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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)

European Technical Assessment

ETA 21/1055
of 08/03/2022

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: UL International (Netherlands) B.V.

Trade name of the construction product ZZ M60

Product family to which the construction product belongs Fire Stopping and Sealing Product:
• Penetration Seals

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Germany

Manufacturing plant(s) Karl Zimmermann GmbH
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This European Technical Assessment contains 23 pages including 4 Annexes which form an integral part of this assessment.

This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of EAD 350454-00-1104, September 2017

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SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

1.1 General

- 1) ZZ M60 is a cable and pipe management firestop system, intended to form a seal to reinstate the fire resistance performance of flexible walls, rigid walls and floors constructions, where they have been provided with openings for the penetration of services.
- 2) ZZ M60 seals with a nominal seal thickness of 300 mm are based on a cable box seal system and on following components:

Components of ZZ M60	Characteristics
ZZ 630	Fire protection box (length \geq 300 mm) consisting of sheet steel housing incorporating intumescent fire protection inlays made of ZZ 12
ZZ 231	Intumescent fire protection inlay on the basis of polyurethane foam (ZZ 12) provided as soft (ZZ 231-s) and hard (ZZ 231-h) blocks
ZZ 330	Intumescent fire protection foam in cartridges on the basis of polyurethane. After application it reacts and increases its volume
ZZ 451-30	Intumescent fire protection wrap on the basis of butyl rubber and glass fibre reinforcement
ZZ 452-30	Intumescent fire protection wrap with one sided self-adhesive tape

- 3) The Fire Protection Box ZZ 630 (Type A with a height of nom. 130 mm and Type B with a height of nom. 180 mm) consists of a metal sheet housing which is made up of two interlocking individual parts (top and bottom part). Top and bottom part of the Fire Protection Box ZZ 630 are connected at two edges using steel clamps. At the insides of the cable box, molded parts made of Fire Protection Foam ZZ 12-B (hard) with a thickness of nom. 8 mm are installed laterally and with a thickness of nom. 15 mm are installed at the bottom. At the top, molded parts made of Fire Protection Foam ZZ 12-A (soft) with a height of 50 mm are installed. The Fire Protection Foam ZZ 12 expands upon heating to close the pathway around services to prevent the passage of fire. (see Annex A.1 and Annex A.2 of the ETA)
- 4) The Fire Protection Box ZZ 630 (Type C with a height of nom. 115 mm and Type D with a height of nom. 165 mm) consists of a 3-sided metal sheet housing. At the insides of the cable box, molded parts made of Fire Protection Foam ZZ 12-B with a thickness of nom. 8 mm are installed laterally and at the top, molded parts made of Fire Protection Foam ZZ 12-A with a height of nom. 50 mm are installed. (see Annex A.3 of the ETA)
- 5) Optionally, the Fire Protection Box ZZ 630 (Type A-D) is available as powder-coated assembly (max. 1500 μ m).
- 6) Fire Protection Box ZZ 630 (Type A-D) containing 6 different width-sizes. Each can be installed as a single box, stacked with maximum 2 boxes above each other or multiple boxes arranged next to each other (see Annex B.3 of the ETA).
- 7) The Fire Protection Boxes ZZ 630 (Type A-D) must be centered in wall assemblies and flush with the bottom side of floor assemblies. In flexible walls the cavity around Fire Protection Box ZZ 630 must be filled with mineral wool (\geq 50 mm).

- 8) ZZ M60 is supplied with Fire Protection Wrap ZZ 451-30 or ZZ 452-30 used as a gasket (30 mm width) to wrap around Fire Protection Box ZZ 630 flush with the supporting construction on both sides of the opening. It expands upon heating to close any gap between the cable box and periphery of the opening (see Annex B.1 and Annex B.2 of the ETA).
- 9) In flexible walls the gap (≤ 30 mm) around the Fire Protection Box ZZ 630 must be sealed using gypsum. Alternatively the gap can be filled with mineral wool and sealed with gypsum with a depth ≥ 25 mm from both sides of the wall.
- 10) In rigid walls the gap (≤ 30 mm) around the Fire Protection Box ZZ 630 must be sealed using gypsum or mortar. Alternatively the gap can be filled with mineral wool and sealed with mortar / gypsum with a depth ≥ 25 mm from both sides of the wall.
- 11) In rigid floors the gap (≤ 30 mm) around the Fire Protection Box ZZ 630 must be sealed using mortar.
- 12) ZZ M60 will be formed by filling Fire Protection Foam ZZ 330 in the opening of the Fire Protection Box ZZ 630 so that all interstices and voids are carefully sealed. Alternatively the remaining space around penetrating elements can be closed with Fire Protection Inlay ZZ 231 (see Annex B.8 of the ETA).
- 13) The overall cross-section of the penetrants (including insulation) of ZZ M60 may not exceed 60 % of the outer dimensions of Fire Protection Box ZZ 630.
- 14) The designation U/U, C/U, U/C or C/C indicates whether or not the product under test are sealed during the fire test.
The first letter refers to the situation in the oven and the second to the situation outside the oven (see table).

Test condition	Configuration	
	Exposed to heat from oven (inside the oven)	Un-exposed to heat from oven (out-side the oven)
U/U	Unsealed	Unsealed
C/U	Sealed	Unsealed
U/C	Unsealed	Sealed
C/C	Sealed	Sealed

The tests carried out with unsealed ends (U/U) correspond to the most unfavorable situation, since the fire can spread more easily because the two ends are unsealed.

The results of these tests may therefore be applied in all situations (U/U, C/U, U/C and C/C).

The C/U tests may be used in the following situations: C/U, U/C and C/C.

The U/C tests may in turn be used for situations U/C and C/C, while the C/C tests may only be used in the C/C situation.

- 15) The applicant has submitted a written declaration that ZZ M60 does not contain substances which have to be 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.

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.

- 16) The use category of ZZ M60 in relation to BWR 3 (Hygiene, health and environment) is IA1.

2 Specification of the intended uses of the product in accordance with the applicable European Assessment Document (Hereinafter EAD): EAD 350454-00-1104

Detailed information and data are given in Annex A to Annex D.

- 1) The intended use of ZZ M60 is to reinstate the fire resistance performance of flexible wall constructions, rigid walls and rigid floors where they are penetrated by services or where services have not been installed yet. Services can be retrofitted or removed after installation.
- 2) The specific elements of construction that the system ZZ M60 may be used to provide a penetration seal in, are as follows:

Flexible walls: The wall must have a minimum thickness of 94 mm and comprise steel studs or timber studs lined on both faces with minimum 2 layers of 12.5 mm thick boards. For timber stud walls there shall be a minimum distance of 100 mm of the penetration seal to any timber stud. The cavity between the penetration seal to any timber stud has to be closed with minimum 100 mm of insulation of Class A1 or A2 (in accordance with EN 13501-1).

Rigid walls: The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete, reinforced concrete or masonry, with a minimum density of 450 kg/m³.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise concrete, aerated concrete or reinforced concrete, with a minimum density of 450 kg/m³.

The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period. For wall assemblies additional precautions may have to be taken to ensure the supporting construction is classified for the intended fire resistance period when incorporating the required aperture. The aperture in flexible walls has to be lined additionally with steel studs where ZZ M60 assemblies with a width > 521 mm and height > 180 mm are installed (see ETA-holder's installation instruction).

