

**Hilti Firestop cable
collar CFS-CC**

European technical
approval
ETA N° 13/0704



Firestop cable collar CFS-CC

Applications

- Single and bundled cables in floors and walls
- New and existing cable installations
- Conduits, coaxial cables, conduit bundles



Advantages

- Fast and easy solution for dry walls
- Problem solver for 100% fill of openings up to 108 mm in diameter
- No chisel work in massive walls necessary
- Lip seal closes annular gaps
- Zero separation to next firestop cable collar
- Re-penetrable to allow increase in future cable capacity
- Pre-formed firestop material does not expire, eliminating shelf-life concerns
- Immediately functional after installation
- Low VOC content and no CFCs or HCFCs

Technical data

	CFS-CC
Cable	Yes
Base materials	Concrete, Aerated Concrete, Drywall, Masonry
Chemical basis	Polyurethane Foam
Color	Red
Complementary products	CFS-FIL, CFS-P BA
Intumescent	Yes
Expansion temperature (Approx.)	200 °C
Expansion ratio (unrestricted, up to)	1:3
Application temperature range	5 – 40 °C
Storage and transportation temperature range	-5 – 40 °C
Temperature resistance range	-15 – 60 °C



Ordering

Ordering designation	Packaging content	Minimum order quantity	Item number
Firestop cable collar CFS-CC	2 PC	2 PC	02079667

Firestop filler mastic CFS-FIL

Applications

- For use with Hilti firestop cable collar CFS-CC (gap filling)

Advantages

- Can be used with Hilti dispenser CFS-DISP



Ordering

Ordering designation	Packaging content	Minimum order quantity	Item number
Firestop filler mastic CFS-FIL	310 ml	1 PC	02052899

Firestop putty bandage CFS-P BA

Applications

- For use with Hilti firestop cable collar CFS-CC
- For specific cable configurations, to achieve EI 120

