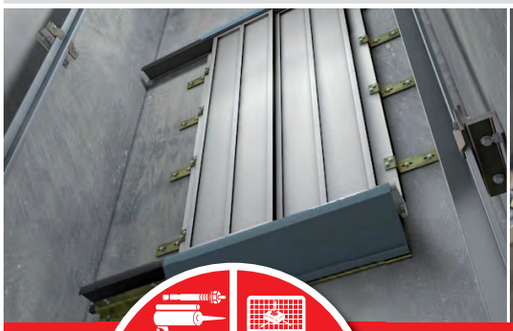
fischer
Fixing solutions for elevators



fischer

innovative solutions

A brand and its promise to perform

fischer
innovative solutions

Customers who choose fischer get more than just a range of secure fixing products. Our goal is to ensure that we always offer our customers the best solutions with real added value.

In addition to innovative and outstanding products, this primarily includes user-oriented advice and benefit-oriented services. fischer is a leading brand in which engineering experts throughout the world place their trust.

Global presence

With more than 40 national subsidiaries and more than 100 importers, fischer has a global network with a strong presence. The advantages for you as a project customer are clear. There'll always be a competent technical or sales partner in your vicinity and a high level of product availability is also guaranteed.

Customer advice

Our technical support service provides cost-effective, legally compliant advice for all questions relating to fastening systems. Services that you can access include test installations, pull-out tests, individual designs, comparative calculations, and the development of special solutions. Around the world, more than 130 engineers support you with their concentrated fastening expertise. We're happy to give you advice – at our fischer Academy, at your office or at the construction site itself.

Products

We offer you a wide range of fastening solutions from the fields of chemical resins, steel and plastics. We cover a very broad application spectrum with our standard products as well as project-based solutions and customer-specific special developments. All of these are based on our know-how and experience gleaned during more than 60 years in anchoring technology. You can depend on it.

Services for elevators.

Research & development

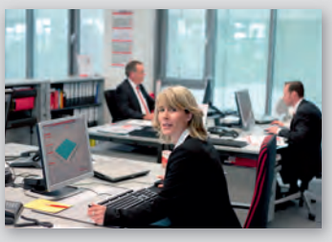
We have our own research and development teams for chemical resins, steel and plastics. This allows our own research results, market trends and customer requirements to be quickly embraced and converted into market-ready products. In addition to the capability and quality of our products, safe and fast installation is also vital. This pays off by saving you time, money and labour.

Production

With research and development, tool-making, special machine construction and production facilities for chemistry, steel and plastics, the entire production process of our products takes place in-house. Our quality management system is certified in accordance with DIN EN ISO 9001.

Through the fischer Process System (fPS), we continuously optimise our processes and adapt flexibly to customer requirements. In this way, we ensure that you can rely on innovative products with a constantly high level of quality.

Design software



Our new modular design software suite is called „Fixperience". It offers safe and reliable design along with top processing comfort. The relevant design standards (ETAG 001 and EC2, such as EC1, EC3 and EC5), national application documents and extensive choice of all conventional load and measurement units make the software suitable for international use. A free „live update" is available at all times at: www.fischer.de/fixperience

