

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 25/0231
of 30/04/2025

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

FIRESAFE / FSP

Product family to which the construction product belongs

Fire Stopping and Sealing Product:
• Penetration Seals

Manufacturer

Firesafe A/S
Robsrudskogen 15
1470 Lørenskog
Norway

Manufacturing plant(s)

L/002

This European Technical Assessment contains

331 pages including 3 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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I. SPECIFIC PARTS OF THE EUROPEAN TECHNICAL ASSESSMENT

1. Technical description of the product

1) FIRESAFE / FSB is a mineral wool board coated with waterborne FIRESAFE / FSP ablative firestop coating based on a sustainable polymer system used to reinstate the fire resistance performance of wall and floor constructions where they have been provided with apertures for the penetration of single or multiple services.

2) The FIRESAFE / FSB is supplied coated on one face, referenced FB1, or on both faces, referenced FB2. The board or boards are then cut to allow the penetration of the required services, before being inserted into or over the aperture in the wall or floor.

3) The products below can be used in conjunction with FIRESAFE / FSB depending upon the required application and classification (see Annex A/B). These products are subject to separate ETAs.

- FIRESAFE / FSA, firestop mastic
- FIRESAFE / FSC, universal fire collar
- FIRESAFE / FSW, fire wrap
- FIRESAFE / FSG, firestop intumescent graphite
- Mulcol® Multitherm Bandage, thermal insulation
- FIRESAFE / FSD, firestop disc
- Mulcol® Multifoam 2K, 2 component fire protection Foam
- Mulcol® Multifoam Stone, fire protection stone

The applicant has submitted a written declaration that FIRESAFE / FSB, FIRESAFE / FSP and FIRESAFE / FSA do 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.

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 is given in Annex A, B and C.

- 1) The intended use of FIRESAFE / FSB is to reinstate the fire resistance performance of flexible wall, rigid wall and floor constructions where they are penetrated by various services.
- 2) The specific elements of construction that the system FIRESAFE / FSB may be used to provide a penetration seal in, are as follows:
 - a) Flexible walls*: The wall must have a minimum thickness of 100 mm. Apertures in flexible walls are not required to be lined
 - b) Rigid walls*: The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 400 kg/m³
 - c) CLT walls: The wall must have a minimum thickness of 100 mm, with a minimum density of 376 kg/m³
 - d) Sandwich panel walls: The wall must have a minimum thickness of 100 mm, consisting of a stone wool core with a minimum density of 115 kg/m³
 - e) Rigid floors: The floor must have a minimum thickness of 150 mm and comprise aerated concrete or concrete with a minimum density of 400 kg/m³
 - f) CLT floors: The wall must have a minimum thickness of 140 mm, with a minimum density of 350 kg/m³
* See Annex C for the field of application.
The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.
- 3) The system FIRESAFE / FSB may be used to provide a penetration seal with services e.g. cables, cable trays, metal pipes, composite pipes and plastic pipes, with and without insulation, with mixed services within the same seal/aperture (for details see Annex A and B).
- 4) The FIRESAFE / FSB panels have a minimum density of 150 kg/m³ and are of type Isover BSP, Paroc Pyrotech, Rockwool Hardrock, SVT/Flamro or equal.
- 5) The FIRESAFE / FSP System FB1 (2x 50 mm) and System FB2 (1x 60 mm) may be used to seal apertures in separating elements up to a maximum seal size given in Annex C. The minimum permitted separation between adjacent seals/apertures is 100 mm. Where seals are installed without services (blank), precautions need to be taken to prevent a person stepping onto a horizontal seal or falling onto a vertical seal.
- 6) The provisions made in this European Technical Assessment are based on an assumed working life of 25 years, provided that the conditions laid down in the product datasheet 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.
- 7) Type Z₂: Intended for uses in internal conditions with humidity lower than 85 % RH excluding temperatures below 0°C, without exposure to rain or UV.

- 8) Mutual distances between services and minimum support distances are given in Annex C.
- 9) It is allowed, for aesthetic reasons, to apply a ≥ 25 mm overlap of FIRESAFE / FSP coating on the adjacent construction around the penetration seal, but it is not mandatory.
- 11) If the solution is in combination with the FIRESAFE / FSW, a maximum of 5 mm protrusion from the surface of the separating element or penetration seal is allowed.
- 12) Insulation types
The following acoustic insulation types are allowed (or equal):
- ABSound Sonocool
 - Jacomassa / Sonimass
 - Merfisol Silver Alu
 - ThermaCompact TF
- The following elastomeric insulation types are given in Annex A and B (or equal, not limited by brand or type):
- Reaction to fire class $\leq$ B-s1, d0 – e.g. ArmaFlex Ultima, Kaiflex KK Plus S1
 - Reaction to fire class $\leq$ B-s2, d0 – e.g. ArmaFlex AF EVO, Kaiflex KK Plus S2 / ST, K-Flex ST
 - Reaction to fire class $\leq$ B-s3, d0 – e.g. ArmaFlex AF / XG / SH, K-Flex H
 - Reaction to fire class $\leq$ C-s2, d0 – e.g. Kaiflex HT S2
 - Reaction to fire class $\leq$ D-s3, d0 – e.g. ArmaFlex NH / SH / HT
- The insulations may also have a B_L, C_L or D_L classification (linear insulation).
- 13) Pipes types
The following multi layered pipes (or equal) are allowed:
- Alpex DUO, Valsir Pexal, Valsir Mixal and APE Plain (PE-Xb/AL/PE-Xb)
 - Uponor and Geberit Mepla (PE-RT/AL/PE-RT)
 - Uponor and Henco (PE-Xc/AL/PE-Xc)
 - Uponor and REHAU (PE-Xa) and REHAU (PE-Xc)
 - SP Superpipe and POLYGON PEX (PE-X/AL/PE-X)
 - Valsir Pexal and Valsir Mixal (PE/AL/PE-Xb)
 - Wavin Tigris, Protecta-Line System and Alpex F50 Profi (PE-X/AL/PE)
 - Kelox Modulrohr
 - Kelox Plus-Rohr (PE-RT/AL/PE-RT)
- The following fibre composite pipes (or equal) are allowed:
- Aquatechnik Fusio PP-R 80, Aquatechnik Fusio PP-RCT
 - Aquatherm Blue-MF, Aquatherm Blue-S, Aquatherm Red-MF, Aquatherm Green-MF, Aquatherm Green-MS, Aquatherm Green-S, Aquatherm Lilac-S, Aquatherm Grey-MS and Aquatherm Orange M
 - Bänninger PP-R, Bänninger Climatec PP-RCT and Bänninger Watertec PP-RCT
- The following low-noise (Silent) pipes (or equal) are allowed:
- Coes PhoNoFire and Coestilen BluePower
 - Geberit Silent PP and Geberit Silent dB 20
 - Girpi Friaphon and Marley Silent
 - Pipelife Master 3 and PhonEX AS
 - Poloplast POLO-KAL NG and Poloplast POLO-KAL 3S
 - Skolan dB
 - Raupiano Plus
 - Valsir Triplus,
 - DykaSono
 - Uponor Decibel
 - Geberit Silent Pro
 - Wavin SiTech+
 - Wavin SiTech B1
 - Wavin AS

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

Product-type: Coated Board		Intended use: Penetration Seal
Assesment method	Essential characteristic	Product Performance
<u>BWR 2 Safety in case of fire</u>		
EN 13501-1	Reaction to fire	E
EN 13501-2	Resistance to fire	Annex A, B & C
<u>BWR 3 Hygiene, health and enviroment</u>		
EN 1026	Air permeability	No performance determined
EAD 350454-00-1104, Annex C	Water permeability	No performance determined
Declaration of manufacturer & EN 16516	Release of dangerous substances	IA1, S/W 1 - Declaration of manufacturer
<u>BWR 4 Safety in use</u>		
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
EAD 350454-00-1104, Clause 2.2.9	Durability	Z ₂
<u>BWR 5 Protection against noise</u>		
EN 10140-1,2,4,5 / EN ISO 7171-1	Airborne sound insulation	R _w (C;C _{tr}) = 28 (-1;-3) dB
<u>BWR 6 Energy economy and theat retention</u>		
EN 12664, EN 12667, EN 13319, 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) 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 to 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 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 factory production control shall be in accordance with the Control Plan of 14 September 2023 relating to the European Technical Assessment ETA 25/0231 issued on 30/04/2025 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.

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. pipe trays)

(b) Installation instruction:

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

6. Issued on:

30 April 2025

Report by:

Verified by:

Validated by:



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

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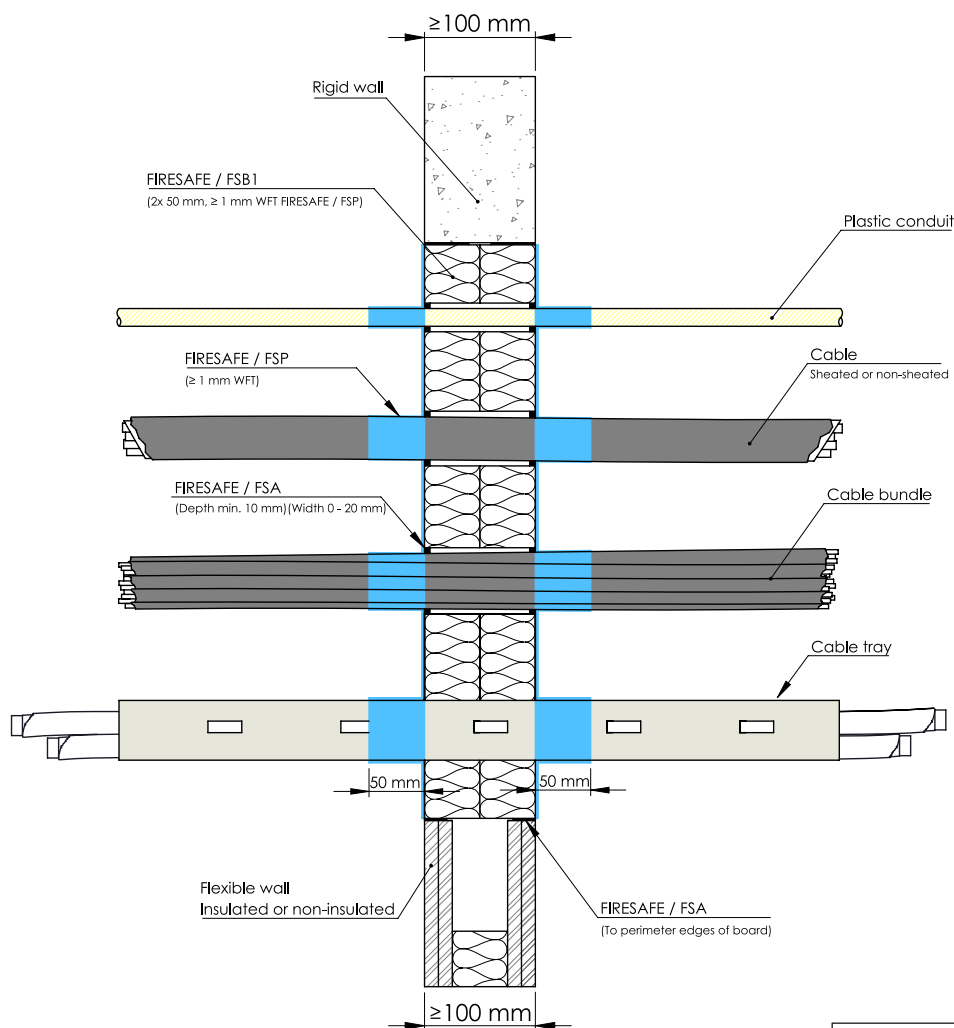
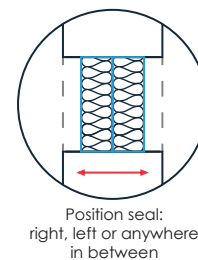
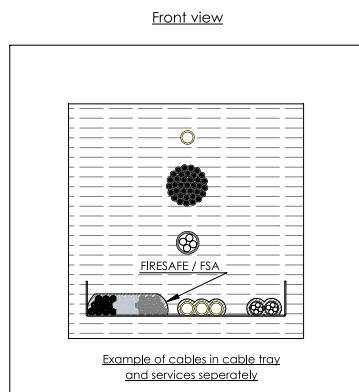
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A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.1 Cables, trays and conduits - FIRESAFE / FSP - 50 mm

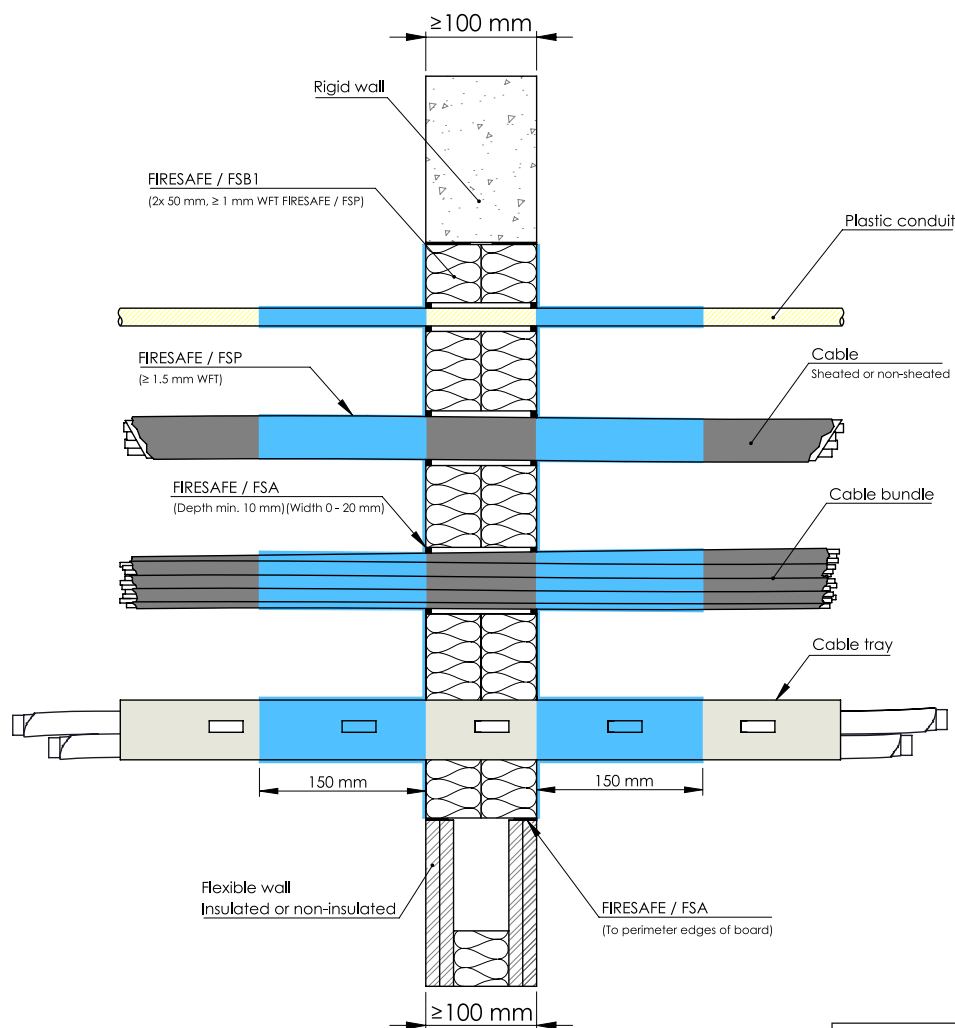
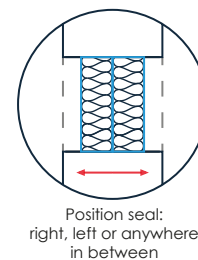
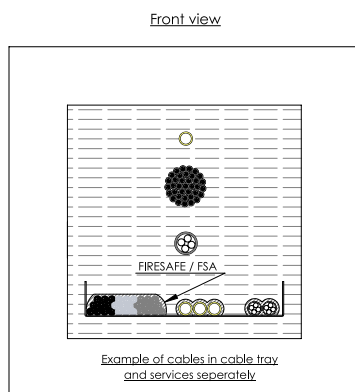


Drawing: PBfw.E-CT-4-MFB1.2.10

Services	Coating	Classification
Metal cable ladders	Coat back 50 mm ≥ 1 mm WFT FIRESAFE / FSP	EI 60, E 90
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 80 mm		
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 45, E 90
Non sheathed cables ≤ Ø 24 mm		EI 60 U/C, E 90 U/C
Plastic conduits ≤ Ø 16 mm		EI 45 C/U, E 60 C/U
Copper conduits ≤ Ø 16 mm		EI 60 C/U
Steel conduits ≤ Ø 16 mm		

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.2 Cables, trays and conduits - FIRESAFE / FSP - 150 mm

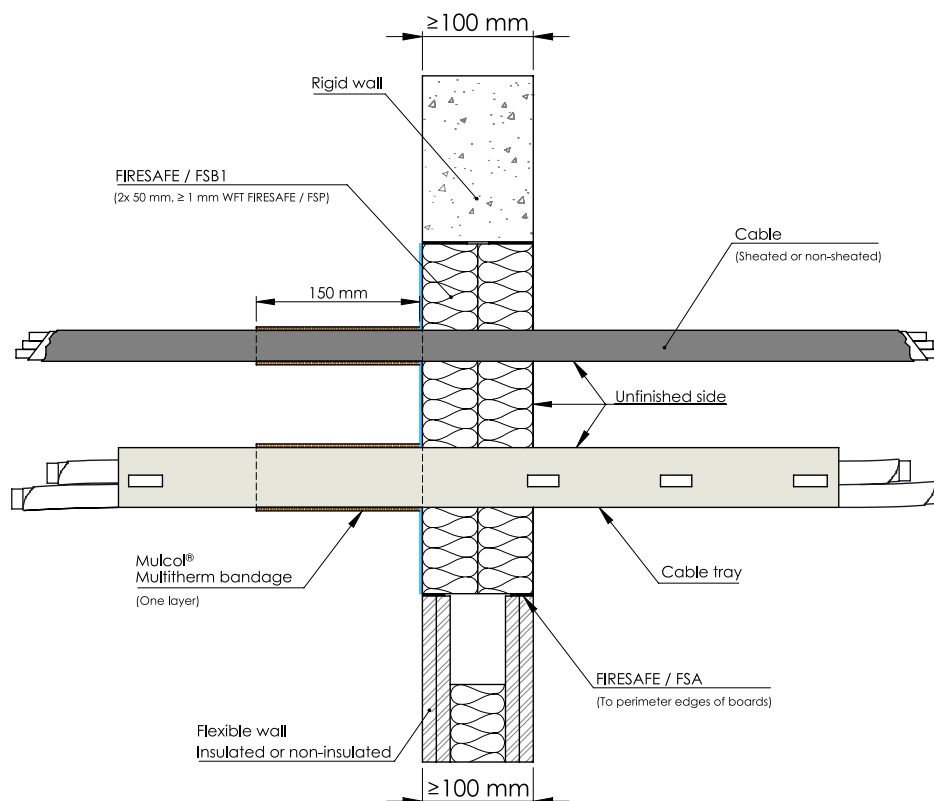
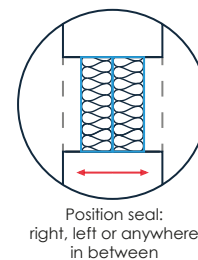
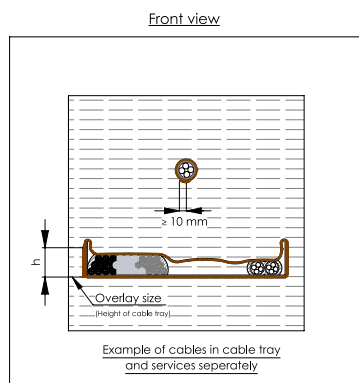


Drawing: PBfw.E-CT-4-MFB1,2,10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSP	EI 90, E 120
Metal (non-)perforated cable trays		EI 120
Steel wire mesh cable trays (baskets)		EI 90, E 120
Cables ≤ Ø 80 mm		EI 60, E 120
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 120 U/C
Non sheathed cables ≤ Ø 24 mm		EI 45 C/U, E 90 C/U
Plastic conduits ≤ Ø 16 mm		EI 90 C/U
Copper conduits ≤ Ø 16 mm		
Steel conduits ≤ Ø 16 mm		

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.3 Cables and trays - Multitherm Bandage

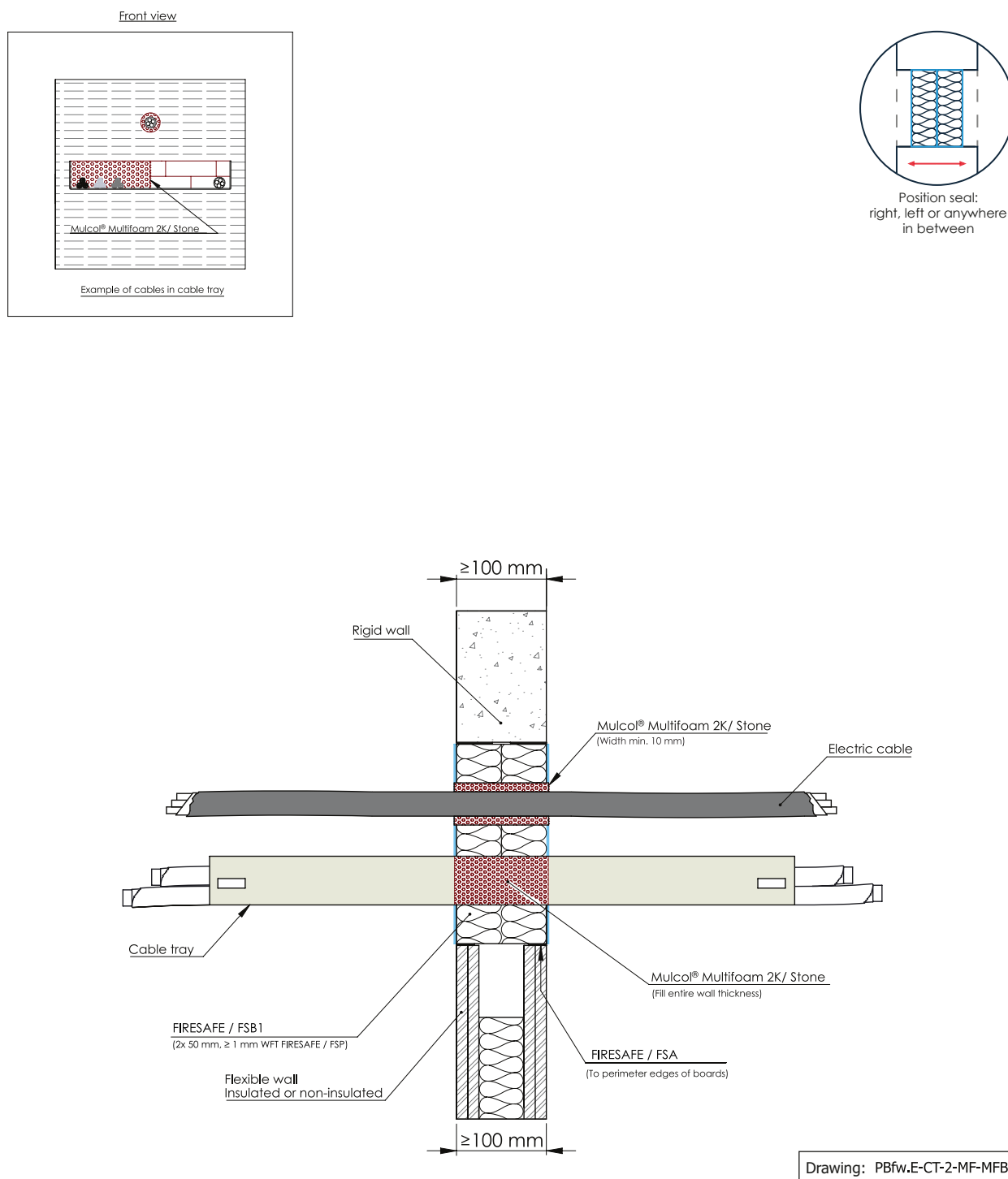


Drawing: PBfw.E-CT-2-MFB1-B1.3.10

Services	Insulation (mm)	Classification
Metal (non-)perforated cable trays	LI 150 - Multitherm Bandage either side	EI 120
Steel wire mesh cable trays (baskets)		
Cables $\leq \varnothing 21$ mm		

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

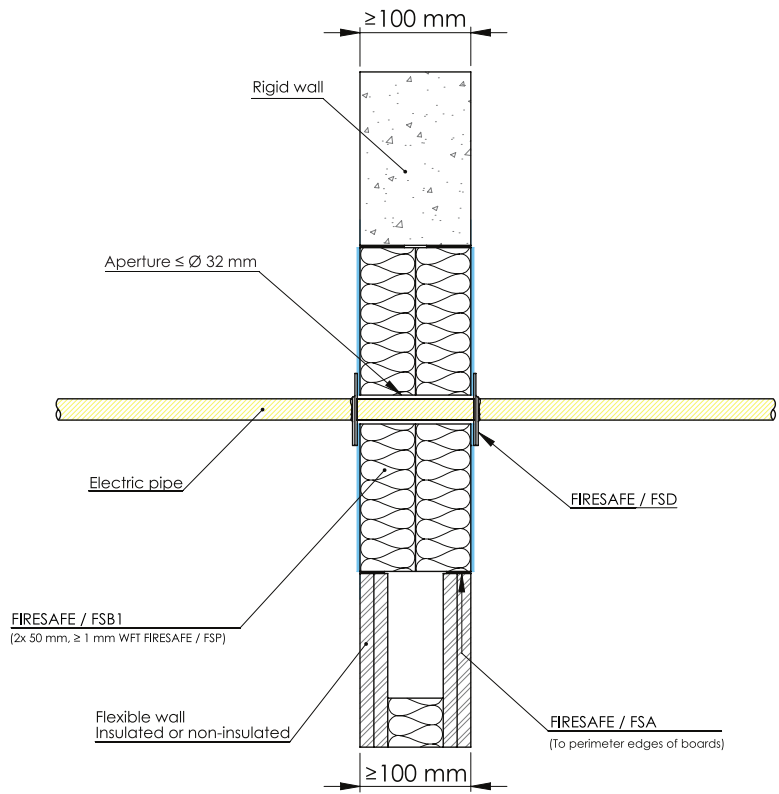
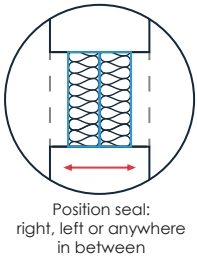
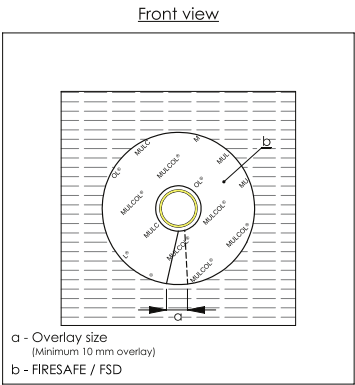
A.1.1.4 Cables and trays - Multifoam 2K



Services	Sealing (mm)	Classification
Metal (non-)perforated cable trays	Multifoam 2K / Stone ≥ 0 x 100 (w x d)	EI 120
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm	Multifoam 2K / Stone ≥ 10 x 100 (w x d)	EI 60, E 120

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.5 Single plastic conduits - FIRESAFE / FSD

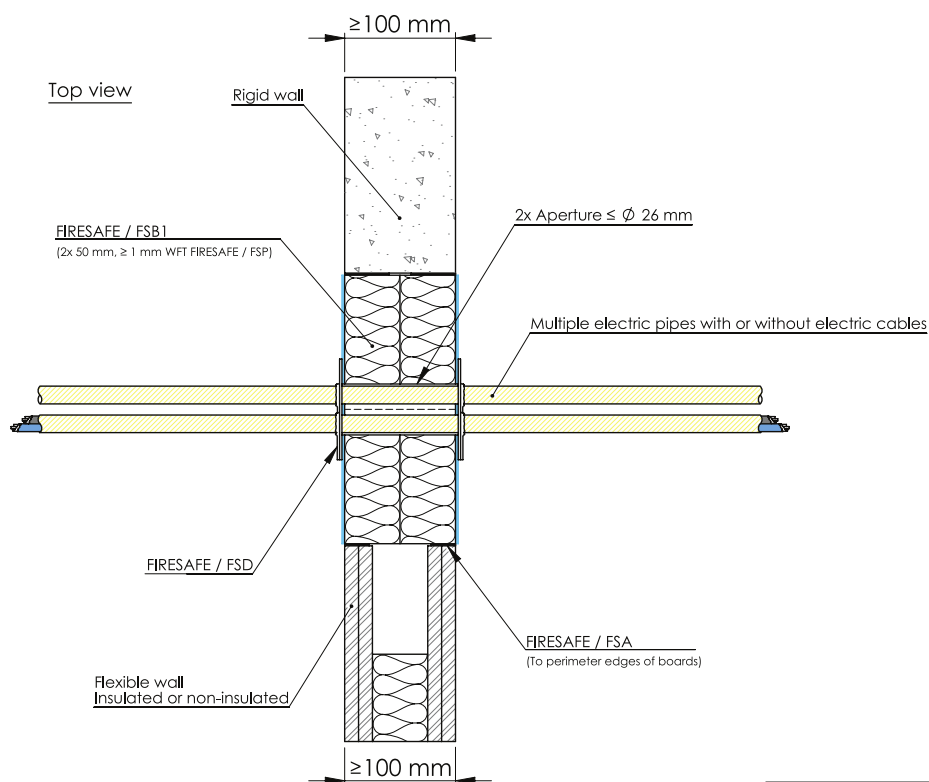
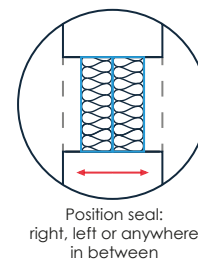
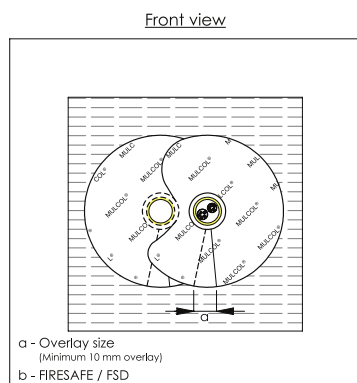


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Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \varnothing 25$ mm, with or without cables	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 90 U/U E 120 U/U

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.6 Multiple plastic conduits - FIRESAFE / FSD

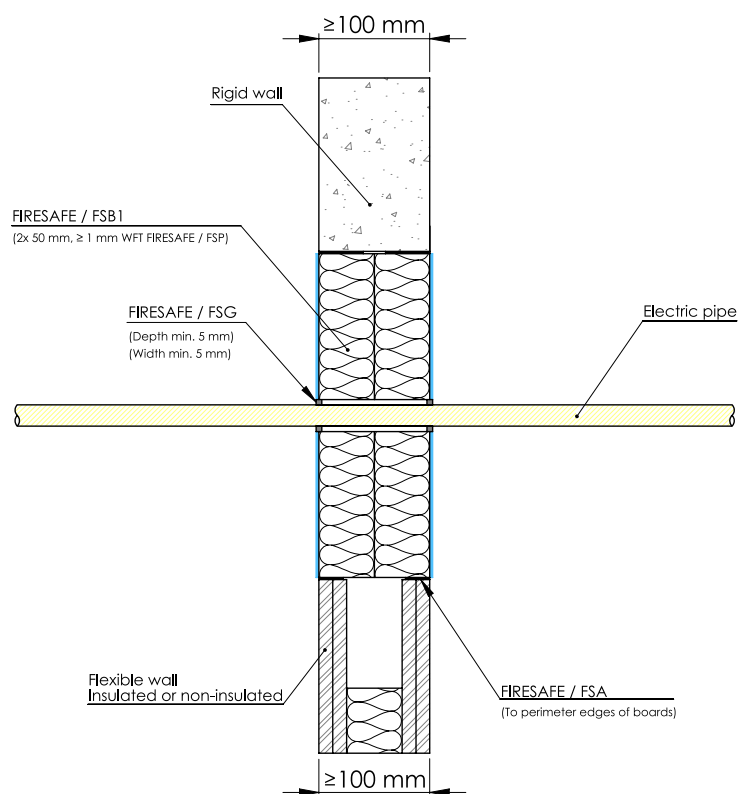
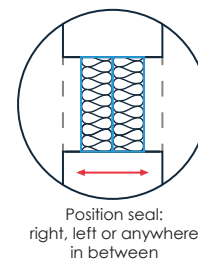
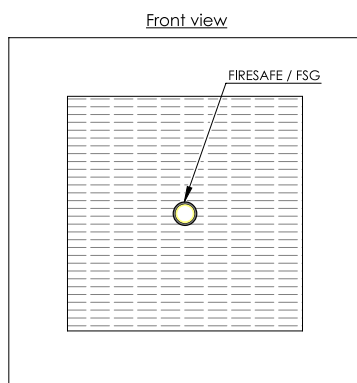


Drawing: PBfw.E-EPs-M2.0.30

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Multiple plastic conduits ≤ Ø 16, up to 5 pcs. with or without cables	FIRESAFE / FSD	≤ Ø 32	Not required	EI 90 U/U E 120 U/U

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.7 Single plastic conduits - FIRESAFE / FSG

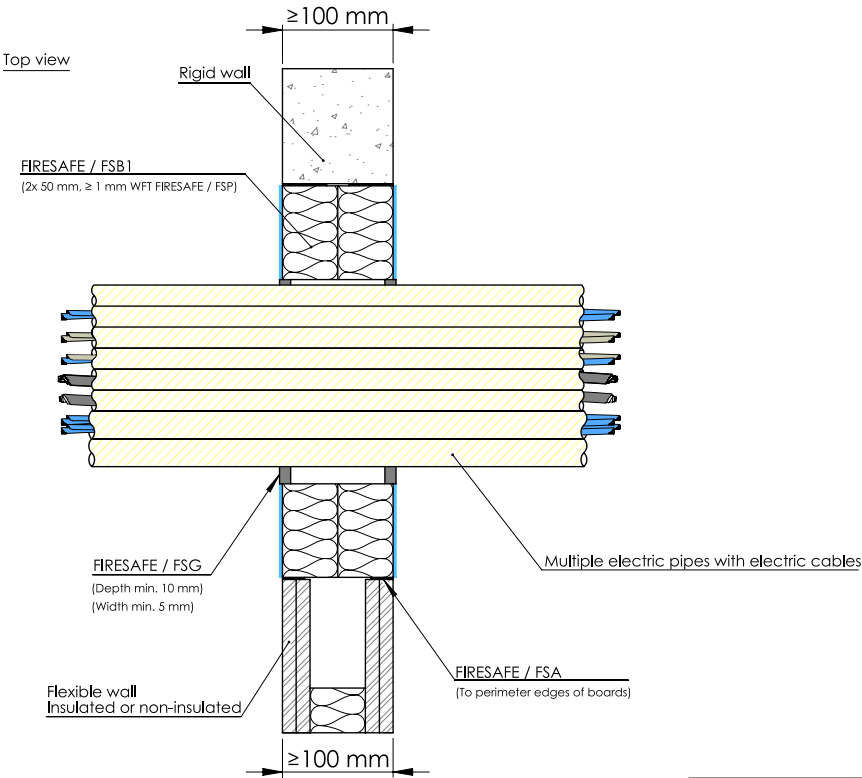
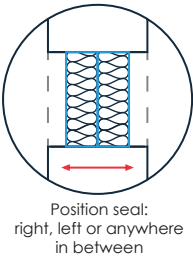
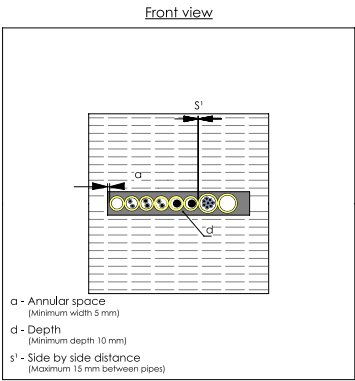


Drawing: PBfw.E-EP-MFB1-G2.0.10

Services	Sealing (mm)	Classification
Plastic conduits ≤ Ø 19 mm, with or without cables	FIRESAFE / FSG ≥ 5 x 5 (wxd)	EI 60 U/U, E 90 U/U

A.1.1 **FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits**

A.1.1.8 **Multiple plastic conduits - FIRESAFE / FSG**

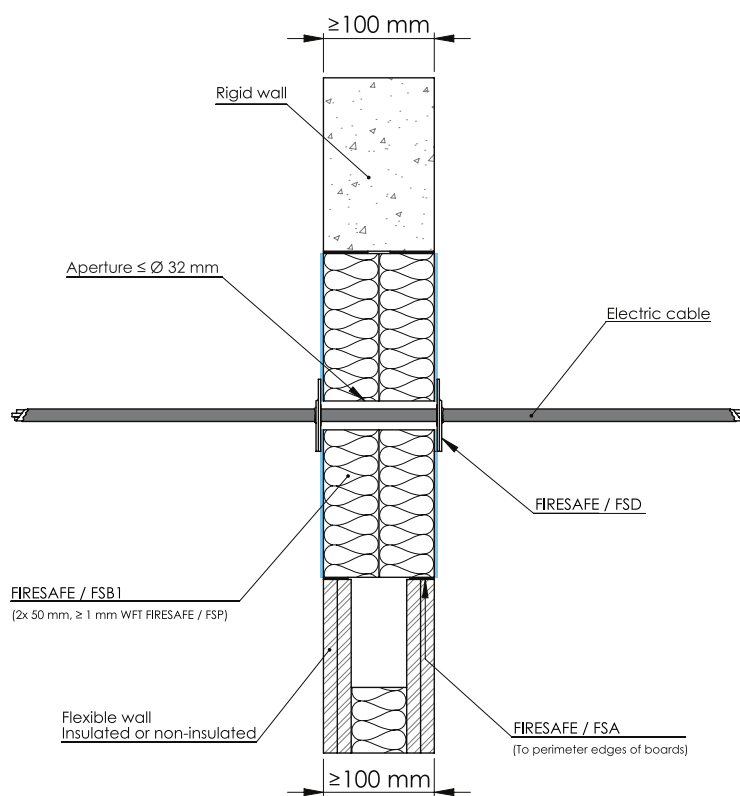
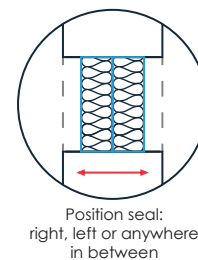
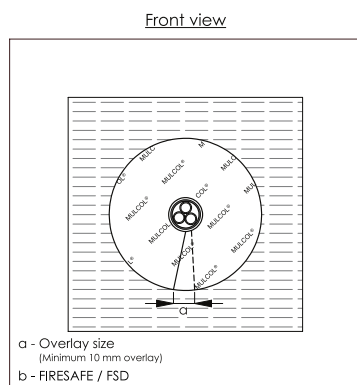


Drawing: PBfw.E-EP8-G2.1.10

Services	Sealing (mm)	Classification
Plastic conduits ≤ Ø 25 mm, with or without cables, max 8 pcs.	FIRESAFE / FSG ≥ 5 x 10 (wxd)	EI 90 U/U

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.9 Single cables - FIRESAFE / FSD

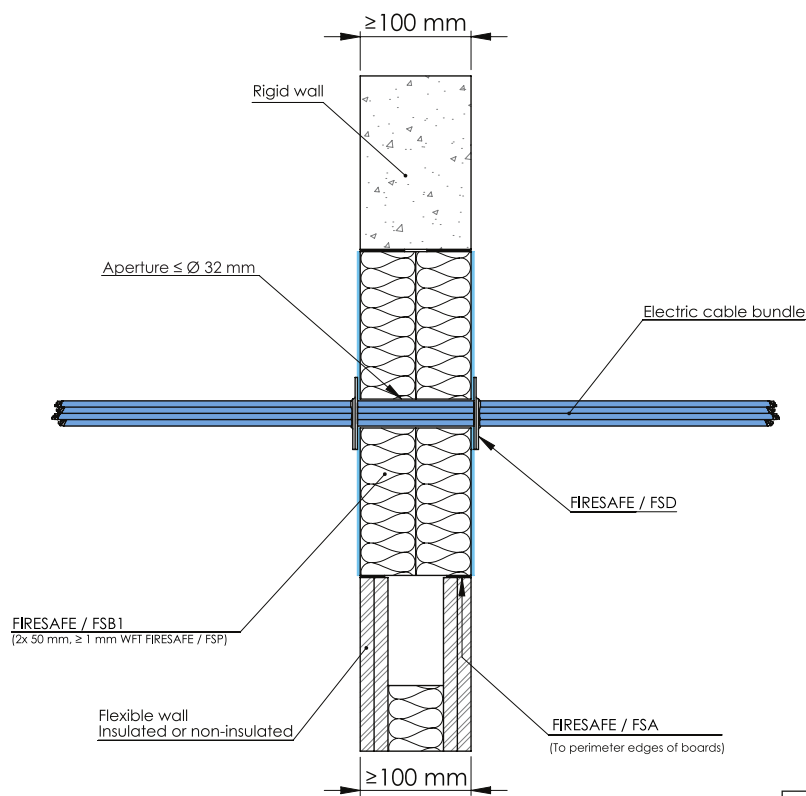
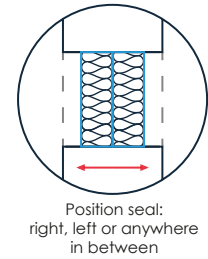
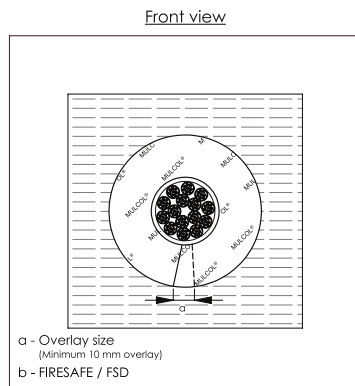


Drawing: PBfw.E-EC-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Single electrical cables $\leq \varnothing 21$ mm	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 90

A.1.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.1.1.10 Multiple cables - FIRESAFE / FSD



Drawing: PBfw.E-ECB-M2.0.10

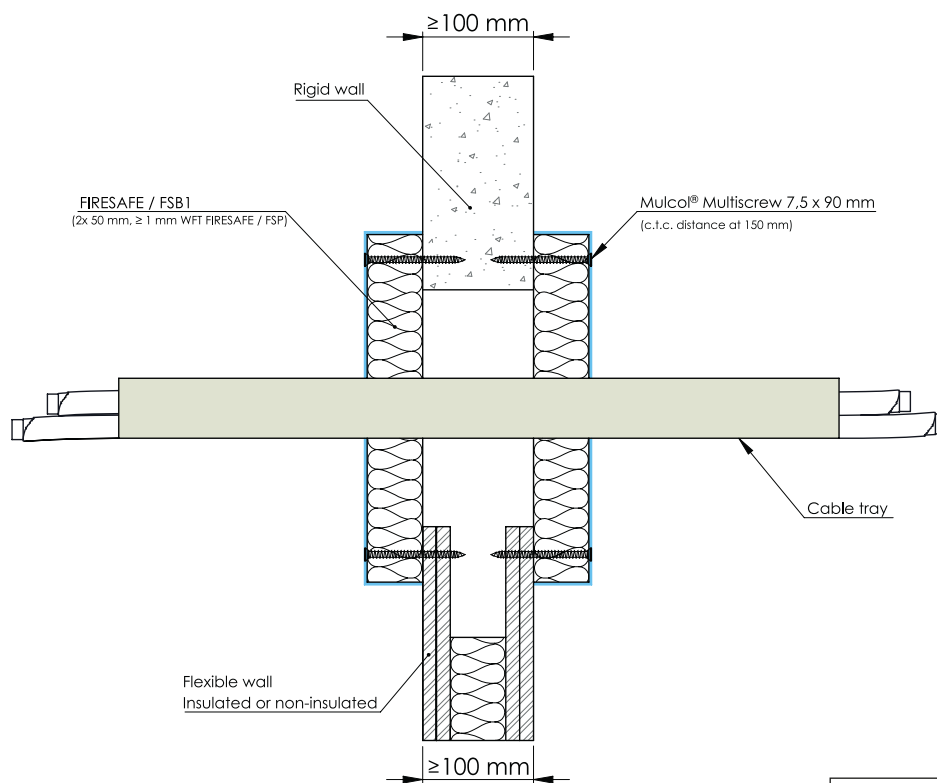
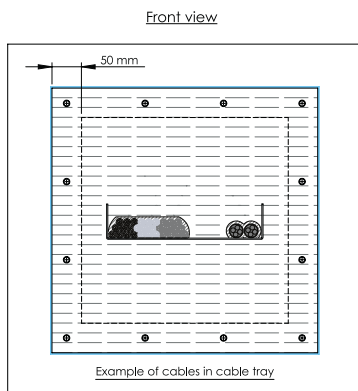
Services	Product	Aperture (mm)	Sealing (mm)	Classification
Multiple electrical / telecommunication cables max. 15 pcs., max. $\leq \varnothing 25$	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 60, E 120

A.1.2

FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Cables, trays and conduits

A.1.2.1

Cables, trays and conduits - FIRESAFE / FSP



Drawing: PBfw.E-CT-MFB1.2.10

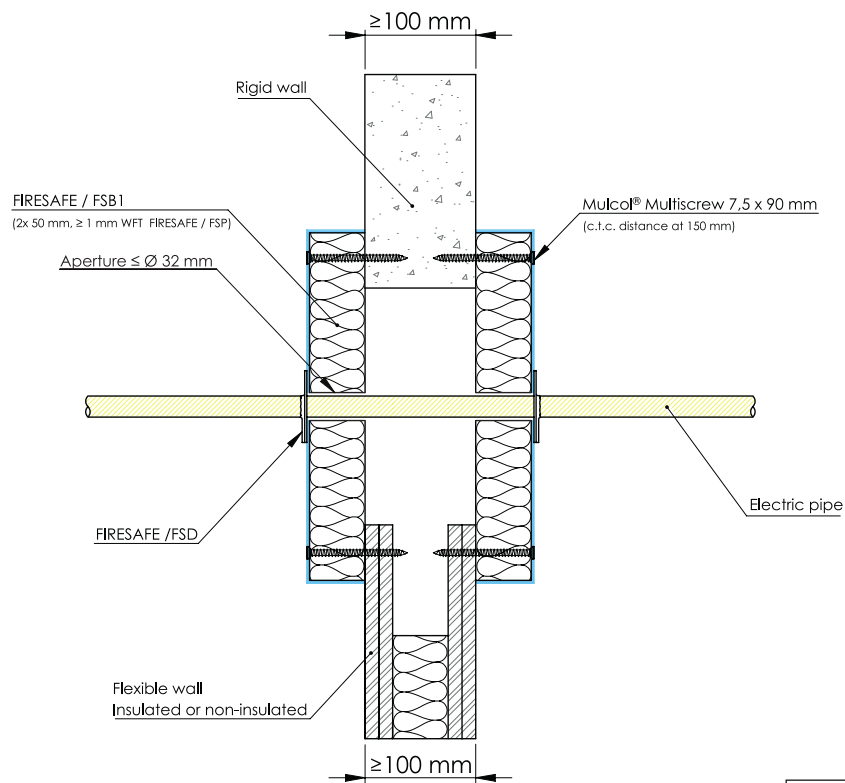
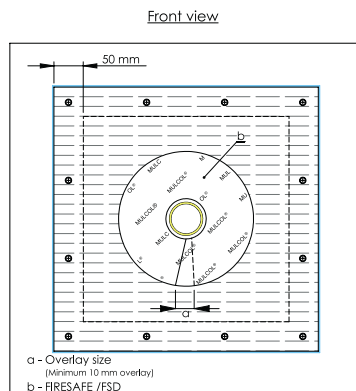
Services	Coating	Classification
Metal cable ladders	Not required	EI 90, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm		EI 60, E 120

A.1.2

FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Cables, trays and conduits

A.1.2.2

Single plastic conduits - FIRESAFE / FSD

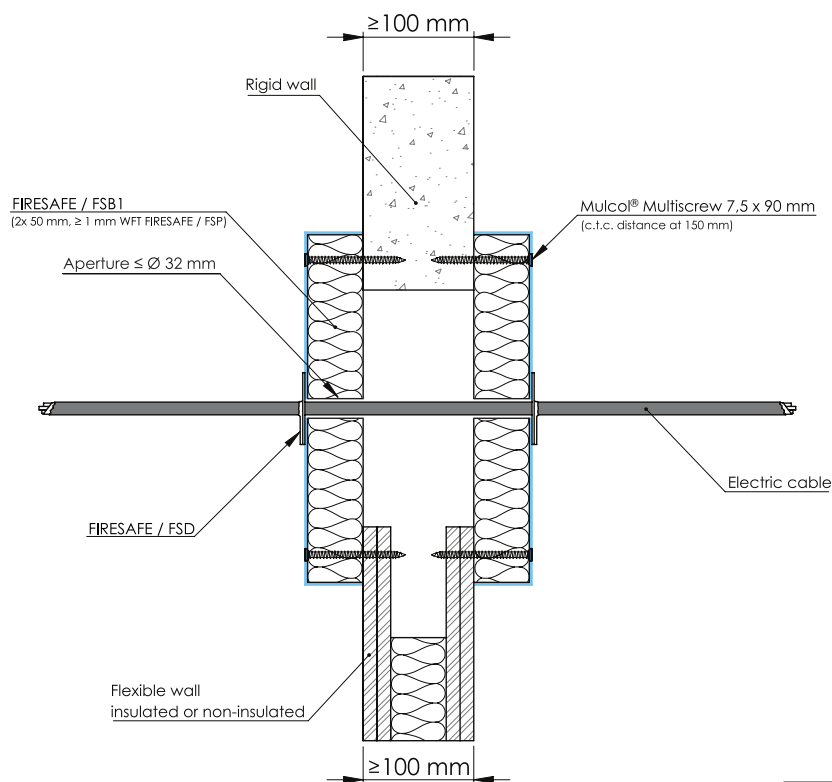
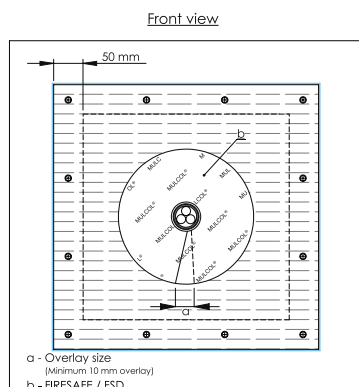


Drawing: PBPfw.E-EP-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits ≤ Ø 19 mm, with or without cables	FIRESAFE / FSD	≤ Ø 32	Not required	EI 120 U/U
Plastic conduits ≤ Ø 25 mm, with or without cables				EI 90 U/U E 120 U/U

A.1.2 FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Cables, trays and conduits

A.1.2.3 Single cables - FIRESAFE / FSD

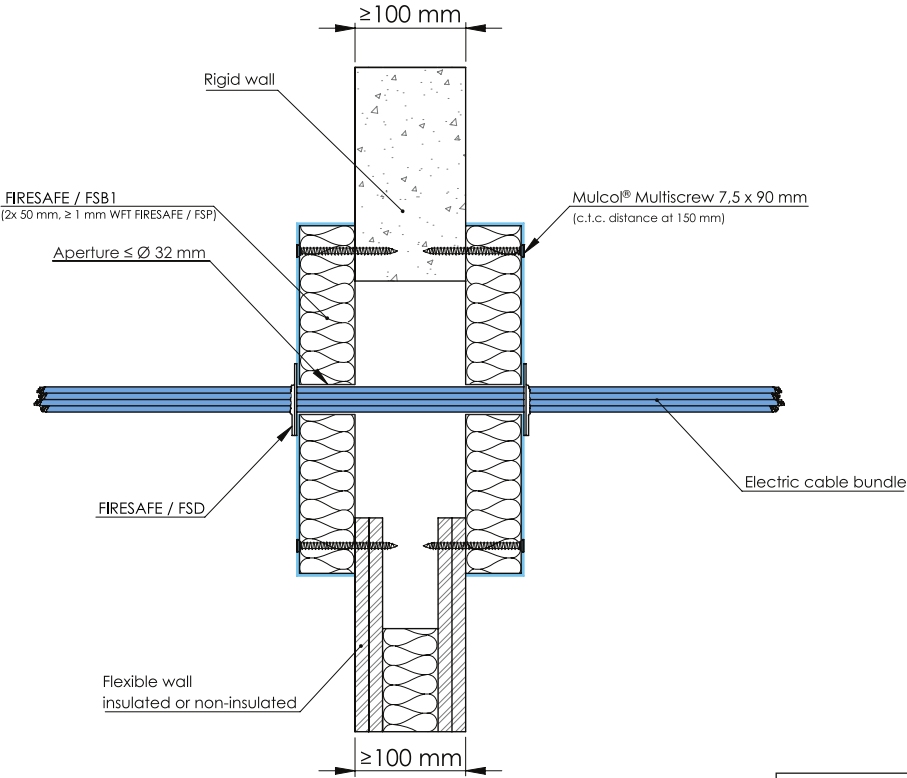
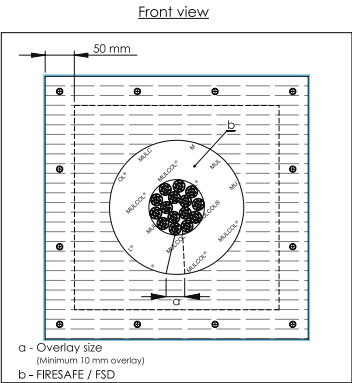


Drawing: PBfw.E-EC-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Single electrical cables $\leq \varnothing 16$ mm	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 60, E 90

A.1.2 **FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Cables, trays and conduits**

A.1.2.4 **Multiple cables - FIRESAFE / FSD**

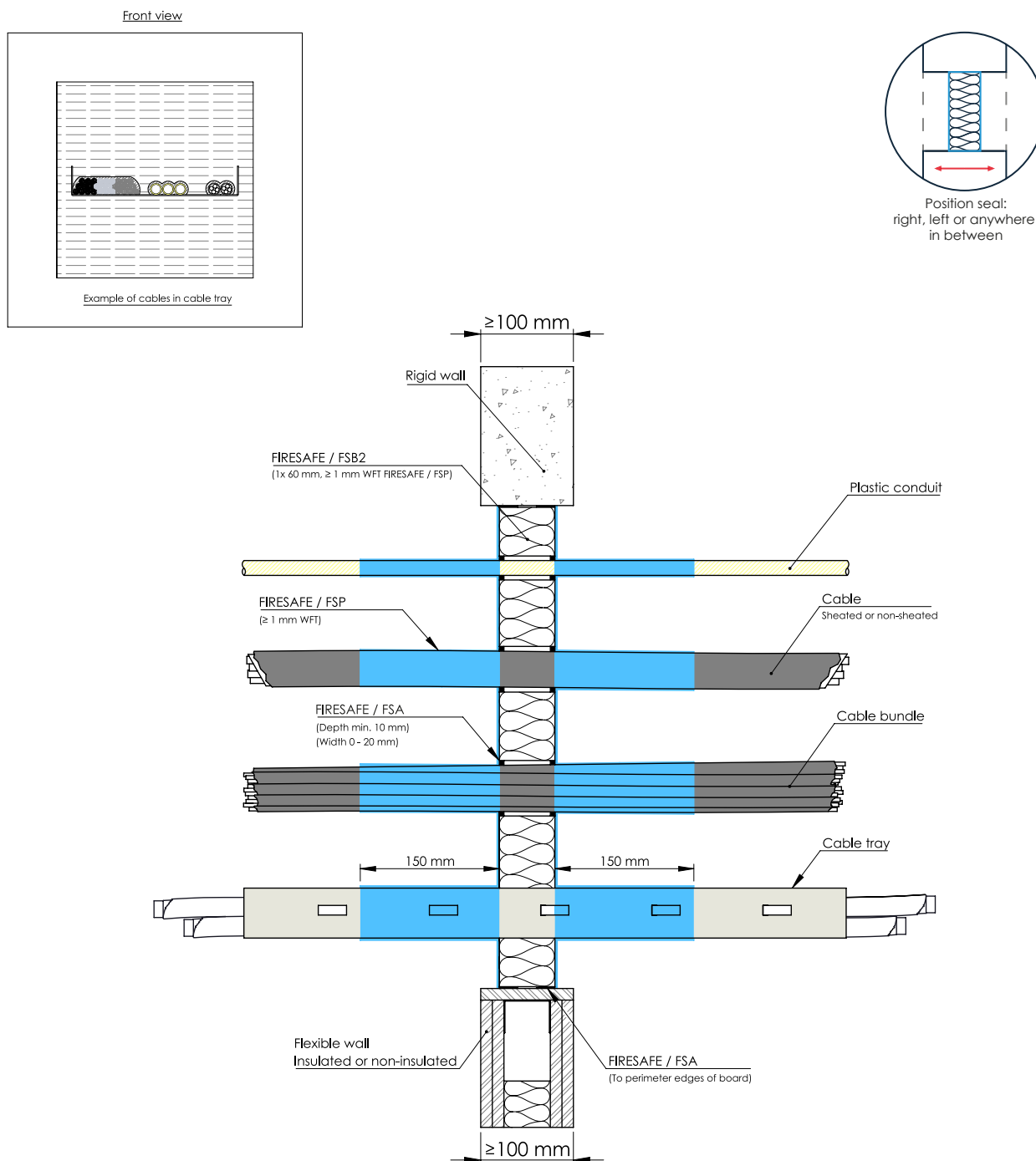


Drawing: PBfw.E-ECB-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Multiple electrical / telecommunication cables max. 15 pcs., max. ≤ Ø 25	FIRESAFE / FSD	≤ Ø 32	Not required	EI 60, E 120

A.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

A.1.3.1 Cables, trays and conduits - FIRESAFE / FSP

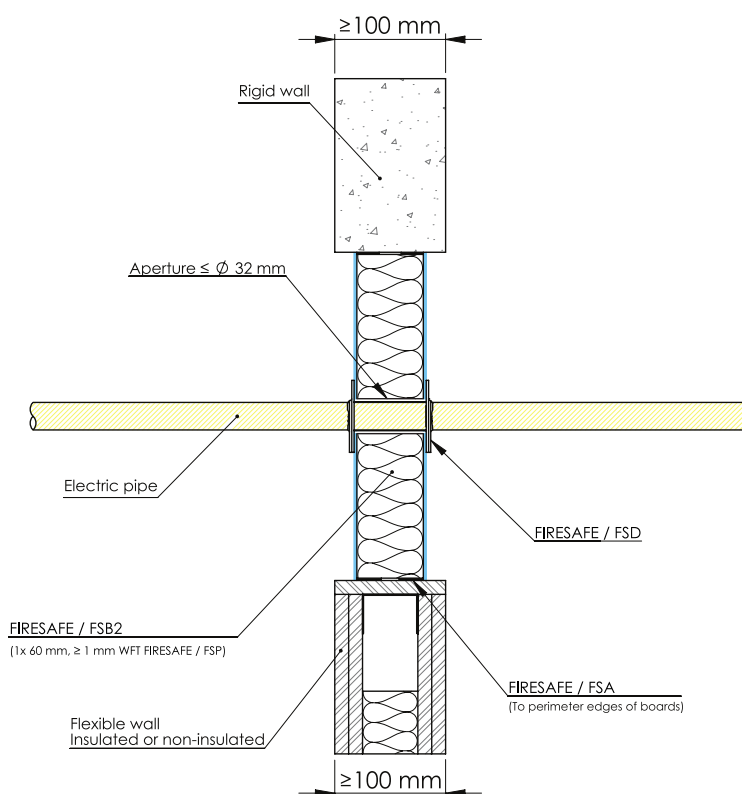
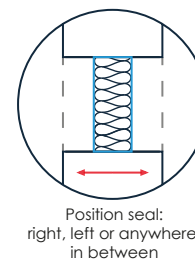
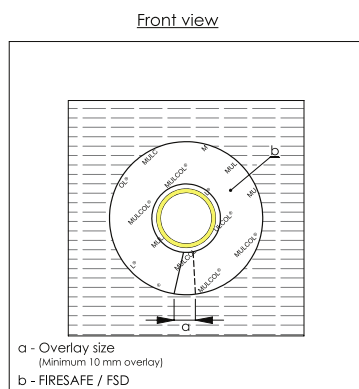


Drawing: PBfw,E-CT-4-MFB2.1.10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1 mm WFT	EI 60, E 90
Metal (non-)perforated cable trays		EI 60
Steel wire mesh cable trays (baskets)		EI 60, E 90
Cables ≤ Ø 80 mm		EI 45, E 90
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 60 U/C, E 90 U/C
Non sheathed cables ≤ Ø 24 mm		EI 45 C/U, E 60 C/U
Plastic conduits ≤ Ø 16 mm		EI 60 C/U
Copper conduits ≤ Ø 16 mm		
Steel conduits ≤ Ø 16 mm		

A.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

A.1.3.2 Single plastic conduits - FIRESAFE / FSD

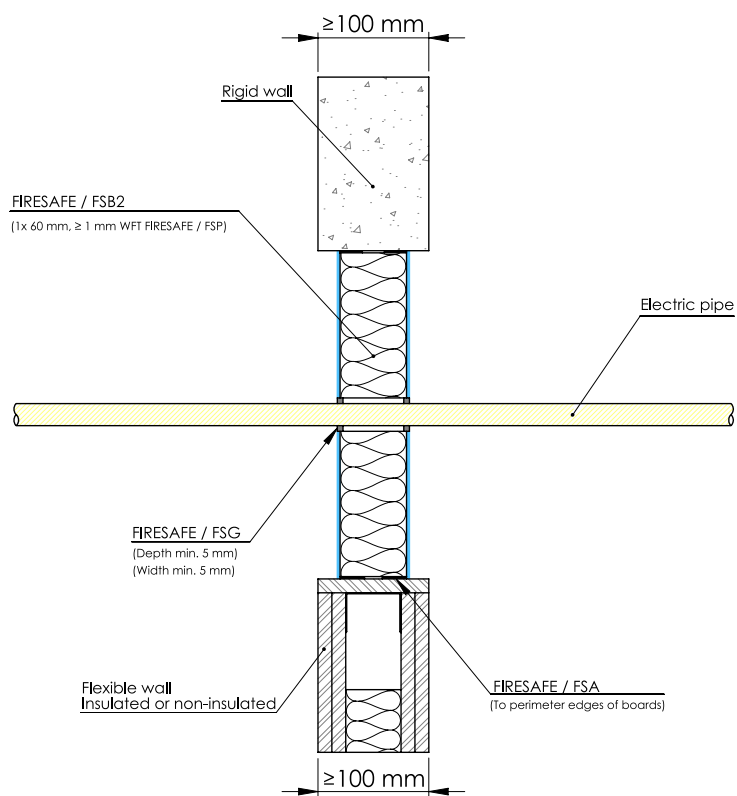
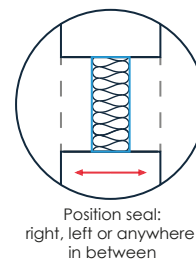
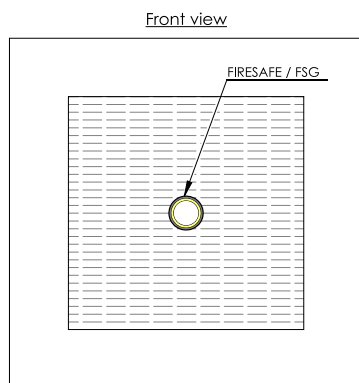


Drawing: PBfw.E-EP-M2-MFB2.1.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \varnothing 25$ mm, with or without cables	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 60 U/U, E 90 U/U

A.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

A.1.3.3 Single plastic conduits - FIRESAFE / FSG

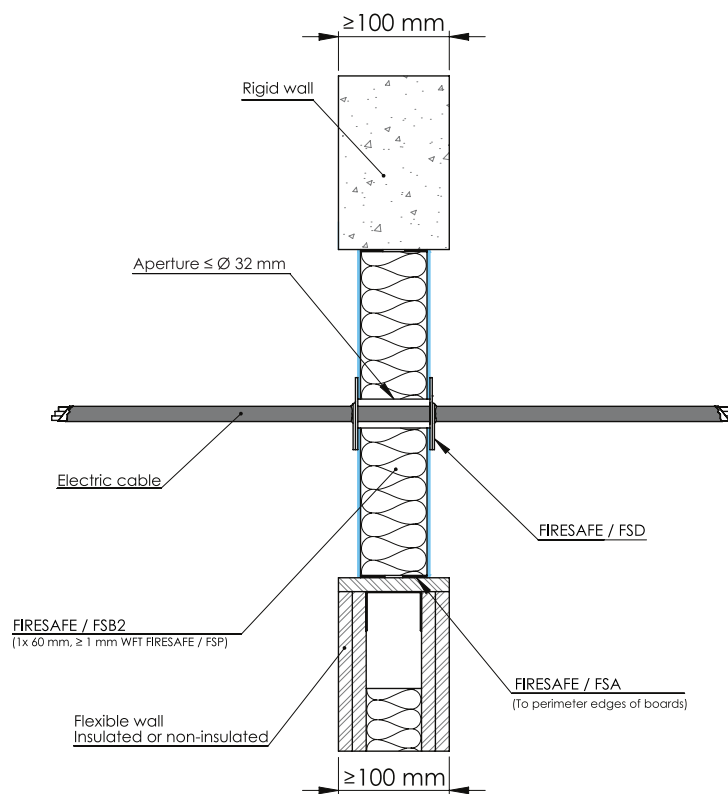
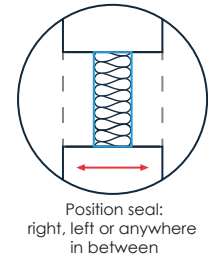
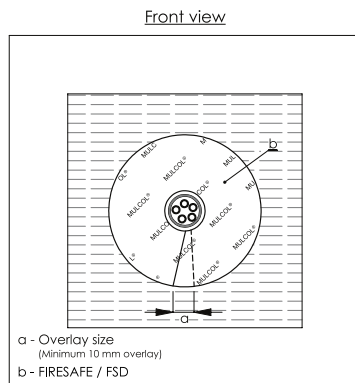


Drawing: PBfw.E-EP-MFB2-G2.0.10

Services	Sealing (mm)	Classification
Plastic conduits ≤ Ø 19 mm, with or without cables	FIRESAFE / FSG ≥ 5 x 5 (wxd)	EI 60 U/U, E 90 U/U

A.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

A.1.3.4 Single cables - FIRESAFE / FSD

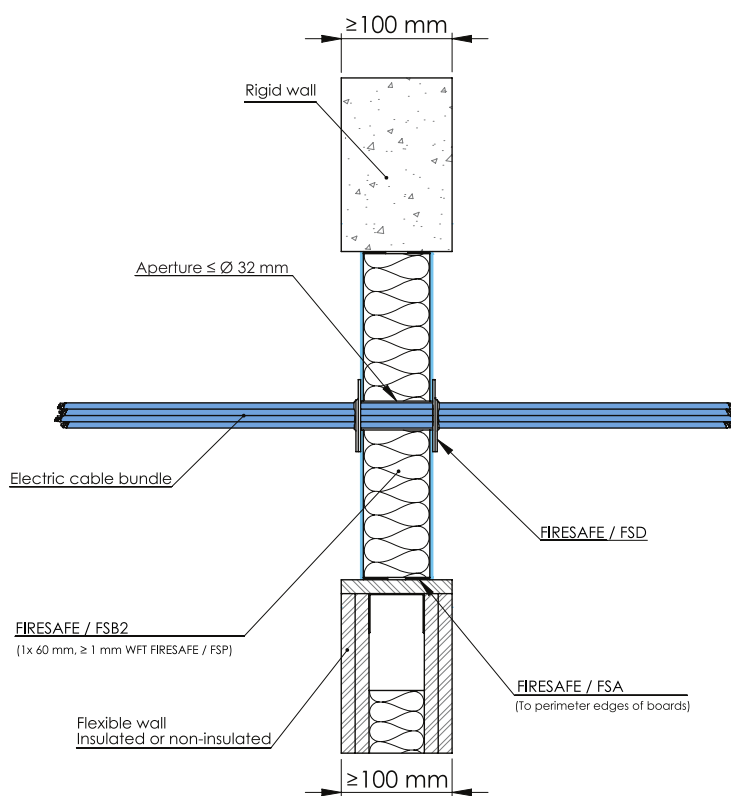
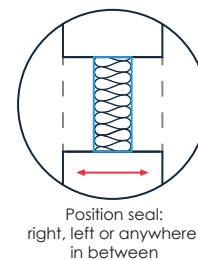
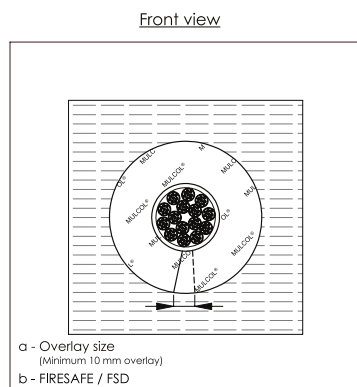


Drawing: PBfw.E-EC-M2-MFB2.1.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Single electrical cables $\leq \varnothing 21$ mm	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 60, E 90

A.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

A.1.3.5 Multiple cables - FIRESAFE / FSD

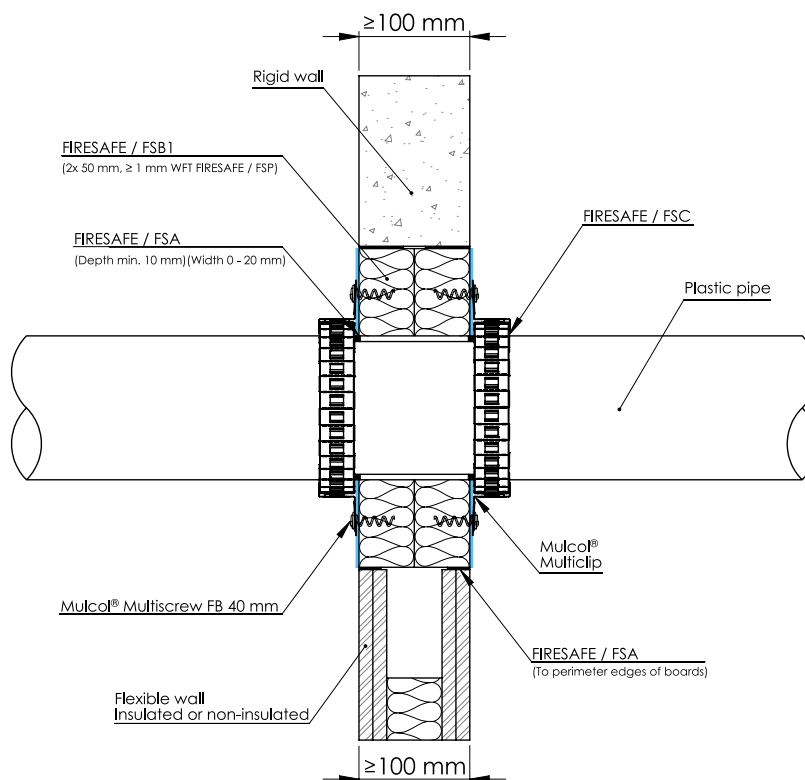
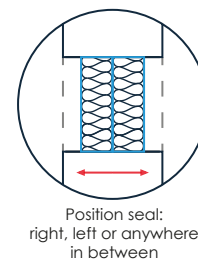
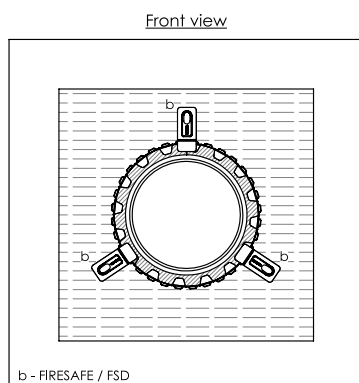


Drawing: PBfw,E-ECB-M2-MFB2.1.10

Services	System	Aperture (mm)	Sealing (mm)	Classification
Multiple electrical / telecommunication cables $\leq \text{Ø } 25 \text{ mm}$	FIRESAFE / FSD	$\leq \text{Ø } 32$	Not required	EI 45, E 90

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.1 Plastic pipes - FIRESAFE / FSC



Drawing: PBfw.E-MC30-PP-MFB1.2.10

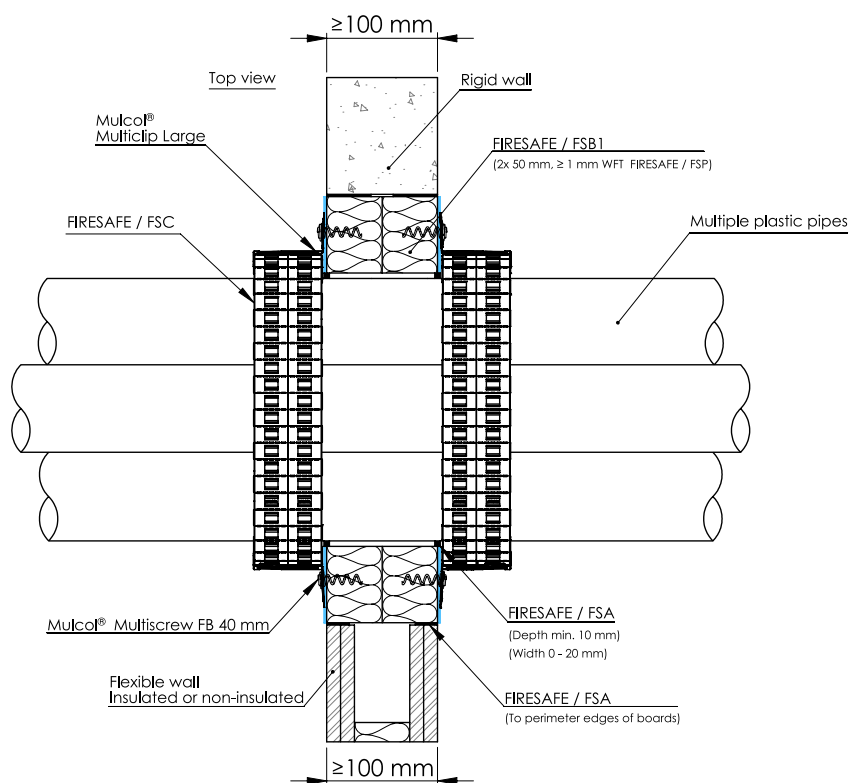
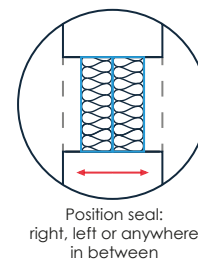
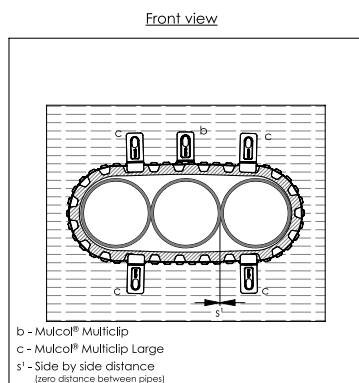
Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.3 - 9.3	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U
PP					EI 120 U/U
PVC(-U/-C)					EI 60 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7 - 6.6			EI 120 U/U
		6.6 - 9.3			EI 60 U/U
PP		2.7			EI 120 U/U
		2.7 - 9.3			EI 60 U/U
		2.7			EI 120 U/U
PVC(-U/-C)		2.7 - 9.3			EI 60 U/U

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.1.4.1 Plastic pipes - FIRESAFE / FSC**

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 125	3.1 - 9.3	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U
PP					
PVC(-U/-C)	≤ Ø 160	4.0 - 9.5			EI 60 U/C
PE(-HD) / PE-X / ABS / SAN+PVC		4.0 - 9.1			
PP					

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.1 Plastic pipes - FIRESAFE / FSC



Drawing: PBfw.E-MLP3-20.0.10

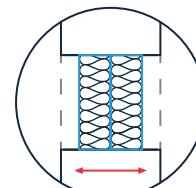
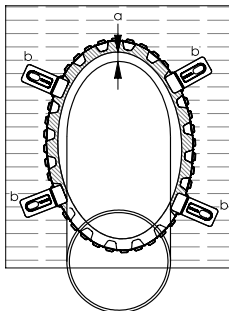
Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	$3x \leq \varnothing 110$	2.7	FIRESAFE / FSC Double	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/C, E 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

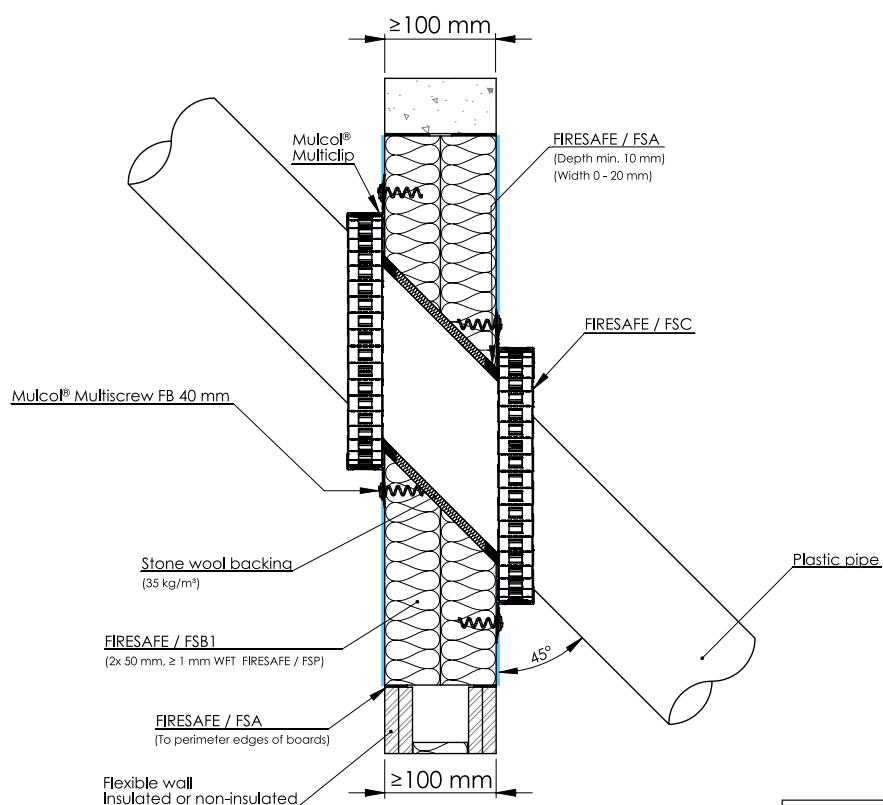
A.1.4.2 Plastic pipes perpendicular to 45° - FIRESAFE / FSC

Front view

- a - Annular space
(Maximum 15 mm between pipe and Mulcol® Multicollar Slim)
b - Mulcol® Multiclip



Position seal:
right, left or anywhere
in between

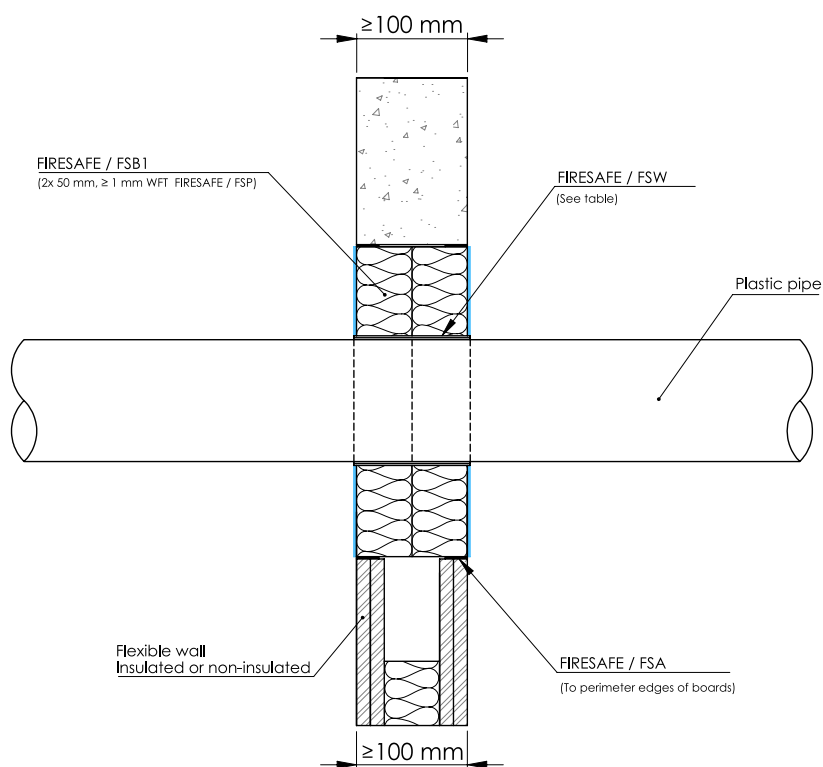
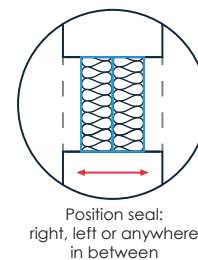
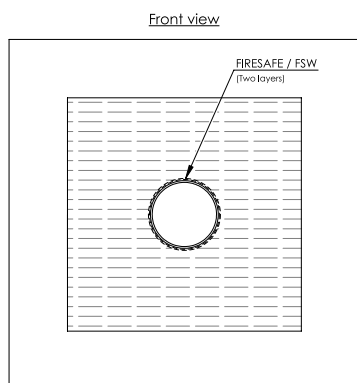


Drawing: PBfw.E-PP-MFB1-10.1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U, E 90 U/U
PP					
PVC(-U/-C)					

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.3 Plastic pipes - FIRESAFE / FSW



Drawing: PBfw.E-PP-MW2-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.3 - 3.7	FIRESAFE / FSW (2 layers)	EI 120 U/U
	≤ Ø 110	2.7 - 10		EI 120 U/C
PP	≤ Ø 40	2.3 - 3.7		EI 120 U/U
		5.5		EI 120 U/C
	≤ Ø 110	3.4		EI 120 U/C
PVC(-U/-C)	≤ Ø 40	1.8 - 3.7		EI 120 U/U
	≤ Ø 110	1.6		E 120 U/C, EI 90 U/C
		1.6 - 8.1		EI 90 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.1.4.3 Plastic pipes - FIRESAFE / FSW**

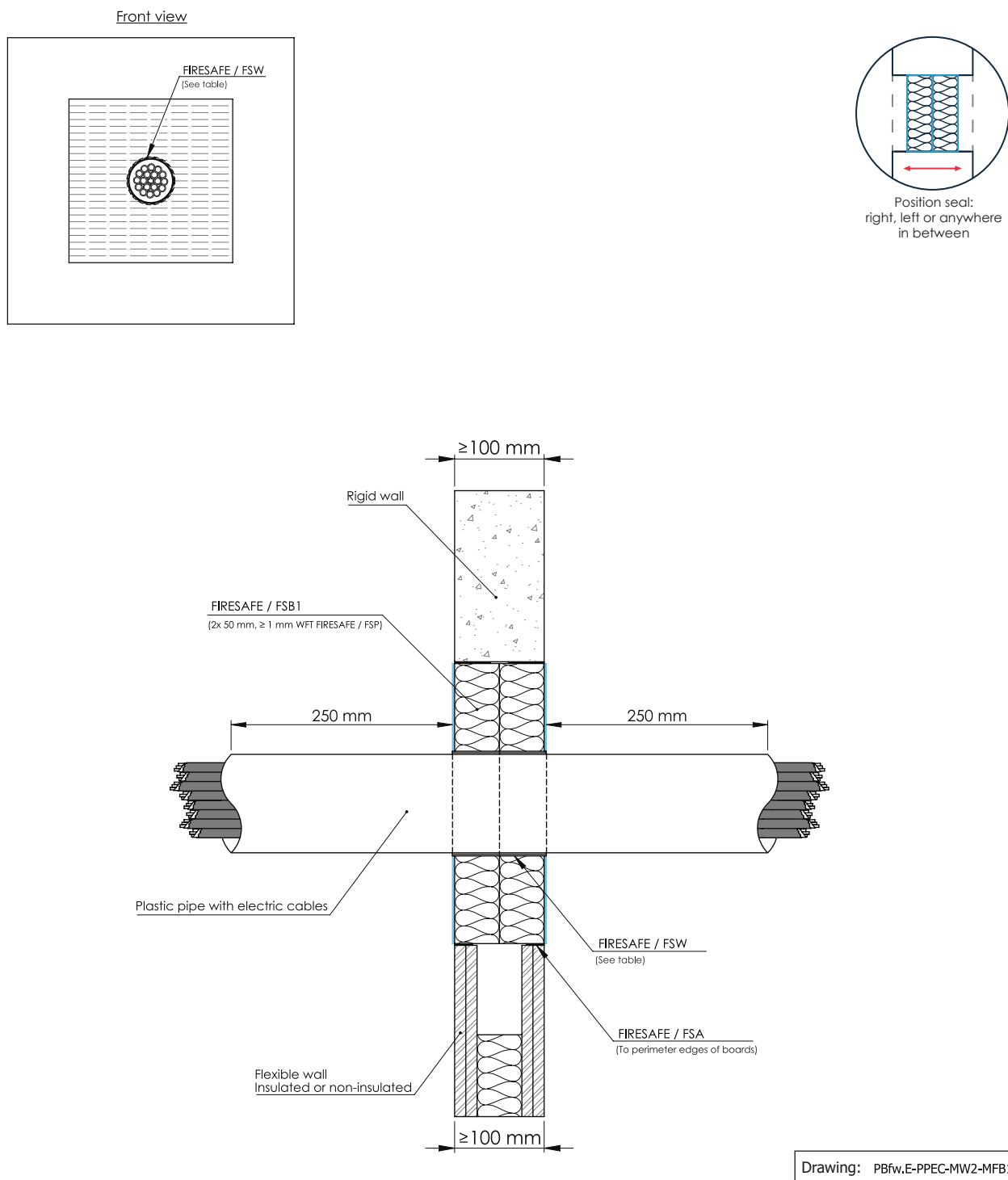
Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE / ABS / SAN+PVC	≤ Ø 125	3.9	FIRESAFE / FSW (3 layers)	EI 120 U/C
		3.9 - 4.8		EI 90 U/C, E 120 U/C
PP		3.1		EI 120 U/C
		3.1 - 11.4		
PVC(-U/-C)		3.7 - 4.8		EI 90 U/C, E 120 U/C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PP	≤ Ø 110	10.0	FIRESAFE / FSW (4 layers)	EI 120 U/U
		10.0 - 14.6		EI 90 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 160	14.6		EI 90 U/C
		5.0		EI 90 U/C, E 120 U/C
PVC(-U/-C)		5.0 - 14.6		EI 90 U/C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE / ABS / SAN+PVC	≤ Ø 125	11.4	FIRESAFE / FSW (5 layers)	EI 120 U/U
PVC(-U/-C)		9.2		

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

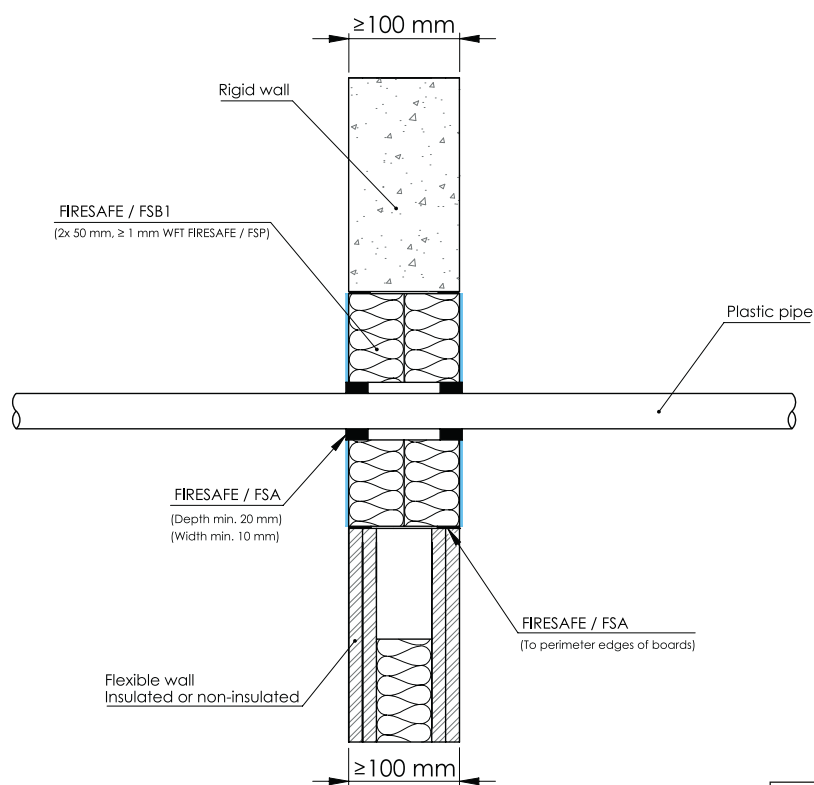
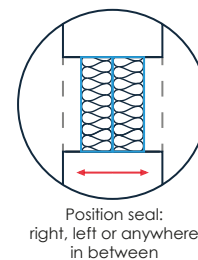
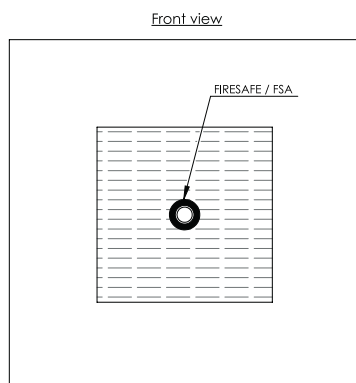
A.1.4.4 Plastic pipes with cables - FIRESAFE / FSW



Services	Pipe dimensions (mm)		Product	Allowed Cables	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7 - 10	FIRESAFE / FSW (2 layers)	Sheathed cables ≤ Ø 80 mm (single or bundled)	EI 90 U/C, E 120 U/C
PP				Cables ≤ Ø 21 mm in a tied bundle	
PVC(-U/-C)				≤ Ø 100 mm	

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.5 Plastic pipes - FIRESAFE / FSA

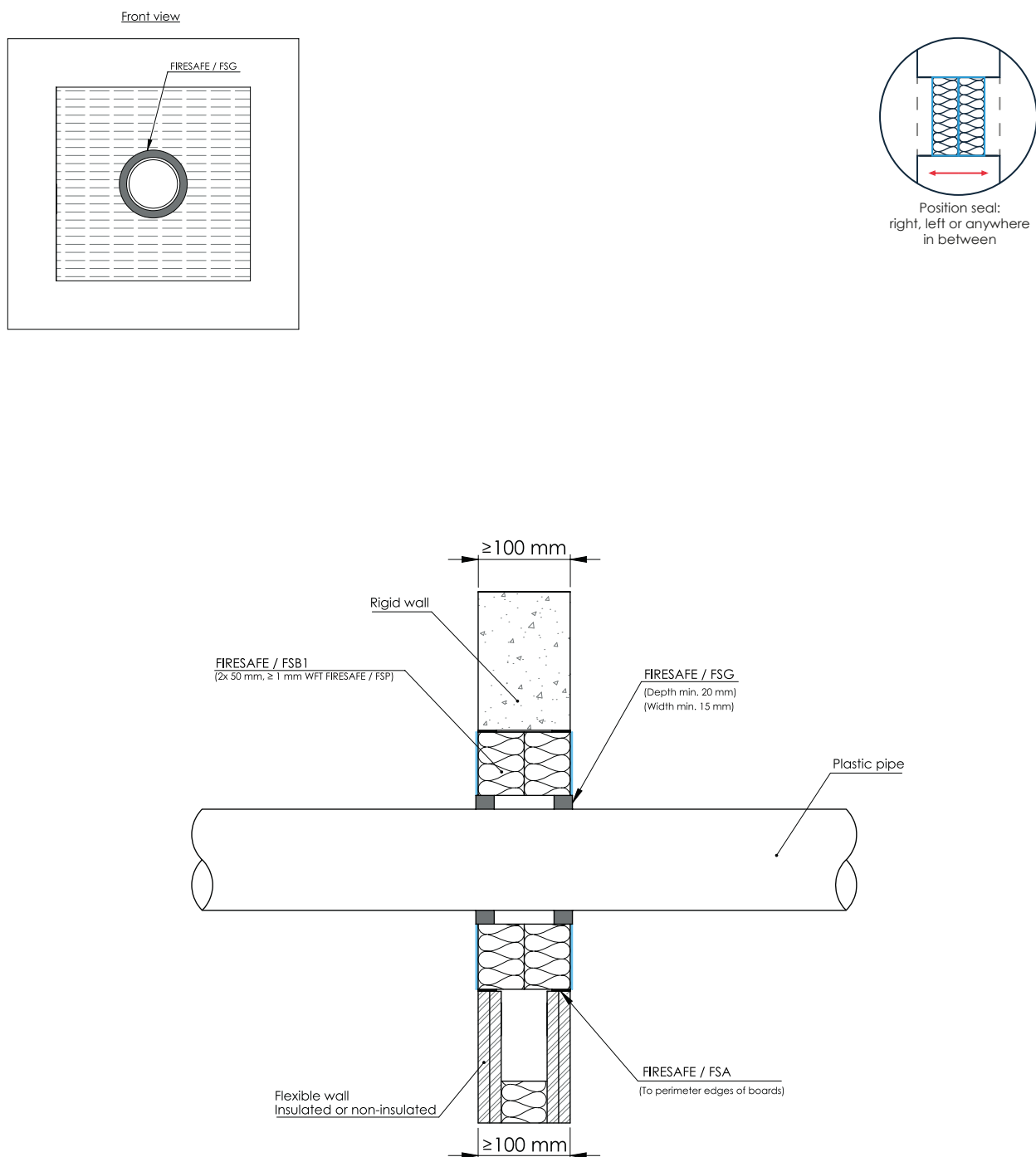


Drawing: PBfw.E-PP-MFB1.2.10

Services	Pipe dimensions (mm)		Sealing (mm)	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 32	2.0 - 3.0	FIRESAFE / FSA ≥ 10 x 20 (wxd)	EI 60 U/C
PP		2.0 - 5.4		EI 90 U/C
PVC(-U/-C)		2.0 - 3.0		EI 60 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.6 Plastic pipes - FIRESAFE / FSG

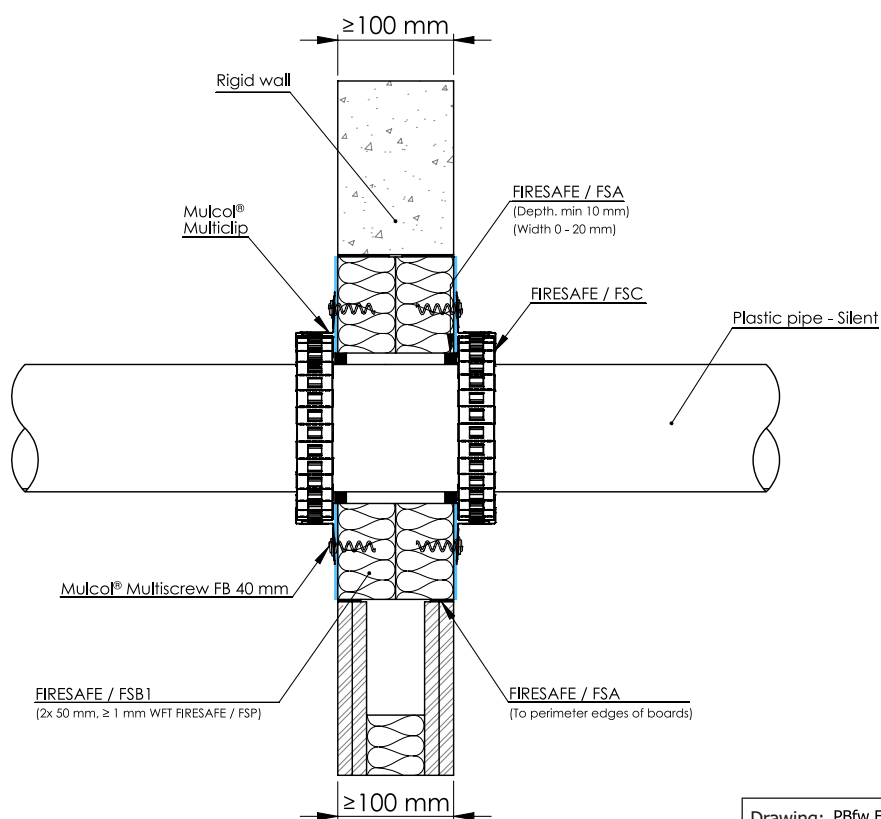
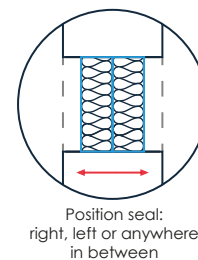
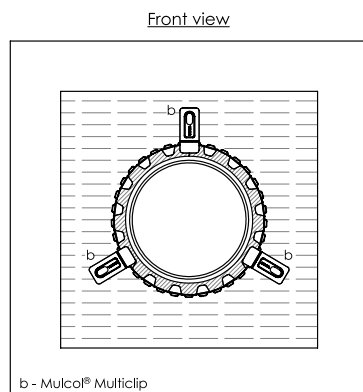


Drawing: PBfw.E-PP-MFB1-G2.4.10

Services	Pipe dimensions (mm)		Sealing (mm)	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7 - 10	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 60 U/C
	≤ Ø 110	10		EI 120 U/C
PP	≤ Ø 110	2.7 - 10		EI 90 U/C, E 120 U/C
	≤ Ø 110	10		EI 120 U/C
PVC(-U/-C)	≤ Ø 32	1.8	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 120 U/U
	≤ Ø 50	3		EI 60 U/U
	≤ Ø 110	2.7 - 10	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 60 U/C
	≤ Ø 110	10		EI 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.7 Plastic pipes (Silent) - FIRESAFE / FSC

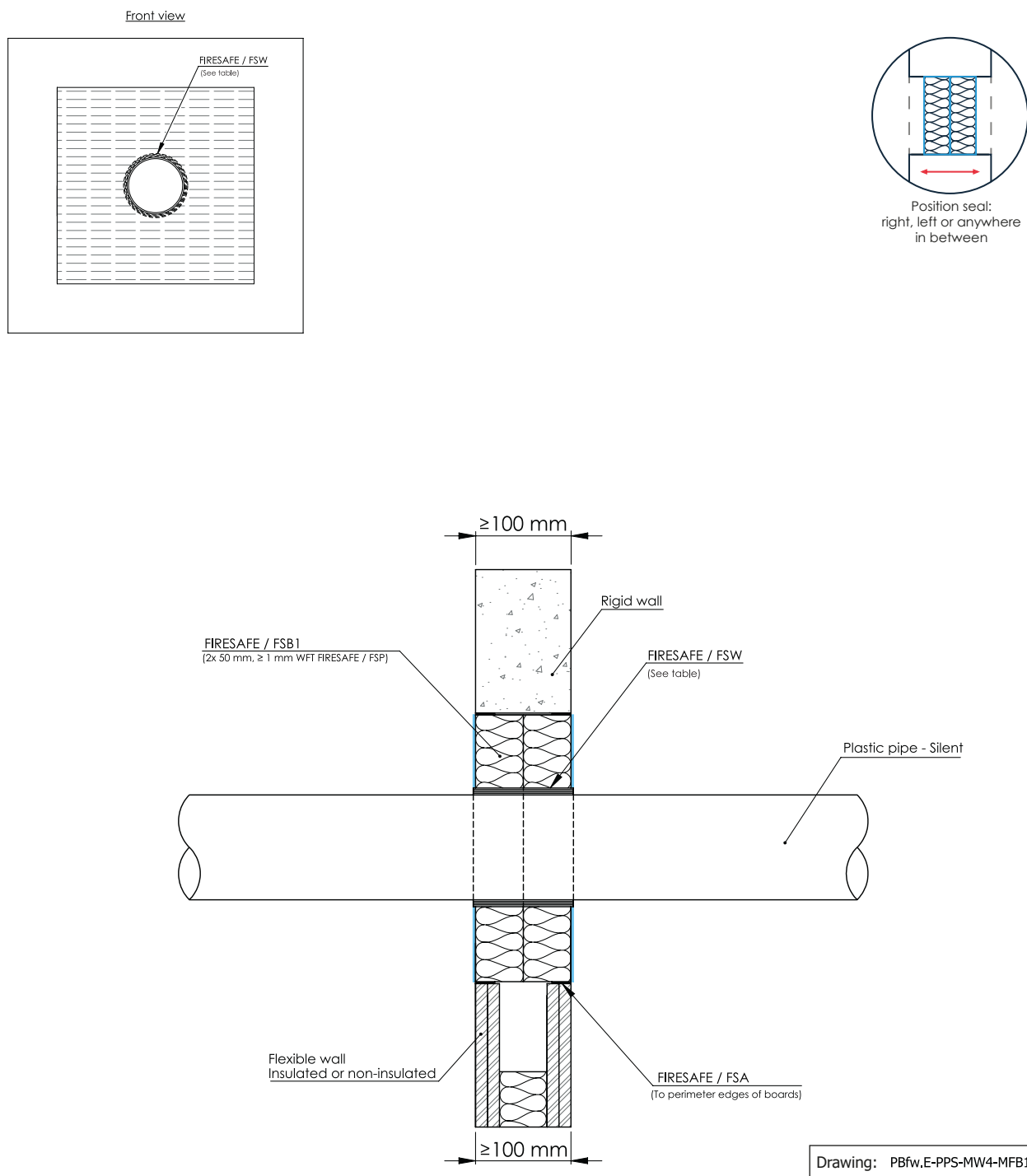


Drawing: PBfw,E-MC30-PPS-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Geberit Silent dB20	≤ Ø 110	6.0	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.8 Plastic pipes (Silent) - FIRESAFE / FSW



Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	≤ Ø 50	1.8 - 2.7	FIRESAFE / FSW (2 layers)	EI 120 U/C
	≤ Ø 110	2.7		
Geberit Silent dB20	≤ Ø 56	3.2 - 6.0		EI 120 U/U
	≤ Ø 110	6.0		
Wavin SiTech+	≤ Ø 40	2.0		
	≤ Ø 40	2.0 - 3.4		
	≤ Ø 50	1.8		
	≤ Ø 110	3.4		
Poloplast PoloKal NG	≤ Ø 50	2.0		EI 120 U/C

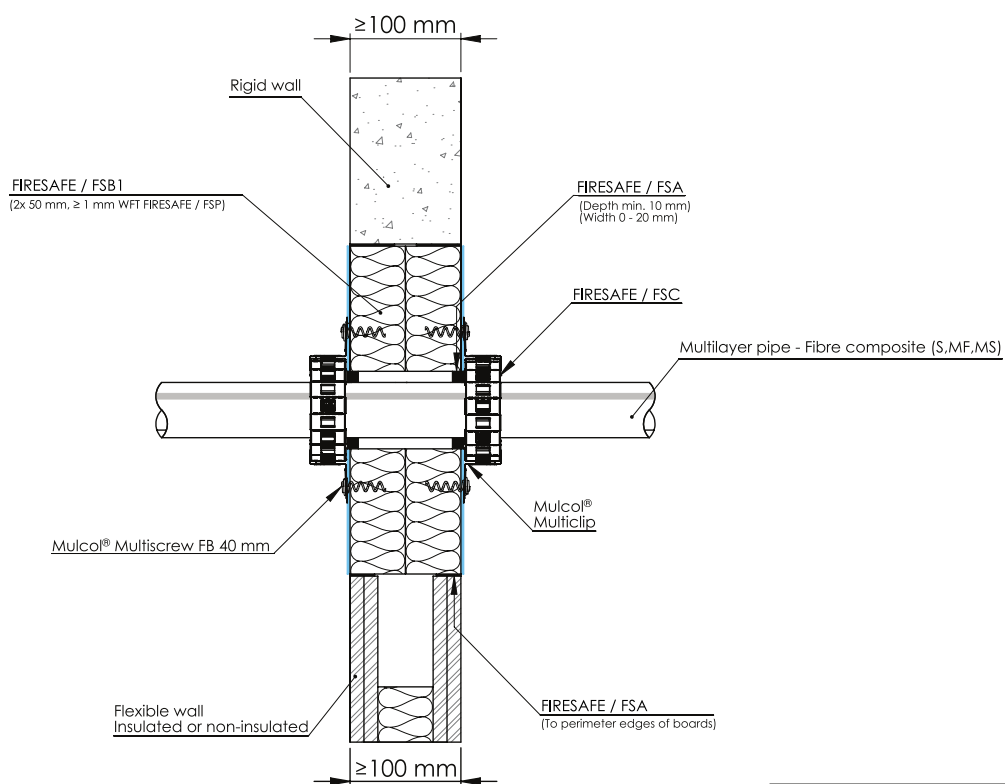
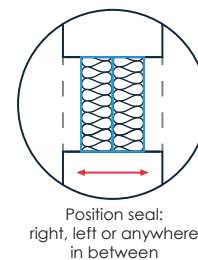
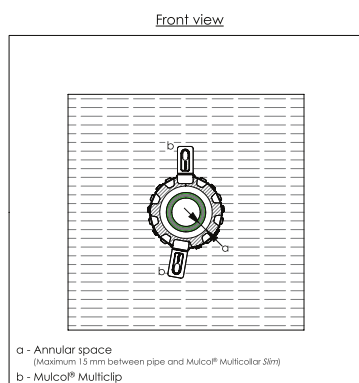
A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.1.4.8 Plastic pipes (Silent) - FIRESAFE / FSW**

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	$\leq \varnothing 110$	2.7	FIRESAFE / FSW (4 layers)	EI 120 U/U
	$\leq \varnothing 160$	4.0		EI 90 U/C, E 120 U/C
Poloplast PoloKal NG	$\leq \varnothing 110$	3.4		EI 120 U/C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	$\leq \varnothing 160$	3.9	FIRESAFE / FSW (6 layers)	EI 120 U/U
Poloplast PoloKal NG	$\leq \varnothing 160$	4.9		EI 90 U/C, E 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.9 PP-R multilayer pipes - FIRESAFE / FSC

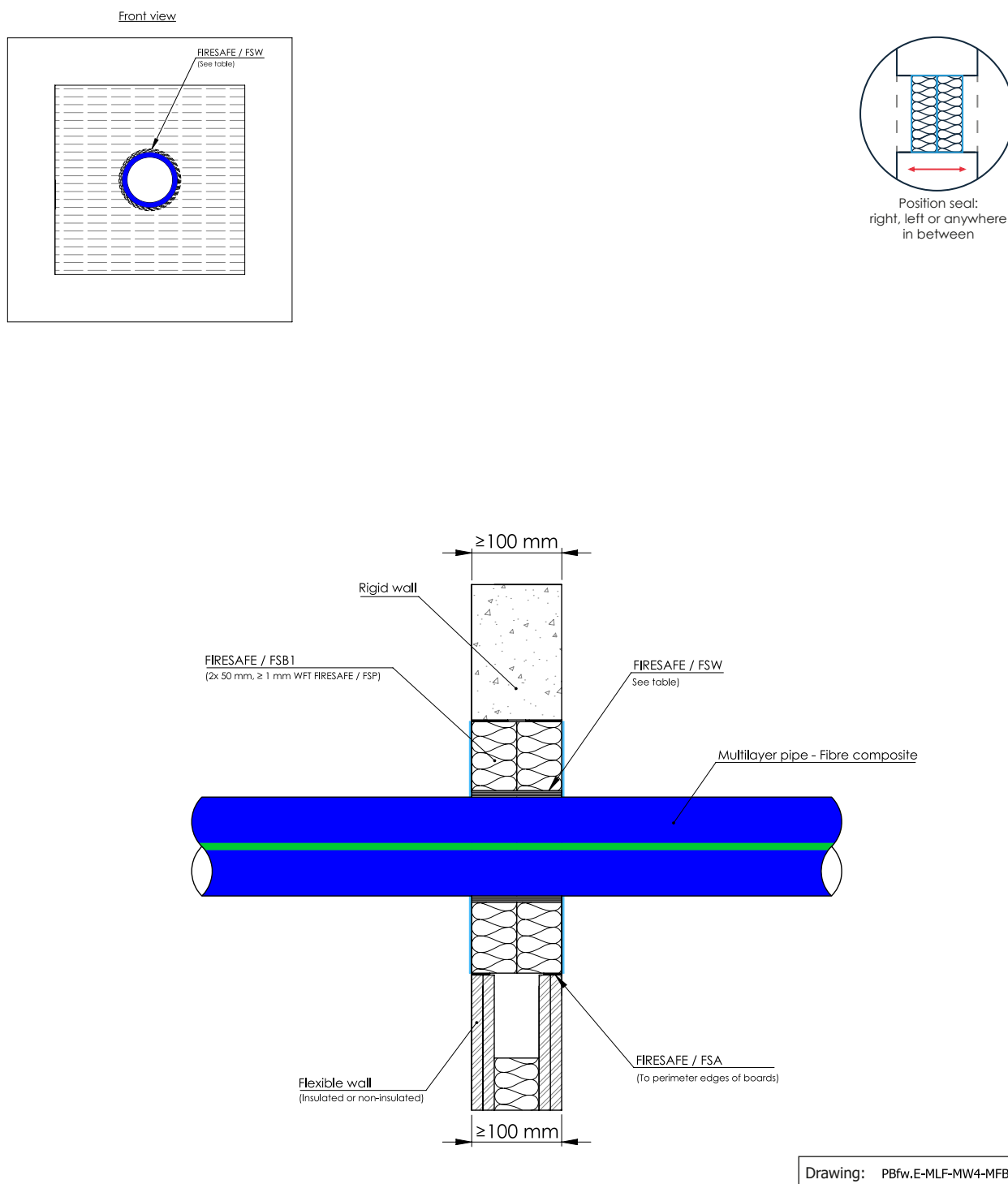


Drawing: PBfw.E-MLF-MC30-10.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Aquatherm Green	≤ Ø 50	6.9	FIRESAFE / FSC	FIRESAFE / FSA ≥ 0-20 x 10 (wxd)	EI 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

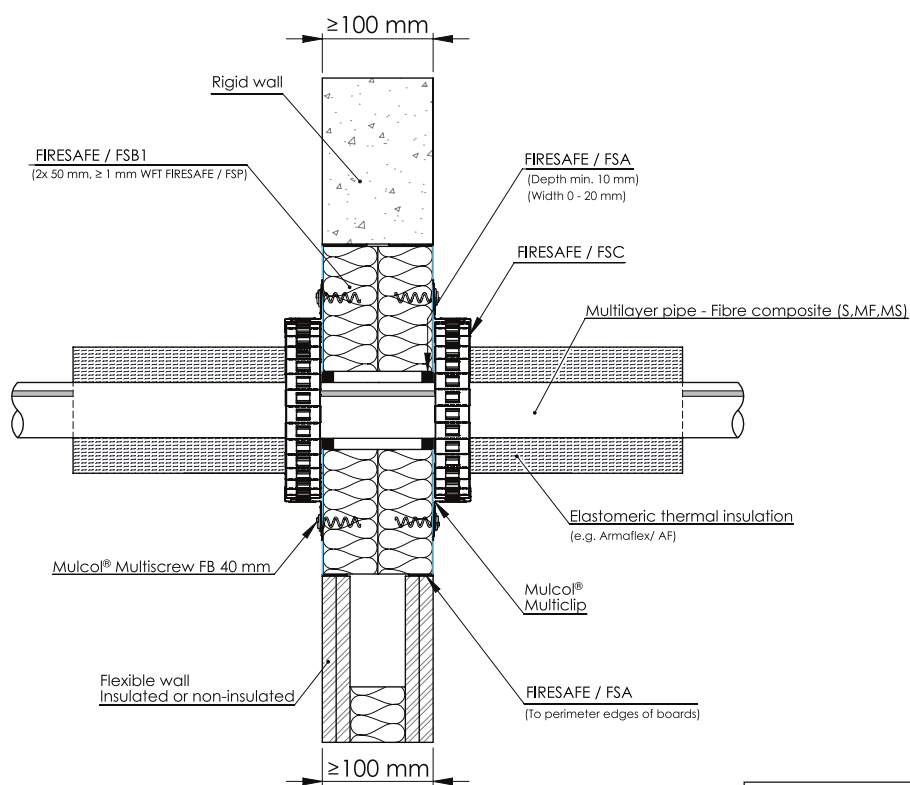
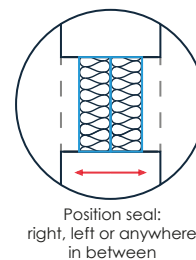
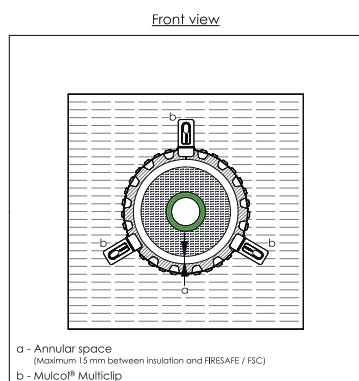
A.1.4.10 PP-R multilayer pipes - FIRESAFE / FSW



Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Aquatherm Blue	≤ Ø 40	3.7	FIRESAFE / FSW (2 layers)	EI 120 U/C
	≤ Ø 50	4.6		EI 120 U/U
	≤ Ø 110	10	FIRESAFE / FSW (4 layers)	EI 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.11 PP-R multilayer pipes - Elastomer LI 300 / CI - FIRESAFE / FSC

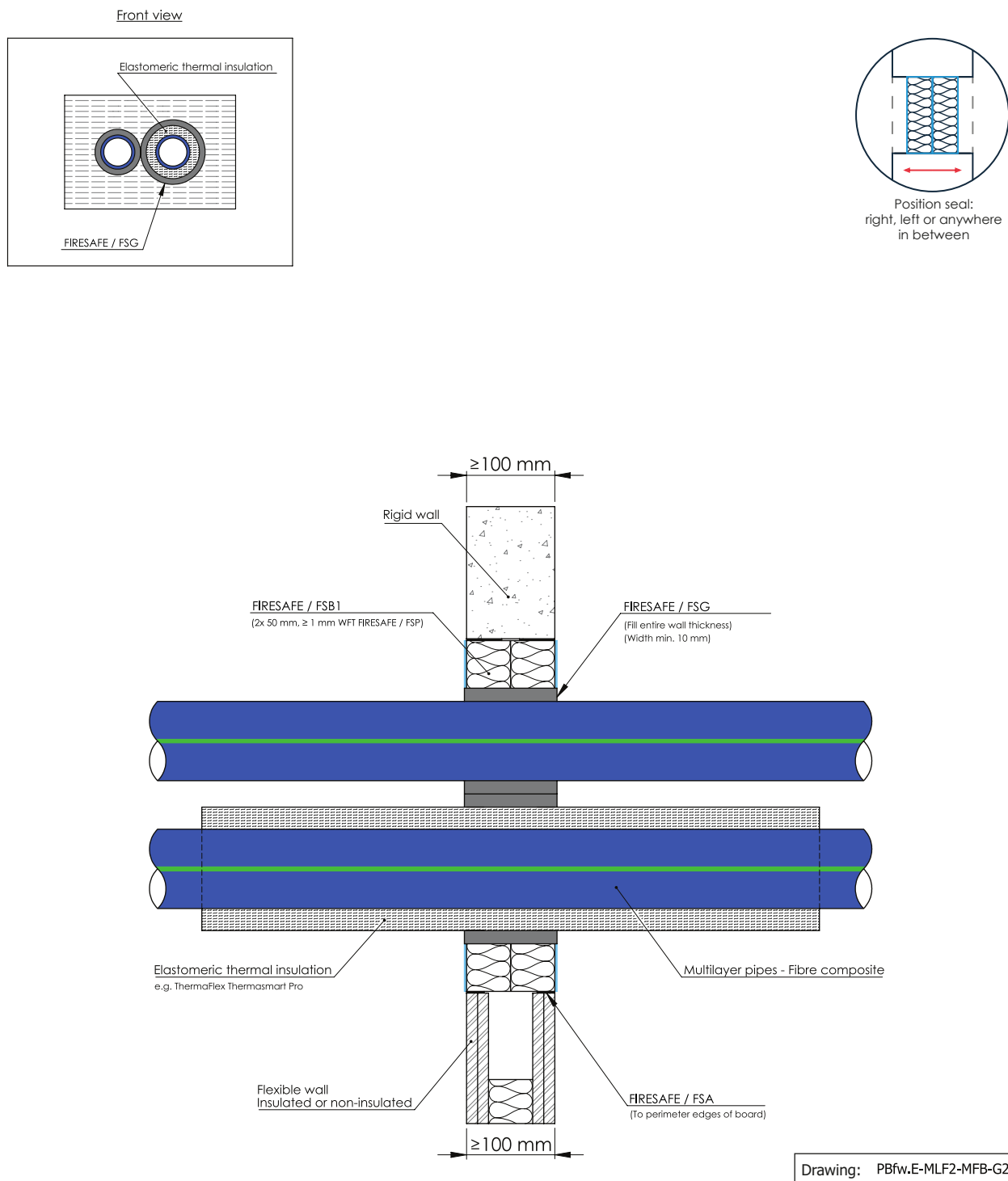


Drawing: PBfw.E-MLF-MC30-10.0.22

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Aquatherm Green	≤ Ø 50	6.9	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LI 300 / CI	FIRESAFE / FSC	EI 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

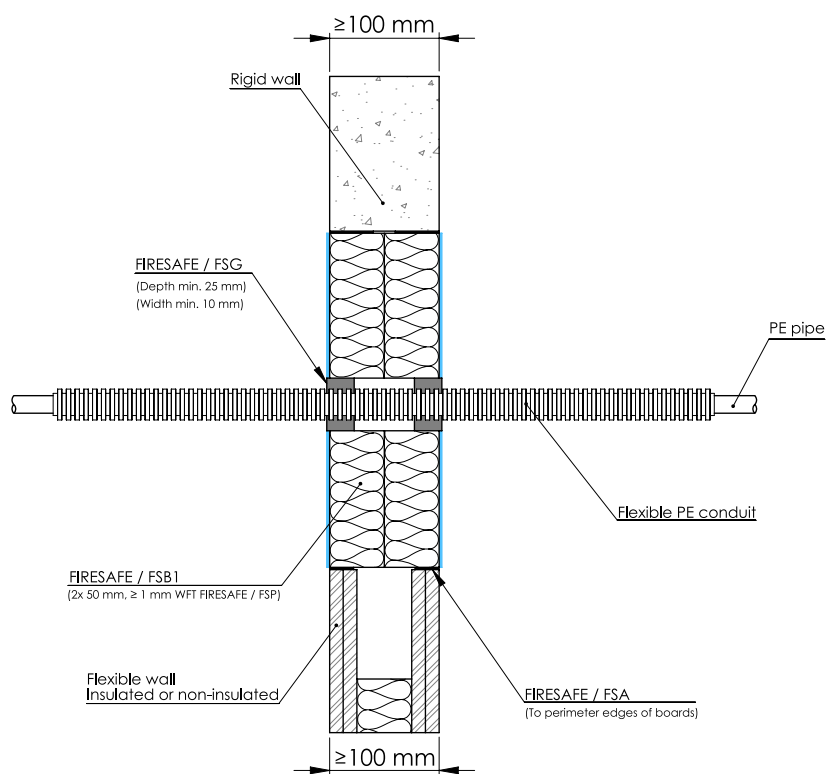
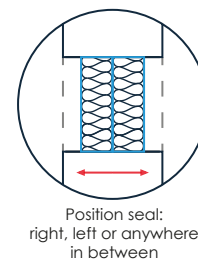
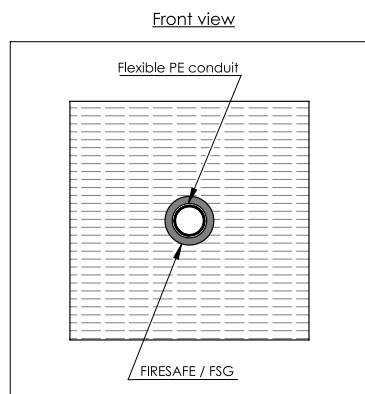
A.1.4.12 PP-R multilayer pipes - With or without Thermoplast Elastomer CS - FIRESAFE / FSG



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
PP-R Multilayer pipes	≤ Ø 90	8.2	ThermaFlex (min. class B-s1, d0 B ₁ -s1, d0)	≥ 25	CS	FIRESAFE / FSG ≥ 15 x 100 mm (wxd)	EI 60 U/C
	≤ Ø 90	8.2	-	-	-		EI 60 U/C, E 90 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.13 Flexible drinking hose - FIRESAFE / FSG

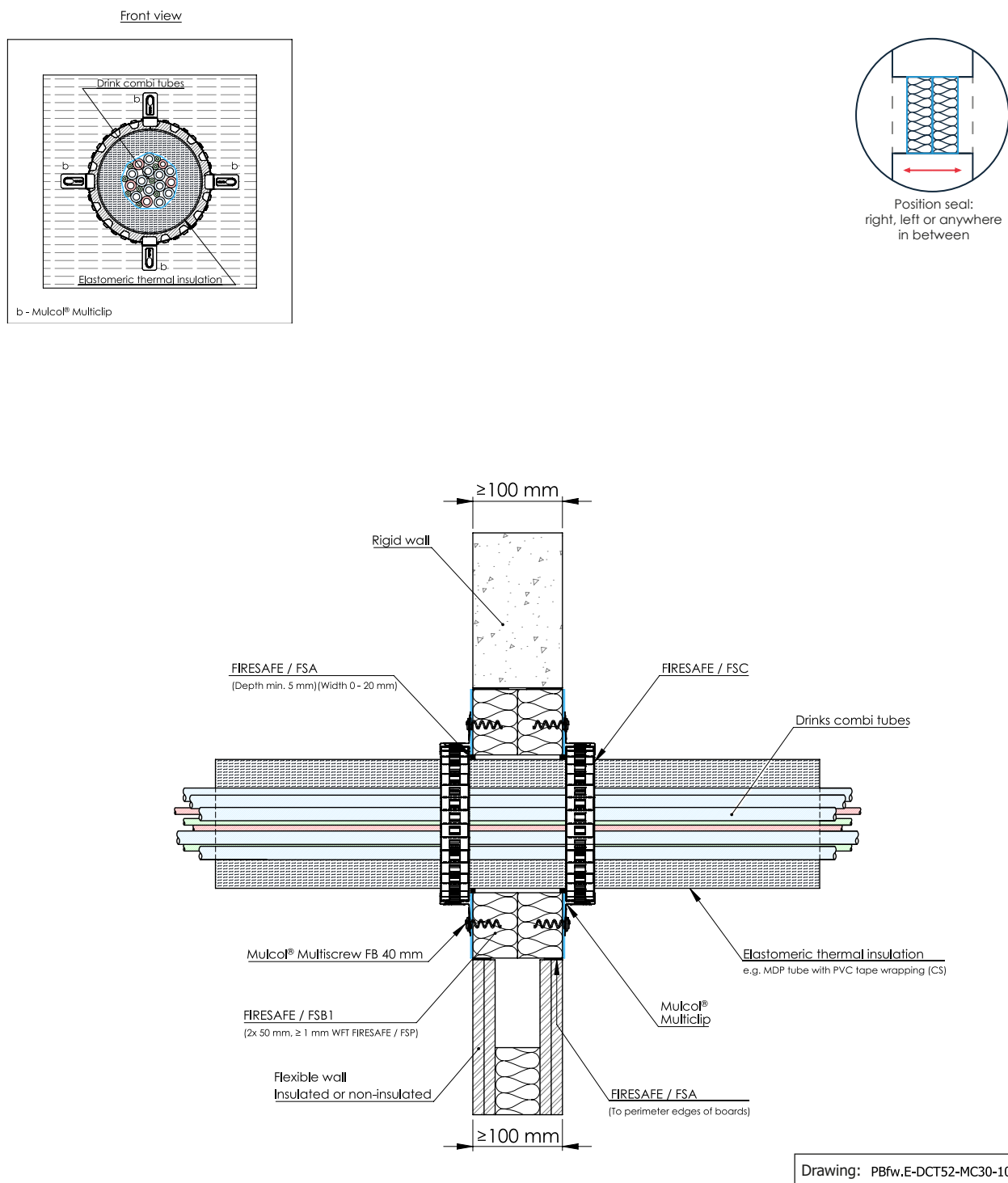


Drawing: PBfw.E-MLA-MFB1.2.30

Services	Pipe dimensions (mm)	Sealing (mm)	Classification
	Outer dimension		
Flexible drinking hose	≤ Ø 20	FIRESAFE / FSG ≥ 10 x 25 (wxd)	EI 60 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

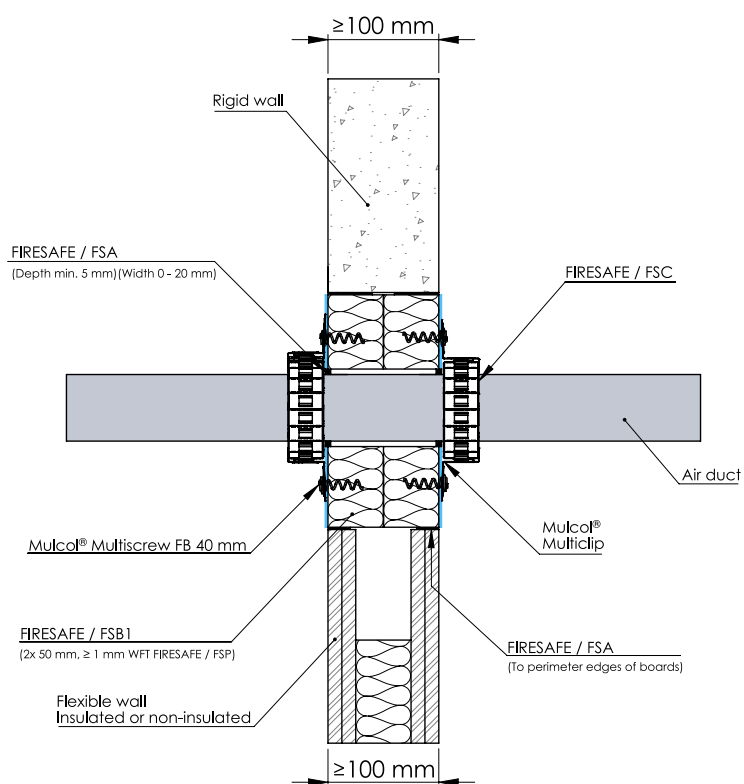
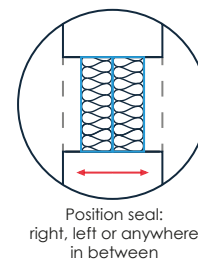
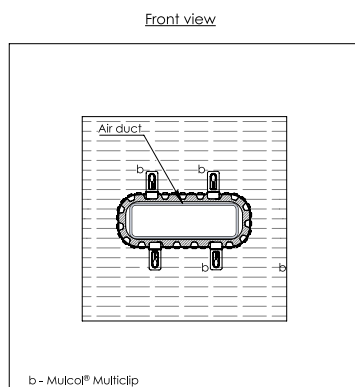
A.1.4.14 Drinks tubing system - FIRESAFE / FSC