Advantages

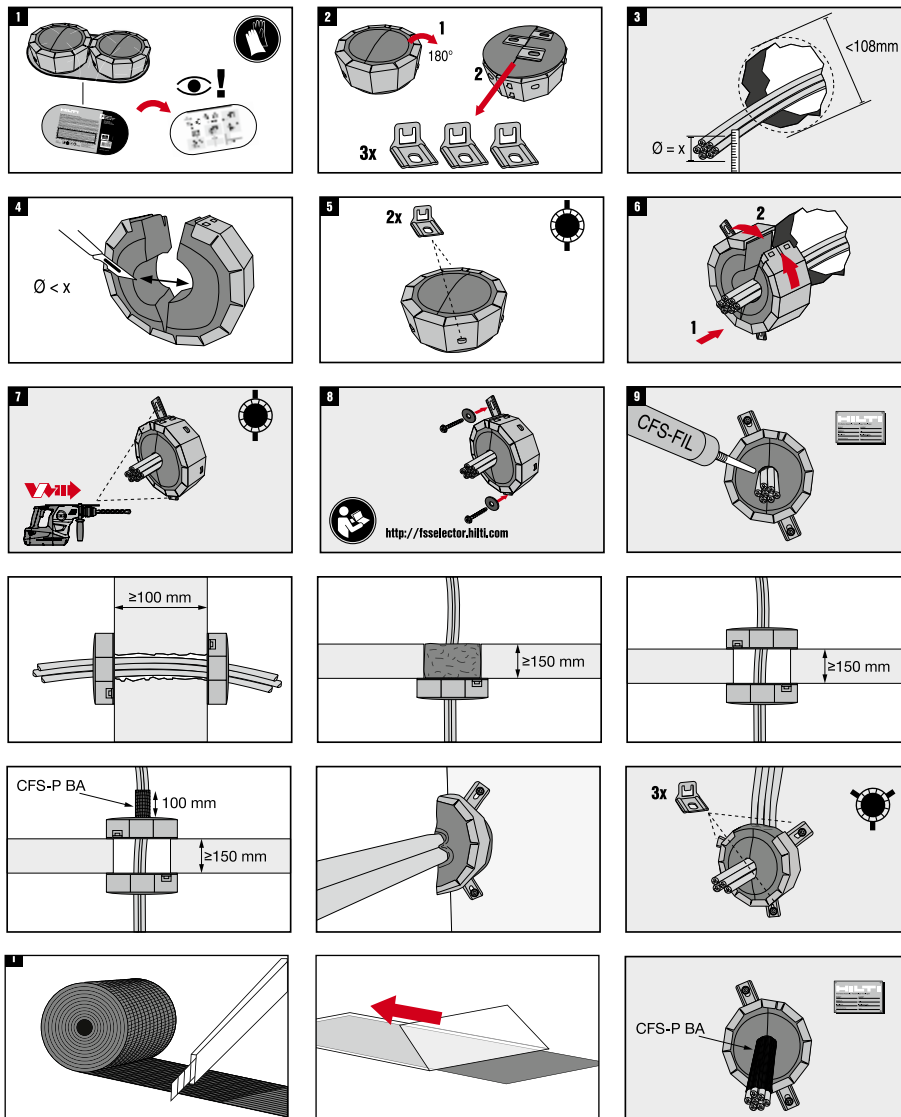
- Easy to cut
- Self-adhesive



Ordering

Ordering designation	Packaging content	Minimum order quantity	Item number
Firestop putty bandage CFS-PBA	5 m	1 PC	02062876

Installation instructions



Fixing Anchors for CFS-CC

Anchoring Solution		Drywall	Rigid Wall	Floor
Screw anchors	HUS-H 6x40/5	x	x	x
	HUS-P 6x40/5	x	x	x
Expansion anchor	HSA M8 20/10		x	x
	HST M8		x	x
Undercut anchor	HPD M10/8		x	x
Internally threaded anchor:	HKD M8/30		x	x
Hollow core	HTBS 6/60	x		
	HHD-S M6 25x64	x		
Others	DBZ 6/45		x	x
	HHD-S M6 25x64		x	x
	screws with washer	x		
	threaded rods with nuts and washer	x		

Aperture framing/beading details for walls and floors

The penetration seal depth is approximately 200 mm (t_A) comprising by at least a wall/floor of 100 mm (t_E) and two times the thickness of the cable collar (Figures 1 and 2a,b).

Aperture framing: Aperture framing is not necessary.

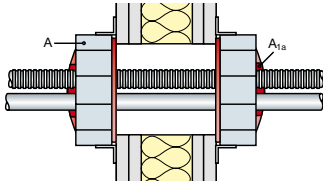


Figure 1: Application without beading

Beading: In some cases a beading is used to thicken a 100mm thick wall to 150 mm by two 12.5 mm board parts on each side. The remaining stripes have a width of about 50 mm (Figure 2c; W_A).

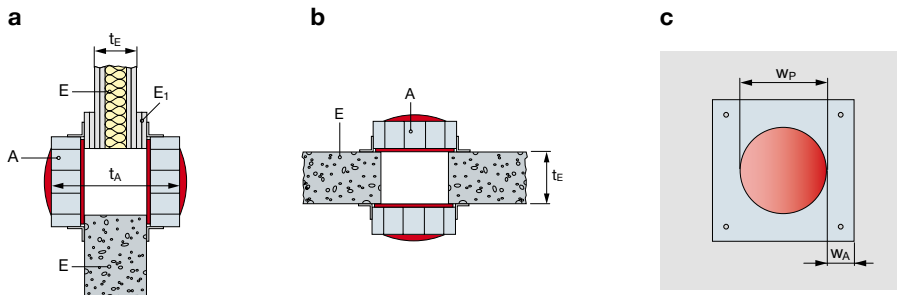


Figure 2: beading and position of the seal in walls/floors

Abbreviation used in figures 1 and 2.

Abbreviation	Description	Abbreviation	Description
A	Hilti firestop product	t_E	Thickness of the building element
E	Building element (rigid or flexible wall construction, floor)	w_P	Width of penetration diameter
E_1	Beading	w_A	Width of frame
t_A	Thickness of seal		

Maximum Seal Size:

- cable collar inlay has to be cut to fit to penetrating cables
- Maximum diameter of cut out part is approximately 108mm (convex core, w), so a boundary stripe of approx. 20mm inlay is left to edge of collar (\varnothing 150mm).

