{min}II) \bullet \alpha_{g,N}\ (s_{min}\perp) \bullet N_{Rk}$;

$V^g_{Rk,b} = V^g_{Rk,c,II} = V^g_{Rk,c,\perp} = \alpha_{g,V}\ (s_{min}II) \bullet \alpha_{g,V}\ (s_{min}\perp) \bullet V_{Rk}$

with N_{Rk} and $\alpha_{g,N}$ depending on $s_{min}II$ or $s_{min}\perp$ acc. to Annex C

with V_{Rk} and $\alpha_{g,V}$ depending on $s_{min}II$ or $s_{min}\perp$ acc. to Annex C

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	Annex B15
Intended Use Spacing and edge distance part 2	

Table C1.1: Characteristic resistance to **steel failure** under **tension loading** of **fischer anchor rods** and **standard threaded rods**

Anchor rod / standard threaded rod					**M6**	**M8**[3)]	**M10**[3)]	**M12**	**M16**
Characteristic resistance to steel failure under tension loading									
Characteristic resistance $N_{Rk,s}$	Steel zinc plated	Property class	4.6	[kN]	8,0	14,6(13,2)	23,2(21,4)	33,7	62,8
			4.8		8,0	14,6(13,2)	23,2(21,4)	33,7	62,8
			5.8		10,0	18,3(16,6)	29,0(26,8)	42,1	78,5
			8.8		16,0	29,2(26,5)	46,4(42,8)	67,4	125,6
	Stainless steel R and High corrosion resistant steel HCR		50		10,0	18,3	29,0	42,1	78,5
			70		14,0	25,6	40,6	59,0	109,9
			80		16,0	29,2	46,4	67,4	125,6
Partial factors [1)]									
Partial factors $\gamma_{Ms,N}$	Steel zinc plated	Property class	4.6	[-]	2,00				
			4.8		1,50				
			5.8		1,50				
			8.8		1,50				
	Stainless steel R and High corrosion resistant steel HCR		50		2,86				
			70		1,50[2)] / 1,87				
			80		1,60				

[1)] In absence of other national regulations

[2)] Only for fischer FIS A made of high corrosion resistant steel HCR

[3)] Values in brackets are valid for undersized threaded rods with smaller stress area A_s for hot-dip galvanised standard threaded rods according to EN ISO 10684:2004+AC:2009.

Table C2.1: Characteristic resistance to **steel failure** under **shear loading** of **fischer anchor rods** and **standard threaded rods**

Anchor rod / standard threaded rod					**M6**	**M8**[3)]	**M10**[3)]	**M12**	**M16**
Characteristic resistance to steel failure under shear loading									
without lever arm									
Characteristic resistance $V_{Rk,s}$	Steel zinc plated	Property class	4.6	[kN]	4,8	8,7(7,9)	13,9(12,8)	20,2	37,6
			4.8		4,8	8,7(7,9)	13,9(12,8)	20,2	37,6
			5.8		6,0	10,9(9,9)	17,4(16,0)	25,2	47,1
			8.8		8,0	14,6(13,2)	23,2(21,4)	33,7	62,8
	Stainless steel R and High corrosion resistant steel HCR		50		5,0	9,1	14,5	21,0	39,2
			70		7,0	12,8	20,3	29,5	54,9
			80		8,0	14,6	23,2	33,7	62,8
with lever arm									
Characteristic resistance $M^0_{Rk,s}$	Steel zinc plated	Property class	4.6	[Nm]	6,1	14,9(12,9)	29,9(26,5)	52,3	132,9
			4.8		6,1	14,9(12,9)	29,9(26,5)	52,3	132,9
			5.8		7,6	18,7(16,1)	37,3(33,2)	65,4	166,2
			8.8		12,2	29,9(25,9)	59,8(53,1)	104,6	265,9
	Stainless steel R and High corrosion resistant steel HCR		50		7,6	18,7	37,3	65,4	166,2
			70		10,6	26,2	52,3	91,5	232,6
			80		12,2	29,9	59,8	104,6	265,9
Partial factors[1)]									
Partial factors $\gamma_{Ms,V}$	Steel zinc plated	Property class	4.6	[-]	1,67				
			4.8		1,25				
			5.8		1,25				
			8.8		1,25				
	Stainless steel R and High corrosion resistant steel HCR		50		2,38				
			70		1,25[2)] / 1,56				
			80		1,33				

1) In absence of other national regulations

2) Only for fischer FIS A made of high corrosion resistant steel HCR

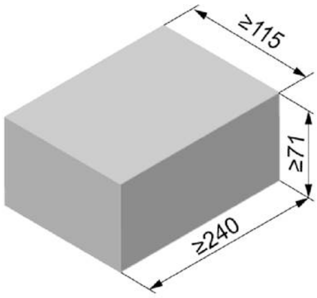
3) Values in brackets are valid for undersized threaded rods with smaller stress area A_s for hot-dip galvanised standard threaded rods (M8 resp. M10) according to EN ISO 10684:2004+AC:2009.

Table C3.1: Characteristic resistance to **steel failure** under **tension / shear loading** of **internal threaded anchors FIS E**

fischer internal threaded anchor FIS E					**M6**	**M8**	**M10**	**M12**
Characteristic resistance to steel failure under tension loading, decisive values of internal threaded anchor FIS E with screw/threaded rod								
Characteristic resistance	$N_{Rk,s}$	Property class	4.6	[kN]	8,0	14,6	23,2	33,7
		Property class	5.8		10,0	18,3	29,0	42,1
		Property class 70	R		14,0	25,6	40,6	59,0
			HCR		14,0	25,6	40,6	59,0
Partial factors[1)]								
Partial factors	$\gamma_{Ms,N}$	Property class	4.6	[-]	2,00			
		Property class	5.8		1,50			
		Property class 70	R		1,87			
			HCR		1,87			
Characteristic resistance to steel failure under shear loading; decisive values of internal threaded anchor FIS E with screw/threaded rod								
without lever arm								
Characteristic resistance	$V_{Rk,s}$	Property class	4.6	[kN]	4,8	8,7	13,9	20,2
		Property class	5.8		6,0	10,9	15,0	21,0
		Property class 70	R		7,0	12,8	20,3	29,5
			HCR		7,0	12,8	20,3	29,5
with lever arm								
Characteristic resistance	$M^0_{Rk,s}$	Property class	4.6	[Nm]	6,1	14,9	29,9	52,3
		Property class	5.8		7,6	18,7	37,3	65,4
		Property class 70	R		10,6	26,2	52,3	91,5
			HCR		10,6	26,2	52,3	91,5
Partial factors[1)]								
Partial factors	$\gamma_{Ms,V}$	Property class	4.6	[-]	1,67			
		Property class	5.8		1,25			
		Property class 70	R		1,56			
			HCR		1,56			

[1)] In absence of other national regulations

Solid brick Mz, NF, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		≥ 240	≥ 115	≥ 71
Mean gross dry density ρ	[kg/dm³]	≥ 1,8		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	15 / 12 or 25 / 20 or 35 / 28		
Standard or annex		EN 771-1:2011+A1:2015		

Table C4.1: Installation parameters for edge distance c=100mm

Anchor rod			**M6**	**M8**	**M10**	**M12**	**-**		**-**	
Internal threaded anchor FIS E			-	-	-	-	**M6**	**M8**	**M10**	**M12**
							11x85		**15x85**	
Anchor rod and internal threaded anchor FIS E without perforated sleeve										
Effective anchorage depth	h_{ef}	[mm]	50	50	50	50	85			
			80	80	80	80				
			200	200	200	200				
Max. installation torque	max T_{inst}	[Nm]	4	10			4	10		
General installation parameters										
Edge distance	$c_{min} = c_{cr}$	[mm]	100				100			
Edge distance h_{ef}=200	$c_{min} = c_{cr}$		150				-[2)]			
Spacing	s_{min} II,N		60				60			
	h_{ef}=200 s_{min} II,N		240				-[2)]			
	s_{min} II,V		240				240			
	s_{cr} II		240				240			
	$s_{cr} \perp = s_{min} \perp$		75				75			
Drilling method										
Hammer drilling with hard metal hammer drill										

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2)] No performance assessed

Table C4.2: Group factors

Anchor rods			**M6**	**M8**	**M10**	**M12**	**-**		**-**	
Internal threaded anchor FIS E			-	-	-	-	**M6**	**M8**	**M10**	**M12**
							11x85		**15x85**	
Edge distance	c_{min}	[mm]	**100**							
Group factor	$\alpha_{g,N}$ (s_{min} II)	[-]	1,5							
	$\alpha_{g,V}$ (s_{min} II)		2,0							
	h_{ef}=200 $\alpha_{g,N}$ (s_{min} II)		1,5							
	h_{ef}=200 $\alpha_{g,V}$ (s_{min} II)		2,0							
	$\alpha_{g,N}$ ($s_{min} \perp$)		2,0							
	$\alpha_{g,V}$ ($s_{min} \perp$)		2,0							
	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \perp$)		2,0							
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \perp$)		2,0							

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Solid brick Mz, NF, dimensions, installation parameters for edge distance c=100mm, Group factors

Annex C4

Solid brick Mz, NF, EN 771-1:211+A1:2015

Table C5.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading for edge distance c=100mm

Anchor rod		M6	M8	M10			M12			-	-
Internal threaded anchor FIS E		-	-	-			-			M6 | M8 11x85	M10 | M12 15x85
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2]											
Mean compressive strength / Min. compressive strength single brick [1]	Use conditions	Effective anchorage depth h_{ef} [mm]									
		≥50	≥50	50	80	200	50	80	200	85	
15 / 12 N/mm²	w/w | w/d	2,5	2,5	2,0	3,0	7,5	2,0	3,5	5,0	3,5	
	d/d	4,0	4,0	3,5	5,0	12,0	3,0	5,5	8,0	5,5	
25 / 20 N/mm²	w/w | w/d	3,5	3,5	3,0	4,5	11,0	3,0	5,0	7,0	5,0	
	d/d	5,5	5,5	5,0	7,0	12,0	4,5	8,0	11,5	8,0	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C5.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading for edge distance c=100mm

Anchor rod		M6	M8	M10		M12		-	-
Internal threaded anchor FIS E		-	-	-		-		M6 | M8 11x85	M10 | M12 15x85
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C									
Mean compressive strength / Min. compressive strength single brick [1]	Use conditions	Effective anchorage depth h_{ef} [mm]							
		≥50	≥50	≥50	200	≥50	200	85	
15 / 12 N/mm²	w/w | w/d, d/d	2,5	2,5	4,0	8,5	4,0	11,5	2,5	
25 / 20 N/mm²	w/w | w/d, d/d	4,0	4,0	6,0	12,0	5,5	12,0	4,0	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	Annex C5
Performance Solid brick Mz, NF, Characteristic resistance under tension and shear loading, edge distance c=100mm	

Solid brick Mz, NF, EN 771-1:2011+A1:2015

Table C6.1: Installation parameters for edge distance c=60mm

Anchor rod			M6	M8	M10	M12	M16	-		-	
Internal threaded anchor FIS E			-	-	-	-	-	M6	M8	M10	M12
								11x85		15x85	
Anchor rod and internal threaded anchor FIS E without perforated sleeve											
Effective anchorage depth	h_{ef}	[mm]	50	50	50	50	50	85			
			100	100	100	100	100				
			200	200	200	200	200				
Max. installation torque	max T_{inst}	[Nm]	4	10				4	10		
General installation parameters											
Edge distance	$c_{min} = c_{cr}$	[mm]	60								
Edge distance h_{ef}=200	c_{min}	[mm]	60								
Spacing	s_{min} II,N	[mm]	80								
	h_{ef}=200 s_{min} II,N	[mm]	80								
	s_{min} II,V	[mm]	80								
	s_{cr} II	[mm]	3x h_{ef}								
	$s_{min} \perp$	[mm]	80								
	$s_{cr} \perp$	[mm]	3x h_{ef}								
Drilling method											
Hammer drilling with hard metal hammer drill											

