

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-07/0142
of 28 July 2016

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

fischer drop-in anchor EA II

Product family
to which the construction product belongs

Deformation-controlled expansion anchor for multiple use
for non-structural applications in concrete

Manufacturer

fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1
72178 Waldachtal
DEUTSCHLAND

Manufacturing plant

fischerwerke

This European Technical Assessment
contains

15 pages including 3 annexes

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

Guideline for European technical approval of "Metal
anchors for use in concrete", ETAG 001 Part 6: "Anchors
for multiple use for non-structural applications",
used as European Assessment Document (EAD)
according to Article 66 Paragraph 3 of Regulation (EU)
No 305/2011.

This version replaces

ETA-07/0142 issued on 7 November 2014

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Specific Part

1 Technical description of the product

The Fischer drop-in anchor EA II is an anchor made of galvanized or stainless steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

The fixture shall be anchored with a fastening screw or threaded rod according to Annex B 5.

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 static and quasi-static loading, displacements	See Annex C 1 to C 3

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfies requirements for Class A1
Resistance to fire	See Annex C 4

3.4 Safety 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 001-6, 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: [97/161/EC].

The system to be applied is: 2+

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

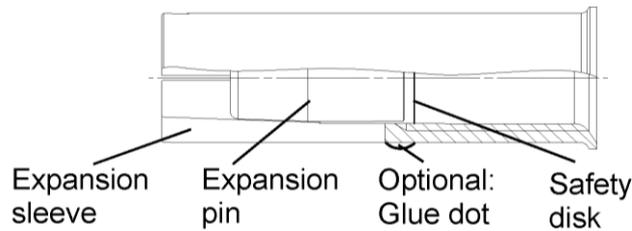
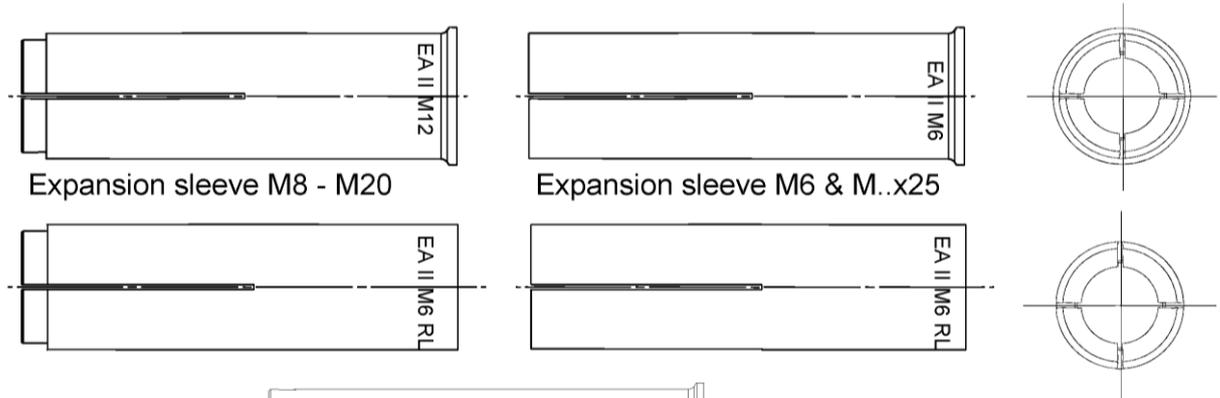
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 28 July 2016 by Deutsches Institut für Bautechnik

