Deutsches Institut für Bautechnik

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Public-law institution jointly founded by the federal states and the Federation

Technical authority granting approvals and permits for construction products and construction techniques

Date: 15 April 2025

Reference number: I 29-1.21.3-20/25

National technical approval / General construction technique permit

Number:
Z-21.3-1737

Validity
from: **15 April 2025**
to: **15 April 2030**

Applicant:
fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1
72178 Waldachtal, Germany

Subject of decision:
fischer remedial wall tie VBS 8
for the subsequent anchorage of outer masonry leaves

The subject named above is herewith granted a national technical approval (*allgemeine bauaufsichtliche Zulassung*) / general construction technique permit (*allgemeine Bauartgenehmigung*).
This decision contains eight pages and six annexes.
The subject concerned was granted the first national technical approval on 17 October 2002.

Translation authorised by DIBt

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I GENERAL PROVISIONS

1 This decision confirms the fitness for use and application of the subject concerned within the meaning of the Building Codes of the federal states (*Landesbauordnungen*).

2 This decision does not replace the permits, approvals and certificates required by law for carrying out construction projects.

3 This decision is granted without prejudice to the rights of third parties, in particular private property rights.

4 Notwithstanding further provisions in the 'Special Provisions', copies of this decision shall be made available to the user and installer of the subject concerned. The user and installer of the subject concerned shall also be made aware that this decision must be made available at the place of use or place of application. Upon request, copies of the decision shall be provided to the authorities involved.

5 This decision shall be reproduced in full only. Partial publication requires the consent of DIBt. Texts and drawings in promotional material shall not contradict this decision. In the event of a discrepancy between the German original and this authorised translation, the German version shall prevail.

6 This decision may be revoked. The provisions contained herein may subsequently be supplemented and amended, in particular if this is required by new technical findings.

7 This decision is based on the information and documents provided by the applicant. Alterations to this basis are not covered by this decision and shall be notified to DIBt without delay.

II SPECIAL PROVISIONS

1 Subject concerned and field of use and application

1.1 Subject concerned

The subject of approval is the fischer remedial wall tie VBS 8 (hereinafter referred to as 'fastener'). The fastener consists of a stainless steel wire anchor (Ø 4 mm) with profiled ends, a plastic sleeve and the FIS V Plus injection mortar. The sleeve is perforated on the far end.

The FIS V Plus injection mortar conforms to the European Technical Assessment ETA-20/0603 of 13 November 2020.

The anchorage system is based on utilisation of the bond and form-fit between injection mortar, sleeve, wire anchor and base material.

The subject of the permit is the planning, design and execution of subsequent anchorages of outer masonry leaves in normal weight concrete and masonry walls.

The installed anchor is shown in Annex 1.

1.2 Field of use and application

The anchorage may be executed in structural layers made of the following base materials:

- Normal weight concrete of strength class ≥ C12/15 in accordance with DIN EN 206-1:2001-07
- Solid clay masonry units of compressive strength class ≥ Mz 8 in accordance with DIN EN 771-1:2015-11 in conjunction with DIN 20000-401:2017-01
- Solid calcium silicate masonry units of compressive strength class ≥ KS 8 in accordance with DIN EN 771-2:2015-11 in conjunction with DIN 20000-402:2017-01
- Vertically perforated clay masonry units of compressive strength class ≥ Hlz 8 in accordance with DIN EN 771-1:2015-11 in conjunction with DIN 20000-401:2017-01
- Perforated calcium silicate masonry units of compressive strength class ≥ KSL 8 in accordance with DIN EN 771-2:2015-11 in conjunction with DIN 20000-402:2017-01

The masonry mortar shall at least correspond to mortar class M 5 in accordance with DIN EN 998-2:2017-02 in conjunction with DIN 20000-412:2019-06.

The anchorage shall be executed only when there are no fire resistance requirements to be met by the entire structure including the fastener.

If the minimum strength class stated cannot be verified for the load-bearing inner leaf, the load-bearing capacity of the fastener may be determined through job site tests.

The temperature shall not exceed +50 °C, or +80 °C for short periods, in the area of the mortar.

The stainless steel fastener may be used in accordance with its corrosion resistance class (CRC) III in accordance with DIN EN 1993-1-4:2015-10 in conjunction with DIN EN 1993-1-4/A2:2021-02 and DIN EN 1993-1-4/NA:2020-11.

2 Provisions for the construction product

2.1 Properties and composition

The fastener shall correspond to the drawings and specifications in the annexes in terms of its dimensions and material properties.

