



## IZJAVA O SVOJSTVIMA



DoP: 0090

za fischer RM II (sidro s vezivnim sredstvom za upotrebu u betonu) – HR

1. Jedinstveni identifikator tipa proizvoda: **DoP: 0090**
2. Namjena korištenja: **Naknadna instalacija u puknutom i nenapuknutom betonu, vidi dodatak, pogotovo priloge B 1 - B 7**
3. Proizvođač: **fischerwerke GmbH & Co. KG, Otto-Hahn-Straße 15, 79211 Denzlingen, Germany**
4. Ovlašteni zastupnik: --
5. Sistem/i od AVCP **1**
6. Europski dokument za ocjenjivanje: **ETAG 001; 2013-04**  
Europska tehnička ocjena: **ETA-16/0340; 2017-02-14**  
Tijelo za tehničko ocjenjivanje: **DIBt**  
Prijavljeno tijelo/prijavljena tijela: **1343 – MPA Darmstadt**
7. Objavljena svojstva:

### Mehanička otpornost i stabilnost (BWR 1), Sigurnost pri upotrebi (BWR 4)

- Karakteristične vrijednosti pod statičkim i kvazi-statičkim opterećenjem, Zamjena: Vidi dodatak, pogotovo priloge C 1 - C 6

### Sigurnost u slučaju požara (BWR 2)

- Reakcija na požar: Sidrišta zadovoljavaju zahtjeve za klasu A 1
- Otpornost na vatru: NPD

8. Odgovarajuća tehnička dokumentacija i/ili specifična tehnička dokumentacija: ---

Svojstva gore navedenog proizvoda su u skladu sa skupom izjava o svojstvima. Ova izjava o svojstvima se izdaje, u skladu sa Europskom regulativom (EU) Br. 305/2011, pod punom odgovornošću gore navedenog proizvođača.

Za proizvođača i u njegovo ime potpisao:

Andreas Bucher, Dipl.-Ing.

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

Tumlingen, 2017-02-21

- Ovaj DoP je pripremljen u različitim jezicima. U slučaju da postoji spor u tumačenju, engleska verzija će uvijek prevladati.
- U aneksu se nalaze dodatni podaci na engleskom jeziku, koji ne podliježu zakonskoj regulativi

## Specific part

### 1 Technical description of the product

The fischer RM II is a bonded anchor for use in concrete consisting of a capsule RM II and a steel element according to Annex A1.

The capsule RM II is placed in the hole and the steel element is driven by machine with simultaneous hammering and turning.

The anchor rod is anchored via the bond between steel element, chemical 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 values under static and quasi-static action, Displacements | See Annex C 1 to C 6 |

#### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance                                 |
|--------------------------|---------------------------------------------|
| Reaction to fire         | Anchorage satisfy requirements for Class A1 |
| Resistance to fire       | No performance assessed                     |

#### 3.3 Hygiene, health and the environment (BWR 3)

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

#### 3.4 Safety in use (BWR 4)

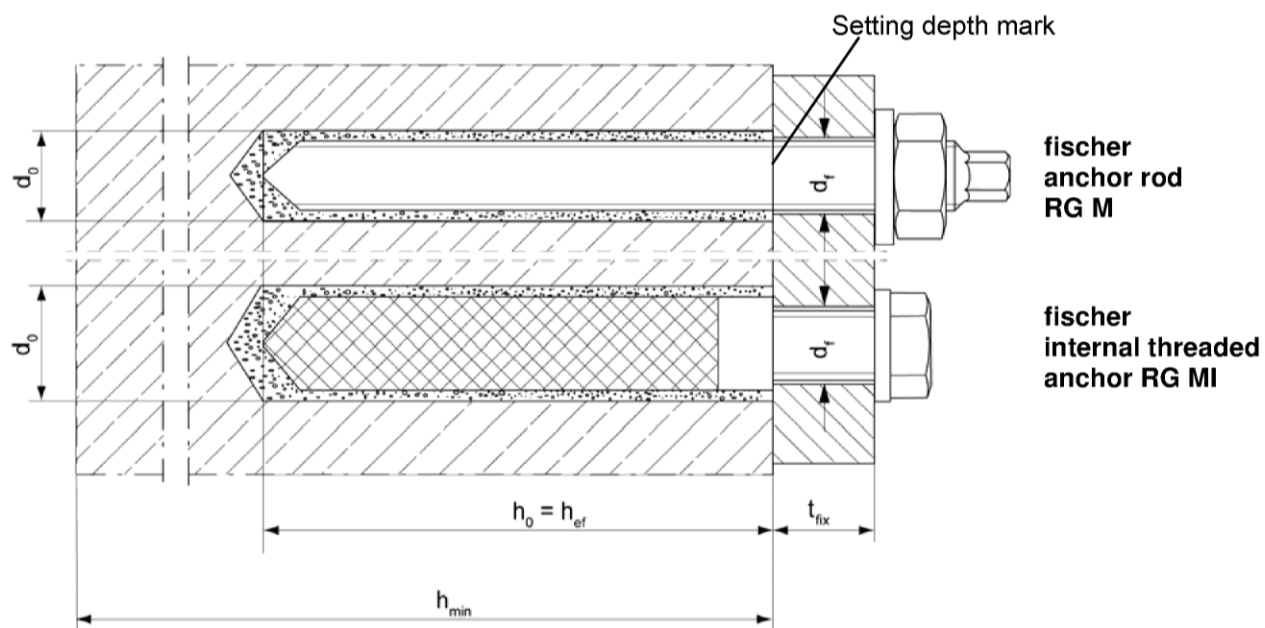
The essential characteristics regarding Safety in use are included under the Basic Works Requirement Mechanical resistance and stability.

**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, 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: [96/582/EC].

