Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment ETA-21/0330 of 5 May 2022

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 saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12
Product family to which the construction product belongs	Products for installation systems for supporting technical building equipment
Manufacturer	fischerwerke GmbH & Co. KG Klaus-Fischer-Straße 1 72178 Waldachtal DEUTSCHLAND
Manufacturing plant	fischer manufacturing plants
This European Technical Assessment contains	17 pages including 12 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 280016-00-0602

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Specific Part

1 Technical description of the product

Object of this European Technical Assessment are the fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12**.**

The fischer saddle nuts FCN Clix M 10 and FCN Clix M 12 each consist of a sliding nut, a steel plate and a plastic cage.

The fischer saddle nuts FCN Clix P 10 and FCN Clix P 12 each consist of a sliding nut and a plastic cage.

Annex A describes the dimensions and materials of the saddle nuts.

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

The performance given in Section 3 can only be assumed if the fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12 are used in compliance with the specifications and under boundary conditions set out in Annex B.

The test and assessment methods on which this European Technical Assessment is based lead to an assumption of a working life of the fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12 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.

In accordance with the European Assessment Document EAD 280016-00-0602, the product is intended to be used in dry indoor conditions for supporting:

- pipes for the transport of water not intended for human consumption,
- pipes for the transport of gas/fuel intended for the supply of building heating/cooling systems,
- technical building equipment in general,
- components of fixed fire-fighting systems.

The product is intended to be used where failure or excessive deformation of the installation systems would

- compromise safety in case of fire (BWR 2) or
- would lead to an unacceptable risk of accidents or damage in service or in operation (BWR 4).

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire: - Steel - Plastic parts	 Class A1 not relevant for fire growth based on TR021 and therefore do not need to be classified
Pull-out resistance with $\varepsilon_{B,\theta a} \leq 2\ \%$ under fire exposure	see Annex D1
Pull-out resistance with $\varepsilon_{B,\theta a} > 2\ \%$ under fire exposure	No performance assessed

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic pull-out resistance	see Annex C1

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 280016-00-0602 the applicable European legal act is:

For products for installation systems intended to be used for supporting pipes for the transport of water not intended for human consumption the applicable European legal act is Commission Decision 1999/472/EC, as amended by Commission Decision 2001/596/EC.

The system to be applied is 4. This includes uses that are subject to regulations on reaction to fire performance because the performance of the product is class A1 without the need to be tested for reaction to fire.

For products for installation systems intended to be used for supporting pipes for the transport of gas/fuel intended for the supply of building heating/cooling systems the applicable European legal act is Commission Decision 1999/472/EC, as amended by Commission Decision 2001/596/EC.

The system to be applied is 3.

For products for installation systems intended to be used for supporting technical building equipment in general the applicable European legal act is Commission Decision 97/161/EC.

The system to be applied is 2+.

For products for installation systems intended to be used for supporting components of fixed fire-fighting systems the applicable European legal act is Commission Decision 96/577/EC, as amended by Commission Decision 2002/592/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 Earopean 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 5 May 2022 by Deutsches Institut für Bautechnik

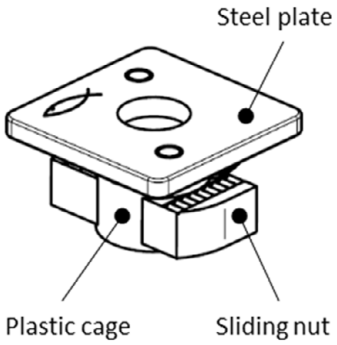
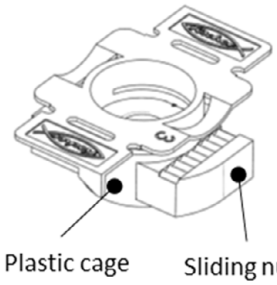
Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Stiller

Deutsches Institut für Bautechnik DIBt

Shape and materials of saddle nuts FCN Clix P and FCN Clix M

Table A 1.1: Shape and materials of the saddle nut FCN Clix M 10 / 12 and FCN Clix P 10 / 12

