



Guidance Document:

SERVICE OPENINGS WITHIN FIRE RESISTANT KNAUF PARTITION SYSTEMS

Build on us.

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KNAUF



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FOREWORD

The Importance of System Based Thinking

The Building Safety Act brings with it a complete overhaul of the Building Regulatory framework. Shed to shard, the Act isn't just about higher risk buildings, it demands a refocus on the co-ordination, competency and information management for all regulated works in all buildings.

The Act tells us that we need to plan, communicate and collaborate more effectively, it requires us to operate in a systematic way. The interior system is at the epicentre of this, bringing together a number of components, which are all interdependent, to form the walls, ceilings and floors that protect the structure and escape routes in the event of a fire. As buildings become more complex, more care is required to co-ordinate this and ensure services can flow and compartments, when penetrated, are effectively protected – a system-based approach built on solid and relatable test evidence.

For too long walls have been somewhat of an afterthought, treated like a finishing element rather than a safety critical product. Even when advanced Building Information Modelling (BIM) techniques have been adopted, the detailing of the wall system has often been lacking. This means decisions have been made late in the process and penetrations unplanned. Beyond the obvious safety issues this can create, when compliance issues are flagged too late, the cost of resolution, ad hoc testing, delays and protracted disputes can have serious financial implications for all involved.

This guide is an encouraging example of how manufacturers can support a rationalised system-based approach, helping to simplify the design development process by creating a set of clear and simple rules. Setting this down helps too with site management and inspection and makes it far easier to manage the Golden Thread of Information, support effective communication and demonstrate compliance. It also makes training of those involved in the inspection, design and construction of buildings easier and in so doing supports competence and ultimately compliance. 'System-based thinking' means providing a framework for evidence to be consistently assembled and assessed at design stage and communicated clearly to support compliance and competence and it is encouraging to see this being put into practice here.

Iain McIlwee
Chief Executive Officer, FIS



1 SCOPE AND INTRODUCTION

Following the implementation of the Building Safety Act (2022) and further secondary legislation, there is a need for manufacturers of construction products and systems to provide up to date, accurate, clear and detailed technical information to all the relevant stakeholders across construction projects.

In addition, to comply with the relevant Gateway stage-gates and the principles of the Golden Thread, the relevant Stakeholders (e.g., Clients, Principal Designers, Principal Contractors, and Installers) all require access to valid and accredited system performance data to help them demonstrate compliance with relevant legislation and Approved Documents. The Service Openings Within Fire Resistance Knauf Partition Systems – Guidance Document has been produced to support the Project Stakeholders with the specifications, details, and installations of service openings created within Knauf partition systems.

The primary focus of this document is to use test evidence to provide guidance on how to construct openings within non-loadbearing, fire resistant partition systems. These correctly formed openings allow for the required services to pass through, which must be designed and supported by fire stopping specialists and are out of the scope of this document.

The Importance of Service Openings

Design, tested, installed, inspected, and recorded passive fire protection for the allowance of service openings within flexible wall systems is paramount. It is crucial for all stakeholders involved to understand which penetrations pass through the fire resistance and fire compartment walls, so that the required fire stopping materials can be specified by an appropriately competent designer with the necessary supporting test documentation.

This is to ensure, fire resistant wall systems and fire compartmentation walls maintain the required performance as set out within the fire strategy of the building. Fire resistant wall systems are designed to withstand fire for a specific duration and fire compartmentation walls refer to the practice of dividing a building into separate fire compartments or zones. It is crucial that the individual elements to form these systems have been tested to demonstrate compliance.

Within non-loadbearing flexible wall systems, service openings are typically infilled using an ablative coated batt along with other accessories and products. These products are required to be tested for various opening sizes and different depths within a flexible wall construction to ensure the specified level of fire resistance is maintained.

It is critical that all duty holders plan and design all service openings through flexible wall systems. It is also critical that the Client, Principal Designer and Principal Contractor are provided with recent, valid and accredited test data from the product and/or system provider.

It is for this reason that Knauf have conducted a series of service opening tests within a selection of Knauf systems against which we have compared identical non-perforated systems. To support, Knauf have developed a new set of standard opening arrangement details showing various sizes, spacings, location and frequency. This information can be used to make informed decisions to suit project requirements where various opening sizes, layouts and locations occur within Knauf fire resistance partition systems.

Testing Scope

The construction details for the service openings are comprised of Knauf components, in conjunction with fully tested, substantiated, fire stopping products supplied by a third-party supplier within flexible wall constructions. These arrangements have been developed, following a series of successful fire resistance tests between May and July 2024, conducted at a UKAS accredited test facility, in accordance with BS EN 1363-1, BS EN 1364-1 and by incorporating the design principles of BS EN 1366-3.

The flexible non-load-bearing wall constructions tested consisted of Knauf Performer, Isolator and Shaftwall arrangements. A summary of each of these systems can be found in Figure 1. Given the industry requirements that the systems tested must be in line with the as-built arrangements on site, these fire resistance tests were conducted with the inclusion of deflection heads (allowing for movement of -25mm or +/- 12.5mm) and proprietary fire stopping products to maintain the fire resistance period of identical systems without service openings.

Figure 1

The **Knauf Performer** system is our most versatile and commonly used partition system. It is constructed using a single row of Knauf metal studs with Knauf plasterboards to both sides to meet fire, acoustic, moisture and impact requirements.

The **Knauf Isolator** system is typically used to divide habitable dwellings. The twin stud build-up, combined with Knauf's high performance plasterboards, maximises acoustic performance to comply with building regulations, technical handbooks, and guidelines for sound insulation.

The **Knauf Shaftwall** is our innovative system to form enclosures around service and lift shafts while working from one side. The unique Knauf 'CT' Stud makes this possible with a minimum of components. The system can provide a high level of fire resistance performance to meet the requirements of your project.



2 APPLICATION OF DATA

Knauf recognises the need to provide robustly tested and substantiated system solutions tailored to market demands. Through rigorous testing protocols, ensuring the products meet high standards of quality and reliability, the extensive fire resistance testing has provided reassurance that Knauf partition systems can accommodate service openings without compromising the fire resistance classification time (integrity and insulation).

This suite of fire resistance testing provides invaluable data that can be utilised to support

clients, architects, main-contractors, and installers to make informed decisions to suit project requirements where various opening sizes, layouts and locations occur in Knauf fire resistant partition systems.

The systems within this document were fire resistance tested to the EN methodology BS EN 1363-1, and BS EN 1364-1, incorporating the design principles of BS EN 1366-3. This means that the systems provided can be applied to projects that require British Standard (BS) compliance.



Table 1 provides a summary of the fire resistance performance of the Knauf systems with and without openings.

Knauf Systems		Systems with no Openings (Imperforate)		Systems with Openings (Perforate)	
System Type	Knauf System Reference Code	Fire resistance test & classification report numbers	Fire resistance classification*	Fire resistance test & classification report numbers	Fire resistance classification**
Performer	EN-PC-70-055-6-1-15-PP-25	TR20230529-003109 CR20230529-003109	EI 60	TR20240220-001315 CR20240220-001315	EI 60
Performer	EN-PC-50-055-6-2-15-SSP-0	WF526672 CR20240808-005415	EI 120	TR20240220-001415 CR20240220-001415	EI 120
Isolator	EN-IC-70-055-6-2x15-SSP-2x25(214/120)	TR20230419-004610 CR20230419-004610	EI 120	TR20230220-001215 CR20230220-001215	EI 120
Shaftwall (Shaft-Lobby)	EN-SW-CT-60-092-6-3-15-FP-0	TR20230207-003409 CR20230207-003409	EI 120	TR20240220-001015 CR20240220-001015	EI 120
Shaftwall (Lobby-Shaft)		TR20230207-003509 CR20230207-003409	EI 120	TR20240220-001115 CR20240220-001115	EI 120

Table 1

Note 1: Systems designed to accommodate up to -25mm or -12.5mm/+12.5mm deflection allowance. Please refer to *Knauf Fire Rated Deflection Head* document for detailed information on design and specification.

Note 2: Systems that require fire resistance and/or acoustic sound insulation performance must have all outer plasterboard joints taped and filled in accordance with Knauf.

*Fire resistance classification in accordance with BS EN 13501-2, tested in accordance with BS EN 1364-1. Fire resistance is inclusive of both fire integrity and fire insulation. Fire resistance performance must be reviewed against Knauf specifications, standard details, with inclusion of deflection head arrangement.

**Fire resistance classification in accordance with BS EN 13501-2, tested in accordance with BS EN 1364-1 and design principles of BS EN 1366-3. Fire resistance is inclusive of both fire integrity and fire insulation. Fire resistance performance must be reviewed against Knauf specifications, standard details, with inclusion of deflection head arrangement.

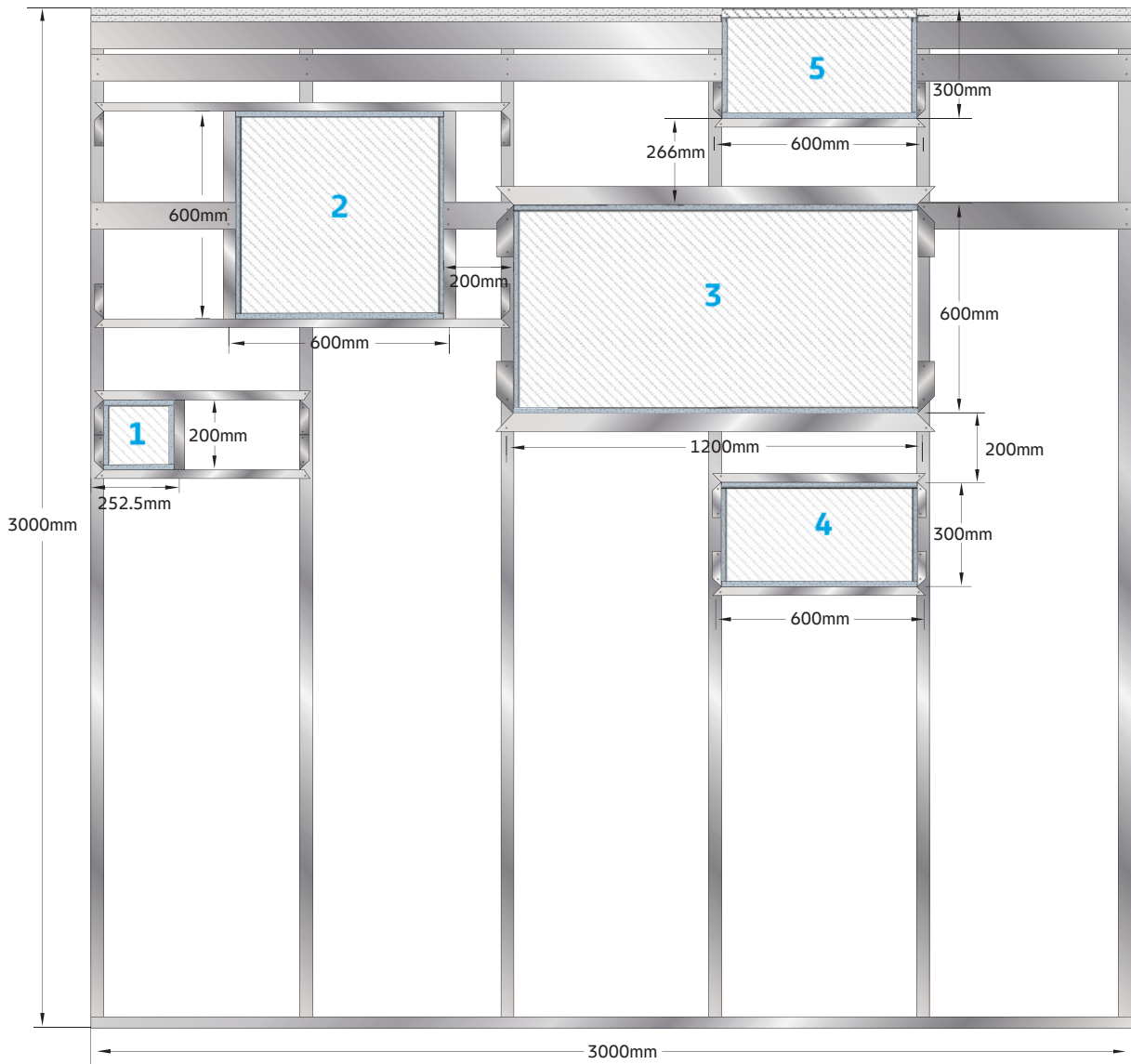


3 SYSTEM SPECIFICATION

Knauf EI 60 Performer

System Reference: EN-PC-70-055-6-1-15-PP-25

Elevation detail showing metal arrangement of the system



The elevation detail of Knauf Performer System (EN-PC-70-055-6-1-15-PP-25) incorporates a 25mm deflection head arrangement, three services openings (with the location and spacing based on the principles of BS EN 1366-3), a further service opening at a perimeter location and one service opening arrangement (three-sided) that is common site scenario. The service opening arrangements are built using Knauf products with proprietary blank seal provided by a third-party supplier who can satisfy and provide relevant supporting evidence to maintain the fire resistance of systems to levels stated in Table 1.

The system is constructed using Knauf 70mm 'C' (0.55) Studs, spaced at 600mm centres, engaged within Knauf 72mm 'U' (0.55) Channel (floor channel) and Knauf 72mm Deep Flange 'U' (0.70) Channel – 70mm Deep Flange (head channel). A layer of Knauf 15mm Performance Plus mechanically fixed either side of Knauf 70mm 'C' (0.55) Studs using 25mm Knauf Performance Plus Screws with 25mm Knauf Insulation Acoustic Roll is located within the cavity of the wall. A deflection head construction forms part of the system, which utilises Knauf 72mm Deep Flange 'U' Channel – 70mm Deep Flange, two