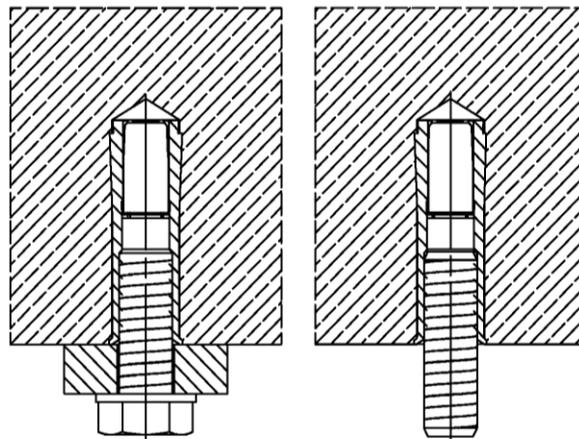
Uwe Bender
Head of Department

beglaubigt:
Lange

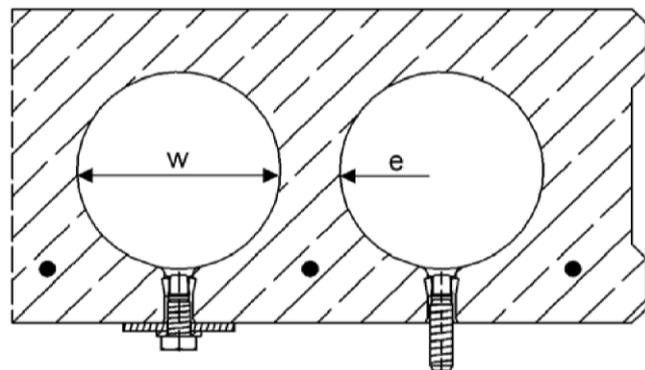
Multiple use for non-structural applications only



Intended use in concrete



Intended use in precast pre-stressed hollow concrete slabs ($w/e \leq 4,2$) with a flange thickness ≥ 35 (or 30 mm \rightarrow see Annex C2) and only for $h_{ef} = 25$ mm

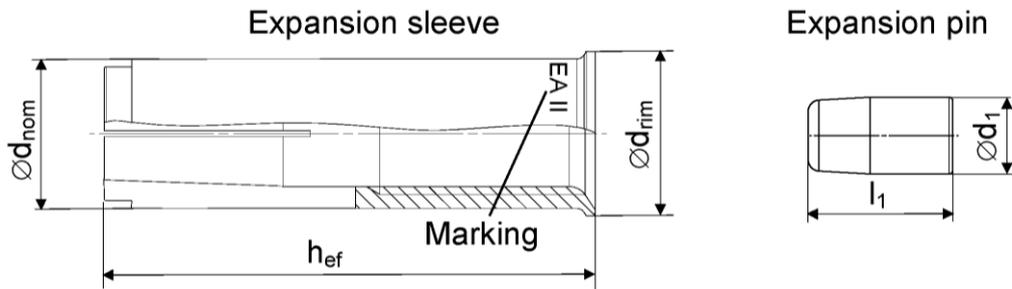


fischer drop-in anchor EA II

Product description
Installed condition
Anchor types

Annex A 1

English translation prepared by DIBt



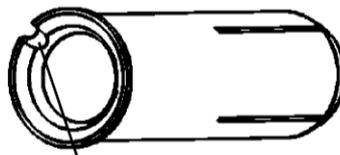
Anchor size EA II	M6x25	M6x30	M8x25	M8x30	M8x40	M10x25	M10x30	M10x40	M12x25	M12x50	M12 D
h_{ef} [mm]	25	30	25	30	40	25	30	40	25	50	50
$\varnothing d_{nom}$ [mm]	8		10			12			15		16
$\varnothing d_{rim}$ [mm]	9,5		11,5			13,5			16,5		17,5
$\varnothing d_1$ [mm]	5		6,5			8,5	8		10		
l_1 [mm]	9	14	8	13,5		9	13,5	18,5	10,5	18,5	

Distinctive feature



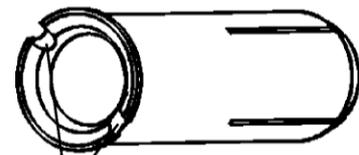
0× groove for:

- EA II M6x30..
- EA II M8x30..
- EA II M10x40..
- EA II M12x50..



1× groove for:

- EA II M6x25..
- EA II M8x25..
- EA II M10x25..
- EA II M12x25..



2× groove for:

- EA II M8x40..
- EA II M10x30..

