



DECLARATION OF PERFORMANCE

DoP 0357

for fischer Superbond dynamic (Post-installed fastening in cracked or uncracked concrete)

EN

1. Unique identification code of the product-type:

DoP 0357
2. Intended use/es:

Post-installed fasteners for use in concrete under fatigue cyclic loading, see appendix, especially annexes B1 - B16.
3. Manufacturer:

fischerwerke GmbH & Co. KG, Otto-Hahn-Straße 15, 79211 Denzlingen, Germany
4. Authorised representative:

-
5. System/s of AVCP:

1
6. European Assessment Document:

EAD 330250-01-0601, Edition 10/2023

European Technical Assessment:

ETA-19/0501; 2024-06-11

Technical Assessment Body:

DIBt- Deutsches Institut für Bautechnik

Notified body/ies:

2873 TU Darmstadt
7. Declared performance/s:

EAD 330250-01-0601; Table 2.1.3

Assessment Method C: Linearized function

Mechanical resistance and stability (BWR 1)

1 Characteristic steel fatigue resistance under tension loading: Annexes C1, C3, C4

2 Characteristic concrete cone, pull-out, splitting and blow out fatigue resistance under tension loading: Annexes C1, C3, C4

3 Characteristic pull-out or combined pull-out /concrete cone fatigue resistance under tension loading: Annexes C1, C3, C4

4 Characteristic steel fatigue resistance under shear loading: Annexes C2, C3, C4

5 Characteristic concrete edge fatigue resistance under shear loading: Annexes C2, C3, C4

6 Characteristic concrete pry-out fatigue resistance under shear loading: Annexes C2, C3, C4

7 Characteristic steel fatigue resistance under tension and shear: Annexes C1-C4

8 Load transfer factor for tension and shear loading: Annexes C1-C4
8. Appropriate Technical Documentation and/or Specific

Technical Documentation:

-

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Dr.Ronald Mihala, Head of Development and Production Management  
Tumlingen, 2026-02-20

Dieter Pfaff, Head of International Production Federation and Quality Management

This DoP has been prepared in different languages. In case there is a dispute on the interpretation the English version shall always prevail.  
The Appendix includes voluntary and complementary information in English language exceeding the (language-neutrally specified) legal requirements.

EAD 330250-01-0601; Table 2.1.3; Assessment Method C: Linearized function

| Mechanical resistance and stability (BWR 1) |                                                                                                          |                                                                                                                                               |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| -                                           |                                                                                                          |                                                                                                                                               |
| 1                                           | Characteristic steel fatigue resistance under tension loading:                                           | $\Delta N_{Rk,s,0,n}$ (n=1 to n= $\infty$ )                                                                                                   |
| 2                                           | Characteristic concrete cone, pull-out, splitting and blow out fatigue resistance under tension loading: | $\Delta N_{Rk,c,0,n}$ ; $\Delta N_{Rk,sp,0,n}$ (n=1 to n= $\infty$ )                                                                          |
| 3                                           | Characteristic pull-out or combined pull-out /concrete cone fatigue resistance under tension loading:    | $\Delta T_{Rk,p,0,n}$ ; (n=1 to n= $\infty$ )<br>$\Delta T_{Rk,p,0,n}$ ; (n=1 to n= $10^8$ )<br>$\Delta N_{Rk,p,0,n}$ ; (n=1 to n= $\infty$ ) |
| 4                                           | Characteristic steel fatigue resistance under shear loading:                                             | $\Delta V_{Rk,s,0,n}$ (n=1 to n= $\infty$ )                                                                                                   |
| 5                                           | Characteristic concrete edge fatigue resistance under shear loading:                                     | $\Delta V_{Rk,c,0,n}$ (n=1 to n= $\infty$ )                                                                                                   |
| 6                                           | Characteristic concrete pry-out fatigue resistance under shear loading:                                  | $\Delta V_{Rk,cp,0,n}$ (n=1 to n= $\infty$ )                                                                                                  |
| 7                                           | Characteristic steel fatigue resistance under tension and shear:                                         | $\alpha_s$                                                                                                                                    |
| 8                                           | Load transfer factor for tension and shear loading:                                                      | $\Psi_{FN}$ , $\Psi_{FV}$                                                                                                                     |

## Specific Part

### 1 Technical description of the product

The fischer superbond dynamic is a bonded anchor consisting of a cartridge with injection mortar FIS SB or FIS SB High Speed or mortar capsule RSB and a steel element according to Annex A3. The steel element is placed into a drilled hole filled with injection mortar and is anchored via the bond between metal part, injection mortar and concrete.

The resin capsule is placed into 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<br>(Assessment method C: Linearized function)                                                                    | Performance                |
|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Characteristic fatigue resistance under cyclic tension loading                                                                            |                            |
| Characteristic steel fatigue resistance<br>$\Delta N_{Rk,s,0,n}$ ( $n = 1$ to $n = \infty$ )                                              | See Annex<br>C1, C3 and C4 |
| Characteristic concrete cone and splitting fatigue resistance<br>$\Delta N_{Rk,c,0,n}$ $\Delta N_{Rk,sp,0,n}$ ( $n = 1$ to $n = \infty$ ) |                            |
| Characteristic combined pull-out /concrete cone fatigue resistance<br>$\Delta \tau_{Rk,p,0,n}$ ( $n = 1$ to $n = \infty$ )                |                            |
| Characteristic fatigue resistance under cyclic shear loading                                                                              |                            |
| Characteristic steel fatigue resistance $\Delta V_{Rk,s,0,n}$ ( $n = 1$ to $n = \infty$ )                                                 | See Annex<br>C2, C3 and C4 |
| Characteristic concrete edge fatigue resistance<br>$\Delta V_{Rk,c,0,n}$ ( $n = 1$ to $n = \infty$ )                                      |                            |
| Characteristic concrete pry out fatigue resistance<br>$\Delta V_{Rk,cp,0,n}$ ( $n = 1$ to $n = \infty$ )                                  |                            |

| Essential characteristic<br>(Assessment method C: Linearized function)            | Performance           |
|-----------------------------------------------------------------------------------|-----------------------|
| Characteristic fatigue resistance under cyclic combined tension and shear loading |                       |
| Characteristic steel fatigue resistance<br>$a_s$ ( $n = 1$ to $n = \infty$ )      | See Annex<br>C1 to C4 |
| Load transfer factor for cyclic tension and shear loading                         |                       |
| Load transfer factor $\psi_{FN}, \psi_{FV}$                                       | See Annex<br>C1 to C4 |

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

In accordance with European Assessment Document No. 330250-01-0601, the applicable European legal act is: [96/582/EC].

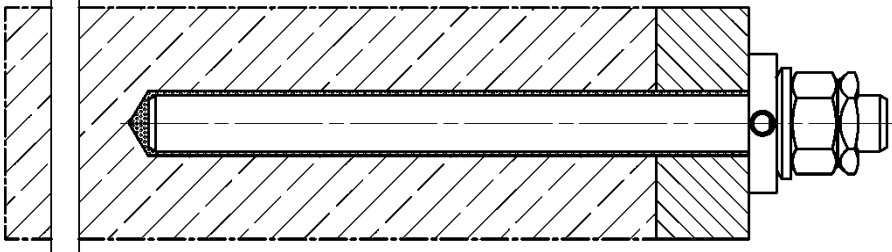
The system to be applied is: 1

Installation conditions

fischer anchor rod FIS A or RG M with fischer injection system FIS SB

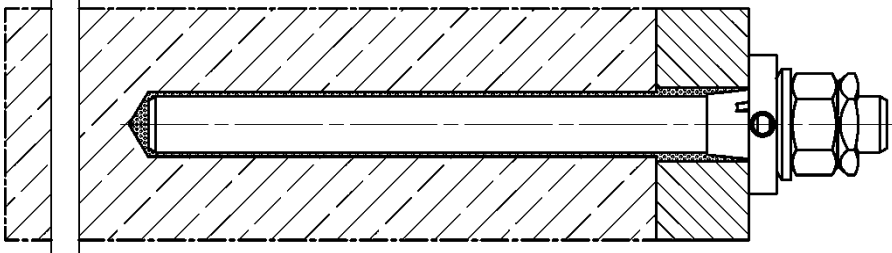
Pre-positioned installation with dynamic set (annular gap filled with mortar)

Size: M12, M16, M20, M24



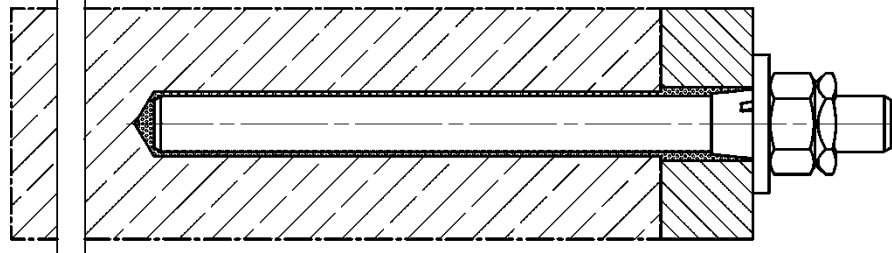
Push through installation with dynamic set (annular gap filled with mortar)

Size: M12, M16, M20, M24



Push through installation with washer and centering sleeve (annular gap filled with mortar)

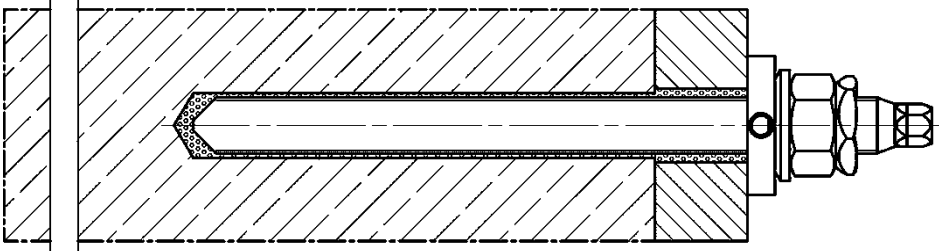
Size: M12, M16, M20, M24



fischer anchor rod RG M with fischer mortar capsule system RSB

Pre-positioned or push through installation the dynamic set (annular gap filled with mortar)

