

GEO STAFF

Specialist in fire protection and decorative gypsum products

TECHNICAL CATALOGUE

FIRE-PROTECTION

SMOKE EXTRACTION & VENTILATION
DUCTS - VERTICAL SYSTEM

**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 (FDS) and observing safety standards (FDES).



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



Tailored dimensions

Tailored dimensions are delivered according to your project needs.



Duct palettizing

Palletizing of the products by ducts is possible.



Online calculation tool

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



Transportation

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



Storage

Product must be kept away from water.



GRG

Glass Reinforced Gypsum.



Lightweight board

PROTECTING YOU FROM FIRE IS WHAT WE DO

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

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

ducts, the fire protection of various electrical cable trays, but also the installation of fire-resistant access hatches. All our products are designed with the aim of making these solutions possible and are tested and classified in accordance with all the existing European standards.

Ventilation and smoke extraction ducts

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

Two cases are therefore possible:



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



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

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

Fire protection of service ducts and shafts



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

Protection to epoxy bonded reinforcement systems on concrete slabs and beams



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

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

Fire-resistant inspection hatches



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



Fire classification and tests standards

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

Fire resistance classification standards

EN 13501-1

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

EN 13501-3

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.

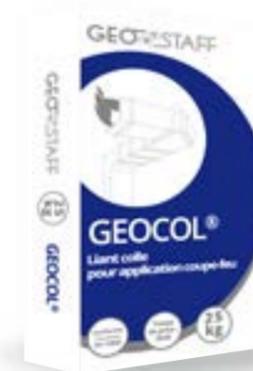
Products are easily paintable and a water-repellent treatment is optional.

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



Additional technical data

Airflow performance

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

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

Cold sealing: Class B in accordance with standard EN 1507

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

Pressure drop

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

Acoustic performance

Acoustic attenuation with lining

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

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

Rw + C : Acoustic attenuation to indoor noise

Rw + Ctr : Acoustic attenuation to outdoor noise

BA13 : Standard plasterboard (13 mm thickness)

LdV : glass wool

dB : decibel

Seismic performance

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

Performance under damp conditions

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



SMOKE EXTRACTION & VENTILATION DUCTS

1. SYSTEM GENERAL OVERVIEW	12
2. VERTICAL SYSTEM	13
2.1 Assembly principle	13
2.2 Installation instructions	14
2.3 Alternative support principles	20
2.4 Floor penetrations	24
2.5 Dilation joints	24
2.6 Various configurations	25

1. SYSTEM GENERAL OVERVIEW

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

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

* Service pressure raised to -1500/+1500 Pa (according to Cert 18/10 Rev. I) E = Integrity / I = Thermal insulation / S = Smoke-tightness

Horizontal system



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

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

Vertical system



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

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

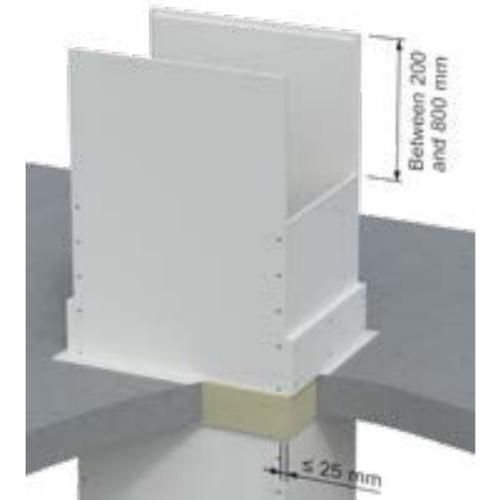
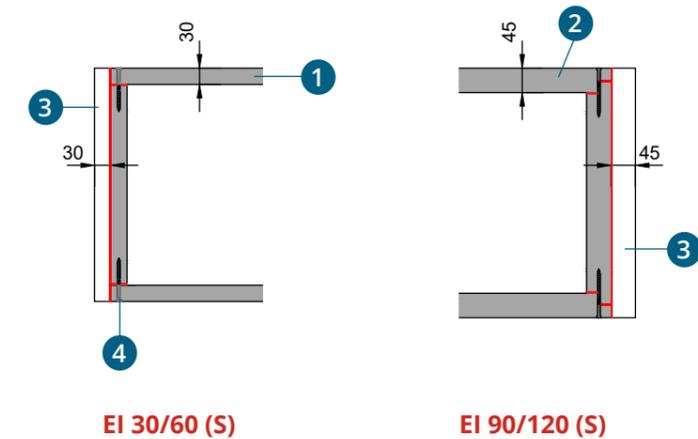
2. VERTICAL SYSTEM

2.1. Assembly principle

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

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

Cross-sectional view



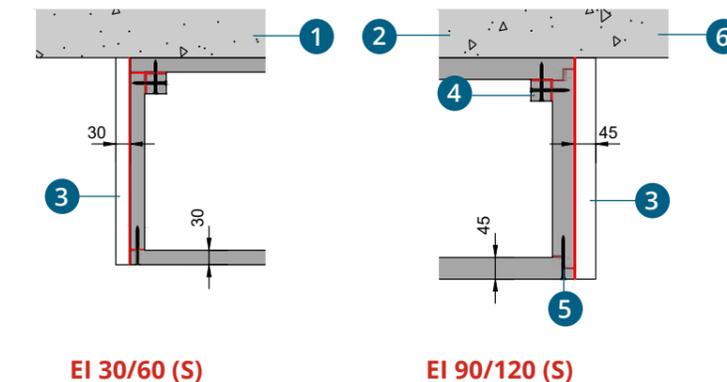
- 1 GEOTEC®S30 board
- 2 GEOTEC®S45 board
- 3 GEOTEC®A Reinforcement collar**
- 4 VBA Screws Ø 5 x 80 (EI 30/60 S) Ø 5 x 90 (EI 90/120 S) or galvanized steel staples* 75 x 10 x 2 mm