Marking on anchor body

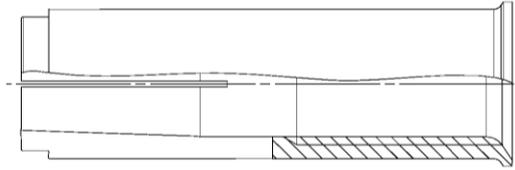
galvanized steel (gvz)		stainless steel (A4)	
with rim	rimless	with rim	rimless
EA II M6x25	EA II M6x25 RL	EA II M6x30 A4	EA II M6x30 RL A4
EA II M6x30	EA II M6x30 RL	EA II M8x30 A4	EA II M8x30 RL A4
EA II M8x25	EA II M8x25 RL	EA II M8x40 A4	EA II M8x40 RL A4
EA II M8x30	EA II M8x30 RL	EA II M10x30 A4	EA II M10x30 RL A4
EA II M8x40	EA II M8x40 RL	EA II M10x40 A4	EA II M10x40 RL A4
EA II M10x25	EA II M10x25 RL	EA II M12x50 A4	EA II M12x50 RL A4
EA II M10x30	EA II M10x30 RL	EA II M12x50 D A4	EA II M12x50 RL D A4
EA II M10x40	EA II M10x40 RL		
EA II M12x25	EA II M12x25 RL		
EA II M12x50	EA II M12x50 RL		
EA II M12x50 D	EA II M12x50 RL D		

fischer drop-in anchor EA II

Product description
Anchor types

Annex A 2

Expansion sleeve



Expansion pin



Table A1: Materials

Designation	Material	
	galvanised steel ($\geq 5 \mu\text{m}$)	stainless steel
Expansion sleeve	EN 10277:2008 or EN 10084:2008 or EN 10111:2008 or EN 10263:2001 or EN 10087:1998 or ASTM A29/A29M	EN 10088:2005
Expansion pin		
Fastening screw or threaded rod	steel, property class 4.6, 5.6, 5.8 or 8.8 according to EN ISO 898-1:2012	property class 50, 70 or 80 according to EN ISO 3506:2009

fischer drop-in anchor EA II

Product description
Material

Annex A 3

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads
- Only to be used for multiple use for non-structural application
- Fire exposure: only in concrete C12/15 to C50/60, not in prestressed hollow concrete slabs

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2014
- Strength classes C12/15 to C50/60 according to EN 206-1:2014
- Precast prestressed hollow concrete slabs with $w/e \leq 4,2$ and strength classes C30/37 to C50/60: M6x25, M8x25, M10x25 and M12x25
- Cracked concrete and non-cracked concrete: all sizes

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc coated steel or stainless steel)
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel)

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

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static or quasi-static actions are to be designed in accordance with:
 - ETAG 001, Annex C, design method B and C, Edition August 2010 or
 - CEN/TS 1992-4:2009, design method B
- Fasteners are only to be used for multiple use for non-structural application, according to: ETAG 001 Part 6, Edition August 2010
- Anchorages under fire exposure are designed in accordance with:
 - EOTA Technical Report TR 020, Edition May 2004
 - CEN/TS 1992-4, Annex D
 - It must be ensured that local spalling of the concrete cover does not occur.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Create drill hole with hammer drill or with hollow drill and vacuum cleaner.
- The anchor may only be used once.
- Anchor expansion by impact using the setting tools given in Annex B 4. The anchor is property set if the stop of the setting tool reaches the expansion sleeve. The manual setting tool with installation control leaves a visible mark on the sleeve, as illustrated in Annex B4 and B 5.

