



HILTI CFS-RCC FIRESTOP CABLE COLLAR

01/2020



CFS-RCC FIRESTOP CABLE COLLAR



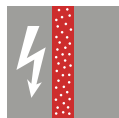
APPLICATIONS

- Flexible solution for cables, conduits, cable trays and pipes in concrete, masonry and drywall applications
- For new and existing penetrations in floors and walls
- Especially suitable for renovation projects under difficult conditions
- Can be used to seal old/damaged fire compartment penetrations without removing the existing material

ADVANTAGES

- Broad approval range – also covers mixed penetrations and mechanical penetrations with metal pipes up to 114 mm and plastic pipes up to 50 mm
- Modular system – fast and easy to install, no mortar or mineral wool required
- Surface-mounted solution – perfect for use at openings with 100% cable fill
- Excellent solution for irregular openings
- Time-saving, dust-free solution – no need for framework for drywall applications, no chiseling work on solid walls necessary
- Preformed product – immediately functional after installation
- Reliable solution – easy to inspect
- Re-penetrable – allows easy increase in future cable capacity
- Also suitable for one side applications for floor and wall openings
- Green building-contains no halogens, solvents or asbestos. LEED information available.

Technical data	CFS-RCC
Base material	Concrete, aerated concrete, dry-wall, masonry
Chemical basis	Polyurethane foam
Color	Red
Complementary products	CFS-FIL, CFS-F FX, CFS-P BA, CP636
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



Order designation	Package contents	Minimum order quantity	Item number
CFS-RCC firestop cable collar	2	2	2126526
CFS-RCC EXT firestop cable collar	2	2	2126527

FIRESTOP FILLER MASTIC CFS-FIL

APPLICATIONS

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

ADVANTAGES

- Can be used with Hilti dispenser CFS-DISP



Order designation	Package contents	Minimum order quantity	Item number
Firestop filler mastic CFS-FIL	310 ml	1 pc	2052899

CFS-F FX FIRESTOP FOAM

APPLICATIONS

- For use with Hilti firestop cable collar RCC (gap filling)
- For use with Hilti firestop cable collar (Polyurethane inlay replacement on both sides)
- For use with Hilti firestop cable collar (wall opening filling for one-sided application)

ADVANTAGES

- Can be used with Hilti HDM 330 manual dispenser and HDE 500-A22 cordless dispenser
- Allows rough cutting of the Polyurethane inlay



Order designation	Package contents	Item number
CFS-F FX firestop foam	incl. 1 mixing nozzle, instructions for use	429802

FIRESTOP PUTTY BANDAGE CFS-B PA

APPLICATIONS

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

ADVANTAGES

- Easy to cut
- Self-adhesive



Order designation	Packing content	Minimum order quantity	Item number
Firestop putty bandage CFS-PBA	5 m	1 pc	2062876

CP 636 FIRESTOP MORTAR

APPLICATIONS

- Permanent firestopping of cables, cable trays, and non-combustible pipes in medium to large wall and floor openings
- Single, multiple and mixed penetrations
- Medium to large multiple penetrations in concrete and masonry in combination with other products

ADVANTAGES

- Easier to install – consistency can be varied for application with a trowel or commercially available pumps
- Excellent thermal insulating properties
- Minimal shrinkage during curing and no spalling in event of fire



Order designation	Packing content	Minimum order quantity	Item number
CP 636 firestop mortar	20 kg	1	334897

INSTALLATION INSTRUCTIONS

CFS-RCC #2126526

2x
4x
8x
8x

CFS-RCC EXT #2126527

2x
4x
4x
4x

1

$y \leq 162 \text{ mm}$
 $x \leq 562 \text{ mm}$

$x \leq 162 \text{ mm}$ 1x CFS-RCC
 $x \leq 362 \text{ mm}$ 1x CFS-RCC + 1x CFS-RCC EXT
 $x \leq 562 \text{ mm}$ 1x CFS-RCC + 2x CFS-RCC EXT

