



X-ENP DATA SHEET

Siding and decking nail

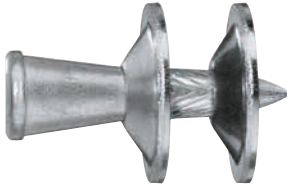


X-ENP Decking nail

Product info

Product description

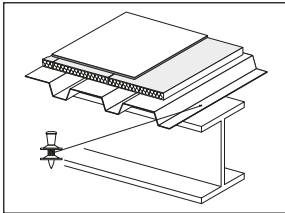
X-ENP



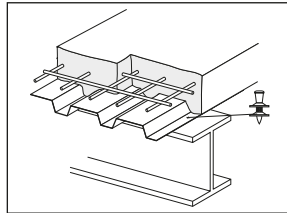
- Fully knurled tip provides high holding capacity
- High application limits with steel thickness ≥ 6 mm (1/4")
- Proven system confirmed by global and local approvals
- Faster and safer fastening system compared to welding
- No pre-drilling required

Application conditions

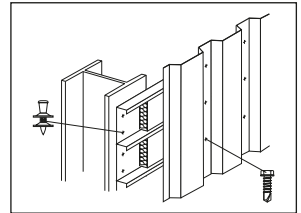
Applications



Roof decking



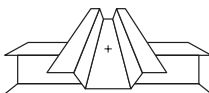
Floor decking



Siding

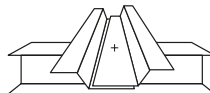
Connection types

Type a



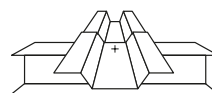
Single layer

Type b



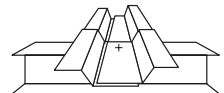
Side overlap
(two layer)

Type c



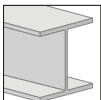
End overlap
(two layer)

Type d



Side/end overlap
(four layer)

Base materials




Steel

Load conditions




Static/
quasi static

Environmental condition

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

Approvals and certificates

Authority	Approvals/certificates	Functional area	Application area
DIBt	ETA-04/0101	Global	Deck fastening
FM	3054498	USA	Deck fastening
	3029102	USA	Form deck fastening
IAPMO	ER 2018, Verco Co-listing	USA	Deck fastening
	ER 161, ASC Co-listing	USA	Deck fastening
ICC-ES	ESR-1663	USA	Deck fastening
	ESR-2197	USA	Deck fastening
	ESR-2776	USA	Deck fastening
LR	97/00077(E4)	Global	Thin sheet fastening

-  • Not all information presented in this product data sheet might be subject to approval/ certificate content. Please refer to approval/certificate for further information.

Product data

Dimensions

Technical drawing	Designation	Length	Shank diameter	Head diameter	Steel washer diameter
		L	d_s	d_h	d_{washer}
	X-ENP-19 L15	23.8 mm	4.5 mm	7.4 mm	15 mm
	X-ENP-19 L15 MX				
	X-ENP-19 L15 MXR				

Material properties for carbon steel parts

Designation	Element	Material	Coating	Coating thickness	Hardness
X-ENP-19 L15	Nail	Steel C67	zinc	8 to 16 μm	58 HRC
X-ENP-19 L15 MX					
X-ENP-19 L15 MXR					

Application requirements

Fastened material properties

Fastened material	Tensile strength	Fastened material according to EN 10346
Steel sheet	$\geq 360 \text{ N/mm}^2$	$\geq \text{S280GD}$

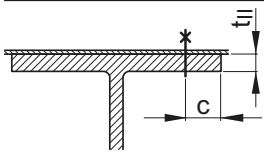
Fastener positioning in fastened material

	Fastened material	Trapezoidal profile
	Fastened material thickness t_f	0.75 to 2.5 mm
	Fastened material thickness $t_{f,tot}$	4 mm
	Edge distance c_{min}	20 mm
	Spacing $s_{1,min}$	45 mm
	Asymmetric double fastening points	load reduction: $0.7 N_{Rk}$
	Spacing $s_{2,min}$	20 mm
	Fastened material	Liner tray
	Fastened material thickness t_f	0.75 to 1.5 mm
	Edge distance $c_{1,min}$	20 mm
	Edge distance $c_{2,max}$	75 mm
	Spacing s_{min}	80 mm



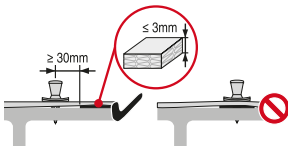
- When driving the fastener, the fastening tool needs to be positioned perpendicular to the surface. If $c_2 > 75 \text{ mm}$, it is recommended to drive an additional fastener (1) at the other side of the tray.

