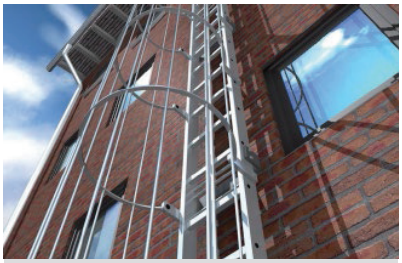
fischer
innovative solutions

The proven bonded anchor for universal application



Rescue ladders

APPROVALS

ETA
CE
ETA 08/0266
ETA 10/0383
ETA 02/0024

Fire resistance classification
R 120
Anchor types see test report

Mit allgemeiner bauaufsichtlicher Zulassung

ICC ES
See ICC-ES Evaluation Report at www.icc-es.org
ESR-2786
Inspection agency: IEA (AA-707)

ADVANTAGES

- The FIS V injection mortar has numerous system approvals, such as in cracked and non-cracked concrete, masonry and for rebar connections. FIS V is thus the universal injection in mortar family with guaranteed reliability for practically all areas of application.
- FIS VW HIGH SPEED has a significantly shorter curing time than FIS V, thus also ensuring swift work progress even at low temperatures.
- FIS VS LOW SPEED with extended gelling time prevents premature curing of the mortar at higher temperatures and is ideally suited to large drill hole depths.
- The extensive range of accessories is ideally suited to the FIS V injection mortar family, increases the great flexibility of the system and thus allows for a broad range of applications.

BUILDING MATERIALS

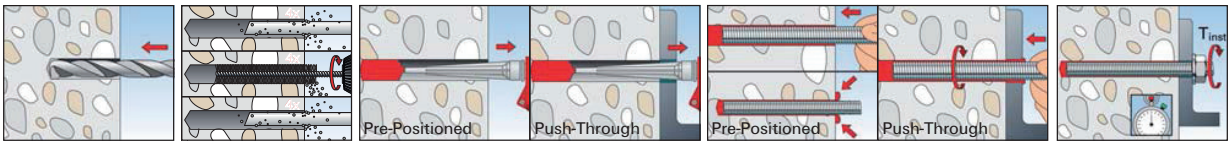
Approved for anchoring in:

- Concrete C20/25 to C50/60
- Cracked and non-cracked
- Seismic conditions
- Hollow blocks made from lightweight concrete
- Hollow blocks made from concrete
- Vertically perforated brick
- Perforated sand-lime brick
- Solid sand-lime brick
- Aerated concrete
- Solid brick
- Rebar connections
- Remedial wall tie VBS 8
- Weather facing reconstruction system FWS II
- Stand-off installation Thermax

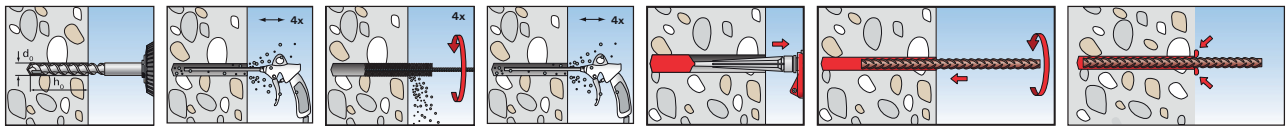
Approved for rebar connection in:

- Concrete C12/15 to C50/60

INSTALLATION



INSTALLATION DETAILS-REBAR



d_0 ≧ 18 mm with oil free compressed air (P > 6 bar)

TECHNICAL DATA

Item	Art-No.	Languages on the cartridge	Contents	Sales unit (pcs)
FIS V 360 S	**094405**	GB, I, P, E, PRC, JP	1 cartridge 360 ml, 2 x static mixer FIS S	6
FIS S	**520742**	–	10 static mixer	10
FIS V 360 S in bucket	**503025**	GB, I, P, E, PRC, JP	20 cartridges 360 ml, 20 x static mixer FIS S	1

CURING TIME

Cartridge temperature (mortar)	Gelling time	Temperature at anchoring base	Curing time
		- 5°C – ± 0°C	24 hrs.
		± 0°C – + 5°C	3 hrs.
+ 5°C – +10°C	9 min.	+ 5°C – +10°C	90 min.
+ 10°C – + 20°C	5 min.	+ 10°C – + 20°C	60 min.
+ 20°C – + 30°C	4 min.	+ 20°C – + 30°C	45 min.
≥30°C	2 min.	≥30°C	35 min.