Size: M12, M16, M20, M24



Figures not to scale

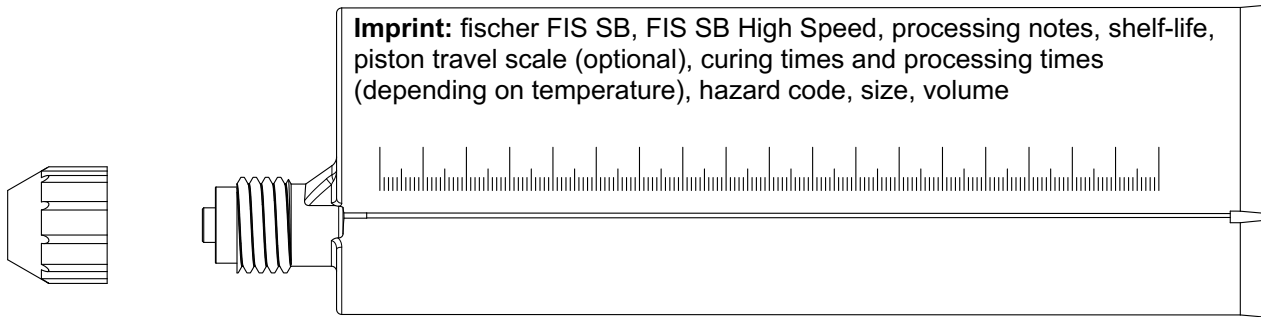
fischer Superbond dynamic

Product description  
Installation conditions

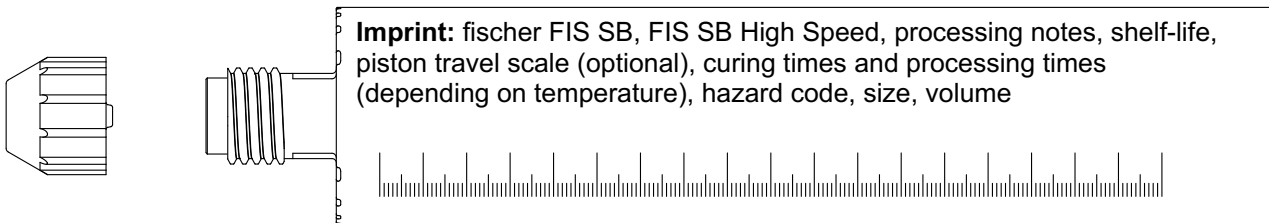
Annex A1

Overview system components Part 1

Mortar cartridge (shuttle cartridge) with sealing cap; Size: 390 ml, 585 ml, 1100 ml, 1500 ml



Mortar cartridge (coaxial cartridge) with sealing cap; Size: 150 ml, 300 ml ,380 ml, 410 ml

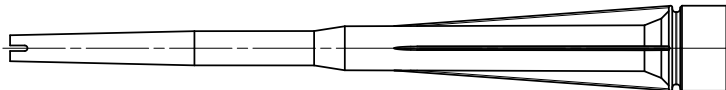


Mortar capsule

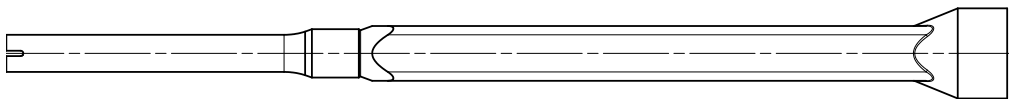
Size: 12 mini, 12, 16 mini, 16, 20, 20 E /24



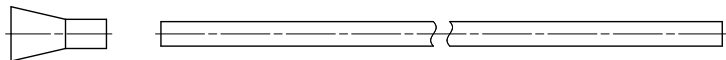
Static mixer FIS MR Plus for injection cartridges up to 410 ml



Static mixer FIS UMR for injection cartridges from 585 ml



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



Figures not to scale

fischer Superbond dynamic

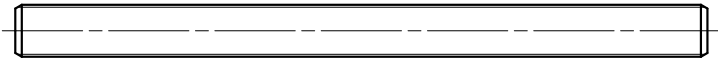
**System description**  
Overview system components part 1;  
cartridges / capsule / static mixer / injection adapter

**Annex A2**  
Appendix 4 / 26

Overview system components Part 2

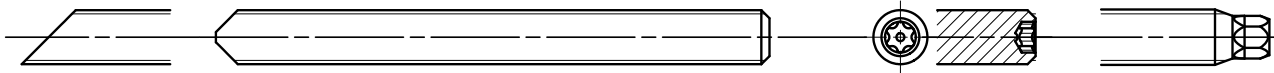
fischer anchor rod FIS A

Size: M12, M16, M20, M24

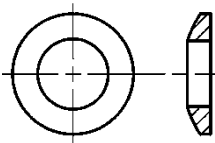


fischer anchor rod RG M

Size: M12, M16, M20, M24

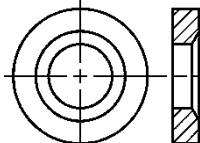


spherical washer

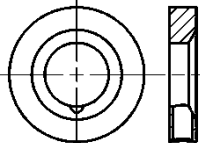


conical washer (various versions; partly fillable)

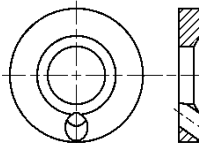
without drill hole



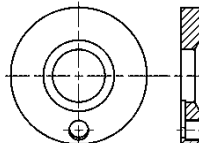
radial



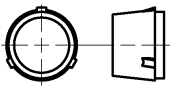
angular



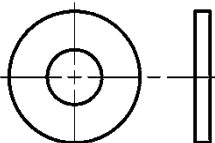
axial



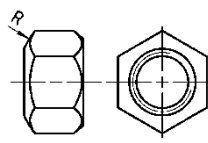
centering sleeve  
(only push through  
installation)



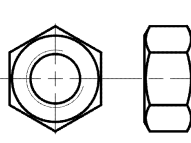
washer



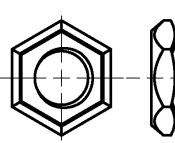
hexagonal nut with  
spherical contact  
surface



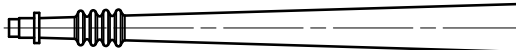
hexagon nut



lock nut



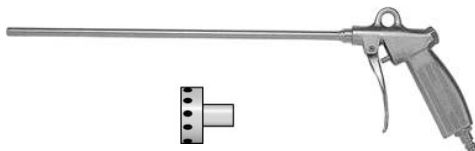
Injection adapter



Cleaning brush BS



Compressed-air cleaning tool ABP or ABG



Figures not to scale

fischer Superbond dynamic

System description

Overview system components part 2;  
Steel components / injection adapter / cleaning brush / blow-out pump

Annex A3

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**Table A4.1: Materials**

| Part | Designation                                      | Material                                                                                                                              |                                                                                                                                                                        |
|------|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Injection cartridge                              | Mortar, hardener, filler                                                                                                              |                                                                                                                                                                        |
| 2    | Resin capsule                                    | Mortar, hardener, filler                                                                                                              |                                                                                                                                                                        |
|      | Steel grade                                      | Steel                                                                                                                                 | Stainless steel R                                                                                                                                                      |
|      |                                                  | zinc plated                                                                                                                           | acc. to EN 10088-1:2023<br>Corrosion resistance class CRC III<br>acc. to EN 1993-1-4:2006+A1:2015                                                                      |
| 3    | fischer anchor rod<br>FIS A or RG M              | Property class 8.8;<br>EN ISO 898-1:2013<br>zinc plated $\geq 5 \mu\text{m}$<br>EN ISO 4042:2022<br>$f_{uk} \leq 1000 \text{ N/mm}^2$ | Property class 70<br>EN ISO 3506-1:2020<br>1.4401 (M12 to M24)<br>1.4062 (M12 and M16)<br>1.4362 (M12 and M16)<br>EN 10088-1:2023<br>$f_{uk} \leq 1000 \text{ N/mm}^2$ |
| 4    | Centering sleeve                                 | Plastic                                                                                                                               |                                                                                                                                                                        |
| 5a   | Washer<br>ISO 7089:2000                          | ---                                                                                                                                   | 1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>EN 10088-1:2023                                                                                                  |
| 5b   | Fillable conical washer<br>similar to DIN 6319-G | zinc plated $\geq 5 \mu\text{m}$ ,<br>EN ISO 4042:2022                                                                                | 1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>EN 10088-1:2023                                                                                                  |
| 6    | Spherical washer                                 | zinc plated $\geq 5 \mu\text{m}$ ,<br>EN ISO 4042:2022                                                                                | 1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>EN 10088-1:2023                                                                                                  |
| 7a   | Hexagon nut                                      | Property class 8;<br>EN ISO 898-2:2022<br>zinc plated $\geq 5 \mu\text{m}$ ,<br>EN ISO 4042:2022                                      | Property class 80<br>EN ISO 3506-1:2020<br>1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>EN 10088-1:2023                                                       |
| 7b   | Hexagonal nut with<br>spherical contact surface  |                                                                                                                                       |                                                                                                                                                                        |
| 8    | Lock nut                                         | zinc plated $\geq 5 \mu\text{m}$ ,<br>EN ISO 4042:2022                                                                                | 1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>EN 10088-1:2023                                                                                                  |

**fischer Superbond dynamic**

### Product description

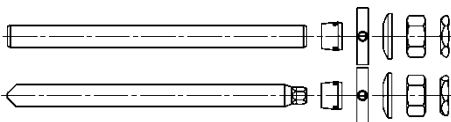
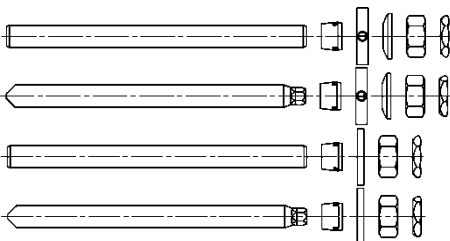
#### Materials

## Annex A4

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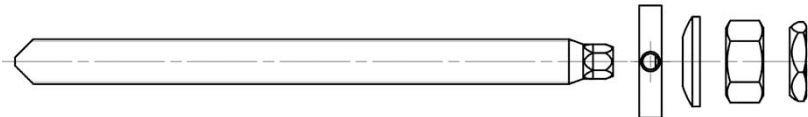
Specifications of intended use part 1