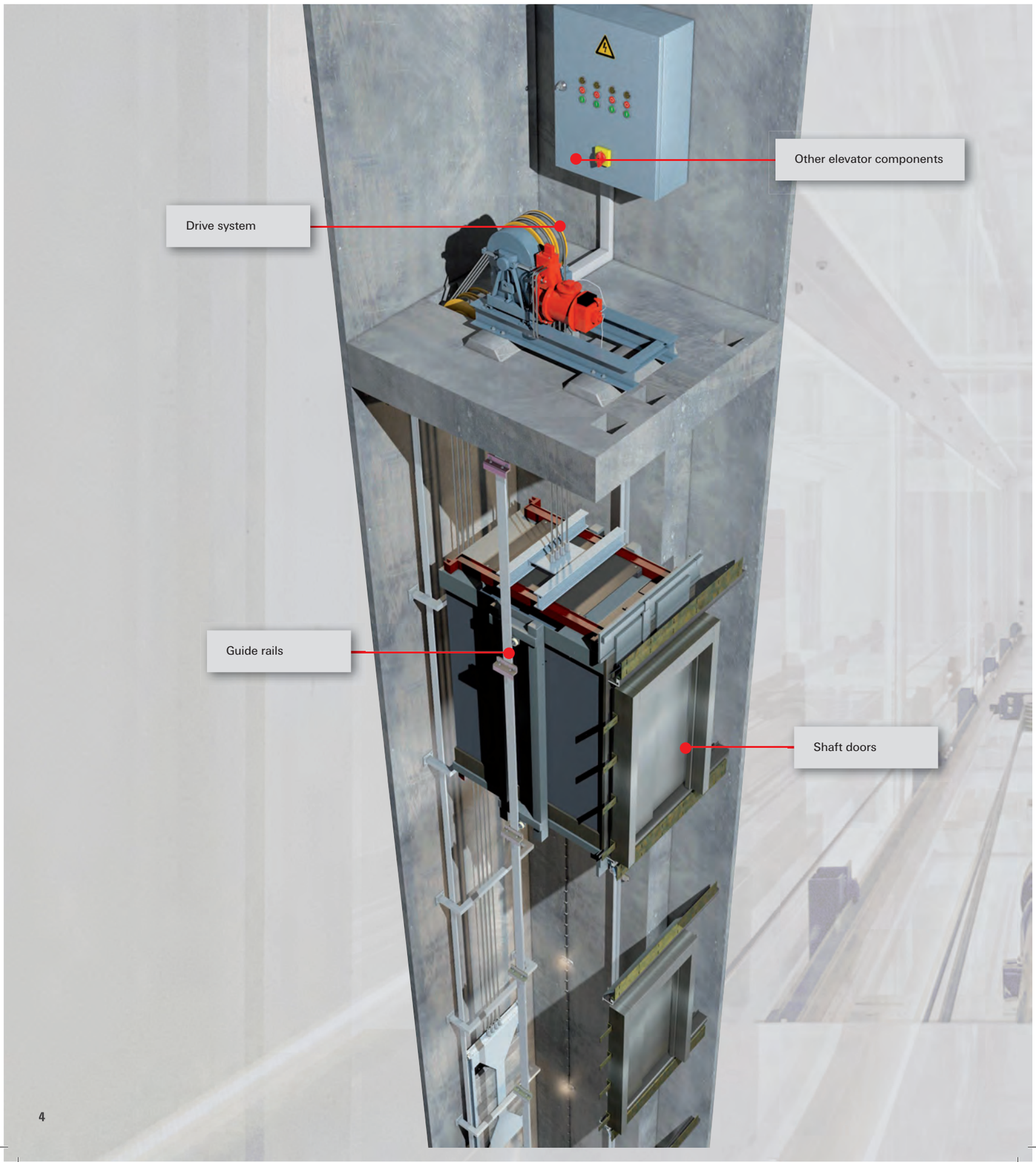
Certifications

We don't compromise on the safety of our products. We take part in the leading international, standard-setting councils in the fastening technology sector, thus contributing our knowledge to their work. Many of our products are characterised by thorough, up-to-date, international approvals, technical certifications and expert reports. For you, this means safety that you can rely on.

The environment

We actively consider the aspect of sustainable construction. Our environmental management system is certified in accordance with DIN EN ISO 14001. A growing number of our products have an Environmental Product Declaration (EPD) from the Bauen und Umwelt e.V. (IBU) institute, which constitutes the data basis for an ecological building evaluation. And our greenline product range is already based on more than 50% sustainable raw materials – certified in accordance with DIN CERTCO/TÜV Rheinland.

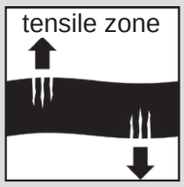
Solutions for elevators.



Basic knowledge.

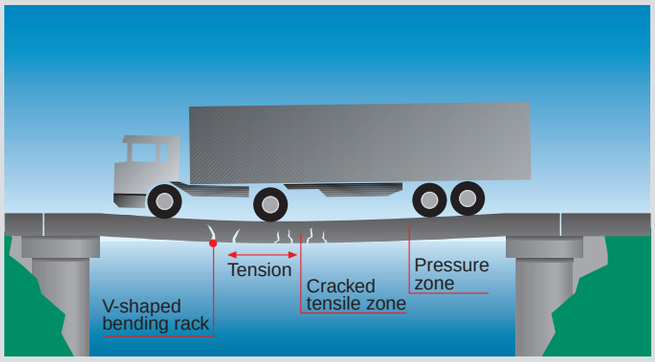
The selection of the appropriate fastener for elevator applications depends on the base material and the load influence. For safety relevant applications, where a case of anchorage failure would endanger human life, certified fixings must be used. In Europe anchors with European Technical Approval (ETA) must be used.

