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## European Technical Assessment

## ETA 13/1061 of 19/2/14

### Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011:

<b>Trade name of the construction product</b>	<b>3M™ Fire Barrier Duct Wrap 615+</b>
<b>Product family to which the construction product belongs</b>	Fire Protective Mat
<b>Manufacturer</b>	<b>3M Nederland B.V.</b> Postbus 193 2300 AD LEIDEN Netherlands.DE12 7DS
<b>Manufacturing plant(s)</b>	AF/001
<b>This European Technical Assessment contains</b>	34 pages including 2 Annex(es) which form an integral part of this assessment.
	Annex(es) 1-2 Contain(s) confidential information and is/are not included in the European Technical Assessment when that assessment is publicly available.
<b>This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of</b>	ETAG 018-part 4, edition 2012, used as European Assessment Document (EAD)

## General Comments

1. This European Technical Assessment is issued by Warrington Certification Limited on the basis of ETAG 018 Fire Protective Products Part 1: General June 2013, and Part 2: protective products, Fire protective board, slab and mat products and kits. Used as European Assessment Document.
2. This European Technical Assessment is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those indicated on page 1.



## SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL ASSESSMENT

### 1 Technical Description of the Product

(Detailed information and data are given in Annexes)

3M Fire Barrier Duct Wrap 615+ is flexible fire-resistant wrap consisting of a man-made, vitreous spun inorganic fibre blanket encapsulated with a fibreglass scrim-reinforced aluminized polyester foil. The product is designed for installation in the following environmental conditions:

Internal use – ETAG 018-4 Type Z<sub>2</sub>

Assembled systems require additional components, as stated in Annex 2 of this ETA. Those ancillary components are not covered by this ETA and cannot be CE marked from this ETA.

#### 1.1 Dimensions and density

Dimensions and density of the product are detailed below in Table 2

<b>Table 2: Dimensions and density</b>	
Density (dried at 105°C) : 96 kg/m <sup>3</sup> ±6.3%	
Density (at 20°C, 50%RH) : 96 kg/m <sup>3</sup> ±6.3%	
<b>Length (m)</b>	<b>Tolerances</b>
7.62	-0 , +0.23
<b>Width (cm)</b>	
x 60.9	-0 , +0.7
<b>Thickness (mm)</b>	
49	+6 mm, -6 mm
<b>Scrim reinforced foil (g/m<sup>2</sup>)</b>	65



## 2 Specification Of The Intended Use In Accordance With The Relevant EAD

### 2.1 Intended Use

The intended use of 3M Fire Barrier Duct Wrap 615+ is identified in Table 1 below:

<b>Table 1 - Intended Use</b>		
<b>Protection of</b>	<b>ETAG 018-1 Reference</b>	<b>Assessment within the scope of this evaluation report</b>
Horizontal membrane protection	Type 1	No
Vertical membrane protection	Type 2	No
Loadbearing concrete elements	Type 3	No
Loadbearing steel elements	Type 4	No
Loadbearing flat concrete profiled sheet composite elements	Type 5	No
Loadbearing concrete filled hollow steel columns	Type 6	No
Loadbearing timber elements	Type 7	No
Fire separating elements with no loadbearing requirements	Type 8	No
Technical services assemblies in buildings	Type 9	Yes
Uses not covered by Types 1-9	Type 10	No

Table 1 shows the possible intended uses of the product. Not all possible uses have been assessed within the framework of this ETA with regards to fire resistance performance. Annex 2 provides details of the use for which fire resistance evaluation has been carried out. This ETA covers assemblies installed in accordance with the provisions given in Annex 2 and Section 4.2.

#### **Working life**

The provisions made in this ETA are based on an assumed intended working life of the fire protective product for the intended use of 10 years, provided that it is subject to appropriate use and maintenance in accordance with this ETA.

The indications given on the intended working life cannot be interpreted as a guarantee given by the producer, but are to be used as a means for selecting the appropriate product in relation to the expected economically reasonable working life of the works.



## 2.2 Use Category

Internal use – ETAG 018-4 Type Z2

## 3 Performance Of The Product And References To The Methods Used For Its Assessment

The assessment of fitness for use has been made in accordance with EOTA ETAG 018 Part 4: 2012-01-11 (used as European Assessment Document, EAD)

ETAG Clause No.	ETA Clause No.	Characteristic
5.2.2	3.2.1	<b>ER2: Safety in case of fire</b>
5.2.2.1	3.2.1.1	- Reaction to fire
5.2.2.2	3.2.1.2	- Resistance to fire
5.2.3	3.2.2	<b>ER3: Hygiene, Health and the Environment</b>
5.2.3.1	3.2.2.1	- Water permeability
5.3.3.2	3.2.2.2	- Release of dangerous substances
5.2.4	3.2.3	<b>ER4: Safety in use</b>
5.2.4.1	3.2.3.1	- Flexural strength
5.2.4.2	3.2.3.2	- Dimensional stability
5.2.5	3.2.4	<b>ER5: Protection against noise</b>
5.2.6	3.2.5	<b>ER6: Energy, Economy and Heat Retention</b>
5.2.6.1	3.2.5.1	- Thermal resistance
5.2.6.2	3.2.5.2	- Water vapour transmission coefficient
5.2.7	3.2.6	<b>Related aspects of durability, serviceability and identification</b>
5.2.7.1.3	3.2.6.1	- Basic durability assessment
5.2.7.1.3	3.2.6.1.1	- Tensile strength (parallel)
5.2.7.1.3	3.2.6.1.2	- Compressive strength



<b>ETAG Clause No.</b>	<b>ETA Clause No.</b>	<b>Characteristic</b>
5.2.7.2	3.2.7	<b>Identification</b>

## **3.2 Characteristics and methods**

### **3.2.1 Safety in case of fire**

#### **3.2.1.1 Reaction to Fire**

The fire protective mat product is classified as Class A1 according to EN 13501-1.

#### **3.2.1.2 Resistance to Fire**

The resistance to fire performance, tested to EN 1336-1 & classified according to EN 13501-3, of assemblies incorporating the fire protective mat product are presented in Annex 2.0.

### **3.2.2 Hygiene, Health and the Environment**

#### **3.2.2.1 Water permeability**

This characteristic is not relevant for the intended use (Z<sub>2</sub>).  
No performance determined.

#### **3.2.2.2 Release of dangerous substances**

3M Nederland B.V. has provided a declaration that Fire Barrier Duct Wrap 615+ does not contain any Substances of Very High Concern (SVHC's) of the candidate list June 2013 intentionally added, with regards to REACH Regulation 1907/2006.

In addition to the specific sections relating to dangerous substances contained within this ETA, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the CPR, these requirements need also be complied with, when and where they apply.

### **3.2.3 Safety in Use**

#### **3.2.3.1 Flexural Strength**

No performance determined.

#### **3.2.3.2 Dimensional Stability**



No performance determined.

### 3.2.4 Protection Against Noise

No performance determined.

### 3.2.5 Energy, Economy and Heat Retention

#### 3.2.5.1 Thermal Resistance

Thermal Resistance per layer M <sup>2</sup> K/W	Density Kg/m <sup>3</sup>	Mean Temp (°C)
1.15 +/- 2.5%	150	9.8

Thickness to EN 823:2013 measured as 54.27mm, Thermal Resistance test sample compressed to 38mm.

#### 3.2.5.2 Water Vapour Transmission Co-efficient

	Thickness (mm)	Water vapour diffusion equivalent air layer thickness (m)
Mean	47.4	3.62

### 3.2.6 Related Aspects of Durability, Serviceability and identification

#### 3.2.6.1 Basic durability assessment

##### 3.2.6.1.1 Tensile strength parallel

In accordance with EN 1608, the 3M Fire Barrier Duct Wrap 615+ product has been tested for tensile strength parallel to the plane of the mat.

