GEOSTAFF

Specialist in fire protection and decorative gypsum products

TECHNICAL CATALOGUE

FIRE-PROTECTION

PASSIVE FIRE PROTECTION

GLUE & SCREW SYSTEM

NEXT

A FEW SITE REFERENCES

National Library of France Paris

High Court of Paris

The Provincial House Antwerp

Orly airport Paris

Torre Hadid Viale Milan

University Hospital Tanger Morocco

New hospital, Ajaccio Corsica

Hotel Ivoire Côte d'Ivoire

Oran airport, Algeria

Also: CDG airport, Roissy - Palais des Congrès - Stade de France - Necker hospital, Paris 15 - Lille Metro - Stade de Lille - Ritz hotel - Paris-Orly airport - Melun hospital - Trocadero Business Centre - Grand Louvre - Georges V hotel - Presidential palace, Congo - AIG Tour Majunga - Toulon military hospital.

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WHO ARE WE ?

Since 1982, GEOSTAFF has been specialising in fire-protective products for passive fire protection, designed to meet the highest building industry standards.

The passive fire protection consists of integrating fire-stop systems into constructions, which will limit the spread of fire and smoke. Passive fire protection means:

Protection of individuals, allowing the occupants to evacuate the building in complete safety,

Protection of property, containing the fire for as long as possible while awaiting the emergency services.

As a pioneer in the field, the Geostaff team is constantly innovating in order to push safety standards to the highest level. Tested in certified laboratories, our systems excel in the most drastic tests in line with the latest European standards.

As a European manufacturer of 100% natural GRG* products, GEOSTAFF offers the following product ranges:

GEOTEC® for the construction of ventilation and smoke extraction ducts, for the fire-protection of service ducts and shafts and the protection of epoxy bonded reinforcement systems on concrete slabs and beams. The GEOTEC® range allows you to build fire safe solutions up to 120 minutes.

GEOFLAM® for the construction of ventilation and smoke extraction ducts and the fire-protection of service ducts and shafts. The GEOFLAM® range allows you to build fire safe solutions up to 240 minutes.

GEODECO® decorative range manufactured for the decoration of hotel suspended ceilings, luxury homes and castles.

*GRG: Glass Reinforced Gypsum (GRG) uses a combination of plaster and fiberglass. Glass Reinforced Gypsum is a more resistant plaster that allows the realization of our fire-protective elements and guarantees the excellent resistance and strength of our boards.

INTERNATIONAL COMPANY

Head office in France
Production plant in France
Research centre in Belgium
Logistic center in Paris & Nice
Worldwide references

KNOWLEDGE

35 years of experience
CE Marking
Declaration of Performance

SOLUTIONS

Certified solutions
EI 30/60 S, EI 90/120 S, EI 180 S, EI 240 S

THIS DOCUMENTATION FOCALISES ON THE INNOVATIVE GEOTEC® SOLUTIONS.

Please download the GEOFLAM® documentation online or contact us at com@geostaff.fr for more informations on our solutions.

GEOFLAM®

EI 90/120S
EI 180 S
EI 240 S
Glue & Fiber reinforced gypsum

GEOTEC®

EI 30/60 S
EI 90/120 S
Glue & Screw assembly
Glue & Staple
Glue & Fiber reinforced gypsum

Geostaff offers, through the GEOTEC® and GEOFLAM® ranges, various models and dimensions of fire protective boards for the construction of ventilation and smoke extraction ducts; the fire-protection of service ducts; the protection of carbon fiber bonded beams as well as for the protection of cable trays.

Fire protective board GEOTEC®S

In order to meet all requirements for passive fire protection, Geostaff also produces pre-moulded fire-resistant elements for the protection of service ducts and shafts (for electrical cables, both combustible as non-combustible pipes and ducts : gas, medical fluids/gasses, air, combustibles...), for the protection of metal columns and fire-resistant inspection hatches.

Prefab C-Light pre-moulded element

GEOFLAM®DC pre-moulded element

Fire-resistant vertical inspection hatch

ICONS

Reaction to fire
A1 classification in accordance with fire resistance classification standard **EN 13501-1.**

European Conformity
Based on the European Assessment Document **(EAD) n° 350142-00-1106** : "Fire-protective board, slab and mat products and kit".

ETA 18/0343
GEOTEC®S : European Technical Assessment **18/0343.**

ETA 15/0654
GEOFLAM®F : European Technical Assessment **15/0654.**

ETA 15/0653
GEOTEC®F-Light : European Technical Assessment **15/0653.**

Indoor air emission
Labelling of construction products Level of volatile pollutant emissions from the product A+ : Very low emissions.

Ventilation
Ventilation duct certificate according to the fire resistance test standard EN 1366-1.

Smoke extraction
Smoke extraction duct certificate according to the fire resistance test standard EN 1366-8.

Fire protection services
Service ducts and shafts certificate according to the fire resistance test standard EN 1366-5.

Carbon protection reinforcement
Protection of epoxy bonded reinforcement systems on concrete slabs and beams.

Fire-resistant inspection hatches
1 and 2 hours fire-protection

Glue + Screw
[Duct internal dimension ≤ 2500 x 1500 mm].

Glue + Staple
[Duct internal dimension ≤ 1250 x 1000 mm].

Glue + Fiber reinforced gypsum
[Duct internal dimension ≤ 2500 x 2000 mm].

Geocol® Glue
Powder-coated adhesive especially formulated for mounting GEOFLAM® and GEOTEC® boards.

Paint application
A water-based acrylic paint may be applied to GEOTEC®S products without compromising their fire-protection properties.

Easy cutting
The product can be cut using a circular saw or a sabre saw.

Easy cutting
The product can be cut using a handsaw.

Water-repellent treatment
It is possible to apply a water-repellent treatment that does not alter the A1 classification by addition of water-repellent (option).

Environmentally friendly products
100% natural gypsum-based products meeting environmental and health standards (FDS) and observing safety standards (FDES).

Geostaff has been awarded the eco labels : EXCELL zone verte and Eco Bau.

Tailored dimensions
Tailored dimensions are delivered according to your project needs.

Duct palettizing
Palletizing of the products by ducts is possible.

Online calculation tool
Calculate your material requirements for the construction of all your GEOSTAFF systems online.

Transportation
Product must be transported and stored on a flat and protected surface.

Storage
Product must be kept away from water.

GRG
Glass Reinforced Gypsum.

Lightweight board

PROTECTING YOU FROM FIRE IS WHAT WE DO

How can we fulfil our mission and protect you in case of a fire?

Our first objective is to introduce fire-stop solutions inside all types of buildings (private, public, industrial, etc.) that will limit the spread of fire and smoke. These solutions are defined by the installation of horizontal and vertical smoke extraction and ventilation ducts, the protection of technical ducts, the fire protection of various electrical cable trays, but also the installation of fire-resistant access hatches. All our products are designed with the aim of making these solutions possible and are tested and classified in accordance with all the existing European standards.

Ventilation and smoke extraction ducts

The construction of a ventilation or smoke extraction system involves using a flow of air to flush the space to be cleared of smoke. This means clearing smoke on the one hand (smoke extraction duct or high-level ventilation) and bringing in fresh air on the other (ventilation duct or low-level ventilation).

Two cases are therefore possible:

Protecting the internal volume of a duct from fire, the common expression "external fire" using ventilation ducts or introduction of air (low-level ventilation).

In the rooms that it crosses, protecting the entire length of ducting from an "internal" fire, using smoke extraction ducts (high-level ventilation).

Please refer to the chapter "SMOKE EXTRACTION AND VENTILATION DUCTS" from page 29.

Fire protection of service ducts and shafts

The service duct is defined as a usually accessible enclosed volume containing combustible or non-combustible service installations such as pipes or cables.The main purpose of the fire resistant protection of service ducts and shafts is to prevent fire from spreading from one room to another through these service installations or to protect these installations from fire and guarantee their functionality.

Protection to epoxy bonded reinforcement systems on concrete slabs and beams

The fire stability of reinforced concrete structures and substrates is obtained by restricting the temperature rise in the steelwork within the concrete.

GEOSTAFF® proposes validated solutions using GEOTEC®S to protect the carbon fibre reinforcements installed under the floor slab and concrete beam, depending on the desired levels of fire performance and the critical temperatures provided by the manufacturer.

Fire-resistant inspection hatches

GEOSTAFF fire-resistant inspection hatches can be installed both in our fire protective systems as standardized constructions to access inside the service ducts. They allow inspections and enable repairs.

Fire classification and tests standards

Geostaff products are tested and classified in accordance with all European standards in force.

Fire resistance classification standards

EN 13501-1

Fire classification of construction products and building elements - Part 1 : Classification using test data from reaction to fire tests.

EN 13501-2

Fire classification of construction products and building elements - Part 2 : Classification using data from fire resistance tests, excluding ventilation services.

EN 13501-3

Fire classification of products and construction elements - Part 3: Classification using fire resistance test data for the products and elements used in maintenance installations: fire-resistant ducts and fire dampers.

EN 13501-4

Fire classification of products and constructional elements - Part 4: Classification based on fire resistance test data for the components of smoke control systems.

Fire resistance tests standards

EN 1366-1

Fire resistance tests for plant installations - Part 1: Ducts.

To obtain a ventilation duct certificate, tests in accordance with EN 1366-1 (horizontal and/or vertical ducts type A and B, as defined in the standard) are required.

EN 1366-5

Fire resistance tests for service installations - Part 5 : Service ducts and shafts.

EN 1366-8

Fire resistance tests for service installations - Part 8: Smoke extraction ducts.

To obtain a certificate for a smoke extraction duct, tests in accordance with EN 1366-1 and 8 (horizontal and/or vertical ducts type A, B and C, as defined in the standard) are required.

Declaration of performance in accordance with CE product standard EN 12101-7 for factory-made duct sections : contact Geostaff for the possibilities.

SOLUTION		Fire-rated performance	Classification standards	Fire-resistant tests
EN 1366-1	**Horizontal and vertical ventilation ducts**	EI 30/60 - 90 /120 - 180 - 240 (S)	EN 13501-3	EN 1366-1
EN 1366-8	**Horizontal and vertical smoke extraction ducts**	EI 30/60 - 90/120 - 180 - 240 (S)	EN 13501-4	EN 1366-8
EN 1366-5	**Service ducts and shafts**	EI 30/60 - 90/120 - 180 - 240	EN 13501-2	EN 1366-5
EN 13501-2	**Fire-resistant inspection hatches**	EI 30/60 - 90/120	EN 13501-2	EN 1634-1
CARBON PROTECTION	**Protection of epoxy bonded reinforcement systems**	30 - 60 - 90 -120 -180 min	-	-

CE Marking

To guarantee the performance of our fire protection systems, Geostaff decided, by means of a daily product inspection, to implement annual third party certification audits to obtain CE marking of fire-protective boards.

The different CE markings of our products have been made according to the European Assessment Document (EAD) n° 350142-00-1106 : "Fire-protective board, slab and mat products and kit". They were created within the framework of the European legislation and certify the conformity of our products with the declared performances.

The ETA numbers corresponding to Geostaff products are as follows:

GEOFLAM®F : European Technical Assessment ETA n° 15/0654

GEOFLAM®F-Light : European Technical Assessment ETA n° 15/0653

GEOTEC®S : European Technical Assessment ETA n° 18/0343

For all Geostaff products with the CE marking, the Declarations of Performance for these products are available on the www.geostaff.fr website.

Classification criteria

E: Integrity (flames and hot gases)

I: Thermal insulation (temperature on the unexposed side < 140°C on average or 180°C at a point)

t: Duration of the classification expressed in minutes

S: Smoke leakage (leakage per unit surface area < 10 $m^3/hr.m^2$ for ventilation, 5 $m^3/hr.m^2$ for smoke extraction)

ve: Vertical position of the duct being tested

ho: Horizontal position of the duct being tested

o → i: Direction of the "external" fire

i → o: Direction of the "internal" fire

i ↔ o: Arbitrary direction of the "internal" or "external" fire

Multi: Indicates that the smoke extraction duct can extract smoke from several compartmentalised zones

Service pressure: Indicates the positive and negative pressures at which the duct was tested

Example of classification

EI 60 : HORIZONTAL & VERTICAL Fire rated ventilation duct with 30 mm GEOTEC®S fire-protective boards. (Dimension up to 2500 x 1500 mm)

E	I	t	ve	ho	i	↔	o	S
E	I	60	ve	ho	i	↔	o	S

EI 120 : HORIZONTAL & VERTICAL Fire rated multi-compartment smoke extraction duct with 45 mm GEOTEC®S fire-protective boards. (Dimension up to 2500 x 1500 mm)

E	I	t	S	ve	ho	Service pressure	Multi
E	I	120	S	ve	ho	-1500 Pa / +1500 Pa 500Pa	Multi

EI 120 : HORIZONTAL & VERTICAL Fire rated protection of service ducts and shafts with 45 mm GEOTEC®S fire-protective boards. (Dimension up to 2500 x 1500 mm)

E	I	t	ve	ho	i	↔	o
E	I	120	ve	ho	i	↔	o

Why choosing the Geostaff solution ?

By choosing Geostaff fire-protective products you can now have the solution that best fits your needs.

CERTIFIED SOLUTION

The Geostaff boards are made in France with respect of the highest European quality standards in addition to CE* certification under a **DOP***.

Geostaff has tested the widest range of solutions with respect to large dimensions, complex shapes, extra standards pressure levels or wall penetrations. These solutions cover beyond the basic requirements for fire rated ventilation ducts (EN 1366-1), multi compartment smoke evacuation ducts (EN 1366-8) and the protection of services (EN 1366-5).

Geostaff products are meeting environmental and health standards ("Fiche de Déclaration Environnementale et Sanitaire": **FDES**) and are observing safety standards ("Fiche de Données de sécurité" : **FDS**).

Please visit our website to find our products safety standards : www.geostaff.fr

*CE : European Conformity
*DOP : Declaration Of Performance.

ONE SHOP STOP SOLUTION

The online calculation tool enables you to calculate your material requirements for all the Geostaff solutions. Besides generating a full Bill of Material (BoM) that allows the Geostaff partners to have a perfect view and control on the material costs, a technical drawing is provided for the various duct section.

Please visit our website and ask for your login to access our online calculation tool.

Also, Geostaff has an extended stock to meet short delivery times.

TAILORED AND FLEXIBLE SOLUTION

Geostaff uses Glass Reinforced Gypsum to mould the various board dimensions and accessories. The tailored boards allow a quick installation with a minimum of material waste.

Geostaff material is characterized by an easy manipulation. The boards can be cut both manually as mechanically. The plaster-based GEOCOL® glue is used on the joints both as glue and as a filler (maximally 1/3rd of the board thickness). It allows larger tolerances during installation hence minimizing material waste and maximizing installation speed.

The pre-molded accessories have a perfect fit and are easy to install.

Products are easily paintable and a water-repellent treatment is optional.

EXPERTISE AT YOUR SERVICE

Our engineers and specialists are at your service to search for the best certified solution for your project. In combination with our logistical team, we can deliver specific duct sections on separate pallets to prosper installation time. Please contact us for more details.

Our installation methods

EI 30 - 60 S EI 90 - 120 S	Glue + screw	GEOTEC®	Duct internal dimension ≤ 2500 x 1500 mm
EI 30 - 60 S EI 90 S	Glue + staple	GEOTEC®	Duct internal dimension ≤ 1250 x 1000 mm
EI 30 - 60 S EI 90 - 120 S	Glue + fiber reinforced gypsum	GEOTEC®	Duct internal dimension ≤ 2500 x 2000 mm
EI 180 S	Glue + fiber reinforced gypsum	GEOFLAM® FX	Duct internal dimension ≤ 2500 x 2000 mm
EI 90 - 120 S	Glue + fiber reinforced gypsum	GEOFLAM® F Light	Duct internal dimension ≤ 1250 x 1000 mm

Additional technical data

Airflow performance

Hot sealing: Classification S in accordance with standards EN 1366-1 and 1366-8

i.e. a leakage flowrate per unit surface area of <10 m^3 /hr.m^2 for ventilation ducts and < 5 m^3/hr.m^2 for smoke extraction ducts.

Cold sealing: Class D in accordance with standard EN 1507

Class	$m^3.s^{-1}.m^{-2}$	$m^3.h^{-1}.m^{-2}$
A	$0.027 \times p^{0.65} \times 10^{-3}$	$0.0972 \times p^{0.65}$
B	$0.009 \times p^{0.65} \times 10^{-3}$	$0.0324 \times p^{0.65}$
C	$0.003 \times p^{0.65} \times 10^{-3}$	$0.0108 \times p^{0.65}$
D	**$0.001 \times p^{0.65} \times 10^{-3}$**	**$0.0036 \times p^{0.65}$**

Pressure drop

The GEOTEC® system also addresses the basic principles of air conditioning techniques with a roughness factor for untreated internal walls similar to that of steel ducts, i.e. Ɛ = 0.05 mm (for the smooth surface of the panel only).

Acoustic performance

Acoustic attenuation with lining

With the aim of restricting airborne noise propagated by the ducts and hence providing better acoustic performance, Geostaff proposes solutions for attaching a lining to the GEOTEC® ducts; the characteristics are listed in the table below:

Thickness GEOTEC® S	$R_w(C; C_{tr})$ dB		
	1 BA13 + LdV 45 mm	2 BA13 + LdV 45 mm	3 BA13 + LdV 85 mm
30	49 (-3;-9)	53 (-2;-7)	57 (-1;-4)
45	50 (-2;-7)	54 (-1;-6)	60 (-1;-4)

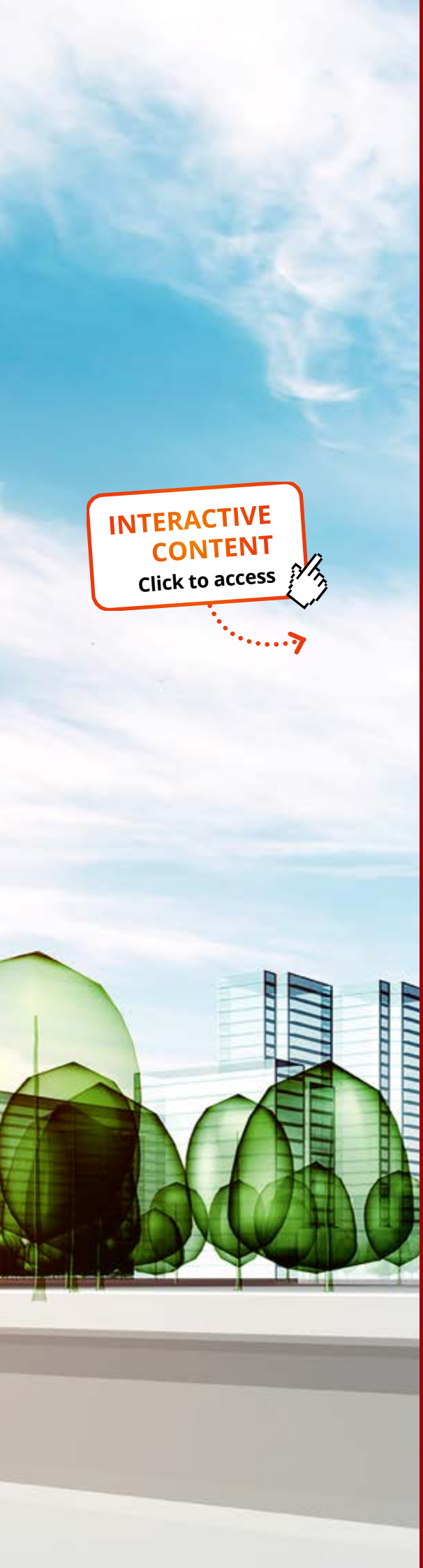
Rw + C : Acoustic attenuation to indoor noise
Rw + Ctr : Acoustic attenuation to outdoor noise
BA13 : Standard plasterboard (13 mm thickness)
LdV : glass wool
dB : decibel

Seismic performance

To guarantee that the GEOTEC® system works properly in seismically active zones or in buildings subject to significant vibration such as airports, stations or even underground car-parks, GEOTEC® ducts have been validated in accordance with the S2 set of spectra at 5% damping as per standard CRT 91 C 112 00. Carried out by the SOPEMEA laboratory (RE 1E31169ME), these calculations showed the excellent resistance to seismic activity and vibration of the GEOTEC® system.

Performance under damp conditions

Where ventilation or smoke extraction ducts are constructed in rooms where the humidity is high, we propose that our products be treated with a water repellent. This treatment is applied to the bulk of the material, and does not alter the fire resistant properties of the products in any way.



INTERACTIVE CONTENT
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PRODUCTS

GEOTEC®S FIRE-PROTECTIVE BOARD

GEOTEC® S30

GEOTEC® SX45

GRG

Strength and resistance

GEOTEC®S boards are made of **GRG.**
GRG or Glass Reinforced Gypsum is a more resistant plaster that allows the realization of our fire-protective elements and guarantees the excellent resistance and strength of our boards.

Lightweight board that is easy to handle

Duct with a fire resistance of 60 minutes (EI 60 S) : GEOTEC®S 30mm: 22.5 kg/m^2.
Duct with a fire resistance of 120 minutes (EI 120 S) : GEOTEC®S 45mm : 34 kg/m^2.

A board that fits all types of ducts

The **GEOTEC® S board** is available in sizes from 200 x 1000 mm up to 1100 x 1000 mm with 50 mm intervals. For instance, for a duct of 500 x 300 mm EI 120 S in 45 mm, you will need 600 and 350 mm GEOTEC® S 45 boards.

The **GEOTEC® SX** standard dimensions board is available only in 1200 x 1000 mm.
Please consult our online calculation tool to calculate your bill of materials available for all your projects.

Reaction to fire

A1 according to the fire classification standard **EN 13501-1.**

CE

Tested and classified in accordance with all European standards in Force

CE marked fire-protective board according to EAD n° 350142-00-1106 and Declaration of Performance available (DOP).

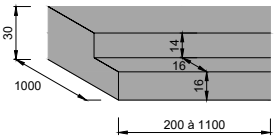
European Technical Assessment **ETA n° 18/0343**.

Respect for environmental and safety standards

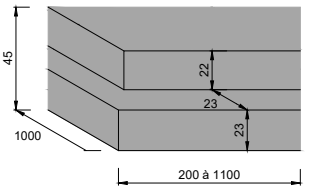
Meeting environmental and health standards
(declaration form : FDES) and observing safety standards (FDS).
Compliance with the A+ criteria concerning the respect of indoor air quality for GEOTEC® products.
Geostaff has been awarded the eco labels : EXCELL zone verte and Eco Bau.

GEOTEC® S30 - S45

GEOTEC®S30



GEOTEC®S45



Dimensions

Thickness (mm)	EI (S)	Board dimensions* (w x L) (mm)	Dry weight (kg/m²)	Rabbeted sides
30	30 - 60	200 to 1100 x 1000	22.5	2
45	90 - 120		34	4

E = Integrity / I = Thermal insulation
**In steps of 50 mm*

Characteristics

Nominal density (± 15%)	± 750 kg/m³
Bending strength	≥ 1.3 MPa
Compressive strength	≥ 3 MPa
pH value	approximately 8.5
Thermal conductivity coeff (λ at 20°C)	0.106 W/m.K
Resistance to water vapour diffusion (μ)	± 3 for standard boards
	± 6 for water-repellent boards
Roughness factor (ε)	0.05 mm
Cold sealing class	D
Acoustic attenuation Rw (C; Ctr)	29 (-2; -2) dB for thickness 30 mm
	31 (-1; -2) dB for thickness 45 mm
Dimensional tolerance	± 5 mm
Thickness tolerance	± 2 mm
Colour	White
Appearance	Smooth
Machinability	Excellent

** The data in this table are average values, given for information only. If certain properties are essential for some particular application, we should preferably be consulted.*

APPLICATIONS

- Ventilation
- Fire protection services
- Smoke extraction
- Carbon protection reinforcement

CERTIFICATIONS

- ETA 18/0343
- A1 - EN 13501-1
- Indoor air emission
- EXCELL zone verte
- Eco-bau

INSTALLATIONS

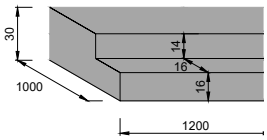
- Glue + Screw [≤ 2500 x 1500 mm]
- Glue + Staple [≤ 1250 x 1000 mm]
- Glue + Fiber reinforced gypsum [≤ 2500 x 2000 mm]

ADVANTAGES

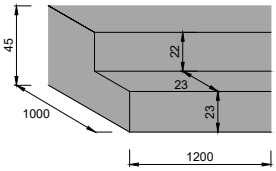
- Paint application Water-based acrylic paint
- Duct palettizing
- Easy cutting
- Tailored dimensions
- Easy cutting
- Environmentally friendly products
- Water-repellent treatment (option)

GEOTEC® SX30 - SX45

GEOTEC®SX30



GEOTEC®SX45



Dimensions

Thickness (mm)	EI (S)	Board dimensions (w x L) (mm)	Dry weight (kg/m²)	Rabbeted sides
30	30 - 60	1200 x 1000	22.5	2
45	90 - 120		34	

E = Integrity / I = Thermal insulation

Characteristics

Nominal density (± 15%)	± 750 kg/m³
Bending strength	≥ 1.3 MPa
Compressive strength	≥ 3 MPa
pH value	approximately 8.5
Thermal conductivity coeff (λ at 20°C)	0.106 W/m.K
Resistance to water vapour diffusion (μ)	± 3 for standard boards
	± 6 for water-repellent boards
Roughness factor (ε)	0.05 mm
Cold sealing class	D
Acoustic attenuation Rw (C; Ctr)	29 (-2; -2) dB for thickness 30 mm
	31 (-1; -2) dB for thickness 45 mm
Dimensional tolerance	± 5 mm
Thickness tolerance	± 2 mm
Colour	White
Appearance	Smooth
Machinability	Excellent

** The data in this table are average values, given for information only. If certain properties are essential for some particular application, we should preferably be consulted.*

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)
- Carbon protection reinforcement (CARBON PROTECTION)

CERTIFICATIONS

- ETA 18/0343
- A1 - EN 13501-1
- Indoor air emission (A+ INDOOR AIR EMISSIONS)
- EXCELL zone verte
- Eco-bau

INSTALLATIONS

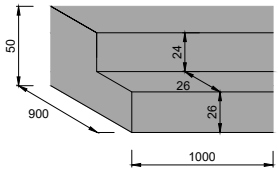
- Glue + Screw [≤ 2500 x 1500 mm]
- Glue + Staple [≤ 1250 x 1000 mm]
- Glue + Fiber reinforced gypsum [≤ 2500 x 2000 mm]

ADVANTAGES

- Paint application Water-based acrylic paint
- Duct palettizing
- Easy cutting
- Environmentally friendly product
- Easy cutting
- Water-repellent treatment (option)

GEOFLAM® FX50

GEOFLAM®FX50



Dimensions

Thickness (mm)	EI (S)	Board dimensions (w x L) (mm)	Dry weight (kg/m²)	Rabbeted sides
50	180	1000 x 900	50	2

E = Integrity / I = Thermal insulation

Characteristics

Nominal density (± 15%)	± 1100 kg/m³
Bending strength	≥ 1,8 MPa
Compressive strength	≥ 5 MPa
pH value	± 8,9
Thermal conductivity coeff (λ à 20°C)	0,60 W/m.K
Resistance to water vapour diffusion (μ)	± 3.8
Roughness factor (ε)	0,05 mm
Dimensional tolerance	± 5 mm
Thickness tolerance	± 2 mm
Colour	White
Appearance	Smooth
Machinability	Excellent

** The data in this table are average values, given for information only. If certain properties are essential for some particular application, we should preferably be consulted.*

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

CERTIFICATIONS

- ETA 18/0343
- A1 - EN 13501-1
- Indoor air emission (A+ INDOOR AIR EMISSIONS)
- EXCELL zone verte
- Eco-bau

INSTALLATIONS

- Glue + Fiber reinforced gypsum [≤ 2500 x 2000 mm]

ADVANTAGES

- Paint application Water-based acrylic paint
- Duct palettizing
- Easy cutting
- Environmentally friendly product
- Easy cutting
- Water-repellent treatment (option)

PREFAB C-light

Made primarily of plaster and glass fibre, these 35 mm thick elements are pre-moulded with longitudinal rabbeted sides and ends that allow them to be interlocked.

Dimensions

Thickness (mm)	EI (S)	Length (m)	Internal dimensions (w x h) (mm)	Dry weight* (kg/ml)
35	120	1	50 x 50	16
			100 x 50	20
			100 x 100	24
			150 x100	28
			150 x 150	32.50
			200 x 100	32.50
			200 x 200	40,50
			300 x 100	41
			350 x 200	53

E = Integrity / I = Thermal insulation
**Channel & Cover*

Characteristics

Nominal density (± 15%)	± 1100 kg/m³
Bending strength	≥ 1.8 MPa
Compressive strength	≥ 5 MPa
pH value	Approximately 8.9
Dimensional tolerance	± 5 mm
Thickness tolerance	± 2 mm
Colour	White
Appearance	Smooth
Machinability	Excellent

** The data in this table are average values, given for information only. If certain properties are essential for some particular application, we should preferably be consulted.*

APPLICATIONS

Fire protection services

CERTIFICATIONS

A1 - EN 13501-1

Indoor air emission

EXCELL zone verte

Eco-bau

INSTALLATIONS

Geocol® Glue

ADVANTAGES

Paint application Water-based acrylic paint

Duct palettizing

Easy cutting

Environmentally friendly product

Easy cutting

Water-repellent treatment (option)

GEOTEC® A U-plaster element

Consisting mainly of plaster and glass fibre, these pre-moulded elements are intended to protect the metal supports of horizontal GEOTEC® and GEOFLAM®A ducts, EI 30 to 180 (30 min to 3 hr fire-break).

Dimensions

EI (min)	Length (m)	Dimensions (h x w) (mm)
30 to 120	1	55 x 110*
30 to 120		60 x 100
180		70 x 100
30 to 180		85 x 120

E = Integrity / I = Thermal insulation
**Only for GEOTEC® ducts*

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

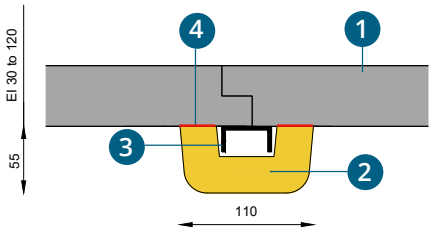
CERTIFICATIONS

- A1 - EN 13501-1
- Indoor air emission (A+ INDOOR AIR EMISSIONS)
- EXCELL zone verte
- Eco-bau

ADVANTAGES

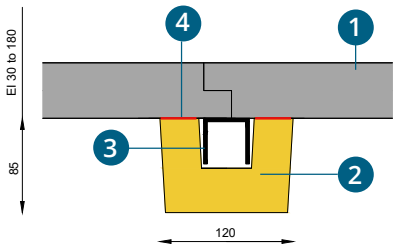
- Paint application Water-based acrylic paint
- Water-repellent treatment (option)
- Easy cutting
- Environmentally friendly product
- Easy cutting

For Steel U-section 41 x 21
30 to 120 minutes fire-resistant



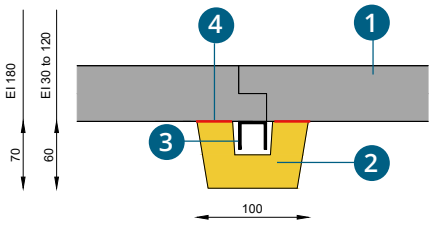
1. GEOTEC® board
2. GEOTEC® A U-plaster element
3. Steel U-profile **41 x 21**
4. GEOCOL® Glue

For Steel U-section 41 x 41
30 to 180 minutes fire-resistant



1. GEOTEC® or GEOFLAM® board
2. GEOTEC® A U-plaster element
3. Steel U-profile **41 x 41**
4. GEOCOL® Glue

For Steel U-section 25 x 25
30 to 180 minutes fire-resistant



1. GEOFLAM® board
2. GEOTEC® A U-plaster element
3. Steel U-profile **25 x 25**
4. GEOCOL® Glue

GEOTEC® A Half shell

Pre-moulded elements made primarily of plaster and glass fibre, designed to protect the metal supports of horizontal GEOTEC® and GEOFLAM® ducts, EI 30 to 180
(30 min to 3 hr firestop).

Dimensions		
EI (min)	**Length (m)**	**Dimensions Ø mm**
30 to 120	1	90
180		110

E = Integrity / I = Thermal insulation

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

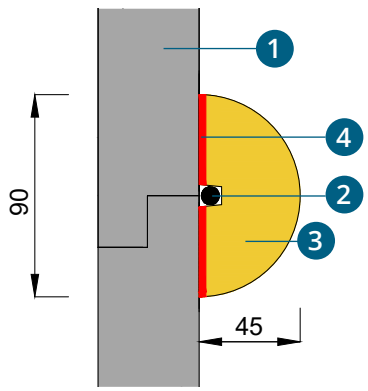
CERTIFICATIONS

- A1 - EN 13501-1
- Indoor air emission A+
- EXCELL zone verte
- Eco-bau

ADVANTAGES

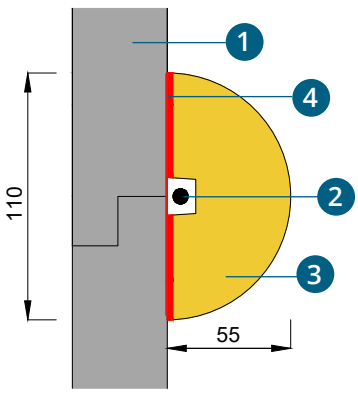
- Paint application Water-based acrylic paint
- Water-repellent treatment (option)
- Easy cutting
- Environmentally friendly product
- Easy cutting

EI 30 - 60 (S) / EI 90 - 120 (S)
30 min to 2 hrs fire-resistant



1. GEOTEC® or GEOFLAM® board
2. Threaded rod **Ø 8 or Ø 10**
3. GEOTEC® A 1/2 shell
4. GEOCOL® Glue

EI 180 (S): 3 hrs fire-resistant



1. **GEOFLAM®** board
2. Threaded rod **Ø 8 or Ø 10**
3. GEOTEC® A 1/2 shell
4. GEOCOL® Glue

GEOTEC® A Reinforcement collar

Made primarily of plaster and glass fibre, GEOTEC®A / GEOFLAM®A reinforcement collars are used to support vertical ducts and service ducts. They can equally be applied as internal reinforcement for horizontal ducts if necessary.

Dimensions

Duct thickness (mm)	Thickness of reinforcement collars (mm)	EI (mm)	Length (m)	Height (mm)
30		30 - 60	1	200
45		90 - 120		

E = Integrity / I = Thermal insulation

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

CERTIFICATIONS

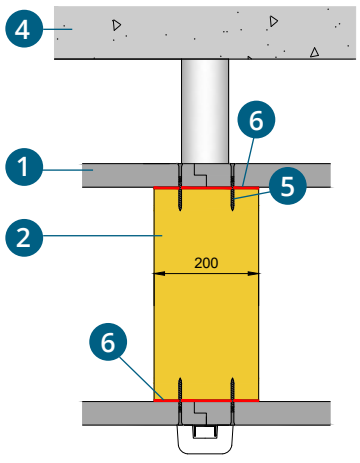
- A1 - EN 13501-1
- Indoor air emission (A+ INDOOR AIR EMISSIONS)
- EXCELL zone verte
- Eco-bau

ADVANTAGES

- Paint application Water-based acrylic paint
- Water-repellent treatment (option)
- Easy cutting
- Environmentally friendly product
- Easy cutting

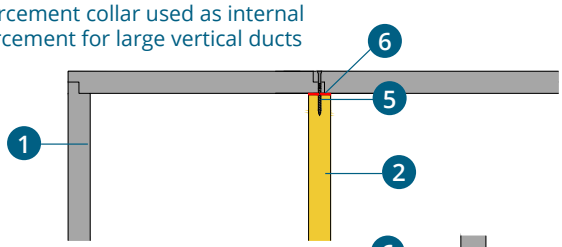
EI 30 - 60 (S) / EI 90 - 120 (S)
30 min to 2 hrs fire-resistant

Reinforcement collar used as internal reinforcement for horizontal ducts

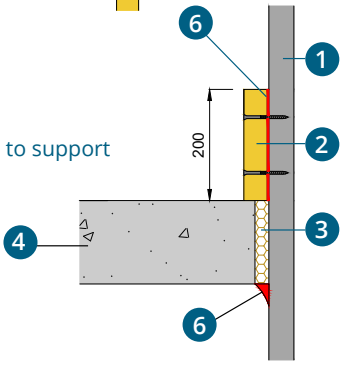


1. GEOTEC® duct
2. GEOTEC® A Reinforcement collar
3. Sealing using stone wool, polyurethane foam or a mixture of sisal fiber and plaster
4. Concrete slab
5. VBA screws **Ø 5**
6. GEOCOL® Glue

Reinforcement collar used as internal reinforcement for large vertical ducts



Reinforcement collar used to support vertical ducts



GEOTEC® A Half collar

Made primarily of plaster and glass fibre, GEOTEC®A half collars are used to fix GEOTEC® boards in the mounting of 1, 2 or 3-sided fire resistant service ducts. GEOTEC®A half collars can be installed both inside or outside the service ducts.

Dimensions

Duct thickness (mm)	Thickness of reinforcement collars (mm)	EI (mm)	Length (m)	Height (mm)
30		30 - 60	1	100
45		90 - 120		

E = Integrity / I = Thermal insulation

APPLICATIONS

Fire protection services

CERTIFICATIONS

A1 - EN 13501-1

Indoor air emission

EXCELL zone verte

Eco-bau

ADVANTAGES

Paint application Water-based acrylic paint

Water-repellent treatment (option)

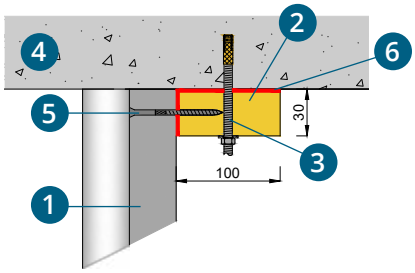
Easy cutting

Environmentally friendly product

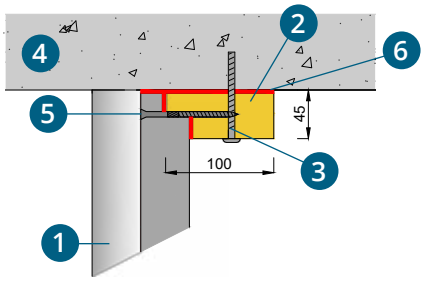
Easy cutting

Use for Horizontal Service Ducts

EI 30 - 60 (S)
30 min to 1 hr fire-resistant



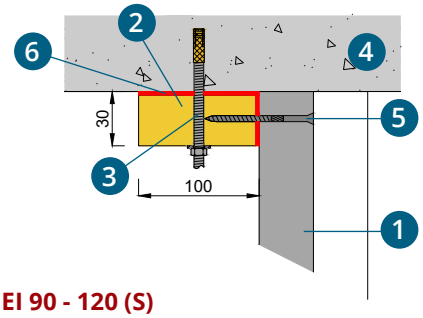
EI 90 - 120 (S)
90 min to 2 hrs fire-resistant



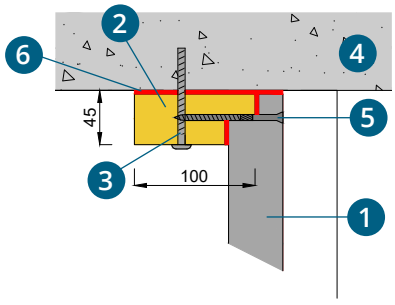
1. GEOTEC® service duct
2. GEOTEC® A Half collar
3. Mechanical fixation
4. Supporting Construction
5. VBA screws **Ø 5**
6. GEOCOL® Glue

Use for Vertical Service Ducts

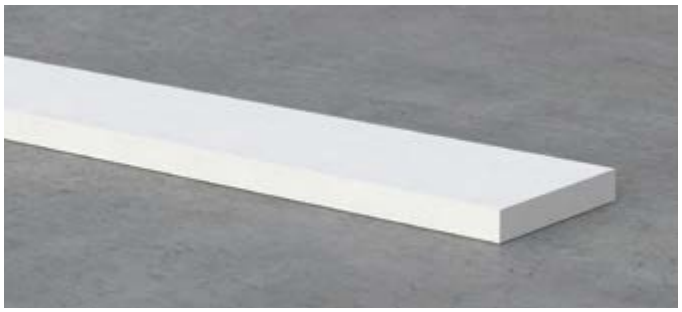
EI 30 - 60 (S)
30 min to 1 hr fire-resistant



EI 90 - 120 (S)
90 min to 2 hrs fire-resistant



GEOTEC® A Cover strip



Made mainly of plaster and glass fibre, GEOTEC®A cover strips are designed to reinforce the upper boards of horizontal ducts and service ducts if necessary. They can equally be applied to reinforce large vertical duct.

Dimensions			
Thickness (mm)	**EI (mm)**	**Length (m)**	**Width (mm)**
20	30 to 120	1	120

E = Integrity / I = Thermal insulation

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

CERTIFICATIONS

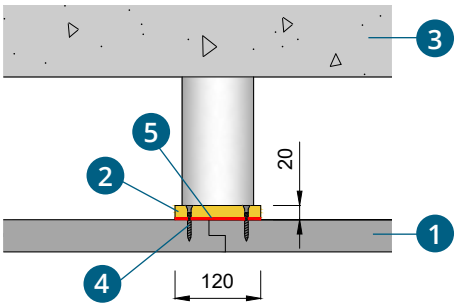
- A1 - EN 13501-1
- Indoor air emission (A+ INDOOR AIR EMISSIONS)
- EXCELL zone verte
- Eco-bau

ADVANTAGES

- Paint application Water-based acrylic paint
- Water-repellent treatment (option)
- Easy cutting
- Environmentally friendly product
- Easy cutting

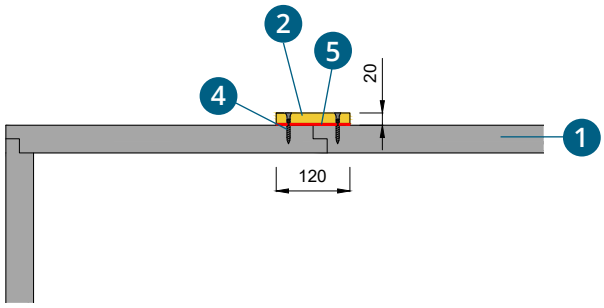
EI 30 - 60 (S) / EI 90 - 120 (S)
30 min to 2 hrs fire-resistant

Cover strip used to reinforce the upper board of horizontal ducts



1. GEOTEC® duct
2. GEOTEC® A Cover strip
3. Concrete slab
4. VBA screws **Ø 5**
5. GEOCOL® Glue

Cover strip used to reinforce large vertical ducts



GEOTEC® A Expension joint element

Plaster and glass fibre pre-moulded element 1.5 m long, bonded around the perimeter of the ducts serving as a presser for inserting of foam and intumescent joints; this is intended to take up the various displacements of the structure as it moves.

Dimensions			
Thickness (mm)	**EI (mm)**	**Length (m)**	**Width (mm)**
60	30 to 120	1,5	200

E = Integrity / I = Thermal insulation

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

CERTIFICATIONS

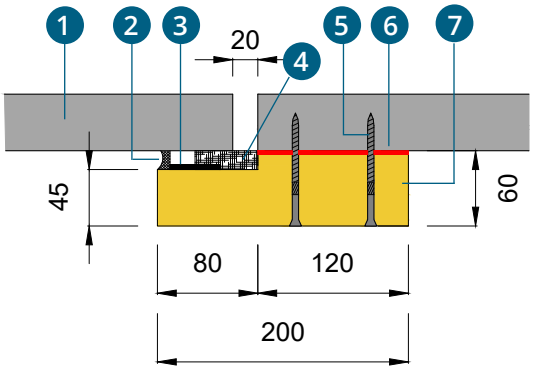
- A1 - EN 13501-1
- Indoor air emission A+
- EXCELL zone verte
- Eco-bau

ADVANTAGES

- Paint application Water-based acrylic paint
- Water-repellent treatment (option)
- Easy cutting
- Environmentally friendly product
- Easy cutting

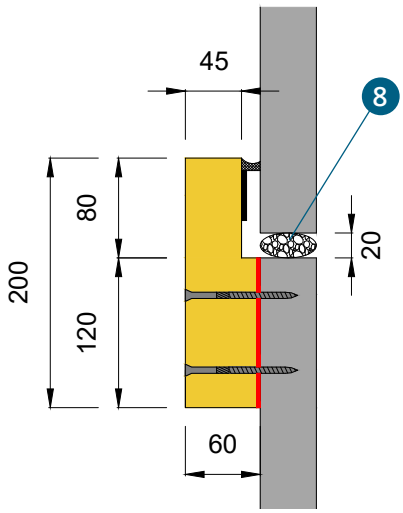
EI 30 - 60 (S) / EI 90 - 120 (S)
30 min to 2 hrs fire-resistant

Application in a horizontal duct



1. GEOTEC® board
2. Fire-resistant silicone
3. Intumescent joint
4. Foam joint
5. VBA Screw **Ø 5**
6. GEOCOL® Glue
7. GEOTEC®A Expansion joint element
8. Mineral fiber rope Ø 40 mm

Application in a vertical duct



GEOTEC® A Batten

Made primarily of plaster and glass fibre, **GEOTEC®A** battens are used to make it easier to screw the boards together when the ducts or shrouds are juxtaposed with the wall or the slab.

Dimensions			
Thickness (mm)	**EI (mm)**	**Length (m)**	**Width (mm)**
45	30 to 120	1	45

E = Integrity / I = Thermal insulation

APPLICATIONS

- Ventilation (EN 1366-1)
- Fire protection services (EN 1366-5)
- Smoke extraction (EN 1366-8)

CERTIFICATIONS

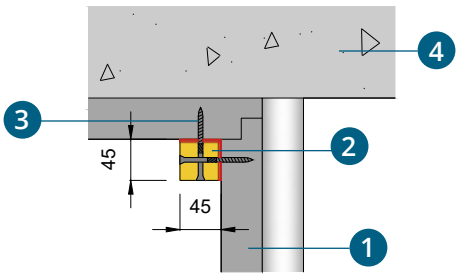
- A1 - EN 13501-1
- Indoor air emission (A+)
- EXCELL zone verte
- Eco-bau

ADVANTAGES

- Paint application Water-based acrylic paint
- Water-repellent treatment (option)
- Easy cutting
- Environmentally friendly product
- Easy cutting

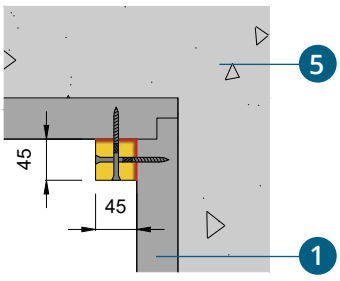
EI 30 - 60 (S) / EI 90 - 120 (S)
30 min to 2 hrs fire-resistant

Battens used in a horizontal duct when juxtaposed to the slab



1. GEOTEC® duct
2. GEOTEC® A Batten
3. VBA screws **Ø 5**
4. Concrete slab
5. Concrete wall

Battens used in a vertical duct when juxtaposed to the wall



GEOTEC® A Ventilation grille

Dimensions

Thickness (mm)	EI (mm)	Length (m)	Width (mm)
50	120	95 x 95	0,3

E = Fire sealing / I = Thermal insulation
** In accordance with extension EFR-14-003037 of docs. 12-A-698 Rev.1 and EFR-14-A-001050 Rev.1*

Characteristics

Description	Fire-protection ventilation grille
Operation	The slats begin to react over 100°C
Operating pressure	-5 to +10 Pa
Safety position	Horizontal slats
Direction of air circulation	Any
Fire-side	Any
Temperature of usage	Max. 60 °C
Environment	For internal use
Maintenance	Maintenance free
Acidity	pH 8.91

PRODUCT DESCRIPTION

Square **GEOFLAM®G** fire-protection ventilation grilles can be installed in the **GEOFLAM®** protective systems for horizontal and vertical service conduits, to avoid heating of electrical cables for example when protecting a cable tray. These grilles are made of plastic profiles filled with bands of intumescent material. These provide fire resistance up to EI 120.

ADVANTAGES

- Approved for installation on **GEOFLAM®** protective ducts
- Maintenance free
- Easy to install

STORAGE AND HANDLING

For safety's sake, these grilles should be stored and handled with care.

CAUTION:

- AVOID ANY DAMAGE
- AVOID CONTACT WITH WATER
- KEEP AWAY FROM HEAT

MAINTENANCE AND CLEANING

Clean with a soft dry cloth.
Do not use abrasive sponges, alkaline or acid detergents, or volatile solvents such as alcohol or other solvent-based products. Use of such products may damage the grille.

INSTALLATION

- The grille can be installed with its slats horizontal
- Installation must comply with extension EFR-14-003037
- Fire-protectioon grilles cannot be used for forced-air ventilation.

