

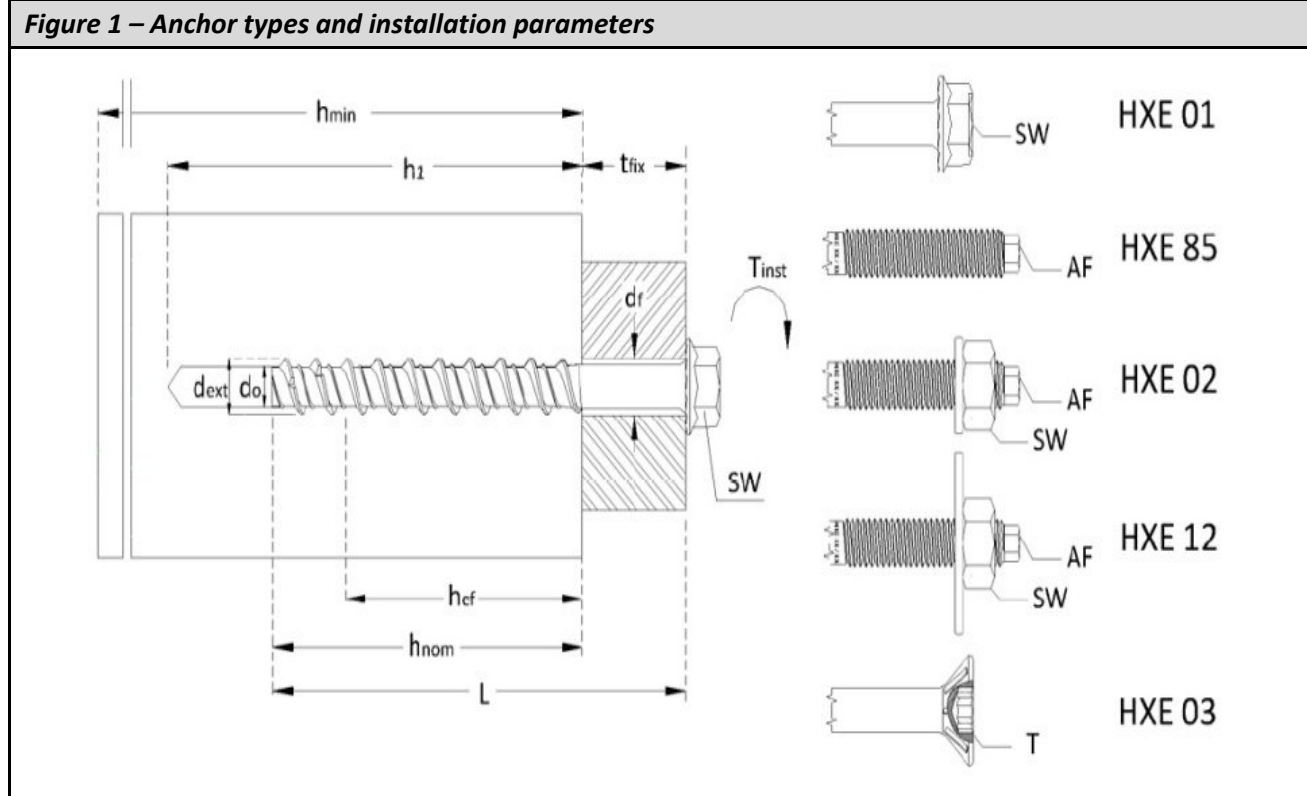
Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Item code: HXE01, HXE85, HXE02, HXE12, HXE03