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

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

Duct against a wall

Cross-sectional view



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

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

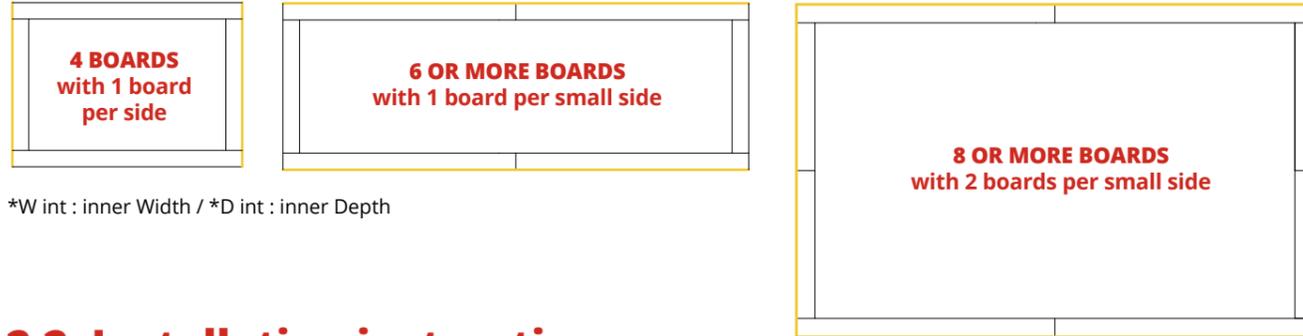
** Height between 2 load-bearing systems limited to 7m with 2 supports and to 10m with 3 or 4 supports.

GENERAL RULE: see on page 32

Concerning the load-bearing systems

For ducts consisting of 4-board casings ($W_{int}^* \leq 1050$ mm and $D_{int}^* \leq 1100$ mm for **EI 30/60 S** and $W_{int} \leq 1000$ mm and $D_{int} \leq 1050$ mm for **EI 90/120 S**), the load bearing system can be carried out on 2 sides only.

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



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

2.2. Installation instructions

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

* or the opposite

Note:

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

Solution 1 : Using cover strips

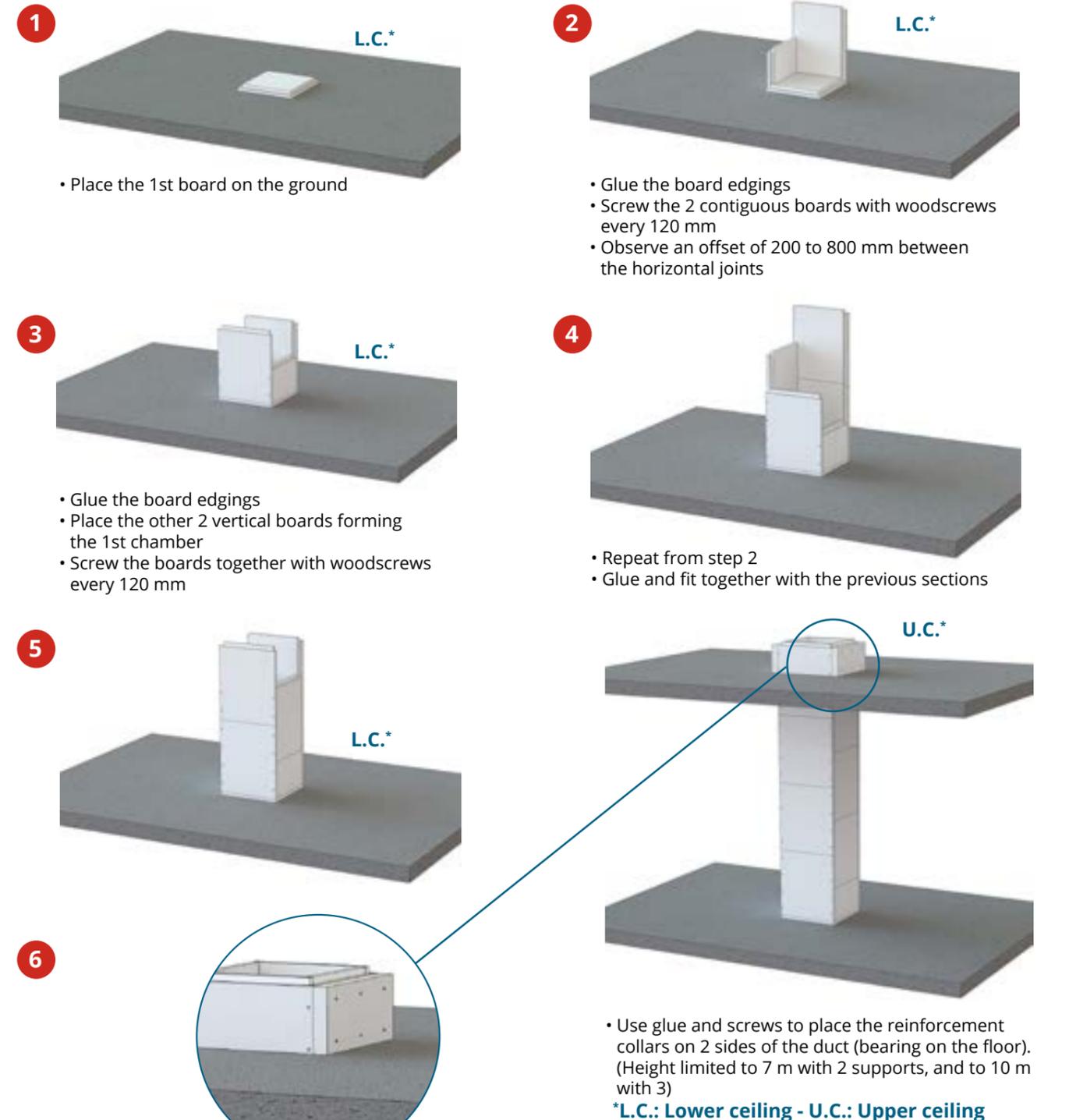
Regardless of the dimensions of the ducts when the level of pressure $< \text{ or } = \pm 500$ Pa, the vertical joints are treated with internal or external cover strips staggered at 120 mm intervals along the length of the duct. For a level of pressure above ± 500 Pa, then the cover strips must be installed both inside and outside the duct.