2

? x

min. 3x min. 4x min. 6x

3

4

5

19 mm
19 mm

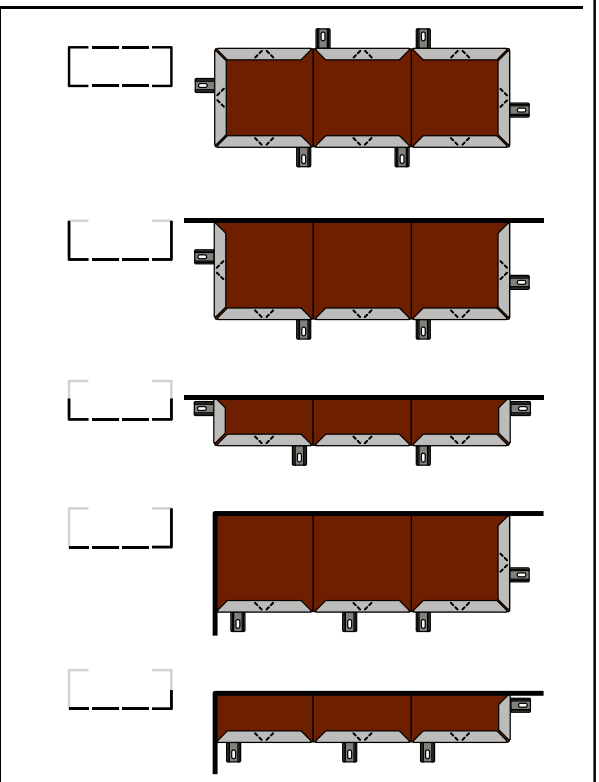
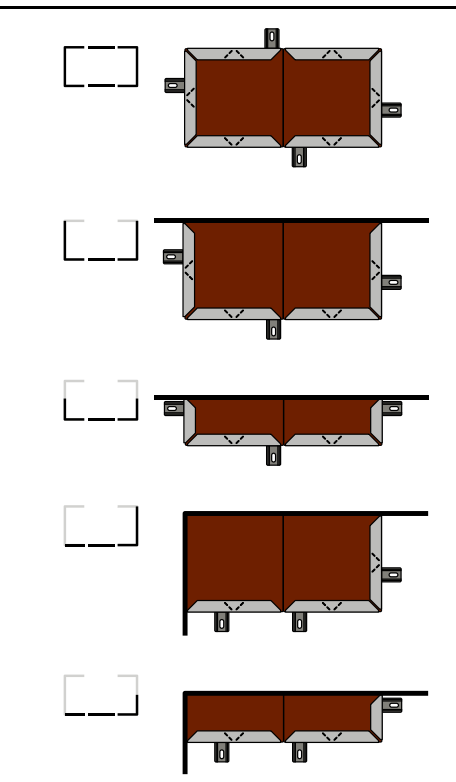
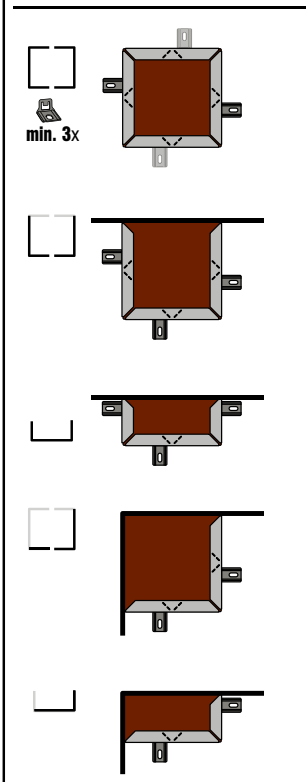
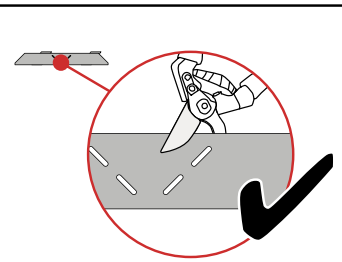
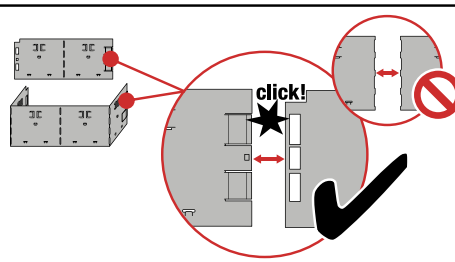
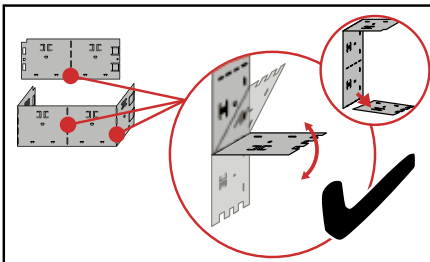
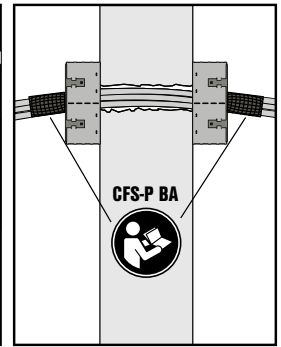
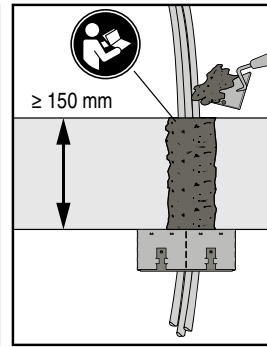
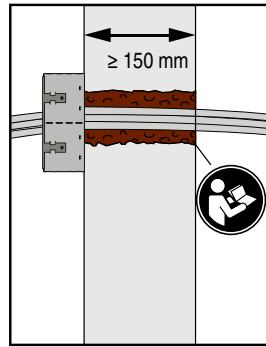
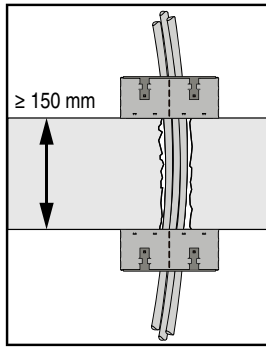
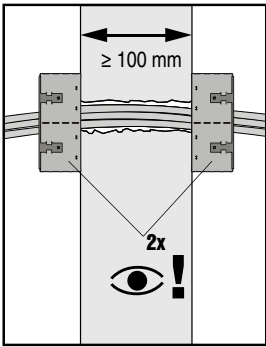
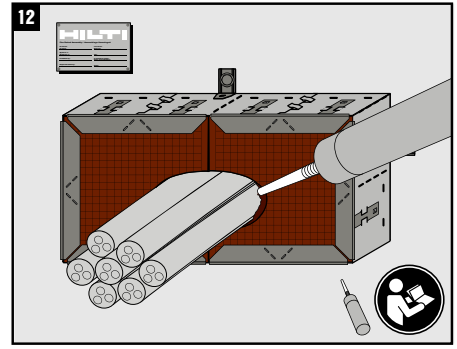
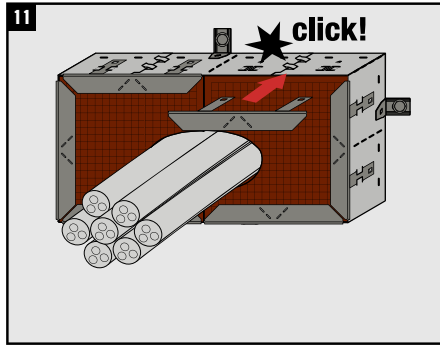
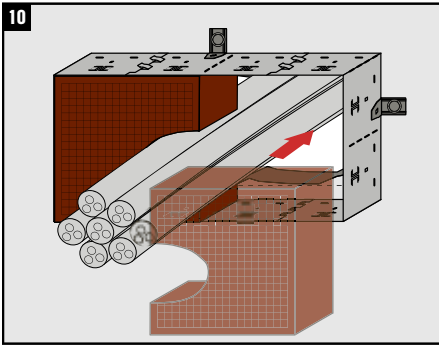
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7

8

9

INSTALLATION INSTRUCTIONS



Abbreviations used in drawings

A	Hilti CFS-RCC firestop cable collar
E	Building element (rigid or flexible wall construction, floor)
t_E	Thickness of building element
t_A	Thickness of seal
A_i	Hilti CFS-F FX firestop foam
A_{ia}	Hilti CFS-FIL firestop filler
E_i	Gypsum frame
B	2 layers of Hilti CFS-P BA firestop putty bandage
W_A	Width of frame
W	Width of opening
M	Mortar
W_1	Opening dimension
A	Old material (e.g. paper, boards, foams, intumescent products, ...)
C_1	Cables
C_2	Condensate pipe
C_3	Copper pipe
S_i	Distance between penetration and seal edge
S_a	Horizontal distance between cable collars linear in cluster arrangement
S_b	Vertical distance between cable collars in cluster arrangement

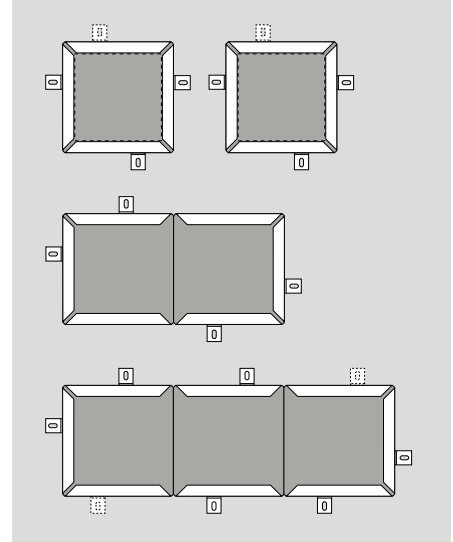
References to standards mentioned in the ETA

EN 998	Graphical symbols for use in the labeling of medical devices
EN 1366-3	Fire resistance tests for service installations - Part 3: Penetration seals
EN ISO 717-1	Acoustics – Rating of sound insulation of buildings and of building elements – Part 1: Airborne sound insulation
EN 10140-2	Acoustics – Laboratory measurement of sound insulation of building elements – Part 2: Measurement of airborne sound insulation
EN 1026	Windows and doors – Air permeability – Test method
EN 12086	Thermal insulating products for building applications – Determination of water vapor transmission properties
EN ISO 12572	Hygrothermal performance of building materials and products – Determination of water vapor transmission properties (ISO 12572:2001);
EN 1226	Plastic piping systems – Glass-reinforced thermosetting plastic (GRP) pipes – Test method to prove the resistance to initial ring deflection
EN 12664	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Dry and moist products with medium and low thermal resistance
EN 12667	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance
EN 12939	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Thick products of high and medium thermal resistance;
EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests
EN 13501-2	Fire classification of construction products and building elements – Part 2: Classification using test data from fire resistance tests
EN 1451-1	Plastic piping systems for soil and waste discharge (low and high temperature) within the building structure – Polypropylene (PP) – Part 1: Specifications for pipes, fittings and the system
EN 1451-2	Plastic piping systems for water supply and for buried and above-ground drainage and sewerage under pressure – Unplasticized poly(vinyl chloride) (PVC-U) - Part 2: Pipes
EN 520	Gypsum plasterboard – Definitions, requirements and test methods;
EN ISO 15494	Plastic piping systems for industrial applications – Polybutylene (PB), polyethylene (PE) and polypropylene (PP) – Specifications for components and the system; Metric series
EOTA TR 001	Determination of impact resistance of panels and panel assemblies
EOTA TR 024	Characterization. Aspects of durability and factory production control for reactive materials. Components and products.
ETAG 026	Fire stopping and fire sealing products

CONFIGURATION TYPES

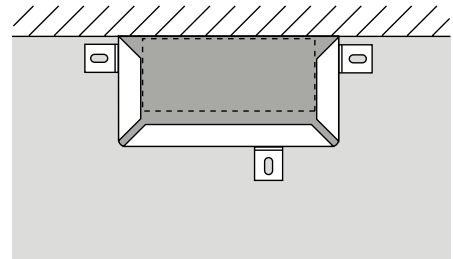
Basic configuration

Hilti CFS-RCC firestop cable collar and Hilti CFS-RCC EXT firestop cable collar extension can be combined as single, double or triple units. The installer can combine up to three units in a horizontal or vertical configuration.