The material characteristics, dimensions and tolerances of the fastener as well as the chemical composition of the injection mortar which are not specified in this decision shall comply with the specifications deposited with DIBt, the certification body and the external surveillance body.

The injection mortar shall be composed of two components (resin and hardener) which are provided in unmixed condition in separate mortar cartridges in accordance with Annex 2.

2.2 Packaging, storage and marking

2.2.1 Packaging and storage

The fastener shall only be packaged and supplied as a compiled unit.

The two components of the injection mortar shall be supplied in unmixed condition in separate mortar cartridges in accordance with Annex 2.

The injection mortar shall be protected from sun radiation and heat and be stored, as specified in the installation instructions, in dry conditions at temperatures of +5 °C to +25 °C. Short-term storage up to + 35° C shall be permitted.

2.2.2 Marking

The packaging, instruction sheet or delivery note for the fastener shall be marked by the manufacturer with the national conformity mark (*Ü-Zeichen*) in accordance with the Conformity Marking Ordinances (*Übereinstimmungszeichen-Verordnungen*) of the federal states. In addition, the manufacturing mark, the approval number and the complete fastener designation shall be declared.

The mark shall only be applied if the requirements given in Section 2.3 are met.

The fastener shall be designated fischer remedial wall tie VBS 8.

Each sleeve shall be marked with the factory identifying mark, the fastener designation and the effective length (air gap thickness / insulation layer thickness) in accordance with Annex 2.

The injection mortar cartridge shall be marked in accordance with the Ordinance on Hazardous Substances (*Gefahrstoffverordnung*) and marked with the words "fischer FIS V Plus", as well as information about the shelf life, hazard designation and processing. The instructions supplied with the injection mortar shall contain information on safety measures to be taken when handling dangerous substances.

2.3 Confirmation of conformity

2.3.1 General

The manufacturer shall confirm for each manufacturing plant that the fastener complies with the provisions of the national technical approval included in this decision by way of a declaration of conformity based on factory production control and a certificate of conformity issued by a certification body recognised for these purposes as well as on regular external surveillance carried out by a recognised inspection body in accordance with the following provisions:

To issue the certificate of conformity and for external surveillance including the associated product testing, the manufacturer of the fastener shall use a certification body and an inspection body recognised for these purposes.

The declaration of conformity shall be submitted by the manufacturer through marking of the construction product with the national conformity mark including statement of the intended use.

The certification body shall send a copy of the certificate of conformity issued by it to DIBt.

2.3.2 Factory production control

A factory production control system shall be set up and implemented in each manufacturing plant. Factory production control shall be understood to be continuous surveillance of production by the manufacturer to ensure that the manufactured construction products satisfy the provisions of the national technical approval included in this decision.

The test plans for the mortar and the plastic and steel parts deposited with DIBt and the external surveillance body shall be decisive for the scope, type and frequency of factory production control.

The results of factory production control shall be recorded and evaluated. The records shall include at least the following information:

- designation of the construction product or the starting material and the components,
- type of check or test,
- date of manufacture and testing of the construction product or the starting material or the components,
- results of checks and tests and, where applicable, comparison with requirements,
- signature of the person responsible for factory production control.

The records shall be kept for at least five years and submitted to the inspection body used for external surveillance. They shall be submitted to DIBt and the competent supreme building authority upon request.

If the test result is unsatisfactory, the manufacturer shall immediately take the necessary measures to resolve the defect. Construction products which do not meet the requirements shall be handled in such a way that they cannot be confused with compliant products. After the defect has been remedied, the relevant test shall be repeated immediately, where technically feasible and necessary to show that the defect has been eliminated.

2.3.3 External surveillance

The factory production control system shall be inspected regularly, i.e. at least once a year, by means of external surveillance at each manufacturing plant.

Initial type-testing of the anchors shall be carried out within the scope of external surveillance. Samples for random testing shall also be taken. Sampling and testing shall be the responsibility of the recognised inspection body.

The test plans for the mortar and the plastic and steel parts deposited with DIBt and the external surveillance body shall be decisive for the scope, type and frequency of external surveillance.

The results of certification and external surveillance shall be kept for at least five years. They shall be presented by the certification or inspection body to DIBt and the competent supreme building authority upon request.

3 Provisions for planning, design and execution

3.1 Planning

The anchorages shall be planned in line with good engineering practice. Verifiable calculations and design drawings shall be prepared in consideration of the loads to be anchored, the dimensions of the member and the tolerances.

The verification of the immediate local force transmission into the base material (load-bearing inner leaf and outer masonry leaf) has been provided.

The fastener shall be positioned in the outer masonry leaf at the crossing point between the horizontal and the vertical joints or in the horizontal joint.