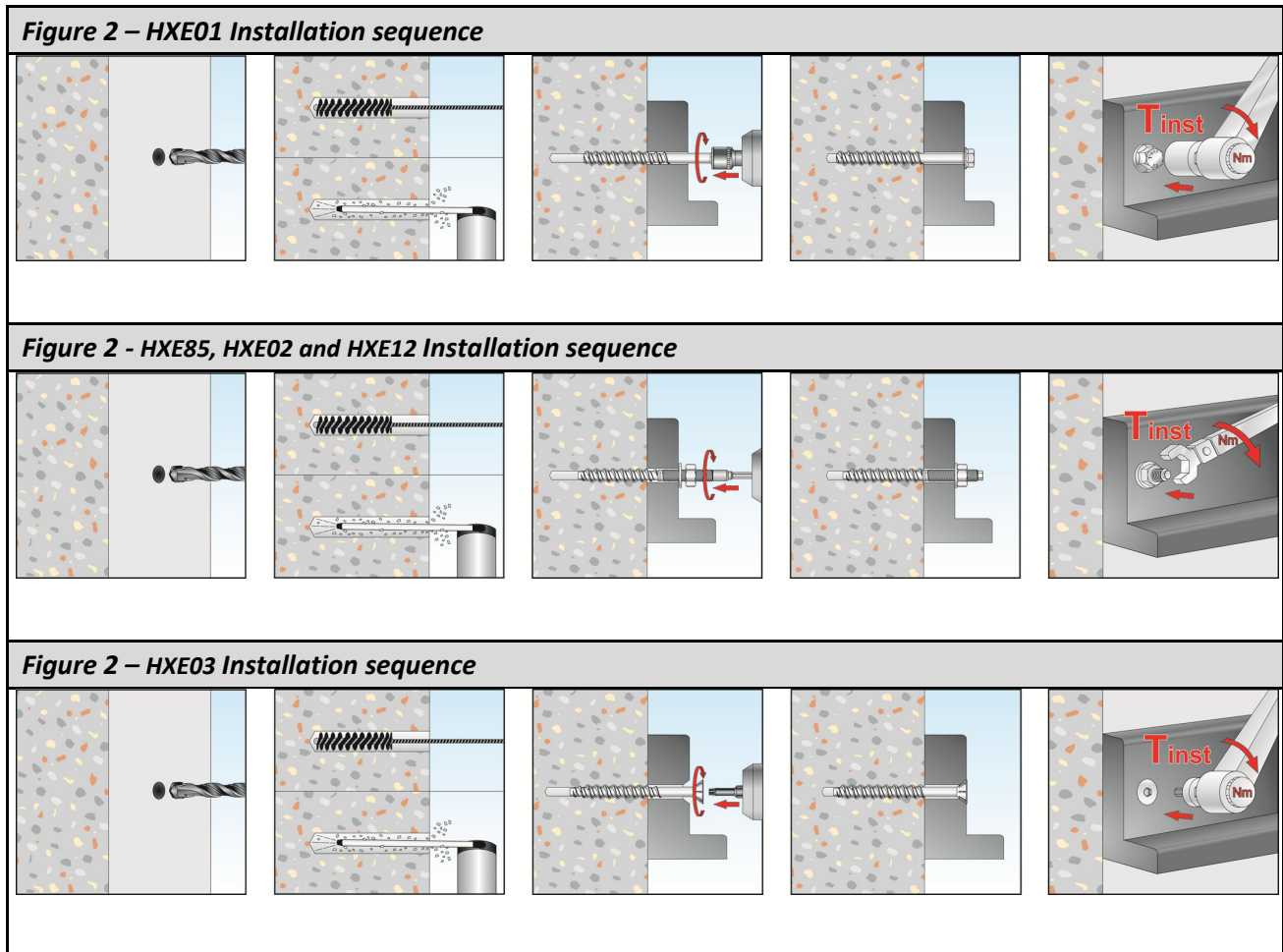
Manufacturer: Tecfi S.p.A. - S.S. Appia, km 193 - 81050 Pastorano (CE), Italy

Table 1 - Intended use	
Generic type:	Metal anchor for use in concrete, concrete screw
Base material:	Cracked and non-cracked concrete C20/25 to C50/60 acc. to EN 206:2000-12
Material:	Galvanised steel
Durability:	Dry internal conditions
Loading:	Static and quasi-static
Fire resistance:	R120
Fire reaction:	A1 according to 96/603/EC amended by 2000/605/EC
ETA:	ETA 11/0336, issued by DIBT
On the basis of:	Etag 001 part 1 and 3
Attestation of Conformity:	EC number 1109-CPD-0079, issued by IFBT
Under system:	2+



Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011



Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Table 2 - Declared Performances according to ETAG 001 part 1 and part 3					
Installation parameters					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Nominal diameter of the drill hole	d₀ [mm]	6	8	10	14
Effective anchorage depth	h_{ef} [mm]	48	56	64	85
Overall anchor embedment depth	h_{nom} [mm]	60	70	80	110
Minimum thickness of concrete member	h_{min} [mm]	100	110	130	170
Depth of drilled hole	h₁ [mm]	75	85	100	140
Installation torque moment	T_{inst} [Nm]	20	50	80	160
Outside diameter of anchor	d_{ext} [mm]	8	10	12	16
Wrench size (Only for HXE 01)	SW [mm]	10	13	15	21
Hexagonal shank size (Only for HXE02) – setting require an impact screwdriver	AF [mm]	5	7	8	-
Six lobe recess (Only for HXE03)	T	T30	T40	T50	-
Minimum allowable spacing	s_{min} [mm]	45	50	60	80
Minimum allowable edge distance	c_{min} [mm]	45	50	60	80
Steel failure to tension load					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Characteristic resistance to tension load	N_{rk,s} [kN]	20	35	50	95
Partial safety factor	γ_{Ms} [-]	1,5 ²⁾			
Pull-out failure to tension load					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Characteristic resistance to tension load in cracked concrete	N_{rk,p,cr} [kN]	4	7,5	9	16
Characteristic resistance to tension load in non-cracked concrete	N_{rk,p,ucr} [kN]	16	20	25	40
Partial safety factor	γ_{Mp} [-]	2,1 ²⁾³⁾	1,8 ^{2), 4)}	2,1 ^{2), 3)}	
Increasing factor for concrete C30/37	Ψ_c C30/37 [-]	1,22			
Increasing factor for concrete C40/50	Ψ_c C40/50 [-]	1,41			
Increasing factor for concrete C50/60	Ψ_c C50/60 [-]	1,55			

¹⁾ Only for HXE 01

²⁾ in absence of national regulations

³⁾ γ₂ = 1,4

⁴⁾ γ₂ = 1,2

Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Table 2 (cont.) - Declared Performances according to ETAG 001 part 1 and part 3					
Concrete cone failure and Splitting failure					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Effective anchorage depth	h_{ef} [mm]	48	56	64	85
Critical spacing	$s_{cr,N}$ [mm]	3 x h_{ef}			
Critical edge distance	$c_{cr,N}$ [mm]	1,5 x h_{ef}			
Critical spacing (splitting)	$s_{cr,sp}$ [mm]	160	175	195	255
Critical edge distance (splitting)	$c_{cr,sp}$ [mm]	80	85	95	130
Partial safety factor	γ_{Mp} [-]	2,1 ²⁾³⁾	1,8 ^{2), 4)}	2,1 ^{2), 3)}	
Steel failure to shear load					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Steel failure without lever arm	$V_{rk,s}$ [kN]	9,4	20,1	32,4	56,9
Steel failure with lever arm	$M_{rk,s}$ [Nm]	19	44	83	216
Partial safety factor	γ_{Ms} [-]	1,5 ²⁾			
Concrete pryout failure					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Factor in equation 5.6 of the guideline's Annex C	k [-]	1		2	
Partial safety factor	γ_{Mp} [-]	1,5 ^{2), 3)}			
Concrete edge failure					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Partial safety factor	γ_{Mc} [-]	1,5 ^{2), 3)}			
Effective external diameter of the anchor	d_{nom} [mm]	6	8	10	14
Effective anchorage length	h_{ef} [mm]	48	56	64	85
Displacements under tension loads					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Service tension load in cracked concrete C20/25	N_{cr} [kN]	1,90	4,17	4,29	5,44
Short term displacement under tension load in cracked concrete C20/25	$\delta_{NO,cr}$ [mm]	0,27	0,39	0,45	0,79
Long term displacement under tension load in cracked concrete C20/25	$\delta_{N\infty,cr}$ [mm]	0,53	0,77	0,97	1,05
Service tension load in non-cracked concrete C20/25	N_{ucr} [kN]	7,62	8,89	11,90	13,61
Short term displacement under tension load in non-cracked concrete C20/25	$\delta_{NO,ucr}$ [mm]	0,76	0,74	0,63	0,74
Long term displacement under tension load in non-cracked concrete C20/25	$\delta_{N\infty,ucr}$ [mm]	0,29	0,34	0,23	0,41