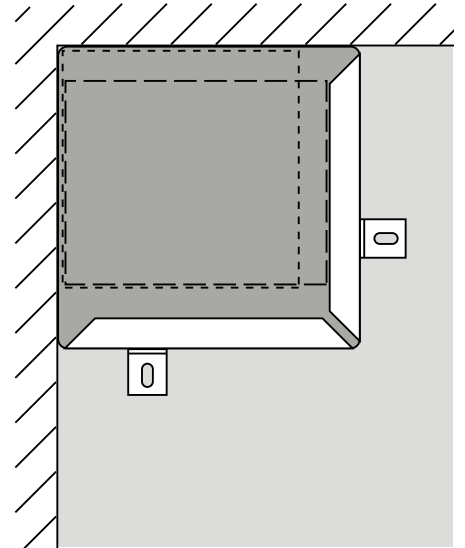
Side configuration

The units can also be cut in half and the housing adjusted in size accordingly. Up to three units can be combined in this way.



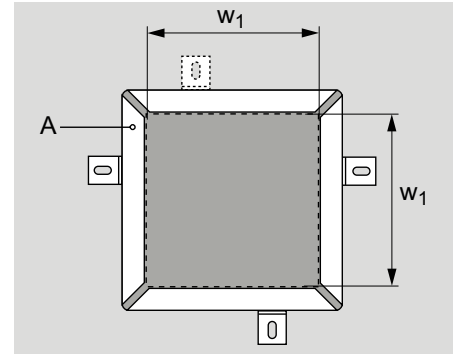
Corner configuration

The units can also be installed in corners as shown.



SEAL AND OPENING SIZES

- The cable collar inlay must be cut to fit the penetrating services.
- A boundary strip of at least 19 mm inlay must be left at each free edge of the collar.
- The total cross section of the penetrating services (including cable supporting systems such as cable trays, etc.) must not exceed 60% of the total seal size.
- In a single unit application, the area $W_1 \times W_1$ corresponds to 60% of the total seal size and can be 100% filled with cables.



Dimensions [mm × mm]	Basic configuration	Corner configuration	Side configuration
Seal	200 × 200 (single), 200 × 400 (double), 200 × 800 (triple)		
	162 × 162 (single)	181/81 × 181 (single)	181/81 × 162 (single)
Opening [$W_1 \times W_1$]	162 × 362 (double)	181/81 × 381 (double)	181/81 × 362 (double)
	162 × 562 (triple)	181/81 × 581 (triple)	181/81 × 562 (triple)

FASTENING

SELECTION OF THE MEANS OF FASTENING

Anchoring solution		Drywall	Rigid wall	Floor
Screw anchors	HUS3 6 × 40/5	X	X	X
	HUS3 6 × 40/5	X	X	X
Expansion anchors	HAS M8 20/10		X	X
	HST M8		X	X
Undercut anchors	HPD M10/8		X	X
Internally threaded anchors	HKD M8/30		X	X
Cavity/toggle anchors	HTBS 6/60	X		
	HHD-S M6 25 × 64	X		
Chemical anchors	Hilti HY 70		X	X
	Hilti HY 270		X	X
	Hilti MM Plus		X	X
	Hilti HFX		X	X
	DBZ 6/45		X	X
Others	HHD-S M6 25 × 64		X	X
	Screws with washer	X		
	Threaded rods with nuts and washer	X	X	X

NUMBER OF FASTENING POINTS

Basic configuration	3	4	6
Side configuration	3	3	4
Corner configuration	2	3	4

At least one fastening per side and per housing element. At least 3 fastenings for the single basic configuration. A minimum of one on the long side of the U-shape is mandatory. For side and corner configurations, no fastenings are required at the side where the collar meets the connecting building element (e. g. wall, floor).

SEAL TYPES

There are several seal types:

- Both sides at the end wall/floor
- Both sides plus foam inlay at the end wall/floor
- One side application with FX foam

Both sides

The penetration seal comprises a wall/floor and two Hilti cable collars (A). (fig. 1)
Aperture framing is not necessary.

In some cases, for cables, a Hilti CFS-P BA firestop putty bandage (see fig. 1a/1b) is required or it is necessary to increase the t_E for higher ratings.

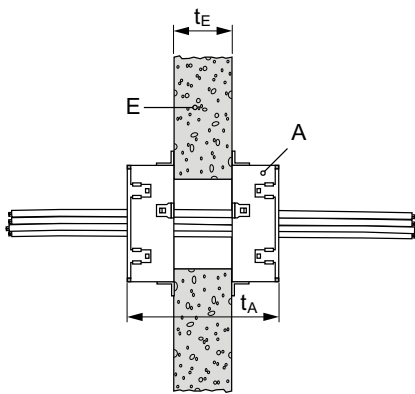


Fig. 1: Both sides

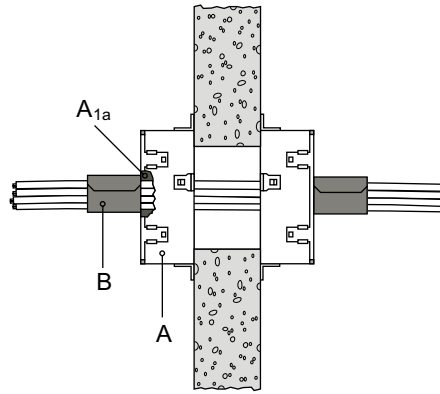


Fig. 1a: CFS-P BA wall

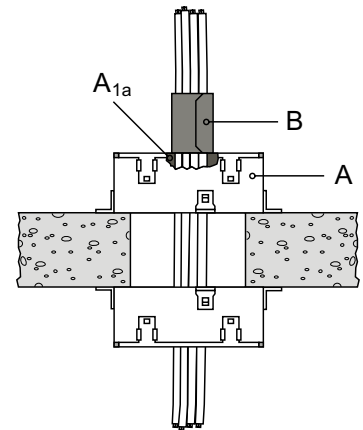


Fig. 1b: CFS-P BA floor

Both sides plus FX Foam

The penetration seal comprises a wall/floor and two Hilti cable collars (A) in which all visible Polyurethane inlay (up to the corner profile of the metal housing) is replaced with Hilti CFS-F FX firestop foam A_1 . (fig. 2)

Aperture framing is not necessary.

