

DECLARATION OF PERFORMANCE



DoP: 0126

for fischer injection system FIS V for use in masonry: (Metal injection anchors for use in masonry) - EN

1. Unique identification code of the product-type: DoP: 0126

2. Intended use/es: Anchorages in masonry for which requirements for mechanical resistance and stability and safety in use shall be fulfilled. They are for fixing and/or supporting structural elements (which contribute to

the stability of the works) or heavy units, see appendix, especially Annexes B 1 to B 15

3. Manufacturer: fischerwerke GmbH & Co. KG, Otto-Hahn-Straße 15, 79211 Denzlingen, Germany

4. Authorised representative: --

5. System/s of AVCP: 1

6. European Assessment Document: ETAG 029; 2013-04

European Technical Assessment: ETA-10/0383; 2017-10-06

Technical Assessment Body: DIBt

Notified body/ies: 1343 - MPA Darmstadt

7. Declared performance/s:

Mechanical resistance and stability (BWR 1), Safety and accessibility (BWR 4)

Characteristic resistance for tension and shear loads: See appendix, especially Annexes C 1 to C 109

• Displacements under shear and tension loads: See appendix, especially Annex C 110

Reduction Factor for job site tests (ß-Factor): See appendix, especially Annex C 110

Edge distances and spacing: See appendix, especially Annexes C 3 to C 109

Safety in case of fire (BWR 2)

Reaction to fire: Anchorages satisfy requirements for Class A 1

Resistance to fire: NPD

8. Appropriate Technical Documentation and/or Specific Technical Documentation: ---

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

1.V. A. Dun

Andreas Bucher, Dipl.-Ing.

Wolfgang Hengesbach, Dipl.-Ing., Dipl.-Wirtsch.-Ing.

i.V. W. Mylal

Tumlingen, 2017-10-16

- This DoP has been prepared in different languages. In case there is a dispute on the interpretation the english version shall always prevail.

- The Appendix includes voluntary and complementary information in English language exceeding the (language-neutrally specified) legal requirements.

Specific part

1 Technical description of the product

The fischer injection system FIS V for masonry is a bonded anchor (injection type) consisting of a mortar cartridge with injection mortar fischer FIS V, FIS VS and FIS VW, a perforated sieve sleeve and an anchor rod with hexagon nut and washer or an internal threaded rod in the range of M6 to M16. 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 anchor 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 anchor 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 tension and shear loads	See Annex C 1 – C 109
Displacements under shear and tension loads	See Annex C 110
Reduction Factor for job site tests (β-Factor)	See Annex C 110
Edge distances and spacing	See Annex C 3 – C 109

3.2 Safety in case of fire (BWR 2)

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

3.3 Hygiene, health and the environment (BWR 3)

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

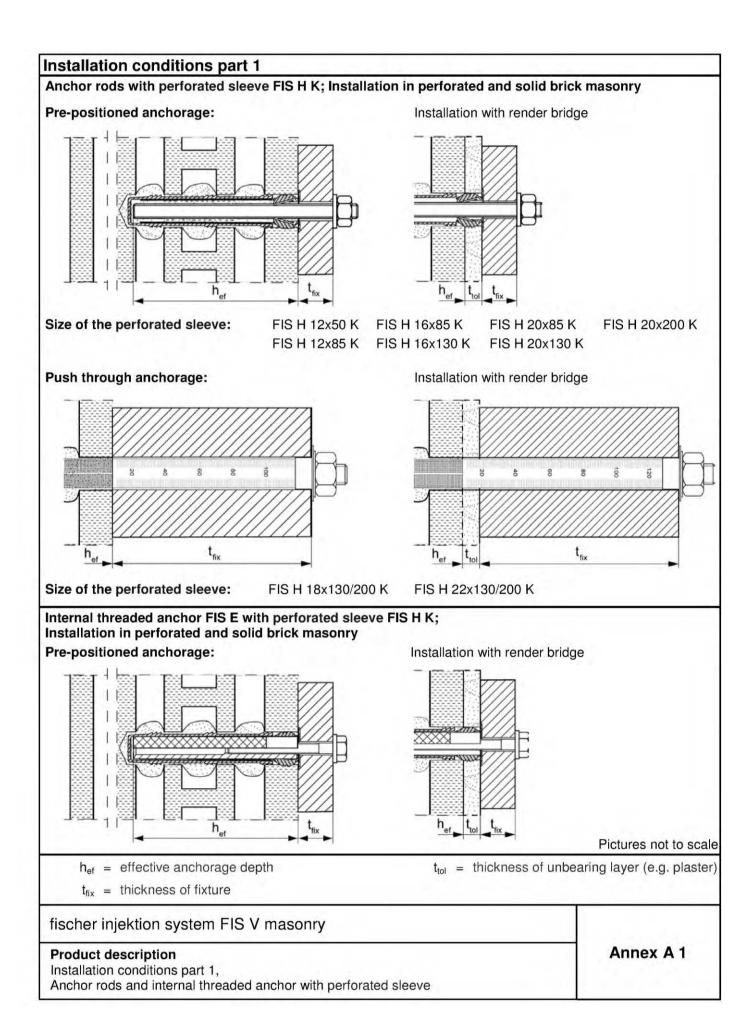
3.4 Safety and accessibility in use (BWR 4)

The essential characteristics regarding Safety in use are included under the Basic Works Requirement Mechanical resistance and stability.

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

In accordance with guideline for European technical approval ETAG 029, April 2013 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: [97/177/EC].

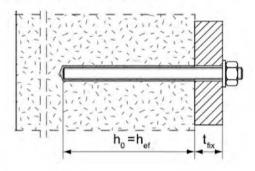
The system to be applied is: 1



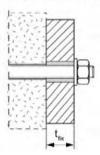
Installation conditions part 2

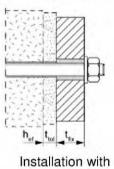
Anchor rods without perforated sleeve FIS H K; installation in solid brick masonry and autoclaved aerated concrete

Pre-positioned anchorage:



Push through anchorage: Annular gap filled with mortar

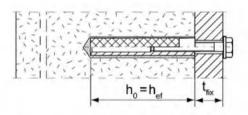




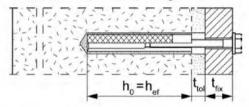
Installation with render bridge

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

Pre-positioned anchorage:



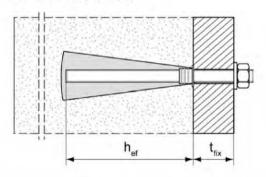
Installation with render bridge



Anchor rods and internal threaded anchors FIS E without perforated sleeve FIS H K; installation in autoclaved aerated concrete with conical drill hole (installation with special conic drill bit PBB)

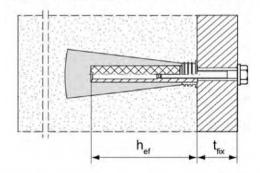
Pre-positioned anchorage:

anchor rods M8, M10, M12



Pre-positioned anchorage:

Internal threaded anchor FIS E 11x85 M6 / M8



ttol = thickness of unbearing layer (e.g. plaster)

Pictures not to scale

 h_0 = depth of drill hole

t_{fix} = thickness of fixture

h_{ef} = effective anchorage depth

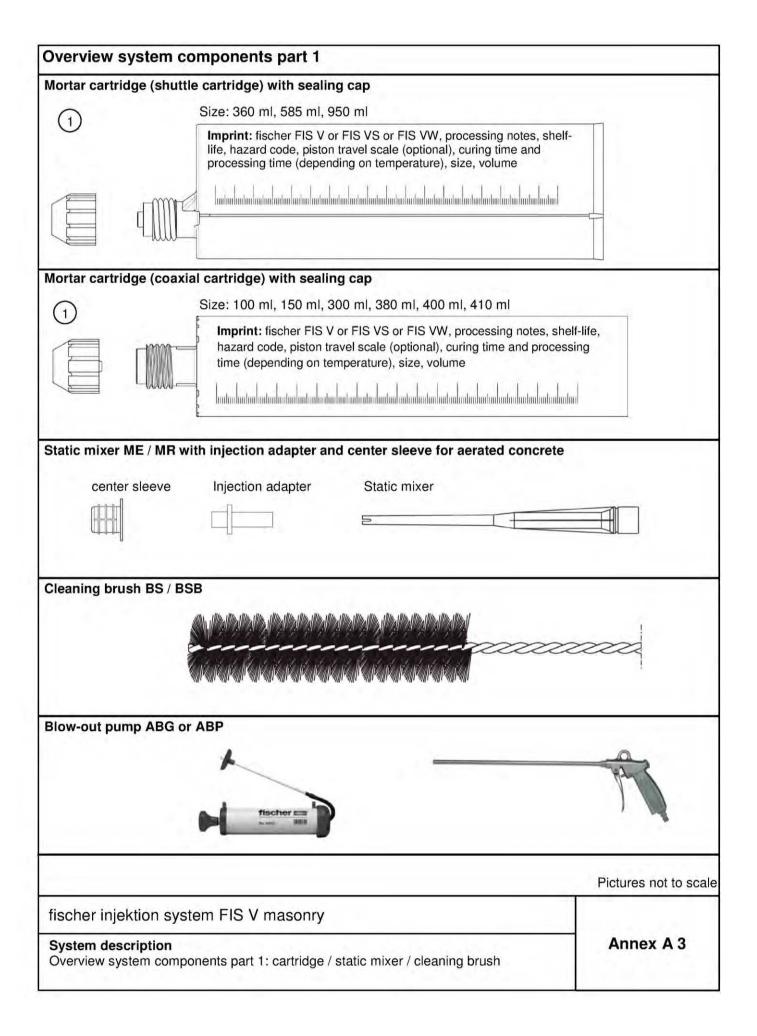
fischer injektion system FIS V masonry

Product description

Installation conditions part 2,

Anchor rods and internal threaded anchor without perforated sleeve

Annex A 2



Overv	view system components pa	rt 2		
fische	r anchor rod			
2		Size:	M6, M8, M10, M12, M1	16
Interna	al threaded anchor FIS E			
5		Size:	11x85 M6 / M8 15x85 M10 / M12	
Perfor	ated sleeve FIS H K	4	1.21	
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	
Perfor	ated sleeve FIS H K (push through	anchorage)		
7				Size: FIS H 18x130/200 K FIS H 22x130/200 K
Washe	er			
3				
Hexag	on nut			
4				
				Pictures not to scale
fisch	er injektion system FIS V maso	onry		
Syste	em description view system components part 2: stee		Isleeve	Annex A 4

Mortar cartridge Anchor rod	Steel, zinc plated Property class 4.6; 4.8; 5.8 oder 8.8; EN ISO 898-1: 2013 zinc plated ≥ 5µm, EN ISO 4042:1999 A2K or hot-dip galvanised EN ISO 10684:2004 f _{uk} ≤ 1000 N/mm² A ₅ > 8% fracture	Mortar, hardener; filler Stainless steel A4 Property class 50, 70 or 80 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062 EN 10088-1:2014	High corrosion-resistant steel C Property class 50 or 80 EN ISO 3506-1:2009 or property class 70 with f _{yk} = 560 N/mm ² 1.4565; 1.4529 EN 10088-1:2014
Anchor rod	Property class 4.6; 4.8; 5.8 oder 8.8; EN ISO 898-1: 2013 zinc plated ≥ 5μm, EN ISO 4042:1999 A2K or hot-dip galvanised EN ISO 10684:2004 f _{uk} ≤ 1000 N/mm²	Property class 50, 70 or 80 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062 EN 10088-1:2014	steel C Property class 50 or 80 EN ISO 3506-1:2009 or property class 70 with f _{yk} = 560 N/mm ² 1.4565; 1.4529 EN 10088-1:2014
Anchor rod	4.6; 4.8; 5.8 oder 8.8; EN ISO 898-1: 2013 zinc plated ≥ 5μm, EN ISO 4042:1999 A2K or hot-dip galvanised EN ISO 10684:2004 f _{uk} ≤ 1000 N/mm²	EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062 EN 10088-1:2014	EN ISÓ 3506-1:2009 or property class 70 with f _{yk} = 560 N/mm ² 1.4565; 1.4529 EN 10088-1:2014
	elongation	$f_{uk} \le 1000 \text{ N/mm}^2$ $A_5 > 8\% \text{ fracture}$ elongation	f _{uk} ≤ 1000 N/mm ² A ₅ > 8% fracture elongation
Washer SO 7089:2000	zinc plated ≥ 5µm, EN ISO 4042:1999 A2K or hot-dip galvanised EN ISO 10684:2004	1.4401; 1.4404; 1.4578;1.4571; 1.4439; 1.4362 EN 10088-1:2014	1.4565;1.4529 EN 10088-1:2014
Hexagon nut	Property class 5 or 8; EN ISO 898-2:2012 zinc plated ≥ 5µm, ISO 4042:1999 A2K or hot-dip galvanised ISO 10684:2004	Property class 50, 70 or 80 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014	Property class 50, 70 or 8 EN ISO 3506-1:2009 1.4565; 1.4529 EN 10088-1:2014
nternal threaded anchor FIS E	Property class 5.8; EN 10277-1:2008-06 zinc plated ≥ 5µm, ISO 4042:1999 A2K	Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014	Property class 70 EN ISO 3506-1:2009 1.4565; 1.4529 EN 10088-1:2014
Commercial standard screw or threaded / anchor rod for internal threaded anchor FIS E	Property class 5.8 or 8.8; EN ISO 898-1:2013 zinc plated ≥ 5µm, ISO 4042:1999 A2K	Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014	Property class 70 EN ISO 3506-1:2009 1.4565; 1.4529 EN 10088-1:2014
ir a	nternal threaded nchor FIS E commercial standard crew or threaded / nchor rod for internal nreaded anchor FIS E	zinc plated ≥ 5µm, ISO 4042:1999 A2K or hot-dip galvanised ISO 10684:2004 Property class 5.8; EN 10277-1:2008-06 zinc plated ≥ 5µm, ISO 4042:1999 A2K Property class 5.8 or 8.8; EN ISO 898-1:2013 zinc plated ≥ 5µm, ISO 4042:1999 A2K	zinc plated ≥ 5μm, 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8; EN 10277-1:2008-06 zinc plated ≥ 5μm, 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8; EN 10277-1:2008-06 zinc plated ≥ 5μm, 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8 or 8.8; EN 15O 898-1:2013 zinc plated ≥ 5μm, 1.4401; 1.4404; 1.4578; 1.4571; 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8 or 8.8; Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8 or 8.8; Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8 or 8.8; Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8 or 8.8; Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014 Property class 5.8 or 8.8; Property class 70 EN ISO 3506-1:2009 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088-1:2014

fischer injektion system FIS V masonry	
Product description Materials	Annex A 5

Specifications of intended use (part 1) Overview use and performance categories Table B1.1: fischer injection system FIS V masonry Anchorages subject to Hole drilling with hammer drill mode all bricks; without C26 to C45, C73 to C76 Hole drilling with rotary drill mode all bricks Static and quasi static load, all bricks in masonry Use category dry or wet masonry all bricks Perforated sleeve (in perforated and solid brick masonry) Anchor rod Size: FIS H 12x50 K Pre-positioned (in solid brick masonry and FIS H 12x85 K anchorage autoclaved aerated concrete) FIS H 16x85 K FIS H 16x130 K FIS H 20x85 K Installation FIS H 20x130 K FIS H 20x200 K Perforated sleeve (in perforated and solid brick Anchor rod Push through masonry) (in solid brick masonry and anchorage autoclaved aerated concrete) Size: FIS H 18x130/200 K FIS H 22x130/200 K category d/d Installation all bricks category w/d conditions category w/w -10°C to +40°C Installation temperature -40°C to max, short term temperature +80 °C and +80°C max. long term temperature +50 °C In-service temperature -40°C to max. short term temperature +120 °C and max. long term temperature +72 °C +120°C fischer injektion system FIS V masonry

Intended Use

Specifications (part 1)

Specifications of intended use (part 2)

Anchorages subject to:

· Static and quasi-static loads

Base materials:

- Solid brick masonry (Use category b) and autoclaved aerated concrete (Use category d), acc. to Annex B 13 / B 14
- Hollow brick masonry (use category c), according to Annex B 13 / B 14
- For minimum thickness of masonry member is h_{ef}+30mm
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2010
- 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 ETAG 029, Annex B under consideration of the β-factor according to Annex C 110, Table C110.1

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:

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

Use conditions (Environmental conditions):

- Dry and wet structure (regarding injection mortar)
- Structures subject to dry internal conditions exist (zinc coated steel, stainless steel or high corrosion resistant steel)
- Structures subject to external atmospheric exposure including industrial and marine environment or exposure to permanently damp internal condition, if no particular aggressive conditions exist exist (stainless steel or high corrosion resistant steel)
- Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist (high corrosion resistant steel)

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used)

fischer injektion system FIS V masonry	
Intended Use Specifications (part2)	Annex B 2

Specifications of intended use (part 2)

Design:

The anchorages have to be designed in accordance with the ETAG 029, Annex C, Design method A
under the responsibility of an engineer experienced in anchorages and masonry work.

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

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

$$V_{Rk} = V_{Rk,b} = V_{Rk,c}$$

For the Calculation of pulling out a brick under tensile load $N_{Rk,pb}$ or pushing out a brick under shear load $V_{Rk,pb}$ see ETAG 029, Annex C.

N_{Rk,s}, V_{Rk,s} and M_{Rk,s} see annex C1-C3

Factors for job site tests and displacements see Annex C110

Verifiable calculation notes and drawings have to be prepared taking account the relevant masonry in the
region of the anchorage, the loads to be transmitted and their transmission to the supports of the
structure. The position of the anchor is indicated on the design drawings.

Installation:

- · Category d/d: Installation and use in dry structures
- · Category w/w: Installation and use in dry and wet structures
- Category 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 mortar
- Bridging of unbearing layer (e.g. plaster) see Annex B 6, 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.
- minimum curing time see Annex B 8, Table B8.2
- 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 A 5, Table 5.1

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

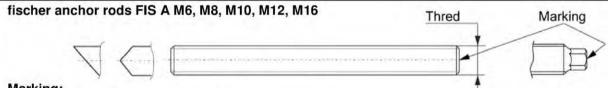
Marking of the anchor rod with the envisage embedment depth. This may be done by the manufacturer of the rod or by a person on job site

fischer injektion system FIS V masonry	
Intended Use Specifications (part2)	Annex B 3
Specifications (partz)	

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 diamete	er	d ₀ [mm]	8	10	12	14	18	
Effective anchorage dept in AAC cylindrical drill ho		h ₀ =h _{ef,min} [mm]			100			
in AAC conical drill hole h _{ef.min}		h _{o,min} [mm]			80	80		
		h _{ef,min} [mm]	10.0		75		-	
		h _{ef,max} [mm]		95				
Effective anchorage depth $h_{ef}^{(1)}$ in solid brick (depth of drill hole $h_0 = h_{ef}$)		h _{ef,min} [mm]	50					
		h _{ef,max} [mm]	h-30, ≤200					
Diameter of clearance	pre-	oosition d _f ≤[mm]	7	9	12	14	18	
hole in the fixture	push t	through d _f ≤[mm]	9 11 14 16				20	
Diameter of cleaning brush d _b ≥ [mm]				see Table B8.	1			
Maximum installation torque T _{inst,max} [Nm]			see p	parameters of	fbrick			

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



Marking:

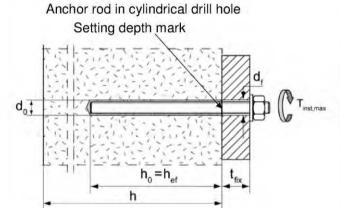
Property class 8.8, stainless steel A4 property class 80 and

high corrosion resistant steel C property class 80: •

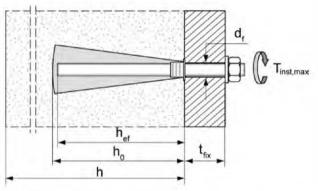
Stainless steel A4 property class 50 and high corrosion resistant steel C property class 50: ••

Or colour coding according to DIN 976-1:2016-09, property class 4.6 marking according to EN ISO 898-1:2013

Installation conditions:



Anchor rod in conical drill hole



Pictures not to scale

fischer injektion system FIS V masonry

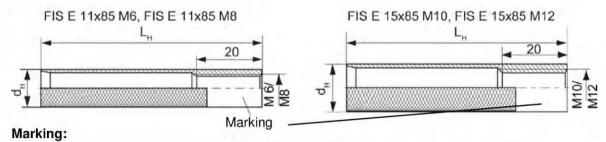
Intended Use

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	d₀ [mm]		14		8	
Length of anchor	L _H [mm]		8	85		
Effective anchorage depth	$h_0 = h_{ef}[mm]$		85			
Effective anchorage depth hef	h ₀ [mm]	1	00	h-		
in AAC (conical drill hole)	h _{ef} [mm]	8	35			
Diameter of cleaning brush	d _b ≥[mm]	see Table B8.1				
Maximum installation torque	T _{inst,max} [Nm]	see parameters of brick				
Diameter of clearance hole in the fixture	d _f [mm]	7	9	12	14	
Course in doubt	I _{E,min} [mm]	6	8	10	12	
Screw-in depth	I _{E,max} [mm]	60				

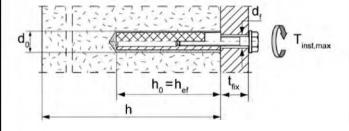
fischer Internal threaded anchor FISE



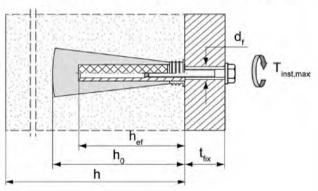
Size, e.g. M8, Stainless steel: A4, e.g. M8 A4, High corrosion-resistant steel: C, e.g. M8 C

Installation conditions:

Internal threaded anchor in cylindrical drill hole



Internal threaded anchor in conical drill hole



Pictures not to scale

fischer injektion system FIS V masonry

Intended Use

Installation parameters for internal threaded rods FIS E without perforated sleeve

Table B6.1: Installation parameters for anchor rods and internal threaded anchors FIS E with perforated sleeves (pre-positioned anchorage)

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 _o [mm]	1	2		16		20	
Depth of drill hole	h₀ [mm]	55	90	90	135	90	135	205
Effective englesses doubt	h _{ef,min} [mm]	50	65	85	110	85	110	180
Effective anchorage depth	h _{ef,max} [mm]	50	85	85	130	85	130	200
Size of threaded rod	[-]	M6 u	nd M8	M8 ur	nd M10	N	112 und M	16
Size of internal threaded ancho	or FIS E	-	This co	11x85		15x85	* 7	7.0
Diameter of cleaning brush ¹⁾ d _b ≥[mm]				se	e Table B	3.1		-
Maximum installation torque	T _{inst,max} [Nm]	see parameters of brick						

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

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

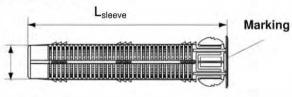
Marking:

Size D_{sleeve,nom} x L_{sleeve}

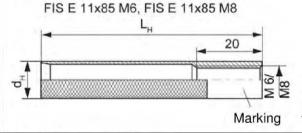
(e.g.: 16x85)

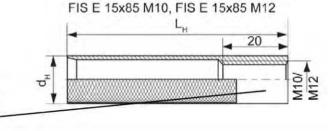






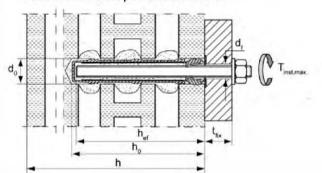
fischer Internal threaded anchor FIS E



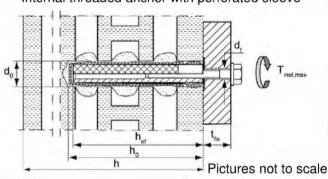


Installation conditions:

Anchor rod with perforated sleeve



Internal threaded anchor with perforated sleeve



fischer injektion system FIS V masonry

Intended Use

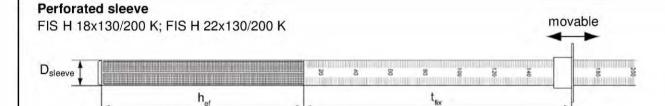
Installation parameters for anchor rods and internal threaded anchors FIS E with perforated sleeve (pre-positioned anchorage)

²⁾ Bridging of unbearing layer (e.g. plaster) is possible. When reducing the effective anchorage depth hef, 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.

Table B7.1:	Installation parameters for anchor rods with perforated sleeves
	(push through anchorage)

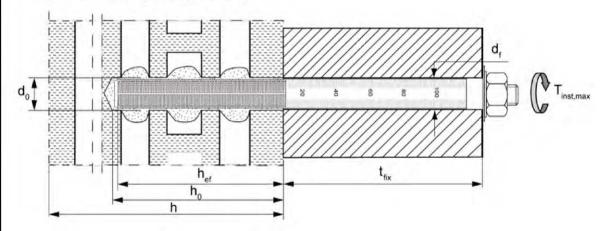
Perforated sleeve FIS H K		18x1	30/200	22x130/200		
Nominal sleeve diameter	D _{sleeve,nom} [mm]		20			
Nominal drill hole diameter	d ₀ [mm]	-	18	22		
Depth of drill hole	h _o [mm]		135 + t _{fix}			
Effective anchorage depth	h _{ef} [mm]		≥130	4		
Diameter of cleaning brush 1)	d _b ≥ [mm]		Siehe Tabelle B8.	1		
Size of threaded rod	[-]	M10	M12	M16		
Maximum installation torque	T _{inst,max} [Nm]		see parameters of b	rick		
Thickness of fixture	t _{fix,max} [mm]	200				

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



Installation conditions:

Anchor rod with perforated sleeve



Pictures not to scale

fischer injektion system FIS V masonry

Intended Use

Installation parameters for anchor rods with perforated sleeves (push through anchorage)

Tabelle B8.1: Par	ameters of t	he clea	aning bru	ish BS (steel bru	sh)			
The size of the cleaning	g brush refers to	o the dr	ill hole dia	meter					
Drill hole diameter	d _o [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

Table B8.2: 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)

Tamanatan	Minimum curing time 1) t _{cure}						
Temperature at anchoring base [°C]	FIS VW High Speed 3)	FIS V 2)	FIS VS Low Speed ²⁾				
-10 to -5	12 h	7.5					
>-5 to ±0	3 h	24 h					
±0 to +5	3 h	3 h	6 h				
>+5 to +10	50 min	90 min	3 h				
>+10 to +20	30 min	60 min	2 h				
>+20 to +30	= -	45 min	60 min				
>+30 to +40	1 1 - 1	35 min	30 min				

System-	Maximum	Maximum processing time twork						
temperature (mortar) [°C]	FIS VW High Speed 3)	FIS V 2)	FIS VS Low Speed ²⁾					
		4.5	-					
±0	5 min							
+5	5 min	13 min	20 min					
+10	3 min	9 min	20 min					
+20	1 min	5 min	10 min					
+30	1-14-	4 min	6 min					
+40	T-DT	2 min	4 min					

Pictures not to scale

fischer injektion system FIS V masonry	
Intended use	Annex B 8
Cleaning brush (steel brush)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Maximum processing times and minimum curing times	

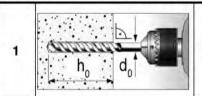
¹⁾ For wet bricks the curing time must be doubled

²⁾ Minimum cartridge temperature +5°C

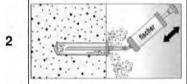
³⁾ Minimum cartridge temperature ±0°C

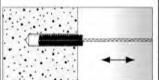
Installation instruction part 1

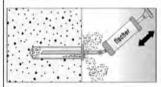
Installation in solid brick and autoclaved aerated concrete (without perforated sleeve)



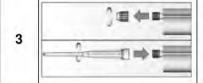
Drill the hole (drilling method see Annex C of the respective brick) depth of drill hole **h**₀ and drill hole diameter **d**₀ see **Table B4.1**; **B5.1**







Blow out the drill hole twice. Brush twice and blow out twice again.



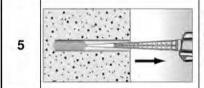
Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible)



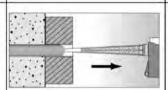
Place the cartridge into a suitable dispenser



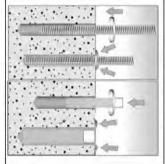
Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of.



Fill approximetly 2/3 of the drill hole with mortar beginning from the bottom of the hole¹⁾. Avoid bubbles!



For push through anchorage fill the annular clearance with mortar.



Only use clean and oil-free anchor elements.

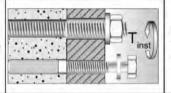
Mark the anchor rod for setting depth.

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.



Do not touch. Minimum curing time see Table **B8.2**



Mounting the fixture. $T_{\text{inst,max}}$ see parameter of brick.

fischer injektion system FIS V masonry

Intended use

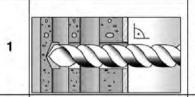
6

Installation instruction (without perforated sleeve) part 1

¹⁾ Exact volume of mortar see manufacturer's specification.

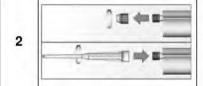
Installation instruction part 2

Installation in perforated or solid brick with perforated sleeve (pre-positioned anchorage)



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.



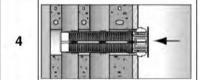
Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible)



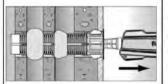
Place the cartridge into a suitable dispenser.



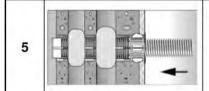
Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of.



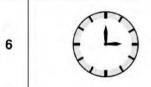
Insert the perforated sleeve flush with the surface of the masonry or plaster.



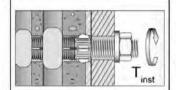
Fill the perforated sleeve completely with mortar beginning from the bottom of the hole¹⁾.



Only use clean and oil-free anchor elements. 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).



Do not touch. Minimum curing time see Table **B8.2**



Mounting the fixture. $T_{\text{inst,max}}$ see parameter of brick.

fischer injektion system FIS V masonry

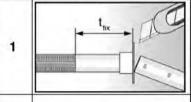
Intended use

Installation instruction (with perforated sleeve) part 2

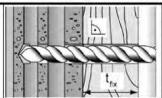
¹⁾ Exact volume of mortar see manufacturer's specification.

Installation instruction part 3

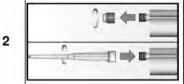
Installation in perforated or solid brick with perforated sleeve (push through anchorage)



Push the movable stop up to the correct thickness of fixture and cut the overlap.



Drill the hole through the fixture. Depth of drill hole (h₀ + t_{fix}) and drill hole diameter see **Table B7.1**



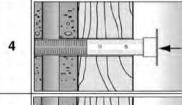
Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible)



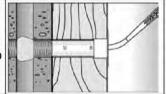
Place the cartridge into a suitable dispenser.



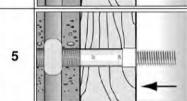
Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of.



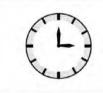
Insert the perforated sleeve flush with the surface of the fixture into the drill hole.



Fill the sleeve with mortar beginning from the bottom of the hole. 1) For deep drill holes use an extension tube.

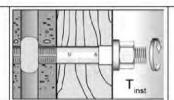


Only use clean and oil-free anchor elements. Mark the anchor rod for setting depth. Insert the anchor rod or the internal threaded anchor FIS E by hand using light turning motions until reaching the setting depth marking (anchor rod) or flush with the surface (internal threaded anchor).



