


 1. Identification of the product: **ATS evo**

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

d ⁵⁾	L ⁶⁾ [mm]	t _{fix} ⁷⁾ [mm]	Marking	Cod. ATS evo-S (hexagonal head)	Cod. ATS evo-B (threaded bar)	d ⁵⁾	t _{fix} ⁷⁾ [mm]	Marking	Cod. ATS evo-SK (countersunk head)
M6	70	10	FM-ATS Ø10/10	79302b10070	79402b10070	M6	15	FM-ATS Ø10/15 sk	79303b10070
	80	20	FM-ATS Ø10/20	79302b10080	79402b10080		25	FM-ATS Ø10/25 sk	79303b10080
	110	50	FM-ATS Ø10/50	79302b10110	79402b10110				
M8	80	10	FM-ATS Ø12/10	79302b12080	79402b12080	M8	16	FM-ATS Ø12/16 sk	79303b12080
	90	20	FM-ATS Ø12/20	79302b12090	79402b12090		26	FM-ATS Ø12/26 sk	79303b12090
	120	50	FM-ATS Ø12/50	79302b12120	79402b12120		56	FM-ATS Ø12/56 sk	79303b12120
M10	90	10	FM-ATS Ø15/10	79302b15090	79402b15090	M10	17	FM-ATS Ø15/17 sk	79303b15090
	100	20	FM-ATS Ø15/20	79302b15100	79402b15100		27	FM-ATS Ø15/27 sk	79303b15100
	130	50	FM-ATS Ø15/50	79302b15130	79402b15130				
	180	100	FM-ATS Ø15/100	79302b15180	79402b15180				
M12	110	10	FM-ATS Ø18/10	79302b18110	79402b18110	M12	33	FM-ATS Ø18/33 sk	79303b18125
	125	25	FM-ATS Ø18/25	79302b18125	79402b18125				
	150	50	FM-ATS Ø18/50	79302b18150	79402b18150				
	200	100	FM-ATS Ø18/100	79302b18200	79402b18200				
M16	125	10	FM-ATS Ø24/10	79302b24125	79402b24125	M16			
	140	25	FM-ATS Ø24/25	79302b24140	79402b24140				
	165	50	FM-ATS Ø24/50	79302b24165	79402b24165				
	215	100	FM-ATS Ø24/100	79302b24215	79402b24215				
M20	160	10	FM-ATS Ø28/10	79302b28160	79402b28160	M20			
	180	30	FM-ATS Ø28/30	79302b28180	79402b28180				
	210	60	FM-ATS Ø28/60	79302b28210	79402b28210				
	250	100	FM-ATS Ø28/100	79302b28250	79402b28250				
M24	180	10	FM-ATS Ø32/10	79302b32180	79402b32180	M24			
	200	30	FM-ATS Ø32/30	79302b32200	79402b32200				
	230	60	FM-ATS Ø32/60	79302b32230	79402b32230				

⁵⁾ Nominal diameter of thread; ⁶⁾ Length of anchor; ⁷⁾ Thickness fixture max.

3. Intended use:

Generic type	Torque controlled expansion anchor wedge type
Base material	Cracked and un-cracked concrete C20/25 to C50/60 acc. to EN 206-1
Material	Steel galvanised acc. to EN ISO 4042 (cl. 8.8 for bolt acc. to EN ISO 898-1)
Durability	Internal dry conditions
Loading	Static, quasi-static and Seismic
Fire Resistance	F120
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:

	Name of Body	System of Assessment	Reference	EAD / hEN Document
Technical Specification Document	ZAG _[TAB]	1	ETA-10/0423	ETAG001 p.1-2-Annex E
Constancy of Performance & FPC	ZAG nr.1404 _[NB]	1	1404-CPR-2553	ETAG001 p.1

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:

Function	Name	Signature	Place and date of issue
Technical Manager	Michele Franzoso	<i>Michele Franzoso</i>	San Giovanni al Natisone, 04-04-2018
C.E.O	Claudio Peleson	<i>Claudio Peleson</i>	

