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**European Technical Assessment Body
for construction products**



European Technical Assessment

**ETA-26/0052
of 11 June 2026**

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Menouquin Injection system MASTERFIX 700

Product family
to which the construction product belongs

Bonded fasteners and bonded expansion fasteners for
use in concrete

Manufacturer

Menouquin SC
Vieux chemin de Thines , 14
1400 Nivelles
BELGIEN

Manufacturing plant

Menouquin SC

This European Technical Assessment
contains

29 pages including 3 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Article 95(4) of
Regulation (EU) 2024/3110, on the basis of

EAD 330499-02-0601

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Specific Part

1 Technical description of the product

The "Menouquin Injection system MASTERFIX 700" is a bonded anchor consisting of a cartridge with injection mortar according to Annex A4 and a steel element according to Annex A5.

The steel element is placed into a drilled hole filled with injection mortar and is anchored via the bond between metal part, injection mortar and concrete.

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 to tension load (static and quasi-static loading)	See Annex B3 to B7, C1 to C6
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C1 to C4
Displacements under short-term and long-term loading	See Annex C7
Characteristic resistance and displacements for seismic performance categories C1 and C2	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

3.3 Hygiene, health and the environment (BWR 3)

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

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

In accordance with the European Assessment Document EAD 330499-02-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

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

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

Issued in Berlin on 11 June 2026 by Deutsches Institut für Bautechnik

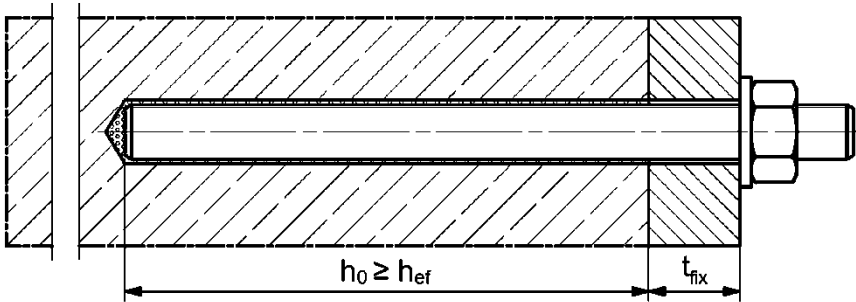
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Baderschneider

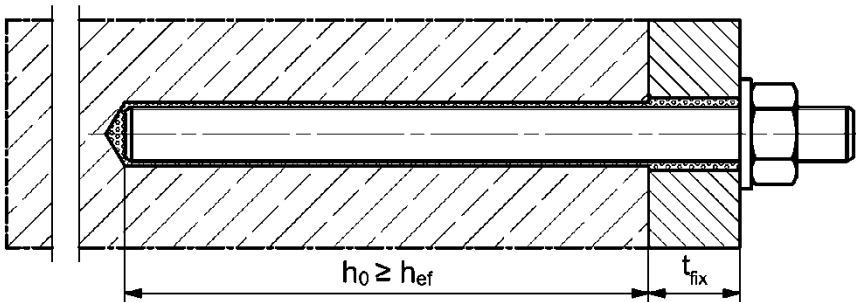
Installation conditions part 1

Anchor rod FIS A / RG M (Anchor rod) and
commercial standard Threaded rod (Threaded rod)

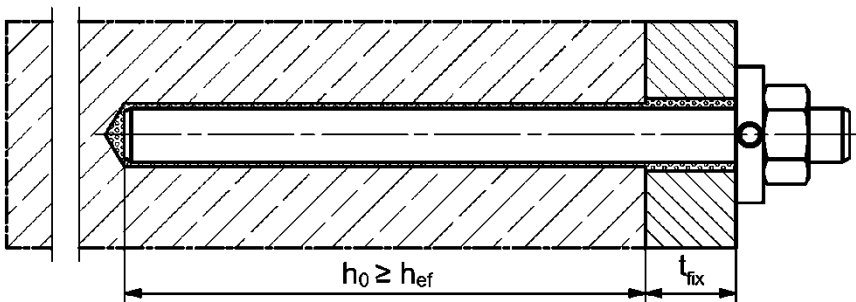
Pre-positioned installation



Push through installation (annular gap filled with mortar)



Pre-positioned or push through installation with subsequently injected filling disc
(annular gap filled with mortar)



Figures not to scale

h_0 = drill hole depth

h_{ef} = effective embedment depth

t_{fix} = thickness of fixture

Menouquin injection system MASTERFIX 700

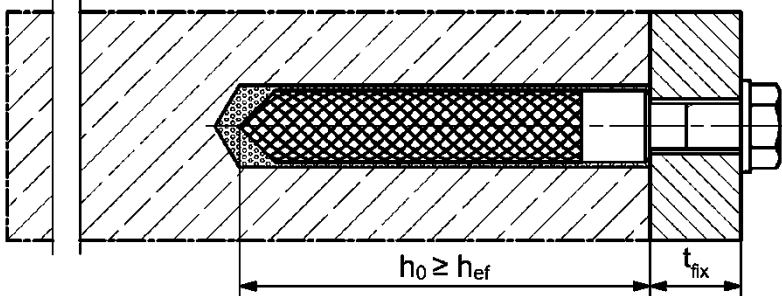
Product description
Installation conditions part 1

Annex A1

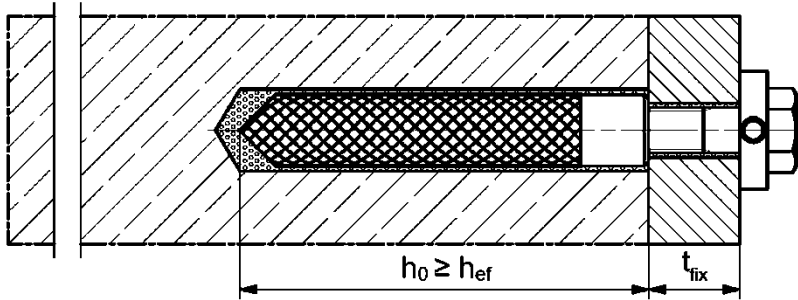
Installation conditions part 2

Internal threaded anchor RG M I (RG M I)

Pre-positioned installation



Pre-positioned installation with subsequently injected filling disc (annular gap filled with mortar)



Figures not to scale

h_0 = drill hole depth

h_{ef} = effective embedment depth

t_{fix} = thickness of fixture

Menouquin injection system MASTERFIX 700

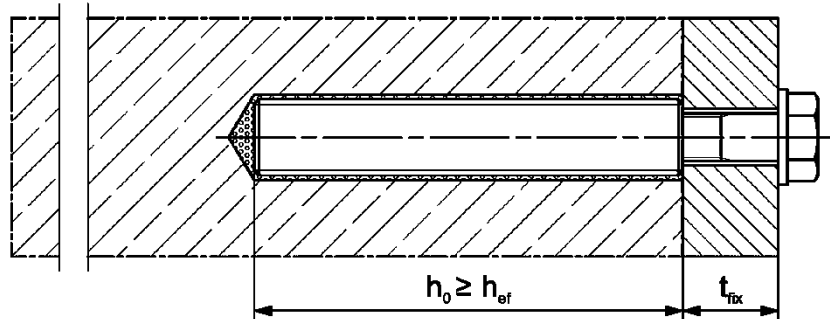
Product description
Installation conditions part 2

Annex A2

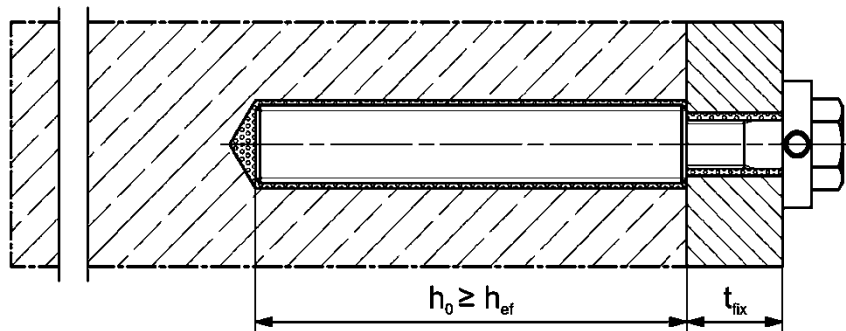
Installation conditions part 3

internal threaded anchor FIS IG (FIS IG)

Pre-positioned installation



Pre-positioned installation with subsequently injected filling disc (annular gap filled with mortar)



