Declaration of Performance
DoP MTP-ssA4-en

1. Product type: MTP-ssA4 anchor

2. Identification: APA4XXYYY
XX = nominal diameter
YYY = nominal length

3. Intended use:

Generic type:	Torque controlled anchor sleeve type
Base material:	Concrete C20/25 to C50/60 according to EN 206-1.
Material:	Made of stainless steel grade A4
Durability:	Dry internal conditions, external atmospheric exposure (including industrial and marine environment) or exposure in permanently damp internal conditions if no particular aggressive conditions exist.
Loading:	Static, quasi static loads
Fire resistance:	F120
Seismic category:	C1 and C2
Assumed working life:	50 years

4. Manufacturer: Index Fixing Systems. Técnicas Expansivas S.L.
Segador, 13
26006 Logroño, La Rioja, SPAIN

5. Authorised representative: Not applicable

6. System of assessment of performance: 1

7. Harmonised standard: Not applicable

8. European technical assessment:

Tech. assessment body:	ZAG: Zavod Za Gradbenistvd Slovenije.
issued:	ETA 15/0145
on the basis of:	ETAG 001, parts 1, 2, TR020, TR045.
performed:	Determination of product type, initial inspection of the manufacturing plant and continuous surveillance of FPC.
under system:	1
and issued:	AVCP certificate 1404-CPR-2520

9. Declared perfomances:

Characteristic values for tension loads in case of static and quasi-static loading for design method A acc. ETAG 001-Annex C or CEN/TS1992-4-4						
Essential characteristics			**Performance**			
			M8	**M10**	**M12**	**M16**
Installation parameters						
d_0	Nominal diameter of drill bit	[mm]	8	10	12	16
h_{nom}	Anchorage depth	[mm]	54	67	81	97
h_{ef}	Effective anchorage depth	[mm]	48	60	72	86
h_{min}	Minimum thickness of concrete member	[mm]	100	120	150	170
T_{inst}	Torque moment	[Nm]	20	40	60	120
s_{min}	Minimum spacing	[mm]	50	55	60	70
for c ≥	Edge distance	[mm]	50	70	80	100
c_{min}	Minimum edge distance	[mm]	50	50	60	70
for s ≥	Spacing	[mm]	50	110	120	130
Tension steel failure mode						
$N_{Rk,s}$	Characteristic tension steel failure	[kN]	21	34	49	88
γ_{MsN}	Partial safety factor	[-]	1,5			
Pull-out failure mode						
$N_{Rk,p}$	Characteristic pull-out failure in non-cracked concrete	[kN]	9	16	20	35
$N_{Rk,p}$	Characteristic pull-out failure in cracked concrete	[kN]	5	9	12	25
γ_2	Partial safety factor	[-]	1,0			
γ_{Mp}		[-]	1,5			
$s_{cr,N}$	Characteristic spacing	[mm]	3 x h_{ef}			
$c_{cr,N}$	Characteristic edge distance	[mm]	1,5 x h_{ef}			
ψ_C **C30/37**	Increasing factor for $N_{Rk,p}$ in non-cracked concrete	[-]	1,22			
ψ_C **C40/50**		[-]	1,41			
ψ_C **C50/60**		[-]	1,55			
Concrete Cone failure mode						
k_{cr}	Factor for cracked concrete CEN/TS 1992-4-4 §. 6.2.1.4	[-]	7,2			
k_{ucr}	Factor for un-cracked concrete CEN/TS 1992-4-4 §. 6.2.1.4	[-]	10,1			
γ_{Mc}	Partial safety factor	[-]	1,5			
Splitting failure mode						
$s_{cr,sp}$	Characteristic spacing	[mm]	3 x h_{ef}			
$c_{cr,sp}$	Characteristic edge distance	[mm]	1,5 x h_{ef}			
γ_{Msp}	Partial safety factor	[-]	1,5			
Displacement under tension load						
Non-cracked concrete C20/25						
N	Service tension load	[kN]	4,3	7,6	9,5	16,7
δ_{N0}	Short term displacement	[mm]	0,3	0,4	0,4	0,3
$\delta_{N\infty}$	Long term displacement	[mm]	1,4	1,5	0,9	1,4
Cracked concrete C20/25						
N	Service tension load	[kN]	2,4	4,3	5,7	11,9
δ_{N0}	Short term displacement	[mm]	0,7	0,6	0,7	0,7
$\delta_{N\infty}$	Long term displacement	[mm]	1,4	1,5	0,9	1,4