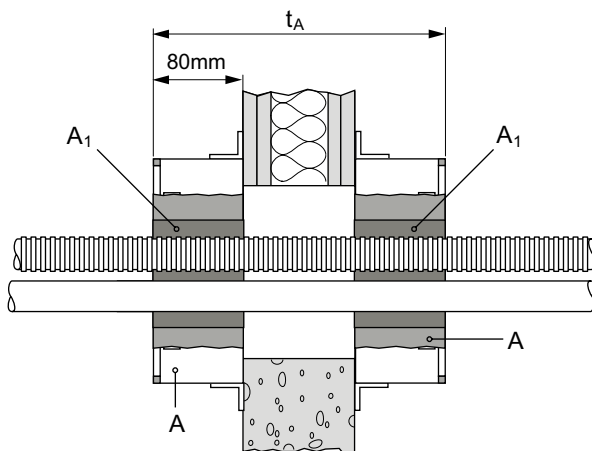


Fig. 2: Seal type:
Both sides plus foam inlay

One-sided wall

For one-Sided applications, a frame made from gypsum board (E_1) may be fastened to the wall around the opening in order to increase the thickness (t_E) of the wall to ≥ 150 mm, as shown in fig. 3.

The frame (E_1) must cover a width (w_A) ≥ 100 mm and must be fastened with metal screws, as shown in fig. 4.

For wall applications, the opening must be completely filled with Hilti CFS-F FX firestop foam (A_1).

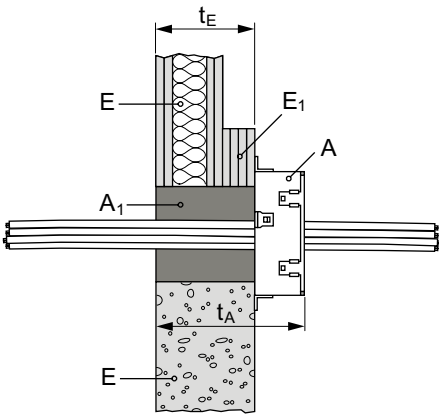


Fig. 3: Seal type: One-sided

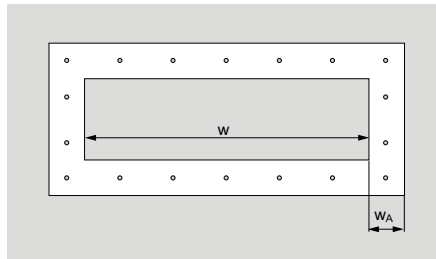


Fig. 4: Gypsum board frame (E_1), front view

Floor – single sided RCC

For floor applications, the annular space between services and floor edges (E) has to be filled with standard gypsum and lime or cement-based mortar (M) with a compressive strength minimum 1 N/mm^2 (M1-M10 mortar in accordance with EN 998, e.g. Hilti CP 636), as shown in fig. 5.

Gaps between services and Hilti firestop cable collar (A) are to be filled with Hilti CFS-FIL firestop filler to a depth of 20 mm.

In some cases, a thickness t_E of 200 mm is required in order to achieve a higher rating.

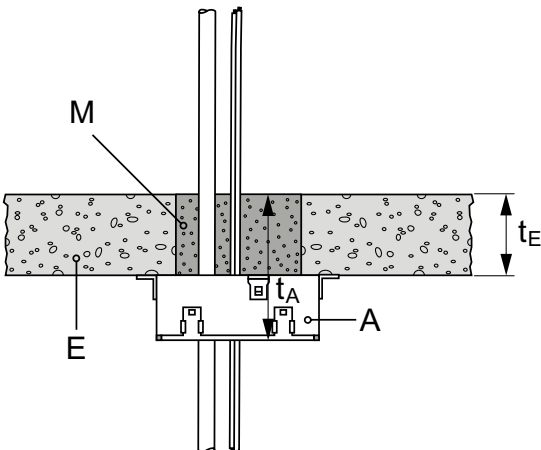


Fig. 5: Seal type:
One sided for floor applications

Filling gaps in penetration seals

Gaps between services and the Hilti firestop cable collar are to be filled with Hilti CFS-FIL firestop filler (A_{1a}), depth 20 mm, as shown in fig. 6.

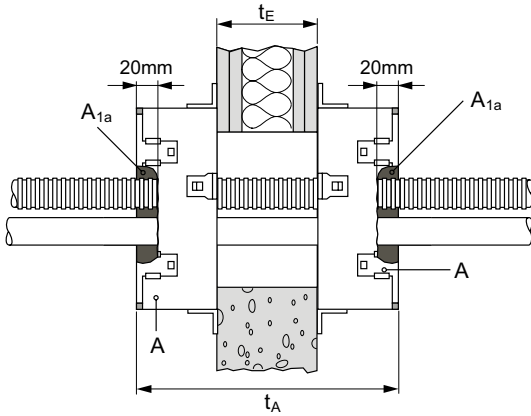
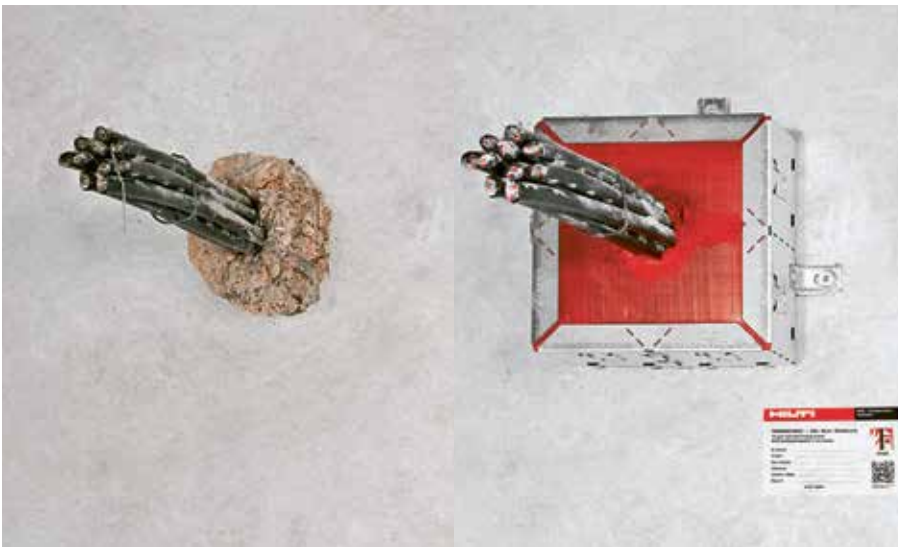


Fig. 6: Penetration sealed with filler

Application with existing firestop installations or in renovation

Old materials (A', e.g. unknown material, paper, boards, foams, intumescent products, sleeved opening/cladding tubes...) can remain inside the wall or floor opening between two Hilti cable collars (A). These have no negative influence on the fire resistance performance of the collar system.



PENETRATING SERVICES

CABLES

Penetrating services	Description
Small cables	All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fiber cables, with or without cable supports) with a diameter $\varnothing \leq 21$ mm.
Medium and large cables	All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fiber cables, with or without cable supports) with a diameter $\varnothing \leq 80$ mm.
Cable bundles	Tied cable bundles with a diameter $\varnothing \leq 150$ mm consisting of small cables each with a diameter $\varnothing \leq 21$ mm. For tied cable bundles the space between the cables does need to be sealed.
Cable support structures	Perforated or unperforated metal cable trays and steel cable ladders with a melting point higher than 1100 °C (e.g. galvanized steel, stainless steel). Trays with organic coatings are included if their overall classification is minimum A2 in accordance with EN 13501-1. All cables are classified with and without cable support structures.
Waveguides coaxial	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 158-50 J 50.4 mm RFS Radialflex RLKW 78-50 \varnothing 28.5 mm RFS Radialflex RLKU 158-50 JFLA \varnothing 48.2 mm

Angle of penetrating services

Cables must lie perpendicular to the seal surface. Cables ≤ 21 mm in diameter may also be fed through with a 90° bend parallel to the wall/floor surface (see fig. 7).

