AB1 A4

CE1 STAINLESS STEEL HEAVY-DUTY EXPANSION ANCHOR

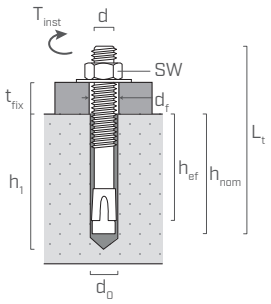
R120 SEISMIC C1

- CE option 1 for cracked and uncracked concrete.
- Seismic performance category C1.
- Stainless steel A4.
- Fire resistance R120.
- Complete with nut and washer.
- Suitable for dense materials.
- Through fastening.
- Torque-controlled expansion.

MY PROJECT SOFTWARE

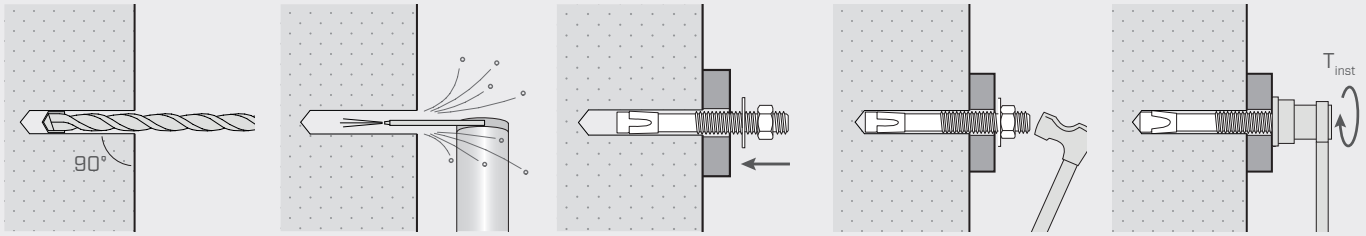
CODES AND DIMENSIONS

CODE	d = d_0 [mm]	L_t [mm]	t_{fix} [mm]	$h_{1,min}$ [mm]	h_{nom} [mm]	h_{ef} [mm]	d_f [mm]	SW [mm]	T_{inst} [Nm]	pcs.
AI8095A4	M8	92	30	60	50	45	9	13	20	50
AI80112A4	M8	112	50	60	50	45	9	13	20	50
AI1095A4	M10	92	10	75	68	60	12	17	35	50
AI10132A4	M10	132	50	75	68	60	12	17	35	25
AI12110A4	M12	118	20	90	81	70	14	19	70	20
AI12163A4	M12	163	65	90	81	70	14	19	70	20
AI16123A4	M16	123	5	110	96	85	18	24	120	10

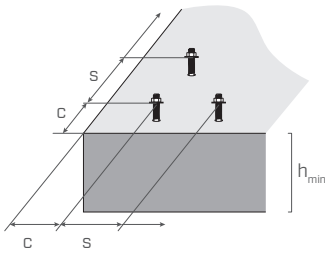


d = anchor diameter
d_0 = hole diameter in the concrete support
L_t = anchor length
t_{fix} = maximum fixing thickness
h_1 = minimum hole depth
h_{nom} = Nominal anchoring depth
h_{ef} = effective anchor depth
d_f = maximum hole diameter in the element to be fastened
SW = wrench size
T_{inst} = tightening torque

ASSEMBLING



INSTALLATION



Spacing and minimum 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 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}
M8	9	1,8	11	1,25
M10	16	1,8	17	1,25
M12	20	1,8	25	1,25
M16	35	1,5	47	1,25

	CRACKED CONCRETE			
	TENSION (1)		SHEAR	
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_M
M8	5	1,8	11	γ_{Mc} = 1,5 (5)
M10	9	1,8	17	γ_{Ms} = 1,25 (2)
M12	12	1,8	25	γ_{Ms} = 1,25 (2)
M16	20	1,5	47	γ_{Ms} = 1,25 (2)

increment factor for $N_{Rk,p}$ (6)		
ψ_c	C25/30	1,04
	C30/37	1,10
	C40/50	1,20
	C50/60	1,28

ADMISSIBLE VALUES (recommended)

	UNCRACKED CONCRETE	
	TENSION	*SHEAR*
	N_{rec} [kN]	V_{rec} [kN]
M8	*3,6*	*6,3*
M10	*6,3*	*9,7*
M12	*7,9*	*14,3*
M16	*16,7*	*26,9*

	CRACKED CONCRETE	
	TENSION	*SHEAR*
	N_{rec} [kN]	V_{rec} [kN]
M8	*2,0*	*5,2*
M10	*3,6*	*9,7*
M12	*4,8*	*14,3*
M16	*9,5*	*26,9*

GENERAL PRINCIPLES:

- Characteristic values according to ETA-10/0076
- 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 by applying the material safety factors γ_m according to ETA and a further partial factor for external actions γ_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.
(3) Breakage characteristics for formation of concrete cone for tensile loads.
(4) Breakage characteristics for splitting for tensile loads.
(5) Breakage characteristics for pry-out.
(6) Tensile-strength increment factor (excluding steel failure).