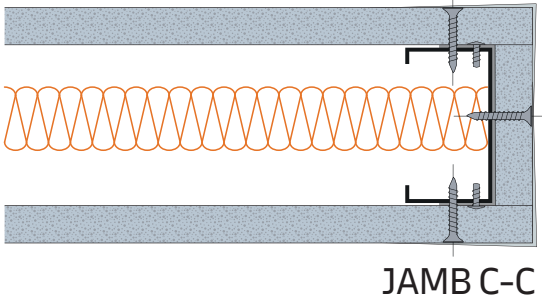
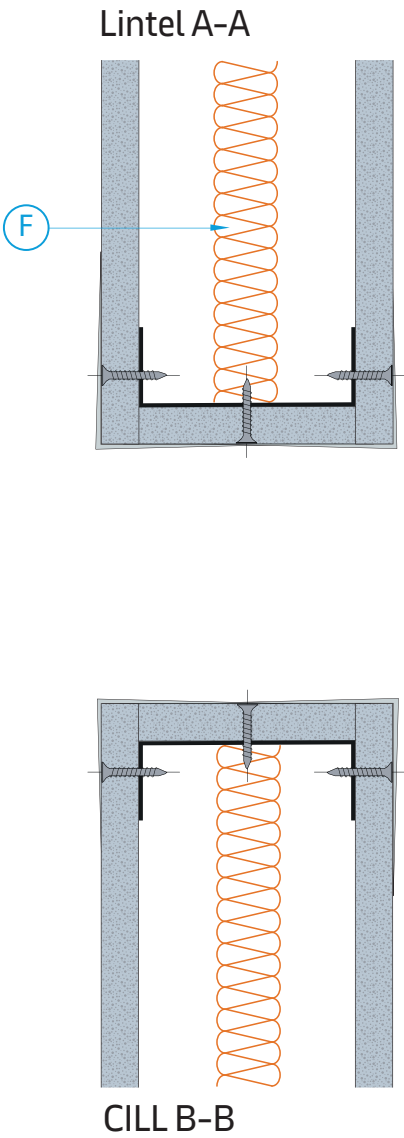
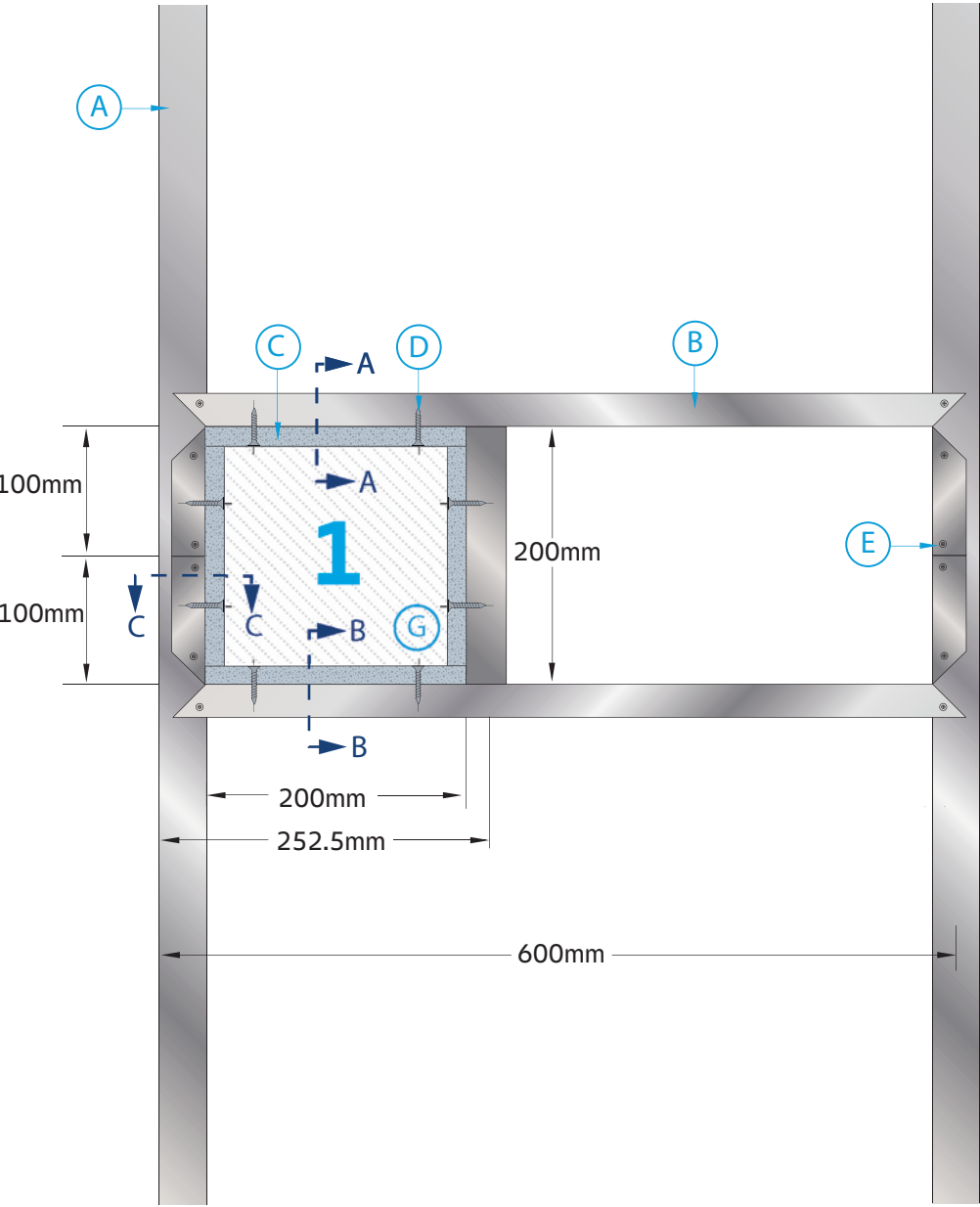
layers of Knauf 19mm Coreboard Fillets, Knauf Insulation Rocksilk® RS60, retained by Knauf 25x50mm Angle Sections. Knauf Flat Fixing Plate is installed horizontally across each side of the stud frame, with the distance between Knauf 72mm Deep Flange 'U' Channel – 70mm Flange of 25mm. For further information on the construction of the deflection head refer to Knauf Fire Rated Deflection Heads document. The system has various opening sizes, as located which are formed using Knauf metal components. Further information of these components is provided within this document.



Knauf EI 60 Performer

System Reference EN-PC-70-055-6-1-15-PP-25

Elevation and cross section view, showing metal and plasterboard arrangement for Opening 1



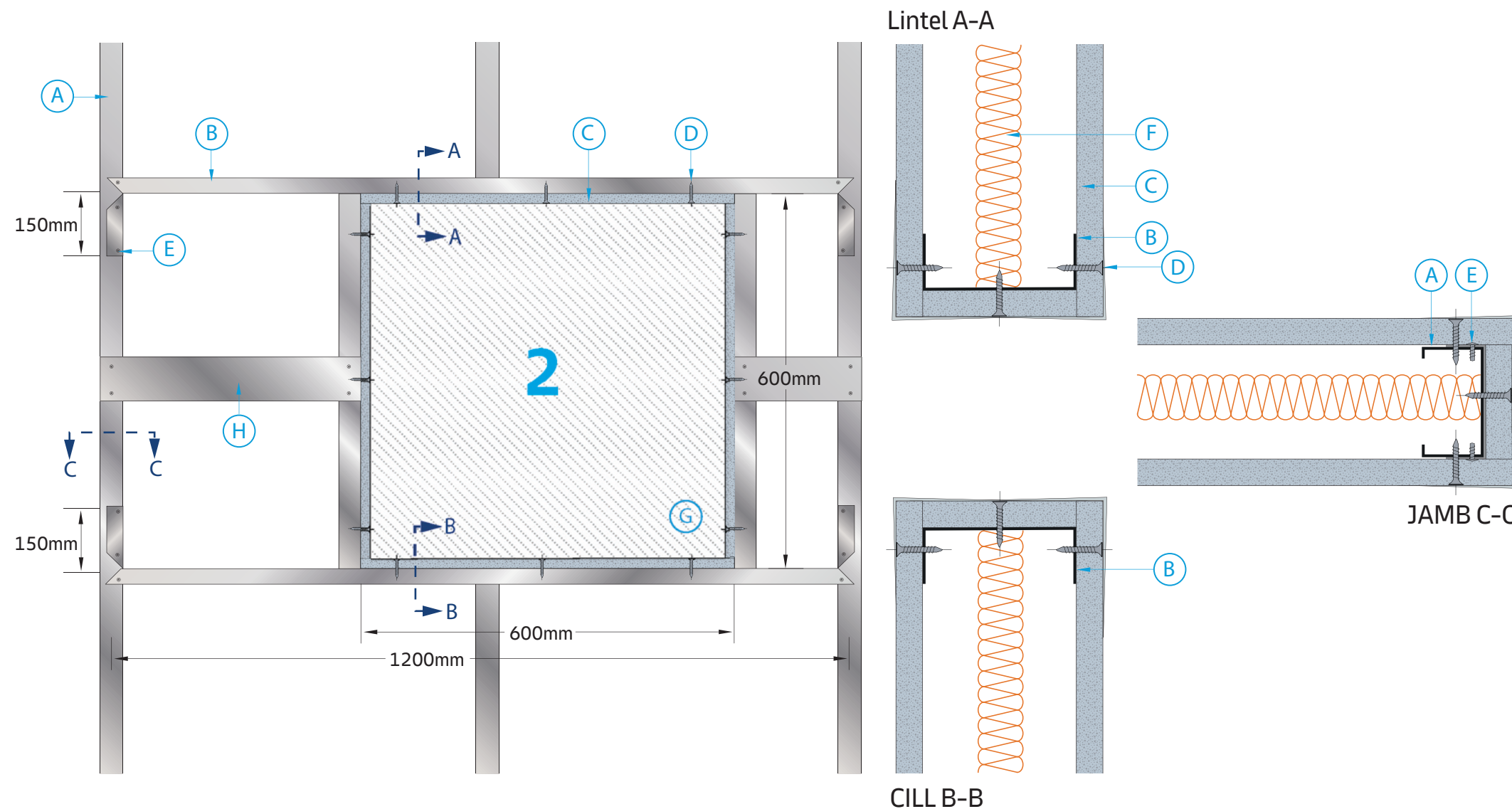
- KEY:**
- A: Knauf 70mm 'C' (0.55) Studs
 - B: Knauf 72mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Performance Plus
 - D: Knauf 25mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Knauf Insulation 25mm Acoustic Roll
 - G: Blank Seal

The elevation detail of Opening 1 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 72mm 'U' (0.55) Channels which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 70mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. For this arrangement one side of the service opening arrangement is formed using a section of Knauf 70mm 'C' (0.55) Stud which is cut and snipped (flanges) at both ends, the web of stud is returned 90 degrees and then fixed to the Knauf 72mm 'U' (0.55) Channels using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with one layer of Knauf 15mm Performance Plus, fixed using Knauf 25mm Performance Plus Screws at 150mm centres, starting at 50mm from each corner of reveal. For this system arrangement, Knauf Insulation 25mm Acoustic Roll was installed within the cavity. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 60 Performer

System Reference EN-PC-70-055-6-1-15-PP-25

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 2



KEY:

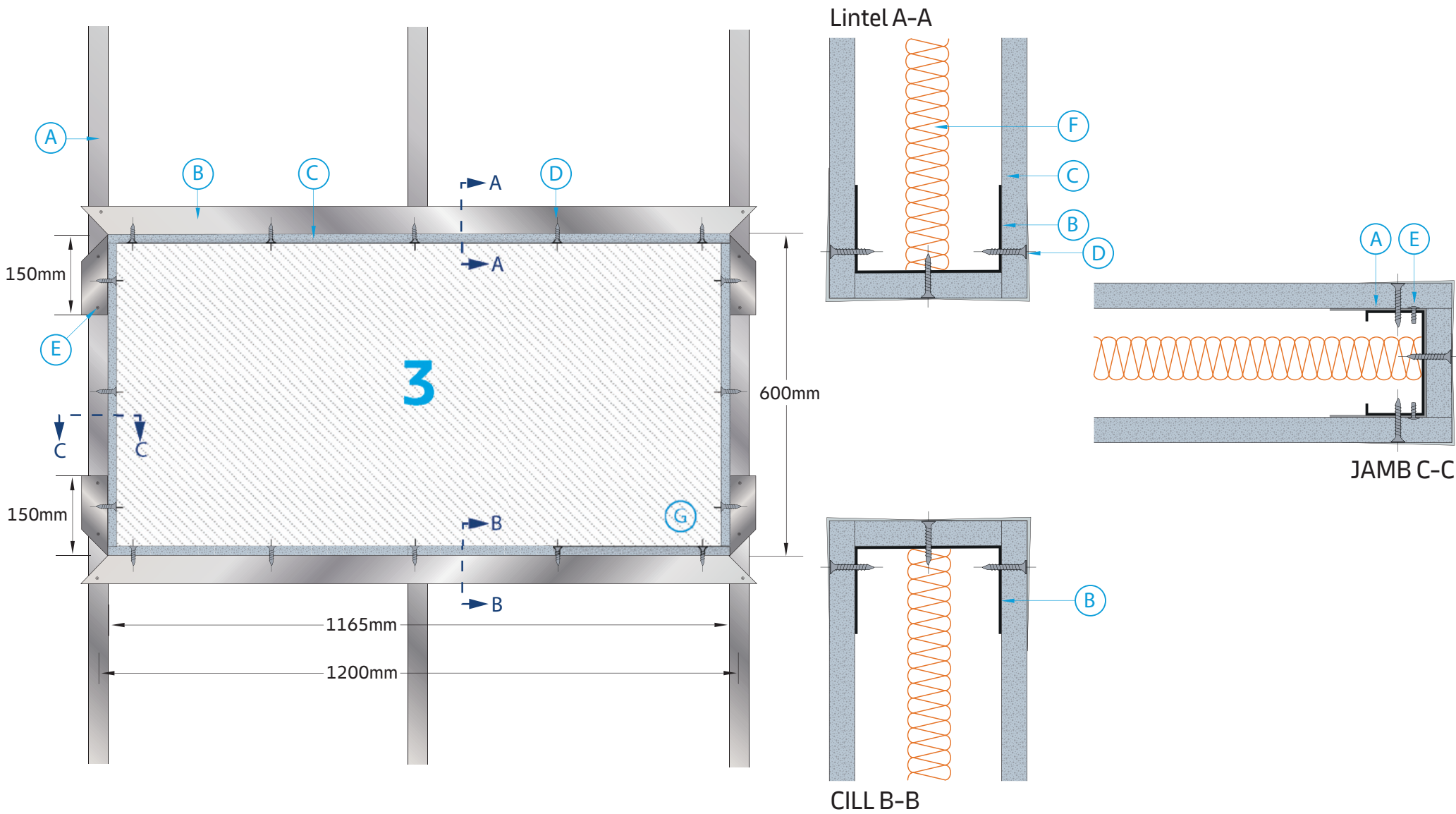
- A: Knauf 70mm 'C' (0.55) Studs
- B: Knauf 72mm 'U' (0.55) Channels (25mm flange)
- C: Knauf 15mm Performance Plus
- D: Knauf 25mm Performance Plus Screws
- E: Knauf Wafer Head Screws – Jackpoint Self-Drilling
- F: Knauf Insulation 25mm Acoustic Roll
- G: Blank Seal
- H: Knauf Flat Fixing Plate (note: used at the location of horizontal plasterboard joints)

The elevation detail of Opening 2 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 72mm 'U' (0.55) Channels which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 70mm 'C' (0.55) Studs, which are spaced 1200mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. For this arrangement both sides of the service opening arrangement is formed using sections of Knauf 70mm 'C' (0.55) Stud which is cut and snipped (flanges) at both ends, the web of stud is returned 90 degrees and then fixed to the Knauf 72mm 'U' (0.55) Channels using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with one layer of Knauf 15mm Performance Plus, fixed using Knauf 25mm Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. For this system arrangement, Knauf Insulation 25mm Acoustic Roll was installed within the cavity. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 60 Performer

System Reference EN-PC-70-055-6-1-15-PP-25

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 3



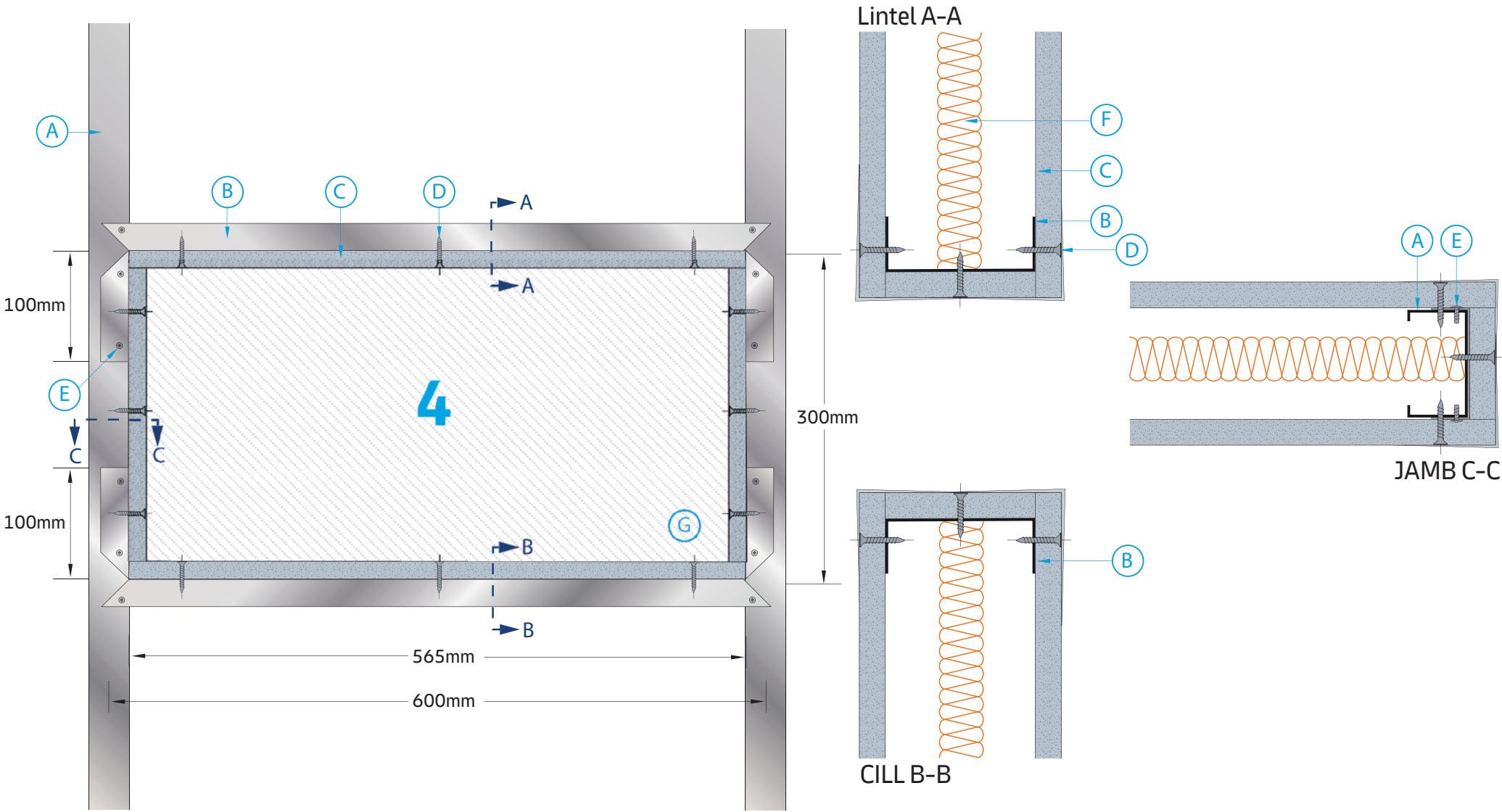
- KEY:**
- A: Knauf 70mm 'C' (0.55) Studs
 - B: Knauf 72mm Deep Flange 'U' (0.70) Channels - 70mm Deep Flange
 - C: Knauf 15mm Performance Plus
 - D: Knauf 25mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self-Drilling
 - F: Knauf Insulation 25mm Acoustic Roll
 - G: Blank Seal