Table C6.2: Group factors

Anchor rods			M6	M8	M10	M12	M16	-		-	
Internal threaded anchor FIS E			-	-	-	-	-	M6	M8	M10	M12
								11x85		15x85	
Edge distance	c_{min}	[mm]	60								
Group factor	$\alpha_{g,N}$ (s_{min} II)	[-]	0,6								
	$\alpha_{g,V}$ (s_{min} II)	[-]	1,3								
	h_{ef}=200 $\alpha_{g,N}$ (s_{min} II)	[-]	1,4								
	h_{ef}=200 $\alpha_{g,V}$ (s_{min} II)	[-]	1,5								
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	0,3								
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]	1,3								
	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \perp$)	[-]	2,0								
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \perp$)	[-]	1,1								

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Solid brick Mz, NF, dimensions, installation parameters, edge distance c=60mm, Group factors

Annex C6

Solid brick Mz, NF, EN 771-1:2011+A1:2015

Table C7.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading for edge distance c=60mm

Anchor rod		M6		M8		M10			M12			M16			-	-
Internal threaded anchor FIS E		-		-		-			-			-			M6 | M8 11x85	M10 | M12 15x85
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [3]																
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions	Effective anchorage depth h_{ef} [mm]														
		50	100	50	100	50	100	200	50	100	200	50	100	200	85	
15 / 12 N/mm²	w/w w/d	1,5		2,0	2,0	2,0	2,5	-[2]	2,0	2,5	-[2]	2,0	5,5	-[2]	-[2]	
	d/d	2,5		3,0	4,0	3,0	4,0	9,5	3,0	4,0	9,5	3,0	8,5	9,5	-[2]	
25 / 20 N/mm²	w/w w/d	2,0		2,5	3,0	2,5	3,5	-[2]	3,0	3,5	-[2]	3,0	7,5	-[2]	-[2]	
	d/d	3,5		4,5	5,5	4,5	5,5	12	4,5	5,5	12	4,5	12	12	-[2]	
35 / 28 N/mm²	w/w w/d	2,5		3,0	4,0	3,0	4,0	-[2]	3,5	4,0	-[2]	3,5	9,0	-[2]	-[2]	
	d/d	4,0		5,5	6,5	5,5	6,5	12	5,5	6,5	12	5,5	12	12	-[2]	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] No performance assessed.
[3] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C7.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading for edge distance c=60mm

Anchor rod		M6		M8		M10			M12			M16			-	-
Internal threaded anchor FIS E		-		-		-			-			-			M6 | M8 11x85	M10 | M12 15x85
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C																
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions	Effective anchorage depth h_{ef} [mm]														
		50	100	50	100	50	100	200	50	100	200	50	100	200	85	
15 / 12 N/mm²	w/w w/d d/d	1,2	2,5	1,2	3,0	2,0	3,0	1,5	1,5	3,0	3,0	0,6	3,0	4,5	-[2]	
25 / 20 N/mm²		1,5	3,5	1,5	4,5	3,0	4,5	2,5	2,0	4,5	4,5	0,9	4,5	6,0	-[2]	
35 / 28 N/mm²		2,0	4,0	2,0	5,0	3,5	5,0	3,0	2,5	5,0	5,0	1,2	5,0	7,5	-[2]	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] No performance assessed.

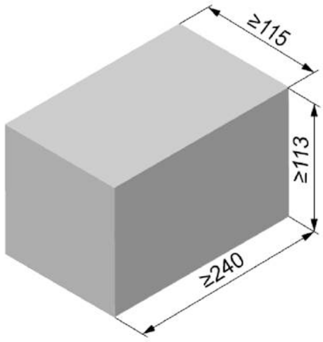
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Solid brick Mz, NF, Characteristic resistance under tension and shear loading, edge distance c=60mm

Annex C7

Solid brick Mz, 2DF, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		≥ 240	≥ 115	≥ 113
Mean gross dry density ρ	[kg/dm³]	≥ 1,8		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	12,5 / 10 or 20 / 16		
Standard or annex		EN 771-1:2011+A1:2015		

Table C8.1: Installation parameters

Anchor rod			M6		M8		M10		M12		M16		-		-	
Internal threaded anchor FIS E			-		-		-		-		-		M6	M8	M10	M12
													11x85		15x85	
Anchor rod and internal threaded anchor FIS E without perforated sleeve																
Effective anchorage depth	h_{ef}	[mm]	50	100	50	100	50	100	50	100	50	100	85			
Max. installation torque	max T_{inst}	[Nm]	4		10								4	10		
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H 16x85 K																
Effective anchorage depth	h_{ef}	[mm]	-[2)]		85				-[2)]				85		-[2)]	
Max. installation torque	max T_{inst}	[Nm]			10								4	10		
General installation parameters																
Edge distance	$c_{min} = c_{cr}$	[mm]	60													
Spacing	s_{min} II	[mm]	120													
	s_{cr} II	[mm]	240													
	$s_{cr} \perp = s_{min} \perp$	[mm]	115													
Drilling method																
Hammer drilling with hard metal hammer drill																

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2)] No performance assessed.

Table C8.2: Group factors

Anchor rods			M6	M8	M10	M12	M16	-		-	
Internal threaded anchor FIS E			-	-	-	-	-	M6	M8	M10	M12
								11x85		15x85	
Group factor	$\alpha_{g,N}$ (s_{min} II)	[-]	1,5								
	$\alpha_{g,V}$ (s_{min} II)	[-]	1,4								
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	2,0								
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]									

Solid brick Mz, 2DF, EN 771-1:2011+A1:2015

Table C9.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		**M6**		**M8**		**M10**		**M12**		**M16**		**-**		**-**		**M8**	**M10**	**-**	
Internal threaded anchor FIS E		-		-		-		-		-		**M6**	**M8**	**M10**	**M12**	-	-	**M6**	**M8**
												11x85		**15x85**				**11x85**	
Perforated sleeve FIS H K		-		-		-		-		-		-		-		**16x85**			
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2]																			
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions	Effective anchorage depth h_{ef} [mm]																	
		50	100	50	100	50	100	50	100	50	100	85							
12,5 / 10 N/mm²	w/w w/d	1,5	2,5	1,5	2,5	1,5	3,0	2,0	3,5	2,0	3,5	2,0				1,5			
	d/d	3,0	4,0	3,0	4,0	3,0	4,5	3,0	5,5	3,0	5,5	3,0				3,0			
20 / 16 N/mm²	w/w w/d	2,5	4,0	2,5	4,0	2,5	4,5	3,5	5,5	3,5	5,5	3,5				2,5			
	d/d	4,5	7,0	4,5	7,0	4,5	7,5	5,5	8,0	5,5	8,0	5,5				4,5			

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C9.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

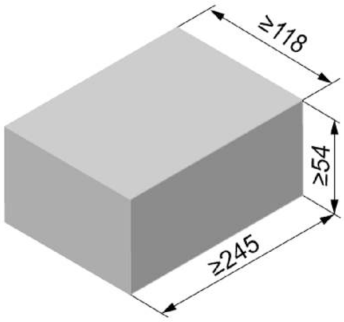
Anchor rod		**M6**	**M8**	**M10**	**M12**	**M16**	**-**		**-**		**M8**	**M10**	**-**	
Internal threaded anchor FIS E		-	-	-	-	-	**M6**	**M8**	**M10**	**M12**	-	-	**M6**	**M8**
							11x85		**15x85**				**11x85**	
Perforated sleeve FIS H K		-	-	-	-	-	-		-		**16x85**			
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C														
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions	Effective anchorage depth h_{ef} [mm]												
		≥ 50					85							
12,5 / 10 N/mm²	w/w w/d d/d	2,5	3,0	3,0	3,5	3,0	2,5	3,0	3,0	3,0	3,0	3,5	2,5	3,0
20 / 16 N/mm²	w/w w/d d/d	4,0	5,0	5,5	5,5	5,0	4,0	5,0	5,0	5,0	5,0	6,0	4,0	5,0

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex C9**
Performance Solid brick Mz, 2DF, Characteristic resistance under tension and shear loading	

Solid brick Mz, EN 771-1:2011+A1:2015



Producer		e.g. Nigra		
Nominal dimensions	[mm]	length L	width W	height H
		≥ 245	≥ 118	≥ 54
Mean gross dry density ρ	[kg/dm³]	≥ 1,8		
Mean compressive strength / Min. compressive strength single brick [1]	[N/mm²]	12,5 / 10 or 25 / 20		
Standard or annex		EN 771-1:2011+A1:2015		

Table C10.1: Installation parameters

Anchor rod			M6		M8		M10		M12		M16		-		-	
Internal threaded anchor FIS E			-		-		-		-		-		M6	M8	M10	M12
													11x85		15x85	
Anchor rod and internal threaded anchor FIS E without perforated sleeve																
Effective anchorage depth	h_{ef}	[mm]	50	100	50	100	50	100	50	100	50	100	85			
Max. installation torque	max T_{inst}	[Nm]	4		10								4	10		
General installation parameters																
Edge distance	$c_{min} = c_{cr}$	[mm]	60													
Spacing	s_{cr} II = s_{min} II	[mm]	245													
	$s_{cr} \perp = s_{min} \perp$	[mm]	60													
Drilling method																
Hammer drilling with hard metal hammer drill																

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C10.2: Group factors

Anchor rods			M6	M8	M10	M12	M16	-		-	
Internal threaded anchor FIS E			-	-	-	-	-	M6	M8	M10	M12
								11x85		15x85	
Group factor	$\alpha_{g,N}$ (s_{min} II)	[-]	2								
	$\alpha_{g,V}$ (s_{min} II)										
	$\alpha_{g,N}$ ($s_{min} \perp$)										
	$\alpha_{g,V}$ ($s_{min} \perp$)										

Solid brick Mz, EN 771-1:2011+A1:2015

Table C11.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

<table>
<tr><td colspan="2">Anchor rod</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td><td>M16</td><td colspan="2">-</td><td colspan="2">-</td></tr>
<tr><td colspan="2" rowspan="2">Internal threaded anchor FIS E</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td></tr>
<tr><td colspan="2">11x85</td><td colspan="2">15x85</td></tr>
<tr><td colspan="11">$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]</td></tr>
<tr><td rowspan="2">Mean compressive strength/ Min. compressive strength single brick [1)]</td><td rowspan="2">Use con-ditions</td><td colspan="9">Effective anchorage depth h_{ef} [mm]</td></tr>
<tr><td colspan="5">≥ 50</td><td colspan="4">85</td></tr>
<tr><td rowspan="2">12,5 / 10 N/mm²</td><td>w/w w/d</td><td>0,60</td><td>0,90</td><td>0,75</td><td>0,75</td><td>0,75</td><td>0,60</td><td colspan="3">0,75</td></tr>
<tr><td>d/d</td><td>1,20</td><td>1,50</td><td>1,20</td><td>1,20</td><td>1,20</td><td>1,20</td><td colspan="3">1,20</td></tr>
<tr><td rowspan="2">25 / 20 N/mm²</td><td>w/w w/d</td><td>0,90</td><td>1,50</td><td>1,20</td><td>1,20</td><td>1,20</td><td>0,90</td><td colspan="3">1,20</td></tr>
<tr><td>d/d</td><td>1,50</td><td>2,50</td><td>2,00</td><td>2,00</td><td>2,00</td><td>1,50</td><td colspan="3">2,00</td></tr>
</table>

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
2) For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

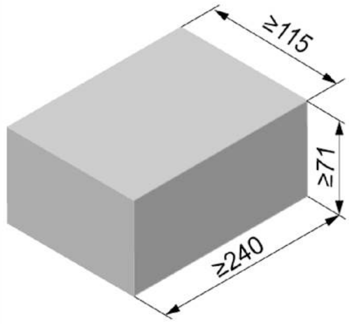
Table C11.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

<table>
<tr><td colspan="2">Anchor rod</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td><td>M16</td><td colspan="2">-</td><td colspan="2">-</td></tr>
<tr><td colspan="2" rowspan="2">Internal threaded anchor FIS E</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td></tr>
<tr><td colspan="2">11x85</td><td colspan="2">15x85</td></tr>
<tr><td colspan="11">$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C</td></tr>
<tr><td rowspan="2">Mean compressive strength / Min. compressive strength single brick [1)]</td><td rowspan="2">Use con-ditions</td><td colspan="9">Effective anchorage depth h_{ef} [mm]</td></tr>
<tr><td colspan="5">≥ 50</td><td colspan="4">85</td></tr>
<tr><td rowspan="2">12,5 / 10 N/mm²</td><td>w/w w/d</td><td rowspan="2">2,0</td><td rowspan="2">3,0</td><td rowspan="2">4,0</td><td rowspan="2">4,5</td><td rowspan="2">5,5</td><td rowspan="2">2,0</td><td rowspan="2">3,0</td><td rowspan="2">4,0</td><td rowspan="2">4,5</td></tr>
<tr><td>d/d</td></tr>
<tr><td rowspan="2">25 / 20 N/mm²</td><td>w/w w/d</td><td rowspan="2">2,5</td><td rowspan="2">4,0</td><td rowspan="2">5,5</td><td rowspan="2">6,0</td><td rowspan="2">8,0</td><td rowspan="2">2,5</td><td rowspan="2">4,0</td><td rowspan="2">5,5</td><td rowspan="2">6,0</td></tr>
<tr><td>d/d</td></tr>
</table>

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Factor for job site tests and displacements see annex C44.

