Conlit® Ductrock

Fire-resistant system
for rectangular air ducts

ROCKWOOL®

CREATE AND PROTECT

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Conlit Ductrock, the fire-proof solution

Planning and installation

Fire-safety standards play an increasingly important role alongside power and ventilation requirements when planning and installing air ducts. Air ducts in buildings often traverse various fire compartments. So what if the right safety measures aren't taken in full? The spread of the smoke and heat generated is a fire risk that compromises fire safety in the building. But you can safeguard the fire resistance of rectangular air ducts for up to 120 minutes in a simple and effective way by applying Conlit Ductrock.

Fully compliant

The new Conlit Ductrock system is the ideal way to make metal air ducts fire-resistant at an attractive price. This solution has been tested compliant with EN 1366-1:2001 Fire resistance tests for service installations – Part 1: Ducts.

Flexible and strong

Conlit Ductrock is the ideal fire-resistant covering for **horizontal and vertical air ducts**. The various Conlit Ductrock systems guarantee fire resistance **up to 60, 90 and even 120 minutes**. Conlit Ductrock also provides very good protection against fire both inside and outside the air duct.

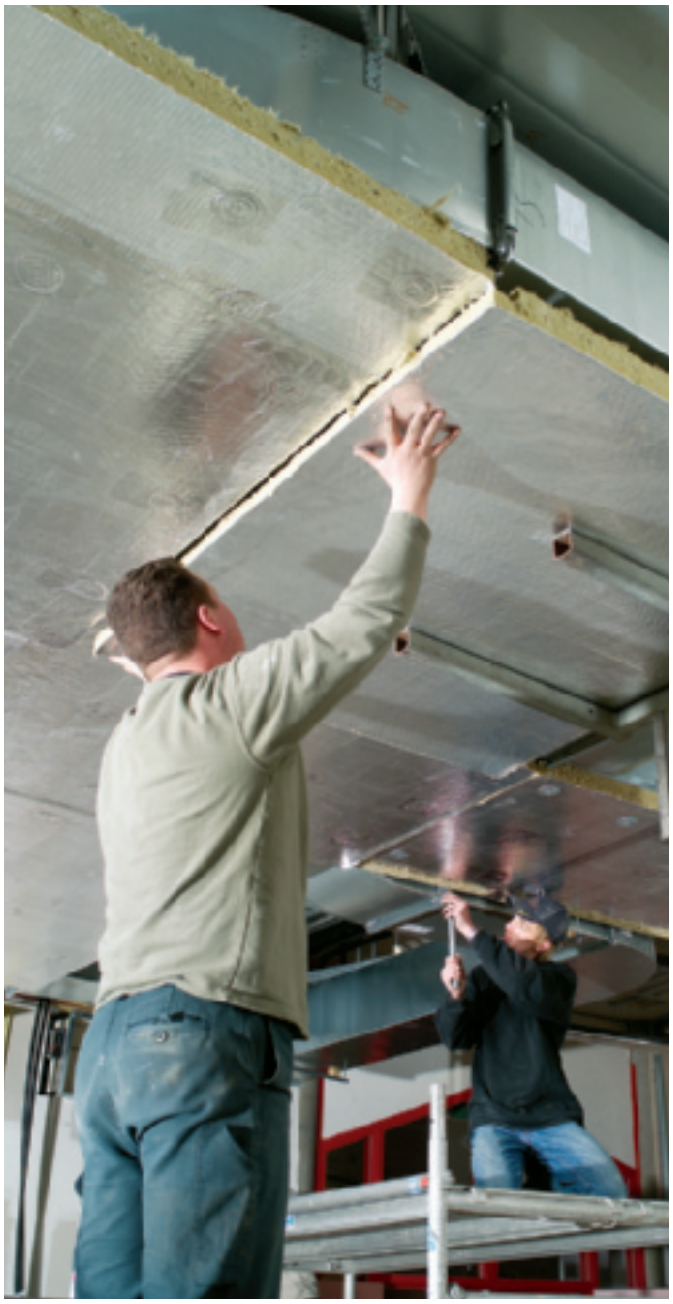
Innovative system

With the development of the Conlit Ductrock system ROCKWOOL has taken the next step in optimal, controlled fire safety. The system is built around the 60 mm-thick non-flammable stone wool slab, covered on one side with reinforced aluminium foil. The stone wool slab contains special granules incorporated by means of an innovative production method. When heated these granules release a large quantity of water trapped in crystals. In the event of fire this water cools down the air duct. It means that a thickness of just 60 mm is all that is needed to keep air ducts fire resistant for up to 120 minutes.

Conlit Ductrock meets the demand for 120 minutes of fire resistance despite being just 60 mm thick!

