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designated according to Article 29 of the Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment, [www.eota.eu](http://www.eota.eu))

<b>European Technical Assessment</b>	<b>ETA 17/0081 of 21/06/2017</b>
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<b>Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:</b>	<b>UL International (UK) Ltd</b>
<b>Trade name of the construction product</b>	Hilti Firestop Sleeve CFS-SL GA
<b>Product family to which the construction product belongs</b>	Fire Stopping and Sealing Product: • Penetration Seals
<b>Manufacturer</b>	Hilti AG, Feldkircherstrasse 100 FL-9494 Schaan Liechtenstein Internet: <a href="http://www.hilti.com">www.hilti.com</a>
<b>Manufacturing plant(s)</b>	HILTI plant 14
<b>This European Technical Assessment contains</b>	23 Pages including 3 Annexes which form an integral part of this Assessment.
<b>This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of</b>	ETAG 026-2, edition 2011, used as European Assessment Document (EAD).

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## **I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT**

### **1 Technical description of the product**

#### **1.1 CFS-SL GA**

1. A detailed specification of the products listed below is given in document "Identification\_CFS-SL GA" relating to the European Technical Assessment ETA-17/0081 - Hilti Firestop Sleeve which is a non-public part of this ETA.
2. The Hilti Firestop Sleeve CFS-SL is a maintenance free cable management firestop device (cable box), intended to form a seal to reinstate the fire resistance performance of flexible wall, rigid wall, sandwich panel and floor constructions, where they have been provided with openings for the penetration of services. Related acronyms following "CFS-SL" are listed below:
  - GA – rubber Gasket (CFS-SL GA)
  - S – Small diameter device variant (CFS-SL GA S)
  - M – Medium diameter device variant (CFS-SL GA M)
  - L – Long length device variant with same diameter as CFS-SL GA M (CFS-SL GA L)
3. The CFS-SL "sleeve" portion consists of a corrugated steel tube that houses a pair of plastic parts ("tabs") at each end, intumescent wrap strips, and a twistable inner fabric smoke seal. Pressing the tabs allows twisting the fabric smoke seal to close the seal.
4. Two rubber gaskets composed of EPDM, are provided with each sleeve, and are placed on both sides of sleeve - flush to wall/floor surface - to seal the annular gap between edge of opening and perimeter of sleeve. The rubber gaskets are positioned after the sleeve is installed, and pressed against wall/floor by flanges.
5. The two flanges made from steel - also provided with each sleeve - are used to mount the sleeve to the wall or floor (one flange on each side). Flanges are turned clockwise on the threading of the metal housing till tight against rubber gasket and wall/floor surface.
6. For installation details, see Seal Type 1 in Annex A.3. For Fire Resistance Classifications, see Annex B.

The Control Plan is defined in document "Control Plan\_CFS-SL GA" relating to the European Technical Assessment ETA-17/0081 – Hilti Firestop Sleeve, which is a non-public part of this ETA.

## **1.2 Ancillary products**

Acronyms used for ancillary products also follow “CFS-SL” and are listed below:

- GP 40 – The 40 centimeter Gangplate with 3 openings (CFS-SL GP 40)
- GP 60 – The 60 centimeter Gangplate with 4 openings (CFS-SL GP 60)
- GP CAP - The Gangplate CAP for “blank” Gangplate openings (CFS-SL GP CAP)

### 1.2.1 Hilti Firestop Gangplate CFS-SL GP 40 and CFS-SL GP 60

Both Gangplate variants consist of a sandwich type construction of steel plates, ceramic paper, EPDM rubber seal and EPDM foam sealing strips. Gangplates are used only with the Medium and Long diameter Sleeve variants - CFS-SL GA M/L (flanges and rubber gaskets not required.) Gangplates are surface mounted over pre-formed openings, direct to surface of flexible/rigid wall or sandwich panel by twelve screws (CFS-SL GP 40) or fourteen screws (CFS-SL GP 60).

For installation details - see Seal Type 2 in Annex A.3.

### 1.2.2 Hilti Firestop Gangplate CAP CFS-SL GP CAP

The Gangplate CAP consists of a zinc coated, steel plate. It allows for the option of having “blank” openings in a Gangplate (openings without sleeves installed.) The CAPs are installed both sides of wall, in Gangplate openings, each by removing four hexagonal nuts and a flange plate, then by inserting the CAP, and reinstalling the flange plate and nuts.

For installation details, see Seal Type 2a in Annex A.4.

Further ancillary products - used as needed - for annular space filling or additional insulation:

### 1.2.3 Hilti Firestop Acrylic Sealant CFS-S ACR

For Specification, see relevant ETA. For installation details, see Seal Type 1a in Annex A.4.

### 1.2.4 Hilti Firestop Plug CFS-PL 132

For Specification, see relevant ETA. For installation details, see Seal Type 2a in Annex A.4.

### 1.2.5 Hilti Firestop Putty Roll CP 619 T

For Specification, see relevant ETA. For installation details, see Seal Type 1b in Annex A.4.

### 1.2.6 Hilti Firestop Putty Pad CP 617

For Specification, see relevant ETA. For installation details, see Seal Type 1b in Annex A.4.

### 1.2.7 Hilti Firestop Putty Bandage CFS-P BA

For Specification, see relevant ETA. For installation details, see Seal Type 1b in Annex A.4.

For Fire Resistance Classifications, see Annex B.

Technical product literature

Technical Data Sheet Hilti Firestop Sleeve CFS-SL GA including all ancillary products.

**2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): ETAG 026-2**

Detailed information and data is given in Annex A and Annex B.

The intended use of Hilti Firestop Sleeve CFS-SL GA (and ancillary products) is to reinstate the fire resistance performance of flexible or rigid wall, sandwich panel and floor constructions where they are penetrated by services.

1. Construction elements for use of CFS-SL GA to provide a penetration seal in, are detailed in Annex A.1.
2. The provisions made in this European Technical Assessment are based on an assumed working life of the Hilti Firestop Sleeve of 10 years, provided that the conditions laid down in the manufacturer's datasheet and instructions for the packaging / transport / storage / installation / use / repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.
3. Intention for use  
Type Z<sub>2</sub>: intended for uses at internal conditions with humidity classes other than Z<sub>1</sub>, excluding temperatures below 0° C.