Solid calcium silicate brick KS, NF, EN 771-2:2011+A1:2015



<table>
<tr><td colspan="2">Producer</td><td colspan="3">-</td></tr>
<tr><td rowspan="2">Nominal dimensions</td><td rowspan="2">[mm]</td><td>length L</td><td>width W</td><td>height H</td></tr>
<tr><td>≥ 240</td><td>≥ 115</td><td>≥ 71</td></tr>
<tr><td>Mean gross dry density ρ</td><td>[kg/dm^3]</td><td colspan="3">≥ 1,8</td></tr>
<tr><td>Mean compressive strength / Min. compressive strength single brick [1)]</td><td>[N/mm^2]</td><td colspan="3">15 / 12 or 25 / 20 or 35 / 28</td></tr>
<tr><td colspan="2">Standard or annex</td><td colspan="3">EN 771-2:2011+A1:2015</td></tr>
</table>

Table C12.1: Installation parameters

<table>
<tr><td colspan="3">Anchor rod</td><td colspan="2">M6</td><td colspan="2">M8</td><td colspan="2">M10</td><td colspan="2">M12</td><td colspan="2">M16</td><td colspan="2">-</td><td colspan="2">-</td></tr>
<tr><td colspan="3" rowspan="2">Internal threaded anchor FIS E</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td></tr>
<tr><td colspan="2">11x85</td><td colspan="2">15x85</td></tr>
<tr><td colspan="17">Anchor rod and internal threaded anchor FIS E without perforated sleeve</td></tr>
<tr><td rowspan="2">Effective anchorage depth</td><td rowspan="2">h_{ef}</td><td rowspan="2">[mm]</td><td rowspan="2">50</td><td rowspan="2">100</td><td rowspan="2">50</td><td rowspan="2">100</td><td>50</td><td>100</td><td>50</td><td>100</td><td>50</td><td>100</td><td colspan="2" rowspan="2">85</td><td colspan="2" rowspan="2">85</td></tr>
<tr><td colspan="2">200</td><td colspan="2">200</td><td colspan="2">200</td></tr>
<tr><td>Max. installation torque</td><td>max T_{inst}</td><td>[Nm]</td><td colspan="2">3</td><td colspan="2">5</td><td colspan="2">15</td><td colspan="2">15</td><td colspan="2">25</td><td>3</td><td>5</td><td colspan="2">15</td></tr>
<tr><td colspan="17">General installation parameters</td></tr>
<tr><td>Edge distance</td><td>$c_{min} = c_{cr}$</td><td rowspan="5">[mm]</td><td colspan="14">60</td></tr>
<tr><td rowspan="4">Spacing</td><td>s_{min} II</td><td colspan="14">80</td></tr>
<tr><td>s_{cr} II</td><td colspan="14">80</td></tr>
<tr><td>$s_{min} \perp$</td><td colspan="14">3x h_{ef}</td></tr>
<tr><td>$s_{cr} \perp$</td><td colspan="14">3x h_{ef}</td></tr>
<tr><td colspan="17">Drilling method</td></tr>
<tr><td colspan="17">Hammer drilling with hard metal hammer drill</td></tr>
</table>

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength..

Table C12.2: Group factors

<table>
<tr><td colspan="3">Anchor rod</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td><td>M16</td><td colspan="2">-</td><td colspan="2">-</td></tr>
<tr><td colspan="3" rowspan="2">Internal threaded anchor FIS E</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td rowspan="2">-</td><td>M6</td><td>M8</td><td>M10</td><td>M12</td></tr>
<tr><td colspan="2">11x85</td><td colspan="2">15x85</td></tr>
<tr><td rowspan="4">Group factor</td><td>$\alpha_{g,N}$ (s_{min} II)</td><td rowspan="4">[-]</td><td colspan="9">0,7</td></tr>
<tr><td>$\alpha_{g,V}$ (s_{min} II)</td><td colspan="9">1,3</td></tr>
<tr><td>$\alpha_{g,N}$ ($s_{min} \perp$)</td><td colspan="9">2,0</td></tr>
<tr><td>$\alpha_{g,V}$ ($s_{min} \perp$)</td><td colspan="9">2,0</td></tr>
</table>

Solid calcium silicate brick KS, NF, EN 771-2:2011+A1:2015

Table C13.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		**M6**		**M8**		**M10**			**M12**			**M16**			**-**	**-**
Internal threaded anchor FIS E		-		-		-			-			-			**M6 / M8** **11x85**	**M10 / M12** **15x85**
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ **[kN]; temperature range 50/80°C** [2]																
Mean compressive strength / Min. compressive strength single brick [1]	Use conditions	Effective anchorage depth h_{ef} [mm]														
		50	100	50	100	50	100	200	50	100	200	50	100	200	85	85
15 / 12 N/mm²	w/w w/d	2,0	3,0	2,5	4,5	2,5	3,5	7,0	2,5	3,0	6,5	2,5	3,5	8,0	2,5	2,5
	d/d	4,0	5,5	4,0	8,0	4,0	5,5	12	4,0	4,5	12	4,5	5,5	12	4,0	4,0
25 / 20 N/mm²	w/w w/d	3,0	4,5	3,5	6,5	3,5	4,5	10	3,5	4,0	9,5	4,0	5,0	11	3,5	3,5
	d/d	5,5	7,5	6,0	11	6,0	8,0	12	6,0	6,5	12	6,5	8,0	12	6,0	6,0
35 / 28 N/mm²	w/w w/d	3,5	5,0	4,0	8,0	4,5	5,5	12	4,5	5,0	11	4,5	5,5	12	4,5	4,5
	d/d	6,5	9,0	7,0	12	7,0	9,0	12	7,0	7,5	12	7,5	9,5	12	7,0	7,0

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C13.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		**M6**		**M8**		**M10**		**M12**		**M16**		**-**	**-**
Internal threaded anchor FIS E		-		-		-		-		-		**M6 / M8** **11x85**	**M10 / M12** **15x85**
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ **[kN]; temperature range 50/80°C and 72/120°C**													
Mean compressive strength / Min. compressive strength single brick [1]	Use conditions	Effective anchorage depth h_{ef} [mm]											
		50	100	50	100	50	≥100	50	≥100	50	≥100	85	85
15 / 12 N/mm²	w/w w/d d/d	1,5	3,0	1,5	3,0	1,2	2,0	1,2	2,0	1,2	2,0	1,2	1,2
25 / 20 N/mm²	w/w w/d d/d	2,5	4,0	2,5	4,0	1,5	3,0	1,5	3,0	1,5	3,0	1,5	1,5
35 / 28 N/mm²	w/w w/d d/d	3,0	4,5	3,0	4,5	1,5	3,5	1,5	3,5	1,5	3,5	1,5	1,5

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

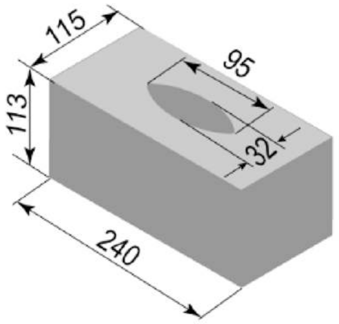
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Solid calcium silicate brick KS, NF, Characteristic resistance under tension and shear loading

Annex C13

Solid calcium silicate brick KS, EN 771-2:2011+A1:2015



Producer		-		
Nominal dimensions	[mm]	length L	width W	height H
		≥ 240	≥ 115	≥ 113
Mean gross dry density ρ	[kg/dm^3]	1,8		
Mean compressive strength / Min. compressive strength single brick 1)	[N/mm^2]	12,5 / 10 or 25 / 20		
Standard or annex		EN 771-2:2011+A1:2015		

Table C14.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod		**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E		**-**		**M6**	**M8**	**-**		**-**		**M10**	**M12**	**-**		**-**	
				11x85						**15x85**					
Perforated sleeve FIS H K		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K															
Max. installation torque max T_{inst}	[Nm]	2		4											
General installation parameters															
Edge distance $c_{min} = c_{cr}$	[mm]	100													
Spacing s_{min} II, s_{cr} II, $s_{min} \perp$, $s_{cr} \perp$	[mm]	255		255				390		255				390	
Drilling method															
Hammer drilling with hard metal hammer drill															

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C14.2: Group factors

Anchor rod		**M6**	**M8**	**M8**	**M10**	**M8**	**M10**	**M12**	**M16**	**M12**	**M16**
Perforated sleeve FIS H K		**12x85**		**16x85**		**16x130**		**20x85**		**20x130**	
Group factors $\alpha_{g,N}$ (s_{min} II) = $\alpha_{g,V}$ (s_{min} II); $\alpha_{g,N}$ ($s_{min} \perp$) = $\alpha_{g,V}$ ($s_{min} \perp$)	[-]	2									

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Solid calcium silicate brick KS, dimensions, installation parameters, Group factors

Annex C14

Solid calcium silicate brick, EN 771-2:2011+A1:2015

Table C15.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E		**-**		**M6** 11x85	**M8** 11x85	**-**		**-**		**M10** 15x85	**M12** 15x85	**-**		**-**	
Perforated sleeve FIS H K		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2]															
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions														
12,5 / 10 N/mm²	w/w	3,5		2,0		2,0		2,0		6,5				4,5	
	d/d	6,0		4,0		3,5		3,5		10,5				7,0	
25 / 20 N/mm²	w/w	5,0		3,0		3,0		3,0		9,5				6,0	
	d/d	8,5		5,5		5,5		5,5		12,0				10,0	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C no performance assessed.

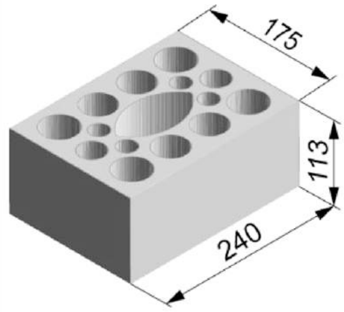
Table C15.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E		**-**		**M6** 11x85	**M8** 11x85	**-**		**-**		**M10** 15x85	**M12** 15x85	**-**		**-**	
Perforated sleeve FIS H K		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C [2]															
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions														
12,5 / 10 N/mm²	w/w	3,0		3,5											
	d/d														
25 / 20 N/mm²	w/w	4,0		5,5											
	d/d														

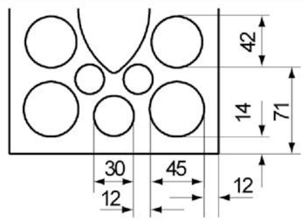
[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C no performance assessed.

Factor for job site tests and displacements see annex C44.