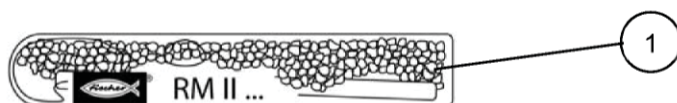
The system to be applied is: 1

## Installation conditions



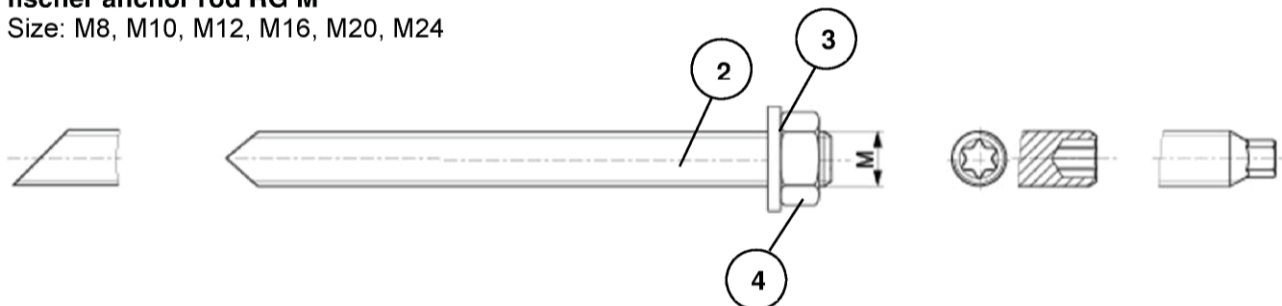
### Capsule RM II

Size: 8, 10, 12, 16, 16E, 20 / 22, 24



### fischer anchor rod RG M

Size: M8, M10, M12, M16, M20, M24



### fischer internal threaded anchor RG MI

Größe: M8, M10, M12, M16, M20



Descriptions of parts see Annex A 2

fischer RM II

#### Product description

Installation conditions

Capsule / anchor rod / internal threaded anchor

**Annex A 1**

**Table A1: Materials**

| Part                             | Designation                                                                                               | Material                                                                                                                                                                                                               |                                                                                                                                                                                           |                                                                                                                                                                                      |
|----------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                | Capsule RM II                                                                                             | Mortar, hardener, filler                                                                                                                                                                                               |                                                                                                                                                                                           |                                                                                                                                                                                      |
|                                  | Steel grade                                                                                               | Steel, zinc plated                                                                                                                                                                                                     | Stainless steel A4                                                                                                                                                                        | High corrosion resistant steel C                                                                                                                                                     |
| 2                                | Anchor rod                                                                                                | Property class 5.8 or 8.8;<br>EN ISO 898-1:2013<br>zinc plated $\geq 5 \mu\text{m}$ ,<br>EN ISO 4042:1999 A2K<br>or hot-dip galvanized $\geq 40 \mu\text{m}$<br>EN ISO 10684:2004<br>$f_{uk} \leq 1000 \text{ N/mm}^2$ | Property class 50, 70 or 80<br>EN ISO 3506-1:2009<br>1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>1.4062, 1.4662, 1.4462<br>EN 10088-1:2014<br>$f_{uk} \leq 1000 \text{ N/mm}^2$ | Property class 50 or 80<br>EN ISO 3506-1:2009<br>or property class 70 with<br>$f_{yk}= 560 \text{ N/mm}^2$<br>1.4565; 1.4529<br>EN 10088-1:2014<br>$f_{uk} \leq 1000 \text{ N/mm}^2$ |
|                                  |                                                                                                           | Fracture elongation $A_5 > 8 \%$ ,                                                                                                                                                                                     |                                                                                                                                                                                           |                                                                                                                                                                                      |
| 3                                | Washer<br>ISO 7089:2000                                                                                   | zinc plated $\geq 5 \mu\text{m}$ ,<br>EN ISO 4042:1999 A2K<br>or hot-dip galvanised $\geq 40 \mu\text{m}$<br>EN ISO 10684:2004                                                                                         | 1.4401; 1.4404;<br>1.4578;1.4571; 1.4439;<br>1.4362<br>EN 10088-1:2014                                                                                                                    | 1.4565;1.4529<br>EN 10088-1:2014                                                                                                                                                     |
| 4                                | Hexagon nut                                                                                               | Property class 5 or 8;<br>EN ISO 898-2:2012<br>zinc plated $\geq 5 \mu\text{m}$ ,<br>ISO 4042:1999 A2K<br>or hot-dip galvanised $\geq 40 \mu\text{m}$<br>EN ISO 10684:2004                                             | Property class 50, 70 or 80<br>EN ISO 3506-1:2009<br>1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362<br>EN 10088-1:2014                                                                 | Property class 50, 70 or 80<br>EN ISO 3506-1:2009<br>1.4565; 1.4529<br>EN 10088-1:2014                                                                                               |
| 5                                | fischer<br>internal threaded<br>anchor RG MI                                                              | Property class 5.8<br>ISO 898-1:2013<br>zinc plated $\geq 5 \mu\text{m}$ ,<br>ISO 4042:1999 A2K                                                                                                                        | Property class 70<br>EN ISO 3506-1:2009<br>1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362<br>EN 10088-1:2014                                                                           | Property class 70<br>EN ISO 3506-1:2009<br>1.4565; 1.4529<br>EN 10088-1:2014                                                                                                         |
| 6                                | Commercial standard<br>screw or anchor /<br>threaded rod for fischer<br>internal threaded<br>anchor RG MI | Property class 5.8 or 8.8;<br>EN ISO 898-1:2013<br>zinc plated $\geq 5 \mu\text{m}$ ,<br>ISO 4042:1999 A2K<br>fracture elongation<br>$A_5 > 8 \%$                                                                      | Property class 70<br>EN ISO 3506-1:2009<br>1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362<br>EN 10088-1:2014<br>fracture elongation<br>$A_5 > 8 \%$                                    | Property class 70<br>EN ISO 3506-1:2009<br>1.4565; 1.4529<br>EN 10088-1:2014<br>fracture elongation<br>$A_5 > 8 \%$                                                                  |
|                                  |                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                                                           |                                                                                                                                                                                      |
|                                  |                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                                                           |                                                                                                                                                                                      |
|                                  |                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                                                           |                                                                                                                                                                                      |
|                                  |                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                                                           |                                                                                                                                                                                      |
| fischer RM II                    |                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                                                           | Annex A 2                                                                                                                                                                            |
| Product description<br>Materials |                                                                                                           |                                                                                                                                                                                                                        |                                                                                                                                                                                           |                                                                                                                                                                                      |