The elevation detail of Opening 3 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 72mm Deep Flange 'U' (0.70) Channels – 70mm Deep Flange which was used to form the framework for the lintel (head) and Cill (base). The 'DFU' channel is supported by cloaking to the vertical Knauf 70mm 'C' (0.55) Studs, which are spaced 1200mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with one layer of Knauf 15mm Performance Plus, fixed using Knauf 25mm Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. For this system arrangement, Knauf Insulation 25mm Acoustic Roll was installed within the cavity. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 60 Performer

System Reference EN-PC-70-055-6-1-15-PP-25

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 4



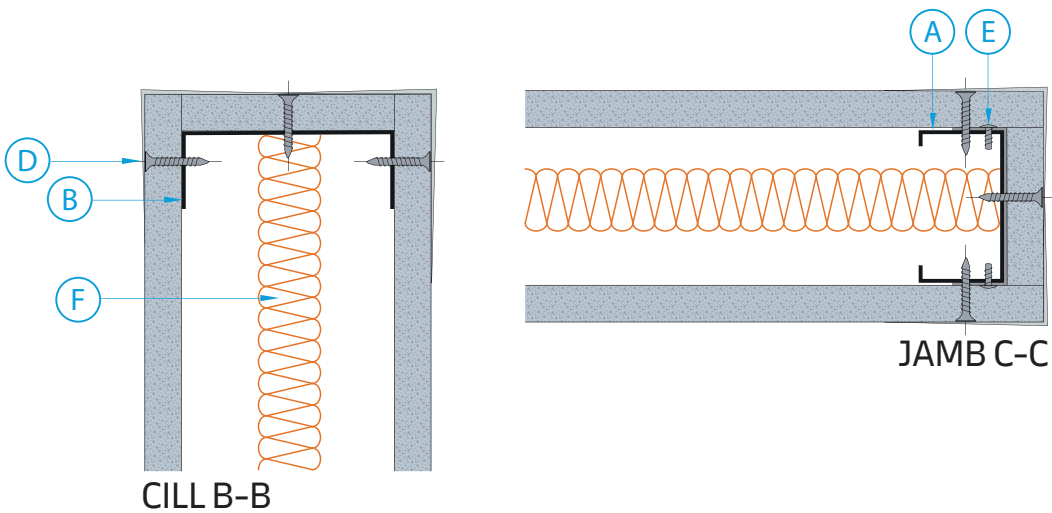
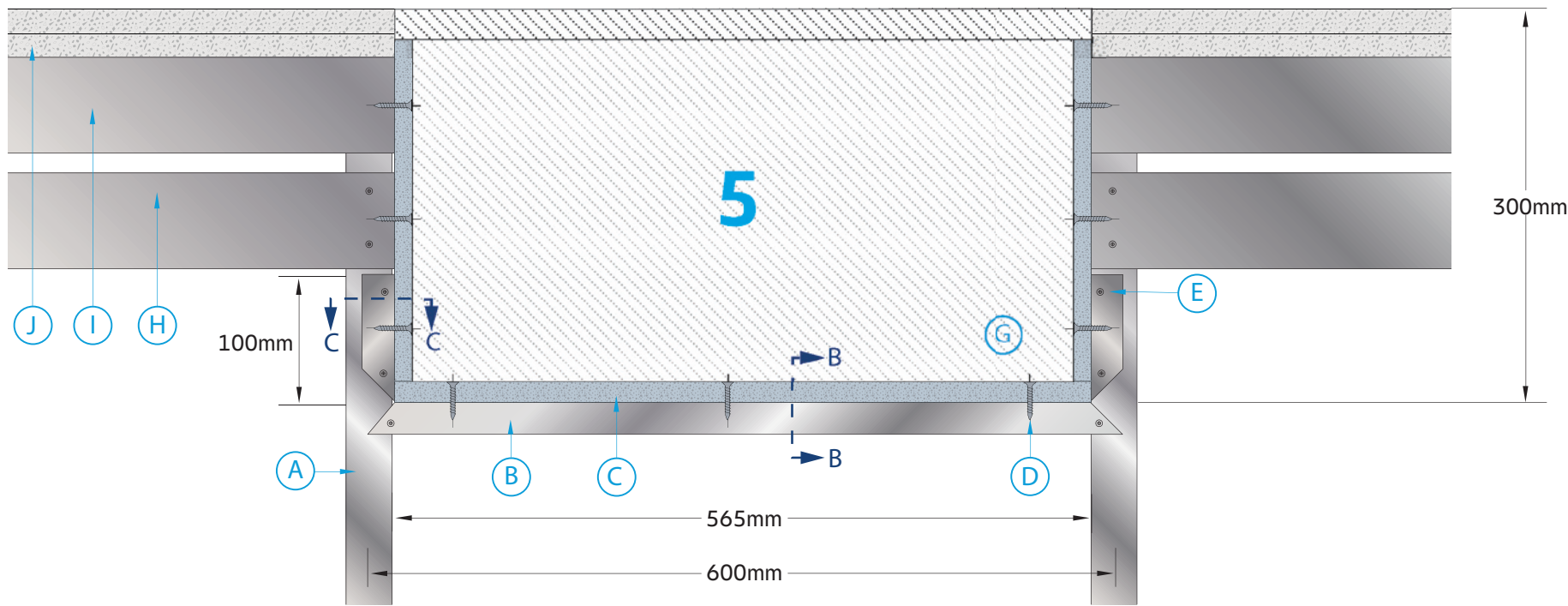
KEY:
A: Knauf 70mm 'C' (0.55) Studs
B: Knauf 72mm 'U' (0.55) Channels (25mm flange)
C: Knauf 15mm Performance Plus
D: Knauf 25mm Performance Plus Screws
E: Knauf Wafer Head Screws – Jackpoint Self Drilling
F: Knauf Insulation 25mm Acoustic Roll
G: Blank Seal

The elevation detail of Opening 4 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 72mm 'U' (0.55) Channels which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 70mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with one layer of Knauf 15mm Performance Plus, fixed using Knauf 25mm Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. For this system arrangement, Knauf Insulation 25mm Acoustic Roll was installed within the cavity. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 60 Performer

System Reference EN-PC-70-055-6-1-15-PP-25

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 5



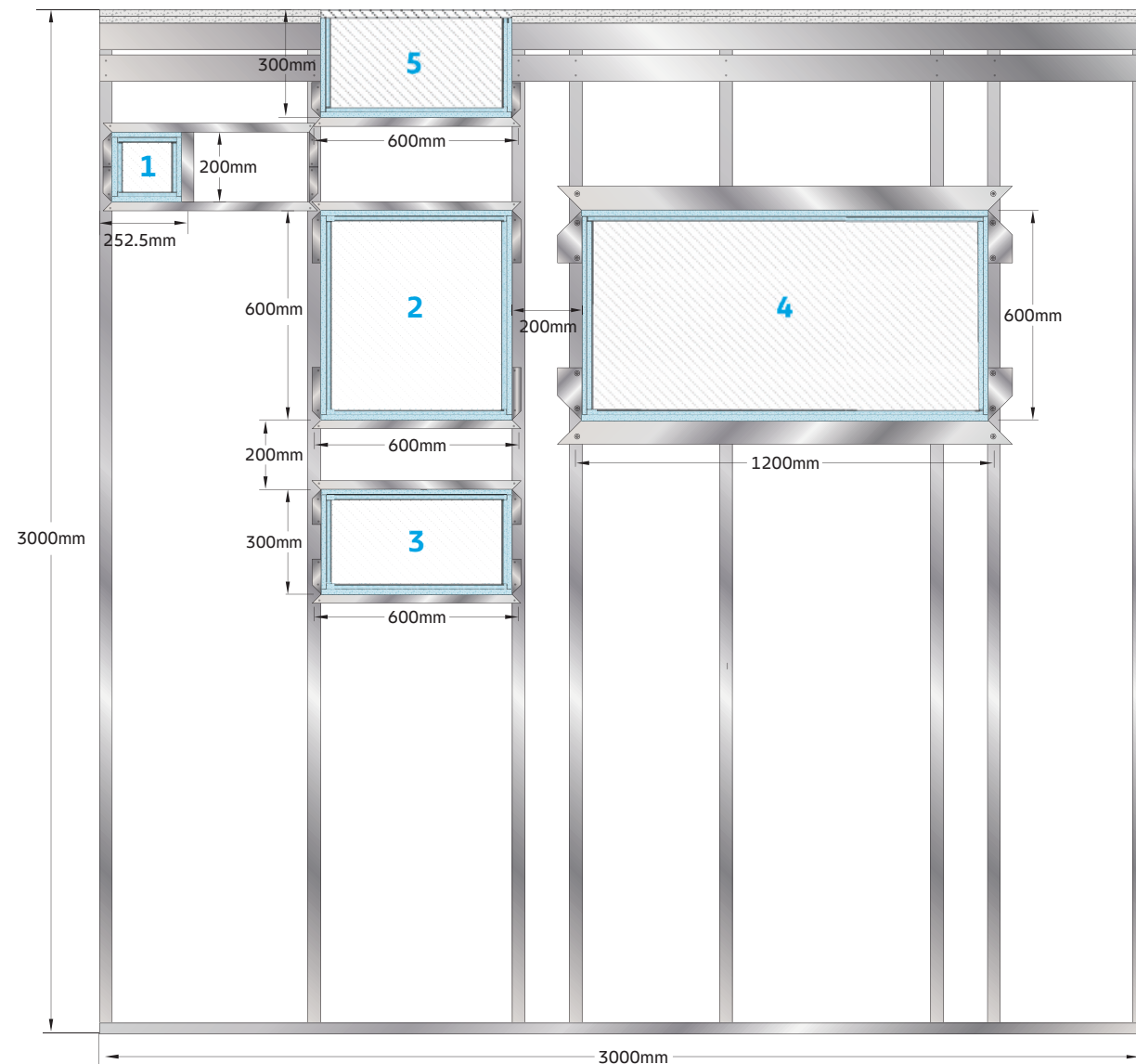
- KEY:**
- A: Knauf 70mm 'C' (0.55) Studs
 - B: Knauf 72mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Performance Plus
 - D: Knauf 25mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Knauf Insulation 25mm Acoustic Roll
 - G: Blank Seal
 - H: Knauf Flat Fixing Plate
 - I: Knauf 72mm Deep Flange 'U' (0.70) Channel – 70mm Deep Flange
 - J: Knauf Deflection Head Detail – Refer to Specification

The elevation detail of Opening 5 shows a three-sided service opening arrangement. This service opening arrangement is built utilising Knauf 72mm 'U' (0.55) Channel which was used to form the framework for the Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 70mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with one layer of Knauf 15mm Performance Plus, fixed using Knauf 25mm Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. For this system arrangement, Knauf Insulation 25mm Acoustic Roll was installed within the cavity. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Performer

System Reference EN-PC-50-055-6-2-15-SSP-0

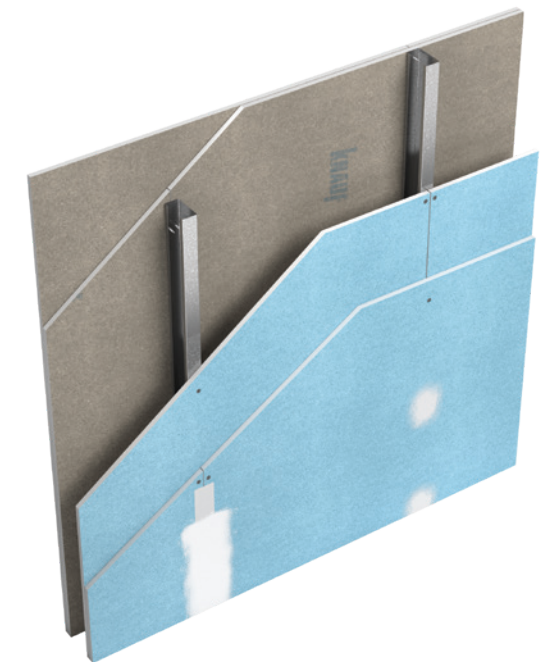
Elevation detail showing metal arrangement of the system



The elevation detail of Knauf Performer System (EN-PC-50-055-6-2-15-SSP-0) incorporates a 25mm deflection head arrangement, three services openings (with the location and spacing based on the principles of BS EN 1366-3), a further service opening at a perimeter location and one service opening arrangement (three-sided) that is common site scenario. The service opening arrangements are built using Knauf products with proprietary blank seal provided by a third-party supplier who can satisfy and provide relevant supporting evidence to maintain the fire resistance of systems to levels stated in Table 1.