6

Do not touch. Minimum curing time see Table **B8.2**



Mounting the fixture. $T_{\text{inst,max}}$ see parameter of brick.

fischer injektion system FIS V masonry

Intended use

Installation instruction (with perforated sleeve) part 3

¹⁾ Exact volume of mortar see manufacturer's specification.

Installation instruction part 4 Installation in autoclaved aerated concrete with special conic drill bit PBB (pre-positioned anchorage) Position the movable drill bit arrester on the used drill hole depth. 1 For this, unlock the clamp screw and slidethe arrester. Now fix the clamp screw. Drill the cylindrical hole with rotating drill until the arrester contact the material 2 surface. (drilling method see Annex C of the respective brick) Deviate the working power drill circulate to generate an conic undercut in the 3 material. Blow out the drill hole four times. 4 Remove the sealing cap. Screw on the static mixer. 5 (the spiral in the static mixer must be clearly visible) 11 中華 Press out approximately 10 cm of mortar until the Place the cartridge into resin is permanently grey in 6 a suitable dispenser. colour. Mortar which is not grey in colour will not cure and must be disposed of. Put the center sleeve into the drill hole and Fill the drill hole with 7 adapt the injection injection mortar. adapter onto the static mixer. Only use clean and oil-free anchor elements. Mark the anchor rod for setting depth. Insert the anchor rod or internal threaded anchor 8 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. Mounting the fixture. Do not touch. 9 Minimum curing time T_{inst,max} see parameter of see Table B8.2 brick. fischer injektion system FIS V masonry

Installation instruction for autoclaved aerated concrete with special conic drill bit PBB

Intended use

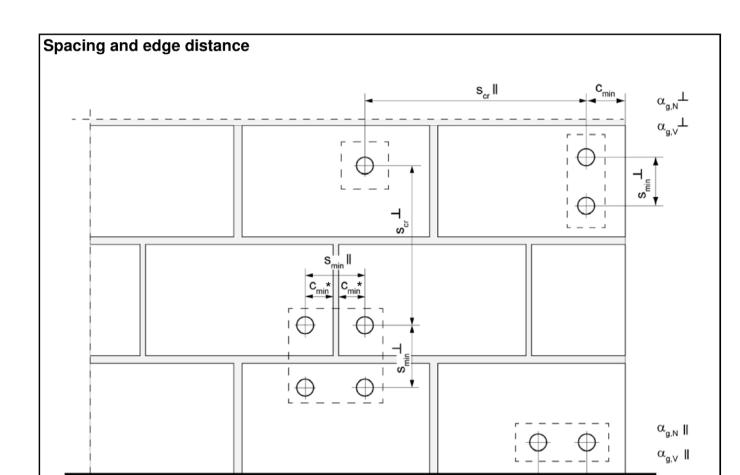
(pre-positioned anchorage) part 4

Kind of masonry	ı	Brick format [mm]	Compressive strength f _b N/mm ²]	Producing county	Density ρ [kg/dm³]	Annex		
			olid brick Mz	,	Lg 1			
	NF	≥240x115x71	12 - 20	Germany	≥1,8	C4 - C7		
Solid brick Mz		≥240x115x113	10 - 16	Germany	≥1,8	C8/C9		
Solid Brick MZ		≥ 245x118x54	10 - 20	Italy	≥1,8	C10/C11		
		≥ 230x108x55	10 - 20	Denmark	≥1,8	C12/C13		
Sc	L							
Solid sand- lime brick KS								
Solid sand- lime brick KS	8DF	≥ 250x240x240	10 - 28	Germany	≥2,0	C16/C17		
Solid sand- lime brick KS		≥ 997x214x538	10 - 36	Netherlands	≥1,8	C18/C19		
Perforated Sand- lime brick KSL	3DF	240x175x113	8 - 20	Germany	≥1,4	C20 - C23		
		Vertical p	erforated brick HLz					
		375x240x237	4 - 12	Germany	≥1,0	C24/C25		
		500x175x237	4 - 12	Germany	≥1,0	C24/C25		
Vertical perforated brick HLz	2DF	240x115x113	6 - 28	Germany	≥1,4	C26/C27		
		248x365x248	4 - 8	Germany	≥0,6	C28 - C31		
		248x365x249	8 - 12	Germany	≥0,7	C32 - C35		
		248x365x249	4 - 6	Germany	≥0,5	C36 - C39		
		248x425x248	4 - 8	Germany	≥0,8	C40 - C43		
	248x425x248		4 - 8	Germany	≥0,6	C44 - C47		
	500x200x315		4 - 8	France	≥0,6	C48 - C51		
		500x200x300	4 - 10	France	≥0,7	C52 - C55		
	500x200x315		2 - 8	France	≥0,7	C56 - C59		
	560x200x275		4 - 8	France	≥0,7	C60/C61		
	255x120x118		2 - 12	Italy	≥1,0	C62 - C64		
		275x130x94	6 - 20	Spain	≥0,8	C65/C66		
		220x190x290	6 - 10	Portugal	≥0,7	C67 - C70		
		253x300x240	2 - 6	Austria	≥0,8	C71 - C74		
		250x440x250	6 - 10 Austria		≥0,7	C75 - C78		
		230x108x55	2 - 8	Denmark	≥1,4	C79/C80		
		Horizontal	perforated brick LL:	z				
Horizontal perforated		248x78x250	2 - 6	Italy	≥0,7	C81/C82		
brick LLz		128x88x275	2	Spain	≥0,8	C83/C84		
		Light-weight co	oncrete hollow bloc	k Hbl				
Light woight apparets		362x240x240	2 - 4	Germany	≥1,0	C85 - C88		
Light-weight concrete hollow block Hbl		500x200x200	2 - 6	France	≥1,0	C89/C90		
		440x215x215	≥1,2	C91 - C94				
fischer injektion syster	n FIS	V masonry			Δηη	ey R 12		
Intended use Overview of controlled brid	ks (pa	rt 1)			Ann	ex B 13		

Table B14.1:	Overview of controlled bricks (part 2)
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Kind of masonry	Brick format [mm]	Compressive strength f _b N/mm ²]	Producing counrty	Density ρ [kg/dm³]	Annex			
Light-weight concrete solid block Vbl								
	≥ 372x300x254	2	Germany	≥0,6	C95/C96			
Light-weight concrete solid block Vbl	≥ 250x240x239	4 - 8	Germany	≥1,6	C97 - C100			
	≥ 440x100x215	4 - 10	Ireland	≥2,0	C101/C102			
	≥ 440x95x215	6 - 12	England	≥2,0	C103/C104			
	Autoclaved a	erated concrete (AA	(C)					
PP2 / AAC	-	2	Germany	0,35	C105 - C109			
PP4 / AAC	-	4	Germany	0,5	C105 - C109			
PP6 / AAC	-	6	Germany	0,65	C105 - C109			

fischer injektion system FIS V masonry	
Intended use Overview of controlled bricks (part 2)	Annex B 14



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

 $egin{array}{lll} s_{min} & = & & & & & & & \\ s_{min} & & = & & & & & \\ s_{cr} & & = & & & & \\ s_{cr} & & = & & & \\ \end{array}$ Minimum spacing vertical to bed joint script = Characteristic spacing parallel to bed joint script = Characteristic spacing vertical to bed joint

 $c_{cr} = c_{min}$ = Edge distance

 $\begin{array}{lll} \alpha_{\text{q,N}} \, \text{II} & = & \text{Group factor for tensile load, anchor group parallel to bed joint} \\ \alpha_{\text{q,V}} \, \text{II} & = & \text{Group factor for shear load, anchor group parallel to bed joint} \\ \alpha_{\text{q,N}} \, ^{\perp} & = & \text{Group factor for tensile load, anchor group vertical to bed joint} \\ \alpha_{\text{q,V}} \, ^{\perp} & = & \text{Group factor for shear load, anchor group vertical to bed joint} \\ \end{array}$

For $s \ge s_{cr}$ $\alpha_q = 2$

For $s_{min} \le s < s_{cr}$ α_g according to installation parameters of brick

$$N_{Rk}^g = \alpha_{g,N} \cdot N_{Rk}$$
; $V_{Rk}^g = \alpha_{g,V} \cdot V_{Rk}$ (Group of 2 anchors)

$$N^g_{Rk} = \alpha_{g,N} \, II \bullet \alpha_{g,N} \,^{\perp} \bullet N_{Rk}; \quad V^g_{Rk} = \alpha_{g,V} \, II \bullet \alpha_{g,V} \,^{\perp} \bullet V_{Rk} \quad \text{(Group of 4 anchors)}$$

fischer injektion system FIS V masonry	
Intended use Spacing and edge distance	Annex B 15

Table C1.1: Characteristic values for the steel bearing capacity of anchor rods under tensile load

Anch	or rod				М6	M8	M10	M12	M16	
Beari	ng capacity unde	r tensile lo	ad, ste	el fail	ure					
			4.6		8	15	23	34	63	
Ø	Stool zine plated		4.8		8	15	23	34	63	
stic A _k ,	Steel zinc plated		5.8		10	18	29	42	78	
sters ce I		Property	8.8	וואאוז	16	29	46	67	125	
Characterstic resistance N _{RK,s}	Stainless steel A4 and High corrosion	class	50	[kN]	10	18	29	42	78	
Ch resi			70		14	26	41	59	110	
	resistant steel C		80		16	29	46	67	125	
Partia	al safety factors 1))					•			
			4.6		2					
tor	Stool zine plated		4.8		1,5					
fac	Steel zinc plated		5.8		1,50					
ety s,N		Property class	8.8	.,	1,50					
l safety Yms,n	Stainless steel		50	[-]	2,86					
Partial safety factor ‱,N	A4 and High corrosion		70		1,50 ²⁾ / 1,87					
ш	resistant steel C		80				1,60			

¹⁾ In absence of other national regulations

fischer injektion system FIS V masonry	
Performances Characteristic steel bearing capacity of anchor rods	Annex C 1

 $^{^{\}rm 2)}$ Only for fischer FIS A made of high corrosion-resistant steel C

Table C2.1: Characteristic values for the steel bearing capacity of anchor rods under shear load

	01100								
Anch	or rod				М6	М8	M10	M12	M16
Beari	ng capacity unde	r shear load	d, stee	l failu	ire				
witho	ut lever arm								
			4.6		4	7	12	17	31
Ø	Steel zine plated		4.8		4	7	12	17	31
stic V _{RK,}	Steel zinc plated		5.8		5	9	15	21	39
ter.		Property	8.8	[kN]	8	15	23	34	63
Characterstic esistance V _{Rk,s}	Stainless steel	class	50	נאואן	5	9	15	21	39
고 Ses	A4 and High corrosion		70		7	13	20	30	55
	resistant steel C		80		8	15	23	34	63
with I	ever arm								
g			4.6		6	15	30	52	133
din	Steel zinc plated		4.8		6	15	30	52	133
ben I _{Rk,s}	Oteer zinc plated		5.8		8	19	37	65	166
stic ot N		Property	8.8	[Nm]	12	30	60	105	266
acteristic ben moment M _{Rk,s}	Stainless steel	class	50	ווייין	7	19	37	65	166
Characteristic bending moment M _{RK,s}	A4 and High corrosion		70		10	26	52	92	232
Ö	resistant steel C		80		12	30	60	105	266
Partia	al safety factors ¹⁾								
			4.6				1,67		
tor	Steel zinc plated		4.8				1,25		
fac	Oteer zine plated		5.8				1,25		
safety Y _{Ms,V}		Property	8.8	[-]			1,25		
al sa M	Stainless steel	class	50	ו"ז			2,38		
Partial safety factor	A4 and High corrosion		70				1,25 ²⁾ / 1,56		
	resistant steel C		80				1,33		

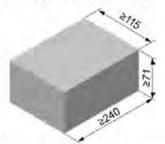
¹⁾ In absence of other national regulations

fischer injektion system FIS V masonry	
Performances Characteristic steel bearing capacity of anchor rods	Annex C 2

 $^{^{\}rm 2)}$ Only for fischer FIS A made of high corrosion-resistant steel C

Table C3.1:					e steel bea le / shear lo		y of internal th	readed
fischer internal t	hread	ed anchor	FIS E		M6	M8	M10	M12
Bearing capacity	unde	r tensile lo	ad, stee	el failure	,			
Characterstic		Property class	5.8	PI - 17	10	18	29	42
resistance with screw	N _{Rk,s}	Property class 70	A4 C	[kN]	14 14	26 26	41	59 59
Partial safety fac	tors1)							
Partial safety		Property class	5.8			1	50	
factor	γMs,N	Property class 70	A4 C	[-]			.87 .87	
Bearing capacity	unde	r shear loa	d, stee	failure	1			
without lever arr	n							
Characterstic		Property class	5.8	n. N. 17	5	9	15	21
resistance with screw	V _{Rk,s}	Property	A4	[kN]	7	13	20	30
		class 70	С		7	13	20	30
with lever arm								
Characteristic	$M_{Rk,s}$	Property class	5.8	[Nm]	8	19	37	65
bending moment	IVIRK,S	Property	A4	Living	- 11	26	52	92
	- 4	class 70	С		11:	26	52	92
Partial safety fac	tors"							
Partial safety		Property class	5.8	[-1			.25	
factor	γMs,V	Property	A4	[-]			.56	
		class 70	С			1	,56	

fischer injektion system FIS V masonry	
Performances Characteristic steel bearing capacity of fischer internal threaded anchor RG MI	Annex C 3



Solid	brick Mz,	NF, EN 77	1-1			
Producer		e.g. Wienerberger				
Nominal dimensions	[mm]	length L	width W	height H		
Nominal dimensions	[mm]	≥ 240	≥ 115	≥ 71		
Density ρ	[kg/dm ³]		≥ 1,8			
Compressive strength fb	[N/mm ²]	12 / 20				
Standard or annex			EN 771-1			

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

Anchor rod			M6	M8	M10	M12				
Internal threaded a	nchor				4.7		M6	M8	M10	M12
FIS E			10.00	1-2	-	-	11)	(85	15)	k 85
Anchor rod and inter	nal threaded anch	or FIS E with	out perfor	ated sleev	e			The second		
PH - W			50	50	50	50				
effective Inchorage depth		[mm]	80	80	80	80		8	35	
anchorage depth			200	200	200	200				
Max. installation torque	T _{inst,max}	[Nm]	4		10		4		10	
General installation p	arameters									
Edge distance	C _{min}			1	00			1	00	
Edge distance her=200	C _{min}			- 4	50				-	
	Smin II,N			6	60			6	60	
	h _{ef} =200 s _{min} II, _N	[mm]	7	2	40				2	
Spacing	s _{min} II,v			2	40			2	40	
	S _{cr} II			2	40			2	40	
	S _{cr} ⊥ = S _{min} ⊥			7	'5			7	75	

Drilling method

Hammer drilling with hard metal hammer drill

Table C4.2: Group factors

Anchor rods			M6	M8	M10	M12	1				
Internal threaded	anchor			-	15.	10.	M6	M8	M10	M12	
Edge distance C _{min}		[mm]	11x85 15x85								
	α _{g,N} II		7			1,5					
=	α _{g,V} II					2,0					
	h _{ef} =200 α _{g,N} II		-			1,5					
_	h _{ef} =200 α _{g,V} II		2,0								
Group factor	$\alpha_{g,N} \perp$	[-]	2,0								
	$\alpha_{g,V} \perp$		2,0								
	h _{ef} =200 α _{g,N} ⊥		1-			2,0					
-	h _{ef} =200 $\alpha_{g,V} \perp$					2,0					

fischer inje	ektion sys	tem FI	SV	masonry
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Performances

Solid brick Mz, NF, dimensions, installation parameters c=100mm

Table C5.1: Characteristic resistance under tensile load for edge distance 100mm

Anchor rod			M6	M8		M10			M12				y 47	
Internal thre		- 1									M6 M8		M10 M12	
		d N _{Rk}	[kN] depe	ending on	the co	mpre	ssive s	streng	th f _b (1	emper		V = 100		
compressive	ompressive Use					Effect	ive and	horag	e dept	h h _{ef} [m	m]			
strength fb			≥50	≥50	50	80	200	50	80	200	200 85		85	
12N/mm²	w/w	w/d	2,5	2,5	2	3	7,5	2	3,5	5	3,5		3,5	
12N/mm	d	′d	4	4	3,5	5	12	3	5,5	8			5,5	
20N/mm ²	w/w	w/d	3,5	3,5	3	4,5	11	3	5	7			5	
20N/mm	d	'd	5,5	5,5	5	7	12	4,5	8	11,5			8	

Factor for temperature range 72/120°C: 0,83

Table C5.2: Characteristic resistance under shear load for edge distance 100mm

Anchor rod	7	M6	M8	M1	0	M1	2			4.1	•
Internal thre anchor FIS E	And the second second	4	I (terr					M6 M8		M10 M12 15x85	
Shear load	V _{Rk} [kN] dep	ending	on the com	pressive s	trength f	(temper	ature ra	nge 50	/80°C	and 72	120°C)
compressive	Use			Effec	tive ancho	orage dep	th h _{ef} [m	m]			
	categorie	≥50	≥50	≥50	200	≥50	200			85	
12N/mm ²	w/w w/d d/d	2,5	2,5	4	8,5	4	11,5		18	2,5	
20N/mm ²	w/w w/d d/d	4,0	4,0	6	12	5,5	12			4	

Factor for job site tests and displacements see annex C110

fischer injektion system FIS V masonry

Performances

Solid brick Mz, NF, Characteristic resistance under tensile and shear load c=100mm

Anchor ro	bd		М6	M8	M10	M12	M16			-	
Internal th	nreaded anchor		2,	7.2	1.21		2,	M6	M8	M10 M12	
3	ad and laternal	46	al accelera	FIG FIAL		to all a la socia		11)	(85	15x85	
Anchor re	od and internal	Inreade	50	50	50	50	50	1			
Effective	h	[mm]	100	100	100	100	100			35	
anchorage	e depth h _{ef}	[man]	200	200	200	200	200				
Max. insta torque	Illation T _{inst,max}	[Nm]	4	200		0	200	4		10	
	nstallation para	meters									
Edge dista	ance c _{min}					60					
Edge distanceh	ef=200 C _{min}					60					
	s _{min} II,					80					
	h _{ef} =200 s _{min} II, _N	[mm]				80					
0	S _{cr} II					80					
Spacing -		ir L				3x h.,					
Spacing — —	S _{cr} I		3x h _{ef}								
Spacing — — —	s _{cr} I s _{min} 1					80					
Drilling m Hammer c	s _{min} ⊥ s _{cr} ⊥ method drilling with hard	metal ha		1							
Drilling m Hammer of Table Co	s _{min} L s _{cr} L dethod drilling with hard 6.2: Group	metal ha		M8	M10	80	M16				
Drilling m Hammer of Table Co	s _{min} ⊥ s _{cr} ⊥ nethod drilling with hard	metal ha	s		M10	80 3x h _{ef}	M16	M6	M8	- M10 M12 15x85	
Drilling m Hammer of Table Co Anchor ro Internal th	s _{min} ⊥ s _{cr} ⊥ nethod drilling with hard 6.2: Group ods nreaded anchor	metal ha	s M6	M8		80 3x h _{ef}		М6	M8	-	
Drilling m Hammer of Table Co Anchor ro Internal th FIS E Edge	s _{min} ⊥ s _{cr} ⊥ nethod drilling with hard 6.2: Group ods nreaded anchor	metal ha	s M6	M8		80 3x h _{ef} M12		М6	M8	-	
Drilling m Hammer of Table Co Anchor ro Internal th FIS E Edge	$s_{min} \perp$ $s_{cr} \perp$ nethod drilling with hard 6.2: Group ods nreaded anchor $c_{min} \parallel$ $\alpha_{g,V} \parallel$	metal ha	s M6	M8		80 3x h _{ef} M12 - 60 0,6 1,3		М6	M8	-	
Drilling m Hammer of Table Co Anchor ro Internal th FIS E Edge	$s_{min} \perp s_{cr} \perp $	metal ha	s M6	M8		80 3x h _{ef} M12 - 60 0,6 1,3 1,4		М6	M8	-	
Drilling m Hammer of Table C6 Anchor ro Internal th FIS E Edge distance	$s_{min} \perp$ $s_{cr} \perp$ nethod drilling with hard 6.2: Group ods nreaded anchor $c_{min} \parallel$ $\alpha_{g,V} \parallel$	metal ha	s M6	M8		80 3x h _{ef} M12 - 60 0,6 1,3 1,4 1,5		М6	M8	-	
Drilling m Hammer of Table C6 Anchor ro Internal th FIS E Edge distance	$s_{min} \perp s_{cr} \perp $	metal ha	s M6	M8		80 3x h _{ef} M12 - 60 0,6 1,3 1,4 1,5 0,3		М6	M8	-	
Drilling m Hammer of Table C6 Anchor ro Internal th FIS E Edge distance	$s_{min} \perp s_{cr} \perp $	metal ha	s M6	M8		80 3x h _{ef} M12 - 60 0,6 1,3 1,4 1,5 0,3 1,3		М6	M8	-	
Drilling m Hammer of Table C6 Anchor ro Internal th FIS E Edge	$s_{min} \perp s_{cr} \perp $	metal ha	s M6	M8		80 3x h _{ef} M12 - 60 0,6 1,3 1,4 1,5 0,3		М6	M8	M10 M12 15x85	

Table C7.1: Characteristic resistance under tensile load for edge distance c= 60 mm

Anchor rod N	M6	M8 M10	M12	M16					
Internal threaded			1			M6	М8	M10	M12
anchor FIS E		7		1	7	11)	(85	15	x85

compres-	use						Effe	ective	anch	orage	depti	n het [mm]		
sive strength f _b	category	50	100	50	100	50	100	200	50	100	200	50	100	200	85
12N/mm ²	w/w w/d	1	,5	2,0	2,0	2,0	2,5		2,0	2,5		2,0	5,5	2	•
12N/mm	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	
20N/mm ²	w/w w/d	2	,0	2,5	3,0	2,5	3,5	-	3,0	3,5	-	3,0	7,5		-
20N/mm	d/d	3	,5	4,5	5,5	4,5	5,5	12	4,5	5,5	12	4,5	12	12	₹ <i>0</i> ′
28N/mm ²	w/w w/d	2	,5	3,0	4,0	3,0	4,0	1-1	3,5	4,0	10	3,5	9,0	10.4	- 4
28N/mm	d/d	4	,0	5,5	6,5	5,5	6,5	12	5,5	6,5	12	5,5	12	12	- 61

Factor for temperature range 72/120°C: 0,83

Table C7.2: Characteristic resistance under shear load for edge distance c= 60 mm

Anchor ro	d	٨	16	N	18		M10			M12			M16			-	-	-
Internal th	readed												121		M6	M8	M10	M12
anchor FIS	S E		•							•					11:	x85	15	x85
Shear loa	d V _{Rk} [kN]	dep	endin	g on	the c	ompr	essiv	e stre	ength	f _b (te	mper	ature	rang	je 50/	80°C	and ?	72/12	0°C)
compres-	use						Effe	ective	anch	orage	dept	hef[mm]					
sive strength f _b	category	50	100	50	100	50	100	200	50	100	200	50	100	200		8	35	
12N/mm²	w/w w/d	10	2,5	10	20	20	3.0	1.5	15	3.0	20	0.6	20	15				- 1
12N/mm	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				
	sadar sadal									1.50		14						

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

3,0

2,5

5,0

5.0

1,2

5.0

7,5

3,5

5,0

5.0

Factor for job site tests and displacements see annex C110

2.0

4,0

fischer injektion system FIS V masonry

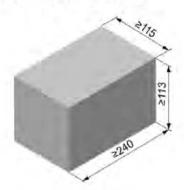
Performances

20N/mm²

28N/mm²

w/w w/d

Solid brick Mz, NF, Characteristic resistance under tensile and shear load c=60



	Solid brick N	Mz, 2DF, E	N 771-1	
Producer		e.g	. Wienerber	ger
Naminal dimana	iona [mm]	length L	width W	height H
Nominal dimens	sions [mm]	≥ 240	≥ 115	≥ 113
Density ρ	[kg/dm ³]		≥ 1,8	
Compressive strength f _b	[N/mm²]		10/16	
Standard or ann	iex		EN 771-1	

Table C8.1: Installation parameters

Anchor rod			N	16	N	18	M	10	M	12	M	16			-	
Internal threaded	anchor												M6	M8	M10	M12
FIS E			7				6.					•	11x85		15)	k85
Anchor rod and in	or rod and internal threaded anchor					with	out pe	erforat	ed si	eeve						
Effective anchorage depth	h _{ef}	[mm]	50	100	50	100	50	100	50	100	50	100		8	15	
Max. installation - torque	T _{inst,max}	[Nm]		4				1	0				4		10	
Anchor rod and in	iternal t	hread	ed ar	nchor	FIS E	with	perfo	rated	sleev	e FIS	H 16	(85 K				
Effective anchorage depth	h _{ef}	[mm]				8	5						8	5		
Max. installation torque	T _{inst,max}	[Nm]				1	0						4	10		
General installation	on parai	meters	3													
Edge distance	Cmin								ϵ	60						
	S _{min} II	[mm]							1.	20						
Spacing	s _{cr} II	[mm]							2	40						
s _{cr} ⊥	$= s_{\text{min}} \bot$								1	15						
Drilling method																

Hammer drilling with hard metal hammer drill

Table C8.2: Group factors

Anchor rods		M6	M8	M10	M12	M16				
Internal threade	ed anchor						M6	M8	M10	M12
FIS E						-	112	(85	15)	k 85
	α _{g,N} II				1,5					
Group factor	α _{q,V} II				1,4					
Group factor	$\alpha_{q,N} \perp$ [-] $\alpha_{q,V} \perp$				2					

fischer injektion	system FIS \	/ masonry
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Performances

Solid brick Mz, 2DF, dimensions, installation parameters

Table C9.1: Characteristic resistance under tensile load

Anchor rod	M6	M8	M10	M12	M16	-		- T	M8	M10	(4)
Internal threaded					1 - 6	M6	M8	M10 M12	7.6		M6 M8
anchor FIS E			2.1	32	17.54	11x	85	15x85	7	. 5	11x85
Perforated sleeve FIS H K				•						16x85	

Tens	ile loa	d Nak	[kN	dep	end	ing (on th	ie co	3888		543400		gth f _b (temperature ra	nge 50/80°C)
compressive strength fb	use	iory	50	100	E0.	1100	E0.	1100				horaq 100	ge depth h _{ef} [mm]	
strength ib	careg	JOLY	50	100	50	100	50	100	50	100	50	100	85)
10N/mm ²	w/w	w/d	1,5	2,5	1,5	2,5	1,5	3	2	3,5	2	3,5	2	1,5
TON/MIM	d	/d	3	4,0	3,0	4,0	3,0	4,5	3	5,5	3	5,5	3	3
16N/mm ²	w/w	w/d	2,5	4	2,5	4	2,5	4,5	3,5	5,5	3,5	5,5	3,5	2,5
16N/mm	d	/d	4,5	7,0	4,5	7,0	4,5	7,5	5,5	8	5,5	8	5,5	4,5

Factor for temperature range 72/120°C: 0,83

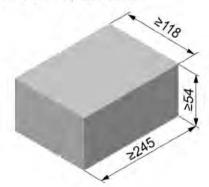
Table C9.2: Characteristic resistance under shear load

Anchor rod	M6	M8	M10	M12	M16	ii ita		1.00	2.74	M8	M10	FE S
Internal threaded						M6	M8	M10	M12	19		M6 M8
anchor FIS E		•	- 3			11)	(85	15	k85	•		11x85
Perforated sleeve FIS H K	4	9		-				- 6			16x85	

	Effective anchorage depth hef [mm]										
		≥ 50							35		
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
4.0	5.0			F.0	10	5.0	.	5.0	5.0	0.0	4,0 5,0
	2,5		2,5 3,0 3,0	2,5 3,0 3,0 3,5	2,5 3,0 3,0 3,5 3,0	2,5 3,0 3,0 3,5 3,0 2,5	2,5 3,0 3,0 3,5 3,0 2,5 3,0	2,5 3,0 3,0 3,5 3,0 2,5 3,0 3,0	2,5 3,0 3,0 3,5 3,0 2,5 3,0 3,0 3,0	2,5 3,0 3,0 3,5 3,0 2,5 3,0 3,0 3,0 3,0	2,5 3,0 3,0 3,5 3,0 2,5 3,0 3,0 3,0 3,0 3,5

Factor for job site tests and displacements see annex C110

fischer injektion system FIS V masonry	
Performances	Annex C 9
Solid brick Mz, 2DF, Characteristic resistance under tensile and shear load	



	Sol	id bric	k Mz, EN 7	71-1	
Producer				e.g. Nigra	
Naminal dimana	ione	[mm]	length L	width W	height H
Nominal dimens	ions	funuit	≥ 245	≥ 118	≥ 54
Density ρ	[k	g/dm ³]		≥ 1,8	
Compressive strength f _b	[N	l/mm²]		10 / 20	
Standard or ann	ex			EN 771-1	

Table C10.1: Installation parameters

		16	IV	18	M	10	M	12	M16		•		•	
	-										M6	M8	M10	M12
								•			11x85		15)	85
reade	ed ar	chor	FIS E	witho	ut pe	erforat	ed sl	eeve						
mm]	50	0 100 50 100 50 100 50 100 50 100							85					
Nm]	4	4				1	0				4 10			
eters														
							6	0						
mm]							2	45						
	60													
r	mm] Nm] eters	mm] 50 Nm] 4 eters	mm] 50 100 Nm] 4 eters	readed anchor FIS E mm] 50 100 50 Nm] 4 eters	readed anchor FIS E without mm] 50 100 50 100 Nm] 4 eters	readed anchor FIS E without permm] 50 100 50 100 50 Nm] 4	readed anchor FIS E without perforat mm] 50 100 50 100 50 100 Nm] 4 100 eters	readed anchor FIS E without perforated sl mm] 50 100 50 100 50 100 50 Nm] 4 10 eters mm] 60 20	readed anchor FIS E without perforated sleeve mm] 50 100 50 100 50 100 50 100 Nm] 4 10 eters mm] 60 245	readed anchor FIS E without perforated sleeve mm] 50 100 50 100 50 100 50 100 50 Nm] 4 10 eters mm] 60 245	readed anchor FIS E without perforated sleeve mm] 50 100 50 100 50 100 50 100 50 100 Nm] 4 10 eters mm] 60 245	readed anchor FIS E without perforated sleeve mm] 50 100 50 100 50 100 50 100 50 100 Nm] 4 10 4 eters 60 245	readed anchor FIS E without perforated sleeve mm] 50 100 50 100 50 100 50 100 50 100 8 Nm] 4 10 4 eters mm] 60 245	readed anchor FIS E without perforated sleeve mm] 50 100 50 100 50 100 50 100 50 100 85 Nm] 4 10 4 10 eters mm] 60 245