Perforated calcium silicate brick KSL, 3DF, EN 771-2:2011+A1:2015



Producer		-		
Nominal dimensions	[mm]	length L	width W	height H
		240	175	113
Mean gross dry density ρ	[kg/dm³]	≥ 1,4		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	10 / 8 or 12,5 / 10 or 15 / 12 or 20 / 16 or 25 / 20		
Standard or annex		EN 771-2:2011+A1:2015		



Dimension see also Annex B11

Table C16.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod	**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E	-		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
					11x85						**15x85**					
Perforated sleeve FIS H K	**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K																
Max. installation torque max T_{inst} [Nm]	2															
General installation parameters																
Edge distance $c_{min} = c_{cr}$ [mm]	60				80											
Spacing s_{min} II [mm]	100															
Spacing s_{cr} II [mm]	240															
Spacing $s_{min} \perp$ [mm]	115															
Spacing $s_{cr} \perp$ [mm]	115															
Drilling method																
Hammer drilling with hard metal hammer drill																

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C16.2: Group factors

Anchor rod	**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E	-		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
					11x85						**15x85**					
Perforated sleeve FIS H K	**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
Group factors $\alpha_{g,N}$ (s_{min} II) = $\alpha_{g,V}$ (s_{min} II) [-]	1,5															
Group factors $\alpha_{g,N}$ ($s_{min} \perp$) = $\alpha_{g,V}$ ($s_{min} \perp$) [-]	2,0															

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Perforated calcium silicate brick KSL, 3DF, dimensions, installation parameters, Group factors

Annex C16

Perforated calcium silicate brick KSL, 3DF, EN 771-2:2011+A1:2015

Table C17.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading (Pre-positioned installation)

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-	
						11x85						15x85					
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]																	
Mean compressive strength/ Min. comp. strength single brick [1)]	Use conditions																
10 / 8 N/mm²	w/w w/d	1.5				2.0				2.0		2.0				2.0	
	d/d	1,5				2,0				2,5		2,5				2,5	
12,5 / 10 N/mm²	w/w w/d	2.0				2.0				2.5		2.5				2.5	
	d/d	2,0				2,5				3,0		3,0				3,0	
15 / 12 N/mm²	w/w w/d	2.5				2.5				3.0		3.0				3.0	
	d/d	2,5				3,0				3,5		3,5				3,5	
20 / 16 N/mm²	w/w w/d	3.0				3.5				4.5		4.5				4.5	
	d/d	3,5				4,0				4,5		4,5				4,5	
25 / 20 N/mm²	w/w w/d	4.0				4.5				5.5		5.5				5.5	
	d/d	4,5				5,0				6,0		6,0				6,0	

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
2) For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C17.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-	
						11x85						15x85					
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C																	
Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions																
10 / 8 N/mm²	w/w w/d d/d	1,5					3,0								2,5	3,0	2,5
12,5 / 10 N/mm²	w/w w/d d/d	2,0					3,5										
15 / 12 N/mm²	w/w w/d d/d	2,5					4,5								4,0	4,5	4,0
20 / 16 N/mm²	w/w w/d d/d	3,0	3,5	3,0	3,5	3,0	6,0								5,5	6,0	5,5
25 / 20 N/mm²	w/w w/d d/d	4,0	4,5	4,0	4,5	4,0	7,5								6,5	7,5	6,5

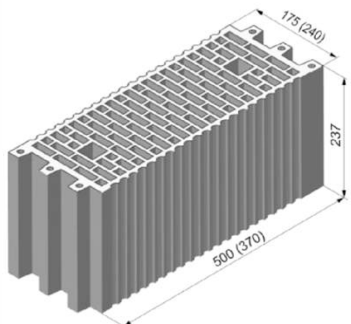
1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

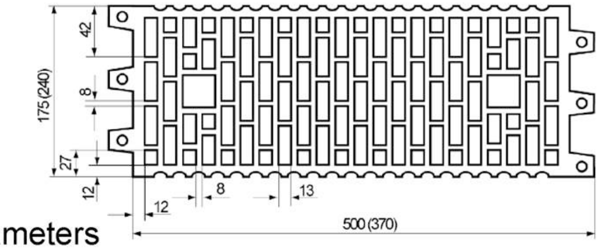
Performance
Perforated calcium silicate brick KSL, 3DF, Characteristic resistance under tension loading

Annex C17

Vertical perforated brick HLz, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger, Poroton		
Nominal dimensions	[mm]	length L	width W	height H
		500	175	237
		370	240	237
Mean gross dry density ρ	[kg/dm^3]	≥ 1,0		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm^2]	5 / 4 or 7,5 / 6 or 10 / 8 or 12,5 / 10 or 15 / 12		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B11

Table C18.1: Installation parameters

Anchor rod	M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E	-		-		M6 11x85	M8 11x85	-		-		M10 15x85	M12 15x85	-		-	
Perforated sleeve FIS H K	12x50		12x85		16x85				16x130		20x85				20x130	

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K			
Max. installation torque	max T_{inst}	[Nm]	2
General installation parameters			
Edge distance	$c_{min} = c_{cr}$	[mm]	100
Spacing	s_{min} II	[mm]	100
	s_{cr} II	[mm]	500 (370)
	$s_{min} \perp$	[mm]	100
	$s_{cr} \perp$	[mm]	240
Drilling method			
Hammer drilling with hard metal hammer drill			

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C19.2: Group factors

Anchor rod	M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E	-		-		M6 11x85	M8 11x85	-		-		M10 15x85	M12 15x85	-		-	
Perforated sleeve FIS H K	12x50		12x85		16x85				16x130		20x85				20x130	

Group factors	$\alpha_{g,N}$ (s_{min} II) = $\alpha_{g,V}$ (s_{min} II)	[-]	1
	$\alpha_{g,N}$ ($s_{min} \perp$) = $\alpha_{g,V}$ ($s_{min} \perp$)	[-]	1

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, dimensions, installation parameters, Group factors

Annex C18

Vertical perforated brick HLz, EN 771-1:2011+A1:2015

Table C19.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-	
						11x85						15x85					
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2]																	
Mean compressive strength / Min. comp. strength single brick [1]	Use conditions																
5 / 4 N/mm²	w/w w/d	0,30				0,90										1,20	
	d/d	0,40				0,90										1,20	
7,5 / 6 N/mm²	w/w w/d	0,50				1,50										2,00	
	d/d	0,60				1,50										2,00	
10 / 8 N/mm²	w/w w/d	0,75				2,00										2,50	
	d/d	0,75				2,00										2,50	
12,5 / 10 N/mm²	w/w w/d	0,90				2,50										3,00	
	d/d	0,90				2,50										3,50	
15 / 12 N/mm²	w/w w/d	0,90				3,00										3,50	
	d/d	1,20				3,00										4,00	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C19.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-	
						11x85						15x85					
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C																	
Mean compressive strength / Min. comp. strength single brick [1]	Use conditions																
5 / 4 N/mm²	w/w w/d d/d	0,50								0,60		0,50				0,60	
7,5 / 6 N/mm²		0,75								0,90		0,75				0,90	
10 / 8 N/mm²		0,90								1,20		0,90				1,20	
12,5 / 10 N/mm²		1,20								1,50		1,20				1,50	
15 / 12 N/mm²		1,50								2,00		1,50				2,00	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

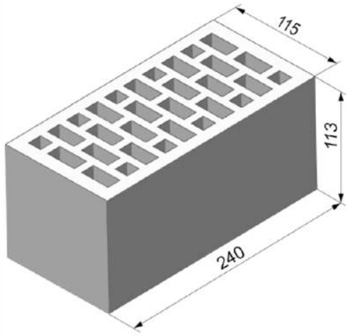
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

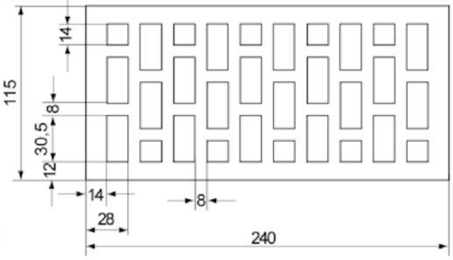
Performance
Vertical perforated brick HLz, Characteristic resistance under tension and shear loading

Annex C19

Vertical perforated brick HLz, 2DF, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		240	115	113
Mean gross dry density ρ	[kg/dm^3]	≥ 1,4		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm^2]	7,5 / 6 or 12,5 / 10 or 20 / 16 or 25 / 20 or 35 / 28		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B11

Table C20.1: Installation parameters

Anchor rod			M6	M8	M6	M8	-		M8	M10	-		M12	M16
Internal threaded anchor FIS E			-		-		M6	M8	-		M10	M12	-	
							11x85				15x85			
Perforated sleeve FIS H K			12x50		12x85		16x85				20x85			
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K														
Max. installation torque	max T_{inst}	[Nm]	2											
General installation parameters														
Edge distance	$c_{min} = c_{cr}$	[mm]	80											
Spacing	s_{cr} II = s_{min} II	[mm]	240											
	$s_{cr} \perp = s_{min} \perp$	[mm]	115											
Drilling method														
Hammer drilling with hard metal hammer drill														

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C20.2: Group factors

Anchor rod			M6	M8	M6	M8	-		M8	M10	-		M12	M16
Internal threaded anchor FIS E			-		-		M6	M8	-		M10	M12	-	
							11x85				15x85			
Perforated sleeve FIS H K			12x50		12x85		16x85				20x85			
Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	2											
	$\alpha_{g,V}$ (s_{min} II)	[-]	2											
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	2											
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]	2											

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex C20**
Performance Vertical perforated brick HLz, 2DF, dimensions, installation parameters, Group factors	

Vertical perforated brick HLz, 2DF, EN 771-1:2011+A1:2015

Table C21.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod			**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**-**		**M12**	**M16**
Internal threaded anchor FIS E			-		-		**M6**	**M8**	-		**M10**	**M12**	-	
							11x85				**15x85**			
Perforated sleeve FIS H K			**12x50**		**12x85**		**16x85**				**20x85**			
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]														
Mean compressive strength / Min. compressive strength single brick [1)]	Use con-ditions													
7,5 / 6 N/mm^2	w/w	w/d	0,75		0,90		0,75				0,90			
	d/d		0,75		1,20		0,75				0,90			
12,5 / 10 N/mm^2	w/w	w/d	1,20		1,50		1,20				1,50			
	d/d		1,20		2,00		1,20				1,50			
20 / 16 N/mm^2	w/w	w/d	2,00		2,50		2,00				2,00			
	d/d		2,00		3,00		2,00				2,50			
25 / 20 N/mm^2	w/w	w/d	2,50		3,50		2,50				3,00			
	d/d		2,50		4,00		2,50				3,00			
35 / 28 N/mm^2	w/w	w/d	3,00		5,00		3,50				4,00			
	d/d		3,50		5,50		3,50				4,50			

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2)] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C21.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**-**		**M12**	**M16**
Internal threaded anchor FIS E		-		-		**M6**	**M8**	-		**M10**	**M12**	-	
						11x85				**15x85**			
Perforated sleeve FIS H K		**12x50**		**12x85**		**16x85**				**20x85**			
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C													
Mean compressive strength / Min. compressive strength single brick [1)]	Use con-ditions												
7,5 / 6 N/mm^2	w/w w/d d/d	1,2	1,5	1,2	2,0	1,2		1,5		2,5			
12,5 / 10 N/mm^2		2,0	2,5	2,0	4,0	2,0		2,5		4,5			
20 / 16 N/mm^2		3,0	3,5	3,0	6,0	3,0		3,5		7,0			
25 / 20 N/mm^2		4,0	4,5	4,0	7,5	4,0		4,5		8,5			
35 / 28 N/mm^2		5,0	6,5	5,0	9,5	5,0		6,5		12,0			

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Factor for job site tests and displacements see annex C44.

