

## DECLARAȚIA DE PERFORMANȚĂ

### DoP 0416

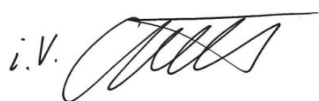
pentru fischer HybridPower (Ancore din metal pentru utilizare în beton)

RO

1. Cod unic de identificare al produsului-tip: **DoP 0416**
2. Utilizare (utilizări) preconizată (preconizate): **Prindere cu instalare ulterioară în beton nefisurat., consultați suplimentul, în special anexele B1 - B3.**
3. Fabricant: **fischerwerke GmbH & Co. KG, Klaus-Fischer-Str. 1, 72178 Waldachtal, Germany**
4. Reprezentant autorizat: **—**
5. Sistemul (sistemele) de evaluare și de verificare a constanței performanței: **1**
6. Documentul de evaluare european: **EAD 330232-02-0601**  
Evaluarea tehnică europeană: **ETA-26/0167; 2026-06-23**  
Organismul de evaluare tehnică: **ETA-Danmark A/S**  
Organism (organisme) notificat(e): **2873 TU Darmstadt**
7. Performanța (performanțe) declarată (declare):  
**Rezistență mecanică și stabilitate (BWR 1)**  
**Rezistența caracteristică la întindere (pentru încărcări statice și cvasistatice) Metoda A:**  
1 Rezistența la cedarea oțelului: Anexele C1  
2 Rezistența la smulgere: Anexele C1  
3 Rezistența la cedarea conului de beton: Anexele C2  
4 Robustețe: Anexele C1  
5 Distanța minimă față de margine și între ancore: Anexele B2  
6 Distanța față de margine pentru a preveni fisuri sub încărcare: Anexele C2  
**Rezistența caracteristică la forfecare (pentru încărcări statice și cvasistatice):**  
7 Rezistența la cedarea oțelului (rezistența la forfecare): Anexele C3  
8 Rezistența la cedarea cu braț de levier: Anexele C3  
**Rezistența caracteristică pentru un design simplificat:**  
9 Metoda B: NPD  
10 Metoda C: NPD  
**Deplasări:**  
11 Deplasări sub încărcări statice și cvasistatice: Anexele C5  
**Rigiditate:**  
12 Rigiditate în domeniul elastic sub sarcină de tracțiune: NPD  
13 Caracteristicile rigidității pentru încărcarea la tracțiune pentru modelele de arc neliniare: NPD  
**Rezistența caracteristică pentru categoria de performanță seismică C1:**  
14 Rezistența la întindere: NPD  
15 Rezistența la forfecare: Factor gol circular: NPD  
**Rezistența caracteristică și Deplasări pentru performanță seismică de categoriile C2:**  
16 Rezistența la întindere, deplasări: NPD  
17 Rezistența la forfecare, deplasări, Factor gol circular: NPD  
**Siguranța în caz de incendiu (BWR 2)**  
18 Reacție la foc: Clasa (A1)  
**Rezistența la incendiu:**  
19 Rezistența la foc în ipoteza cedării oțelului (rezistența la întindere) Anexele C4  
20 Rezistența la foc în ipoteza cedării prin smulgere (rezistența la întindere) Anexele C4  
21 Rezistența la foc în ipoteza cedării oțelului (rezistența la forfecare) Anexele C4  
**Durabilitate:**  
22 Durabilitate: Anexele B1
8. Documentație tehnică adecvată și/sau documentație tehnică specifică: **—**

Performanța produsului identificat mai sus este în conformitate cu setul de performanțe declarate. Această declarație de performanță este eliberată în conformitate cu Regulamentul (UE) nr. 305/2011, pe răspunderea exclusivă a fabricantului identificat mai sus.

Semnată pentru și în numele fabricantului de către:



Dr. Christian Weber, Director Dezvoltare  
Tumlingen, 2026-08-01



Dieter Pfaff, Șeful Federației Internaționale de Producție și Managementul Calității

Această declarație de performanță a fost întocmită în mai multe limbi. În cazul unei divergențe de interpretare, versiunea în limba engleză prevalează întotdeauna. Suplimentul include informații voluntare și complementare în limba engleză, în afara cerințelor legale (specificate neutru din punct de vedere al limbii).

Translation guidance Essential Characteristics and Performance Parameters for Annexes