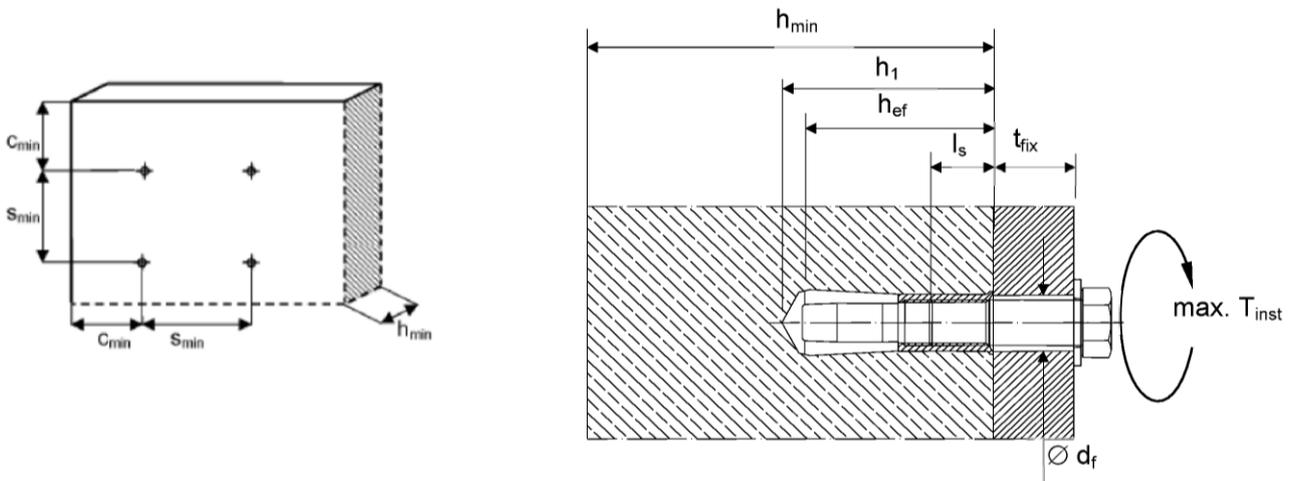
fischer drop-in anchor EA II

Annex B 1

Intended Use
Specifications

Table B1: Installation parameters for concrete C12/15 to C50/60

Anchor size			M6		M8			M10			M12		M12D
Nominal drill hole diameter	d_0	[mm]	8		10			12			15		16
Effective anchorage depth	h_{ef}	[mm]	25	30	25	30	40	25	30	40	25	50	50
Maximum installation torque	max. T_{inst}	[Nm]	4		8			15			35		
Minimum drill hole depth	h_1	[mm]	27	32	27	33	43	27	33	43	27	54	54
Minimum screw-in depth	$l_{s,min}$	[mm]	6		8			10			12		
Maximum screw-in depth	$l_{s,max}$	[mm]	14		14			14		17	14	22	
Clearance hole diameter	$\varnothing d_f \leq$	[mm]	7		9			12			14		
$h_{min} = 80$ mm													
Minimum spacing	s_{min}	[mm]	30	70	70	110	200	80	200		100	-	-
Minimum edge distance	c_{min}	[mm]	60	150	100	150		120	150		130	-	-
$h_{min} = 100$ mm													
Minimum spacing	s_{min}	[mm]	30	65	50	70	60	90	150	100	200		
Minimum edge distance	c_{min}	[mm]	60	115	100	115	100	160	180	110	200		
$h_{min} = 120$ mm													
Minimum spacing	s_{min}	[mm]	30	65	50	70	60	85	95	100	145		
Minimum edge distance	c_{min}	[mm]	60	115	100	115	100	140	150	110	200		



Fastening screw or threaded rod:

- Minimum property class and materials according to table A1
- The length of the fastening screw or threaded rod shall be determined depending on thickness of fixture t_{fix} , admissible tolerances and maximum screw length $l_{s,max}$ as well as minimum screw-in depth $l_{s,min}$.

