



**Declaration of Performance**  
**FM753 Crack**  
 Throughbolt anchor made of galvanised steel



1. Identification of the product: **FM753 Crack**

2. Identification code (art. 11.4), for the batch or serial number see packaging:

d <sup>4)</sup>	L <sup>5)</sup> [mm]	t <sub>fix</sub> <sup>6)</sup> [mm]	Marking	ID	Cod.
M8	68	4	FM-C 8/4	A	75350b08068
	75	10	FM-C 8/10	B	75350b08075
	90	25	FM-C 8/25	C	75350b08090
	115	50	FM-C 8/50	D	75350b08115
	135	70	FM-C 8/70	E	75350b08135
	165	100	FM-C 8/100	G	75350b08165
M10	90	10	FM-C 10/10	A	75350b10090
	105	25	FM-C 10/25	B	75350b10105
	115	35	FM-C 10/35	C	75350b10115
	135	55	FM-C 10/55	D	75350b10135
	155	75	FM-C 10/75	E	75350b10155
	185	105	FM-C 10/105	F	75350b10185
M12	110	10	FM-C 12/10	A	75350b12110
	120	20	FM-C 12/20	B	75350b12120
	145	45	FM-C 12/45	C	75350b12145
	170	70	FM-C 12/70	D	75350b12170
	200	100	FM-C 12/100	E	75350b12120
M16	130	10	FM-C 16/10	A	75350b16130
	150	30	FM-C 16/30	B	75350b16150
	185	60	FM-C 16/60	C	75350b16185
	220	100	FM-C 16/100	D	75350b16220

<sup>4)</sup> Nominal diameter of thread; <sup>5)</sup> Length of anchor; <sup>6)</sup> Thickness fixture max.

3. Intended use:

Generic type	Torque controlled expansion anchor throughbolt type
Base material	Cracked and un-cracked concrete C20/25 to C50/60 acc. to EN 206-1
Material	Steel galvanised 8µm acc. to EN ISO 4042 (cl. 9.8 for bolt acc. to EN ISO 898-1)
Durability	Internal dry conditions
Loading	Static, quasi-static and Seismic
Fire Resistance	NPD
Fire Reaction	A1 according to EN 13501-1

4. Manufacturer (art. 11.5): **Friulsider SpA via trieste,1 - 33048 San Giovanni al Natisone (UD) - Italy**

5. Authorised representative (art. 12.2): **Not Relevant**

6. System of Assessment AVCP (annex V): **System 1**

7/8. Harmonised Specification & Notified Body:

	Notified Body	System of Assessment	Reference	EN Norm or EAD Document
Technical Specification	CSTB nr.0679	1	ETA-09/0056	ETAG001 p.1-2-Annex E
Factory Product Control	CSTB nr.0679	1	0679-CPR-0418	

9. Declared Performance: **See Annexes**

10. The performance of the product identified in points 1 and 2 is in conformity with declared performance in point 9. This declaration of performance is issued under the sole responsibility of Friulsider SpA.

Signed for and behalf of the manufacturer by:

Name and functions	Place and date of issue	Signature
Sales Manager Fabrizio Fasan	San Giovanni al Natisone, 10-06-2015	