Table B1.1: Overview use and performance categories injection motar system

| FIS SB with                                                                                                                                                            |                                                                                                                                                     |                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                        | fischer anchor rod FIS A or fischer anchor rod RG M                                                                                                 |                                                                                                                                           |
|                                                                                                                                                                        | <div>Steel, zinc plated<br/>M12 + M16</div> <div></div>           | <div>Stainless steel R<br/>M12 - M24</div> <div></div> |
| Hammer drilling<br>with standard drill bit                                                                                                                             | Nominal drill bit diameter (d <sub>0</sub> )<br>14 mm to 18 mm                                                                                      | Nominal drill bit diameter (d <sub>0</sub> )<br>14 mm to 28 mm                                                                            |
| Hammer drilling<br>with hollow drill bit<br>(fischer “FHD”, Heller "Duster<br>Expert"; Bosch “Speed Clean”;<br>Hilti “TE-CD, TE-YD”;<br>DreBo „D-Plus“; DreBo „D-Max“) |                                                                                                                                                     |                                                                                                                                           |
| Diamond drilling                                                                                                                                                       |                                                                                                                                                     |                                                                                                                                           |
|                                                                                                                                                                        |                                                                                                                                                     | no performance assessed                                                                                                                   |
| Fatigue load, in <div>uncracked<br/>concrete</div> <div>cracked<br/>concrete</div>                                                                                     | Steel, zinc plated:<br>M12 and M16                                                                                                                  | Stainless steel R:<br>M12, M16, M20 and M24                                                                                               |
| Design method I<br>acc. to EOTA TR 061:2023                                                                                                                            | n = 1 to n = ∞                                                                                                                                      |                                                                                                                                           |
| Design method II<br>acc. to EOTA TR 061:2023                                                                                                                           | n = ∞                                                                                                                                               |                                                                                                                                           |
| Use category I1 dry or wet concrete                                                                                                                                    | M12, M16, M20 and M24                                                                                                                               |                                                                                                                                           |
| Installation direction                                                                                                                                                 | D3<br>Downwards, horizontal and upwards (overhead) installation                                                                                     |                                                                                                                                           |
| Installation method                                                                                                                                                    | pre-positioned or push through installation                                                                                                         |                                                                                                                                           |
| Installation temperature                                                                                                                                               | FIS SB: T <sub>i,min</sub> = -15 °C to T <sub>i,max</sub> = +40 °C<br>FIS SB High Speed: T <sub>i,min</sub> = -20 °C to T <sub>i,max</sub> = +30 °C |                                                                                                                                           |
| In-service temperature                                                                                                                                                 | Temperature range I:                                                                                                                                | -40 °C to +40 °C (max. short term temperature +40 °C;<br>max. long term temperature +24 °C)                                               |
|                                                                                                                                                                        | Temperature range II:                                                                                                                               | -40 °C to +80 °C (max. short term temperature +80 °C;<br>max. long term temperature +50 °C)                                               |
|                                                                                                                                                                        |                                                                                                                                                     |                                                                                                                                           |
| fischer Superbond dynamic                                                                                                                                              |                                                                                                                                                     | Annex B1<br><br>Appendix 7 / 26                                                                                                           |
| Intended use<br>Specifications injection mortar system FIS SB part 1                                                                                                   |                                                                                                                                                     |                                                                                                                                           |

Specifications of intended use part 2

Table B2.1: Overview use and performance categories resin capsule system

| RSB with                                                                                                                                                   |                                                                                    |                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|                                                                                                                                                            | fischer anchor rod RG M                                                            |                                                                                                |
|                                                                                                                                                            |  |                                                                                                |
| Hammer drilling with standard drill bit                                                                                                                    | Nominal drill bit diameter (d <sub>0</sub> )<br>14 mm to 18 mm                     | Nominal drill bit diameter (d <sub>0</sub> )<br>14 mm to 28 mm                                 |
| Hammer drilling with hollow drill bit<br>(fischer "FHD", Heller "Duster Expert"; Bosch „Speed Clean“; Hilti "TE-CD, TE-YD"; DreBo „D-Plus“; DreBo „D-Max“) |                                                                                    |                                                                                                |
| Diamond drilling                                                                                                                                           | Nominal drill bit diameter (d <sub>0</sub> )<br>18 mm                              | Nominal drill bit diameter (d <sub>0</sub> )<br>18 mm to 28 mm                                 |
| Fatigue load, in <div>uncracked concrete</div> <div>cracked concrete</div>                                                                                 | Steel, zinc plated:<br>M12 and M16                                                 | Stainless steel R:<br>M12, M16, M20 and M24                                                    |
| Design method I<br>acc. to EOTA TR 061:2023                                                                                                                | n = 1 to n = ∞                                                                     |                                                                                                |
| Design method II<br>acc. to EOTA TR 061:2023                                                                                                               | n = ∞                                                                              |                                                                                                |
| Use category I1 dry or wet concrete                                                                                                                        | M12, M16, M20 and M24                                                              |                                                                                                |
| Installation direction                                                                                                                                     | D3<br>Downward, horizontal and upwards (overhead) installation                     |                                                                                                |
| Installation method                                                                                                                                        | pre-positioned or push through installation                                        |                                                                                                |
| Installation temperature                                                                                                                                   | RSB: T <sub>i,min</sub> = -30 °C to T <sub>i,max</sub> = +40 °C                    |                                                                                                |
| In-service temperature                                                                                                                                     | Temperature range I:                                                               | -40 °C to +40 °C<br>(max. short term temperature +40 °C;<br>max. long term temperature +24 °C) |
|                                                                                                                                                            | Temperature range II:                                                              | -40 °C to +80 °C<br>(max. short term temperature +80 °C;<br>max. long term temperature +50 °C) |
|                                                                                                                                                            |                                                                                    |                                                                                                |
| fischer Superbond dynamic                                                                                                                                  |                                                                                    | Annex B2<br><br>Appendix 8 / 26                                                                |
| Intended use<br>Specifications resin capsule system RSB part 2                                                                                             |                                                                                    |                                                                                                |

# Specifications of intended use part 3

**Base materials:**

- Compacted reinforced or unreinforced normal weight concrete without fibers of strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021.

**Use conditions (Environmental conditions):**

- Structures subject to dry internal conditions (zinc plated steel, stainless steel R).
- For all other conditions according to EN 1993-1-4:2006+A1:2015 corresponding to corrosion resistance classes to Annex A4 Table A4.1.

**Design:**

- Fastenings have 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.).
- Anchorages have to be designed in accordance with:
  - EN 1992-4:2018 and
  - EOTA Technical Report TR 061 "Design method for fasteners in concrete under fatigue cyclic loading", Edition 2023.
- Static and quasi-static loading see ETA-12/0258 of 24.10.2023. Centering sleeve and lock nut are additional parts for fatigue loading, which are not part of ETA-12/0258 of 24.10.2023.
- Fastenings shall be positioned outside of critical regions (e.g. plastic hinges) of the concrete structure.
- Fastenings in stand-off installation or with a grout layer are not covered by this European Technical Assessment (ETA).

**Installation:**

- Anchor installation is 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.
- Fastening depth should be marked and adhered to on installation.
- If only tension loads are involved in the application, the annular gap does not need to be filled.
- Overhead installation is allowed.
- Setting the fastener with clearance between concrete and anchor plate (only if the fastener is loaded in axial direction)

fischer Superbond dynamic

Intended use  
Specifications part 3

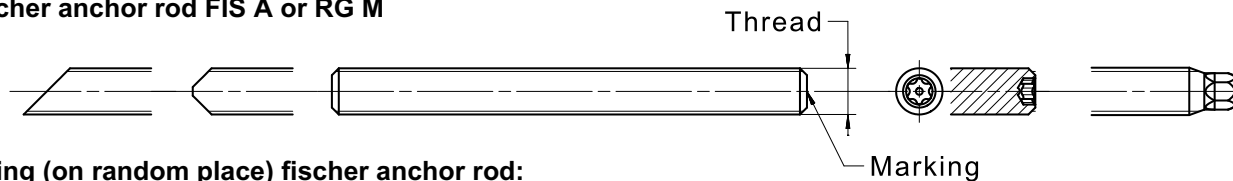
Annex B3

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**Table B4.1:** Installation parameters for fischer anchor rods in combination with injection mortar system FIS SB

| fischer anchor rods                                         |                                |                                           | Thread | M12                                       | M16                               | M20                               | M24                               |
|-------------------------------------------------------------|--------------------------------|-------------------------------------------|--------|-------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Material                                                    |                                |                                           |        | zinc plated steel or<br>stainless steel R |                                   | stainless steel R                 |                                   |
| Nominal drill hole diameter                                 |                                | d <sub>0</sub>                            | [mm]   | 14                                        | 18                                | 24                                | 28                                |
| Drill hole depth                                            |                                | h <sub>0</sub>                            |        | h <sub>0</sub> = h <sub>ef</sub>          |                                   |                                   |                                   |
| Effective embedment depth                                   |                                | h <sub>ef, min</sub>                      |        | 70                                        | 80                                | 90                                | 96                                |
| Design method I                                             |                                | h <sub>ef, max</sub>                      |        | 240                                       | 320                               | 400                               | 480                               |
| Effective embedment depth                                   |                                | h <sub>ef, min</sub>                      |        | 95                                        | 125                               | 160                               | 190                               |
| Design method II                                            |                                | h <sub>ef, max</sub>                      |        | 240                                       | 320                               | 400                               | 480                               |
| Minimum spacing and minimum<br>edge distance                |                                | s <sub>min</sub><br>=<br>c <sub>min</sub> |        | 55                                        | 65                                | 85                                | 105                               |
| Diameter of the<br>clearance hole of<br>the fixture         | pre-positioned<br>installation | d <sub>f</sub>                            |        | 14-16                                     | 18-20                             | 22-26                             | 26-30                             |
|                                                             | push through<br>installation   | d <sub>f</sub>                            |        | 15-16                                     | 19-20                             | 25-26                             | 29-30                             |
| Fixture thickness                                           | t <sub>fix,min</sub>           |                                           |        | 6                                         | 8                                 | 10                                | 12                                |
|                                                             | t <sub>fix,max</sub>           |                                           |        | 200                                       |                                   |                                   |                                   |
| Minimum thickness of concrete<br>member                     |                                | h <sub>min</sub>                          |        | h <sub>ef</sub> + 30                      | h <sub>ef</sub> + 2d <sub>0</sub> | h <sub>ef</sub> + 2d <sub>0</sub> | h <sub>ef</sub> + 2d <sub>0</sub> |
| Installation with dynamic set                               |                                |                                           |        |                                           |                                   |                                   |                                   |
| Protrusion anchor rod FIS A or<br>RG M without hexagon head |                                | h <sub>p,min</sub>                        | [mm]   | 25 + t <sub>fix</sub>                     | 30 + t <sub>fix</sub>             | 36 + t <sub>fix</sub>             | 43 + t <sub>fix</sub>             |
| Protrusion anchor rod RG M<br>(with hexagon head)           |                                | h <sub>p,min</sub>                        |        | 32 + t <sub>fix</sub>                     | 38 + t <sub>fix</sub>             | 43 + t <sub>fix</sub>             | ---                               |
| Installation with washer (only with stainless steel R)      |                                |                                           |        |                                           |                                   |                                   |                                   |
| Protrusion anchor rod FIS A or<br>RG M without hexagon head |                                | h <sub>p2,min</sub>                       | [mm]   | 19 + t <sub>fix</sub>                     | 23 + t <sub>fix</sub>             | 27 + t <sub>fix</sub>             | 32 + t <sub>fix</sub>             |
| Protrusion anchor rod RG M<br>(with hexagon head)           |                                | h <sub>p2,min</sub>                       |        | 26 + t <sub>fix</sub>                     | 31 + t <sub>fix</sub>             | 34 + t <sub>fix</sub>             | ---                               |
| Required installation torque                                |                                | T <sub>inst</sub>                         | [Nm]   | 40                                        | 60                                | 120                               | 150                               |