The fastener characteristic values, dimensions of the member and spacings specified in Annex 4, Table 4.1, shall be observed.

For determination of the fastener size, the thickness of the outer masonry leaf and the thickness of the air space layer shall be determined by means of drilled test holes. The fastener sizes for different member thicknesses are given in Annex 5, Table 5.1.

3.2 Design

3.2.1 General

The provisions of DIN EN 1996-1-1:2013-02 in conjunction with DIN EN 1996-1-1/NA:2019-12 shall apply to wire anchors as shown in Figure NA.9 and DIN EN 1996-2:2010-12 in conjunction with DIN EN 1996-2/NA:2012-01, NCI Annex NA.D, for wire anchors as shown in Figure NA.D.1. By way of deviation from these provisions, the wire anchors and leaf spacings specified in this decision may be used.

If deviations from the base materials specified in Section 1.2 occur with respect to the strength class, the load-bearing capacity of the fastener in the load-bearing inner leaf and the outer masonry leaf may be determined through job site tests in accordance with Section 3.2.2.

3.2.2 Verification of the anchor through job site tests

For each base material, at least five pull-out tests with a centric load acting on the fastener shall be carried out. At a test load of 1.5 kN, slip shall not exceed 0.5 mm in at least five individual tests on each fastener and shall not exceed 1.0 mm in at least ten individual tests on each fastener.

Testing, test evaluation and test report preparation shall be carried out by the test supervisor or testing laboratories or under the supervision of the construction site supervisor.

Section 4 shall apply to the installation of the fastener.

The test report shall contain all the information necessary for evaluating the load-bearing capacity of the base material. It shall be included in the building files.

At least the following information is required:

- structure, building owner
- date and location of tests
- temperature
- company installing the fasteners
- testing device
- results of tests
- testing carried out or supervised by ... with signature

3.3 Execution

3.3.1 General

The installer of the construction technique or the executing company shall provide a declaration of conformity in accordance with Sections 16a(5) and 21(2) of the Model Building Code to confirm the conformity of the construction technique with this general construction technique permit.

The fastener shall only be used as a mass-produced fastening unit. Individual parts shall not be exchanged.

The fastener shall be installed in accordance with the design drawings prepared in accordance with Section 3.1 and the installation instructions of the applicant.

3.3.2 Drilling and cleaning of the holes

The hole shall be drilled at the crossing point between the vertical and the horizontal joint or in the horizontal joint through the outer masonry leaf into the load-bearing base material. The hole shall be drilled at a right angle to the surface of the base material with a hard metal hammer drill bit or a hard metal impact drill bit.

Holes in vertically perforated units shall be drilled only with rotary drills (no impact or hammer drilling).

The carbide masonry drill bits shall meet the specifications given in the January 2002 version of the DIBt leaflet 'Characteristic values, requirements and tests for masonry drill bits with carbide cutting bodies which are used for the manufacture of drilled holes for anchoring' (*Kennwerte, Anforderungen und Prüfungen von Mauerbohrern mit Schneidköpfen aus Hartmetall, die zur Herstellung der Bohrlöcher von Dübelverankerungen verwendet werden*) and the Association of the German Tool Industry (*Fachverband Werkzeugindustrie e.V.*). Compliance of the drill bit characteristic values shall be verified in accordance with Section 5 of the leaflet.

The nominal drill hole diameter, drill bit cutting diameter and drill hole depth shall comply with Annex 4.

If a hole is drilled incorrectly, a new hole shall be drilled at a distance of at least 1 x the depth of the incorrect hole. 5 x the outer diameter of the fastener is sufficient as the maximum distance. Holes drilled incorrectly shall be sealed with mortar.

The drilling dust shall be removed from the drill hole.

a) Perforated bricks

   For anchoring in masonry made from perforated bricks, the drill hole shall be cleaned by being blown out twice in accordance with the installation instructions.

b) Concrete and solid bricks

   For anchoring in concrete and masonry made from solid bricks, the drill hole shall be cleaned in accordance with the installation instructions as follows: 2x blow-out, 2x brush-out and 2x blow-out. The appropriate cleaning brush in accordance with Annex 2 shall be used for brush-out. Before the brush is used, a check shall be made to determine whether the brush still has an adequate brush diameter, i.e. whether the brush still has a diameter of at least 8.3 mm.

3.3.3 Installation of the fastener

The mortar processing temperature shall be at least +5 °C.

The temperature in the base material shall not fall below - 5 °C during hardening of the injection mortar.