Services	Dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Hoses no.	Type	Thickness (mm)	Configuration			
Drinks tubing system	≤ Ø 47	≤ 3	Elastomeric foam	8 - 35	CS	FIRESAFE / FSC	FIRESAFE / FSA ≥ 0-20 x 5 (wxwd)	EI 60 U/C
	≤ Ø 145	≤ 52						

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.15 Rectangular duct - FIRESAFE / FSC

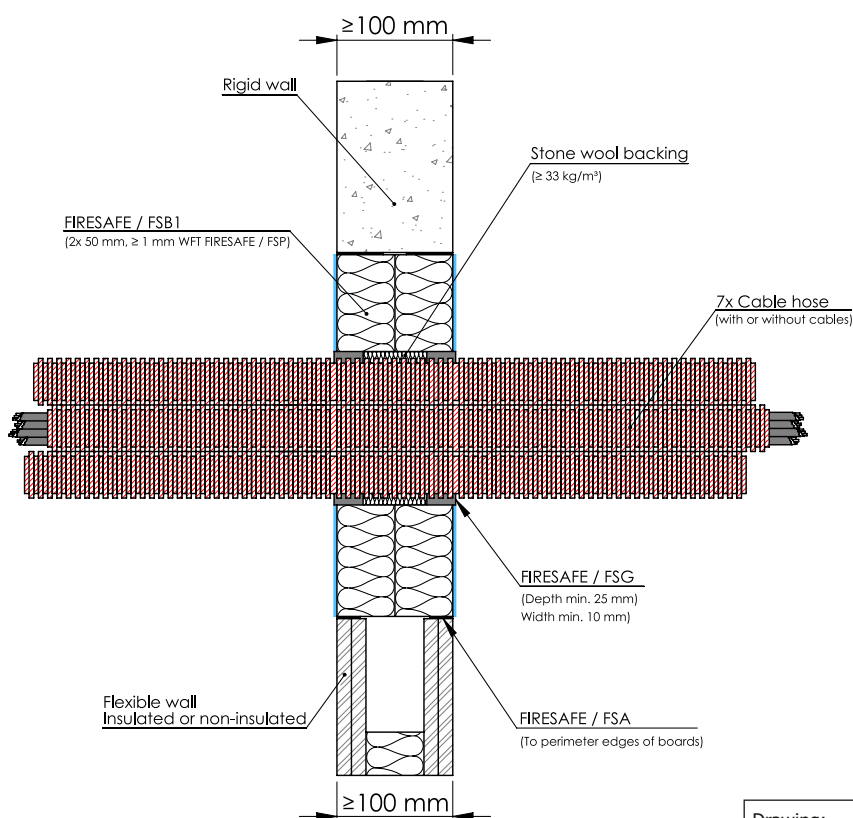
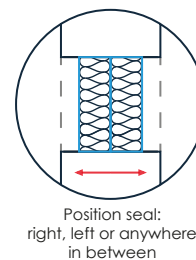
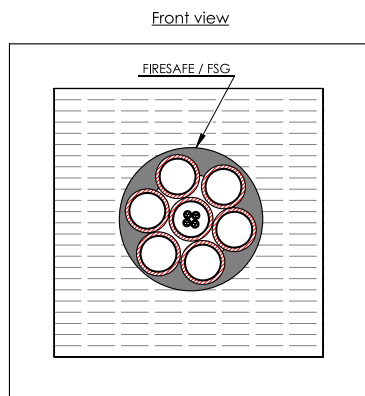


Drawing: PBfw.E-AD-MFB1.2.10

Services	Duct dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Rectangular plastic duct	≤ 220 x 90	1.0	FIRESAFE / FSC	FIRESAFE / FSA ≥ 0-20 x 5 (wxd)	EI 45 U/C
		2.0			EI 120 U/C

A.1.4 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.1.4.16 Flexible plastic hoses with cables - FIRESAFE / FSG

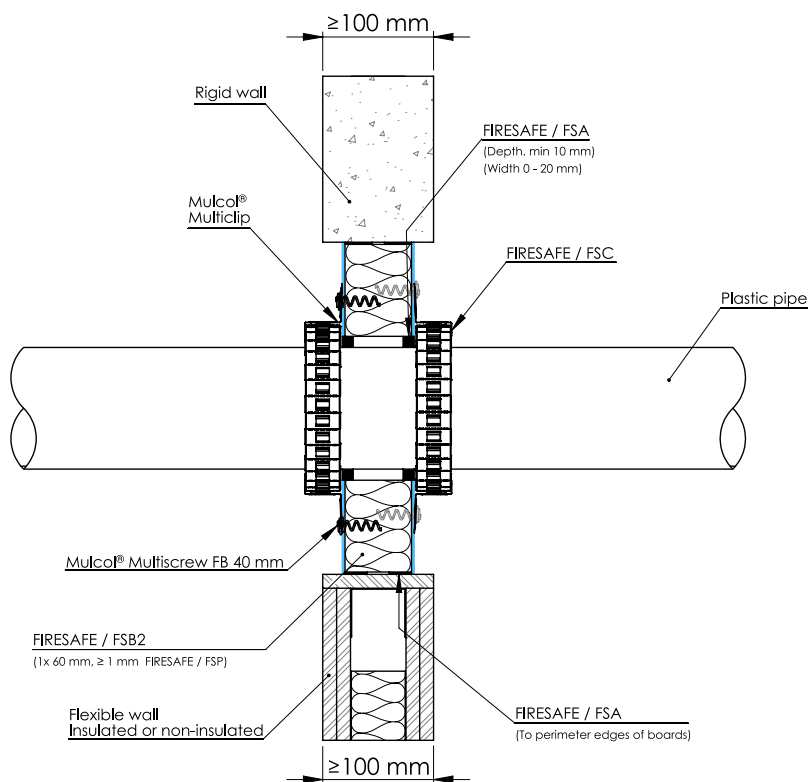
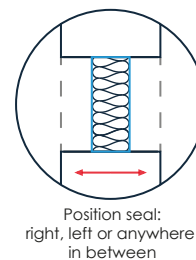
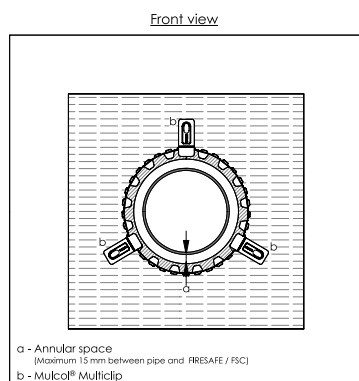


Drawing: PBfw.E-ECH7-MFB1-G2.19.30

Services	Diameter of penetration (mm)	Sealing (mm)	Classification
Ribbed PE-sleeve conduit ≤ Ø 63 mm, with or without cables	≤ 160	FIRESAFE / FSG ≥ 10 x 25 (wxd)	EI 60 U/U

A.1.5 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

A.1.5.1 Plastic pipes - FIRESAFE / FSC

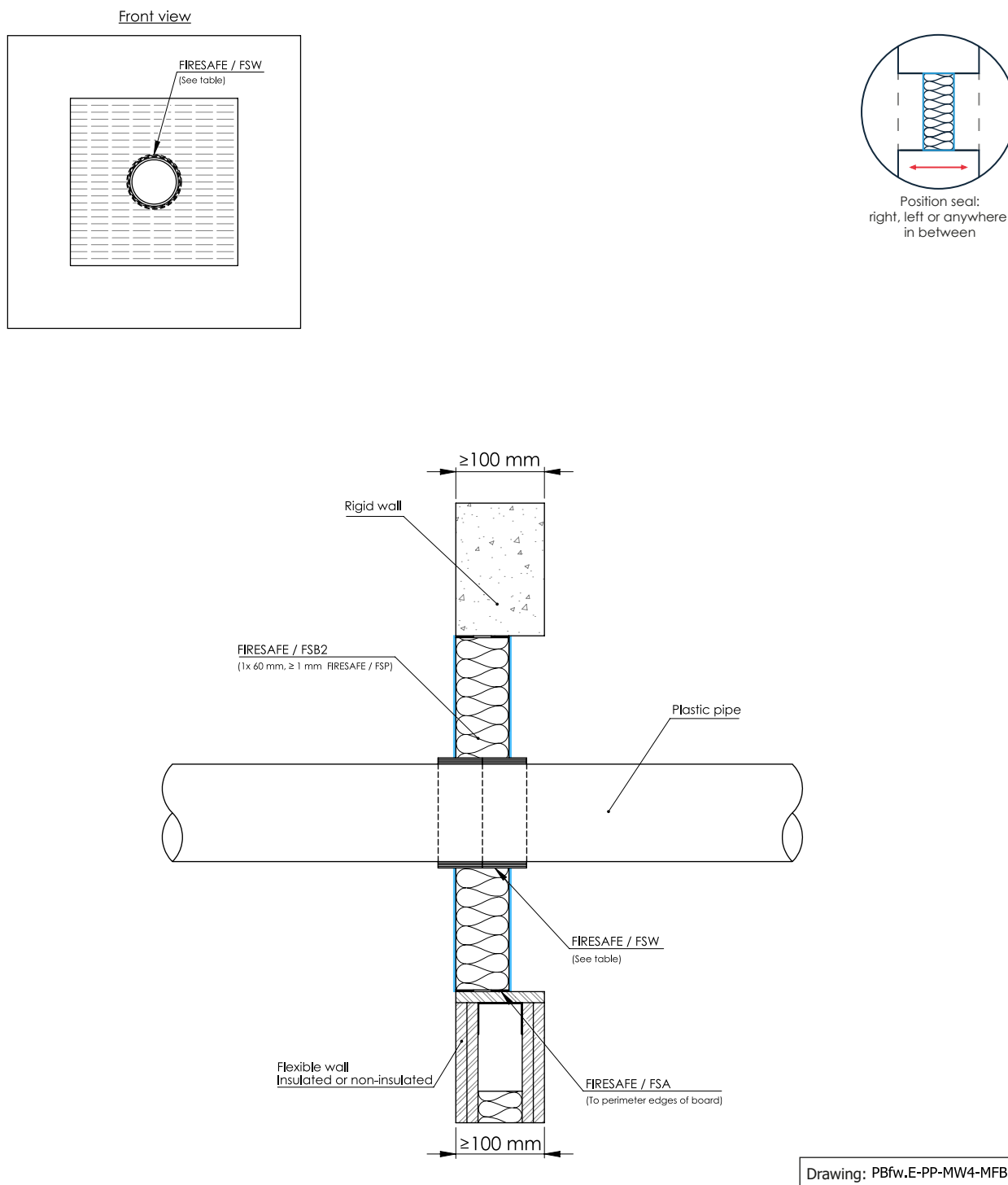


Drawing: PBfw.E-PP-MFB2.1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC PVC(-U/-C)	≤ Ø 110	2.7	FIRESAFE / FSC	FIRESAFE / FSA ≥ 0-20 x 10 (wxd)	EI 120 U/U
PE(-HD) / PE-X / ABS / SAN+PVC		3.9			EI 45 U/U E 60 U/U
PP	≤ Ø 125				EI 60 U/U

A.1.5 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

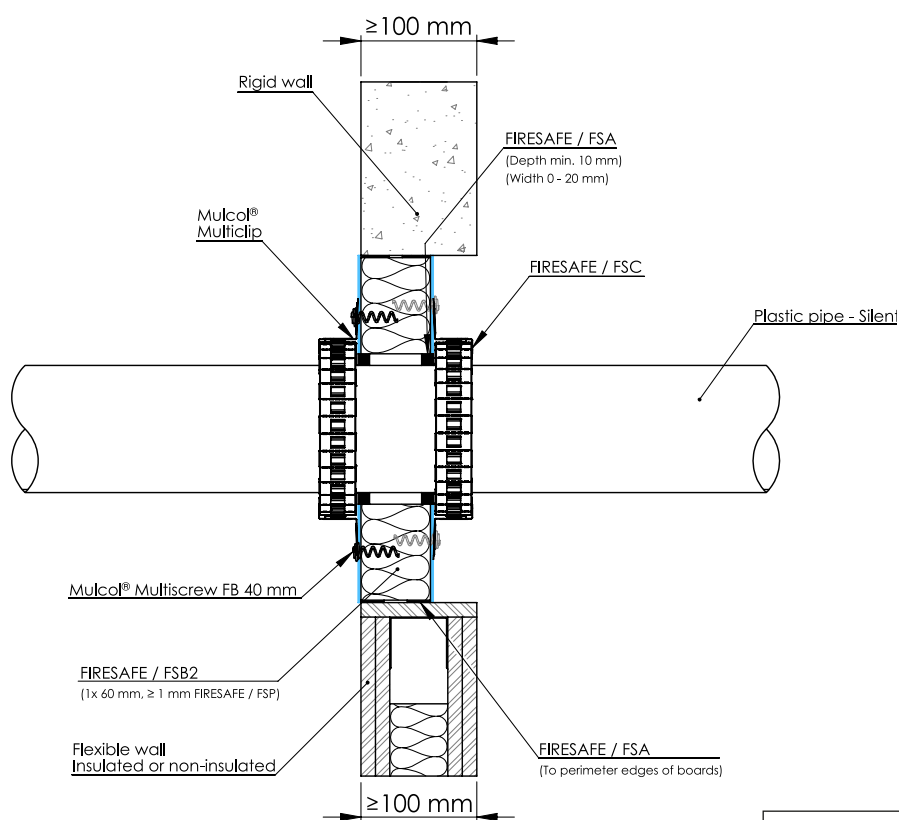
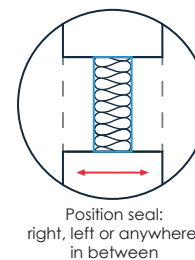
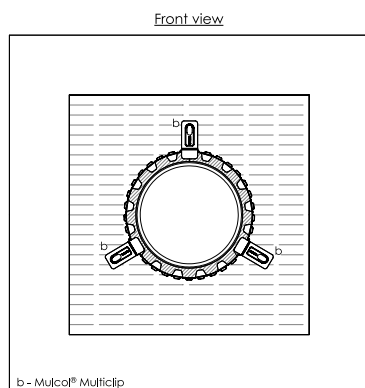
A.1.5.2 Plastic pipes - FIRESAFE / FSW



Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PP	≤ Ø 40	2.3	FIRESAFE / FSW (2 layers)	EI 60 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	10.0	FIRESAFE / FSW (4 layers)	EI 30 U/U
PVC(-U/-C)		8.1		EI 60 U/U

A.1.5 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

A.1.5.3 Plastic pipes (Silent) - FIRESAFE / FSC

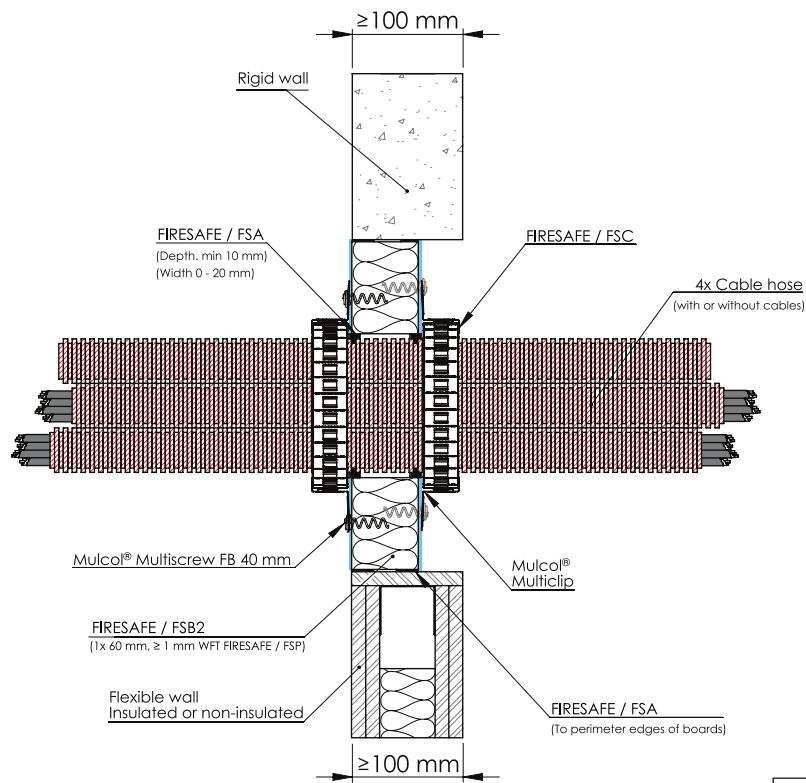
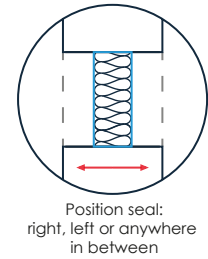
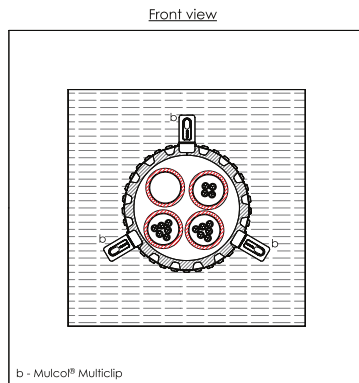


Drawing: PBfw,E-MC30-PPS-MFB2.1,10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Geberit Silent dB20	≤ Ø 110	6.0	FIRESAFE / FSC	FIRESAFE / FSA ≥ 0-20 x 10 (wxd)	EI 60 U/U

A.1.5 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

A.1.5.4 Flexible plastic hoses with cables - FIRESAFE / FSC

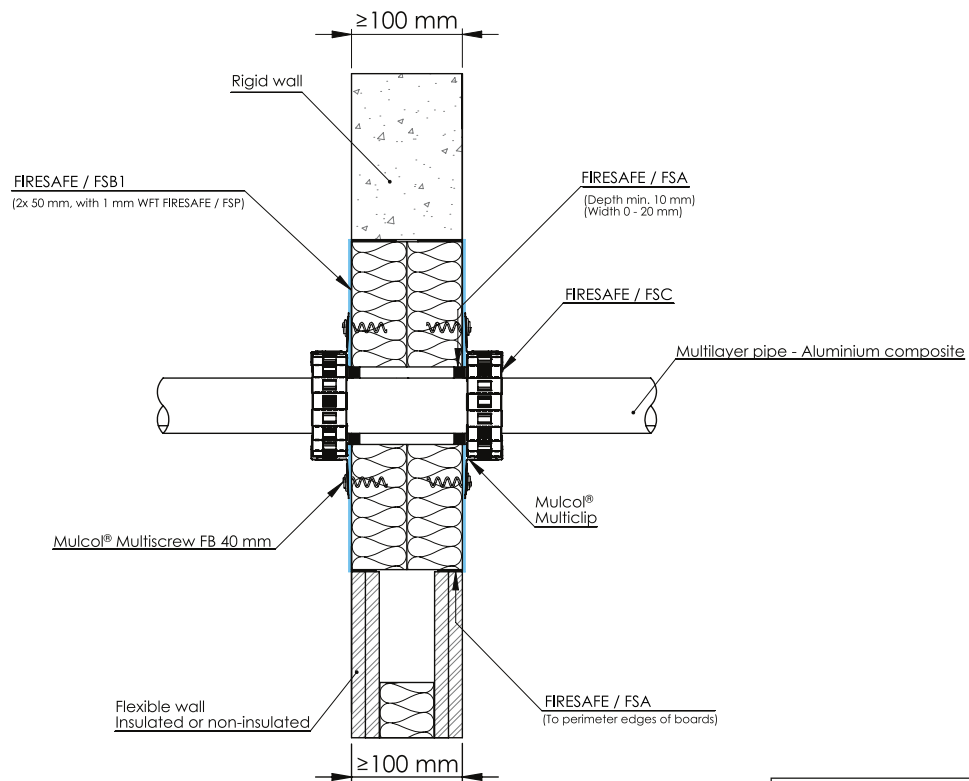
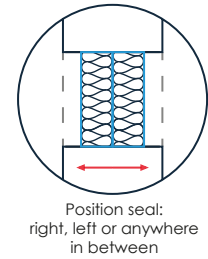
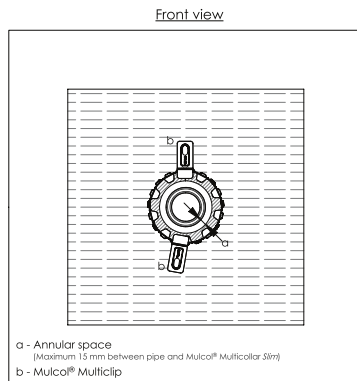


Drawing: PBfw.E-ECH4-MC30-MFB2.1.30

Services	Number of sleeves	Product	Sealing (mm)	Classification
Ribbed PE-sleeve conduit ≤ Ø 63 mm, with or without cables	≤ 4	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/C, E 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.1 Multilayer pipes (MLC) - FIRESAFE / FSC

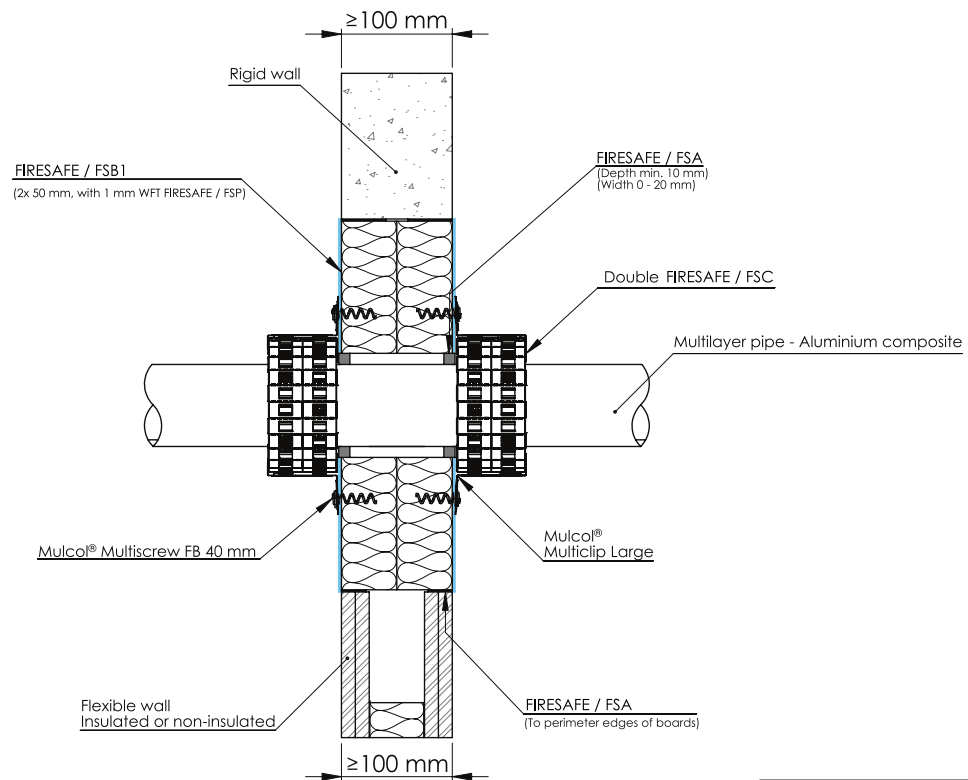
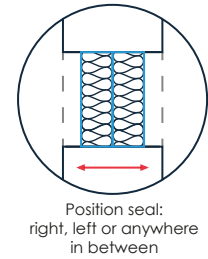
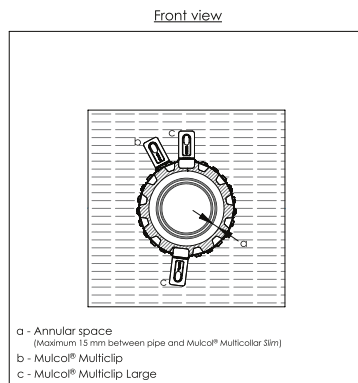


Drawing: PBfw.E-MLA-MC30-MFB1.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 20	2.0	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 120 U/C
	≤ Ø 25	3.5			
	≤ Ø 32	3.0			
	≤ Ø 40	3.5			
	≤ Ø 40	4.0			
	≤ Ø 50	4.0			
	≤ Ø 63	4.5			EI 90 U/C, E 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.1 Multilayer pipes (MLC) - FIRESAFE / FSC

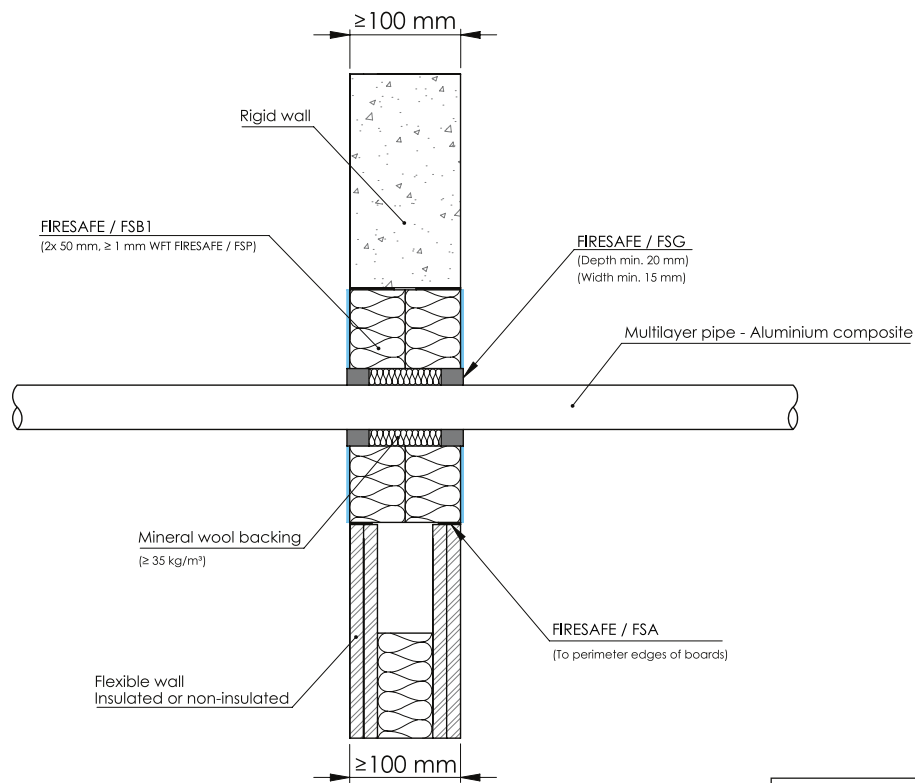
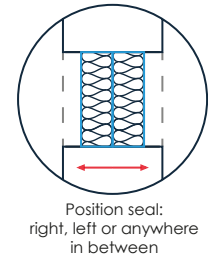
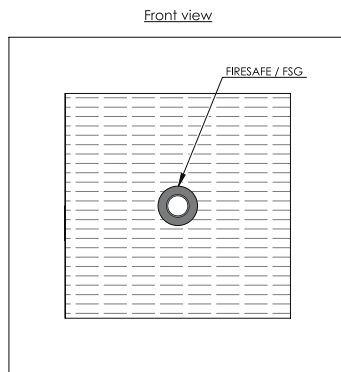


Drawing: PBfw.E-MLA-MC60-MFB1.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 75	6.0	FIRESAFE / FSC Double	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 U/C, E 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.2 Multilayer pipes (MLC) - FIRESAFE / FSG

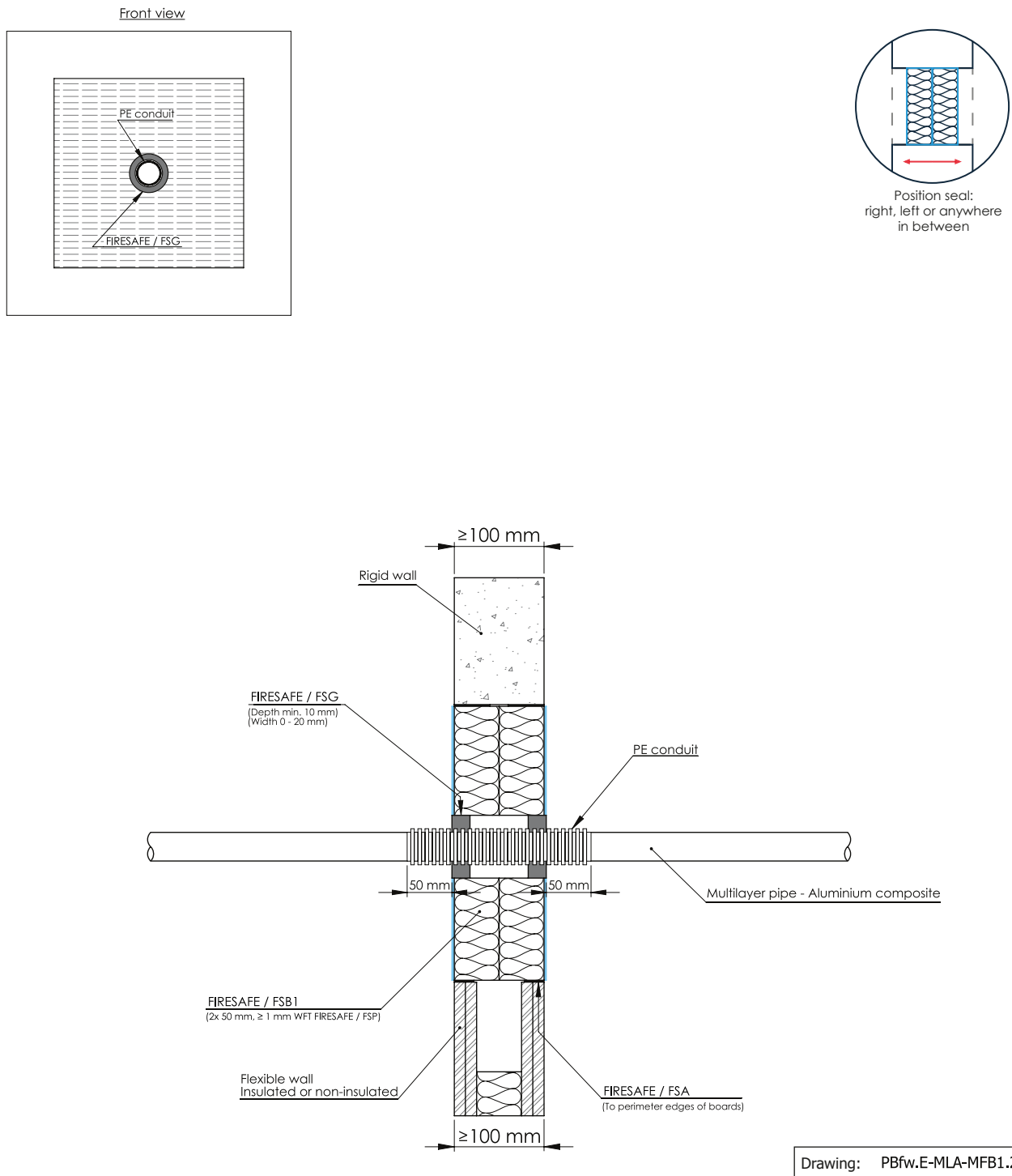


Drawing: PBfw,E-MLA-G2.4.10

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 20	2.0	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m³)	EI 120 U/C
	≤ Ø 32	3.0			
	≤ Ø 40	3.5 - 4.0			

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

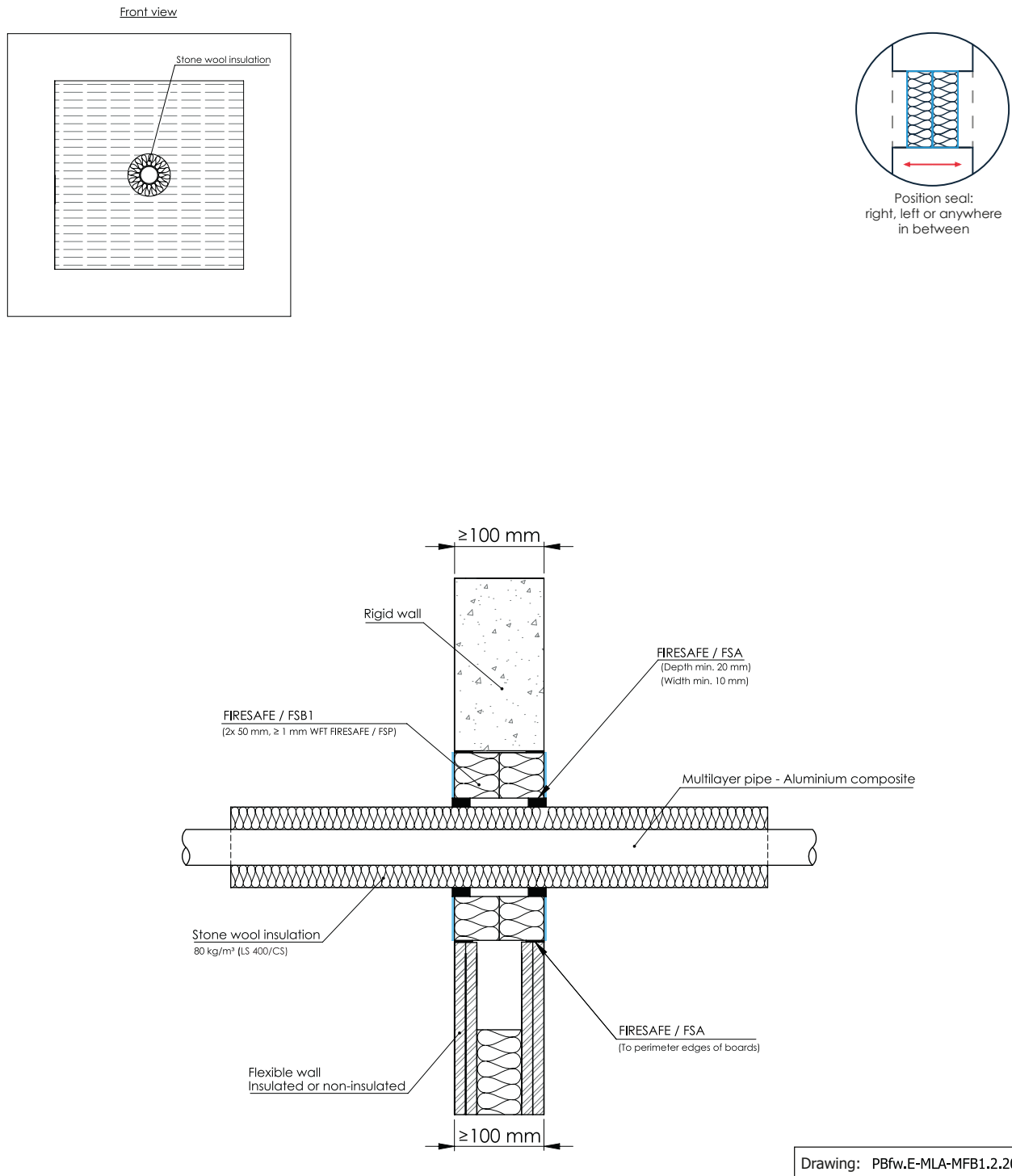
A.1.6.3 Multilayer pipes (MLC) - Conduit - FIRESAFE / FSG



Services	Pipe dimensions (mm)		Conduit			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Outer dimension (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0	PE-conduit ribbed	≤ Ø 40	LS 50 / CS	FIRESAFE / FSG 0-20 x ≥ 10 (wxd)	EI 60 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

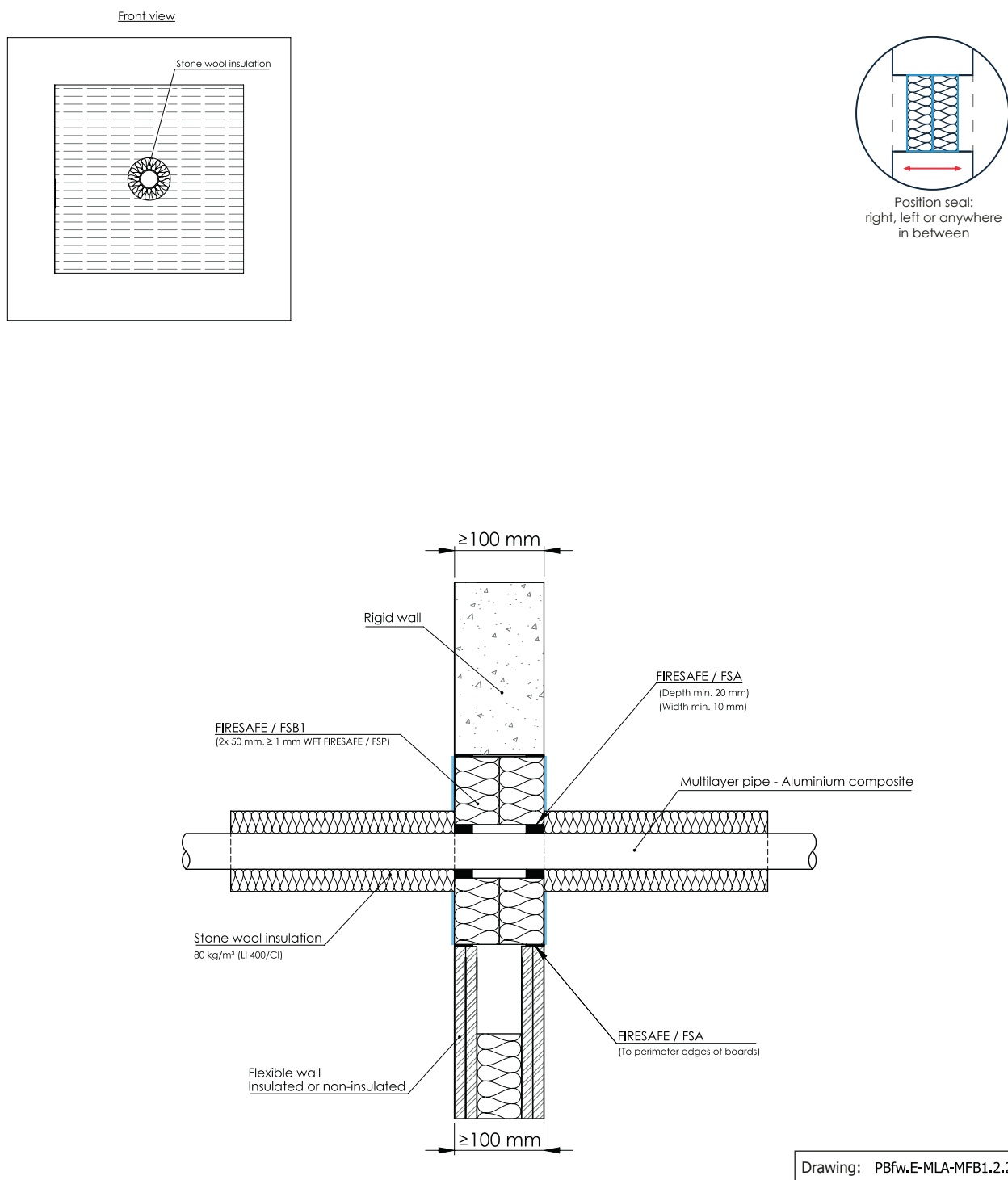
A.1.6.4 Multilayer pipes (MLC) - Stone wool LS 400 / CS



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0 to 6.0	Stone wool (≥ 80 kg/m³)	≥ 25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/C
	≤ Ø 75	6.0					EI 90 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

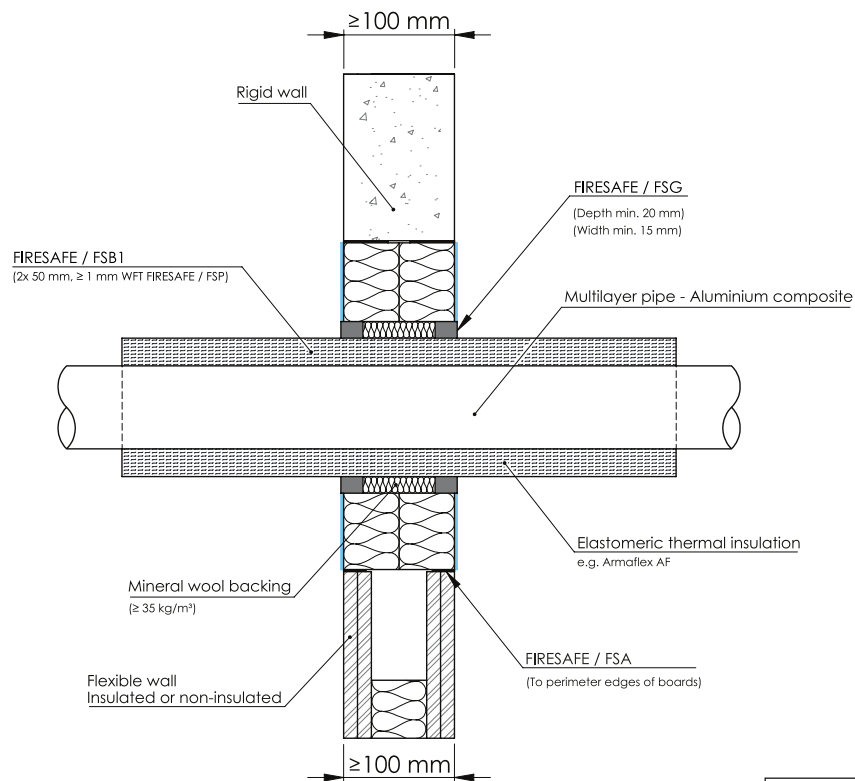
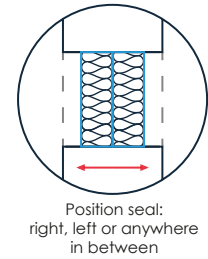
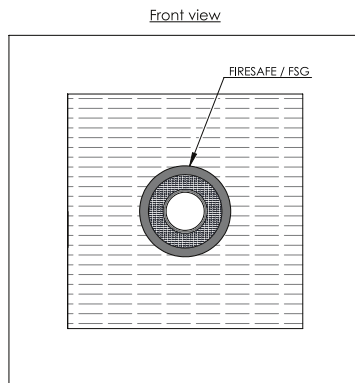
A.1.6.5 Multilayer pipes (MLC) - Stone wool LI 400 / CI



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 40	3.5	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.6 Multilayer pipes (MLC) - Elastomer LS 300 / CS - FIRESAFE / FSG

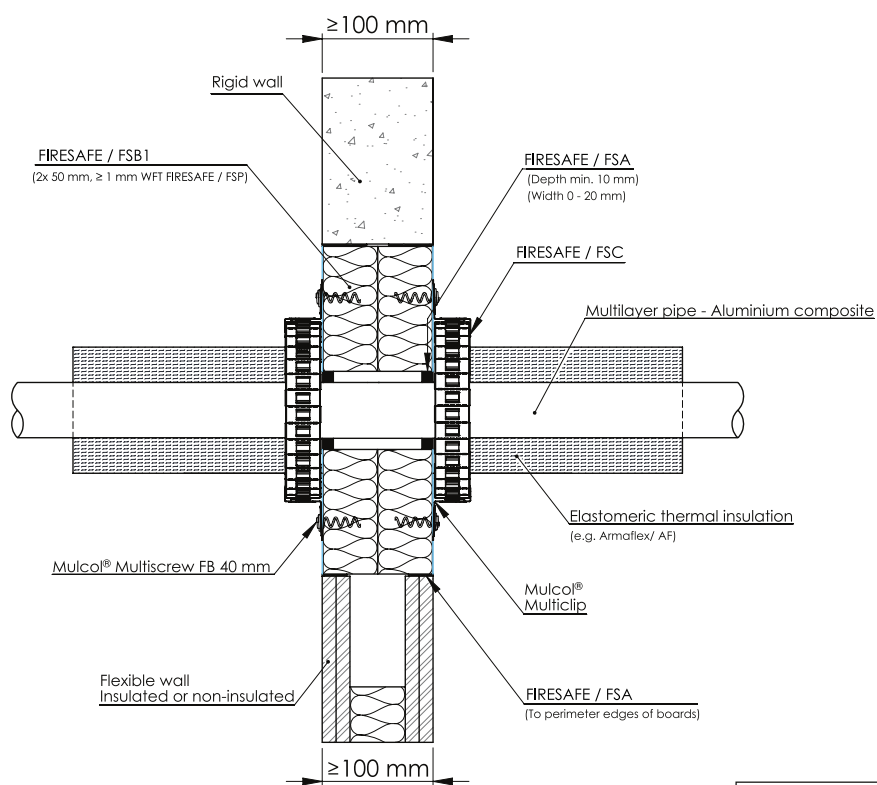
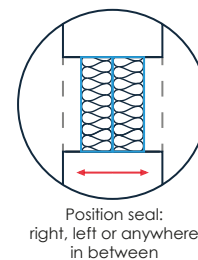
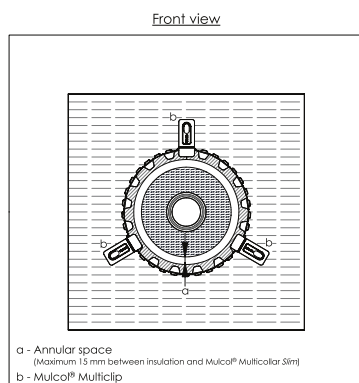


Drawing: PBfw.E-MLA-G2.4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 20	2.0	ArmaFlex AF (min. class B-s3, d0 BL-s3, d0)	9 - 32	LS 300 / CS LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 mm (wxd)	EI 120 U/C
	≤ Ø 32	3.0					EI 90 U/C E 120 U/C
	≤ Ø 40	3.5					
	≤ Ø 50	4.0					
	≤ Ø 63	4.5					
	≤ Ø 75	6.0					

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.7 Multilayer pipes (MLC) - Elastomer LI 300 / CI - FIRESAFE / FSC



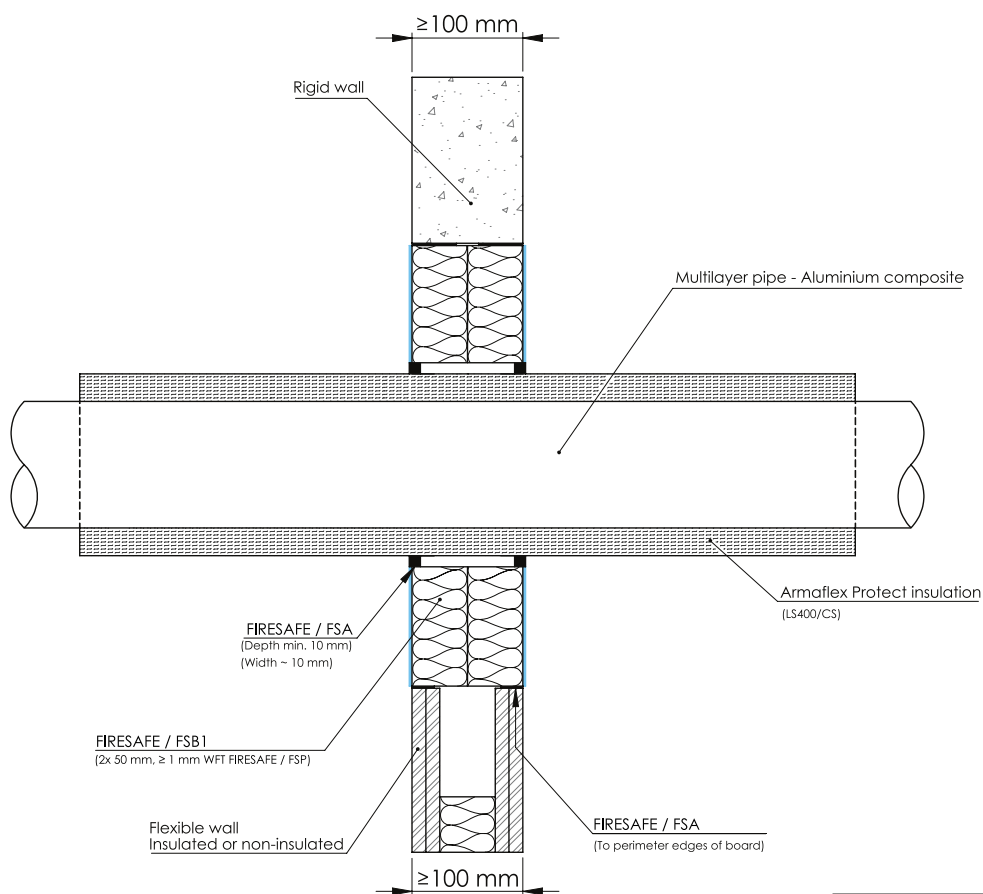
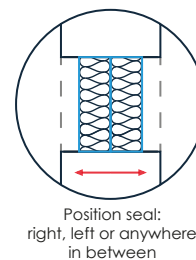
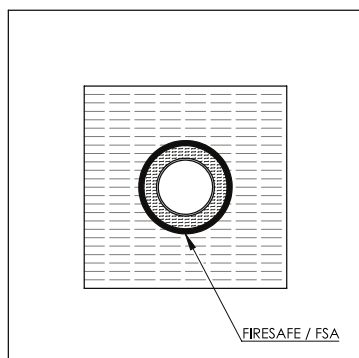
Drawing: PBfw.E-MLA-MC30-10.0.22

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipes (MLC)	≤ Ø 50	4.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LI 300 / CI	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.8 Multilayer pipes (MLC) - ArmaFlex Protect LS 400 / CS - FIRESAFE / FSA

Front view

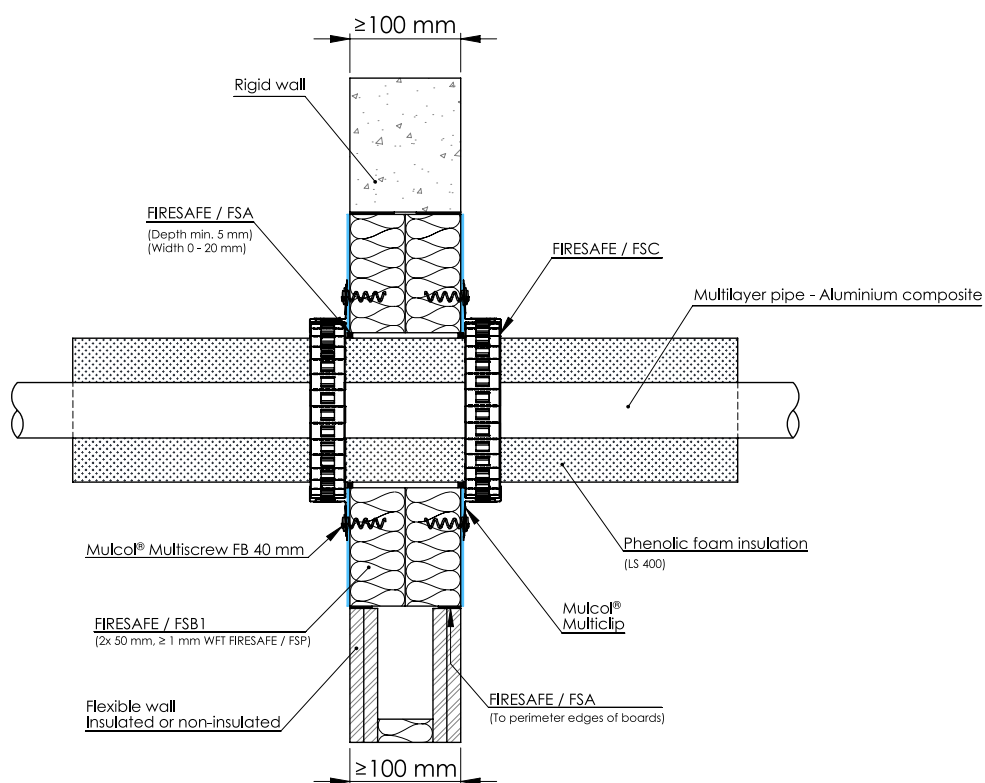
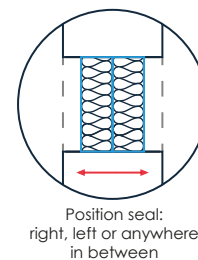
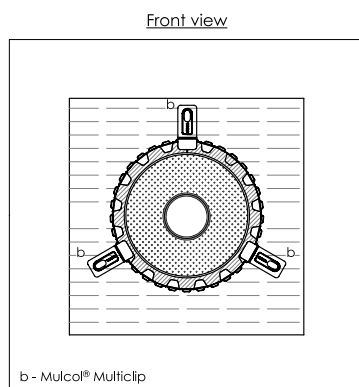


Drawing: PBfw.E-MLA-MFB1.2.10

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 26	3.0	ArmaFlex Protect	20	LS 400 / CS	FIRESAFE / FSA 10 x ≥ 10 (wxd)	EI 120 U/C
	≤ Ø 75	5.0		25			

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.9 Multilayer pipes (MLC) - Phenolic foam LS 400 / CS - FIRESAFE / FSC

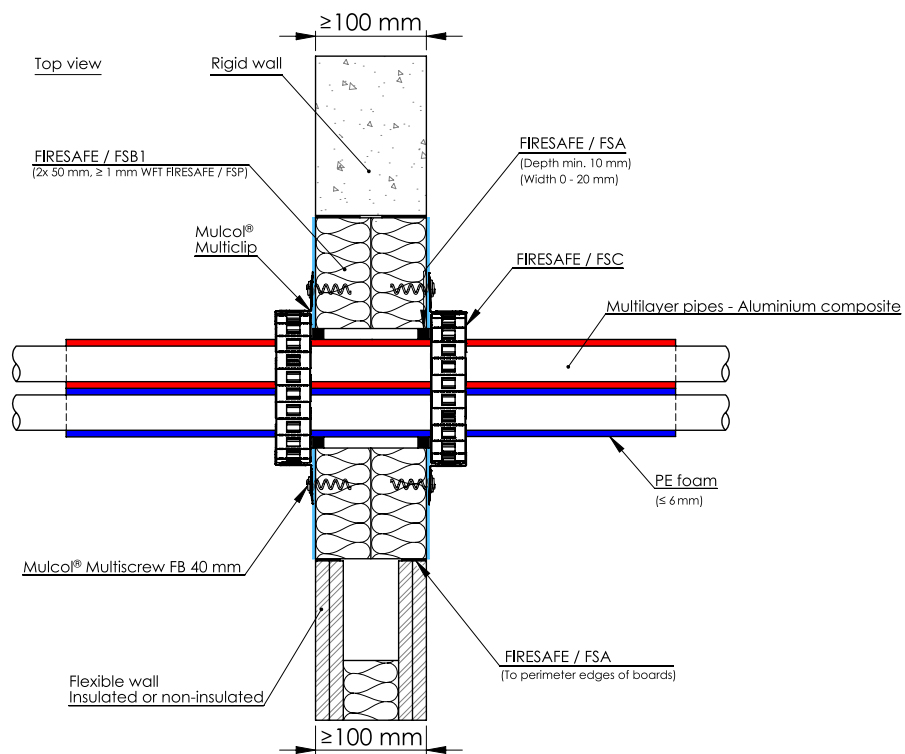
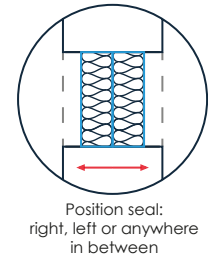
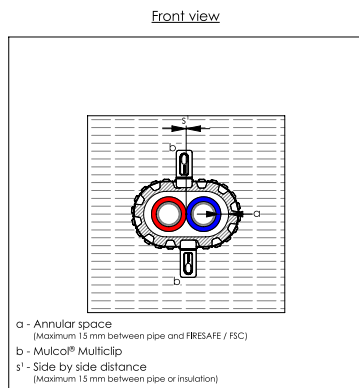


Drawing: PBfw.E-MLA-MC30-MFB1.0.22

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipes (MLC)	≤ Ø 20	2.0	Kingspan Kooltherm	15 - 40	LS 400 / CS	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 U/C
	≤ Ø 40	3.5		20 - 40				
	≤ Ø 63	4.5						

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.10 Multiple Multilayer pipes (MLC) - PE foam - FIRESAFE / FSC

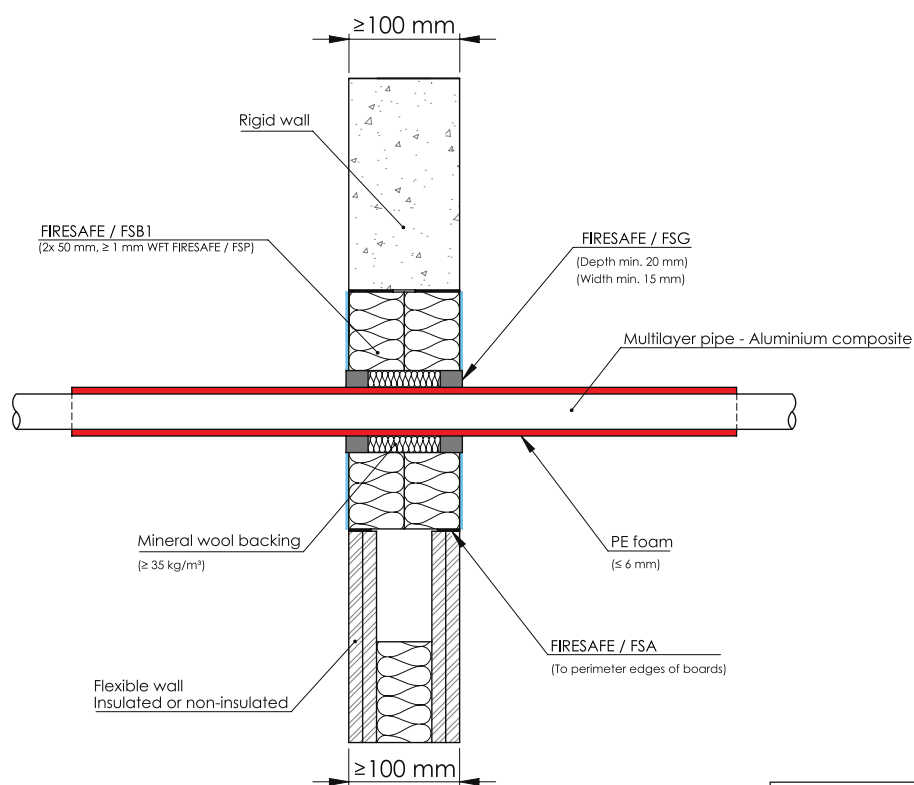
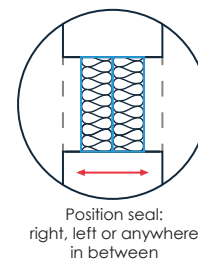
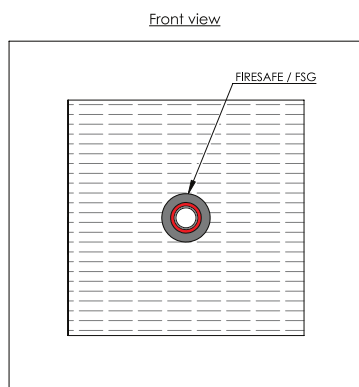


Drawing: PBfw.E-MC30-MLP2-10.0.23

Services	Pipe dimensions (mm)		Number of pipes	Insulation			Product	Sealing	Classification
	Outer dimension	Wall thickness		Type	Thickness (mm)	Configuration			
Multilayer pipes (MLC)	≤ Ø 15	2.0	≤ 12	PE foam	6	LS 400 / CS LI 400 / CI	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.11 Multilayer pipes (MLC) - PE foam - FIRESAFE / FSG

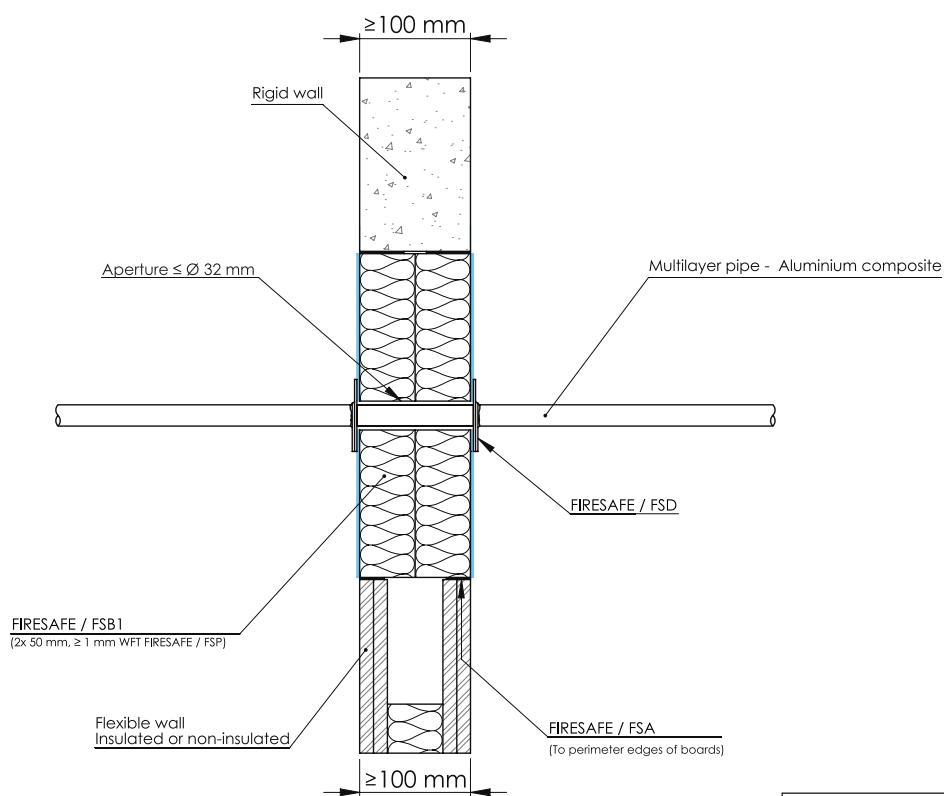
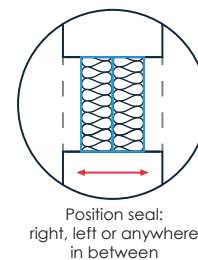
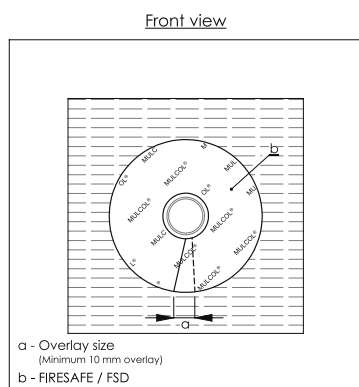


Drawing: PBfw.E-MLA_pr-G2.4.23

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	2.0 - 3.0	PE Foam	≤ 6	LS 300 / CS LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.12 Multilayer pipes (MLC) - FIRESAFE / FSD

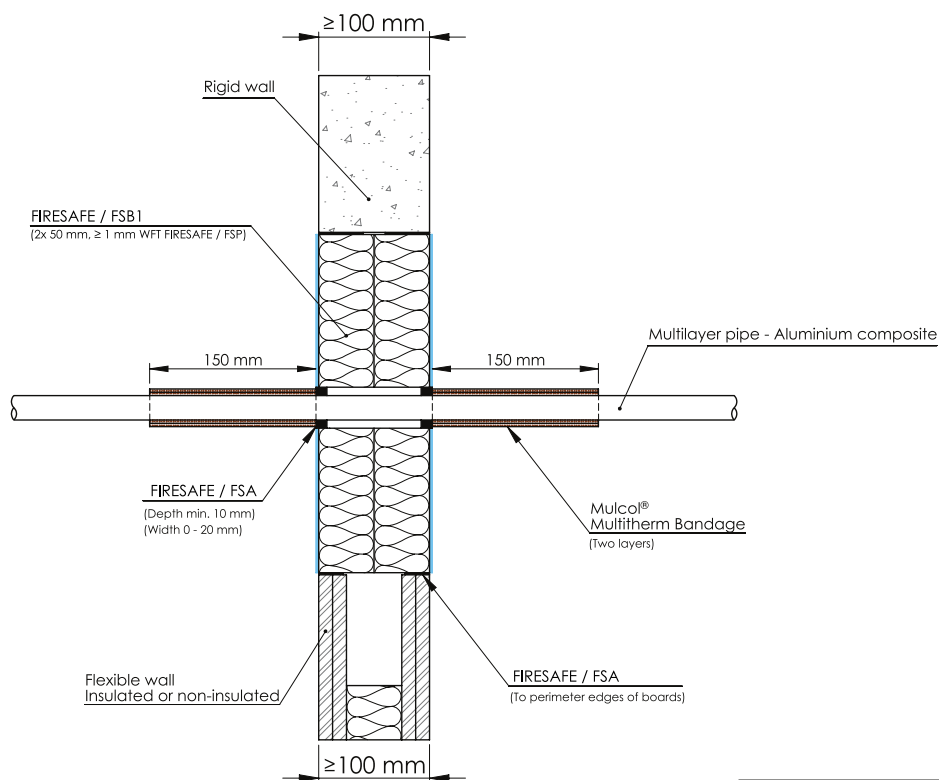
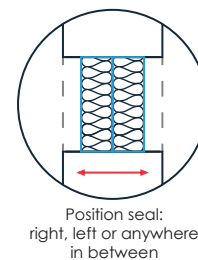
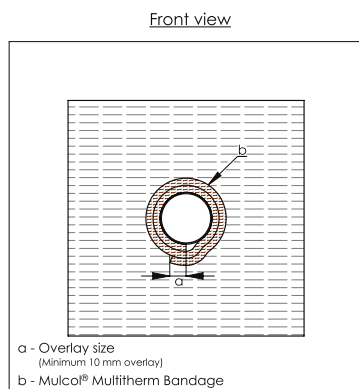


Drawing: PBfw.E-MLA-M2.0.10

Services	Pipe dimensions (mm)		Aperture (mm)	Product	Sealing (mm)	Classification
	Outer diameter	Wall thickness				
Multilayer pipes (MLC)	$\leq \varnothing 16$	2.0	$\leq \varnothing 32$	FIRESAFE / FSD	Not required	EI 90 U/C E 120 U/C

A.1.6 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.1.6.13 Multilayer pipes (MLC) - Multitherm Bandage

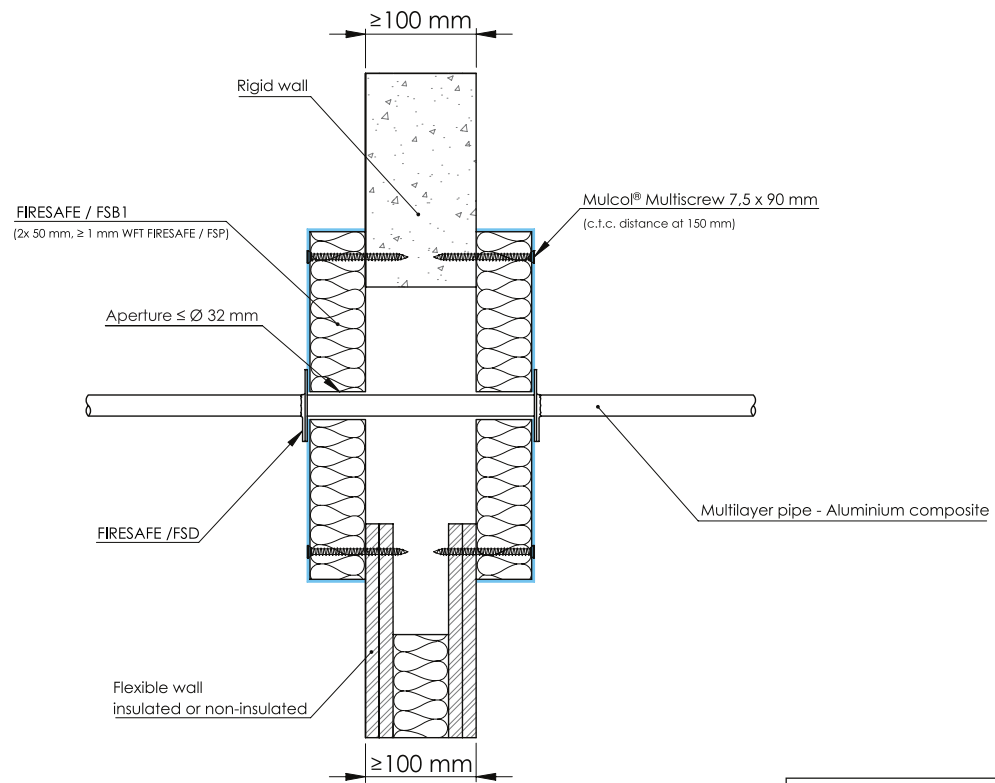
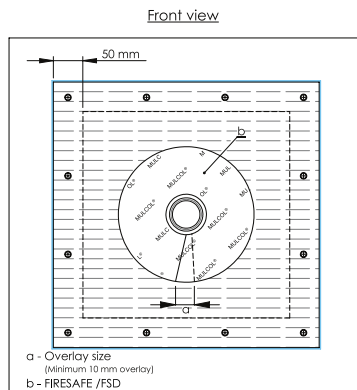


Drawing: PBfw.E-MLA-MFB1-B2.1.20

Services	Pipe dimensions (mm)		Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 16	2.0	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	LI 150 two layers	EI 120 U/C
	≤ Ø 25	3.5			
	≤ Ø 26	3.0			

A.1.7 FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Multilayer pipes (MLC)

A.1.7.1 Multilayer pipes (MLC) - FIRESAFE / FSD

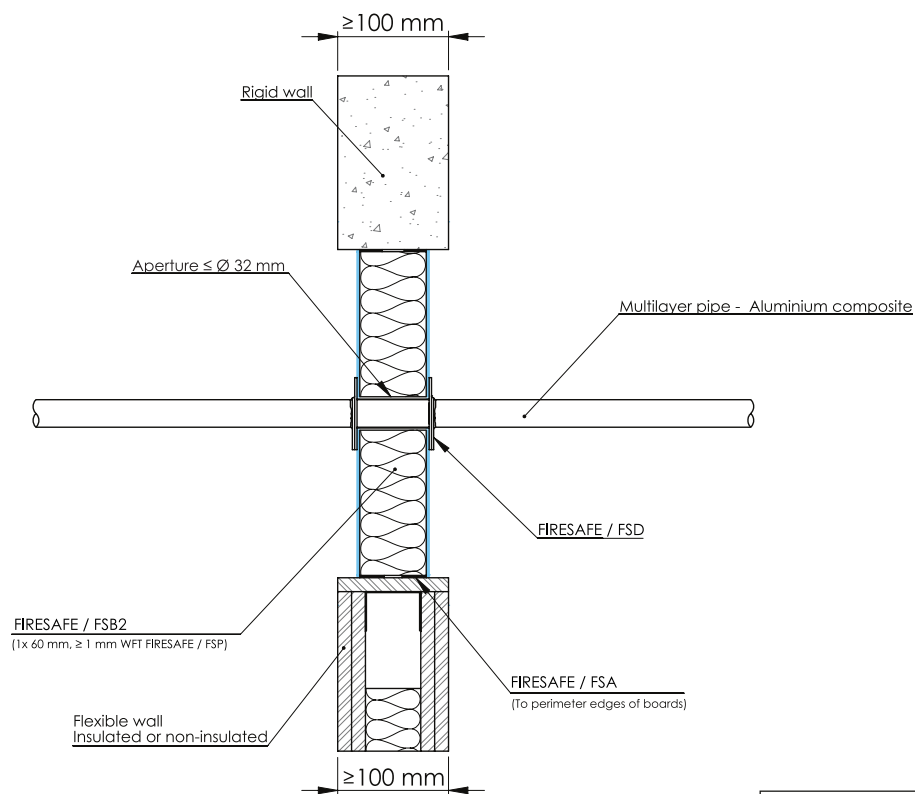
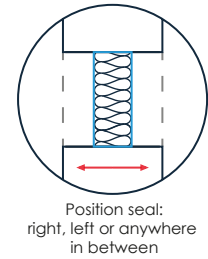
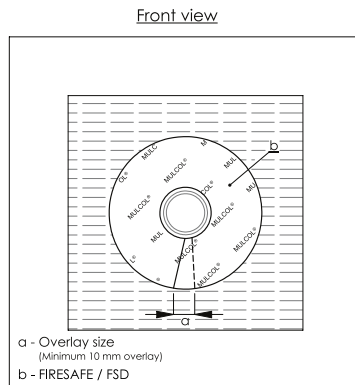


Drawing: PBPfw-MLA-M2.0.10

Services	Pipe dimensions (mm)		Aperture (mm)	Product	Sealing (mm)	Classification
	Outer diameter	Wall thickness				
Multilayer pipes (MLC)	≤ Ø 16	2.0	≤ Ø 32	FIRESAFE / FSD	Not required	EI 60 U/C E 120 U/C

A.1.8 FIRESAFE / FSB2 - 1x 60 mm - Multilayer pipes (MLC)

A.1.8.1 Multilayer pipes (MLC) - FIRESAFE / FSD

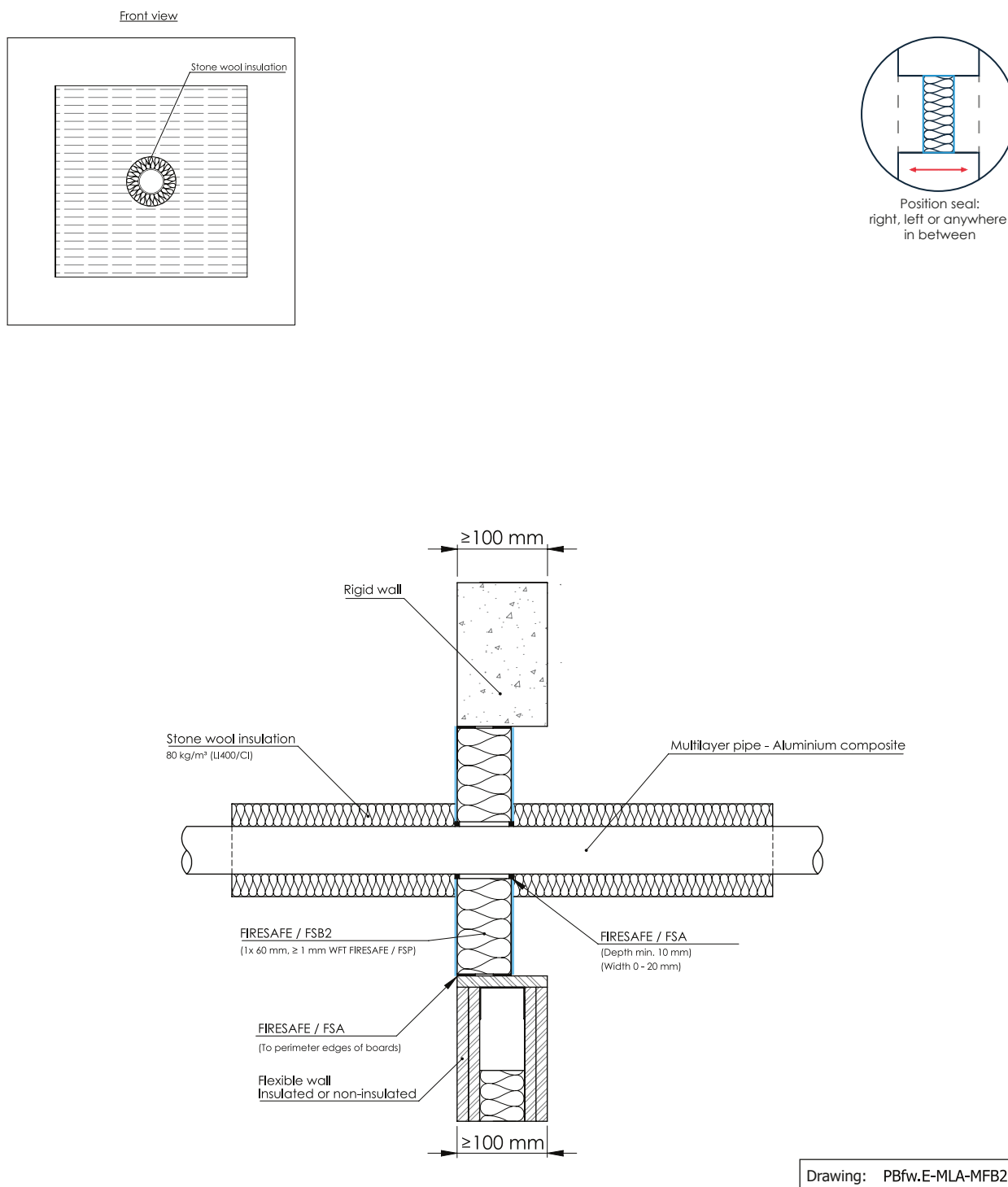


Drawing: PBfw.E-MLA-MFB2.1.10-M2.0.10

Services	Pipe dimensions (mm)		Aperture (mm)	Product	Sealing (mm)	Classification
	Outer diameter	Wall thickness				
Multilayer pipes (MLC)	≤ Ø 16	2.0	≤ Ø 32	FIRESAFE / FSD	Not required	EI 45 U/C E 120 U/C

A.1.8 FIRESAFE / FSB2 - 1x 60 mm - Multilayer pipes (MLC)

A.1.8.2 Multilayer pipes (MLC) - Stone wool LI 400 / CI



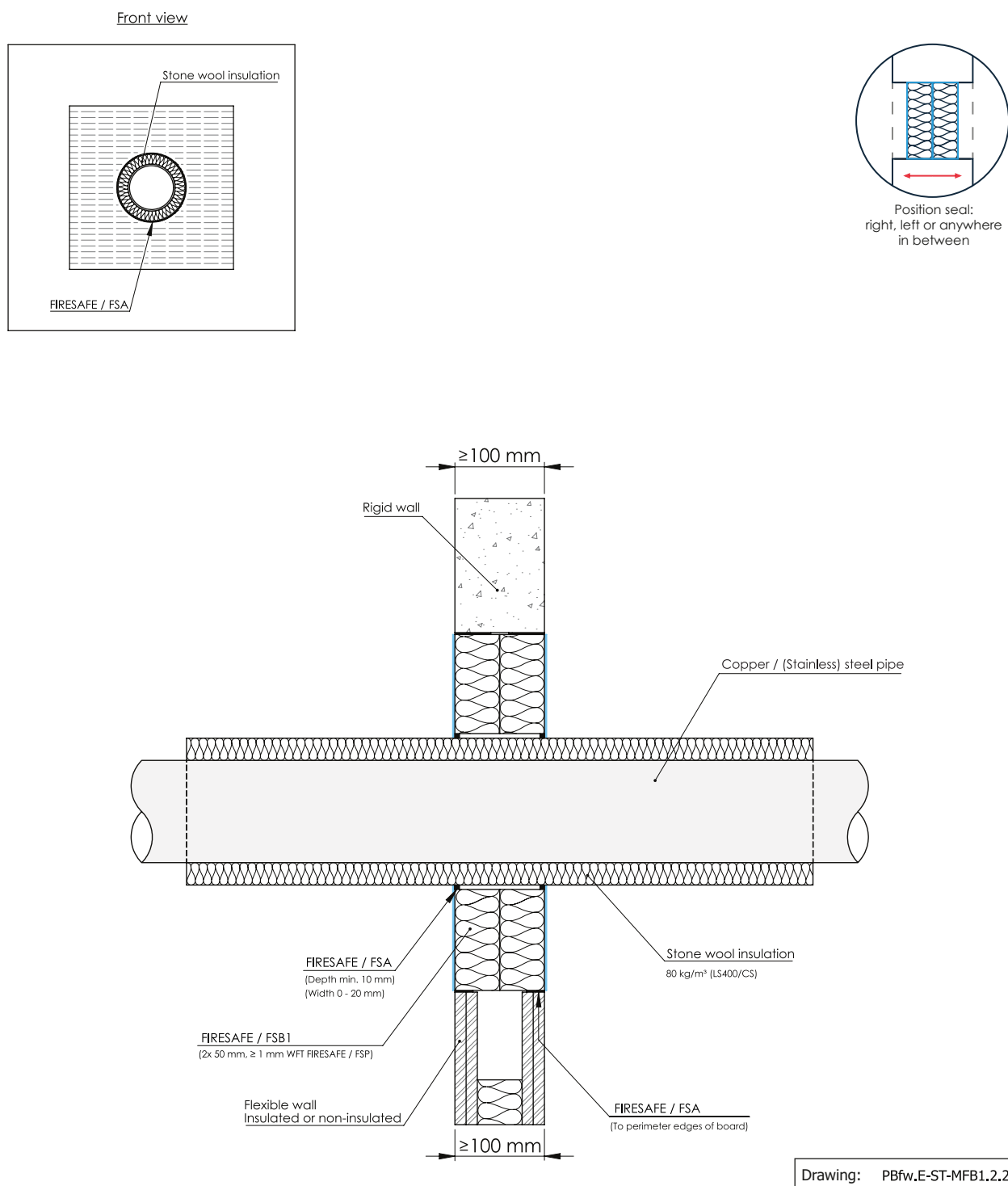
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 40	3.5	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0 - 20 x ≥ 10 (wxd)	EI 60 C/U

A.1.9

FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated mineral wool

A.1.9.1

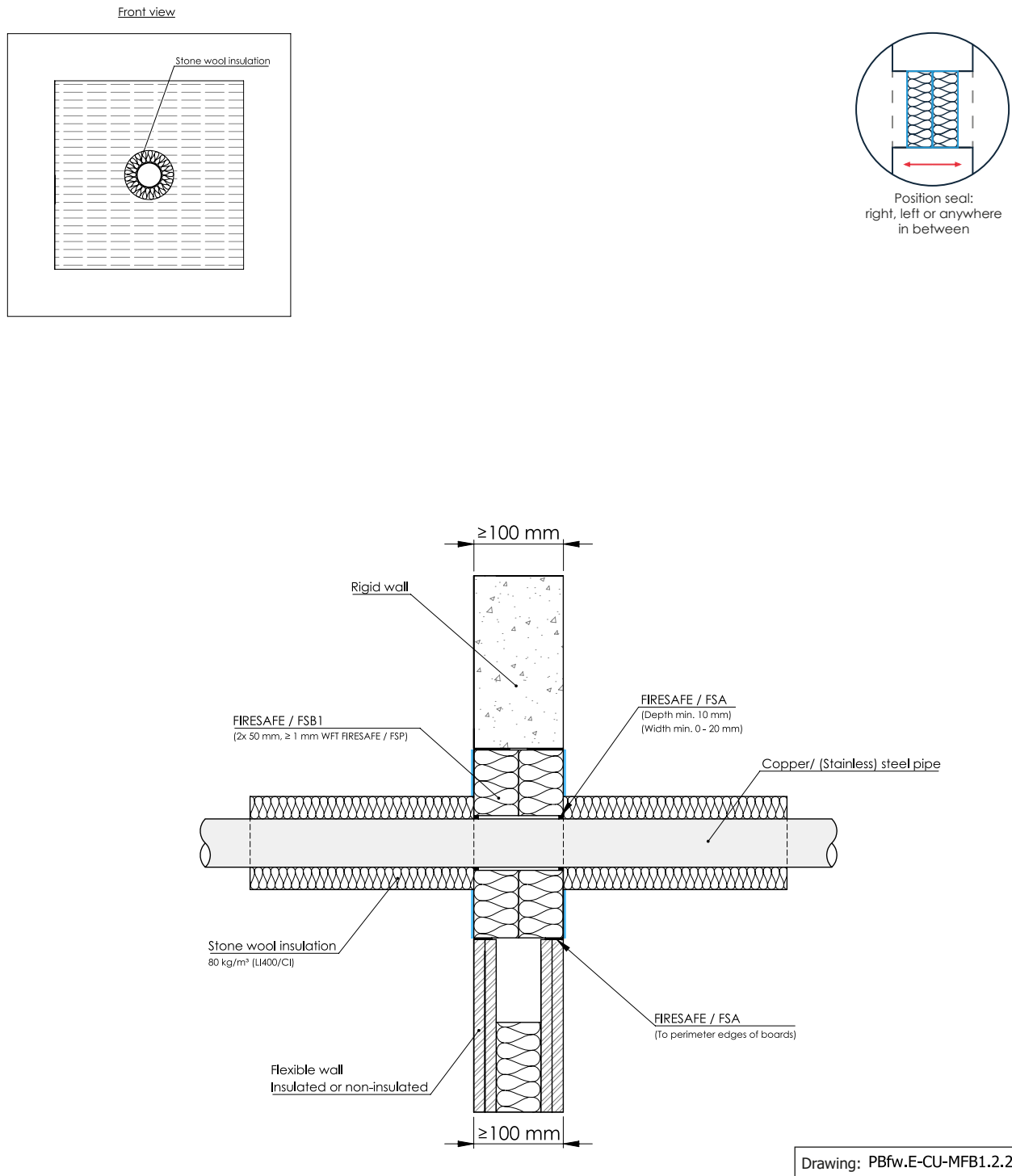
Copper and steel pipes - Stone wool LS 400 / CS



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel / cast iron	≤ Ø 12	≥ 1.5					
	≤ Ø 114.3	≥ 3.6					
	≤ Ø 219.1	≥ 4.0					
	≤ Ø 324	≥ 3.7					
			30	CS	EI 60 C/U		
					EI 60 C/U, E 120 C/U		
						EI 90 C/U, E 120 C/U	

A.1.9 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated mineral wool

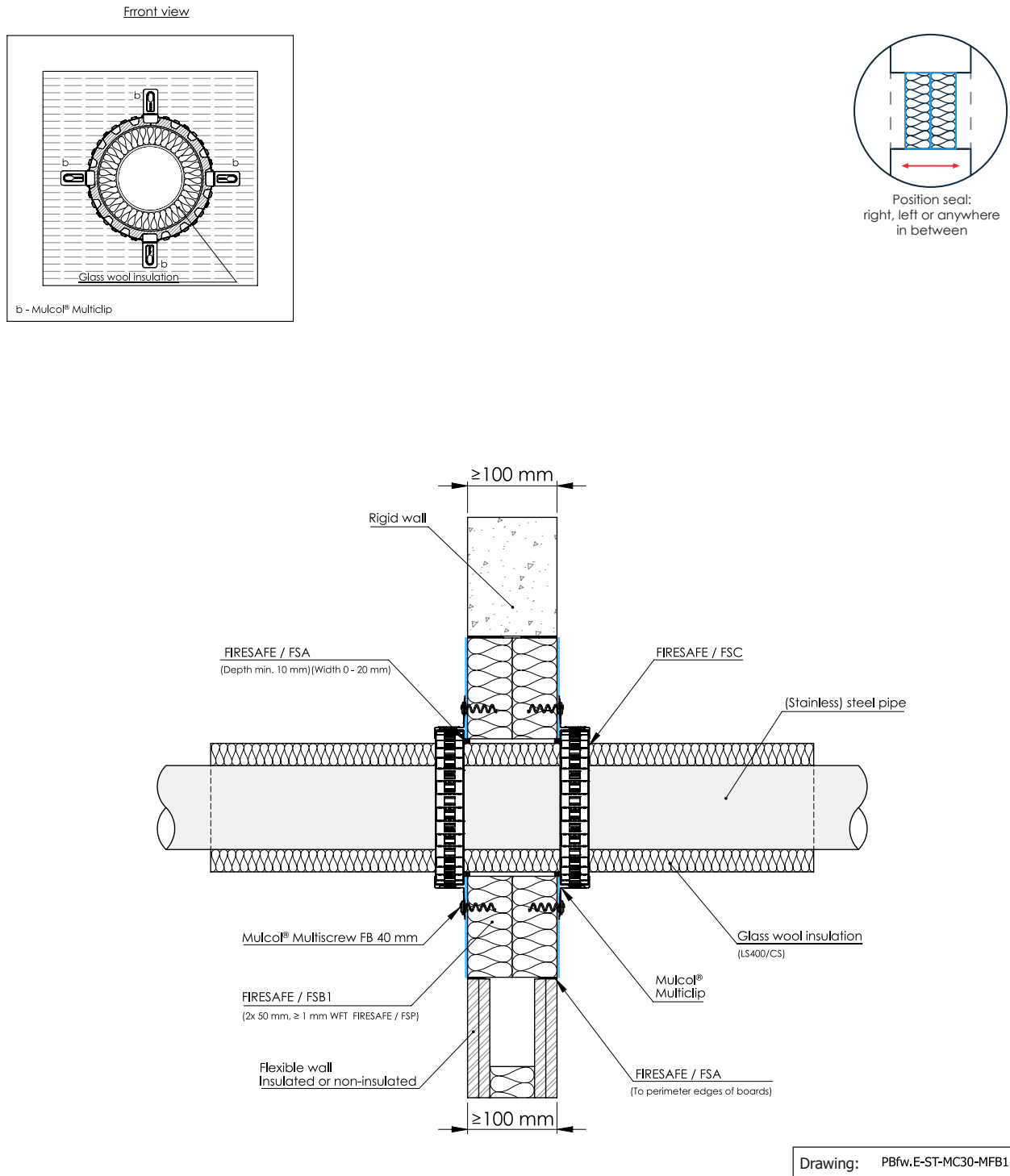
A.1.9.2 Copper and steel pipes - Stone wool LI 400 / CI



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6					
	≤ Ø 324	≥ 3.7					

A.1.9 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated mineral wool

A.1.9.3 Steel pipes - Glass wool LS 400 / CS - FIRESAFE / FSC



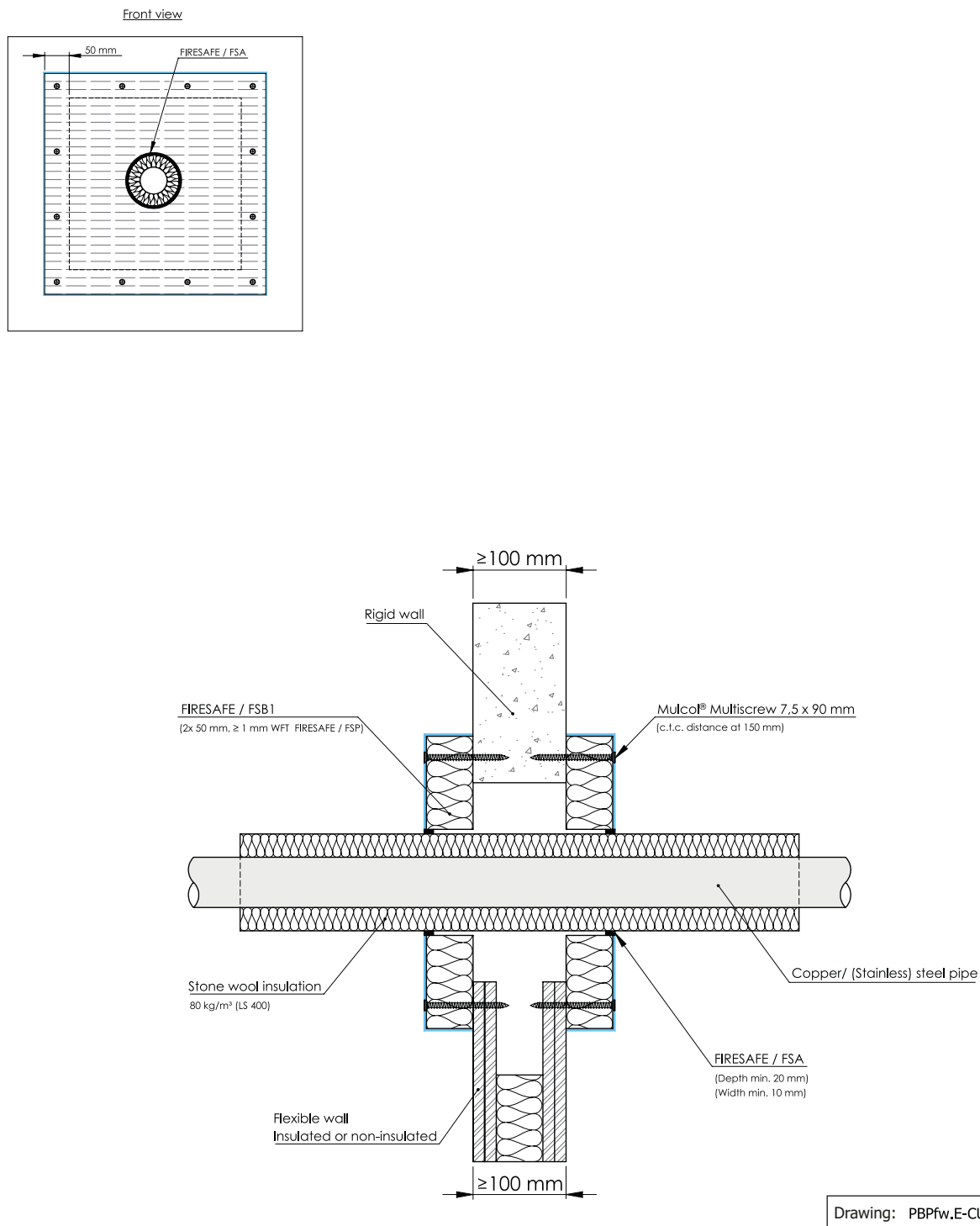
Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
(Stainless) Steel / cast iron	≤ Ø 76.2	≥ 3.3	Glass wool (≥ 33 kg/m³)	30	LS 400 / CS	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 C/U E 120 C/U
	≤ Ø 139.7	≥ 4.0		50				EI 60 C/U E 90 C/U

A.1.10

FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Metal pipes insulated mineral wool

A.1.10.1

Copper and steel pipes - Stone wool LS 400 / CS



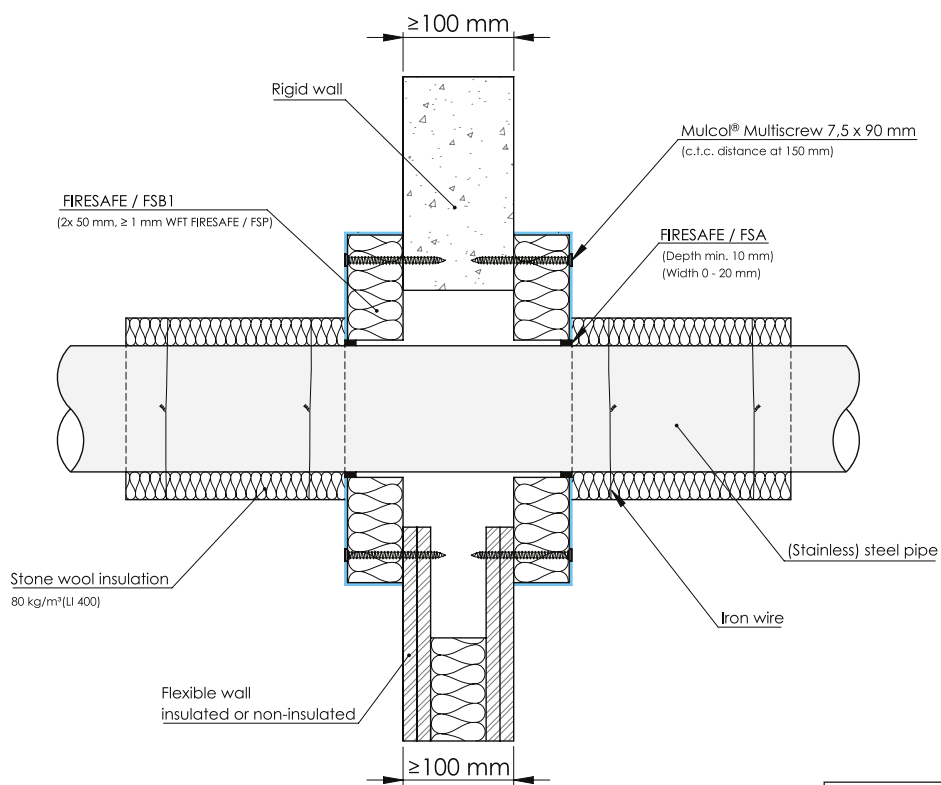
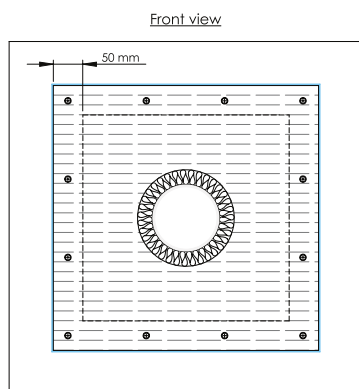
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel / cast iron	≤ Ø 12	≥ 1.5					EI 60 C/U
	≤ Ø 114.3	≥ 3.6					EI 60 C/U, E 120 C/U
	≤ Ø 219.1	≥ 4.0					EI 90 C/U, E 120 C/U
	≤ Ø 324	≥ 3.7		30	CS		

A.1.10

FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Metal pipes insulated mineral wool

A.1.10.2

Copper and steel pipes - Stone wool LI 400 / CI

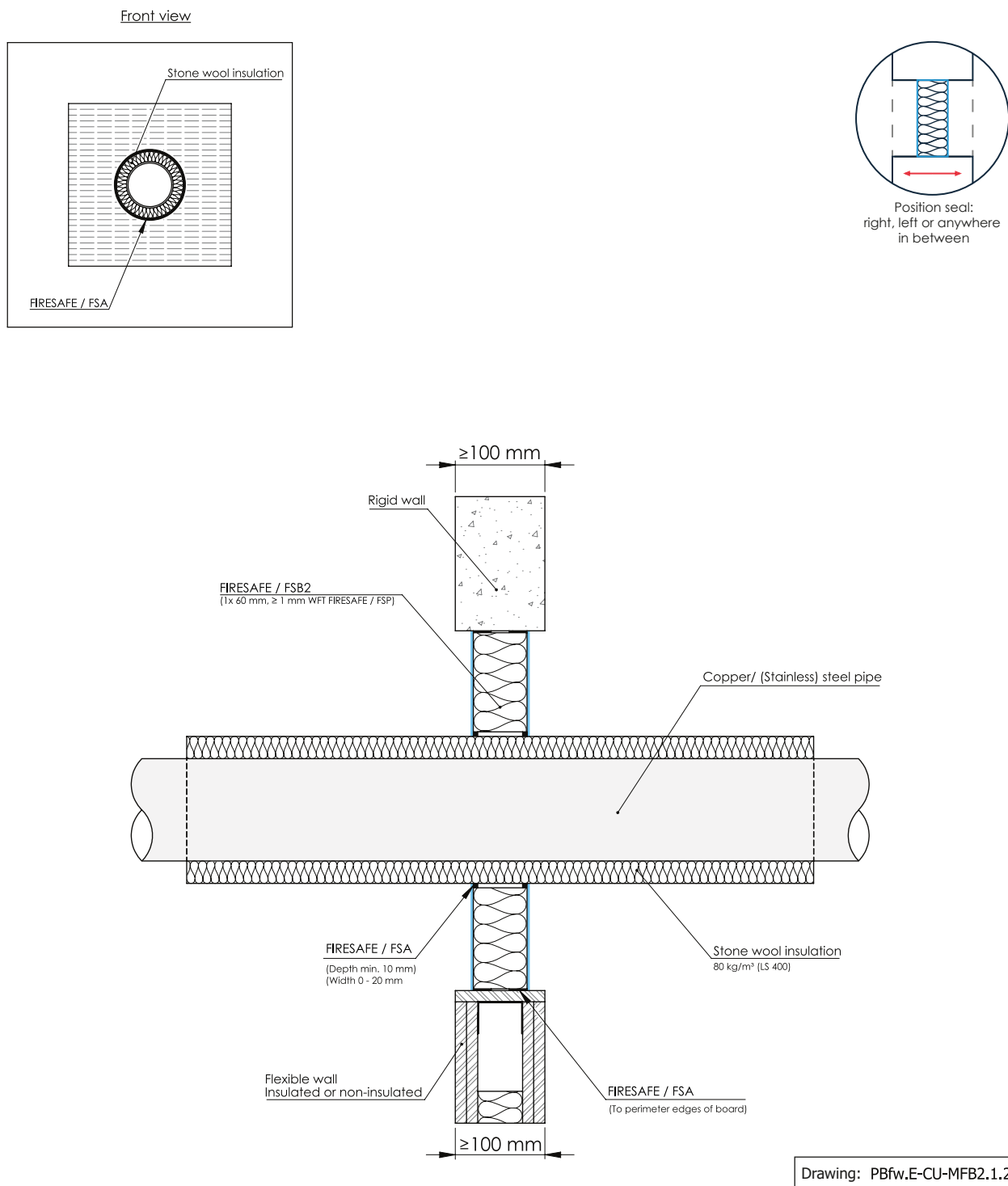


Drawing: PBPfw,E-ST-MFB1.2.20.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 10 (wx d)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6					
	≤ Ø 324	≥ 3.7					

A.1.11 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated mineral wool

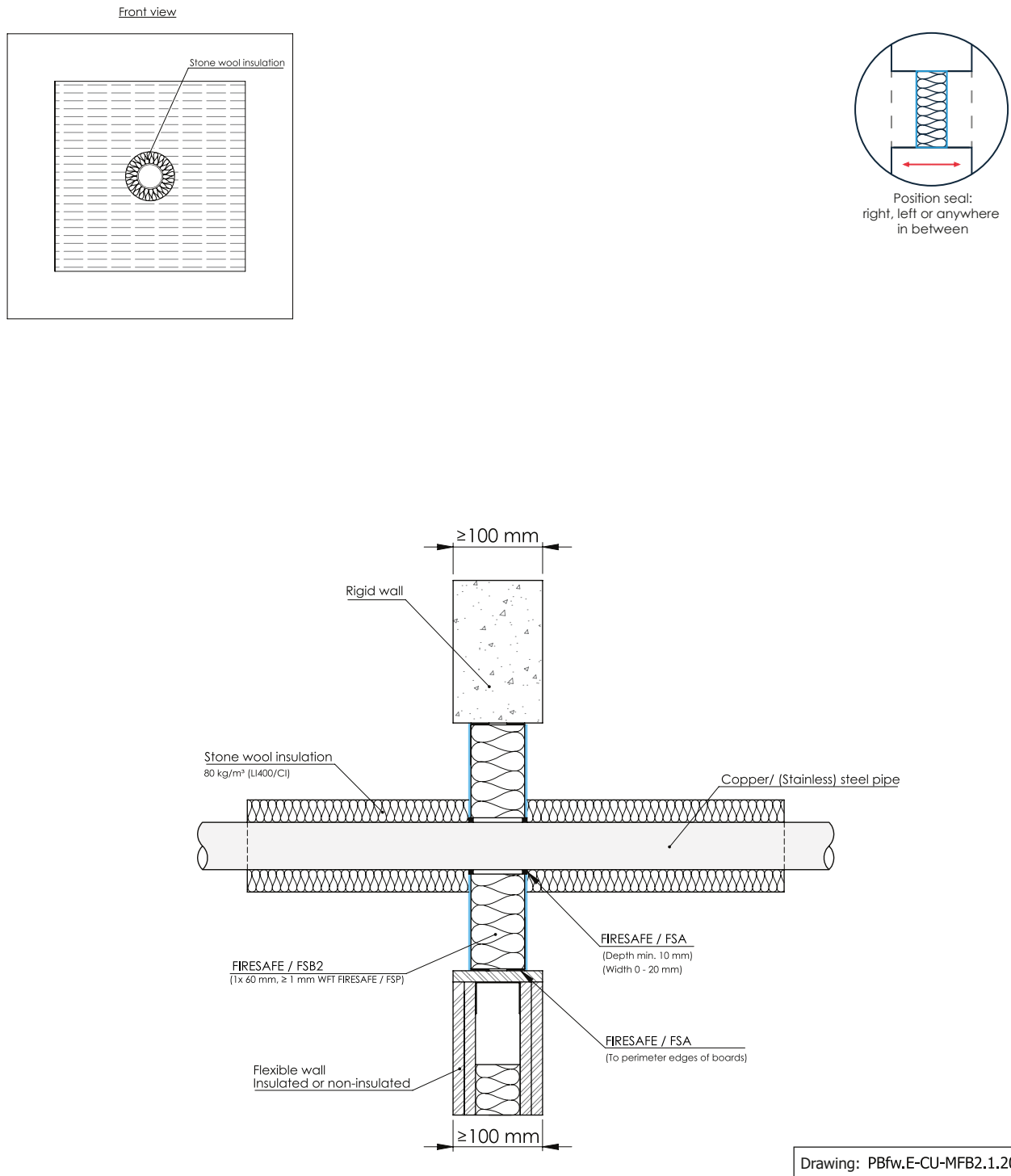
A.1.11.1 Copper and steel pipes - Stone wool LS 400 / CS



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification	
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 C/U E 90 C/U	
	≤ Ø 54	≥ 1.5						
(Stainless) Steel / cast iron	≤ Ø12	≥ 1.5						EI 90 C/U E 120 C/U
	≤ Ø 114.3	≥ 3.6						
	≤ Ø 324	≥ 3.7		30			EI 60 C/U	

A.1.11 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated mineral wool

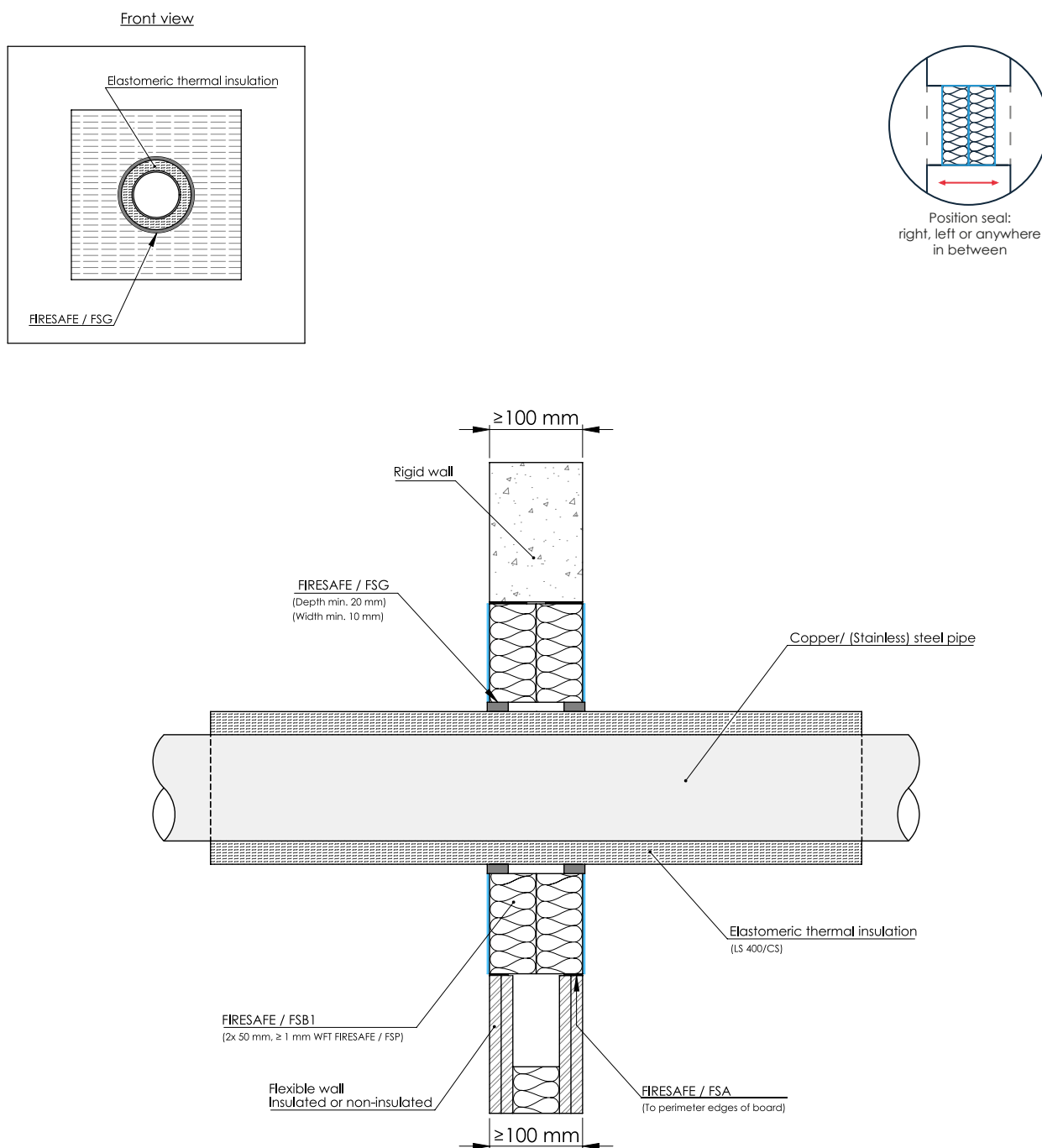
A.1.11.2 Copper and steel pipes - Stone wool LI 400 / CI



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6					

A.1.12 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.1.12.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG



Drawing: PBfw,E-CU-MFB1-G2,4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 90 C/U, E 120 C/U
				8.5 - 38			EI 90 C/U
	≤ Ø 54	≥ 1.5		13.5 - 38	CS		EI 30 C/U, E 90 C/U
				13.5			EI 90 C/U
				13.5 - 38			EI 60 C/U, E 90 C/U
				38			EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3	8.5	LS 400 / CS	EI 90 C/U, E 120 C/U		
			8.5 - 38		EI 90 C/U		
			15 - 43		EI 45 C/U, E 90 C/U		
	≤ Ø 114.3	≥ 3.6	43		EI 60 C/U, E 90 C/U		

A.1.12 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.1.12.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) Steel / cast iron	$\leq \varnothing 26.9$	≥ 2.3	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	8.5	LS 400 / CS	FIRESAFE / FSG $\geq 10 \times 20$ (wxd)	EI 120 C/U

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -s3, d0)	9	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxwd)	EI 90 C/U
				9 - 25			EI 60 C/U
	13	EI 45 C/U, E 90 C/U					
	≤ Ø 54	≥ 1.5		13	CS		EI 60 C/U, E 90 C/U
				13 - 25	EI 45 C/U		
(Stainless) Steel / cast iron				≤ Ø 26.9	≥ 2.3		9
	≤ Ø 114.3	≥ 3.6		9 - 25	EI 60 C/U, E 90 C/U		
				19 - 25	EI 45 C/U		
				25	EI 60 C/U, E 90 C/U		

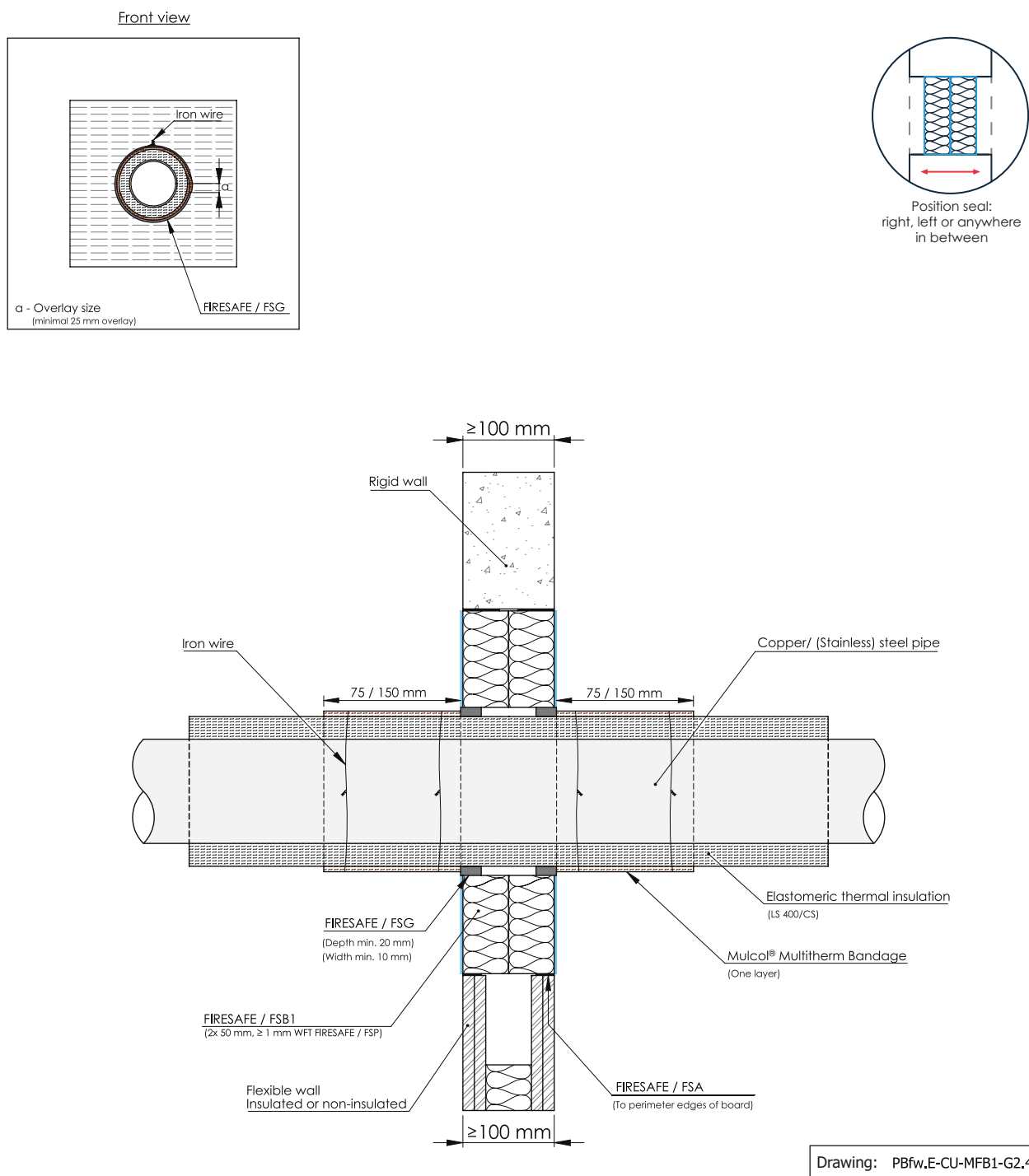
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -s1, d0)	9 - 32	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 60 C/U, E 120 C/U
	≤ Ø 54	≥ 1.5		32			EI 90 C/U
				13			EI 60 C/U, E 120 C/U
				13 - 32			EI 60 C/U, E 90 C/U
				32			EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9			EI 120 C/U
	≤ Ø 114.3	≥ 3.6		9 - 32			EI 90 C/U, E 120 C/U
				13			EI 90 C/U
				13 - 32			EI 60 C/U, E 120 C/U

A.1.12

FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.1.12.2

Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG - Multitherm Bandage



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (one wire)	EI 90 C/U, E 120 C/U
				8.5 - 38				EI 90 C/U
	≤ Ø 54	≥ 1.5		13.5 - 38	CS			EI 30 C/U, E 90 C/U
				13.5 - 38				EI 60 C/U, E 90 C/U
								38
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5	EI 90 C/U, E 120 C/U			
				8.5 - 38	EI 90 C/U			
				18.5	EI 90 C/U, E 120 C/U			
	≤ Ø 114.3	≥ 3.6	18.5 - 43	LI ≥ 150 one layer (two wires)	EI 90 C/U			

A.1.12 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.1.12.2 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG - Multitherm Bandage

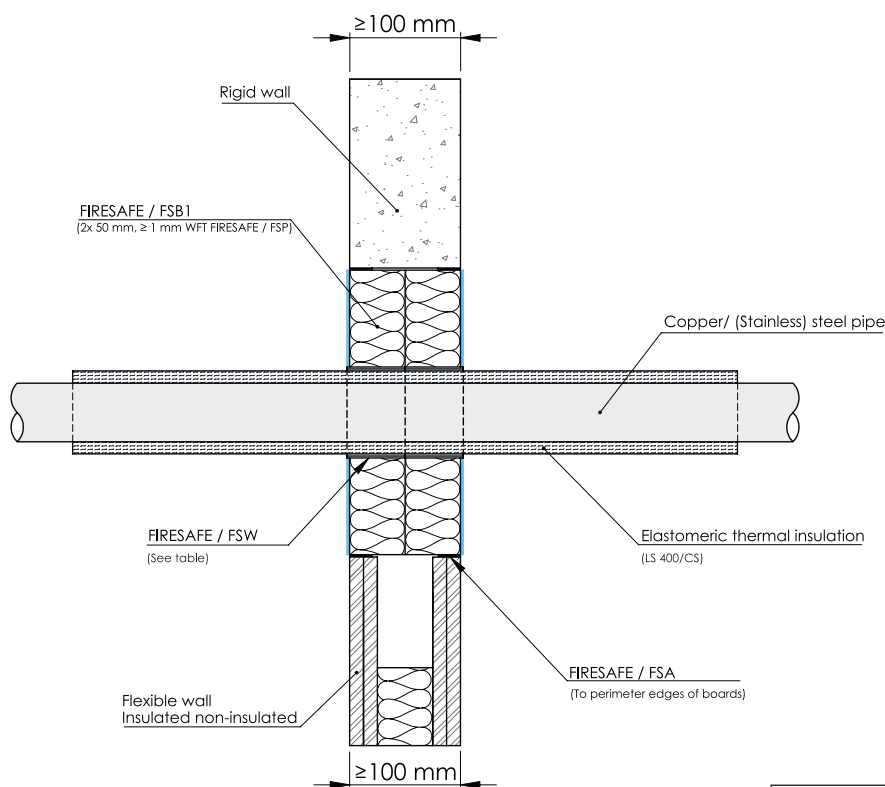
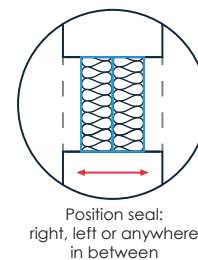
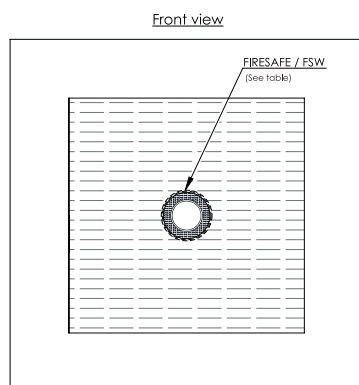
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 54	≥ 1.5	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	13.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (two wires)	EI 120 C/U
				13.5 - 35.5			LI ≥ 150 one layer (two wires)	EI 90 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5			LI ≥ 75 one layer (two wires)	EI 120 C/U
				8.5 - 35.5			LI ≥ 150 one layer (two wires)	EI 90 C/U, E 120 C/U
	≤ Ø 114.3	≥ 3.6		15 - 35.5			LI ≥ 150 one layer (two wires)	EI 90 C/U, E 120 C/U
				35.5 - 40			LI ≥ 150 one layer (two wires)	EI 120 C/U

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (two wires)	EI 90 C/U
				9 - 25				EI 60 C/U
	≤ Ø 54	≥ 1.5		13	CS			EI 45 C/U, E 90 C/U
				13				EI 60 C/U, E 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		13 - 25	LS 400 / CS			EI 45 C/U
				9				EI 90 C/U, E 120 C/U
	≤ Ø 114.3	≥ 3.6		9 - 25				EI 60 C/U, E 90 C/U
				19 - 25				EI 45 C/U
				25				EI 60 C/U, E 90 C/U

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification				
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration							
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -s1, d0)	9 - 32	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (two wires)	EI 90 C/U, E 120 C/U				
				32				EI 90 C/U				
	≤ Ø 54	≥ 1.5		13			LI ≥ 150 one layer (two wires)	EI 120 C/U				
				13 - 32				EI 90 C/U				
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9			LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (two wires)	EI 120 C/U		
				9 - 32						EI 90 C/U, E 120 C/U		
	≤ Ø 114.3	≥ 3.6		13 - 32					LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (two wires)	EI 90 C/U
				32								LI ≥ 150 one layer (two wires)

A.1.12 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.1.12.3 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW



Drawing: PBfw.E-CU-MW2-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 12	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9	LS 400 / CS	FIRESAFE / FSW (2 layers)	EI 120 C/U, E 180 C/U
	≤ Ø 35	≥ 1.1		35			EI 90 C/U, E 120 C/U
				60		FIRESAFE / FSW (3 layers)	EI 120 C/U
				≤ Ø 54			≥ 1.5
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		15	EI 60 C/U, E 120 C/U		
	≤ Ø 219.1	≥ 4.0		32	CS	EI 45 C/U, E 120 C/U	
					EI 120 C/U		
				≤ Ø 324	≥ 3.7	50	LS 400 / CS
	FIRESAFE / FSW (3 layers)	EI 45 C/U, E 180 C/U					
CS		EI 90 C/U, E 180 C/U					

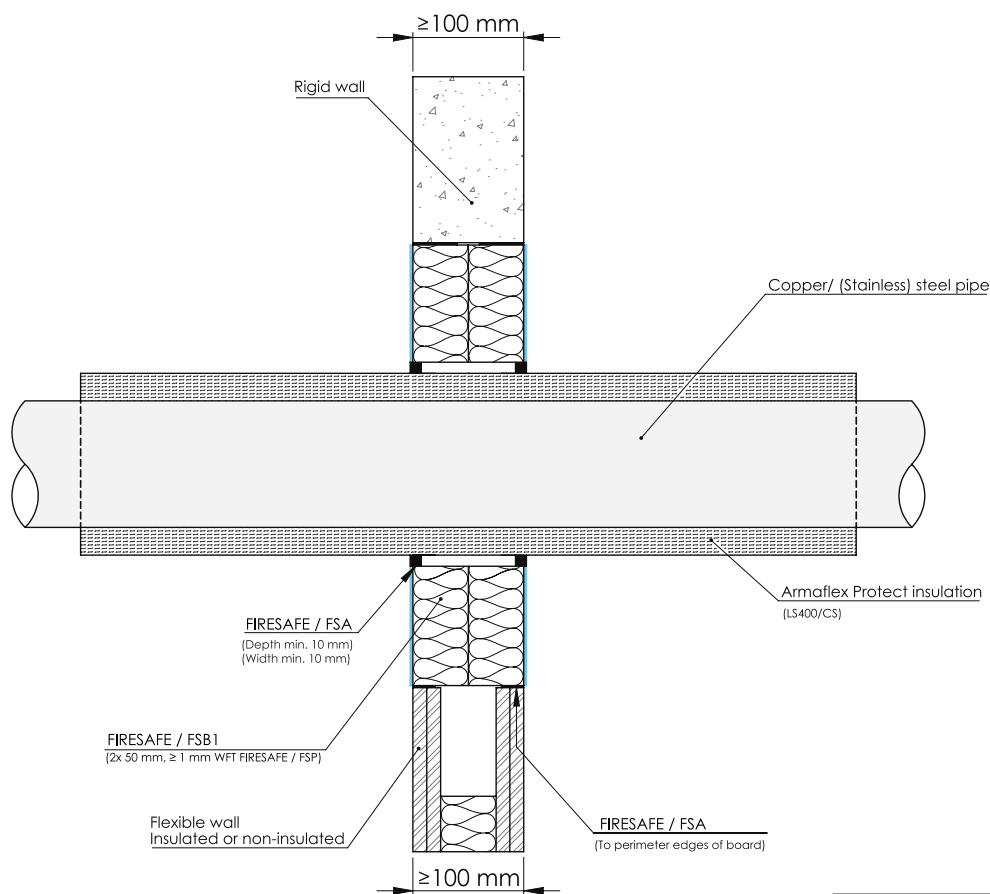
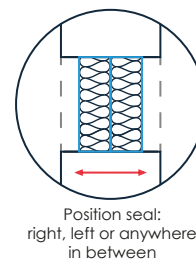
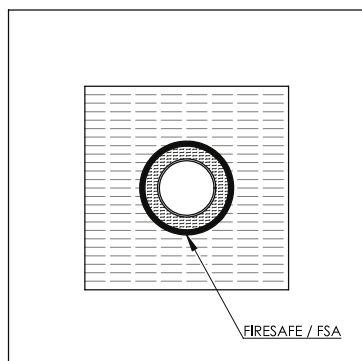
A.1.12 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer**A.1.12.3 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW**

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thick-ness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Kaiflex ST (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LS 400 / CS	FIRESAFE / FSW (2 layers)	EI 90 C/U, E 120 C/U
				32			EI 120 C/U
	≤ Ø 54	≥ 1.5		13 - 32			EI 30 C/U, E 120 C/U
				32			EI 60 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		13			EI 60 C/U, E 120 C/U
				13 - 32			EI 45 C/U, E 120 C/U
	≤ Ø 168.3	≥ 4.5		32			EI 60 C/U, E 120 C/U

A.1.12 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.1.12.4 Copper and steel pipes - ArmaFlex Protect LS 400 / CS

Front view

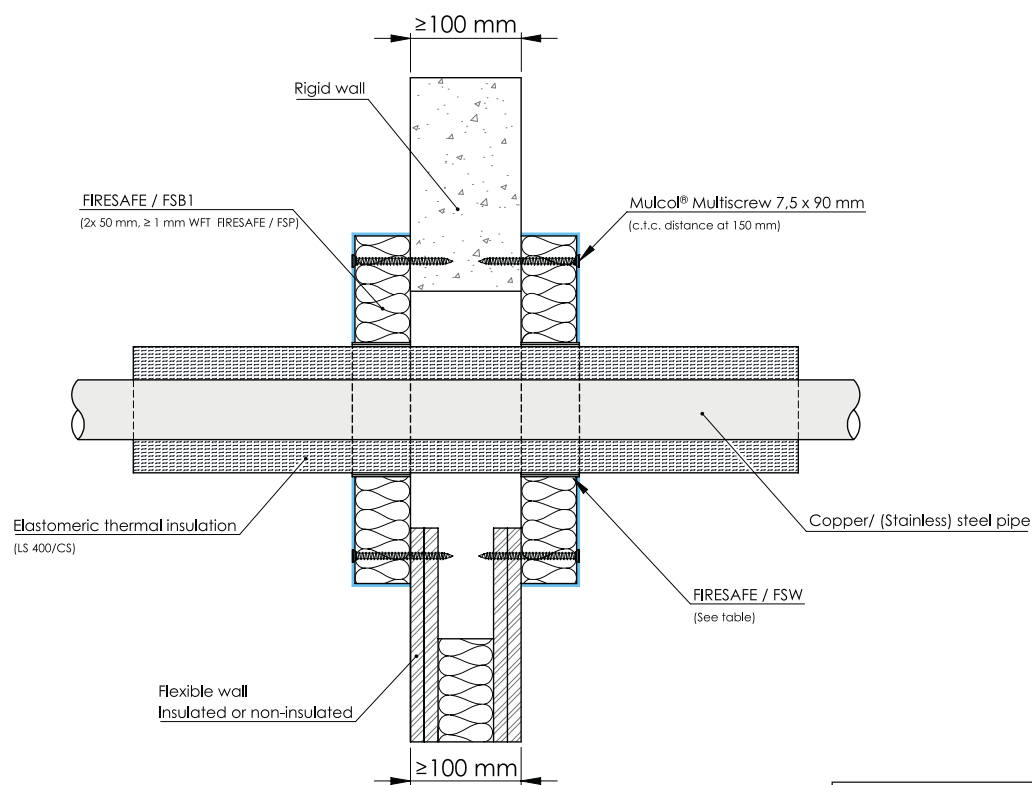
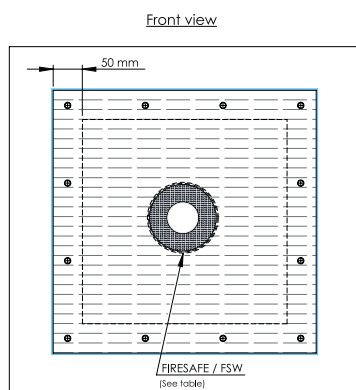


