

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

ETA-21/0253
of 16 February 2022

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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

fischer FRS M8/M10 pipe clamp

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

12 pages including 7 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 is the fischer FRS M8/M10 pipe clamp.

The pipe clamp fischer FRS M8/M10 consist of two profiled steel strips, which are designed to be able to surround a pipe circularly. The clamping strips are connected together by two steel screws and are pressed onto the outside of the pipe to be fastened by tightening the screws. Each pipe clamp has a designated clamping range. The top clamping strip features a welded connection head with M8/M10 combi-thread. The clamping strips are fitted with an SBR/EDPM profile on the inside to aid structure-borne sound insulation, to balance unevenness and to prevent contact corrosion.

Annex A describes the dimensions and materials of the fischer FRS M8/M10 pipe clamp.

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 FRS M8/M10 pipe clamp 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 FRS M8/M10 pipe clamp 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 fischer FRS M8/M10 pipe clamp is intended to be used under 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: <ul style="list-style-type: none"> - Steel - Plastic parts | Class A1 not relevant for fire growth based on TR021 and therefore do not need to be classified |
| Resistance and deformation under fire exposure | see Annex D 1 |

3.2 Safety and accessibility in use (BWR 4)

| Essential characteristic | Performance |
|----------------------------|---------------|
| Characteristic resistance | see Annex C 1 |
| Serviceability limit state | see Annex C 2 |

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 European Assessment Document

The technical details necessary for the implementation of the system for the assessment and verification of constancy of performance are laid down in the control plan (confidential part of this European Technical Assessment) deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 16 February 2022 by Deutsches Institut für Bautechnik