The sleeve shall be installed in the drill hole. With the unshortened injection nozzle mounted on the static mixer, the sleeve shall be inserted to the end of the drill hole until the stop on the injection nozzle is reached and the injection mortar shall be injected into the sleeve.

The mortar components shall be mixed during injection by hand in the mounted static mixer and the associated mounted injection nozzle in accordance with Annex 2. The injection mortar shall be sufficiently mixed when it has a uniform light grey colour. The first 10 cm of each batch (mixer preliminary run) shall be discarded and not used for anchoring.

The minimum fill level for the injection mortar depends on the anchor length and is given in Annex 5, Table 5.1.

The wire anchor shall be manually forced into the sleeve, which is completely filled with mortar, using a slight rotating action. The mounted injection nozzle shall then be shortened to the provided marking and be inserted up to the stop into the drilled hole in order to completely fill the hole with injection mortar in the area of the wire anchor without sleeve.

The minimum curing times until load application specified in Annex 5, Table 5.2, shall be observed. Each time work is interrupted for longer than the specified processing time, the attachment parts of the cartridge shall be replaced.

3.3.4 Check of load-bearing capacity of the fastener

The load-bearing capacity of the fasteners shall be checked on every 3% of the fasteners installed in a component, or at least five fasteners per wall surface and floor, through pull-out tests in accordance with Section 3.2.2. The check shall be deemed to have been passed if the displacements in the load-bearing inner leaf listed in Section 3.2.2 are not exceeded.

If a fastener does not meet the test condition, an additional 25% of the fasteners (at least five) in the member in which the fastener was improperly embedded in mortar shall be checked. If another fastener does not meet the test condition, all fasteners in the given member shall be checked. All fasteners not meeting the test conditions shall not be used for force transmission.

A report on the checks carried out on the load-bearing capacity of the fastener shall be drawn up and shall contain information about the positions of the tested fasteners in relation to the member, the magnitude of the load applied and the result. The report shall be included in the building files.

3.3.5 Inspection of execution

During the installation of the fasteners the contractor commissioned with the anchoring of the fasteners or the site manager assigned by the contractor or a competent representative of the site manager shall be present at the construction site. They shall ensure that the work is carried out properly.

During the installation of the fasteners, records of the verification of the base material (strength class, masonry type and mortar group), the temperature in the base material and the proper installation of the fasteners shall be kept by the site manager or the site manager's representative. The records shall be available at the construction site during the construction period and shall be handed over to the construction site supervisor upon request. Like the delivery notes, they shall be kept by the contractor for a minimum of five years after completion of the project.

Dipl.-Ing. Beatrix Wittstock
Head of Section

Drawn up by
Baderschneider

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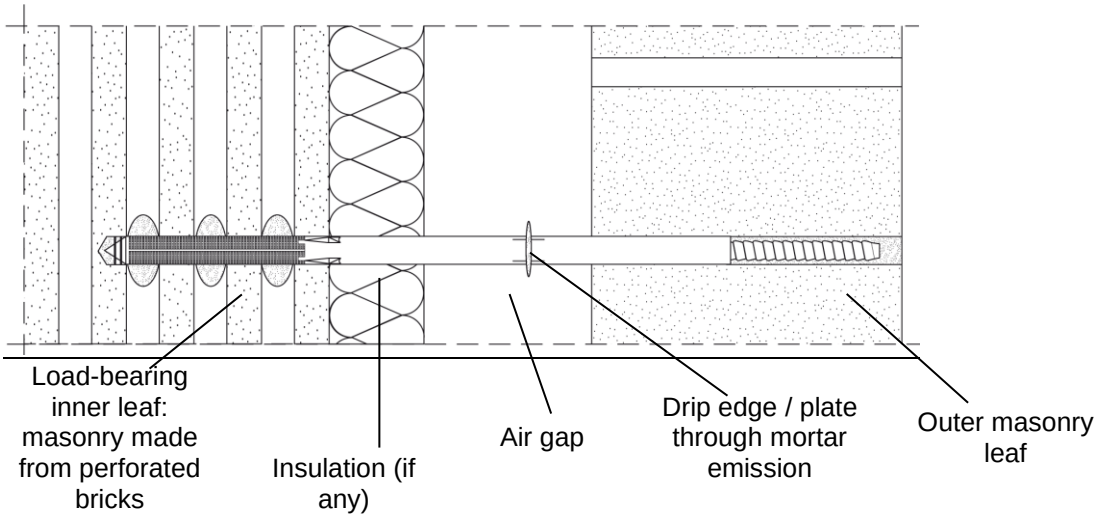
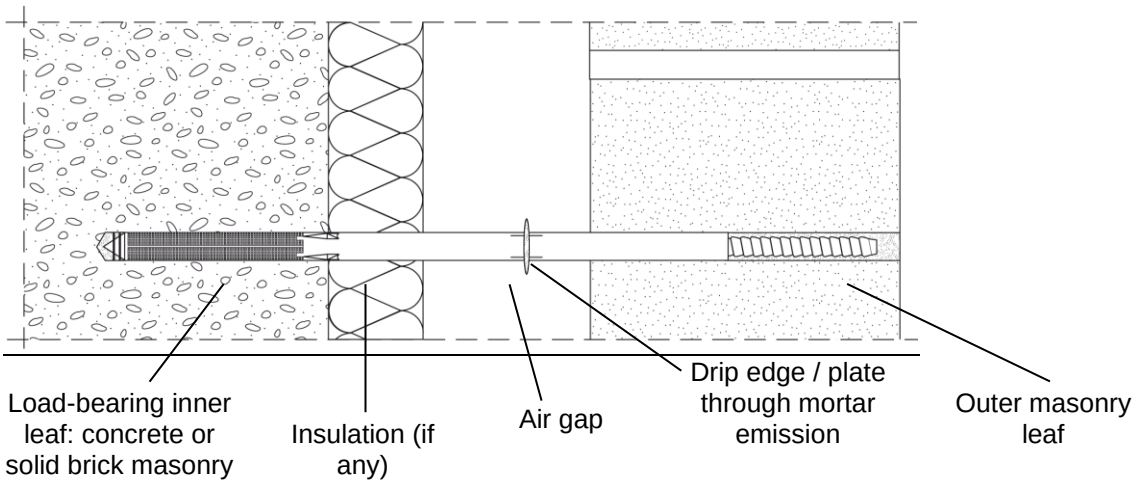
VBS 8 installation in perforated brick masonry