Figures not to scale

h_0 = drill hole depth

h_{ef} = effective embedment depth

t_{fix} = thickness of fixture

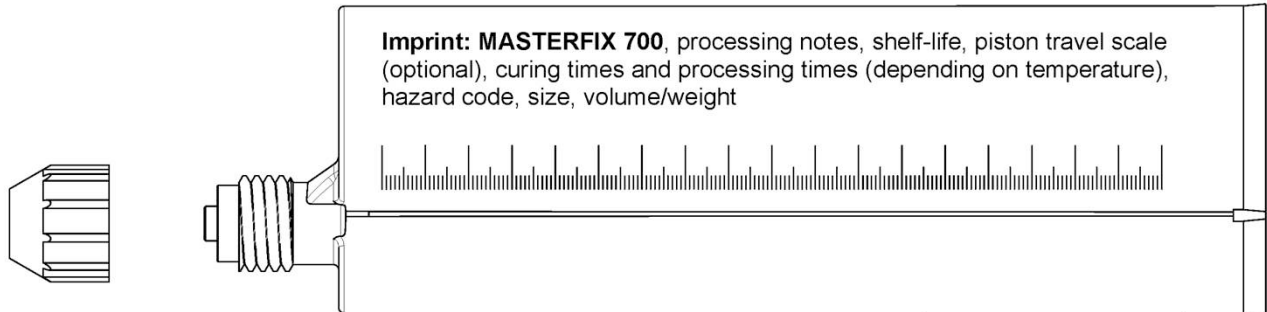
Menouquin injection system MASTERFIX 700

Product description
Installation conditions part 3

Annex A3

Overview system components part 1

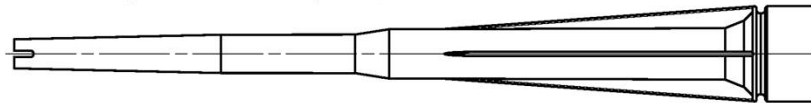
Injection cartridge (shuttle cartridge) with sealing cap; Sizes: 360 ml, 825 ml



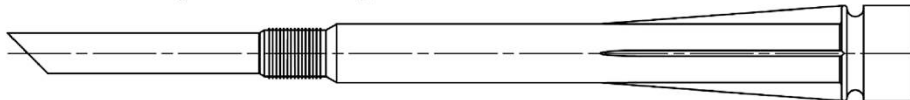
Injection cartridge (coaxial cartridge) with sealing cap; Sizes: 100 ml, 150 ml, 300 ml, 380 ml, 400 ml, 410 ml



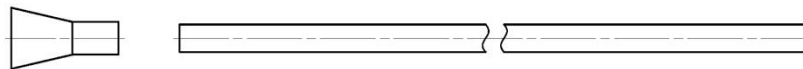
Static mixer FIS MR Plus for injection cartridges up to 825 ml



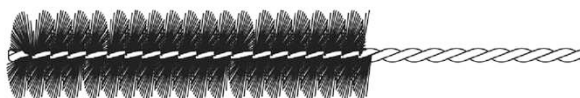
Static mixer FIS JMR for injection cartridges of 825 ml



Injection adapter and extension tube Ø 9 for static mixer FIS MR Plus; Injection adapter and extension tube Ø 9 or Ø 15 for static mixer FIS JMR



Cleaning brush BS



Blow-out pump AB G



Compressed-air cleaning tool ABP



Figures not to scale

Menouquin injection system MASTERFIX 700

Product description

Overview system components part 1;
cartridges / static mixer / cleaning tools / injection adapter

Annex A4

Overview system components part 2

Anchor rod / Threaded rod

Size: M6, M8, M10, M12, M16, M20, M24, M27, M30



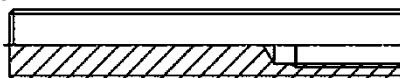
Internal threaded anchor RG M I

Size: M8, M10, M12, M16, M20

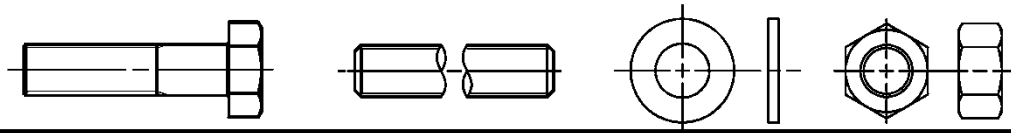


Internal threaded anchor FIS IG

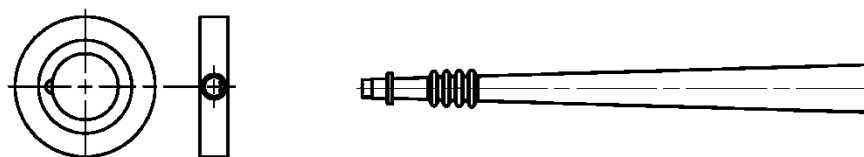
Size: M5, M6, M8, M10, M12, M16, M20



Screw / Anchor rod / Threaded rod / washer / hexagon nut



Filling disc with injection adapter



Centering clip DD-S / DD-E



Figures not to scale

Menouquin injection system MASTERFIX 700

Product description

Overview system components part 2; metal parts, centering clip, injection adapter

Annex A5

Table A6.1: Materials

Part	Designation	Material		
1	Injection cartridge	Mortar, hardener, filler		
	Steel grade	Steel zinc plated (zp, hdg)	Stainless steel R	High corrosion resistant steel HCR
			acc. to EN 10088-1:2023 Corrosion resistance class CRC III acc. to EN 1993-1-4:2006+A1:2015	acc. to EN 10088-1:2023 Corrosion resistance class CRC V acc. to EN 1993-1-4:2006+A1:2015
2	Anchor rod / Threaded rod	Property class 4.8, 5.8 or 8.8; EN ISO 898-1:2013 zp ≥ 5 µm, EN ISO 4042:2022 or hot dip galvanised ≥ 40 µm EN ISO 10684:2004+AC:2009 f _{uk} ≤ 1000 N/mm ² A ₅ > 8 % fracture elongation	Property class 50, 70 or 80; EN ISO 3506-1:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; 1.4062; 1.4662; 1.4462; EN 10088-1:2023 f _{uk} ≤ 1000 N/mm ² A ₅ > 8 % fracture elongation	Property class 50, 70 or 80; EN ISO 3506-1:2020 or property class HCR 70 with f _{yk} ≥ 560 N/mm ² ; 1.4565;1.4529; EN 10088-1:2023 f _{uk} ≤ 1000 N/mm ² A ₅ > 8 % fracture elongation
3	Washer ISO 7089:2000	zinc plated ≥ 5 µm, EN ISO 4042:2022 or hot dip galvanised ≥ 40 µm EN ISO 10684:2004+AC:2009	1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	1.4565; 1.4529; EN 10088-1:2023
4	Hexagon nut	Property class 5 or 8 acc. EN ISO 898-2:2022 zinc plated ≥ 5 µm, EN ISO 4042:2022 or hot dip galvanised ≥ 40 µm EN ISO 10684:2004+AC:2009	Property class 50, 70 or 80 acc. EN ISO 3506-2:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	Property class 50, 70 or 80 acc. EN ISO 3506-2:2020 1.4565; 1.4529; EN 10088-1:2023
5	Internal threaded anchor RG M I / FIS IG	Property class 5.8 EN ISO 898-1:2013 zinc plated ≥ 5 µm, EN ISO 4042:2022	Property class 70 EN ISO 3506-1:2020; 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	Property class 70 EN ISO 3506-1:2020 1.4565; 1.4529; EN 10088-1:2023
6	Commercial standard screw or Anchor rod / Threaded rod for Internal threaded anchor RG M I /FIS IG	Property class 5.8 or 8.8; EN ISO 898-1:2013 zinc plated ≥ 5 µm, EN ISO 4042:2022 A ₅ > 8 % fracture elongation	Property class 70 EN ISO 3506-1:2020 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023 A ₅ > 8 % fracture elongation	Property class 70 EN ISO 3506-1:2020 1.4565; 1.4529; EN 10088-1:2023 A ₅ > 8 % fracture elongation
7	Filling disc similar to DIN 6319-G	zinc plated ≥ 5 µm, EN ISO 4042:2022 or hot dip galvanised ≥ 40 µm EN ISO 10684:2004+AC:2009	1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362; EN 10088-1:2023	1.4565;1.4529; EN 10088-1:2023
Menouquin injection system MASTERFIX 700				Annex A6
Product description Materials				