**Ghid de traducere a caracteristicilor esențiale și a parametrilor de performanță pentru anexe**

|                                                                                             |                                                                                                                                                                             |                                                                                                                          |
|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Mechanical resistance and stability (BWR 1)                                                 |                                                                                                                                                                             |                                                                                                                          |
| Rezistență mecanică și stabilitate (BWR 1)                                                  |                                                                                                                                                                             |                                                                                                                          |
| Characteristic resistance under static and quasi-static loading, Method A                   |                                                                                                                                                                             |                                                                                                                          |
| Rezistența caracteristică la întindere (pentru încărcări statice și cvasistatice) Metoda A: |                                                                                                                                                                             |                                                                                                                          |
| 1                                                                                           | Resistance to steel failure:<br>Rezistența la cedarea oțelului:                                                                                                             | $N_{Rk,s}$ [kN], $E_s$ [N/mm <sup>2</sup> ]                                                                              |
| 2                                                                                           | Resistance to pull- out failure:<br>Rezistența la smulgere:                                                                                                                 | $N_{Rk,p}$ [kN], $\psi_c$                                                                                                |
| 3                                                                                           | Resistance to concrete cone failure:<br>Rezistența la cedarea conului de beton:                                                                                             | $k_{cr,N}$ , $k_{ucr,N}$ [-], $h_{ef}$ , $c_{cr,N}$ [mm]                                                                 |
| 4                                                                                           | Robustness:<br>Robustețe:                                                                                                                                                   | $\gamma_{inst}$ [-]                                                                                                      |
| 5                                                                                           | Minimum edge distance and spacing:<br>Distanța minimă față de margine și între ancore:                                                                                      | $c_{min}$ , $s_{min}$ , $h_{min}$ [mm]                                                                                   |
| 6                                                                                           | Edge distance to prevent splitting under load:<br>Distanța față de margine pentru a preveni fisuri sub încărcare:                                                           | $N^0_{Rk,sp}$ [kN], $c_{cr,sp}$ [mm]                                                                                     |
| Characteristic resistance to shear load (static and quasi-static loading), Method A         |                                                                                                                                                                             |                                                                                                                          |
| Rezistența caracteristică la forfecare (pentru încărcări statice și cvasistatice):          |                                                                                                                                                                             |                                                                                                                          |
| 7                                                                                           | Resistance to steel failure under shear load:<br>Rezistența la cedarea oțelului (rezistența la forfecare):                                                                  | $V^0_{Rk,s}$ [kN], $M^0_{Rk,s}$ [Nm], $k_7$ [-]                                                                          |
| 8                                                                                           | Resistance to pry-out failure:<br>Rezistența la cedarea cu braț de levier:                                                                                                  | $k_8$ [-]                                                                                                                |
| Characteristic Resistance for simplified design:                                            |                                                                                                                                                                             |                                                                                                                          |
| Rezistență caracteristică pentru un design simplificat:                                     |                                                                                                                                                                             |                                                                                                                          |
| 9                                                                                           | Method B:<br>Metoda B:                                                                                                                                                      | $F^0_{Rk}$ [kN], $M^0_{Rk,s}$ [Nm] $\psi_c$ [-], $c_{cr}$ , $s_{cr}$ , $c_{min}$ , $s_{min}$ , $h_{min}$ [mm]            |
| 10                                                                                          | Method C:<br>Metoda C:                                                                                                                                                      | $F_{Rk}$ [kN], $M^0_{Rk,s}$ [Nm], $c_{cr}$ , $s_{cr}$ , $h_{min}$ [mm]                                                   |
| Displacements                                                                               |                                                                                                                                                                             |                                                                                                                          |
| Deplasări:                                                                                  |                                                                                                                                                                             |                                                                                                                          |
| 11                                                                                          | Displacements under static and quasi-static loading:<br>Deplasări sub încărcări statice și cvasistatice:                                                                    | $\delta_{N0}$ , $\delta_{N50years}$ , $\delta_{N100years}$ , $\delta_{V0}$ , $\delta_{V\infty}$ [mm]                     |
| 12                                                                                          | Stiffness characteristics for tension loading for non-linear spring models:<br>Rigiditate:                                                                                  | $k_{1,cr}$ , $k_{2,cr}$ , $k_{3,cr}$ , $k_{4,cr}$ [kN/mm]                                                                |
| 12                                                                                          | Stiffness in the elastic range under tension loading<br>Rigiditate în domeniul elastic sub sarcină de tracțiune:                                                            | $k_{A,ucr}$ , $k_{A,cr}$ [N/mm]                                                                                          |
| 13                                                                                          | Stiffness characteristics for tension loading for non-linear spring models<br>Caracteristicile rigidității pentru încărcarea la tracțiune pentru modelele de arc neliniare: | $k_{A,ucr}$ , $k_{B,ucr}$ , $k_{C,ucr}$ , $k_{D,ucr}$ [N/mm]<br>$k_{A,cr}$ , $k_{B,cr}$ , $k_{C,cr}$ , $k_{D,cr}$ [N/mm] |
| Characteristic resistance for seismic performance category C1:                              |                                                                                                                                                                             |                                                                                                                          |
| Rezistență caracteristică pentru categoria de performanță seismică C1:                      |                                                                                                                                                                             |                                                                                                                          |
| 14                                                                                          | Resistance to tension load:<br>Rezistența la întindere:                                                                                                                     | $N_{Rk,s,C1}$ [kN], $N_{Rk,p,C1}$ [kN]                                                                                   |
| 15                                                                                          | Resistance to shear load:, Factor annular gap:<br>Rezistența la forfecare:, Factor gol circular:                                                                            | $V_{Rk,s,C1}$ [kN]                                                                                                       |
| Characteristic resistance and displacements for seismic performance categorie C2:           |                                                                                                                                                                             |                                                                                                                          |
| Rezistență caracteristică și Deplasări pentru performanță seismică de categoriile C2:       |                                                                                                                                                                             |                                                                                                                          |
| 16                                                                                          | Resistance to tension load, displacements:<br>Rezistența la întindere, deplasări:                                                                                           | $N_{Rk,s,C2}$ [kN], $N_{Rk,p,C2}$ [kN]<br>$\delta_{N,C2(0,5)}$ , $\delta_{N,C2(0,8)}$ [mm]                               |
| 17                                                                                          | Resistance to shear load and displacements, factor annular gap:<br>Rezistența la forfecare, deplasări, Factor gol circular:                                                 | $V_{Rk,s,C2}$ [kN],<br>$\delta_{V,C2(0,5)}$ , $\delta_{V,C2(0,8)}$ [mm]                                                  |
| Safety in case of fire (BWR 2)                                                              |                                                                                                                                                                             |                                                                                                                          |
| Siguranța în caz de incendiu (BWR 2)                                                        |                                                                                                                                                                             |                                                                                                                          |
| 18                                                                                          | Reaction to fire:<br>Reacție la foc:                                                                                                                                        | Class                                                                                                                    |
| Resistance to fire:                                                                         |                                                                                                                                                                             |                                                                                                                          |
| Rezistența la incendiu:                                                                     |                                                                                                                                                                             |                                                                                                                          |
| 19                                                                                          | Fire resistance to steel failure (tension load):<br>Rezistența la foc în ipoteza cedării oțelului (rezistența la întindere)                                                 | $N_{Rk,s,fi}$ [kN]                                                                                                       |
| 20                                                                                          | Fire resistance to pull-out failure (tension load):<br>Rezistența la foc în ipoteza cedării prin smulgere (rezistența la întindere)                                         | $N_{Rk,p,fi}$ [kN]                                                                                                       |
| 21                                                                                          | Fire resistance to steel failure (shear load):<br>Rezistența la foc în ipoteza cedării oțelului (rezistența la forfecare)                                                   | $V_{Rk,s,fi}$ [kN], $M^0_{Rk,s,fi}$ [Nm]                                                                                 |
| Aspects of durability                                                                       |                                                                                                                                                                             |                                                                                                                          |
| Durabilitate:                                                                               |                                                                                                                                                                             |                                                                                                                          |
| 22                                                                                          | Durability:<br>Durabilitate:                                                                                                                                                | Class                                                                                                                    |