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Head of Section

beglaubigt:
Stiller

Shape, dimensions and materials of FRS M8/M10 pipe clamp

Figure A 1.1 – Shape and dimensions of FRS M8/M10 pipe clamp

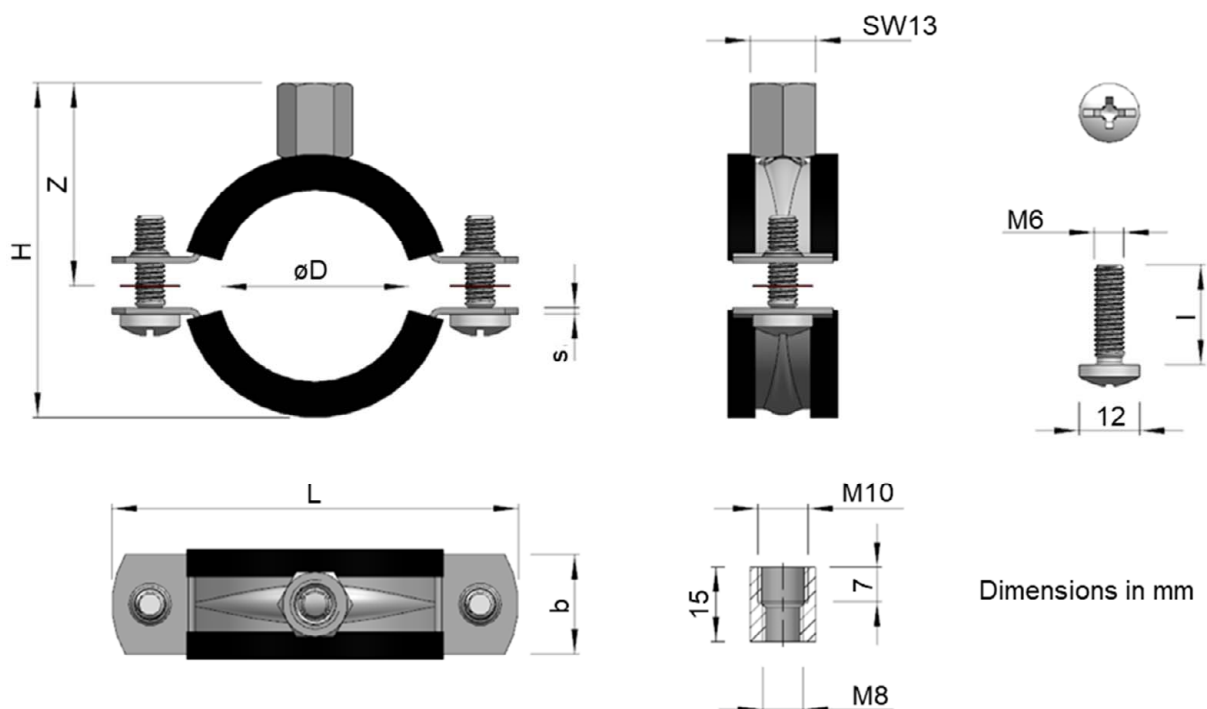


Table A 1.1: Materials of the FRS M8/M10 pipe clamp

| Pipe clamp components | Description |
|-----------------------|---|
| clamp strap | Steel, DC01 according to EN 10025-2, material number 1.0330, surface according to EN ISO 4042 -A2K |
| connecting nut | Steel, S235JR according to EN 10025-2, material number 1.0037, surface according to EN ISO 4042 -A2K |
| locking screw | Steel according to EN ISO 7045, material quality 4.8 or higher, surface according to EN ISO 4042 -A2K |
| Insulation inlay | SBR/EPDM |

fischer FRS M8/M10 pipe clamp

Product description
Shape, dimensions and materials

Annex A 1

Dimensions of FRS M8/M10 pipe clamp

The parameter of Table A 2.1 refers to Figure A 1.1

Table A 2.1: Dimensions of FRS M8/M10 pipe clamp

| Designation | Thread | Nominal size | D [mm] | L [mm] | H [mm] | b x S [mm] | Z [mm] | l [mm] |
|--------------------|--------|--------------|---------|--------|--------|------------|--------|--------|
| FRS 12-15 M8/M10 | M8/M10 | 1/4" | 12-15 | 55 | 39 | 20x1,25 | 29 | 20 |
| FRS 15-19 M8/M10 | | 3/8" | 15-19 | 59 | 43 | | 31 | |
| FRS 20-24 M8/M10 | | 1/2" | 20-24 | 65 | 48 | | 32 | |
| FRS 25-30 M8/M10 | | 3/4" | 25-30 | 72 | 54 | | 35 | |
| FRS 32-37 M8/M10 | | 1" | 32-37 | 77 | 61 | | 38 | 20 |
| FRS 40-45 M8/M10 | | 1 1/4" | 40-45 | 89 | 69 | | 42 | 16 |
| FRS 48-54 M8/M10 | | 1 1/2" | 48-54 | 99 | 78 | 46 | | |
| FRS 55-61 M8/M10 | | 2" | 55-61 | 105 | 85 | 50 | 20 | |
| FRS 63-67 M8/M10 | | - | 63-67 | 111 | 91 | 53 | 16 | |
| FRS 72-80 M8/M10 | | 2 1/2" | 72-80 | 125 | 104 | 20x2,0 | 60 | 20 |
| FRS 87-92 M8/M10 | | 3" | 87-92 | 137 | 116 | | 66 | 30 |
| FRS 95-103 M8/M10 | | - | 95-102 | 149 | 130 | 25x2,0 | 73 | |
| FRS 108-116 M8/M10 | | 4" | 108-116 | 164 | 140 | | 78 | |
| FRS 121-128 M8/M10 | | - | 121-128 | 176 | 152 | 25x2,5 | 84 | |
| FRS 133-141 M8/M10 | | 5" | 133-141 | 187 | 165 | | 90 | |
| FRS 159-165 M8/M10 | | - | 159-165 | 211 | 198 | | 102 | |
| FRS 165-168 M8/M10 | 6" | 165-168 | 225 | 205 | 110 | | | |