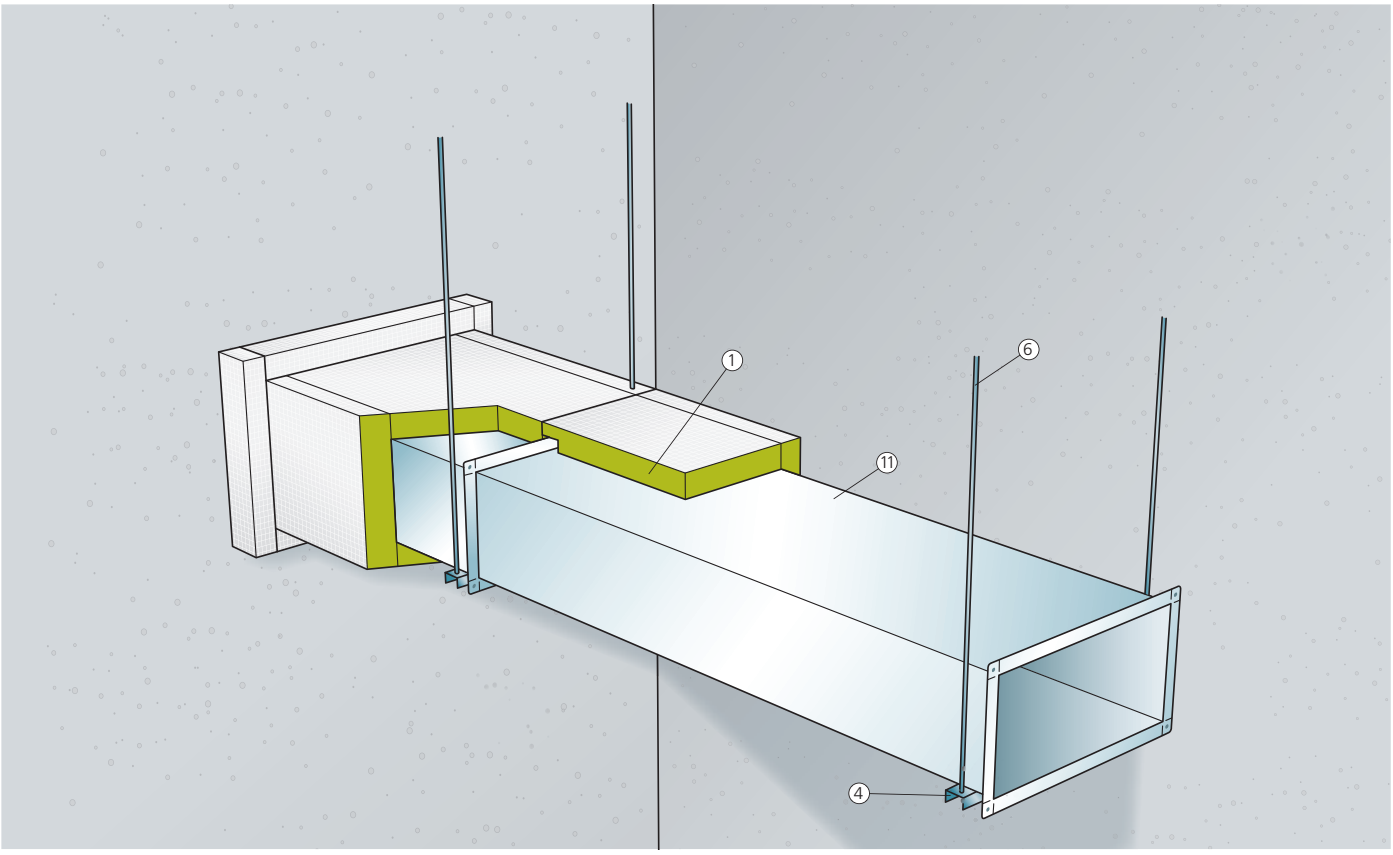
Advantages

- Fire-resistant, acoustic and thermal insulation in one product
- Saves space because there is just a single 60 mm layer of fire-resistant material
- No need for flange collars or hangers
- No need for spacers
- Fast assembly with welded pins
- Very workable; easy to cut and size
- Lightweight and easy to handle
- Tested compliant with the EN 1366-1:2001 standard
- Sturdy and safe



Component list

N°	Description	Remarks
1	Conlit Ductrock	60 mm-thick fire-resistant slab
2	Welded pin with cap Length x (in mm): 60 ⩽ x ⩽ 62	Welded pin ø 2.8 mm with cap ø 28 mm
3	Nail	ø 5 x 125 mm, gap 350 mm
4	Steel U profile (hanger)	25 x 45 x 25 x 3.0 mm
5a	Steel U profile	25 x 40 x 25 x 2.0 mm wall penetration
5b	Steel L profile	50 x 50 x 5.0 mm floor penetration
6	Threaded rod for hanger	Min. M8, max distance between centres 1500 mm
7	Conlit Fix	Non-flammable glue
8a	Self-tapping screw (vertical)	ø 4.2 x 18 mm to fix the steel L profile to the duct Distance between centres ⩽ 100 mm
8b	Self-tapping screw (horizontal)	ø 4 x 90 mm to fix the steel U profile to the duct At least two screws on each side
9	Aluminium foil	
10	Loose wool	
11	Galvanised steel air duct	Max. dimensions 1250 x 1000 x 0.7 mm, max. length duct element 1500 mm
12	Access hatch	
13	Threaded rod with nuts	Min M10 for access hatch
14	Galvanised steel plate	For access hatch



1. Conlit Ductrock – 4. Steel U profile – 6. Threaded rod – 11. Air duct

Quick and easy to apply

The Conlit Ductrock fire slabs are mounted directly on the air duct. It's not necessary to fix spacers against the flanges first. Commercially available welded pins are used. These are pushed through the stone wool slab and welded onto the duct. The slabs are connected together by Conlit Fix.

A corner is cut from the Conlit Ductrock at the location of the flange and the hanger, so no collars are needed. The result is a slim, even, space-saving fire-resistant covering. The Conlit Ductrock slabs are easy to cut, saw and work with a serrated insulation knife or saw. The air duct hanger can be mounted inside or outside the insulation. Coverings incorporating solid walls and floors are also possible: Conlit Ductrock can be installed on two or three sides.

Conlit Fix must be used on all seams between the Conlit Ductrock slabs and between the Conlit Ductrock slabs and the structure.

Technical details

Conlit Ductrock slab

Product characteristics and maximum duct dimensions are shown in the table below.

Product name	Fire resistance (min)	Calculation weight for hanger (kg/m²)	Dimensions* (mm)	Thickness (mm)	Maximum duct dimensions BxH (mm)
Conlit Ductrock 60	60	13	1500 x 1200	60	1250 x 1000
Conlit Ductrock 90	90	20			
Conlit Ductrock 120	120	21			

* Other dimensions on request

Conlit Ductrock fits perfectly on horizontal and vertical ducts.
All Conlit Ductrock slabs are 60 mm thick, but the composition does differ. Choose the right product based on the required fire resistance: Conlit Ductrock 60, 90 or 120.

Conlit Ductrock slabs are delivered on a palette, which must be protected from the weather and stored in no more than two layers.