## **II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT**

### **1 Technical description of product**

The fischer HybridPower is a plastic anchor consisting of a plug sleeve made of polyamide combined with a metal skeleton (power wedge), and a special screw made of either galvanized steel with an additional organic coating or stainless steel according to Annex A3. The anchor is available with two different head types; a hexagon head (type FUS) and a countersunk head (type T).

The anchors are intended for use in both cracked and uncracked concrete of strength classes ranging from C20/25 to C50/60.

The anchor is screwed into a predrilled cylindrical drill hole, and the power wedges interlock with the base material ensuring a secure anchorage.

The product description is given in Annex A and the intended use specifications of the product are detailed in Annex B.

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

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 provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor of 50 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, 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

| Characteristic | Assessment of characteristic |
|----------------|------------------------------|
|----------------|------------------------------|

#### 3.1 Mechanical resistance and stability (BWR1)

##### Characteristic resistance to tension load (static and quasi-static loading) Method A

|                                                |          |
|------------------------------------------------|----------|
| Resistance to steel failure under tension load | Annex C1 |
| Resistance to pull-out failure                 | Annex C1 |
| Resistance to concrete cone failure            | Annex C2 |
| Robustness                                     | Annex C1 |
| Minimum edge distance and spacing              | Annex B2 |
| Edge distance to prevent splitting under load  | Annex C2 |

##### Characteristic resistance to shear load (static and quasi-static loading)

|                                              |          |
|----------------------------------------------|----------|
| Resistance to steel failure under shear load | Annex C3 |
| Resistance to pry-out failure                | Annex C3 |

##### Characteristic resistance for simplified methods

|          |              |
|----------|--------------|
| Method B | Not relevant |
| Method C | Not relevant |

##### Displacements

|                                                     |          |
|-----------------------------------------------------|----------|
| Displacements under static and quasi-static loading | Annex C5 |
|-----------------------------------------------------|----------|

##### Stiffness

|                                                                            |                         |
|----------------------------------------------------------------------------|-------------------------|
| Stiffness in the elastic range under tension loading                       | No performance assessed |
| Stiffness characteristics for tension loading for non-linear spring models | No performance assessed |

##### Characteristic resistance for seismic performance category C1

|                            |                         |
|----------------------------|-------------------------|
| Resistance to tension load | No performance assessed |
| Resistance to shear load   | No performance assessed |

##### Characteristic resistance and displacements for seismic performance category C2

|                                              |                         |
|----------------------------------------------|-------------------------|
| Resistance to tension load and displacements | No performance assessed |
|----------------------------------------------|-------------------------|

| Characteristic                             | Assessment of characteristic |
|--------------------------------------------|------------------------------|
| Resistance to shear load and displacements | No performance assessed      |

### 3.2 Safety in case of fire (BWR2)

|                  |          |
|------------------|----------|
| Reaction to fire | Class A1 |
|------------------|----------|

#### Resistance to fire

|                                                     |          |
|-----------------------------------------------------|----------|
| Fire resistance to steel failure under tension load | Annex C4 |
| Fire resistance to pull-out failure                 | Annex C4 |
| Fire resistance to steel failure under shear load   | Annex C4 |

### 3.3 Aspects of durability

|            |          |
|------------|----------|
| Durability | Annex B1 |
|------------|----------|

See additional information in section 3.9

### **3.9 General aspects related to the performance of the product**

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

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

### **4.1 AVCP system**

According to the decision 1996/582/EC of the European Commission, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No. 305/2011) is 1.

