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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))

## European Technical Assessment

**ETA 16/0383  
 of 19/07/2016**

**Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: UL International (UK) Ltd**

<b>Trade name of the construction product</b>	Hilti Firestop Cast In Device CFS-CID
<b>Product family to which the construction product belongs</b>	Firestop Collar for Use in penetrations Seals
<b>Manufacturer</b>	Hilti Corporation Feldkircherstrasse 100 9494 Schaan Liechtenstein
<b>Manufacturing plant</b>	Hilti Plant 5a Hilti Plant 14
<b>This European Technical Assessment contains</b>	32 pages including 4 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>	Guideline for European technical approval (ETAG) No. 026-2 Fire Stopping and Fire Sealing Products – Part 2: Penetration Seals, edition August 2011, used as European Assessment Document (EAD)

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

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## Table of Contents

<b>I.</b>	<b>SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT .....</b>	<b>3</b>
1.	Technical description of the product .....	3
2.	Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter ETAG) .....	3
3.	Performance of the product and references to the methods used for its assessment .....	5
4	Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base .....	7
5	Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD .....	7
6	Issued on: .....	9
	ANNEX 1 .....	10
	ANNEX 2 .....	11
	ANNEX 3 .....	29
	ANNEX 4 .....	30

## I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

### 1. Technical description of the product

#### 1.1 Definition of the construction product

This European technical assessment refers to the Hilti Firestop Cast-in Device for use in Penetration Seals with the designation Hilti CFS-CID.

Hilti Firestop Cast-in Device CFS-CID is a pipe closure device that is cast into rigid floors. Ancillary products referred to in this European technical assessment within the framework of evaluating resistance to fire (see Annexes 1 and 2) are not covered by this ETA and cannot be CE-marked on the basis of it.

Type of penetration seal system: Pipe closure device – cast in (see ETAG 026-2, clause 1.1, table 1-1). Hilti Firestop Cast-in Device CFS-CID consists of a plastic housing, an intumescent inlay and rubber seal for the purpose of smoke and draft stop, air or water tightness and airborne sound insulation.

Hilti Firestop Cast-in Device CFS-CID is supplied in several sizes – see table below.

Pipe sealing size	For plastic pipes with nominal outside diameter range (mm)	For insulated metal pipes	
		nominal outside diameter range (mm)	nominal pipe insulation range (mm)
CFS-CID 50	32 - 63	18 - 54	8 - 38
CFS-CID 75	50 - 75		
CFS-CID 110	90 - 110	54 - 76	14 - 40,5
CFS-CID 160	125 - 160		

For a description of the installation procedure see 3.1 and 3.2

### 2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter ETAG)

#### 2.1 Intended use

Hilti Firestop Cast-in Device CFS-CID is intended to form a part of a penetration seal, which is used to maintain the fire resistance of a separating element (rigid floor) when and where services with plastic, composite pipes and insulated metal pipes as single penetrations pass through.

Annex 2 gives details of penetration for which fire resistance tests were carried out. This ETA covers assemblies installed in accordance with the provisions given in Annex 2.

For details on diameters, wall thicknesses, pipe materials, pipe insulation and pipe standards see Annex 2.

Pipes shall be perpendicular to the seal surface. The pipe penetration seal is intended for in piping systems for non-combustible liquids and fluids, for pneumatic dispatch systems and for pipes in centralised vacuum-cleaning systems.

The assessment does not cover the avoidance of destruction of the seal or of the abutting building element(s) by forces caused by temperature changes in case of fire. This has to be considered when designing the piping system.

The provisions made in this European technical assessment are based on an assumed working life of Hilti Firestop Cast-in Device CFS-CID of 10 years provided the conditions laid down in sections 4 and 5 relating to manufacturing, installation, use and 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.

## 2.2 Use category

Hilti Firestop Cast-in Device CFS-CID fulfils the requirements of use category Y<sub>2</sub> in accordance with ETAG 026-2, Section 1.2.

Type Y<sub>2</sub>: Products intended for uses at internal conditions

## 2.3 General assumptions

For evaluating resistance to fire of the penetration seal using "Hilti Firestop Cast-in Device CFS-CID" as specified in Annex 2 it is assumed that

- the installation of the penetration seal does not affect the stability of the adjacent building elements – even in case of fire,
- the installations are fixed to the adjacent building elements (not to the seal) in accordance with the relevant regulations in such a way that, in case of fire, no additional mechanical load is imposed on the seal,
- the support of the installations is maintained for the classification period required and
- pneumatic dispatch systems, compressed air systems, etc. are switched off by additional means in case of fire.

This European technical assessment does not address any risks associated with the emission of dangerous liquids or gases caused by failure of the pipe(s) in case of fire nor does it prove the prevention of the transmission of fire through heat transfer via the medium in the pipes.

This European technical assessment does not verify the prevention of destruction of adjacent building elements with fire separating function or of the pipes themselves due to distortion forces caused by extreme temperatures. These risks shall be accounted for by taking appropriate measures when designing or installing the pipe work.

The mounting or hanging of the pipes or the layout of the pipe work shall be implemented in such a way that the pipes and the fire-resistant building elements shall remain functional for at least ... minutes (corresponding to the target period of fire resistance).

The risk of downward spread of fire caused by burning material which drips through a pipe to floors below, is not considered in this ETA (see EN 1366-3: 2009-07, section 1).

The durability assessment does not take account of the possible effect on the penetration seal of substances permeating through pipe floors.

## 2.4 Manufacturing

Hilti Firestop Cast-in Device CFS-CID shall be produced in accordance with the manufacturing process deposited with UL International (UK) LTD.

The European technical assessment is issued for the product on the basis of agreed data/information, deposited with UL International (UK) LTD, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to UL International (UK) LTD before the changes are introduced. UL International (UK) LTD will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

## 2.5 Installation

The arrangement and installation of Hilti Firestop Cast-in Device CFS-CID shall be done in accordance with the details given in Annex 2 and Annex 3 for the penetration seal(s).

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

Basic requirements for construction works	Essential characteristics	Method of verification	Performance
<b>BWR 1</b>	None	Not relevant	
<b>BWR 2</b>	Reaction to fire	EN 13501-1	Class E
	Resistance to fire	EN 13501-2:2007+A1:2009	See annex 2
<b>BWR 3</b>	Air permeability (material property)	No Performance Determined (NPD)	
	Water permeability (material property)	No Performance Determined (NPD)	
	Content and/or release of dangerous substances	European Council Directive 67/548/EEC- Dangerous Substances Directive and Regulation (EC) No 1272/2008, see clause 3.3.1	Declaration of conformity by the manufacturer
<b>BWR 4</b>	Mechanical resistance and stability	No Performance Determined (NPD)	
	Resistance to impact / movement	No Performance Determined (NPD)	
	Adhesion	See clause 3.4.2	
<b>BWR 5</b>	Airborne sound insulation	See clause 3.5.1	
<b>BWR 6</b>	Thermal properties	No Performance Determined (NPD)	
	Water vapour permeability	No Performance Determined (NPD)	
<b>BWR 7</b>	No Performance Determined (NPD)		

### 3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

### 3.2 Safety in case of fire (BWR 2)

#### 3.2.1 Reaction to fire

The components of construction product Hilti Firestop Cast-in Device CFS-CID were assessed according to ETAG 026-Part 2 used as EAD clause 2.4.1 and classified according to EN 13501-1.

Component	Class according to EN 13501-1
CFS-CID	E

#### 3.2.2 Resistance to fire

The resistance to fire performance according to EN 13501-2 of penetration seals made of Hilti Firestop Cast-in Device CFS-CID is given in Annex 2.

### 3.3 Hygiene, health and environment (BWR 3)

#### 3.3.1 Release of dangerous substances

According to the manufacturer's declaration, the product specification has been compared with the list of dangerous substances of the European Commission to verify that it does not contain such substances above the acceptable limits.

A written declaration in this respect was submitted by the ETA-holder.

Note: In addition to the specific clauses relating to dangerous substances contained in this ETA, 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 Product Regulation, these requirements need also to be complied with, when and where they apply.

### 3.4 Safety and accessibility in use (BWR 4)

#### 3.4.1 Mechanical resistance and stability

No performance determined

#### 3.4.2 Resistance to impact / movement

No performance determined

#### 3.4.2 Adhesion

The fixing of the Cast-in Device must be done according to the provisions given in Annex 3.

### 3.5 Protection against noise (BWR 5)

#### 3.5.1 Airborne sound insulation

Airborne sound insulation for a single penetration of a plastic pipe, fire stopped with Firestop Cast-in Device CFS-CID can only be achieved when the pipe closure device is casted in rigid floor.

Test reports from noise reduction according to EN ISO 10140-1: 2010 + A1: 2012 + A2: 2014, EN ISO 10140-2: 2010 and EN ISO 717-1: 2013 have been provided.