Solution 2 : Using internal reinforcement collars

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

Standard installation principle

CLICK and watch THE VERTICAL DUCT ASSEMBLY on video.

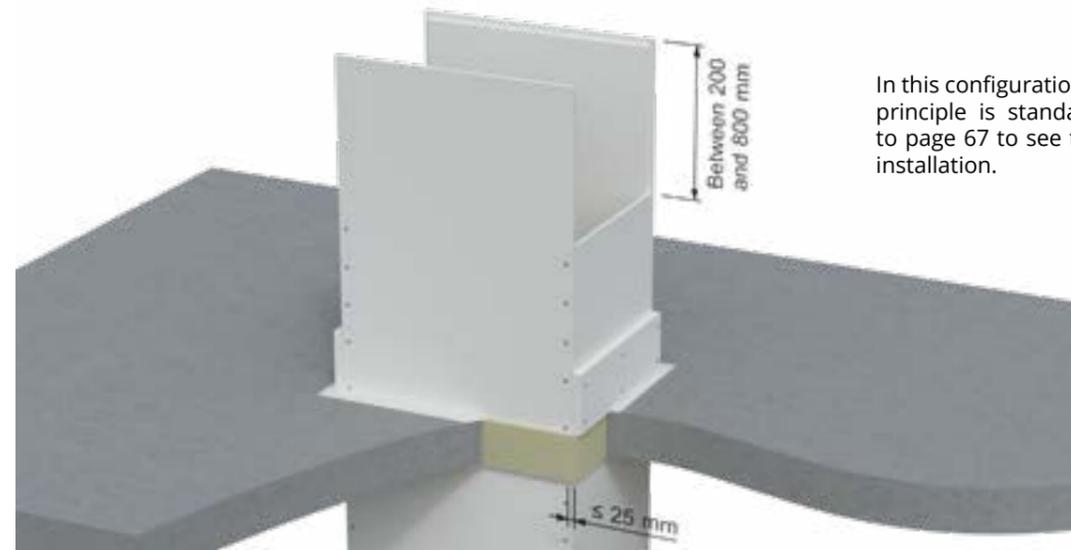


• Use glue and screws to place the reinforcement collars on 2 sides of the duct (bearing on the floor). (Height limited to 7 m with 2 supports, and to 10 m with 3)

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

EI 60: $W_{int} \leq 1050$ 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

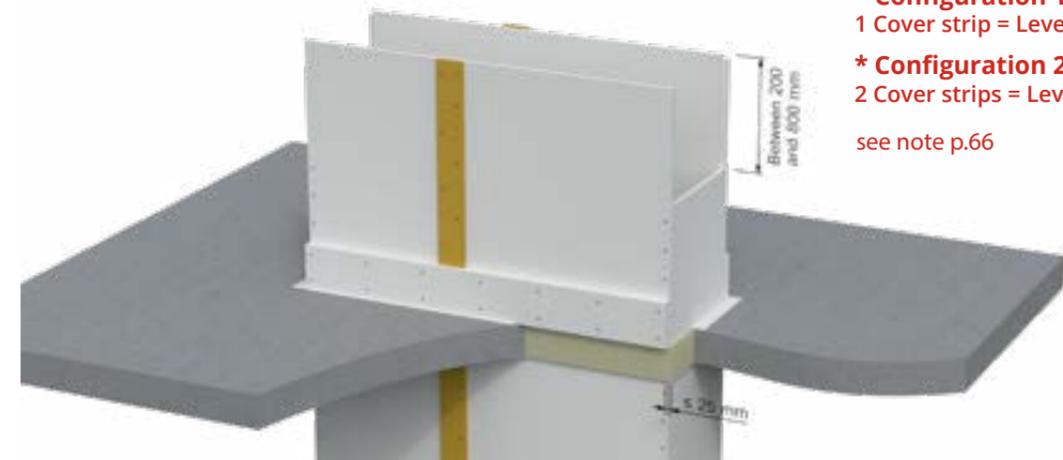


In this configuration, the installation principle is standard, please refer to page 67 to see the details of the installation.

