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Declaration of Performance

No. **DPGEB1026** v2

1. Unique identification code of the product-type: **MA Multi Anchor**

2. Intended uses:

Intended use of the construction product according to ETA 16/0598	
Generic type	bonded anchor
Base material	non-cracked reinforced or unreinforced normal weight concrete C20/25 to C50/60 according to EN 206-1:2000 threaded rod M8, M10, M12, M16, M20, M24
Durability	- elements made of zinc coated or hot-dip galvanized steel, class 5.8 and 8.8 dry internal conditions - elements made of stainless steel A4, class 70 and 80 dry internal conditions, external atmospheric exposure (including industrial and marine environment) or exposure to permanently damp internal conditions if no particular aggressive conditions exist
Loading	static, quasi-static
Service temperature range	-40 °C to +40 °C (max. short term temperature +40 °C and max. long term temperature +24 °C)
Use categories	1: dry concrete

3. Manufacturer: **G&B Fissaggi S.r.l.** C.so Savona 22, Villastellone (TO), Italy

5. System of AVCP: 1

6b.
European Assessment Document: ETAG 001 Part 1 and Part 5, edition 2013, used as EAD
European Technical Assessment: ETA 16/0598
Technical Assessment Body: TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.
Notified body: 1020 TECHNICKÝ A ZKUŠEBNÍ ÚSTAV STAVEBNÍ PRAHA, s.p.

7. Declared performances:

Declared performances according to ETAG 001:2013 Part 1 and Part 5, ETA 16/0598 (Design method A - ETAC 001 Annex C, TR 029)

Threaded rod diameter			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Essential characteristics			**Performance**					
Installation parameters								
d	Nominal diameter of bar	[mm]	8	10	12	16	20	24
d_0	Nominal diameter of drill bit	[mm]	10	12	14	18	22	28
d_{fix}	Diameter of clearance hole in the fixture	[mm]	9	12	14	18	22	26
h_{ef}	Effective anchorage depth	[mm]	80	90	110	125	170	210
h_1	Depth of the drilling hole	[mm]	80	90	110	125	170	210
h_{min}	Minimum thickness of the concrete member	[mm]	110	120	140	160	215	260
T_{inst}	Maximum installation torque	[Nm]	10	20	40	80	150	200
t_{fix}	Thickness to be fixed	[mm]	0 to 1500					
s_{min}	Minimum spacing	[mm]	40	50	60	80	100	120
c_{min}	Minimum edge distance	[mm]	40	50	60	80	100	120

Threaded rod diameter			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Essential characteristics			**Performance**					
Tension steel failure mode								
$N_{Rk,s}$	Characteristic tension resistance of steel, 5.8	[kN]	18	29	42	79	123	177
γ_{Ms}	Partial safety factor, steel 5.8	[-]	1.5					
$N_{Rk,s}$	Characteristic tension resistance of steel, 8.8	[kN]	29	46	67	126	196	282
γ_{Ms}	Partial safety factor, steel 8.8	[-]	1.5					
$N_{Rk,s}$	Characteristic tension resistance of steel, A4-70	[kN]	26	41	59	110	172	247
γ_{Ms}	Partial safety factor, steel A4-70	[-]	1.9					
$N_{Rk,s}$	Characteristic tension resistance of steel, A4-80	[kN]	29	46	67	126	169	282
γ_{Ms}	Partial safety factor, steel A4-80	[-]	1.6					
Combined pull-out and concrete cone mode								
$N_{Rk,p,ucr}$	Characteristic tension resistance in non-cracked concrete C20/25	[kN]	20	30	35	60	75	115
$\psi_{c,C30/37}$	Increasing factor for concrete C30/37	[-]	1.12					
$\psi_{c,C40/50}$	Increasing factor for concrete C40/50	[-]	1.19					
$\psi_{c,C50/60}$	Increasing factor for concrete C50/60	[-]	1.30					
$s_{cr,Np}$	Critical spacing	[mm]	160	180	220	250	340	420
$c_{cr,Np}$	Critical edge distance	[mm]	80	90	110	125	170	210
Splitting failure mode								
$s_{cr,sp}$	Critical spacing	[mm]	320	360	440	375	510	630
$c_{cr,sp}$	Critical edge distance	[mm]	160	180	220	188	255	315
Partial safety factors								
γ_{Mc}, γ_{Mp}, γ_{Msp}	Partial safety factor	[-]	1.8					
Shear steel failure mode without lever arm								
$V_{Rk,s}$	Characteristic shear resistance of steel, 5.8	[kN]	9	15	21	39	61	88
γ_{Ms}	Partial safety factor, steel 5.8	[-]	1.25					
$V_{Rk,s}$	Characteristic shear resistance of steel, 8.8	[kN]	15	23	34	63	98	141
γ_{Ms}	Partial safety factor, steel 8.8	[-]	1.25					
$V_{Rk,s}$	Characteristic shear resistance of steel, A4-70	[kN]	13	20	30	55	86	124
γ_{Ms}	Partial safety factor, steel A4-70	[-]	1.53					
$V_{Rk,s}$	Characteristic shear resistance of steel, A4-80	[kN]	15	23	34	63	98	141
γ_{Ms}	Partial safety factor, steel A4-80	[-]	1.33					
Shear steel failure mode with lever arm								
$M^0_{Rk,s}$	Characteristic bending resistance of steel, 5,8	[kN]	19	37	66	166	325	561
γ_{Ms}	Partial safety factor, steel 5.8	[-]	1.25					
$M^0_{Rk,s}$	Characteristic bending resistance of steel, 8.8	[kN]	30	60	105	266	519	898
γ_{Ms}	Partial safety factor, steel 8.8	[-]	1.25					
$M^0_{Rk,s}$	Characteristic bending resistance of steel, A4-70	[kN]	26	52	92	233	454	786
γ_{Ms}	Partial safety factor, steel A4-70	[-]	1.56					
$M^0_{Rk,s}$	Characteristic bending resistance of steel, A4-80	[kN]	30	30	105	266	519	898
γ_{Ms}	Partial safety factor, steel A4-80	[-]	1.33					

Threaded rod diameter			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Essential characteristics			**Performance**					
Concrete pry-out failure mode								
k	Factor in eq. (5.7) of TR029	[-]	2.0					
γ_{iMp}	Partial safety factor	[-]	1.5					
Concrete edge failure mode								
γ_{iMc}	Partial safety factor	[-]	1.5					
Displacement on tension load								
N	Service tension load	[kN]	6.3	9.9	13.9	23,8	29.8	37.7
δ_{N0}	Short term displacement under tension load	[mm]	0.1	0.2	0.3	0.5	0.7	0.9
$\delta_{N\infty}$	Long term displacement under tension load		0.5	0.5	0.5	0.5	0.5	0.5
Displacement on shear load								
V	Service shear load	[kN]	3.1	5.0	7.2	13.5	21.0	30.3
δ_{V0}	Short term displacement under shear load	[mm]	1.5	1.5	1.5	1.5	2.0	2.5
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	2.3	2.3	2.3	2.3	3.0	3.8

The performance of the product identified above is in conformity with the set of declared performances. 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 the manufacturer by:

Andrea Maggioni, General manager

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Villastellone, 5 August 2016