## Annex I°

Declared Performances according to ETA-09/0056 - ETAG001 p.1 and 2 Design Method according to ETAG001 Annex C or CEN/TS 1992-4						
ESSENTIAL CHARACTERISTICS			PERFORMANCE			
Installation parameters			M8	M10	M12	M16
$d_0$	Nominal diameter of drill bit	[mm]	8	10	12	16
$h_{nom}$	Minimum installation depth	[mm]	54	67	81	97
$h_{ef}$	Effective anchorage depth	[mm]	48	60	72	86
$h_{min}$	Minimum thickness of the concrete member	[mm]	100	120	150	170
$T_{inst}$	Nominal torque moment	[Nm]	20	40	60	120
$s_{min}$ for $c \geq$	Minimum spacing	[mm]	50	60	70	80
	Edge distance	[mm]	65	80	90	120
$c_{min}$ for $s \geq$	Minimum edge distance	[mm]	50	60	70	85
	Anchor spacing	[mm]	75	120	150	170
<b>TENSION Steel failure</b>			M8	M10	M12	M16
$N_{Rk,s}$	Tension Steel characteristic failure	[kN]	23,8	38,7	54,7	98,4
$\gamma_{m,sN}^{1)}$	Partial safety factor for tension steel failure	[-]	1,5			
<b>Pull-out failure</b>			M8	M10	M12	M16
$N_{Rk,p,cr}$	Tension characteristic load in <b>cracked concrete</b> C20/25	[kN]	6	12	16	20
$N_{Rk,p,ucr}$	Tension characteristic load in <b>un-cracked concrete</b> C20/25	[kN]	9	16	20	35
$\gamma_2$	Partial safety factor	[-]	1,0			
$\gamma_{mc}^{1)}$	Partial safety factor	[-]	1,5			
$\Psi_{c,C30/37}$	Increasing factor for concrete C30/37	[-]	1,22			
$\Psi_{c,C40/50}$	Increasing factor for concrete C40/50	[-]	1,41			
$\Psi_{c,C50/60}$	Increasing factor for concrete C50/60	[-]	1,55			
<b>Concrete cone failure and Splitting failure</b>			M8	M10	M12	M16
$K_{cr}$	Factor for cracked concrete ref. CEN/TS 1992-4-4 §. 6.2.1.4	[-]	7,2			
$K_{ucr}$	Factor for un-cracked concrete ref. CEN/TS 1992-4-4 §. 6.2.1.4	[-]	10,1			
$s_{cr,N}$	Critical spacing for concrete cone failure	[mm]	140	180	220	260
$c_{cr,N}$	Critical edge distance for concrete cone failure	[mm]	70	90	110	130
$s_{cr,sp}$	Critical spacing for splitting failure	[mm]	290	360	430	520
$c_{cr,sp}$	Critical edge distance for splitting failure	[mm]	145	180	215	260
$\gamma_{mc} = \gamma_{msp}^{1)}$	Partial safety factor	[-]	1,5			
<b>Displacement on Tension Load</b>			M8	M10	M12	M16
$N_{cr}$	Service tension load in <b>cracked concrete</b> C20/25	[kN]	2,9	5,7	7,6	9,5
$\delta_{N0,cr}$	Short term displacement under tension load	[mm]	1,4	1,2	0,9	0,6
$\delta_{N\infty,cr}$	Long term displacement under tension load	[mm]	1,4	1,2	1,3	0,6
$N_{ucr}$	Service tension load in <b>un-cracked concrete</b> C20/25	[kN]	4,3	7,6	9,5	16,7
$\delta_{N0,ucr}$	Short term displacement under tension load	[mm]	0,1	0,1	0,1	0,1
$\delta_{N\infty,ucr}$	Long term displacement under tension load	[mm]	0,5	0,5	0,5	0,5
<b> SHEAR Steel failure</b>			M8	M10	M12	M16
$V_{Rk,s}$	Shear Steel characteristic failure	[kN]	12,9	24,2	33,8	66,4
$K_2$	Ductility factor acc.to CEN/TS 1992-4-5 Section § 6.3.2.1	[-]	0,8			
$M_{Rk,s}^0$	Bending Moment characteristic failure	[Nm]	34	67	118	300
$\gamma_{m,sV}^{1)}$	Partial safety factor	[-]	1,5			
<b>Shear Concrete Pry-out failure</b>			M8	M10	M12	M16
$k$	Factor equation (5.6) of ETAG 001-Annex C, § 5.2.3.3	[-]	1,0	2,0		
$k_3$	Factor equation (16) of CEN/TS 1992-4-4, § 6.2.2.3	[-]	1,0	2,0		
$\gamma_{mc}^{1)}$	Partial safety factor	[-]	1,5			
<b>Shear Concrete Edge failure</b>			M8	M10	M12	M16
$l_f$	Effective anchorage length	[mm]	48	60	72	86
$d_{nom}$	Nominal diameter of anchor	[mm]	8	10	12	16
$\gamma_{mc}^{1)}$	Partial safety factor	[-]	1,5			
<b>Displacement on Shear Load</b>			M8	M10	M12	M16
$V$	Service shear load in concrete	[kN]	6,2	11,4	16,2	31,4
$\delta_{V0}$	Short term displacement under shear load	[mm]	3,0	3,8	4,1	4,5
$\delta_{V\infty}$	Long term displacement under shear load	[mm]	4,1	5,1	5,5	6,1

<sup>1)</sup> In absence of other national regulations.