VBS 8 installation in concrete or solid brick masonry



Figures not to scale

fischer remedial wall tie VBS 8 for the subsequent anchorage of outer masonry leaves	**Annex 1**
Installed condition	

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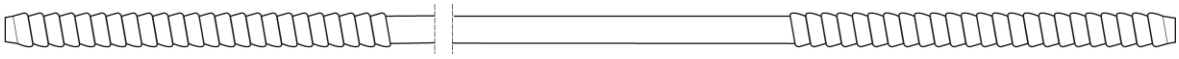
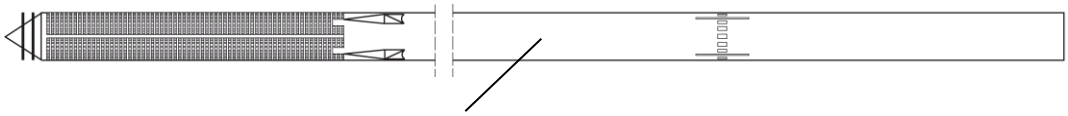
Wire anchor

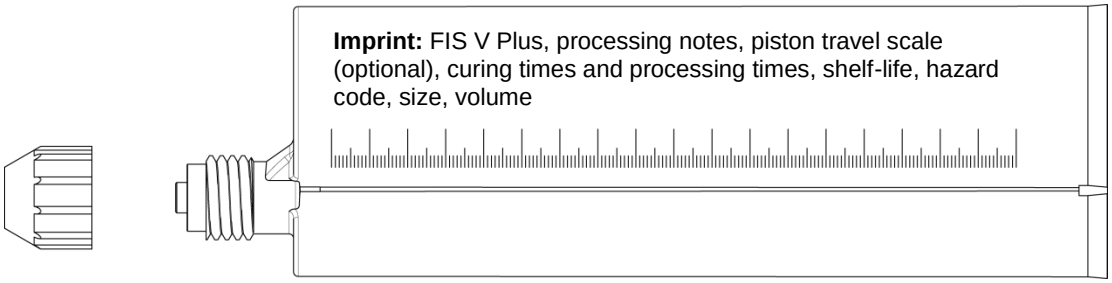


Anchor sleeve

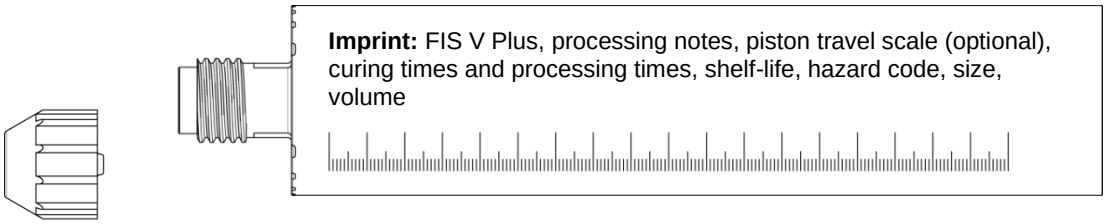


Marking. wall tie type / length
e.g. VBS 8 / 20

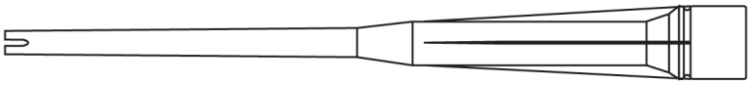
Mortar cartridge (shuttle cartridge) with cap, sizes: 360 ml, 825 ml



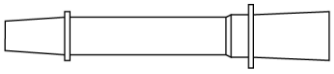
Mortar cartridge (coaxial cartridge) with cap, sizes: 150 ml, 300 ml, 380 ml and 410 ml



FIS MR Plus static mixer



Injection nozzle



Cleaning brush

Nominal diameter: 9 mm
Minimum diameter: 8.3 mm

Figures not to scale