The system is constructed using Knauf 50mm 'C' (0.55) Studs, spaced at 600mm centres, engaged within Knauf 52mm 'U' (0.55) Channel (floor channel) and Knauf 52mm Deep Flange 'U' (0.70) Channel – 70mm Deep Flange (head channel). Two layers of Knauf 15mm Soundshield Plus mechanically fixed either side of Knauf 50mm 'C' (0.55) Studs using 25mm and 45mm Knauf Performance Plus Screws. A deflection head construction forms part of the system, which utilises Knauf 52mm Deep Flange 'U' Channel – 70mm Deep Flange, two layers of Knauf 19mm Coreboard Fillets, Knauf Insulation Rocksilk®

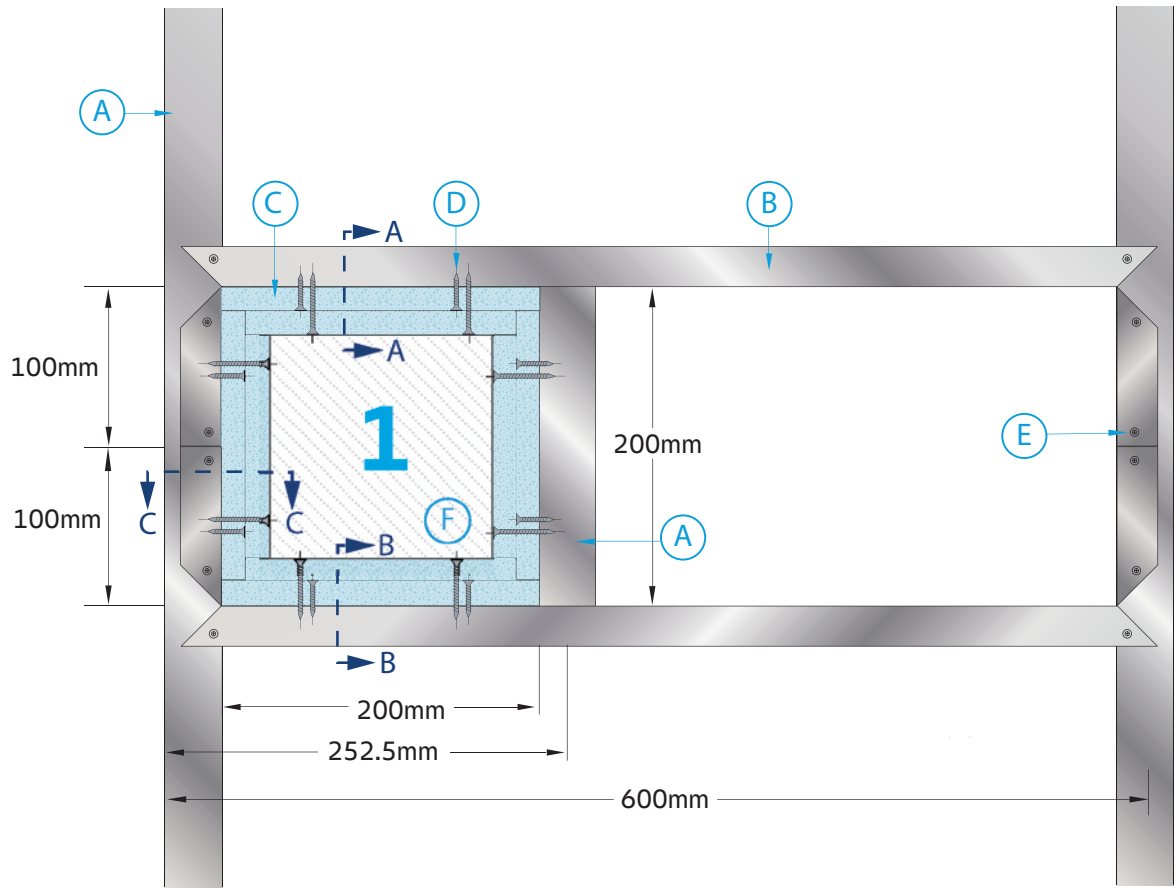
RS60, retained by Knauf 25x50mm Angle Sections. Knauf Flat Fixing Plate is installed horizontally across each side of the stud frame, with the distance between Knauf 52mm Deep Flange 'U' Channel – 70mm Flange of 25mm. For further information on the construction of the deflection head refer to Knauf Fire Rated Deflection Heads document. The system has various opening sizes, as located which are formed using Knauf metal components. Further information of these components is provided within this document.



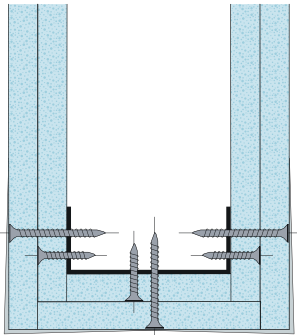
Knauf EI 120 Performer

System Reference EN-PC-50-055-6-2-15-SSP-0

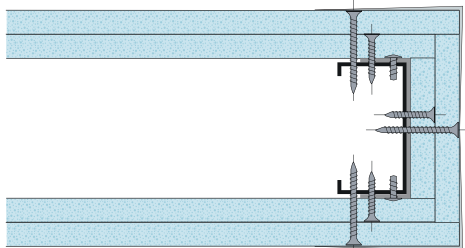
Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 1



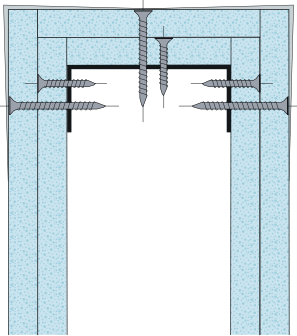
Lintel A-A



JAMB C-C



CILL B-B



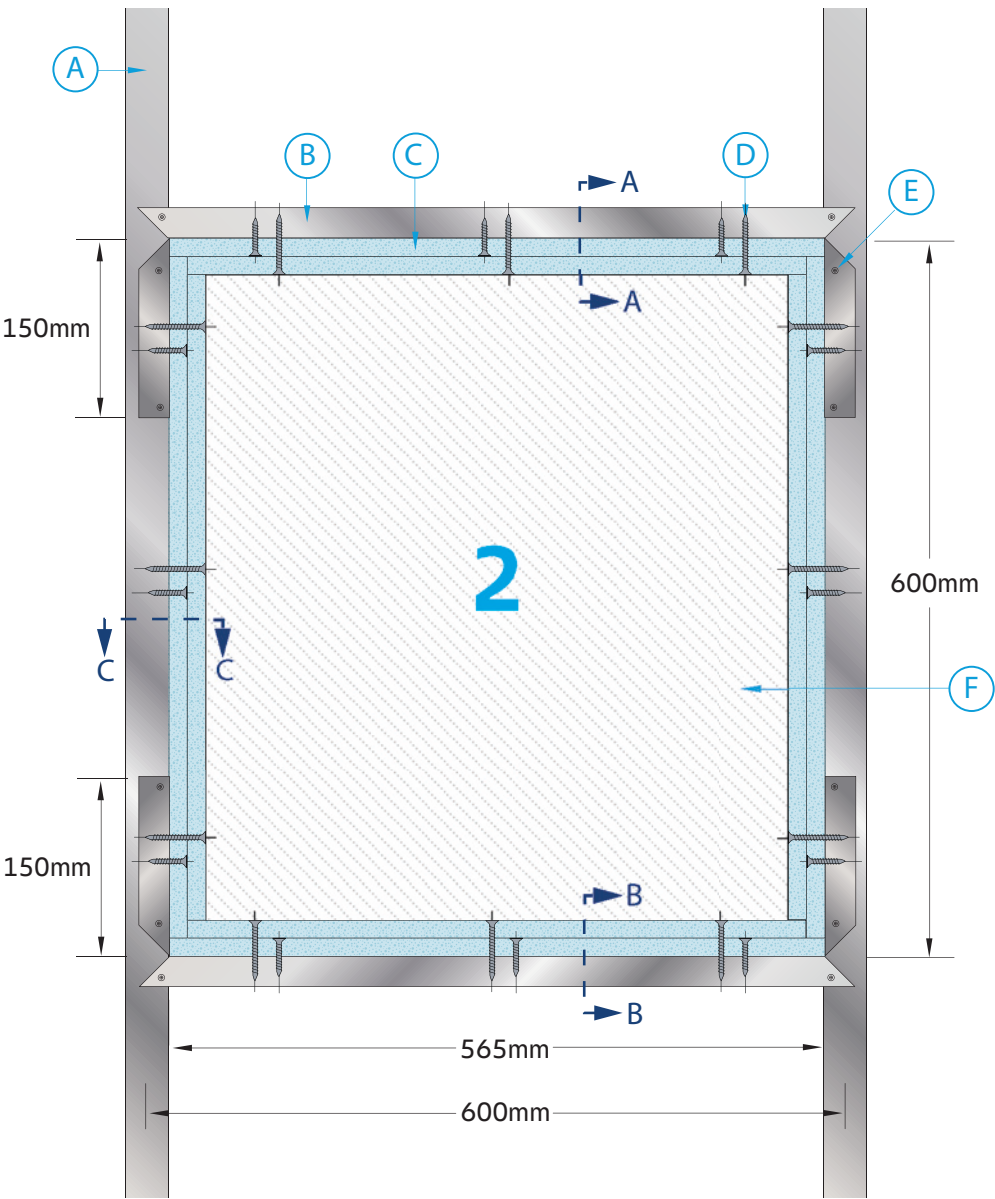
- KEY:**
- A: Knauf 50mm 'C' (0.55) Studs
 - B: Knauf 52mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Soundshield Plus
 - D: Knauf 25mm/45mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Blank Seal

The elevation detail of Opening 1 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 52mm 'U' (0.55) Channel which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 50mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. For this arrangement one side of the service opening arrangement is formed using sections of Knauf 50mm 'C' (0.55) Stud which is cut and snipped (flanges) at both ends, the web of stud is returned 90 degrees and then fixed to the Knauf 52mm 'U' (0.55) Channels using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with two layers of Knauf 15mm Soundshield Plus, fixed using Knauf 25mm and 45mm Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

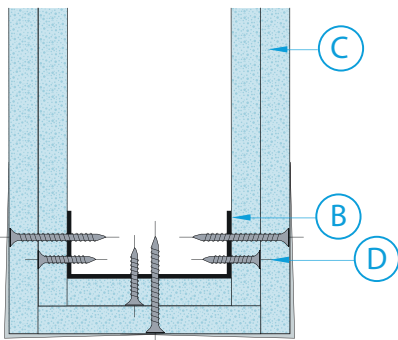
Knauf EI 120 Performer

System Reference EN-PC-50-055-6-2-15-SSP-0

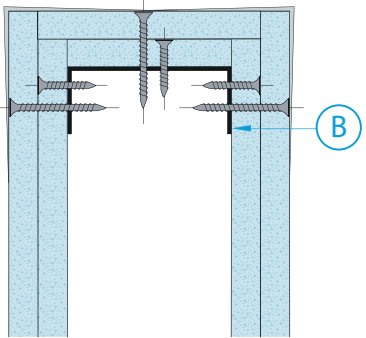
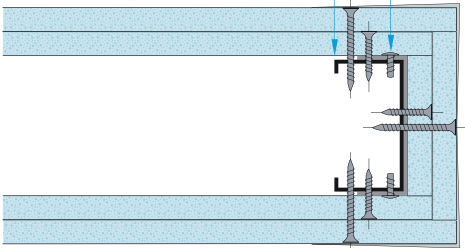
Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 2



Lintel A-A



JAMB C-C



CILL B-B

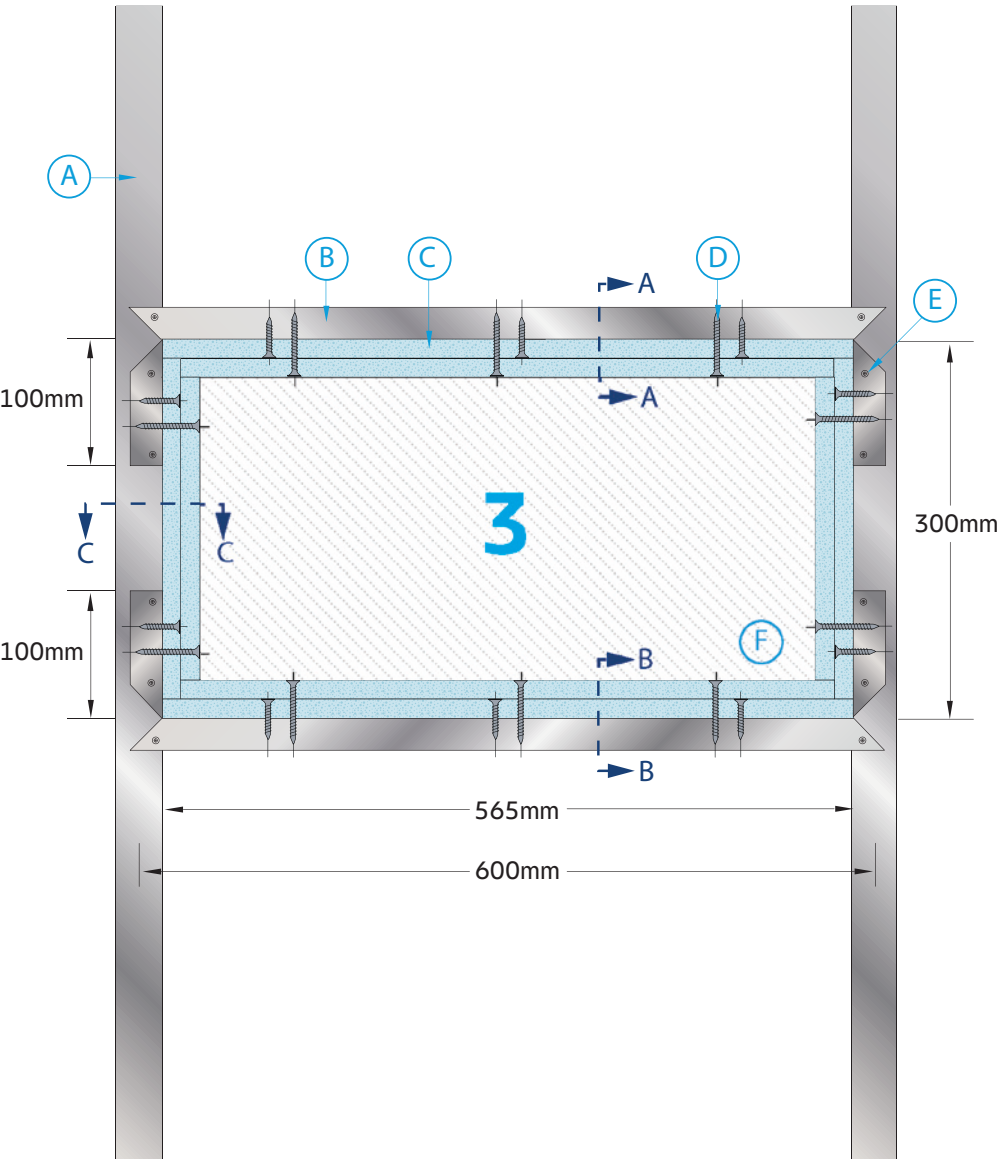
- KEY:**
- A: Knauf 50mm 'C' (0.55) Studs
 - B: Knauf 52mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Soundshield Plus
 - D: Knauf 25mm/45mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Blank Seal

The elevation detail of Opening 2 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 52mm 'U' (0.55) Channel which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 50mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with two layers of Knauf 15mm Soundshield Plus, fixed using 25mm and 45mm Knauf Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

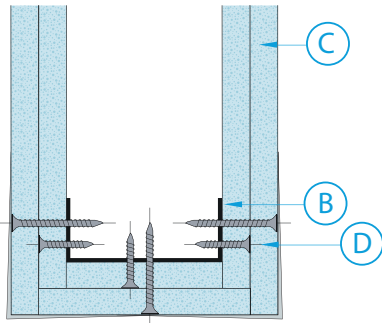
Knauf EI 120 Performer

System Reference EN-PC-50-055-6-2-15-SSP-0

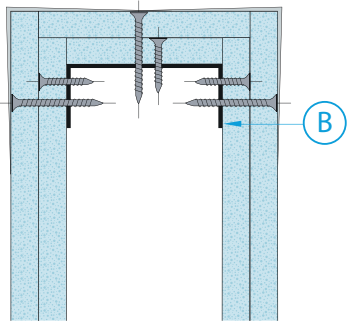
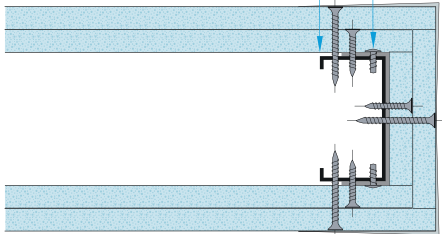
Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 3



