

High performance anchor FH

The heavy-duty sleeve anchor for applications with sophisticated design.

Overview

-  High performance anchor **FH II-S**, zinc plated steel
-  High performance anchor **FH II-SK**, zinc plated steel
-  High performance anchor **FH II-H**, zinc plated steel
-  High performance anchor **FH II-B**, zinc plated steel
-  High performance anchor **FH-S A4***, stainless steel of the corrosion resistance class III, e.g. A4

Approved for:

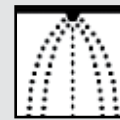
- Cracked and non-cracked concrete C20/25 to C50/60.

Also suitable for:

- Concrete C12/15
- Natural stone with dense structure.

For fixing of:

- Steel constructions
- Railings
- Consoles
- Ladders
- Cable trays
- Machines
- Staircases
- Gates
- Facades
- Window elements



*) not part of the approvals

DESCRIPTION

- Heavy-duty sleeve anchor for push-through installation.
- When the hexagon nut or bolt is tightened, the cone is pulled into the expansion sleeve and expands it against the hole wall.
- FH version made of stainless steel of the corrosion resistance class III, e.g. A4, for outdoor use and in damp conditions (not part of the approvals).

Advantages/benefits

- For stylish fixings.
- Highest tensile and shear loads for push-through installation.
- Simple and easy setting: Anchor setting with a few, light hammer blows.
- Surface flush removal.
- Minimum axial and edge distances.
- Anchor versions for fixings with sophisticated design: FH-S (hexagon head screw), FH-H (cap nut) and FH-SK (countersunk screw).
- All anchors can be removed flush with the surface.



FH II - ADVANTAGES AT A GLANCE

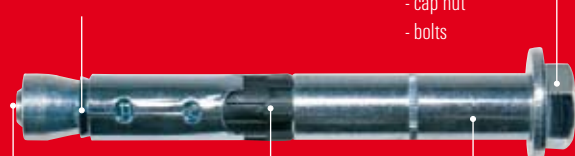
The unit of cone and expansion clip leads to the highest tensile strength and smallest edge distances and axial spacings in cracked and non-cracked concrete.

Fixing with four different head designs
 - hexagon head screw
 - countersunk screw
 - cap nut
 - bolts

Optimised screw and bolt length for reduced anchorage depth.

The black plastic ring provides highest performance and takes a torque slippage (so called "internal expansion"). Any turning of the anchor is prevented.

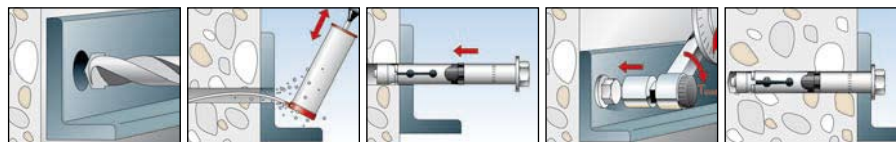
The high tensile strength of the steel (strength class 8.8) and the optimum interaction of screw and sleeve (enlargement of the shear area) allows the highest shear loads.



INSTALLATION

Type of installation

- Push-through installation

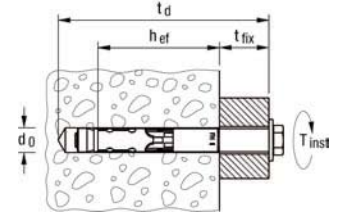


TECHNICAL DATA



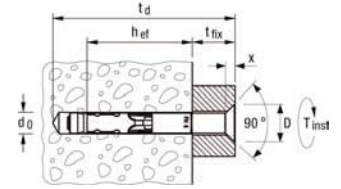
High performance anchor **FH II-S**
with hexagon head screw
- zinc plated steel