The product has a mean parallel tensile strength of 138.1 kPa according to tests in accordance with EN 1608: 2013.

##### 3.2.6.1.2 Compressive strength

The product has a compressive strength of 0.86 kPa, according to tests in accordance with EN 826: 2013.

These values are guidance values and do not reflect a statistical evaluation, nor a minimum guaranteed value.

#### 3.2.6.2 Durability Assessment

The working life of Fire Barrier Duct Wrap 615+ is 10 years for the intended use Z<sub>2</sub> (internal use).



### **3.2.7 Identification**

#### **3.2.7.1 Product Properties**

The identification of the product was carried out according to the criteria indicated in 5.2.7.2 of ETAG 018-4 and all results were within specified tolerances.

Additional components used in test assemblies are specified in the installation provisions of the fire resistance tests described in Annex 2 of the ETA.

For any additional components referred to in this ETA specifically (by trade name), the composition of the product (if manufactured by the ETA holder) or its properties/characteristics (if supplied to the ETA holder) are laid down in the confidential ETA file held by Warrington Certification Limited. The ETA holder shall inform the Approval Body if any of this information is no longer correct.

For any additional components referred to in this ETA generally (by minimum requirements), compliance with these minimum requirements has been verified with the framework of approval testing.

In the intended end use conditions, assemblies in which the Fire Barrier Duct Wrap 615+ fire protective mat is used should meet all works related requirements (e.g. related to safety in use).

## **4 Assessment And Verification Of Constancy Of Performance (Hereinafter AVCP) System Applied, With References To Its Legal base**

According to the decision 1999/454/EC of the European Commission the system of assessment and verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) given in the following table apply:

<b>Products</b>	<b>Intended uses</b>	<b>Level or Class</b>	<b>System</b>
Fire Protective Products	Fire protective board, slab and mat products and kits	Any	System 1

## **5 Technical Details Necessary For The Implementation Of The AVCP System, As Provided For In The Applicable EAD.**

### **Tasks for the Manufacturer**

#### **Factory production control**

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of





results performed. This production control system shall ensure that the product is in conformity with this European technical assessment.

The manufacturer may only use constituent materials stated in the technical documentation of this European technical assessment.

The factory production control shall be in accordance with the Control Plan of 14.10.13 relating to the European technical assessment ETA 13/1061 which is part of the technical documentation of this European technical assessment. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at Warrington Certification Limited.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

### **Other tasks of manufacturer**

Additional information

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

- a) Technical data sheet:
  - Field of application:
- b) Installation instruction:
  - Steps to be followed
  - Procedure in case of retrofitting.

### **Tasks of approved bodies**

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control,

In accordance with the provisions laid down in the " Control Plan" of 14.10.13 relating to the European Technical Assessment 13/1061.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical assessment.

In cases where the provisions of the European technical assessment and its "Control Plan" are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform the Warrington Certification Limited without delay.





## Signatories

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Responsible Officer

D. Forshaw\* - Principal Certification Engineer



Approved

A. Kearns\* - Technical Manager

\* For and on behalf of Warrington Certification Limited.



## ANNEX 1 - References

- ETAG 018** Fire Protective Products  
Part 1: General (edition November 2004, amended April 2013)  
Part 4: Fire protective board, slab and mat products and kits (Version December 2011)
- EN 13501-1: 2002** Fire classification of construction products and building elements  
- Part 1: Classification using test data from reaction to fire tests
- EN 13501-3:2005+ A1: 2009** Fire classification of construction products and building elements  
- Part 3: Classification using test data from fire resistance tests on products and elements used in building service installations: fire resisting ducts and fire dampers.
- EN 1366-1: 1999** Fire resistance tests for service installations - Part 1 : Ducts
- EN 826: 1996** Thermal insulation products for building applications  
– determination of compression behaviour
- EN 1608: 1997** Thermal insulating products for building applications  
– Determination of tensile strength parallel to faces
- EN 12667: 2001** Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance
- EN 12086:1997** Thermal insulating products for building applications.  
Determination of water vapour transmission properties
- EN 13820** Thermal insulating materials for building applications -  
Determination of organic content



## ANNEX 2 – Fire resistance performances and assembly methods for uses covered by this ETA

### Annex 2.0 – Overview of fire resistance performances for Fire Barrier Duct Wrap 615+ assemblies

The fire protective assemblies in Table A2.0.1 have been assessed within the framework of this ETA. Assemblies installed according to the provisions given in this Annex are covered by this ETA.

Table A.2.0.1					
Assembly assessed within the framework of this ETA	Classification according to EN 13501-3	Test standard	Intended use type according to ETAG 018-4	Installation details	Date of addition to this ETA
vertically and horizontally orientated, insulated ventilation Duct Type A	<b>EI 120 (v<sub>e</sub> h<sub>o</sub> o → i) S</b> <b>EI 180 (v<sub>e</sub> o → i) S</b> <b>EI 180 (v<sub>e</sub> h<sub>o</sub> o → i)</b> <b>EI 240 (v<sub>e</sub> o → i) S</b>	EN 1366-1	Type 9	Annex 2.1	November 2013

### Annex 2.1 – Specification of Fire Barrier Duct Wrap 615+ ventilation duct assemblies (intended type 9) Duct A horizontal and vertical applications

#### A.2.1.1 Classification

The Fire Barrier Duct Wrap 615+ protected ventilation duct assemblies described in this annex have been tested in accordance with EN 1366-1 and classified in accordance with EN 13501-3 as follows:

**Fire resistance classification: EI 120 (v<sub>e</sub> h<sub>o</sub> o → i) S**

**Fire resistance classification: EI 180 (v<sub>e</sub> o → i) S**

**Fire resistance classification: EI 180 (v<sub>e</sub> h<sub>o</sub> o → i)**

**Fire resistance classification: EI 240 (v<sub>e</sub> o → i) S**

#### A.2.1.2 Installation requirements

The installation provisions given in Section 4.2 of this ETA shall be taken into account.



### A.2.1.3 Vertical assemblies

Vertical assemblies shall be as detailed in the following section. Components shall be as specified below in Table A.2.1.1 and as shown in Figures A.2.1.2. to A.2.1.7. Note the figures show the tested assembly and are for general reference purposes only.

**Table A.2.1.1**

<b><u>Item</u></b>	<b><u>Description</u></b>
<b>1. Separating Element</b>	
General description	: The tested separating element consisted of steel reinforced autoclaved aerated concrete slabs
Thickness	: 150 mm thick
	: Or an alternative, suitable supporting construction with a fire resistance equal to or greater than that of the standard supporting construction used for the test (thicker, denser).
Floor aperture	: Duct length + 100 mm, duct width + 100 mm
<b>2. Duct</b>	
Construction	: Constructed to EN 1505 and DW 144 requirements
Material	: Galvanised mild steel
Thickness	: 0.8 mm
Overall sizes	
i. Outer dimensions	: Maximum 1250 mm x 1000 mm
ii. End flanges	: 30 mm x 1 mm thick (Item 3)
iii. Length	: Maximum 1500 mm
Duct seams	: Duct seams to be closed using lock seam joints along length of 1 corner joint
Sealant	: For leakage requirements the duct seam shall be internally sealed using a proprietary, non-fire rated, sealant
Stiffening	: Each section shall be provided with a single internal tie rod at mid width and mid length (Item 5)
Joints	: Adjacent duct sections shall be bolt fixed flange to flange, at the corners, using M10 steel bolts. Steel clamps shall be used to compress the joints at nominally 210 mm maximum centres along each edge. Additionally, 19 mm long by 4.1 mm steel self-tapping screws shall be installed between the clamps on each edge



