EUROPA PLUS

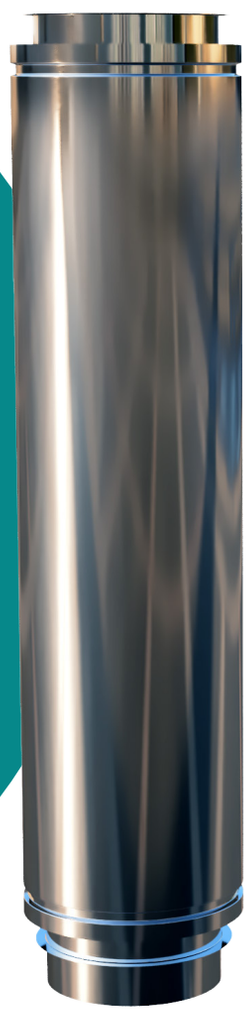
Flanged Stainless Steel High Pressure
Twin Wall Exhaust System

SFL Sphering

Installation Guide

IMPORTANT
This document must be fully understood before planning and commencing installation of the chimney system. Failure to follow the installation instructions could prove dangerous and result in loss of life.

Please check online at www.sflchimneys.com that you are working from the latest version of this document.



bsi. ISO 9001 Quality Management FM 557622

CE UKCA

UL LISTED MH49940 c UL LISTED MH49940

Always check on line that you are using the latest version of the installation instruction. This is identified by the publication date on the front cover.

Publication Date: 13/05/2026

Introduction

EUROPA PLUS has been specifically designed for today's high performance appliances, such as electrical generators, CHP and conventional heating appliances, offering an engineered system capable of meeting the demands of high temperature and high pressure exhaust applications.
Suitable for continuous flue gas temperatures up to 600°C (T600) and positive pressure applications up to 5000 Pa (H1). The EUROPA PLUS product as standard is offered with a 25mm insulated annulus and is optionally available in 50mm or 100mm AES insulation, allowing a controlled surface temperature to meet the requirements of the installation. For low temperature applications, EUROPA PLUS is also available in single wall.

Specification and Performance Designations

EUROPA PLUS (DN100 to DN600)

Inner Liner: 0.6mm 316L stainless steel
Outer Case: 304 BA stainless steel
Annulus: 25mm insulated with Insulfrax 128Kg/m³ AES high density blanket
Joint Construction: U-Band and composite graphite flange gasket.

EUROPA PLUS (DN650 to DN1200)

Inner Liner: 1mm 316L stainless steel and 1.2mm above 1000ID
Outer Case: 304 BA stainless steel
Annulus: 25mm insulated with 250Kg/m³ high density loose fill mineral wool. (Also available with 50mm and 100mm annulus).
Joint Construction: Vee Band utilising high or low temperature sealant depending on application.

Product Performance Specification to BS EN 1856-1						
DN100-600	T600	H1	W	V2	L50060	GXX
DN650-DN950	T600	H1	W	V2	L50100	GXX
DN1000-DN1200	T600	H1	W	V2	L50120	GXX
DN650-DN950	T250	H1	W	V2	L50100	OXX
DN1000-DN1200	T250	H1	W	V2	L50120	OXX
DN100-600	T200	H1	W	V2	L50060	OXX
DN650-DN950	T200	H1	W	V2	L50100	OXX
DN1000-DN1200	T200	H1	W	V2	L50120	OXX

Clearance to combustible materials (XX)

Unenclosed in open environment

Temp Class	Internal Diameter (mm)	Clearance To Combustible Material (mm)	Product Type
T250 / T600	100 - 300	50	Twin Wall
T250 / T600	350 - 450	75	Twin Wall
T250 / T600	500 - 600	100	Twin Wall
T250 / T600	>600	200	Twin Wall
T200	100 - 300	200	Single Wall
T200	350 - 450	300	Single Wall
T200	500 - 600	400	Single Wall
T200	>600	800	Single Wall

Enclosed within a ventilated combustible shaft

Temp Class	Internal Diameter (mm)	Clearance To Combustible Material (mm)	Product Type
T600	100 - 300	100	Twin Wall
T600	350 - 450	150	Twin Wall
T600	500 - 600	200	Twin Wall
T600	>600	400	Twin Wall
T250	100 - 300	50	Twin Wall
T250	350 - 450	75	Twin Wall
T250	500 - 600	100	Twin Wall
T250	>600	200	Twin Wall

Approvals

EUROPA PLUS is manufactured and tested to the requirements of EN 1856-1 to the performance designations as detailed opposite. These products are CE marked under the Construction Products Regulation, Certificate No. 0036 CPR 91455. In addition EUROPA PLUS is also UKCA marked, Certificate No. 0168 CPR 91455 and administered by TÜV Industrie Service GmbH.

