

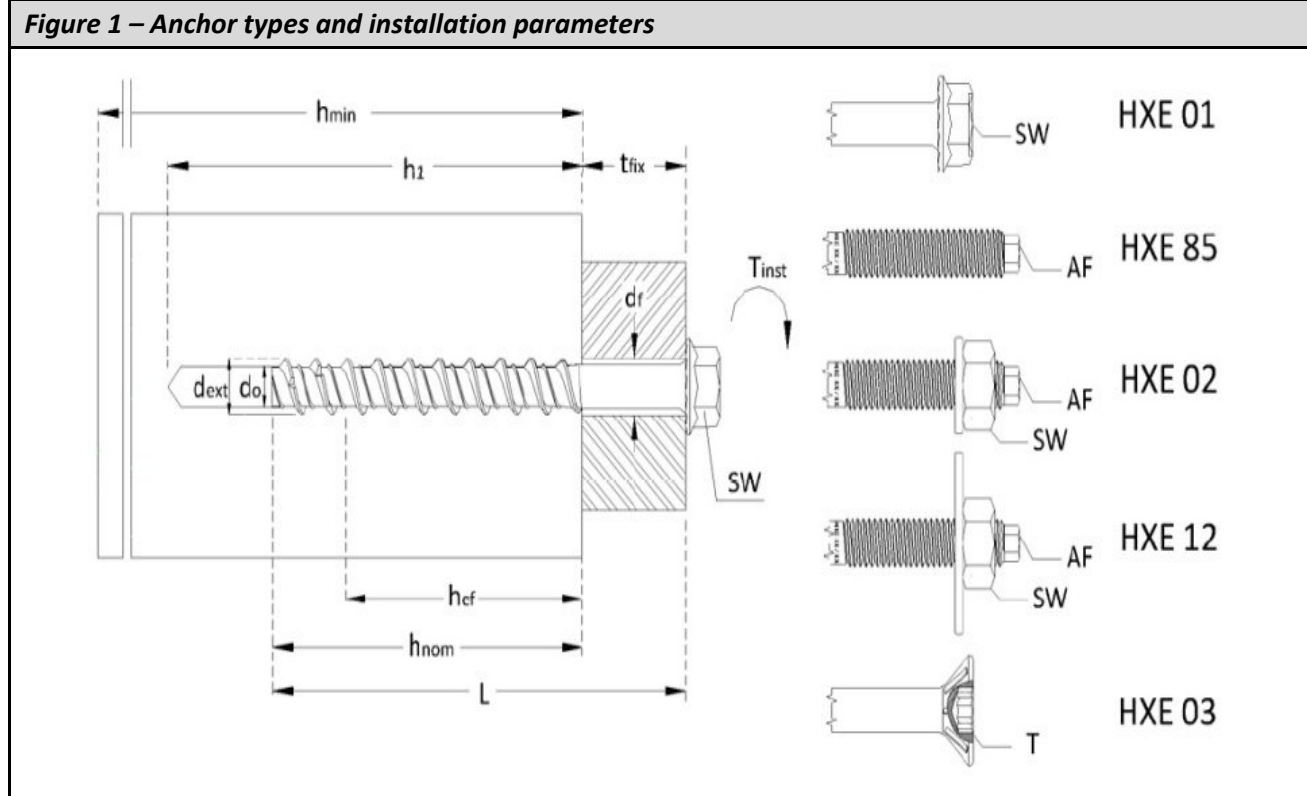
## Declaration of Performance Number 1109-CPD-0079

