

GEO STAFF

Specialist in fire protection and decorative gypsum products

TECHNICAL CATALOGUE

FIRE-PROTECTION

SERVICES DUCT & SHAFTS

**GLUE &
SCREW SYSTEM**

▶ NEXT



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.

THIS DOCUMENTATION FOCALISES ON THE INNOVATIVE GEOTEC® SOLUTIONS.

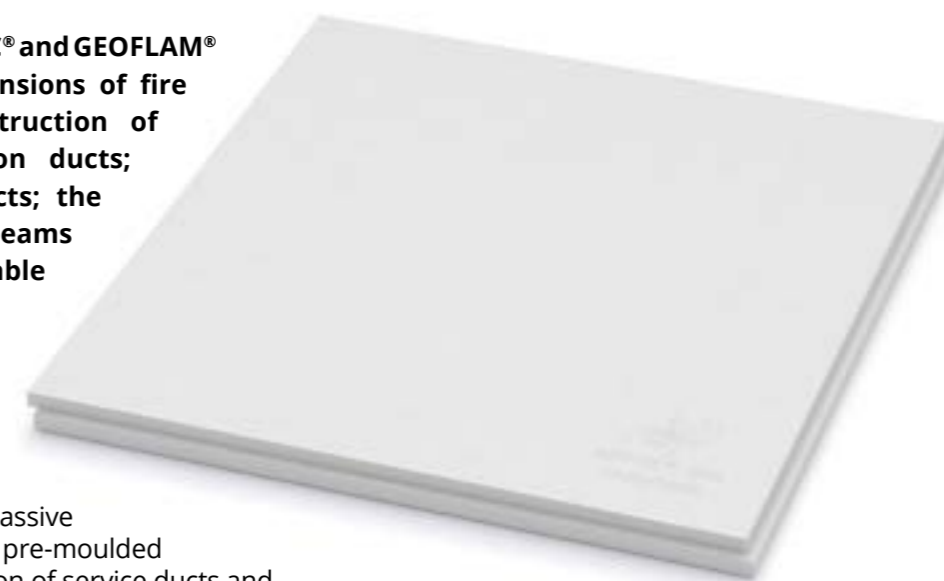
GEOTEC®

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.



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



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



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 **EN 13501-2**.
-  **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 (FDES) 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?

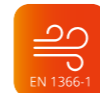

Our first objective is to introduce fire-stop solutions inside all types of buildings (private, public, industrial, etc.) that will limit the spread of fire and smoke. These solutions are defined by the installation of horizontal and vertical smoke extraction and ventilation ducts, the protection of 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 13501-3

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.

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 1366-8

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.

EN 13501-2

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

EN 13501-4

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

EN 1366-5

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

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
Horizontal and vertical ventilation ducts	EI 30/60 - 90 /120 - 180 - 240 (S)	EN 13501-3	EN 1366-1
Horizontal and vertical smoke extraction ducts	EI 30/60 - 90/120 - 180 - 240 (S)	EN 13501-4	EN 1366-8
Service ducts and shafts	EI 30/60 - 90/120 - 180 - 240	EN 13501-2	EN 1366-5
Fire-resistant inspection hatches	EI 30/60 - 90/120	EN 13501-2	EN 1634-1
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)	o → i: Direction of the "external" fire
I: Thermal insulation (temperature on the unexposed side < 140°C on average or 180°C at a point)	i → o: Direction of the "internal" fire
t: Duration of the classification expressed in minutes	i ↔ o: Arbitrary direction of the "internal" or "external" fire
S: Smoke leakage (leakage per unit surface area < 10 m³/hr.m² for ventilation, 5 m³/hr.m² for smoke extraction)	Multi: Indicates that the smoke extraction duct can extract smoke from several compartmentalised zones
ve: Vertical position of the duct being tested	Service pressure: Indicates the positive and negative pressures at which the duct was tested
ho: Horizontal position of the duct being 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



SERVICE DUCTS & SHAFTS

**INTERACTIVE
CONTENT**
Click to access



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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)	EFFECTIS 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.

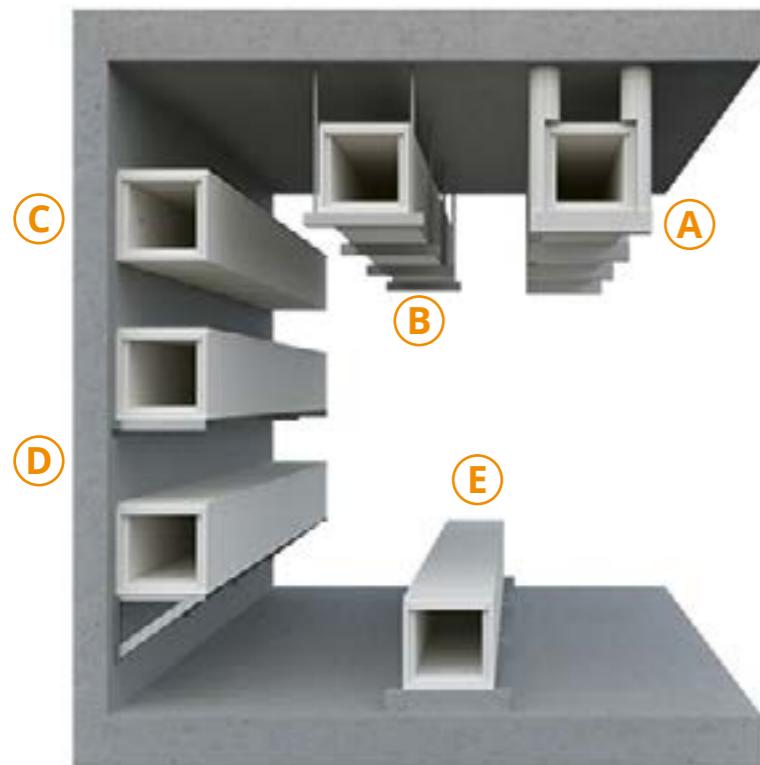
When the Geoflam® C-Light is installed before installation of the services, the prefabricated channel can serve as suspension and carrying system of the services.

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.

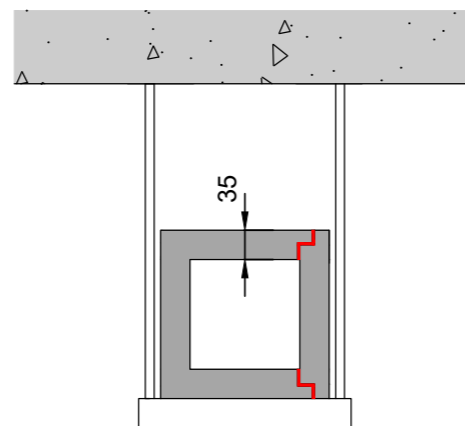
When the Geoflam® C-Light is installed after techniques are installed and when the existing supports of the elements to be protected have not been designed to be fire resistant, it shall be compulsory to protect the external parts of these supports against fire using Geoflam® A elements.

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)

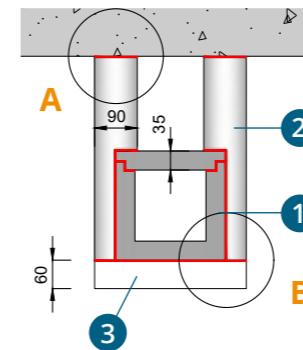


1. Ceiling installation

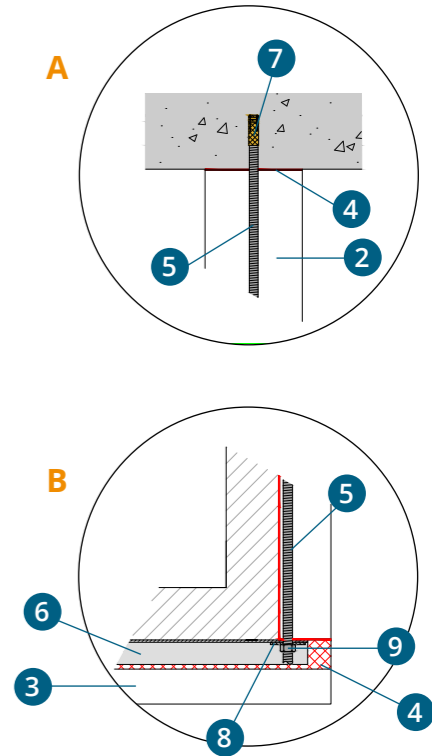
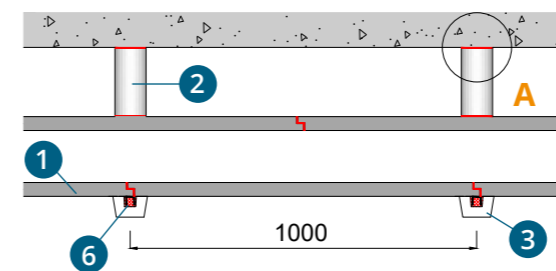
A) Suspended under concrete slab - with protection of the supporting system

The suspension system of threaded rods (M8) and steel U-profile (25/3x2 or of 21x41x21 mm) is protected by Geotec® A ½ shells and Geotec® A U-plaster elements.

Front view



Side view



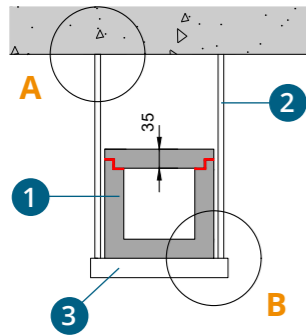
- 1 GEOFLAM® C light channel
- 2 GEOTEC® A 1/2 shell
- 3 GEOTEC® A U-plaster element
- 4 Geocol® Glue
- 5 Threaded rod Ø8
- 6 Steel U profile 25x25 or 21x41
- 7 Brass anchor Ø8
- 8 Galvanized washers Ø8
- 9 Galvanized nuts Ø8

B) Suspended under concrete slab - without protection of the supporting system

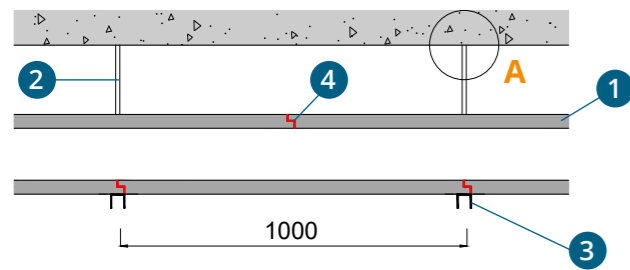
When both heavier threaded rods (M12) and steel U-profile (41x41mm) are used, the suspension system needs no further protection.

In this case, steel anchors have to be used.

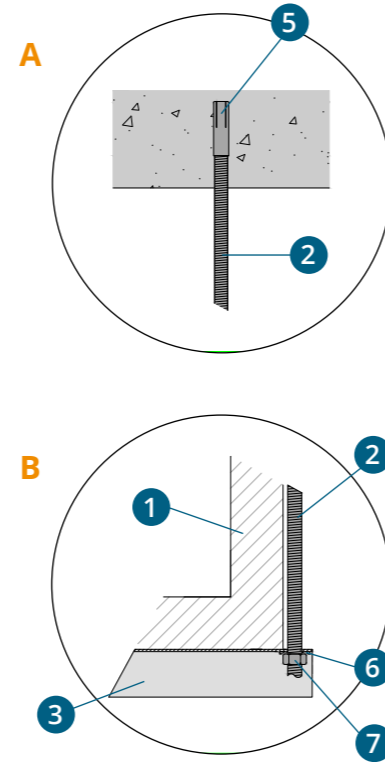
Front view



Side view



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



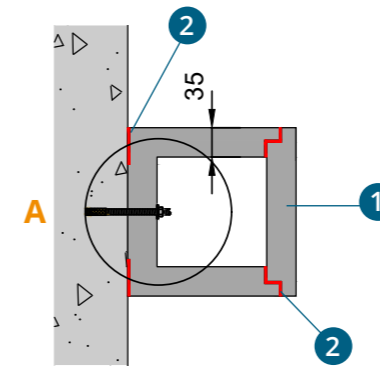
- 1 Geoflam® C light channel
- 2 Threaded rod Ø12
- 3 Steel U profile 41x41
- 4 Geocol® Glue
- 5 Steel anchor Ø12
- 6 Galvanized washers Ø12
- 7 Galvanized nuts Ø12

2. Wall installation

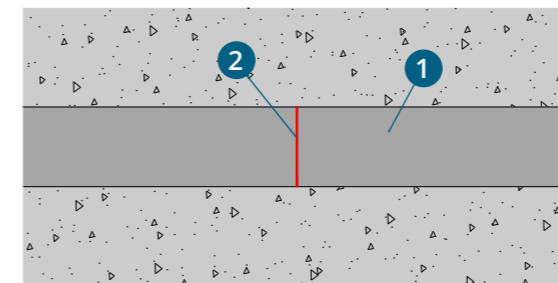
C) Feathered installation

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

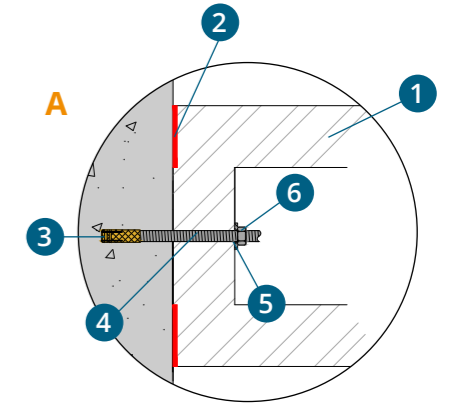
Front view



Side view



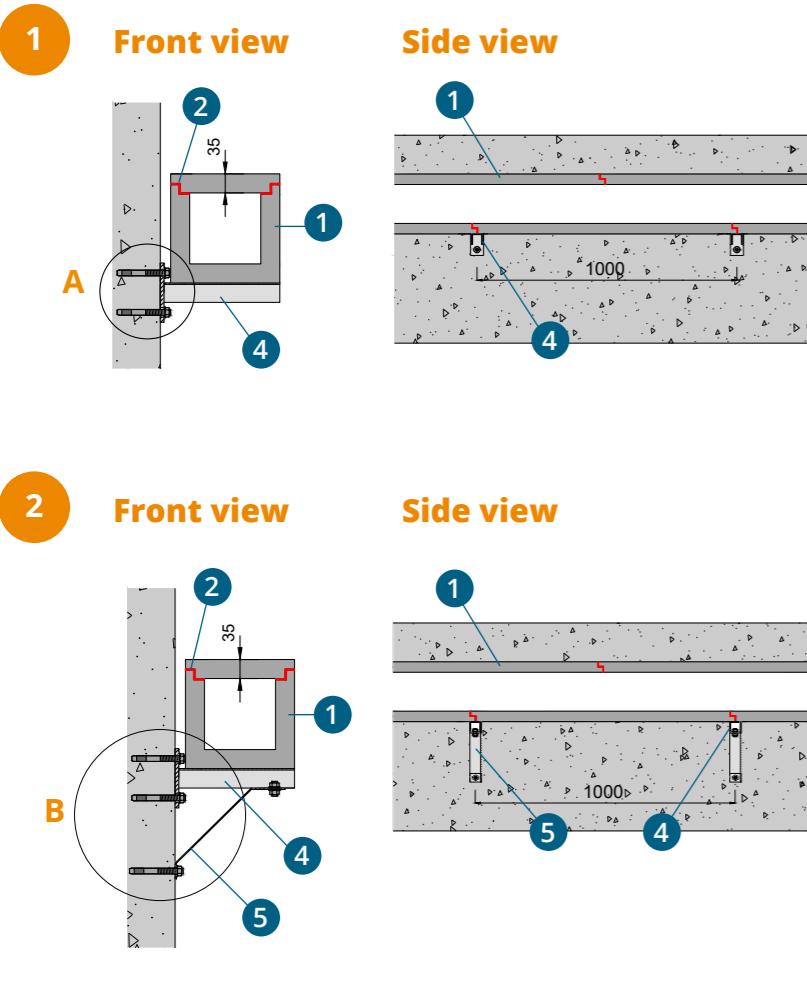
Extension EFR-15-000916 on EFR-14-A-001050 Rev. 1



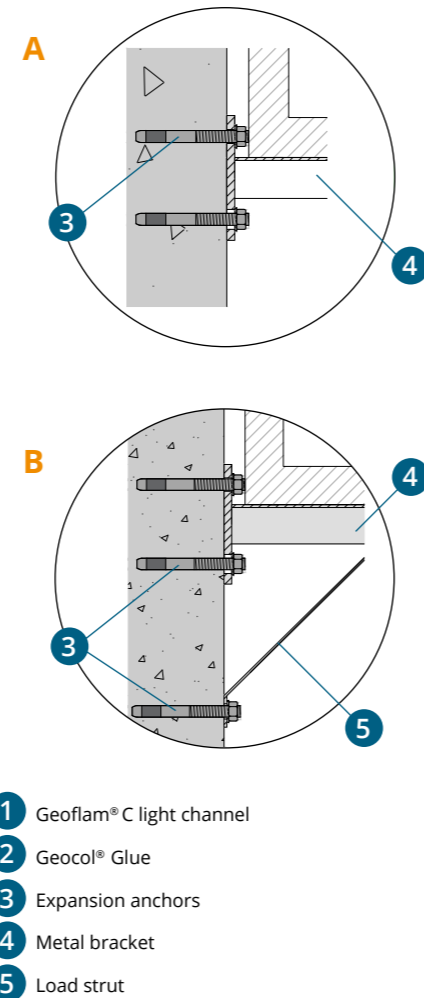
- 1 Geoflam® C light channel
- 2 Geocol® Glue
- 3 Brass anchor Ø8
- 4 Threaded rod Ø8
- 5 Galvanized washers Ø8
- 6 Galvanized nuts Ø8

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.



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



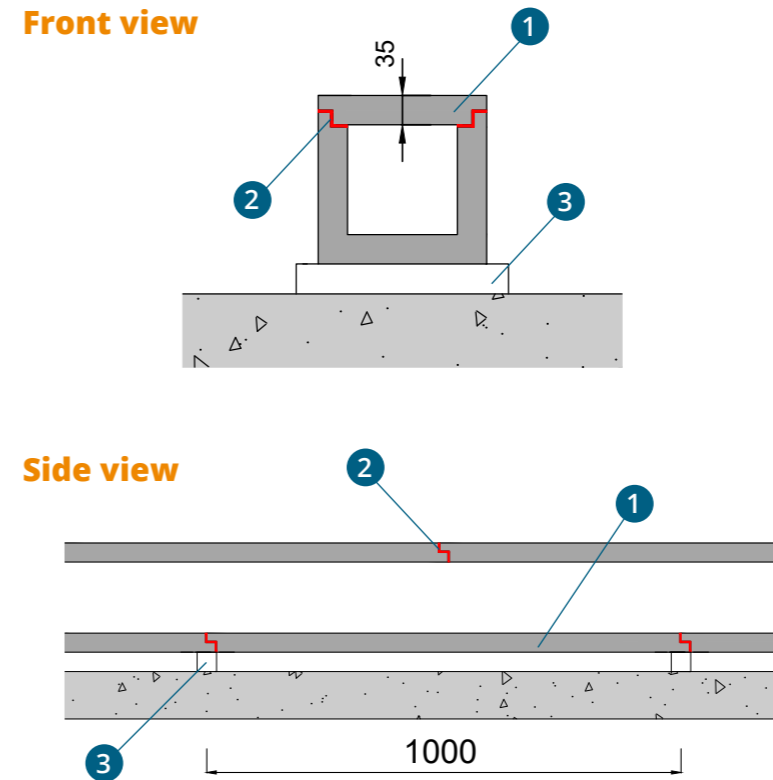
3. Floor installation

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.

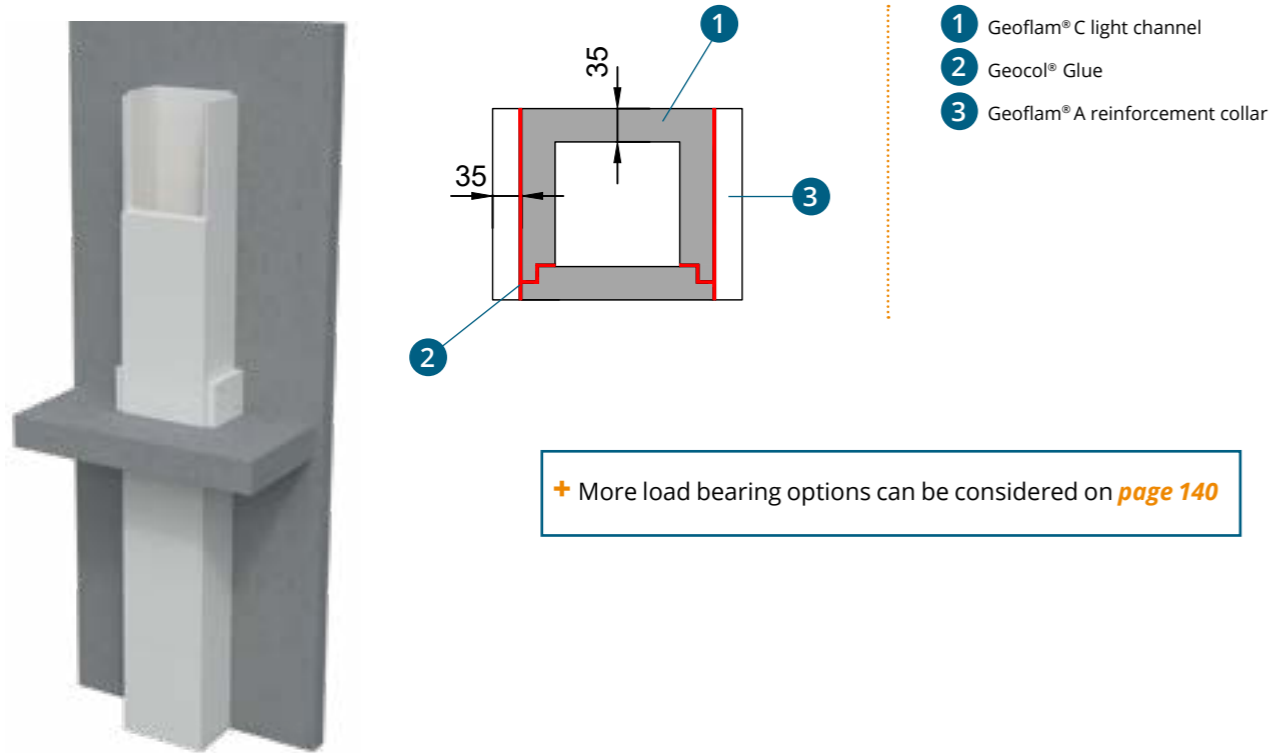
The cover is afterwards glued onto the open side using Geocol glue®.