EI 60: $W_{int} > 1050$ mm & $D_{int} \leq 1100$ mm (or the opposite)
& EI 120: $W_{int} > 1000$ mm & $D_{int} \leq 1050$ mm (or the opposite)

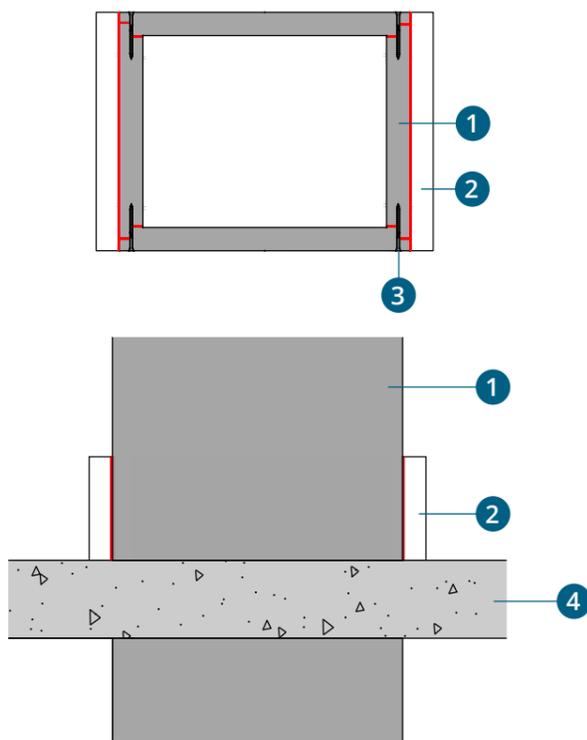
* W_{int} : internal width / * D_{int} : internal depth

Solution 1: using the GEOTEC® A Cover strip*



- * **Configuration 1**
1 Cover strip = Level of pressure $\leq \pm 500$ Pa
 - * **Configuration 2**
2 Cover strips = Level of pressure $> \pm 500$ Pa
- see note p.66

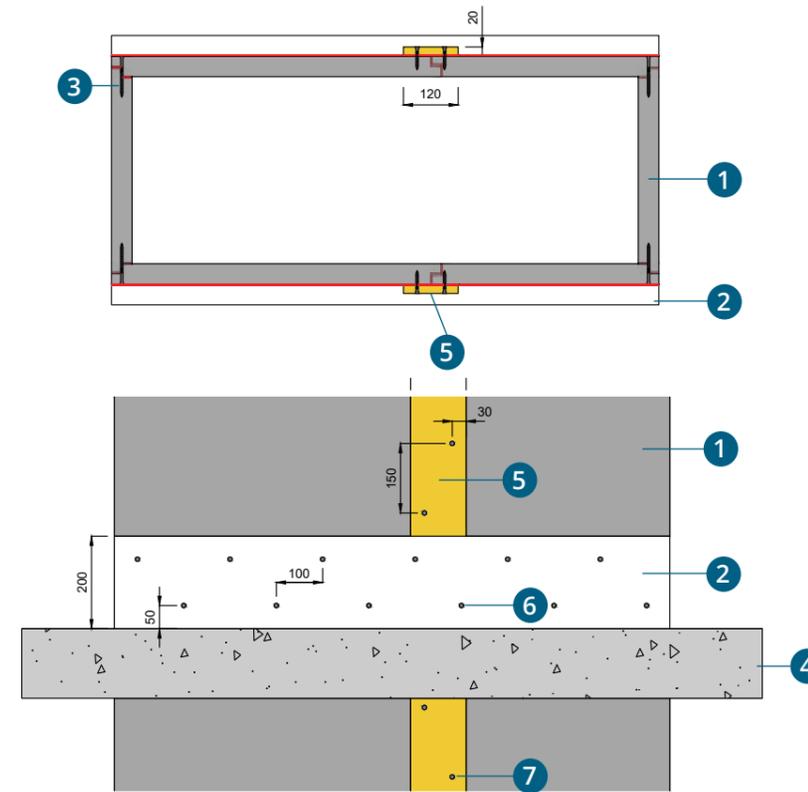
Cross-sectional view



- 1 GEOTEC® S board
- 2 GEOTEC® A Reinforcement collar
- 3 VBA Screws
 $\varnothing 5 \times 80$ (EI 30/60 S)
 $\varnothing 5 \times 90$ (EI 90/120 S)
 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.

Cross-sectional view



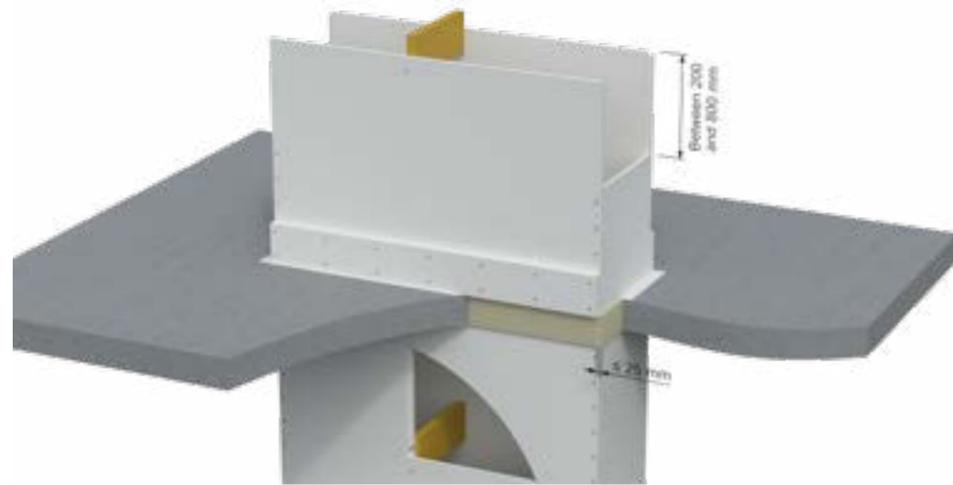
- 1 GEOTEC® S board
- 2 GEOTEC® A Reinforcement collar
- 3 VBA Screws
 $\varnothing 5 \times 80$ (EI 30/60 S)
 $\varnothing 5 \times 90$ (EI 90/120 S)
 or galvanized steel staples*
 $75 \times 10 \times 2$ mm
- 4 Concrete slab
- 5 GEOTEC® A Cover strip (exterior or interior)
- 6 VBA Screws
 $\varnothing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