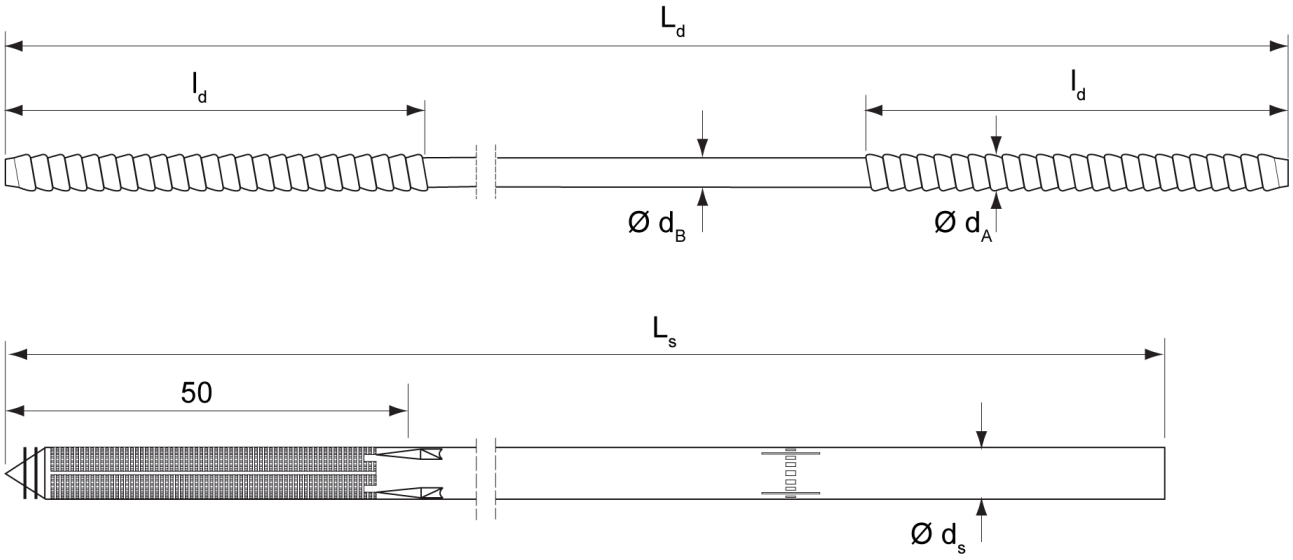
fischer remedial wall tie VBS 8 for the subsequent anchorage of outer masonry leaves	**Annex 2**
Product description	

Table 3.1: Materials

Designation	Material
Wire anchor	Stainless steel of corrosion resistance class CRC III in accordance with DIN EN 1993-1-4:2015-10, material number 1.4401 or 1.4571
Anchor sleeve	Polypropylene PP
FIS V Plus injection mortar	Mortar, hardener, additives
Cleaning brush	Steel wire

Table 3.2: Dimensions

Wire anchor size				**VBS 8/20**	**VBS 8/50**	**VBS 8/80**	**VBS 8/120**	**VBS 8/150**
Wire anchor	Total length	L_d	[mm]	188	218	248	288	318
	Thread length	l_d		50				
	Thread diameter	Ø d_A		4.4				
	Wire diameter	Ø d_B		4.0				
Anchor sleeve	Total length	L_S		150	180	210	250	280
	Diameter	Ø d_S		7.8				



Figures not to scale

fischer remedial wall tie VBS 8 for the subsequent anchorage of outer masonry leaves