Conlit Fix

Conlit Fix is a non-flammable glue specially developed for the assembly of Conlit products in fire-resistant structures.

Application
Conlit Fix is very good for gluing seams between Conlit slabs and gluing Conlit products to steel, concrete and other stone-like materials.

Composition
Conlit Fix is a non-flammable water glass-based glue. The glue is inorganic and has a pH value of 10 in fluid form.

Application
The ideal application temperature is between 10°C and 20°C. The glue must be applied above 5°C. For situations in which this is not possible, ROCKWOOL has the frost-free Conlit Fix solution. Ensure the glue is stirred well before use. The target surface must be dry and free of grease and dust. The glue surface must not be exposed to moisture (such as rainwater or condensation). All seams must be filled in with Conlit Fix (layer thickness ±1-1.5 mm). The hardening time depends on the ambient temperature (around 12 hours).

Reports

Dutch SVO

Conlit Ductrock structure tests are conducted by EFECTIS in accordance with the EN 1366-1:2001 standard. Based on the results of this European test method EFECTIS Netherlands has issued a test summary (SVO) regarding the application of Conlit Ductrock in the Netherlands.

SVO: 2006-Efectis-R0661

This test summary covers the products Conlit Ductrock 60, 90 and 120 for horizontal and vertical air ducts with fire resistance requirements up to 120 minutes.

Belgian technical recommendations

Conlit Ductrock structure tests are conducted by EFECTIS in accordance with the EN 1366-1:2001 standard. Based on the results of this European test method the ISIB has issued a technical recommendation regarding the application of Conlit Ductrock in Belgium.

- **Technical Recommendation 2007-G-048** relates to the product Conlit Ductrock 60 for horizontal and vertical air ducts that are required to be fire resistant for up to **60 minutes** and are covered on 2, 3 and 4 sides.
- **Technical Recommendation 2007-G-049** relates to the product Conlit Ductrock 90 for horizontal and vertical air ducts that are required to be fire resistant for up to **90 minutes** and are covered on 2, 3 and 4 sides.
- **Technical Recommendation 2007-G-050** relates to the product Conlit Ductrock 120 for horizontal and vertical air ducts that are required to be fire resistant for up to **120 minutes** and are covered on 2, 3 and 4 sides.

Directions for use

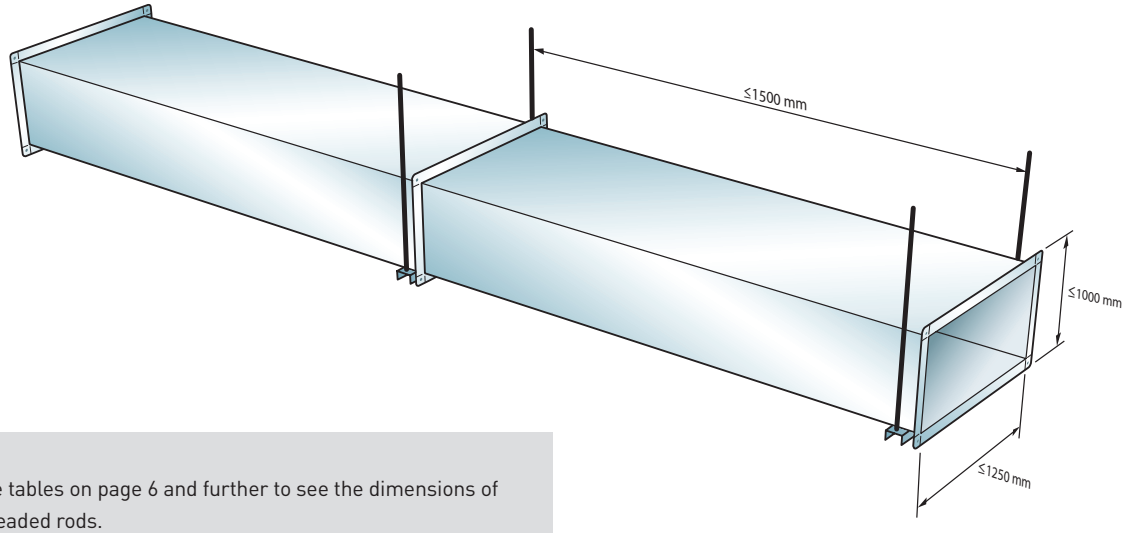
Insulating air ducts

Hanging up air ducts

The horizontal air ducts are hung using threaded rods and steel U profiles.
The distance between two hanger points must not exceed 1500 mm.

Dimensions of threaded rods

The threaded rods should be precisely dimensioned to ensure the tensile stress does not exceed 9 N/mm² when fire resistance is 60 minutes and 6 N/mm² when fire resistance is 90 or 120 minutes. For technical data see the table on page 6. In (reinforced) concrete the threaded rods are anchored with (steel) expansion anchors.
The maximum stress per expansion anchor is 500 N.
The expansion anchors must be fixed at a depth of at least 6 cm.



- See the tables on page 6 and further to see the dimensions of the threaded rods.
- Max. length of duct element 1500 mm.
- At least one hanger per duct element.

Insulating rectangular air ducts

A horizontal duct can be insulated in one of **two ways:**

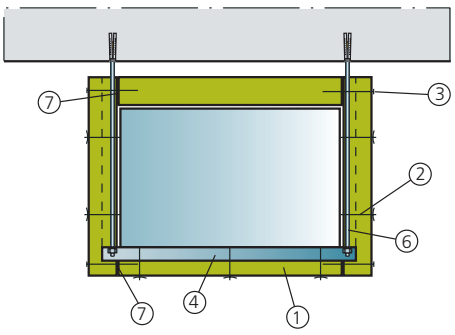
1. Duct hanger inside the insulation

The insulation is mounted directly against the steel air duct and the hanger is insulated too. The distance between the duct and the threaded rod must not exceed 30 mm. Important: the covering around the threaded rod must be at least 30 mm.