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

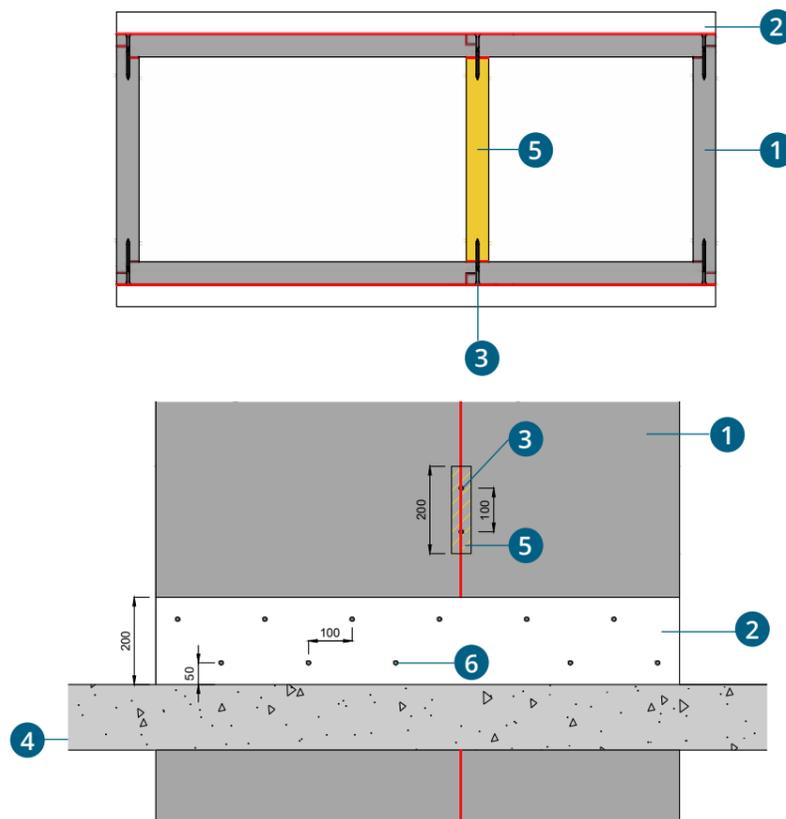
EI 60: $W_{int} > 1050 \text{ mm}$ & $D_{int} \leq 1000 \text{ mm}$ (or the opposite)
& EI 120: $W_{int} > 1000 \text{ mm}$ & $D_{int} \leq 1000 \text{ mm}$ (or the opposite)

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

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



Cross-sectional view



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

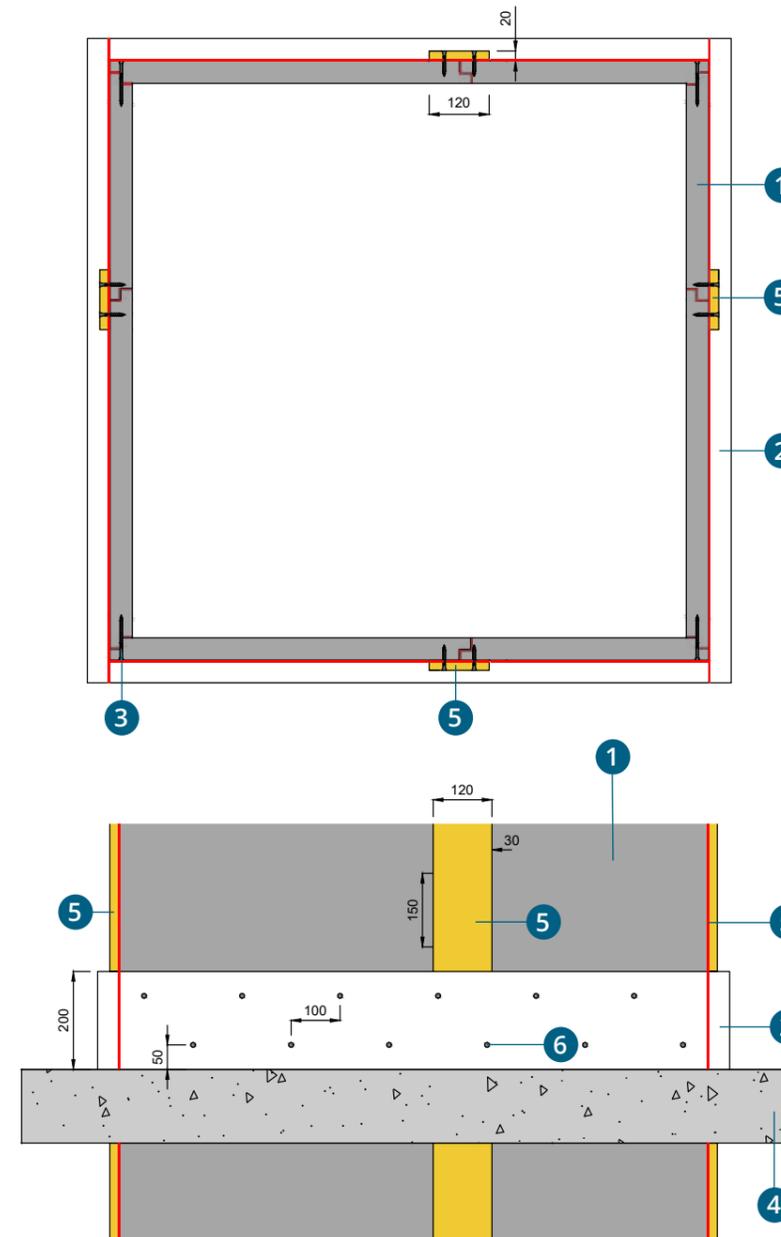
*staples:
 $\leq 1250 \times 1000 \text{ mm}$ (w x h) EI 30/60/90 S.

