

Declaration of Performance Number 1020-CPD-010030554

According to Regulation EUNo 305/2011

KT2 - KW2

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



1 - Intended use	
Product-type:	Three-dimensional nailing plates
Anchor type:	Joist hangers
Technical description of the product:	see Table 2.a
Specification of the intended use in accordance with the applicable EAD:	The joist hangers are intended to be used in making end-grain to side-grain connections in load bearing timber structures, as a connection between a wood based joist and a solid timber or wood based header, where requirements for mechanical resistance and stability and safety in use in the sense of the Basic Requirements 1 and 4 of the Annex I of the Regulation EU No 305/2011 shall be fulfilled.
Base material:	<p>The joist hangers can be installed as connections between wood based members such as:</p> <ul style="list-style-type: none"> · Structural solid timber classified to C14-C40 according to EN 338 / EN 14081 · Glulam classified to GL24-GL36 according to EN 1194 / EN 14080 · LVL according to EN 14374 · Parallam PSL · Intrallam LSL · Duo- and Triobalken · Layered wood plates · Kreuzbalken with minimum thickness of 80 mm · I-beams with backer blocks on both sides of the web in the header and web stiffeners in the joist · Plywood according to EN 636 <p>However, the calculation methods are only allowed for a characteristic wood density of up to 400 kg/m³. Even though the wood based material may have a larger density, this must not be used in the formulas for the load-carrying capacities of the fasteners. For timber or wood based material with a lower characteristic density than 400 kg/m³ the load carrying capacities shall be reduced by the k_{dens} factor, given by:</p> $k_{dens} = \frac{(\rho_k)^{0,5}}{400}$ <p>Where ρ_k is the characteristic density of the timber in kg/m³.</p>
Installation:	<p>The header shall be restrained against rotation and be free from wane under the joist hanger. Joist hangers can be fastened to wood-based members by screws. There shall be screws in all holes or a partial screw pattern as prescribed in Table 3 can be used. The characteristic capacity of the joist hanger connection is calculated according to the manufacturer's technical documentation. The joist hanger connection is designed in accordance with Eurocode 5 or an appropriate national code. The gap between the end of the joist and the surface, where contact stresses can occur during loading shall be limited. This means that for joist hangers with outward flaps shall the gap between the surface of the end of the joist and that of the header be maximum 3 mm. The width of the joist shall be at least the penetration length of the screws, for full screw pattern and partial screw pattern without staggering the screws in the joist. For partial screw pattern with staggered screws in the joist the width shall be at least the penetration length of the screws. The cross section of the joist at the joist hanger connection shall have sharp edges at the lower side against the bottom plate, i.e. it shall be without wane. The cross section of the header shall have a plane surface against the whole joist hanger. The width BJ of the joist shall correspond to that of the joist hanger. BJ shall not be smaller than B-3 mm, where B is the inner width of the joist hanger. The depth of the joist shall be so large that the top of the joist is at least 20 mm above the upper screw in the joist. Screws to be used shall have a diameter, which fits the holes of the joist hangers. In addition the following requirements apply to the joist hanger type KW:</p>

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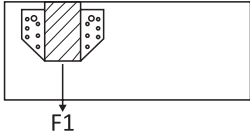
According to Regulation EUNo 305/2011