### 3 Performance of the product and references to the methods used for its assessment

Product-type:mixed seal		Intended use: Penetration Seal	
Basic requirement for construction work	Basic Requirement	Performance	
<b>BWR 1 Mechanical resistance and stability</b>			
-	None	Not relevant	
<b>BWR 2 Safety in case of fire</b>			
EN 13501-1	Reaction to fire	Class E	
EN 13501-2	Resistance to fire	Annex B	
<b>BWR 3 Hygiene, health and environment</b>			
EN 1026:2000	Air permeability (Device 0% Filled) (CFS-SL GA M/L)	Pressure	Leakage
		10 Pa	0.24 m <sup>3</sup> /(h)
		50 Pa	0.83 m <sup>3</sup> /(h)
		100 Pa	1.38 m <sup>3</sup> /(h)
		150 Pa	1.83 m <sup>3</sup> /(h)
		200 Pa	2.21 m <sup>3</sup> /(h)
		250 Pa	2.59 m <sup>3</sup> /(h)
		300 Pa	2.95 m <sup>3</sup> /(h)
		450 Pa	3.94 m <sup>3</sup> /(h)
600 Pa	4.79 m <sup>3</sup> /(h)		
ETAG 026-2, Annex C	Water permeability (material property)	No performance determined	
Declaration of manufacturer	Release of dangerous substances	Declaration of manufacturer	
<b>BWR 4 Safety in use</b>			
EOTA TR 001:2003	Mechanical resistance and stability	No performance determined	
EOTA TR 001:2003	Resistance to impact/movement	No performance determined	
EOTA TR 001:2003	Adhesion	No performance determined	
<b>BWR 5 Protection against noise</b>			
EN 10140-2/EN ISO 717-1	Airborne sound insulation	No performance determined	
<b>BWR 6 Energy economy and heat retention</b>			
EN 12664, EN 12667 or EN 12939	Thermal properties	No performance determined	
EN ISO 12572 EN 12086	Water vapour permeability	No performance determined	
<b>General aspects relating to fitness for use</b>			
EOTA TR 024:2009, clause 3.1.11 & 3.1.12	Durability and serviceability	Z <sub>2</sub>	
<b>BWR 7 Sustainable use of natural resources</b>			
-	-	No performance determined	

1. The applicant has submitted a written declaration that the product and/or constituents of the product contains no substances which have been classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No. 1272/2008 and listed in the 'indicative list on dangerous substances' of the EGDS – taking into account the installation conditions of the construction product and the release scenarios resulting from there.
2. In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

**4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base**

According to the decision 1999/454/EC – Commission Decision of date 22nd June 1999 on the procedure for attesting the conformity of construction products pursuant to Article 20(2) of Council Directive 89/106/EEC as regards fire stopping, fire sealing and fire protective products, published in the Official Journal of the European Union (OJEU) L178/52 of 14/07/1999, see <http://eur-lex.europa.eu/JOIndex.do> of the European Commission<sup>1</sup>, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table(s) applies (apply).

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	Any	1

**5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD**

**Tasks of the manufacturer:**

**Factory production control:**

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use initial / raw / constituent materials stated in the technical documentation of this European Technical Assessment.

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<sup>1</sup> Official Journal of the European Communities L178/52 of 14/7/1999

The factory production control shall be in accordance with the Control Plan dated 18.05.2017 relating to the European Technical Assessment ETA 17/0081 issued on 21.0.2017 which is part of the technical documentation of this European Technical Assessment. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at UL International (UK) Ltd.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

#### Other tasks of the manufacturer

##### Additional information

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

- (a) Technical data sheet:
- Field of application
  - Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
  - Limits in size, minimum thickness etc. of the penetration seal
  - Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.
- (b) Installation instruction:
- Steps to be followed
  - Procedure in case of retrofitting
  - Stipulations on maintenance, repair and replacement

#### **6 Issued on:**

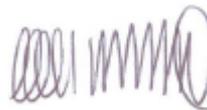
**21.06.2017**

Report by:



C. Johnson  
Staff Engineer  
Building and Life Safety Technologies

Reviewed by:



C. W. Miles  
Business Manager – Europe & Latin America  
Building and Life Safety Technologies

**For and on behalf of UL International (UK) Ltd.**

## ANNEX A – Manufacturer Detailed Installation Information

### A.1 Supporting Constructions for CFS-SL GA S/M/L:

<p><b><u>Flexible and Rigid walls</u></b></p>	<p>Flexible Walls:</p> <ul style="list-style-type: none"> <li>• Minimum thickness 100mm &amp; maximum thickness 200mm (CFS-SL GA S/M) Minimum thickness 200mm &amp; maximum thickness 300mm (CFS-SL GA L) Comprise timber or steel studs lined on both faces to a thickness of 25mm according to EN 520 type F.</li> <li>• For timber stud walls - minimum distance of 100mm of the seal to any stud, the cavity between stud and seal must be closed, and a minimum of 100mm insulation of Class A1 or A2 (in accordance with EN 13501-1) is required in the cavity between stud and seal.</li> </ul> <p>Rigid Walls:</p> <ul style="list-style-type: none"> <li>• Minimum thickness 100mm &amp; maximum thickness 200mm (CFS-SL GA S/M) Minimum thickness 200mm &amp; maximum thickness 300mm (CFS-SL GA L) Comprise of: concrete, aerated concrete or masonry, with a minimum density of 550 kg/m<sup>3</sup>.</li> </ul>
<p><b><u>Sandwich panels:</u></b></p>	<p>Tested with 100mm Paroc line 200 AST F 100/99 and 150mm Paroc line 200 AST F.</p> <p>Field of application, based on tested Specimens (in accordance with Standard EN 14509:2013):</p> <ul style="list-style-type: none"> <li>• Minimum thickness 100mm &amp; maximum thickness 200mm (CFS-SL GA S/M) Minimum thickness 200mm &amp; maximum thickness 300mm (CFS-SL GA L)</li> <li>• Shall comprise Euroclass A1 structural stone wool core of density between: 100 kg/m<sup>3</sup> and 150kg/m<sup>3</sup>, and Reaction to Fire: Euroclass A2-s1,d0</li> <li>• Steel faced with exposed and unexposed sides between 0.50mm and 1mm</li> <li>• Flat or light profile type</li> <li>• Polyurethane based adhesive</li> <li>• Valid for vertically and horizontally installed panels</li> <li>• PVDF (external) and SP (Internal) steel coating</li> <li>• 1.2m width of panel. Unlimited decrease in width, and increase up to 1.44m</li> </ul>
<p><b><u>Floors:</u></b></p>	<ul style="list-style-type: none"> <li>• Minimum thickness 150mm &amp; maximum thickness 200mm (CFS-SL GA S/M) Minimum thickness 200mm &amp; maximum thickness 300mm (CFS-SL GA L)</li> <li>• Aerated concrete or concrete with a minimum density of 550kg/m<sup>3</sup>.</li> </ul>

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.