According to Regulation EU No 305/2011

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

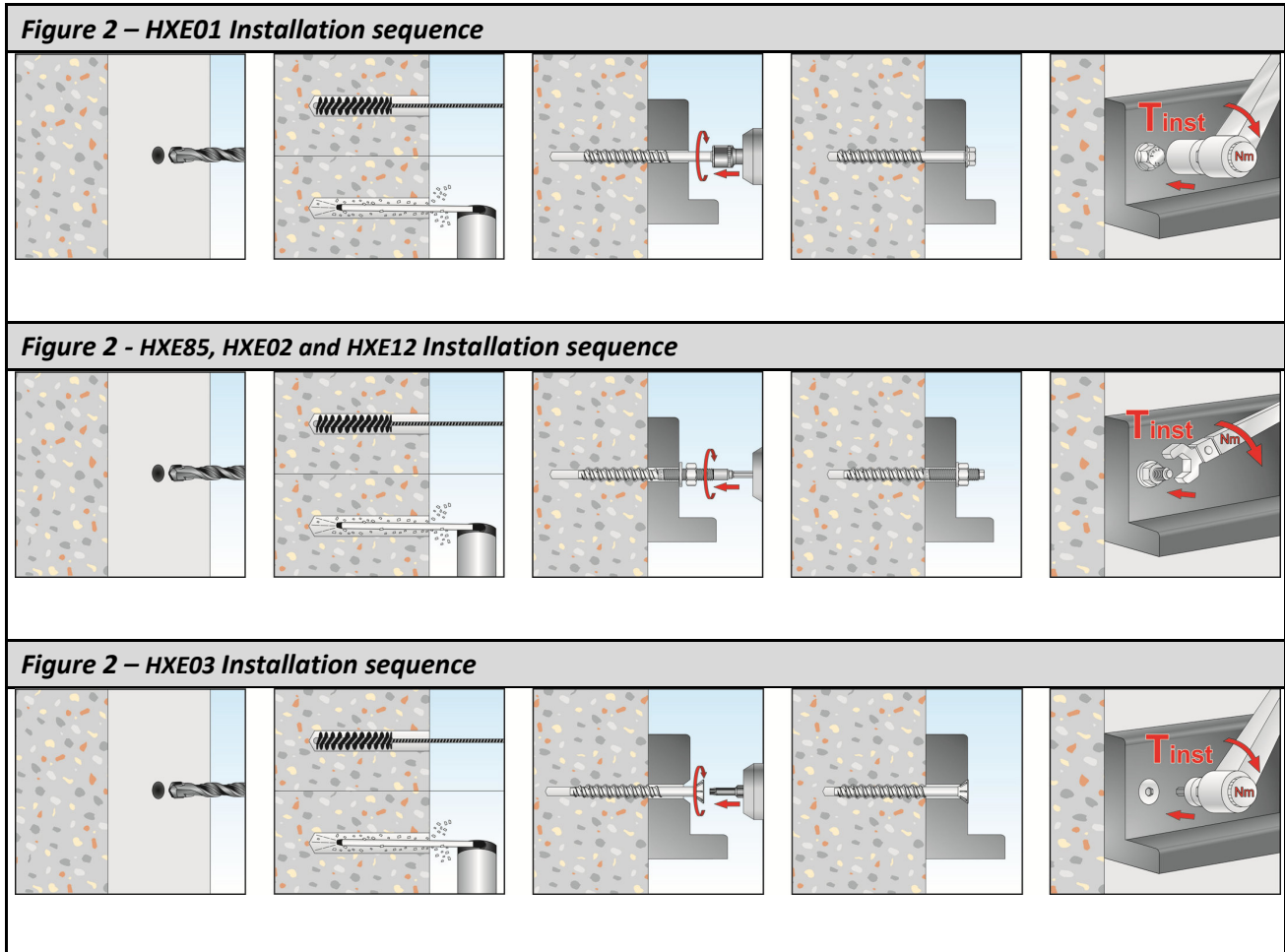
Manufacturer: Tecfi S.p.A. - S.S. Appia, km 193 - 81050 Pastorano (CE), Italy