In this case, up to 2 metal segments can be removed to make space for cable penetration. Three fixing hooks must be used to fasten the collar.

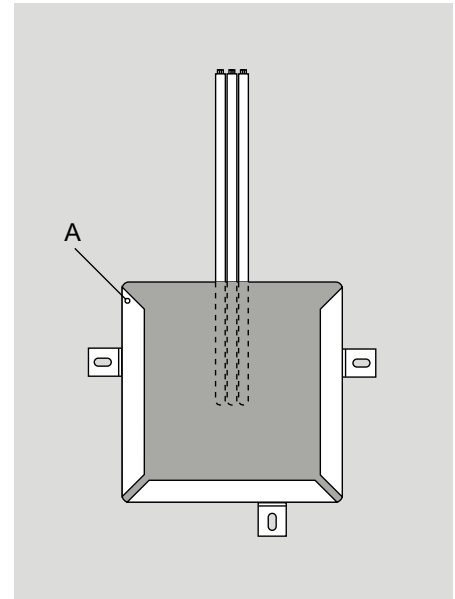


Fig. 7: Bent cables

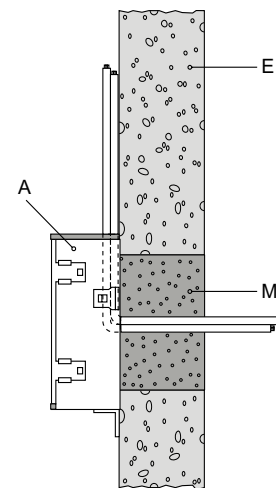


Fig. 7: Bent cables

Conduits

Penetrating services	Description
Single conduits Ø ≤ 16 mm	Rigid, flexible and pliable plastic conduits and metal conduits with a diameter Ø ≤ 16 mm with or without cables.
Single conduits Ø ≤ 50 mm	Rigid, flexible and pliable plastic conduits with a diameter Ø ≤ 50 mm with or without cables.
Conduit bundles	Bundles with a diameter Ø ≤ 80 mm of rigid, flexible and pliable plastic conduits with a max. diameter Ø ≤ 50 mm , with or without cables.

PIPES

Mineral wool insulation – non combustible insulation

Mineralwool pipe insulation, e.g with the brands. (Rockwool: RS800, Conlit 150, ProRox WM 960, Klimarock) has to be with an melting point ≥ 1000°C, with an reaction to fire class (min.) A2L-s1, d0 acc. EN 13501-1.

Foamed elastomeric insulation – combustible insulation

Foamed elastomeric insulations include the following brand names:

Armstrong Armaflex AF, Armstrong Armaflex SH, Armstrong Armaflex Ultima, Armstrong Armaflex HT, nmc Insul-Tube normal quality, nmc Insul-Tube H-Plus, Kaimann Kaiflex KK, Kaimann Kaiflex KK-Plus, L'isolante k-Flex H, L'isolante k-Flex HT, L'isolante k-Flex ECO, L'isolante k-Flex ST, L'isolante k-Flex ST-Plus

Combustible pipes (non insulated)

Type	Pipe Ø [mm]	Wall thickness [mm]	Condition
PVC pipes (EN 1451-1/1452-2)	50	1,8 ≤ t ≤ 3,7	U/U
PE pipes (EN ISO 15494) ABS other for SAN+PVC EN standard 1455-1	50	1,8 ≤ t ≤ 4,6	U/U
PP pipes (EN1451)	50	1,8 ≤ t ≤ 3,0	U/U
PP pipes (other/no standard)*	50	1,8 ≤ t ≤ 2,0	U/U

* include the following brand names:

Friatec db blue, Rehau Raupiano, Poloplast Polokal NG, Wavin SiTec, Geberit Silent PP, Coes Blue Power, Coes PhoNoFire, Valsir Triplus, Pipelive Master 3, Marely Silent, Mainpex Mainpower, Poloplast Polokal 3S, Ostendorf Solan db, Valsir Silere Wavin AS.

Copper pipes (insulated)

Insulation type	Pipe Ø [mm]	Wall thickness [mm]	Insulation thickness [mm] LS	Total insulation length [mm] LS	Condition
Foamed elastomeric insulation	12-28	1.0 ≤ t ≤ 14.2	7.5 - 35.0 e.g. AF1 - AF6	≥ 800	C/U
	28-42	1.0 ≤ t ≤ 14.2	13.5 - 38.5 e.g. AF2 - AF6	≥ 800	C/U
Mineral wool insulation	12-28	1.0 ≤ t ≤ 14.2	20 e.g. rock wool RS 800	≥ 800	C/U
	28-42	1.0 ≤ t ≤ 14.2	40 e.g. rock wool RS 800	≥ 1000	C/U

Steel pipes (insulated)

Insulation type	Pipe Ø [mm]	Wall thickness [mm]	Insulation thickness [mm] LS	Total insulation length [mm] LS	Condition
Foamed elastomeric insulation	40-108	1.2 ≤ t ≤ 14.2	7.5 - 35.0 e.g. AF1 - AF6	≥ 1100	C/U
	108-114	2.0 ≤ t ≤ 14.2	13.5 - 36.5 e.g. AF2 - AF6	≥ 1100	C/U
Mineral wool insulation	12-108	1.2 ≤ t ≤ 14.2	20 e.g. rock wool RS 800	≥ 1000	C/U
	108-114	2.0 ≤ t ≤ 14.2	40 e.g. rock wool RS 800	≥ 1000	C/U

Aluminum composite pipes (insulated)*

Insulation type	Pipe Ø [mm]	Wall thickness [mm]	Pipe insul. thickness [mm]	Total pipe insul. length [mm] LS	Condition
Foamed elastomeric insulation	16-42	$2.0 \leq t \leq 6.0$	8.0 – 36.0 e.g. AF1 – AF6	≥ 800	U/C

* include the following brand names:

Geberit Mepla, Fränkische Alpex F50 Profi, Rehau Rautitan stabil, GF Sanipex, Prineto Stabil, Kekelit Kelox, TECEflex, Uponor Uni Pipe Plus, Viega SANIFIX Fosta

Special penetration bundle e.g. Climasplit

The penetration service is a bundle (distance between $C_1/C_2/C_3 \geq 0$ mm) consisting of 2 cables (C_1), 1 condensate pipe (C_2) and 2 cooper pipes (C_3) with combustibile insulation.