Drawing: PBfw.E-CU-MFB1.2.10

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Protect	20 - 25	LS 400 / CS	FIRESAFE / FSA 10 x ≥ 10 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5		25			EI 90 C/U, E 120 C/U

A.1.13 FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Metal pipes insulated elastomer

A.1.13.1 Copper and steel pipes - Elastomer LS400 / CS - FIRESAFE / FSW

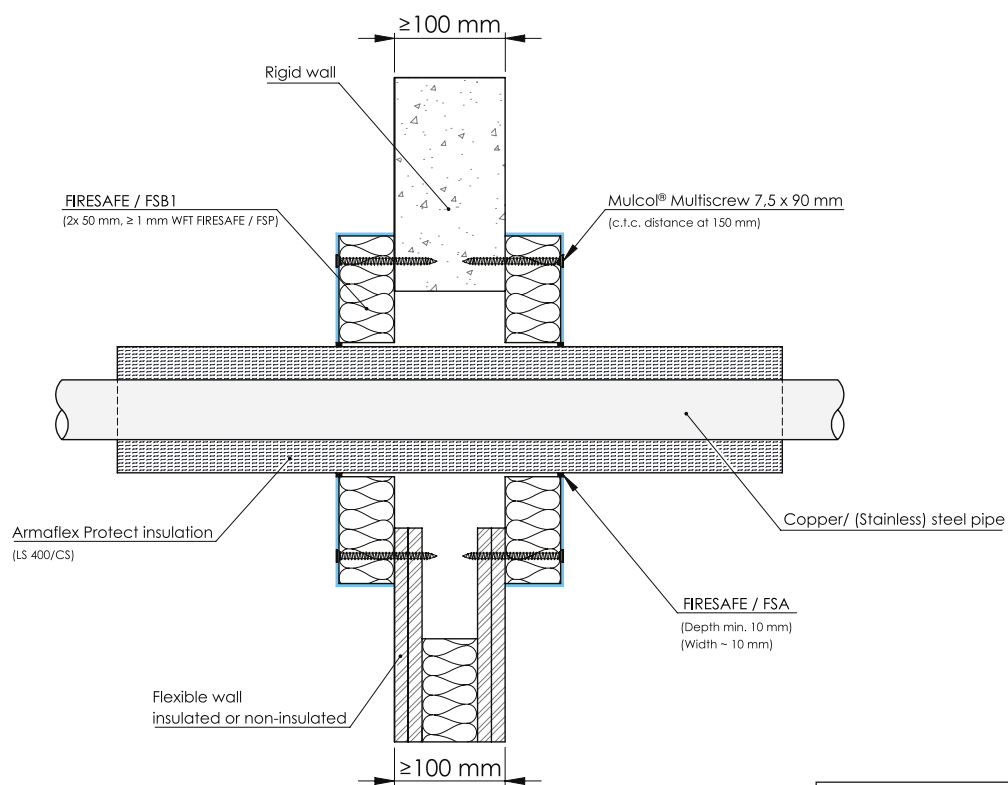
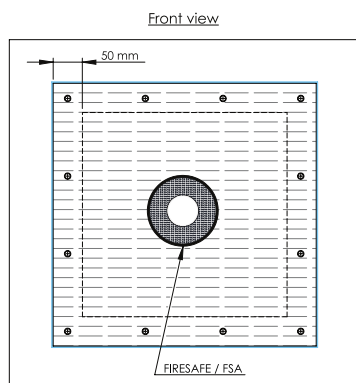


Drawing: PBPfw.E-CU-MW2-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 54	≥ 1.5	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	38	LS 400 / CS	FIRESAFE / FSW (2 layers)	EI 60 C/U, E 120 C/U

A.1.13 FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Metal pipes insulated elastomer

A.1.13.2 Copper and steel pipes - ArmaFlex Protect LS 400 / CS

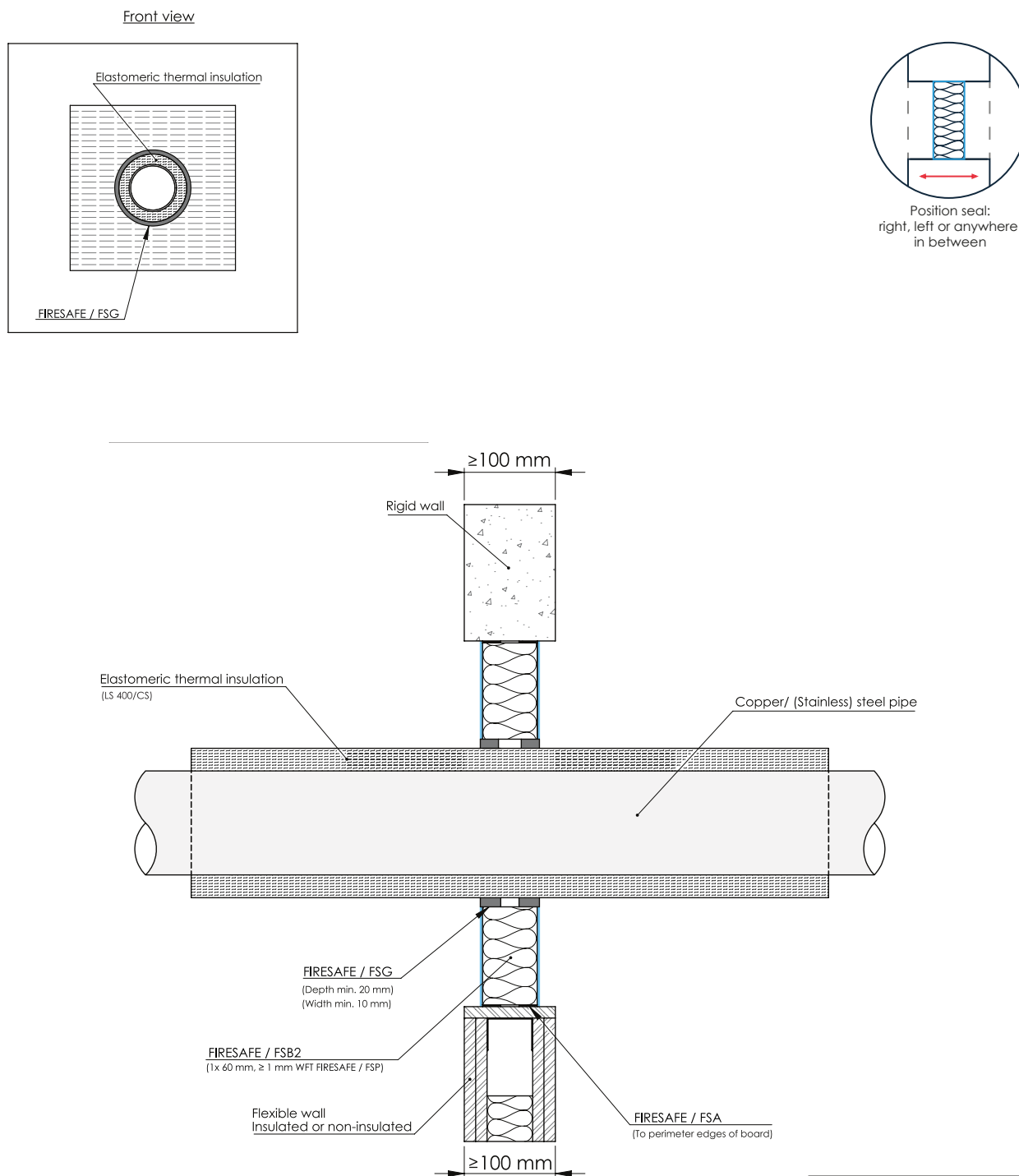


Drawing: PBPfw,E-CU-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Protect	20 - 25	LS 400 / CS	FIRESAFE / FSA 10 x ≥ 10 (wxd)	EI 120 U/C
	≤ Ø 54	≥ 1.5		25			EI 90 C/U, E 120 C/U

A.1.14 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer

A.1.14.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG



Drawing: PBfw.E-CU-MFB2-G2.4.22

Services	Pipe dimensions (mm)		Insulation			System (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 60 C/U, E 90 C/U
				8.5 - 33.5			EI 60 C/U, E 120 C/U
	≤ Ø 54	≥ 1.5		13.5 - 38			EI 45 C/U, E 60 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5 - 43	CS		EI 60 C/U
	≤ Ø 114.3	≥ 3.6		15 - 43			EI 45 C/U, E 60 C/U
				15 - 43	EI 60 C/U		
				43	LS 400 / CS		EI 60 C/U

A.1.14 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer

A.1.14.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	35.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 45 C/U / E 90 C/U
	≤ Ø 54	≥ 1.5		35.5			EI 45 C/U / E 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5			EI 90 C/U / E 120 C/U
				8.5 - 40			EI 45 C/U / E 120 C/U
	≤ Ø 114.3	≥ 3.6		15 - 40			EI 45 C/U / E 90 C/U

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 30 C/U, E 60 C/U
				9 - 25	CS		EI 60 C/U
				25	LS 400 / CS		EI 60 C/U
	13	EI 45 C/U, E 120 C/U					
	≤ Ø 54	≥ 1.5		13	CS		EI 60 C/U, E 120 C/U
				13 - 25	LS 400 / CS		EI 45 C/U, E 60 C/U
(Stainless) Steel / cast iron				≤ Ø 26.9			≥ 2.3
	≤ Ø 114.3	≥ 3.6		9 - 25			EI 60 C/U
				13 - 25			EI 60 C/U

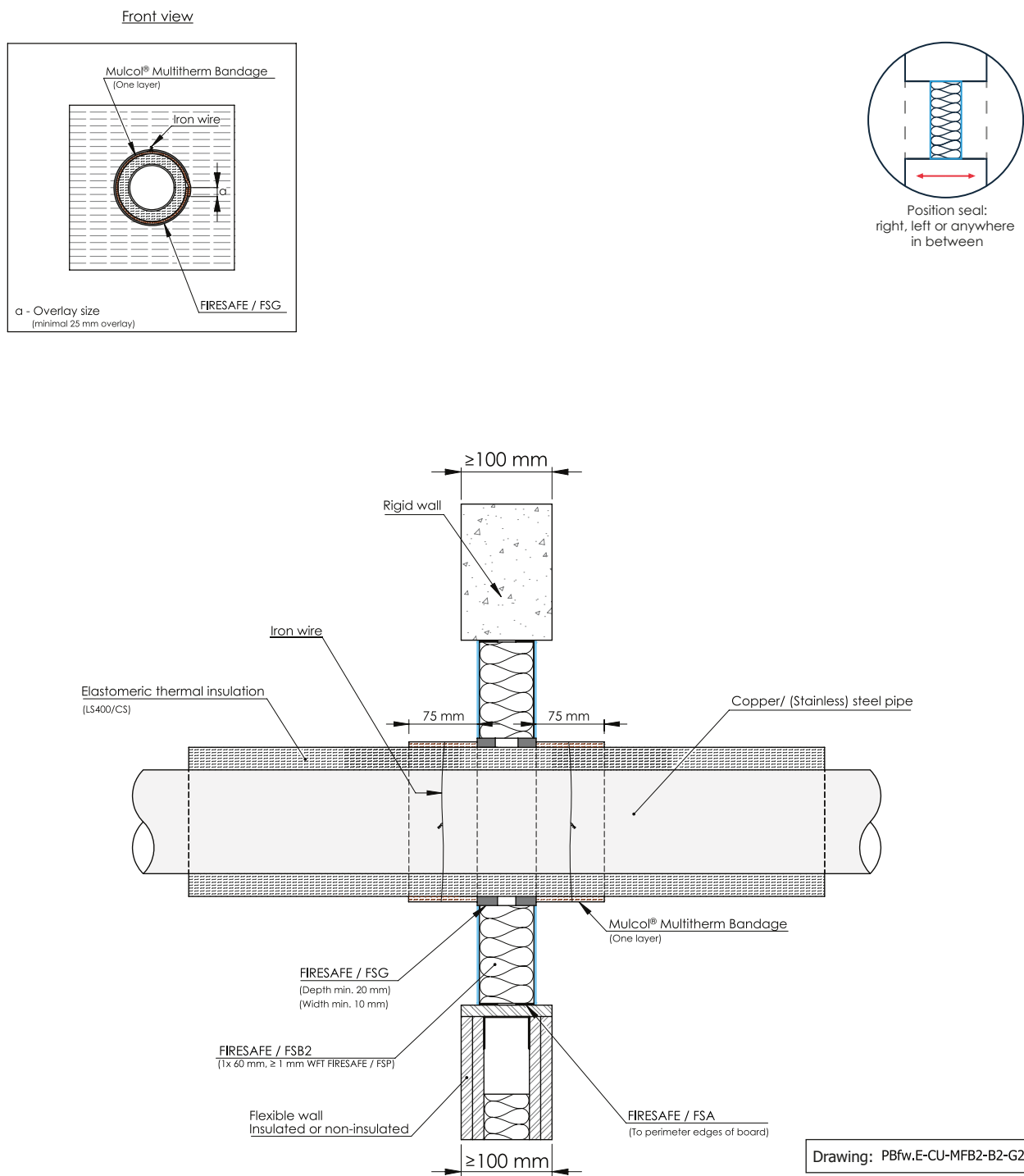
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -S1, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 45 C/U, E 120 C/U
	≤ Ø 54	≥ 1.5		25			EI 60 C/U, E 120 C/U
				13 - 32			EI 45 C/U, E 90 C/U
				32			EI 60 C/U, E 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 32			EI 60 C/U, E 90 C/U
	≤ Ø 114.3	≥ 3.6		32			EI 60 C/U, E 120 C/U
				13 - 32			EI 90 C/U, E 120 C/U

A.1.14

FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer

A.1.14.2

Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG - Multitherm Bandage



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5 - 33.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (one wire)	EI 60 C/U
	≤ Ø 54	≥ 1.5		17 - 43				
(Stainless) Steel /	≤ Ø 26.9	≥ 2.3		8.5 - 43				
cast iron	≤ Ø 114.3	≥ 3.6		15 - 43				

A.1.14 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer
A.1.14.2 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG - Multitherm Bandage

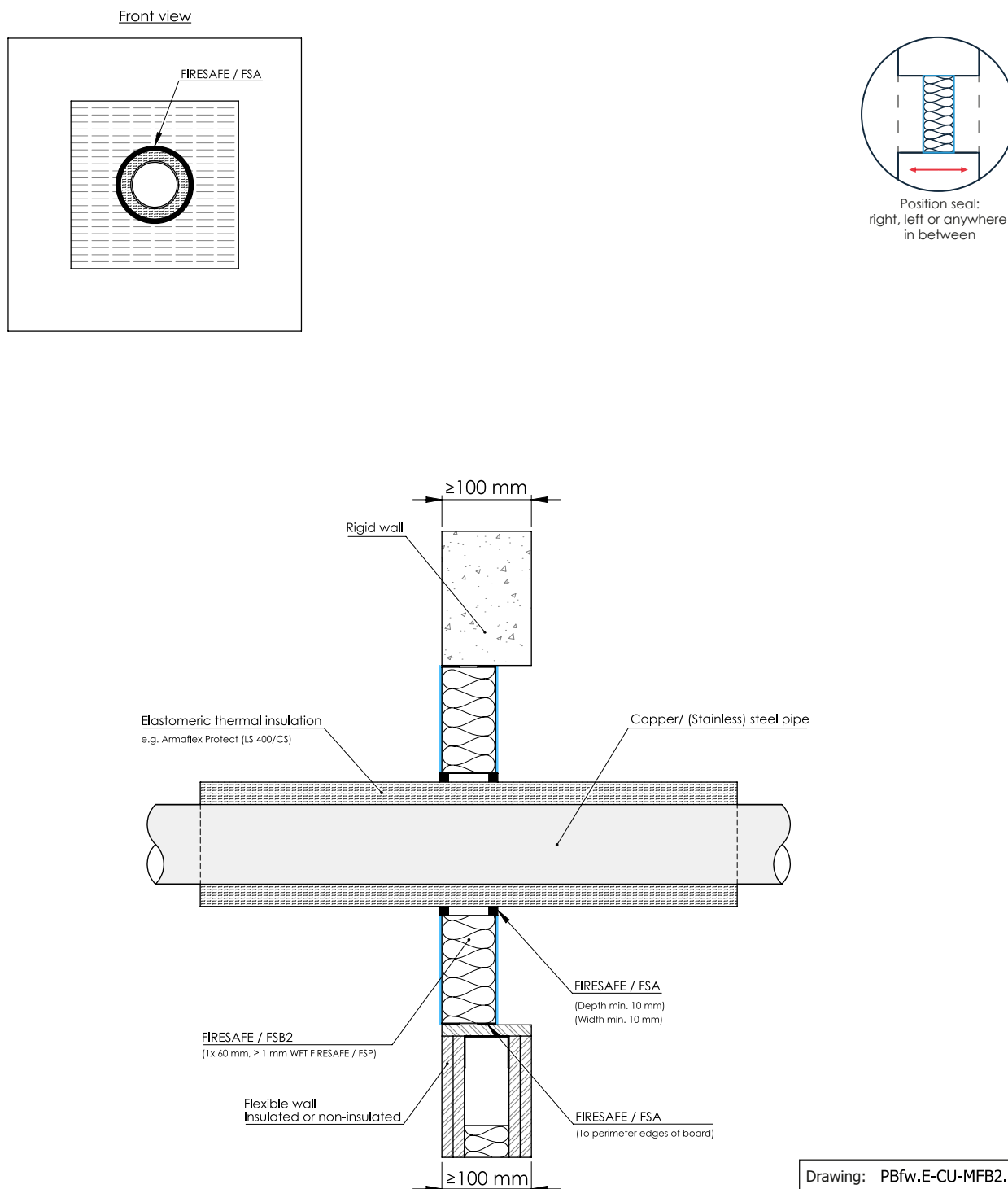
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	9 - 35.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (one wire)	EI 60 C/U
	≤ Ø 54	≥ 1.5		21 - 35.5				
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5 - 35.5				
	≤ Ø 114.3	≥ 3.6		15 - 40				

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (one wire)	EI 60 C/U
	≤ Ø 54	≥ 1.5		13 - 25				
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25				
	≤ Ø 114.3	≥ 3.6		13 - 25				

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -S1, d0)	13 - 32	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	LI ≥ 75 one layer (one wire)	EI 60 C/U
	≤ Ø 54	≥ 1.5		13 - 32				
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 32				
	≤ Ø 114.3	≥ 3.6		13 - 32				

A.1.14 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer

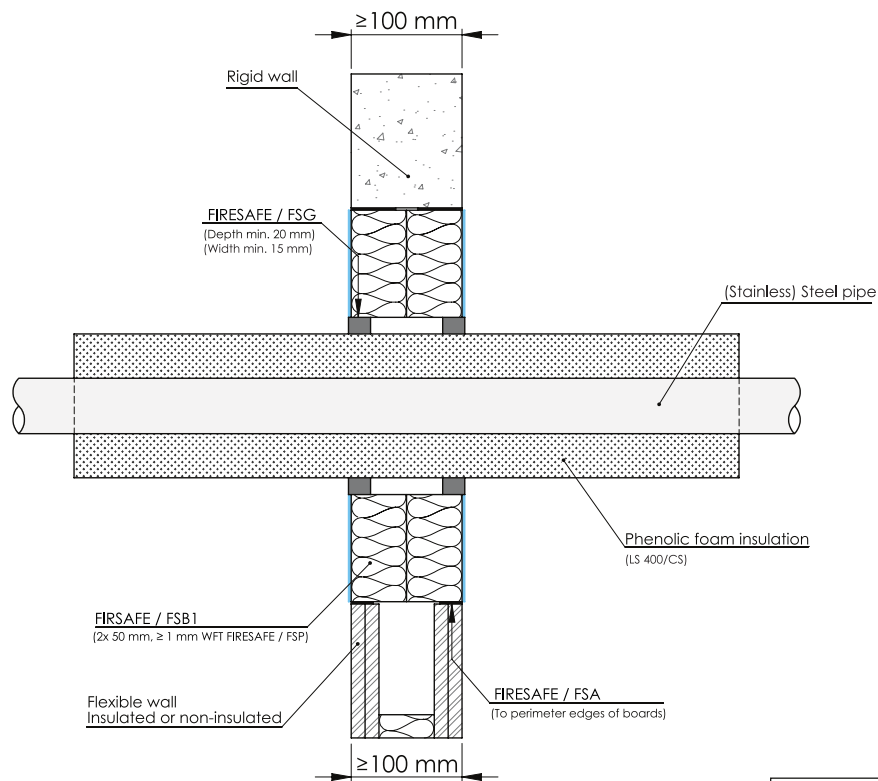
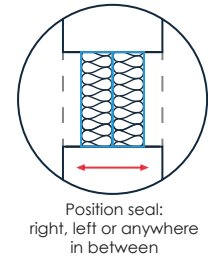
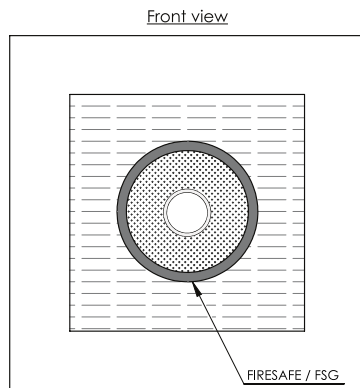
A.1.14.4 Steel pipes - ArmaFlex Protect LS 400 / CS



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) steel / cast iron	≤ Ø 88.9	≥ 2.0	ArmaFlex Protect	25	LS 400 / CS	FIRESAFE / FSA 10 x ≥ 20 (wxd)	EI 60 C/U

A.1.15 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated phenolic foam

A.1.15.1 Steel pipes - Phenolic foam LS 400 / CS - FIRESAFE / FSG

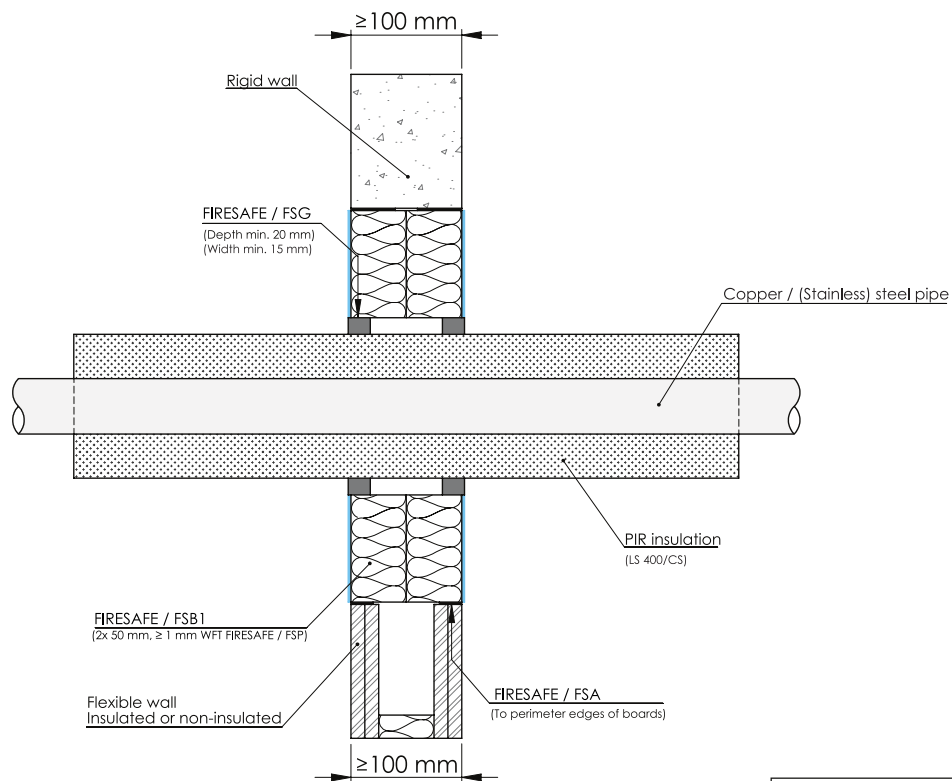
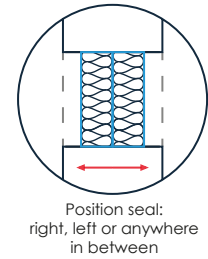
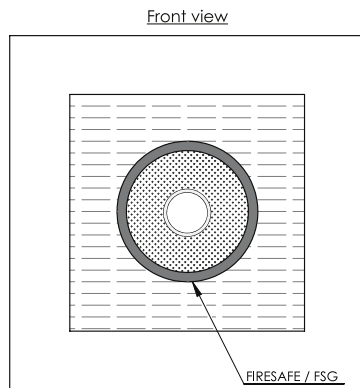


Drawing: PBfw,E-ST-MFB1-G2.4.27

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3	Kingspan Kooltherm	15 - 45	LS 400 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 60 C/U
	≤ Ø 114.3	≥ 3.6		20 - 45			

A.1.16 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated PIR foam

A.1.16.1 Copper and steel pipes - PIR foam LS 400 / CS - FIRESAFE / FSG



Drawing: PBfw.E-CU-MFB1-G2.4.28

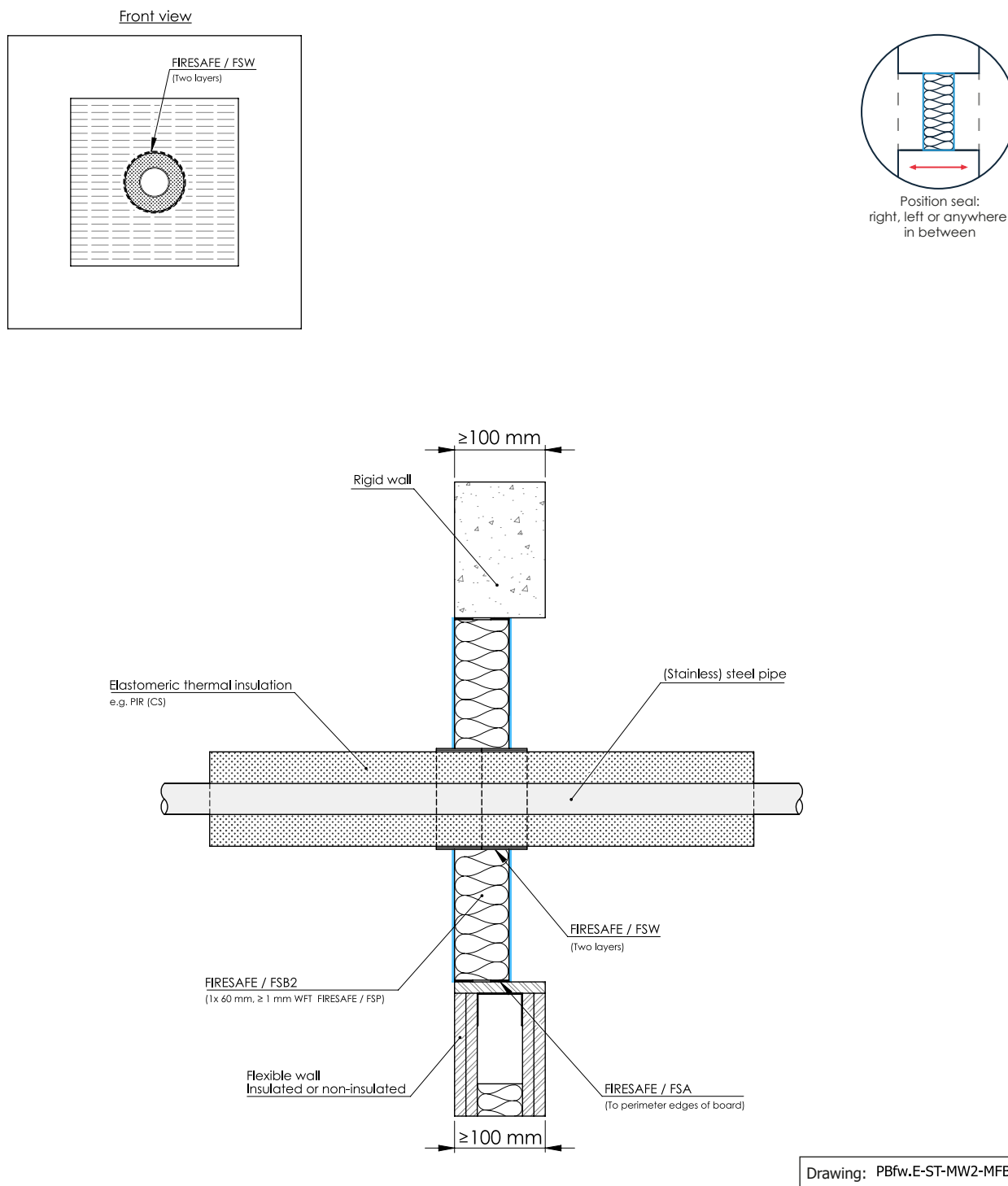
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	PIR (min. class E)	20 - 40	LS 400 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 60 C/U
	≤ Ø 54	≥ 1.5		25 - 40			
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6					

A.1.17

FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated PIR foam

A.1.17.1

Copper and steel pipes - PIR foam LS 400 / CS - FIRESAFE / FSW

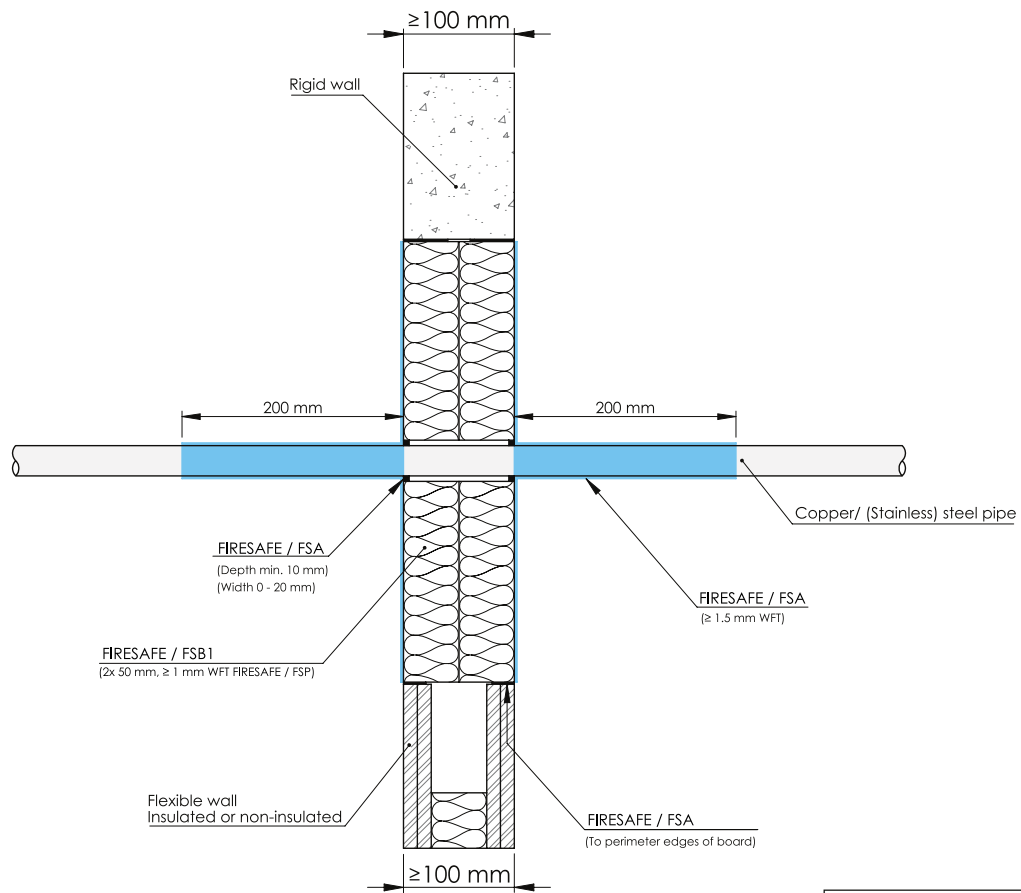
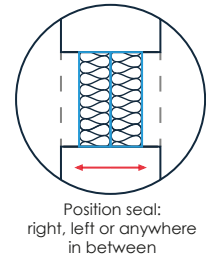
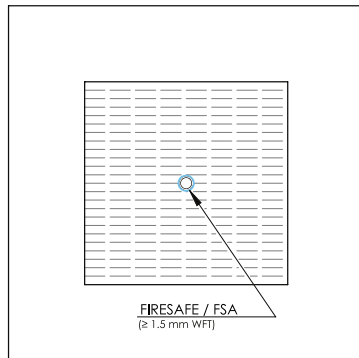


Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classifica- tion
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) Steel / cast iron	≤ Ø 35	≥ 2.0	PIR (min. class E)	20 - 40	LS 400 / CS	FIRESAFE / FSW (2 layers)	EI 60 C/U

A.1.18 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes uninsulated

A.1.18.1 Copper and steel pipes - FIRESAFE / FSA

Front view



Drawing: PBfw.E-CU-MFB1-SPC.1.10

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSA	1.5 WFT	LI 200	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 C/U E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 16	≥ 1.0					EI 90 C/U
	≤ Ø 26.9	≥ 2.6					EI 90 C/U E 120 C/U
	≤ Ø 42.4	≥ 3.2					EI 60 C/U E 120 C/U
	≤ Ø 60.3	≥ 3.6					

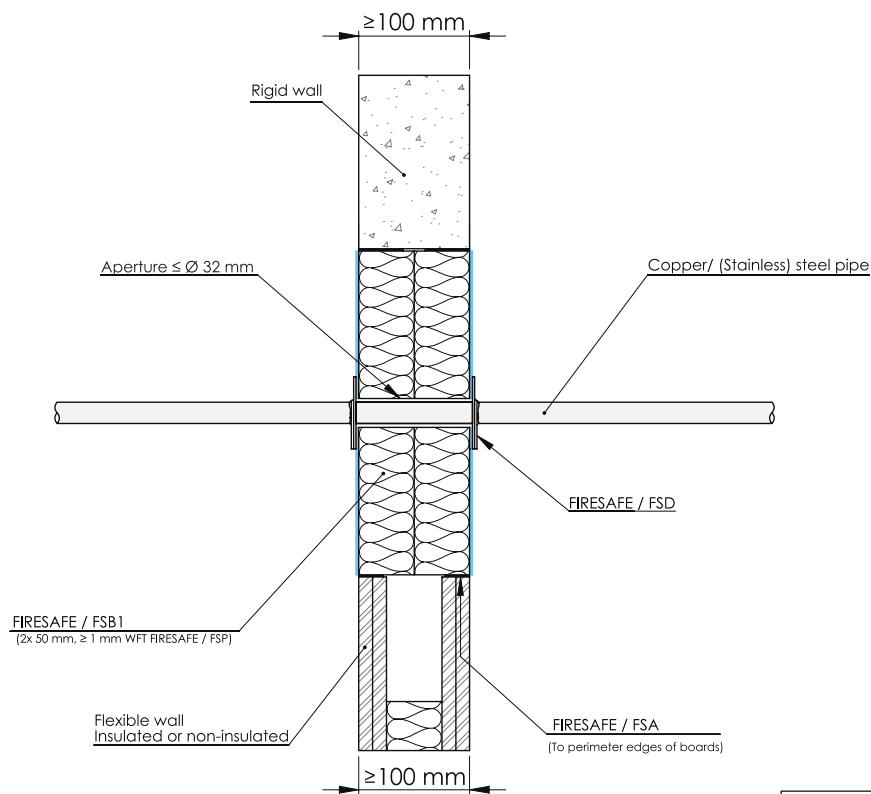
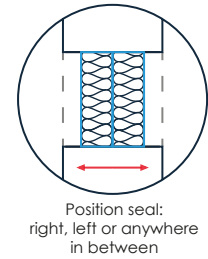
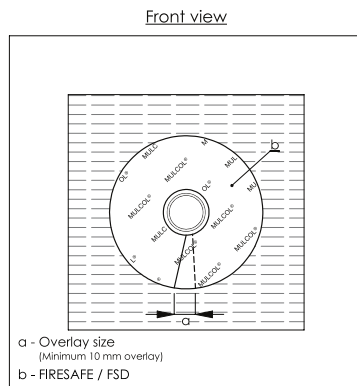
A.1.18.2 Steel pipes - FIRESAFE / FSG



Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.6	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSG	FIRESAFE / FSG 0-20 x ≥ 10 (wxd)	EI 90 C/U, E 120 C/U
	≤ Ø 60.3	≥ 3.6			

A.1.18 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes uninsulated

A.1.18.3 Copper and steel pipes - FIRESAFE / FSD

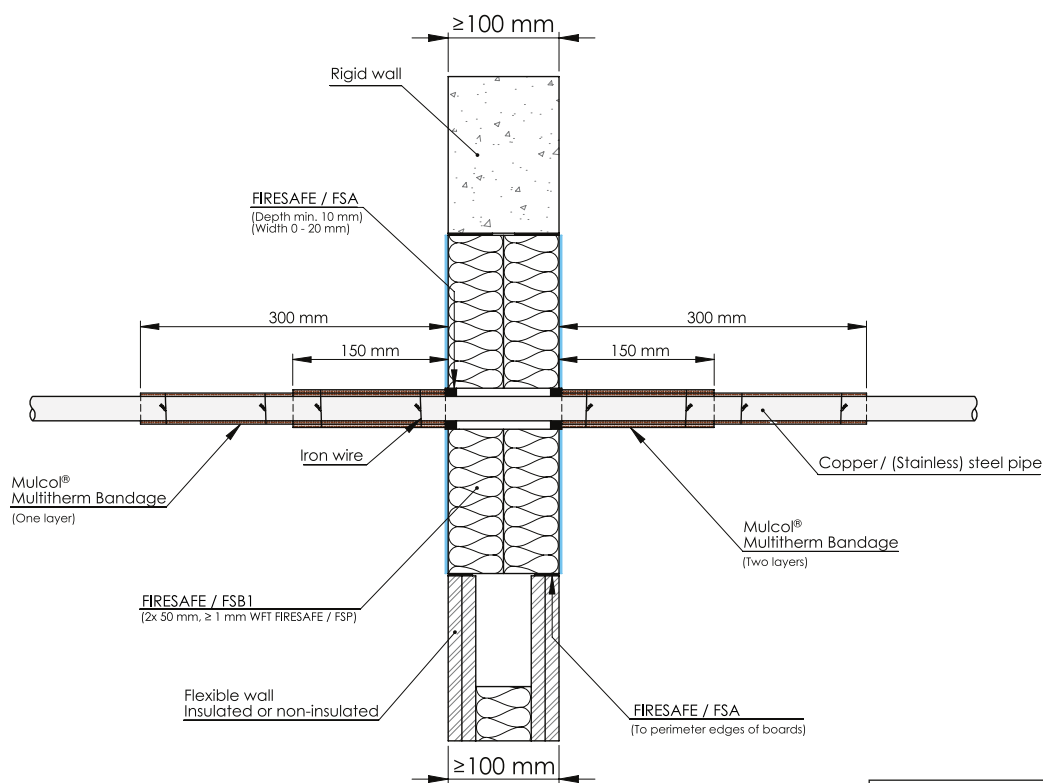
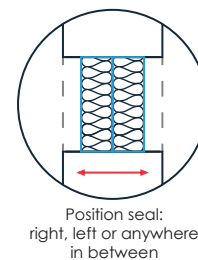
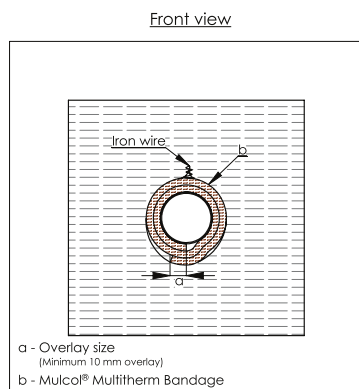


Drawing: PBfw.E-MLA-M2.0.10

Services	Pipe dimensions (mm)		Product	Aperture (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness				
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSD	≤ Ø 32	Not required	EI 45 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 17.2					EI 90 C/U

A.1.18 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes uninsulated

A.1.18.4 Copper and steel pipes - Multitherm Bandage

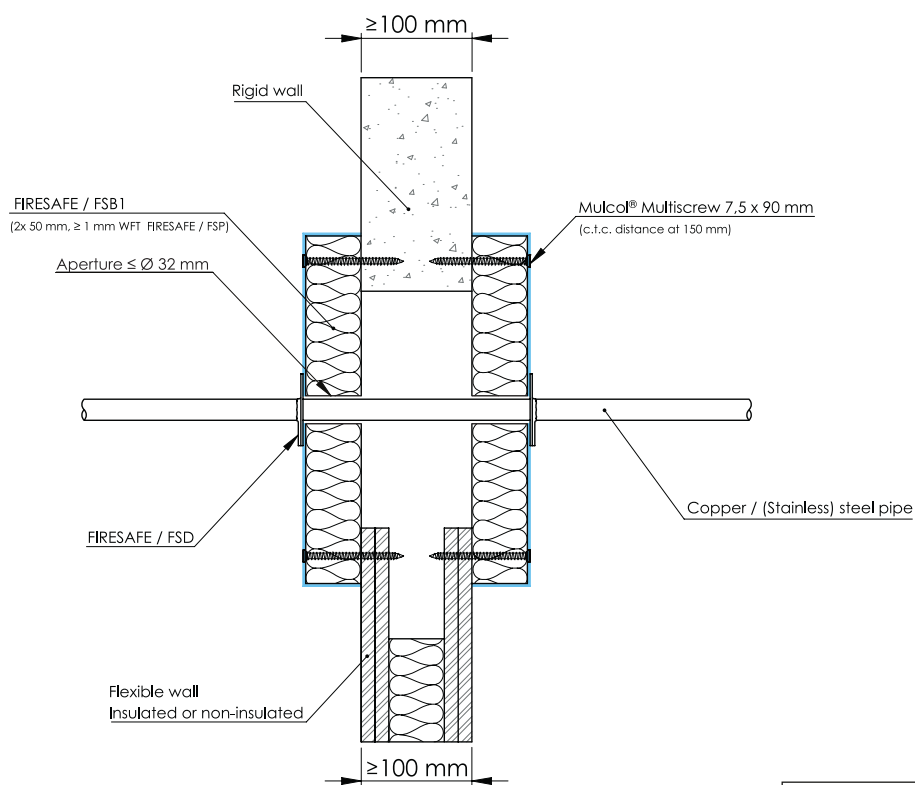
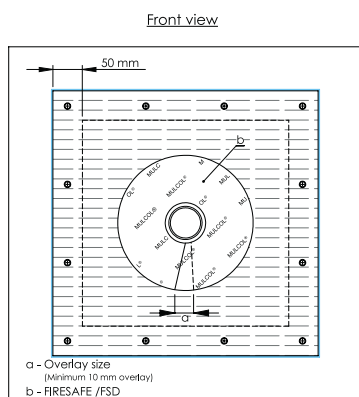


Drawing: PBfw,E-CU-MFB1-B2.3.21

Services	Pipe dimensions (mm)		Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	LI 150 two layers (two wires)	EI 30 C/U, E 120 C/U
	≤ Ø 15	≥ 1.0		LI 150 two layers (two wires) + LI 300 one layer (two wires)	EI 60 C/U, E 120 C/U
	≤ Ø 54	≥ 1.5			EI 45 C/U, E 120 C/U
	≤ Ø 88.9	≥ 2.0			EI 30 C/U, E 120 C/U

A.1.19 FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Metal pipes uninsulated

A.1.19.1 Copper and steel pipes - FIRESAFE / FSD

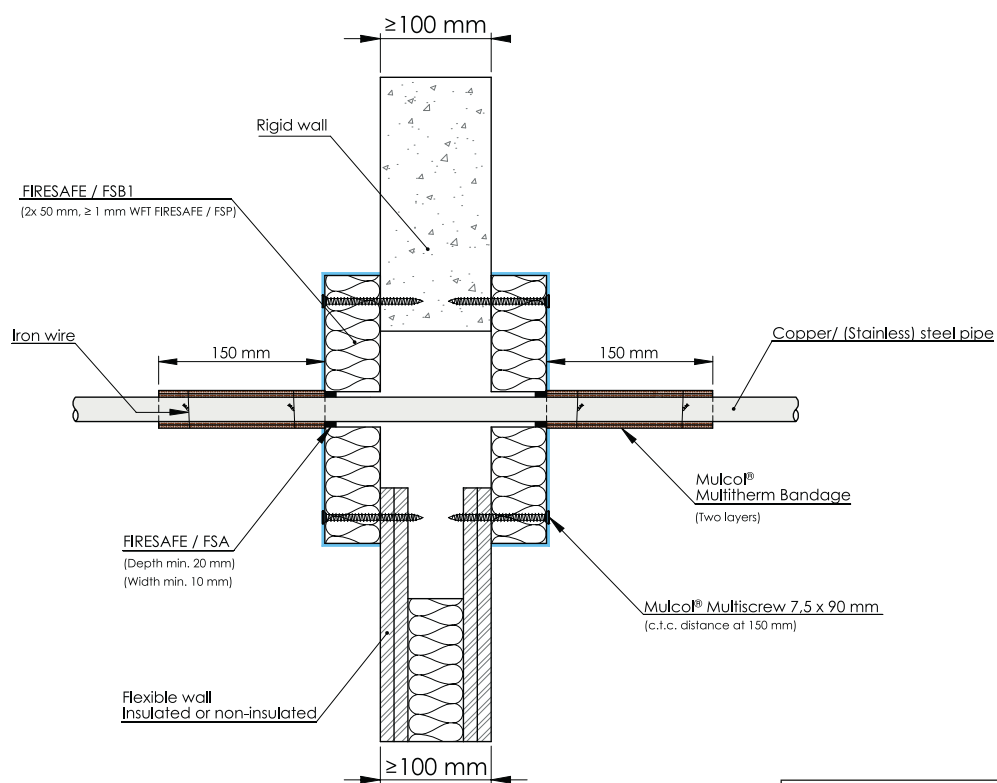
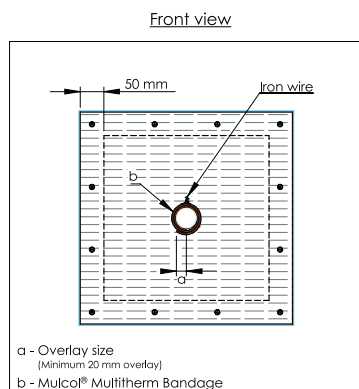


Drawing: PBPfw.E-CU-M2.0.10

Services	Pipe dimensions (mm)		Product	Aperture (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness				
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSD	≤ Ø 32	Not required	EI 45 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 17.2					EI 90 C/U

A.1.19 FIRESAFE / FSB1 Pattress fixed to wall - 2x 50 mm - Metal pipes uninsulated

A.1.19.2 Copper and steel pipes - Multitherm Bandage

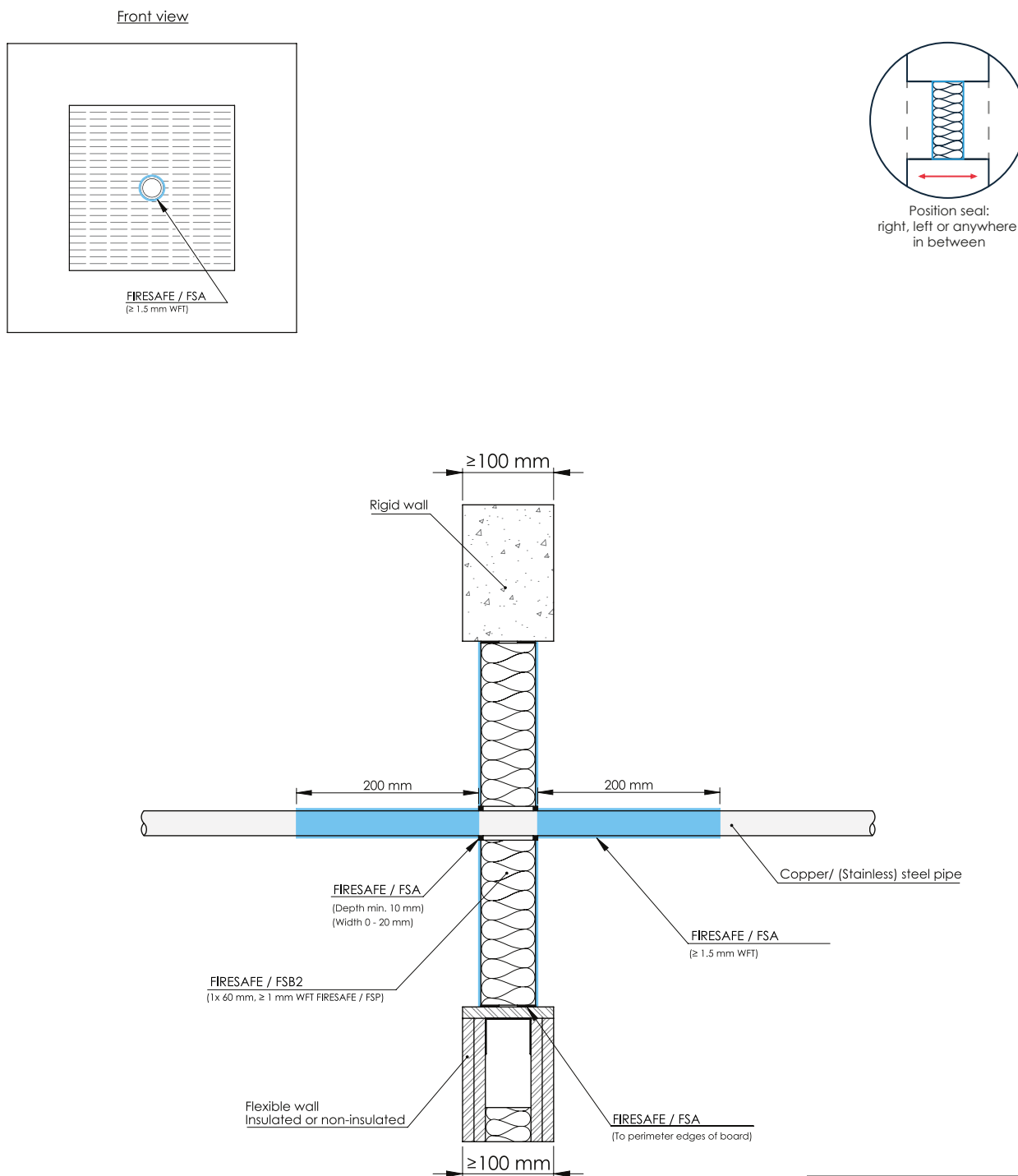


Drawing: PBfw.E-CU-MFB1-B2.1.20

Services	Pipe dimensions (mm)		Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	LI 150 two layers (two wires)	EI 120 C/U
	≤ Ø 15	≥ 1.5		LI 150 two layers (two wires) +	EI 45 C/U, E 120 C/U
	≤ Ø 54	≥ 2.0		LI 300 one layer (two wires)	EI 30 C/U, E 120 C/U

A.1.20 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes uninsulated

A.1.20.1 Copper and steel pipes - FIRESAFE / FSA



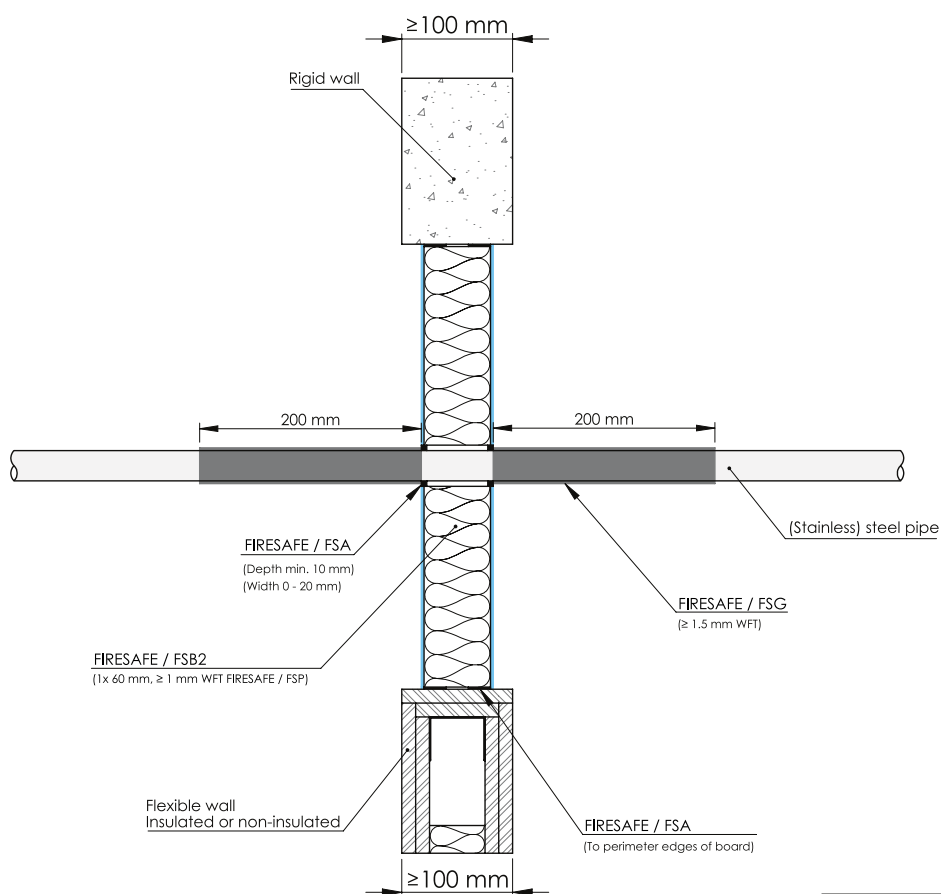
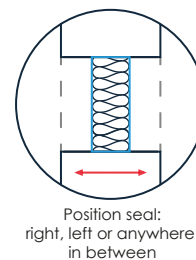
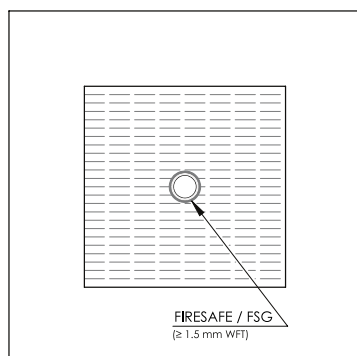
Drawing: PBfw.E-CU-MFB2-SPC.1.10

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSA	1.5 WFT	LI 200	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 30 C/U E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.6					EI 60 C/U E 120 C/U
	≤ Ø 42.4	≥ 3.2					
	≤ Ø 60.3	≥ 3.6					

A.1.20 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes uninsulated

A.1.20.2 Steel pipes - FIRESAFE / FSG

Front view

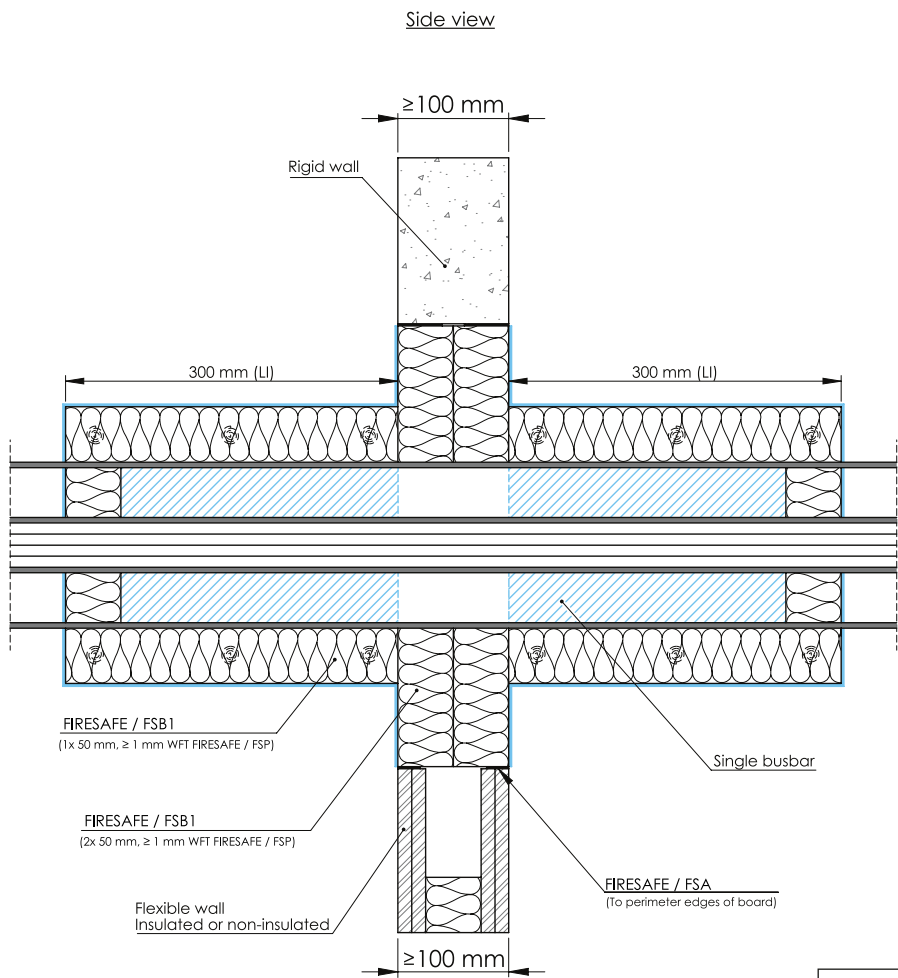
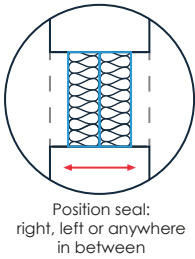


Drawing: PBfw.E-ST-MFB2-GRC.1.10

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
(Stainless) Steel / cast iron	$\leq \varnothing 26.9$	≥ 2.6	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSG	FIRESAFE / FSG 0-20 x ≥ 10 (wxd)	EI 60 C/U, E 120 C/U
	$\leq \varnothing 60.3$	≥ 3.6			

A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.1 Single busbar - LI 300

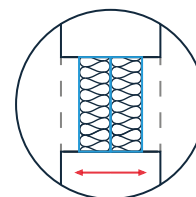


Drawing: PBfw.E-1BB-MFB1.2.10

Services	Service dimensions		Insulation			Classification
	Outside	Conductor	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 300 / CI	EI 60

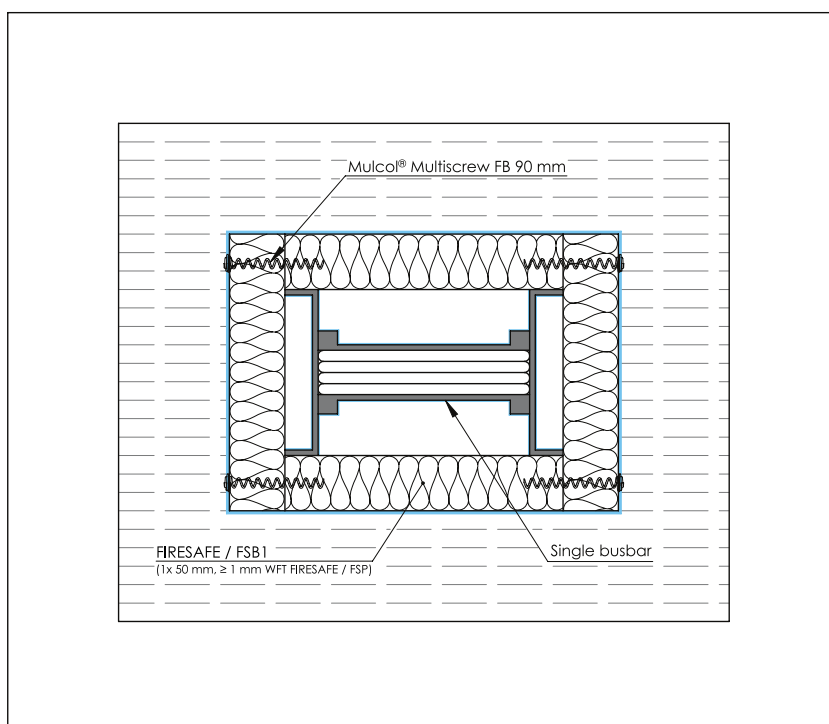
A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.1 Single busbar - LI 300



Position seat:
right, left or anywhere
in between

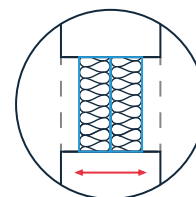
Front view



Drawing: PBfw.E-1BB-MFB1.2.10

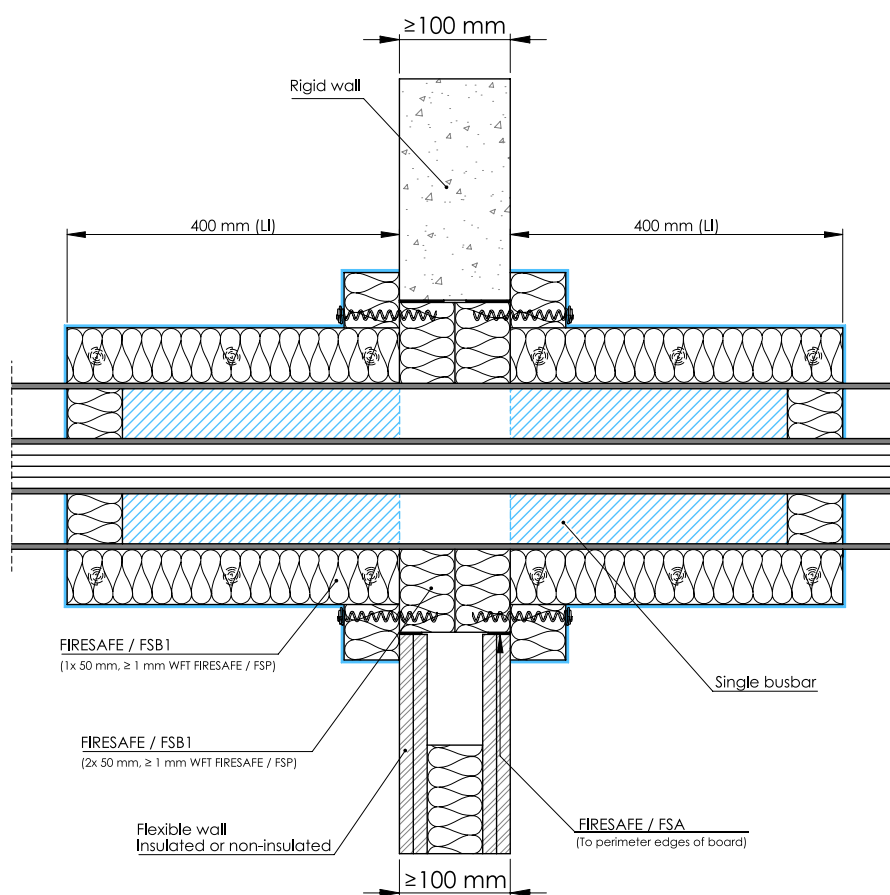
A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.2 Single busbar - LI 400



Position seal:
right, left or anywhere
in between

Side view

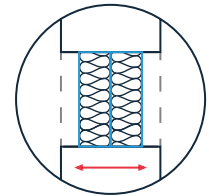


Drawing: PBfw.E-1BB-MFB1.2.10

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

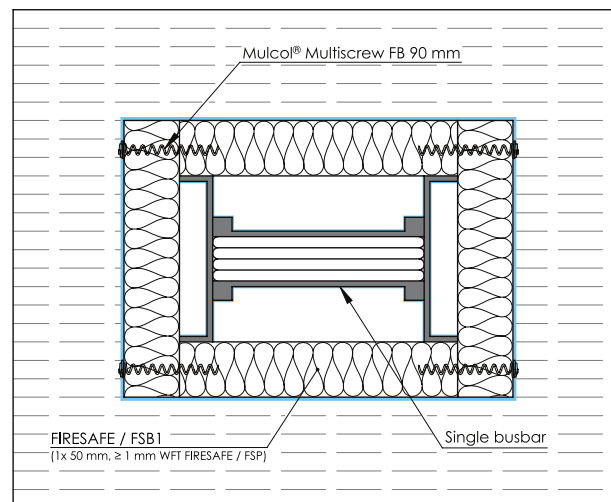
A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.2 Single busbar - LI 400



Position seal:
right, left or anywhere
in between

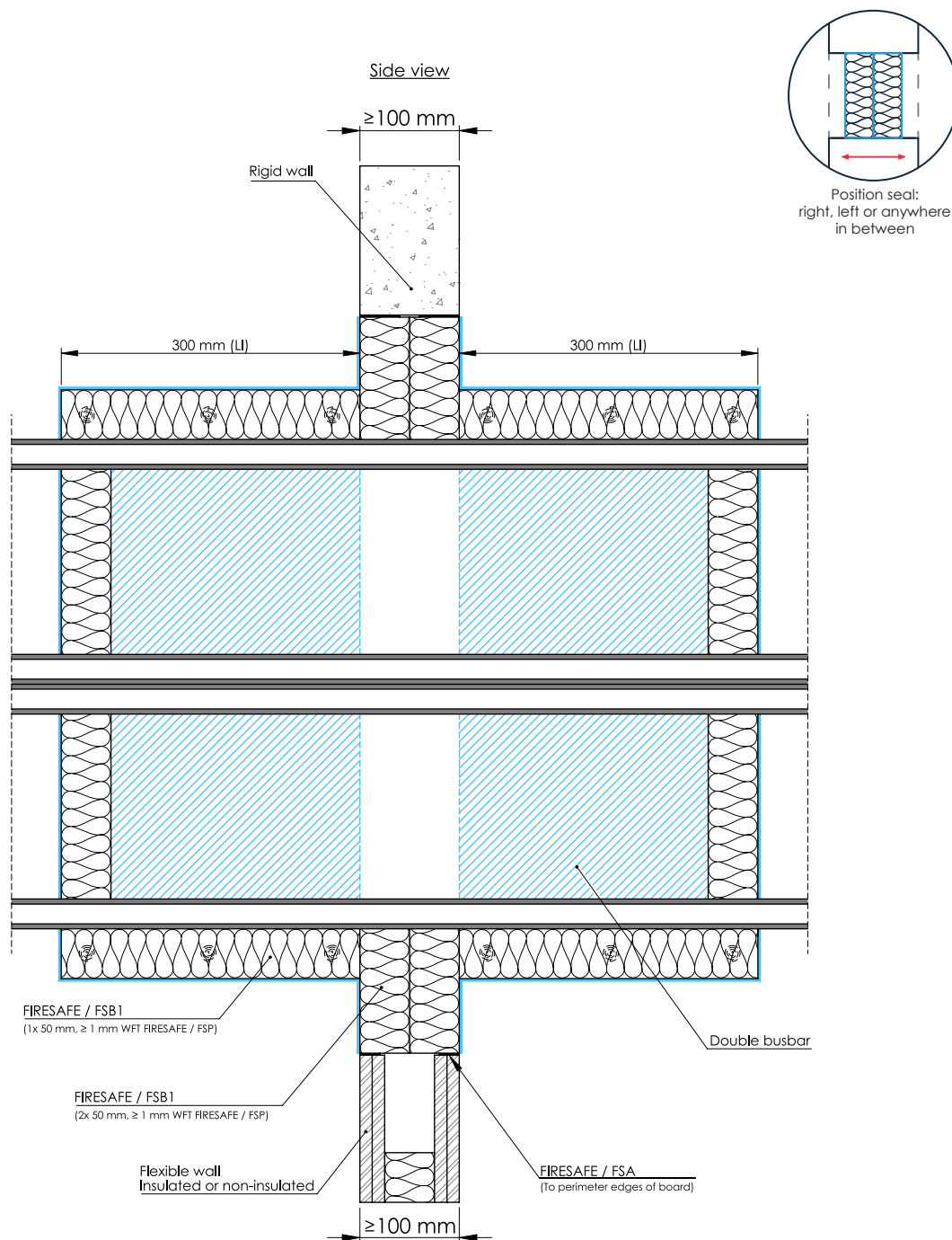
Front view



Drawing: PBfw.E-1BB-MFB1.2.10

A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.3 Multiple busbars - LI 300



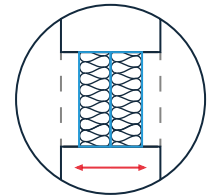
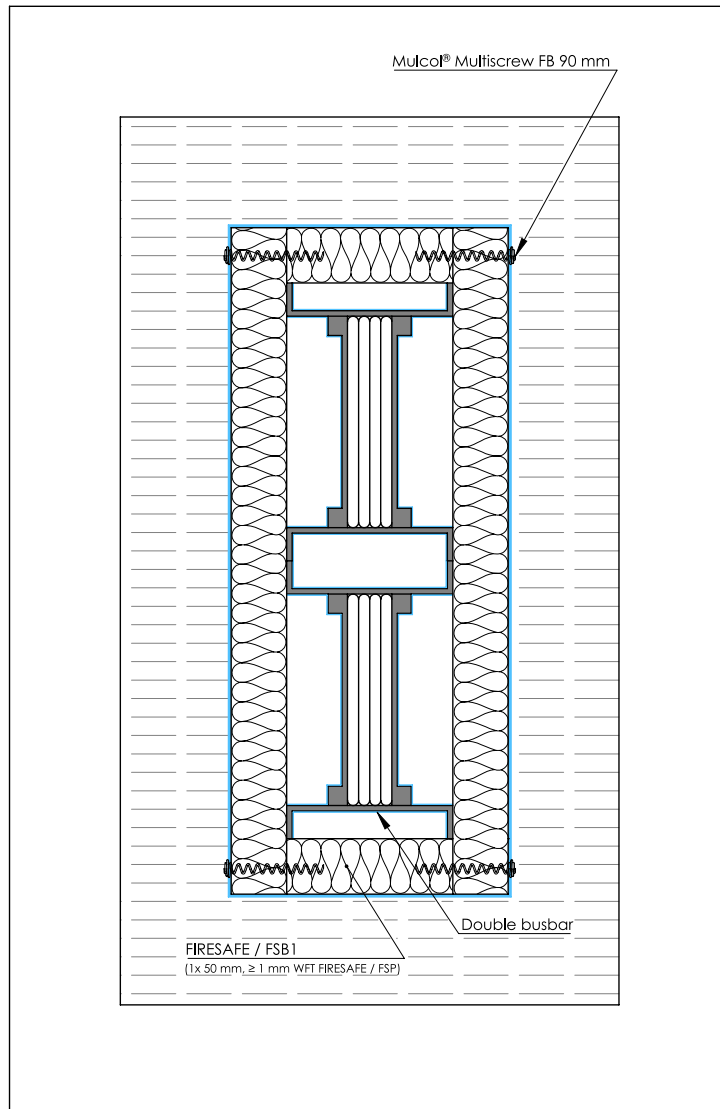
Drawing: PBfw.E-2BB-MFB1.2.10

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Double busbar	≤ 150 x 500 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 300 / CI	EI 60

A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.3 Multiple busbars - LI 300

Front view

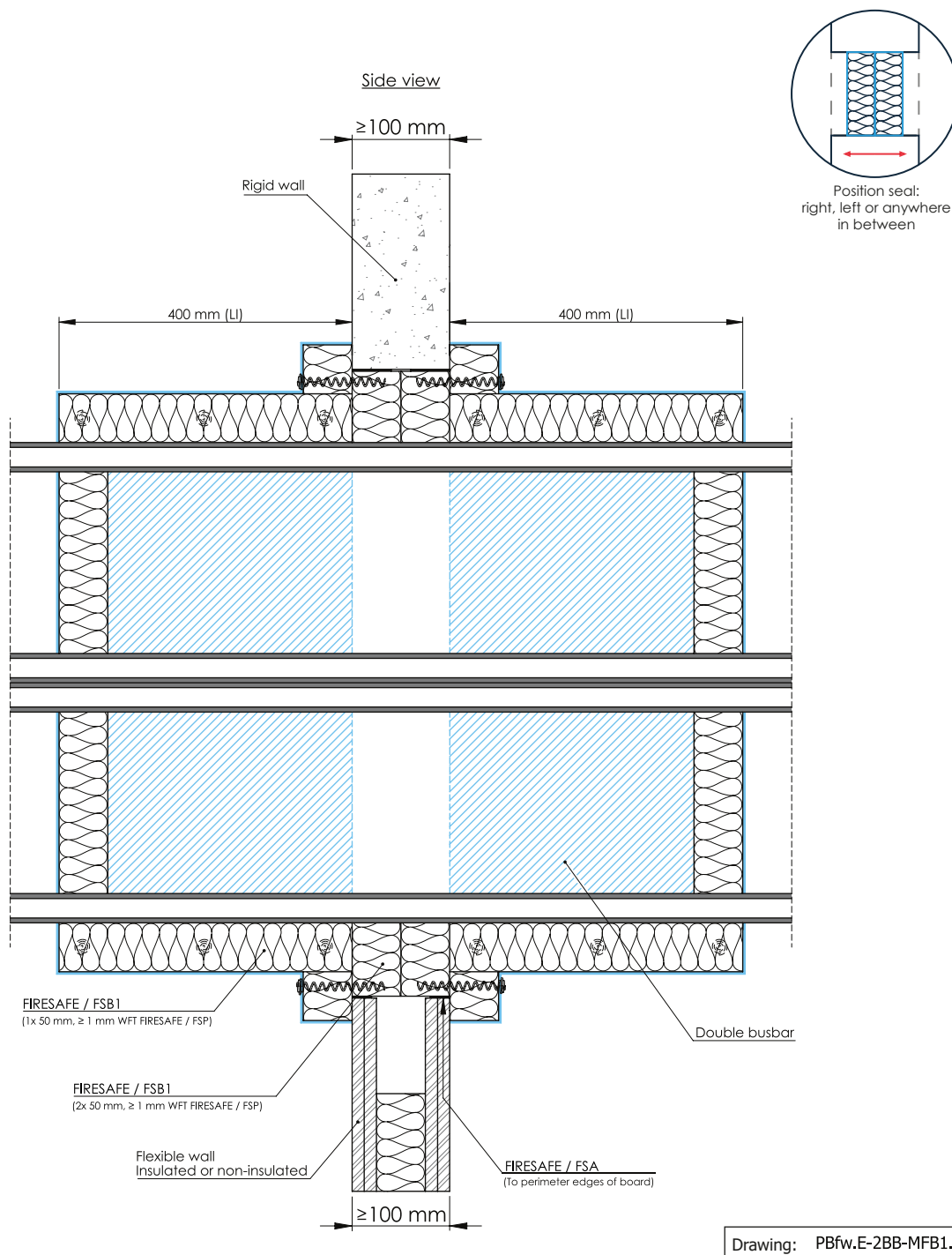


Position seal:
right, left or anywhere
in between

Drawing: PBfw.E-2BB-MFB1.2.10

A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.4 Multiple busbars - LI 400

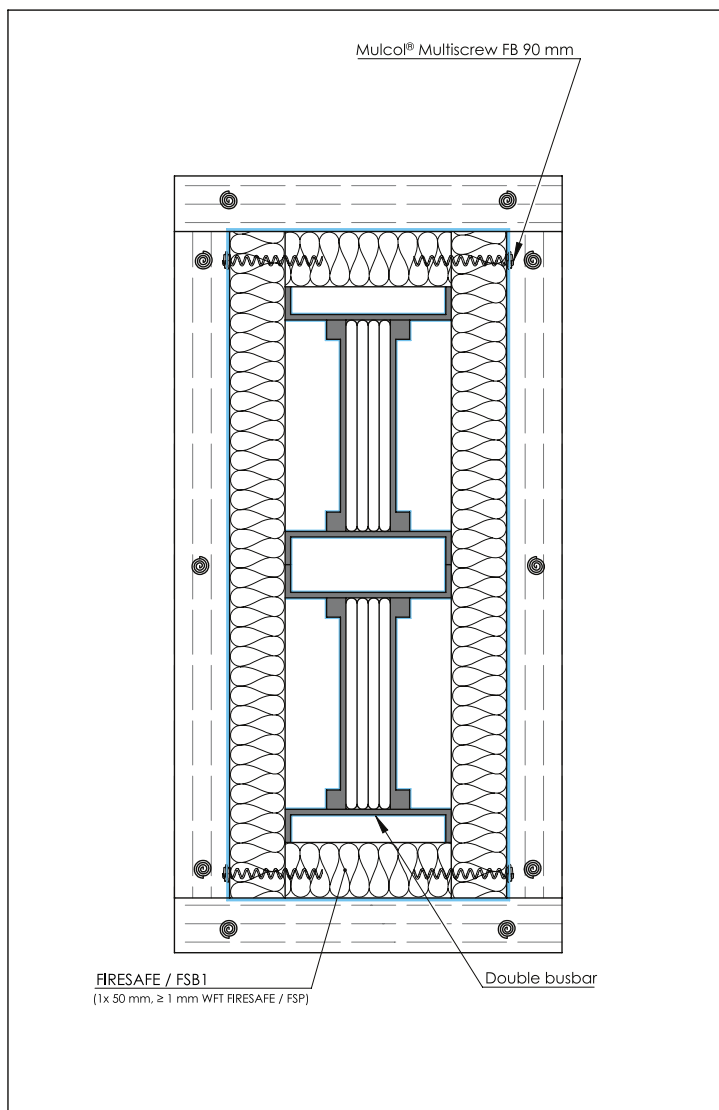
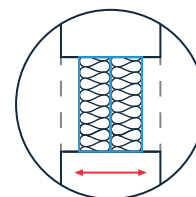


Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Double busbar	≤ 150 x 500 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

A.1.21 FIRESAFE / FSB1 - 2x 50 mm - Busbars

A.1.21.4 Multiple busbars - LI 400

Front view

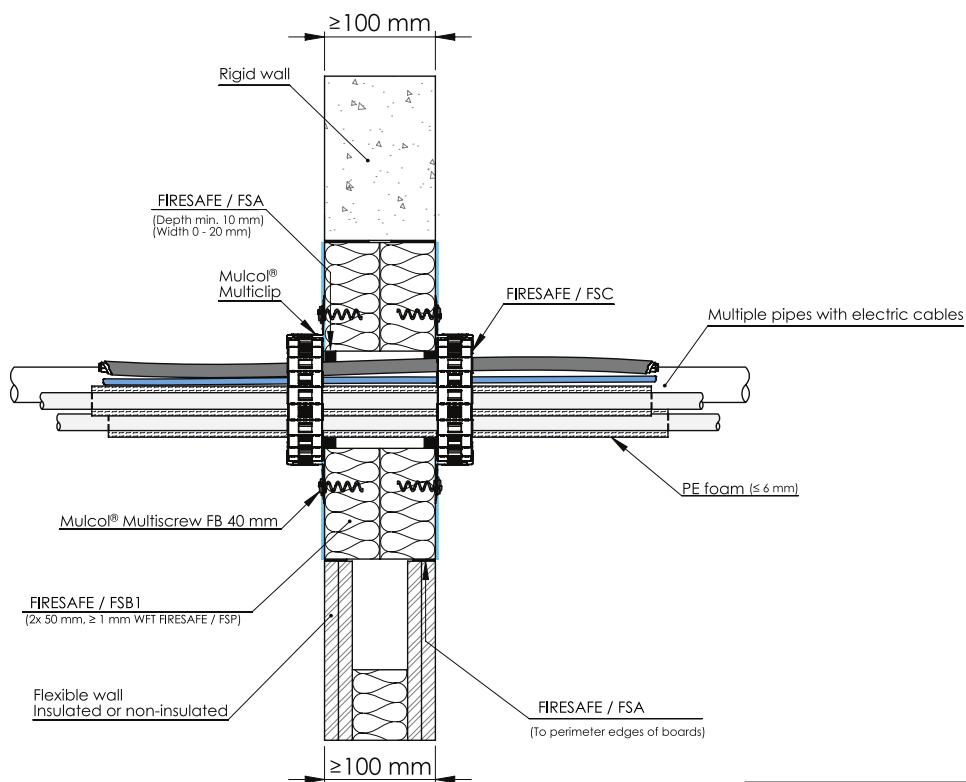
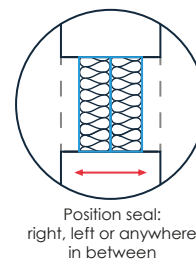
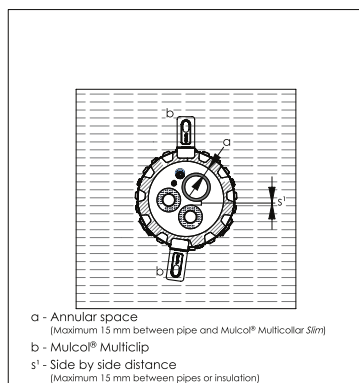


Drawing: PBfw.E-2BB-MFB1.2.10

A.1.22 FIRESAFE / FSB1 - 2x 50 mm - Multiple services

A.1.22.1 Airconditioning set - FIRESAFE / FSC

Front view



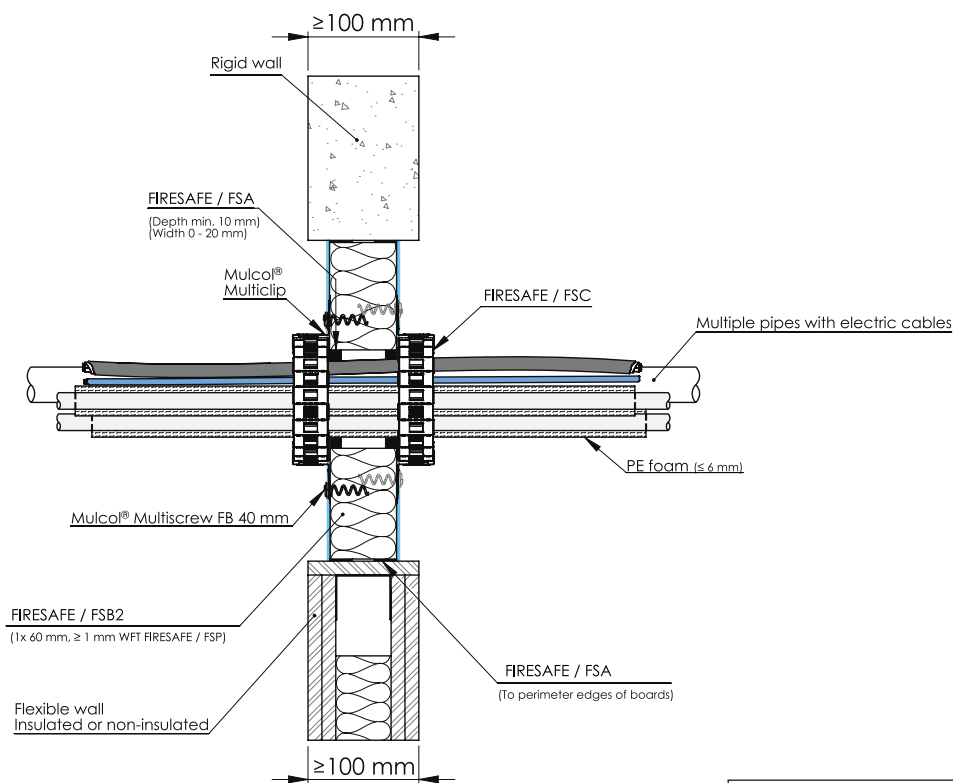
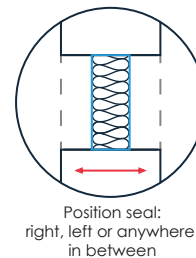
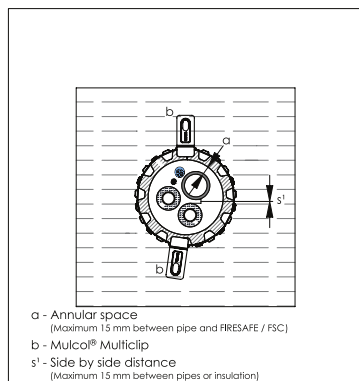
Drawing: PBfw.E-MLP5-MFB1.2.40

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer diameter	Wall thickness	Type	Thickness (mm)	Configuration		
Set of airconditioning pipes	$2x \leq \varnothing 15$	1.5	PE foam	≥ 6	LS 400 / CS LI 400 / CI	FIRESAFE / FSC	EI 60 C/U E 120 C/U
PVC-U / PVC-C	$\leq \varnothing 40$	3.0	-	-	-		EI 60 U/U E 120 U/U
Telecommunication cable	UTP Cat 5/6	-	-	-	-		EI 60 E 120
Sheathed cable	$\leq 5 \times 2.5$ mm ²	-	-	-	-		

A.1.23 FIRESAFE / FSB2 - 1x 60 mm - Multiple services

A.1.23.1 Airconditioning set - FIRESAFE / FSC

Front view

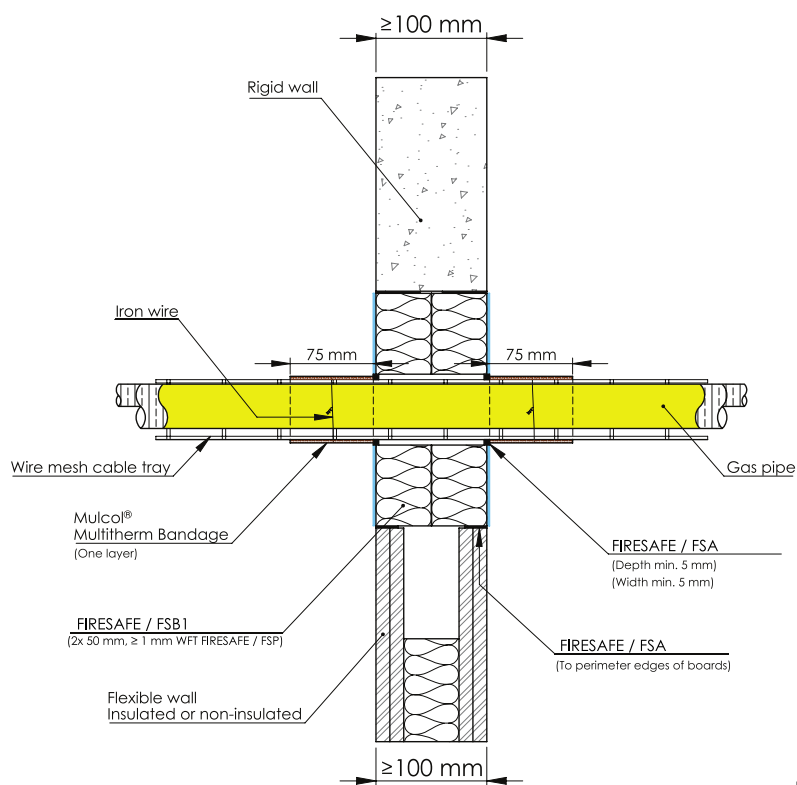
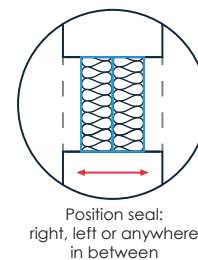
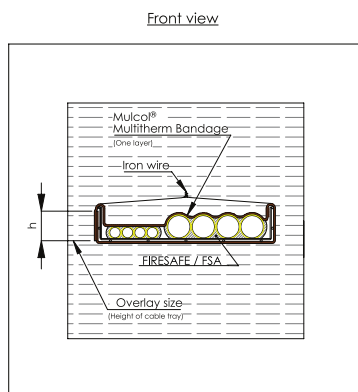


Drawing: PBfw.E-MLP5-MFB2.1.40

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer diameter	Wall thickness	Type	Thickness (mm)	Configuration		
Set of airconditioning pipes	$2x \leq \varnothing 15$	1.5	PE foam	≥ 6	LS 400 / CS LI 400 / CI	FIRESAFE / FSC	EI 60 C/U E 120 C/U
PVC-U / PVC-C	$\leq \varnothing 40$	3.0	-	-	-		EI 60 U/U E 120 U/U
Telecommunication cable	UTP Cat 5/6	-	-	-	-		
Sheathed cable	$\leq 5 \times 2.5$ mm ²	-	-	-	-		EI 60 E 120

A.1.24 FIRESAFE / FSB1 - 2x 50 mm - Gas pipes

A.1.24.1 Corrugated stainless steel tube gas (CSST) pipes

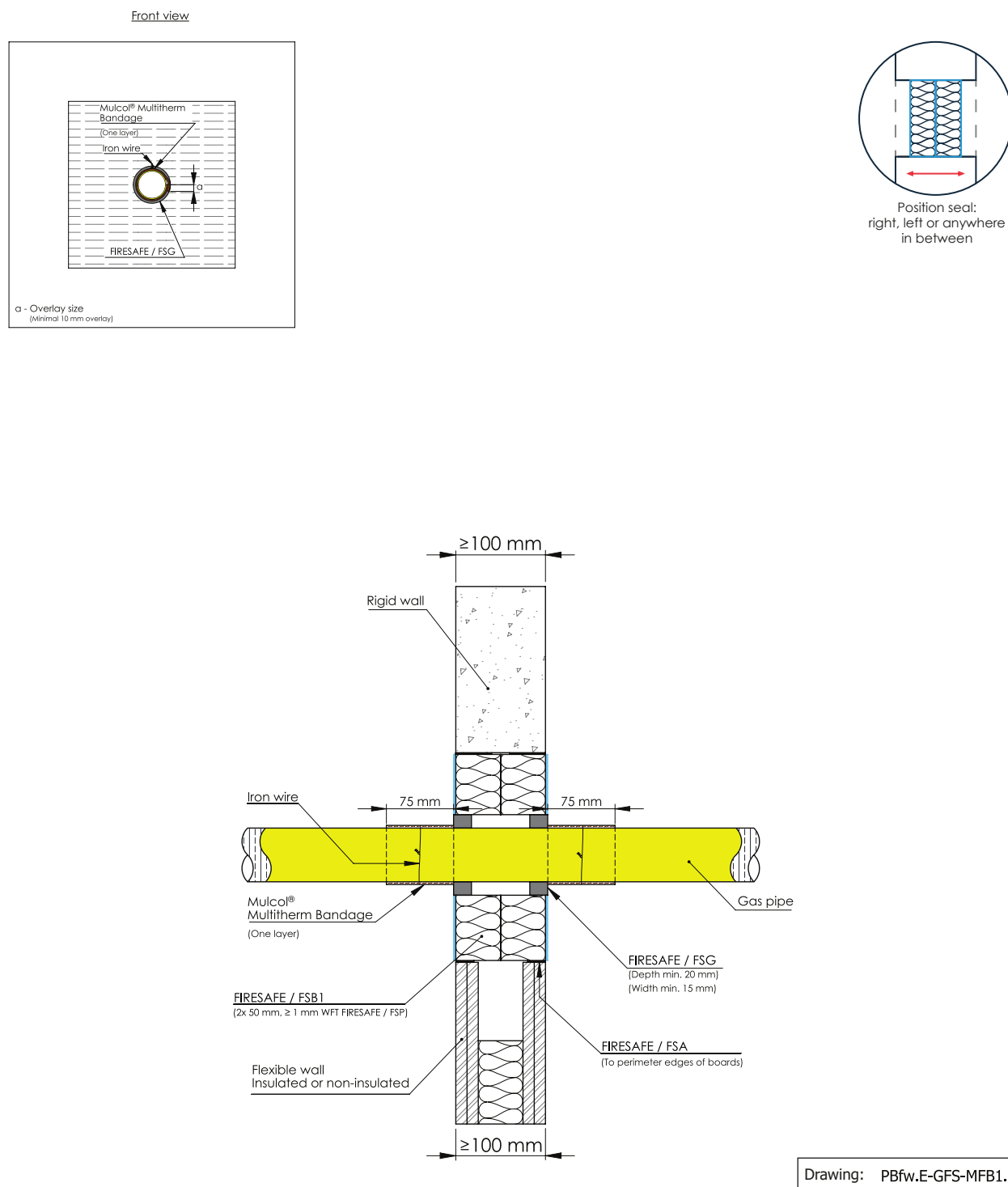


Drawing: PBfw.E-CT-MFB1.2.10

Services	Service dimensions (mm)		Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Number of pipes			
Corrugated stainless steel tube (CSST) gas pipes in wire mesh cable tray	≤ Ø 19.9	≤ 3	FIRESAFE / FSA ≥ 5 x 5 (wxd)	LI 75 one layer (one wire)	EI 60 U/C
	≤ Ø 40.8	≤ 3			
	≤ Ø 60.3	≤ 1			

A.1.24 FIRESAFE / FSB1 - 2x 50 mm - Gas pipes

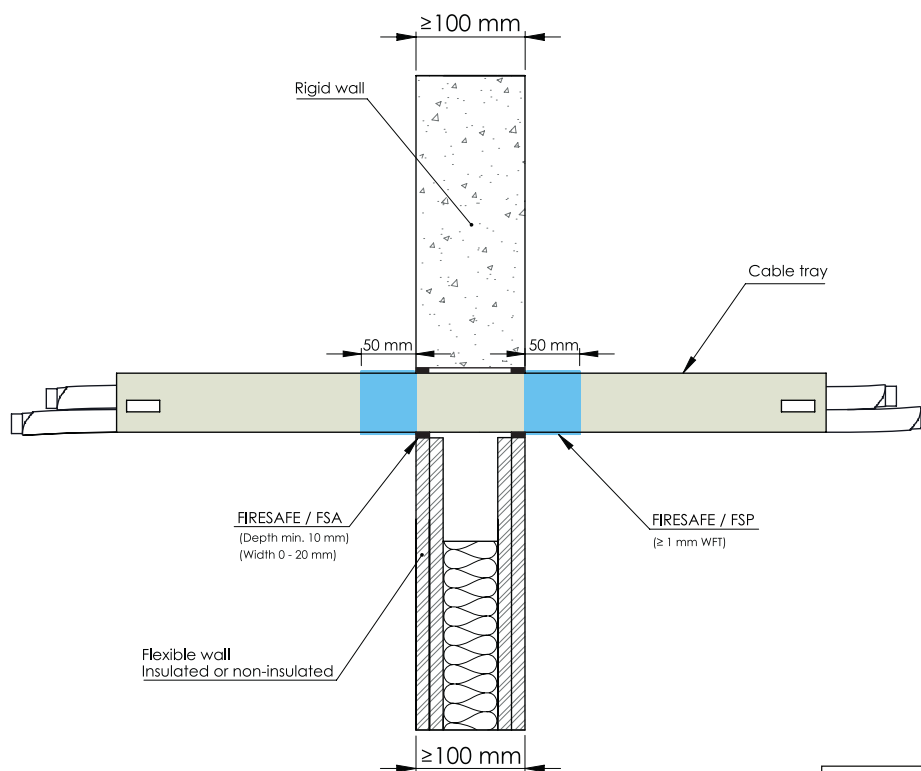
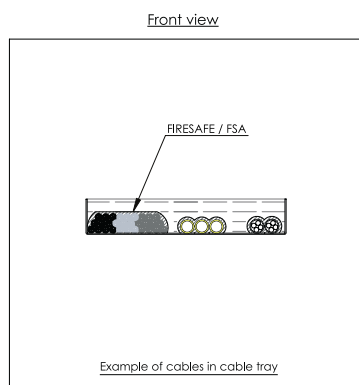
A.1.24.2 Corrugated stainless steel tube gas (CSST) pipes - FIRESAFE / FSG - Multitherm Bandage



Services	Service dimensions (mm)		Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Number of pipes			
Corrugated stainless steel tube (CSST) gas pipes	≤ Ø 19.9	≤ 2	FIRESAFE / FSG ≥ 15 x 20 (wxd)	LI 75 one layer (one wire)	EI 60 U/C
	≤ Ø 40.8	≤ 1			
	≤ Ø 60.3	≤ 1			

A.1.25 Directly through wall - Cables, trays and conduits

A.1.25.1 Cables, trays and conduits - FIRESAFE / FSP - 50 mm

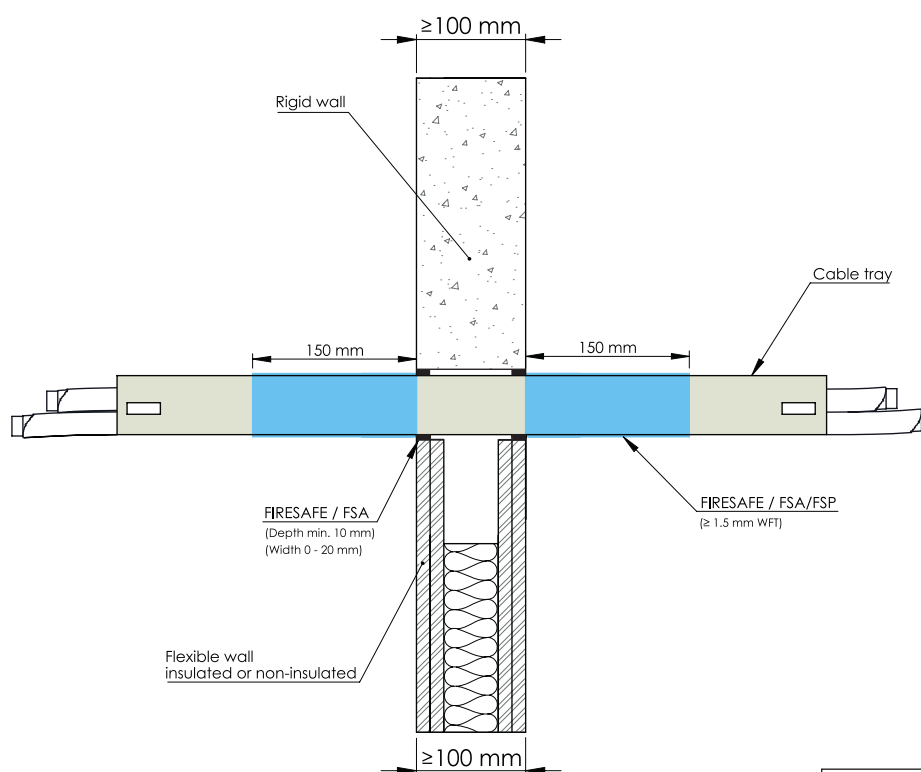
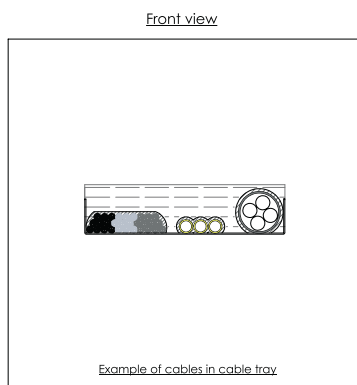


Drawing: FW.E-PB-CT-0.10_50

Services	Coating	Classification
Metal cable ladders	Coat back 50 mm ≥ 1 mm WFT	EI 60, E 90
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 80 mm		
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 45, E 90
Non sheathed cables ≤ Ø 24 mm		EI 60 U/C, E 90 U/C
Plastic conduits ≤ Ø 16 mm		EI 45 C/U, E 60 C/U
Copper conduits ≤ Ø 16 mm		EI 60 C/U
Steel conduits ≤ Ø 16 mm		

A.1.25 Directly through wall - Cables, trays and conduits

A.1.25.2 Cables, trays and conduits - FIRESAFE / FSP - 150 mm

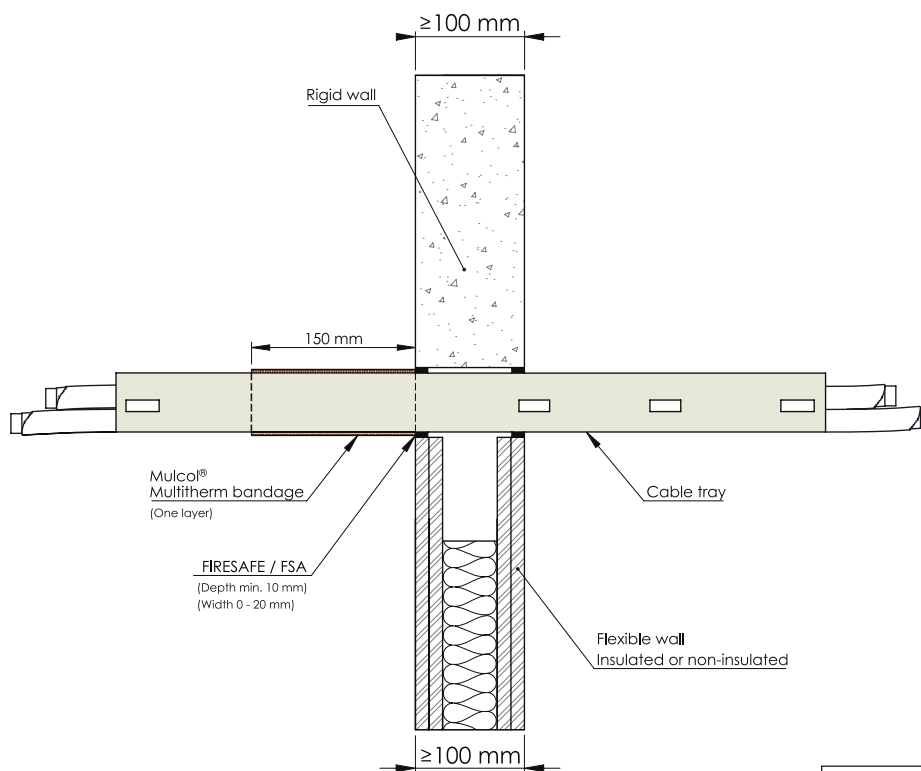
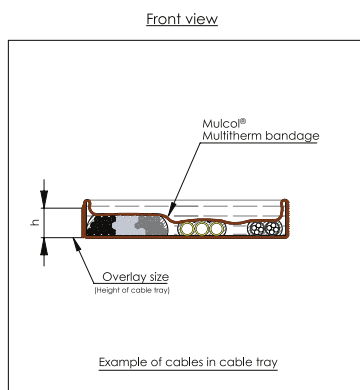


Drawing: FW.E-PB-CT-0.10_150

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT	EI 90, E 120
Metal (non-)perforated cable trays		EI 120
Steel wire mesh cable trays (baskets)		EI 90, E 120
Cables ≤ Ø 80 mm		EI 60, E 120
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 120 U/C
Non sheathed cables ≤ Ø 24 mm		EI 45 C/U, E 90 C/U
Plastic conduits ≤ Ø 16 mm		EI 90 C/U
Copper conduits ≤ Ø 16 mm		
Steel conduits ≤ Ø 16 mm		

A.1.25 Directly through wall - Cables, trays and conduits

A.1.25.3 Cables, trays and conduits - Multitherm Bandage



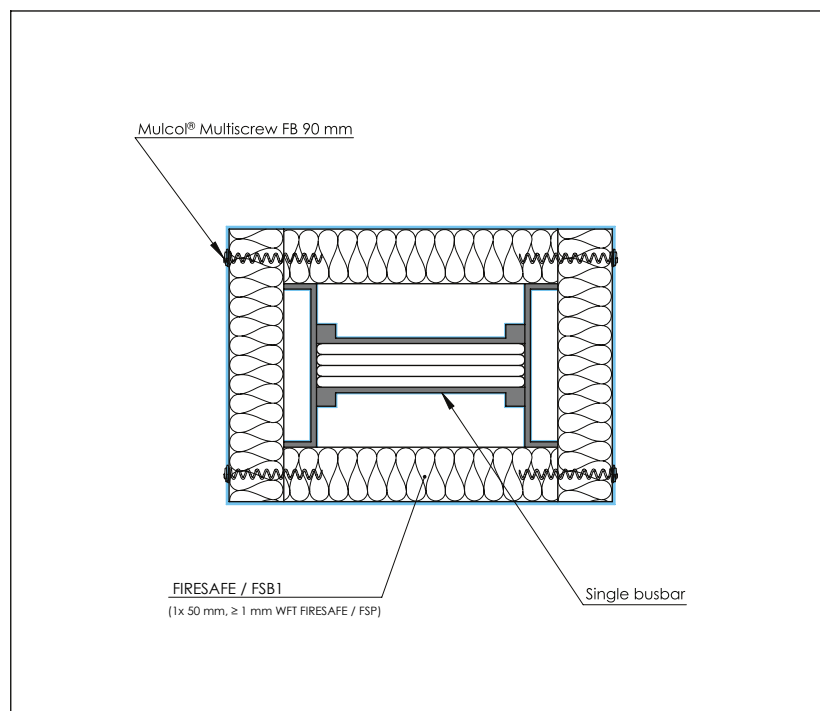
Drawing: FW.E-PB-CT-B1.3.10

Services	Insulation (mm)	Classification
Metal (non-)perforated cable trays	LI 150 - Multitherm Bandage either side	EI 120
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm		

A.1.26 Directly through wall - Busbars

A.1.26.1 Single busbar - LI 300

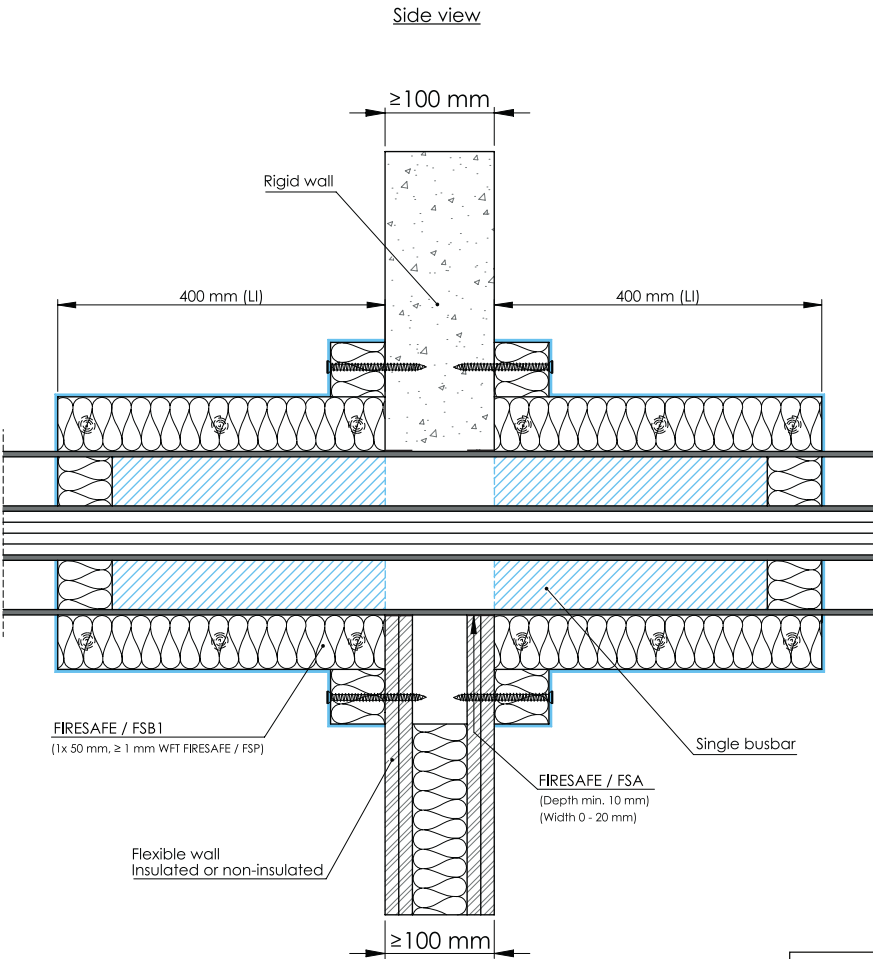
Front view



Drawing: FW.E-1BB-0.10.LI300

A.1.26 Directly through wall - Busbars

A.1.26.2 Single busbar - LI 400



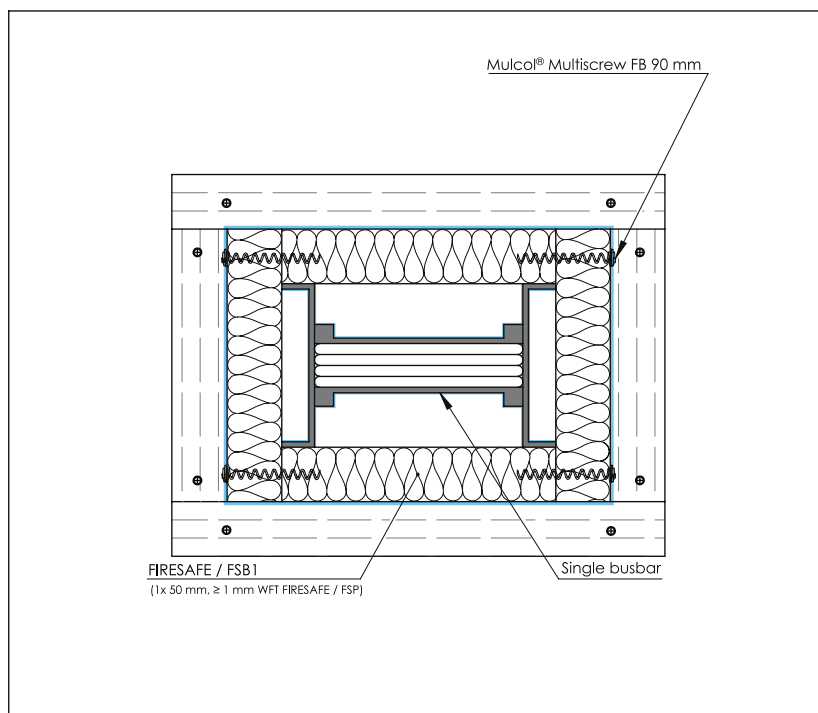
Drawing: FW.E-1BB-0.10.LI400

Services	Service dimensions		Insulation			Classification
	Outside	Conductor	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

A.1.26 Directly through wall - Busbars

A.1.26.2 Single busbar - LI 400

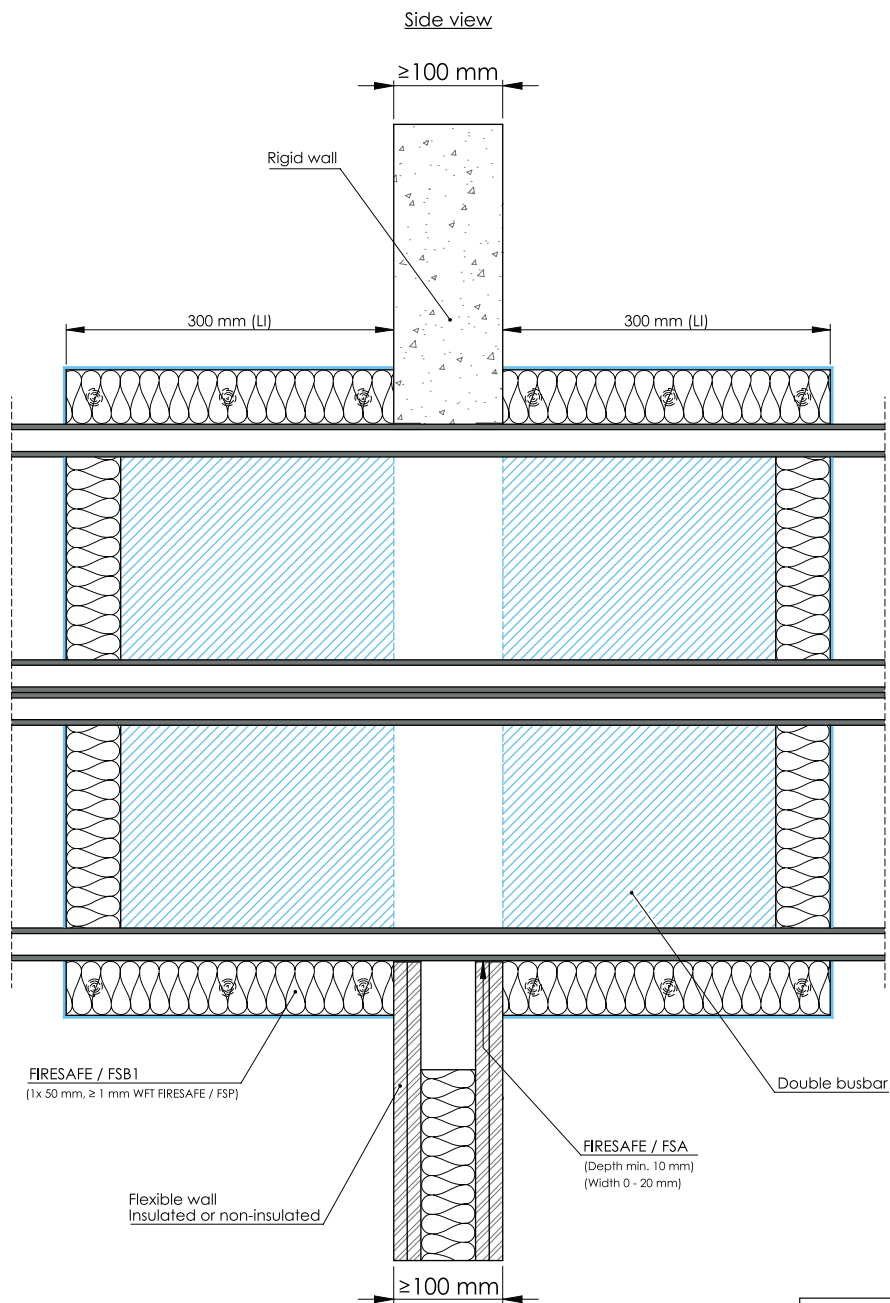
Front view



Drawing: FW.E-1BB-0.10.LI400

A.1.26 Directly through wall - Busbars

A.1.26.3 Multiple busbars - LI 300



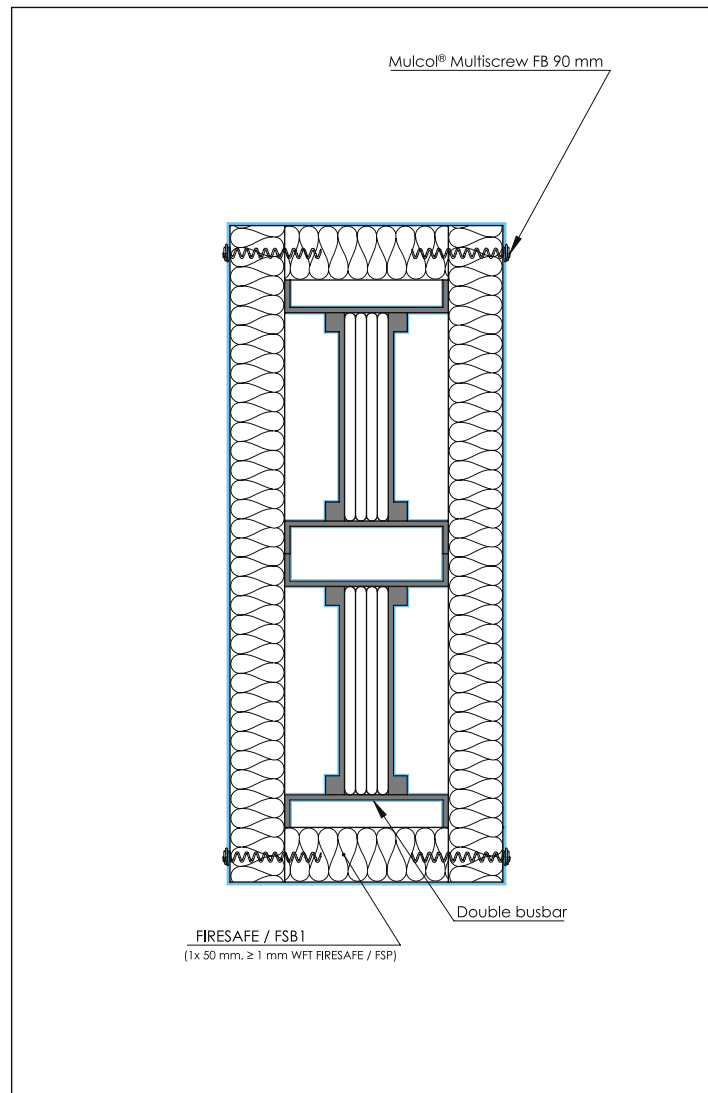
Drawing: FW.E-2BB-0.10.LI300

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Double busbar	≤ 150 x 500 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 300 / CI	EI 60

A.1.26 Directly through wall - Busbars

A.1.26.3 Multiple busbars - LI 300

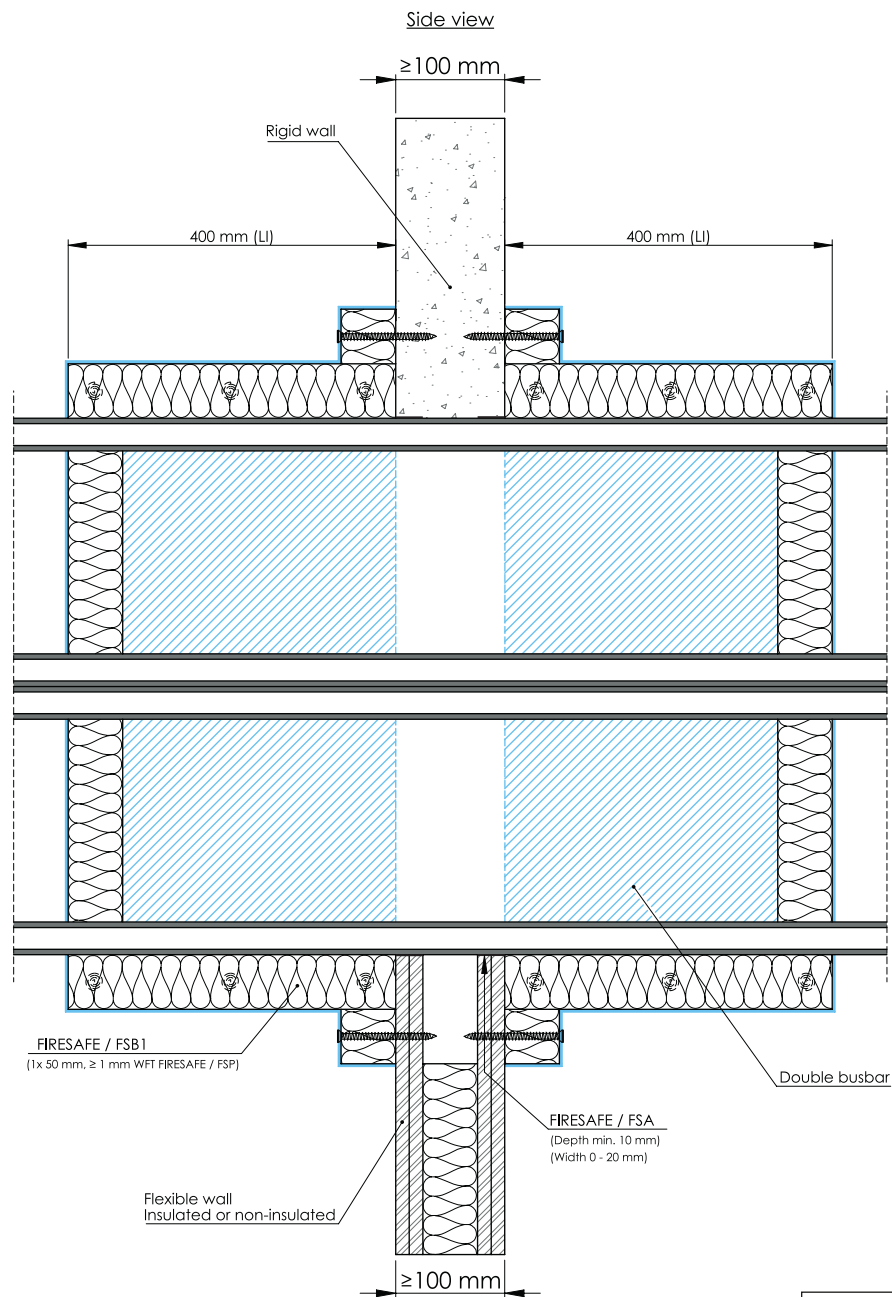
Front view



Drawing: FW.E-2BB-0.10.LI300

A.1.26 Directly through wall - Busbars

A.1.26.4 Multiple busbars - LI 400



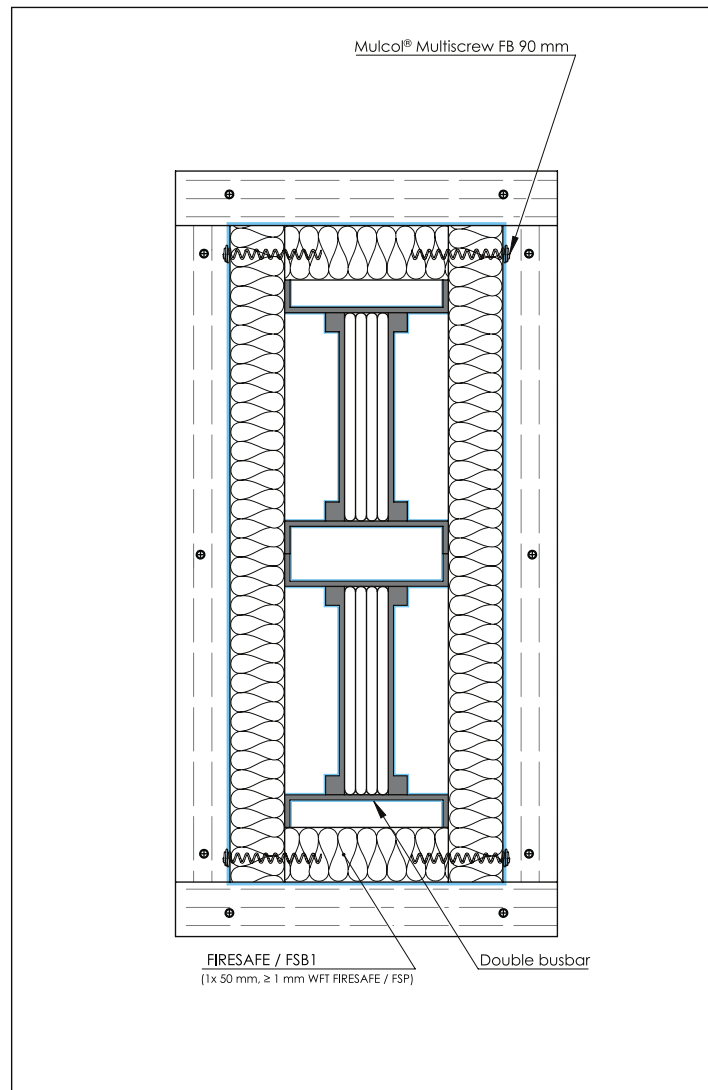
Drawing: FW.E-2BB-0.10.LI400

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Double busbar	≤ 150 x 500 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

A.1.26 Directly through wall - Busbars

A.1.26.4 Multiple busbars - LI 400

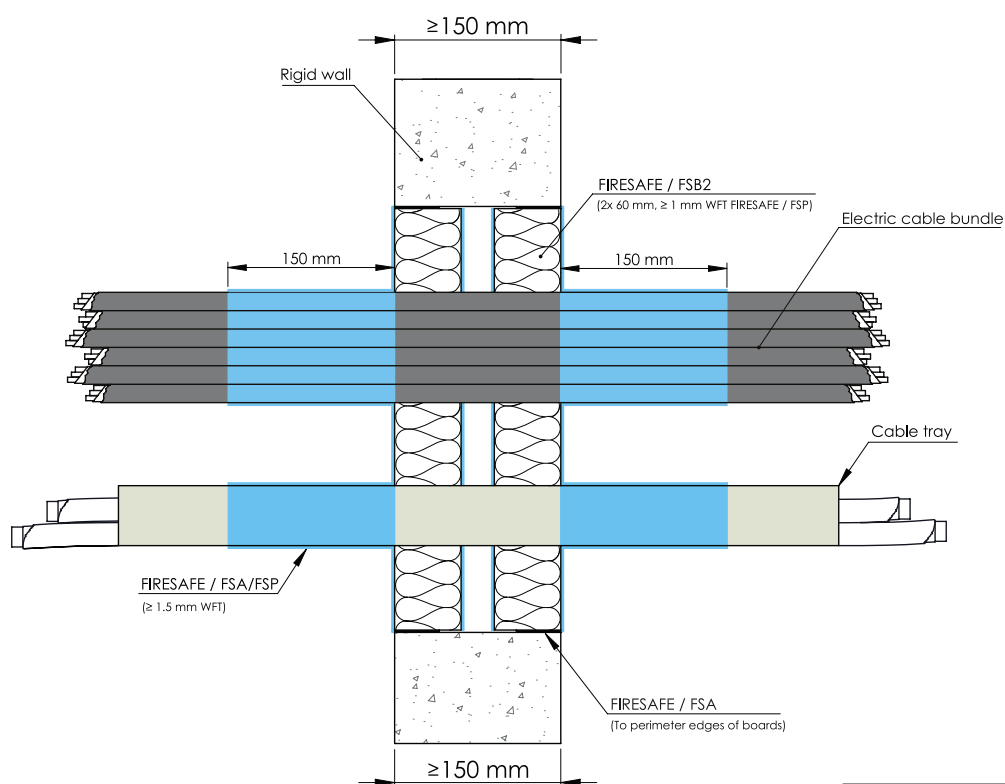
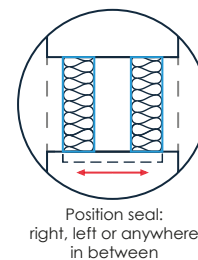
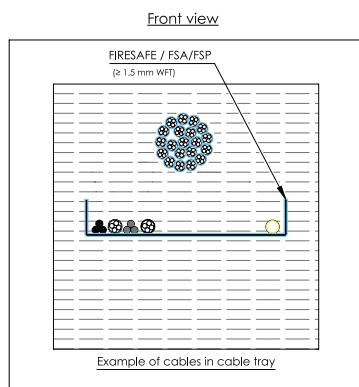
Front view