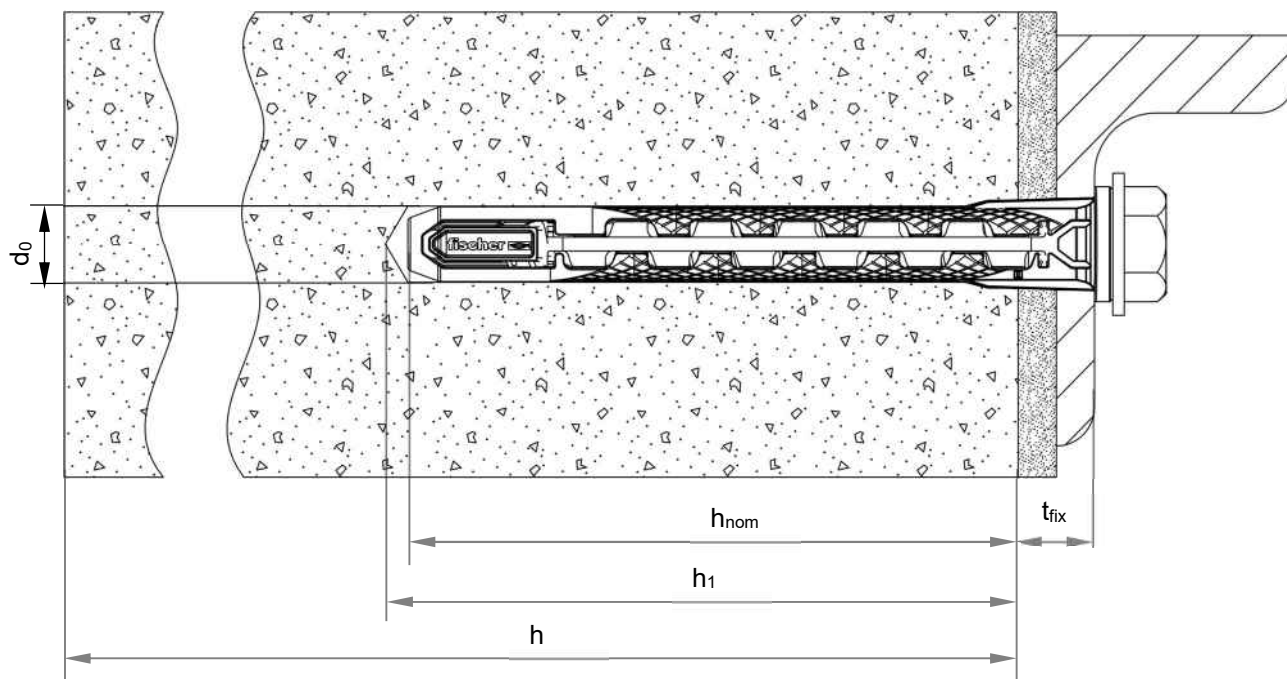
## **5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking.

The following standards and documents are referred to in this European Technical Assessment:

- EOTA European Assessment Document EAD 330232-02-0601: Mechanical fasteners for use in concrete
- EN 206:2013+A2:2021: Concrete – Specification, performance, production and conformity
- EN 1992-4:2019-04: Eurocode 2 - Design of concrete structures - Part 4: Design of fastenings for use in concrete; German version EN 1992-4:2018
- EN 1993-1-4:2006 + A1:2015: Eurocode 3: Design of steel structures - Part 1-4: General rules - Supplementary rules for stainless steels
- EN ISO 4042:2018: Fasteners – Electroplated coating systems

## fischer HybridPower



### Legend

- $d_0$  = Nominal drill hole diameter
- $h_{nom}$  = Overall plastic anchor embedment depth in the base material
- $h_1$  = Depth of drill hole to deepest point
- $h$  = Thickness of concrete member
- $t_{fix}$  = Thickness of fixture and / or non-load bearing layer

*Figure not to scale*

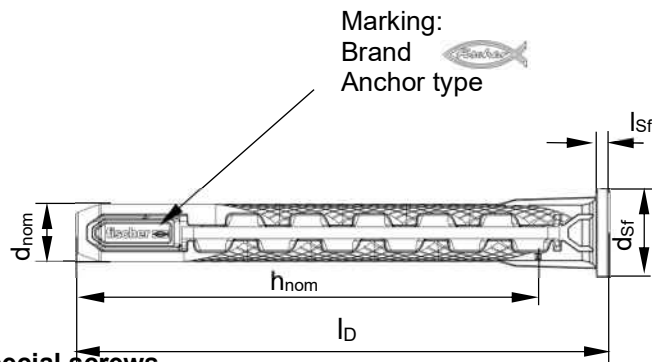
## fischer HybridPower

**Product description**  
Installed anchor

## Annex A1

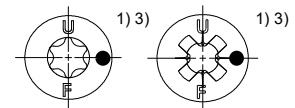
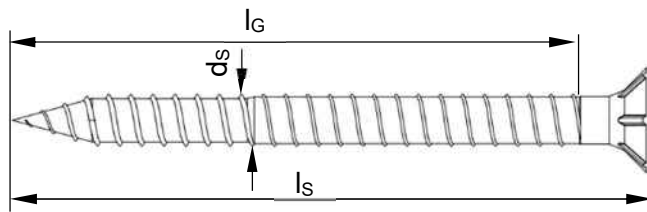
Appendix 6 / 16

## Anchor sleeve – HybridPower

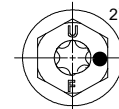
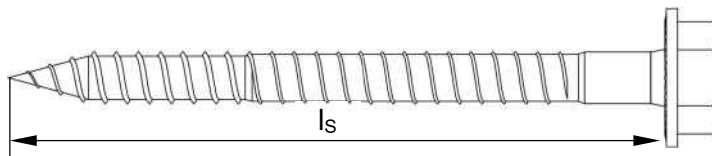


### Special screws

#### Countersunk screw



#### Hexagonal screw with washer



- 1) Additional marking for the special screw, stainless steel version: e.g. "A4" or "R" or "A2".  
2) Internal driving feature for Torx bit is optional for hexagonal head.  
3) Optional additional version with underhead ribs.