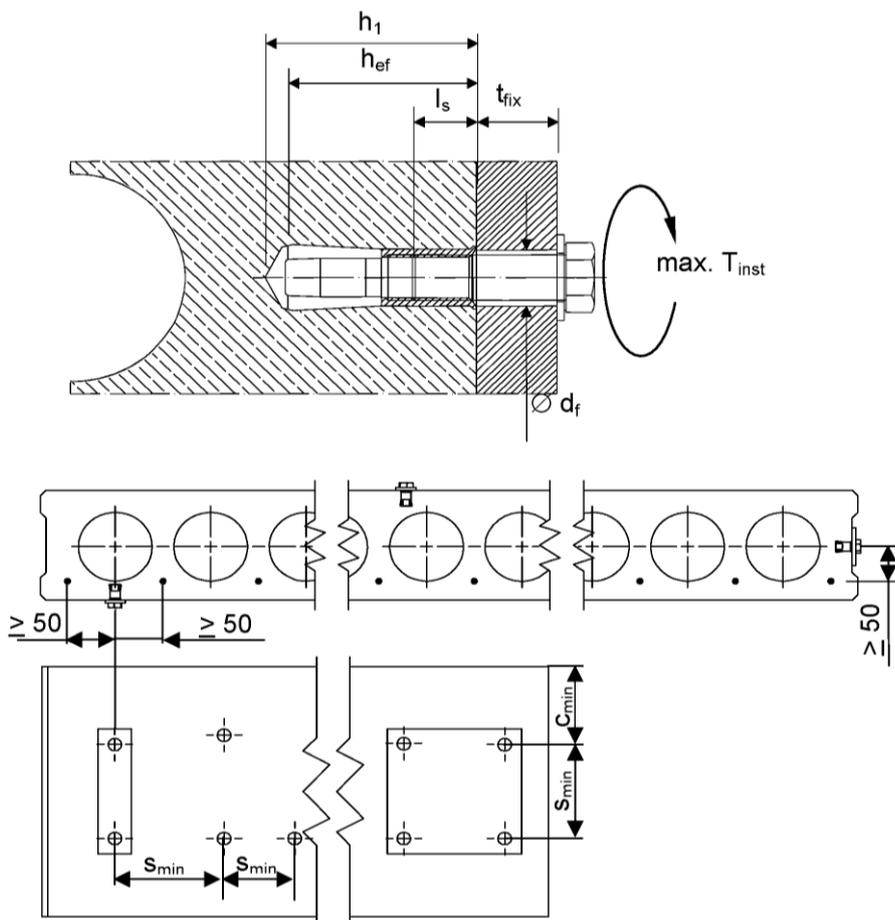
fischer drop-in anchor EA II

Annex B 2

Intended Use
Installation parameters

Table B2: Installation parameters for precast pre-stressed hollow concrete

Anchor size		M6	M8	M10	M12
Nominal drill hole diameter	d_0 [mm]	8	10	12	15
Effective anchorage depth	h_{ef} [mm]	25			
Maximum installation torque	max. T_{inst} [Nm]	4	8	15	35
Minimum drill hole depth	h_1 [mm]	27			
Minimum screw-in depth	$l_{s,min}$ [mm]	6	8	10	12
Maximum screw-in depth	$l_{s,max}$ [mm]	14			
Clearance hole diameter	$\varnothing d_f$ [mm]	7	9	12	14
Minimum spacing	$s_{min} = s_{cr}$ [mm]	200			
Minimum edge distance	$c_{min} = c_{cr}$ [mm]	150			



Fastening screw or threaded rod:

- Minimum property class and materials according to table A1
- The length of the fastening screw or threaded rod shall be determined depending on thickness of fixture t_{fix} , admissible tolerances and maximum screw length $l_{s,max}$ as well as minimum screw-in depth $l_{s,min}$.

fischer drop-in anchor EA II

Intended Use
Installation parameters

Annex B 3

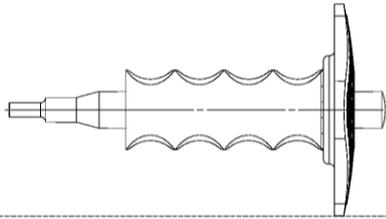
Setting & drilling tools

Setting tools

Marking

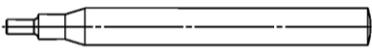
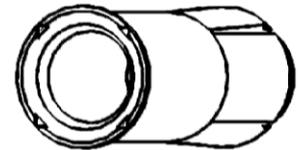
Description