Hammer drilling with hard metal hammer drill

Table C10.2: Group factors

Anchor rods	M6	M8	M10 -	M12	M16		-		
Internal threaded anchor						M6	M8	M10	M12
FIS E	•	-		141	. •	11:	11x85		x85
$\begin{array}{c} \alpha_{\text{g,N}} \text{ II} \\ \hline \alpha_{\text{q,V}} \text{ II} \\ \hline \alpha_{\text{q,N}} \bot \\ \hline \alpha_{\text{q,V}} \bot \end{array}$	[-]			2					

fischer injektion system FIS V masonry	
Performances Solid brick Mz, dimensions, installation parameters	Annex C 10

Table C11.1: Characteristic resistance under tensile load

Anchor rod			M6	M8	M10	M12	M16	III pr	eth.	-		
Internal thre		2.11		1 -25	1-1			_ M6 N		M10 M12		
anchor FIS E	4					. = = **	3"	11)	(85	15x85		
Tensi	le loa	d N _{Rk}	[kN] depend	ing on the c	ompressive s	trength fb (te	mperature	range 5	50/80	°C)		
compressive	use			Effective anchorage depth hef [mm]								
strength f _b category					5							
10N/mm ²	w/w	w/d	0,6	0,9	0,75	0,75	0,75	0,6		0,75		
10N/mm	d	′d	1,2	1,5	1,2	1,2	1,2	1,2) EI	1,2		
20N/mm ²	w/w	w/d	0,9	1,5	1,2	1,2	1,2	0,9	1	1,2		
2014/mm	d	'd	1,5	2,5	2,0	2,0	2,0	1,5		2,0		

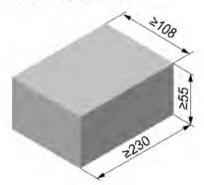
Factor for temperature range 72/120°C: 0,83

Table C11.2: Characteristic resistance under shear load

Anchor rod		M6	M8	M10	M12	M16						
Internal thre	aded				17		M6	M8	M10	M12		
anchor FIS E		•		100			112	x85	15x85			
Shear load	V _{Rk} [kN] depe	ending on t	he compres	sive strength	f _b (temperate	ure range 5	0/80°C	and i	72/120)°C)		
compressive	use		Effective anchorage depth hef [mm]									
strength fb	category			≥ 50			85					
10N/mm ²	w/w w/d d/d	2,0	3,0	4,0	4,5	5,5	2,0	3,0	4,0	4,5		
20N/mm ²	w/w w/d d/d	2,5	4,0	5,5	6,0	8,0	2,5	4,0	5,5	6,0		

Factor for job site tests and displacements see annex C110

fischer injektion system FIS V masonry	
Performances	Annex C 11
Solid brick Mz, Characteristic resistance under tensile and shear load	



	Solid bric	k Mz, EN 7	71-1							
Producer		e.g	. Wienerber	ger						
Naminal dimana	ione [mm]	, length L width W heig								
Nominal dimens	ions [mm]	≥ 230	≥ 108	≥ 55						
Density ρ	sions [mm] $\frac{\text{length L}}{\geq 230}$ $\frac{108}{\geq 1,8}$ $\frac{1}{2}$									
Compressive strength f _b	[N/mm²]		10 / 20							
Standard or ann	ex		EN 771-1							

Table C12.1: Installation parameters

Anchor rod nternal threaded anchor	IV	6	IV	18	M	10	M12 M16		16					
										М6	M8	M10	M12	
	1								- 1	11x85		15)	(85	
hread	ed an	chor	FIS E	with	out pe	rfora	ted sl	eeve		7				
[mm]	50	50 90 50 90 50 90 50 90 50 90						90	85					
[Nm]] 4 10 4						10							
neters	,													
							6	0						
[mm]							23	30						
	60													
	[mm] [Nm] neters	[mm] 50 [Nm] 4 meters	[mm] 50 90 [Nm] 4 meters	hreaded anchor FIS E [mm] 50 90 50 [Nm] 4 meters	[mm] 50 90 50 90 [Nm] 4 meters	hreaded anchor FIS E without pe [mm] 50 90 50 90 50 [Nm] 4 meters	hreaded anchor FIS E without perforate	hreaded anchor FIS E without perforated slamm 50 90 50 90 50 90 50 [Nm]		hreaded anchor FIS E without perforated sleeve	hreaded anchor FIS E without perforated sleeve	Threaded anchor FIS E without perforated sleeve	Table Tabl	

Hammer drilling with hard metal hammer drill

Table C12.2: Group factors

Anchor rods	M6	M8 -	M10 -	M12 -	M16 -			•	
Internal threaded anchor						M6	M8	M10	M12
FIS E						11x85		15x85	
Group factor $ \begin{array}{c} \underline{\alpha_{\text{g,N}} \text{ II}} \\ \underline{\alpha_{\text{g,V}} \text{ II}} \\ \underline{\alpha_{\text{g,N}} \perp} \\ \underline{\alpha_{\text{g,V}} \perp} \end{array} \text{ [-]} $				2					

fischer injektion system FIS V masonry	
Performances Solid brick Mz, dimensions, installation parameters	Annex C 12
Solid Brick Wz, differsions, installation parameters	

Table C13.1: Characteristic resistance under tensile load

Anchor rod			M6	M8	M10	M12	M16							
Internal thre	aded	2 11						M6	M8	M10	M12			
anchor FIS I	E		•						11x85		(85			
Tens	ile loa	d N _{Rk}	[kN] depend	ing on the c	ompressive s	trength fb (te	mperature	range :	50/80	°C)				
compressive	use			Effective anchorage depth hef [mm]										
strength fb	categ	ory	ory ≥ 50						85					
10N/mm ²	w/w	w/d	0,6	0,9	0,75	0,75 0,75		0,75		75	#- 1			
ION/mm	d	/d	1,2	1,5	1,2	1,2	1,2		1,2		9			
20N/mm ²	00N/2 W/W W/d 0,9		0,9	1,5	1,2	1,2	1,2	1,2		,2				
20N/mm	d	/d	1,5	2,5	2,0	2,0	2,0	2		,0				

Factor for temperature range 72/120°C: 0,83

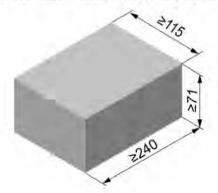
Table C13.2: Characteristic resistance under shear load

Anchor rod		M6	M8	M10 M12		M16	11.		- F-9 F				
Internal thre			1 1				M6	M8	M10 M1				
anchor FIS	E					· ·	113	(85	15x85				
Querlast V	Rk [kN] in Ab	hängigkeit	von der Dru	ckfestigkeit f	(Temperatu	rbereich 50	/80°C ∟	ınd 7	2/120	°C)			
compressive	use		Effective anchorage depth hef [mm]										
strength f _b	category			≥ 50				8	35				
10N/mm ²	w/w w/d	2.0	2.0	4.0	15	5.5	2.0	2.0	4.0	4,5			
TON/IIIII	d/d	2,0	3,0	4,0	4,5	5,5	2,0	3,0	4,0	4,5			
20N/mm ²	w/w w/d	2.5	40	5.5	6,0	9.0	2,5	4.0	5,5	6,0			
ZUN/IIIII	d/d	2,5	4,0	5,5	0,0	8,0	2,5	4,0	5,5	0,0			

Factor for job site tests and displacements see annex C110

fischer injektion system FIS V masonry	
Performances	Annex C 13
Solid brick Mz, Characteristic resistance under tensile and shear load	

Solid sand-lime brick KS, NF, EN 771-2



Solid	sand-lime	brick KS, N	IF, EN 771-	2
Producer				
Naminal dimana	iona [mm]	length L	width W	height H
Nominal dimens	ions [mm]	≥ 240	≥ 115	≥ 71
Density p	[kg/dm ³]			
Compressive strength f _b	[N/mm ²]		12 / 20 / 28	
Standard or ann	ex		EN 771-2	

Table C14.1: Installation parameters

Anchor rod			Λ	16	N	18	M	10	M	12	M	16	1			•	
Internal threade	d anchor				1								M6	M8	M10 M12		
FIS E								•		•		•	11:	k 85	153	x85	
Anchor rod and	internal	thread	ed a	nchor	FIS E	witho	out p	erforat	ted sl	eeve							
Effective	b	[mm]	EO	100	EO	100	50	100	50	100	50	100		E		E	
anchorage depth	h _{ef}	[mm]	50	100	50	100	2	00	2	00	2	00	٥	85		85	
Max. installation torque	T _{inst,max}	[Nm]	I	3	1	5		15	1	5	2	25	3	5	5 15		
General installa	tion para	meters	3														
Edge distance	Cmin								6	60							
	s _{min} II								8	30							
Caratina	S _{cr} II	[mm]							8	30						- 1	
Spacing —	Smin 1								Зх	h _{ef}							
s _{cr} ⊥								3×	chet								

Drilling method

Hammer drilling with hard metal hammer drill

Table C14.2: Group factors

Anchor rod		M6	M8	M10	M12	M16	1 50			•
Internal threaded anchor FIS E						1 3	M6	M8	M10	M12
			~ .	-	4 5		11x85		15x85	
7	α _{q.N} II				0,7					
Croup footor	α _{a,V} II				1,3					
Group factor	α _{g,N} ⊥ [-]				2,0					
	α _{α,V} ⊥				2,0					

fischer injektion system FIS V masonry	
Performances Solid sand-lime brick KS, NF, dimensions, installation parameters	Annex C 14

Solid sand-lime brick KS, NF, EN 771-2

Table C15.1: Characteristic resistance under tensile load

Anchor rod			N	16	N	18		M10)		M12			M16			-		
Internal thre	aded															M6 M8		M10	M12
anchor FIS I	E							•			•			•		11	x85	15)	(85
Tens	ile loa	d N _{Rk}	[kN]	dep	endi	ng o	n the	con	press	sive :	stren	gth f	b (ter	npera	ture	rang	e 50/8	30°C)	
compressive	use						-	E	ffectiv	e and	chora	ge de	epth I	n _{ef} [mr	n]				
strength f _b	categ	jory	50	100	50	100	50	100	200	50	100	200	50	100	200	8	35	8	5
12N/mm ²	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	2,5	2	,5
12N/mm	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	1,0	4	,0
20N/mm ²	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	3,5	3	,5
20N/IIIII	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	6,0	6	,0
28N/mm ²	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	1,5	4	,5
2014/mm	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	7,0	7	,0

Factor for temperature range 72/120°C: 0,83

Table C15.2: Characteristic resistance under shear load

Anchor rod		N	16	N	18	N	110	M	112	M	16				0
Internal thre	aded											M6	M8	M10	M12
anchor FIS E				9	•		•		•			11)	85	15x	85
Shear load	V _{Rk} [kN] de	pendi	ng on	the co	mpres	sive	strengt	h f _b (temper	ature	range	50/80°	C and	72/12	0°C)
compressive	use					Effe	ctive ar	chora	age dep	th h _{ef}	[mm]				
strength fb	50	100	50	100	50	≥100	50	≥100	50	≥100	8	5	8	5	
12N/mm ²	w/w w/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
20N/mm ²	w/w w/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
28N/mm ²	w/w w/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

fischer injektion system FIS V masonry	
Performances Solid sand-lime brick KS, NF, Characteristic resistance under tensile and shear load	Annex C 15

Solid sand-lime brick KS, 8DF, EN 771-2



Solid	sand-lime b	rick KS, 81	DF, EN 771	-2
Producer			The et al.	
Name in all all as a same	tama Francis	length L	width W	height H
Nominal dimens	ions [mm]	≥ 250	≥ 240	≥ 240
Density ρ	[kg/dm ³]		≥ 2,0	
Compressive strength f _b	[N/mm²]		10 / 20 / 28	
Standard or ann	iex		EN 771-2	

100 40 100 Q

Table C16.1: Installation parameters

Anchor rod			٨	16	٨	18	M	10	M	12	M	16			
Internal threade	d anchor												M6	M8	M10 M12
FIS E											100		11x85		15x85
Anchor rod and	internal	thread	ed a	nchor	FIS E	with	out pe	erforat	ed sl	eeve					
Effective anchorage depth	h _{ef}	[mm]	50	100	50	100	50	100	50	100	50	100		8	35
Max. installation torque	T _{inst,max}	[Nm]		4				1	0				4		10
Anchor rod and	internal	thread	ed a	nchor	FIS E	with	perfo	rated	sleev	e FIS	H 16:	k85 K			
Effective anchorage depth	h _{ef}	[mm]			=	8	5			3.5			8	5	
Max. installation torque	T _{inst,}	[Nm]				1	0						4	10	-
General installat	tion para	meters	3												
Edge distance	Cmin								6	60					
	s _{min} II								8	30					
0		[mm]							2	50					
Spacing	s _{min} ⊥			80				30							
	scr⊥						240								
Drilling method															

Drilling method

Hammer drilling with hard metal hammer drill

Table C16.2: Group factors

Anchor rods		M6	M8	M10	M12	M16	4						
Internal threaded anchor							M6	M8	M10	M12			
FIS E		7	-	1 - 2 - 1			11x85		15)	x85			
	α _{q.N} II	ļ		**	1,5								
Constant fractions	α _{α,V} II				1,2								
Group factors	α _{g,N} ⊥ [-]				1,5								
	$\alpha_{q,V} \perp$	1,2											

fischer injektion system FIS V masonry

Performances

Solid sand-lime brick KS, 8DF, dimensions, installation parameters

Solid sand-lime brick KS, 8DF, EN 771-2

Table C17.1: Characteristic resistance under tensile load

Anchor rod	М6	M8	M10	M12	M16	1.7		1.		M8	M10	€ -
Internal threaded						M6	M8	M10	M12	1.5		M6 M8
anchor FIS E				1.2	2	11x85	(85	15x85		•		11x85
Perforated sleeve FIS H K	3-1	-		7-3							16x85	

Tensi	le loa	d N _{Rk}	[kN] de	pending	on the co	ompress	ive strer	ngth f _b (temperature	range 50/80°	C)		
compressive				Effective anchorage depth hef [mm]									
strength f _b	categ	jory			≥ 50					85			
10N/mm ²	w/w	w/d	3,0	4,0	4,5	4,5	3,5	3,0	3,5	4,5	3,0 4,5		
TON/mm	d	/d	5,0	7,0	7,0	7,0	5,5	5,0	5,5	8,0	5,0 8,0		
20N/mm ²	w/w	w/d	4,5	6,0	6,0	6,0	5,0	4,5	5,0	6,5	4,5 6,5		
20N/mm	d	/d	7,5	10,0	10,0	10,0	7,5	7,5	7,5	11,0	7,5 11		
28N/mm ²	w/w	w/d	5,0	8,0	8,5	8,5	7,0	5,0	7,0	8,5	5,0 8,5		
28N/mm	d	/d	8,5	12,0	12,0	12,0	11,0	8,5	11,0	12,0	8,5 12		

Factor for temperature range 72/120°C: 0,83

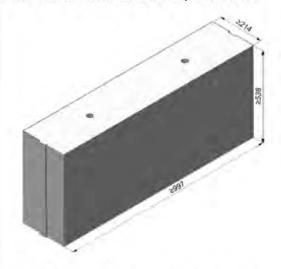
Table C17.2: Characteristic resistance under shear load

Anchor rod	M6	M8	M10	M12	M16	H To-			M8	M10	-
Internal threaded		- 5		- 53	-	M6 M8		M10 M12	100		M6 M8
anchor FIS E								11x85 15x85			11x85
Perforated sleeve FIS H K		•	-	•					16x85		

compressive	use		Effective a	anchorage dept	nchorage depth h _{ef} [mm]							
strength f _b			≥ 50			85						
10N/mm²	w/w w/d d/d	2,5	4,5	2,5	4,5	4,5	2,5 4,5					
20N/mm ²	w/w w/d	4,0	6,5	4,0	6,5	6,5	4,0 6,5					
28N/mm ²	w/w w/d	5,0	9,0	5,0	9,0	9,0	5,0 9,0					

fischer injektion system FIS V masonry	
Performances Solid sand-lime brick KS, 8DF, Characteristic resistance under tensile and shear load	Annex C 17

Solid sand-lime brick KS, EN 771-2



Sol	id sand-l	ime	e brick KS,	EN 771-2					
Producer			e.g. Calduran						
Naminal dimana	ione Im	1	length L	width W	height H				
Nominal dimensions [mm			≥ 997	≥ 214	≥ 538				
Density ρ	[kg/dn	n ³]	1,8		2,2				
Compressive [N/mm²]			10 / 20	0	36				
Standard or annex				EN 771-2					



Table C18.1: Installation parameters

Anchor rod		N	16	N	18	М	10	M	12	M	16		-12		
Internal threaded anchor		-		. (6)							M6	M8	M10	M12	
FIS E						•		- 7 -			5 (1)	11x85		15x85	
Anchor rod and internal	thread	ed ar	nchor	FIS E	with	out pe	erforat	ed sl	eeve						
Effective anchorage depth hef	[mm]	50	100 50 100 50 100 50 100 50 100									8	85		
Max. installation torque T _{inst,max}	[Nm]		4				1	10				4		10	
General installation para	meters	3													
Edge distance c _{min}								7	75						
Ser II = Smin I	[mm]		3x h _{ef}												
Spacing $s_{cr} \perp = s_{min} \perp$		3x h _{ef}													
Drilling method									100						- 1

Hammer drilling with hard metal hammer drill

Table C18.2: Group factors

Anchor rod	М6	M8	M10	M12	M16	1.7.5	•		•
Internal threaded anchor						M6	M8	M10	M12
FIS E	1 7 1			7.5		11x85		15x85	
Group factors $ \begin{array}{c} \frac{\alpha_{\text{g,N}} \text{ II}}{\alpha_{\text{g,N}} \perp} \\ \frac{\alpha_{\text{g,N}} \perp}{\alpha_{\text{g,V}} \perp} \end{array} [-] $			**	2					

Annex C 18

Solid sand-lime brick KS, EN 771-2

Table C19.1: Characteristic resistance under tensile load

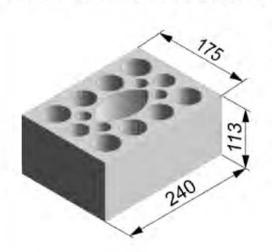
Anchor rod			N	16	N	18	M	10	M	12	М	16				
Internal thre	aded												M6	M8	M10	M12
anchor FIS	E												112	x85		
Tens	ile loa	d N _{Rk}	[kN] d	lepend	ling on	the co	ompre	ssive s	trengt	h f _b (te	mpera	ture ra	inge :	50/80	°C)	
compressive	use						Effect	ive and	horage	depth	h _{ef} [mr	n]				
strength f _b	categ	jory	50	100	50	100	50	100	50 100		50	100	85			
10N/mm ²	w/w	w/d	4	4,0		7,0	5,0	6,0	5,0	6,0	5,5	7,5		5	,5	
TON/mm	d	/d	7	7,0		12,0	8,0	9,5	8,0	10,0	9,0	11,5		9	,0	9
20N/mm ²	w/w	w/d	5	,5	6,0	10,0	7,0	8,5	7,0	9,0	8,0	11,0		8	,0	
20N/IIIII	d	/d	8	8,5		12,0	11,5	12,0	11,0	12,0	12,0	12,0		12	2,0	
36N/mm ²	w/w	w/d	4	4,5		12,0	11,5	12,0	12,0	12,0	12,0	12,0		12	2,0	1
30N/MM	mm² d/d 8,0		12,0	12,0	12,0	12,0	12,0	12,0	12,0	12,0	111	12	2,0			

Factor for temperature range 72/120°C: 0,83

Table C19.2: Characteristic resistance under shear load

Anchor rod		M6	M8	M10	M12	M16		•		2
Internal thre	eaded	12	_			4	M6	M8	M10	M12
anchor FIS	E						11x85		15x85	
Shear load	V _{Rk} [kN] dep	ending on t	he compres	sive strength	f _b (temperate	ure range 5	0/80°C	and '	72/120	O°C)
compressive	use									
strength f _b	category			85						
10N/mm ²	w/w w/d	3,0	5.0	5,5	4,0	4,0	3,0	5,0	5,5	4,0
TON/IIIII	d/d	3,0	5,0	3,3	4,0	4,0	3,0	3,0	5,5	4,0
20N/mm ²	w/w w/d	4,5	7,0	7,5	6,0	6,0	4,5	7,0	7,5	6,0
2014/111111	d/d	4,5	7,0	7,5	0,0	0,0	4,3	7,0	7,5	0,0
36N/mm ²	w/w w/d	4,5	9,0	11,0	12,0	12,0	4,5	9,0	11,0	120
3014/111111	d/d	4,5	9,0	11,0	12,0	12,0	4,5	9,0	11,0	12,0

fischer injektion system FIS V masonry	
Performances Solid sand-lime brick KS, Characteristic resistance under tensile and shear load	Annex C 19
Contraction Contraction and Assistant Section 25 and a section of the Property and Assistant Assistant Assistant	



Perforate	d sand-lime	brick KSL	., 3DF, EN	771-2				
Producer		e.g. KS Wemding						
Naminal dimana	iona [mm]	length L	height H					
Nominal dimens	ions [mm]	240	175	113				
Density ρ	[kg/dm ³]	≥ 1,4						
Compressive strength f _b	[N/mm²]	8/	10/12/16	/ 20				
Standard or ann	ex		EN 771-2					

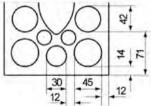


Tabelle C20.1: Installation parameters (Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10		M12	M16	M12	M16
Internal threaded				-3-1	M6	M8					M10 M12	2			
anchor FIS E						11x85		_0.0 T		•	15x85				
Perforated sleeve FIS H K	12	x50	12:	12x85 16		16:	85 16x		(130	20:)x85		20x	130	
Anchor rod and internal thre	eaded a	ncho	r FIS	Ew	ith pe	erfora	ited :	sleev	e FIS	S HK					
Max. installation torque T _{inst,max} [N	m]							2	2						
General installation parame	ers														

General installat	ion parameters			
Edge distance	C _{min}	60	80	
	S _{min} II		100	
0	s _{cr} II [mm]		240	
Spacing	S _{min} ⊥		115	
	s _{cr} ⊥		115	

Drilling method

Hammer drilling with hard metal hammer drill

Table C20.2: Group factors

Anchor rod			М6	M8	М6	M8		i i	M8	M10	M8	M10	-	M12 M16	M12 M16
Internal threaded anchor							M6 M8				hotel		M10 M12		-3.1
FIS E						•	113	k 85		- 2		-	15x85	.	
Perforated sleeve FIS H K			12)	(50	12	k 85		16	85		16x	130	20:	x85	20x130
Group	$\alpha_{\text{a,N}} \text{ II} = \alpha_{\text{a,V}} \text{ II}$	r 1								1,	5				
factors	$\alpha_{q,N} \perp = \alpha_{q,V} \perp$	[-]								2,	0				

fischer injektion system FIS V masonry	
Performances	Annex C 20
Perforated sand-lime brick KSL, 3DF, dimensions, installation parameters	

Table C21.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16
Perforated sleev	e FIS H H		18x13	30/200	22x130/200
Anchor rod with	perforat	ed sleeve	FIS H K		
Max. installation torque	T _{inst,max}	[Nm]		2	
General installat	ion para	neters			
Edge distance	C _{min}			80	
	s _{min} II			100	
Casalaa	S _{cr} II	[mm]		240	
Spacing	Smin⊥			115	
	s _{cr} ⊥	14 =		115	
Drilling method				- 00	
Hammer drilling v	vith hard	netal ham	mer drill		

Table C21.2: Group factors

Anchor rod		M10	M12	M16
Perforated slee	ve FIS H K	18x13	30/200	22x130/200
0	$\frac{\alpha_{g,N} I }{\alpha_{g,V} I }$		1,5	
Group factors	$\alpha_{q,N} \perp \alpha_{q,V} \perp$		2,0	l so

fischer injektion system FIS V masonry	
Performances	Annex C 21
Perforated sand-lime brick KSL, 3DF, dimensions, installation parameters	

w/w

w/w

d/d

d/d

16 N/mm²

20 N/mm²

w/d

w/d

Table C22.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8			M8	M10	M8 M10	-	M12 M16	M12 M16
Internal thread	nternal threaded						M6	M8				M10 M12		
anchor FIS E							11:	x85				15x85	1.5	-
Perforated slee	ated sleeve FIS H K		123	(50	12x85		16x85			16x130	20:	x85	20x130	
Tensile	Tensile load N _{Rk} [kN] d		epend	ing c	n the	e con	npre	ssive	stre	ngth	f _b (tempe	rature ran	ge 50/80°	C)
compressive strength f _b	use catego	ry												
8 N/mm ²	w/w	w/d		1,5			2	,0		2,0	2	,0	2,0	
8 N/mm	d	/d		1	1,5				2,0		2,5	2	,5	2,5
10 N/mm ²	w/w	w/d		2	,0			2	,0		2,5	2	,5	2,5
10 N/mm	d	/d	2,		2,0		2,		,5		3,0	3	,0	3,0
10 N/2	w/w	w/d		2,		2,5		2	,5	5	3,0	3	,0	3,0
12 N/mm	12 N/mm ² d/d			2	,5			3	,0		3,5	3	,5	3,5

3,5

4,0

4,5

5,0

4,5

4,5

5,5

6,0

4,5

4,5

5,5

6,0

4,5

4,5

5,5

6,0

Table C22.2: Characteristic resistance under tensile load (Push through anchorage)

3,0

3,5

4,0

4,5

Anchor rod			M10	M12	M16						
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200						
Tensile l	oad N _{Rk}	[kN] depe	nding on the compressive strength f _b (temperature range 50/80°C)								
compressive strength f _b	use catego	ry									
8 N/mm ²	w/w	w/d		2,0							
O IN/IIIIII	d.	/d		2,5							
10 N/mm ²	w/w	w/d		2,5							
TO N/IIIII	d.	/d	3,0								
12 N/mm ²	w/w	w/d		3,0							
12 14/11111	d	/d		3,5							
16 N/mm ²	w/w	w/d		4,5							
10 14/11111	d	/d		4,5							
20 N/mm ²	w/w	w/d		5,5							
20 N/mm	d	/d		6,0							

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Perforated sand-lime brick KSL, 3DF, Characteristic resistance under tensile load	Annex C 22

Table C23.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod		M6	M8	M6	M8	100	-	M8	M10	M8	M10			M12	M16	M12	M16
Internal thread	ed					М6	M8					M10	M12	-			
anchor FIS E						11:	x85		-21.		-	15	x85				•
Perforated slee	eve FIS H K	12:	x50	12:	k 85		16:	(85		16)	130	-	20:	x85		20x	130
Shear load V _R	k [kN] depend	ing on	the c	ompi	essi	ve st	rengt	h f _b	(temp	erat	ure ra	ange	50/8	0°C a	nd 7	2/120	°C)
compressive	LICO																

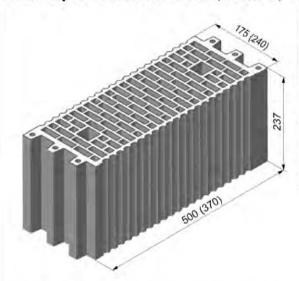
compressive strength f _b	use catego	ry									1
Q M/2	w/w	w/d			4.5			0.0	0.5	0.0	0.5
8 N/mm ²	d	/d			1,5			3,0	2,5	3,0	2,5
10 N/mm ²	w/w	w/d			2.0			0.5			
10 N/mm	d	/d		2,0				3,5			
12 N/mm ²	w/w	w/d			0.5			4.5	4.0	4.5	4.0
12 N/mm	d	/d			2,5			4,5	4,0	4,5	4,0
16 N/mm ²	w/w	w/d	3,0	0.5	2.0	0.5	3,0	0.0	5.5	0.0	F F
16 N/mm	d	/d	3,0	3,5	3,0	3,5	3,0	6,0	5,5	6,0	5,5
20 N/mm ²	w/w	w/d	40	4.5	4.0	1 E	4.0	7.5	C.F.	7.5	C.E.
20 N/mm	d	/d	4,0	4,5	4,0	4,5	4,0	7,5	6,5	7,5	6,5

Table C23.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16		
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200		
Shear load V _{Rk}	[kN] dep	ending o	n the compressi	ve strength f ₆ (temper	ature range 50/80°C and 72/120°C)		
compressive strength f _b	use catego	ry					
8 N/mm ²	w/w	w/d	0	0	2.5		
o M/mm	d/d			,0	2,5		
10 N/mm ²	w/w	w/d	2	_	3,5		
10 N/mm	d	/d	3	,5	3,5		
12 N/mm ²	w/w	w/d	- 4	,5	4.0		
12 N/mm	d.	/d	4	,5	4,0		
16 N/mm ²	w/w	w/d	C	0	EE		
16 N/mm	d/d		0	,0	5,5		
20 N/mm²	w/w	w/d	7	E	C.F.		
20 N/mm	20 N/mm ²			,5	6,5		

fischer injektion system FIS V masonry	
Performances	Annex C 23
Perforated sand-lime brick KSL, 3DF, Characteristic resistance under shear load	1000000

Vertical perforated brick HLz, form B, EN 771-1



Vertical p	erforated b	rick HLz, f	orm B, EN	771-1			
Producer		e.g. Wie	enerberger,	Poroton			
		length L	width W	height H			
Nominal dimens	ions [mm]	500	175	237			
		370	240	237			
Density ρ	[kg/dm ³]		≥ 1,0				
Compressive strength f _b	[N/mm²]	4/6/8/10/12					
Standard or ann	iex		EN 771-1				

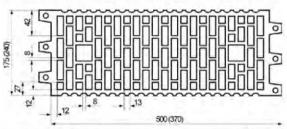


Table C24.1: Installation parameters

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10		M12	M16	M12 M16
Internal threaded anchor					М6	M8		4.7			M10 M12			
FIS E					111	x85		· .			15x85	1		
Perforated sleeve FIS H K	12	x50	12	x85		16)	(85		16x	130	20:	x85		20x130

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K

Max. installation torque $T_{inst,max}$ [Nm]

General installation parameters

General Installat		3.22	
Edge distance	C _{min}	100	
	S _{min} II	100	
Consider	s _{cr} II [mm]	500 (370)	
Spacing	S _{min} ⊥	100	
	S _{cr} ⊥	240	

Drilling method

Hammer drilling with hard metal hammer drill

Table C24.2: Group factors

Anchor rod	M6	М8	М6	M8			M8	M10	M8	M10		M12	M16	M12	M16	
Internal threaded anchor FIS E	-				M6	M6 M8		•			M10 M1	2			•	
Perforated sleeve FIS H K	12x5	12x50		12:	x85		16	(85		16)	130	2	0x85		20x	130
Group $\alpha_{q,N} \parallel = \alpha_{q,V} \parallel $ [-]								1								

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fischer injektion syste	m FIS V masonry	