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

Solution 1: using the GEOTEC® A Cover strip*

Cross-sectional view



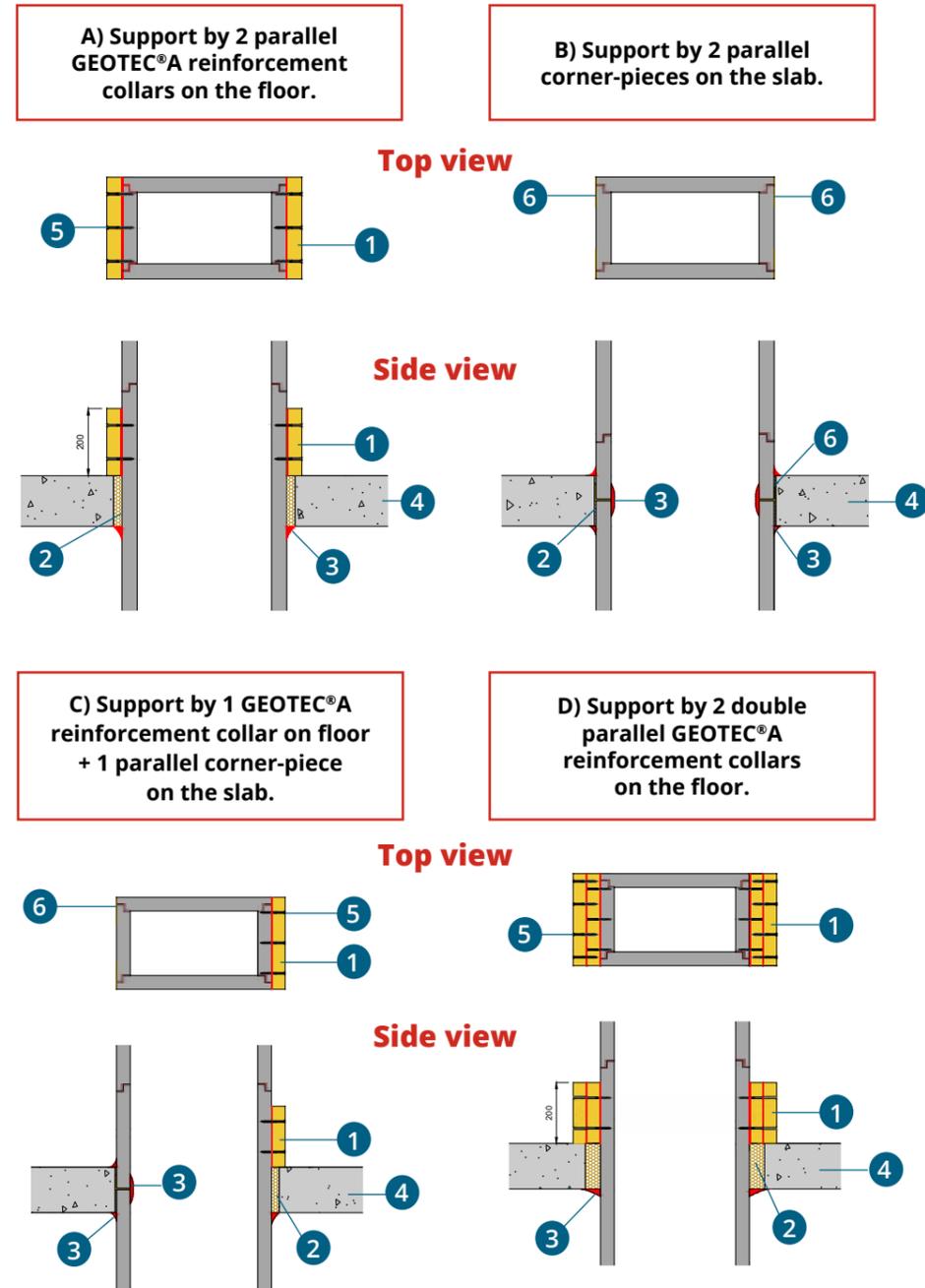
*** Configuration 1**
 1 Cover strip = Level of pressure $\leq \pm 500 \text{ Pa}$
*** Configuration 2**
 2 Cover strips = Level of pressure $> \pm 500 \text{ Pa}$
 see note p.66