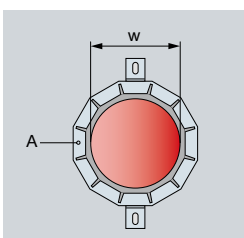


Figure 3: maximum seal size w

Penetration Sealing

Basic sealing with firestop filler CFS-FIL (A_{1a})

Gaps between services and firestop cable collar CFS-CC are filled with firestop filler CFS-FIL (A_{1a}), depth 20 mm.

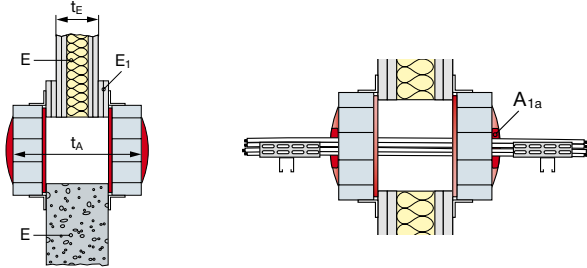


Figure 4: Filler (A_{1a})

Additional protection by filler coating with firestop filler CFS-FIL (A_{1b})

- Gaps between services and firestop cable collar CFS-CC are filled with firestop filler CFS-FIL (A_{1a}), depth 20 mm.
- Cables are covered by firestop filler CFS-FIL at 50 mm in length (t_R) and approximately 5 mm in thickness (A_{1b}).

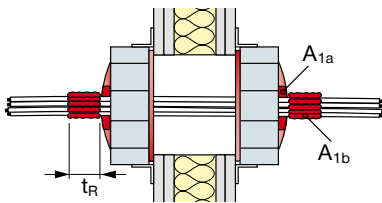


Figure 5: Filler Coating with firestop filler CFS-FIL (A_{1b})

Additional protection with putty bandage CFS-P BA (A_2)

- Gaps between services and firestop cable collar CFS-CC are filled with firestop filler CFS-FIL (A_{1a}), depth 20 mm.
- Two layers of firestop putty bandage CFS-P BA (A_2) are wrapped around the services or group of services.

Note: Firestop putty bandage CFS-P BA must be installed with the mesh outside upside: The overlap of the putty wrapping must be at least 20 mm and is recommended to position on top or on the side. For floor applications, firestop putty bandage CFS-P BA is required on the top side, only.

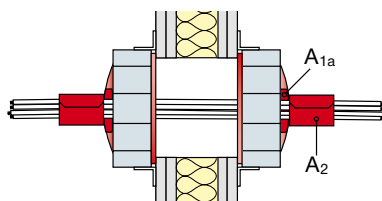


Figure 6: Filler (A_{1a}) plus 2 layers of putty bandage (A_2)

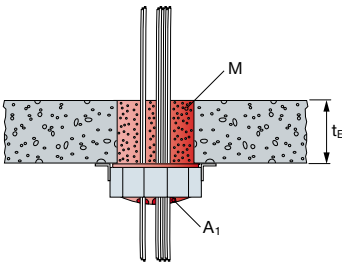


Figure 7: Mortar CP 633 as gapfiller (M)

Additional sealing with mortar CP 633 (floors only)

- Annular space between services and floor edges are filled with Mortar (M) M10 (CP 633; Figure 7).
- Gaps between services and firestop cable collar CFS-CC are filled with firestop filler CFS-FIL (A_{1a}), depth 20 mm.
- Seal thickness is about 200 mm (150 + 50 mm)

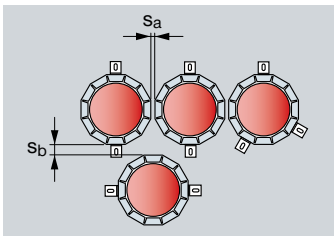


Figure 8: cluster arrangement

Cluster arrangement

Minimum distances in mm (see illustration):

S_a = 0 (distance between cable collars linear)

S_b = 0 (distance between cable collars in cluster arrangement)

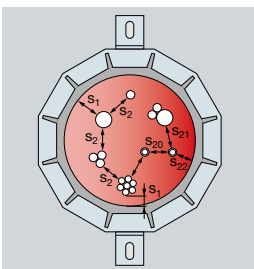


Figure 9: Distance requirements

Distance Requirements

Distances valid for wall and floor installations.