Performances

Vertical perforated brick HLz, form B, dimensions, installation parameters

Anchor rod			M6 M8	M6	M8	-		M8 M1) M	18 M10	-	M12	M16	M12 M16
Internal thread anchor FIS E	ed				ŝ	M6 M	-	15-41		-	M10 M12 15x85			
Perforated slee	ve FIS H	K	12x50	12	x85	1	6x	85	1	6x130	20:	x85		20x130
	load N _{Rk}	[kN] de	pending	on th	e cor	npressi	ve	strength	ı f _b	(tempe	rature ran	ge 50	/80°C	()
compressive strength f _b	use ca	tegory								0,9				1,2
4 N/mm ²	w/w	w/d		0,3										
	w/w	/d w/d		0,4					_	0,9				1,2
6 N/mm ²	6 N/mm ² d/d		0,5 0,6							1,5				2,0
w/w w/d				,75						2,0				2,5
8 N/mm ²	d	/d		,75						2,0				2,5
10 N/mm ²	w/w	w/d		0,9						2,5				3,0
10 14/111111	d	/d		0,9						2,5				3,5
12 N/mm²		w/d		0,9					1	3,0				3,5
12 N/mm² d/d		12												10
Factor for tem Table C25.2: Anchor rod	perature Chara	range 7		tance			1	load	D M	3,0	-	M12 I	M16	4,0 M12 M16
Table C25.2: Anchor rod Internal thread anchor FIS E	Chara ed	range 7	72/120°C stic resis	0,83	M8 -	M6 M	8	M8 M10		18 M10	M10 M12 15x85	T de	M16	M12 M16
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee	Chara ed	range 7 acteris	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8 - x85	M6 M	8 6x	M8 M10 - (85	7	18 M10 - 6x130	M10 M12 15x85 20	- x85		M12 M16 - 20x130
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee	Chara ed	range 7 acteris	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8 - x85	M6 M	8 6x	M8 M10 - (85	7	18 M10 - 6x130	M10 M12 15x85 20	- x85		M12 M16 - 20x130
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee	Chara ed eve FIS H	range 7 acteris K pending	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8 - x85	M6 M	8 6x	M8 M10 - (85	7	18 M10 - 6x130	M10 M12 15x85 20	- x85		M12 M16 - 20x130
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive	Chara ed eve FIS H [kN] dep use ca	range 7 acteris K pending	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8 - x85 ressi	M6 M	8 6x	M8 M10 - (85	7	18 M10 - 6x130	M10 M12 15x85 20: ange 50/86	- x85		M12 M16 - 20x130
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive strength f _b 4 N/mm ²	Chara ed eve FIS H [kN] dep use ca	range 7 acteris K bending tegory w/d	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8 - ex85 eressi	M6 M 11x85 1 ve stren	8 6x	M8 M10 - (85	7	6x130 ature ra	M10 M12 15x85 203 ange 50/8	- x85 D°C ar		M12 M16 - 20x130 2/120°C)
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive strength f _b	ed eve FIS H [kN] dep use ca w/w d w/w	K pending tegory w/d	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8 - ex85 eressi	M6 M 11x85 1 ve stren	8 6x	M8 M10 - (85	7	18 M10 - 6x130 ature ra	M10 M12 15x85 203 ange 50/8	x85 0°C ar		M12 M16 - 20x130 2/120°C)
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive strength f _b 4 N/mm ² 6 N/mm ²	ed Eve FIS H [kN] dep use ca w/w d w/w d w/w	K pending tegory w/d w/d w/d w/d	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8	M6 M 11x85 1 ve stren	8 6x	M8 M10 - (85	7	6x130 ature ra	M10 M12 15x85 203 ange 50/86	,5		M12 M16 - 20x130 2/120°C) 0,6 0,9
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive strength f _b 4 N/mm ²	ed eve FIS H [kN] dep use ca w/w d w/w d w/w d	K pending w/d w/d w/d w/d w/d w/d	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	M8	M6 M 11x85 1 ve stren	8 6x	M8 M10 - (85	7	6x130 ature ra	M10 M12 15x85 203 ange 50/86	- x85 D°C ar		M12 M16 - 20x130 2/120°C)
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive strength f _b 4 N/mm ² 6 N/mm ²	ed eve FIS H [kN] dep use ca w/w d w/w d w/w d w/w d w/w	K pending tegory w/d w/d w/d w/d	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	0 0,	M6 M 11x85 1 ve stren	8 6x	M8 M10 - (85	7	6x130 ature ra	M10 M12 15x85 203 ange 50/86	,5		M12 M16 - 20x130 2/120°C) 0,6 0,9
Table C25.2: Anchor rod Internal thread anchor FIS E Perforated slee Shear load V _{RI} compressive strength f _b 4 N/mm ² 6 N/mm ²	ed eve FIS H [kN] dep use ca w/w d w/w d w/w d w/w d w/w d w/w d w/w	K pending tegory w/d w/d w/d w/d w/d w/d	72/120°C stic resis M6 M8 - 12x50	0,83 stance M6	0 0,	M6 M 11x85 1 ve stren ,5	8 6x	M8 M10 - (85	7	0,6 0,9	M10 M12 15x85 203 ange 50/86 0 0,	,5 ,9		M12 M16 - 20x130 2/120°C) 0,6 0,9 1,2
Table C25.2: Anchor rod Internal threade anchor FIS E Perforated slees Shear load V _{RI} compressive strength f _b 4 N/mm ² 6 N/mm ² 8 N/mm ²	ed eve FIS H [kN] dep use ca w/w d w/w d w/w d w/w d w/w d w/w d w/w d	range 7 acteris K pending tegory w/d /d w/d /d w/d /d w/d /d w/d /d /	72/120°C stic resis	0,83 stances M6	0 0, 0	,5 ,5 ,9	8 i 6x igth	M8 M10 - (85	7	0,6 0,9 1,2	M10 M12 15x85 203 ange 50/86 0 0,	,5 ,5 ,9		M12 M16 - 20x130 2/120°C) 0,6 0,9 1,2 1,5

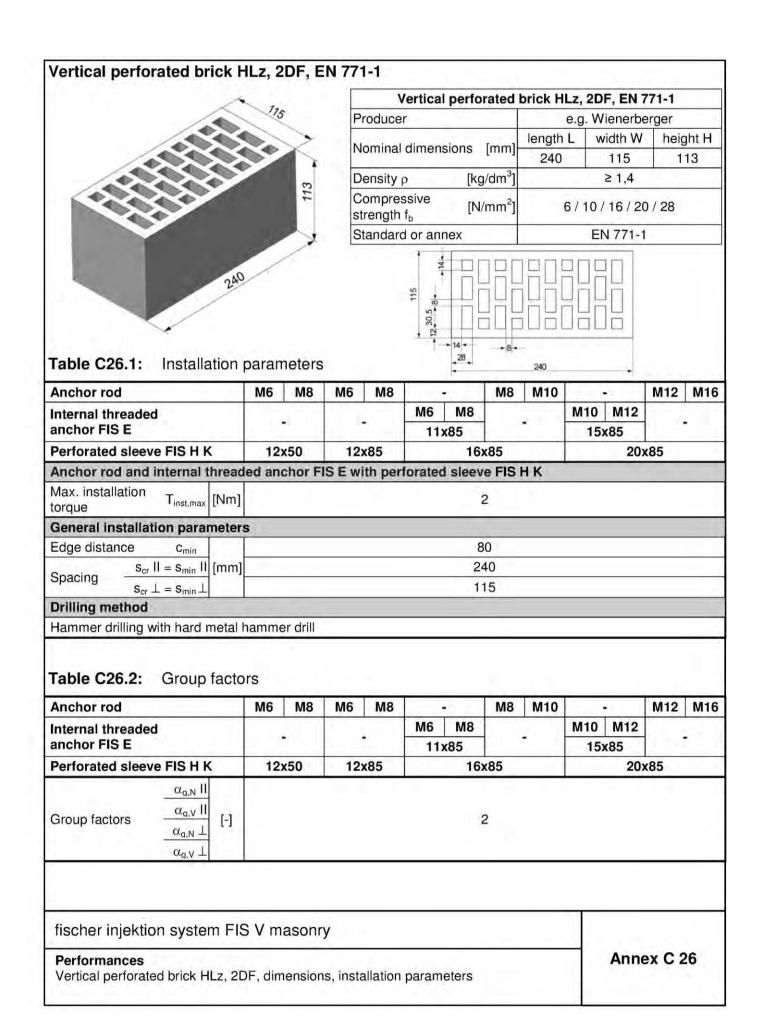


Table C27.1: Characteristic resistance under tensile load

Anchor rod	М6	M8	М6	M8			M8	M10			M12	M16
Internal threaded					M10	M12						
anchor FIS E					11)	(85			153	c 85	·	
Perforated sleeve FIS H K	12x50		12x85		16)		x85			20)	x85	

Perforated sieev	e FIS H	K	12X50	12X85	16X85	20x85
Tensile lo	ad N _{Rk}	[kN] de	pending on t	the compress	sive strength f _b (temperatu	ire range 50/80°C)
compressive strength f_b	use ca	tegory				
6 N/mm ²	w/w	w/d	0,75	0,9	0,75	0,9
6 N/IIIII	d	/d	0,75	1,2	0,75	0,9
10 N/mm ²	w/w	w/d	1,2	1,5	1,2	1,5
10 14/111111	d	/d	1,2	2,0	1,2	1,5
16 N/mm ²	w/w	w/d	2,0	2,5	2,0	2,0
10 14/111111	d	/d	2,0	3,0	2,0	2,5
20 N/mm ²	w/w	w/d	2,5	3,5	2,5	3,0
20 14/111111	d	/d	2,5	4,0	2,5	3,0
28 N/mm ²	w/w	w/d	3,0	5,0	3,5	4,0
20 11/111111	d	/d	3,5	5,5	3,5	4,5

Factor for temperature range 72/120°C: 0,83

Table C27.2: Characteristic resistance under shear load

Anchor rod	М6	M8	М6	М8			М8	M10		•	M12	M16
Internal threaded anchor FIS E		-		-	M6 11)	M8 (85		-	M10	M12 <85		-
Perforated sleeve FIS H K	12x50		12	k 85		16	x85		20x85			
Cl												

Perforated sleeve	e FIS H K	12:	x50	12	x85		16x85	20x85
Shear load V _{Rk} [I	kN] dependin	g on th	e com	pressi	ve stre	ngth f	temperature rang	e 50/80°C and 72/120°C)
compressive strength f _b	use category							
6 N/mm²	w/w w/d	1,2	1,5	1,2	2,0	1,2	1,5	2,5
10 N/mm²	w/w w/d	2,0	2,5	2,0	4,0	2,0	2,5	4,5
16 N/mm ²	w/w w/d	3,0	3,5	3,0	6,0	3,0	3,5	7,0
20 N/mm ²	w/w w/d	4,0	4,5	4,0	7,5	4,0	4,5	8,5
28 N/mm ²	w/w w/d	5,0	6,5	5,0	9,5	5,0	6,5	12,0

Factor for job site tests and displacements see annex C110

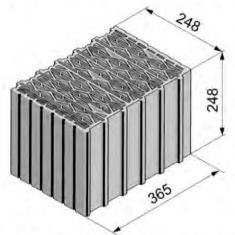
fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, 2DF,

Characteristic resistance under tensile and shear load

Vertical perforated brick HLz, U8, EN 771-1



Vertical	perforated	brick HLz	, U8, EN 77	1-1
Producer			FU-	
Niamatana Indiana	taura Francis	length L	width W	height H
Nominal dimens	ions [mm]	248	365	248
Density ρ	[kg/dm ³]		0,6	
Compressive strength f _b	[N/mm²]		4/6/8	
Standard or ann	ex		EN 771-1	

5

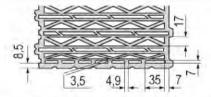


Table C28.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8	J. O	-	M8	M10	M8	M10		M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E		-	[4		M6	M8 x85					M10 M12 15x85			-
Perforated sleeve FIS H K	12:	x50	12	x85		16	(85		16x	130	20:	x85	20x130	20x200

Anchor rod and	internal 1	thread	ed a	anch	or F	ISE	with	per	forated sleeve FIS H K
Max. installation torque	T _{inst,max}	[Nm]	3	5	3	5	3	5	

General installat	ion parameters		
Edge distance	C _{min}	60	
	S _{min} II	80	
0	s _{cr} II [mm]	250	
Spacing	S _{min} ⊥	80	
	S _{cr} ⊥	250	

Drilling method

Rotary drilling with carbide drill

Table C28.2: Group factors

Anchor rod		M6	M8	M6	M8	1¥a 1	M8	M10	M8	M10		M12 M16	M12 M16	M12 M16
Internal threade anchor FIS E	d			9		M6 M8	17.4				M10 M12 15x85	1.3		•
Perforated sleev	e FIS H K	12:	x50	12	x85	16:	k85		16x	130	20:	x85	20x130	20x200
	α _{g,N} II								1	,3				
Croup factors	α _{α.V} ΙΙ								1	,2				
Group factors	$\frac{\alpha_{q,V} \Pi}{\alpha_{q,N} \perp}$ [-]								1	,3				
	$\alpha_{q,V} \perp$								1	,0				

fischer injektion	system	FIS V	masonry
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Performances

Vertical perforated brick HLz, U8, dimensions, installation parameters

Vertical perforated brick HLz, U8, EN 771-1

Table C29.1:

Installation parameters (Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16
Perforated sleev	e FIS H	(18x13	0/200	22x130/200
Anchor rod with	perforat	ed sleeve	FIS H K		
Max. installation torque	T _{inst,max}	[Nm]		5	
General installa	tion para	meters			
Edge distance	C _{min}			60	
	S _{min} II			80	
Cassina	s _{cr} 11	[mm]		250	
Spacing	S _{min} ⊥			80	
	s _{cr} ⊥			250	
Drilling method					
Rotary drilling with	h carbide	drill			

Table C29.2: Group factors

Anchor rod		M10	M12	M16
Perforated sleev	ve FIS H K	18x13	0/200	22x130/200
	α _{q,N} II		1,3	
Crayes factors	α _{q,V} II		1,2	
Group factors	α _{α,N} ⊥ [-]		1,3	
	$\alpha_{q,V} \perp$		1,0	

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, U8, dimensions, installation parameters	Annex C 29

Vertical perforated brick HLz, U8, EN 771-1

Table C30.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8		2.7	M8	M10	M8	M10	-	M12	M16	M12 N	/ 116	M12 M16
Internal threaded anchor FIS E		- 1			M6	M8 x85		-			M10 M12 15x85	E				- -
Perforated sleeve FIS H K	12	x50	12:	x85		16:	x85		16x	130	20:	k 85		20x1	30	20x200

Tensile	load N _{Rk}	[kN] der	ending on the compre	essive strength f _b (temperature range 50/80°C)
compressive strength f _b	use ca	tegory		
4 N/mm²	w/w	w/d	1,2	1,2
4 N/mm	d	/d	1,2	1,5
6 N/mm ²	w/w	w/d	1,5	1,5
6 N/mm	d	/d	1,5	1,5
8 N/mm ²	w/w	w/d	1,5	2,0
8 N/MM	d	/d	2,0	2,0

Table C30.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16					
Perforated slee	ve FIS H	K	18x13	22x130/200						
Tensile	load N _{Rk}	[kN] deper	nding on the cor	npressive strength fb ((temperature range 50/80°C)					
compressive strength f _b	use ca	tegory								
4 N/mm ²	w/w	w/d		1,2						
4 N/mm	d	/d		1,5						
6 N/mm ²	w/w	w/d		1,5						
6 N/mm	d	/d		1,5						
8 N/mm²	w/w	w/d		2,0						
o W/mm	d	/d		2,0						

Factor for job site tests and displacements see annex C110

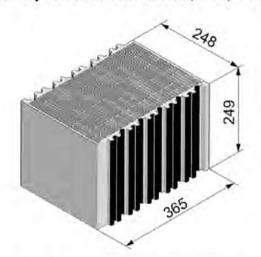
Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, U8, Characteristic resistance under tensile load	Annex C 30

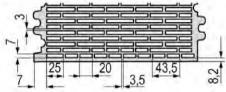
Anchor rod		M6 M8	M6 M8	. F 645	M8 M1	0 M8 M10	-	M12 M1	6 M12 M16	M12 M16
Internal thread	ed			M6 M8			M10 M12			
Perforated slee	ve FIS H K	12x50	12x85		x85	16x130		x85	20x130	20x200
Shear load V _{Rk}	[kN] dependir	ng on the	compres	sive stre	ength f _b	(temperat	ure rang	je 50/80°	°C and 72	/120°C)
compressive strength f _b	use category	,	177					LOT		
4 N/mm ²	w/w w/d					1,2				
6 N/mm ²	w/w w/d					1,5				
8 N/mm²	w/w w/d			-		1,5				
Perforated slee			1,700,700	130/200	1			22x130		
Shear load V _{Rk}	[kN] dependir	ng on the	compres	sive stre	ength f _b	(temperat	ure rang	je 50/80°	°C and 72	/120°C)
compressive strength f _b	use category									
4 N/mm ²	w/w w/d					1,2				
6 N/mm ²	w/w w/d	4				1,5				
8 N/mm²	w/w w/d					1,5				
	site tests and d	isplaceme	nts see a	nnex C1	08					

Performances

Vertical perforated brick HLz, U8, Characteristic resistance under shear load



Vertical pe	erforate	d bri	ck HLz, T	10, T11, EN	771-1			
Producer				-				
Naminal dimana	iono In	1	length L	width W	height H			
Nominal dimens	ions [n	nul.	248	365	249			
Density ρ	[kg/d	m ³]	0,7					
Compressive strength f _b	[N/m	m²]		8/10/12	4			
Standard or ann	ex			EN 771-1				



Installation parameters **Table C32.1:**

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod			M6	M8	M6	M8			M8	M10	M8	M10	-	M12 M16	M12 M16	M12 M16
Internal threade anchor FIS E	d					ارا.		M8 (85		-		-	M10 M12 15x85			•
Perforated sleev	ve FIS H H	(12	x50	12	x85		16:	x85		16)	(130	20:	x85	20x130	20x200
Anchor rod and	internal t	threac	led a	inch	or F	IS E	with	per	fora	ted s	leev	e FI	SHK			
Max. installation torque	T _{inst,max}	[Nm]				3				5	3			5		
General installa	tion para	meter	s													
Edge distance	C _{min}		li .								6	60				
	S _{min} II										8	30				
Consider	s _{cr} II	[mm]									2	50				
Spacing —	S _{min} ⊥										8	30				
	s _{cr} ⊥										2	50				
Drilling method													-			

Rotary drilling with carbide drill

Table C32.2: Group factors

Anchor rod		M6	M8	M6	M8	J. T	71	M8	M10	M8	M10		M12 M16	M12 M16	M12 M16
Internal threade anchor FIS E	d					M6	M8 (85	5			- 7	M10 M12 15x85			
Perforated sleev	re FIS H K	12	x50	12	x85		162	k85		16x	130	20)	k 85	20x130	20x200
	$\alpha_{g,N} \parallel$									1	,7				
Croup footors	α _{g,V} II									0	,5				
Group factors	$\frac{\alpha_{g,V} + 1}{\alpha_{g,N} \perp}$ [-]									1	,3				
	$\alpha_{q,V} \perp$									0	,5				

fischer i	injektion	system	FIS V	masonry
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Performances

Vertical perforated brick HLz, T10, T11, dimensions, installation parameters

Table C33.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H H	(18x13	0/200	22x130/200
Anchor rod with	perforat	ed sleeve	FISHK		
Max. installation torque	T _{inst,max}	[Nm]		5	
General installa	tion para	meters			
Edge distance	C _{min}			60	
	S _{min} II			80	
0	s _{cr} II	[mm]		250	
Spacing —	s _{min} ⊥			80	
	s _{cr} ⊥			250	
Drilling method					
Rotary drilling wi	th carbide	drill			

Table C33.2: Group factors

Anchor rod		M10	M12	M16
Perforated sleev	ve FIS H K	18x13	30/200	22x130/200
	α _{g,N} II		1,7	
Crave fantara	α _{α,V} 11		0,5	
Group factors	α _{g,N} <u> </u> [-]		1,3	
	$\alpha_{q,V} \perp$		0,5	

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, T10, T11, dimensions, installation parameters	Annex C 33

Table C34.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8		-	M8	M10	M8	M10		M12	M16	M12 M16	M12 M16
Internal threaded anchor FIS E		-			M6	M8 x85		-			M10 M12 15x85		er I		3-3
Perforated sleeve FIS H K	12:	x50	12	x85		16:	k 85	. 14	16x	130	20	(85		20x130	20x200

ad N _{Rk} [kN] der	ending on the compre	essive strength f _b (temperature range 50/80°C)
use cat	tegory		
w/w	w/d	1,5	1,5
d/	'd	1,5	2,0
w/w	w/d	1,5	2,0
d/	'd	2,0	2,0
w/w	w/d	2,0	2,0
d/	'd	2,0	2,5
	w/w d/ w/w d/ w/w	use category w/w w/d d/d w/w w/d d/d	w/w w/d 1,5 d/d 1,5 w/w w/d 1,5 d/d 2,0 w/w w/d 2,0

Table C34.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200
Tensile	oad N _{Rk}	[kN] deper	nding on the cor	npressive strength fb (temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
8 N/mm²	w/w	w/d	.1	,5	1,5
8 N/mm	d	/d	2	,0	2,0
10 N/mm ²	w/w	w/d	2	,0	2,0
10 N/mm	d	/d	2	,0	2,0
12 N/mm ²	w/w	w/d	2	,0	2,0
12 N/mm	d	/d	2	,5	2,5

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, T10, T11, Characteristic resistance under tensile load	Annex C 34

Table C35.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod			M6	M8	Me	M8			M8	M10	M8 M10		M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E Perforated sleeve FIS H K			,			•	M6 M8				2	M10 M12	-		
		к	12:	12x50 12x85		16x85			16x130				20x130	20x200	
Shear load V _{Rk}	[kN] dep	endin	g on	the	con	npres	sive	stre	ngth	f _b (tempera	ture rang	e 50/80°	C and 72	120°C)
compressive strength f _b	use ca	tegory				V									
8 N/mm ²	w/w	w/d					4.6			F			0.0		
8 N/mm	d	/d		0	,9		1,5			5			2,0		
40.11/2	w/w	w/d		- 0	^										
10 N/mm ²	d	/d	0		,9			1,5					2,0		
40 N/m - 2	w/w	w/d		20	,2				_	^			á		
12 N/mm ²	d	/d		1			2,0			2,0			2,0		

Table C35.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16				
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200				
Shear load V _{Rk}	[kN] dep	ending or	the compressi	ve strength f _b (temper	ature range 50/80°C and 72/120°C)				
compressive strength f _b	use ca	tegory							
8 N/mm ²	w/w	w/d		-	0.0				
8 N/mm	d	/d	1	,5	2,0				
10 N/mm ²	w/w	w/d		F	2.0				
10 N/mm	d	/d	1	,5	2,0				
12 N/mm ²	w/w	w/d	0						
12 N/mm	d	/d	2	,0	2,0				

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, T10, T11, Characteristic resistance under shear load	Annex C 35

Vertical perforated brick HLz, T7 PF, filled with perlit, EN 771-1 Vertical perforated brick HLz, T7 PF, filled with perlit, EN 771-1 248 Producer length L width W height H Nominal dimensions [mm] 248 365 249 [kg/dm³] 0,5 Density p Compressive $[N/mm^2]$ 4/6 strength fb Standard or annex EN 771-1 365 20 Table C36.1: Installation parameters (Pre-positioned anchorage with perforated sleeve FIS HK) M6 M8 M6 M8 M8 M10 M8 M10 M12M16M12M16M12M16 Anchor rod M6 M8 M10 M12 Internal threaded anchor FIS E 11x85 15x85 Perforated sleeve FIS H K 20x130 20x200 12x50 16x85 20x85 12x85 16x130 Ankerstangen und Innengewindeanker FIS E mit Injektionsanker-Hülse FIS H K Max. installation 2 5 T_{inst,max} [Nm] torque General installation parameters Edge distance 60 Smin II 80 s_{cr} II [mm] 250 Spacing 80 Smin 250 Scr 1 **Drilling method** Rotary drilling with carbide drill Table C36.2: Group factors M8 M10 M8 M10 M12 M16 M12 M16 M12 M16 Anchor rod M6 **M8** M6 M8 M6 M8 M10 M12 Internal threaded anchor FIS E 11x85 15x85 Perforated sleeve FIS H K 12x50 12x85 16x85 16x130 20x85 20x130 20x200 1,1 $\alpha_{g,N} \parallel$ $\alpha_{q,V} \parallel$ 1,2 Group factors [-] 1,1 $\alpha_{q,N} \perp$ 1,2 $\alpha_{g,V} \perp$ fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, T7 PF, filled with perlite,

dimensions, installation parameters

Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1

Table C37.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16								
Perforated slee	ve FIS H H	(18x13	0/200	22x130/200								
Anchor rod wit	n perforat	ed sleeve	FIS H K										
Max. installation torque	T _{inst,max}	[Nm]		5									
General installa	tion para	meters											
Edge distance	C _{min}			60									
Luge distance	s _{min} II			80									
Caralan	s _{cr} II	[mm]	250										
Spacing —	s _{min} ⊥		80										
	s _{cr} ⊥			250									
Drilling method													
Rotary drilling w	th carbide	drill											

Table C37.2: Group factors

Anchor rod		M10	M12	M16							
Perforated sleev	ve FIS H K	18x13	30/200	22x130/200							
	α _{g,N} II		1,1								
Group factors $\alpha_{a,V}$ II	α _{α,V} II		1,2								
	α _{α,N} ⊥ [-]	1,1									
	$\alpha_{q,V} \perp$	1,2									

Annex C 37

Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1

Table C38.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8	10	4.7	M8	M10	M8	M10	-10	M12	M16	M12 M1	6 M12 M16
Internal threaded anchor FIS E		91			M6	M8 x85					M10 M12 15x85		er I		4.)
Perforated sleeve FIS H K	12:	x50	12	x85		16:	x85		16x	130	20:	k 85		20x13	20x200

Tensile	load N _{Rk}	kN] dependir	g on the compressiv	e strength f _b (tem	perature ran	ge 50/80°C)
compressive strength f _b	use ca	tegory					
4 N/mm ²	w/w	w/d	1,2	1,2	1,2	1,2	2,0
4 N/mm	d	/d	1,5	1,5	1,5	1,5	2,0
6 N/mm ²	w/w	w/d	1,5	1,5	1,5	1,5	2,5
O M/IIIII	d	/d	1,5	2,0	1,5	2,0	3,0

Table C38.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	eve FIS H	K	18x13	0/200	22x130/200
Tensile	load N _{Rk}	[kN] deper	nding on the con	pressive strength fb	temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
4.01/2022	w/w	w/d	1,	2	1,2
4 N/mm		/d	1,	5	1,5
6 N/mm ²	w/w	w/d	1,	5	1,5
o N/mm	d	/d	2,	0	2,0

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances	Annex C 38
Vertical perforated brick HLz, T7 PF, filled with perlite,	
Characteristic resistance under tensile load	

Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1

Table C39.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8	-		M8	M10	M8	M10		M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E			-		130		M6 I	M8				M10 M12				
							11x85						15x85	1		25.7
Perforated sleeve FIS H K			12:	12x50		x85	16x		x85		16x130		20:	x85	20x130	20x200
Shear load V _{RI}	(kN) dep	endin	g on	the	com	pres	sive s	tre	ngth	f _b (t	emp	perat	ure rang	e 50/80°	C and 72	/120°C)
compressive strength f _b	use ca	tegory														
4 N/mm ²	w/w	w/d	0	0.9				16					1,2			
4 N/IIIII	d	/d	0	,9	1,5											
6 N/mm ²	w/w	w/d	1	2				2	0					- 4	E	
6 N/mm	d	/d	1,2			2,0					1,5					

Table C39.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod	chor rod			M12	M16
Perforated slee	Perforated sleeve FIS H K			30/200	22x130/200
Shear load V _R	k [kN] dep	ending or	n the compressi	ve strength fb (temper	ature range 50/80°C and 72/120°C)
compressive strength f _b	use ca	tegory			
4 N/mm ²	w/w	w/d		-	10
4 N/mm	d	/d	J.	,5	1,2
6 N/mm ²	w/w	w/d	2	0	16
O N/MIII	d	/d	2	,0	1,5

fischer injektion system FIS V masonry	
Performances	Annex C 39
Vertical perforated brick HLz, T7 PF, filled with perlite,	
Characteristic resistance under shear load	

Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1 Vertical perforated brick HLz, T9 MW, 248 filled with mineral wool, EN 771-1 Producer length L width W height H Nominal dimensions [mm] 248 425 248 [kg/dm³] 8,0 Density p Compressive $[N/mm^2]$ 4/6/8 strength fb Standard or annex EN 771-1 15,2 8 33 12,3 Table C40.1: Installation parameters (Pre-positioned anchorage with perforated sleeve FIS HK) M6 M8 M6 M8 M12M16M12M16M12M16 Anchor rod M8 M10 M8 M10 M6 M8 M10 M12 Internal threaded anchor FIS E 11x85 15x85 Perforated sleeve FIS H K 20x130 20x200 12x50 16x85 20x85 12x85 16x130 Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K Max. installation 3 5 T_{inst,max} [Nm] torque General installation parameters Edge distance 60 Smin II 80 s_{cr} II [mm] 250 Spacing 80 Smin 1 250 Scr 1 **Drilling method** Rotary drilling with carbide drill **Table C40.2:** Group factors M12M16M12M16M12M16 Anchor rod M6 **M8** M6 M8 M8 M10 M8 M10 M6 M8 M10 M12 Internal threaded anchor FIS E 11x85 15x85 16x85 Perforated sleeve FIS H K 12x50 12x85 16x130 20x85 20x130 20x200 1,3 $\alpha_{g,N} \parallel$ $\alpha_{q,V}$ II 1,2 Group factors [-] 0,6 $\alpha_{q,N} \perp$ 1,2 $\alpha_{q,V} \perp$ fischer injektion system FIS V masonry Annex C 40 Performances Vertical perforated brick HLz, T9 MW, filled with mineral wool, dimensions, installation parameters

Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1

Table C41.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16		
Perforated sleev	e FIS H	(18x13	0/200	22x130/200		
Anchor rod with	perforat	ed sleeve	FISHK				
Max. installation torque	T _{inst,max}	[Nm]		5			
General installa	tion para	meters					
Edge distance	C _{min}			60)		
	S _{min} II	1	80				
Conning	s _{cr} II	[mm]		25	0		
Spacing	S _{min} ⊥	[[mm]		80) -		
	s _{cr} ⊥			25	0		
Drilling method							
Rotary drilling wit	h carbide	drill					

Table C41.2: Group factors

Anchor rod		M10	M12	M16
Perforated sleev	ve FIS H K	18x13	0/200	22x130/200
	α _{q,N} II		1,3	
Crava factors	α _{q,V} II		1,2	
Group factors	α _{q,N} ⊥ [-]		0,6	
	$\alpha_{q,V} \perp$		1,2	

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, T9 MW, filled with mineral wool,	Annex C 41

Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1

Table C42.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8		M8	M10	M8	M10		M12 M16	M12 M16	M12 M16
Internal thread	ed						M6 M8					M10 M12		7	
anchor FIS E			12x50				11x85		124		15x85	1.5.11	20x130	100.7	
Perforated slee	ve FIS H	K			12x85		162	x85		16x130	130	20)		(85	20x200
Tensile	load N _{Rk}	[kN] de	pen	ding	on i	he c	ompress	ive :	stren	gth	f _b (te	emperatu	re range	50/80°C)
compressive strength f _b	use ca	tegory													
4 N/mm ²	w/w	w/d		1,5		2	,0		3	,0	2,	,5	-4,	,0	
4 N/mm d/d		/d		2,0		2,5			3,0 2,5		5	4,5			
G N/mm²	w/w w/d			2	,0		2	,5		3	,5	3	,0	5	,0
6 N/mm ² d/d			2,0		3,0		1	,0	3,0		5,5				

