

ABE A4



HEAVY DUTY EXPANSION ANCHOR CE1

- CE option 1 for cracked and uncracked concrete
- Seismic performance category C1 (M8-M10-M12-M16) and C2 (M10-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 SC3 SC4

ATMOSPHERIC CORROSIVITY

C1 C2 C3 C4 C5

MATERIAL

A4
AISI 316

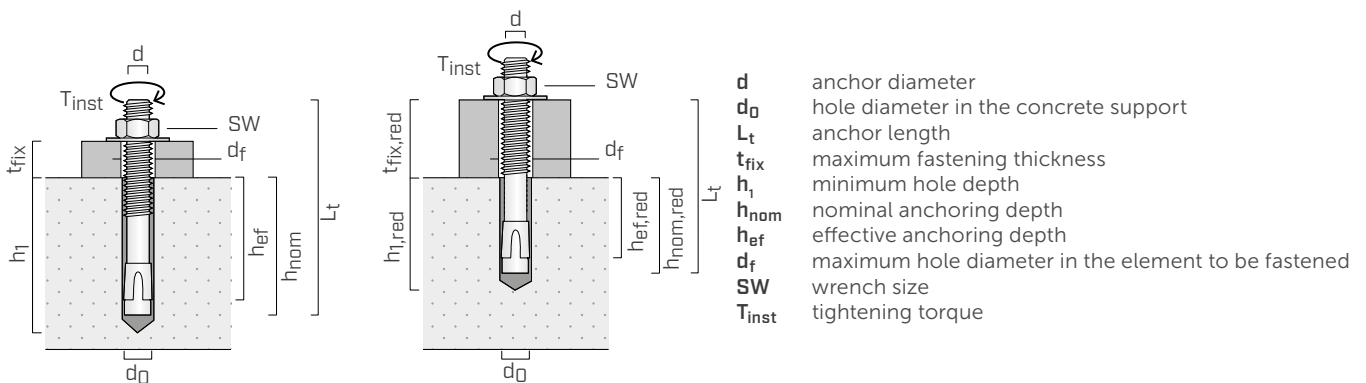
A4 | AISI316 austenitic stainless steel



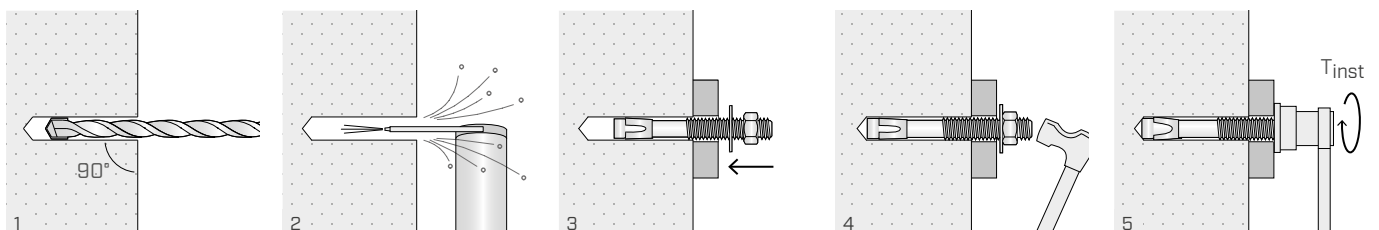
CODES AND DIMENSIONS

CODE	d = d ₀ [mm] [in]	L _t [mm] [in]	t _{fix} t _{fix,red} [mm] [in]	h ₁ h _{1,red} [mm] [in]	h _{nom} h _{nom,red} [mm] [in]	h _{ef} h _{ef,red} [mm] [in]	d _f [mm] [in]	SW [mm]	T _{inst} [Nm] [ft.-lbf]	pcs
ABE895A4	M8 0.32	95 3 3/4	25 0.98	65 2 9/16	55 2 3/16	48 1 7/8	9 0.35	13	20 14	100
ABE8115A4	M8 0.32	115 4 1/2	45 1.77	65 2 9/16	55 2 3/16	48 1 7/8	9 0.35	13	20 14	100
ABE1095A4	M10 0.40	95 3 3/4	15 35 0.59 1.38	80 60 3 1/8 2 3/8	70 50 2 3/4 1 15/16	60 40 2 3/8 1 9/16	12 0.47	17	45 33	100
ABE10140A4	M10 0.40	140 5 1/2	60 80 2.36 3.15	80 60 3 1/8 2 3/8	70 50 2 3/4 1 15/16	60 40 2 3/8 1 9/16	12 0.47	17	45 33	50
ABE12110A4	M12 0.48	110 4 3/8	15 0.59	90 3 1/2	81 3 3/16	70 2 3/4	14 0.55	19	60 44	50
ABE16145A4	M16 0.63	145 5 11/16	30 1.18	110 4 3/8	98 3 7/8	80 3 1/8	18 0.71	24	80 59	25

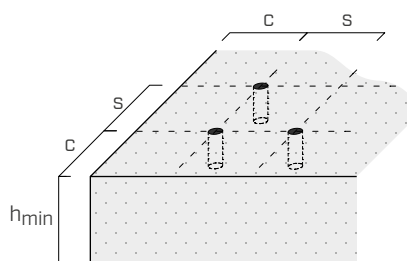
GEOMETRY



MOUNTING



INSTALLATION



Spacing and minimum distances			M8	M10	M12	M16
Minimum spacing	s_{min}	[mm]	50	80	100	120
Minimum edge distance	c_{min}	[mm]	50	65	60	70
Minimum thickness of concrete support	h_{min}	[mm]	100	120	140	160
Spacing and critical distances			M8	M10	M12	M16
Critical spacing	$s_{cr,N}^{(1)}$	[mm]	144	3·hef	210	240
	$s_{cr,sp}^{(2)}$	[mm]	192	240	280	320
Critical edge distance	$c_{cr,N}^{(1)}$	[mm]	72	1,5·hef	105	120
	$c_{cr,sp}^{(2)}$	[mm]	96	120	140	160

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.
For h_{ef} values see table of codes and dimensions.

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	
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_{Ms}	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_M
M8	12	1,5	9,2	1,33	4	1,5	9,2	1,33
M10*	7,5 20		11,4 14,5		4,5 9		11,4 14,5	
M12	24		21,1		16		21,1	
M16	26		39,3		20		39,3	

*The values refer to the installation of the dowel with the insertion depth value of: $h_{nom}=50mm$ | $h_{nom}=70mm$ respectively.

	Ψ_c incremental factor for $N_{Rk,p}^{(5)}$ uncracked concrete		
	C30/37	C40/50	C50/60
M8	1,11	1,20	1,27
M10*	1,18 1,16	1,34 1,29	1,47 1,40
M12	1,21	1,39	1,54
M16	1,22	1,41	1,58

	Ψ_c incremental factor for $N_{Rk,p}^{(5)}$ cracked concrete		
	C30/37	C40/50	C50/60
M8	1,22	1,41	1,58
M10*	1,22 1,22	1,41 1,41	1,58 1,58
M12	1,22	1,40	1,57
M16	1,20	1,37	1,51

*The values refer to the installation of the dowel with the insertion depth value of: $h_{nom}=50mm$ | $h_{nom}=70mm$ respectively.

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

- Characteristic values according to ETA-20/0295.
- 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.