Marking on EA II
with rim and rimless



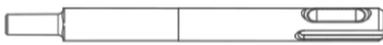
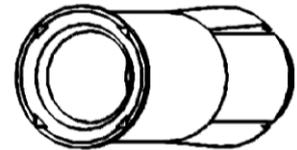
EHS Plus
M..x h_{ef}

Manual setting
tool with hand
guard



EHS
M..x h_{ef}

Manual setting
tool basic
format

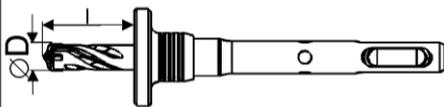


EMS
M..x h_{ef}

Machine
setting tool
with SDS Plus

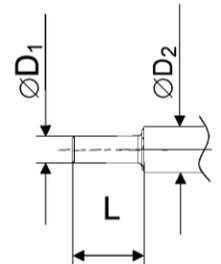
No marking

Drilling tools



EBB
∅D x l

Stop drill



Or other usual drillers

Table B3: Parameters of setting tools

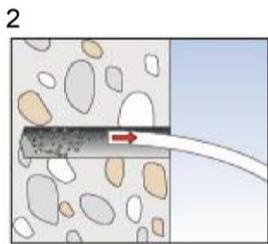
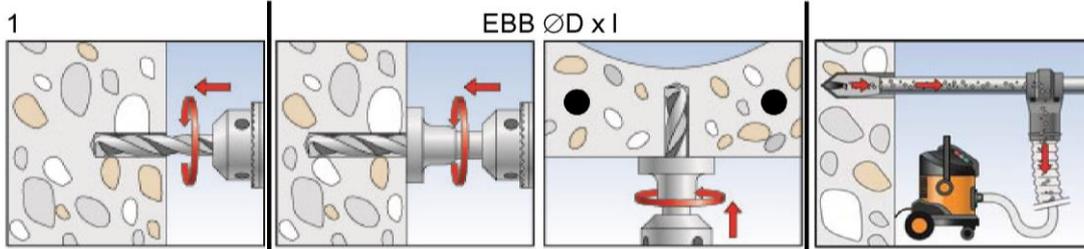
Manual setting tool	Machine setting tool	Stop drill	For anchor size	∅ D ₁	∅ D ₂	L
EHS M6x25/30	EMS M6x25/30	EBB 8x25 EBB 8x30	EA II M6x25 EA II M6x30	4,8	9,0	17,0
EHS M8x25/30	EMS M8x25/30	EBB 10x25 EBB 10x30	EA II M8x25 EA II M8x30	6,4	11,0	18,0
EHS M8x40	EMS M8x40	EBB 10x40	EA II M8x40			28,0
EHS M10x25/30	EMS M10x25/30	EBB 12x25 EBB 12x30	EA II M10x25 EA II M10x30	7,9	13,0	18,0
EHS M10x40	EMS M10x40	EBB 12x40	EA II M10x40			24,0
EHS M12x25	EMS M12x25	EBB 15x25	EA II M12x25	10,2	16,5	15,2
EHS M12x50	EMS M12x50	EBB 15x50	EA II M12x50	10,2	16,5	30,0
EHS M12x50	EMS M12x50	EBB 16x50	EA II M12x50 D			