**Specifications of intended use (part 1)****Table B1:** Overview use and performance categories

| Anchorages subject to                                                                              |                                                                                   | RM II with ...                                                                                    |                           |                                                                                     |                           |  |  |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|---------------------------|--|--|
|                                                                                                    |                                                                                   | fischer anchor rod<br>RG M                                                                        |                           | fischer internal threaded anchor<br>RG MI                                           |                           |  |  |
|                  |                                                                                   |                                                                                                   |                           |  |                           |  |  |
| Hammer drilling with<br>standard drill bit                                                         |  | all sizes                                                                                         |                           | all sizes                                                                           |                           |  |  |
| Hammer drilling<br>with hollow drill bit<br>(Heller "Duster Expert"<br>or Hilti "TE-CD,<br>TE-YD") |  | Nominal drill bit diameter<br>(d <sub>0</sub> ) 12 mm to 28 mm                                    |                           | all sizes                                                                           |                           |  |  |
| Static and quasi static<br>load, in                                                                | uncracked<br>concrete                                                             | all sizes                                                                                         | Tables:<br>C1, C3, C4, C6 | all sizes                                                                           | Tables:<br>C2, C3, C5, C7 |  |  |
|                                                                                                    | cracked concrete                                                                  | M10, M12, M16,<br>M20, M24                                                                        |                           |                                                                                     |                           |  |  |
| Use category                                                                                       | dry or wet concrete                                                               | all sizes                                                                                         |                           | all sizes                                                                           |                           |  |  |
|                                                                                                    | flooded hole                                                                      | M12, M16, M20,<br>M24                                                                             |                           | M8, M10, M16                                                                        |                           |  |  |
| Installation<br>temperature                                                                        |                                                                                   | -15 °C to +40 °C                                                                                  |                           |                                                                                     |                           |  |  |
| In-service<br>temperature                                                                          | Temperature range<br>I                                                            | -40 °C bis +40 °C (max. long term temperature +24 °C and<br>max. short term temperature +40 °C)   |                           |                                                                                     |                           |  |  |
|                                                                                                    | Temperature range<br>II                                                           | -40 °C bis +120 °C (max. long term temperature +72 °C and<br>max. short term temperature +120 °C) |                           |                                                                                     |                           |  |  |

fischer RM II

**Intended Use**  
 Specifications (part 1)
**Annex B 1**

## Specifications of intended use (part 2)

### Base materials:

- Reinforced or unreinforced normal weight concrete Strength classes C20/25 to C50/60 according to EN 206-1:2000

### Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc coated steel, stainless steel or high corrosion resistant 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 or high corrosion resistant steel)
- Structures subject to external atmospheric exposure, to permanently damp internal conditions or in other particular aggressive conditions (high corrosion resistant steel)

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

### Design:

- Anchorage has to be designed by a responsible engineer with experience of concrete anchor design
- Verifiable calculation notes and drawings are to be 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.)
- Anchorage under static or quasi-static actions are designed in accordance with EOTA Technical Report TR 029 "Design of bonded anchors" Edition September 2010 or CEN/TS 1992-4:2009

### Installation:

- Anchor installation has to be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
- In case of aborted hole: The hole shall be filled with mortar
- Anchorage depth should be marked and adhered to on installation
- Overhead installation is allowed

fischer RM II

**Intended Use**  
Specifications (part 2)

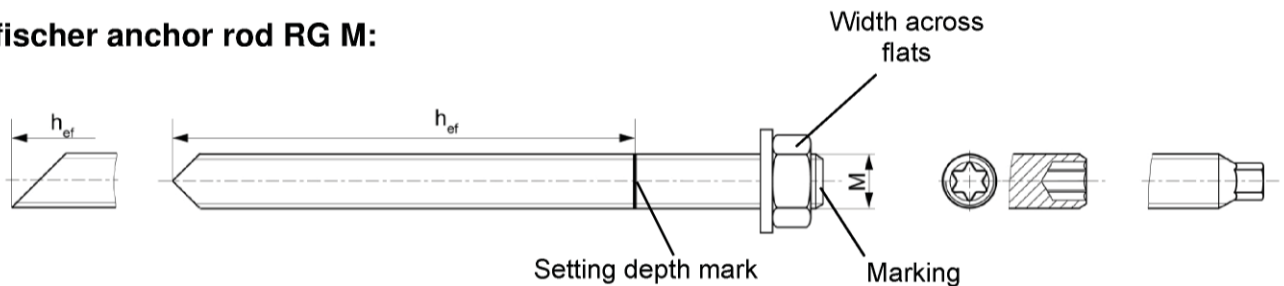
**Annex B 2**

**Table B2:** Installation parameters for fischer anchor rods RG M

| Size                                                    |                                            |      | M8                               | M10 | M12 | M16                               | M20 | M24 |
|---------------------------------------------------------|--------------------------------------------|------|----------------------------------|-----|-----|-----------------------------------|-----|-----|
| Width across flats                                      | SW                                         | [mm] | 13                               | 17  | 19  | 24                                | 30  | 36  |
| Nominal drill bit diameter                              | d <sub>0</sub>                             |      | 10                               | 12  | 14  | 18                                | 25  | 28  |
| Drill hole depth                                        | h <sub>0</sub>                             |      | h <sub>0</sub> = h <sub>ef</sub> |     |     |                                   |     |     |
| Effective anchorage depth                               | h <sub>ef</sub>                            |      | 80                               | 90  | 110 | 125                               | 170 | 210 |
| Minimum spacing and minimum edge distance               | s <sub>min</sub> = c <sub>min</sub>        |      | 40                               | 45  | 55  | 65                                | 85  | 105 |
| Diameter of clearance hole in the fixture <sup>1)</sup> | pre-positioned anchorage<br>d <sub>f</sub> |      | 9                                | 12  | 14  | 18                                | 22  | 26  |
| Minimum thickness of concrete member                    | h <sub>min</sub>                           |      | h <sub>ef</sub> + 30<br>(≥ 100)  |     |     | h <sub>ef</sub> + 2d <sub>0</sub> |     |     |
| Maximum installation torque                             | T <sub>inst,max</sub>                      | [Nm] | 10                               | 20  | 40  | 60                                | 120 | 150 |

<sup>1)</sup> For larger clearance holes in the fixture see TR 029, 4.2.2.1 or CEN/TS 1992-4-1:2009, 5.2.3.1

#### fischer anchor rod RG M:



#### Marking (on random place) fischer anchor rod RG M:

Property class 8.8, stainless steel, property class 80 or high corrosion resistant steel, property class 80: •  
 Stainless steel A4, property class 50 and high corrosion resistant steel, property class 50: ••  
 Or colour coding according to DIN 976-1

fischer RM II

#### Intended Use

Installation parameters anchor rods RG M

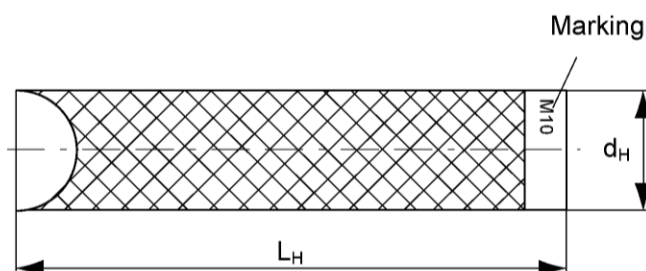
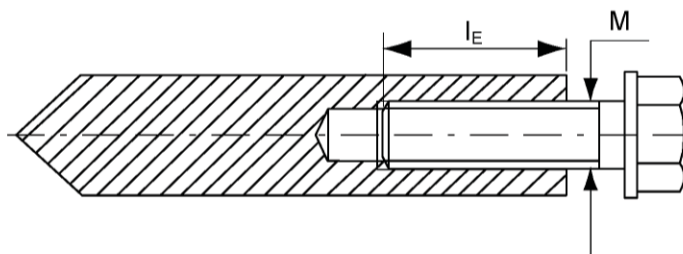
**Annex B 3**