Specifications of intended use part 1

Table B1.1: Overview use and performance categories

MASTERFIX 700 with ...							
		Anchor rod Threaded rod 	Internal threaded anchor RG M I 		Internal threaded anchor FIS IG 		
Hammer drilling with standard drill bit 		all sizes					
Hammer drilling with hollow drill bit  (fischer „FHD“, Heller „Duster Expert“, Bosch „Speed Clean“, Hilti „TE-CD, TE-YD“, DreBo „D-Plus“, DreBo „D-Max“)		Nominal drill bit diameter (d ₀) 12 mm to 35 mm					
Static and quasi static load, in	uncracked concrete	all sizes	Tables: C1.1 C4.1 C5.1 C7.1	all sizes	Tables: C2.1 C4.1 C6.1 C7.2	all sizes	Tables: C3.1 C4.1 C7.1
	cracked concrete	M10 to M20		₁₎		M5 to M12	
Seismic performance category	C1	₁₎					
	C2						
Use category	I1 dry or wet concrete	all sizes					
	I2 water filled hole	M12 to M30	all sizes		M8 to M20		
Resistance to fire in concrete		₁₎					
Installation direction		D3 (downward and horizontal and upwards (e.g. overhead) installation)					
Installation temperature		T _{i,min} = -10 °C to T _{i,max} = +40 °C					
In-service temperature	Temperature range I	-40 °C to +80 °C	(max. short term temperature +80 °C; max. long term temperature +50 °C)				
	Temperature range II	-40 °C to +120 °C	(max. short term temperature +120 °C; max. long term temperature +72 °C)				
₁₎ No performance assessed							
Menouquin injection system MASTERFIX 700						Annex B1	
Intended use Specifications part 1							

Specifications of intended use part 2

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres of strength classes C12/15 to C50/60 according to EN 206:2013+A2:2021.

Use conditions (Environmental conditions):

- Fastener intended for use in structures subject to dry, internal conditions (all materials).
- For all other conditions according to EN 1993-1-4:2006+A1:2015 corresponding to corrosion resistance classes to **Annex A6 Table A6.1**.

Design:

- Fastenings are designed in accordance with:
EN 1992-4:2018.
- The structural design is conducted under responsibility of a designer experienced in the field of anchorages and concrete works.
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the fastener is indicated on the design drawings (e. g. position of the fastener relative to reinforcement or to supports, etc.).

Installation:

- Fastener installation is to be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Fastening depth should be marked and adhered to installation.
- Overhead installation is allowed (necessary equipment see installation instruction).

Menouquin injection system MASTERFIX 700

Intended use
Specifications part 2

Annex B2

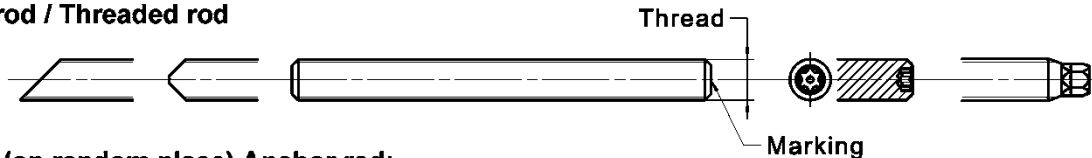
Table B3.1: Installation parameters for Anchor rods / Threaded rods

Anchor rods / Threaded rods		Thread	M6	M8	M10	M12	M16	M20	M24	M27	M30
Nominal drill hole diameter	d_0	[mm]	8	10	12	14	18	24	28	30	35
Drill hole depth	$h_0^{2)}$		$h_0 \geq h_{ef}$								
Effective embedment depth	$h_{ef, min}$		50	60	60	70	80	90	96	108	120
	$h_{ef, max}$		72	160	200	240	320	400	480	540	600
Simplified spacing and edge distance ¹⁾	$s = c$		40	40	45	55	65	85	105	125	140
Maximum diameter of the pre-positioned installation	d_f		7	9	12	14	18	22	26	30	33
Maximum diameter of the push through installation	d_f		9	12	14	16	20	26	30	33	40
Minimum thickness of concrete member	h_{min}		$h_{ef} + 30 (\geq 100)$				$h_{ef} + 2d_0$				
Maximum installation torque	$\max T_{inst}$	[Nm]	5	10	20	40	60	120	150	200	300

1) Detailed calculation according to **Annex B6** and **B7**.

2) When using centering clips DD-S / DD-E, observe the deviating specifications as specified in **Table B9.1**.

Anchor rod / Threaded rod



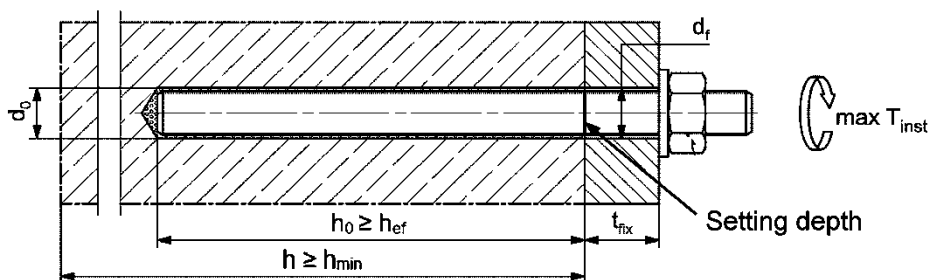
Marking (on random place) Anchor rod:

Steel zinc plated PC ¹⁾ 8.8	• or +	Steel hot-dip PC ¹⁾ 8.8	•
High corrosion resistant steel HCR PC ¹⁾ 50	•	High corrosion resistant steel HCR PC ¹⁾ 70	-
High corrosion resistant steel HCR PC ¹⁾ 80	(	Stainless steel R property class 50	~
Stainless steel R property class 80	*		

Alternatively: Colour coding according to DIN 976-1: 2016

¹⁾ PC = property class

Installation conditions:



Threaded rods, washers and hexagon nuts may also be used if the following requirements are fulfilled:

- Materials, dimensions and mechanical properties according to **Annex A6, Table A6.1**.
- Inspection certificate 3.1 according to EN 10204:2004, the documents have to be stored.
- Setting depth is marked.
- Steel load-bearing capacities for hot-dip galvanised parts are only valid if the threaded rod and nut are correctly paired. The strength class of the nut must be one strength class higher than that of the threaded rod ($\geq M12$ in combination with tolerance class 6AX in accordance with EN ISO 10684:2004+AC:2009 two strength classes higher). The pairing of undersized threaded rods (additional designation U according to EN ISO 10684) with oversized nuts (additional designation Z or X according to EN ISO 10684) is not permitted under any circumstances.

Figures not to scale

Menouquin injection system MASTERFIX 700

Intended use

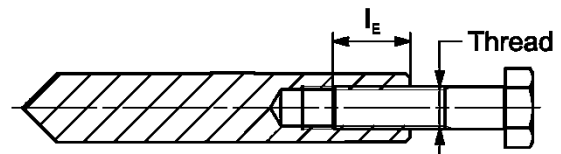
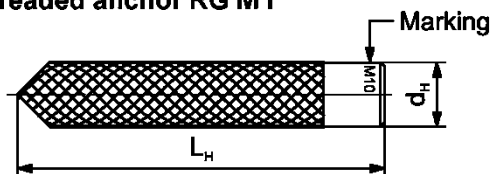
Installation parameters Anchor rods / Threaded rods

Annex B3

Table B4.1: Installation parameters for internal threaded anchor RG M I

Internal threaded anchor RG M I		Thread	M8	M10	M12	M16	M20
Diameter of Anchor	$d_{nom} = d_H$	[mm]	12	16	18	22	28
Nominal drill hole diameter	d_0		14	18	20	24	32
Drill hole depth	h_0		$h_0 \geq h_{ef} = L_H$				
Effective embedment depth ($h_{ef} = L_H$)	h_{ef}		90	90	125	160	200
Minimum spacing and minimum edge distance	$s_{min} = c_{min}$		55	65	75	95	125
Maximum diameter of clearance hole in the fixture	d_f		9	12	14	18	22
Minimum thickness of concrete member	h_{min}		120	125	165	205	260
Maximum screw-in depth	$l_{E,max}$		18	23	26	35	45
Minimum screw-in depth	$l_{E,min}$		8	10	12	16	20
Maximum installation torque	$\max T_{inst}$	[Nm]	10	20	40	80	120

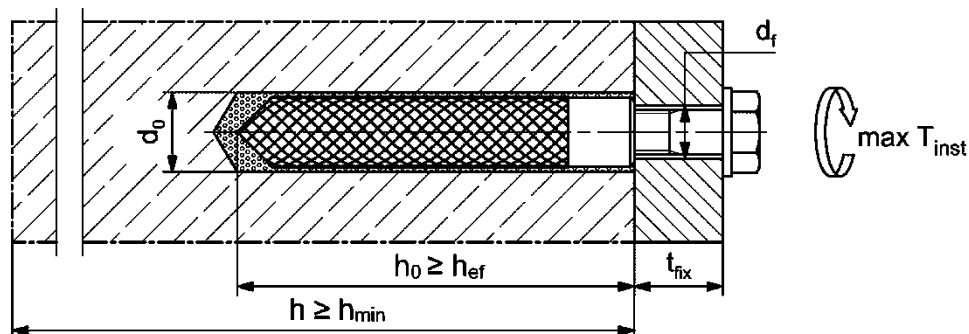
Internal threaded anchor RG M I



Marking: Anchor size e. g.: **M10**
Stainless steel → additional **R**; e.g.: **M10 R**
High corrosion resistant steel → additional **HCR**; e.g.: **M10 HCR**

Retaining bolt or Anchor rod / Threaded rods (including nut and washer) must comply with the appropriate material and strength class of **Annex A6, Table A6.1**.