For supporting constructions for ancillary products – see A.4.

## A.2 Illustration Abbreviations:

<b>A</b>	Hilti Firestop Sleeve CFS-SL GA
<b>A<sub>1</sub></b>	Rubber Gasket
<b>B</b>	Hilti Firestop Gangplate: CFS-SL GP 40 or 60
<b>B<sub>1</sub></b>	Hilti Firestop Gangplate CAP: CFS-SL GP CAP
<b>B<sub>1a</sub></b>	Hilti Firestop Plug: CFS-PL 132
<b>A<sub>1a</sub></b>	Hilti Firestop Acrylic Sealant CFS-S ACR
<b>A<sub>1b</sub></b>	Hilti Firestop Putty Roll CP 619 T
<b>A<sub>1c</sub></b>	Hilti Firestop Putty Pad CP 617 – cut to 25mm width
<b>A<sub>1d</sub></b>	Hilti Firestop Putty Bandage CFS-P BA
<b>C</b>	Cables/Conduits
<b>E<sub>1</sub></b>	Building Element Flexible/Rigid Wall
<b>E<sub>2</sub></b>	Building Element Sandwich Panel
<b>E<sub>3</sub></b>	Building Element Floor
<b>t<sub>E</sub></b>	Thickness of Building Element – refer to A.1

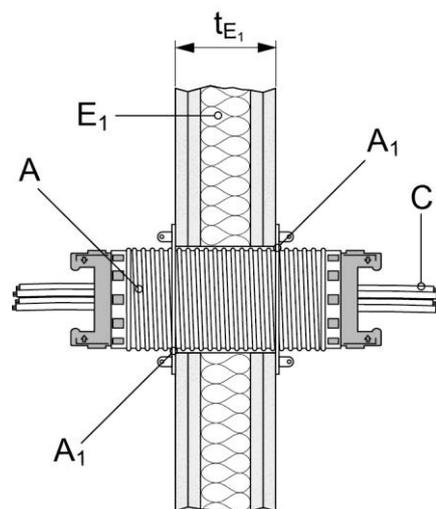
## A.3 Seal Type Details and Installation:

There are two primary Seal Types:

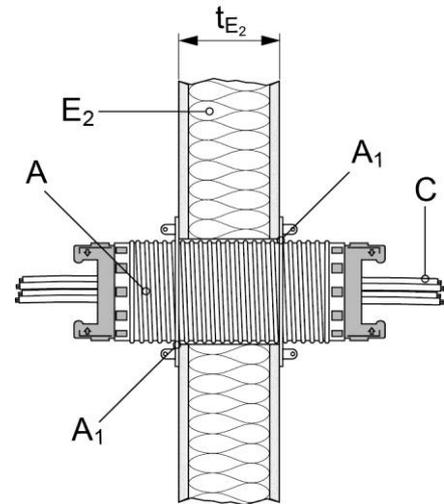
Seal Type	Seal Detail	Device/s	
		Wall (incl. Sandwich panel)	Floor
<b>1</b>	Single Devices	CFS-SL GA S/M/L	CFS-SL GA S/M/L
<b>2</b>	Ganged Devices	CFS-SL GA M/L & CFS-SL GP 40 or 60	N/A

### A.3.1 Seal Type 1 Details:

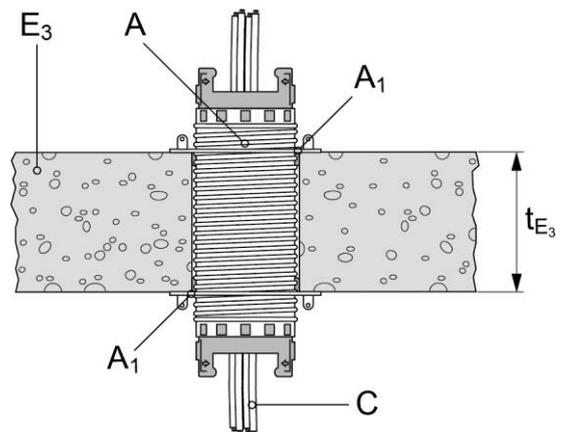
Section –  
CFS-SL GA S/M/L  
in Flexible or Rigid  
Wall



Section –  
CFS-SL GA S/M/L  
in Sandwich Panel

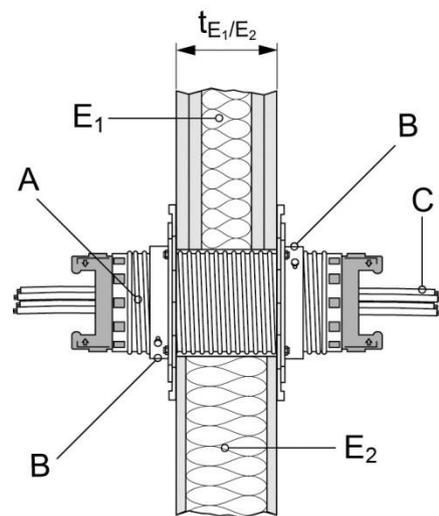


Section –  
CFS-SL GA S/M/L  
in Floor



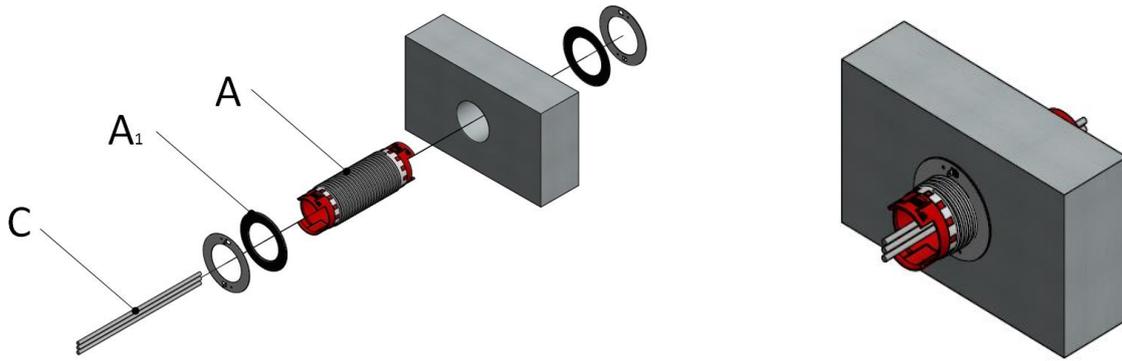
**A.3.2 Seal Type 2 Detail:**

Section –  
CFS-SL GA M/L and  
CFS-SL GP 40 or 60  
in Flexible or Rigid  
Wall or Sandwich  
Panel