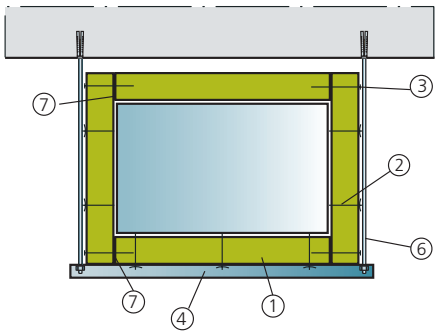
2. Duct hanger outside the insulation

If the distance between the threaded rods and the duct is greater than 60 mm, the hanger will be outside the insulation. The distance between the threaded rod and the exterior of the insulation must not exceed 40 mm.

Internal hanger



External hanger

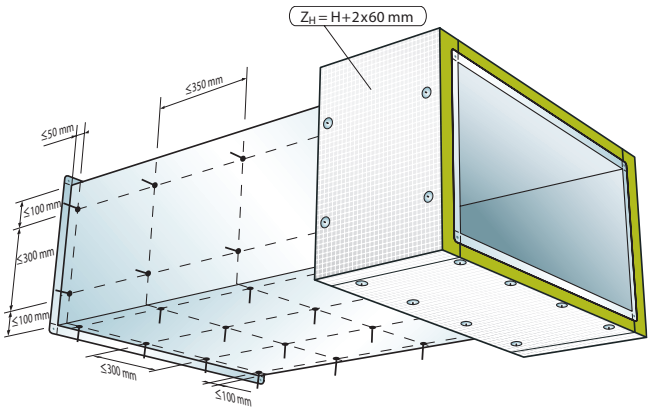


1. Conlit Ductrock – 2. Welded pin with cap – 3. Nail – 4. Steel U profile – 6. Threaded rod – 7. Conlit Fix

Cutting the insulation to size

Before cutting the slabs it is advisable to measure the duct to factor in tolerances in duct dimensions. When determining the slab size the tolerances when cutting should also be factored in. The slab size for the sides of the duct are easy to calculate: duct height Z_H = H + 2 x the insulation thickness of 60 mm.

Welded pin arrangement

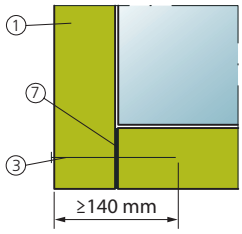


Important: Welded pins are not needed on the top of horizontal rectangular air ducts.

Mounting the slabs onto the duct

The slabs must be mounted on the duct using welded pins (ø 2.8 mm) with steel caps (ø 28 mm). Parker screws can also be used instead of welded pins.

Detail showing gluing



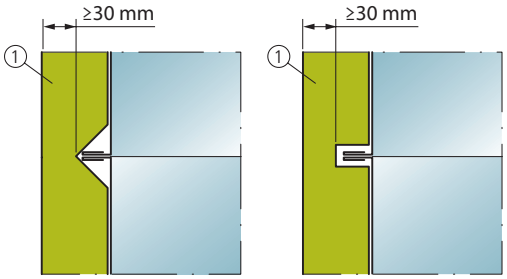
1. Conlit Ductrock – 3. Nail – 7. Conlit Fix

All seams between the Conlit Ductrock slabs must be filled with Conlit Fix. As an assembly aid, steel nails of 4 mm in diameter and approximately twice as long as the insulation thickness are recommended to ensure the seams are kept apart while the glue is hardening.

Insulating hangers and flanges

Hangers and flanges inside the insulation can be insulated in one of two ways: individually or collectively. A square or triangular rebate can be cut out of the Conlit Ductrock slab, but this rebate must never be larger than 30 mm.

Insulating flange connection

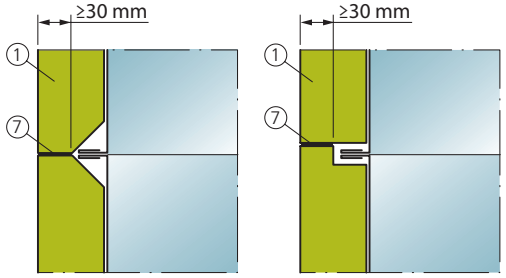


1. Conlit Ductrock

One Conlit Ductrock slab is placed over the flange.

This rebate can also be made at the seam between two slabs. This seam must be filled with Conlit Fix.

Insulating flange connection

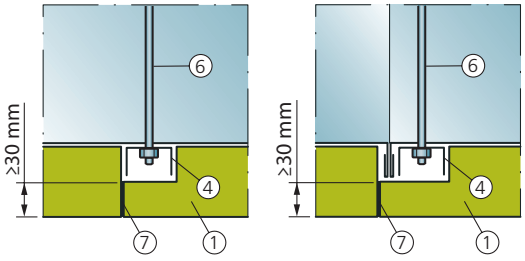


1. Conlit Ductrock - 7. Conlit Fix

Two Conlit Ductrock slabs with seam at the flange.

As an alternative to individual insulation, flange and hanger can also be insulated collectively.

Insulation / duct hanger



1. Conlit Ductrock – 4. Steel U profile – 6. Threaded rod – 7. Conlit Fix

When using Conlit Ductrock slabs all seams and openings in the aluminium foil must be covered with aluminium tape (recommended width 100 mm). Two overlapping layers of aluminium tape are recommended for covering the corners of the duct.