Lintel A-A



JAMB C-C



CILL B-B

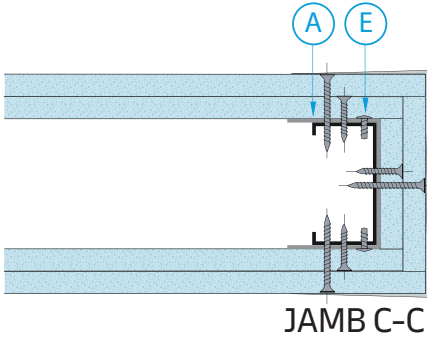
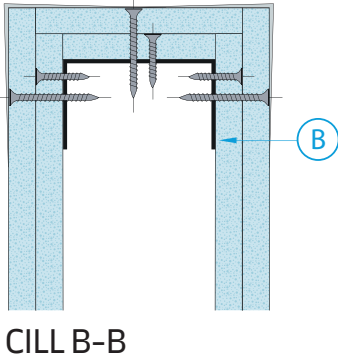
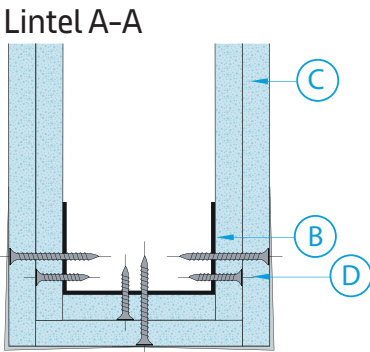
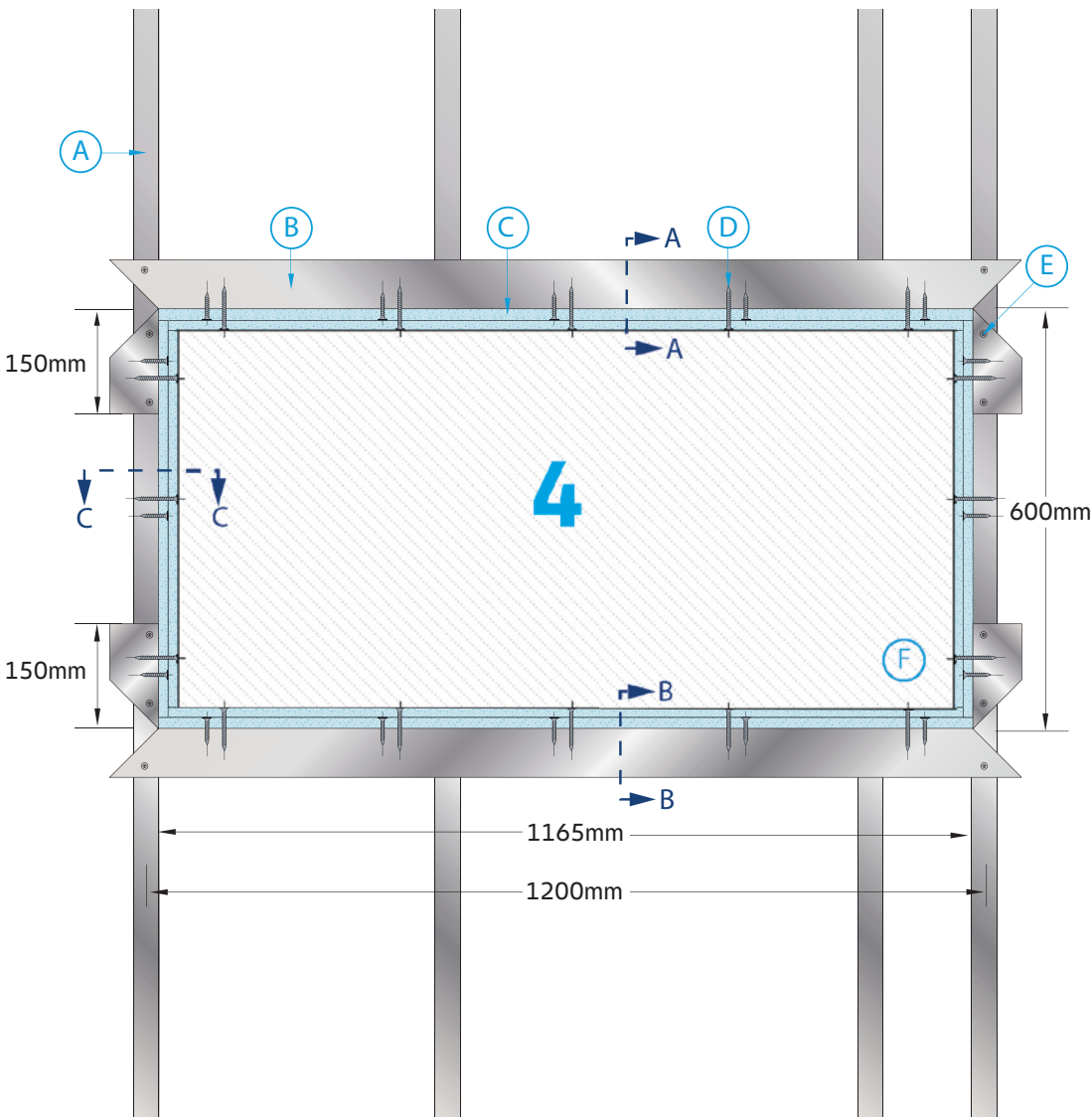
- KEY:**
- A: Knauf 50mm 'C' (0.55) Studs
 - B: Knauf 52mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Soundshield Plus
 - D: Knauf 25mm/45mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Blank Seal

The elevation detail of Opening 3 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 52mm 'U' (0.55) Channel which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 50mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with two layers of Knauf 15mm Soundshield Plus, fixed using 25mm and 45mm Knauf Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Performer

System Reference EN-PC-50-055-6-2-15-SSP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 4



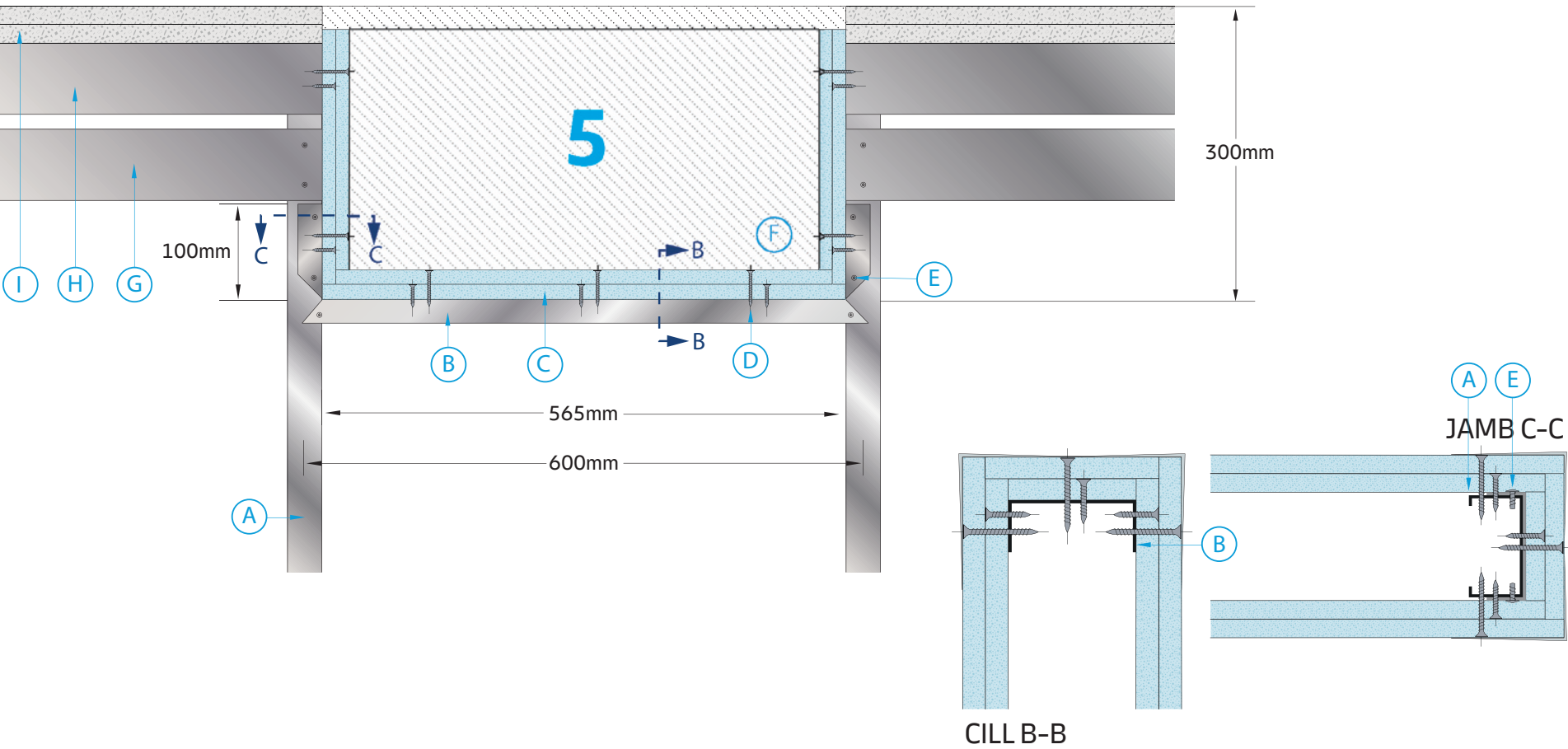
- KEY:**
- A: Knauf 50mm 'C' (0.55) Studs
 - B: Knauf 52mm Deep Flange 'U' (0.70) Channels – 70mm Deep Flange
 - C: Knauf 15mm Soundshield Plus
 - D: Knauf 25mm/45mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Blank Seal

The elevation detail of Opening 4 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 52mm Deep Flange 'U' (0.70) Channel – 70mm Deep Flange which was used to form the framework for the lintel (head) and Cill (base). The 'DFU' channel is supported by cloaking to the vertical Knauf 50mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with two layers of Knauf 15mm Soundshield Plus, fixed using 25mm and 45mm Knauf Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Performer

System Reference EN-PC-50-055-6-2-15-SSP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 5



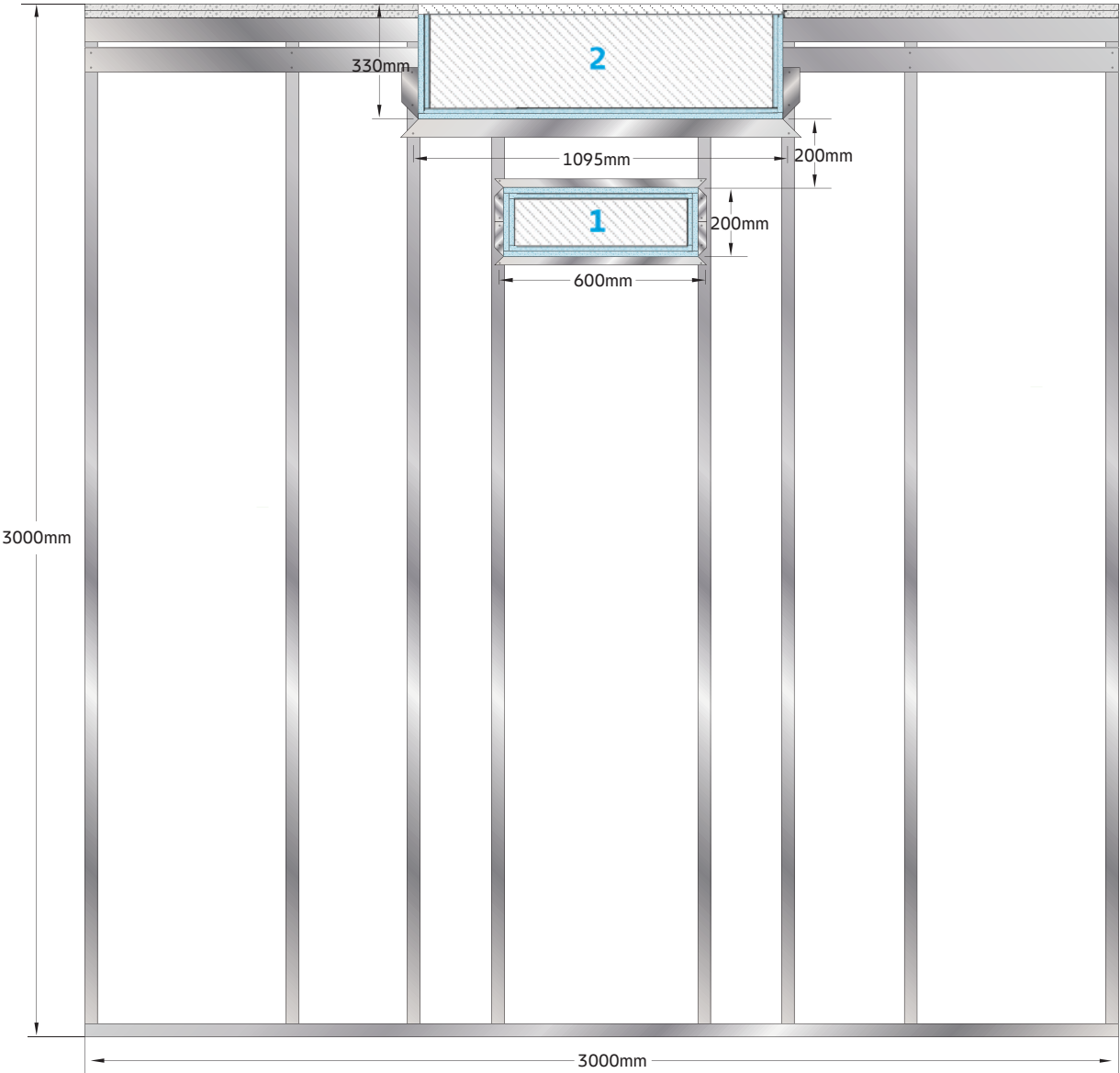
- KEY:**
- A: Knauf 50mm 'C' (0.55) Studs
 - B: Knauf 52mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Soundshield Plus
 - D: Knauf 25mm/45mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Blank Seal
 - G: Knauf Flat Fixing Plate
 - H: Knauf 52mm Deep Flange 'U' (0.70) Channel – 70mm Deep Flange
 - I: Knauf Deflection Head Detail – Refer to Specification

The elevation detail of Opening 5 shows a three-sided service opening arrangement. This service opening arrangement is built utilising Knauf 52mm 'U' (0.55) Channel which was used to form the framework for the Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 50mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with two layers of Knauf 15mm Soundshield Plus, fixed using 25mm and 45mm Knauf Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Isolator

System Reference EN-IC-70-055-6-2x15-SSP-2x25(214/120)

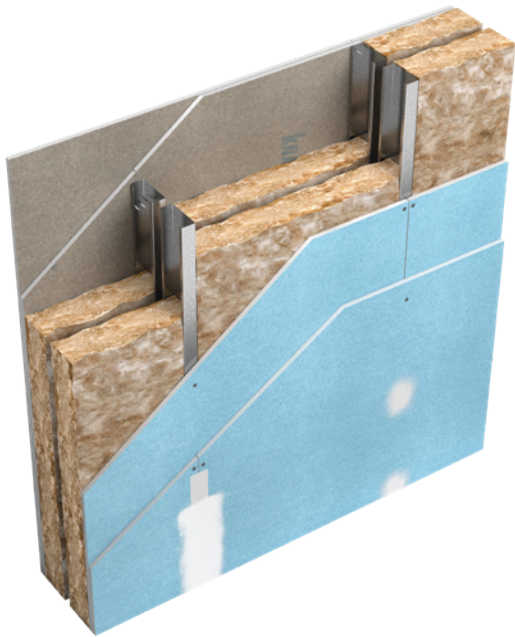
Elevation showing metal arrangement of the system



The elevation detail of Knauf Performer System EN-IC-70-055-6-2x15-SSP-2x25(214/120) incorporates a 25mm deflection head arrangement, two service openings (with the location and spacing based on the principles of BS EN 1366-3), one of which is four-sided and the other three-sided, located at a site scenario. The service opening arrangements are built using Knauf products with proprietary blank seal provided by a third-party supplier who can satisfy and provide relevant supporting evidence to maintain the fire resistance of systems to levels stated in Table 1.

