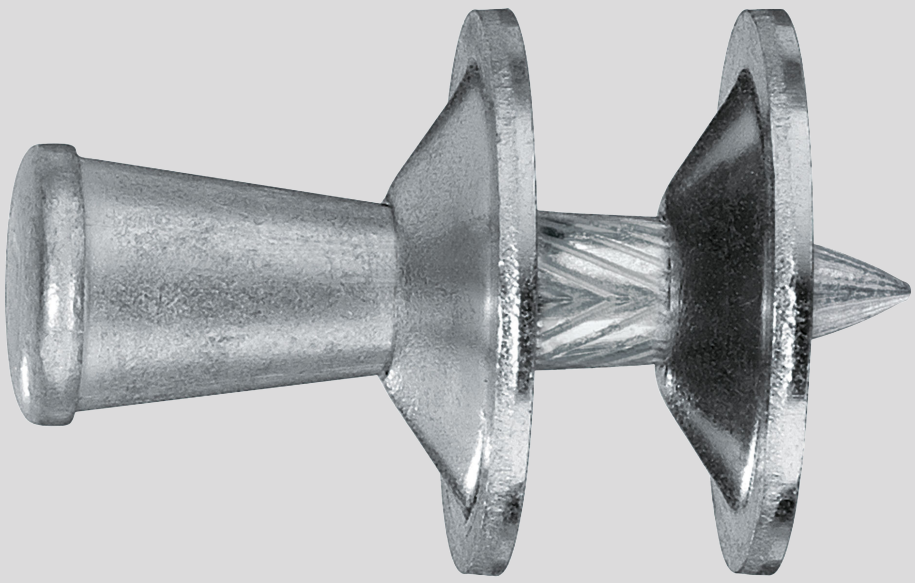
X-ENP-19

Metal deck fasteners

Data Sheet



Feb 26 2026

CONTENTS

Document ID: 7bb1a847-7ca4-c249-b7c4-f3c4b3b17a90

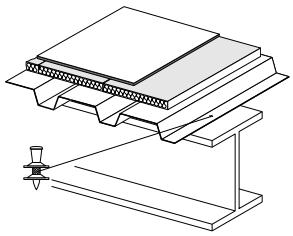
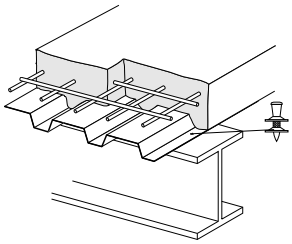
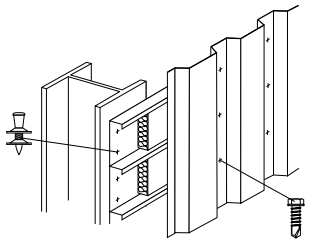
1 PRODUCT INFORMATION

1.1 Product description

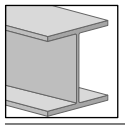
Designation	Features
X-ENP-19 L15 	• A much faster and safer fastening system compared to welding • Fully knurled tip provides high holding capacity • High application limits – can be used on steel with a thickness of at least 6 mm (1/4") • Proven system and has several worldwide approvals for siding and decking • No predrilling required, even on thick steel
X-ENP-19 L15 MX 	
X-ENP-19 L15 MXR 	

2 INTENDED USE

2.1 Application examples

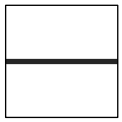
		
Metal roof decking on steel	Metal floor decking on steel	Metal siding on steel

2.2 Base materials



Steel

2.3 Load conditions



Static / quasi-static

2.4 Environmental conditions

Dry indoor

- Intended use only for fastenings not directly exposed to external weather or moist conditions.
- Fasteners can be used for exterior applications by using SDK2 or PDK2 sealing caps.
- Exposure to exterior weather conditions during construction phase shall not exceed 180 days.
- For more details, please refer to the Hilti Corrosion Handbook.

3 APPROVALS AND REFERENCE DOCUMENTS

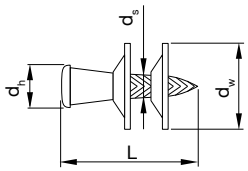
3.1 Approvals and certificates

Authority	Approval/Certificate number
American Bureau of Shipping (ABS)	ABS 21-2146146-PDA
Deutsches Institut für Bautechnik (DIBt)	ETA-04/0101
FM Approvals	3029102
FM Approvals	3054498
International Code Council - Evaluation Service (ICC-ES)	ESR-1663
International Code Council - Evaluation Service (ICC-ES)	ESR-2197
International Code Council - Evaluation Service (ICC-ES)	ESR-2776
Lloyd's Register (LR)	LR 2410589TA
Ministry of Land, Infrastructure, Transport and Tourism (MLIT)	MLIT 2005
Underwriter Laboratories (UL)	R13203

- Not all information presented in this product data sheet might be subject to approval/certificate content.
- Information presented in this product data sheet might also be based on Hilti Technical Data.
- Please refer to approval/certificate for further information.