**Table A2.1: Dimensions**

| Anchor type     | Anchor sleeve     |                   |               |                  |                  | Special screw |               |               |
|-----------------|-------------------|-------------------|---------------|------------------|------------------|---------------|---------------|---------------|
|                 | $h_{nom}$<br>[mm] | $d_{nom}$<br>[mm] | $l_D$<br>[mm] | $l_{sf}$<br>[mm] | $d_{sf}$<br>[mm] | $d_s$<br>[mm] | $l_G$<br>[mm] | $l_s$<br>[mm] |
| HybridPower FUS | 80                | 10                | 90-230        | 2,5              | 15               | 7,0           | 77            | $l_D$         |
| HybridPower T   | 80                | 10                | 90-230        | 2,5              | 15               | 7,0           | 77            | $l_D$         |

### Legend

|           |   |                                                             |
|-----------|---|-------------------------------------------------------------|
| $h_{nom}$ | = | Overall plastic anchor embedment depth in the base material |
| $d_{nom}$ | = | Nominal diameter of the anchor sleeve                       |
| $l_D$     | = | Length of the anchor sleeve                                 |
| $l_{sf}$  | = | Thickness of the anchor sleeve collar                       |
| $d_{sf}$  | = | Diameter of the anchor sleeve collar                        |
| $d_s$     | = | Diameter of the screw                                       |
| $l_G$     | = | Thread length of the screw                                  |
| $l_s$     | = | Length of the screw                                         |

*Figures not to scale*

### fischer HybridPower

#### Product description

Anchor type and special screws  
Marking and dimensions

### Annex A2

Appendix 7 / 16

**Table A3.1: Materials**

| Name                      | Material                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HybridPower anchor sleeve | - Polyamide, PA6, colour: red                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| HybridPower skeleton      | - Ferritic stainless steel                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Special screw             | <div>- Galvanised steel gvz with Zn5/Ag or Zn5/An in accordance with EN ISO 4042 with additional organic layer (Zn5/Ag/T7 or Zn5/An/T7, resp., total layer thickness <math>\geq 6 \mu\text{m}</math>)<br/><div><u>or</u></div><div>- Stainless steel "A2" of corrosion resistance class CRC II in accordance with EN 1993-1-4<br/><div><u>or</u></div><div>- Stainless steel "A4" or "R" of corrosion resistance class CRC III in accordance with EN 1993-1-4</div></div></div> |

**fischer HybridPower****Product description**  
Materials**Annex A3**

Appendix 8 / 16

## Specifications of intended use

### Anchorage subject to:

- Static and quasi-static loads.
- Fire exposure.

### Base materials:

- Reinforced or unreinforced compacted normal weight concrete without fibres (cracked or uncracked) in accordance with EN 206-1.
- Strength classes C20/25 to C50/60 in accordance with EN 206-1.

### Use conditions (Environmental conditions):

- Temperature Range: - 20 °C to + 50 °C.
- Structures subject to dry internal conditions (HybridPower, HybridPower A2, HybridPower A4, HybridPower R).
- For all other conditions according to EN 1993-1-4 corresponding to corrosion resistance class (CRC):
  - for CRC II: for HybridPower A2
  - for CRC III: for HybridPower A4 or HybridPower R

### Design:

- The structural design is conducted under responsibility of a designer experienced in the field of anchorages and concrete works.
- Verifiable calculation notes and drawings are to be prepared taking account of the loads to be anchored. The position of the fastener is indicated on the design drawings (e.g. position of the fastener relative to reinforcement or to supports, etc.).
- Design of fastenings according to EN 1992-4.

### Installation:

- Fastener installation is to be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Use of the fastener only as supplied by the manufacturer without exchanging the components of the fastener.
- Hammer drilling.
- Drill hole created perpendicular +/- 5° to concrete surface, positioning without damaging the reinforcement.
- In case of aborted hole: new drilling at a minimum distance twice the depth of the aborted drill hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.
- Installation temperature: - 20 °C to + 40 °C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks.
- No ingress of water in the borehole at temperatures < 0°C.

**fischer HybridPower**

**Intended use**  
Specifications

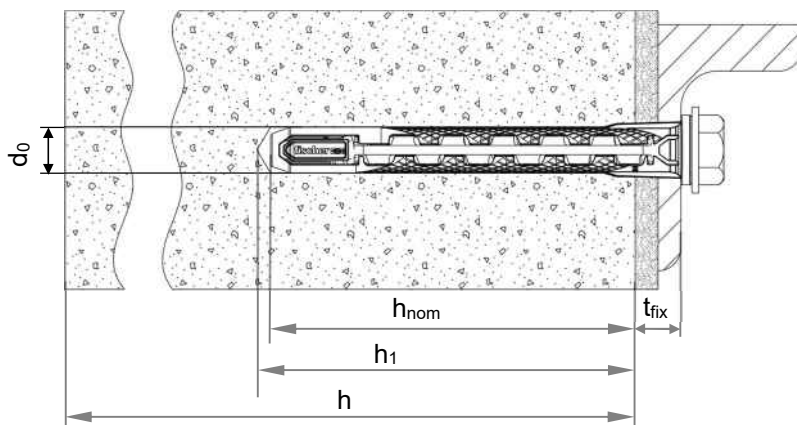
**Annex B1**

Appendix 9 / 16

**Table B2.1: Installation parameters**

| Anchor type                                                 |           |        | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |
|-------------------------------------------------------------|-----------|--------|---------------------------------------------------------------|
| Nominal drill hole diameter                                 | $d_0$     | = [mm] | 10                                                            |
| Cutting diameter of drill bit                               | $d_{cut}$ | ≤ [mm] | 10,45                                                         |
| Overall plastic anchor embedment depth in the base material | $h_{nom}$ | ≥ [mm] | 80                                                            |
| Depth of drill hole to deepest point                        | $h_1$     | ≥ [mm] | 90                                                            |
| Diameter of clearance hole in the fixture                   | $d_f$     | ≤ [mm] | 10,50 <sup>1)</sup>                                           |
| Thickness of fixture and / or non-load bearing layer        | $t_{fix}$ | ≥ [mm] | 1                                                             |

<sup>1)</sup> In combination of hexagon screw with washer and anchor sleeve, use in elongated hole under tensile load is allowed.