- 3) ZZ M60 may be used to provide a penetration seal with cables, conduits and pipes as well as support constructions (see Annex C of the ETA). Subsequent addition (retrofitting) and removal of cables, conduits / tubes, pipes and cable support constructions according to the ETA holder's installation instructions is permitted.
- 4) Services shall be supported in walls at maximum 200 mm from both faces of the Fire Protection Box ZZ 630 and 300 mm from top face of the Fire Protection Box ZZ 630 in floors.
- 5) The provisions made in this European Technical Assessment are based on an assumed working life of the ZZ M60 of 10 years, provided that the conditions laid down in the manufacturers 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.
- 6) Type Z₁: Intended for use at internal conditions with high humidity, excluding temperatures below 0 °C (These uses apply for internal humidity class 5 in accordance with EN ISO 13788). Includes lower classes.

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

Product-type: Cable box		Intended use: Penetration Seal
Assessment method	Essential characteristic	Product performance
BWR 2 Safety in case of fire		
EN 13501-1	Reaction to fire	Class 'E'
EN 13501-2	Resistance to fire	see Annex D of the ETA
BWR 3 Hygiene, health and environment		
EN 1026	Air permeability	No performance determined
EAD 350454-00-1104, Annex C	Water permeability	No performance determined
Declaration of manufacturer	Content, emission and/or release of dangerous substances	Use categories: IA1 Declaration of manufacturer
BWR 4 Safety in use		
EOTA TR 001:2003	Mechanical resistance and stability	No performance determined
EOTA TR 001:2003	Resistance to impact/movement	
EOTA TR 001:2003	Adhesion	
EAD 350454-00-1104, Clause 2.2.9	Durability	Z ₁
BWR 5 Protection against noise		
EN 10140-1,2,4,5/ EN ISO 717-1	Airborne sound insulation	No performance determined
BWR 6 Energy economy and heat retention		
EN 12664, EN 12667, EN 12939, EN ISO 8990, EN ISO 6946, EN ISO 14683, EN ISO 10211, EN ISO 10456	Thermal properties	No performance determined
EN ISO 12572, EN 12086, EN ISO 10456	Water vapour permeability	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 – 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 <https://eur-lex.europa.eu/oj/direct-access.html>) of the European Commission¹, 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.

The factory production control shall be in accordance with the Control Plan of 11th January 2022 relating to the European Technical Assessment ETA 21/1055 issued on 08/03/2022 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 (Netherlands) B.V.

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

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

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.
 - Services which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. cable trays)

(b) Installation instruction:

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

6 Issued on:

8th March 2022

Report by:



Justin Kalathil
Senior Project Engineer
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Verified by:



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Validated by:

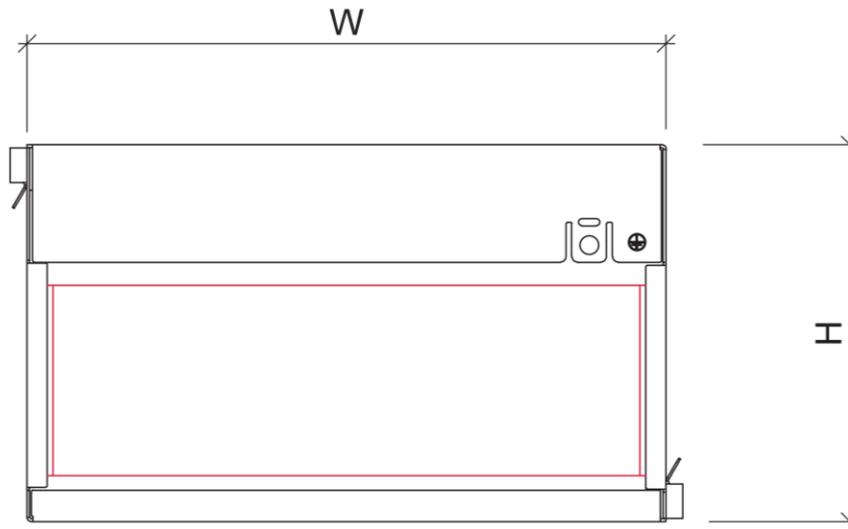


Erik Teubler
Head of TAB
Built Environment

For and on behalf of UL International (Netherlands) B.V.

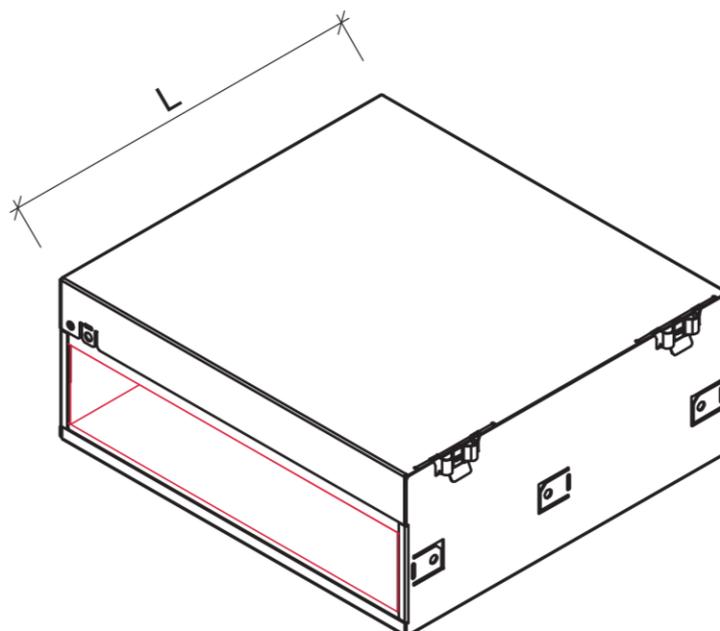
ANNEX A – Construction Details of ZZ M60

A.1 Dimensions of Fire Protection Box ZZ 630 (Type A)

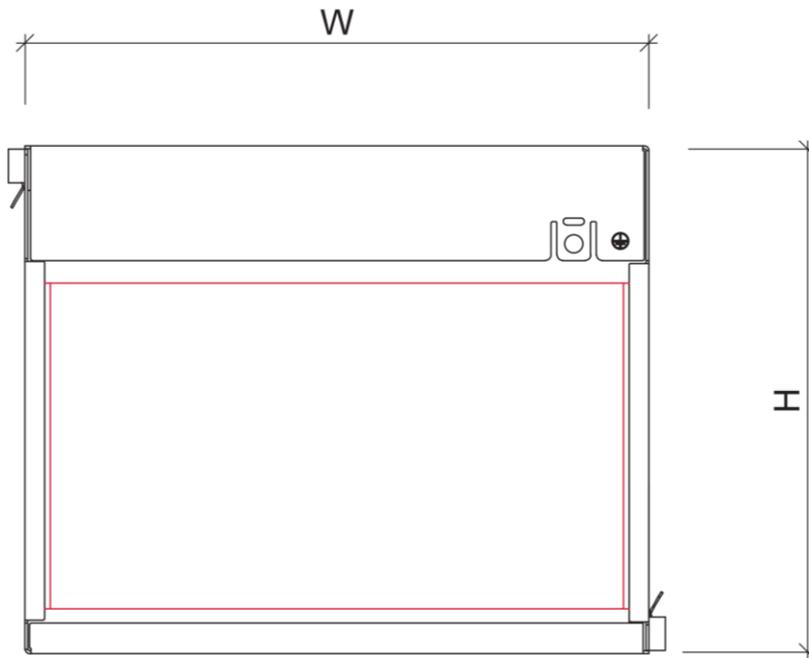


Size	W [mm] *	H [mm] *	L [mm] *
Fire Protection Box ZZ 630-100-1	121	130	300
Fire Protection Box ZZ 630-200-1	221	130	300
Fire Protection Box ZZ 630-300-1	321	130	300
Fire Protection Box ZZ 630-400-1	421	130	300
Fire Protection Box ZZ 630-500-1	521	130	300
Fire Protection Box ZZ 630-600-1	621	130	300