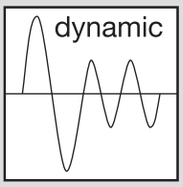
For elevator shafts made from block material/masonry, the fixing must be selected carefully. Mechanical expansion anchors are not suitable due to high expansion forces and cavities in the block material. Chemical injections systems, which are approved for a wide range of different block materials, offer the best solution.



Cracked concrete

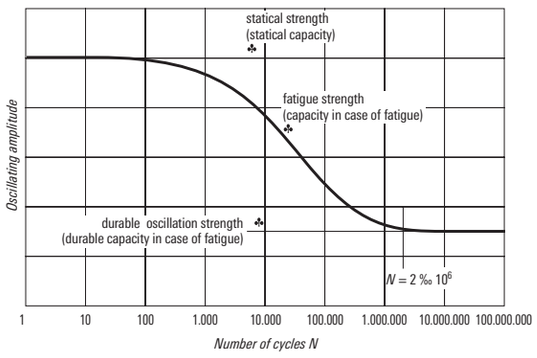
When anchoring in concrete, it is often presumed that tensile cracks are present in the anchoring area that influence the bearing capacity of the fixings. However, it is very complicated, if not impossible, to prove whether the concrete is cracked or non-cracked. For safety reasons, the use of fixings suitable for cracked concrete is recommended. Fixings with an approval according to ETAG 001 for cracked concrete have proved their suitability in cracks and may be used without restriction in the tensile and compressive zones of concrete members. Fixings suitable for cracked concrete are also checked and approved according to American standards. These "evaluation reports" are prepared according to ACI 318.





Dynamic/fatigue behaviour

The general approval issued by the German supervisory building authority(DIBt) and the European Technical Approvals (ETA) are generally exclusively for anchoring of Static and quasi-static loads. However, in contrast to these current approvals, in practice, a number of dynamic effects occur, e.g. increasing and alternating stresses in guide rails or drive systems for elevator installations. The fischer Highbond anchor FHB dyn is approved for dynamic loads. The approvals apply to anchoring of dynamic loads with unlimited numbers of load cycles, for tension and for shear loads. In addition, the FHB dyn is manufactured in, anchor size M16, of high corrosion-resistant steel, material no.1.4529. Tests have shown that this material - in contrast to the usual standard stainless steel types in the corrosion resistance class III, e.g. A4 - is suitable not only for use in humid internal and external conditions, but also for dynamic loads.



Wöhler curve

Action	Run of the oscillation	Possible cause
harmonic	sinusoidal, period T	Unbalances, tumbling machines
periodic	optional, periodical, period T_D	Regularly abutting parts (e.g. punching machines), rail- and road traffic
transient	optional, nonperiodical	Earthquakes
impulsive	optional, with very short time of influence	Impact, explosion

Dynamic effects

Seismic

In Europe, the design method TR045 has been established to consider anchor design under seismic action. This design method is consistent with the assessment according to ETAG 001, Annex.E and has been developed during the revision of the CEN/TS 1992-4 series and is incorporated in Eurocode EN 1992-4 (to be published mid/end 2015)The seismic performance of anchors subjected to seismic loading is categorized by performance categories C1 and C2. Performance category C1 is subjected to attachments of non-structural elements and is equal to the American regulations.

Category C2 is for connections between structural elements of primary and/or secondary seismic members. Based on the assessment according to ETAG 001, Annex.E, the seismic performance category of an anchor is given in the corresponding ETA (e.g. FAZII, FHII, FIS SB, FIS EM...).

ETA seismic category C1 is similar to the US pre-qualification procedure. The seismic values are issued in the corresponding ICC ES approval. (FAZII, FHII, FIS EM).