Characteristic values for shear loads in case of static and quasi-static loading for design method A acc. ETAG 001-Annex C or CEN/TS1992-4-4						
Essential characteristics			**Performance**			
			M8	**M10**	**M12**	**M16**
Shear steel failure						
$V_{Rk,s}$	Characteristic shear steel failure	[kN]	11,9	18,8	27,4	51,0
$M^0_{Rk,s}$	Bending moment characteristic failure	[Nm]	24	49	85	216
γ_{MsV}	Partial safety factor	[-]	1,30			
Shear concrete pry-out and edge failure						
k	Factor in equation (5.6) of ETAG 001 Annex C § 5.2.3.3	[mm]	1,0	2,0		
K_3	Factor in equation (16) of CEN/TS 1992-4-4 § 6.2.2.3	[mm]	1,0	2,0		
l_{ef}	Effective anchorage depth	[mm]	48	60	72	86
d_{nom}	Diameter of anchor	[mm]	8	10	12	16
γ_{Mc}	Partial safety factor	[-]	1,5			
Displacement under shear load						
V	Service shear load	[kN]	6,5	10,4	15,1	28,0
δ_{V0}	Short term displacement	[mm]	0,8	0,9	1,2	2,5
$\delta_{V\infty}$	Long term displacement	[mm]	1,3	1,3	1,8	3,8

Characteristic values for seismic performances category C1 according to TR045						
Essential characteristics			**Performance**			
			M8	**M10**	**M12**	**M16**
Tension steel failure						
$N_{Rk,s,seis\ C1}$	Characteristic tension steel failure	[kN]	21	34	48	88
$\gamma_{Ms,N,seis}$ 1)	Partial safety factor	[-]	1.5			
Pull-out failure $N_{Rk,p,seis} = \psi_c \times N^0_{Rk,p,seis}$						
$N_{Rk,s,seis\ C1}$	Characteristic pull out failure in concrete C20/25	[kN]	4,1	9,0	12,0	25,0
$\gamma_{Ms,N,seis}$ 1)	Partial safety factor	[-]	1.5			
Shear steel failure						
$V_{Rk,s,seis\ C1}$	Characteristic shear steel failure	[kN]	8,0	12,3	15,9	36,9
$\gamma_{Ms,V,seis}$ 1)	Partial safety factor	[-]	1,3			

1) The recommended partial safety factors under seismic action ($\gamma_{M,seis}$) are the same as for static loads

Characteristic values for seismic performances category C2 according to TR045						
Essential characteristics			**Performance**			
			M8	**M10**	**M12**	**M16**
Tension steel failure						
$N_{Rk,s,seis\ C2}$	Characteristic tension steel failure	[kN]	21	34	48	88
$\gamma_{Ms,N}$ 2)	Partial safety factor	[-]	1,5			
Pull-out failure $N_{Rk,p,seis} = \psi_c \times N^0_{Rk,p,seis}$						
$N_{Rk,p,seis\ C2}$	Characteristic pull out failure in concrete C20/25	[kN]	-	2,4	8,8	21,9
$\gamma_{Mp,seis}$ 2)	Partial safety factor	[-]	1,5			
$\delta_{N,seis\ (DSL)}$ 1) 2)	Displacement at DLS	[mm]	-	2,9	4,9	6,3
$\delta_{N,seis\ (USL)}$ 1) 2)	Displacement at ULS	[mm]	-	15,8	15,7	21,0
Displacement under shear load						
$V_{Rk,s,seis\ C2}$	Characteristic tension steel failure	[kN]	-	12,3	15,8	36,6
$\gamma_{Ms,V,seis}$ 3)	Partial safety factor	[-]	1,3			
$\delta_{V,seis\ (DSL)}$ 1) 2)	Displacement at DLS	[mm]	-	2,4	5,2	6,0
$\delta_{V,seis\ (USL)}$ 1) 2)	Displacement at ULS	[mm]	-	4,1	9,7	10,7

