Declaration of Perfomances
DoP HEHO-en

1. Product type: HEHO, HECLO drop in anchor

2. Identification:

Code	Collar	Metric	Length L [mm]
HEHOM06	Without collar	M6	25
HEHOM08		M8	30
HEHOM10		M10	40
HEHOM12		M12	50
HEHOM16		M16	65
HEHOM20		M20	80
HECLOM06	With collar	M6	25
HECLOM08		M8	30
HECLOM10		M10	40
HECLOM12		M12	50
HECLOM16		M16	65
HECLOM20		M20	80

3. Intended use 1:

Generic type:	Deformed expansion anchor for structural applications in non cracked concrete.
Base material:	Non cracked concrete C20/25 to C50/60 according to EN 206-1.
Material:	Carbon steel, ISO 4042 A2
Durability:	Dry internal conditions
Loading:	Static, quasi static loads
Fire resistance:	Not declared performance
Assumed working life:	50 years

Intended use 2:

Generic type:	Deformed expansion anchor for multiple use in non structural applications in concrete.
Base material:	Concrete C12/15 to C50/60 according to EN 206-1.
Material:	Carbon steel, ISO 4042 A2
Durability:	Dry internal conditions
Loading:	Static, quasi static loads
Fire resistance:	R120
Assumed working life:	50 years

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

5. Authorised representative: No applicable

6. System of assessment of performance: 1

7. Harmonised standard: No applicable

8. European technical assessment :

Tech. assessment body:	IETcc; Instituto Eduardo Torroja de ciencias de la construcción. Notified body 1219.
issued:	ETAs 14/0068 and 14/0135
on the basis of:	ETAG 001, parts 1, 3 and 6
performed:	Determination of product type, initial inspection of the manufacturing plant and continuous surveillance of FPC
under system:	1
and issued:	Certificates CE 1219-CPR-0078 and 1219-RPC-0079

9. Declared performances

Use for structural applications in non cracked concrete

Standard: ETAG 001 parts 1 and 4

Installation parameters			Performance					
			M6[2)]	M8[2)]	M10	M12	M16	M20
d_o	Nominal diameter of drill bit:	[mm]	8	10	12	15	20	25
D	Thread diameter	[mm]	M6	M8	M10	M12	M16	M20
d_f	Fixture clearance hole diameter:	[mm]	7	9	12	14	18	22
T_{inst}	Maximum installation torque:	[Nm]	4	11	17	38	60	100
$l_{s,min}$	Minimum screwing depth	[mm]	6	8	10	12	16	20
$l_{s,max}$	Maximum screwing depth	[mm]	10	13	17	21	27	34
h_{min}	Minimum thickness of concrete member:	[mm]	100	100	100	100	130	160
h_1	Depth of drilled hole:	[mm]	27	33	43	54	70	86
h_{nom}	Overall anchor embed. depth in the concrete:	[mm]	25	30	40	50	65	80
h_{ef}	Effective anchorage depth:	[mm]	25	30	40	50	65	80
s_{min}	Minimum allowable spacing:	[mm]	60	90	80	100	130	160
c_{min}	Minimum allowable distance:	[mm]	105	105	140	175	230	280