<u>Item</u>	<u>Description</u>
<b>3. End Flanges</b>	
Material	: Galvanised mild steel
Overall size	: 30 mm high rolled steel profiled knock on flanges
Thickness	: 1 mm
Fixing method	: Push fitted over ends of ducting and spot welded at 120 mm centres
<b>4. Joint Tape</b>	
Material	: Unifrax Corporation Insulfrax® Felt tape
Overall size	: 20 mm x 3 mm
<b>5. Internal Tie Rods</b>	
Material	: Galvanised mild steel
Construction	: Tie rods shall consist of an M12 threaded rod inside galvanised steel tube, secured top and bottom with 40 mm square plate washers and nuts
<b>6. Support Angles</b>	
Material	: Mild steel
Overall size	: 30 mm x 30 mm x 3 mm. Length to be determined by duct dimension, duct length + 500 mm
Positioning	: Shall be fitted to long faces of duct directly above floor opening and fixed to floor and duct
Fixing	: Fix to duct using steel M6 bolts at 100 mm centres. Screw fix to floor using M6 anchor bolts
<b>7a. Penetration Seal Collar</b>	
Material	: Promatect L 500 board
Thickness	: 35 mm
Overall size	: A 200 mm by 200 mm L frame collar shall be installed on the upper surface of the floor, closely abutting the duct. The L frame shall have butt jointed corners and be glued with Promatect K84 adhesive and be screw fixed together using Item 10b at 100 mm centres. The long sides of the L frame shall be grooved to cover the supporting angles (Item 6). The frame shall be screw fixed to both surfaces of the floor using item 10c at nominally 100 mm centres



**Item**

**Description**

**7b. Penetration Seal Protection**

- Material : 3M™ Fire Barrier Moldable Putty+ Pad
- Thickness : 2.7 mm
- Overall size : A single 50 mm width to be installed between the duct and Item 7a, for the entire duct perimeter, on each face of the floor. On the underside of the floor the inner face of the pad shall be installed flush with the soffit. On the upper face of the floor the pad shall be installed above the steel angle (Item 6) 30 mm above the surface of the floor

**8a. Duct Wrap Insulation**

- Material : 3M™ Fire Barrier Duct Wrap 615+
- Overall size : Nominally 610 mm wide by 38 mm thick, supplied in 6.35 metre long rolls
- Method : Install in single width wraps around duct. First section of Duct Wrap shall be tightly butted up to the collar. Second section overlapping onto first and tightly butting up to Item 8b. Each adjacent section shall be overlapped onto the previous by a minimum of 100 mm and each section overlapping onto the cut edge by 100 mm minimum. Cut edges to be closed with 3M aluminium foil tape. Duct Wrap may be temporarily retained using 19 mm wide filament tape prior to banding (Item 11)

**8b. Duct Wrap Collar**

- Material : 3M™ Fire Barrier Duct Wrap 615+
- Overall size : Nominally 610 mm wide by 38 mm thick, supplied in 6.35 metre long rolls
- Method : Single width wrap shall be installed overlapping fully onto penetration seal collar (Item 8a), and onto the cut edge by 100 mm minimum. Cut edges to be closed with 3M aluminium foil tape. Duct Wrap shall be screw fixed to item 7a, on all four edges, using Item 10a and 30 mm diameter washers at 225 mm maximum centres. Duct Wrap may be temporarily retained using 19 mm wide filament tape prior to banding (Item 11)

**9. Penetration Seal Infill**

- Material : 3M™ Fire Barrier Duct Wrap 615+ core material (without outer jacket)
- Fitting method : Packed into annular space using nominally 30% compression





**Item****Description****10a Fixing Screws**

Material	:	Mild steel
Type	:	Drywall screws
Overall size	:	45 mm x 3.9 mm diameter
Position	:	Fixing Item 8b to Item 7a

**10b Fixing Screws**

Material	:	Mild steel
Type	:	Drywall screws
Overall size	:	55 mm x 3.9 mm diameter
Position	:	Fixing corner and L angle joints

**10c Fixing Screws**

Material	:	Mild steel
Type	:	Drywall screws
Overall size	:	100 mm x 5 mm diameter
Position	:	Fixing collar to floor

**11. Retention Banding**

Material	:	Carbon steel
Overall size	:	12.7 mm x 0.5 mm
Fitting method	:	Shall be tightly clamped around duct at mid width of overlapping joints, and at nominally mid width of each section of Duct Wrap

**12a. Duct Wrap Retention Pins**

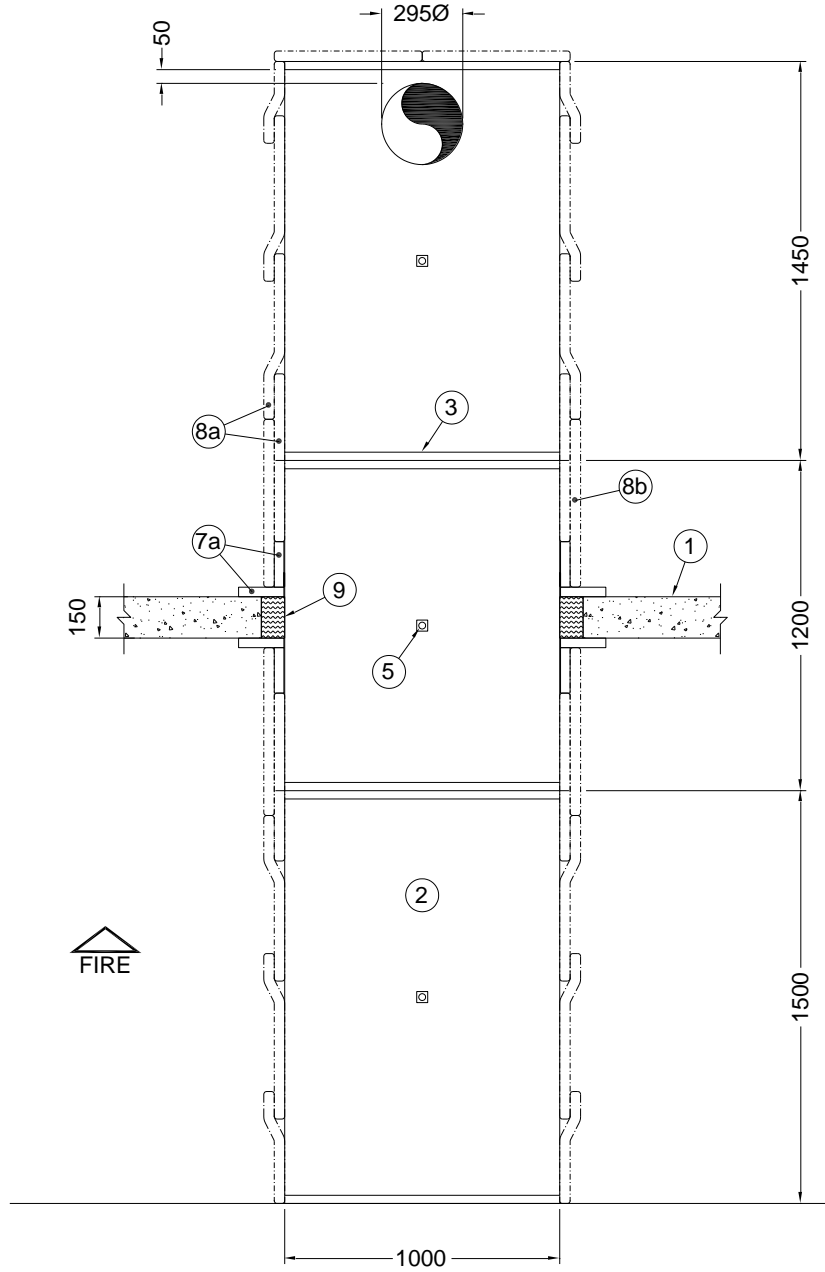
Material	:	Mild steel CD weld fixed cup pins
Overall size	:	64 mm long x 2.7 mm diameter
Fixing method	:	Pins shall be used on both wide faces of the duct, applied through the Duct Wrap at nominally mid span between retention banding (Item 11). A minimum of three pins to be used across the width, one centrally and the outer pins installed at 350 mm maximum centres across the width, and not more than 170 mm from the edge of the duct