ANNEX I°

Declared Performances acc. to ETA-10/0423 - ETAG001 p.1 and 2
 Design method ETAG001-Annex C or CEN/TS 1992-4

ESSENTIAL CHARACTERISTICS		PERFORMANCE						
		M6	M8	M10	M12	M16	M20	M24
Installation parameters								
d_0	Nominal diameter of drill bit [mm]	10	12	15	18	24	28	32
h_{nom}	Minimum installation depth [mm]	60	70	80	100	115	145	165
h_{ef}	Effective anchorage depth [mm]	49	59	67	88	99	125	150
h_{min}	Minimum thickness of the concrete member [mm]	100	120	140	180	200	250	300
T_{inst}	Nominal torque moment [Nm]	10	20	45	80	150	170	200
s_{min}	Minimum spacing [mm]	50	60	70	80	100	125	150
$c \geq$	Edge distance [mm]	75	90	100	150	200	250	300
c_{min}	Minimum edge distance [mm]	50	60	70	80	100	125	150
$s \geq$	Anchor spacing [mm]	75	90	100	150	200	250	300
Tension Steel failure								
$N_{Rk,s}$	Tension Steel characteristic failure [kN]	16	29	46	67	126	203	293
$\gamma_{m,sN}^{1)}$	Partial safety factor for tension steel failure [-]	1,5						
Pull-out failure		M6	M8	M10	M12	M16	M20	M24
$N_{Rk,p,cr}$	Tension characteristic load in cracked concrete C20/25 [kN]	9	12	16	25	35,5 ²⁾	50,2 ²⁾	66,1 ²⁾
$N_{Rk,p,ucr}$	Tension characteristic load in un-cracked concrete C20/25 [kN]	16	22,8 ²⁾	27,6 ²⁾	41,6 ²⁾	49,7 ²⁾	70,4 ²⁾	92,6 ²⁾
γ_2	Partial safety factor [-]	1,0						
$\gamma_{m,c}^{1)}$	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						
Concrete Cone and Splitting failure								
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 [mm]	150	180	200	270	300	375	450
$c_{cr,N}$	Critical edge distance [mm]	75	90	100	135	150	188	225
$s_{cr,sp}$	Critical spacing (splitting) [mm]	150	180	200	270	300	375	450
$c_{cr,sp}$	Critical edge distance (splitting) [mm]	75	90	100	135	150	188	225
$\gamma_{m,c}^{1)}$	Partial safety factor [-]	1,5						
Displacement on Tension Load		M6	M8	M10	M12	M16	M20	M24
N_{cr}	Service tension load in cracked concrete C20/25 [kN]	4,3	5,7	7,6	11,9	16,9	23,9	31,5
$\delta_{N0,cr}$	Short term displacement under tension load [mm]	1,21	0,83	1,25	0,98	0,96	0,99	1,41
$\delta_{N\infty,cr}$	Long term displacement under tension load [mm]	2,38	2,49	1,99	1,12	2,15	0,99	1,41
N_{ucr}	Service tension load in un-cracked concrete C20/25 [kN]	7,7	10,9	13,2	19,8	23,6	33,6	44,2
$\delta_{N0,ucr}$	Short term displacement under tension load [mm]	0,47	0,81	0,30	0,25	0,20	2,08	2,45
$\delta_{N\infty,ucr}$	Long term displacement under tension load [mm]	2,38	2,49	1,99	1,12	2,15	2,08	2,45
Shear Steel failure		M6	M8	M10	M12	M16	M20	M24
$V_{Rk,s}$	Shear Steel characteristic failure [kN]	14	26	42	50	97	125	151
$M_{Rk,s}^0$	Bending Moment characteristic failure [Nm]	12	30	60	105	266	542	932
$\gamma_{m,sV}^{1)}$	Partial safety factor for shear steel failure [-]	1,25						
Shear Concrete Edge and Pry-out failure		M6	M8	M10	M12	M16	M20	M24
k	Factor equation (5.6) of ETAG, 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			
l_{ef}	Effective anchorage length [mm]	49	59	67	88	99	125	150
d_{nom}	Nominal diameter of anchor [mm]	10	12	15	18	24	28	32
$\gamma_{mc}^{1)}$	Partial safety factor [-]	1,5						
Displacement on Shear Load		M6	M8	M10	M12	M16	M20	M24
V	Service shear load in concrete [kN]	8,0	14,9	24,0	28,6	55,4	71,4	86,3
δ_{V0}	Short term displacement under shear load [mm]	1,39	1,94	2,71	1,69	2,69	7,84	8,87
$\delta_{V\infty}$	Long term displacement under shear load [mm]	2,09	2,91	4,07	2,54	4,04	11,76	13,31