GEOCOL®Adhesive 25 kgs

APPLICATIONS

- EN 1366-1 — Ventilation
- EN 1366-5 — Fire protection services
- EN 1366-8 — Smoke extraction
- CARBON PROTECTION — Carbon protection reinforcement

PRODUCT DESCRIPTION

Powder-coated adhesive especially formulated for mounting GEOFLAM® and GEOTEC® boards.
Also suitable for bonding various building materials: plasterboard, plasterboard tiles, aerated concrete block, etc.
Can also be used for top coating on most substrates.

The plaster-based GEOCOL® glue is used on the joints both as glue and as a filler (maximally 1/3 rd of the board thickness). It allows larger tolerances during installation hence minimizing material waste and maximizing installation speed.

COMPOSITION AND APPEARANCE

Gypsum, calcium carbonate, resin and various additives.
White plaster.

TECHNICAL DATA

Reaction to fire A1 according to EN 13501-1
Operating time: approx. 2 hours depending on ambient conditions.

AVERAGE CONSUMPTION

1 bag of glue = 10 to 15 m2.

DRYING TIME

5 to 6 hours depending on the ambient conditions.

MIXING RATE

Approximately 12 to 14 L of water per 25 KG bag.

PERMITTED SUPPORTS

Gypsum tiles, water-repellent or not / Gypsum / Cellular concrete.

COATING

All types of products except cement-based products.

PRECAUTIONS FOR USE

The temperature during application and drying must be between 5 and 30°C. Do not use paste that has begun to harden. Do not use for outdoor purposes.

SUBSTRATE PREPARATION

The supports must be dry and free of dust.

PACKAGING

25 kg bags.

TRANSPORT AND STORAGE

Transport and store on a flat and protected surface (out of water), in a cool and dry place, protected from frost and heat.

SHELF LIFE

6 months in original unopened packaging.

Polyurethane foam

APPLICATIONS

- EN 1366-1 Ventilation
- EN 1366-5 Fire protection services
- EN 1366-8 Smoke extraction

PRODUCT DESCRIPTION

Soudafoam FR is a single-part, self-expanding polyurethane foam that can be used upside down. Soudafoam FR serves to ensure the degree of fire resistance of ducts and conduits passing through walls.

TECHNICAL CHARACTERISTICS

Base: Polyurethane
Consistency: Stable foam
Curing system: Polymerisation due to humidity in the air
Resistance to temperature: -40°C to + 90°C (cured)

PACKAGING AND STORAGE

750 ml aerosol can
Always store Soudafoam FR in an upright position in a cool dry place.
The foam will last for 12 months in its closed packaging.

Mineral Fiber Rope

APPLICATIONS

- EN 1366-1 Ventilation
- EN 1366-5 Fire protection services
- EN 1366-8 Smoke extraction

PRODUCT DESCRIPTION

Ensuring the degree of fire resistance for expansion joints, mineral fiber ropes are available in diameters from 20 to 60 mm. Mineral fiber roll is mainly used for expension joint element on vertical ducts.

TECHNICAL CHARACTERISTICS

Material: Basalt "bio soluble" mineral fibers.
Density: 270 ± 25 kg /m^3.
Melting temperature: 1200°C.
Complete immersion water absorption at 20°C: 11 to 12 %, saturation after 7 days, returns to initial weight in 48 hours.
Good acoustic and thermal insulation, 0.08 W/m°K.

PACKAGING

20 m roll.

SMOKE EXTRACTION & VENTILATION DUCTS

1. SYSTEM GENERAL OVERVIEW

Ducts are made by juxtaposing **GEOTEC®S** boards of length 1000 mm and of 30 or 45 mm thickness. These systems are available for fire classifications EI 30 S to EI 120 S (in accordance with standards EN 13501-3 and EN 13501-4).
All boards are moulded to standard dimensions with rabbets to facilitate their assembly (30 mm : 2-sided; 45mm : 4-sided).
Each 1000 mm long cuttable segment comprises four or more boards.

Certificates: fire resistance classification report

	Tests in accordance with EN 1366-1 and 1366-8	Thickness (mm)	EI S	Internal cross-sections (mm)	Service pressure* (Pa)	EFECTIS classification documents
EN 1366-1	Horizontal and vertical ventilation ducts	30	30/60	0x0 to 2500x1500	± 500	Cert EFR-16-002202 Rev. 1
		45	90/120			
EN 1366-8	Horizontal and vertical Smoke extraction ducts	30	30/60	0x0 to 2500x1500	-1500/+500	Cert. EFR-16-002203 Rev. 1
		45	90/120			

* Service pressure raised to -1500/+1500 Pa (according to Cert 18/10 Rev. I)

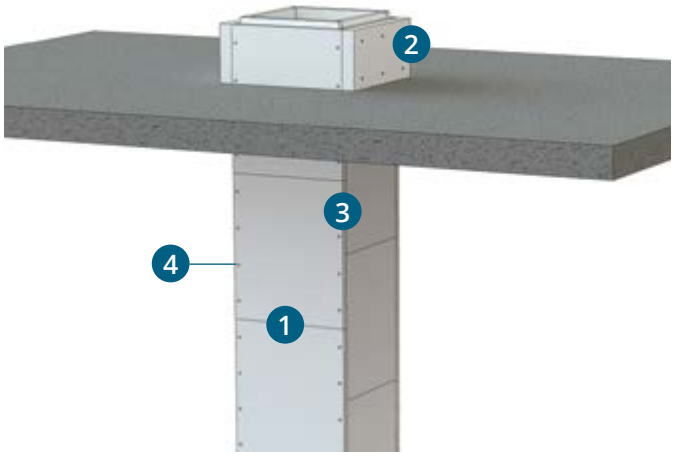
E = Integrity / I = Thermal insulation / S = Smoke-tightness

Horizontal system

1. GEOTEC®S 30 or GEOTEC®S 45 fire-protective boards **(EI 30/60 S and EI 90/120 S)**
2. GEOTEC®A 1/2 shells
3. GEOTEC®A U-plaster element
4. **21x41x21** steel U profile, **Ø8** nut and washer
5. **Ø8** anchor brass and threaded rod
6. GEOCOL® glue

To make your assemblies easier, Geostaff privileges the use of the Ø8 threaded rod and 41x21 steel U-profile.
All screw heads can be hidden by glue for easthetic reasons.

Vertical system



1. GEOTEC®S 30 or GEOTEC®S 45 fire-protective boards **(EI 30/60 S and EI 90/120 S)**
2. GEOTEC®A* reinforcement collar
3. GEOCOL® glue
4. VBA screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)

* Other load-bearing methods in chapter : 3.3.Alternative support principles (from page 72).

2. HORIZONTAL SYSTEM

2.1. Assembly principle

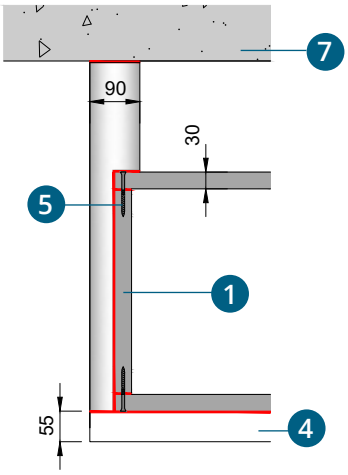
The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®**glue.

Horizontal ducts are formed from 1000 mm sections; the boards are mounted without offset on the horizontal and vertical joints. However, in order to facilitate the installation, the upper boards can be offset from the rest of the duct.

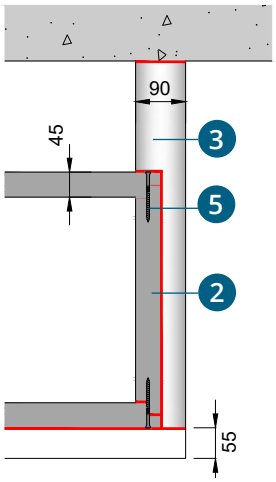
+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

Cross-sectional view



EI 30/60 S



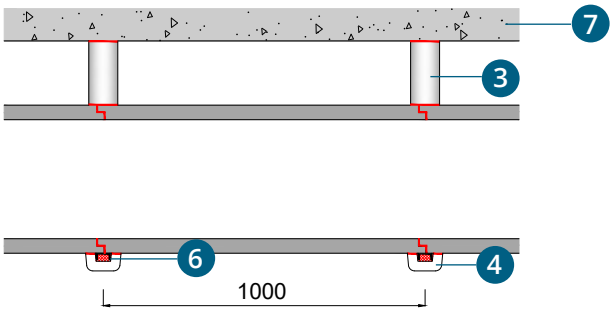
EI 90/120 S

1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)

   or galvanized steel staples
   * **75 x 10 x 2 mm**
6. Steel U-profile
   21 x 41 x 21
7. Concrete slab

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

Longitudinal section view

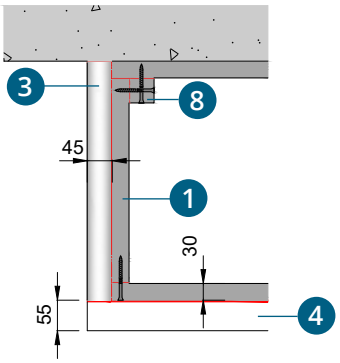


EI 30/60 S and 90/120 S

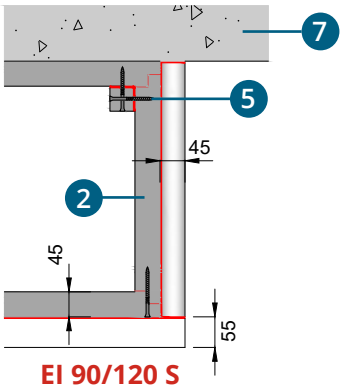
When the duct is against the slab:

In the case of a horizontal duct adjoining the slab, a batten can be used to screw the boards together.

Cross-sectional view

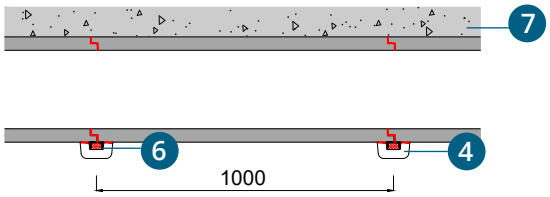


EI 30/60 S



EI 90/120 S

Longitudinal section view



EI 30/60 S and 90/120 S

1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)

   or galvanized steel staples
   * **75 x 10 x 2 mm**
6. Steel U-profile
   21 x 41 x 21
7. Concrete slab
8. GEOTEC®A Batten

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

2.2. Installation instructions

Internal Duct Width (W int)	Ventilation duct (EN 1366-1)	Smoke extraction duct (EN 1366-8)	Page
≤ 600 mm	Standard Installation.		**35**
600 < w ≤ 1000 mm	**Solution 1**: Using GEOTEC® A cover strip.		**36**
	Solution 2: Using GEOTEC® A Reinforcement collar.		**38**
1000 < w ≤ 1250 mm	**Solution 1**		**40**
	Using internal steel U-profile.	Using internal steel U-profile protected by GEOTEC® A U-plaster element.	**40/42**
	Solution 2: Using internal protected Ø8 threaded rods.		**44**
1250 < w ≤ 2000 mm	Using a second 21x41x21 steel U-profile + an additional Ø8 threaded rod.	Using a second 21x41x21 steel U-profile protected by **GEOTEC® A U-plaster** element and using an additional Ø8 threaded rod protected by **GEOTEC® A Half shell**	**46**
2000 < w ≤ 2500 mm	Using a second 24x41x21 steel U-profile + an additional Ø8 threaded rod. + Replace the steel U-profile placed under the lower board for a 41x41 Steel U-profile.	Using a second 21x41x21 steel U-profile protected by **GEOTEC® A U-plaster** element and using an additional Ø8 threaded rod protected by **GEOTEC® A Half shell.** + Replace the steel U-profile placed under the lower board for a 41x41 Steel U-profile.	**49**

Internal Duct Width (W int)	Ventilation duct	Smoke extraction duct	Page
Inner Perimeter > 4500 mm			
1000 < w ≤ 1250 mm	Use solution 1 or 2 above and replace Ø8 threaded rods for Ø10 threaded rods.		**52**
	Special configuration: Use a second 21x41x21 steel U-profile + an additional Ø8 threaded rod.	**Special configuration**: Use a second 21x41x21 steel U-profile protected by **GEOTEC® A U-plaster** element and use an additional Ø8 threaded rod protected by **GEOTEC® A Half shell.**	

Note:

In the case of a horizontal duct installed with multiple boards in its height (h_{int} > 1100 mm in EI 30/60 S or 1050 mm in EI 90/120 S), the horizontal joint between the boards has to be reinforced.

Two solutions may be considered according to the internal width of the duct and its level of pressure :

Solution 1 : Using cover strips
Regardless of the width of the duct, when the level of pressure ≤ ± 500 Pa, the horizontal joints are treated with internal **or** external cover strips staggered at 120 mm intervals along the length of the duct. For a level of pressure above ± 500 Pa then the cover strips should be installed both inside **and** outside the duct.

Solution 2 : Using internal reinforcement collars
Regardless of the level of pressure in the duct, when w_{int} ≤ 1000 mm, the horizontal joint can be reinforced using a horizontal reinforcement collar every meter.

Standard installation principle

CLICK and watch
THE HORIZONTAL DUCT ASSEMBLY on video.

1

- Mark out every 1000 mm
- Drill Ø10 holes
- Install Ø8 brass anchors
- Screw up the Ø8 threaded rods

2

- Install steel U-profiles every 1000 mm

3

- Install the lower board

4

- Glue the board edgings
- Screw the side boards with VBA screws every 120 mm or use staples

5

- Glue the board rabbets
- Install the upper board
- Screw with VBA screws every 120 mm or use staples

6

- Glue and install the protective plaster U-profiles against the underside of the lower board

7

- Glue and install the 1/2 shells to protect the threaded rods

8

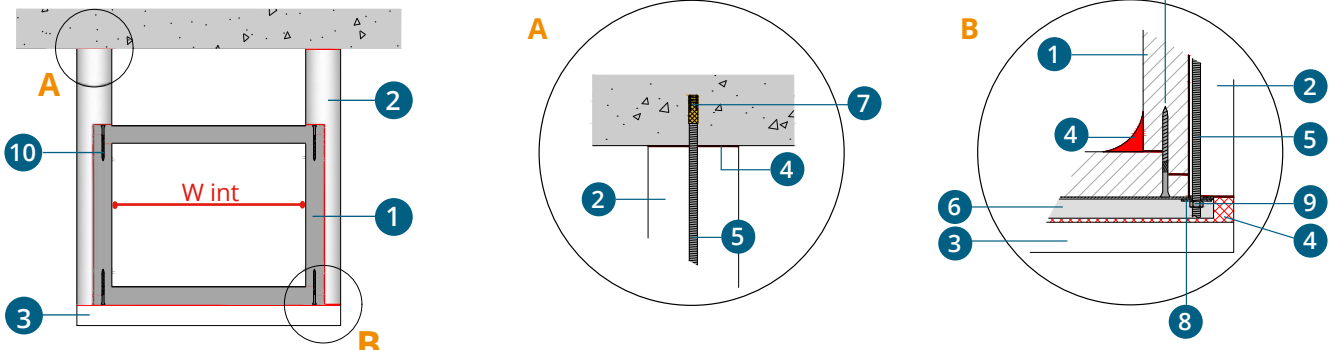
- Repeat from step 3
- Glue and fit together with the previous section

W int ≤ 600 mm

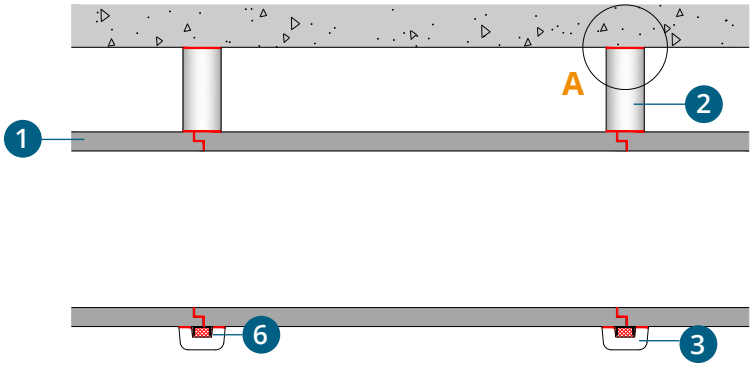
Standard installation principle: see page 34.

W int ≤ 600 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Front view



Side view



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

600 < W int ≤ 1000 mm

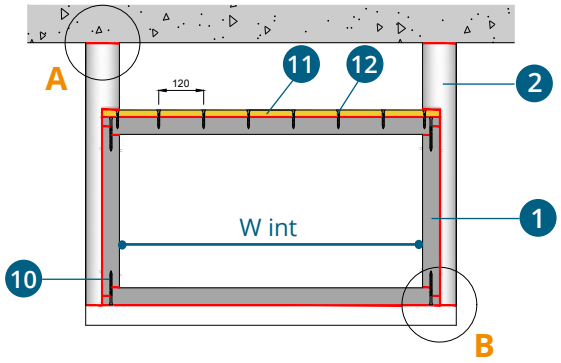
In this configuration, install a reinforcement every meter where the sections meet to support the upper board of the duct. Two solutions may be used: using **cover strips** or using **internal reinforcement collars**.

Solution 1 : using GEOTEC®A Cover strip

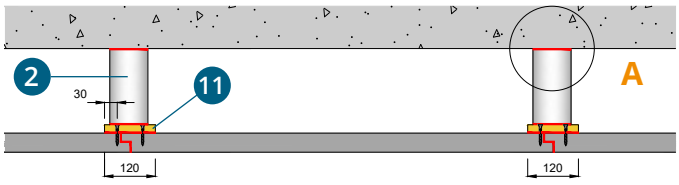
GEOTEC® A Cover strip are placed inside or outside the duct to cover the joints.
This installation principle is accepted for internal ducts dimensions 600 < W int ≤ 1000 mm for EI 60 S (1 hour fire-resistant) and for internal dimensions 600 < W int ≤ 800 mm for EI 120 S (2 hours fire-resistant).

600 < W int ≤ 1000 mm - EI 30 / 60 (S)
600 < W int ≤ 800 mm - EI 90 / 120 (S)

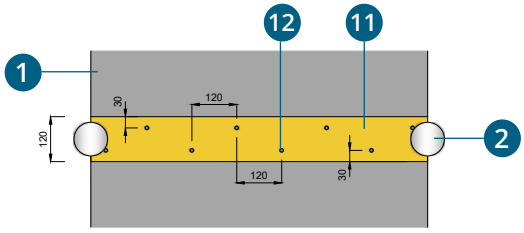
Front view



Side view



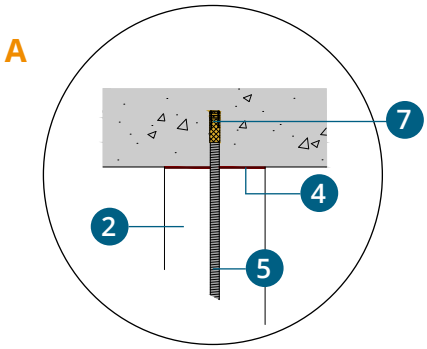
Top view

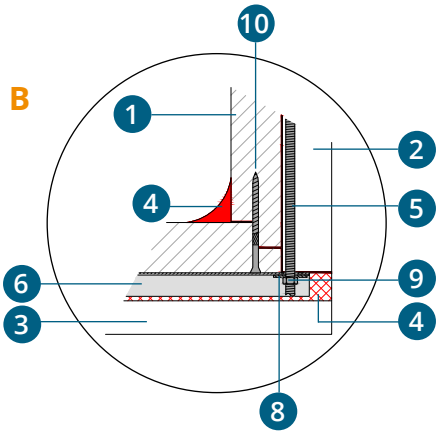


If duct inner perimeter > 4500 mm, two solutions:

A) replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10**.

B) Add a third Ø8 threaded rod inside the duct which has to be protected with a GEOTEC® A 1/2 shell to support the installation.





1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC® A Cover strips
12. VBA Screws **Ø 5 x 50**

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

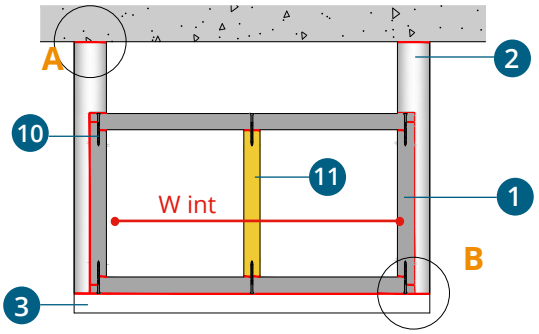
600 < W int ≤ 1000 mm

Solution 2 : using internal reinforcement collars (thickness identical to that of the board)

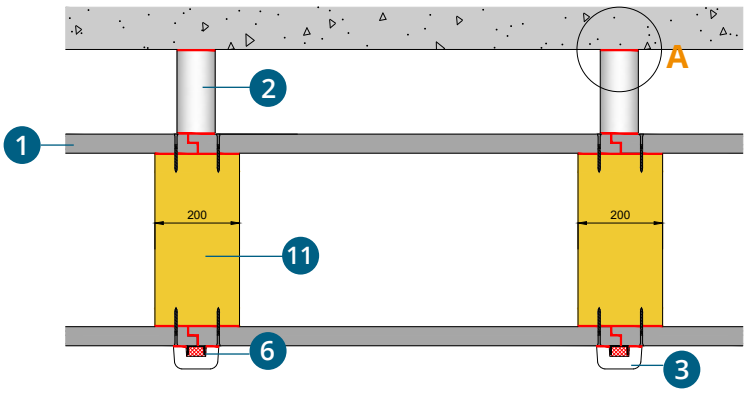
GEOTEC® A Reinforcement collars are placed inside the duct to support the upper board of the duct.

600 < W int ≤ 1000 mm
EI 30 / 60 (S) - EI 90 / 120 (S)

Front view



Side view

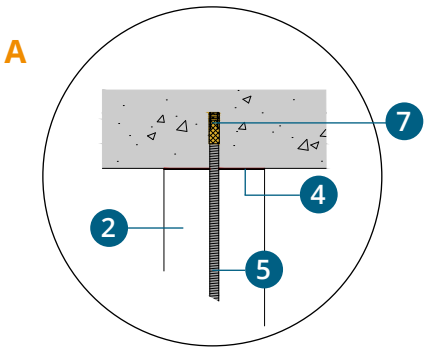


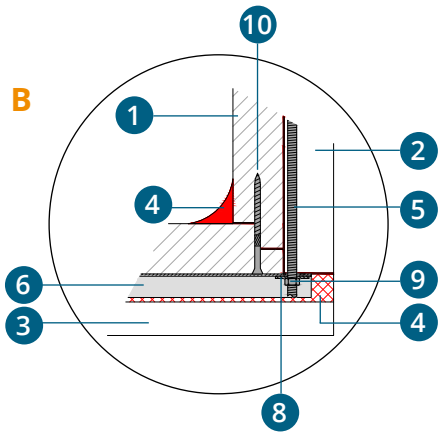
If duct inner perimeter > 4500 mm, two solutions:

A) replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10**.

B) Add a third Ø8 threaded rod inside the duct which has to be protected with a GEOTEC® A 1/2 shell to support the installation.

See on pages 52 / 54





1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC®A Reinforcement collar

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

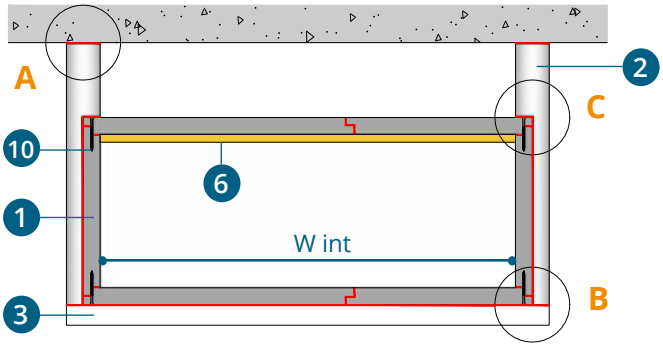
1000 < W int ≤ 1250 mm

Solution 1 : Using internal steel U-profile

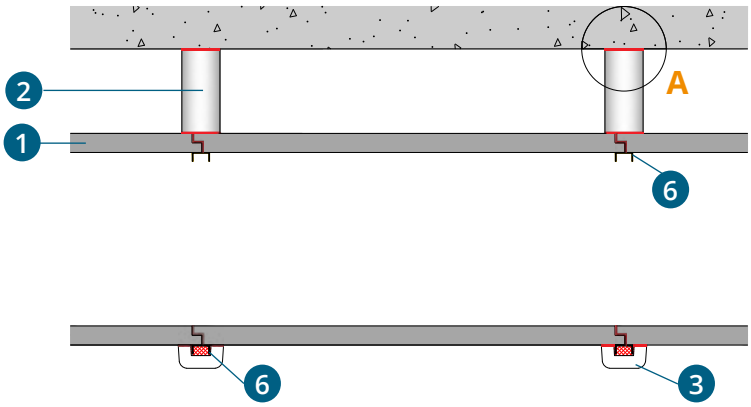
1. For a ventilation duct: In this configuration, **a second 21x41x21 steel U-profile** must be installed inside the duct to support the upper boards.

1000 < W int ≤ 1250 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Front view



Side view

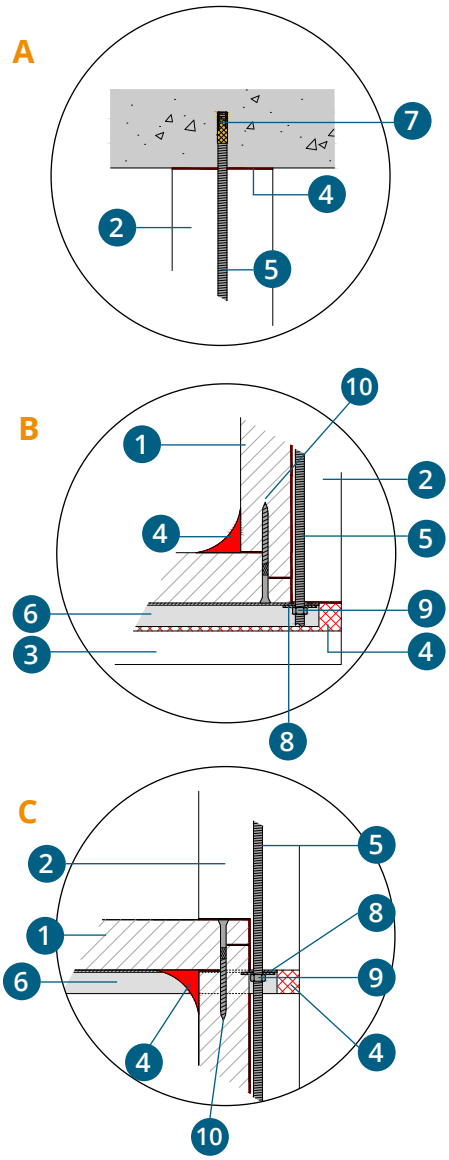


If duct inner perimeter > 4500 mm, two solutions:

A) replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10**.

B) Add a third Ø8 threaded rod inside the duct which has to be protected with a GEOTEC® A 1/2 shell to support the installation.

See on pages 52 / 54



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm

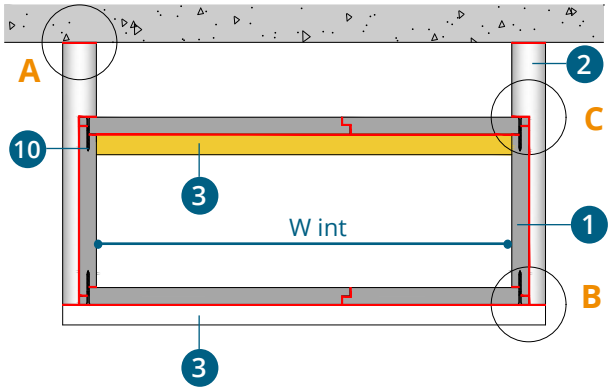
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

1000 < W int ≤ 1250 mm

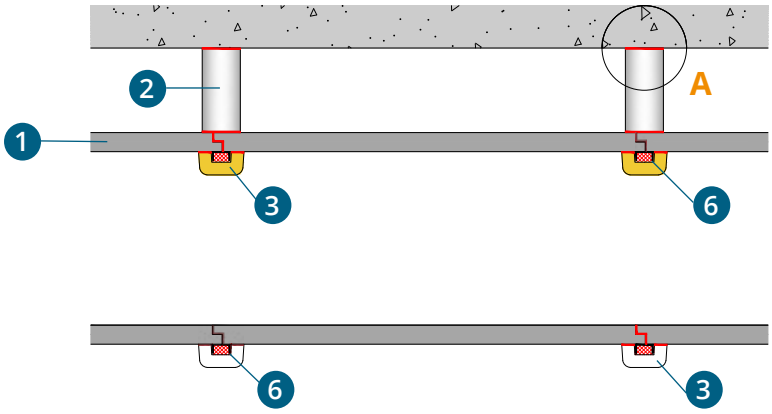
2. For a smoke extraction duct:
In this configuration, **a second 21x41x21 steel U-profile** must be installed inside the duct to support the upper boards and **protected by GEOTEC® A U plaster element**.

1000 < W int ≤ 1250 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Front view



Side view

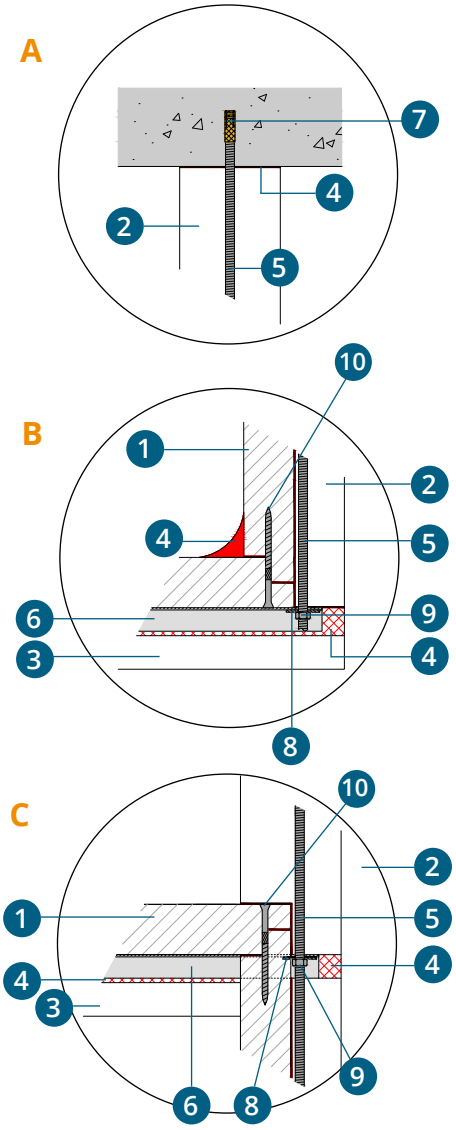


If duct inner perimeter > 4500 mm, two solutions:

A) replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10**.

B) Add a third Ø8 threaded rod inside the duct which has to be protected with a GEOTEC® A 1/2 shell to support the installation.

See on pages 52 / 54



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

1000 < W int ≤ 1250 mm

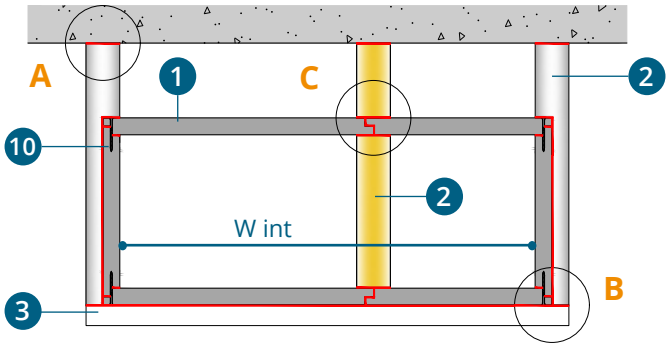
Solution 2 : Using internal protected threaded rods.

This solution can be used for both ventilation and smoke extraction ducts.

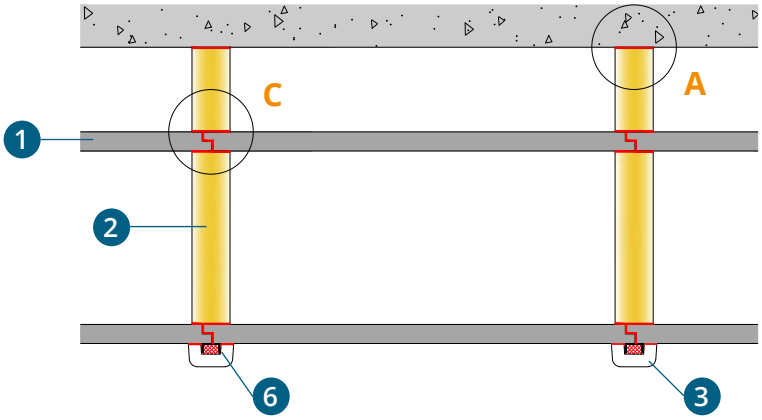
In this configuration, **a third Ø8 threaded rod** must be installed at mid-width of the duct to support the upper board of the duct. This threaded rod will be protected using **GEOTEC® A Half shells** whether it is a ventilation or a smoke extraction duct.

1000 < W int ≤ 1250 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Front view



Side view

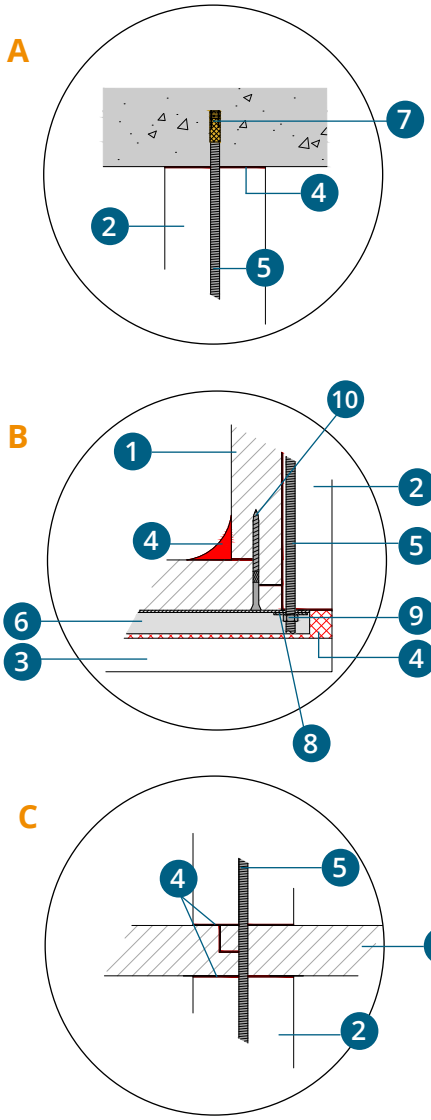


If duct inner perimeter > 4500 mm, two solutions:

A) replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10**.

B) Add a third Ø8 threaded rod inside the duct which has to be protected with a GEOTEC® A 1/2 shell to support the installation.

See on pages 52 / 54



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

1250 < W int ≤ 2000 mm

In the case of horizontal ducts with an internal width of 1250 < W int ≤ 2000 mm, **the installation principle varies according to the type of duct:**

1. For a ventilation duct: In this configuration, **a second 21x41x21 steel U-profile as well as an additional Ø 8 threaded rod** must be installed inside to support the upper boards of the duct.

2. For a smoke extraction duct: In this configuration, **a second 21x41x21 steel U-profile as well as an additional Ø 8 threaded rod** must be installed inside to support the upper boards of the duct. Also, Threaded rods and steel U-profiles must be **protected using GEOTEC® A half shells and U-plaster elements.**

Ventilation duct

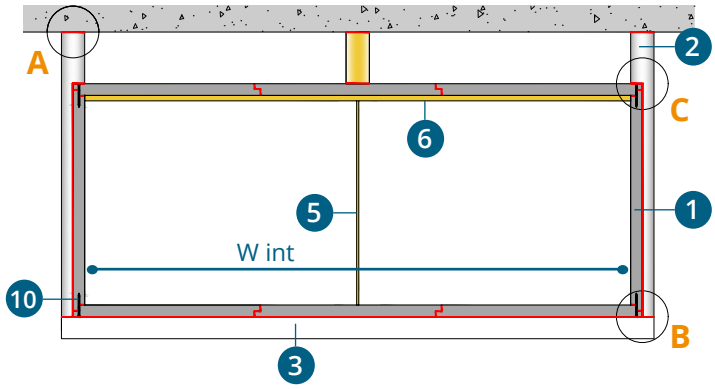
1250 < W int ≤ 2000 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Smoke extraction duct

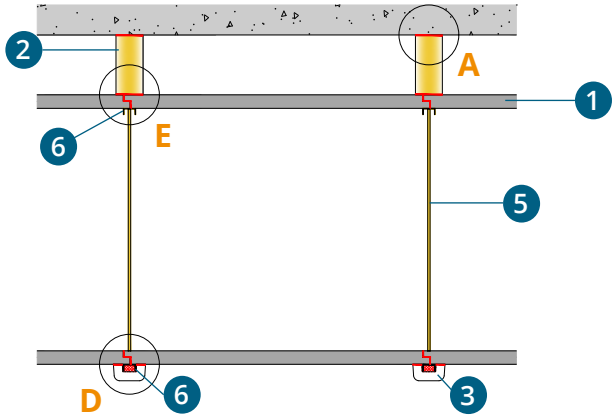
1250 < W int ≤ 2000 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

1. FOR A VENTILATION DUCT

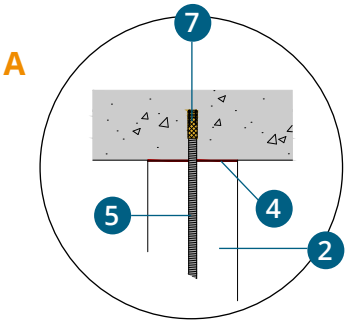
Front view

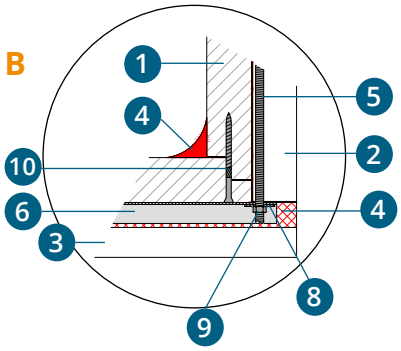


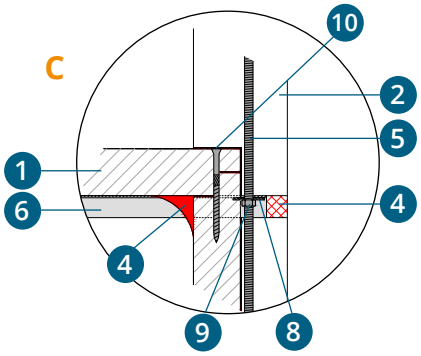
Side view

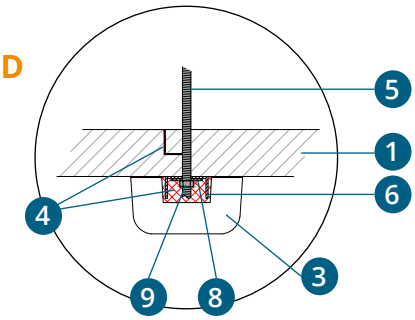


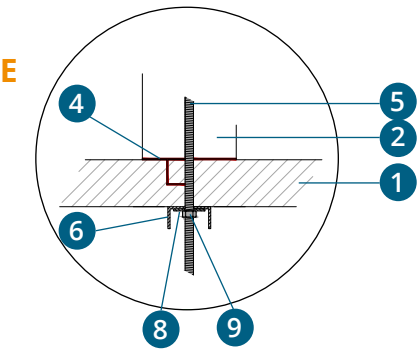
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41x21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120







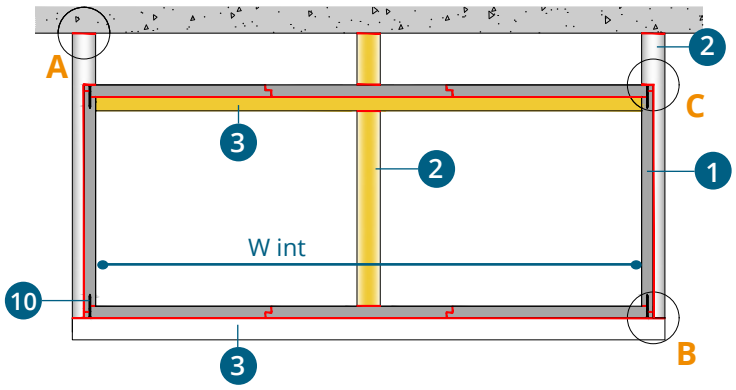




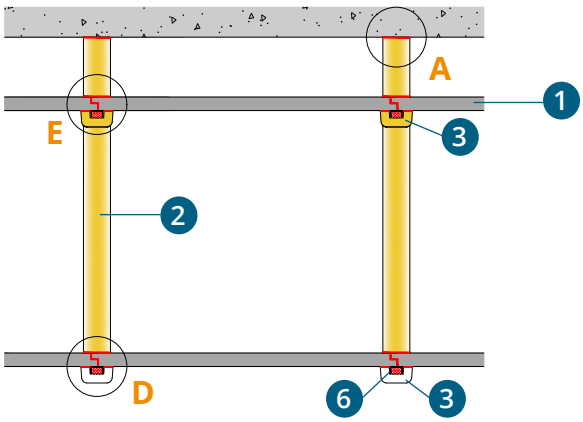
1250 < W int ≤ 2000 mm

2. FOR A SMOKE EXTRACTION DUCT

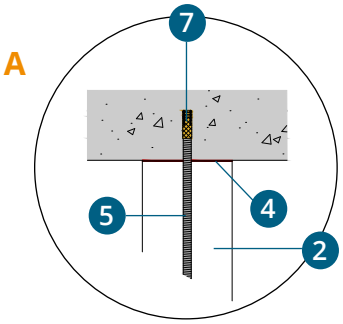
Front view

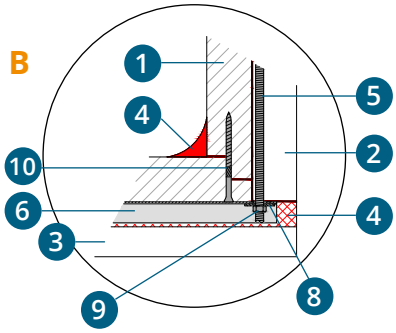


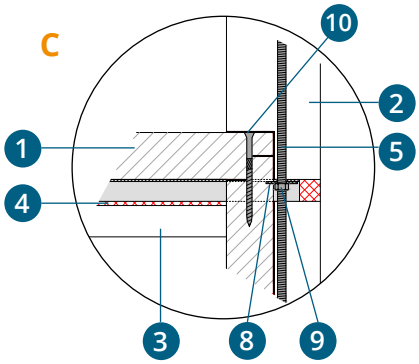
Side view

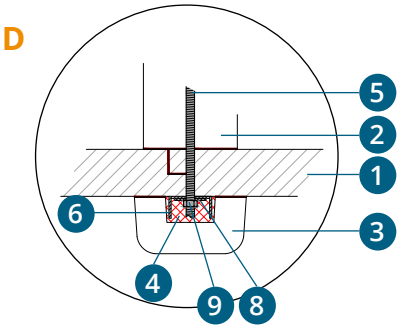


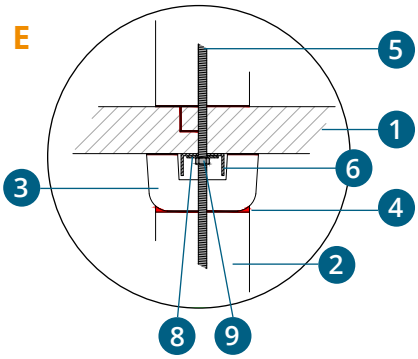
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41x21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120











2000 < W int ≤ 2500 mm

In the case of horizontal ducts with an internal width of 2000 < w ≤ 2500 mm, **the installation principle varies according to the type of duct :**

1. For a ventilation duct: In this configuration, **a second 21x41x21 steel U-profile as well as an additional Ø 8 threaded rod** must be installed inside to support the upper boards of the duct. Also, the steel U-profile placed under the lower board of the duct will be here a **41x41 steel U-profile** instead of a 21x41 (usually used for internal width ≤ 2000 mm).

2. For a smoke extraction duct: In this configuration, **a second 21x41x21 steel U-profile as well as an additional Ø 8 threaded rod** must be installed inside to support the upper boards of the duct and be protected by the **GEOTEC® A Half shells and U-plaster elements.** Also, the steel U-profile placed under the lower board of the duct will be here a **41x41 steel U-profile** instead of a 21x41 (usually used for internal width ≤ 2000 mm).