**12b. Duct Wrap Retention Pins**

Material	:	Mild steel CD weld fixed cup pins
Overall size	:	28 mm long x 2.7 mm diameter
Fixing method	:	As above



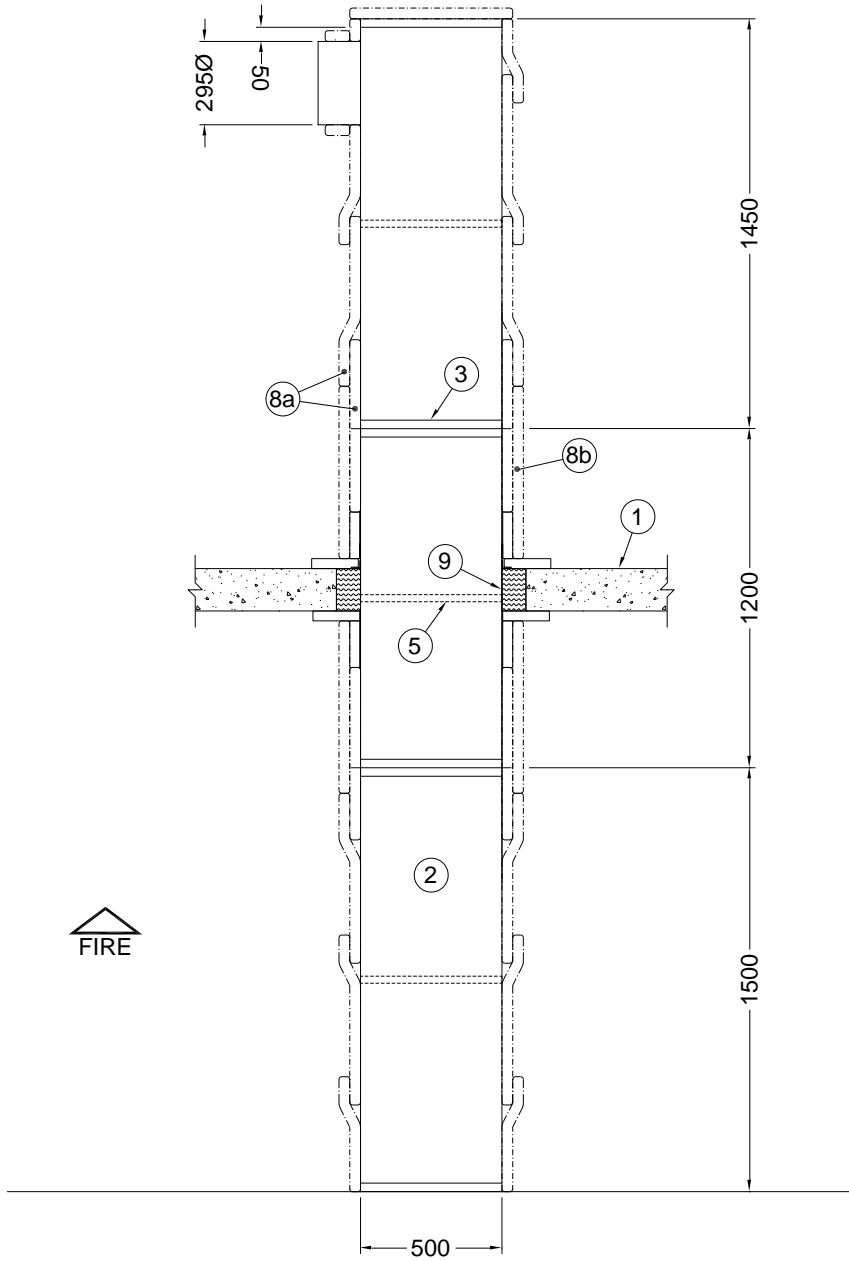
Figure A.2.1.2 Typical front view of installed vertical assembly



Do not scale. All dimensions are in mm



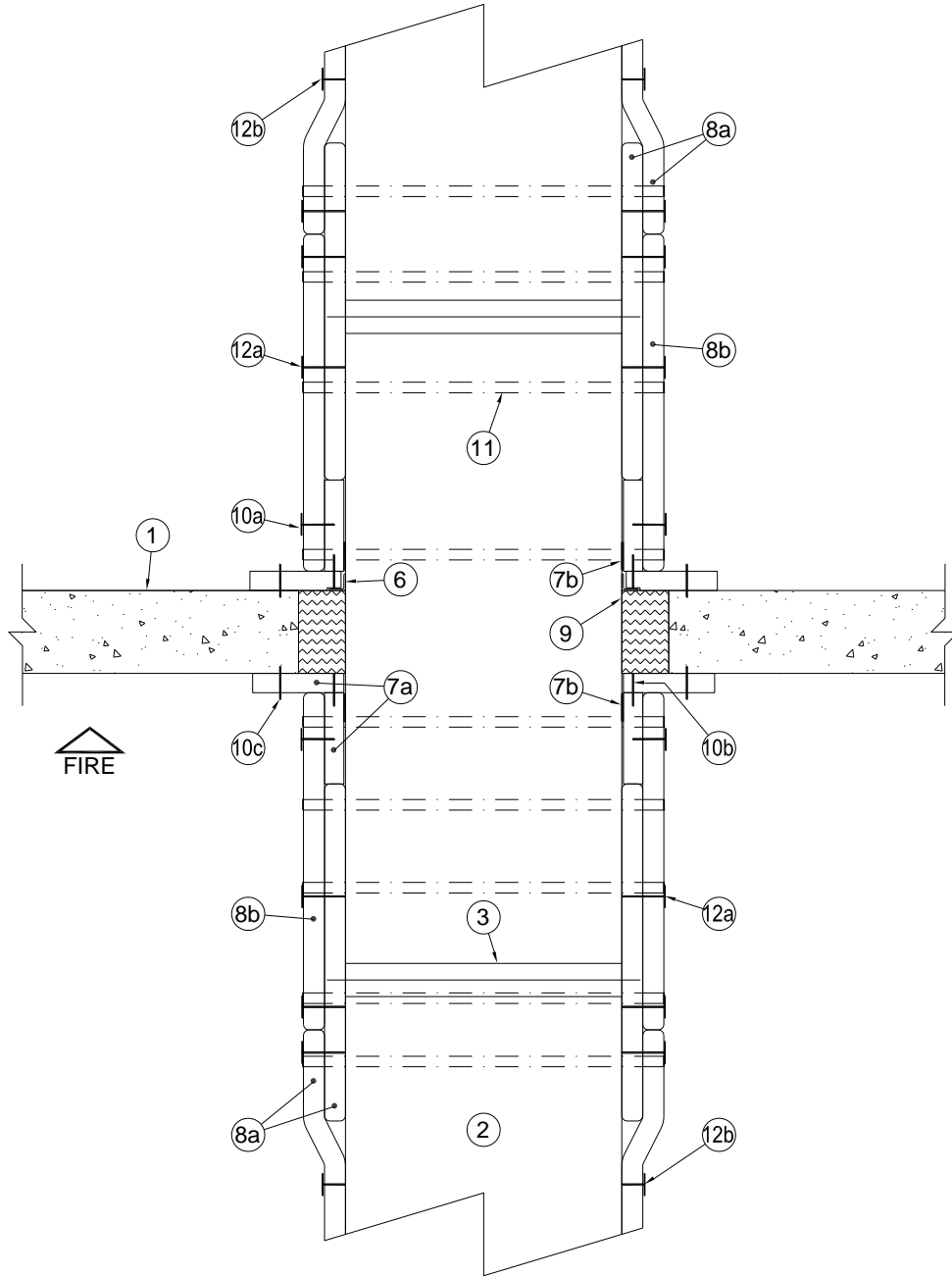
Figure A.2.1.3 Typical side view of installed vertical assembly