Seismicitz level[a]		Importance Class acc. to EN 1998-1:2004, 4.2.5			
Class	$a_g \cdot S$ [c]	I	II	III	IV
Very low[b]	$a_g \cdot S \leq 0{,}05$ g	No additional requirement			
Low[b]	$0{,}05\ g < a_g \cdot S \leq 0{,}10$ g	C1	C1 [d] or C2 [e]		C2
> low	$a_g \cdot S > 0{,}10$ g	C1	C2		

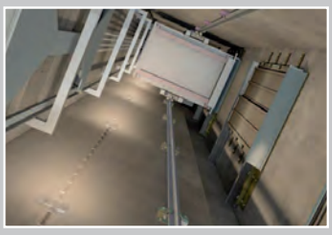
[a] The values defining the seismicity levels are may be found in the National of EN 1988-1.
[b] Definition according to EN 1998-1:2004, 3.2.1.

[c] a_g = design ground acceleration on Type A ground (EN 1998-1:2004, 3.2.1),
S = soil factor (see e.g. EN 1998-1:2004, 3.2.2).

[d] C1 for Type 'B ' connections
[e] C2 for Type 'A' connections

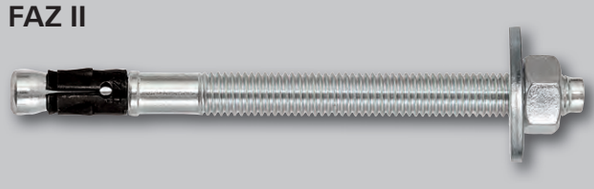
Guide rails.

Fixing in concrete



A variety of mechanical and chemical anchor systems with different approvals allows the design engineer flexible design options. Mechanical anchors for fast and reliable installation - and chemical systems for high operational demands.

FAZ II



ETA-05/0069
ETAG 001
Option 1 for cracked concrete
seismic performance category C1, C2

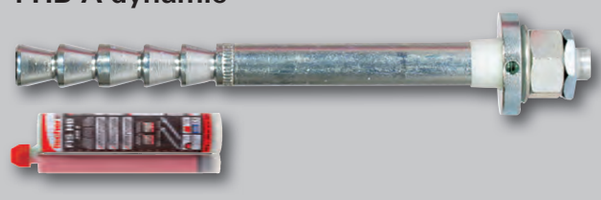
ICC-ES ESR-2948 — See ICC-ES Evaluation Report at www.icc-es.org

Fire resistance classification R 120 — Anchor types see test report

SEISMIC

- The tried-and-trusted expansion clip makes large load-bearing capacities possible, so fewer fixing points and smaller anchor plates are required.
- The reduced anchorage depths makes considerably shorter drill hole depths possible, so providing a noticeably faster installation.
- Fewer hammer blows and minimal torque slippage ensure safe and easy setting.
- The international approvals guarantee maximum safety and the best performance. Applications in earthquake regions (Seismic) are also covered by these approvals.

FHB-A dynamic



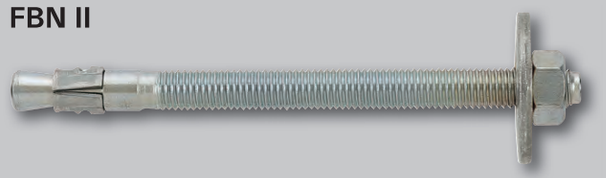
Mit allgemeiner bauaufsichtlicher Zulassung

dynamic

Fire resistance classification R 120 — Anchor types see test report

- During the installation process, the injection mortar FIS HB fills the annular gap in the fixture, and ensures optimum load distribution. This allows for the absorption of dynamic alternating loads.
- The cone shape of the FHB-A dyn anchor rod ensures a controlled expansion under dynamic stress, thus allowing for use in cracked concrete.
- The anchor rod FHB-A dyn is also available made from highly corrosion-resistant steel. This makes it suitable for use in aggressive atmospheres.

FBN II



ETA-07/0211
ETAG 001-2
Option 7 for non-cracked concrete

Fire resistance classification R 120 — Anchor types see test report

- The standard anchorage depth achieves the maximum load-bearing capacity in non-cracked concrete.
- The reduced anchorage depth reduces the drill hole depth. This minimizes the amount of time needed for drilling and enables less wear on the drill.
- Great flexibility throughout the load range.
- Few hammer blows and the minimal torque slippage allow for a noticeably simpler installation.

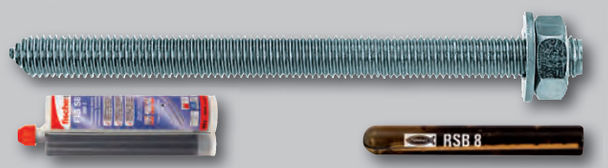
FHB II

Fire resistance classification R 120

Shock-tested; BZS approval for shockproof fixings in civilian shelters.