Ventilation duct

2000 < W int ≤ 2500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

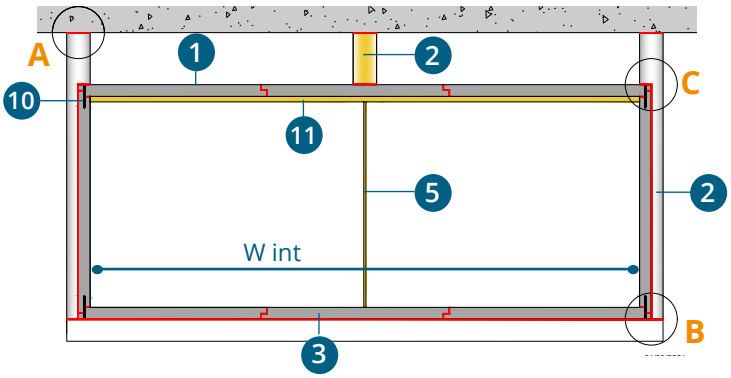
Smoke extraction duct

2000 < W int ≤ 2500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

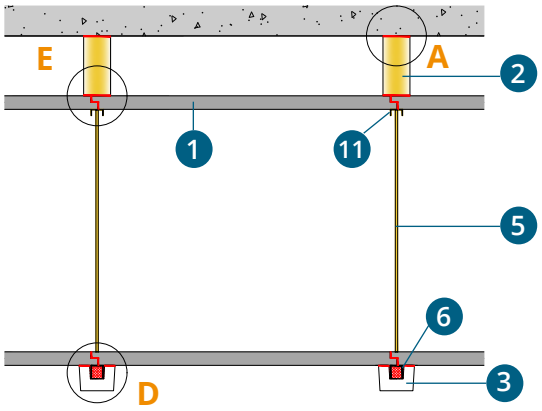
2000 < W int ≤ 2500 mm

1. FOR A VENTILATION DUCT

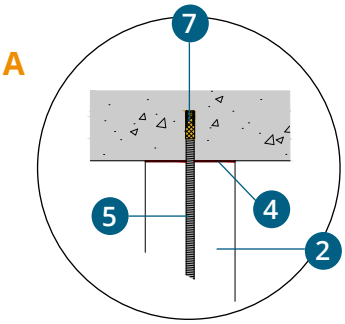
Front view

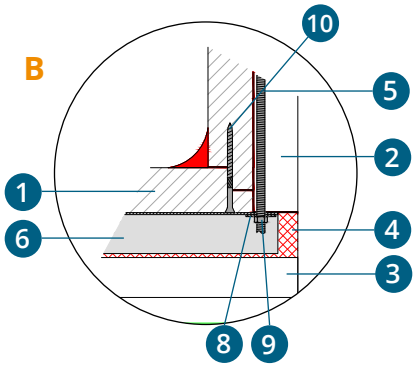


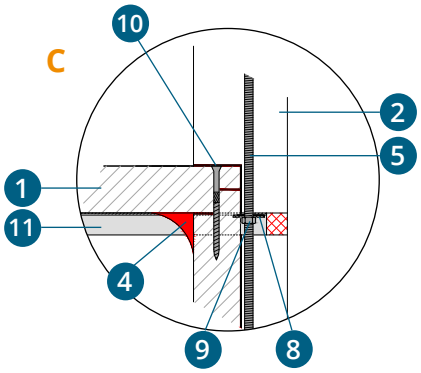
Side view

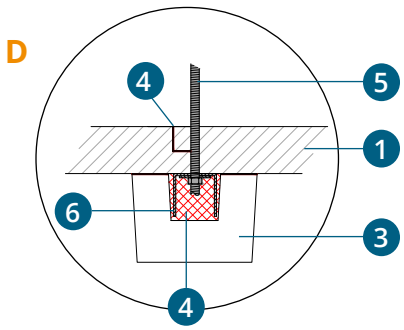


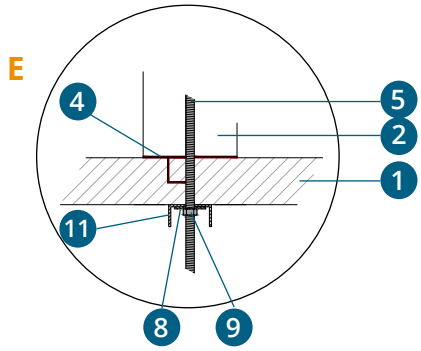
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element **for steel U profile 41x41**
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 41**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws **Ø 5 x 80** (EI 30/60) **Ø 5 x 90** (EI 90/120
11. Steel U profile **41x21**





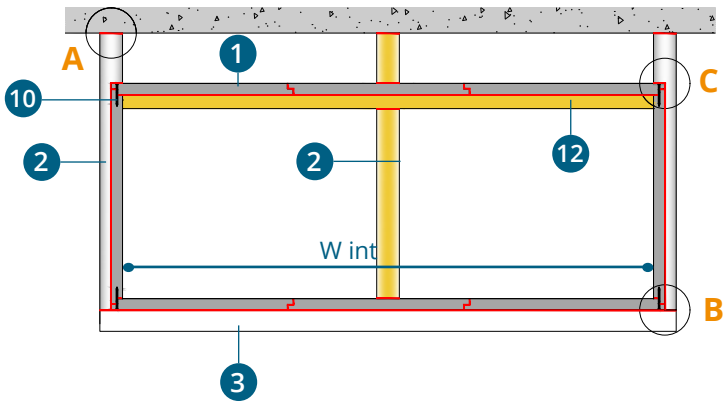




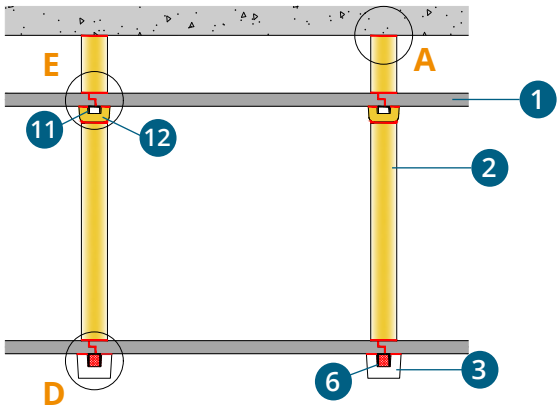


2. FOR A SMOKE EXTRACTION DUCT

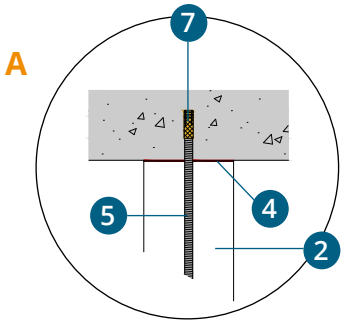
Front view

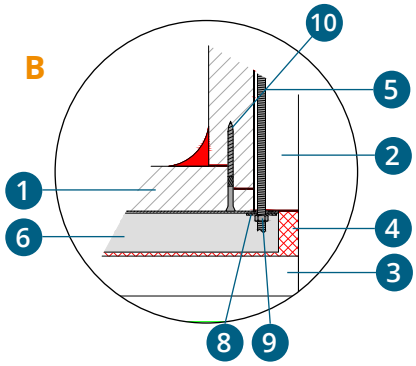


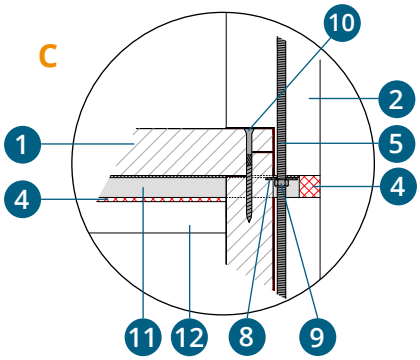
Side view

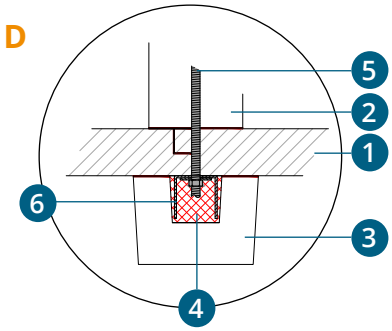


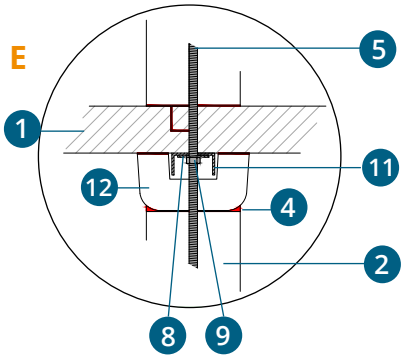
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element **for steel U profile 41x41**
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 41**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws **Ø 5 x 80** (EI 30/60) **Ø 5 x 90** (EI 90/120
11. Steel U profile **41x21**
12. GEOTEC®A U-plaster element **for steel U profile 41x21**











Inner perimeter > 4500 mm

1000 < W int ≤ 1250 mm

In the case of horizontal ducts with an internal width of 1000 < W int ≤ 1250 mm and inner perimeter > 4500 mm, for instance a duct of internal width 1250 x 1050 mm, **two possibilities can be considered :**

1. To realize the ventilation or smoke extraction duct using the solutions described previously for inner perimeter ≤ 4500 mm (solution 1 page 40 to 43 and solution 2 page 44 to 45) **with Ø 10 threaded rod instead of Ø 8 threaded rod.**

2. To realize the ventilation or smoke extraction duct using the **special configuration such as bellow** :

Special configuration

1. For a ventilation duct: In this configuration, **a second 21x41x21 steel U-profile as well as an additional Ø 8 threaded rod** must be installed inside to support the upper boards of the duct.

2. For a smoke extraction duct: In this configuration, **a second 21x41x21 steel U-profile as well as an additional Ø 8 threaded rod** must be installed inside to support the upper boards of the duct. Also, Threaded rods and steel U-profiles must be **protected using GEOTEC® A half shells and U-plaster elements.**

Ventilation duct
EN1366-1

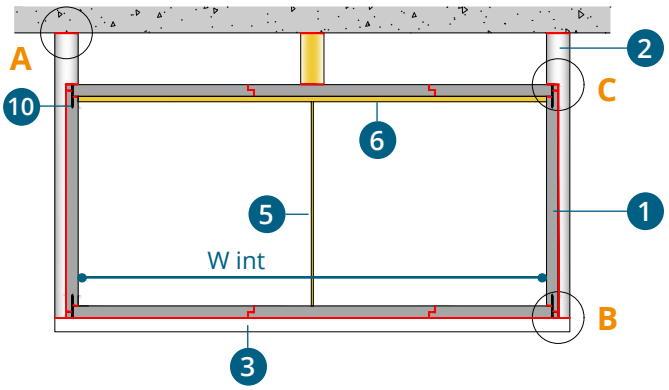
1000 < W int ≤ 1250 mm + Inner perimeter > 4500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Smoke extraction duct
EN1366-8

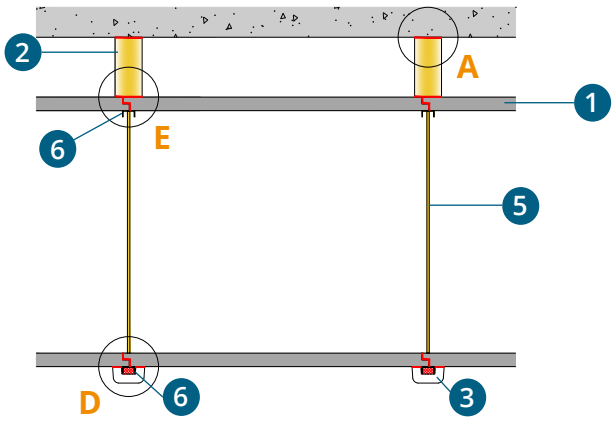
1000 < W int ≤ 1250 mm + Inner perimeter > 4500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

1. FOR A VENTILATION DUCT

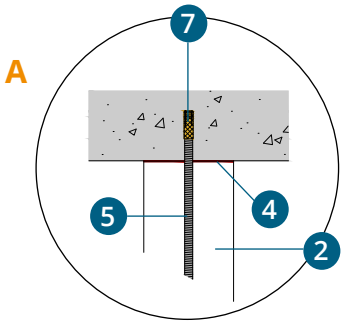
Front view

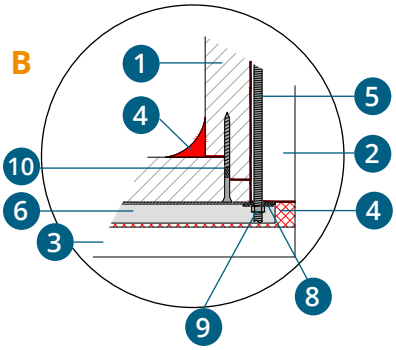


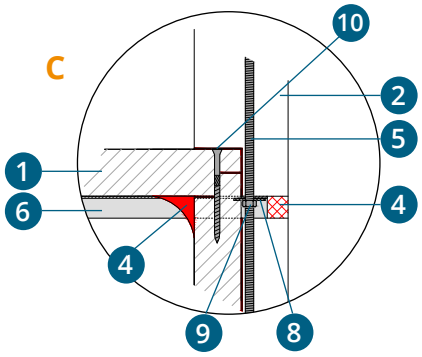
Side view

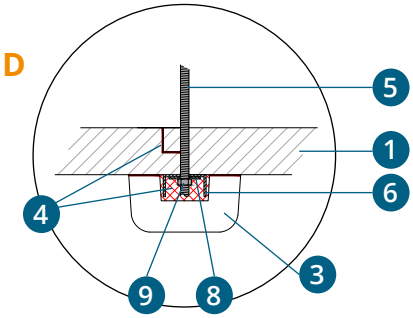


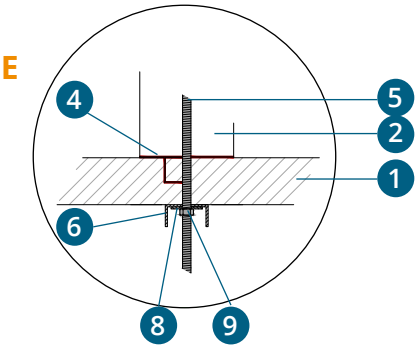
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41x21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120







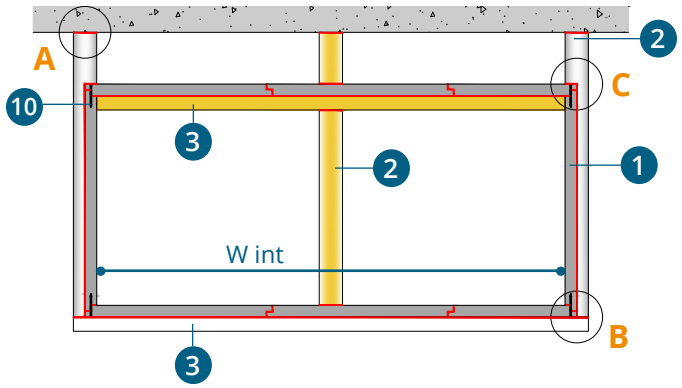




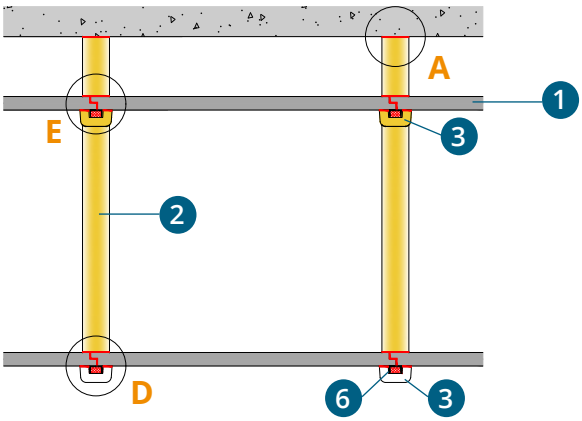
1000 < W int ≤ 1250 mm

2. FOR A SMOKE EXTRACTION DUCT

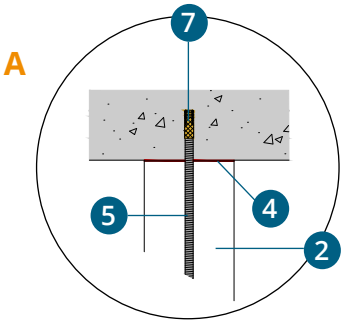
Front view

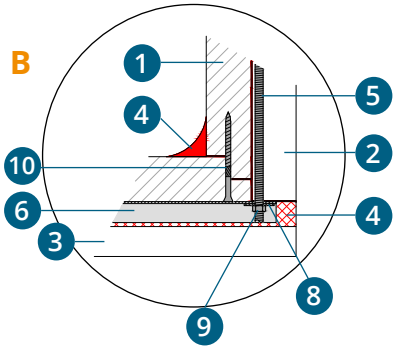


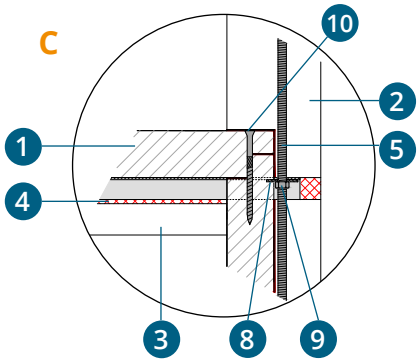
Side view

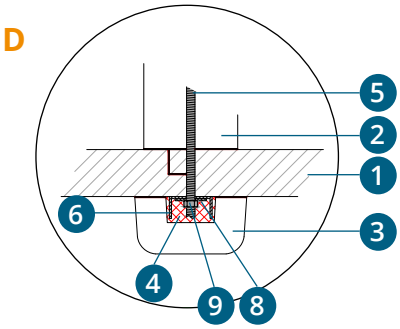


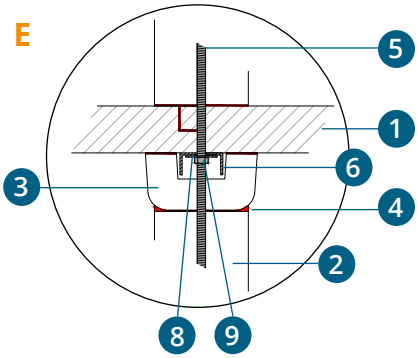
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41x21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120











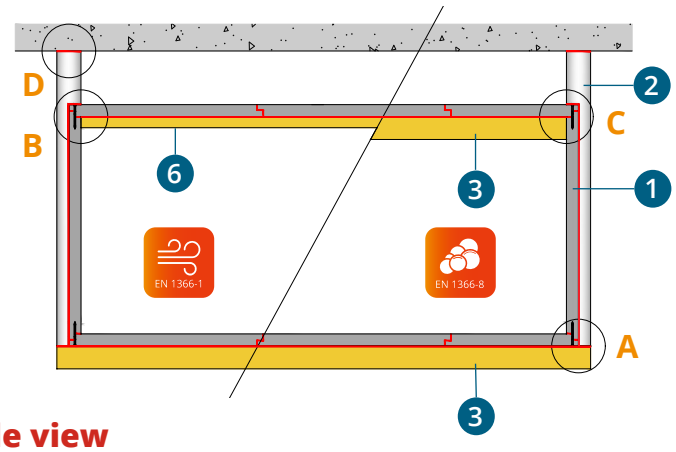
2.3. Alternative support principles

In response to the difficulties experienced on construction sites, Geostaff offers alternative solutions to support the ducts.

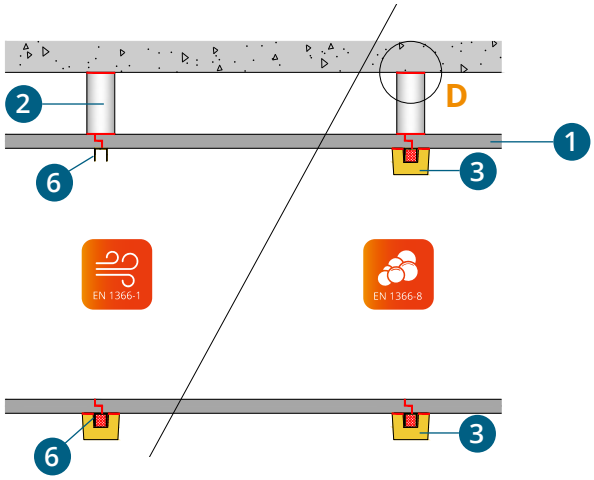
A) Suppression of the inner rod Ø8 for large ducts

In the case of ducts with an internal width of **1250 < w ≤ 2500 mm**, it is possible to remove the 3rd internal rod by replacing the external rods with rods of **Ø10** and by using appropriate **steel U-profiles** (upper and lower) according to the supplier's certification.

Front view



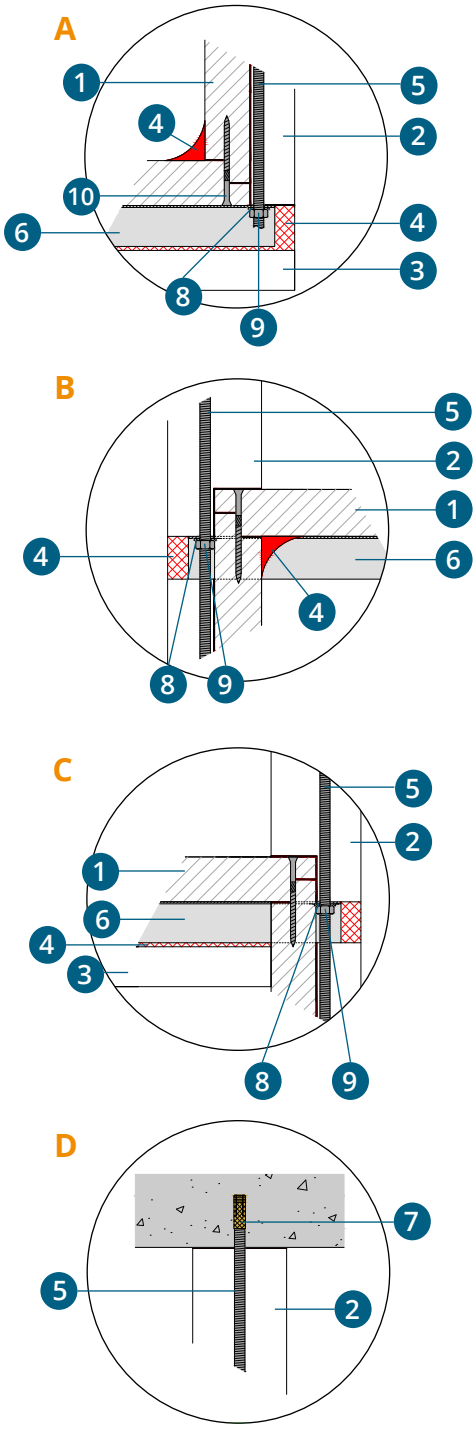
Side view



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element (appropriated according to supplier's certification)
4. Geocol® Glue
5. Threaded rod **Ø10**
6. Steel U profile (appropriated according to supplier's certification)
7. Brass anchor **Ø10**
8. Galvanized washers **Ø10**
9. Galvanized nuts **Ø10**
10. VBA Screws **Ø 5 x 80** (EI 30/60) / **Ø 5 x 90** (EI 90/120

1250 < w ≤ 2500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

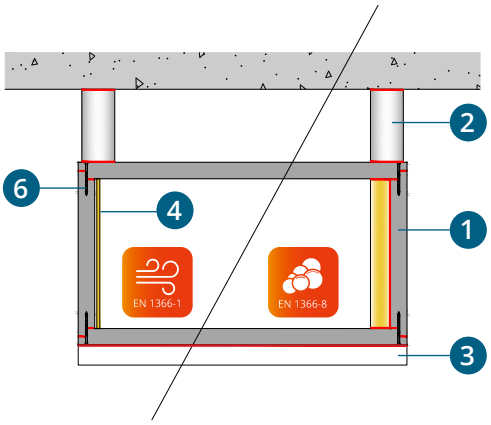
Extension 17/7 on EFR-16-002202
Extension 17/6 on EFR-16-002203



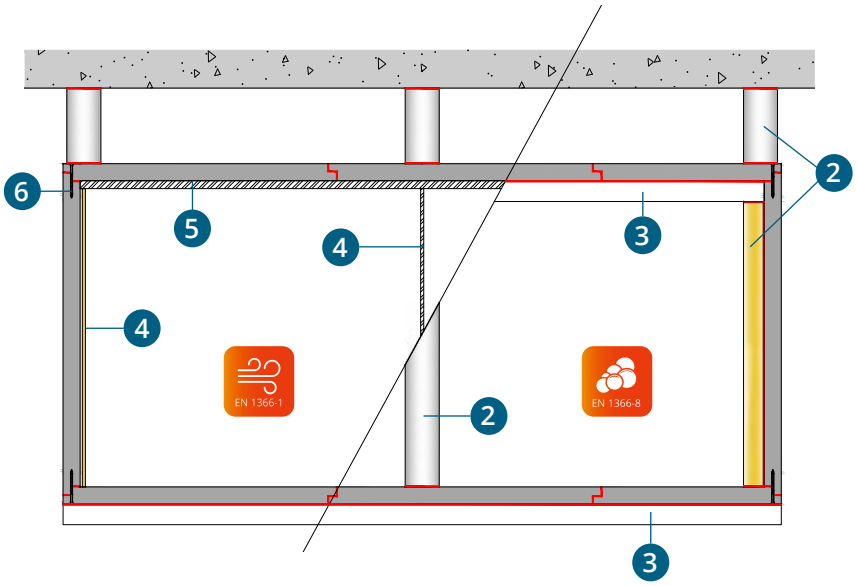
B) Decrease of the duct overall dimension

If it is necessary to reduce the overall dimensions, it is possible, by positioning the threaded rods inside the ducts, to reduce the external width of the ducts (10 cm).

Front view: small section



Side view: large section



0x0 mm to 2500x1500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Extension 17/7 on EFR-16-002202
Extension 17/6 on EFR-16-002203

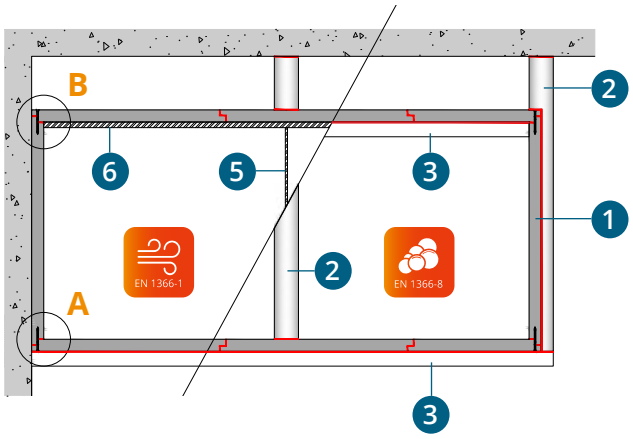
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element
4. Threaded rod
5. Steel U profile
6. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

C) Duct adjoining a vertical wall

In this case, on the vertical wall side, **the lower and upper steel U-profiles** of the duct must be fixed to the wall by using **Ø 8 brass anchors**. On the free side, the support will be made in a standard way.

Front view

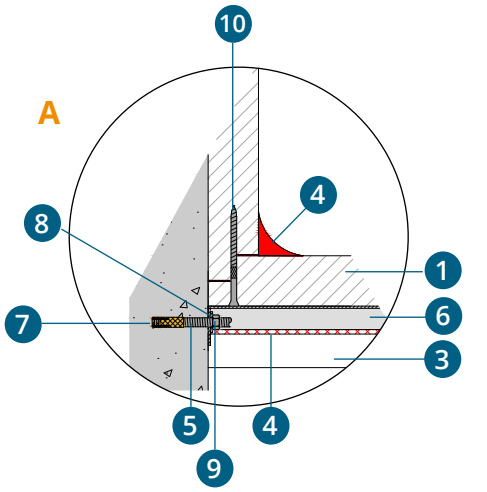


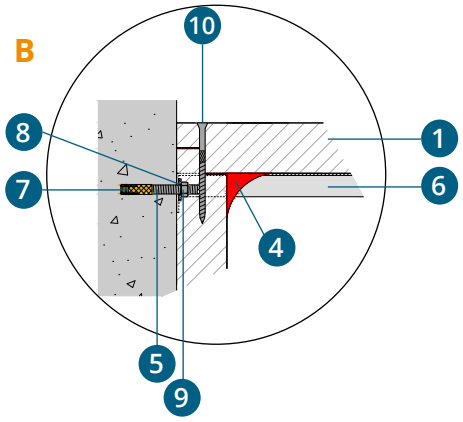
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod
6. Steel U profile
7. Brass anchor
8. Galvanized washers
9. Galvanized nuts
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120
    or galvanized steel staples*
    75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

0x0 mm to 2500x1500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Extension 17/7 on EFR-16-002202
Extension 17/6 on EFR-16-002203



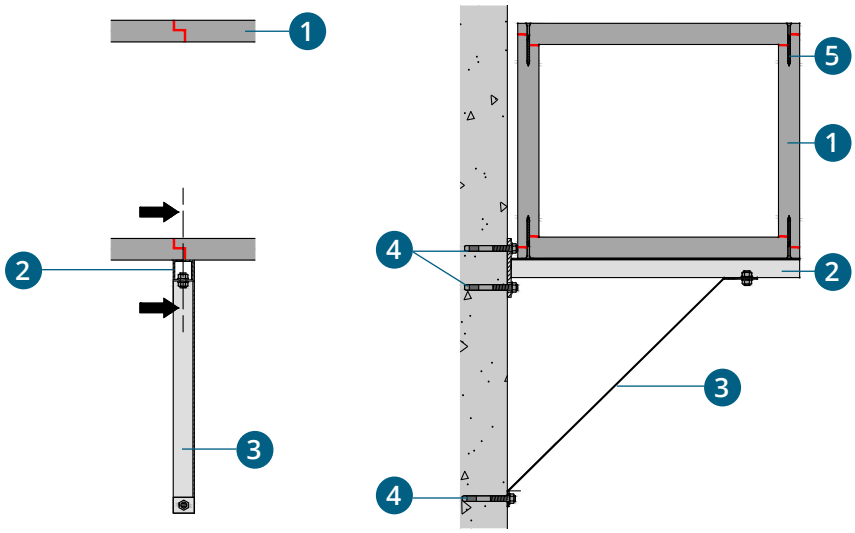


D) Installation of the duct on a bracket

When the duct is installed on a vertical wall, the support can be made by using **metal brackets,** with or without struts (appropriate according to the supplier's certification).
Metal brackets and strut must be thermally protected against fire using **GEOTEC® A U-plaster element.**

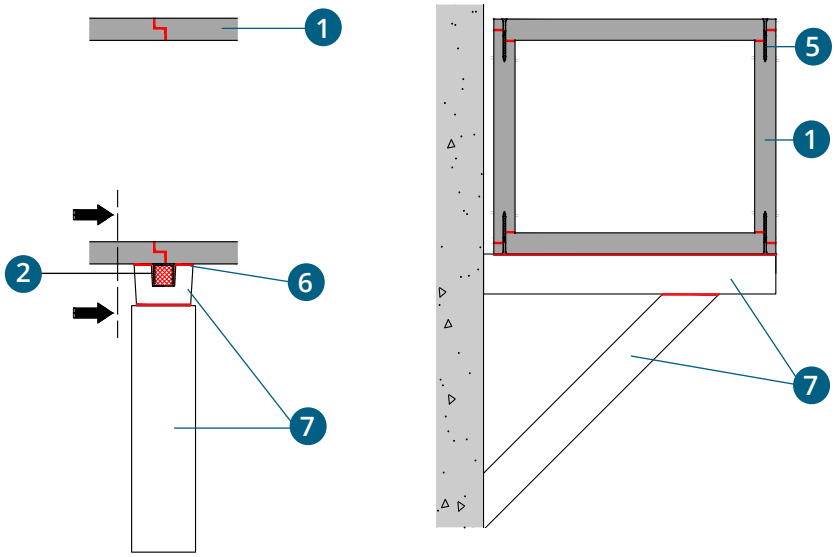
1- INSTALL THE BRACKETS AND THE SUPPORT STRUT.

Longitudinal view **Cross-sectional view**



2- PROTECT THE BRACKETS AND THE STRUT WITH GEOTEC® A U-PLASTERS ELEMENT.

Longitudinal view **Cross-sectional view**



0x0 mm to 2500x1500 mm
EI 30 / 60 (S) and EI 90 / 120 (S)

Extension 17/7 on EFR-16-002202
Extension 17/6 on EFR-16-002203

1. GEOTEC® S board
2. Metal bracket
3. Load strut
4. Expansion anchors
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Geocol® Glue
7. GEOTEC® A Uplaster element

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

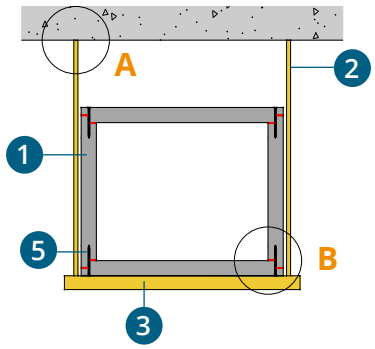
+ In the case of ventilation ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A U-plaster element.

E) Non protection of the supports

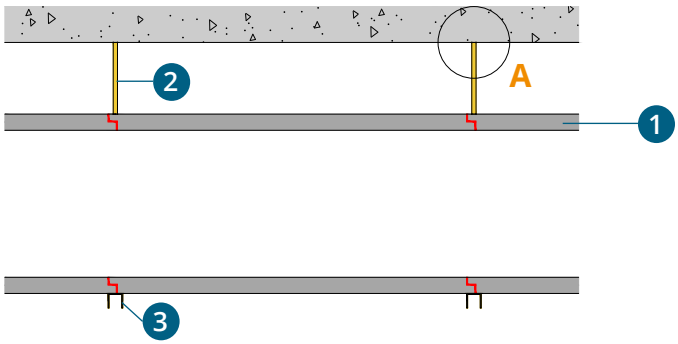
In the case of ventilation ducts with a **inner width (W int) of ≤ 600 mm and a inner perimeter (P int) of ≤ 1900 mm,** it is allowed to remove GEOTEC® A half-shells and GEOTEC® A U-plaster element.

For this purpose, the **steel U-profiles 41x21 must be replaced by 41x41** and the **Ø8 threaded rods must be replaced by Ø12 or Ø14 rods** (depending on the cross-section and the desired fire resistance). Attention, in this case, the anchors used are steel anchors.

Front view

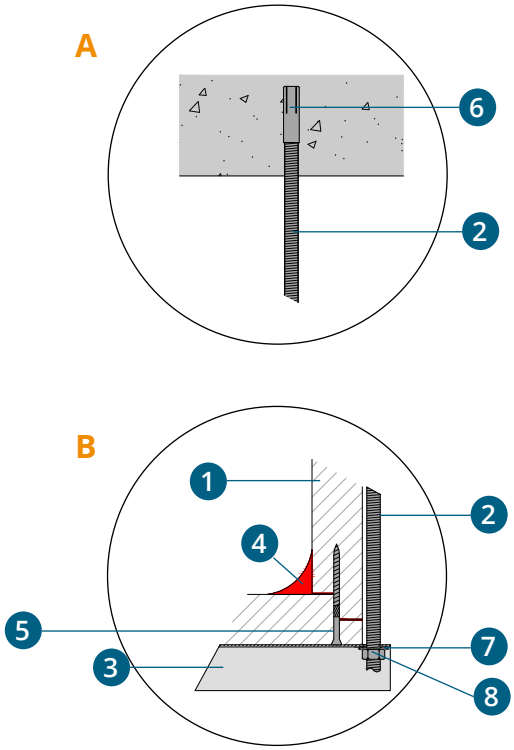


Side view



W int ≤ 600 mm & P int ≤ 1900 mm EI 30 / 60 (S) and EI 90 / 120 (S)

Extension 19/13 on EFR-16-002202

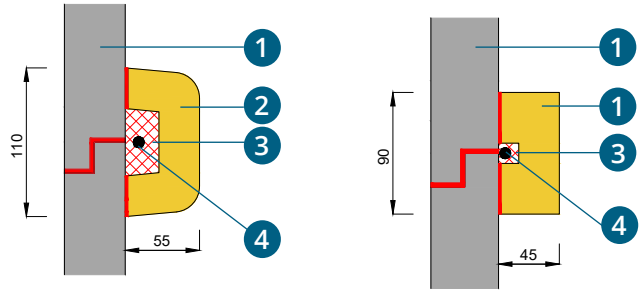


1. GEOTEC® S board
2. Threaded rod **Ø12 or Ø14**
3. Steel U profile **41x41**
4. Geocol® Glue
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120
   or galvanized steel staples* **75 x 10 x 2 mm**
6. Steel anchor **Ø12 or Ø14**
7. Galvanized washers **Ø12 or Ø14**
8. Galvanized nuts **Ø12 or Ø14**

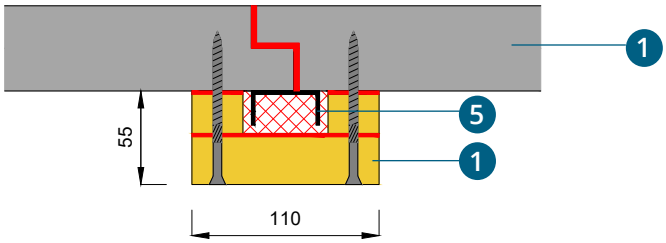
2.4. Alternatives for the protection of the suspension system

With the constant aim of making it easier to install GEOTEC® S ducts, extensions 18/8 and 18/9 of assessments EFR-16-002202 and EFR-16-002203 have been validated to offer an alternative to the protection of threaded rods and steel U-sections.

The **GEOTEC®A** 1/2 shells used to protect the threaded rods may therefore be replaced by a protection in the form of GEOTEC®S boards or GEOTEC®A U-plaster element normally used to protect the steel U-sections.



The **GEOTEC®A** U-plaster element used for protecting the steel U-sections may thus be replaced by a protection in the form of GEOTEC®S boards.



0x0 mm to 2500x1500 mm EI 30 / 60 (S) and EI 90 / 120 (S)

Extension 18/8 on EFR-16-002202
Extension 18/9 on EFR-16-002203

1. GEOTEC® S board
2. GEOTEC®A U-plaster element
3. Geocol® Glue
4. Threaded rod **Ø8**
5. Steel U profile

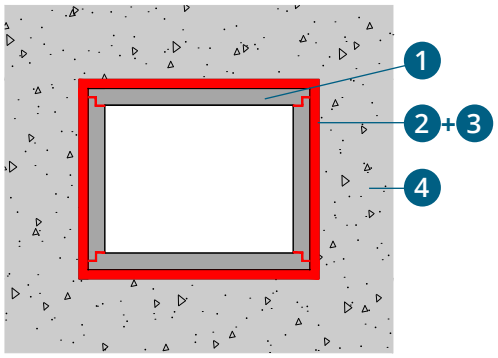
2.5. Wall penetrations

A) Solid wall

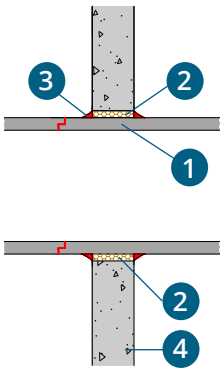
1. CONTINUOUS DUCT

Method of caulking horizontal ducts through vertical walls :

Top view



Side view

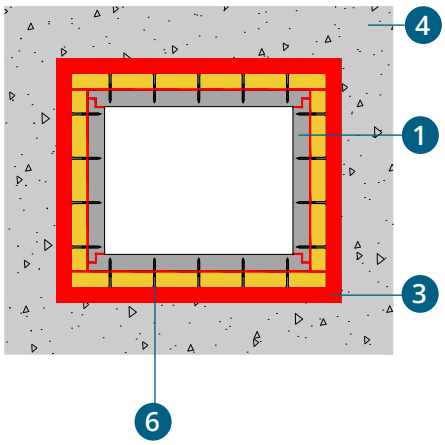


+ * Caulking may be carried out using fire-stop polyurethane foam or stone wool (26 kg/m³ minimum).

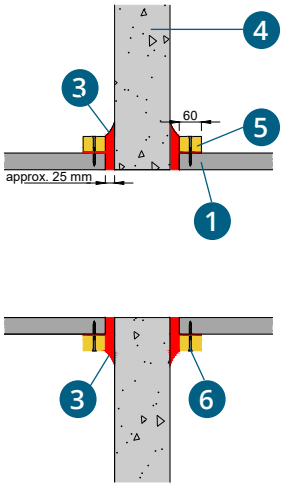
2. NON-TRAVERSING HORIZONTAL DUCT

Method of caulking a non-traversing horizontal duct :

Top view



Side view



1. GEOTEC® S board
2. Caulking* (max 25 mm)
3. Geocol® Glue
4. Concrete wall
5. GEOTEC® A Batten
6. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120
   or galvanized steel staples*
   75 x 10 x 2 mm

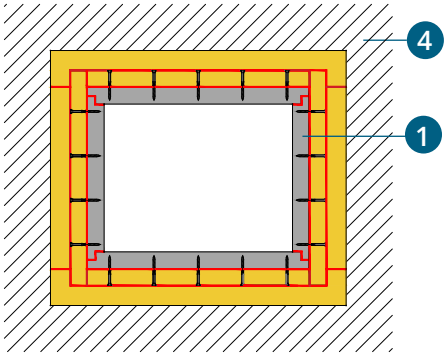
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

2.5. Wall penetrations

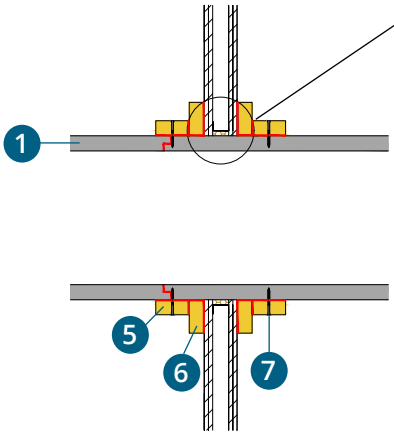
B) Flexible wall

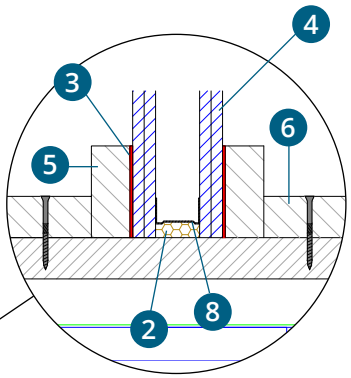
THROUGHOUT OF LIGHTWEIGHT PLASTERBOARD PARTITION

Top view



Side view





+ * Caulking may be carried out using fire-stop polyurethane foam or stone wool (26 kg/m³ minimum).

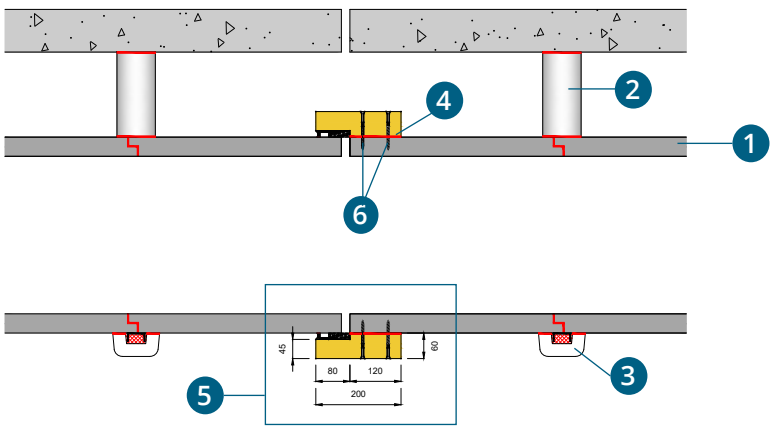
1. GEOTEC® S board
2. Caulking* (max. 25 mm)
3. Geocol® Glue
4. Fire resistant lightweight partition
5. GEOTEC®A Batten (100 mm x thickness)
6. GEOTEC®A Batten (100 mm x thickness) (against the lightweight partition)
7. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120
   or galvanized steel staples*
   75 x 10 x 2 mm
8. Rail

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

2.6. Dilation joints

Treatment of the crossing of an expansion joint

In the construction of a building, expansion joints must be envisaged in accordance with pre-established rules. It is therefore common for horizontal ducts to pass through expansion joints. It is then necessary to carry out a specific treatment.



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. GEOTEC® A Expansion joint element*
6. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm

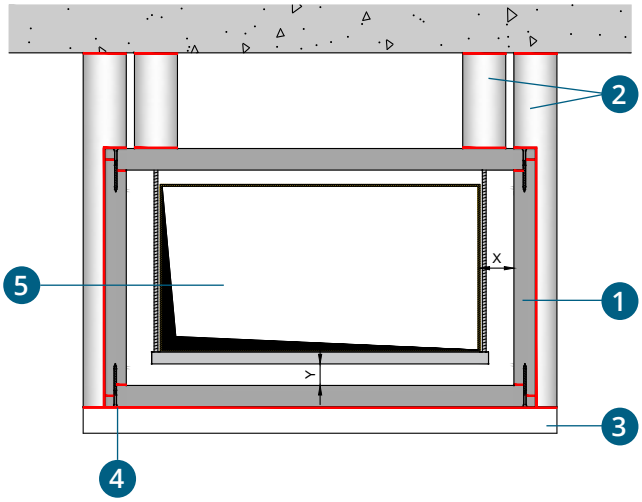
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

* Technical datasheet of Expansion joint element page 24

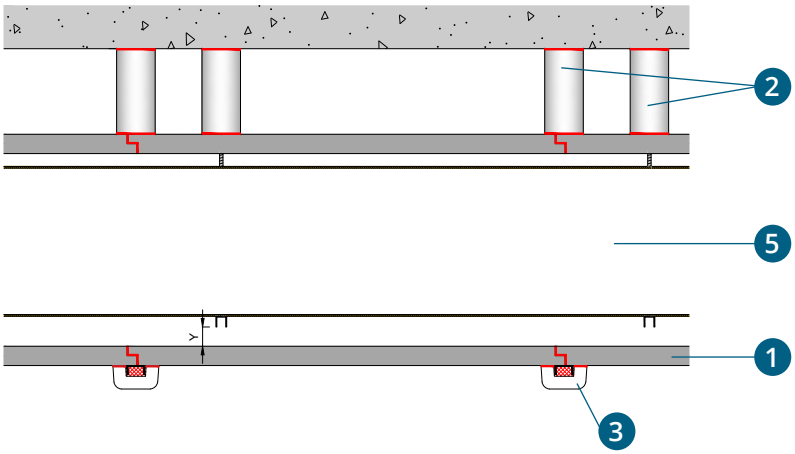
2.7. Protection of steel ducts

The GEOTEC® product range also allows the protection of existing steel ventilation ducts by directly applying GEOTEC®S boards around the duct. These existing ventilation ducts may be made of galvanised or stainless sheet steel and must have their own support system.

Front view



Side view



Dimensions max 2500x1500 mm EI 30 / 60 (S) and EI 90 / 120 (S)

Extension 16/3 on EFR-16-002202 and EFR-16-002204

1. GEOTEC® S board
2. GEOTEC® A 1/2 shell + threaded rod
3. GEOTEC®A U-plaster element + Steel U-profile
4. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm
5. Steel ventilation duct (must have its own supporting system)

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

Dilatation margen:
x : in width
y : in height
A minimum gap (see x and y) of 19 mm/m must be maintained between the inner metal duct and the GEOTEC® ventilation duct.

2.8. Various configurations

Change of cross-section

Corner connection

Take-off point on horizontal duct

Sloping

Floor installation ≤ 600 mm

Floor installation Large section

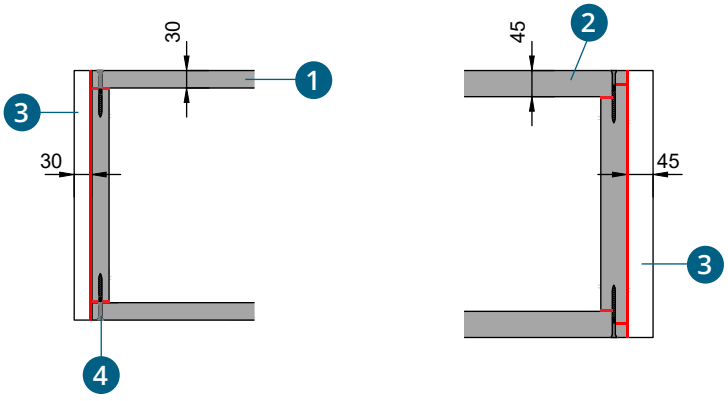
3. VERTICAL SYSTEM

3.1. Assembly principle

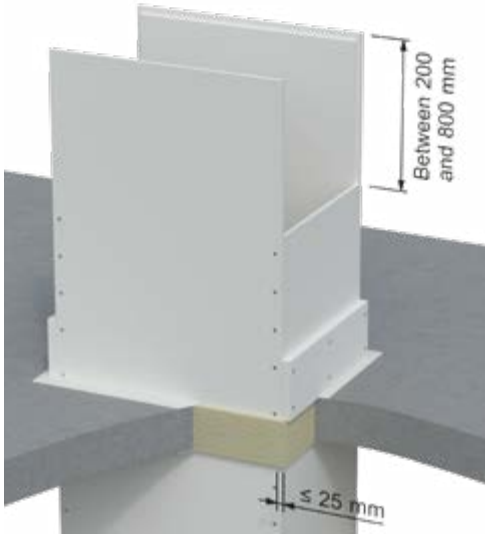
The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previousy treated with GEOCOL® glue.

When constructing vertical ducts, the board joints are offset between 2 contiguous faces (between 200 and 800 mm) so as to achieve optimal mechanical strength for the duct.

Cross-sectional view



EI 30/60 (S) EI 90/120 (S)



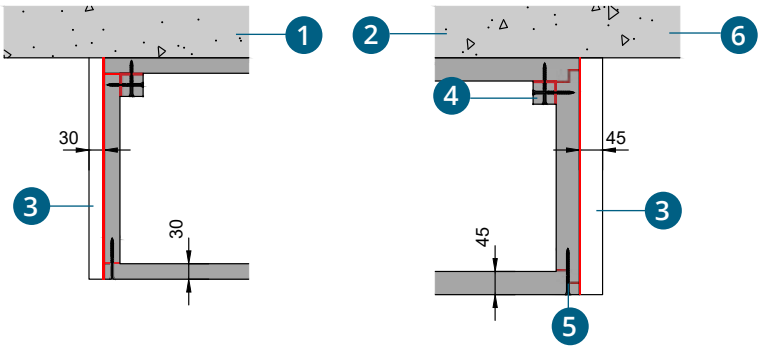
1. GEOTEC® S30 board
2. GEOTEC® S45 board
3. GEOTEC®A Reinforcement collar**
4. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

**** Height between 2 load-bearing systems limited to 7m with 2 supports and to 10m with 3 or 4 supports.**

Duct against a wall

Cross-sectional view



EI 30/60 (S) EI 90/120 (S)

1. GEOTEC® S30 board
2. GEOTEC® S45 board
3. GEOTEC®A Reinforcement collar**
4. GEOTEC®A Batten
5. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Concrete wall

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

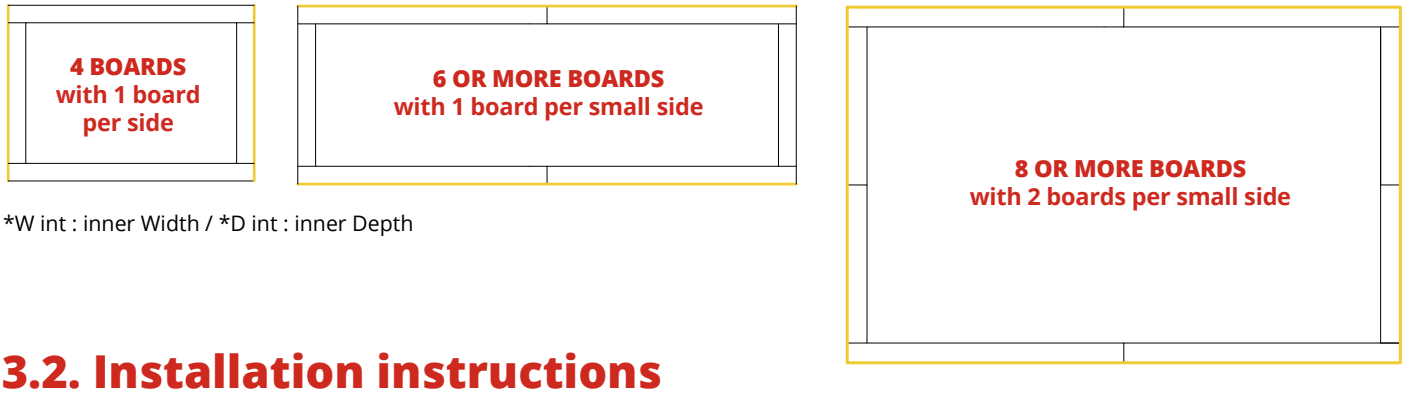
**** Height between 2 load-bearing systems limited to 7m with 2 supports and to 10m with 3 or 4 supports.**

GENERAL RULE: *see on page 32*

Concerning the load-bearing systems

For ducts consisting of 4-board casings (**W int* ≤ 1050 mm** and **D int* ≤ 1100 mm** for **EI 30/60 S** and **W int ≤ 1000 mm** and **D int ≤ 1050 mm** for **EI 90/120 S**), the load bearing system can be carried out on 2 sides only.