Base material properties and fastener positioning in base material



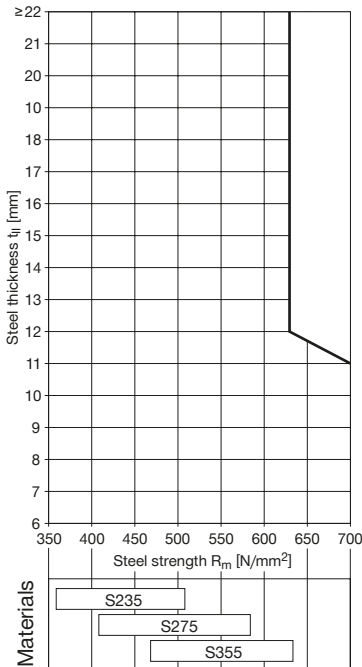
Base material	Steel	
Base material shape	Rolled beam, wide flange beam	
Base material thickness $t_{fl,min}$	6 to 7 mm	> 7 mm
Edge distance c_{min}	15 mm	10 mm

Fastener positioning in case of insulation/isolation tapes



- Steel sheeting shall be in direct contact with the steel supporting structure in the connection area.
- Fastener shall be installed minimum 30 mm away from the edge of the insulation/ isolation tape.
- Insulation/ isolation tape thickness ≤ 3 mm

Application limitation



- Steel grades according to EN 10025-2.

Performance data

Characteristic resistance under tension and shear load

Fastened material thickness	Trapezoidal profile				Liner trays	
	Tension load	Shear load	Reduction factor	Connection type	Tension load	Shear load
t_f	N_{Rk}	V_{Rk}	α_{cycl}		N_{Rk}	V_{Rk}
0.63 mm	4.1 kN	4.0 kN	1.0	a, b, c, d	–	–
0.75 mm	6.3 kN	4.7 kN		a, b, c, d	4.4 kN	3.3 kN
0.88 mm	7.2 kN	5.4 kN		a, b, c, d	5.0 kN	3.8 kN
1.00 mm	8.0 kN	6.0 kN		a, b, c, d	5.6 kN	4.2 kN
1.13 mm	8.4 kN	7.0 kN		a, c	5.9 kN	4.9 kN
1.25 mm	8.8 kN	8.0 kN		a, c	6.2 kN	5.6 kN
1.50 mm	8.8 kN	8.6 kN		a	6.2 kN	6.0 kN
1.75 mm	8.8 kN	8.6 kN		a	–	–
2.00 mm	8.8 kN	8.6 kN		a	–	–
2.50 mm	8.8 kN	8.6 kN		a	–	–



- For intermediate fastened material thicknesses linear interpolation or the lower value can be used.
- For liner trays the load reduction according to EN 1993-1-1:2006, section B.3 (7) and fig. 8.2 has been taken into account.
- For trapezoidal profiles using specified connection types and steel grades up to S320 according to EN 10346 it is not necessary to take effects of constraints due to temperature into account.
- For trapezoidal profiles using specified connection types, steel grades S350 according to EN 10346 and base material thickness $t_{II} \geq 8$ mm forces of constraints can be neglected (verified by Hilti).
- Minimum fastened material thickness for DX 76 PTR according to ETA-04/0101: 0.75 mm.

Characteristic resistance under tension and shear load for other applications

Fastened material	Fastened material thickness	Tension load	Shear load
	$t_{f,max}$	N_{Rk}	V_{Rk}
Clips, brackets, etc.	2.5 mm	4.5 kN	8.6 kN



- Redundancy of fastening points is required.
- Prying effect shall be considered.
- Valid for predominantly static loading.
- Failure of fastened material is not considered in loads.