Minimum distances in mm (see figure 9: Distance requirements):

S₁ = 0 (distance between cables and seal edge)

S₂ = 0 (distance between cables or bundles)

S_{20, 21, 22} = 0 (conduits Ø ≤ 16 mm)

S₂₀ = 0 (conduits Ø > 16 mm; distance between conduits to each other)

S_{21, 22} = 15 (conduits Ø > 16 mm; distance between conduits and other services or seal border)

Wall Penetrations

The walls must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfill the requirements of the relevant Eurocode. This ETA does not cover use of the product as a penetration seal in sandwich panel structures.

Flexible wall, figure 10, top section (E)

The wall must have a minimum thickness of 100 mm (t_E) and comprise timber or steel studs lined on both faces with minimum 2 layers of 12.5 mm thick boards according EN 520 type F.

In steel stud construction the space between linings has not to be completely filled with insulation material, especially in the neighborhood to the seal. Nevertheless, the wall has to be set up according requirements.

For timber stud walls there must be a minimum distance of 100 mm of the seal to any stud and the cavity between stud and seal must be closed and a minimum of 100 mm insulation of Class A1 or A2 (in accordance with EN 13501-1) in the cavity between stud and seal is necessary.

Rigid wall, figure 10, bottom section (E)

The wall must have a minimum thickness of 100 mm (t_E) and comprise of concrete, aerated concrete or masonry with a minimum density of 600 kg/m³.

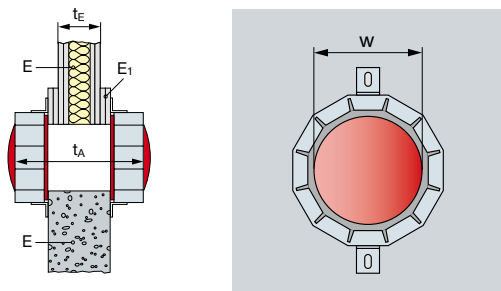


Figure 10: Blank wall seal, no service

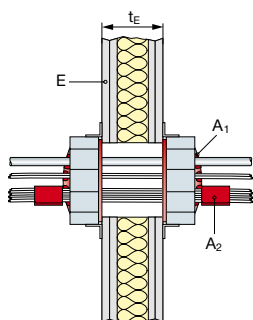


Figure 11: Details of filler (A_{1a}) and 2 x putty bandage (A_2)

Description of services	Classification E=Integrity, I=Insulation			
Blank opening (no service)*	EI 120			
Cables				
Additional Protection		Filler Coating	Putty 2x	Beading
Wall thickness at penetration seal	100 mm			150 mm (100 + 2x25)
All sheathed cables up to $\varnothing \leq 21$ mm ($\varnothing 108$ mm can be filled 100% with cable of this diameter)	EI 90	-	EI 120	EI 120
All sheathed cables with $21 \leq \varnothing \leq 50$ mm	EI 60	EI 90	EI 90	EI 90
Tied cable bundle $\leq \varnothing 100$ mm; \varnothing single cable ≤ 21 mm	EI 90	-	EI 120	EI 120
Non-sheathed cables (wires) $\varnothing \leq 24$ mm	EI 30	-	EI 60	-
Small conduits and tubes	Filler			
Plastic conduits and tubes ≤ 16 mm	EI 120 U/U			
Steel conduits and tubes ≤ 16 mm	EI 120 C/U			
Conduits				
Flexible PO: 16 mm to 32 mm with and without cables Flexible PVC: 16 mm to 32 mm with and without cables	EI 120 U/U EI 120 U/U			
Rigid PO: 16 mm to 40 with and without cables Rigid PVC: 16 mm to 40 with and without cables	EI 120 U/U EI 120 U/U			
Bundles of rigid and flexible conduits ≤ 32 mm: up to 80 mm with cables up to 80 mm without cables	EI 120 U/U EI 90 U/U			
Waveguides (coaxial) with 27,8 mm $\leq \varnothing$ 59,9 mm				
RFS Cellflex LCF 78-50 JA $\varnothing 27.8$ mm RFS Cellflex LCF 214-50 J $\varnothing 59.9$ mm RFS Heliflex HCA 78-50 JFNA $\varnothing 28.0$ mm RFS Heliflex HCA 158J $\varnothing 59.9$ mm	EI 90-U/C			
RFS Radialflex RLKW 78-50 $\varnothing 28.5$ mm RFS Radialflex RLKU 158-50 JFLA $\varnothing 48.2$ mm	EI 120-U/C			

Note: seal size $\varnothing 108$ mm, seal thickness ≥ 200 mm

Services have to be supported at ≤ 300 mm from both faces of wall. Cable collars are fixed on the surface by 2 to 3 fixing hooks evenly spaced around the diameter

*If services are added later on in a blank seal only the services listed in the tables below may be added that fulfill the required classification.