4 PRODUCT DATA

4.1 Dimensions

Technical drawing	Fastener	Length	Shank diameter	Head diameter	Steel washer diameter
		L [mm]	d_s [mm]	d_h [mm]	d_w [mm]
	X-ENP-19 L15	23.8	4.5	7.4	15
	X-ENP-19 L15 MX	23.8	4.5	7.4	15
	X-ENP-19 L15 MXR	23.8	4.5	7.4	15

4.2 Material properties for carbon steel parts

Fastener	Component part	Material	Coating	Coating thickness	Hardness	Corrosivity category
				t_c [µm]	[HRC]	
X-ENP-19	Nail	Carbon steel	Zinc coated	8–16	58	C1

- Corrosivity category of the atmosphere according to EN ISO 9223.

4.3 Material properties for plastic parts

Fastener	Component part	Material	Color	Other properties
X-ENP-19 L15 MX	Magazine strip	Polypropylene (PP)	White	Halogen free, LABS free, Silicone free
X-ENP-19 L15 MXR	Magazine strip	High Density Polyethylene (HDPE)	Grey	Halogen free, LABS free, Silicone free

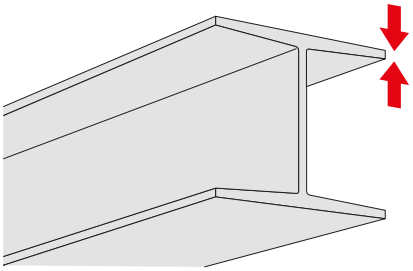
5 SYSTEM RECOMMENDATION

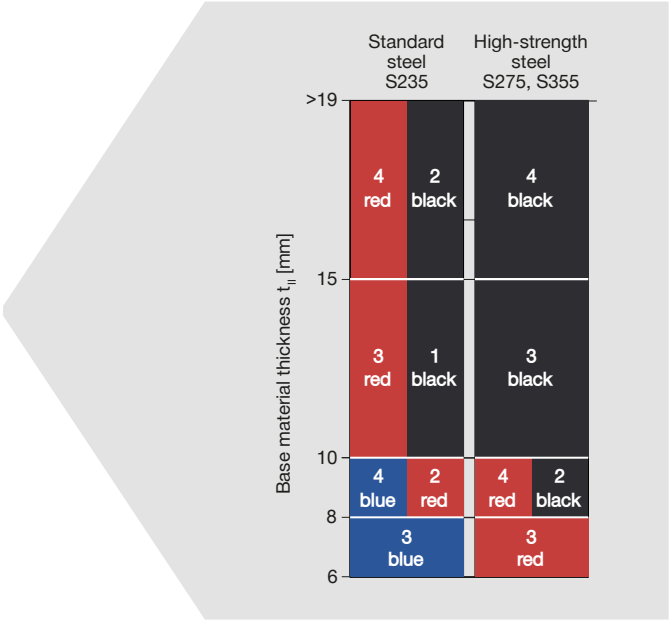
5.1 Tool recommendation

Fastening condition	Fastener	Tool	Fastener guide
Steel to steel	X-ENP-19 L15	DX 76 F15	X-76-F-15
	X-ENP-19 L15	DX 76 PTR	X-76-F-15-PTR
	X-ENP-19 L15	DX 8 F15	X-8-F-15
	X-ENP-19 L15 MX	DX 76 MX	MX 76
	X-ENP-19 L15 MX	DX 76 PTR	MX 76 PTR
	X-ENP-19 L15 MX	DX 8	X-8-MX
	X-ENP-19 L15 MXR	DX 9-ENP	MX 9-ENP, MX 9-ENP W

- For more details, please refer to the chapter Accessories and consumables compatibility in the Direct Fastening Technology Manual (DFTM).