Do not scale. All dimensions are in mm



Figure A.2.1.4 Typical detail of vertical assembly

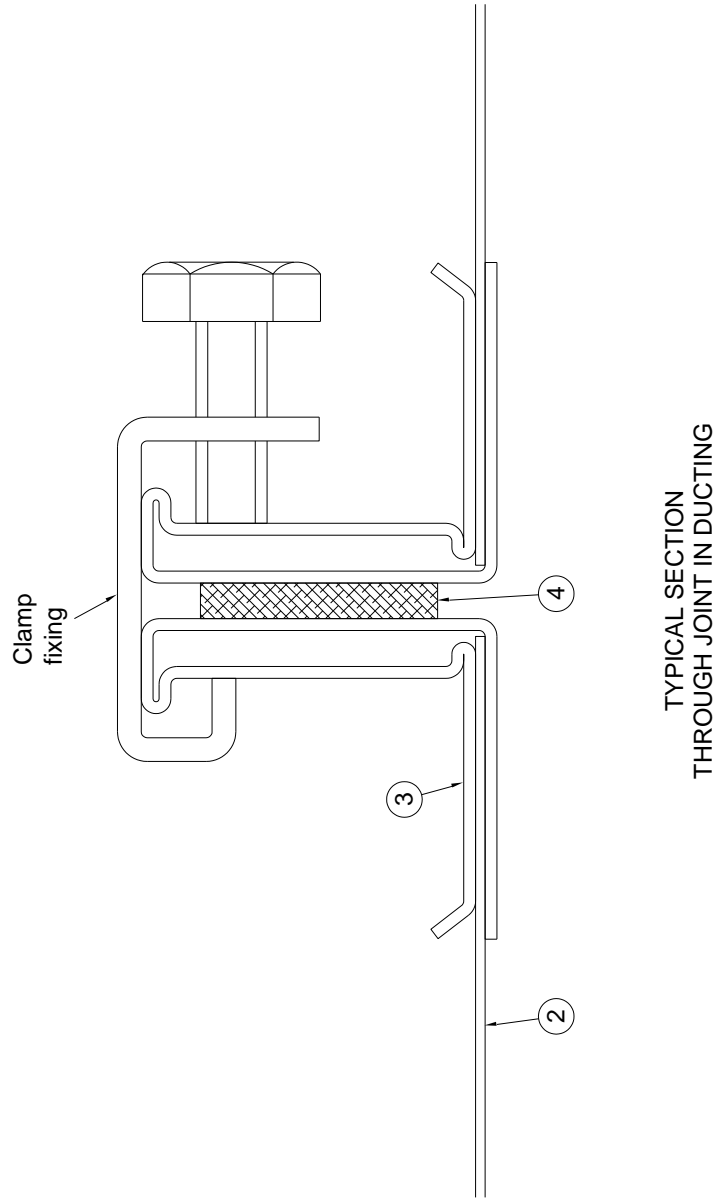


DETAIL WHERE DUCTWORK PASSES THROUGH FURNACE ROOF

Do not scale. All dimensions are in mm



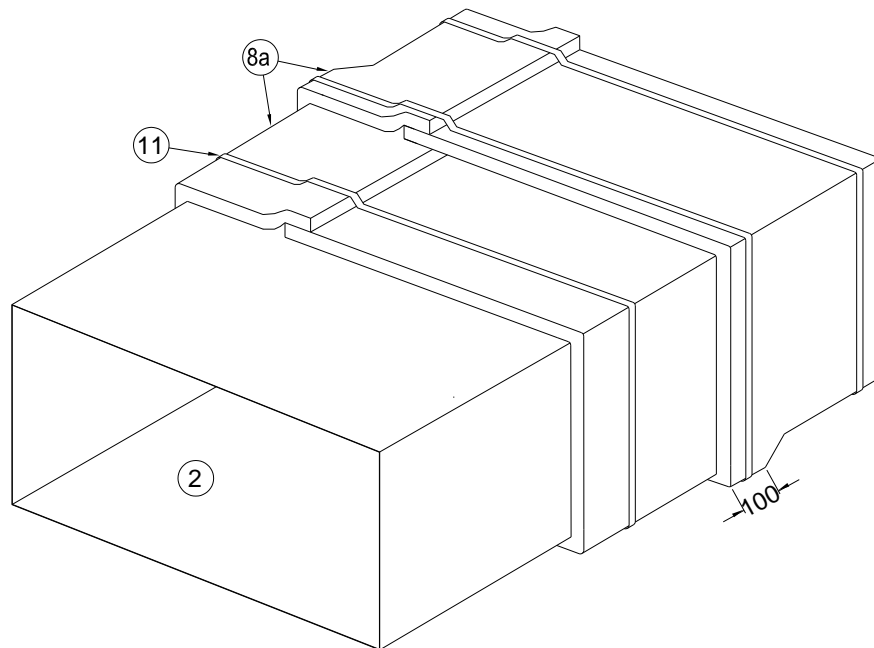
Figure A.2.1.5 Typical detail of vertical assembly duct jointing



Do not scale. All dimensions are in mm



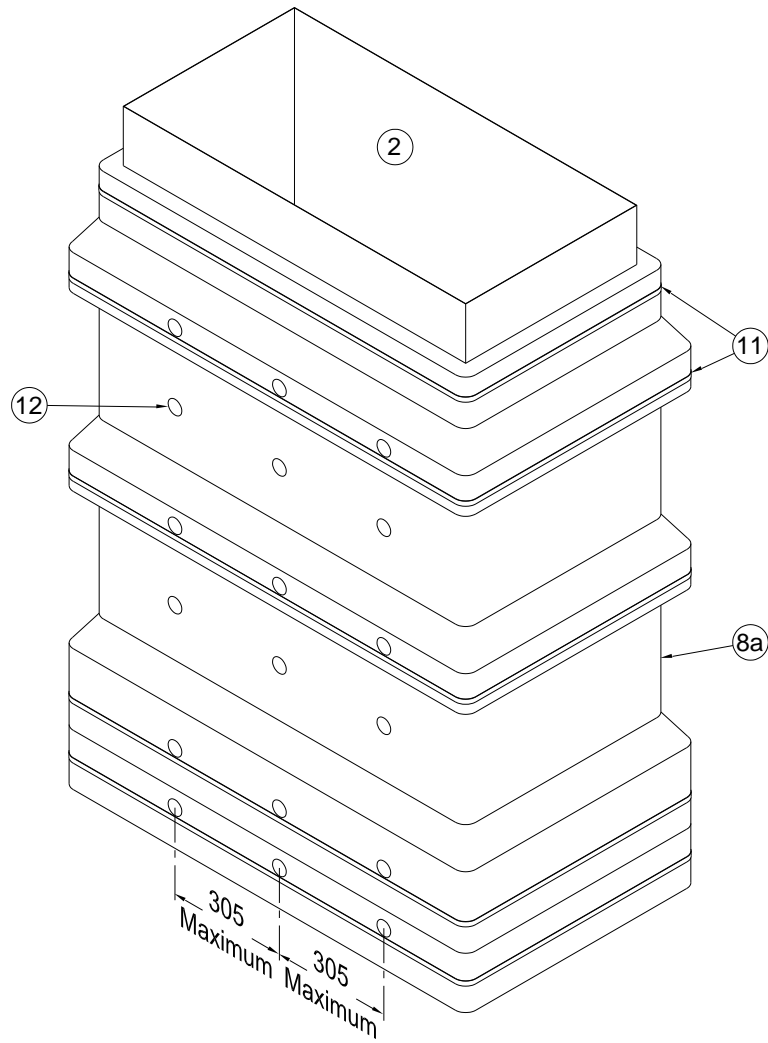
Figure A.2.1.6 Detail Showing Fire Barrier Duct Wrap 615+ Overlap & Banding