**fischer anchor rod FIS A or RG M**



**Marking (on random place) fischer anchor rod:**

Property class 8.8: **+**

**Installation conditions see Annex B5**

Figures not to scale

**fischer Superbond dynamic**

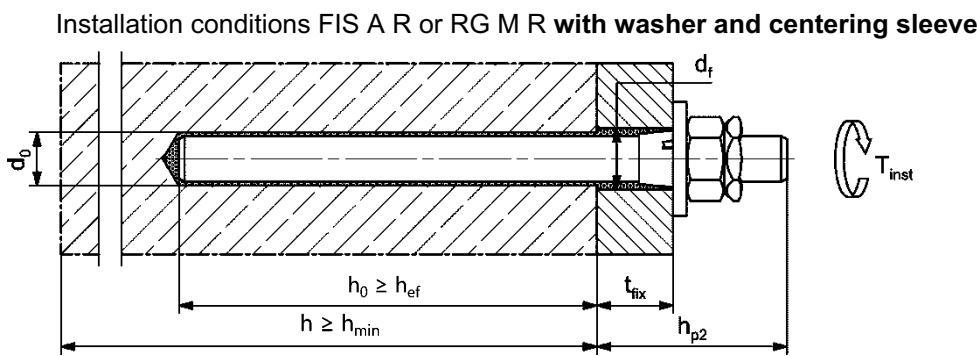
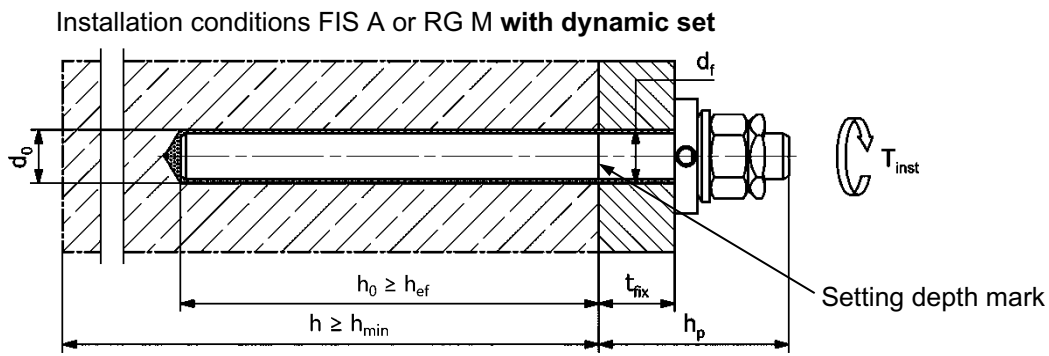
**Intended use**

Installation parameters fischer anchor rods FIS A and RG M in combination with injection mortar system FIS SB

**Annex B4**

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Installation conditions FIS A or RG M with dynamic set or washer with centering sleeve



Installation conditions for RG M see **Annex B6**

Figures not to scale

**fischer Superbond dynamic**

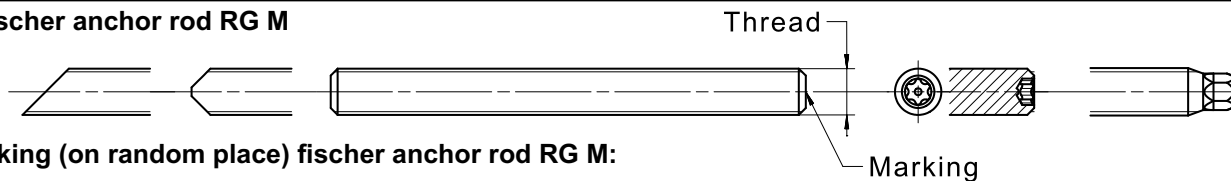
**Intended use**  
Installation conditions FIS A or RG M with dynamic set or washer with centering sleeve

**Annex B5**

**Table B6.1:** Installation parameters for fischer anchor rods RG M in combination with resin capsule system RSB

| fischer anchor rod RG M                             |                                |                                           | Thread | M12                                       | M16                               | M20                               | M24                               |     |
|-----------------------------------------------------|--------------------------------|-------------------------------------------|--------|-------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----|
| Material                                            |                                |                                           |        | zinc plated steel or<br>stainless steel R |                                   | stainless steel R                 |                                   |     |
| Nominal drill hole diameter                         |                                | d <sub>0</sub>                            | [mm]   | 14                                        | 18                                | 25                                | 28                                |     |
| Drill hole depth                                    |                                | h <sub>0</sub>                            |        | h <sub>0</sub> = h <sub>ef</sub>          |                                   |                                   |                                   |     |
| Effective embedment depth                           |                                | h <sub>ef,1</sub>                         |        | 75                                        | 95                                | ---                               | ---                               |     |
|                                                     |                                | h <sub>ef,2</sub>                         |        | 110                                       | 125                               | 170                               | 210                               |     |
|                                                     |                                | h <sub>ef,3</sub>                         |        | 150                                       | 190                               | 210                               | ---                               |     |
| Minimum spacing and minimum<br>edge distance        |                                | s <sub>min</sub><br>=<br>c <sub>min</sub> |        | 55                                        | 65                                | 85                                | 105                               |     |
| Diameter of the<br>clearance hole of<br>the fixture | pre-positioned<br>installation | d <sub>f</sub>                            |        | 14-16                                     | 18-20                             | 22-26                             | 26-30                             |     |
|                                                     | push through<br>installation   | d <sub>f</sub>                            |        | 15-16                                     | 19-20                             | 26                                | 29-30                             |     |
| Fixture thickness                                   |                                | t <sub>fix,min</sub>                      |        | 6                                         | 8                                 | 10                                | 12                                |     |
|                                                     |                                | t <sub>fix,max</sub>                      |        | 200                                       |                                   |                                   |                                   |     |
| Minimum thickness of concrete<br>member             |                                | h <sub>min</sub>                          |        | h <sub>ef</sub> + 30                      | h <sub>ef</sub> + 2d <sub>0</sub> | h <sub>ef</sub> + 2d <sub>0</sub> | h <sub>ef</sub> + 2d <sub>0</sub> |     |
| Installation with dynamic set                       |                                |                                           |        |                                           |                                   |                                   |                                   |     |
| Protrusion anchor rod RG M                          |                                | h <sub>p,min</sub>                        |        | [mm]                                      | 32 + t <sub>fix</sub>             | 38 + t <sub>fix</sub>             | 43 + t <sub>fix</sub>             | --- |
| Protrusion anchor rod RG M<br>without hexagon head  |                                | h <sub>p,min</sub>                        | ---    |                                           | ---                               | ---                               | 43 + t <sub>fix</sub>             |     |
| Required installation torque                        |                                | T <sub>inst</sub>                         | [Nm]   | 40                                        | 60                                | 120                               | 150                               |     |

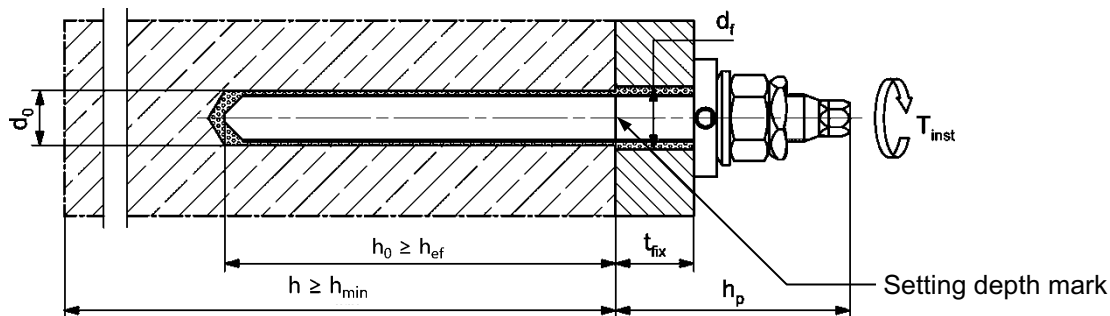
**fischer anchor rod RG M**



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

Property class 8.8: +

**Installation conditions:**



Figures not to scale

**fischer Superbond dynamic**

**Intended use**

Installation parameters fischer anchor rod RG M in combination with resin capsule system RSB

**Annex B6**

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**Table B7.1:**     Dimension of resin capsule RSB

| Resin capsule RSB |                | 12 mini | 12   | 16 mini | 16   | 20 | 20 E / 24 |     |
|-------------------|----------------|---------|------|---------|------|----|-----------|-----|
| Capsule diameter  | d <sub>P</sub> | [mm]    | 12,5 |         | 16,5 |    | 23,0      |     |
| Capsule length    | L <sub>P</sub> |         | 72   | 97      | 72   | 95 | 160       | 190 |



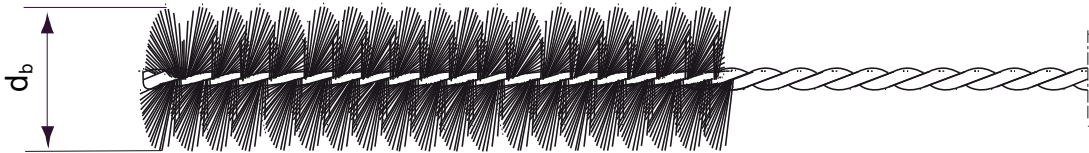
**Table B7.2:**     Assignment of resin capsule RSB to fischer anchor rod RG M

| Anchor rod RG M           |            |      | M12        | M16        | M20       | M24       |
|---------------------------|------------|------|------------|------------|-----------|-----------|
| Effective anchorage depth | $h_{ef,1}$ | [mm] | 75         | 95         | ---       | ---       |
| Related capsule RSB       |            | [-]  | 12 mini    | 16 mini    | ---       | ---       |
| Effective anchorage depth | $h_{ef,2}$ | [mm] | 110        | 125        | 170       | 210       |
| Related capsule RSB       |            | [-]  | 12         | 16         | 20        | 20 E / 24 |
| Effective anchorage depth | $h_{ef,3}$ | [mm] | 150        | 190        | 210       | ---       |
| Related capsule RSB       |            | [-]  | 2x 12 mini | 2x 16 mini | 20 E / 24 | ---       |

**Table B7.3:**     Parameters of the cleaning brush BS (steel brush with steel bristles)

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

|                             |       |      |    |    |    |    |    |
|-----------------------------|-------|------|----|----|----|----|----|
| Nominal drill hole diameter | $d_0$ | [mm] | 14 | 18 | 24 | 25 | 28 |
| Steel brush diameter        | $d_b$ |      | 16 | 20 | 26 | 27 | 30 |



**fischer Superbond dynamic**

**Intended use**  
Dimensions of the capsules; Assignment of the capsule to the anchor rod RG M;  
Cleaning brush (steel brush)

**Annex B7**

Appendix 13 / 26

| Table B8.1: Conditions for use <b>static mixer</b> without an <b>extension tube</b> |                |      |       |       |       |       |       |
|-------------------------------------------------------------------------------------|----------------|------|-------|-------|-------|-------|-------|
| Nominal drill hole diameter                                                         | d <sub>0</sub> | [mm] | 14    | 18    | 24    | 25    | 28    |
| Drill hole depth h <sub>0</sub> by using                                            | FIS MR Plus    | [mm] | ≤ 120 | ≤ 150 | ≤ 190 | ≤ 210 |       |
|                                                                                     | FIS UMR        | [mm] | ≤ 90  | ≤ 180 | ≤ 220 |       | ≤ 250 |

| Table B8.2: Maximum processing time of the mortar and minimum curing time                                                                                                                         |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|
| During the curing time of the mortar the concrete temperature may not fall below the listed minimum temperature.<br>Minimal cartridge temperature +5 °C; minimal resin capsule temperature -15 °C |  |  |  |  |  |  |