5.2 Cartridge recommendation



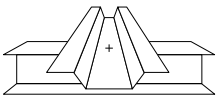
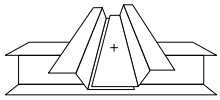
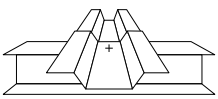
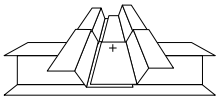


Tool type	Cartridge type
DX 76 F15, DX 76 MX, DX 76 PTR, DX 8, DX 8 F15	6.8/18 M10
DX 9-ENP	6.8/18 M40

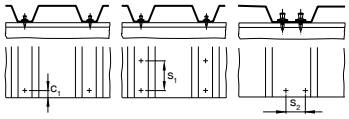
- Tool power level adjustment by setting tests on site.
- Start tool energy selection with recommended tool power level.
- Adjust tool energy according to requirement from chapter quality assurance.

6 REQUIREMENTS FOR INTENDED USE

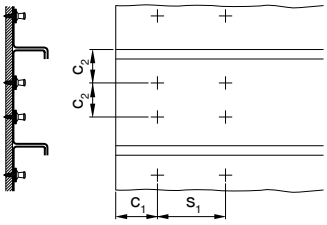
6.1 Connection types

			
Type a - single layer	Type b - side overlap (two layers)	Type c - end overlap (two layers)	Type d - side/ end overlap (four layers)

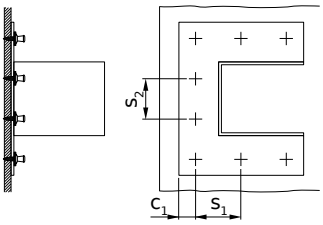
6.2 Fastened material properties



Trapezoidal profile



Liner tray

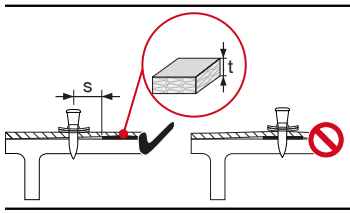


Clips and brackets

Fastened material shape	Fastened material tensile strength	Fastened material thickness	Edge distance	Edge distance	Fastener spacing distance	Fastener spacing distance
	R_m [MPa]	t_l [mm]	c_1 [mm]	c_2 [mm]	s_1 [mm]	s_2 [mm]
Trapezoidal profile	≥360	0.63 – 2.5	≥20		≥45	≥20
Liner tray	≥360	0.75 – 1.5	≥20	≤75	≥80	≥80
Clips and brackets	≥360	≤2.5	≥20		≥80	≥80

- For trapezoidal profile, fastened material steel grade ≥ S280 GD according to EN 10346.
- For liner tray, fastened material steel grade ≥ S280 GD according to EN 10346.
- For liner tray, in case c_2 ≥ 75 mm, it is recommended to drive an additional fastener at the corner side of the tray. Otherwise the design tension resistance has to be reduced by 50%.
- For clips and brackets, fastened material steel grade ≥ S235 according to EN 10025-2.

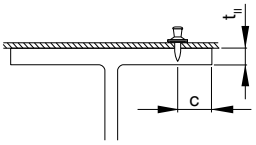
6.3 Fastened material properties for insulation/isolation tape



Fastened material type	Insulation/ isolation tape thickness	Distance between fastener and insulation/ isolation tape edge
	t [mm]	s [mm]
Metal sheet with insulation/ isolation tape	≤3	≥30

- Steel sheeting shall be in direct contact with the steel supporting structure in the connection area.