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.

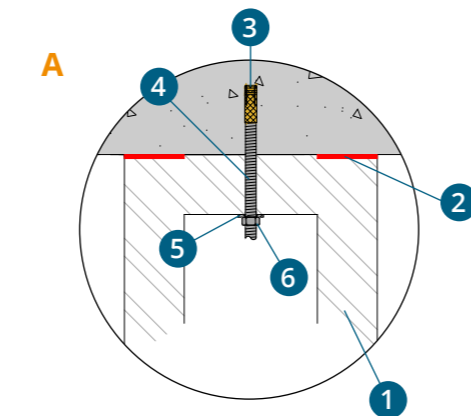
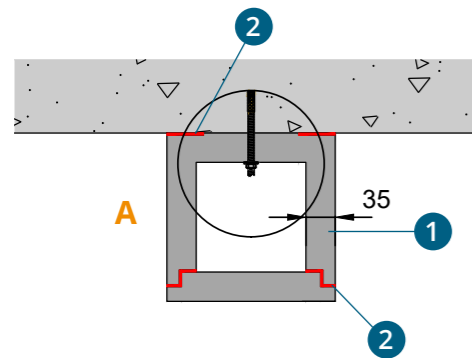


- 1 Geoflam® C light channel
- 2 Geocol® Glue
- 3 Geoflam® A reinforcement collar

+ 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)	EFFECTIS 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

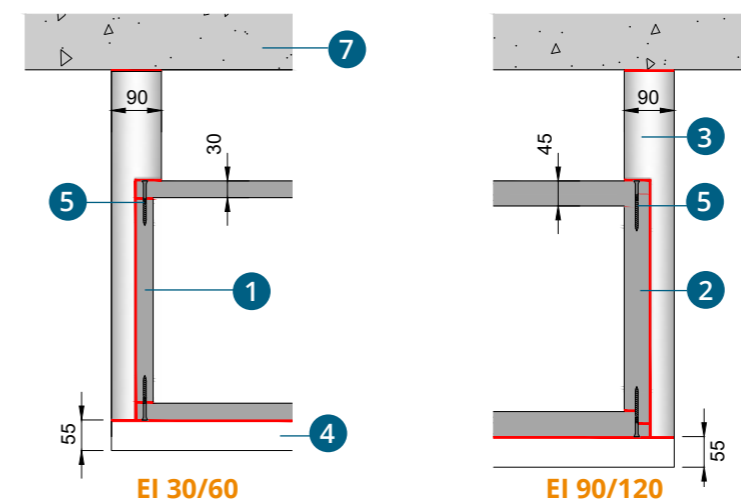
1. Assembly principles

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.

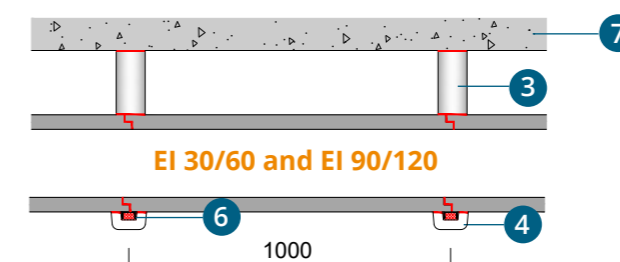
Cross-sectional view



- 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.

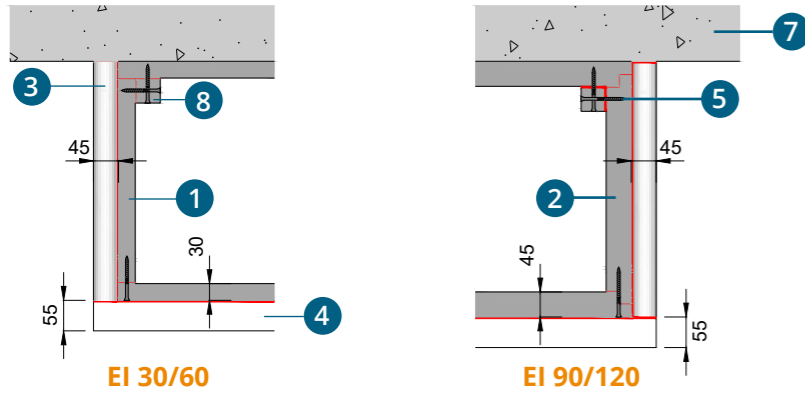
Longitudinal section view



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.

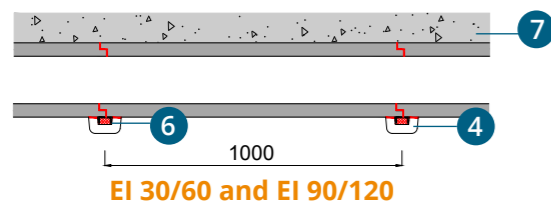
Cross-sectional view



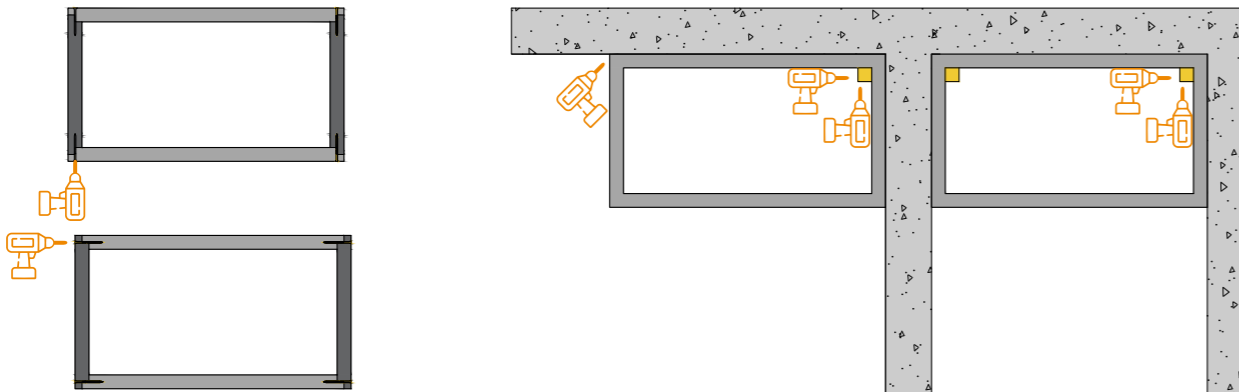
- 1 GEOTEC® S 30 board
- 2 GEOTEC® S 45 board
- 3 GEOTEC® A 1/2 shell
- 4 GEOTEC® A U plaster element
- 5 VBA Screw
Ø 5 x 80 (EI 30/60)
Ø 5 x 90 (EI 90/120)
or galvanized steel staples*
75 x 10 x 2 mm
- 6 Steel U-profile
21 x 41 x 21
- 7 Concrete slab
- 8 GEOTEC® A Batten

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

Longitudinal section view



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.

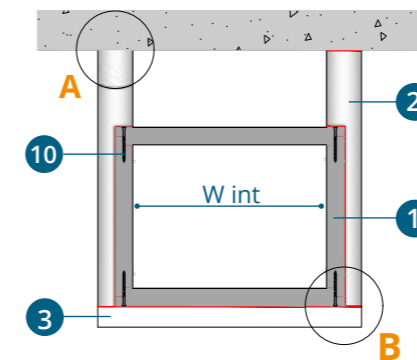
Inner Perimeter > 4500 mm → On request / Reference pages 52/54

W int ≤ 600 mm

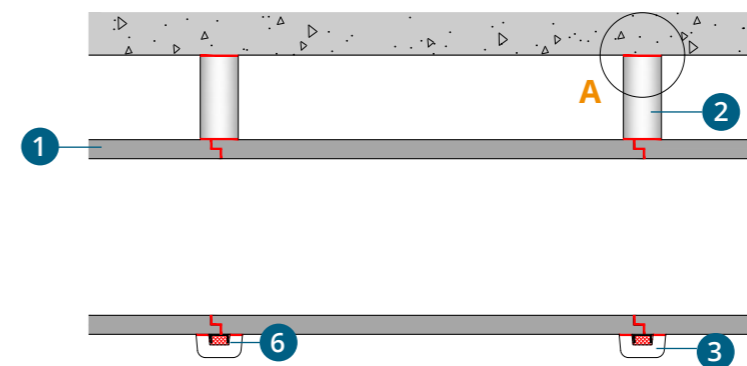
Standard installation principle: see page 34.



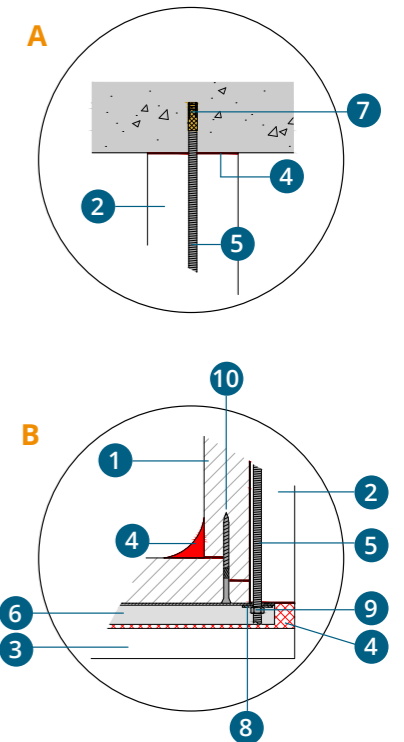
Front view



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

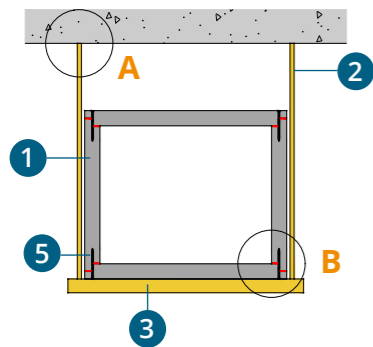
*staples :
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

Alternative without protection supports

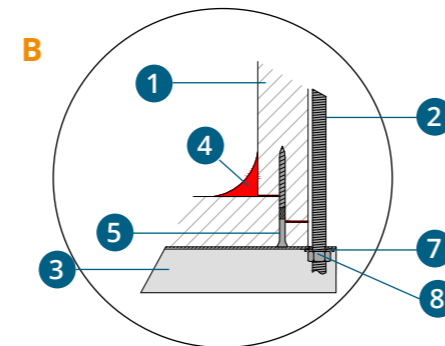
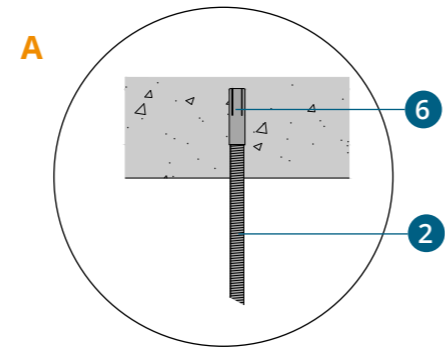
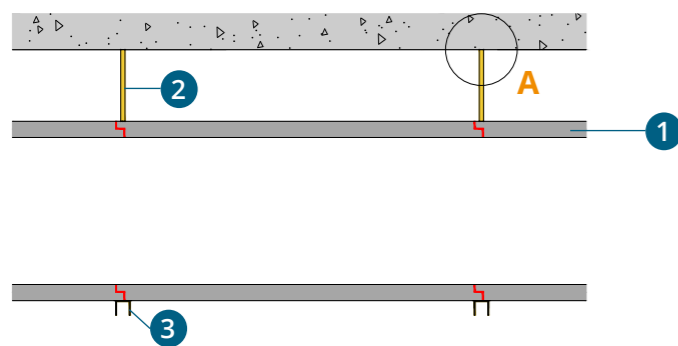
In the case of service ducts with an internal width (W_{int}) of ≤ 600 mm and an inner perimeter (P_{int}) of ≤ 1900 mm, it is allowed to remove GEOTEC® A half-shells and GEOTEC® A U-plaster element.

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 $\text{Ø}12$ or $\text{Ø}14$ **
- 3 Steel U profile 41×41
- 4 Geocol® Glue
- 5 VBA Screws
 $\text{Ø} 5 \times 80$ (EI 30/60)
 $\text{Ø} 5 \times 90$ (EI 90/120)
or galvanized steel staples *
 $75 \times 10 \times 2$ mm
- 6 Steel anchor $\text{Ø}12$ or $\text{Ø}14$
- 7 Galvanized washers $\text{Ø}12$ or $\text{Ø}14$
- 8 Galvanized nuts $\text{Ø}12$ or $\text{Ø}14$

*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90 S.

*What diameter should I use ?
EI 30/60 : $\text{Ø} 12$ in any case
EI 90/120 : $\text{Ø} 12$ when $P_{int} \leq 1200$ mm and $\text{Ø} 14$ above

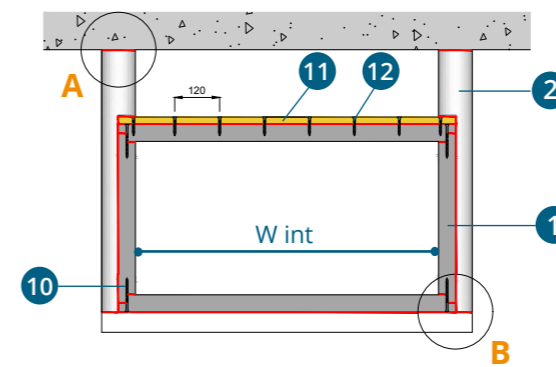
$600 < W_{int} \leq 1000$ mm

In this configuration, install **Cover strips on the upper board joints.**

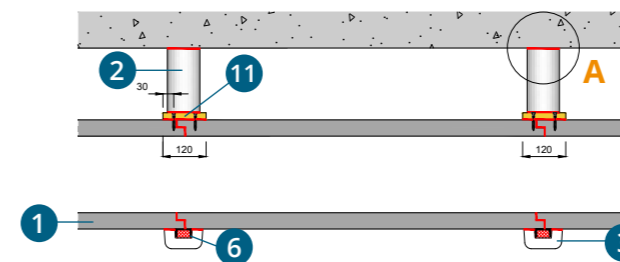
GEOTEC® A Cover strip can be placed inside or outside the service duct to cover the joints.



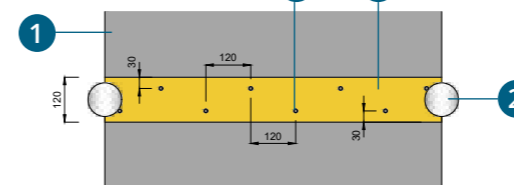
Front view



Side view

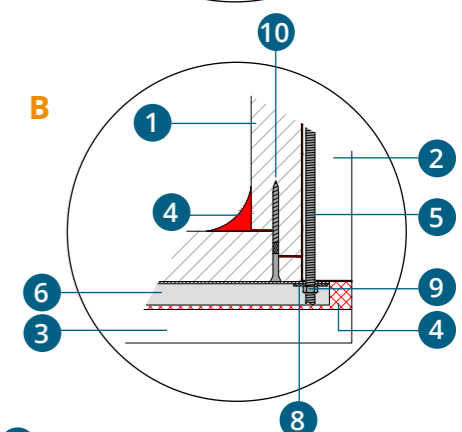
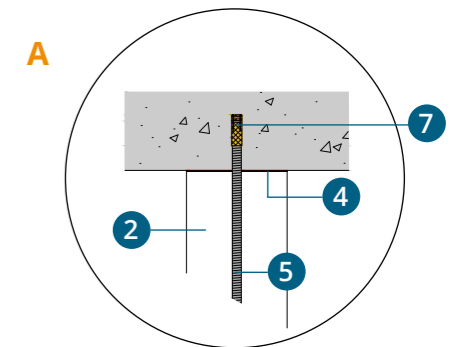


Top view



If service duct inner perimeter > 4500 mm
replace Threaded rod $\text{Ø}8$, Brass anchor $\text{Ø}8$, Galvanized washers $\text{Ø}8$,
Galvanized nuts $\text{Ø}8$ for $\text{Ø}10$.

$600 < W_{int} \leq 1000$ 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 $\text{Ø}8$
- 6 Steel U profile 41×21
- 7 Brass anchor $\text{Ø}8$
- 8 Galvanized washers $\text{Ø}8$
- 9 Galvanized nuts $\text{Ø}8$
- 10 VBA Screws
 $\text{Ø} 5 \times 80$ (EI 30/60)
 $\text{Ø} 5 \times 90$ (EI 90/120)
or galvanized steel staples*
 $75 \times 10 \times 2$ mm
- 11 GEOTEC® A Cover strips
- 12 VBA Screws $\text{Ø} 5 \times 50$

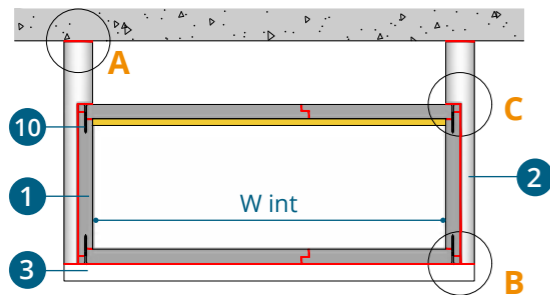
*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90 S.

1000 < W int ≤ 1250 mm

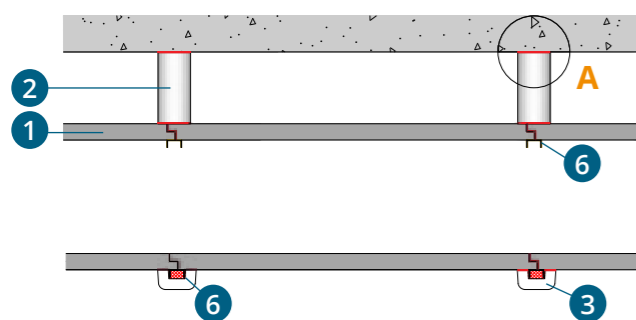
When the service duct has an internal width of $1000 < w \leq 1250$, a **second 21x41x21 steel U-profile** must be installed inside the duct to support the upper boards.



Front view



Side view

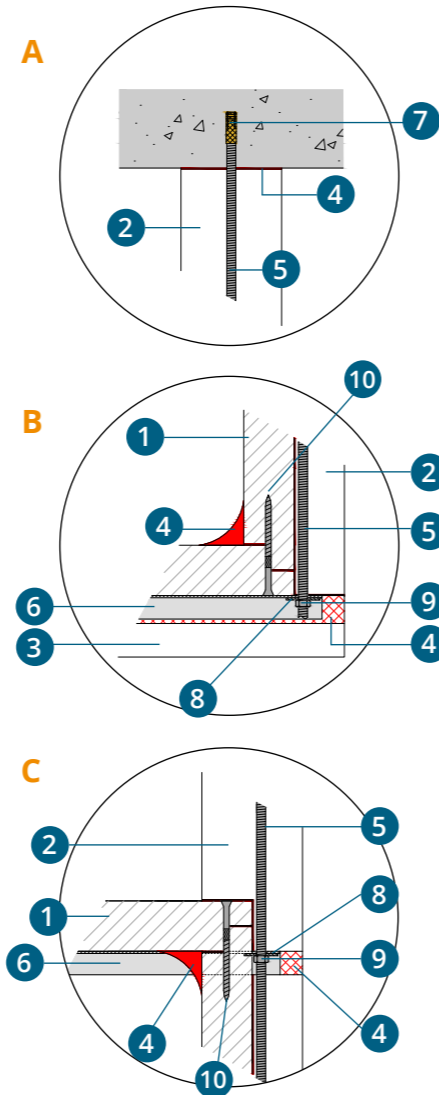


* when the protection $i \rightarrow o$ is at stake, then the protective U-plaster element on the inside of the service duct must be added.

If service duct inner perimeter > 4500 mm

replace Threaded rod $\varnothing 8$, Brass anchor $\varnothing 8$, Galvanized washers $\varnothing 8$, Galvanized nuts $\varnothing 8$ for $\varnothing 10$.

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 $\varnothing 8$
- 6 Steel U profile 41 x 21
- 7 Brass anchor $\varnothing 8$
- 8 Galvanized washers $\varnothing 8$
- 9 Galvanized nuts $\varnothing 8$
- 10 VBA Screws $\varnothing 5 \times 80$ (EI 30/60), $\varnothing 5 \times 90$ (EI 90/120) or galvanized steel staples* 75 x 10 x 2 mm

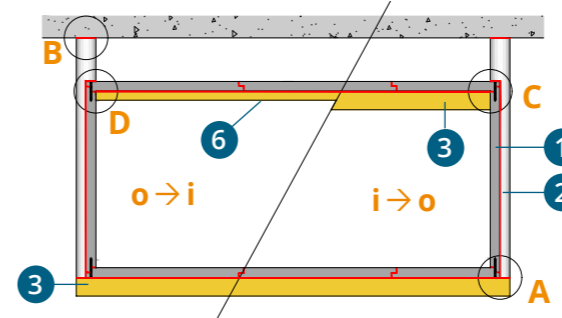
*staples:
≤ 1250 x 1000 mm (w x h) EI 30/60/90.

1250 < W int ≤ 2500 mm

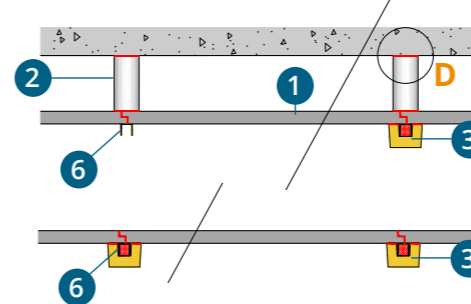
When the service duct has an internal width of $1250 < w \leq 2500$ mm and when 100% free area is needed in the encasement, external rods of $\varnothing 10$ and appropriate **steel U-profiles** (upper and lower) are used according to the supplier's certification.



