



The following pages are an excerpt from the North American Product Technical Guide, Volume 1: Direct Fastening Technical Guide, Edition 22.

Please refer to the publication in its entirety for complete details on this product including data development, base materials, general suitability, installation, corrosion, and product specifications.

[Direct Fastening Technical Guide, Edition 22](#)

To consult directly with a team member regarding our direct fastening products, contact Hilti's team of technical support specialists between the hours of 7:00am - 5:00pm CST.

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Listings/Approvals
ICC-ES (International Code Council)
 ESR-2184 with LABC/LARC Supplement



3.3.2 X-CX CEILING CLIP AND HANGER ASSEMBLIES

3.3.2.1 PRODUCT DESCRIPTION

Ceiling clip assemblies are an economical and recognized method of suspending acoustical ceiling grids and panels from concrete and steel. These pre-assembled ceiling clips consist of a sheet metal clip with a pre-mounted powder-actuated fastener and are pre-tied with wires of various lengths and gauges depending on ceiling height and other requirements. When the fastening is made, the clip, fastener and wire are installed in one step. Further productivity can be achieved through the use of a Hilti powder-actuated pole tool.

Product features:

The X-CX ceiling clip is premounted with either an X-AL-H fastener or an X-C fastener.

The X-AL-H fastener has a long conical tip design, which better ensures optimal tension loads and stick rate while X-C fastener is a standard solution for fastening into normal weight concrete or concrete over metal deck.

3.3.2.2 MATERIAL SPECIFICATIONS

Part	Material designation	Steel diameter/ thickness	Plating
X-AL-H Fastener	Carbon Steel	0.177"	5 µm Zinc ¹
X-C27 Fastener	Carbon Steel	0.138"	5 µm Zinc ¹
X-CX Clip	Carbon Steel	16 GA	5 µm Zinc ¹
Wire	Carbon Steel	12 GA, 9 GA or 8 GA	Class 1 ²

¹ ASTM B633, SC 1, Type III.
² Pre-mounted ASTM A641/A641M Class 1 wires come attached with a minimum of three tight turns in 1-1/2" length.

3.3.2.3 TECHNICAL DATA

Allowable loads in normal weight concrete^{1,2,3}

Fastener designation	Concrete compressive strength			
	4,000 psi		6,000 psi	
Load direction	Tension lb (kN)	45-degree lb (kN)	Tension lb (kN)	45-degree lb (kN)
X-CX ALH22	90 (0.40)	125 (0.56)	90 (0.40)	125 (0.56)
X-CX ALH27	125 (0.56)	165 (0.73)	110 (0.49)	150 (0.67)
X-CX ALH32	160 (0.71)	210 (0.93)	145 (0.64)	200 (0.89)
X-CX C27	90 (0.40)	125 (0.56)	-	-

1 The tabulated allowable load values are for the powder-actuated ceiling clip assemblies only, using a safety factor that is greater or equal to 5.0, calculated based on testing in accordance with ICC-ES AC70 and ASTM E1190. Connected components, including wires, must be investigated separately.

2 Multiple fasteners are recommended for any attachment.

3 The concrete thickness at the point of penetration must be a minimum of three times the fastener embedment depth.

Allowable Loads in structural 3000 psi lightweight concrete over metal deck^{1,2,3,4}

Fastener designation	Fastener location			
	Lower flute		Upper flute	
Load direction	Tension lb (kN)	45-degree lb (kN)	Tension lb (kN)	45-degree lb (kN)
X-CX ALH22	90 (0.40)	110 (0.49)	110 (0.49)	110 (0.49)
X-CX ALH27	120 (0.53)	125 (0.56)	150 (0.67)	130 (0.67)
X-CX ALH32	150 (0.67)	145 (0.64)	190 (0.85)	160 (0.71)
X-CX C27	80 (0.36)	110 (0.49)	110 (0.49)	110 (0.49)

1. The tabulated allowable load values are for the powder-actuated ceiling clip assemblies only, using a safety factor that is greater or equal to 5.0, calculated based on testing in accordance with ICC-ES AC70 and ASTM E1190. Connected components, including wires, must be investigated separately.

2. Multiple fasteners are recommended for any attachment.

3. The concrete thickness at the point of penetration must be a minimum of three times the fastener embedment depth.

4. Deck panel must be a 3-inch deep composite floor deck and have a minimum 0.0358 inch base-metal thickness, a minimum yield strength of 40 ksi and a minimum tensile strength of 55 ksi.

Allowable loads in minimum ASTM A36 (Fy ≥ 36 ksi; Fu ≥ 58 ksi) steel^{1,2,3}

Fastener designation	Steel thickness in.					
	1/4		3/8		1/2 ⁴	
Load direction	Tension lb (kN)	45-degree lb (kN)	Tension lb (kN)	45-degree lb (kN)	Tension lb (kN)	45-degree lb (kN)
X-CX ALH22	260	260	260	260	260	260

1 The tabulated allowable load values are for the powder-actuated ceiling clip assemblies only, using a safety factor that is greater or equal to 5.0, calculated based on testing in accordance with ICC-ES AC70 and ASTM E1190. Connected components, including wires, must be investigated separately.

2 Low-velocity fasteners shall be driven to where the point of the fastener penetrates through the steel base material, except otherwise noted.

3 Multiple fasteners are recommended for any attachment.

4 For fastening into 1/2-inch or thicker steel, DX460/DX5 with black cartridge may be needed. For more information, contact Hilti technical service.

3.3.2.4 ORDERING INFORMATION

Fastener designation	Shank length in. (mm)	Shank Ø in. (mm)	Guidance washer Ø	Packaging quantity
X-CX ALH22 ¹	7/8 (22)	0.177 (4.5)	8 mm Plastic	100 pcs
X-CX ALH27 ¹	1 (27)	0.177 (4.5)	8 mm Plastic	100 pcs
X-CX ALH32 ¹	1-1/4 (32)	0.177 (4.5)	8 mm Plastic	100 pcs
X-CX C27 ²	1 (27)	0.138 (3.5)	8 mm Plastic	100 pcs

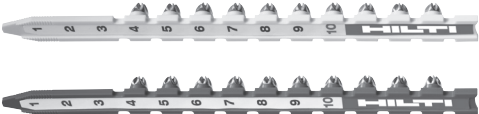
1 Fasteners are also available with pre-tied wire, 12 GA, 9 GA or 8 GA, with lengths ranging from 4' to 12'.
 2 Fasteners are also available with pre-tied wire, 12 Ga, with lengths ranging from 4' to 8'.



DX 351-CT Powder-Actuated Tool



Pole tool accessories for DX 351 CT



Booster cartridges



X-CX ALH Fastener
without ceiling wire



X-CX ALH Fastener
with pre-tied ceiling wire



X-CX C27 Fastener
without ceiling wire



X-CX C27 Fastener
with pre-tied ceiling wire