Drawing: FW.E-2BB-0.10.LI400

A.2.1 FIRESAFE / FSB2 - 2x 60 mm - Cables, trays and conduits

A.2.1.1 Cables and trays - FIRESAFE / FSP

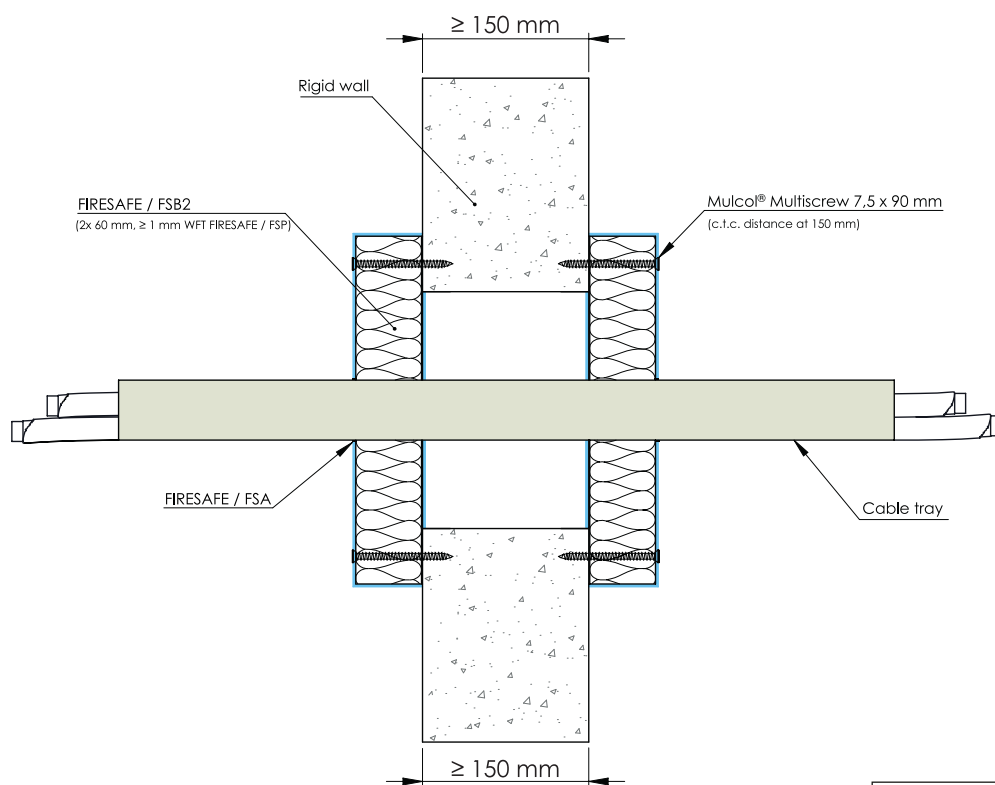
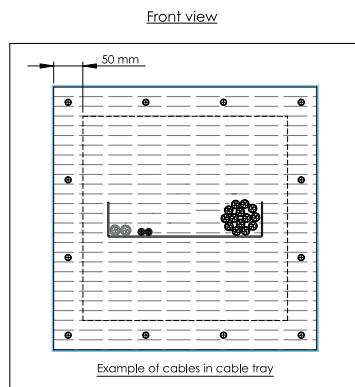


Drawing: RW150.E-CT-ECB-MFB2.2.10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSP	EI 240
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm		EI 120
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 180 U/C
Plastic conduits ≤ Ø 16 mm		

A.2.2 FIRESAFE / FSB2 Pattress - 2x 60 mm - Cables, trays and conduits

A.2.2.1 Cables and trays - FIRESAFE / FSP



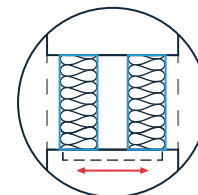
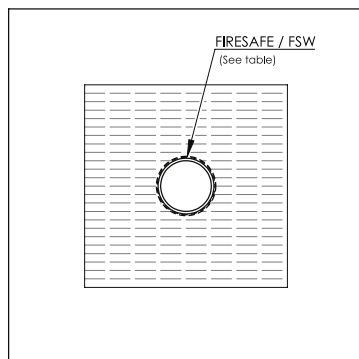
Drawing: RW150-P-CT-MFB2.2.10

Services	Coating	Classification
Metal cable ladders	Not required	EI 240
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		EI 180, E 240
Cables ≤ Ø 21 mm		EI 240
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 90, E 240
Non sheathed cables ≤ Ø 24 mm		

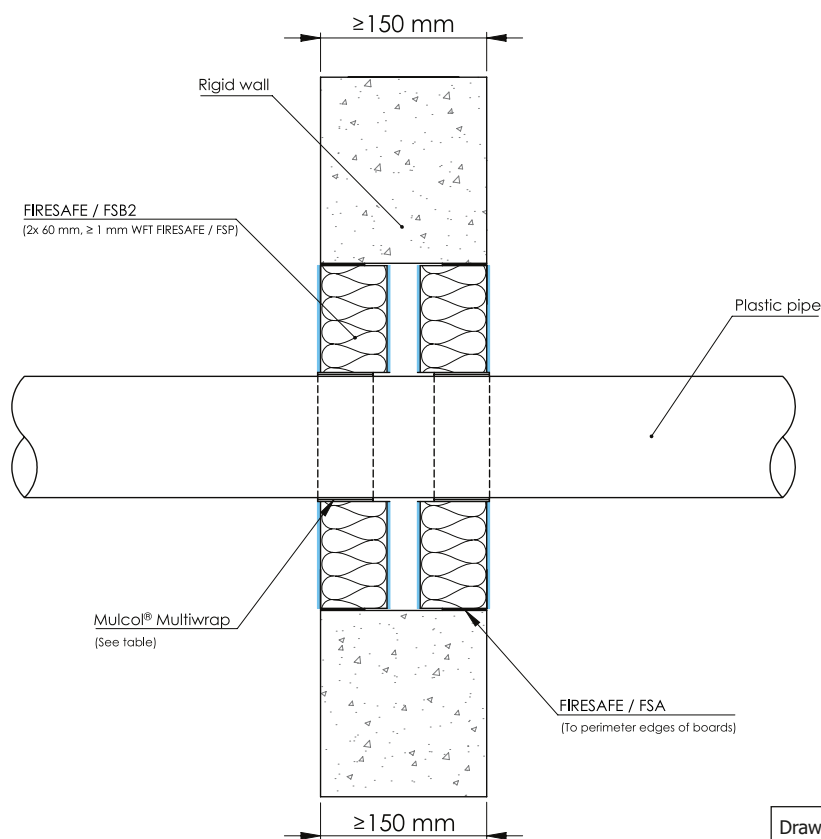
A.2.3 FIRESAFE / FSB2 - 2x 60 mm - Combustible pipes

A.2.3.1 Plastic pipes - FIRESAFE / FSW

Front view



Position seal:
right, left or any in between

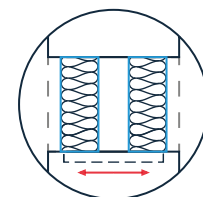
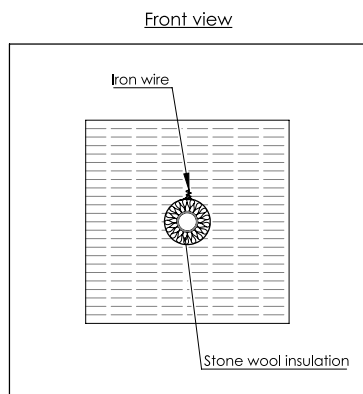


Drawing: RW150-PP-MW2-MFB2.2.10

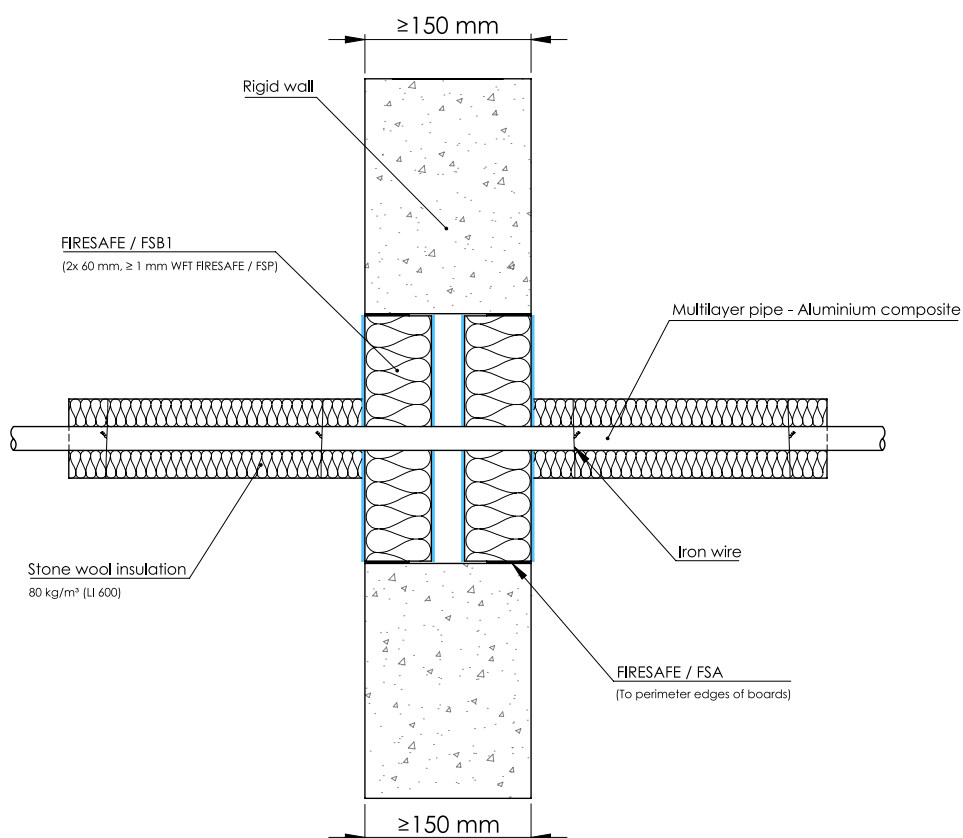
Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.0 to 5.5	FIRESAFE / FSW (1 layer)	EI 240 U/C
	≤ Ø 110	3.4	FIRESAFE / FSW (2 layers)	
		3.4 to 10		
	≤ Ø 160	4.0 to 9.5	FIRESAFE / FSW (6 layers)	EI 180 U/C, E 240 U/C
		9.5		
PP	≤ Ø 40	1.8 to 5.5	FIRESAFE / FSW (1 layer)	EI 240 U/C
PVC(-U/-C)	≤ Ø 40	2.0 to 5.5		
	≤ Ø 110	2.7 to 8.6		
	≤ Ø 160	4.0 to 11.8	FIRESAFE / FSW (6 layers)	

A.2.4 FIRESAFE / FSB2 - 2x 60 mm - Multilayer pipes (MLC)

A.2.4.1 Multilayer pipes (MLC) - Stone wool LI 600 / CI



Position seal:
right, left or any in between

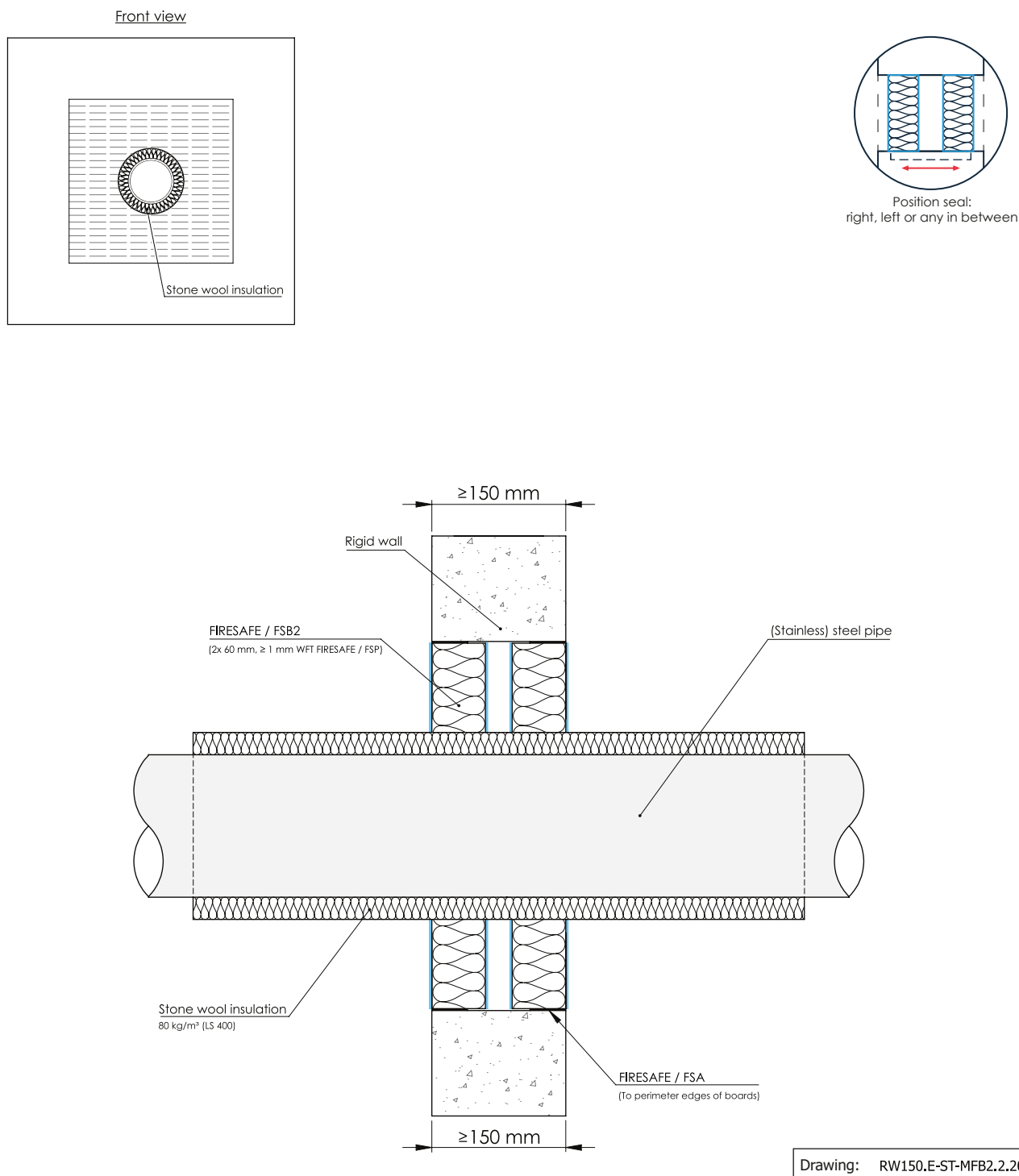


Drawing: RW150-MLA-MFB2.2.20

Services	Pipe dimensions (mm)		Insulation			Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration	
Multilayer pipes (MLC)	≤ Ø 20	2.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 600 / CI	EI 240 C/U

A.2.5 FIRESAFE / FSB2 - 2x 60 mm - Metal pipes insulated mineral wool

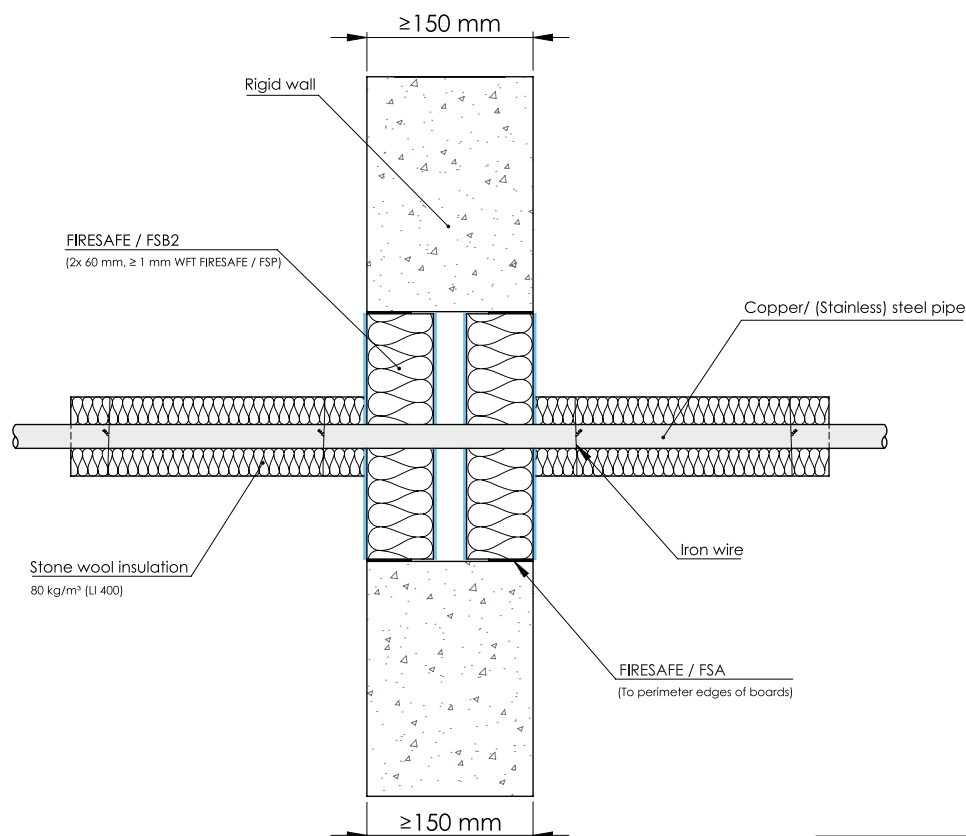
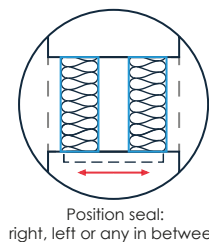
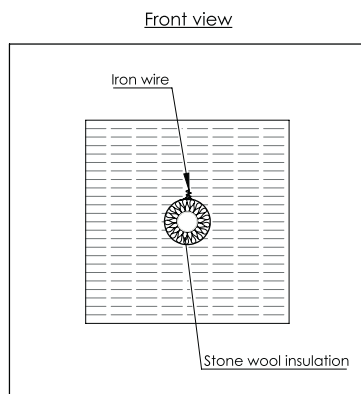
A.2.5.1 Steel pipes - Stone wool LS 400 / CS



Services	Pipe dimensions (mm)		Insulation			Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration	
(Stainless) Steel / cast iron	≤ Ø 40	≥ 1.0	Stone wool (≥ 80 kg/m³)	30	LS 400 / CS	EI 90 C/U E 180 C/U
	≤ Ø 324	≥ 3.7				EI 90 C/U E 180 C/U

A.2.5 FIRESAFE / FSB2 - 2x 60 mm - Metal pipes insulated mineral wool

A.2.5.2 Copper and steel pipes - Stone wool LI / CI

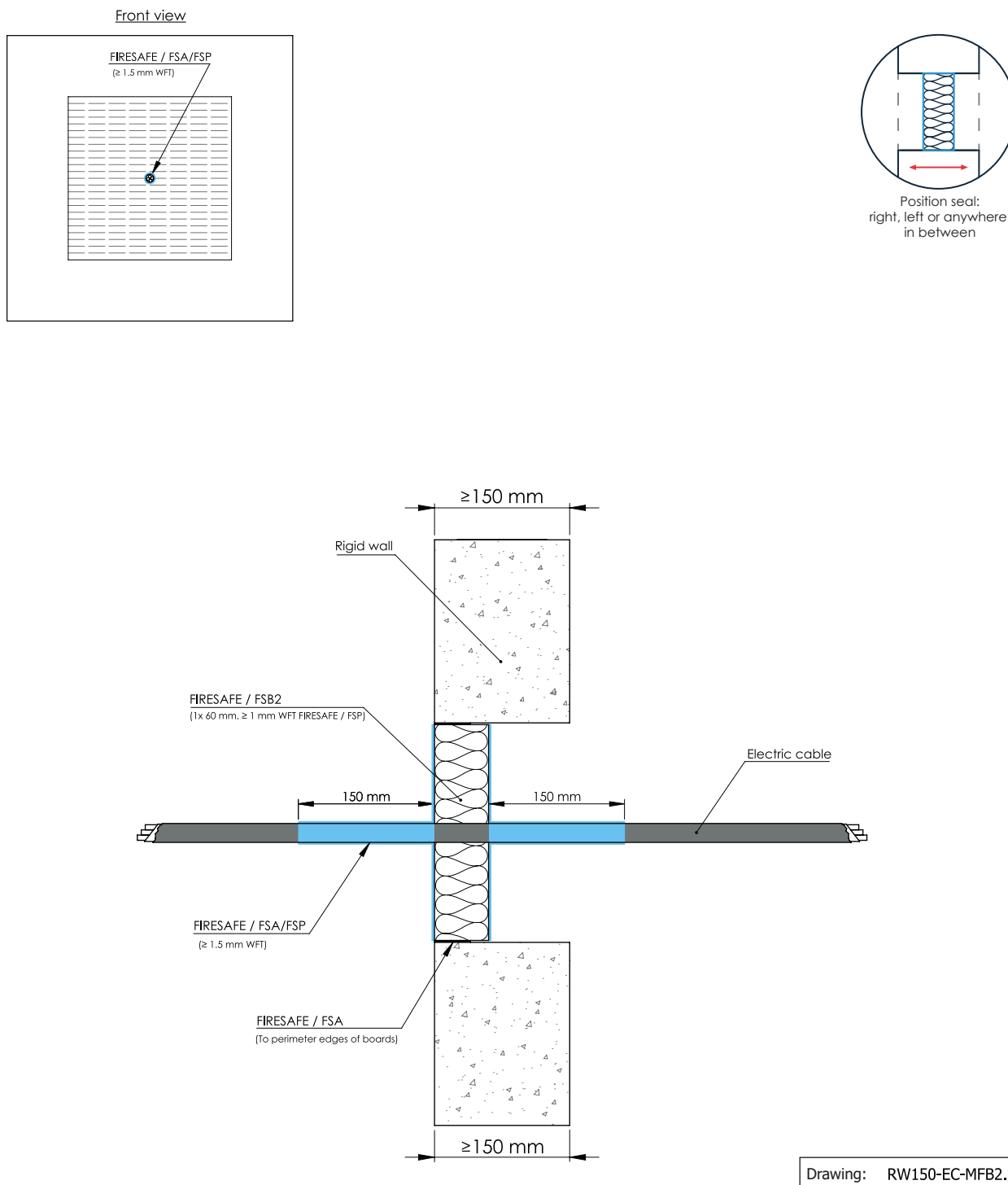


Drawing: RW150.E-CU-MFB2.2.20

Services	Pipe dimensions (mm)		Insulation			Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration	
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	EI 90 C/U, E 240 C/U
	≤ Ø 54	≥ 1.5			CI	EI 120 C/U, E 240 C/U
					LI 400 / CI	EI 120 C/U
					LI 500 / CI	EI 90 C/U, E 240 C/U
					CI	EI 120 C/U, E 240 C/U
(Stainless) Steel / cast iron	≤ Ø 40	≥ 1.0		≥ 30	LI 400 / CI	EI 180 C/U
	≤ Ø 114.3	≥ 3.6			LI 600 / CI	EI 240 C/U
	≤ Ø 219	≥ 4.0			LI 400 / CI	EI 120 C/U
					LI 600 / CI	EI 120 C/U, E 240 C/U
	≤ Ø 324	≥ 3.7 ≥ 6.3		CI	EI 180 C/U, E 240 C/U	
				LI 400 / CI	EI 120 C/U	
				LI 500 / CI	EI 180 C/U, E 240 C/U	

A.2.6 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

A.2.6.1 Cables - FIRESAFE / FSP



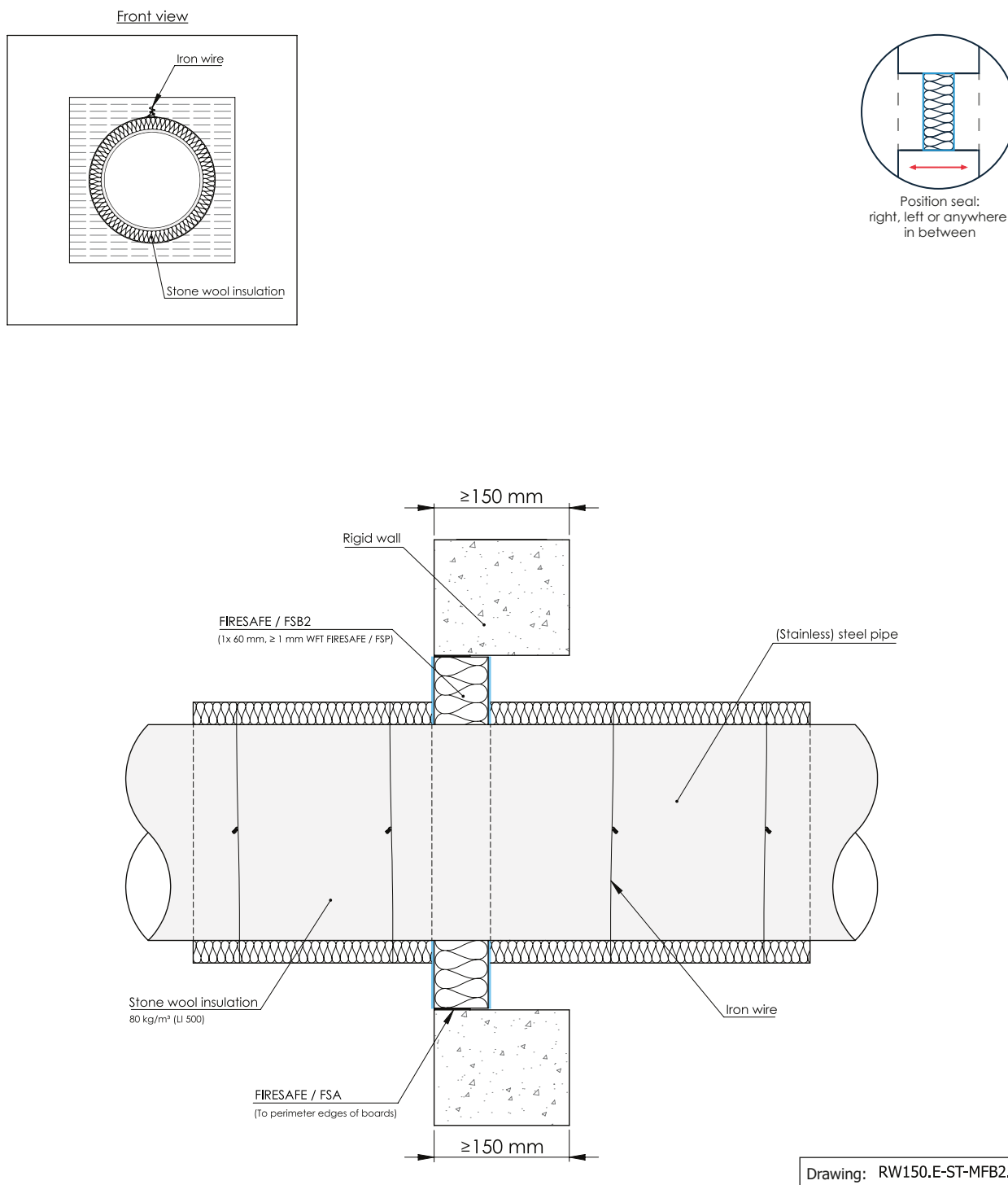
Services	Coating	Classification
Cables ≤ Ø 21 mm (single)	Coat back 150 mm, ≥ 1 mm WFT	EI 45, E 240

A.2.7

FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated mineral wool

A.2.7.1

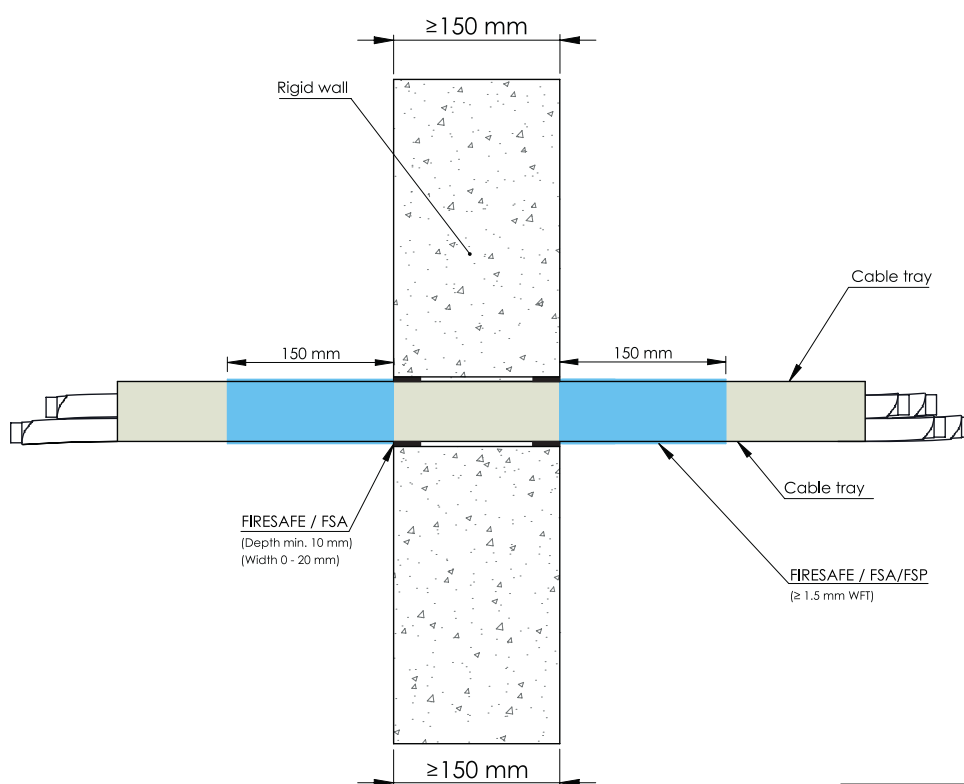
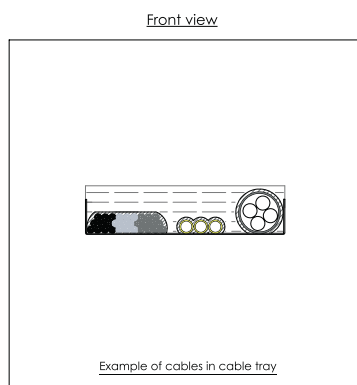
Copper and steel pipes - Stone wool LI / CI



Services	Pipe dimensions (mm)		Insulation			Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration	
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 500 / CI	EI 90 C/U, E 240 C/U
					CI	EI 120 C/U, E 240 C/U
	≤ Ø 54	≥ 1.5			LI 500 / CI	EI 90 C/U, E 240 C/U
					CI	EI 120 C/U, E 240 C/U
(Stainless) Steel / cast iron	≤ Ø 40	≥ 1.0		≥ 30	LI 600 / CI	EI 240 C/U
	≤ Ø 219	≥ 4.0				EI 120 C/U, E 240 C/U
			CI		EI 180 C/U, E 240 C/U	

A.2.8 Directly through wall - Cables, trays and conduits

A.2.8.1 Cables, trays and conduits - FIRESAFE / FSP - 150 mm

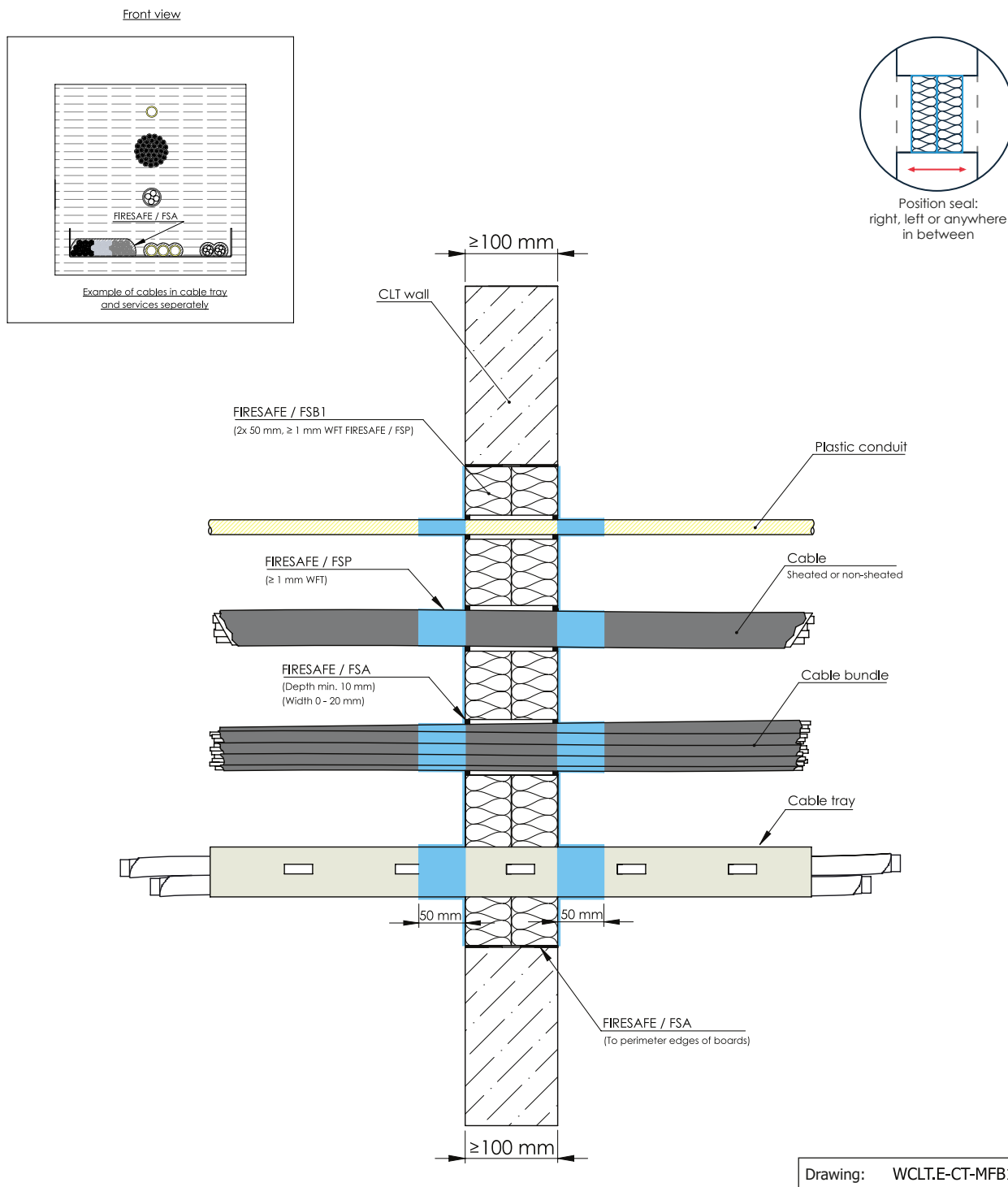


Drawing: RW150.E-PB-CT-0.10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSA/C	EI 240
Metal (non-)perforated cable trays		EI 120, E 180
Steel wire mesh cable trays (baskets)		EI 180 U/C
Cables $\leq \varnothing 21$ mm		
Cables $\leq \varnothing 21$ mm in a tied bundle $\leq \varnothing 100$ mm		
Plastic conduits $\leq \varnothing 16$ mm		

A.3.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

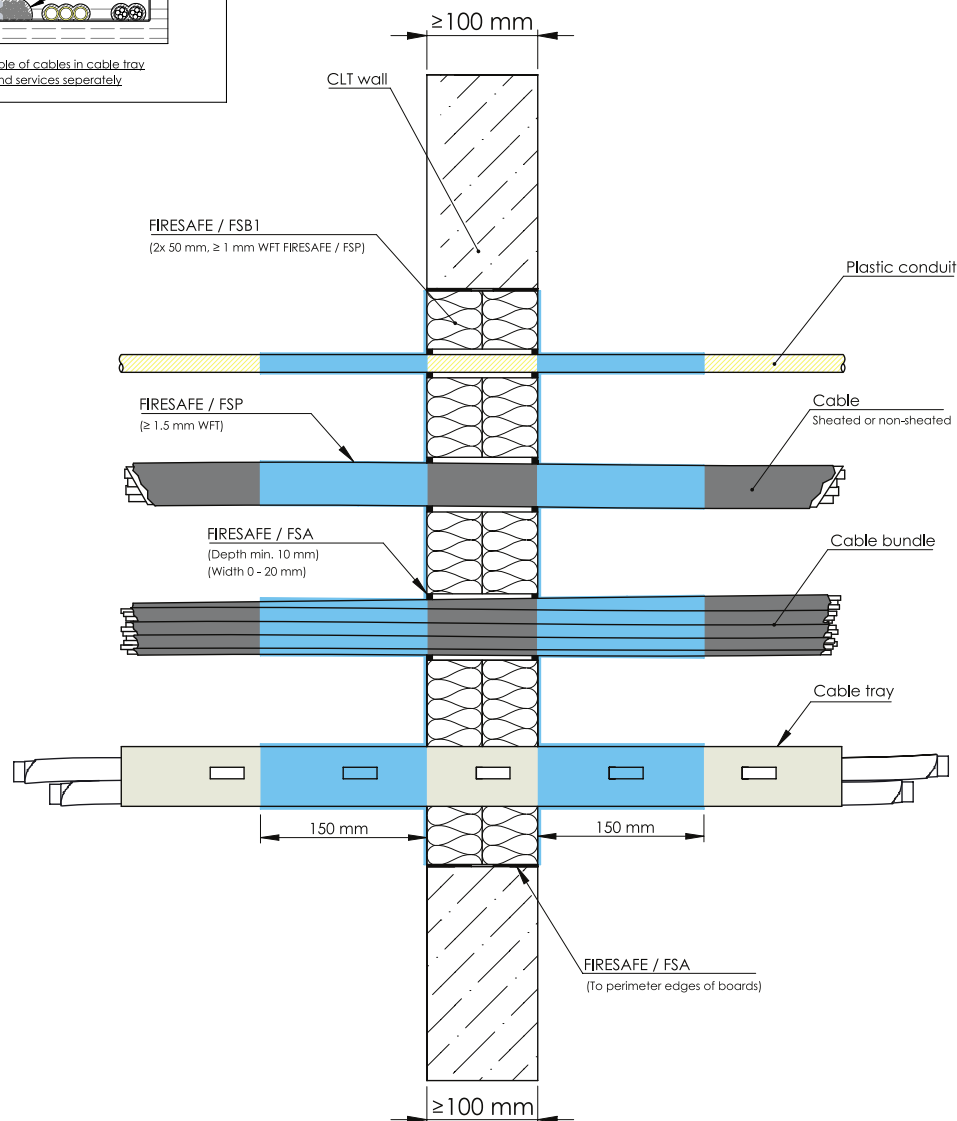
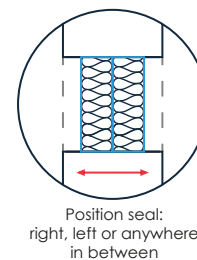
A.3.1.1 Cables, trays and conduits - FIRESAFE / FSP - 50 mm



Services	Coating	Classification
Metal cable ladders	Coat back 50 mm ≥ 1 mm WFT FIRESAFE / FSP	EI 60, E 90
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables $\leq \varnothing 80$ mm		
Cables $\leq \varnothing 21$ mm in a tied bundle $\leq \varnothing 100$ mm		EI 45, E 90
Non sheathed cables $\leq \varnothing 24$ mm		EI 60 U/C, E 90 U/C
Plastic conduits $\leq \varnothing 16$ mm		EI 45 C/U, E 60 C/U
Copper conduits $\leq \varnothing 16$ mm		EI 60 C/U
Steel conduits $\leq \varnothing 16$ mm		

A.3.1.2 Cables, trays and conduits - FIRESAFE / FSP - 150 mm

Example of cables in cable tray and services separately

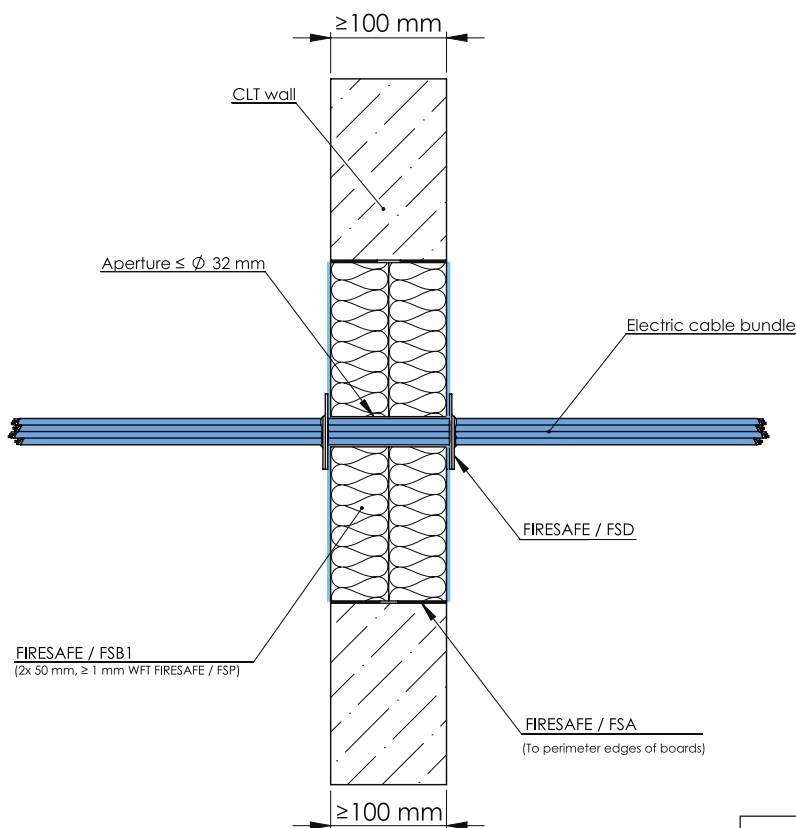
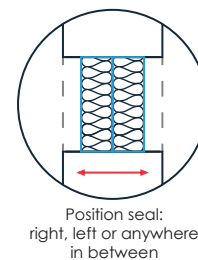
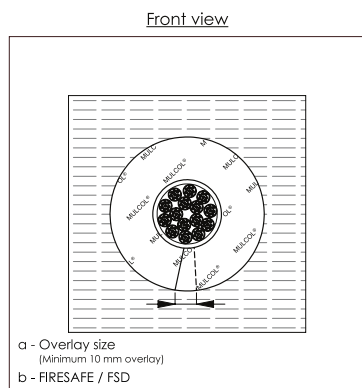


Drawing: WCLT.E-CT-MFB1.2.10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSP	EI 90
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 80 mm		
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 60, E 90
Non sheathed cables ≤ Ø 24 mm		
Plastic conduits ≤ Ø 16 mm		
Copper conduits ≤ Ø 16 mm		
Steel conduits ≤ Ø 16 mm		
	EI 90 U/C	
	EI 45 C/U, E 90 C/U	
	EI 90 C/U	

A.3.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.3.1.4 Multiple cables - FIRESAFE / FSD

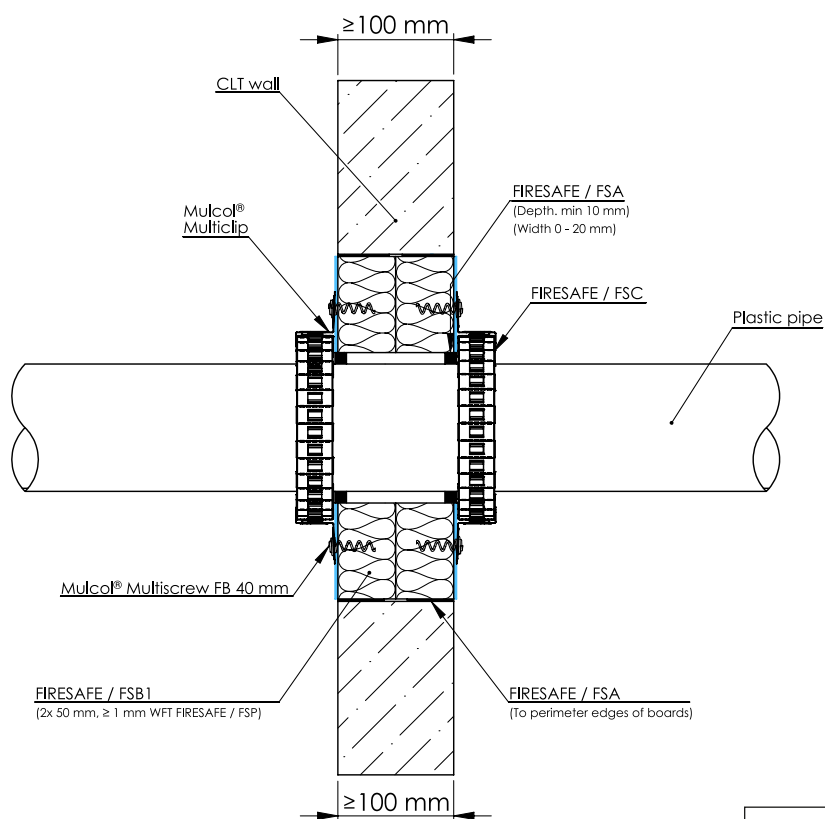
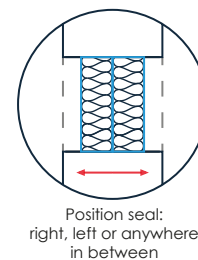
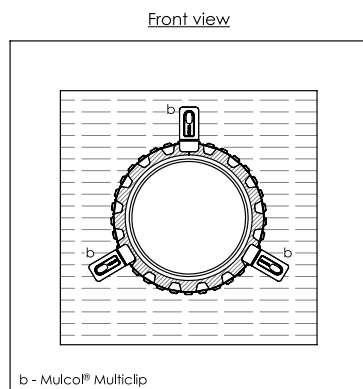


Drawing: WCLT.E-ECB-MFB1-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Multiple electrical / telecommunication cables max. 15 pcs., max. $\leq \varnothing 25$	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 60, E 90

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.3.2.1 Plastic pipes - FIRESAFE / FSC



Drawing: WCLT.E-MC30-PP-MFB1.2.10

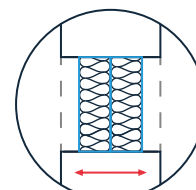
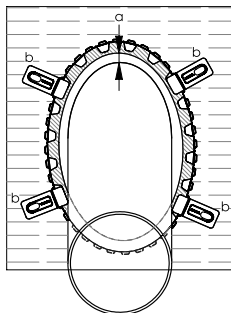
Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7 - 6.6	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/U
PP		2.7			
PVC(-U/-C)					

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

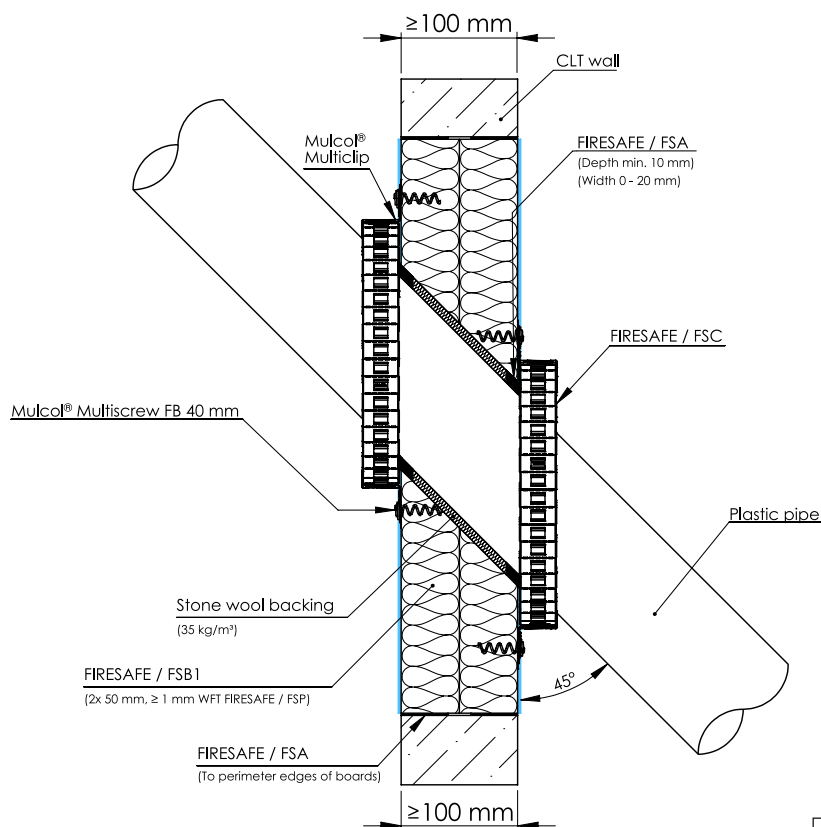
A.3.2.2 Plastic pipes perpendicular to 45° - FIRESAFE / FSC

Front view

a - Annular space
(Maximum 15 mm between pipe and FIRESAFE / FSC)
b - Mulcol® Multiclip



Position seal:
right, left or anywhere
in between



Drawing: WCLT,E-MC30-PP-MFB1-10.1,10

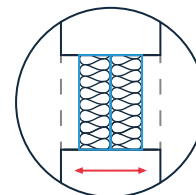
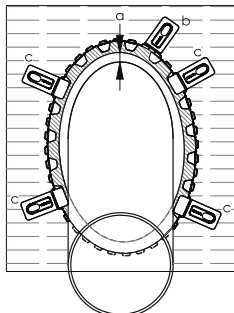
Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/C
PP					
PVC(-U/-C)					

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

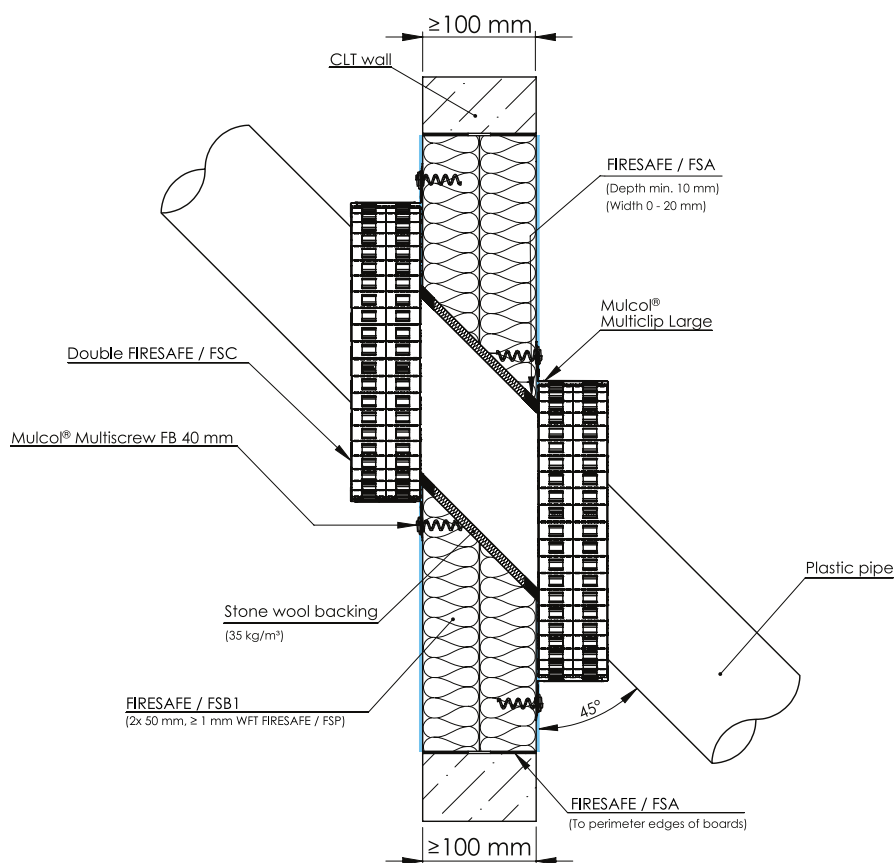
A.3.2.3 Plastic pipes perpendicular to 45° - FIRESAFE / FSC

Front view

- a - Annular space
(Maximum 15 mm between pipe and FIRESAFE / FSC)
b - Mulcol® Multiclip
c - Mulcol® Multiclip Large



Position seal:
right, left or anywhere
in between

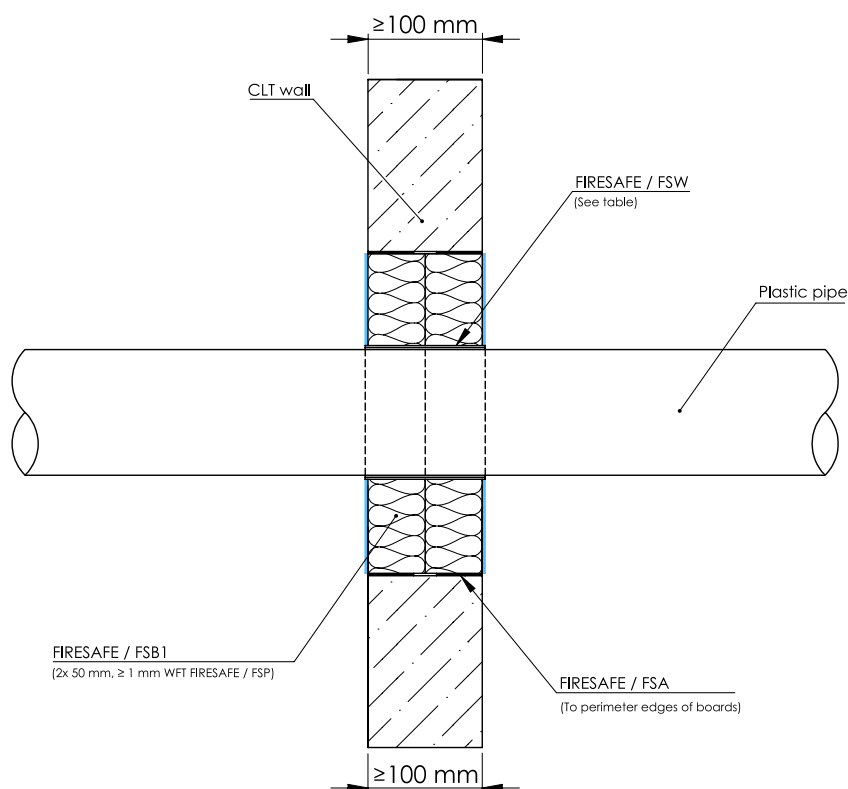
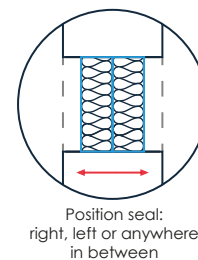
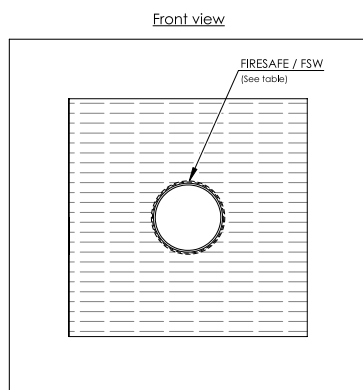


Drawing: WCLT,E-MC60-PP-MFB1-20,1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC Double	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/U
		2.7 - 10.0			EI 90 U/C
PP		2.7			EI 30 U/U
		3.4			EI 90 U/C
		3.4 - 10.0			EI 60 U/C
PVC(-U/-C)		2.7			EI 30 U/U
		3.4			EI 90 U/C
		3.4 - 10.0			EI 60 U/C

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.3.2.4 Plastic pipes - FIRESAFE / FSW



Drawing: WCLT.E-PP-MW2-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.4 - 3.7	FIRESAFE / FSW (2 layers)	EI 90 U/U
	≤ Ø 110	2.7 - 10		EI 90 U/C
PP	≤ Ø 40	2.3 - 3.7		EI 90 U/U
		5.5		EI 90 U/C
	≤ Ø 110	3.4		EI 90 U/C
PVC(-U/-C)	≤ Ø 40	1.8 - 3.7		EI 90 U/U
	≤ Ø 110	1.6 - 8.1		EI 90 U/C

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.3.2.4 Plastic pipes - FIRESAFE / FSW**

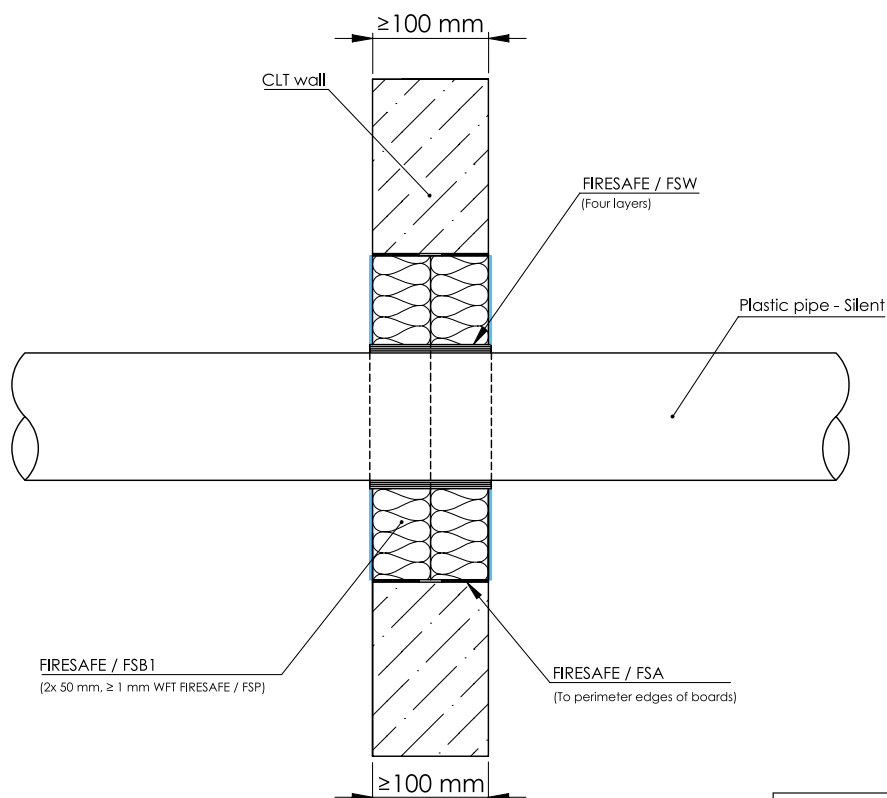
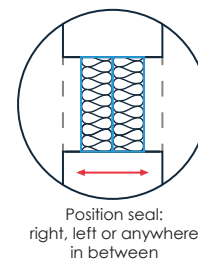
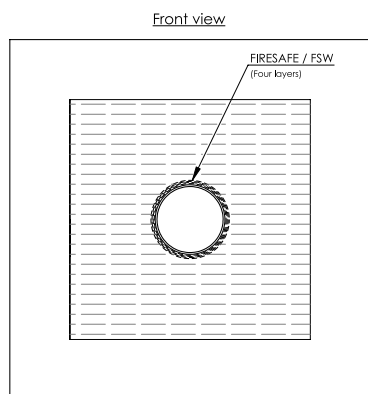
Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE / ABS / SAN+PVC	≤ Ø 125	3.9 - 4.8	FIRESAFE / FSW (3 layers)	EI 90 U/C
PP		3.1		
		3.1 - 11.4		
PVC(-U/-C)		3.7 - 4.8		

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PP	≤ Ø 110	10.0 - 14.6	FIRESAFE / FSW (4 layers)	EI 90 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 160	14.6		EI 90 U/C
		5.0		
PVC(-U/-C)		5.0 - 14.6		

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE / ABS / SAN+PVC	≤ Ø 125	11.4	FIRESAFE / FSW (5 layers)	EI 90 U/U
PVC(-U/-C)		9.2		

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.3.2.5 Plastic pipes (Silent) - FIRESAFE / FSW



Drawing: WCLT-PPS-MW4-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	≤ Ø 50	1.8 - 2.7	FIRESAFE / FSW (2 layers)	EI 90 U/C
	≤ Ø 110	2.7		
Geberit Silent dB20	≤ Ø 56	3.2 - 6.0		EI 90 U/U
	≤ Ø 110	6.0		
Wavin SiTech+	≤ Ø 40	2.0		EI 90 U/C
	≤ Ø 40	2.0 - 3.4		EI 90 U/U
	≤ Ø 50	1.8		EI 90 U/C
	≤ Ø 110	3.4		EI 90 U/C
Poloplast PoloKal NG	≤ Ø 50	2.0		

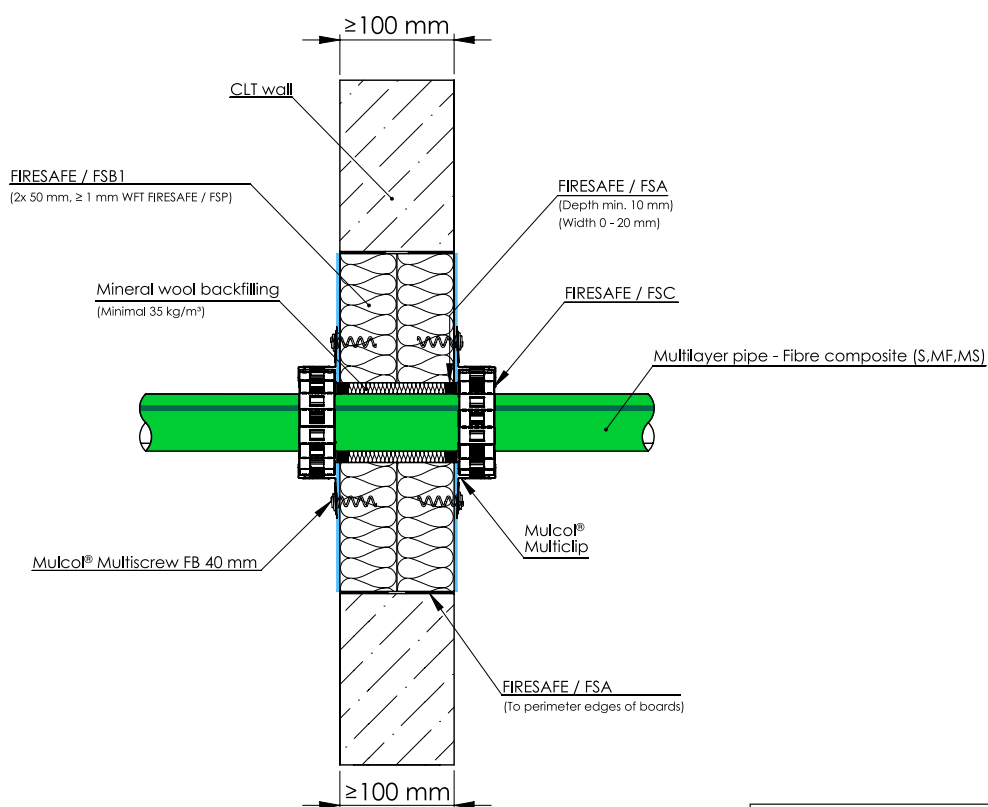
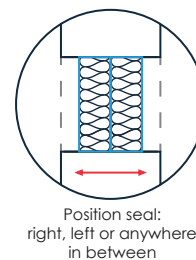
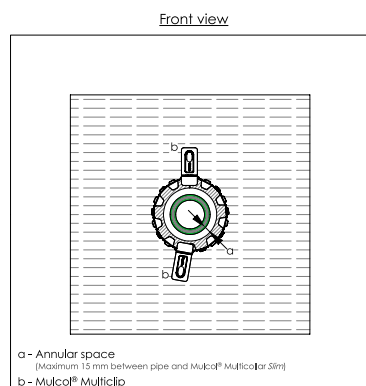
A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.3.2.5 Plastic pipes (Silent) - FIRESAFE / FSW**

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	$\leq \varnothing 110$	2.7	FIRESAFE / FSW (4 layers)	EI 90 U/U
	$\leq \varnothing 160$	4.0		EI 90 U/C
Poloplast PoloKal NG	$\leq \varnothing 110$	3.4		

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	$\leq \varnothing 160$	3.9	FIRESAFE / FSW (6 layers)	EI 90 U/U
Poloplast PoloKal NG	$\leq \varnothing 160$	4.9		EI 90 U/C

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.3.2.6 PP-R multilayer pipes - FIRESAFE / FSC

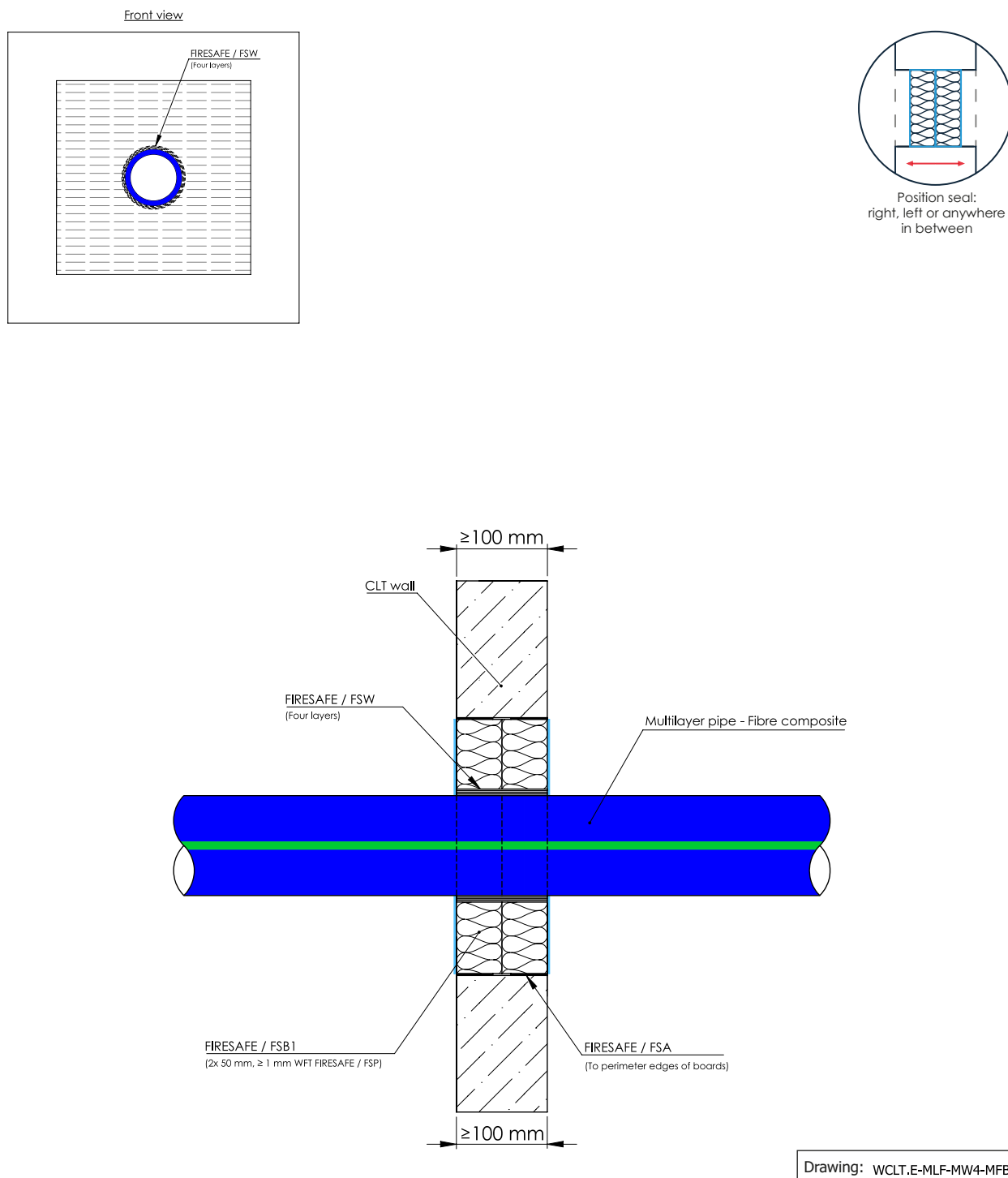


Drawing: WCLT.E-MC30-MLF-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Aquatherm Green	$\leq \varnothing 50$	6.9	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/C

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

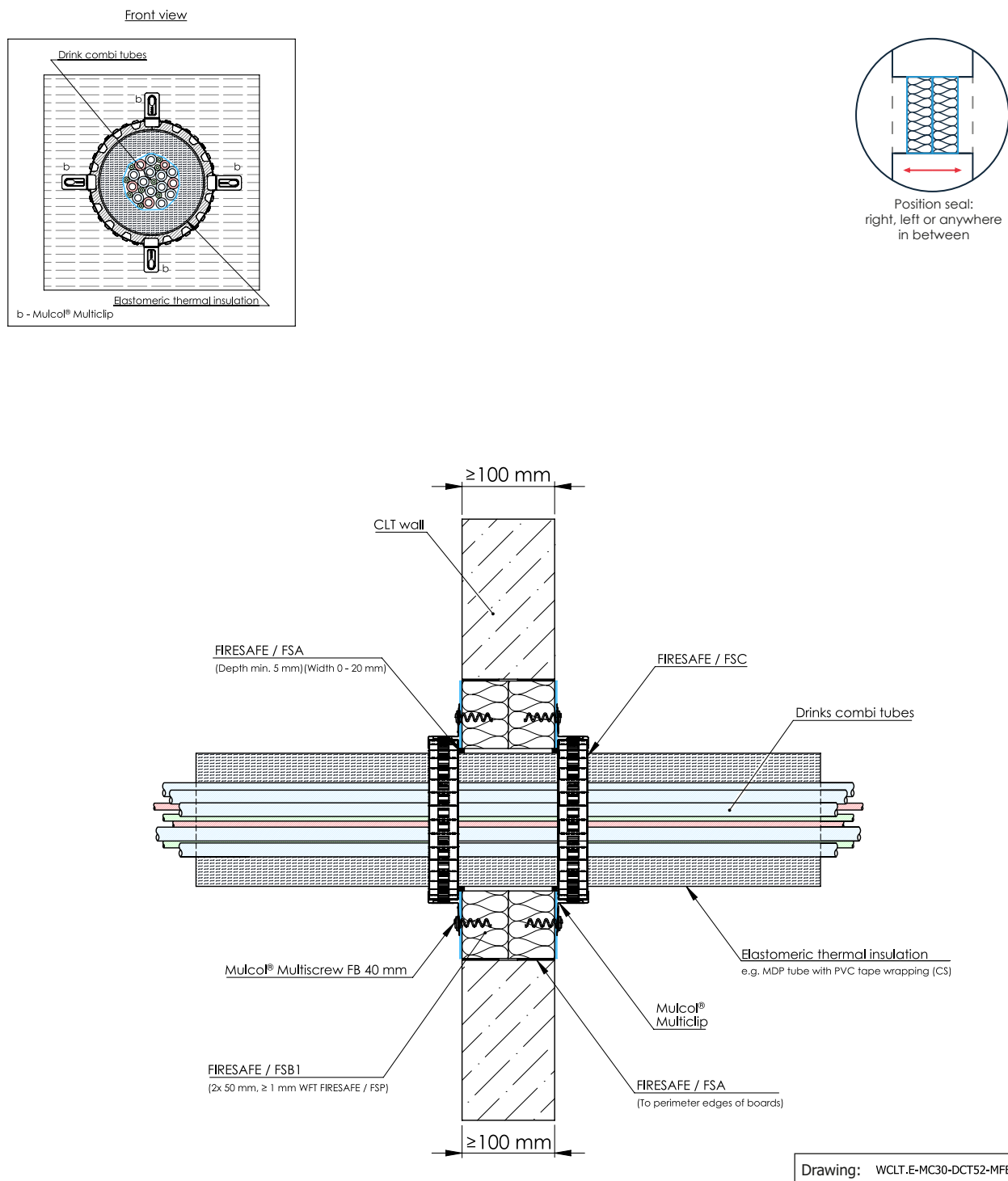
A.3.2.7 PP-R multilayer pipes - FIRESAFE / FSW



Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Aquatherm Blue	≤ Ø 40	3.7	FIRESAFE / FSW (2 layers)	EI 90 U/C
	≤ Ø 50	4.6		EI 90 U/U
	≤ Ø 110	10	FIRESAFE / FSW (4 layers)	EI 90 U/C

A.3.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

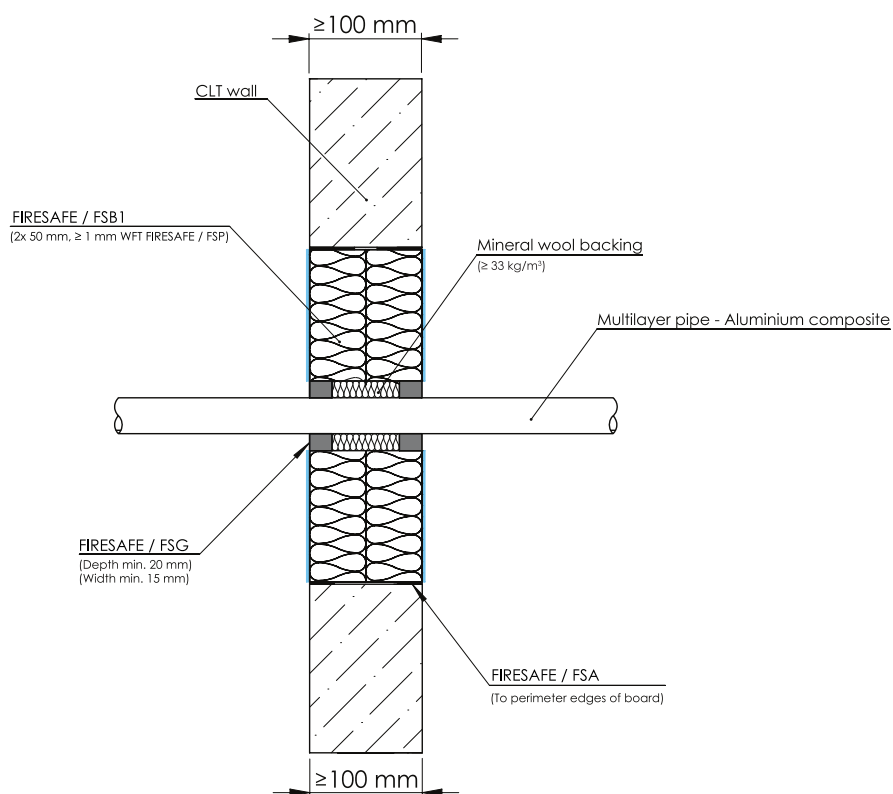
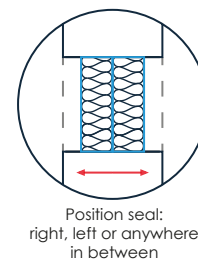
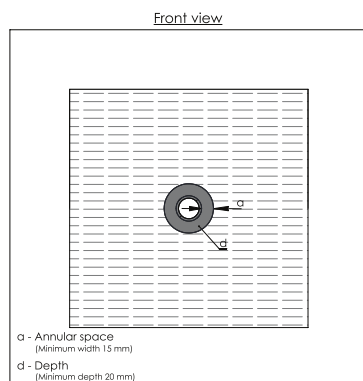
A.3.2.8 Drinks tubing system - FIRESAFE / FSC



Services	Dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Hoses no.	Type	Thickness (mm)	Configuration			
Drinks tubing system	≤ Ø 47	≤ 3	Elastomeric foam	8.5 - 35	CS	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 U/C
	≤ Ø 145	≤ 52						

A.3.3 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.3.3.1 Multilayer pipes (MLC) - FIRESAFE / FSG

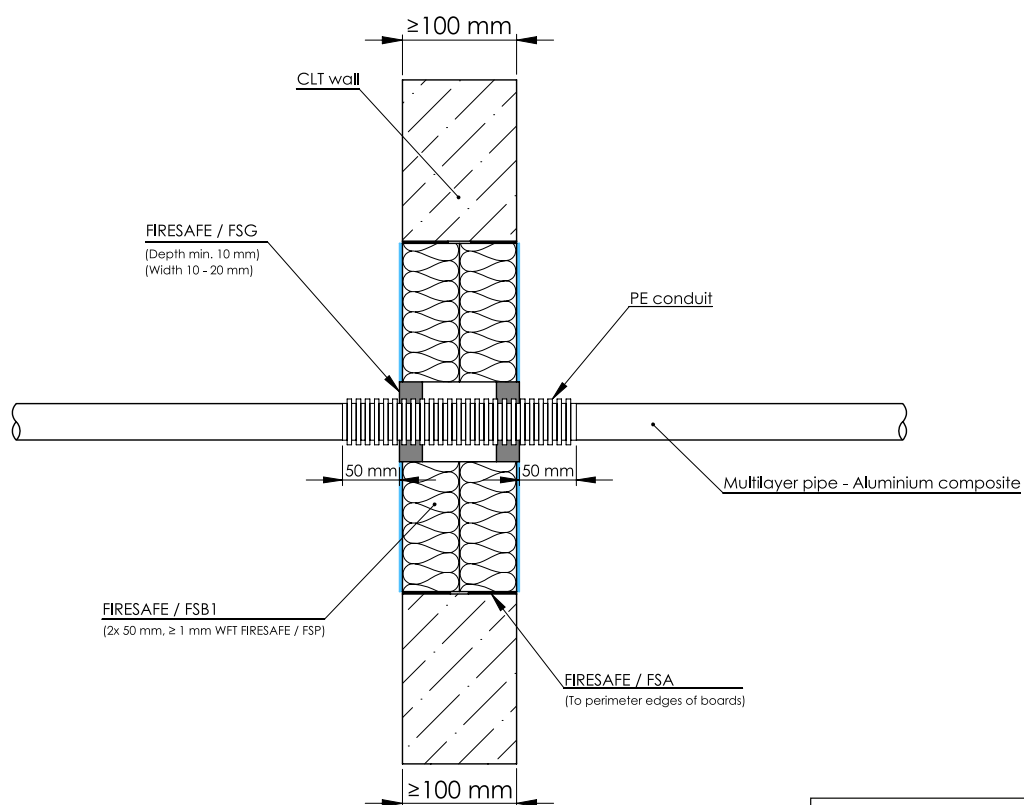
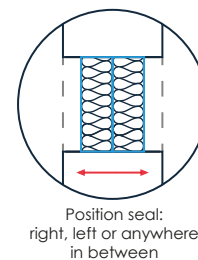
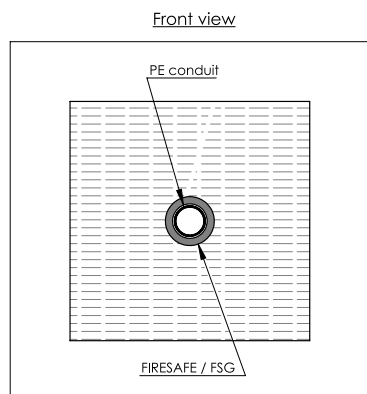


Drawing: WCLT.E-MLA-MFB1-G2.4.10

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 32	3.0	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 33 kg/m³)	EI 90 U/C
	≤ Ø 40	4.0			

A.3.3 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.3.3.2 Multilayer pipes (MLC) - Conduit - FIRESAFE / FSG

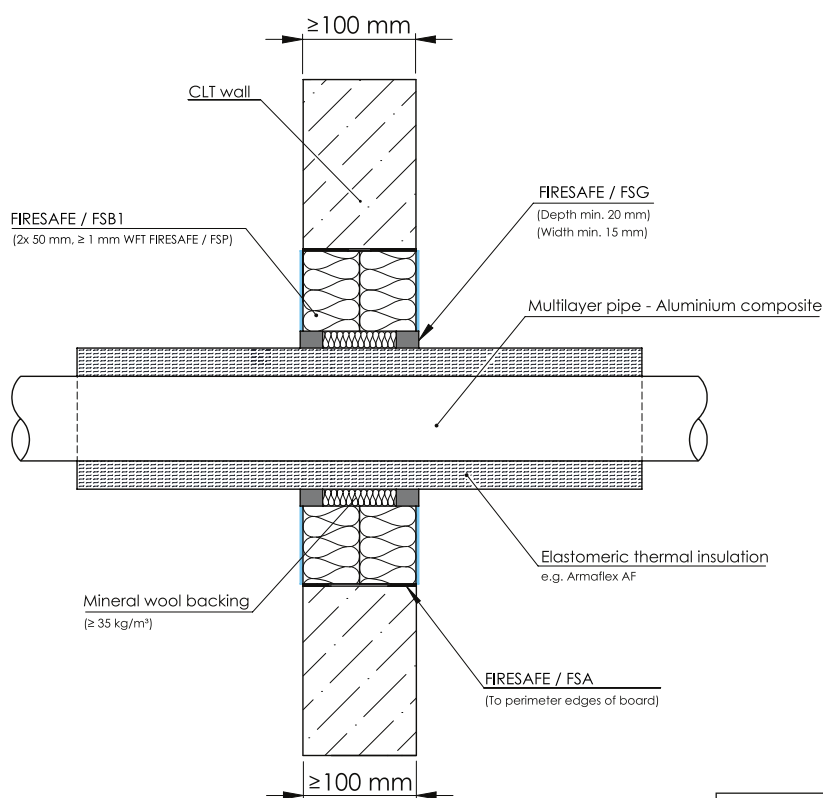
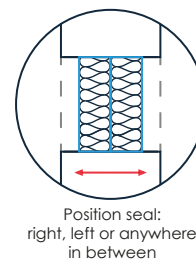
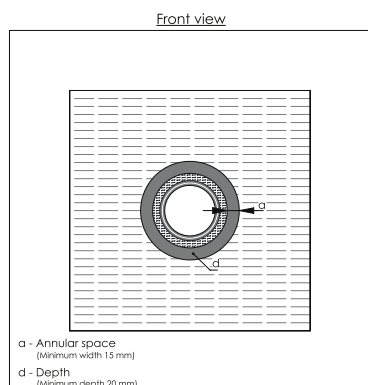


Drawing: WCLT-MLA-MFB1-G2.18.30

Services	Pipe dimensions (mm)		Conduit			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Outer dimension (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0	PE-conduit ribbed	≤ Ø 40	LS 50 / CS	FIRESAFE / FSG 10-20 x ≥ 10 (wxd)	EI 60 U/C

A.3.3 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.3.3.3 Multilayer pipes (MLC) - Elastomer LS 300 / CS - FIRESAFE / FSG

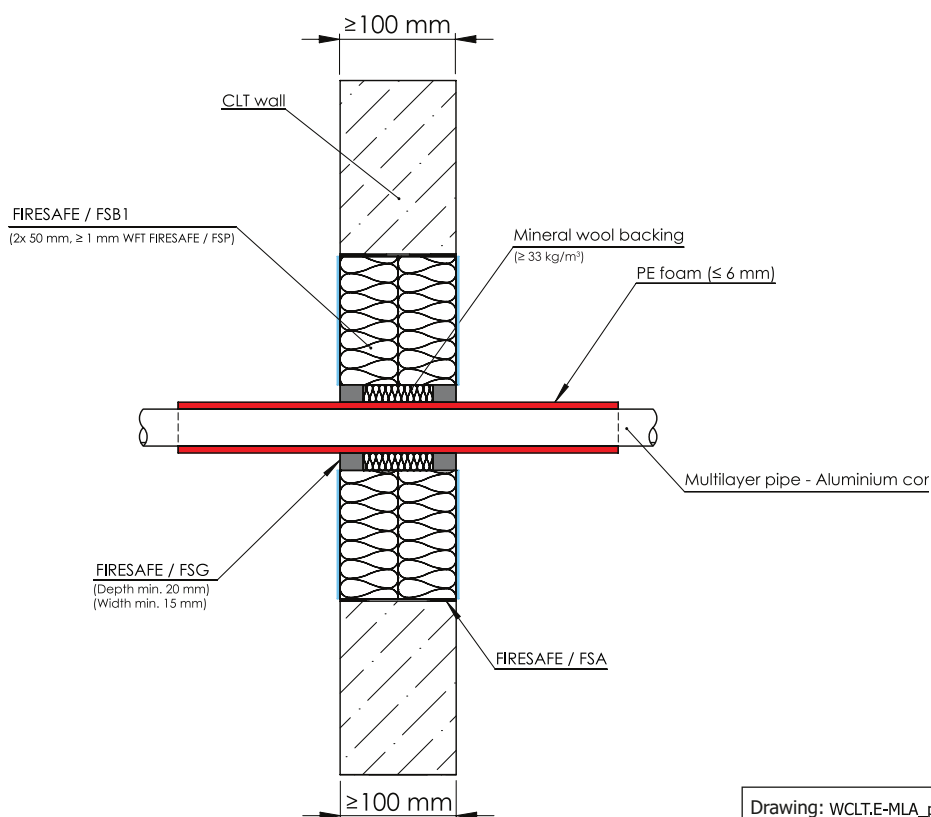
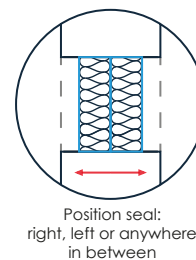
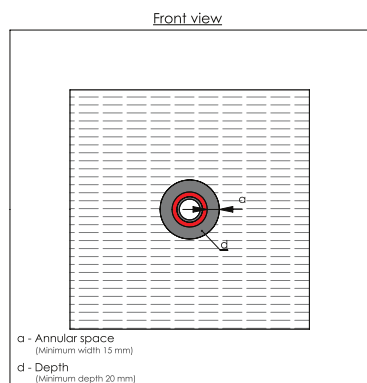


Drawing: WCLT,E-MLA-MFB1-G2.4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	$\leq \varnothing 75$	6.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LS 400 / CS	FIRESAFE / FSG $\geq 15 \times 20$ mm (wxd)	EI 90 U/C

A.3.3 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.3.3.4 Multilayer pipes (MLC) - PE foam - FIRESAFE / FSG

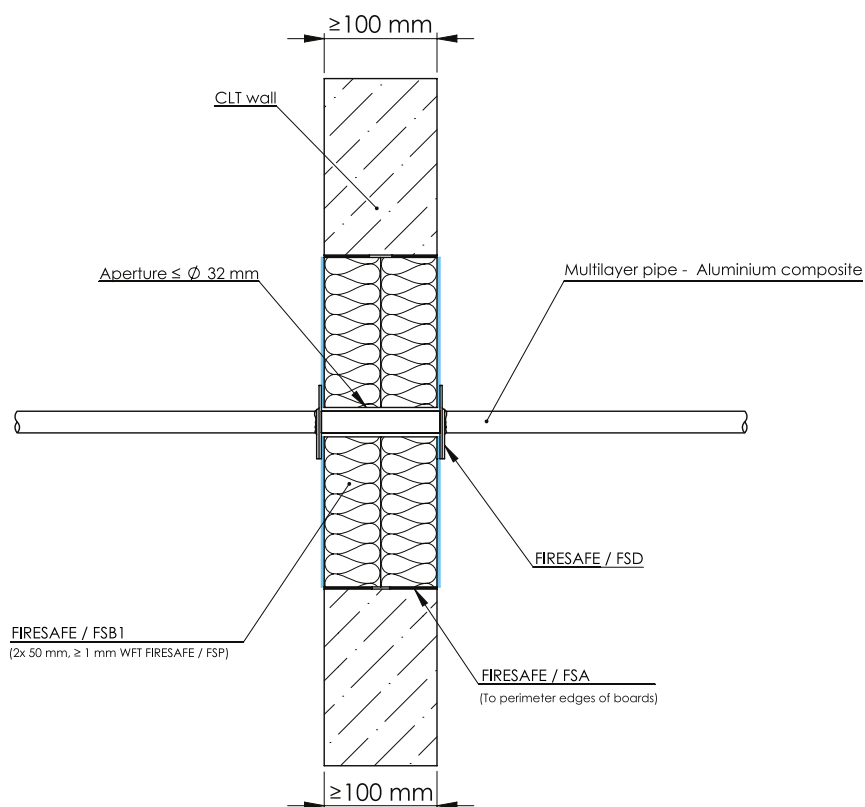
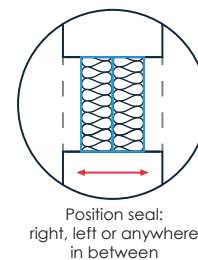
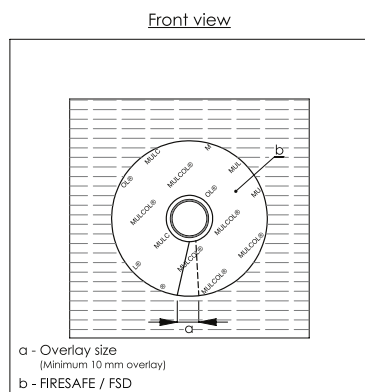


Drawing: WCLT.E-MLA_pr-MFB1-G2.4.23

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0	PE Foam	≤ 6	LS 300 / CS LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 90 U/C

A.3.3 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.3.3.5 Multilayer pipes (MLC) - FIRESAFE / FSD

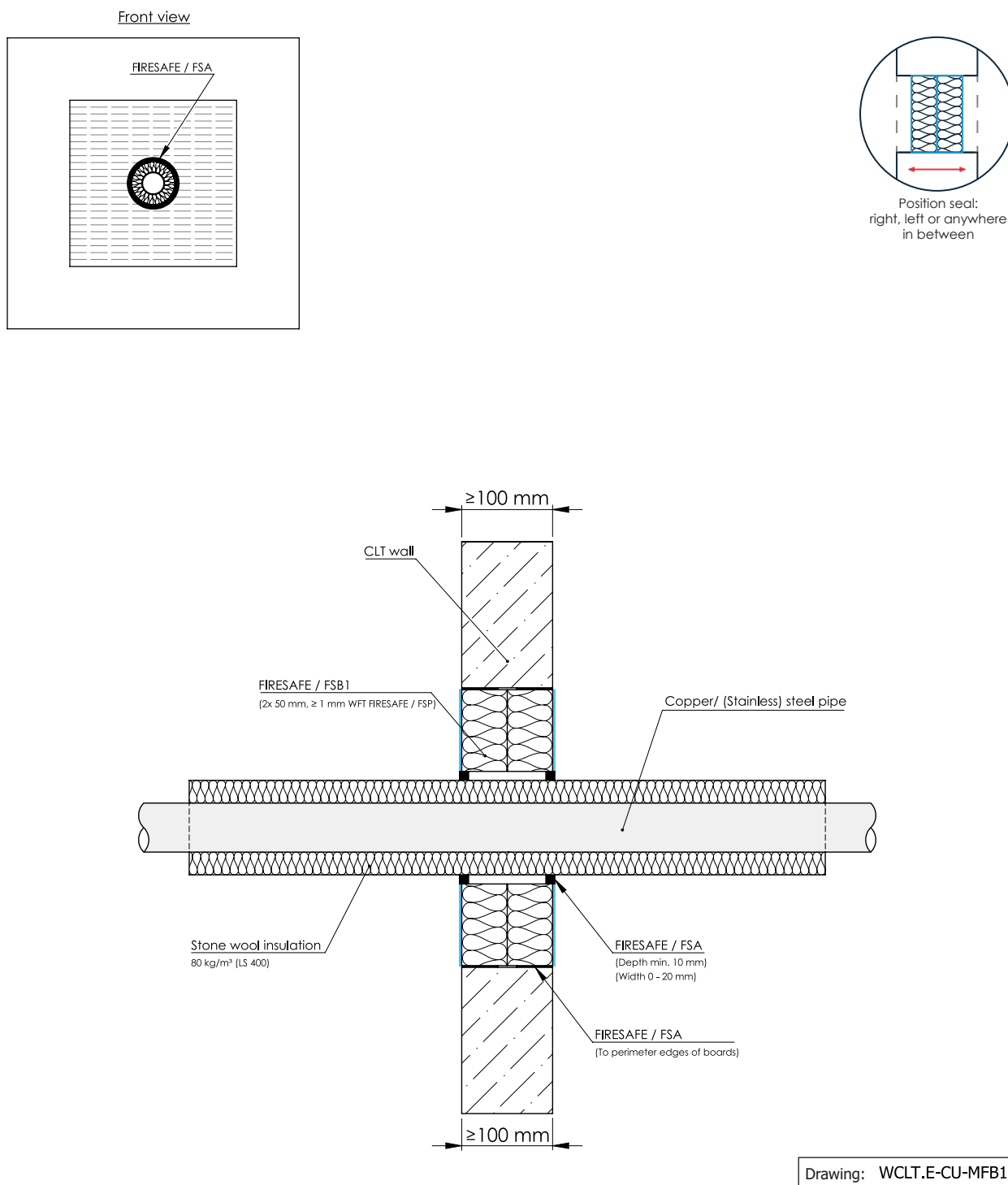


Drawing: WCLT.E-MFB1-MLA-M2.0.10

Services	Pipe dimensions (mm)		Aperture (mm)	Product	Sealing (mm)	Classification
	Outer diameter	Wall thickness				
Multilayer pipes (MLC)	$\leq \varnothing 16$	2.0	$\leq \varnothing 32$	FIRESAFE / FSD	Not required	EI 60 U/C E 90 U/C

A.3.4 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated mineral wool

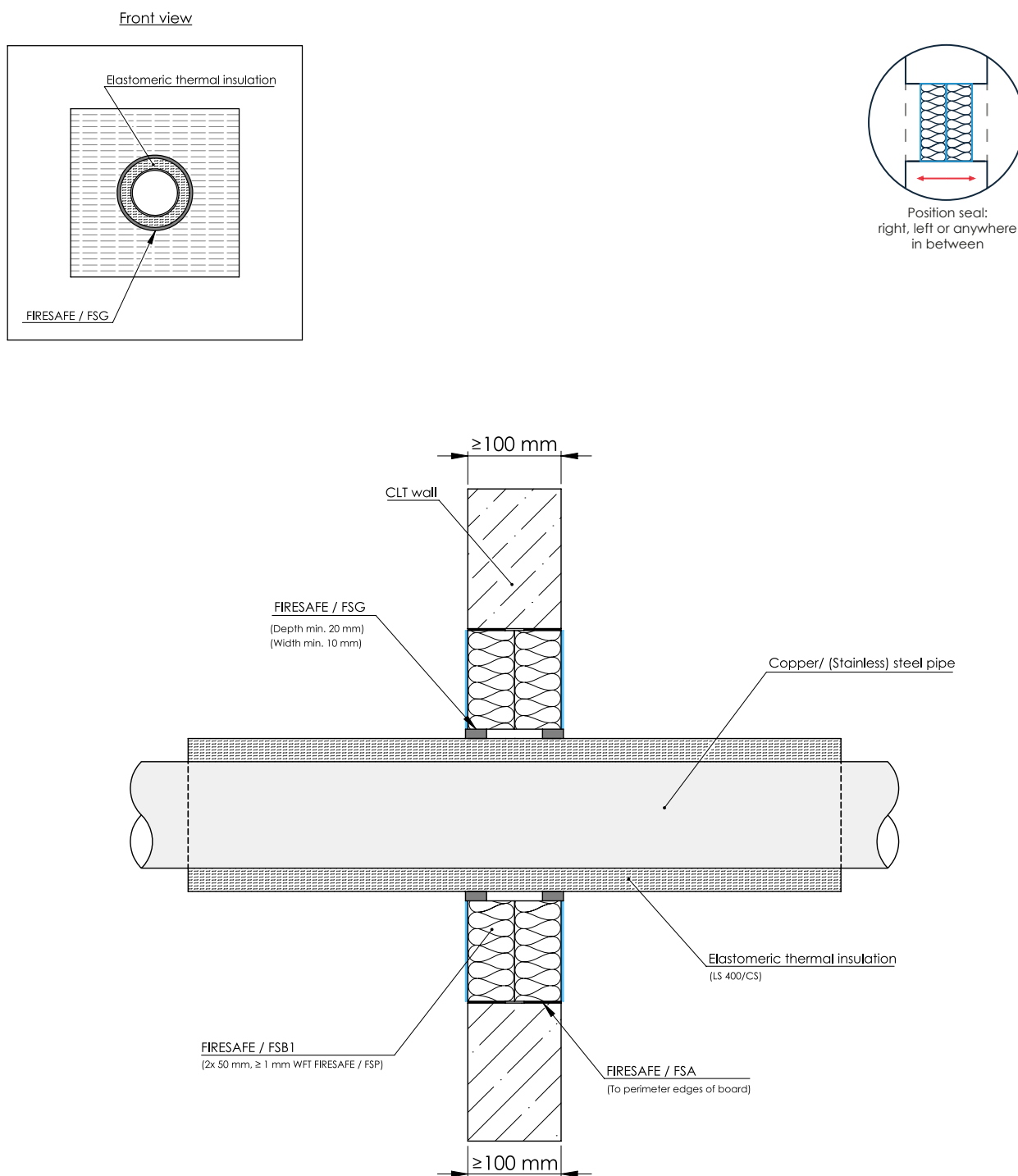
A.3.4.1 Copper and steel pipes - Stone wool LS 400 / CS



Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel /	≤ Ø 12	≥ 1.5					
cast iron	≤ Ø 114.3	≥ 3.6					

A.3.5 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.3.5.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

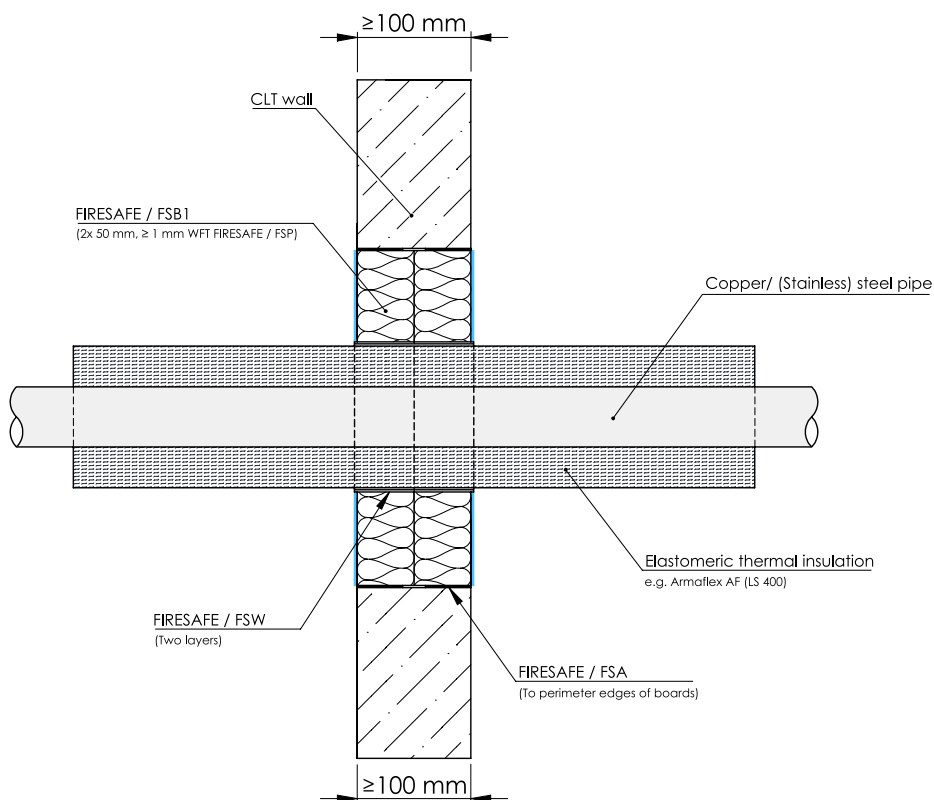
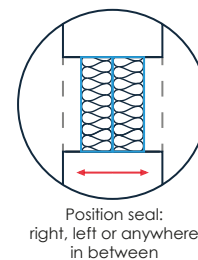
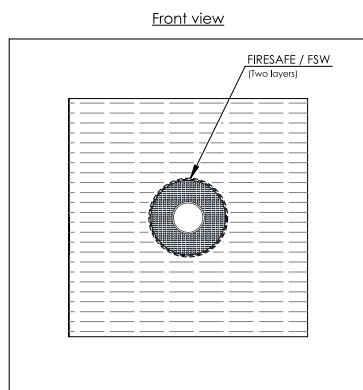


Drawing: WCLT,E-CU-MFB1-G2.4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5 - 38	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 90 C/U
	≤ Ø 54	≥ 1.5		13.5 - 38			EI 30 C/U, E 90 C/U
				13.5	CS		EI 90 C/U
				13.5 - 38			EI 60 C/U, E 90 C/U
				38	LS 400 / CS		EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5 - 38			EI 90 C/U
	≤ Ø 114.3	≥ 3.6		15 - 43			EI 45 C/U, E 90 C/U
			43	EI 60 C/U, E 90 C/U			

A.3.5 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.3.5.2 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW

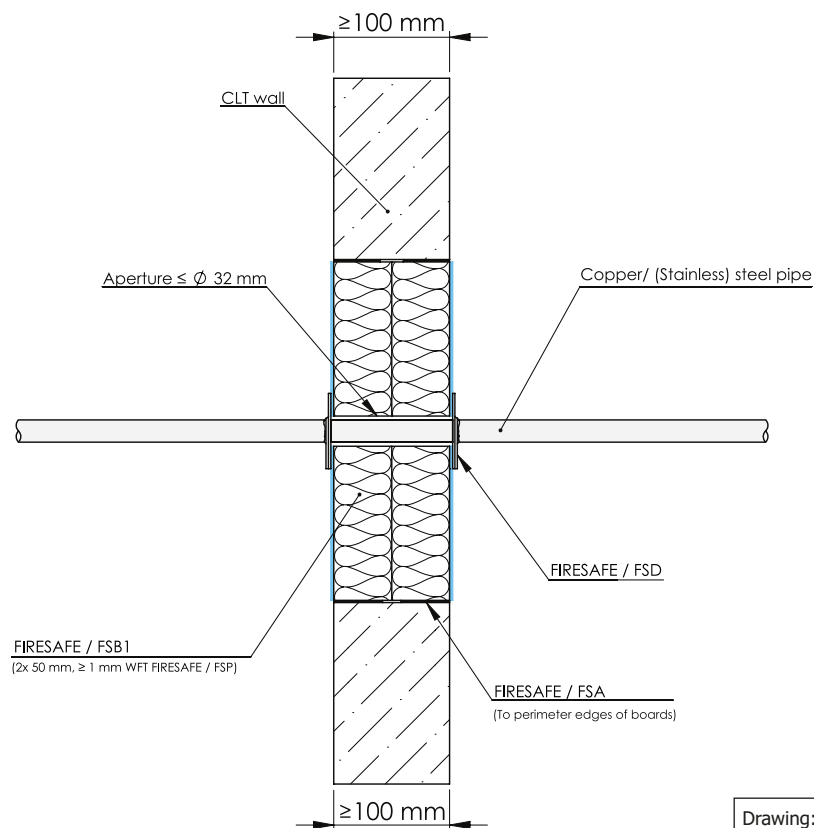
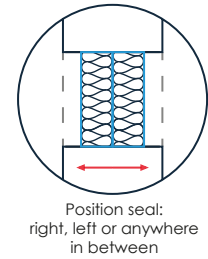
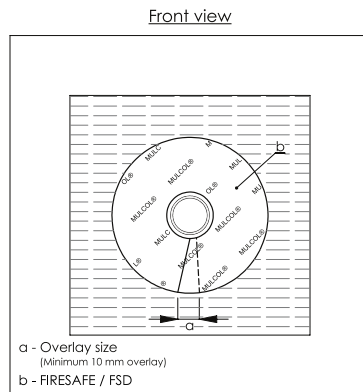


Drawing: WCLT.E-CU-MW2-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 12	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9	LS 400 / CS	FIRESAFE / FSW (2 layers)	EI 90 C/U
	≤ Ø 35	≥ 1.1		35			
	≤ Ø 54	≥ 1.5		60			
				38			
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		15			EI 60 C/U, E 90 C/U

A.3.6 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes uninsulated

A.3.6.1 Copper and steel pipes - FIRESAFE / FSD

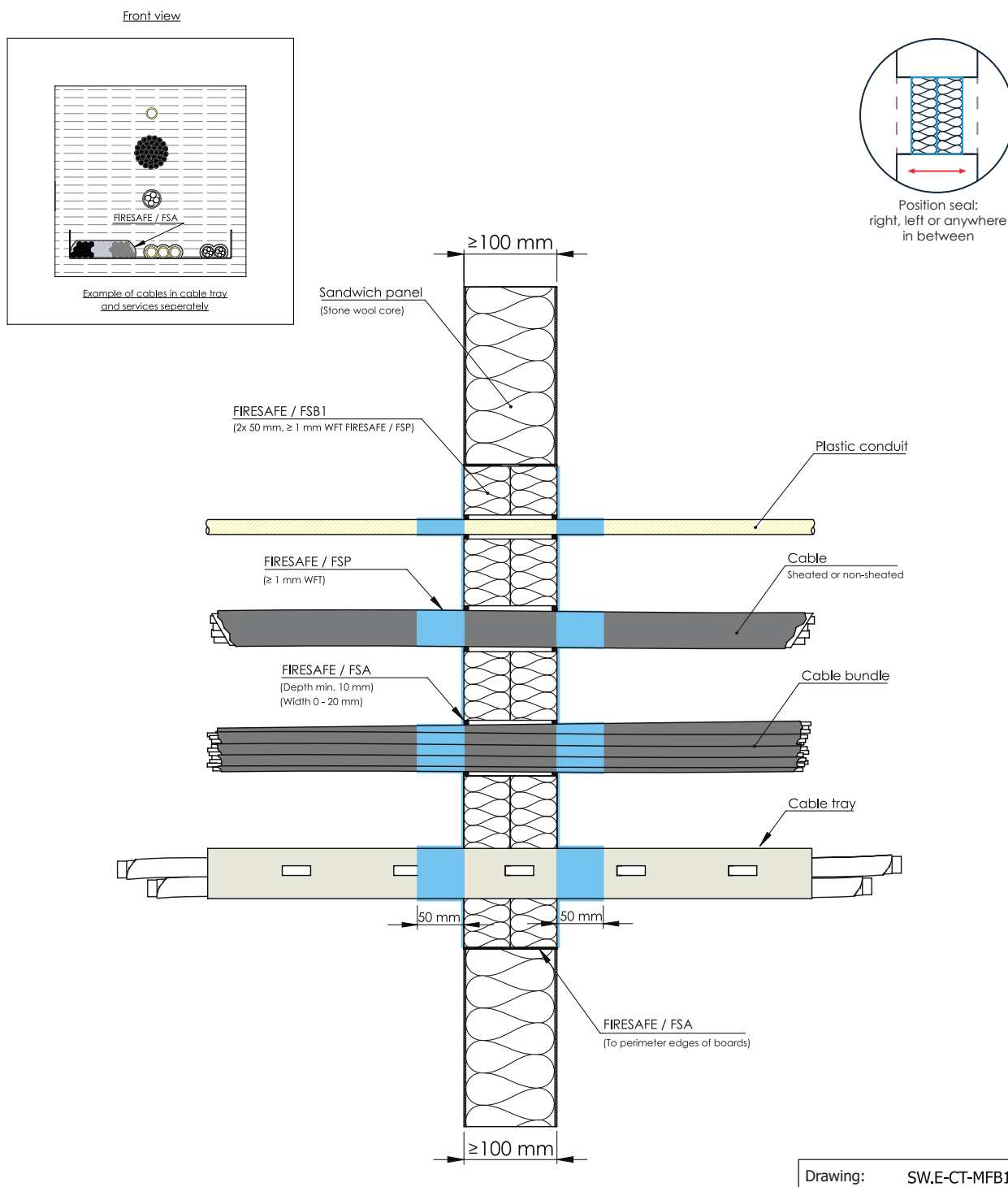


Drawing: WCLT.E-MFB1-CU-M2.0.10

Services	Pipe dimensions (mm)		Product	Aperture (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness				
Copper / (stainless) steel / cast iron	$\leq \varnothing 15$	≥ 1.0	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 45 C/U, E 90 C/U
(Stainless) Steel / cast iron	$\leq \varnothing 17.2$					EI 90 C/U

A.4.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

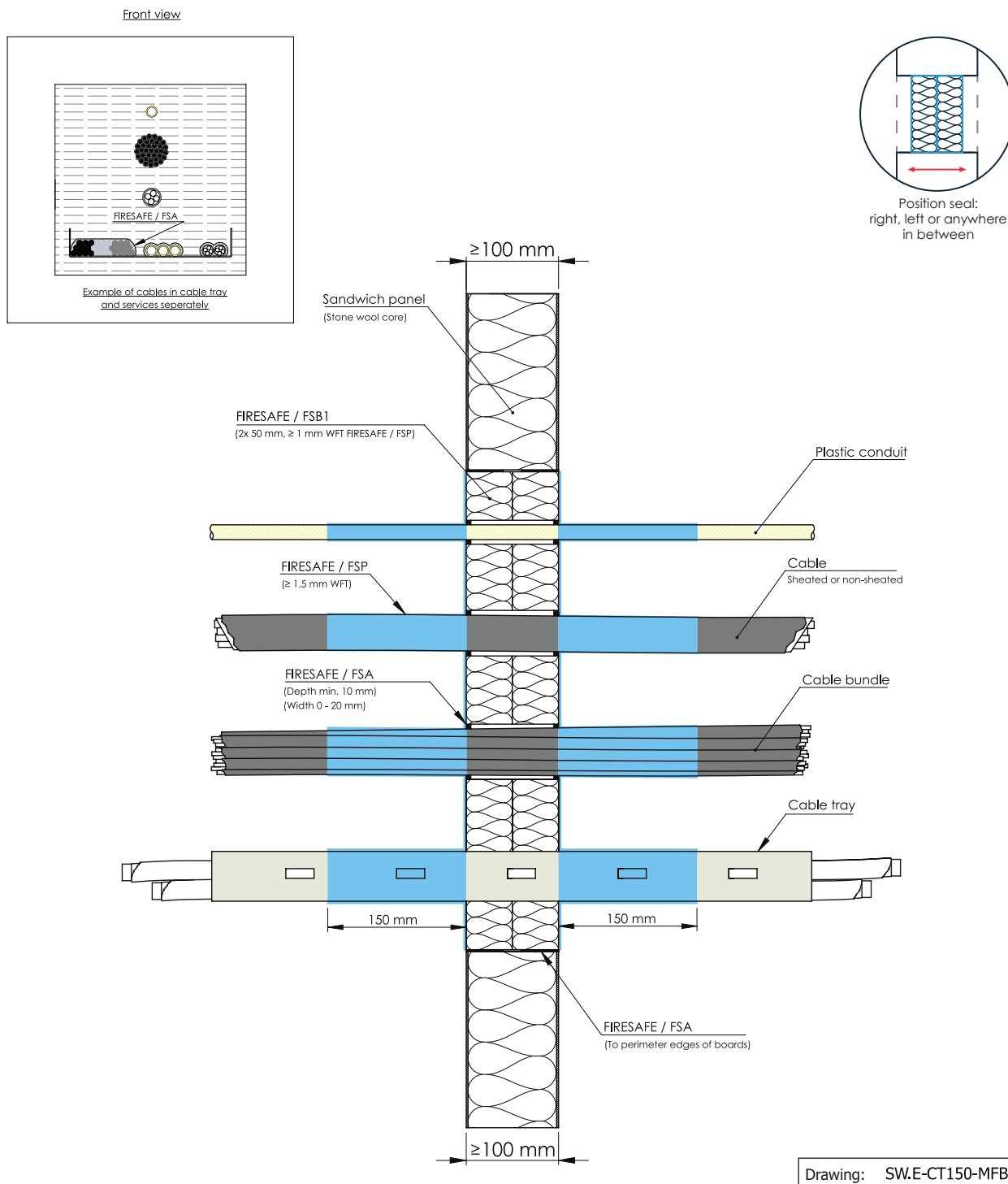
A.4.1.1 Cables, trays and conduits - FIRESAFE / FSP - 50 mm



Services	Coating	Classification
Metal cable ladders	Coat back 50 mm ≥ 1 mm WFT FIRESAFE / FSP	EI 60, E 90
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		EI 45, E 90
Cables $\leq \varnothing 80$ mm		EI 60 U/C, E 90 U/C
Cables $\leq \varnothing 21$ mm in a tied bundle $\leq \varnothing 100$ mm		EI 45 C/U, E 60 C/U
Non sheathed cables $\leq \varnothing 24$ mm		EI 60 C/U
Plastic conduits $\leq \varnothing 16$ mm		
Copper conduits $\leq \varnothing 16$ mm		
Steel conduits $\leq \varnothing 16$ mm		

A.4.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

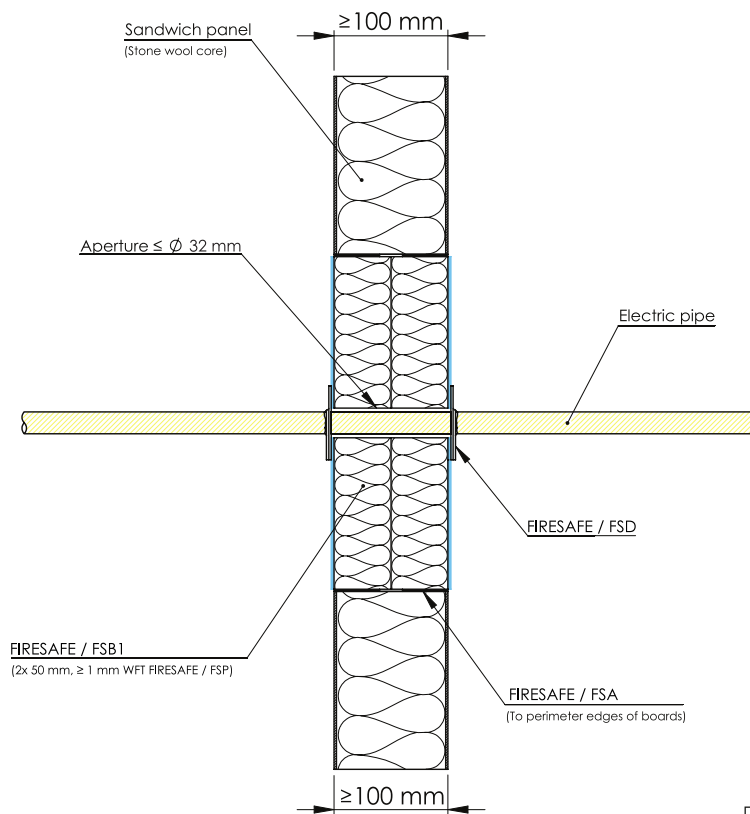
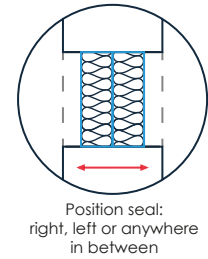
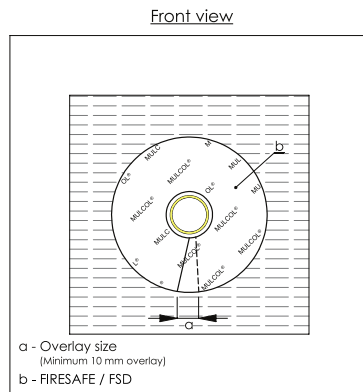
A.4.1.2 Cables, trays and conduits - FIRESAFE / FSP - 150 mm



Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSP	EI 90
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		EI 60, E 90
Cables ≤ Ø 80 mm		
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 90 U/C
Non sheathed cables ≤ Ø 24 mm		
Plastic conduits ≤ Ø 16 mm		EI 45 C/U, E 90 C/U
Copper conduits ≤ Ø 16 mm		EI 90 C/U
Steel conduits ≤ Ø 16 mm		

A.4.1 FIRESAFE / FSB1 - 2x 50 mm - Cables, trays and conduits

A.4.1.3 Single plastic conduits - FIRESAFE / FSD

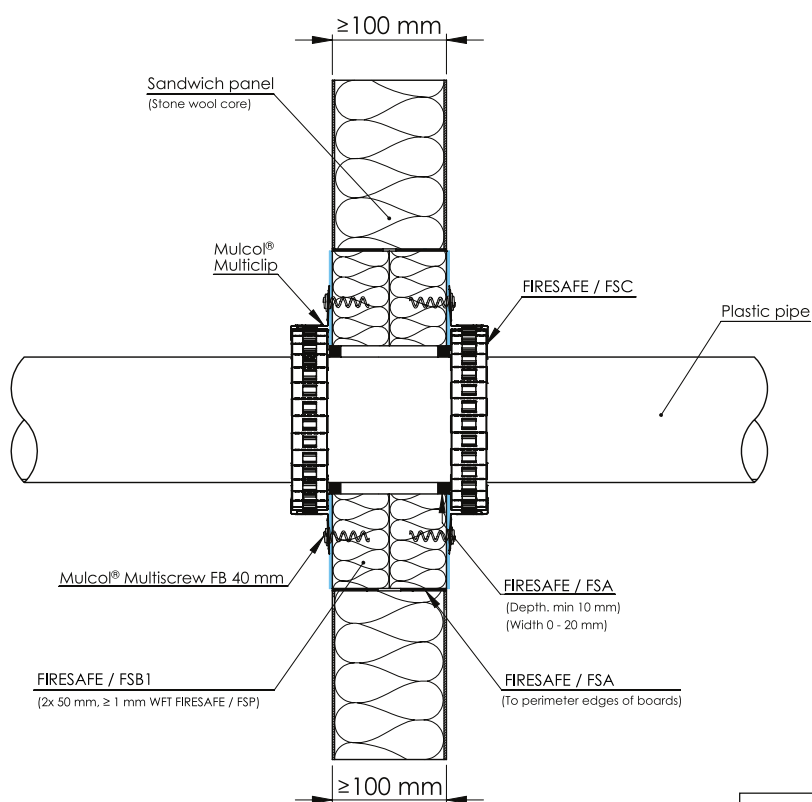
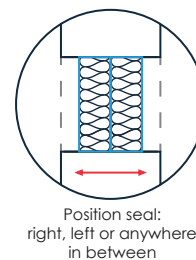
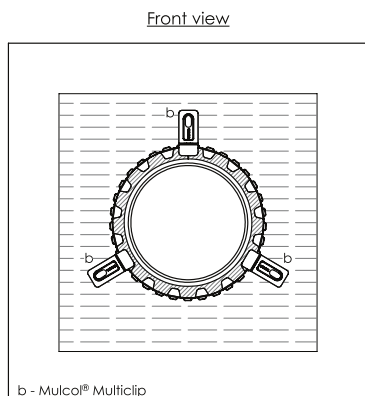


Drawing: SW.E-EP-MFB1-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \varnothing 25$ mm, with or without cables	FIRESAFE / FSD	$\leq \varnothing 32$	Not required	EI 90 U/U

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.4.2.1 Plastic pipes - FIRESAFE / FSC



Drawing: SW,E-MC30-PP-MFB1,2,10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.3 - 9.3	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U
	≤ Ø 110	2.7 - 6.6			EI 120 U/U
		6.6 - 9.3			EI 60 U/U
	≤ Ø 125	3.1 - 9.3			EI 60 U/C
	≤ Ø 160	4.0 - 9.5			

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.4.2.1 Plastic pipes - FIRESAFE / FSC**

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PP	≤ Ø 40	2.3 - 9.3	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U
	≤ Ø 110	2.7			EI 120 U/U
		2.7 - 9.3			EI 60 U/U
	≤ Ø 125	3.1 - 9.3			EI 60 U/C
	≤ Ø 160	4.0 - 9.1			

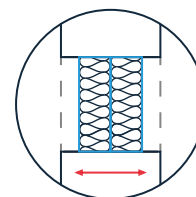
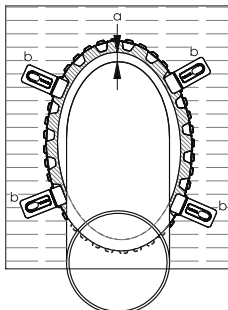
Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PVC(-U/-C)	≤ Ø 40	2.3 - 9.3	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U
	≤ Ø 110	2.7			EI 120 U/U
		2.7 - 9.3			EI 60 U/U
	≤ Ø 125	3.1 - 9.3			EI 60 U/C
	≤ Ø 160	4.0 - 9.1			

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

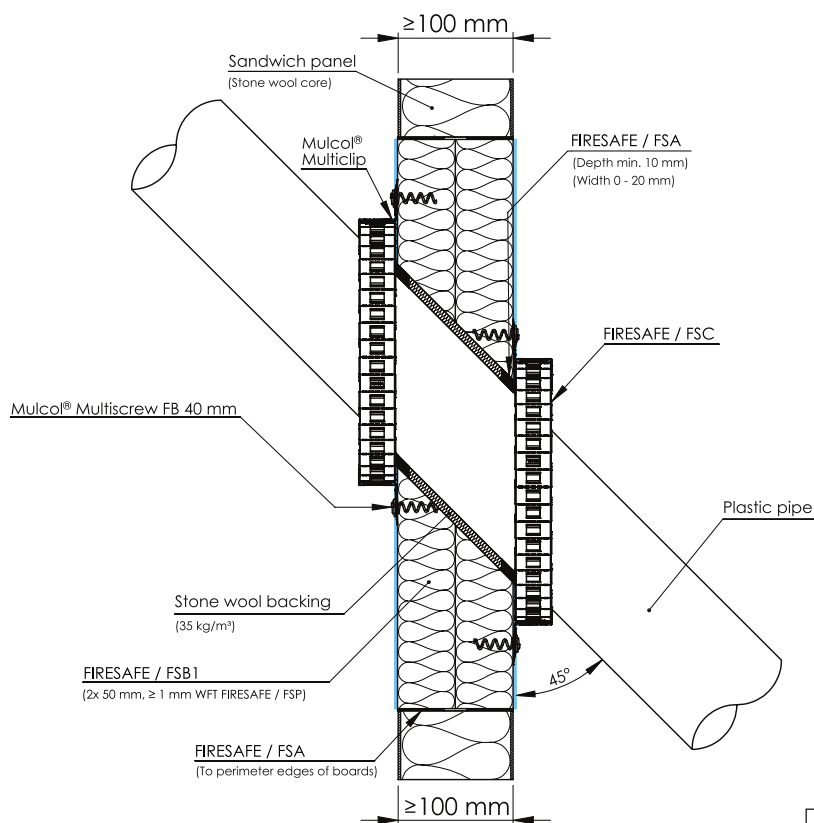
A.4.2.2 Plastic pipes perpendicular to 45° - FIRESAFE / FSC

Front view

a - Annular space
(Maximum 15 mm between pipe and FIRESAFE / FSC)
b - Mulcol® Multiclip



Position seal:
right, left or anywhere
in between



Drawing: SW.E-MC30-PP-MFB1-10.1.10

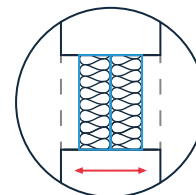
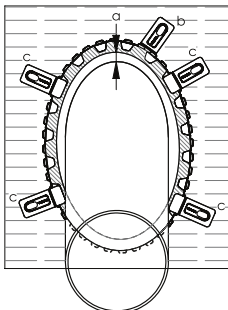
Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/C
PP					
PVC(-U/-C)					

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

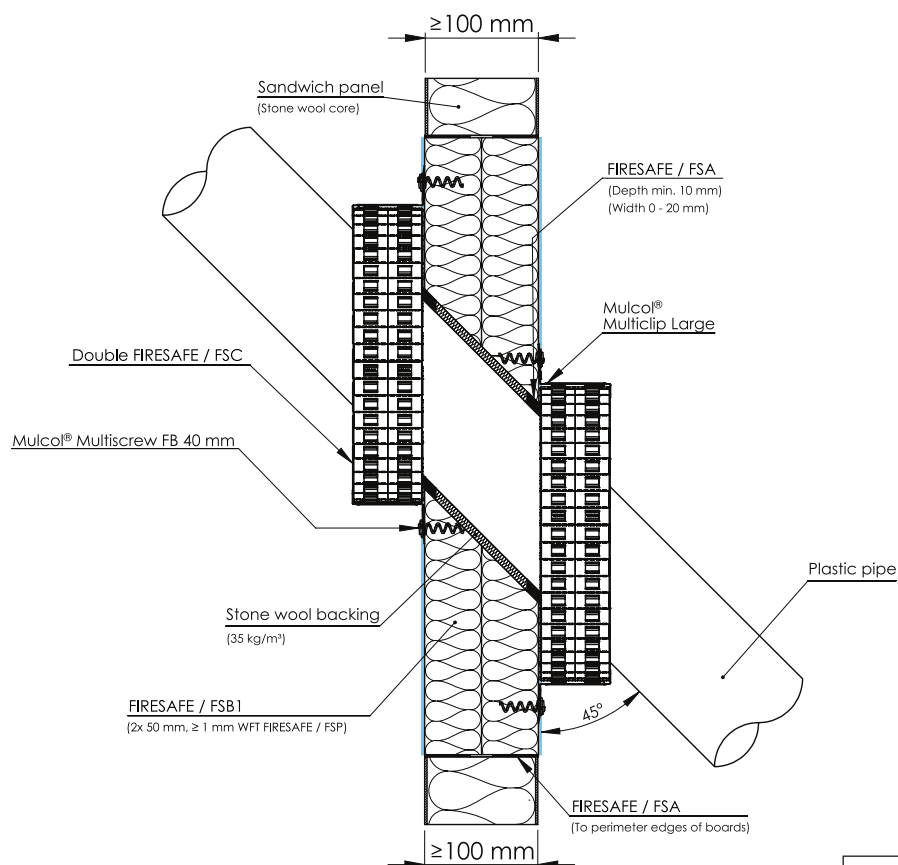
A.4.2.3 Plastic pipes perpendicular to 45° - double FIRESAFE / FSC

Front view

- a - Annular space
(Maximum 15 mm between pipe and Mulcol® Multicollar Slim)
b - Mulcol® Multiclip
c - Mulcol® Multiclip Large



Position seal:
right, left or anywhere
in between

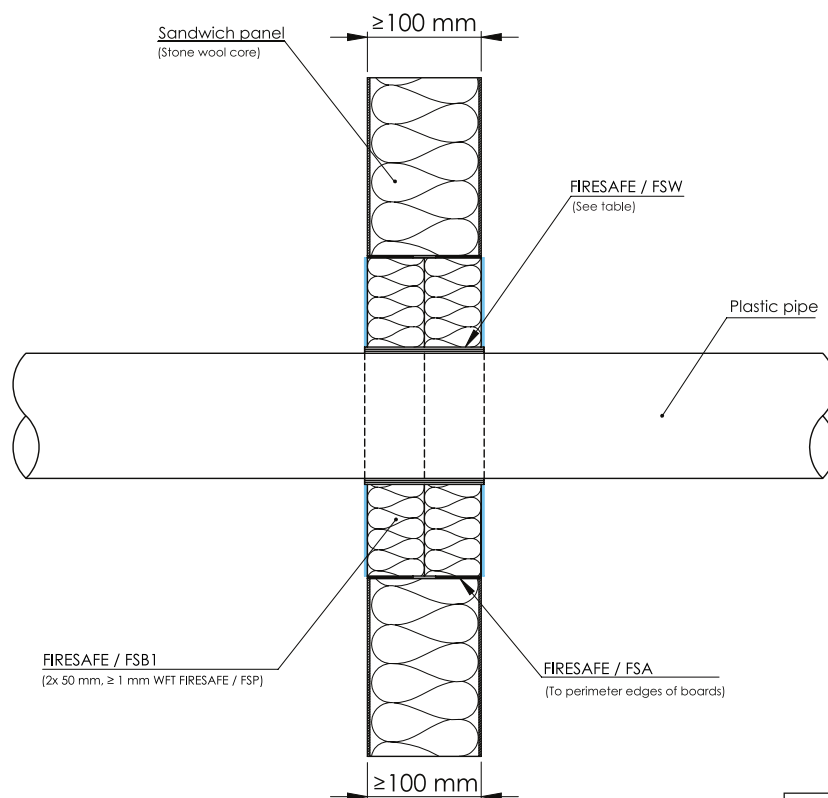
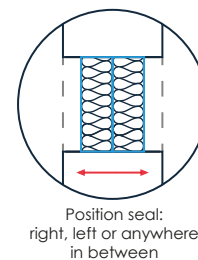
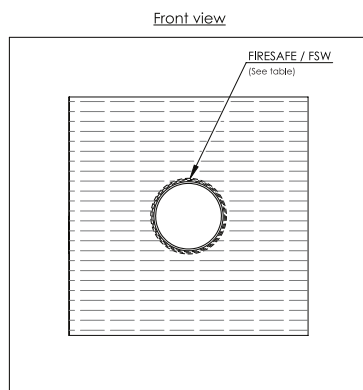