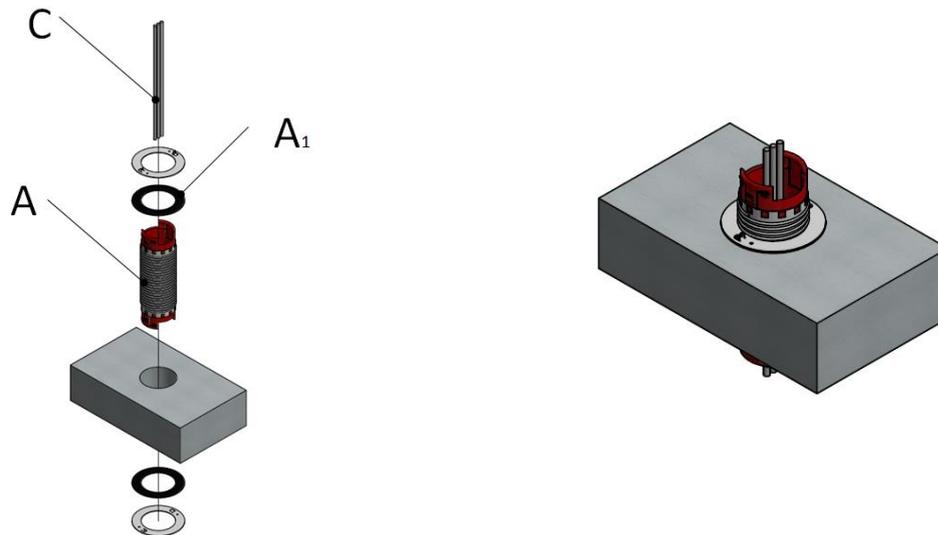


### A.3.3 Seal Type 1 Application Information (CFS-SL GA S/M/L)

Walls and Sandwich Panels:

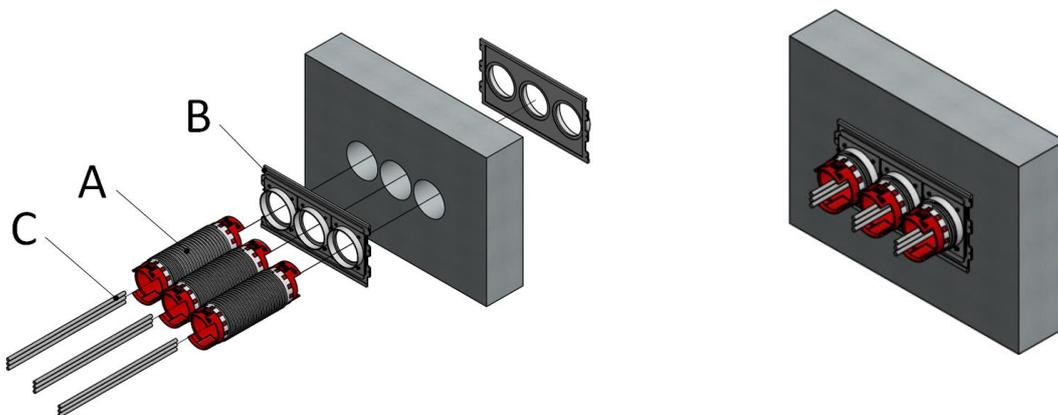


Floors:



### A.3.4 Seal Type 2 Application Information (CFS-SL GP 40 or 60)

Walls and Sandwich Panels:



#### A.4 Variations on Seal Type

As variations to Seal Type 1 and 2, further ancillary products can be installed to provide:

- Higher Fire Classification ratings in specific flexible or rigid wall applications: Hilti Firestop Acrylic Sealant CFS-S ACR can be applied to seal annular gaps in place of Rubber Gaskets. (See Seal Type 1a for installation)

- Higher Fire Classifications for CFS-SL GA M/L in 150mm thick Sandwich Panels: Hilti Firestop Putty is pressed around opening - CP 619 T or CP 617 (cut to 25mm width) before installing rubber gasket, and CFS-P BA used to wrap first 100mm of cables as they project from tabs of sleeve.

In all cases, putty is installed in 2 layers with minimum 5mm overlap. (See Seal Type 1b for installation)

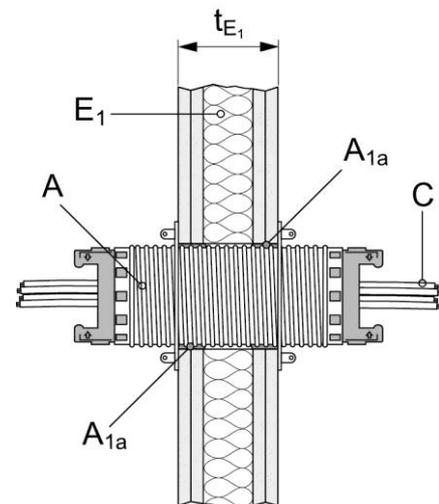
- Blank openings (no sleeve) in Gangplates: Hilti CFS-SL GP CAP & CFS-PL 132 are required. (See Seal Type 2a for installation)

Seal Type Variation	Seal Detail	Ancillary product		
		Wall	100mm Sandwich Panel	150mm Sandwich Panel
<b>1a</b>	Single Devices	CFS-S ACR	-	-
<b>1b</b>	Single Devices	-	-	CP 619 T or CP 617. And CFS-P BA
<b>2a</b>	Ganged Devices	CFS-SL GP 40 or 60, CFS-SL GP CAP & CFS-PL 132		