3,0

3,0

4,0

4,5

3,5

3,5

6,0

6,5

 Table C42.2:
 Characteristic resistance under tensile load (Push through anchorage)

2,5

2,5

Anchor rod			M10	M12	M16
Perforated slee	eve FIS H	K	18x13	30/200	22x130/200
Tensile	load N _{Rk}	[kN] deper	nding on the con	npressive strength fb ((temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
4 N/mm²	w/w	w/d	3	,0	4,0
4 N/mm	d	/d	3	,0	4,5
6 N/mm ²	w/w	w/d	3	,5	5,0
6 N/mm	d	/d	4	,0	5,5
8 N/mm²	w/w	w/d	4	,0	6,0
o N/mm	d	/d	4	,5	6,5

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

w/w

d/d

8 N/mm²

w/d

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, T9 MW, filled with mineral wool; Characteristic resistance under tensile load	Annex C 42

Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1

Table C43.1: Characteristic resistance under shear load (Pre-positioned anchorage)

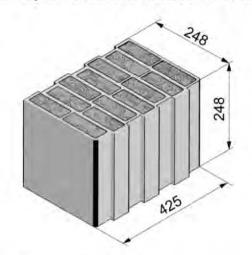
Anchor rod			M6	M8	M6	M8			M8	M10	M8 M1	-	M12 M1	6 M12 M16	M12 M16
Internal threaded anchor FIS E		1 -		134		M6 M8			-1	1	M10 M12			-	
Perforated slee	eve FIS H	K	12	x50	12	x85		16:	k 85		16x130	20	x85	20x130	20x200
Shear load V _{RI}	[kN] dep	endin	g on	the	com	pres	sive	stre	ngth	fb (t	empera	ture rang	e 50/80	°C and 72	120°C)
compressive strength f _b	use ca	tegory				7									
4 N/mm ²	w/w	w/d		2,0		0.0		0.5		2.0		4.5			
4 N/mm	d	/d	2	,0			2	2,0		2,5		2,0			1,5
6 N/mm ²	w/w	w/d		2,5			2,5		0.0			2,5		0.0	
6 N/mm	d	/d	1 2				2	,5		3,0		3,0			2,0
8 N/mm ²	w/w	w/d					0				4.0			0.5	
o N/mm	d	/d	2	,5		3,0				4,0		3,0		2,5	

Table C43.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10 M12		M16		
Perforated slee	ve FIS H	K	18x130/200		22x130/200		
Shear load V _{RI}	[kN] dep	ending o	n the compressi	ve strength fb (temper	ature range 50/80°C and 72/120°C)		
compressive strength f _b	use ca	tegory					
4 N/mm ²	2 W/W W/d			-	0.0		
4 N/mm	d	/d	2	,5	2,0		
6 N/mm²	w/w	w/d	0	0	0.5		
6 N/mm	d	/d	3	,0	2,5		
8 N/mm²	w/w	w/d		0	2.0		
o IN/MM	d	/d	4	,0	3,0		

fischer injektion system FIS V masonry	
Performances	Annex C 43
Vertical perforated brick HLz, T9 MW, filled with mineral wool;	
Characteristic resistance under shear load	

Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1



Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1									
		14							
inum Financi	length L	width W	height H						
ions [mm]	248 425 248								
[kg/dm ³]	0,6								
[N/mm²]		4/6/8							
ex	EN 771-1								
֡֡֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜	ed with min ions [mm]- [kg/dm³] [N/mm²]	ions [mm] length L 248 [kg/dm³] [N/mm²]	class clas						

10 8 10

Table C44.1: Installation parameters (Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod			M6	M8	M6	M8		•	M8	M10	M8	M10	-	M12 M16	M12 M16	//12 M16 M12 M16
Internal threade anchor FIS E	d							M8 x85		-	113		M10 M12 15x85			1.4
Perforated sleeve FIS H K		12x50		12	12x85		16x8		85		x130	20:	k85	20x130	20x200	
Anchor rod and	internal	thread	led a	anch	or F	IS E	with	per	fora	ted s	lee	e FI	знк			
Max. installation torque	T _{inst,max}	[Nm]				2				5	2			5		
General installa	tion para	meter	S													
Edge distance	C _{min}										(60				
	S _{min} II											30				
_	S _{cr} II	[mm]									2	50				
Spacing —	s _{min} ⊥		T								8	30				
	S _{cr} ⊥										2	50				
Drilling method												100				

Drilling method

Rotary drilling with carbide drill

Table C44.2: Group factors

Anchor rod	Anchor rod		M8	M6	M8	10		M8	M10	M8	M10	•	M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E Perforated sleeve FIS H K			•			M6 M8				-7		M10 M12 15x85		20x130	- 20x200
		12:	12x50		12x85		16)		x85		130	20)			
	$\alpha_{q,N}$ II									1	,9				
α _σ γ.II										0	,9				
Group factors	$\frac{\alpha_{q,V} + 1}{\alpha_{q,N} \perp}$ [-]									1	,0				
	$\alpha_{q,V} \perp$									0	,7				

fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, FZ 7, filled with mineral wool; dimensions, installation parameters

Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1

Table C45.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H H	(18x13	0/200	22x130/200
Anchor rod with	perforat	ed sleeve	FIS H K		
Max. installation torque	T _{inst,max}	[Nm]			5
General installa	tion para	meters			
Edge distance	C _{min}			- 10	60
	S _{min} II				80
Canalan	s _{cr} II	[mm]		. 2	250
Spacing —	Smin⊥				80
	s _{cr} ⊥			2	250
Drilling method					
Rotary drilling wi	th carbide	drill			

Rotary drilling with carbide drill

Table C45.2: Group factors

Anchor rod		M10	M12	M16	
Perforated sleev	ve FIS H K	18x13	0/200	22x130/200	
	α _{g,N} II		1,9		
0	α _{a,V} II		0,9		
Group factors	α _{g,N} ⊥ [-]		1,0		
	$\alpha_{q,V} \perp$		0,7		

fischer injektion system	FIS V masonry

Performances

Vertical perforated brick HLz, FZ 7, filled with mineral wool; dimensions, installation parameters

Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1

Table C46.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	M	6 M8			M8 M	10	M8 M10	- M12 M16		M12 M16	M12 M16
Internal thread anchor FIS E	Internal threaded anchor FIS E		,			(-)		M6 M8			Pall.	M10 M12 15x85	-		2-3
Perforated sleeve FIS H K		K	12x50		12x85		162		x85		16x130	20:	x85	20x130	20x200
Tensile	load N _{Rk}	[kN] de	pen	ding	on	the c	omp	ress	ive st	ren	gth fb (te	emperati	ure range	e 50/80°C)
compressive strength f _b	use ca	tegory													
4 N/mm ²	w/w	w/d	0	,6	(),75		1.	,5		2,0	1	,2	2,0	2,0
4 N/mm	d	/d	0	,6	Tu	0,9		1	,5		2,0	1	,5	2,0	2,5
C 11/2	w/w	w/d	0,	75	10	0,9		1	,5		2,0	1	,5	2,5	2,5
6 N/mm ²	d	/d	0	,9	121	0,9		2	,0		2,5	2	,0	2,5	3,0
0.11/2	w/w	w/d	0	,9		1,2		2	,0		2,5	2	,0	2,5	3,0
8 N/mm ²	d	/d	0	,9	11.5	1,2		2	,0		3,0	2	,0	3,0	3,5

Table C46.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200
Tensile	load N _{Rk}	[kN] deper	nding on the cor	npressive strength fb	(temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
4 N/mm²	w/w	w/d	2	,0	2,0
4 N/mm	d	/d	2	,0	2,0
6 N/mm ²	w/w	w/d	2	,0	2,5
o M/mm	d	/d	2	,5	2,5
8 N/mm²	w/w	w/d	2	,5	2,5
o N/mm	d	/d	3	,0	3,0

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, FZ 7, filled with mineral wool; Characteristic resistance under tensile load	Annex C 46

Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1 Table C47.1: Characteristic resistance under shear load (Pre-positioned anchorage) Anchor rod M6 M8 M6 M8 M8 M10 M8 M10 M12M16M12M16M12M16 M6 M8 M10 M12 Internal threaded anchor FIS E 15x85 11x85 Perforated sleeve FIS H K 16x85 16x130 20x85 20x130 20x200 12x50 12x85 Shear load V_{Rk} [kN] depending on the compressive strength f_b (temperature range 50/80°C and 72/120°C) compressive use category strength fb w/w w/d 4 N/mm² 1,2 1,5 1,5 d/d w/w w/d 6 N/mm² 1,5 2,0 1,5 d/d w/w w/d 8 N/mm² 2,5 2,0 1,5 d/d Table C47.2: Characteristic resistance under shear load (Push through anchorage) M12 Anchor rod M10 M16 Perforated sleeve FIS H K 18x130/200 22x130/200 Shear load V_{Rk} [kN] depending on the compressive strength f_b (temperature range 50/80°C and 72/120°C) compressive use category strength fb w/d w/w 4 N/mm² 1,5 d/d

2,0

2,5

Factor for job site tests and displacements see annex C110

w/d

w/d

w/w

w/w

d/d

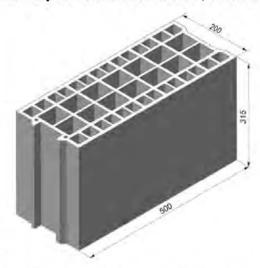
d/d

6 N/mm²

8 N/mm²

fischer injektion system FIS V masonry	
Performances	Annex C 47
Vertical perforated brick HLz, FZ 7, filled with mineral wool;	
Characteristic resistance under shear load	

Vertical perforated brick HLz, form B, EN 771-1



Vertical p	erforated bi	rick HLz, form B, EN 771-1							
Producer	4 7 1	e.g. Bouyer Leroux							
Niamatan di allas ana	tana farant	length L	width W	height H					
Nominal dimens	ions [mm]	500	200	315					
Density ρ	[kg/dm ³]	≥ 0,6							
Compressive strength f _b	[N/mm²]		4/6/8						
Standard or ann	ex	EN 771-1							

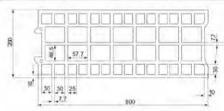


Table C48.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10	5.4.j=	M12 M1	6 M12 M10
Internal threaded		-			M6	M8					M10 M1:	2 -	1
anchor FIS E					112	x85					15x85		
Perforated sleeve FIS H K	12	x50	12:	x85		16	(85		16)	130	20)x85	20x130

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K

Max. installation torque $T_{inst,max}$ [Nm]

General installation parameters

Edge distance	ce c _{min}		120	
	s _{min} II		120	
Spacing	s _{cr} II	[mm]	500	
	$s_{min} \perp = s_{cr} \perp$		315	

Drilling method

Hammer drilling with hard metal hammer drill

Table C48.2: Group factors

Anchor rod Internal threaded anchor FIS E		M6	M8	М6	M8		c/s	M8	M10	M8	M10	70.U	M12	M16	M12	M16
		-0			M6 M8	M8 (85	•		-		M10 M12 15x85	-	1.1			
Perforated sleeve FIS H K			x50	12x85		16x85		- 11	16x130		20x85		20x130			
	$\alpha_{g,N}$ II								-1,	3						
Group factors	α _{α,V} II [-]		1,7													
	$\alpha_{q,N} \perp = \alpha_{q,V} \perp$		2													

fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, form B, dimensions, installation parameters

Vertical perforated brick HLz, form B, EN 771-1

Table C49.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod Perforated sleeve FIS H K			M10	M12	M16			
		18x13	0/200	22x130/200				
Anchor rod with p	erforate	ed sleeve	FISHK					
Max. installation torque T _{inst,max}		[Nm]	2					
General installation	n parar	neters						
Edge distance c _{min}				120				
	S _{min} II	[same 1		120				
Spacing	s _{cr} II	[mm]		500				
Smin 1	= S _{cr} _			315				
Drilling method								

Hammer drilling with hard metal hammer drill

Table C49.2: Group factors

Anchor r	od	M10	M12	M16				
Perforate	ed sleeve FIS H K	18x130/200		22x130/200	22x130/200			
	α _{g,N} II		1,3					
Group factors	α _{q,V} II [-]	1,7						
iaciois	$\alpha_{g,N} \perp = \alpha_{g,V} \perp$		2					

fischer injektion system FIS V masonry	
Performances	

Vertical perforated brick HLz, form B, dimensions, installation parameters

Table C50.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8	10		M8	M10	M8	M10		-	M12	M16	M12	M16
Internal threaded anchor FIS E					M6	M8 ×85		•	E		A.A. C. C. C.	M12 x85				
Perforated sleeve FIS H K	12:	x50	123	x85	16)		x85		16x130		20:		x85		20x	130

Tensile	load N _{Rk}	kN] de	pending on the	compressive stre	ngth f _b (temperat	ure range 50/8	0°C)
compressive strength f _b	use ca	tegory					
4 N/mm²	w/w	w/d	0,5	1,5	0,75	1,5	1,5
4 N/mm ²	d/d		0,6	1,5	0,9	1,5	2,0
6 N/mm ²	w/w	w/d	0,75	2,0	1,2	2,0	2,5
6 N/mm	d	/d	0,9	2,5	1,2	2,5	2,5
8 N/mm ²	w/w	w/d	0,9	3,0	1,5	3,0	3,5
8 N/mm	d,	/d	1,2	3,0	2,0	3,0	3,5

Table C50.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200
Tensile	load N _{Rk}	[kN] deper	nding on the con	npressive strength fb ((temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
4 N/mm²	w/w	w/d	0,	75	1,5
4 N/mm	d	/d	0	,9	2,0
6 N/mm ²	w/w	w/d	1	,2	2,5
6 N/mm	d	/d	1	,2	2,5
8 N/mm²	w/w	w/d	1	,5	3,5
o N/mm	d	/d	2	,0	3,5

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, form B, Characteristic resistance under tensile load	Annex C 50

Table C51.1: Characteristic resistance under shear load (Pre-positioned anchorage)

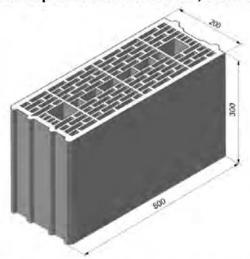
Anchor rod	M6	M8	M6	M8	1 10		M8	M10	M8	M10		•):	M12	M16	M12	M16
Internal threaded					M6	M8			1		M10				-	
anchor FIS E					11x85						15)	(85				
Perforated sleeve FIS H K	12:	x50	12	x85	16)		x85		16x130		20:		k 85	- 1	20x1	30

Shear load V _{RI}	k [kN] dep	ending on	the compressive strength	f _b (temperature rai	nge 50/80°0	C and 72	/120°C)
compressive strength f _b	ength f _b use category						
4 N/mm ²	w/w	w/d	4.5	0.0		2,5	0.0
4 N/mm	d	/d	1,5	0,9	1,5	2,5	0,9
6 N/mm ²	CN/2 W/W W/d	2.5	1.5	2.5	2.5	1.5	
6 N/mm	d	/d	2,5	1,5	2,5	3,5	1,5
8 N/mm ²	w/w	w/d	2.5	2.0	2.5	15	2.0
O N/IIIII	d	/d	3,5	2,0	3,5	4,5	2,0

Table C51.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	eve FIS H	K	18x13	30/200	22x130/200
Shear load V _{RI}	[kN] dep	ending or	n the compressi	ve strength fb (temper	ature range 50/80°C and 72/120°C)
compressive strength f _b	use ca	tegory			
4 N/mm ²	w/w	w/d		0.0	
4 N/mm	d	/d		0,9	
6 N/mm ²	w/w	w/d		1.5	
O IN/IIIII	d	/d		1,5	
8 N/mm ²	w/w	w/d		2.0	
o M/mm	d	/d		2,0	

fischer injektion system FIS V masonry	
Performances	Annex C 51
Vertical perforated brick HLz, form B, Characteristic resistance under shear load	



Vertical p	erforated bi	rick HLz, f	orm B, EN	771-1					
Producer	4 7 1	e.g. Wienerberger							
Naminal dimana	iona [mm]	length L	width W	height H					
Nominal dimens	ions [mm]	500	200	300					
Density ρ	[kg/dm ³]		≥ 0,7						
Compressive strength f _b	[N/mm²]	-	4/6/8/10)					
Standard or ann	ex	EN 771-1							

8 2 10 50 -25 - 10 500

Table C52.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10		M12	M16	M12 M1
Internal threaded	-		M6		М8					M10 M12				
anchor FIS E					11x85					15x85				
Perforated sleeve FIS H K	12	x50	12:	x85	16)		x85		16x130		20:	x85	- 11	20x130

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K

Max. installation torque $T_{inst,max}$ [Nm]

General installation parameters

Edge distar	nce c _{min}		50	80	50	80
	S _{min} II	[]		100		
Spacing	S _{cr} II			500		
1 Table 1	$s_{min} \perp = s_{cr} \perp$			300		

Drilling method

Hammer drilling with hard metal hammer drill

Table C52.2: Group factors

Anchor rod	or rod		M8	M6	M8		e la	M8	M10	M8	M10	7 C . V	M12	M16	M12	M16
Internal threaded anchor FIS E					6 M8 1x85		- 1		•	M10 M12 15x85	.					
Perforated sl	12	12x50 12x85		16x85		-7.0	16x130		20x85			20x130				
	$\alpha_{g,N}$ II		1,4 2													
Group factors	$\alpha_{q,V} \coprod [-]$ $\alpha_{q,N} \perp = \alpha_{q,V} \perp$															

fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, form B, dimensions, installation parameters

Table C53.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod		M10	M12	M16
Perforated sleeve FI	SHK	18x13	0/200	22x130/200
Anchor rod with per	forated sleeve	FISHK		
Max. installation T _i	nst,max [Nm]		2	
General installation	parameters			
Edge distance	C _{min}		80	
	S _{min} II		100	
Spacing	S _{cr} II [mm]		500	_
s _{min} ⊥ =	s _{cr} ⊥		300	

Drilling method

Hammer drilling with hard metal hammer drill

Table C53.2: Group factors

Anchor rod		M10	M12	M16
Perforated s	leeve FIS H K	18x13	30/200	22x130/200
0	α _{g,N} II		1,4	
Group factors _	$\frac{\alpha_{q,V}II}{\alpha_{q,N}\perp = \alpha_{q,V}\perp} [-]$		2	

fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, form B, dimensions, installation parameters

w/w w/d

d/d

d/d

w/d

w/w

8 N/mm²

10 N/mm²

Table C54.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8			M8	M10	M8	M10	-	M12	M16	M12 M16
Internal thread	ed						М6	M8				Ti	M10 M12			
anchor FIS E							11)	k 85					15x85			
Perforated slee	ve FIS H	K	12)	k 50	12:	x85		16:	(85		16x	130	203	(85		20x130
Tensile	load N _{Rk}	[kN] de	pend	ling o	on the	e cor	npres	ssive	stre	ngth	f _b (te	mpe	rature ran	ge 50	/80°	C)
compressive strength f _b	use ca	tegory				Ŧ										
4 N/mm ²	w/w	w/d		0	,5			0	,6		1	,2	0,	75		1,5
4 N/mm	d	/d		0	,6	- 1		0,	75	- 31	1	,2	0	,9		1,5
6 N/mm ²	w/w	w/d		0,	75			0	,9	-	1	,5	1,	,2		2,0
o M/mm	d	/d		0	,9			-1	,2		2	,0	1	,2		2,5
		_	_				_	_	_							

1,2

1,5

1,5

2,0

2,0

2,5

2,5

3,0

1,5

1,5

2,0

2,0

2,5

3,0

3,5

4,0

 Table C54.2:
 Characteristic resistance under tensile load (Push through anchorage)

0,9

1,2

1,2

1,5

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H	K	18x13	0/200	22x130/200
Tensile	load N _{Rk}	[kN] deper	nding on the con	pressive strength fb	(temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
4 N/mm ²	w/w	w/d	1,	2	1,5
4 N/mm	d	/d	1,	2	1,5
6 N/mm ²	w/w	w/d	1,	5	2,0
6 N/mm	d	/d	2,	0	2,5
0.11/2	w/w	w/d	2,	0	2,5
8 N/mm ²	d	/d	2,	5	3,0
10 N/mm ²	w/w	w/d	2,	5	3,5
10 N/mm	d	/d	3,	0	4,0

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, form B, Characteristic resistance under tensile load	Annex C 54

Table C55.1: Characteristic resistance under shear load (Pre-positioned anchorage)

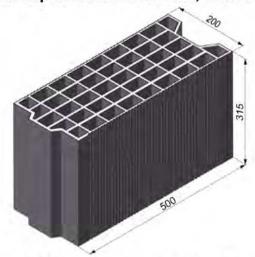
Anchor rod			M6	M8	M6	M8			M8	M10	M8	M10			M12	M16	M12	M16
Internal thread	ed						M6	M8					M10	M12	-			
anchor FIS E							11)	(85		21.		-	15x	85				
Perforated slee	ve FIS H	K	12:	x50	12:	x85		16:	(85		16x	130		20)	x85		20x	130
Shear load V _R	[kN] dep	endin	g on	the c	ompi	essi	ve st	rengt	h f _b ((temp	erat	ure ra	ange	50/80	0°C a	nd 7	2/120	°C)
compressive strength f _b	use ca	tegory			·		4			7							-	

strength f _b	use ca	tegory							
4 N/mm ²	w/w	w/d	0.0	1.0	0.0	1.0	0.6	2.0	0.6
4 N/IIIII	d	/d	0,9	1,2	0,9	1,2	0,6	2,0	0,6
6 N/mm ²	w/w	w/d	1.2	1,5	1,2	1.5	0.0	3,0	0,9
0 14/111111	d	/d	1,2	1,5	1,2	1,5	0,9	3,0	0,9
8 N/mm ²	w/w	w/d	1,5	2,0	1,5	2.0	1.2	4,0	10
O N/IIIII	d	/d	1,5	2,0	1,5	2,0	1,2	4,0	1,2
10 N/mm ²	w/w	w/d	2,0	3.0	2,0	3.0	1.5	5.0	15
10 14/11111	d	/d	2,0	3,0	2,0	3,0	1,5	5,0	1,5

Table C55.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod	4.14		M10	M12	M16
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200
Shear load V _{RI}	[kN] dep	ending or	n the compressi	ve strength f _b (temper	rature range 50/80°C and 72/120°C)
compressive strength f _b	use ca	tegory			
4 N/mm ²	w/w	w/d		0.0	7
4 N/mm	d	/d		0,6	
6 N/mm ²	w/w	w/d		0.0	
O N/IIIII	d	/d		0,9	
8 N/mm ²	w/w	w/d		4.0	
O IN/IIIIII	d	/d		1,2	
10 N/mm ²	w/w	w/d		1.5	
TO IN/IIIII	d	/d		1,5	

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, form B, Characteristic resistance under shear load	Annex C 55



Vertical p	erforated bi	rick HLz, f	orm B, EN	771-1
Producer	4 7 1		e.g. Terrea	
Ni	taura Francis	length L	width W	height H
Nominal dimens	ions [mm]	500	200	315
Density ρ	[kg/dm ³]		≥ 0,7	
Compressive strength f _b	[N/mm²]		2/4/6/8	
Standard or ann	ex		EN 771-1	

8 8!	1	_	=	=		
						8
- 5000000	1				2	60¢

Table C56.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8	- 0	-	M8	M10	M8	M10	-	M12	M16	M12 M16
Internal threaded					M6	M8					M10 M12			
anchor FIS E					11:	x85		-			15x85			1-7
Perforated sleeve FIS H K	12	x50	12	k 85		16:	k 85		16x	130	202	x85		20x130

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K

Max. installation	T [MM] T	2
torque	T _{inst,max} [Nm]	2

General installation parameters

General Installat	ion parameters				
Edge distance	C _{min}	50	80	50	80
	S _{min} II		100		
Cassina	s _{cr} II [mm]		500		
Spacing	S _{min} ⊥		100		
	S _{cr} ⊥		315		

Drilling method

Hammer drilling with hard metal hammer drill

Table C56.2: Group factors

Anchor rod		M6	M8	M6	M8	-		M8	M10	M8	M10		M12 M16	M12 M16
Internal threaded anchor FIS E		-5				M6 M8						M10 M12 15x85	J.S.	1
Perforated sleev	e FIS H K	12	x50	12:	x85		16)	85		16x	130	20:	x85	20x130
	$\alpha_{g,N}$ II								1,	,1				
Group factors	α _{g,V} II								-1,	,2				
Group factors	$\frac{\alpha_{g,V} \cdot \Pi}{\alpha_{g,N} \perp}$ [-]								1,	,1				
	$\alpha_{q,V}\bot$								1,	2				

fischer	injektion	system	FIS V	masonry
	HIIIGKIIOH	3 4 3 1 5 1 1	I IO V	IIICISUIIIV

Performances

Vertical perforated brick HLz, form B, dimensions, installation parameters

Table C57.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16
Perforated sleev	e FIS H H	(18x13	22x130/200	
Anchor rod with	perforat	ed sleeve	FIS H K		
Max. installation torque	T _{inst,max}	[Nm]		2	
General installat	ion para	meters			
Edge distance	C _{min}			80	
	s _{min} II			100	
Casalan	S _{cr} II	[mm]		500	
Spacing	Smin⊥			100	
	s _{cr} ⊥			315	
Drilling method					

Hammer drilling with hard metal hammer drill

Table C57.2: Group factors

Anchor rod		M10	M12	M16				
Perforated sleev	re FIS H K	18x13	0/200	22x130/200				
	α _{α,N} II		1,1					
Casum faminas	α _α ν II		1,2					
Group factors	α _{g,N} ⊥ [-]		1,1					
	$\alpha_{q,V}\bot$		1,2					

fischer injektion system FIS V masonry

Performances

Vertical perforated brick HLz, form B, dimensions, installation parameters

Table C58.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8	10		M8	M10	M8	M10		-	M12	M16	M12	M16
Internal threaded anchor FIS E					M6	M8 x85		•				M12 x85				
Perforated sleeve FIS H K	12	x50	12:	x85			(85		16)	130	10.		x85		20x	130

Tensile	load N _{Rk}	[kN] der	ending on	the compressive	strength fb (tem	perature range 50/8	0°C)					
compressive strength f _b	use ca	tegory										
2 N/mm²	w/w	w/d			0,5							
2 N/min	d	/d		0,5	0,6	0,5	0,6					
4 N/mm ²	w/w	w/d		0,9								
4 N/mm	d	/d	0,9	0,9 1,2								
6 N/mm ²	w/w	w/d			1,5							
6 N/mm	d	/d			1,5							
8 N/mm²	w/w	w/d	2,0									
8 N/IIIII	d	/d			2,0							

Table C58.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16					
Perforated slee	Perforated sleeve FIS H K			30/200	22x130/200					
Tensile	load N _{Rk}	[kN] deper	nding on the con	npressive strength fb ((temperature range 50/80°C)					
compressive strength f _b	use ca	tegory								
2 N/mm ²	w/w	w/d		0,5						
2 N/min	d	/d		0,6						
4 N/mm ²	w/w	w/d		0,9						
4 N/mm	d	/d		1,2						
6 N/mm ²	w/w	w/d		1,5						
o M/mm	d	/d	1,5							
8 N/mm²	w/w	w/d	2,0							
o M/mm	d	/d	2,0							

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, form B, Characteristic resistance under tensile load	Annex C 58

d/d

d/d

w/d

1,5

w/w

8 N/mm²

Table C59.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8			M8	M10	M8	M10			M12	M16	M12 M16
Internal thread	ed						M6	M8					M10	M12			
anchor FIS E							11x85			21.		-	15	x85			
Perforated slee	ve FIS H	K	123	c 50	12:	(85		16:	k 85		16)	130		20:	x85		20x130
Shear load V _{RI}	[kN] dep	endin	g on t	he c	ompi	essi	ve st	rengt	h f _b	(temp	erat	ure ra	ange	50/80	0°C ar	nd 7:	2/120°C)
compressive strength f _b	use ca	tegory					4										
2 N/mm ²	w/w	w/d	0.0		0.0		0.0		0.0			0		^	0		0.75
2 N/mm	d	/d	0,3		0,6		0,3		0,6	1	Ü	,6		0	,9		0,75
4 N/mm ²	w/w	w/d	0.75		10		0.75		10			0		0	0		1.5
4 N/mm	d	/d	0,75		1,2		0,75		1,2			,2		2	,0		1,5
2 W/W		w/d	0.0		20		0.0		2.0		5 2 1		0	0		2.0	
6 N/mm ²	- 2	/d	0,9		2,0		0,9		2,0		- 3	,5		3	,0		2,0

1,5

2,5

2,0

4,0

3,0

Table C59.2: Characteristic resistance under shear load (Push through anchorage)

2,5

Anchor rod			M10	M12	M16			
Perforated sleeve FIS H K			18x13	30/200	22x130/200			
Shear load V _R	k [kN] dep	ending or	n the compressi	ve strength f _b (temper	ature range 50/80°C and 72/120°C)			
compressive strength f _b	use ca	tegory						
2 N/mm ²	w/w	w/d	0	c	0.75			
2 N/HIII	d	/d	U	,6	0,75			
4 N/mm²	w/w	w/d		0	1.5			
4 N/mm	d	/d	1	,2	1,5			
6 N/mm²	w/w	w/d	4	-	2.0			
o M/mm	d	/d	.1	,5	2,0			
8 N/mm²	w/w w/d		2	0	2.0			
o M/mm	d	/d	2	,0	3,0			

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, form B, Characteristic resistance under shear load	Annex C 59