Installation conditions:



Figures not to scale

Menouquin injection system MASTERFIX 700

Intended use
Installation parameters internal threaded anchor RG M I

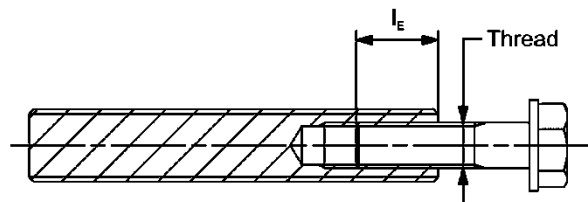
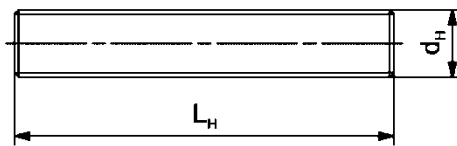
Annex B4

Table B5.1: Installation parameters for internal threaded anchor FIS IG

Internal threaded anchor FIS IG		Thread	M5	M6	M8	M10	M12	M16	M20
Diameter of anchor	$d_{nom} = d_H$	[mm]	10	10	12	16	20	24	30
Nominal drill hole diameter	d_0		12	12	14	18	24	28	35
Drill hole depth	h_0 ¹⁾		$h_0 \geq h_{ef} = L_H$						
Effective embedment depth	$h_{ef, min}$		50	60	60	70	80	96	120
($h_{ef} = L_H$)	$h_{ef, max}$		200	200	240	320	400	480	600
Minimum spacing	s_{min}		according to Annex B8						
Minimum edge distance	c_{min}		according to Annex B8						
Diameter of clearance hole in the fixture	d_f		6	7	9	12	14	18	22
Minimum thickness of concrete member	h_{min} ¹⁾		$h_{ef} + 30 (\geq 100)$			$h_{ef} + 2d_0$			
Maximum screw-in depth	$l_{E, max}$		18	18	20	25	30	40	50
Minimum screw-in depth	$l_{E, min}$		8	8	10	12	14	19	23
Maximum installation torque	$\max T_{inst}$	[Nm]	5	5	10	20	40	80	120

¹⁾ When using centering clips DD-S / DD-E, observe the deviating specifications as specified in **Table B9.1**.

internal threaded anchor FIS IG

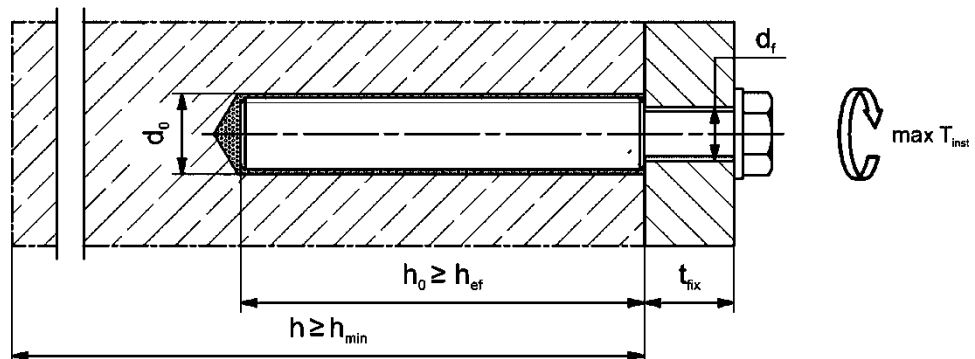


Marking (at any location) Anchor rod:

High corrosion resistant steel HCR property class 70

Bolts or threaded rods (including nut and washer) must comply with the relevant material and strength class as specified in **Annex A6, Table A6.1**.

Installation conditions:



Figures not to scale

Menouquin injection system MASTERFIX 700

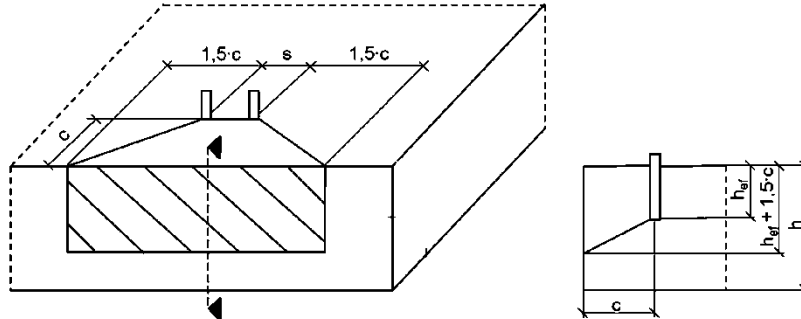
Intended use
Installation parameters internal threaded anchor FIS IG

Annex B5

Table B6.1: Minimum spacing and minimum edge distance for **Anchor rods / Threaded rods und internal threaded anchor FIS IG**

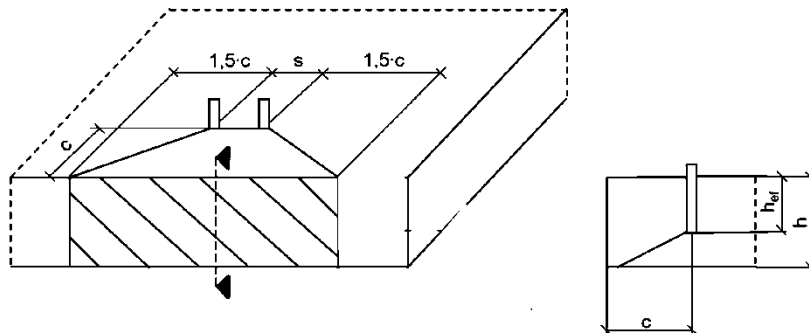
Anchor rods / Threaded rods			M6	M8	M10	-	-	-	M12	-	-	M16	-	
Internal threaded anchor FIS IG			-	-	-	M5	M6	M8	-	M10	-	-	M12	
Minimum edge distance														
Uncracked / cracked concrete	c_{min}	[mm]	40	40	45	40	45	45	45	50	45	50	55	
Minimum spacing	s		according to Annex B7											
Minimum spacing														
Uncracked / cracked concrete	s_{min}	[mm]	40	40	45	40	45	55	55	65	60	65	85	
Minimum edge distance	c		according to Annex B7											
Required projecting area														
Uncracked concrete	$\geq C20/25$	$A_{sp,req}$	[1000	8,0	8,0	13,0	3,5	3,5	5,5	22,0	8,0	23,0	24,0	13,0
Cracked concrete			mm ²]	6,5	6,5	10,0	2,5	2,5	4,5	16,5	6,5	17,5	18,5	10,0
Anchor rods / Threaded rods			M20	-	M24	-	M27	-				M30		
Internal threaded anchor IG			-	M16	-	-	-	-	-	M20		-		
Minimum edge distance														
Uncracked / cracked concrete	c_{min}	[mm]	55	60	60	75	75	80	80	80				
Minimum spacing	s		according to Annex B7											
Minimum spacing														
Uncracked / cracked concrete	s_{min}	[mm]	85	105	105	120	120	140	140	140				
Minimum edge distance	c		according to Annex B7											
Required projecting area														
Uncracked concrete	$\geq C20/25$	$A_{sp,req}$	[1000	38,5	21,5	40,0	47,5	47,5	64,0	26,0	64,0			
Cracked concrete			mm ²]	29,5	16,5	30,5	36,5	36,5	49,0	20,0	49,0			
Splitting failure for minimum edge distance and spacing in dependence of the effective embedment depth h_{ef}. For the calculation of minimum spacing and minimum edge distance of anchors in combination with different embedment depths and thicknesses of concrete members the following equation shall be fulfilled: $A_{sp,req} < A_{sp,t}$ $A_{sp,req}$ = required projecting area $A_{sp,t}$ = projecting area (according to Annex B7)														
Menouquin injection system MASTERFIX 700										Annex B6				
Intended use Minimum spacing and edge distance for Anchor rods / Threaded rods und internal threaded anchor FIS IG														