##### A.4.1 Seal Type 1a Detail:

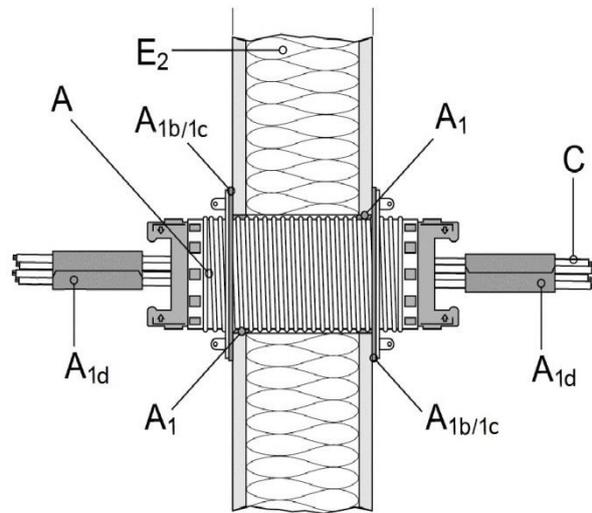
Section –  
CFS-SL GA S/M/L  
and CFS-S ACR  
in Flexible or Rigid  
Wall

Recommended  $A_{1a}$   
(CFS-S ACR) installed  
to 25mm depth into  
wall



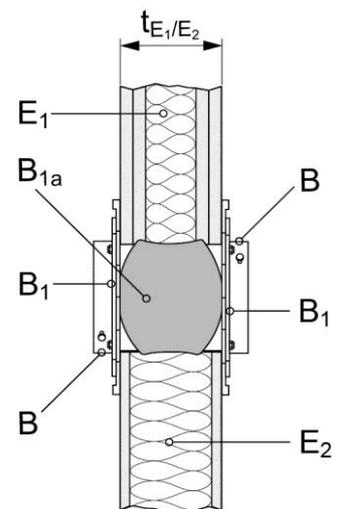
**A.4.2 Seal Type 1b Detail:**

Section –  
CFS-SL GA M/L with  
CP 619 T or CP 617  
behind flanges and  
CFS-P BA around  
Cables - in  
150mm Sandwich  
Panel



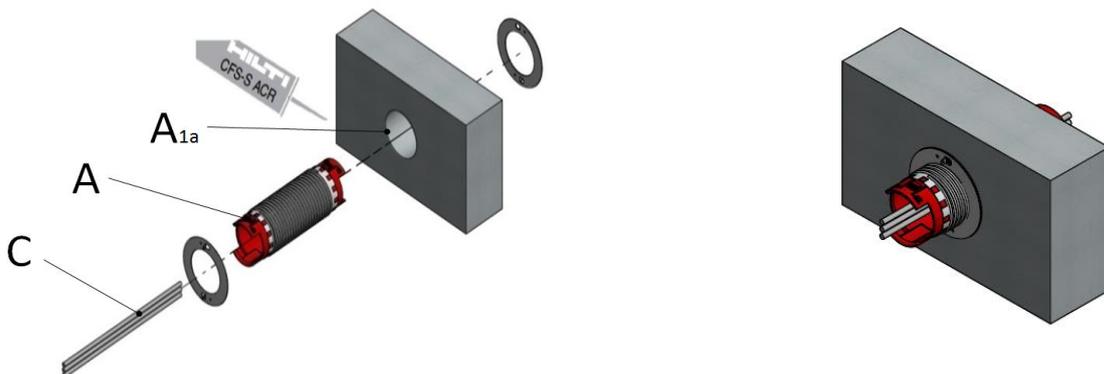
**A.4.3 Seal Type 2a Detail:**

Section –  
CFS-SL GA M/L and  
CFS-SL GP 40 or 60  
with CFS-SL GP CAP  
and CFS-PL 132  
in Flexible or Rigid  
Wall or Sandwich  
Panel



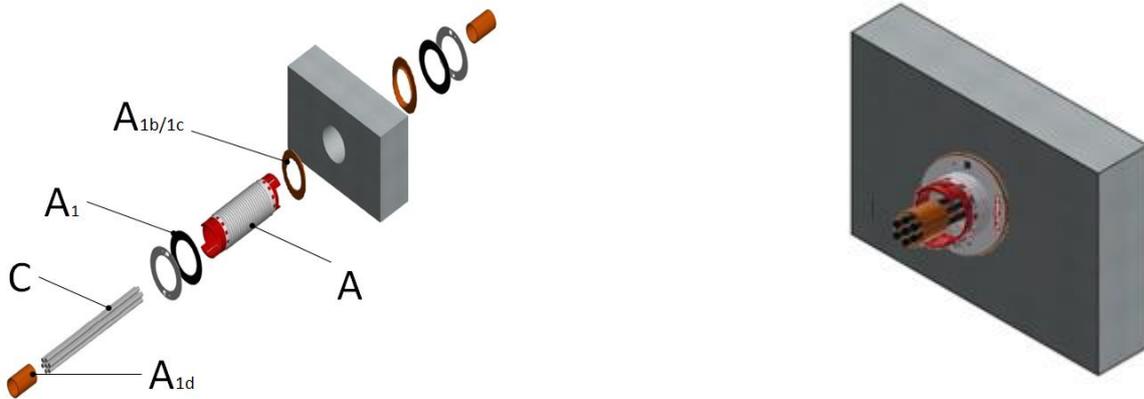
**A.4.4 Seal Type 1a Application Information (CFS-SL GA S/M/L and CFS-S ACR)**

Flexible and Rigid Walls



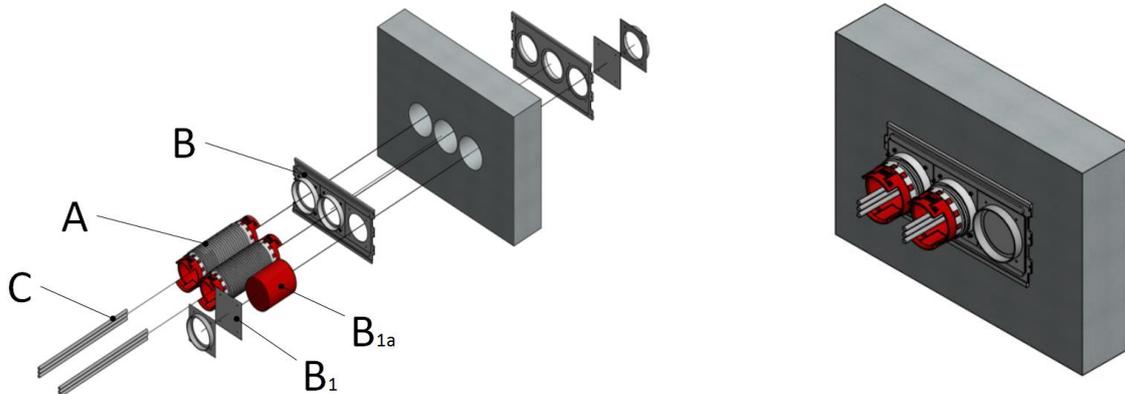
**A.4.5 Seal Type 1b Application Information (CFS-SL GA M/L & CP 619 T/CP 617 and CFS-P BA)**