6.4 Base material properties

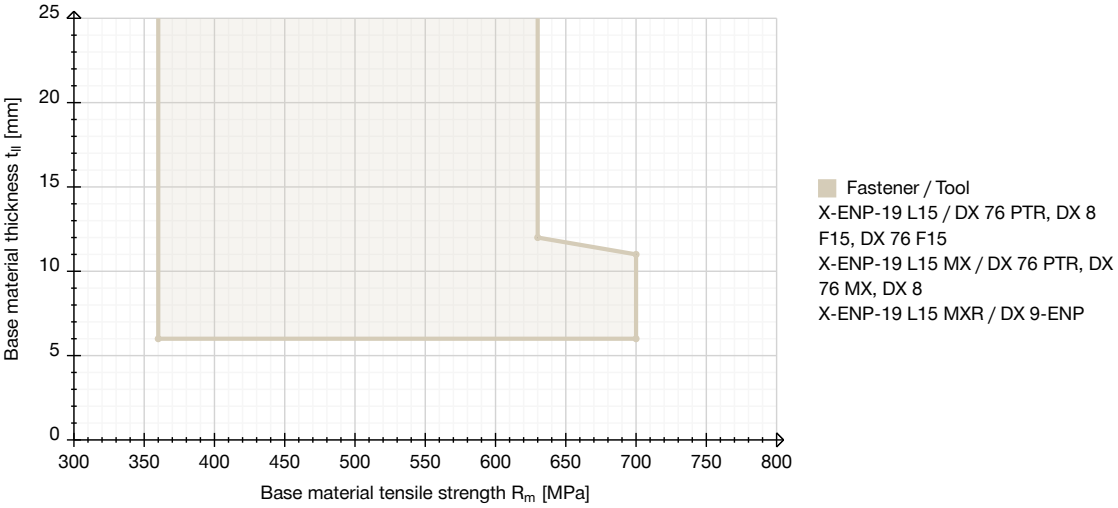


Fastening to steel

Fastening condition	Base material thickness t_{II} [mm]	Edge distance c [mm]
Steel to steel	6 – 7	≥ 15
Steel to steel	> 7	≥ 10

6.5 Application range for fastening to steel

Steel to steel



- The marked area represents the admissible field of application.
- Tensile strength for structural steel according to EN 10025-2:
  - S235: 360 – 510 MPa
  - S275: 410 – 560 MPa
  - S355: 470 – 630 MPa

7 PERFORMANCE DATA

7.1 Characteristic resistance under static/quasi-static loading

Fastened material shape	Fastened material thickness t_I [mm]	Connection type	Tension load N_{Rk} [kN]	Shear load V_{Rk} [kN]
Trapezoidal profile	0.63	a, b, c, d	4.1	4

Fastened material shape	Fastened material thickness	Connection type	Tension load	Shear load
	t_I [mm]		N_{Rk} [kN]	V_{Rk} [kN]
Trapezoidal profile	0.75	a, b, c, d	6.3	4.7
Trapezoidal profile	0.88	a, b, c, d	7.2	5.4
Trapezoidal profile	1	a, b, c, d	8	6
Trapezoidal profile	1.13	a, c	8.4	7
Trapezoidal profile	1.25	a, c	8.8	8
Trapezoidal profile	1.5	a	8.8	8.6
Trapezoidal profile	1.75	a	8.8	8.6
Trapezoidal profile	2	a	8.8	8.6
Trapezoidal profile	2.5	a	8.8	8.6
Liner tray	0.75	a	4.4	3.3
Liner tray	0.88	a	5	3.8
Liner tray	1	a	5.6	4.2
Liner tray	1.13	a	5.9	4.9
Liner tray	1.25	a	6.2	5.6
Liner tray	1.5	a	6.2	6
Clips and brackets	≤2.5		4.5	8.6

7.2 Design resistance under static/quasi-static loading

Fastened material shape	Fastened material thickness	Connection type	Tension load	Shear load
	t_I [mm]		N_{Rd} [kN]	V_{Rd} [kN]
Trapezoidal profile	0.63	a, b, c, d	3.3	3.2
Trapezoidal profile	0.75	a, b, c, d	5	3.8
Trapezoidal profile	0.88	a, b, c, d	5.8	5.1
Trapezoidal profile	1	a, b, c, d	6.4	4.8
Trapezoidal profile	1.13	a, c	6.7	5.6
Trapezoidal profile	1.25	a, c	7	6.4
Trapezoidal profile	1.5	a	7	6.9
Trapezoidal profile	1.75	a	7	6.9
Trapezoidal profile	2	a	7	6.9
Trapezoidal profile	2.5	a	7	6.9
Liner tray	0.75	a	3.5	2.6
Liner tray	0.88	a	4	3
Liner tray	1	a	4.5	3.4
Liner tray	1.13	a	4.7	3.9
Liner tray	1.25	a	5	4.5
Liner tray	1.5	a	5	4.8
Clips and brackets	≤2.5		3.6	6.9

- The values presented in the table above have been calculated using the design resistance partial factor for material properties γ_m = 1.25 and the reduction factor α_{cycl} = 1.0.

7.3 Technical notes

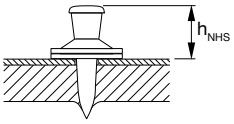
- Trapezoidal profile
  - For fastened material thicknesses that fall between tabulated values, either linear interpolation or the lower bound value may be applied to determine performance.
  - When using steel grades up to S320 GD, in accordance with EN 10346, and under the specified conditions, the influence of temperature-induced constraint forces during construction can be considered negligible.
  - For steel grades up to S360 GD (EN 10346) and base material thicknesses $t_{II} \geq 8$ mm, the effects of temperature-induced constraint forces during construction may also be disregarded under the given conditions.
  - For further technical specifications and verification, refer to European Technical Assessment ETA-04/0101.
  - For use in combination with DX 76 PTR, the permissible fastened material thickness ranges from 0.75 mm to 2.5 mm.
  - For symmetric double fastening, a load reduction factor of 0.7 shall be considered in accordance with EN 1993-1-1: 2006, specifically Section B.3 (7) and Figure 6.2.

