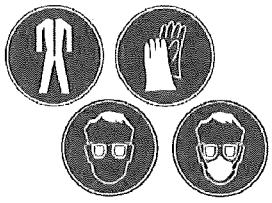
Safety regulations



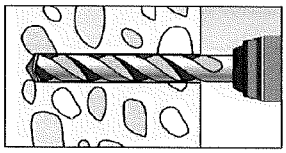
Review the Safety Data Sheet (SDS) before use for proper and safe handling!
Wear well-fitting protective goggles and protective gloves when working with mortar FIS V / FIS VS Low Speed.
Important: Observe the instructions for use provided with each cartridge.

Installation instruction part 1; Installation with FIS V / FIS VS Low Speed

Hole drilling

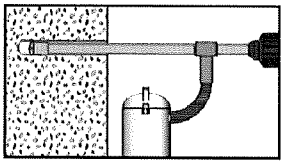
Note: Before drilling, remove carbonized concrete; clean contact areas (see Annex B 2)
In case of aborted drill holes the drill hole shall be filled with mortar.

1a **Hammer drilling or compressed air drilling**



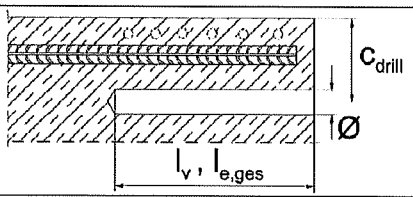
Drill the hole to the required embedment depth using a hammer drill with carbide drill bit set in rotation hammer mode or a pneumatic drill.
Drill bit sizes see table B6.2.

1b **Hammer drilling with hollow drill bit**

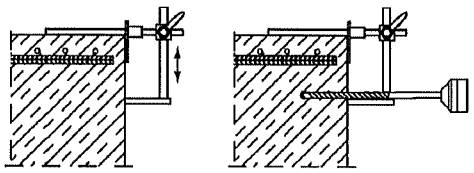


Drill the hole to the required embedment depth using a hammer drill with hollow drill bit in rotation hammer mode.
Dust extraction conditions see drill hole cleaning annex B 8.
Drill bit sizes see table B6.2.

2



Measure and control concrete cover c
(c_{drill} = c + Ø / 2)
Drill parallel to surface edge and to existing rebar.
Where applicable use drilling aid.



For holes l_v > 20 cm use drilling aid.
Three different options can be considered:

A) drilling aid
B) Slat or spirit level
C) Visual check

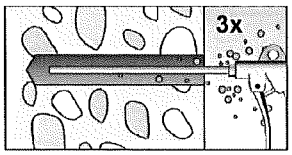
Minimum concrete cover c_{min} see table B5.1

Rebar connection with injection system FIS V	
Intended use Safety regulations; Installation instruction part 1, hole drilling	**Annex B 7**

Installation instruction part 2; Installation with FIS V / FIS VS Low Speed

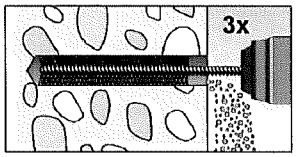
Drill hole cleaning

Hammer or compressed air drilling

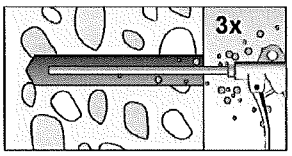


Blowing
three times from the back of the hole with the appropriate nozzle (oil-free compressed air ≥ 6 bar) until return air stream is free of noticeable dust.
Personal protective equipment must be used (see regulations Annex B 7).

3a

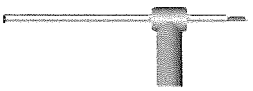


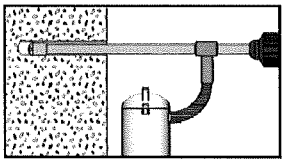
Brushing (with power drill)
three times with the suitable brush size (brush diameter > drill hole diameter). Switch on the power drill after inserting the steel brush into the drill hole. The brush must produce a noticeable resistance when it is inserted into the drill hole. If this is not the case, use a new or larger brush.
If necessary, check with brush inspection template.
Suitable brushes see table B6.2.



Blowing
three times from the back of the hole with the appropriate nozzle (oil-free compressed air ≥ 6 bar) until return air stream is free of noticeable dust.
Personal protective equipment must be used. (see regulations Annex B 7).

Hammer drilling with hollow drill bit





3b

Use a suitable dust extraction system, e. g.
fischer FVC 35 M or a comparable dust extraction system with equivalent performance data.
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.

No further drill hole cleaning necessary

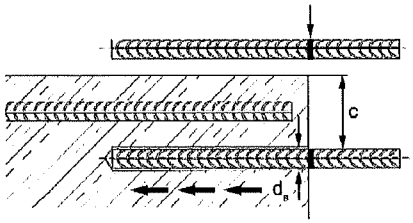
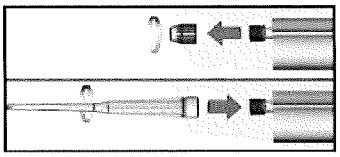
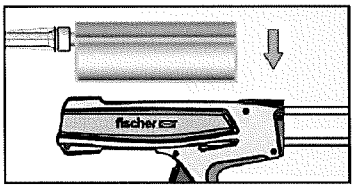
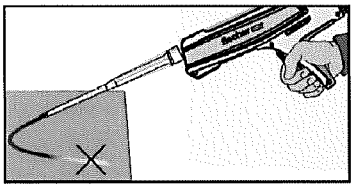
Rebar connection with injection system FIS V

Intended use
Installation instruction part 2, drill hole cleaning

Annex B 8

Installation instruction part 3; Installation with FIS V / FIS VS Low Speed

reinforcing bars (rebar) / fischer rebar anchor FRA and cartridge preparation

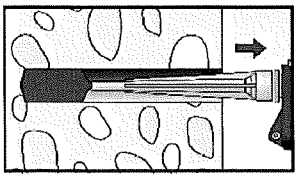
4		Before use, make asure that the rebar or the fischer rebar anchor FRA is dry and free of oil or other residue. Mark the embedment depth l_v (e.g. with tape) Insert rebar in borehole, to verify drill hole depth and setting depth l_v resp. $l_{e,ges}$
5		Twist off the sealing cap Twist on the static mixer (the spiral in the static mixer must be clearly visible).
6		Place the cartridge into a suitable dispenser.
7		Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed.