The system is constructed using double Knauf 70mm 'C' (0.55) Studs, spaced at 600mm centres, engaged within Knauf 72mm 'U' (0.55) Channel (floor channel) and Knauf 72mm Deep Flange 'U' (0.60) Channel – 50mm Deep Flange (head channel). Two layers of Knauf 15mm Soundshield Plus mechanically fixed to outer sides of Knauf 70mm 'C' (0.55) Studs using 25mm and 45mm Knauf Performance Plus Screws with 2 x 25mm Knauf Insulation Acoustic Roll located within the cavity of the wall. A deflection head construction forms part of the system, which utilises Knauf 72mm

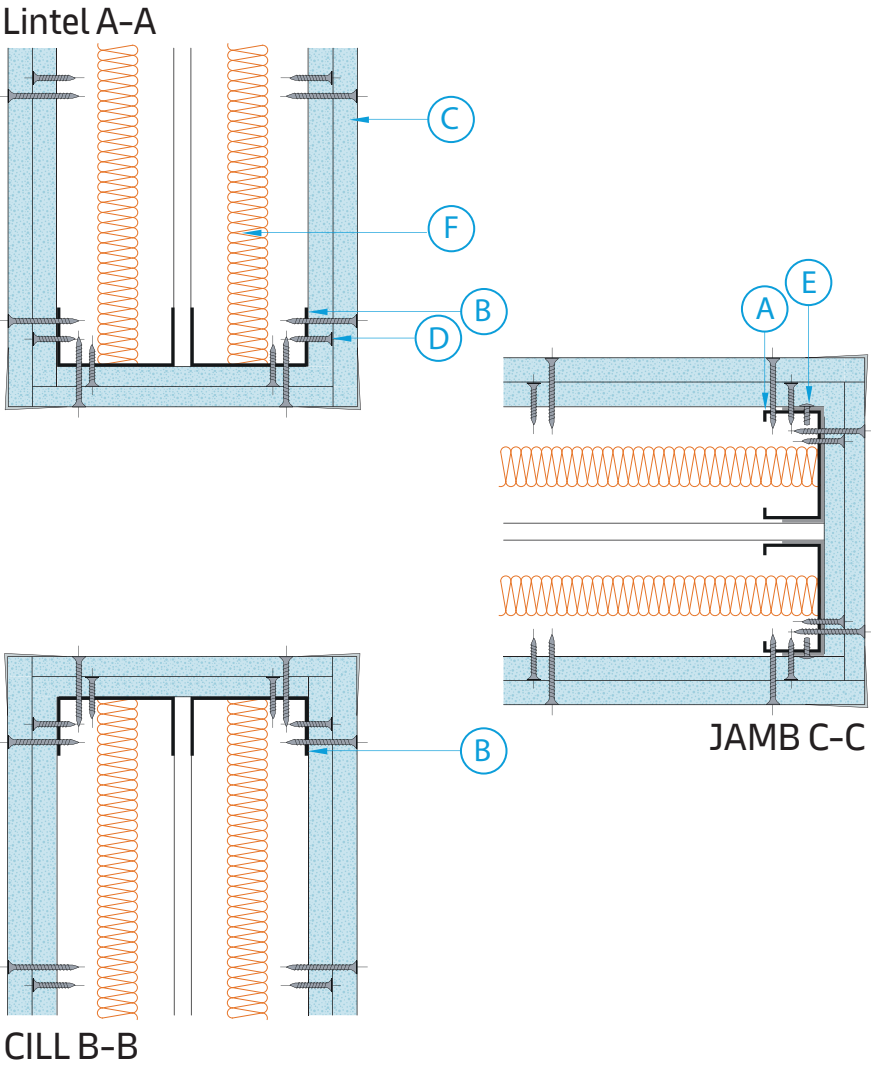
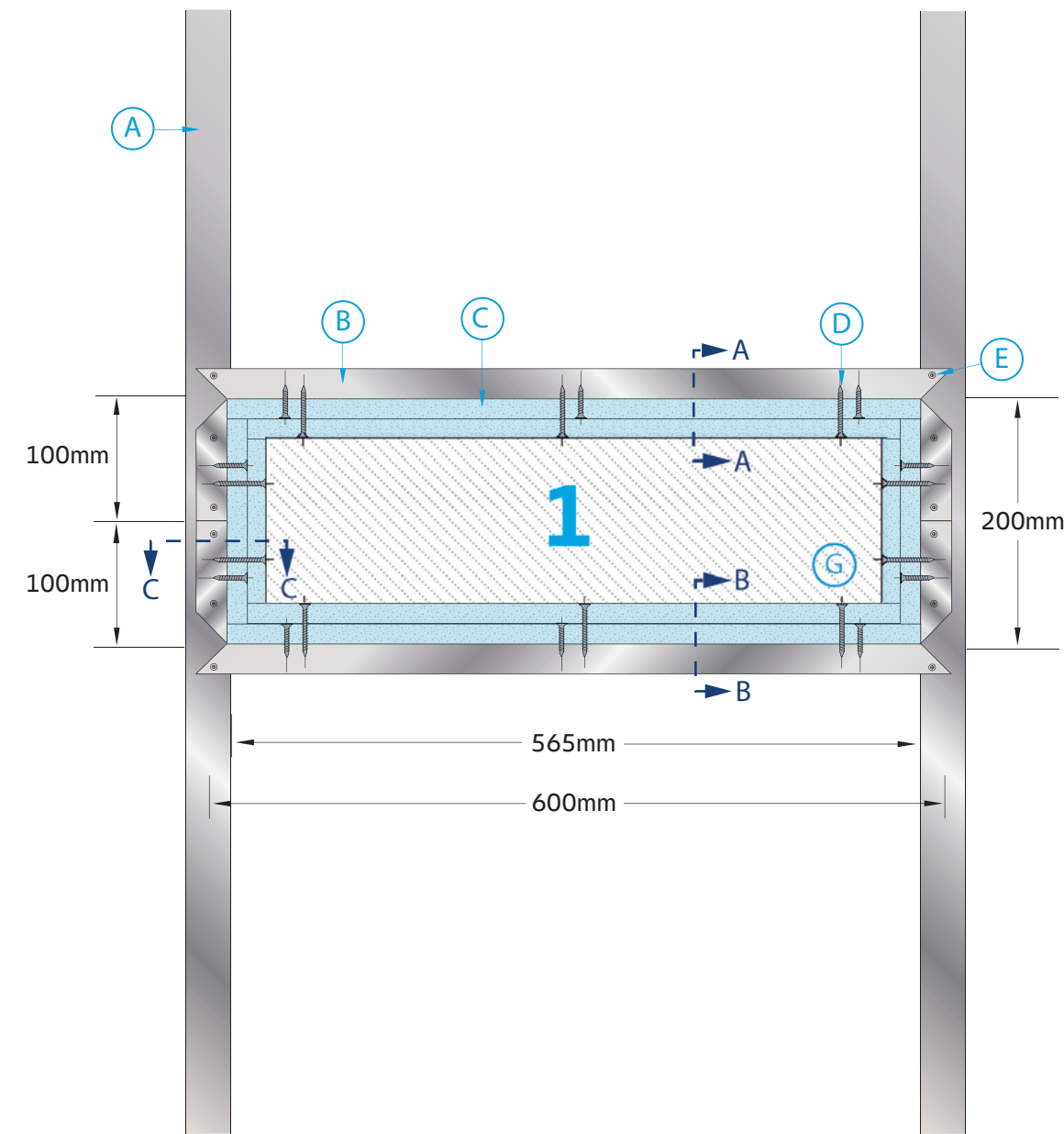
Deep Flange 'U' Channel – 50mm Flange, two layers of Knauf 19mm Coreboard Fillets, Knauf Insulation Rocksilk® RS60, retained by Knauf 25x50mm Angle Sections. Knauf Flat Fixing Plate is installed horizontally across the outer stud frames, with the distance between Knauf 72mm Deep Flange 'U' Channel – 50mm Flange of 25mm. For further information on the construction of the deflection head refer to Knauf Fire Rated Deflection Heads document. The system has various opening sizes, as located which are formed using Knauf metal components. Further information of these components is provided within this document.



Knauf EI 120 Isolator

System Reference EN-IC-70-055-6-2x15-SSP-2x25(214/120)

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 1



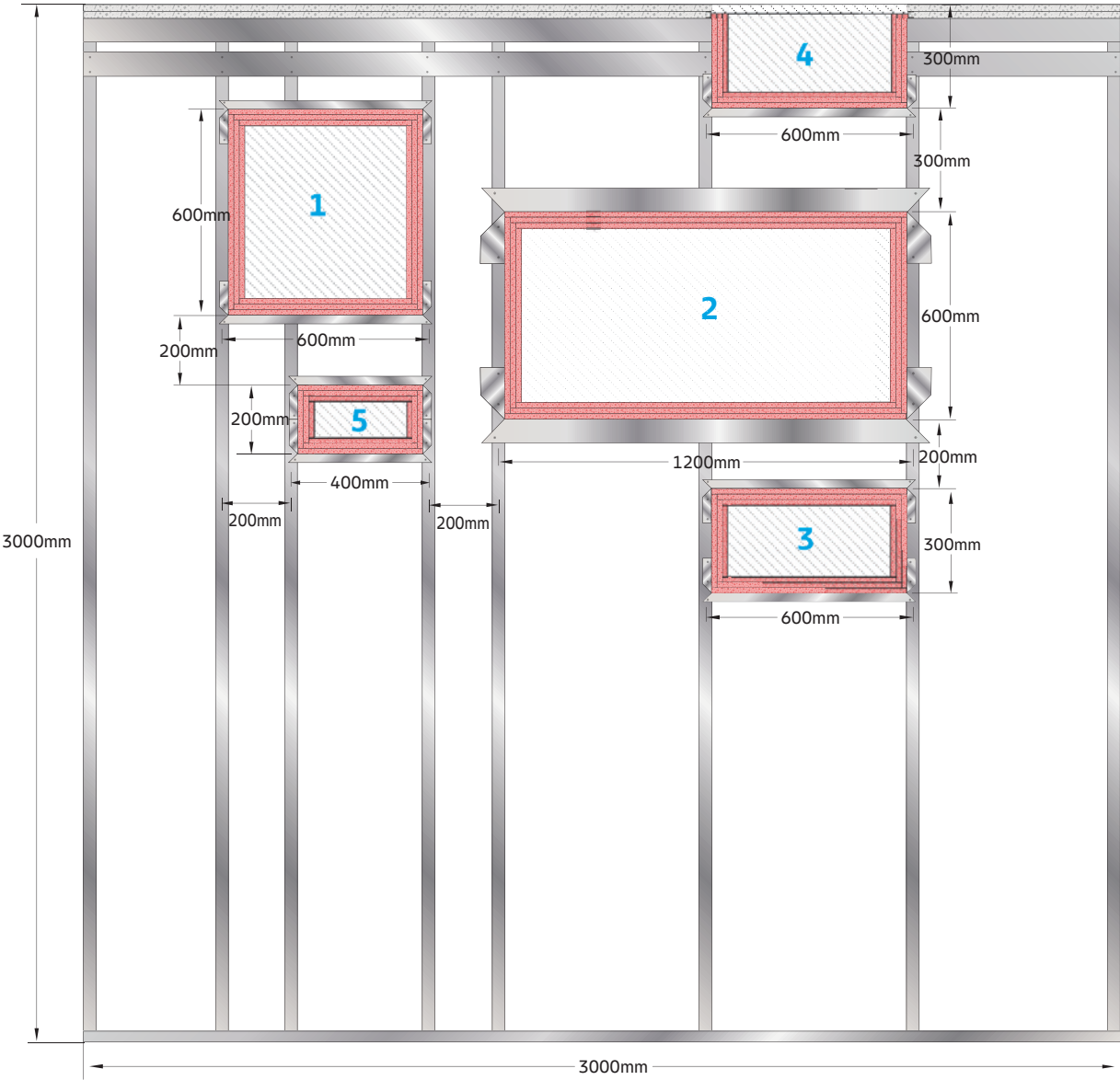
- KEY:**
- A: Knauf 70mm 'C' (0.55) Studs
 - B: Knauf 72mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Soundshield Plus
 - D: Knauf 25mm/45mm Performance Plus Screws
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Knauf Insulation 25mm Acoustic Roll
 - G: Blank Seal

The elevation detail of Opening 1 shows a four-sided service opening arrangement. This service opening arrangement is built utilising double Knauf 72mm 'U' (0.55) Channels which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 70mm 'C' (0.55) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling. The reveal of the opening was lined with two layers of Knauf 15mm Soundshield Plus, fixed using 25mm and 45mm Knauf Performance Plus Screws at 150mm centres, starting at 50mm from each corner of the reveal. For this system arrangement, Knauf Insulation 25mm Acoustic Roll was installed within each stud cavity. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Shaftwall

System Reference EN-SW-CT-60-092-6-3-15-FP-0

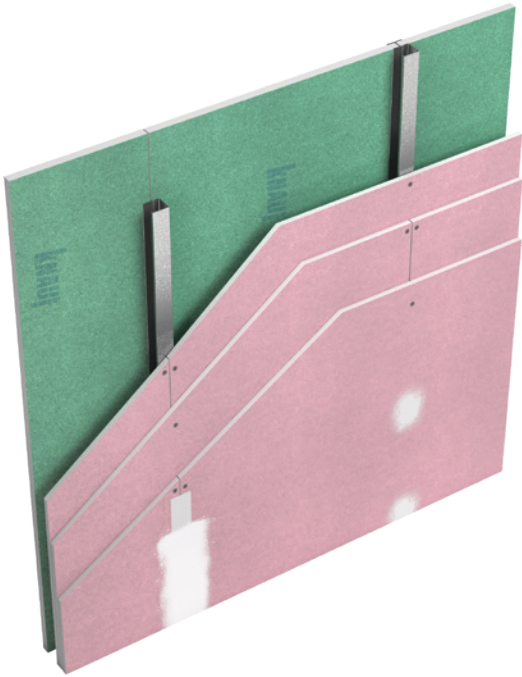
Elevation detail showing metal arrangement of the system



The elevation detail of Knauf Shaftwall System EN-SW-CT-60-092-6-3-15-FP-0 incorporates a 25mm deflection head arrangement, four services openings (with locations spacings taking the principles of BS EN 1366-3), and one service opening arrangement (three-sided) that is common site scenario. The service opening arrangements are built using Knauf products with proprietary blank seal provided by a third-party supplier who can satisfy and provide relevant supporting evidence to maintain the fire resistance of systems to levels stated in Table 1.

The system is constructed using Knauf 60mm 'CT' (0.92) Studs, spaced at 600mm centres, engaged within Knauf 62mm 'U' (0.55) Channel (floor channel) and Knauf 62mm Deep Flange 'U' (0.70) Channel – 70mm Deep Flange (head channel). An integral layer of Knauf 19mm Coreboard installed within Knauf 60mm 'CT' (0.92) Stud, lined internally with three layers of Knauf 15mm Fire Panel, mechanically fixed using Knauf 25mm, 42mm, 55mm Drywall Screws – Jackpoint Self Drilling. A deflection head construction forms part of the system, which utilises Knauf 62mm Deep Flange 'U' Channel – 70mm Deep Flange, two layers of Knauf 19mm Coreboard Fillets, Knauf 50mm Insulation Rocksilk® RS60 incorporated

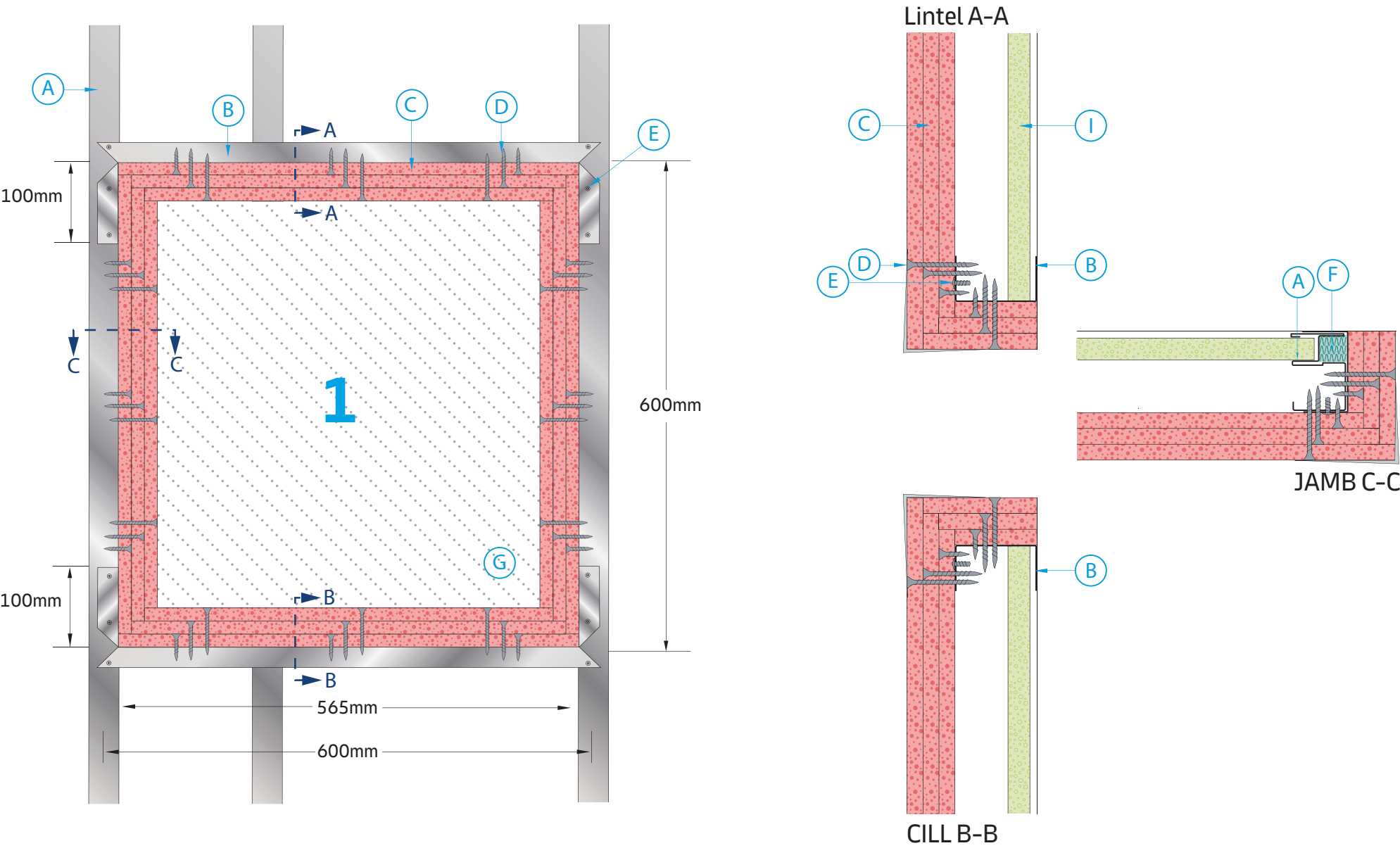
within head construction and installed above Knauf Fire Panels, retained by Knauf 25x50mm Angle Sections. Knauf Flat Fixing Plate is installed horizontally across one side of the stud frame where Knauf Fire Panels are fixed, with the distance between Knauf 62mm Deep Flange 'U' Channel – 70mm Flange of 25mm. For further information on the construction of the deflection heads refer to Knauf Fire Rated Deflection Heads document. The system has various opening sizes, as located which are formed using Knauf metal components. Further information of these components is provided within this document.



