EN

DECLARATION OF PERFORMANCE

according to Annex III of the Regulation (EU) Nr. 305/2011 (Construction Products Regulation)

Hilti powder-actuated fastener X-ENP2K-20 L15 (MX)
No. Hilti-DX-DoP-003

1. Unique identification code of the product-type: Hilti powder-actuated fasteners X-ENP2K-20 L15, X-ENP2K-20 L15 MX in combination with Hilti powder-actuated fastening tool DX 76 PTR

2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4): Type and lot number are displayed on the packaging

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:

Intended use	Fastening of steel sheeting or other thin gauge steel members to steel members
Steel Sheeting	≥ S280 acc. to EN 10346 Single layer thickness: 0.75 to 1.0 mm for base metal thickness less than 4 mm, 0.75 to 1.5 mm for base metal thickness ≥ 4 mm and ≤ 6 mm Maximum multiple layer thickness: see Table 1, 2 and 3
Base material	Structural steel S235, S275, S355 acc. to EN 10025-2 Minimum thickness: 3 mm (specific details, see Annex B3 of ETA-13/0172) Maximum thickness: 6 mm
Environmental condition	Connections must not be exposed to external weather or moist atmospheres
Loading	Predominantly static (e.g. wind loading)

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

Hilti Aktiengesellschaft, Business Unit Direct Fastening, 9494 Schaan, Fürstentum Liechtenstein

5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2): n.a.

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V: System 2+

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard: n.a.

8. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued:

DIBt, Deutsches Institut für Bautechnik issued ETA-13/0172 on the basis of EAD 330153-00-0602. The notified body MPA-Stuttgart 0672 performed third party tasks under system 2+ and issued the certificate of conformity of the factory production control 0672-CPR-0302.

9. Declared performance:

Essential characteristics	Performance
Tension resistance of connection	See Table 1, 2 and 3
Shear resistance of connection	See Table 1, 2 and 3
Design resistance in case of combined tension and shear forces (interaction)	Linear interaction formula according to EN 1993-1-3:2006 + AC:2009, section 8.3 (8)
Check of deformation capacity in case of constraining forces due to temperature	For the type of connection (a, b, c, d) listed in Table 1, 2 and 3 and for the fastener patterns given in Table 4, it is not necessary to take the effect of constraints due to temperature into account (applicable for steel grades S280 to S350 in accordance with EN 10346:2015)
Determination and check of application limits	Base material structural steel S235, S275, S355 according to EN 10025-2 Minimum thickness: 3 mm (specific details, see Annex B3 of ETA-13/0172), Maximum thickness: 6 mm
Reaction to fire	Class A1
Resistance to fire	The part of the structure in which the powder-actuated fasteners X-ENP2K-20 L15 are intended to be installed shall be tested, using the test method relevant for the corresponding fire resistance class, in order to be classified according to the appropriate part of EN 13501.
Durability	The intended use only comprises fasteners and connections which are not directly exposed to external weather conditions or moist atmospheres.

Table 1

Characteristic shear and tension resistance V_{Rk} and N_{Rk} of connection: Base material thickness 3 mm ≤ t_{II} < 4 mm				
Sheeting thickness t_I [mm]	Shear V_{Rk} [kN]	Tension N_{Rk} [kN]	Types of connection	Consideration of effect of repeated wind loading
0.75	4.7	6.0	a,c	α_{cycl} = 1.0 with $N_{Rd} = \alpha_{cycl} \cdot N_{Rk} / \gamma_M$
0.88	5.4	6.0	a,c	
1.00	6.0	6.0	a,c	

Table 2

Characteristic shear and tension resistance V_{Rk} and N_{Rk} of connection: Base material thickness 4 mm ≤ t_{II} < 5 mm				
Sheeting thickness t_I [mm]	Shear V_{Rk} [kN]	Tension N_{Rk} [kN]	Types of connection	Consideration of effect of repeated wind loading
0.75	4.7	6.3	a,b,c,d	α_{cycl} = 1.0 with $N_{Rd} = \alpha_{cycl} \cdot N_{Rk} / \gamma_M$
0.88	5.4	7.2	a,c,d	
1.00	6.0	8.0	a,c,d	
1.13	7.0	8.4	a,c	
1.25	8.0	8.8	a,c	
1.50	8.6	8.8	a	