The above times apply from the moment of contact between resin and hardener in the static mixer.
For installation, the cartridge temperature must be at least +5 °C. For longer installation times, i.e. when interruptions occur in work, the mixer should be replaced.

LOADS

Loads for a single anchor in concrete [1) 2) 5) 8) 9)]
For the design the complete approval ETA - 02/0024 has to be considered.

Design Resistance [1)]

Rod diameter	Dia 6				Dia 8				Dia 10				Dia 12				Dia 16				Dia 20			
hef(mm)	60				80				100				120				160				200			
Quality	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar
Non-cracked Concrete																								
Tension C20/25 N_{rd} (kN)	6.6	6.7	6.7	–	12.6	14.7	13.7	14.7	19.3	23.0	21.7	23.0	28.6	33.1	31.5	33.1	52.3	53.6	53.6	53.6	79.5	79.5	79.5	79.5
Tension C50/60 N_{rd} (kN)	6.6	8.5	7.5	–	12.6	18.5	13.7	18.1	19.3	29.0	21.7	28.0	28.6	41.8	31.5	40.8	52.3	67.5	58.7	67.5	82.0	100.2	91.7	100.2
Shear ≥ C25/25	4.0	6.4	4.5	–	7.2	11.7	8.2	10.1	12.0	18.5	13.0	15.8	16.8	26.9	18.9	22.8	31.2	50.2	35.2	40.5	48.8	78.4	54.9	63.5
Cracked Concrete																								
Tension C20/25 N_{rd} (kN)	–	–	–	–	–	–	–	–	12.5	12.5	12.5	6.2	18.0	18.0	18.0	15.0	32.1	32.1	32.1	26.8	46.0	46.0	46.0	37.6
Tension C50/60 N_{rd} (kN)	–	–	–	–	–	–	–	–	15.8	15.8	15.8	7.9	22.8	22.8	22.8	19.0	40.5	40.5	40.5	33.7	58.0	58.0	58.0	47.5
Shear ≥ C25/25	–	–	–	–	–	–	–	–	12.0	18.5	13.0	12.5	16.8	26.9	18.9	22.8	31.2	50.2	35.2	40.6	48.8	78.3	54.9	63.5

Rod diameter	Dia 24				Dia25	Dia 27				Dia28	Dia 30		
hef(mm)	240				250	270				280	300		
Quality	5.8	8.8	A4-70	Rebar	Rebar	5.8	8.8	A4-70	Rebar	Rebar	5.8	8.8	A4-70
Non-cracked Concrete													
Tension C20/25 N_{rd} (kN)	108.5	108.5	108.5	–	117.8	129.7	129.7	129.7	–	139.5	160.2	160.2	160.2
Tension C50/60 N_{rd} (kN)	118.0	136.8	132.1	–	148.4	153.3	163.5	163.5	–	175.6	187.3	201.8	201.8
Shear ≥ C25/25	71.2	112.9	79.1	–	99.3	92.0	146.8	102.9	–	124.5	112.8	179.5	125.8
Cracked Concrete													
Tension C20/25 N_{rd} (kN)	54.2	54.2	54.2	–	52.3	61.0	61.0	61.0	–	65.6	75.3	75.3	75.8
Tension C50/60 N_{rd} (kN)	68.3	68.3	68.3	–	65.9	76.9	76.9	76.9	–	82.7	95.0	95.0	95.0
Shear ≥ C25/25	71.2	108.5	79.1	–	99.3	92.0	122.1	102.9	–	124.5	112.8	150.7	125.8