Insulating floor and wall penetrations

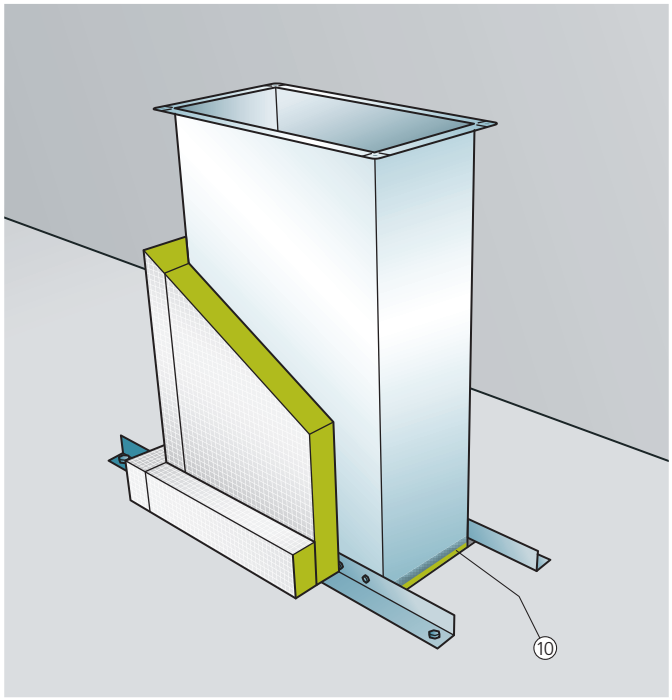
Penetrations in solid walls / floors or light partition walls classified as fire-resistant must be made fire-resistant to protect the fire resistance of the structure. A support must be introduced at wall or floor penetrations to ensure that stability is not compromised.

Penetration, solid floor

For stability reasons, a support should be introduced in the form of a steel angle profile for penetrations against the long side of the duct. This L profile (50 x 50 x 5 mm) is fixed at the end of the floor and attached to the duct with self-tapping screws (ø 4.2 x 18 mm; maximum distance 100 mm).

The gap between the duct and the floor at the penetration (≤30 mm) must be filled with loose wool. 100 mm wide strips of Conlit Ductrock should be glued around the opening using Conlit Fix and fixed to the air duct protection with nails (ø 5 x 125 mm; distance between centres approx. 350 mm). The thickness of this strip will be equal to the insulation thickness.

Conlit Fix must be used on all seams between the Conlit Ductrock slabs and between the Conlit Ductrock slabs and the floor.

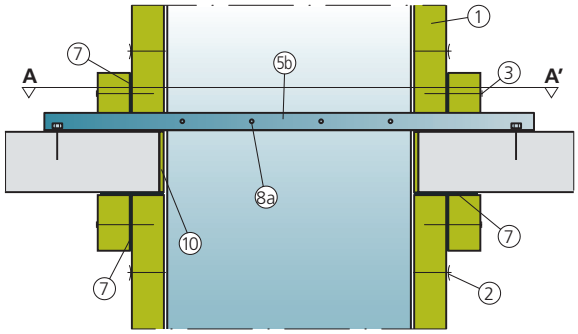


10. Losse wol

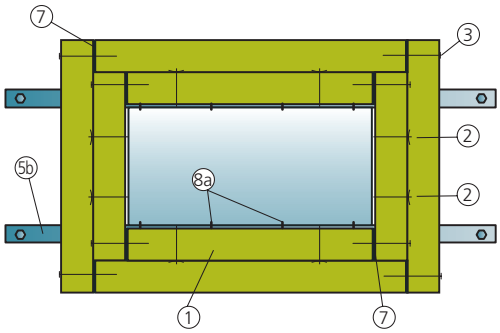
Height of vertical ducts

Vertical ducts may be insulated in any building regardless of the number of storeys, provided the height of the duct is at least 5 mm between the bearing structures. If the ratio between the length of the duct (measured between the structures) and the smallest cross section is greater than 8:1, the duct must be provided with additional attachments. As a general rule of thumb for additional attachments, the ratio of the gap between the attachments and the smallest cross section must not exceed 8:1.

Floor penetration long side



Floor penetration top face, AA' cross section

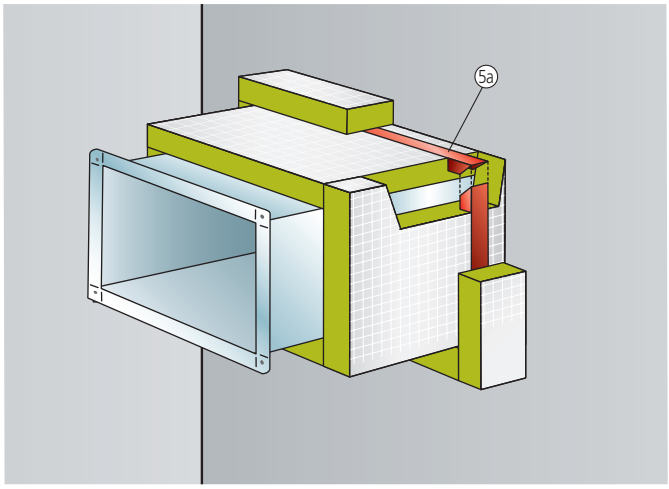


1. Conlit Ductrock – 2. Welded pin with cap – 3. Nail – 5b. Steel L profile – 7. Conlit Fix – 8a. Self-tapping screw – 10. Loose wool

Penetration, solid and light partition

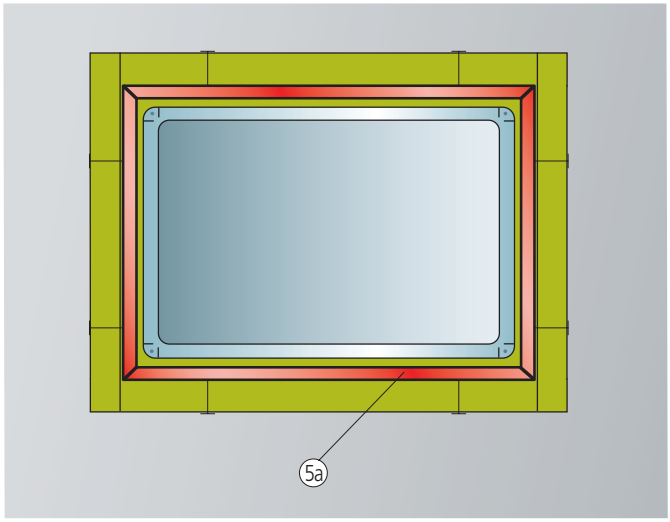
The duct must be given additional support on each side of the wall penetration to improve stability. This is done by introducing mitred U profiles round the insulated duct (see figure A and B).