Shape	Designation	Thread	Material
	FCN Clix M 10	M10	Steel plate: Steel S235JR according to EN 10025-2:2019, material No.: 1.0038, galvanised Saddle nut: Steel S235JR according to EN 10025-2:2019, material No.: 1.0037, galvanised Plastic cage: Polyamide, Nylon 1013B
	FCN Clix M 12	M12	
	FCN Clix P 10	M10	Saddle nut: Steel S235JR according to EN 10025-2:2019, material No.: 1.0037, galvanised Plastic cage: Polyamide, Nylon 1013B
	FCN Clix P 12	M12	

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Dimensions of saddle nut FCN Clix M

Table A 2.1 Dimensions of the FCN Clix M 10 parts

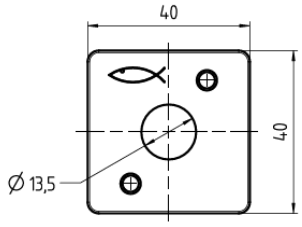
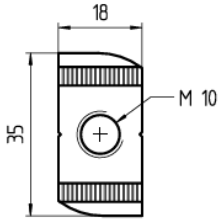
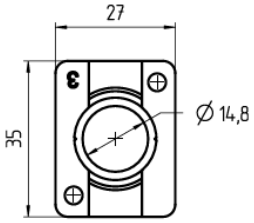
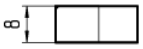
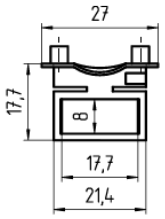
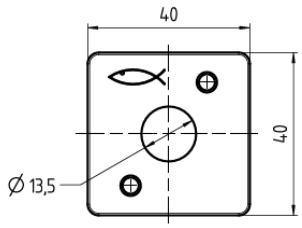
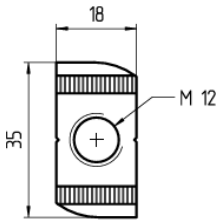
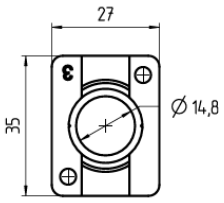
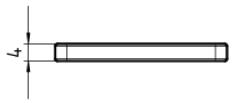
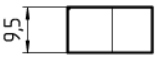
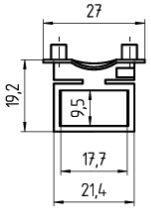
Steel plate [mm]	Saddle nut [mm]	Plastic cage [mm]
		
		

Table A 2.2: Dimensions of the FCN Clix M 12 parts

Steel plate [mm]	Saddle nut [mm]	Plastic cage [mm]
		
		

fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12

Product description
Dimensions

Annex A2

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Dimensions of saddle nut FCN Clix P

Table A 3.1 Dimensions of the FCN Clix P 10 parts

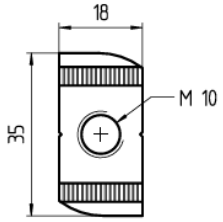
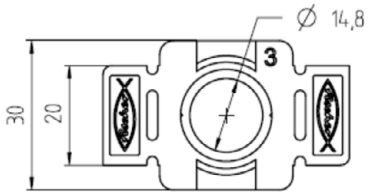
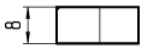
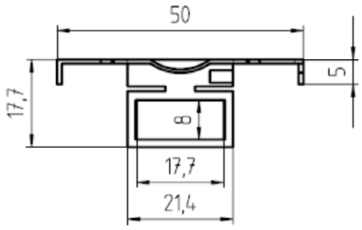
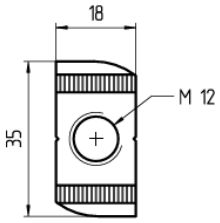
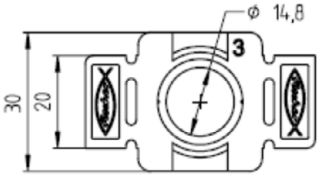
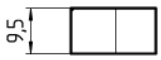
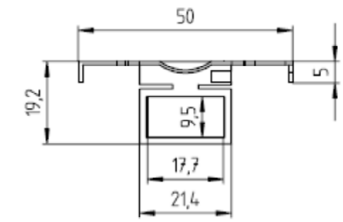
Saddle nut [mm]	Plastic cage [mm]
	