**Table B3:** Installation parameters for fischer internal threaded anchors RG MI

| Size                                                       |                             | M8             | M10 | M12 | M16 | M20 |
|------------------------------------------------------------|-----------------------------|----------------|-----|-----|-----|-----|
| Diameter of anchor                                         | $d_H$                       | 12             | 16  | 18  | 22  | 28  |
| Nominal drill bit diameter                                 | $d_0$                       | 14             | 18  | 20  | 24  | 32  |
| Drill hole depth                                           | $h_0$                       | $h_0 = h_{ef}$ |     |     |     |     |
| Effective anchorage depth<br>( $h_{ef} = L_H$ )            | $h_{ef}$                    | 90             | 90  | 125 | 160 | 200 |
| Minimum spacing and<br>minimum edge distance               | $s_{min}$<br>=<br>$c_{min}$ | 55             | 65  | 75  | 95  | 125 |
| Diameter of clearance hole in<br>the fixture <sup>1)</sup> | $d_f$                       | 9              | 12  | 14  | 18  | 22  |
| Minimum thickness<br>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<br>installation torque                             | $T_{inst,max}$ [Nm]         | 10             | 20  | 40  | 80  | 120 |

<sup>1)</sup> For larger clearance holes in the fixture see TR 029, 4.2.2.1 or CEN/TS 1992-4-1:2009, 5.2.3.1

### fischer internal threaded anchor RG MI



**Marking:** Anchor size

e.g.: **M10**

Stainless steel additional **A4**

e.g.: **M10 A4**

High corrosion resistant steel

additional **C**

e.g.: **M10 C**

Retaining bolt or threaded rods (including nut and washer) must comply with the appropriate material and strength class of Annex A 2, Table A1

fischer RM II

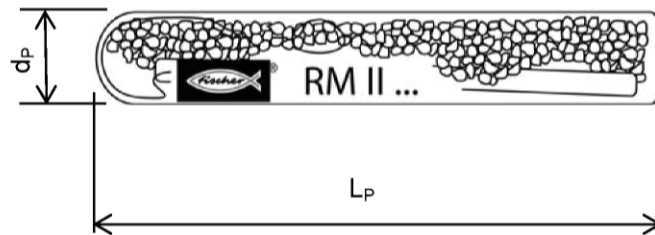
#### Intended Use

Installation parameters fischer internal threaded anchors RG MI

**Annex B 4**

**Table B4:** Dimensions of capsules RM II

| Capsule RM II    |       | 8   | 10   | 12   | 16   | 16 E | 20 / 22 | 24  |
|------------------|-------|-----|------|------|------|------|---------|-----|
| Capsule diameter | $d_p$ | 9,0 | 10,5 | 12,5 | 16,5 |      | 23,0    |     |
| Capsule length   | $L_p$ | 85  | 90   | 97   | 95   | 123  | 160     | 190 |

**Table B5:** Assignment of the capsule RM II to the fischer anchor rod RG M

| Size RG M                 |               | M8 | M10 | M12 | M16 | M20     | M24 |
|---------------------------|---------------|----|-----|-----|-----|---------|-----|
| Effective anchorage depth | $h_{ef}$ [mm] | 80 | 90  | 110 | 125 | 170     | 210 |
| Related capsule RM II     | [-]           | 8  | 10  | 12  | 16  | 20 / 22 | 24  |

**Table B6:** Assignment of the capsule RM II to the fischer internal threaded anchor RG MI

| Size RG MI                |               | M8 | M10 | M12 | M16 | M20 |
|---------------------------|---------------|----|-----|-----|-----|-----|
| Effective anchorage depth | $h_{ef}$ [mm] | 90 | 90  | 125 | 160 | 200 |
| Related capsule RM II     | [-]           | 10 | 12  | 16  | 16E | 24  |

**Table B1:** Minimum curing time

(During the curing time of the mortar the concrete temperature may not fall below the listed minimum temperature; minimal capsule temperature -15 °C)

| Concrete temperature [°C] | Minimum curing time $t_{cure}$ [minutes] |
|---------------------------|------------------------------------------|
| -15 to -10                | 30 hours                                 |
| -9 to -5                  | 16 hours                                 |
| -4 to $\pm 0$             | 10 hours                                 |
| +1 to +5                  | 45                                       |
| +6 to +10                 | 30                                       |
| +11 to +20                | 20                                       |
| +21 to +30                | 5                                        |
| +31 to +40                | 3                                        |

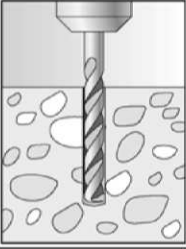
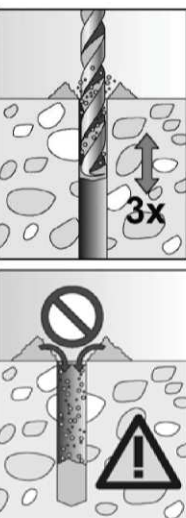
fischer RM II

**Intended Use**

Dimensions of the capsules, Assignment of the capsule to the anchor rod and internal threaded anchor, Minimum curing time

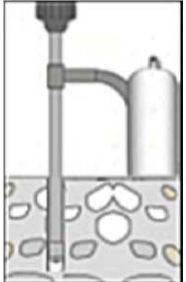
**Annex B 5**

**Installation instructions part 1****Drilling and cleaning the hole (hammer drilling with standard drill bit)**

|   |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 |   | <p>Specified drill hole depth <math>h_0</math> should be adhered to (e.g. mark on the drill bit). Drill the hole.<br/>Drill hole diameter <math>d_0</math> and drill hole depth <math>h_0</math> see <b>Tables B2, B3</b></p>                                                                                                                                                                                                                        |
| 2 |  | <p>When reaching the drill hole depth <math>h_0</math> pull out the drill bit whilst power drill is switched on. To reduce the drill dust in the drill hole repeat this step minimum <b>three times</b>, beginning from the drill hole bottom (discharging the bore hole)</p> <p>Trickling of the bore dust into the drill hole has to be avoided. (e.g. with exhausting the drill dust) Blowing out or brushing the drill hole is not necessary</p> |

