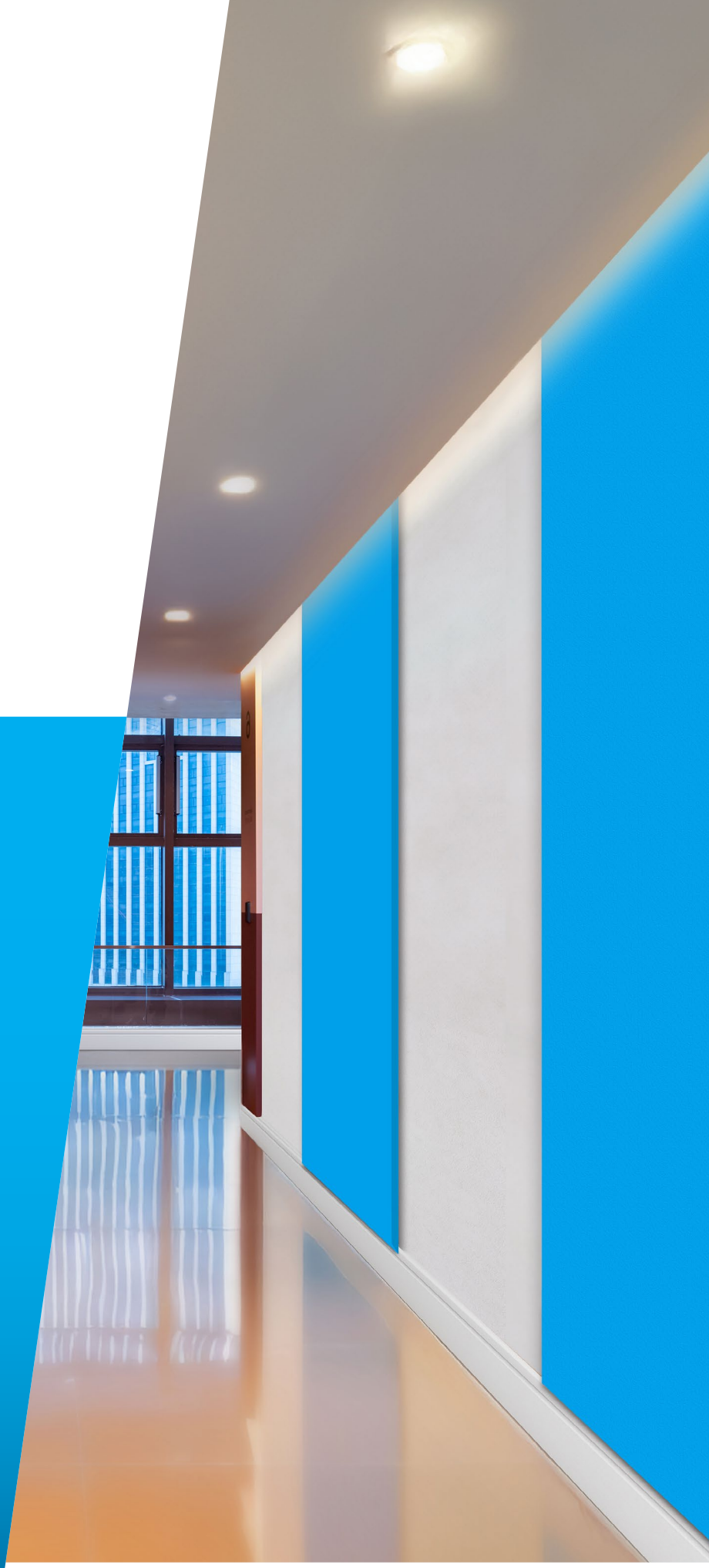
KNAUF

VENTSHAFT MANUAL

Wall Systems



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All works undertaken to prescribe the use of or to install Knauf's products and systems must be performed by experienced and, where required by applicable laws, appropriately licensed personnel. Knauf's products and systems must be installed in accordance with Knauf's installation manual, Systems+, and any other product or system specific literature issued by Knauf. If installation works are not performed in compliance with such product literature, by experienced and licensed personnel, or are incorrectly performed by experienced or licensed personnel, there is a serious risk that the works, application and performance of the relevant system or products will be compromised, which could result in property damage, injury or death.

All personnel who undertake works to install Knauf's products and systems must comply with all applicable health and safety laws, including wearing appropriate personal protection equipment. If personnel do not comply with applicable health and safety laws, including by not wearing appropriate personal protection equipment, there is a serious risk of injury or death.

All of Knauf's products and systems must only be used for the uses identified in this document (and any other product or system specific literature issued by Knauf from time to time). Before prescribing or using any Knauf product or system for any other use, you must contact Knauf. All recommended component parts for Knauf's products and systems should be used and not substituted for other products. If component parts are substituted, there is a serious risk that the works, application and performance of the relevant system or products will be compromised, which could result in property damage, injury or death.

This product manual is intended to provide general information on plasterboard products and should not be used as a substitute for professional building advice. We recommend you use a qualified person to install Knauf plasterboard. To ensure the information you are using is current, Knauf recommends you review the latest building information available on the Knauf website Knauf.com. For further information contact TecASSIST or your Knauf representative.

Content

VENTSHAFT

Introduction

Knauf Ventshaft is a family of non-loadbearing, laminated fire-rated wall systems developed primarily for use as enclosures around minor floor penetrations, vent and service risers, for use in commercial and residential building construction.

Ventshaft offers footprint reduction and cost savings to builders and developers through its combination of lightweight construction and rapid installation.

Designed for erection from one side only, Ventshaft systems are assembled outside of the shaft eliminating the need for access from both sides.

Description

Knauf Ventshaft systems are constructed by laminating three leaves of fire-rated plasterboard together, with no requirement for steel or timber stud framing. Perimeter steel angles are used for the top and bottom tracks, and at the sides and corners of the system.

The Ventshaft system is ideal for use in hotels and multi-storey residential developments where small service shaft penetrations, air return and exhaust risers between levels are required.

The system can accommodate a wide range of fire-rated penetrations and provides a simple construction solution for the designer.

GENERAL INFORMATION

Features and Benefits

- No wet trades are required
- Lightweight and space efficient
- Cost effective and versatile
- Fast and easy to construct from one side, eliminating the need for access from the shaft side
- Permits easy inclusion of services and penetrations such as power points, dampers, and pipes
- FRL up to -/120/120 in both directions

Figure 1: Examples of Knauf Ventshaft Systems

System VS90.1A

System VS120.2A

Design Options

Service shafts or risers are enclosures that typically contain electrical, mechanical or hydraulic services between floor levels. Perimeter walls of these enclosures may be required to protect the enclosed services from fire, prevent the spread of fire through the service duct, and/or provide acoustic separation between these services and the building occupants.

Ventshaft systems can be used as such walls and are available in three primary configurations, accommodating heights up to 6 metres and widths up to 3 metres.

Table 1: Ventshaft System Configuration

System	Lining Configuration	FRL
VS90.1A	3 x 13 mm FireStop screw laminated together	-/90/90
VS120.1A	3 x 16 mm FireStop screw laminated together	-/120/120
VS120.2A	1 x 16 mm FireStop adhesive + screw laminated to each side of 1 x 25 mm Shaftliner Mouldstop	-/120/120

Notes

Knauf Ventshaft systems are not suitable for use in lift shaft or external applications.

Knauf Ventshaft systems can incorporate typical service penetrations such as large and small diameter pipes, fire dampers, cable trays and power points without compromising the fire performance of the system provided that the service penetrations are treated accordingly.

All construction details contained in this manual have been assessed by BRANZ. Refer to BRANZ Assessment FC12926.

Standards

The following Australasian Standards are referenced or are relevant to this publication:

- AS/NZS 2588 Gypsum Plasterboard
- AS/NZS 2589 Gypsum Linings – Application and Finishing
- AS/NZS 1170.2 Structural Design Actions – Wind Actions
- AS 1170.4 Structural Design Actions - Earthquake Actions in Australia
- AS 1397 Steel Sheet and Strip – Hot Dipped, Zinc Coated or Aluminium/Zinc Coated
- AS 3566 Self-Drilling Screws for the Building and Construction Industries
- AS/NZS 4600 Cold-Formed Steel Structures
- AS/NZS 5216 Fastenings in Concrete
- AS/NZS 1530.4 Methods for Fire Tests on Building Materials
- AS 5637.1 Determination of Fire Hazard Properties - Wall and Ceiling Linings
- AS/NZS 3837 Method of test for Heat and Smoke Release Rates for Materials and Products using an Oxygen Consumption Calorimeter
- ISO 5660 Reaction-to-fire tests - Heat release, smoke production and mass loss rate
- AS 1191-2002 Acoustics - Method for Laboratory Measurement of Airborne Sound Insulation of Building Elements
- AS/NZS ISO 717.1:2004 Acoustics - Rating of Sound Insulation in Buildings and of Building Elements, Part 1: Airborne Sound Insulation.

DESIGN CONSIDERATIONS

Requirements relevant to service riser walls in accordance with the National Construction Code (NCC) are discussed below.

Refer to the NCC for detailed requirements. Project specific requirements may apply and must be determined by the project design team.

Fire Resistance

Knauf Ventshaft systems have been fire tested at CSIRO's laboratory at North Ryde in Sydney, and subsequently assessed by BRANZ and confirmed to achieve the Fire Resistance Level (FRL) specified in Table 1. Under the NCC, buildings are categorised into types of fire-resistant construction, with Type A being the most fire-resistant and Type C the least fire-resistant.

For service riser walls, these NCC provisions can require FRLs up to -/90/90 for Class 2, 3, 4, 5, 7a or 9 buildings, or -/120/120 for Class 6, 7b or 8 buildings. Ventshaft can be used to satisfy these NCC provisions and ensure the required FRL is achieved in both directions as required in the NCC Volume One.

Penetrations

Penetrations in Knauf Ventshaft must be treated strictly in accordance with relevant test reports and approved installation details in order to maintain the system's FRL. Refer to relevant construction details within this publication for further details.

Where components by others are specified in Ventshaft penetration details (i.e. dampers, fire collars, etc.), such components must be installed in accordance with the manufacturer's specifications. It is the responsibility of the component manufacturer to ensure that the fire rating performance of the Ventshaft system is not adversely affected.

Non-Combustible Building Elements

Deemed to Satisfy Provision C2D10 of the NCC Volume One requires non-loadbearing fire-resisting internal walls of Type A or B Construction, including all components incorporated in them such as framing and insulation, to be non-combustible.

The NCC permits the use of plasterboard wherever a non-combustible material is required as per C2D10 clause (6) and therefore Knauf plasterboard linings are suitable for use in internal walls requiring non-combustible construction.

Notes *Refer to Clause C2D10 of the NCC for the full requirements of non-combustible building elements.*

Table 2: Types Of Fire-Resistant Construction

Rise in Storeys	Class of Building		
	2, 3, 9	5, 7a	6, 7b, 8
4 or more	A[1]	A[1]	A[2]
3	A[1]	B	B
2	B	C	C
1	C	C	C

NCC Specification 5 Requirements for Riser Walls
[1] Riser FRL -/90/90
[2] Riser FRL -/120/120

Notes *Refer to the NCC for definition of rise in storeys, types of construction for buildings of multiple classification and mixed types of construction.*

Fire Hazard Properties

Knauf plasterboard linings have been tested to AS/NZS 3837 – Method of Test for Heat and Smoke Release Rates for Materials and Products using an Oxygen Consumption Calorimeter. These tests were conducted in accordance with AS 5637.1 to determine their Group Number Classification, as required by NCC Specification S7C4 Fire Hazard Properties - Walls and Ceilings.

The following Knauf plasterboard linings have achieved a Group 1 classification and have an Average Specific Extinction Area of less than 250 m²/kg, making them suitable for use in buildings not fitted with a sprinkler system, in accordance with BRANZ Assessment Report FC13971:

- 25 mm Shaftliner MouldStop
- 13/16 mm FireStop
- 13 mm ImpactStop
- 13/16 mm MultiStop ONE
- 13 mm MultiStop ONE HI.

DESIGN CONSIDERATIONS CONT.

Structural

Framing

Knauf specifies the use of steel components manufactured by Rondo Building Services Pty Ltd in all Ventshaft systems.

If other steel components are to be used it is the responsibility of the steel component manufacturer to substantiate equivalent or better performance than the recommended Rondo component, and the relevant building surveyor or fire engineer of the particular project to approve.

Additional information can be obtained from Rondo Building Services Pty Ltd offices around Australia, or by contacting 1300 367 663.

Structural Tests for Lightweight Construction

Knauf Ventshaft systems comply with the structural strength and serviceability requirements outlined in NCC Specification 6 'Structural Tests for Lightweight Construction', with testing carried out at Knauf NATA-accredited laboratory for this purpose.

Resistance to Static Pressure

Lightweight walls are to be tested for deflection and damage under static pressure when subjected to a uniformly distributed load of 0.25 kPa or 0.35 kPa (or its equivalent) depending on the location of the wall and the class of the building in which it is used.

Knauf Ventshaft systems have been tested to resist these loads and comply with the requirements of the Specification.

Notes

Ventshaft is not suitable for walls of certain Class 9B buildings that require 1.0 kPa loading.

Resistance to Impact

Lightweight walls are also to be tested for deflection and damage under dynamic pressure when impacted by a 27.2 kg sandbag from a drop height of 150 mm.

Knauf Ventshaft systems have been tested under impact to comply with the requirements of the NCC.

Resistance to Surface Indentation

The surface indentation test is a measure of the surface hardness of the given material. It is tested by applying a load of 150 N through a steel ball of 10 mm diameter resting on the surface of the material. To comply with the NCC, no impression must be more than 5 mm in diameter at the end of the 5-minute test period.

Knauf FireStop, ImpactStop, MultiStop ONE, MultiStop ONE HI and Shaftliner MouldStop panels satisfy the requirements of this NCC specification.

Maximum Wall Heights

Consulting Engineers Taylor Thomson Whitting observed the static testing conducted for Ventshaft systems, and maximum panel sizes were subsequently computed. Refer to Ventshaft systems section for maximum wall heights.

Seismic

Framing components and connections must be suitably designed by Rondo in accordance with AS/NZS 1170.4 *Earthquake Actions* and other relevant Standards for use in seismic applications.

Superstructure Fasteners

All fasteners to superstructure must be designed by the Project Engineer in accordance with AS 5216 and all other relevant Australian Standards and Provisions of the National Construction Code (NCC).

Fastener manufacturer/supplier to provide compliance documentation to ensure design intent is satisfied.

Notes

Nylon anchors and drive pins are not acceptable concrete fasteners. Suitable fasteners include Rondo CERT-R-FIX or equivalent. Refer to Rondo for details.

DESIGN CONSIDERATIONS CONT.

Acoustics

Laminated and single side plasterboard systems have been tested at the acoustic laboratories at CSIRO. Based on these and other tests, as well as mathematical modelling, Renzo Tonin & Associates Pty Ltd, have provided their professional opinions on the acoustical performance of Knauf Ventshaft systems.

The NCC requires an acoustic performance of $R_w + C_{tr}$ 25 for internal service risers if the adjacent room is a kitchen or non-habitable space, and a performance of $R_w + C_{tr}$ 40 if the adjacent room is habitable.

The primary configurations of Knauf Ventshaft systems satisfy NCC acoustic provisions of $R_w + C_{tr}$ 25 for risers in a non-habitable space.

A separate steel or timber stud with cavity insulation (KI 50G11) can be adopted in front of Ventshaft VS systems and spaced 20 mm from the face to comply with the NCC provisions of $R_w + C_{tr}$ 40 for risers in habitable spaces.

MATERIALS

Materials used in the construction of Knauf Ventshaft systems are listed in the following table:

Table 3: Ventshaft Materials

Knauf Item Code	Item Description	Product Image
00818588	25 mm Shaftliner MouldStop 600 x 3000 mm	
00818589	25 mm Shaftliner MouldStop 600 x 3600 mm	
00817941	16 mm FireStop 1200 x 2400 mm	
00817936	16 mm FireStop 1200 x 3000 mm	
00818608	10 mm SHEETROCK ONE 1200 x 3000 mm	
00817768	Rondo 35 x 35 x 3600 mm x 0.7 BMT Galvanised Metal Angle	
00832942	6 g x 25 mm Type 'S' Fixing Screws	
00832952	6 g x 32 mm Type 'S' Fixing Screws	
00832940	6 g x 25 mm Type 'D' Fixing Screw	
00832950	6 g x 32 mm Type 'D' Fixing Screw	

Knauf Item Code	Item Description	Product Image
00832938	10 g x 38 mm Type 'L' Laminating Screw	
00832939	10 g x 50 mm Type 'L' Laminating Screw	
00824145	Cert-R-Fix Screw Bolts HH RCH06 M6 x 43	
00795248	50 mm Knauf Insulation Glasswool 11 kg/m³ Density 450 mm	
00795249	50 mm Knauf Insulation Glasswool 11 kg/m³ Density 600 mm	
00820726	22 mm Promaseal IBS Strip	
00820727	29 mm Promaseal IBS Strip	
00747812	Cornice Adhesive 45 20 kg	
00820256	Firesound Mastic 600 ml Sausage	

Notes

Ventshaft performance values stated in this manual are based on the use of materials and components listed herein. Material substitution may affect the performance of Ventshaft systems.

VENTSHAFT SYSTEMS

Table 4: Fasteners for Ventshaft Systems

VENTSHAFT System	Laminating Screws	Fixing Screws
VS90.1A	10 g x 38 mm Type 'L' screws at 400 mm maximum centres	6 g x 25 mm Type 'S' or 'D' screws at 400 mm maximum centres
VS120.1A	10 g x 38 mm Type 'L' screws at 400 mm maximum centres	6 g x 32 mm Type 'S' or 'D' screws at 400 mm maximum centres
VS120.2A	10 g x 50 mm Type 'L' screws at 400 mm maximum centres	6 g x 32 mm Type 'S' or 'D' screws at 400 mm maximum centres

Jointing and Finishing

Knauf has a comprehensive range of jointing and finishing compounds, and adhesives to meet market needs and varying climatic conditions.

This gypsum board range guide does not provide plasterboard installation, jointing and finishing details. Refer to Knauf Plasterboard Installation Manual or **knauf.com** for further information.

Decoration

Apply appropriate painting system or other decorative finishes as recommended for the required level of finish and application (refer to Knauf Plasterboard Installation Manual).

VENTSHAFT SYSTEMS CONT.

Table 5: Ventshaft Systems

Fire Resistance Level (Refer to Table)

FRL Basis: FC16109

System Description

Side 1:
Multiple layers of fire resistant plasterboard laminated together

Framing:
Rondo 35 x 35 mm x 0.70 BMT steel angle framing

Side 2 (if specified):
1 x 10 mm SHEETROCK ONE fixed to separate stud spaced 20 mm from Ventshaft panel

Insulation:
Refer to table

Acoustic Ratings Basis: RT&A TE405-20S10 , TK778-06S01

System	FRL	Side 1	Side 2	Cavity mm	Stud Size (Gap) mm	Nom Wall Width mm	Insulation	$R_w(R_w + C_{tr})$
VS90.1A	-/90/90 from both sides	3 x 13 mm FireStop screw laminated together	N/A	N/A	N/A	39	N/A	38(37)
VS120.1A	-/120/120 from both sides	3 x 16 mm FireStop screw laminated together	N/A	N/A	N/A	48	N/A	39(38)
VS120.2A	-/120/120 from both sides	1 x 16 mm FireStop adhesive + screw fixed to each side of 1 x 25 mm Shaftliner Mouldstop	N/A	N/A	N/A	57	N/A	39(38)
VST120.1A	-/120/120 from both sides	3 x 16 mm FireStop screw laminated together	1 x 10 mm SHEETROCK ONE on a separate 70 mm timber stud	90	70 (20)	148	Nil	47(41)
							KI 50G11	53(45)
VSS120.1A	-/120/120 from both sides	3 x 16 mm FireStop screw laminated together	1 x 10 mm SHEETROCK ONE on a separate 64 mm steel stud	85	64 (20)	142	Nil	47(41)
							KI 50G11	53(45)

*KI 50G11-50 mm Knauf Insulation Glasswool 11 kg/m³ density.
Any lining designated as FireStop can be replaced by Multistop ONE board of equivalent or greater thickness without adversely affecting FRL or acoustic rating.
Replacing Multistop ONE with FireStop may reduce acoustic performance.

Max Sizes of Non-Loadbearing Ventshaft Panels: VS120.1A, VS120.2A, VST120.1A, VSS120.1A

Serviceability Pressure			
0.25 kPa		0.35 kPa	
Width (mm)	Height (mm)	Width (mm)	Height (mm)
1200	6000	1200	6000
1800	4800	1800	2800
2400	3300	2400	2100
3000	2700	3000	1700

Height Limiting Factor: L/240 ≤ 20 mm.

Notes

- *All four edges of panel must be supported.*
- *Plasterboard layers 1 and 3 to be aligned along long direction of panel, layer 2 across.*
- *Wall heights tables are not for axial loads but include self-weight and lateral pressures stated.*
- *The maximum panel sizes are based on testing performed using Knauf FireStop plasterboard.*
- *Deflection heads to be designed and used as required.*
- *Panel size of up to 3000 mm x 3000 mm have been fire tested at pressures of 50 Pa. However, the panel size will in most cases be limited by cold structural consideration.*

INSTALLATION PROCEDURE
SCREW ONLY METHOD

General Installation Notes

- Where Ventshaft is to be erected around open shafts, ensure that suitable safety procedures are taken
- Refer to Table 5 for fastener requirements for Ventshaft systems
- Type 'S' or 'D' screws should be located 10 mm - 16 mm from the sheet edge, and Type 'L' screws located 60 mm - 100 mm from soffit, floor and corner angles, and 10 mm - 16 mm from butt joints and staggered on either side
- Stagger joints in adjacent layers by minimum 300 mm horizontally and vertically
- FireStop and Shaftliner MouldStop linings should **not** be fixed to the soffit angles for a deflection head detail
- The installation orientation shown is applicable where Ventshaft panel height exceeds width. Where panel width exceeds height, first and third layers to be installed horizontally and second layer vertically
- Fixing sequence may be affected by existing service penetrations, refer to Knauf for details
- Penetrations requiring proprietary caulking products and penetration must be used and installed in accordance with the manufacturer's specifications to ensure the fire performance is maintained

Step 1a: Install Floor and Soffit Angles

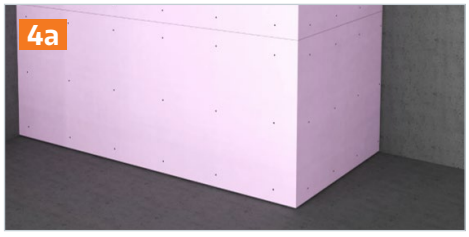
- Align and fix Rondo 35 mm x 35 mm x 0.70 BMT steel angle framing into the floor and soffit with approved concrete fasteners maximum 100 mm from ends and at 1200 mm maximum centres

Step 2a: Install Corner Angles

- Cut vertical Rondo 35 mm x 35 mm x 0.70 BMT steel corner angles 15 mm short to allow for expansion
- For internal and external corners, align the angle with the gap at the top of the wall and fix both flanges to the slab and soffit angles with Type 'S' or 'D' screws
- Where corner side angles abut a masonry or concrete wall, fix the angles into the wall with approved concrete fasteners maximum 100 mm from ends and at 1200 mm maximum centres

Step 3a: Install First FireStop Layer

- Cut the first Knauf FireStop layer maximum 20 mm short of the required height and locate vertically in position, resting on the floor
- Fix FireStop lining to vertical corner angles and horizontal floor angle with Type 'S' or 'D' screws at 400 mm maximum centres
- Do not fix FireStop sheets to the horizontal soffit angles at the top of the wall
- Gaps at the bottom and side perimeters should be continuously sealed with a bead of H.B. Fuller Firesound sealant



Step 4a: Install Central FireStop or Shaftliner MouldStop Layer

- Align the second layer of Knauf FireStop horizontally resting on the floor
- Laminate the second layer to the first layer with Type 'L' laminating screws at 400 mm maximum centres horizontally and vertically, with screws located 60 mm - 100 mm from the floor and corner angles
- Cut the topmost row of FireStop maximum 20 mm short of the required height and locate top row of Type 'L' screws 60 mm - 100 mm below the slab

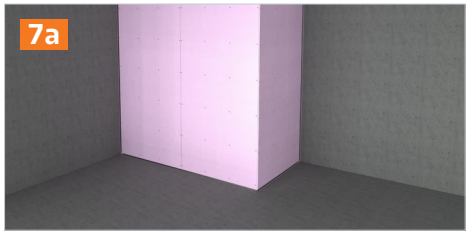
INSTALLATION PROCEDURE
SCREW ONLY METHOD CONT.

Step 5a: Seal for Fire at Soffit

- Install a 22 mm Promaseal IBS strip compressed between the top of the first and second Knauf FireStop layers and the underside of the slab soffit
- Cover the IBS strip with a minimum 5 mm seal of H.B. Fuller Firesound sealant

Step 6a: Install Secondary Steel Angle Framing

- Cut secondary Rondo 35 mm x 35 mm x 0.70 BMT steel angle framing for the top, bottom, sides and corners for installation on the tenancy side of the Ventshaft system
- Fix the floor, soffit and side angles with approved concrete fasteners maximum 100 mm from ends and at 1200 mm maximum centre
- Cut internal and external corner angles 15 mm short of required height to allow for expansion and fix through both flanges and into the slab and soffit angles with Type 'S' or 'D' screws



Step 7a: Install Third Layer of FireStop

- Cut the third layer of Knauf FireStop to accommodate a maximum 20 mm gap at the top and a 6 mm - 10 mm gap at the bottom of the sheets
- Install the third layer vertically and fix to vertical corner angles and horizontal floor angle with Type 'S' or 'D' screws at 400 mm maximum centres
- Laminate the third layer to the second layer elsewhere with Type 'L' laminating screws at 400 mm maximum centres horizontally and vertically, with the top row located 60 mm - 100 mm below the soffit

Step 8a: Perimeter Caulking Continuously fill all perimeter gaps

- Continuously fill all perimeter gaps with H.B. Fuller Firesound sealant

Step 9a: Jointing and Finishing

- Finish all joints and internal and external corners in the face layer with the appropriate Knauf jointing system as outlined in Knauf Plasterboard Installation Manual
- Paper tape must be used in Knauf fire-rated systems
- Joints in inner layers are not required to be taped and set
- Corners in Ventshaft system to be reinforced with corner beads as required. Note that this is not part of the fire-rated system

INSTALLATION PROCEDURE
SCREW & ADHESIVE METHOD

General Installation Notes

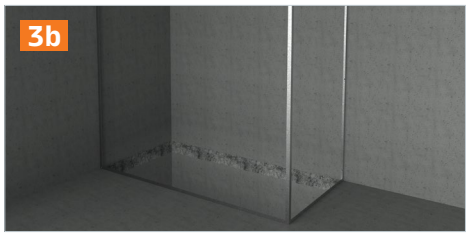
- Where Ventshaft is to be erected around open shafts, ensure that suitable safety procedures are taken
- Refer to Table 4 for fastener requirements for Ventshaft systems
- Type 'S' or 'D' screws should be located 10 mm - 16 mm from the sheet edge, and Type 'L' screws located 60 mm - 100 mm from soffit, floor and corner angles, and 10 mm - 16 mm from butt joints and staggered on either side
- Stagger joints in adjacent layers by minimum 300 mm horizontally and vertically
- FireStop and Shaftliner MouldStop linings should not be fixed to the soffit angles for a deflection head detail
- The installation orientation shown is applicable where Ventshaft panel height exceeds width. Where panel width exceeds height, first and third layers to be installed horizontally and second layer vertically
- Fixing sequence may be affected by existing service penetrations, refer to Knauf for details
- Penetrations requiring proprietary caulking products and penetration must be used and installed in accordance with the manufacturer's specifications to ensure the fire performance is maintained

Step 1b: Install Floor and Soffit Angles

- Align and fix Rondo 35 mm x 35 mm x 0.70 BMT steel angle framing into the floor and soffit with approved concrete fasteners maximum 100 mm from ends and at 1200 mm maximum centres

Step 2b: Install Corner Angles

- Cut vertical Rondo 35 mm x 35 mm x 0.70 BMT steel corner angles 15 mm short to allow for expansion
- For internal and external corners, align the angle with the gap at the top of the wall and fix both flanges to the slab and soffit angles with Type 'S' or 'D' screws
- Where corner side angles abut a masonry or concrete wall, fix the angles into the wall with approved concrete fasteners maximum 100 mm from ends and at 1200 mm maximum centres



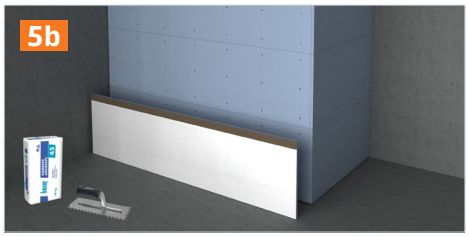
Step 3b: Install Temporary Support Angle (if Required)

- Fix Rondo 35 mm x 35 mm x 0.70 BMT temporary support angle to the shaft side if required for ease of construction to support butt joints if Ventshaft panel height exceeds sheet length as per Figure 8
- Support angle to be fixed to vertical corner angles with Type 'S' or 'D' screws

INSTALLATION PROCEDURE
SCREW & ADHESIVE METHOD CONT.

Step 4b: Install First FireStop Layer

- Cut the first layer of Knauf 16 mm FireStop layer maximum 20 mm short of the required height and locate vertically in position, resting on the floor
- Fix FireStop lining to vertical corner angles and horizontal floor angle with Type 'S' or 'D' screws at 400 mm maximum centres
- Do not fix FireStop sheets to the horizontal soffit angles at the top of the wall
- Gaps at the bottom and side perimeters should be continuously sealed with a bead of H.B. Fuller Firesound sealant

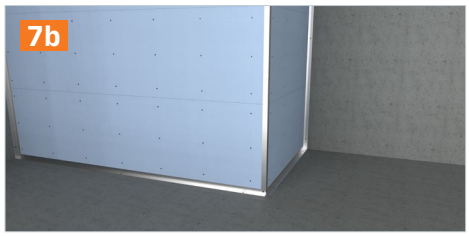


Step 5b: Install Central FireStop or Shaftliner MouldStop Layer

- Cover the back face of the Shaftliner MouldStop panels with Knauf Cornice Adhesive using a notched trowel. Cornice Adhesive to stop 20 mm short of soffit angle and control joint angle (if applicable) at concrete junctions
- Align the Shaftliner MouldStop panels horizontally resting on the floor and laminate to the first 16 mm FireStop layer with Type 'L' laminating screws at 400 mm maximum centres horizontally and vertically, with the bottom row of screws located 60 mm – 100 mm above the finished slab
- Cut the top most row of Shaftliner MouldStop panels maximum 20 mm short of the required height and locate top row of Type 'L' screws 60 mm – 100 mm below the slab

Step 6b: Seal for Fire at Soffit

- Install a 22 mm Promaseal IBS strip compressed between the top of the installed FireStop and Shaftliner MouldStop layers and the underside of the slab soffit
- Cover the IBS strip with a minimum 5 mm seal of H.B. Fuller Firesound sealant



Step 7b: Install Secondary Steel Angle Framing

- Cut secondary Rondo 35 mm x 35 mm x 0.70 BMT steel angle framing for the top, bottom, sides and corners for installation on the tenancy side of the Ventshaft system
- Fix the floor, soffit and side angles with approved concrete fasteners maximum 100 mm from ends and at 1200 mm maximum centres
- Cut internal and external corner angles 15 mm short of required height to allow for expansion and fix through both flanges and into the slab and soffit angles with Type 'S' or 'D' screws

INSTALLATION PROCEDURE
SCREW & ADHESIVE METHOD CONT.

Step 8b: Install Third Layer of FireStop

- Cut the third layer of Knauf 16 mm FireStop short of the required height to accommodate a maximum 20 mm gap at the top and a 6 mm - 10 mm gap at the bottom
- Cover the back face of the FireStop linings with Knauf Cornice Adhesive using a notched trowel. Cornice Adhesive to stop 20 mm short of soffit angle and control joint angle (if applicable) at concrete junctions
- Install the third layer vertically and fix to vertical corner angles and horizontal floor angle with Type 'S' or 'D' screws at 400 mm maximum centres
- Laminate the third layer to the second layer elsewhere with Type 'L' laminating screws at 400 mm maximum centres horizontally and vertically, with the top row located 60 mm - 100 mm below the soffit

Step 9b: Perimeter Caulking

- Continuously fill all perimeter gaps with H.B. Fuller Firesound sealant

Step 10b: Jointing and Finishing

- Finish all joints and internal and external corners in the face layer with the appropriate Knauf jointing system as outlined in Knauf Plasterboard Installation Manual
- Paper tape must be used in Knauf fire-rated systems
- Joints in inner layers are not required to be taped and set
- Corners in Ventshaft system to be reinforced with corner beads as required

Notes

This is not part of the fire-rated system.

INSTALLATION DETAILS

Figure 3: Ventshaft Frame Layout

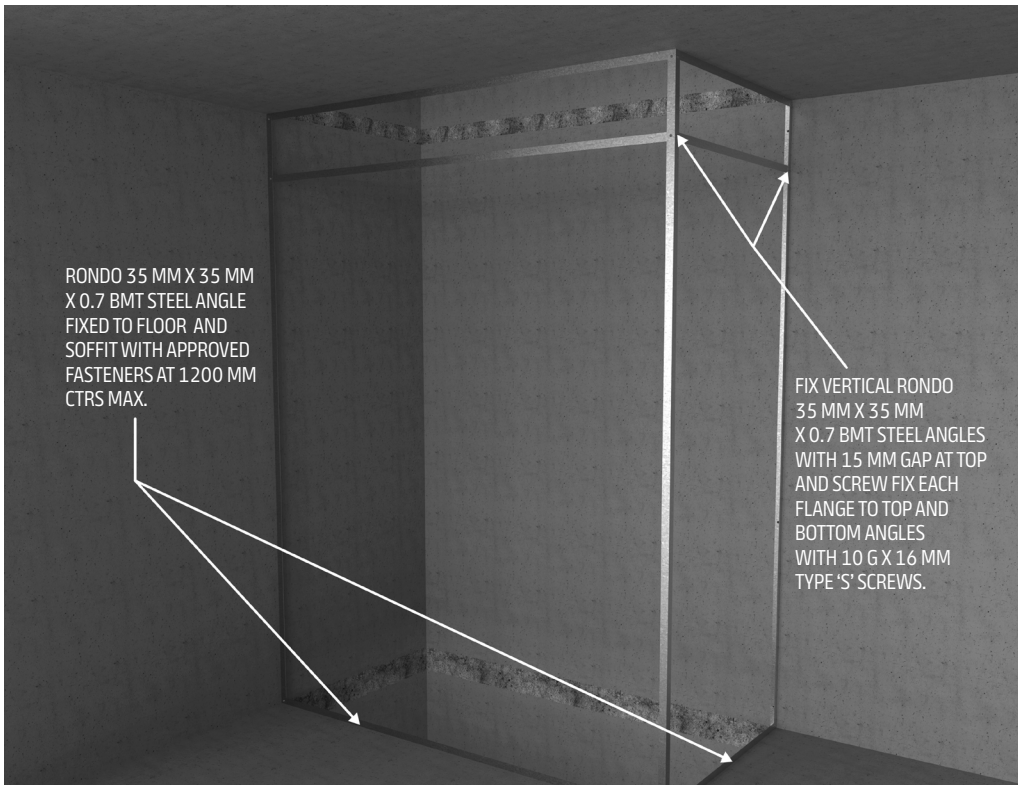
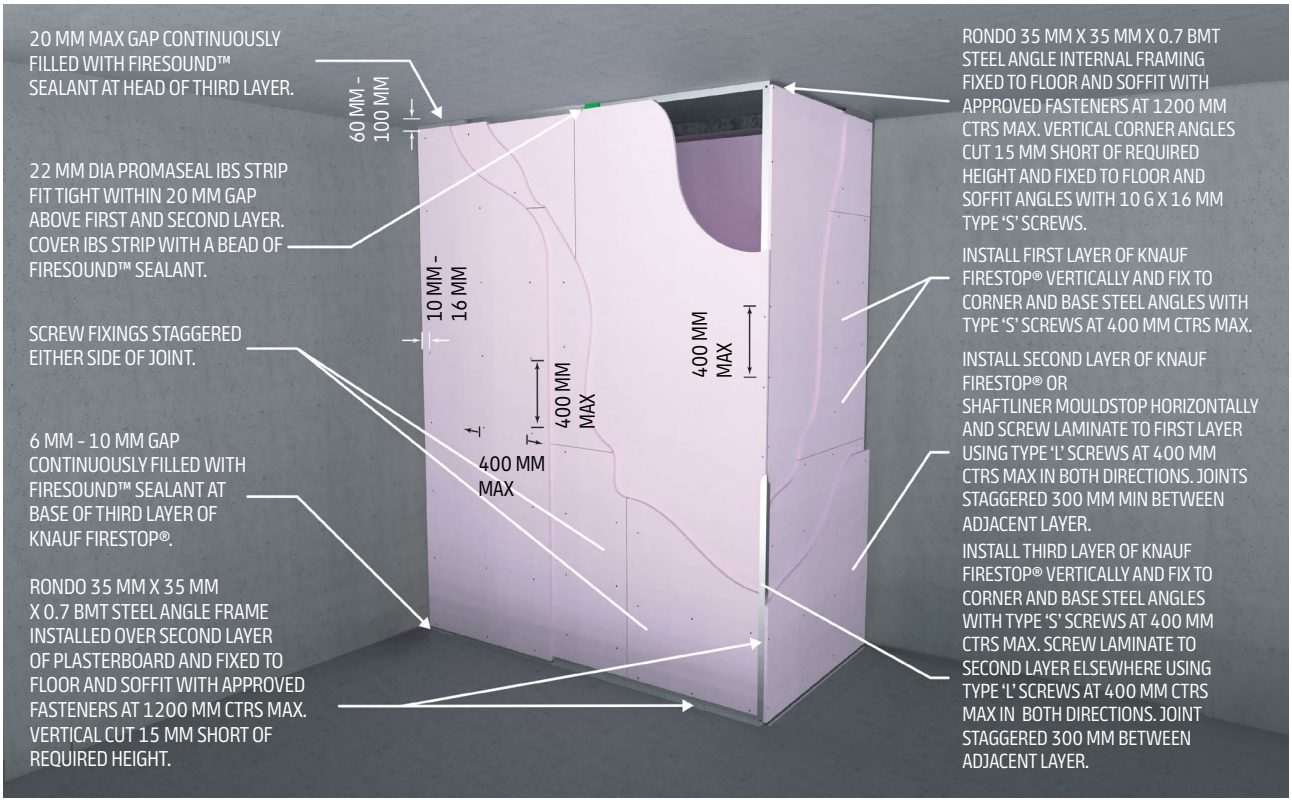


Figure 4: Ventshaft Installation Details



INSTALLATION DETAILS CONT.

Figure 5: Deflection Head Detail
VS90.1A & VS120.1A

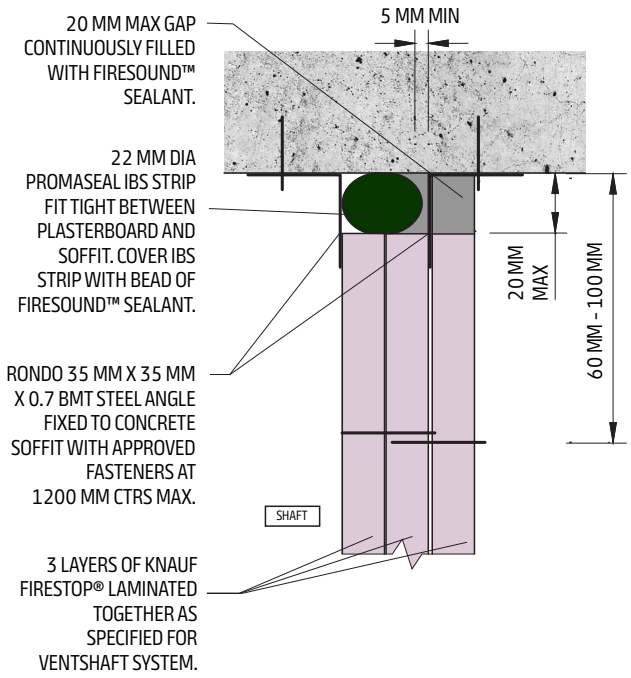
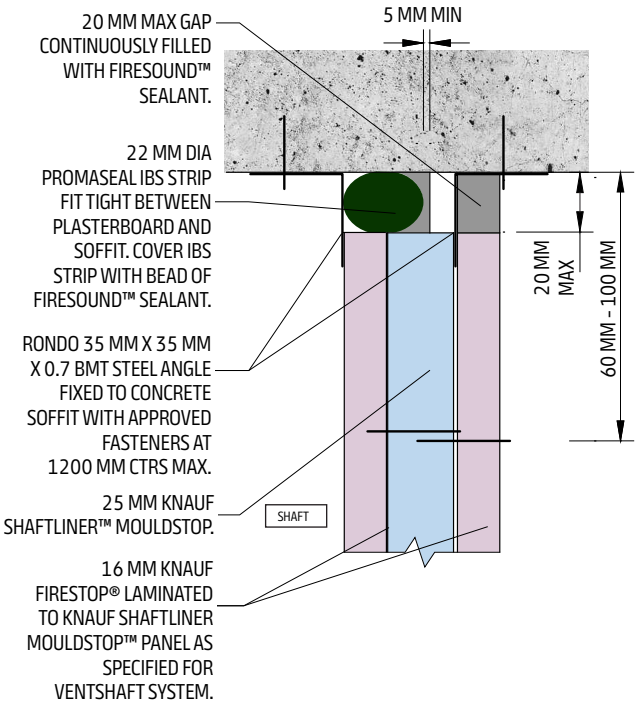


Figure 6: Deflection Head Detail
VS120.2A



Notes

Plasterboard linings are not to be fixed into steel soffit angles for deflection head detail to allow for vertical deflection.

Figure 7: Horizontal Join Detail
VS90.1A & VS120.1A

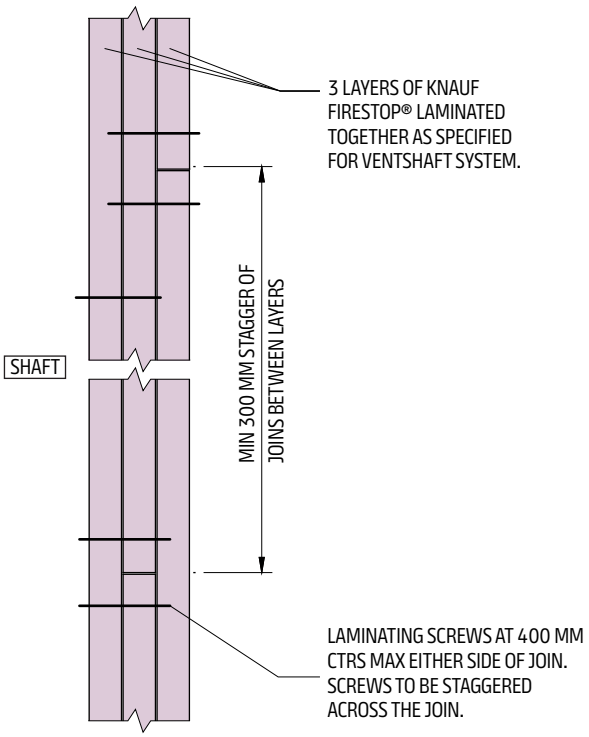
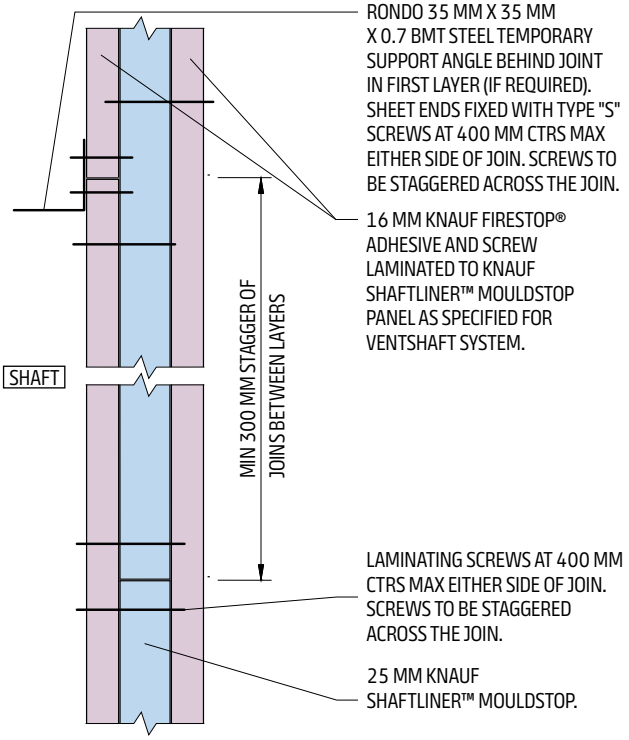


Figure 8: Horizontal Join Detail
VS120.2A



INSTALLATION DETAILS CONT.

Figure 9: Base Detail
VS90.1A & VS120.1A

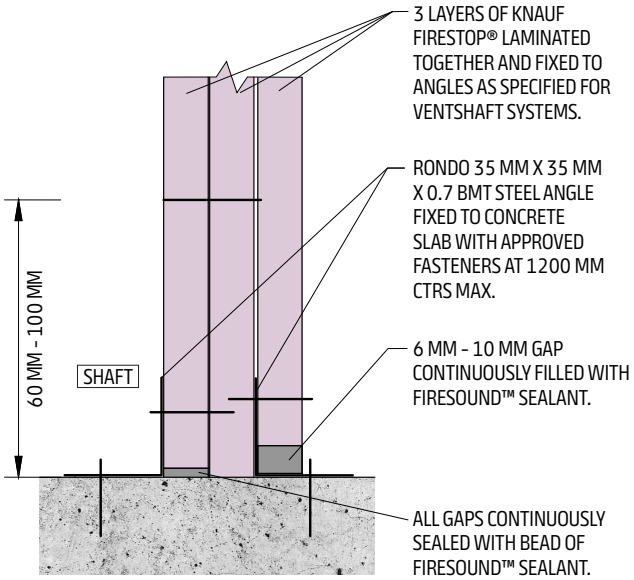


Figure 10: Base Detail
VS120.2A

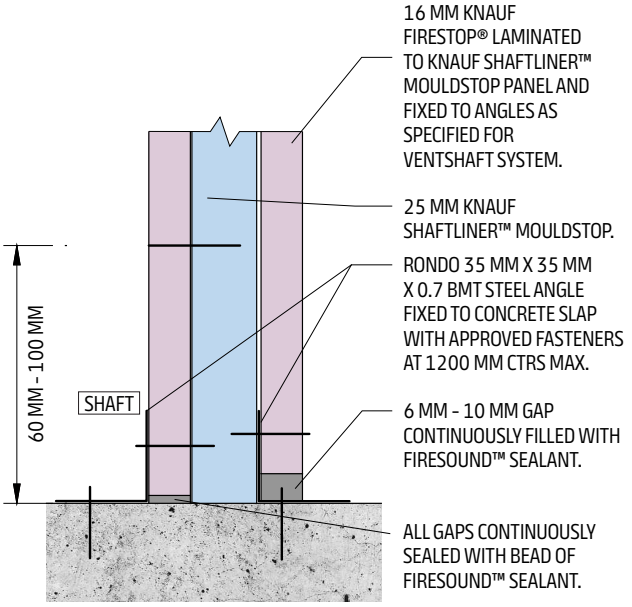


Figure 11: Control Joint Detail
VS90.1A & VS120.1A

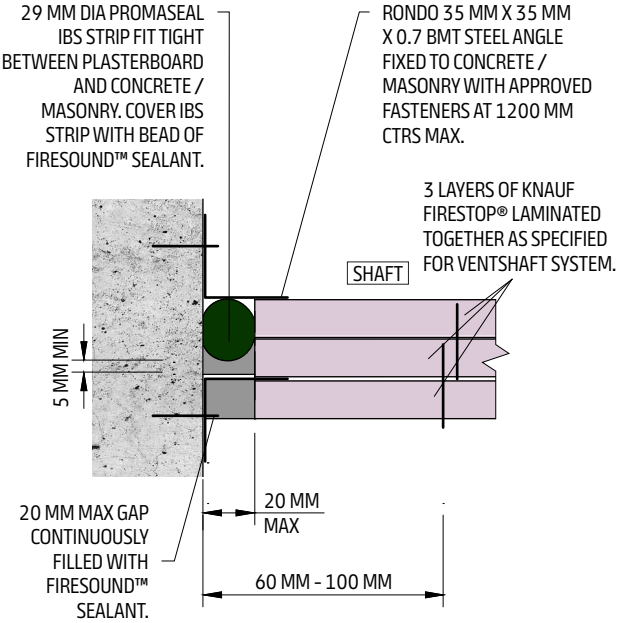
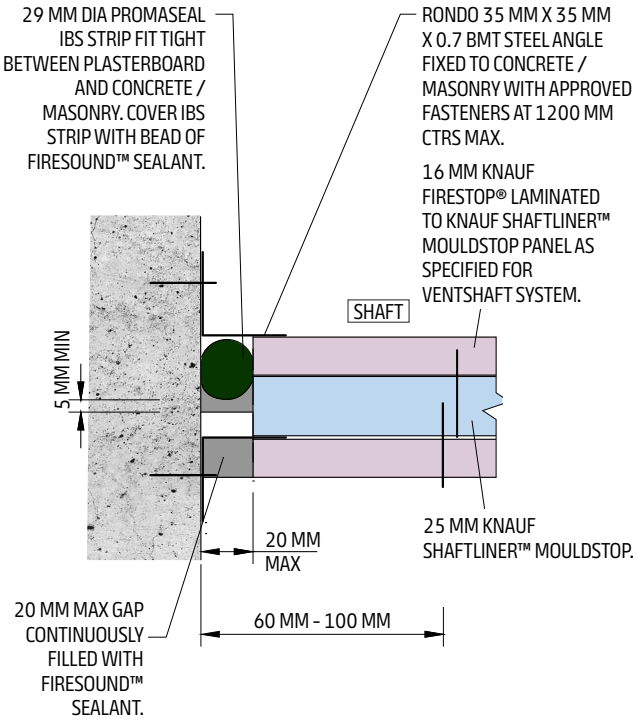


Figure 12: Control Joint Detail
VS120.2A



Notes

Plasterboard linings are not to be fixed into steel soffit angles for deflection head detail to allow for vertical deflection.

INSTALLATION DETAILS CONT.

Figure 13: Corner and End Detail
VS90.1A & VS120.1A

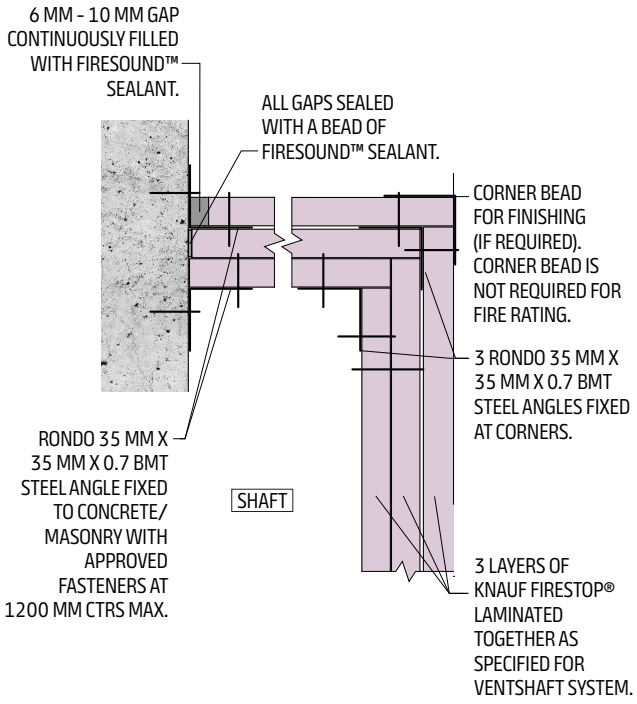


Figure 14: Corner and End Detail
VS120.2A

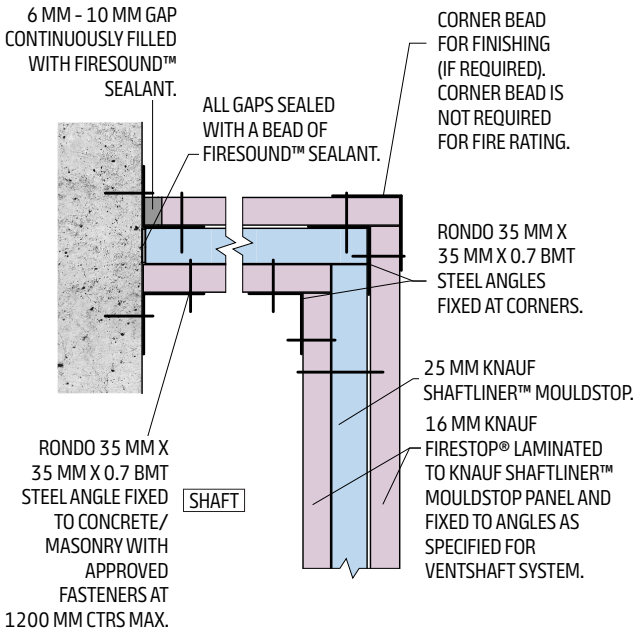


Figure 15: Oblique Corner Detail
VS90.1A & VS120.1A

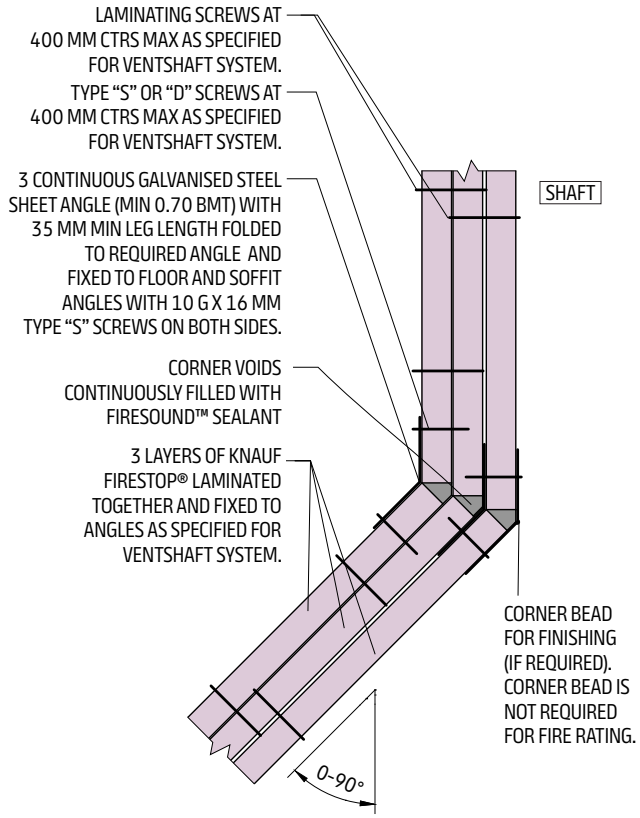
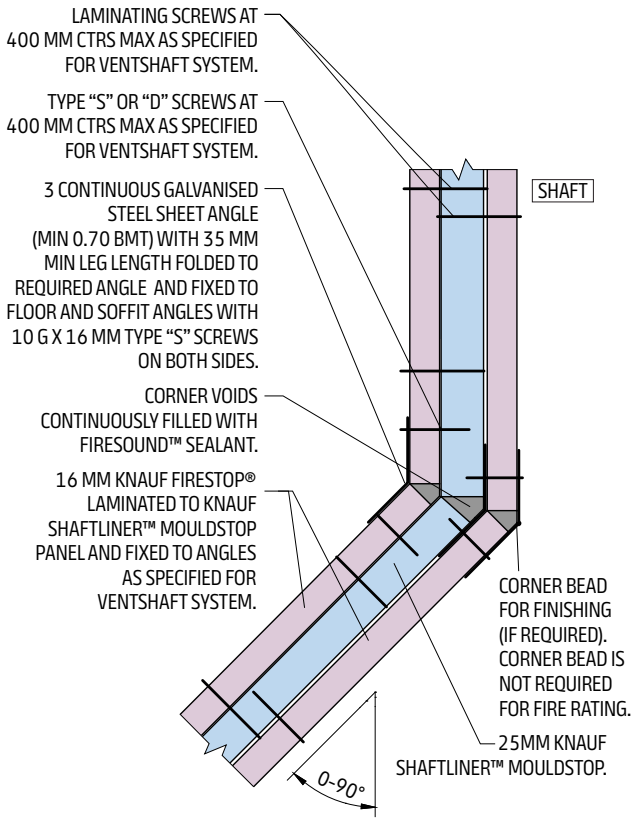


Figure 16: Oblique Corner Detail
VS120.2A



INSTALLATION DETAILS CONT.

Figure 17: Power Point Penetration
VS90.1A, FRL -/90/90. VS120.1A, FRL -/120/90

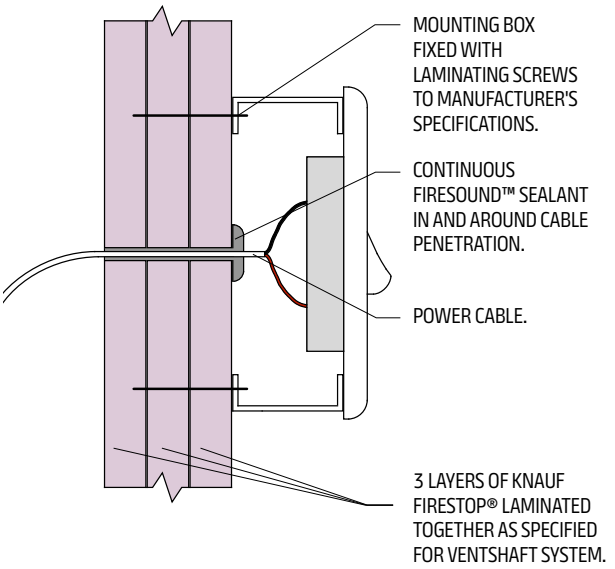


Figure 18: Power Point Penetration
VS120.2A, FRL -/120/90

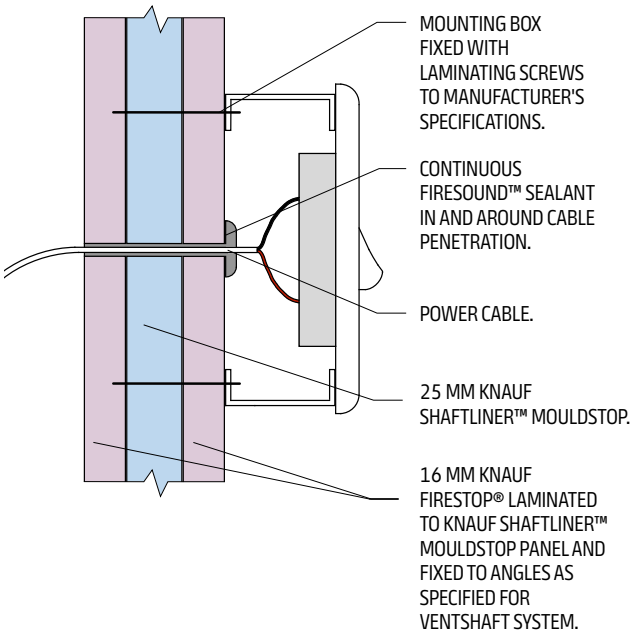


Figure 19: Copper Pipe Penetration 'A'
VS90.1A, FRL -/90/90 for max 32NM metal pipe;
FRL-/90/- for brass, copper or ferrous pipe.
VS120.1A, FRL -/120/120 for max 32NM metal pipe;
FRL -/120/- for brass, copper or ferrous pipe.

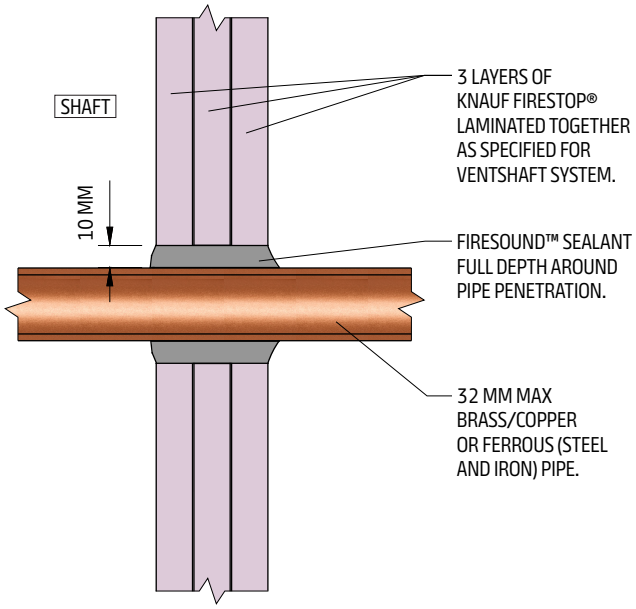
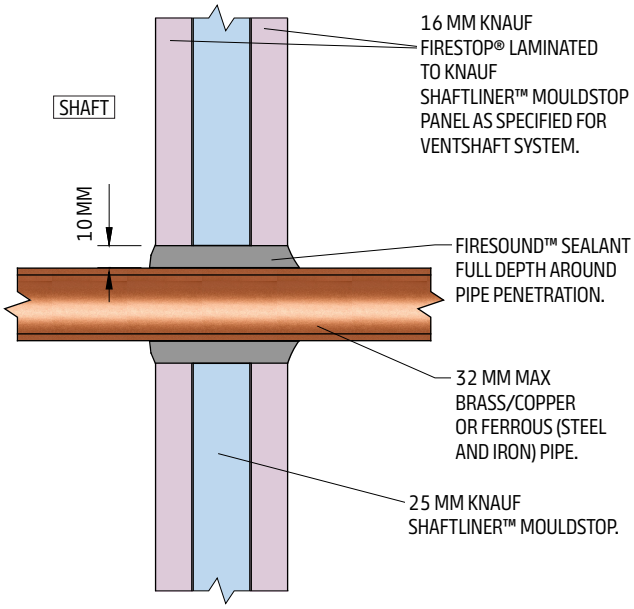


Figure 20: Copper Pipe Penetration 'A'
VS120.2A, FRL -/120/120 for max 32NB metal pipe;
FRL -/120/- for brass, copper or ferrous pipe



Notes

The FRL of the penetration is a combination of the wall and the penetration, whichever is the lesser shall apply to the integrity and insulation criteria of the penetration.

INSTALLATION DETAILS CONT.

Figure 21: Copper Pipe Penetration 'B'
VS90.1A, FRL -/90/-. VS120.1A, FRL -/120/-

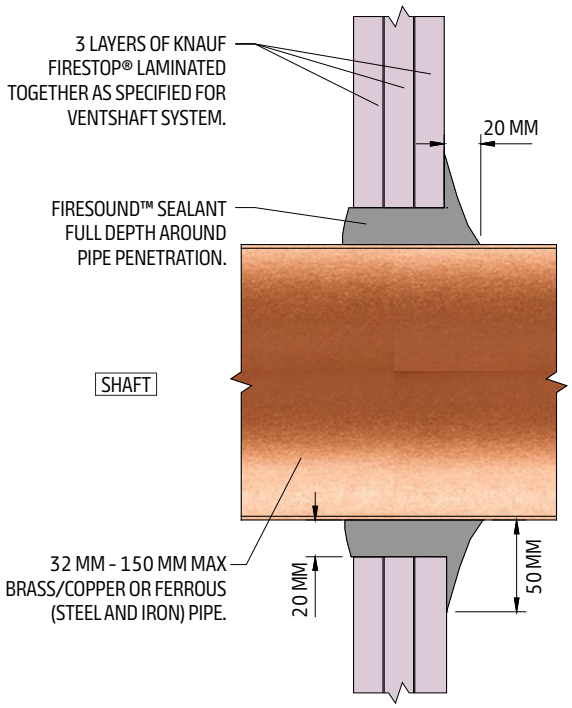


Figure 22: Copper Pipe Penetration 'B'
VS120.2A, FRL -/120/-

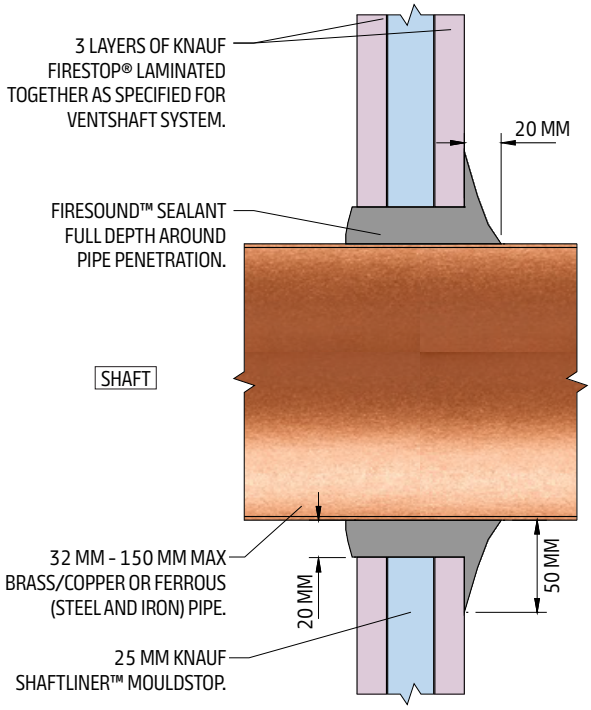


Figure 23: uPVC Pipe Penetration
VS90.1A, FRL -/90/90. VS120.1A, FRL -/120/90
Refer to Promat for full details and report (C91513)

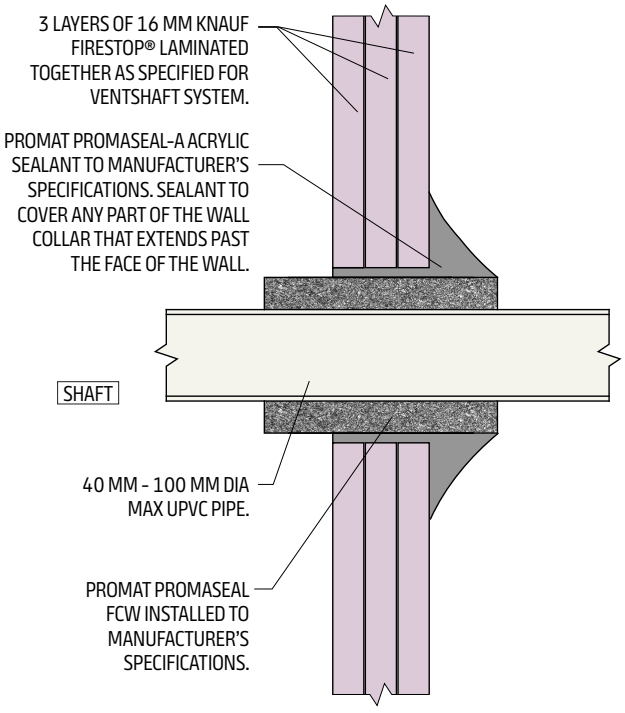
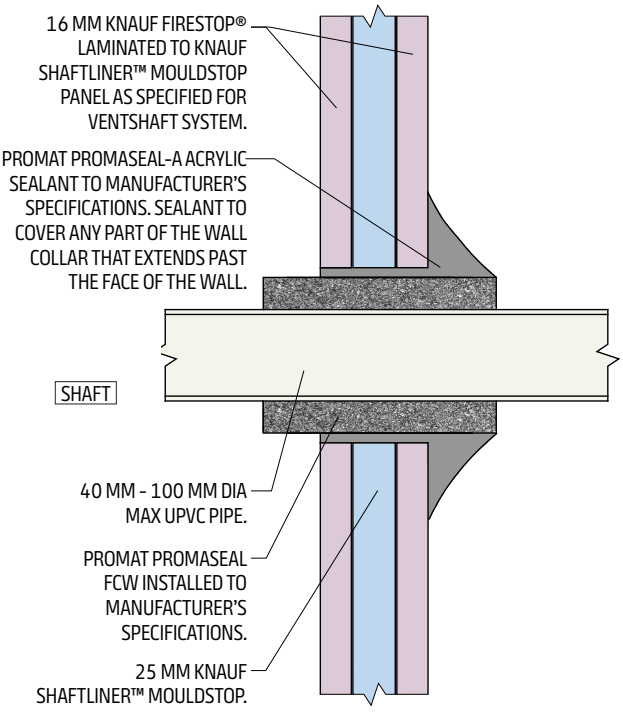


Figure 24: uPVC Pipe Penetration
VS120.2A, FRL -/180/90
Refer to Promat for full details and report (C91513)

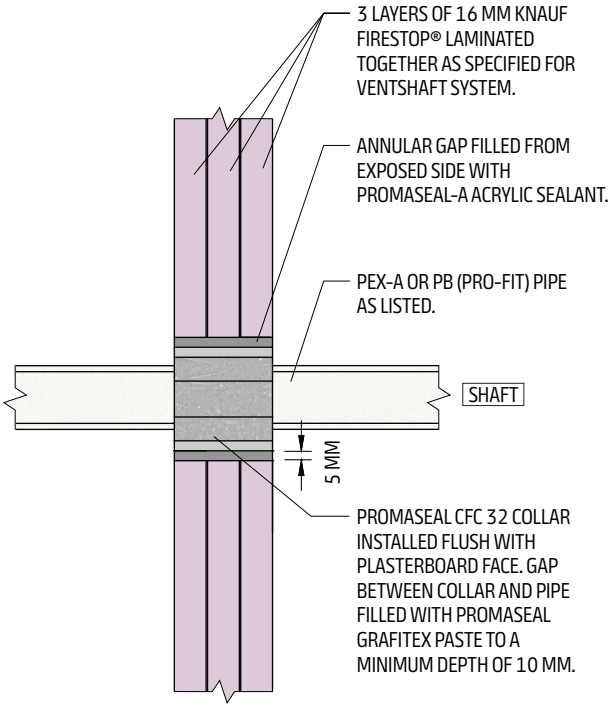


Notes

The FRL of the penetration is a combination of the wall and the penetration, whichever is the lesser shall apply to the integrity and insulation criteria of the penetration.

INSTALLATION DETAILS CONT.

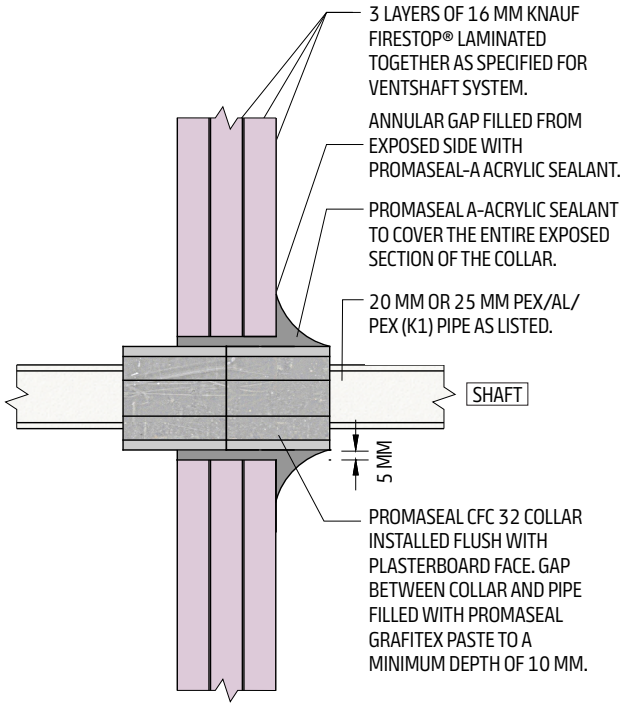
Figure 25: Ventshaft PEX-A and PB (Pro-Fit)
Pipe Penetration (VS120.1A)
Refer to penetration FRLs detail below



Notes

- *Suitable pipe penetrations as listed below. Refer to promat.com for full details and report.*
  - *18 mm PEX-A Pipe FRL: -/120/60 (A-13-823)*
  - *20 mm PEX-A Pipe FRL: -/90/90 (A-13-848)*
  - *18 mm PB (Pro-Fit) Pipe FRL: -/120/90 (A-13-848)*
  - *22 mm PB (Pro-Fit) Pipe FRL: -/120/60 (A-13-848)*
- *The FRL of the penetration is a combination of the wall and the penetration, whichever is the lesser shall apply to the integrity and insulation criteria of the penetration.*

Figure 26: Ventshaft PEX/AL/PEX (K1)
Pipe Penetration (VS120.1A)
Refer to penetration FRLs detail below



Notes

- *Suitable pipe penetrations as listed below. Refer to promat.com for full details and report.*
  - *20 mm PEX/AL/PEX (K1) Pipe FRL: -/120/90 (A-13-848)*
  - *25 mm PEX/AL/PEX (K1) Pipe FRL: -/120/30 (A-13-848)*
- *The FRL of the penetration is a combination of the wall and the penetration, whichever is the lesser shall apply to the integrity and insulation criteria of the penetration.*

INSTALLATION DETAILS CONT.

Figure 27: 19 mm Copper Pipe Penetration
(with Promaseal Wrap)
VS120.1A, FRL -/120/90
Refer to Promat for full details and report (A-13-848)

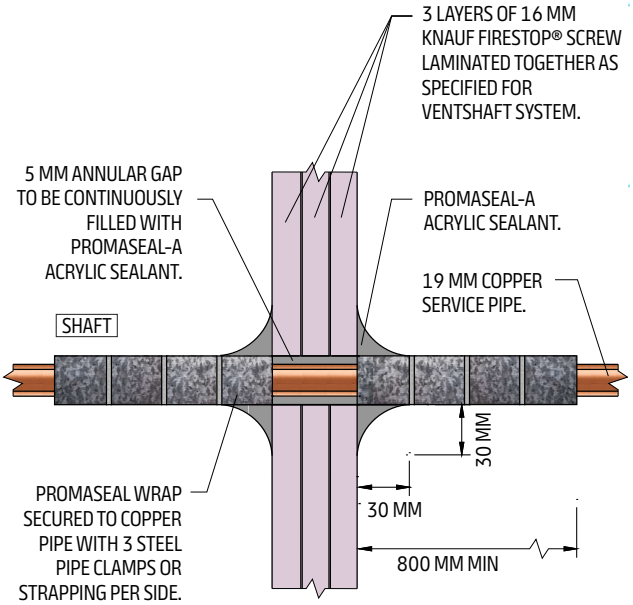
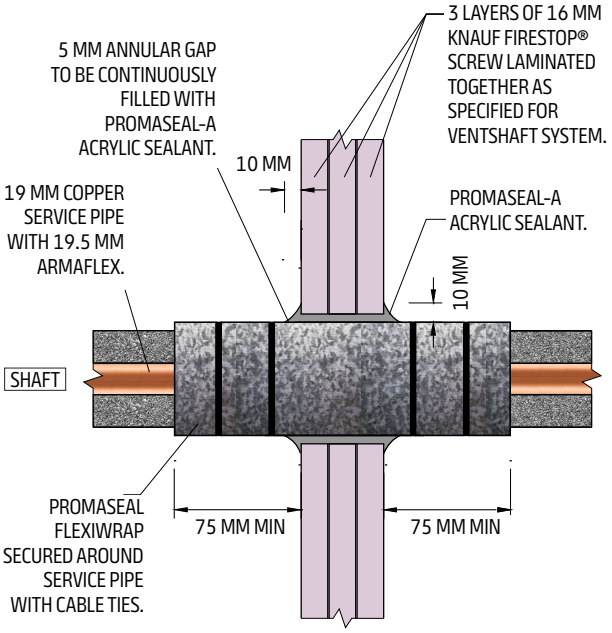


Figure 28: 19 mm Copper Pipe Penetration (with Armaflex)
VS120.1A, FRL -/120/60
Refer to Promat for full details and report (A-13-848)

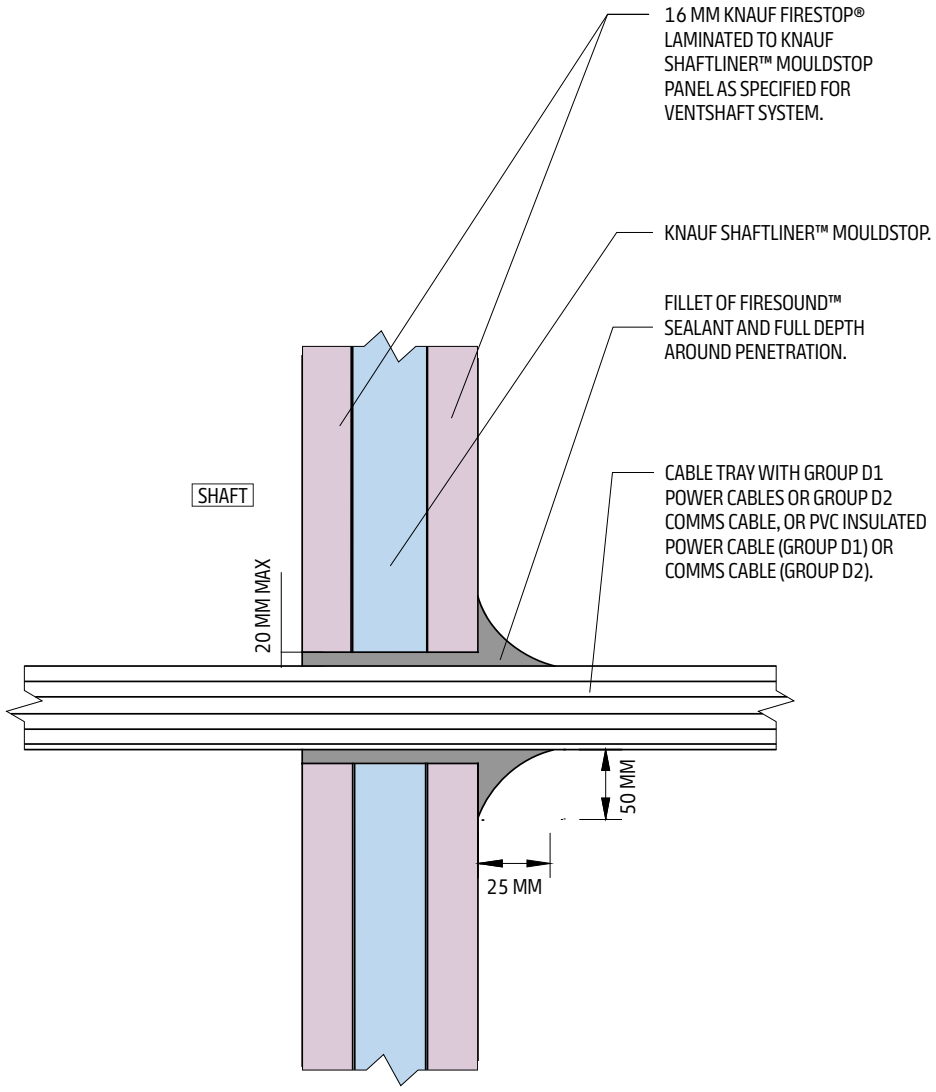


Notes

- *FRL -/120/- achieved without Promaseal Wrap. Refer to Promat for full details and report (F91682).*
- *The FRL of the penetration is a combination of the wall and the penetration, whichever is the lesser shall apply to the integrity and insulation criteria of the penetration.*

INSTALLATION DETAILS CONT.

Figure 29: Ventshaft Cable Bundle or Cable Tray Penetration
VS120.1A

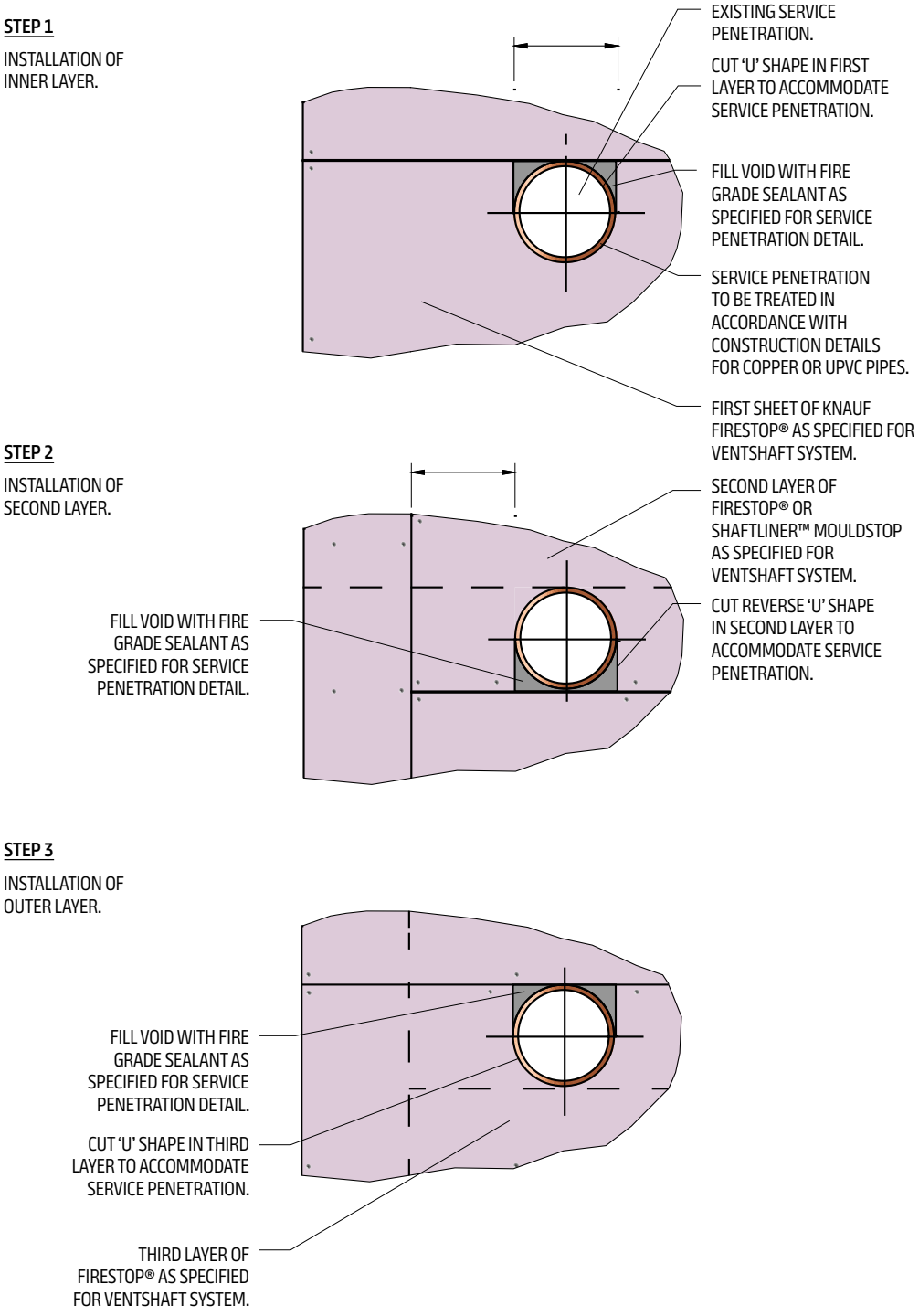


Note

- *Suitable penetrations as listed below. Refer to promat.com for full details and report.*
  - *Cable Bundle up to 30mm Diameter FRL: -/120/30 (A-13-848)*
  - *Cable Tray in Opening up to 325mm x 85mm FRL: -/90/60 (F91682)*
- *The FRL of the penetration is a combination of the wall and the penetration, whichever is the lesser shall apply to the integrity and insulation criteria of the penetration.*

INSTALLATION DETAILS CONT.