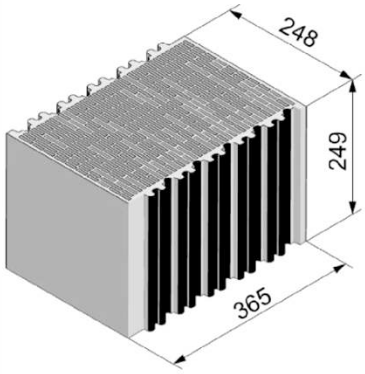
fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, 2DF,
Characteristic resistance under tension and shear loading

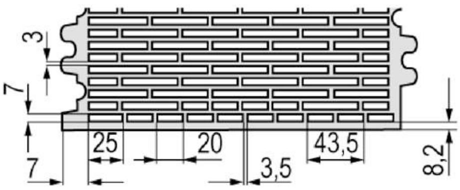
Annex C21

Deutsches Institut für Bautechnik DIBt

Vertical perforated brick HLz, T10, T11, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		248	365	249
Mean gross dry density ρ	[kg/dm^3]	0,7		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm^2]	10 / 8 or 12,5 / 10 or 15 / 12		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B11

Table C22.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod			**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E			-		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-		-	
							11x85						**15x85**							
Perforated sleeve FIS H K			**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**		**20x200**	
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K																				
Max. installation torque	max T_{inst}	[Nm]	3							5	3	5								
General installation parameters																				
Edge distance	$c_{min} = c_{cr}$	[mm]	60																	
Spacing	s_{min} II	[mm]	80																	
	s_{cr} II	[mm]	250																	
	$s_{min} \perp$	[mm]	80																	
	$s_{cr} \perp$	[mm]	250																	
Drilling method																				
Rotary drilling with carbide drill																				

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C22.2: Group factors

Anchor rod			**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E			-		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-		-	
							11x85						**15x85**							
Perforated sleeve FIS H K			**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**		**20x200**	
Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	1,7																	
	$\alpha_{g,V}$ (s_{min} II)	[-]	0,5																	
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	1,3																	
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]	0,5																	

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, T10, T11, dimensions, installation parameters, Group factors

Annex C22

Vertical perforated brick HLz, T10, T11, EN 771-1:2011+A1:2015

Table C23.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod	M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E	-		-		M6	M8	-		-		M10	M12	-		-		-	
					11x85						15x85							
Perforated sleeve FIS H K	12x50		12x85		16x85				16x130		20x85				20x130		20x200	

$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ **[kN]; temperature range 50/80°C** [2)]

Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions		
10 / 8 N/mm²	w/w w/d	1,5	1,5
	d/d	1,5	2,0
12,5 / 10 N/mm²	w/w w/d	1,5	2,0
	d/d	2,0	2,0
15 / 12 N/mm²	w/w w/d	2,0	2,0
	d/d	2,0	2,5

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2)] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C23.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod	M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E	-		-		M6	M8	-		-		M10	M12	-		-		-	
					11x85						15x85							
Perforated sleeve FIS H K	12x50		12x85		16x85				16x130		20x85				20x130		20x200	

$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ **[kN]; temperature range 50/80°C and 72/120°C**

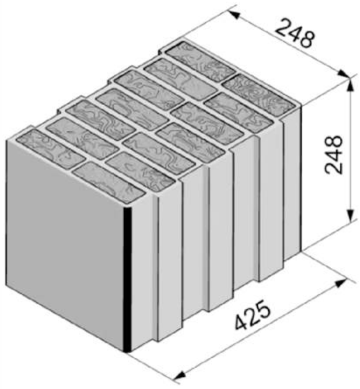
Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions			
10 / 8 N/mm²	w/w w/d, d/d	0,9	1,5	2,0
12,5 / 10 N/mm²	w/w w/d, d/d	0,9	1,5	2,0
15 / 12 N/mm²	w/w w/d, d/d	1,2	2,0	2,0

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

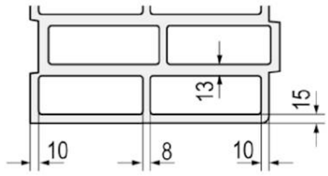
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex C23**
Performance Vertical perforated brick HLz, T10, T11, Characteristic resistance under tension loading and shear loading	

Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		248	425	248
Mean gross dry density ρ	[kg/dm³]	0,8		
Mean compressive strength / Min. compressive strength single brick [1]	[N/mm²]	5 / 4 or 7,5 / 6 or 10 / 8		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B12

Table C24.1: Installation parameters
(Pre-positioned installation with perforated sleeve FIS H K)

Anchor rod			**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E			**-**		**-**		**M6**	**M8**	**-**		**-**		**M10**	**M12**	**-**		**-**		**-**	
							11x85						**15x85**							
Perforated sleeve FIS H K			**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**		**20x200**	
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K																				
Max. installation torque	max T_{inst}	[Nm]	2							5	2	5								
General installation parameters																				
Edge distance	$c_{min} = c_{cr}$	[mm]	60																	
Spacing	s_{min} II	[mm]	80																	
	s_{cr} II	[mm]	250																	
	$s_{min} \perp$	[mm]	80																	
	$s_{cr} \perp$	[mm]	250																	
Drilling method																				
Rotary drilling with carbide drill																				

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C24.2: Group factors

Anchor rod			**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E			**-**		**-**		**M6**	**M8**	**-**		**-**		**M10**	**M12**	**-**		**-**		**-**	
							11x85						**15x85**							
Perforated sleeve FIS H K			**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**		**20x200**	
Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	1,9																	
	$\alpha_{g,V}$ (s_{min} II)	[-]	0,9																	
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	1,0																	
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]	0,7																	

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Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2011+A1:2015

Table C25.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

<table>
<tr><th colspan="2">Anchor rod</th><th>M6</th><th>M8</th><th>M6</th><th>M8</th><th colspan="2">-</th><th>M8</th><th>M10</th><th>M8</th><th>M10</th><th colspan="2">-</th><th>M12</th><th>M16</th><th>M12</th><th>M16</th><th>M12</th><th>M16</th></tr>
<tr><th colspan="2" rowspan="2">Internal threaded anchor FIS E</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th><th>M6</th><th>M8</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th><th>M10</th><th>M12</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th></tr>
<tr><th colspan="2">11x85</th><th colspan="2">15x85</th></tr>
<tr><th colspan="2">Perforated sleeve FIS H K</th><th colspan="2">12x50</th><th colspan="2">12x85</th><th colspan="4">16x85</th><th colspan="2">16x130</th><th colspan="4">20x85</th><th colspan="2">20x130</th><th colspan="2">20x200</th></tr>
<tr><td colspan="20">$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]</td></tr>
<tr><td>Mean compressive strength / Min. compressive strength single brick [1)]</td><td>Use conditions</td><td colspan="18"></td></tr>
<tr><td rowspan="2">5 / 4 N/mm²</td><td>w/w w/d</td><td colspan="2">0,60</td><td colspan="2">0,75</td><td colspan="4">1,50</td><td colspan="2">2,00</td><td colspan="4">1,20</td><td colspan="2">2,00</td><td colspan="2">2,00</td></tr>
<tr><td>d/d</td><td colspan="2">0,60</td><td colspan="2">0,90</td><td colspan="4">1,50</td><td colspan="2">2,00</td><td colspan="4">1,50</td><td colspan="2">2,00</td><td colspan="2">2,50</td></tr>
<tr><td rowspan="2">7,5 / 6 N/mm²</td><td>w/w w/d</td><td colspan="2">0,75</td><td colspan="2">0,90</td><td colspan="4">1,50</td><td colspan="2">2,00</td><td colspan="4">1,50</td><td colspan="2">2,50</td><td colspan="2">2,50</td></tr>
<tr><td>d/d</td><td colspan="2">0,90</td><td colspan="2">0,90</td><td colspan="4">2,00</td><td colspan="2">2,50</td><td colspan="4">2,00</td><td colspan="2">2,50</td><td colspan="2">3,00</td></tr>
<tr><td rowspan="2">10 / 8 N/mm²</td><td>w/w w/d</td><td colspan="2">0,90</td><td colspan="2">1,20</td><td colspan="4">2,00</td><td colspan="2">2,50</td><td colspan="4">2,00</td><td colspan="2">2,50</td><td colspan="2">3,00</td></tr>
<tr><td>d/d</td><td colspan="2">0,90</td><td colspan="2">1,20</td><td colspan="4">2,00</td><td colspan="2">3,00</td><td colspan="4">2,00</td><td colspan="2">3,00</td><td colspan="2">3,50</td></tr>
</table>

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
2) For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C25.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

<table>
<tr><th colspan="2">Anchor rod</th><th>M6</th><th>M8</th><th>M6</th><th>M8</th><th colspan="2">-</th><th>M8</th><th>M10</th><th>M8</th><th>M10</th><th colspan="2">-</th><th>M12</th><th>M16</th><th>M12</th><th>M16</th><th>M12</th><th>M16</th></tr>
<tr><th colspan="2" rowspan="2">Internal threaded anchor FIS E</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th><th>M6</th><th>M8</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th><th>M10</th><th>M12</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th><th colspan="2" rowspan="2">-</th></tr>
<tr><th colspan="2">11x85</th><th colspan="2">15x85</th></tr>
<tr><th colspan="2">Perforated sleeve FIS H K</th><th colspan="2">12x50</th><th colspan="2">12x85</th><th colspan="4">16x85</th><th colspan="2">16x130</th><th colspan="4">20x85</th><th colspan="2">20x130</th><th colspan="2">20x200</th></tr>
<tr><td colspan="20">$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C</td></tr>
<tr><td>Mean compressive strength / Min. compressive strength single brick [1)]</td><td>Use conditions</td><td colspan="18"></td></tr>
<tr><td rowspan="2">5 / 4 N/mm²</td><td>w/w w/d</td><td colspan="2" rowspan="2">1,2</td><td colspan="14" rowspan="2">1,5</td><td colspan="2" rowspan="2">1,5</td></tr>
<tr><td>d/d</td></tr>
<tr><td rowspan="2">7,5 / 6 N/mm²</td><td>w/w w/d</td><td colspan="2" rowspan="2">1,5</td><td colspan="14" rowspan="2">2,0</td><td colspan="2" rowspan="2">1,5</td></tr>
<tr><td>d/d</td></tr>
<tr><td rowspan="2">10 / 8 N/mm²</td><td>w/w w/d</td><td colspan="2" rowspan="2">1,5</td><td colspan="14" rowspan="2">2,5</td><td colspan="2" rowspan="2">2,0</td></tr>
<tr><td>d/d</td></tr>
</table>

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

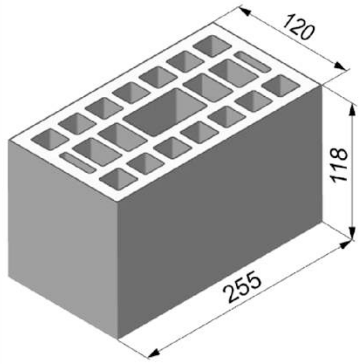
Factor for job site tests and displacements see annex C44

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

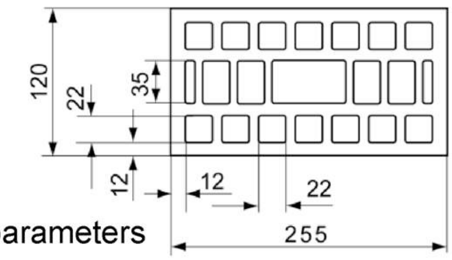
Performance
Vertical perforated brick HLz, FZ 7, filled with mineral wool;
Characteristic resistance under tension loading and shear loading

Annex C25

Vertical perforated brick HLz, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		255	120	118
Mean gross dry density ρ	[kg/dm^3]	≥ 1,0		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm^2]	2,5 / 2 or 5 / 4 or 8 / 6 or 10 / 8 or 12,5 / 10 or 15 / 12		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B12

Table C26.1: Installation parameters

Anchor rod		M6	M8	M6	M8	-		M8	M10	-		M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		M10	M12	-	
						11x85				15x85			
Perforated sleeve FIS H K		12x50		12x85		16x85				20x85			
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K													
Max. installation torque max T_{inst}	[Nm]	2											
General installation parameters													
Edge distance $c_{min} = c_{cr}$	[mm]	60											
Spacing s_{cr} II = s_{min} II	[mm]	255											
Spacing $s_{cr} \perp = s_{min} \perp$	[mm]	120											
Drilling method													
Hammer drilling with hard metal hammer drill													

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C26.2: Group factors

Anchor rod		M6	M8	M6	M8	-		M8	M10	-		M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		M10	M12	-	
						11x85				15x85			
Perforated sleeve FIS H K		12x50		12x85		16x85				20x85			
Group factors $\alpha_{g,N}$ (s_{min} II)	[-]	2											
Group factors $\alpha_{g,V}$ (s_{min} II)	[-]	2											
Group factors $\alpha_{g,N}$ ($s_{min} \perp$)	[-]	2											
Group factors $\alpha_{g,V}$ ($s_{min} \perp$)	[-]	2											

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, dimensions, installation parameters, Group factors

Annex C26

Vertical perforated brick HLz, EN 771-1:2011+A1:2015

Table C27.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**-**		**M12**	**M16**
Internal threaded anchor FIS E		**-**		**-**		**M6**	**M8**	**-**		**M10**	**M12**	**-**	
						11x85				**15x85**			
Perforated sleeve FIS H K		**12x50**		**12x85**		**16x85**				**20x85**			
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [1)]													
Mean compressive strength / Min. compressive strength single brick [2)]	Use con-ditions												
2,5 / 2 N/mm²	w/w w/d	0,40		0,50						-[3)]			
	d/d	0,50		0,50						-[3)]			
5 / 4 N/mm²	w/w w/d	0,90		0,90						0,50			
	d/d	0,90		1,20						0,50			
8 / 6 N/mm²	w/w w/d	1,20		1,50						0,75			
	d/d	1,50		1,50						0,75			
10 / 8 N/mm²	w/w w/d	1,50		2,00						0,90			
	d/d	2,00		2,00						0,90			
12,5 / 10 N/mm²	w/w w/d	2,00		2,50						1,20			
	d/d	2,50		2,50						1,20			
15 / 12 N/mm²	w/w w/d	2,50		3,00						1,50			
	d/d	3,00		3,50						1,50			

[1)] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

[2)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

[3)] No performance assessed.

Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, Characteristic resistance under tension loading

Annex C27

Vertical perforated brick HLz, EN 771-1:2011+A1:2015

Table C28.1: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		M6	M8	M6	M8	-		M8	M10	-		M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		M10	M12	-	
						11x85				15x85			
Perforated sleeve FIS H K		12x50		12x85		16x85				20x85			
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C													
Mean compressive strength / Min. compressive strength single brick [1)]	Use condition												
2,5 / 2 N/mm²	w/w w/d d/d	0,60	0,75	0,60	0,75	0,90							
5 / 4 N/mm²	w/w w/d d/d	1,20	1,50	1,20	1,50	2,00							
8 / 6 N/mm²	w/w w/d d/d	2,00	2,00	2,00	2,00	2,50							
10 / 8 N/mm²	w/w w/d d/d	2,50	3,00	2,50	3,00	3,50							
12,5 / 10 N/mm²	w/w w/d d/d	3,00	3,50	3,00	3,50	4,50							
15 / 12 N/mm²	w/w w/d d/d	4,00	4,50	4,00	4,50	5,50							

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

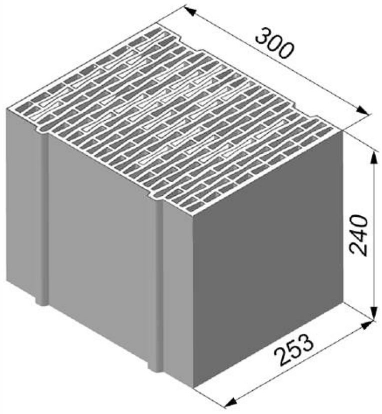
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, Characteristic resistance under shear loading

Annex C28

Vertical perforated brick HLz, EN 771-1:2011+A1:2015



Producer		e.g. Ziegelwerk Brenna
Nominal dimensions [mm]	length L	width W	height H
	253	300	240
Mean gross dry density ρ [kg/dm^3]		≥ 0,8
Mean compressive strength / Min. compressive strength single brick [1)] [N/mm^2]		2,5 / 2 or 5 / 4 or 8 / 6
Standard or annex		EN 771-1:2011+A1:2015

Dimension see also Annex B12

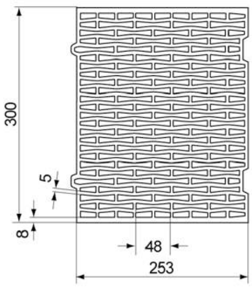


Table C29.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod	**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E	-		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
					11x85						**15x85**					
Perforated sleeve FIS H K	**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K			
Max. installation torque	max T_{inst}	[Nm]	2
General installation parameters			
Edge distance	$c_{min} = c_{cr}$	[mm]	60
Spacing	s_{min} II = s_{cr} II	[mm]	255
	$s_{min} \perp = s_{cr} \perp$	[mm]	240
Drilling method			
Hammer drilling with hard metal hammer drill			

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C29.2: Group factors

Anchor rod	**M6**	**M8**	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E	-		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
					11x85						**15x85**					
Perforated sleeve FIS H K	**12x50**		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	

Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	2
	$\alpha_{g,V}$ (s_{min} II)		
	$\alpha_{g,N}$ ($s_{min} \perp$)		
	$\alpha_{g,V}$ ($s_{min} \perp$)		

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, dimensions, installation parameters, Group factors

Annex C29

Vertical perforated brick HLz, EN 771-1:2011+A1:2015

Table C30.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-	
						11x85						15x85					
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]																	
Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions																
2,5 / 2 N/mm^2	w/w w/d	-[3)]		0,50		0,50				0,40		0,50				0,40	
	d/d	0,30		0,50		0,50				0,50		0,50				0,50	
5 / 4 N/mm^2	w/w w/d	0,50		0,90		0,90				0,90		0,90				0,90	
	d/d	0,60		0,90		0,90				0,90		0,90				0,90	
8 / 6 N/mm^2	w/w w/d	0,75		1,50		1,50				1,20		1,50				1,20	
	d/d	0,90		1,50		1,50				1,50		1,50				1,50	

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
2) For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.
3) No performance assessed.

Table C30.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

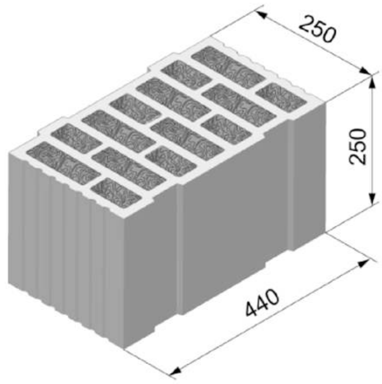
Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-	
						11x85						15x85					
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C																	
Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions																
2,5 / 2 N/mm^2	w/w w/d, d/d	0,5											0,6				
5 / 4 N/mm^2	w/w w/d, d/d	0,9											1,2				
8 / 6 N/mm^2	w/w w/d, d/d	1,5											1,5				

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

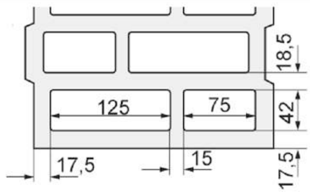
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	Annex C30
Performance Vertical perforated brick HLz, Characteristic resistance under tension loading	

Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		250	440	250
Mean gross dry density ρ	[kg/dm³]	0,7		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	8 / 6 or 10 / 8 or 12,5 / 10		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B12

Table C31.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod			M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E			-		-		M6	M8	-		-		M10	M12	-		-		-	
							11x85						15x85							
Perforated sleeve FIS H K			12x50		12x85		16x85				16x130		20x85				20x130		20x200	
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K																				
Max. installation torque	max T_{inst}	[Nm]	2							5	2	5			6					
General installation parameters																				
Edge distance	$c_{min} = c_{cr}$	[mm]	60																	
Spacing	s_{min} II	[mm]	80																	
	s_{cr} II	[mm]	250																	
	$s_{min} \perp$	[mm]	80																	
	$s_{cr} \perp$	[mm]	250																	
Drilling method																				
Rotary drilling with carbide drill																				

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C31.2: Group factors

Anchor rod			M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E			-		-		M6	M8	-		-		M10	M12	-		-		-	
							11x85						15x85							
Perforated sleeve FIS H K			12x50		12x85		16x85				16x130		20x85				20x130		20x200	
Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	1,3																	
	$\alpha_{g,V}$ (s_{min} II)	[-]	1,3																	
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	0,8																	
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]	1,3																	

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool; dimensions, installation parameters, Group factors

Annex C31

Deutsches Institut für Bautechnik DIBt

Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool, EN 771-1:2011+A1:2015

Table C32.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

<table>
<tr><td colspan="3">Anchor rod</td><td>M6</td><td>M8</td><td>M6</td><td>M8</td><td colspan="2">-</td><td>M8</td><td>M10</td><td>M8</td><td>M10</td><td colspan="2">-</td><td>M12</td><td>M16</td><td>M12</td><td>M16</td><td>M12</td><td>M16</td></tr>
<tr><td colspan="3" rowspan="2">Internal threaded anchor FIS E</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td>M6</td><td>M8</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td>M10</td><td>M12</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td></tr>
<tr><td colspan="2">11x85</td><td colspan="2">15x85</td></tr>
<tr><td colspan="3">Perforated sleeve FIS H K</td><td colspan="2">12x50</td><td colspan="2">12x85</td><td colspan="4">16x85</td><td colspan="2">16x130</td><td colspan="4">20x85</td><td colspan="2">20x130</td><td colspan="2">20x200</td></tr>
<tr><td colspan="21">$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]</td></tr>
<tr><td>Mean compressive strength / Min. compressive strength single brick [1)]</td><td colspan="2">Use con-ditions</td><td colspan="18"></td></tr>
<tr><td rowspan="2">8 / 6 N/mm²</td><td>w/w</td><td>w/d</td><td colspan="2">0,75</td><td colspan="2">1,50</td><td colspan="4">1,20</td><td colspan="8">1,50</td><td colspan="2">2,50</td></tr>
<tr><td colspan="2">d/d</td><td colspan="2">0,90</td><td colspan="2">1,50</td><td colspan="4">1,20</td><td colspan="8">1,50</td><td colspan="2">2,50</td></tr>
<tr><td rowspan="2">10 / 8 N/mm²</td><td>w/w</td><td>w/d</td><td colspan="2">0,90</td><td colspan="2">1,50</td><td colspan="4">1,20</td><td colspan="8">1,50</td><td colspan="2">2,50</td></tr>
<tr><td colspan="2">d/d</td><td colspan="2">0,90</td><td colspan="2">2,00</td><td colspan="4">1,50</td><td colspan="8">2,00</td><td colspan="2">3,00</td></tr>
<tr><td rowspan="2">12,5 / 10 N/mm²</td><td>w/w</td><td>w/d</td><td colspan="2">0,90</td><td colspan="2">2,00</td><td colspan="4">1,50</td><td colspan="8">2,00</td><td colspan="2">3,00</td></tr>
<tr><td colspan="2">d/d</td><td colspan="2">1,20</td><td colspan="2">2,00</td><td colspan="4">1,50</td><td colspan="8">2,00</td><td colspan="2">3,50</td></tr>
</table>

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
2) For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C32.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