Go to step 3

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

|   |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 |  | <p>Check a suitable hollow drill (see <b>Table B1</b>) for correct operation of the dust extraction</p>                                                                                                                                                                                                                                                                                                                               |
| 2 |  | <p>Use a suitable dust extraction system, e.g. Bosch GAS 35 M AFC or a comparable dust extraction system with equivalent performance data</p> <p>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. Diameter of drill hole <math>d_0</math> and drill hole depth <math>h_0</math> see <b>Tables B2, B3</b></p> |

Go to step 3

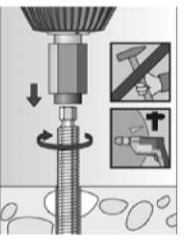
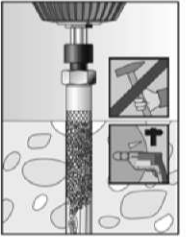
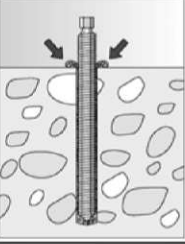
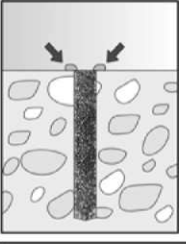
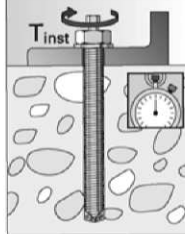
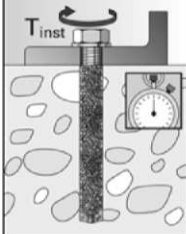
fischer RM II

**Intended use**  
Installation instructions part 1

**Annex B 6**

**Installation instructions part 2**

Installation of capsule RM II with fischer anchor rods or  
fischer internal threaded anchors RG MI

|   |                                                                                     |                                                                                     |                                                                                    |                                                                                                                                                                                                                                                                                          |
|---|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3 |    | Push the capsule RM II into the drill hole                                          |  | Depending on the anchor being installed, use a suitable setting tool (e.g. RA-SDS)                                                                                                                                                                                                       |
| 4 |    |    |                                                                                    | Only use clean and oil-free anchors. Using a suitable adapter, drive the RG M or fischer internal threaded anchor RG MI into the capsule using a hammer drill set on rotary hammer action. Stop when the anchor reaches the bottom of the hole and is set to the correct embedment depth |
| 5 |   |   |                                                                                    | When reaching the correct embedment depth, excess mortar must be emerged from the mouth of the drill hole                                                                                                                                                                                |
| 6 |  |  |                                                                                    | Wait for the specified curing time<br>$t_{\text{cure}}$ see <b>Table B7</b><br><br>Mounting the fixture<br>$T_{\text{inst,max}}$ see<br><b>Table B2, B3</b>                                                                                                                              |

fischer RM II

**Intended use**  
Installation instructions part 2

**Annex B 7**

**Table C1: Characteristic values for the steel bearing capacity of fischer anchor rods RG M under tensile / shear load**

| Size                                                          |                                                         |                |       | M8   | M10                      | M12 | M16 | M20 | M24 |     |
|---------------------------------------------------------------|---------------------------------------------------------|----------------|-------|------|--------------------------|-----|-----|-----|-----|-----|
| Bearing capacity under tensile load, steel failure            |                                                         |                |       |      |                          |     |     |     |     |     |
| Charact.bearing capacity $N_{Rk,s}$                           | Steel zinc plated                                       | Property class | 5.8   | [kN] | 19                       | 29  | 43  | 79  | 123 | 177 |
|                                                               |                                                         |                | 8.8   |      | 29                       | 47  | 68  | 126 | 196 | 282 |
|                                                               | Stainless steel A4 and High corrosion resistant steel C |                | 50    |      | 19                       | 29  | 43  | 79  | 123 | 177 |
|                                                               |                                                         |                | 70    |      | 26                       | 41  | 59  | 110 | 172 | 247 |
|                                                               |                                                         |                | 80    |      | 30                       | 47  | 68  | 126 | 196 | 282 |
| Partial safety factors <sup>1)</sup>                          |                                                         |                |       |      |                          |     |     |     |     |     |
| Partial safety factor $\gamma_{Ms,N}$                         | Steel zinc plated                                       | Property class | 5.8   | [-]  | 1,50                     |     |     |     |     |     |
|                                                               |                                                         |                | 8.8   |      | 1,50                     |     |     |     |     |     |
|                                                               | Stainless steel A4 and High corrosion resistant steel C |                | 50    |      | 2,86                     |     |     |     |     |     |
|                                                               |                                                         |                | 70    |      | 1,50 <sup>2)</sup> /1,87 |     |     |     |     |     |
|                                                               |                                                         |                | 80    |      | 1,60                     |     |     |     |     |     |
| Bearing capacity under shear load, steel failure              |                                                         |                |       |      |                          |     |     |     |     |     |
| without lever arm                                             |                                                         |                |       |      |                          |     |     |     |     |     |
| Charact.bearing capacity $V_{Rk,s}$                           | Steel zinc plated                                       | Property class | 5.8   | [kN] | 9                        | 15  | 21  | 39  | 61  | 89  |
|                                                               |                                                         |                | 8.8   |      | 15                       | 23  | 34  | 63  | 98  | 141 |
|                                                               | Stainless steel A4 and High corrosion resistant steel C |                | 50    |      | 9                        | 15  | 21  | 39  | 61  | 89  |
|                                                               |                                                         |                | 70    |      | 13                       | 20  | 30  | 55  | 86  | 124 |
|                                                               |                                                         |                | 80    |      | 15                       | 23  | 34  | 63  | 98  | 141 |
| Ductility factor acc. to CEN/TS 1992-4-5:2009 Section 6.3.2.1 |                                                         |                | $k_2$ | [-]  | 1,0                      |     |     |     |     |     |
| with lever arm                                                |                                                         |                |       |      |                          |     |     |     |     |     |
| Charact.bending moment $M^0_{Rk,s}$                           | Steel zinc plated                                       | Property class | 5.8   | [Nm] | 19                       | 37  | 65  | 166 | 324 | 560 |
|                                                               |                                                         |                | 8.8   |      | 30                       | 60  | 105 | 266 | 519 | 896 |
|                                                               | Stainless steel A4 and High corrosion resistant steel C |                | 50    |      | 19                       | 37  | 65  | 166 | 324 | 560 |
|                                                               |                                                         |                | 70    |      | 26                       | 52  | 92  | 232 | 454 | 784 |
|                                                               |                                                         |                | 80    |      | 30                       | 60  | 105 | 266 | 519 | 896 |
| Partial safety factors <sup>1)</sup>                          |                                                         |                |       |      |                          |     |     |     |     |     |
| Partial safety factor $\gamma_{Ms,V}$                         | Steel zinc plated                                       | Property class | 5.8   | [-]  | 1,25                     |     |     |     |     |     |
|                                                               |                                                         |                | 8.8   |      | 1,25                     |     |     |     |     |     |
|                                                               | Stainless steel A4 and High corrosion resistant steel C |                | 50    |      | 2,38                     |     |     |     |     |     |
|                                                               |                                                         |                | 70    |      | 1,25 <sup>2)</sup> /1,56 |     |     |     |     |     |
|                                                               |                                                         |                | 80    |      | 1,33                     |     |     |     |     |     |