- The Highbond system FHB II achieves high load values in cracked concrete. Thus fewer fixing points and smaller anchor plates are required.
- The resin capsule FHB II-P/PF can be used in uncleaned drill holes. This makes it an economical and fast solution.
- The injection mortar FIS HB and the capsules FHB II-P/PF offer the same performance and can be used with the FHB II- A S (short version) or L (long version) anchor rods. This enables you to select the most economical solution based on your requirements.

Superbond (Anchor rod FIS A /RG M)



Fire resistance classification R 120

SEISMIC

- The Superbond system is a combined capsule and injection system for cracked and non-cracked concrete. The injection mortar FIS SB and resin capsule RSB perform the same. This gives the installer maximum flexibility.
- Approved for seismic applications (performance category C2 with FIS SB and C1 for capsule) as well as in waterfilled and diamond drilled holes (capsule only) ensures safety even in extreme conditions.
- Maximum application temperatures of up to +150°C and minimum temperatures of -30°C open up new areas of use for bonded anchors

More from fischer - Drill bits

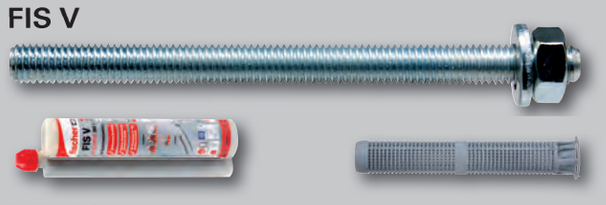
See for further information: www.fischer.de

Guide rails.

Fixing in masonry

Chemical injection systems combined with the right accessories guarantee a perfect load transfer into solid or perforated blocks. For lower load demands nylon frame fixings offer good performance into solid blocks.

FIS V



ETA-10/0383
ETAG 029
Masonry
Use categories b, c or d
and d/d or w/w

Fire resistance classification
R 120

- The FIS V injection resin has numerous system approvals and is the universal injection resin family with guaranteed reliability for practically all areas of application.
- FIS VW HIGH SPEED has a significant shorter curing time than FIS V. Thus also ensuring fast installation even at low temperatures.
- The extensive range of accessories ideally suited to the FIS V injection resin family, increases the flexibility of the system and so allows for a broad range of applications.

SXRL

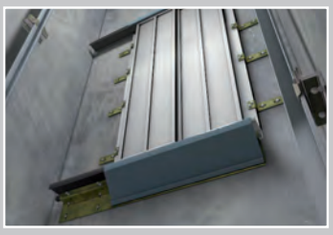
ETA-07/0121
ETAG 020 a, b, c, d
Multiple use in concrete
and masonry for
non-structural applications

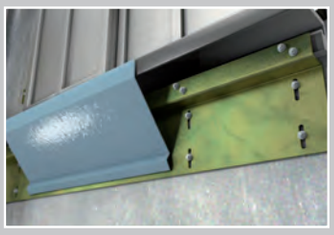
Fire resistance classification
R 90

- When anchoring in hollow and solid construction materials, the two expansion zones lead to optimum retention values.
- Through the special geometry of the plug, the retention forces are evenly distributed in the drill hole.
- The variable anchorage depth of 70 or 90 mm offer special advantages and high loads when anchoring in aerated concrete.

Shaft doors.

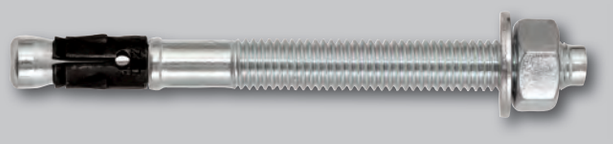
Fixing in concrete





Depending on requirements – mechanical expansion anchors offer a high load performance even if they are installed close to the edge – which is usually a criteria, when fixing shaft doors. Anchors are available with different head styles and offer fast and secure installation.