In the case of large cross-sections ducts, the number of boards per duct side can increase up to 4.
In this case, load bearing system must be carried out on faces consisting of more than 2 boards.



*W int : inner Width / *D int : inner Depth

3.2. Installation instructions

Internal Duct Width & Depth	Ventilation duct	Smoke extraction duct	Page
EI 30/60: W_{int} ≤ 1050 mm & D_{int} ≤ 1100 mm and **EI 90/120**: W_{int} ≤ 1000 mm & D_{int} ≤ 1050 mm	Standard Installation.		**70**
EI 30/60: W_{int} > 1050 mm & D_{int} ≤ 1100 mm* and **EI 90/120**: W_{int} > 1000 mm & D_{int} ≤ 1050 mm	**Solution 1:** Using GEOTEC® A Cover strip.		**71**
	Solution 2: Using GEOTEC® A internal reinforcement collar (if W_{int} or D_{int} ≤ 1000 mm)		**72**
EI 30/60: W_{int} > 1050 mm & D_{int} > 1100 mm and **EI 90/120**: W_{int} > 1000 mm & D_{int} > 1050 mm	**Solution 1:** Using GEOTEC® A Cover strip.		**73**
	Solution 2: Using GEOTEC® A internal reinforcement collar.		**74**

* or the opposite

Note:

In a case of a vertical duct, installed with multiple boards on at least 2 sides, the vertical joint between the boards must be reinforced.

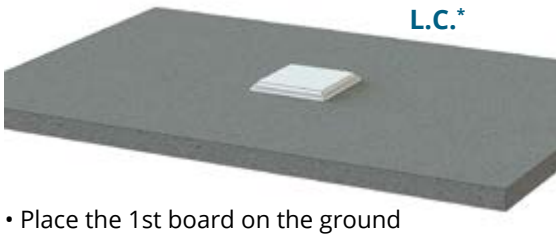
Solution 1 : Using cover strips
Regardless of the dimensions of the ducts when the level of pressure < or = à + - 500 Pa, the vertical joints are treated with internal or external cover strips staggered at 120 mm intervals along the length of the duct. For a level of pressure above +- 500Pa, then the cover strips must be installed both inside and outside the duct.

Solution 2 : Using internal reinforcement collars
Regardless the level of pressure inside the duct, it is also possible to reinforce the vertical joint by using a horizontal reinforcement collar every meter (see page 70).

Standard installation principle

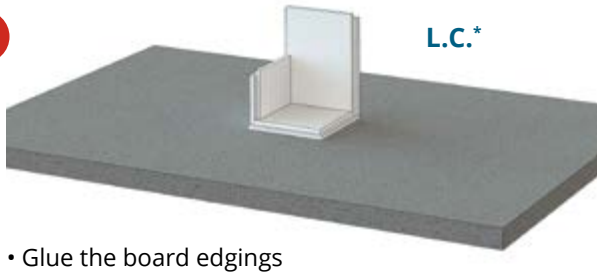
CLICK and watch
THE VERTICAL DUCT ASSEMBLY on video.

1



- Place the 1st board on the ground

2

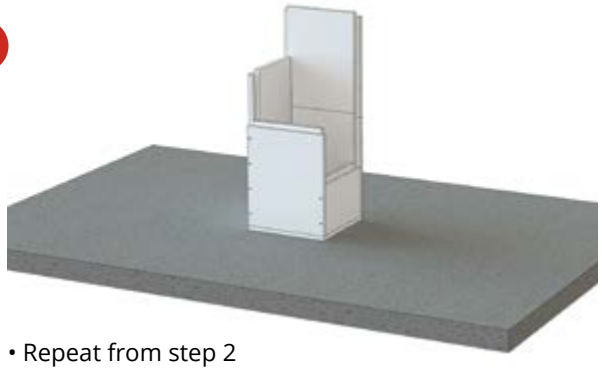


- Glue the board edgings
- Screw the 2 contiguous boards with woodscrews every 120 mm
- Observe an offset of 200 to 800 mm between the horizontal joints

3

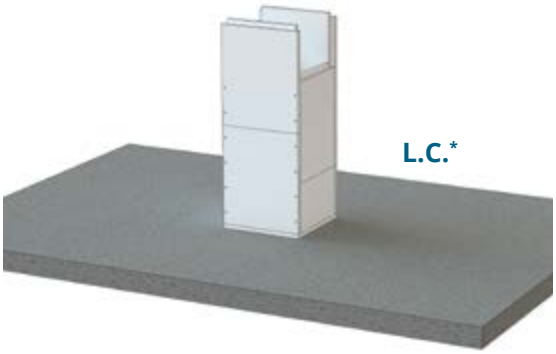
- Glue the board edgings
- Place the other 2 vertical boards forming the 1st chamber
- Screw the boards together with woodscrews every 120 mm

4

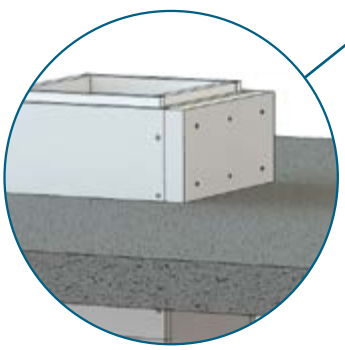


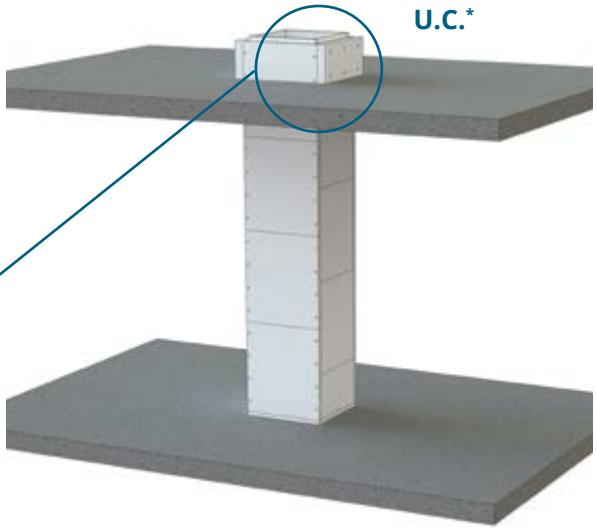
- Repeat from step 2
- Glue and fit together with the previous sections

5



6



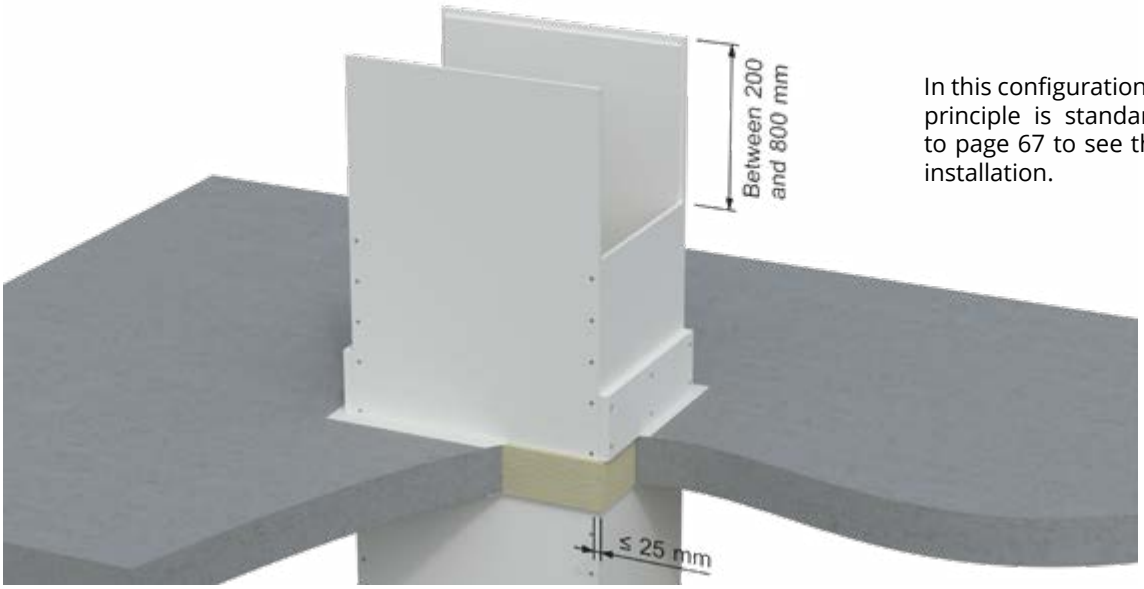


- Use glue and screws to place the reinforcement collars on 2 sides of the duct (bearing on the floor). (Height limited to 7 m with 2 supports, and to 10 m with 3)

*L.C.: Lower ceiling - U.C.: Upper ceiling

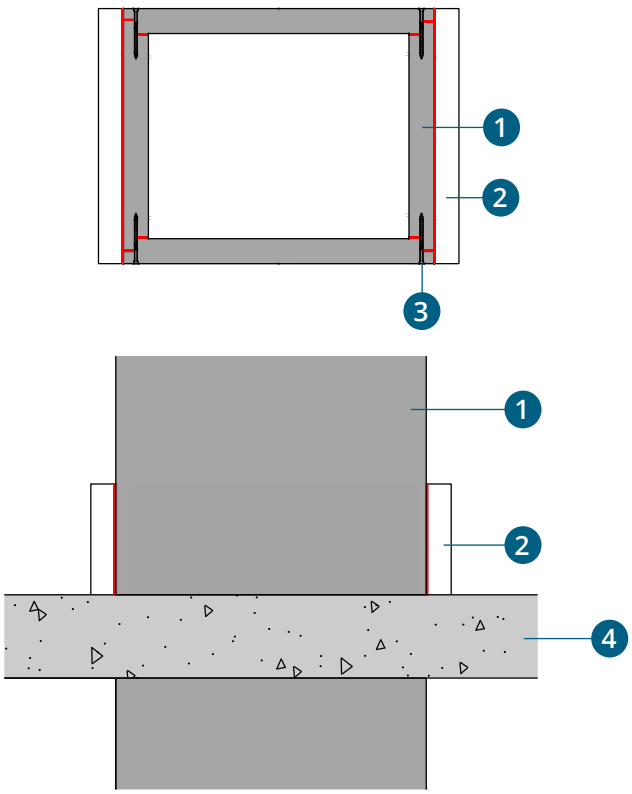
EI 60: W int* ≤ 1050 mm & D int* ≤ 1100 mm (or W int ≤ 1140 mm & D int ≤ 1200 mm if using GEOTEC® SX 30 Boards) & EI 120: W int ≤ 1000 mm & D int ≤ 1050 mm (or W int ≤ 1100 mm & D int ≤ 1200 mm if using GEOTEC® SX 45 Boards)

*W int: internal width / *D int: internal depth



In this configuration, the installation principle is standard, please refer to page 67 to see the details of the installation.

Cross-sectional view



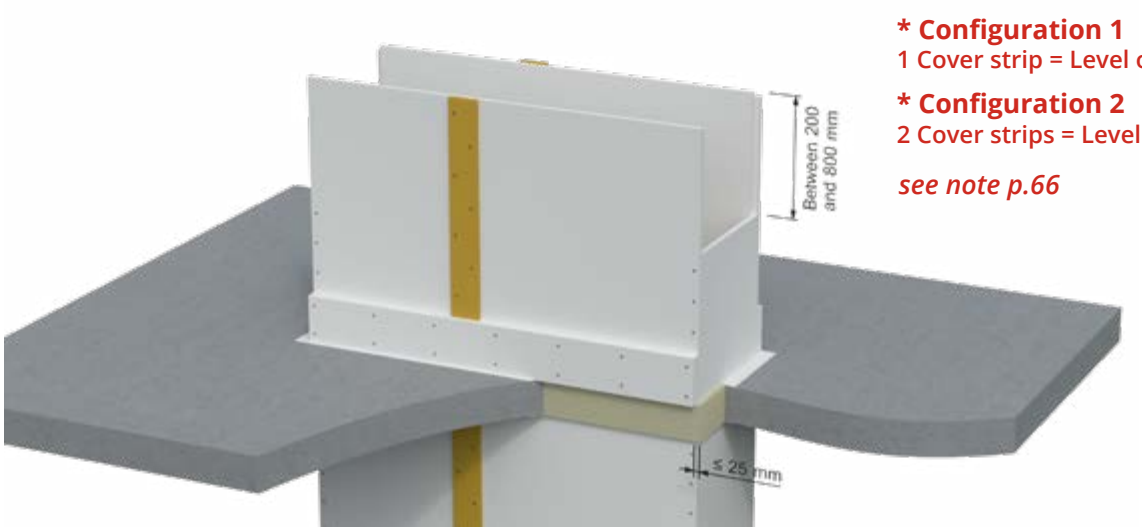
1. GEOTEC® S board
2. GEOTEC® A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

EI 60: W int* > 1050 mm & D int* ≤ 1100 mm (or the opposite)
& EI 120: W int > 1000 mm & D int ≤ 1050 mm (or the opposite)

*W int: internal width / *D int: internal depth

Solution 1: using the GEOTEC® A Cover strip*

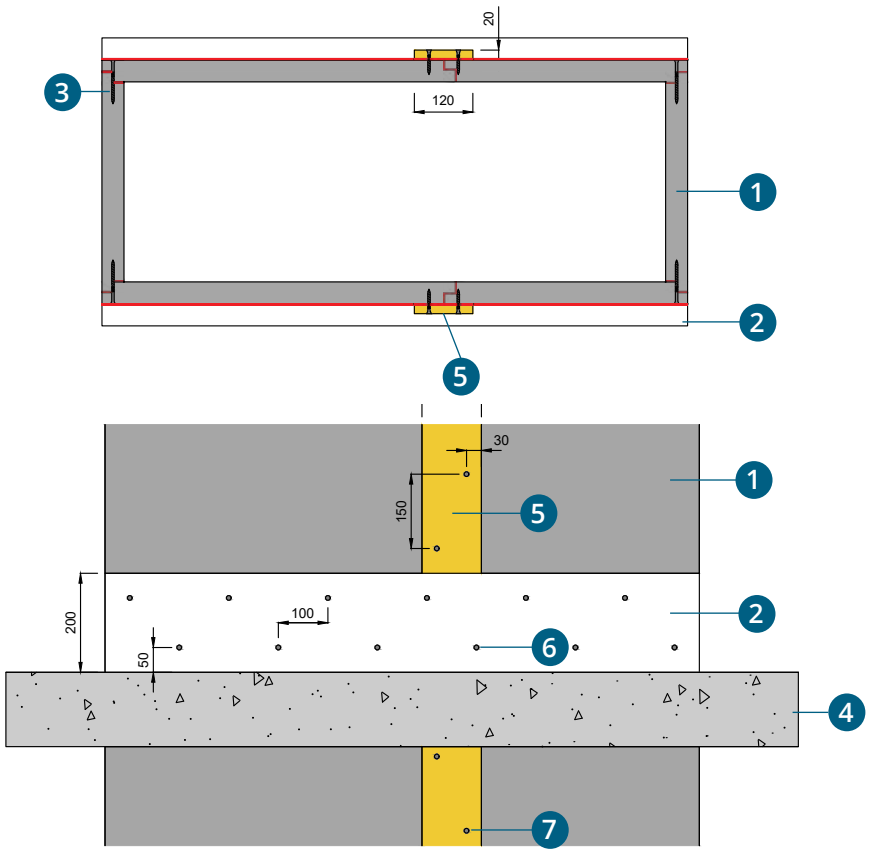


*** Configuration 1**
1 Cover strip = Level of pressure ≤ +/- 500 Pa

*** Configuration 2**
2 Cover strips = Level of pressure > +/- 500 Pa

see note p.66

Cross-sectional view



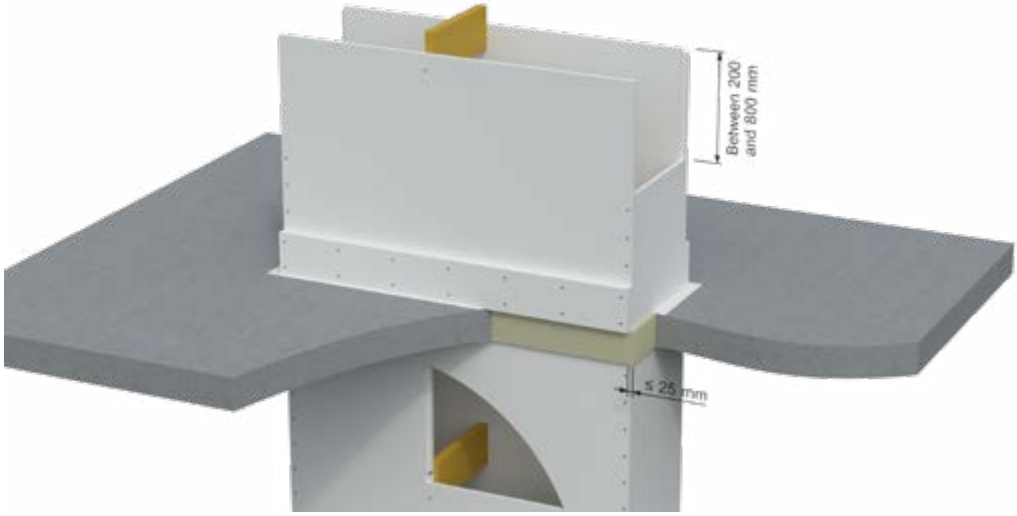
1. GEOTEC® S board
2. GEOTEC® A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. GEOTEC® A Cover strip (exterior or interior)
6. VBA Screws
   Ø 5 x 50 (EI 30/60 S)
   Ø 5 x 80 (EI 90/120 S)
7. VBA Screws
   Ø 5 x 50 (EI 30/60/90/120 S)

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

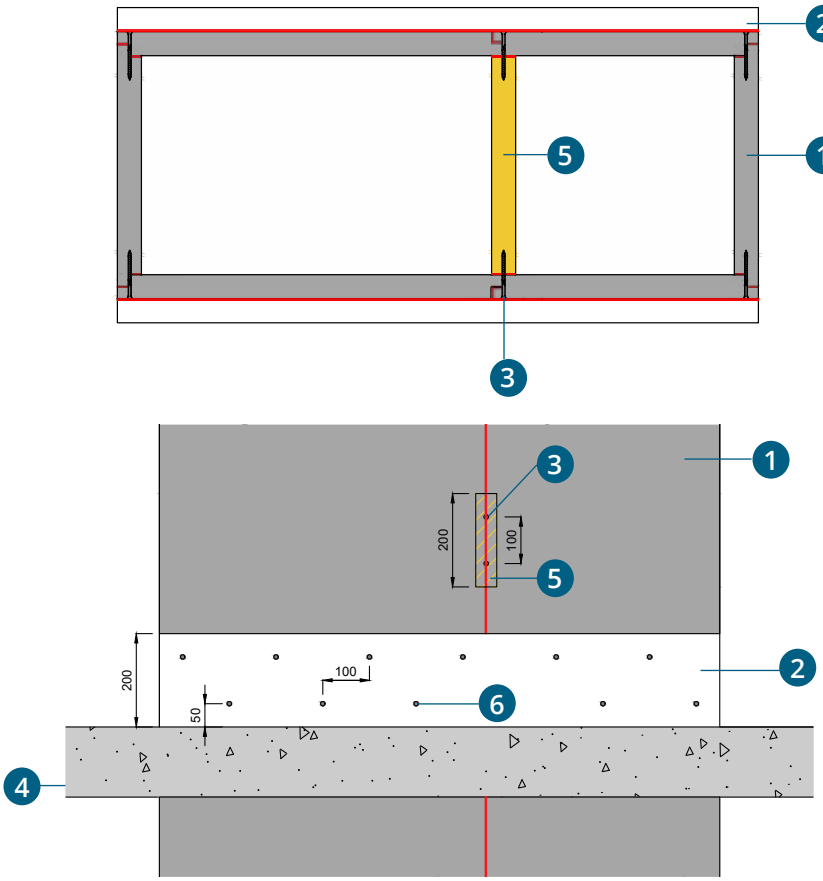
EI 60: W int* > 1050 mm & D int* ≤ 1000 mm (or the opposite) & EI 120: W int > 1000 mm & D int ≤ 1000 mm (or the opposite)

*W int: internal width / *D int: internal depth

Solution 2: using the GEOTEC® A internal reinforcement collar *(See note page 66)*



Cross-sectional view



1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar (load-bearing system)
3. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. GEOTEC®A Reinforcement collar 200 x duct thickness (every 1000 mm)
6. VBA Screws
   Ø 5 x 50 (EI 30/60 S)
   Ø 5 x 80 (EI 90/120 S)

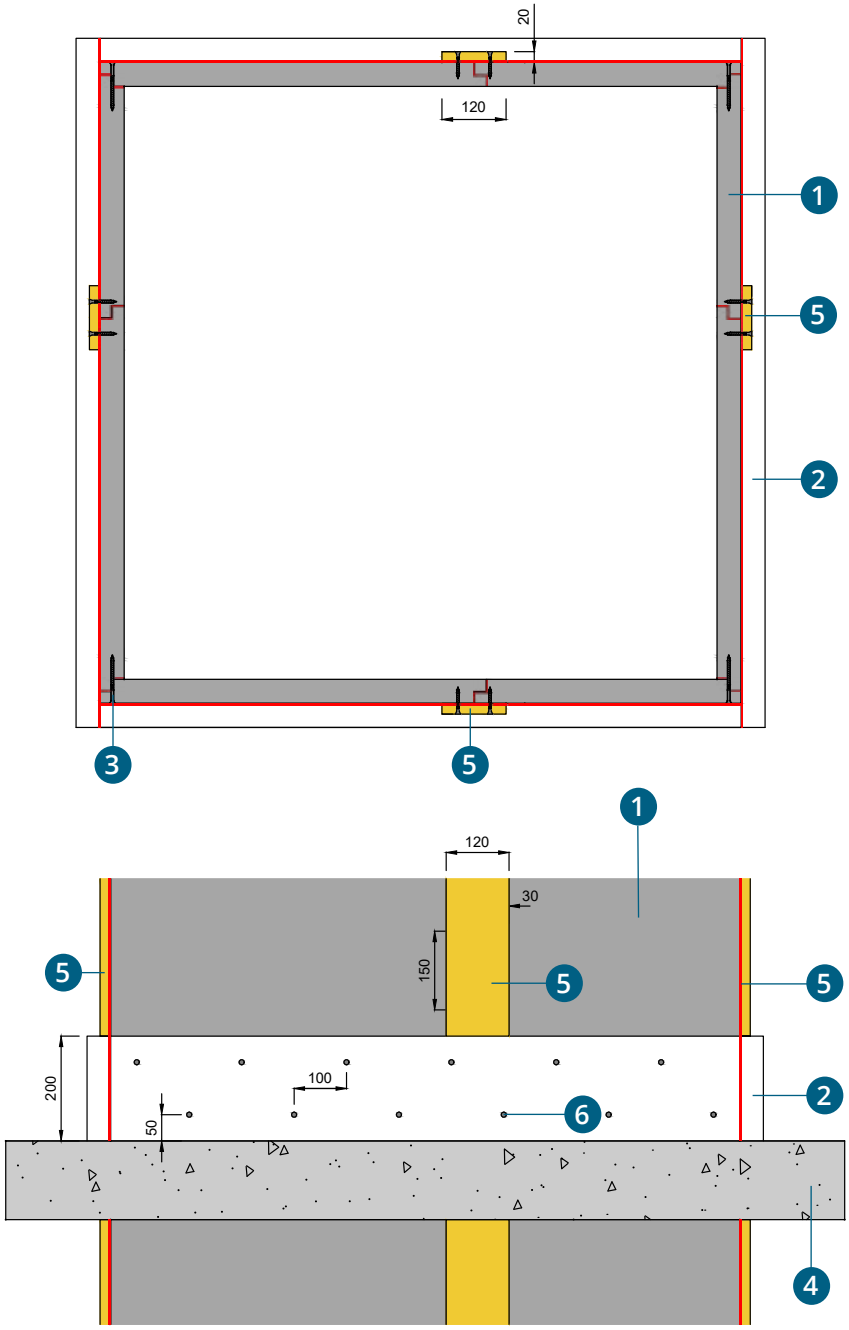
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

EI 60: W int* > 1050 mm & D int > 1100 mm
& EI 120: W int > 1000 mm & D int > 1050 mm

*W int : internal width / *D int : internal depth

Solution 1: using the GEOTEC® A Cover strip*

Cross-sectional view



*** Configuration 1**
1 Cover strip = Level of pressure ≤ +/- 500 Pa

*** Configuration 2**
2 Cover strips = Level of pressure > +/- 500 Pa

see note p.66

1. GEOTEC® S board
2. GEOTEC® A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
4. Concrete slab
5. GEOTEC® A Cover strip (exterior or interior)
6. VBA Screws
   Ø 5 x 50 (EI 30/60/90/120 S)
   Ø 5 x 80 (EI 90/120 S)
7. VBA Screws
   Ø 5 x 50 (EI 30/60/90/120 S)

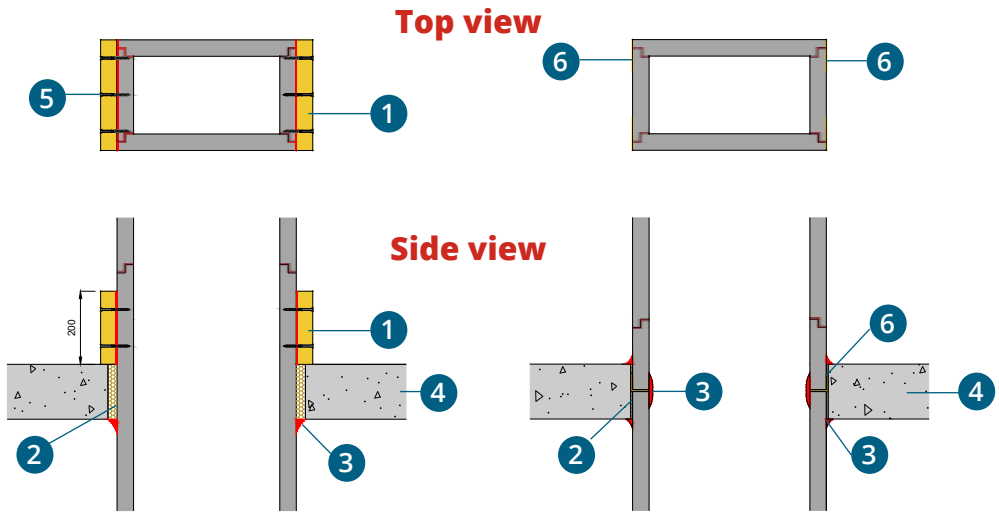
3.3. Alternative support principles

The various load bearing principles shown below are suitable for ducts consisting of 4-board casings (one board per side). In the case of large section ducts (more than 4 boards per casing), these alternative systems will have to be adapted **(see page 66)**.

1. Ducts not attached to walls

A) Support by 2 parallel GEOTEC®A reinforcement collars on the floor.

B) Support by 2 parallel corner-pieces on the slab.

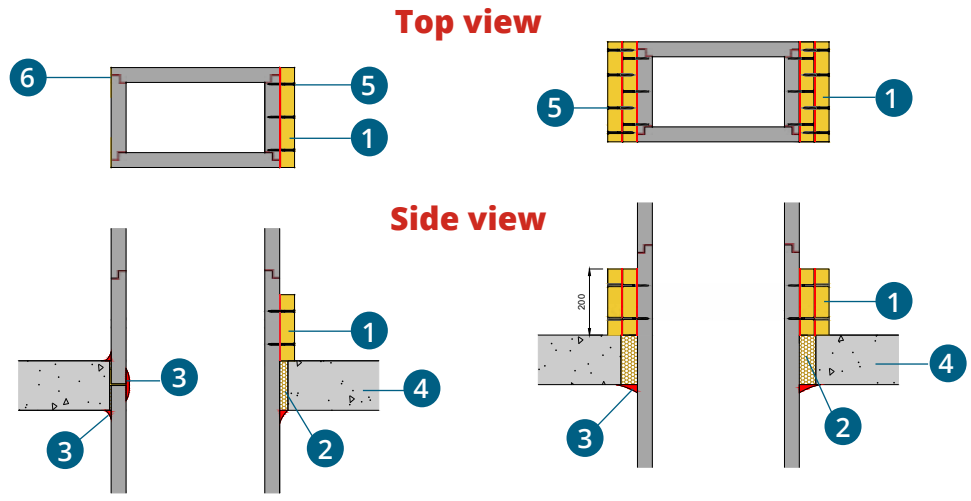


1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

   EI 30/60 (S): 35x35x4 mm.
   EI 90/120 (S): 50x50x5 mm.

C) Support by 1 GEOTEC®A reinforcement collar on floor + 1 parallel corner-piece on the slab.

D) Support by 2 double parallel GEOTEC®A reinforcement collars on the floor.



1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

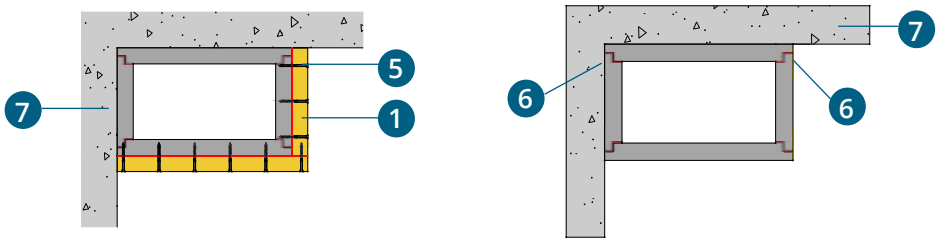
   EI 30/60 (S): 35x35x4 mm.
   EI 90/120 (S): 50x50x5 mm.

2. Ducts adjacent to a wall corner

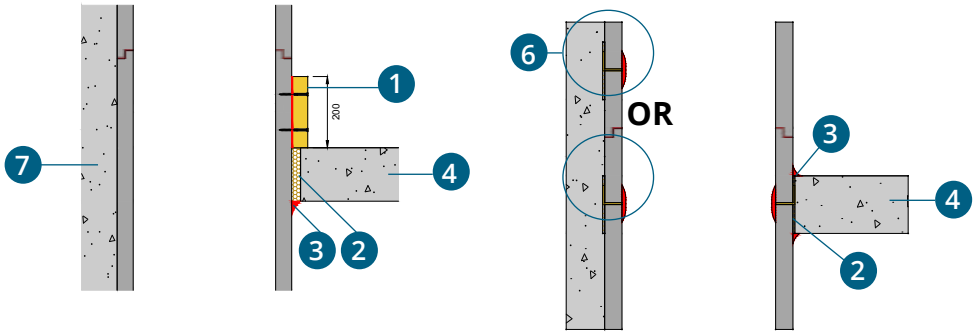
E) Support by 2 perpendicular GEOTEC®A reinforcement collars on the floor.

F) Support by 2 parallel corner-pieces on the slab and wall.

Top view



Side view



1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

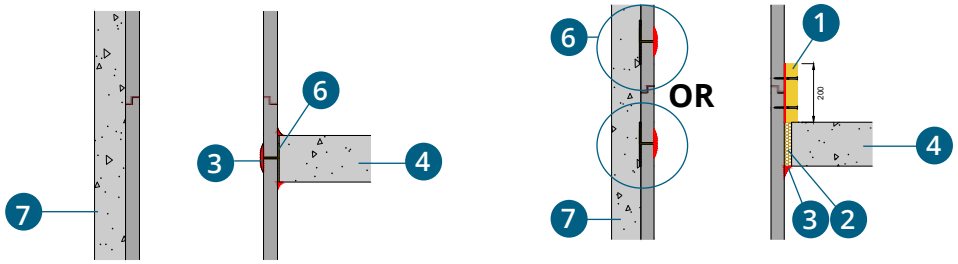
   EI 30/60 (S): 35x35x4 mm.
   EI 90/120 (S): 50x50x5 mm.
7. Concrete wall

G) Support by 2 perpendicular corner-pieces on the slab.

H) Support by 1 GEOTEC®A reinforcement collar on the floor + 1 corner-piece in parallel on the wall.

Top view

Side view



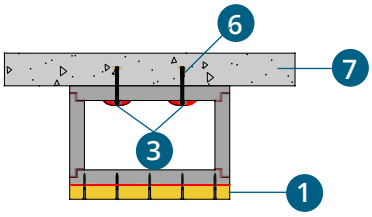
1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

   EI 30/60 (S): 35x35x4 mm.
   EI 90/120 (S): 50x50x5 mm.
7. Concrete wall

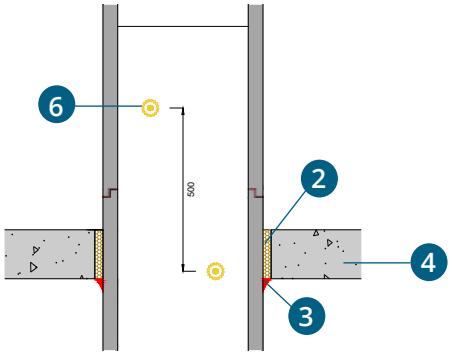
3. Ducts adjacent to the wall

I) Support by threaded rods anchored to the vertical wall and other parallel supports.

Top view



Side view

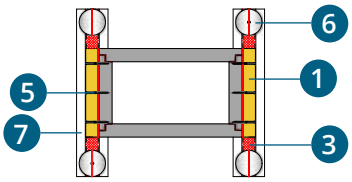


1. GEOTEC®A reinforcement collar (glued & screwed) or corner piece
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Mechanical fixation
7. Concrete wall

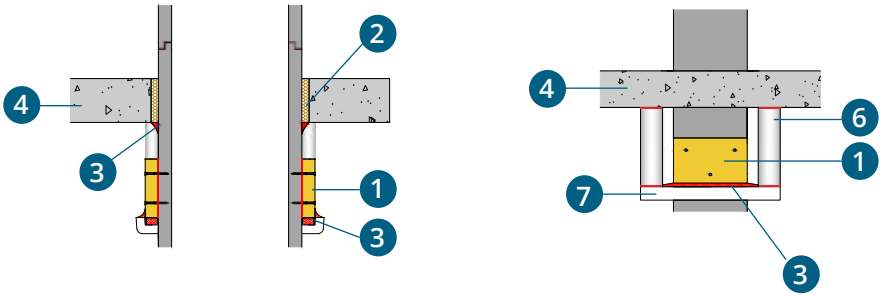
4. Sub-floor level support

J) Support by 2 parallel GEOTEC®A reinforcement collars under the floor.

Top view



Side view



1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. GEOTEC®A Half shells + **Ø8** threaded rods
7. GEOTEC®A U-plaster element + Steel U-profile **41x21**

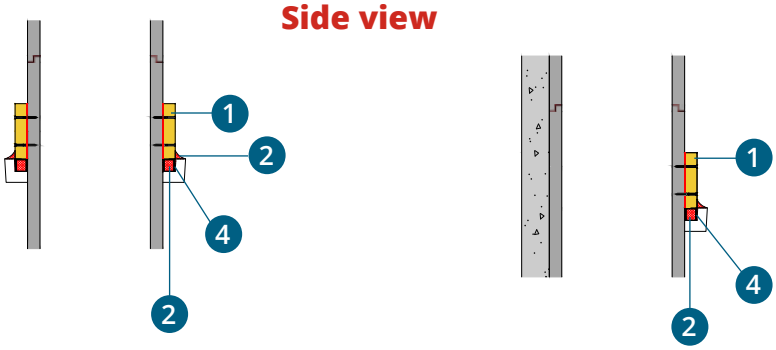
5. Console supported ducts

K) Support by 2 parallel GEOTEC®A reinforcement collars on brackets fixed in the vertical wall.

L) Support by 2 perpendicular GEOTEC®A reinforcement collars on brackets fixed in the vertical wall.

Top view

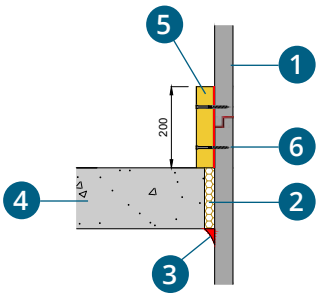
Side view



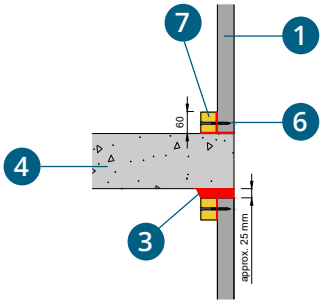
1. GEOTEC®A reinforcement collar (glued & screwed) placed on brackets
2. GEOCOL® Glue
3. Screws
4. Protected appropriate brackets
5. Concrete wall

3.4. Floor penetrations

1. Method of caulking a continuous vertical duct



2. Method of caulking a non-traversing vertical duct



1. GEOTEC® S board
2. Caulking* (max 25mm)
3. GEOCOL® Glue
4. Concrete floor
5. GEOTEC®A internal reinforcement collar
6. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
7. GEOTEC®A Batten

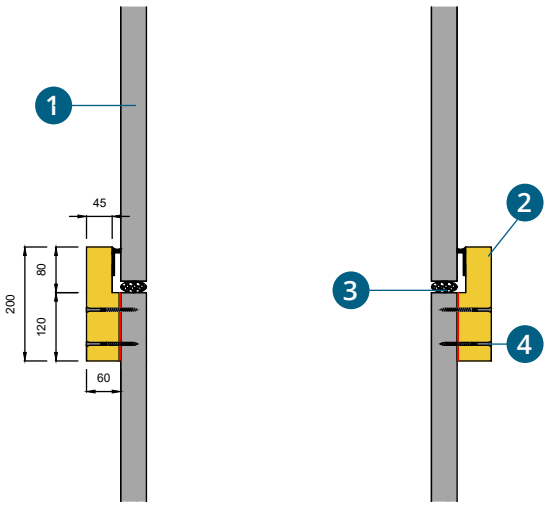
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

\+ * Caulking may be carried out using fire-stop polyurethane foam or stone wool (26 kg/m³ minimum).

3.5. Dilatation joints

Treatment of the crossing of an expansion joint

In the construction of a building, expansion joints must be envisaged in accordance with pre-established rules.
It is therefore common for vertical ducts to pass through expansion joints. It is then necessary to carry out a specific treatment.



1. GEOTEC® S board
2. GEOTEC® A Expansion joint element*
3. Mineral fiber rope **Ø40**
4. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

* Technical datasheet of Expansion joint element page 24

3.6. Various configurations

Vertical deviation

Take-off point on a vertical duct

installation of a fire damper

installation of a smoke shutter

INTERACTIVE CONTENT
Click to access

SERVICE DUCTS & SHAFTS

1. SYSTEM GENERAL OVERVIEW

The fire protection of service ducts and shafts requires a specific approach according to EN 1366-5 and focuses on a fire resistance EI 60/120 i ↔ o. The integrity (E) and thermal insulation (I) are considered during a minimal time, also taking into account the sense of the fire propagation:

- protect services from external fire (o → i), or to
- protect compartments from internal fire (i ← o)

The solutions are in line with the EN 1366-5 test standard and the EN 13501-2 classification.
These services can consist of various types (pipework for gasses, electrical installations, medical fluids...).
Local regulations and requirements need to be considered whilst responding to the European regulatory setting.

The solutions in this technical documentation guarantee a fire resistance upto two hours.
For fire resistant solutions upto EI180(S) and EI240(S), please check **www.geostaff.fr** or contact your local Geostaff partner.

1.1 GEOFLAM® C-Light

Geoflam© C-Light is a prefabricated channel duct on which the cover is fixed. The prefab-nature of this solution allows a quick & flexible installation in various sizes ***(see page 18)***.
The combination of the wide range of installation methods both horizontally as vertically, and its fire resistance of 2 hours (EI120 i <-> o), makes this a preferred multi-purpose product.

1.2 GEOTEC® S Boards

When larger dimensions of service protection are necessary, the Geotec© S and Geotec© SX boards can be used to make a certified installation of EI60 i ↔ o with the Geotec© S(X) 30mm or EI120 i ↔ o with the Geotec© S(X) 45mm board thicknesses. *(see page 15/16)*

The protection of services can be 4-sided, 3-sided or 2-sided depending on the installation situation. For vertical protection of services, a 1-sided protection is also possible.

2. GEOFLAM® C-LIGHT

Certificates: fire resistance classification report				
Tests in accordance with EN 1366-5	**Thickness (mm)**	**EI i ↔ o**	**Internal width (mm)**	**EFECTIS classification documents**
Horizontal and vertical Fire Protection of Service Ducts & Shafts	35	120	50 x 50 to 350 x 200	Cert EFR-14-A-001050 Rev. 1

2.1. Horizontal system

The fire resistant Geoflam© C-Light channels can be installed both before as after techniques are installed.

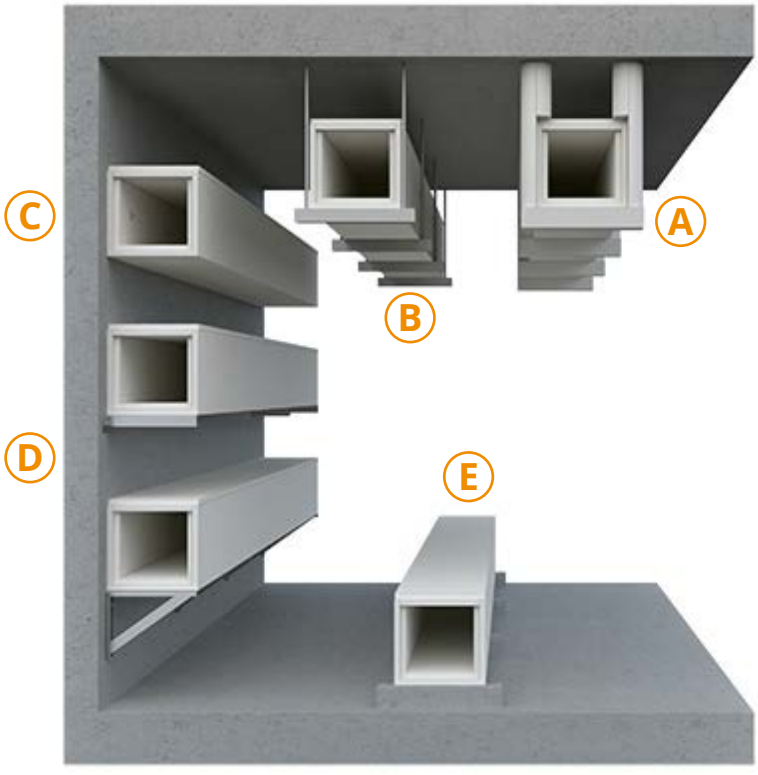
When the Geoflam© C-Light is installed before installation of the services, the prefabricated channel can serve as suspension and carrying system of the services.

Geoflam© C-Light can bear **50kg/m** load of services when properly supported. The upfront installation of this system allows for overall cost savings in installation time and material.

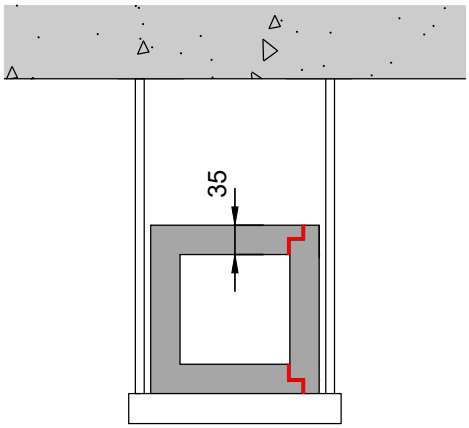
When the Geoflam® C-Light is installed after techniques are installed and when the existing supports of the elements to be protected have not been designed to be fire resistant, it shall be compulsory to protect the external parts of these supports against fire using Geoflam® A elements.

The various installation methods as described below make the Geoflam© C-Light a perfect fit for many installations.
After the U-shaped prefab element is put and the techniques are installed, gluing the cover closes the open side. An offset joint improves the stability but is not a must.

Fiber reinforced caulking or 'polochon' (by using Geoplatre and sisal fibers) need to be considered to improve the strength of the combined prefab elements especially for cables.



+ If needed, the cover can also be placed on the side in any case (see example below)

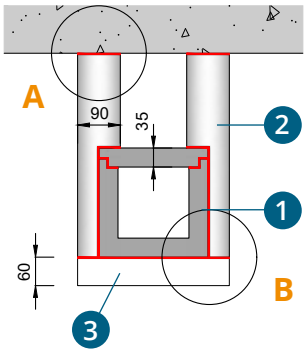


1. Ceiling installation

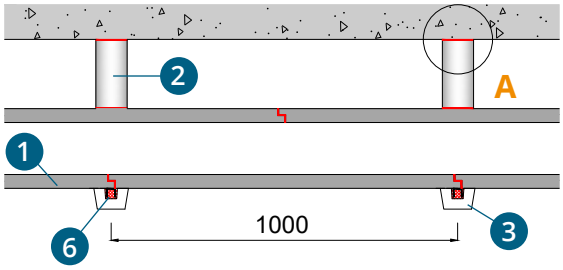
A) Standard insulated

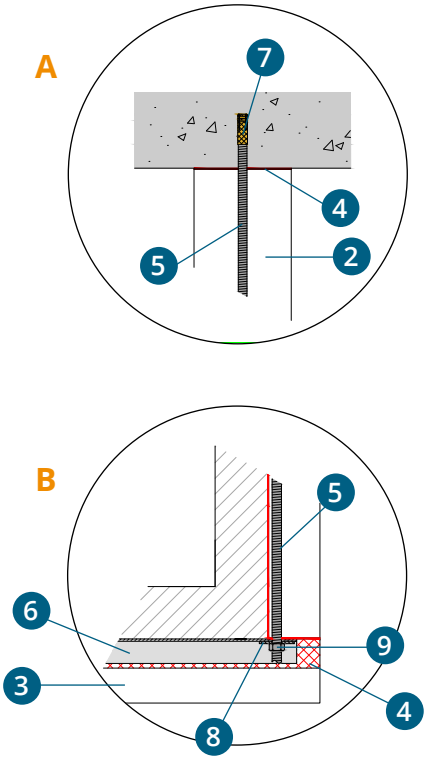
The suspension system of threaded rods (M8) and rails (25/3x2 or of 21x41x21mm) is protected by Geotec®A ½ shells and Geotec®A U plaster elements.

Front view



Side view





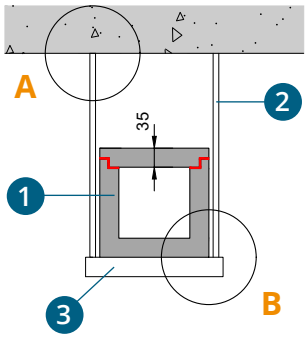
1. Geoflam® C light channel
2. Geoflam® A 1/2 shell
3. Geoflam® A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **25x25** or **21x41**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**

B) Standard non insulated

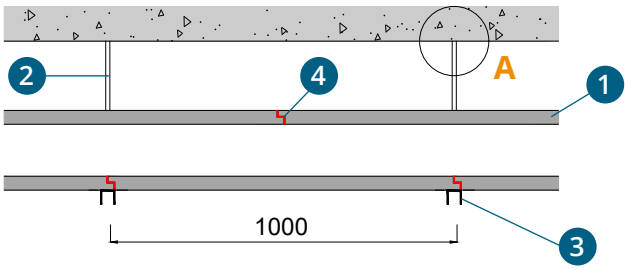
When both heavier threaded rods (M12) and rails (41x41mm) are used, the suspension system needs no further protection.

In this case, steel anchors have to be used.

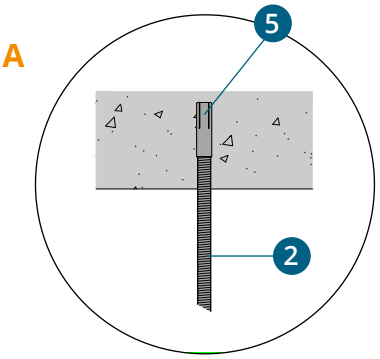
Front view

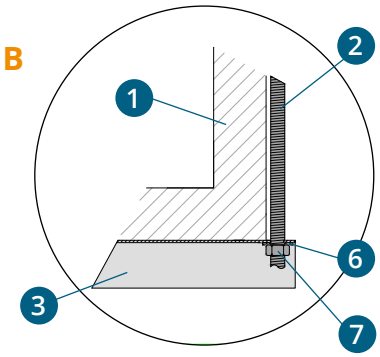


Side view



Extension 17/10 on EFR-14-A-001050 Rev. 1





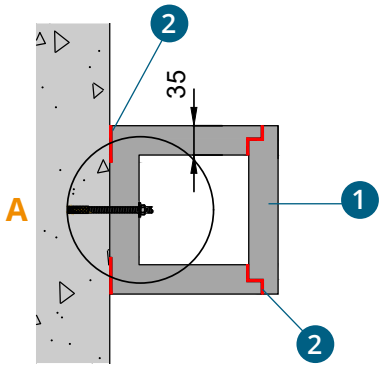
1. Geoflam® C light channel
2. Threaded rod **Ø12**
3. Steel U profile **41x41**
4. Geocol® Glue
5. Steel anchor **Ø12**
6. Galvanized washers **Ø12**
7. Galvanized nuts **Ø12**

2. Wall installation

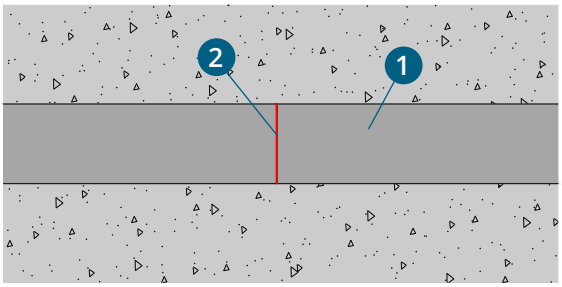
C) Feathered installation

The prefab U-element is fixed directly to the wall with a minimum of 2 anchors by section element.