fischer FRS M8/M10 pipe clamp

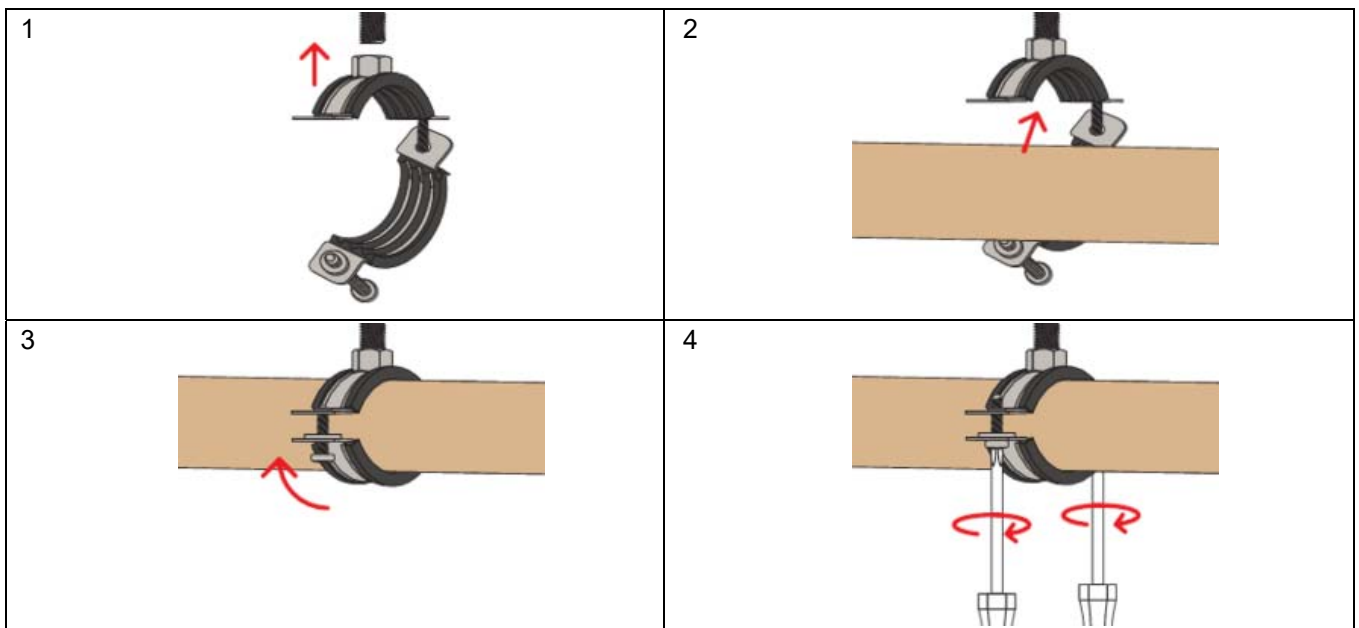
Product description
Dimensions

Annex A 2

Requirements for the performance assessment of FRS M8/M10 pipe clamp

- fischer FRS M8/M10 pipe clamps are used to transfer the loads of technical building equipment such as pipes and equipment for sprinkler, water, heating, cooling, ventilation, electrical and other installations via threaded rods into the sub structure. The load-bearing capacities specified for the fischer FRS M8/M10 pipe clamps apply to the conditions described in Section 2 of this European Technical Assessment.
- The performance data for the FRS M8/M10 pipe clamp results in conjunction with the threaded rods as per table B 2.1.
- The performance data of FRS M8/M10 pipe clamp is assessed in conjunction with the threaded rods of property class 4.8 or better acc. to table B 2.1.
- The data for resistance at ambient temperature and in case of fire 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 pipe to be inserted, the anchoring of the threaded rods to the base material and the base material itself are suitable to withstand the resistance values of the pipe clamps and that they have a fire proof certificate.
- When attaching the FRS M8/M10 pipe clamp to the load-bearing components, the manufacturer's general installation instructions for attachments and fasteners as shown in Figure B 1.1 must be observed.

Figure B 1.1 - General installation instructions for FRS M8/M10 pipe clamp



fischer FRS M8/M10 pipe clamp

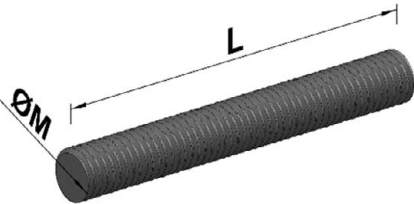
Requirements for the performance calculation

Annex B 1

Components necessary to connect FRS M8/M10 pipe clamp with load-bearing parts

FRS M8/M10 pipe clamp is fastened to the load-bearing components by means of the threaded rods shown in Table B 2.1. The listed items in Table B 2.1 are examples of threaded rods for fastening the pipe clamp to the load-bearing components. In general, M10 threaded rods with a property class of 4.8 or higher can be used for fastening the pipe clamp to the load-bearing components.

Table B 2.1: Threaded rods for use with FRS M8/M10 pipe clamp

| Shape | Designation | Thread | L [mm] | Material |
|---|--------------------------|--------|----------------------|--|
|  | G 8 G 8/2 | M8 | 1000 2000 | DIN 976:2016, property class 4.8 or better acc. to EN ISO 898-1:1999, galvanised |
| | G 10 G 10/2 G 10/3 | M10 | 1000 2000 3000 | |

fischer FRS M8/M10 pipe clamp

Requirements for the performance calculation

Annex B 2

Table C 1.1: Characteristic resistance of FRS M8/M10 pipe clamp under tension load