Flexible and Rigid Walls



**A.4.6 Seal Type 2a Application Information (CFS-SL GA M/L, CFS-SL GP 40 or 60, CFS-SL GP CAP & CFS-PL 132)**

Flexible and Rigid Walls and Sandwich Panels



**A.5 Seal Type Opening Sizes:**

Seal Type	Seal Detail	Device	Opening $\varnothing$
<b>1, 1a &amp; 1b</b>	Single Devices	CFS-SL GA S CFS-SL GA M/L	<b>63 – 73mm</b> <b>113 - 122mm</b>
<b>2 &amp; 2a</b>	Ganged Devices	CFS-SL GP 40 or 60	<b>113 - 122mm</b>

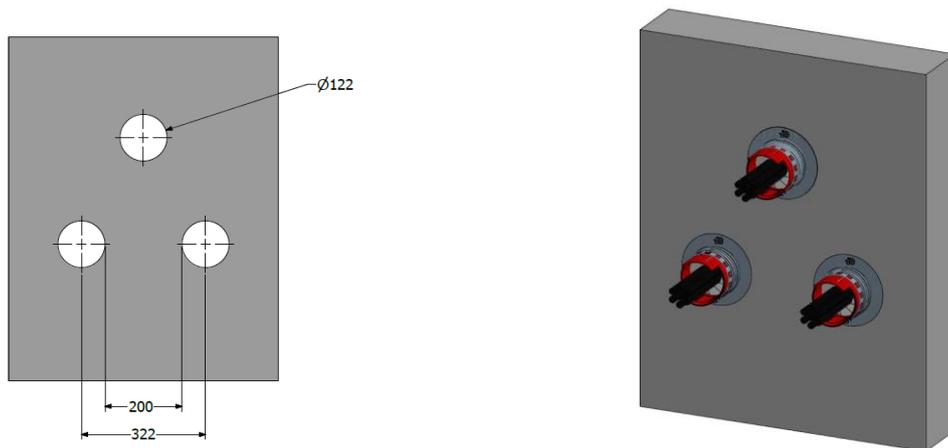
## A.6. Distances between openings

### A.6.1 Seal Type 1 including 1a and 1b

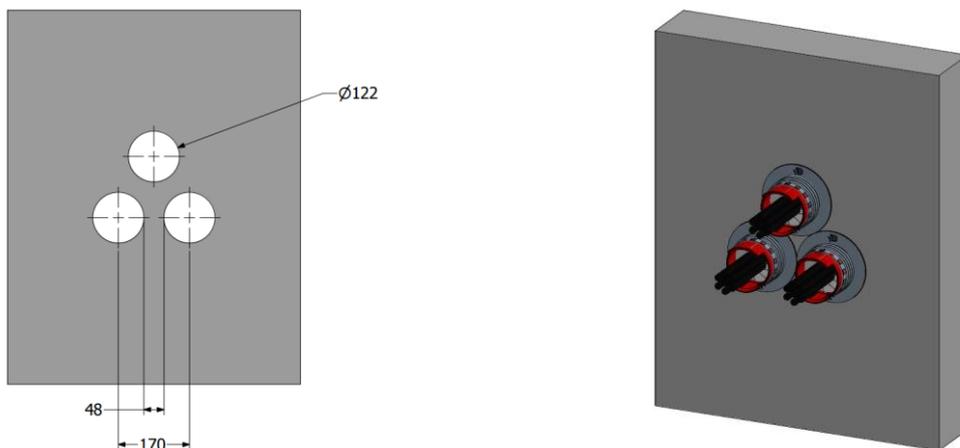
Depending on Fire Classification and space requirements, the Hilti Firestop Sleeve CFS-SL GA can be installed with:

- $\geq 200\text{mm}$  distance between openings, or
- flanges touching (zero distance between devices)

200mm (horizontal/vertical distance between openings linear or cluster)



Zero distance (horizontal/vertical distance between flanges linear or cluster)



Note: dimensions above relate to  $\varnothing 122\text{mm}$  (CFS-SL GA M/L) – using smaller diameters will alter the distances between opening centres.

(For CFS-SL GA S – use diameter  $\varnothing 63\text{-}73\text{mm}$  as in Section A.5.)

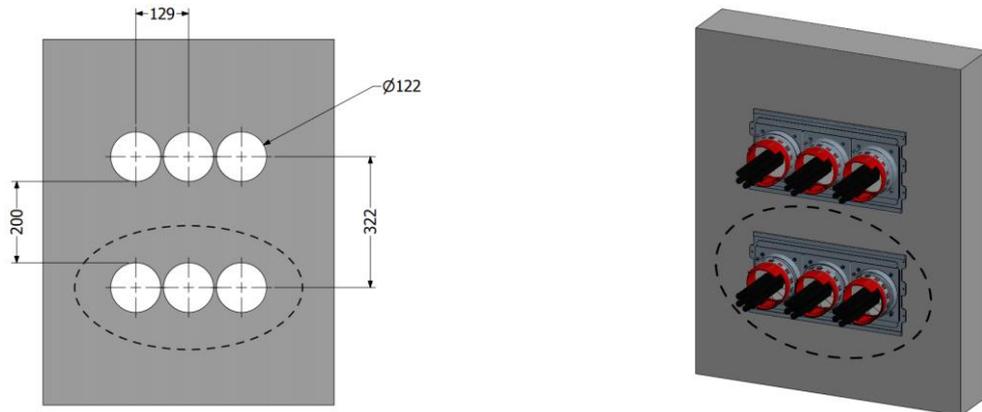
### A.6.2 Seal Type 2 including 2a

Depending on Fire Classification and space requirements, the Hilti Firestop Sleeve CFS-SL GP can be installed with:

- $\geq 200\text{mm}$  distance between openings, or
- Gangplates touching or slight overlap (zero distance)

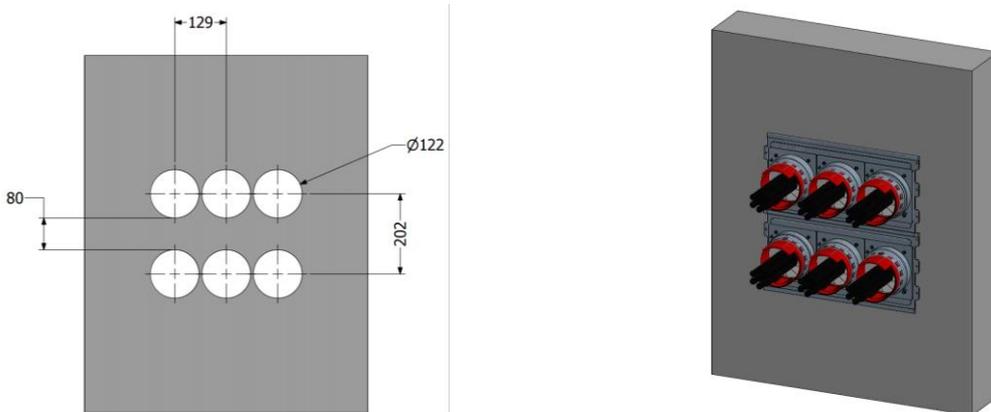
200mm from Opening to nearest Opening - For Single to any number of installations:

(Lower, dashed Gangplate illustrates correct placement of 200mm distance)

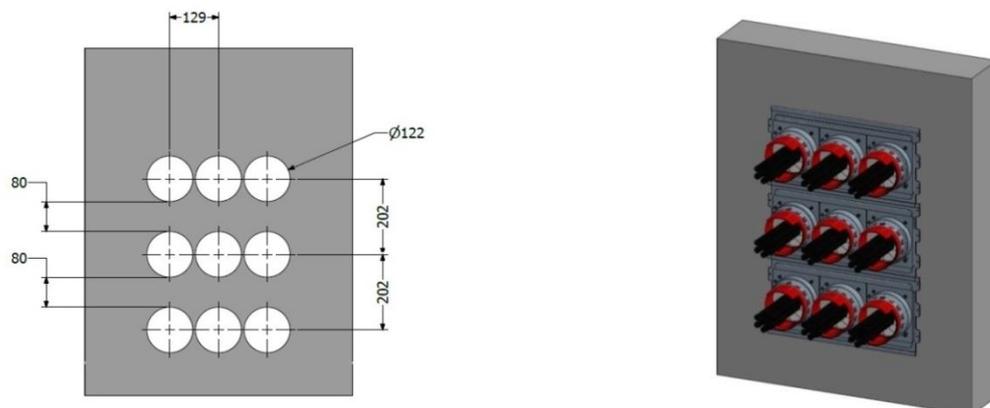


Zero Distance between Devices - For Double Gangplate installation:

(Outside of Double Constellation, 200mm to next Gangplate/Constellation /Device opening)



Zero Distance between Devices - For Triple Gangplates to any number of installations:



### A.6.3 Guideline for Gangplate fixing elements

Anchoring solution	Anchor Indication	Drywall	Aerated Concrete wall	Sandwich Panel
Drywall Screws:	Diameter: 3.5mm Length: ≥ 35mm	x	x	
Self-drilling Screws:	Diameter: 3.5mm Length: ≥ 19mm			x

	CFS-SL GP 40	CFS-SL GP 60
Total Number of fixations	12	14

## A.7 Penetrating services

### A.7.1 Cables

<u>Penetrating services</u>	<u>Description</u>
Small Cables $\varnothing \leq 21\text{mm}$ : (CFS-SL GA S/M/L)	All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fibre cables, with or without cable supports) with a <b>diameter <math>\varnothing \leq 21\text{mm}</math></b> .
Medium and Large Cables (CFS-SL GA M/L)	All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fibre cables, with or without cable supports) with a <b>diameter up to <math>\varnothing \leq 80\text{mm}</math></b> .
Cable Fills:	All Fire Classifications in Annex B allow sleeves to be left blank or filled with cables to up to 60% of the total sleeve cross section/area.  For fills higher than 60%, there are classifications with: - 36mm bundles (CFS-SL GA S) and 86mm bundles (CFS-SL GA M/L) or, - 100% fills (CFS-SL GA S/M/L) Note that all cables with $\varnothing \leq 21\text{mm}$ are covered, and in cases cables up to $\varnothing \leq 80\text{mm}$ .

### A.7.2 Conduits

<u>Penetrating services</u>	<u>Description</u>
Single conduits $\varnothing \leq 25\text{mm}$ : (CFS-SL GA S):	Rigid, flexible and pliable plastic conduits and metal conduits with a <b>diameter <math>\varnothing \leq 25\text{mm}</math></b> with or without cables.
Single conduits $\varnothing \leq 63\text{mm}$ (CFS-SL GA M/L):	Rigid, flexible and pliable plastic conduits and metal conduits with a <b>diameter <math>\varnothing \leq 63\text{mm}</math></b> with or without cables.
Conduit bundle (CFS-SL GA S):	Conduits with a <b>max. single conduit diameter <math>\varnothing \leq 25\text{mm}</math></b> with or without cables can be bundled to a <b>diameter <math>\varnothing \leq 48\text{mm}</math></b> .
Conduit bundle (CFS-SL GA M/L):	Conduits with a <b>max. single conduit diameter <math>\varnothing \leq 63\text{mm}</math></b> with or without cables can be bundled to a <b>diameter <math>\varnothing \leq 92\text{mm}</math></b> .