Do not scale. All dimensions are in mm



Figure A.2.1.7 Detail Showing Positions of Duct Wrap Retention Pins



Do not scale. All dimensions are in mm



#### A.2.1.4 Horizontal assemblies

Horizontal assemblies shall be as detailed in the following section. Components shall be as specified below in Table A.2.1.2 and as shown in Figures A.2.1.8. to A.2.1.11. Note the figures show the tested assembly and are for reference purposes only.

Table A.2.1.2

<u>Item</u>	<u>Description</u>
<b>1. Separating Element</b>	
General description	: The tested separating element consisted of a gypsum plasterboard drywall assembly
Thickness	: 100 mm
Wall construction	
i. relevant requirements	: The construction of the wall was in accordance with the requirements of Clause 7.2, Table 4 of EN 1366-1: 1999 Or an alternative, suitable supporting construction with a fire resistance equal to or greater than that of the standard supporting construction used for the test (thicker, denser, more layers of board as appropriate).
iii. aperture	: Duct width + 100 mm x duct height + 100 mm. Apertures in partitions shall be lined
<b>2a. Duct (inclusive of 2b)</b>	
Construction	: Constructed to Class A requirements of EN 1507 and Class A requirements of DW 144
Material	: Galvanised mild steel
Thickness	: 0.8 mm
Overall sizes	
i. Outer dimensions	: Maximum 1250 mm wide x 1000 mm high
ii. End flanges	: 30 mm x 1 mm thick (Item 3)
iii. Length	: Maximum 1500 mm
Duct seams	: Duct seams to be closed using lock seam joints along length of 1 corner joint
Sealant	: For leakage requirements the duct seam shall be internally sealed using a proprietary, non-fire rated, sealant
Stiffening	: Each section shall be provided with a single vertical internal tie rod at mid width and mid length (Item 5)
Joints	: Adjacent duct sections shall be bolt fixed flange to flange, at the corners, using M10 steel bolts. Steel clamps shall be used to compress the joints at nominally 210 mm maximum centres along each edge





<b><u>Item</u></b>	<b>Description</b>
<b>3. End Flanges</b>	
Material	: Galvanised mild steel
Overall size	: 30 mm high rolled steel profiled knock on flanges
Thickness	: 1 mm
Fixing method	: Push fitted over ends of ducting and spot welded at 120 mm centres
<b>4. Joint Tape</b>	
Material	: Unifrax Corporation Insulfrax <sup>®</sup> Felt tape
Overall size	: 20 mm x 3 mm
<b>5. Internal Tie Rods</b>	
Material	: Galvanised mild steel
Construction	: Tie rods shall consist of M12 threaded rod inside 21.6 mm diameter galvanised steel tube, secured top and bottom with 40 mm square x 5 mm thick plate washers and nuts
<b>6. Hanger rods</b>	
Material	: Mild steel threaded rod
Overall size	: M10 thread
Ancillaries	: M10 nuts and M10 flat steel washers
Positioning	: The hanger rods shall be set 125 mm from the face of the uninsulated duct
<b>7. Support Channel</b>	
Material	: Galvanised mild steel
Overall size	: 41 mm x 41 mm x 2.5 mm thick U profile
Length	: To suit duct width + 300 mm to allow for hanger rod spacing
Positioning	: The support channels shall be positioned 200 mm from the flange joints. The maximum unsupported span shall be 1100 mm
<b>8. Support Channel Saddle</b>	
Material	: Galvanised mild steel angled plate
Overall size	: 48 mm x 30 mm x 80 mm by 80 mm wide x 5.2 mm thick
<b>9a. Penetration Seal Collar</b>	
Material	: Promatect L 500 board
Thickness	: 35 mm
Overall size	: A 200 mm by 200 mm L frame surrounding the duct and fixed to the wall. The L frame shall have butt jointed corners and be glued with Promacol K84 adhesive and screw fixed together using Item 12b at 100mm centres. Joints shall be staggered at corners. The L frame shall be glued and screwed to the wall using item 12c at nominally 100 mm centres



## Item

## Description

### **9b. Penetration Seal Protection**

Material	:	3M™ Fire Barrier Moldable Putty+ Pad
Thickness	:	2.7 mm
Overall size	:	A single 100 mm width shall be installed between the duct and Item 9a, for the entire duct perimeter, on each face of the wall. The inner face of the pad shall be installed flush with the outer face of the wall

### **10a. Duct Wrap Insulation**

Material	:	3M™ Fire Barrier Duct Wrap 615+
Overall size	:	Nominally 610 mm wide by 38 mm thick, supplied in 6.35 metre long rolls
Method	:	Installed in single width wraps around duct. First section of Duct Wrap shall be tightly butted up to collar. Second section overlapping onto first and tightly butting up to Item 10b. Each adjacent section shall be overlapped onto the previous by a minimum of 100 mm each section overlapping onto the cut edge by 100 mm minimum. Cut edges to be closed with 3M aluminium foil tape. Duct Wrap may be temporarily retained using 19 mm wide filament tape prior to banding (Item 13)

### **10b. Duct Wrap Collar**

Material	:	3M™ Fire Barrier Duct Wrap 615+
Overall size	:	Nominally 610 mm wide by 38 mm thick, supplied in 6.35 metre long rolls
Method	:	Single width wrap shall be installed overlapping fully onto penetration seal collar (Item 9a), and onto the cut edge by 100 mm minimum. Cut edges to be closed with 3M aluminium foil tape. Duct Wrap shall be screw fixed to item 9a, on all four edges, using Item 11a and 30 mm diameter washers at 225 mm maximum centres. Duct Wrap may be temporarily retained using 19 mm wide filament tape prior to banding (Item 13)

### **11. Penetration Seal Infill**

Material	:	3M™ Fire Barrier Duct Wrap 615+ core material (without outer jacket)
Fitting method	:	Packed into annular space using nominally 30% compression

### **12a. Fixing Screws**

Material	:	Mild steel
Type	:	Drywall screws
Overall size	:	55 mm long x 3.9 mm diameter
Position	:	Fixing duct wrap to L angles



**Item****Description****12b. Fixing Screws**

Material	:	Mild steel
Type	:	Drywall screws
Overall size	:	70 mm long x 4.5 mm diameter
Position	:	Fixing corner and L angle joints

**12c. Fixing Screws**

Material	:	Mild steel
Type	:	Drywall screws
Overall size	:	80 mm long x 4.5 mm diameter
Position	:	Fixing collar to wall