<sup>1)</sup> In absence of other national regulations

<sup>2)</sup> Only for fischer RG M made of high corrosion-resistant steel C

fischer RM II

**Performances**

Characteristic steel bearing capacity of fischer anchor rods RG M

**Annex C 1**

**Table C2: Characteristic values for the steel bearing capacity of fischer internal threaded anchors RG MI under tensile / shear load**

| Size                                                          |                 |                   |       | M8   | M10  | M12  | M16  | M20  |      |
|---------------------------------------------------------------|-----------------|-------------------|-------|------|------|------|------|------|------|
| Bearing capacity under tensile load, steel failure            |                 |                   |       |      |      |      |      |      |      |
| Characteristic bearing capacity with screw                    | $N_{Rk,s}$      | Property class    | 5.8   | [kN] | 19   | 29   | 43   | 79   | 123  |
|                                                               |                 |                   | 8.8   |      | 29   | 47   | 68   | 108  | 179  |
|                                                               |                 | Property class 70 | A4    |      | 26   | 41   | 59   | 110  | 172  |
|                                                               |                 |                   | C     |      | 26   | 41   | 59   | 110  | 172  |
| Partial safety factors <sup>1)</sup>                          |                 |                   |       |      |      |      |      |      |      |
| Partial safety factor                                         | $\gamma_{Ms,N}$ | Property class    | 5.8   | [-]  | 1,50 |      |      |      |      |
|                                                               |                 |                   | 8.8   |      | 1,50 |      |      |      |      |
|                                                               |                 | Property class 70 | A4    |      | 1,87 |      |      |      |      |
|                                                               |                 |                   | C     |      | 1,87 |      |      |      |      |
| Bearing capacity under shear load, steel failure              |                 |                   |       |      |      |      |      |      |      |
| without lever arm                                             |                 |                   |       |      |      |      |      |      |      |
| Characteristic bearing capacity with screw                    | $V_{Rk,s}$      | Property class    | 5.8   | [kN] | 9,2  | 14,5 | 21,1 | 39,2 | 62,0 |
|                                                               |                 |                   | 8.8   |      | 14,6 | 23,2 | 33,7 | 54,0 | 90,0 |
|                                                               |                 | Property class 70 | A4    |      | 12,8 | 20,3 | 29,5 | 54,8 | 86,0 |
|                                                               |                 |                   | C     |      | 12,8 | 20,3 | 29,5 | 54,8 | 86,0 |
| Ductility factor acc. to CEN/TS 1992-4-5:2009 Section 6.3.2.1 |                 |                   | $k_2$ | [-]  | 1,0  |      |      |      |      |
| with lever arm                                                |                 |                   |       |      |      |      |      |      |      |
| Characteristic bending moment with screw                      | $M^0_{Rk,s}$    | Property class    | 5.8   | [Nm] | 20   | 39   | 68   | 173  | 337  |
|                                                               |                 |                   | 8.8   |      | 30   | 60   | 105  | 266  | 519  |
|                                                               |                 | Property class 70 | A4    |      | 26   | 52   | 92   | 232  | 454  |
|                                                               |                 |                   | C     |      | 26   | 52   | 92   | 232  | 454  |
| Partial safety factors <sup>1)</sup>                          |                 |                   |       |      |      |      |      |      |      |
| Partial safety factor                                         | $\gamma_{Ms,V}$ | Property class    | 5.8   | [-]  | 1,25 |      |      |      |      |
|                                                               |                 |                   | 8.8   |      | 1,25 |      |      |      |      |
|                                                               |                 | Property class 70 | A4    |      | 1,56 |      |      |      |      |
|                                                               |                 |                   | C     |      | 1,56 |      |      |      |      |