Recomended Resistance [2)]

Rod diameter	Dia 6				Dia 8				Dia 10				Dia 12				Dia 16				Dia 20			
hef(mm)	54				80				90				110				150				180			
Quality	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar	5.8	8.8	A4-70	Rebar
Non-cracked Concrete																								
Tension C20/25 N_{rd} (kN)	4.7	4.8	4.8	–	9.0	10.5	9.8	10.5	13.8	16.5	15.5	16.4	20.4	23.6	22.5	23.6	37.4	38.3	38.3	38.3	56.8	56.8	56.8	56.8
Tension C50/60 N_{rd} (kN)	4.7	6.1	5.4	–	9.0	13.2	9.8	12.9	13.8	20.7	15.5	20.2	20.4	29.9	22.5	29.1	37.4	48.2	41.9	48.2	58.6	71.6	65.5	71.6
Shear ≥ C25/25	2.9	4.6	3.2	–	5.1	8.4	5.9	7.2	8.6	13.2	9.3	11.3	12.0	19.2	13.5	16.3	22.3	35.9	25.2	28.9	34.9	56.0	39.2	45.4
Cracked Concrete																								
Tension C20/25 N_{rd} (kN)	–	–	–	–	–	–	–	–	8.9	8.9	8.9	4.4	12.9	12.9	12.9	10.7	22.9	22.9	22.9	19.1	32.9	32.9	32.9	26.9
Tension C50/60 N_{rd} (kN)	–	–	–	–	–	–	–	–	11.3	11.3	11.3	5.6	16.3	16.3	16.3	13.6	28.9	28.9	28.9	24.1	41.4	41.4	41.4	33.9
Shear ≥ C25/25	–	–	–	–	–	–	–	–	8.6	13.2	9.3	8.9	12.0	19.2	13.5	16.3	22.3	35.9	25.1	29.0	34.9	55.9	39.2	45.4

Rod diameter	Dia 24				Dia 25	Dia 27				Dia 28	Dia 30		
hef(mm)	220				250	270				280	300		
Quality	5.8	8.8	A4-70	Rebar	Rebar	5.8	8.8	A4-70	Rebar	Rebar	5.8	8.8	A4-70
Non-cracked Concrete													
Tension C20/25 N_{rd} (kN)	77.5	77.5	77.5	–	84.1	92.6	92.6	92.6	–	99.6	114.4	114.4	114.4
Tension C50/60 N_{rd} (kN)	84.3	97.7	94.4	–	106.0	109.5	109.5	116.8	–	125.4	133.8	144.1	144.1
Shear ≥ C25/25	50.9	80.6	56.5	–	70.9	65.7	65.7	104.9	–	88.9	80.6	128.2	89.9
Cracked Concrete													
Tension C20/25 N_{rd} (kN)	38.7	38.7	38.7	–	37.4	43.6	43.6	43.6	–	46.9	53.8	53.8	53.8
Tension C50/60 N_{rd} (kN)	48.8	48.8	48.8	–	47.1	54.9	54.9	54.9	–	59.1	67.9	67.9	67.9
Shear ≥ C25/25	50.9	77.5	56.5	–	70.9	65.7	65.7	87.2	–	88.9	80.6	107.6	89.9

(1) The partial safety factors for material resistance as regulated in the approval.
(2) Partial safety factor for load γ_L= 1.4 are considered for recommended load capacities.
(3) Minimum possible axial spacings resp. edge distance while reducing the permissible load/ design load.
(4) For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.
(5) For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
(6) The given loads are valid for use in dry and humid concrete for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval.
(7) Rebar grade used for above calculation is FY= 460 n/mm²).
(8) The above loads use for embedment depth = 10 x dia.
(9) Embedment depth can be reduced or increased to get desired loads as per approval.