Figure A



5a. Steel U profile

Figure B

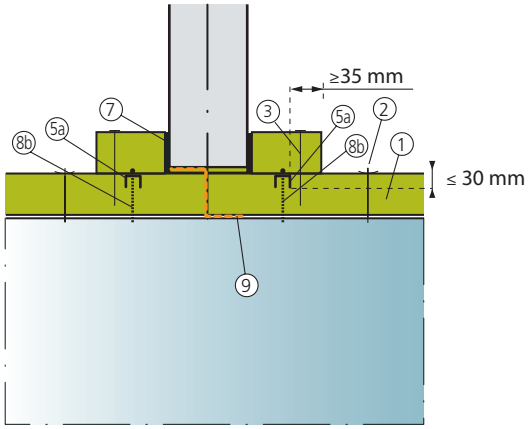


5a. Steel U profile

These steel U profiles with a bending moment greater than 6200 mm^4 (e.g. 25 x 40 x 25 x 2 mm) must be positioned in such a way that the Conlit Ductrock collar (100 mm wide) overlaps the U profile by at least 35 mm. Important: the height of the U profiles must not exceed 30 mm.

These U profiles are then fixed to the duct with at least two self-tapping screws (ø 4 x 90 mm) on each side.

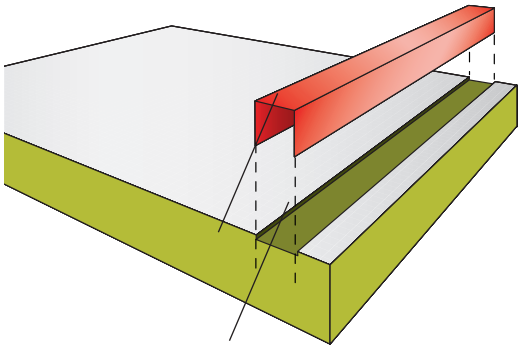
Detail of wall penetration, solid wall



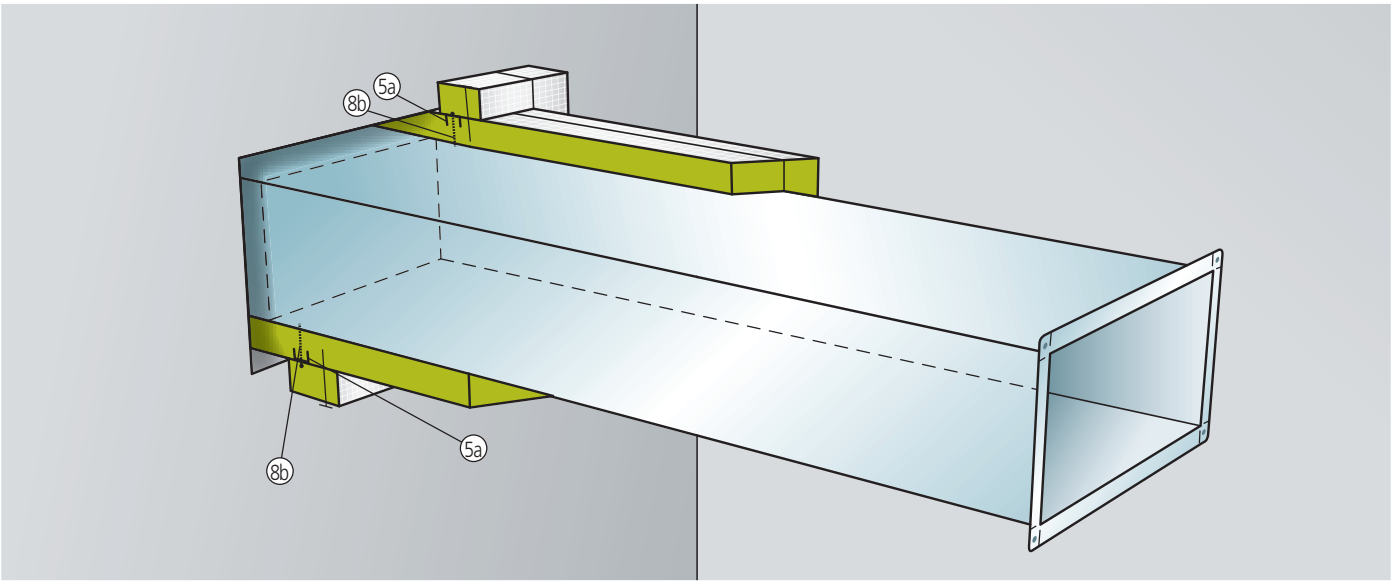
1. Conlit Ductrock – 2. Welded pin with cap – 3. Nail – 5a. Steel U profile – 7. Conlit Fix – 8b. Self-tapping screw – 9. Aluminium foil

Ensure that the surface is smooth even after installing the U profiles. Do this by removing a small quantity of wool at the location of the U profile equal to the thickness of the profile ±2-3 mm. This will ensure that there are no chinks between the insulation and the collar (see figure C).

Figure C



Scrape away
2-3 mm of wool



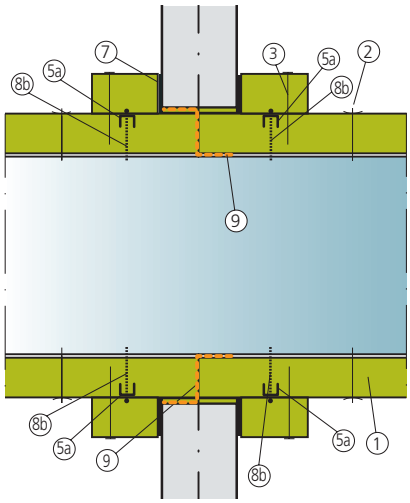
5a. Steel U profile – 8b. Self-tapping screw

Unlike the floor penetration, the Conlit Ductrock covering runs through the wall penetration in the case of horizontal air ducts.