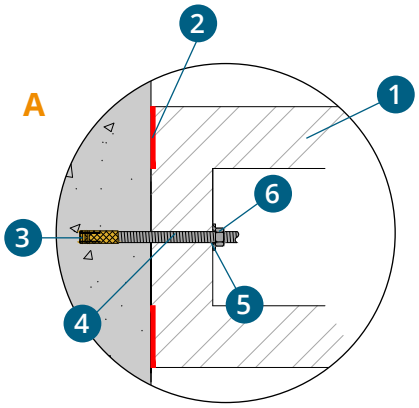
Front view



Side view



Extension EFR-15-000916 on EFR-14-A-001050 Rev. 1

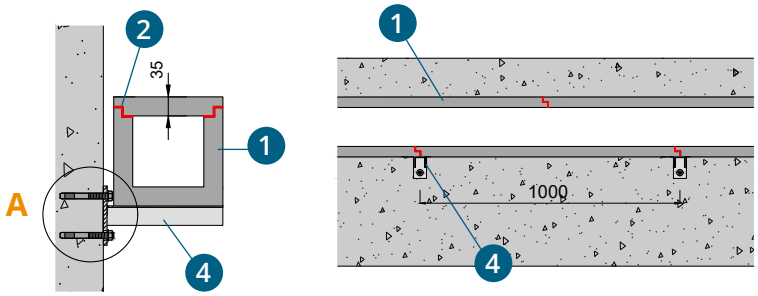


1. Geoflam® C light channel
2. Geocol® Glue
3. Brass anchor **Ø8**
4. Threaded rod **Ø8**
5. Galvanized washers **Ø8**
6. Galvanized nuts **Ø8**

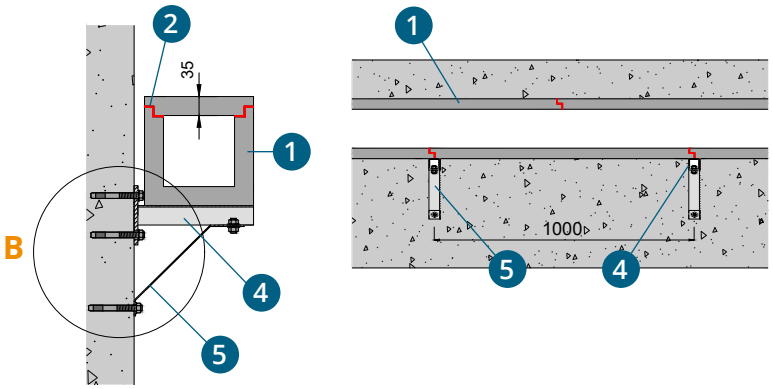
D) Bracket Installation

The Geoflam© C-Light is installed on brackets that are fixed to the wall according to the specifications of the producer.
A metal strut (F) can be used when heavier loads are at stake.

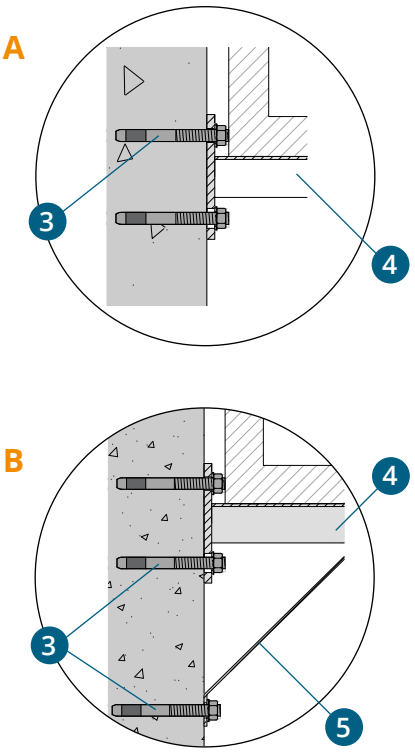
1 **Front view** **Side view**



2 **Front view** **Side view**



Extension 17/10 on EFR-14-A-001050 Rev. 1



1. Geoflam® C light channel
2. Geocol® Glue
3. Expansion anchors
4. Metal bracket
5. Load strut

3. Floor installation

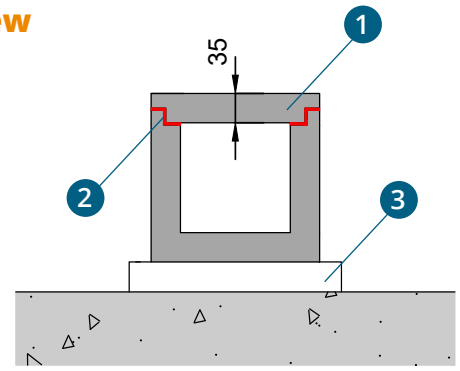
E) Installation on waterproof blocks

The Geoflam© C-Light channels are glued together with Geocol©.
Attention needs to be paid to stress-friction onto the joints of the elements – e.g. pulling cables through the Geoflam© C-Light channels might cause joint damages.

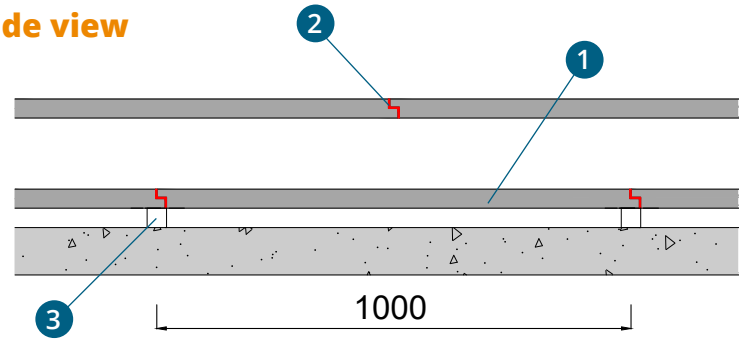
Fiber reinforced caulking or 'polochon' (by using Geoplatre and sisal fibers) need to be considered to improve the strength of the combined prefab elements especially for cables.

The cover is afterwards glued onto the open side using Geocol glue©.

Front view



Side view

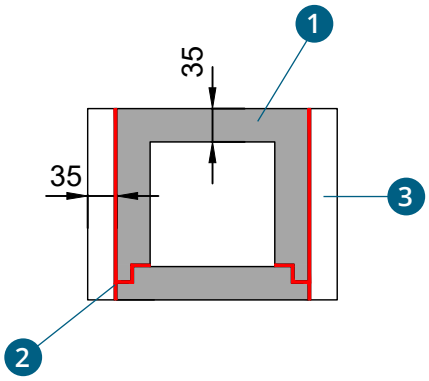


1. Geoflam® C light channel
2. Geocol® Glue
3. Waterproof blocks

2.2. Vertical system

The vertical installation of the Geoflam© C-Light channels can be stand-alone, against the wall or in the corner. Reinforcement collars, bearing on the floor, are put on both sides of the channel every 7m to bear the weight.

An offset installation of the cover (200-800mm) onto the channel improves the stability but is not a must.

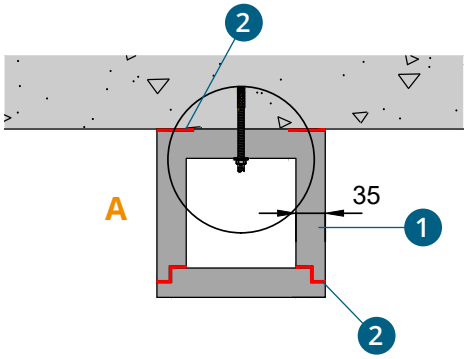


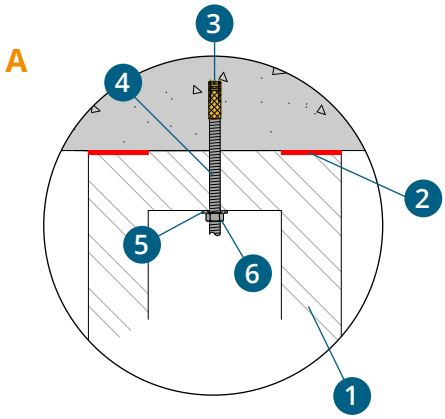
1. Geoflam® C light channel
2. Geocol® Glue
3. Geoflam® A reinforcement collar

+ More load bearing options can be considered on *page 140*

Feathered installation

When installing against a concrete wall, the prefab U-element can be fixed directly to the wall with a minimum of 2 anchors by section element.





1. Geoflam® C light channel
2. Geocol® Glue
3. Brass anchor **Ø8**
4. Threaded rod **Ø8**
5. Galvanized washers **Ø8**
6. Galvanized nuts **Ø8**

3. FOUR SIDED PROTECTION

Service ducts and shafts can be protected by installing a 4-sided protection that functions as a compartmentation.
The sense of the propagation of the fire is taken into account. When inside fire can occur, the metal suspension and/or supporting system of the Geotec® installation on the inside are also protected.

Certificates: fire resistance classification report				
Tests in accordance with EN 1366-5	**Thickness (mm)**	**EI i ↔ o**	**Internal cross-sections (mm)**	**EFECTIS classification documents**
Horizontal and vertical Fire Protection of Service Ducts & Shafts	30	30/60	50 x 50 to 2500 x 1500	Cert EFR-16-003067 Rev. 1
	45	90/120		

3.1. Horizontal system

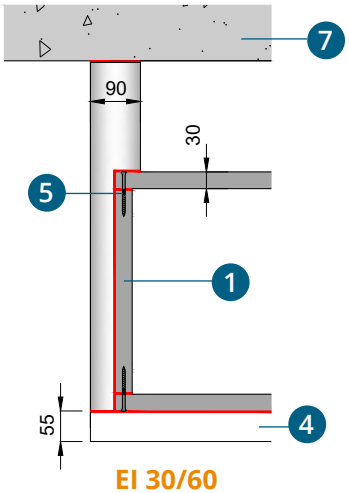
1. Assembly principles

The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®**glue.
Horizontal ducts are formed from 1000 mm sections; the boards are mounted without offset on the horizontal and vertical joints. However, in order to facilitate the installation, the upper boards can be offset from the rest of the duct.

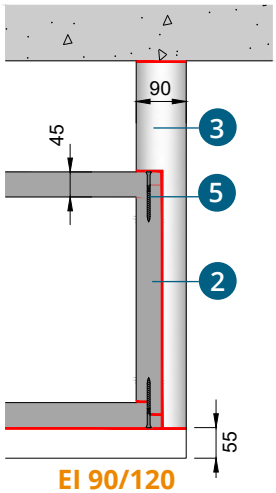
+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

Cross-sectional view

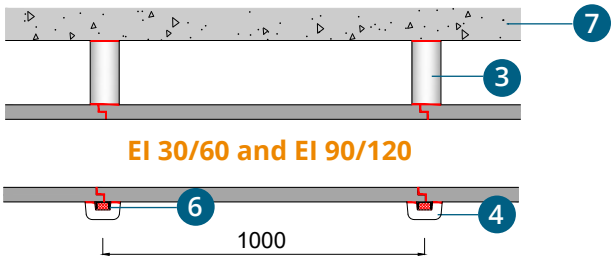


EI 30/60



EI 90/120

Longitudinal section view



EI 30/60 and EI 90/120

1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)

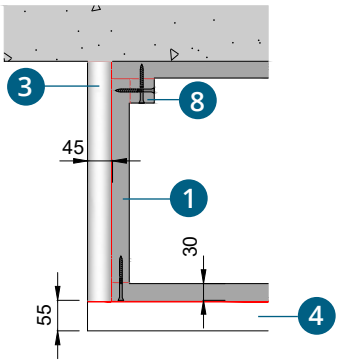
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Steel U-profile
   21 x 41 x 21
7. Concrete slab

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

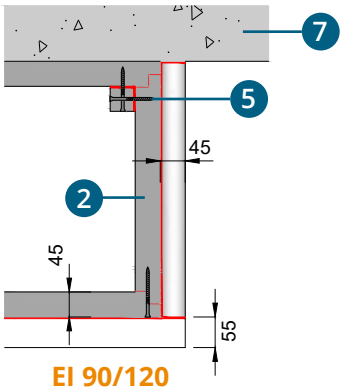
When the duct is against the slab:

In the case of a horizontal duct adjoining the slab, a batten can be used to screw the boards together.

Cross-sectional view



EI 30/60



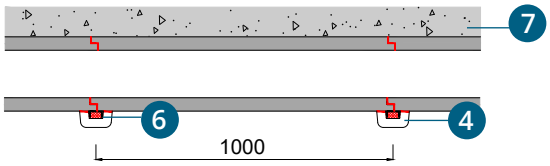
EI 90/120

1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)

   or galvanized steel staples*
   75 x 10 x 2 mm
6. Steel U-profile
   21 x 41 x 21
7. Concrete slab
8. GEOTEC®A Batten

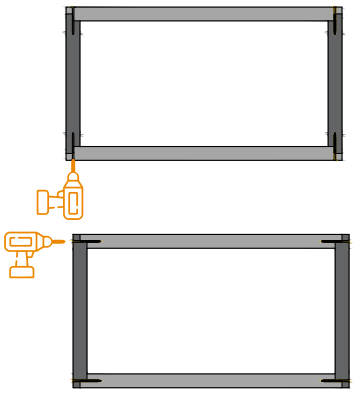
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

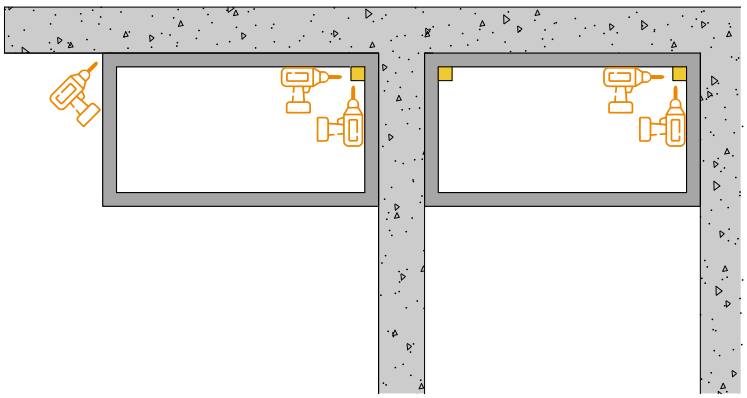
Longitudinal section view



EI 30/60 and EI 90/120

When the fixation space to screw is limited, the installer can consider to alter the board assembly to enable screwing from the side. It is also allowed to screw diagonally.





2. Installation Instructions

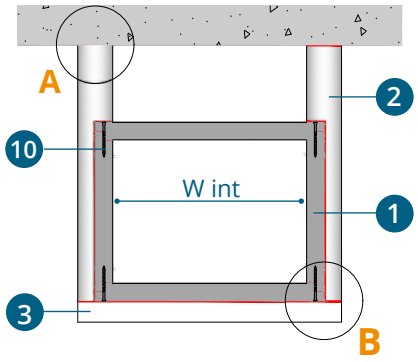
Internal Duct Width (W int)	EN 1366-5 o → i	EN 1366-5 i → o
≤ 600 mm	Standard Installation.	
600 < w ≤ 1000 mm	Using GEOTEC® A cover strip.	
1000 < w ≤ 1250 mm	Using internal steel U-profile.	Using internal steel U-profile protected by GEOTEC® A U-plaster element.
1250 < w ≤ 2500 mm	Using appropriated steel U-profiles (internal & external) + Ø 10 threaded rods.	Using appropriated steel U-profiles (internal & external) both protected by GEOTEC® A U-plaster éléments + Ø 10 threaded rods.

Inner Perimeter > 4500 mm → On request / Reference pages 52/54

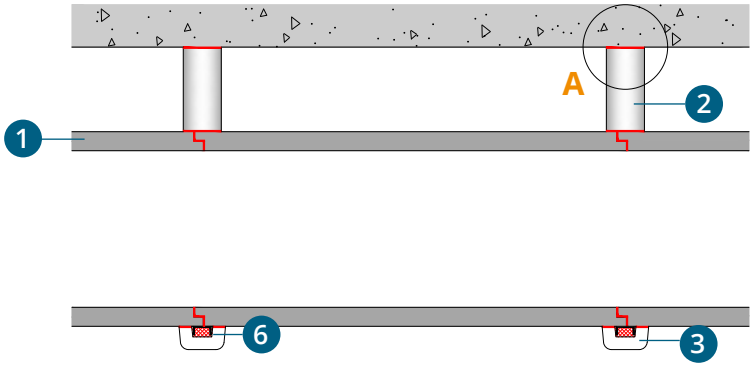
W int ≤ 600 mm

Standard installation principle: see page 34.

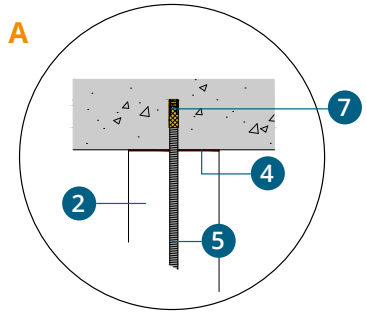
Front view

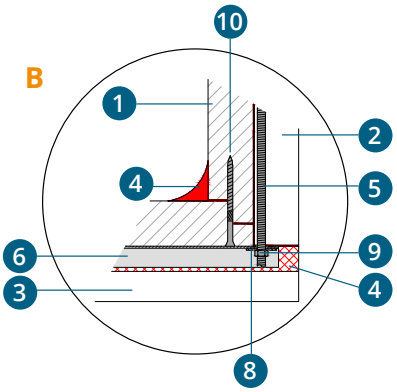


Side view



W int ≤ 600 mm
EI 30 / 60 and EI 90 / 120





1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm

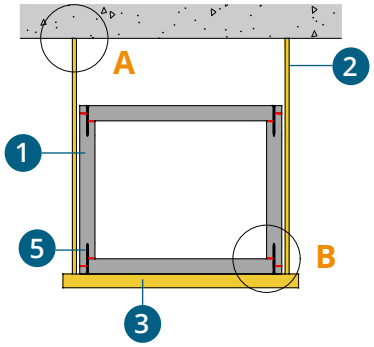
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

Alternative without protection supports

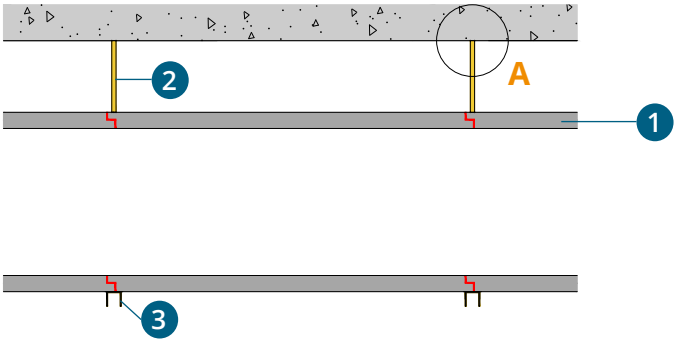
In the case of service ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A half-shells and GEOTEC® A U-plaster element.

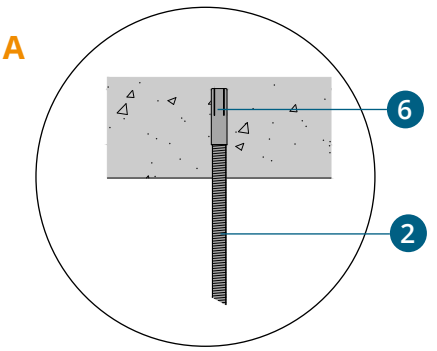
For this purpose, the **steel U-profiles 41x21 must be replaced by 41x41** and the **Ø8 threaded rods must be replaced by Ø12 or Ø14 rods** (depending on the cross-section and the desired fire resistance). Attention, in this case, steel anchors have to be used.

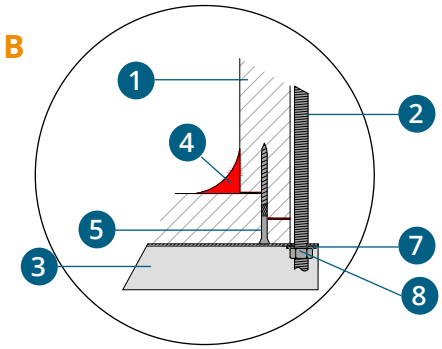
Front view



Side view







1. GEOTEC® S board
2. Threaded rod **Ø12 or Ø14 ****
3. Steel U profile **41x41**
4. Geocol® Glue
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples *
   75 x 10 x 2 mm
6. Steel anchor **Ø12 or Ø14**
7. Galvanized washers **Ø12 or Ø14**
8. Galvanized nuts **Ø12 or Ø14**

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

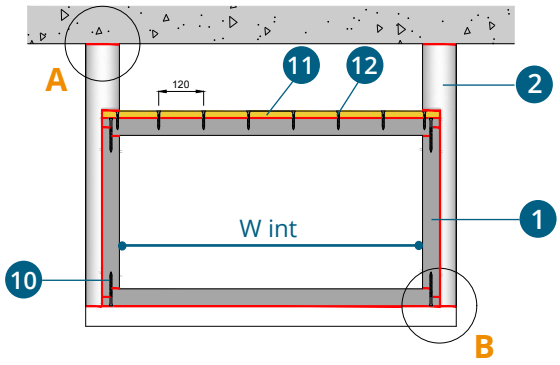
***What diameter should I use ?**

EI 30/60 : Ø 12 in any case
EI 90/120 : Ø 12 when P int ≤ 1200 mm and Ø 14 above

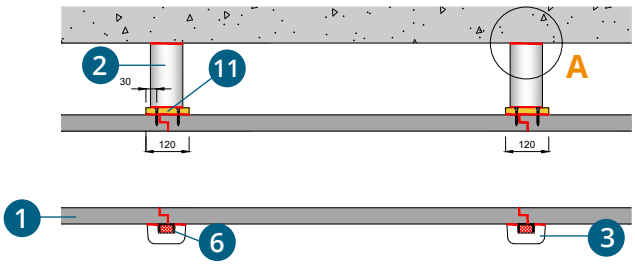
600 < W int ≤ 1000 mm

In this configuration, install Cover strips on the upper board joints.
GEOTEC® A Cover strip can be placed inside or outside the service duct to cover the joints.

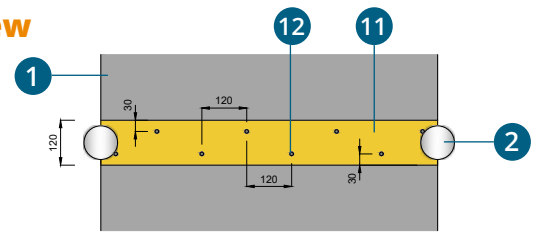
Front view



Side view

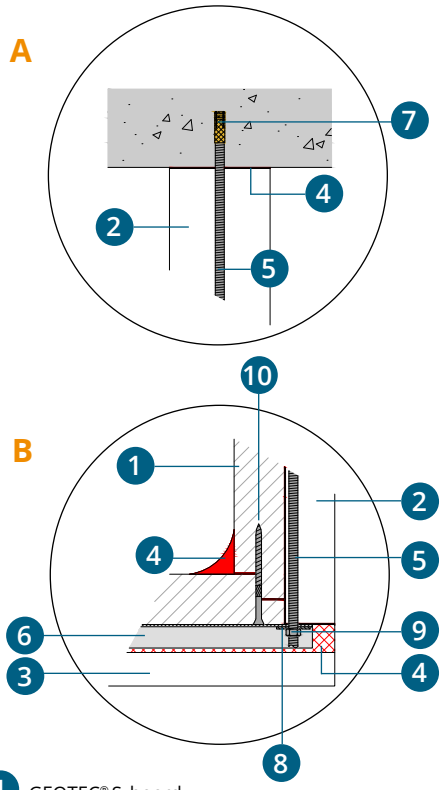


Top view



If service duct inner perimeter > 4500 mm
replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10.**

600 < W int ≤ 1000 mm
EI 30 / 60 - EI 90 / 120



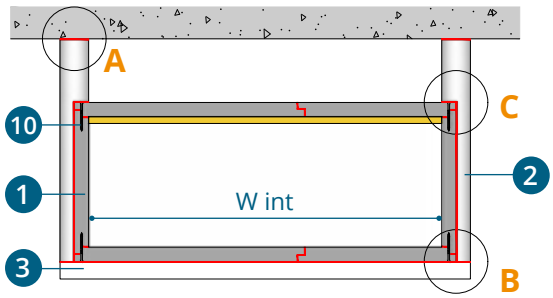
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC® A Cover strips
12. VBA Screws **Ø 5 x 50**

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

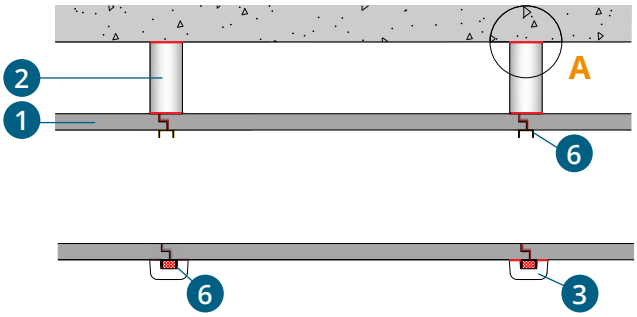
1000 < W int ≤ 1250 mm

When the service duct has an internal width of 1000 < w ≤ 1250, **a second 21x41x21 steel U-profile** must be installed inside the duct to support the upper boards.

Front view



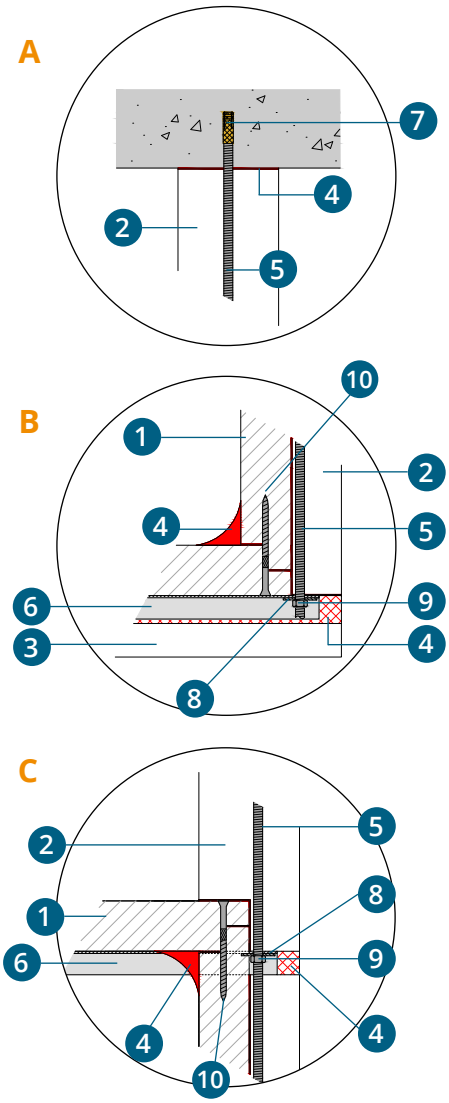
Side view



*** when the protection i → o is at stake, then the protective U-plaster element on the inside of the service duct must be added.**

If service duct inner perimeter > 4500 mm
replace Threaded rod Ø8, Brass anchor Ø8, Galvanized washers Ø8, Galvanized nuts Ø8 for **Ø10.**

1000 < W int ≤ 1250 mm
EI 30 / 60 and EI 90 / 120



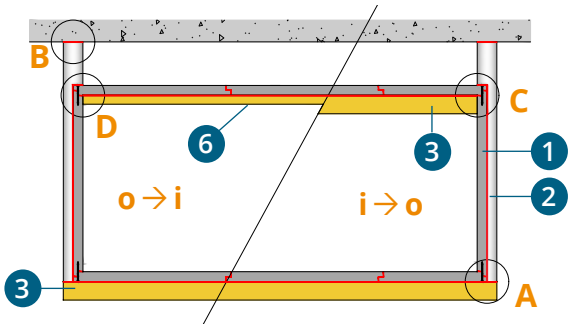
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element *
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
Ø 5 x 80 (EI 30/60), **Ø 5 x 90** (EI 90/120)
or galvanized steel staples* **75 x 10 x 2 mm**

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

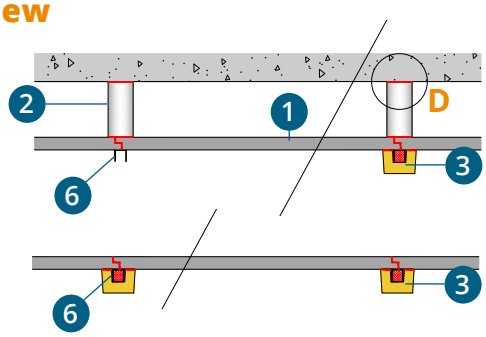
1250 < W int ≤ 2500 mm

When the service duct has an internal **width of 1250 < w ≤ 2500** mm and when 100% free area is needed in the encasement, external rods of **Ø10** and appropriate **steel U-profiles** (upper and lower) are used according to the supplier's certification.

Front view



Side view

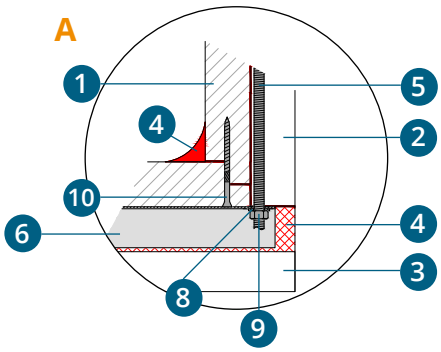


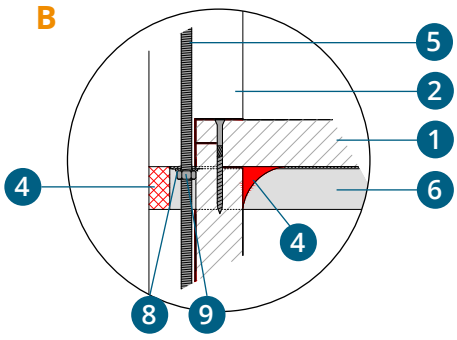
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element* (appropriated according to the steel U profile used)
4. Geocol® Glue
5. Threaded rod **Ø10**
6. Steel U profile (appropriated according to supplier's certification). **See on page 96/97**
7. Brass anchor **Ø10**
8. Galvanized washers **Ø10**
9. Galvanized nuts **Ø10**
10. VBA Screws **Ø 5 x 80** (EI 30/60) / **Ø 5 x 90** (EI 90/120)

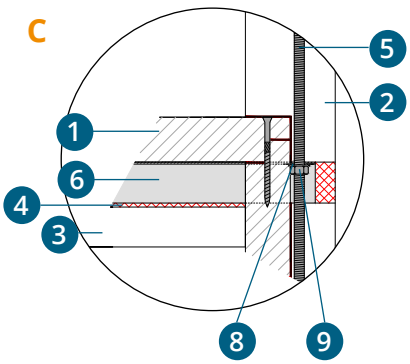
*** when the protection i → o is at stake, then the protective U-plaster element on the inside of the service duct must be added.**

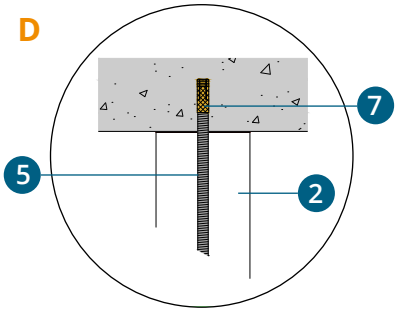
1250 < w ≤ 2500 mm EI 30 / 60 and EI 90 / 120

Extension 17/6 on EFR-16-003067









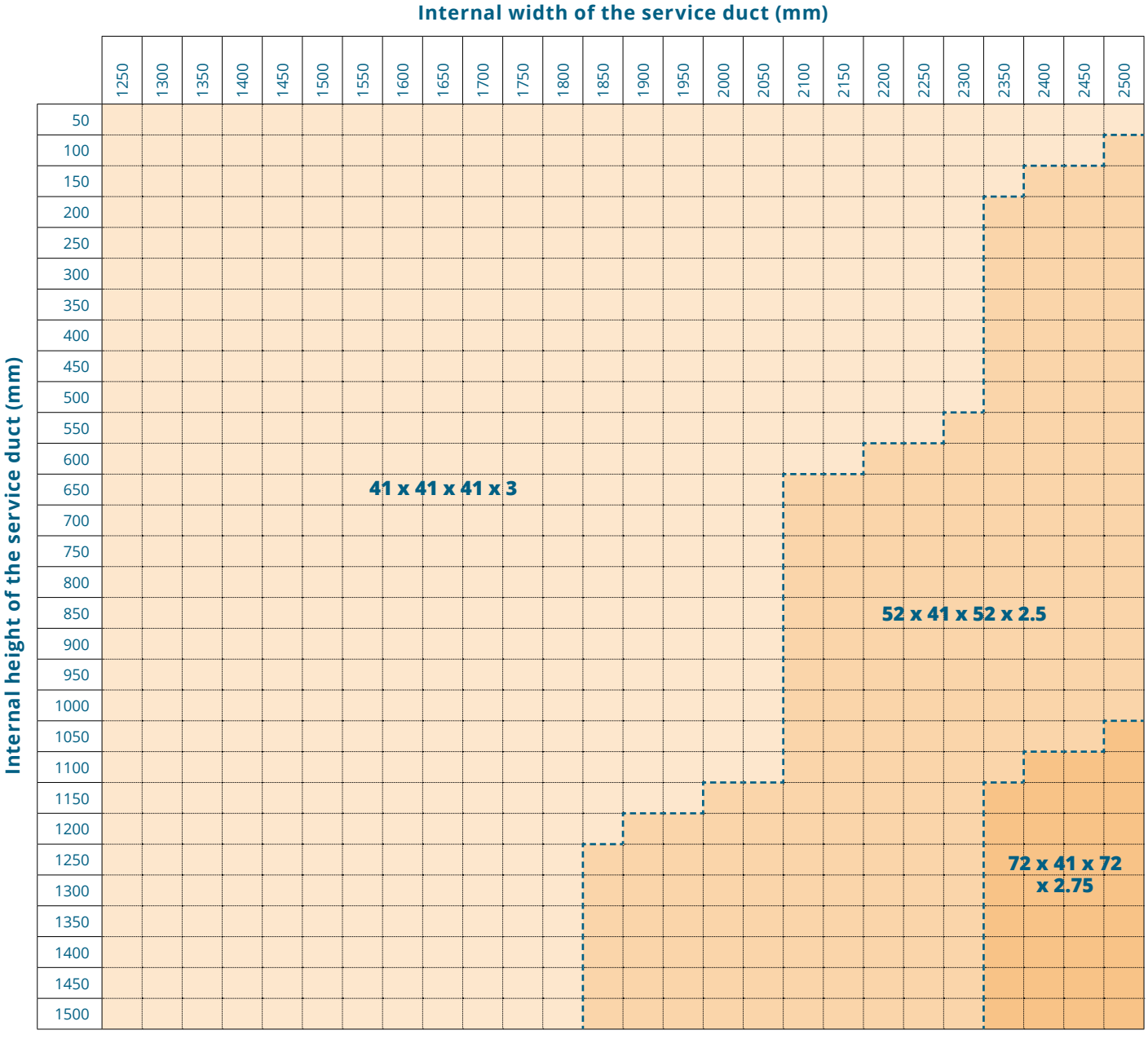
Steel U-profiles dimensions

4 sided EI 30-60 Geotec® S30

Steel U-profiles UPPER

Internal width of the service duct (mm)	Steel U-profile (mm)
1250 > 2500 mm	**41 x 41 x 41 x 3**

Steel U-profiles LOWER



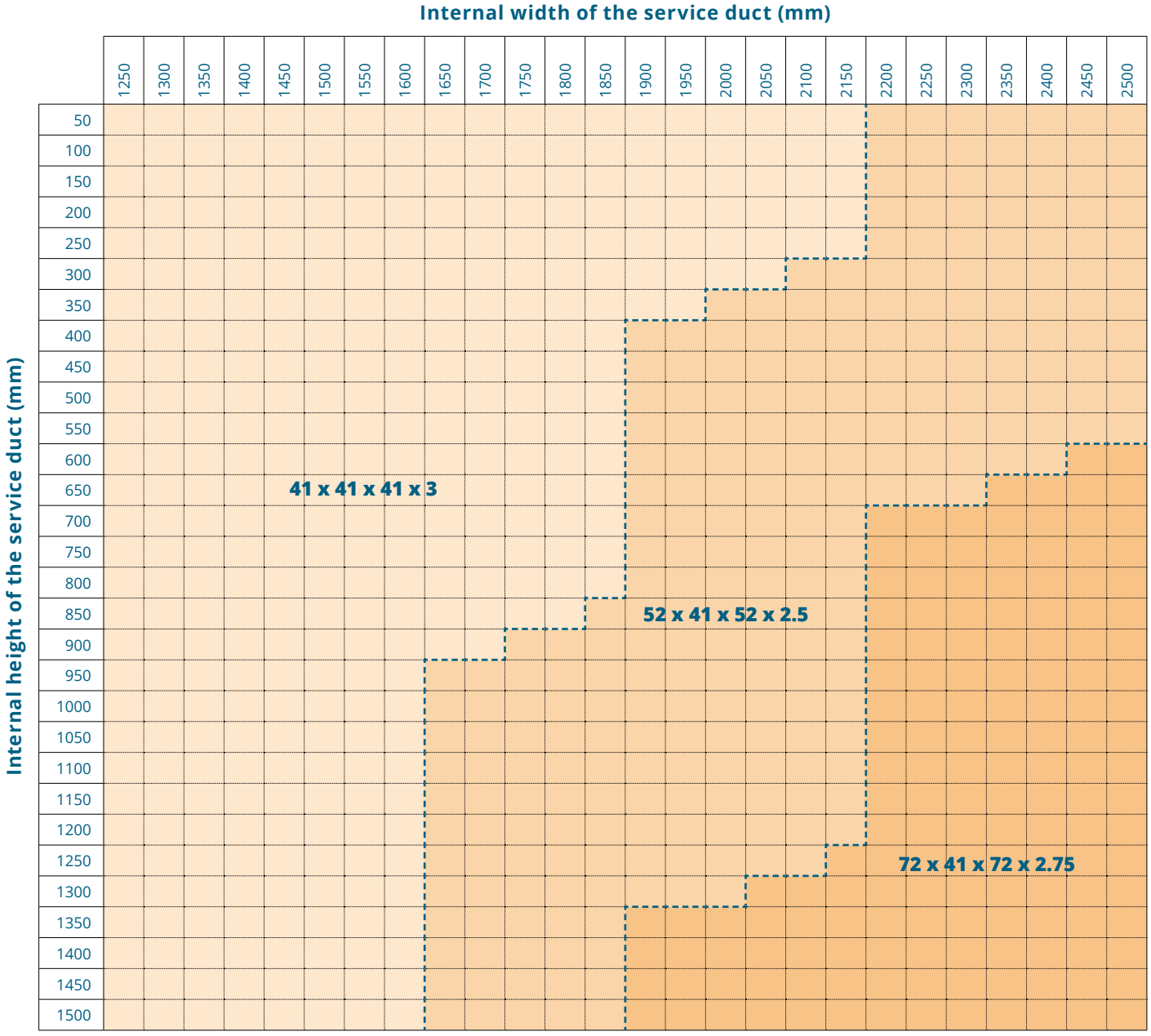
Calculation made with Hilti's certification

Steel U-profiles dimensions
4 sided EI 90-120 Geotec® S45

Steel U-profiles UPPER

Internal width of the service duct (mm)	Steel U-profile (mm)
1250 > 2150 mm	**41 x 41 x 41 x 3**
2200 > 2500 mm	**52 x 41 x 52 x 2.5**

Steel U-profiles LOWER



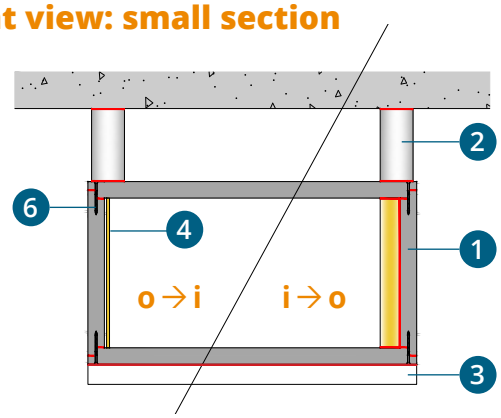
Calculation made with Hilti's certification

3. Alternative supporting principles

A) Decrease of service duct overall dimension

If it is necessary to reduce the overall dimensions, it is possible to reduce the external width of the service ducts (10 cm) by positioning the threaded rods on the inside.

Front view: small section



*** when the protection i → o is at stake, then the protective 1/2 shell and U-plaster element on the inside of the service duct must be added.**

0x0 mm to 2500x1500 mm
EI 30 / 60 and EI 90 / 120

Extension 17/6 on EFR-16-003067

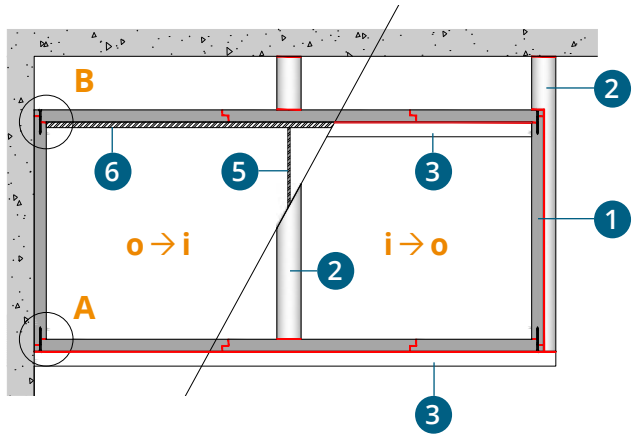
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell *
3. GEOTEC®A U-plaster element *
4. Threaded rod
5. Steel U profile
6. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
   75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

B) Service duct adjoining a vertical wall

In this case, on the vertical wall side, **the lower and upper steel U-profiles** of the service duct must be fixed to the wall by using **Ø 8 brass anchors**. On the free side, the support will be made in a standard way.

Front view

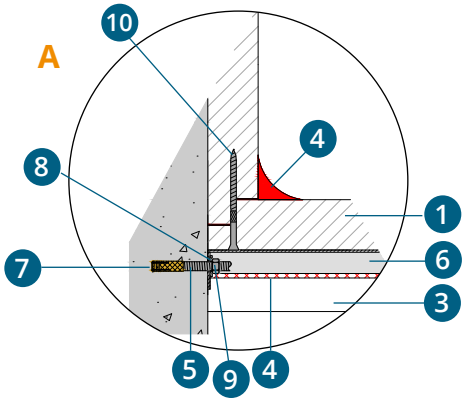


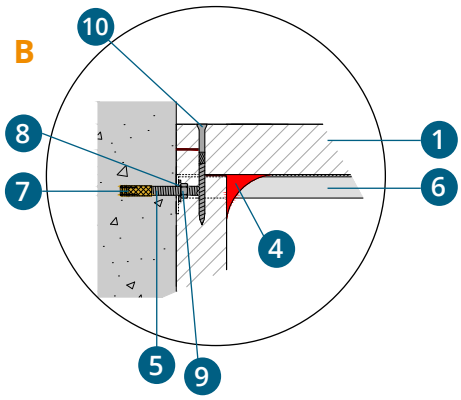
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod
6. Steel U profile
7. Brass anchor
8. Galvanized washers
9. Galvanized nuts
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

0x0 mm to 2500x1500 mm
EI 30 / 60 and EI 90 / 120

Extension 17/6 on EFR-16-003067



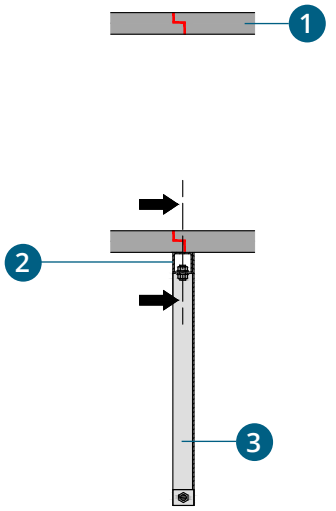


C) Installation on brackets

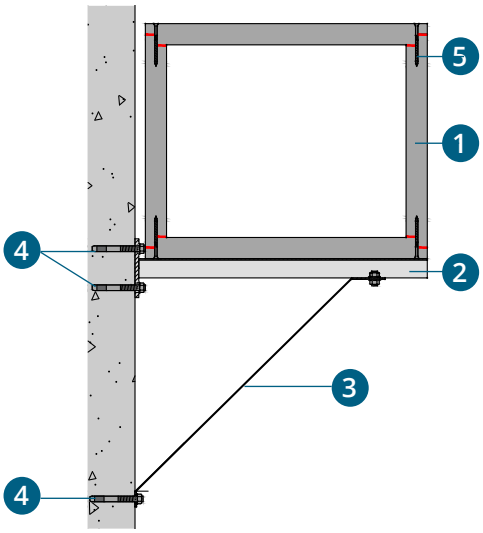
When the service duct is installed on/adjacent to a vertical wall, the support can be made by using metal brackets, with or without struts (appropriate according to the supplier's certification). **Metal brackets** and struts must be protected against fire using the **GEOTEC® A U-plaster element** and Geocol®.

1- INSTALL THE BRACKETS AND THE SUPPORT STRUT.

Longitudinal view

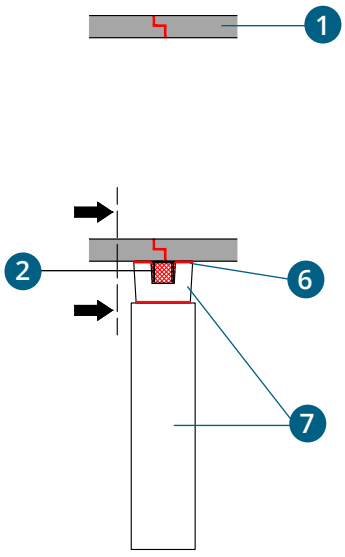


Cross-sectional view

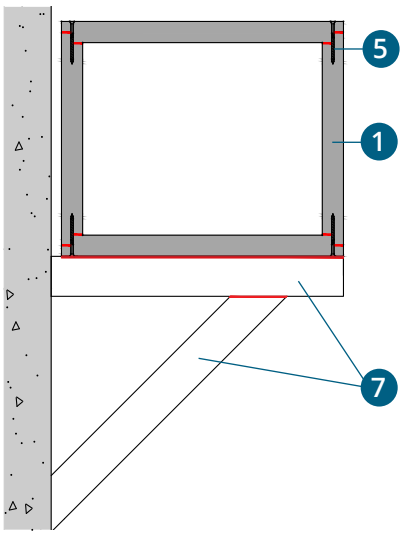


2- PROTECT THE BRACKETS AND THE STRUT WITH GEOTEC® A U-PLASTERS ELEMENT.

Longitudinal view



Cross-sectional view



0x0 mm to 2500x1500 mm EI 30 / 60 and EI 90 / 120

Extension 17/6 on EFR-16-003067

1. GEOTEC® S board
2. Metal bracket
3. Load strut
4. Expansion anchors
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Geocol® Glue
7. GEOTEC® A Uplaster element

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

+ In the case of service ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A U-plaster element.

4. Service ducts passing trough vertical construction elements *(see page 138)*

5. Service ducts with dilatation joints *(see page 144)*

3.2. Vertical system

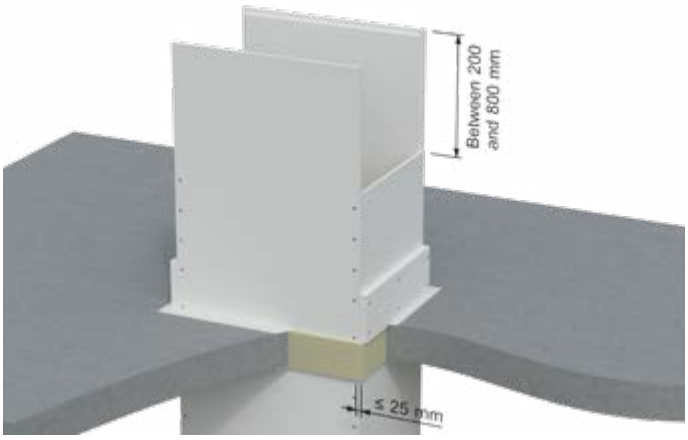
1. Assembly principles

The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previousy treated with GEOCOL® glue.