* Nominal values

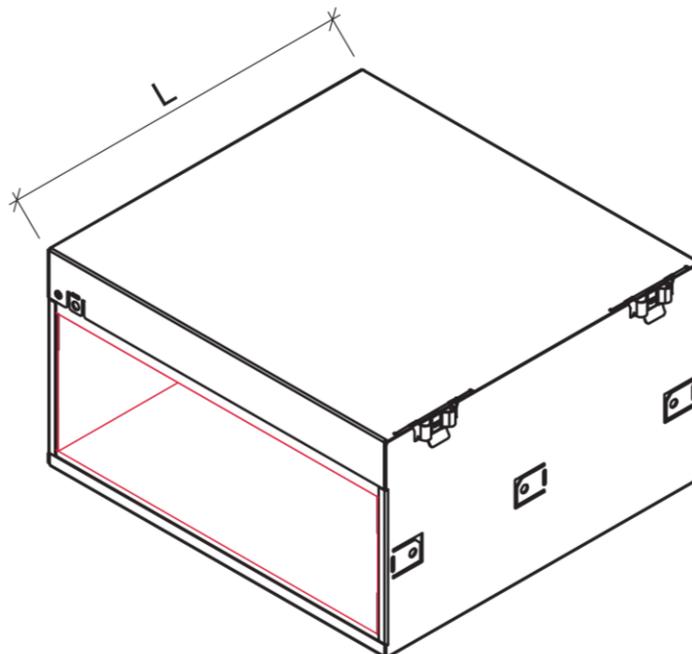


A.2 Dimensions of Fire Protection Box ZZ 630 (Type B)

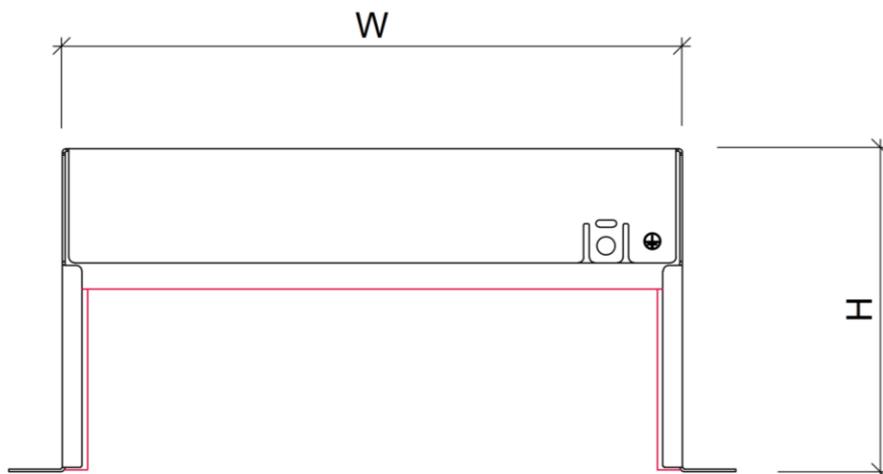


Size	W [mm] *	H [mm] *	L [mm] *
Fire Protection Box ZZ 630-100-2	121	180	300
Fire Protection Box ZZ 630-200-2	221	180	300
Fire Protection Box ZZ 630-300-2	321	180	300
Fire Protection Box ZZ 630-400-2	421	180	300
Fire Protection Box ZZ 630-500-2	521	180	300
Fire Protection Box ZZ 630-600-2	621	180	300

* Nominal values

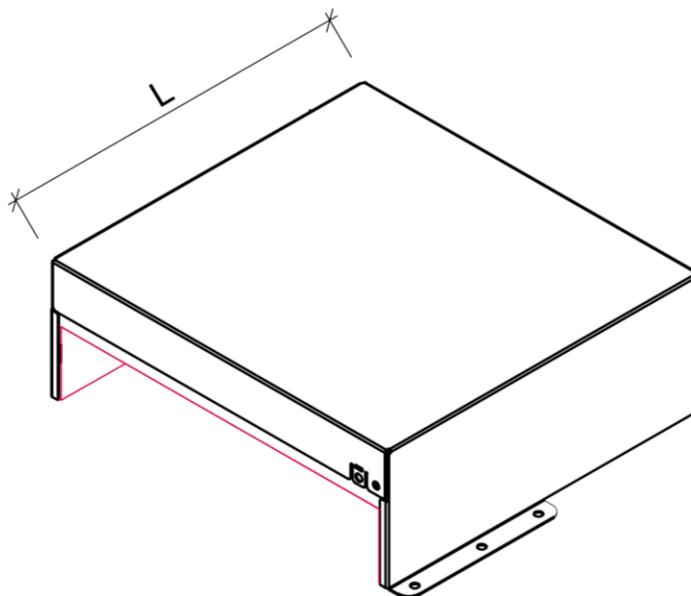


A.3 Dimensions of Fire Protection Box ZZ 630 (Type C and Type D)



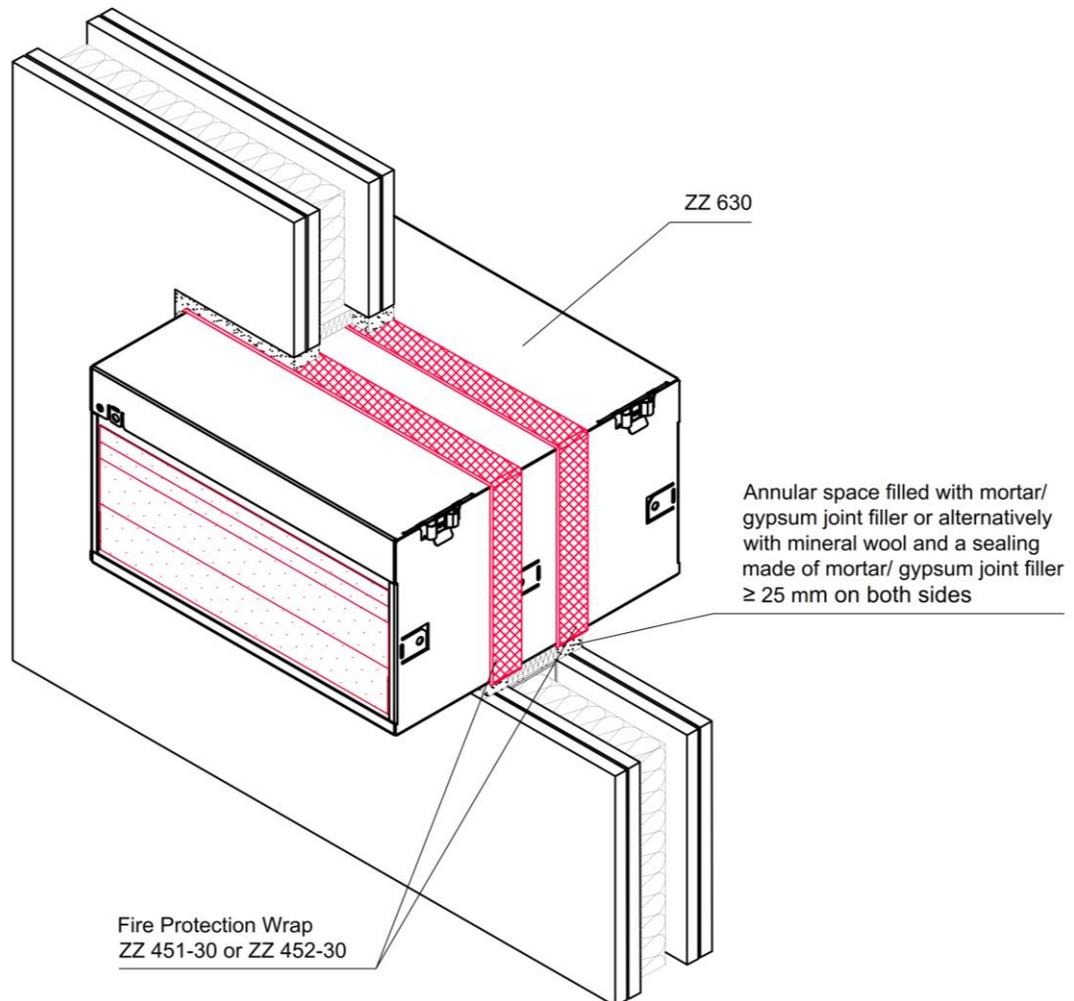
Size	W [mm] *	H [mm] *		L [mm] *
		Type C	Type D	
Fire Protection Box ZZ 630-100-3 (Type C) resp. -4 (Type D)	120	115	165	300
Fire Protection Box ZZ 630-200-3 (Type C) resp. -4 (Type D)	220	115	165	300
Fire Protection Box ZZ 630-300-3 (Type C) resp. -4 (Type D)	320	115	165	300
Fire Protection Box ZZ 630-400-3 (Type C) resp. -4 (Type D)	420	115	165	300
Fire Protection Box ZZ 630-500-3 (Type C) resp. -4 (Type D)	520	115	165	300
Fire Protection Box ZZ 630-600-3 (Type C) resp. -4 (Type D)	620	115	165	300