Table B7.1: Projecting area $A_{sp,t}$ with concrete member thickness
 $h > h_{ef} + 1,5 \cdot c$ and $h \geq h_{min}$



Single fastener	$A_{sp,t} = (3 \cdot c) \cdot (h_{ef} + 1,5 \cdot c)$	[mm ²]	with $c \geq c_{min}$
Group of fastener with $s > 3 \cdot c$	$A_{sp,t} = (6 \cdot c) \cdot (h_{ef} + 1,5 \cdot c)$	[mm ²]	
Group of fastener with $s \leq 3 \cdot c$	$A_{sp,t} = (3 \cdot c + s) \cdot (h_{ef} + 1,5 \cdot c)$	[mm ²]	with $c \geq c_{min}$ and $s \geq s_{min}$

Table B7.2: Projecting area $A_{sp,t}$ with concrete member thickness
 $h \leq h_{ef} + 1,5 \cdot c$ and $h \geq h_{min}$



Single fastener	$A_{sp,t} = 3 \cdot c \cdot \text{existing } h$	[mm ²]	with $c \geq c_{min}$
Group of fastener with $s > 3 \cdot c$	$A_{sp,t} = 6 \cdot c \cdot \text{existing } h$	[mm ²]	
Group of fastener with $s \leq 3 \cdot c$	$A_{sp,t} = (3 \cdot c + s) \cdot \text{existing } h$	[mm ²]	with $c \geq c_{min}$ and $s \geq s_{min}$

Edge distance and axial spacing shall be rounded up to at least 5 mm.

Figures not to scale

Menouquin injection system MASTERFIX 700

Intended use

Minimum thickness of concrete member for Anchor rods / Threaded rods,
internal threaded anchor FIS IG, minimum spacing and edge distance

Annex B7

Table B8.1: Parameters of the cleaning brush BS (steel brush with steel bristles)

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

Nominal drill hole diameter d_0		8	10	12	14	16	18	20	24	25	28	30	32	35
Steel brush diameter BS d_b	[mm]	9	11	14	16	20		25	26	27	30		40	

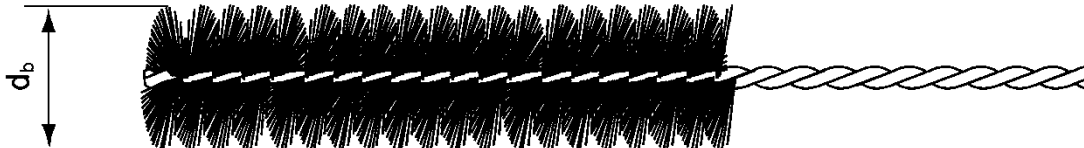


Table B8.2: Maximum processing time of the mortar and minimum curing time
(During the curing time of the mortar the concrete temperature may not fall below the listed minimum temperature)

Temperature at anchoring base [°C]	Maximum processing time t_{work}	Minimum curing time ¹⁾ t_{cure}
	MASTERFIX 700	MASTERFIX 700
> -5 to 0 ²⁾	13 min	24 h
> 0 to 5 ²⁾	13 min	3 h
> 5 to 10	9 min	90 min
> 10 to 20	5 min	60 min
> 20 to 30	4 min	45 min
> 30 to 40	2 min	35 min

¹⁾ In wet concrete or water filled holes the curing times must be doubled.

²⁾ Minimal cartridge temperature +5°C.

Table B8.3: Conditions for use static mixer without an extension tube

Nominal drill hole diameter d_0		8	10	12	14	16	18	20	24	25	28	30	32	35
Drill hole depth h_0 by using	FIS MR Plus	≤90			≤120	≤140	≤150	≤160	≤190	≤210				
	FIS JMR	-	-	-	≤90	≤160	≤180	≤190	≤220	≤250				

Menouquin injection system MASTERFIX 700

Intended use
Cleaning brush (steel brush)
Processing time and curing time

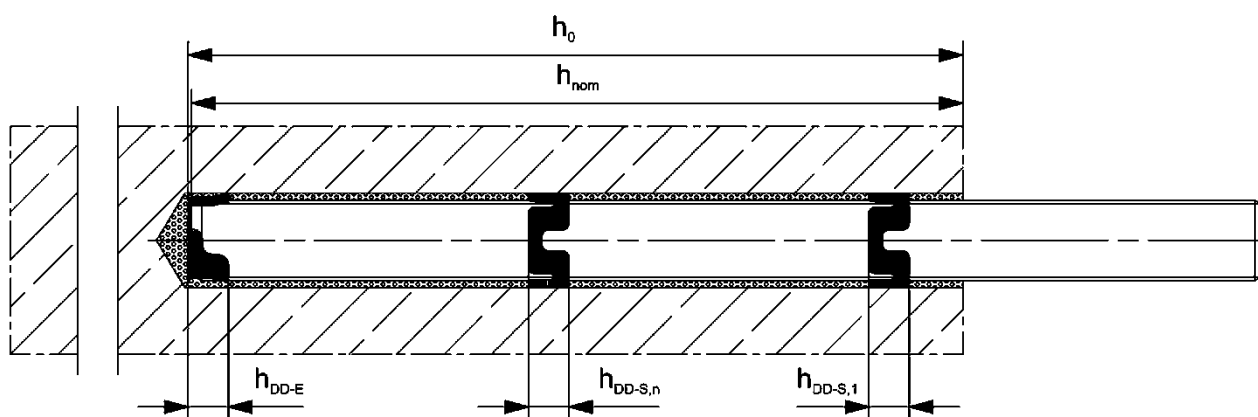
Annex B8

Table B9.1: Parameters of the centering clip DD-S / DD-E

Anchor rods / Threaded rods			M12	M16	M20	M24	M27	M30
Internal threaded anchor FIS IG			M8	M10	M12	M16	-	M20
Centering clip DD-S / DD-E			M12	M16	M20	M24	M27	M30
Centering clip DD-S	h_{DD-S}	[mm]	6,5	8,0	9,0	10,0	10,0	10,0
Centering clip DD-E	h_{DD-E}	[mm]	12,0	13,5	18,0	19,0	19,0	19,0
Drill hole depth	h_0	[mm]	$h_0 \geq h_{nom} + 3 \text{ mm}$					
Minimum thickness of concrete member	h_{min}	[mm]	$h_{nom} + 30$ (≥ 100)	$h_{nom} + 2d_0$				

The uppermost DD-S clip should be positioned approx. 5 - 10 mm below the concrete surface.
The effective embedment depth h_{ef} is calculated as follows when using the DD-S / DD-E clips.

$$h_{ef} = h_{nom} - h_{DD-E} - n \cdot h_{DD-S} \quad n = \text{number of DD-S clips used}$$



Figures not to scale

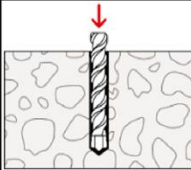
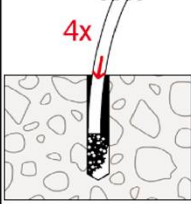
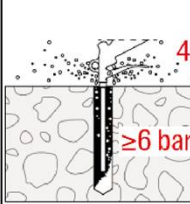
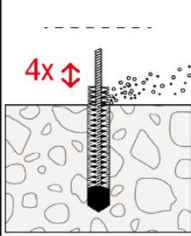
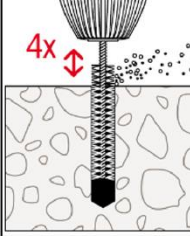
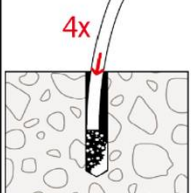
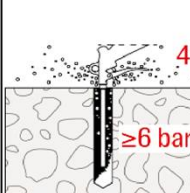
Menouquin injection system MASTERFIX 700