When constructing vertical service ducts, the board joints are installed offset (between 200 and 800 mm) to achieve optimal mechanical strength.

+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

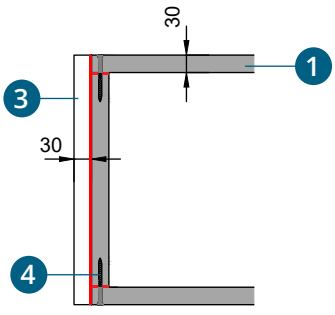


1. GEOTEC® S30 board
2. GEOTEC® S45 board
3. GEOTEC®A Reinforcement collar**
4. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm

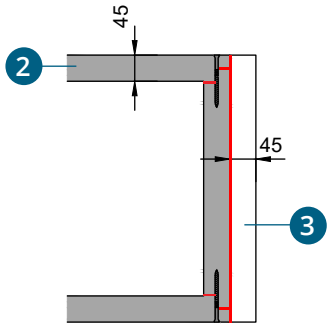
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

**** Height between 2 load-bearing systems limited to 7m with 2 supports and to 10m with 3 or 4 supports.**

Cross-sectional view



EI 30/60

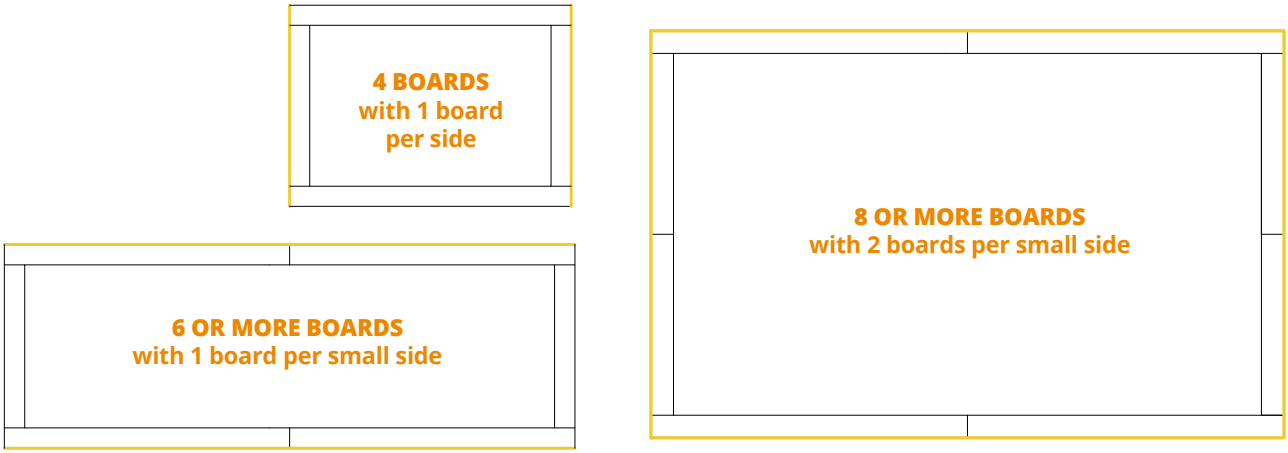


EI 90/120

Concerning the load-bearing systems

For service ducts consisting of 4-board casings (**W int* ≤ 1050 mm** and **D int* ≤ 1100 mm** for **EI 30/60** and **W int ≤ 1000 mm** and **D int ≤ 1050 mm** for **EI 90/120**), the load bearing system can be carried out on 2 sides only.

In the case of large cross-sections ducts, the number of boards per duct side can increase up to 4.
In this case, the load bearing system must be installed on sides consisting of more than 2 boards.



2 Installation instructions

Internal Duct Width & Depth (W int & D int)	EN 1366-5 o → i	EN 1366-5 i → o
EI 60: w ≤ 1050 & d ≤ 1100 mm **EI 120: w ≤ 1000 & d ≤ 1050 mm**	Standard Installation	
EI 60: w > 1050 & d ≤ 1100 mm **EI 120: w > 1000 & d ≤ 1050 mm** **or** **EI 60: w ≤ 1050 & d > 1100 mm** **EI 120: w ≤ 1000 & d > 1050 mm**	Using cover strips on 2 sides	
EI 60: w > 1050 & d > 1100 mm **EI 120: w > 1000 & d > 1050 mm**	Using cover strips on 4 sides	

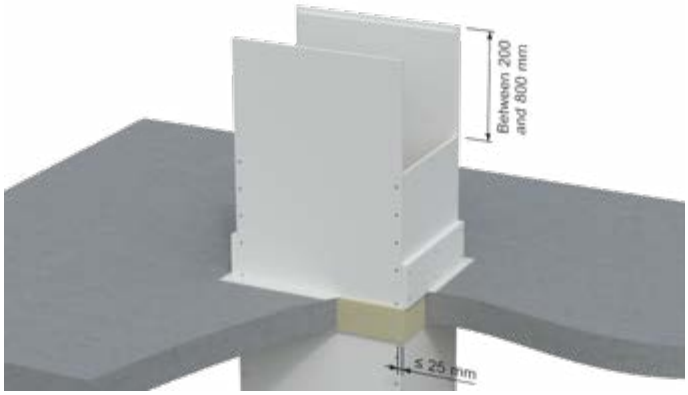
*W int : inner Width / *D int : inner Depth

A) Standard installation

EI 60: W int* ≤ 1050 mm & D int* ≤ 1100 mm (or W int ≤ 1140 mm & D int ≤ 1200 mm if using GEOTEC® SX 30 Boards)

EI 120: W int ≤ 1000 mm & D int ≤ 1050 mm (or W int ≤ 1100 mm & D int ≤ 1200 mm if using GEOTEC® SX 45 Boards)

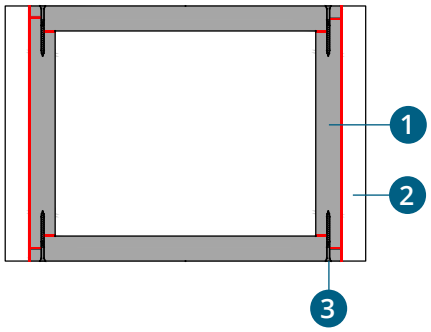
*W int: internal width / *D int: internal depth



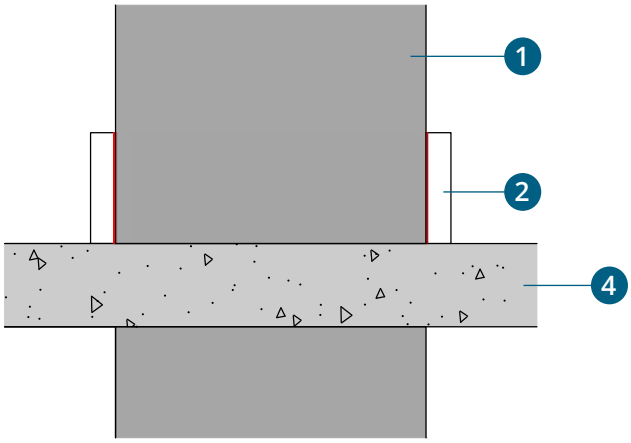
1. GEOTEC® S board
2. GEOTEC® A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

Cross-sectional view



Side view

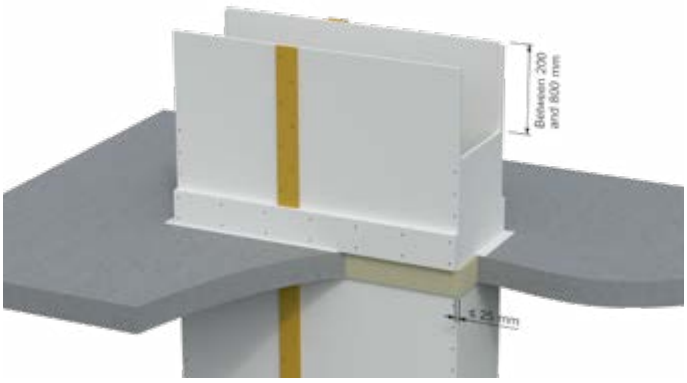


In this configuration, the installation principle is standard, please refer to page 67 to see the details of the installation.

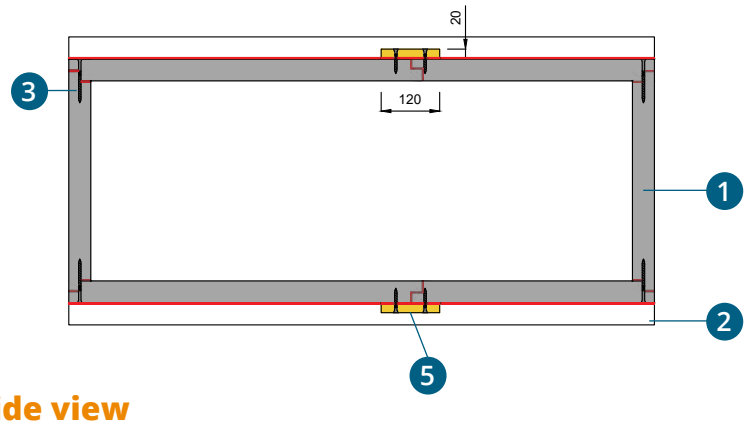
B) Using cover strips on 2 sides

EI 60: W int* > 1050 mm & D int* ≤ 1100 mm
EI 120: W int > 1000 mm & D int ≤ 1050 mm

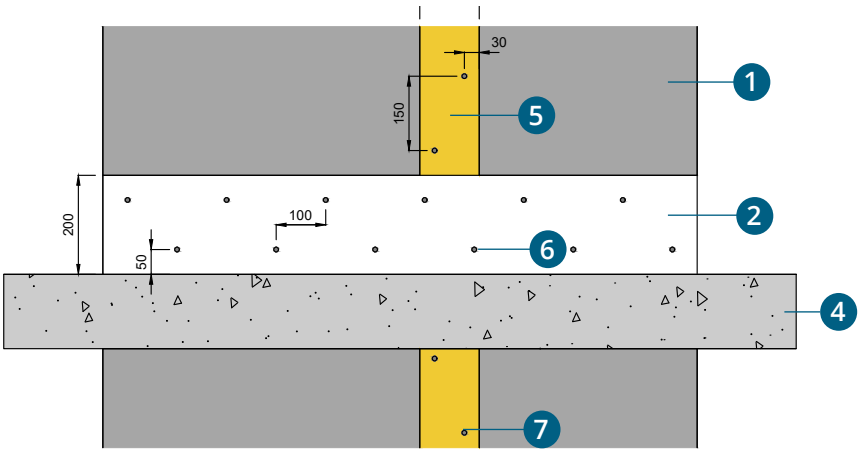
*W int: internal width / *D int: internal depth



Cross-sectional view



Side view



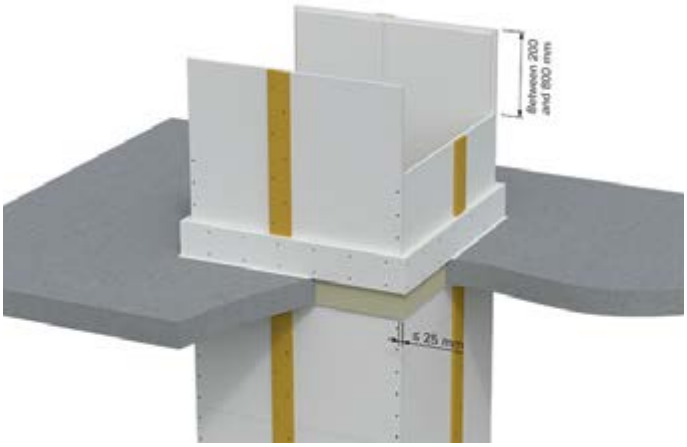
1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. GEOTEC®A Cover strip (exterior or interior)
6. VBA Screws
   Ø 5 x 50 (EI 30/60)
   Ø 5 x 80 (EI 90/120)
7. VBA Screws
   Ø 5 x 50 (EI 30/60/90/120)

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

C) Using cover strips on 4 sides

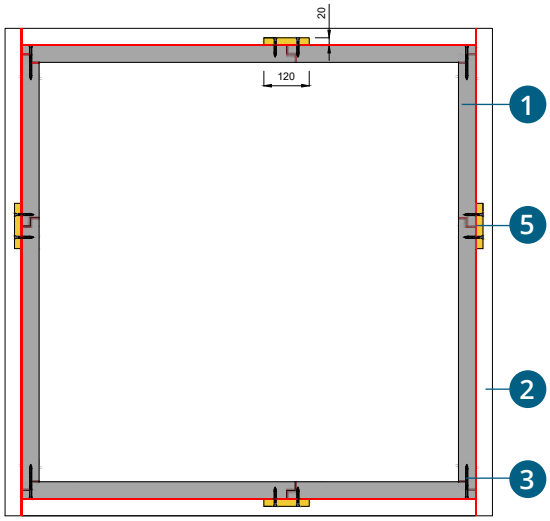
EI 60: W int* > 1050 mm & D int > 1100 mm
& EI 120: W int > 1000 mm & D int > 1050 mm

*W int : internal width / *D int : internal depth

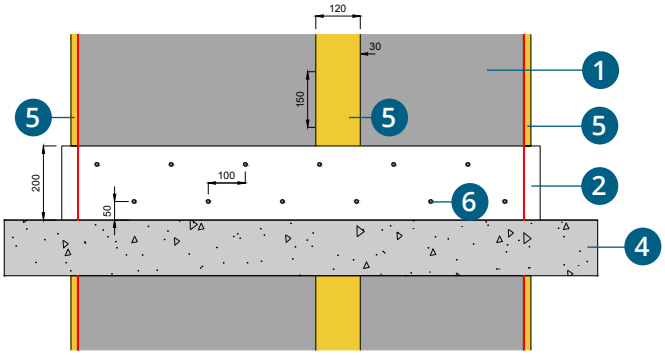


1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
4. Concrete slab
5. GEOTEC®A Cover strip (exterior or interior)
6. VBA Screws
   Ø 5 x 50 (EI 30/60)
   Ø 5 x 80 (EI 90/120)
7. VBA Screws
   Ø 5 x 50 (EI 30/60/90/120)

Cross-sectional view



Side view



3. Alternative support principles *(see page 140)*

In the standard configuration, reinforcement collars are put at the floor slab level to bear the load of the duct.
In cases where this standard configuration is not possible, you can find solutions in the validated alternative supporting constructions.

4. Service ducts passing trough horizontal construction elements *(see page 139)*

5. Service ducts with dilatation joints *(see page 144)*

4. THREE SIDED PROTECTION

The 3-sided protection is fixed to the ceiling or wall using half-collars that are fixed to the supporting construction.
These collars can be placed on the in - or outside.
Each collar is glued and fixed with minimally 2 fixations to the supporting construction.

Certificates: fire resistance classification report				
Tests in accordance with EN 1366-5	**Thickness (mm)**	**EI i ⟷ o**	**Internal cross-sections (mm)**	**EFECTIS classification documents**
Horizontal and vertical Fire Protection of Service Ducts & Shafts	30	30/60	50 x 50 to 2500 x 1500	Cert EFR-16-003921 B Rev. 1
	45	90/120		

4.1. Horizontal system - Ceiling installation

1. Assembly principle

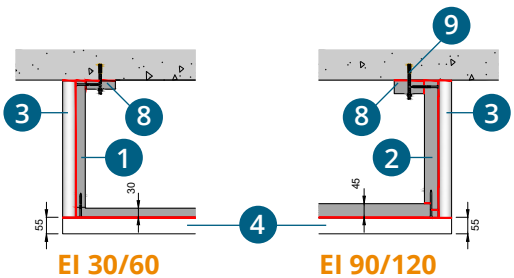
The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®**glue.
Horizontal ducts are formed from 1000 mm sections; the boards are mounted without offset on the horizontal and vertical joints. However, in order to facilitate the installation, the upper boards can be offset from the rest of the duct.

+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

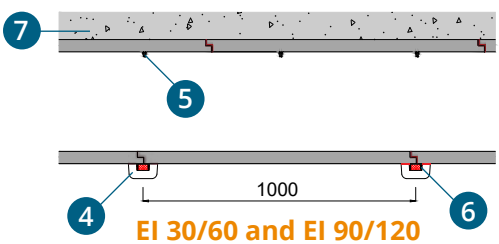
When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling can be made :
a) with rabbets by installing rabetted half-collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Cross-sectional view



EI 30/60 EI 90/120

Longitudinal view

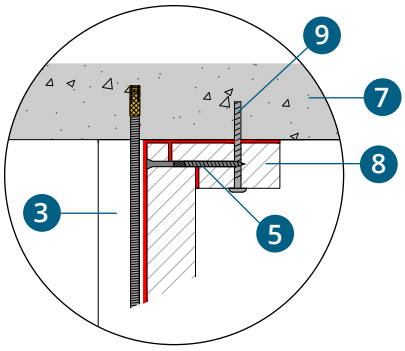


EI 30/60 and EI 90/120

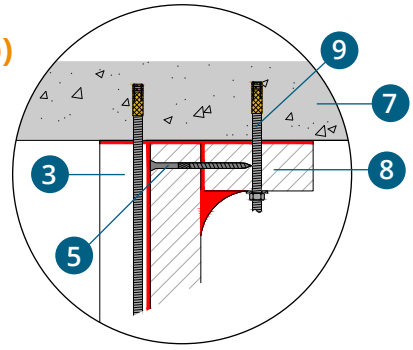
1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw **Ø 5 x 80 (EI 30/60)** **Ø 5 x 90 (EI 90/120)** or galvanized steel staples* **75 x 10 x 2 mm**
6. Steel U-profile **21 x 41 x 21**
7. Concrete slab
8. GEOTEC®A 1/2 collar
9. Mechanical fixation

***staples : ≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.**

a)



b)



Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

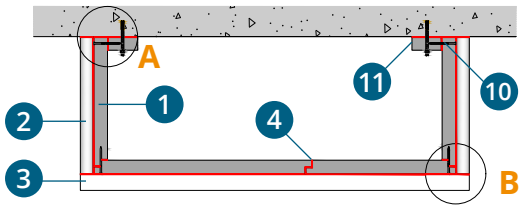
2. Installation instructions

Internal Duct Width (W int)	EN 1366-5 o → i	EN 1366-5 i → o
≤ 1250 mm	Standard Installation.	
1250 < w ≤ 2500 mm	Using appropriated steel U-profiles + Ø 10 threaded rods	

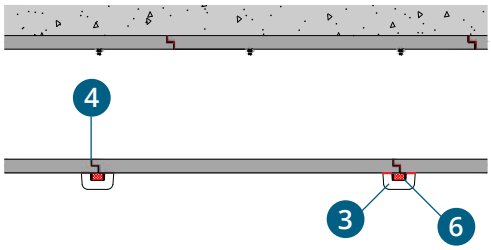
Inner Perimeter > 4500 mm → On request

W int ≤ 1250 mm

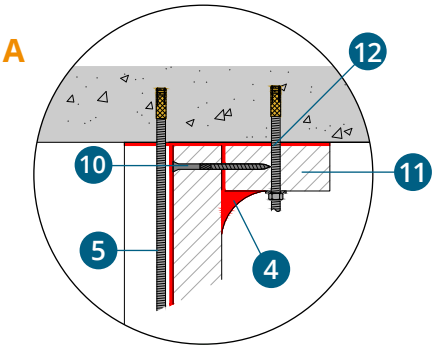
Front view

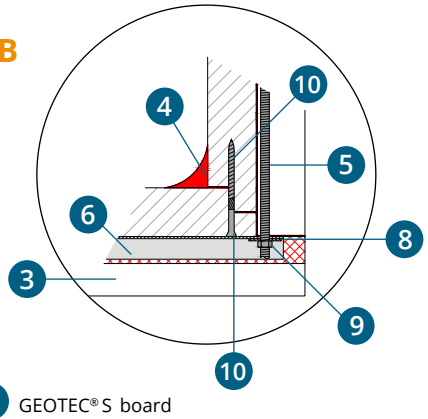


Side view



If service duct inner perimeter > 4500 mm
replace Threaded rod, Brass anchor, Galvanized washers, Galvanized nuts Ø8 for **Ø10.**



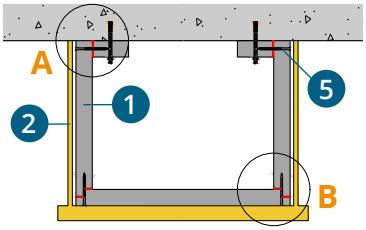


1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC®A 1/2 collar
12. Mechanical fixation

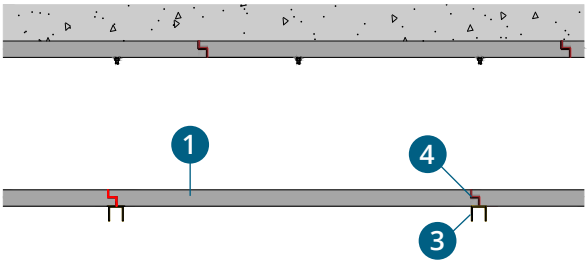
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

Non protection supports

Front view

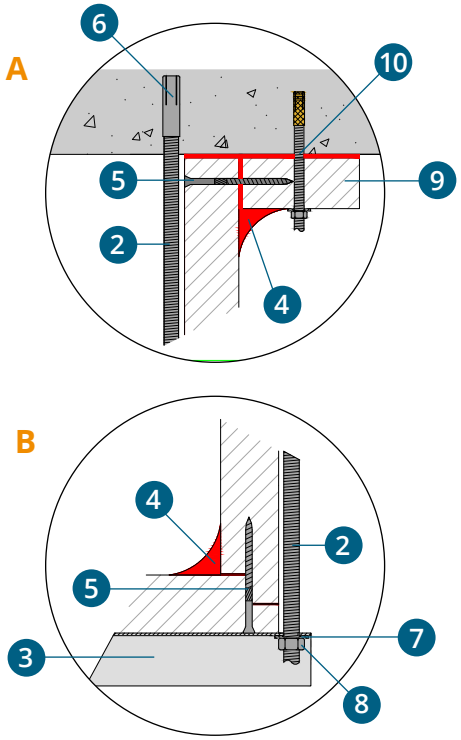


Side view



**** What diameter should I use ?**

EI 30/60 : Ø 12 in any case
EI 90/120 : Ø 12 when P int ≤ 1200 mm and Ø 14 above

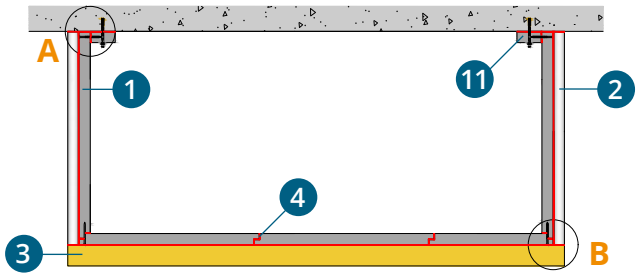


1. GEOTEC® S board
2. Threaded rod **Ø12 or Ø14 ****
3. Steel U profile **41x41**
4. Geocol® Glue
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples *
   75 x 10 x 2 mm
6. Steel anchor **Ø12 or Ø14**
7. Galvanized washers **Ø12 or Ø14**
8. Galvanized nuts **Ø12 or Ø14**
9. GEOTEC®A 1/2 collar
10. Mechanical fixation

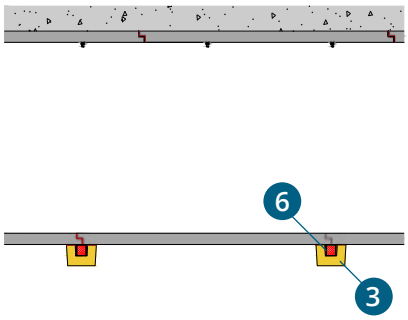
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

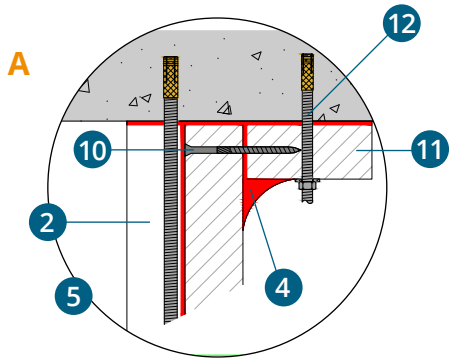
1250 < W int ≤ 2500 mm

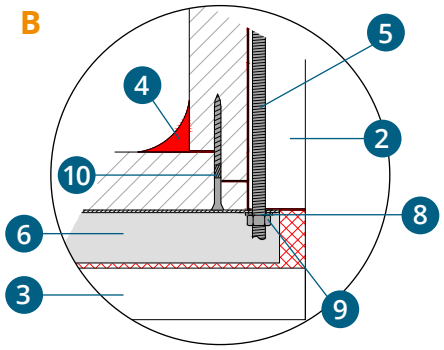
Front view



Side view



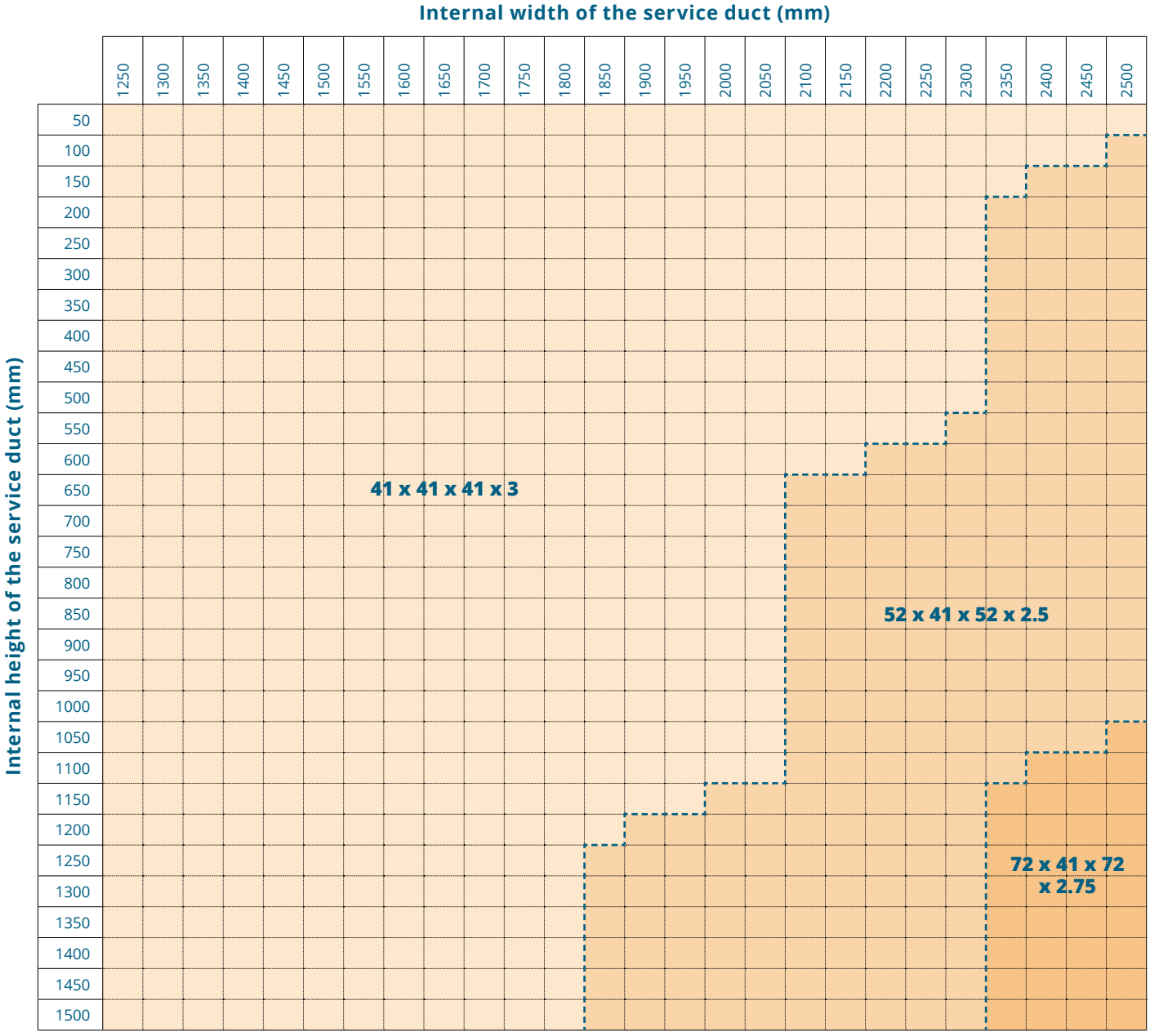




1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element (appropriated according to the steel U profile used)
4. Geocol® Glue
5. Threaded rod **Ø10**
6. Steel U profile (appropriated according to supplier's certification). **See on page 112/113**
7. Brass anchor **Ø10**
8. Galvanized washers **Ø10**
9. Galvanized nuts **Ø10**
10. VBA Screws **Ø 5 x 80** (EI 30/60) / **Ø 5 x 90** (EI 90/120)
11. GEOTEC®A 1/2 collar
12. Mechanical fixation

Steel U-profiles dimensions
3 sided EI 30-60 Geotec® S30

Steel U-profiles LOWER



Calculation made with Hilti's certification

Steel U-profiles dimensions

3 sided EI 90-120 Geotec® S45

Steel U-profiles LOWER

Internal width of the service duct (mm)

Internal height of the service duct (mm)	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500
50																										
100																										
150																										
200																										
250																										
300																										
350																										
400																										
450																										
500																										
550																										
600																										
650					41 x 41 x 41 x 3																					
700																										
750																										
800																										
850														52 x 41 x 52 x 2.5												
900																										
950																										
1000																										
1050																										
1100																										
1150																										
1200																										
1250																					72 x 41 x 72 x 2.75					
1300																										
1350																										
1400																										
1450																										
1500																										

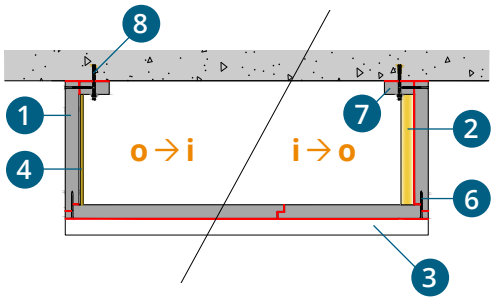
Calculation made with Hilti's certification

3. Alternative supporting principle

Decrease of service duct overall dimension

It is possible to reduce the external width of the service ducts (10 cm) by positioning the threaded rods on the inside of the service duct.

Front view



*** when the protection i → o is at stake, then the protective 1/2 shell element on the inside of the service duct must be added.**

0x0 mm to 2500x1500 mm
EI 30 / 60 and EI 90 / 120

Extension 17/6 on EFR-16-003067

1. GEOTEC® S board
2. GEOTEC® A 1/2 shell*
3. GEOTEC®A U plaster
4. Threaded rod
5. Steel U profile
6. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

4. Service ducts passing trough vertical construction elements *(see page 138)*

5. Service ducts with dilatation joints *(see page 144)*

4.2. Horizontal system - Wall installation

1. Assembly principles

The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®**glue.
Horizontal ducts are formed from 1000 mm sections; the boards are mounted without offset on the horizontal and vertical joints. However, in order to facilitate the installation, the upper boards can be offset from the rest of the duct.

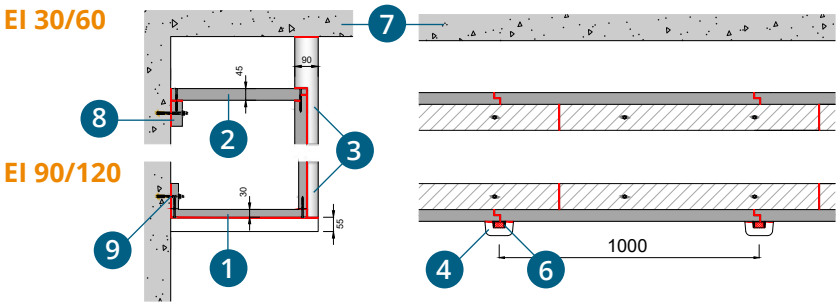
+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling can be made :
a) with rabbets by installing rabetted half collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Cross-sectional view

Longitudinal view



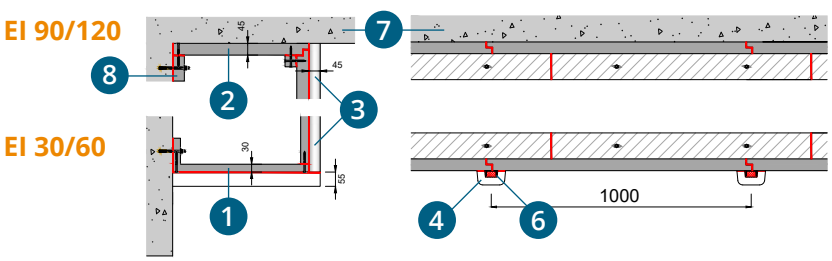
EI 30/60 and EI 90/120

When the duct is against the slab :

In the case of a horizontal duct adjoining the slab, a batten can be used to screw the boards together.

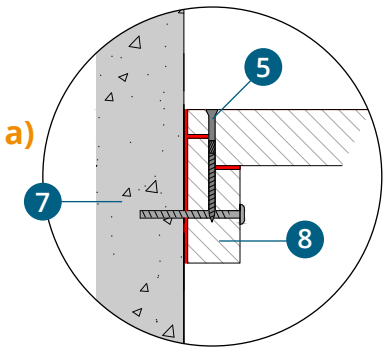
Cross-sectional view

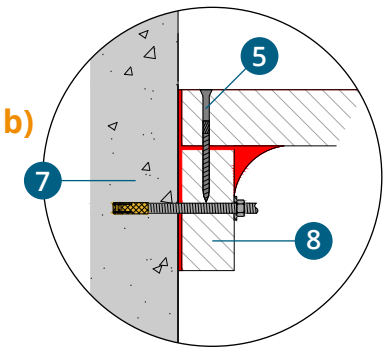
Longitudinal view



EI 30/60 and EI 90/120

Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)





1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw
   Ø 5 x 80 (EI 30/60), Ø 5 x 90 (EI 90/120)
   or galvanized steel staples* **75 x 10 x 2 mm**
6. Steel U-profile
   21 x 41 x 21
7. Concrete slab
8. GEOTEC®A 1/2 collar
9. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

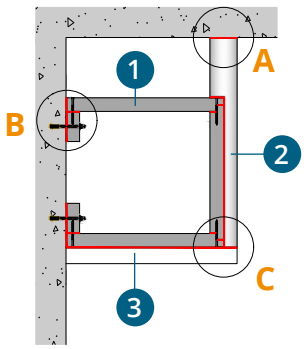
2. Installation instructions

Internal Duct Width (W int)	EN 1366-5 o → i	EN 1366-5 i → o
≤ 600 mm	Standard Installation.	
600 < w ≤ 1000 mm	Using GEOTEC® A cover strips	
1000 < w ≤ 1250 mm	Using internal steel U-profiles	Using internal steel U-profiles protected by GEOTEC® A U-plaster elements
1250 < w ≤ 2500 mm	Using appropriated steel U-profiles (internal & external) + Ø 10 threaded rods	Using appropriated steel U-profiles (internal & external) both protected by GEOTEC® A U-plaster éléments + Ø 10 threaded rods

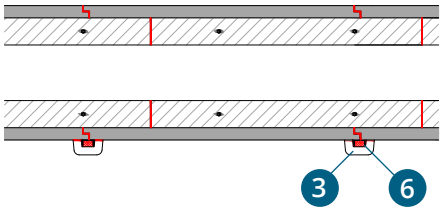
Inner Perimeter > 4500 mm → On request

W int ≤ 600 mm

Front view



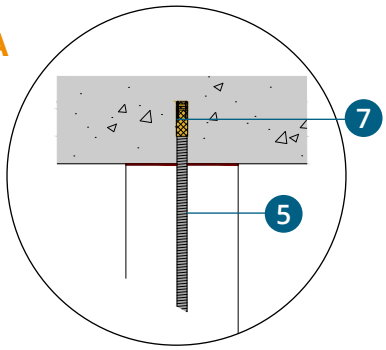
Side view



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC®A 1/2 collar
12. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

A



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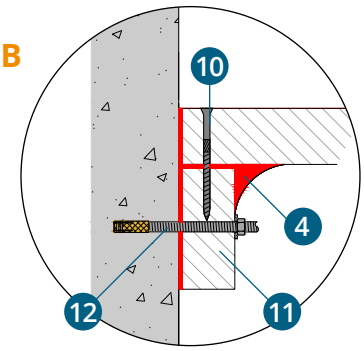
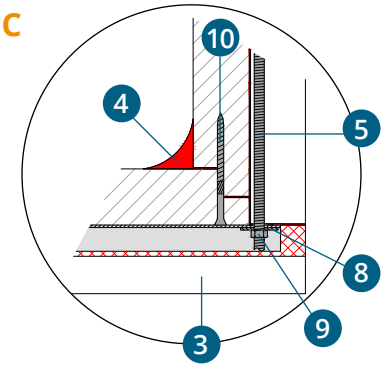


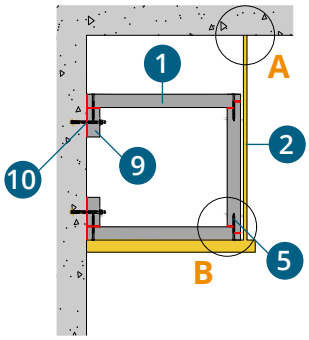
C



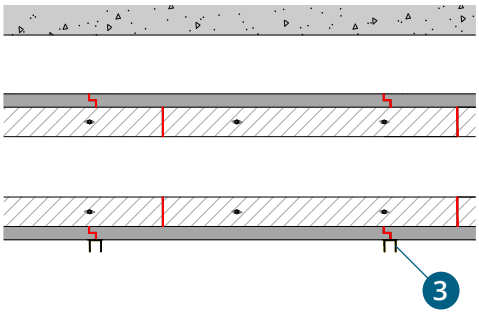
Non protection supports

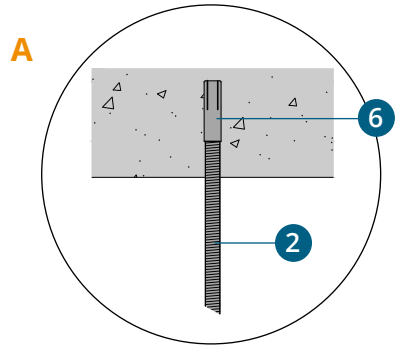
In the case of service ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A half-shells and GEOTEC® A U-plaster element.
For this purpose, the **steel U-profiles 41x21 must be replaced by 41x41** and the **Ø8 threaded rods must be replaced by Ø12 or Ø14 rods** (depending on the cross-section and the desired fire resistance). Attention, in this case, steel anchors have to be used.

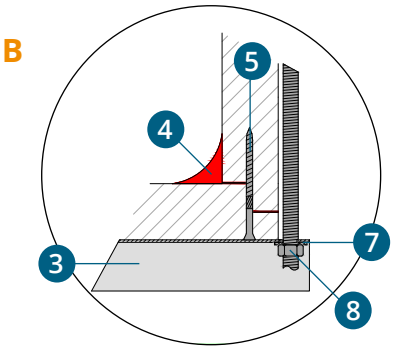
Front view



Side view







1. GEOTEC® S board
2. Threaded rod **Ø12 or Ø14 ****
3. Steel U profile **41x41**
4. Geocol® Glue
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples *
   75 x 10 x 2 mm
6. Steel anchor **Ø12 or Ø14**
7. Galvanized washers **Ø12 or Ø14**
8. Galvanized nuts **Ø12 or Ø14**
9. GEOTEC®A 1/2 collar
10. Mechanical fixation

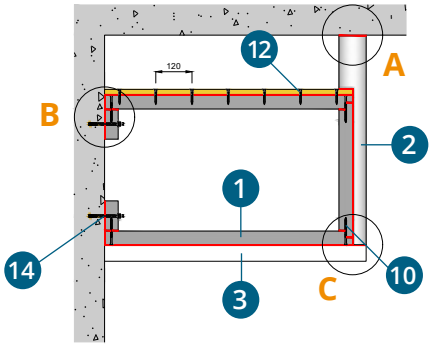
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

***What diameter should I use ?**

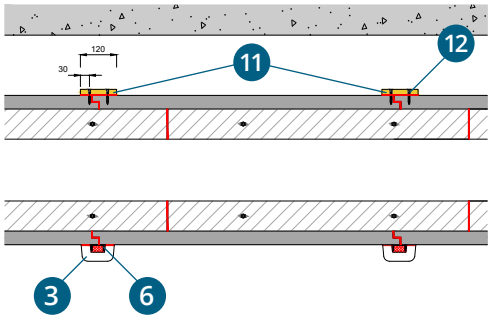
EI 30/60 : Ø 12 in any case
EI 90/120 : Ø 12 when P int ≤ 1200 mm and Ø 14 above

600 < W int ≤ 1000 mm

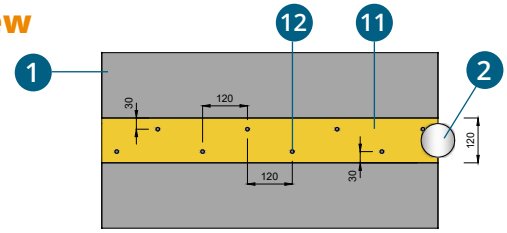
Front view



Side view

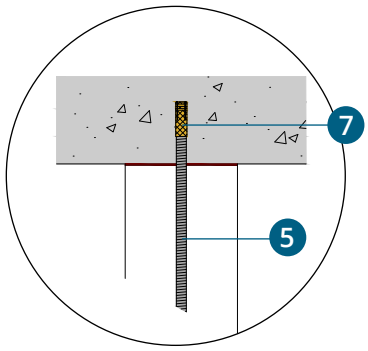


Top view



If service duct inner perimeter > 4500 mm
replace Threaded rod, Brass anchor, Galvanized washers, Galvanized nuts Ø8 for **Ø10.**

A



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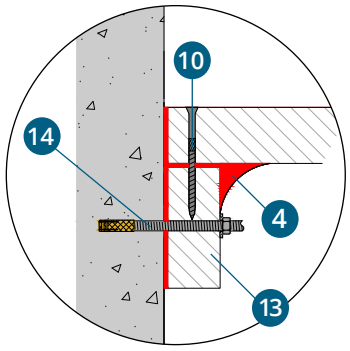

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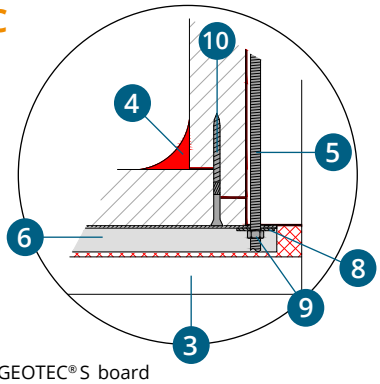
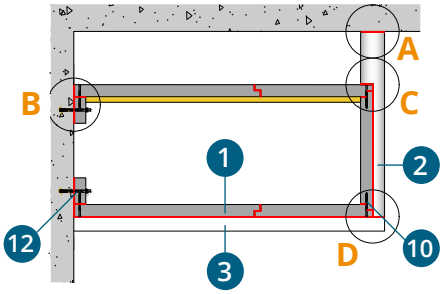


1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC® A Cover strips
12. VBA Screws **Ø 5 x 50**
13. GEOTEC®A 1/2 collar
14. Mechanical fixation

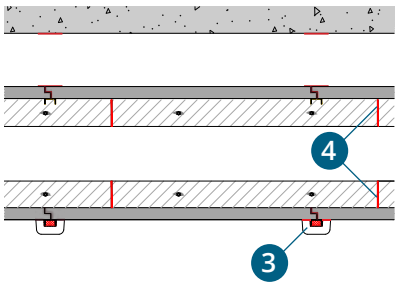
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

1000 < W int ≤ 1250 mm

Front view



Side view



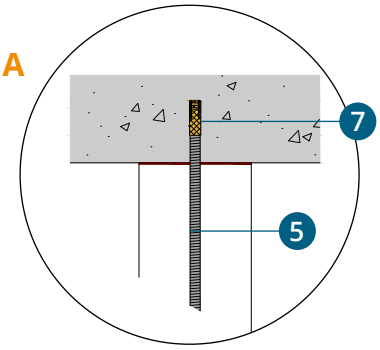
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element *
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60),
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC® A 1/2 collar
12. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

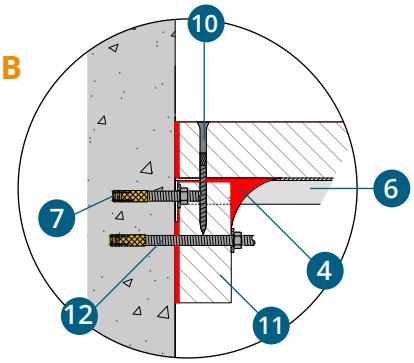
*** when the protection i → o is at stake, then the protective U-plaster element on the inside of the service duct must be added.**

If service duct inner perimeter > 4500 mm
replace Threaded rod, Brass anchor, Galvanized washers, Galvanized nuts Ø8 for **Ø10.**

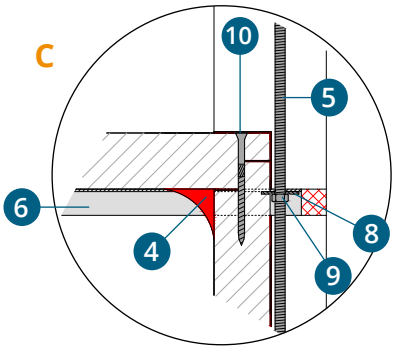
A



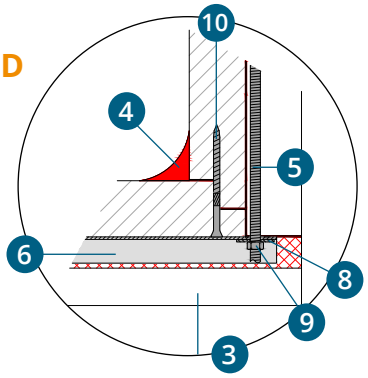
B



C

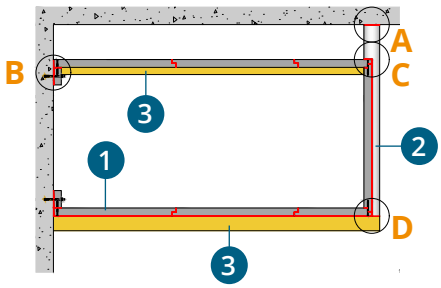


D

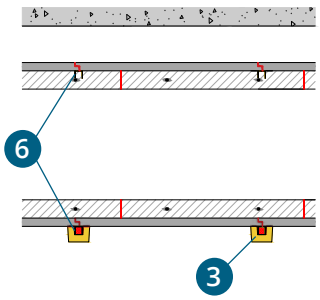


1250 < W int ≤ 2500 mm

Front view



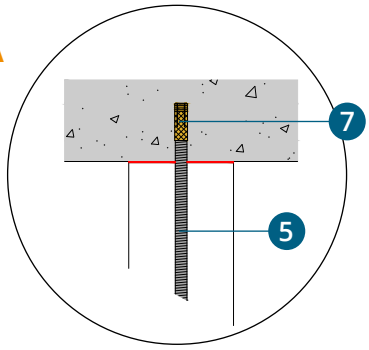
Side view



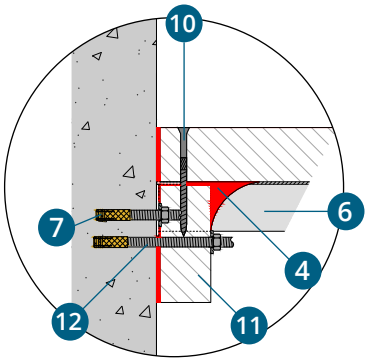
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC® A U-plaster element* (appropriated according to the U profile)
4. Geocol® Glue
5. Threaded rod **Ø10**
6. Steel U profile (appropriated according to supplier's certification). **See on page 122/123**
7. Brass anchor **Ø10**
8. Galvanized washers **Ø10**
9. Galvanized nuts **Ø10**
10. VBA Screws **Ø 5 x 80** (EI 30/60) / **Ø 5 x 90** (EI 90/120)
11. GEOTEC® A 1/2 collar
12. Mechanical fixation

*** when the protection i → o is at stake, then the protective U-plaster element on the inside of the service duct must be added.**

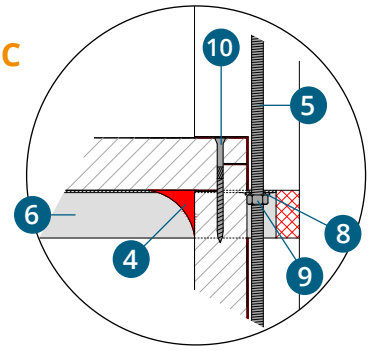
A



B



C



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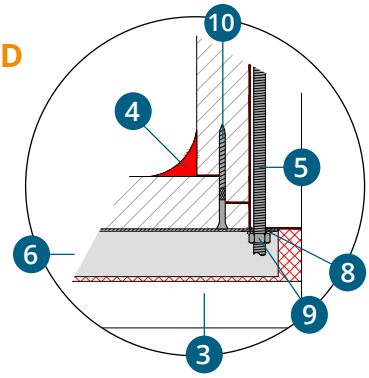

Steel U-profiles dimensions
3 sided EI 30-60 Geotec® S30

Steel U-profiles UPPER

Internal width of the service duct (mm)	Steel U-profile (mm)
1250 > 2500 mm	**41 x 41 x 41 x 3**

Steel U-profiles LOWER

Internal width of the service duct (mm)

Internal height of the service duct (mm)	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500
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1400																										
1450																										
1500																										

52 x 41 x 52 x 2.5

Calculation made with Hilti's certification

Steel U-profiles dimensions

3 sided EI 90-120 Geotec® S45

Steel U-profiles UPPER

Internal width of the service duct (mm)	Steel U-profile (mm)
1250 > 2150 mm	41 x 41 x 41 x 3
2200 > 2500 mm	52 x 41 x 52 x 2.5

Steel U-profiles LOWER

Internal width of the service duct (mm)

Internal height of the service duct (mm)	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500
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1150																										
1200																										
1250																										
1300																										
1350																										
1400																										
1450																								72 x 41 x		
1500																								72 x 2.75		

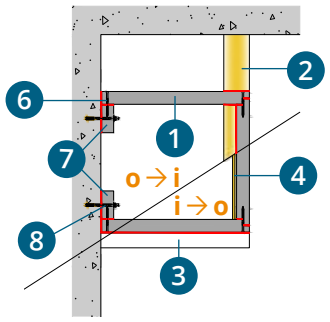
Calculation made with Hilti's certification

3. Alternative supporting principles

A) Decrease of service duct overall dimension

It is possible to reduce the external width of the service ducts (50 mm) by positioning the threaded rod on the inside.