* Nominal values



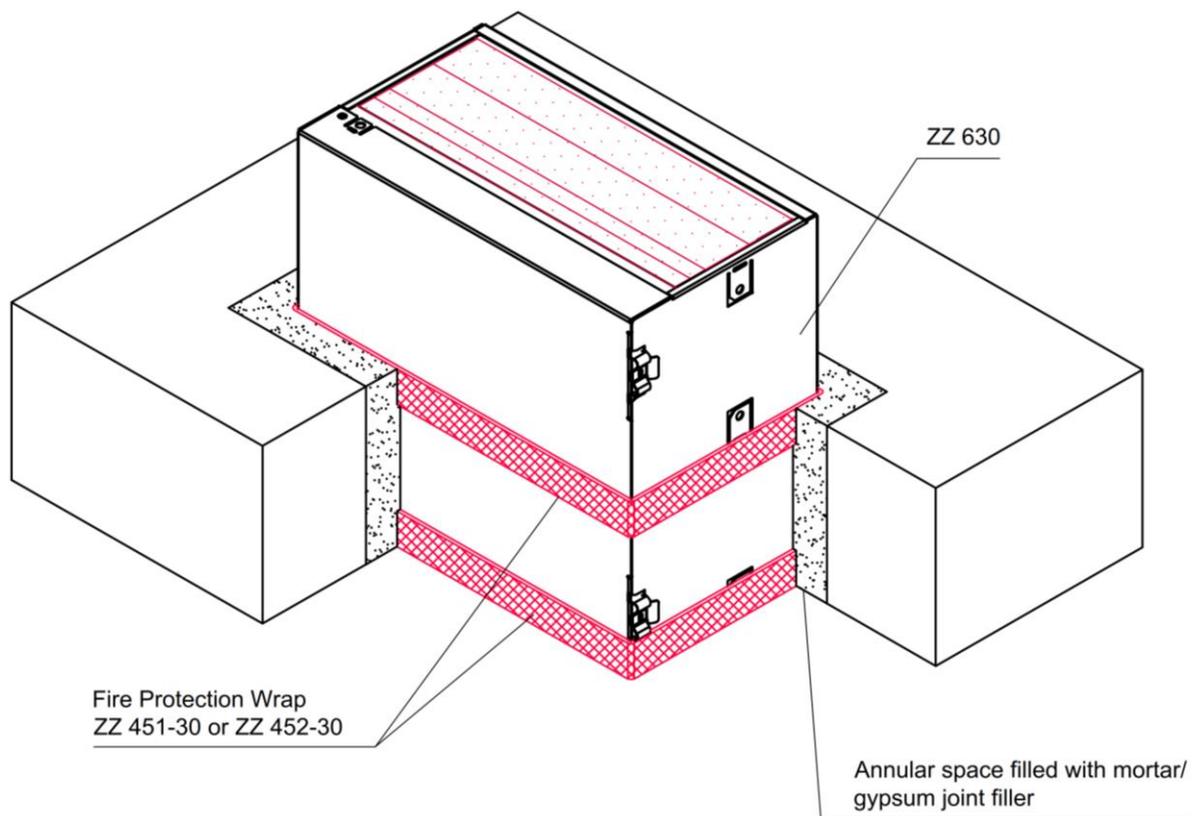
ANNEX B – Manufacturer installation instructions

B.1 Fixing of intumescent gasket in walls



The Fire Protection Wrap ZZ 451-30 or ZZ 452-30 must be fixed to Fire Protection Box ZZ 630 so that it is flush with the surface of the wall on both sides.

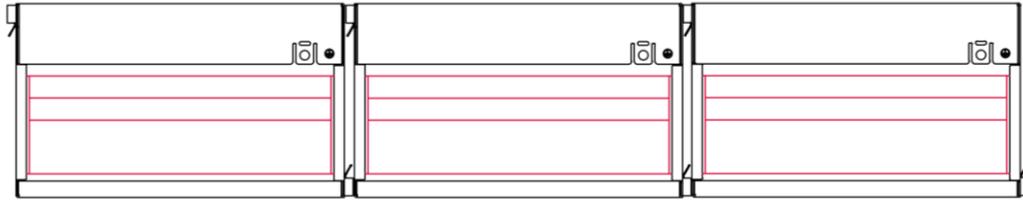
B.2 Fixing of intumescent gasket in floors



The Fire Protection Wrap ZZ 451-30 or ZZ 452-30 must be fixed to Fire Protection Box ZZ 630 so that it is flush with the surface of the floor on both sides.

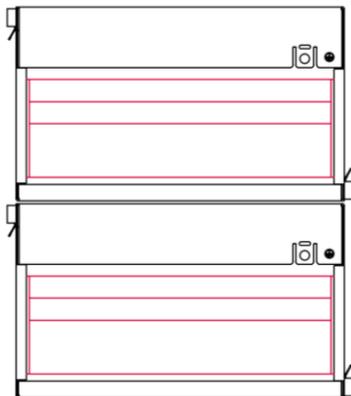
B.3 Arrangement of multiple boxes

Arrangement of several Fire Protection Boxes ZZ 630 next to each other



Several Fire Protection Boxes ZZ 630 may be arranged next to each other. The Fire Protection Wrap ZZ 451-30 or ZZ 452-30 has to be fixed around each fire protection box in accordance with ANNEX B.1 and B.2 of the ETA.