**Table B2.2: Minimum thickness of concrete members, minimum edge distances and minimum spacing**

| Anchor type                              |                | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |
|------------------------------------------|----------------|---------------------------------------------------------------|
|                                          |                | 10                                                            |
| <b>Minimum edge distance and spacing</b> |                |                                                               |
| Uncracked concrete                       | $c_{min}$      | 50                                                            |
| Cracked concrete                         |                |                                                               |
| Uncracked concrete                       | $s_{min}$ [mm] | 50                                                            |
| Cracked concrete                         |                |                                                               |
| Minimum thickness of concrete member     | $h_{min}$      | 100                                                           |

*Figure not to scale*

**fischer HybridPower**

**Intended use**

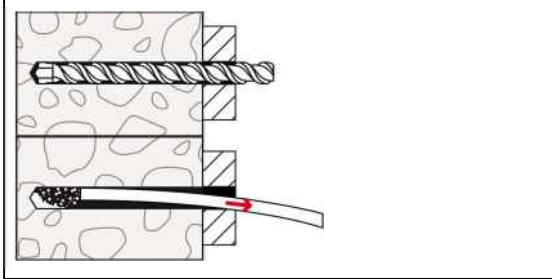
Installation parameters  
Minimum thickness of member, edge distances and spacing

**Annex B2**

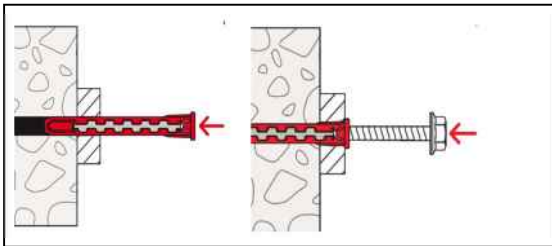
Appendix 10 / 16

## Installation instructions

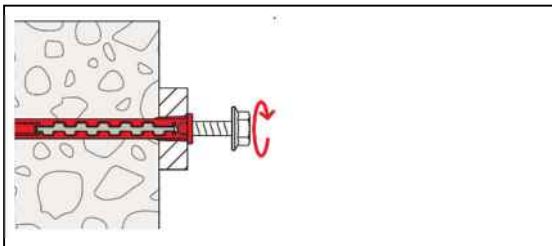
The following pictures show fixing through timber in concrete.



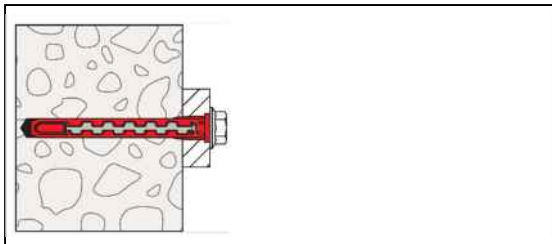
1. Drill the bore hole as per Table B2.1 using hammer drilling.
2. Remove dust from borehole.



3. Insert anchor (screw and sleeve) by using a hammer until the collar of the plastic sleeve is flush with the surface of the fixture.



4. The screw is screwed-in until the head of the screw touches the sleeve. The anchor is correctly installed, if the head of the screw fits tight on the surface and nor the anchor sleeve neither the screw cannot be turned-in any further.



5. Correctly installed anchor.

*Figures not to scale*

**fischer HybridPower**

**Intended use**  
Installation instructions

**Annex B3**

Appendix 11 / 16

**Table C1.1: Characteristic values of tension resistance under static and quasi-static action**

| Anchor type                                                                                               |                |                                                                          | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |                    |
|-----------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------|---------------------------------------------------------------|--------------------|
|                                                                                                           |                |                                                                          | 10                                                            |                    |
| Overall plastic anchor embedment depth in the base material                                               |                | $h_{nom} \geq$ [mm]                                                      | 80                                                            |                    |
| Steel failure                                                                                             |                |                                                                          |                                                               |                    |
| Characteristic tension resistance                                                                         | HybridPower    | $N_{Rk,s}$                                                               | [kN]                                                          | 21,70              |
|                                                                                                           | HybridPower A2 |                                                                          |                                                               |                    |
|                                                                                                           | HybridPower A4 |                                                                          |                                                               |                    |
|                                                                                                           | HybridPower R  |                                                                          |                                                               |                    |
| Partial factor for steel failure                                                                          | HybridPower    | $\gamma_{Ms}^{1)}$                                                       | [-]                                                           | 1,55               |
|                                                                                                           | HybridPower A2 |                                                                          |                                                               |                    |
|                                                                                                           | HybridPower A4 |                                                                          |                                                               |                    |
|                                                                                                           | HybridPower R  |                                                                          |                                                               |                    |
| Pullout failure                                                                                           |                |                                                                          |                                                               |                    |
| Characteristic resistance in cracked concrete C20/25                                                      |                | $N_{Rk,p,cr}$                                                            | [kN]                                                          | 2,00 <sup>2)</sup> |
| Increasing factor $\psi_c$ for cracked concrete<br>$N_{Rk,p,cr} = \psi_c \times N_{Rk,p,cr} (C20/25)$     |                | <div>C25/30<br/>C30/37<br/>C35/45<br/>C40/50<br/>C45/55<br/>C50/60</div> | [-]                                                           | 1,00               |
| Installation sensitivity factor for cracked concrete                                                      |                | $\gamma_{inst,cr}$                                                       | [-]                                                           | 1,00               |
| Characteristic resistance in uncracked concrete C20/25                                                    |                | $N_{Rk,p,ucr}$                                                           | [kN]                                                          | 10,50              |
| Increasing factor $\psi_c$ for uncracked concrete<br>$N_{Rk,p,ucr} = \psi_c \times N_{Rk,p,ucr} (C20/25)$ |                | <div>C25/30<br/>C30/37<br/>C35/45<br/>C40/50<br/>C45/55<br/>C50/60</div> | [-]                                                           | 1,05               |
|                                                                                                           |                | 1,08                                                                     |                                                               |                    |
|                                                                                                           |                | 1,12                                                                     |                                                               |                    |
|                                                                                                           |                | 1,15                                                                     |                                                               |                    |
|                                                                                                           |                | 1,18                                                                     |                                                               |                    |
|                                                                                                           |                | 1,20                                                                     |                                                               |                    |
| Installation sensitivity factor for uncracked concrete                                                    |                | $\gamma_{inst,ucr}$                                                      | [-]                                                           | 1,00               |

