

AB1

Heavy-duty expansion anchor CE1



- 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
- Complete with nut and washer
- Electrogalvanized carbon steel and stainless steel
- Through fastening
- Torque-controlled expansion

AB1
electrogalvanized carbon steel

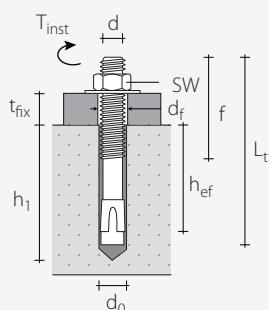


code	d = d ₀ [mm]	L _t [mm]	t _{fix} [mm]	f [mm]	h _{1,min} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs/box
FE210405	M8	72	10	32	60	45	9	13	20	100
FE210410		92	30	52	60	45	9	13	20	50
FE210415		112	50	72	60	45	12	17	20	50
FE210475	M10	112	30	67	75	60	12	17	35	25
FE210476		132	50	87	75	60	12	17	35	25
FE210440	M12	103	5	53	90	70	14	19	50	25
FE210480		118	20	68	90	70	14	19	50	25
FE210445		148	50	98	90	70	14	19	50	25
FE210490		178	80	115	90	70	14	19	50	25
FE210493	M16	138	20	80	110	85	18	24	120	10

AB1
A4 stainless steel



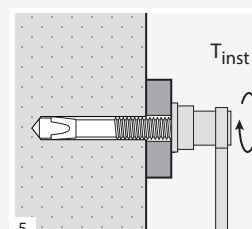
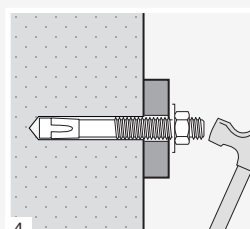
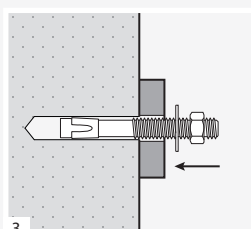
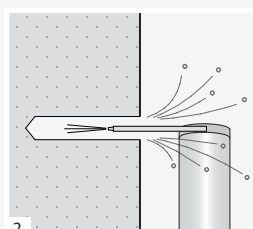
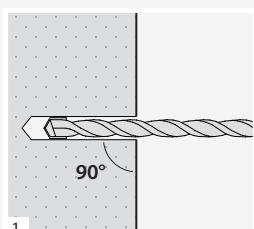
code	d = d ₀ [mm]	L _t [mm]	t _{fix} [mm]	f [mm]	h _{1,min} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs/box
AI8095A4	M8	92	30	52	60	45	9	13	20	50
AI80112A4		112	50	72	60	45	9	13	20	50
AI1095A4	M10	92	10	47	75	60	12	17	35	50
AI10132A4		132	50	87	75	60	12	17	35	25
AI12110A4	M12	118	20	68	90	70	14	19	70	20
AI12163A4		163	65	113	90	70	14	19	70	20
AI16123A4	M16	123	5	65	110	85	18	24	120	10



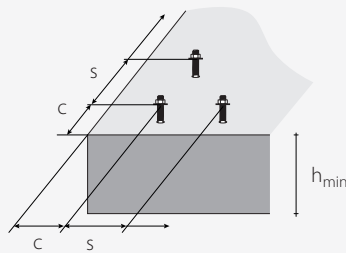
d = screw diameter
d₀ = anchor diameter = hole diameter in the concrete support
L_t = anchor length
t_{fix} = maximum fixing thickness
f = thread length

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

ASSEMBLY



INSTALLATION



Spacing and minimum distances			M8	M10	M12	M16	
Minimum spacing	s_{min}	[mm]	50	55	60	70	
	for c ≥	[mm]	50	80	90	120	
Minimum edge distance	c_{min}	[mm]	50	50	55	85	
	for s ≥	[mm]	50	100	145	150	
Minimum thickness of the concrete support		h_{min}	[mm]	100	120	140	170

Spacing and critical distances			M8	M10	M12	M16
Critical spacing	$s_{cr,N}^{(3)}$	[mm]	135	180	210	255
	$s_{cr,sp}^{(4)}$	[mm]	180	240	280	340
Critical edge distance	$c_{cr,N}^{(3)}$	[mm]	68	90	105	128
	$c_{cr,sp}^{(4)}$	[mm]	90	120	140	170

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 ⁽²⁾		
$N_{Rk,p}$ [kN]	γ_{Mp}		$V_{Rk,s}$ [kN]			$N_{Rk,p}$ [kN]	γ_{Mp}		$V_{Rk,s}$ [kN]		
			AB1 galvanized	AB1 A4	γ_{Ms}				AB1 galvanized	AB1 A4	γ_{Ms}
M8	9		10	11	1,5	M8	5		10	11	1,5
M10	16	1,8	18	17		M10	9	1,8	18	17	
M12	20		23	25		M12	12		23	25	
M16	35	1,5	44	47		M16	20	1,5	44	47	

increment factor for $N_{Rk,p}$		
ψ_c	C25/30	1,04
	C30/37	1,10
	C40/50	1,20
	C50/60	1,28

ADMISSIBLE VALUES (recommended)

UNCRACKED CONCRETE				CRACKED CONCRETE			
TENSION		SHEAR		TENSION		SHEAR	
N_{rec} [kN]		V_{rec} [kN]		N_{rec} [kN]		V_{rec} [kN]	
		AB1 galvanized	AB1 A4			AB1 galvanized	AB1 A4
M8	3,6	4,8	5,2	M8	2,0	4,8	5,2
M10	6,3	8,6	8,1	M10	3,6	8,6	8,1
M12	7,9	11,0	11,9	M12	4,8	11,0	11,9
M16	16,7	21,0	22,4	M16	9,5	21,0	22,4

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 accordance with the product certificates.

- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external 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.
- (3) Concrete cone failure mode.
- (4) Splitting failure mode.