

HEAVY DUTY EXPANSION ANCHOR CE1

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



USA, Canada and more design values available online.

SERVICE CLASS

SC1

SC2

ATMOSPHERIC CORROSIVITY

C1

C2

MATERIAL

Zn
ELECTRO
PLATED

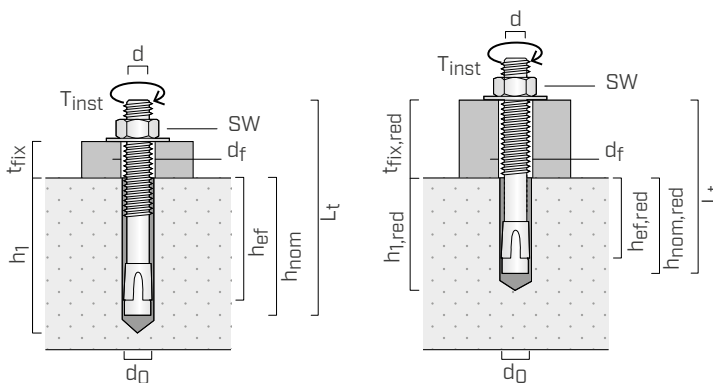
electrogalvanized carbon steel



CODES AND DIMENSIONS

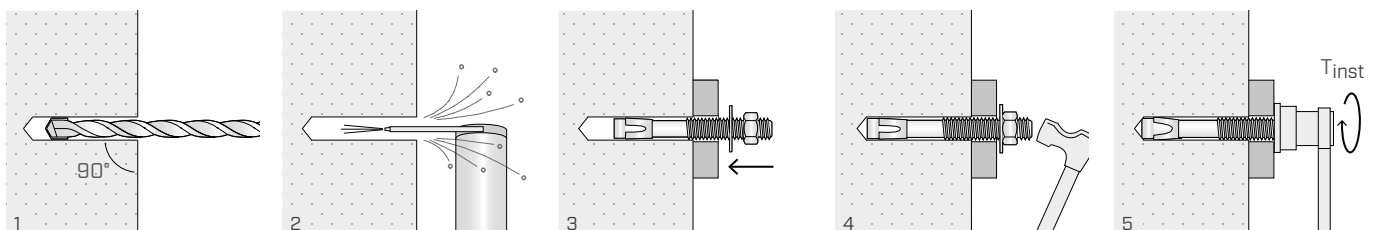
CODE	d = d ₀	L _t	t _{fix} t _{fix,red}	h ₁ h _{1,red}	h _{nom} h _{nom,red}	h _{ef} h _{ef,red}	d _f	SW	T _{inst}	pcs
	[mm] [in]	[mm] [in]	[mm] [in]	[mm] [in]	[mm] [in]	[mm] [in]	[mm] [in]	[mm]	[Nm] [ft.-lbf]	
AB110115	M10 0.4	115 4 1/2	35 1.38	75 2.95	68 2.68	60 2.36	12 0.47	17	40 29	25
AB110135	M10 0.4	135 5 5/16	55 2.17	75 2.95	68 2.68	60 2.36	12 0.47	17	40 29	25
AB112100	M12 0.48	100 4	4 0.16	85 3.35	80 3.15	70 2.76	14 0.55	19	60 44	25
AB112120	M12 0.48	120 4 3/4	24 0.94	85 3.35	80 3.15	70 2.76	14 0.55	19	60 44	25
AB112150	M12 0.48	150 6	54 2.13	85 3.35	80 3.15	70 2.76	14 0.55	19	60 44	25
AB112180	M12 0.48	180 7 1/8	84 3.31	85 3.35	80 3.15	70 2.76	14 0.55	19	60 44	25
AB116145	M16 0.63	145 5 11/16	25 45 0.98 1.77	110 90 4.33 3.54	97 77 3.82 3.03	85 65 3.35 2.56	18 0.71	24	90 66	10

GEOMETRY

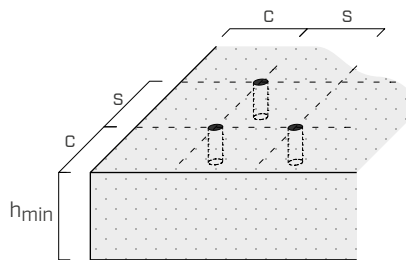


d anchor diameter
d₀ hole diameter in the concrete support
L_t anchor length
t_{fix} maximum fastening thickness
h₁ minimum hole depth
h_{nom} nominal anchoring depth
h_{ef} effective anchoring depth
d_f maximum hole diameter in the element to be fastened
SW wrench size
T_{inst} tightening torque

MOUNTING



■ INSTALLATION



Spacing and minimum distances			M10	M12	M16 ^(*)
Minimum spacing	s_{min}	[mm]	60	70	80
Minimum edge distance	c_{min}	[mm]	60	70	90
Minimum thickness of concrete support	h_{min}	[mm]	120	140	140
Spacing and critical distances			M10	M12	M16 ^(*)
Critical spacing	$s_{cr,N}^{(1)}$	[mm]	180	210	255
	$s_{cr,sp}^{(2)}$	[mm]	300	350	$2 \cdot c_{cr,sp}$
Critical edge distance	$c_{cr,N}^{(1)}$	[mm]	90	105	127,5
	$c_{cr,sp}^{(2)}$	[mm]	150	175	$2,5 \cdot h_{ef}$

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

*Values refer to installation of the M16 anchor in non-cracked concrete with insertion depth $h_{nom}=97$ mm

■ STRUCTURAL 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

rod	UNCRACKED CONCRETE				CRACKED CONCRETE			
	tension ⁽³⁾		shear ⁽⁴⁾		tension ⁽³⁾		shear ⁽⁴⁾	
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_{Ms}	$N_{Rk,p}$ [kN]	γ_{Mp}	V_{Rk} [kN]	γ_{Ms}
M10	16		17,4		9		17,4	
M12	25	1,5	25,3	1,25	16	1,5	25,3	1,25
M16*	35		55		25		55	

*The characteristic values refer to the installation of the dowel with the $h_{nom} = 97$ mm.

incremental factor for $N_{Rk,p}^{(5)}$			
ψ_c	M10-M12	C30/37	1,16
		C40/50	1,31
		C50/60	1,41
	M16	C30/37	1,22
		C40/50	1,41
		C50/60	1,58

NOTES

- ⁽¹⁾ Breakage characteristics for formation of concrete cone for tensile loads.
- ⁽²⁾ Splitting failure mode for tensile loads.
- ⁽³⁾ Pull-out failure mode.
- ⁽⁴⁾ Steel failure mode.
- ⁽⁵⁾ Tensile-strength increment factor (excluding steel failure).

GENERAL PRINCIPLES

- The characteristic values for diameters M10 and M12 are calculated according to ETA-17/0481, for diameter M16 the values are calculated according to ETA-99/0010.
- The design values are obtained from the 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.
- 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.
- For the design of anchors subjected to seismic loading refer to ETA and to EN 1992-4:2018.
- For the calculation of anchors subjected to fire refer to the ETA and the Technical Report 020.