FAZ II



ETA-05/0069
ETAG 001
Option 1 for cracked concrete
seismic performance category C1, C2

ICC ES ESR-2948 See ICC-ES Evaluation Report at www.icc-es.org

Fire resistance classification R 120

SEISMIC

- The tried-and-trusted expansion clip makes large load-bearing capacities possible, so fewer fixing points and smaller anchor plates are required.
- The reduced anchorage depths makes considerably shorter drill hole depths possible, so providing a noticeably faster installation.
- Fewer hammer blows and minimal torque slippage ensure safe and easy setting.
- The international approvals guarantee maximum safety and the best performance. Applications in earthquake regions (Seismic) are also covered by these approvals.

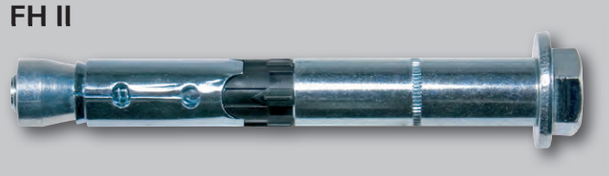
FBN II

ETA-07/0211
ETAG 001-2
Option 7 for non-cracked concrete

Fire resistance classification R 120

- The standard anchorage depth achieves the maximum load-bearing capacity in non-cracked concrete.
- The reduced anchorage depth reduces the drill hole depth. This minimizes the amount of time needed for drilling and enables less wear on the drill.
- Great flexibility throughout the load range.
- Few hammer blows and the minimal torque slippage allow for a noticeably simpler installation.

FH II



ETA-07/0025
ETAG 001-2
Option 1 for cracked concrete
seismic performance category C1

ICC ES ESR-2691 See ICC-ES Evaluation Report at www.icc-es.org

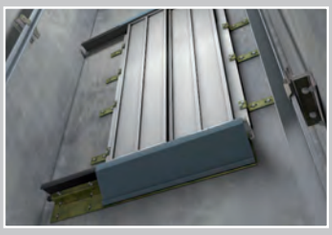
Fire resistance classification R 120

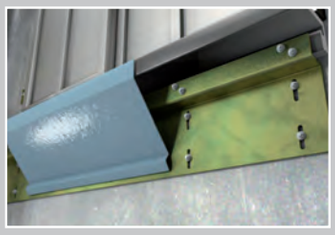
SEISMIC

- The optimized geometry reduces the setting energy thus ensuring power-saving installation.
- The anchor design enables different head shapes for fixing points with a sophisticated design.
- The international approvals guarantee maximum safety and the best performance. Applications in earthquake regions (Seismic) are also covered by these approvals.
- The detachable bolt connection allows for surface flush removal.

Shaft doors.

Fixing in concrete





According the demands – mechanical expansion anchors are offering a high load performance even if they are installed close to the edge – which is usually a criterion, when fixing shaft doors. Anchors are available in different head shapes allows a fast and secure installation.

SBS

- Cost and time-saving installation, SBS anchor comes pre-assembled.
- Easy and flexible installation of SBS anchor allows adjustment of plate before applying torque, due to immediate prestress.
- The large metal washer prevents the metal fixing from slipping into the drill hole, thus allowing a simple installation.
- The anti-rotation lock prevent the metal fixing rotating in the drill hole, thus guaranteeing a high level of installation safety.

Fixing in masonry

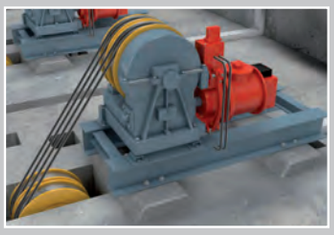
Quick and fast installation in solid or perforated block material even with short edge distances.

SXRL

- When anchoring in hollow and solid construction materials, the two expansion zones lead to optimum retention values.
- Through the special geometry of the plug, the retention forces are evenly distributed in the drill hole.
- The variable anchorage depth of 70 or 90 mm offer special advantages and high loads when anchoring in aerated concrete.

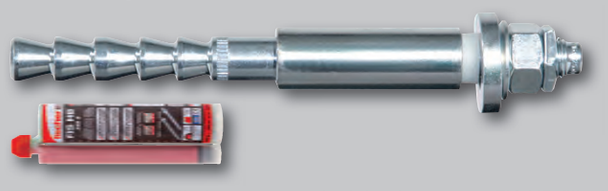
Drive system.

Fixing solution for drive systems



The drive for the elevator system must be anchored with approved heavy duty anchor systems - there is no compromise. Sophisticated and reliable chemical systems as well as heavy duty sleeve anchors are the right choice.