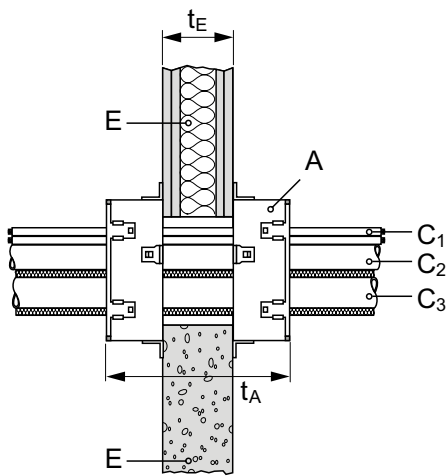


Fig. 8: Climasplit system

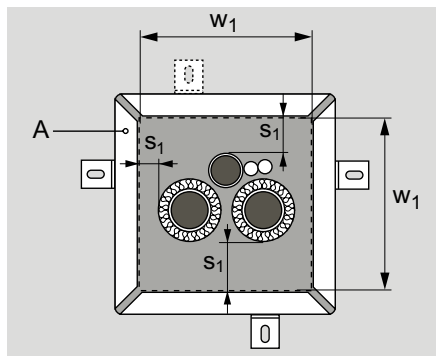


Fig. 8a: Distance between $C_1/C_2/C_3$

Special penetration bundles with combustibile insulation – foam elastomeric insulation

Copper pipe (C_3) (C/U) with 9 mm foamed elastomeric insulation, e.g. AF 1		Plastic pipes (C_2) (U/U)	Cables (C_1)	
Pipe 1 Ø mm × wall thickness	Pipe 2 Ø mm × wall thickness	(PVC, PE, fabric tube...) Ø mm × wall thickness	Cable 1 mm ²	Cable 2 mm ²
42 × 1.2	28 × 1.0	up to 40 × 2.0	5 × 6	5 × 6
35 × 1.2	18 × 1.0	up to 32 × 2.0		
28 × 1.0	12 × 0.8	up to 25 × 2.0		
18 × 1.0	8 × 0.8	up to 20 × 2.0		
12 × 0.8	6 × 0.8			
8 × 0.8				
6 × 0.8				
35 × 1.2	35 × 1.2			

All services in these special penetration bundles can be used as single penetrations.

Special penetration bundles with PE/PEF insulation – (combustible insulation)

Copper pipe (C ₃) (C/U) with 9mm PE/ PEF insulation, e.g. (WicuFlex or SangiTwin)		Condensate pipe (C ₂) (U/U)	Cables (C ₁)	
Pipe 1 Ømm × wall thickness	Pipe 2 Ømm × wall thickness	(PVC, PE, fabric tube...) Ømm × wall thickness	Cable 1 mm ²	Cable 2 mm ²
22 × 1.0	22 × 1.0	up to 32 × 2.0	5 × 6	5 × 6
19 × 1.0	12.7 × 0.8	up to 25 × 2.0		
18 × 1.0	18 × 1.0	up to 20 × 2.0		
12 × 0.8	12 × 0.8			
8 × 0.8	8 × 0.8			
6 × 0.8	6 × 0.8			

Mixed penetration seals in walls and floors

A mixed penetration seal allows the installation / combination of all different types of services in one opening. The table indicates the distances between penetrants.

Mixed penetration seals in walls

Distance from – to (mm)	Cables	Conduits	Wave-guides	Plastic pipes	Metal pipes, combustible insulation	Metal pipes, uncombustible insulation	Alu composite pipes	Special applications bundles/systems	Seal edge
Cables	0	10	20	20	10	10	10	20	0
Conduits	10	0	20	0	20	20	20	20	0
Waveguides	20	20	20	20	20	20	20	20	0
Plastic pipes	20	0	20	20	0	0	0	20	0
Metal pipes, combustible insulation	10	20	20	0	20	10	0	20	0
Metal pipes, non-combustible	10	20	20	0	10	0	0	20	0
Alu composite pipes	10	20	20	0	0	0	20	20	0
Special penetration bundle	20	20	20	20	20	20	20	20	0
Seal edge	0	0	0	0	0	0	0	0	0

Mixed penetration seals in floors

Distance from – to (mm)	Cables	Conduits	Wave-guides	Plastic pipes	Metal pipes, combustible insulation	Metal pipes, uncombustible insulation	Alu composite pipes	Special applications bundles/systems	Seal edge
Cables	0	20	20	20	10	10	10	20	0
Conduits	20	20	20	0	20	20	20	20	0
Waveguides	20	20	20	20	20	20	20	20	0
Plastic pipes	20	0	20	20	20	20	20	20	0
Metal pipes, combustible insulation	10	20	20	20	20	10	20	20	0
Metal pipes, non-combustible	10	20	20	20	10	0	20	20	0
Alu composite pipes	10	20	20	20	20	20	20	20	0
Special penetration bundle	20	20	20	20	20	20	20	20	0
Seal edge	0	0	0	0	0	0	0	0	0

DISTANCES BETWEEN CLUSTER ARRANGEMENTS

Minimum distances:

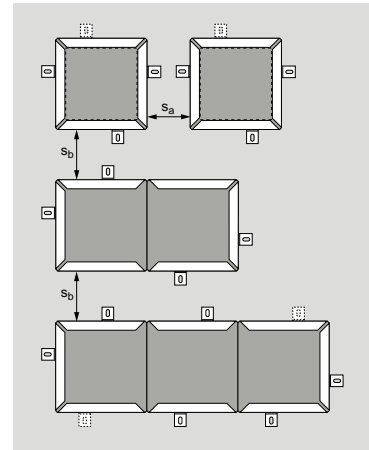
$S_a = 40$ mm (horizontal distance between cable collars, linear)

$S_b = 40$ mm (vertical distance between cable collars in cluster arrangement)

When S_a and S_b are at least 60 mm, the distance between openings is 78 mm

Distances for pipe and cable support structures

In walls, the distance from the surface of the separating element to the first supporting structure (distance from the face of the wall on both sides) must be equal or less than 500 mm. In walls the distance from the face of the wall on both sides): ≤ 500 mm.



MINIMUM DISTANCES FOR PENETRATIONS

The following separating distances must be taken into account:

Single and multiple penetration seals in walls and floors

Service	Minimum distance between any service and the seal edge (mm)	Minimum distance between any two or more cables (mm)
Cables	0	0
Conduits $\varnothing \leq 16$ mm	0	0

Service	Minimum distance between any service and the seal side edge (mm)	Minimum distance between any two or more services (mm)
Conduits $\varnothing > 16$ mm	0	20
Waveguides	0	20
Plastic pipes	0	20
Metal pipes	0	20
Aluminium composite pipes	0	20
Special penetration bundles	0	0

Distances for pipe and cable support structures

The distance from the surface of the separating element to the first supporting structure:

- a) Wall (distance from the face of the wall on both sides): ≤ 500 mm

RATINGS FOR PENETRATIONS

Flexible walls

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

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

Rigid walls

The wall must have a minimum thickness of 100 mm and be made of concrete, aerated concrete or masonry with a minimum density of 550 kg/m³.

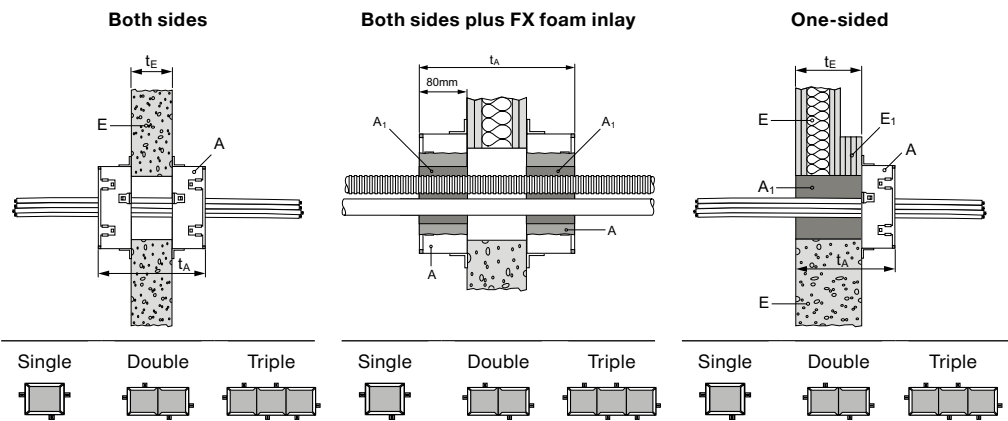
Rigid floors

The floor must have a minimum thickness of 150 mm and be made of aerated concrete or concrete with a minimum density of 550 kg/m³.