The acoustic tests were performed in a rigid wall. Hilti Firestop Cast-in Device CFS-CID 50, 75, 110 and 160 was tested in combination with a plastic pipe. The acoustic characteristics of the walls itself have not been measured. According to these tests reports the single number ratings are:

Rigid floor:

Determined standard level difference:

- CFS-CID 50 and plastic pipe:  $D_{n,e,w}$  (C; Ctr) = 55 (-3;-2) dB
- CFS-CID 50 blank version:  $D_{n,e,w}$  (C; Ctr) = 62 (-1;-2) dB
- CFS-CID 75 and plastic pipe:  $D_{n,e,w}$  (C; Ctr) = 51 (-1;-1) dB
- CFS-CID 75 blank version:  $D_{n,e,w}$  (C; Ctr) = 56 (-1;-2) dB
- CFS-CID 110 and plastic pipe:  $D_{n,e,w}$  (C; Ctr) = 48 (-1;0) dB
- CFS-CID 110 blank version:  $D_{n,e,w}$  (C; Ctr) = 53 (-1;-2) dB
- CFS-CID 160 and plastic pipe:  $D_{n,e,w}$  (C; Ctr) = 46 (0;0) dB
- CFS-CID 160 blank version:  $D_{n,e,w}$  (C; Ctr) = 45 (-3;-5) dB

From this  $D_{n,e,w}$  the determined standard level calculates to:  $R_w$  (C;Ctr) = 61 (-3;-7) dB

Structure of the rigid wall: 150 mm thick concrete wall with a density of 2000 kg/m<sup>3</sup>

It should be noticed that both above mentioned results apply to the total wall construction of the size  $S = 1,23 \text{ m} \times 1,48 \text{ m} (= 1,82 \text{ m}^2)$ .

$D_{n,e,w}$ : determined standard level difference of small building elements (given with spectrum adaptation terms C and  $C_{tr}$ )

$R_w$ : determined standard level (given with spectrum adaptation terms C and  $C_{tr}$ )

### **3.6 Energy economy and heat retention (BWR 6)**

#### 3.6.1 Thermal properties

No performance determined

#### 3.6.2 Water vapour permeability

No performance determined

### **3.7 Sustainable use of natural resources (BWR 7)**

No performance determined

## **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<sup>1</sup>, amended by Decision 2001/596/EC<sup>2</sup> of the European Commission, as amended, the system(s) of assessment and verification of constancy of performance AVCP (see Annex V of Regulation (EU) No 305/2011) is 1.

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

### **5.1 Tasks of the manufacturer**

#### 5.1.1 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.

The factory production control shall be in accordance with the Control Plan relating to the valid European technical assessment ETA-16/0383 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 the UL International (UK) LTD.

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

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<sup>1</sup> Official Journal of the European Communities no. L 178, 14.7.1999, p. 52

<sup>2</sup> Official Journal of the European Communities no. L 209, 2.8.2001, p. 33

### 5.1.2 Other tasks of the manufacturer

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information (as far as relevant):

#### Technical data sheet:

- Field of application:
- Building elements in which the product may be installed, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions - the construction requirements.
- Services which may penetrate the building element, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings, separations etc.
- Design of the penetration seal(s) including limits in size, minimum thickness, separations etc. of the penetration seal(s)
- Definitions of ancillary products (e.g. backfilling material) with clear indication whether they are generic or specific.
- Environmental conditions covered by the ETA.

#### Installation instruction:

- Steps to be followed
- Procedure in case of retrofitting
- Stipulations on maintenance, repair and replacement

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 4.1 in the field of assessment products.. For this purpose, the "control plan" referred to in clause 5.1.1 and 5.1.2 shall be handed over by the manufacturer to the notified body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA-16/0383.

### 5.1.3 Further testing of samples taken at the factory

Testing of samples taken at the factory by the manufacturer is not required.

## **5.2 Tasks of notified product certification body**

The Notified Body shall retain the essential points of its actions referred to clause 5.2.1 to 5.2.3, state the results obtained and conclusions drawn in written report.

These tasks shall be performed in accordance with the provisions laid down in the control plan of this European Technical Assessment.

### 5.2.1 Determination of the product type

Notified bodies undertaking tasks under Systems 1 shall consider the European Technical Assessment issued for the construction product in question as the assessment of the performance of that product. Notified bodies shall therefore not undertake the tasks referred to in point 1.2 (b)(i), in Annex V of Regulation (EU) No 305/2011, unless there are changes in the manufacture or manufacturing plant. In such cases, the necessary initial type testing has to be agreed between the UL International (UK) LTD and notified product certification body involved.

### 5.2.2 Initial inspection of the manufacturing plant and of factory production control

The notified product certification body shall ascertain that, in accordance with the control plan, the manufacturing plant, in particular personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the kit according to the specifications given in clause 2 and in the Annexes of the European Technical Assessment.



### 5.2.3 Continuous surveillance, assessment and evaluation of factory production control

The notified product certification body shall visit the factory at least twice per year for surveillance of the manufacturer.

It has to be verified that the system of factory production control and the specified manufacturing process are maintained taking into account the control plan.

Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The results of continuous surveillance shall be made available on demand by the notified product certification body or the UL International (UK) LTD. In cases where the provisions of the European Technical Assessment and the control plan are no longer fulfilled, the certificate of constancy of performance shall be withdrawn.

## 6 **Issued on:**

**19<sup>th</sup> July 2016**

Report by:



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Staff Engineer  
Building and Life Safety Technologies

Reviewed by:



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

**ANNEX 1**  
**DESCRIPTION OF THE PRODUCT AND ANCILLARY PRODUCT(S)**

**Hilti Firestop Cast-in Device CFS-CID**

The Cast-in device consists of a plastic housing, an inlay with different number of intumescent layers, and a rubber gasket.

In case of greater floor thicknesses (>150mm) the Cast-in device length can be increased through an extension tube.

Manifold adapter to create a spacing of 280 x 280 x 75 mm.

A detailed specification of the product is contained in document "Identification / Product Specification relating to the European technical assessment ETA – 16/0383 Hilti Firestop Cast-in Device CFS-CID" which is a non-public part of this ETA.

The Control Plan defined in document "Control Plan is relating to the European technical assessment ETA – 16/0383 Hilti Firestop Cast-in Device CFS-CID" which is a non-public part of this ETA.

**Technical product literature:**

Installation instruction Hilti Firestop Cast-in Device CFS-CID (according to Annex 3).

**ANNEX 2**  
**RESISTANCE TO FIRE CLASSIFICATION OF PENETRATION SEALS MADE OF**  
**HILTI FIRESTOP Cast-in Device CFS-CID**

Overview intended use of pipes<sup>3</sup> and reference to relevant section

Application	Pipe material	Standard	Insulation	Diameter (mm)	Distance (s <sub>1</sub> ) (mm)	Fire resistance Classification	Rigid floor ≥ 550 kg/m <sup>3</sup>
							Details (see section)
Waste water Roof Drainage	PE (PE-HD)	EN 1519-1, EN 12666-1 (covers EN 12201-2, EN 1519-1, EN 12666-1, EN 1455-1 (ABS), EN 1565-1 (SAN+PVC))	-	40 - 160	200	EI 180	2.2.1.1
					0	EI 120	
	PE	EN ISO 15494, DIN 8074	-	50 - 160	200	EI 180	2.2.1.2
					0	EI 120	
	PE-S2 Geberit dB20	Non regulated	-	56 - 160	200	EI 180	2.2.2
					0	EI 120	
	PVC-U	EN 1329-1 or EN 1453-1 or EN 1452-1 (covers EN 1329-1, EN 1453-1, EN 1566-1), EN ISO 15493 (Industrial, equivalent EN 1452)	-	63 - 160	200	EI 180	2.2.3
					50 - 160	0	
	PP	EN 1451-1 (DIN 4102)	-	40 - 160	200	EI 180	2.2.5
					0	EI 120	
Drinking water	PP-R	DIN 8077/8078	-	32 - 160	200	EI 180	2.2.6
	PE-Xa	Non-regulated (Rehau Rautitan Flex)	-	32 - 63	200	EI 180	2.2.7
					0	EI 120	
PE-X	Non-regulated (e.g. Geberit Mepla, etc.)	Elastomeric	40	200	EI 180	2.2.8	
				0	EI 120		
Heating	Copper and Steel	DIN 1786/1754,	Elastomeric	18 - 76	200	EI 180	2.2.9
					200	EI 120	2.2.10
			Glass wool	18 - 76	0	EI 120	2.2.11
			Mineral	18 - 89	200	EI 180	2.2.12

<sup>3</sup> According to technical literature of pipe manufacturers  
ETA 16/0383 of 19/07/2016 – page 11 of 32

Application	Pipe material	Standard	Insulation	Diameter (mm)	Distance (s <sub>1</sub> ) (mm)	Fire resistance Classification	Rigid floor ≥ 550 kg/m <sup>3</sup>
							Details (see section)
			wool				
Elbow	PE (PE-HD)	EN 1519-1, EN 12666-1 (covers EN 12201-2, EN 1519-1, EN 12666-1, EN 1455-1 (ABS), EN 1565-1 (SAN+PVC))	-	110	200	EI 180	2.2.13
	PVC	EN 1519-1, EN 12666-1 (covers EN 12201-2, EN 1519-1, EN 12666-1, EN 1455-1 (ABS), EN 1565-1 (SAN+PVC))					
Blank	-	-	-	-	200	EI 180	2.2.14
					0	EI 120	2.2.15
Manifold	-	-	-	-	200	EI 180	3.1

## 2.1 General information

### 2.1.1 Rigid floor

The floor must have a minimum thickness of 150 mm and comprise concrete with a minimum density of 550 kg/m<sup>3</sup>.

