

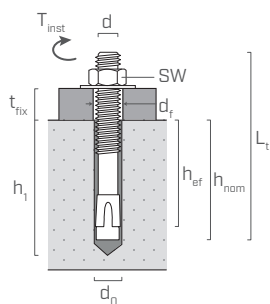
HEAVY-DUTY EXPANSION ANCHOR CE1

- CE option 1 for cracked and uncracked concrete.
- Seismic performance category C1 (M10-M16) and C2 (M12-M16).
- Electrogalvanized carbon steel.
- Fire resistance R120.
- Complete with nut and washer.
- Suitable for dense materials.
- Through fastening.
- Torque-controlled expansion.



CODES AND DIMENSIONS

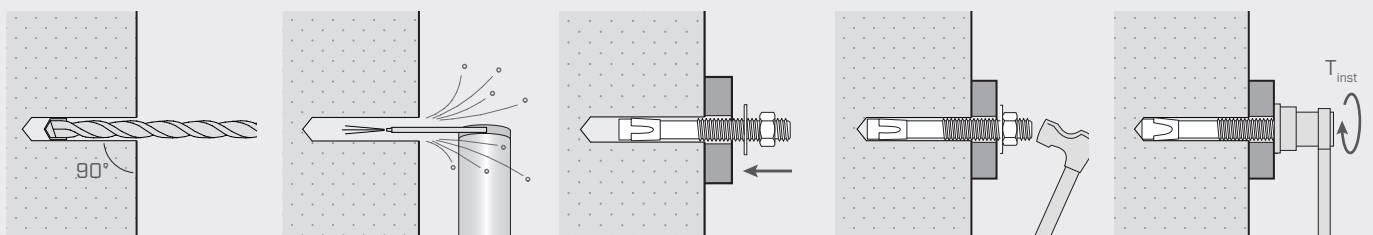
CODE	d = d ₀ [mm]	L _t [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs.
AB1875	M8	75	9	60	55	48	9	13	15	100
AB1895	M8	95	29	60	55	48	9	13	15	50
AB18115	M8	115	49	60	55	48	9	13	15	50
AB110115	M10	115	35	75	68	60	12	17	40	25
AB110135	M10	135	55	75	68	60	12	17	40	25
AB112100	M12	100	4	85	80	70	14	19	60	25
AB112120	M12	120	24	85	80	70	14	19	60	25
AB112150	M12	150	54	85	80	70	14	19	60	25
AB112180	M12	180	84	85	80	70	14	19	60	25
AB116145	M16	145	28	105	97	85	18	24	100	10



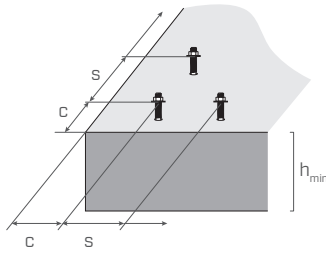
d = anchor diameter
 d₀ = hole diameter in the concrete support
 L_t = anchor length
 t_{fix} = maximum fixing thickness
 h₁ = minimum hole depth
 h_{nom} = Nominal anchoring depth

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	60	70	85
Minimum edge distance	C_{min}	[mm]	50	60	70	85
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]	144	180	210	255
	$S_{cr,sp}^{(4)}$	[mm]	288	300	350	425
Critical edge distance	$C_{cr,N}^{(3)}$	[mm]	72	90	105	128
	$C_{cr,sp}^{(4)}$	[mm]	144	150	175	213

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					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} [kN]	γ _M			
M8	9	1,8	11,0	1,25	M8	6	1,8	12,0	γ _{Mc} = 1,5 ⁽⁵⁾	increment factor for N _{Rk,p} ⁽⁶⁾		
M10	16	1,5	17,4	1,25	M10	9	1,5	17,4	γ _{Ms} = 1,25 ⁽²⁾			
M12	25	1,5	25,3	1,25	M12	16	1,5	25,3	γ _{Ms} = 1,25 ⁽²⁾			
M16	35	1,5	47,1	1,25	M16	25	1,5	47,1	γ _{Ms} = 1,25 ⁽²⁾			
											ψ _c	
										C30/37		1,16
										C40/50		1,31
										C50/60	1,41	

ADMISSIBLE VALUES [recommended]

	UNCRACKED CONCRETE			CRACKED CONCRETE	
	TENSION	SHEAR		TENSION	SHEAR
	N_{rec} [kN]	V_{rec} [kN]		N_{rec} [kN]	V_{rec} [kN]
M8	3,6	6,3		M8	2,4
M10	7,6	9,9		M10	4,3
M12	11,9	14,5		M12	7,6
M16	16,7	26,9		M16	11,9

GENERAL PRINCIPLES:

- Characteristic values according to ETA-17/0481.
- 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 $\gamma_f = 1,4$.
- 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.
- ⁽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).