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

2.3. Alternative support principles

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

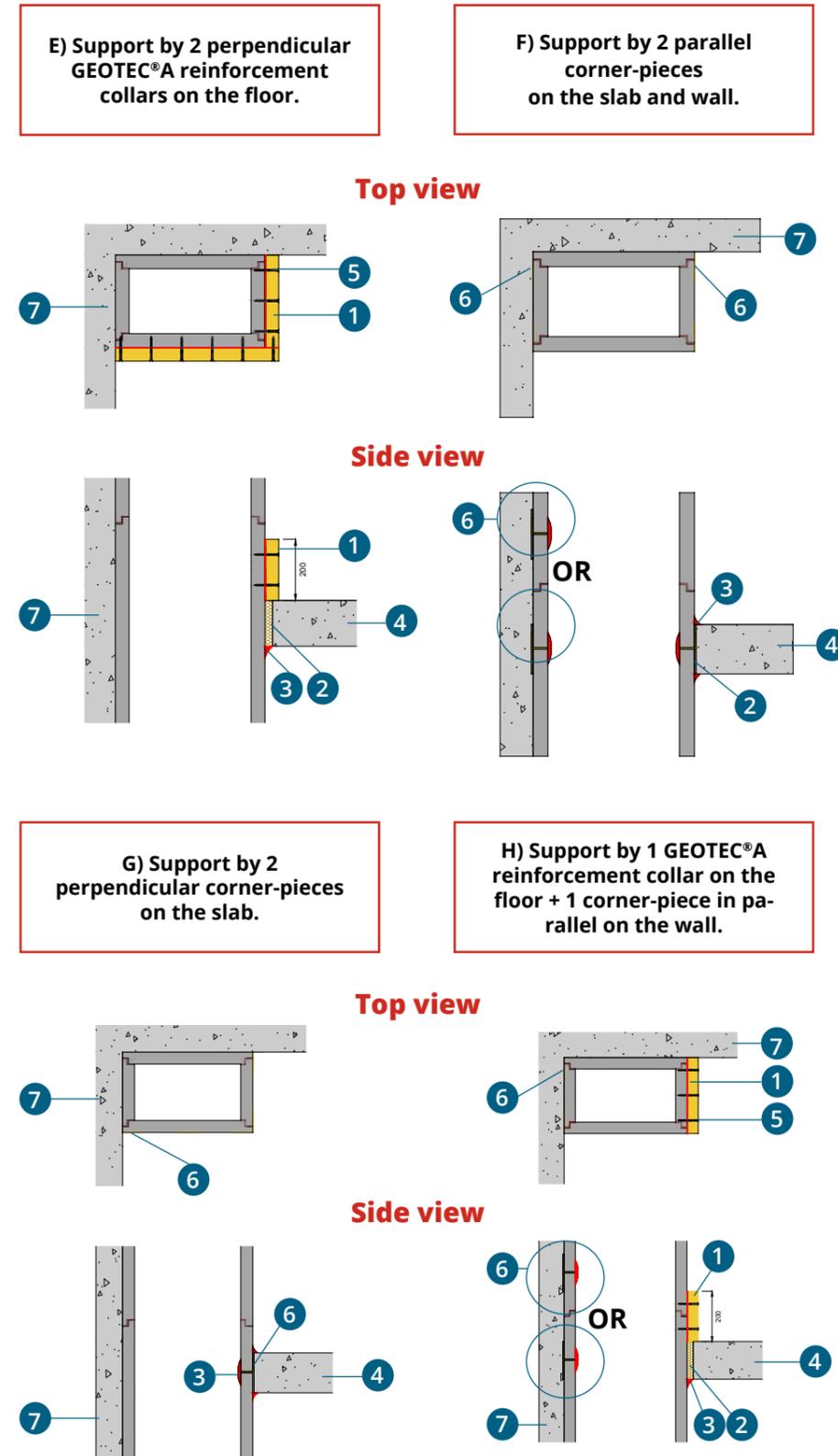
1. Ducts not attached to walls



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

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

2. Ducts adjacent to a wall corner



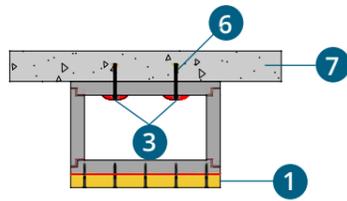
- 1 GEOTEC®A reinforcement collar (glued & screwed)
- 2 Caulking
- 3 GEOCOL® Glue
- 4 Floor
- 5 Screws
- 6 Corner-pieces:
EI 30/60 (S): 35x35x4 mm.
EI 90/120 (S): 50x50x5 mm.
- 7 Concrete wall

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

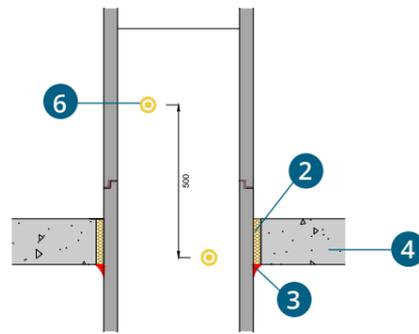
3. Ducts adjacent to the wall

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

Top view



Side view

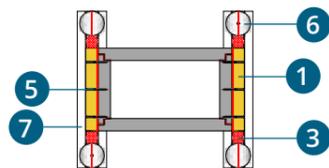


- 1 GEOTEC®A reinforcement collar (glued & screwed) or corner piece
- 2 Caulking
- 3 GEOCOL® Glue
- 4 Floor
- 5 Screws
- 6 Mechanical fixation
- 7 Concrete wall