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



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<b>Table 2 - Declared Performances according to ETAG 001 part 1 and part 3</b>					
<b>Installation parameters</b>					
<b>Size</b>		<b>Ø8</b>	<b>Ø10</b>	<b>Ø12</b>	<b>Ø16<sup>1)</sup></b>
Nominal diameter of the drill hole	<b>d<sub>0</sub> [mm]</b>	6	8	10	14
Effective anchorage depth	<b>h<sub>ef</sub> [mm]</b>	48	56	64	85
Overall anchor embedment depth	<b>h<sub>nom</sub> [mm]</b>	60	70	80	110
Minimum thickness of concrete member	<b>h<sub>min</sub> [mm]</b>	100	110	130	170
Depth of drilled hole	<b>h<sub>1</sub> [mm]</b>	75	85	100	140
Installation torque moment	<b>T<sub>inst</sub> [Nm]</b>	20	50	80	160
Outside diameter of anchor	<b>d<sub>ext</sub> [mm]</b>	8	10	12	16
Wrench size (Only for HXE 01)	<b>SW [mm]</b>	10	13	15	21
Hexagonal shank size (Only for HXE02) – setting require an impact screwdriver	<b>AF [mm]</b>	5	7	8	-
Six lobe recess (Only for HXE03)	<b>T</b>	T30	T40	T50	-
Minimum allowable spacing	<b>s<sub>min</sub> [mm]</b>	45	50	60	80
Minimum allowable edge distance	<b>c<sub>min</sub> [mm]</b>	45	50	60	80
<b>Steel failure to tension load</b>					
<b>Size</b>		<b>Ø8</b>	<b>Ø10</b>	<b>Ø12</b>	<b>Ø16<sup>1)</sup></b>
Characteristic resistance to tension load	<b>N<sub>rk,s</sub> [kN]</b>	20	35	50	95
Partial safety factor	<b>γ<sub>Ms</sub> [-]</b>	1,5 <sup>2)</sup>			
<b>Pull-out failure to tension load</b>					
<b>Size</b>		<b>Ø8</b>	<b>Ø10</b>	<b>Ø12</b>	<b>Ø16<sup>1)</sup></b>
Characteristic resistance to tension load in cracked concrete	<b>N<sub>rk,p,cr</sub> [kN]</b>	4	7,5	9	16
Characteristic resistance to tension load in non-cracked concrete	<b>N<sub>rk,p,ucr</sub> [kN]</b>	16	20	25	40
Partial safety factor	<b>γ<sub>Mp</sub> [-]</b>	2,1 <sup>2)3)</sup>	1,8 <sup>2), 4)</sup>	2,1 <sup>2), 3)</sup>	
Increasing factor for concrete C30/37	<b>Ψ<sub>c</sub> C30/37 [-]</b>	1,22			
Increasing factor for concrete C40/50	<b>Ψ<sub>c</sub> C40/50 [-]</b>	1,41			
Increasing factor for concrete C50/60	<b>Ψ<sub>c</sub> C50/60 [-]</b>	1,55			

<sup>1)</sup> Only for HXE 01

<sup>2)</sup> in absence of national regulations

<sup>3)</sup> γ<sub>2</sub> = 1,4

<sup>4)</sup> γ<sub>2</sub> = 1,2

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<b>Table 2 (cont.) - Declared Performances according to ETAG 001 part 1 and part 3</b>					
<b>Concrete cone failure and Splitting failure</b>					
Size		Ø8	Ø10	Ø12	Ø16 <sup>1)</sup>
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	$\gamma_{Mp}$ [-]	2,1 <sup>2)3)</sup>	1,8 <sup>2), 4)</sup>	2,1 <sup>2), 3)</sup>	
<b>Steel failure to shear load</b>					
Size		Ø8	Ø10	Ø12	Ø16 <sup>1)</sup>
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	$\gamma_{Ms}$ [-]	1,5 <sup>2)</sup>			
<b>Concrete pryout failure</b>					
Size		Ø8	Ø10	Ø12	Ø16 <sup>1)</sup>
Factor in equation 5.6 of the guideline's Annex C	$k$ [-]	1		2	
Partial safety factor	$\gamma_{Mp}$ [-]	1,5 <sup>2), 3)</sup>			
<b>Concrete edge failure</b>					
Size		Ø8	Ø10	Ø12	Ø16 <sup>1)</sup>
Partial safety factor	$\gamma_{Mc}$ [-]	1,5 <sup>2), 3)</sup>			
Effective external diameter of the anchor	$d_{nom}$ [mm]	6	8	10	14
Effective anchorage length	$h_{ef}$ [mm]	48	56	64	85
<b>Displacements under tension loads</b>					
Size		Ø8	Ø10	Ø12	Ø16 <sup>1)</sup>
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