The walls/floors must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfil the requirements of the relevant Eurocode.

Wall ≥ 100 mm for basic configuration

Housing concept



Blank seal

	Single	Double	Triple	Single	Double	Triple	Single	Double	Triple
Blank seal	EI120	EI120	EI120	EI120	EI90	EI90	EI120	EI90	EI90

Cables

Small cables $\varnothing \leq 21$ mm	EI120	EI90	EI90	EI120	EI90	EI90	EI120	EI90	EI90
Small cables $\varnothing \leq 21$ mm, bent 90°	EI90	EI90	EI90	-	-	-	-	-	-
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90
Cable bundle $\varnothing \leq 150$ mm	EI120	EI90	EI90	EI120	EI90	EI90	EI120	EI90	EI90
Unsheathed cables (wires)	EI60	EI60	EI60	-	-	-	-	-	-
Waveguides	EI120	EI120	EI120	-	-	-	EI120	EI90	EI90

Conduits

Single conduits $\varnothing \leq 16$ mm	EI120	EI120	EI120	EI90	EI90	EI90	EI120	EI90	EI90
Single conduits $\varnothing \leq 50$ mm	EI120	EI120	EI120	-	-	-	-	-	-
Conduit bundle	EI120	EI120	EI120	-	-	-	-	-	-

Special penetration bundles

Bundle with PE/PEF insulation	EI120	EI120	EI120	-	-	-	EI120	EI90	EI90
Bundle with foamed elastomeric insulation	EI120	EI120	EI120	-	-	-	EI120	EI90	EI90

Pipes

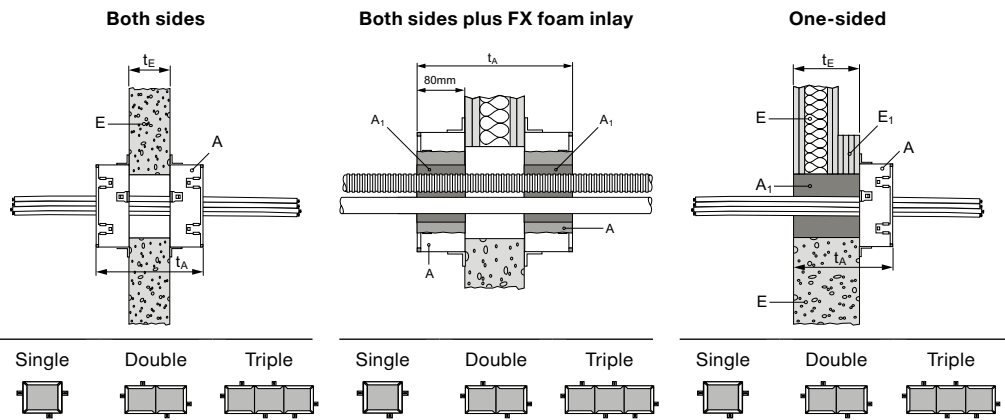
Combustible pipes (U/U)	EI120	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with non-combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with combustible insulation $\varnothing \leq 108$ mm	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with combustible insulation $\varnothing \leq 114$ mm	EI90	EI90	EI90	-	-	-	-	-	-
Steel pipes (C/U) with non-combustible insulation $\varnothing \leq 108$ mm	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with non-combustible insulation $\varnothing \leq 114$ mm	EI90	EI90	EI90	-	-	-	-	-	-
Aluminum composite pipes (U/C) with combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-

Mixed seals

Mixed seals without electrical cables	EI120	EI120	EI120	-	-	-	-	-	-
Mixed seals with up to large electrical cables	EI90	EI90	EI90	-	-	-	-	-	-

Wall ≥ 100 mm for corner and side configuration

Housing concept



	Single	Double	Triple	Single	Double	Triple	Single	Double	Triple
Blank seal	EI120	EI120	EI120	EI120	EI90	EI90	EI120	EI90	EI90
Cables									
Small cables $\varnothing \leq 21$ mm	EI120	EI90	EI90	EI120	EI90	EI90	EI120	EI90	EI90
Small cables $\varnothing \leq 21$ mm, bent 90°	EI90	EI90	EI90	-	-	-	-	-	-
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90
Cable bundle $\varnothing \leq 150$ mm	EI120	EI90	EI90	EI120	EI90	EI90	EI120	EI90	EI90
Unsheathed cables (wires)	EI60	EI60	EI60	-	-	-	-	-	-
Waveguides	EI120	EI120	EI120	-	-	-	EI120	EI90	EI90
Conduits									
Single conduits $\varnothing \leq 16$ mm	EI120	EI120	EI120	EI90	EI90	EI90	EI120	EI90	EI90
Single conduits $\varnothing \leq 50$ mm	EI120	EI120	EI120	-	-	-	-	-	-
Conduit bundle	EI120	EI120	EI120	-	-	-	-	-	-
Special penetration bundles									
Bundle with PE/PEF insulation	EI120	EI120	EI120	-	-	-	EI120	EI90	EI90
Bundle with foamed elastomeric insulation	EI120	EI120	EI120	-	-	-	EI120	EI90	EI90
Pipes									
Combustible pipes (U/U)	EI120	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with non-combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with combustible insulation $\varnothing \leq 114$ mm	EI90	EI90	EI90	-	-	-	-	-	-
Steel pipes (C/U) with non-combustible insulation $\varnothing \leq 114$ mm	EI90	EI90	EI90	-	-	-	-	-	-
Aluminum composite pipes (U/C) with combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Mixed seals									
Mixed seals without electrical cables	EI120	EI120	EI120	-	-	-	-	-	-
Mixed seals with up to large electrical cables	EI90	EI90	EI90	-	-	-	-	-	-

Rigid wall ≥ 150 mm for basic configuration

To obtain higher ratings, a Hilti CFS-P BA firestop putty bandage is required or it is necessary to increase the t_E .

Housing concept	Both sides			Both sides plus 2 layers of CFS-P BA on each side			Both sides ≥ 200		
	Single	Double	Triple	Single	Double	Triple	Single	Double	Triple
Cables									
Small cables $\varnothing \leq 21$ mm	EI120	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI120
Small cables $\varnothing \leq 21$ mm, bent 90°	EI120	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI120
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI120	EI120
Cable bundle $\varnothing \leq 150$ mm	EI120	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI120

Rigid wall ≥ 150 mm for corner and side configuration

To obtain higher ratings, a Hilti CFS-P BA firestop putty bandage is required or it is necessary to increase the t_E .

Housing concept	Both sides			Both sides plus 2 layers of CFS-P BA on each side			Both sides ≥ 200		
	Single	Double	Triple	Single	Double	Triple	Single	Double	Triple
Cables									
Small cables $\varnothing \leq 21$ mm	EI120	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI90
Small cables $\varnothing \leq 21$ mm, bent 90°	EI90	EI90	EI90	EI90	EI120	EI120	EI90	EI120	EI120
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI90	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI120
Cable bundle $\varnothing \leq 150$ mm	EI120	EI90	EI90	EI120	EI120	EI120	EI120	EI120	EI120

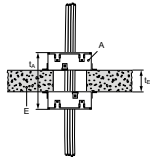
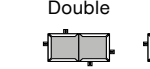
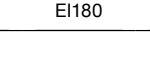
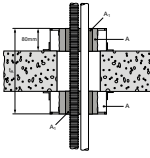
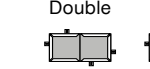
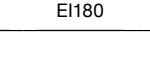
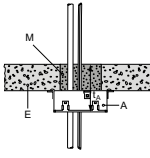
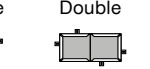
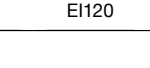









RATINGS FOR PENETRATIONS IN VARIOUS FLOOR TYPES

Rigid floors

The floor must have a minimum thickness of 150 mm and be made of concrete or aerated concrete, with a minimum density of 550 kg/m³.

