ABS

HEAVY-DUTY EXPANSION ANCHOR WITH CLAMP CE1

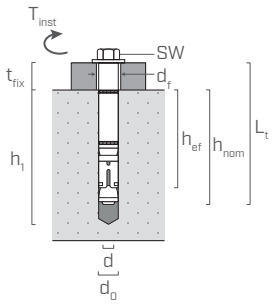
R120 SEISMIC C2

- CE option 1 for cracked and uncracked concrete.
- Seismic performance category C1 and C2.
- Electrogalvanized carbon steel.
- Fire resistance R120.
- 8.8 grade screw with hexagonal head and washer.
- Suitable for dense materials.
- Through fastening.
- Torque-controlled expansion.

MY PROJECT SOFTWARE

CODES AND DIMENSIONS

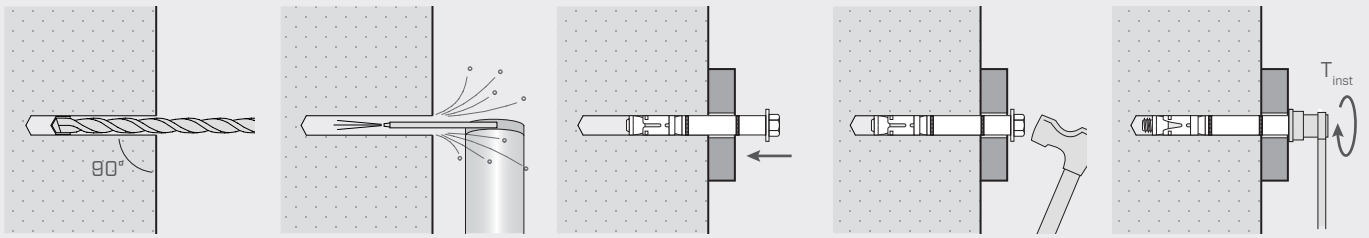
CODE	d_0 [mm]	L_t [mm]	d_{screw} [mm]	t_{fix} [mm]	$h_{1,min}$ [mm]	h_{nom} [mm]	h_{ef} [mm]	d_f [mm]	SW [mm]	T_{inst} [Nm]	pcs.
FE210356	10	70	M6	5	80	65	55	12	10	15	50
FE210361	10	100	M6	35	80	65	55	12	10	15	50
FE210366	12	100	M8	30	90	70	60	14	13	30	50
FE210371	12	120	M8	50	90	70	60	14	13	30	25
FE210376	16	120	M10	40	100	80	70	18	17	50	25
FE210381	16	140	M10	60	100	80	70	18	17	50	20
FE210386	18	120	M12	20	120	100	90	20	19	100	10
FE210391	18	150	M12	50	120	100	90	20	19	100	10
FE210392	24	140	M16	20	140	120	105	26	24	160	5
FE210393	24	170	M16	50	140	120	105	26	24	160	5



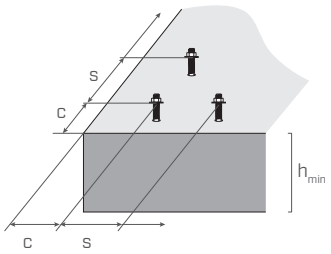
d_0 = anchor diameter = hole diameter in the concrete support
d = screw diameter
L_t = anchor length
t_{fix} = maximum fixing thickness
h_1 = minimum hole depth

h_{nom} = nominal anchoring 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 thickened C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

	UNCRACKED CONCRETE			
	TENSION (1)		SHEAR (2)	
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_{Ms}
10/M6	16,0	1,5	16,0	1,45
12/M8	16,0	1,5	25,0	1,45
16/M10	20,0	1,5	43,0	1,45
18/M12	35,0	1,5	58,0	1,45
24/M16	45,0	1,5	107,0	1,45

	CRACKED CONCRETE			
	TENSION (1)		SHEAR	
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s\,/\,Rk,cp}$ [kN]	$\gamma_{Ms,Mc}$
10/M6	5	1,5	15,6 (3)	1,5
12/M8	6	1,5	25,0 (2)	1,45
16/M10	16	1,5	42,2 (3)	1,5
18/M12	25	1,5	58,0 (2)	1,45
24/M16	35	1,5	75,9 (3)	1,5

incremental factor for $N_{Rk,p}$ (6)		
ψ_c	C30/37	1,22
	C40/50	1,41
	C50/60	1,55

ADMISSIBLE VALUES (recommended)

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

	CRACKED CONCRETE	
	TENSION	*SHEAR*
	N_{rec} *[kN]*	V_{rec} *[kN]*
10/M6	*2,4*	*7,4*
12/M8	*2,9*	*12,3*
16/M10	*7,6*	*20,1*
18/M12	*11,9*	*28,6*
24/M16	*16,7*	*38,0*

GENERAL PRINCIPLES:

- Characteristic values according to ETA-11/0181.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$
- Coefficients γ_m are listed in the table in accordance with the failure characteristics and 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, limited thickness or a thick reinforcing layer please see ETA.
- When designing anchors under seismic load please refer to the ETA referral document and information in the EOTA Technical Report 045.
- For the calculation of anchors subjected to fire refer to the ETA and the Technical Report 020.

NOTES:

(1) Pull-out failure mode.
(2) Steel failure mode ($V_{Rk,s}$).
(3) Breakage characteristics for pry-out. ($V_{Rk,cp}$).
(4) Breakage characteristics for formation of concrete cone for tensile loads.
(5) Breakage characteristics for splitting for tensile loads.
(6) Tensile-strength increment factor (excluding steel failure).