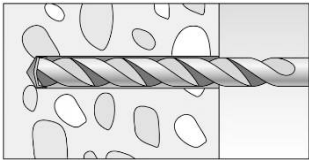
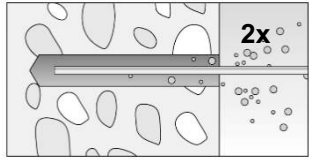
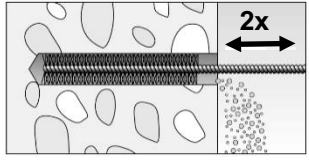
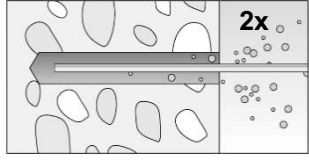
| Temperature at anchoring base [°C] | Maximum processing time<br>t <sub>work</sub> |                   | Minimum curing time<br>t <sub>cure</sub> |                   |        |
|------------------------------------|----------------------------------------------|-------------------|------------------------------------------|-------------------|--------|
|                                    | FIS SB                                       | FIS SB High Speed | FIS SB                                   | FIS SB High Speed | RSB    |
| -30 to -20                         | ---                                          | ---               | ---                                      | ---               | 120 h  |
| > -20 to -15                       | ---                                          | 60 min            | ---                                      | 24 h              | 48 h   |
| > -15 to -10                       | 60 min                                       | 30 min            | 36 h                                     | 8 h               | 30 h   |
| > -10 to -5                        | 30 min                                       | 15 min            | 24 h                                     | 3 h               | 16 h   |
| > -5 to ±0                         | 20 min                                       | 10 min            | 8 h                                      | 2 h               | 10 h   |
| > ±0 to +5                         | 13 min                                       | 5 min             | 4 h                                      | 1 h               | 45 min |
| > +5 to +10                        | 9 min                                        | 3 min             | 2 h                                      | 45 min            | 30 min |
| > +10 to +20                       | 5 min                                        | 2 min             | 1 h                                      | 30 min            | 20 min |
| > +20 to +30                       | 4 min                                        | 1 min             | 45 min                                   | 15 min            | 5 min  |
| > +30 to +40                       | 2 min                                        | ---               | 30 min                                   | ---               | 3 min  |

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|

|                                                                                                                                      |                                         |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>fischer Superbond dynamic</b>                                                                                                     | <b>Annex B8</b><br><br>Appendix 14 / 26 |
| <b>Intended use</b><br>Conditions for use static mixer without an extension tube;<br>Maximum processing time and minimum curing time |                                         |

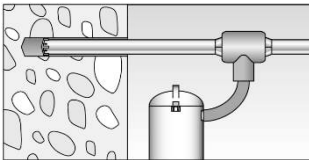
# Installation instructions part 1; injection mortar system FIS SB

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

|   |                                                                                   |                                                                                                                                                                                                                                                        |                                                                                     |
|---|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1 |  | Drill the hole.<br>Nominal drill hole diameter $d_0$ and drill hole depth $h_0$ see <b>Table B4.1</b> .                                                                                                                                                |                                                                                     |
| 2 |  | Clean the drill hole:<br>Blow out the drill hole twice, with oil free compressed air ( $p \geq 6$ bar).<br><br>In uncracked concrete the use of the manual blow-out pump ABG is possible (Installation parameters: $d_0 < 18$ mm and $h_{ef} < 10d$ ). |  |
| 3 |  | Brush the drill hole twice.<br>For deep holes use an extension.<br>Corresponding brushes see <b>Table B7.3</b> .                                                                                                                                       |                                                                                     |
| 4 |  | Clean the drill hole:<br>Blow out the drill hole twice, with oil free compressed air ( $p \geq 6$ bar).<br><br>In uncracked concrete the use of the manual blow-out pump ABG is possible (Installation parameters: $d_0 < 18$ mm and $h_{ef} < 10d$ ). |  |

Go to step 5 **Annex B10**.

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

|   |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|---|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1 |  | Check a suitable hollow drill (see <b>Table B1.1</b> ) for correct operation of the dust extraction.                                                                                                                                                                                                                                                                                                           |  |
| 2 |  | Use a suitable dust extraction system, e.g. fischer FVC 35 M or a comparable dust extraction system with equivalent performance data.<br><br>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.<br>Nominal drill hole diameter $d_0$ and drill hole depth $h_0$ see <b>Table B4.1</b> . |  |

Go to step 5 **Annex B10**.

**fischer Superbond dynamic**

### Intended use

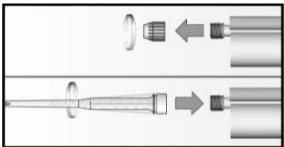
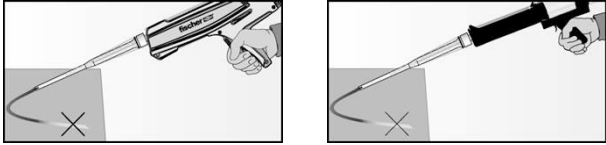
Installation instructions part 1;  
injection mortar system FIS SB

**Annex B9**

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Installation instructions part 2; injection mortar system FIS SB

Preparing the cartridge

|   |                                                                                   |                                                                                                                                     |
|---|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 5 |  | Remove the sealing cap.<br>Screw on the static mixer<br>(the spiral in the static mixer must be clearly visible).                   |
| 6 |  | Place the cartridge into the dispenser.                                                                                             |
| 7 |  | Extrude approximately 10 cm of material out until the resin is evenly grey in colour. Do not use mortar that is not uniformly grey. |

Go to step 8 (pre-positioned installation **Annex B11** or push through installation **Annex B12**).

fischer Superbond dynamic

Intended use

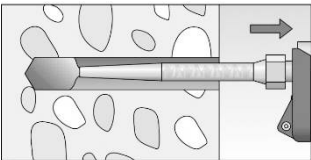
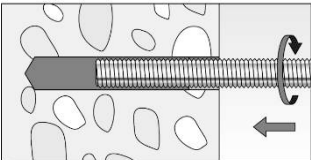
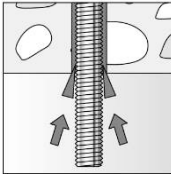
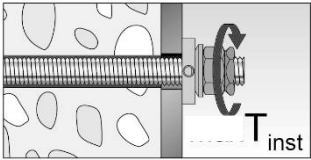
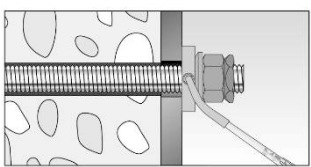
Installation instructions part 2;  
injection mortar system FIS SB

**Annex B10**

Appendix 16 / 26

# Installation instructions part 3, injection mortar system FIS SB

## Pre-positioned installation

|    |                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8  |                                                                                    | <p>Fill approximately 2/3 of the drill hole with mortar. Always begin from the bottom of the hole and avoid bubbles.</p> <p>For drill hole depth <math>\geq 150</math> mm use an extension tube see <b>Table B8.1</b>. For overhead installation or deep holes <math>h_0 &gt; 250</math>mm use an injection adapter.</p>                                                                                                                                                                                      |
| 9  |   | <p>Only use clean and oil-free metal parts.</p> <p>Mark the setting depth of the anchor rod. Push the fischer anchor rod down to the bottom of the hole, turning it slightly while doing so.</p> <p>After inserting the anchor rod, excess mortar must be emerged around the anchor element. If not, pull out the anchor element immediately and reinject mortar.</p> <p>For overhead installations support the anchor rod with wedges (e.g. fischer centering wedges) until the mortar begins to harden.</p> |
| 10 |                                                                                    | <p>Wait for the specified curing time <math>t_{\text{cure}}</math> see <b>Table B8.2</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 11 |                                                                                   | <p>Attach the component and install the washer and nuts - without centering sleeve.</p> <p>Tighten the hexagon nut with torque wrench, <math>T_{\text{inst}}</math> see <b>Table B4.1</b>. Tighten lock nut manually, then use wrench to give another quarter or half turn.</p>                                                                                                                                                                                                                               |
| 12 |                                                                                  | <p>The gap between anchor and fixture (annular clearance) has to be filled with mortar (FIS SB, FIS SB High Speed, FIS V Plus or FIS EM Plus) via the fillable conical washer.</p> <p>If only tension loads are involved in the application, the annular gap does not necessarily have to be filled.</p>                                                                                                                                                                                                      |

**fischer Superbond dynamic**

### Intended use

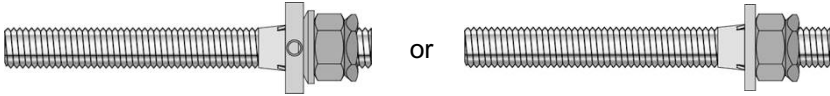
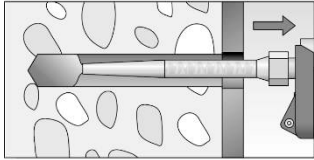
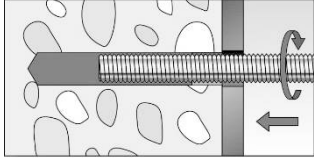
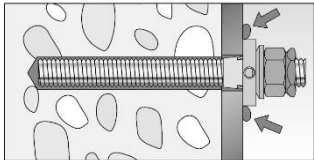
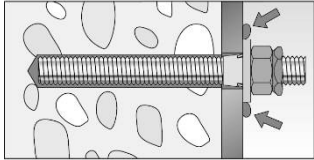
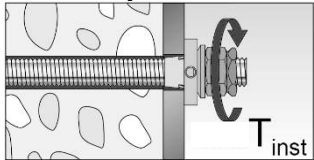
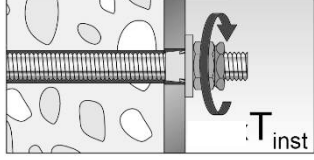
Installation instructions part 3; pre-positioned installation;  
injection mortar system FIS SB