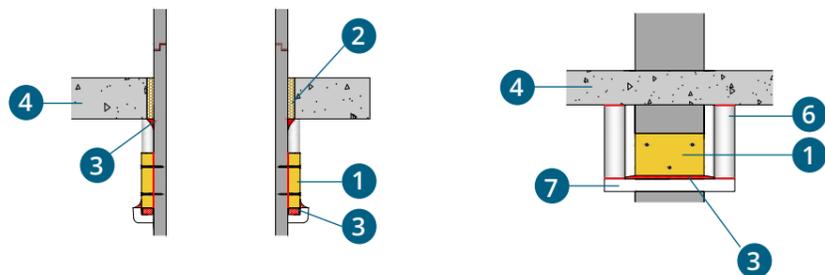
4. Sub-floor level support

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

Top view



Side view



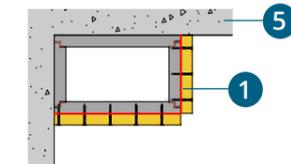
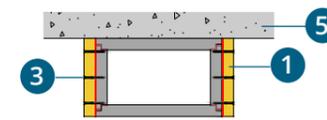
- 1 GEOTEC®A reinforcement collar (glued & screwed)
- 2 Caulking
- 3 GEOCOL® Glue
- 4 Floor
- 5 Screws
- 6 GEOTEC®A Half shells + Ø8 threaded rods
- 7 GEOTEC®A U-plaster element + Steel U-profile 41x21

5. Console supported ducts

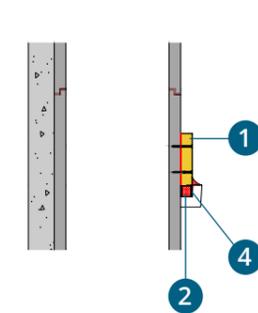
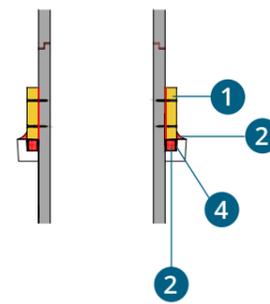
K) Support by 2 parallel GEOTEC®A reinforcement collars on brackets fixed in the vertical wall.

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

Top view



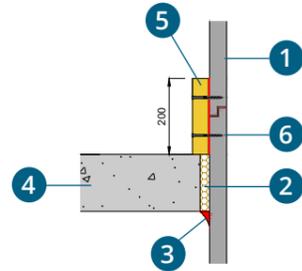
Side view



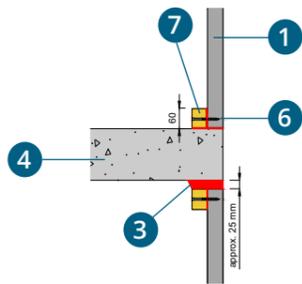
- 1 GEOTEC®A reinforcement collar (glued & screwed) placed on brackets
- 2 GEOCOL® Glue
- 3 Screws
- 4 Protected appropriate brackets
- 5 Concrete wall

2.4. Floor penetrations

1. Method of caulking a continuous vertical duct



2. Method of caulking a non-traversing vertical duct

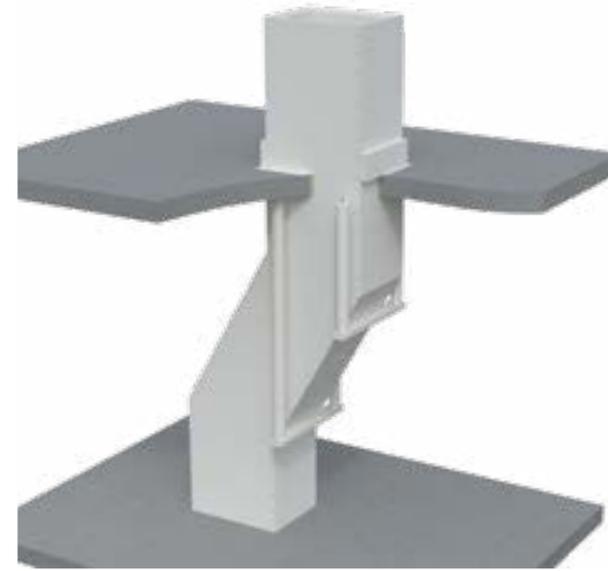


- 1 GEOTEC® S board
- 2 Caulking* (max 25mm)
- 3 GEOCOL® Glue
- 4 Concrete floor
- 5 GEOTEC® A internal reinforcement collar
- 6 VBA Screws
Ø 5 x 80 (EI 30/60 S)
Ø 5 x 90 (EI 90/120 S)
or galvanized steel staples*
- 7 GEOTEC® A Batten

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

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

2.6. Various configurations



Vertical deviation

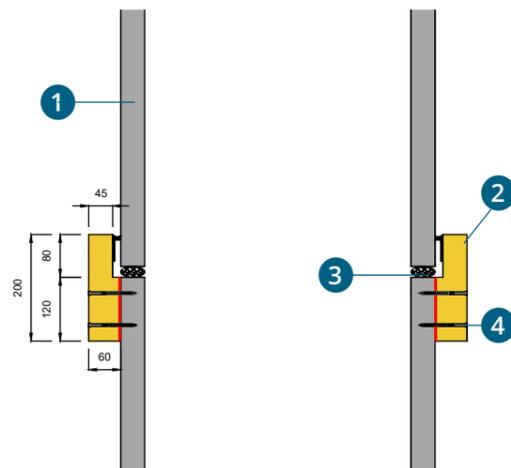


Take-off point on a vertical duct

2.5. Dilatation joints

Treatment of the crossing of an expansion joint

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



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

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

* Technical datasheet of Expansion joint element page 24



installation of a fire damper



installation of a smoke shutter

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