Intended use
Centering clip DD-S / DD-E

Annex B9

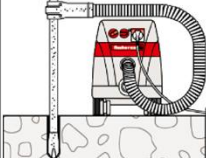
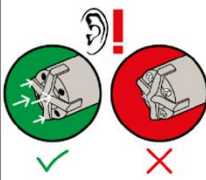
Installation instructions part 1

Drilling and cleaning the hole (hammer drilling with standard drill bit)

1		Drill the hole. Nominal drill hole diameter d_0 and drill hole depth h_0 see Tables B3.1, B4.1 und B5.1.		
2		Clean the drill hole: For $h_{ef} \leq 12d$ and $d_0 < 18$ mm blow out the hole four times by hand.		For $h_{ef} > 12d$ and / or $d_0 \geq 18$ mm blow out the hole four times with oil-free compressed air ($p \geq 6$ bar). Use suitable compressed-air nozzle
3		Brush the drill hole four times. For $d_0 < 30$ mm brush process can be performed by hand. For deep holes use an extension. Use suitable brushes (see Table B8.1).		Brush the drill hole four times. For drill hole diameter ≥ 30 mm use a power drill. For deep holes use an extension. Use suitable brushes (see Table B8.1).
4		Clean the drill hole: For $h_{ef} \leq 12d$ and $d_0 < 18$ mm blow out the hole four times by hand.		For $h_{ef} > 12d$ and / or $d_0 \geq 18$ mm blow out the hole four times with oil-free compressed air ($p \geq 6$ bar). Use suitable compressed-air nozzle.

Go to step 5

Drilling and cleaning the hole (hammer drilling with hollow drill bit)

1		Check a suitable hollow drill (see Table B1.1) for correct operation of the dust extraction.	
2		Use a suitable dust extraction system, e.g. fischer FVC 35 M or a comparable dust extraction system with equivalent performance data Drill the hole with hollow drill bit. The dust extraction system has to extract the drill dust nonstop during the drilling process and must be adjusted to maximum power. Nominal drill hole diameter d_0 and drill hole depth h_0 see Tables B3.1, B4.1 und B5.1.	

Go to step 5

Menouquin injection system MASTERFIX 700

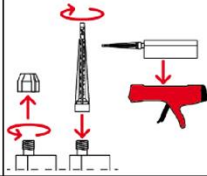
Intended use
Installation instructions part 1

Annex B10

Installation instructions part 2

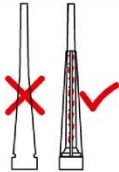
Preparing the cartridge

5



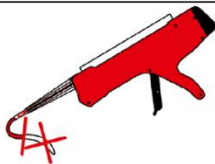
Remove the sealing cap
Screw on the static mixer
Place the cartridge into the dispenser

6



Ensuring that the spiral inside the mixer is clearly visible.

7

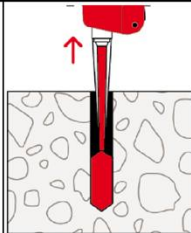


Extrude approximately 10 cm of material out until the resin is evenly grey in colour.
Do not use mortar that is not uniformly grey.

Go to step 8

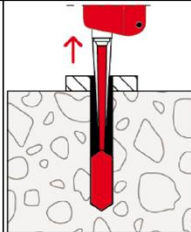
Injection of the mortar

8



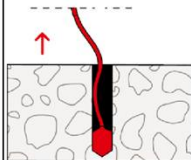
For $h_0 = h_{ef}$ fill approximately 2/3 of the drill hole with mortar. For $h_0 > h_{ef}$ more mortar is needed. Always begin from the bottom of the hole and avoid bubbles.

9

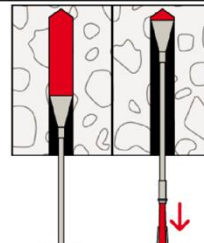


Push-through installation:
the drill hole in the fixture must be also filled with mortar.

10



The conditions for mortar injection without extension tube can be found in **Table B8.3**.



For overhead installation, deep holes ($h_0 > 250$ mm) or drill hole diameter ($d_0 \geq 30$ mm) use an injection-adaptor.

Go to step 11

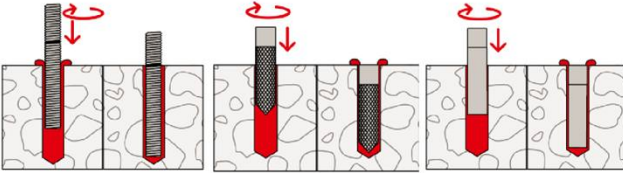
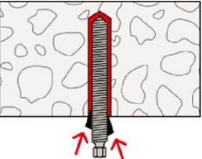
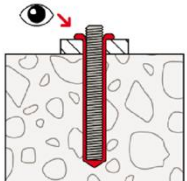
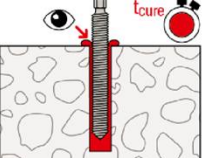
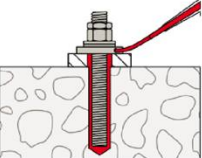
Menouquin injection system MASTERFIX 700

Intended use
Installation instructions part 2

Annex B11

Installation instructions part 3

Installation of Anchor rods / Threaded rods, internal threaded anchors RG M I and FIS IG

11		Only use clean and oil-free metal parts. Push the Anchor rod / Threaded rods with the setting depth mark or internal threaded anchors RG M I or FIS IG down to the bottom of the hole, turning it slightly while doing so. No turning movement is permitted when using the DD-S / DD-E centering clips. After inserting the metal parts, excess mortar must be emerged around the anchor element.
12	 For overhead installations support the metal part with wedges (e.g. centering wedges or overhead clips).	 For push through installation fill the annular gap with mortar.
13	 Wait for the specified curing time t_{cure} see Table B8.2. The application with the anchor rod is shown as an example.	14  Mounting the fixture max T_{inst} see Tables B3.1, B4.1 and B5.1.
Option	 After the minimum curing time is reached, the gap between metal part and fixture (annular clearance) may be filled with mortar via the filling disc. Compressive strength $\geq 50 \text{ N/mm}^2$ (e.g. injection mortars Masterfix 700). ATTENTION: Using filling disc reduces t_{fix} (usable length of the Anchor).	

Menouquin injection system MASTERFIX 700

Intended use
Installation instructions part 3

Annex B12

Table C1.1: Characteristic resistance to steel failure under tension / shear loading of Anchor rods and Threaded rods

Anchor rod / Threaded rod				M6	M8	M10	M12	M16	M20	M24	M27	M30	
Characteristic resistance to steel failure under tension loading ¹⁾													
Characteristic resistance $N_{Rk,s}$	Steel zinc plated	Property class	4.8	[kN]	8,0	14,6(13,2)	23,2(21,4)	33,7	62,8	98,0	141,2	183,6	224,4
			5.8		10,1	18,3(16,6)	29,0(26,8)	42,1	78,5	122,5	176,5	229,5	280,5
			8.8		16,1	29,2(26,5)	46,4(42,8)	67,4	125,6	196,0	282,4	367,2	448,8
	Stainless steel R and high corrosion resistant steel HCR		50		10,1	18,3	29,0	42,1	78,5	122,5	176,5	229,5	280,5
			70		14,1	25,6	40,6	59,0	109,9	171,5	247,1	321,3	392,7
			80		16,1	29,2	46,4	67,4	125,6	196,0	282,4	367,2	448,8
Partial factors ¹⁾													
Partial factor $\gamma_{Ms,N}$	Steel zinc plated	Property class	4.8	[-]	1,50								
			5.8		1.50								
			8.8		1.50								
	Stainless steel R and high corrosion resistant steel HCR		50		2.86								
			70		1.87 / Menouquin HCR: 1.50 ³⁾								
			80		1.60								
Characteristic resistance to steel failure under shear loading ¹⁾													
without lever arm													
Characteristic resistance $V_{Rk,s}^0$	Steel zinc plated	Property class	4.8	[kN]	4,8	8,7(7,9)	13,9(12,8)	20,2	37,6	58,8	84,7	110,1	134,6
			5.8		6,0	10,9(9,9)	17,4(16,0)	25,2	47,1	73,5	105,9	137,7	168,3
			8.8		8,0	14,6(13,2)	23,2(21,4)	33,7	62,8	98,0	141,2	183,6	224,4
	Stainless steel R and high corrosion resistant steel HCR		50		5,0	9,1	14,5	21,0	39,2	61,2	88,2	114,7	140,2
			70		7,0	12,8	20,3	29,5	54,9	85,7	123,5	160,6	196,3
			80		8,0	14,6	23,2	33,7	62,8	98,0	141,2	183,6	224,4
Ductility factor		k_7	[-]	1,0									
with lever arm													
Characteristic resistance $M_{Rk,s}^0$	Steel zinc plated	Property class	4.8	[Nm]	6,1	14,9(12,9)	29,9(26,5)	52,3	132,9	259,6	448,8	665,7	899,5
			5.8		7,6	18,7(16,1)	37,3(33,2)	65,4	166,2	324,6	561,0	832,2	1124,4
			8.8		12,2	29,9(25,9)	59,8(53,1)	104,6	265,9	519,3	897,6	1331,5	1799,0
	Stainless steel R and high corrosion resistant steel HCR		50		7,6	18,7	37,3	65,4	166,2	324,6	561,0	832,2	1124,4
			70		10,7	26,2	52,3	91,5	232,6	454,4	785,4	1165,0	1574,1
			80		12,2	29,9	59,8	104,6	265,9	519,3	897,6	1331,5	1799,0
Partial factors ²⁾													
Partial factor $\gamma_{Ms,V}$	Steel zinc plated	Property class	4.8	[-]	1,25								
			5.8		1.25								
			8.8		1.25								
	Stainless steel R and high corrosion resistant steel HCR		50		2.38								
			70		1.56 / Menouquin HCR: 1.25 ³⁾								
			80		1.33								
¹⁾ Values in brackets are valid for undersized threaded rods with smaller stress area A_s for hot dip galvanised threaded rods according to EN ISO 10684:2004+AC:2009.													
²⁾ In absence of other national regulations.													
³⁾ Only admissible for high corrosion resistant steel HCR, acc. to Table A6.1 .													
Menouquin injection system MASTERFIX 700										Annex C1			
Performances Characteristic resistance to steel failure under tension / shear loading of Anchor rods and Threaded rods													