Characteristic values of resistance to tension loads of design method A			Performance					
			M6[2)]	M8[2)]	M10	M12	M16	M20
Tension loads: steel failure								
$N_{Rk,s}$	Tension steel char. resistance, steel class 4.6:	[kN]	8,0	14,6	23,2	33,7	62,8	98,0
γ_{Ms}	Partial safety factor: [1)]	[-]	2,0	2,0	2,0	2,0	2,0	2,0
$N_{Rk,s}$	Tension steel char. resistance, steel class 4.8:	[kN]	8,0	14,6	18,2	33,7	62,8	95,1
γ_{Ms}	Partial safety factor: [1)]	[-]	1,5	1,5	1,5	1,5	1,5	1,5
$N_{Rk,s}$	Tension steel char. resistance, steel class 5.6:	[kN]	10,1	18,3	18,2	42,2	78,5	122,5
γ_{Ms}	Partial safety factor: [1)]	[-]	2,0	2,0	1,5	2,0	2,0	2,0
$N_{Rk,s}$	Tension steel char. resistance, steel class 5.8:	[kN]	10,1	17,6	18,2	35,1	65,0	95,1
γ_{Ms}	Partial safety factor: [1)]	[-]	1,5	1,5	1,5	1,5	1,5	1,5
$N_{Rk,s}$	Tension steel char. resistance, steel class 6.8	[kN]	12,1	17,6	18,2	35,1	65,0	95,1
γ_{Ms}	Partial safety factor: [1)]	[-]	1,5	1,5	1,5	1,5	1,5	1,5
$N_{Rk,s}$	Tension steel char. resistance, steel class 8.8	[kN]	13,1	17,6	18,2	35,1	65,0	95,1
γ_{Ms}	Partial safety factor: [1)]	[-]	1,5	1,5	1,5	1,5	1,5	1,5
Tension loads: pull-out failure in concrete								
$N_{Rk,p,\ ucr}$	Tension characteristic resistance in C20/25 uncracked concrete:	[kN]	-- [3)]	-- [3)]	-- [3)]	-- [3)]	-- [3)]	-- [3)]
ψ_c	C30/37	[-]	1,02	1,22	1,15	1,15	1,22	1,19
ψ_c	C40/45	[-]	1,04	1,41	1,29	1,28	1,41	1,35
ψ_c	C50/60	[-]	1,05	1,55	1,37	1,37	1,55	1,46
γ_{Mp}	Partial safety factor: [1)]	[-]	1,8	1,8	2,1	2,1	2,1	2,1
Tension loads: concrete cone and splitting failure								
h_{ef}	Effective embedment depth:	[mm]	25	30	40	50	65	80
γ_{Mc}	Partial safety factor: [1)]	[-]	1,8	1,8	2,1	2,1	2,1	2,1
$s_{cr,N}$	Critical spacing:	[mm]	75	90	120	150	195	240
$c_{cr,N}$	Critical edge distance:	[mm]	38	45	60	75	98	120
$s_{cr,sp}$	Critical spacing (splitting):	[mm]	150	180	240	300	390	480
$c_{cr,sp}$	Critical edge distance (splitting):	[mm]	75	90	120	150	195	240
γ_{Msp}	Partial safety factor: [1)]	[-]	1,8	1,8	2,1	2,1	2,1	2,1

Displacements under tension loads			Performance					
			M6[2)]	M8[2)]	M10	M12	M16	M20
N	Service tension load in uncracked concrete C20/25 to C50/60:	[kN]	2,4	3,4	6,0	7,4	17,8	18,2
δ_{N0}	Short term displacement under tension loads:	[mm]	0,1	0,1	0,1	0,1	0,1	0,1
$\delta_{N\infty}$	Long term displacement under tension loads:	[mm]	0,3	0,3	0,3	0,3	0,3	0,3

Characteristic values of resistance to shear loads of design method A			Performance					
			M6[2)]	M8[2)]	M10	M12	M16	M20
Shear loads: steel failure without lever arm								
$V_{Rk,s}$	Shear steel char. resistance, steel class 4.6:	[kN]	4,0	7,3	11,6	16,8	31,4	49,0
γ_{Ms}	Partial safety factor: [1)]	[-]	1,67	1,67	1,67	1,67	1,67	1,67
$V_{Rk,s}$	Shear steel char. resistance, steel class 4.8:	[kN]	4,0	7,3	9,1	16,8	31,4	47,5
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$V_{Rk,s}$	Shear steel char. resistance, steel class 5.6	[kN]	5,0	9,1	9,1	21,1	39,2	61,2
γ_{Ms}	Partial safety factor: [1)]	[-]	1,67	1,67	1,25	1,67	1,67	1,67
$V_{Rk,s}$	Shear steel char. resistance, steel class 5.8	[kN]	5.0	8,8	9,1	17,5	32,5	47,5
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$V_{Rk,s}$	Shear steel char. resistance, steel class 6.8	[kN]	6,0	8,8	9,1	17,5	32,5	47,5
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$V_{Rk,s}$	Shear steel char. resistance, steel class 8.8:	[kN]	6,5	8,8	9,1	17,5	32,5	47,5
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
Shear loads: steel failure with lever arm								
$M^0_{Rk,s}$	Characteristic bending moment, steel class 4.6	[Nm]	6,1	15.0	29,9	52,4	133,3	259,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,67	1,67	1,67	1,67	1,67	1,67
$M^0_{Rk,s}$	Characteristic bending moment, steel class 4.8	[Nm]	6,1	15.0	29,9	52,4	133,3	259,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$M^0_{Rk,s}$	Characteristic bending moment, steel class 5.6	[Nm]	7,6	18,8	37,4	65,5	166,6	324,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,67	1,67	1,67	1,67	1,67	1,67
$M^0_{Rk,s}$	Characteristic bending moment, steel class 5.8	[Nm]	7,6	18,8	37,4	65,5	166,6	324,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$M^0_{Rk,s}$	Characteristic bending moment, steel class 6.8	[Nm]	9,2	22,5	44,9	78,7	199,9	389,7
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$M^0_{Rk,s}$	Characteristic bending moment, steel class 8.8	[Nm]	12,2	30,0	59,9	104,9	266,6	519,7
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
Shear loads: concrete pryout failure								
K	K factor:	[-]	1,0	1,0	1,0	1,0	2,0	2,0
γ_{Mpr}	Partial safety factor: [1)]	[-]	1,5	1,5	1,5	1,5	1,5	1,5
Shear loads: concrete edge failure								
l_f	Effective anchorage depth under shear loads:	[mm]	25	30	40	50	65	80
d_{nom}	Outside anchor diameter:	[mm]	8	10	12	15	20	25
γ_{Mc}	Partial safety factor: [1)]	[-]	1,5	1,5	1,5	1,5	1,5	1,5