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

<sup>2)</sup> If it is ensured that the temperature during working life does not exceed + 30°C, the values may be increased by 1,08.

**fischer HybridPower**

**Performances**

Characteristic values of tension resistance under static and quasi-static action

**Annex C1**

Appendix 12 / 16

**Table C2.1: Characteristic values of tension resistance under static and quasi-static action**

| Anchor type                                                 |                     |                        | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |
|-------------------------------------------------------------|---------------------|------------------------|---------------------------------------------------------------|
|                                                             |                     |                        | 10                                                            |
| Overall plastic anchor embedment depth in the base material | $h_{nom} \geq$ [mm] |                        | 80                                                            |
| <b>Concrete cone and splitting failure</b>                  |                     |                        |                                                               |
| Effective embedment depth for calculation                   | cracked concrete    | $h_{ef,cr} \geq$ [mm]  | 35                                                            |
|                                                             | uncracked concrete  | $h_{ef,ucr} \geq$ [mm] | 53                                                            |
| Factor for cracked concrete                                 | $k_{cr,N}$          | [-]                    | 7,7                                                           |
| Factor for uncracked concrete                               | $k_{ucr,N}$         |                        | 11,0                                                          |
| Characteristic spacing                                      | cracked concrete    | $s_{cr,N,cr}$ [mm]     | 105                                                           |
|                                                             | unracked concrete   | $s_{cr,N,ucr}$ [mm]    | 159                                                           |
| Characteristic edge distance                                | cracked concrete    | $c_{cr,N,cr}$ [mm]     | 53                                                            |
|                                                             | unracked concrete   | $c_{cr,N,ucr}$ [mm]    | 80                                                            |
| Characteristic spacing for splitting failure                | cracked concrete    | $s_{cr,sp,cr}$ [mm]    | $2 \times c_{cr,sp}$                                          |
|                                                             | unracked concrete   | $s_{cr,sp,ucr}$ [mm]   |                                                               |
| Characteristic edge distance for splitting failure          | cracked concrete    | $c_{cr,sp,cr}$ [mm]    | 49                                                            |
|                                                             | unracked concrete   | $c_{cr,sp,ucr}$ [mm]   | 53                                                            |
| Characteristic resistance to splitting                      | $N_{Rk,sp}^0$ [kN]  |                        | $\min \{N_{Rk,c}^0; N_{Rk,p}\}^{1)}$                          |

<sup>1)</sup>  $N_{Rk,c}^0$  according to EN 1992-4.

**fischer HybridPower**

**Performances**

Characteristic values of tension resistance under static and quasi-static action

**Annex C2**

Appendix 13 / 16

**Table C3.1: Characteristic values of shear resistance under static and quasi-static action**

| Anchor type                                                     |                | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |       |
|-----------------------------------------------------------------|----------------|---------------------------------------------------------------|-------|
|                                                                 |                | 10                                                            |       |
| Steel failure without lever arm                                 |                |                                                               |       |
| Characteristic resistance                                       | HybridPower    | $V_{Rk,s}^0$ [kN]                                             | 10,80 |
|                                                                 | HybridPower A2 |                                                               |       |
|                                                                 | HybridPower A4 |                                                               |       |
|                                                                 | HybridPower R  |                                                               |       |
| Partial factor for steel failure                                |                | $\gamma_{Ms}^{1)}$                                            | 1,29  |
| Factor for ductility                                            | HybridPower    | $k_7$ [-]                                                     | 0,80  |
|                                                                 | HybridPower A2 |                                                               | 1,00  |
|                                                                 | HybridPower A4 |                                                               |       |
|                                                                 | HybridPower R  |                                                               |       |
| Steel failure with lever arm and Concrete pryout failure        |                |                                                               |       |
| Characteristic bending resistance                               | HybridPower    | $M_{Rk,s}^0$ [Nm]                                             | 20,60 |
|                                                                 | HybridPower A2 |                                                               |       |
|                                                                 | HybridPower A4 |                                                               |       |
|                                                                 | HybridPower R  |                                                               |       |
| Factor for pryout failure                                       |                | $k_8$                                                         | 1,00  |
| Partial factor for steel failure                                |                | $\gamma_{Ms}^{1)}$                                            | 1,25  |
| Concrete edge failure                                           |                |                                                               |       |
| Effective embedment depth for calculation in cracked concrete   |                | $l_{f,cr}$                                                    | 35    |
| Effective embedment depth for calculation in uncracked concrete |                | $l_{f,ucr}$ [mm]                                              | 53    |
| Nominal diameter of a fastener                                  |                | $d_{nom}$                                                     | 10    |