Knauf EI 120 Shaftwall

System Reference EN-SW-CT-60-092-6-3-15-FP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 1



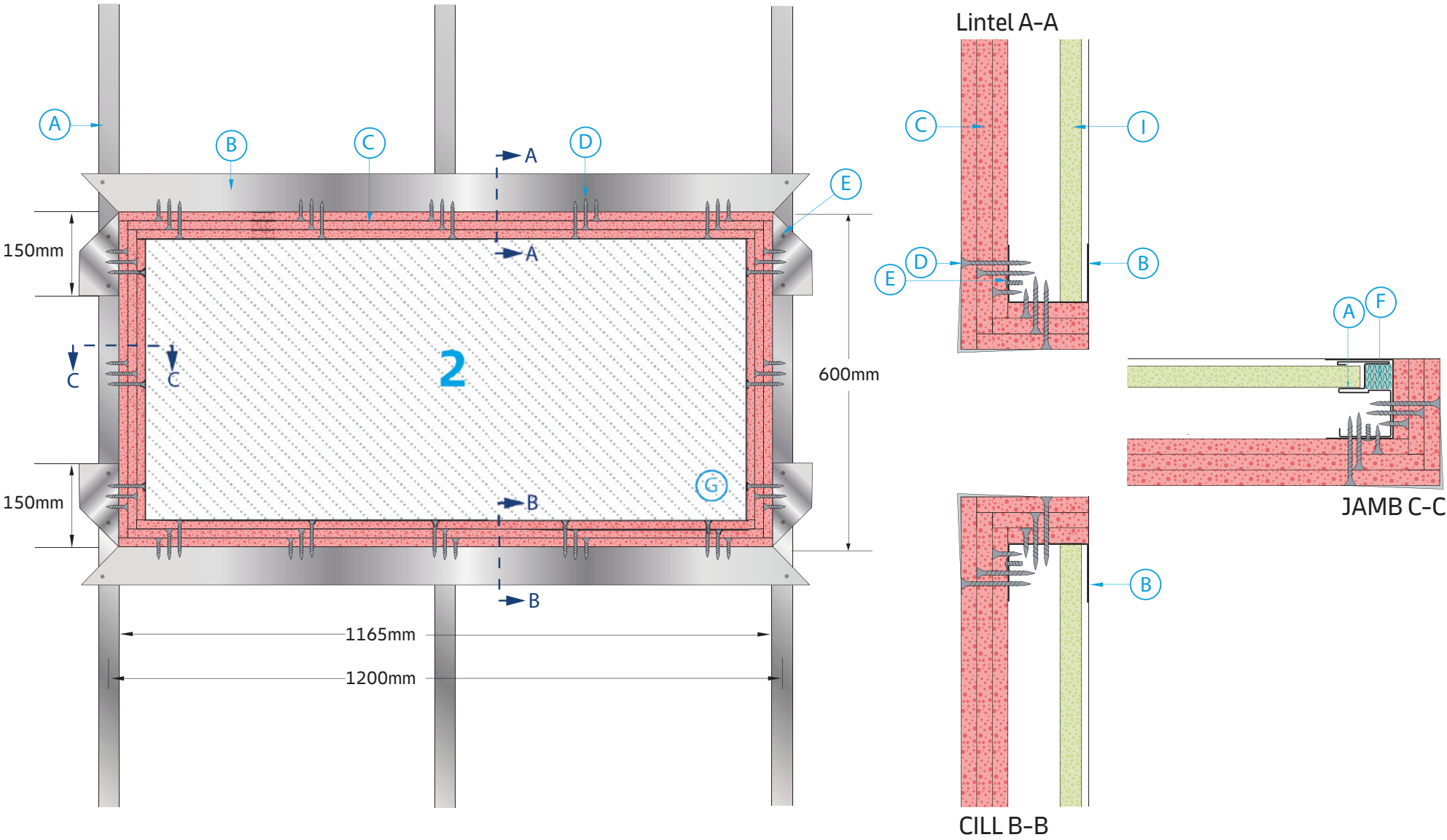
- KEY:**
- A: Knauf 60mm 'CT' (0.92) Studs
 - B: Knauf 62mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Fire Panel
 - D: Knauf 25mm, 42mm, 55mm Drywall Screws – Jackpoint Self Drilling
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Knauf Insulation Rocksilk® RS60
 - G: Blank Seal
 - I: Knauf 19mm Coreboard

The elevation detail of Opening 1 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 62mm 'U' (0.55) Channel which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 60mm 'CT' (0.92) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling to one side of frame. A strip of Knauf Insulation Rocksilk® RS60 is filled within the Jambs of Knauf 60mm CT (0.92) Studs. The reveal of the opening was lined with three layers of Knauf 15mm Fire Panel, fixed using 25mm, 42mm, 55mm Knauf Drywall Screws – Jackpoint Self Drilling at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Shaftwall

System Reference EN-SW-CT-60-092-6-3-15-FP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 2



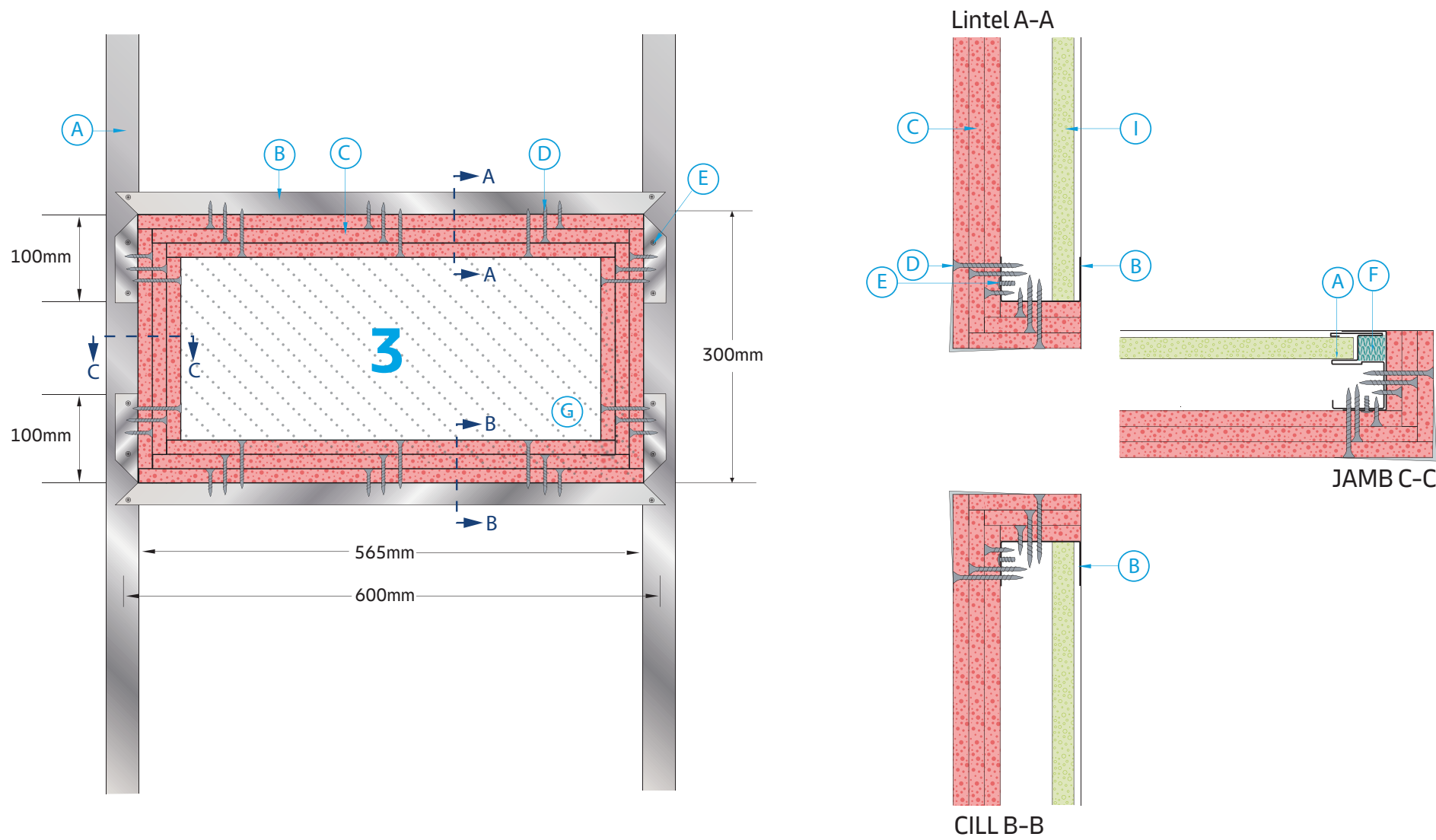
- KEY:**
- A: Knauf 60mm 'CT' (0.92) Studs
 - B: Knauf 62mm Deep Flange 'U' (0.70) Channels - 70mm Deep Flange
 - C: Knauf 15mm Fire Panel
 - D: Knauf 25mm, 42mm, 55mm Drywall Screws - Jackpoint Self Drilling
 - E: Knauf Wafer Head Screws - Jackpoint Self Drilling
 - F: Knauf Insulation Rocksilk® RS60
 - G: Blank Seal

The elevation detail of Opening 2 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 62mm Deep Flange 'U' (0.70) Channel - 70mm Deep Flange which was used to form the framework for the lintel (head) and Cill (base). The 'DFU' channel is supported by cloaking to the vertical Knauf 60mm 'CT' (0.92) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws - Jackpoint Self Drilling to one side of frame. A strip of Knauf Insulation Rocksilk® RS60 is filled within the Jambs of Knauf 60mm CT (0.92) Studs. The reveal of the opening was lined with three layers of Knauf 15mm Fire Panel, fixed using 25mm, 42mm, 55mm Knauf Drywall Screws - Jackpoint Self Drilling at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Shaftwall

System Reference EN-SW-CT-60-092-6-3-15-FP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 3



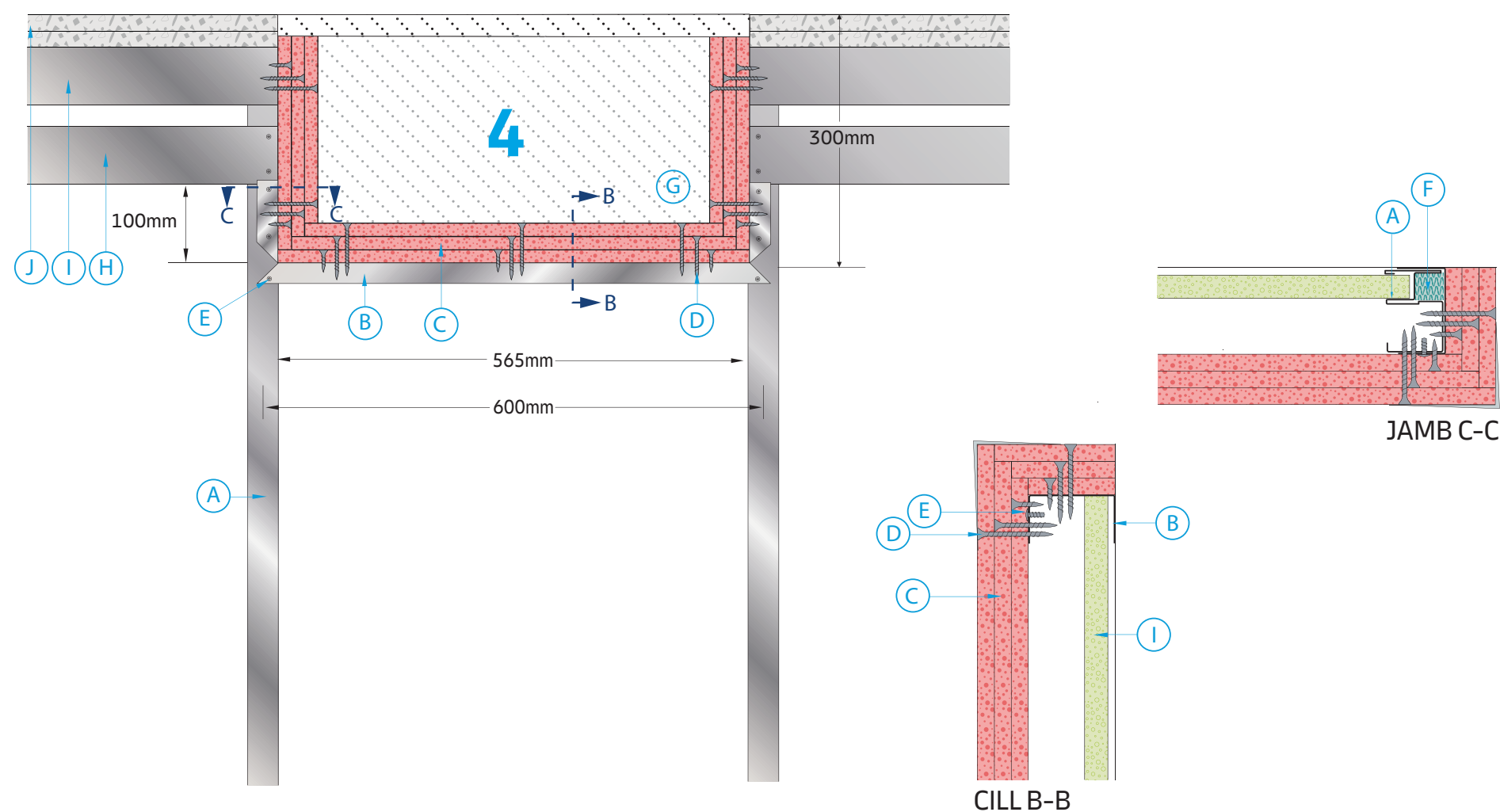
- KEY:**
- A: Knauf 60mm 'CT' (0.92) Studs
 - B: Knauf 62mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Fire Panel
 - D: Knauf 25mm, 42mm, 55mm Drywall Screws – Jackpoint Self Drilling
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Knauf Insulation Rocksilk® RS60
 - G: Blank Seal