**Annex B11**

Appendix 17 / 26

Installation instructions part 4, injection mortar system FIS SB

Push through installation

|    |                                                                                                          |                                                                                                                                                                                                                                                                                                    |
|----|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8  |                        | <b>Pre-assemble the anchor!</b><br>(Position of the conical washer or washer = embedment depth + fixture thickness).                                                                                                                                                                               |
| 9  |                         | Fill approximately 2/3 of the drill hole incl. fixture with mortar. Always begin from the bottom of the hole and avoid bubbles.<br>For drill hole depth $\geq 150$ mm use an extension tube see <b>Table B8.1</b> . For overhead installation, deep holes $h_0 > 250$ mm use an injection adapter. |
| 10 |                         | Only use clean and oil-free metal parts.<br>Push the pre-assembled fischer anchor rod into the drill hole until the conical washer or washer is in full contact with the surface, turning it slightly while doing so.                                                                              |
|    | with dynamic set:<br>   | After inserting the anchor rod with pre-assembled components, excess mortar must be emerged around the anchor element (minimum on one point of the conical washer or washer).<br>If not, pull out the anchor element immediately and reinject mortar.                                              |
|    | with washer:<br>       |                                                                                                                                                                                                                                                                                                    |
| 11 |                       | Wait for the specified curing time $t_{\text{cure}}$ see <b>Table B8.2</b> .                                                                                                                                                                                                                       |
| 12 | with dynamic set:<br> | Tighten the hexagon nut with torque wrench, $T_{\text{inst}}$ see <b>Table B4.1</b> . Tighten lock nut manually, then use wrench to give another quarter or half turn.                                                                                                                             |
|    | with washer:<br>      |                                                                                                                                                                                                                                                                                                    |

fischer Superbond dynamic

Intended use

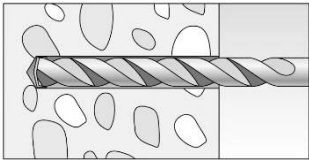
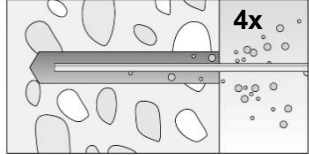
Installation instructions part 4; push through installation;  
injection mortar system FIS SB

Annex B12

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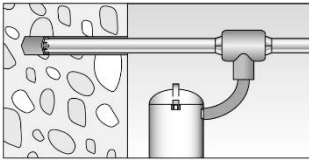
Installation instructions part 5; resin capsule RSB

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

|   |                                                                                   |                                                                                                                                                                                                                                                             |                                                                                     |
|---|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1 |  | Drill the hole.<br>Nominal drill hole diameter $d_0$ and drill hole depth $h_0$ see <b>Table B6.1</b> .                                                                                                                                                     |                                                                                     |
| 2 |  | Clean the drill hole:<br>Blow out the drill hole four times, with oil free compressed air ( $p \geq 6$ bar).<br><br>In uncracked concrete the use of the manual blow-out pump ABG is possible (Installation parameters: $d_0 < 18$ mm and $h_{ef} < 10d$ ). |  |

Go to step 6 (pre-positioned installation **Annex B15** or push through installation **Annex B16**).

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

|   |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|---|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1 |   | Check a suitable hollow drill (see <b>Table B2.1</b> ) for correct operation of the dust extraction.                                                                                                                                                                                                                                                                                                           |  |
| 2 |  | Use a suitable dust extraction system, e.g. fischer FVC 35 M or a comparable dust extraction system with equivalent performance data.<br><br>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.<br>Nominal drill hole diameter $d_0$ and drill hole depth $h_0$ see <b>Table B6.1</b> . |  |

Go to step 6 (pre-positioned installation **Annex B15** or push through installation **Annex B16**).

fischer Superbond dynamic

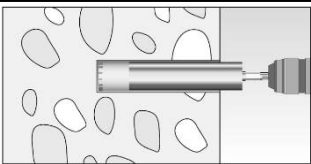
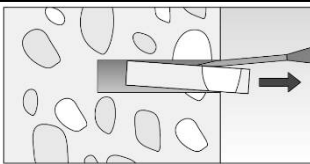
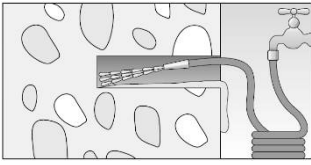
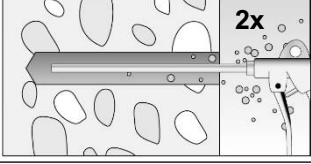
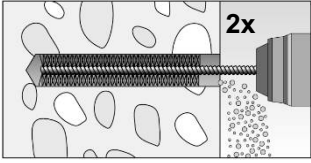
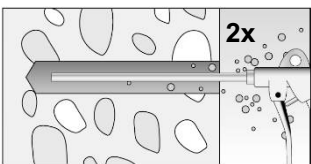
**Intended use**  
Installation instructions part 5;  
resin capsule RSB

**Annex B13**

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Installation instructions part 6; resin capsule RSB

Drilling and cleaning the hole (wet drilling with diamond drill bit)

|   |                                                                                   |                                                                                                               |                                                                                    |                                        |
|---|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------|
| 1 |  | Drill the hole.<br>Drill hole diameter $d_0$ and<br>nominal drill hole depth $h_0$<br>see <b>Table B6.1</b> . |  | Break the drill core<br>and remove it. |
| 2 |  | Flush the drill hole, until clear water emerges from the drill hole.                                          |                                                                                    |                                        |
| 3 |  | Blow out the drill hole twice, using oil-free compressed air ( $p > 6$ bar).                                  |                                                                                    |                                        |
| 4 |  | Brush the drill hole twice using a power drill.<br>Corresponding brushes see <b>Table B7.3</b> .              |                                                                                    |                                        |
| 5 |  | Blow out the drill hole twice, using oil-free compressed air ( $p > 6$ bar).                                  |                                                                                    |                                        |

Go to step 6 (pre-positioned installation **Annex B15** or push through installation **Annex B16**).

fischer Superbond dynamic

**Intended use**

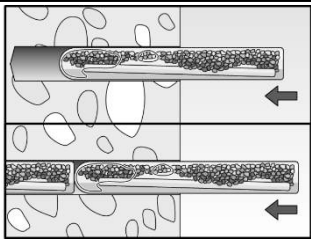
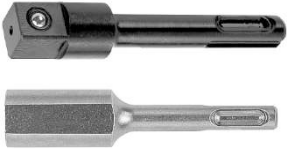
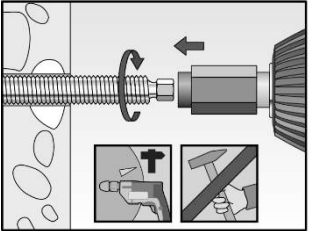
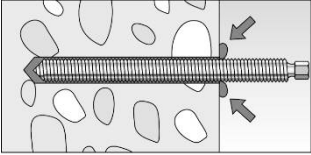
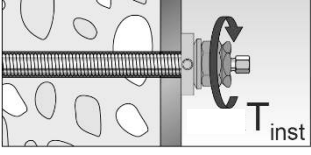
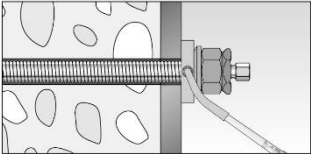
Installation instructions part 6;  
resin capsule RSB

**Annex B14**

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# Installation instructions part 7; resin capsule RSB

## Pre-positioned installation fischer anchor rod RG M

|    |                                                                                     |                                                                                                                                                                                                                                                                                               |                                                                                    |                                                                     |
|----|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 6  |    | Insert the resin capsule into the drill hole by hand.<br>Suitable resin capsule RSB or RSB mini see <b>Table B7.2</b> .                                                                                                                                                                       |  | Depending on the metal part, use a suitable setting tool / adapter. |
| 7  |    | Only use clean and grease-free metal parts. Drive the fischer anchor rod RG M into the capsule using suitable adapter and hammer drill set on rotary hammer action. Stop when the metal part reaches the bottom of the hole and the correct embedment depth is reached.                       |                                                                                    |                                                                     |
| 8  |    | When the correct embedment depth is reached, excess mortar must emerge from the mouth of the drill hole.<br>If not, the metal part must be pulled out directly and another resin capsule must be pushed into the drill hole. Setting process (Step 7) must be repeated.                       |                                                                                    |                                                                     |
| 9  |    | Wait for the specified curing time $t_{cure}$ see <b>Table B8.2</b> .                                                                                                                                                                                                                         |                                                                                    |                                                                     |
| 10 |   | Attach the component and install the washer and nuts - without centering sleeve.<br>Tighten the hexagon nut with torque wrench, $T_{inst}$ see <b>Table B6.1</b> .<br>Tighten lock nut manually, then use wrench to give another quarter or half turn.                                        |                                                                                    |                                                                     |
| 11 |  | The gap between anchor and fixture (annular clearance) has to be filled with mortar (FIS SB, FIS SB High Speed, FIS V Plus or FIS EM Plus) via the fillable conical washer.<br>If only tension loads are involved in the application, the annular gap does not necessarily have to be filled. |                                                                                    |                                                                     |

fischer Superbond dynamic

### Intended use

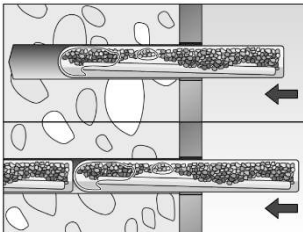
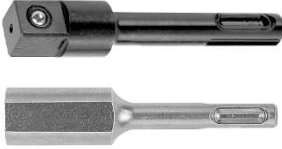
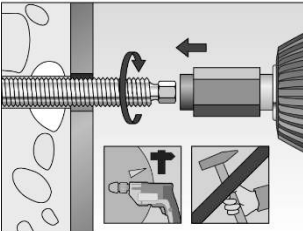
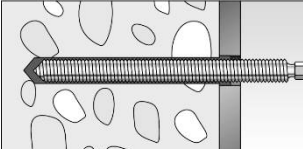
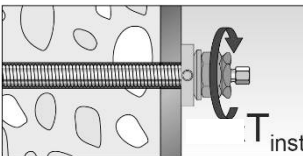
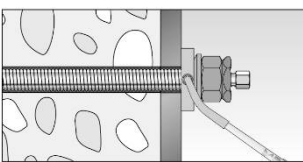
Installation instructions part 7; resin capsule RSB, pre-positioned installation

**Annex B15**

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## Installation instructions part 8; resin capsule RSB

### Push through installation fischer anchor rod RG M

|    |                                                                                     |                                                                                                                                                                                                                                                                                                   |                                                                                                                                                               |
|----|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6  |    | <p>Insert the resin capsule through the fixture into the drill hole by hand. Suitable resin capsule RSB or RSB mini see <b>Table B7.2</b>.</p>                                                                                                                                                    |  <p>Depending on the metal part, use a suitable setting tool / adapter.</p> |
| 7  |    | <p>Only use clean and grease-free metal parts. Drive the fischer anchor rod RG M into the capsule using suitable adapter and hammer drill set on rotary hammer action. Stop when the metal part reaches the bottom of the hole and the correct embedment depth is reached.</p>                    |                                                                                                                                                               |
| 8  |    | <p>When the correct embedment depth is reached, excess mortar must be visible in the mounting part. If not, the metal part must be pulled out directly and another resin capsule must be pushed into the drill hole. Setting process (Step 7) must be repeated.</p>                               |                                                                                                                                                               |
| 9  |    | <p>Wait for the specified curing time <math>t_{\text{cure}}</math> see <b>Table B8.2</b>.</p>                                                                                                                                                                                                     |                                                                                                                                                               |
| 10 |   | <p>Install the washer and nuts - without centering sleeve. Tighten the hexagon nut with torque wrench, <math>T_{\text{inst}}</math> see <b>Table B6.1</b>. Tighten lock nut manually, then use wrench to give another quarter or half turn.</p>                                                   |                                                                                                                                                               |
| 12 |  | <p>The gap between anchor and fixture (annular clearance) has to be filled with mortar (FIS SB, FIS SB High Speed, FIS V Plus or FIS EM Plus) via the fillable conical washer. If only tension loads are involved in the application, the annular gap does not necessarily have to be filled.</p> |                                                                                                                                                               |