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

**fischer HybridPower**

**Performances**

Characteristic values of shear resistance under static and quasi-static action

**Annex C3**

Appendix 14 / 16

| Table C4.1: Characteristic values of tension and shear resistance under fire exposure |                 |             |                                                               |  |
|---------------------------------------------------------------------------------------|-----------------|-------------|---------------------------------------------------------------|--|
| Anchor type                                                                           |                 |             | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |  |
|                                                                                       |                 |             | 10                                                            |  |
| Overall plastic anchor<br>embedment depth in the<br>base material                     | $h_{nom}$       | $\geq$ [mm] | 80                                                            |  |
| Tension loading                                                                       |                 |             |                                                               |  |
| Characteristic resistance<br>steel failure                                            | $N_{Rk,s,fi}$   | R30         | 0,45                                                          |  |
|                                                                                       |                 | R60         | 0,35                                                          |  |
|                                                                                       |                 | R90         | 0,25                                                          |  |
|                                                                                       |                 | R120        | 0,20                                                          |  |
| Characteristic resistance<br>Concrete cone failure                                    | $N_{Rk,c,fi}$   | R30 [kN]    | 1,20                                                          |  |
|                                                                                       |                 | - R90       |                                                               |  |
|                                                                                       |                 | R120        | 1,00                                                          |  |
| Characteristic resistance<br>pullout failure                                          | $N_{Rk,p,fi}$   | R30         | 0,45                                                          |  |
|                                                                                       |                 | R60         | 0,35                                                          |  |
|                                                                                       |                 | R90         | 0,25                                                          |  |
|                                                                                       |                 | R120        | 0,20                                                          |  |
| Shear loading                                                                         |                 |             |                                                               |  |
| Characteristic resistance<br>steel failure                                            | $V_{Rk,s,fi}$   | R30         | 2,00                                                          |  |
|                                                                                       |                 | R60         | 1,50                                                          |  |
|                                                                                       |                 | R90         | 1,00                                                          |  |
|                                                                                       |                 | R120        | 0,80                                                          |  |
| Characteristic resistance<br>pryout failure                                           | $V_{Rk,cp,fi}$  | R30 [kN]    | 1,20                                                          |  |
|                                                                                       |                 | - R90       |                                                               |  |
|                                                                                       |                 | R120        | 1,00                                                          |  |
| Characteristic resistance<br>concrete edge failure                                    | $V_{Rk,c,fi}$   | R30         | 5,60                                                          |  |
|                                                                                       |                 | - R90       |                                                               |  |
|                                                                                       |                 | R120        | 4,50                                                          |  |
| Characteristic resistance<br>steel failure                                            | $M^0_{Rk,s,fi}$ | R30 [Nm]    | 2,09                                                          |  |
|                                                                                       |                 | R60         | 1,62                                                          |  |
|                                                                                       |                 | R90         | 1,07                                                          |  |
|                                                                                       |                 | R120        | 0,80                                                          |  |

| Table C4.2: Characteristic spacings and characteristic edge distances of fasteners under fire exposure for tension and shear load |             |                                                                  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------|--|
| Anchor type                                                                                                                       |             | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R    |  |
|                                                                                                                                   |             | 10                                                               |  |
| Spacing                                                                                                                           | $S_{cr,fi}$ | 140                                                              |  |
| Edge distance                                                                                                                     | $C_{cr,fi}$ | 70                                                               |  |
|                                                                                                                                   |             | for fire exposure from more than one side $c_{min} \geq 300$ mm. |  |

|                                                                         |          |
|-------------------------------------------------------------------------|----------|
| fischer HybridPower                                                     | Annex C4 |
| Performances<br>Characteristic values of resistance under fire exposure |          |
| Appendix 15 / 16                                                        |          |

**Table C5.1: Displacements under static and quasi static tension loads**

| Anchor type                                                | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |
|------------------------------------------------------------|---------------------------------------------------------------|
|                                                            | 10                                                            |
| <b>Displacement – factor for tensile load<sup>1)</sup></b> |                                                               |
| $\delta_{N0}$ - factor in cracked concrete                 | 0,20                                                          |
| $\delta_{N\infty}$ - factor [mm/kN]                        | 0,30                                                          |
| $\delta_{N0}$ - factor in uncracked concrete               | 0,60                                                          |
| $\delta_{N\infty}$ - factor                                | 1,10                                                          |

1) Calculation of effective displacement:

$$\delta_{N0} = \delta_{N0} - \text{factor} \times N$$

$$\delta_{N\infty} = \delta_{N\infty} - \text{factor} \times N$$

N = Action tension loading

**Table C5.2: Displacements under static and quasi static shear loads**

| Anchor type                                                      | HybridPower, HybridPower A2,<br>HybridPower A4, HybridPower R |
|------------------------------------------------------------------|---------------------------------------------------------------|
|                                                                  | 10                                                            |
| <b>Displacement – factor for shear load<sup>2)</sup></b>         |                                                               |
| $\delta_{V0}$ - factor in cracked and uncracked concrete [mm/kN] | 6,50                                                          |
| $\delta_{V\infty}$ - factor                                      | 9,80                                                          |

2) Calculation of effective displacement:

$$\delta_{V0} = \delta_{V0} - \text{factor} \times V$$

$$\delta_{V\infty} = \delta_{V\infty} - \text{factor} \times V$$

V = Action shear loading

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**Performances**

Displacements under tension and shear loads

**Annex C5**

Appendix 16 / 16