Front view



Side view

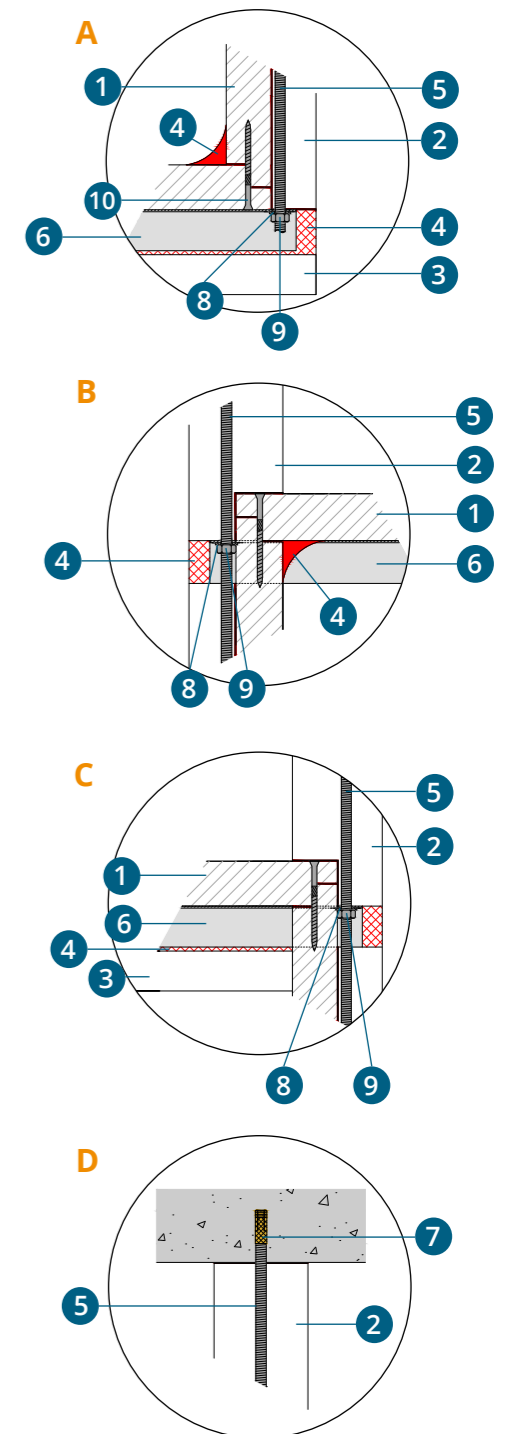


- 1 GEOTEC® S board
- 2 GEOTEC® A 1/2 shell
- 3 GEOTEC® A U-plaster element* (appropriated according to the steel U profile used)
- 4 Geocol® Glue
- 5 Threaded rod $\varnothing 10$
- 6 Steel U profile (appropriated according to supplier's certification). See on page 96/97
- 7 Brass anchor $\varnothing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

* when the protection $i \rightarrow o$ 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

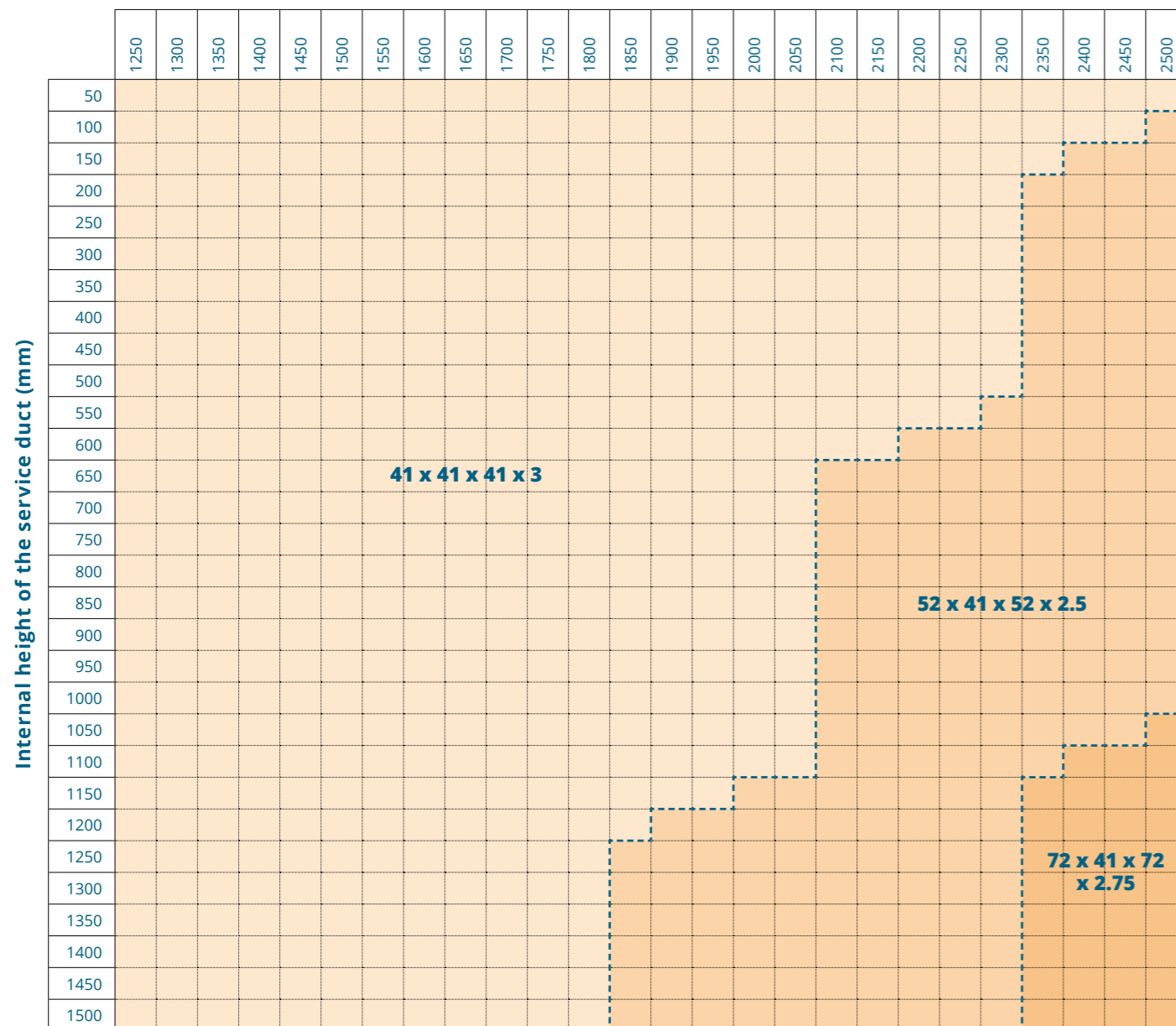


Steel U-profiles UPPER

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

Internal width of the service duct (mm)



Calculation made with Hilti's certification

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

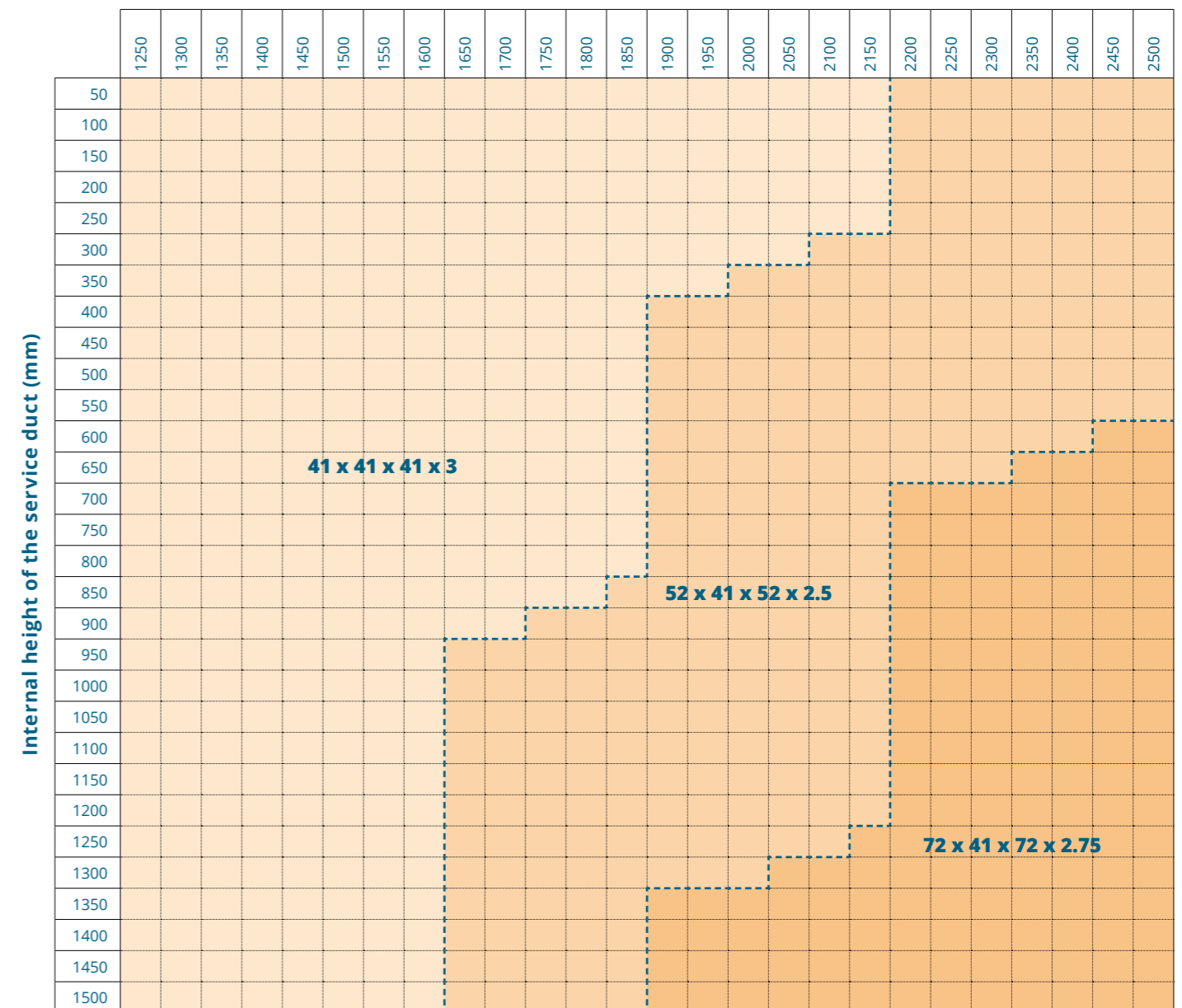


Steel U-profiles UPPER

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

Internal width of the service duct (mm)



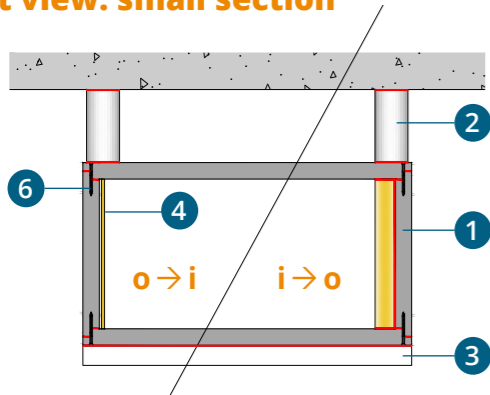
Calculation made with Hilti's certification

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

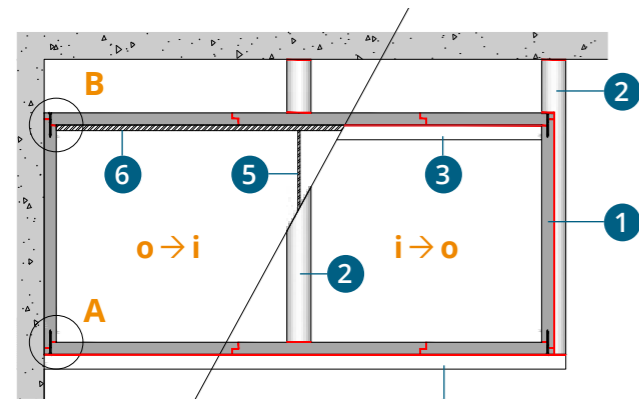


* when the protection $i \rightarrow o$ is at stake, then the protective 1/2 shell and U-plaster element on the inside of the service duct must be added.

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 \emptyset 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
 \emptyset 5 x 80 (EI 30/60)
 \emptyset 5 x 90 (EI 90/120)
 or galvanized steel staples*
 75 x 10 x 2 mm

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

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

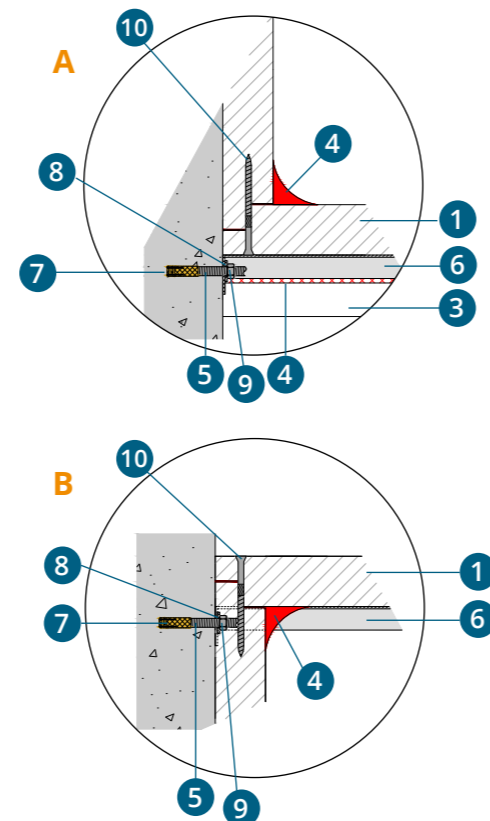
Extension 17/6 on EFR-16-003067

- 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
 \emptyset 5 x 80 (EI 30/60 S)
 \emptyset 5 x 90 (EI 90/120 S)
 or galvanized steel staples*
 75 x 10 x 2 mm

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

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

Extension 17/6 on EFR-16-003067

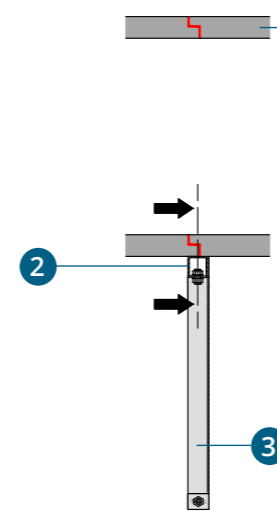


C) Installation on brackets

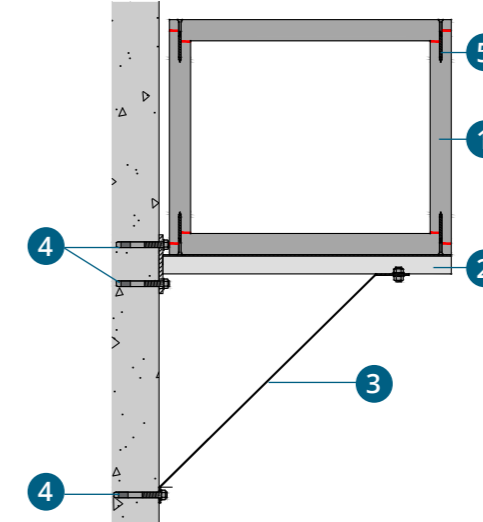
When the service duct is installed on/adjacent to a vertical wall, the support can be made by using metal brackets, with or without struts (appropriate according to the supplier's certification). **Metal brackets** and struts must be protected against fire using the **GEOTEC® A U-plaster element** and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

1- INSTALL THE BRACKETS AND THE SUPPORT STRUT.

Longitudinal view



Cross-sectional view



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

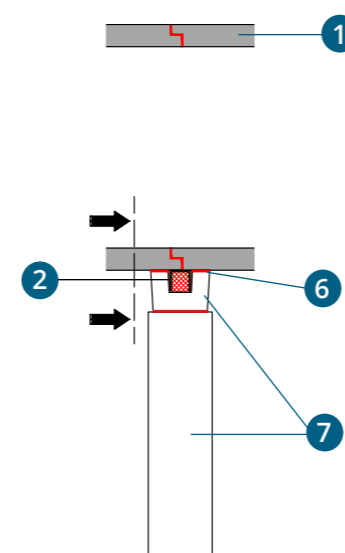
Extension 17/6 on EFR-16-003067

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

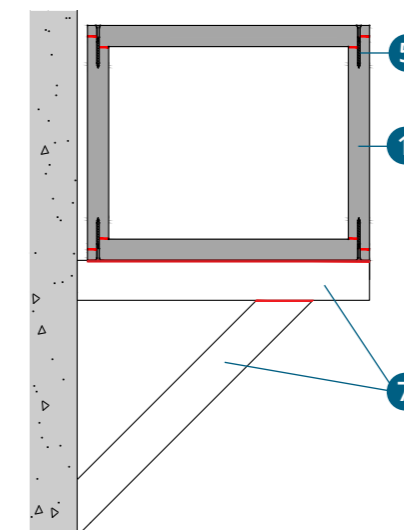
*staples :
 \leq 1250 x 1000 mm (w x h) EI 30/60/90 S.

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

Longitudinal view



Cross-sectional view



+ In the case of service ducts with an internal width (W_{int}) of \leq 600 mm and an inner perimeter (P_{int}) of \leq 1900 mm, it is allowed to remove GEOTEC® A U-plaster element.

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

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

3.2. Vertical system

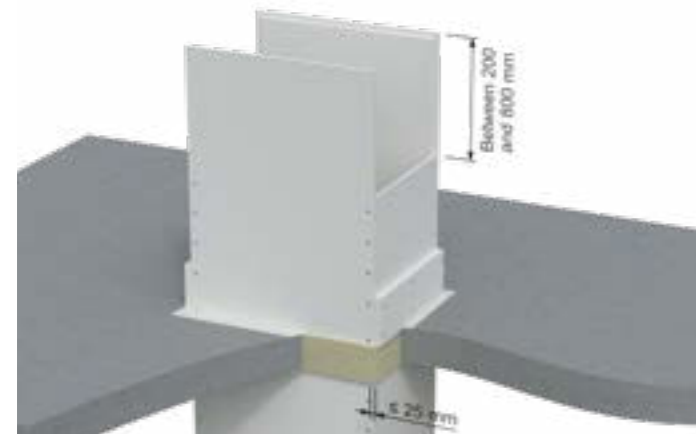
1. Assembly principles

The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously 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.

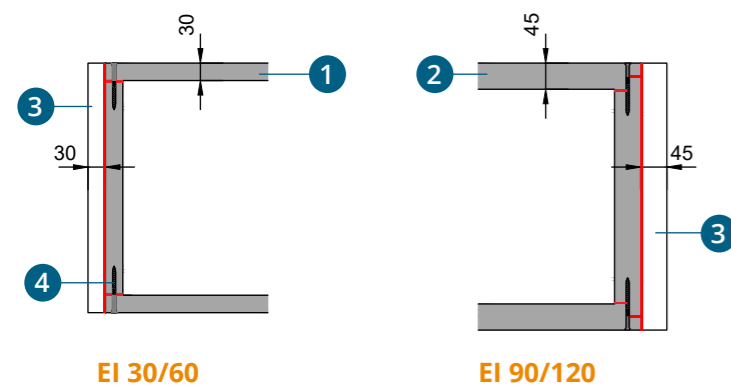


- 1 GEOTEC® S30 board
- 2 GEOTEC® S45 board
- 3 GEOTEC® A Reinforcement collar**
- 4 VBA Screws
 Ø 5 x 80 (EI 30/60)
 Ø 5 x 90 (EI 90/120)
 or galvanized steel staples*
 75 x 10 x 2 mm

*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.