<table>
<tr><td colspan="3">Anchor rod</td><td>M6</td><td>M8</td><td>M6</td><td>M8</td><td colspan="2">-</td><td>M8</td><td>M10</td><td>M8</td><td>M10</td><td colspan="2">-</td><td>M12</td><td>M16</td><td>M12</td><td>M16</td><td>M12</td><td>M16</td></tr>
<tr><td colspan="3" rowspan="2">Internal threaded anchor FIS E</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td>M6</td><td>M8</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td>M10</td><td>M12</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td><td colspan="2" rowspan="2">-</td></tr>
<tr><td colspan="2">11x85</td><td colspan="2">15x85</td></tr>
<tr><td colspan="3">Perforated sleeve FIS H K</td><td colspan="2">12x50</td><td colspan="2">12x85</td><td colspan="4">16x85</td><td colspan="2">16x130</td><td colspan="4">20x85</td><td colspan="2">20x130</td><td colspan="2">20x200</td></tr>
<tr><td colspan="21">$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C</td></tr>
<tr><td>Mean compressive strength / Min. compressive strength single brick [1)]</td><td colspan="2">Use con-ditions</td><td colspan="18"></td></tr>
<tr><td rowspan="2">8 / 6 N/mm²</td><td>w/w</td><td>w/d</td><td colspan="8" rowspan="2">0,9</td><td colspan="2" rowspan="2">1,2</td><td colspan="4" rowspan="2">0,9</td><td colspan="2" rowspan="2">1,2</td><td colspan="2" rowspan="2">1,2</td></tr>
<tr><td colspan="2">d/d</td></tr>
<tr><td rowspan="2">10 / 8 N/mm²</td><td>w/w</td><td>w/d</td><td colspan="8" rowspan="2">0,9</td><td colspan="2" rowspan="2">1,5</td><td colspan="4" rowspan="2">0,9</td><td colspan="2" rowspan="2">1,5</td><td colspan="2" rowspan="2">1,2</td></tr>
<tr><td colspan="2">d/d</td></tr>
<tr><td rowspan="2">12,5 / 10 N/mm²</td><td>w/w</td><td>w/d</td><td colspan="8" rowspan="2">1,2</td><td colspan="2" rowspan="2">1,5</td><td colspan="4" rowspan="2">1,2</td><td colspan="2" rowspan="2">1,5</td><td colspan="2" rowspan="2">1,5</td></tr>
<tr><td colspan="2">d/d</td></tr>
</table>

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

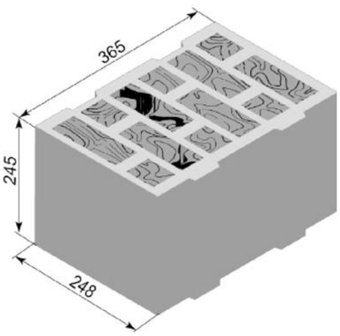
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

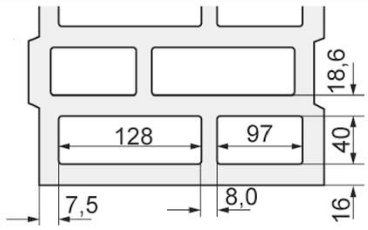
Performance
Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,
Characteristic resistance under tension loading and shear loading

Annex C32

Vertical perforated brick HLz filled with mineral wool, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		≥ 365	≥ 248	≥ 245
Mean gross dry density ρ	[kg/dm³]	0,6		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	10 / 8		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B12

Table C33.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod	**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E	-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
			11x85						**15x85**					
Perforated sleeve FIS H K	**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K				
Max. installation torque	max T_{inst}	[Nm]	2	4
General installation parameters				
Edge distance	$c_{min} = c_{cr}$	[mm]	100	
Spacing	s_{min} II	[mm]	250	
	s_{cr} II	[mm]	250	
	$s_{min} \perp$	[mm]	245	
	$s_{cr} \perp$	[mm]	245	
Drilling method				
Hammer drilling with hard metal hammer drill				

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C33.2: Group factors

Anchor rod			**M6**	**M8**	**M8**	**M10**	**M8**	**M10**	**M12**	**M16**	**M12**	**M16**
Perforated sleeve FIS H K			**12x85**		**16x85**		**16x130**		**20x85**		**20x130**	
Group factors	$\alpha_{g,N}$ (s_{min} II) = $\alpha_{g,V}$ (s_{min} II)	[-]	2									
	$\alpha_{g,N}$ ($s_{min} \perp$) = $\alpha_{g,V}$ ($s_{min} \perp$)	[-]	2									

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz filled with mineral wool, dimensions, installation parameters, Group factors

Annex C33

Vertical perforated brick HLz filled with mineral wool, EN 771-1:2011+A1:2015

Table C34.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E		-		M6	M8	-		-		M10	M12	-		-		-	
				11x85						15x85							
Perforated sleeve FIS H K		12x85		16x85				16x130		20x85				20x130		20x200	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]																	
Mean compressive strength / Min. compressive strength single brick [1)]	Use con-ditions																
10 / 8 N/mm²	w/w	2,0		1,5		2,5				2,0				2,0		3,0	
	d/d	2,0		2,0		3,0				2,0				2,0		3,0	

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2)] For temperature range 72/120°C no performance assessed.

Table C34.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E		-		M6	M8	-		-		M10	M12	-		-		-	
				11x85						15x85							
Perforated sleeve FIS H K		12x85		16x85				16x130		20x85				20x130		20x200	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C [2)]																	
Mean compressive strength / Min. compressive strength single brick [1)]	Use con-ditions																
10 / 8 N/mm²	w/w	2,5	3,0	3,0				3,0		1,5				1,5		1,5	1,5
	d/d	2,5	3,0	3,0				3,0		1,5				1,5		1,5	1,5

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2)] For temperature range 72/120°C no performance assessed.

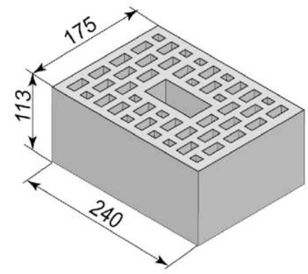
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

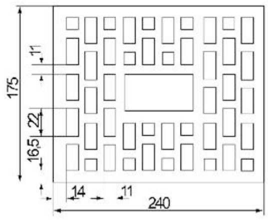
Performance
Vertical perforated brick HLz filled with mineral wool, Characteristic resistance under tension loading and shear loading

Annex C34

Vertical perforated brick HLz, EN 771-1:2011+A1:2015



Producer		e.g. Wienerberger		
Nominal dimensions	[mm]	length L	width W	height H
		≥ 240	≥ 175	≥ 113
Mean gross dry density ρ	[kg/dm³]	0,9		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	12,5 / 10		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B12

Table C35.1: Installation parameters (installation with perforated sleeve FIS H K)

Anchor rod	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16
Internal threaded anchor FIS E	-		M6	M8	-		-		M10	M12	-		-	
			11x85						15x85					
Perforated sleeve FIS H K	12x85		16x85				16x130		20x85				20x130	
Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K														
Max. installation torque max T_{inst} [Nm]	2		4											
General installation parameters														
Edge distance $c_{min} = c_{cr}$ [mm]	100													
Spacing s_{min} II / s_{cr} II [mm]	240													
Spacing $s_{min} \perp$ / $s_{cr} \perp$ [mm]	115													
Drilling method														
Hammer drilling with hard metal hammer drill														

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C35.2: Group factors

Anchor rod		M6	M8	M8	M10	M8	M10	M12	M16	M12	M16
Perforated sleeve FIS H K		12x85		16x85		16x130		20x85		20x130	
Group factors $\alpha_{g,N}$ (s_{min} II) = $\alpha_{g,V}$ (s_{min} II); $\alpha_{g,N}$ ($s_{min} \perp$) = $\alpha_{g,V}$ ($s_{min} \perp$)	[-]	2									

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Vertical perforated brick HLz, dimensions, installation parameters, Group factors

Annex C35

Vertical perforated brick HLz, EN 771-1:2011+A1:2015

Table C36.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
				11x85						**15x85**					
Perforated sleeve FIS H K		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2]															
Mean compressive strength/ Min. compressive strength single brick [1]	Use con-ditions														
12,5 / 10 N/mm²	w/w	3,5		4,0				4,5		4,5				4,0	
	d/d	4		4,5				5,0		5,0				4,0	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C no performance assessed.

Table C36.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

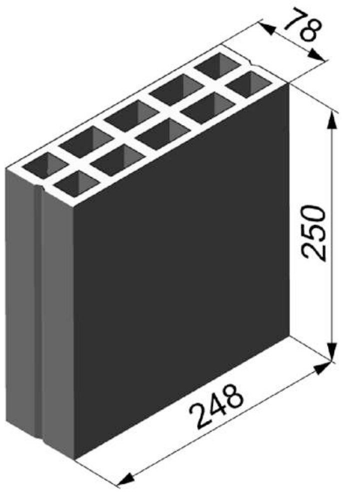
Anchor rod		**M6**	**M8**	**-**		**M8**	**M10**	**M8**	**M10**	**-**		**M12**	**M16**	**M12**	**M16**
Internal threaded anchor FIS E		-		**M6**	**M8**	-		-		**M10**	**M12**	-		-	
				11x85						**15x85**					
Perforated sleeve FIS H K		**12x85**		**16x85**				**16x130**		**20x85**				**20x130**	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C [2]															
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions														
12,5 / 10 N/mm²	w/w	4,0	5,5	4,0	5,5	5,5	7,0	5,5	7,0	7,0	6,0	6,0	8,0	6,0	8,0
	d/d	4,0	5,5	4,0	5,5	5,5	7,0	5,5	7,0	7,0	6,0	6,0	8,0	6,0	8,0

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C no performance assessed.

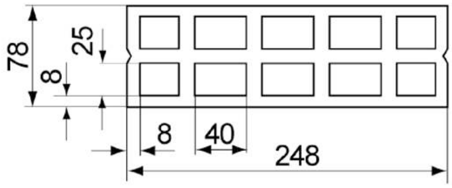
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex C36**
Performance Vertical perforated brick HLz, Characteristic resistance under tension loading and shear loading	

Horizontal perforated brick LLz, EN 771-1:2011+A1:2015



Producer		-		
Nominal dimensions	[mm]	length L	width W	height H
		250	78	248
Mean gross dry density ρ	[kg/dm³]	≥ 0,7		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	2,5 / 2 or 5 / 4 or 8 / 6		
Standard or annex		EN 771-1:2011+A1:2015		



Dimension see also Annex B13

Table C37.1: Installation parameters

Anchor rod			M6	M8
Perforated sleeve FIS H K			12x50	
Anchor rod with perforated sleeve FIS H K				
Max. installation torque	max T_{inst}	[Nm]	2	
General installation parameters				
Edge distance	$c_{min} = c_{cr}$	[mm]	100	
Spacing	s_{min} II	[mm]	75	
	s_{cr} II	[mm]	250	
	$s_{min} \perp = s_{cr} \perp$	[mm]	250	
Drilling method				
Hammer drilling with hard metal hammer drill				

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C37.2: Group factors

Anchor rod			M6	M8
Perforated sleeve FIS H K			12x50	
Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	1,6	
	$\alpha_{g,V}$ (s_{min} II)	[-]	1,1	
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	2,0	
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]		

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Horizontal perforated brick LLz, dimensions, installation parameters, Group factors

Annex C37

Horizontal perforated brick LLz, EN 771-1:2011+A1:2015

Table C38.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod			M6	M8
Perforated sleeve FIS H K			12x50	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2)]				
Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions			
2,5 / 2 N/mm²	w/w	w/d	0,5	
	d/d		0,6	
5 / 4 N/mm²	w/w	w/d	0,9	
	d/d		1,2	
8 / 6 N/mm²	w/w	w/d	1,5	
	d/d		1,5	

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength..
[2)] For temperature range 72/120°C: $N_{Rk\ (72/120°C)} = 0,83 \cdot N_{Rk\ (50/80°C)}$.