Drawing: SW,E-MC60-PP-MFB1-20.1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC double	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/U
		3.4 - 10.0			EI 120 U/C
PP		2.7			EI 30 U/U
		3.4			EI 120 U/C
		3.4 - 10.0			EI 60 U/C
PVC(-U/-C)		2.7			EI 30 U/U
		3.4			EI 120 U/C
		3.4 - 10.0			EI 60 U/C

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.4.2.4 Plastic pipes - FIRESAFE / FSW



Drawing: SW.E-PP-MW3-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE-X / ABS / SAN+PVC	$\leq \varnothing 40$	2.4 - 3.7	FIRESAFE / FSW (2 layers)	EI 120 U/U
	$\leq \varnothing 110$	2.7 - 10		EI 120 U/C
PP	$\leq \varnothing 40$	2.3 - 5.5		EI 120 U/U
	$\leq \varnothing 110$	3.4		EI 90 U/C, E 120 U/C
PVC(-U/-C)	$\leq \varnothing 40$	1.8 - 3.7		EI 120 U/U
	$\leq \varnothing 110$	1.6		EI 90 U/C, E 120 U/C
		1.6 - 8.1		EI 90 U/C

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.4.2.4 Plastic pipes - FIRESAFE / FSW**

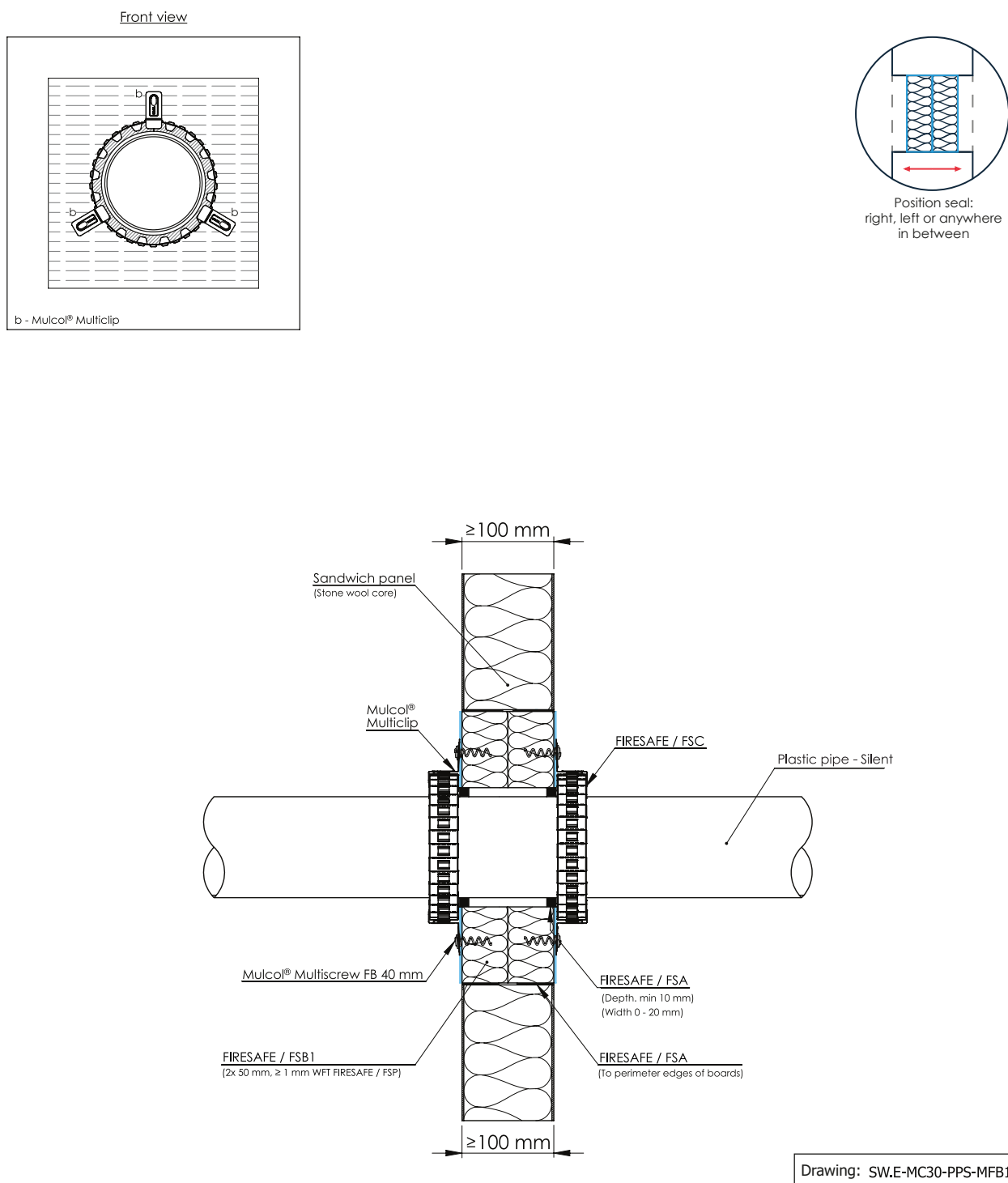
Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE / ABS / SAN+PVC	≤ Ø 125	3.9	FIRESAFE / FSW (3 layers)	EI 120 U/C
		3.9 - 4.8		EI 90 U/C, E 120 U/C
PP		3.1		EI 120 U/C
		3.1 - 11.4		
PVC(-U/-C)		3.7 - 4.8		EI 90 U/C, E 120 U/C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PP	≤ Ø 110	10.0	FIRESAFE / FSW (4 layers)	EI 120 U/U
		10.0 - 14.6		EI 90 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 160	14.6		EI 90 U/C
PVC(-U/-C)		5.0		EI 90 U/C, E 120 U/C
		5.0 - 14.6		EI 90 U/C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PE(-HD) / PE / ABS / SAN+PVC	≤ Ø 125	11.4	FIRESAFE / FSW (5 layers)	EI 120 U/U
PVC(-U/-C)		9.2		

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

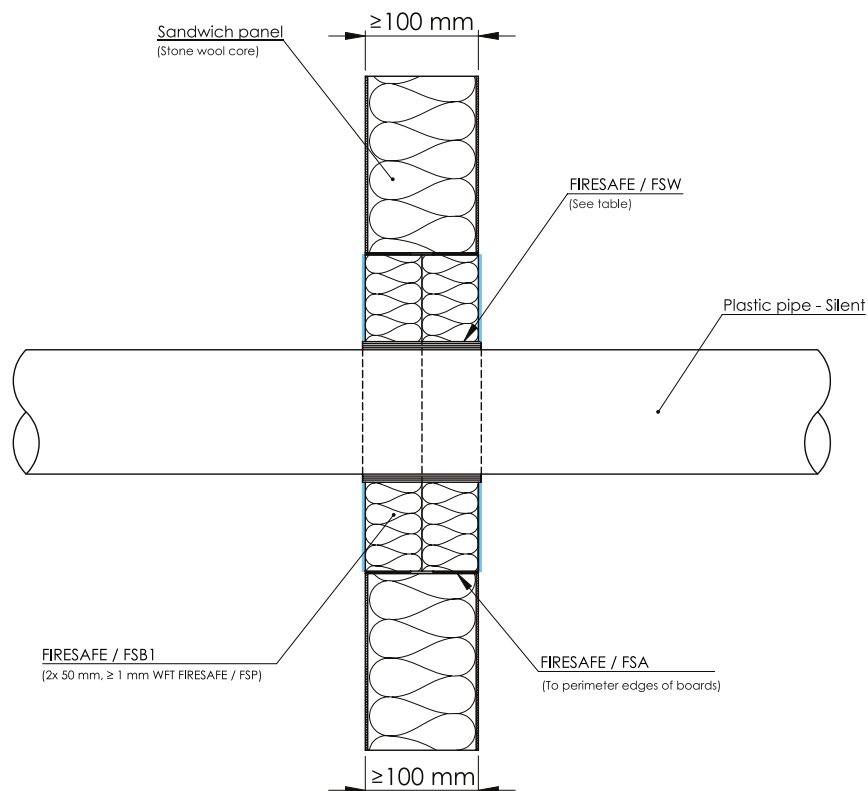
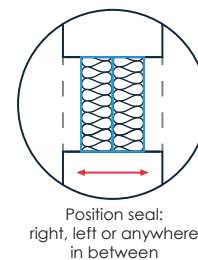
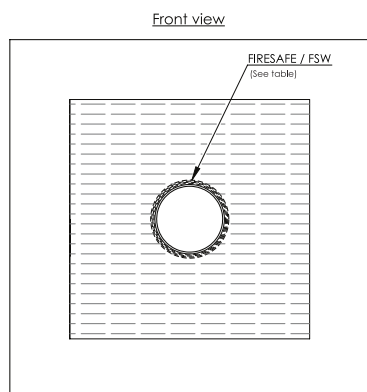
A.4.2.5 Plastic pipes (Silent) - FIRESAFE / FSC



Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Geberit Silent dB20	≤ Ø 110	6.0	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 60 U/U

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.4.2.6 Plastic pipes (Silent) - FIRESAFE / FSW



Drawing: SW.E-PPS-MW4-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	≤ Ø 50	1.8 - 2.7	FIRESAFE / FSW (2 layers)	EI 120 U/C
	≤ Ø 110	2.7		
Geberit Silent dB20	≤ Ø 56	3.2 - 6.0		
	≤ Ø 110	6.0		EI 120 U/U
Wavin SiTech+	≤ Ø 40	2.0		
	≤ Ø 50	1.8		EI 120 U/C
	≤ Ø 110	3.4		
Poloplast PoloKal NG	≤ Ø 50	2.0		

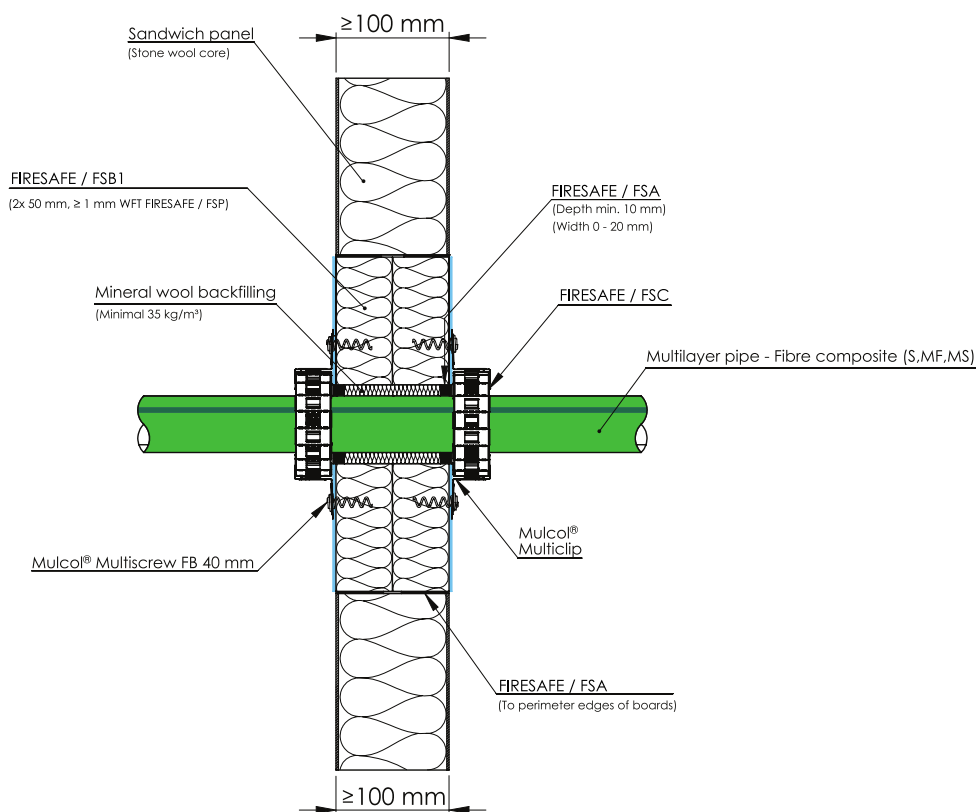
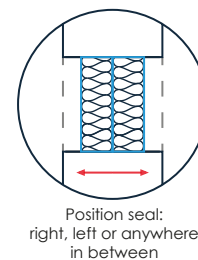
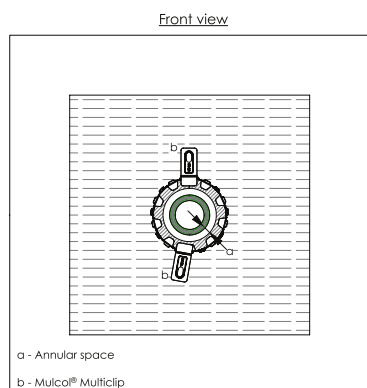
A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes**A.4.2.6 Plastic pipes (Silent) - FIRESAFE / FSW**

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	≤ Ø 110	2.7	FIRESAFE / FSW (4 layers)	EI 120 U/U
	≤ Ø 160	4.0		EI 90 U/C, E 120 U/C
Poloplast PoloKal NG	≤ Ø 110	3.4		EI 120 U/C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Raupiano Plus	≤ Ø 160	3.9	FIRESAFE / FSW (6 layers)	EI 120 U/U
Poloplast PoloKal NG		4.9		EI 90 U/C, E 120 U/C

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.4.2.7 PP-R multilayer pipes - FIRESAFE / FSC

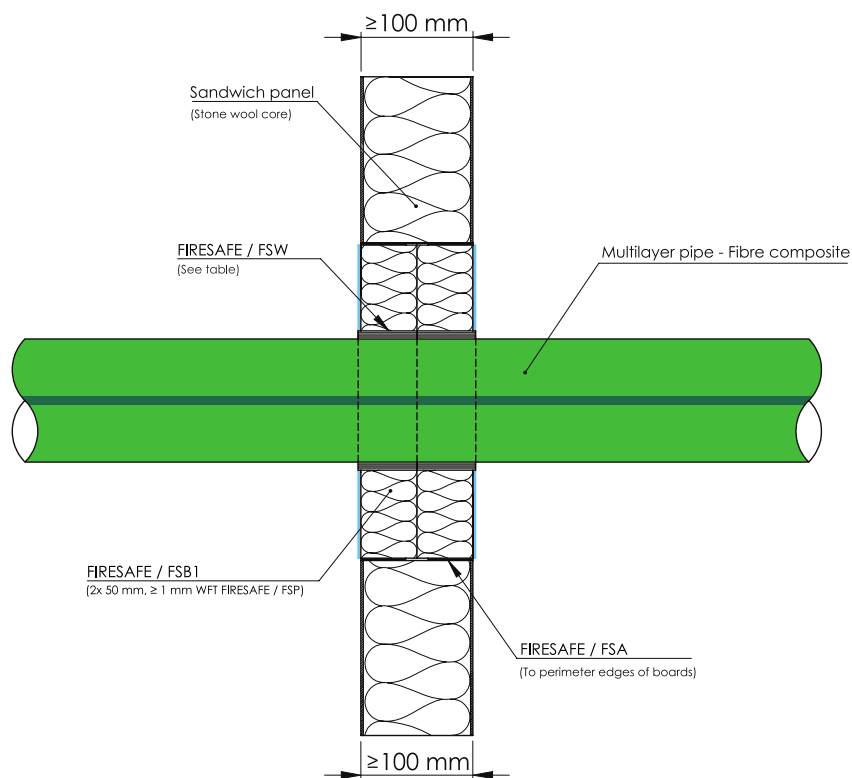
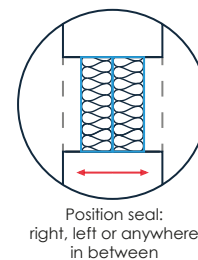
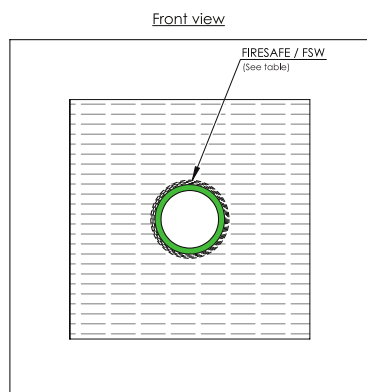


Drawing: SW.E-MC30-MLF-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Aquatherm Green	≤ Ø 50	6.9	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 120 U/C

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.4.2.8 PP-R multilayer pipes - FIRESAFE / FSW

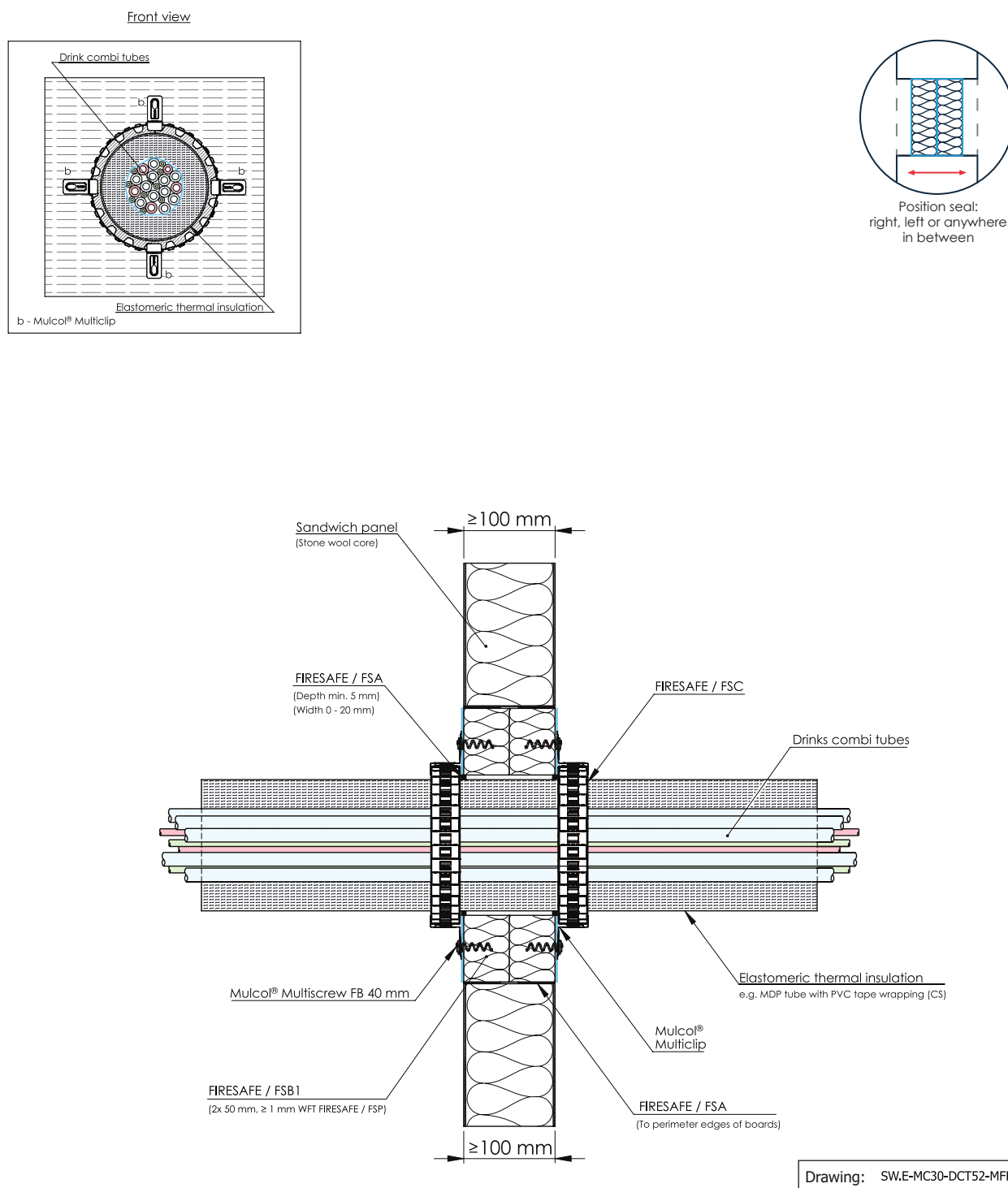


Drawing: SW.E-MLF-MW4-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Aquatherm Blue	≤ Ø 40	3.7	FIRESAFE / FSW (2 layers)	EI 120 U/C
	≤ Ø 50	4.6		EI 120 U/U
	≤ Ø 110	10	FIRESAFE / FSW (4 layers)	EI 120 U/C
Aquatherm Green	≤ Ø 90	12.3		

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

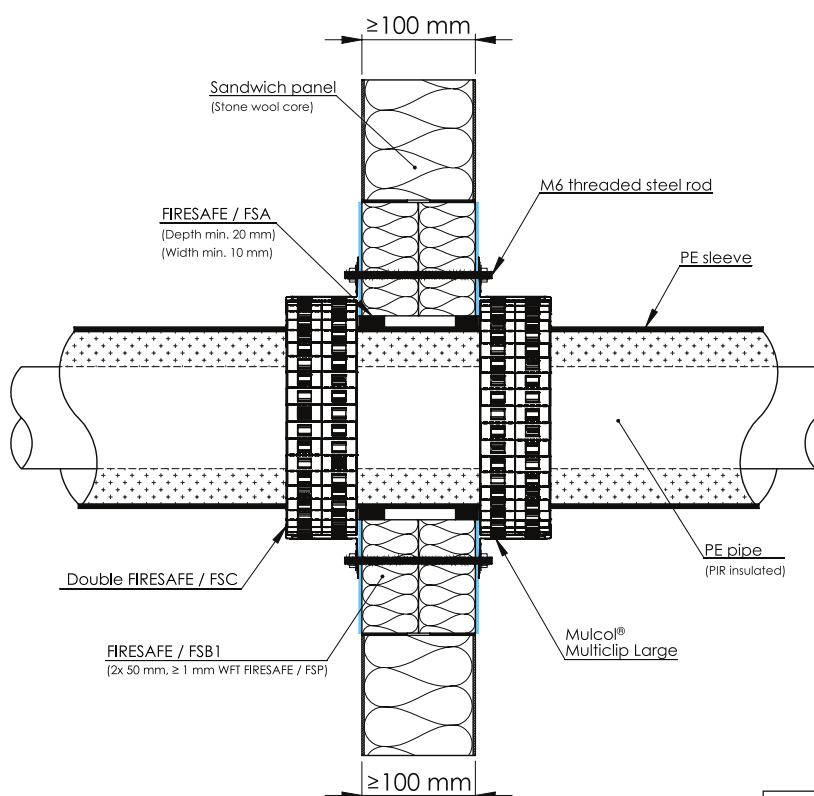
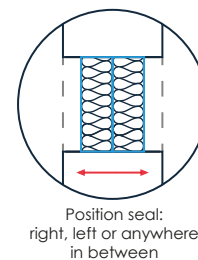
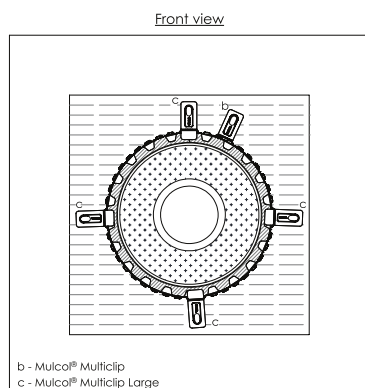
A.4.2.9 Drinks tubing system - FIRESAFE / FSC



Services	Dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Hoses no.	Type	Thickness (mm)	Configuration			
Drinks tubing system	≤ Ø 145	≤ 52	Elastomeric foam	8.5 - 35	CS	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 U/C

A.4.2 FIRESAFE / FSB1 - 2x 50 mm - Combustible pipes

A.4.2.10 PE Pipe insulated PIR - double FIRESAFE / FSC

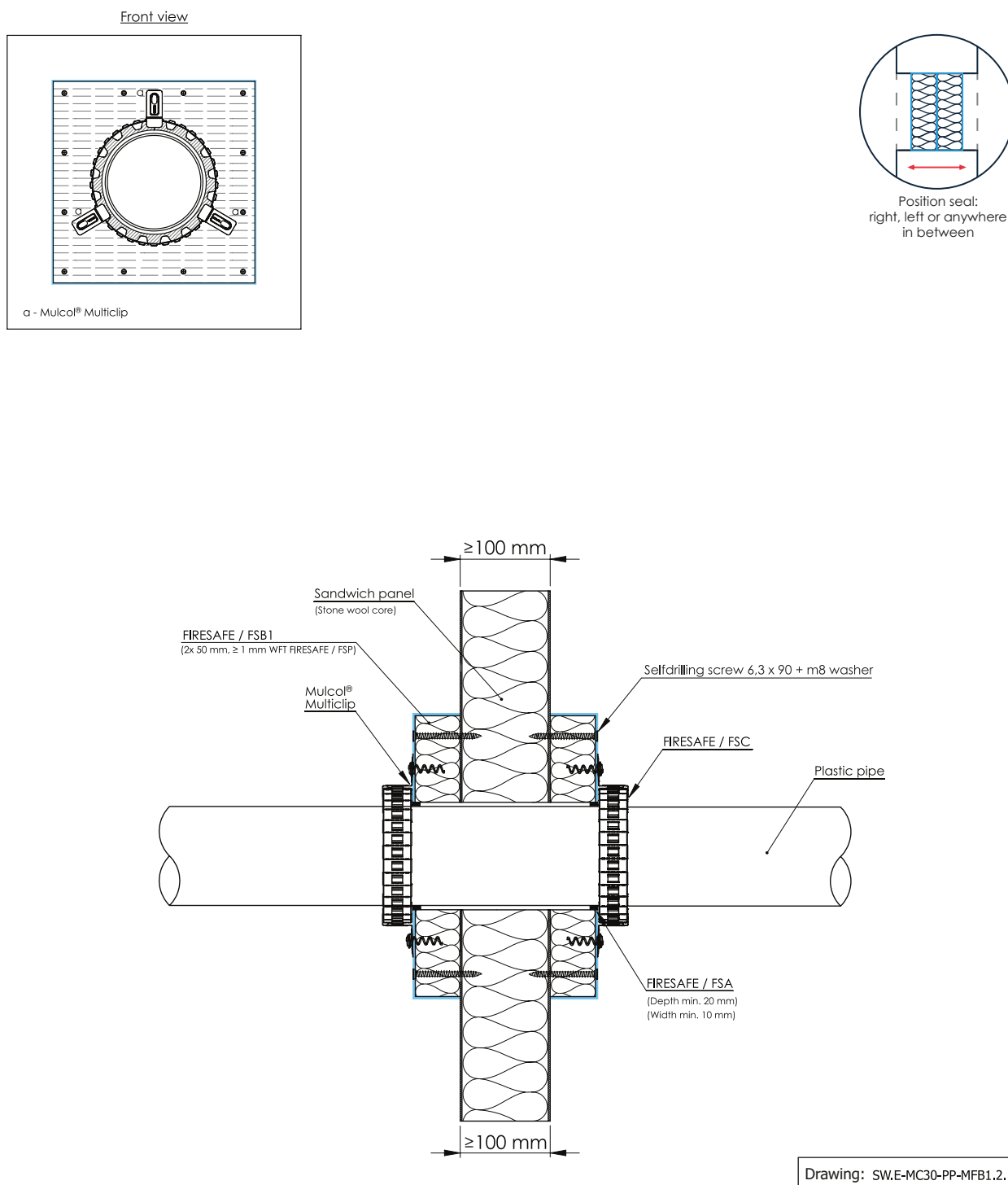


Drawing: SW,E-MC60-PP_pr-MFB1.2.23

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimensions	Wall thickness	Type	Thickness (mm)	Configuration		
PE	≤ Ø 160	≥ 3.5	PIR / PUR + PE coating	30	CS	double FIRESAFE / FSC	EI 120 U/C

A.4.3 FIRESAFE / FSB1 Pattress fixed to wall - 2x50 mm - Combustible pipes

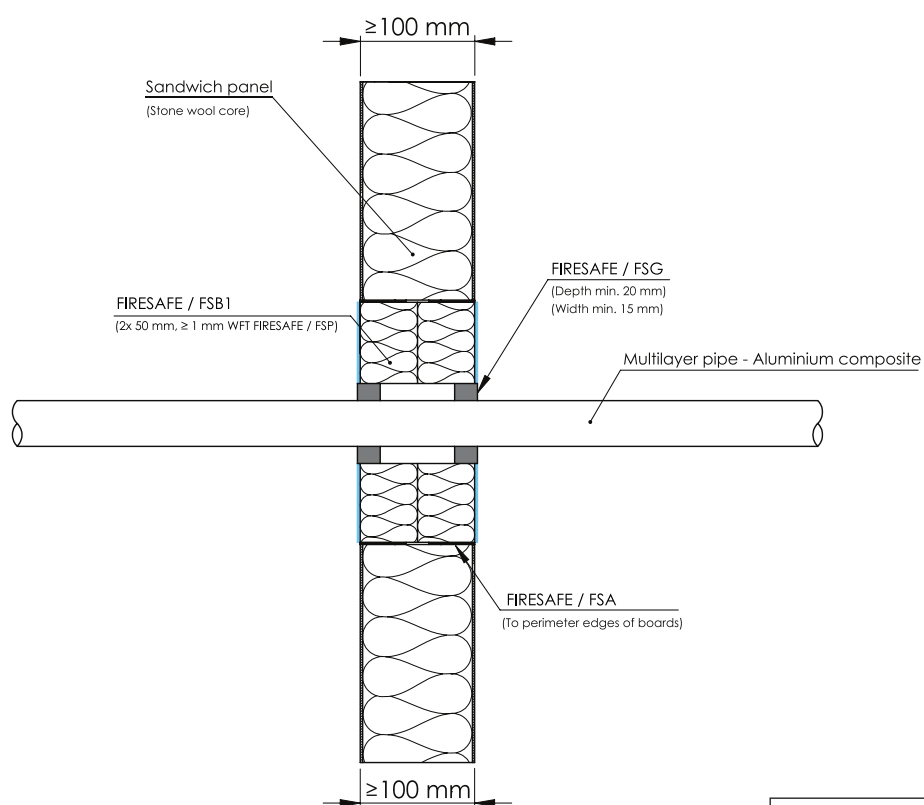
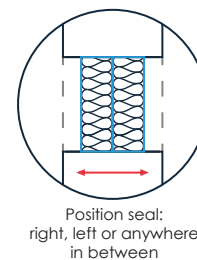
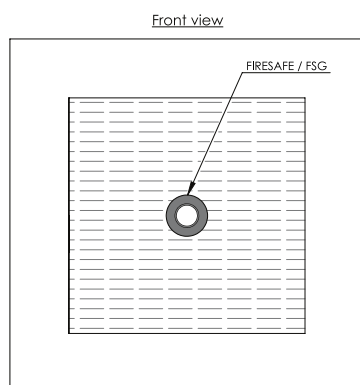
A.4.3.1 Plastic pipes - FIRESAFE / FSC



Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.4	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 30 U/U, E 90 U/U
	≤ Ø 110	3.4			
PP	≤ Ø 40	2.3 - 2.7			EI 90 U/U
	≤ Ø 110	2.7			
PVC(-U/-C)	≤ Ø 40	2.4			EI 30 U/U, E 90 U/U
	≤ Ø 110	3.4			EI 90 U/U

A.4.4 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.4.4.1 Multilayer pipes (MLC) - FIRESAFE / FSG

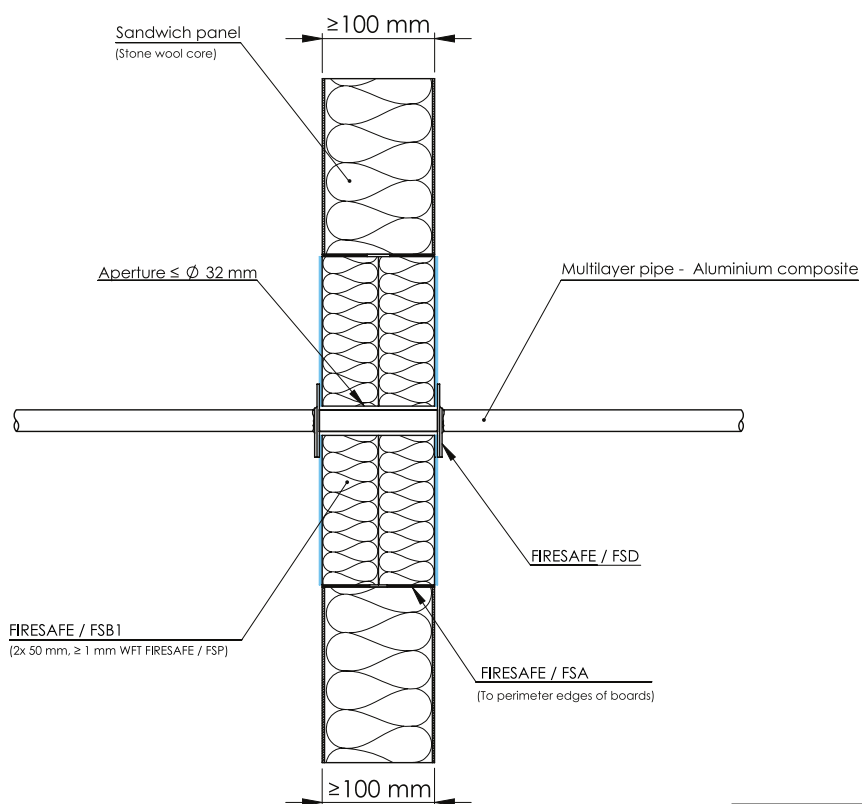
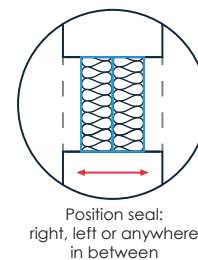
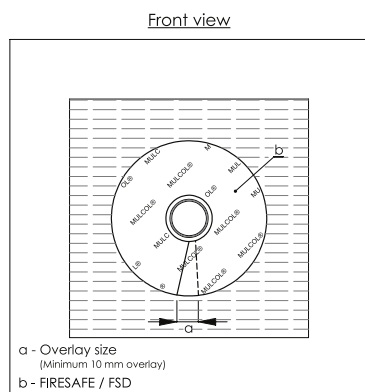


Drawing: SW.E-MLA-G2.4.10

Services	Pipe dimensions (mm)		Sealing (mm)	Classification
	Outer dimension	Wall thickness		
Multilayer pipes (MLC)	≤ Ø 32	3.0	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 120 U/C
	≤ Ø 40	4.0		

A.4.4 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.4.4.2 Multilayer pipes (MLC) - FIRESAFE / FSD

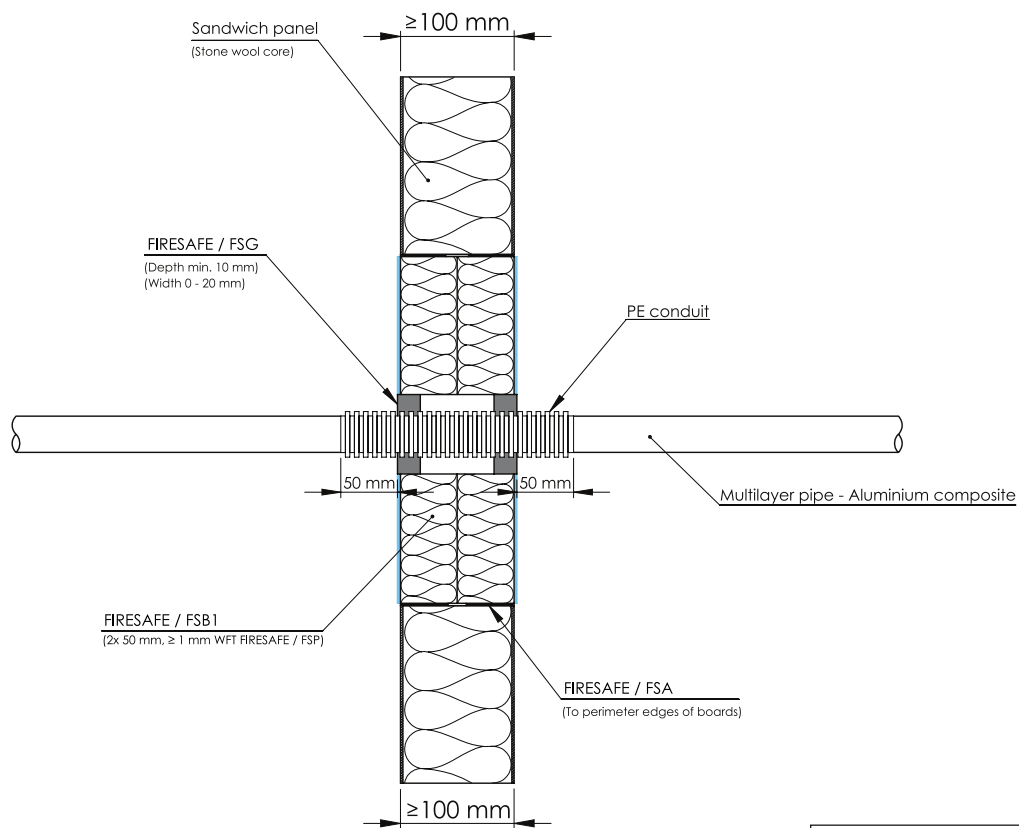
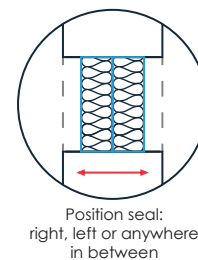
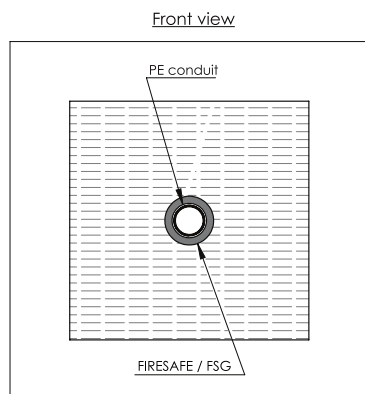


Drawing: SW.E-MFB1-MLA-M2.0.10

Services	Pipe dimensions (mm)		Aperture (mm)	Product	Sealing (mm)	Classification
	Outer diameter	Wall thickness				
Multilayer pipes (MLC)	$\leq \varnothing 16$	2.0	$\leq \varnothing 32$	FIRESAFE / FSD	Not required	EI 60 U/C E 90 U/C

A.4.4 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.4.4.3 Multilayer pipes (MLC) - PE Conduit - FIRESAFE / FSG

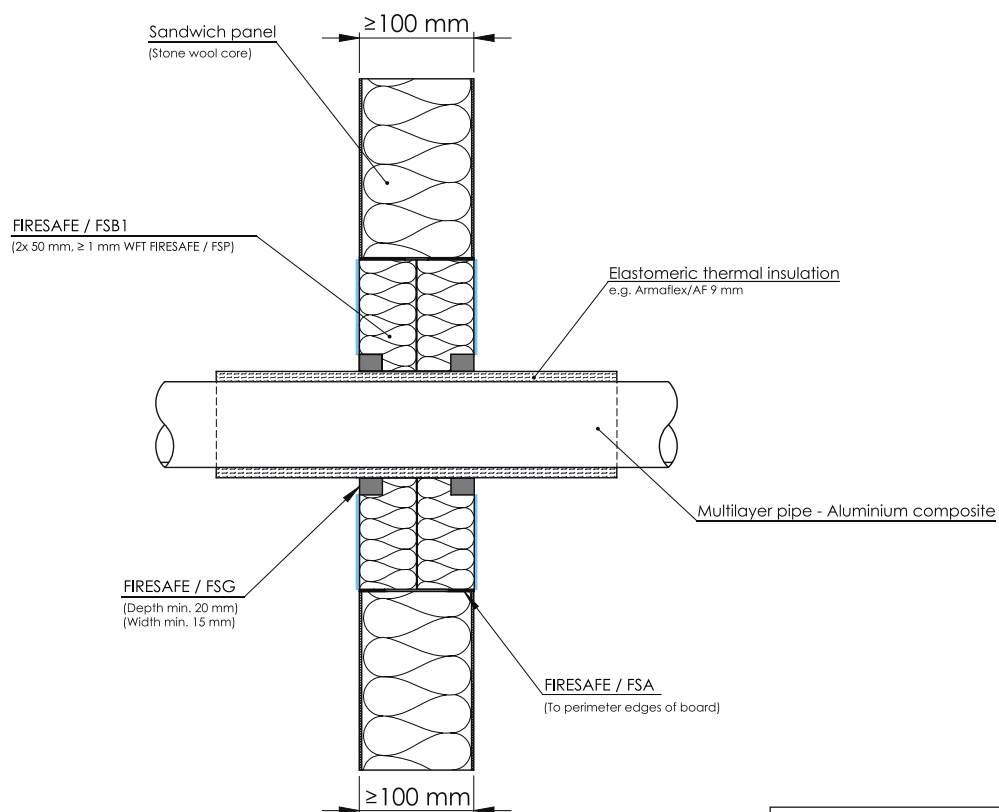
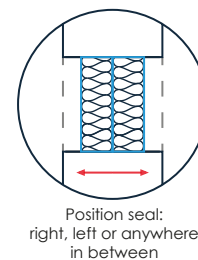
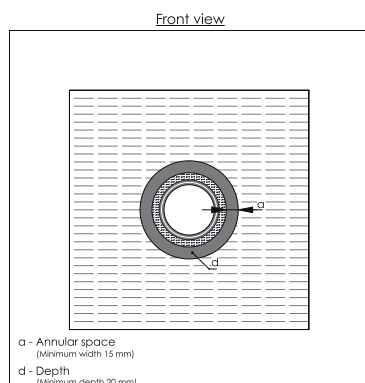


Drawing: SW,E-MLA-MFB1-G2.18.30

Services	Pipe dimensions (mm)		Conduit			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Outer dimension (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0	PE-conduit ribbed	≤ Ø 40	LS 50 / CS	FIRESAFE / FSG 10-20 x ≥ 10 (wxd)	EI 60 U/C

A.4.4 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.4.4.4 Multilayer pipes (MLC) - Elastomer LS 400 / CS - FIRESAFE / FSG

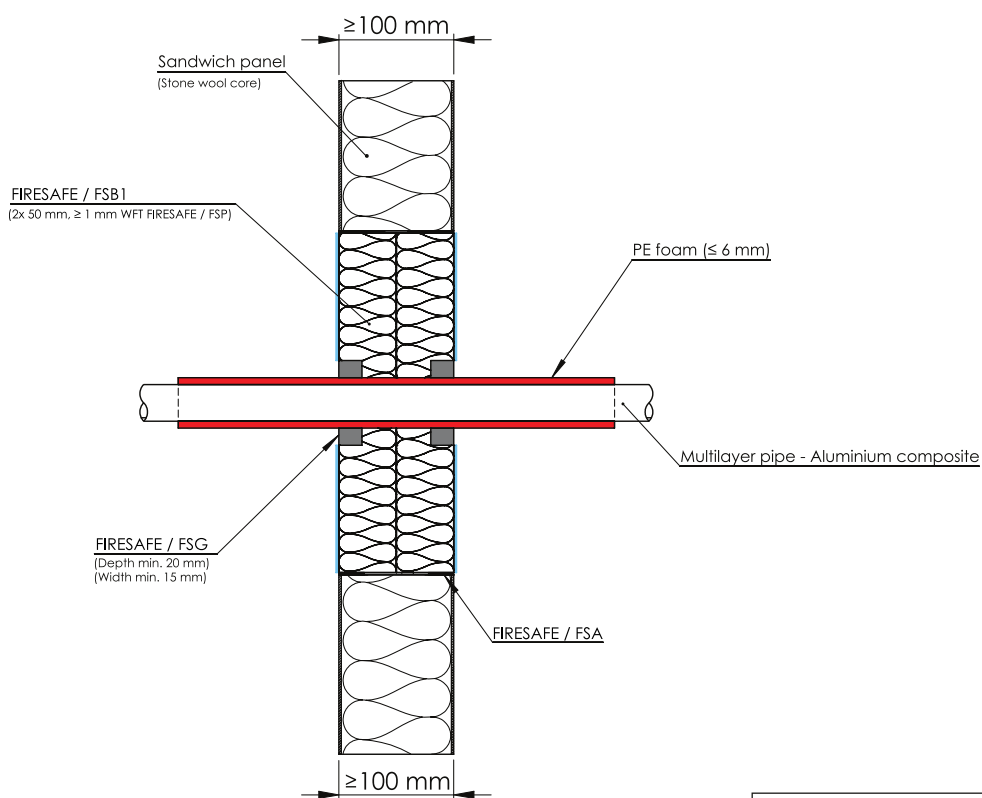
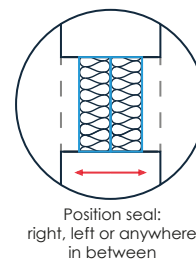
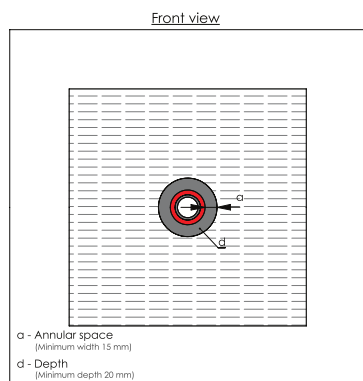


Drawing: SW.E-MLA-MFB1-G2.4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 75	6.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LS 400 / CS	FIRESAFE / FSG ≥ 15 x 20 mm (wxd)	EI 90 U/C E 120 U/C

A.4.4 FIRESAFE / FSB1 - 2x 50 mm - Multilayer pipes (MLC)

A.4.4.5 Multilayer pipes (MLC) - PE foam - FIRESAFE / FSG

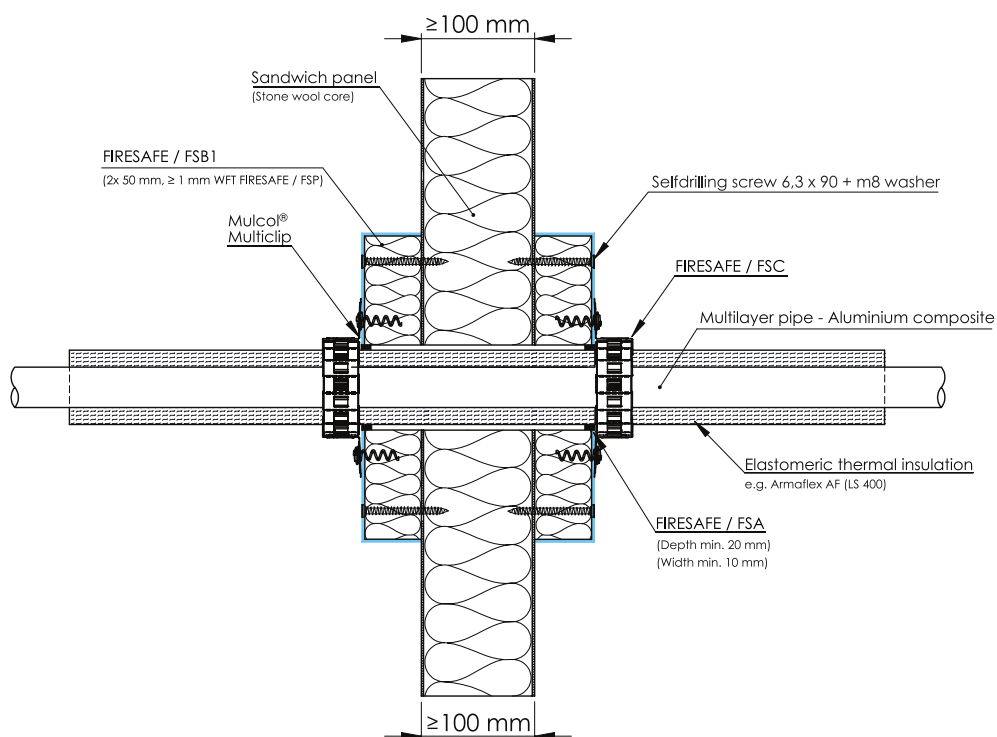
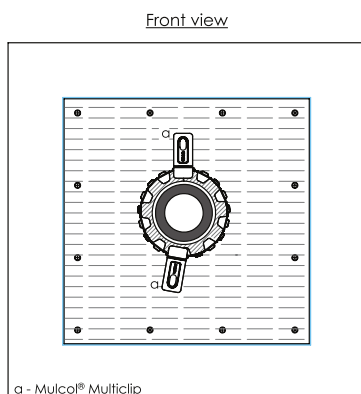


Drawing: SW,E-MLA_pr-MFB1-G2.4.23

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0	PE Foam	≤ 6	LS 300 / CS LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 120 U/C

A.4.5 FIRESAFE / FSB1 Pattress fixed to wall - 2x50 mm - Multilayer pipe (MLC)

A.4.5.1 Multilayer pipe (MLC) - Elastomer LS 400 / CS - FIRESAFE / FSC

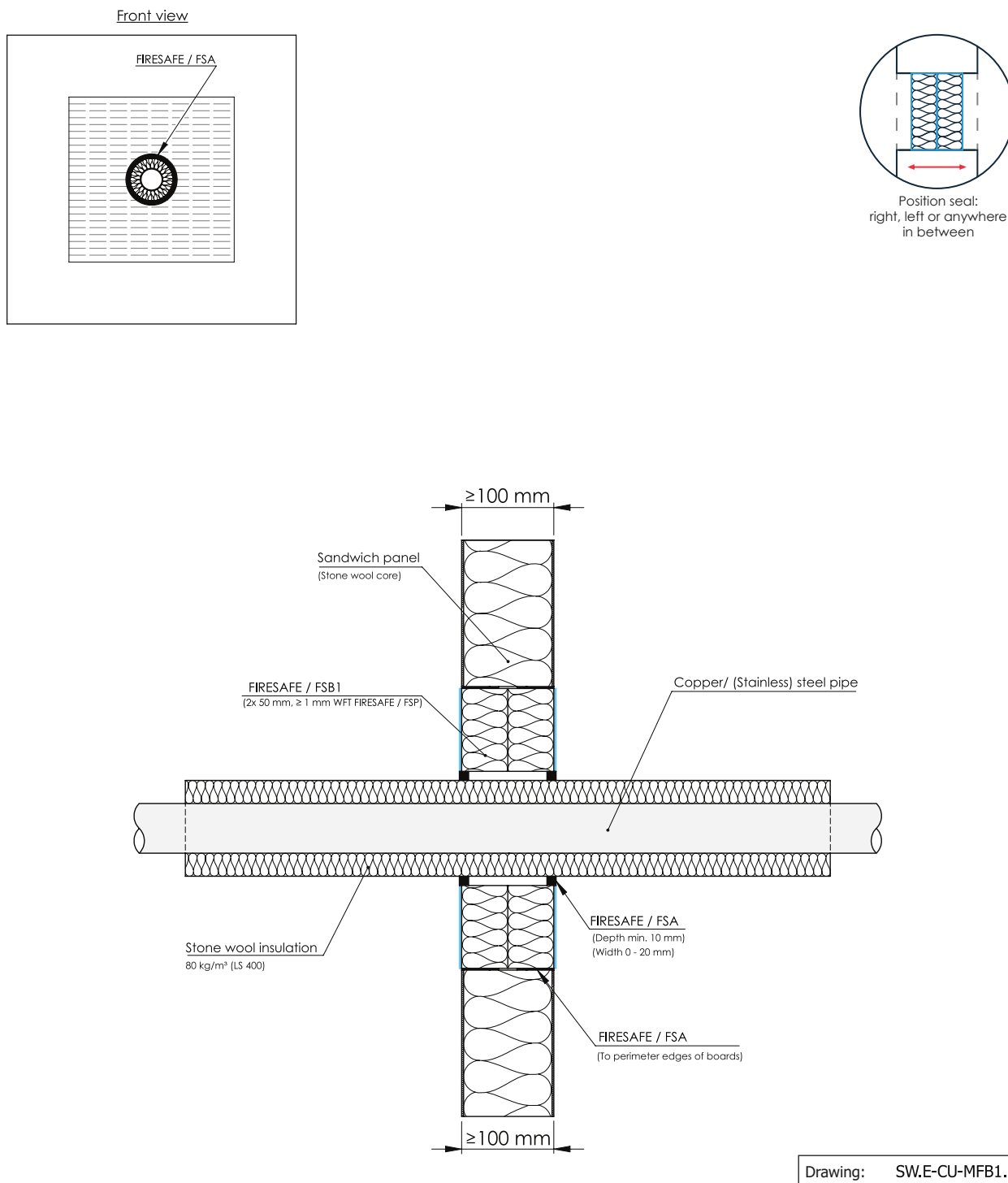


Drawing: SW,E-MC30-MLA-MFB1.2.10_pat

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 32	3.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	13	LS 400 / CS	FIRESAFE / FSC	EI 90 U/C

A.4.6 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated mineral wool

A.4.6.1 Copper and steel pipes - Stone wool LS 400 / CS



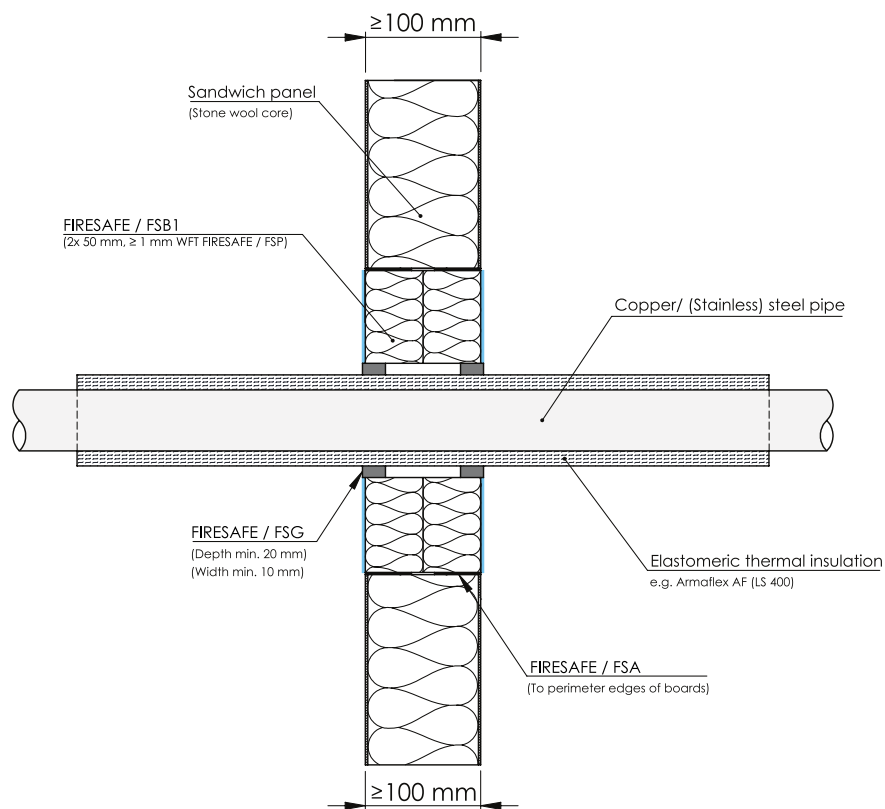
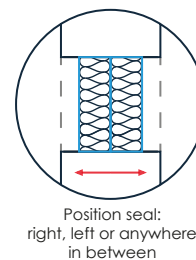
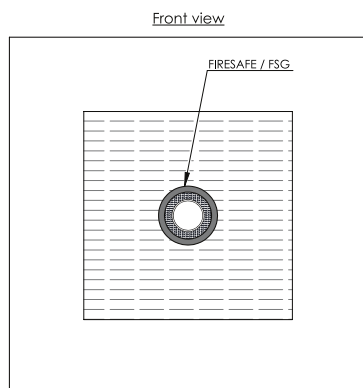
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless)	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 C/U, E 120 C/U
steel / cast iron	≤ Ø 54	≥ 1.5					
(Stainless) Steel /	≤ Ø 12						
cast iron	≤ Ø 114.3	≥ 3.6					

A.4.7

FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.4.7.1

Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG



Drawing: SW.E-CU-MFB1-G2.18.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 90 C/U, E 120 C/U
				8.5 - 38			EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5			EI 90 C/U, E 120 C/U
				8.5 - 38			EI 90 C/U

A.4.7 FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.4.7.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

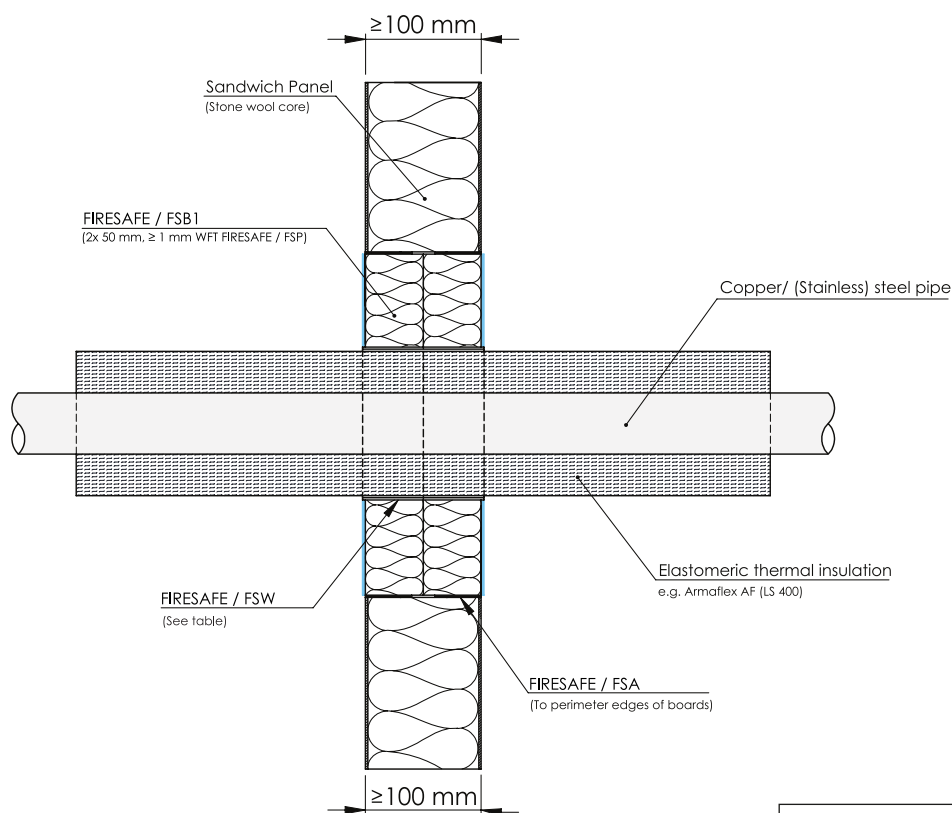
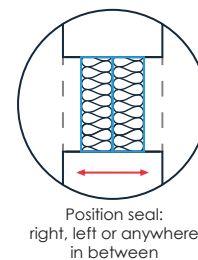
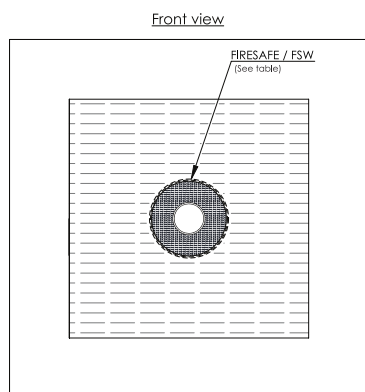
Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 54	≥ 1.5	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	13.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	EI 30 C/U, E 90 C/U
					CS		EI 90 C/U
				13.5 - 38	LS 400 / CS		EI 30 C/U, E 90 C/U
					CS		EI 60 C/U, E 90 C/U
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		38	LS 400 / CS		EI 90 C/U
				15 - 43			EI 45 C/U, E 90 C/U
			43	EI 60 C/U, E 90 C/U			

A.4.7

FIRESAFE / FSB1 - 2x 50 mm - Metal pipes insulated elastomer

A.4.7.2

Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW

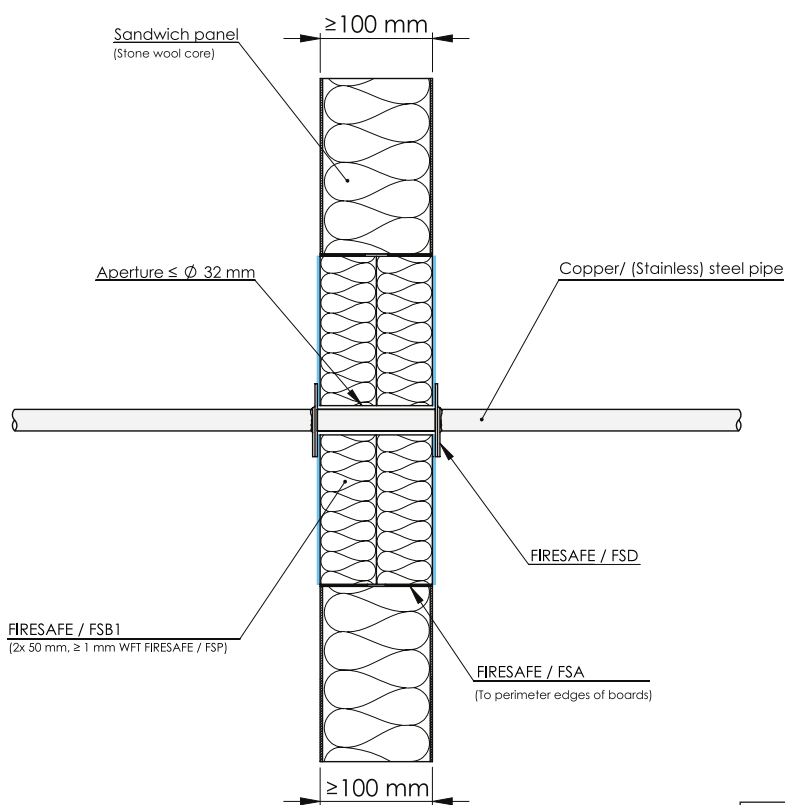
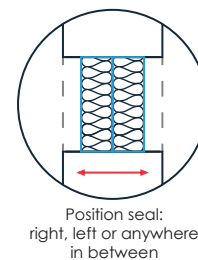
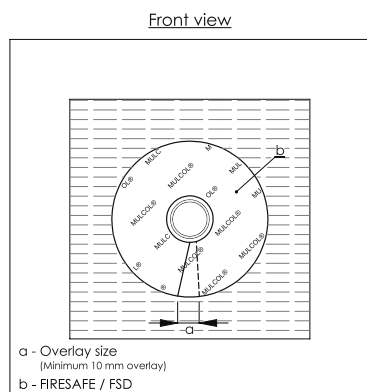


Drawing: SW.E-CU-MW2-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Product	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 12	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9	LS 400 / CS	FIRESAFE / FSW (2 layers)	EI 90 C/U
	≤ Ø 35	≥ 1.1		35			EI 90 C/U, E 120 C/U
		≥ 1.5		60			EI 120 C/U
				38			EI 90 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		15			EI 60 C/U, E 90 C/U

A.4.8 FIRESAFE / FSB1 - 2x50 mm - Metal pipes uninsulated

A.4.8.1 Copper and steel pipes - FIRESAFE / FSD

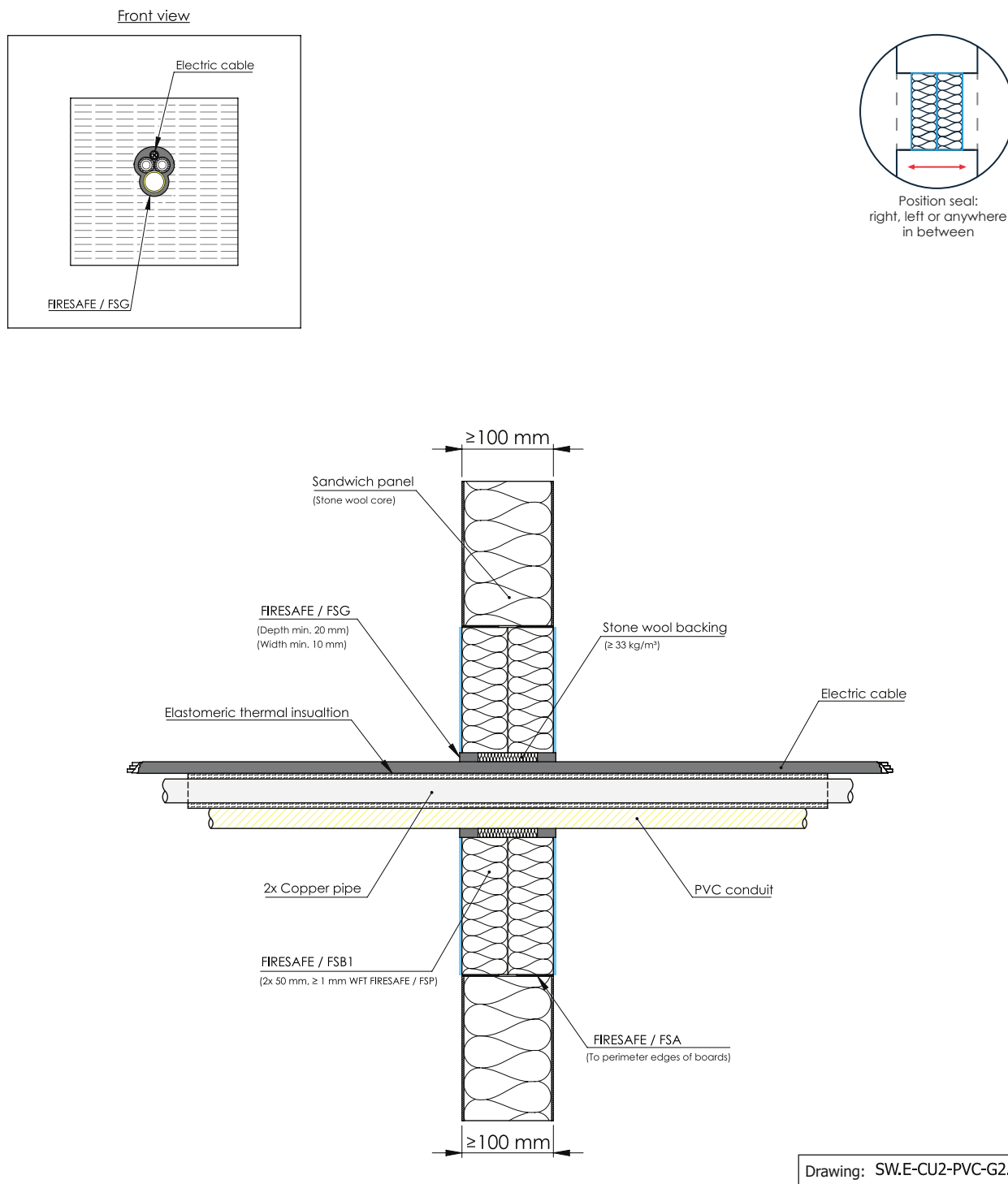


Drawing: SW.E-MFB1-CU-M2.0.10

Services	Pipe dimensions (mm)		Aperture (mm)	Product	Sealing (mm)	Classification
	Outer diameter	Wall thickness				
Copper / (stainless) steel / cast iron	$\leq \varnothing 15$	≥ 1.0	$\leq \varnothing 32$	FIRESAFE / FSD	Not required	EI 45 C/U E 90 C/U
(Stainless) Steel / cast iron	$\leq \varnothing 17.2$					EI 90 C/U

A.4.9 FIRESAFE / FSB1 - 2x 50 mm - Multiple penetrations

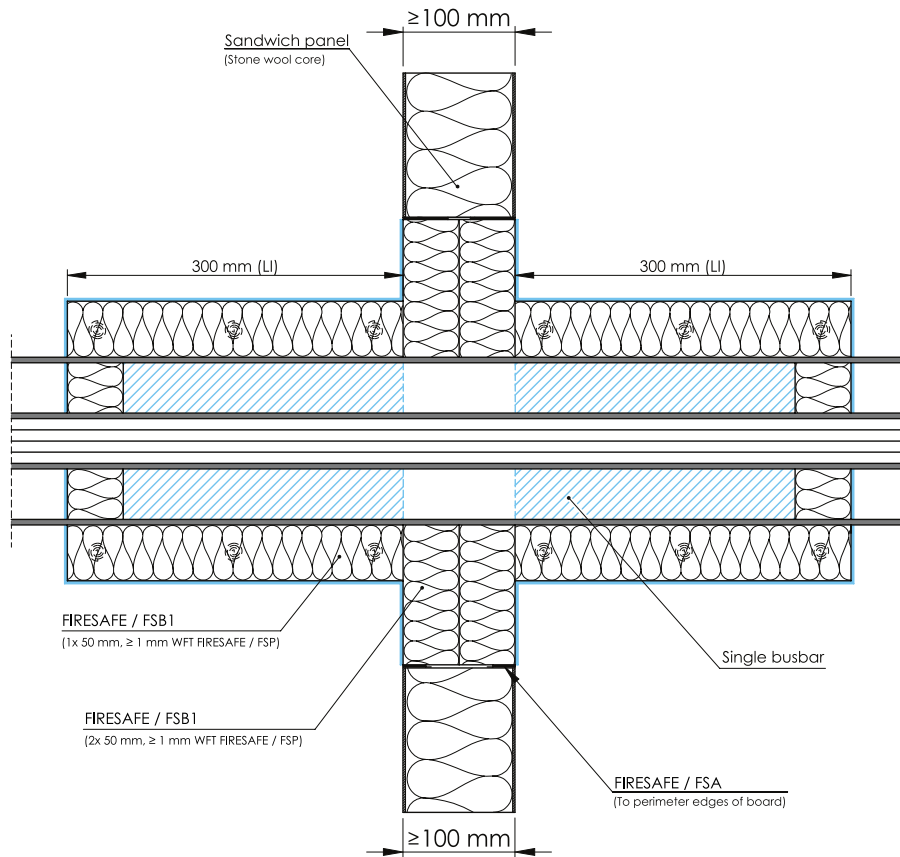
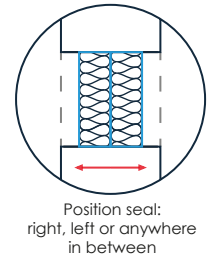
A.4.9.1 Airconditioning set - FIRESAFE / FSG



Services	Pipe dimensions (mm)	Insulation		Product	Classification
	Outer diameter	Type	Thickness (mm)		
Set of airconditioning pipes	$2x \leq \varnothing 13$	PE foam	≥ 6	FIRESAFE / FSG $\geq 10 \times 20 \text{ (wxd)}$	EI 120 C/U
PVC-U / PVC-C	$\leq \varnothing 22$	-	-		
Sheathed cable	$\leq 3 \times 2.5 \text{ mm}^2$	-	-		

A.4.10 FIRESAFE / FSB1 - 2x 50 mm - Busbar

A.4.10.1 Single busbar - LI 300

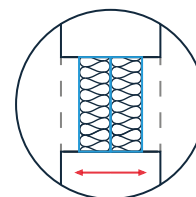


Drawing: SW.E-1BB-MFB1.2.10

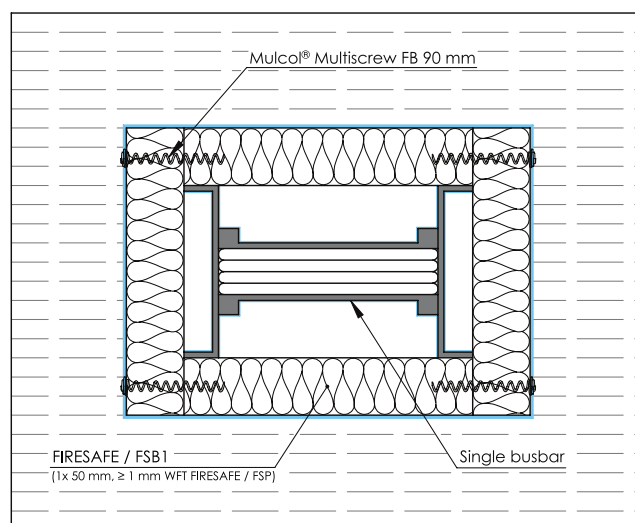
Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 300 / CI	EI 120

A.4.10 FIRESAFE / FSB1 - 2x 50 mm - Busbar

A.4.10.1 Single busbar - LI 300



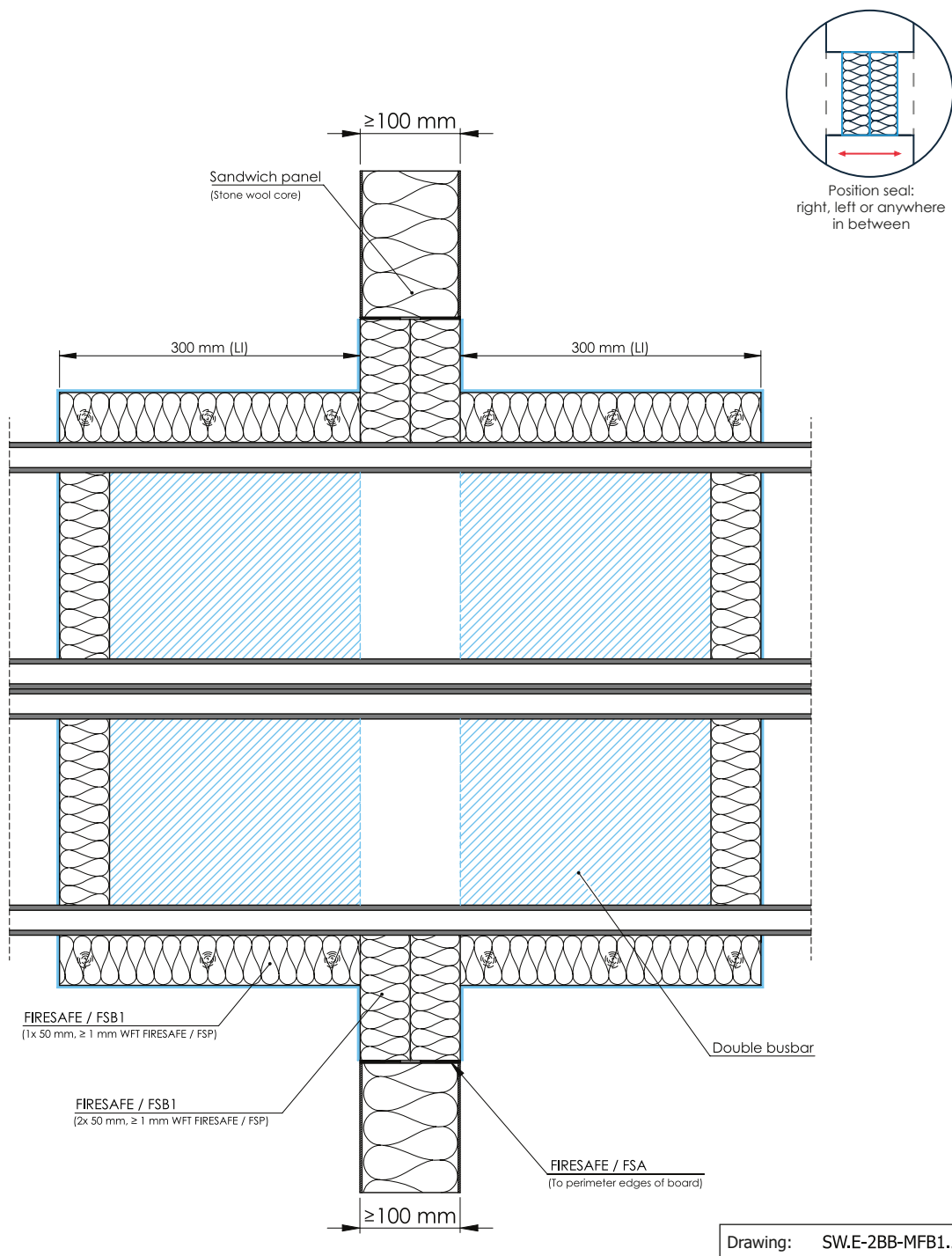
Position seal:
right, left or anywhere
in between



Drawing: SW,E-1BB-MFB1.2.10

A.4.10 FIRESAFE / FSB1 - 2x 50 mm - Busbar

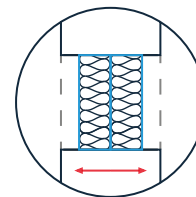
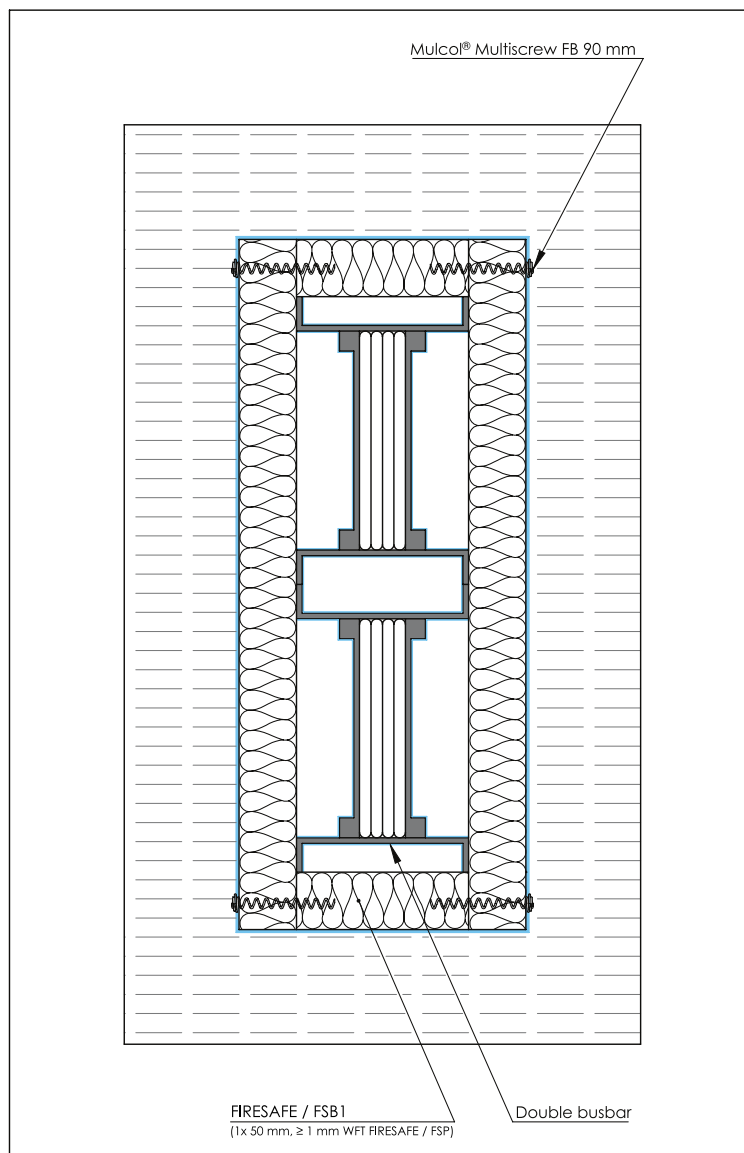
A.4.10.2 Multiple busbars - LI 300



Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductor	Type	Thickness (mm)	Configuration	
Multiple busbars	$\leq 150 \times 500$ mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 300 / CI	EI 120

A.4.10 FIRESAFE / FSB1 - 2x 50 mm - Busbar

A.4.10.2 Multiple busbars - LI 300



Position seal:
right, left or anywhere
in between

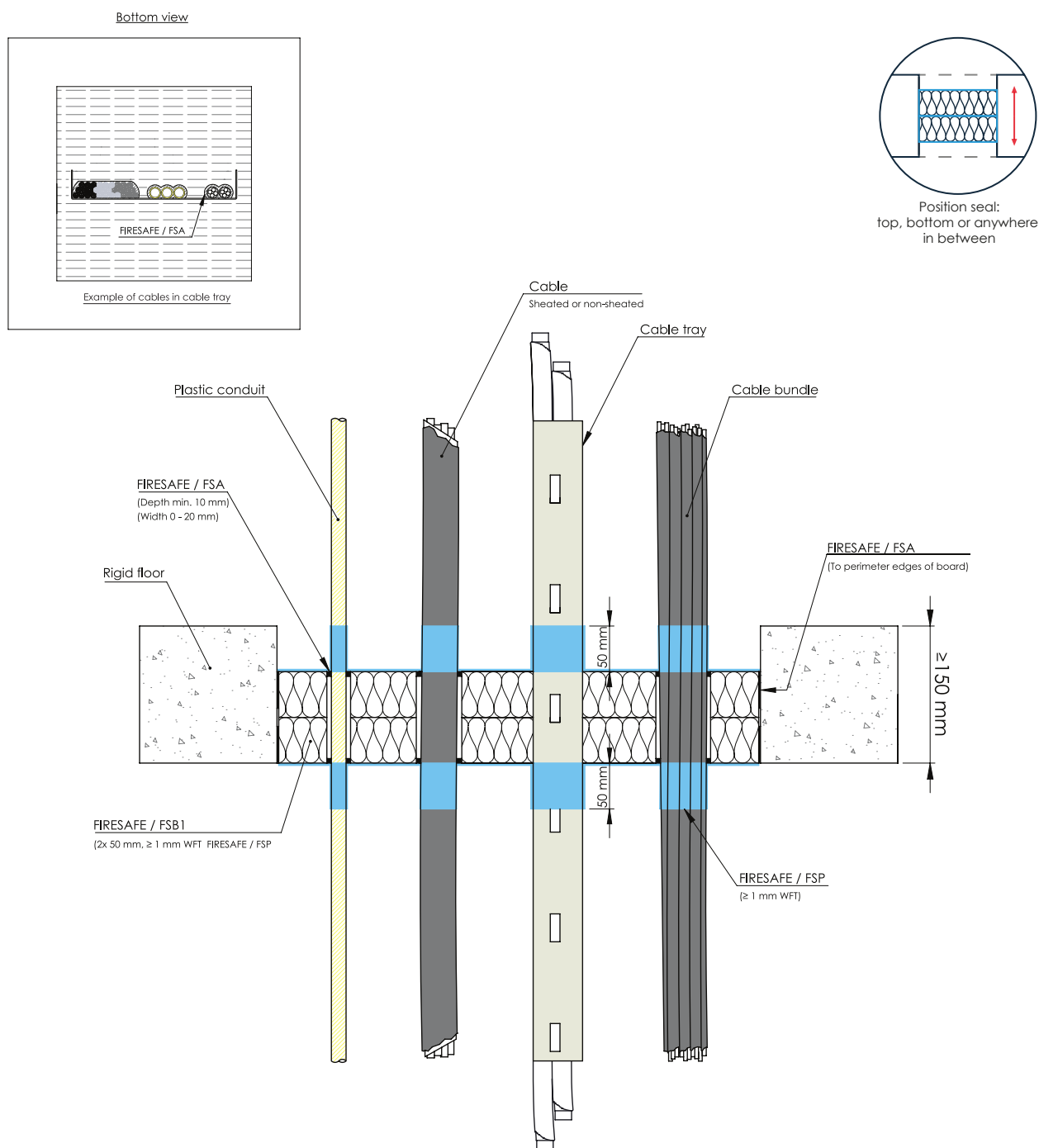
Drawing: SW.E-2BB-MFB1.2.10

B.1.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.1

Cables, trays and conduits - FIRESAFE / FSP



Drawing: PBrf.E-CT-4-MFB1.2.10

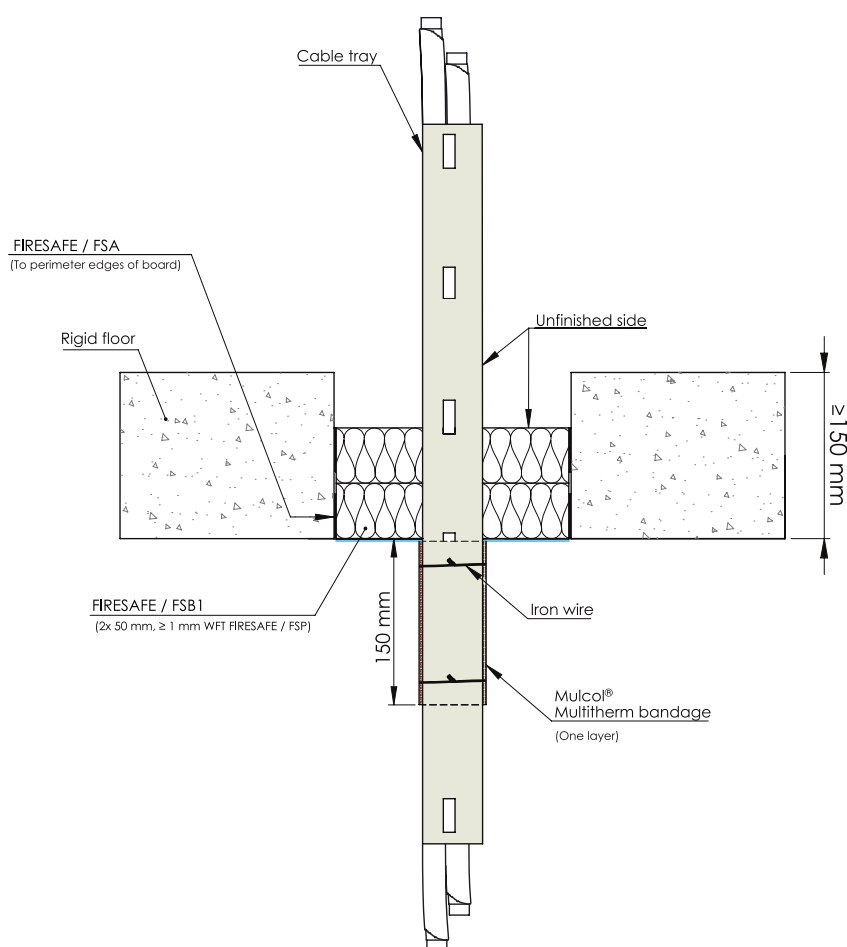
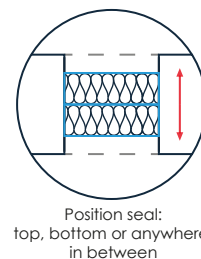
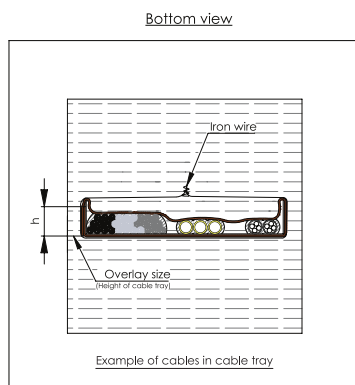
Services	Coating	Classification
Metal cable ladders	Coat back 50 mm ≥ 1 mm WFT FIRESAFE / FSP	EI 90, E 120
Metal (non-)perforated cable trays		EI 60, E 120
Steel wire mesh cable trays (baskets)		EI 90 U/C, E 120 U/C
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 45, E 120
Cables ≤ Ø 50 mm		
Plastic conduits ≤ Ø 16 mm		
Non sheathed cables ≤ Ø 24 mm		

B.1.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.2

Cables and trays - Multitherm Bandage



Drawing: PBrf.E-CT-MFB1-B1.1.10

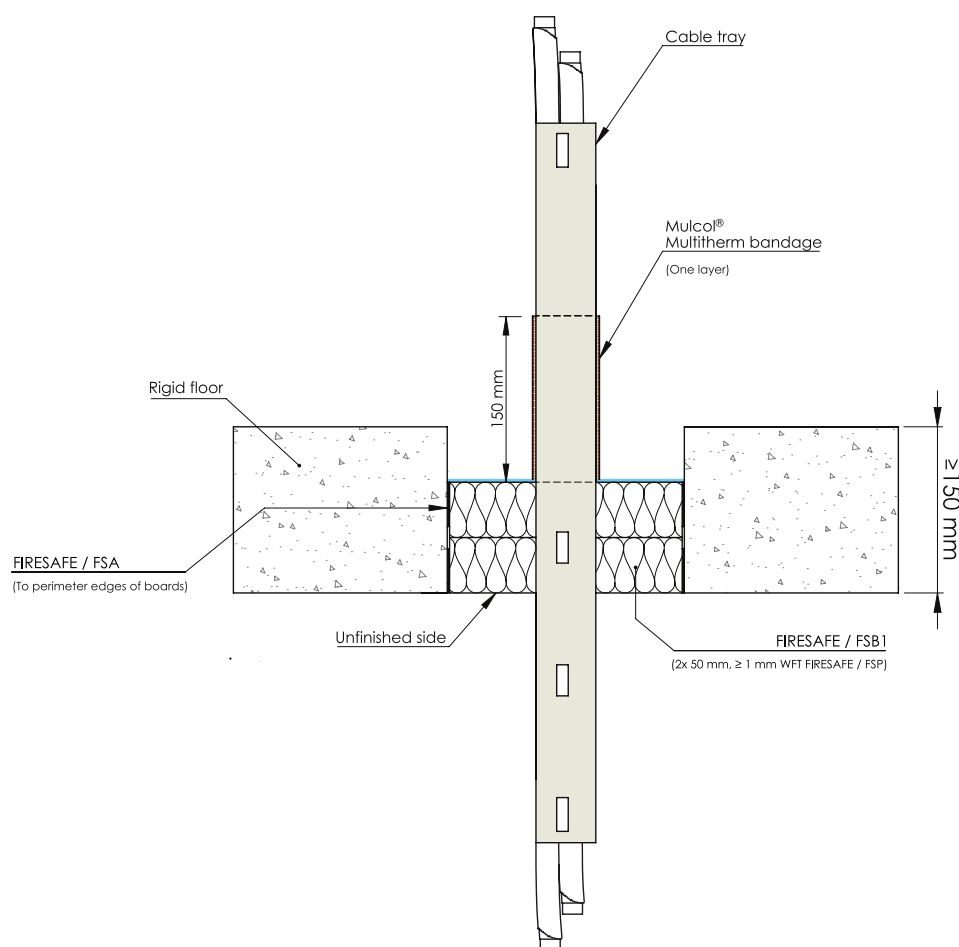
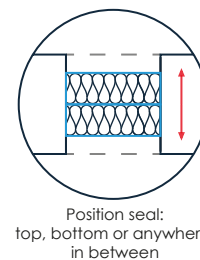
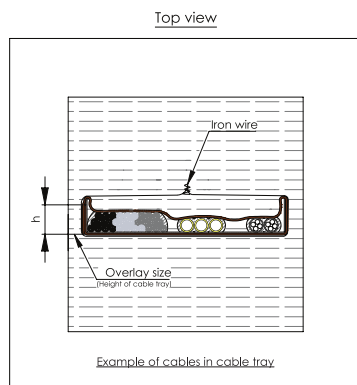
Services	Insulation (mm)	Classification
Metal cable ladders	LI 150 Multitherm Bandage bottom of floor (two wires)	EI 60, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables $\leq \varnothing 21 \text{ mm}$		

B.1.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.2

Cables and trays - Multitherm Bandage



Drawing: PBrf.E-CT-MFB1-B3.1.10

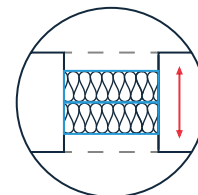
Services	Insulation (mm)	Classification
Metal cable ladders	LI 150 - Multitherm Bandage top of floor	EI 90, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm		

B.1.1

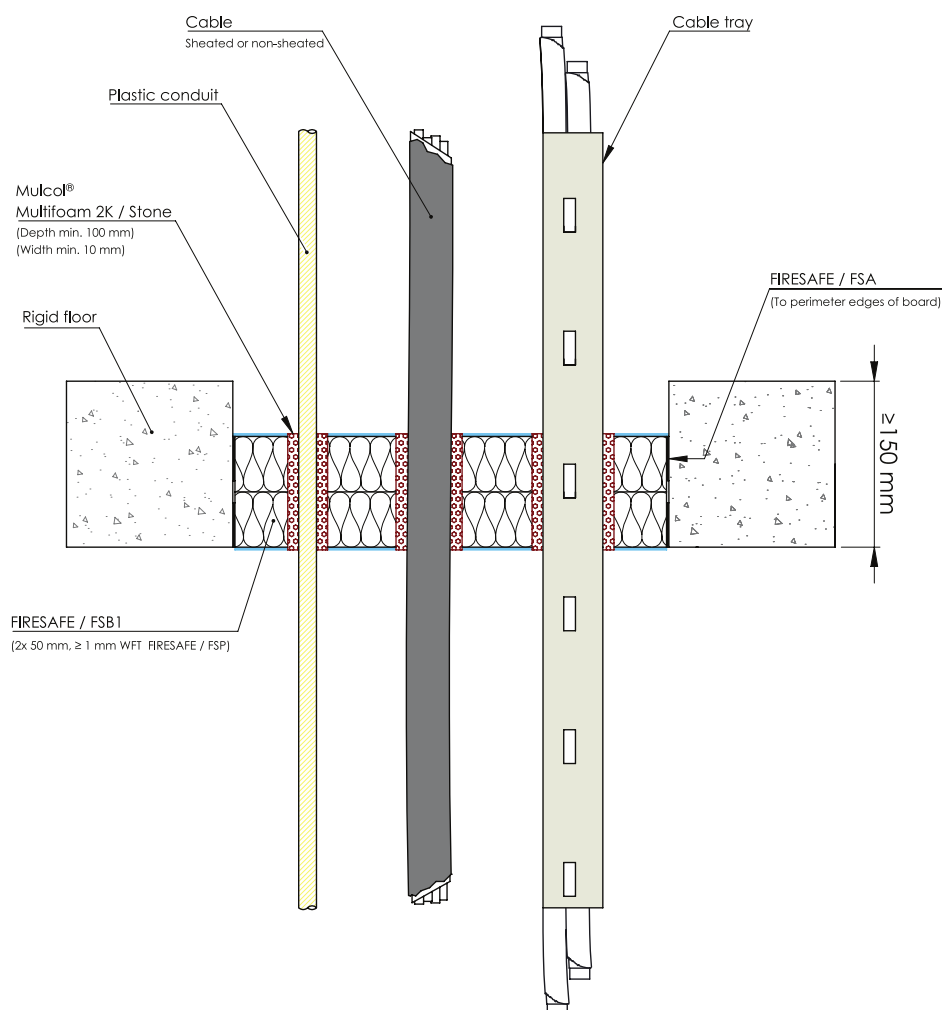
FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.3

Cables and trays - Multifoam 2K



Position seal:
top, bottom or anywhere
in between



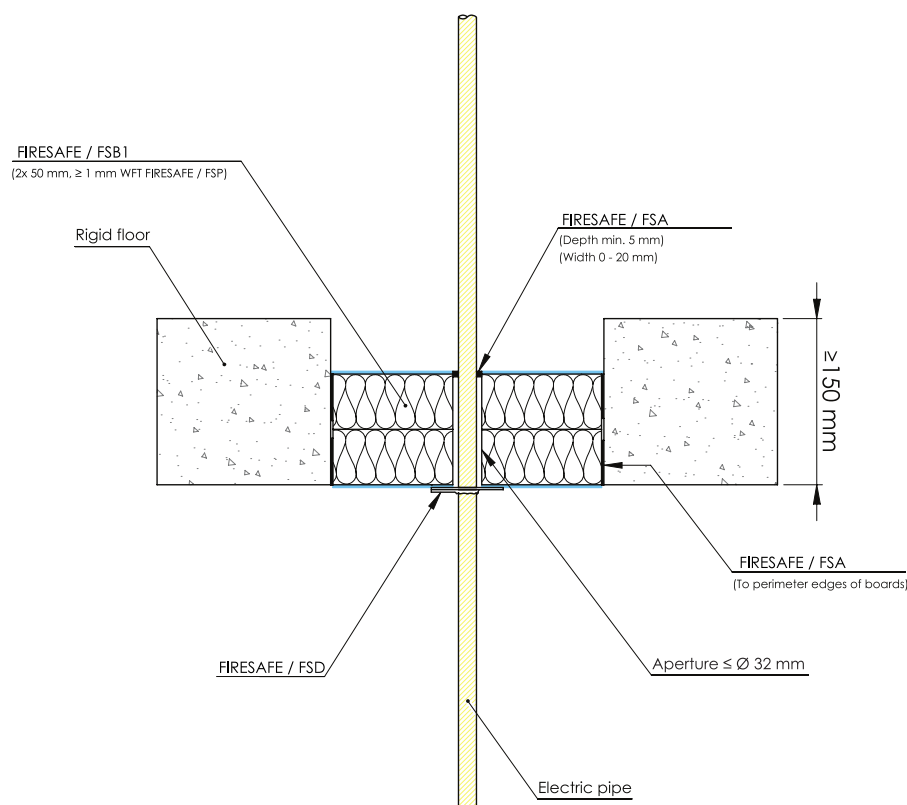
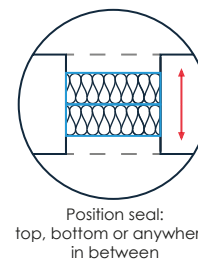
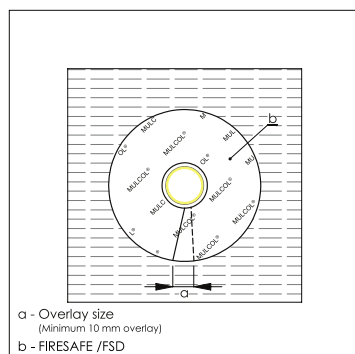
Drawing: PBrf.E-CT-3-MF-MFB1.2.10

Services	Sealing (mm)	Classification
Metal cable ladders	Multifoam 2K / Stone ≥ 0 x 100 (wxd)	EI 60, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm	Multifoam 2K / Stone ≥ 10 x 100 (wxd)	EI 60 C/U, E 90 C/U
Plastic conduits ≤ Ø 16 mm		

B.1.1 FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.4 Single plastic conduits - FIRESAFE / FSD

Bottom view



Drawing: PBrf,E-MFB1-EP19-M2.0.10

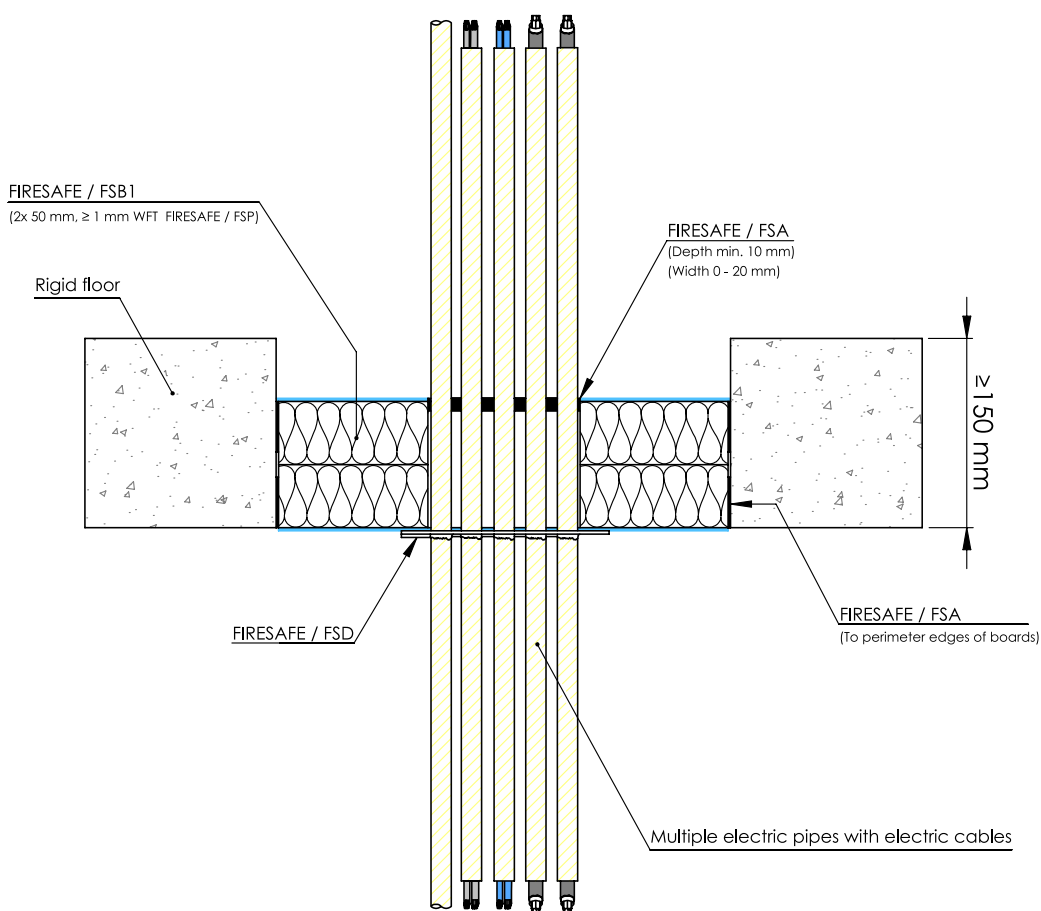
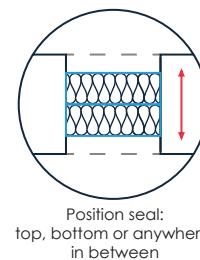
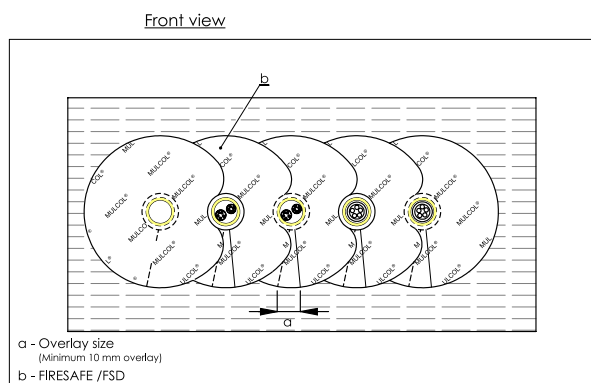
Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \varnothing 25$ mm, with or without cables	FIRESAFE / FSD bottom of floor	$\leq \varnothing 32$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 90 U/U, E 120 U/U

B.1.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.5

Multiple plastic conduits - FIRESAFE / FSD

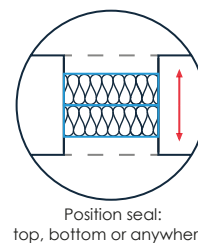
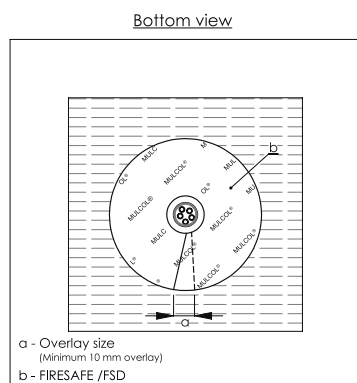


Drawing: PBrf.E-EP-M5.0.30

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Multiple plastic conduits, max 5 pcs. ≤ Ø 16 mm, with or without cables	FIRESAFE / FSD bottom of floor	≤ Ø 32	FIRESAFE / FSA 0-10 x ≥ 20 (wxd) top of floor	EI 90 U/U, E 120 U/U

B.1.1 FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.6 Single cables - FIRESAFE / FSD



FIRESAFE / FSB1
(2x 50 mm, ≥ 1 mm WFT FIRESAFE / FSP)

Rigid floor

FIRESAFE / FSA
(Depth min. 5 mm)
(Width 0 - 20 mm)

≥ 150 mm

FIRESAFE / FSA
(To perimeter edges of boards)

FIRESAFE / FSD

Aperture $\leq \varnothing 32$ mm

Electric cable

Drawing: PBrf.E-MFB1-EC-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Cables $\leq \varnothing 12$ mm (e.g. YMVK 5x2.5 mm ²)	FIRESAFE / FSD bottom of floor	$\leq \varnothing 32$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 90, E 120

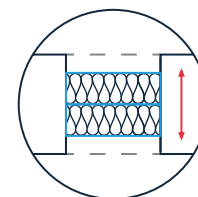
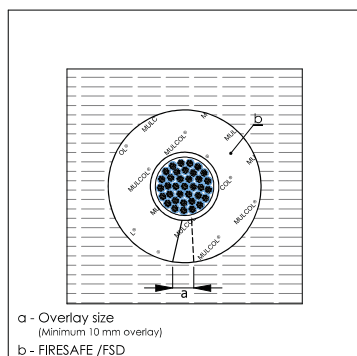
B.1.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.7

Multiple cables - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere
in between

FIRESAFE / FSB1
(2x 50 mm, ≥ 1 mm WFT FIRESAFE / FSP)

Rigid floor

FIRESAFE / FSA
(Depth min. 5 mm)
(Width 0 - 20 mm)

≥ 150 mm

FIRESAFE / FSA
(To perimeter edges of boards)

FIRESAFE / FSD

Aperture $\leq \varnothing 32$ mm

Electric cable bundle

Drawing: PBrf.E-MFB1-ECB-M2.0.10

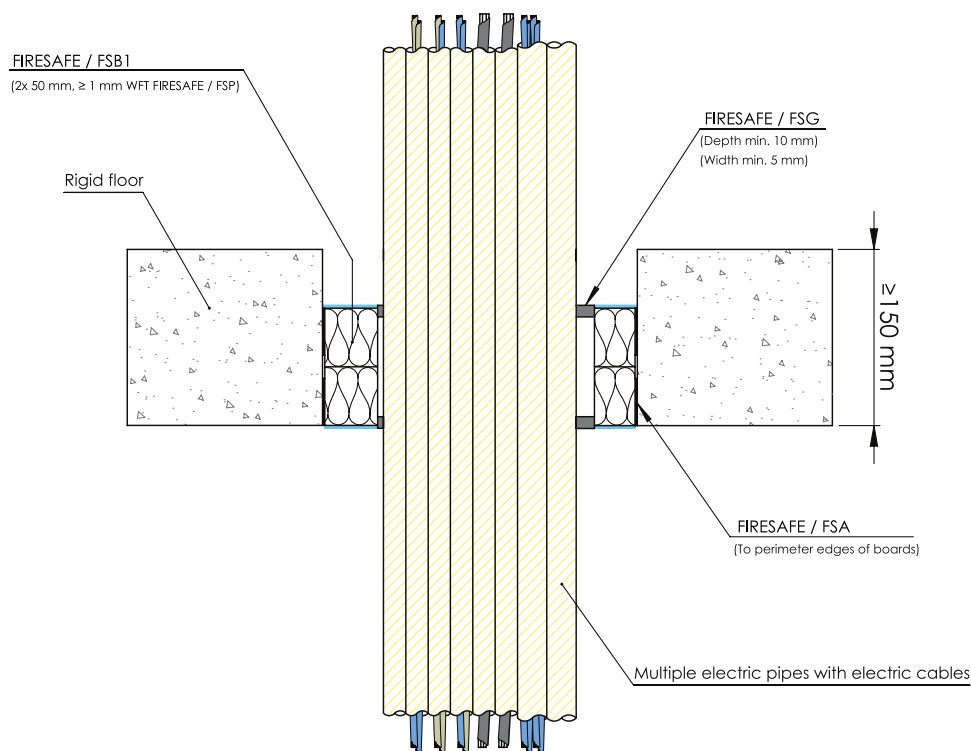
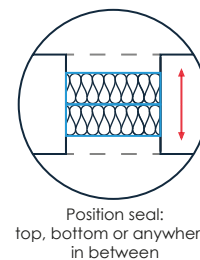
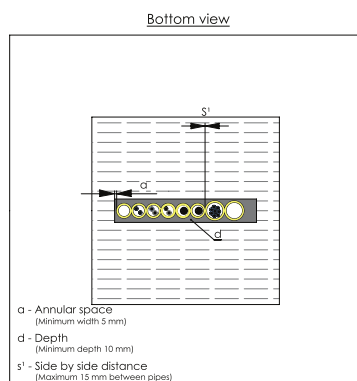
Services	Product	Aperture (mm)	Sealing (mm)	Classification
Telecommunication cables $\leq \varnothing 15$ max 15 pcs	FIRESAFE / FSD bottom of floor	$\leq \varnothing 32$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60, E 120

B.1.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.1.1.8

Multiple plastic conduits - FIRESAFE / FSG

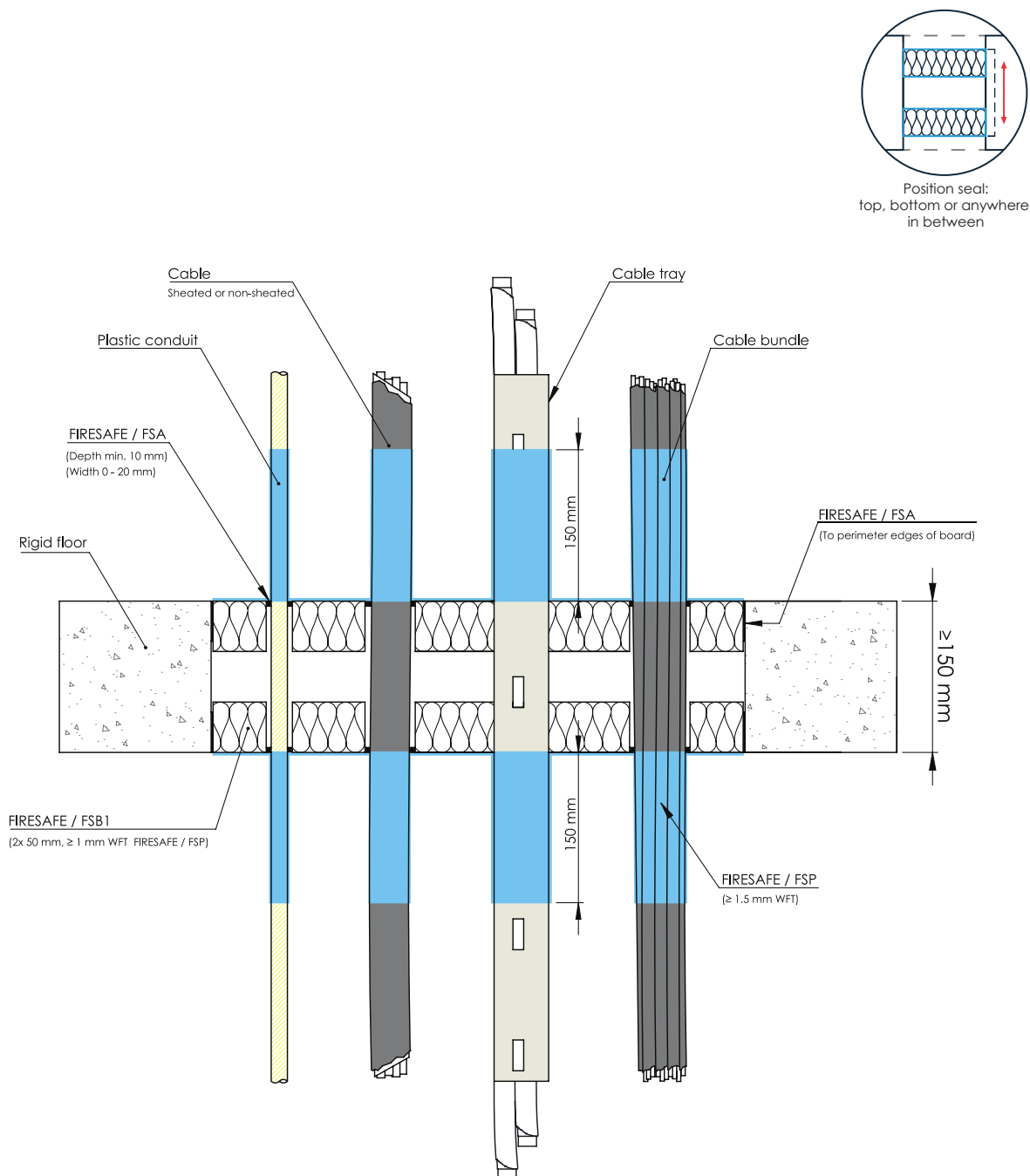


Drawing: PBrf.E-EP8-G2.1.10

Services	Sealing (mm)	Classification
Multiple plastic conduits ≤ Ø 25 mm, max 8 pcs. with or without cables	FIRESAFE / FSG ≥ 5x10 mm (wxd)	EI 90 U/U

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.1 Cables, trays and conduits - FIRESAFE / FSP

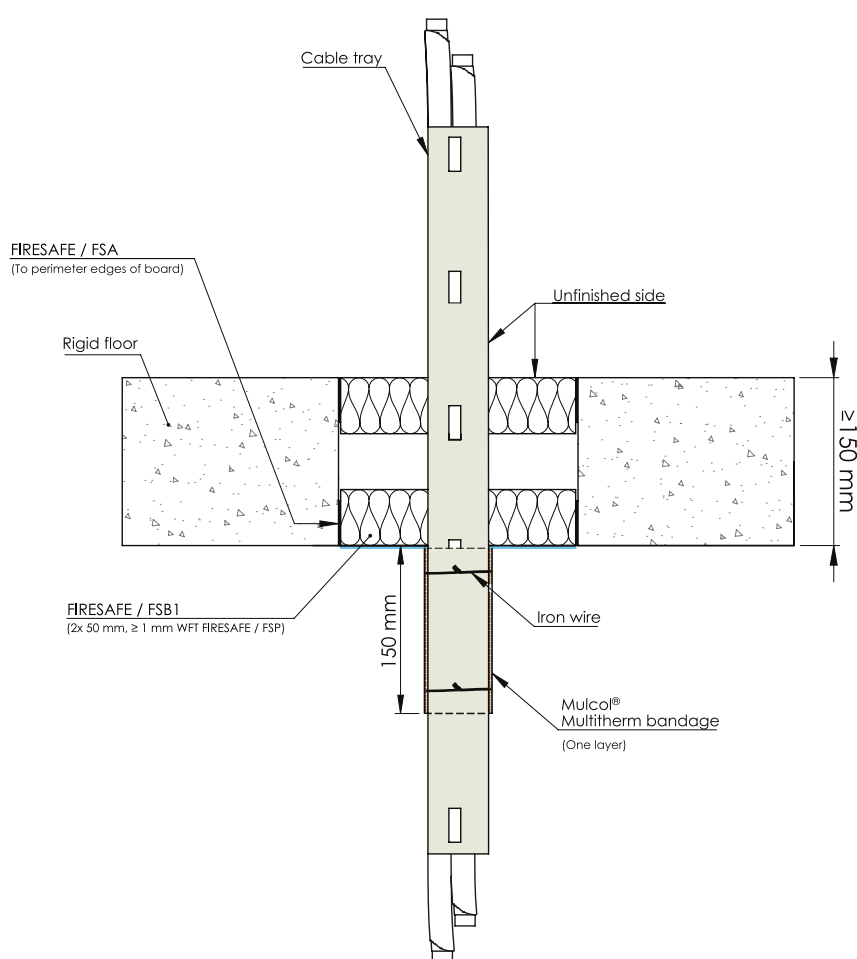
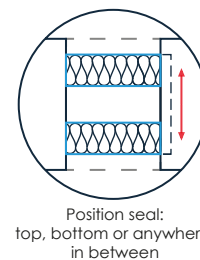
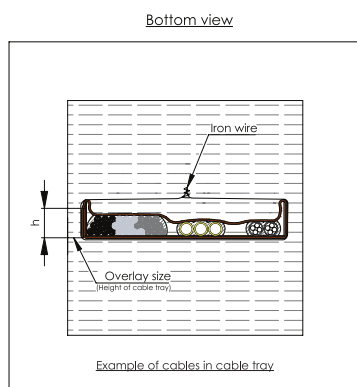


Drawing: PBrf.E-CT-4-MFB1.2.10.C

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSP	EI 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 120 U/C
Non sheathed cables ≤ Ø 17 mm		
Plastic conduits ≤ Ø 16 mm		EI 90, E 120
Cables ≤ Ø 80 mm		
Non sheathed cables ≤ Ø 24 mm		

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.2 Cables and trays - Multitherm Bandage

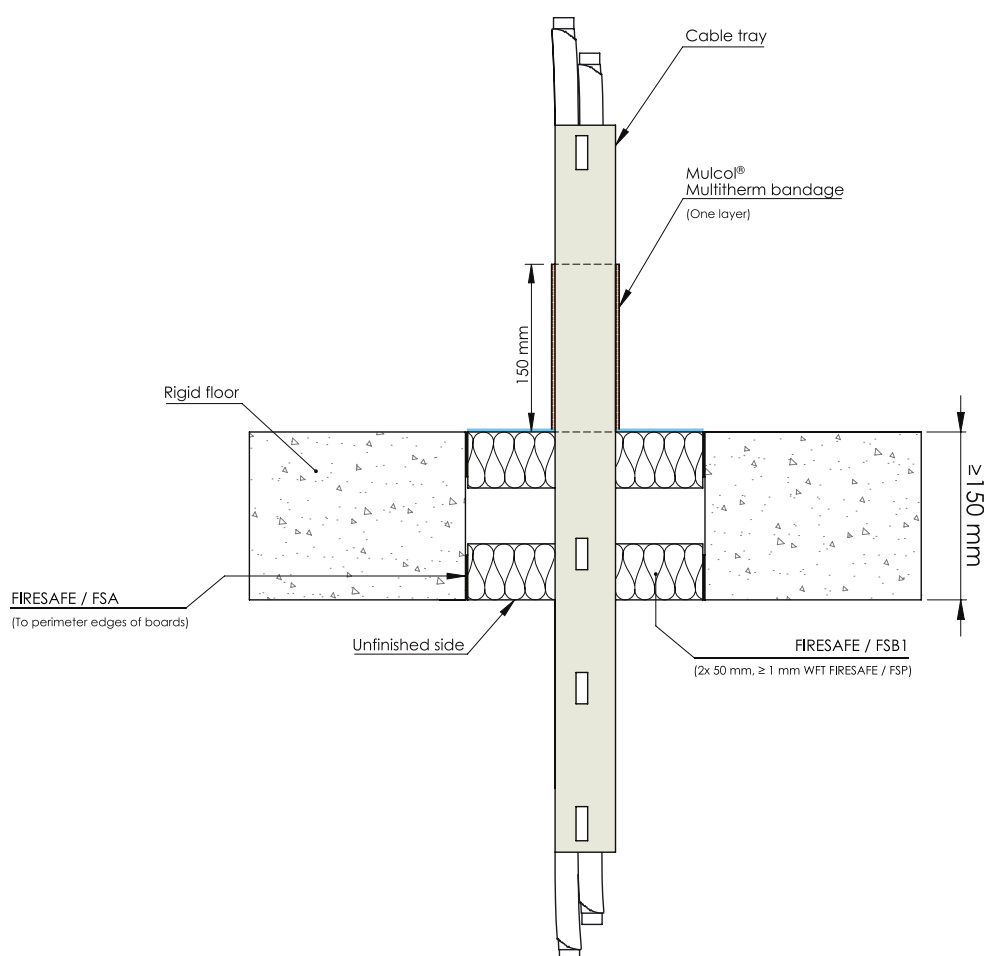
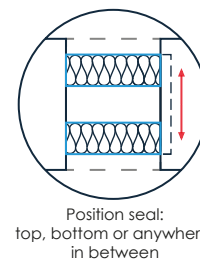
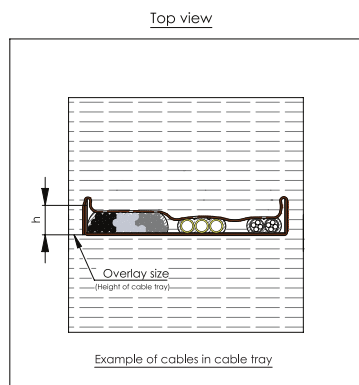


Drawing: PBrf.E-CT-MFB1-B1.1.10.C

Services	Insulation	Classification
Metal cable ladders	LI 150 Multitherm Bandage bottom of floor (two wires)	EI 60, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm		

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.2 Cables and trays - Multitherm Bandage

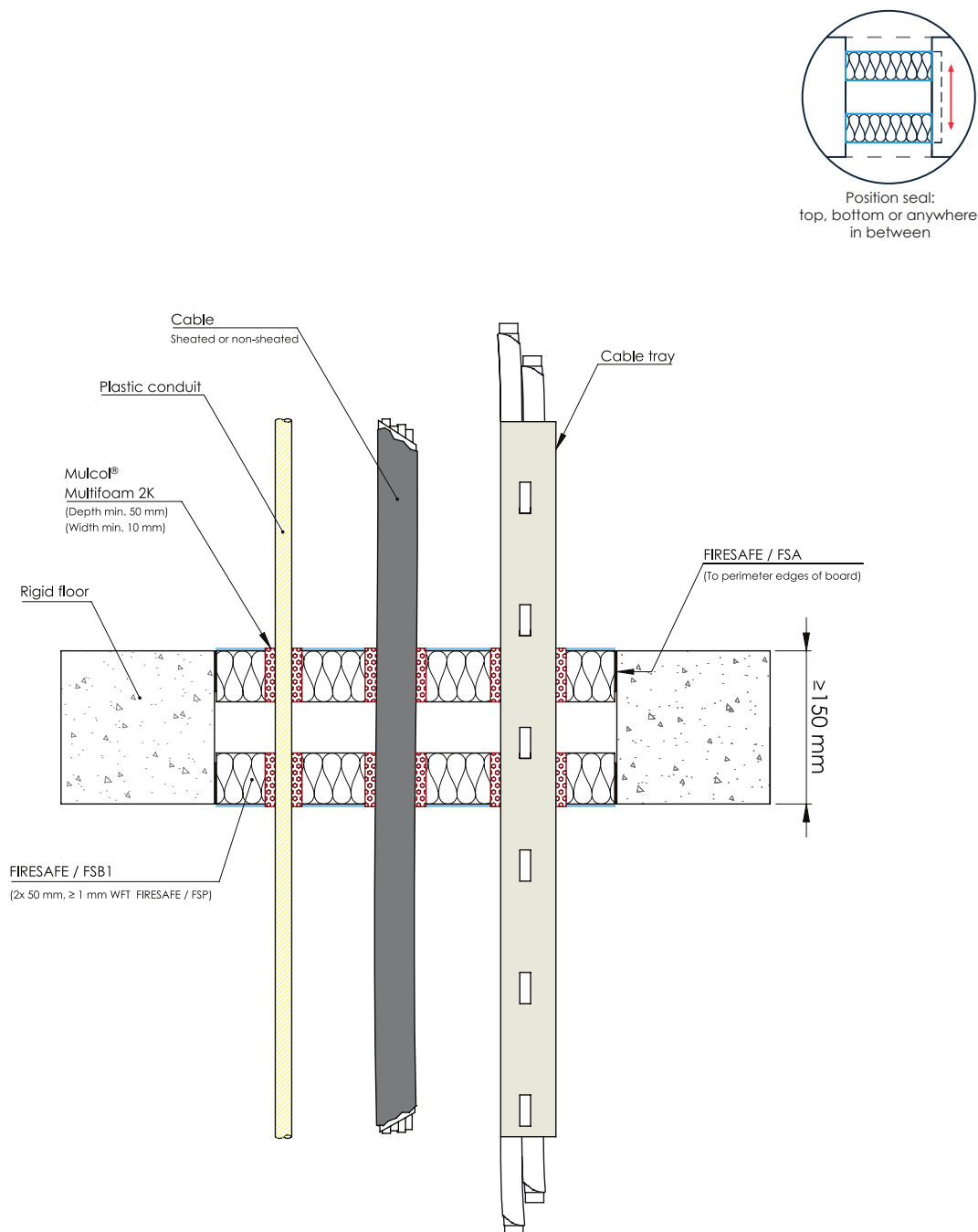


Drawing: PBrf.E-CT-MFB1-B3.1.10.C

Services	Insulation	Classification
Metal cable ladders	LI 150 Multitherm Bandage top of floor	EI 90, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm		

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.3 Cables and trays - Multifoam 2K



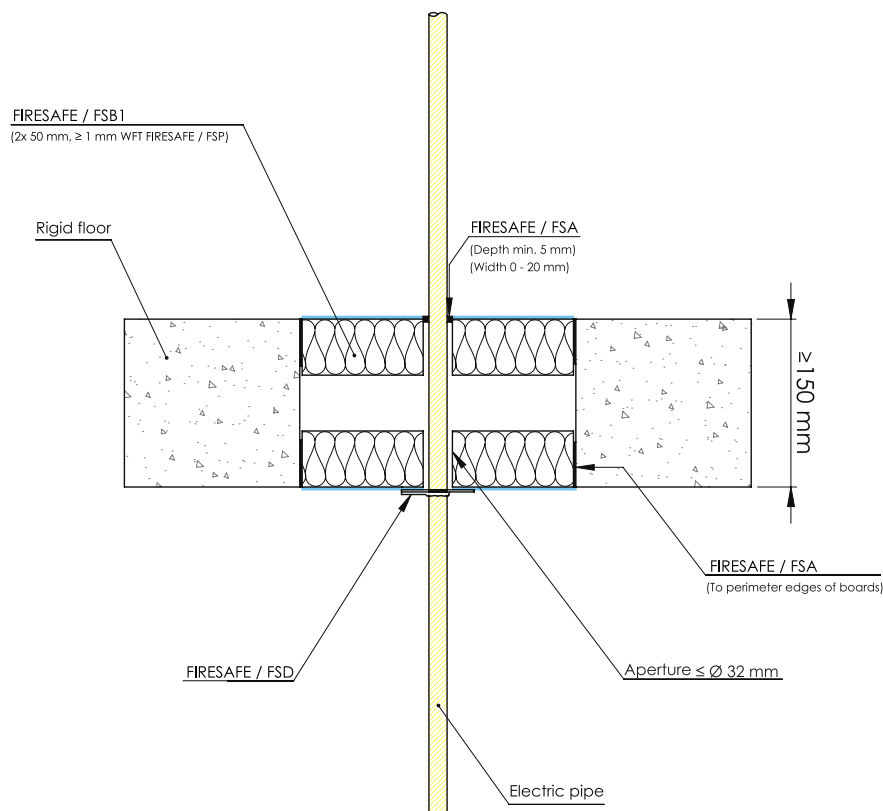
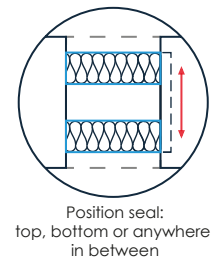
Drawing: PBrf.E-CT-3-MF-MFB1.2.10.C

Services	Sealing (mm)	Classification
Metal cable ladders	Multifoam 2K / Stone ≥ 0 x 100 (wxd)	EI 60, E 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 21 mm	Multifoam 2K / Stone ≥ 10 x 100 (wxd)	EI 60, E 90
Plastic conduits ≤ Ø 16 mm		

B.1.2.4 Single plastic conduits - FIRESAFE / FSD

a - Overlay size
(Minimum 10 mm overlay)