	

Table A 3.2: Dimensions of the FCN Clix P 12 parts

Saddle nut [mm]	Plastic cage [mm]
	
	

fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12	**Annex A3**
Product description Dimensions	

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Requirements for performance assessment of saddle nuts FCN Clix M and FCN Clix P

- fischer saddle nut FCN Clix M 10 and FCN Clix M 12 as well as saddle nut FCN Clix P 10 and FCN Clix P 12 are used to transfer loads of components of technical building equipment such as pipes and equipment for sprinkler, water, heating, cooling, ventilation, electrical and other installations into the fischer FUS channels.
- The performance of saddle nuts FCN Clix P and FCN Clix M results in conjunction with the parts shown in Annexes B3 to B10.
- fischer saddle nuts FCN Clix M 10 and FCN Clix M 12 are used for fixing threaded rods to fischer FUS channel system in conjunction with hexagon nuts.
- The performances of FCN Clix M 10 and FCN Clix M 12 are assessed in conjunction with
  - threaded rods of property class 4.8 or better acc. to Table B 4.1,
  - hexagon nuts of property class 8 or better acc. to Table B 5.1 and
  - channels acc. to Table B 6.1.
- The performances of FCN Clix P 10 and FCN Clix P 12 are assessed in conjunction with
  - threaded rods of property class 4.8 or better acc. to Table B 4.1,
  - hexagon nuts of property class 8 or better acc. to Table B 5.1,
  - channels acc. to Table B 6.1 and
  - drilled plates acc. to Table B 7.1.
- Inclinations of the channel of more than 0° to the horizontal are not permitted.
- The data for resistance at ambient temperature and under fire exposure apply to static and centric tension loading.
- Resistance and deformation values under fire exposure are assessed based on the standard temperature/time curve (STTC) acc. to EN 1363-1:2020.
- Prior to installation, it must be ensured that the supported components, the threaded rods, the anchoring to the base material and the base material itself are suitable to withstand the resistance values of the saddle nuts as well as the installation system and that they have a fire proof certificate.
- When mounting the saddle nut FCN Clix P or FCN Clix M to attachments, the general manufacturer's mounting instructions for attachments and fasteners must be observed. The installation instructions for saddle nut FCN Clix M and FCN Clix P is shown in Annex B2 and Annex B3.

fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12	**Annex B1**
Intended Use Requirements for performance assessment	

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Installation instructions for saddle nut FCN Clix M

Figure B 2.1 – Installation instructions saddle nut FCN Clix M

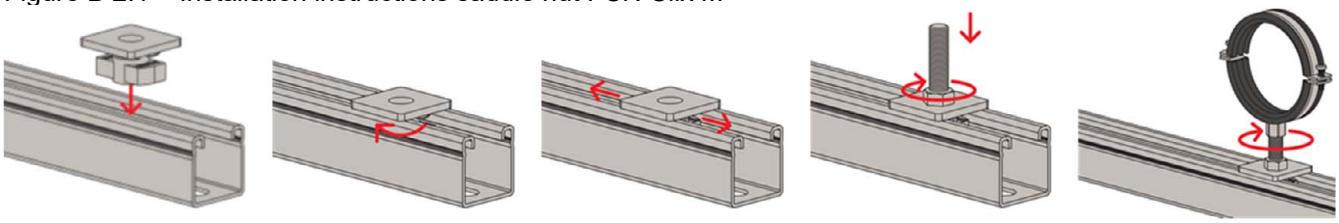

Table B 2.1 shows the installation torques $T_{inst.}$ for the installation of the saddle nut FCN Clix M in combination with a threaded rod of property class 4.8 or higher with the FUS channel system depending on the thread size.