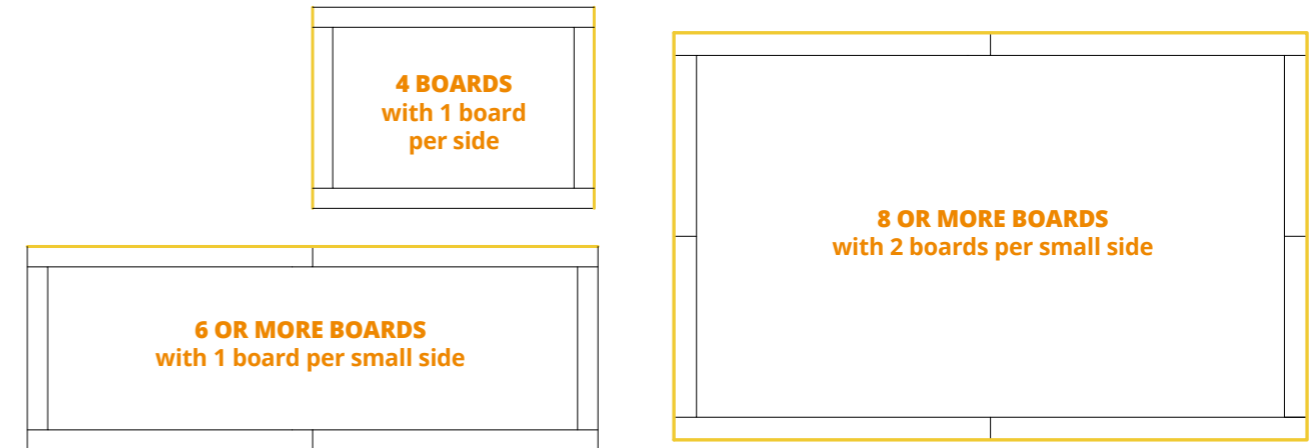
Cross-sectional view



Concerning the load-bearing systems

For service ducts consisting of 4-board casings ($W_{int} \leq 1050$ mm and $D_{int} \leq 1100$ mm for EI 30/60 and $W_{int} \leq 1000$ mm and $D_{int} \leq 1050$ 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: $w \leq 1050$ & $d \leq 1100$ mm EI 120: $w \leq 1000$ & $d \leq 1050$ mm	Standard Installation	
EI 60: $w > 1050$ & $d \leq 1100$ mm EI 120: $w > 1000$ & $d \leq 1050$ mm or EI 60: $w \leq 1050$ & $d > 1100$ mm EI 120: $w \leq 1000$ & $d > 1050$ 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	

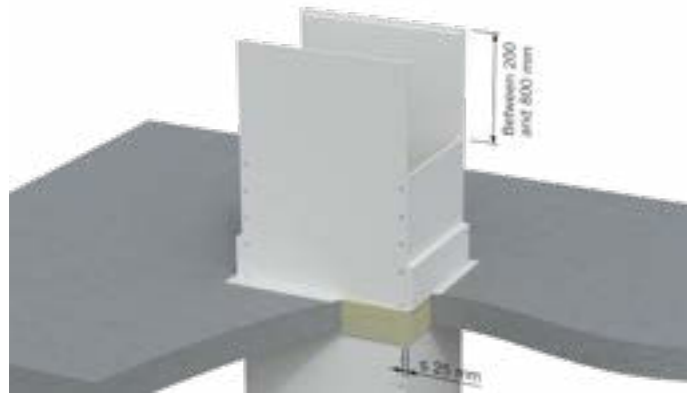
* W_{int} : inner Width / * D_{int} : inner Depth

A) Standard installation

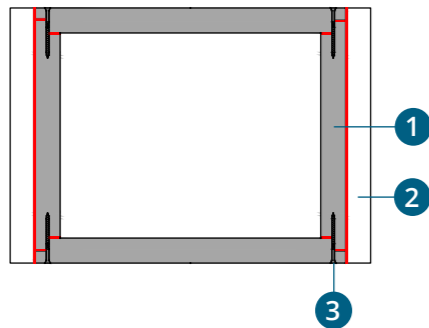
EI 60: $W_{int}^* \leq 1050$ mm & $D_{int}^* \leq 1100$ mm
 (or $W_{int} \leq 1140$ mm & $D_{int} \leq 1200$ mm if using GEOTEC® SX 30 Boards)

EI 120: $W_{int} \leq 1000$ mm & $D_{int} \leq 1050$ mm
 (or $W_{int} \leq 1100$ mm & $D_{int} \leq 1200$ mm if using GEOTEC® SX 45 Boards)

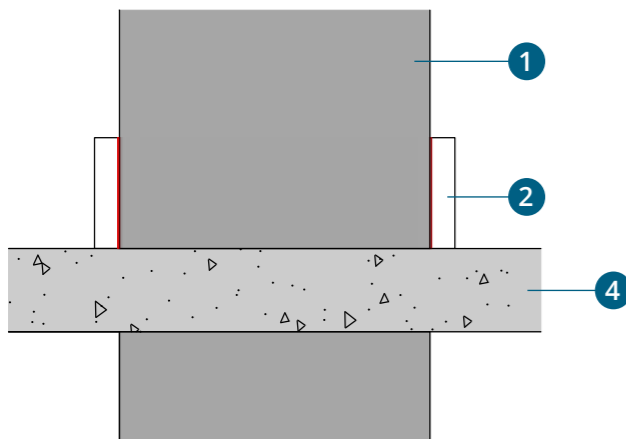
* W_{int} : internal width / * D_{int} : internal depth



Cross-sectional view



Side view



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

*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90 S.

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

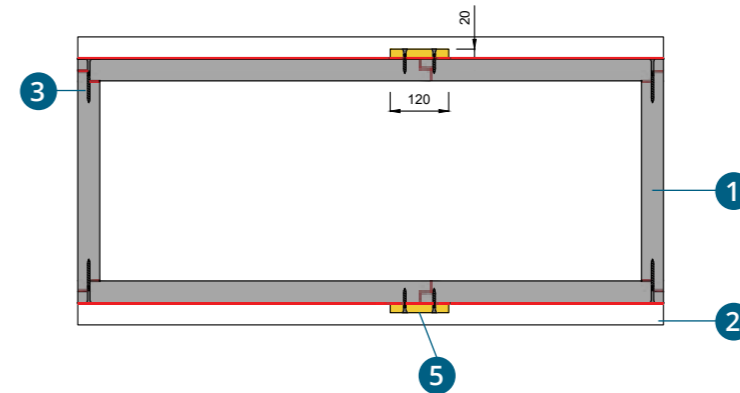
B) Using cover strips on 2 sides

EI 60: $W_{int}^* > 1050$ mm & $D_{int}^* \leq 1100$ mm
EI 120: $W_{int} > 1000$ mm & $D_{int} \leq 1050$ mm

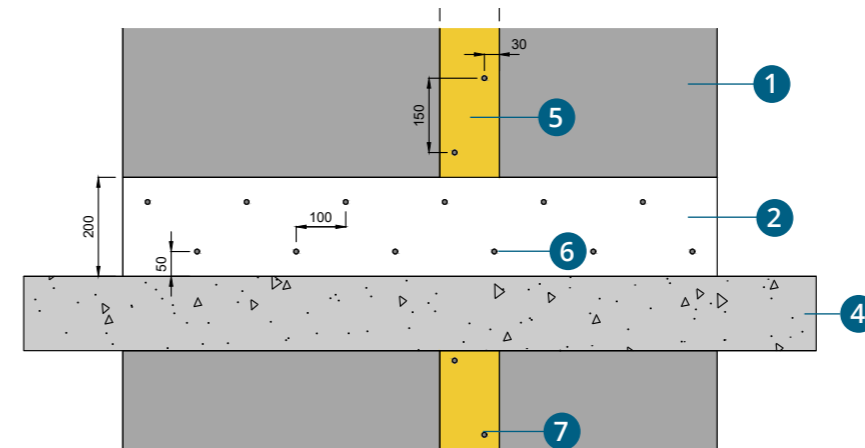
* W_{int} : internal width / * D_{int} : internal depth



Cross-sectional view



Side view



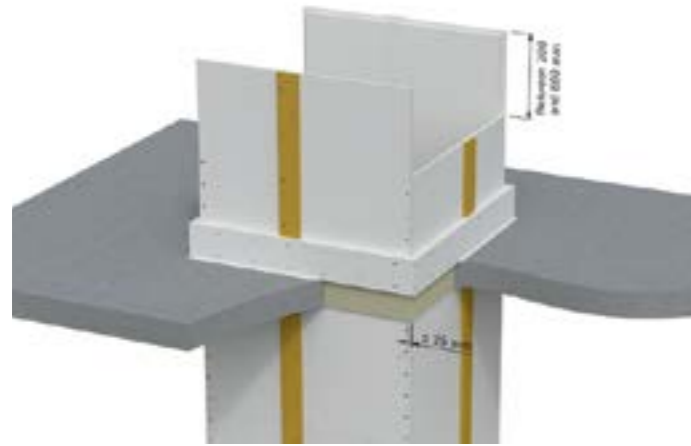
- 1 GEOTEC® S board
- 2 GEOTEC® A Reinforcement collar
- 3 VBA Screws
 $\varnothing 5 \times 80$ (EI 30/60)
 $\varnothing 5 \times 90$ (EI 90/120)
 or galvanized steel staples*
 $75 \times 10 \times 2$ mm
- 4 Concrete slab
- 5 GEOTEC® A Cover strip (exterior or interior)
- 6 VBA Screws
 $\varnothing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

*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90 S.

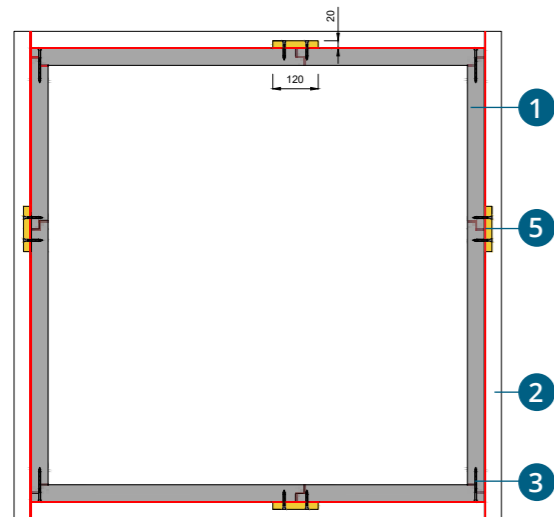
C) Using cover strips on 4 sides

EI 60: $W_{int} > 1050 \text{ mm}$ & $D_{int} > 1100 \text{ mm}$
& EI 120: $W_{int} > 1000 \text{ mm}$ & $D_{int} > 1050 \text{ mm}$

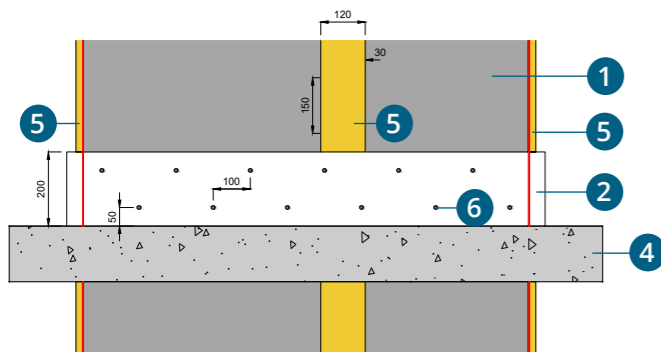
* W_{int} : internal width / * D_{int} : internal depth



Cross-sectional view



Side view



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

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)	EFFECTIS 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

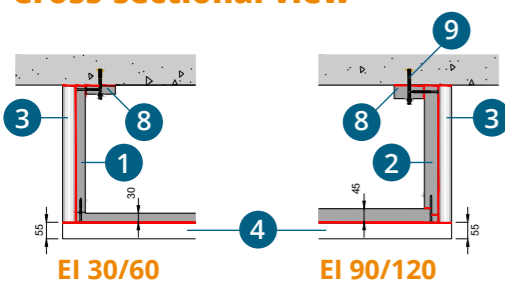
1. Assembly principle

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.

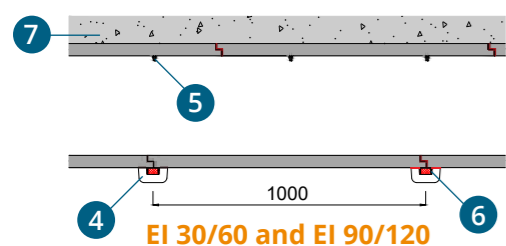
- + Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with **GEOCOL®** glue.
- + Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

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

Cross-sectional view

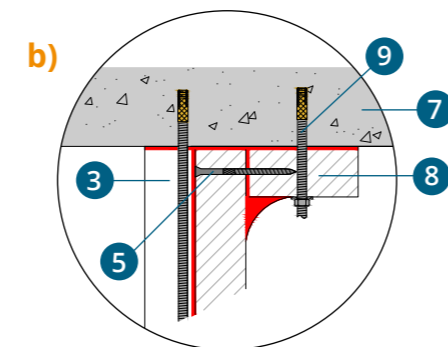
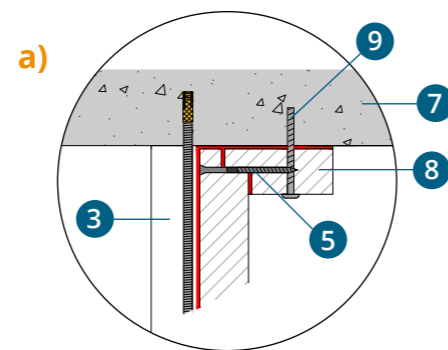


Longitudinal view



- 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

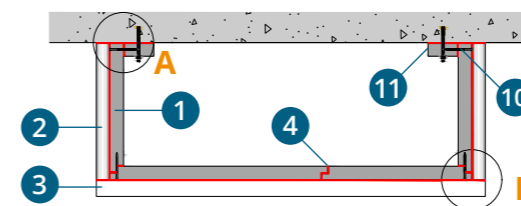
Internal Duct Width (W int)	EN 1366-5 o → i	EN 1366-5 i → o
≤ 1250 mm	Standard Installation.	
1250 < w ≤ 2500 mm	Using appropriated steel U-profiles + Ø 10 threaded rods	

Inner Perimeter > 4500 mm → On request

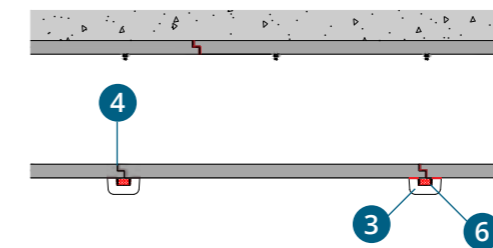
W int ≤ 1250 mm



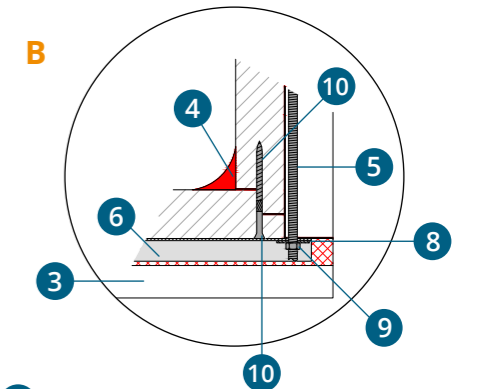
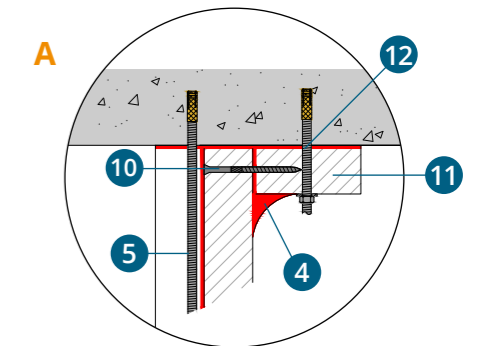
Front view



Side view



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

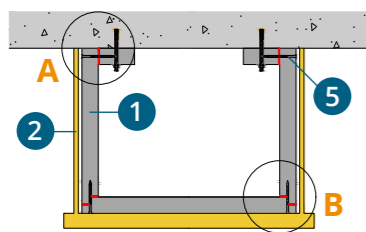


- 1 GEOTEC® S board
- 2 GEOTEC® A 1/2 shell
- 3 GEOTEC® A U-plaster element
- 4 Geocol® Glue
- 5 Threaded rod Ø8
- 6 Steel U profile 41 x 21
- 7 Brass anchor Ø8
- 8 Galvanized washers Ø8
- 9 Galvanized nuts Ø8
- 10 VBA Screws Ø 5 x 80 (EI 30/60) Ø 5 x 90 (EI 90/120) or galvanized steel staples* 75 x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

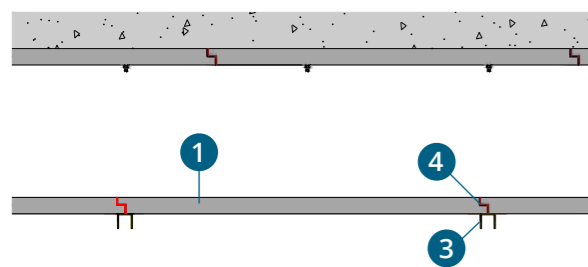
*staples :
 ≤ 1250 x 1000 mm (w x h) EI 30/60/90.

Non protection supports

Front view

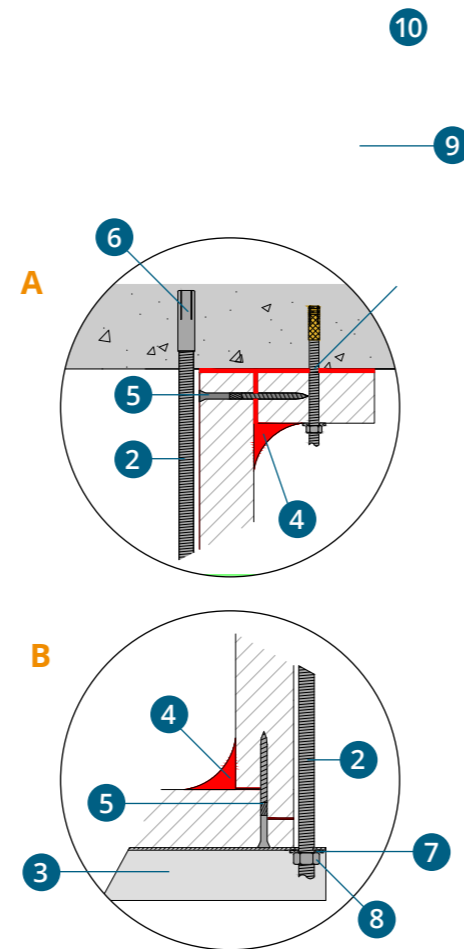


Side view



** 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



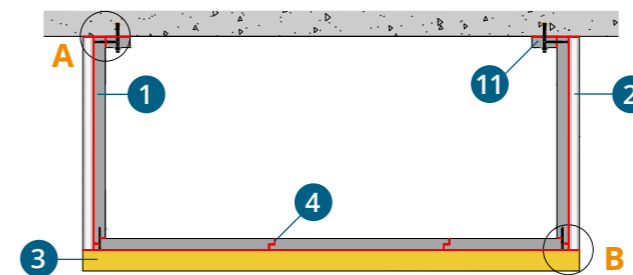
- 1 GEOTEC® S board
- 2 Threaded rod Ø12 or Ø14 **
- 3 Steel U profile 41x41
- 4 Geocol® Glue
- 5 VBA Screws
Ø 5 x 80 (EI 30/60)
Ø 5 x 90 (EI 90/120)
or galvanized steel staples *
75 x 10 x 2 mm
- 6 Steel anchor Ø12 or Ø14
- 7 Galvanized washers Ø12 or Ø14
- 8 Galvanized nuts Ø12 or Ø14
- 9 GEOTEC® A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

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

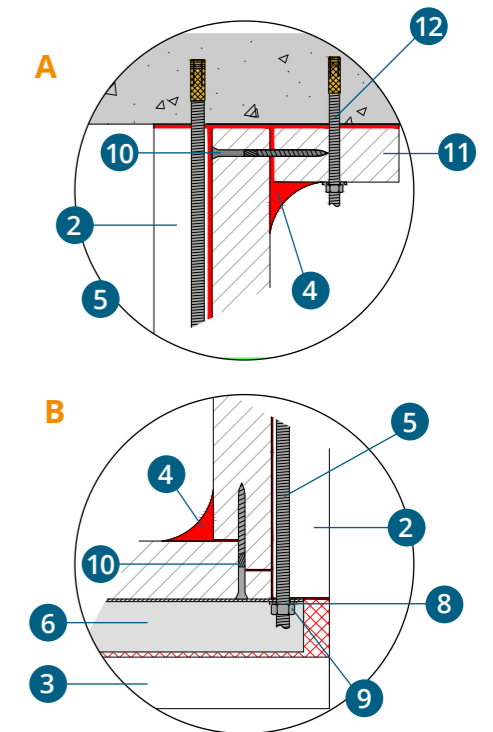
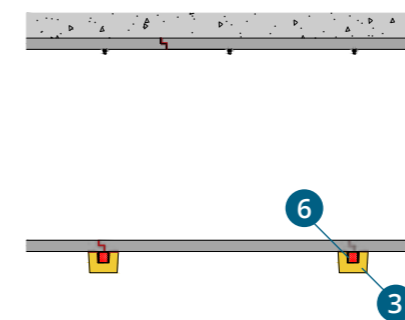
1250 < W int ≤ 2500 mm