fischer drop-in anchor EA II

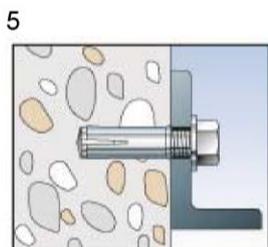
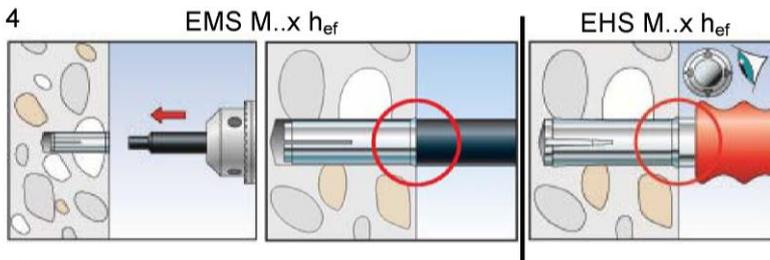
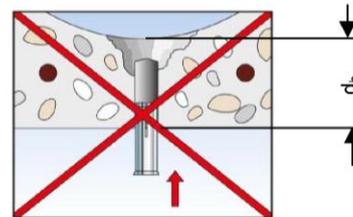
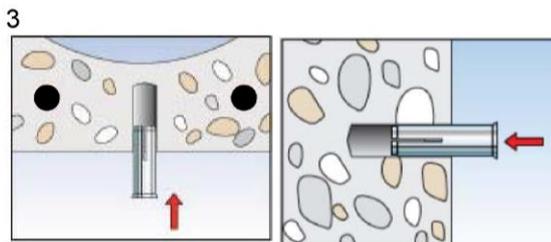
Intended Use
Setting & Drilling tools

Annex B 4

Installation instructions



Fixing is not allowed for
 $h_{ef} = 25 \text{ mm}$ and $d_b < 35 \text{ mm}$
when a cavity is cut!



No.	Description
1	Create drill hole with hammer drill or with hollow drill and vacuum cleaner
2	Clean from drill-dust
3	Set anchor till anchor is flush with surface of concrete
4	Expand the sleeve by driving the pin into the sleeve and control the correct setting
5	Fixation of fixture with max. T_{inst}

fischer drop-in anchor EA II

Intended Use
Installation instructions

Annex B 5

Table C1: Characteristic values due to design method B according to ETAG 001, Annex C or design method B according to CEN/TS 1992-4

Anchor size	Property class screw / rod	M6		M8			M10			M12/ M12D		
		25	30	25	30	40	25	30	40	25	50	
Effective anchorage depth	h_{ef} [mm]											
All load directions												
Characteristic resistance C12/15	F_{RK}^0 ¹⁾ [kN]	\geq A4-50	-	2	-	3	-	3	5	-	6	
		\geq 4.6	1,5		2			3		3		
Characteristic resistance C20/25 to C50/60	F_{RK}^0 ¹⁾ [kN]	\geq A4-50	-	3	-	5	-	5	7,5	-	9	
		\geq 4.6	2		3			4		4		
Installation safety factor	$\gamma_2 = \gamma_{inst}$		1,0	1,2	1,0	1,2	1,0	1,2		1,0		
Characteristic spacing	s_{cr} [mm]		75	90	75	90	120	75	90	200	75	300
Characteristic edge distance	c_{cr} [mm]		38	45	38	45	60	38	45	100	38	150
Steel failure with lever arm												
Characteristic resistance	$M_{RK,s}^0$ [Nm]	A4-50	-	8	-	19	-	37	-	66		
Partial safety factor	γ_{Ms}		2,38									
Characteristic resistance	$M_{RK,s}^0$ [Nm]	A4-70	-	11	-	26	-	52	-	92		
Partial safety factor	γ_{Ms}		1,56									
Characteristic resistance	$M_{RK,s}^0$ [Nm]	A4-80	-	12	-	30	-	60	-	105		
Partial safety factor	γ_{Ms}		1,33									
Characteristic resistance	$M_{RK,s}^0$ [Nm]	4.6	6,1		15		30		52			
Partial safety factor	γ_{Ms}		1,67									
Characteristic resistance	$M_{RK,s}^0$ [Nm]	5.6	7,6		19		37		66			
Partial safety factor	γ_{Ms}		1,67									
Characteristic resistance	$M_{RK,s}^0$ [Nm]	5.8	7,6		19		37		66			
Partial safety factor	γ_{Ms}		1,25									
Characteristic resistance	$M_{RK,s}^0$ [Nm]	8.8	12		30		60		105			
Partial safety factor	γ_{Ms}		1,25									

¹⁾ The anchor is to be used only for multiple use for non-structural applications, the definition of multiple use according to the Member States is given in the informative Annex 1 of ETAG 001 Part 6 (see: www.eota.eu).