¹⁾ Only HXE 01

²⁾ in absence of national regulations

³⁾ $\gamma_2 = 1,0$

Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Table 2 (cont.) - Declared Performances according to ETAG 001 part 1 and part 3					
Displacements under shear loads					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Service tension load in cracked and non-cracked concrete C20/25	V [kN]	4,50	9,60	15,40	27,10
Short term displacement under shear load in cracked and non-cracked concrete C20/25	δ _{vo} [mm]	0,94	1,47	1,87	3,00
Long term displacement under shear load in cracked and non-cracked concrete C20/25	δ _{v∞} [mm]	1,41	2,20	2,81	4,50
Characteristic resistance to tension loads under fire exposure in cracked and non-cracked concrete					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Tension load - fire duration = 30 min - steel failure	N _{rk,s,fi,30} [kN]	0,28	0,73	1,51	2,85
Tension load - fire duration = 30 min - pull-out failure	N _{rk,p,fi,30} [kN]	1,00	1,87	2,25	4,00
Tension load - fire duration = 30 min - concrete cone failure	N ⁰ _{rk,c,fi,30} [kN]	2,87	4,23	5,90	12,0
Tension load - fire duration = 60 min - steel failure	N _{rk,s,fi,60} [kN]	0,25	0,64	1,13	2,14
Tension load - fire duration = 60 min - pull-out failure	N _{rk,p,fi,60} [kN]	1,00	1,87	2,25	4,00
Tension load - fire duration = 60 min - concrete cone failure	N ⁰ _{rk,c,fi,60} [kN]	2,87	4,23	5,90	12,0
Tension load - fire duration = 90 min - steel failure	N _{rk,s,fi,90} [kN]	0,19	0,49	0,98	1,85
Tension load - fire duration = 90 min - pull-out failure	N _{rk,p,fi,90} [kN]	1,00	1,87	2,25	4,00
Tension load - fire duration = 90 min - concrete cone failure	N ⁰ _{rk,c,fi,90} [kN]	2,87	4,23	5,90	12,0
Tension load - fire duration = 120 min - steel failure	N _{rk,s,fi,120} [kN]	0,14	0,39	0,75	1,43
Tension load - fire duration = 120 min - pull-out failure	N _{rk,p,fi,120} [kN]	0,8	1,5	1,8	3,2
Tension load - fire duration = 120 min - concrete cone failure	N ⁰ _{rk,c,fi,120} [kN]	2,30	3,80	4,72	9,59
Spacing and edge distance					
Size		Ø8	Ø10	Ø12	Ø16 ¹⁾
Spacing	s _{cr,N} [mm]	4 x h _{ef}			
	s _{min} [mm]	45	50	60	80
Edge distance	c _{cr,N} [mm]	2 x h _{ef}			
	c _{min} [mm]	c _{min} = 2 x h _{ef} ; if fire attack comes from more than one side, the edge distance of the anchor has to be ≥ 300mm or ≥ 2 x h _{ef}			

Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Table 2 (cont.) - Declared Performances according to ETAG 001 part 1 and part 3					
Characteristic resistance to shear loads under fire exposure in cracked and non-cracked concrete					
Size		Ø8	Ø10	Ø12	Ø16¹⁾
Shear load without lever arm - fire duration = 30 min	V_{rk,s,fi,30} [kN]	0,28	0,73	1,51	2,85
Shear load with lever arm - fire duration = 30 min	M_{rk,s,fi,30} [Nm]	0,24	0,87	2,22	5,76
Shear load without lever arm - fire duration = 60 min	V_{rk,s,fi,60} [kN]	0,25	0,64	1,13	2,14
Shear load with lever arm - fire duration = 60 min	M_{rk,s,fi,60} [Nm]	0,22	0,75	1,66	4,32
Shear load without lever arm - fire duration = 90 min	V_{rk,s,fi,90} [kN]	0,19	0,49	0,98	1,85
Shear load with lever arm - fire duration = 90 min	M_{rk,s,fi,90} [Nm]	0,17	0,58	1,44	3,74
Shear load without lever arm - fire duration = 120 min	V_{rk,s,fi,120} [kN]	0,14	0,39	0,75	1,43
Shear load with lever arm - fire duration = 120 min	M_{rk,s,fi,120} [Nm]	0,12	0,46	1,11	2,88
Concrete pry-out failure					
The characteristic resistance $V_{rk,cp,fi,ri}$ in concrete C20/25 to C50/60 is determined by: $V_{rk,c,fi,90} = k \times N_{rk,c,fi,90} (\leq R90)$ and $V_{rk,c,fi,120} = k \times N_{rk,c,fi,120}$ (up to R120)					
Concrete edge failure					
The characteristic resistance $V_{rk,cp,fi,ri}$ in concrete C20/25 to C50/60 is determined by: $V_{rk,c,fi(90)}^0 = 0,25 \times V_{rk,c}^0 (\leq R90)$ and $V_{rk,c,fi(120)}^0 = 0,20 \times V_{rk,c}^0$ (R120) with $V_{rk,c}^0$ as an initial value of the characteristic resistance of a single anchor in cracked concrete C20/25					