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

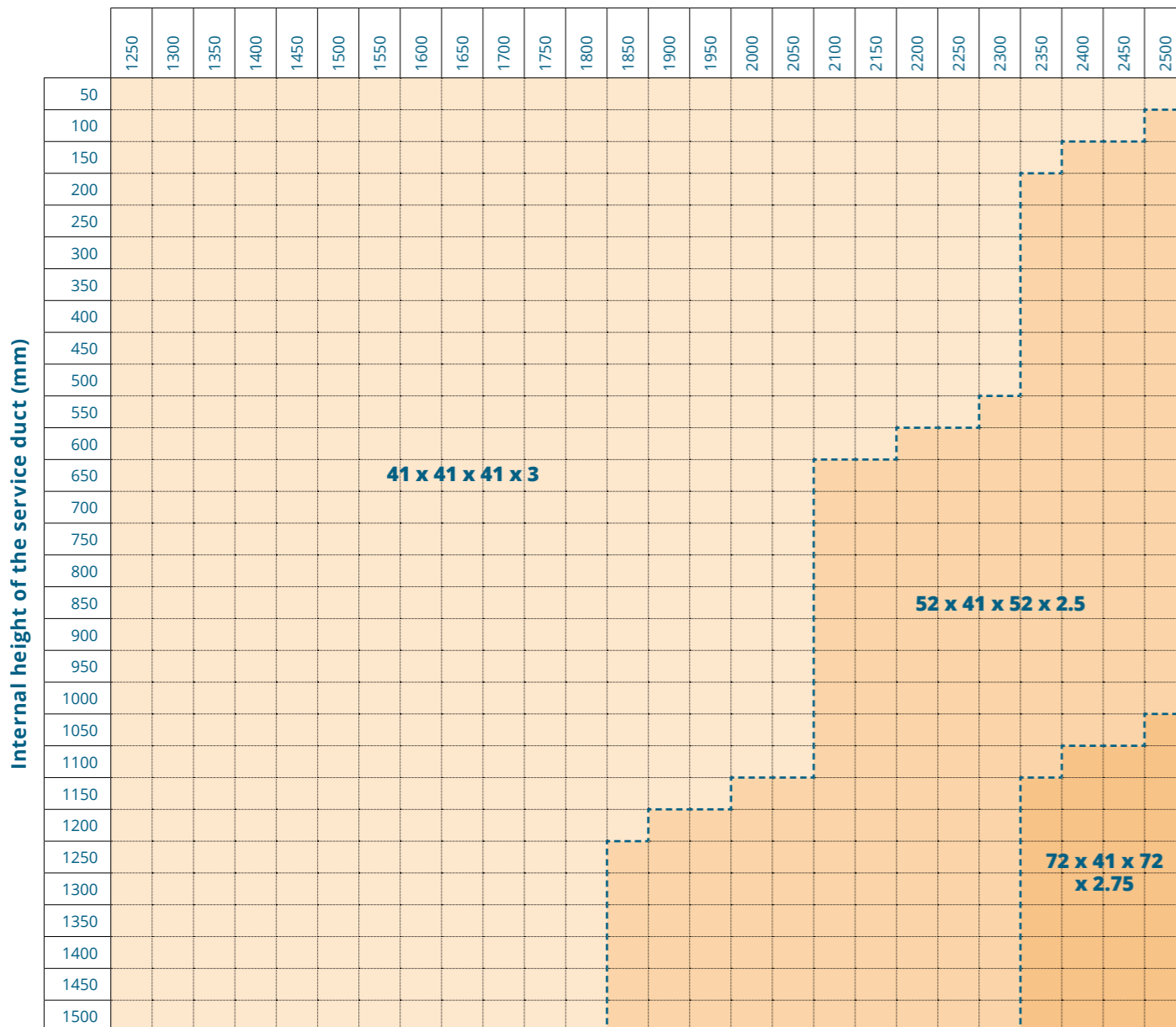


Steel U-profiles dimensions 3 sided EI 90-120 Geotec® S45



Steel U-profiles LOWER

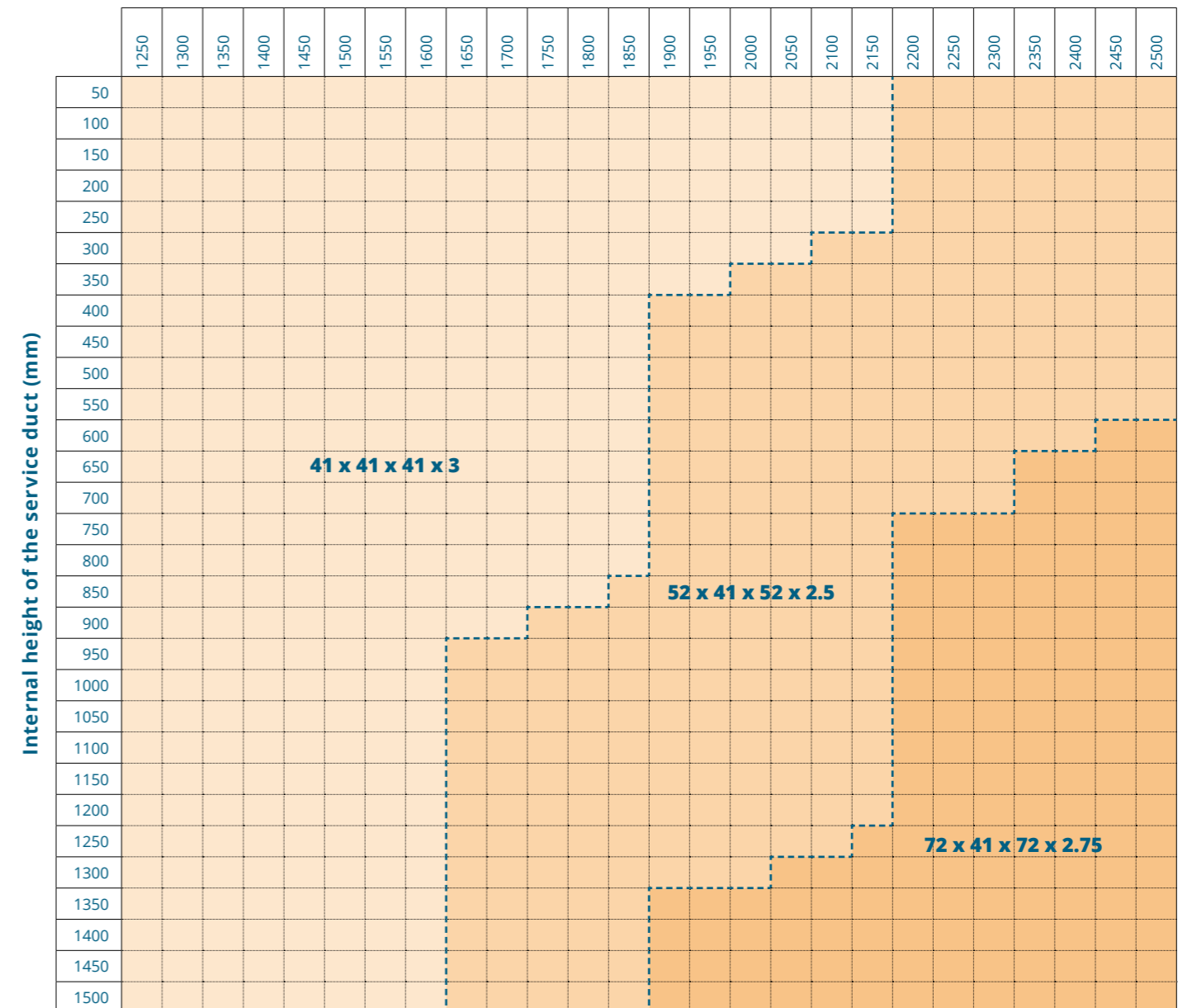
Internal width of the service duct (mm)



Calculation made with Hilti's certification

Steel U-profiles LOWER

Internal width of the service duct (mm)



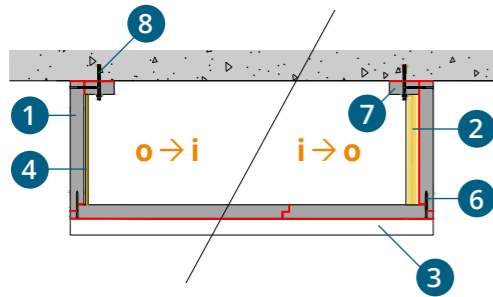
Calculation made with Hilti's certification

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 $i \rightarrow o$ is at stake, then the protective 1/2 shell element on the inside of the service duct must be added.

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

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

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.

4.2. 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.

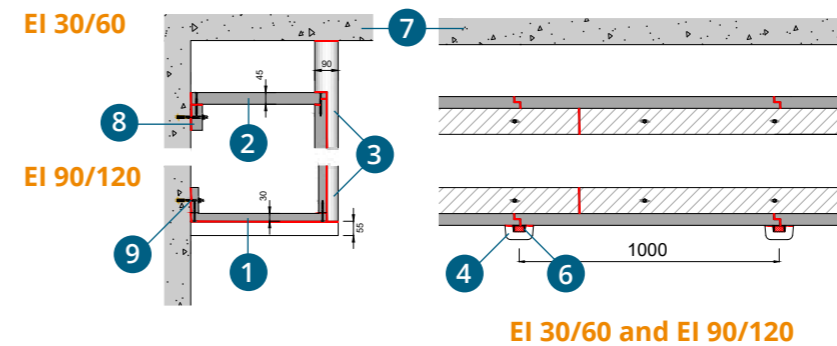
+ Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with **GEOCOL®** glue.

+ 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 rabbeted 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

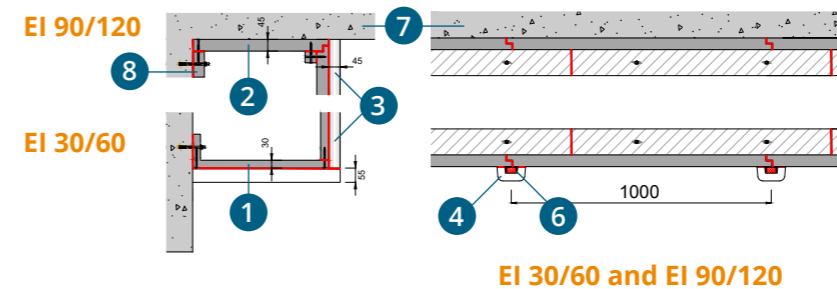


When the duct is against the slab :

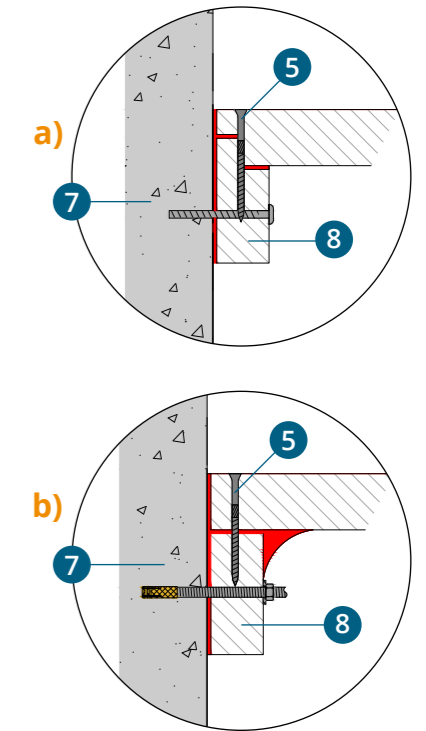
In the case of a horizontal duct adjoining the slab, a batten can be used to screw the boards together.

Cross-sectional view

Longitudinal view



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

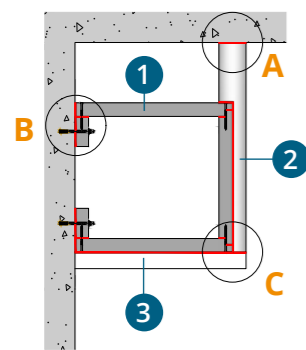
Internal Duct Width (W int)	EN 1366-5 o → i	EN 1366-5 i → o
≤ 600 mm	Standard Installation.	
600 < w ≤ 1000 mm	Using GEOTEC® A cover strips	
1000 < w ≤ 1250 mm	Using internal steel U-profiles	Using internal steel U-profiles protected by GEOTEC® A U-plaster elements
1250 < w ≤ 2500 mm	Using appropriated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

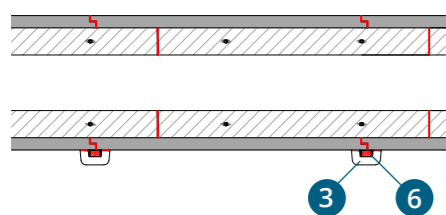
W int ≤ 600 mm



Front view

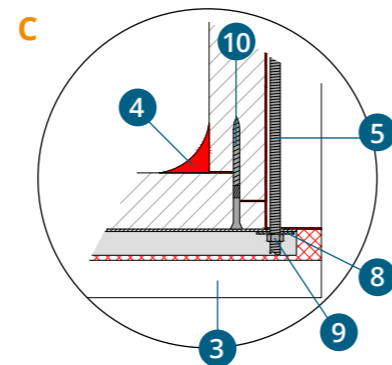
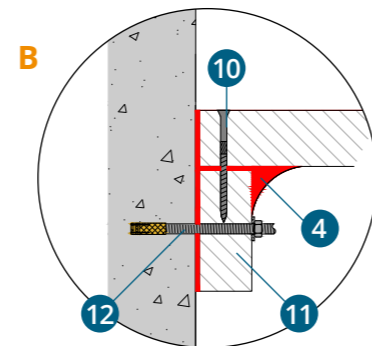
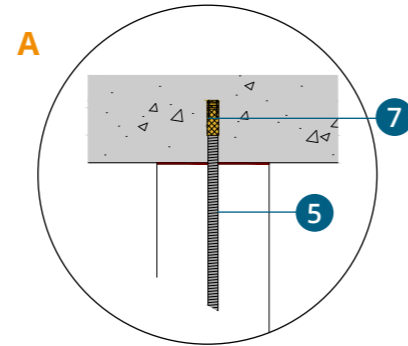


Side view



- 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

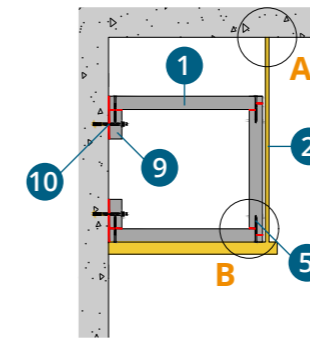
*staples :
≤ 1250 x 1000 mm (w x h) EI 30/60/90.



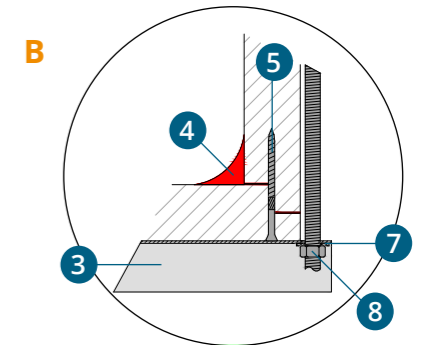
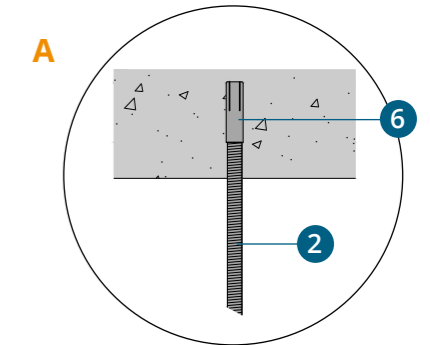
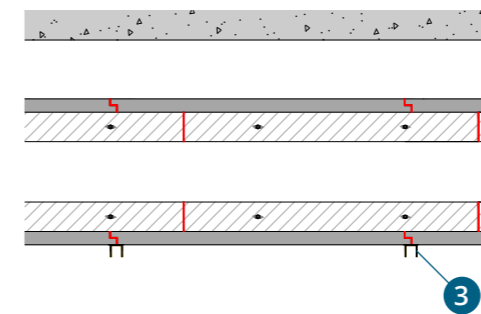
Non protection supports

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

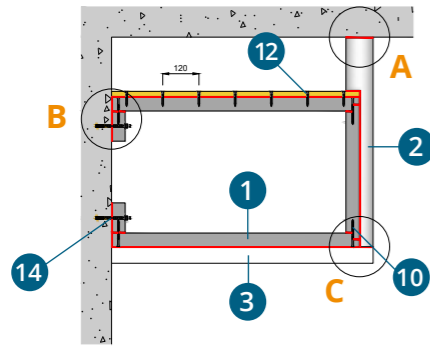
*staples :
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.

**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

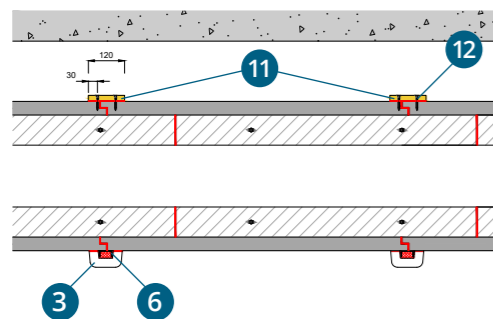
600 < W int ≤ 1000 mm



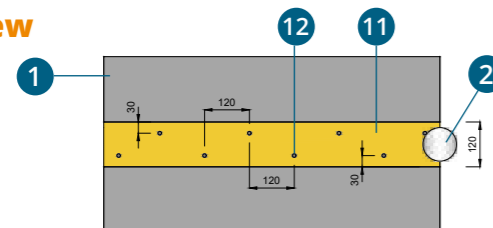
Front view



Side view



Top view

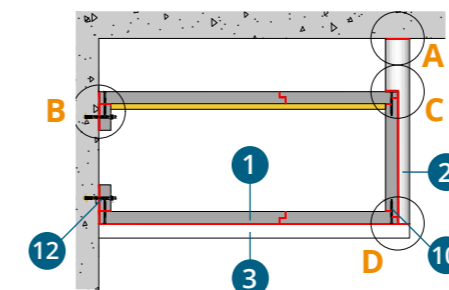


If service duct inner perimeter > 4500 mm
replace Threaded rod, Brass anchor, Galvanized washers, Galvanized nuts Ø8 for Ø10.

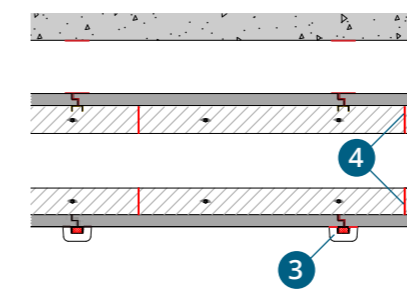
1000 < W int ≤ 1250 mm



Front view



Side view

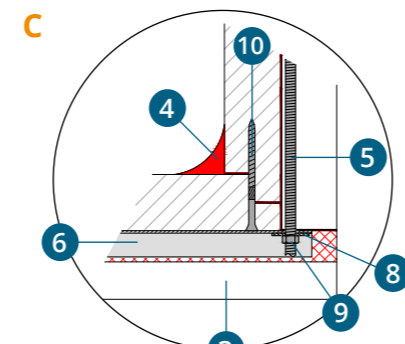
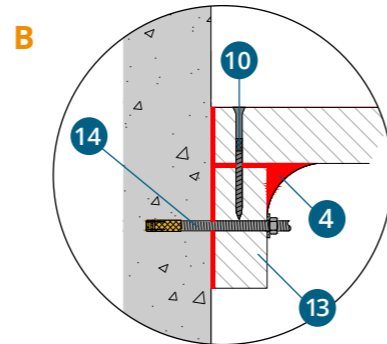
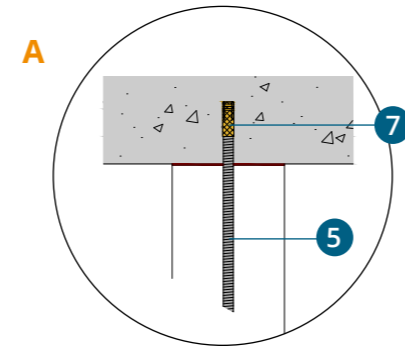


- 1 GEOTEC® S board
- 2 GEOTEC® A 1/2 shell
- 3 GEOTEC® A U-plaster element *
- 4 Geocol® Glue
- 5 Threaded rod Ø8
- 6 Steel U profile 41 x 21
- 7 Brass anchor Ø8
- 8 Galvanized washers Ø8
- 9 Galvanized nuts Ø8
- 10 VBA Screws
Ø 5 x 80 (EI 30/60),
Ø 5 x 90 (EI 90/120)
or galvanized steel staples*
75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

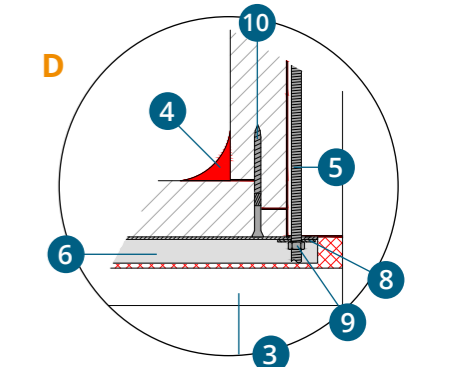
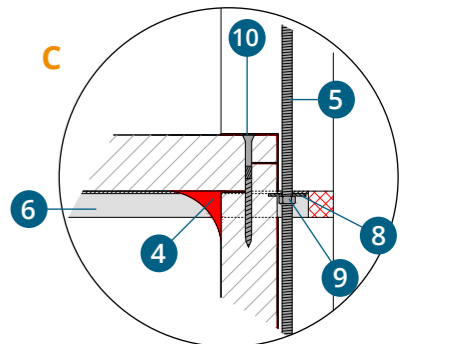
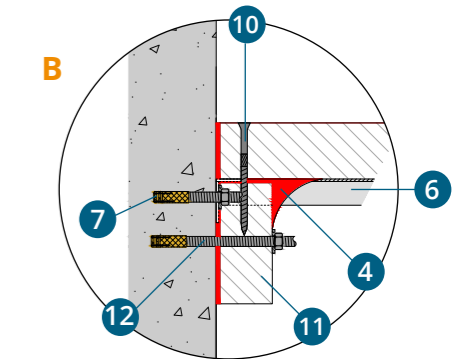
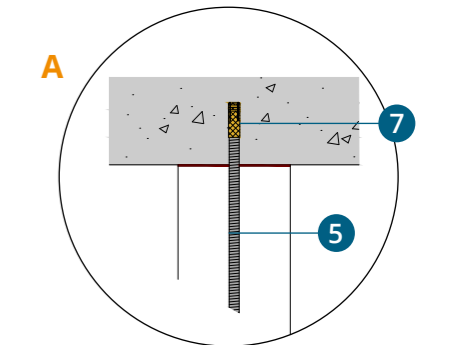
*** when the protection i → o is at stake, then the protective U-plaster element on the inside of the service duct must be added.**

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



- 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

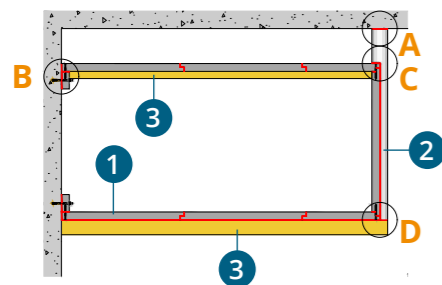
*staples :
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.



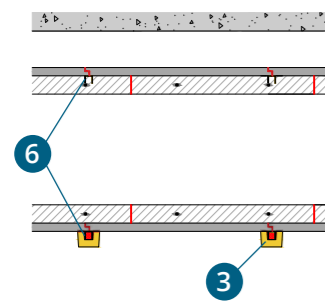
1250 < W int ≤ 2500 mm



Front view

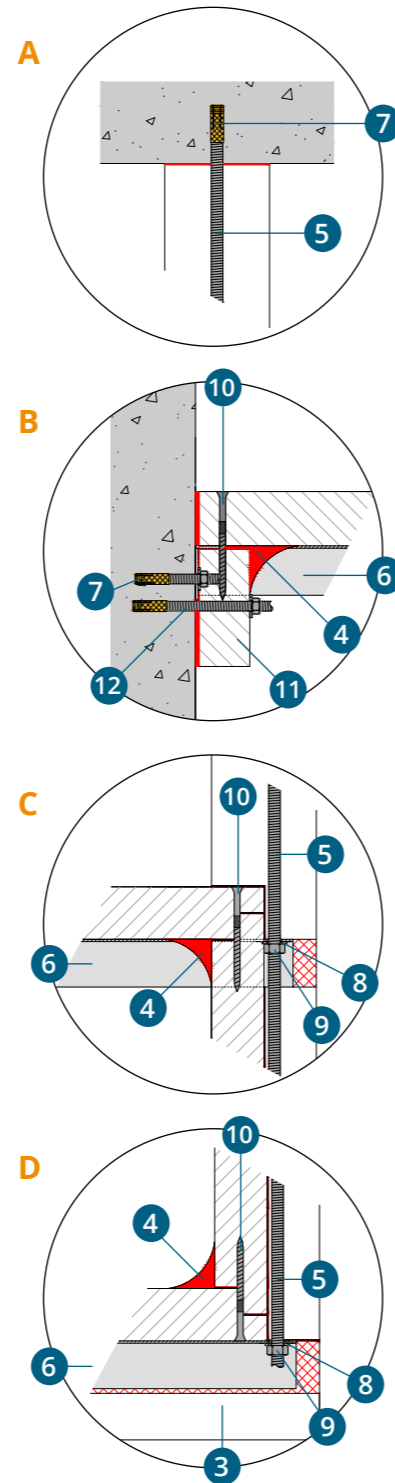


Side view



- 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.