<sup>1)</sup> In absence of other national regulations

fischer RM II

**Performances**

Characteristic steel bearing capacity of fischer internal threaded anchor RG MI

**Annex C 2**

**Table C3: General design factors for the bearing capacity under tensile / shear load; uncracked or cracked concrete**

| Size                                                                                              |                          |                            |          | All Sizes            |      |     |     |           |     |
|---------------------------------------------------------------------------------------------------|--------------------------|----------------------------|----------|----------------------|------|-----|-----|-----------|-----|
| Bearing capacity under tensile load                                                               |                          |                            |          |                      |      |     |     |           |     |
| Factors acc. to CEN/TS 1992-4-5:2009 Section 6.2.3.1                                              |                          |                            |          |                      |      |     |     |           |     |
| Uncracked concrete                                                                                |                          | $k_{ucr}$                  | [-]      | 10,1                 |      |     |     |           |     |
| Cracked concrete                                                                                  |                          | $k_{cr}$                   |          | 7,2                  |      |     |     |           |     |
| Factors for the compressive strength of concrete > C20/25                                         |                          |                            |          |                      |      |     |     |           |     |
| Increasing factor for $\tau_{Rk}$                                                                 | C25/30                   |                            | $\Psi_c$ | [-]                  | 1,02 |     |     |           |     |
|                                                                                                   | C30/37                   |                            |          |                      | 1,04 |     |     |           |     |
|                                                                                                   | C35/45                   |                            |          |                      | 1,07 |     |     |           |     |
|                                                                                                   | C40/50                   |                            |          |                      | 1,08 |     |     |           |     |
|                                                                                                   | C45/55                   |                            |          |                      | 1,09 |     |     |           |     |
|                                                                                                   | C50/60                   |                            |          |                      | 1,10 |     |     |           |     |
| Splitting failure                                                                                 |                          |                            |          |                      |      |     |     |           |     |
| Edge distance                                                                                     | $h / h_{ef} \geq 2,0$    |                            | [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 cone failure acc. to CEN/TS 1992-4-5:2009 Section 6.2.3.2                                |                          |                            |          |                      |      |     |     |           |     |
| Edge distance                                                                                     |                          | $c_{cr,N}$                 | [mm]     | 1,5 $h_{ef}$         |      |     |     |           |     |
| Spacing                                                                                           |                          | $s_{cr,N}$                 |          | 2 $c_{cr,N}$         |      |     |     |           |     |
| Bearing capacity under shear load                                                                 |                          |                            |          |                      |      |     |     |           |     |
| Installation safety factors                                                                       |                          |                            |          |                      |      |     |     |           |     |
| All installation conditions                                                                       |                          | $\gamma_2 = \gamma_{inst}$ | [-]      | 1,0                  |      |     |     |           |     |
| Concrete pry-out failure                                                                          |                          |                            |          |                      |      |     |     |           |     |
| Factor k acc. to TR029 Section 5.2.3.3 resp. $k_3$ acc. to CEN/TS 1992-4-5:2009 Section 6.3.3     |                          | $k_{(3)}$                  | [-]      | 2,0                  |      |     |     |           |     |
| Concrete edge failure                                                                             |                          |                            |          |                      |      |     |     |           |     |
| The value of $h_{ef}$ (= $l_f$ ) under shear load                                                 |                          |                            | [mm]     | $h_{ef} = h_0$       |      |     |     |           |     |
| Calculation diameters                                                                             |                          |                            |          |                      |      |     |     |           |     |
| Size                                                                                              |                          |                            | M8       | M10                  | M12  | M16 | M20 | M24       |     |
| fischer anchor rods                                                                               |                          | d                          | [mm]     | 8                    | 10   | 12  | 16  | 20        | 24  |
| fischer internal threaded anchors RG MI                                                           |                          | $d_{nom}$                  |          | 12                   | 16   | 18  | 22  | 28        | --- |
|                                                                                                   |                          |                            |          |                      |      |     |     |           |     |
| fischer RM II                                                                                     |                          |                            |          |                      |      |     |     | Annex C 3 |     |
| Performances                                                                                      |                          |                            |          |                      |      |     |     |           |     |
| General design factors relating to the characteristic bearing capacity under tensile / shear load |                          |                            |          |                      |      |     |     |           |     |

**Table C4:** Characteristic values of **resistance** for **fischer anchor rods RG M** in hammer drilled holes; **uncracked or cracked concrete**

| Size                                                                                      | M8                                   | M10  | M12  | M16  | M20  | M24  |
|-------------------------------------------------------------------------------------------|--------------------------------------|------|------|------|------|------|
| <b>Combined pullout and concrete cone failure</b>                                         |                                      |      |      |      |      |      |
| Calculation diameter d [mm]                                                               | 8                                    | 10   | 12   | 16   | 20   | 24   |
| <b>Uncracked concrete</b>                                                                 |                                      |      |      |      |      |      |
| <b>Characteristic bond resistance in uncracked concrete C20/25</b>                        |                                      |      |      |      |      |      |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (dry and wet concrete)</u> |                                      |      |      |      |      |      |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                  | $\tau_{Rk,ucr}$ [N/mm <sup>2</sup> ] | 12,5 | 12,5 | 12,5 | 12,5 | 12,5 |
|                                                                                           |                                      | 10,5 | 10,5 | 10,5 | 10,5 | 10,5 |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (flooded hole)</u>         |                                      |      |      |      |      |      |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                  | $\tau_{Rk,ucr}$ [N/mm <sup>2</sup> ] | ---  | ---  | 12,5 | 12,5 | 12,5 |
|                                                                                           |                                      | ---  | ---  | 10,5 | 10,5 | 10,5 |
| <b>Installation safety factors</b>                                                        |                                      |      |      |      |      |      |
| Dry and wet concrete                                                                      | $\gamma_2 = \gamma_{inst}$ [-]       | 1,2  |      |      |      |      |
| Flooded hole                                                                              |                                      | ---  | 1,4  |      |      |      |
| <b>Cracked concrete</b>                                                                   |                                      |      |      |      |      |      |
| <b>Characteristic bond resistance in cracked concrete C20/25</b>                          |                                      |      |      |      |      |      |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (dry and wet concrete)</u> |                                      |      |      |      |      |      |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                  | $\tau_{Rk,cr}$ [N/mm <sup>2</sup> ]  | ---  | 4,5  | 4,5  | 4,5  | 4,5  |
|                                                                                           |                                      | ---  | 3,5  | 3,5  | 3,5  | 3,5  |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (flooded hole)</u>         |                                      |      |      |      |      |      |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                  | $\tau_{Rk,cr}$ [N/mm <sup>2</sup> ]  | ---  | ---  | 4,5  | 4,5  | 4,5  |
|                                                                                           |                                      | ---  | ---  | 3,5  | 3,5  | 3,5  |
| <b>Installation safety factors</b>                                                        |                                      |      |      |      |      |      |
| Dry and wet concrete                                                                      | $\gamma_2 = \gamma_{inst}$ [-]       | ---  | 1,2  |      |      |      |
| Flooded hole                                                                              |                                      | ---  | 1,4  |      |      |      |

fischer RM II

## Performances

Characteristic values for static or quasi-static action under tensile load for  
fischer anchor rod RG M (uncracked or cracked concrete)

## Annex C 4

**Tabelle C5:** Characteristic values of **resistance** for **fischer internal threaded anchors**  
**RG MI** in hammer drilled holes; **uncracked** or **cracked concrete**