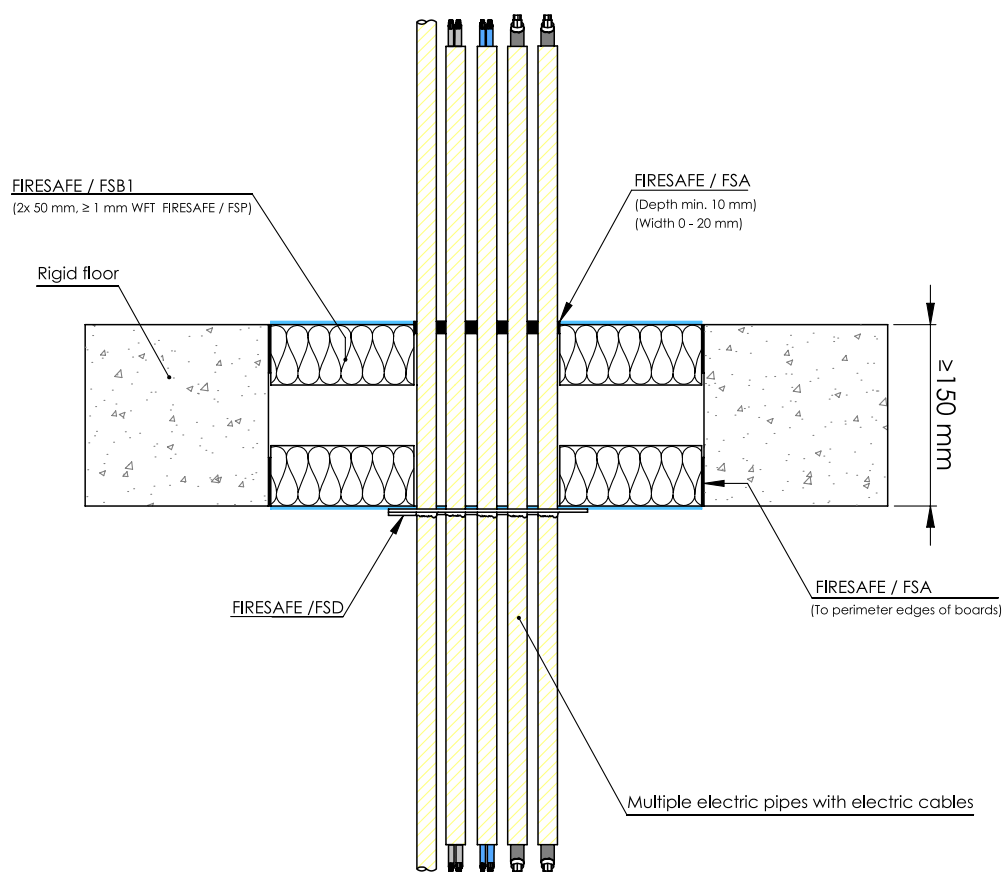
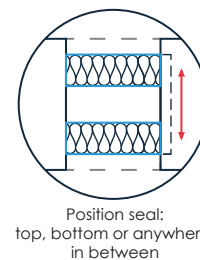
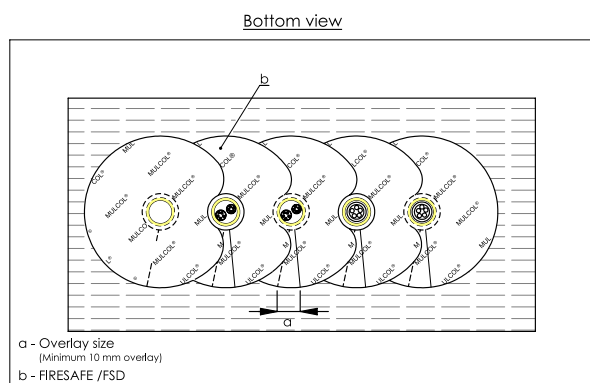
b - FIRESAFE / FSD



Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \varnothing 25$ mm with or without cables	FIRESAFE / FSD bottom of floor	$\leq \varnothing 32$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 90 U/U, E 120 U/U

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.5 Multiple plastic conduits - FIRESAFE / FSD



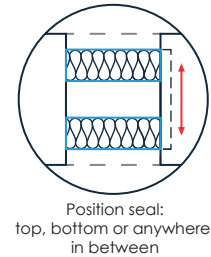
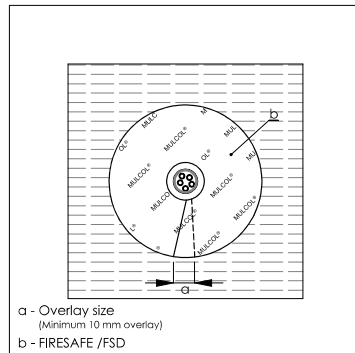
Drawing: PBrf.E-EP-M5.0.30.C

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits ≤ Ø 25 mm with or without cables	FIRESAFE / FSD bottom of floor	≤ Ø 32	FIRESAFE / FSA ≥ 0-20 x 5 (wxd) top of floor	EI 90 U/U, E 120 U/U

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.6 Single cables - FIRESAFE / FSD

Bottom view



FIRESAFE / FSB1
(2x 50 mm, ≥ 1 mm WFT FIRESAFE / FSP)

Rigid floor

FIRESAFE / FSA
(Depth min. 5 mm)
(Width 0 - 20 mm)

≥ 150 mm

FIRESAFE / FSA
(To perimeter edges of boards)

FIRESAFE / FSD

Aperture $\leq \varnothing 32$ mm

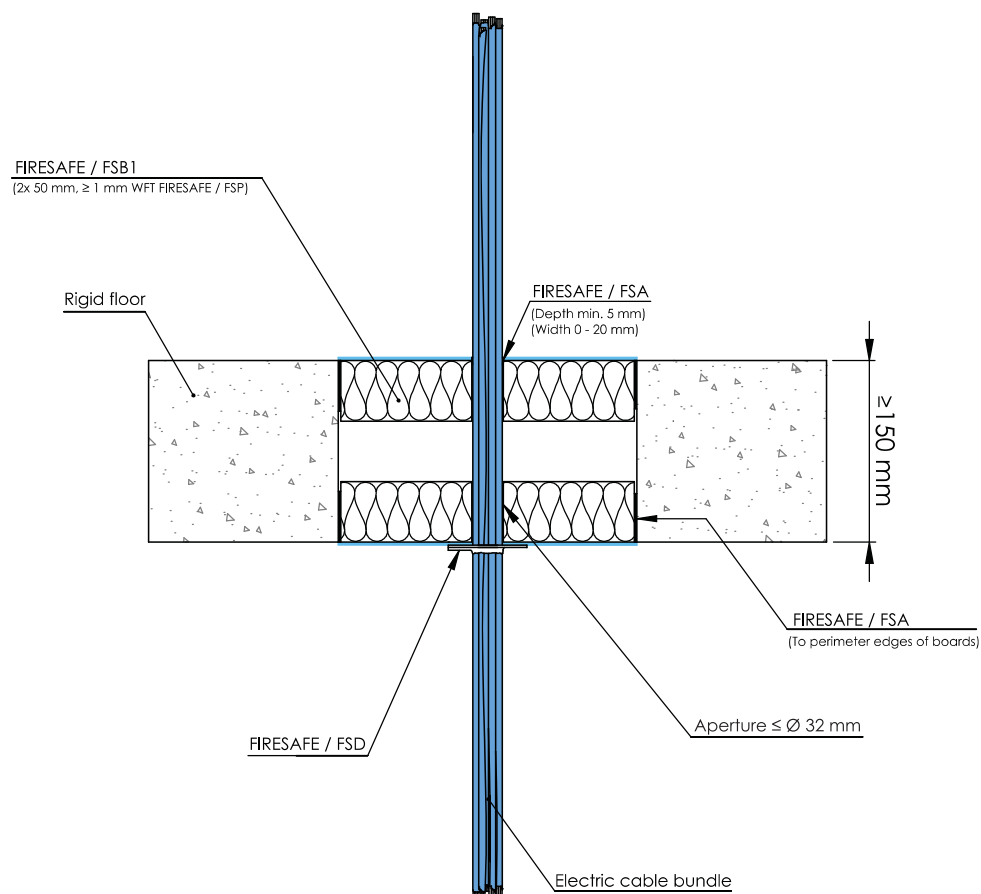
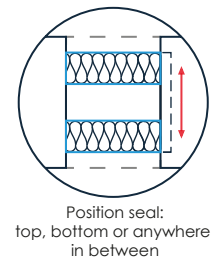
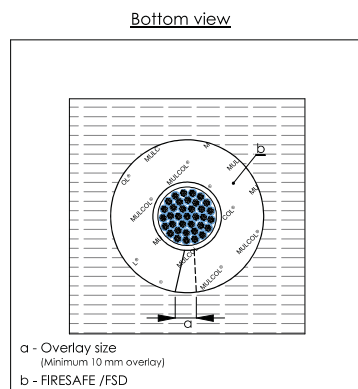
Electric cable

Drawing: PBrf.E-MFB1-EC-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Cables $\leq \varnothing 12$ mm (e.g. YMKV 5x2.5 mm ²)	FIRESAFE / FSD bottom of floor	$\leq \varnothing 32$	FIRESAFE / FSA $\geq 0-20 \times 5$ (wxd) top of floor	EI 120

B.1.2 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Cables, trays and conduits

B.1.2.7 Multiple cables - FIRESAFE / FSD



Drawing: PBrf.E-MFB1-ECB-M2.0.10.C

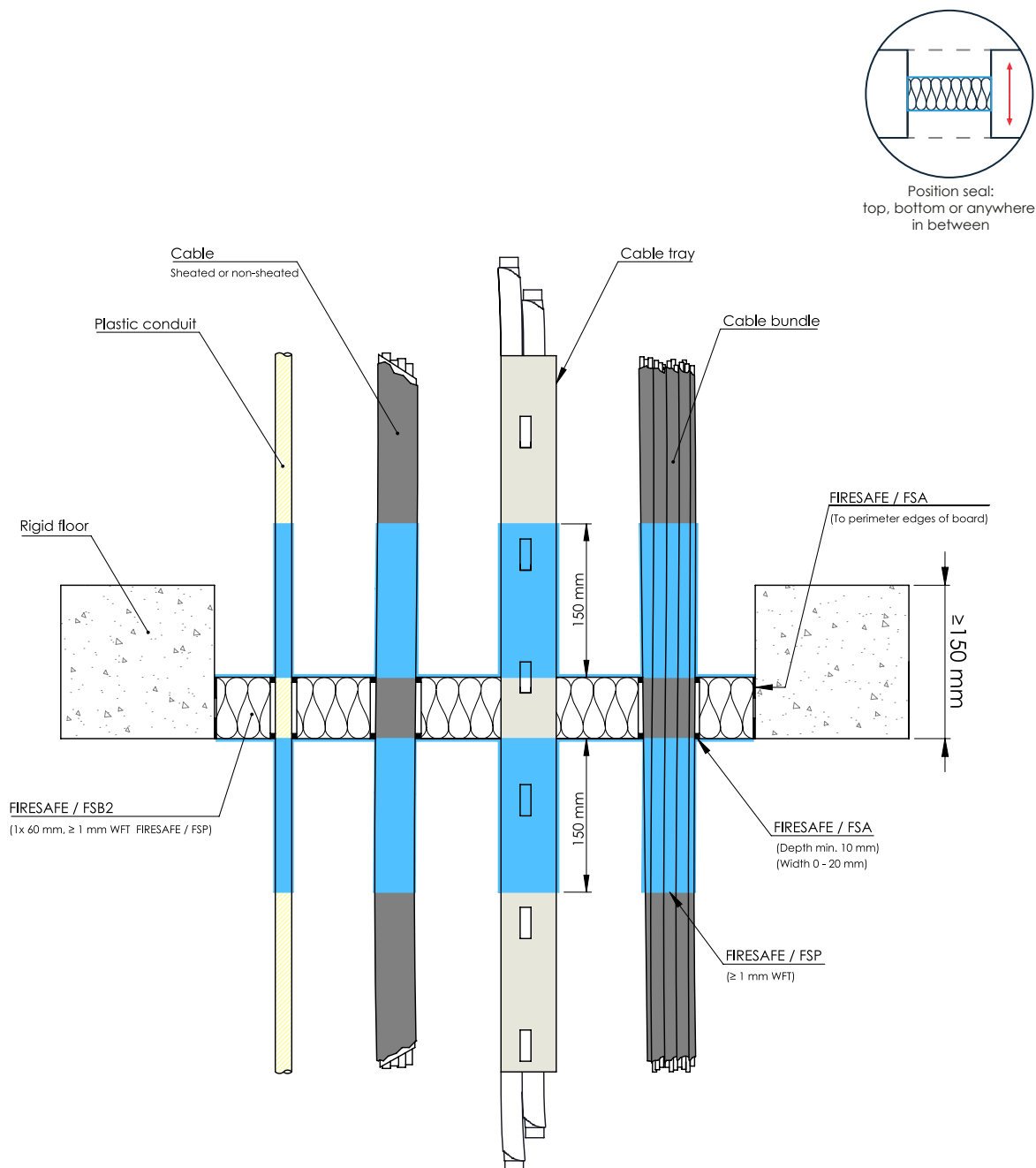
Services	Product	Aperture (mm)	Sealing (mm)	Classification
Telecommunication cables ≤ Ø 15 max 15 pcs	FIRESAFE / FSD bottom of floor	≤ Ø 32	FIRESAFE / FSA ≥ 0-20 x 5 (wxd) top of floor	EI 60, E 120

B.1.3

FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

B.1.3.1

Cables, trays and conduits - FIRESAFE / FSP

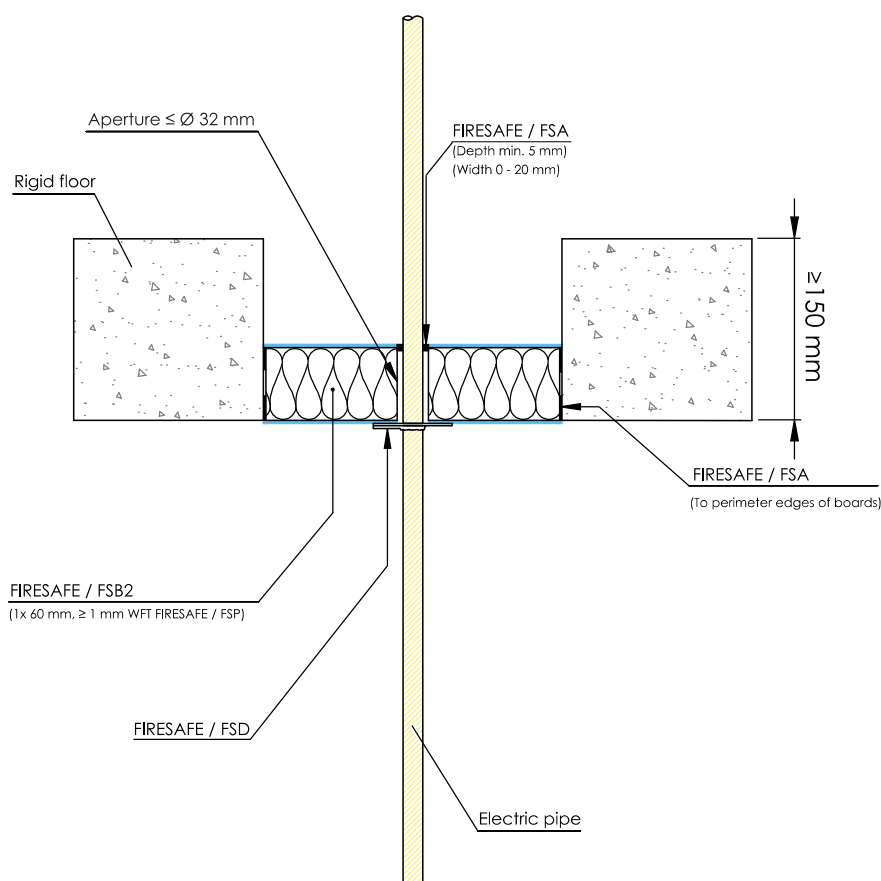
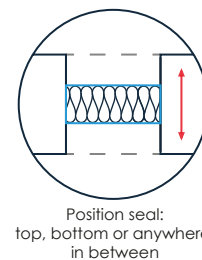
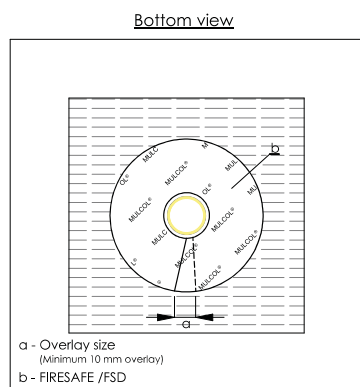


Drawing: PBrf.E-CT-4-MFB2.1.10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1 mm WFT FIRESAFE / FSP	EI 90, E 120
Metal (non-)perforated cable trays		EI 60, E 120
Steel wire mesh cable trays (baskets)		
Cables ≤ Ø 50 mm		EI 90, E 120
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 45, E 120
Plastic conduits ≤ Ø 16 mm		
Non sheathed cables ≤ Ø 24 mm		

B.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

B.1.3.2 Single plastic conduits - FIRESAFE / FSD



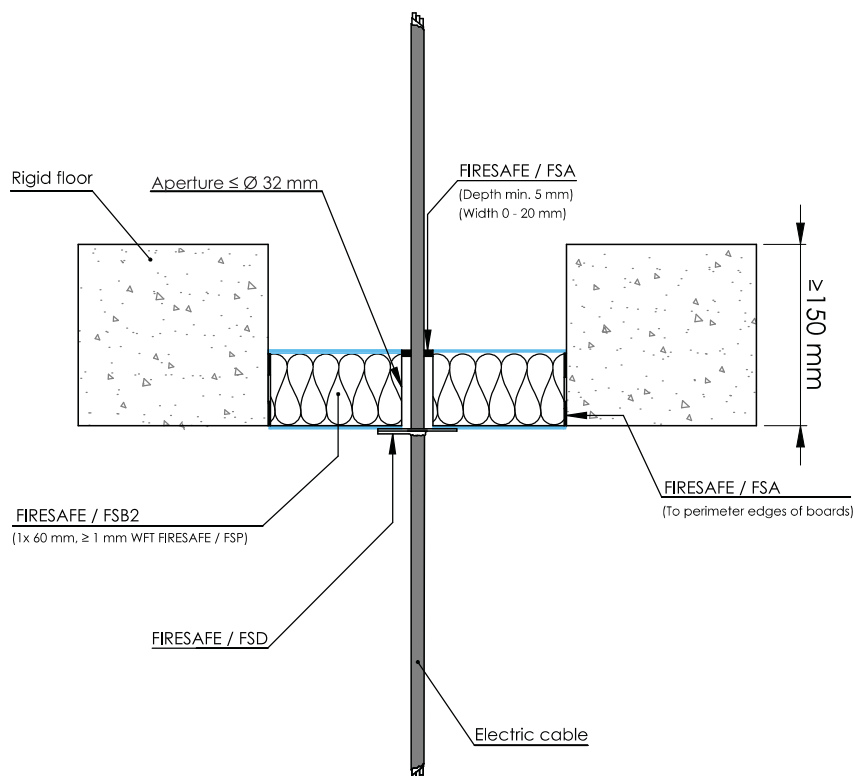
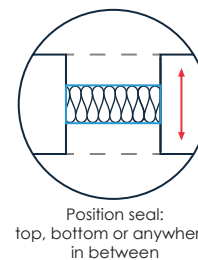
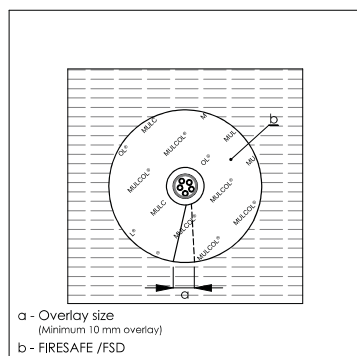
Drawing: PBrf.E-MFB2-EP19-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \text{Ø } 25 \text{ mm}$ with or without cables	FIRESAFE / FSD bottom of floor	$\leq \text{Ø } 32$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 U/C, E 90 U/C

B.1.3 FIRESAFE / FSB2 - 1x 60 mm - Cables, trays and conduits

B.1.3.3 Single cables - FIRESAFE / FSD

Bottom view

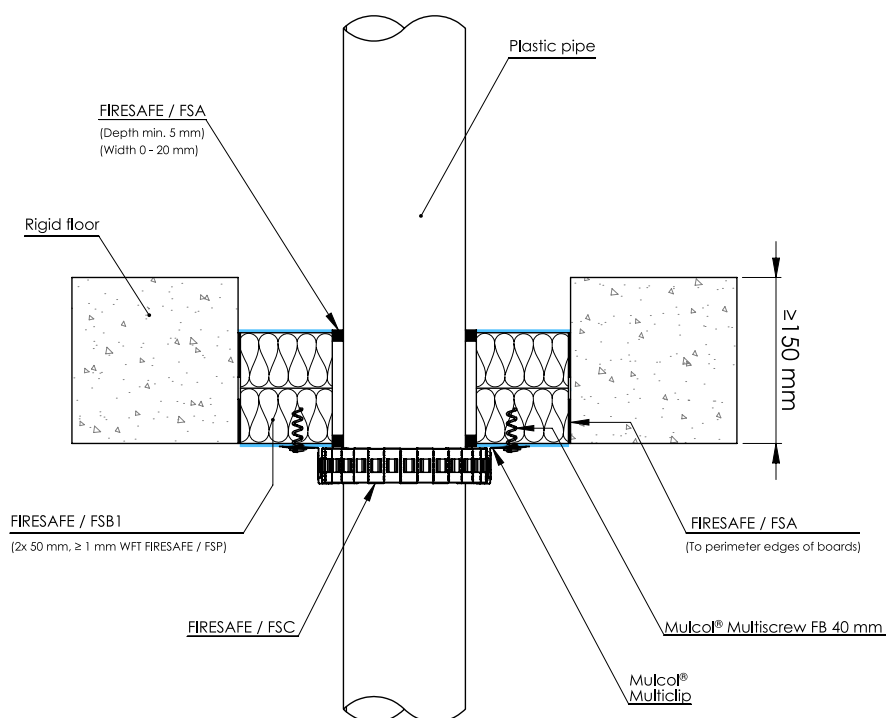
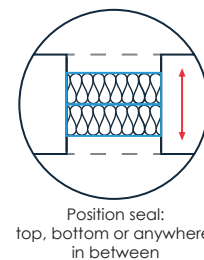
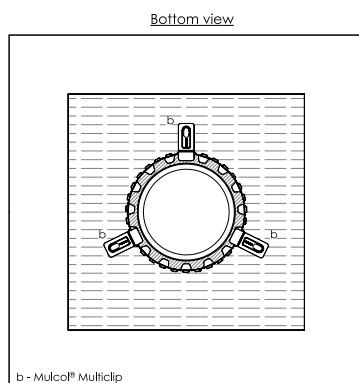


Drawing: PBrf.E-MFB2-EC-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Cables $\leq \text{Ø } 12 \text{ mm}$ (e.g. YMKV 5x2.5 mm ²)	FIRESAFE / FSD bottom of floor	$\leq \text{Ø } 32$	FIRESAFE / FSA $\geq 0-20 \times 5$ (wxd) top of floor	EI 60, E 90

B.1.4 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.1.4.1 Plastic pipes - FIRESAFE / FSC

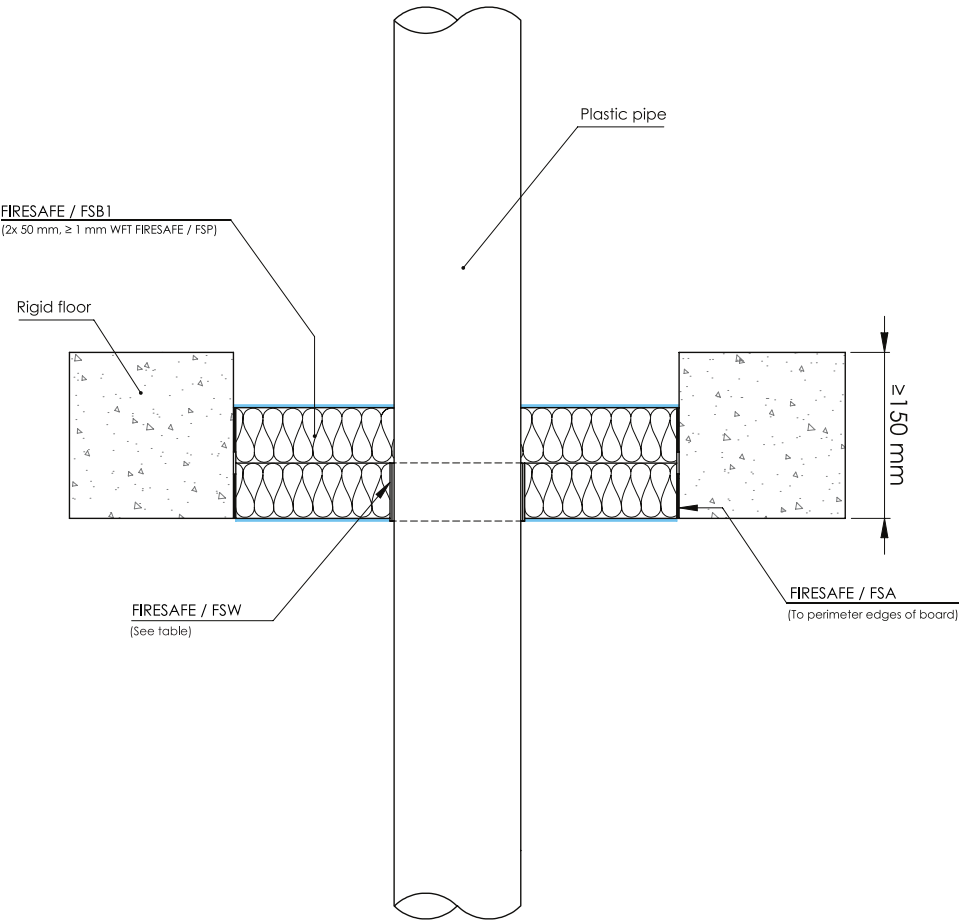
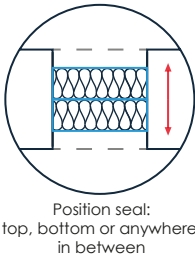
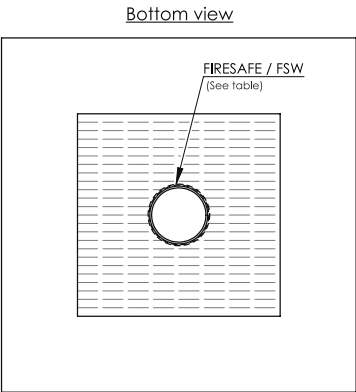


Drawing: PBrf.E-PP-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 U/U
		2.7 - 6.6			EI 60 U/U
PP		2.7			EI 90 U/U
		2.7 - 6.3			EI 60 U/U
PVC(-U/-C)		2.7			EI 90 U/U
		2.7 - 6.3			EI 60 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 160	4.0			EI 90 U/C, E 120 U/C
		4.0 - 14.6			EI 60 U/C
PP		4.0			EI 45 U/C, E 60 U/C
		4.0 - 14.6			

B.1.4 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.1.4.2 Plastic pipes - FIRESAFE / FSW

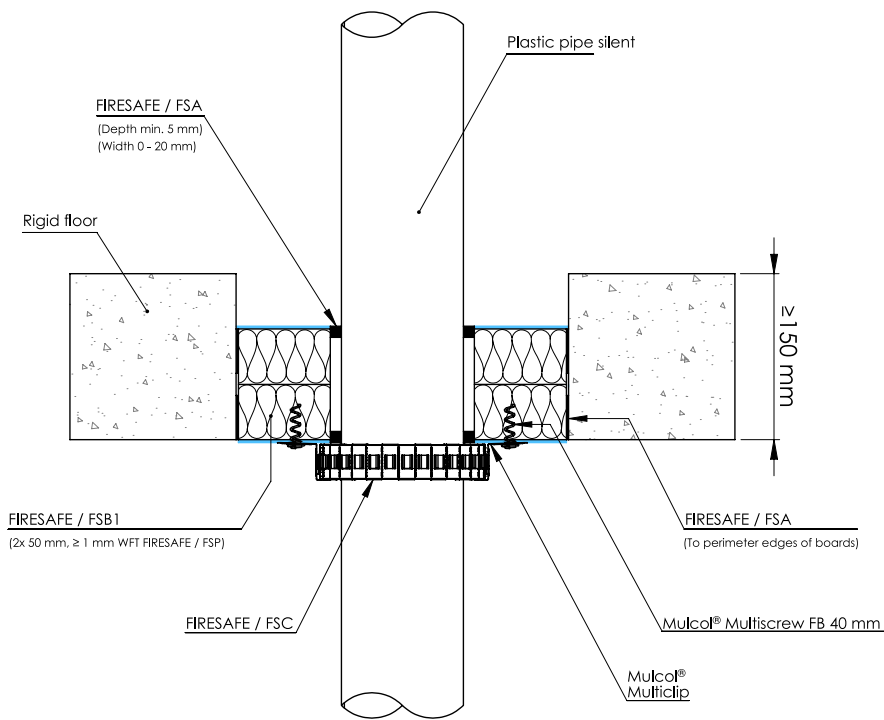
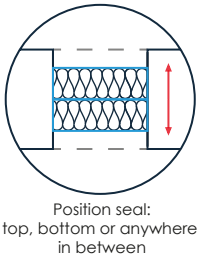
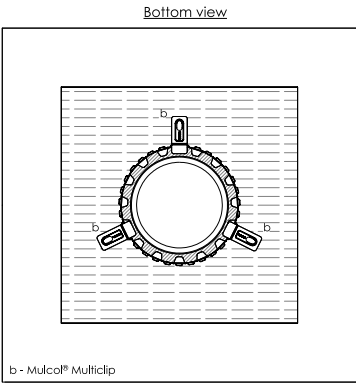


Drawing: PBrf.E-PP-MW2-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PVC(-U/-C)	≤ Ø 110	3.2	FIRESAFE / FSW (2 layers)	EI 120 U/C

B.1.4 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.1.4.3 Plastic pipes (Silent) - FIRESAFE / FSC



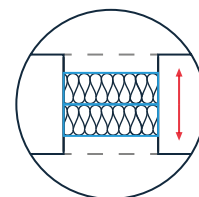
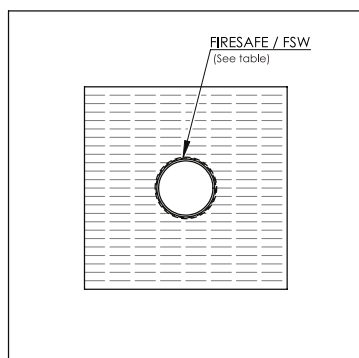
Drawing: PBrf.E-PPS-MFB1.2.10

Services	Pipe dimensions (mm)		System	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Geberit Silent dB20	≤ Ø 110	6.0	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 U/U

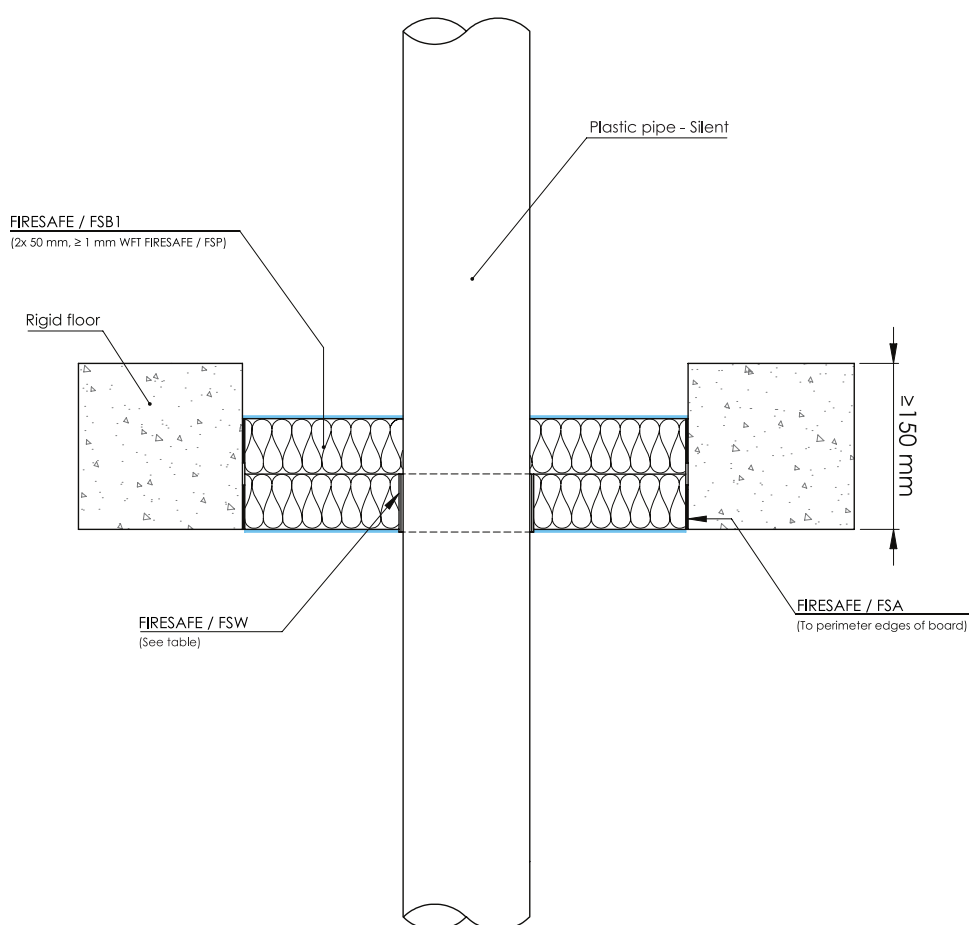
B.1.4 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.1.4.4 Plastic pipes (Silent) - FIRESAFE / FSW

Bottom view



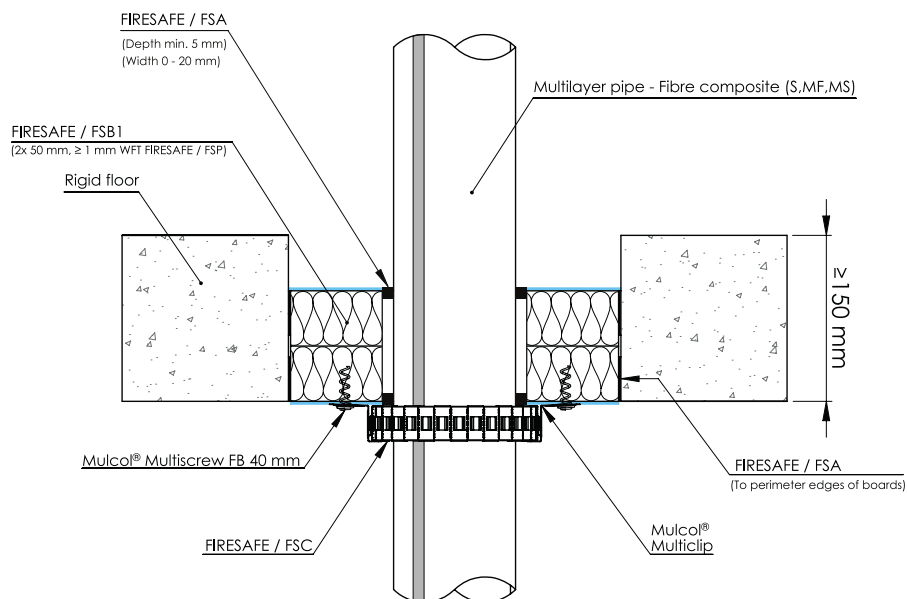
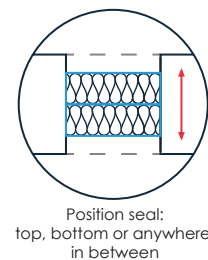
Position seal:
top, bottom or anywhere
in between



Drawing: PBrf.E-PPS-MW2-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Poloplast PoloKal NG	≤ Ø 50	2.0	FIRESAFE / FSW (2 layers)	EI 240 U/U
	≤ Ø 110	3.4		
Geberit Silent dB20	≤ Ø 56	3.2		EI 240 U/C
	≤ Ø 110	6.0		
Poloplast PoloKal NG	≤ Ø 125	3.9	FIRESAFE / FSW (4 layers)	

B.1.4.5 PP-R Multilayer pipes - FIRESAFE / FSC

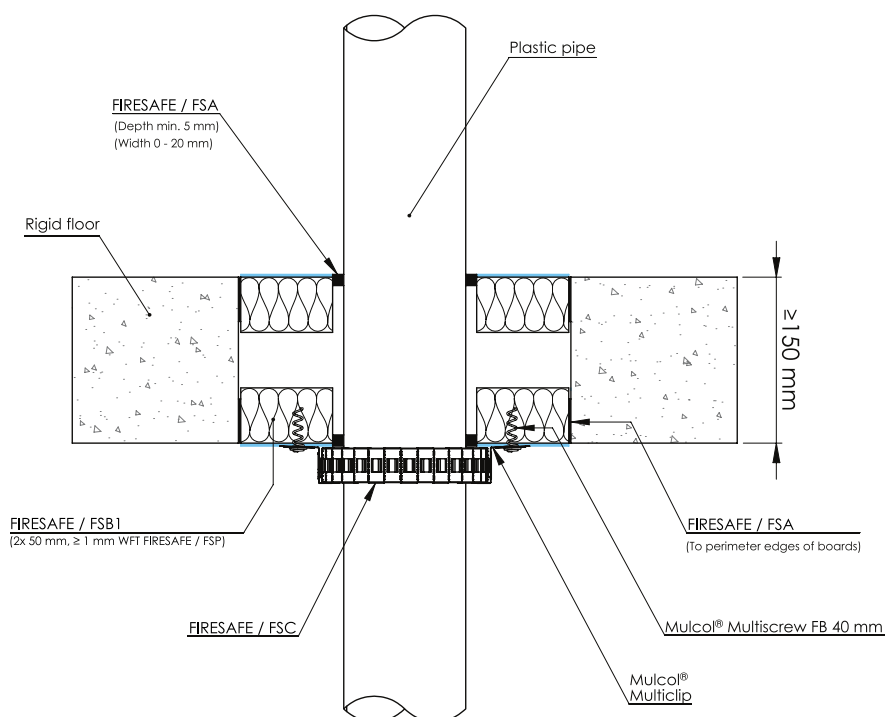
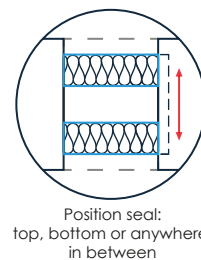
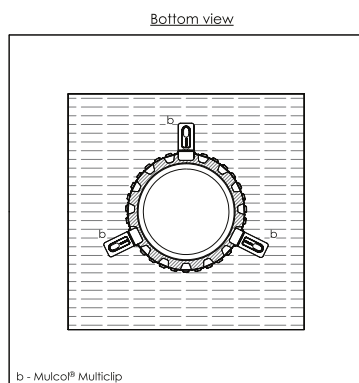


Drawing: PBrf.E-MLF-11.0.10

Services	Pipe dimensions (mm)		System	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Aquatherm Green-MF	≤ Ø 50	6.9	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 U/C
	≤ Ø 110	10.0			EI 60 U/C

B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.1 Plastic pipes - FIRESAFE / FSC



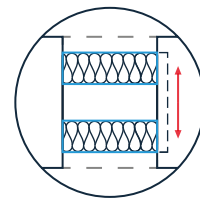
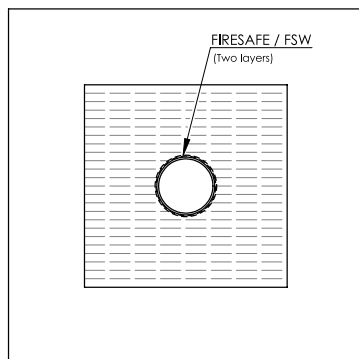
Drawing: PBrf.E-PP-MFB1.2.10.C

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 90 U/U
		2.7 - 6.6			EI 60 U/U
		2.7 - 3.1			EI 120 U/C
PP	≤ Ø 125	3.1			EI 90 U/U
		2.7			EI 60 U/U
		2.7 - 6.3			EI 90 U/U
PVC(-U/-C)	≤ Ø 110	2.7			EI 60 U/U
		2.7 - 6.3			EI 60 U/U

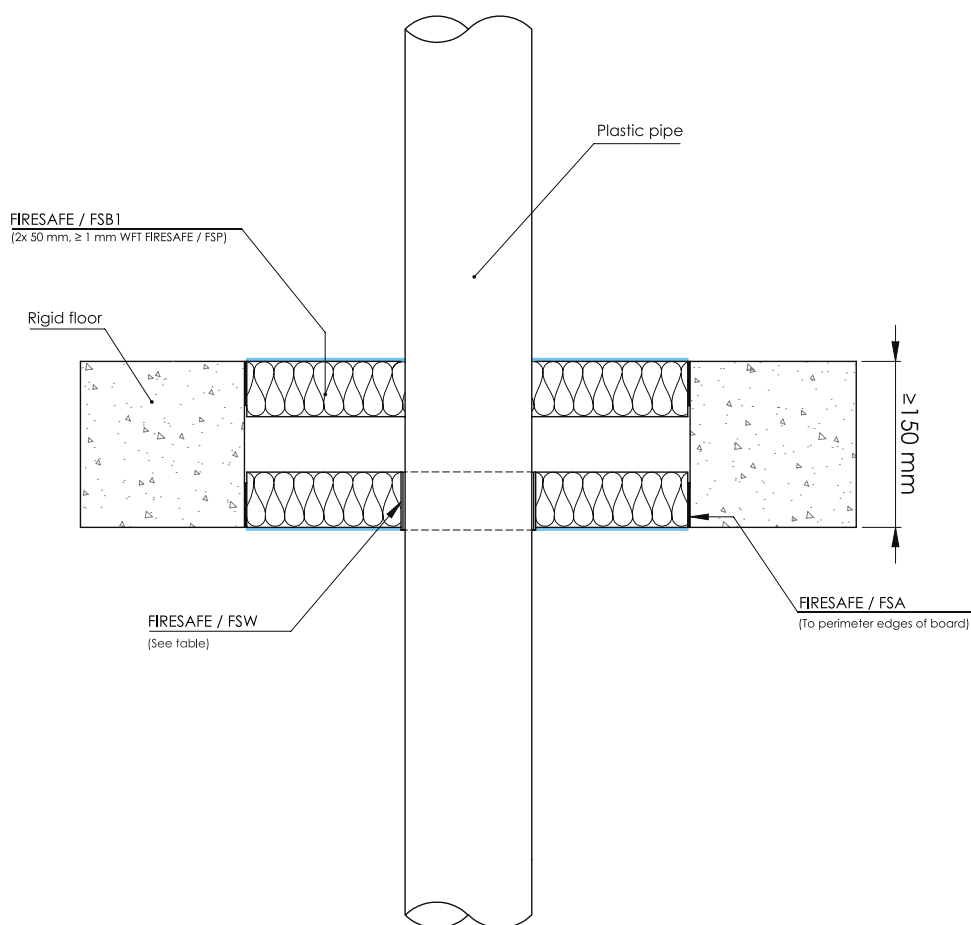
B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.2 Plastic pipes - FIRESAFE / FSW

Bottom view



Position seal:
top, bottom or anywhere
in between



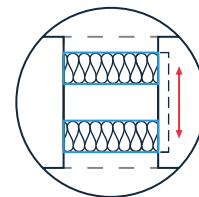
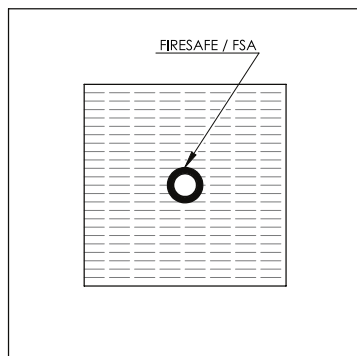
Drawing: PBrf.E-PP-MW2-MFB1.2.10.C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PVC(-U/-C)	≤ Ø 110	3.2	FIRESAFE / FSW (2 layers)	EI 120 U/C

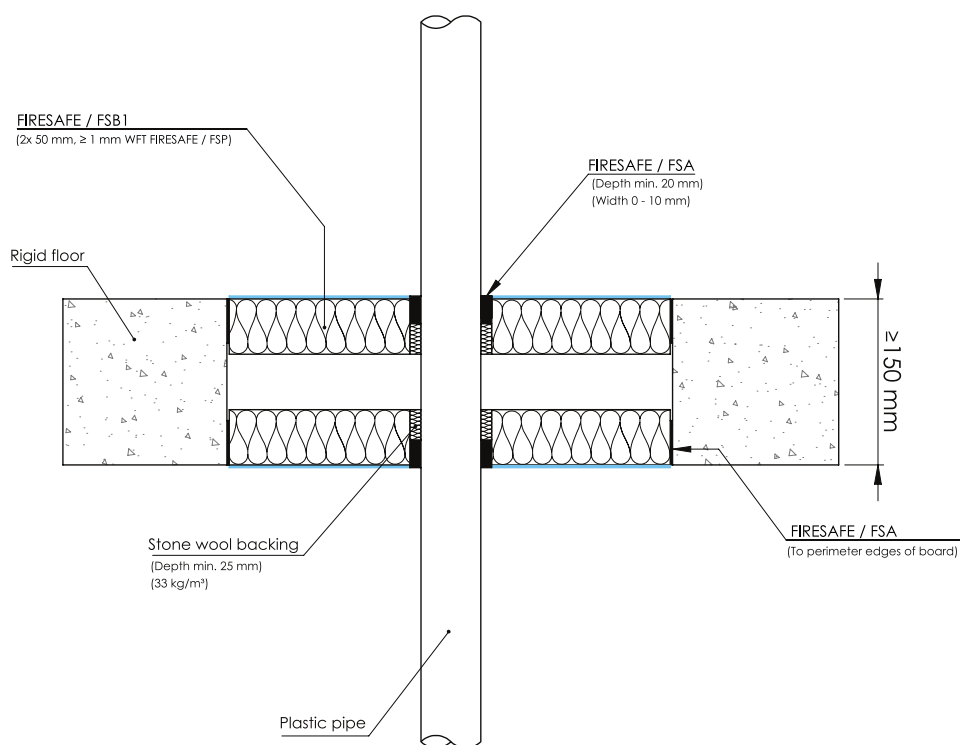
B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.3 Plastic pipes - FIRESAFE / FSA

Bottom view



Position seal:
top, bottom or anywhere
in between



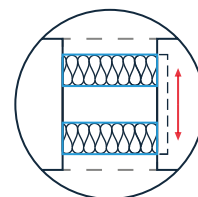
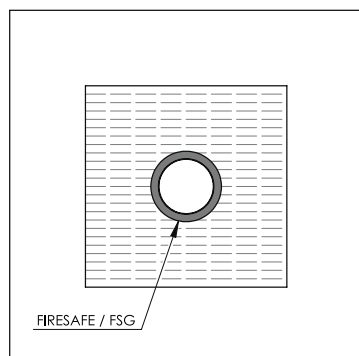
Drawing: PBrf.E-CU-MFB1.2.20.C

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	$\leq \varnothing 40$	3.7	FIRESAFE / FSA 0-10 x ≥ 20 (wxd)	Stone wool (≥ 33 kg/m ³)	EI 120 U/C
PP	$\leq \varnothing 40$	3.7			
PVC(-U/-C)	$\leq \varnothing 40$	1.8 - 3.7			
	$\leq \varnothing 50$	2.0			

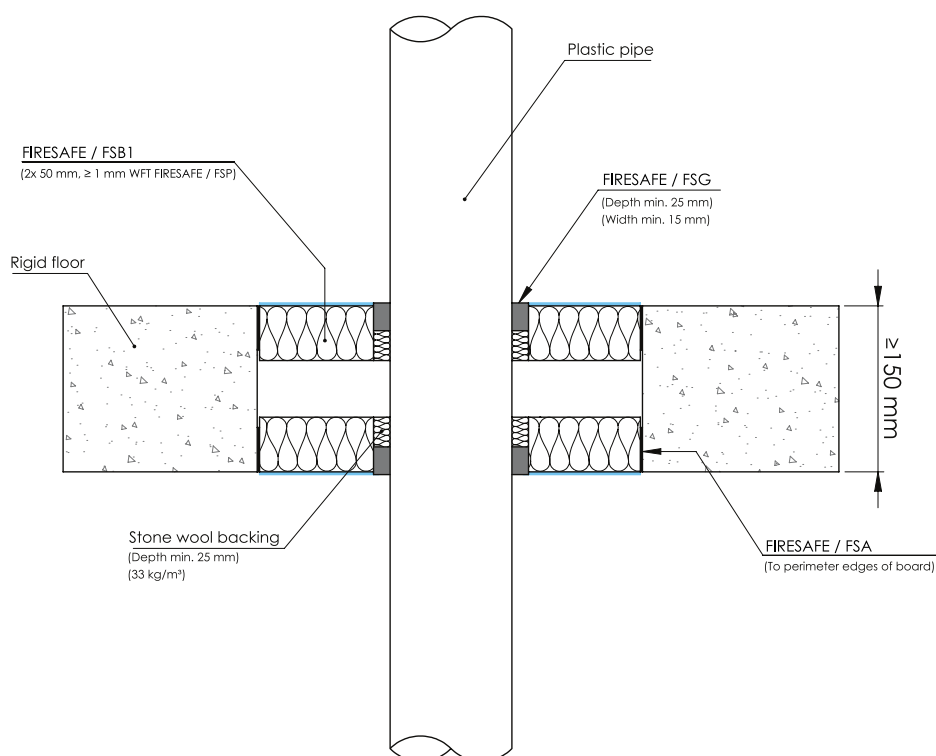
B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.4 Plastic pipes - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between

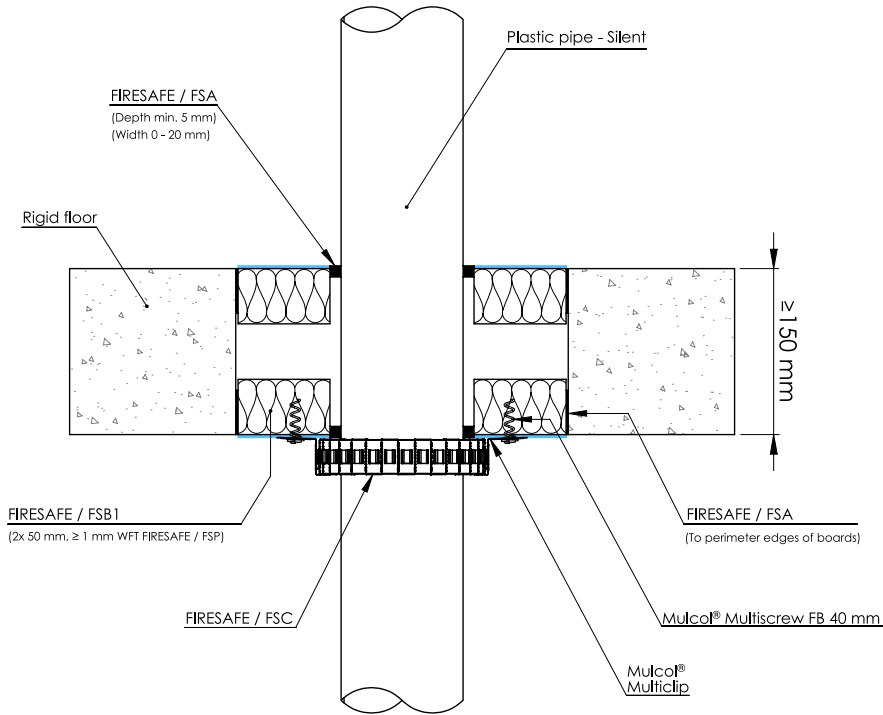
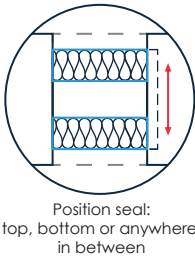
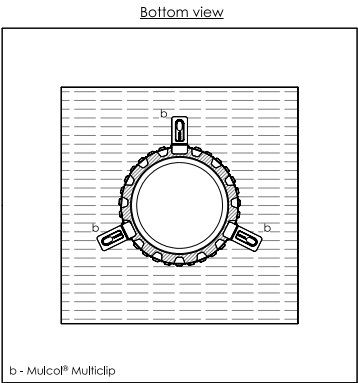


Drawing: PBrf.E-PP-MFB1-G2.5.10.C

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.4 - 10	FIRESAFE / FSG ≥ 15 x 25 (wxd)	Stone wool (≥ 33 kg/m³)	EI 120 U/U
	≤ Ø 110	2.7 - 10			
PP	≤ Ø 40	2.3 - 10			
	≤ Ø 110	2.7 - 10			
PVC(-U/-C)	≤ Ø 40	2.4 - 10			
	≤ Ø 110	2.7 - 10			

B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.5 Plastic pipes (Silent) - FIRESAFE / FSC



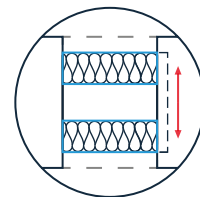
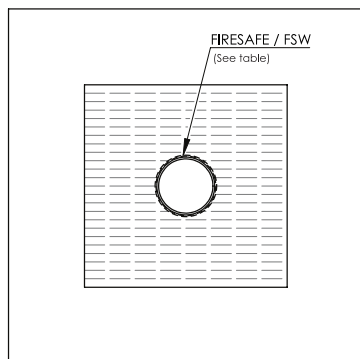
Drawing: PBrf-PPS-MFB1.2.10.C

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimensions	Wall thickness			
Geberit Silent dB20	≤ Ø 110	6.0	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 U/U

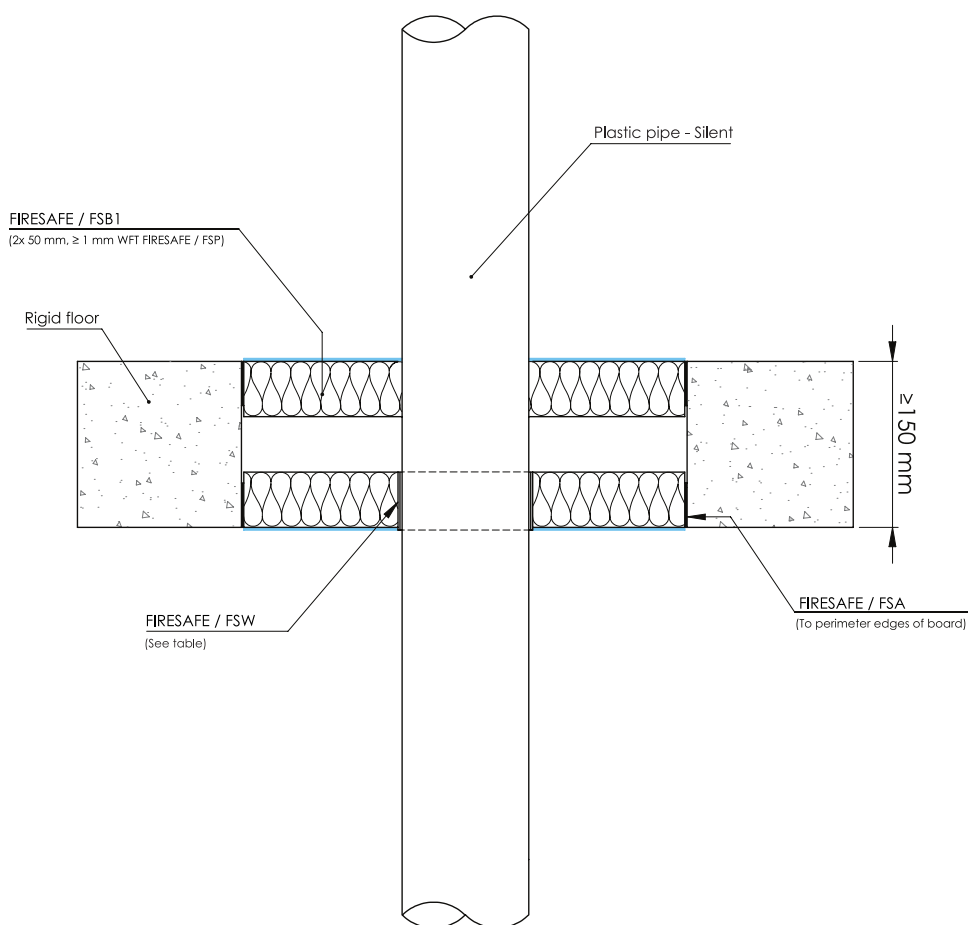
B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.6 Plastic pipes (Silent) - FIRESAFE / FSW

Bottom view



Position seal:
top, bottom or anywhere
in between

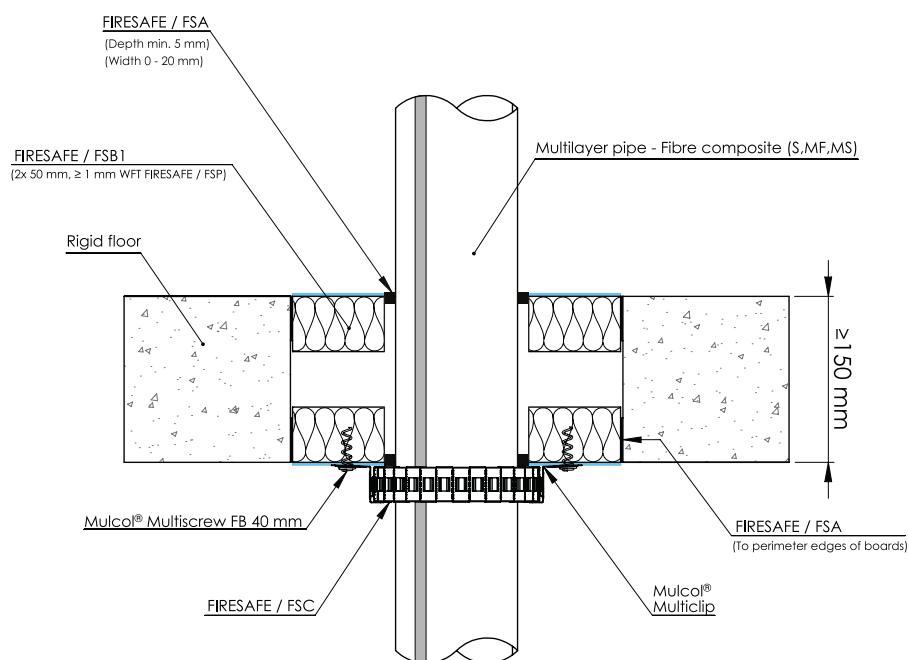
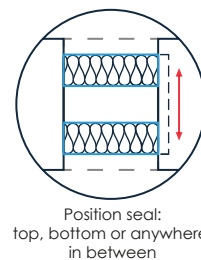
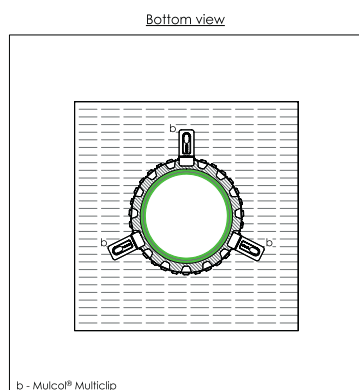


Drawing: PBrf.E-PPS-MW2-MFB1.2.10.C

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Poloplast PoloKal NG	≤ Ø 50	2.0	FIRESAFE / FSW (2 layers)	EI 240 U/U
	≤ Ø 110	3.4		
Geberit Silent dB20	≤ Ø 56	3.2		
	≤ Ø 110	6.0	FIRESAFE / FSW (4 layers)	EI 240 U/C
Poloplast PoloKal NG	≤ Ø 125	3.9		

B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.7 PP-R Multilayer pipes - FIRESAFE / FSC



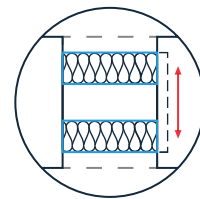
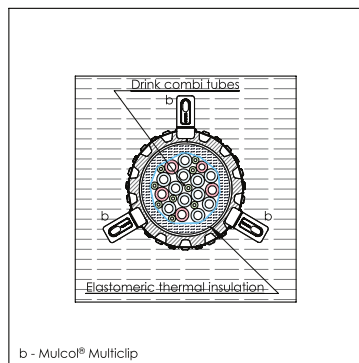
Drawing: PBrf,E-MLF-11.0.10.C

Services	Pipe dimensions (mm)		System	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Aquatherm Green-MF	≤ Ø 50	6.9	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 U/C
	≤ Ø 110	10.0			EI 120 U/C

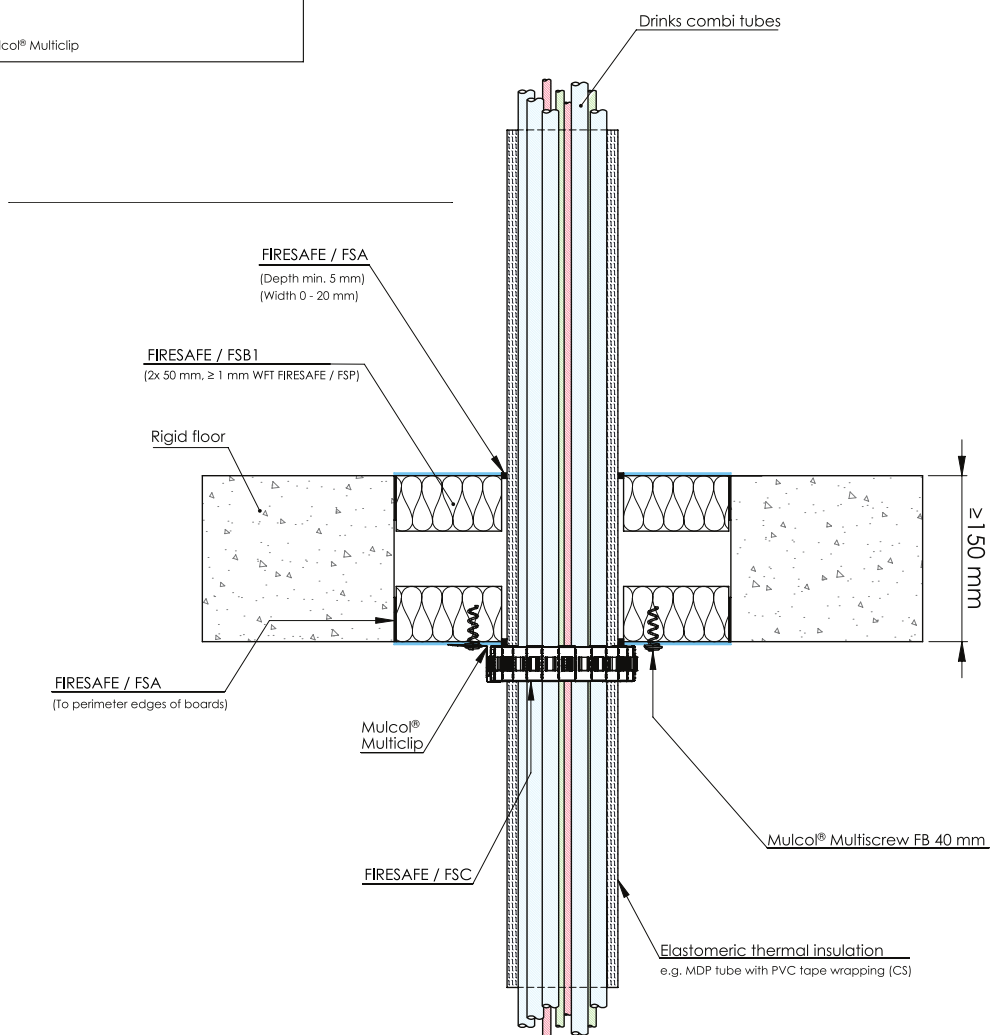
B.1.5 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Combustible pipes

B.1.5.8 Drinks tubing system - FIRESAFE / FSC

Bottom view



Position seal:
top, bottom or anywhere
in between

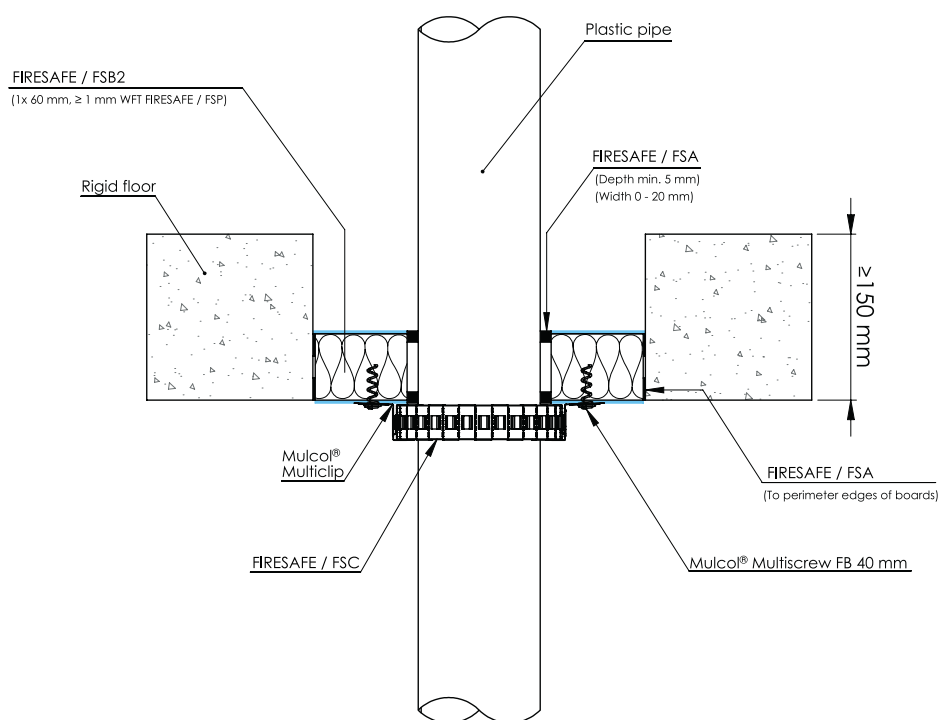
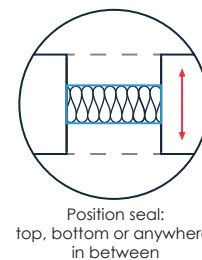
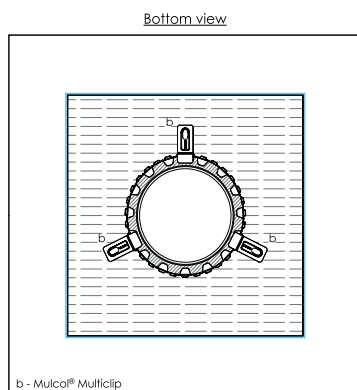


Drawing: PBrf,E-MC30-DCT25-11,0.22.C

Services	Dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	No. of Hoses	Type	Thickness (mm)	Configuration			
Drinks tubing system	≤ Ø 47	≤ 3	Elastomeric foam	8 - 35	CS	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 U/C
	≤ Ø 90	≤ 3						
	≤ Ø 100	≤ 25						
	≤ Ø 145	≤ 52						

B.1.6 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

B.1.6.1 Plastic pipes - FIRESAFE / FSC



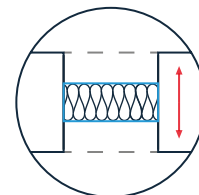
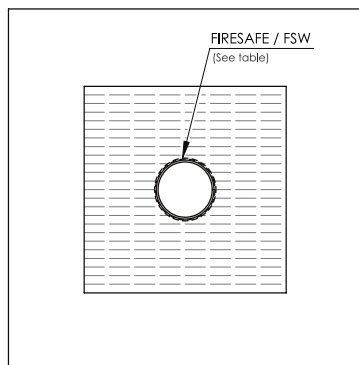
Drawing: PBrf.E-PP-MFB2.1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 40	2.4	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 U/U, E 90 U/U
		2.4 - 6.6			EI 30 U/U
PP		1.8			EI 90 U/U, E 180 U/U
		1.8 - 5.5			EI 30 U/U
PVC(-U/-C)		2.4			EI 60 U/U, E 90 U/U
		2.4 - 4.3			EI 30 U/U
	≤ Ø 110	2.7			EI 120 U/U
PE(-HD) / PE-X / ABS / SAN+PVC		2.7 - 6.6			EI 30 U/U
		3.9			EI 90 U/C
PP	≤ Ø 125	3.9 - 7.4			EI 45 U/C
		3.1 - 7.1			

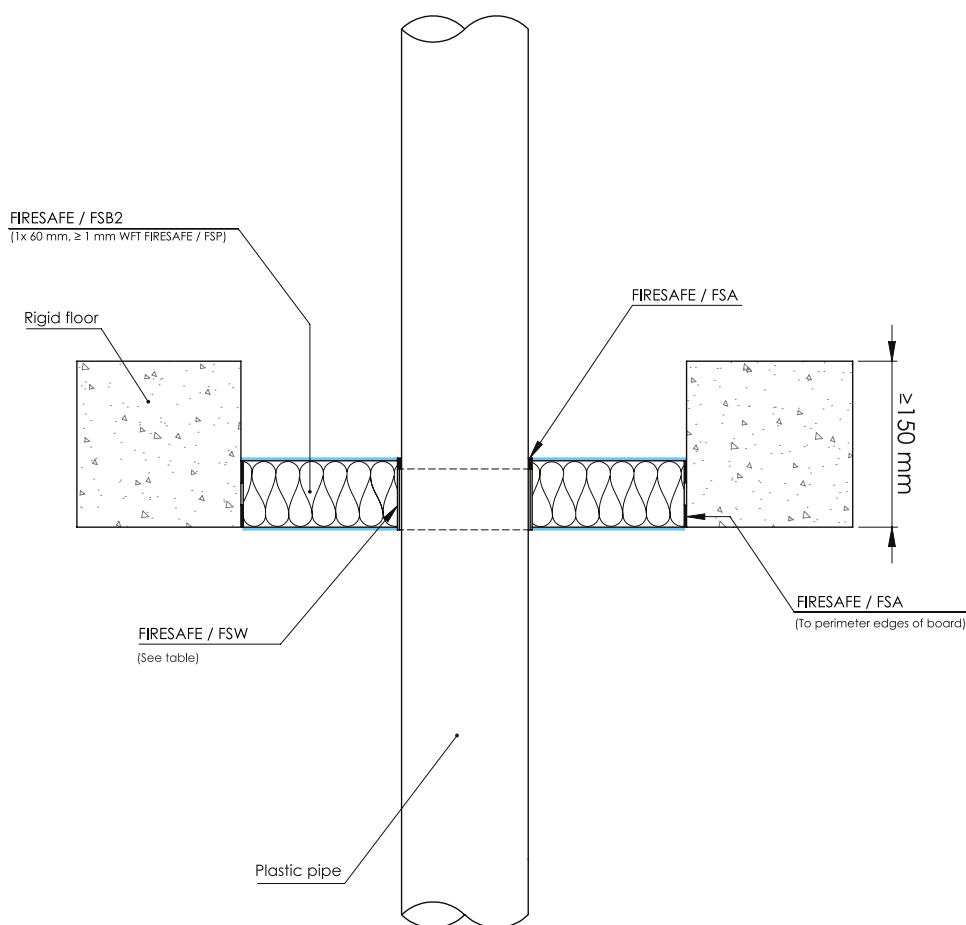
B.1.6 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

B.1.6.2 Plastic pipes - FIRESAFE / FSW

Bottom view



Position seal:
top, bottom or anywhere
in between



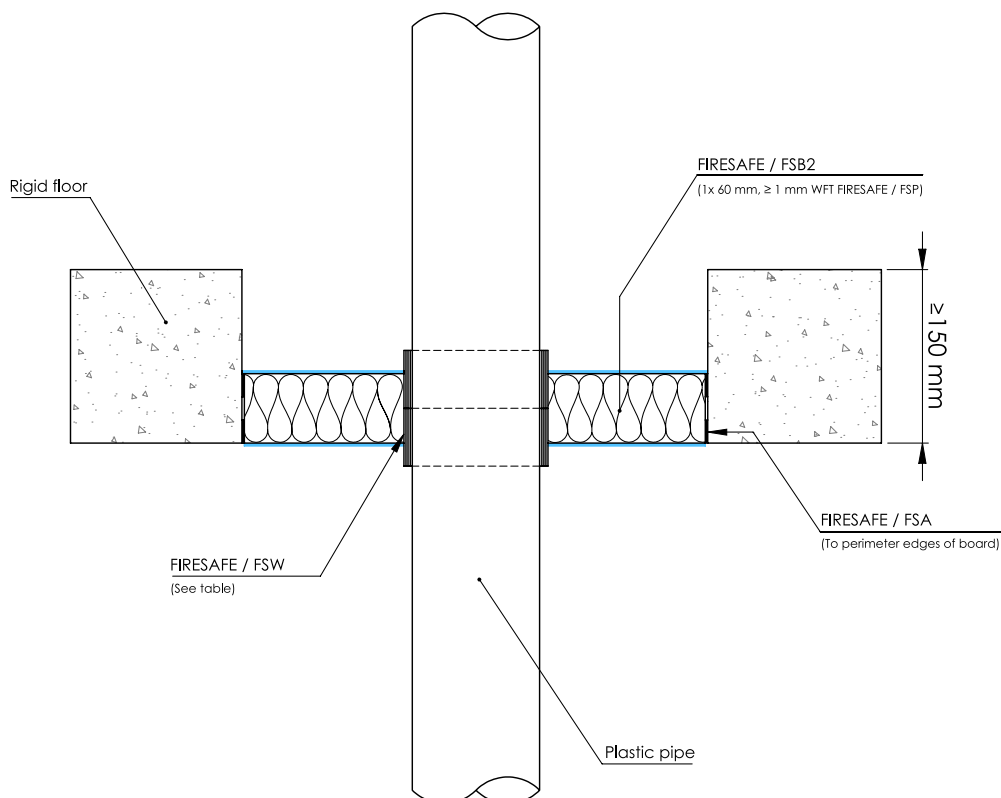
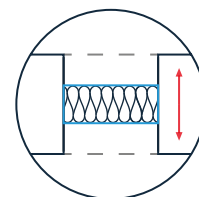
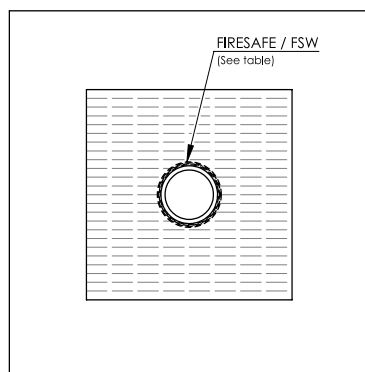
Drawing: PBrf.E-PP-MW2-MFB2.1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7	FIRESAFE / FSW (2 layers)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 90 U/C, EI 120 U/C
PVC(-U/-C)		3.2			EI 120 U/C

B.1.6 FIRESAFE / FSB2 - 1x 60 mm - Combustible pipes

B.1.6.3 Plastic pipes - FIRESAFE / FSW - both sides

Bottom view

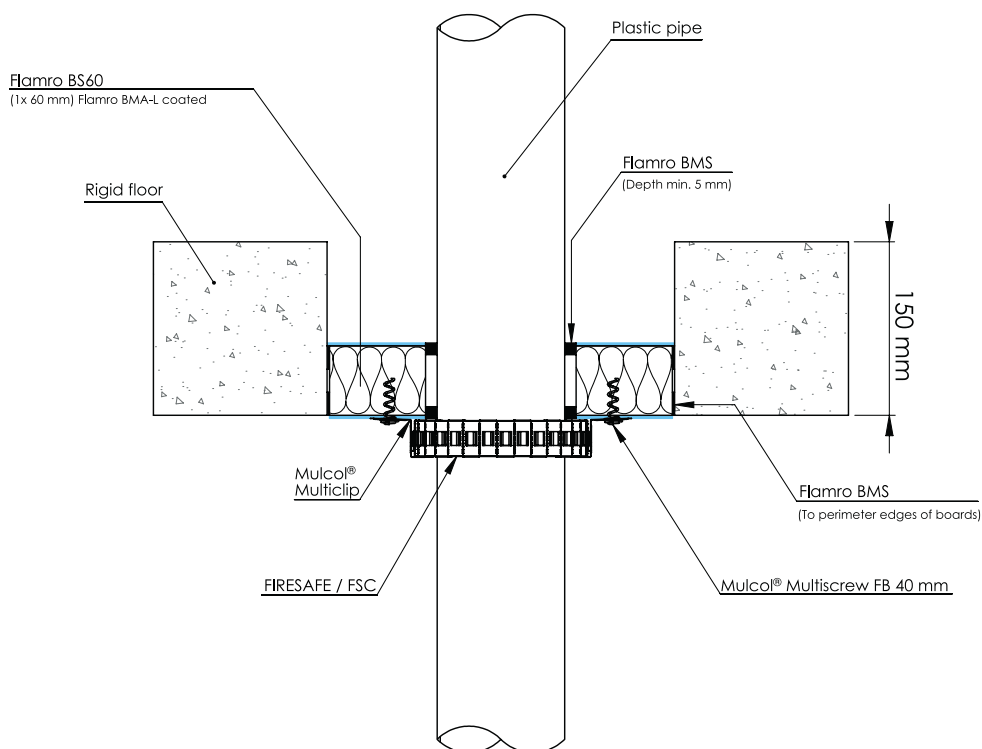
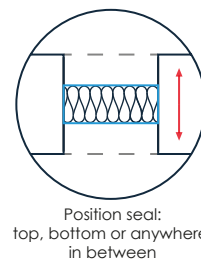
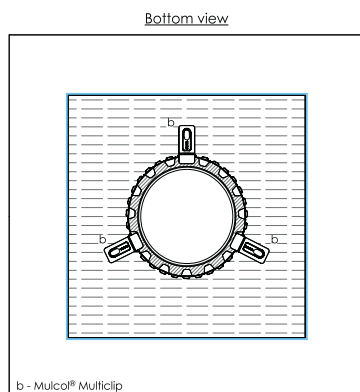


Drawing: PBrf.E-PP-MW4-MFB2.1.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PP	$\leq \varnothing 40$	2.3	FIRESAFE / FSW (2 x 2 layers)	EI 120 U/U
PE(-HD) / PE-X / ABS / SAN+PVC	$\leq \varnothing 110$	10.0	FIRESAFE / FSW (2 x 4 layers)	EI 45 U/U, E 120 U/U
PVC(-U/-C)		8.1		EI 90 U/U, E 120 U/U

B.1.7 SVT Flamro BS60 - 1x60 mm - Combustible pipes

B.1.7.1 Plastic pipes - FIRESAFE / FSC

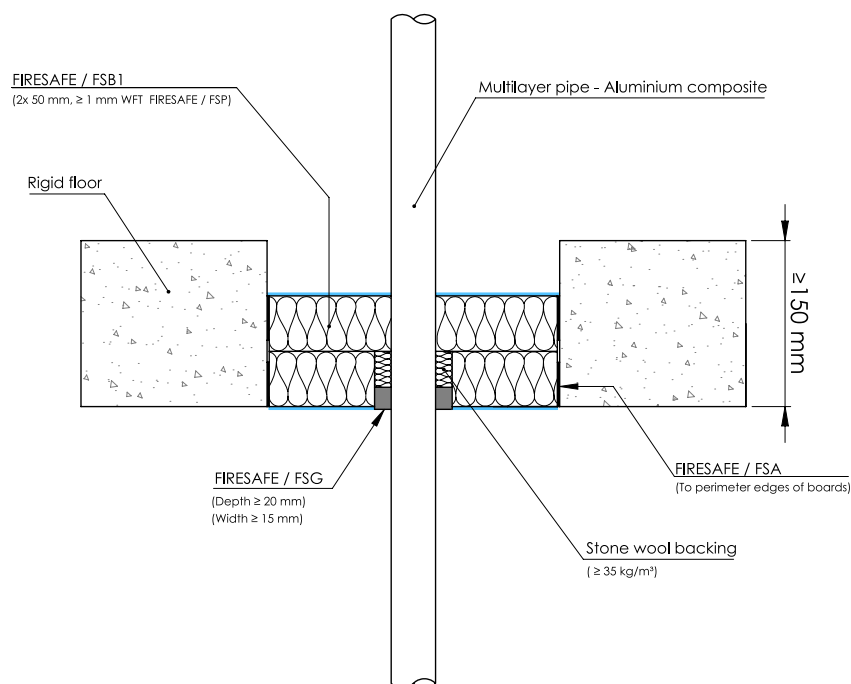
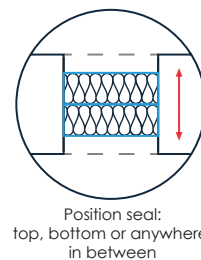
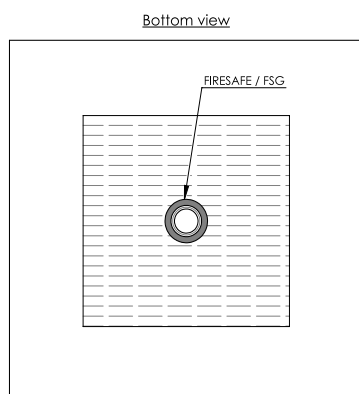


Drawing: PBrf.E-PP-BS2.1.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	$\leq \varnothing 125$	3.9	FIRESAFE / FSC	Flamro BMS 0-20 x ≥ 5 (wxd)	EI 120 U/C, E 180 U/C

B.1.8 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.1.8.1 Multilayer pipes (MLC) - FIRESAFE / FSG

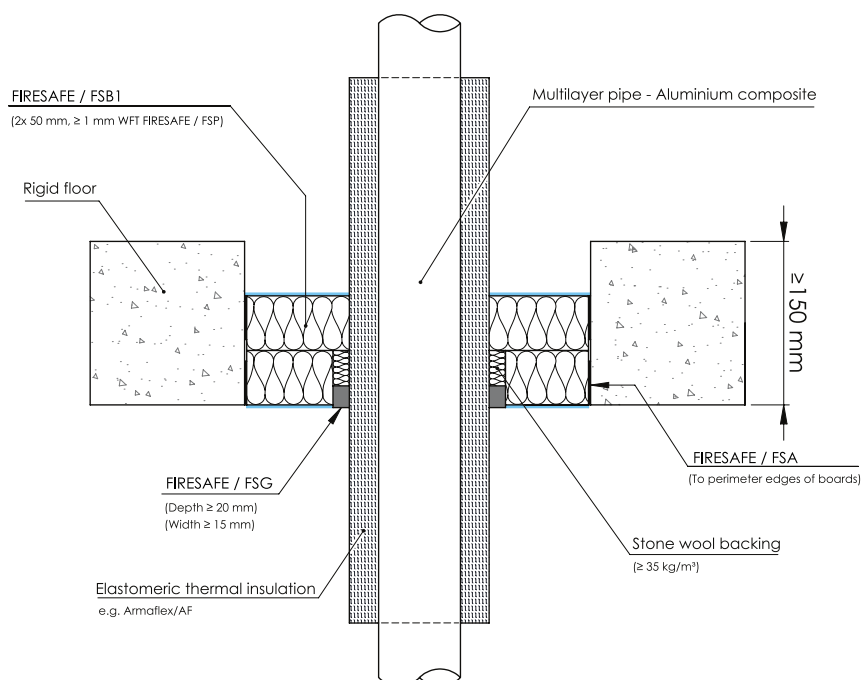
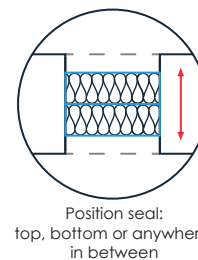
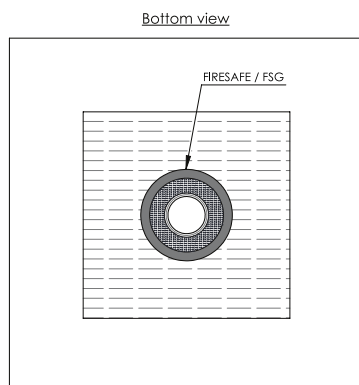


Drawing: PBrf.E-MLA-G1.4.10

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 20	2.0	FIRESAFE / FSG ≥ 15 x 25 (wxd)	Stone wool (≥ 33 kg/m ³)	EI 120 U/C
	≤ Ø 25	3.5			
	≤ Ø 32	3.0			EI 90 U/C EI 120 U/C
	≤ Ø 40	3.5 - 4.0			

B.1.8 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.1.8.2 Multilayer pipes (MLC) - Elastomer LS 300 / CS - FIRESAFE / FSG



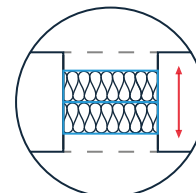
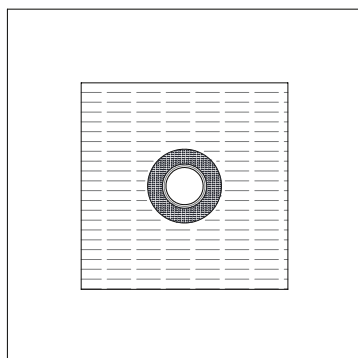
Drawing: PBrf.E-MLA-G1.4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 20	2.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LS 300 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m ³)	EI 120 U/C
	≤ Ø 32	3.0						EI 90 U/C
	≤ Ø 40	3.5						E 120 U/C
	≤ Ø 50	4.0						EI 90 U/C
	≤ Ø 63	4.5						EI 90 U/C
	≤ Ø 75	6.0						

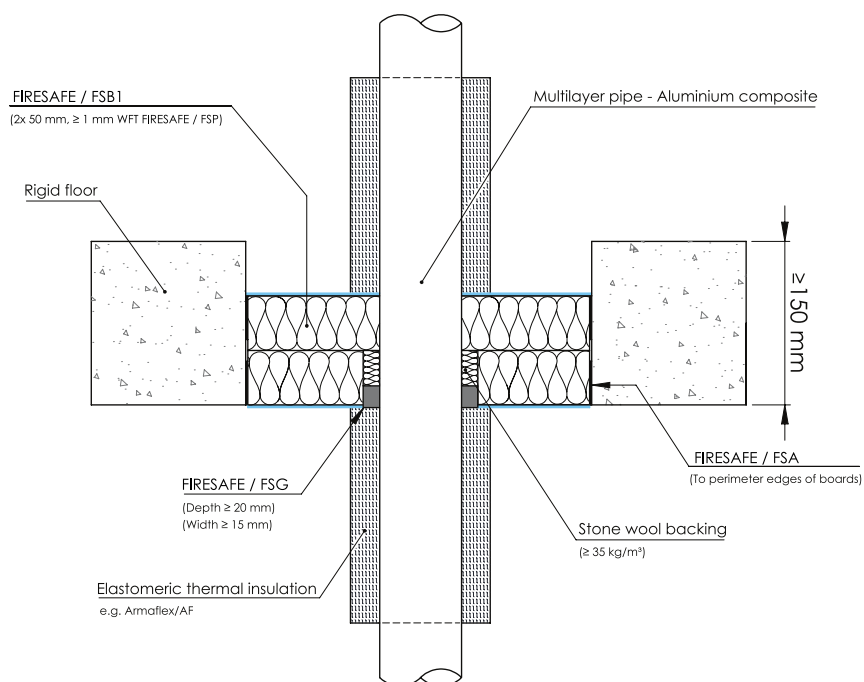
B.1.8 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.1.8.3 Multilayer pipes (MLC) - Elastomer LI 300 / CI - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between



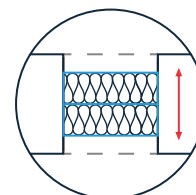
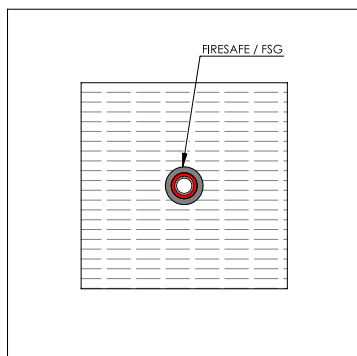
Drawing: PBrf.E-MLA-G1.4.22.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 20	2.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m ³)	EI 120 U/C
	≤ Ø 32	3.0						EI 90 U/C
	≤ Ø 40	3.5						E 120 U/C
	≤ Ø 50	4.0						EI 90 U/C
	≤ Ø 63	4.5						EI 90 U/C
	≤ Ø 75	6.0						

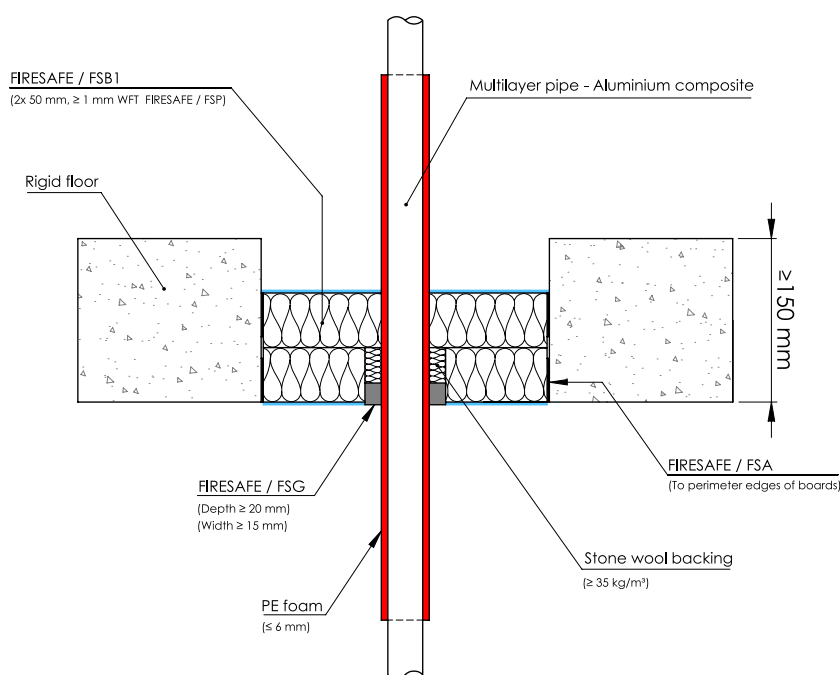
B.1.8 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.1.8.4 Multilayer pipes (MLC) - PE foam LS 300 / CS - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between



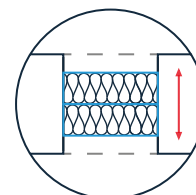
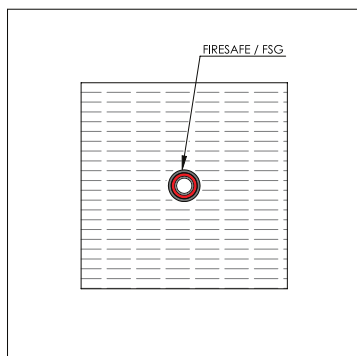
Drawing: PBrf.E-MLA_pr-G1.4.23

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 20	2.0	Henco PE foam	≤ 6	LS 300 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m³)	EI 120 U/C
	≤ Ø 25	3.5						
	≤ Ø 32	3.0						

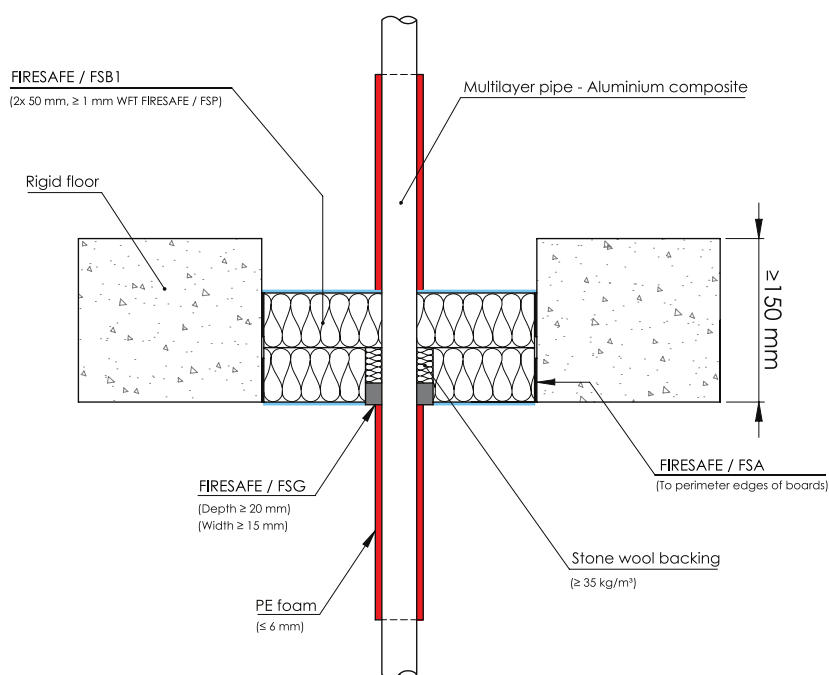
B.1.8 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.1.8.4 Multilayer pipes (MLC) - PE foam LI 300 / CI - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between



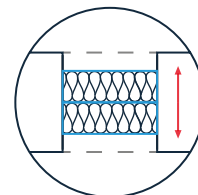
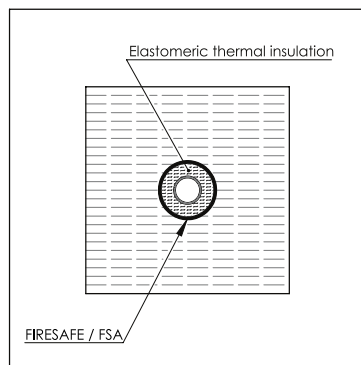
Drawing: PBrf.E-MLA_pr-G1.4.23.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 20	2.0	Henco PE foam	≤ 6	LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m³)	EI 120 U/C
	≤ Ø 25	3.5						
	≤ Ø 32	3.0						

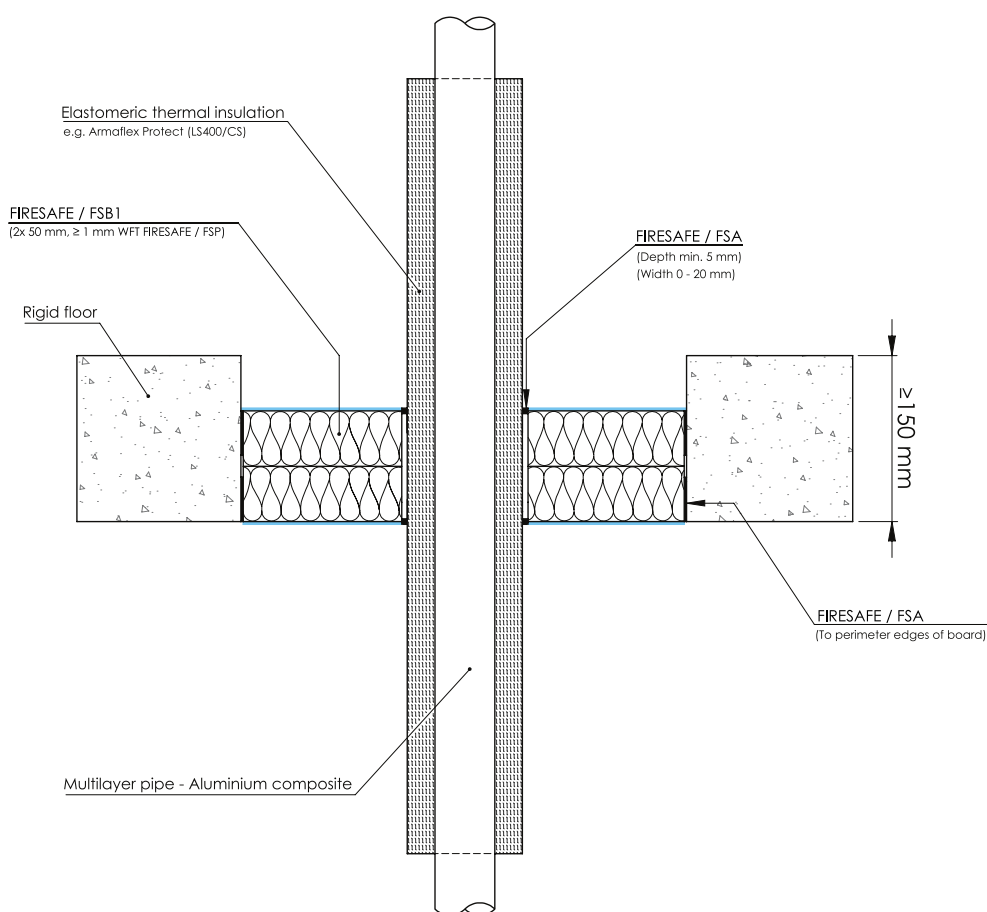
B.1.8 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.1.8.5 Multilayer pipes (MLC) - FIRESAFE / FSA

Bottom view



Position seal:
top, bottom or anywhere
in between



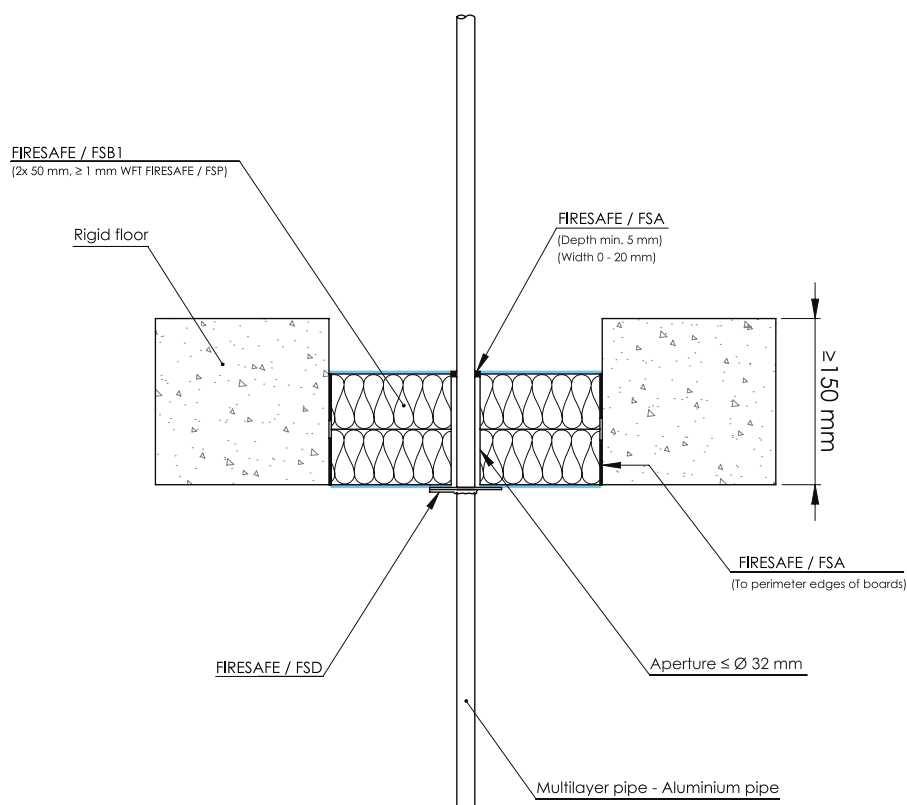
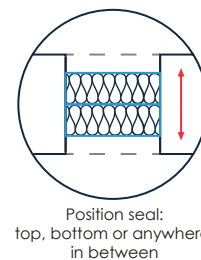
Drawing: PBrf.E-MLA-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 26	3.0	ArmaFlex Protect	20	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 U/C
	≤ Ø 75	5.0		25			

B.1.8.6 Multilayer pipes (MLC) - FIRESAFE / FSD

a - Overlay size
(Minimum 10 mm overlay)

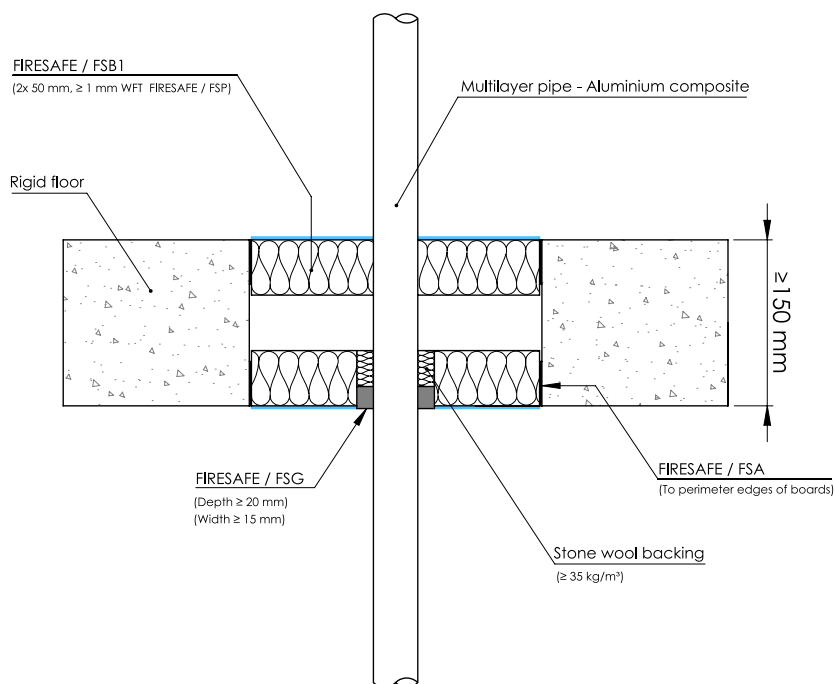
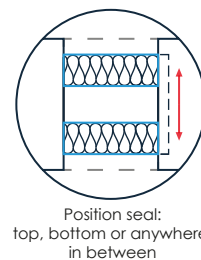
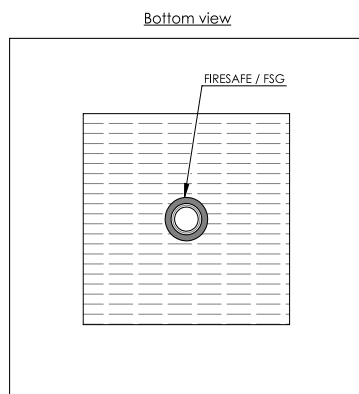
b - FIRESAFE /FSD



Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 16	2.0	FIRESAFE / FSD	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 90 U/C E 120 U/C

B.1.9 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Multilayer pipes (MLC)

B.1.9.1 Multilayer pipes (MLC) - FIRESAFE / FSG

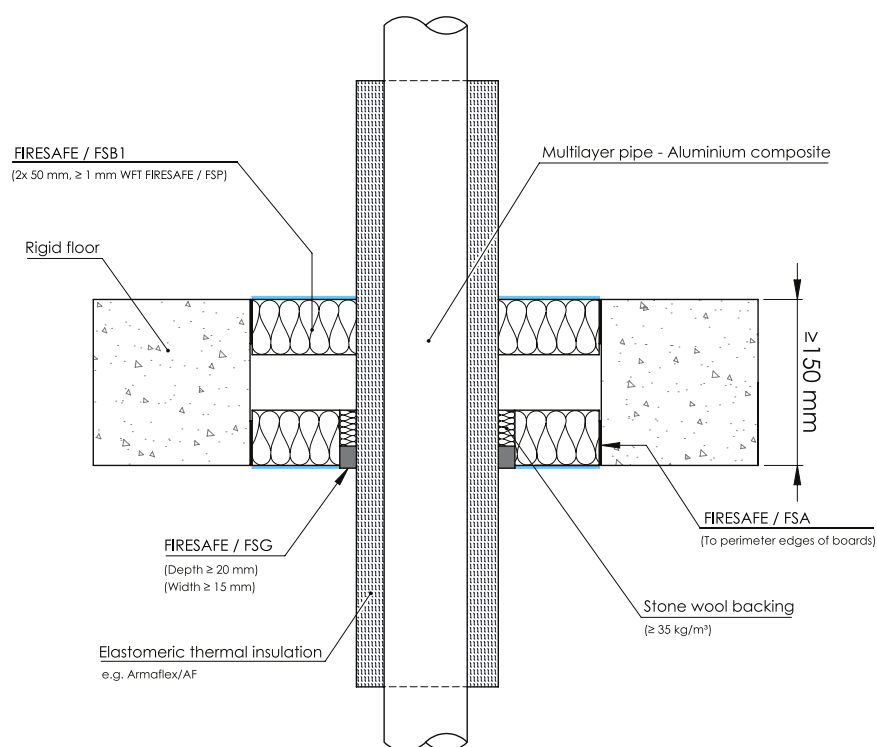
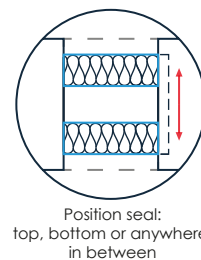
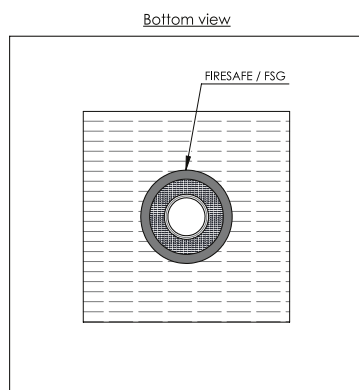


Drawing: PBrf.E-MLA-G1.4.10.C

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 20	2.0	FIRESAFE / FSG ≥ 15 x 25 (wxd)	Stone wool (≥ 33 kg/m³)	EI 120 U/C
	≤ Ø 25	3.5			
	≤ Ø 32	3.0			EI 90 U/C E 120 U/C
	≤ Ø 40	3.5 - 4.0			

B.1.9 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Multilayer pipes (MLC)

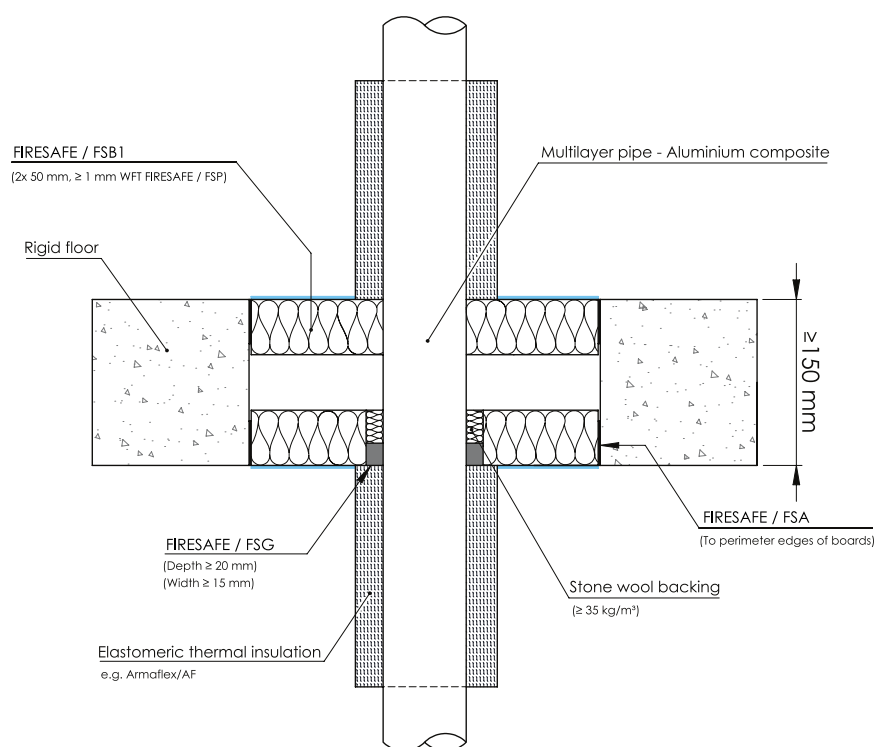
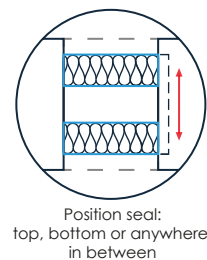
B.1.9.2 Multilayer pipes (MLC) - Elastomer LS 300 / CS - FIRESAFE / FSG



Drawing: PBrf.E-MLA-G1.4.22.C

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 20	2.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LS 300 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m ³)	EI 120 U/C
	≤ Ø 32	3.0						EI 90 U/C
	≤ Ø 40	3.5						E 120 U/C
	≤ Ø 50	4.0						EI 90 U/C
	≤ Ø 63	4.5						
	≤ Ø 75	6.0						

B.1.9.2 Multilayer pipes (MLC) - Elastomer LI 300 / CI - FIRESAFE / FSG

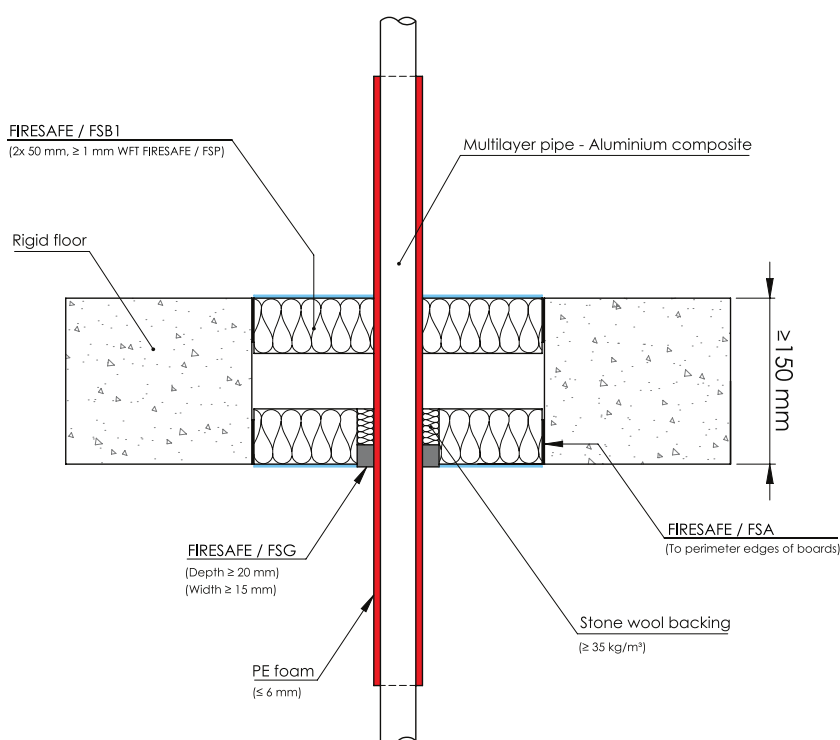
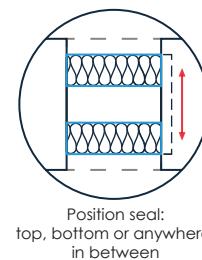
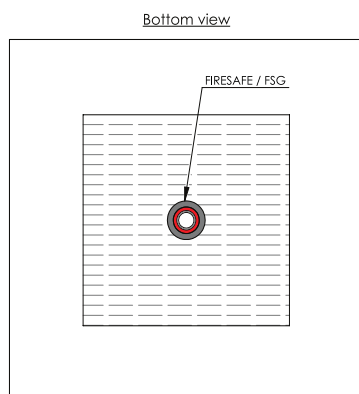


Drawing: PBrf.E-MLA-G1.4.22.C.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 20	2.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxhd)	Stone wool (≥ 35 kg/m³)	EI 120 U/C
	≤ Ø 32	3.0						EI 90 U/C E 120 U/C
	≤ Ø 40	3.5						
	≤ Ø 50	4.0						EI 90 U/C
	≤ Ø 63	4.5						
	≤ Ø 75	6.0						

B.1.9 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Multilayer pipes (MLC)

B.1.9.3 Multilayer pipes (MLC) - PE foam - FIRESAFE / FSG

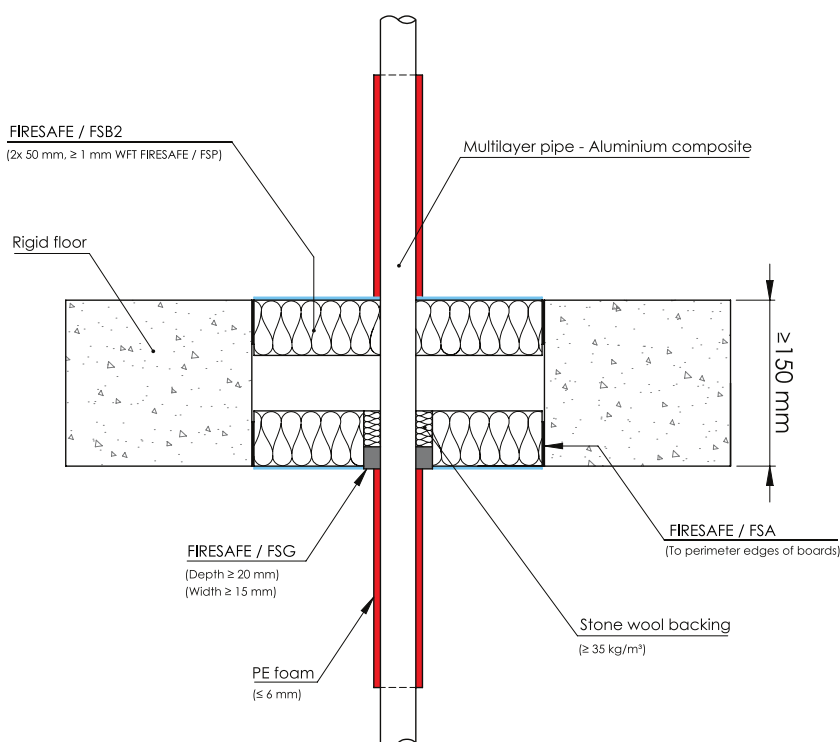
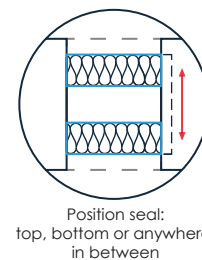
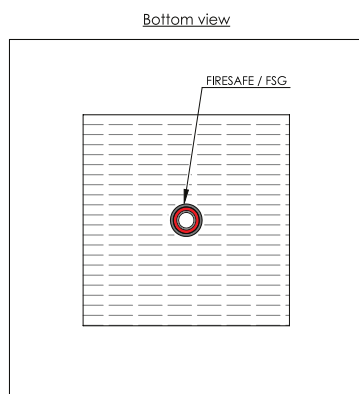


Drawing: PBrf.E-MLA_pr-G1.4.23.C

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 20	2.0	Henco PE Foam	6	LS 300 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 120 U/C
	≤ Ø 25	3.5					
	≤ Ø 32	3.0					

B.1.9 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Multilayer pipes (MLC)

B.1.9.3 Multilayer pipes (MLC) - PE foam - FIRESAFE / FSG



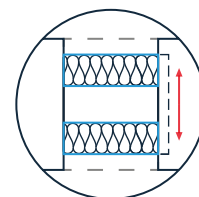
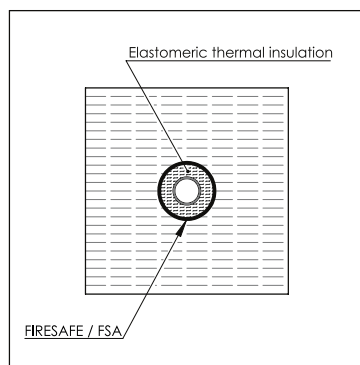
Drawing: PBrf,E-MLA_pr-G1.4.23.C.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 20	2.0	Henco PE Foam	6	LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	EI 120 U/C
	≤ Ø 25	3.5					
	≤ Ø 32	3.0					

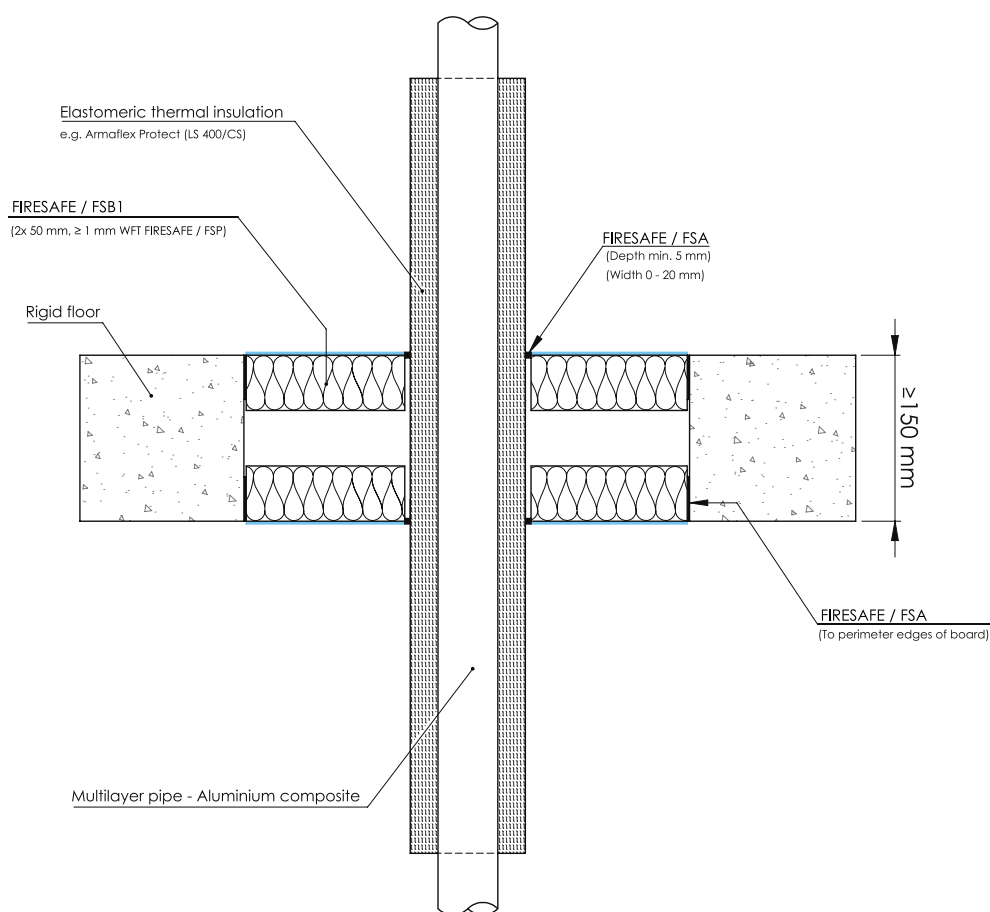
B.1.9 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Multilayer pipes (MLC)

B.1.9.4 Multilayer pipes (MLC) - FIRESAFE / FSA

Bottom view



Position seal:
top, bottom or anywhere
in between



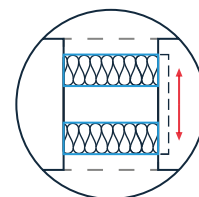
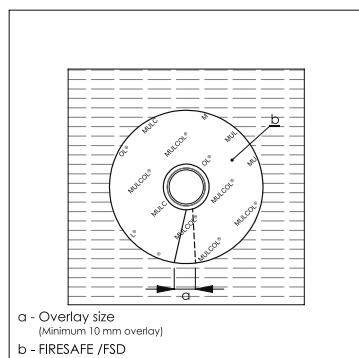
Drawing: PBrf,E-MLA-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Multilayer pipes (MLC)	≤ Ø 26	3.0	ArmaFlex Protect	20	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 U/C
	≤ Ø 75	5.0		25			

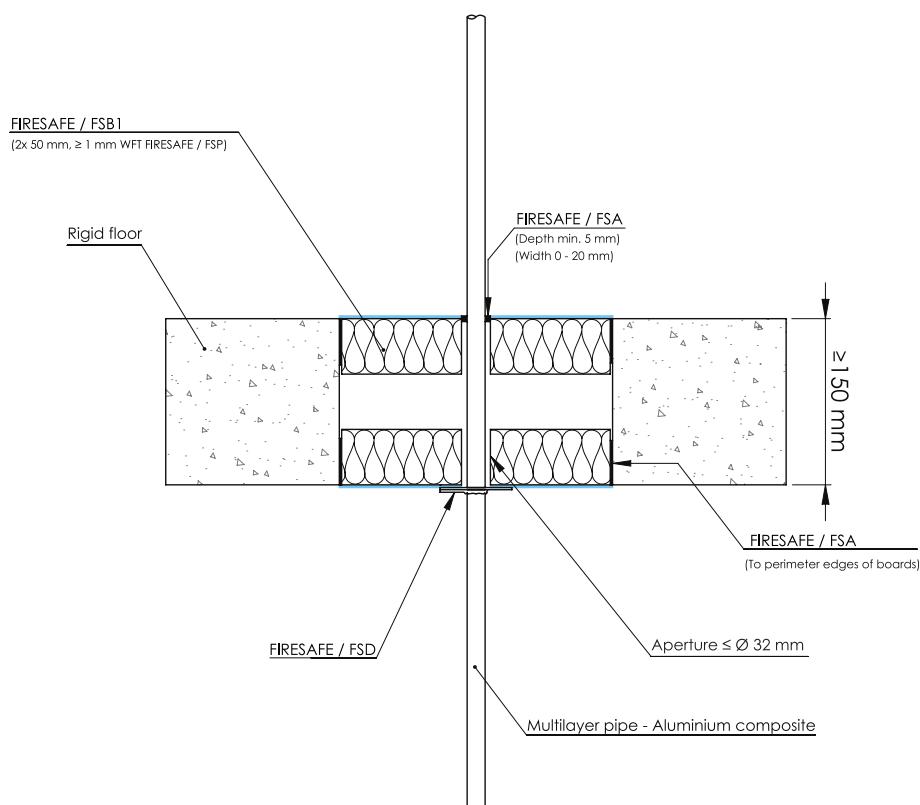
B.1.9 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Multilayer pipes (MLC)

B.1.9.5 Multilayer pipes (MLC) - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere
in between



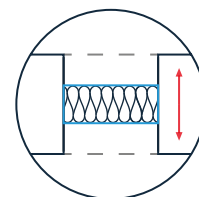
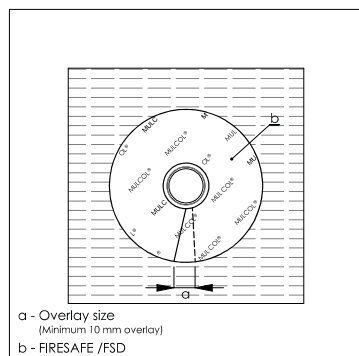
Drawing: PBrf.E-MFB1-MLA-M2.0.10.C

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	$\leq \varnothing 16$	2.0	FIRESAFE / FSD	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 90 U/C, E 120 U/C

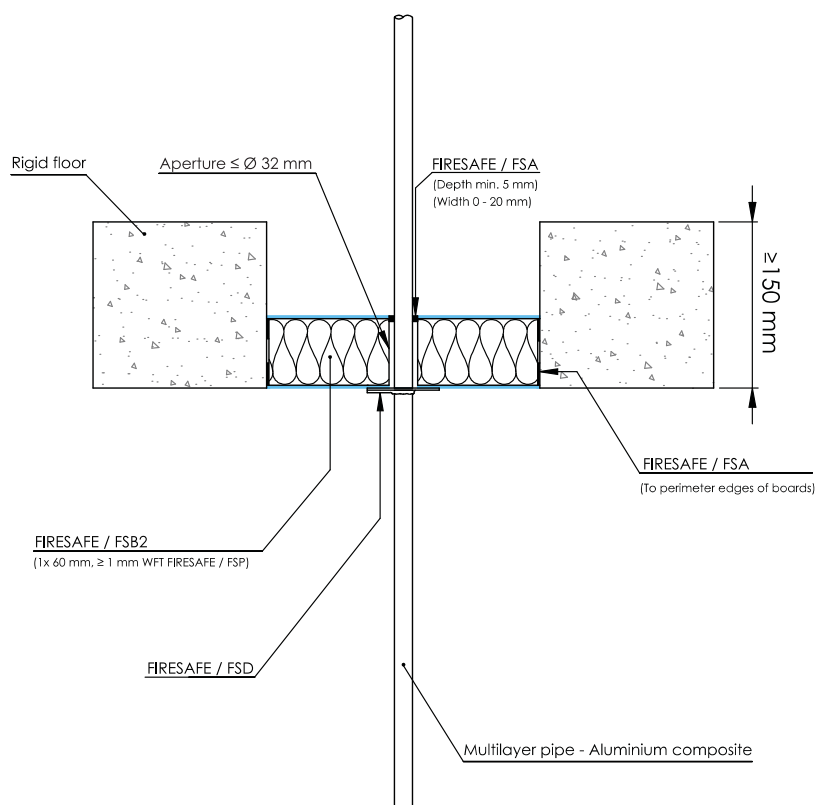
B.1.10 FIRESAFE / FSB2 - 1x 60 mm - Multilayer pipes (MLC)

B.1.10.1 Multilayer pipes (MLC) - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere
in between



Drawing: PBrf.E-MFB2-MLA-M2.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 16	2.0	FIRESAFE / FSD	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 U/C, E 90 U/C

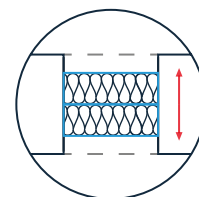
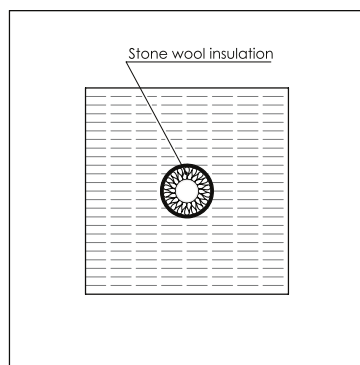
B.1.11

FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated mineral wool

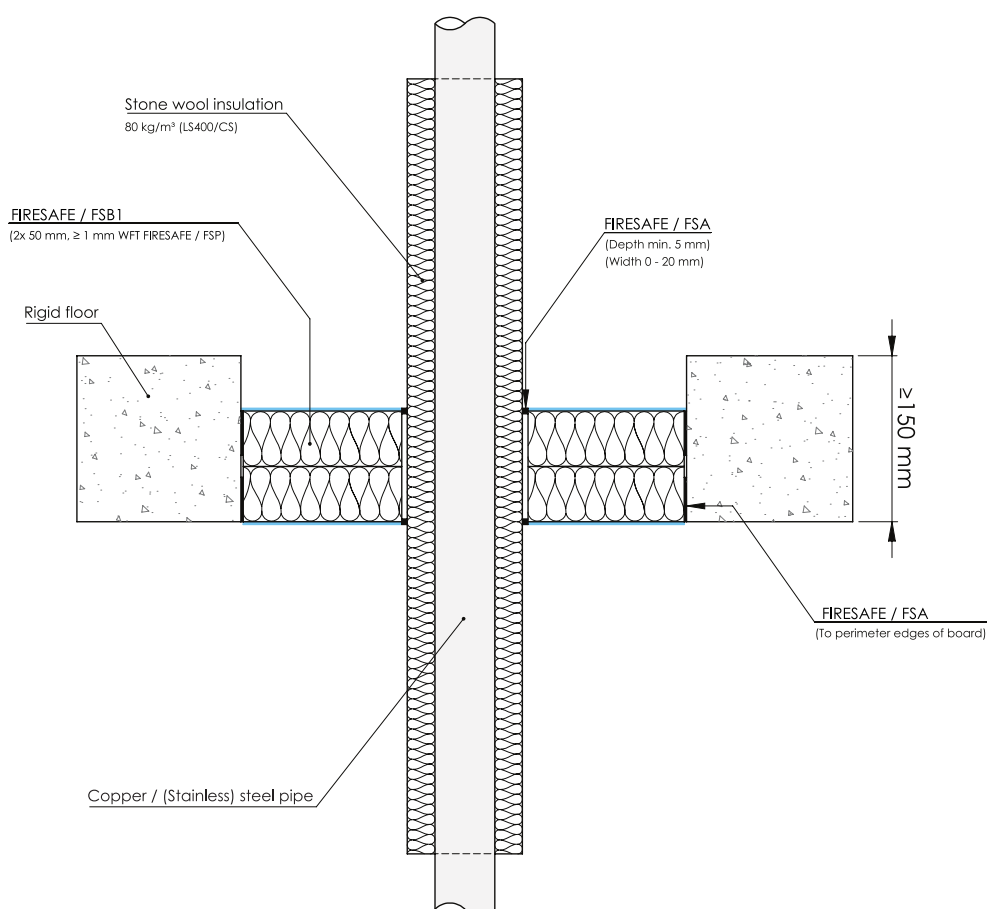
B.1.11.1

Copper and steel pipes - Stone wool LS 400 / CS

Bottom view



Position seal:
top, bottom or anywhere
in between



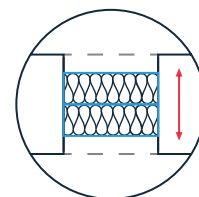
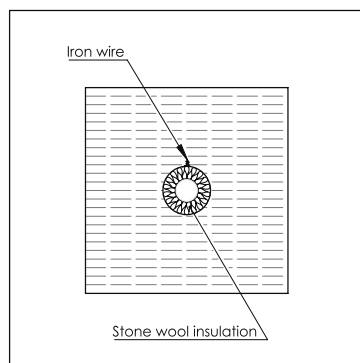
Drawing: PBrf.E-CU-MFB1.2.20.LS