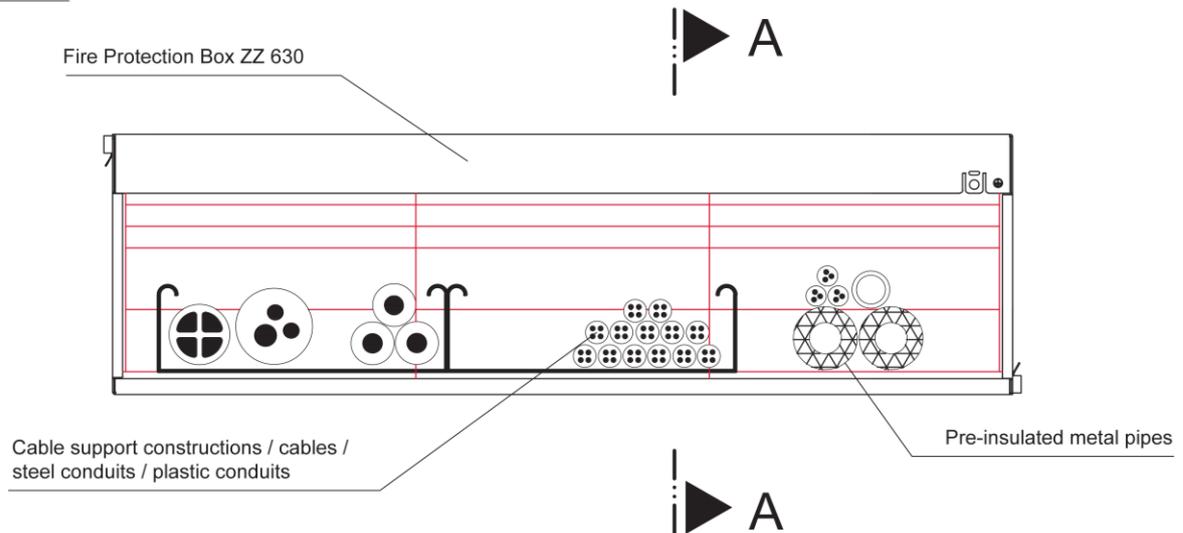
Arrangement of stacked Fire Protection Boxes ZZ 630



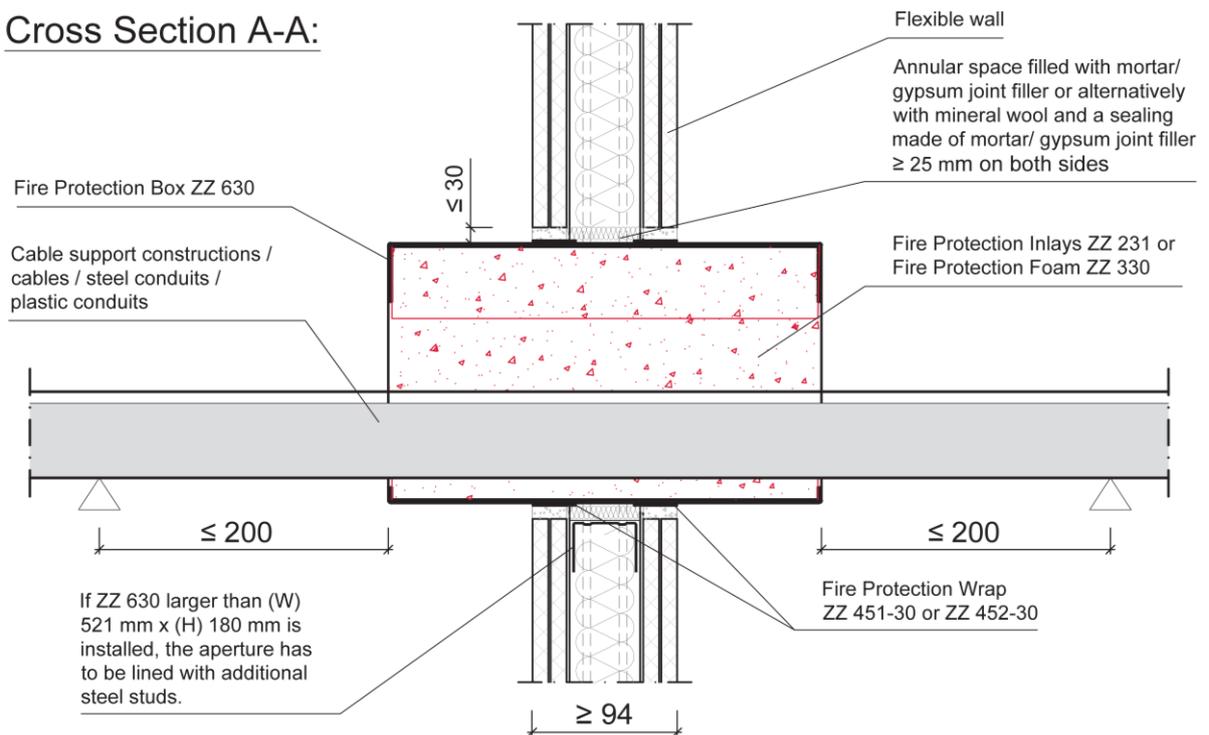
Two Fire Protection Boxes ZZ 630 may be stacked. The Fire Protection Wrap ZZ 451-30 or ZZ 452-30 has to be fixed around each fire protection box in accordance with ANNEX B.1 and B.2 of the ETA.

B.4 Installation of ZZ M60 in flexible walls (Type A and Type B)

View:



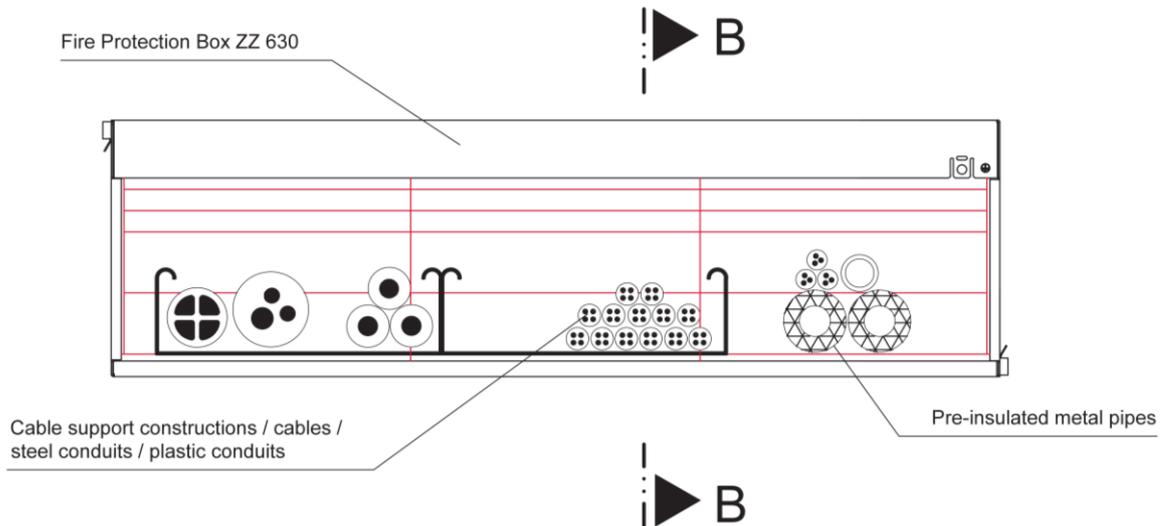
Cross Section A-A:



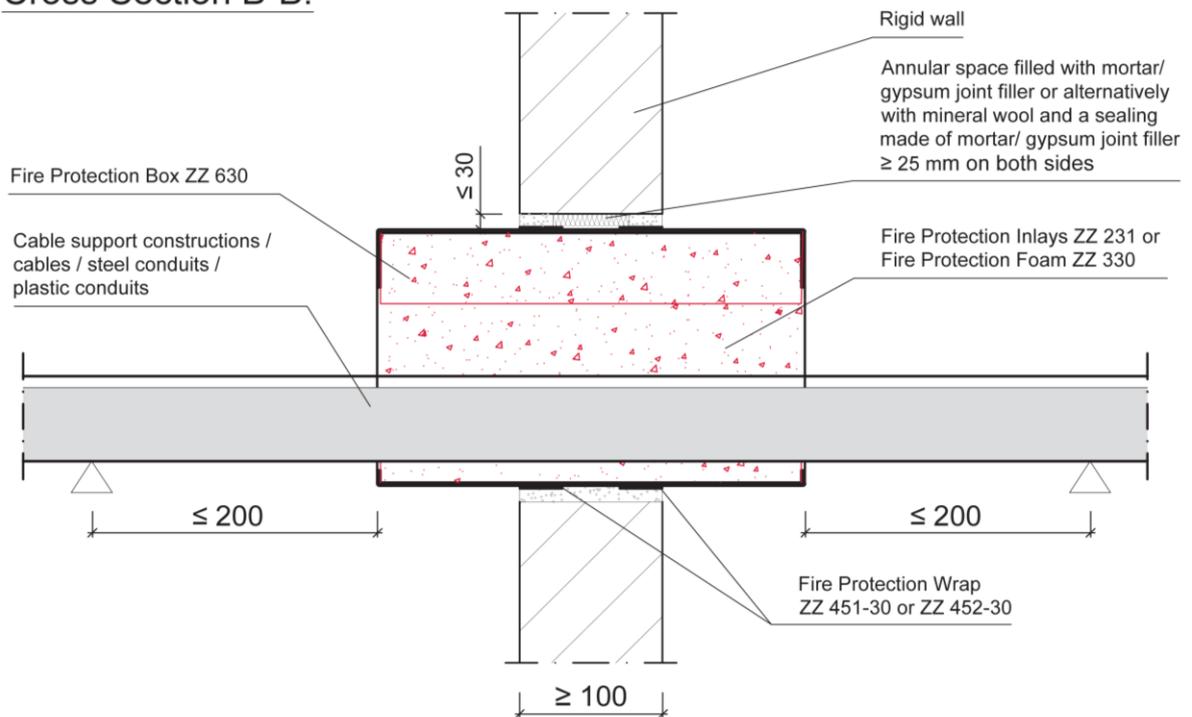
All dimensions in mm

B.5 Installation of ZZ M60 in rigid walls (Type A and Type B)

View:



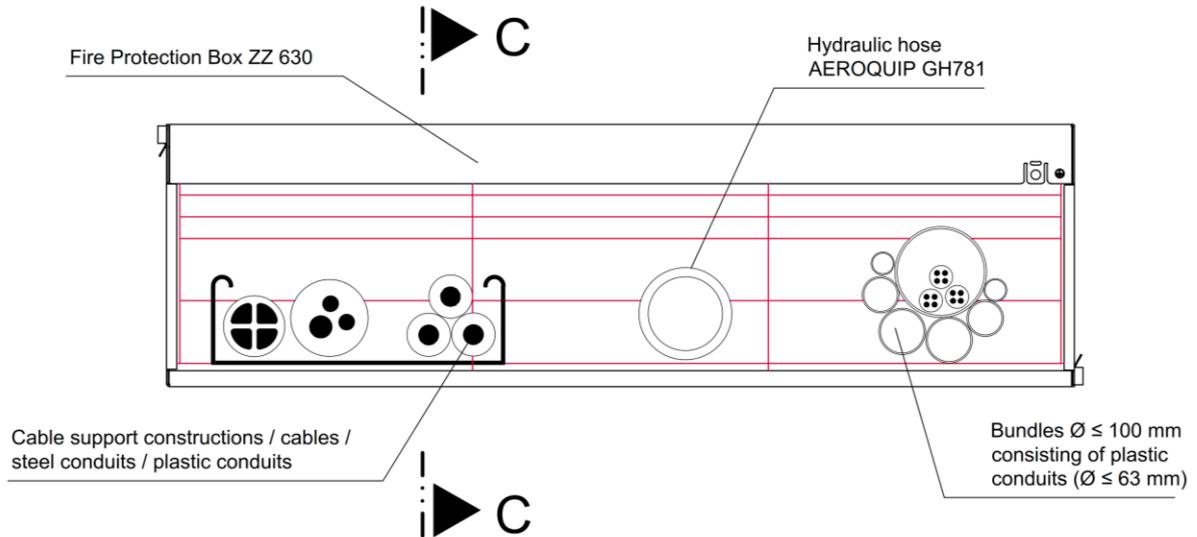
Cross Section B-B:



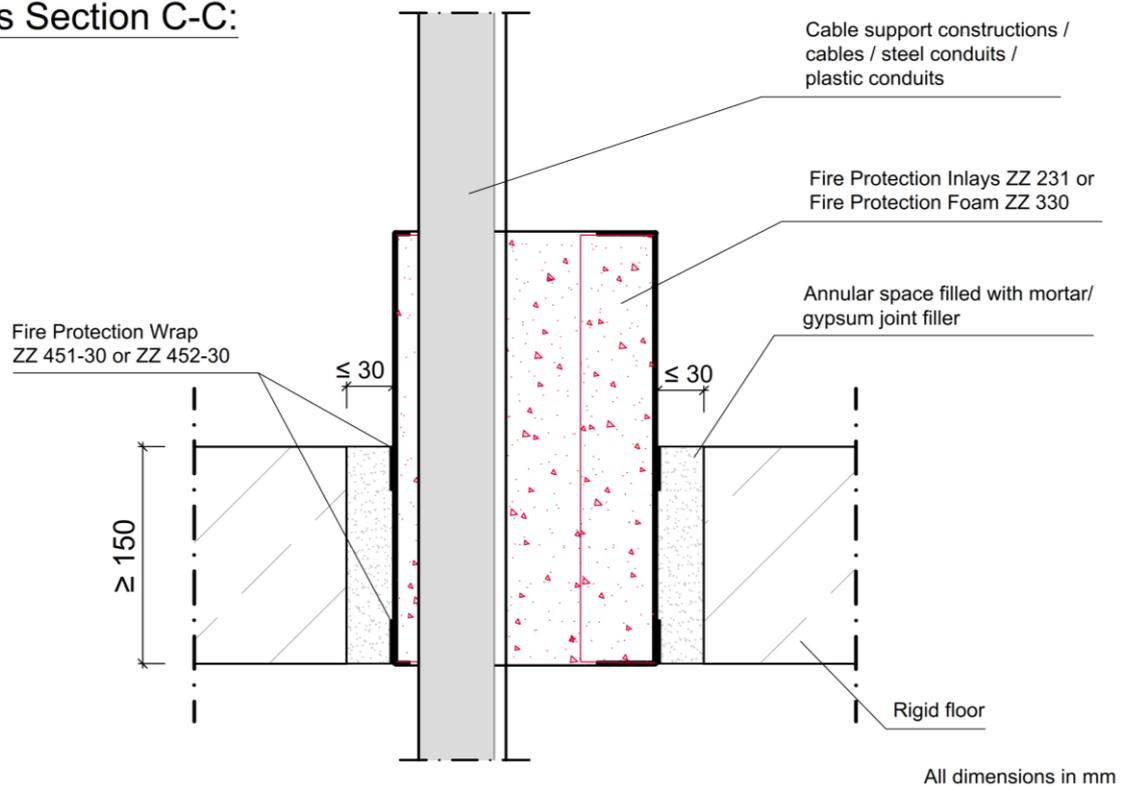
All dimensions in mm

B.6 Installation of ZZ M60 in rigid floors (Type A and Type B)

Top View:

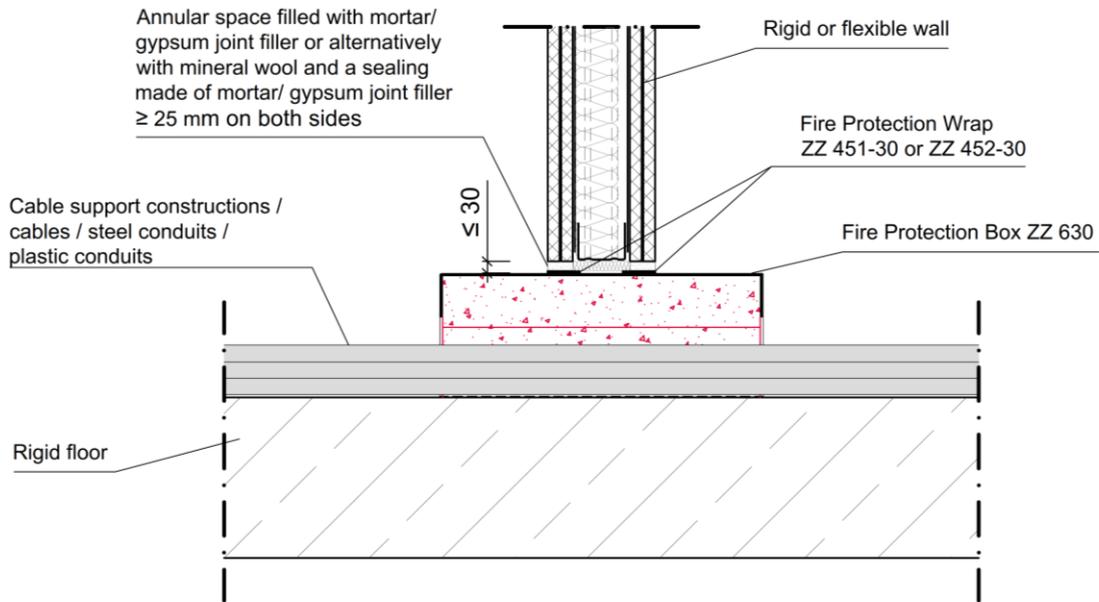


Cross Section C-C:

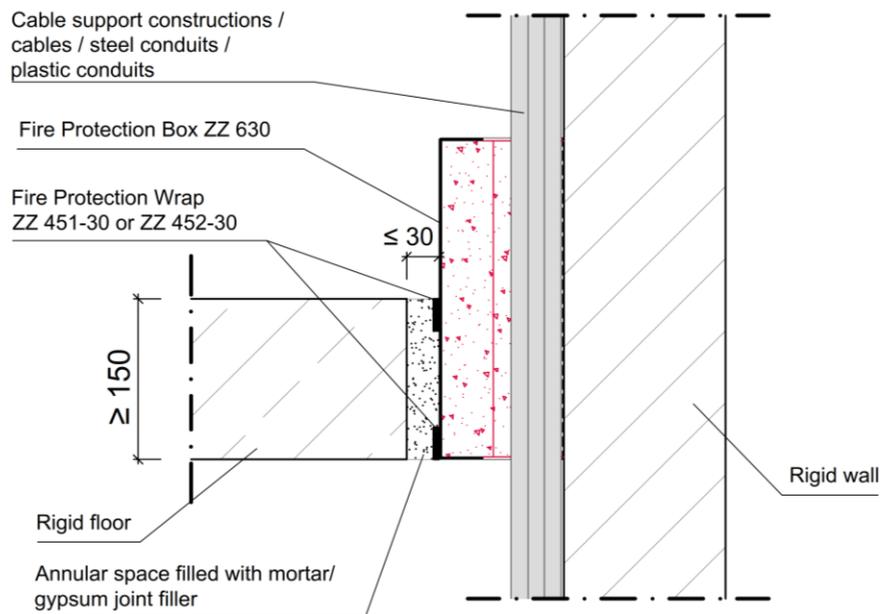


B.7 Installation of Fire Protection Box ZZ 630 (Type C and Type D)

Installation of ZZ 630 (Type C or Type D) in rigid or flexible wall:

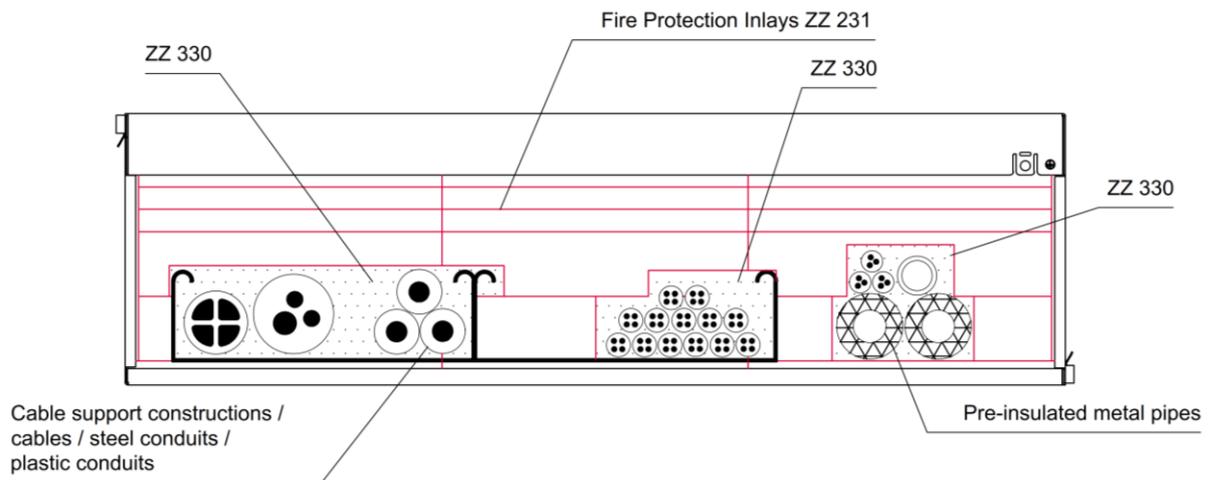


Installation of ZZ 630 (Type C or Type D) in rigid floor:

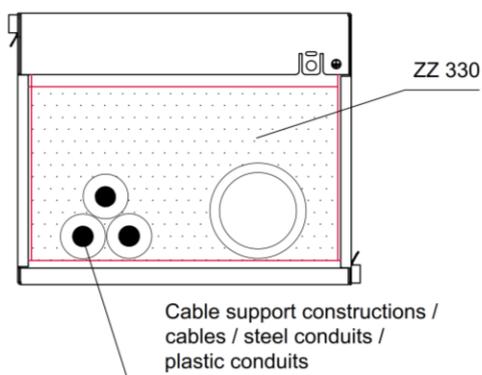


All dimensions in mm

B.8 Application of Fire Protection Foam ZZ 330



All joints and gaps between the penetrating elements and between the penetrating elements and ZZ 630 resp. ZZ 231 have to be filled with ZZ 330.



The use of ZZ 231 is not required. The Fire Protection Box ZZ 630 may be filled completely with ZZ 330.