### 2.1.2 Penetration seal:

Single penetration;

Hilti Firestop Cast-In CFS-CID on the underside of the floor

### 2.1.3 Distance between penetrations:

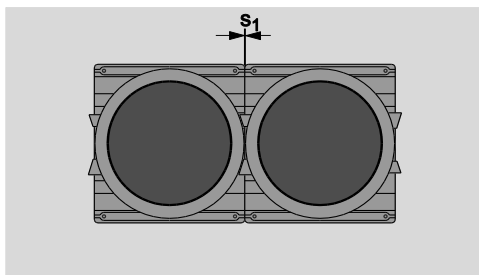
Minimum distance between Cast-In / annular gap edge ( $s_1$ ):

**A:** Non-insulated pipes:  $s_1$  (0 mm)

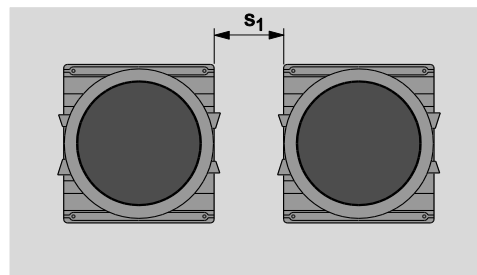
Insulated pipes:  $s_1$  (0 mm)

**B:** Non-insulated pipes:  $s_1$  (200 mm)

Insulated pipes:  $s_1$  (200 mm)



Note:  $s_1$  (0 mm) = **EI 120**



$s_1$  (200 mm) = **EI 180**

#### 2.1.4.1 Pipes provided with foamed elastomeric insulation.

The following types of foamed elastomeric insulation material may be used in direct contact ( $s_1 \geq 0$  mm) to Hilti Firestop Cast-in Device CFS-CID:

Producer	Approved Type of foamed elastomeric thermal isolation
Armacell GmbH	<ul style="list-style-type: none"> <li>Armaflex AF, Armaflex SH, Armaflex Ultima, Armaflex HT</li> </ul>
NMC Group	<ul style="list-style-type: none"> <li>Insul-Tube (nmc), Insul-Tube H-Plus (nmc),</li> </ul>
Kaimann GmbH	<ul style="list-style-type: none"> <li>Kaiflex KK plus, Kaiflex KK,</li> </ul>
L'Isolante K-Flex	<ul style="list-style-type: none"> <li>l'Isolante K-Flex HT, l'Isolante K-Flex ECO, l'Isolante K-Flex ST, l'Isolante K-Flex H, l'Isolante K-Flex ST Plus</li> </ul>

Named material may be used in form of an insulation hose, bandage/wrap or plates. If a protect insulation  $D_p$  is used, it should be made of the same elastomeric material as the thermal pipe isolation itself.

#### 2.1.4.2 Pipes provided with stone wool insulation.

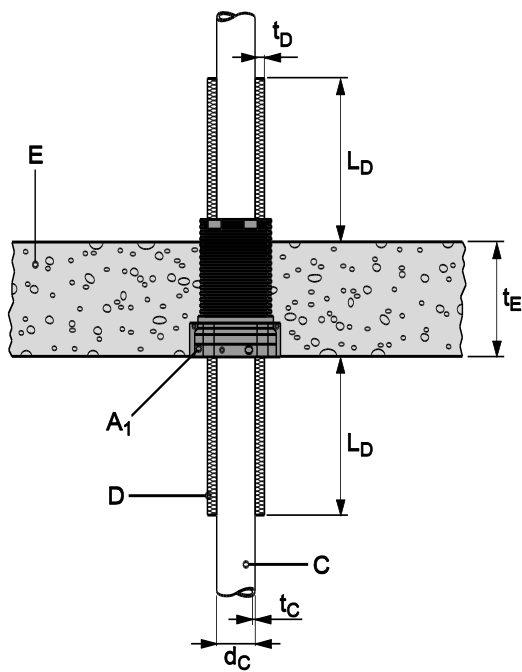
Type	Mineral wool insulation
Form	<ul style="list-style-type: none"> <li>Half shell, coated with aluminium foil</li> </ul>
Reaction to fire classification (EN 13501-1)	<ul style="list-style-type: none"> <li>A2</li> </ul>
Material	<ul style="list-style-type: none"> <li>Mineral stone wool</li> </ul>
Density	<ul style="list-style-type: none"> <li><math>\geq 70</math> kg/m<sup>3</sup></li> </ul>
Melting point	<ul style="list-style-type: none"> <li><math>\geq 1000</math> C°</li> </ul>

2.1.4.3 Pipes provided with glass wool fibre insulation.

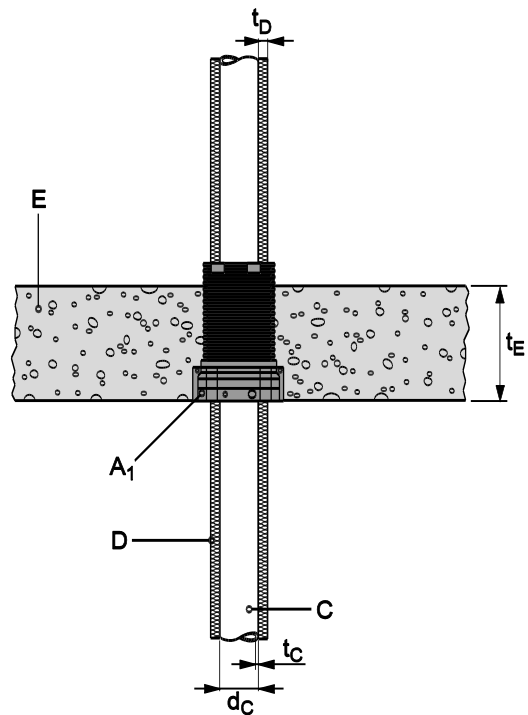
Typ	Glass wool insulation
Form	<ul style="list-style-type: none"> <li>• Half shell, coated with aluminium foil</li> </ul>
Reaction to fire classification (EN 13501-1)	<ul style="list-style-type: none"> <li>• A2</li> </ul>
Material	<ul style="list-style-type: none"> <li>• Mineral glass wool</li> </ul>
Density	<ul style="list-style-type: none"> <li>• <math>\geq 35 \text{ kg/m}^3</math></li> </ul>

**Pipe insulation**

Local/Sustained pipe insulation (LS)



Continued/Sustained pipe insulation (CS)



for abbreviations see Annex 4.1

**2.2 Penetrating services approved with CFS-CID**

**2.2.1 PE pipes**

Pipe end configuration: U/U

Distance of penetrations ( $s_1$ ): 200 mm

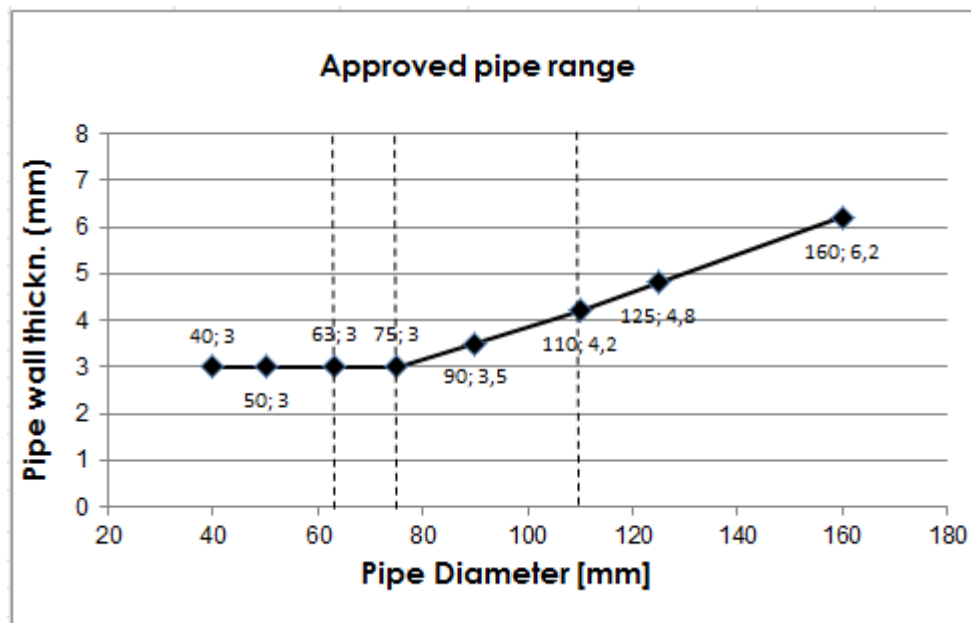
**2.2.1.1 PE pipes according to EN 1519-1, EN 12666-1, EN 12201-2**

Pipe end configuration: U/U

Distance of penetrations ( $s_1$ ): 0mm /200 mm (B)

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 0mm	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	40	3,0	EI 120-U/U	EI 180-U/U
	50	3,0		
	63	3,0		
	<b>40 - 63</b>	<b>3,0</b>		
CFS-CID 75	75	3,0		
CFS-CID 110	90	3,5		
	110	4,2		
	<b>90 - 110</b>	<b>3,5/4,2<sup>(1)</sup></b>		
CFS-CID 160	125	4,8		
	160	6,2		
	<b>125 - 160</b>	<b>4,8/6,2<sup>(1)</sup></b>		