The wall/floors must be classified in accordance with EN 13501-2 for the required fire resistance period or fulfil the requirements of the relevant Eurocode.

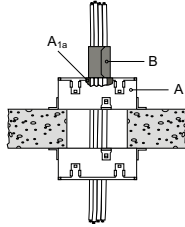
Rigid floor ≥ 150 mm for basic configuration

Housing concept	Both sides			Both sides plus FX Foam inlay			One-sided		
									
	Single 	Double 	Triple 	Single 	Double 	Triple 	Single 	Double 	Triple 
Blank seal	EI180	EI180	EI180	EI180	EI180	EI180	EI120	EI120	EI120
Cables									
Small cables $\varnothing \leq 21$ mm	EI180	EI180	EI180	EI180	EI180	EI180	EI180	EI180	
Small cables $\varnothing \leq 21$ mm, bent 90°	EI180	EI180	EI180	-	-	-	-	-	-
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90
Cable bundle $\varnothing \leq 150$ mm	EI120	EI120	EI120	EI120	EI120	EI120	EI120	EI120	EI120
Unsheathed cables (wires)	EI90	EI90	EI90	-	-	-	EI120	EI120	EI120
Waveguides	EI180	EI120	EI120	-	-	-	EI120	EI120	EI120
Waveguides - Heliflex	EI120	EI120	EI120	-	-	-	EI120	EI120	EI120
Conduits									
Single conduits $\varnothing \leq 16$ mm	EI180	EI180	EI180	EI90	EI90	EI90	EI180	EI180	EI180
Single conduits $\varnothing \leq 50$ mm	EI120	EI120	EI120	-	-	-	-	-	-
Conduit bundle	EI120	EI120	EI120	-	-	-	-	-	-
Special penetration bundles									
Bundle with PE/PEF insulation	EI120	EI120	EI120	-	-	-	EI120	EI120	EI120
Bundle with foamed elastomeric insulation	EI120	EI120	EI120	-	-	-	EI120	EI120	EI120
Pipes									
Combustible pipes (U/U)	EI180	EI180	EI180	-	-	-	-	-	-
Copper pipes (C/U) with combustible insulation	EI180	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with non-combustible insulation up to 28 mm	EI180	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with non-combustible insulation up to 42 mm	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with combustible insulation up to 114 mm	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with non-combustible insulation up to 108 mm	EI120	EI120	EI120	-	-	-	-	-	-
Aluminium composite pipes (U/C) with combustible insulation	EI180	EI180	EI180	-	-	-	-	-	-
Mixed seals									
Mixed seals without electrical cables	EI120	EI120	EI120	-	-	-	-	-	-
Mixed seals with up to large electrical cables	EI90	EI90	EI90	-	-	-	-	-	-

**Rigid floor ≥ 150 mm for basic configuration –
with 2 layers CFS-P BA on top side**

Housing concept

Both sides plus 2 layers of CFS-P BA on top side



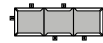
Single



Double



Triple



Cables

Small cables $\varnothing \leq 21$ mm	EI180	EI180	EI180
Small cables $\varnothing \leq 21$ mm, bent 90°	EI180	EI180	EI180
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI180	EI180	EI180
Cable bundle $\varnothing \leq 150$ mm	EI120	EI120	EI120

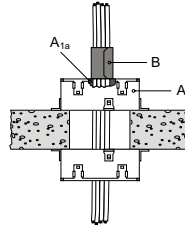
Rigid floor ≥ 150 mm for corner and side configuration

Housing concept	Both sides			Both sides plus FX foam inlay			One-sided		
	Single	Double	Triple	Single	Double	Triple	Single	Double	Triple
Blank seal	EI180	EI180	EI180	EI180	EI180	EI180	EI120	EI120	EI120
Cables									
Small cables $\varnothing \leq 21$ mm	EI180	EI180	EI180	EI180	EI180	EI180	EI180	EI180	EI180
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90	EI90
Cable bundle $\varnothing \leq 150$ mm	EI120	EI120	EI120	EI120	EI180	EI180	EI120	EI120	EI120
Unsheathed cables (wires)	EI90	EI90	EI90	-	-	-	EI120	EI120	EI120
Waveguides	EI120	EI120	EI120	-	-	-	EI120	EI120	EI120
Conduits									
Single conduits $\varnothing \leq 16$ mm	EI180	EI180	EI180	EI90	EI90	EI90	EI180	EI180	EI180
Single conduits $\varnothing \leq 50$ mm	EI120	EI120	EI120	-	-	-	-	-	-
Conduit bundle	EI120	EI120	EI120	-	-	-	-	-	-
Special penetration bundles									
Bundle with PE/PEF insulation	EI120	EI120	EI120	-	-	-	EI120	EI120	EI120
Bundle with foamed elastomeric insulation	EI120	EI120	EI120	-	-	-	EI120	EI120	EI120
Pipes									
Combustible pipes (U/U)	EI180	EI180	EI180	-	-	-	-	-	-
Copper pipes (C/U) with combustible insulation 42mm	EI180	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with non-combustible insulation up to 28mm	EI120	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Copper pipes (C/U) with non-combustible insulation	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with combustible insulation 114 mm	EI180	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with combustible insulation up to 114 mm	EI120	EI120	EI120	-	-	-	-	-	-
Steel pipes (C/U) with non-combustible insulation up to 114mm	EI120	EI120	EI120	-	-	-	-	-	-
Aluminium composite pipes (U/C) with combustible insulation	EI180	EI180	EI180	-	-	-	-	-	-
Mixed seals									
Mixed seals without electrical cables	EI120	EI120	EI120	-	-	-	-	-	-
Mixed seals with up to large electrical cables	EI90	EI90	EI90	-	-	-	-	-	-

**Rigid floor ≥ 150 mm for corner and side configuration –
with 2 layers CFS-P BA on top side**

Housing concept

Both sides plus 2 layers of CFS-P BA on top side



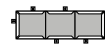
Single



Double



Triple



Cables

Small cables $\varnothing \leq 21$ mm	EI180	EI180	EI180
Medium and large cables $21 \leq \varnothing \leq 80$ mm	EI180	EI180	EI180
Cable bundle $\varnothing \leq 150$ mm	EI120	EI120	EI120

CHARACTERISTICS OF HILTI CFS-RCC 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 in accordance with AgBB (2015) and AFSEET (2009). French VOC regulation (2011). French CMR components (2011). Belgian Regulation (2015). Indoor Air Comfort® (2015). BREEAM International. LEED 4
Protection against noise (airborne sound insulation)	CFS-RCC=Rw (C; Ctr)=63 (-3; -9) dB	EN ISO 140-1. EN 10140-2. EN ISO 717-1
Thermal properties	Thermal conductivity $\lambda = 0.089$ W/mK and thermal resistance $r = 0.55$ m ² K/W	EN 12667
Electrical properties	Electrical volume resistivity: approx. $2.23E+9$ Ω cm Electrical surface resistivity: approx. $47.1E+9$ Ω cm	IEC 60093 (VDE 0303 Part 30): 1993-12
Durability and serviceability	Overall: Category Z2 (for internal use at low humidity)	EOTA TR 024:2009
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).



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