Front view: small section



*** when the protection i → o is at stake, then the protective 1/2 shell and U-plaster element on the inside of the service duct must be added.**

0x0 mm to 2500x1500 mm
EI 30 / 60 and EI 90 / 120

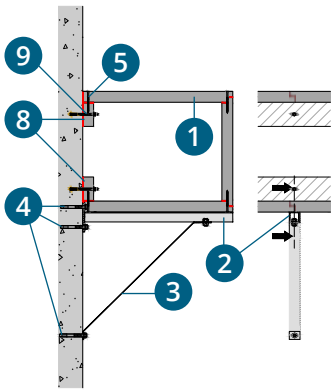
Extension 17/6 on EFR-16-003067

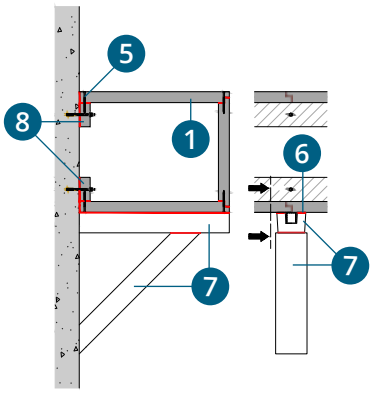
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell*
3. GEOTEC®A U-plaster element *
4. Threaded rod
5. Steel U profile
6. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

B) Installation on brackets

When the service duct is installed on/adjacent to a vertical wall, the support can be made by using metal brackets, with or without struts (appropriate according to the supplier's certification). **Metal brackets** and struts must be thermally protected against fire using the **GEOTEC® A U-plaster element** and Geocol®.





1. GEOTEC® S board
2. Metal bracket
3. Load strut
4. Expansion anchors
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Geocol® Glue
7. GEOTEC® A U-plaster element
8. GEOTEC®A 1/2 collar
9. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

+ In the case of service ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A U-plaster element.

4. Service ducts passing trough vertical construction elements *(see page 138)*

5. Service ducts with dilatation joints *(see page 144)*

4.3. Vertical system

1. Assembly principles

The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®**glue.
When constructing vertical service ducts, the board joints are offset between 2 contiguous faces (between 200 and 800 mm) so as to achieve optimal mechanical strength for the duct.

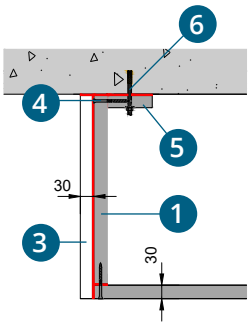
+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

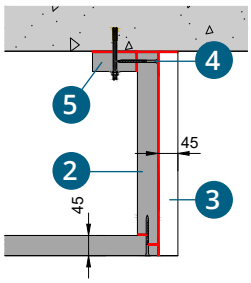
When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling can be made :
a) with rabbets by installing rabetted half collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Front views

EI 30/60



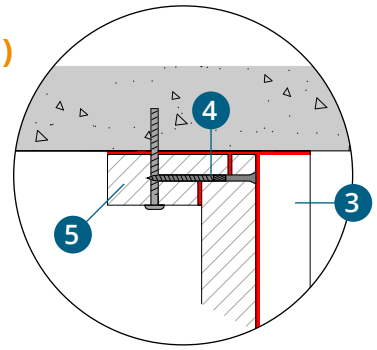
EI 90/120



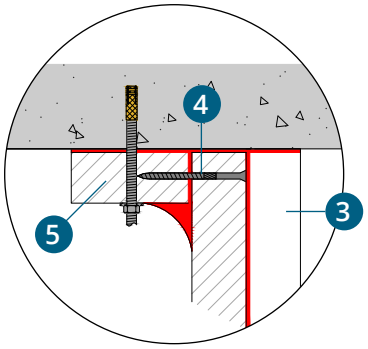
1. GEOTEC® S30 board
2. GEOTEC® S45 board
3. GEOTEC®A Reinforcement collar
4. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
5. GEOTEC®A 1/2 collar
6. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

a)



b)

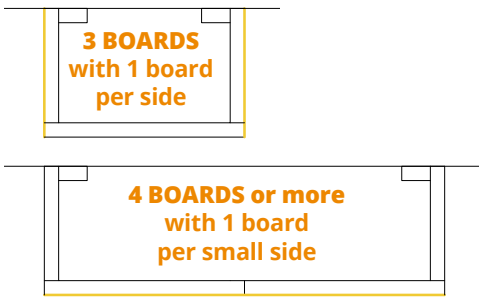


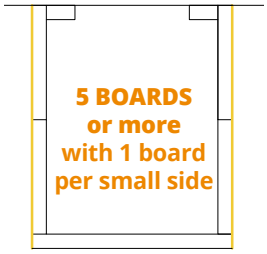
Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

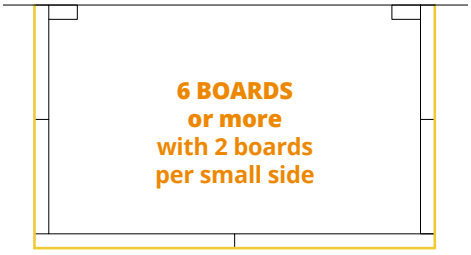
Concerning the load-bearing systems

For 3-sided service ducts consisting of 3-board casings **(W int* ≤ 1050 mm and D int* ≤ 1100 mm** for **EI 30/60** and **W int ≤ 1000 mm and D int ≤ 1050 mm** for **EI 90/120**), the load-bearing system can be carried out on 2 sides only.

In the case of large cross-sections 3-sided service ducts, the number of boards per duct side can increase up to 4. In this case, load-bearing systems must be carried out on faces consisting of more than 2 boards





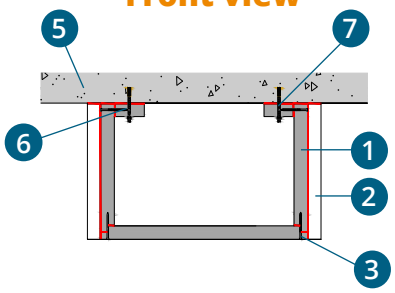


2. Installation instructions

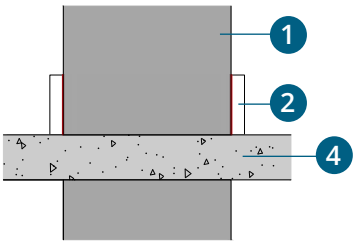
Internal Duct Width & Depth (W int & D int)	EN 1366-5 o → i	EN 1366-5 i → o
EI 60: w ≤ 1050 & d ≤ 1100 mm **EI 120: w ≤ 1000 & d ≤ 1050 mm**	Standard Installation	
EI 60: w > 1050 & d ≤ 1100 mm **EI 120: w > 1000 & d ≤ 1050 mm**	Using cover strips on 1 side	
EI 60: w ≤ 1050 & d > 1100 mm **EI 120: w ≤ 1000 & d > 1050 mm**	Using cover strips on 2 sides	
EI 60: w > 1050 & d > 1100 mm **EI 120: w > 1000 & d > 1050 mm**	Using cover strips on 3 sides	

A) Standard Installation

Front view



Side view

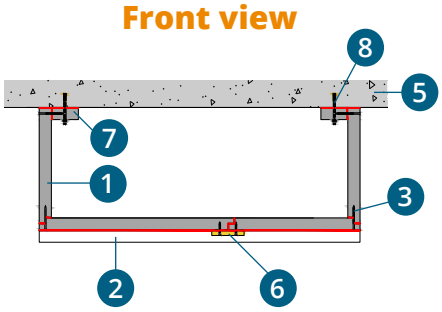


1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. GEOTEC®A 1/2 collar
7. Mechanical fixation

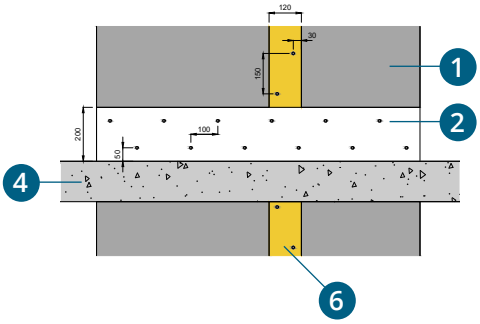
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

B) Using cover strips on 1 side

Front view



Side view

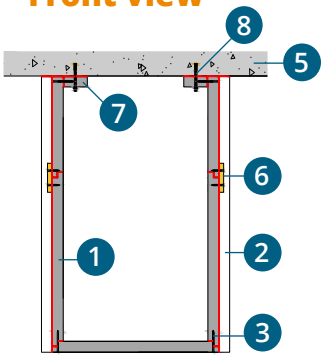


1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. Cover strip
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

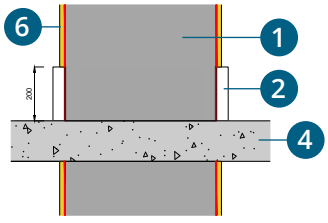
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

C) Using cover strips on 2 sides

Front view



Side view

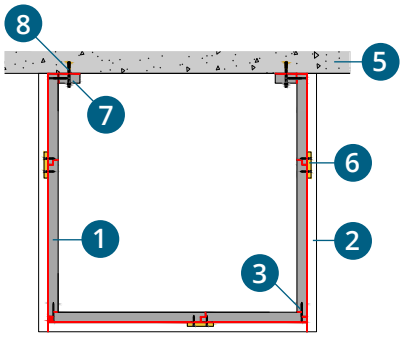


1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. Cover strip
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

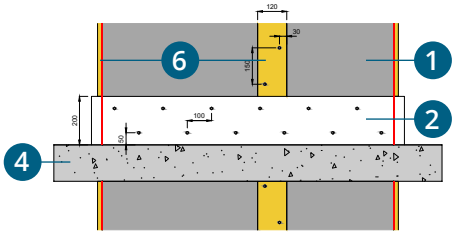
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

D) Using cover strips on 3 sides

Front view



Side view



1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. Cover strip
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

3. Alternative support principles *(see page 140)*

In the standard configuration, reinforcement collars are put at the floor slab level to bear the load of the duct. In cases where this standard configuration is not possible, you can find solutions in the validated alternative supporting constructions.

4. Service ducts passing trough horizontal construction elements *(see page 139)*

5. Service ducts with dilatation joints *(see page 144)*

5. TWO SIDED PROTECTION

The 2-sided protection is fixed to the ceiling or wall using collars that are fixed to the supporting construction.
These collars can be placed on the in - or outside.
Each collar is glued and fixed with minimally 2 fixations to supporting construction.

Certificates: fire resistance classification report				
Tests in accordance with EN 1366-5	**Thickness (mm)**	**EI i ⟷ o**	**Internal cross-sections (mm)**	**EFECTIS classification documents**
Horizontal and vertical Fire Protection of Service Ducts & Shafts	30	30/60	50 x 50 to 2500 x 1500	Cert EFR-16-003921 B Rev. 1
	45	90/120		

5.1. Horizontal system

1. Assembly principle

The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®**glue.
Horizontal ducts are formed from 1000 mm sections; the boards are mounted without offset on the horizontal and vertical joints. However, in order to facilitate the installation, the upper boards can be offset from the rest of the duct.

+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with GEOCOL® glue.

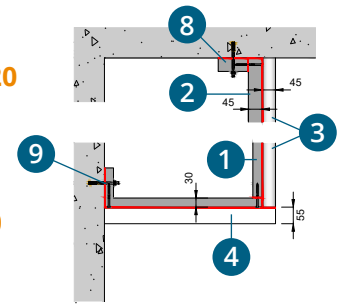
+ Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling or wall can be made
a) with rabbets by installing rabetted half collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

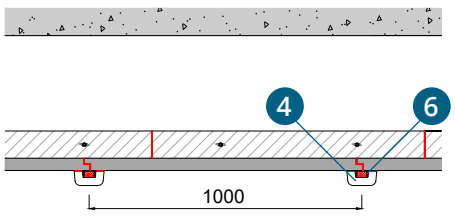
Cross-sectional view

EI 90/120

EI 30/60



Longitudinal view

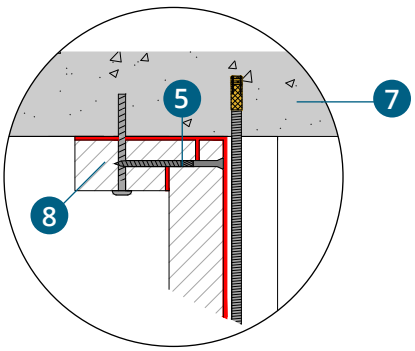


EI 30/60 and EI 90/120

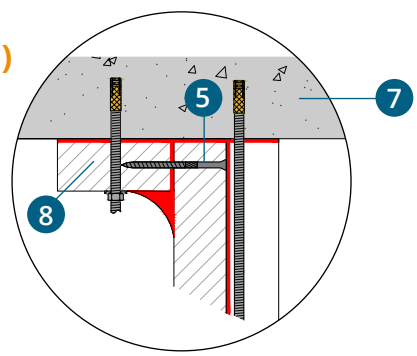
1. GEOTEC® S 30 board
2. GEOTEC® S 45 board
3. GEOTEC®A 1/2 shell
4. GEOTEC®A U plaster element
5. VBA Screw
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Steel U-profile
   21 x 41 x 21
7. Concrete slab
8. GEOTEC®A 1/2 collar
9. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

a)



b)



Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

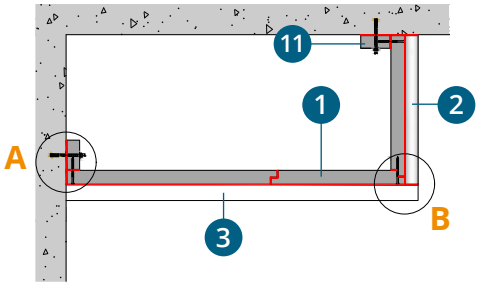
2. Installation instructions

Internal Duct Width (W int)	1366-5 o → i	1366-5 i → o
≤ 1250 mm	Standard Installation.	
1250 < w ≤ 2500 mm	Using appropriated steel U-profiles + Ø 10 threaded rods	

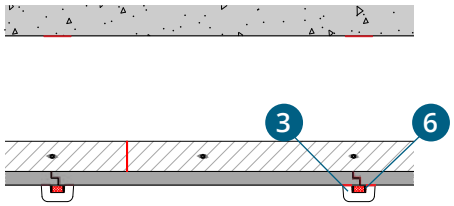
Inner Perimeter > 4500 mm → On request

W int ≤ 1250 mm

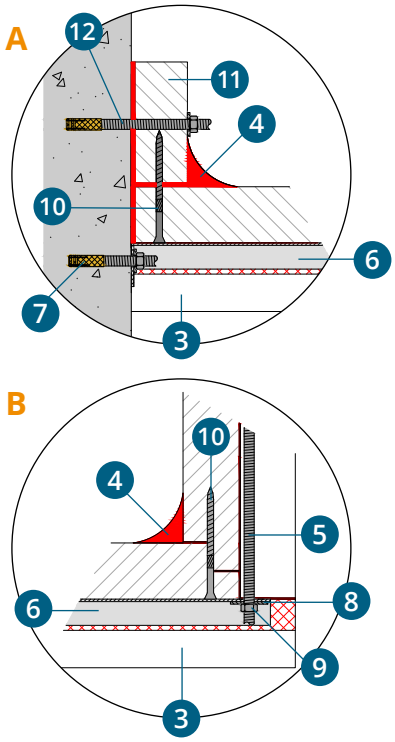
Front view



Side view



If service duct inner perimeter > 4500 mm
replace Threaded rod, Brass anchor, Galvanized washers, Galvanized nuts Ø8 for **Ø10.**



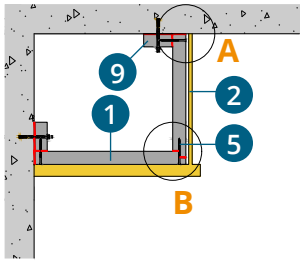
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. Threaded rod **Ø8**
6. Steel U profile **41 x 21**
7. Brass anchor **Ø8**
8. Galvanized washers **Ø8**
9. Galvanized nuts **Ø8**
10. VBA Screws
    Ø 5 x 80 (EI 30/60)
    Ø 5 x 90 (EI 90/120)
    or galvanized steel staples*
    75 x 10 x 2 mm
11. GEOTEC®A 1/2 collar
12. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

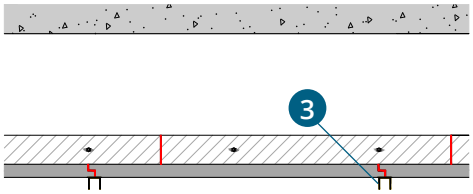
Non protection supports

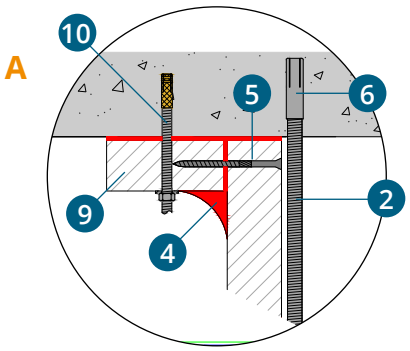
In the case of service ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A half-shells and GEOTEC® A U-plaster element.
For this purpose, the **steel U-profiles 41x21 must be replaced by 41x41** and the **Ø8 threaded rods must be replaced by Ø12 or Ø14 rods** (depending on the cross-section and the desired fire resistance). Attention, in this case, steel anchors have to be used.

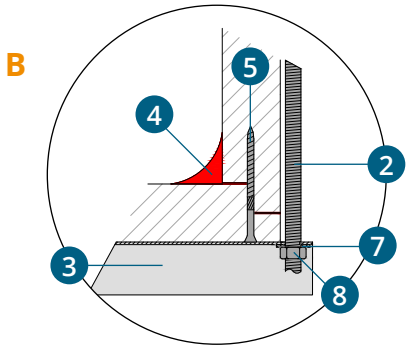
Front view



Side view







1. GEOTEC® S board
2. Threaded rod **Ø12 or Ø14 ****
3. Steel U profile **41x41**
4. Geocol® Glue
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples *
   75 x 10 x 2 mm
6. Steel anchor **Ø12 or Ø14**
7. Galvanized washers **Ø12 or Ø14**
8. Galvanized nuts **Ø12 or Ø14**
9. GEOTEC®A 1/2 collar
10. Mechanical fixation

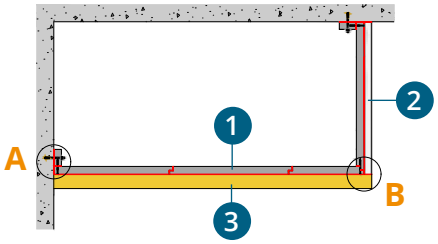
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

**** What diameter should I use ?**

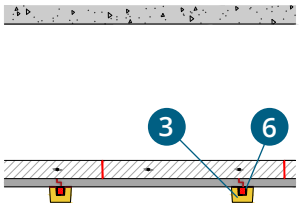
EI 30/60 : Ø 12 in any case
EI 90/120 : Ø 12 when P int ≤ 1200 mm and Ø 14 above

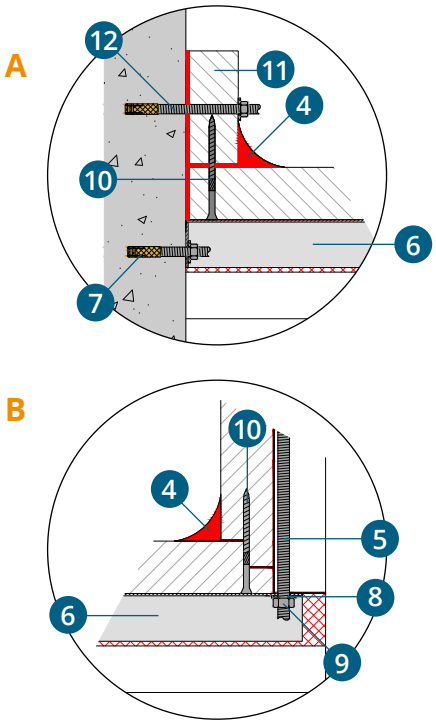
1250 ≤ W int ≤ 2500 mm

Front view



Side view

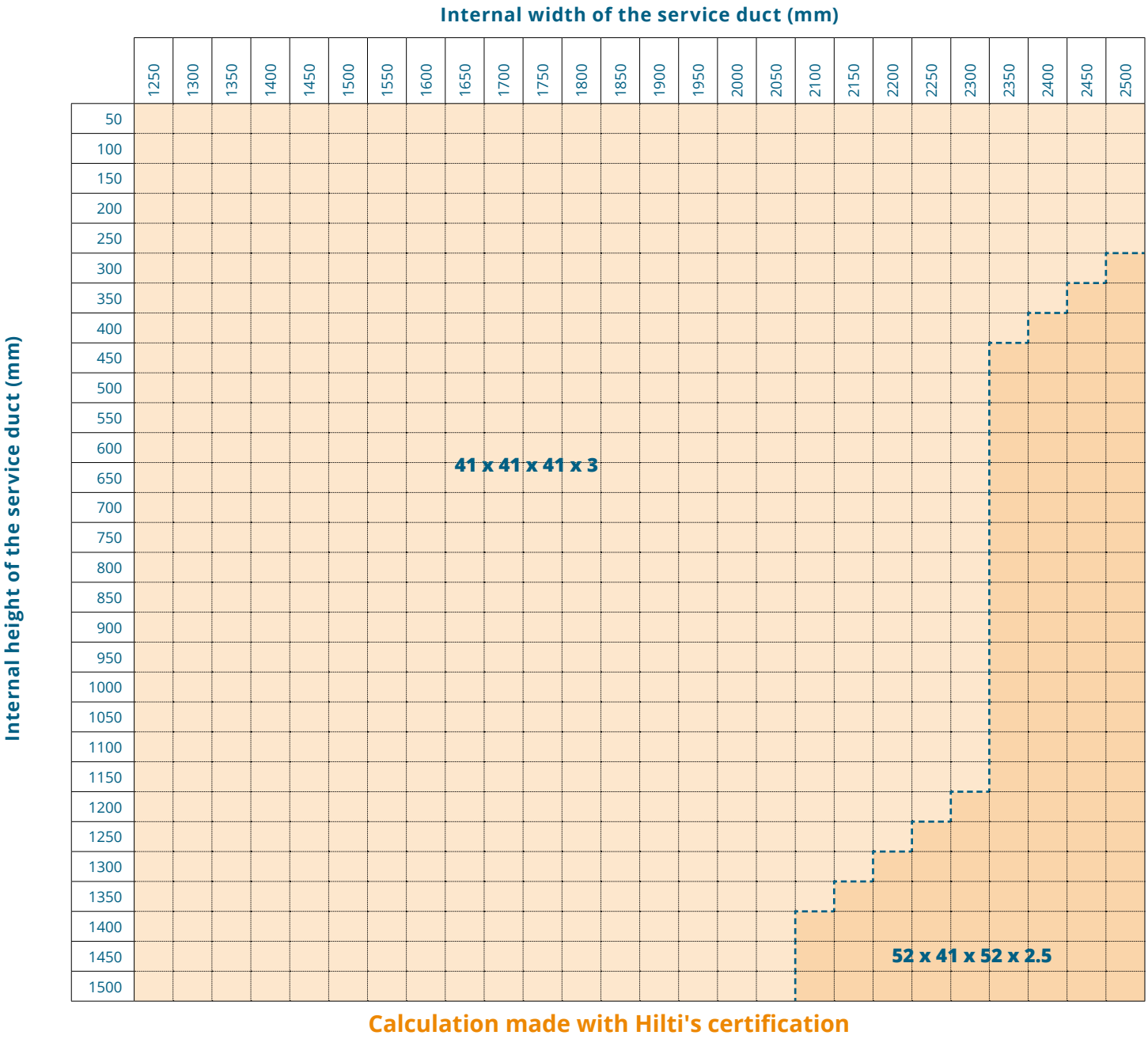




1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element (appropriated according to the steel U profile used)
4. Geocol® Glue
5. Threaded rod **Ø10**
6. Steel U profile (appropriated according to supplier's certification). **See on page 130/131**
7. Brass anchor **Ø10**
8. Galvanized washers **Ø10**
9. Galvanized nuts **Ø10**
10. VBA Screws **Ø 5 x 80** (EI 30/60) / **Ø 5 x 90** (EI 90/120)
11. GEOTEC®A 1/2 collar
12. Mechanical fixation

Steel U-profiles dimensions
2 sided EI 30-60 Geotec® S30

Steel U-profiles LOWER



Calculation made with Hilti's certification

Steel U-profiles dimensions
2 sided EI 90-120 Geotec® S45

Steel U-profiles LOWER

Internal width of the service duct (mm)

Internal height of the service duct (mm)	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500
50																										
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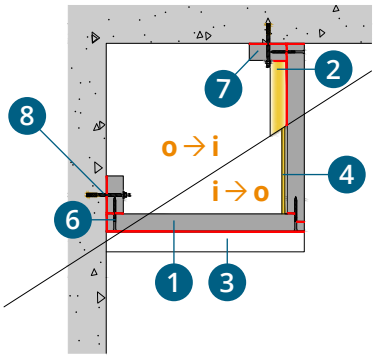
Calculation made with Hilti's certification

3. Alternative supporting principles

A) Decrease of service duct overall dimension

It is possible to reduce the external width of the service ducts (50 mm) by positioning the threaded rod on the inside.

Front view: small section



*** when the protection i → o is at stake, then the protective 1/2 shell element on the inside of the service duct must be added.**

1250 < w ≤ 2500 mm
EI 30 / 60 and EI 90 / 120

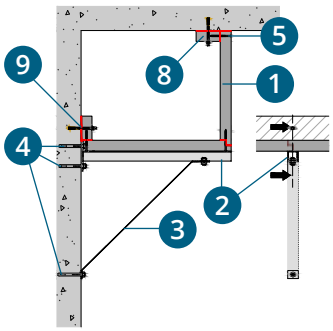
Extension 17/6 on EFR-16-003067

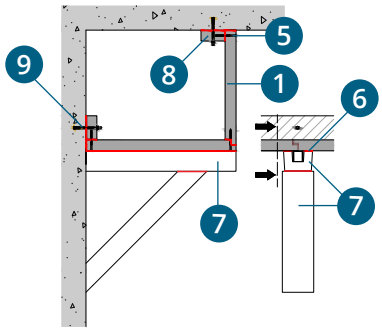
1. GEOTEC® S board
2. GEOTEC® A 1/2 shell*
3. GEOTEC®A U-plaster element
4. Threaded rod
5. Steel U profile
6. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

B) Installation on brackets

When the service duct is installed on/adjacent to a vertical wall, the support can be made by using metal brackets, with or without struts (appropriate according to the supplier's certification). **Metal brackets** and strut must be thermally protected against fire using the **GEOTEC® A U-plaster element** and Geocol®.





1. GEOTEC® S board
2. Metal bracket
3. Load strut
4. Expansion anchors
5. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
6. Geocol® Glue
7. GEOTEC® A U-plaster element
8. GEOTEC®A 1/2 collar
9. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

+ In the case of service ducts with an internal **width (W int) of ≤ 600 mm and an inner perimeter (P int) of ≤ 1900 mm**, it is allowed to remove GEOTEC® A U-plaster element.

4. Service ducts passing trough vertical construction elements *(see page 138)*

5. Service ducts with dilatation joints *(see page 144)*

5.2. Vertical system

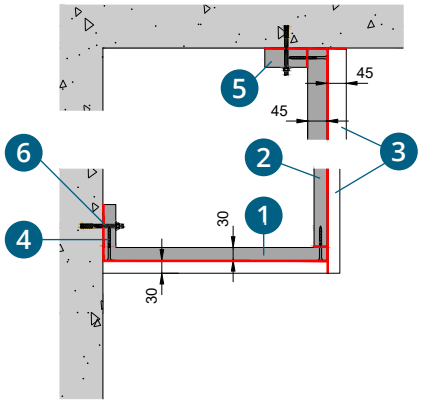
1. Assembly principles

Collars are installed on the constructive element on the inner or the outer side of the service duct. The side boards are then assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with GEOCOL® glue.

When constructing vertical service ducts, the board joints are offset between 2 contiguous faces (between 200 and 800 mm) so as to achieve optimal mechanical strength for the duct.

When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling or wall can be made
a) with rabbets by installing rabetted half collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Cross-sectional views

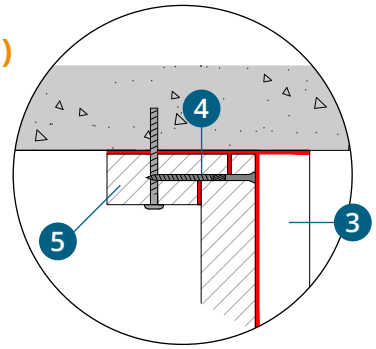


1. GEOTEC® S30 board
2. GEOTEC® S45 board
3. GEOTEC®A Reinforcement collar
4. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
5. GEOTEC®A 1/2 collar
6. Mechanical fixation

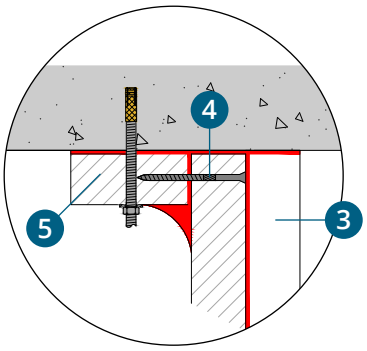
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

a)

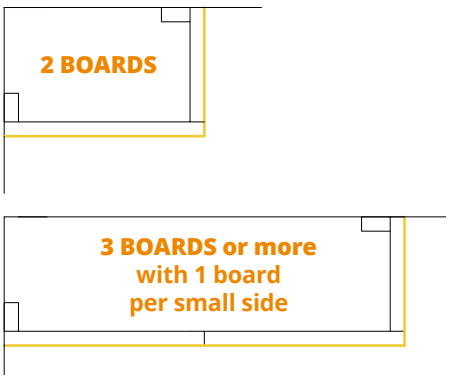


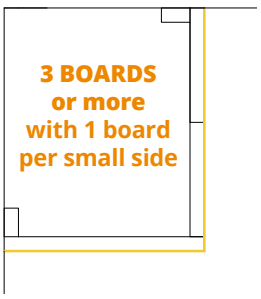
b)

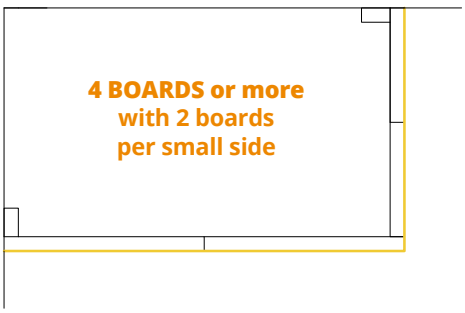


Concerning the load-bearing systems

Concerning the 2-sided service ducts the load-bearing system shall be obviously carried out on 2 sides only in all cases.





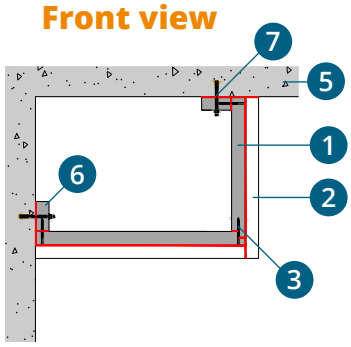


2. Installation instructions

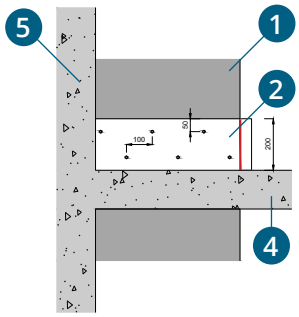
Internal Duct Width & Depth (W int & D int)	1366-5 o → i	1366-5 i → o
EI 60: w ≤ 1050 & d ≤ 1100 mm EI 120: w ≤ 1000 & d ≤ 1050 mm	Standard Installation	
EI 60: w > 1050 & d ≤ 1100 mm EI 120: w > 1000 & d ≤ 1050 mm or EI 60: w ≤ 1050 & d > 1100 mm EI 120: w ≤ 1000 & d > 1050 mm	Using cover strips on 1 side	
EI 60: w > 1050 & d > 1100 mm EI 120: w > 1000 & d > 1050 mm	Using cover strips on 2 sides	

A) Standard Installation

Front view



Side view

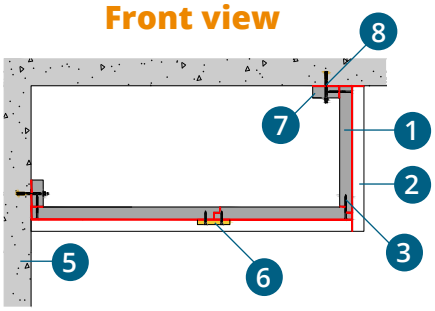


1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. GEOTEC®A 1/2 collar
7. Mechanical fixation

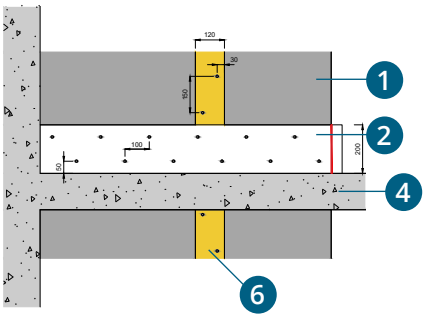
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

B) Using cover strips on 1 side

Front view



Side view

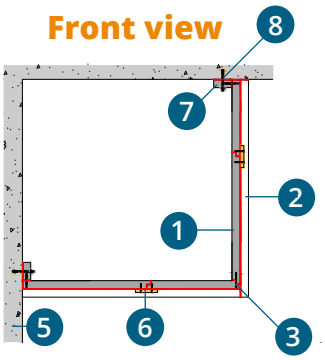


1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. Cover strip
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

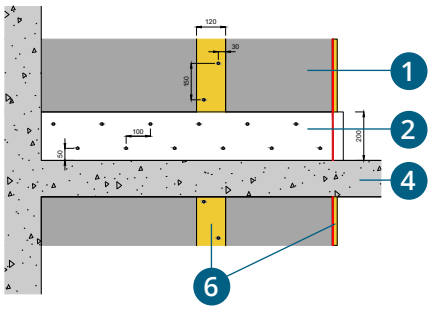
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

C) Using cover strips on 2 sides

Front view



Side view



1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. Cover strip
7. GEOTEC®A 1/2 collar
8. Mechanical fixation

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

3. Alternative support principles *(see page 140)*

In the standard configuration, reinforcement collars are put at the floor slab level to bear the load of the duct. In cases where this standard configuration is not possible, you can find solutions in the validated alternative supporting constructions.

4. Service ducts passing trough horizontal construction elements *(see page 139)*

5. Service ducts with dilatation joints *(see page 144)*

6. ONE SIDED PROTECTION (vertical)

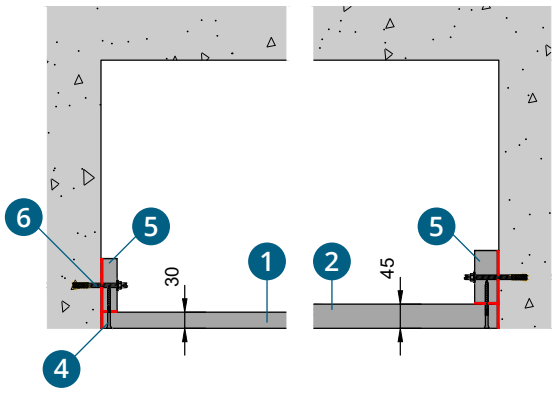
Certificates: fire resistance classification report				
Tests in accordance with EN 1366-5	**Thickness (mm)**	**EI i ⟷ o**	**Internal width (mm)**	**EFECTIS classification documents**
Vertical Fire Protection of Service Ducts & Shafts	30	30/60	50 to 2500	Cert EFR-18-003855 A
	45	90/120		

6.1. Assembly principle

Collars are installed on the constructive element on the inner or the outer side of the service duct. The side boards are then assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with GEOCOL® glue.
When constructing vertical service ducts, the board joints are offset between 2 contiguous faces (between 200 and 800 mm) so as to achieve optimal mechanical strength for the duct.

When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling or wall can be made
a) with rabbets by installing rabetted half collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Front views

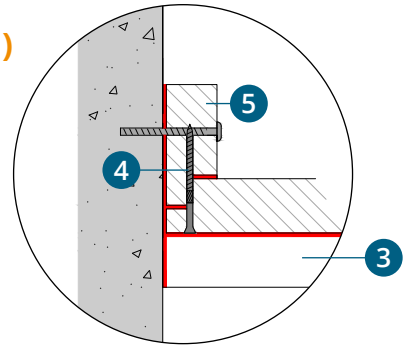


1. GEOTEC® S30 board
2. GEOTEC® S45 board
3. GEOTEC®A Reinforcement collar
4. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
5. GEOTEC®A 1/2 collar
6. Mechanical fixation

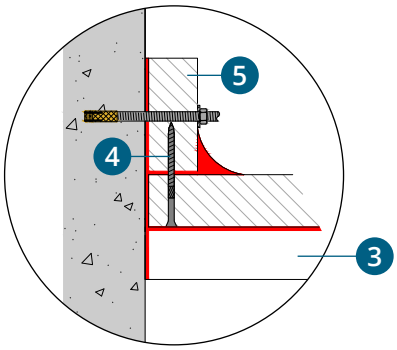
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

a)



b)



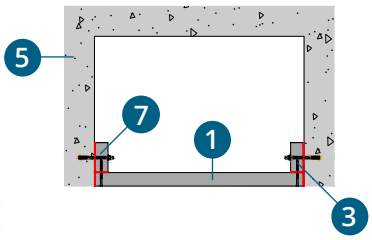
Concerning the load-bearing systems

Concerning the 1-sided vertical service ducts, the load-bearing system shall be carried out on the only accessible side in the case of a service duct made of multiple boards.

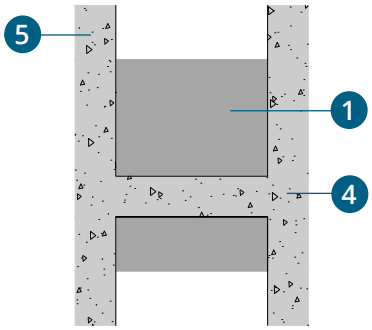
6. 2. Installation instructions

Installation with single board sides

Front view

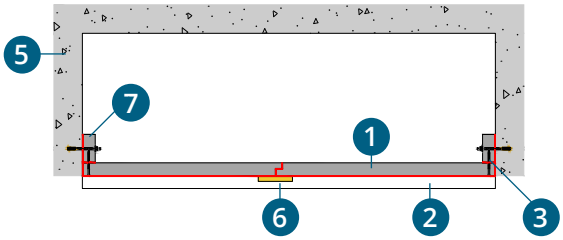


Side view

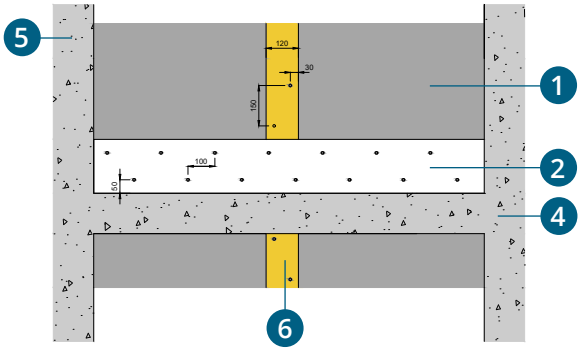


Installation with multiple board sides

Front view



Side view



1. GEOTEC® S board
2. GEOTEC®A Reinforcement collar
3. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm
4. Concrete slab
5. Concrete wall
6. Cover strip
7. GEOTEC®A 1/2 collar

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

3. Alternative support principles *(see page 140)*

In the standard configuration, reinforcement collars are put at the floor slab level to bear the load of the duct. In cases where this standard configuration is not possible, you can find solutions in the validated alternative supporting constructions.

4. Service ducts passing trough horizontal construction elements *(see page 139)*

5. Service ducts with dilatation joints *(see page 144)*

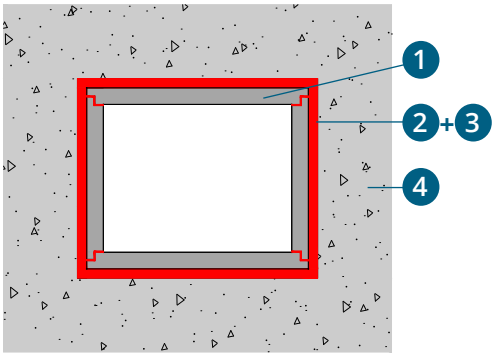
7. PENETRATION OF CONSTRUCTION ELEMENTS

7.1. Vertical construction elements

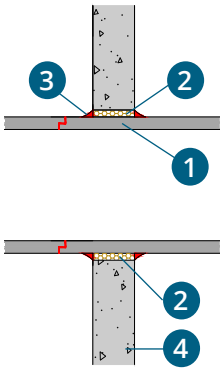
1. Solid wall - Continuous

Method of caulking horizontal ducts through vertical walls :

Top view



Side view

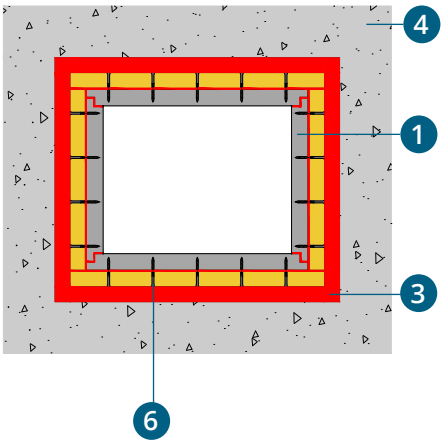


\+ * Caulking may be carried out using fire-stop polyurethane foam or stone wool (26 kg/m³ minimum).

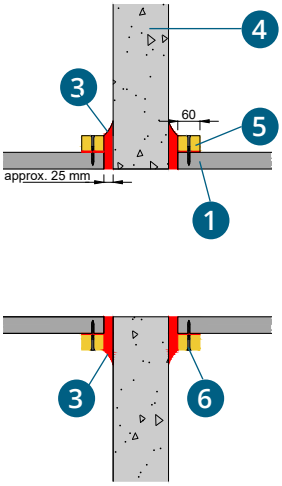
2. Solid wall - Interrupted

Method of caulking a non-traversing horizontal duct :

Top view



Side view



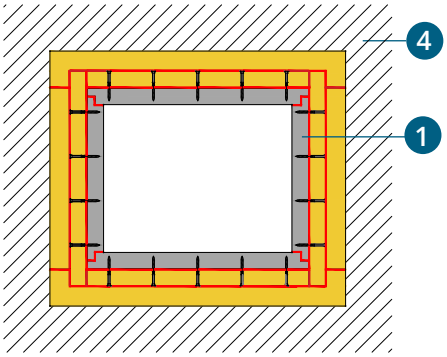
1. GEOTEC® S board
2. Caulking* (max 25 mm)
3. Geocol® Glue
4. Concrete wall
5. GEOTEC® A Batten
6. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

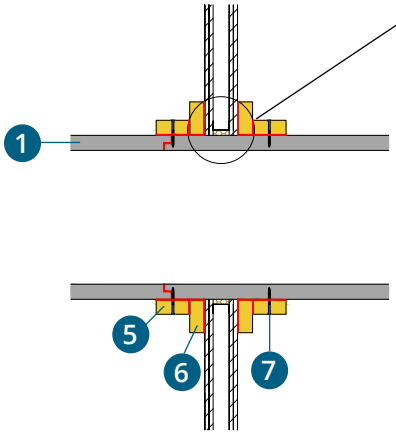
3. Flexible wall

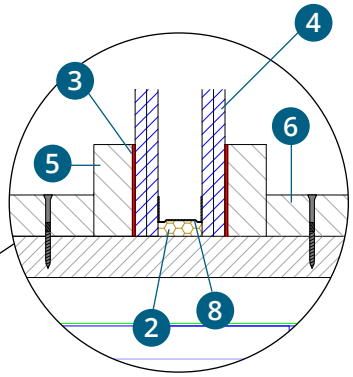
THROUGHOUT OF LIGHTWEIGHT PLASTERBOARD PARTITION

Top view



Side view





1. GEOTEC® S board
2. Caulking* (max. 25 mm)
3. Geocol® Glue
4. Fire resistant lightweight partition
5. GEOTEC®A Batten (100 mm x thickness)
6. GEOTEC®A Batten (100 mm x thickness) (against the lightweight partition)
7. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120
   or galvanized steel staples*
   75 x 10 x 2 mm
8. Rail

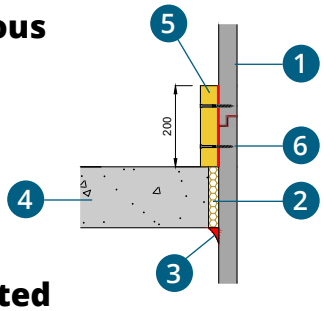
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

✚ * Caulking may be carried out using fire-stop polyurethane foam or stone wool (26 kg/m³ minimum).

7.2. Horizontal construction elements

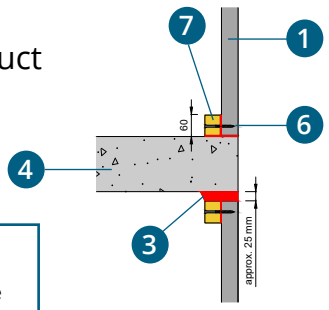
1. Solid floor - Continuous

Method of caulking a continuous vertical duct



2. Solid floor - Interrupted

Method of caulking a non-traversing vertical duct



✚ * Caulking may be carried out using fire-stop polyurethane foam or stone wool (26 kg/m³ minimum).

1. GEOTEC® S board
2. Caulking* (max 25mm)
3. GEOCOL® Glue
4. Concrete floor
5. GEOTEC®A internal reinforcement collar
6. VBA Screws
   Ø 5 x 80 (EI 30/60 S)
   Ø 5 x 90 (EI 90/120 S)
   or galvanized steel staples*
7. GEOTEC®A Batten

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

8. SUPPORTING SOLUTIONS FOR VERTICAL INSTALLATIONS

The various load bearing principles shown below are represented for service ducts consisting of 4-board casing (in the case of 4-sided service ducts). In the case of larger section and/or 3- sided, 2-sided and 1-sided service ducts, these alternative systems will have to be adapted (see paragraph 3.2.1, 4.3.1, 5.2.1 or 6.1).