KT2 - KW2

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1 - Intended use

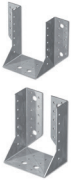
<p>>>></p>	<ul style="list-style-type: none"> · The number of screws in the joist shall be at least twice the number of screws in the header; · The screws in the joist shall be evenly distributed over the screwing plate; · The screws nearest top the joist is utilized first; · The requirements for the screw distance in direction of the fibres shall be fulfilled; · The load bearing capacities of the brackets has been determined based on the use of connector screws 5,0 mm (outer thread diameter) x 40mm or 30mm (thread length) in accordance with the EN 14592; · The shape of the screw directly under the head shall be in the form of a truncated cone with a diameter under the screw head which exceeds the hole diameter; · 5,0 mm threaded screws with a truncated cone below the head are used as fasteners, which are particularly suitable for screwed steel-to-timber connections. The specific shape below the head causes a clamping of screws in the steel plate. The joist hangers are mounted using either full or half screw pattern. · No performance has been determined in relation to ductility of a joint under cyclic testing. The contribution to the performance of structures in seismic zones, therefore, has not been assessed. No performance has been determined in relation to the joint's stiffness properties to be used for the analysis of the serviceability limit state.
<p>Loading:</p>	<p>It is assumed that the force acting on the joist hanger connection is F1 as shown in the figure below. The force shall act in the middle of the joist hanger.</p>  <p>It is assumed that the header is prevented from rotating. Similar it is assumed that the concrete structure or the steel member to which the joist hanger is bolted does not rotate.</p>
<p>Durability:</p>	<p>The joist hangers are intended for use for connections subject to static or quasi static loading. The zinc-coated hangers are for use in timber structures subject to dry, internal conditions defined by the service classes 1 and 2 of EN 1995-1-1:2004, (Eurocode 5). The assumed intended working life of the joist hangers for the intended use is 50 years, provided that they are subject to appropriate use and maintenance. The information on the working life should not be regarded as a guarantee provided by the manufacturer or ETA-Danmark A/S. An "assumed intended working life" means that it is expected that, when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements.</p>
<p>Resistance to fire:</p>	<p>NPD</p>
<p>Reaction to fire:</p>	<p>The anchor is classified A1 according to EC Decision 96/603/EC.</p>
<p>European Assessment Document:</p>	<p>ETAG 015 used as EAD according to Article 66(3) of the Regulation (EU) No 305/2011.</p>
<p>European Technical Assessment:</p>	<p>ETA 12/0237</p>
<p>Technical Assessment Body:</p>	<p>ETA-Danmark A/S, Kollegievej 6, DK-2920 Charlottenlund, Danmark</p>
<p>Design methods:</p>	<p>The characteristic capacities of the joist hangers are determined by calculation as described in the EOTA Guideline 015 clause 5.1.2. They should be used for designs in accordance with Eurocode 5 or a similar national Timber Code.</p>
<p>Assessment and Verification of Constancy of Performance:</p>	<p>EC Certificate No. 1020-CPD-010030554</p>
<p>Notified Body:</p>	<p>Technický A Zkušební Ústav Stavební Praha, S.p. Prosecká 76/32, 180 00, Praha Czech Republic</p>
<p>Under the system:</p>	<p>2+</p>

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2 - Components

Table 2.a - KT and KW 2

Component	Description
Three-dimensional nailing plate with outward flaps (KT2)	The joist hanger have a zinc coating weight of min Z275. The steel employed is DX51D + Z275 according to EN 10327:2004.
Three-dimensional nailing plate with inward flaps (KW2)	

Table 2.b – Tecfi TM screws

Screw type	Nail and screw size (mm)		
	Diameter	Length	Finish
Tecfi TM Connector screw according to EN 14592	5	30 and 40	Electroplated zinc

3 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KT20 40 110		
KT20 50 105		
KT20 60 100		
KT20 64 098		

Connectors		Tecfi TM1105030	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	22	Permanent	10,2
		Long-term	11,9
		Medium-term	13,6
		Short-term	15,3
		Instantaneous	18,7
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k _{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	12	Permanent	5,8
		Long-term	6,8
		Medium-term	7,7
		Short-term	8,7
		Instantaneous	10,6
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k _{mod} "			

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4 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KT20 50 135		
KT20 60 130		
KT20 70 125		
KT20 76 122		
KT20 80 120		
KT20 90 115		
KT21 00 110		

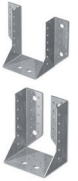
Connectors		Tecfi TM1105030	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	28	Permanent	12,0
		Long-term	14,0
		Medium-term	16,0
		Short-term	18,0
		Instantaneous	22,0
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	16	Permanent	7,5
		Long-term	8,7
		Medium-term	10,0
		Short-term	11,2
		Instantaneous	13,7
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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5 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KT20 50 165		
KT20 60 160		
KT20 70 155		
KT20 80 150		
KT20 90 145		
KT20 90 115		
KT21 00 140		