Type	Art.-No.	approvals ETA ICCES	drill d_0 [mm]	min. drill-hole depth for through fixings t_d [mm]	effect. anchoring depth h_{ef} [mm]	total length l [mm]	max. usable length t_{fix} [mm]	thread M	width across nut SW	Washer (outer diameter x thickness) [mm]	Qty. per box pcs.
FH II 10/10 S	503133	■	10	65	40	70	10	M 6	10	12 x 2	50
FH II 10/25 S	503134	■	10	80	40	85	25	M 6	10	12 x 2	50
FH II 10/50 S	503135	■	10	105	40	110	50	M 6	10	12 x 2	50
FH II 12/10 S	044884	■ ▼	12	90	60	90	10	M 8	13	22 x 2,5	50
FH II 12/25 S	044885	■ ▼	12	105	60	105	25	M 8	13	22 x 2,5	50
FH II 12/50 S	044886	■ ▼	12	130	60	130	50	M 8	13	22 x 2,5	25
FH II 15/10 S	044887	■ ▼	15	100	70	106	10	M 10	17	25 x 3	25
FH II 15/25 S	044888	■ ▼	15	115	70	121	25	M 10	17	25 x 3	25
FH II 15/50 S	044889	■ ▼	15	140	70	146	50	M 10	17	25 x 3	25
FH II 18/10 S	046847	■ ▼	18	115	80	118	10	M 12	19	30 x 3	20
FH II 18/25 S	044894	■ ▼	18	130	80	132	25	M 12	19	30 x 3	20
FH II 18/50 S	044896	■ ▼	18	155	80	157	50	M 12	19	30 x 3	20
FH II 24/25 S	044898	■ ▼	24	150	100	160	25	M 16	24	40 x 5	10
FH II 24/50 S	044900	■ ▼	24	175	100	185	50	M 16	24	40 x 5	10
FH II 28/30 S	044901	■ ▼	28	185	125	192	30	M 20	30	44 x 4,5	4
FH II 28/60 S	044902	■ ▼	28	215	125	222	60	M 20	30	44 x 4,5	4
FH II 32/30 S	044903	■ ▼	32	210	150	215	30	M 24	36	50 x 5	4
FH II 32/60 S	044904	■ ▼	32	210	150	245	60	M 24	36	50 x 5	4



High performance anchor **FH II-SK**
with countersunk screw
- zinc plated steel

Type	Art.-No.	approvals ETA ICCES	drill d_0 [mm]	min. drill-hole depth for through fixings t_d [mm]	effect. anchoring depth h_{ef} [mm]	total length l [mm]	max. usable length t_{fix} [mm]	thread M	SW	Qty. per box pcs.
FH II 10/15 SK	503136	■	10	70	40	65	10	M 6	4	50
FH II 10/25 SK	503137	■	10	80	40	75	25	M 6	4	50
FH II 10/50 SK	503138	■	10	105	40	100	50	M 6	4	50
FH II 12/15 SK	044917	■	12	95	60	90	15	M 8	5	25
FH II 12/25 SK	044918	■	12	105	60	100	25	M 8	5	25
FH II 12/50 SK	044919	■	12	130	60	125	50	M 8	5	25
FH II 15/15 SK	044920	■ ▼	15	105	70	100	15	M 10	6	25
FH II 15/25 SK	044921	■ ▼	15	115	70	110	25	M 10	6	25
FH II 15/50 SK	044922	■ ▼	15	140	70	135	50	M 10	6	25
FH II 18/15 SK	044923	■ ▼	18	120	80	115	15	M 12	8	20
FH II 18/25 SK	044924	■ ▼	18	130	80	125	25	M 12	8	20
FH II 18/50 SK	044925	■ ▼	18	155	80	150	50	M 12	8	20

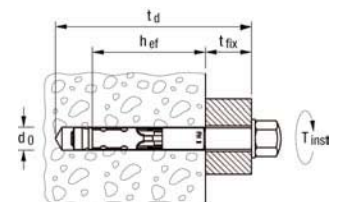


	X [mm]	phi D [mm]	counter bore
FH II 10/... SK	5	19.5	90°
FH II 12/... SK	5.8	22	90°
FH II 15/... SK	5.8	25	90°
FH II 18/... SK	8,0	32	90°



High performance anchor **FH II-H**
with cap nut - zinc plated steel

Type	Art.-No.	approvals ETA ICCES	drill d_0 [mm]	min. drill-hole depth for through fixings t_d [mm]	effect. anchoring depth h_{ef} [mm]	total length l [mm]	max. usable length t_{fix} [mm]	thread M	width across nut SW	Washer (outer diameter x thickness) [mm]	Qty. per box pcs.
FH II 10/10 H	503139	■	10	65	40	75	10	M 6	13	18 x 2	50
FH II 10/25 H	503140	■	10	80	40	90	25	M 6	13	18 x 2	50
FH II 10/50 H	503141	■	10	105	40	115	50	M 6	13	18 x 2	50
FH II 12/10 H	044905	■	12	90	60	92	10	M 8	17	22 x 2,5	50
FH II 12/25 H	044906	■	12	105	60	107	25	M 8	17	22 x 2,5	50
FH II 12/50 H	044907	■	12	130	60	132	50	M 8	17	22 x 2,5	25
FH II 15/10 H	044908	■ ▼	15	100	70	113	10	M 10	17	25 x 3	25
FH II 15/25 H	044909	■ ▼	15	115	70	128	25	M 10	17	25 x 3	25
FH II 15/50 H	044910	■ ▼	15	140	70	153	50	M 10	17	25 x 3	25
FH II 18/25 H	044915	■ ▼	18	130	80	138	25	M 12	19	30 x 3	20
FH II 18/50 H	044916	■ ▼	18	155	80	163	50	M 12	19	30 x 3	20