Table C38.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod			M6	M8
Perforated sleeve FIS H K			12x50	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C				
Mean compressive strength / Min. compressive strength single brick [1)]	Use conditions			
2,5 / 2 N/mm²	w/w	w/d	0,5	
	d/d			
5 / 4 N/mm²	w/w	w/d	0,9	
	d/d			
8 / 6 N/mm²	w/w	w/d	1,5	
	d/d			

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

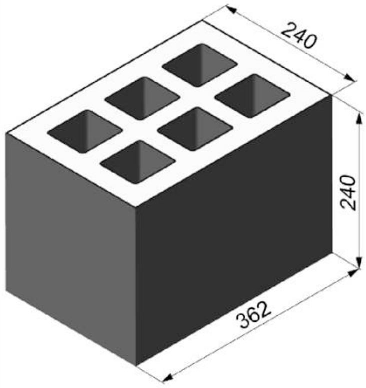
Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

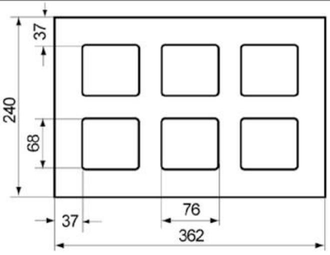
Performance
Horizontal perforated brick LLz, Characteristic resistance under tension and shear loading

Annex C38

Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015



Producer		-		
Nominal dimensions	[mm]	length L	width W	height H
		362	240	240
Mean gross dry density ρ	[kg/dm³]	≥ 1,0		
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	2,5 / 2 or 5 / 4		
Standard or annex		EN 771-3:2011+A1:2015		



Dimension see also Annex B13

Table C39.1: Installation parameters (with perforated sleeve FIS H K)

Anchor rod	M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E	-		-		M6	M8	-		-		M10	M12	-		-		-	
					11x85						15x85							
Perforated sleeve FIS H K	12x50		12x85		16x85				16x130		20x85				20x130		20x200	

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K			
Max. installation torque	max T_{inst}	[Nm]	2
General installation parameters			
Edge distance	$c_{min} = c_{cr}$	[mm]	60
Spacing	s_{min} II	[mm]	100
	s_{cr} II	[mm]	362
	$s_{min} \perp = s_{cr} \perp$	[mm]	240
Drilling method			
Hammer drilling with hard metal hammer drill			

[1)] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Table C39.2: Group factors

Anchor rod	M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E	-		-		M6	M8	-		-		M10	M12	-		-		-	
					11x85						15x85							
Perforated sleeve FIS H K	12x50		12x85		16x85				16x130		20x85				20x130		20x200	

Group factors	$\alpha_{g,N}$ (s_{min} II)	[-]	1,2
	$\alpha_{g,V}$ (s_{min} II)	[-]	1,1
	$\alpha_{g,N}$ ($s_{min} \perp$)	[-]	2,0
	$\alpha_{g,V}$ ($s_{min} \perp$)	[-]	2,0

Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

Table C40.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-		-	
						11x85						15x85							
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130		20x200	
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [2]																			
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions																		
2,5 / 2 N/mm²	w/w w/d	1,2		1,5														2,5	
	d/d	1,2		1,5														2,5	
5 / 4 N/mm²	w/w w/d	2,0		3,0														5,0	
	d/d	2,5		3,0														5,5	

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[2] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C40.1: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

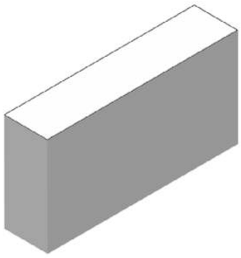
Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10	-		M12	M16	M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M8	-		-		M10	M12	-		-		-	
						11x85						15x85							
Perforated sleeve FIS H K		12x50		12x85		16x85				16x130		20x85				20x130		20x200	
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C																			
Mean compressive strength / Min. compressive strength single brick [1]	Use con-ditions																		
2,5 / 2 N/mm²	w/w w/d	0,9																	
	d/d																		
5 / 4 N/mm²	w/w w/d	2,0																	
	d/d																		

[1] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	Annex C40
Performance Light-weight concrete hollow block Hbl, Characteristic resistance under tension loading and shear loading	

Autoclaved aerated concrete, EN 771-4:2011+A1:2015



Producer		e.g. Ytong		
Mean gross dry density ρ	[kg/dm³]	0,35	0,5	0,65
Mean compressive strength / Min. compressive strength single brick [1)]	[N/mm²]	2,5 / 2	5 / 4	8 / 6
Standard or annex		EN 771-4:2011+A1:2015		

Table C41.1: Installation parameters

Anchor rod			**M6**		**M8**		**M10**		**M12**		**M16**		**-**		**-**	
Internal threaded anchor FIS E			-		-		-		-		-		**M6**	**M8**	**M10**	**M12**
													11x85		**15x85**	
Anchor rod and internal threaded anchor FIS E without perforated sleeve																
Effective anchorage depth	h_{ef}	[mm]	100	200	100	200	100	200	100	200	100	200	85			
Max. installation torque	max T_{inst}	[Nm]	1	4	1	8	2	12	2	16	2	20	1		2	
General installation parameters																
Edge distance	$c_{min} = c_{cr}$	[mm]	100													
Spacing	$s_{cr} \parallel = s_{min} \parallel$	[mm]	250													
	h_{ef}=200mm $s_{min} \parallel$	[mm]	80													
	h_{ef}=200mm $s_{cr} \parallel$	[mm]	3x h_{ef}													
	$s_{cr} \perp = s_{min} \perp$	[mm]	250													
	h_{ef}=200mm $s_{min} \perp$		80													
	h_{ef}=200mm $s_{cr} \perp$		3x h_{ef}													
Drilling method																
Hammer drilling with hard metal hammer drill																

1) The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.

Autoclaved aerated concrete, EN 771-4:2011+A1:2015

Table C42.1: Group factors for autoclaved aerated concrete
(Min. compressive strength single brick = 2 N/mm²)

Anchor rod			M6	M8	M10	M12	M16	-	-
Internal threaded anchor FIS E			-	-	-	-	-	M6 M8 11x85	M10 M12 15x85
Group factors	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \parallel$)	[-]	1,6					-[1)]	-[1)]
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \parallel$)		1,1					-[1)]	-[1)]
	$\alpha_{g,N} \parallel$, $\alpha_{g,V}$ ($s_{min} \parallel$)		2,0						
	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \perp$)		1,6					-[1)]	-[1)]
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \perp$)		0,8					-[1)]	-[1)]
	$\alpha_{g,N} \perp$, $\alpha_{g,V}$ ($s_{min} \perp$)		2,0						

[1)] No performance assessed.

Table C42.2: Group factors for autoclaved aerated concrete
(Min. compressive strength single brick = 4 N/mm²)

Anchor rod			M6	M8	M10	M12	M16	-	-
Internal threaded anchor FIS E			-	-	-	-	-	M6 M8 11x85	M10 M12 15x85
Group factors	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \parallel$)	[-]	0,7					-[1)]	-[1)]
	h_{ef}=200 α_{gV} ($s_{min} \parallel$)		2,0					-[1)]	-[1)]
	$\alpha_{g,N} \parallel$, α_{gV} ($s_{min} \parallel$)		2,0						
	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \perp$)		0,7					-[1)]	-[1)]
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \perp$)		1,2					-[1)]	-[1)]
	$\alpha_{g,N} \perp$, α_{gV} ($s_{min} \perp$)		2,0						

[1)] No performance assessed.

Table C42.3: Group factors for autoclaved aerated concrete
(Min. compressive strength single brick = 6 N/mm²)

Anchor rod			M6	M8	M10	M12	M16	-	-
Internal threaded anchor FIS E			-	-	-	-	-	M6 M8 11x85	M10 M12 15x85
Group factors	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \parallel$)	[-]	0,7					-[1)]	-[1)]
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \parallel$)		2,0					-[1)]	-[1)]
	$\alpha_{g,N} \parallel$, $\alpha_{g,V}$ ($s_{min} \parallel$)		2,0						
	h_{ef}=200 $\alpha_{g,N}$ ($s_{min} \perp$)		0,7					-[1)]	-[1)]
	h_{ef}=200 $\alpha_{g,V}$ ($s_{min} \perp$)		1,2					-[1)]	-[1)]
	$\alpha_{g,N} \perp$, $\alpha_{g,V}$ ($s_{min} \perp$)		2,0						

[1)] No performance assessed.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry	**Annex C42**
Performance Autoclaved aerated concrete, Group factors	

Autoclaved aerated concrete, EN 771-4:2011+A1:2015

Table C43.1: Characteristic resistance to pull-out failure or brick breakout failure of a single anchor under tension loading

Anchor rod		M6		M8		M10		M12		M16		-	-
Internal threaded anchor FIS E		-		-		-		-		-		M6 / M8 11x85	M10 / M12 15x85
$N_{Rk} = N_{Rk,p} = N_{Rk,b} = N_{Rk,p,c} = N_{Rk,b,c}$ [kN]; temperature range 50/80°C [3]													
Mean compressive strength / Min. compressive strength single brick [2]	Use conditions	Effective anchorage depth h_{ef} [mm]											
		100	200	100	200	100	200	100	200	100	200	85	
2,5 / 2 N/mm²	w/w w/d	1,2	1,2	1,5	2,0	1,5	3,0	1,5	3,0	2,0	3,0	1,5	1,5
	d/d	1,5	3,0	1,5	3,0	1,5	3,5	2,0	4,0	2,0	4,0	1,5	1,5
5 / 4 N/mm²	w/w w/d	1,2	-[1]	2,0	1,5	2,5	3,5	2,5	3,5	2,0	3,5	2,0	1,5
	d/d	1,5	-[1]	2,0	3,0	3,0	5,0	2,5	5,0	2,0	5,0	2,0	1,5
8 / 6 N/mm²	w/w w/d	1,5	-[1]	3,0	2,5	4,5	5,0	4,5	7,0	3,0	8,5	3,5	2,5
	d/d	1,5	-[1]	3,5	4,0	5,0	7,0	5,0	9,0	3,0	11,5	3,5	2,5

[1] No performance assessed.
[2] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength.
[3] For temperature range 72/120°C: $N_{Rk\,(72/120°C)} = 0{,}83 \cdot N_{Rk\,(50/80°C)}$.

Table C43.2: Characteristic resistance to local brick failure or brick edge failure of a single anchor under shear loading

Anchor rod		M6		M8		M10		M12		M16		-	-
Internal threaded anchor FIS E		-		-		-		-		-		M6 / M8 11x85	M10 / M12 15x85
$V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$ [kN]; temperature range 50/80°C and 72/120°C													
Mean compressive strength / Min. compressive strength single brick [2]	Use conditions	Effective anchorage depth h_{ef} [mm]											
		100	200	100	200	100	200	100	200	100	200	85	
2,5 / 2 N/mm²	w/w w/d, d/d	1,2	1,2	1,2	1,2	1,2	1,2	1,5	1,2	1,2	1,2	1,2	1,5
5 / 4 N/mm²	w/w w/d, d/d	2,0	-[1]	2,5	2,0	2,0	2,0	2,5	2,0	2,0	2,0	2,0	2,5
8 / 6 N/mm²	w/w w/d, d/d	2,5	-[1]	3,0	2,5	3,0	3,0	3,5	4,0	4,5	4,5	2,5	3,5

[1] No performance assessed.
[2] The minimum compressive strength of the single brick must not be less than 80% of the mean compressive strength

Factor for job site tests and displacements see annex C44.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
Autoclaved aerated concrete,
Characteristic resistance under tension and shear loading

Annex C43

β-factors for job site tests; displacements

Table C44.1: β-factors for job site tests

use conditions		w/w and w/d		d/d	
temperature range [°C]		50/80	72/120	50/80	72/120
Material	Size	β-factors			
solid units	M6	0,55	0,46	0,96	0,80
	M8	0,57	0,51		
	M10	0,59	0,52		
	M12 FIS E 11x85	0,60	0,54		
	M16 FIS E 15x85	0,62	0,52		
	FIS H 16x85 K	0,55	0,46		
hollow units	all sizes	0,86	0,72	0,96	0,80
Autoclaved aerated concrete cylindrical drill hole	all sizes	0,73	0,73	0,81	0,81

Table C44.2: Displacements

Material	N [kN]	δN_0 [mm]	δN_∞ [mm]	V [kN]	δV_0 [mm]	δV_∞ [mm]
solid units and autoclaved aerated concrete h_{ef}=100mm	$\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$	0,03	0,06	$\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$	0,82	0,88
hollow units	$\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$	0,48	0,06	$\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$	1,71	2,56
solid brick Mz NF Annex C4 - C7	$\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$	0,74	1,48	$\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$	1,23	1,85
solid brick KS NF Annex C12 / C13	$\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$	0,20	0,40	$\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$	0,91	1,37
AAC h_{ef}=200 mm Annex C41 – C43	$\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$	1,03	2,06	$\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$	1,25	1,88

For anchorage in autoclaved aerated concrete (AAC), the partial factor γ_{MAAC} shall be used instead of γ_{Mm}.

fischer injection system T-BOND PRO.1 - FIS C700 HP PRO.1 masonry

Performance
β-factors for job site tests; displacements

Annex C44