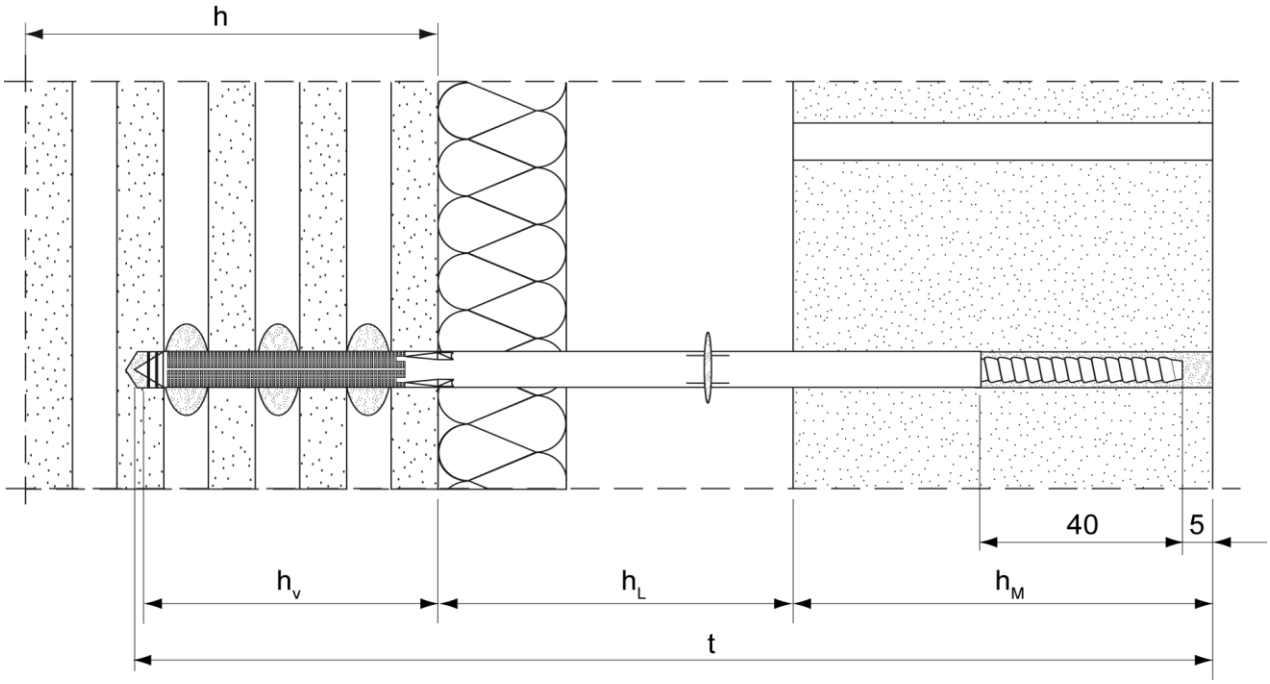
Materials, dimensions

Annex 3

Table 4.1: Installation and anchor parameters

Wire anchor size			**VBS 8**
Base material/strength class			Concrete ≥ C12/15 Masonry ≥ Mz 8; ≥ Hlz 8; ≥ KS 8; ≥ KSL 8
Nominal drill bit diameter	d_0	[mm]	8
Drill bit cutting diameter	d_{cut} ≤		8.3
Embedment depth in load-bearing inner leaf	h_v ≥		60
Thickness of load-bearing inner leaf	h ≥		Concrete = 100 / Masonry = 115
Thickness of outer masonry leaf	h_M ≥		90
Drill hole depth[1)]	t ≥		$h_M + h_L + h_v$
Minimum sleeve length	$L_{s,min}$ ≥		t - 45
Length of wire tie	L_d =		L_s + 38
Spacing	s ≥		250

[1)] The hole has to be drilled through the outer masonry leaf into the load-bearing inner leaf.



Figures not to scale

fischer remedial wall tie VBS 8 for the subsequent anchorage of outer masonry leaves

Installation and anchor parameters

Annex 4

Table 5.1: Wire anchor selection

Wire anchor size	Outer masonry leaf h_M [mm]	Air gap and insulation h_L [mm]	Drill hole depth t [mm]	Embedment depth in the load-bearing inner leaf h_v [mm]	Sleeve length L_s [mm]	Minimum fill level[1] for injection mortar in the sleeve Scale divisions [-]
VBS 8/20	90	0-45	195	≥ 60	150	4
	115	0-20				
VBS 8/50	90	45-75	225		180	4
	115	20-50				
VBS 8/80	90	75-105	255		210	4
	115	50-80				
VBS 8/120	90	105-145	295		250	6
	115	80-120				
VBS 8/150	90	145-175	325		280	6
	115	120-150				

[1] Approximately 2-3 additional scale divisions are required for sealing of the outer masonry leaf.