## Annex II°

SEISMIC RESISTANCE Declared Performances acc. to <u>ETA-09/0056</u> - ETAG001 Annex E Design Method according to TR045						
ESSENTIAL CHARACTERISTICS			PERFORMANCE			
SEISMIC RESISTANCE Category C1			M8	M10	M12	M16
$N_{rk,s,seis\ C1}$	Tension Steel characteristic failure for Seismic Category C1	[kN]	23,8	38,7	54,7	98,4
$N_{rk,p,seis\ C1}$	Tension charact. load in concrete C20/25 for Seismic Category C1	[kN]	6	12	16	20
$V_{rk,s,seis\ C1}$	Shear Steel characteristic failure Seismic for Category C1	[kN]	7,7	17,0	30,4	57,6
$\gamma_{m,seis}^{2)}$	Partial safety factor for seismic actions	[-]	1,5			
SEISMIC RESISTANCE Category C2			M8	M10	M12	M16
$N_{rk,s,seis\ C2}$	Tension Steel characteristic failure for Seismic Category C2	[kN]	-	38,7	54,7	98,4
$N_{rk,p,seis\ C2}$	Tension charact. load in concrete C20/25 for Seismic Category C2	[kN]	-	3,3	11,8	20
$V_{rk,s,seis\ C2}$	Shear Steel characteristic failure for Seismic Category C2	[kN]	-	11,9	19,3	31,2
$\gamma_{m,seis}^{2)}$	Partial safety factor for seismic actions	[-]	1,5			

<sup>2)</sup> The safety factors recommended under seismic actions are being taken into account the same as the static action.

FIRE RESISTANCE Declared Performances acc. to <u>ETA-09/0056</u> Design Method according to TR020						
ESSENTIAL CHARACTERISTICS			PERFORMANCE			
FIRE RESISTANCE			M8	M10	M12	M16
$F_{Rk,s,fi,R30}$	Characteristic Tensile/Shear Resistance = 30 min.	[kN]	0,4	0,9	1,7	3,1
$F_{Rk,s,fi,R60}$	Characteristic Tensile/Shear Resistance = 60 min.	[kN]	0,3	0,8	1,3	2,4
$F_{Rk,s,fi,R90}$	Characteristic Tensile/Shear Resistance = 90 min.	[kN]	0,3	0,6	1,1	2,0
$F_{Rk,s,fi,R120}$	Characteristic Tensile/Shear Resistance = 120 min.	[kN]	0,2	0,5	0,8	1,6
$M_{Rk,s,fi,R30}^0$	Characteristic Bending Moment = 30 min.	[Nm]	0,4	1,1	2,6	6,7
$M_{Rk,s,fi,R60}^0$	Characteristic Bending Moment = 60 min.	[Nm]	0,3	1,0	2,0	5,0
$M_{Rk,s,fi,R90}^0$	Characteristic Bending Moment = 90 min.	[Nm]	0,3	0,7	1,7	4,3
$M_{Rk,s,fi,R120}^0$	Characteristic Bending Moment = 120 min.	[Nm]	0,2	0,6	1,3	3,3
$\gamma_{M,fi}^{3)}$	Partial safety factor under fire exposure	[-]	1,0			
$S_{cr,N,fi}$	Critical spacing under fire exposure	[mm]	192	240	288	384
$C_{cr,N,fi}$	Critical edge distance under fire exposure	[mm]	96	120	144	192

<sup>3)</sup> In absence of other national regulations, under fire exposure is recommended the safety factor  $\gamma_{M,fi} = 1,0$ .

Reach Directive EC 1907/2006 declaration:

We inform you that Friulsider is classified in the EC 1907/2006 Reach Directive as a Downstream-user of substances.

The product supplied does not contain substances classified as SVHC according to the Candidate List in a concentration equal or greater than 0.1% (weight / weight). Article 31 is not applicable to the present product.