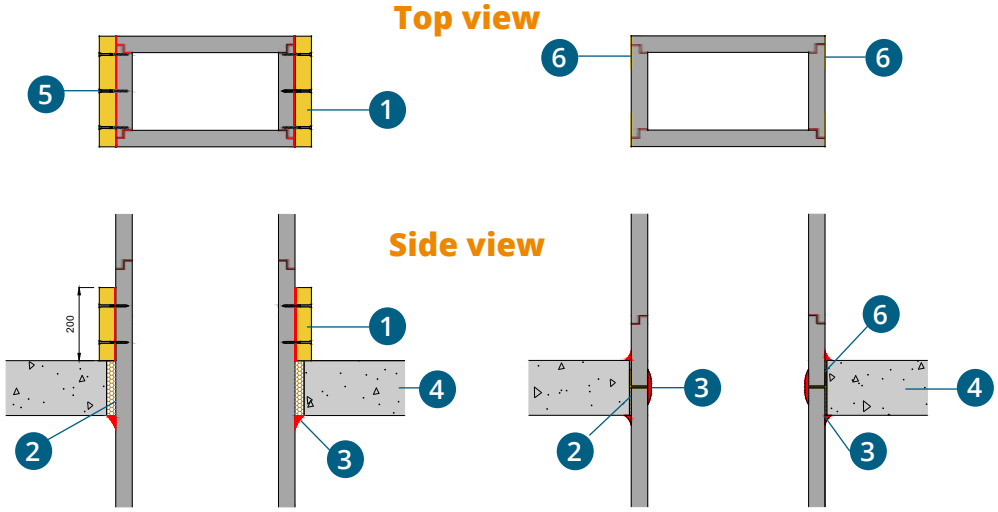
The table below shows the different alternatives supporting constructions according to the type of service duct encountered.

Alternative Support Principles			4-SIDED + GEOFLAM® C-Light (see section 3.2.1)	3-SIDED (see section 4.3.1)	2-SIDED (see section 5.2.1)	1-SIDED (see section 6.1)
1	Service Ducts not attached to walls	A	X	X		X
		B	X	X		X
		C	X	X		X
		D	X	X		X
2	Service Ducts adjacent to a wall corner	E	X		X	
		F	X			
		G	X		X	
		H	X			
3	Service Ducts adjacent to the wall	I	X			
4	Sub-floor level support	J	X	X	X	X
5	Service Ducts on brackets	K	X	X		
		L	X		X	

1. Service Ducts not attached to walls

A) Support by 2 parallel GEOTEC®A reinforcement collars on the floor.

B) Support by 2 parallel corner-pieces on the slab.



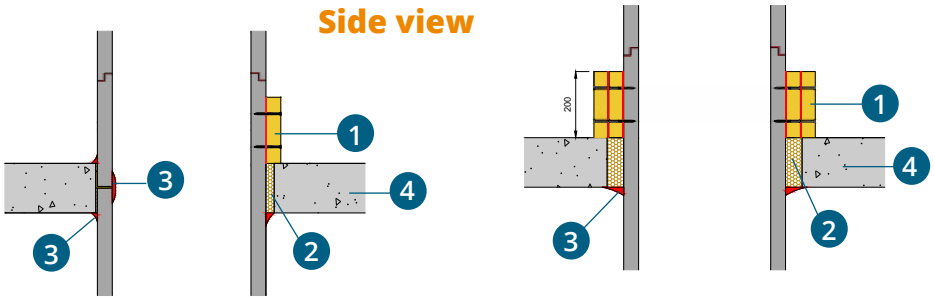
1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:
   EI 30/60: 35x35x4 mm.
   EI 90/120 (S): 50x50x5 mm.

C) Support by 1 GEOTEC®A reinforcement collar on floor + 1 parallel corner-piece on the slab.

D) Support by 2 double parallel GEOTEC®A reinforcement collars on the floor.

Top view

Side view



+ Height limited to 7 m with 2 supports, and to 10 m with 3 or 4 supports.

1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

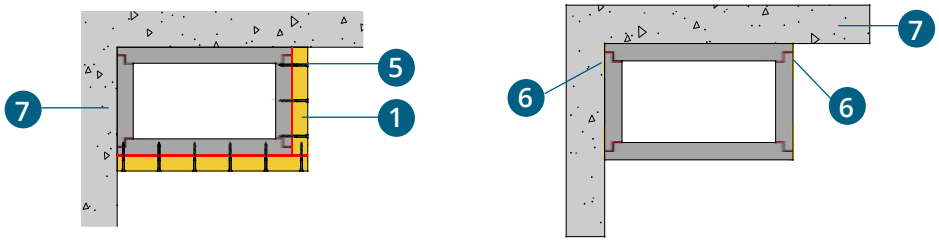
   EI 30/60: 35x35x4 mm.
   EI 90/120: 50x50x5 mm.

2. Ducts adjacent to a wall corner

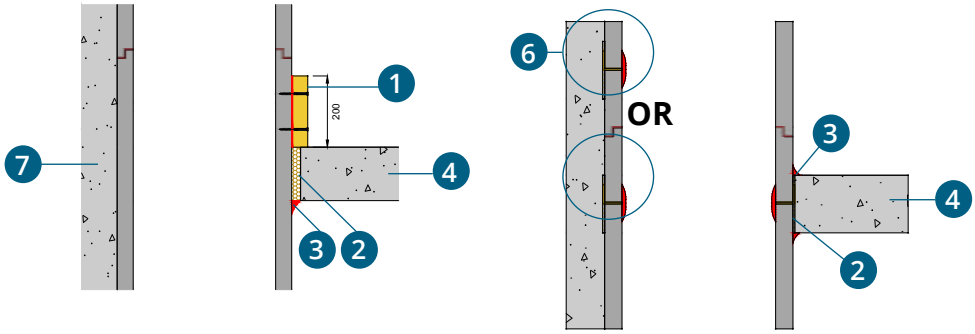
E) Support by 2 perpendicular GEOTEC®A reinforcement collars on the floor.

F) Support by 2 parallel corner-pieces on the slab and wall.

Top view



Side view



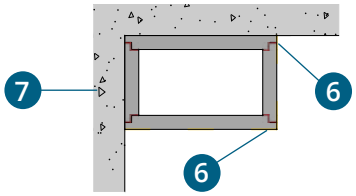
1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

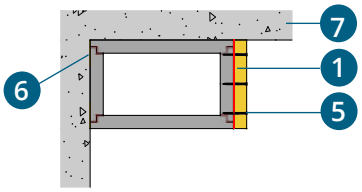
   EI 30/60: 35x35x4 mm.
   EI 90/120: 50x50x5 mm.
7. Concrete wall

G) Support by 2 perpendicular corner-pieces on the slab.

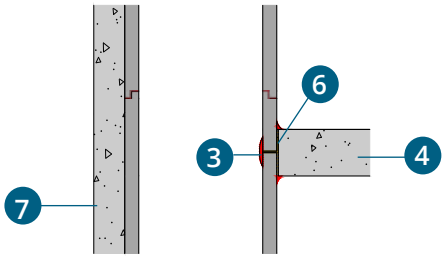
H) Support by 1 GEOTEC®A reinforcement collar on the floor + 1 corner-piece in parallel on the wall.

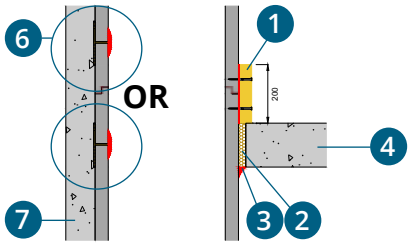
Top view





Side view





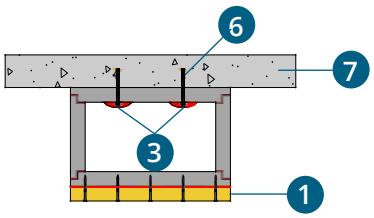
1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Corner-pieces:

   EI 30/60: 35x35x4 mm.
   EI 90/120: 50x50x5 mm.
7. Concrete wall

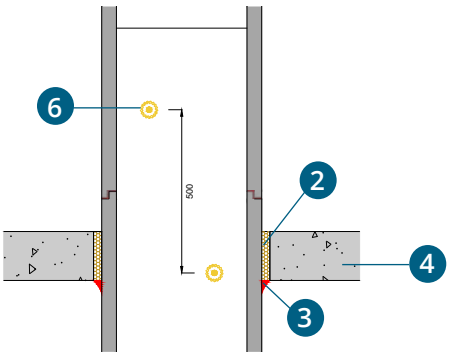
3. Ducts adjacent to the wall

I) Support by threaded rods anchored to the vertical wall and other parallel supports.

Top view



Side view

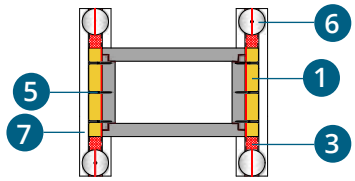


1. GEOTEC®A reinforcement collar (glued & screwed) or corner piece
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. Mechanical fixation
7. Concrete wall

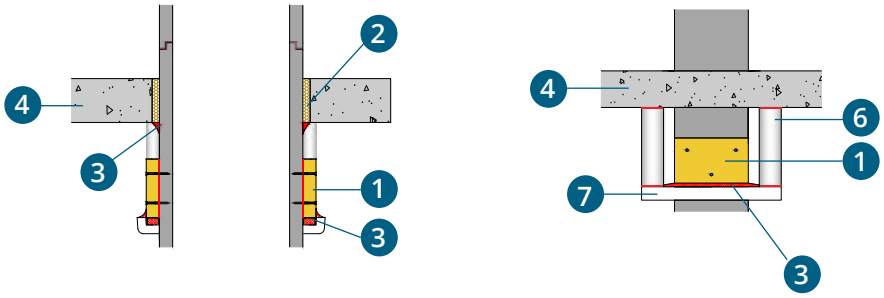
4. Sub-floor level support

J) Support by 2 parallel GEOTEC®A reinforcement collars under the floor.

Top view



Side view



1. GEOTEC®A reinforcement collar (glued & screwed)
2. Caulking
3. GEOCOL® Glue
4. Floor
5. Screws
6. GEOTEC®A Half shells + **Ø8** threaded rods
7. GEOTEC®A U-plaster element + Steel U-profile **41x21**

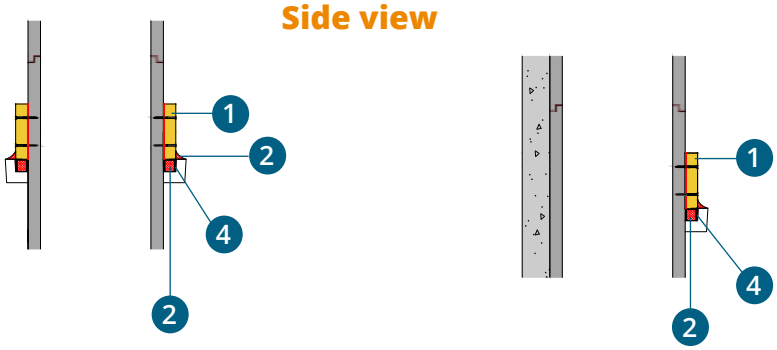
5. Service Ducts on brackets

K) Support by 2 parallel GEOTEC®A reinforcement collars on brackets fixed in the vertical wall.

L) Support by 2 perpendicular GEOTEC®A reinforcement collars on brackets fixed in the vertical wall.

Top view

Side view



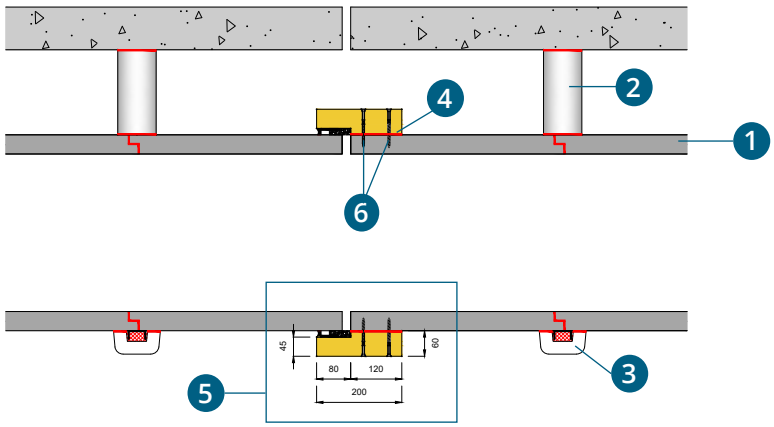
1. GEOTEC®A reinforcement collar (glued & screwed) placed on brackets
2. GEOCOL® Glue
3. Screws
4. Protected appropriate brackets
5. Concrete wall

9. DILATATION JOINTS

9.1. Horizontal dilation joints

Treatment of the crossing of an expansion joint

In the construction of a building, expansion joints must be envisaged in accordance with pre-established rules. It is therefore common for horizontal ducts to pass through expansion joints. It is then necessary to carry out a specific treatment.



1. GEOTEC® S board
2. GEOTEC® A 1/2 shell
3. GEOTEC®A U-plaster element
4. Geocol® Glue
5. GEOTEC® A Expansion joint element*
6. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm

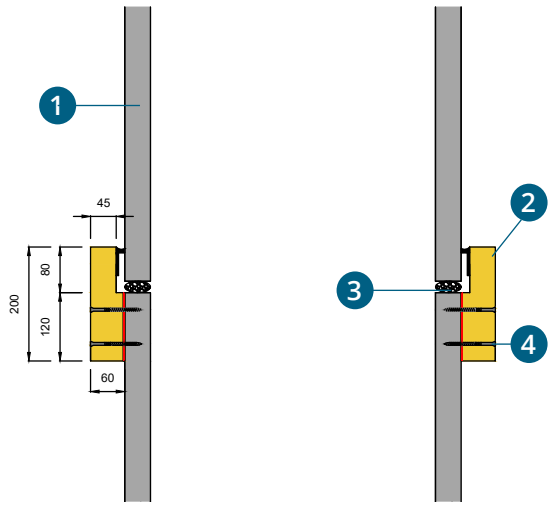
***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

* Technical datasheet of Expansion joint element page 24

9.2. Vertical dilation joints

Treatment of the crossing of an expansion joint

In the construction of a building, expansion joints must be envisaged in accordance with pre-established rules. It is therefore common for vertical ducts to pass through expansion joints. It is then necessary to carry out a specific treatment.



1. GEOTEC® S board
2. GEOTEC® A Expansion joint element*
3. Mineral fiber rope **Ø40**
4. VBA Screws
   Ø 5 x 80 (EI 30/60)
   Ø 5 x 90 (EI 90/120)
   or galvanized steel staples*
   75 x 10 x 2 mm

***staples :**
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

* Technical datasheet of Expansion joint element page 24

CARBON FIBER REINFORCE-MENTS

1. SYSTEM GENERAL OVERVIEW

The fire stability of reinforced concrete structures and substrates is obtained by restricting the temperature rise in the steelwork within the concrete.

If the existing load-bearing structures need to be strengthened (in the case of a change of use, anti-seismic confinement, refurbishment, etc.), one solution involves bonding carbon fibre reinforced boards with an epoxy resin adhesive.

With the aim of guaranteeing the strength and performance of these carbon reinforcements in the event of fire, the solution has to guarantee a temperature of the adhesive used.

This maximum temperature, varying between 45 and 80° C, appears in the technical notes of the manufacturers to whom the reader should refer.

Following the fire resistance tests carried out at the Efectis laboratory, and via the intermediary of Laboratory Assessment EFR-18-001644, GEOSTAFF® proposes validated solutions using GEOTEC®S to protect the carbon fibre reinforcements installed under the floor slab and concrete beam, depending on the desired levels of fire performance and the critical temperatures provided by the manufacturer.

2. PROTECTION UNDER CONCRETE FLOOR SLAB

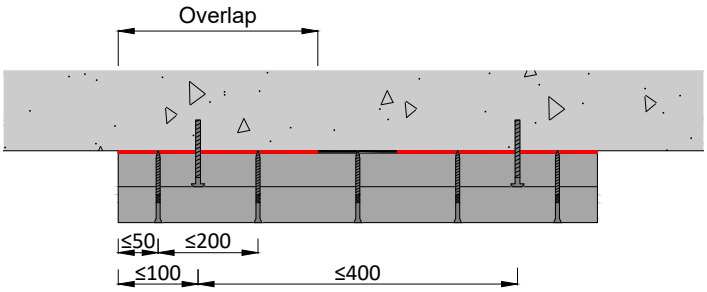
In this configuration, GEOCOL® adhesive is applied around the periphery of the carbon fibre reinforcement.

A first protective thickness using GEOTEC®S is attached to the concrete using masonry screws 400 mm apart in both directions.

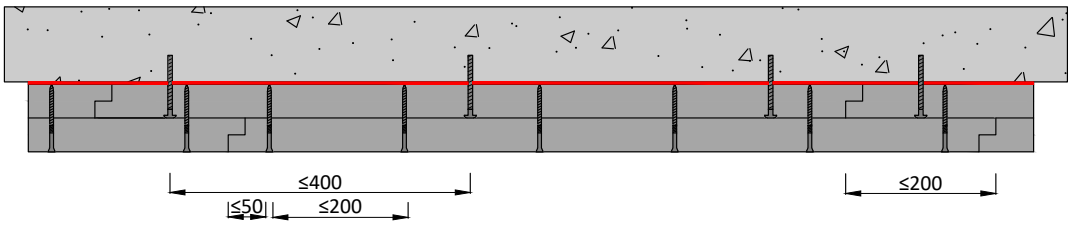
The second thickness is attached to the first via offset joints, using woodscrews 200 mm apart in both directions.

If a third layer is to be used, it should be fixed to the second layer by means of wood screws every 200 mm.

Front view



Side view



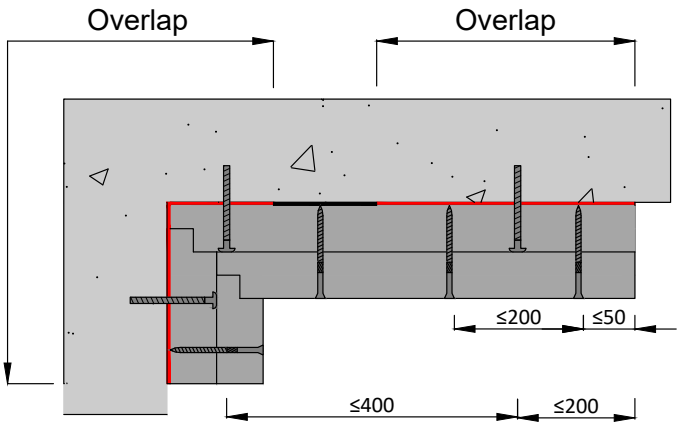
Desired interface temperature (°C)	GEOTEC®S PROTECTIVE THICKNESS				
	Desired fire performance				
	30 min	60 min	90 min	120 min	180 min
45	2x30 mm (Overlap 100 mm)	2x45 mm (Overlap 100 mm)	2x45 mm (Overlap 350 mm)	3x45 mm* (Overlap 250 mm)	-
60	2x30 mm (Overlap 100 mm)	2x30 mm (Overlap 100 mm)	2x45 mm (Overlap 100 mm)	2x45 mm (Overlap 200 mm)	-
80	2x30 mm (Overlap 100 mm)	2x30 mm (Overlap 100 mm)	2x30 mm (Overlap 100 mm)	2x45 mm (Overlap 100 mm)	2x45 mm (Overlap 100 mm)

* Glue must be applied between each layer

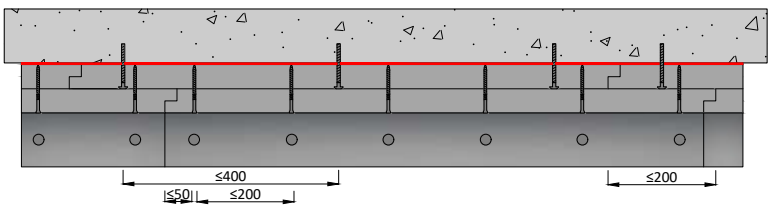
Note:
When the protection is adjacent to a wall corner:

In the case of a protection adjacent to a wall corner, the installation must be adapted so the overlap remain the same as indicated in the table (see above page 147).

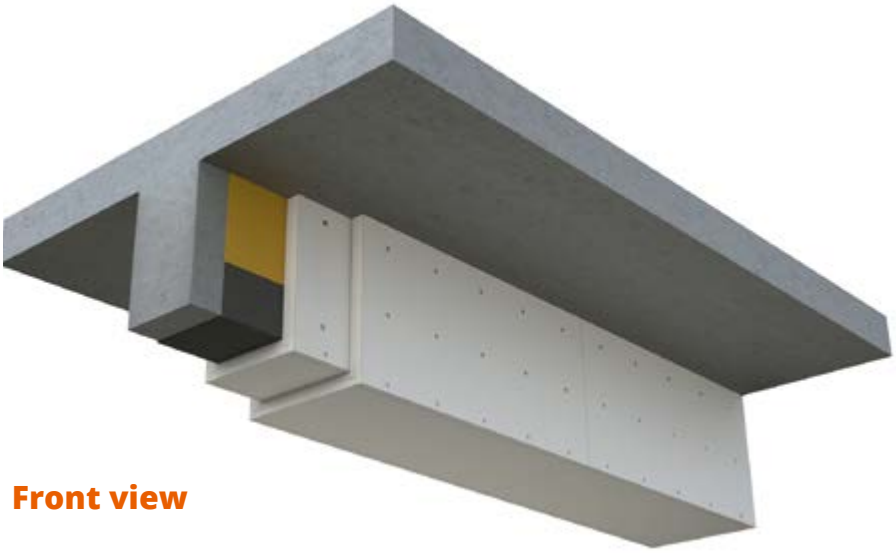
Front view



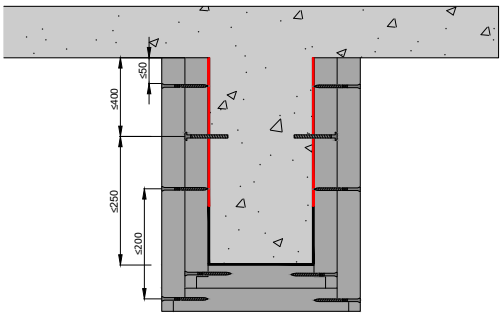
Side view



3. PROTECTION UNDER THE BEAM



Front view



In this configuration, the beam is covered on all three sides.
The carbon reinforcement is glued on the periphery with GEOCOL® adhesive.

The first layer of GEOTEC® protection is fixed on the one hand to the two vertical sides by means of concrete screws (centre distance: 400 mm) and on the other hand to the bottom of the beam by means of wood screws (centre distance: 200 mm).

The second layer of protection is fixed at offset joints to the first layer by means of wood screws (centre distance 200 mm in both directions).

If a third layer of protection is required, it should be fixed to the second layer by means of wood screws (centres: 200 mm in both directions).

Reinforcement installed on the bottom of the beam

Desired interface temperature (°C)	GEOTEC®S PROTECTIVE THICKNESS			
	Desired fire performance			
	30 min	60 min	90 min	120 min
45	2x45 mm	2x45 mm	3x45 mm	-
60	2x45 mm	2x45 mm	2x45 mm + 30 mm	3x45 mm
80	2x30 mm	2x45 mm	2x45 mm	2x45 mm

Reinforcement installed on the side of the beam

Desired interface temperature (°C)	GEOTEC®S PROTECTIVE THICKNESS			
	Desired fire performance			
	30 min	60 min	90 min	120 min
45	2x45 mm	2x45 mm	2x45 mm + 30 mm	3x45 mm*
60	2x30 mm	2x45 mm	2x45 mm	2x45 mm + 30 mm
80	2x30 mm	2x30 mm	2x45 mm	2x45 mm

* Glue must be applied between each layer

FIRE RATED INSPECTION HATCHES

1. VERTICAL INSPECTION HATCHES

1.1. GEOSYSTEM® V60-V120

1.Technical datasheet

Dimensions

EI i⇔o	Dimensions of the door (opening)	Free way	Overall dimensions	Total Thickness
	E x F	C x D	A x B	G
60	200 x 200 up to 600 x 600	162 x 162 up to 562 x 562	294 x 294 up to 694 x 694	72,5
120				87,5

DOCUMENTATION nr. EFR-19-002200
The inspection hatches are tested with an indifferent direction of fire

PRODUCT DESCRIPTION

GEOSYSTEM® V60 & V120 inspection hatches consist of a frame made of fire-resistant plasterboard and two successive leaves.

The first leaf, which acts as an aesthetic covering, is opened/closed by simply pressing on the hatch, while the second, which can be removed, is equipped with two steel pins to remove it.

APPLICATIONS

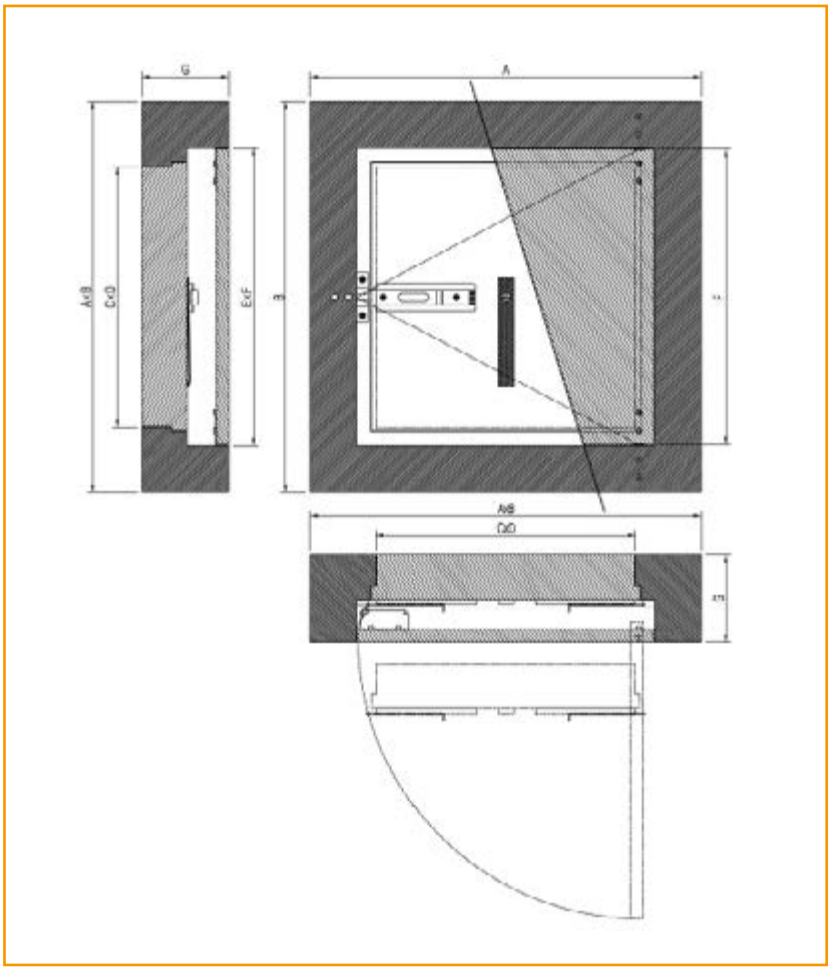
Easy to install and in compliance with current standards, **GEOSYSTEM® V60 & V120** inspection hatches, with fire resistance ratings EI 60 and EI 120 (FP1H and 2H), can be installed in technical ducts, solid walls or as passage openings in partition walls.

USAGE

The inspection hatches **GEOSYSTEM® V60 & V120** can be installed:
- **GEOTEC®** and **GEOFLAM®** protection of service ducts and shafts
- Solid walls
- Partitions or false walls
- Plasterboards walls

TRANSPORTATION AND STORAGE

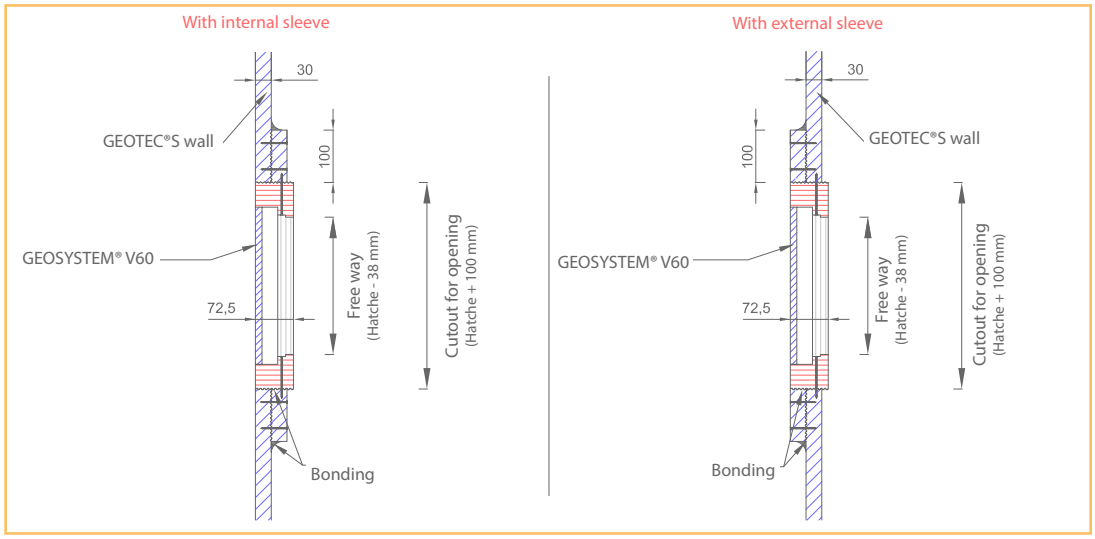
Transport and store on a flat, protected surface. Keep away from water.



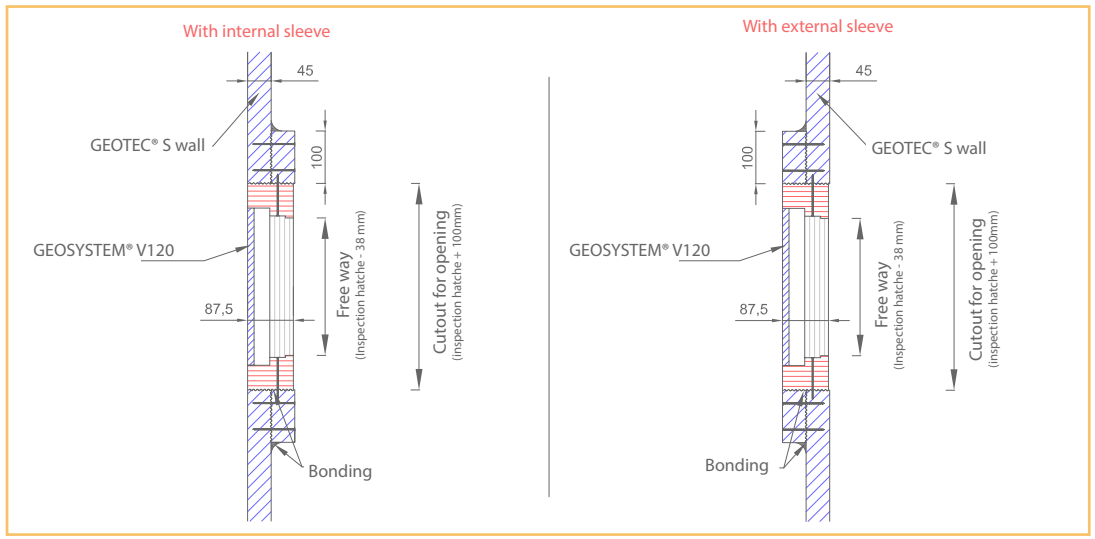
Overall dimensions

2. Assembly of GEOSYSTEM® Inspection hatches inside a GEOTEC® technical duct

GEOSYSTEM® V60 for EI 60



GEOSYSTEM® V120 for EI 120



Certificates : fire-resistance classification report

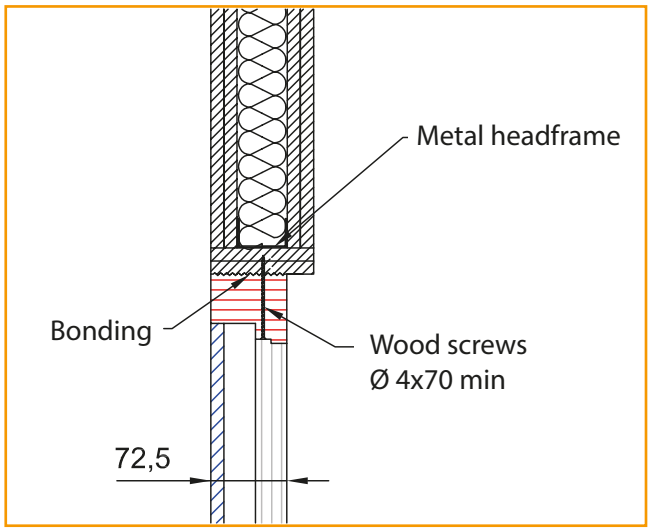
Tests in accordance with EN 1634-1	EFECTIS classification documents	Dimensions (mm)	EI	
			60	120
EI 60 hatch	Document n° EFR-19-002200	200 x 200 up to 600 x 600	x	
EI 120 hatch				x

E = Fire sealing / I = Thermal insulation

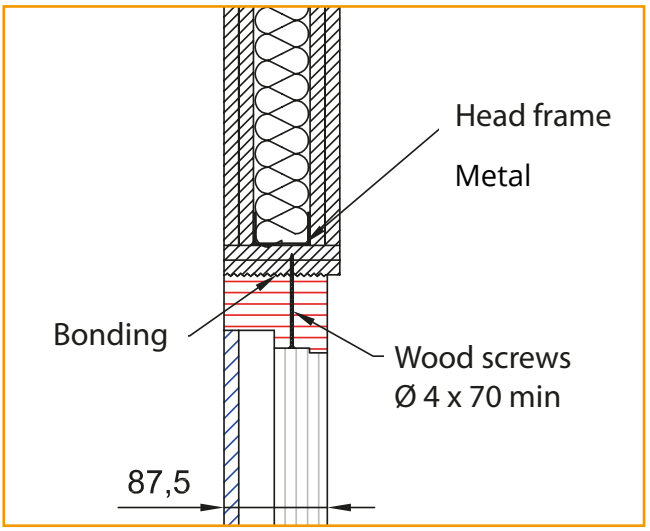
Please consult us if you require fire-protection hatches installed horizontally

3. Assembly of GEOSYSTEM® Inspection hatches inside a plasterboards wall

GEOSYSTEM® V60

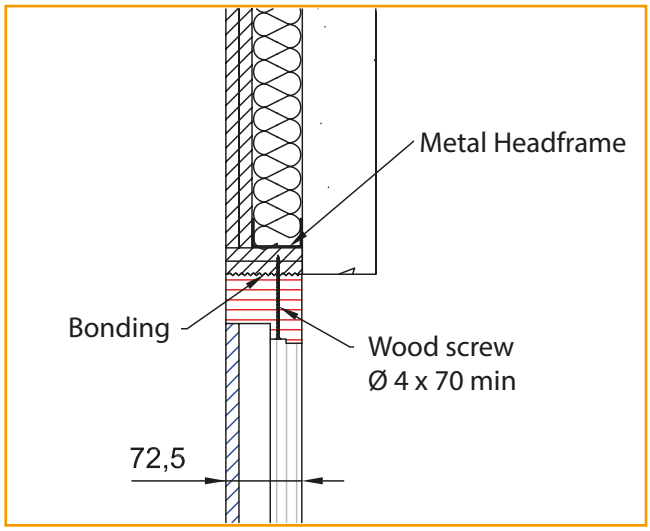


GEOSYSTEM® V120

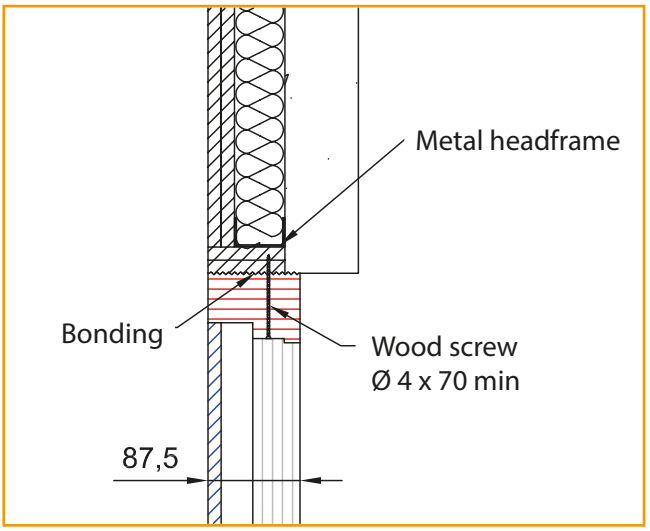


4. Assembly of GEOSYSTEM® Inspection hatches inside a shaft wall

GEOSYSTEM® V60

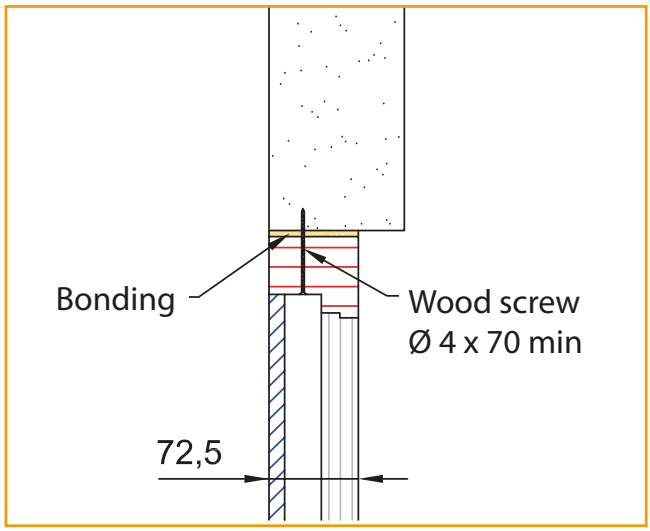


GEOSYSTEM® V120

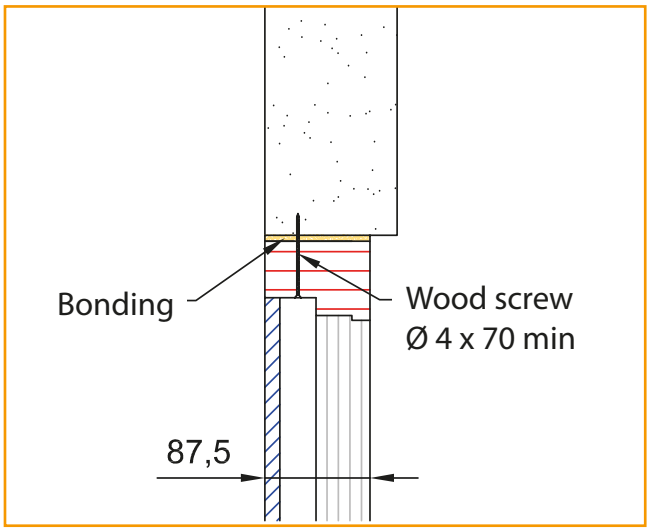


5. Assembly of GEOSYSTEM® Inspection hatches inside a cellular concrete wall or a plasterboards wall

GEOSYSTEM® V60

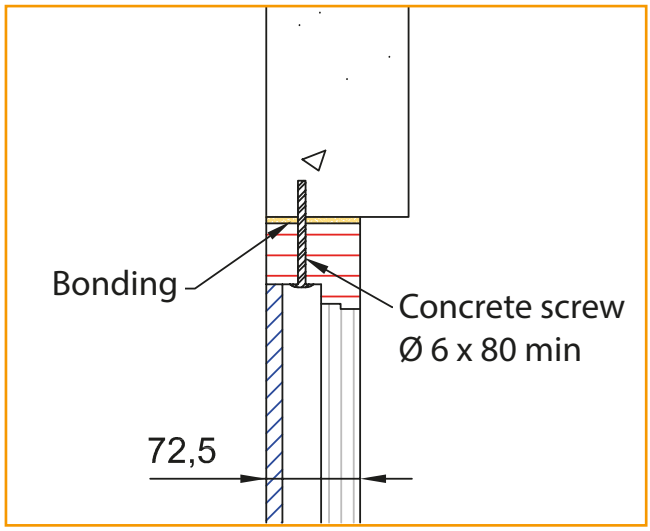


GEOSYSTEM® V120

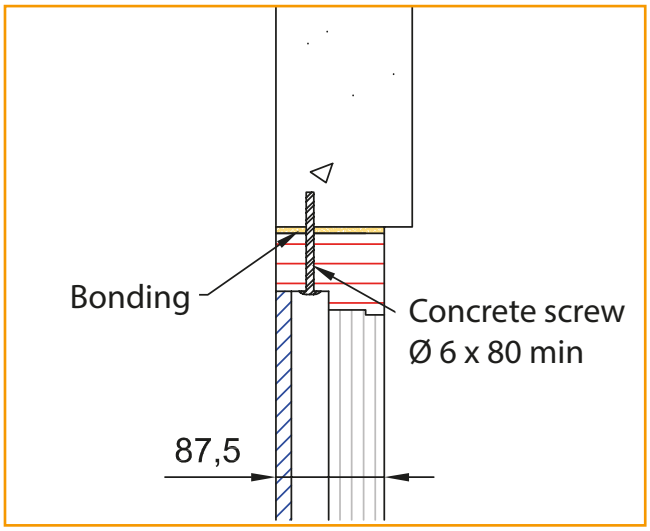


6. Assembly of GEOSYSTEM® Inspection hatches inside a massive wall

GEOSYSTEM® V60



GEOSYSTEM® V120



1.2. TCF V60-V120

1.Technical datasheet

Dimensions

EI (mm)	Dimensions of the door	Thickness of the frame	Width of the frame	Thickness or height of the latch	Total Thickness
	AxB (mm)	C	D	E	Z
60	200 x 200 up to 1500 x 1000	30	55	-	45
120		50	55	30	80

Hatches of special dimensions may be constructed.

PRODUCT DESCRIPTION

The inspection hatch consists of two aluminium profile frames (1 fixed and 1 opening) and finished off with plasterboard.

The two frames of the inspection hatch comprise four aluminium profiles attached rigidly to one another by means of a special welding technique.
An intumescent seal is placed around the periphery of the door and the fixed frame.

The hatch is fitted with two locking systems (cable and snap-hook).

For safety, these systems must always be hooked up before closing the door panel. The invisible spring closures allow opening and closing by a simple pressure on the hatch.

APPLICATIONS

The **GEOSTAFF®** inspection hatches must be installed vertically in order to access the service ducts and shafts (Document 12-A-119 Rev.1 & Extensions 15/2 and 15/3). With a fire-protection time of EI 60 and 120 (1 hour and 2 hour fire-protection), our inspection hatches can be installed on our **GEOTEC®** and **GEOFLAM®** products.

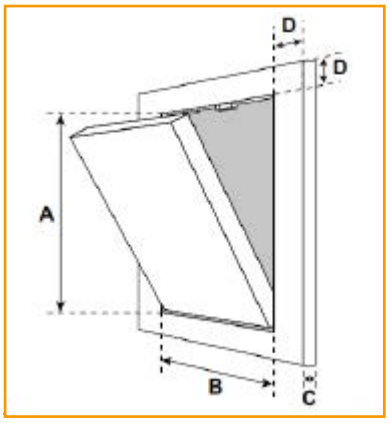
USAGE

Installed in protective systems for service ducts and shafts, **GEOTEC®** and **GEOFLAM®**.

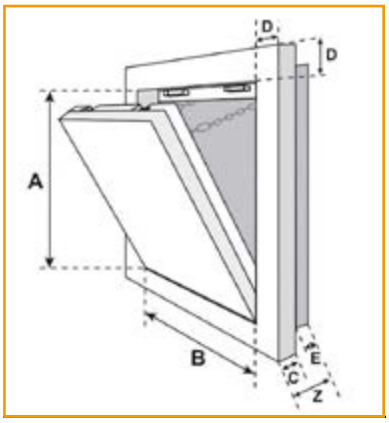
TRANSPORTATION AND STORAGE

Transport and store on a flat, protected surface. Keep away from water.

EI 60



EI 120



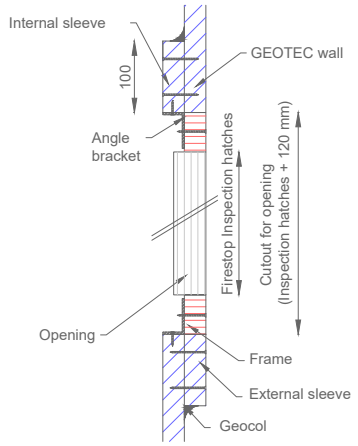
Available locks (only in EI 60)

Turn-key	Cylinder lock	Deadlock
		

2.Assembly principle

EI 60

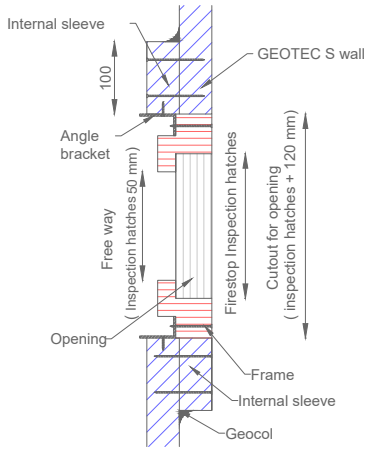
With internal sleeve



With external sleeve

EI 120

With internal sleeve



With external sleeve

Please consult us if you require fire-protection hatches installed horizontally

Certificates : fire-resistance classification report

Tests in accordance with EN 1634-1	EFECTIS classification documents	Dimensions (mm)	EI	
			60	120
EI 120 hatch	Document 12-A119 Rev.1 + Ext. 15/3	200 x 200 à 1500 x 1000		x
EI 60 hatch	Ext. 15/2		x	

E = Fire sealing / I = Thermal insulation

2. Horizontal inspection hatches

Product dimensions

EI (mm)	Dimensions of the opening	Thickness of the frame	Width of the frame	Total Thickness
	AxB (mm)	C	D	Z
60	200 x 200 until 800 x 800	40	90	100
120		50	110	120

Hatches of special dimensions may be constructed.

PRODUCT DESCRIPTION

The inspection hatch consists of two aluminium profile frames (1 fixed and 1 opening) and finished off with plasterboard.

The two frames of the inspection hatch comprise four aluminium profiles attached rigidly to one another by means of a special welding technique.
An intumescent seal is placed around the periphery of the door and the fixed frame.

The hatch is fitted with two locking systems (cable and snap-hook).

For safety, these systems must always be hooked up before closing the door panel. The invisible spring closures allow opening and closing by a simple pressure on the hatch.

APPLICATIONS

The **GEOSTAFF®** inspection hatches must be installed horizontally in order to access the service ducts (Document 12-A-119 Rev.1 & Extensions 15/2 and 15/3). With a fire-break time of EI 60 and 120 (1 hour and 2 hour fire-protection), our inspection hatches can be installed on our **GEOTEC®** and **GEOFLAM®** products.

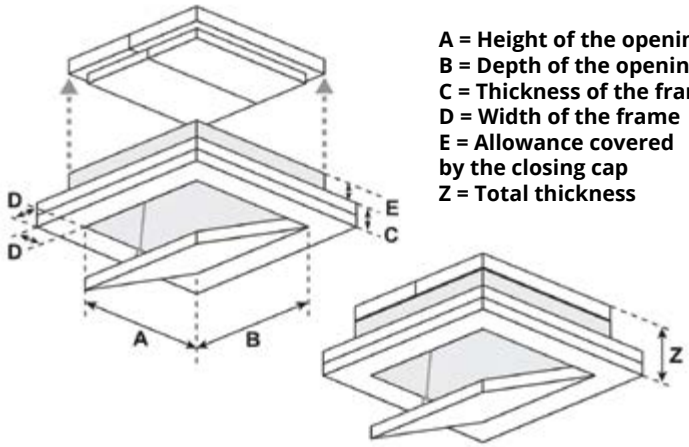
USAGE

Installed in protective systems for service conduits, **GEOTEC®** and **GEOFLAM®**.

TRANSPORTATION AND STORAGE

Transport and store on a flat, protected surface. Keep away from water.

EI 60 / EI 120



A = Height of the opening
B = Depth of the opening
C = Thickness of the frame
D = Width of the frame
E = Allowance covered by the closing cap
Z = Total thickness

Available locks (only in EI 60)

Turn-key	Cylinder lock	Deadlock
		

NOTES

NOTES

HEAD OFFICE

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HEAD OFFICE

ZAC du Chêne Bocquet
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Fax: +33(0)1 39 95 96 23

Opening hours
Monday to Thursday:
9:00 - 12:30 / 13:30 - 18:00
Friday:
9:00 - 12:30 / 13:30 - 17:00

Contact us
com@geostaff.fr

GEOSTAFF FACTORY

Rue de St-Just
60130 Catillon-Fumechon

It may be possible to pick up some of our products from this address. Please contact us for further information.

SALES DEPARTMENT

Geostaff IDF
+33(0)1 30 26 37 00

Geostaff Grand Est
+33(0)7 76 08 75 54

Geostaff Grand Ouest
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Geostaff Déco PACA
+33(0)6 80 72 09 85

LOGISTICS DEPARTMENT

ZAC du Chêne Bocquet
6 bis, rue Jacques Kellner
95150 TAVERNY
Tel: +33(0)1 30 26 36 90

Opening hours
Open from Monday to Thursday: 6:30 - 17:00
Friday: 6:30 - 12:30

Contact us
com@geostaff.fr

For ease of collection in **the South of France**, there is a GEOSTAFF warehouse at
ZAC LA GRAVE
06150 CARROS
(Alpes-Maritimes).

Please contact us for further information.