Table B 2.1 - Installation torques $T_{inst.}$ for installing the saddle nut FCN Clix M

Thread	Hexagon nut	Installation torque $T_{inst.}$ for property class ≥ 4.8
M10	acc. to EN ISO 4032:2012 or DIN 934-1987	15 Nm
M12	acc. to EN ISO 4032:2012 or DIN 934-1987	20 Nm

fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12	**Annex B2**
Intended Use Installation instructions for saddle nut FCN Clix M	

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Installation instructions for saddle nut FCN Clix P

Figure B 3.1 – Installation instructions saddle nut FCN Clix P

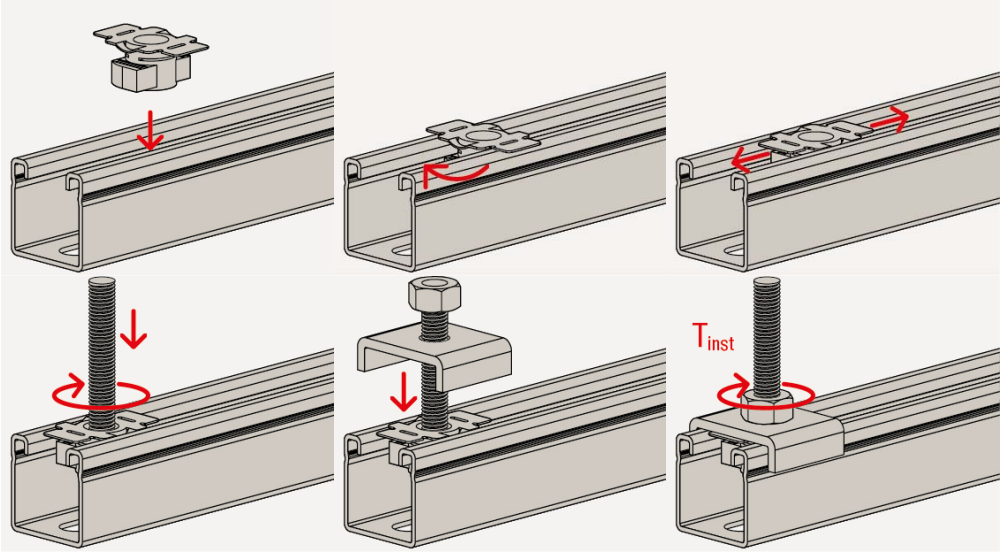

Table B 2.2 shows the installation torques $T_{inst.}$ for the installation of the saddle nut FCN Clix P in combination with the drilled plate HK 41 and a threaded rod of property class 4.8 or higher with the FUS channel system depending on the thread size.

Table B 3.1 - Installation torques T_{inst} for installing the saddle nut FCN Clix P

Thread	Hexagonal nut	Installation torque $T_{inst.}$ for property class ≥ 4.8
M10	acc. to EN ISO 4032:2012 or DIN 934:1987	15 Nm
M12	acc. to EN ISO 4032:2012 or DIN 934:1987	20 Nm

fischer saddle nut FCN Clix M 10, FCN Clix M 12, FCN Clix P 10 and FCN Clix P 12	**Annex B3**
Intended Use Installation instructions for saddle nut FCN Clix P	

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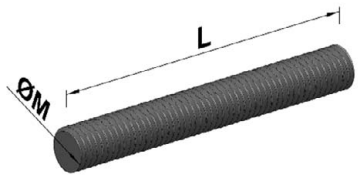
Components necessary for an assembly corresponding to figures B 2.1 and B 3.1

Table B 4.1: Threaded rod dimensions and materials for use with saddle nuts FCN Clix M and FCN Clix P

Shape	Designation	Thread	L [mm] [1)]	Material
	G M10 x 1.000	M10	1.000	DIN 976:2016, property class 4.8 or better acc. to EN ISO 898-1:2013, zinc coated
	G M10 x 2.000	M10	2.000	
	G M10 x 3.000	M10	3.000	
	G M12 x 1.000	M12	1.000	
	G M12 x 2.000	M12	2.000	
	G M12 x 3.000	M12	3.000	

[1)] The lengths of the threaded rods shown in Table B 4.1 serve as an example.