Connectors		Tecfi TM11050340	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	34	Permanent	13,3
		Long-term	15,5
		Medium-term	17,7
		Short-term	19,9
		Instantaneous	24,3
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	18	Permanent	8,0
		Long-term	9,4
		Medium-term	10,7
		Short-term	12,0
		Instantaneous	14,7
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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6 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KT20 80 180		
KT21 20 160		

Connectors		Tecfi TM1105040	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	40	Permanent	16,5
		Long-term	19,2
		Medium-term	21,9
		Short-term	24,7
		Instantaneous	30,2
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	22	Permanent	10,4
		Long-term	12,2
		Medium-term	13,9
		Short-term	15,6
		Instantaneous	19,1
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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7 - Prestazioni dichiarate in accordo all' ETAG 015

Codici articolo	CONFIGURAZIONE COMPLETA	CONFIGURAZIONE PARZIALE
KT21 20 190		
KT21 40 180		

Connectors		Tecfi TM1105040	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	46	Permanent	17,1
		Long-term	19,9
		Medium-term	22,8
		Short-term	25,6
		Instantaneous	31,3
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	24	Permanent	11,6
		Long-term	13,5
		Medium-term	15,5
		Short-term	17,4
		Instantaneous	21,3
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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8 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KW20 80 120		
KW20 90 115		
KW21 00 110		

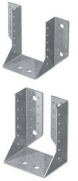
Connectors		Tecfi TM1105040	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	28	Permanent	12,4
		Long-term	14,5
		Medium-term	16,6
		Short-term	18,7
		Instantaneous	22,8
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	16	Permanent	7,2
		Long-term	8,5
		Medium-term	9,7
		Short-term	10,9
		Instantaneous	13,3
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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9 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KW20 80 150		
KW20 90 145		
KW21 00 140		

Connectors		Tecfi TM1105040	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	34	Permanent	15,0
		Long-term	17,5
		Medium-term	20,0
		Short-term	22,5
		Instantaneous	27,5
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	18	Permanent	8,0
		Long-term	9,4
		Medium-term	10,7
		Short-term	12,0
		Instantaneous	14,7
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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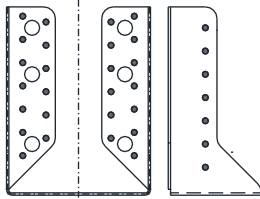
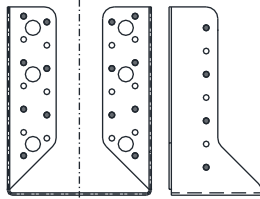
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10 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KW21 20160		

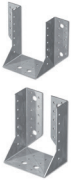
Connectors		Tecfi TM1105040	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	40	Permanent	16,3
		Long-term	19,0
		Medium-term	21,7
		Short-term	24,4
		Instantaneous	29,9
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	22	Permanent	9,9
		Long-term	11,6
		Medium-term	13,2
		Short-term	14,9
		Instantaneous	18,2
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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11 - Declared performances according to ETAG 015

Item codes	FULL SCREW PATTERN	PARTIAL SCREW PATTERN
KW21 20 190		
KW21 40 180		

Connectors		Tecfi TM1105040	
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Full screw pattern	46	Permanent	17,1
		Long-term	19,9
		Medium-term	22,8
		Short-term	25,6
		Instantaneous	31,3
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			
Configuration	Number of connectors	Load duration (EC5 §2.3.1.2)	F [kN]
Partial screw pattern	24	Permanent	10,6
		Long-term	12,4
		Medium-term	14,1
		Short-term	15,9
		Instantaneous	19,4
		Characteristic values	
The values have been assessed in accordance with EC5 Table 3.1 "Values of k_{mod} "			