FHB-A dynamic V

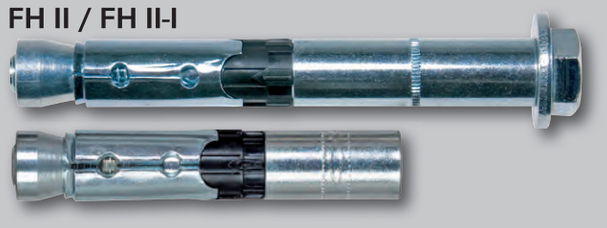


- During the installation process, the injection mortar FIS HB fills the annular gap in the fixture, and ensures optimum load distribution. This allows for the absorption of dynamic alternating loads.
- The cone shape of the FHB-A dyn anchor rod ensures a controlled expansion under dynamic stress, thus allowing for use in cracked concrete.
- The anchor rod FHB-A dyn is also available in highly corrosion-resistant steel. This makes it suitable for use in aggressive atmospheres.

Superbond (Anchor rod FIS A /RG M)

- The Superbond system is a combined capsule and injection system for cracked and non-cracked concrete. The injection mortar FIS SB and resin capsule RSB perform the same. This gives the installer maximum flexibility.
- Approved for seismic applications (performance category C2 with FIS SB and C1 for capsule) as well as in waterfilled and diamond drilled holes (capsule only) ensures safety even in extreme conditions.
- Maximum application temperatures of up to +150°C and minimum temperatures of -30°C open up new areas of use for bonded anchors.

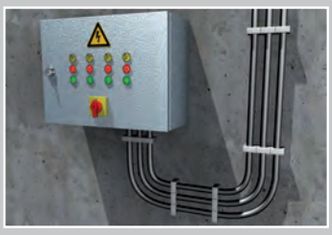
FH II / FH II-I



- The optimized geometry reduces the setting energy thus ensuring power-saving installation.
- The anchor design enables different head shapes for fixing points with a sophisticated design.
- The international approvals guarantee maximum safety and the best performance. Applications in earthquake regions (Seismic) are also covered by these approvals.
- The detachable bolt connection allows for surface flush removal.

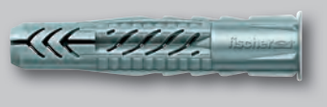
Other elevator components.

Control technology



Installation of electrical equipment, e.g. conduit or junction boxes, a variety of different nylon fixings guarantees a fast and secure installation in almost all building materials. For higher demands expansion bolts or injection systems are the right choice.

SX / UX



SX

- The 4-way expansion provides the optimum force distribution in the drill hole, and offers high load-bearing capacities in solid and hollow building materials.

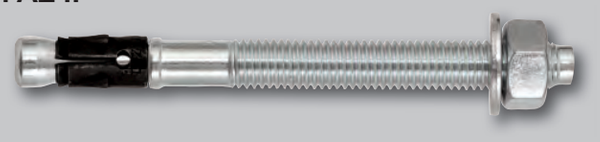
UX

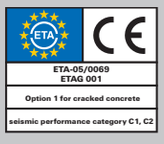
- The universal operating principle (knotting or expanding) allows for use in all solid, hollow and board building materials. Thus the UX is the correct choice for unknown base materials.

SXRL

- When anchoring in hollow and solid construction materials, the two expansion zones lead to optimum retention values.
- Through the special geometry of the plug, the retention forces are evenly distributed in the drill hole.
- The variable anchorage depth of 70 or 90 mm offer special advantages and high loads when anchoring in aerated concrete.

FAZ II





- The tried-and-trusted expansion clip makes maximum load-bearing capacities possible, so fewer fixing points and smaller anchor plates are required.
- The reduced anchorage depths makes a considerably shorter drill hole depths possible, thus provides a noticeably faster installation.
- Fewer hammer blows and the minimal torque slippage ensure a subjectively easier and comfortable setting process.
- The international approvals guarantee maximum safety and the best performance. Applications in earthquake regions (Seismic) are also covered by these approvals.

Superbond (Anchor rod FIS A /RG M)

- The Superbond system is a combined capsule and injection system for cracked and non-cracked concrete. The injection mortar FIS SB and resin capsule RSB perform the same. This gives the installer maximum flexibility.
- Approved for seismic applications (performance category C2 with FIS SB and C1 for capsule) as well as in waterfilled and diamond drilled holes (capsule only) ensures safety even in extreme conditions.
- Maximum application temperatures of up to +150°C and minimum temperatures of -30°C open up new areas of use for bonded anchors.