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification			
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration					
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U			
	≤ Ø 54	≥ 1.5								
(Stainless)	≤ Ø 114.3	≥ 3.6								
Steel / cast iron	≤ Ø 324	≥ 3.7								

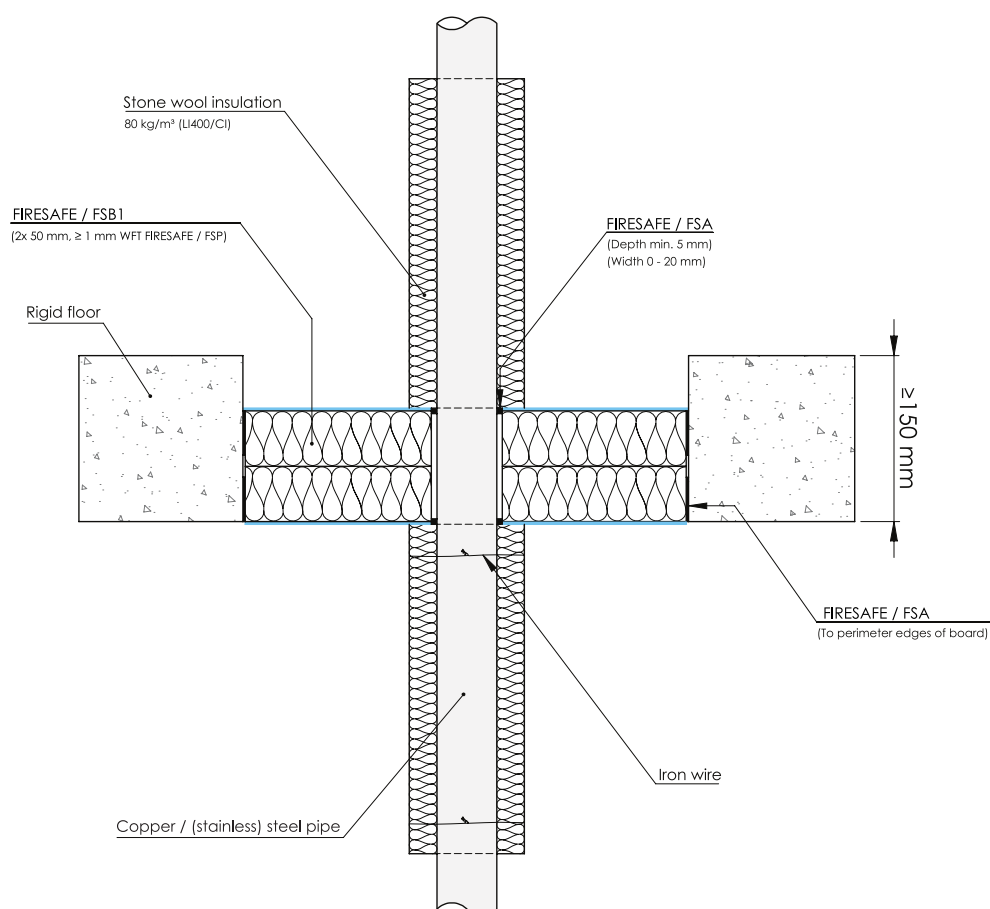
B.1.11 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated mineral wool

B.1.11.2 Copper and steel pipes - Stone wool LI 400 / CI

Bottom view



Position seal:
top, bottom or anywhere
in between



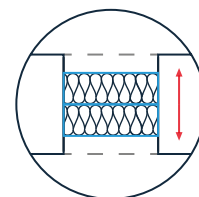
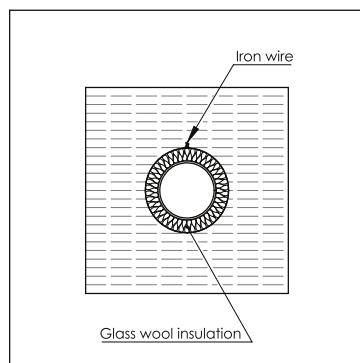
Drawing: PBrf.E-CU-MFB1.2.20.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0 - 20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless)	≤ Ø 114.3	≥ 3.6					
Steel / cast iron	≤ Ø 219	≥ 4.0					

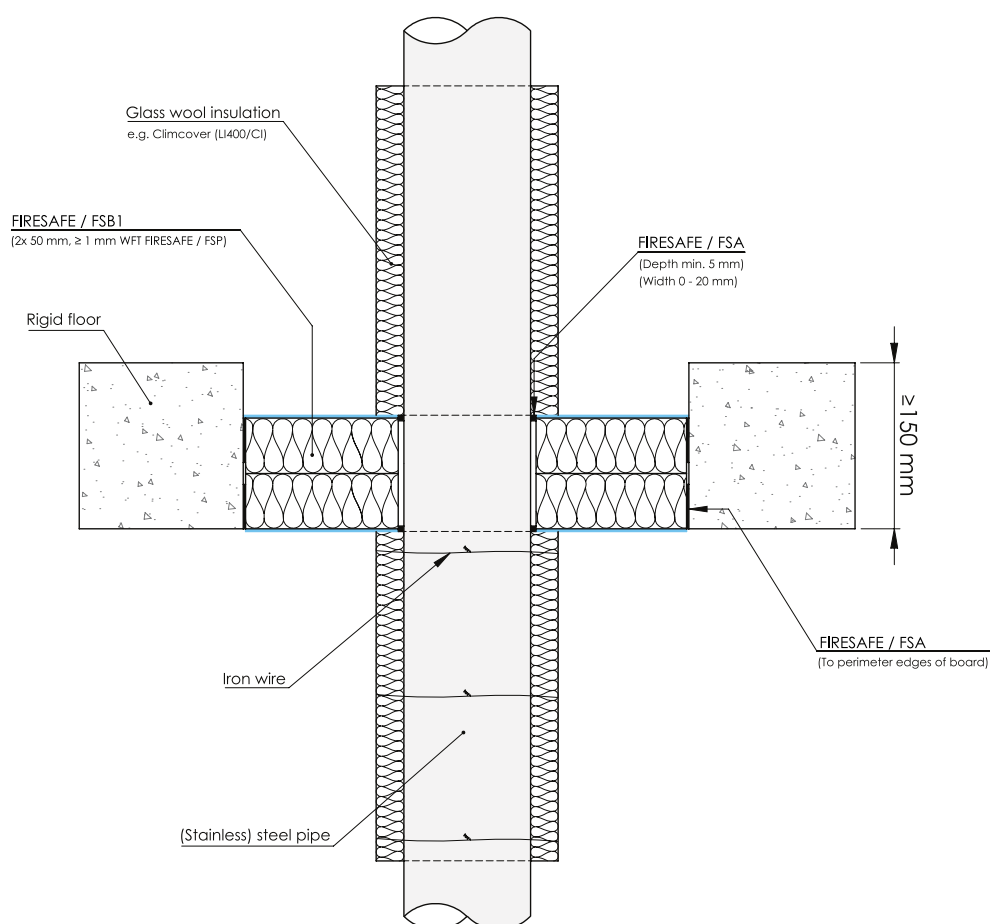
B.1.11 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated mineral wool

B.1.11.3 Copper and steel pipes - Glass wool LI 400 / CI

Bottom view



Position seal:
top, bottom or anywhere
in between



Drawing: PBrf.E-ST-MFB1.2.20.G.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) Steel / cast iron	≤ Ø 40	≥ 2.0	Glass wool (≥ 33 kg/m ³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 114.3	≥ 3.6		≥ 30			EI 90 C/U, E 120 C/U
	≤ Ø 219	≥ 4.0					EI 60 C/U, E 120 C/U

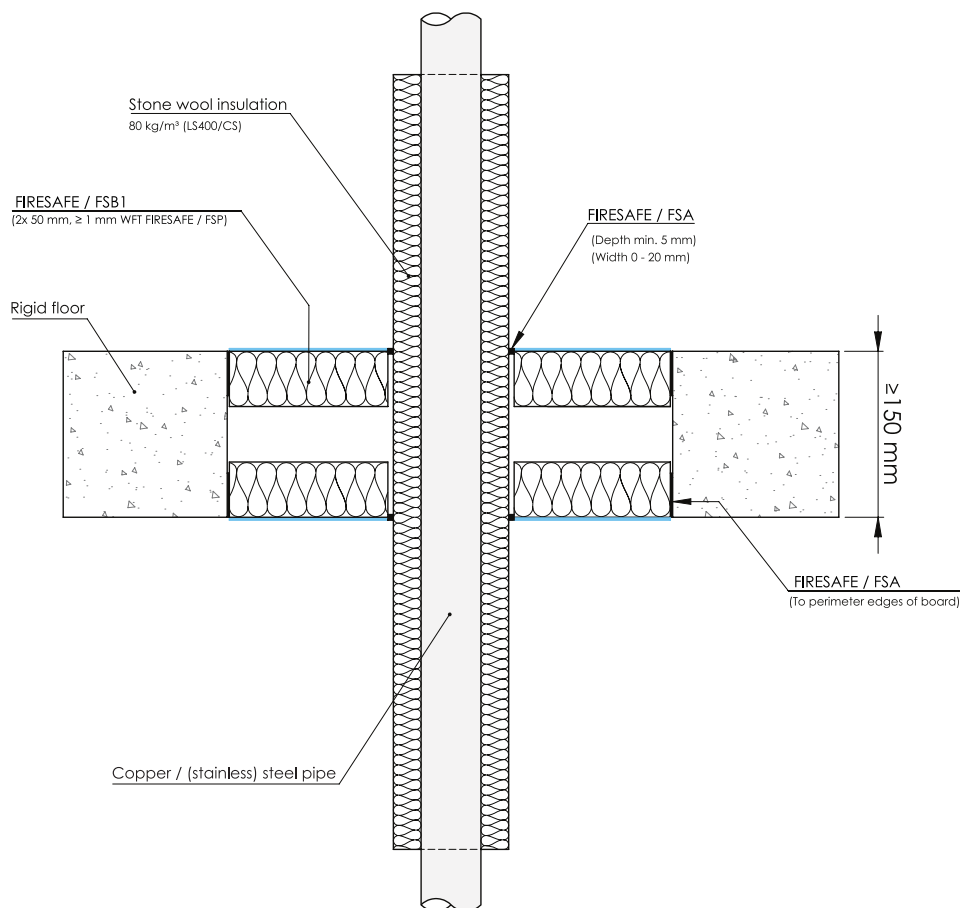
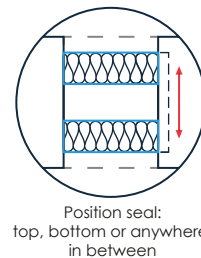
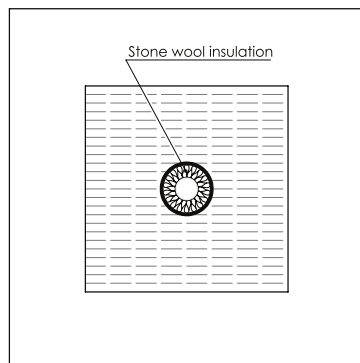
B.1.12

FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes insulated mineral wool

B.1.12.1

Copper and steel pipes - Stone wool LS 400 / CS

Bottom view



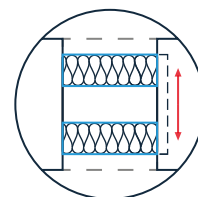
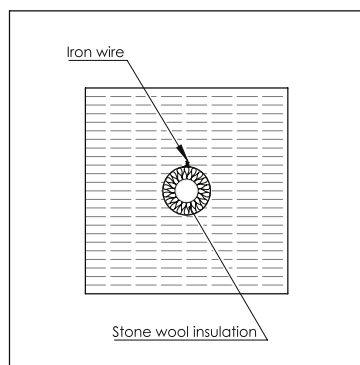
Drawing: PBrf.E-CU-MFB1.2.20.LS.C

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless)	≤ Ø 114.3	≥ 3.6					
Steel / cast iron	≤ Ø 324	≥ 3.7		30			

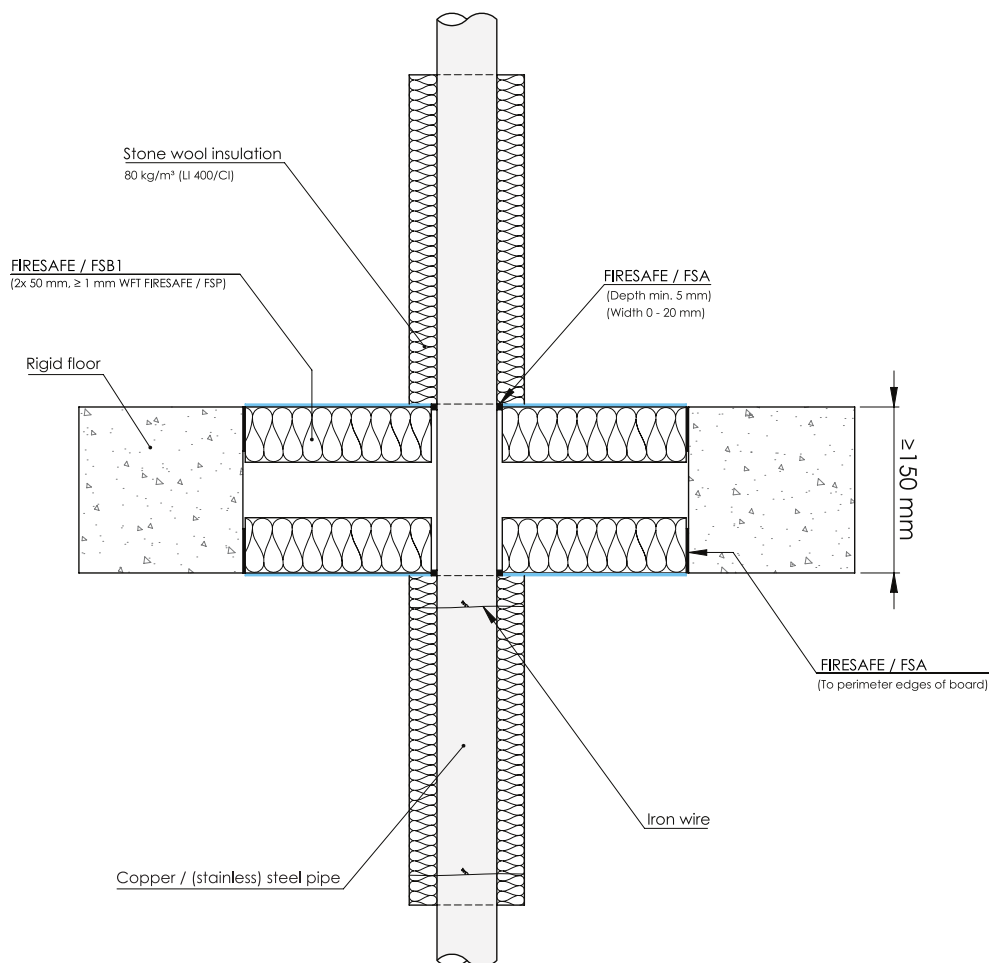
B.1.12 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes insulated mineral wool

B.1.12.2 Copper and steel pipes - Stone wool LI 400 / CI

Bottom view



Position seal:
top, bottom or anywhere
in between



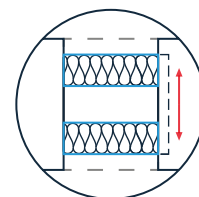
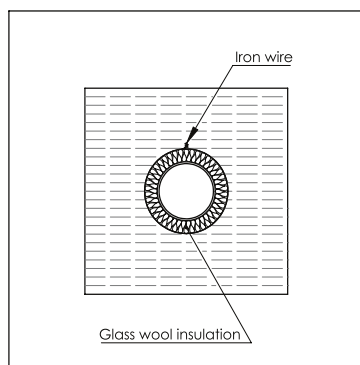
Drawing: PBrf.E-CU-MFB1.2.20.LI.C

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless)	≤ Ø 114.3	≥ 3.6					
Steel / cast iron	≤ Ø 324	≥ 3.7		30			

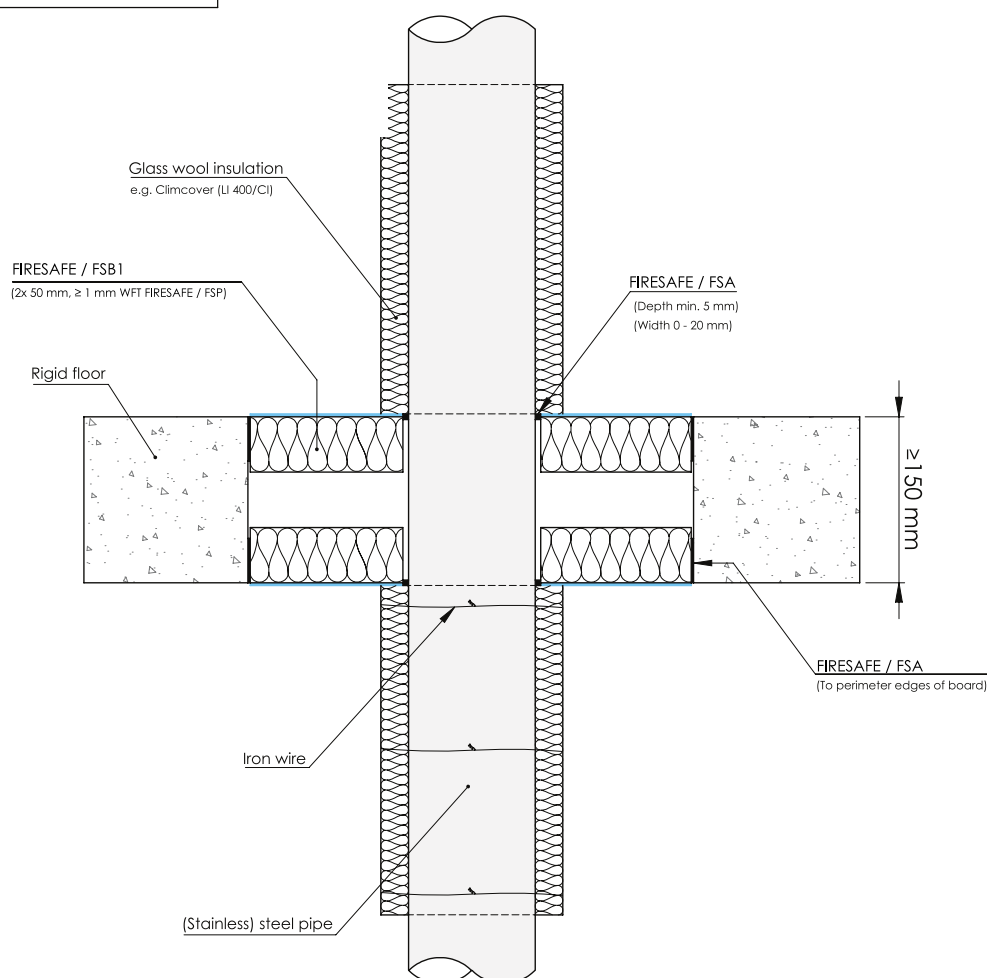
B.1.12 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes insulated mineral wool

B.1.12.3 Copper and steel pipes - Glass wool LI 400 / CI

Bottom view



Position seal:
top, bottom or anywhere
in between



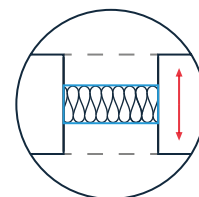
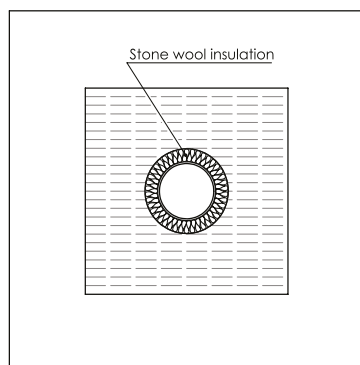
Drawing: PBrf.E-ST-MFB1.2.20.G.LI.C

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) Steel / cast iron	≤ Ø 40	≥ 2.0	Isover	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 114.3	≥ 3.6	Climclover				EI 90 C/U, E 120 C/U
	≤ Ø 219	≥ 4.0	Glass wool (≥ 33 kg/m³)	≥ 30			EI 60 C/U, E 120 C/U

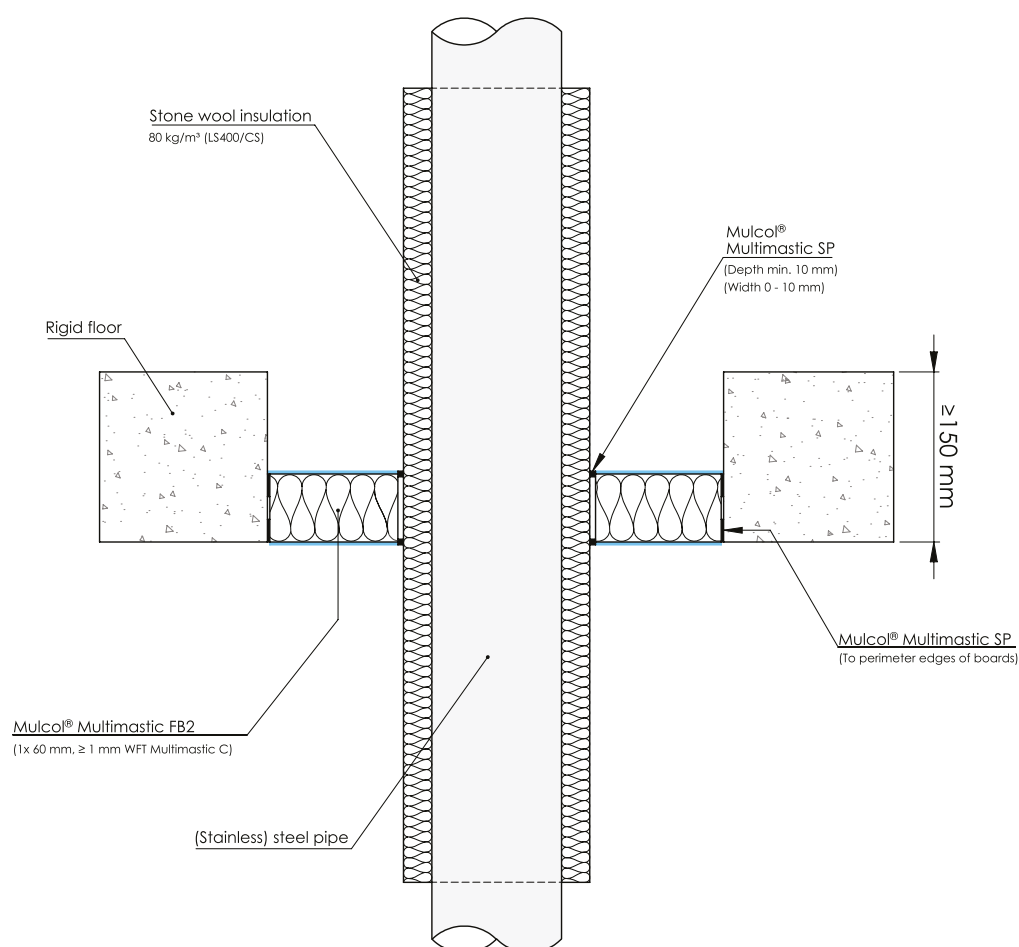
B.1.13 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated mineral wool

B.1.13.1 Copper and steel pipes - Stone wool LS 400 / CS

Bottom view



Position seal:
top, bottom or anywhere
in between



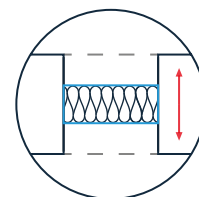
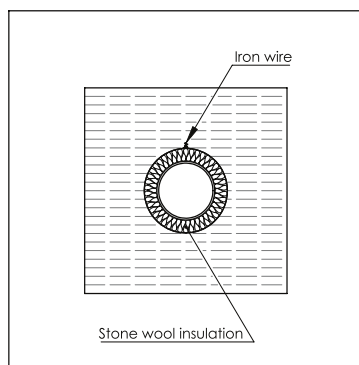
Drawing: PBrf.E-ST-MFB2.1.20

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-10 x ≥ 10 (wxd)	EI 90 C/U E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6					EI 60 C/U E 120 C/U
	≤ Ø 219	≥ 4.0					

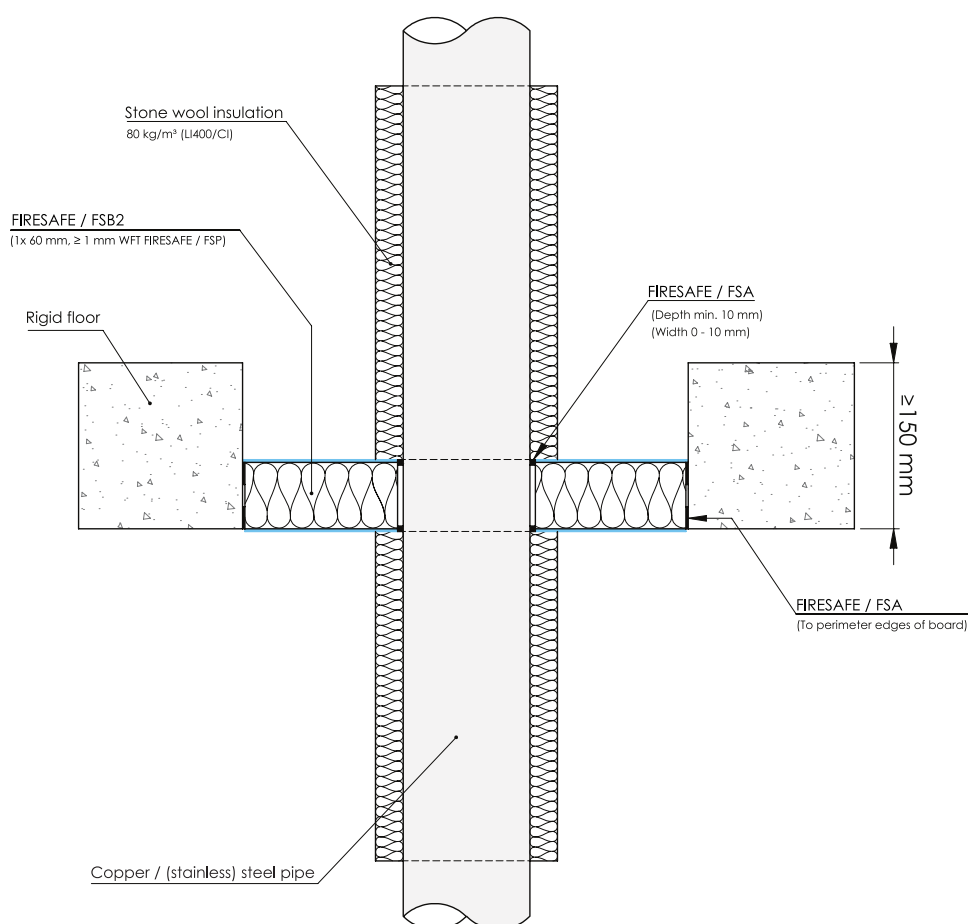
B.1.13 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated mineral wool

B.1.13.2 Copper and steel pipes - Stone wool LI 400 / CI

Bottom view



Position seal:
top, bottom or anywhere
in between



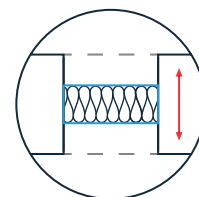
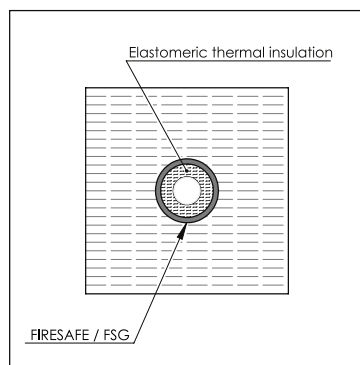
Drawing: PBrf.E-ST-MFB2.1.20.LI

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	≥ 25	LI 400 / CI	FIRESAFE / FSA 0-10 x ≥ 10 (wxd)	EI 90 C/U E 120 C/U
(Stainless)	≤ Ø 114.3	≥ 3.6		≥ 30			
Steel / cast iron	≤ Ø 219	≥ 4.0		≥ 30			

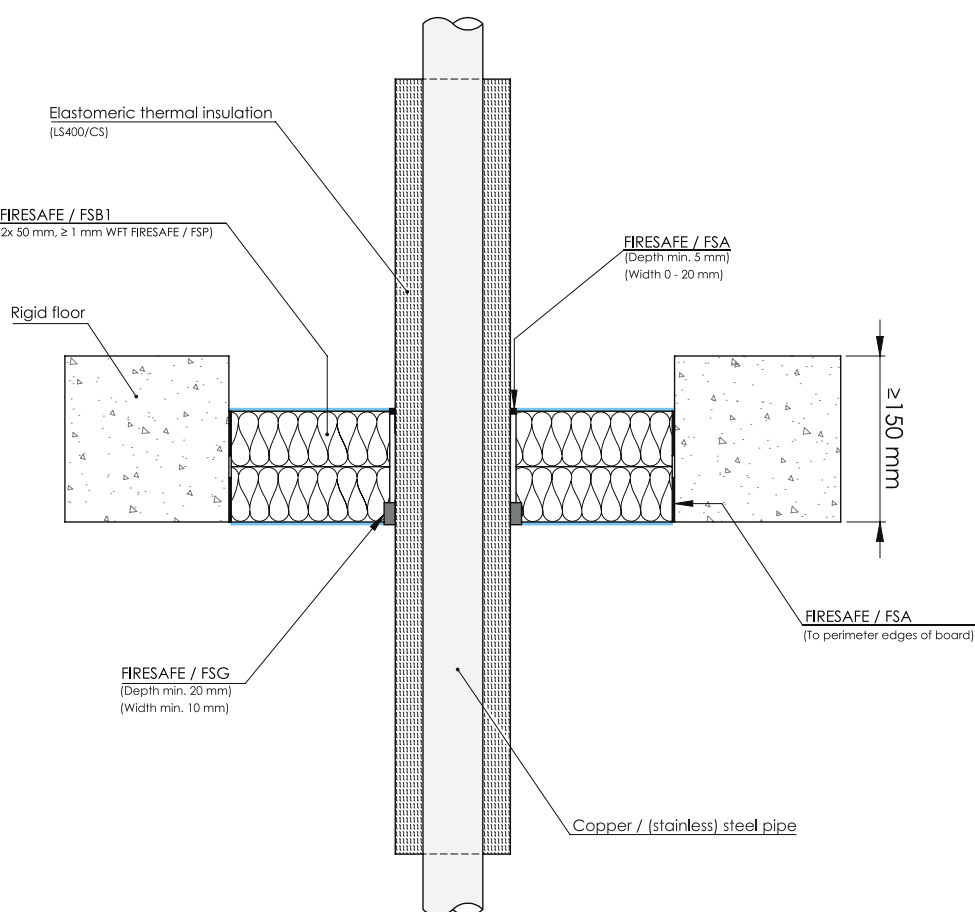
B.1.14 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.1.14.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between



Drawing: PBrf.E-CU-MFB1-G2.4.22

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U, E 120 C/U
				8.5 - 33.5				EI 60 C/U, E 90 C/U
	≤ Ø 54	≥ 1.5		13.5	CS			EI 120 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		13.5 - 38	LS 400 / CS			EI 90 C/U, E 120 C/U
				8.5 - 35				EI 120 C/U
	≤ Ø 114.3	≥ 3.6		15	CS			EI 90 C/U, E 120 C/U
					15 - 43			LS 400 / CS

B.1.14 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.1.14.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

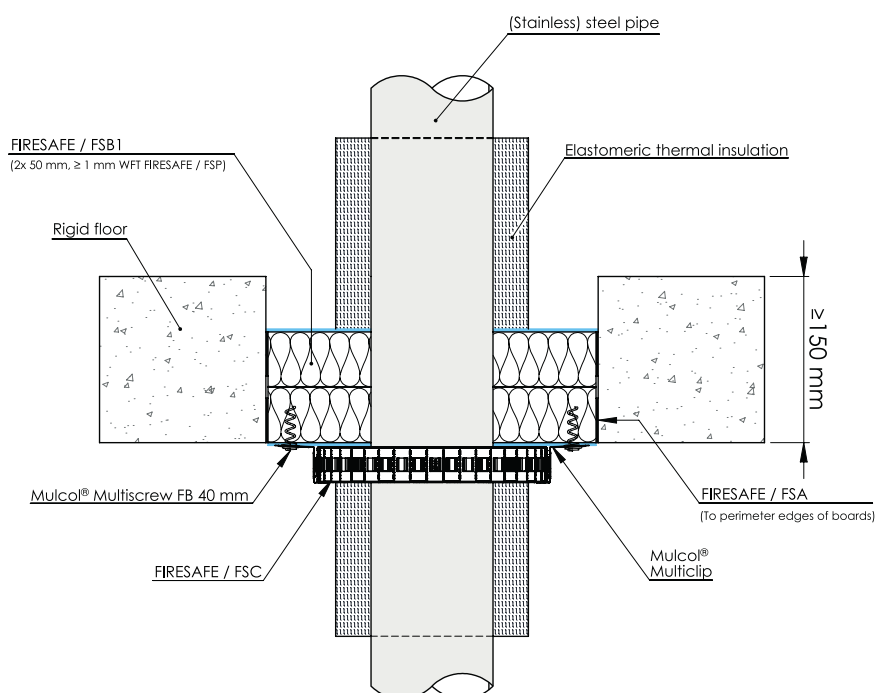
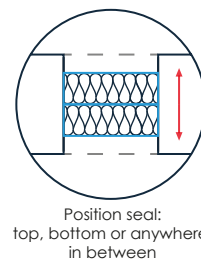
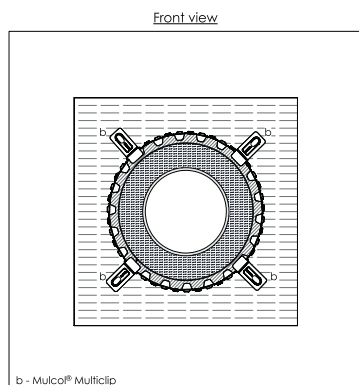
Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 120 C/U
	≤ Ø 54	≥ 1.5		13	LS 400 / CS			EI 90 C/U
				13 - 25	LS 400 / CS			
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25	LS 400 / CS			
	≤ Ø 114.3	≥ 3.6	19 - 25	LS 400 / CS				

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -S1, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U
				25 - 32				EI 90 C/U E 120 C/U
	≤ Ø 54	≥ 1.5		13 - 32	CS			EI 60 C/U E 120 C/U
				13 - 32				EI 90 C/U E 120 C/U
				32	LS 400 / CS			EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25				EI 60 C/U E 90 C/U
				25				EI 90 C/U E 120 C/U
	≤ Ø 114.3	≥ 3.6		13				
				13 - 32	EI 60 C/U E 120 C/U			

B.1.14 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.1.14.2 Steel pipes - Elastomer LI 300 / CI - FIRESAFE / FSC

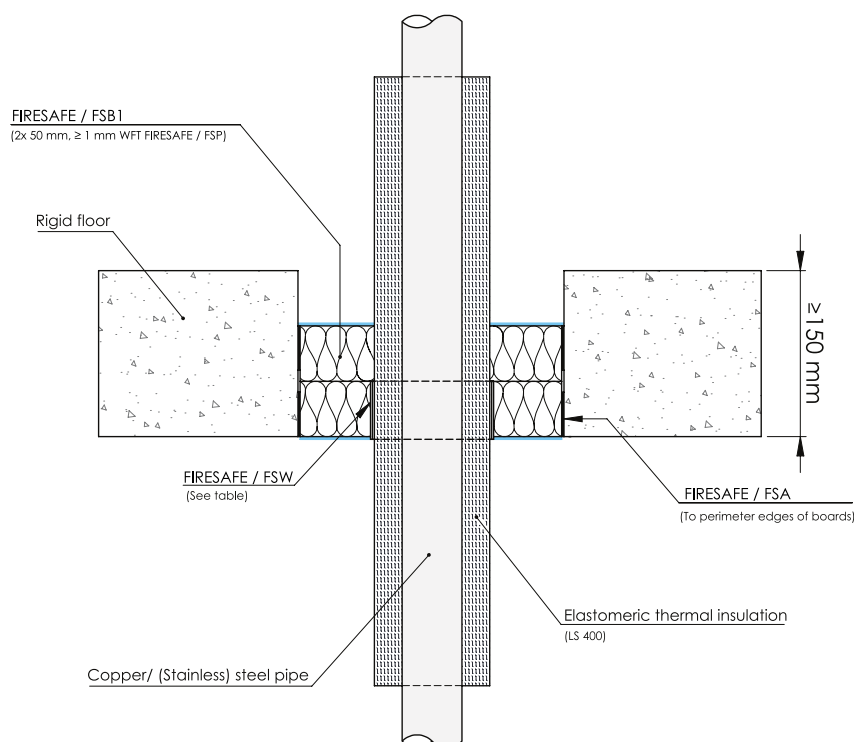
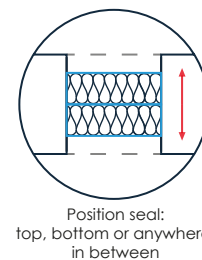
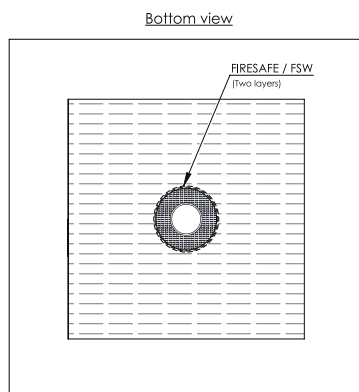


Drawing: PBrf.E-ST-11.0.22.LI

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration				
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LI 300 / CI	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	25 mm stone wool (33 kg/m ³)	EI 60 C/U E 90 C/U
				32					EI 90 C/U

B.1.14 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.1.14.3 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW

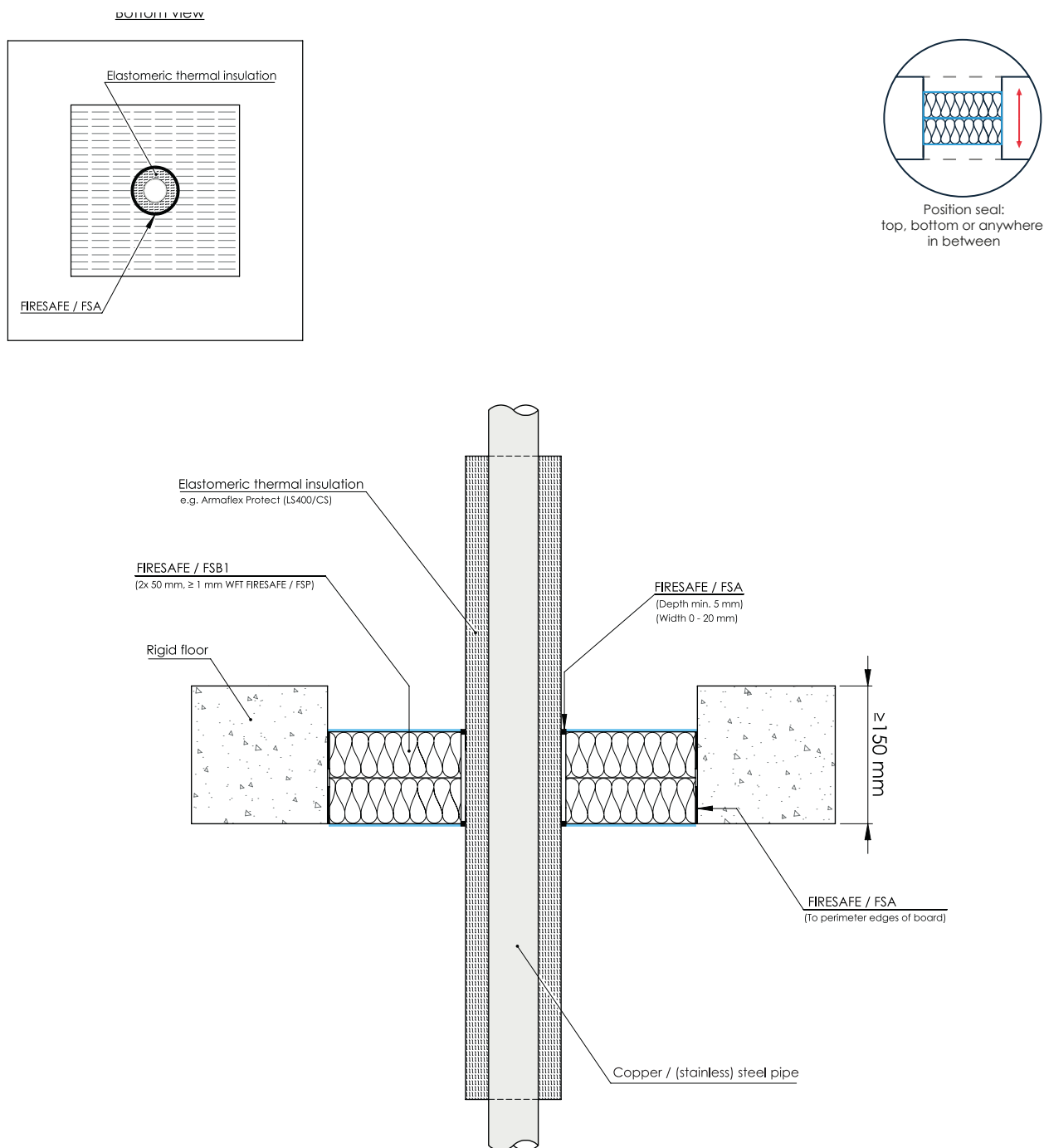


Drawing: PBrf.E-CU-MW2-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 12	≥ 1	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	11	LS 400 / CS	FIRESAFE / FSW (2 layers)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 120 C/U E 240 C/U
				11 - 28.5				EI 90 C/U
Copper / (stainless) steel / cast iron	≤ Ø 54	≥ 1.5		13.5				EI 90 C/U E 120 C/U
				13.5 - 28.5				EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 168.3	≥ 4.5		13 - 19				EI 45 C/U E 120 C/U

B.1.14 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.1.14.4 Copper and steel pipes - ArmaFlex Protect LS 400 / CS



Drawing: PBrf.E-CU-MFB1.2.22.LS

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Protect	20 - 25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5		25			

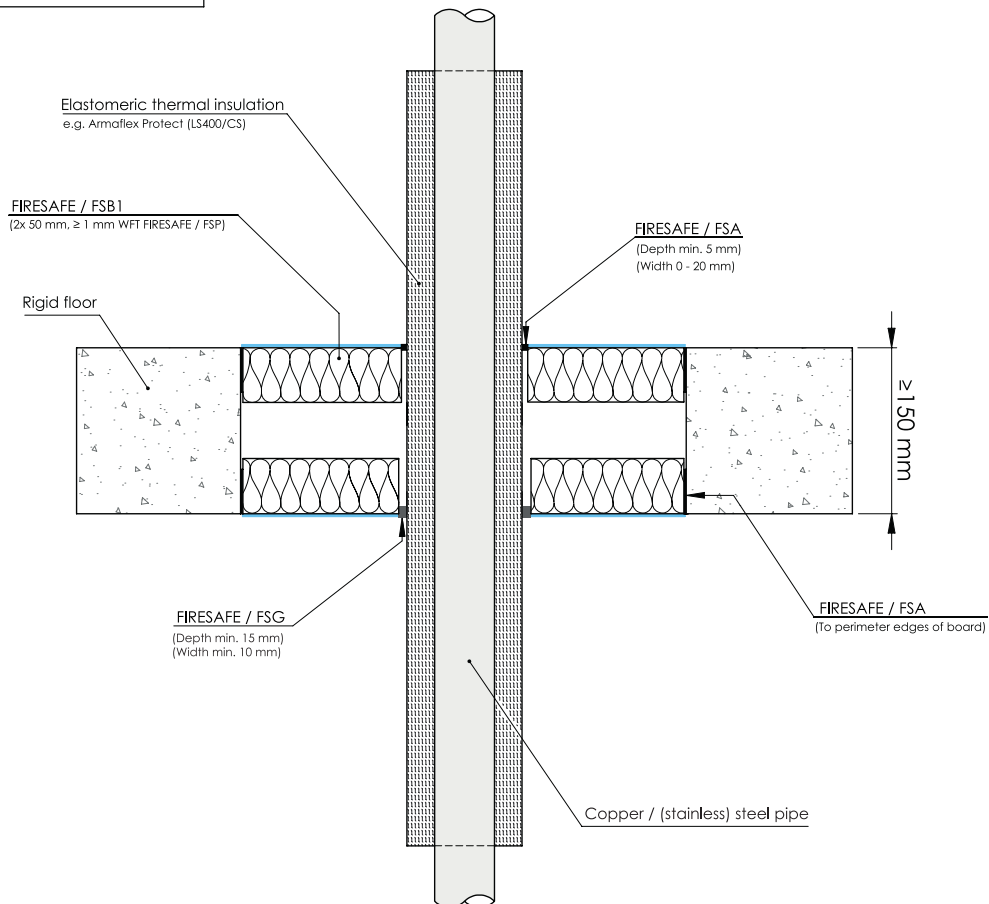
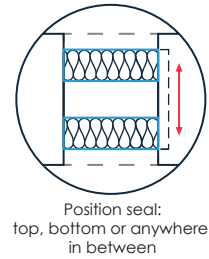
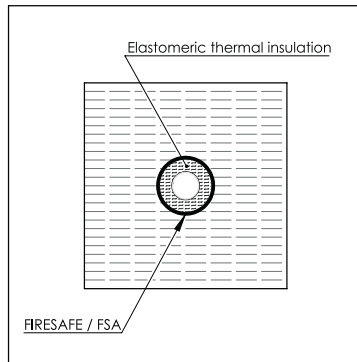
B.1.15

FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes insulated elastomer

B.1.15.1

Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

Bottom view



Drawing: PBrf.E-CU-MFB1-G2.2.22.LS.C

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification	
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration				
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U	
				8.5 - 33.5				EI 60 C/U E 90 C/U	
	≤ Ø 54	≥ 1.5		13.5	CS			EI 120 C/U	
				13.5 - 38	LS 400 / CS			EI 90 C/U E 120 C/U	
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		8.5 - 35				CS	EI 120 C/U
	≤ Ø 114.3	≥ 3.6		15	LS 400 / CS				EI 90 C/U E 120 C/U
				15 - 43					

B.1.15 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm- Metal pipes insulated elastomer**B.1.15.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG**

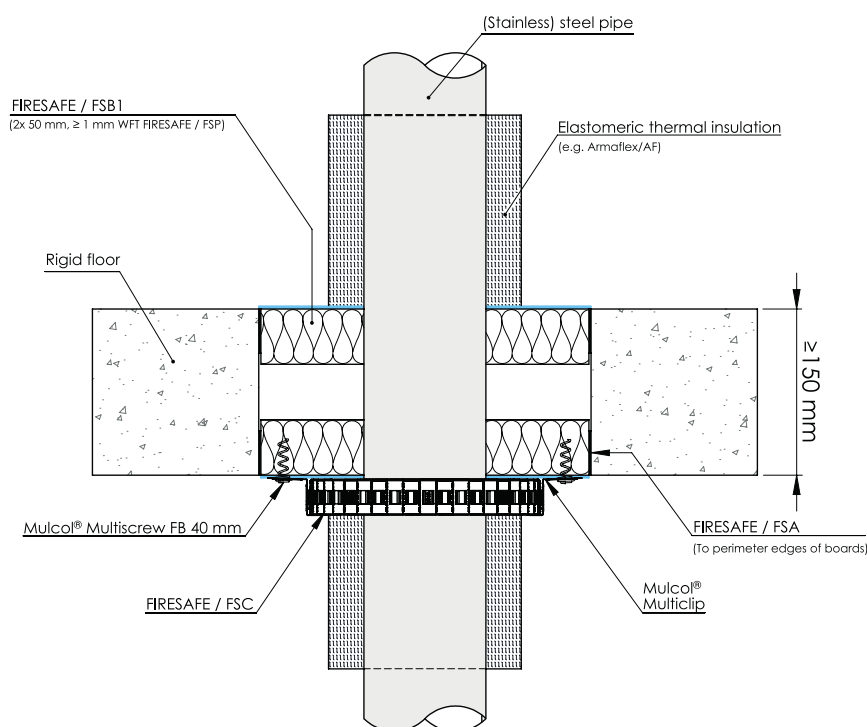
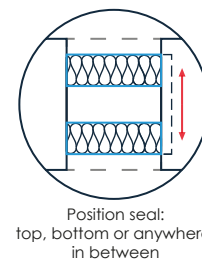
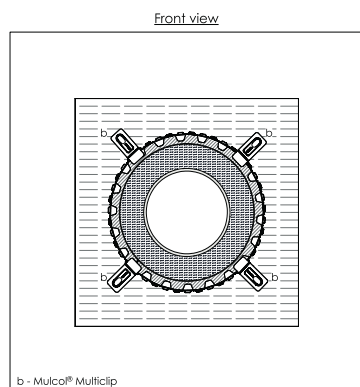
Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
(Stainless) Steel / cast iron	$\leq \varnothing 26.9$	≥ 2.3	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	8.5	LS 400 / CS	FIRESAFE / FSG $\geq 10 \times 20$ (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 120 C/U
	≤ Ø 54	≥ 1.5		13	LS 400 / CS			EI 90 C/U
				13 - 25	LS 400 / CS			
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25	LS 400 / CS			
	≤ Ø 114.3	≥ 3.6		19 - 25	LS 400 / CS			

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -S1, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U
				25 - 32				EI 90 C/U E 120 C/U
	≤ Ø 54	≥ 1.5		13 - 32				EI 60 C/U E 120 C/U
				13 - 32	CS			EI 90 C/U E 120 C/U
				32	EI 90 C/U			
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25	LS 400 / CS			EI 60 C/U E 90 C/U
				25				EI 90 C/U E 120 C/U
				13				EI 60 C/U E 120 C/U
	≤ Ø 114.3	≥ 3.6		13 - 32				EI 60 C/U E 120 C/U

B.1.15 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm- Metal pipes insulated elastomer

B.1.15.2 Steel pipes - Elastomer LI 300 / CI - FIRESAFE / FSC

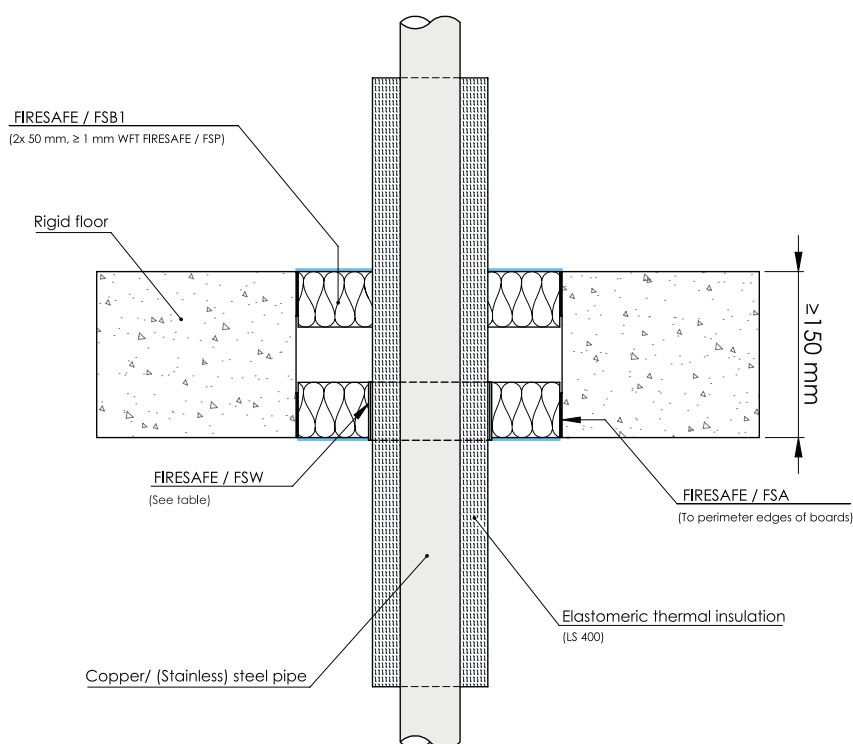
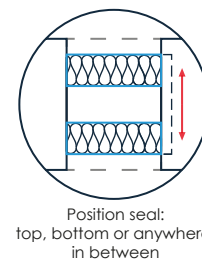
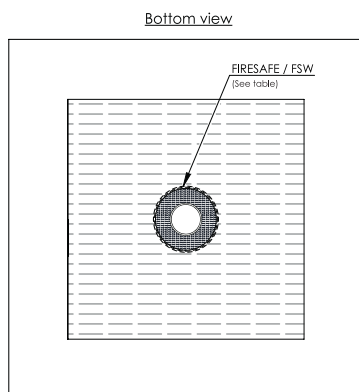


Drawing: PBrf.E-ST-11.0.22.LI.C

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration				
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LI 300 / CI	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	25 mm stone wool (≥ 33kg/m ³)	EI 60 C/U E 90 C/U
				32					EI 90 C/U

B.1.15 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm- Metal pipes insulated elastomer

B.1.15.3 Steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW



Drawing: PBrf,E-CU-MW2-MFB1,2,22,LS,C

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 12	≥ 1	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	11	LS 400 / CS	FIRESAFE / FSW (2 layers)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 120 C/U E 240 C/U
				11 - 28.5				EI 90 C/U
Copper / (stainless) steel / cast iron	≤ Ø 54	≥ 1.5		13.5 - 28.5				EI 45 C/U E 90 C/U
	≤ Ø 54	≥ 1.5		28.5				EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 168.3	≥ 4.5		13 - 19				EI 45 C/U E 120 C/U

B.1.15 FIRESAFE / FSB1 - 2x 50 mm cavity $\geq$ 50 mm- Metal pipes insulated elastomer

B.1.15.3 Steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
(Stainless) Steel / cast iron	$\leq \varnothing 40$	≥ 2.0	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	19	LS 400 / CS	FIRESAFE / FSW (2 layers)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 45 C/U E 120 C/U

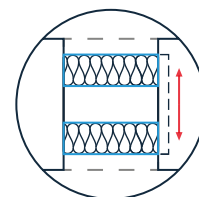
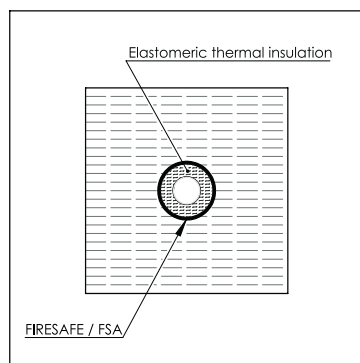
B.1.15

FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm- Metal pipes insulated elastomer

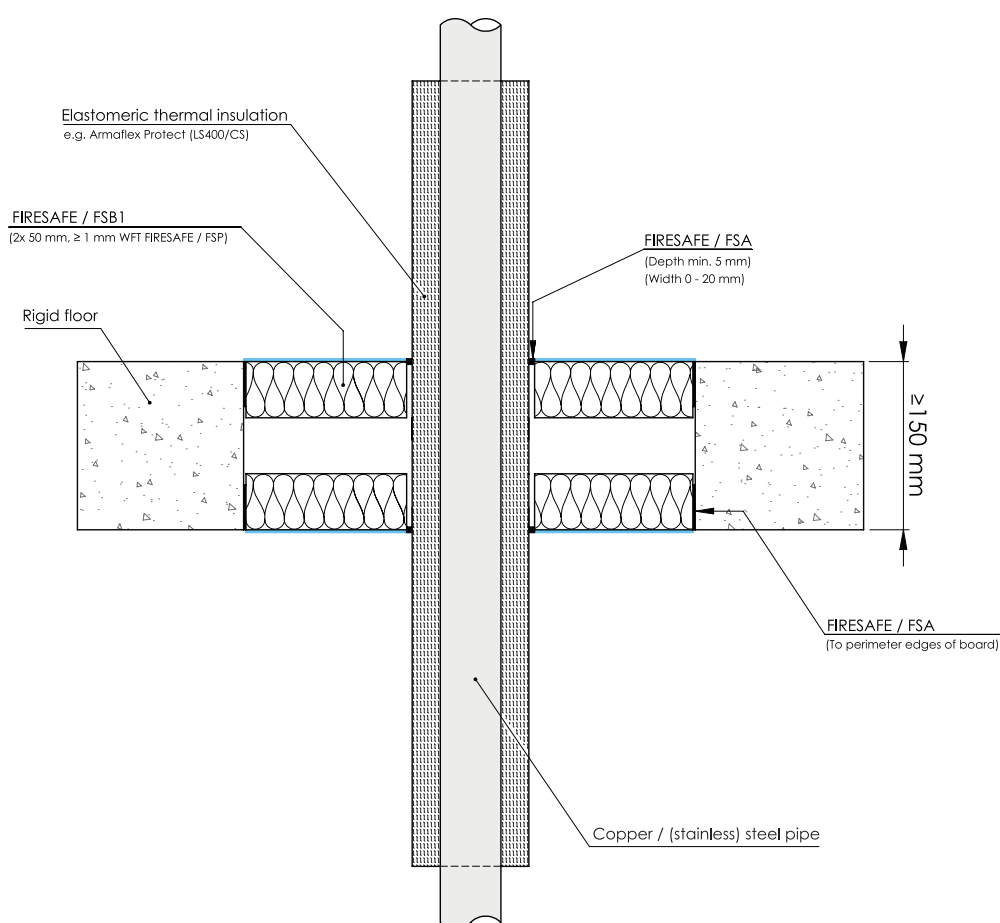
B.1.15.4

Copper and steel pipes - ArmaFlex Protect LS 400 / CS

Bottom view



Position seal:
top, bottom or anywhere
in between



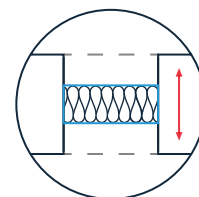
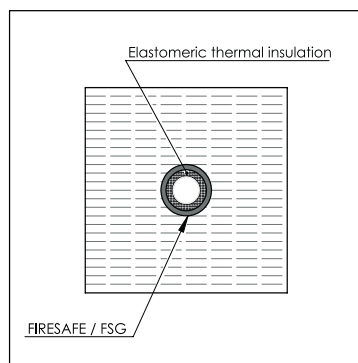
Drawing: PBrf.E-CU-MFB1.2.22.LS.C

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Protect	20 - 25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5		25			

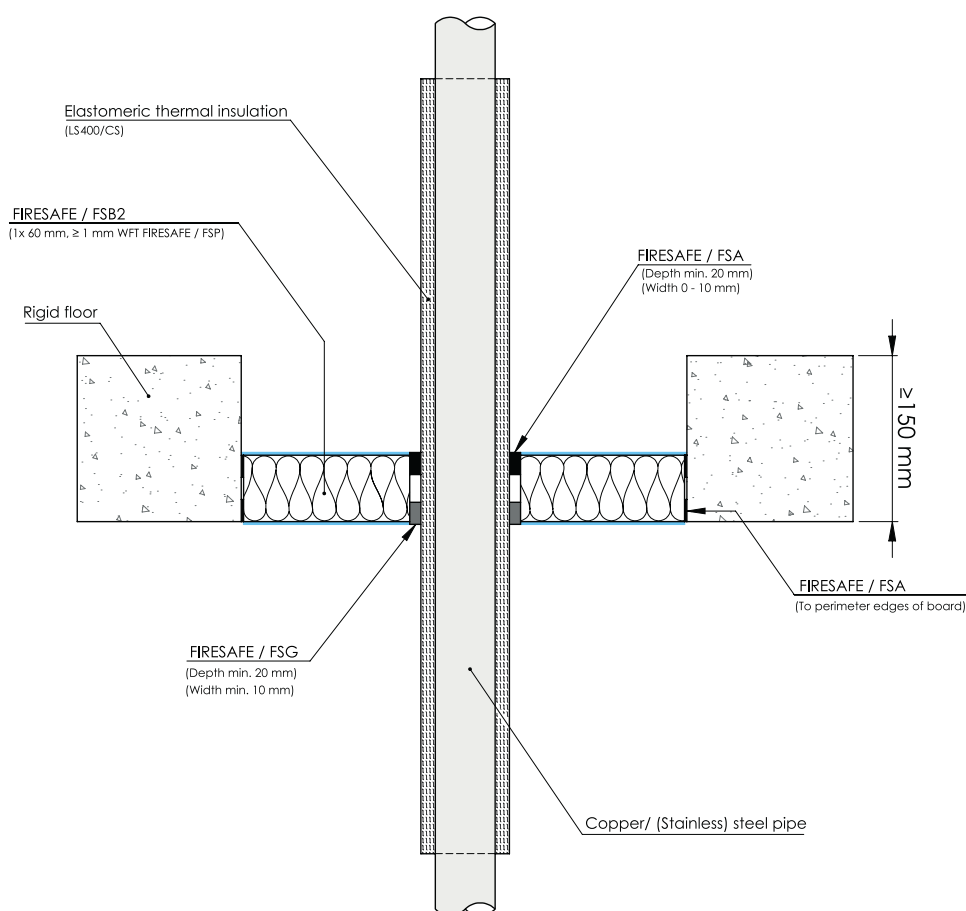
B.1.16 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer

B.1.16.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between



Drawing: PBrf,E-CU-MFB2-G2.4.22.LS

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification	
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration				
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5 - 35	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd) bottom of floor	FIRESAFE / FSA 0-10 x ≥ 20 (wxd) top of floor	EI 60 C/U	
	≤ Ø 54	≥ 1.5		35				EI 120 C/U	
				13.5				EI 60 C/U	
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		13.5 - 38				E 120 C/U	
				8.5 - 35					EI 60 C/U
				35					EI 90 C/U
	≤ Ø 114.3	≥ 3.6		13.5					EI 120 C/U
				15 - 43					EI 60 C/U E 120 C/U

B.1.16 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer**B.1.16.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG**

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
(Stainless) Steel / cast iron	$\leq \varnothing 26.9$	≥ 2.3	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	8.5	LS 400 / CS	FIRESAFE / FSG $\geq 10 \times 20$ (wxd)	FIRESAFE / FSA 0-20 x ≥ 10 (wxd) top of floor	EI 45 C/U

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 10 (wxd) top of floor	EI 60 C/U E 90 C/U
	≤ Ø 54	≥ 1.5		13 - 25				EI 60 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25				EI 30 C/U
	≤ Ø 26.9	≥ 2.3		25				EI 60 C/U E 120 C/U
	≤ Ø 114.3	≥ 3.6		19				EI 30 C/U E 120 C/U
				19 - 25				EI 45 C/U E 120 C/U

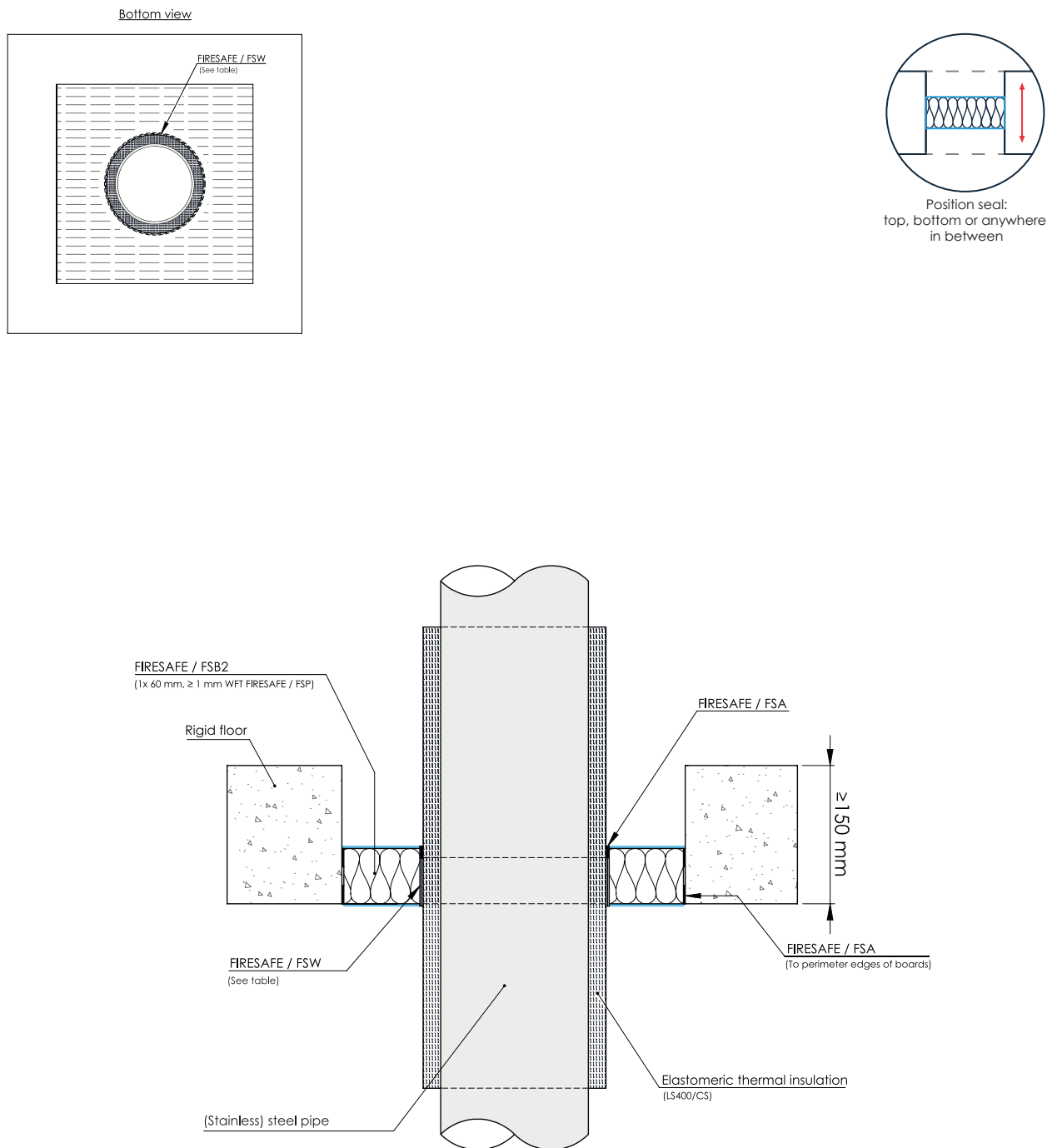
Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification				
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration							
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -S1, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 10 (wxd) top of floor	EI 30 C/U E 120 C/U				
				25				EI 60 C/U E 120 C/U				
	≤ Ø 54	≥ 1.5		13 - 32				EI 45 C/U E 120 C/U				
				32				EI 90 C/U				
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25								EI 60 C/U E 120 C/U
				25								EI 90 C/U E 120 C/U
	≤ Ø 114.3	≥ 3.6		13								EI 120 C/U
				13 - 32								EI 60 C/U E 120 C/U

B.1.16

FIRESAFE / FSB2 - 1x 60 mm - Metal pipes insulated elastomer

B.1.16.2

Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW

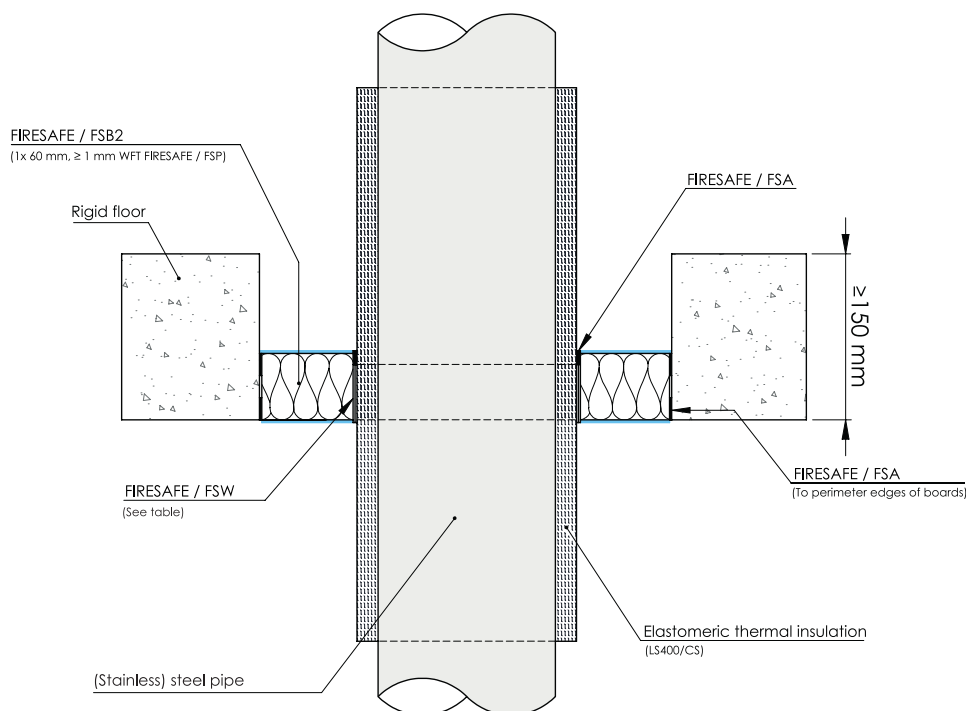
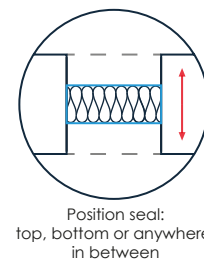
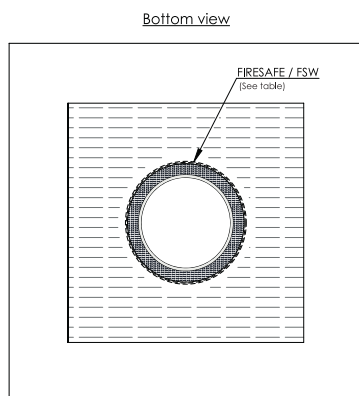


Drawing: PBrf.E-ST-MW2-MFB2.1.22.LS

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.1	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	12	LS 400 / CS	FIRESAFE / FSW (2 layers)	FIRESAFE / FSA 0-10 x ≥ 20 (wxd) top of floor	EI 90 C/U E 120 C/U
	≤ Ø 54	≥ 1.5		12 - 33.5				EI 45 C/U E 120 C/U
				13.5 - 38				EI 60 C/U E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		38				EI 45 C/U E 120 C/U
				15 - 32				EI 60 C/U E 120 C/U
	≤ Ø 168.3	≥ 4.5		32				EI 45 C/U E 120 C/U
			13 - 19	EI 45 C/U E 120 C/U				

B.1.17 FIRESAFE / FSB2 - 1x60 mm - Metal pipes insulated PIR foam

B.1.17.1 Steel pipes - PIR foam CS - FIRESAFE / FSW - both sides

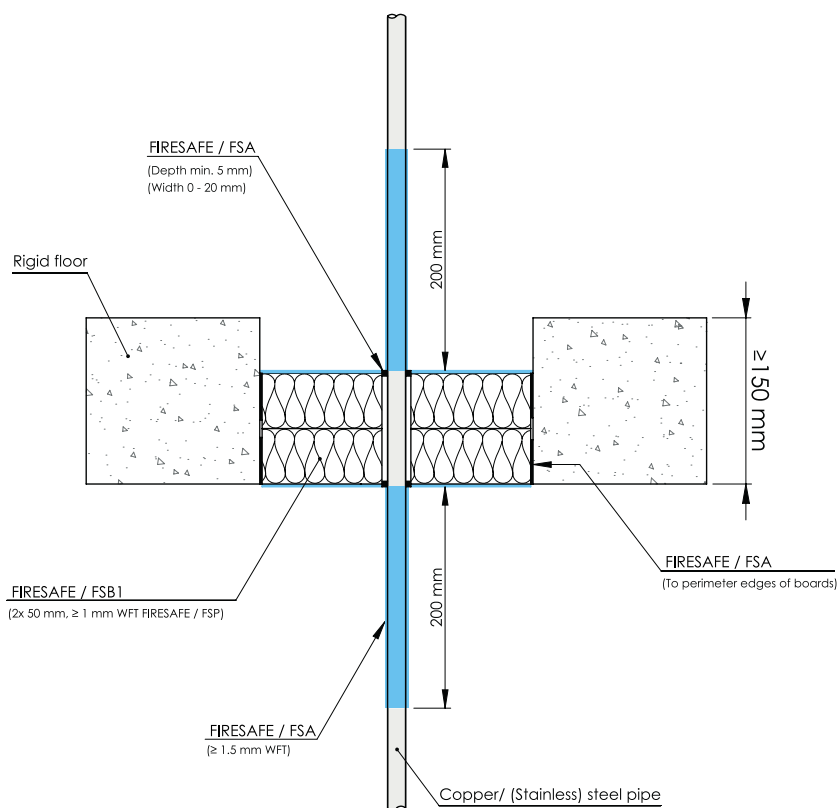
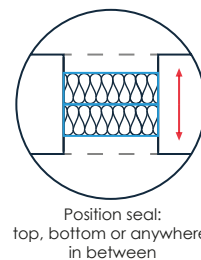
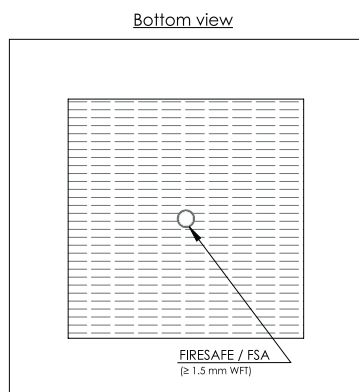


Drawing: PBf.E-ST-MW2-MFB2.1.22.LS

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
(Stainless) Steel / cast iron	≤ Ø 35	≥ 1.5	PIR (min. class E)	40	CS	FIRESAFE / FSW (2 layers)	EI 60 C/U E 120 C/U

B.1.18 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes uninsulated

B.1.18.1 Copper and steel pipes - FIRESAFE / FSA

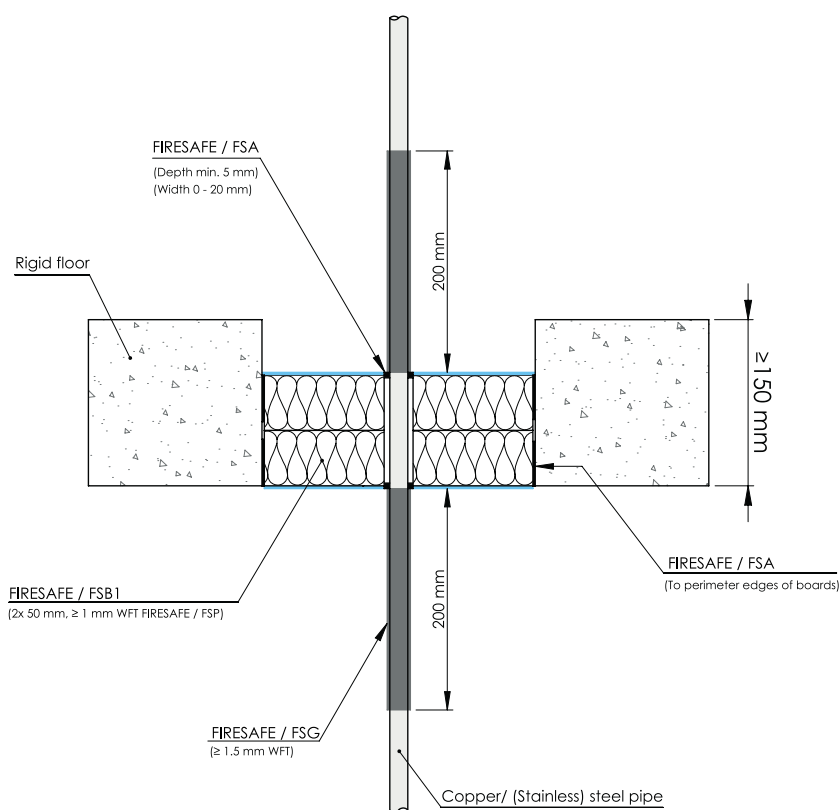
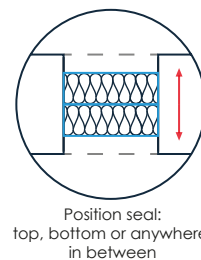
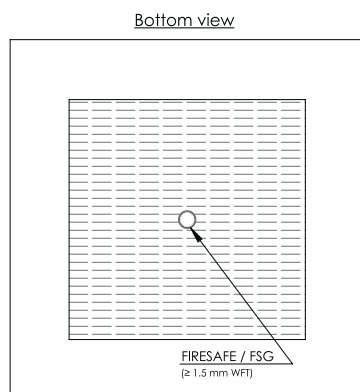


Drawing: PBrf.E-CU-MFB1-SPC.1.10

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper	$\leq \varnothing 22$	≥ 1.0	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSA	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 20 C/U, E 90 C/U
(Stainless) Steel / cast iron					EI 30 C/U, E 90 C/U
	$\leq \varnothing 42.4$	≥ 3.2			

B.1.18 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes uninsulated

B.1.18.2 Copper and steel pipes - FIRESAFE / FSG

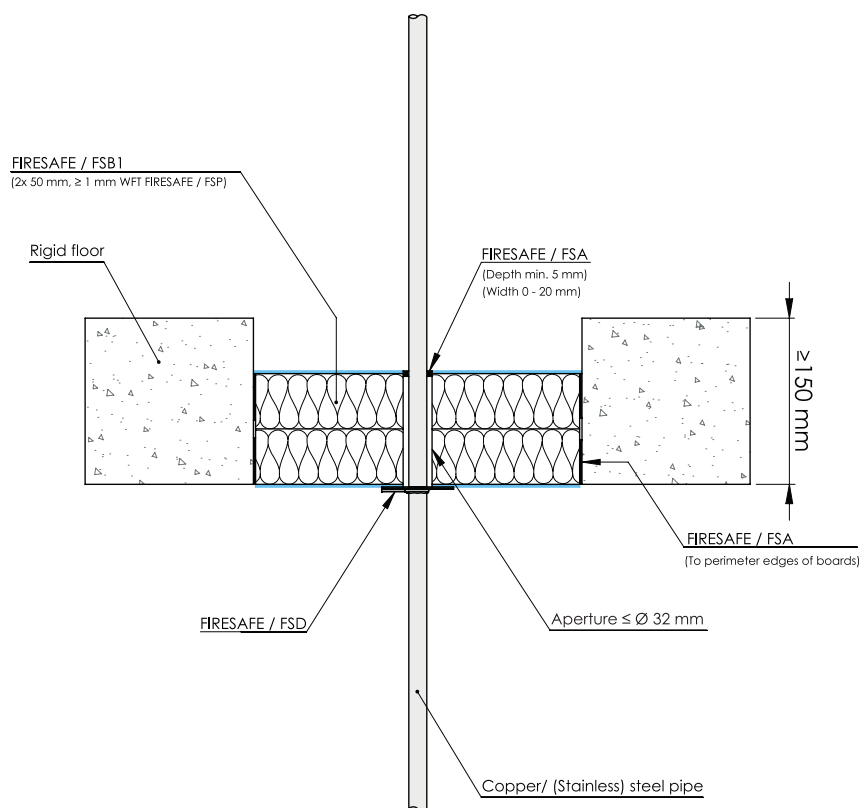
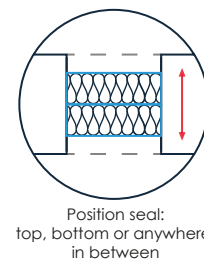
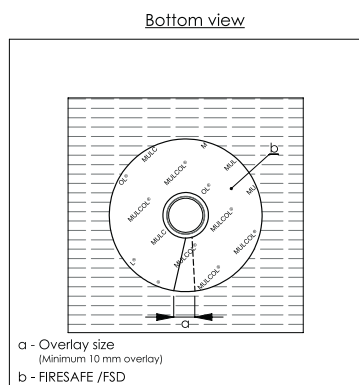


Drawing: PBrf.E-CU-MFB1-GRC.1.10

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	$\leq \varnothing 15$	≥ 1.0	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSG	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 C/U, E 90 C/U
(Stainless) Steel / cast iron	$\leq \varnothing 42.4$	≥ 3.2			

B.1.18 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes uninsulated

B.1.18.3 Copper and steel pipes - FIRESAFE / FSD



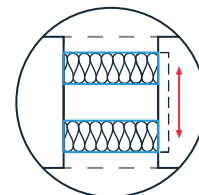
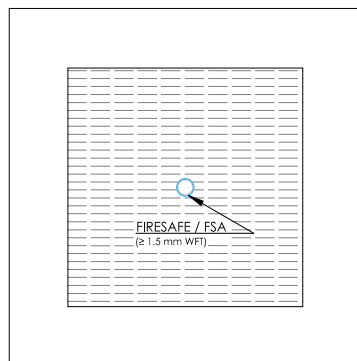
Drawing: PBrf.E-CU-M2.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSD bottom of floor	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U

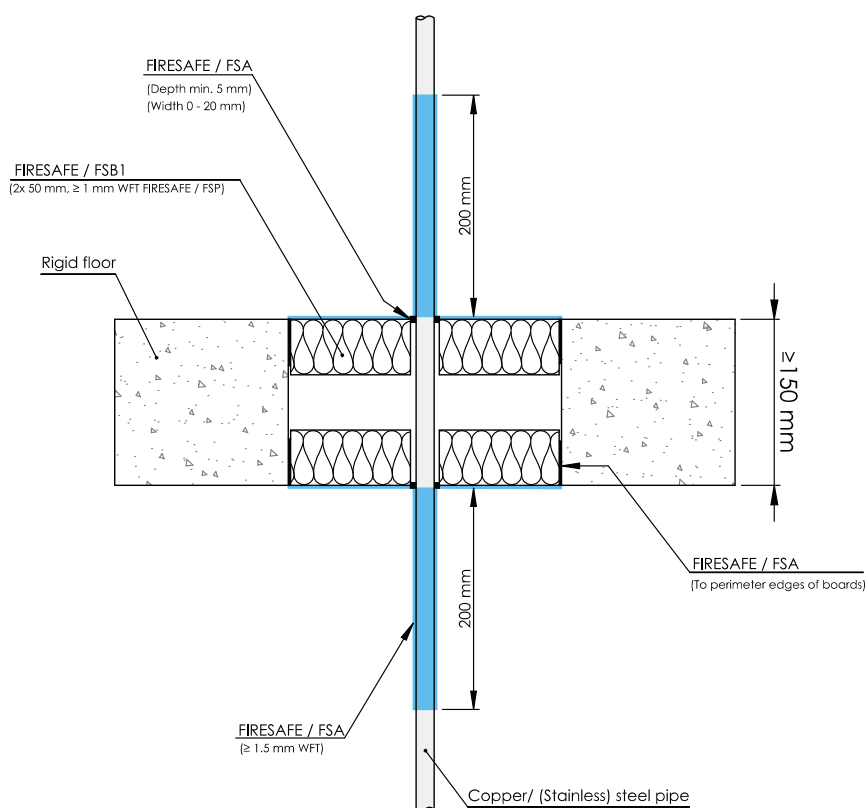
B.1.19 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes uninsulated

B.1.19.1 Copper and steel pipes - FIRESAFE / FSA

Bottom view



Position seal:
top, bottom or anywhere
in between



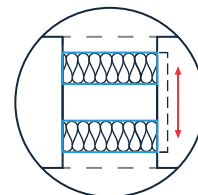
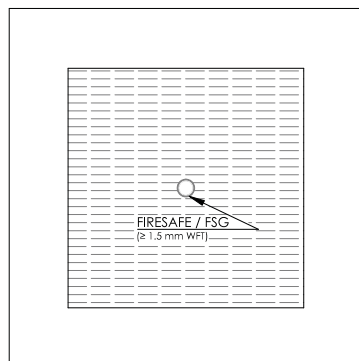
Drawing: PBrf.E-CU-MFB1-SPC.1.10.C

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSA	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 90 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3			EI 120 C/U
	≤ Ø 42.4	≥ 3.2			EI 90 C/U, E 120 C/U

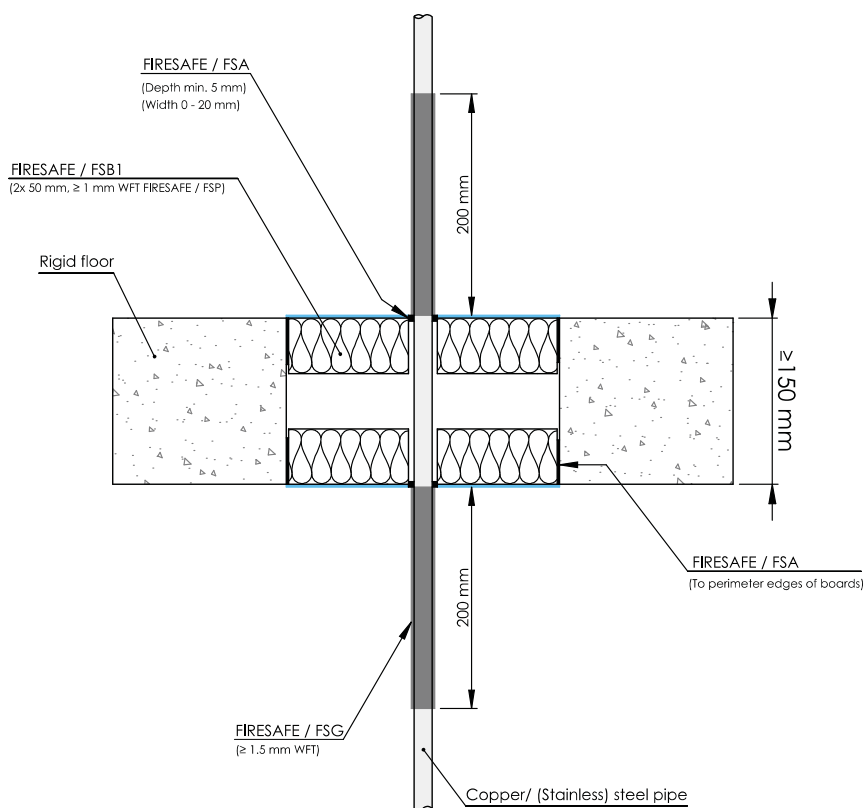
B.1.19 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes uninsulated

B.1.19.2 Copper and steel pipes - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between



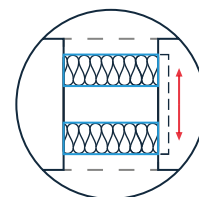
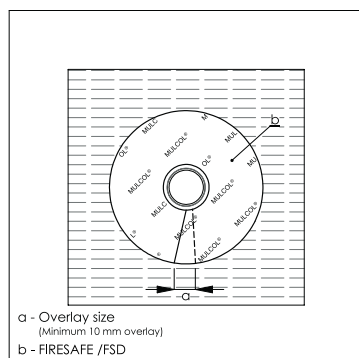
Drawing: PBrf.E-CU-MFB1-GRC.1.10.C

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSG	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 C/U, E 120 C/U
(Stainless) Steel / cast iron	≤ Ø 15	≥ 1.0			EI 120 C/U
	≤ Ø 42.4	≥ 3.2			

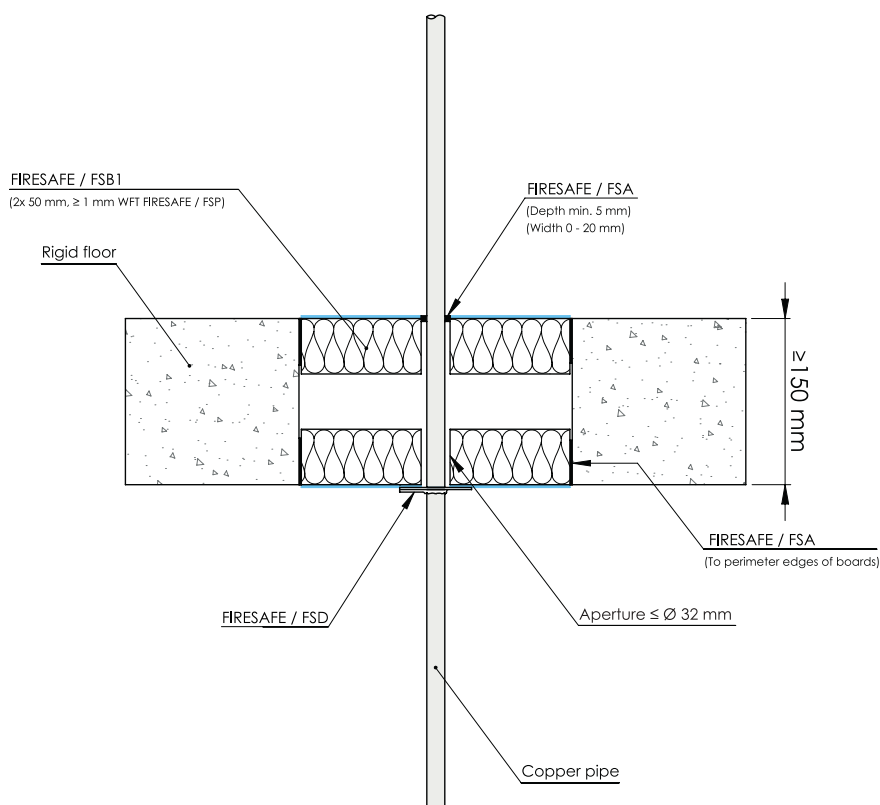
B.1.19 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes uninsulated

B.1.19.3 Copper and steel pipes - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere
in between

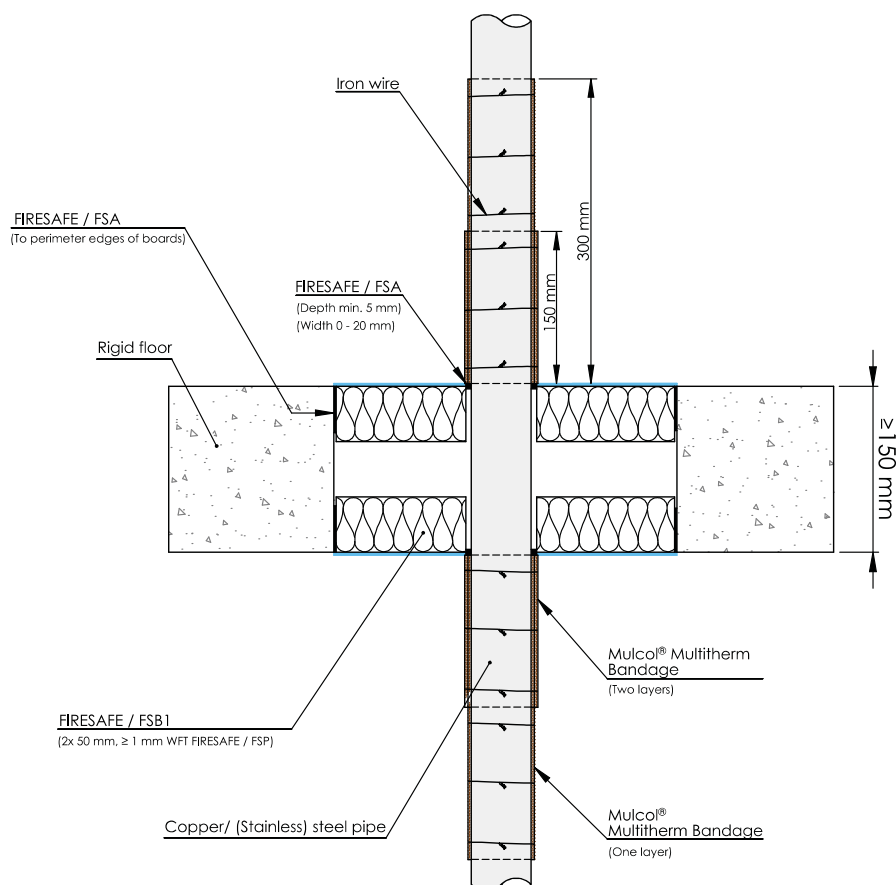
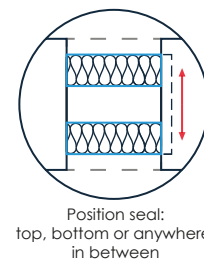
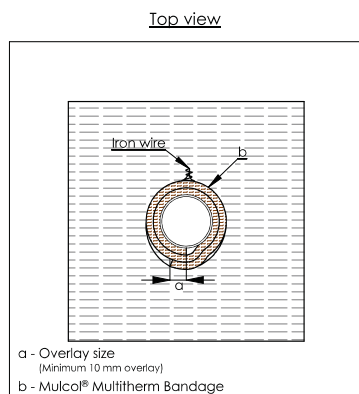


Drawing: PBrf.E-CU-M2.0.10.C

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSD bottom of floor	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U

B.1.19 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Metal pipes uninsulated

B.1.19.4 Copper and steel pipes - Multitherm Bandage

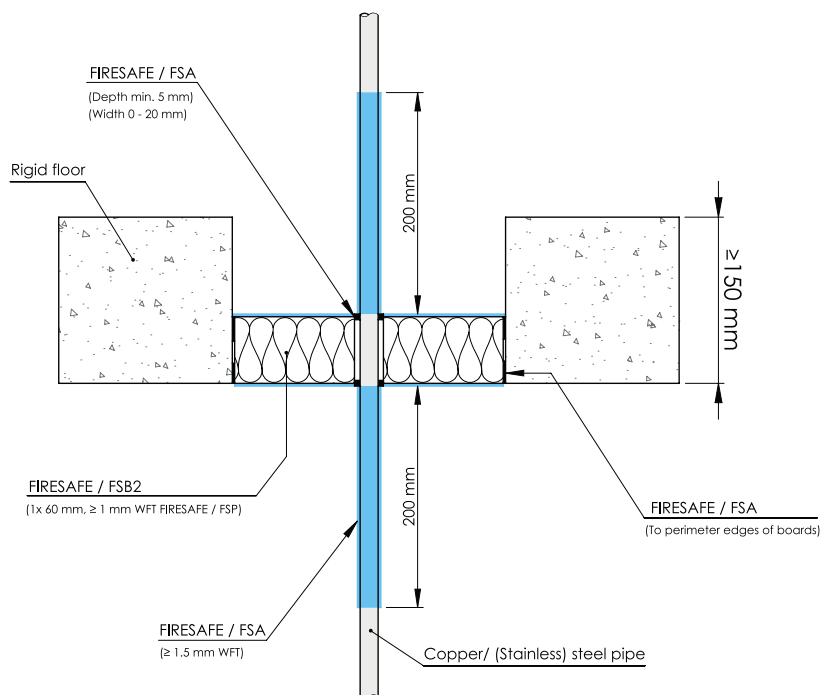
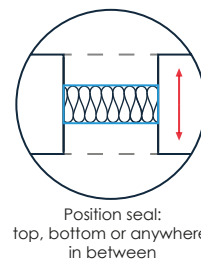
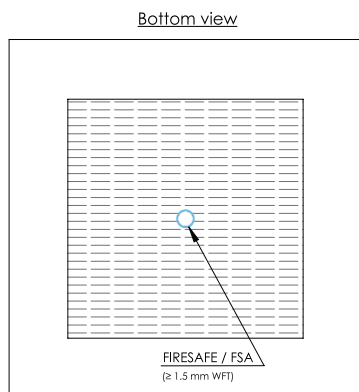


Drawing: PBrf.E-CU-MFB1-B2.3.21.C

Services	Pipe dimensions (mm)		Sealing (mm)	Multitherm Bandage	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 54	≥ 1.5	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	LI 150 two layers (two wires) + LI 300 one layer (two wires)	EI 90 C/U E 120 C/U

B.1.20 FIRESAFE / FSB2 - 1x 60 mm - Metal pipes uninsulated

B.1.20.1 Copper and steel pipes - FIRESAFE / FSA



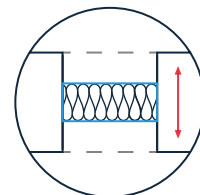
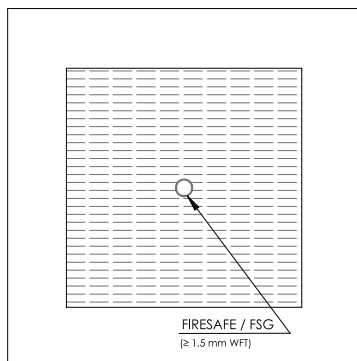
Drawing: PBrf.E-CU-MFB2-SPC.1.10

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper	≤ Ø 15	≥ 1.0	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSA	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 20 C/U, E 90 C/U
(Stainless) steel / cast iron	≤ Ø 42.4	≥ 3.2			EI 30 C/U, E 90 C/U

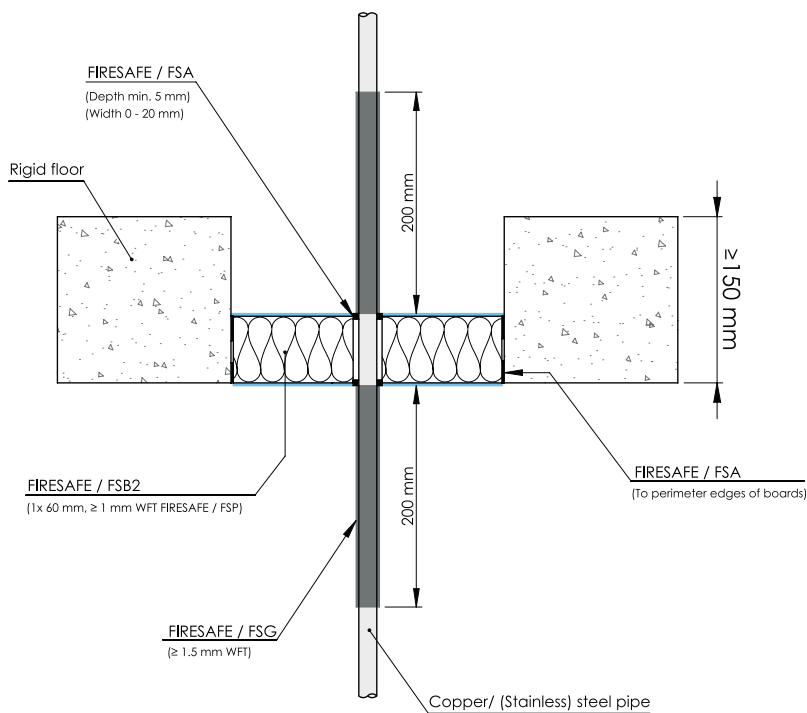
B.1.20 FIRESAFE / FSB2- 1x 60 mm - Metal pipes uninsulated

B.1.20.2 Copper and steel pipes - FIRESAFE / FSG

Bottom view



Position seal:
top, bottom or anywhere
in between

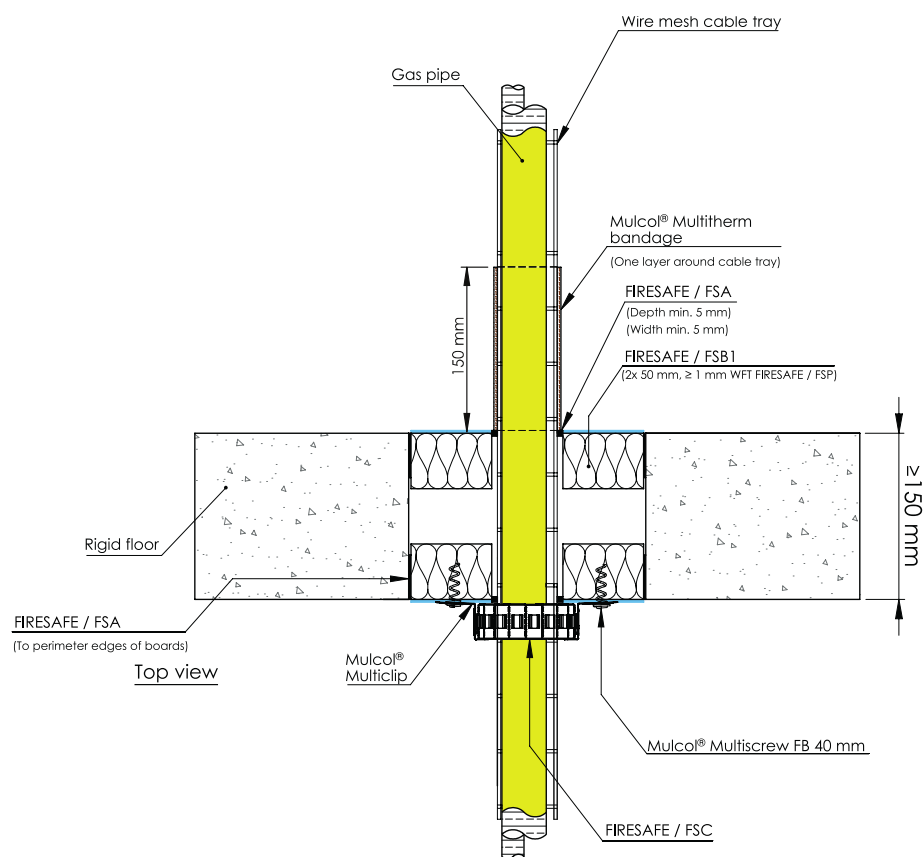
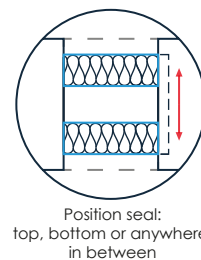
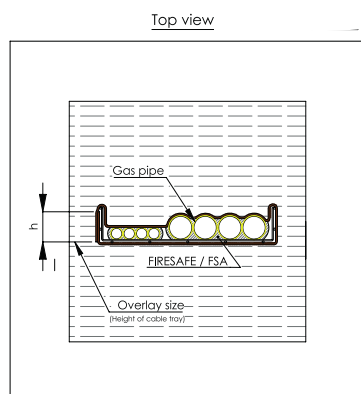


Drawing: PBrf.E-CU-MFB2-GRC.1.10

Services	Pipe dimensions (mm)		Coating	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper	≤ Ø 15	≥ 1.0	Coat back 200 mm ≥ 1.5 mm WFT FIRESAFE / FSG	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 60 C/U, E 90 C/U
(Stainless) steel / cast iron	≤ Ø 42.4	≥ 3.2			

B.1.21 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Gas pipes

B.1.21.1 Corrugated stainless steel tube gas (CSST) pipes - Multicollar - Multitherm Bandage

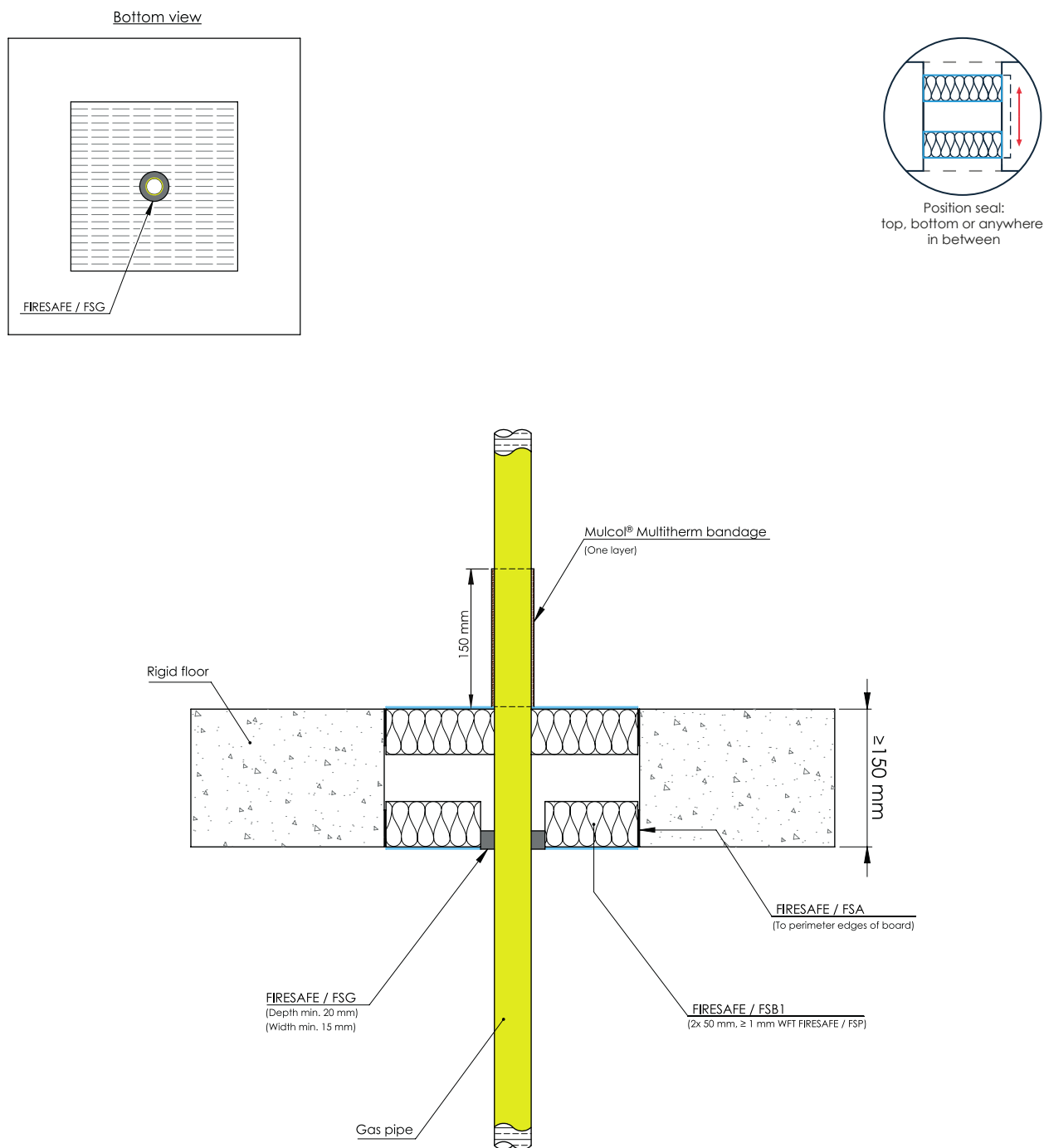


Drawing: PBrf.E-CT-MFB1-B3.1.10.C

Services	Number of pipes	Product	Sealing (mm)	Classification
CFS CSST gas pipe DN 15	≤ 4	Multicollar (bottom of floor) & Multitherm Bandage	FIRESAFE / FSA ≥ 5 x 5 (wxd)	EI 120 U/C
CFS CSST gas pipe DN 32	≤ 2			

B.1.21 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Gas pipes

B.1.21.2 Corrugated stainless steel tube gas (CSST) pipes - FIRESAFE / FSG - Multitherm Bandage

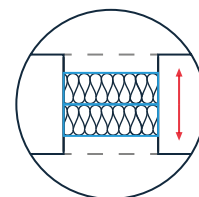


Drawing: PBrf.E-GFS-MFB1-B3.1.10.C

Services	Number of pipes	Product	Sealing (mm)	Classification
CFS CSST gas pipe DN 15	≤ 2	FIRESAFE / FSG (bottom of floor) & Multitherm Bandage (top of floor)	FIRESAFE / FSG ≥ 15 x 20 (wxd) bottom of floor	EI 120 U/C
CFS CSST gas pipe DN 32	1			

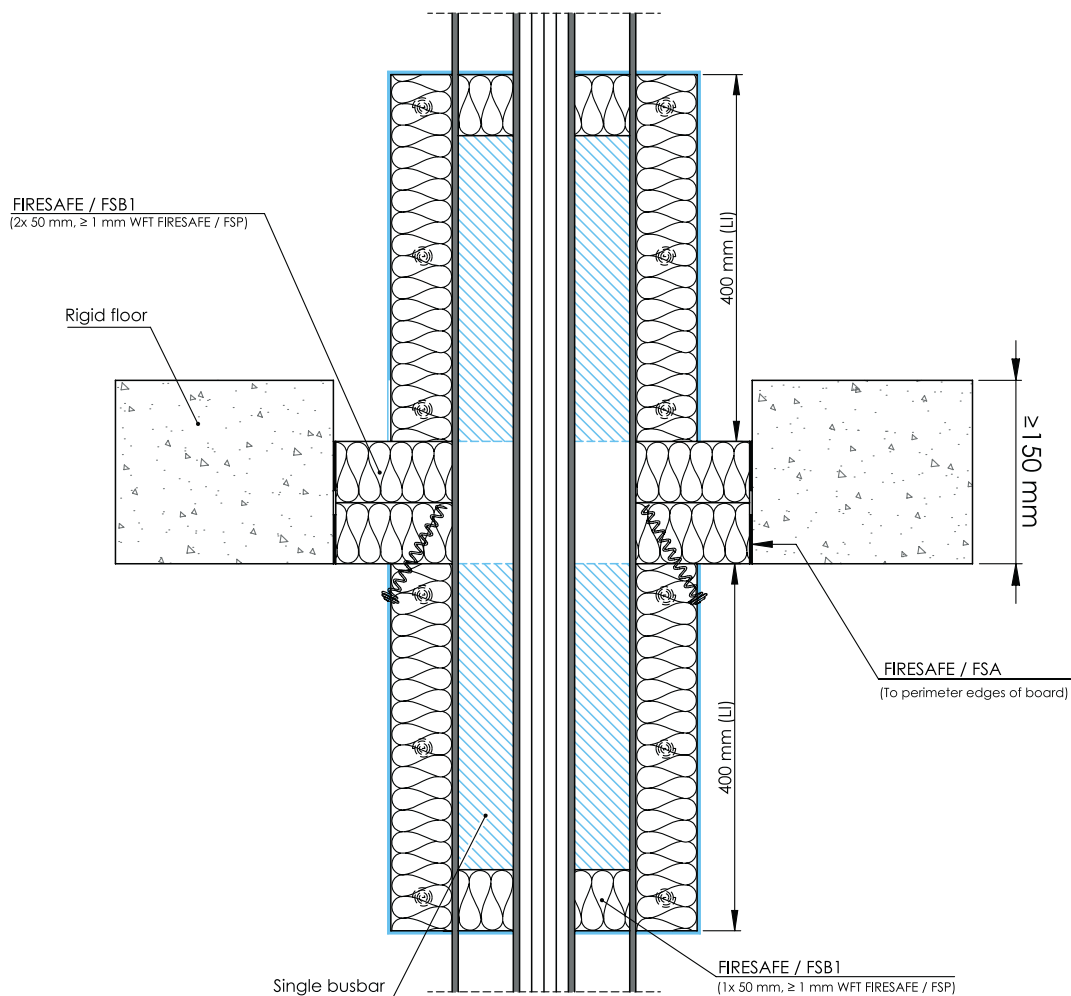
B.1.22 FIRESAFE / FSB1 - 2x 50 mm no cavity - Busbars

B.1.22.1 Single busbar



Position seal:
top, bottom or anywhere
in between

Side view

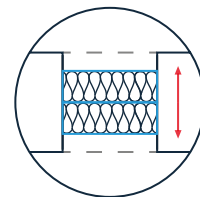


Drawing: PBrf.E-1BB-MFB1.2.10

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductors	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

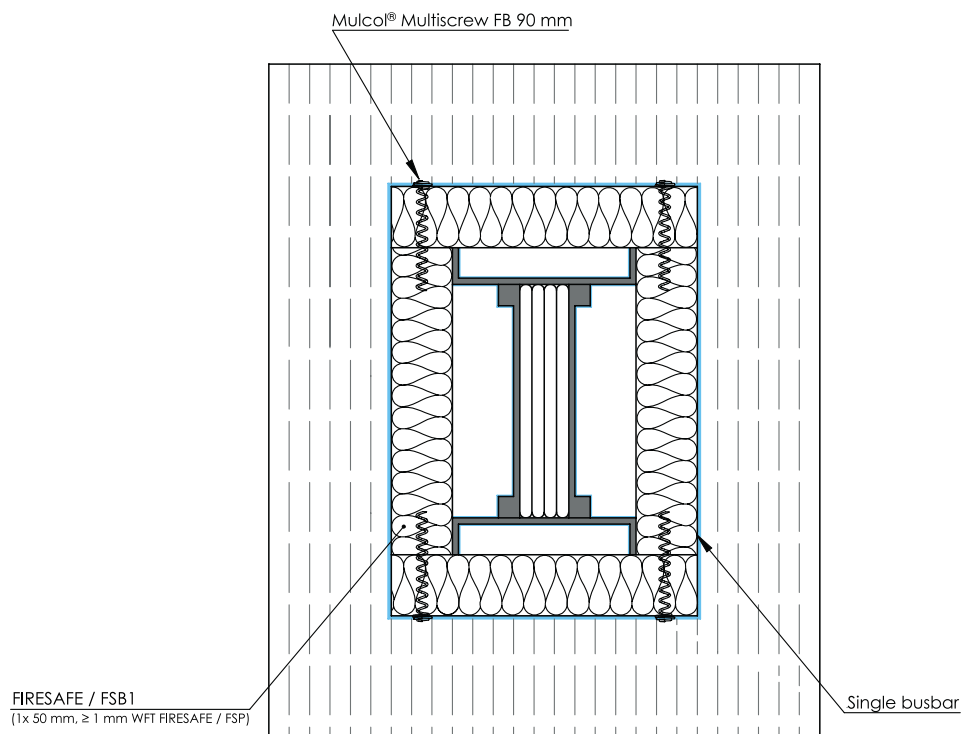
B.1.22 FIRESAFE / FSB1 - 2x 50 mm no cavity - Busbars

B.1.22.1 Single busbar



Position seal:
top, bottom or anywhere
in between

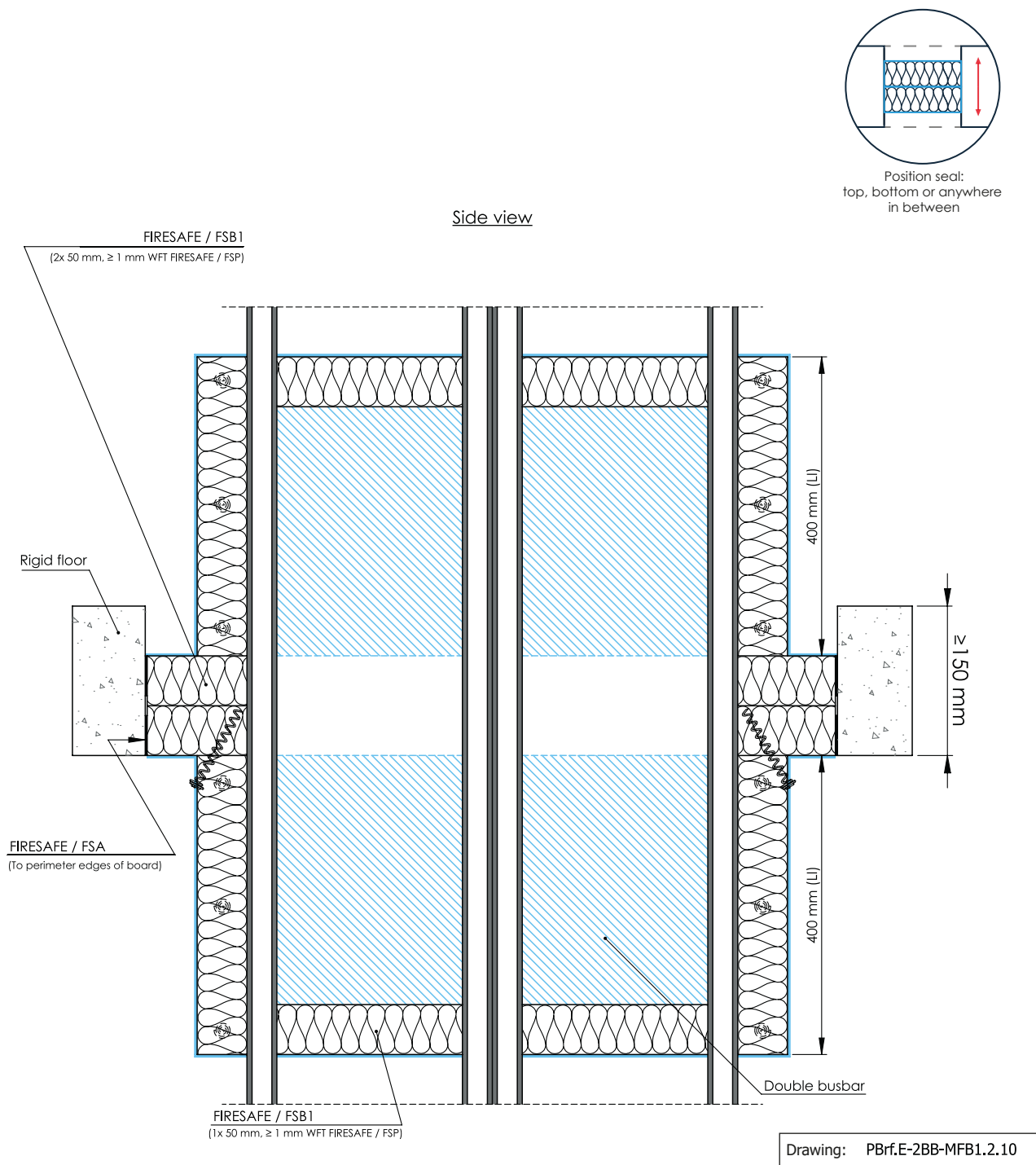
Bottom view



Drawing: PBrf.E-1BB-MFB1.2.10

B.1.22 **FIRESAFE / FSB1 - 2x 50 mm no cavity - Busbars**

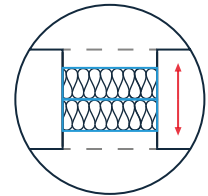
B.1.22.2 **Multiple busbars**



Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductors	Type	Thickness (mm)	Configuration	
Double busbar	$\leq 150 \times 500$ mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

B.1.22 FIRESAFE / FSB1 - 2x 50 mm no cavity - Busbars

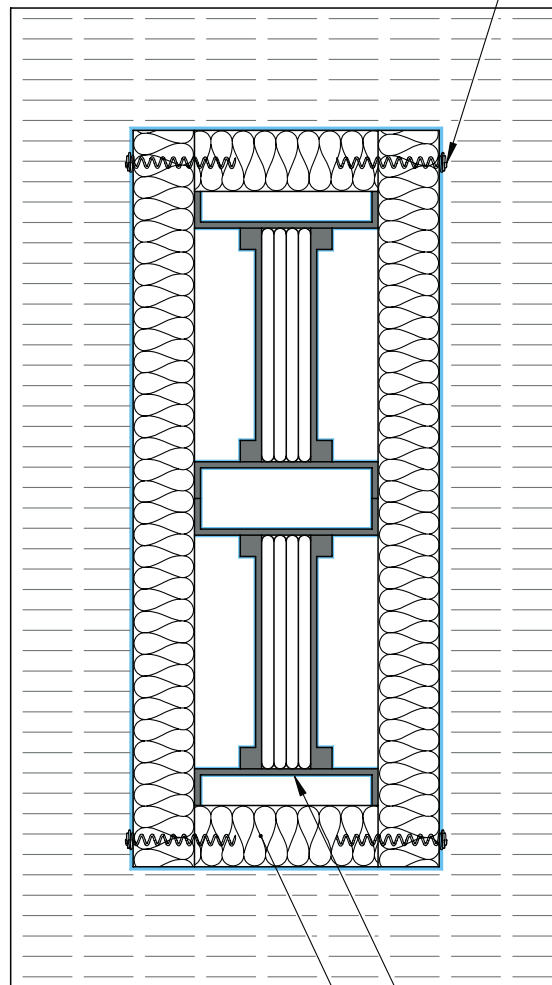
B.1.22.2 Multiple busbars



Position seal:
top, bottom or anywhere
in between

Bottom view

Mulco® Multiscrew FB 90 mm



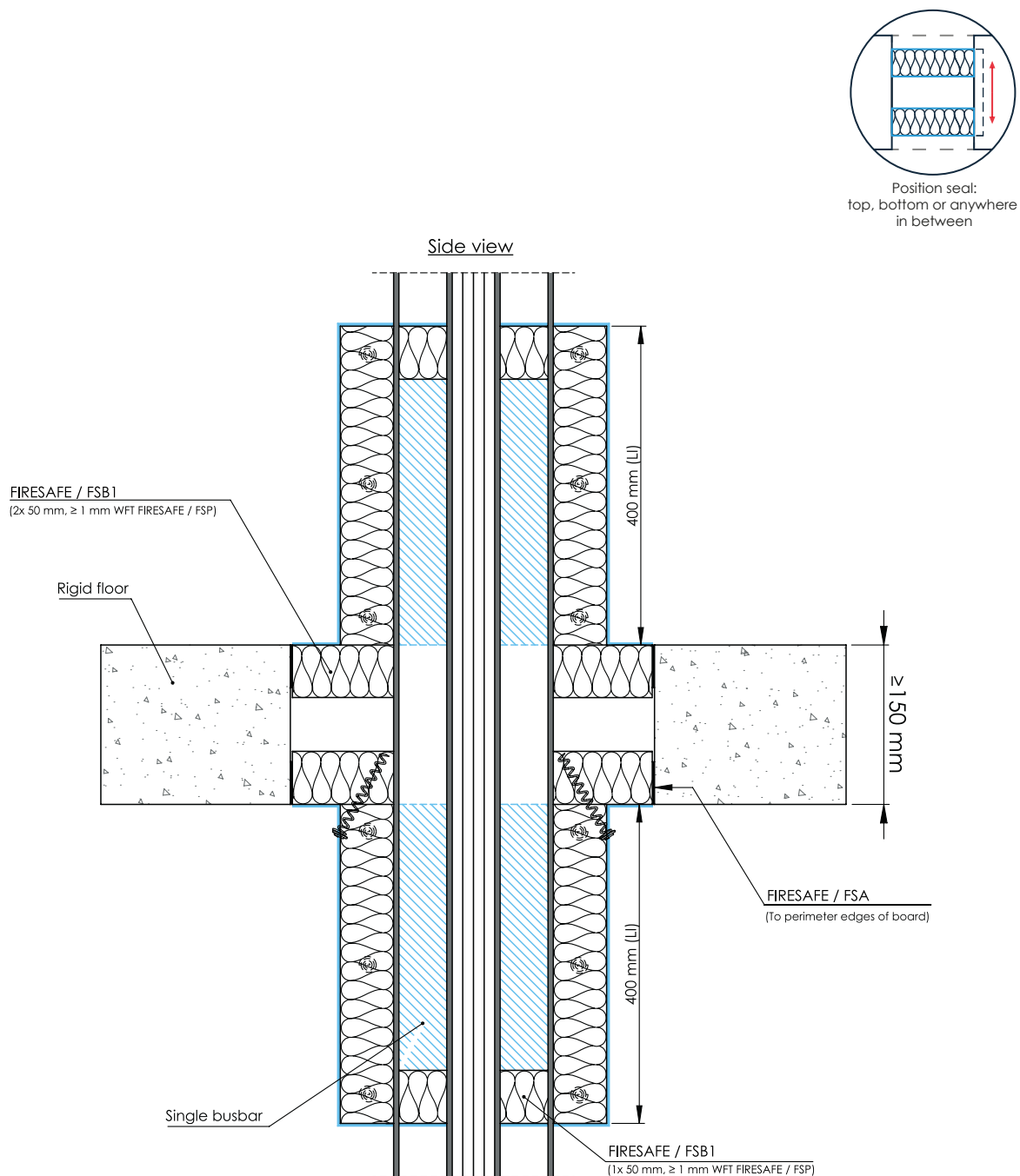
FIRESAFE / FSB1
(1x 50 mm, ≥ 1 mm WFT FIRESAFE / FSP)

Double busbar

Drawing: PBrf-2BB-MFB1.2.10

B.1.23 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Busbars

B.1.23.1 Single busbar

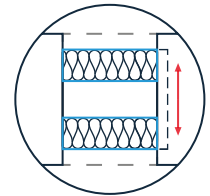


Drawing: PBrf.E-1BB-MFB1.2.10.C

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductors	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

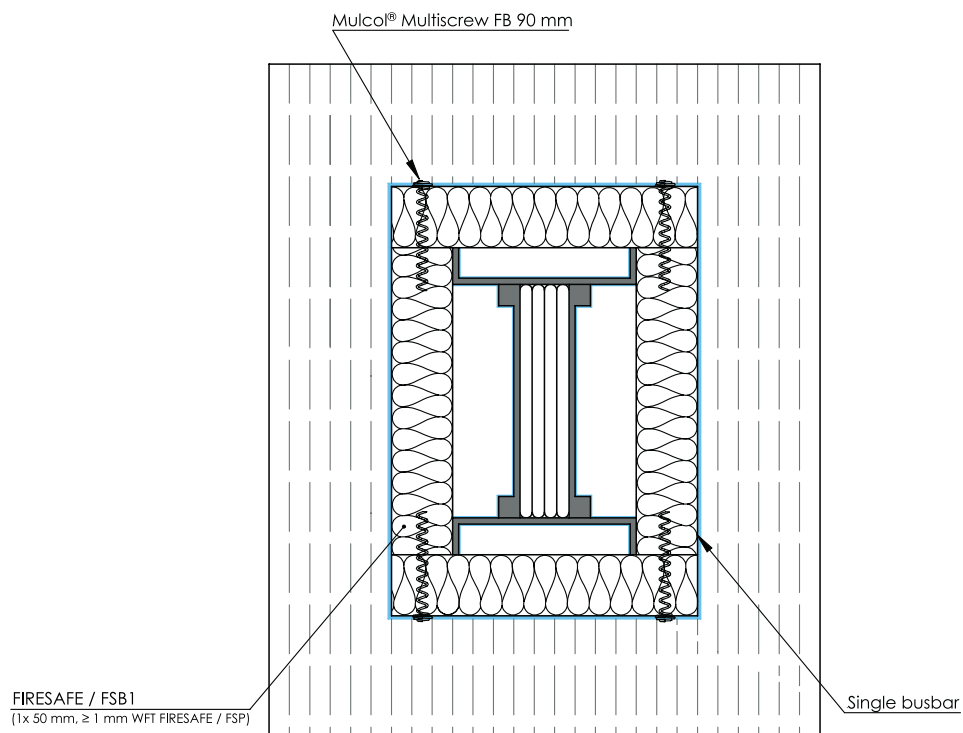
B.1.23 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Busbars