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range



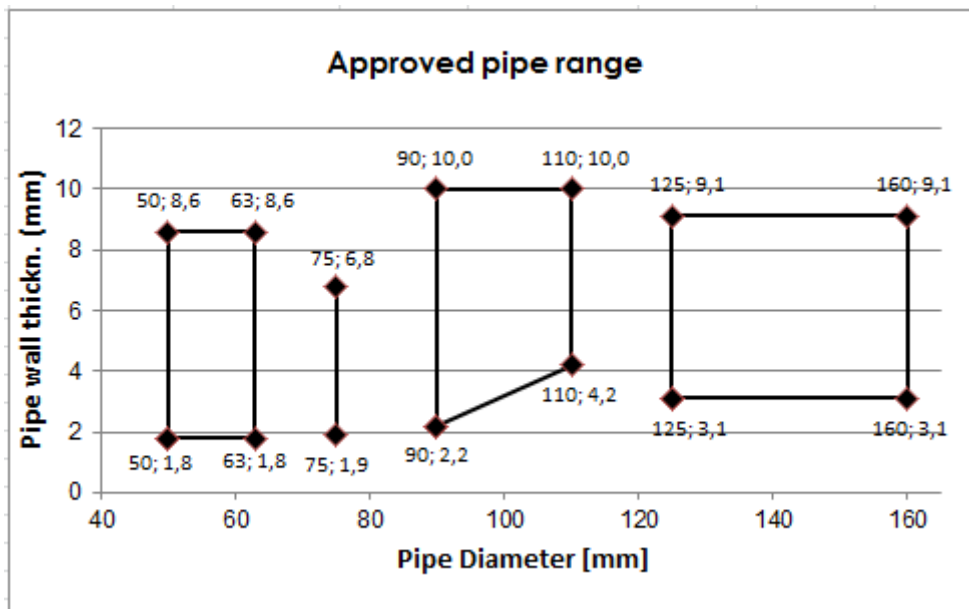
**2.2.1.2 PE pipes according to EN ISO 15494 and DIN 8074/8075**

**Pipe end configuration: U/C**

**Distance of penetrations ( $s_1$ ): 0mm /200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 0mm	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	50	2,9	EI 120-U/U	EI 180-U/U
	63	1,8		
	63	8,6		
	<b>50 - 63</b>	<b>1,8/1,8<sup>(1)</sup> - 8,6</b>		
CFS-CID 75	75	1,9		
	75	6,8		
	<b>75</b>	<b>1,9<sup>(1)</sup> to 6,8</b>		
CFS-CID 110	90	2,2		
	110	2,7		
	110	10,0		
	<b>90 - 110</b>	<b>2,2/2,7<sup>(1)</sup> - 10,0</b>		
CFS-CID 160	125	3,1		
	160	4,0		
	160	9,1		
	<b>125 - 160</b>	<b>3,1/4,0<sup>(1)</sup> - 9,1</b>		

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range





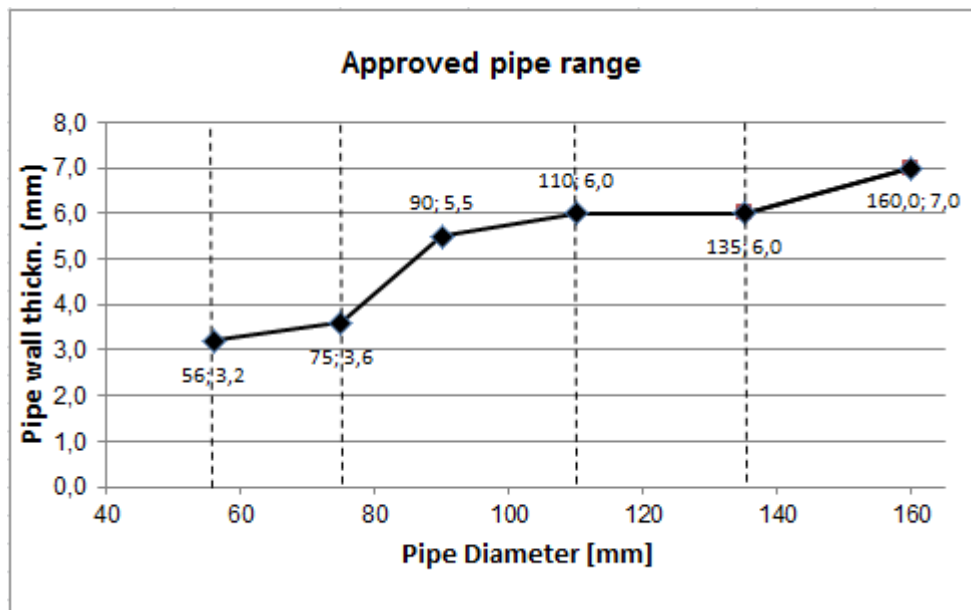
**2.2.2 PE-S2 pipes, designation "Geberit Silent dB20"**

**Pipe end configuration: U/U**

**Distance of penetrations ( $s_1$ ): 0mm /200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 0mm	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	56	3,2	EI 120-U/U	EI 180-U/U
CFS-CID 75	56	3,2		
	75	3,6		
	<b>56 - 75</b>	<b>3,2/3,6<sup>(1)</sup></b>		
CFS-CID 110	90	5,5		
	110	6,0		
	<b>90 - 110</b>	<b>5,5/6,0<sup>(1)</sup></b>		
CFS-CID 160	135	6,0		
	160	7,0		
	<b>135 - 160</b>	<b>6,0/7,0<sup>(1)</sup></b>		

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range



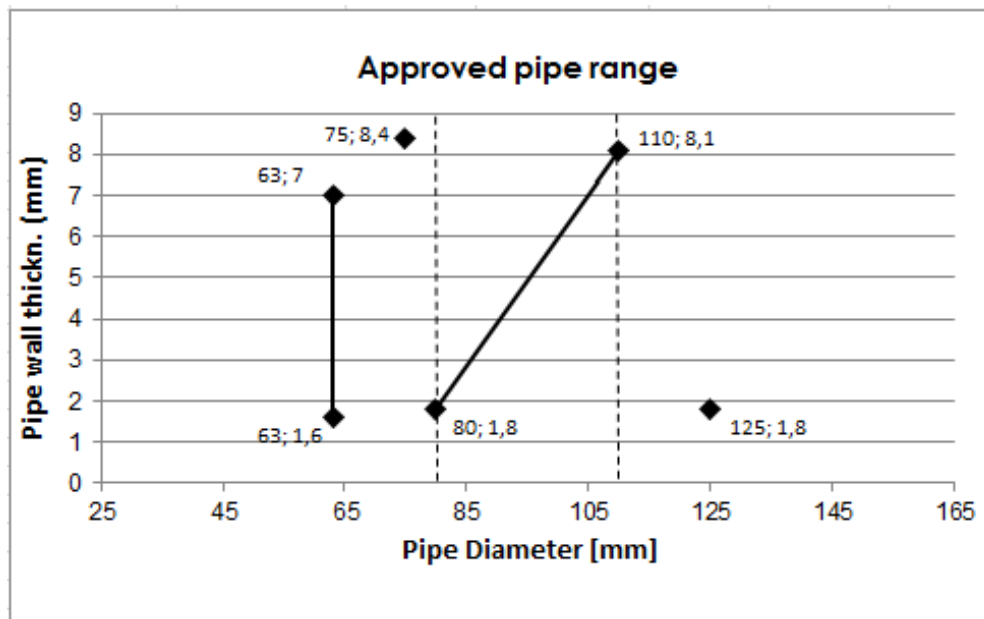
**2.2.3 PVC pipes acc. to EN 1452-2, EN 1329-1, EN 1453-1**

**Pipe end configuration: U/U**

**Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	63	1,6	EI 180-U/U
	63	7,0	
	<b>63</b>	<b>1,6 - 7,0</b>	
CFS-CID 75	75	8,4	
CFS-CID 110	80	1,8	
	110	8,1	
	<b>80 - 110</b>	<b>1,8/8,1<sup>(1)</sup></b>	
CFS-CID 160	125	1,8	

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range



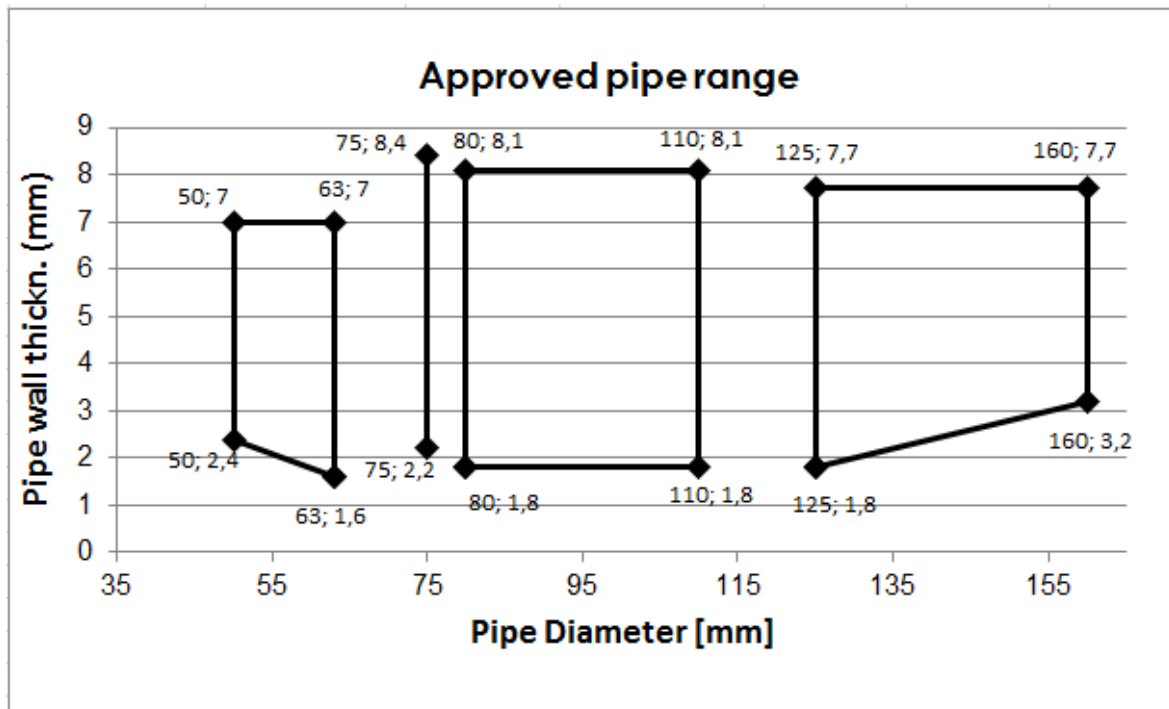
**2.2.4 PVC pipes acc. to EN 1452-2, EN 1329-1, EN 1453-1**

**Pipe end configuration: U/U**

**Distance of penetrations ( $s_1$ ): 0 mm (A)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 0mm
CFS-CID 50	50	2,4	EI 120-U/U
	63	1,6	
	63	7,0	
	<b>50 - 63</b>	<b>1,6/1,6<sup>(1)</sup> - 7,0</b>	
CFS-CID 75	75	2,2	
	75	8,4	
	<b>75</b>	<b>2,2 - 8,4</b>	
CFS-CID 110	80	1,8	
	110	1,8	
	110	8,1	
	<b>80 - 110</b>	<b>1,8/1,8<sup>(1)</sup> - 8,1</b>	
CFS-CID 160	125	1,8	
	160	3,2	
	160	7,7	
	<b>125 - 160</b>	<b>1,8/3,2<sup>(1)</sup> - 7,7</b>	

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range



### 2.2.5 PP pipes according to EN 1451-1

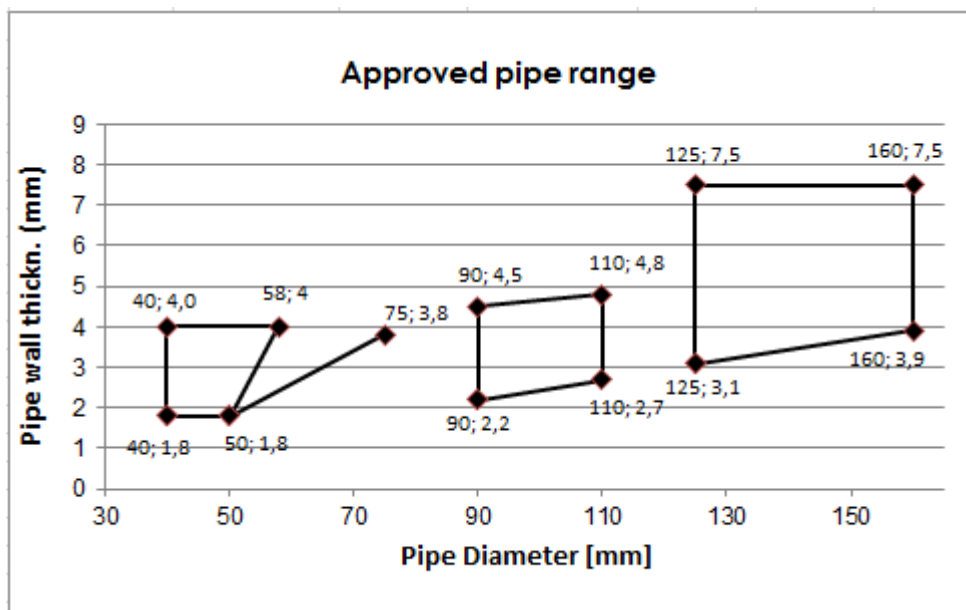
Designation: Cloes "Blue Power", Cloes "PhoNoFire", "Geberit Silent PP", Marley Silent, Ostendorf "Skolan-dB", Pipelife "Master 3", POLOPLAST "Polokal NG", "POLOPLAST Phonex AS", POLOPLAST "Polokal 3S", "POLOPLAST Polokal XS", Rehau "Raupiano Plus", Wavin "AS", KeKelit "Phonex AS", Wavin "SiTech", Valsire "Triplus", Valsire "Silere",

**Pipe end configuration: U/U**

**Distance of penetrations ( $s_1$ ): 0mm / 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 0mm	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	40	1,8	EI 120-U/U	EI 180-U/U
	50	1,8		
	58	4,0		
	<b>40 - 58</b>	<b>1,8 - 1,8/4,0<sup>(1)</sup></b>		
CFS-CID 75	50	1,8		
	75	3,8		
	<b>50 - 75</b>	<b>1,8/3,8<sup>(1)</sup></b>		
CFS-CID 110	90	2,2		
	90	4,5		
	110	2,7		
	110	4,8		
	110	5,3		
	<b>90 - 110</b>	<b>2,2/2,7<sup>(1)</sup> - 5,3</b>		
CFS-CID 160	125	3,1		
	160	3,9		
	160	7,5		
	<b>125 - 160</b>	<b>3,1/3,9<sup>(1)</sup> - 7,5</b>		

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range



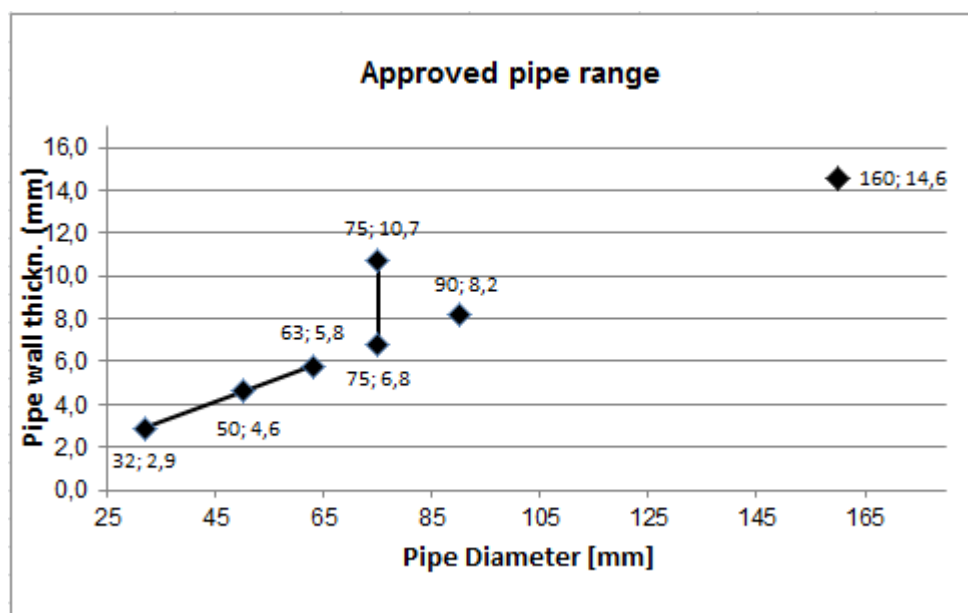
### 2.2.6 PP-R pipes designation "Aquatherm"

Pipe end configuration: U/C

Distance of penetrations ( $s_1$ ): 200 mm (B)

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	32	2,9	EI 180-U/C
	50	4,6	
	63	5,8	
	<b>32 - 63</b>	<b>2,9/5,8<sup>(1)</sup></b>	
CFS-CID 75	75	6,8	
	75	10,7	
	<b>75</b>	<b>6,8 - 10,7</b>	
CFS-CID 110	90	8,2	
CFS-CID 160	160	14,6	

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range



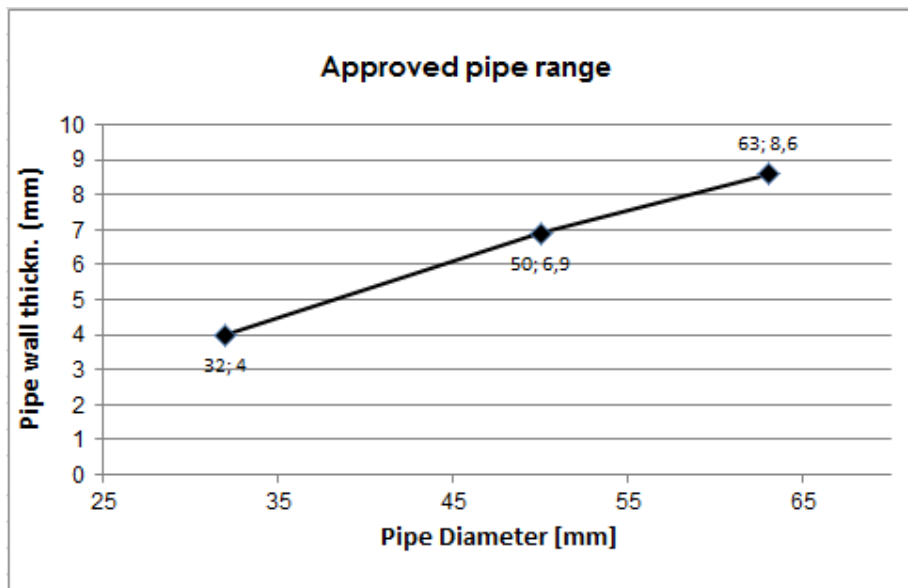
**2.2.7 PE-Xa pipes designation “Rehau Rautitan Flex”**

**Pipe end configuration: U/U**

**Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	32	4,0	EI 180-U/U
	50	6,9	
	63	8,6	
	<b>32 - 63</b>	<b>4,4/8,6<sup>(1)</sup></b>	

<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range

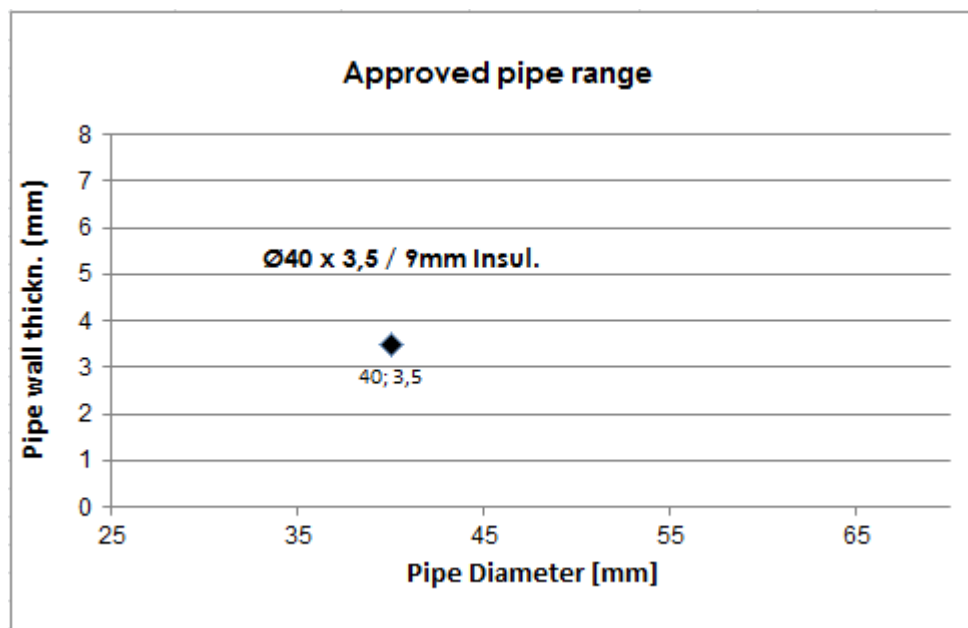


**2.2.8 PE-X pipes designation “Geberit Mepla”, elastomeric foamed thermal pipe insulation,**

**Pipe end configuration: U/U**

**Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Pipe insulation thickness (mm), CS	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	40	3,5	9,0	EI 180-U/U

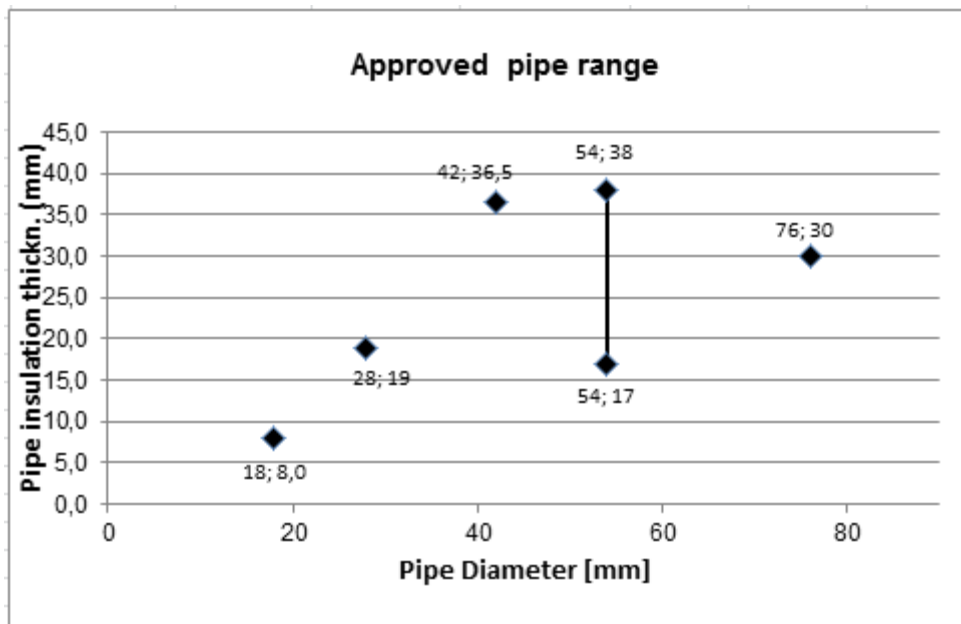


**2.2.9 Copper pipes including metal pipes, sustained (CS) elastomeric foamed thermal pipe insulation**

**Pipe end configuration: C/U**

**Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Pipe insulation thickness (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	18	1,0	8,0	EI 180-C/U
	28	1,5	19,0	
CFS-CID 75	18	1,0	32,0	
CFS-CID 110	42	1,5	36,5	
	54	2,0	17,0	
CFS-CID 160	54	2,0	38,0	
	76	2,0	30,0	





**2.2.10 Copper pipes including metal pipes,  
with sustained (CS) elastomeric foamed thermal pipe insulation**

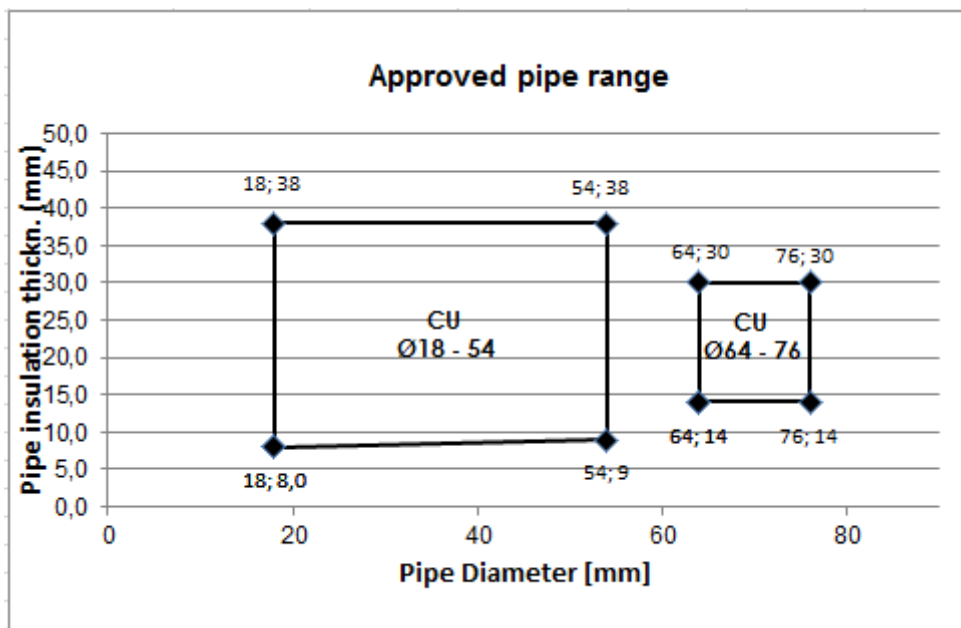
**Pipe end configuration: C/U**

**Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Pipe insulation thickness (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50 CFS-CID 75 CFS-CID 110 CFS-CID 160	18 - 54	1,0/2,0 <sup>(1)</sup>	8,0 - 38,0 <sup>(3)</sup>	EI 120-C/U
	64 - 76	1,0/2,0 <sup>(1)</sup>	14,0 - 30,0 <sup>(3)</sup>	

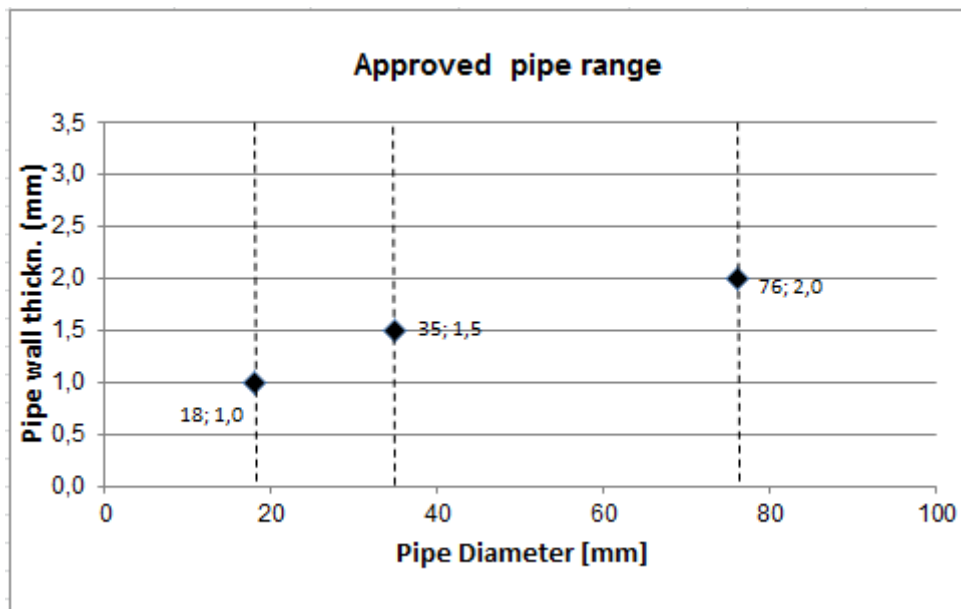
<sup>(1)</sup> interpolation of min. pipe wall thickness within pipe diameter range