**fischer Superbond dynamic**

#### Intended use

Installation instructions part 8; resin capsule RSB, push through installation

**Annex B16**

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| Table C1.1: Essential characteristics under tension fatigue loading for FIS SB / RSB;<br>Design method I according to TR 061                                                                                                                                          |                                                                                                              |                                                                                |                                        |                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------------|------------------------------|
| Required evidence                                                                                                                                                                                                                                                     |                                                                                                              |                                                                                |                                        |                              |
| Number of load cycles (n)                                                                                                                                                                                                                                             |                                                                                                              |                                                                                |                                        |                              |
| n ≤ 10 <sup>4</sup>                                                                                                                                                                                                                                                   | 10 <sup>4</sup> < n ≤ 5 · 10 <sup>6</sup>                                                                    | 5 · 10 <sup>6</sup> < n ≤ 10 <sup>8</sup>                                      | n > 10 <sup>8</sup>                    |                              |
| Tension loading                                                                                                                                                                                                                                                       |                                                                                                              |                                                                                |                                        |                              |
| Characteristic steel fatigue resistance (zinc plated steel 8.8)<br>ΔN <sub>Rk,s,0,n</sub> (8.8) [kN]                                                                                                                                                                  |                                                                                                              |                                                                                |                                        |                              |
| 0,75 · N <sub>Rk,s,(8.8)</sub> · 0,33                                                                                                                                                                                                                                 | 0,75 · N <sub>Rk,s,(8.8)</sub> · 10 <sup>(- 0,12 · log (n))</sup><br>≤ 0,75 · N <sub>Rk,s,(8.8)</sub> · 0,33 | 0,75 · N <sub>Rk,s,(8.8)</sub> · 10 <sup>(- 0,438 - 0,057 · log (n))</sup>     | 0,75 · N <sub>Rk,s,(8.8)</sub> · 0,12  |                              |
| Characteristic steel fatigue resistance (stainless steel R, property class 70)<br>ΔN <sub>Rk,s,0,n</sub> (R-70) [kN]                                                                                                                                                  |                                                                                                              |                                                                                |                                        |                              |
| 0,75 · N <sub>Rk,s,(R-70)</sub> · 0,33                                                                                                                                                                                                                                | 0,75 · N <sub>Rk,s,(R-70)</sub> · 10 <sup>(- 0,16 - 0,09 · log (n))</sup>                                    | 0,75 · N <sub>Rk,s,(R-70)</sub> ·<br>10 <sup>(- 0,469 - 0,043 · log (n))</sup> | 0,75 · N <sub>Rk,s,(R-70)</sub> · 0,15 |                              |
| Characteristic combined pull-out / concrete cone fatigue resistance,<br>in uncracked and cracked concrete                                                                                                                                                             |                                                                                                              |                                                                                |                                        |                              |
| Characteristic bond strength in uncracked concrete<br>Δτ <sub>Rk,p,ucr,0,n</sub> [N/mm <sup>2</sup> ]                                                                                                                                                                 |                                                                                                              |                                                                                |                                        |                              |
| τ <sub>Rk,ucr</sub> · 0,575                                                                                                                                                                                                                                           | τ <sub>Rk,ucr</sub> · 10 <sup>(- 0,06 · log (n))</sup>                                                       | τ <sub>Rk,ucr</sub> · 10 <sup>(- 0,207 - 0,029 · log (n))</sup>                | τ <sub>Rk,ucr</sub> · 0,35             |                              |
| Characteristic bond strength in cracked concrete<br>Δτ <sub>Rk,p,cr,0,n</sub> [N/mm <sup>2</sup> ]                                                                                                                                                                    |                                                                                                              |                                                                                |                                        |                              |
| τ <sub>Rk,cr</sub> · 0,575                                                                                                                                                                                                                                            | τ <sub>Rk,cr</sub> · 10 <sup>(- 0,06 · log (n))</sup>                                                        | τ <sub>Rk,cr</sub> · 10 <sup>(- 0,207 - 0,029 · log (n))</sup>                 | τ <sub>Rk,cr</sub> · 0,35              |                              |
| Characteristic concrete cone and splitting fatigue resistance                                                                                                                                                                                                         |                                                                                                              |                                                                                |                                        |                              |
| Characteristic concrete fatigue resistance in uncracked concrete<br>ΔN <sub>Rk,c/sp,ucr,0,n</sub> [kN]                                                                                                                                                                |                                                                                                              |                                                                                |                                        |                              |
| N <sub>Rk,c/sp,ucr</sub> · 0,66                                                                                                                                                                                                                                       | N <sub>Rk,c/sp,ucr</sub> · 1,1 · n <sup>- 0,055</sup> ≥ N <sub>Rk,c/sp,ucr</sub> · 0,50                      |                                                                                | N <sub>Rk,c/sp,ucr</sub> · 0,50        |                              |
| Characteristic concrete fatigue resistance in cracked concrete<br>ΔN <sub>Rk,c/sp,cr,0,n</sub> [kN]                                                                                                                                                                   |                                                                                                              |                                                                                |                                        |                              |
| N <sub>Rk,c/sp,cr</sub> · 0,66                                                                                                                                                                                                                                        | N <sub>Rk,c/sp,cr</sub> · 1,1 · n <sup>- 0,055</sup> ≥ N <sub>Rk,c/sp,cr</sub> · 0,50                        |                                                                                | N <sub>Rk,c/sp,cr</sub> · 0,50         |                              |
| Exponents and load transfer factor                                                                                                                                                                                                                                    |                                                                                                              |                                                                                |                                        |                              |
| Exponent for combined loading                                                                                                                                                                                                                                         |                                                                                                              |                                                                                |                                        |                              |
|                                                                                                                                                                                                                                                                       | M12                                                                                                          | M16                                                                            | M20                                    | M24                          |
| α <sub>s</sub> = α <sub>sn</sub> [-]                                                                                                                                                                                                                                  | 0,5                                                                                                          | 0,7                                                                            |                                        |                              |
| Load transfer factor                                                                                                                                                                                                                                                  |                                                                                                              |                                                                                |                                        |                              |
| ψ <sub>FN</sub> [-]                                                                                                                                                                                                                                                   | 0,5                                                                                                          |                                                                                |                                        |                              |
| N <sub>Rk,s</sub> , τ <sub>Rk,ucr</sub> , τ <sub>Rk,cr</sub> see ETA-12/0258 of 24.10.2023, for τ <sub>Rk</sub> (M24-R-70) ≤ 0,85 · τ <sub>Rk</sub> (M20-R-70)<br>N <sub>Rk,c/sp,ucr</sub> , N <sub>Rk,c/sp,cr</sub> see ETA-12/0258 of 24.10.2023 and EN 1992-4:2018 |                                                                                                              |                                                                                |                                        |                              |
| fischer Superbond dynamic                                                                                                                                                                                                                                             |                                                                                                              |                                                                                |                                        | Annex C1<br>Appendix 23 / 26 |
| Performance<br>Essential characteristics under tension fatigue loading;<br>Design method I according to TR 061                                                                                                                                                        |                                                                                                              |                                                                                |                                        |                              |

| Table C2.1: Essential characteristics under shear fatigue loading for FIS SB / RSB;<br>Design method I according to TR 061 |                                                                                   |                                                                                           |                              |                              |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------------|------------------------------|
| Required evidence                                                                                                          |                                                                                   |                                                                                           |                              |                              |
| Number of load cycles (n)                                                                                                  |                                                                                   |                                                                                           |                              |                              |
| $n \leq 10^4$                                                                                                              | $10^4 < n \leq 5 \cdot 10^6$                                                      | $5 \cdot 10^6 < n \leq 10^8$                                                              | $n > 10^8$                   |                              |
| Shear loading                                                                                                              |                                                                                   |                                                                                           |                              |                              |
| Characteristic steel fatigue resistance (zinc plated steel 8.8)<br>$\Delta V_{Rk,s,0,n}$ (8.8) [kN]                        |                                                                                   |                                                                                           |                              |                              |
| $V_{Rk,s,(8.8)} \cdot 0,23$                                                                                                | $V_{Rk,s,(8.8)} \cdot 10^{(-0,147 \cdot \log(n))} \leq V_{Rk,s,(8.8)} \cdot 0,23$ | $V_{Rk,s,(8.8)} \cdot 10^{(-0,573 - 0,068 \cdot \log(n))} \geq V_{Rk,s,(8.8)} \cdot 0,08$ | $V_{Rk,s,(8.8)} \cdot 0,08$  |                              |
| Characteristic steel fatigue resistance (stainless steel R, property class 70)<br>$\Delta V_{Rk,s,0,n}$ (R-70) [kN]        |                                                                                   |                                                                                           |                              |                              |
| $V_{Rk,s,(R-70)} \cdot 0,31$                                                                                               | $V_{Rk,s,(R-70)} \cdot 10^{(-0,042 - 0,118 \cdot \log(n))}$                       | $V_{Rk,s,(R-70)} \cdot 10^{(-0,461 - 0,056 \cdot \log(n))}$                               | $V_{Rk,s,(R-70)} \cdot 0,12$ |                              |
| Characteristic concrete pry out fatigue resistance in cracked and uncracked concrete<br>$\Delta V_{Rk,cp,0,n}$ [kN]        |                                                                                   |                                                                                           |                              |                              |
| $V_{Rk,cp} \cdot 0,574$                                                                                                    | $V_{Rk,cp} \cdot 1,2 \cdot n^{-0,08} \geq V_{Rk,cp} \cdot 0,50$                   |                                                                                           | $V_{Rk,cp} \cdot 0,50$       |                              |
| Characteristic concrete edge fatigue resistance in cracked and uncracked concrete<br>$\Delta V_{Rk,c,0,n}$ [kN]            |                                                                                   |                                                                                           |                              |                              |
| $V_{Rk,c} \cdot 0,574$                                                                                                     | $V_{Rk,c} \cdot 1,2 \cdot n^{-0,08} \geq V_{Rk,c} \cdot 0,50$                     |                                                                                           | $V_{Rk,c} \cdot 0,50$        |                              |
| Exponents, load transfer factor                                                                                            |                                                                                   |                                                                                           |                              |                              |
| Exponent for combined loading, steel failure                                                                               |                                                                                   |                                                                                           |                              |                              |
|                                                                                                                            | M12                                                                               | M16                                                                                       | M20                          | M24                          |
| $\alpha_s = \alpha_{sn}$                                                                                                   | [-]                                                                               | 0,5                                                                                       | 0,7                          |                              |
| Exponent for combined loading, verification regarding failure modes other than steel failure                               |                                                                                   |                                                                                           |                              |                              |
| $\alpha_c$                                                                                                                 | [-]                                                                               | 1,5                                                                                       |                              |                              |
| Load transfer factor                                                                                                       |                                                                                   |                                                                                           |                              |                              |
| $\psi_{FV}$                                                                                                                | [-]                                                                               | 0,5                                                                                       |                              |                              |
| $V_{Rk,s}$ see ETA-12/0258 of 24.10.2023<br>$V_{Rk,c}, V_{Rk,cp}$ see ETA-12/0258 of 24.10.2023 and EN 1992-4:2018         |                                                                                   |                                                                                           |                              |                              |
| fischer Superbond dynamic                                                                                                  |                                                                                   |                                                                                           |                              | Annex C2<br>Appendix 24 / 26 |
| Performance<br>Essential characteristics under shear fatigue loading;<br>Design method I according to TR 061               |                                                                                   |                                                                                           |                              |                              |