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12 - Item codes KT2

Item codes	Cross section area of the beam
KT 20 40 110	40x110 [mm]
KT 20 50 105	50x105 [mm]
KT 20 50 135	50x135 [mm]
KT 20 50 165	50x165 [mm]
KT 20 60 100	60x100 [mm]
KT 20 60 130	60x130 [mm]
KT 20 60 160	60x160 [mm]
KT 20 64 098	64x98 [mm]
KT 20 70 125	70x125 [mm]
KT 20 70 155	70x155 [mm]
KT 20 76 122	76x122 [mm]
KT 20 80 120	80x120 [mm]
KT 20 80 150	80x150 [mm]
KT 20 80 180	80x180 [mm]
KT 20 90 115	90x115 [mm]
KT 20 90 145	90x145 [mm]
KT 21 00 110	100x110 [mm]
KT 21 00 140	100x140 [mm]
KT 21 20 160	120x160 [mm]
KT 21 20 190	120x190 [mm]
KT 21 40 180	140x180 [mm]

12.a - Item codes KW2

Item codes	Cross section area of the beam
KW 20 80 120	80x120 [mm]
KW 20 80 150	80x150 [mm]
KW 20 90 115	90x115 [mm]
KW 20 90 145	90x145 [mm]
KW 21 00 110	100x110 [mm]
KW 21 00 140	100x140 [mm]
KW 21 20 160	120x160 [mm]
KW 21 20 190	120x190 [mm]
KW 21 40 180	140x180 [mm]

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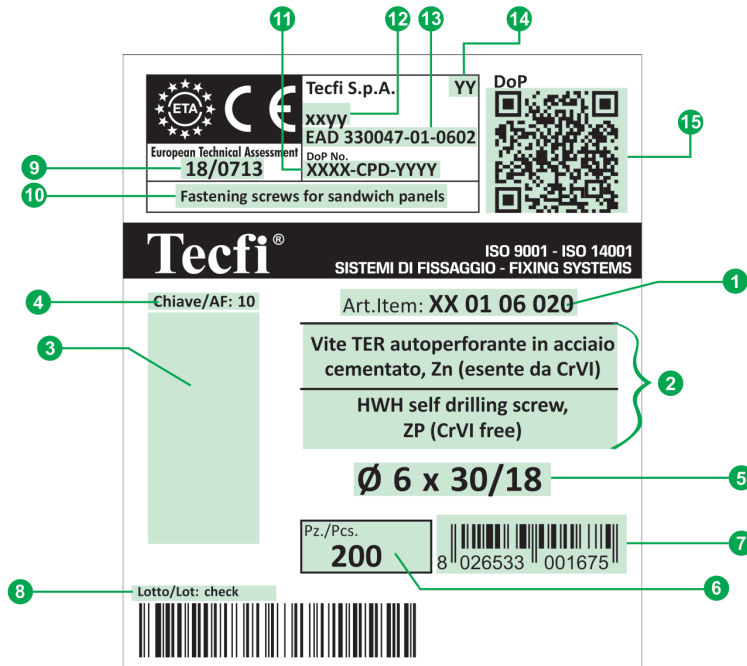
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13 - Label



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| <ul style="list-style-type: none"> 1 Codice articolo / Item Code 2 Descrizioni / Descriptions 3 Immagine / Picture 4 Informazione extra / extra information 5 Misura / Size 6 Numero di pezzi per scatola / Number of Pieces per Box 7 Codice EAN 13 / EAN 13 barcode 8 Lotto / Lot Number 9 Numero di ETA / ETA Number | <ul style="list-style-type: none"> 10 Uso del prodotto previsto dallo standard Europeo applicato, livello di prestazione dichiarato / Intended use of the product as laid down in the European standard applied, level of performance declared 11 Numero di DoP / DoP Number 12 Gamma di prodotto / Product range 13 Specifica tecnica armonizzata / European Technical Specification 14 Le ultime due cifre dell'anno in cui il marchio è stato affisso per la prima volta / Last two digits of the year in which the marking was first affixed 15 Link al DoP (tramite QR code) / Link to DoP (by QR code) |
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The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
President Antonio Guarino	Pastorano, July 5 th 2017	