<sup>(3)</sup> interpolation of min. pipe insulation within pipe diameter range



**2.2.11 Copper pipes including metal pipes,  
with local sustained (LS) mineral glass wool thermal pipe insulation  
Pipe end configuration: C/U  
Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Pipe insulation thickness (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	18	1,0	20,0	EI 120-C/U
CFS-CID 75	35	1,5	20,0	
CFS-CID 110	76	2,0	20,0	

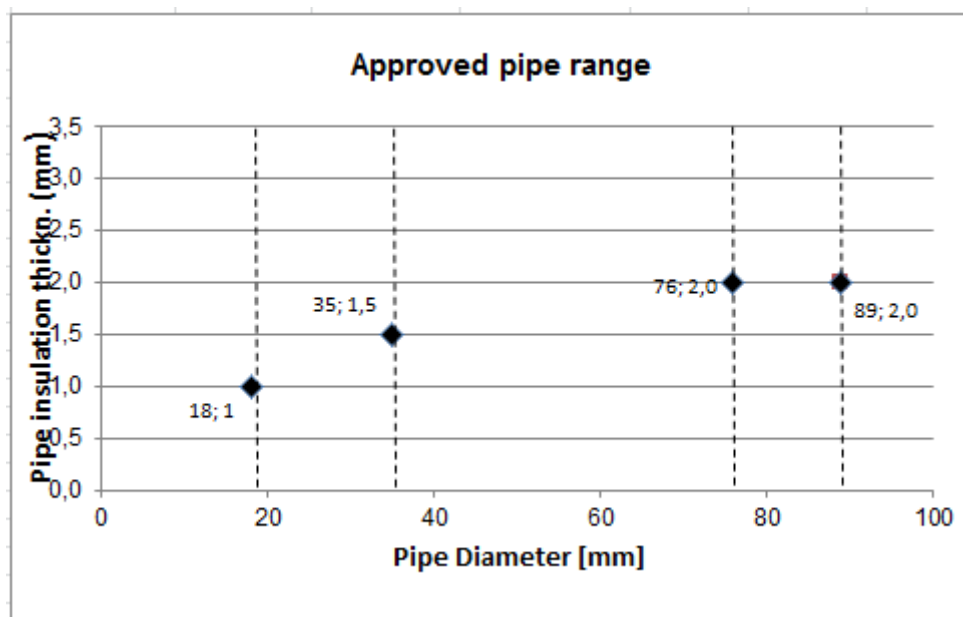


**2.2.12 Copper pipes including metal pipes,  
with local sustained (LS) mineral stone wool thermal pipe insulation**

**Pipe end configuration: C/U**

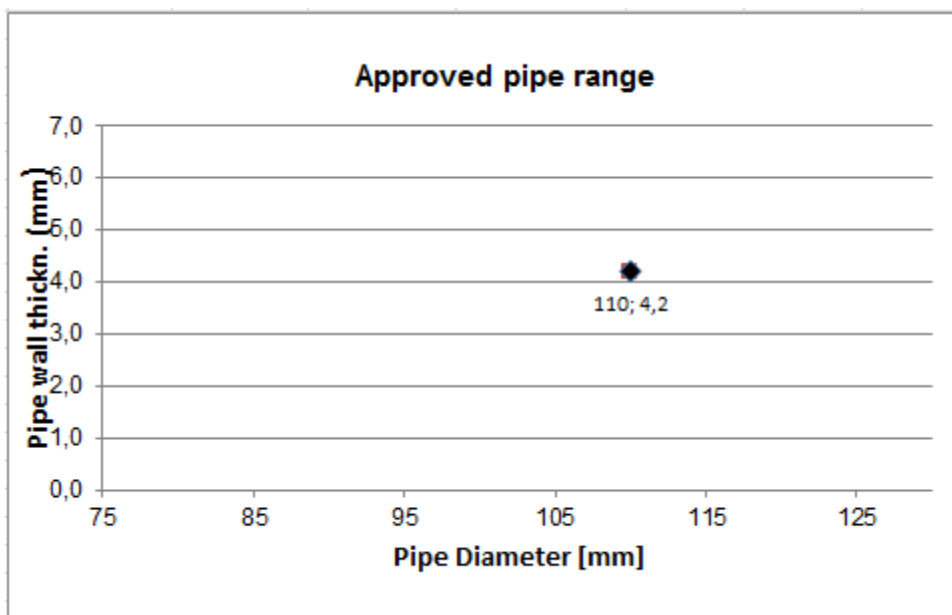
**Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Pipe insulation thickness (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	18	1,0	20,0	EI 180-C/U
CFS-CID 75	35	1,5	20,0	
CFS-CID 110	76	2,0	20,0	
CFS-CID 160	89	2,0	20,0	



**2.2.13 PE pipes according to EN 1519-1, EN 12666-1, EN 12201-2 with 87° elbow,  
PVC pipes acc. to EN 1452-2, EN 1329-1, EN 1453-1 with 87° elbow  
Pipe end configuration: U/U  
Distance of penetrations ( $s_1$ ): 200 mm (B)**

Collar size ( $A_1$ )	Pipe diameter $d_c$ (mm)	Pipe wall thickness $t_c$ (mm)	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 110	110	4,2	EI 180-U/U



**2.2.14 Blank seals**

**Distance of penetrations ( $s_1$ ): 0mm /200 mm (B)**

Collar size ( $A_1$ )	Classification with Distance ( $s_1$ ) 0mm	Classification with Distance ( $s_1$ ) 200mm
CFS-CID 50	EI 120-U/U	EI 180-U/U
CFS-CID 75		
CFS-CID 110		
CFS-CID 160		

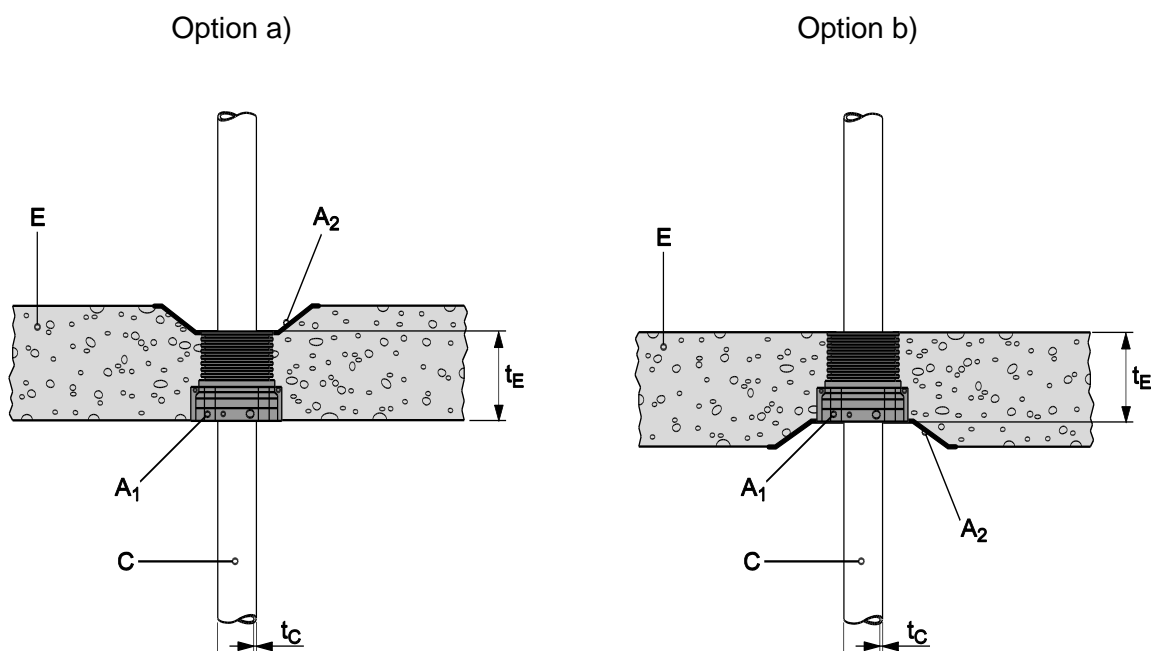
### 3.1 Penetrating services approved for CFS-CID with "Manifold"

The floor must have a minimum thickness of 150 mm and comprise concrete with a minimum density of 550 kg/m<sup>3</sup>.