The elevation detail of Opening 3 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 62mm 'U' (0.55) Channel which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 60mm 'CT' (0.92) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling to one side of frame. A strip of Knauf Insulation Rocksilk® RS60 is filled within the Jambs of Knauf 60mm CT (0.92) Studs. The reveal of the opening was lined with three layers of Knauf 15mm Fire Panel, fixed using 25mm, 42mm, 55mm Knauf Drywall Screws – Jackpoint Self Drilling at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Shaftwall

System Reference EN-SW-CT-60-092-6-3-15-FP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 4



KEY:

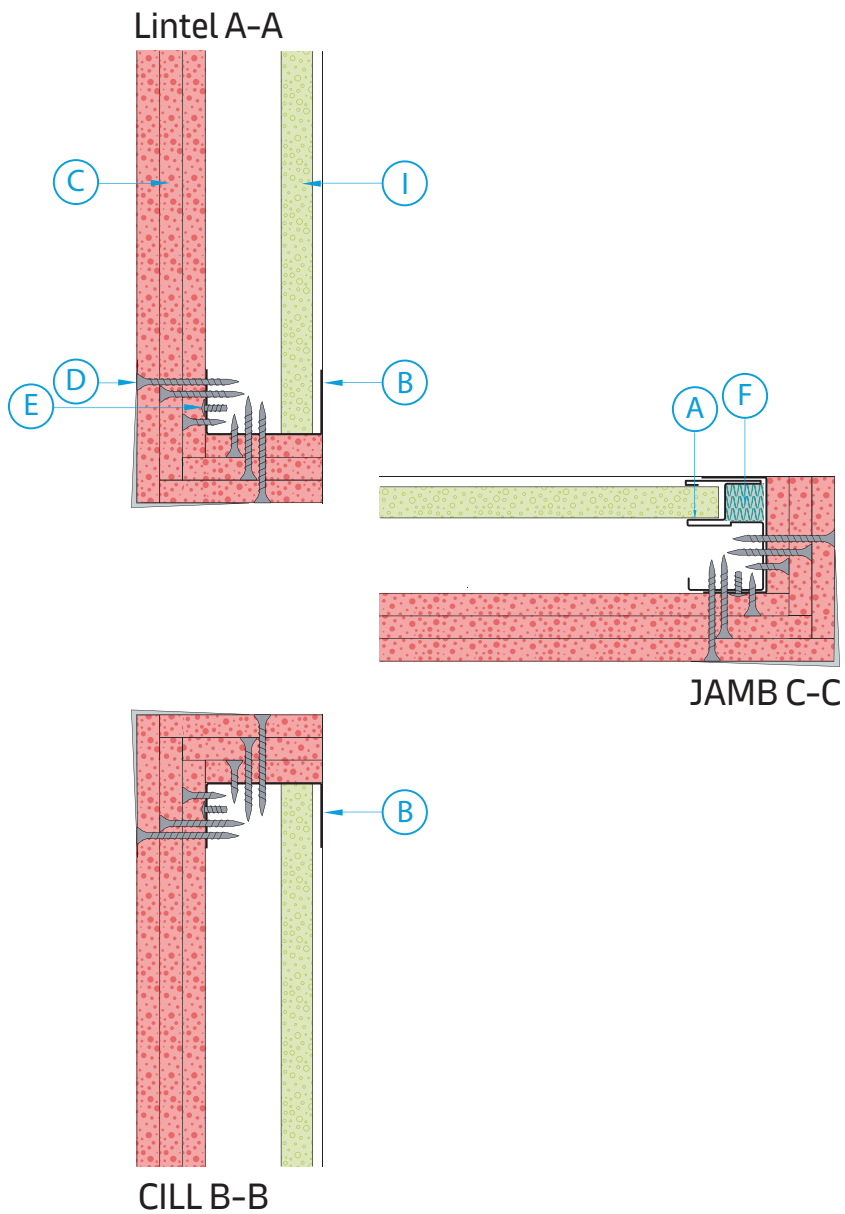
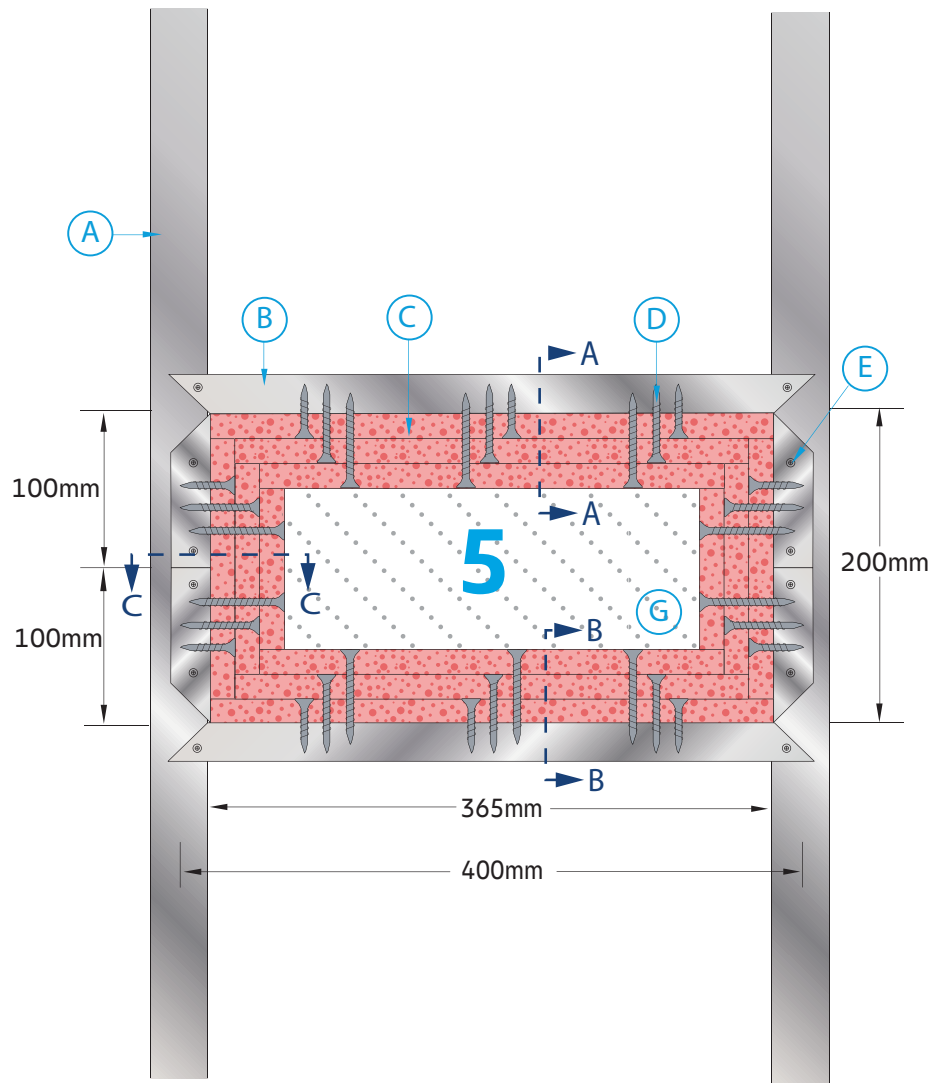
- A: Knauf 60mm 'CT' (0.92) Studs
- B: Knauf 62mm 'U' (0.55) Channels (25mm flange)
- C: Knauf 15mm Fire Panel
- D: Knauf 25mm, 42mm, 55mm
Drywall Screws – Jackpoint Self Drilling
- E: Knauf Wafer Head Screws – Jackpoint Self Drilling
- F: Knauf Insulation Rocksilk® RS60
- G: Blank Seal
- H: Knauf Flat Fixing Plate
- I: Knauf 62mm Deep Flange 'U' (0.70) Channel
– 70mm Deep Flange
- J: Knauf Deflection Head Detail – Refer to Specification

The elevation detail of Opening 4 shows a three-sided service opening arrangement. This service opening arrangement is built utilising Knauf 62mm 'U' (0.55) Channel which was used to form the Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 60mm 'CT' (0.92) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling to one side of frame. A strip of Knauf Insulation Rocksilk® RS60 is filled within the Jambs of Knauf 60mm CT (0.92) Studs. The reveal of the opening was lined with three layers of Knauf 15mm Fire Panel, fixed using 25mm, 42mm, 55mm Knauf Drywall Screws – Jackpoint Self Drilling at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

Knauf EI 120 Shaftwall

System Reference EN-SW-CT-60-092-6-3-15-FP-0

Elevation and cross section views, showing the metal and plasterboard arrangement for Opening 5



- KEY:**
- A: Knauf 60mm 'CT' (0.92) Studs
 - B: Knauf 62mm 'U' (0.55) Channels (25mm flange)
 - C: Knauf 15mm Fire Panel
 - D: Knauf 25mm, 42mm, 55mm Drywall Screws – Jackpoint Self Drilling
 - E: Knauf Wafer Head Screws – Jackpoint Self Drilling
 - F: Knauf Insulation Rocksilk® RS60
 - G: Blank Seal

The elevation detail of Opening 5 shows a four-sided service opening arrangement. This service opening arrangement is built utilising Knauf 62mm 'U' (0.55) Channel which was used to form the framework for the lintel (head) and Cill (base). The 'U' channel is supported by cloaking to the vertical Knauf 60mm 'CT' (0.92) Studs, which are spaced 600mm centres apart. This is securely fixed using Knauf Wafer Head Screws – Jackpoint Self Drilling to one side of frame. A strip of Knauf Insulation Rocksilk® RS60 is filled within the Jambs of Knauf 60mm CT (0.92) Studs. The reveal of the opening was lined with three layers of Knauf 15mm Fire Panel, fixed using 25mm, 42mm, 55mm Knauf Drywall Screws – Jackpoint Self Drilling at 150mm centres, starting at 50mm from each corner of the reveal. A proprietary blank seal provided by a third-party supplier was used and must be used to satisfy and provide relevant supporting evidence to maintain the fire resistance of system to levels stated in Table 1.

4 OPENINGS

GUIDANCE SUMMARY

Following the completion of the fire testing program, Knauf have reviewed the behavioral elements of stiffness and stability of identical Knauf systems with and without openings.

The summary has concluded that the prescribed openings and locations as shown within this document, resulted in no reduction in the level of fire resistance classified performances in comparison to systems without openings.

Via test observations, the Knauf metal opening arrangements performed well, maintaining the blank seals in position, whilst keeping the stability of the main partition frame. No detrimental twisting of Knauf metal studs and Knauf channels framing channels had occurred.

Based on the results, the following guidance tables have been created to provide a uniform approach to all Knauf fire resistant partition systems. Table 2 summaries the required Knauf Channels and the reveal turn dimensions based on opening widths. In addition, Table 3 and Table 4, provides the blank seal width openings subject to the Knauf metal framing widths for Knauf partitions and Knauf Shaftwall partitions respectively.

TABLE 2: Overview of required Knauf Channels and reveal turns based on width of openings

Knauf System Type	Number of sides to service blank seal openings	Knauf stud spacing width (mm)	Knauf Channel type, gauge (mm) and flange size	Reveal turn dimension (mm)	Blank seal height range (mm)
Performer (Single Double)	4	≤600	'U' (0.55) Channel (25mm flange)	100	200 - 300
Performer (Single Double)	4	≤600	'U' (0.55) Channel (25mm flange)	150	300 - 600
Performer (Single Double)	4	600 - ≤1200	Deep Flange 'U' Channel (0.70) Channel – 70mm Deep Flange	150	300 - 600
Performer (Single Double)	3 (Deflection zone)	≤600	'U' (0.55) Channel (25mm flange)	100	Opening depth max. 300
Isolator	4	≤600	'U' (0.55) Channel (25mm flange)	100	200
Isolator	3 (Deflection zone)	600 - ≤1095	Deep Flange 'U' Channel (0.70) Channel – 70mm Deep Flange*	150	Opening depth max. 330
Shaftwall	4	≤600	'U' (0.55) Channel (25mm flange)	100	200 – 600
Shaftwall	4	600 - ≤1200	Deep Flange 'U' Channel (0.70) Channel – 70mm Deep Flange	150	300 – 600
Shaftwall	3 (Deflection zone)	≤600	'U' (0.55) Channel (25mm flange)	100	Opening depth max. 300

*Tested with Deep Flange U (0.60) – 50mm Deep Flange.

TABLE 3: Overview of required blank seal width sizes to suit metal clear opening width size and various plasterboard configurations in Knauf partitions.

Maximum clear opening width sizes (mm) at various stud centres (mm) with Knauf plasterboard (mm) reveal – lining no. of layers thicknesses				
Knauf metal framing opening width size (mm)*	600 400 300 Stud Centres			
	1 x 12.5	1 x 15	2 x 12.5	2 x 15
200	175	170	150	140
565	540	535	515	505
1165	1140	1135	1115	1105

*Opening size is calculated based on the metal frame opening width size minus the thickness of plasterboard reveals.

TABLE 4: Overview of required blank seal width sizes to suit metal clear opening width size and various plasterboard configurations in Knauf Shaftwall.

Maximum clear opening width sizes (mm) at various stud centres (mm) with Knauf plasterboard (mm) reveal – lining no. of layers thicknesses		
Knauf metal framing opening width size (mm)*	2 x 12.5	3 x 15
365**	315	275
565	515	475
1165	1115	1075

*Opening size is calculated by metal frame opening width size minus the thickness of plasterboard reveals.

** Stud spacing 400mm.

5 *DISCLAIMER*

This disclaimer must be read in conjunction with all the drawings and details provided in this document.

The details shown here form part of a tested construction with a deflection head. Any deviations from the dimensions, components or layouts must be approved by a third-party. The details demonstrate how to create openings within Knauf fire resistant partition systems whilst maintaining the overall fire resistance performance of that partition system. Any penetrations made with this system should be tested as suitable within a flexible wall construction to the relevant test standards. This construction is therefore suitable for use as part of a fire rated construction subject to the provision of valid data from the relevant third-party manufacturers of passive fire protection.

The details must be used in conjunction with fire stopping products supplied by the manufacturer and installed by the specialist contractors who are approved by the relevant duty holder/s on the project. In relation to service openings, Knauf advise that the fire stopping products (third-party supplier) are required to be designed and substantiated to achieve required fire resistance in accordance with current testing standards and field of application, within flexible wall supporting constructions.

The Knauf details, provide typical arrangement details for service openings in fire resistant partitions using Knauf components. These are referenced against the requirements of BS EN 1366-3, and BS EN 1634-1.

For other Knauf systems that contain openings, please contact the Knauf Technical Team (Technical-UK@Knauf.com) who can provide relevant guidance.



6 *FURTHER GUIDANCE*

Relevant Test Methodologies, Standards and Guidance

- BS EN 1364-1:2015 Fire resistance tests for non-loadbearing elements, walls.
- BS EN 1366-3:2009 Fire resistance tests for service installations, penetration seals.
- BS EN 1634-1:2014 Fire resistance tests for door and shutter assemblies.
- BS EN 1366-3:2021: Fire resistance for service installations and penetration seals.
- BS EN 1366-2:2015: Fire resistance tests for service installations. Fire dampers.
- BS EN 1634-1:2014+A1: 2018: Fire resistance and smoke control tests for door and shutter assemblies, openable windows, and elements of building hardware – Fire resistance test for door and shutter assemblies and openable windows.
- TGD 17 – ASFP Technical Guidance Document: Code of practise for the installation and inspections of fire stopping systems in buildings: Linear joint seals, penetration seals, small cavity barriers. 2013.
- Firestopping of service penetrations – Best practise in design and installation. ASFP, BESA, BSRIA, FIS, GPDA. 2020.
- Use and limitations of drywall specifications and standard details. GPDA. 2022.

Further Guidance and Support

If you have any questions in relation to this document, please contact the Knauf Technical Team **Technical-UK@Knauf.com** who can provide relevant guidance.

Other Knauf Documentation and Guidance

- Knauf EN compliance Systems – Knauf
- Knauf BS Compliance Systems – Knauf
- Knauf Fire Rated Deflection Heads – Knauf



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