



Declaration of Performance

No. DEA990130

C-BOLT

Intended use or uses of the construction product according to ETAG 001 parts 1 and 3		
Generic type		Concrete Screw
Base material		Cracked & Un-cracked concrete C20/25 to C50/60 acc. to EN 206-1:2003
A	Material	Galvanized carbon steel
	Durability	Internal dry conditions
	Durability	dry internal conditions, external atmospheric exposure, in permanently damp internal conditions or in other particular aggressive conditions - e.g. permanent, alternating immersion in seawater, splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).
Loading		static, quasi-static
Fire Reaction		A1 according to EN13501-1
ETA-12/0522		
On the basis of		INSTYTUT TECHNIKI BUDOWLANEJ (ITB)
Certificates of Conformity 1488-CPD-0377/W issued by		ETAG 001
Under System		Building Research Institute
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Declared performances according to ETAG 001 parts 1 and 3

Essential Characteristics			Performance			
			C-Bolt M10	C-Bolt M12	C-Bolt M14	C-Bolt M16
Installation parameters						
d	Diameter of anchor bolt or thread diameter	[mm]	10	12	14	16
d ₀	Nominal diameter of drill bit	[mm]	8	10	12	14
d _{fix}	Diameter of clearance hole in the fixture	[mm]	12	14	16	18
h _{eff}	Minimum effective anchorage depth	[mm]	47	54	71	86
h ₁	Depth of the drilling hole	[mm]	75	85	105	125
h _{nom}	Embedment Depth	[mm]	65	75	95	115
h _{min}	Minimum thickness of the concrete member	[mm]	110	110	130	150
s _{min}	Minimum spacing	[mm]	60	70	80	90
for c ≥	Edge distance	[mm]	60	70	80	90
c _{min}	Minimum edge distance	[mm]	60	70	80	90
for s ≥	Anchor spacing	[mm]	60	70	80	90

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Essential Characteristics			Performance			
			C-Bolt M10	C-Bolt M12	C-Bolt M14	C-Bolt M16
Steel Failure						
$N_{Rk,s}$	Tensile Steel failure, Characteristic resistance	[kN]	42,4	67,2	99,4	134,0
γ_{Ms}	Partial safety factor	[-]	1,4			
Pullout Failure						
$N_{Rk,p,ucr}$	Characteristic resistance in un-cracked concrete class C20/25	[kN]	12	16	25	35
$N_{Rk,p,cr}$	Characteristic resistance in cracked concrete class C20/25	[kN]	7,5	9,0	16,0	20,0
γ_2	Partial safety factor	[-]	1,8			
$\psi_{c,ucr}$ C30/37	Increasing factor for un-cracked concrete C30/37	[-]	1,17	1,17	1,17	1,22
$\psi_{c,ucr}$ C40/50	Increasing factor for un-cracked concrete C40/50	[-]	1,32	1,32	1,32	1,41
$\psi_{c,ucr}$ C50/60	Increasing factor for un-cracked concrete C50/60	[-]	1,42	1,42	1,42	1,55
Resistance for Concrete Cone failure						
$s_{cr,N}$	Critical spacing	[mm]	141	162	213	258
$c_{cr,N}$	Critical edge distance	[mm]	71	81	107	129
Resistance for splitting failure						
$s_{cr,sp}$	Critical spacing (splitting)	[mm]	141	162	213	258
$c_{cr,sp}$	Critical edge distance(splitting)	[mm]	71	81	107	129
Displacement on Tension Load						
N	Service tension value in un-cracked concrete	[kN]	5,8	8,5	12,6	15,6
N	Service tension value in cracked concrete	[kN]	3,2	4,0	6,9	9,6
δ_0	Short term displacement under tension load in un-cracked	[mm]	0,3	0,4	0,4	0,6
δ_∞	Long term displacement under tension load in un-cracked	[mm]	1,4	1,5	1,8	1,9
δ_0	Short term displacement under tension load in cracked concrete	[mm]	0,4	0,5	0,5	0,6
δ_∞	Long term displacement under tension load in cracked concrete	[mm]	2,0	2,0	2,0	2,0
Shear, steel failure						
$V_{Rk,s}$	Shear Steel characteristic failure	[kN]	17,0	26,9	39,8	53,5
$M^0_{Rk,s}$	Bending Moment characteristic failure	[Nm]	46,8	93,2	167,7	261,8
$\gamma_{m,sV}$	Partial safety factor for shear steel failure (4.6 steel)	[-]	1,5			
Shear Concrete Edge failure mode						
k	Factor for concrete edge failure	[-]	1,0	1,0	2,0	2,0
Shear Concrete Edge failure mode						
l_f	Effective length of anchor under shear loading	[-]	47	54	71	86
Dnom	Effective diameter of the anchor	[mm]	8	10	12	14
Displacement on Shear Load						
V	Service shear load in concrete	[kN]	6,9	11,0	15,0	15,5
δ_{V0}	Short term displacement under shear load	[mm]	1,5	1,7	2,0	2,7
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	2,3	2,6	3,0	4,1



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The performance of the product identified above is in conformity with the set of declared performance/s.

This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of Expandet Screw Anchors A/S by:

Place and date of issue: Græsted, 15/07/2014

Peter van der Wel, Managing Director