| Table C3.1: Essential characteristics under tension and shear fatigue loading;<br>Design method II according to TR 061; zinc plated steel 8.8                                                              |                                   |                      |                                  |                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------|----------------------------------|------------------------------|
| Size                                                                                                                                                                                                       |                                   |                      | M12                              | M16                          |
| Tension loading                                                                                                                                                                                            |                                   |                      |                                  |                              |
| Effective embedment depth                                                                                                                                                                                  | $h_{ef,min}$                      | [mm]                 | 95                               | 125                          |
| Steel failure                                                                                                                                                                                              |                                   |                      |                                  |                              |
| Characteristic steel fatigue resistance                                                                                                                                                                    | $\Delta N_{Rk,s,0,\infty}$        | [kN]                 | 6,1                              | 11,3                         |
| Exponent for combined loading                                                                                                                                                                              | $\alpha_s = \alpha_{sn}$          | [-]                  | 0,5                              | 0,7                          |
| Combined pull-out / concrete cone failure                                                                                                                                                                  |                                   |                      |                                  |                              |
| Characteristic bond fatigue resistance                                                                                                                                                                     | $\Delta \tau_{Rk,p,ucr,0,\infty}$ | [N/mm <sup>2</sup> ] | $\tau_{Rk,ucr} \cdot 0,35$       |                              |
|                                                                                                                                                                                                            | $\Delta \tau_{Rk,p,cr,0,\infty}$  | [N/mm <sup>2</sup> ] | $\tau_{Rk,cr} \cdot 0,35$        |                              |
| Concrete cone failure and concrete splitting failure                                                                                                                                                       |                                   |                      |                                  |                              |
| Characteristic concrete fatigue resistance                                                                                                                                                                 | $\Delta N_{Rk,c,0,\infty}$        | [-]                  | $0,5 \cdot N_{Rk,c}^{1)}$        |                              |
|                                                                                                                                                                                                            | $\Delta N_{Rk,sp,0,\infty}$       | [-]                  | $0,5 \cdot N_{Rk,sp}^{1)}$       |                              |
| Exponent for combined loading                                                                                                                                                                              | $\alpha_c$                        | [-]                  | 1,5                              |                              |
| Load transfer factor                                                                                                                                                                                       | $\Psi_{FN}$                       | [-]                  | 0,5                              |                              |
| Shear loading                                                                                                                                                                                              |                                   |                      |                                  |                              |
| Shear loading, steel failure without lever arm                                                                                                                                                             |                                   |                      |                                  |                              |
| Characteristic steel fatigue resistance                                                                                                                                                                    | $\Delta V_{Rk,s,0,\infty}$        | [kN]                 | 2,7                              | 5,0                          |
| Exponent for combined loading                                                                                                                                                                              | $\alpha_s = \alpha_{sn}$          | [-]                  | 0,5                              | 0,7                          |
| Concrete pryout failure                                                                                                                                                                                    |                                   |                      |                                  |                              |
| Characteristic concrete fatigue resistance                                                                                                                                                                 | $\Delta V_{Rk,cp,0,\infty}$       | [kN]                 | $0,5 \cdot V_{Rk,cp}^{1)}$       |                              |
| Concrete edge failure                                                                                                                                                                                      |                                   |                      |                                  |                              |
| Characteristic concrete fatigue resistance                                                                                                                                                                 | $\Delta V_{Rk,c,0,\infty}$        | [kN]                 | $0,5 \cdot V_{Rk,c}^{1)}$        |                              |
| Effective length of fastener                                                                                                                                                                               | $l_f$                             | [mm]                 | $\min(h_{ef}; 12 \cdot d_{nom})$ |                              |
| Effective outside diameter of the anchor                                                                                                                                                                   | $d_{nom}$                         | [mm]                 | 12                               | 16                           |
| Exponent for combined loading                                                                                                                                                                              | $\alpha_c$                        | [-]                  | 1,5                              |                              |
| Load transfer factor                                                                                                                                                                                       | $\Psi_{FV}$                       | [-]                  | 0,5                              |                              |
| 1) $N_{Rk,c}$ , $N_{Rk,sp}$ , $V_{Rk,c}$ and $V_{Rk,cp}$ – Essential characteristics for concrete failure under static and quasi-static loading according to ETA-12/0258 of 24.10.2023 and EN 1992-4:2018. |                                   |                      |                                  |                              |
| fischer Superbond dynamic                                                                                                                                                                                  |                                   |                      |                                  | Annex C3<br>Appendix 25 / 26 |
| Performance<br>Essential characteristics under tension / shear fatigue loading;<br>Design method II according to TR 061; zinc plated steel 8.8                                                             |                                   |                      |                                  |                              |

| Table C4.1: Essential characteristics under tension and shear fatigue loading;<br>Design method II according to TR 061; stainless steel R property class 70                                                                                                                  |                                   |                      |                                  |      |                  |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------|----------------------------------|------|------------------|------|
| Size                                                                                                                                                                                                                                                                         |                                   |                      | M12                              | M16  | M20              | M24  |
| Tension loading                                                                                                                                                                                                                                                              |                                   |                      |                                  |      |                  |      |
| Effective embedment depth                                                                                                                                                                                                                                                    | $h_{ef,min}$                      | [mm]                 | 95                               | 125  | 170              | 220  |
| Steel failure                                                                                                                                                                                                                                                                |                                   |                      |                                  |      |                  |      |
| Characteristic steel fatigue resistance                                                                                                                                                                                                                                      | $\Delta N_{Rk,s,0,\infty}$        | [kN]                 | 6,6                              | 12,4 | 19,4             | 27,8 |
| Exponent for combined loading                                                                                                                                                                                                                                                | $\alpha_s = \alpha_{sn}$          | [-]                  | 0,5                              | 0,7  |                  |      |
| Combined pull-out / concrete cone failure                                                                                                                                                                                                                                    |                                   |                      |                                  |      |                  |      |
| Characteristic bond fatigue resistance                                                                                                                                                                                                                                       | $\Delta \tau_{Rk,p,ucr,0,\infty}$ | [N/mm <sup>2</sup> ] | $\tau_{Rk,ucr} \cdot 0,35$       |      |                  |      |
|                                                                                                                                                                                                                                                                              | $\Delta \tau_{Rk,p,cr,0,\infty}$  | [N/mm <sup>2</sup> ] | $\tau_{Rk,cr} \cdot 0,35$        |      |                  |      |
| Concrete cone failure and concrete splitting failure                                                                                                                                                                                                                         |                                   |                      |                                  |      |                  |      |
| Characteristic concrete fatigue resistance                                                                                                                                                                                                                                   | $\Delta N_{Rk,c,0,\infty}$        | [-]                  | $0,5 \cdot N_{Rk,c}^{1)}$        |      |                  |      |
|                                                                                                                                                                                                                                                                              | $\Delta N_{Rk,sp,0,\infty}$       | [-]                  | $0,5 \cdot N_{Rk,sp}^{1)}$       |      |                  |      |
| Exponent for combined loading                                                                                                                                                                                                                                                | $\alpha_c$                        | [-]                  | 1,5                              |      |                  |      |
| Load transfer factor                                                                                                                                                                                                                                                         | $\Psi_{FN}$                       | [-]                  | 0,5                              |      |                  |      |
| Shear loading                                                                                                                                                                                                                                                                |                                   |                      |                                  |      |                  |      |
| Shear loading, steel failure without lever arm                                                                                                                                                                                                                               |                                   |                      |                                  |      |                  |      |
| Characteristic steel fatigue resistance                                                                                                                                                                                                                                      | $\Delta V_{Rk,s,0,\infty}$        | [kN]                 | 3,6                              | 6,6  | 10,3             | 14,9 |
| Exponent for combined loading                                                                                                                                                                                                                                                | $\alpha_s = \alpha_{sn}$          | [-]                  | 0,5                              | 0,7  |                  |      |
| Concrete pryout failure                                                                                                                                                                                                                                                      |                                   |                      |                                  |      |                  |      |
| Characteristic concrete fatigue resistance                                                                                                                                                                                                                                   | $\Delta V_{Rk,cp,0,\infty}$       | [kN]                 | $0,5 \cdot V_{Rk,cp}^{1)}$       |      |                  |      |
| Concrete edge failure                                                                                                                                                                                                                                                        |                                   |                      |                                  |      |                  |      |
| Characteristic concrete fatigue resistance                                                                                                                                                                                                                                   | $\Delta V_{Rk,c,0,\infty}$        | [kN]                 | $0,5 \cdot V_{Rk,c}^{1)}$        |      |                  |      |
| Effective length of fastener                                                                                                                                                                                                                                                 | $l_f$                             | [mm]                 | $\min(h_{ef}; 12 \cdot d_{nom})$ |      |                  |      |
| Effective outside diameter of the anchor                                                                                                                                                                                                                                     | $d_{nom}$                         | [mm]                 | 12                               | 16   | 20               | 24   |
| Exponent for combined loading                                                                                                                                                                                                                                                | $\alpha_c$                        | [-]                  | 1,5                              |      |                  |      |
| Load transfer factor                                                                                                                                                                                                                                                         | $\Psi_{FV}$                       | [-]                  | 0,5                              |      |                  |      |
| 1) $N_{Rk,c}$ , $N_{Rk,sp}$ , $V_{Rk,c}$ and $V_{Rk,cp}$ – Essential characteristics for concrete failure under static and quasi-static loading according to ETA-12/0258 of 24.10.2023 and EN 1992-4:2018, for $\tau_{Rk}$ (M24-R-70) $\leq 0,85 \cdot \tau_{Rk}$ (M20-R-70) |                                   |                      |                                  |      |                  |      |
| fischer Superbond dynamic                                                                                                                                                                                                                                                    |                                   |                      |                                  |      | Annex C4         |      |
| Performance<br>Essential characteristics under tension / shear fatigue loading;<br>Design method II according to TR 061; stainless steel R property class 70                                                                                                                 |                                   |                      |                                  |      |                  |      |
|                                                                                                                                                                                                                                                                              |                                   |                      |                                  |      | Appendix 26 / 26 |      |