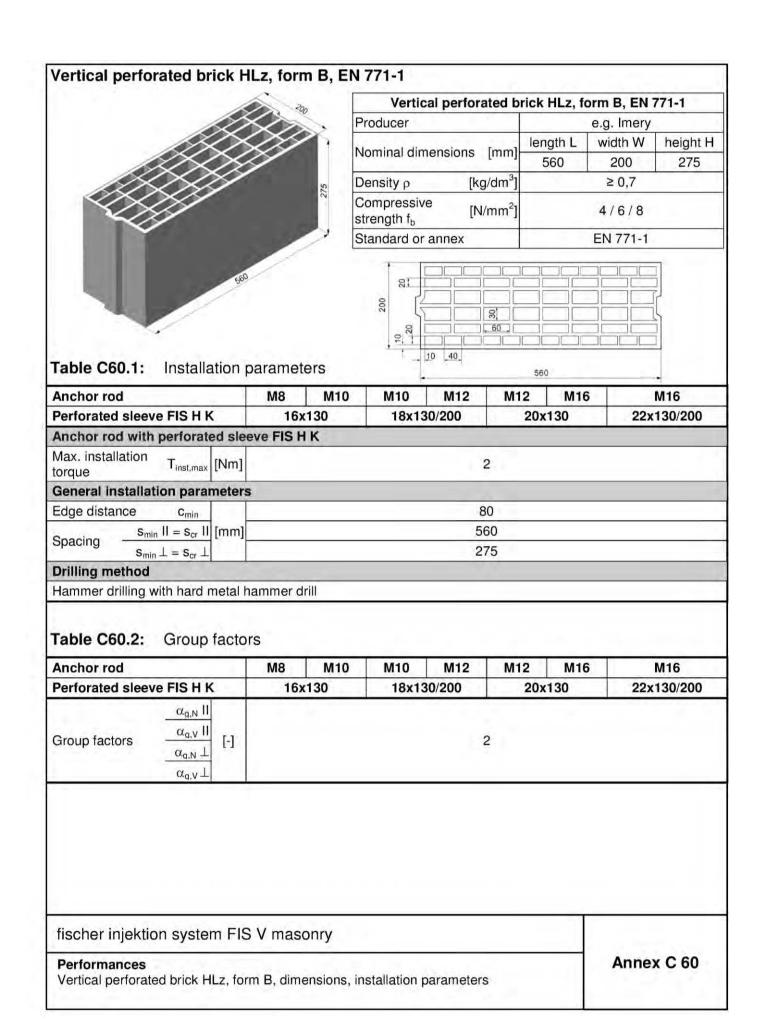


Table C61.1: Characteristic resistance under tensile load

Anchor rod		M8	M10	M10	M12	M12	M16	M16			
Perforated sleeve FIS H K		16x130		18x13	18x130/200		130	22x130/200			
Tensile	load N _{Rk}	[kN] dep	ending	on the cor	npressive	strength	f _b (tempe	rature rang	ge 50/80°C)		
compressive strength f _b	use ca	tegory									
4 N/mm ²	4 N/2 W/W W/d			0	,9			1,	2		
4 N/mm			1	,2		1,5					
6 N/mm ²	w/w	w/d		- 1	,5			2,	2,0		
d/d			1	,5		2,0					
8 N/mm²	w/w	w/d		2	.0		2,5				
8 N/mm				2	,5		3,0				

Factor for temperature range 72/120°C: 0,83

Table C61.2: Characteristic resistance under shear load

Anchor rod	hor rod		M8	M10	M10	M12	M12	M16	M16		
Perforated sleeve FIS H K		16)	130	18x13	30/200	20)	130	22x130/200			
Shear load V _{RI}	[kN] dep	pending	on the c	ompressi	ve streng	th f _b (temp	perature r	ange 50/80	°C and 72/120°C)		
compressive strength f _b	use ca	tegory									
4 N/mm ² w/w w/d			1	0.0							
4 N/mm	d	/d		0,9							
6 N/mm ²	w/w	w/d					-				
6 N/mm²		/d		1,5							
8 N/mm²	w/w	w/d									
8 N/mm d/d				2,0							

fischer injektion system FIS V masonry	
Performances	Annex C 61
Vertical perforated brick HLz, form B,	
Characteristic resistance under tensile and shear load	

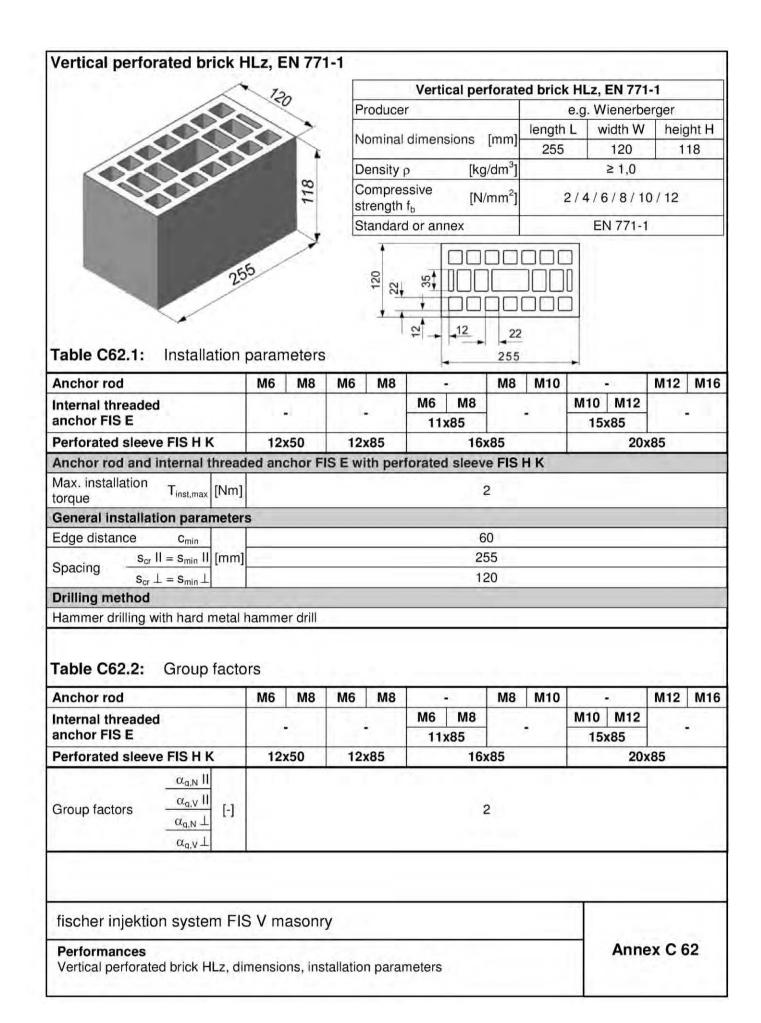


Table C63.1: Characteristic resistance under tensile load

Anchor rod			M6	M8	M6	M8			M8	M10	- 1		M12	M16	
Internal thread	ed						М6	M6 M8			M10	M12			
anchor FIS E			1			-	112	11x85 15x8		k 85		•			
Perforated sleeve FIS H K			12	x50	12	x85		16x85				20x85			
Tensile	load N _{Rk}	[kN] de	pendi	ng on t	he cor	npress	ive str	ength	f _b (ten	nperatu	ıre ran	ge 50/	80°C)		
compressive strength f _b	use ca	tegory													
2 N/mm ² w/v		w/d	0	,4	0,5			,5					- (
2 N/IIIII	d	/d	0	,5	5 0,5						-				
4 N/mm ²	w/w	w/d	0	,9	0,9			0	,5						
4 N/IIIII	d	/d	0	,9	1,2						0,5				
6 N/mm ²	w/w	w/d	1	,2			1	,5				0,	75		
O N/IIIII	d	/d	1	,5	5 1,5						0,75				
8 N/mm²	w/w	w/d	1	,5			2	,0				0	,9		
8 N/mm		/d	2	,0	2,0					0,9					
10 N/mm ²	w/w	w/d	2	,0	2,5					2,5 1,2				,2	
TO N/IIIII	d	/d	2	,5			2	,5				1	,2		

3,0

3,5

1,5

1,5

Factor for job site tests and displacements see annex C110

2,5

3,0

w/d

Factor for temperature range 72/120°C: 0,83

d/d

w/w

12 N/mm²

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, Characteristic resistance under tensile load	Annex C 63

Table C64.1: Characteristic resistance under shear load

Anchor rod	M6	M8	M6	M8			M8 M10		M8 M10		M8 M10		M8 M10			-1	M12	M16
Internal threaded anchor	-		1000			M6 M8				M12								
FIS E					11x85					15x85								
Perforated sleeve FIS H K	12:	x50	12x85		16:		x85			20:	x85							

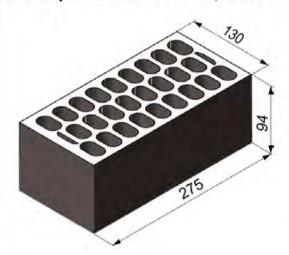
Shear load V _{Rk} [I							
compressivestren gth f _b	use ca	tegory					
2 N/mm ²	w/w	w/d	0.0	0.75	0,6	0,75	0.0
2 N/mm	d	'd	0,6	0,75			0,9
4 N/mm ²	w/w	w/d	1,2	4.5	10	1.5	2.0
4 N/mm	d	'd		1,5	1,2	1,5	2,0
6 N/mm ²	w/w	w/d	2,0	2,0	0.0	20	0.5
	d/	'd			2,0	2,0	2,5
8 N/mm²	w/w	w/d	0.5	0.0	0.5	0.0	0.5
8 N/mm	d	'd	2,5	3,0	2,5	3,0	3,5
10 N/mm ²	w/w	w/d	0.0	0.5	0.0	0.5	4.5
10 N/mm	d	'd	3,0	3,5	3,0	3,5	4,5
10 N/m m²	w/w	w/d		4.5	4.0	4.5	E 6
12 N/mm ²	d/	'd	4,0	4,5	4,0	4,5	5,5

Factor for job site tests and displacements see annex C110

fischer injektion	system	FIS V	masonry
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Performances

Vertical perforated brick HLz, Characteristic resistance under shear load



Vertic	al perforate	ed brick HI	Lz, EN 771-	1		
Producer		e.g. Cer	manica Fari	reny S.A.		
Newigal dimaga	ione [mm]	length L	width W	height H		
Nominal dimens	ions [mm]	275	130	94		
Density ρ	[kg/dm ³]	≥ 0,8				
Compressive strength f _b	[N/mm²]	6/8/12/16/20				
Standard or ann	ex	EN 771-1				

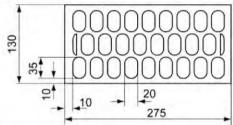


Table C65.1: Installation parameters

Anchor rod	M6	M8	M6	M8	1		M8 M10		M8 M10		M8 M10		M8 M10		M8 M10		1		M12	M16
Internal threaded anchor	l of a					M8			M10	M12	110									
FIS E					11x85		-		15x85		-									
Perforated sleeve FIS H K	12:	x50	12:	x85	16)		16x85			20:	x85									

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K

Max. installation torque $T_{inst,max}$ [Nm]

General installation parameters

Edge dista	ince c _{min}	100	120
0	$s_{cr} II = s_{min} II [mm]$	275	
Spacing	$s_{cr} \perp = s_{min} \perp$	95	

Drilling method

Hammer drilling with hard metal hammer drill

Table C65.2: Group factors

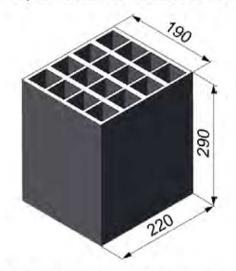
Anchor rod		M6	M6 M8 M6 M8					M10			M12	M16	
Internal threaded anchor						M6	M8			M10	10 M12		
FIS E			-4			11x85		-		15x85			
Perforated sleeve FIS H K		12	12x50		12x85		16x85			20x85			
Group factors	$\frac{\alpha_{q,N}II}{\alpha_{q,N}\perp} = \frac{\alpha_{q,N}II}{\alpha_{q,N}\perp} = \frac{\alpha_{q,N}II}{\alpha_{N}\perp} = \frac{\alpha_{q,N}II}{\alpha_{N}\perp} = \frac{\alpha_{q,N}\perp} = \frac{\alpha_{q,N}\perp$	-1						2					

fischer	injektion	system	FIS V	masonry
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Performances

Vertical perforated brick HLz, dimensions, installation parameters

Anchor rod		M6	M8	M6 M8	· ·	M8 M10	• 1	M12 M16	
Internal threade anchor FIS E	ed	-		-	- M6 M8 11x85		M10 M12	17.5	
Perforated slee	ve FIS H K	12x	50	12x85	16x85		20	x85	
Tensile I	oad N _{Rk} [kN] de	pending	g on t	he compre	sive strength	f _b (temperati	ure range 50/	80°C)	
compressive strength f _b	use category								
6 N/mm ²	w/w w/d	0,4				0,9			
304000	d/d	0,4	4			0,9			
8 N/mm ²	w/w w/d	0,5				1,2			
•	d/d	0,6	6			1,2			
12 N/mm ²	w/w w/d	0,7				1,5			
3-01011111	d/d	0,9				2,0			
16 N/mm ²	w/w w/d	0,9	-			2,0			
	d/d	1,2				2,5 3,0			
20 N/mm ²	w/w w/d	1,2							
	7777	, -	1,5						
Factor for tem Table C66.2: Anchor rod	perature range Characteris					M8 M10		M12 M1	
Table C66.2: Anchor rod Internal threade	Characteris	stic resi	istand	ce under s	M6 M8	M8 M10	- M10 M12	M12 M10	
Table C66.2: Anchor rod Internal threade anchor FIS E	Characteris ed	M6	istand M8	m6 M8	M6 M8		15x85	1,14	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee	Characteris	M6	M8	M6 M8	M6 M8 11x85	- 5x85	15x85 20	×85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee	Characteris ed	M6	M8	M6 M8	M6 M8 11x85	- 5x85	15x85 20	×85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee Shear load V _{Rk} compressive	Characteris ed eve FIS H K	M6	M8 50 com	M6 M8	M6 M8 11x85	- 5x85	15x85 20	x85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee Shear load V _{Rk} compressive strength f _b	characteris ed ve FIS H K [kN] dependin use category w/w w/d	M6 12x3	M8 50 com	M6 M8	M6 M8 11x85	x85 perature rang	15x85 20	x85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee Shear load V _{Rk} compressive strength f _b 6 N/mm ²	characteris ve FIS H K [kN] dependin use category w/w w/d d/d w/w w/d	M6 12x3	M8 50 com	M6 M8	M6 M8 11x85	ex85 perature rang	15x85 20	x85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee Shear load V _{Rk} compressive strength f _b 6 N/mm ² 8 N/mm ²	characteris ve FIS H K [kN] dependin use category w/w w/d d/d w/w w/d d/d w/w w/d	M6 12x3 g on the	M8 50 com	M6 M8	M6 M8 11x85	1,2	15x85 20	×85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee Shear load V _{Rk} compressive strength f _b 6 N/mm ² 8 N/mm ²	characteris ve FIS H K [kN] dependin use category w/w w/d d/d w/w w/d d/d w/w w/d d/d w/w w/d d/d w/w w/d	12x3 g on the	M8 50 com 2	M6 M8	M6 M8 11x85	1,2 1,5 2,5	15x85 20	×85	
Table C66.2: Anchor rod Internal threade anchor FIS E Perforated slee Shear load V _{Rk} compressive strength f _b 6 N/mm ² 8 N/mm ² 12 N/mm ² 16 N/mm ²	characteris ve FIS H K [kN] dependin use category w/w w/d d/d w/w w/d	m6 12x3 1,5 2,0 4,0	M8 50 e com 2 5 0 0	M6 M8 - 12x85 pressive st	M6 M8 11x85 16 rength f _b (tem	1,2 1,5 2,5 3,0	15x85 20	×85	



Vertical perforated brick HLz, EN 771-1								
Producer		e.g. Perceram						
Naminal dimana	iona [mm]	length L	width W	height H				
Nominal dimens	ions [mm]	220	190	290				
Density ρ	[kg/dm ³]	≥ 0,7 6 / 8 / 10						
Compressive strength f _b	[N/mm²]							
Standard or ann	iex	EN 771-1						

1	= 1		H	
+	╣		H	H
		Н		

Table C67.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

M6	M8	M6	M8		-	M8	M10	M8	M10		-	M12 N	M16	M12 M16
	-			M6	M8 x85					331031.				
12	c 50	12	(85		16)	(85		16x	130		20)	k 85		20x130
		- 12x50		- 1-	M6	M6 M8 11x85	M6 M8 11x85	M6 M8 11x85	M6 M8 11x85	M6 M8 11x85	M6 M8 M10 M10 M5 M5 M5 M5 M5 M5 M5 M	M6 M8 M10 M12 15x85	M6 M8 M10 M12 15x85	M6 M8 M10 M12 15x85

Max. installation T_{inst,max} [Nm] 2 torque

General installation parameter

General III	istanation param			
Edge dista	nce c _{min}	= 1	110	1
Caralina	s _{min} II = s _{cr} II [mm]	220	- 0
Spacing	$s_{min} \perp = s_{cr} \perp$		290	

Drilling method

Hammer drilling with hard metal hammer drill

Table C67.2: Group factors

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10		M12 M16	M12 M16
Internal threaded					М6	M8					M10 M12		
anchor FIS E			•		11x85						15x85		
Perforated sleeve FIS H K	12	c 50	12:	x85		16	(85		16x	130	20:	x85	20x130
Group factors $\frac{\frac{\alpha_{q,N} \text{ II}}{\alpha_{q,N} \text{ II}}}{\alpha_{q,N} \perp} \text{ [-]}$								2	2				

fischer injektion system	FIS V masonry

Performances

Vertical perforated brick HLz, dimensions, installation parameters

Table C68.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod	M10	M12	M16
Perforated sleeve FIS H K	18x13	0/200	22x130/200
Anchor rod with perforated sl	eeve FIS H K		
Max. installation T _{inst,max} [Nm		2	
General installation paramete	rs		
Edge distance c _{min}		110	
Smin II = Scr II [mm]	220	
Spacing $s_{min} \perp = s_{cr} \perp$		290	
Drilling method			

Table C68.2: Group factors

Hammer drilling with hard metal hammer drill

Anchor rod	M10	M12	M16
Perforated sleeve FIS H K	18x13	0/200	22x130/200
Group factors $\frac{\frac{\alpha_{q,N} II}{\alpha_{q,N} \bot}}{\frac{\alpha_{q,N} \bot}{\alpha_{q,V} \bot}} [\text{-}]$		2	

fischer injektion system	n FIS V masonry
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Performances

Vertical perforated brick HLz, dimensions, installation parameters

Table C69.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8	10		M8	M10	M8	M10	-	M12 M1	6 M12 M16
Internal thread	ed						M6	M8					M10 M12	2	
anchor FIS E	nchor FIS E		1				117		x85				15x85	1.2	
Perforated slee	ve FIS H	K	12:	x50	12:	x85		16:	k 85		16x	130	20:	x85	20x130
Tensile	load N _{Rk}	[kN] de	pend	ling o	n th	e cor	npre	ssive	stre	ngth	f _b (te	mpe	rature ran	ge 50/80	°C)
compressive strength f _b	use ca	tegory													
6 N/mm ²	w/w	w/d	0	,3	1	,2		1.	,2		1	,5	1	,2	1,5
6 N/mm	d	/d	0	,4	1	,5		1	,5		1	,5	1	,5	1,5
8 N/mm ²	w/w	w/d	0	,5	- 1	,5		1	,5		2	,0	1	,5	2,0
8 N/mm	d	/d	0	,5	2	,0		2	,0		2	,5	2	,0	2,5
10 N/mm ²	w/w	w/d	0	,6	2	,0		2	,0		2	,5	2	,0	2,5
TO IN/MM	d	/d	0	,6	2	,5		2	,5		3	,0	2	,5	3,0

Table C69.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16					
Perforated slee	ve FIS H	K	18x130/200 22x130/200							
Tensile	oad N _{Rk}	[kN] deper	nding on the con	npressive strength fb ((temperature range 50/80°C)					
compressive strength f _b	use ca	tegory								
6 N/mm ²	w/w	w/d		1,5						
6 N/mm	d	/d	1,5							
8 N/mm ²	w/w	w/d		2,0						
o M/mm	d	/d		2,5						
10 N/mm ²	w/w	w/d		2,5						
TO N/MIM	d	/d		3,0	3,0					

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, Characteristic resistance under tensile load	Annex C 69

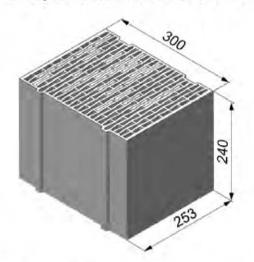
Table C70.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8	10.0	v	M8	M10	M8	M10	-):	M12	M16	M12 M16
Internal thread	l threaded						M6	M8			1.5.11		M10 M12		2		
anchor FIS E							113	k 85		21.			15x	85	1		
Perforated slee	eve FIS H	K	12:	x50	12:	x85		16:	(85		16x	130		20)	k 85		20x130
Shear load V _{RI}	[kN] dep	endin	g on	the c	ompi	ressi	ve st	rengt	h f _b	(temp	erat	ure ra	inge 5	50/80	0°C ar	nd 7	2/120°C)
compressive strength f _b	use ca	tegory			- 77					7							
6 N/mm ²	w/w	w/d		-	,	-			-		0	-		- 4	-		0.0
6 N/mm	d	/d	1	,5	1	,5		- 1	,5		2	,5		11.	,5		2,0
8 N/mm ²	w/w	w/d	0	0	_	0		0	0		0	-		0	^		0.0
8 N/mm	d	/d	2	,0	2	,0		2	,0		3	,5		2	,0		3,0
10 N/mm ²	w/w	w/d	0	Ē	0	0		ò	0		,	-		0	0		0.5
IU N/mm	d	/d	2	,5	3	3,0		3,0			4	4,5	3,		,0		3,5

Table C70.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200
Shear load VR	[kN] dep	ending or	n the compressi	ve strength f _b (temper	ature range 50/80°C and 72/120°C)
compressive strength f _b	use ca	tegory			
6 N/mm ²	w/w	w/d		2.0	
6 N/mm	d	/d		2,0	
8 N/mm ²	w/w	w/d		0.0	
o M/mm	d	/d		3,0	
10 N/mm ²	w/w	w/d		0.5	-
TO M/HIM	d	/d		3,5	

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, Characteristic resistance under shear load	Annex C 70



Vertic	cal perforate	ed brick HI	_z, EN 771-	1				
Producer		e.g. Ziegelwerk Brenna						
Naminal dimana	iona [mm]	length L	width W	height H				
Nominal dimens	ions [mm]	253	300	240				
Density ρ	[kg/dm ³]	≥ 0,8						
Compressive strength f _b	[N/mm²]		2/4/6					
Standard or ann	iex		EN 771-1					

Table C71.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10	-	M12	M16	M12	M16
Internal threaded anchor FIS E		- 0			M6	M8 x85		-		-	 M12 x85	the same of the same of			
Perforated sleeve FIS H K	12:	x50	123	x85		16:	(85		16)	130	20:	x85		20x	130
Anchor rod and internal thre	aded a	ncho	r FIS	Ewi	th pe	erfora	ted	sleev	e FIS	нк				2500	

Max. installation 2 T_{inst,max} [Nm] torque

General installation parameters

Edge distance c _{min}	60	
Secretary S _{min} II = S _{cr} II [mm]	255	
Spacing $s_{min} \perp = s_{cr} \perp$	240	

Drilling method

Hammer drilling with hard metal hammer drill

Table C71.2: Group factors

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10		M12 M	16 M	12 M16
Internal threaded					M6	M8					M10 M12			
anchor FIS E		•			113	x85		-			15x85			•
Perforated sleeve FIS H K	12	x50	12:	x85		16:	x85		16x	130	20:	x85	2	20x130
Group factors $\frac{\alpha_{q,N} I }{\alpha_{q,N} \perp}$ [-								2	2					

fischer injektion system FIS V masonry	
E al la Maria de la Calabara de la C	

Performances

Vertical perforated brick HLz, dimensions, installation parameters

Table C72.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod	M10	M12	M16
Perforated sleeve FIS H K	18x13	30/200	22x130/200
Anchor rod with perforate	d sleeve FIS H K		
Max. installation T _{inst,max}	[Nm]	2	
General installation param	neters		
Edge distance c _{min}		60	
Smin II = Scr II	[mm]	255	
Spacing $s_{min} \perp = s_{cr} \perp$		240	
Drilling method			

Table C72.2: Group factors

Hammer drilling with hard metal hammer drill

Anchor rod		M10	M12	M16
Perforated sleeve	FIS H K	18x13	30/200	22x130/200
Group factors	$ \begin{array}{c c} \alpha_{q,N} & II \\ \hline \alpha_{q,V} & II \\ \hline \alpha_{q,N} & \bot \end{array} $ [-]		2	

fischer injektion	system FIS	S V masonry
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Performances

Vertical perforated brick HLz, dimensions, installation parameters

Table C73.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	Anchor rod			M8	M6 M8		-		M8	M10			-	M1	2 M16	M12 N
Internal threaded							M6	8M 6					M10 M	12	5 6 7	
anchor FIS E Perforated sleeve FIS H K								11x85					15x8	5	1.2	-
			12	(50	12:	12x85		16)		x85		130	20x85			20x13
Tensile	load N _{Rk}	kN] de	pend	ing c	on the	e cor	npres	ssive	stre	ngth	f _b (te	mpe	rature r	ange !	50/80°	(C)
compressive strength f _b	use ca	tegory														
0.11/2	w/w	w/d			0	,5		0	,5		0	,4		0,5		0,4
2 N/mm²			_	^	_	-		0	_		0	-		0.5		0.5

w/w	w/d		0,5	0,5	0,4	0,5	0,4
d/	'd	0,3	0,5	0,5	0,5	0,5	0,5
w/w	w/d	0,5	0,9	0,9	0,9	0,9	0,9
d/	'd	0,6	0,9	0,9	0,9	0,9	0,9
w/w	w/d	0,75	1,5	1,5	1,2	1,5	1,2
d/	'd	0,9	1,5	1,5	1,5	1,5	1,5
	d/ w/w d/ w/w	d/d w/w w/d d/d	d/d 0,3 w/w w/d 0,5 d/d 0,6 w/w w/d 0,75	d/d 0,3 0,5 w/w w/d 0,5 0,9 d/d 0,6 0,9 w/w w/d 0,75 1,5	d/d 0,3 0,5 0,5 w/w w/d 0,5 0,9 0,9 d/d 0,6 0,9 0,9 w/w w/d 0,75 1,5 1,5	d/d 0,3 0,5 0,5 0,5 w/w w/d 0,5 0,9 0,9 0,9 d/d 0,6 0,9 0,9 0,9 w/w w/d 0,75 1,5 1,5 1,2	d/d 0,3 0,5 0,5 0,5 w/w w/d 0,5 0,9 0,9 0,9 d/d 0,6 0,9 0,9 0,9 w/w w/d 0,75 1,5 1,5 1,2 1,5

Table C73.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16				
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200				
Tensile	load N _{Rk}	[kN] deper	nding on the cor	npressive strength fb ((temperature range 50/80°C)				
compressive strength f _b	use ca	tegory							
2 N/mm²	w/w	w/d	0,4						
2 N/mm	d	/d		0,5					
4 N/mm²	w/w	w/d		0,9					
4 N/mm	d	/d		0,9	=				
6 N/mm ²	w/w	w/d		1,2					
o N/mm	d	/d		1,5					

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, Characteristic resistance under tensile load	Annex C 73

Table C74.1: Characteristic resistance under shear load (Pre-positioned anchorage)

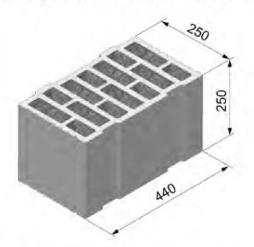
Anchor rod	M6	M8	M6	M8	100	•/	M8	M10	M8	M10		0):	M12	M16	M12	M16
Internal threaded					M6	M8			13		M10					
anchor FIS E	-				113	x85					15x	85			2	
Perforated sleeve FIS H K	12	x50	12	x85		16:	c 85		16)	130		20:	k 85		20x	130

Shear load V _{RI}	(kN) dep	pending	on the compressive	strength fb (tem	perature rang	e 50/80°C and	72/120°C)
compressive strength f _b	use ca	tegory					X 4 1 =
2 N/mm ²	w/w	w/d		0.5		0.	c
2 N/mm	d	/d		0,5		0,0	0
4 N/mm ²	w/w	w/d		0.0			0
4 N/mm	d	/d		0,9		1,3	2
6 N/mm ²	w/w	w/d	1				
6 N/mm	d	/d		1,5		1,8	0

Table C74.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16			
Perforated slee	ve FIS H	K	18x13	18x130/200 22x130/200				
Shear load VR	[kN] dep	ending or	the compressi	ve strength f _b (temper	ature range 50/80°C and 72/120°C)			
compressive strength f _b	use ca	tegory						
2 N/mm²	w/w w/d		0	_	0.0			
2 N/mm	d	/d	U	,5	0,6			
4 N/mm²	w/w	w/d	0	0	1.0			
4 N/mm	d	/d	U	,9	1,2			
6 N/mm ²	w/w	w/d		F	1.5			
o N/mm	d	/d		,5	1,5			

fischer injektion system FIS V masonry	
Performances	Annex C 74
Vertical perforated brick HLz, Characteristic resistance under shear load	



	Porotherm N EN 771-1	N 44,							
Producer									
No select discour	Cours Forum	length L	width W	height H					
Nominal dimens	sions [mm]	250	440	250					
Density ρ	[kg/dm ³]		0,7						
Compressive strength f _b	[N/mm²]		6/8/10						
Standard or ann	iex		EN 771-1						

Table C75.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod			M6	M8	M6	M8		-	M8	M10	M8	M10	7.5	M12 M	16 M12 M16	M12 M16
Internal threade anchor FIS E	d					-		M8 x85				•	M10 M12	-		
Perforated sleev	ve FIS H H	(12	12x50 12x85 16x85 16x130 20x85							x85	20x130	20x200			
Anchor rod and internal threaded anchor FIS E with perf									fora	ted s	leev	e FIS	знк			
Max. installation torque	T _{inst,max}	[Nm]	į.			2				5	2		5		6	
General installa	tion para	meter	s													
Edge distance	C _{min}										6	60				
	s _{min} II										8	30				
0	s _{cr} II	[mm]									2	50				
Spacing —	s _{min} ⊥		80													
S _{cr} ⊥											2	50				
Drilling method																

Rotary drilling with carbide drill

Table C75.2: Group factors

Anchor rod		M6	M8	M6	M8	1.7		M8	M10	M8	M10	-	M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E Perforated sleeve FIS H K			- 4	10.4		M6	M6 M8				•	M10 M12 15x85			-
		12x50		12x85		16)		x85		16x130	20)	(85	20x130	20x200	
									1	,3					
Group factors $ \begin{array}{c c} \alpha_{q,N} & II \\ \hline \alpha_{q,N} & \bot \\ \hline \alpha_{q,N} & \bot \end{array} [-] $									1	,3					
	α _{a,N} ⊥ [-]									0	,8				
		1,3													

fischer injektion system FIS V masonry

Performances

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

Table C76.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16					
Perforated slee	ve FIS H H	(18x13	30/200	22x130/200					
Anchor rod with	perforat	ed sleeve	FISHK		•					
Max. installation torque	T _{inst,max}	[Nm]	5		6					
General installa	tion para	meters								
Edge distance	C _{min}			6	60					
	S _{min} II		80							
Canalan	s _{cr} II	[mm]		2	50					
Spacing —	s _{min} ⊥			8	30					
	s _{cr} ⊥			2	50					
Drilling method										
Rotary drilling wi	th carbide	drill								

Table C76.2: Group factors

Anchor rod		M10	M12	M16				
Perforated sleev	ve FIS H K	18x13	30/200	22x130/200				
	α _{g,N} II		1,3					
90 v 11	α _{α,V} 11	1,3						
Group factors	α _{g,N} [-]		0,8					
	$\alpha_{q,V}\bot$		1,3					

fischer injektion system FIS V masonry	
Performances	Annex C 76
Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool;	