B.1.23.1 Single busbar



Position seal:
top, bottom or anywhere
in between

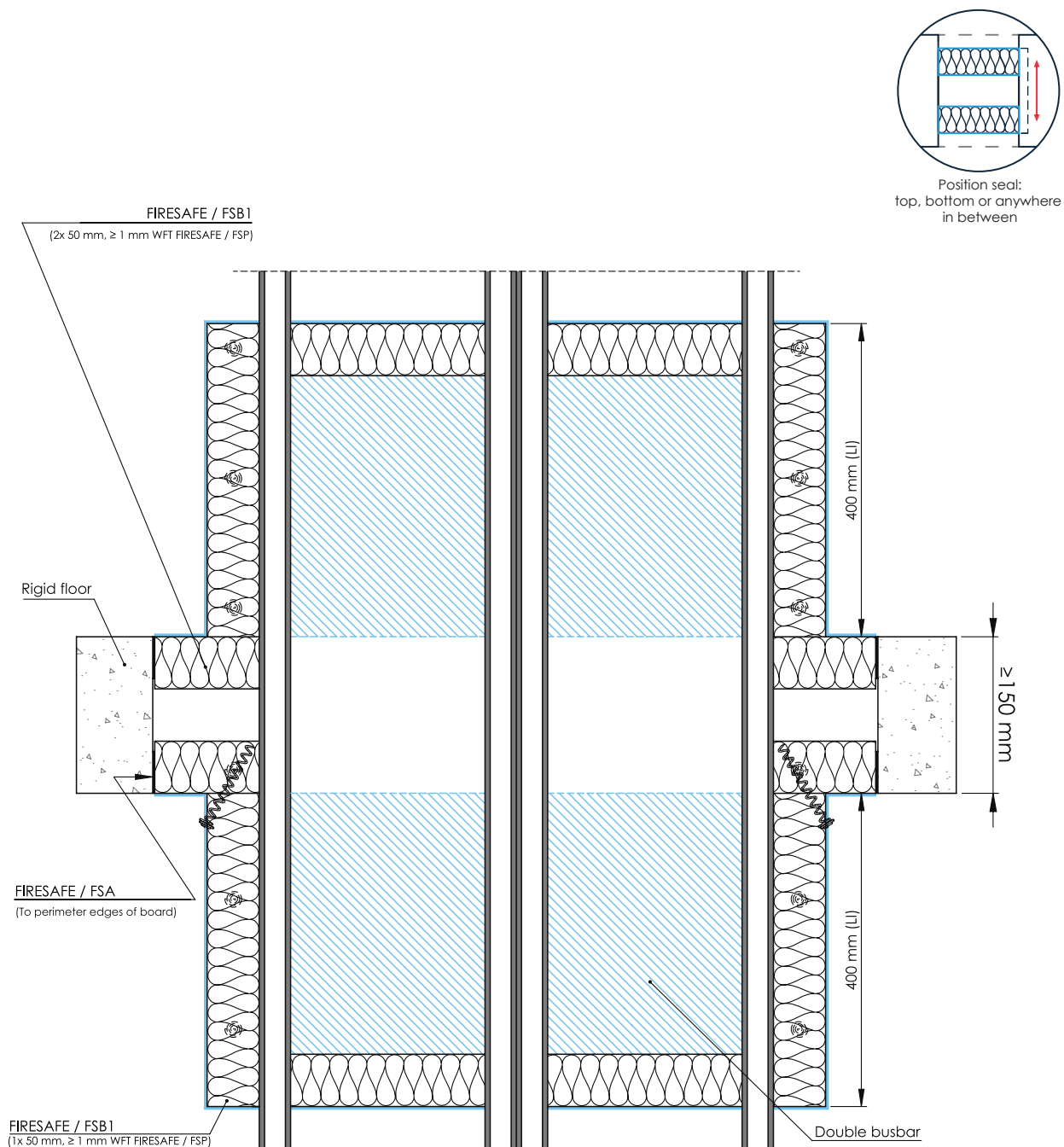
Bottom view



Drawing: PBrf,E-1BB-MFB1.2.10.C

B.1.23 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Busbars

B.1.23.2 Multiple busbars

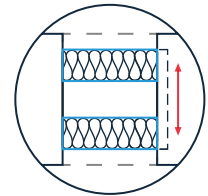


Drawing: PBrf.E-2BB-MFB1.2.10.C

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductors	Type	Thickness (mm)	Configuration	
Double busbar	≤ 150 x 500 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

B.1.23 FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm - Busbars

B.1.23.2 Multiple busbars



Position seal:
top, bottom or anywhere
in between

Bottom view

Mulcol® Multifiscrew FB 90 mm

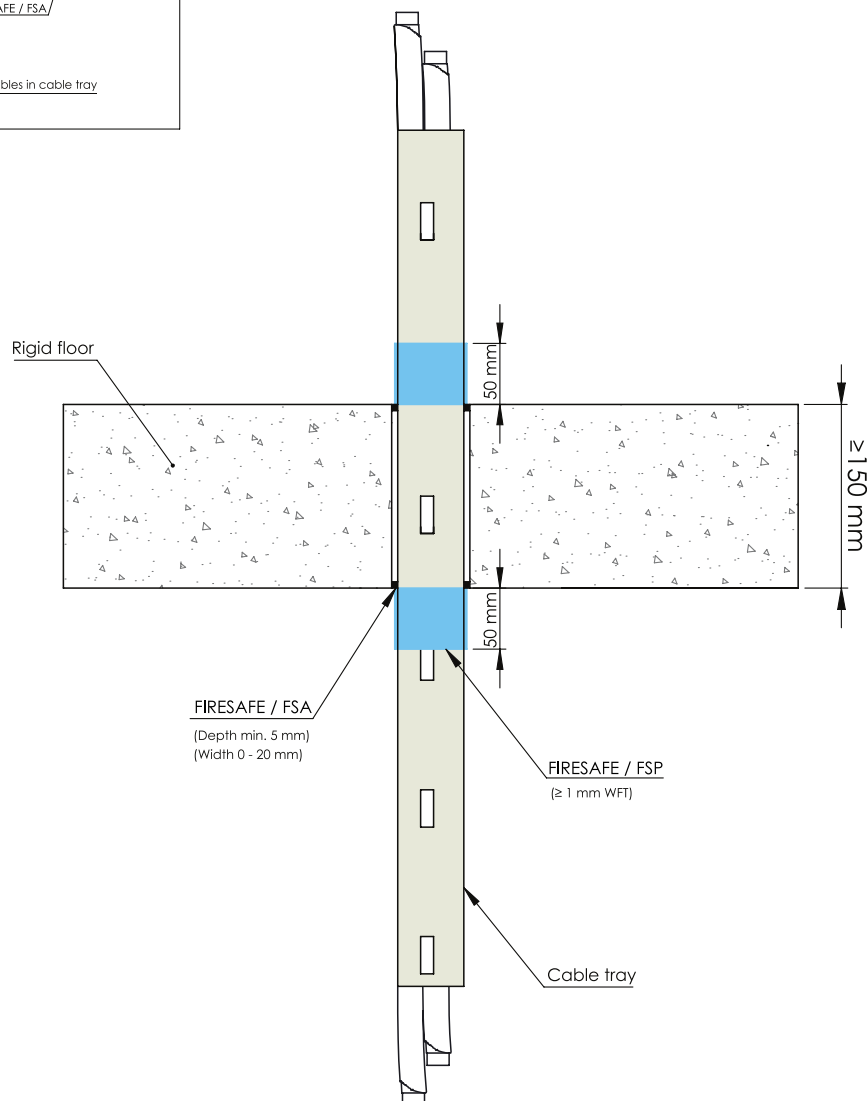
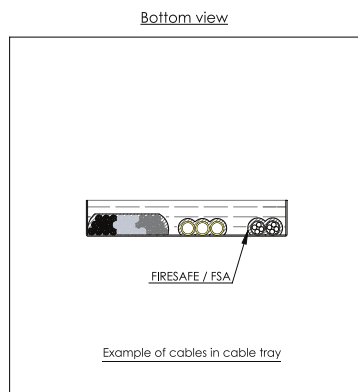
FIRESAFE / FSB1
(1x 50 mm, ≥ 1 mm WFT FIRESAFE / FSP)

Double busbar

Drawing: PBrf.E-2BB-MFB1.2.10.C

B.1.24 Directly through floor - Cables, trays and conduits

B.1.24.1 Cables, trays and conduits - FIRESAFE / FSP - 50 mm

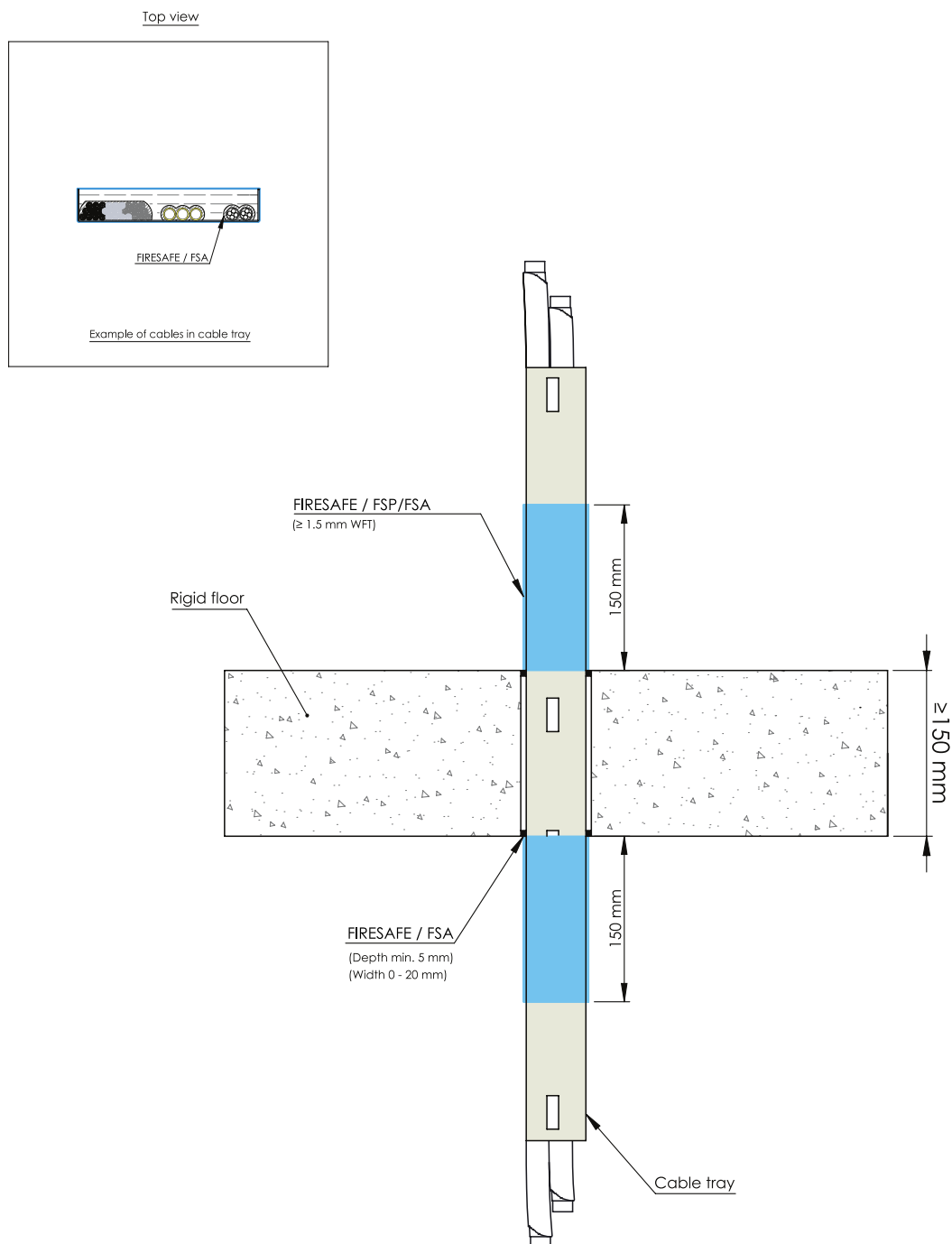


Drawing: RFE-PB-CT-0.10

Services	Coating	Classification
Metal cable ladders	Coat back 50 mm ≥ 1 mm WFT FIRESAFE / FSP	EI 90, E 120
Metal (non-)perforated cable trays		EI 60, E 120
Steel wire mesh cable trays (baskets)		EI 90 U/C, E 120 U/C
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		EI 45, E 120
Cables ≤ Ø 50 mm		
Plastic conduits ≤ Ø 16 mm		
Non sheathed cables ≤ Ø 24 mm		

B.1.24 Directly through floor - Cables, trays and conduits

B.1.24.2 Cables, trays and conduits - FIRESAFE / FSP - 150 mm



Drawing: RFE-PB-CT-0.12

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSA/C	EI 120
Metal (non-)perforated cable trays		
Steel wire mesh cable trays (baskets)		
Non sheathed cables ≤ Ø 17 mm		
Cables ≤ Ø 21 mm in a tied bundle ≤ Ø 100 mm		
Plastic conduits ≤ Ø 16 mm		EI 120 U/C
Cables ≤ Ø 80 mm		EI 90, E 120

B.1.25.1 Single busbar

Rigid floor

FIRESAFE / FSA
(To perimeter edges of boards)

FIRESAFE / FSA
(Depth min. 10 mm
(Width 0 - 20 mm))

FIRESAFE / FSB1
(1x 50 mm, ≥ 1 mm WFT FIRESAFE / FSP)

Single busbar

400 mm (L1)

400 mm (L1)

≥150 mm

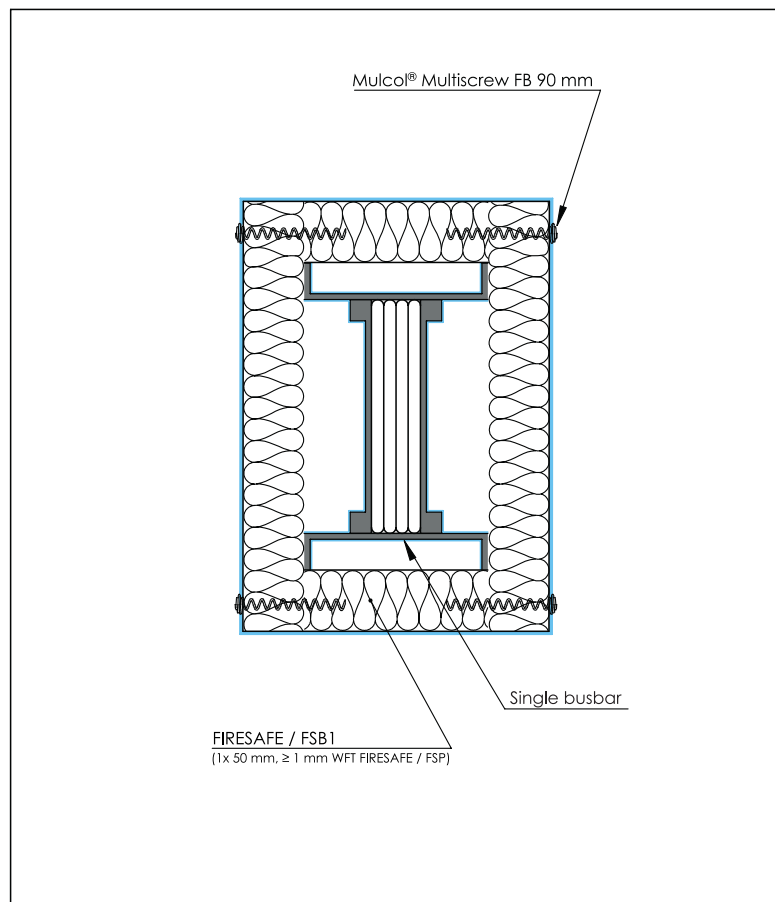
Drawing

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductors	Type	Thickness (mm)	Configuration	
Single busbar	≤ 150 x 250 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

B.1.25 Directly through floor - Busbars

B.1.25.1 Single busbar

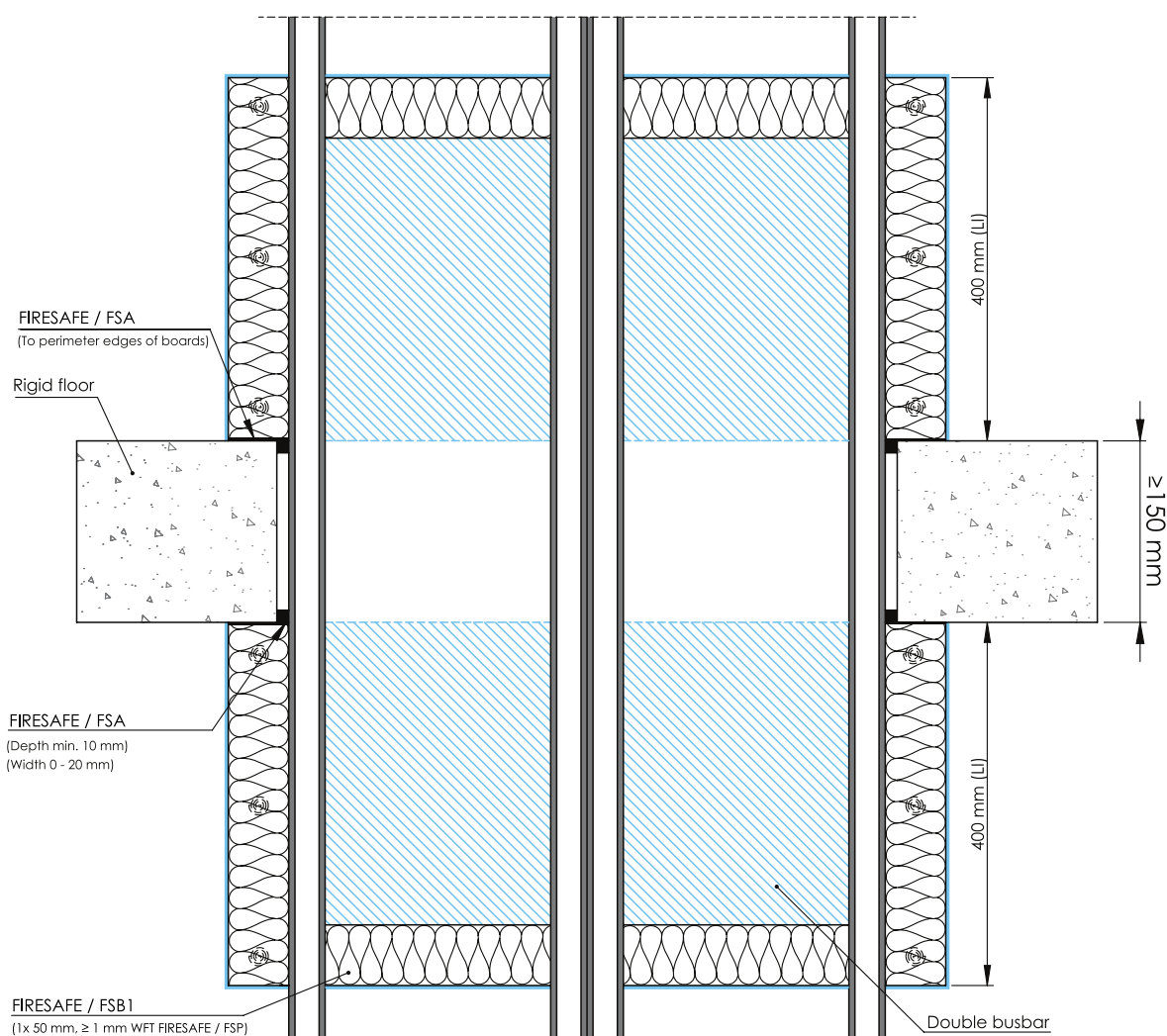
Bottom view



Drawing: RFE-1BB-0.10

B.1.25 Directly through floor - Busbars

B.1.25.2 Multiple busbars



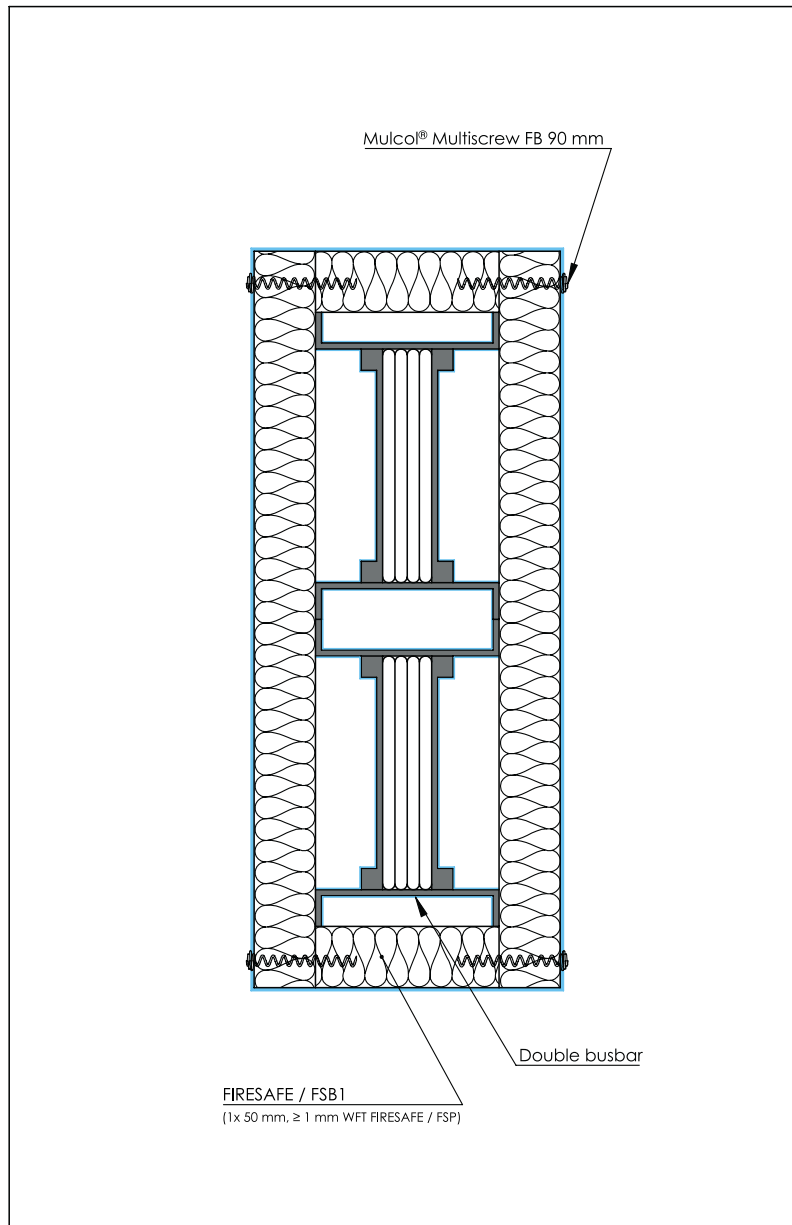
Drawing: RFE-2BB-0.10

Services	Service dimensions		Insulation			Classification
	Outside dimension	Conductors	Type	Thickness (mm)	Configuration	
Double busbar	≤ 150 x 500 mm	max. 4 x ≤ 200 mm width (per busbar)	FIRESAFE / FSB1	50	LI 400 / CI	EI 120

B.1.25 Directly through floor - Busbars

B.1.25.2 Multiple busbars

Bottom view



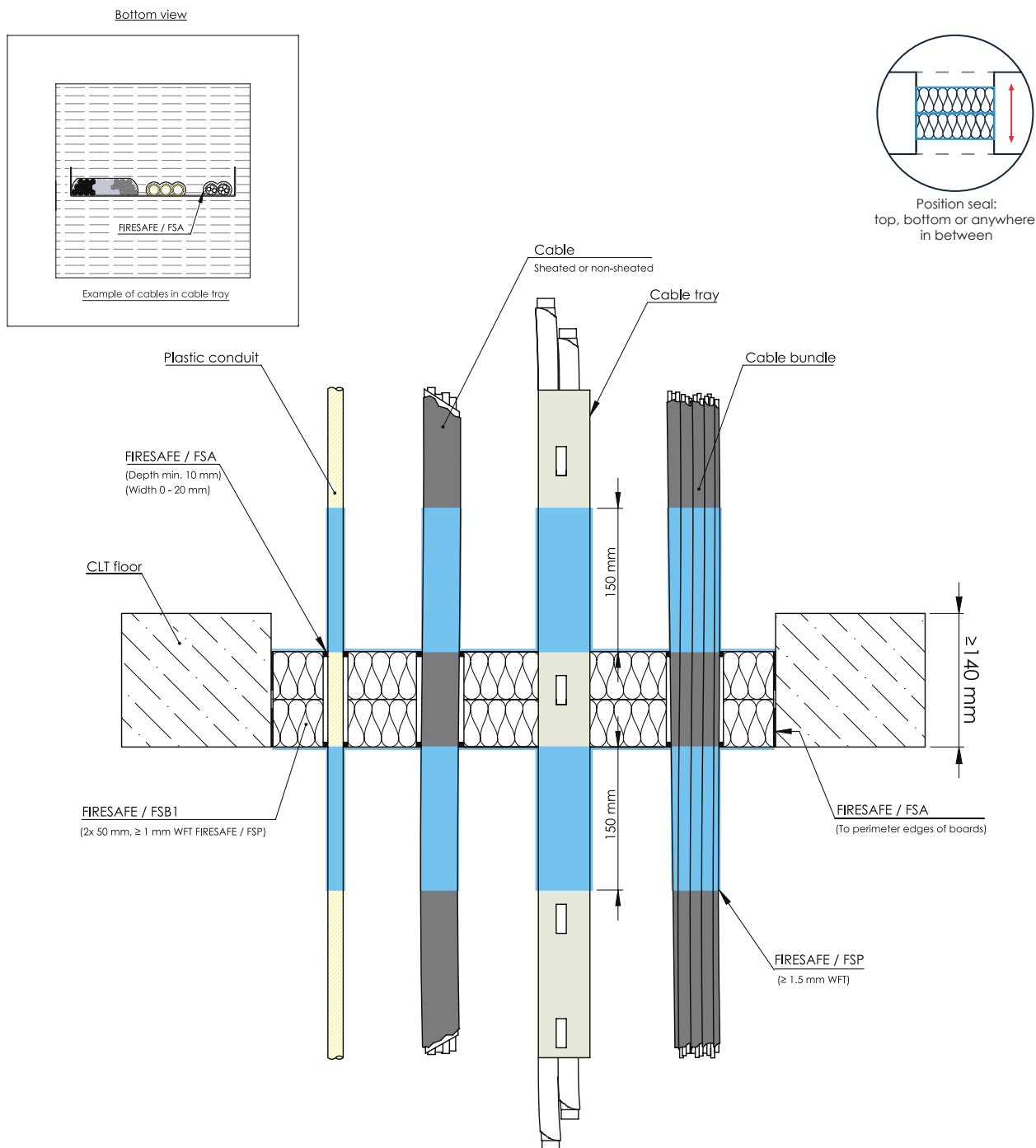
Drawing: RF.E-2BB-0.10

B.2.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

B.2.1.1

Cables, trays and conduits - FIRESAFE / FSP



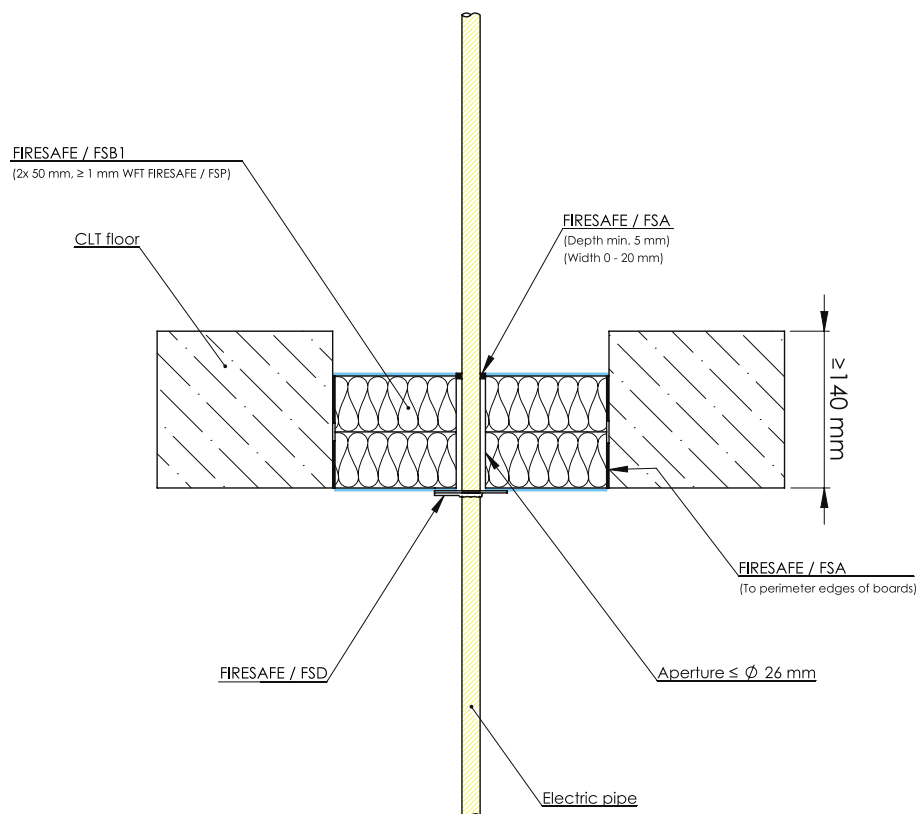
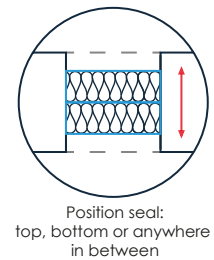
Drawing: FCLT.E-CT-4-MFB1.2.10

Services	Coating	Classification
Metal cable ladders	Coat back 150 mm ≥ 1.5 mm WFT FIRESAFE / FSP	EI 90, E 120
Metal (non-)perforated cable trays		EI 60, E 120
Steel wire mesh cable trays (baskets)		EI 90 U/C, E 120 U/C
Cables $\leq \varnothing 21$ mm in a tied bundle $\leq \varnothing 100$ mm		EI 45, E 120
Cables $\leq \varnothing 80$ mm		
Plastic conduits $\leq \varnothing 16$ mm		
Non sheathed cables $\leq \varnothing 24$ mm		

B.2.1.2 Single plastic conduits - FIRESAFE / FSD

a - Overlay size
(Minimum 10 mm overlay)

b - FIRESAFE / FSD



Services	Product	Aperture (mm)	Sealing (mm)	Classification
Plastic conduits $\leq \varnothing 19$ mm, with or without cables	FIRESAFE / FSD bottom of floor	$\leq \varnothing 26$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	E 60 U/C

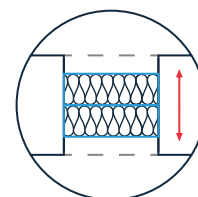
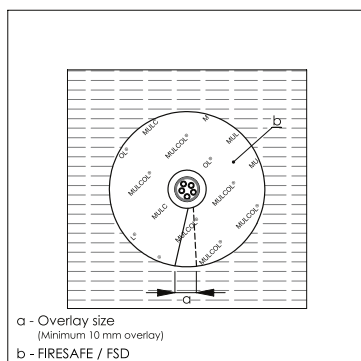
B.2.1

FIRESAFE / FSB1 - 2x 50 mm no cavity - Cables, trays and conduits

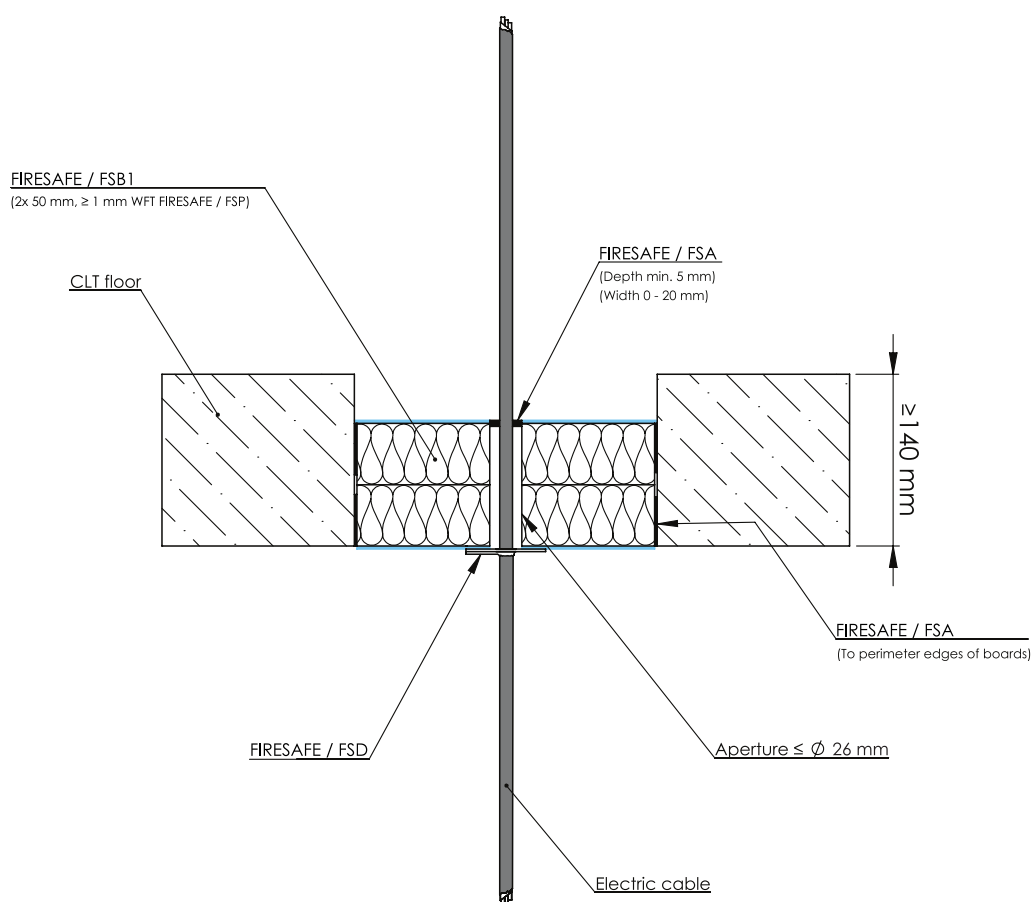
B.2.1.3

Single cables - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere



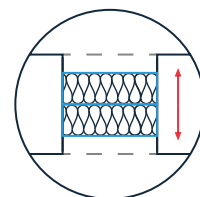
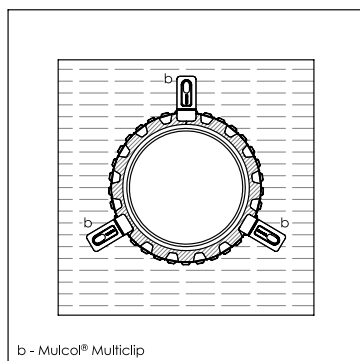
Drawing: PBrf.E-MFB1-EC-M2.0.10

Services	Product	Aperture (mm)	Sealing (mm)	Classification
Cables $\leq \varnothing 12 \text{ mm}$ (e.g. YMKV 5x2.5 mm ²)	FIRESAFE / FSD bottom of floor	$\leq \varnothing 26$	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	E 60

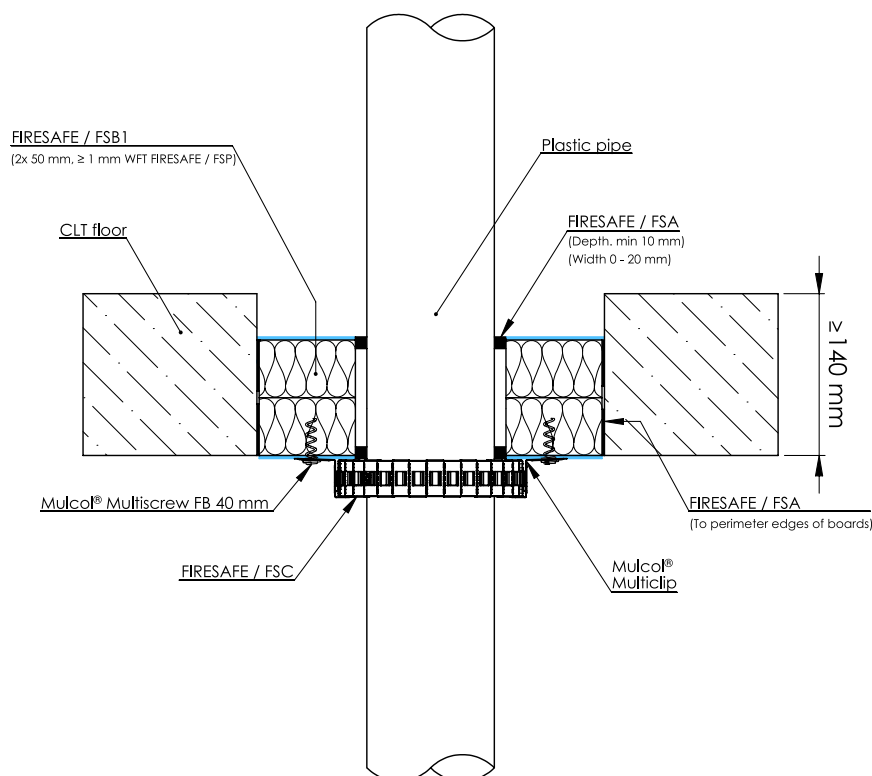
B.2.2 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.2.2.1 Plastic pipes - FIRESAFE / FSC

Bottom view



Position seal:
top, bottom or anywhere
in between

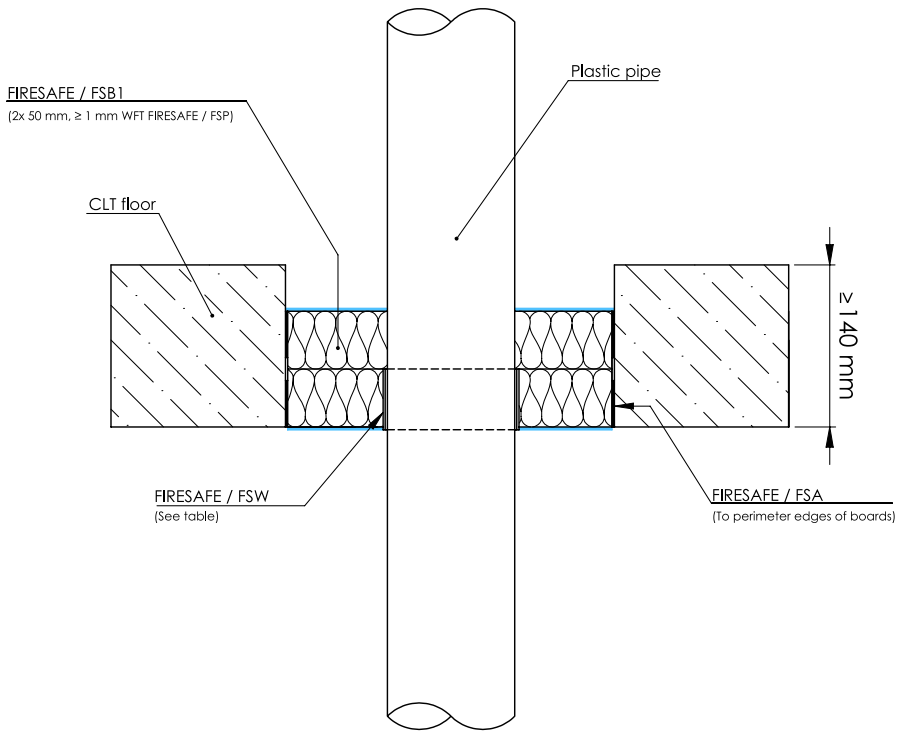
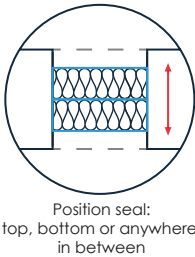
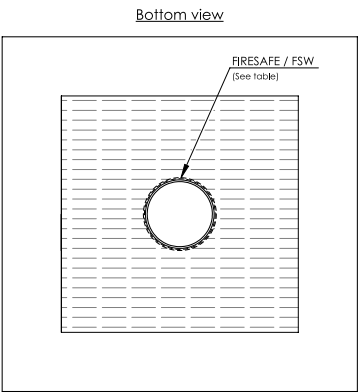


Drawing: FCLT.E-MC30-PP-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
PE(-HD) / PE-X / ABS / SAN+PVC	≤ Ø 110	2.7 - 6.6	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 45 U/U
PP		2.7 - 6.3			
PVC(-U/-C)					

B.2.2 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.2.2.2 Plastic pipes - FIRESAFE / FSW

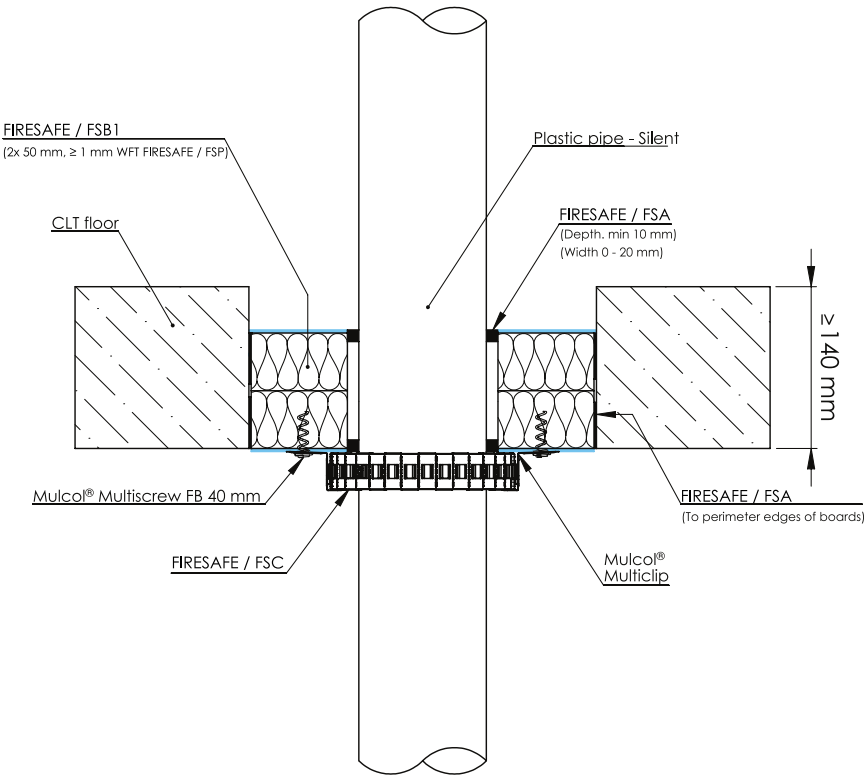
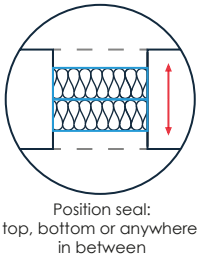
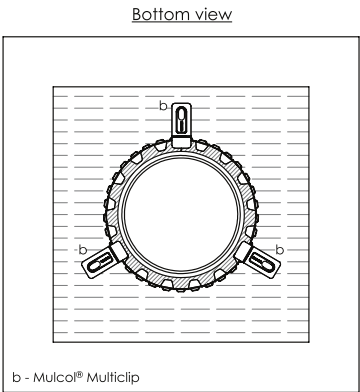


Drawing: FCLT.E-PP-MW2-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
PVC(-U/-C)	≤ Ø 110	3.2	FIRESAFE / FSW (2 layers)	EI 120 U/C

B.2.2 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.2.2.3 Plastic pipes (Silent) - FIRESAFE / FSC

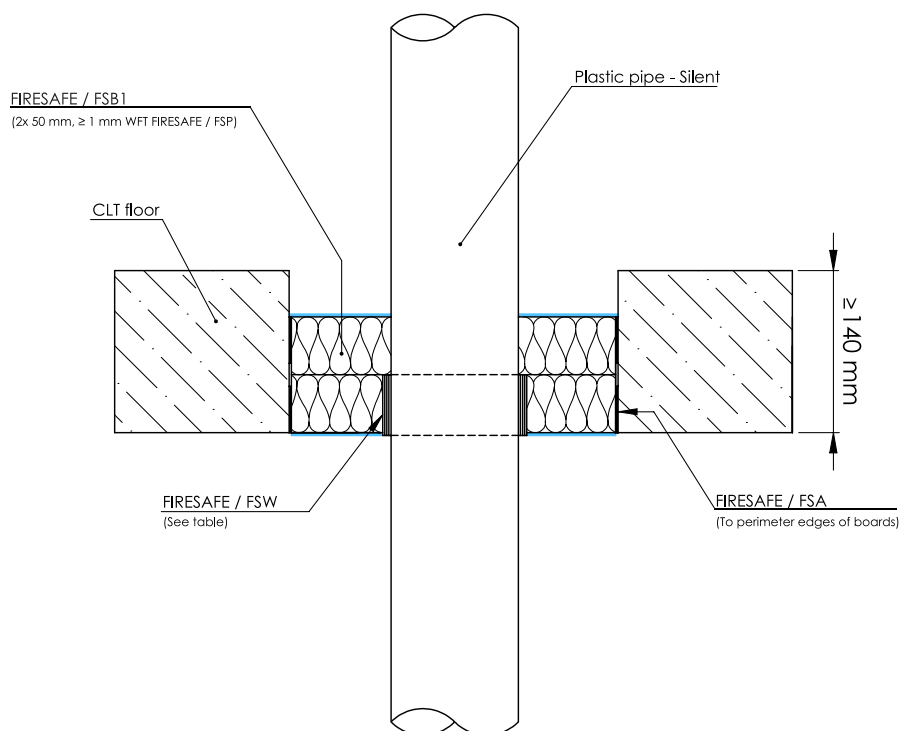
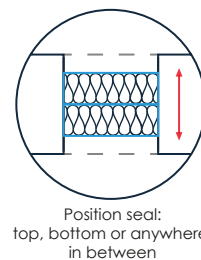
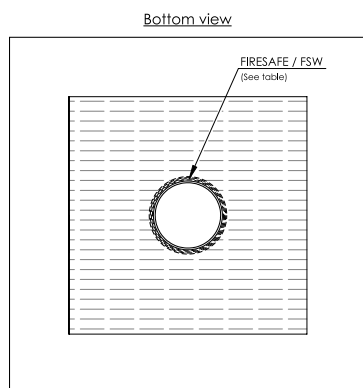


Drawing: FCLT.E-MC30-PP-MFB1.2.10

Services	Pipe dimensions (mm)		System	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Geberit Silent dB20	$\leq \varnothing 110$	6.0	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 10 (wxd)	EI 45 U/U

B.2.2 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.2.2.4 Plastic pipes (Silent) - FIRESAFE / FSW

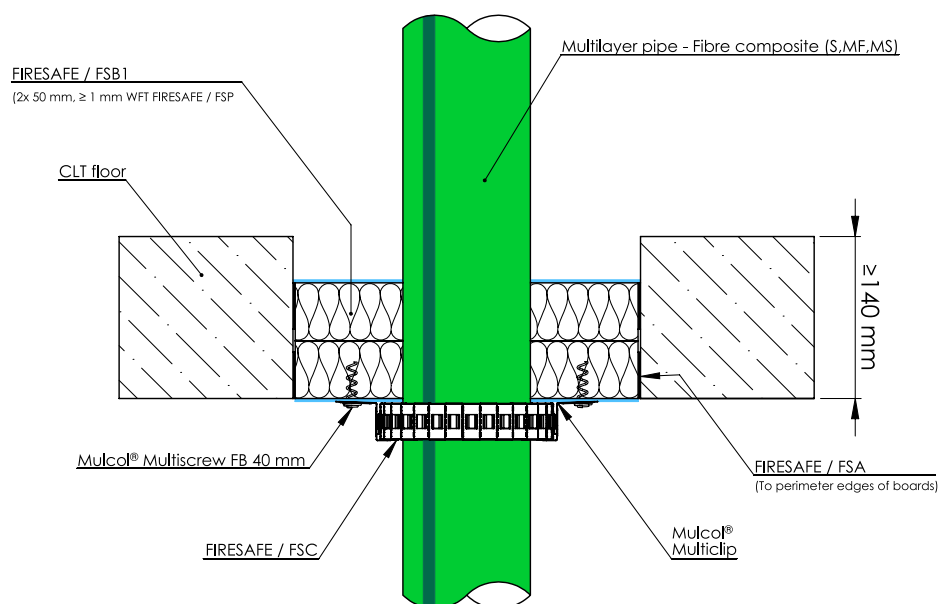
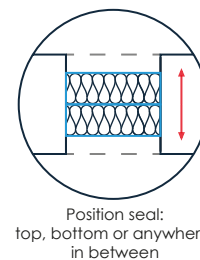
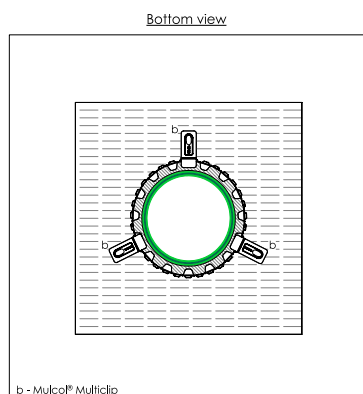


Drawing: PBrf.E-PPS-MW2-MFB1.2.10

Services	Pipe dimensions (mm)		Product	Classification
	Outer dimension	Wall thickness		
Poloplast PoloKal NG	≤ Ø 50	2.0	FIRESAFE / FSW (2 layers)	EI 120 U/U
	≤ Ø 110	3.4		
Geberit Silent dB20	≤ Ø 56	3.2		
	≤ Ø 110	6.0	FIRESAFE / FSW (4 layers)	EI 120 U/C
Poloplast PoloKal NG	≤ Ø 125	3.9		

B.2.2 FIRESAFE / FSB1 - 2x 50 mm no cavity - Combustible pipes

B.2.2.5 PP-R Multilayer pipes - FIRESAFE / FSC

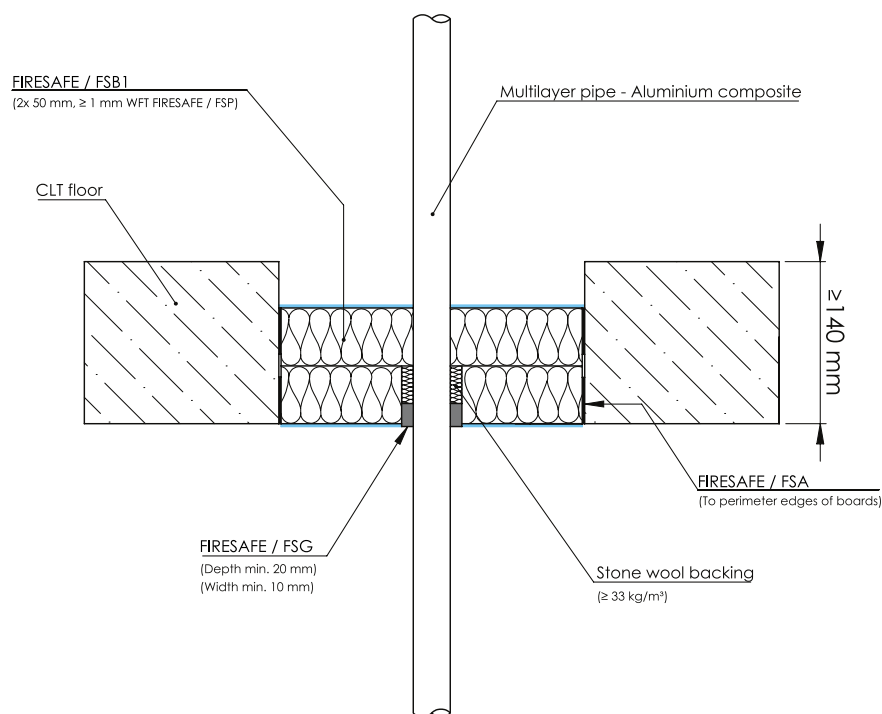
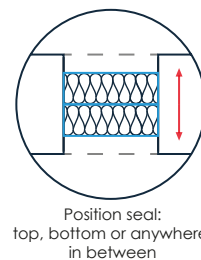
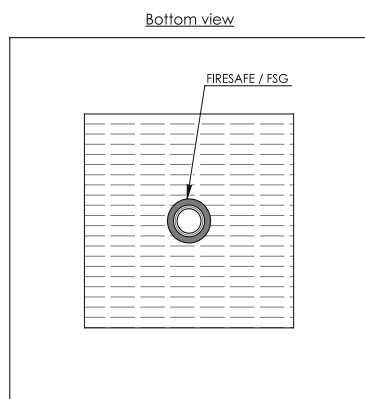


Drawing: FCLT.E-MC30-MLF-MFB1.2.10

Services	Pipe dimensions (mm)		System	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Aquatherm Green	≤ Ø 50	6.9	FIRESAFE / FSC	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 45 U/C
Aquatherm Blue	≤ Ø 110	10.0			

B.2.3 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.2.3.1 Multilayer pipes (MLC) - FIRESAFE / FSG

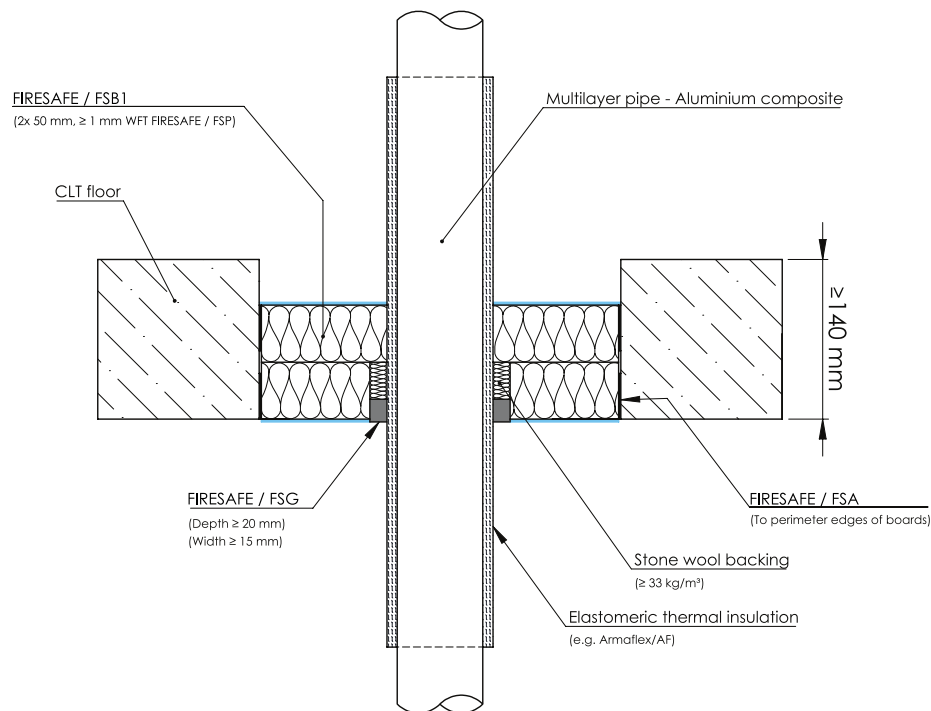
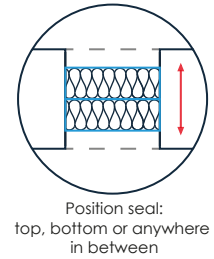
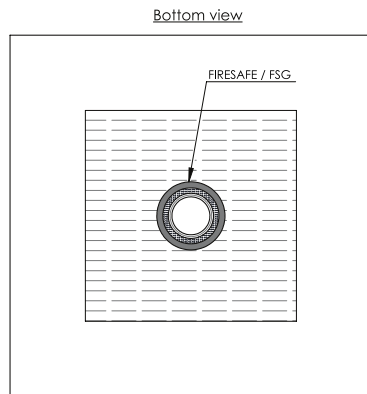


Drawing: FCLT.E-MLA-MFB1-G1.18.10

Services	Pipe dimensions (mm)		Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	≤ Ø 32	3.0	FIRESAFE / FSG ≥ 10 x 20 (wxd)	Stone wool (≥ 33 kg/m³)	EI 30 U/C E 90 U/C

B.2.3 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.2.3.2 Multilayer pipes (MLC) - Elastomer LS 400 / CS - FIRESAFE / FSG

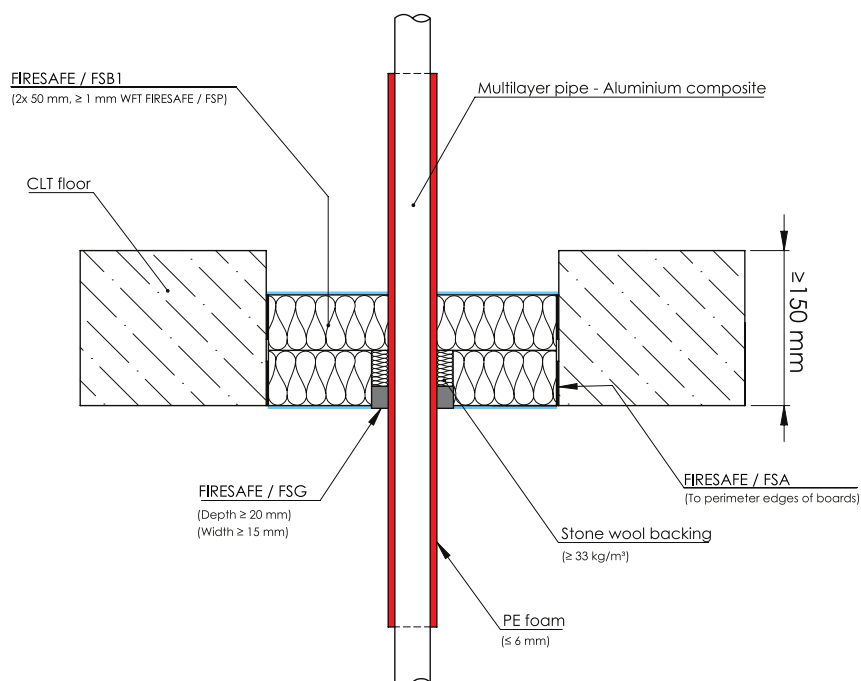
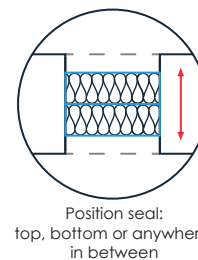
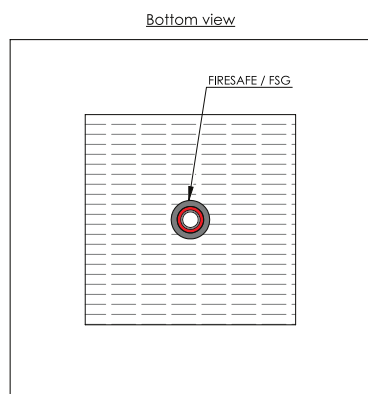


Drawing: FCLT.E-MLA-MFB1-G1.4.22

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 75	6.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	9 - 32	LS 400 / CS	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m ³)	EI 90 U/C

B.2.3 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.2.3.3 Multilayer pipes (MLC) - PE foam LS 300 / CS - FIRESAFE / FSG



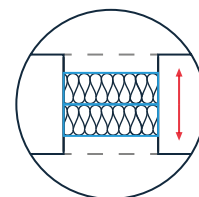
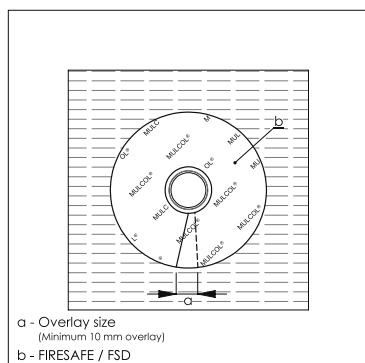
Drawing: FCLT.E-MLA-MFB1-G1.4.23

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Backing	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Multilayer pipe (MLC)	≤ Ø 32	3.0	Henco PE foam	≤ 6	LS 300 / CS LI 300 / CI	FIRESAFE / FSG ≥ 15 x 20 (wxd)	Stone wool (≥ 35 kg/m ³)	EI 30 U/C E 90 U/C

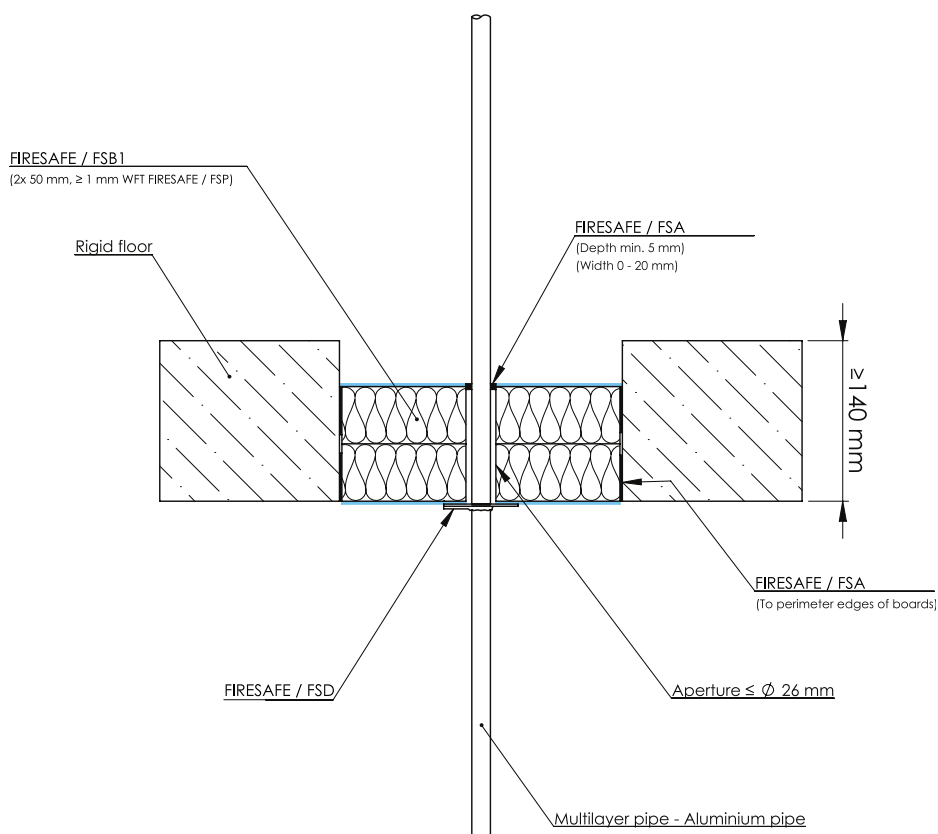
B.2.3 FIRESAFE / FSB1 - 2x 50 mm no cavity - Multilayer pipes (MLC)

B.2.3.4 Multilayer pipes (MLC) - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere
in between



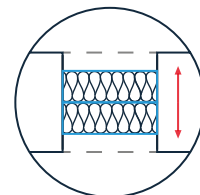
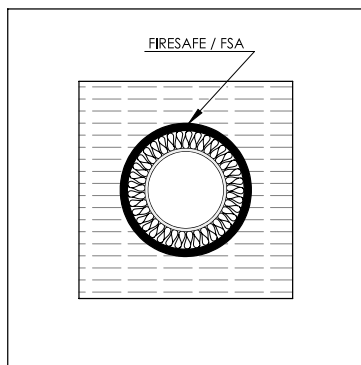
Drawing: FCLT.E-MFB1-MLA-M2.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Multilayer pipes (MLC)	$\leq \varnothing 16$	2.0	FIRESAFE / FSD	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	E 60 U/C

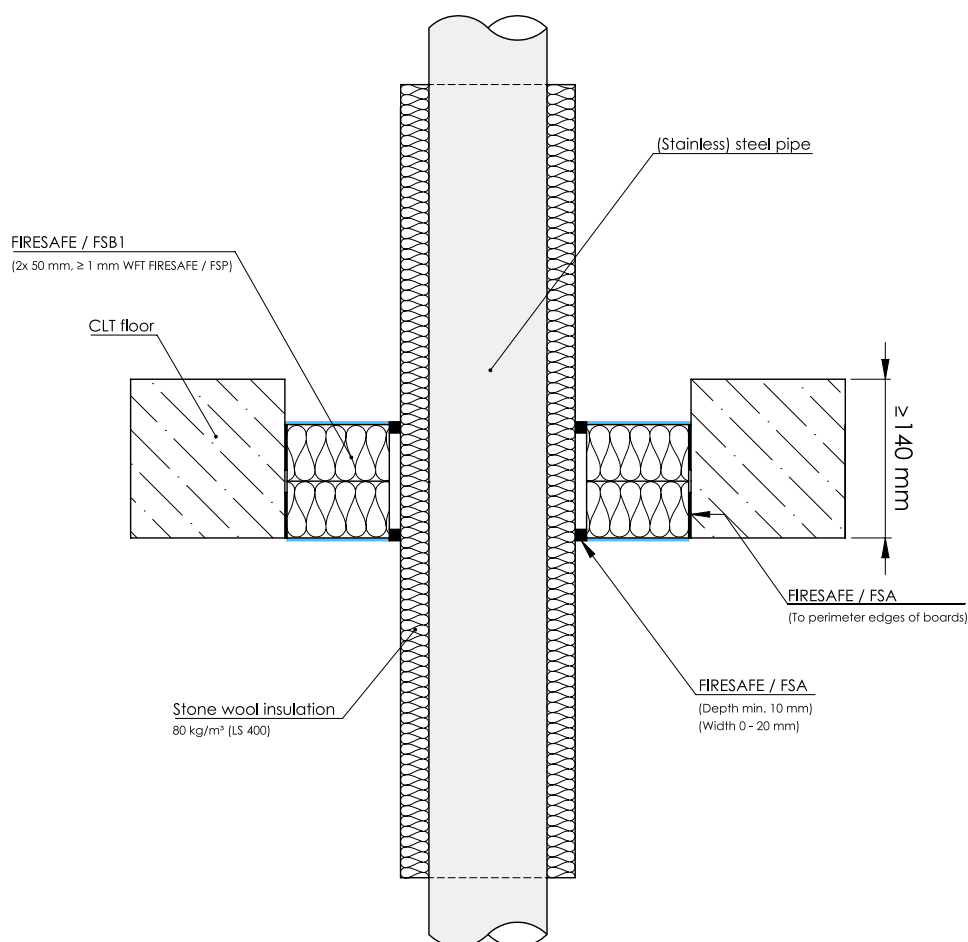
B.2.4 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated mineral wool

B.2.4.1 Copper and steel pipes - Stone wool LS 400 / CS

Bottom view



Position seal:
top, bottom or anywhere
in between

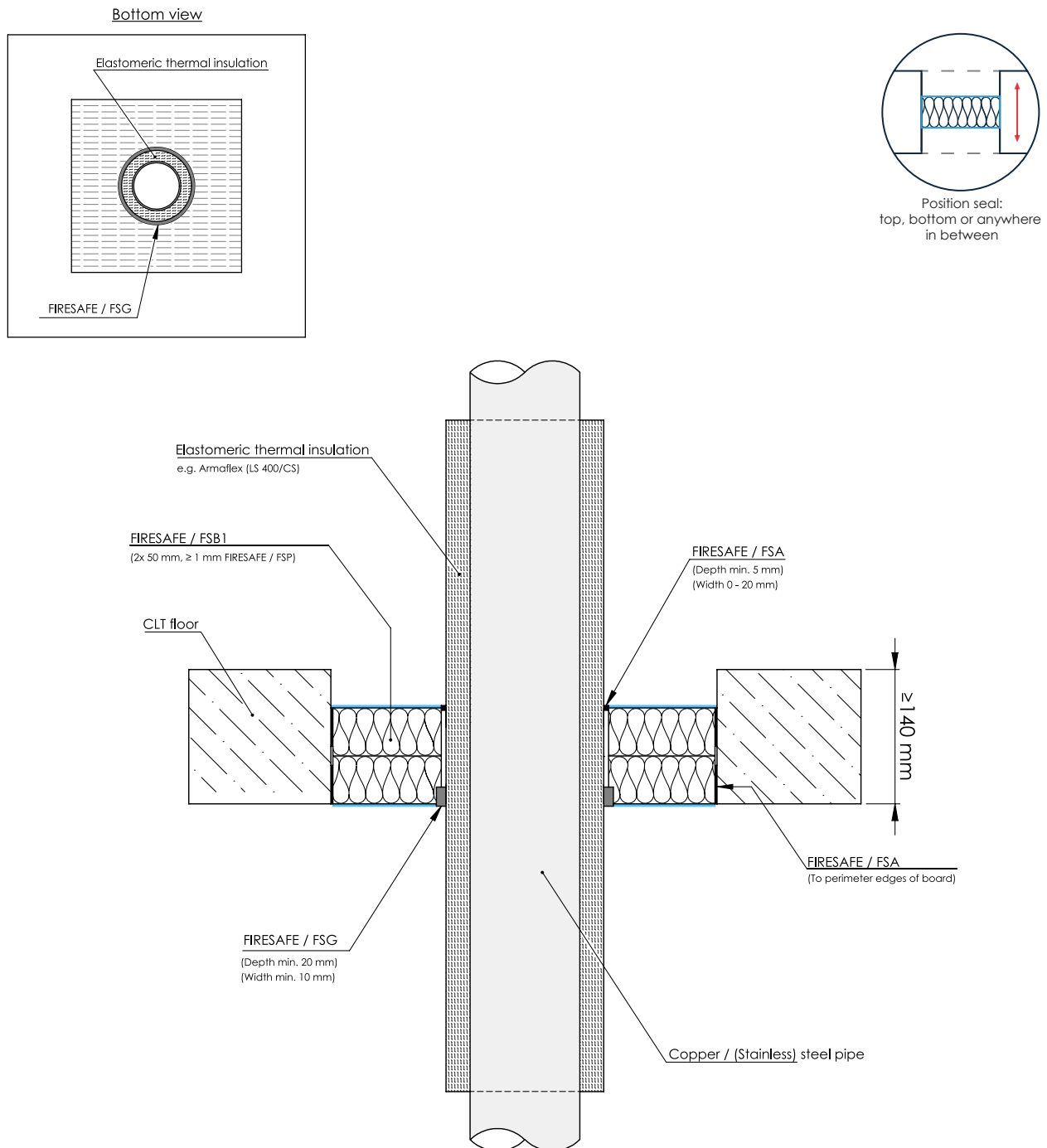


Drawing: FCLT.E-ST-MFB1.2.20

Services	Pipe dimensions (mm)		Insulation			Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration		
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	Stone wool (≥ 80 kg/m³)	25	LS 400 / CS	FIRESAFE / FSA 0-20 x ≥ 5 (wxd)	EI 120 C/U
	≤ Ø 54	≥ 1.5					
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		30			

B.2.5 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.2.5.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG



Drawing: FCLT.E-ST-MFB1-G2.4.22

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U, E 120 C/U
				8.5 - 33.5				EI 60 C/U, E 90 C/U
	≤ Ø 54	≥ 1.5		13.5	CS			EI 120 C/U
				13.5 - 38	LS 400 / CS			EI 90 C/U, E 120 C/U
≤ Ø 26.9	≥ 2.3	8.5 - 35		CS				EI 120 C/U
		≤ Ø 114.3			≥ 3.6			15

B.2.5 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.2.5.1 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSG

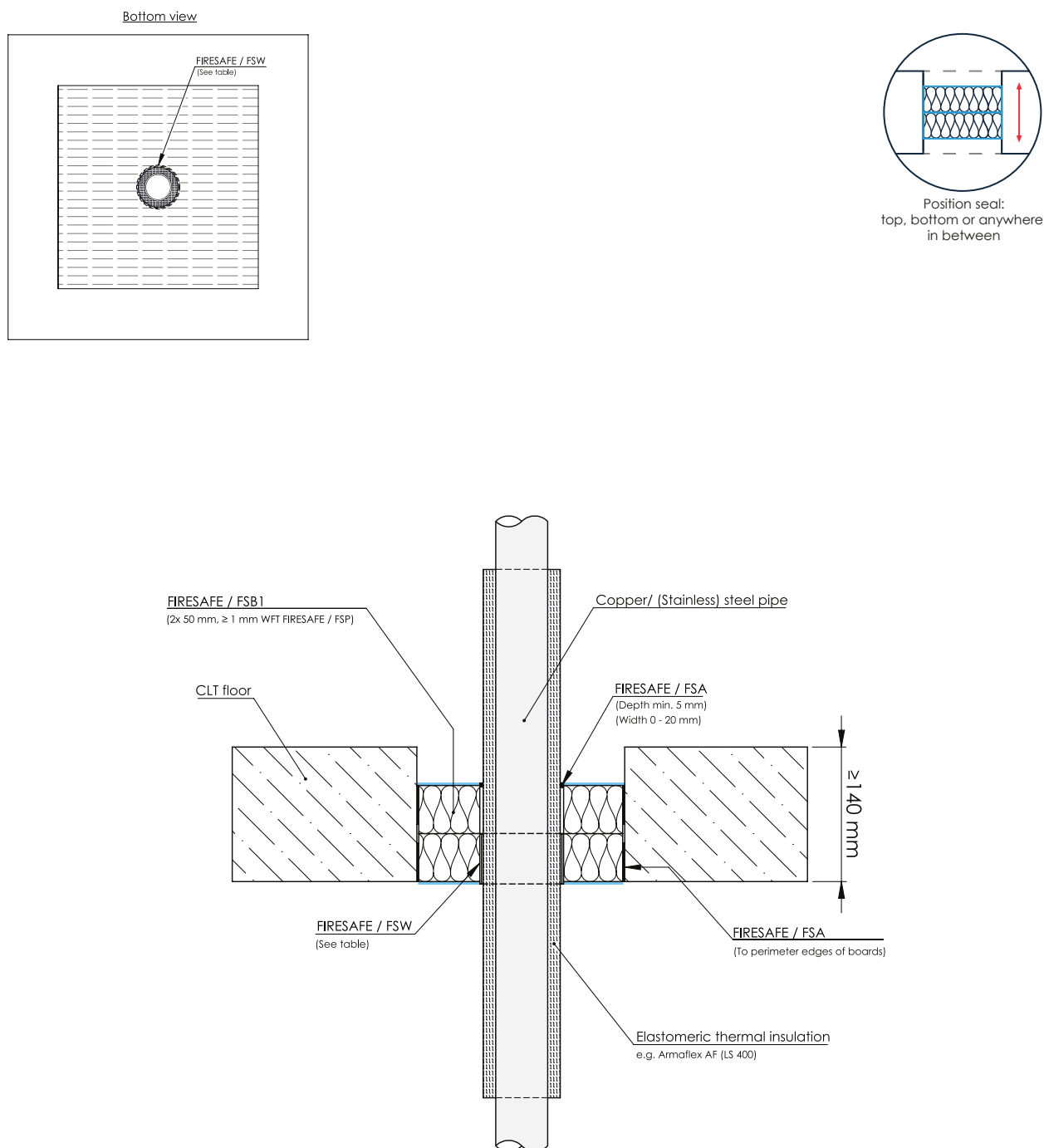
Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3	Kaiflex KK Plus (min. class B-s2, d0 B _L -s2, d0)	8.5	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex NH (min. class D-s3, d0 D _L -S3, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 120 C/U
	≤ Ø 54	≥ 1.5		13	LS 400 / CS			EI 90 C/U
	≤ Ø 54	≥ 1.5		13 - 25	LS 400 / CS			EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25	LS 400 / CS			EI 120 C/U
(Stainless) Steel / cast iron	≤ Ø 114.3	≥ 3.6		19 - 25	LS 400 / CS			

Services	Pipe dimensions (mm)		Insulation			Product (mm)	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 22	≥ 1.0	ArmaFlex Ultima (min. class B-s1, d0 B _L -S1, d0)	9 - 25	LS 400 / CS	FIRESAFE / FSG ≥ 10 x 20 (wxd)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 60 C/U E 120 C/U
				25 - 32				EI 90 C/U E 120 C/U
	≤ Ø 54	≥ 1.5		13 - 32				EI 60 C/U E 120 C/U
				13 - 32	CS			EI 90 C/U E 120 C/U
				32	LS 400 / CS			EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 26.9	≥ 2.3		9 - 25				EI 60 C/U E 90 C/U
				25				EI 90 C/U E 120 C/U
	≤ Ø 114.3	≥ 3.6		13				EI 60 C/U E 120 C/U
				13 - 32	EI 60 C/U E 120 C/U			

B.2.5 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes insulated elastomer

B.2.5.2 Copper and steel pipes - Elastomer LS 400 / CS - FIRESAFE / FSW



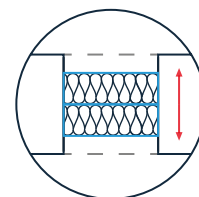
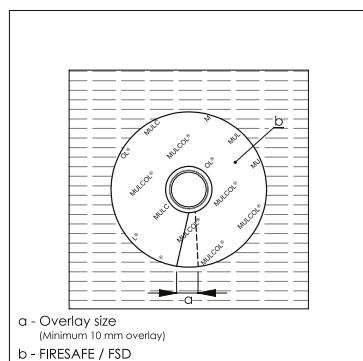
Drawing: FCLT.E-CU-MW2-MFB1.2.22

Services	Pipe dimensions (mm)		Insulation			Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness	Type	Thickness (mm)	Configuration			
Copper / (stainless) steel / cast iron	≤ Ø 12	≥ 1.0	ArmaFlex AF (min. class B-s3, d0 B _L -s3, d0)	11	LS 400 / CS	FIRESAFE / FSW (2 layers)	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	EI 120 C/U
				11 - 28.5				EI 90 C/U
	≤ Ø 54	≥ 1.5		13.5 - 28.5				EI 45 C/U E 90 C/U
				28.5				EI 90 C/U
(Stainless) Steel / cast iron	≤ Ø 168.3	≥ 4.5		13 - 19			EI 45 C/U E 120 C/U	

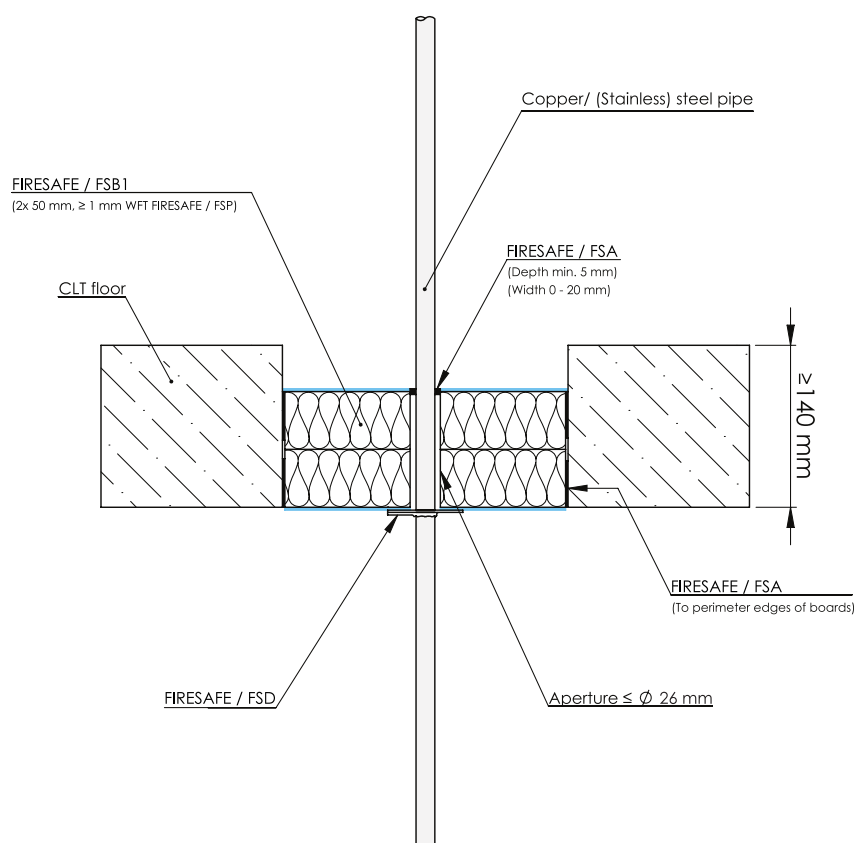
B.2.6 FIRESAFE / FSB1 - 2x 50 mm no cavity - Metal pipes uninsulated

B.2.6.1 Copper and steel pipes - FIRESAFE / FSD

Bottom view



Position seal:
top, bottom or anywhere
in between

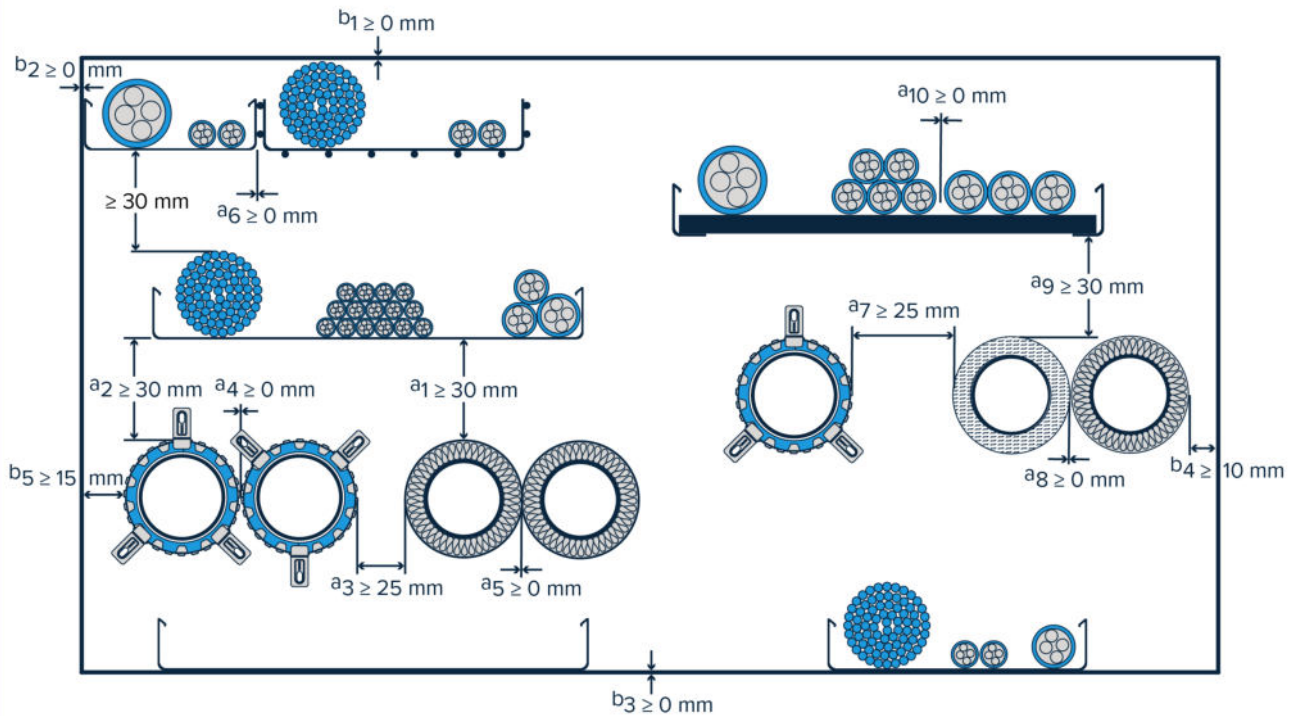


Drawing: FCLTE-CU-MFB1-M2.0.10

Services	Pipe dimensions (mm)		Product	Sealing (mm)	Classification
	Outer dimension	Wall thickness			
Copper / (stainless) steel / cast iron	≤ Ø 15	≥ 1.0	FIRESAFE / FSD bottom of floor	FIRESAFE / FSA 0-20 x ≥ 5 (wxd) top of floor	E 60 C/U

C.1 Wall constructions - General

C.1.1 Mutual distances & distance to first support



Mutual distances Mixed Penetration Seal – FIRESAFE / FSP System

- a_1 Distance between cables/cable trays and metal pipes
- a_2 Distance between cables/cable trays and plastic pipes
- a_3 Distance between metal pipes and plastic pipes
- a_4 Distance between plastic pipes
- a_5 Distance between metal pipes with non-combustible insulation
- a_6 Distance between cable trays
- a_7 Distance between plastic pipes and pipes with combustibile insulation
- a_8 Distance between pipes with non-combustible insulation and pipes with combustibile insulation
- a_9 Distance between cables/cable trays and pipes with combustibile insulation
- a_{10} Distance between cables stacked together or in a row
- b_1 Distance between cables/cable trays and the upper seal edge
- b_2 Distance between cables/cable trays and the side seal edge
- b_3 Distance between cables/cable tray and the lower seal edge
- b_4 Distance between metal pipes and all seal edges
- b_5 Distance between plastic pipes and all seal edges

Service support construction

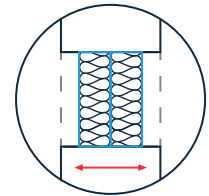
First support for all services at 450 mm, except cable trays at 250 mm.

C.1.2

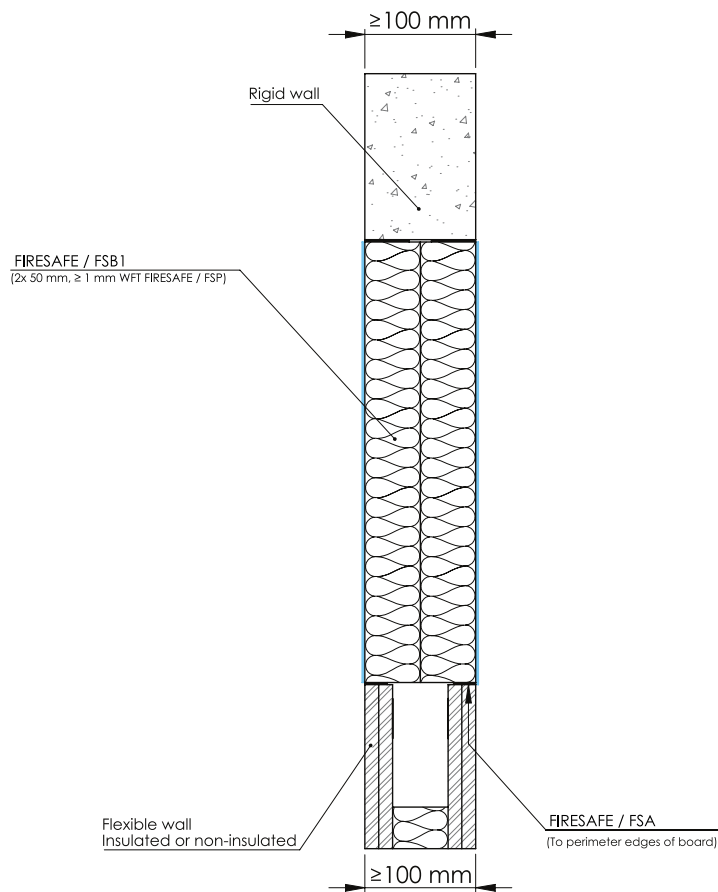
Wall constructions - Maximum seal dimensions flexible or rigid wall

C.1.2.1

Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm no aperture framing



Position seal:
right, left or anywhere
in between



Drawing: PBfw.E-BS-MFB1.2.10

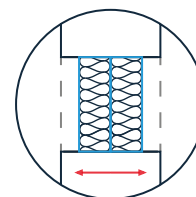
Services	Classification
Maximum seal size 1500 x 2500 mm (width x height or height x width) With a maximum surface of 3 m ²	EI 60
Maximum circular seal size Ø 1954 mm	
Maximum seal size 1200 x 1200 mm With a maximum surface of 1.44 m ²	EI 60, E 90
Maximum circular seal size Ø 1354 mm	
Maximum seal size 625 x 475 mm (w x h) With a maximum surface of 0.24 m ²	EI 120
Maximum circular seal size Ø 550 mm	

C.1.2

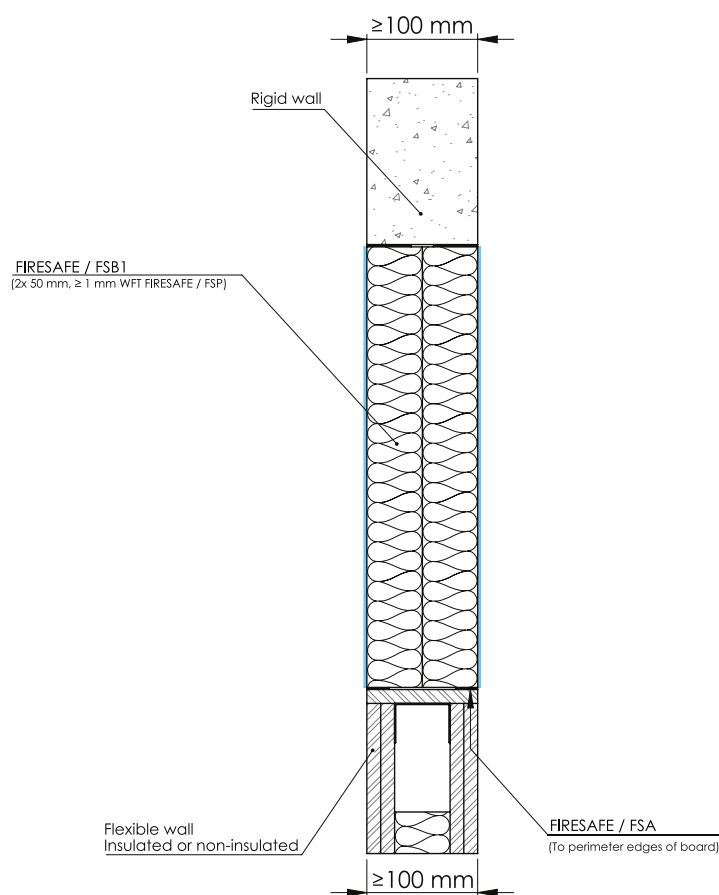
Wall constructions - Maximum seal dimensions flexible or rigid wall

C.1.2.2

Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm with aperture framing



Position seal:
right, left or anywhere
in between

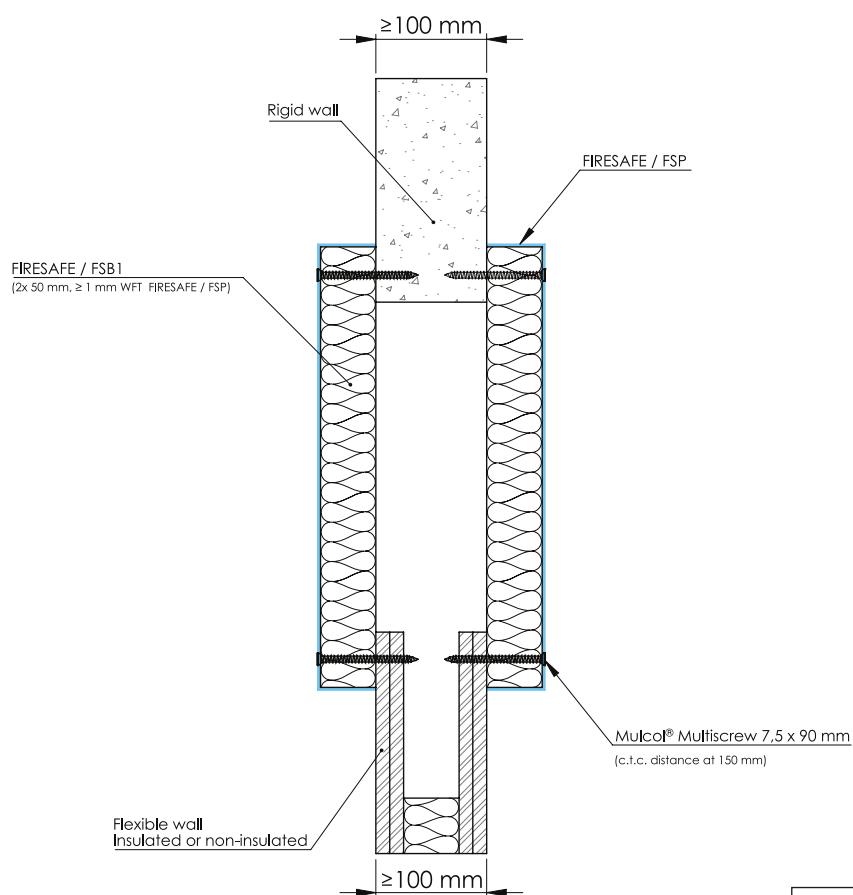


Drawing: PBfw.E-BS-A-MFB1.2.10

Services	Classification
Maximum seal size 1500 x 2500 mm (width x height or height x width) With a maximum surface of 3 m ²	EI 120
Maximum circular seal size Ø 1954 mm	
Maximum seal size 1200 x 2000 mm (width x height or height x width) With a maximum surface of 2.44 m ²	EI 180
Maximum circular seal size Ø 1748 mm	

C.1.2 Wall constructions - Maximum seal dimensions flexible or rigid wall

C.1.2.3 Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm - Pattress fixed to the wall



Drawing: PBPfw-BS-MFB1.2.10

Services

Maximum seal size 750 x 1250 mm (width x height or height x width)
With a maximum surface of 0.75 m²

Maximum circular seal size $\varnothing 1093 \text{ mm}$

Classification

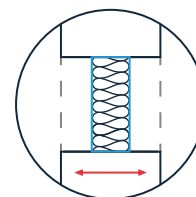
EI 120

C.1.2

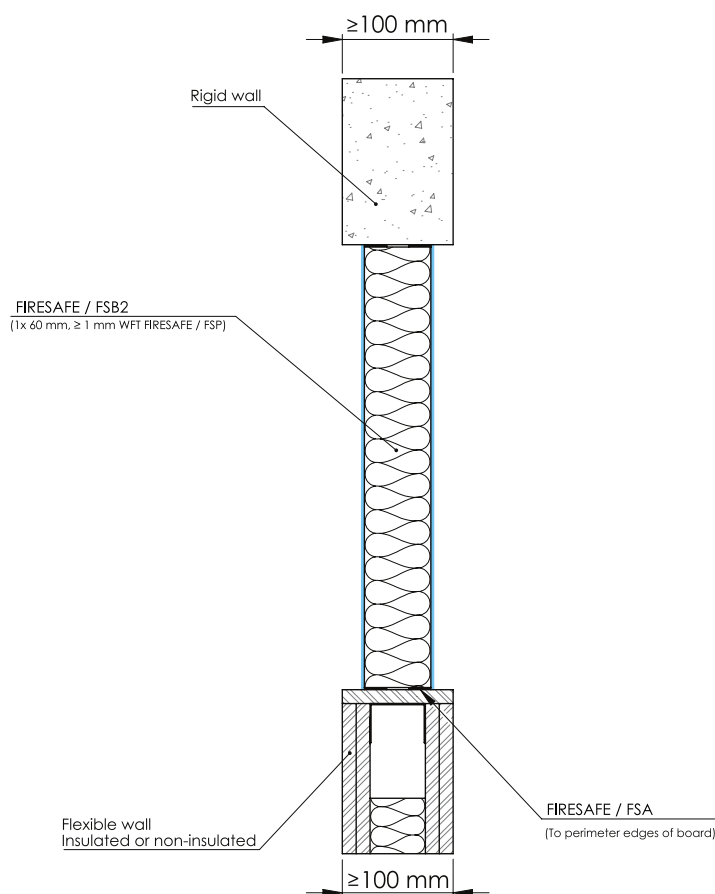
Wall constructions - Maximum seal dimensions flexible or rigid wall

C.1.2.4

Maximum seal dimensions - FIRESAFE / FSB2 - 1x 60 mm with aperture framing



Position seal:
right, left or anywhere
in between

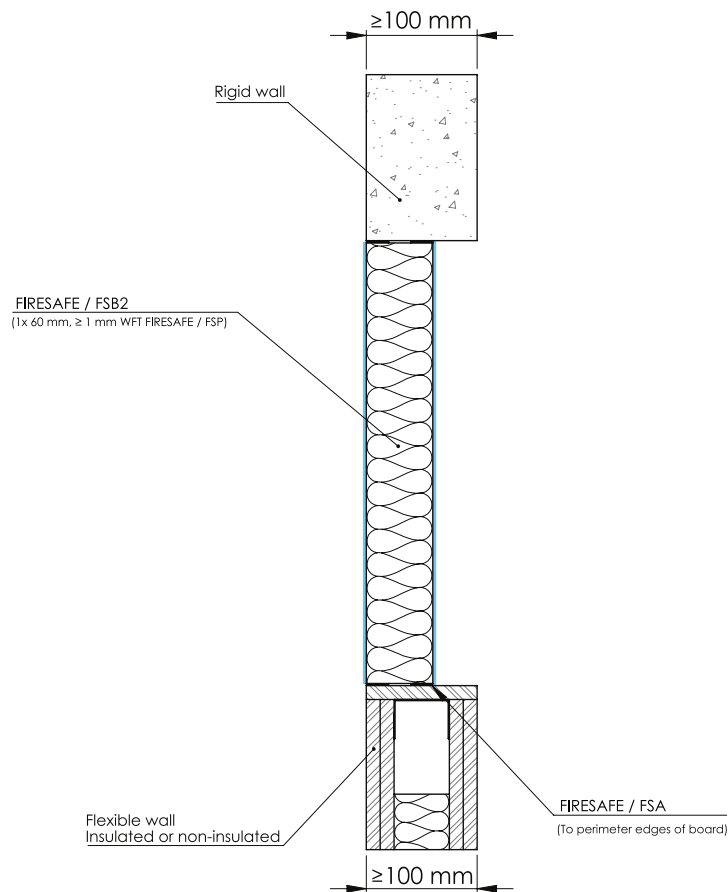


Drawing: PBfw.E-BS-MFB2.1.10

Services	Classification
Maximum seal size 1500 x 2500 mm (width x height or height x width) With a maximum surface of 3.0 m ²	EI 60
Maximum circular seal size Ø 1954 mm	
Maximum seal size 1200 x 1200 mm With a maximum surface of 1.44 m ²	
Maximum circular seal size Ø 1354 mm	EI 60, E 90
Maximum seal size 563 x 525 mm (width x height or height x width) With a maximum surface of 0.24 m ²	
Maximum circular seal size Ø 548 mm	EI 90
Maximum seal size 450 x 420 mm (width x height or height x width) With a maximum surface of 0.19 m ²	
Maximum circular seal size Ø 491 mm	EI 120

C.1.2 Wall constructions - Maximum seal dimensions flexible or rigid wall

C.1.2.5 Maximum seal dimensions - FIRESAFE / FSB2 - 1x 60 mm with aperture framing

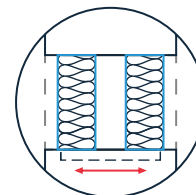


Drawing: PBfw.E-BS-fs-MFB2.1.10

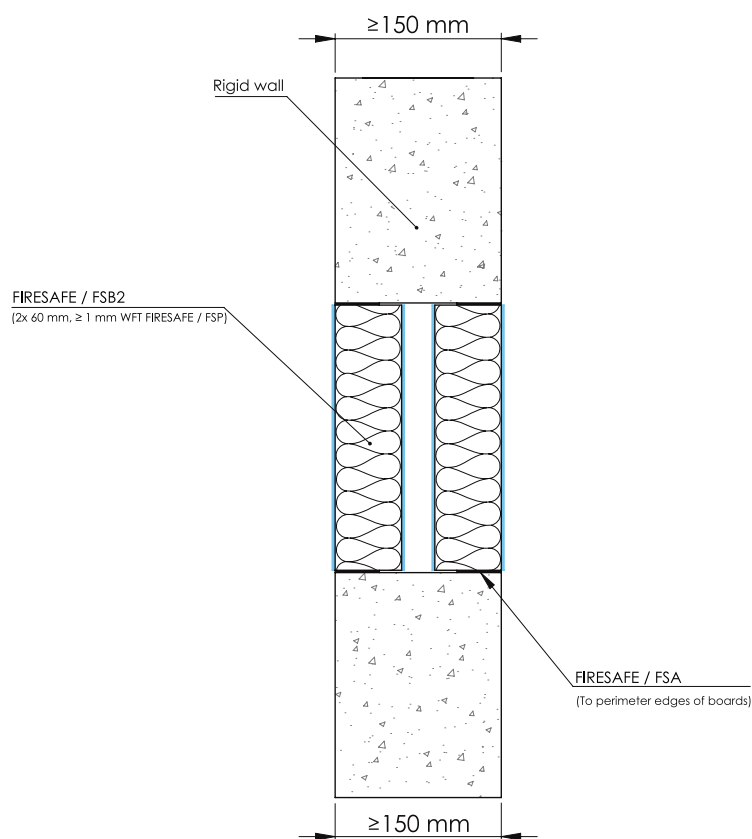
Services	Classification
Maximum seal size 1500 x 2500 mm (width x height or height x width) With a maximum surface of 3.0 m ²	EI 60
Maximum circular seal size Ø 1954 mm	
Maximum seal size 1200 x 1200 mm With a maximum surface of 1.44 m ²	
Maximum circular seal size Ø 1354 mm	EI 60, E 90
Maximum seal size 563 x 525 mm (width x height or height x width) With a maximum surface of 0.24 m ²	
Maximum circular seal size Ø 548 mm	EI 90
Maximum seal size 450 x 420 mm (width x height or height x width) With a maximum surface of 0.19 m ²	
Maximum circular seal size Ø 491 mm	EI 120

C.1.2 Wall constructions - Maximum seal dimensions flexible or rigid wall

C.1.2.6 Maximum seal dimensions - FIRESAFE / FSB2 - 2x 60 mm with cavity 30 mm



Position seal:
right, left or any in between



Drawing: RW150.E-BS-MFB2.2.10

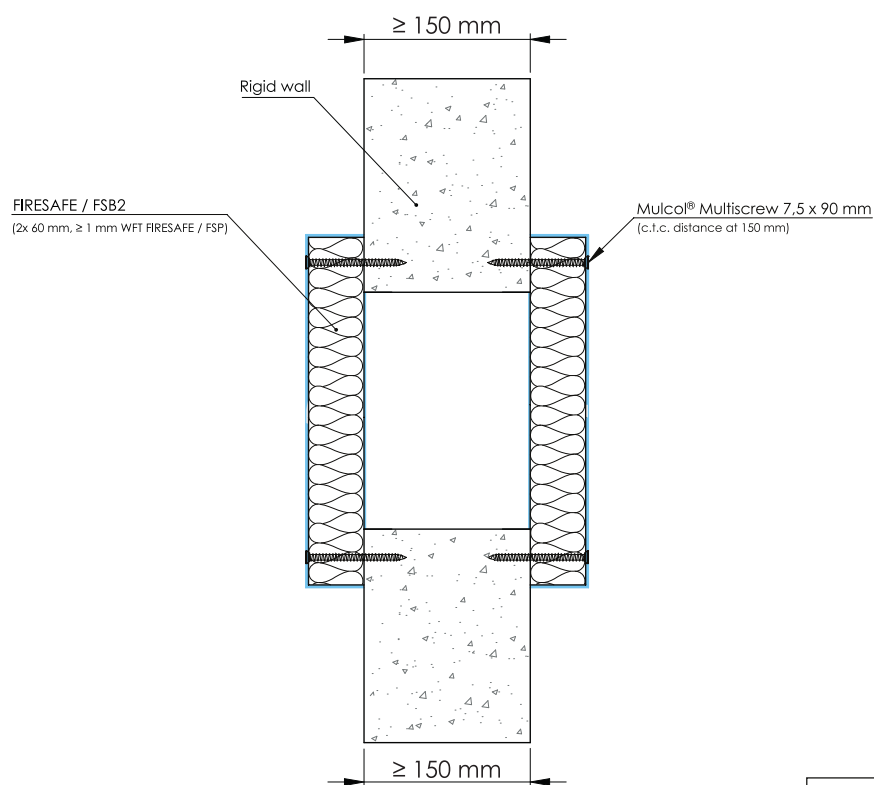
Services

Maximum seal size 1500 x 1500 mm
With a maximum surface of 1.8 m²

Maximum circular seal size Ø 1354 mm

Classification

EI 240

C.1.2**Wall constructions - Maximum seal dimensions flexible or rigid wall****C.1.2.7****Maximum seal dimensions - FIRESAFE / FSB2 - 2x 60 mm - Pattress fixed to wall**

Drawing: PBPrw150.E-BS-MFB2.2.10

Services

Maximum seal size 750 x 600 mm (width x height or height x width)
With a maximum surface of 0.45 m²

Maximum circular seal size Ø 757 mm

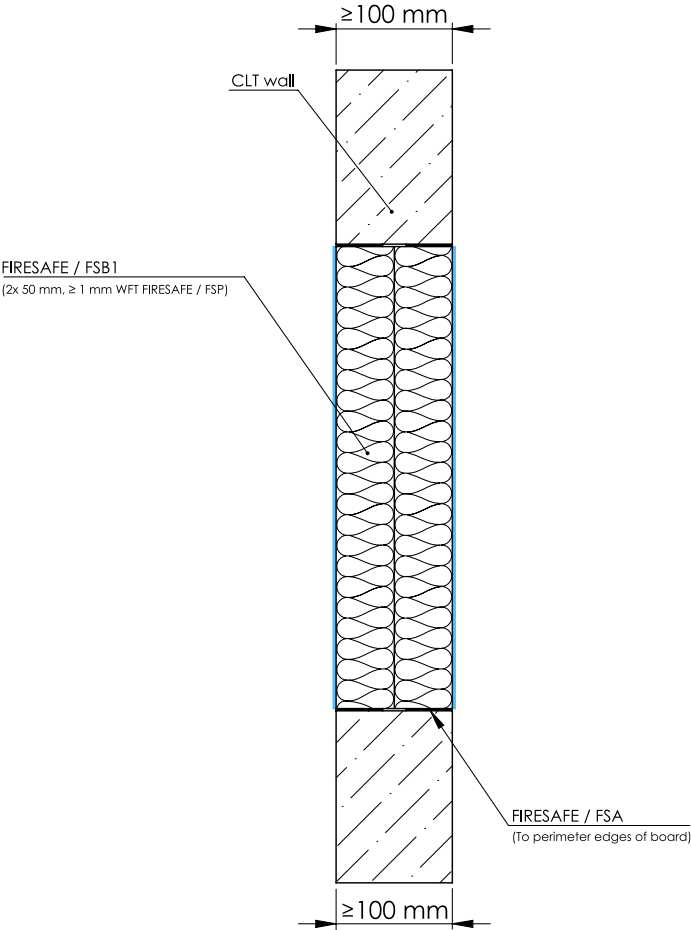
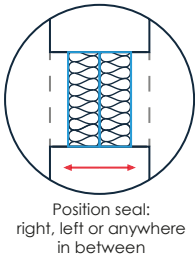
Classification**EI 240**

C.1.3

Wall constructions - Maximum seal dimensions CLT

C.1.3.1

Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm

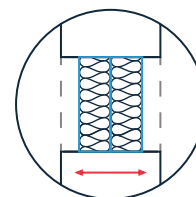


Drawing: WCLT.E-BS-MFB1.2.10

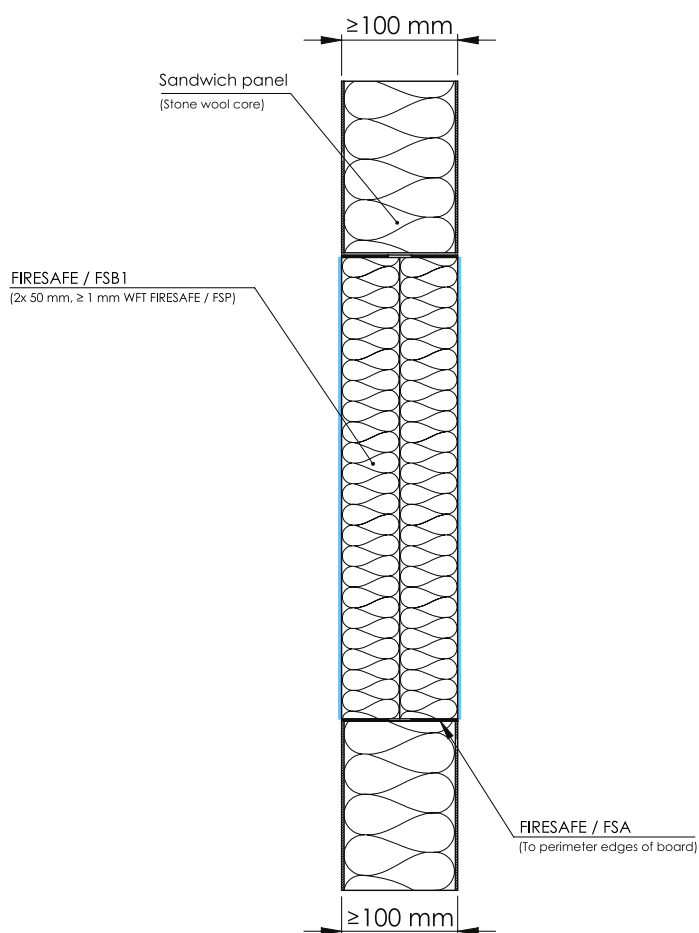
Services	Classification
Maximum seal size 500 x 500 mm With a maximum surface of 0.25 m²	EI 90
Maximum circular seal size Ø 564 mm	

C.1.4 Wall constructions - Maximum seal dimensions Sandwich panel

C.1.4.1 Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm no aperture framing



Position seal:
right, left or anywhere
in between



Drawing: SW,E-BS_B-MFB1.2.10

Services

Maximum seal size 500 x 600 mm (width x height or height x width)
With a maximum surface of 0.3 m²

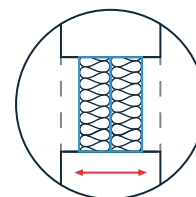
Maximum circular seal size Ø 618 mm

Classification

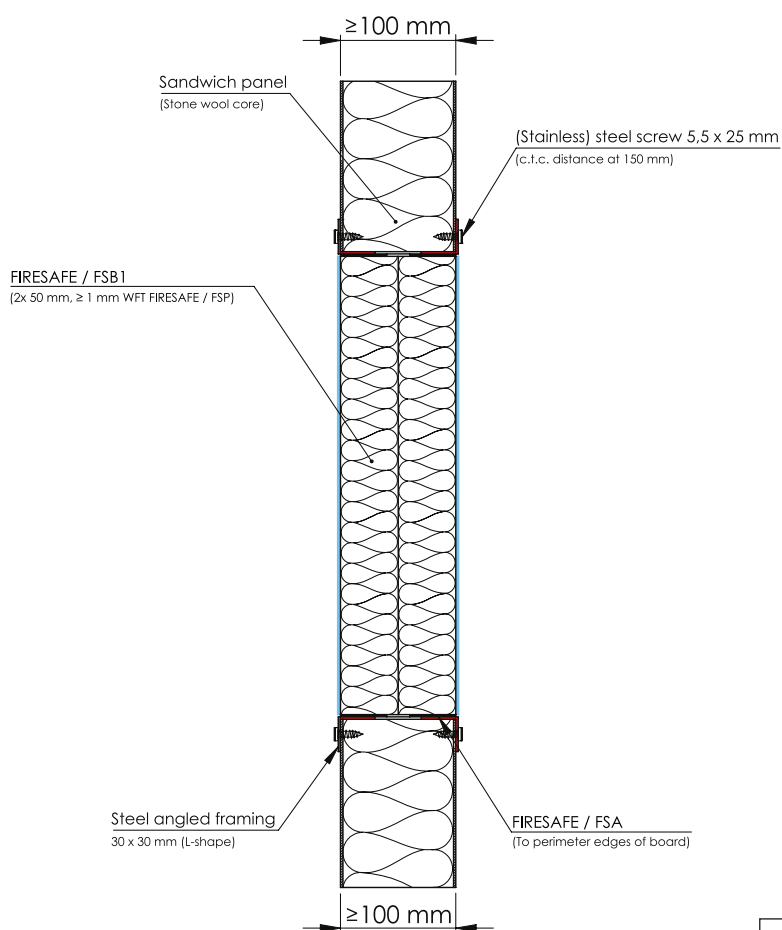
EI 90

C.1.4 Wall constructions - Maximum seal dimensions Sandwich panel

C.1.4.2 Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm with aperture framing



Position seal:
right, left or anywhere
in between



Drawing: SW.E-BS-MFB1.2.10

Services

Maximum seal size 1200 x 1000 mm (width x height or height x width)
With a maximum surface of 1.2 m²

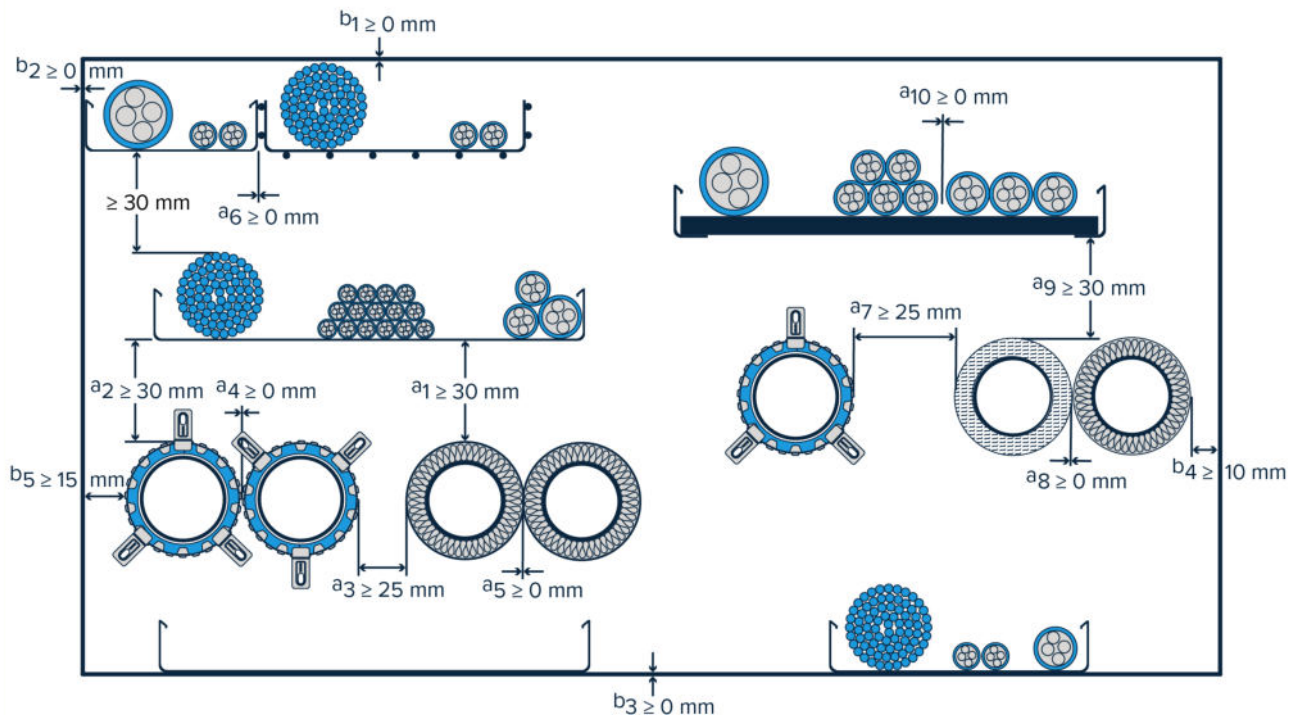
Maximum circular seal size Ø 1236 mm

Classification

EI 120

C.2 Floor constructions - General

C.2.1 Mutual distances & distance to first support



Mutual distances Mixed Penetration Seal – FIRESAFE / FSP System

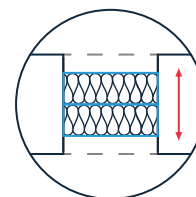
- a₁ Distance between cables/cable trays and metal pipes
- a₂ Distance between cables/cable trays and plastic pipes
- a₃ Distance between metal pipes and plastic pipes
- a₄ Distance between plastic pipes
- a₅ Distance between metal pipes with non-combustible insulation
- a₆ Distance between cable trays
- a₇ Distance between plastic pipes and pipes with combustible insulation
- a₈ Distance between pipes with non-combustible insulation and pipes with combustible insulation
- a₉ Distance between cables/cable trays and pipes with combustible insulation
- a₁₀ Distance between cables stacked together or in a row
- b₁ Distance between cables/cable trays and the upper seal edge
- b₂ Distance between cables/cable trays and the side seal edge
- b₃ Distance between cables/cable tray and the lower seal edge
- b₄ Distance between metal pipes and all seal edges
- b₅ Distance between plastic pipes and all seal edges

Service support construction

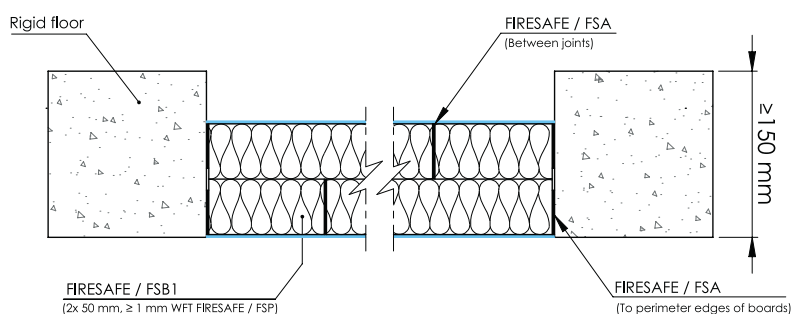
First support for all services at 450 mm, except cable trays at 250 mm.

C.2.2 Floor constructions - Maximum seal dimensions rigid floor

C.2.2.1 Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm no cavity



Position seal:
top, bottom or anywhere
in between

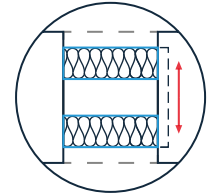


Drawing: PBrf.E-BS-MFB1.2.10

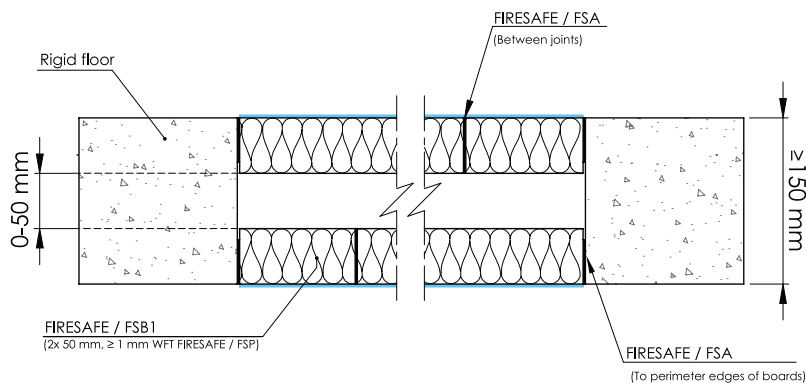
Services	Classification
Maximum seal size 1200 x 1200 mm Maximum seal size 9000 x 900 mm	EI 90, E 120
Maximum circular seal size Ø 1354 mm	
Maximum seal size 600 x 400 mm	EI 120
Maximum circular seal size Ø 553 mm	
Maximum seal size 450 x 450 mm	EI 240
Maximum circular seal size Ø 508 mm	

C.2.2 Floor constructions - Maximum seal dimensions rigid floor

C.2.2.2 Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm cavity 50 mm



Position seal:
top, bottom or anywhere
in between

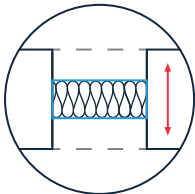


Drawing: PBrf.E-BS-MFB1.2.10.C

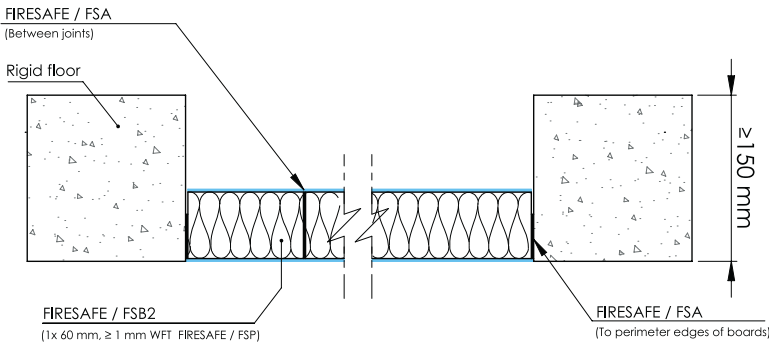
Services	Classification
Maximum seal size 1200 x 1200 mm Maximum seal size 9000 x 900 mm	EI 90, E 120
Maximum circular seal size Ø 1354 mm	
Maximum seal size 1200 x 600 mm Maximum seal size 9000 x 600 mm	EI 120
Maximum circular seal size Ø 957 mm	
Maximum seal size 450 x 450 mm Maximum circular seal size Ø 508 mm	EI 240

C.2.2 Floor constructions - Maximum seal dimensions rigid floor

C.2.2.3 Maximum seal dimensions - FIRESAFE / FSB2 - 1x 60 mm



Position seal:
top, bottom or anywhere
in between

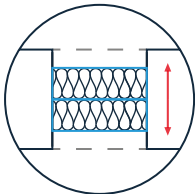


Drawing: PBrf.E-BS-MFB2.1.10

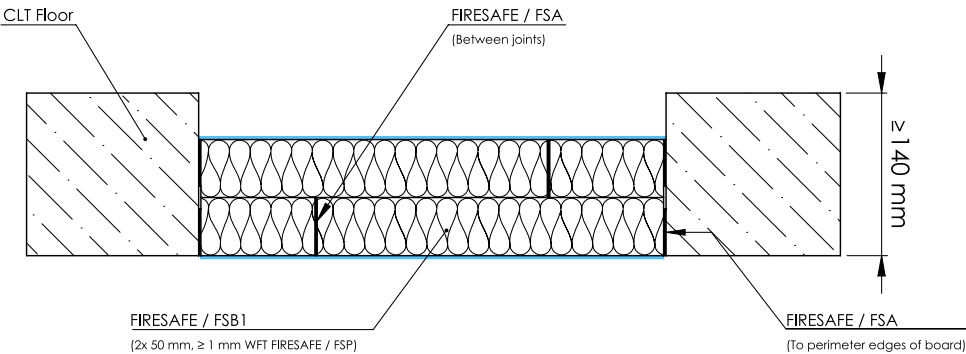
Services	Classification
Maximum seal size 1200 x 1200 mm Maximum seal size 9000 x 900 mm Maximum circular seal size Ø 1354 mm	EI 90, E 120

C.2.3 Floor constructions - Maximum seal dimensions CLT floor

C.2.3.1 Maximum seal dimensions - FIRESAFE / FSB1 - 2x 50 mm



Position seal:
top, bottom or anywhere
in between



Drawing: FCLT.E-BS-MFB1.2.10

Services	Classification
Maximum seal size 500 x 800 mm	EI 120
Maximum circular seal size Ø 713 mm	

C.3 Wall configurations

C.3.1 Allowed wall configurations

The use of FIRESAFE / FSP is allowed in all double sided flexible wall constructions (with or without insulation) of the same or higher fire resistance classification in accordance with EN 13501-2, with a lining made of gypsum boards (EN 520) or Calcium Silicate boards which are CE marked for the application as lining of flexible wall, if their construction is in accordance with the rules given below.

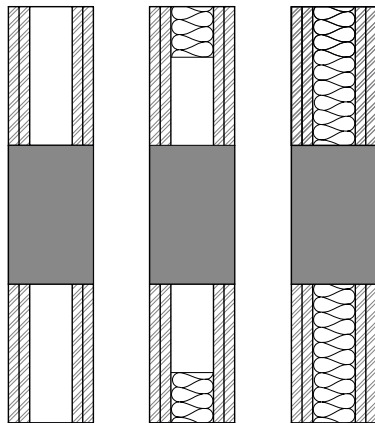
Field of direct application rules for double-sided flexible wall constructions:

- flexible wall constructions as shown in solutions given in Annex A of this document;
- flexible wall constructions with the same or higher number of board layers of the same or higher board thickness on each side of the wall, with insulation of any type or without insulation;
- flexible wall constructions with a reduced number of board layers but the same or higher board thickness on each side of the wall as tested, with insulation of any type or without insulation;
- flexible wall constructions with timber studs, no part of the penetration seal closer than 100 mm to any stud or nogging piece, the cavity closed between the penetration seal and the stud/nogging piece with minimum 100 mm of insulation of class A1 or A2 in accordance with EN 13501-1;
- rigid constructions of an overall thickness equal to or greater than that given in the solutions in Annex A and a minimum density of 350 kg/m³. In case of hollow brick wall the same rules regarding aperture framing apply as for double-sided flexible walls.

Allowed constructions (not limited by):

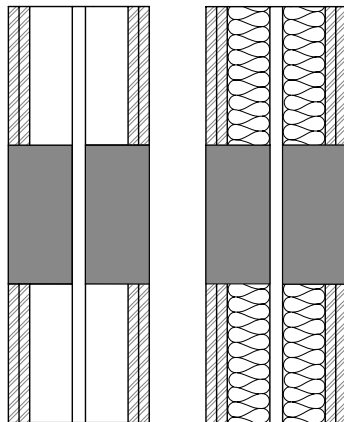
Flexible walls, not insulated, partially removed insulation or fully insulated with any type of insulation.

e.g.:



Double stud walls, separated by ≥ 0 mm, not insulated, partially insulated or fully insulated with any type of insulation.

e.g.:



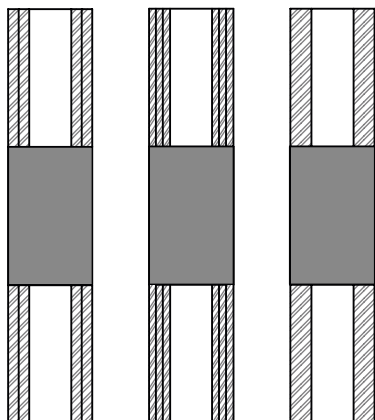
C.3 Wall configurations

C.3.1 Allowed wall configurations

Walls with a reduced number of board layers but the same or higher overall lining thickness on each side of the wall as shown in the solutions in Annex A.

Walls with a higher number of board layers, where individual boards are thinner yet the overall lining thickness is at least that of shown in the solutions in Annex A.

e.g.:



Rigid walls with a density of $\geq 350 \text{ kg/m}^3$

e.g.:

