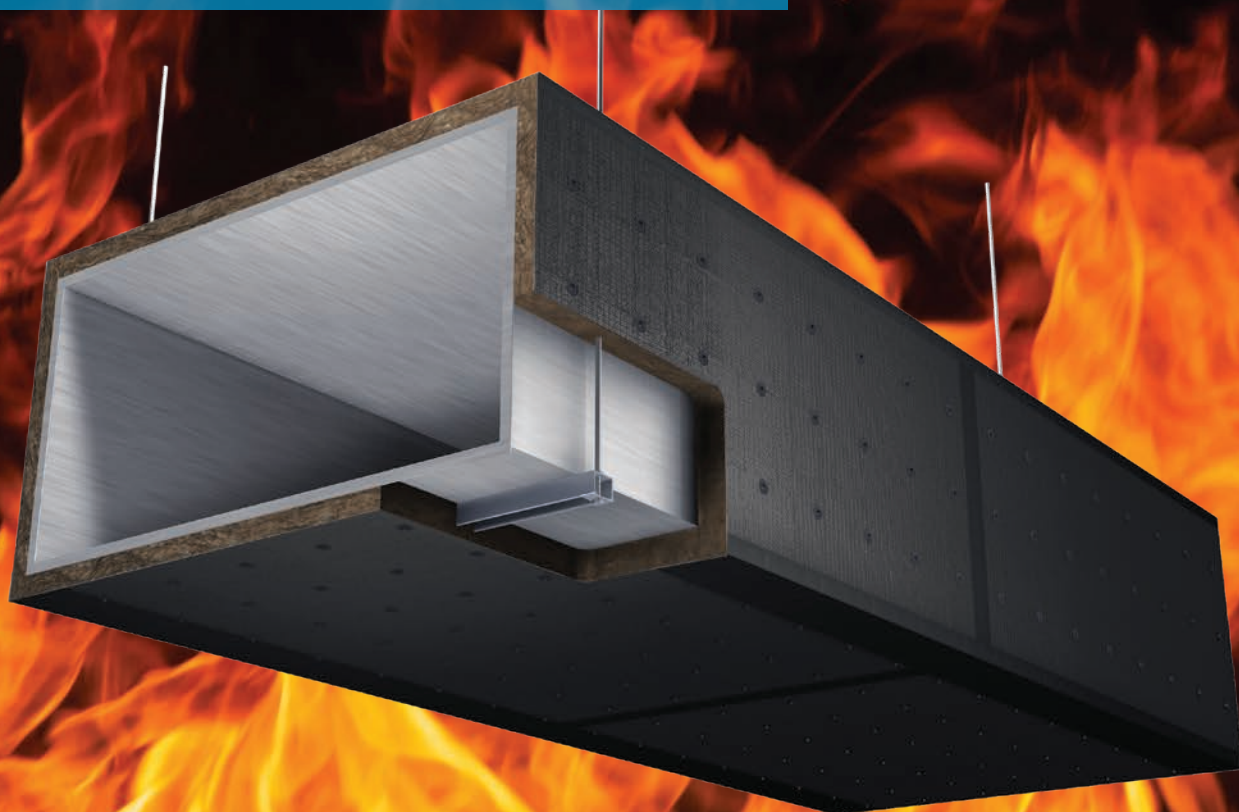


INSTALLATION MANUAL: FIRE-TEK® DuctProtect 30 R SYSTEM



Insulation system for ventilation duct
EI 30 (veho i ↔ o) S tested in accordance with
EN 1366-1 with VKF approval

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KNAUF INSULATION FIRE-TEK® DuctProtect 30 R SYSTEM



Passive structural fireproof protection is one of the most important factors in HVAC, shipbuilding, and the process industry. Together with appropriate fire containment, highly efficient fireproof insulation is necessary to prevent the spread of flames, heat and smoke to other areas in case of fire.

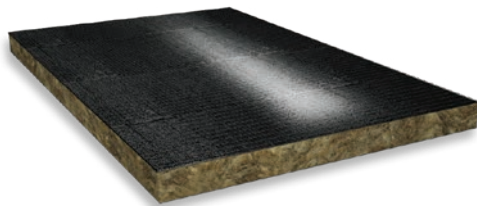
Ventilation systems can spread fire, heat and smoke if unprotected, too. Fire-rated rectangular ducts assure separation of the building into several fire compartments in order to save lives and property. Therefore, only technically proven fireproof insulation can be installed in fire protective horizontal and vertical rectangular ducts.

Components are assessed according to their fire behavior, in particular according to the duration of their fire resistance. The classification of the fire resistance of ventilation systems is based on the EN 13501-3 standard.

KNAUF INSULATION FIRE-TEK® DuctProtect 30 R SYSTEM ELEMENTS

With our Knauf Insulation Fire-teK® DuctProtect 30 R SYSTEM you have decided on a system that provides superior passive fire protection of the ventilation ducts.

Two products in the form of boards represent core materials of our new Fire-teK® DuctProtect 30 R SYSTEM.



Fire-teK® BD 907 ALB



Fire-teK® BD 918

System name	Fire resistance class	Application	Product name	Density [kg/m³]	Thickness [mm]
Fire-teK® DuctProtect 30 R SYSTEM	EI 30 (vehicle ↔) S	Solid ceiling	Fire-teK® BD 907 ALB*	70	60 - 100
		Dry wall Solid wall	Fire-teK® BD 918	180	30

* ALB = reinforced black alu foil

There are also additional products which complement and add additional performance to our newly developed fire protection system:

- Fire-teK® STICK Ceramic Glue
- Fire-teK® INT Intumescent
- Power-teK LW STD Loose Wool
(alternatively Sound-teK FM 140 ALU Mat)



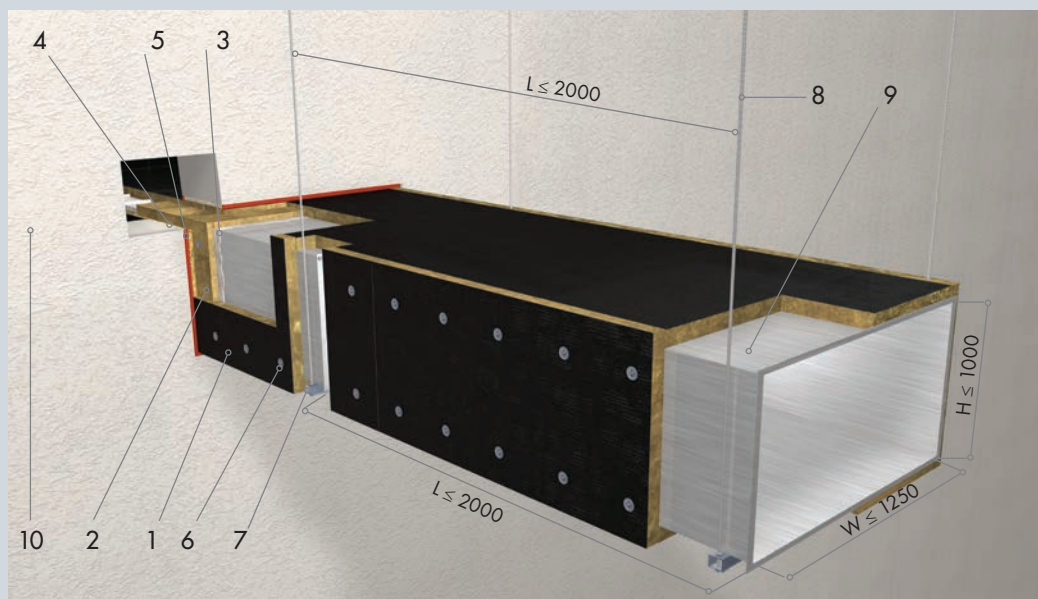
Fire-teK® STICK



Fire-teK® INT



Power-teK LW STD



1. Fire-teK® BD 907 ALB
2. Fire-teK® BD 918
3. Fire-teK® STICK
4. Power-teK® LW STD
5. Fire-teK® INT
6. Welded pins
7. Duct support
8. Threaded rods
9. Duct
10. Solid/Drywall

Remark: The maximum dimensions for the cross-section of the ventilation duct are 1,250 x 1,000 mm. The maximum length of an individual ventilation duct is 2,000 mm.

APPLICATION

Knauf Insulation Fire-teK® DuctProtect 30 R SYSTEM has been developed for use on horizontal and vertical ventilation ducts.

In addition to passive fire protection the Knauf Insulation Fire-teK® DuctProtect 30 R SYSTEM also has excellent thermal and acoustic insulation properties. Due to the dimensions of the insulation boards, the system can even be also used where space is at a premium.

The system provides guaranteed fire resistance of up to 30 minutes (if installed following the installation guidelines).

Benefits of the Knauf Insulation Fire-teK® DuctProtect 30 R SYSTEM:

- 100% Mineral Wool fire protection system (patent applied)
- No reinforcing profile needed
 - › No risk of leakage / loss of pressure as there are no holes in the ventilation duct.
 - › Ensuring higher hygiene standards due to missing rivets or screws inside the duct
- No wall fixation needed
 - › No sound transfer from the duct to the wall
 - › Faster and easier mounting
- Simple installation
 - › Fast and easy cutting and mounting
 - › No additional tools such as cutting discs, drilling and cordless riveting machines required.
- Added revision openings (NEW)
- Insulation thicknesses 60 and 100 mm

TECHNICAL DATA

Knauf Insulation Fire-teK® BD 907 ALB

Properties	Symbol	Description				Unit	Test method
Reaction to fire	—	A1				—	EN 13501-1
Density	—	ca. 70				kg/m ³	EN 1602
Thermal conductivity depending on temperature	ϑ	10	40	50	100	°C	EN 12667
	λ	0.035	0.038	0.039	0.046	W/(m·K)	
	ϑ	150	200	250		°C	
	λ	0.056	0.065	0.077		W/(m·K)	
Water-soluble chloride ions (AS quality)	—	≤ 10				ppm	EN 13468
Water absorption	W _p	≤ 1.0				kg/m ²	EN 1609
Water vapour diffusion equivalent air layer thickness	S _d	≥ 100				—	
Melting point of fibres	ϑ	≥ 1000				°C	DIN 4102-17
Specific heat capacity	C _p	1030				J/(kgK)	EN ISO 10456
Silicon-free	—	No emissions by lacquering disturbing substances					
Designation code	—	MW-EN 14303-T5-WS1-MV2-CL10				—	EN 14303

Knauf Insulation Fire-teK® BD 918

Properties	Symbol	Description				Unit	Test method
Reaction to fire	—	A1				—	EN 13501-1
Density	—	ca. 180				kg/m ³	EN 1602
Thermal conductivity depending on temperature	ϑ	50	100	200	300	°C	EN 12667
	λ	0.041	0.045	0.059	0.072	W/(m·K)	
Water-soluble chloride ions (AS quality)	—	≤ 10				ppm	EN 13468
Water absorption	W _p	≤ 1.0				kg/m ²	EN 1609
Melting point of fibres	ϑ	≥ 1000				°C	DIN 4102-17
Specific heat capacity	C _p	1030				J/(kgK)	EN ISO 10456
Silicon-free	—	No emissions by lacquering disturbing substances					
Designation code	—	MW-EN 14303-T5-WS1-MV2-CL10				—	EN 14303

INSULATION OF DUCTS

Overview & Installation



Insulation of horizontal and vertical ducts with our
Fire-teK® DuctProtect 30 R SYSTEM

INSTALLATION INSTRUCTIONS

The Knauf Insulation Fire-teK® DuctProtect 30 R SYSTEM for rectangular ventilation ducts only provides the stated class of fire-resistance if installed following the installation guidelines.

Step

1

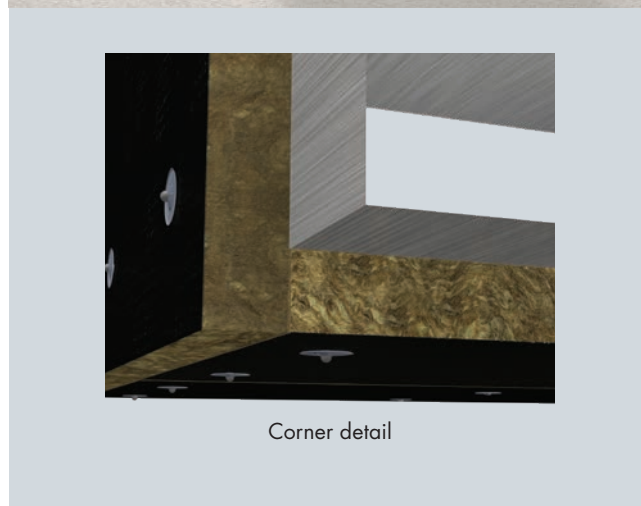
MOUNTING THE FIRE-TEK® BD 907 ALB BOARD

Cutting insulation board to the right duct dimensions:

- The top and bottom boards should be approx. 10 mm wider than the duct width.
- Height of the insulation board: Duct height + 2 x insulation thickness

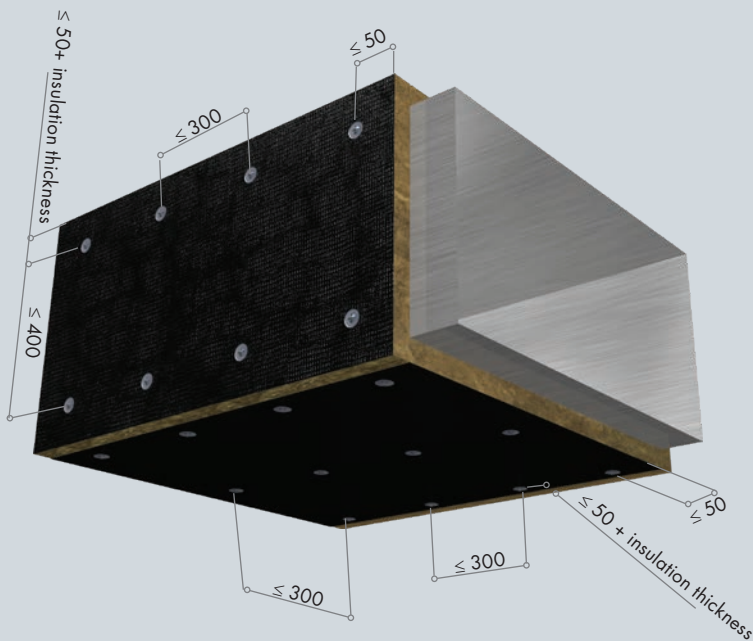
Installing insulation board to the duct:

- Place the board on the top side of the duct without pins.
- Install the second board on the bottom side of the duct and pin it, following the pin pattern as described in step 2
- Install the boards on the sides of the duct and pin them, following the pin pattern as described in step 2
- No glue or screws needed when installing the insulations boards to the ducts.
- For design reasons only, black alu tape can be added to the edges (no impact on fire performance).

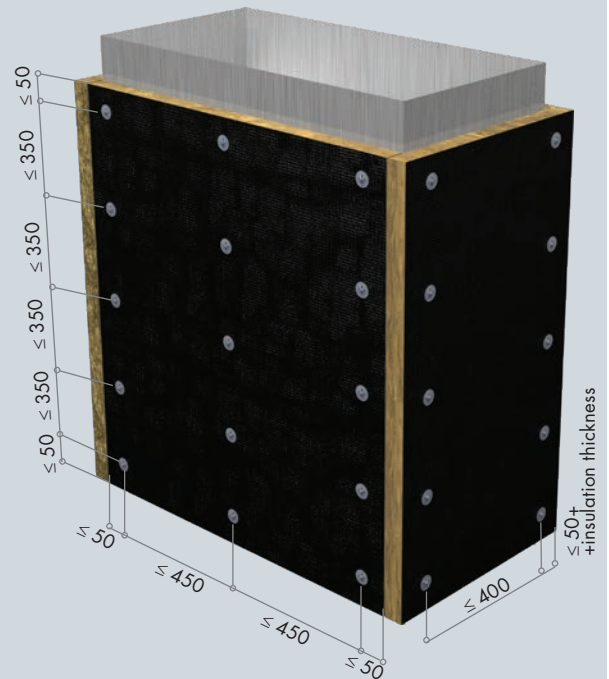


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Pin pattern fixation for horizontal mounting



Pin pattern fixation for vertical mounting



The insulation boards are fastened with welding pins $\varnothing 2.7$ mm and a washer with $\varnothing 30$ mm. Welded pins shall be applied following the appropriate pin pattern. (See the drawings above.)

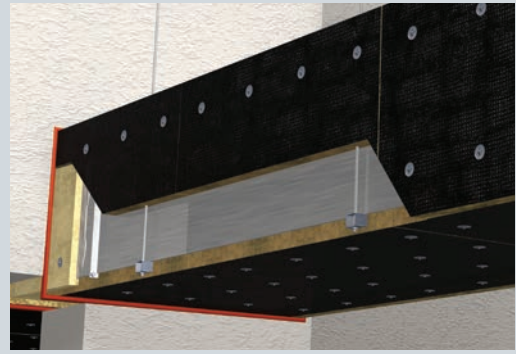
- No welding pins necessary on the top side of the duct
- Maximum duct cross-section 1,250 x 1,000 mm
- Maximum duct length 2,000 mm

Step

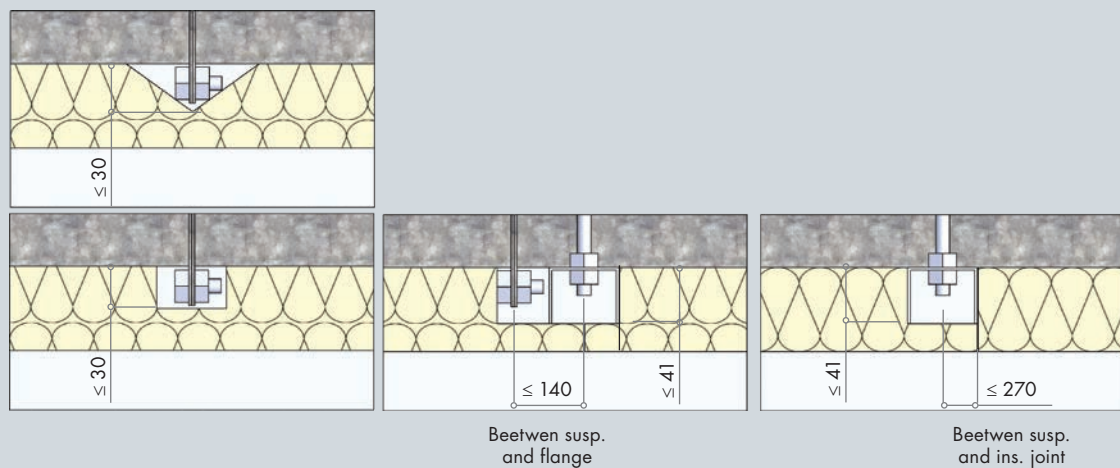
3

COVERING THE DUCT JOINTS AND SUSPENSIONS

In the area of duct joint connections and suspensions, Fire-teK® BD 907 ALB can be notched up to a depth of 30 and 41 mm respectively, without the need for an additional layer of insulation. See below for detailed design.



Detail of duct joints and suspensions



IMPORTANT TO KNOW:

- The fastening and suspension of the ventilation duct must be at least correspondent to the required fire resistance class.
- The fasteners (threaded rods, profiles, dowels, etc.) must all be made of non-combustible materials (RF1). Vibration dampers and the like are excluded.
- The fastening structure must be statically dimensioned so that the calculated tensile stress of the threaded rods does not exceed 9 N/mm^2 .
- The purpose of Fire-teK® DuctProtect 30 R System is for steel-sheet air ducts. Minimal requirement is leakage class C, according to EN 1507:2006. The maximum allowed pressure difference is 500 Pa.

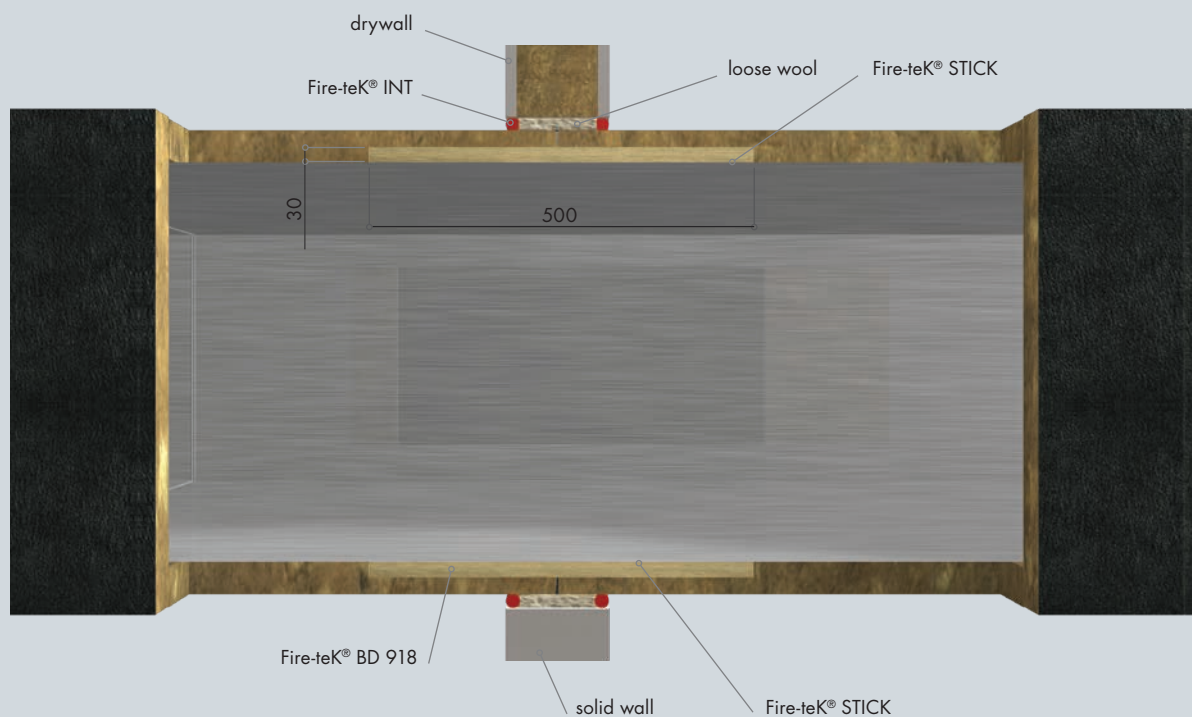
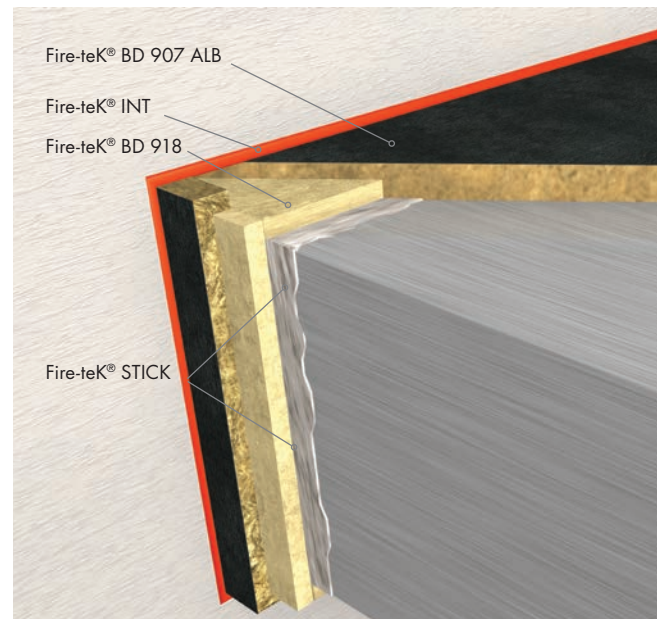
HORIZONTAL WALL PENETRATION

Overview & Installation



Components for wall penetration:

- Fire-teK® BD 907 ALB Fire Protection Board
- Fire-teK® BD 918 Enforcement Board
- Fire-teK® STICK Ceramic Glue
- Fire-teK® INT Intumescent
- Power-teK LW STD Loose Wool



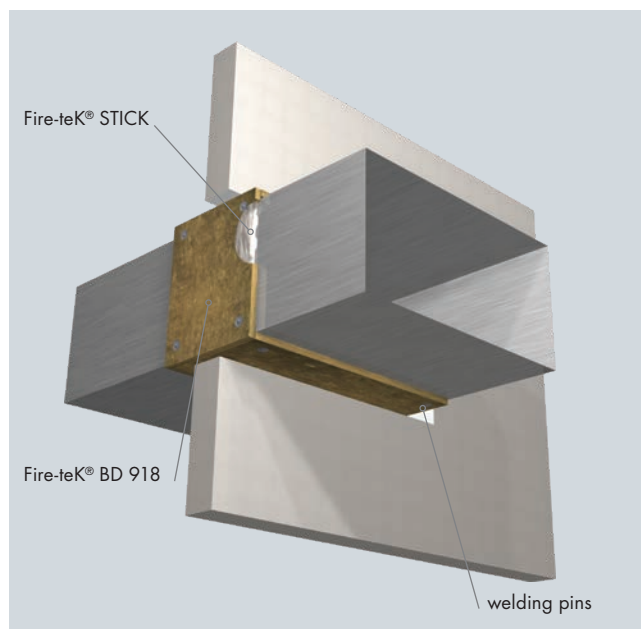
The wall must have at least the same fire resistance as the fire protection insulation.

Step

1

MOUNTING FIRE-TEK® BD 918

- The width of Fire-teK® BD 918 is 500 mm, independent to the wall thickness.
- Apply the Fire-teK® BD 918 with Fire-teK® STICK against the duct.
- Fire-teK® STICK needs to be applied all over on the Fire-teK® BD 918 at the contact surface of the ventilation duct. The ventilation duct itself must not be coated with Fire-teK® STICK.
- Fire-teK® BD 918 is placed to the centre of the wall.
- Add welding pins at each corner in order to ensure fixation (top board not to be fixed with pins).

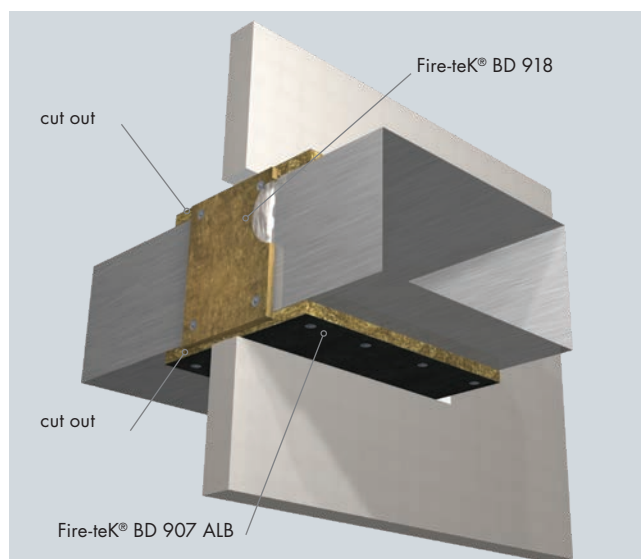


Step

2

CUTTING OUT THE FIRE-TEK® BD 907 ALB

- Cut Fire-teK® BD 907 ALB out to cover Fire-teK® BD 918 with it.
- The board joints of Fire-teK® BD 907 ALB can be centred to the wall, any other position is possible.

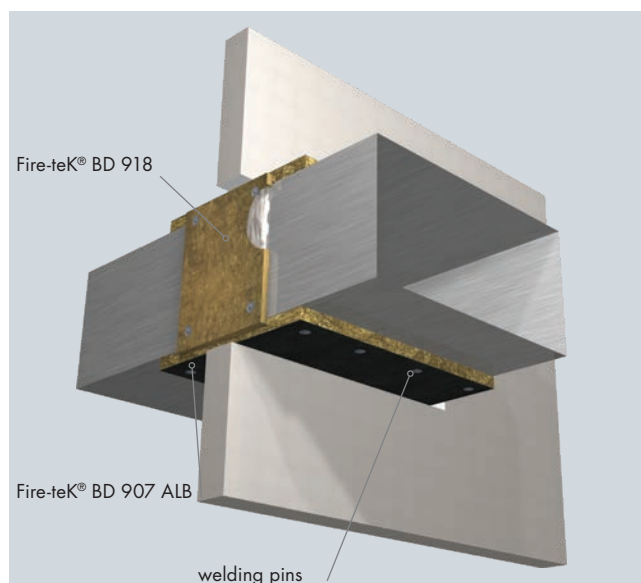


Step

3

MOUNTING FIRE-TEK® BD 907 ALB – TOP AND BOTTOM

- Apply Fire-teK® BD 907 ALB on the top and on the bottom of the duct.
- The bottom part must be secured with welding pins only (see pin distance on page 6).
- The upper board does not have to be fixed with welding pins.
- Fire-teK® BD 907 ALB does not need to be applied with Fire-teK® STICK.

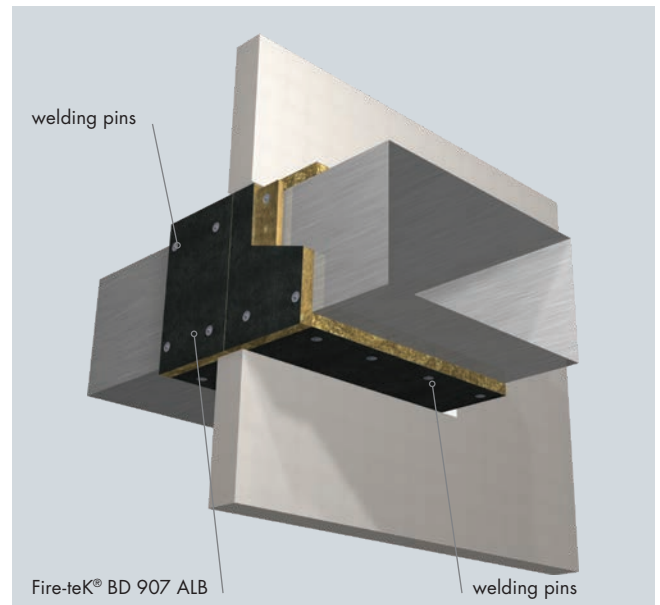


Step

4

APPLYING FIRE-TEK® BD 907 ALB

- Apply Fire-teK® BD 907 on both sides of the duct and secure them with welding pins only (see pin distance on page 6).
- Fire-teK® BD 907 ALB does not need to be applied with Fire-teK® STICK.

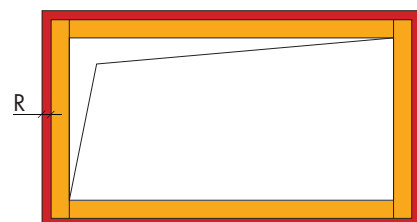
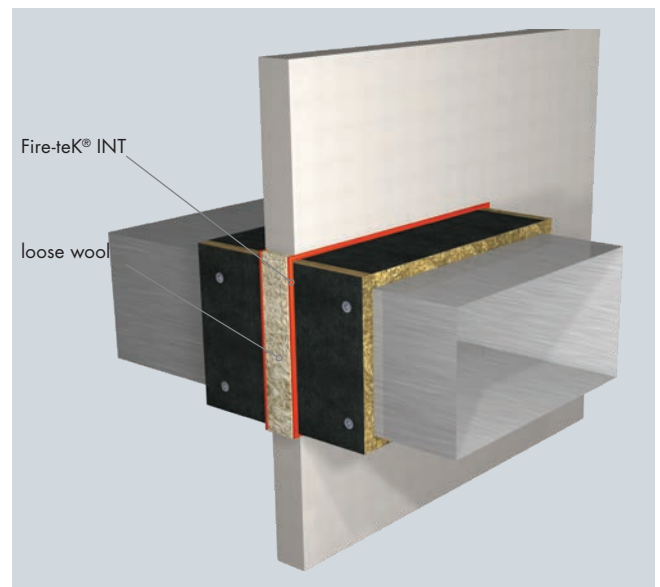


Step

5

FILLING-IN THE GAPS

- The remaining gap between the fire protection insulation boards and the wall can be up to 30 mm.
- Fill the gap on all four sides around the duct with Fire-teK® INT on both sides of the wall penetration.
- Fire-teK® INT needs to be installed separately on each side of the duct.
- Fire-teK® INT needs to be firm in place (no air gap), without twisting and without protruding from the wall (see details on page 8).
- To fill empty spaces across the wall penetration, apply loose wool between the wall and the Fire-teK® INT.
- The design is identical for both, solid wall and drywall walls with fire resistance of EI30 or higher.



R Residual gap

R	Fire-teK® INT
(mm)	ø (mm)
0 - 13	16
13 - 21	24
20 - 27	30
25 - 35	39

Overview of available intumescent

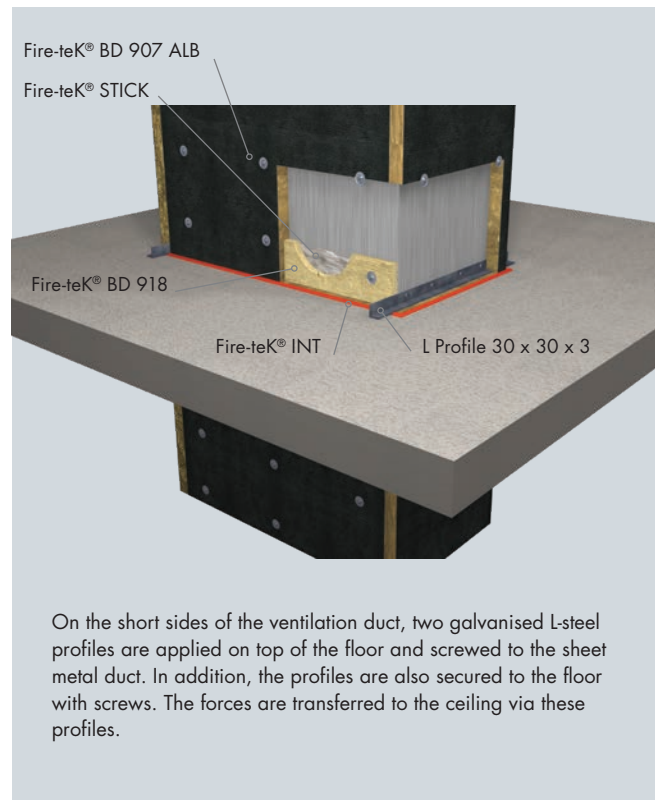
CEILING PENETRATION

Overview & Installation



Components for Insulation of duct ceiling penetration:

- Fire-teK® BD 907 ALB Fire Protection Board
- Fire-teK® BD 918 Fire Protection Board
- Fire-teK® STICK Ceramic Glue
- Fire-teK® INT Intumescent

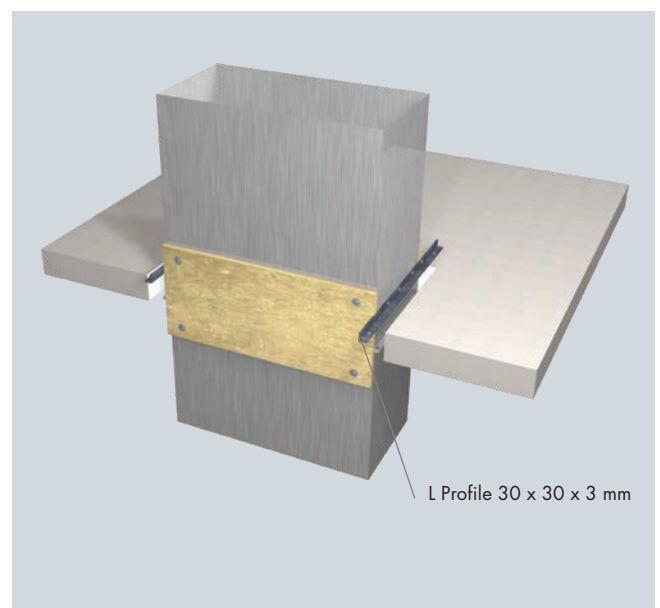


Step

1

MOUNTING THE L-PROFILES

- Place the profiles on both short sides of the duct. Profile length = ceiling gap + 220 mm. The floor must have at least the same fire resistance as the fire protection insulation.



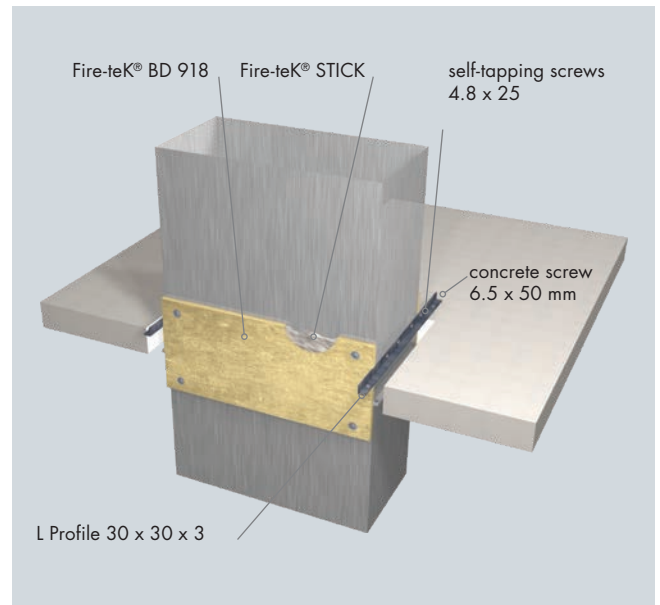
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Step

2

MOUNTING FIRE-TEK® BD 918 ON THE LONG SIDES

- The width of the Fire-teK® BD 918 is 500 mm, regardless of the ceiling thickness.
- Apply the Fire-teK® BD 918 with Fire-teK STICK on the long sides of the duct only.
- For the short sides of the duct there is no need to reinforce them with Fire-teK BD 918.
- Fire-teK® STICK needs to be applied all over on the Fire-teK® BD 918 at the contact surface of the ventilation duct. The ventilation duct itself must not be coated with Fire-teK® STICK.
- Fire-teK® BD 918 is placed to the centre of the ceiling.
- Add welding pins at each corner of the Fire-teK® BD 918 board in order to ensure fixation.

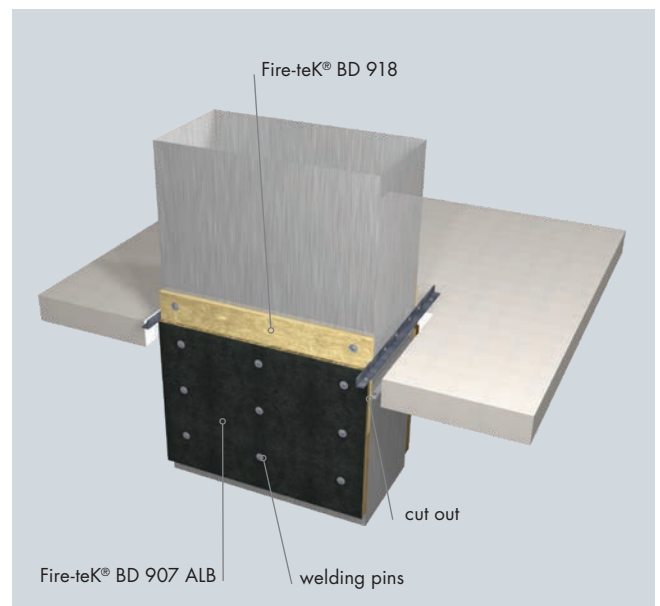


Step

3

CUTTING AND ASSEMBLY OF THE FIRE-TEK® BD 907 ALB

- Cut out Fire-teK® BD 907 ALB to cover Fire-teK® BD 918 with it.
- Apply Fire-teK® BD 907 ALB on the long sides of the duct (see pin distance on page 6).
- Fire-teK BD 907 ALB does not need to be applied with Fire-teK® STICK.
- The Fire-teK® BD 907 ALB board joints can be centred to the ceiling or at any other position.

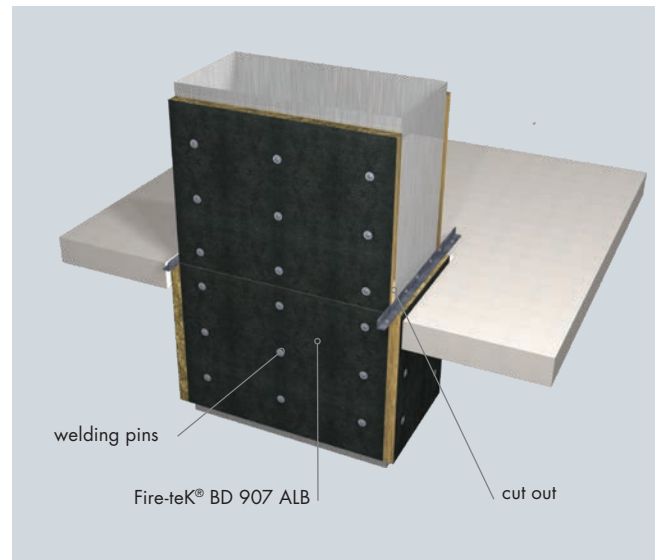


Step

4

MOUNTING FIRE-TEK® BD 907 ALB ON THE SMALL SIDES

- Apply Fire-teK® BD 907 ALB on the small sides of the duct. Place the lower and the upper board tight to the L-profile to create the board joint (see pin distance on page 6).
- Fire-teK® BD 907 ALB does not need to be applied with Fire-teK® STICK.

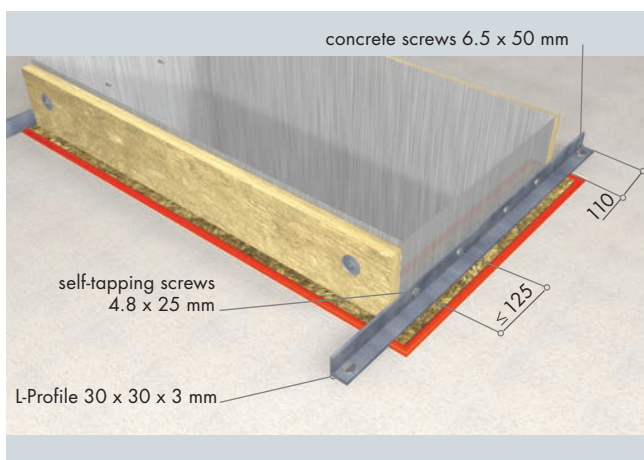
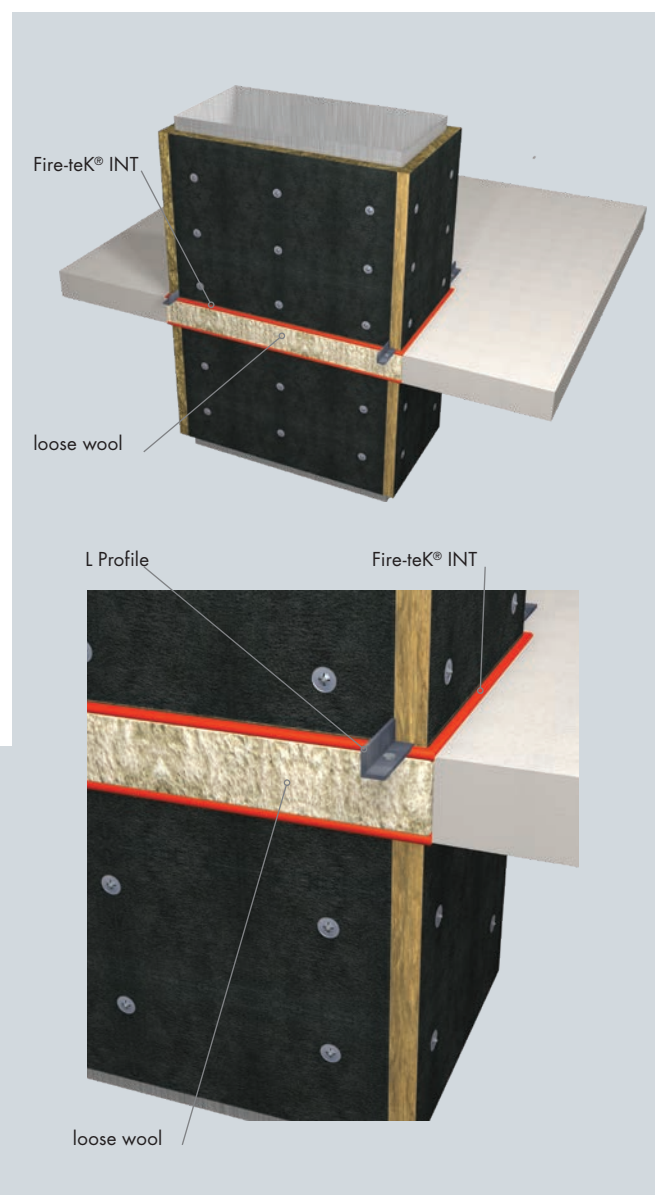


Step

5

CLOSING THE REMAINING GAPS

- The remaining gap between the fire protection insulation boards and the ceiling can be up to 30 mm.
- Seal the lower remaining gap on 4 sides with Fire-teK® INT.
- Stuff the remaining gap from above with loose wool.
- Seal the upper remaining gap on 4 sides with Fire-teK® INT.
- **IMPORTANT:** Fire-teK® INT must fit snugly and must be installed flush with the ceiling.



REVISION OPENINGS

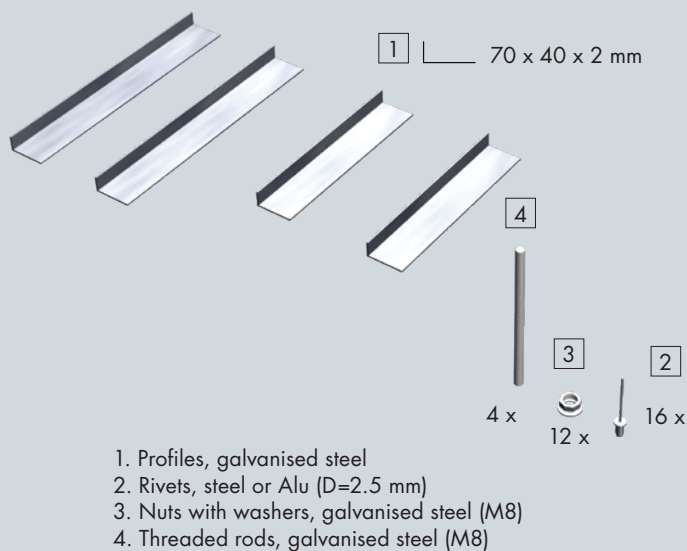
Overview & Installation



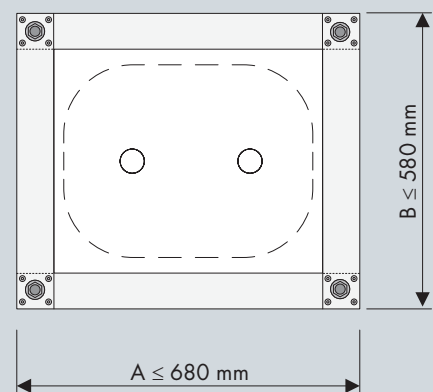
Inspection openings enable the ventilation ducts to be cleaned when needed.
With the Fire-teK® DuctProtect 30 R System, these inspection openings can be made easily and safely.

The described Mounting is valid for all common revision openings with a size of up to 400 x 300 mm.

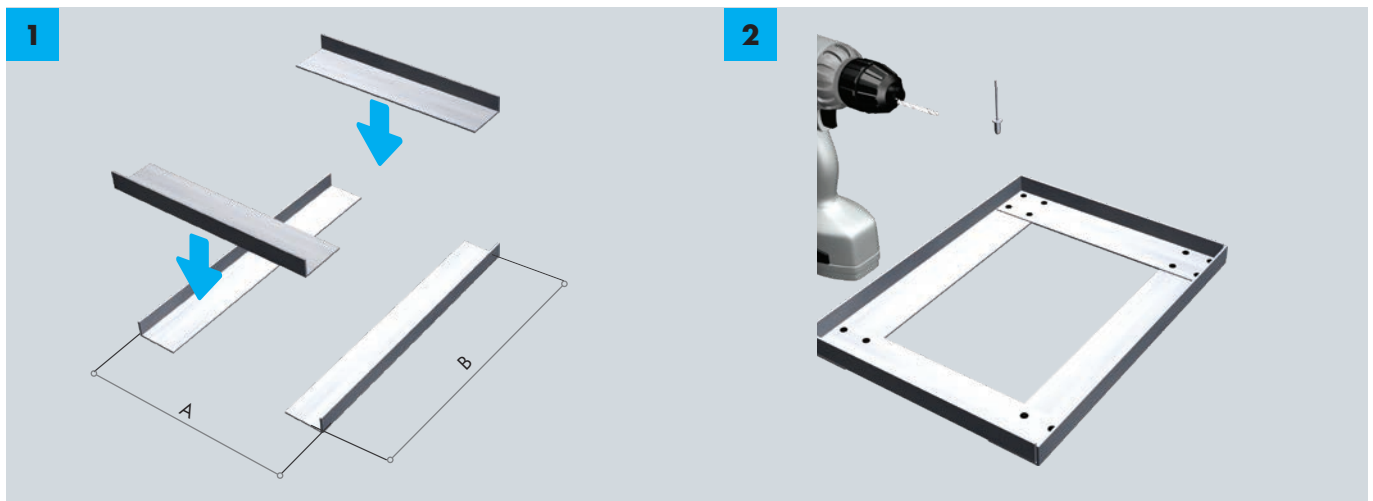
Required components



Dimensioning:

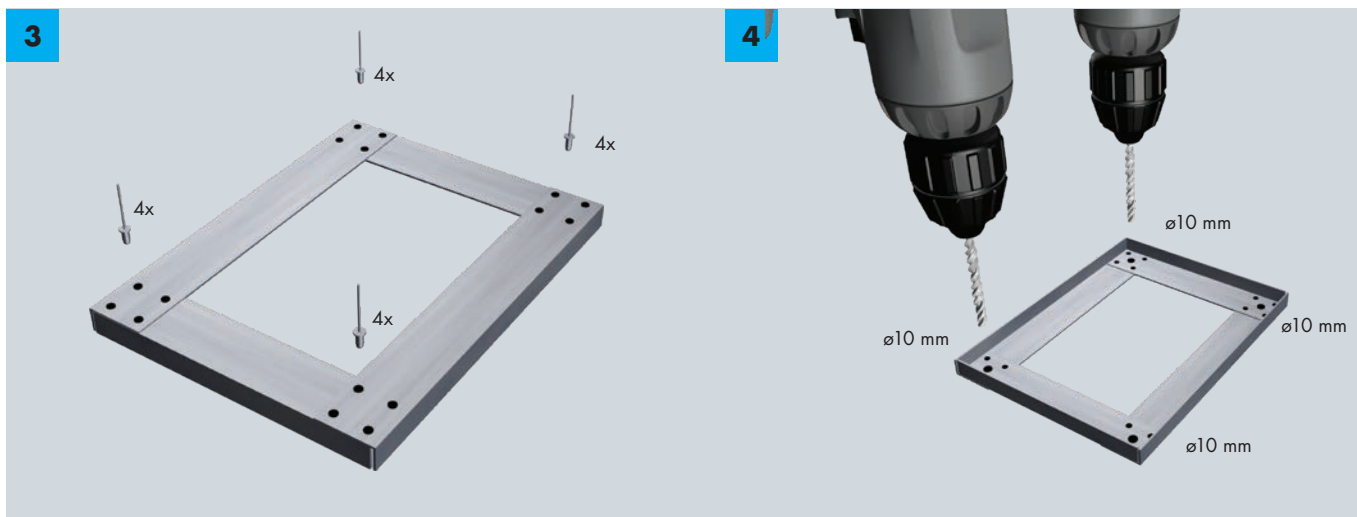


1. Align the L profile and create a square shape not bigger than 680 x 580 mm.
2. With a drill, create four holes on each corner, big enough for rivets.



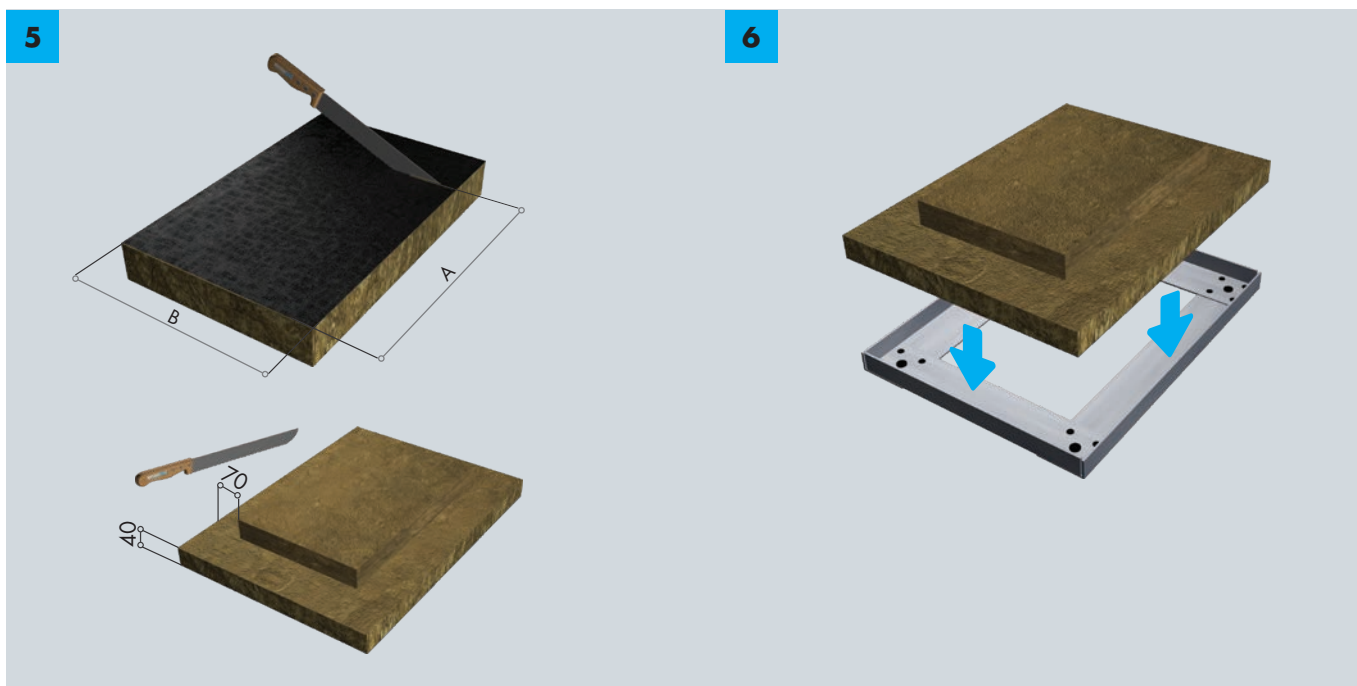
3. Apply four rivets on each corner.

4. With a drill, create a hole, large enough for the threaded bolt to pass through.

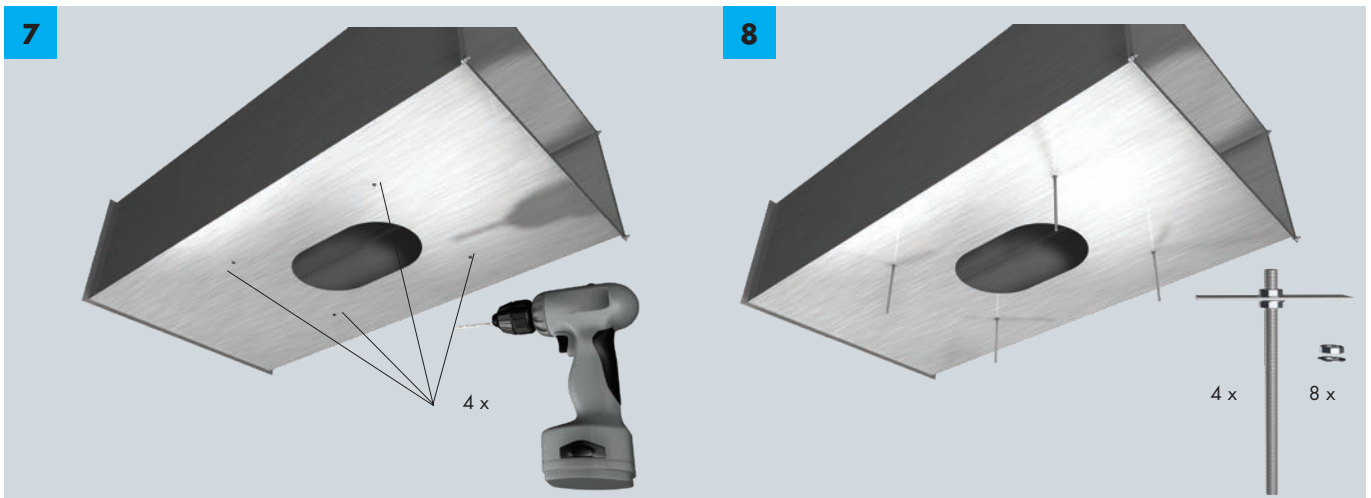


5. Cut one piece of Fire-teK® 907 ALB with the same dimension as defined in point 1.

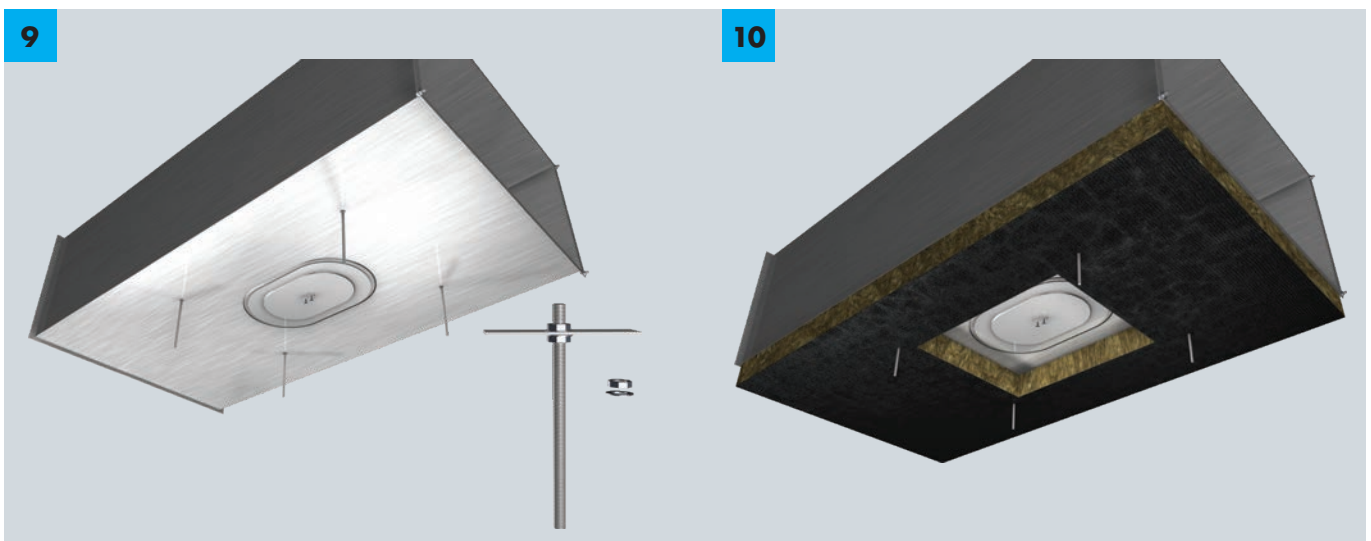
6. Cut out a 20 mm thick piece of insulation around the insulation board respectively 70 mm on each side. Apply the prefabricated piece inside the metal frame.



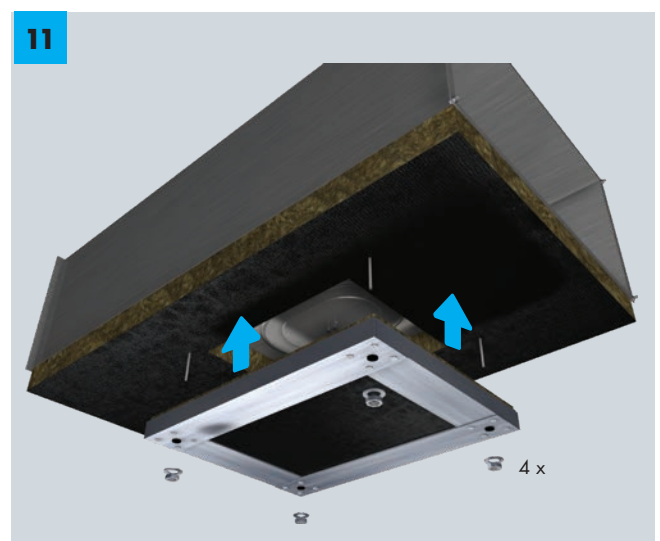
7. At the same position of the metal frame, on the bottom of the duct, drill four 10 mm holes.
8. Apply four M8 Rods on the holes, secure them on both sides with M8 washers and nuts.



9. Close the access panel.
10. Install the insulation.



11. Install the prefabricated access panel door, and secure with four M8 washers and nuts.



INSULATING CURVED DUCTS



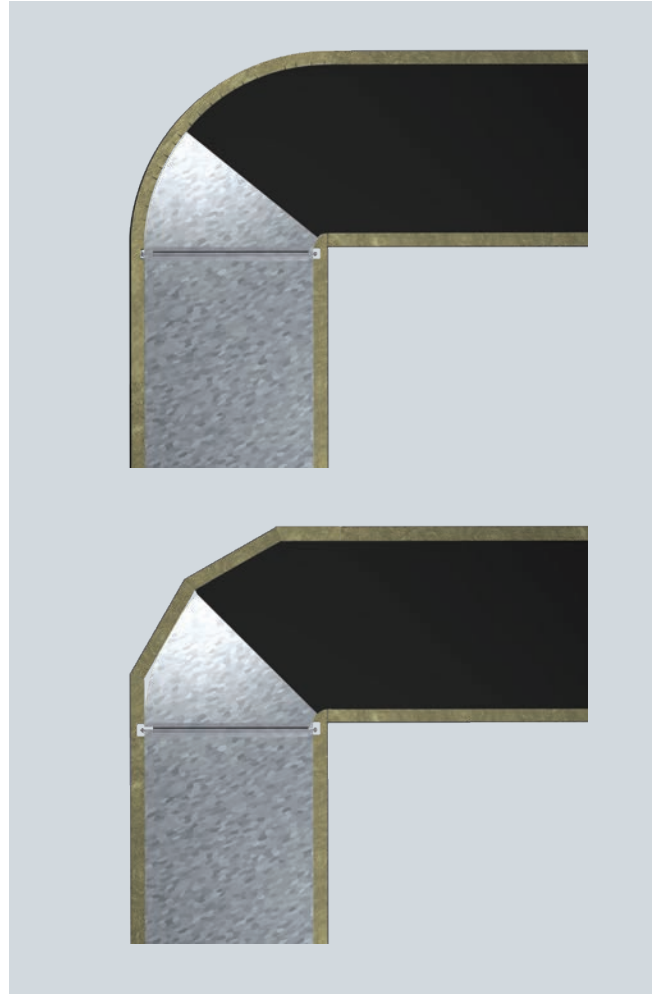
The following two design variants are possible for cladding curved pieces. The cladding can be designed as a segment arch or a round arch.

1. V-SHAPED CUTTING OF BOARDS

The Fire-teK® BD 907 ALB insulation board is regularly cut out in a V-shape, not continuously, and fixed with the appropriate fastening grid. Incisions are handled like board joints.

2. BOARDS CUT TO PRECISE DIMENSIONS

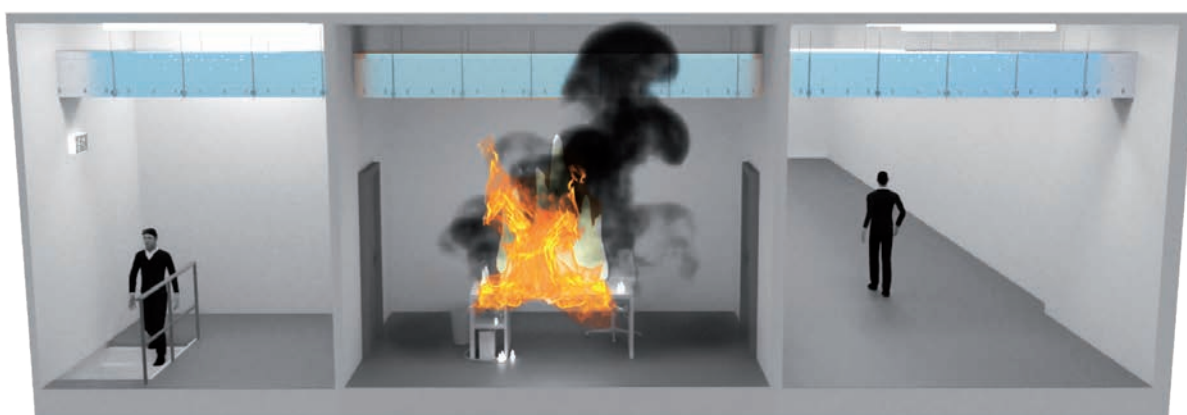
The Fire-teK® BD 907 ALB insulation board is cut precisely to the appropriate angle and fixed with the appropriate fastening grid.



EXAMPLES OF FIRE RESISTANCE IN BUILDINGS

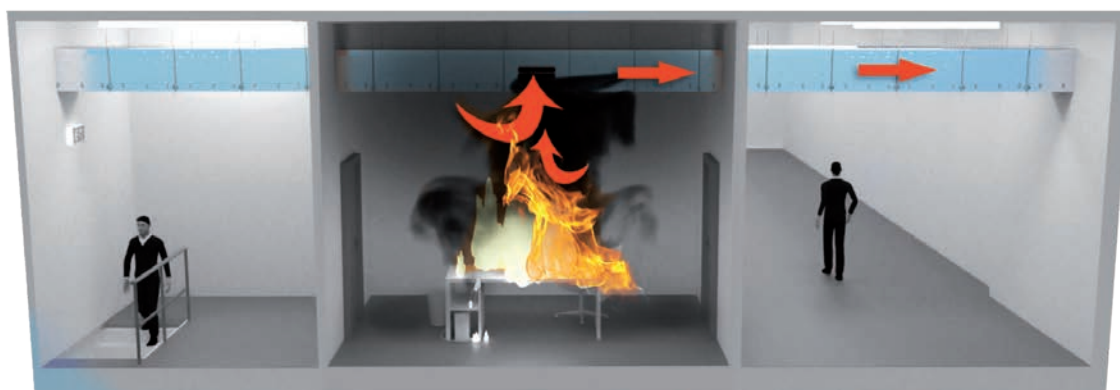
Fire-resistant lines such as channels insulated in accordance with fire safety are components classified in accordance with **EN 13501-3**. Here, for instance, the following information may be given:

- Fire resistance duration
- The orientation of the class of fire resistance duration
- Vertical / horizontal installation of the building element or component
- Smoke insulation



Fire outside duct (o → i) S

Under EN 13501-3 classification, fire outside refers to duct A, which fulfils the fire resistance requirements from the outside to the inside of the duct.



Fire inside duct (i → o) S

Under EN 13501-3 classification, fire inside refers to duct B, which fulfils the fire resistance requirements from the inside of the duct to the outside environment.

OUR MINERAL WOOL PRODUCTS WITH ECOSE® TECHNOLOGY!

Following the successful launch of ECOSE® Technology in building insulation, Knauf Insulation has decided to extend its use of this innovative binding technology to technical insulation products.

We almost exclusively use natural materials as the basic material for our mineral wool products. With our formaldehyde-free binder ECOSE® Technology, we reduce energy consumption during manufacture and improve the energy balance of our products. With the receipt of the **Eurofins Indoor Air Comfort Award**, our insulation materials have been proven

to contribute to improved indoor air quality and are therefore ideally suited for sustainable use in building technical insulation.

Knowing that people spend 90% of their life time inside, the air quality in their working and living environment really matters.



ENVIRONMENTAL PRODUCT DECLARATIONS (EPD)

In order to enable a correct assessment of the impact of our insulation materials on the environment, we provide you with information relevant to your decision. Our products are assessed with regard to their sustainability over their entire life cycle. This is done with the help of a life cycle assessment across each phase – from start to finish.

We make the results available to you in the form of environmental product declarations (EPD) for each product.

<https://info.knaufinsulation-ts.com/de/download-epd-labelled-products-from-knauf-insulation-technical-solutions>



BIM - OUR NEW PLANNING TOOL FOR YOU



Our **mission**: To support you in your daily work.

Building Information Modeling (BIM) is a digital, future-oriented process for planning, building and operating buildings that helps increase productivity in the construction industry. It bundles all information that can be accessed at every step of the life cycle of a building, from design to demolition. Parts lists can be created just as easily during planning, as can comprehensive, timely maintenance overviews during regular operation.

BIM drawings are available for our Fire-teK products as well.

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Our products save energy, cut emissions and are designed to make sure buildings and applications are good for the environment and keep people healthy, safe and well. Across our company, we have been working on sustainability for over a decade. We have focused on zero harm, reducing our energy use and emissions, recycling our production waste, incorporating circular economy principles and constantly campaigning for better and more sustainable buildings and applications. Over the past decade, we have achieved great things and we are proud of how we have changed our company, helped our colleagues, communities and customers and reduced our impact on the environment. But sustainability is a process of continuous improvement. We must do more for our people and our environment. That's why we've created our new sustainability strategy. We call the new strategy **'For A Better World'** because it builds on the success of our mission statement: "Our vision is to lead the change in smarter insulation solutions for a better world."



CONTACTS

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FOR FURTHER INFORMATION VISIT
 OUR WEBSITE WWW.KNAUFINSULATION-TS.COM/



Premium member of



COMPANY PROFILE

Knauf Insulation is one of the most respected names in the insulation industry worldwide with over 40 years of experience and still growing fast. Over 5.500 employees in more than 40 countries and 27 manufacturing sites. Being part of the family-owned Knauf group, Knauf Insulation Technical Solutions provides solutions for customers' requirements in industry, marine applications, heating, ventilation and air conditioning. A profound market understanding and insulation know-how enables us to provide a broad range of products to meet your specific needs.

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