<sup>1)</sup> Only HXE 01

<sup>2)</sup> in absence of national regulations

<sup>3)</sup>  $\gamma_2 = 1,0$

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

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<b>Table 2 (cont.) - Declared Performances according to ETAG 001 part 1 and part 3</b>					
<b>Characteristic resistance to shear loads under fire exposure in cracked and non-cracked concrete</b>					
<b>Size</b>		<b>Ø8</b>	<b>Ø10</b>	<b>Ø12</b>	<b>Ø16<sup>1)</sup></b>
Shear load without lever arm - fire duration = 30 min	<b>V<sub>rk,s,fi,30</sub> [kN]</b>	0,28	0,73	1,51	2,85
Shear load with lever arm - fire duration = 30 min	<b>M<sub>rk,s,fi,30</sub> [Nm]</b>	0,24	0,87	2,22	5,76
Shear load without lever arm - fire duration = 60 min	<b>V<sub>rk,s,fi,60</sub> [kN]</b>	0,25	0,64	1,13	2,14
Shear load with lever arm - fire duration = 60 min	<b>M<sub>rk,s,fi,60</sub> [Nm]</b>	0,22	0,75	1,66	4,32
Shear load without lever arm - fire duration = 90 min	<b>V<sub>rk,s,fi,90</sub> [kN]</b>	0,19	0,49	0,98	1,85
Shear load with lever arm - fire duration = 90 min	<b>M<sub>rk,s,fi,90</sub> [Nm]</b>	0,17	0,58	1,44	3,74
Shear load without lever arm - fire duration = 120 min	<b>V<sub>rk,s,fi,120</sub> [kN]</b>	0,14	0,39	0,75	1,43
Shear load with lever arm - fire duration = 120 min	<b>M<sub>rk,s,fi,120</sub> [Nm]</b>	0,12	0,46	1,11	2,88
<b>Concrete pry-out failure</b>					
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)					
<b>Concrete edge failure</b>					
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					

<sup>1)</sup> Only HXE 01

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<b>Table 3 – HXE01 range</b>				
$\emptyset/d_o$	$d_o$ [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
<b>Table 3 – HXE85, HXE02 and HXE12 ranges</b>				
$\emptyset/d_o$	$d_o$ [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



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<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



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**Figure 3 - Label**

**Art. HXE 01 12 110**

**Vite TER per calcestruzzo (filetto BREVETTATO), finitura speciale**

HWH concrete screw (PATENTED thread), special finishing

Vis à béton tête hexagonale (filetage breveté) en acier cimenté, zingué

Sechskant Betonschraube (Gewinde patentiert), einsatzgehartet, verzinkt

Tornillo para hormigón (rosca patentada), cabeza hexagonal y arandela estampada, acero cementado, cincado

Chave/AF: 15

$\varnothing 12 \times 110 / 30$   
d<sub>nom</sub> X L / t<sub>fix</sub>

CE 1109 Tecfi S.p.A. 11

HXE01 ETAG001, Part 1 and 3

Metal anchor for use in concrete, option 1

Essential characteristics given in the DoP No. 1109-CPD-0079

www.tecfi.it/DoP

Pz./Pcs. 25

Lotto/Lot: 12345

**Tecfi** Sistemi di Fissaggio **certezze**<sup>®</sup> per lavorare bene

Art. HXE 01 12 110

Chave/AF: 15

$\varnothing 12 \times 110 / 30$   
d<sub>nom</sub> X L / t<sub>fix</sub>

www.tecfi.it info@tecfi.it

1 Item Code	9 European standard applied
2 Descriptions	10 Intended use of the product as laid down in the European standard applied, level of performance declared
3 Picture	11 DoP Number
4 Anchor Diameter (d <sub>nom</sub> )	12 Link to DoP
5 Anchor Length (L)	13 Lot Number
6 Maximum Thickness of fixture (t <sub>fix</sub> )	14 Number of Pieces per Box
7 Identification number of the notified production control certification body	15 Fire resistance
8 Last two digits of the year in which the marking was first affixed	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 <sup>st</sup> 2013	