**13. Retention Banding**

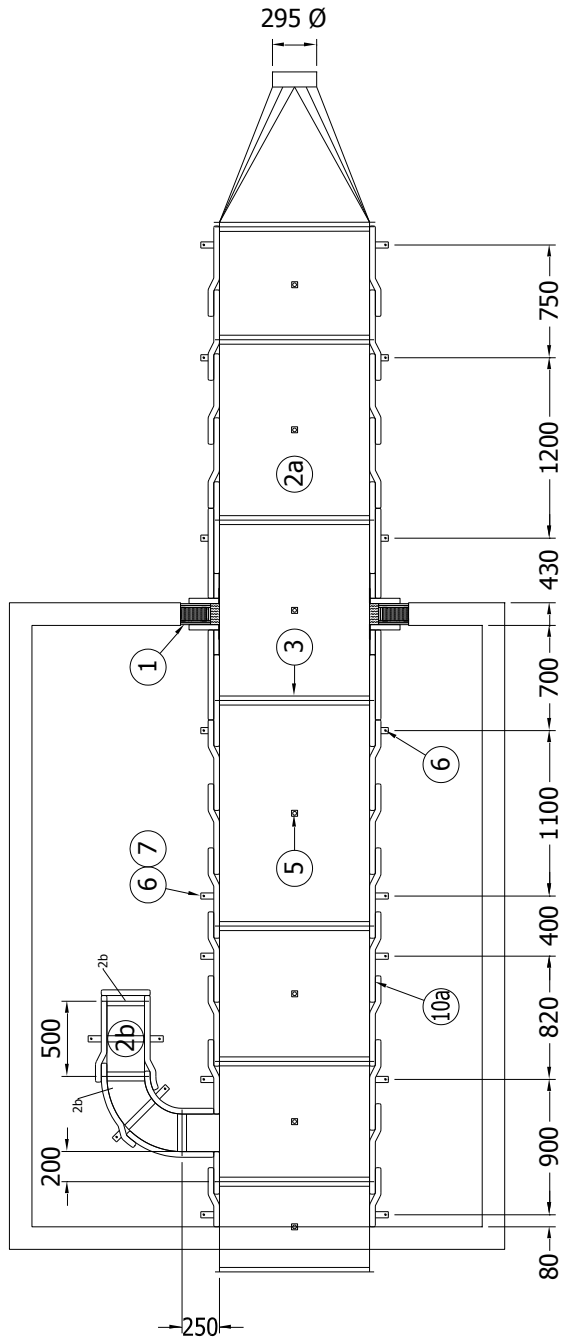
Material	:	Stainless steel
Overall size	:	12.7 mm x 0.4 mm
Fitting method	:	Shall be tightly clamped around duct at mid width of overlapping joints, and at nominally mid width of each section of Duct Wrap

**14. Duct Wrap Retention Pins**

Material	:	Mild steel CD weld fixed cup pins
Overall size	:	64 mm long x 2.7 mm diameter for fixing at twin layer collar. 28 mm long x 2.7 mm diameter for fixing at single layer thickness
Fixing method	:	Pins only required on bottom face of duct, applied through the duct wrap at nominally mid span between retention banding (Item 13). A minimum of three pins shall be used across the width, one centrally and the outer pins installed at 350 mm maximum centres across the width, and not more than 170 mm from the edge of the duct



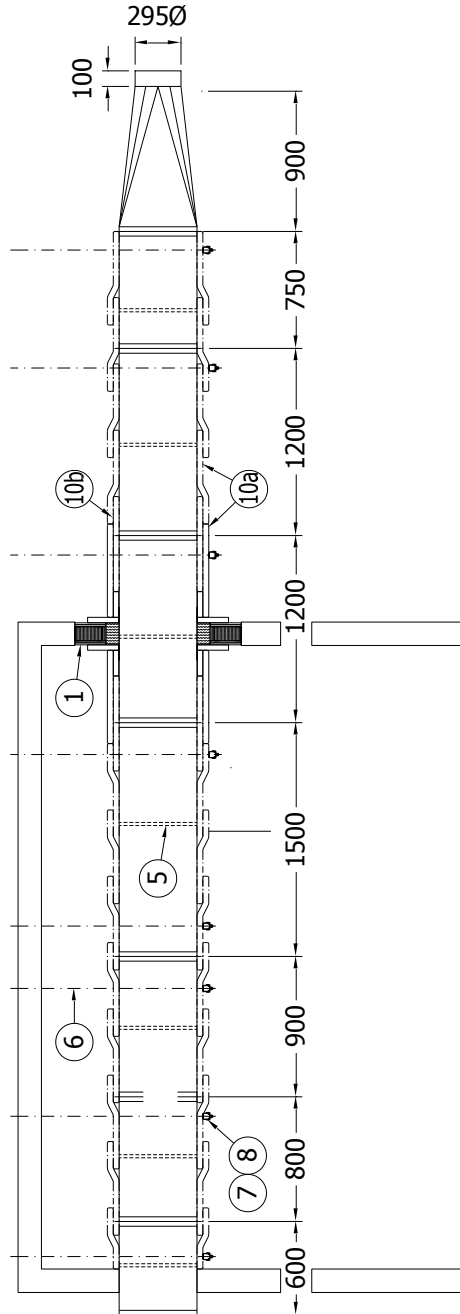
Figure A.2.1.8 Typical Plan View of Horizontal Assembly



Do not scale. All dimensions are in mm



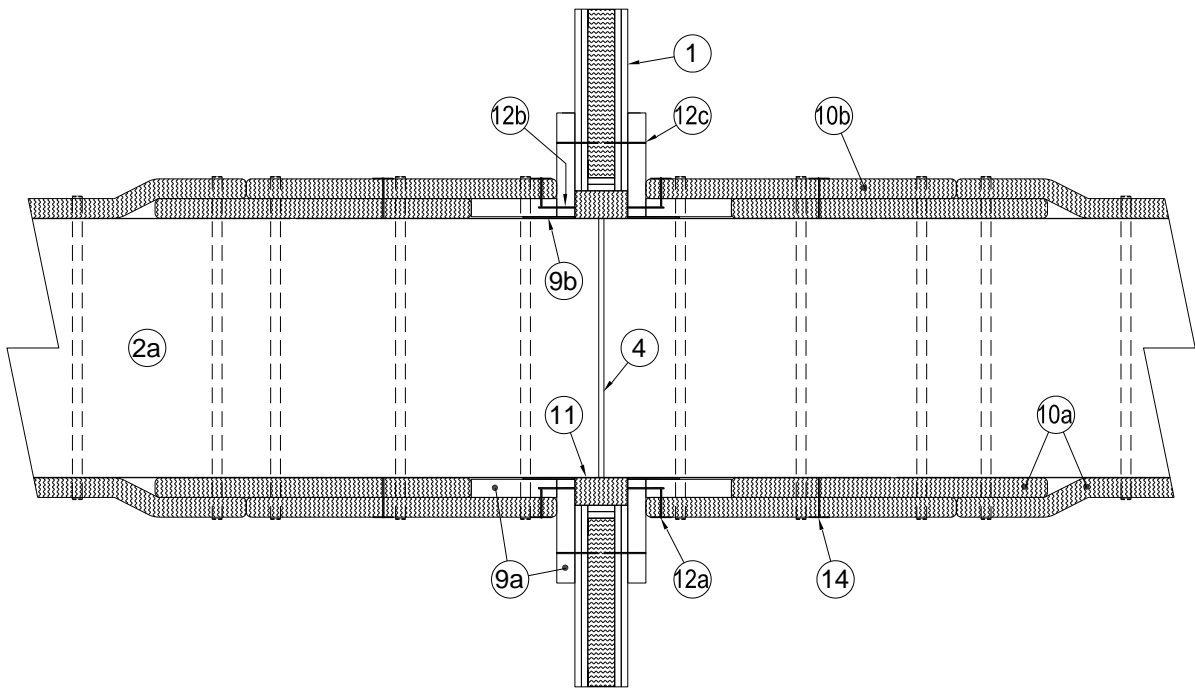
Figure A.2.1.9 Typical Side View of Installed Horizontal Assembly



