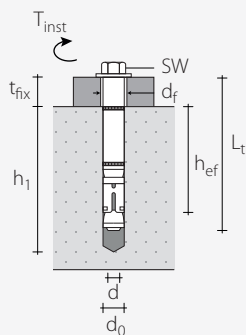


- CE option 1
- Certified use for cracked and uncracked concrete from C20/25 up to C50/60 grading
- Suitable for dense materials
- Fire resistance R120
- 8.8 grade screw with hexagonal head and washer
- Electrogalvanized carbon steel
- Through fastening
- Torque-controlled expansion

ABS



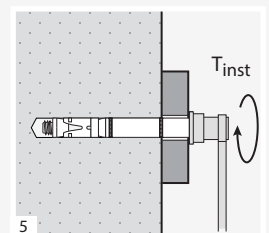
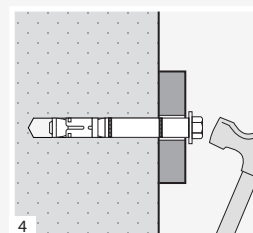
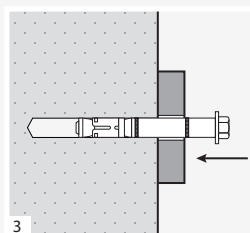
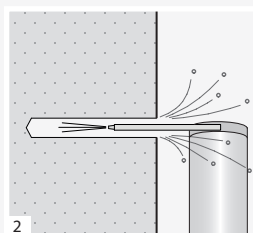
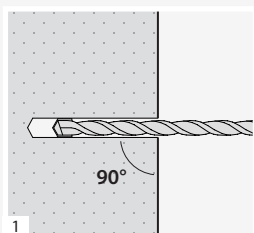
code	d ₀ [mm]	L _t [mm]	d _{screw} [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs/box
FE210356	10	70	M6	5	80	55	12	10	15	50
FE210361		100		35	80	55	12	10	15	50
FE210366	12	100	M8	30	90	60	14	13	30	50
FE210371		120		50	90	60	14	13	30	25
FE210376	16	120	M10	40	100	70	18	17	50	25
FE210381		140		60	100	70	18	17	50	25
FE210386	18	120	M12	20	120	90	20	19	100	10
FE210391		150		50	120	90	20	19	100	10
FE210392	24	140	M16	20	140	105	26	24	160	5
FE210393		170		50	140	105	26	24	160	5



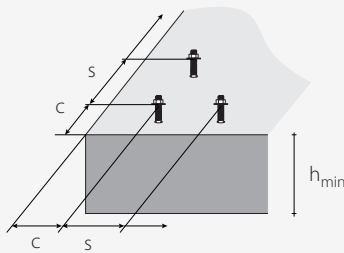
d₀ = anchor diameter = hole diameter in the concrete support
d = screw diameter
L_t = anchor length
t_{fix} = maximum fixing thickness

h₁ = minimum hole depth
h_{ef} = effective anchor depth
d_f = maximum hole diameter in the element to be fastened
SW = wrench size
T_{inst} = tightening torque

ASSEMBLING



INSTALLATION



Spacing and minimum distance			10 / M6	12 / M8	16 / M10	18 / M12	24 / M16		
Minimum spacing	S_{min}	[mm]	55	110	80	135	130		
	for c ≥	[mm]	110	145	120	220	240		
Minimum edge distance	C_{min}	[mm]	70	100	90	175	180		
	for s ≥	[mm]	110	160	175	255	290		
Minimum thickness of the concrete support			h_{min}	[mm]	110	120	140	180	210

Spacing and critical distance			10 / M6	12 / M8	16 / M10	18 / M12	24 / M16
Critical spacing	S_{cr,N} ⁽⁴⁾	[mm]	165	180	210	270	315
	S_{cr,sp} ⁽⁵⁾	[mm]	220	320	240	370	390
Critical edge distance	C_{cr,N} ⁽⁴⁾	[mm]	85	90	105	135	160
	C_{cr,sp} ⁽⁵⁾	[mm]	110	160	120	185	195

For spacing and distances smaller than the critical ones, strength values will be reduced depending on the installation parameters.

STATIC VALUES

Valid for a single anchor in C20/25 grade concrete when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

	UNCRACKED CONCRETE					CRACKED CONCRETE													
	TENSION ⁽¹⁾		SHEAR ⁽²⁾			TENSION ⁽¹⁾		SHEAR											
	N _{Rk,p} [kN]	γ _{Mp}	V _{Rk,s} [kN]	γ _{Ms}		N _{Rk,p} [kN]	γ _{Mp}	V _{Rk,s} / R _{k,cp} [kN]	γ _{Ms,Mc}										
10 / M6	16,0	1,5	16,0	1,45	10 / M6	5	14,7 ⁽³⁾	1,5	<table><tr><th colspan="3">incremental factor for N_{Rk,p}</th></tr><tr><td rowspan="3">ψ_c</td><td>C30/37</td><td>1,22</td></tr><tr><td>C40/50</td><td>1,41</td></tr><tr><td>C50/60</td><td>1,55</td></tr></table>	incremental factor for N _{Rk,p}			ψ _c	C30/37	1,22	C40/50	1,41	C50/60	1,55
incremental factor for N _{Rk,p}																			
ψ _c	C30/37		1,22																
	C40/50		1,41																
	C50/60		1,55																
12 / M8	16,0	25,0	12 / M8	6	25,0 ⁽²⁾	1,45													
16 / M10	20,0	43,0	16 / M10	16	42,2 ⁽³⁾	1,5													
18 / M12	35,0	58,0	18 / M12	25	58,0 ⁽²⁾	1,45													
24 / M16	45,0	107,0	24 / M16	35	77,5 ⁽³⁾	1,5													

ADMISSIBLE VALUES (recommended)

	UNCRACKED CONCRETE			CRACKED CONCRETE	
	TENSION	SHEAR		TENSION	SHEAR
	N_{rec} [kN]	V_{rec} [kN]		N_{rec} [kN]	V_{rec} [kN]
10 / M6	7,6	7,9	10 / M6	2,4	7,0
12 / M8	7,6	12,3	12 / M8	2,9	12,3
16 / M10	9,5	21,2	16 / M10	7,6	20,1
18 / M12	16,7	28,6	18 / M12	11,9	28,6
24 / M16	21,4	52,7	24 / M16	16,7	36,9

GENERAL PRINCIPLES

- Characteristic values according to ETA and in accordance with the design method A (ETAG001).
- Design values can be obtained from characteristic values as follows:

$$R_d = \frac{R_k}{\gamma_m}$$

Coefficients γ_m are listed in the table in and are accordance with the product certificates.

- Admissible values (recommended) are evaluated based on the characteristic values applying the material safety factors γ_m according to ETA and a further partial factor for actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade or limited thickness please see ETA.

NOTES

- (1) Pull-out failure mode.
- (2) Steel failure mode ($V_{Rk,s}$).
- (3) Pry-out failure mode ($V_{Rk,cp}$).
- (4) Concrete cone failure mode.
- (5) Splitting failure mode.