More from fischer - Electrical fixings

See for further information: www.fischer.de

Other elevator components.

Temporary fixings & maintenance

Concrete screws are allowing a very fast and secure installation of temporary installations e.g. mounting platforms. After completing the work the screws can be removed without any remaining parts in the concrete.

FBS

ETA-11/0006
ETAG 001-3
Option 1 for cracked concrete

Fire resistance classification R 120

- The self-tapping concrete screw enables a complete dismantling and is ideal for temporary fixings.
- The expansion pressure-free anchoring ensures low edge distances and axial spacings.
- The FBS is installed in a single step, which saves time and money.
- The molded washer allows the usage also for fixtures with larger clearance holes.

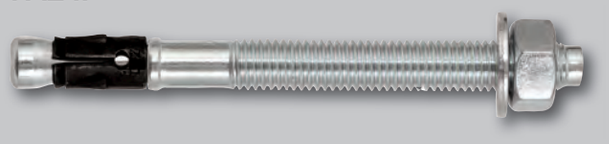
FBN II

ETA-07/0211
ETAG 001-2
Option 7 for non-cracked concrete

Fire resistance classification R 120

- The standard anchorage depths achieves the maximum load-bearing capacity in non-cracked concrete.
- The reduced anchorage depth reduces the drill hole depth. This minimizes the amount of time needed for drilling and enables less wear of material.
- Great flexibility concerning the load range.
- Few hammer blows and the minimal torque slippage allow for a noticeably simpler installation.

FAZ II



ETA-05/0069
ETAG 001
Option 1 for cracked concrete
seismic performance category C1, C2

ICC ES ESR-2948
See ICC-ES Evaluation Report at www.icc-es.org

Fire resistance classification R 120

SEISMIC

- The tried-and-trusted expansion clip makes large load-bearing capacities possible, so fewer fixing points and smaller anchor plates are required.
- The reduced anchorage depths makes considerably shorter drill hole depths possible, so providing a noticeably faster installation.
- Fewer hammer blows and minimal torque slippage ensure safe and easy setting.
- The international approvals guarantee maximum safety and the best performance. Applications in earthquake regions (Seismic) are also covered by these approvals.

Accessories for installation.

- Dispenser (e.g. FIS AM or FIS DM S)

- Pneumatic cleaning tool ABP/ Pneumatic dispenser FIS AP

- Cleaning brush BS for concrete/ Cleaning brush with thread M8/SDS-adapter

- Drills and bits for concrete and masonry

- Blow out pump AGB

- Anchor bolt setting tool FABS (fits with FAZ II & FBN II)

- Setting tool RA-SDS (fits with RGM)

Overview fischer fixing competence.

Chemical fixings
Resin systems, in the form of cartridge or capsule systems, for fixing of high loads. A secure hold in cracked and non-cracked concrete, natural stone, masonry and aircrete – including reinforcement.

General fixings
A wide range of different nylon and metal anchors with and without screws and hooks. For fastening, assembling and installing lightweight objects in very diverse building materials.

Electrical fixings
E-fix plugs, cable and nail clamps, pipe clips, cable clasps and multi-cable supports. Everything you need for quickly laying cables and conduits.

Frame fixings / Stand-off installation
Frame fixings and nail anchors with screws with different head shapes. For fastening substructures, façades, cable trays, gates, etc. Can be used in concrete, solid brick, perforated brick, natural stone, aircrete and much more.

Foams and sealants
Gun foams and quick assembly foams for filling, insulating, sealing, gluing and fixing. Silicones, acrylic building materials and bitumen sealants for grouting, sealing and gluing in diverse applications inside and outside.

Installation systems
Basis for secure guidance and mounting of pipelines within HVAC business. A clever system of universal channels, cantilevers, connection- and construction elements, pipe clamps and accessories in different material qualities and versions for versatile applications.

High performance steel anchors
Cost-effective, easy-to-install anchor bolts for high loads, undercut anchors, sleeve anchors and hammerset anchors. For a wide range of applications in cracked and non-cracked concrete.

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- The new modular design program includes engineering software and application modules.
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- The 3 D display gives a detailed and realistic image.
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