- Liner tray
  - Load reduction has been considered in accordance with EN 1993-1-1:2006, specifically Section B.3 (7) and Figure 6.2.

- Clips and brackets
  - A redundant configuration of fastening points is required to ensure structural integrity.
  - The prying effect must be accounted for in the design and assessment of the fastening system.
  - The tabulated resistances do not account for potential failure of the fastened material itself.

8 QUALITY ASSURANCE

8.1 Fastening inspection

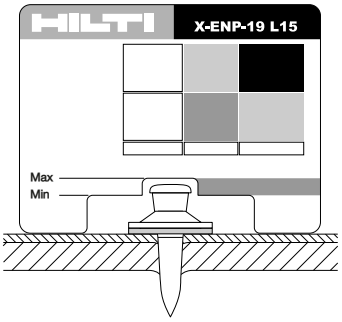


Steel to steel

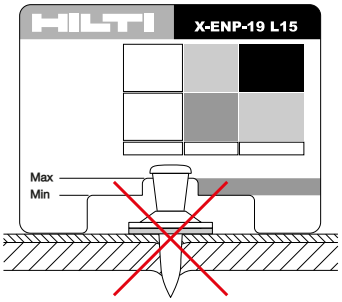
Fastening condition	Fastener	Fastener standoff h_{NHS} [mm]
Steel to steel	X-ENP-19 L15, X-ENP-19 L15 MX, X-ENP-19 L15 MXR	8.2 – 9.8

- The powder-actuated fastener is properly set if the metal sheet is tightened against the steel surface and the nail head standoff h_{NHS} is in accordance with the requirements given in ETA-04/0101, Annex C1 and Annex C2. A piston mark on the top washer is clearly visible.
- Always review/ follow the instructions accompanying the product.

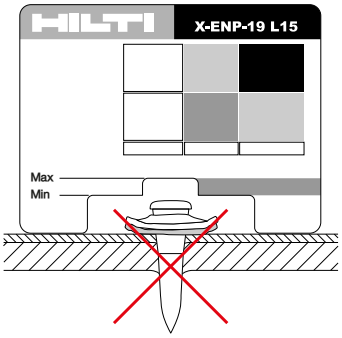
8.2 Fastening inspection with checking gauge for single layer fastenings



Correct installation



Incorrect installation (underdriven fastener)



Incorrect installation (overdriven fastener)

Fastening inspection with checking gauge	Fastener standoff h_{NHS} [mm]	Installation information
Correct installation	8.2 – 9.8	• Fastener correctly embedded into base material • Washer properly seated
Incorrect installation (underdriven fastener)	> 9.8	• Fastener not fully embedded • Washer not compressed
Incorrect installation (overdriven fastener)	< 8.2	• Fastener penetrated too deeply into base material • Washer damaged • Base material deformed

- For multiple layer fastenings check piston mark on washer. If measurement is nedded, use a slide caliper and measure nail stand-off next to the perimeter of the washer.

8.3 Troubleshooting

				
Nail stand-off too high	Nail stand-off is OK	Nail stand-off too low	Gap between deck profile and beam	Beam miss

Subject	Criteria	Trouble	Possible cause	Action
Nail stand-off too high	No piston mark visible, nail head stays off, stand-off too high	Deck is not fastened properly to the beam	Power setting too low or cartridge not strong enough	Dial up power setting or increase strengh of cartridge
Nail stand-off is OK	Washer compressed, piston mark clearly visible, deck flat - no deformation			
Nail stand-off too low	Washer over compressed, deck deformed, stand-off too low	Deck is not fastened properly to the beam	Power setting too high or cartridge too strong	Dial down power setting or decrease strengh of cartridge
Gap between deck profile and beam	Nail stand-off OK or too low without piston clear mark	Deck profile does not lay solid on the beam	Gap caused by slope of the deck or local effects	Avoid gap between sheet and beam or fasten at the right side of the beam
Beam miss	Nail stand-off OK or too low, sheet metal one sided deformed (edge of the beam visible)	Beam miss	Deck not marked	Mark the deck

9 ORDERING INFORMATION

9.1 Item number and description

Designation	Item number	Description
X-ENP-19 L15	283506	X-ENP Metal deck fasteners
X-ENP-19 L15 MX	283507	
X-ENP-19 L15 MXR	283508	

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