### A.8 Distances for all cable support constructions

The distances from the surface of the separating element to the first supporting construction:

- a) Wall (distance from the face of the wall on both sides):  $\leq 250\text{mm}$
- b) Floor (distance from upper side of floor):  $\leq 250\text{mm}$

## ANNEX B – Resistance to Fire Classifications

### B.1 Seal Type 1 (Including 1a and 1b)

#### B.1.1 200mm between openings (See A.6.1):

	Description	(CFS-SL GA S)	(CFS-SL GA M/L)
<b>Flexible &amp; Rigid wall</b>	Blank Device	EI 120	EI 120
	All sheathed cables ≤ 21mm	EI 90	EI 90 <sup>1)</sup>
	All sheathed cables ≤ 50mm	-	EI 90
	All sheathed cables ≤ 80mm	-	EI 60
	Cable bundles ≤ 36mm All sheathed cables ≤ 21mm	EI 90	-
	Cable bundles ≤ 86mm All sheathed cables ≤ 21mm	-	EI 90
	100% filled device with cables ≤ 21mm	EI 60 <sup>2)</sup>	EI 90
	Conduits ≤ 25mm (CFS-SL GA S)	EI 120	-
	Conduits ≤ 63mm (CFS-SL GA M/L)	-	EI 90 <sup>3)</sup>
	<b>For higher Fire Classifications – follow Seal Type 1a (ACR) installation:</b>		
	<sup>1)</sup> All sheathed cables ≤ 21mm	-	EI 120
	<sup>2)</sup> 100% filled device with cables ≤ 21mm	EI 90	-
<sup>3)</sup> Conduits ≤ 63mm (CFS-SL GA M/L)	-	EI 120	

<b>Sandwich Panel</b>  150mm thickness	Blank Device	EI 90	EI 90 <sup>4)</sup>
	All sheathed cables ≤ 21mm	EI 60	EI 90 <sup>4)</sup>
	All sheathed cables ≤ 50mm	-	EI 90
	100% filled device with cables ≤ 21mm	EI 60	-
	100% filled device with cables ≤ 50mm	-	EI 60 <sup>4)</sup>
	<b>For higher Fire Classifications – follow Seal Type 1b (Putty) installation:</b>		
	<sup>4)</sup> 100% filled device with cables ≤ 21mm (CFS-SL GA M/L)	-	EI 120

**B.1.2 Zero distance between flanges (See A.6.1):**

	Description	(CFS-SL GA S)	(CFS-SL GA M/L)
<b>Flexible &amp; Rigid wall</b>	Blank Device	EI 120	EI 90
	All sheathed cables ≤ 21mm	EI 60	EI 90
	All sheathed cables ≤ 50mm	-	EI 60
	All sheathed cables ≤ 80mm	-	EI 60
	Cable bundles ≤ 36mm All sheathed cables ≤ 21mm	EI 90	-
	Cable bundles ≤ 86mm All sheathed cables ≤ 21mm	-	EI 60
	100% filled device with cables ≤ 21mm	EI 60	EI 60
	100% filled device with cables ≤ 80mm	-	EI 60
	Conduits ≤ 25mm (CFS-SL GA S)	EI 90	-
	Conduits ≤ 63mm (CFS-SL GA M/L)	-	EI 60

<b>Sandwich Panel</b>  100mm thickness	Blank Seal	EI 45	EI 90
	All sheathed cables ≤ 21mm	EI 45	EI 90
	All sheathed cables ≤ 50mm	-	EI 60
	100% filled device with cables ≤ 21mm	EI 45	EI 60
	100% filled device with cables ≤ 50mm	-	EI 60

	Description	(CFS-SL GA S)	(CFS-SL GA M/L)
<b>Floors</b>	Blank Device	EI 180	EI 180
	All sheathed cables ≤ 21mm	EI 180	EI 180
	All sheathed cables ≤ 50mm	-	EI 120 <sup>5)</sup>
	All sheathed cables ≤ 80mm	-	EI 60
	Cable bundles ≤ 36mm All sheathed cables ≤ 21mm	EI 180	-
	Cable bundles ≤ 86mm All sheathed cables ≤ 21mm	-	EI 120
	100% filled device with cables ≤ 21mm	EI 120	-
	100% filled device with cables ≤ 50mm	-	EI 120
	Conduits ≤ 25mm (CFS-SL GA S)	EI 120	-
	Conduits ≤ 63mm (CFS-SL GA M/L)	-	EI 60 <sup>6)</sup>
	<b>For higher Fire Classifications – increase distances between openings - 200mm:</b>		
	<sup>5)</sup> All sheathed cables ≤ 50mm	-	EI 180
	<sup>6)</sup> Conduits ≤ 63mm (CFS-SL GA M/L)	-	EI 120

**B.2 Seal Type 2 (Multiple/Ganged devices)**

**B.2.1 Flexible/Rigid Walls:**

**B.2.1.1  $\geq 200$ mm Distance between Openings (See A.6.2):**

<b>Flexible &amp; Rigid wall</b>	Blank Device to 100% filled Cables $\leq 21$ mm	<b>EI120</b>
	Blank Seal (CAP and Plug)	

**B.2.1.2 Double Gangplate Zero Distance between Devices (See A.6.2):**

<b>Flexible &amp; Rigid wall</b>	Blank Device to 100% filled Cables $\leq 21$ mm	<b>EI90</b>
	Blank Seal (CAP and Plug)	

**B.2.1.3 Triple Gangplate (or more) Zero Distance between Devices (See A.6.2):**

<b>Flexible &amp; Rigid wall</b>	Blank Device to 100% filled Cables $\leq 21$ mm	<b>EI60</b>
	Blank Seal (CAP and Plug)	

**B.2.2 Sandwich Panel – 100mm thick:**

**B.2.2.1 Double Gangplate Zero Distance between Devices (See A.6.2):**

<b>Sandwich Panel</b>  100mm thickness	Blank Device to 100% filled Cables $\leq 21$ mm	<b>EI60</b>
	Blank Seal (CAP and Plug)	

**B.2.3 Sandwich Panel – 150mm thick:**

**B.2.3.1  $\geq 200$ mm Distance between Openings (See A.6.2):**

<b>Sandwich Panel</b>  150mm thickness	Blank Device to 100% filled Cables $\leq 21$ mm	<b>EI120</b>
	Blank Seal (CAP and Plug)	

## ANNEX C – Abbreviations and referenced documents

### C.1 References to standards mentioned in the ETA

<b>Norm</b>	<b>Description</b>
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 vapour transmission properties
EN ISO 12572	Hygrothermal performance of building materials and products - Determination of water vapour transmission properties (ISO 12572:2001);
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 14509	Self-supporting double skin metal faced insulating panels - Factory made products
EN 520	Gypsum plasterboards - Definitions, requirements and test methods;
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