¹⁾ Only HXE 01

Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Table 3 – HXE01 range				
\emptyset/d_o	d_o [mm]	l [mm]	t_{fix} [mm]	Item code
$\emptyset 8/6$	6	80	20	HXE 01 08 080
		100	40	HXE 01 08 100
		120	60	HXE 01 08 120
		140	80	HXE 01 08 140
$\emptyset 10/8$	8	80	10	HXE 01 10 080
		100	30	HXE 01 10 100
		120	50	HXE 01 10 120
		140	70	HXE 01 10 140
		160	90	HXE 01 10 160
$\emptyset 12/10$	10	90	10	HXE 01 12 090
		110	30	HXE 01 12 110
		130	50	HXE 01 12 130
		150	70	HXE 01 12 150
		190	110	HXE 01 12 190
		210	130	HXE 01 12 210
		250	170	HXE 01 12 250
		290	210	HXE 01 12 290
$\emptyset 16/14$	14	130	20	HXE 01 16 130
		150	40	HXE 01 16 150
		180	70	HXE 01 16 170
Table 3 – HXE85, HXE02 and HXE12 ranges				
\emptyset/d_o	d_o [mm]	l [mm]	t_{fix} [mm]	Item code
$\emptyset 8/6$	6	90	10	HXE 85 08 090, HXE 02 08 090, HXE 12 08 090
		120	40	HXE 85 08 120, HXE 02 08 120, HXE 12 08 120
		160	80	HXE 85 08 140, HXE 02 08 140, HXE 12 08 140
$\emptyset 10/8$	8	105	10	HXE 85 10 105, HXE 02 10 105, HXE 12 10 105
		125	30	HXE 85 10 125, HXE 02 10 125, HXE 12 10 125
		195	100	HXE 85 10 195, HXE 02 10 195, HXE 12 10 195
$\emptyset 12/10$	10	118	10	HXE 85 12 118, HXE 02 12 118, HXE 12 12 118
		138	30	HXE 85 12 138, HXE 02 12 138, HXE 12 12 138
		208	100	HXE 85 12 208, HXE 02 12 208, HXE 12 12 208
		248	140	HXE 85 12 248, HXE 02 12 248, HXE 12 12 248

Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

<i>Table 3 (cont.) – HXE03 range</i>				
\varnothing/d_o	d_o [mm]	l [mm]	t_{fix} [mm]	Item code
$\varnothing 8/6$	6	70	10	HXE 03 08 070
		100	40	HXE 03 08 100
		140	80	HXE 03 08 140
$\varnothing 10/8$	8	80	10	HXE 03 10 080
		100	30	HXE 03 10 100
		160	90	HXE 03 10 160
$\varnothing 12/10$	10	100	20	HXE 03 12 100
		120	40	HXE 03 12 120
		180	100	HXE 03 12 180

Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

Figure 3 - Label

<ul style="list-style-type: none"> 1 Item Code 2 Descriptions 3 Picture 4 Anchor Diameter (d_{nom}) 5 Anchor Length (lt) 6 Maximum Thickness of fixture (t_{fix}) 7 Identification number of the notified production control certification body 8 Last two digits of the year in which the marking was first affixed 	<ul style="list-style-type: none"> 9 European standard applied 10 Intended use of the product as laid down in the European standard applied, level of performance declared 11 DoP Number 12 Link to DoP 13 Lot Number 14 Number of Pieces per Box 15 Fire resistance 16 Wrench Size/hexalobular socket number
--	---

The performances of the product identified by the above identification code are in conformity with the declared performance. This declaration of performance is issued under the sole responsibility of Tecfi S.p.A.

Signed for and behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
President Antonio Guarino	Pastorano, July 1 st 2013	