ANNEX C – Penetrating Services

C.1 Cables/Conduits/Cable support constructions

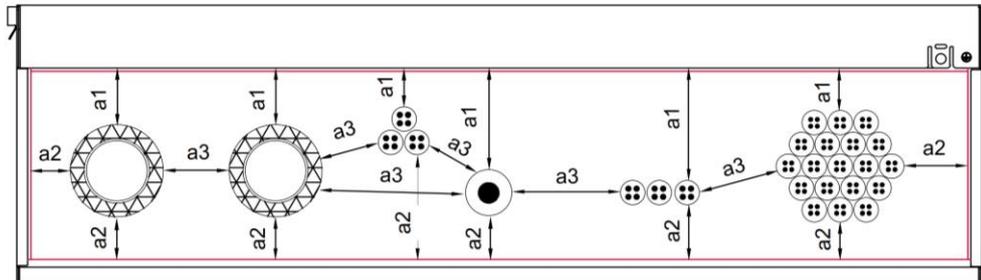
<u>Penetrating services</u>	<u>Description</u>
Cables:	All cable types currently and commonly used in building practice in Europe (e.g. power, control, signal, telecommunication, data, optical fibre cables, with or without cable supports) with a diameter of up to 80 mm.
Waveguides (High frequency coaxial cables):	<ul style="list-style-type: none"> • RFS CELLFLEX® up to a size of 1-5/8" (41 mm) • RFS CELLFLEX® Lite up to a size of 1-5/8" (41 mm) • RFS RADIAFLEX® up to a size of 1-5/8" (41 mm) • RFS HELIFLEX® up to a size of 1-5/8" (41 mm) • CommScope HELIAX® Andrew Virtual Air up to a size of 1-5/8" (41 mm) • CommScope RADIAX® Coaxial Radiating Cable up to a size of 1-5/8" (41 mm)
Steel conduits / tubes (C/U):	Rigid metal conduits / tubes with a diameter of up to 16 mm with or without cables.
Plastic conduits / tubes (U/U):	Rigid plastic conduits / tubes with a diameter of up to 16 mm with or without cables.
Plastic conduits/ tubes (U/C):	Rigid, flexible and pliable plastic conduits / tubes with a diameter of up to 63mm with or without cables.
Conduit bundle (U/C):	Plastic conduits with a max. single conduit diameter of up to 63mm with or without cables can be bundled to a diameter of up to 100 mm.
Cable support constructions:	<ul style="list-style-type: none"> • Steel cable trays (perforated or non-perforated) • Steel ladders • Steel cable trays (perforated or non-perforated) and steel ladders with organic coatings shall at least be classified A2 (in accordance with EN 13501-1)

C.2 Pipes/Hoses

<u>Penetrating services</u>	<u>Description</u>
Pre-insulated (CS) metal pipes used for air conditioning, heating and sanitary systems (C/U):	<ul style="list-style-type: none"> • WICU® Eco with a diameter of 35 mm and 18 mm thick insulation • WICU® Frio with a diameter of up to 22 mm, s = 1 mm pipe wall thickness and 10 mm thick insulation • WICU® Clim with a diameter Ø of up to 22,22 mm, s = 1 mm pipe wall thickness and 10 mm thick insulation • Tubolit® Split/ Tubolit® DuoSplit with a diameter of up to 22,22 mm, s= 1 mm pipe wall thickness and 9 mm thick insulation • Cuprofrio.plus with a diameter of up to 22 mm, s = 1 mm pipe wall thickness and 9 mm thick insulation
Drain hose (U/U):	<ul style="list-style-type: none"> • PVC condensed water hose of type “Cristallo Extra” with a diameter of up to 33 mm and a wall thickness up to 4 mm
Hydraulic hose (C/C in walls and U/C in floors):	<ul style="list-style-type: none"> • Aeroquip GH781 with a diameter of up to 64,3 mm

C.3 Minimum working clearances of penetrating services

View:



Minimum working clearances:

a1: Penetrating element / top edge of the Fire Protection Box ZZ 630

a2: Penetrating element / side or lower edge of the Fire Protection Box ZZ 630

a3: Penetrating element / penetrating element

Minimum working clearances			
Penetrating element	a1	a2	a3
Sheathed cables, telecommunication cables, optical fibre cables, coaxial cables, cable support constructions	0 mm	0 mm	<ul style="list-style-type: none"> - Sheathed cables, telecommunication cables, optical fibre cables, coaxial cables, cable support constructions 0 mm - Conduits made of plastic or steel 0 mm - Pre-insulated metal pipes with PE- / PUR-insulation 0 mm - Drain hoses 0 mm - Other penetrating elements 50 mm
Conduits made of plastic or steel	0 mm	0 mm	<ul style="list-style-type: none"> - Conduits made of plastic or steel 0 mm - Sheathed cables, telecommunication cables, optical fibre cables, coaxial cables, cable support constructions 0 mm - Pre-insulated metal pipes with PE- / PUR- insulation 0 mm - Other penetrating elements 50 mm
Pre-insulated metal pipes with PE- / PUR-insulation	0 mm	0 mm	<ul style="list-style-type: none"> - Pre-insulated metal pipes with PE- / PUR-insulation 0 mm - Sheathed cables, telecommunication cables, optical fibre cables, coaxial cables, cable support constructions 0 mm - Conduits made of plastic or steel 0 mm - Drain hoses 0 mm - Hydraulic hoses 20 mm - Other penetrating elements 50 mm
Drain hoses	0 mm	35 mm	<ul style="list-style-type: none"> - Sheathed cables, telecommunication cables, optical fibre cables, coaxial cables, cable support constructions 0 mm - Pre-insulated metal pipes with PE- / PUR-insulation 0 mm - Other penetrating elements 50 mm
Hydraulic hoses	0 mm	0 mm	<ul style="list-style-type: none"> - Pre-insulated metal pipes with PE- / PUR-insulation 20 mm - Other penetrating elements 50 mm

ANNEX D – Fire resistance classification

Installation in flexible walls of at least 94 mm thickness and rigid walls of at least 100 mm thickness or rigid floors of at least 150 mm thickness

Penetrating element	Classification in walls	Classification in floors
<ul style="list-style-type: none"> - Sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 80 mm - Tied bundles up to 100 mm overall diameter containing sheathed cables / telecommunication cables / optical fibre cables up to a max. outer diameter of 21 mm 	EI 90	EI 90 / E 120
Steel conduits / tubes up to a max. outer diameter of 16 mm with / without cables	EI 90-C/U	EI 90-C/U / E 120-C/U
Plastic conduits / tubes up to a max. outer diameter of 16 mm with / without cables	EI 90-U/U	EI 90-U/U / E 120-U/U
Plastic conduits / tubes up to a max. outer diameter of 63 mm and bundles up to 100 mm overall diameter consisting of plastic conduits (max. Ø 63 mm) with / without cables	EI 90-U/C	EI 90-U/C / E 120-U/C
Coaxial cable <ul style="list-style-type: none"> - RFS CELLFLEX[®] up to a size of 1-5/8" - RFS CELLFLEX[®] Lite up to a size of 1-5/8" - RFS RADIAFLEX[®] up to a size of 1-5/8" - RFS HELIFLEX[®] up to a size of 1-5/8" - CommScope HELIAX[®] Andrew Virtual Air up to a size of 1-5/8" - CommScope RADIAX[®] Coaxial Radiating Cable up to a size of 1-5/8" 	EI 90	EI 90 / EI 120
Pre-insulated metal pipes with insulations made of PE or PUR <ul style="list-style-type: none"> - WICU[®] Frio up to a max. outer diameter of Ø 22 mm - WICU[®] Clim up to a max. outer diameter of Ø 22 mm - WICU[®] Eco with an outer diameter of Ø 35 mm - CUPROFRIO.PLUS[®] up to a max. outer diameter of Ø 22 mm - Armacell Tubolit[®] Split / Tubolit[®] DuoSplit up to a max. outer diameter of Ø 22 mm 	EI 90-C/U	EI 90-C/U / E 120-C/U
PVC drain hoses of type "Cristallo Extra" up to a max. outer diameter of Ø 33 mm	EI 90-U/U	EI 90-U/U / E 120-U/U
Hydraulic hoses AEROQUIP GH 781 up to a max. outer diameter of Ø 64,3 mm	EI 90-C/C	EI 90-U/C / E 120-U/C