fischer drop-in anchor EA II

Annex C 1

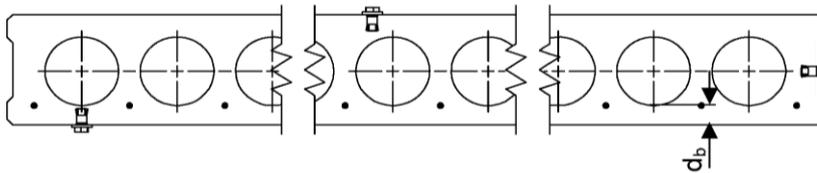
Performances

Characteristic values for tension loads in concrete according to design method B

Table C2: Characteristic values for $h_{ef} = 25$ mm in precast pre-stressed hollow concrete slabs according to design method C with C30/37 to C50/60

Anchor size	Property class screw / rod	M6	M8	M10	M12
Effective anchorage depth h_{ef} [mm]		25			
All Load directions		galvanised steel; with rim			
Flange thickness d_b [mm]		≥ 35 (or $30^{2)}$)			
Characteristic resistance C30/37 to C50/60 $F_{RK}^{1)}$ [kN]		2	3	4	
Installation safety factor γ_2		1,0			
Characteristic spacing $s_{cr} = s_{min}$ [mm]		200			
Characteristic edge distance $c_{cr} = c_{min}$ [mm]		150			
Steel failure with lever arm					
Characteristic resistance $M_{RK,s}^0$ [Nm]	4.6	6,1	15	30	52
Partial safety factor γ_{Ms}		1,67			
Characteristic resistance $M_{RK,s}^0$ [Nm]	5.6	7,6	19	37	66
Partial safety factor γ_{Ms}		1,67			
Characteristic resistance $M_{RK,s}^0$ [Nm]	5.8	7,6	19	37	66
Partial safety factor γ_{Ms}		1,25			
Characteristic resistance $M_{RK,s}^0$ [Nm]	8.8	12	30	60	105
Partial safety factor γ_{Ms}		1,25			

- 1) The anchor is to be used only for multiple use for non-structural applications, the definition of multiple use according to the Member States is given in the informative Annex 1 of ETAG 001 Part 6 (see: www.eota.eu).
- 2) The anchor may be used in a flange thickness of 30 mm with the same characteristic resistance, but the drill hole is not allowed to cut a cavity (see Annex B5 Point 3). The use of the fischer stop drill EBB is recommended.



fischer drop-in anchor EA II

Annex C 2

Performances
Characteristic values for tension loads in hollow core slabs according to design method C

Table C3: Characteristic resistance under fire exposure³⁾ in concrete C20/25 to C50/60 according to EOTA TR 20 or CEN/TS 1992-4, Annex D

fire resistance class	EA II	property class	M6x25		M6x30		M8x25		M8x30		M8x40		M10x25		M10x30		M10x40		M12x25		M12x50/ M12x50D			
			All load directions																					
R 30	Characteristic resistance $F_{Rk,fi}^0$ [kN] C20/25 to C50/60	steel ≥ 4.6 or $\geq A4-50^{2)}$	0,5	0,6		0,9		1,3		0,6		0,9		1,8		0,6		2,3						
R 60			0,5		0,6		0,9		0,6		0,9		1,5		0,6		2,0							
R 90			0,4		0,6		0,6		0,9		0,6		0,9		0,5		1,3							
R 120			0,3		0,5		0,6		0,6		0,6		0,5		1,3									
R 30 – R 120	Characteristic spacing $s_{cr,fi}$ [mm]		100	120	100	120	160	100	120	160	100	120	160	100										
	Characteristic edge distance $c_{cr,fi}$ [mm]		50	115	50	140	140	50	140	160	50	140	160	50										

¹⁾ In absence of other national regulations, a partial safety factor for the resistance of $\gamma_{m,fi} = 1,0$ under fire stress is recommended.

²⁾ Not for M..x25

³⁾ Not valid for precast pre-stressed hollow core slabs.

fischer drop-in anchor EA II

Performances
Characteristic loads for fire resistances

Annex C 3