Rebar connection with injection system FIS V	**Annex B 9**
Intended use Installation instruction part 3, reinforcing bars (rebar) / fischer rebar anchor and cartridge preparation	

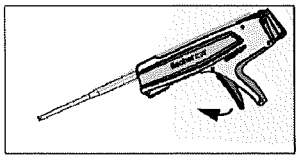
Installation instruction part 4; Installation with FIS V / FIS VS Low Speed

Injection of the mortar; borehole depth ≤ 250 mm

8a



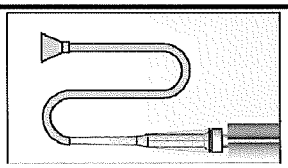
Inject the mortar from the back of the hole towards the front and slowly withdraw the mixing nozzle step by step with each trigger pull.
Avoid bubbles.
Fill holes approximately 2/3 full, to ensure that the annular gap between the rebar and the concrete will be completely filled with adhesive over the entire embedment length.



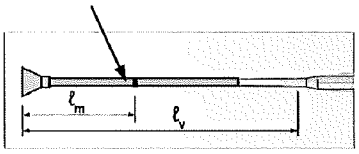
After injecting, release the dispenser. This will prevent further mortar discharge from the static mixer.

Injection of the mortar; borehole depth > 250 mm

8b



Assemble static mixer, extension tube and appropriate injection adapter (see table B6.2)



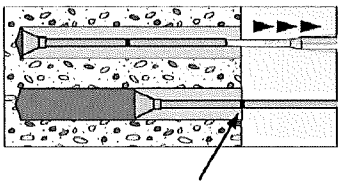
Mark the required mortar level l_m and embedment depth l_v resp. $l_{e,ges}$ with tape or marker on the injection extension tube.

a) Estimation:

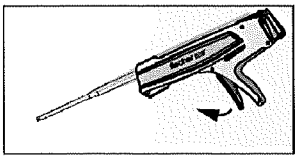
$$l_m = \frac{1}{3} * l_v \; resp. \; l_m = \frac{1}{3} * l_{e,ges} [\text{mm}]$$

b) Precise equation for optimum mortar volume:

$$l_m = l_v \; resp. \; l_{e,ges} \left((1{,}2 * \frac{d_s^2}{d_0^2} - 0{,}2) \right) [\text{mm}]$$



Insert injection adapter to back of the hole. Begin injection allowing the pressure of the injected adhesive mortar to push the injection adapter towards the front of the hole. Do not actively pull out!
Fill holes approximately 2/3 full, to ensure that the annular gap between the rebar and the concrete will be completely filled with adhesive over the embedment length.
When using an injection adapter continue injection until the mortar level mark l_m becomes visible.
Maximum embedment depth see table B5.2



After injecting, release the dispenser. This will prevent further mortar discharge from static mixer.

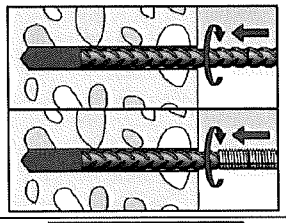
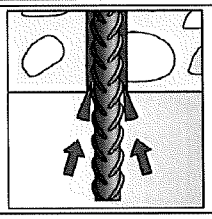
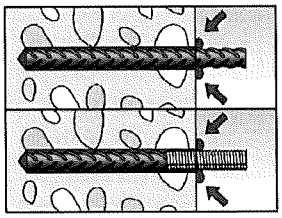
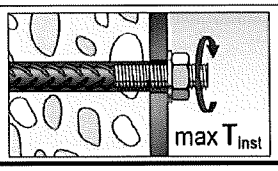
Rebar connection with injection system FIS V

Intended use
Installation instruction part 4, mortar injection

Annex B 10

Installation instruction part 5; Installation with FIS V / FIS VS Low Speed

Insert rebar / fischer rebar anchor FRA

9		Insert the rebar / fischer rebar anchor FRA / FRA HCR slowly twisted into the borehole until the embedment mark is reached. Recommendation: Rotation back and forth of the reinforcement bar or the fischer rebar anchor FRA makes pushing easy
10		For overhead installation, support the rebar / fischer rebar anchor FRA and secure it from falling till mortar started to harden, e.g. using wedges.
11		After installing the rebar or fischer rebar anchor FRA the annular gap must be completely filled with mortar. Proper installation • Desired embedment depth is reached l_v: embedment mark at concrete surface • Excess mortar flows out of the borehole after the rebar has been fully inserted up to the embedment mark.
12		Observe the working time "t_{work}" (see table B6.1), which varies according to temperature of base material. Minor adjustments to the rebar / fischer rebar anchor FRA position may be performed during the working time Full load may be applied only after the curing time "t_{cure}" has elapsed (see table B 6.1)
13		Mounting the fixture, max T_{inst} see table A6.1

Rebar connection with injection system FIS V

Intended use
Installation instruction part 5, insert rebar / fischer rebar anchor

Annex B 11