¹⁾ In absence of other national regulations;

²⁾ Pull-out failure not decisive.

ANNEX II*

SEISMIC RESISTANCE Declared performances according to ETA-10/0423 - ETAG001 Annex E

Design Method according to TR045

ESSENTIAL CHARACTERISTICS			PERFORMANCE						
SEISMIC RESISTANCE Category C1			M6	M8	M10	M12	M16	M20	M24
$N_{rk,p,seis\ C1}$	Tension char. load in concrete C20/25 for Seismic Category C1	[kN]	6,8	12	16	25	35,5 ¹⁾	50,2 ¹⁾	66,1 ¹⁾
$\gamma_{m,seisN}$ ²⁾	Partial safety factor for seismic actions for tension load	[-]	1,5						
$V_{rk,s,seis\ C1}$	Shear Steel characteristic failure Seismic for Category C1	[kN]	9,8	13	20	20	48,5	87,5	105,7
$\gamma_{m,seisV}$ ²⁾	Partial safety factor for seismic actions for shear load	[-]	1,25						
SEISMIC RESISTANCE Category C2			M6	M8	M10	M12	M16	M20	M24
$N_{rk,p,seis\ C2}$	Tension char. load in concrete C20/25 for Seismic Category C2	[kN]	-	3,9	7,8	15,3	28,8	32,8	41,3
$\gamma_{m,seisN}$ ²⁾	Partial safety factor for seismic actions for tension load	[-]	1,5						
$\delta_{N,sei\ (DSL)}$ ^{3) 4)}	Displacement at DSL	[mm]	-	2,7	4,9	3,6	3,1	7,0	7,0
$\delta_{N,sei\ (USL)}$ ^{3) 4)}	Displacement at USL	[mm]	-	12,8	15,2	14,0	11,5	18,4	16,2
$\gamma_{m,seisN}$ ²⁾	Partial safety factor for seismic actions for tension load	[-]	1,5						
$V_{rk,s,seis\ C2}$	Shear Steel characteristic failure Seismic for Category C2	[kN]	-	10,2	17,0	17,0	43,9	72,9	74,6
$\gamma_{m,seisV}$ ²⁾	Partial safety factor for seismic actions for shear load	[-]	1,25						
$\delta_{V,sei\ (DSL)}$ ^{3) 4)}	Displacement at DSL	[mm]	-	3,5	2,7	2,5	2,7	7,0	7,0
$\delta_{V,sei\ (USL)}$ ^{3) 4)}	Displacement at USL	[mm]	-	6,8	6,3	5,8	6,1	20,9	18,6

¹⁾ Pull-out failure not decisive²⁾ The recommended partial safety factors under seismic action ($\gamma_{m,seis}$) are the same as for static loading;³⁾ The listed displacement represent mean values;⁴⁾ A smaller displacement may be required in the design in the case of displacement sensitive fastenings or "rigid" supports;

The characteristic resistance associated with such smaller displacement may be determined by linear interpolation or proportional reduction.