¹⁾ Values in brackets are valid for undersized threaded rods with smaller stress area A_s for hot dip galvanised threaded rods according to EN ISO 10684:2004+AC:2009.

²⁾ In absence of other national regulations.

³⁾ Only admissible for high corrosion resistant steel HCR, acc. to **Table A6.1**.

Table C2.1: Characteristic resistance to steel failure under tension / shear loading of internal threaded anchor RG M I										
Internal threaded anchor RG M I					M8	M10	M12	M16	M20	
Characteristic resistance to steel failure under tension loading										
Characteristic resistance with Screw or Threaded / Anchor rod $N_{Rk,s}$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[kN]	18,3	29,0	42,1	78,3	122,4	
			8.8		29,2	46,4	67,4	106,7	180,2	
	Stainless steel R and High corrosion resistant steel HCR		70		25,6	40,6	59,0	109,6	171,3	
Partial factors ¹⁾										
Partial factor $\gamma_{Ms,N}$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[-]	1,50					
			8.8		1,50					
	Stainless steel R and High corrosion resistant steel HCR		70		1,87 / Menouquin HCR: 1,50 ²⁾					
Characteristic resistance to steel failure under shear loading										
Without lever arm										
Characteristic resistance with Screw or Threaded / Anchor rod $V_{Rk,s}^0$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[kN]	10,9	17,4	25,2	47,1	73,5	
			8.8		14,6	23,2	33,7	62,8	98,0	
	Stainless steel R and High corrosion resistant steel HCR		70		12,8	20,3	29,5	54,9	85,7	
Ductility factor			k ₇	[-]	1,0					
With lever arm										
Characteristic resistance with Screw or Threaded / Anchor rod $M_{Rk,s}^0$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[Nm]	18,7	37,3	65,4	166,2	324,6	
			8.8		29,9	59,8	104,6	265,9	519,3	
	Stainless steel R and High corrosion resistant steel HCR		70		26,2	52,3	91,5	232,6	454,4	
Partial factors ¹⁾										
Partial factor $\gamma_{Ms,V}$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[-]	1,25					
			8.8		1,25					
	Stainless steel R and High corrosion resistant steel HCR		70		1,56 / Menouquin HCR: 1,25 ²⁾					
¹⁾ In absence of other national regulations ²⁾ Only admissible for high corrosion resistant steel HCR, acc. to Table A6.1 .										
Menouquin injection system MASTERFIX 700								Annex C2		
Performances Characteristic resistance to steel failure under shear loading of internal threaded anchor RG M I										

Table C3.1: Characteristic resistance to steel failure under tension / shear loading of internal threaded anchor FIS IG												
Internal threaded anchor FIS IG					M5	M6	M8	M10	M12	M16	M20	
Characteristic resistance to steel failure under tension loading												
Characteristic resistance with Screw or Threaded / Anchor rod $N_{Rk,s}$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[kN]	7,1	10,1	18,3	29,0	42,1	78,3	122,4	
			8.8		11,4	16,1	23,0	46,4	67,4	96,9	156,8	
	Stainless steel R and High corrosion resistant steel HCR		70		9,9	14,1	25,6	40,6	59,0	109,6	171,3	
Partial factors ¹⁾												
Partial factor $\gamma_{Ms,N}$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[-]	1,50							
			8.8		1,50							
	Stainless steel R and High corrosion resistant steel HCR		70		1,87 / Menouquin HCR: 1,50 ²⁾							
Characteristic resistance to steel failure under shear loading												
Without lever arm												
Characteristic resistance with Screw or Threaded / Anchor rod $V_{Rk,s}^0$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[kN]	4,3	6,0	10,9	17,4	25,2	47,1	73,5	
			8.8		5,7	8,0	14,6	23,2	33,7	62,8	98,0	
	Stainless steel R and High corrosion resistant steel HCR		70		5,0	7,0	12,8	20,3	29,5	54,9	85,7	
Ductility factor			k ₇	[-]	1,0							
With lever arm												
Characteristic resistance with Screw or Threaded / Anchor rod $M_{Rk,s}^0$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[Nm]	4,5	7,6	18,7	37,3	65,4	166,2	324,6	
			8.8		7,2	12,2	29,9	59,8	104,6	265,9	519,3	
	Stainless steel R and High corrosion resistant steel HCR		70		6,3	10,7	26,2	52,3	91,5	232,6	454,4	
Partial factors ¹⁾												
Partial factor $\gamma_{Ms,V}$	Steel zinc plated	Property class of Screw or Threaded / Anchor rod	5.8	[-]	1,25							
			8.8		1,25							
	Stainless steel R and High corrosion resistant steel HCR		70		1,56 / Menouquin HCR: 1,25 ²⁾							
¹⁾ In absence of other national regulations.												
²⁾ Only admissible for high corrosion resistant steel HCR, acc. to Table A6.1												
Menouquin injection system MASTERFIX 700									Annex C3			
Performances Characteristic resistance to steel failure under shear loading of internal threaded anchor FIS IG												

Table C4.1: Characteristic resistance to concrete failure under tension / shear loading

Size			All sizes										
Characteristic resistance to concrete failure under tension loading													
Installation factor		γ_{inst}	[-]	See annex C5 and C6									
Factors for the compressive strength of concrete > C20/25													
Increasing factor ψ_c for cracked or uncracked concrete $\tau_{Rk}(X,Y) = \psi_c \cdot \tau_{Rk}(C20/25)$	C25/30	[-]	1,05										
	C30/37		1,10										
	C35/45		1,15										
	C40/50		1,19										
	C45/55		1,22										
	C50/60		1,26										
Splitting failure													
Edge distance	$h / h_{ef} \geq 2,0$	$C_{cr,sp}$	[mm]	1,0 h_{ef}									
	$2,0 > h / h_{ef} > 1,3$			4,6 $h_{ef} - 1,8 h$									
	$h / h_{ef} \leq 1,3$			2,26 h_{ef}									
Spacing		$S_{cr,sp}$		2 $C_{cr,sp}$									
Concrete failure													
Uncracked concrete		$k_{ucr,N}$	[-]	11,0									
Cracked concrete		$k_{cr,N}$		7,7									
Edge distance		$C_{cr,N}$	[mm]	1,5 h_{ef}									
Spacing		$S_{cr,N}$		2 $C_{cr,N}$									
Factors for sustained tension loading													
Temperature range			[-]	50 °C / 80 °C				72 °C / 120 °C					
Factor			Ψ_{sus}^0	[-]	0,76				0,78				
Characteristic resistance to concrete failure under shear loading													
Installation factor		γ_{inst}	[-]	1,0									
Concrete pry-out failure													
Factor for pry-out failure		k_8	[-]	2,0									
Concrete edge failure													
Effective length of fastener in shear loading		l_f	[mm]	for $d_{nom} \leq 24$ mm: min (h_{ef} ; 12 d_{nom}) for $d_{nom} > 24$ mm: min (h_{ef} ; 8 d_{nom} ; 300 mm)									
Calculation diameters													
Size				M5	M6	M8	M10	M12	M16	M20	M24	M27	M30
Anchor rods and Threaded rods		d_{nom}	[mm]	-1)	6	8	10	12	16	20	24	27	30
Internal threaded anchor RG M I		d_{nom}		-1)	-1)	12	16	18	22	28	-1)	-1)	-1)
Internal threaded anchor FIS IG		d_{nom}		10	10	12	16	20	24	30	-1)	-1)	-1)
1) Size of Anchor type not part of the assessment													
Menouquin injection system MASTERFIX 700											Annex C4		
Performances Characteristic resistance to concrete failure under tension / shear loading													