Floor Penetrations

The floors must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfil the requirements of the relevant Eurocode. The floor must have a minimum thickness of 150mm and comprise aerated concrete or concrete with a minimum density of 550kg/m³.

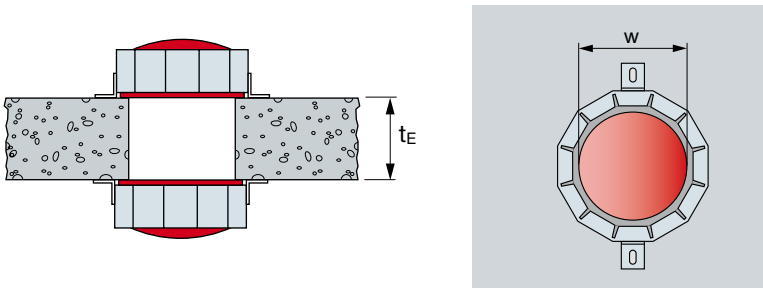


Figure 12: Blank floor seal, no service

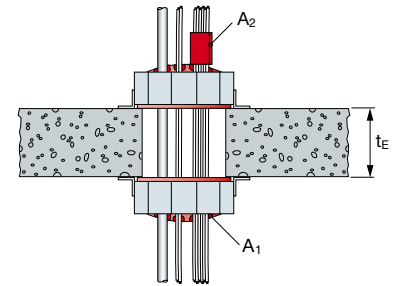


Figure 13: Details of filler (A_{1a}) and 2 x putty bandage (A₂)

Description of services	Classification E=Integrity, I=Insulation	
Blank opening (no service)*	EI 120	
Cables		
Additional Protection		Putty 2x
All sheathed cables up to $\varnothing \leq 21$ mm	EI 90	EI 120
All sheathed cables with $21 \leq \varnothing \leq 50$ mm		
Tied cable bundle $\leq \varnothing 80$ mm; \varnothing single cable ≤ 21 mm		
Non-sheathed cables (wires) $\varnothing \leq 24$ mm	EI 30	EI 120
	CFS-CC 1x (lower floor only)	CFS-CC 1x (lower floor only)
Additional Sealing	mortar	mortar
Additional Protection		Putty 2x
All sheathed cables up to $\varnothing \leq 21$ mm	EI 120	-
All sheathed cables with $21 \leq \varnothing \leq 50$ mm	EI 60	EI 120
Non-sheathed cables (wires) $\varnothing \leq 24$ mm	EI 90	EI 120
Small conduits and tubes		
Plastic conduits and tubes ≤ 16 mm	EI 120 U/U	
Steel conduits and tubes ≤ 16 mm	EI 120 C/U	
Conduits		
Flexible PO: 16 mm to 32 with and without cables Flexible PVC: 16 mm to 32 with and without cables	EI 120 U/U EI 120 U/U	
Rigid PO: 16 mm to 32 with and without cables Rigid PVC: 16 mm to 32 with and without cables	EI 120 U/U EI 120 U/U	
Bundles of rigid and flexible conduits: up to 80 mm with cables up to 80 mm without cables	EI 120 U/U	
Waveguides (coaxial) with 27,8 mm $\leq \varnothing \leq 59,9$ mm		
RFS Heliflex HCA 78-50, JFNA $\varnothing 28.0$ mm RFS Heliflex HCA 158J $\varnothing 59.9$ mm	EI 90-U/C	
RFS Cellflex LCF 78-50 JA $\varnothing 27.8$ mm RFS Cellflex LCF 214-50 J $\varnothing 59.9$ mm RFS Radialflex RLKW 78-50 $\varnothing 28.5$ mm RFS Radialflex RLKU 158-50 JFLA $\varnothing 48.2$ mm	EI 120-U/C	

Note: seal size $\varnothing 108$ mm, seal thickness ≥ 250 mm

Services have to be supported at ≤ 300 mm from both faces of wall. Cable collars are fixed on the surface by 2 to 3 fixing hooks evenly spaced around the diameter

*If services are added later on in a blank seal only the services listed in the tables below may be added that fulfill the required classification.