Calculation equations

Load type	Calculation	Partial factor for material properties	Global safety factor
Design resistance under tension load	$N_{Rd} = \alpha_{cycl} N_{Rk} / \gamma_m$	$\gamma_m = 1.25$	-
Design resistance under shear load	$V_{Rd} = V_{Rk} / \gamma_m$	$\gamma_m = 1.25$	-
Recommended tension load	$N_{Rec} = \alpha_{cycl} N_{Rk} / \gamma_{global}$	-	$\gamma_{global} = 1.875$
Recommended shear load	$V_{Rec} = V_{Rk} / \gamma_{global}$	-	$\gamma_{global} = 1.875$

System recommendation

Tool recommendation

DX 76, DX 76 MX, DX 860-ENP, DX 9-ENP:

Fastener	Tool	Fastener guide	Piston	Cartridge
X-ENP-19 L15	DX 76	X-76-F-15	X-76-P-ENP	6.8/18 M10
X-ENP-19 L15 MX	DX 76 MX	MX 76		
X-ENP-19 L15 MXR	DX 860-ENP	-	X-76-P-ENP	6.8/18 M40
	DX 9-ENP	-	X-9-ENP	6.8/18 M40

DX 76 PTR:

Fastener	Tool	Fastener guide	Piston	Cartridge
X-ENP-19 L15	DX 76 PTR	X-76-F-15-PTR	X-76-P-ENP-PTR	6.8/18 M10
X-ENP-19 L15 MX		MX 76-PTR		



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

Cartridge recommendation

Tool	Base material thickness	Cartridge color (tool power level)	
		Base material	
		S235	S275, S355
DX 76, DX 76 MX, DX 860-ENP, DX 9-ENP	$t_{II} \geq 15 \text{ mm}$	red ■ (4), black ■ (2)	black ■ (4)
	$10 \leq t_{II} < 15 \text{ mm}$	red ■ (3), black ■ (1)	black ■ (3)
	$8 \leq t_{II} < 10 \text{ mm}$	blue ■ (4), red ■ (2)	red ■ (4), black ■ (2)
	$6 \leq t_{II} < 8 \text{ mm}$	blue ■ (3)	red ■ (3)
DX 76 PTR	$t_{II} \geq 15 \text{ mm}$	red ■ (4), black ■ (2)	black ■ (4)
	$10 \leq t_{II} < 15 \text{ mm}$		
	$8 \leq t_{II} < 10 \text{ mm}$	blue ■ (4), red ■ (2)	red ■ (4), black ■ (2)
	$6 \leq t_{II} < 8 \text{ mm}$	blue ■ (3), red ■ (1)	red ■ (3), black ■ (1)



- Tool power level adjustment by setting tests on site (see chapter quality assurance).
- For S275: Start tool energy selection with recommendation for S355.
- For more details, please refer to the chapter Accessories and consumables compatibility in the Direct Fastening Technology Manual (DFTM).

Quality assurance

Fastening inspection

	Designation	Fastener stand-off h_{NVS}
	X-ENP-19 L15 X-ENP-19 L15 MX X-ENP-19 L15 MXR	8.2 to 9.8 mm
	The powder-actuated fastener is properly set if the metal sheet tightened against the steel surface and the nail head stand-off h_{NVS} 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 instruction for use (IFU) accompanying the product.

Fastening inspection with checking gauge for single layer fastenings

$h_{NVS} = 8.2 \text{ mm to } 9.8 \text{ mm}$	$h_{NVS} > 9.8 \text{ mm}$ (washers are not compressed)	$h_{NVS} < 8.2 \text{ mm}$ (washers are damaged by tool piston)

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

Trouble shooting

Issue	Visual	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 strength of cartridge
Nail stand-off is OK		Washer compressed, piston mark clearly visible, deck flat – no deformation	–	–	–
Nail stand-off is 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 is too strong	Dial down power setting or decrease strength 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

Fastener program

Item no. and description		
Designation	Item no.	Description
X-ENP-19 L15	283506	Single nail
X-ENP-19 L15 MX	283507	Collated nail
X-ENP-19 L15 MXR	283508	