| Size                                                                                                                                                                          |                                      | M8         | M10        | M12        | M16        | M20              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------|------------|------------|------------|------------------|
| <b>Combined pullout and concrete cone failure</b>                                                                                                                             |                                      |            |            |            |            |                  |
| Calculation diameter d                                                                                                                                                        | [mm]                                 | 12         | 16         | 18         | 22         | 28               |
| <b>Uncracked concrete</b>                                                                                                                                                     |                                      |            |            |            |            |                  |
| <b>Characteristic bond resistance in uncracked concrete C20/25</b>                                                                                                            |                                      |            |            |            |            |                  |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (dry and wet concrete)</u>                                                                                     |                                      |            |            |            |            |                  |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                                                                                                      | $\tau_{RK,ucr}$ [N/mm <sup>2</sup> ] | 11<br>9,5  | 11<br>9,5  | 11<br>9,5  | 11<br>9,5  | 11<br>9,5        |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (flooded hole)</u>                                                                                             |                                      |            |            |            |            |                  |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                                                                                                      | $\tau_{RK,ucr}$ [N/mm <sup>2</sup> ] | 11<br>9,5  | 11<br>9,5  | ---<br>--- | 11<br>9,5  | ---<br>---       |
| <b>Installation safety factors</b>                                                                                                                                            |                                      |            |            |            |            |                  |
| Dry and wet concrete                                                                                                                                                          | $\gamma_2 = \gamma_{inst}$ [-]       | 1,2        |            |            |            |                  |
| Flooded hole                                                                                                                                                                  |                                      | 1,4        |            | ---        | 1,4        | ---              |
| <b>Cracked concrete</b>                                                                                                                                                       |                                      |            |            |            |            |                  |
| <b>Characteristic bond resistance in cracked concrete C20/25</b>                                                                                                              |                                      |            |            |            |            |                  |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (dry and wet concrete)</u>                                                                                     |                                      |            |            |            |            |                  |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                                                                                                      | $\tau_{RK,cr}$ [N/mm <sup>2</sup> ]  | 4,5<br>3,5 | 4,5<br>3,5 | 4,5<br>3,5 | 4,5<br>3,5 | 4,5<br>3,5       |
| <u>Hammer-drilling with standard drill bit or hollow drill bit (flooded hole)</u>                                                                                             |                                      |            |            |            |            |                  |
| Temperature range I: 24 °C / 40 °C<br>II: 72 °C / 120 °C                                                                                                                      | $\tau_{RK,cr}$ [N/mm <sup>2</sup> ]  | 4,5<br>3,5 | 4,5<br>3,5 | ---<br>--- | 4,5<br>3,5 | ---<br>---       |
| <b>Installation safety factors</b>                                                                                                                                            |                                      |            |            |            |            |                  |
| Dry and wet concrete                                                                                                                                                          | $\gamma_2 = \gamma_{inst}$ [-]       | 1,2        |            |            |            |                  |
| Flooded hole                                                                                                                                                                  |                                      | 1,4        |            | ---        | 1,4        | ---              |
| fischer RM II                                                                                                                                                                 |                                      |            |            |            |            | <b>Annex C 5</b> |
| <b>Performances</b><br>Characteristic values for static or quasi-static action under tensile load for fischer internal threaded anchors RG MI (uncracked or cracked concrete) |                                      |            |            |            |            |                  |

**Tabelle C6: Displacements for fischer anchor rods RG M**

| Size                                                   |                           | M8   | M10  | M12  | M16  | M20  | M24  |
|--------------------------------------------------------|---------------------------|------|------|------|------|------|------|
| Displacement-Factors for tensile load <sup>1)</sup>    |                           |      |      |      |      |      |      |
| Uncracked or cracked concrete; Temperature range I, II |                           |      |      |      |      |      |      |
| δ <sub>N0</sub> -Faktor                                | [mm/(N/mm <sup>2</sup> )] | 0,07 | 0,08 | 0,09 | 0,10 | 0,11 | 0,12 |
| δ <sub>N∞</sub> -Faktor                                |                           | 0,13 | 0,14 | 0,15 | 0,17 | 0,17 | 0,18 |
| Displacement-Factors for shear load <sup>2)</sup>      |                           |      |      |      |      |      |      |
| Uncracked or cracked concrete; Temperature range I, II |                           |      |      |      |      |      |      |
| δ <sub>V0</sub> -Faktor                                | [mm/kN]                   | 0,18 | 0,15 | 0,12 | 0,09 | 0,07 | 0,06 |
| δ <sub>V∞</sub> -Faktor                                |                           | 0,27 | 0,22 | 0,18 | 0,14 | 0,11 | 0,09 |

<sup>1)</sup> Calculation of effective displacement:

$$\delta_{N0} = \delta_{N0\text{-Faktor}} \cdot \tau_{Ed}$$

$$\delta_{N\infty} = \delta_{N\infty\text{-Faktor}} \cdot \tau_{Ed}$$

( $\tau_{Ed}$ : Design value of the applied tensile stress)

<sup>2)</sup> Calculation of effective displacement:

$$\delta_{V0} = \delta_{V0\text{-Faktor}} \cdot V_{Ed}$$

$$\delta_{V\infty} = \delta_{V\infty\text{-Faktor}} \cdot V_{Ed}$$

( $V_{Ed}$ : Design value of the applied shear force)

**Tabelle C7: Displacements for fischer internal threaded anchors RG MI**

| Size                                                   |                           | M8   | M10  | M12  | M16  | M20  |
|--------------------------------------------------------|---------------------------|------|------|------|------|------|
| Displacement-Factors for tensile load <sup>1)</sup>    |                           |      |      |      |      |      |
| Uncracked or cracked concrete; Temperature range I, II |                           |      |      |      |      |      |
| $\delta_{N0}$ -Faktor                                  | [mm/(N/mm <sup>2</sup> )] | 0,09 | 0,10 | 0,10 | 0,11 | 0,19 |
| $\delta_{N\infty}$ -Faktor                             |                           | 0,13 | 0,15 | 0,15 | 0,17 | 0,19 |
| Displacement-Factors for shear load <sup>2)</sup>      |                           |      |      |      |      |      |
| Uncracked or cracked concrete; Temperature range I, II |                           |      |      |      |      |      |
| $\delta_{V0}$ -Faktor                                  | [mm/kN]                   | 0,12 | 0,09 | 0,08 | 0,07 | 0,05 |
| $\delta_{V\infty}$ -Faktor                             |                           | 0,18 | 0,14 | 0,12 | 0,10 | 0,08 |

<sup>1)</sup> Calculation of effective displacement:

$$\delta_{N0} = \delta_{N0\text{-Faktor}} \cdot \tau_{Ed}$$

$$\delta_{N\infty} = \delta_{N\infty\text{-Faktor}} \cdot \tau_{Ed}$$

( $\tau_{Ed}$ : Design value of the applied tensile stress)

<sup>2)</sup> Calculation of effective displacement:

$$\delta_{V0} = \delta_{V0\text{-Faktor}} \cdot V_{Ed}$$

$$\delta_{V\infty} = \delta_{V\infty\text{-Faktor}} \cdot V_{Ed}$$

( $V_{Ed}$ : Design value of the applied shear force)

fischer RM II

**Performances**

Displacements for anchor rods RGM and fischer internal threaded anchors RG MI

**Annex C 6**