A strip of aluminium foil is introduced in the penetration in the seam between the two Conlit Ductrock slabs. The ends of this strip are fixed to the wall and the duct. The space between the Conlit Ductrock covering of the duct and the wall at the penetration must be filled with loose wool. A 100 mm-wide Conlit Ductrock is glued to the wall round the protected air duct with Conlit Fix along both sides of the wall. It is then fixed to the protection of the air duct with nails (ø 5 x 125 mm; distance between centres approx. 350 mm). The thickness of this strip will be equal to the insulation thickness.

Conlit Fix must be used on all seams between the Conlit Ductrock slabs and between the Conlit Ductrock slabs and the wall.

Wall penetration, solid wall

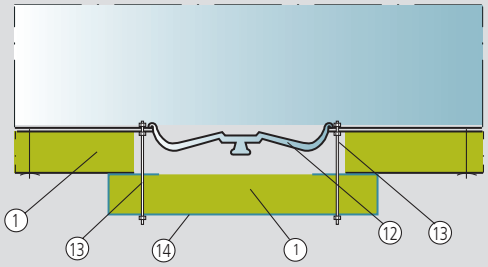


1. Conlit Ductrock – 2. Welded pin with cap – 3. Nail – 5a. Steel U profile – 7. Conlit Fix – 8b. Self-tapping screw – 9. Aluminium foil

Access hatch

Due to their smooth surfaces, metal air ducts offer major advantages over self-bearing fire-resistant air ducts with regard to airflow and hygiene. The inside of these ducts can be cleaned periodically by means of access hatches. These are easy to make in combination with the fire-resistant covering of the Conlit Ductrock system.

Access hatch



1. Conlit Ductrock – 12. Access hatch – 13. Threaded rod M10 fixed with nuts – 14. Galvanised steel plate

Installing coverings on two and three sides

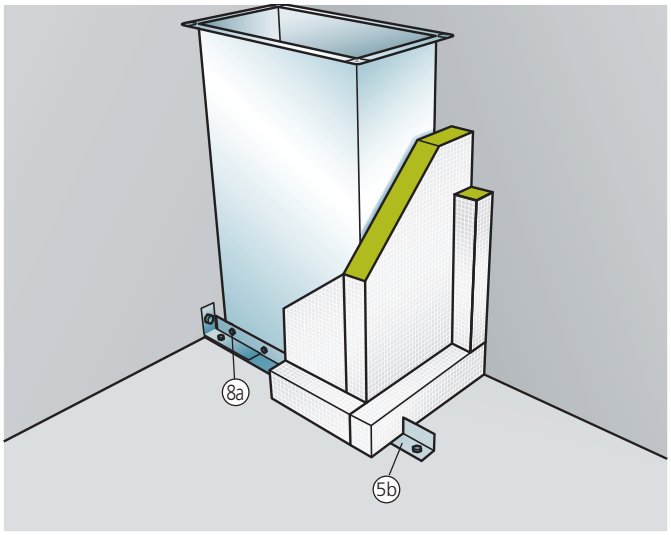
Horizontal ducts

Covering on two and three sides is sufficient for ducts that are installed in the corner of a space or against the ceiling. For two or three sided coverings both internal and external hangers can be used for horizontal ducts.

The U profiles need only be applied to the insulated sides at the point of the penetration. These U profiles are fixed to the ends by means of small L profiles on the structure (wall, ceiling or floor). The L profiles must be 50 mm or less to ensure they are completely covered by the Conlit Ductrock collar. Conlit Ductrock strips measuring at least 60 x 60 mm must be installed over the entire length of the duct where the duct connects to the structure.

These Conlit Ductrock strips must overlap the duct by at least 20 mm.

Vertical air duct in the corner with two-sided covering

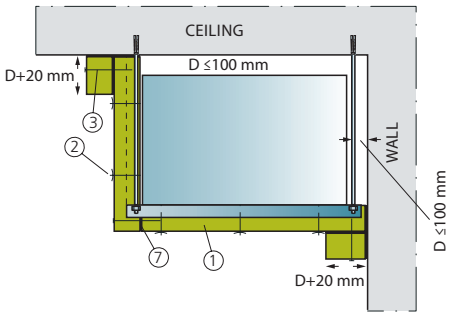


5a. Steel U profile – 8b. Self-tapping screw

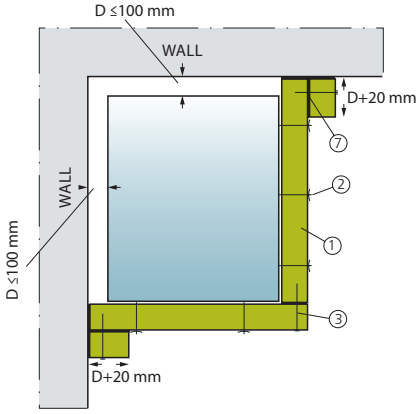
Vertical ducts

L-profiles should always be fixed to the covered long sides of the duct in the case of vertical ducts covered on two and three sides. These L profiles must also be fixed at the ends to the structure (floor or wall). Here too, Conlit Ductrock strips measuring at least 60 x 60 mm must be installed over the entire length of the duct where the duct connects to the structure.

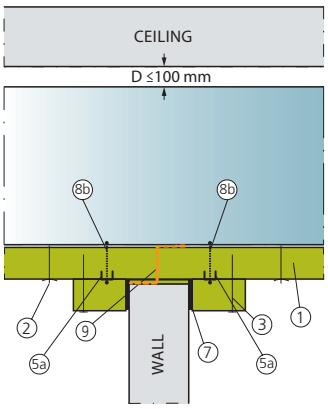
Cross section of horizontal air duct with two-sided covering and internal hanger



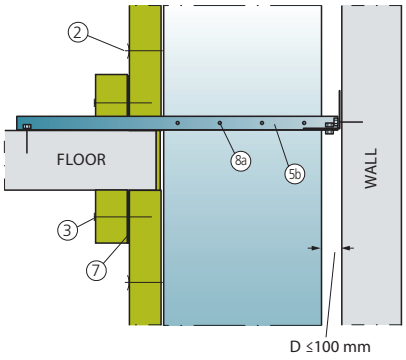
Cross section of vertical air duct with two-sided covering