Table 5.2: Maximum processing times of the FIS V Plus mortar and minimum curing times (During the curing time of the mortar, the temperature in the base material may not fall below the minimum temperature given).

Temperature in the base material [°C]	Maximum processing time t_{work}	Minimum curing time[1] t_{cure}
-5 to 0 [2]	> 13 min	24 h
> 0 to 5 [2]	13 min	3 h
> 5 to 10	9 min	90 min
> 10 to 20	5 min	60 min
> 20 to 30	4 min	45 min
> 30 to 40	2 min	35 min

[1] For wet base material, the curing time must be doubled.
[2] Minimum cartridge temperature +5°C

fischer remedial wall tie VBS 8 for the subsequent anchorage of outer masonry leaves	**Annex 5**
Wire anchor selection Processing and curing times	

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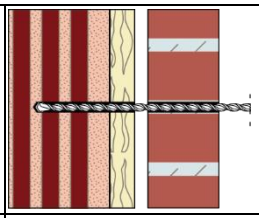
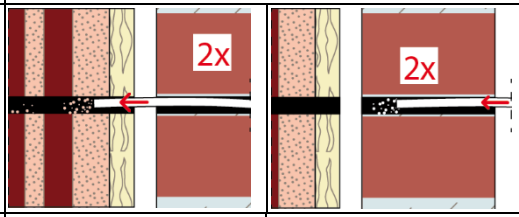
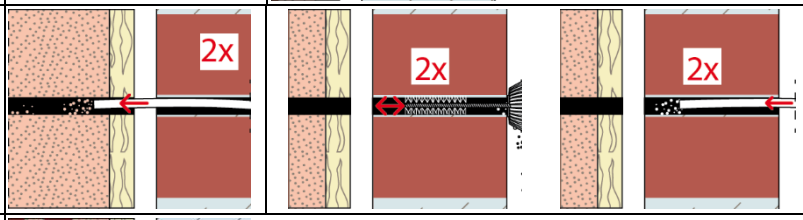
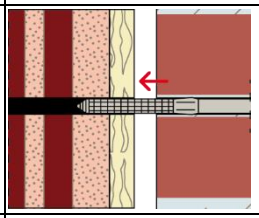
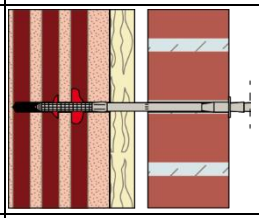
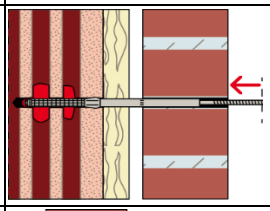
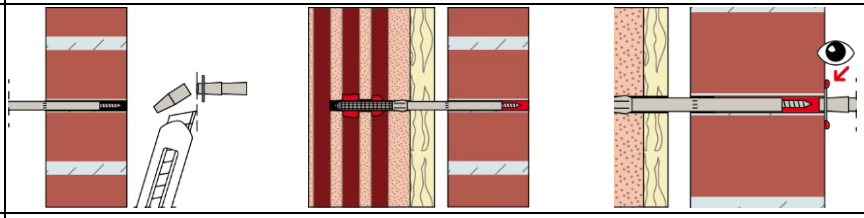
Installation instructions

1		Drill a Ø 8 mm hole in the horizontal joint of the outer masonry leaf. Drill through the air gap and/or insulation into the load-bearing inner leaf. For drill hole depth **t**, see **Table 5.1**.
2a		Blow out the drilled holes in the load-bearing inner leaf and the outer masonry leaf.
2b		For solid construction materials, the drilled hole has to be blown out twice, brushed out twice and blown out twice again.
3		Insert the VBS 8 sleeve into the cleaned hole.
4		Mount the enclosed injection nozzle on the static mixer of the prepared FIS V Plus injection mortar (mandatory). Push the sleeve into the hole until the stop on the injection nozzle is reached and inject the mortar (see **Table 5.1** for minimum fill levels).
5		Insert the wire anchor of the VBS 8 completely into the sleeve filled with mortar.
6		Shorten the injection nozzle to the marking. Fill the hole with the injection mortar until excess mortar starts to come out of the mouth of the hole.
7		Do not touch. For minimum curing time **see Table 5.2**

fischer remedial wall tie VBS 8 for the subsequent anchorage of outer masonry leaves	**Annex 6**
Installation instructions	