| Subgroup | Designation | Steel band width x thickness [mm] | Characteristic resistance F_{RK} [kN] | Partial factor $\gamma_M^{1)}$ [-] |
|------------------|--------------------|-----------------------------------|---|------------------------------------|
| 1 | FRS 12-15 M8/M10 | 20 x 1,25 | 3,81 | 1,38 |
| | FRS 15-19 M8/M10 | | | |
| | FRS 20-24 M8/M10 | | | |
| | FRS 25-30 M8/M10 | | | |
| | FRS 32-37 M8/M10 | | | |
| | FRS 40-45 M8/M10 | | | |
| | FRS 48-54 M8/M10 | | | |
| | FRS 55-61 M8/M10 | | | |
| FRS 63-67 M8/M10 | | | | |
| 2 | FRS 72-80 M8/M10 | 20 x 2,0 | 1,87 | 1,27 |
| | FRS 87-92 M8/M10 | | | |
| 3 | FRS 95-103 M8/M10 | 25 x 2,0 | 2,32 | 1,26 |
| | FRS 108-116 M8/M10 | | | |
| 4 | FRS 121-128 M8/M10 | 25 x 2,5 | 2,40 | 1,25 |
| | FRS 133-141 M8/M10 | | | |
| | FRS 159-165 M8/M10 | | | |
| | FRS 165-168 M8/M10 | | | |

¹⁾ In absence of other national regulations

fischer FRS M8/M10 pipe clamp

Performances
Characteristic resistance at ambient temperature

Annex C 1

Serviceability limit state capacity

F_{SLS} was determined at a defamation of:

1,5 mm or

2 % of the largest diameter.

The larger of these two values was used to determine F_{SLS}.

Table C 2.1: Serviceability limit state capacity of FRS M8/M10 pipe clamp

| Subgroup | Designation | Steel band width x thickness [mm] | Service load F _{SLS} ¹⁾ [kN] |
|------------------|--------------------|-----------------------------------|--|
| 1 | FRS 12-15 M8/M10 | 20 x 1,25 | 0,65 |
| | FRS 15-19 M8/M10 | | |
| | FRS 20-24 M8/M10 | | |
| | FRS 25-30 M8/M10 | | |
| | FRS 32-37 M8/M10 | | |
| | FRS 40-45 M8/M10 | | |
| | FRS 48-54 M8/M10 | | |
| | FRS 55-61 M8/M10 | | |
| FRS 63-67 M8/M10 | | | |
| 2 | FRS 72-80 M8/M10 | 20 x 2,0 | 1,16 |
| | FRS 87-92 M8/M10 | | |
| 3 | FRS 95-103 M8/M10 | 25 x 2,0 | 1,80 |
| | FRS 108-116 M8/M10 | | |
| 4 | FRS 121-128 M8/M10 | 25 x 2,5 | 2,19 |
| | FRS 133-141 M8/M10 | | |
| | FRS 159-165 M8/M10 | | |
| | FRS 165-168 M8/M10 | | |

¹⁾ Preloads according to EAD 280016-00-0602, Annex C, Table C 1 are included in F_{SLS}

fischer FRS M8/M10 pipe clamp

Serviceability limit state and service load

Annex C 2

Resistance and deformation under fire exposure

Table D 1.1 shows the characteristic resistance $F_{Rk,30(\delta)}$ and $F_{Rk(t)}$ of FRS M8/M10 pipe clamp. $F_{Rk,30(\delta)}$ is the resistance after a fire exposure time of 30 minutes with the displacement δ .

$F_{Rk,30(\delta)}$ can be calculated at each deformation point in the range of the defined deformation interval using the formula acc. to Eq. D 1.1. The limits δ_{min} and δ_{max} for the permissible deformation interval of each subgroup for $F_{Rk,30(\delta)}$ are shown in Table D 1.1.

$$F_{Rk,30(\delta)} = a_3(a_1 * \delta^{a_2}) \quad \text{Eq. D 1.1}$$

$F_{Rk(t)}$ is the resistance after a fire exposure time of FRS M8/M10 pipe clamp of 30 min, 60 min, 90 min and 120 min. $F_{Rk(t)}$ can be calculated at each time point in the range of the defined time interval using the formula acc. to Eq. D 1.2. The limits t_{min} and t_{max} for the permissible time interval of each subgroup for $F_{Rk(t)}$ are shown in Table D 1.1.