Additional applications

Following additional applications are tested and proved to reach classification as stated above for both wall or floor constellations. Deviations from before mentioned conditions or classifications are described.

Protection of collar edge

Protective edge strip:

- in cases where a damage of cable might be risked a rubber protection stripe can be used on circular edges of collar

Installation of part of collar

To fit cable collar to corner of wall/wall/floor or wall/wall or wall/floor edges

- Up to 6 metal segments of cable collar in sequence can be taken out (½ size metal cage).
- The cable collar is mounted with compression against the corner by pushing the tailored foam inlay. The inlay may comprise of two parts.
- At least two fixing hooks have to be used at sufficient distance to each other.

Perpendicular out-bending of cables

- Cables of size $\varnothing \leq 21$ mm can be phased out in a perpendicular manner through cable collar along wall/floor.
In parallel, additional cables might run straight through as in standard configuration.
- In this case up to 3 metal segments can be taken out to open space for cable penetration.
- Three fixing hooks have to be used for fixation of collar
- For wall and floor classification is EI 120.

Special smoke guide pipe application

Chemical high resistant smoke guide pipes

- Smoke guide pipes made of ABS plastic (EN ISO 15493) of \varnothing 25 mm and 2,3mm wall thickness are fire-rated by cable collar with a classification of EI 120 U/U

Fire rating of air conditioner services

Split-type air conditioner

- Insolated copper pipes including plastic condenser tubes of split-type air conditioner are fire-rated EI 120 by cable collar.
- Constellation:
 - Sangi twin copper pipe 12/6 mm x 1.0 mm, preinsulated by PEP insulation of 9 mm thickness (\varnothing 30 or 24 mm)
 - plastic condenser tube \varnothing 24 mm x 4.3 mm (Rehau Rauflame-E, flex PVC)
 - electrical lines: two lines, each 5 x 1.5 mm²
 - all services are bundled together with no distance in between

Isolated copper pipe

Protection of isolated copper pipe \varnothing 22 mm

- Copper pipe is isolated with RS 800 Rockwool mineral wool locally sustained (LS), protruding at a length of 200 mm on each side. Classification: wall EI 90 C/U / floor EI 120 C/U

Characteristics of Hilti CFS-CC firestop cable collar

Additional Attributes

Hilti firestop products are comprehensively tested and individually tailored to the technical requirements of a building's mechanical and electrical installations. In addition to their superior behavior in passive fire protection, Hilti firestop products also meet the requirements in building technology that continue to gain significance and also help the designer and installer to meet these additional requirements. The assessment of fitness for use has been made in accordance with EOTA ETAG No 026 – Part 2.

Characteristics	Assessment of Characteristics	Norm, standard, test
Health and the environment Dangerous substances	Below any respective occupational exposure limits as far as such limits exist (compared with the list of dangerous substances of the European Commission)	VOC test report according AgBB (2012) and AFSSSET (2009)
Protection against noise (air borne sound insulation)	CFS-CC=Rw (C; Ctr)=59 (-3; -9) dB	EN ISO 140-3
Thermal properties	Thermal conductivity $\lambda = 0.089$ W/mK and thermal resistance $R = 0.563$ m ² K/W	EN 12667
Electrical properties	Electrical volume resistivity: approx. $2.17E+9$ Ω cm Electrical surface resistivity: approx. $49.6E+9$ Ω	DIN IEC 60093 (VDE 0303 Part 30):1993-12
Durability and servicability	Category Z ₂ (for internal use at low humidity)	EOTA Technical Report TR 024 ETAG 026-2
Reaction to Fire	Class E	EN 13501-1

Service

With more than 20 years of experience worldwide, Hilti is one of the leading suppliers of firestop systems. We actively help you manage your firestop projects better by providing:

- Quick engineering judgments
- Extensive technical literature
- On-site training and demonstration
- Sophisticated jobsite logistics
- Assurance of conformity with specific application requirements
- International network of Hilti firestop specialists

Our network of experienced sales representatives, field engineers, firestop specialists and customer service representatives is just a phone call away (use the local toll-free Hilti number).

Hilti. Outperform. Outlast.

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