FIRE RESISTANCE Declared performances according to ETA-10/0423

Design Method according to TR020

ESSENTIAL CHARACTERISTICS			PERFORMANCE						
Tension steel failure			M6	M8	M10	M12	M16	M20	M24
$N_{Rk,s,fi,R30}$	Characteristic Tension Resistance = 30 min.	[kN]	0,20	0,37	0,87	1,69	3,14	4,90	7,06
$N_{Rk,s,fi,R60}$	Characteristic Tension Resistance = 60 min.	[kN]	0,18	0,33	0,75	1,26	2,36	3,68	5,30
$N_{Rk,s,fi,R90}$	Characteristic Tension Resistance = 90 min.	[kN]	0,14	0,26	0,58	1,10	2,04	3,19	4,59
$N_{Rk,s,fi,R120}$	Characteristic Tension Resistance = 120 min.	[kN]	0,10	0,18	0,46	0,84	1,57	2,45	3,53
$S_{cr,N,fi}$	Critical spacing under fire exposure	[mm]	4xh _{ef}						
$C_{cr,N,fi}$	Critical edge distance under fire exposure	[mm]	2xh _{ef}						
S_{min}	Minimum spacing	[mm]	50	60	70	80	100	125	150
C_{min}	Minimum edge distance	[mm]	c _{min} = 2 h _{ef} ; if fire attack from more than one side, the edge distance of the anchor has to be ≥ 300mm and ≥ 2 h _{ef}						
$\gamma_{M,fi}$ ⁵⁾	Partial safety factor under fire exposure	[-]	1,0						
Shear steel failure without lever arm			M6	M8	M10	M12	M16	M20	M24
$V_{Rk,s,fi,R30}$	Characteristic Shear Resistance = 30 min.	[kN]	0,20	0,37	0,87	1,69	3,14	4,90	7,06
$V_{Rk,s,fi,R60}$	Characteristic Shear Resistance = 60 min.	[kN]	0,18	0,33	0,75	1,26	2,36	3,68	5,30
$V_{Rk,s,fi,R90}$	Characteristic Shear Resistance = 90 min.	[kN]	0,14	0,26	0,58	1,10	2,04	3,19	4,59
$V_{Rk,s,fi,R120}$	Characteristic Shear Resistance = 120 min.	[kN]	0,10	0,18	0,46	0,84	1,57	2,45	3,53
Shear steel failure with lever arm			M6	M8	M10	M12	M16	M20	M24
$M_{Rk,s,fi,R30}^0$	Characteristic Bending Moment = 30 min.	[Nm]	0,15	0,37	1,12	2,62	6,66	13,07	22,45
$M_{Rk,s,fi,R60}^0$	Characteristic Bending Moment = 60 min.	[Nm]	0,14	0,34	0,97	1,96	5,00	9,80	16,84
$M_{Rk,s,fi,R90}^0$	Characteristic Bending Moment = 90 min.	[Nm]	0,11	0,26	0,75	1,70	4,33	8,49	14,59
$M_{Rk,s,fi,R120}^0$	Characteristic Bending Moment = 120 min.	[Nm]	0,08	0,19	0,60	1,31	3,33	5,44	9,35
Shear concrete pry-out failure			M6	M8	M10	M12	M16	M20	M24
k	Factor in equation (5.6) of ETAG001-Annex C § 5.2.3.3	[-]	1,0			2,0			
Shear concrete edge failure			M6	M8	M10	M12	M16	M20	M24
The characteristic resistance $V_{Rk,c,fi}^0$ in C20/25 to C50/60 concrete is determined by: $V_{Rk,c,fi}^0 = 0,25 \times V_{Rk,c}^0 (\leq R90)$ and $V_{Rk,c,fi}^0 = 0,20 \times V_{Rk,c}^0 (R120)$ with $V_{Rk,c}^0$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature acc. ETAG 001-Annex C, 5.2.3.4.									

⁵⁾ In absence of other national regulations.