$$F_{Rk(t)} = c_3(c_1 + c_2/t) \quad \text{Eq. D 1.2}$$

Table D 1.1: Resistances and deformations under fire exposure of FRS M8/M10 pipe clamp

| Pipe clamp | Regression coefficients | | $F_{Rk,30(\delta)}$ [N] | $F_{Rk(t)}$ [N] |
|--------------------|---|--|--|---|
| | $F_{Rk,30(\delta)} = a_3(a_1 * \delta^{a_2})$ | $F_{Rk(t)} = c_3(c_1 + c_2/t)$ | | |
| FRS 12-15 M8/M10 | $a_1 = 3,8786$ $a_2 = 1,323$ $a_3 = 0,7294$ $\delta_{min} = 14 \text{ mm}$ $\delta_{max} = 37 \text{ mm}$ | $c_1 = 129,2186$ $c_2 = 11456,2236$ $c_3 = 0,543099$ $t_{min} = 10\text{min}$ $t_{max} = 136\text{min}$ | $F_{Rk,30(15)} = 101,7$ $F_{Rk,30(20)} = 148,9$ $F_{Rk,30(25)} = 200,0$ $F_{Rk,30(30)} = 254,6$ $F_{Rk,30(35)} = 277,6$ | $F_{Rk(30)} = 277,6$ $F_{Rk(60)} = 173,9$ $F_{Rk(90)} = 139,3$ $F_{Rk(120)} = 122,0$ |
| FRS 15-19 M8/M10 | | | | |
| FRS 20-24 M8/M10 | | | | |
| FRS 25-30 M8/M10 | | | | |
| FRS 32-37 M8/M10 | | | | |
| FRS 40-45 M8/M10 | | | | |
| FRS 48-54 M8/M10 | | | | |
| FRS 55-61 M8/M10 | | | | |
| FRS 63-67 M8/M10 | | | | |
| FRS 72-80 M8/M10 | $a_1 = 28,128$ $a_2 = 0,8286$ $a_3 = 0,8179$ $\delta_{min} = 17 \text{ mm}$ $\delta_{max} = 51\text{mm}$ | $c_1 = 360,7386$ $c_2 = 8889,2746$ $c_3 = 0,70326$ $t_{min} = 8 \text{ min}$ $t_{max} = 135 \text{ min}$ | $F_{Rk,30(20)} = 275,3$ $F_{Rk,30(25)} = 331,2$ $F_{Rk,30(30)} = 385,2$ $F_{Rk,30(35)} = 437,7$ $F_{Rk,30(50)} = 462,1$ | $F_{Rk(30)} = 462,1$ $F_{Rk(60)} = 357,9$ $F_{Rk(90)} = 323,2$ $F_{Rk(120)} = 305,8$ |
| FRS 87-92 M8/M10 | | | | |
| FRS 95-103 M8/M10 | $a_1 = 16,1155$ $a_2 = 0,8827$ $a_3 = 0,6529$ $\delta_{min} = 25 \text{ mm}$ $\delta_{max} = 59 \text{ mm}$ | $c_1 = 231,2033$ $c_2 = 12825,7931$ $c_3 = 0,74445$ $t_{min} = 18 \text{ min}$ $t_{max} = 149 \text{ min}$ | $F_{Rk,30(30)} = 211,8$ $F_{Rk,30(35)} = 242,7$ $F_{Rk,30(40)} = 273,0$ $F_{Rk,30(45)} = 302,9$ $F_{Rk,30(50)} = 332,5$ $F_{Rk,30(55)} = 361,6$ | $F_{Rk(30)} = 490,4$ $F_{Rk(60)} = 331,3$ $F_{Rk(90)} = 278,2$ $F_{Rk(120)} = 251,7$ |
| FRS 108-116 M8/M10 | | | | |
| FRS 121-128 M8/M10 | | | | |
| FRS 133-141 M8/M10 | | | | |
| FRS 159-165 M8/M10 | $a_1 = 54,7511$ $a_2 = 0,6267$ $a_3 = 0,6827$ $\delta_{min} = 16 \text{ mm}$ $\delta_{max} = 58 \text{ mm}$ | $c_1 = 249,969$ $c_2 = 14859,8196$ $c_3 = 0,741322$ $t_{min} = 13 \text{ min}$ $t_{max} = 147 \text{ min}$ | $F_{Rk,30(20)} = 244,3$ $F_{Rk,30(30)} = 315,0$ $F_{Rk,30(40)} = 377,2$ $F_{Rk,30(50)} = 433,8$ $F_{Rk,30(55)} = 460,5$ | $F_{Rk(30)} = 552,5$ $F_{Rk(60)} = 368,9$ $F_{Rk(90)} = 307,7$ $F_{Rk(120)} = 277,1$ |
| FRS 133-141 M8/M10 | | | | |
| FRS 159-165 M8/M10 | | | | |
| FRS 165-168 M8/M10 | | | | |

fischer FRS M8/M10 pipe clamp

Performances
Resistance and deformation under fire exposure

Annex D