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 height of the service duct (mm)	Internal width 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																											
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1400																											
1450																											
1500																											

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)	Internal width 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																											
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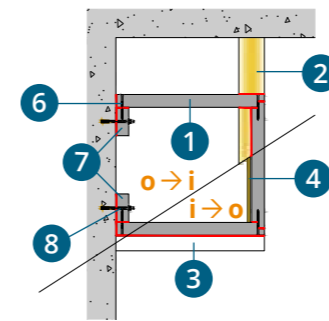
Calculation made with Hilti's certification

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.

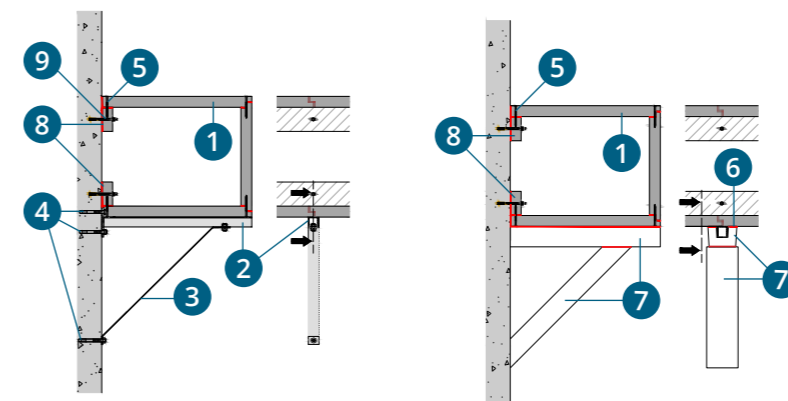
Front view: small section



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

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®.**



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.

- 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 through vertical construction elements (see page 138)

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

4.3. Vertical system

1. Assembly principles

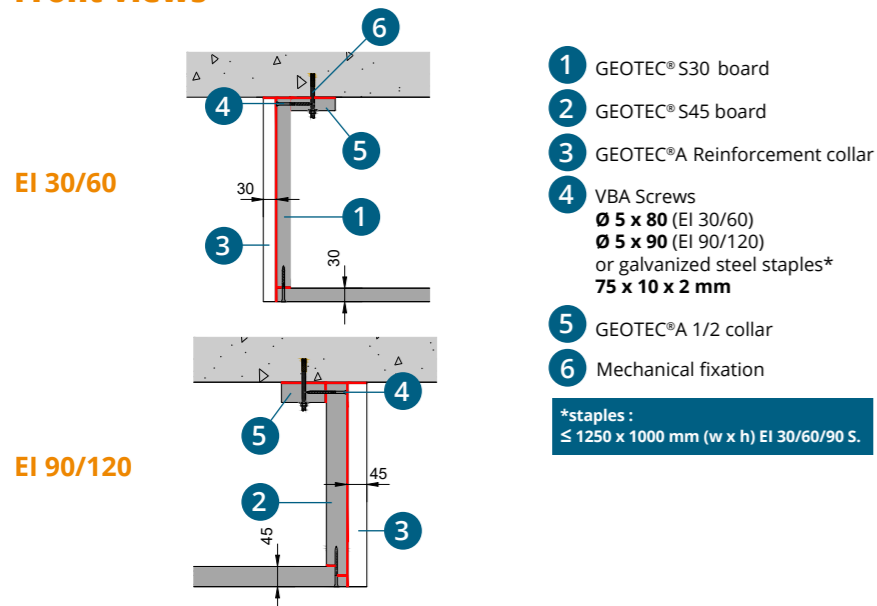
The boards are assembled using VBA screws or staples. Screws are inserted without pilot holes. All joints are previously treated with **GEOCOL®** glue. When constructing vertical service ducts, the board joints are offset between 2 contiguous faces (between 200 and 800 mm) so as to achieve optimal mechanical 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 rabbetted half collars (Geotec® A).
- b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Front views

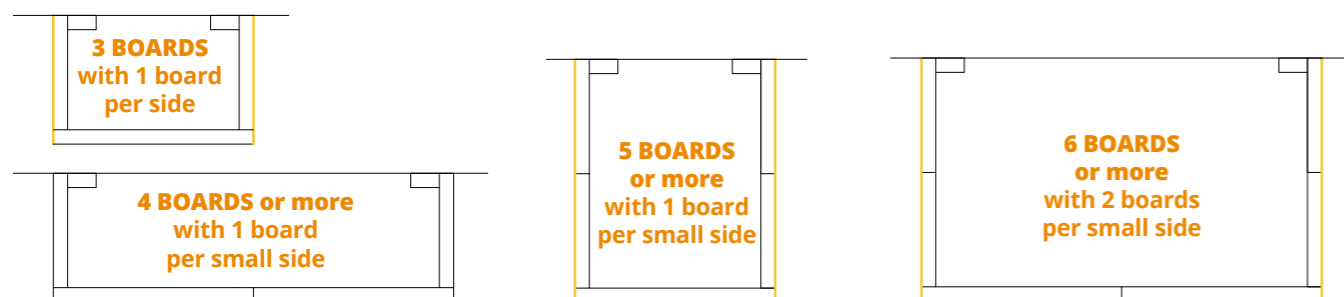


Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

Concerning the load-bearing systems

For 3-sided service ducts consisting of 3-board casings ($W_{int}^* \leq 1050$ mm and $D_{int}^* \leq 1100$ mm for EI 30/60 and $W_{int} \leq 1000$ mm and $D_{int} \leq 1050$ mm for EI 90/120), the load-bearing system can be carried out on 2 sides only.

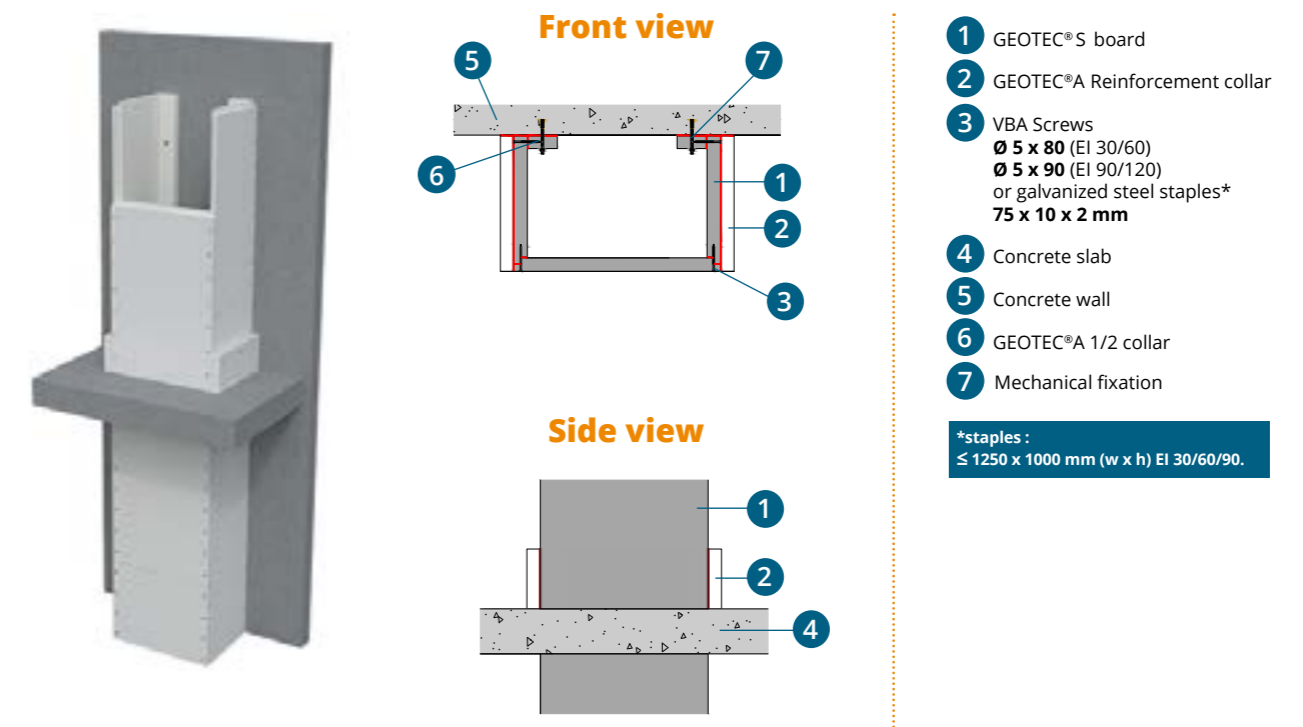
In the case of large cross-sections 3-sided service ducts, the number of boards per duct side can increase up to 4. In this case, load-bearing systems must be carried out on faces consisting of more than 2 boards



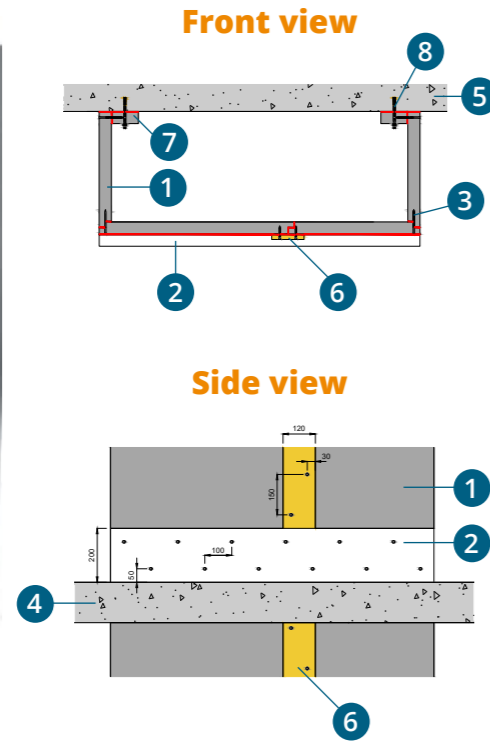
2. Installation instructions

Internal Duct Width & Depth (W_{int} & D_{int})	EN 1366-5 o → i	EN 1366-5 i → o
EI 60: $w \leq 1050$ & $d \leq 1100$ mm EI 120: $w \leq 1000$ & $d \leq 1050$ mm	Standard Installation	
EI 60: $w > 1050$ & $d \leq 1100$ mm EI 120: $w > 1000$ & $d \leq 1050$ mm	Using cover strips on 1 side	
EI 60: $w \leq 1050$ & $d > 1100$ mm EI 120: $w \leq 1000$ & $d > 1050$ 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



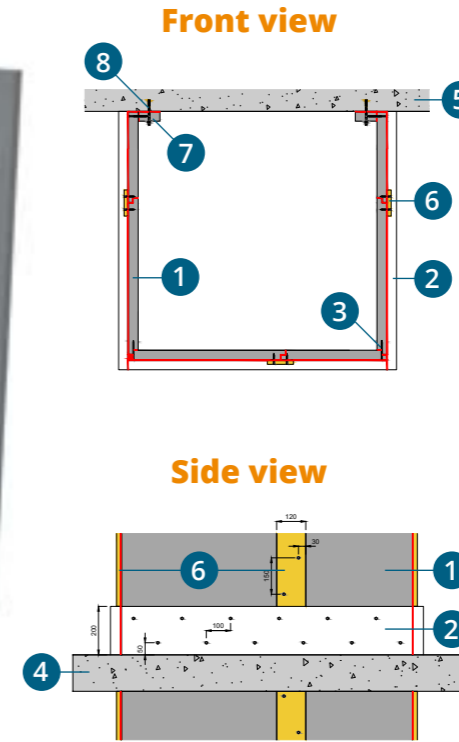
B) Using cover strips on 1 side



- 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.

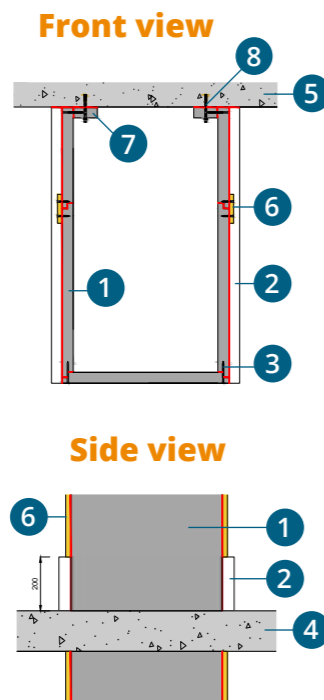
D) Using cover strips on 3 sides



- 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



- 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 through 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)	EFFECTIS 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

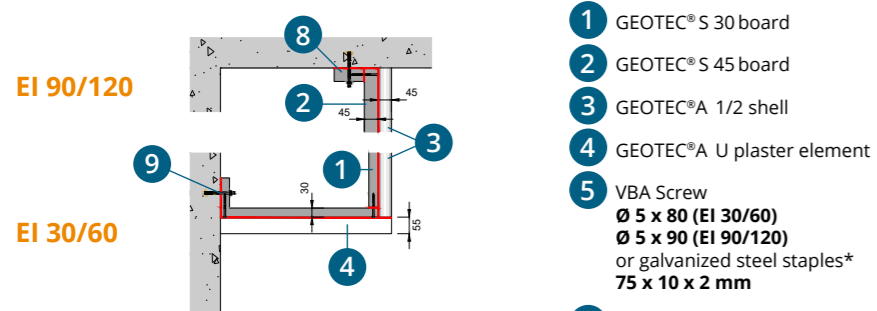
1. Assembly principle

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.

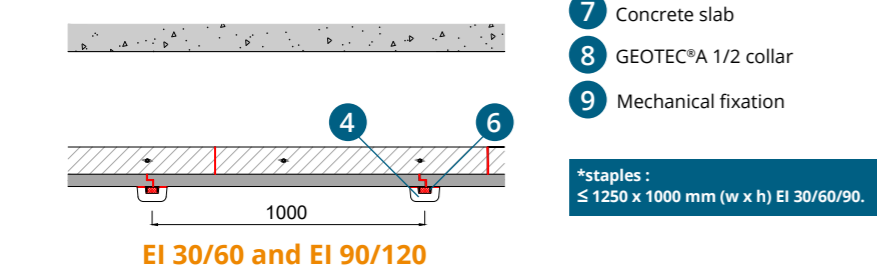
- + Any spaces of less than 10 mm between board junctions must be filled in over the entire thickness with **GEOCOL®** glue.
- + Eventual repairs can be treated by bonding and screwing an extra thickness of the board with an overlap equivalent to the thickness of the board.

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 rabbetted half collars (Geotec® A). b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

Cross-sectional view

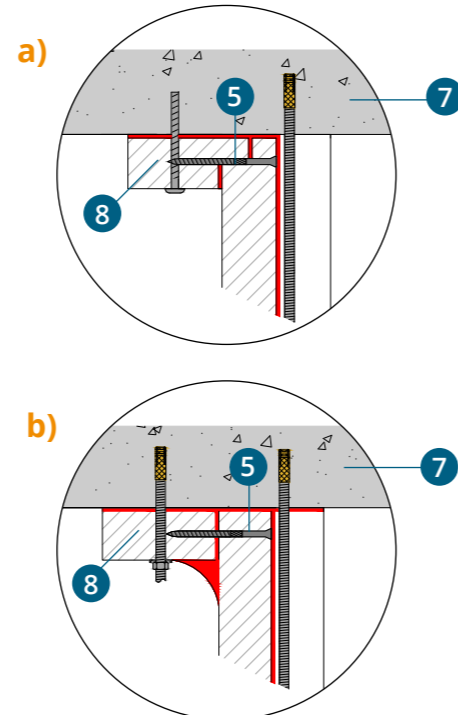


Longitudinal view



- 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.



2. Installation instructions

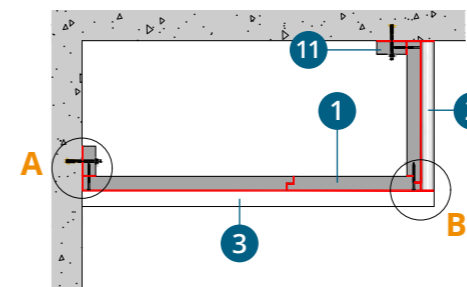
Internal Duct Width (W int)	1366-5 o → i	1366-5 i → o
≤ 1250 mm	Standard Installation.	
1250 < w ≤ 2500 mm	Using appropriated steel U-profiles + Ø 10 threaded rods	

Inner Perimeter > 4500 mm → On request

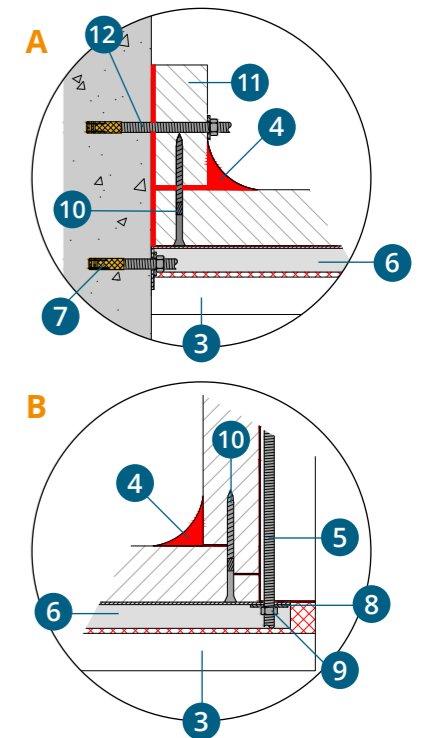
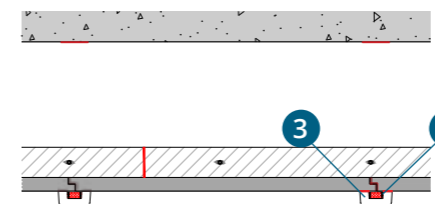
W int ≤ 1250 mm



Front view



Side view



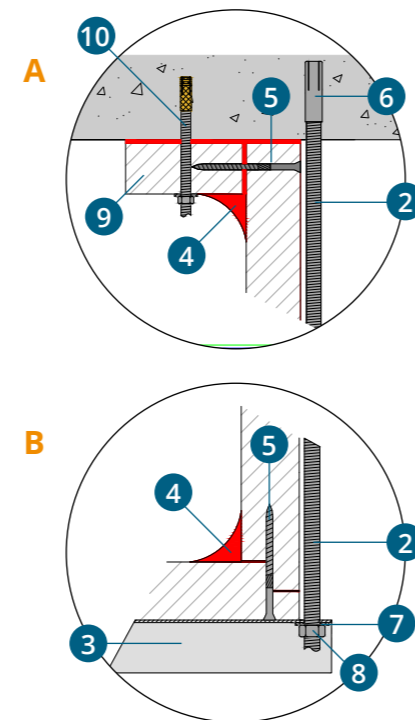
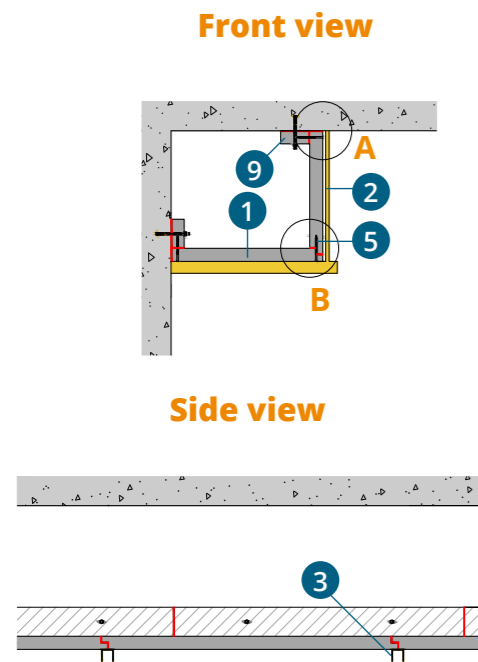
- 1 GEOTEC® S board
- 2 GEOTEC® A 1/2 shell
- 3 GEOTEC® A U-plaster element
- 4 Geocol® Glue
- 5 Threaded rod Ø8
- 6 Steel U profile 41 x 21
- 7 Brass anchor Ø8
- 8 Galvanized washers Ø8
- 9 Galvanized nuts Ø8
- 10 VBA Screws Ø 5 x 80 (EI 30/60) Ø 5 x 90 (EI 90/120) or galvanized steel staples* 75 x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

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

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.



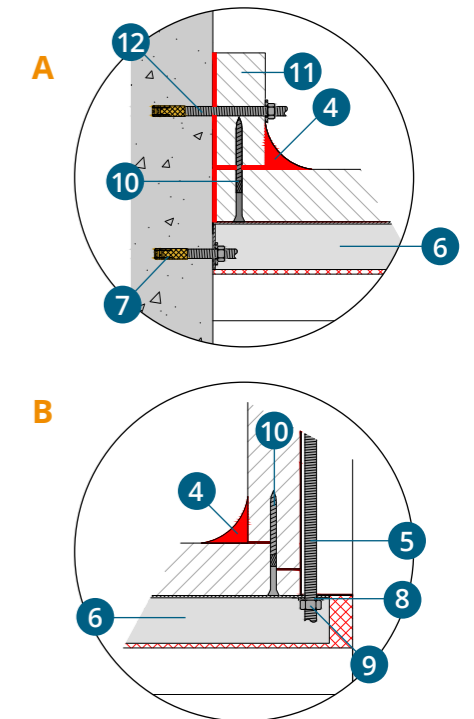
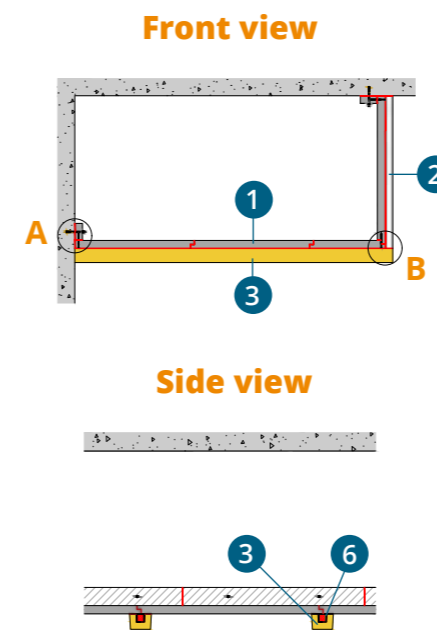
- 1 GEOTEC® S board
- 2 Threaded rod $\text{Ø}12$ or $\text{Ø}14$ **
- 3 Steel U profile 41x41
- 4 Geocol® Glue
- 5 VBA Screws
 $\text{Ø}5 \times 80$ (EI 30/60)
 $\text{Ø}5 \times 90$ (EI 90/120)
 or galvanized steel staples *
 $75 \times 10 \times 2$ mm
- 6 Steel anchor $\text{Ø}12$ or $\text{Ø}14$
- 7 Galvanized washers $\text{Ø}12$ or $\text{Ø}14$
- 8 Galvanized nuts $\text{Ø}12$ or $\text{Ø}14$
- 9 GEOTEC® A 1/2 collar
- 10 Mechanical fixation

*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90 S.