Table C5.1: Characteristic resistance to combined pull-out and concrete failure for Anchor rods and Threaded rods and internal threaded anchor FIS IG in hammer drilled holes; uncracked or cracked concrete

Anchor rod / Threaded rod			M6	M8	M10	M12	M16	M20	M24	M27	M30		
Internal threaded anchor FIS IG			-	-	M5 M6	M8	M10	M12	M16	-	M20		
Combined pullout and concrete cone failure													
Calculation diameter		d	[mm]	6	8	10	12	16	20	24	27	30	
Uncracked concrete													
Characteristic bond resistance in uncracked concrete C20/25													
Hammer-drilling with standard drill bit or hollow drill bit (dry or wet concrete)													
Tem- perature range	I: 50 °C / 80 °C		$\tau_{Rk,ucr}$	[N/mm ²]	9,0	11,0	11,0	11,0	10,0	9,5	9,0	8,5	8,5
	II: 72 °C / 120 °C				6,5	9,5	9,5	9,0	8,5	8,0	7,5	7,0	7,0
Hammer-drilling with standard drill bit or hollow drill bit (water filled hole)													
Tem- perature range	I: 50 °C / 80 °C		$\tau_{Rk,ucr}$	[N/mm ²]	- ¹⁾	- ¹⁾	- ¹⁾	9,5	8,5	8,0	7,5	7,0	7,0
	II: 72 °C / 120 °C				- ¹⁾	- ¹⁾	- ¹⁾	7,5	7,0	6,5	6,0	6,0	6,0
Installation factors													
Dry or wet concrete		γ_{inst}	[-]	1,2									
Water filled hole				- ¹⁾	- ¹⁾	- ¹⁾	1,4						
Cracked concrete													
Characteristic bond resistance in cracked concrete C20/25													
Hammer-drilling with standard drill bit or hollow drill bit (dry or wet concrete)													
Tem- perature range	I: 50 °C / 80 °C		$\tau_{Rk,cr}$	[N/mm ²]	- ¹⁾	- ¹⁾	6,0	6,0	6,0	5,5	- ¹⁾	- ¹⁾	- ¹⁾
	II: 72 °C / 120 °C				- ¹⁾	- ¹⁾	5,0	6,0	5,5	5,0	- ¹⁾	- ¹⁾	- ¹⁾
Hammer-drilling with standard drill bit or hollow drill bit (water filled hole)													
Tem- perature range	I: 50 °C / 80 °C		$\tau_{Rk,cr}$	[N/mm ²]	- ¹⁾	- ¹⁾	- ¹⁾	5,0	5,0	4,5	- ¹⁾	- ¹⁾	- ¹⁾
	II: 72 °C / 120 °C				- ¹⁾	- ¹⁾	- ¹⁾	4,0	4,0	4,0	- ¹⁾	- ¹⁾	- ¹⁾
Installation factors													
Dry or wet concrete		γ_{inst}	[-]	- ¹⁾	- ¹⁾	1,2			- ¹⁾	- ¹⁾	- ¹⁾		
Water filled hole				- ¹⁾	- ¹⁾	- ¹⁾	1,4			- ¹⁾	- ¹⁾	- ¹⁾	
1) No performance assessed													
Menouquin injection system MASTERFIX 700									Annex C5				
Performances													
Characteristic resistance to combined pull-out and concrete failure for Anchor rod, Threaded rods or internal threaded anchor FIS IG													

Table C6.1: Characteristic resistance to combined pull-out and concrete failure for internal threaded anchor RG M I in hammer drilled holes; uncracked concrete

Internal threaded anchor RG M I			M8	M10	M12	M16	M20	
Combined pullout and concrete cone failure								
Calculation diameter		d	[mm]	12	16	18	22	28
Uncracked concrete								
Characteristic bond resistance in uncracked concrete C20/25								
Hammer-drilling with standard drill bit or hollow drill bit (dry or wet concrete)								
Tem- perature range	I: 50 °C / 80 °C	$\tau_{Rk,ucr}$	[N/mm ²]	10,5	10,0	9,5	9,0	8,5
	II: 72 °C / 120 °C			9,0	8,0	8,0	7,5	7,0
Hammer-drilling with standard drill bit or hollow drill bit (water filled hole)								
Tem- perature range	I: 50 °C / 80 °C	$\tau_{Rk,ucr}$	[N/mm ²]	10,0	9,0	9,0	8,5	8,0
	II: 72 °C / 120 °C			7,5	6,5	6,5	6,0	6,0
Installation factors								
Dry or wet concrete		γ_{inst}	[-]	1,2				
Water filled hole				1,4				

Table C7.1: Displacements for Anchor rods / Threaded rods or internal threaded anchor FIS IG										
Anchor rod / Threaded rods		M6	M8	M10	M12	M16	M20	M24	M27	M30
Internal threaded anchor FIS IG		-	-	M5 M6	M8	M10	M12	M16	-	M20
Displacement-Factors for tension loading ¹⁾										
Uncracked concrete; Temperature range I, II										
δ _{N0} -Factor	[mm/(N/mm ²)]	0,09	0,09	0,09	0,10	0,10	0,10	0,10	0,12	0,12
δ _{N∞} -Factor		0,10	0,10	0,10	0,12	0,12	0,12	0,13	0,13	0,14
Cracked concrete; Temperature range I, II										
δ _{N0} -Factor	[mm/(N/mm ²)]	- ³⁾	0,12	0,12	0,12	0,13	0,16	0,19	0,21	0,23
δ _{N∞} -Factor		- ³⁾	0,25	0,27	0,30	0,30	0,30	0,35	0,35	0,40
Displacement-Factors for shear loading ²⁾										
Uncracked or cracked concrete; Temperature range I, II										
δ _{V0} -Factor	[mm/kN]	0,11	0,11	0,11	0,10	0,10	0,09	0,09	0,08	0,07
δ _{V∞} -Factor		0,12	0,12	0,12	0,11	0,11	0,10	0,10	0,09	0,09
1) Calculation of effective displacement: δ _{N0} = δ _{N0} -Factor · τ δ _{N∞} = δ _{N∞} -Factor · τ τ = acting bond strength under tension loading					2) Calculation of effective displacement: δ _{V0} = δ _{V0} -Factor · V δ _{V∞} = δ _{V∞} -Factor · V V = acting shear loading					
3) No performance assessed										
Table C7.2: Displacements for internal threaded anchor RG M I										
Internal threaded anchor RG M I		M8	M10	M12	M16	M20				
Displacement-Factors for tension loading ¹⁾										
Uncracked concrete; Temperature range I, II										
δ _{N0} -Factor	[mm/(N/mm ²)]	0,10	0,11	0,12	0,13	0,14				
δ _{N∞} -Factor		0,13	0,14	0,15	0,16	0,18				
Displacement-Factors for shear loading ²⁾										
Uncracked concrete; Temperature range I, II										
δ _{V0} -Factor	[mm/kN]	0,12	0,12	0,12	0,12	0,12				
δ _{V∞} -Factor		0,14	0,14	0,14	0,14	0,14				
1) Calculation of effective displacement: δ _{N0} = δ _{N0} -Factor · τ δ _{N∞} = δ _{N∞} -Factor · τ τ = acting bond strength under tension loading					2) Calculation of effective displacement: δ _{V0} = δ _{V0} -Factor · V δ _{V∞} = δ _{V∞} -Factor · V V: acting shear loading					
Menouquin injection system MASTERFIX 700							Annex C7			
Performances Displacements for Anchor rods / Threaded rods, internal threaded anchor FIS IG and internal threaded anchor RG M I										