Do not scale. All dimensions are in mm



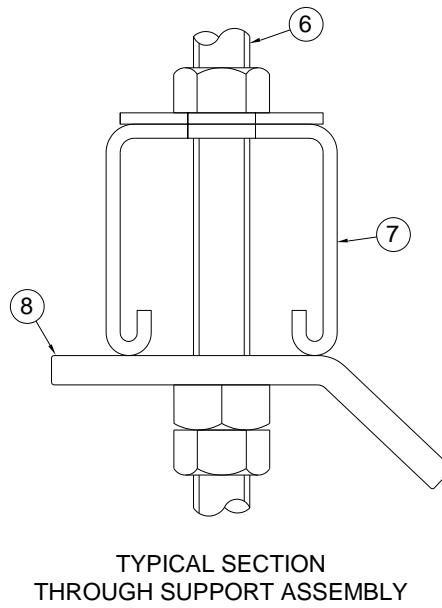
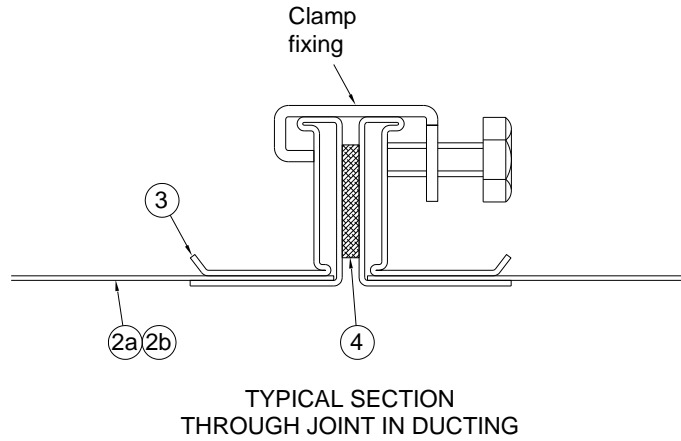
Figure A.2.1.10 Typical Details of Horizontal Assembly



Do not scale. All dimensions are in mm



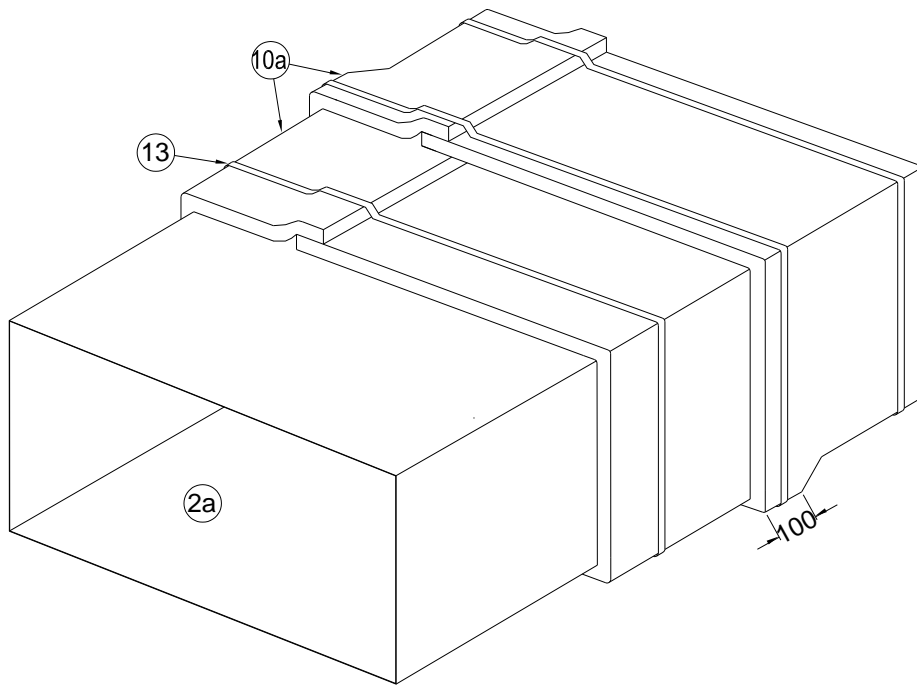
Figure A.2.1.11 Typical Details of Horizontal Assembly Duct Jointing and Support



Do not scale. All dimensions are in mm



Figure A.2.1.12 Detail Showing Fire Barrier Duct Wrap 615+ Overlap & Banding

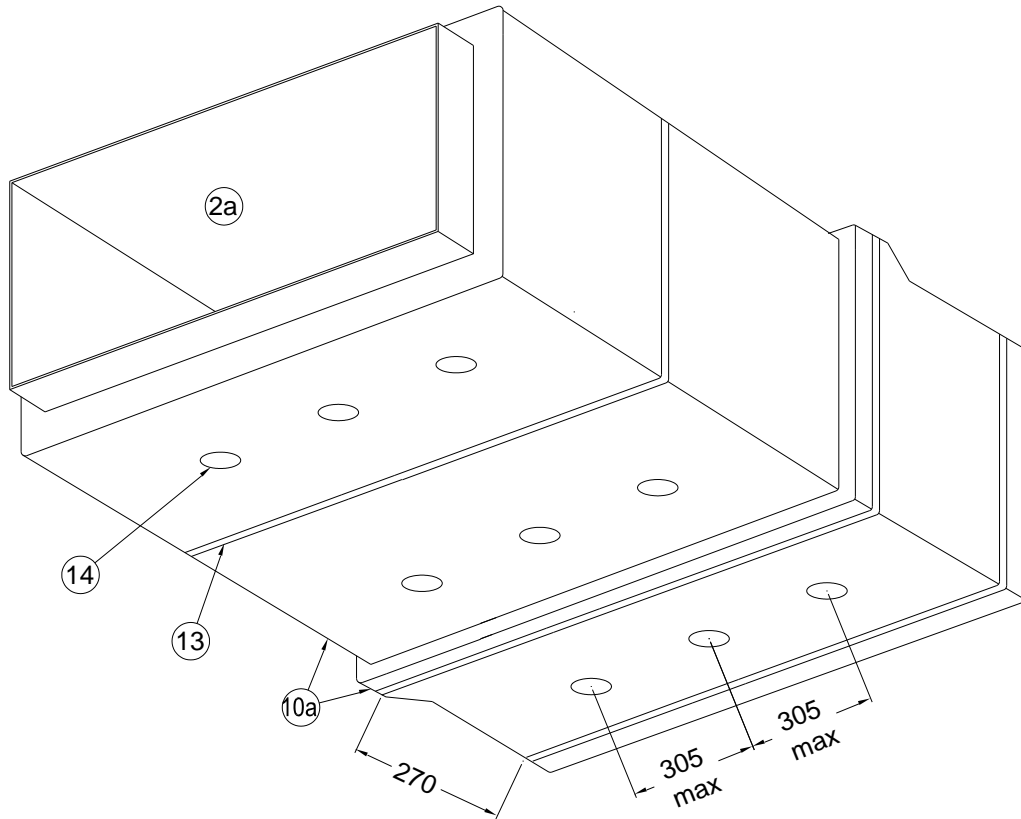


Do not scale. All dimensions are in mm





Figure A.2.1.13 – Detail Showing Positions of Duct Wrap Retention Pins



Do not scale. All dimensions are in mm