** What diameter should I use ?

EI 30/60 : $\text{Ø}12$ in any case
 EI 90/120 : $\text{Ø}12$ when $P_{int} \leq 1200$ mm and $\text{Ø}14$ above

$1250 \leq W_{int} \leq 2500$ mm



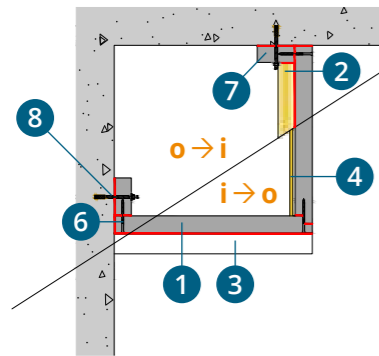
- 1 GEOTEC® S board
- 2 GEOTEC® A 1/2 shell
- 3 GEOTEC® A U-plaster element (appropriated according to the steel U profile used)
- 4 Geocol® Glue
- 5 Threaded rod $\text{Ø}10$
- 6 Steel U profile (appropriated according to supplier's certification). See on page 130/131
- 7 Brass anchor $\text{Ø}10$
-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

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.

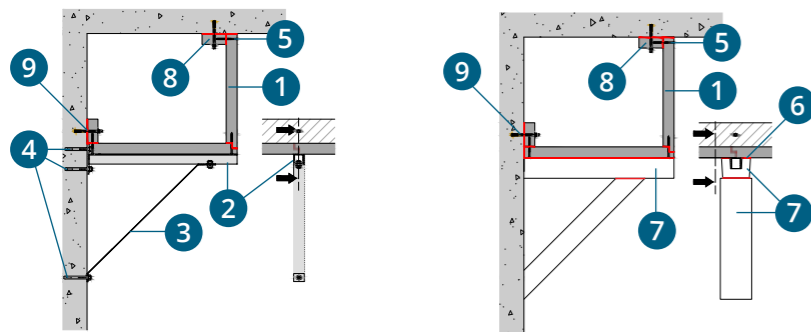
Front view: small section



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

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®.**



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

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

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.

- 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.

5.2. Vertical system

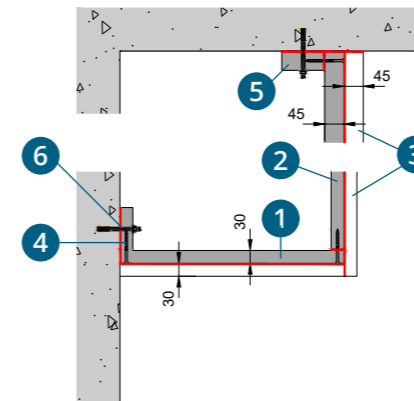
1. Assembly principles

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.

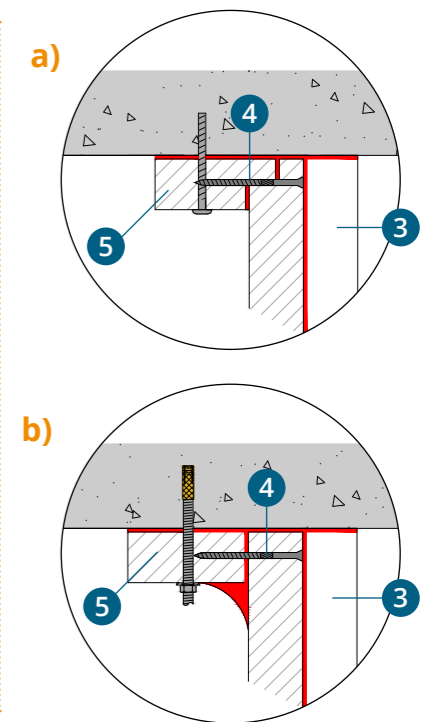
When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling or wall can be made
a) with rabbets by installing rabbeted half collars (Geotec® A).
b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.

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

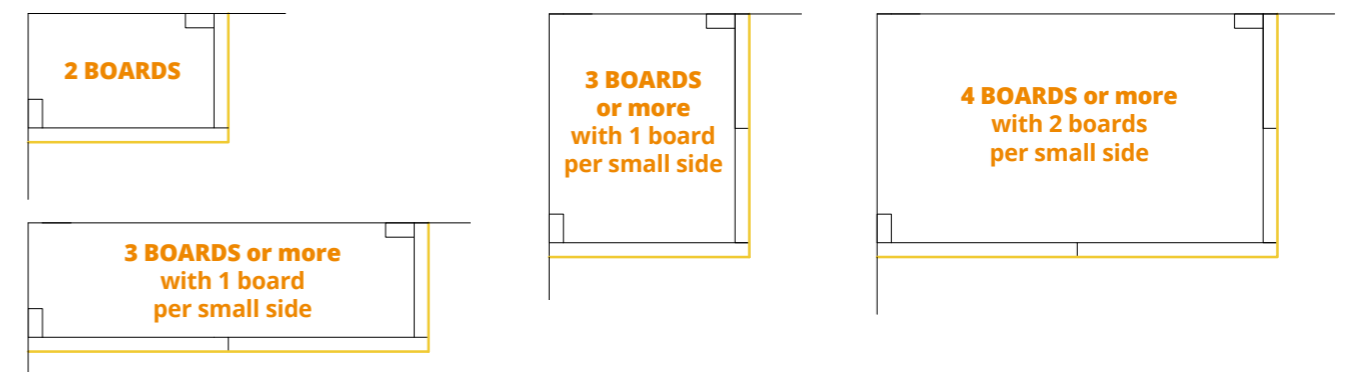
*staples:
≤ 1250 x 1000 mm (w x h) EI 30/60/90 S.



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

Concerning the load-bearing systems

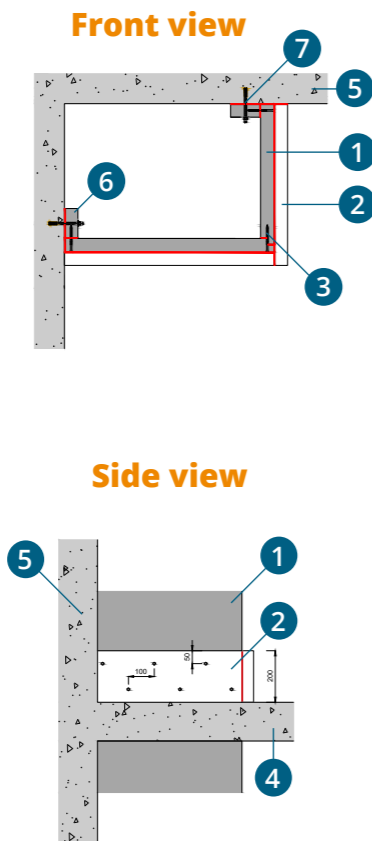
Concerning the 2-sided service ducts the load-bearing system shall be obviously carried out on 2 sides only in all cases.



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	

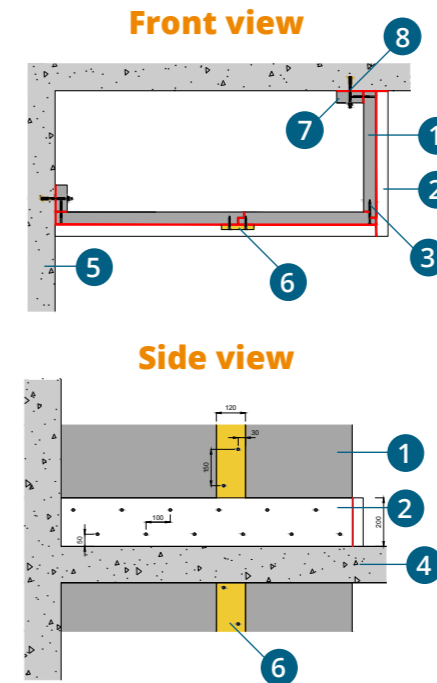
A) Standard Installation



- 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.

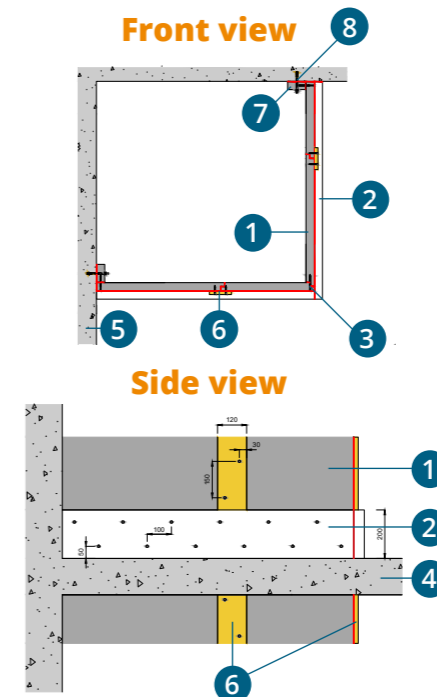
B) Using cover strips on 1 side



- 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



- 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 through horizontal construction elements (see page 139)

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

6. ONE SIDED PROTECTION (vertical)

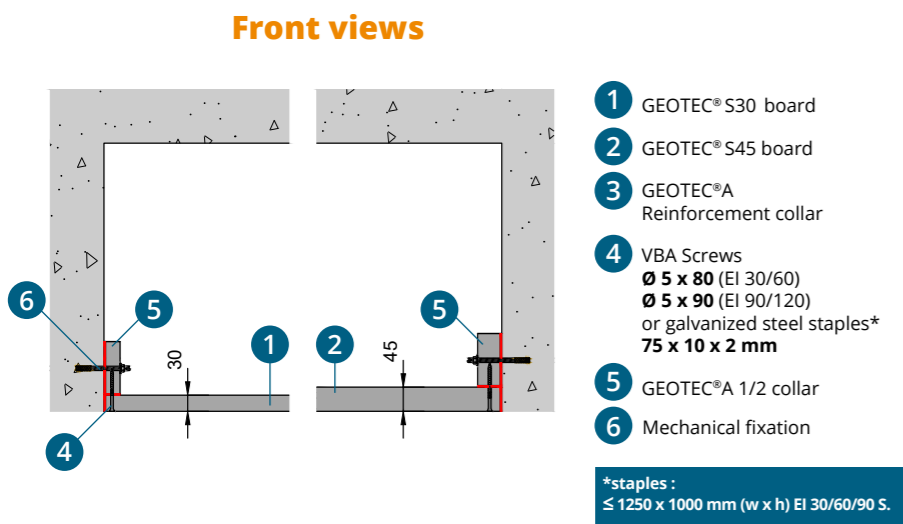
Certificates: fire resistance classification report				
Tests in accordance with EN 1366-5	Thickness (mm)	EI i ↔ o	Internal width (mm)	EFFECTIS classification documents
Vertical Fire Protection of Service Ducts & Shafts	30	30/60	50 to 2500	Cert EFR-18-003855 A
	45	90/120		

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.

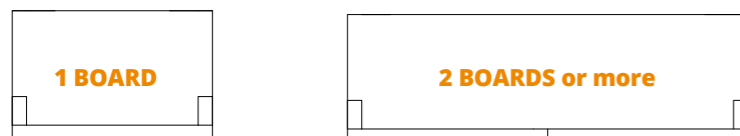
When Geotec® S45 boards (with rabbeted sides) are used, then the junction with the ceiling or wall can be made
 a) with rabbets by installing rabbeted half collars (Geotec® A).
 b) without rabbets. The rabbets are then cut off to make a junction with the straight collars.



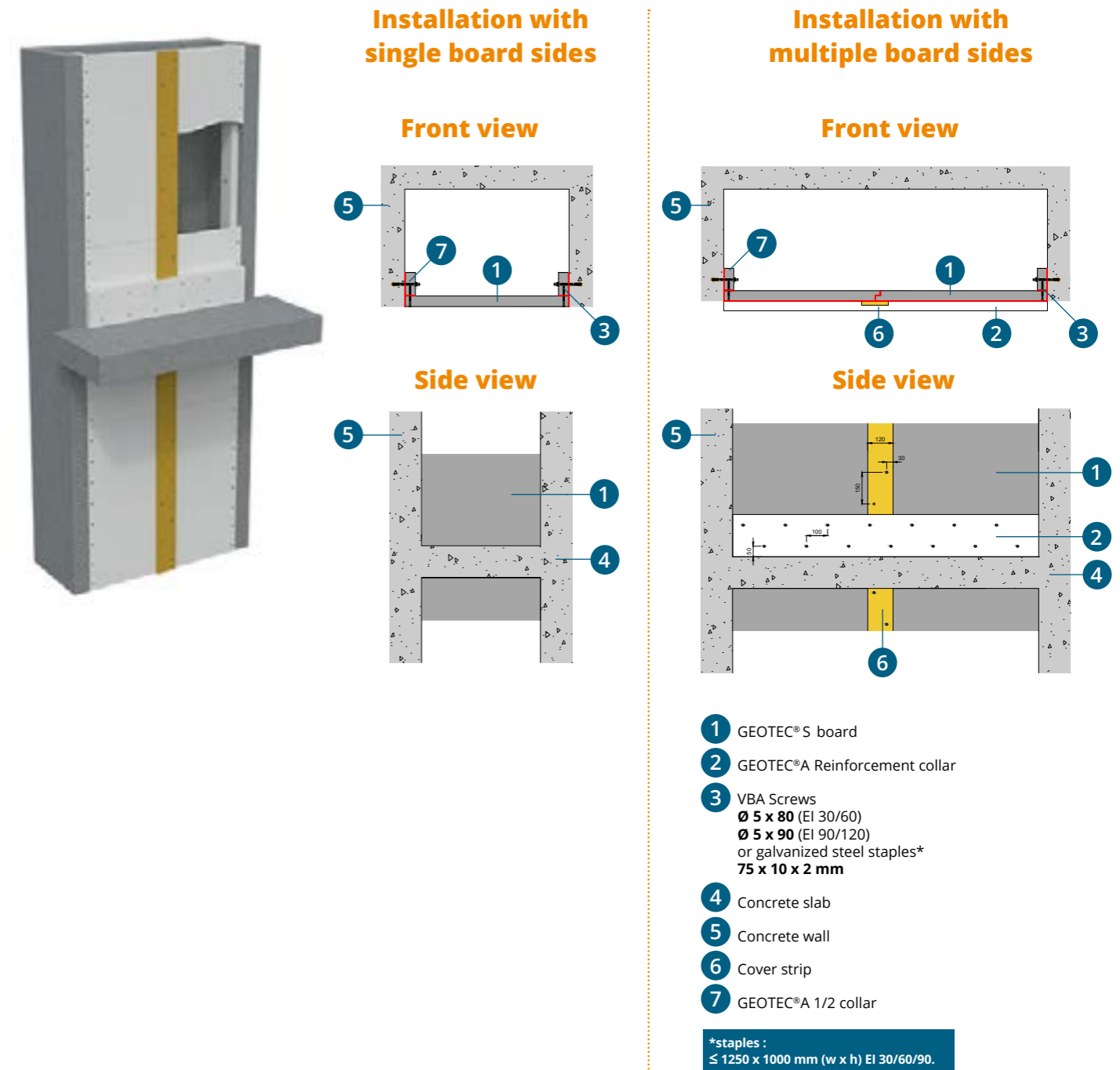
Half-collars must be fixed to the supporting construction with appropriate fixation material (concrete screws or threaded rods + brass anchors + galvanized washers + galvanized nuts...)

Concerning the load-bearing systems

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



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)

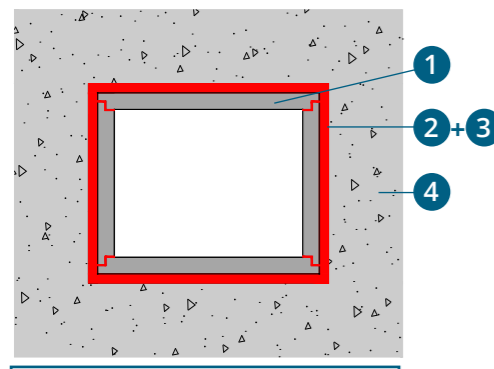
7. PENETRATION OF CONSTRUCTION ELEMENTS

7.1. Vertical construction elements

1. Solid wall - Continuous

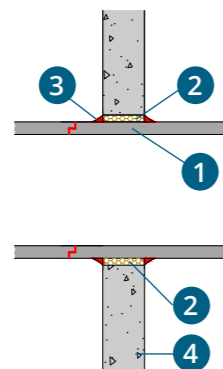
Method of caulking horizontal ducts through vertical walls :

Top view



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

Side view



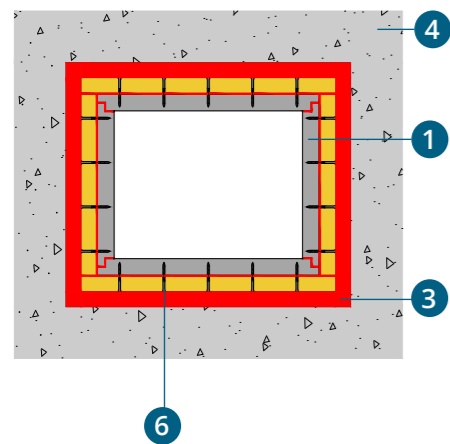
- 1 GEOTEC® S board
- 2 Caulking* (max 25 mm)
- 3 Geocol® Glue
- 4 Concrete wall
- 5 GEOTEC® A Batten
- 6 VBA Screws
Ø 5 x 80 (EI 30/60)
Ø 5 x 90 (EI 90/120
or galvanized steel staples*
75 x 10 x 2 mm

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

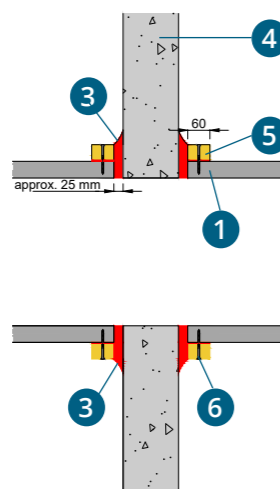
2. Solid wall - Interrupted

Method of caulking a non-traversing horizontal duct :

Top view



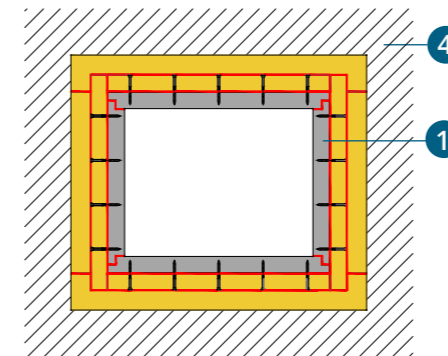
Side view



3. Flexible wall

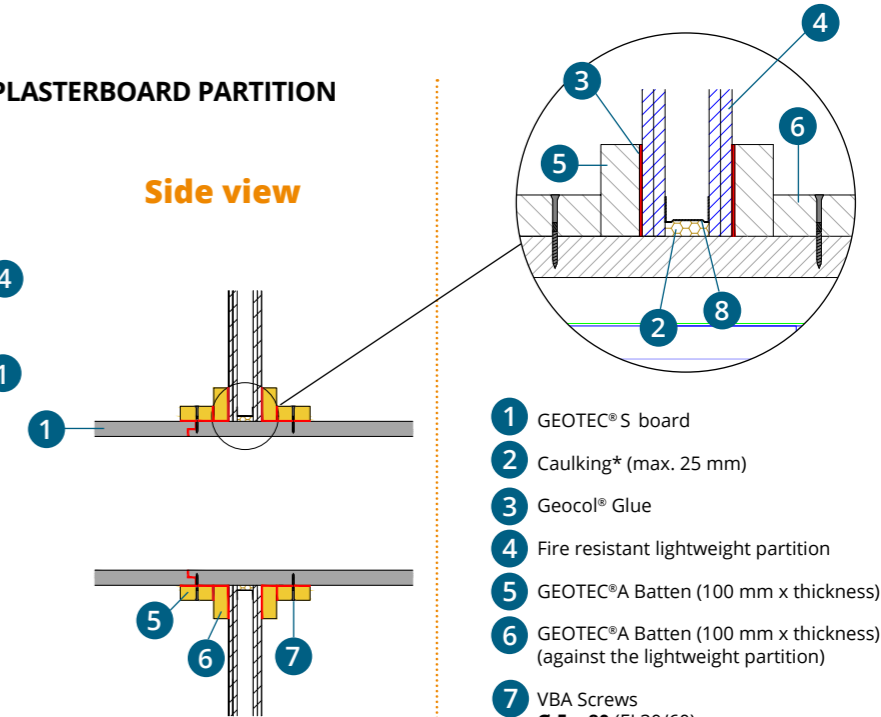
THROUGHOUT OF LIGHTWEIGHT PLASTERBOARD PARTITION

Top view



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

Side view



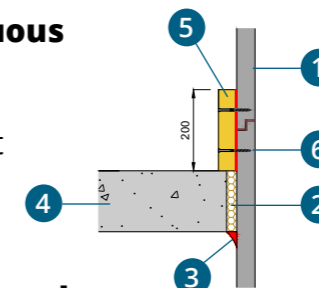
- 1 GEOTEC® S board
- 2 Caulking* (max. 25 mm)
- 3 Geocol® Glue
- 4 Fire resistant lightweight partition
- 5 GEOTEC® A Batten (100 mm x thickness)
- 6 GEOTEC® A Batten (100 mm x thickness) (against the lightweight partition)
- 7 VBA Screws
Ø 5 x 80 (EI 30/60)
Ø 5 x 90 (EI 90/120 S)
or galvanized steel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

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

7.2. Horizontal construction elements

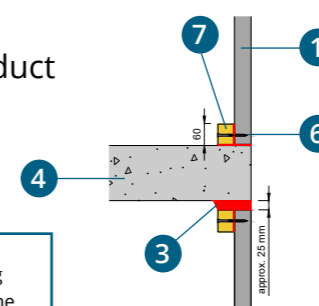
1. Solid floor - Continuous

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.