Figure 30: Installation Sequence: Pre-Existing Services
FRL -/120/- (VS120.1A)



INSTALLATION DETAILS CONT.

Figure 31: Lorient Fire Damper Section Detail 'A': Square Damper
Refer to lorient.com.au for full details and report (EWFA 33233400)

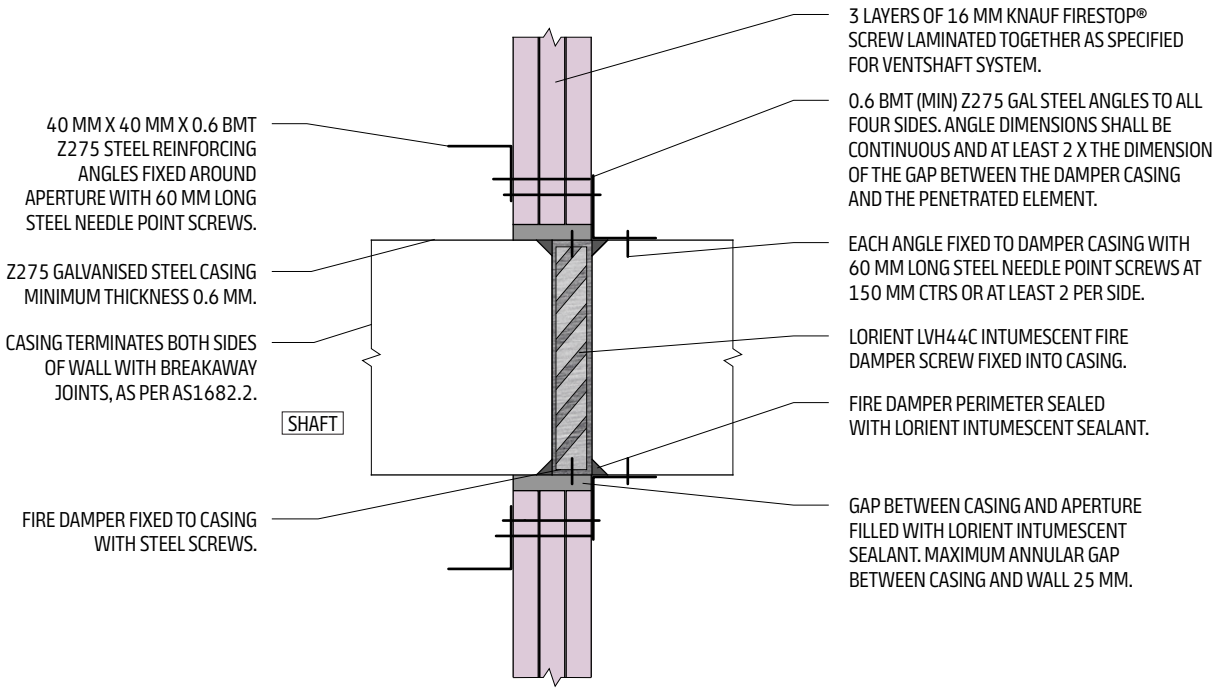
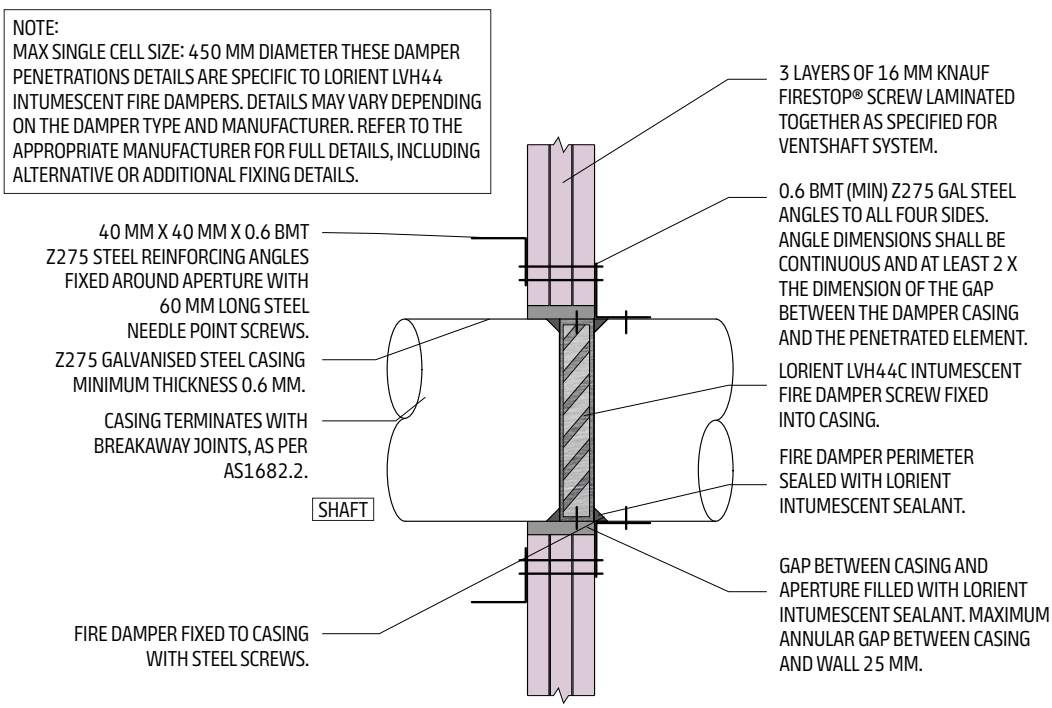


Figure 32: Lorient Fire Damper Section Detail 'B': Round Damper
FRL -/120/- (VS120.1A)
Refer to lorient.com.au for full details and report (EWFA 33233400)

NOTE:
MAX SINGLE CELL SIZE: 450 MM DIAMETER THESE DAMPER PENETRATIONS DETAILS ARE SPECIFIC TO LORIENT LVH44 INTUMESCENT FIRE DAMPERS. DETAILS MAY VARY DEPENDING ON THE DAMPER TYPE AND MANUFACTURER. REFER TO THE APPROPRIATE MANUFACTURER FOR FULL DETAILS, INCLUDING ALTERNATIVE OR ADDITIONAL FIXING DETAILS.



INSTALLATION DETAILS CONT.

Figure 33: Elephants Foot Self-Closing Garbage Chute Door Penetration – Aperture Elevation Detail
VS90.1A, FRL -/90/30. VS120.1A, FRL -/120/30
Refer to elephantsfoot.com.au for full details and report (FAS 180410)

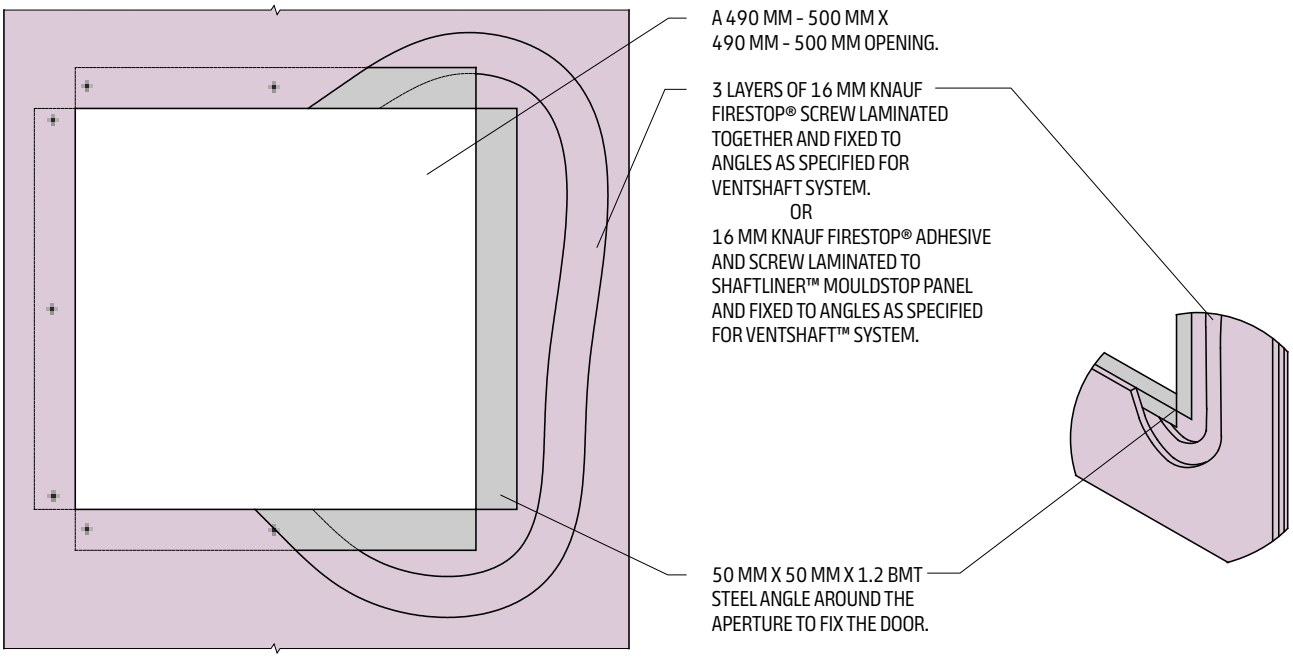
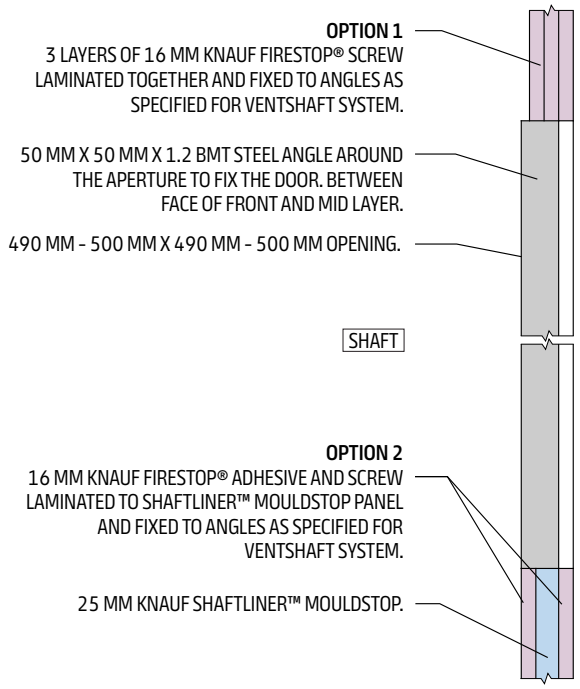


Figure 34: Elephants Foot Self-Closing Garbage Chute Door Penetration
VS90.1A, FRL -/90/30. VS120.1A, FRL -/120/30
Refer to elephantsfoot.com.au for full details and report (FAS 180410)



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The Knauf Group believes that the best innovations start with a purpose; a focus on why the innovation is needed and who will benefit from it. The business's focus is to deliver innovations that help companies in the construction sector to work smarter, do more, and build better. This is achieved through investing in purposeful innovation, expanding into different markets and constantly searching for new ways to increase performance and productivity. This commitment to innovation and focus on customers is inspired by a desire to empower architects, contractors, and workers alike to improve the way societies live by changing the way buildings are designed and built. Knauf is committed to delivering only the best to its customers and partners.

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