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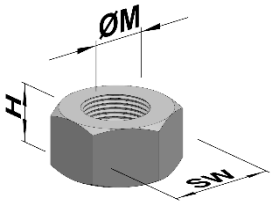
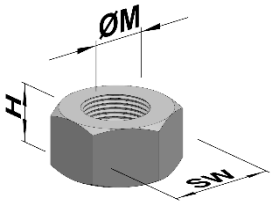
Components necessary for an assembly corresponding to figures B 2.1 and B 3.1

Table B 5.1: Dimensions and materials of hexagonal nuts for use with saddle nuts FCN Clix M and FCN Clix P

Shape	Designation	Thread M	Hexagonal nut [mm]	H [mm]	Materials
	MU M10 Hexagonal nut	M10	acc. to EN ISO 4032:2012 or DIN 934:1987	8	Property class 8 or higher acc. to EN ISO 898-2:2012, zinc coated
	MU M12 Hexagonal nut	M12	acc. to EN ISO 4032:2012 or DIN 934:1987	10	Property class 8 or higher acc. to EN ISO 898-2:2012, zinc coated

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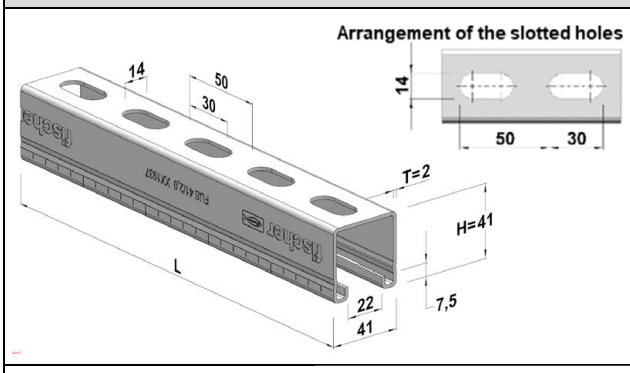
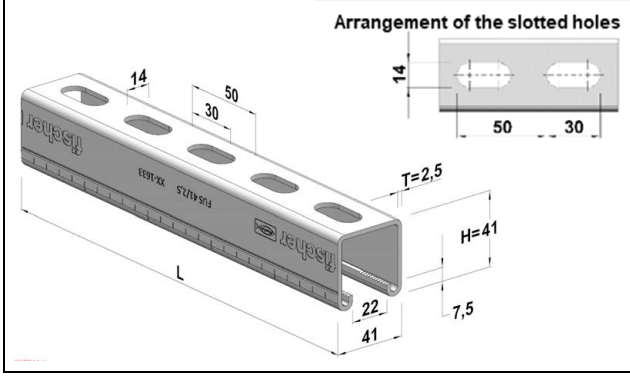
Components necessary for an assembly corresponding to figures B 2.1 and B 3.1

Table B 6.1: Shape, dimensions and materials of channel FUS 41

Shape [mm]	Designation[1)]	Length L [m]	Material
	FUS 41/2,0	0,05 to 6,00	S250GD+Z275-M-A-C acc. to EN 10346:2015
	FUS 41/2,5		

Legend of the variables in the figures: H = Channel height, T = Material thickness of the channel, L = Length of the channel

[1)] The designation of the channel refers to the height H and the material thickness T of the channel. Example: The channel FUS 41/2,0 has a height H = 41 mm and a material thickness T = 2,0 mm.

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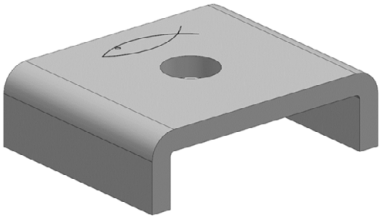
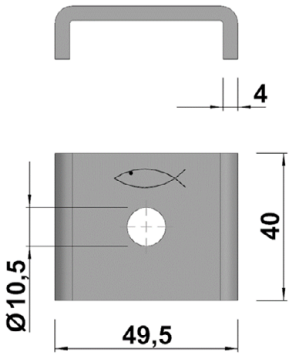
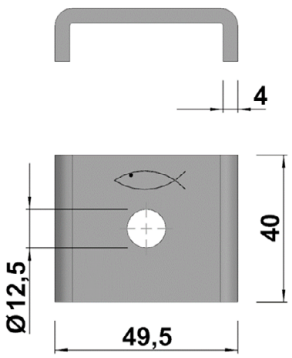
Components necessary for an assembly corresponding to figures B 3.1

The saddle nut FCN Clix P can only be used in combination with drilled plate HK 41.