Longitudinal section of horizontal air duct with two-sided covering



Longitudinal section of vertical air duct with two-sided covering



1. Conlit Ductrock – 2. Welded pin with cap – 3. Nail – 5a. U profile – 5b. L profile – 7. Conlit Fix – 8a. Self-drilling screw (vertical) – 8b. Self-drilling screw (horizontal) – 9. Aluminium foil

Table: Threaded rod sizes

Conlit Ductrock 60

Duct length 1000 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 6	M 6	M 6						
150	M 6	M 6	M 6	M 6					
200	M 6	M 6	M 6	M 6	M 6				
250		M 6	M 6	M 6	M 8	M 8			
300			M 6	M 6	M 8	M 8	M 8		
400				M 6	M 8	M 8	M 8	M 8	
500					M 8	M 8	M 8	M 10	M 10
600						M 8	M 8	M 10	M 10
800							M 10	M 10	M 12
1000								M 10	M 12

Duct length 1250 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 6	M 6	M 6						
150	M 6	M 6	M 6	M 6					
200	M 6	M 6	M 6	M 8	M 8				
250		M 6	M 6	M 8	M 8	M 8			
300			M 8	M 8	M 8	M 8	M 8		
400				M 8	M 8	M 8	M 10	M 10	
500					M 8	M 8	M 10	M 10	M 12
600						M 10	M 10	M 10	M 12
800							M 10	M 12	M 12
1000								M 12	M 12

Duct length 1500 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 6	M 6	M 6						
150	M 6	M 6	M 6	M 8					
200	M 6	M 6	M 8	M 8	M 8				
250		M 6	M 8	M 8	M 8	M 8			
300			M 8	M 8	M 8	M 8	M 10		
400				M 8	M 8	M 10	M 10	M 12	
500					M 8	M 10	M 10	M 12	M 12
600						M 10	M 12	M 12	M 12
800							M 12	M 12	M 14
1000								M 12	M 14

Conlit Ductrock 90

Duct length 1000 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 8	M 8	M 8						
150	M 8	M 8	M 8	M 8					
200	M 8	M 8	M 8	M 8	M 10				
250		M 8	M 8	M 8	M 10	M 10			
300			M 8	M 10	M 10	M 10	M 12		
400				M 10	M 10	M 12	M 12	M 12	
500					M 12	M 12	M 12	M 14	M 14
600						M 12	M 12	M 14	M 14
800							M 14	M 14	M 14
1000								M 14	M 14

Duct length 1250 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 8	M 8	M 8						
150	M 8	M 8	M 8	M 10					
200	M 8	M 8	M 8	M 10	M 10				
250		M 8	M 10	M 10	M 10	M 12			
300			M 10	M 10	M 12	M 12	M 12		
400				M 12	M 12	M 12	M 14	M 14	
500					M 12	M 12	M 14	M 14	M 14
600						M 14	M 14	M 14	M 14
800							M 14	M 14	M 16
1000								M 14	M 16

Duct length 1500 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 8	M 8	M 8						
150	M 8	M 8	M 10	M 10					
200	M 8	M 8	M 10	M 10	M 12				
250		M 10	M 10	M 12	M 12	M 12			
300			M 10	M 12	M 12	M 12	M 14		
400				M 12	M 12	M 14	M 14	M 14	
500					M 12	M 14	M 14	M 14	M 16
600						M 14	M 14	M 14	M 16
800							M 14	M 16	M 16
1000								M 16	M 16

Conlit Ductrock 120

Duct length 1000 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 8	M 8	M 8						
150	M 8	M 8	M 8	M 8					
200	M 8	M 8	M 8	M 8	M 10				
250		M 8	M 8	M 10	M 10	M 10			
300			M 8	M 10	M 10	M 12	M 12		
400				M 10	M 10	M 12	M 12	M 12	
500					M 12	M 12	M 12	M 14	M 14
600						M 12	M 12	M 14	M 14
800							M 14	M 14	M 14
1000								M 14	M 14

Duct length 1250 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 8	M 8	M 8						
150	M 8	M 8	M 8	M 10					
200	M 8	M 8	M 10	M 10	M 10				
250		M 8	M 10	M 10	M 12	M 12			
300			M 10	M 10	M 11	M 12	M 12		
400				M 12	M 12	M 12	M 14	M 14	
500					M 12	M 12	M 14	M 14	M 14
600						M 14	M 14	M 14	M 14
800							M 14	M 14	M 16
1000								M 16	M 16

Duct length 1500 mm

H = height (mm) – B = breadth (mm)

H \ B	200	250	300	400	500	600	800	1000	1200
100	M 8	M 8	M 8						
150	M 8	M 8	M 10	M 10					
200	M 8	M 10	M 10	M 12	M 12				
250		M 10	M 10	M 12	M 12	M 12			
300			M 10	M 12	M 12	M 12	M 14		
400				M 12	M 12	M 14	M 14	M 14	
500					M 14	M 14	M 14	M 14	M 16
600						M 14	M 14	M 14	M 16
800							M 14	M 16	M 16
1000								M 16	M 16

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Create and protect®

The ROCKWOOL Group markets products and services worldwide that enable the creation of buildings that provide comfortable working and living conditions while also meeting the aesthetic expectations in their surroundings. Over time, ROCKWOOL has evolved from offering products to creating efficient, aesthetic solutions that protect buildings against the environment and the environment against the impact of buildings.

ROCKWOOL Romania
46-48, Ocna Sibiului street
Sector 1
014011 Bucharest
Romania

ROCKWOOL Bulgaria
83 Car Ivan Asen II Str.
1124 Sofia
Bulgaria

ROCKWOOL Turkey
Osmaniye Mah.
Çobançeşme Koşuyolu Blv. No:3
Garden Office Kat: 2 No: 6-7-8
34568 Bakırköy/ Istanbul
Turkey

ROCKWOOL®