Table 3

Characteristic shear and tension resistance V_{Rk} and N_{Rk} of connection: Base material thickness 5 mm ≤ t_{II} ≤ 6 mm				
Sheeting thickness t_I [mm]	Shear V_{Rk} [kN]	Tension N_{Rk} [kN]	Types of connection	Consideration of effect of repeated wind loading
0.75	4.7	6.3	a,b,c,d	α_{cycl} = 1.0 with $N_{Rd} = \alpha_{cycl} \cdot N_{Rk} / \gamma_M$
0.88	5.4	7.2	a,(b)*,c,d	
1.00	6.0	8.0	a,(b)*,c,d	
1.13	7.0	8.4	a,c	
1.25	8.0	8.8	a,c	
1.50	8.6	8.8	a	

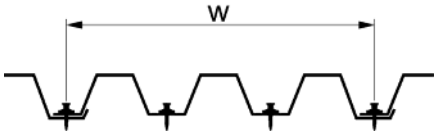
* Fastening type (b) covered for 5 mm ≤ t_{II} < 6 mm, if N_{Rk} is reduced to 6.6 kN
Fastening type (b) fully covered for t_{II} = 6 mm

Table 4

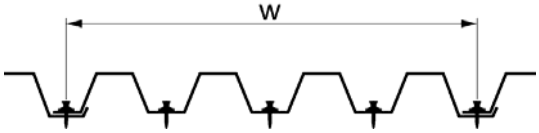
Characteristic tension resistances n_{Rk} [kN/m] and shear resistances v_{Rk} [kN/m] per unit length, taking the effect of thermal constraints into account

with: N_{Rk} and V_{Rk} according to Table 1, 2 or 3 (depending on base material thickness t_{II})
w … width of the panel sheet

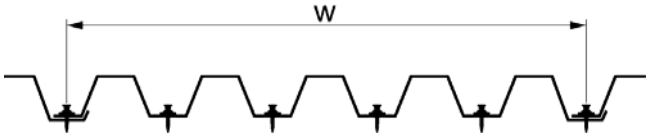
Remark: The same characteristic resistances can also be applied along supports at end-overlaps, if connection Type "d" is not covered in Table 1, 2 or 3



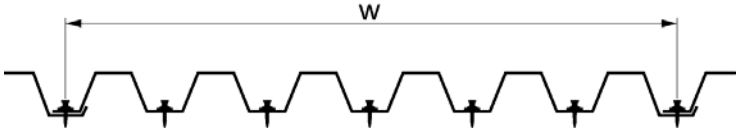
$n_{Rk} = 0.9 \cdot 2 \cdot N_{Rk} / w$ $v_{Rk} = 2 \cdot V_{Rk} / w$



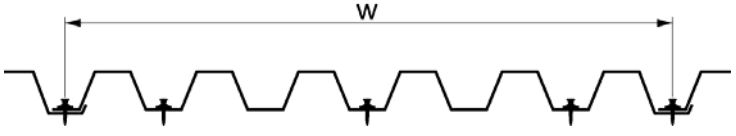
$n_{Rk} = 0.9 \cdot 3 \cdot N_{Rk} / w$ $v_{Rk} = 3 \cdot V_{Rk} / w$



$n_{Rk} = 0.9 \cdot 4 \cdot N_{Rk} / w$ $v_{Rk} = 4 \cdot V_{Rk} / w$



$n_{Rk} = 0.9 \cdot 5 \cdot N_{Rk} / w$ $v_{Rk} = 5 \cdot V_{Rk} / w$



$n_{Rk} = 3 \cdot N_{Rk} / w$ $v_{Rk} = 3 \cdot V_{Rk} / w$

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 for and on behalf of the manufacturer by:

Norbert Wohlwend
Head of Quality Direct Fastening

Hilti Aktiengesellschaft, Schaan: June 1, 2018