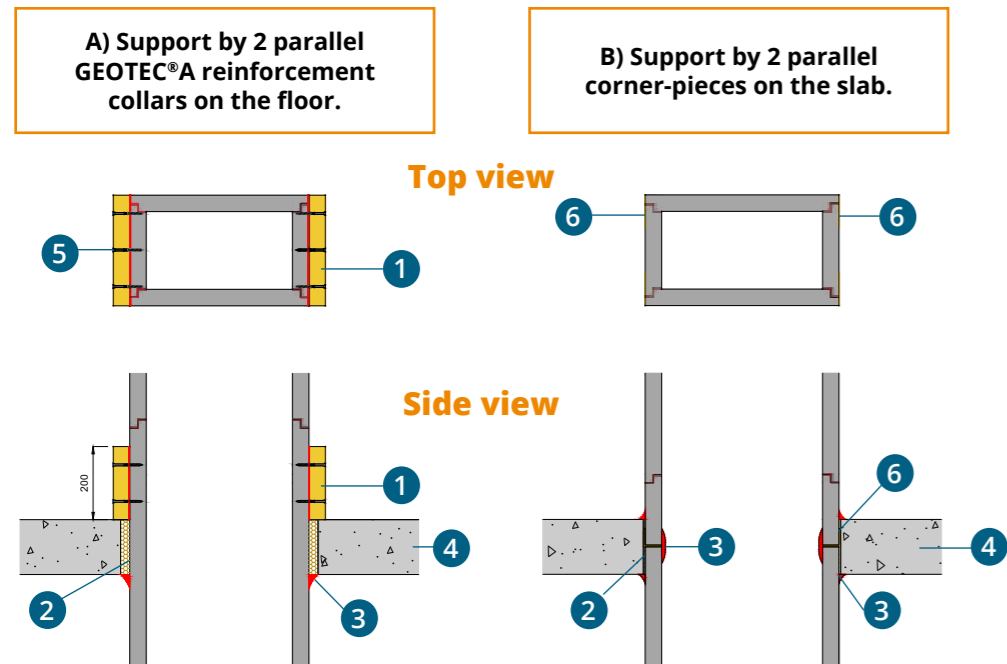
8. SUPPORTING SOLUTIONS FOR VERTICAL INSTALLATIONS

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).

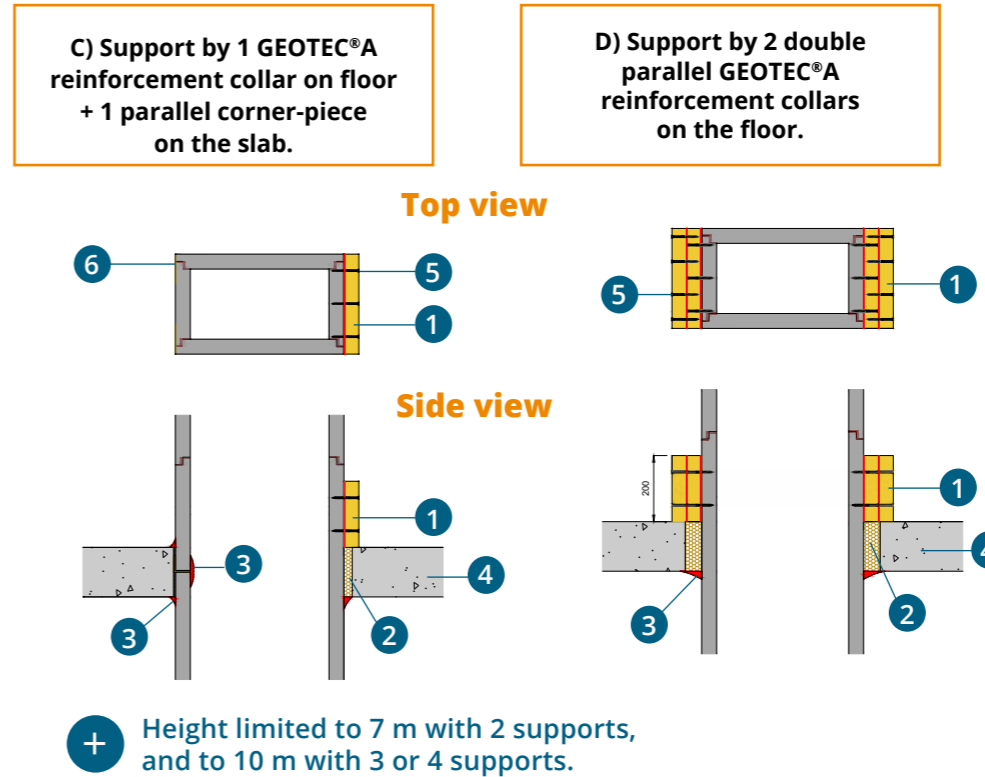
The table below shows the different alternatives supporting constructions according to the type of service duct encountered.

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		
3	Service Ducts adjacent to the wall	H	X		
		I	X		
4	Sub-floor level support	J	X	X	X
5	Service Ducts on brackets	K	X	X	
		L	X		X

1. Service Ducts not attached to walls

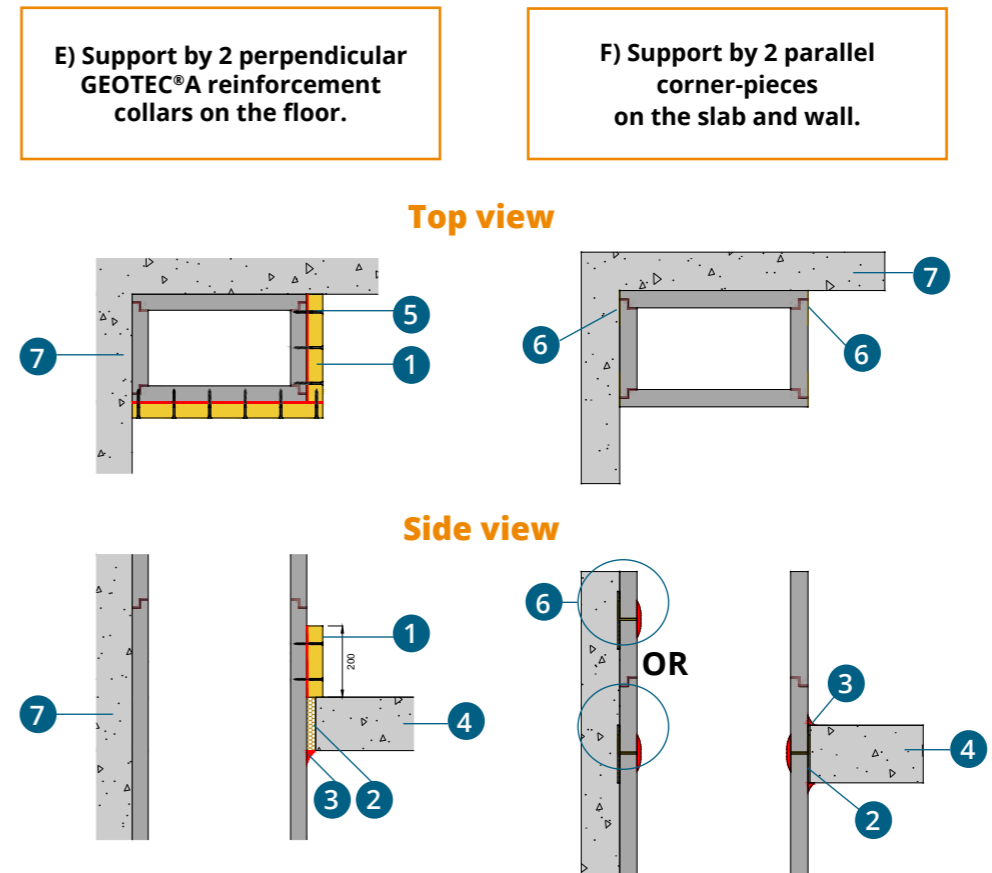


- 1 GEOTEC®A reinforcement collar (glued & screwed)
- 2 Caulking
- 3 GEOCOL® Glue
- 4 Floor
- 5 Screws
- 6 Corner-pieces:
EI 30/60: 35x35x4 mm.
EI 90/120 (S): 50x50x5 mm.



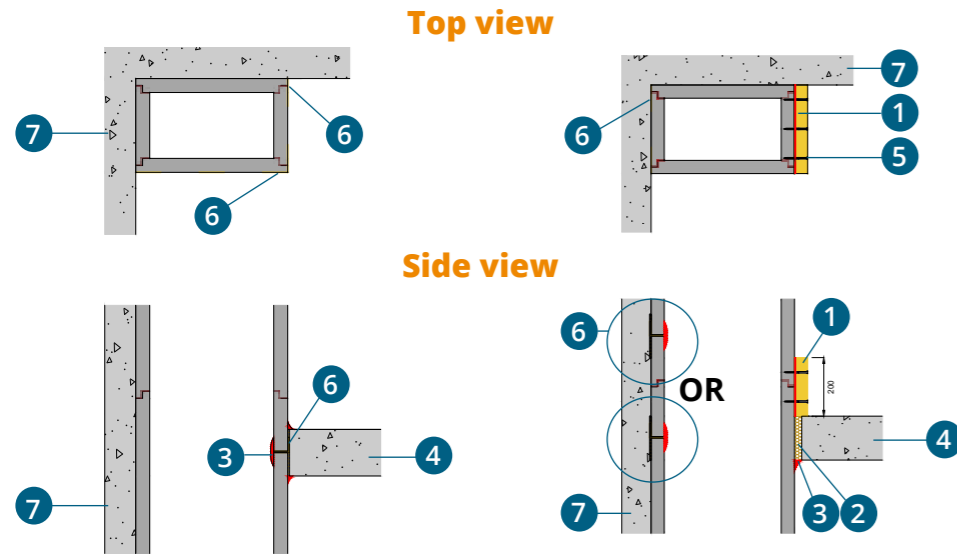
- 1 GEOTEC®A reinforcement collar (glued & screwed)
- 2 Caulking
- 3 GEOCOL® Glue
- 4 Floor
- 5 Screws
- 6 Corner-pieces:
EI 30/60: 35x35x4 mm.
EI 90/120: 50x50x5 mm.

2. Ducts adjacent to a wall corner

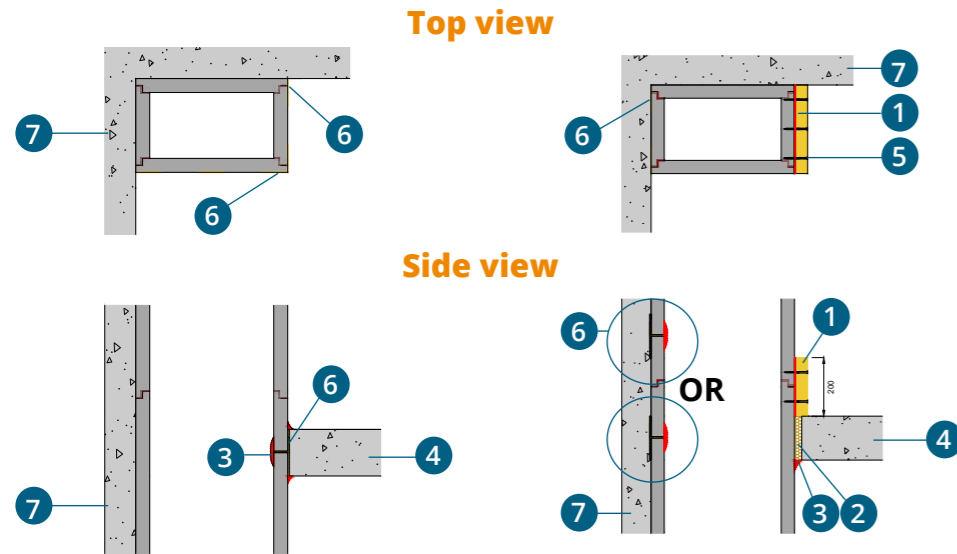


- 1 GEOTEC®A reinforcement collar (glued & screwed)
- 2 Caulking
- 3 GEOCOL® Glue
- 4 Floor
- 5 Screws
- 6 Corner-pieces:
EI 30/60: 35x35x4 mm.
EI 90/120 (S): 50x50x5 mm.
- 7 Concrete wall

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



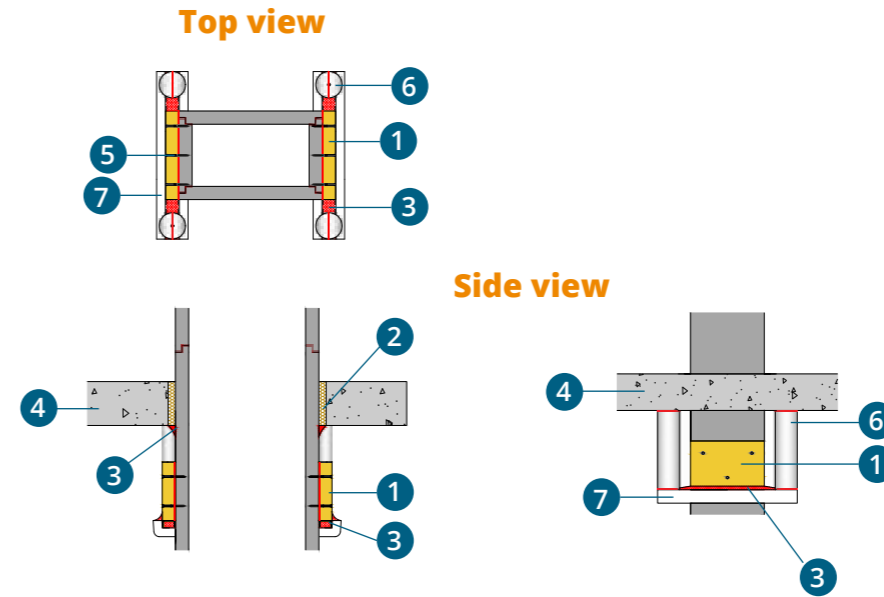
H) Support by 1 GEOTEC®A reinforcement collar on the floor + 1 corner-piece in parallel on the wall.



- 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

4. Sub-floor level support

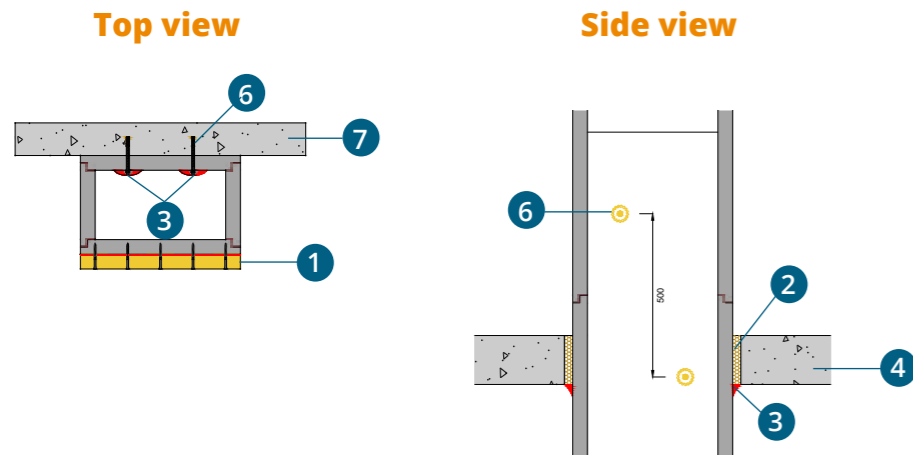
J) Support by 2 parallel GEOTEC®A reinforcement collars under the floor.



- 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

3. Ducts adjacent to the wall

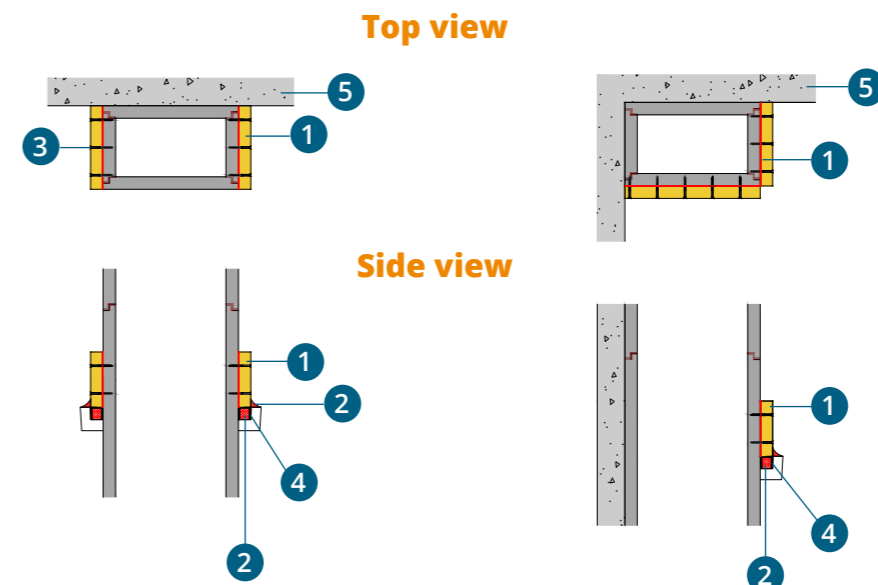
I) Support by threaded rods anchored to the vertical wall and other parallel supports.



- 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

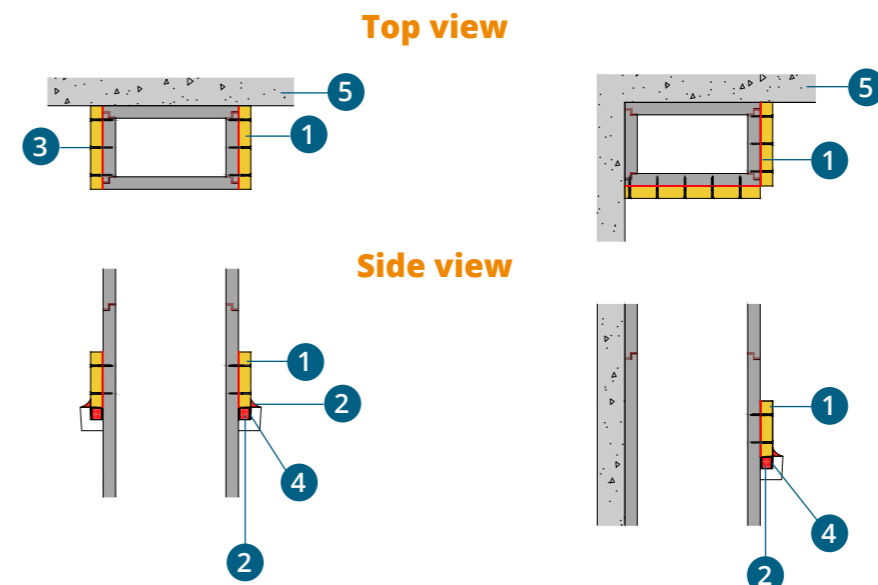
5. Service Ducts on brackets

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



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

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

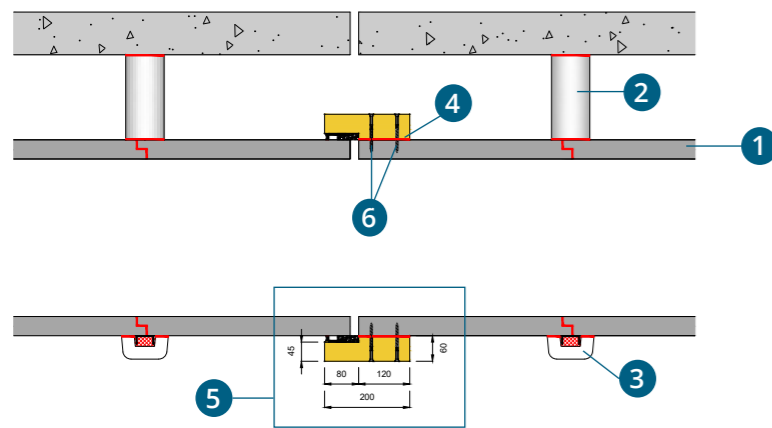


9. DILATATION JOINTS

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
 $\varnothing 5 \times 80$ (EI 30/60)
 $\varnothing 5 \times 90$ (EI 90/120)
 or galvanized steel staples*
 $75 \times 10 \times 2$ mm

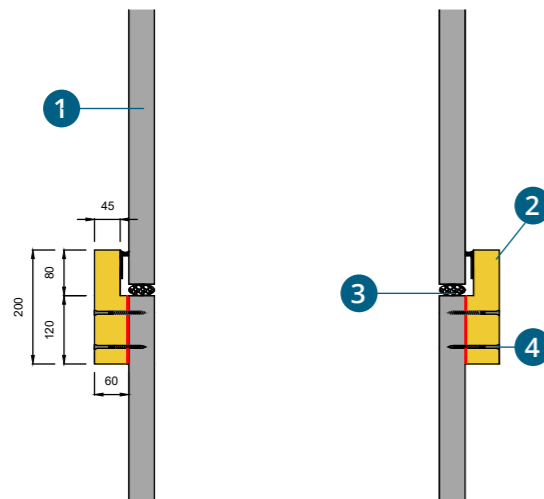
*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90.

* 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 $\varnothing 40$
- 4 VBA Screws
 $\varnothing 5 \times 80$ (EI 30/60)
 $\varnothing 5 \times 90$ (EI 90/120)
 or galvanized steel staples*
 $75 \times 10 \times 2$ mm

*staples :
 $\leq 1250 \times 1000$ mm (w x h) EI 30/60/90.

* Technical datasheet of
 Expansion joint element page 24

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