Declaration of Performance n° 10/0125

Mechanical Torque Controlled anchors VE CE 7

Intended use of the construction product according to ETAG 001 parte 1 e 2	
Generic type	Torque controlled expansion anchor
Base material	Non cracked concrete C20/25 a C50/60 - EN 206-1:2003
Material	Zincplated steel
Durability	Internal dry condition
Loads	Static, quasi-static
Manufacturer information	
VORPA s.r.l. Vial San Leo, 5 – 47838 – Riccione (RN) – ITALY Tel. +39 0541/607111 vorpa@vorpa.com – www.vorpa.com	
Certificate information	
ETA 12/0291 issued by	ETA Danmark A/S Goteborg Plads 1 DK-2150 Nordhavn
On the basis of	ETAG 001 (Option 7)
Certificate of conformity **1220-CPR-1794** Issued by	ITeC Institut de Tecnologia de la Construcciò de Catalunya Wellington 19 – ES08018 Barcelona
Under system	1

Declared performance according to ETAG 001 parte 1 e 2 – Design method A							
Essential Characteristic			**Performance**				
			M6	**M8**	**M10**	**M12**	**M16**
Installation parameters							
d_0	Nominal diameter of drill bit	[mm]		8	10	12	16
h_{ef}	Effective anchorage depth	[mm]		43.2	46.6	63.6	75.8
h_{nom}	Minimum installation depth	[mm]		55	60	80	100
h_{min}	Minimum thickness of the concrete member	[mm]		110	120	160	200
T_{inst}	Setting torque	[Nm]		15	30	50	100
s_{min}	Minimum spacing	[mm]		48	70	72	96
c_{min}	Minimum edge distance	[mm]		64	80	96	128
Tension – Steel faiulure							
$N_{Rk,s}$	Tension steel characteristic failure	[kN]		13.2	21.5	29.7	51.9
$\gamma_{m,sN}$	Partial safety factor	[-]		1.5			
Pull-out failure							
$N_{Rk,p,ucr}$	Tension characteristic load in non-cracked concrete C20/25	[kN]		7.5	9.0	12.0	25
γ_{mP}	Partial safety factor	[-]		1.5			1.8
$s_{cr,N}$	Critical spacing	[mm]		144	180	210	270
$c_{cr,N}$	Critical edge distance	[mm]		72	90	105	135
ψ_c C30/37	Increasing factor for concrete C30/37	[-]		1.22			
ψ_c C40/50	Increasing factor for concrete C40/50	[-]		1.41			
ψ_c C50/60	Increasing factor for concrete C50/60	[-]		1.55			
Splitting failure							

Declaration of Performance n° 10/0125

$s_{cr,sp}$	Critical spacing (splitting)	[mm]		144	180	210	270
$c_{cr,sp}$	Critical edge distance (splitting)	[mm]		72	90	105	135
Displacement on Tension load							
N_{ucr}	Service tension load in non-cracked concrete	[kN]		3.6	4.3	5.7	9.9
$\delta_{N0,ucr}$	Short term displacement under tension load	[mm]		0.02	0.03	0.04	0.07
$\delta_{N\infty,ucr}$	Long term displacement under tension load	[mm]		-	-	0.33	-
Shear – Steel failure							
Threaded rod M8, M10, M12 for length up to 180mm and M16 for length up to 220mm							
$V_{Rk,s}$	Shear characteristic failure	[kN]		6.6	10.1	21.1	39.3
$\gamma_{m,sV}$	Partial safety factor	[-]		1.25			
$M^0_{Rk,s}$	Bending moment characteristic failure	[Nm]		18.7	37.4	65.4	166.0
$\gamma_{m,sV}$	Partial safety factor	[-]		1.25			
Shear – Concrete edge failure							
l_{ef}	Effective anchorage length	[mm]		51	56	75	93
Displacement on shear load							
V	Service shear load in non-cracked concrete	[kN]		3.8	5.8	12	22.4
δ_{V0}	Short term displacement under shear load	[mm]		2.4	3.4	3.6	3.7
$\delta_{V\infty}$	Long term displacement under shear load	[mm]		3.6	5.1	5.4	5.5
Shear – Steel failure							
Threaded rod M12 for length up to 360mm and M16 for length up to 400mm							
$V_{Rk,s}$	Carico caratteristico di rottura acciaio per taglio	[kN]		-	-	8.8	13.5
$\gamma_{m,sV}$	Coefficiente di sicurezza per l'acciaio a taglio	[-]		-		1.25	
$M^0_{Rk,s}$	Momento caratteristico di flessione	[Nm]		-	-	65.4	166.0
$\gamma_{m,sV}$	Coefficiente di sicurezza per l'acciaio a taglio	[-]		-		1.25	
Taglio – Rottura del bordo del calcestruzzo							
l_{ef}	Lunghezza effettiva dell'ancorante	[mm]		-	-	75	93
Spostamenti per carico a taglio							
V	Carico di servizio a taglio	[kN]		-	-	4.2	5.4
δ_{V0}	Spostamento a breve termine per carico di taglio	[mm]		-	-	5.0	4.7
$\delta_{V\infty}$	Spostamento a lungo termine per carico di taglio	[mm]		-	-	7.5	7.1

Declaration of Performance n° 10/0125

The above performance apply for the following article numbers:

Code	d [mm]	Type (d_0/T_{fix}-L) [mm]
4637	6	6/10 – 55
4638		6/20 – 65
4640	8	8/1 – 65
4641		8/15 – 80
4642		8/30 – 95
4643		8/50 – 115
4644		8/65 – 130
4645	10	10/1 – 75
4646		10/15 – 90
4647		10/45 – 120
4648		10/75 – 150
4650	12	12/15 – 110
4651		12/25 – 120
4652		12/45 – 140
4653		12/65 – 160
4654		12/85 – 180
4655	16	16/5 – 125
4656		16/20 – 140
4657		16/30 – 150
4658		16/55 – 175
4659		16/100 – 220

The performances of the product identified by above identification code are in conformity with the declared performances.
This declaration of performance is issued on the basis of the European regulation (EU) N. 305/2011, under the sole responsibility of the indicated Manufacturer.

Signed for and in behalf of the manufacturer by:

Name and function	Place and date	Signature
Roberto Vorabbi Legale Rappresentante	Riccione, 20/06/2013