#### Penetration seal:

- Pipes classified in the section 2.2.1 to 2.2.20 can be sealed with a Hilti Firestop Cast-in device CFS-CID with a Manifold adapter if the requirements of the options a) or b) given below are respected (the conditions to expose the intumescent layer of the Cast-in device to a potential fire have to be maintained):
  - a) the bottom side of the Cast-in device A<sub>1</sub> must be installed flush with the bottom side of the floor, the manifold A<sub>2</sub> is positioned on top of the Cast-in device
  - b) the bottom side of the manifold A<sub>2</sub> must be installed flush with the bottom side of the floor, the Cast-in device A<sub>1</sub> is positioned directly on top of the manifold
- the remaining floor thickness t<sub>E</sub> around the Cast-in device must be ≥150 mm

#### Manifold:

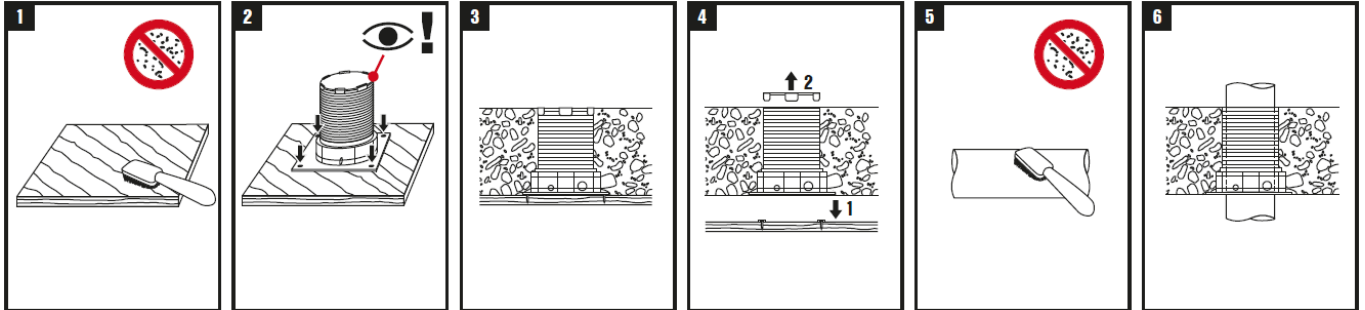


### ANNEX 3

#### INSTALLATION OF THE PRODUCT AND ANCILLARY PRODUCT(S)

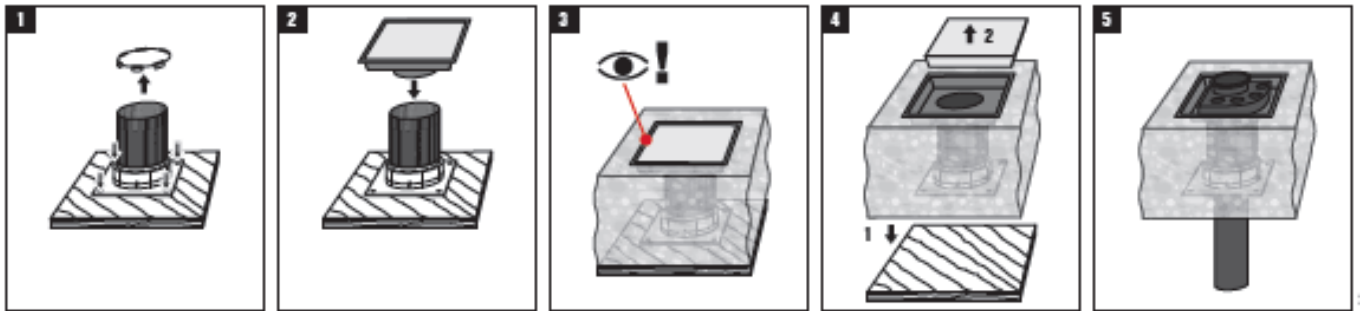
The arrangement and installation of Hilti Firestop Collar CFS-CID shall be done in accordance with the details given below and in Annex 2 for the penetration seal(s).

### 3.1 CFS-CID installation

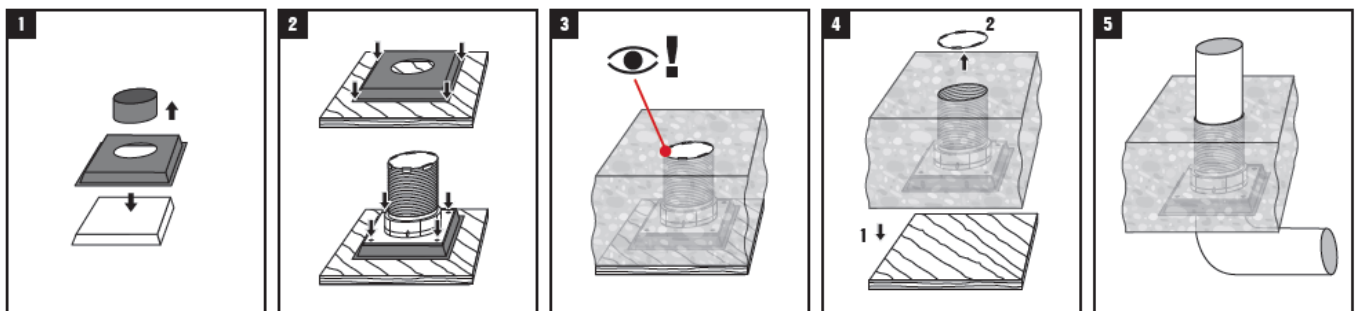


### 3.2 Manifold installation

#### 3.2.1 CFS-CID with Manifold installed top side



#### 3.2.2 CFS-CID with Manifold installed bottom side



**ANNEX 4**  
**ABBREVIATIONS AND REFERENCE DOCUMENTS**

**4.1 Abbreviations used in drawings**

Abbreviation	Description
A <sub>1</sub>	Hilti Firestop Cast in CFS-CID
A <sub>2</sub>	Manifold
C	Plastic Pipe
D	Pipe insulation
d <sub>C</sub>	Pipe diameter (nominal outside diameter)
E	Building element (wall, floor)
s <sub>1</sub>	Minimum distance between single penetration seals
t <sub>C</sub>	Pipe wall thickness
t <sub>D</sub>	Insulation thickness
t <sub>E</sub>	Thickness of the building element
L <sub>D</sub>	Length of Insulation

**4.2 References to standards mentioned in the ETA:**

EN 1026	Windows and doors – Air permeability – Test method
EN 1329-1	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Unplasticized poly(vinyl chloride) (PVC-U)
EN 1366-3	Fire resistance tests for service installations - Part 3: Penetration seals
EN 1451-1	Plastics 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 1453-1	Plastics piping systems with structured-wall pipes for soil and waste discharge (low and high temperature) inside buildings - Unplasticized poly(vinyl chloride) (PVC-U)
EN 1519-1	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Polyethylene (PE) - Part 1: Specifications for pipes, fittings and the system
EN 1566-1	Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Chlorinated poly(vinyl chloride) (PVC-C) - Part 1: Specifications for pipes, fittings and the system
EN 12201-2	Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 2: Pipes
EN 12666-1	Plastics piping systems for non-pressure underground drainage and sewerage – Polyethylene (PE) – Part 1: Specifications for pipes, fittings and the system
EN 13501	Fire classification of construction products and building elements – Part 1: Classification using test data from reaction to fire tests Part 2: Classification using test data from fire resistance tests, excluding ventilation services
EN ISO 140-3	Acoustics – Measurement of sound insulation in buildings and of building elements – Part 3: Laboratory measurements of airborne sound insulation of building elements <sup>4</sup>
EN ISO 717-1	Acoustics – Rating of sound insulation of buildings and of building elements – Part 1: Airborne sound insulation
EN ISO 1519	Paints and varnishes – Bend test (cylindrical mandrel)
EN ISO 1452	Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure - Unplasticized poly(vinyl chloride) (PVC-U) <sup>5</sup>

<sup>4</sup> In September 2010 substituted by the EN ISO 10140 series  
ETA 16/0383 of 19/07/2016 – page 31 of 32

EN ISO 15493	Plastics piping systems for industrial applications - Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) - Specifications for components and the system; Metric series
EN ISO 15494	Plastics piping systems for industrial applications - Polybutene (PB), polyethylene (PE) and polypropylene (PP) - Specifications for components and the system; Metric series
EN ISO 15874	Plastics piping systems for hot and cold water installations - Polypropylene (PP)
EN ISO 20140-10	Acoustics – Measurements of sound insulation in buildings and of building elements – Part 10: Laboratory measurement of airborne sound insulation of small building elements <sup>4</sup>
DIN 8061	Unplasticized polyvinyl chloride (PVC-U) pipes - General quality requirements and testing
DIN 8062	Unplasticized polyvinyl chloride (PVC-U) pipes - Dimensions
DIN 8074	Polyethylene (PE) - Pipes PE 80, PE 100 - Dimensions
DIN 8075	Polyethylene (PE) pipes - PE 80, PE 100 - General quality requirements, testing
DIN 8077	Polypropylene (PP) pipes - PP-H, PP-B, PP-R, PP-RCT – Dimensions
DIN 8078	Polypropylene (PP) pipes - PP-H, PP-B, PP-R, PP-RCT - General quality requirements and testing
DIN 19531-10	Pipes and fittings made of unplasticized polyvinyl chloride (PVC-U) socket for waste and soil discharge systems inside buildings – Part 10: Fire behaviour, quality control and installation recommendations
DIN 19535-10	High-density polyethylene (PE-HD) pipes and fittings for hot-water resistant waste and soil discharge systems (HT) inside buildings – Part 10: Fire behaviour, quality control and installation recommendations

#### 4.3 Other reference documents

EOTA TR 001	Determination of impact resistance of panels and panel assemblies
EOTA TR 024	Characterisation, Aspects of Durability and Factory Production Control for Reactive Materials, Components and Products

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<sup>5</sup> Successor of EN 1452 since December 2009  
ETA 16/0383 of 19/07/2016 – page 32 of 32