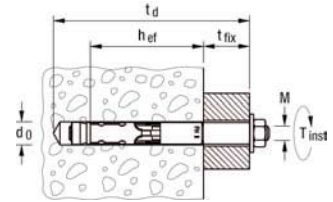
High performance anchor FH

TECHNICAL DATA



High performance anchor **FH II-B**
with hexagon nut and threaded bolt
- zinc plated steel

Type	Art.-No.	approvals	drill		effect. anchoring depth	total length	max. usable length	thread	width across nut	Washer (outer diameter x thickness)	Qty. per box
			d_0 [mm]	t_d [mm]							
		■ ETA ▼ ICCES			h_{ef} [mm]	l [mm]	t_{fix} [mm]	M	SW	[mm]	pcs.
FH II 10/10 B	503142	■	10	65	40	70	10	M 6	10	18 x 2	50
FH II 10/25 B	503143	■	10	80	40	85	25	M 6	10	18 x 2	50
FH II 10/50 B	503144	■	10	105	40	110	50	M 6	10	18 x 2	50
FH II 12/10 B	048773	■ ▼	12	90	60	90	10	M 8	13	22 x 2,5	50
FH II 12/25 B	048774	■ ▼	12	105	60	105	25	M 8	13	22 x 2,5	50
FH II 12/50 B	048775	■ ▼	12	130	60	130	50	M 8	13	22 x 2,5	25
FH II 12/100 B	046832	■ ▼	12	190	60	184	100	M 8	13	22 x 2,5	25
FH II 15/10 B	048776	■ ▼	15	100	70	110	10	M 10	17	25 x 3	25
FH II 15/25 B	048777	■ ▼	15	115	70	125	25	M 10	17	25 x 3	25
FH II 15/50 B	048778	■ ▼	15	140	70	150	50	M 10	17	25 x 3	25
FH II 15/100 B	046835	■ ▼	15	190	70	200	100	M 10	17	25 x 3	20
FH II 18/25 B	048779	■ ▼	18	130	80	135	25	M 12	19	30 x 3	20
FH II 18/50 B	048780	■ ▼	18	155	80	160	50	M 12	19	30 x 3	20
FH II 18/100 B	046841	■ ▼	18	205	80	214	100	M 12	19	30 x 3	10
FH II 24/25 B	048886	■ ▼	24	150	100	167	25	M 16	24	40 x 5	10
FH II 24/50 B	048887	■ ▼	24	175	100	192	50	M 16	24	40 x 5	10
FH II 24/100 B	046842	■ ▼	24	225	100	242	100	M 16	24	40 x 5	5
FH II 28/30 B	047547	■ ▼	28	180	125	196	30	M 20	30	44 x 4,5	4
FH II 28/60 B	047548	■ ▼	28	210	125	226	60	M 20	30	44 x 4,5	4
FH II 28/100 B	506630	■ ▼	28	255	125	268	100	M 20	30	44 x 4,5	4
FH II 32/30 B	047549	■ ▼	32	230	170	250	30	M 24	36	50 x 5	4
FH II 32/60 B	047550	■ ▼	32	260	170	280	60	M 24	36	50 x 5	4



High performance anchor **FH-S A4**.
stainless steel of the corrosion
resistance class III, e.g. A4

Type	Art.-No.	drill	min. drill-hole depth for through fixings		effect. anchoring depth	total length	max. usable length	thread	width across nut	Washer (outer diameter x thickness)	Qty. per box
			d_0 [mm]	t_d [mm]							
					h_{ef} [mm]	l [mm]	t_{fix} [mm]	M	SW	[mm]	pcs.
FH 10/10 S A4	045222	10	85	50	84	10	10	M 6	10	18 x 1,6	50
FH 12/10 S A4	045224	12	95	60	95	10	10	M 8	13	21 x 2	50
FH 12/25 S A4	045102	12	110	60	110	25	25	M 8	13	21 x 2	20
FH 15/10 S A4	045226	15	110	70	111	10	10	M 10	17	25 x 3	50
FH 15/25 S A4	045104	15	125	70	126	25	25	M 10	17	25 x 3	20
FH 15/50 S A4	045105	15	150	70	151	50	50	M 10	17	25 x 3	10
FH 18 x 100/25 S A4	045106	18	160	100	158	25	25	M 12	19	30 x 3,5	10
FH 18 x 100/50 S A4	045107	18	185	100	183	50	50	M 12	19	30 x 3,5	10
FH II 24/25 S A4	502711	24	150	100	160	25	25	M 16	24	40 x 4	8

LOADS

Mean ultimate loads, design resistant and recommended loads for single anchors of fischer High performance anchor FH II and FH 10 with large axial and edge distance.