Table C77.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	Me	M8			M8 M	10 N	//8 M10		M12 M16	M12 M16	M12 M16
Internal threade				-				M6 M8			r ŝi i,	M10 M12 15x85	-		
Perforated slee	Perforated sleeve FIS H K			12x50 12x85			16:	x85	1	6x130	20:	x85	20x130	20x200	
Tensile I	load N _{Rk}	[kN] de	pen	ding	on	the e	comp	ress	sive str	eng	th fb (te	emperati	ire range	e 50/80°C)
compressive strength f _b	use ca	tegory													
6 N/mm ²	w/w	w/d	0,	75	100	1,5		1	,2			1	,5		2,5
6 N/mm	d	/d	0	,9		1,5		1	,2			- 1	,5	- 4	2,5
8 N/mm²	w/w	w/d	0	,9	11.3	1,5		1	,2			1	,5	-	2,5
8 N/mm	d	/d	0	,9	:	2,0		1	,5			2	,0		3,0
40 11/2	w/w	w/d	0	,9		2,0		1	,5			2	,0		3,0
10 N/mm	10 N/mm ²		1	2		20		1	5			2	٥		3.5

Table C77.2: Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16					
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200					
Tensile l	oad N _{Rk}	[kN] deper	nding on the cor	npressive strength fb ((temperature range 50/80°C)					
compressive strength f _b	use ca	tegory								
G N/mm²	w/w	w/d	1,5							
6 N/mm	6 N/mm ²		1,5							
Q M/mam ²	w/w	w/d		1,5						
o M/mm	8 N/mm ² d/d		2,0							
10 N/mm ²	w/w	w/d		2,0						
TO N/MIM	d	/d	2,0							

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances	Annex C 77
Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,	

Table C78.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8			M8	M10	M8 M	110 -	M12 M1	16 M12 M16	M12 M16
Internal thread			,			- 1		M6 M8			7	M10 M1	2		2.9
Perforated sleeve FIS H K			12x50		12x85				x85		16x130		x85	20x130	20x200
Shear load V _{Rk}	[kN] dep	endin	g on	the	com	pres	sive	stre	ngth	f _b (1	empe	rature ran	ge 50/80	°C and 72	/120°C)
compressive strength f _b	use ca	tegory													
6 N/mm ²	w/w	w/d									10		20	1,2	4.0
6 N/mm	d	/d				U	,9	,9			1,2		0,9		1,2
8 N/mm ²	w/w	w/d				0	^				4.5		20	1.5	4.0
8 N/mm	d	/d				0,9				1,5		0,9	1,5	1,2	
10 N/mm ²	w/w	w/d		1,		0				1.5			1.5		
IU N/mm	- 4	ld				1,2			- 1		1,5 1,		1,5	1,5	

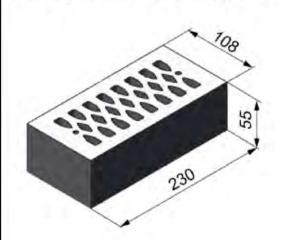
Table C78.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16
Perforated slee	ve FIS H	K	18x13	30/200	22x130/200
Shear load V _{Rk}	[kN] dep	ending o	n the compressi	ve strength f _b (temper	ature range 50/80°C and 72/120°C)
compressive strength f _b	use ca	tegory			
6 N/mm ²	w/w	w/d		0	10
6 N/mm	d	w/w w/d d/d w/w w/d d/d	11	,2	1,2
8 N/mm²	w/w	w/d	-	-	16
o N/mm	d	/d		,5	1,5
10 N/mm ²	w/w	w/d	- 107	F	i e
10 N/mm	d	/d		,5	1,5

Factor for job site tests and displacements see annex C110

d/d

fischer injektion system FIS V masonry	
Performances	Annex C 78
Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool; Characteristic resistance under shear load	



Verti	cal perforate	ed brick HI	Lz, EN 771-	1						
Producer		e.g. Wienerberger.								
Nominal dimensions [mm]		length L	width W	height H						
Nominal dimens	sions [mm]	230 108 55								
Density ρ	[kg/dm ³]	≥ 1,4								
Compressive strength f _b	[N/mm²]		2/4/6/8	n n						
Standard or ani	nex		EN 771-1							

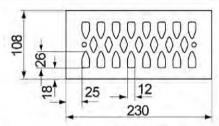


Table C79.1: Installation parameters

Anchor rod			M6	M6 M8		M8	1	F 60 0 11		M10		a =	M12	M16
Internal threaded	nal threaded							M8			M10	M12		
anchor FIS E						•	11:	x85			15)	k 85		-
Perforated sleeve	FIS H K		12x50 12x85			x85		16	x85		20x85			
Anchor rod and in	iternal t	hread	ed and	chor F	SEW	ith per	forated	d sleev	e FIS	нк				
Max. installation torque	T _{inst,max}	[Nm]							2					

General installation parameters

General Installat	ion parameters		
Edge distance	C _{min}	60	
	s _{min} II	80	
Ozzalow	s _{cr} II [mm]	230	
Spacing	S _{min} ⊥	60	
	S _{cr} ⊥	60	

Drilling method

Hammer drilling with hard metal hammer drill

Table C79.2: Group factors

Anchor rod	M6	M8	M6	M8	- 0		M8	M10	2	•	M12	M16
Internal threaded anchor FIS E		•	M6 M8				M10 M12 15x85 20x85			-11		
Perforated sleeve FIS H K	12x50 12x8		x85			5x85						
Group factors $ \begin{array}{c} \frac{\alpha_{\text{q,N}} \text{ II}}{\alpha_{\text{q,N}} \text{ II}} \\ \frac{\alpha_{\text{q,N}} \text{ II}}{\alpha_{\text{q,N}} \perp} \end{array} $	-1					[8	2					

fischer	injektion	system	FIS V	masonry	i
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Performances

Vertical perforated brick HLz, dimensions, installation parameters

Table C80.1: Characteristic resistance under tensile load 1)

Anchor rod			M6	M8	M6	M8			M8	M10			M12	M16	
Internal threaded							M6	M8			M10	M12	11-		
anchor FIS E			1				112	x85		•	15:	x85			
Perforated slee	eve FIS H	K	12:	x50	123	x85		16:	x85			20:)x85		
Tensile	load N _{Rk}	[kN] de	pendir	ng on t	he con	npress	ive str	ength	f _b (ten	peratu	ire ran	ge 50/	80°C)		
compressive strength f _b	use ca	tegory													
2 N/mm ²	w/w	w/d	0	,3	0	,9		0,	75			0	,5		
2 N/IIIII	d	/d	0	,3	0	,9		0	,9		0,6				
4 N/mm ²	w/w	w/d	0	,6	1	,5		1	,5		0,9				
4 N/mm	d	/d	0,	75	2	,0		1	,5			1	,2		
6 N/mm ²	w/w	w/d	0	,9	2	,5		2	,5		(1	,5		
d/d		0	,9	3	,0		2	,5			1	,5			
Q N/mm²	w/w	w/d	1	,2	3	,5		3	,0			2	,0		
8 N/mm²		/d	1	,5	4	,0		3	,5			2	,5		

¹⁾ If the fixing is in a solid area, for w/w, the characteristic value shall be reduced with the factor 0,64.

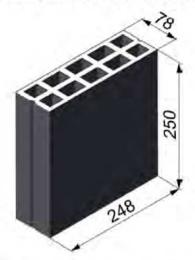
Factor for temperature range 72/120°C: 0,83

Table C80.2: Characteristic resistance under shear load

Anchor rod			M6 M8 M6 M8 - M8 M10				M12	M16						
Internal threaded							M6	M8			M10	M12		
anchor FIS E				•			11	x85		•	15:	x85		
Perforated slee	ve FIS H	K	12:	x50	12:	x85		16:	x85			20:	k 85	
Shear load VR	[kN] dep	ending	on th	e com	pressi	ve stre	ngth f	(temp	eratu	e rang	e 50/8	0°C an	d 72/12	20°C)
compressive strength f _b	use ca	tegory												
2 N/mm ²	w/w	w/d							0,4					
2 N/mm	d	/d				U	,6					Ü	.4	
4 N/mm ²	w/w	w/d				- 4	^				0.0			
4 N/mm	d	/d				ĵ	,2				0,9			
6 N/mm ²	w/w	w/d												
6 N/mm	d	/d		1,5							1,2			
8 N/mm²	w/w	w/d	w/d								- 1	-		
8 N/mm d/d		/d		2,5				1,5						

fischer injektion system FIS V masonry	
Performances Vertical perforated brick HLz, Characteristic resistance under tensile and shear load	Annex C 80

Horizontal perforated brick LLz, EN 771-1



Horizontal perforated brick LLz, EN 771-1									
Producer		THE REAL							
Naminal diman	siana [mm]	length L	width W	height H					
Nominal dimensions [mm]		250	78	248					
Density ρ	[kg/dm ³]		≥ 0,7						
Compressive strength f _b [N/mm ²]		2/4/6							
Standard or ani	nex	EN 771-1							

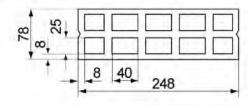


Table C81.1: Installation parameters

Anchor rod			M6	M8
Perforated sleeve	FIS H K		12	x50
Anchor rod with	perforate	ed sleeve FIS	H K	
Max. installation torque	T _{inst,max}	[Nm]		2
General installati	on para	neters		
Edge distance	C _{min}		1	00
	s _{min} II	Far-and	1	75
Spacing	S _{cr} II	[mm]	2	50
Smin	$\perp = s_{cr} \perp$	1 1 2	2	50
Drilling method			J	

Hammer drilling with hard metal hammer drill

Table C81.2: Group factors

Anchor rod		M6	M8		
Perforated sleev	ve FIS H K	12x50			
	α _{g,N} II	1	,6		
Group factors -	α _{g,V} II	= 1	,1		
	$\frac{\alpha_{q,N}\perp}{\alpha_{q,V}\perp}$ [-]	2	,0		

fischer injektion system FIS V masonry	
Performances	Annex C 81
Horizontal perforated brick LLz, dimensions, installation parameters	

Horizontal perforated brick LLz, EN 771-1 Table C82.1: Characteristic resistance under tensile load Anchor rod M₆ **M8** Perforated sleeve FIS H K 12x50 Tensile load N_{Rk} [kN] depending on the compressive strength f_b (temperature range 50/80°C) compressive use category strength fb w/d 0,5 w/w 2 N/mm² d/d 0,6 w/d 0,9 w/w 4 N/mm² d/d 1,2 w/w w/d 1,5 6 N/mm² d/d 1,5 Factor for temperature range 72/120°C: 0,83 Table C82.2: Characteristic resistance under shear load **M6 M8** Anchor rod Perforated sleeve FIS H K 12x50 Shear load V_{Rk} [kN] depending on the compressive strength f_b (temperature range 50/80°C and 72/120°C) compressive use category strength fb w/w w/d 2 N/mm² 0.5 d/d w/w w/d 4 N/mm² 0,9 d/d w/w w/d 6 N/mm² 1.5 d/d Factor for job site tests and displacements see annex C110

fischer injektion system FIS V masonry	
Performances Horizontal perforated brick LLz, Characteristic resistance under tensile and shear load	Annex C 82
	Annex C

Horizontal perforated brick LLz, EN 771-1



Horizo	ntal perfor	ated brick	LLz, EN 771	1-1			
Producer		e.g. Cer	manica Far	reny S.A.			
Naminal dimana	iona formi	length L	width W	height H			
Nominal dimens	ions [mm]	275	88	128			
Density ρ	[kg/dm ³		≥ 0,8				
Compressive strength f _b [N/mm ²]			2				
Standard or ann	ex		EN 771-1				

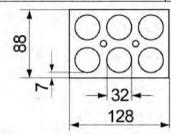


Table C83.1: Installation parameters

Anchor rod			M6	M8
Perforated sleeve FIS H K			12x50	
Anchor rod with	perforate	ed sleeve FIS I	H K	
Max. installation torque	T _{inst,max}	[Nm]		2
General installat	ion para	neters		N
Edge distance	C _{min}			60
	S _{min} II			75
Oi	S _{cr} II	[mm]	- 7	275
Spacing	Smin 1			75
	S _{cr} ⊥			130
Drilling method				

Drilling method

Hammer drilling with hard metal hammer drill

Table C83.2: Group factors

Anchor rod		M6	M8
Perforated slee	ve FIS H K	12)	50
FENNS	α _{g,N} 11	1,	3
Croup factors	(7. v. II	-1,	5
Group factors	$\alpha_{q,N} \perp$ [-]	1 ,	3
	$\alpha_{q,V} \perp$	1,	5

fischer injektion system FIS V masonry	
Performances Horizontal perforated brick LLz, dimensions, installation parameters	Annex C 83
nonzontal penoraled blick ELZ, differisions, installation parameters	

Anchor rod Perforated sleeve FIS H K		M6	M8	
		12x50		
Tensile I	oad N _{Rk} [kN] dependin	g on the compressive strength $f_{\mbox{\scriptsize b}}$ (tempe	rature range 50/80°C)	
compressive strength f _b	use category			
2 N/mm ² w/w w/d d/d		1,5		
Factor for tem Table C84.2:	perature range 72/120°0 Characteristic res	stance under shear load		
Anchor rod		M6	M8	
Perforated slee		12x50		
	[kN] depending on the	compressive strength fb (temperature r	ange 50/80°C and 72/120°C)	
compressive strength f _b	use category		1 17 11 11	
2 N/mm ²	w/w w/d	1,2		
Factor for job	site tests and displacem	ents see annex C110		
Factor for job	site tests and displacem	ents see annex C110		

Light-weight concrete hollow block Hbl, EN 771-3 Light-weight concrete hollow block Hbl, EN 771-3 Producer Länge L Breite B Höhe H Nominal dimensions [mm] 362 240 240 [kg/dm3] ≥ 1,0 Density p Compressive $[N/mm^2]$ 2/4 strength fb Standard or annex EN 771-3 88 76 37 + Table C85.1: Installation parameters (Pre-positioned anchorage with perforated sleeve FIS HK) M6 M8 M6 M8 M8 M10 M8 M10 M12M16M12M16M12M16 Anchor rod M6 M8 M10 M12 Internal threaded anchor FIS E 11x85 15x85 16x85 Perforated sleeve FIS H K 12x50 16x130 20x85 20x130 20x200 12x85 Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K Max. installation T_{inst,max} [Nm] torque General installation parameters Edge distance 60 Cmin 100 Smin II [mm] Scr II Spacing 362 240 $S_{min} \perp = S_{cr} \perp$ **Drilling method** Hammer drilling with hard metal hammer drill Table C85.2: Group factors M12 M16 M12 M16 M12 M16 Anchor rod M6 M8 M6 M8 M8 M10 M8 M10 M6 M8 M10 M12 Internal threaded anchor FIS E 15x85 11x85 Perforated sleeve FIS H K 20x130 20x200 12x50 12x85 16x85 16x130 20x85 1,2 $\alpha_{q,N} \parallel$ 1,1 $\alpha_{q,V} II$ Group factors [-] $\alpha_{q,N} \perp$ 2,0 $\alpha_{q,V} \perp$ fischer injektion system FIS V masonry Annex C 85 Performances Light-weight concrete hollow block Hbl, dimensions, installation parameters

Table C86.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16
Perforated sleeve FIS H K			18x13	0/200	22x130/200
Anchor rod with	perforate	ed sleeve	FIS H K		
Max. installation torque	T _{inst,max}	[Nm]		2	
General installati	ion para	meters			
Edge distance	C _{min}			60	
	s _{min} II	farm 1		100	
Spacing	s _{cr} II	[mm]		362	I -
Smin	$\perp = s_{cr} \perp$			240	
Drilling method			100		

Hammer drilling with hard metal hammer drill

Table C86.2: Group factors

Anchor rod		M10	M12	M16		
Perforated slee	ve FIS H K	18x13	30/200	22x130/200		
	α _{α,N} II		1,2			
Group factors	α _{α,V} II		1,1			
Group factors	$\alpha_{q,N} \perp \alpha_{q,V} \perp$		2,0			

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fischer	injektion	system	FIS V	masonry
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Performances

Light-weight concrete hollow block Hbl, dimensions, installation parameters

Table C87.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8			M8	M10	M8	M10		M12 M1	6 M12 M16	M12 M16
Internal threaded anchor FIS E		οJ			M6	M8 x85		-		-	M10 M12 15x85	i C - 90		7-3
Perforated sleeve FIS H K	12:	x50	12	x85		16:	k 85		16x	130	20	k 85	20x130	20x200

Tensile	load N _{Rk}	kN] de	ending on the com	pressive strength fb (temperature rang	je 50/80°C)
compressive strength f _b	use ca	tegory			
2 N/mm ²	w/w	w/d	1,2	1,5	2,5
2 N/mm	d	/d	1,2	1,5	2,5
4 N/mm ²	w/w	w/d	2,0	3,0	5,0
4 N/MM	d	/d	2,5	3,0	5,5

Table C87.2: Characteristic resistance under tensile load (Push through anchorage)

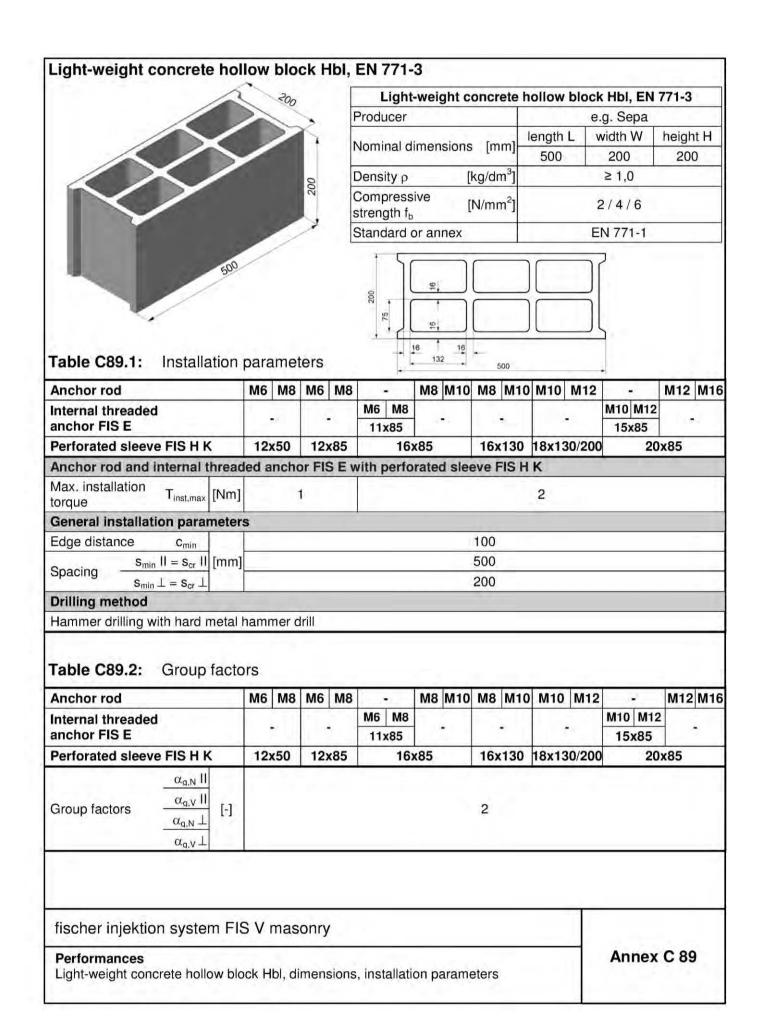
Anchor rod			M10	M12	M16
Perforated slee	d sleeve FIS H K			30/200	22x130/200
Tensile	load N _{Rk}	[kN] deper	nding on the cor	npressive strength fb	(temperature range 50/80°C)
compressive strength f _b	use ca	tegory			
2 N/mm ²	w/w	w/d		1,5	i E
2 N/mm	d	/d		1,5	
4 N/mm ²	w/w	w/d		3,0	
4 N/mm	d	/d		3,0	1 10

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Light-weight concrete hollow block Hbl, Characteristic resistance under tensile load	Annex C 87

Anchor rod		M6 M8	M6 M8	1.2	M8 M10	M8 M10	, <u>.</u>	M12 M1	6M12M16	M12 M16
Internal threade	ed		1.3	M6 M8			M10 M12 15x85	2		1
Perforated slee	ve FIS H K	12x50	12x85	16	(85	16x130	20:	x85	20x130	20x200
Shear load V _{Rk}	[kN] dependin	g on the	compres	sive stre	ngth f _b (t	emperat	ure rang	e 50/80°	C and 72	120°C)
compressive strength f _b	use category									
2 N/mm ²	w/w w/d					0,9				
4 N/mm ²	w/w w/d	2,0								
Shear load V _{Rk}	AND DOCUMENTS	g on the			ngth f _b (1	emperat	ure rang			120°C)
Perforated slee	AND DOCUMENTS	g on the		130/200	nath f	emperat	ure rang	22x130		120°C)
compressive		g on the	ompres	Sive Sue	ingth is (i	emperat	ure rang	e 50/00	C and 12	120 0)
strength f _b	use category									
2 N/mm ²	w/w w/d					0,9				
	w/w w/d					2,0				
4 N/mm²	d/d	splaceme	nts see al	nnex C11	0					
	d/d site tests and di	splaceme	nts see al	nnex C11	0					



N _{Rk} [kN] c				M8 M10	M8 M10		M12		M12 M16
N _{Rk} [kN] o		Ţ.	M6 M8		•			M10 M12 15x85	(
N _{Rk} [kN] c	12x50	12x85	16:	c 85	16x130	18x13	0/200	20	x85
	epending	on the co	mpressiv	e strengt	h f _b (temp	eratur	e ranç	je 50/80°	C)
se category								414	
w/w w/d	411				0,4				
d/d		0,5							
The state of the s	A III				0,9				
92 CONT. CONT.					I ATA				
d/d					1,5				
	- IVIO	-	M6 M8	-	-	-	WIZ	M10 M12	M12 M10
EIG H K	12v50	12v85		285	16v130	18v13			
									7.5
				9					
w/w w/d	2				0.0				
d/d					0,9				
where I are					1.5				
w/w w/d					1,5				
w/w w/d d/d									
					2,5				
	d/d w/w w/d d/d w/w w/d d/d ature range Character FIS H K I depending se category w/w w/d d/d	d/d w/w w/d d/d w/w w/d d/d ature range 72/120°C: Characteristic resistion M6 M8	d/d w/w w/d d/d w/w w/d d/d ature range 72/120°C: 0,83 Characteristic resistance ur M6 M8 M6 M8 FIS H K 12x50 12x85 I depending on the compress se category w/w w/d d/d	d/d w/w w/d d/d w/w w/d d/d ature range 72/120°C: 0,83 Characteristic resistance under she M6 M8 M6 M8 - M6 M8 11x85 FIS H K 12x50 12x85 16x I depending on the compressive strenge se category w/w w/d d/d	M/W W/d d/d M/W W/d d/d Ature range 72/120°C: 0,83 Characteristic resistance under shear load M6 M8 M6 M8 - M8 M10 - M6 M8 M6 M8 11x85 FISHK 12x50 12x85 16x85 Clapending on the compressive strength f _b (tended) See category M/W W/d d/d	d/d	d/d	d/d	d/d

Light-weight concrete hollow block Hbl, EN 771-3 Light-weight concrete hollow block Hbl, EN 771

Light-weig	ht concrete	hollow blo	ock Hbl, EN	771-3			
Producer		e.g. Roadstone wood					
No astront alternace	inna Farani	length L	height H				
Nominal dimens	sions [mm]	440	215	215			
Density ρ	[kg/dm ³]	≥ 1,2					
Compressive strength f _b	[N/mm²]	4/6/8/10					
Standard or ann	iex	EN 771-3					

\$2 \$2 \$3 \$40 \$440

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8	100		M8	M10	M8	M10	-	OX.	M12	M16	M12	M16
Internal threaded anchor FIS E					M6	M8 x85		- 7			M10					,
Perforated sleeve FIS H K	12:	x50	12	x85		16	(85		16)	130		20:	x85		20x	130

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS HK

Max. installation	T [Nm1]	
torque	T _{inst,max} [Nm]	2

General installation parameters

General Installa	ion parameters		
Edge distance	C _{min}	110	
	s _{min} II	100	
Oznata o	s _{cr} II [mm]	440	[
Spacing	S _{min} ⊥	100	
	S _{cr} ⊥	215	1

Drilling method

Hammer drilling with hard metal hammer drill

Table C91.2: Group factors

Anchor rod	hor rod		M8	M6	M8	-		M8	M10	M8	M10	(-	M12	M16	M12	M16
Internal threaded anchor FIS E		-		-		M6	M6 M8		-			M10 M12 15x85	13			
Perforated sleeve FIS H K		12	x50	12x85		16x		(85		16x130		20x85		20x130	30	
α _{q,N} II			1,4												- 1	
Croup footors	any II		2,0													
Group factors	$\frac{\alpha_{q,V} \Pi}{\alpha_{q,N} \perp}$ [-]								1,	4						
$\alpha_{g,V} \perp$									1,	2						

fischer injektion system FIS V masonr	fischer	injektion	system	FIS V	masonr
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Performances

Light-weight concrete hollow block Hbl, dimensions, installation parameters

Table C92.1:

Installation parameters (Push through anchorage with perforated sleeve FIS HK)

Anchor rod			M10	M12	M16				
Perforated sleev	ve FIS H H	(18x13	22x130/200					
Anchor rod with	perforat	ed sleeve	FIS H						
Max. installation torque	T _{inst,max}	[Nm]		2					
General installa	tion para	meters							
Edge distance	C _{min}			110					
	S _{min} II			100					
Cassina	s _{cr} II	[mm]	440						
Spacing —	s _{min} ⊥		100						
	s _{cr} ⊥		215						
Drilling method									
Hammer drilling	with hard	metal han	nmer drill						

Table C92.2: Group factors

Anchor rod	nchor rod		M12	M16			
Perforated sleev	re FIS H K	18x13	0/200	22x130/200			
	α _{g,N} II		1,4				
Carrier frankris	0° × 11	2,0					
Group factors	$\frac{\alpha_{q,N} \perp}{\alpha_{q,N} \perp}$ [-]	1,4					
	$\alpha_{q,V}\bot$	1,2					

fischer injektion system FIS V masonry	
Performances Light-weight concrete hollow block Hbl, dimensions, installation parameters	Annex C 92

Table C93.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod	M6	M8	M6	M8	10	·×	M8	M10	M8	M10			M12	M16	M12	M16
Internal threaded					M6	M8					M10	M12				
anchor FIS E					11x85		•				15x85				-	
Perforated sleeve FIS H K	12:	x50	12:	x85		16:	(85		16x	130		20:	x85		20x	130

Tensile	load N _{Rk}	KNJ deper	iding on the comp	ressive strength fb (temper	rature range 50/80°C)
compressive strength f _b	use catego	ry			
4 N/mm ²	w/w	w/d	0,9	1,2	2,0
4 N/mm	d	/d	1,2	1,5	2,0
6 N/mm ²	w/w	w/d	1,5	2,0	3,0
6 N/mm	m² d/d		1,5	2,0	3,0
8 N/mm ²	w/w	w/d	2,0	2,5	3,5
o N/mm	d	/d	2,0	3,0	4,0
10 N/mm ²	w/w	w/d	2,5	3,0	4,5
10 N/mm	d	/d	3,0	3,5	5,0

Table C93.2: Characteristic resistance under tensile load (Push through anchorage)

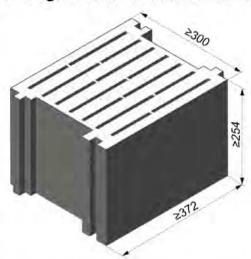
Anchor rod			M10	M12	M16			
Perforated slee	ve FIS H	K	18x13	0/200	22x130/200			
Tensile	load N _{Rk}	kN] deper	nding on the con	pressive strength fb	(temperature range 50/80°C)			
compressive strength f _b	use catego	ry						
4 N/mm ²	w/w	w/d	1,	2	2,0			
4 N/mm	d/d		1,	5	2,0			
C N/2	w/w	w/d	2,	0	3,0			
6 N/mm ²	d/d		2,	0	3,0			
8 N/mm²	w/w	w/d	2,	5	3,5			
8 N/mm	d	/d	3,	0	4,0			
10 N/m == 2	w/w	w/d	3,	0	4,5			
IU N/mm	0 N/mm ² d/d		3,	5	5,0			

Factor for job site tests and displacements see annex C110

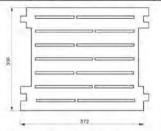
Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Light-weight concrete hollow block Hbl, Characteristic resistance under tensile load	Annex C 93

Anchor rod		1	V16	M8	M6	M8	-	y I	M8 M10	M8 M10		M12 M16	M12 M16
Internal threade	ed						M6		66-01	[53, 1]	M10 M12 15x85		4
Perforated slee	ve FIS H K		12)	(50	12)	(85		16)	x85	16x130	20)	x85	20x130
Shear load V _{Rk}	[kN] depe	nding o	on t	he c	ompr	essi	ve str	engt	th f _b (temp	erature r	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b	use category										1.74		
4 N/mm ²	w/w d/d	w/d 0	,75	1,2	0,75	1,2	0,75				1,2		
6 N/mm ²	w/w d/d	w/d	,2	2,0	1,2	2,0	1,2				2,0		
8 N/mm²	w/w d/d	w/d 1	,5	2,5	1,5	2,5	1,5	2,5					
10 N/mm ²	w/w d/d	w/d 2	2,0	3,0	2,0	3,0	2,0				3,0		
Shear load VRk	[kN] depe	nding o	on t	the c	ompr	essi	ve str	engt	th f _b (temp	erature ra	ange 50/80	0°C and 7	2/120°C)
01.				A									
compressive	use		on t	the c	ompr	essi	ve str	engt	th f _b (temp	erature r	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b	use category		on t	the c	ompr	essi	ve str	engt			ange 50/80	0°C and 7	2/120°C)
compressive	use category	w/d	on t	the c	ompr	essi	ve str	engt		erature ra	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b	use category w/w d/d	w/d	on t	the c	ompr	essi	ve str	engt	1,	,2	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b	use category w/w d/d	w/d w/d	on t	the c	ompr	essi	ve str	engt		,2	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b 4 N/mm ² 6 N/mm ²	w/w d/d w/w d/d w/w	w/d w/d w/d	on t	the c	ompr	ressi	ve str	engt	1,	,2	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b	w/w d/d w/w d/d w/w d/d	w/d w/d w/d	on t	the c	ompr	ressi	ve str	engt	1,	,2	ange 50/80	0°C and 7	2/120°C)
compressive strength f _b 4 N/mm ² 6 N/mm ²	w/w d/d w/w d/d w/w d/d w/w d/d	w/d w/d w/d							1,	,2 ,0 ,5	ange 50/80	0°C and 7	2/120°C)



Light-weig	ght concret	e solid blo	ck Vbl, EN	771-3					
Producer		e.g. Sepa							
Naminal dimana	iona [mm]	length L	width W	height H					
Nominal dimens	ions [mm]	≥ 372	≥ 300	≥ 254					
Density ρ	[kg/dm ³]	≥ 0,6							
Compressive strength f _b	ompressive [N/mm²]		2						
Standard or ann	ex	EN 771-3							



Installation parameters Table C95.1:

Anchor rod	M8	M10	M10	M12	M12	M16	M16	M12	M16
Perforated sleeve FIS H K	163	(130	18x13	30/200	20x	130	22x130/200	20x	200
Anchor rod with perforated s	leeve FIS	нк							
Max. installation torque T _{inst,max} [Nn	n]					4			
General installation parameter	ers								
Edge distance c _{min}					13	30			
S _{min} II = S _{cr} II [mr	n]				3	70			
Spacing $s_{min} \perp = s_{cr} \perp$					2	50			
Drilling method						T			

Hammer drilling with hard metal hammer drill

Table C95.2: Group factors

Anchor rod		M8	M10	M10	M12	M12	M16	M16	M12	M16
Perforated sleev	ve FIS H K	16)	(130	18x13	30/200	20x	130	22x130/200	20x	200
Group factors	$ \begin{array}{c c} \alpha_{q,N} & II \\ \hline \alpha_{q,V} & II \\ \hline \alpha_{q,N} & \bot \end{array} $ [-]					LS	2			

fischer injektion system FIS V masonry	
Performances	Annex C 95
Light-weight concrete solid block Vbl, dimensions, installation parameters	

Table C96.1: Characteristic resistance under tensile load

Anchor rod			M8	M10	M10	M12	M12	M16	M16	M12	M16
Perforated slee	ve FIS H	K	16)	130	18x13	30/200	20x	130	22x130/200	20x	200
Tensile	load N _{Rk}	[kN] de	pendin	g on the	compre	essive s	trength	f _b (temp	erature range !	50/80°C)	
compressive strength f _b	use ca	tegory									
2 N/mm ²	w/w	w/d		2	,0		= =	2	,5	_ 3	,0
2 N/mm	d	/d		2	,0			3	0	4	,0

Factor for temperature range 72/120°C: 0,83

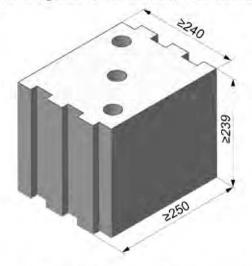
Table C96.2: Characteristic resistance under shear load

Anchor rod		= =	M8	M10	M10	M12	M12	M16	M16	M12	M16
Perforated slee	ve FIS H	K	16)	130	18x13	30/200	20x	130	22x130/200	20x	200
Shear load V _{RI}	[kN] dep	pending	on the	compr	essive s	trength	f _b (temp	erature	range 50/80°C	and 72/	120°C)
compressive strength f _b	use ca	tegory									
2 N/mm²	w/w	w/d			- 4	-				-	
2 N/mm	d	/d			4	,5			6	,5	

Factor for job site tests and displacements see annex C110

fischer injektion system FIS V masonry

Performances
Light-weight concrete solid block Vbl,
Characteristic resistance under tensile and shear load



Light-weig	ght concrete	e solid blo	ck Vbl, EN	771-3			
Producer			KLB	14.00			
Naminal dimana	ione [mm]	length L	width W	height H			
Nominal dimens	ions [mm]	≥ 250	≥ 240	≥ 239			
Density ρ	[kg/dm ³]	≥ 1,6					
Compressive strength f _b	[N/mm²]		4/6/8				
Standard or ann	ex	EN 771-3					

36 0

Table C97.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve FIS HK)

Anchor rod	M6	M8	M6	M8		-	M8	M10	M8 N	/110	-	M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E	- 3				M6	M8 x85	1 0				M10 M12 15x85	•		
Perforated sleeve FIS H K	123	k 50	12	x85		16	(85		16x1	30	20)	85	20x130	20x200

Anchor rod and internal threaded anchor FIS E with perforated sleeve FIS H K

Max. installation torque T_{inst,max} [Nm]

General installation parameters

General	istanditon parameters		
Edge dista	nce c _{min}	130	
0	S _{min} II = S _{cr} II [mm]	250	
Spacing	$S_{min} \perp = S_{cr} \perp$	250	

Drilling method

Hammer drilling with hard metal hammer drill

Table C97.2: Group factors

Anchor rod	M6	M8	M6	M8	(n.m)	M8	M10	M8	M10	- 1	M12 M16	M12 M16	M12 M16
Internal threaded anchor FIS E				-	M6 M8		-4		-	M10 M12 15x85	•		
Perforated sleeve FIS H K	122	<50	12	x85	16:	k 85		16x	130	20:	x85	20x130	20x200
Group factors $ \frac{ \begin{array}{c} \alpha_{\text{q,N}} \text{ II} \\ \hline \alpha_{\text{q,N}} \perp \end{array} }{ \begin{array}{c} \alpha_{\text{q,N}} \text{ II} \end{array} } \text{ [-]} $								2	,0				

fischer injektion	system	FIS V	masonry
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 $\alpha_{q,V}\bot$

Performances

Light-weight concrete solid block Vbl, dimensions, installation parameters

Table C98.1: Installation parameters

(Push through anchorage with perforated sleeve FIS HK)

Anchor rod	M10	M12	M16
Perforated sleeve FIS H K	18x13	0/200	22x130/200
Anchor rod with perforated sl	eeve FIS H K		
Max. installation $T_{inst,max}$ [Nm		2	
General installation paramete	rs		
Edge distance c _{min}		130	
Smin II = Scr II [mm]	250	
Spacing $s_{min} \perp = s_{cr} \perp$		250	
Drilling method			

Hammer drilling with hard metal hammer drill

Table C98.2: Group factors

Anchor rod	M10	M12	M16		
Perforated sleeve FIS H K	18x13	18x130/200 22x130/200			
Group factors $\frac{\frac{\alpha_{\text{q,N}} \text{ II}}{\alpha_{\text{q,N}} \perp}}{\frac{\alpha_{\text{q,N}} \perp}{\alpha_{\text{q,V}} \perp}} \text{ [-]}$		2,0			

22				
fischer	injektion	system	FIS V	masonry
11001101		0,000111		macomy

Performances

Light-weight concrete solid block Vbl, dimensions, installation parameters

Table C99.1: Characteristic resistance under tensile load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8			M8 N	/110	M8	M10	-	M12 M1	6M12M16	M12 M16
Internal thread anchor FIS E	ed						M6	M8 (85	12		y		M10 M12 15x85	-		2.3
Perforated slee	eve FIS H	K	12:	x50	12	x85		16	x85		16x	130	20:	x85 20x130		20x200
Tensile	load N _{Rk}	[kN] de	pen	ding	on t	he c	omp	ress	ive st	tren	gth	fb (te	emperatu	ire rang	e 50/80°C)
compressive strength f _b	use ca	tegory														
4 N/mm ²	w/w	w/d	1	,2	2	,0			2,5	5				3	3,0	
4 N/mm	d	d/d			3	,5			4,0)	5				5,0	
C 11/2	w/w	w/d	1	,5	3	,0			4,0)				į	5,0	
6 N/mm ²	d	/d	3	,0	5	,0			6,5	5				- 5	7,5	- 7
0.11/2	w/w	w/d	2	,0	4	,0			5,0			(5,5			
8 N/mm ²	d	/d	4	,0	7	,0			8,5	5				ç	9,0	

 Table C99.2:
 Characteristic resistance under tensile load (Push through anchorage)

Anchor rod			M10	M12	M16		
Perforated slee	ve FIS H	K	18x13	0/200	22x130/200		
Tensile	load N _{Rk}	[kN] deper	nding on the con	npressive strength fb	(temperature range 50/80°C)		
compressive strength f _b	use ca	tegory					
4 N/mm ²	w/w	w/d	2	5	3,0		
4 N/mm	d	/d	4	,0	5,0		
6 N/mm ²	w/w	w/d	4	,0	5,0		
o w/mm	d	/d	6	5	7,5		
8 N/mm²	w/w	w/d	5	.0	6,5		
	d	/d	8	5	9,0		

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

fischer injektion system FIS V masonry	
Performances Light-weight concrete solid block Vbl, Characteristic resistance under tensile load	Annex C 99

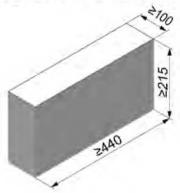
Table C100.1: Characteristic resistance under shear load (Pre-positioned anchorage)

Anchor rod			M6	M8	M6	M8		M8 M10	M8 M10	-1	M12 M16	M12 M16	M12 M16	
Internal thread	ed				I		M6 M8			M10 M12				
anchor FIS E							11x85			15x85	1			
Perforated slee	ve FIS H	K	12:	(50	12	k 85	16	x85	16x130	20:	x85	20x130	20x200	
Shear load V _{RI}	(kN) dep	endin	g on	the	com	pres	sive stre	ength f _b (temperat	ure rang	je 50/80°	C and 72	120°C)	
compressive strength f _b	use ca	tegory						7.7						
4 N/mm ²	w/w	w/d	20	0.0	20	2.0	20	0.5			i	-		
4 N/mm	d	/d	2,0	3,0	2,0	3,0	2,0 3,5						4,5	
6 N/mm ²	w/w	w/d	0.0	1.5	0.0	4.5	0.0					ė.		
6 N/mm	d	/d	3,0	4,5	3,0	4,5	3,0	5,5			6	,5		
0.11/2	w/w	w/d	4.0	0.0	4.0	0.0	4.0	7.0				-		
8 N/mm ²	d	/d	4,0	6,0	4,0	6,0	4,0	7,0			8	,5		

Table C100.2: Characteristic resistance under shear load (Push through anchorage)

Anchor rod			M10	M12	M16		
Perforated slee	eve FIS H	K	18x13	30/200	22x130/200		
Shear load V _{RI}	[kN] dep	ending or	n the compressi	ve strength f _b (tempera	ature range 50/80°C and 72/120°C)		
compressive strength f _b	use ca	tegory					
4 N/mm ²	w/w	w/d	0		4.5		
4 N/mm	d/d		3	,5	4,5		
6 N/mm ²	w/w	w/d	į.	-	C.E.		
6 N/mm	d/d		5	,5	6,5		
8 N/mm²	w/w	w/d	-	0	0.5		
o IN/IIII	d	/d	1.	,0	8,5		

fischer injektion system FIS V masonry	
Performances Light-weight concrete solid block Vbl, Characteristic resistance under shear load	Annex C 100



Light-wei	ght c	oncrete	solid blo	ck Vbl, EN	771-3					
Producer			Roadstone wood							
Naminal dimana	dana	[man]	length L	width W	height H					
Nominal dimens	sions	funnil	≥ 440	≥ 100	≥ 215					
Density ρ	[k	g/dm ³]								
Compressive strength f _b	[N	l/mm²]								
Standard or ann	iex		EN 771-3							

Table C101.1: Installation parameters

		M	16	IV	18	M	10	M	12	М	16
out perfo	orated :	sleeve									
h _{ef}	[mm]	50	70	50	70	50	70	50	70	50	70
T _{inst,max}	[Nm]	4 10									
tion para	meters				11 11					11 11	
C _{min}						10	00				
S _{min} II		75									
S _{cr} II	[mm]		440								
S _{min} ⊥						7	5				
						2	15				
	h _{ef} T _{inst,max} tion para c _{min} s _{min} II	h _{ef} [mm] T _{inst,max} [Nm] tion parameters c _{min} s _{min} II s _{cr} II [mm] s _{min} ⊥	h _{ef} [mm] 50 T _{inst,max} [Nm] 4 tion parameters C _{min} S _{min} II S _{cr} II [mm] S _{min} ⊥	h _{ef} [mm] 50 70 T _{inst,max} [Nm] 4 tion parameters C _{min} S _{min} II S _{cr} II S _{min} ⊥ S _{min} ⊥	hef [mm] 50 70 50	hef [mm] 50 70 50 70	nout perforated sleeve hef [mm] 50 70 50 70 50 T _{inst,max} [Nm] 4 tion parameters C _{min} 10 7 <	hef [mm] 50 70 50 70 50 70 70	hef [mm] 50 70 50 70 50 70 50	hef [mm] 50 70 50 70 50 70 50 70 7	hef [mm] 50 70 7

Hammer drilling with hard metal hammer drill

Table C101.2: Group factors

Anchor rod		М6	M8	M10	M12	M16
Group factors	α _{α,N} II			1,6		
	α _{a,V} II			1,3		
	α _{q,N} ⊥ [-]			1,4		
	$\alpha_{q,V} \perp$			1,3		

fischer injektion system FIS V masonry	
Performances Light-weight concrete solid block Vbl, dimensions, installation parameters	Annex C 101

Table C102.1: Characteristic resistance under tensile load

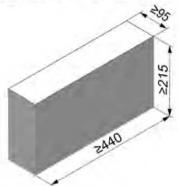
Anchor rod			М6	M6 M8 M10 M12 N									
Tens	ile loa	d N _{Rk}	kN] depending of	on the compress	ive strength fb (te	emperature range	50/80°C)						
compressive strength f _b	use categ	ory		Effective anchorage depth h _{ef} [mm] ≥ 50									
4 N/mm ²	w/w	w/d	1,2		1	,2							
4 N/mm	d/d 2,0 2,0				2,0								
6 N/mm ²	w/w	w/d	1,5		2	,0							
6 N/mm	d/d 3,0				3,5								
0 M/mm 2	w/w	w/d	2,0		2	,5							
8 N/mm ²	d/d		d/d		4,0		4	,5					
10N/mm ²	w/w	w/d	3,0		3	,5							
	d/	ď	5,0		5	,5							

Factor for temperature range 72/120°C: 0,83

Table C102.2: Characteristic resistance under shear load

Anchor rod		M6	M8	M10	M12	M16		
Shear load	V _{Rk} [kN] depe	nding on the c	ompressive stre	ngth f _b (temperat	ure range 50/80°0	C and 72/120°C)		
compressive strength f _b	use category	Effective anchorage depth h _{ef} [mm] ≥ 50						
4 N/mm ²	w/w w/d d/d	1,2	1,5	1,5	1,5	1,5		
6 N/mm ²	w/w w/d d/d	2,0	2,0	2,5	2,5	2,5		
8 N/mm ²	w/w w/d d/d	2,5	2,5	3,0	3,0	3,5		
10N/mm ²	w/w w/d d/d	3,0	3,5	4,0	4,0	4,5		

fischer injektion system FIS V masonry	
Performances Light-weight concrete solid block Vbl, Characteristic resistance under tensile and shear load	Annex C 102



Light-wei	ght c	oncrete	solid blo	ck Vbl, EN	771-3		
Producer				Tramac			
Naminal dimana	iono	[mana]	length L	width W	height H		
Nominal dimensions [mm]			≥ 440	≥ 95	≥ 215		
Density ρ	[k	g/dm ³]	≥ 2,0				
Compressive strength f _b [N/mm ²]			6/8/10/12				
Standard or ann	iex		1000	EN 771-3			

Table C103.1: Installation parameters

Anchor rod		М6		M8		M10		M12		M16			
Anchor rod with	out perfe	orated :	sleeve										
Effective anchorage depth	h _{ef}	[mm]	50	70	50	70	50	70	50	70	50	70	
Max. installation torque	T _{inst,max}	[Nm]	4		10								
General installa	tion para	meters									11 11		
Edge distance	C _{min}						6	0					
	S _{min} I		75										
Casalas	S _{cr} I	[mm]		440									
Spacing —	s _{min} 1		75										
-	S _{cr} 1		215										

Drilling method

Hammer drilling with hard metal hammer drill

Table C103.2: Group factors

Anchor rod		M6	M8	M10	M12	M16			
C	α _{α,N} II			1,9					
	α _{a,V} II	1,4							
Group factors	$\alpha_{g,N} \perp$			1,9					
	$\alpha_{q,V} \perp$	1,4							

fischer injektion system FIS V masonry	
Performances Light-weight concrete solid block Vbl, dimensions, installation parameters	Annex C 103
Light-weight concrete solid block vol, differsions, installation parameters	

Table C104.1: Characteristic resistance under tensile load

Anchor rod	Inchor rod			16	M8 M10		M12		M16					
Tensi	ile loa	d N _{Rk}	[kN] dep	ending	on the co	ompress	ive stren	gth f _b (te	mperatu	re range	50/80°C)		
compressive	use			Effective anchorage depth h _{ef} [mm]										
		ory	50	70	50	70	50	70	50	70	50	70		
C N/2	w/w	w/d	1,5	2,0	1,5	2,0	1,5	2,0	1,5	2,0	1,5	2,0		
6 N/mm ²	d	/d	2,5	3,5	2,5	3,5	2,5	3,5	2,5	3,5	2,5	3,5		
8 N/mm ²	w/w	w/d	2,0	2,5	2,0	2,5	2,0	3,0	2,0	3,0	2,0	3,0		
8 N/mm	d/	/d	3,5	4,5	3,5	4,5	3,5	5,0	3,5	5,0	3,5	5,0		
10N/mm²	w/w	w/d	2,5	3,5	2,5	3,5	2,5	3,5	2,5	3,5	2,5	3,5		
10N/mm	d/d		4,5	6,0	4,5	6,0	4,5	6,0	4,5	6,0	4,5	6,0		
12N/mm ²	w/w	w/d	3,0	4,0	3,0	4,0	3,0	4,5	3,0	4,5	3,0	4,5		
	d	'd	5,0	7,0	5,0	7,0	5,0	7,5	5,0	7,5	5,0	7,5		

Factor for temperature range 72/120°C: 0,83

Table C104.2: Characteristic resistance under shear load

Anchor rod		M6	M8	M10	M12	M16
Shear load	V _{Rk} [kN] depe	nding on the d	compressive stre	ngth fb (temperat	ure range 50/80°	C and 72/120°C)
compressive strength f _b	use category		Effective	e anchorage depth ≥ 50	h _{ef} [mm]	
6 N/mm ²	w/w w/d d/d	2,0	2,0	2,0	1,5	1,5
8 N/mm ²	w/w w/d d/d	2,5	2,5	3,0	2,5	2,5
10N/mm ²	w/w w/d d/d	3,5	3,5	4,0	3,0	3,0
12N/mm ²	w/w w/d d/d	4,0	4,0	4,5	3,5	3,5

fischer injektion system FIS V masonry	
Performances Light-weight concrete solid block Vbl, Characteristic resistance under tensile and shear load	Annex C 104

Autoclaved aerated concrete (cylindrical drill hole), EN 771-4



Autoc	laved aerate	d concret	te, EN 771-	4		
Producer		e.g. Ytong				
Density ρ	[kg/dm ³]	0,35	0,5	0,65		
Compressive strength f _b	[N/mm ²]	2	4	6		
Standard or ann	ex	EN 771-4				

Table C105.1: Installation parameters

Anchor ro	d		M6		M8		M	M10		M12		16	-3-		-	
Internal threaded anchor FIS E												M6	M8	M10	M12	
			-0		747								11)	(85	15	x85
Anchor ro	d and internal	thread	led ar	chor	FIS E	with	out pe	erfora	ted sl	eeve						
Effective anchorage	depth h _{ef}	[mm]	100	200	100	200	100	200	100	200	100	200		8	35	- 1
Max. instal torque	lation T _{inst,max}	[Nm]	1	4	1	8	2	12	2	16	2	20		1	2	2
General in	stallation para	meter	s													
Edge dista	nce c _{min}								- 10	00						
	S _{cr} II = S _{min} II		250													
Consine	$h_{ef}=200$ mm $s_{cr} II = s_{min} II$			80												
Spacing —	$s_{cr} \perp = s_{min} \perp$								2	50						
	$h_{ef}=200$ mm $s_{cr} \perp = s_{min} \perp$			80												
Drilling me	athad	,														

Drilling method

Hammer drilling with hard metal hammer drill

fischer inje	ktion sys	tem FI	SV	masonry
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Performances

Autoclaved aerated concrete (cylindrical drill hole), dimensions, installation parameters

Table C106.1:	Group factors for autoclaved aerated concrete
	(Compressive strength f _b =2 N/mm ²)

Anchor rod		М6	М8	M10	M12	M16	-	-
Internal threa	ded anchor EIS E	_	_	_	_	_	M6 M8	M10 M12
Internal threat	Internal threaded anchor FIS E		_	-	•	_	11x85	15x85
	h _{ef} =200 $\alpha_{g,N}$ II			1,6			-	-
	$\frac{h_{ef} = 200 \; \alpha_{g,V} \; II}{g_{e,V} \; II}$	1,1						-
Group factors					2			
Group ractors	$\frac{\alpha_{g,N} \text{ if, } \alpha_{g,V} \text{ if}}{h_{ef} = 200 \alpha_{g,N} \perp} [-]$			1,6			-	-
	h _{ef} =200 α _{g,V} ⊥			0,8			-	-
	$\alpha_{g,N} \perp, \alpha_{g,V} \perp$				2			

Table C106.2: Group factors for autoclaved aerated concrete (Compressive strength $f_b = 4 \text{ N/mm}^2$)

Anchor rod		М6	М8	M10	M12	M16	-	-	
Internal threa	ded anchor FIS E		_	-	_	_	M6 M8	M10 M12	
Internal timeat	ded allellor FIS E	-			-	_	11x85	15x85	
	h _{ef} =200 $\alpha_{g,N}$ II			0,7			-	-	
h _{ef} =200 α_{qV} II	h _{ef} =200 α_{qV} II	2,0						1	
Group factors	$\frac{\alpha_{g,N} \text{ II, } \alpha_{gV} \text{ II}}{h_{ef}=200 \alpha_{g,N} \bot} \text{ [-]}$				2				
Group ractors	$\frac{\alpha_{g,N} n, \alpha_{g} n}{h_{ef} = 200 \alpha_{g,N} \perp} [-]$			0,7			-	-	
	h _{ef} =200 α _{g,V} ⊥			1,2			-	-	
	$\alpha_{g,N} \perp, \alpha_{gV} \perp$				2				

Table C106.3: Group factors for autoclaved aerated concrete (Compressive strength $f_b = 6 \text{ N/mm}^2$)

Anchor rod		М6	M8	M10	M12	M16	-	-
Internal threa	ded anchor FIS E		-	-	-	_	M6 M8	M10 M12
Internal timeat	ded anchor 113 L	_				_	11x85	15x85
	h _{ef} =200 $\alpha_{g,N}$ II			0,7			-	-
- Group factors	h _{ef} =200 $\alpha_{g,V}$ II			-	-			
	$\alpha_{g,N} \parallel, \alpha_{g,V} \parallel$ [-]							
Group factors	h _{ef} =200 α _{a,N} ⊥ [-]			-	-			
	h _{ef} =200 $\alpha_{g,V} \perp$			1,2			-	-
	$\alpha_{g,N} \perp$, $\alpha_{g,V} \perp$				2			

fischer injektion system FIS V masonry	
Performances Autoclaved aerated concrete (cylindrical drill hole), Group factors	Annex C 106

Autoclaved aerated concrete (cylindrical drill hole), EN 771-4

Table C107.1: Characteristic resistance under tensile load

Anchor rod		M	16	N	18	M	10	M	12	M	16				
Internal threaded	-121 -12								М6	M8	M10	M12			
anchor FIS I												11x85		15x85	
Tens	le load N _{Rk}	[kN] d	epend	ing on	the co	ompre	ssive s	trengt	h f _b (te	mpera	ture r	ange !	50/80	°C)	
compressive	use					Effect	ive and	horage	depth	h _{ef} [mr	n]				
strength fb	category	100	200	100	200	100	200	100	200	100	200		8	35	
	//-1	10	10	4.5	0.0	4.5	0.0	4.5	20	0.0	2.0	-	-	- 4	r

compressive	use						Effect	ive and	horage	edepth	h _{ef} [mi	m]		
strength fb	categ	jory	100	200	100	200	100	200	100	200	100	200	8	35
2 N/mm ²	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
2 N/mm	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
4 N/mm²	w/w	w/d	1,2		2,0	1,5	2,5	3,5	2,5	3,5	2,0	3,5	2,0	1,5
4 N/mm	d	/d	1,5	T-F	2,0	3,0	3,0	5,0	2,5	5,0	2,0	5,0	2,0	1,5
6 N/mm ²	w/w	w/d	1,5	16	3,0	2,5	4,5	5,0	4,5	7,0	3,0	8,5	3,5	2,5
O IN/IIIII	d	/d	1,5	-	3,5	4,0	5,0	7,0	5,0	9,0	3,0	11,5	3,5	2,5

Factor for temperature range 72/120°C: 0,83

Table C107.2: Characteristic resistance under shear load

Anchor rod		N	16	N	18	M	10	М	12	M	16	100			
Internal thre	aded			TE TOTAL								M6	M8	M10	M12
anchor FIS I		-				To the				- 1 - 2 - 4		11x85		15x85	
Shear load	V _{Rk} [kN] de	pendir	ng on t	he cor	npres	sive st	rength	f _b (ten	nperat	ure rar	nge 50	/80°C	and i	72/120)°C)
compressive	use		7			Effect	ive and	horage	depth	h _{ef} [mr	n]				2.5
strength fb	category	100	200	100	200	100	200	100	200	100 200		85			
2 N/mm ²	w/w w/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
2 14/111111	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
4 N/mm ²	w/w w/d	2,0		2,5	2.0	2,0	2,0	2,5	2,0	2,0	2,0		2,0		2,5
4 14/111111	d/d	2,0		2,5	2,0	2,0	2,0	2,5	2,0	2,0	2,0		2,0		2,3
6 N/mm ²	w/w w/d	2,5	100	3,0	2,5	3,0	3,0	3,5	4,0	4,5	4,5		2,5		3,5
0 14/111111	d/d	2,0		3,0	2,5	3,0	3,0	3,3	4,0	4,5	4,5		2,5		5,5

Factor for job site tests and displacements see annex C110

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Performances

Autoclaved aerated concrete (cylindrical drill hole), Characteristic resistance under tensile and shear load

Autoclaved aerated concrete (conical drill hole with special drill bit PBB), EN 771-4



Autoc	laved aerate	d concre	te, EN 771-	4				
Producer		e.g. Ytong						
Density ρ	[kg/dm ³]	0,35	0,5	0,65				
Compressive strength f _b	[N/mm²]	2	4	6				
Standard or ann	ex		EN 771-4					

Table C108.1: Installation parameters

Anchor rod		M	8	M	10	M	12		
Internal threaded anchor FIS E		-	15		20		(4)	M6	M8
Anchor rod and internal t	hreade	d anchor	FIS E with	out perfora	ted sleeve			1170	
Effective anchorage depth het	[mm]	75	95	75	95	75	95	85	
Max. installation torque	[Nm]				2				
General installation parai	meters								
Edge distance c _{min}		120	150	120	150	120	150	150)
S _{cr} II = S _{min} II	[mm]	240	300	240	300	240	300	300)
Spacing $s_{cr} \perp = s_{min} \perp$		240	250	240	250	240	250	250)
Drilling method									
Hammer drilling with hard r	netal ha	ımmer dril	1						

Table C108.2: Group factors

Anchor rod	N	18	M	110	M			
Internal threaded				1	114	1-8	M6	M8
anchor FIS E		7-1					11)	(85
α _{g,N} II								
Group factors α _{q,V} II	-1			2				
$\alpha_{q,N} \perp$. 1							
$\alpha_{\sf q,V} \perp$								

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Performances Autoclaved aerated concrete (conical drill hole with special drill bit PBB), dimensions, installation parameters	Annex C 108

Autoclaved aerated concrete (conical drill hole with special drill bit PBB), EN 771-4

Table C109.1: Characteristic resistance under tensile load

Internal threaded anchor FIS E		M8 M10		10	M					
		1291	- 7	II (è,	l e	l d 🛊	-	M6 M		
Tens	ile loa	d N _{Rk}	[kN] depend	ding on the	compressive	strength fb	(temperatur	e range 50	/80°C)	
compressive	use				Effective a	nchorage de	oth h _{ef} [mm]			
strength fb	category		75	95	75	95	75	95	85	
2 N/mm ²	w/w	w/d	2,0	2,5	2,0	2,5	2,0	2,5	2,0	
	2 N/mm	d/d		2,0	2,5	2,0	2,5	2,0	2,5	2,0
4 N/mm ²	A \$1/2	w/w w/d		3,0	3,5	3,0	3,5	3,0	3,5	3,0
	d	/d	3,0	3,5	3,0	3,5	3,0	3,5	3,0	
6 N/mm ²	w/w	w/d	3,5	4,0	3,5	4,0	3,5	4,0	3,5	
	d	/d	4,0	4,5	4,0	4,5	4,0	4,5	4,0	

Factor for temperature range 72/120°C: 0,83

Table C109.2: Characteristic resistance under shear load

Anchor rod Internal threaded anchor FIS E		N	M8		M10		M12			
			11 12 11					M6	M8	
						7-1	17.5	113	11x85	
Shear load	V _{Rk} [kN] dep	ending on	the compres	ssive streng	th f _b (temper	ature range	50/80°C ar	nd 72/12	(0°C)	
compressive	use			Effective a	nchorage der	oth h _{ef} [mm]			-	
strength fb	category	75	95	75	95	75	95	8	5	
2 N/mm ²	w/w w/d	0.5								
2 N/IIIII	d/d	2,5								
4 N/mm ²	w/w w/d	4,5								
4 N/MM	d/d									
6 N/mm ²	w/w w/d	6.0								
O W/IIIII	d/d				6,0					

fischer injektion system FIS V masonry	
Performances	Annex C 109
Autoclaved aerated concrete (conical drill hole with special drill bit PBB),	The state of the s
Characteristic resistance under tensile and shear load	

β-factors for job site tests; displacements

Table C110.1: β-factors for job site tests

use category	w/w ar	nd w/d	d/d		
temperature range	50/80	72/120	50/80	72/120	
Material	Size				
	M6	0,55	0,46		
	M8	0,57	0,51		0,80
	M10	0,59	0,52		
solid units	M12 FIS E 11x85	0,6	0,54	0,96	
	M16 FIS E 15x85	0,62	0,52		
	16x85	0,55	0,46		
hollow units	all sizes	0,86	0,72	0,96	0,8
Autoclaved aerated concrete cylindrical drill hole	all sizes	0,73	0,73	0,81	0,81
Autoclaved aerated concrete conical drill hole	all sizes	0,66	0,59	0,73	0,66

Table C110.2: Displacements

Material	N [kN]	δN ₀ [mm]	δN∞ [mm]	V [kN]	δV_0 [mm]	δ V ∞ [mm]
solid units and autoclaved aerated concrete hef=100m	N _{Rk} 1,4 * γ _{Mm}	0,03	0,06	V _{Rk} 1,4 * γ _{Mm}	0,82	0,88
hollow units	N _{Rk} 1,4 * γ _{Mm}	0,48	0,06		1,71	2,56
solid brick Mz NF annex C 4 - C 7	N _{Rk} 1,4 * γ _{Mm}	0,74	1,48	V _{Rk} 1,4 * γ _{Mm}	1,23	1,85
solid brick Ks NF annex C 14 / C 15	N _{Rk} 1,4 * γ _{Mm}	0,2	0,4	V _{Rk} 1,4 * γ _{Mm}	0,91	1,37
AAC h _{ef} =200 mm annex C 105 - C 107	N _{Rk} 1,4 * γ _{Mm}	1,03	2,06	V _{Rk} 1,4 * γ _{Mm}	1,25	1,88
brick Annex C 89 / C 90	N _{Rk} 1,4 * γ _{Mm}	0,03	0,06	V _{Rk} 1,4 * γ _{Mm}	6,44	9,66

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

fischer injektion system FIS V masonry	
Performances β-factors for job site tests; displacements	Annex C 110