1) The listed displacements represent mean values.
2) 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.
3) The recommended partial safety factors under seismic action ($\gamma_{M,seis}$) are the same for static loading

Characteristic resistance under fire exposure for design acc. to TR020						
Essential characteristics			**Performance**			
			M8	**M10**	**M12**	**M16**
Tension steel failure mode						
$F_{Rk,s,fi,30}$	Duration = 30 minutes	[kN]	0,5	1,1	1,8	3,3
$F_{Rk,s,fi,60}$	Duration = 60 minutes	[kN]	0,4	0,9	1,5	2,7
$F_{Rk,s,fi,90}$	Duration = 90 minutes	[kN]	0,3	0,7	1,2	2,2
$F_{Rk,s,fi,120}$	Duration = 120 minutes	[kN]	0,3	0,6	1,0	1,8
Pull-out failure mode						
$F_{Rk,p,fi,30}$	Duration = 30 minutes	[kN]	1,3	2,3	3,0	6,3
$F_{Rk,p,fi,60}$	Duration = 60 minutes	[kN]	1,3	2,3	3,0	6,3
$F_{Rk,p,fi,90}$	Duration = 90 minutes	[kN]	1,3	2,3	3,0	6,3
$F_{Rk,p,fi,120}$	Duration = 120 minutes	[kN]	1,0	1,8	2,4	5,0
Concrete cone failure mode						
$F_{Rk,c,fi,30}$	Duration = 30 minutes	[kN]	2,9	5,0	7,9	12,3
$F_{Rk,c,fi,60}$	Duration = 60 minutes	[kN]	2,9	5,0	7,9	12,3
$F_{Rk,c,fi,90}$	Duration = 90 minutes	[kN]	2,9	5,0	7,9	12,3
$F_{Rk,c,fi,120}$	Duration = 120 minutes	[kN]	2,3	4,0	6,3	9,9
$s_{cr,N}$	Characteristic spacing	[mm]	$4 \times h_{ef}$			
$c_{cr,N}$	Characteristic edge distance	[mm]	$2 \times h_{ef}$			
s_{min}	Minimum spacing	[mm]	50	50	60	70
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 ≥ $2\ h_{ef}$			
$\gamma_{M,fi}$	Partial safety factor	[-]	1,0 1)			
Shear steel failure without lever arm						
$V_{Rk,s,fi,30}$	Duration = 30 minutes	[kN]	0,7	1,5	2,5	4,7
$V_{Rk,s,fi,60}$	Duration = 60 minutes	[kN]	0,6	1,2	2,1	3,9
$V_{Rk,s,fi,90}$	Duration = 90 minutes	[kN]	0,4	0,9	1,7	3,1
$V_{Rk,s,fi,120}$	Duration = 120 minutes	[kN]	0,4	0,8	1,4	2,5

Shear steel failure with lever arm						
$M^0_{Rk,s,fi,30}$	Duration = 30 minutes	[Nm]	0,7	1,9	3,9	10,0
$M^0_{Rk,s,fi,60}$	Duration = 60 minutes	[Nm]	0,6	1,5	3,3	8,3
$M^0_{Rk,s,fi,90}$	Duration = 90 minutes	[Nm]	0,4	1,2	2,6	6,7
$M^0_{Rk,s,fi,120}$	Duration = 120 minutes	[Nm]	0,4	1,0	2,1	5,3
Shear concrete pry-out failure						
k	Factor in equation (5.6) of ETAG Annex C § 5.2.3.3	[mm]	1,0	2,0		
Shear concrete edge failure						
The characteristic resistance $V^0_{Rk,c,fi}$ in C 20/25 to C5 0/60 concrete is determined by: $V^0_{Rk,c,fi} = 0,25 \times V^0_{Rk,c}$ ($\leq$ R90) and $V^0_{Rk,c,fi} = 0,20 \times V^0_{Rk,c}$ (R120) with $V^0_{Rk,c}$ initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature acc. ETAG 001, Annex C, 5.2.3.4.						

10. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 9.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed on behalf of the manufacturer by:

Santiago Reig. Technical manager
Logroño, 04.04.2016