Table B 7.1: Shape, dimensions and materials of the drilled plate HK 41

Shape	Dimension [mm]	Designation	Materials
		HK 41 10,5	Steel, S235JR acc. to EN 10025-2:2019, material No. 1.0037 Surface acc. to EN ISO 4042:2018-A2K
		HK 41 12,5	

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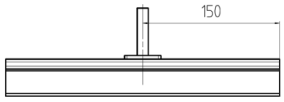
Characteristic pull-out resistance of saddle nuts FCN Clix P and FCN Clix M

Table C 1.1 shows the characteristic pull-out resistance F_{Rk} of the saddle nuts FCN Clix P and FCN Clix M

Table C 1.1: Characteristic pull-out resistance

Saddle nut	FUS-Channel	Characteristic pull-out resistance Saddle nut pull out test in channel center		Characteristic pull-out resistance Saddle nut pull out test at channel end	
					
		F_{RK} [kN]	γ_M [1)]	F_{RK} [kN]	γ_M [1)]
FCN Clix M 10	FUS 41 / 2,0	- [2)]	- [2)]	- [2)]	- [2)]
	FUS 41 / 2,5	14,0	1,10	9,6	1,27
FCN Clix M 12	FUS 41 / 2,0	- [2)]	- [2)]	- [2)]	- [2)]
	FUS 41 / 2,5	14,1	1,10	9,9	1,45
FCN Clix P 10 [3)]	FUS 41 / 2,0	13,9	1,23	7,7	1,25
	FUS 41 / 2,5	15,2	1,14	12,6	1,43
FCN Clix P 12 [4)]	FUS 41 / 2,0	15,0	1,44	8,3	1,16
	FUS 41 / 2,5	15,6	1,15	15,8	1,10

[1)] Partial safety factor in absence of other national regulations
[2)] No performance assessed
[3)] Values are only valid in combination with the HK 10,5 drilled plate
[4)] Values are only valid in combination with the HK 12,5 drilled plate

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Pull-out resistance of saddle nuts FCN Clix M and FCN Clix P under fire exposure

Table D 1.1: Pull-out resistance with $\varepsilon_{B,\theta a} \leq 2\ \%$ under fire exposure, coefficients c_1, c_2 and c_3 of regression curve $F_{Rk(t)} = c_3 (c_1 + c_2 / t)$

Saddle nut	channel	Regression coefficients			Limits for $F_{Rk(t)}$	
		c_1 [N]	c_2 [N·min]	c_3 [-]	t_{min} [min]	t_{max} [min]
FCN Clix M 12	FUS 41/2,5	233,24	37579,70	0,78	24	135
FCN Clix P 10 [1)]		656,85	44601,95	0,82	13	122

[1)] Values are only valid in combination with the drilled plate HK 10,5.

Based on the coefficients given in Table D 1.1, the Pull-out resistance under fire exposure $F_{Rk(30)}$, $F_{Rk(60)}$, $F_{Rk(90)}$, $F_{Rk(120)}$ are calculated in Table D 1.2 for the discrete time points t = [30, 60, 90, 120] min.

Table D 1.2: Pull-out resistance $F_{Rk(t)}$ with $\varepsilon_{B,\theta a} \leq 2\ \%$ under fire exposure of the saddle nuts FCN Clix P and FCN Clix M

Saddle nut	channel	Pull through resistance $F_{Rk(t)}$			
		$F_{Rk(30)}$ [N]	$F_{Rk(60)}$ [N]	$F_{Rk(90)}$ [N]	$F_{Rk(120)}$ [N]
FCN Clix M 12	FUS 41/2,5	1151	666	504	423
FCN Clix P 10 [1)]		1761	1150	947	845

[1)] Values are only valid in combination with the HK 10,5 drilled plate.

The equation for calculating the pull-through resistances at each time point in the range of the defined time interval is given in formula Eq. D 1.1

$$F_{Rk(t)} = c_3(c_1 + c_2/t) \qquad \text{Eq. D 1.1}$$