Displacements under shear loads			Performance					
			M6[2)]	M8[2)]	M10	M12	M16	M20
V	Service shear load in uncracked concrete C20/25 to C50/60:	[kN]	3,8	5,0	5,2	10,1	18,6	27,2
δ_{V0}	Short term displacement under shear loads:	[mm]	2,4	2,4	2,4	1,3	1,0	1,0
$\delta_{V\infty}$	Long term displacement under shear loads:	[mm]	3,5	3,5	3,5	2,0	1,5	1,5

[1)] in absence of other national regulations
[2)] For application with statically indeterminate structural components only
[3)] Pull out value not decisive

Multiple use in non-structural applications in concrete

Standard: ETAG 001 parts 1 and 6 and TR020

Characteristic values of resistance to loads of design method B			Performance					
			M6	M8	M10	M12	M16	M20
All load directions								
F^0_{Rk}	Tension characteristic resistance in C12/15 concrete:	[kN]	1,5	3,0	4,0	6,0	9,0	16,0
F^0_{Rk}	Tension characteristic resistance in C20/25 to C50/60 concrete:	[kN]	2,0	3,0	5,0	7,5	12,0	20,0
γ_M	Partial safety factor: [1)]	[-]	1,8	1,8	2,1	2,1	2,1	2,1
$s_{cr,N}$	Characteristic spacing	[mm]	75	90	120	150	195	240
$c_{cr,N}$	Characteristic edge distance	[mm]	38	45	60	75	98	120
$s_{cr,sp}$	Characteristic spacing (splitting)	[mm]	50	60	80	100	130	160
$c_{cr,sp}$	Characteristic edge distance (splitting)	[mm]	75	90	120	150	195	240

Shear loads: steel failure with lever arm								
$M^0_{Rk,s}$	Characteristic bending moment, steel class 4.6	[Nm]	6,1	15.0	29,9	52,4	133,3	259,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,67	1,67	1,67	1,67	1,67	1,67
$M^0_{Rk,s}$	Characteristic bending moment, steel class 4.8	[Nm]	6,1	15.0	29,9	52,4	133,3	259,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$M^0_{Rk,s}$	Characteristic bending moment, steel class 5.6	[Nm]	7,6	18,8	37,4	65,5	166,6	324,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,67	1,67	1,67	1,67	1,67	1,67
$M^0_{Rk,s}$	Characteristic bending moment, steel class 5.8	[Nm]	7,6	18,8	37,4	65,5	166,6	324,8
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$M^0_{Rk,s}$	Characteristic bending moment, steel class 6.8	[Nm]	9,2	22,5	44,9	78,7	199,9	389,7
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25
$M^0_{Rk,s}$	Characteristic bending moment, steel class 8.8	[Nm]	12,2	30,0	59,9	104,9	266,6	519,7
γ_{Ms}	Partial safety factor: [1)]	[-]	1,25	1,25	1,25	1,25	1,25	1,25

[1)] in absence of other national regulations

Characteristic resistance under fire exposure in concrete C20/25 to C50/60 in any load direction for use in concrete				Performance					
				M6	M8	M10	M12	M16	M20
R30	Characteristic resistance $F^0_{Rk,fi30}$ [1)]		[kN]	--	0.4	0.9	1.7	3.1	4.9
R60	Characteristic resistance $F^0_{Rk,fi60}$ [1)]		[kN]	--	0.3	0.8	1.3	2.4	3.7
R90	Characteristic resistance $F^0_{Rk,fi90}$ [1)]		[kN]	--	0.3	0.6	1.1	2.0	3.2
R120	Characteristic resistance $F^0_{Rk,fi120}$ [1)]		[kN]	--	0.2	0.5	0.8	1.6	2.5
R30 to R120	Spacing	$s_{cr,fi}$	[mm]	--	120	160	200	260	320
	Edge distance	$c_{cr,fi}$	[mm]	--	60	80	100	130	160
	Reaction to fire			Class A1					

[1)] in absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi}$ =1.0 is recommended
Design under fire exposure is performed according to the design method given in TR 020. Under fire exposure usually cracked concrete is assumed. The design equations are given in TR 020, Section 2.2.1.
TR 020 covers design for fire exposure from one side. If fire attack is from more than one side, the design method may be taken if edge distance of the anchor is c ≥ 300

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, 15.03.2018