		Non-cracked concrete						
Anchor size		FH II 10 M 6 gvz	FH II 12 M 8 gvz	FH II 15 M 10 gvz	FH II 18 M 12 gvz	FH II 24 M 16 gvz	FH II 28 M 20 gvz	FH II 32 M 24 gvz
Effective anchorage depth	h_{ef} [mm]	40	60	70	80	100	125	150
Drill hole depth	$h_1 \geq$ [mm]	55	80	90	105	125	150	180
Drill hole diameter	d_0 [mm]	10	12	15	18	24	28	32
Mean ultimate loads N_u and V_u [kN]								
Tensile	0° N_u [kN]	16.1	29.3*	39.4	48.3	67.5	94.3	124.0
Shear	90° V_u [kN]	15.5* (17.0) ²⁾	30.6* (36.1*) ²⁾	48.7* (56.9*) ²⁾	71.1* (82.5*) ²⁾	148.6*	170.4*	223.1*
Design resistant loads N_{Rd} and V_{Rd} [kN]								
Tensile	0° N_{Rd} [kN]	8.5	15.6	19.7	26.4	37.0	51.7	67.9
Shear	90° V_{Rd} [kN]	8.5	19.2 (23.2) ²⁾	31.2 (36.8) ²⁾	45.6 (52.8) ²⁾	74.1	96.8 (103.3) ²⁾	119.2 (136.1) ²⁾
Recommended loads N_{rec} and V_{rec} [kN]								
Tensile	0° N_{rec} [kN]	6.1	11.2	14.1	18.9	26.4	36.9	48.5
Shear	90° V_{rec} [kN]	6.1	13.7 (16.6) ²⁾	22.3 (26.3) ²⁾	32.6 (37.7) ²⁾	52.9	69.1 (73.9) ²⁾	85.1 (97.2) ²⁾
Recommended bending moment M_{rec} [Nm]								
	M_{rec} [Nm]	6.9	17.1	34.3	60.0	152.0	296.0	512.0
Anchor characteristics								
Characteristic axial spacing	$s_{cr, N}$ [mm]	= 3 x h_{ef}						
Characteristic edge distance	$c_{cr, N}$ [mm]	= 1.5 x h_{ef}						
Minimum axial spacing ¹⁾	s_{min} [mm]	40	60	70	80	100	120	160
	for $c \geq$ [mm]	70	100	100	160	200	220	360
Minimum edge distance ¹⁾	c_{min} [mm]	40	60	70	80	100	120	180
	for $s \geq$ [mm]	70	100	140	200	220	240	380
Minimum structural component thickness	h_{min} [mm]	80	120	140	160	200	250	300
Clearance-hole in fixture to be attached	$d_f \leq$ [mm]	12	14	17	20	26	30	34
Installation torque	T_{inst} [Nm]	10	22.5 (17.5) ³⁾	40 (38) ²⁾	80	160 (120) ³⁾	180	200
		Cracked concrete						
Anchor size		FH II 10 M 6 gvz	FH II 12 M 8 gvz	FH II 15 M 10 gvz	FH II 18 M 12 gvz	FH II 24 M 16 gvz	FH II 28 M 20 gvz	FH II 32 M 24 gvz
Effective anchorage depth	h_{ef} [mm]	40	60	70	80	100	125	150
Drill hole depth	$h_1 \geq$ [mm]	44	80	90	105	125	150	180
Drill hole diameter	d_0 [mm]	10	12	15	18	24	28	32
Mean ultimate loads N_u and V_u [kN]								
Tensile	0° N_u [kN]	10.0	29.3	39.5	48.3	47.3	66.0	86.8
Shear	90° V_u [kN]	10.0*	30.6* (36.1*) ²⁾	48.7* (56.9*) ²⁾	71.1* (82.5*) ²⁾	148.6*	170.4*	223.1*
Design resistant loads N_{Rd} and V_{Rd} [kN]								
Tensile	0° N_{Rd} [kN]	5.0	9.8	14.1	17.1	24.0	33.5	44.1
Shear	90° V_{Rd} [kN]	6.1	19.2 (22.3) ²⁾	28.1	34.3	48.0	67.1	88.2
Recommended loads N_{rec} and V_{rec} [kN]								
Tensile	0° N_{rec} [kN]	3.6	7.0	10.0	12.2	17.1	24.0	31.5
Shear	90° V_{rec} [kN]	4.3	13.7 (15.9) ²⁾	20.1	24.5	34.3	47.9	63.0
Recommended bending moment M_{rec} [Nm]								
	M_{rec} [Nm]	6.9	17.1	34.3	60.0	152.0	296.0	512.0
Anchor characteristics								
Characteristic axial spacing	$s_{cr, N}$ [mm]	= 3 x h_{ef}						
Characteristic edge distance	$c_{cr, N}$ [mm]	= 1.5 x h_{ef}						
Minimum axial spacing ¹⁾	s_{min} [mm]	40	50	60	70	80	100	120
	for $c \geq$ [mm]	40	80	120	140	180	200	260
Minimum edge distance ¹⁾	c_{min} [mm]	40	50	60	70	80	100	120
	for $s \geq$ [mm]	40	80	120	160	200	220	280
Minimum structural component thickness	h_{min} [mm]	80	120	140	160	200	250	300
Clearance-hole in fixture to be attached	$d_f \leq$ [mm]	12	14	17	20	26	30	34
Installation torque	T_{inst} [Nm]	10	22.5 (17.5) ³⁾	40 (38) ²⁾	80	160 (120) ³⁾	180	200

All values apply for concrete C20/25 without edge or spacing influences.

Design resistant loads: material safety factor γ_M is included. Material safety factor γ_M depends on the type of anchor.

Recommended loads: material safety factor γ_M and safety factor for load $\gamma_L = 1.4$ are included.

* Steel failure value.

¹⁾ For minimum axial spacing and minimum edge distance the above described loads have to be reduced (See "fischer Technical Handbook" or design software "CC-COMPUFIX")!

²⁾ Values in brackets are valid for screw type FH II-S and type with countersunk screw head FH II-SK only

³⁾ Values in brackets are valid for bolt type FH II-B only.

High performance anchor FH

LOADS

Mean ultimate loads, design resistant and recommended loads for single anchors of fischer High performance anchor FH A4 with large spacing and edge distance.

Anchor type		FH 10 A4 M 6	FH 12 A4 M 8	FH 15 A4 M 10	FH 18 x 100 A4 M 12
Effective anchorage depth	h_{ef} [mm]	50	60	70	100
Drill hole depth	$h_f \geq$ [mm]	75	85	100	135
Drill hole diameter	d_0 [mm]	10	12	15	18
Mean ultimate loads N_u and V_u [kN]					
Tensile	0° N_u [kN]	14.1*	22.3	34.3	55.8
Shear	90° V_u [kN]	19.8*	29.5*	48.3*	71.6*
Design resistant loads N_{Rd} and V_{Rd} [kN]					
Tensile	0° N_{Rd} [kN]	7.5	11.6	18.0	25.4
Shear	90° V_{Rd} [kN]	7.5	11.1	18.2	26.8
Recommended loads N_{rec} and V_{rec} [kN]					
Tensile	0° N_{rec} [kN]	5.4	8.3	12.8	18.1
Shear	90° V_{rec} [kN]	5.4	8.0	13.0	19.2
Recommended bending moment M_{rec} [Nm]					
	M_{rec} [kNm]	4.9	12.0	24.0	42.0
Anchor characteristics					
Characteristic spacing	$s_{cr, N}$ [mm]			$= 3 \times h_{ef}$	
Characteristic edge distance	$c_{cr, N}$ [mm]			$= 1.5 \times h_{ef}$	
Minimum spacing ¹⁾	s_{min} [mm]	50	60	70	80
	for $c \geq$ [mm]	100	120	190	200
Minimum edge distance ¹⁾	c_{min} [mm]	50	60	80	80
	for $s \geq$ [mm]	100	100	180	240
Minimum structural component thickness	h_{min} [mm]	100	130	140	200
Clearance-hole in fixture to be attached	$d_f \leq$ [mm]	12	14	18	20
Installation torque	T_{inst} [Nm]	10	25	40	80

All values apply for non-cracked concrete C20/25 without edge or spacing influences.

Design resistant loads: material safety factor γ_M is included. Material safety factor γ_M depends on the type of anchor.

Recommended loads: material safety factor γ_M and safety factor for load $\gamma_L = 1.4$ are included.

* Steel failure decisive.

¹⁾ For minimum spacing and minimum edge distance the above described loads have to be reduced (See "fischer Technical Handbook" or design software "CC-COMPUFIX")!