UKCA 0168 CPR 91455

CE 0036 CPR 91455

Other Approvals

EUROPA PLUS is a UL Listed product covering the following standards:

North America

UL103 : USA requirements for Factory-built Chimneys for Residential Type and Building Heating Appliances
UL2561 : 1400 Degree Fahrenheit Factory-Built Chimneys
UL1777 : Chimney Liners
UL1738 : Venting Systems for Gas-Burning Appliances, Categories II, III, and IV

Canada

ULC/ORD-C959-1993 : 540°C and 760°C Industrial Chimneys
ULC-S635-00 : Lining Systems for Existing Masonry or Factory-Built Chimneys or Vents
ULC-S636-08 : Type BH Gas Venting Systems

c UL LISTED MH49940

UL LISTED MH49940

Quality Management

All components are manufactured under a quality management system, certificate No. FM557622, administered by The British Standards Institute in accordance with BS EN 9001: 2015.

bsi ISO 9001 Quality Management Systems CERTIFIED
FM557622

Fire Resistance Approvals

EUROPA PLUS DN100 - DN600

Tested by Appos Laboratories to EN 1366-13 - Fire resistance tests for service installations - Chimneys.
Report 22/32302474-2

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Tested and assessed by the Building Research Establishment (BRE) offering a 4 hour fire resistance in accordance with the integrity criteria of BS 476 Part 20. Test Report 302589 Issue 2 and Assessment Reports P120607-1001.

EUROPA PLUS DN650-DN1200

Tested by the Loss Prevention Council offering a 4 hour fire resistance in accordance with the stability and integrity criteria of BS 476 Part 24 Duct Type B. Reports TE6696 and TE7109.

Chimney Environment and Contamination

Although EUROPA PLUS is supplied as standard with a high corrosive 316L austenitic stainless steel liner and 304 austenitic stainless steel outer case, a corrosive environment can lead to premature failure of the product. The two main considerations are the internal environment within the appliance plant room and the external environment. Where the chimney is installed in coastal areas, it is recommended that any external portion is protected with a suitable anti-corrosion coating. It is also recommended that only stainless steel support components are use. Where galvanised steel components are used within this environment, it is suggested that they are coated with a protective finish to help prevent corrosion. Care must also be taken to ensure that there is no possibility of chemical contamination of the combustion air supply in the internal environment. Halogens, especially chlorine and chloride when entering into the combustion process through the combustion air duct can lead to the formation of aggressive compounds. Prolong exposure to such chemicals can lead to early deterioration of the chimney system.
Chemicals which may result in corrosion of the venting system include (but are not limited to):

- chlorinated or halogenated dry cleaning solutions
- fluorocarbon aerosol propellants
- chlorination systems used in swimming pools and leisure facilities
- titanium tetrachloride
- chlorine based bleaches and associated cleaning products
- fluorocarbon refrigerants (CFC)
- vinyl based plastics when burn't
- plating or etching baths and solutions

Where extraction systems are discharging externally in close proximity to an external chimney and where the products of the discharge could be corrosive in nature, it is recommended that a suitable protective coating is applied to the outer casing.

Maximum Performance Specification

Temperature
Maximum Operating temperature: 600°C
Intermittent Operating Temperature: 750°C
Internal Sootfire: 1000°C for 30 minutes

Pressure Capability
Pressure rating to EN 1856-1: 5000Pa (H1)
Leakage rating to EN 1856-1: <0.005 l/s/m^2 (H1)
Maximum Pressure Rating: 15KPa at 50ppm (UL)

Expansion Components
Expansion Bellows: 15KPa
Expansion Lengths: 5000Pa* @ 450°C
*Restrictions apply, see pages 7, 8 and 9

Linear Thermal Expansion & Contraction

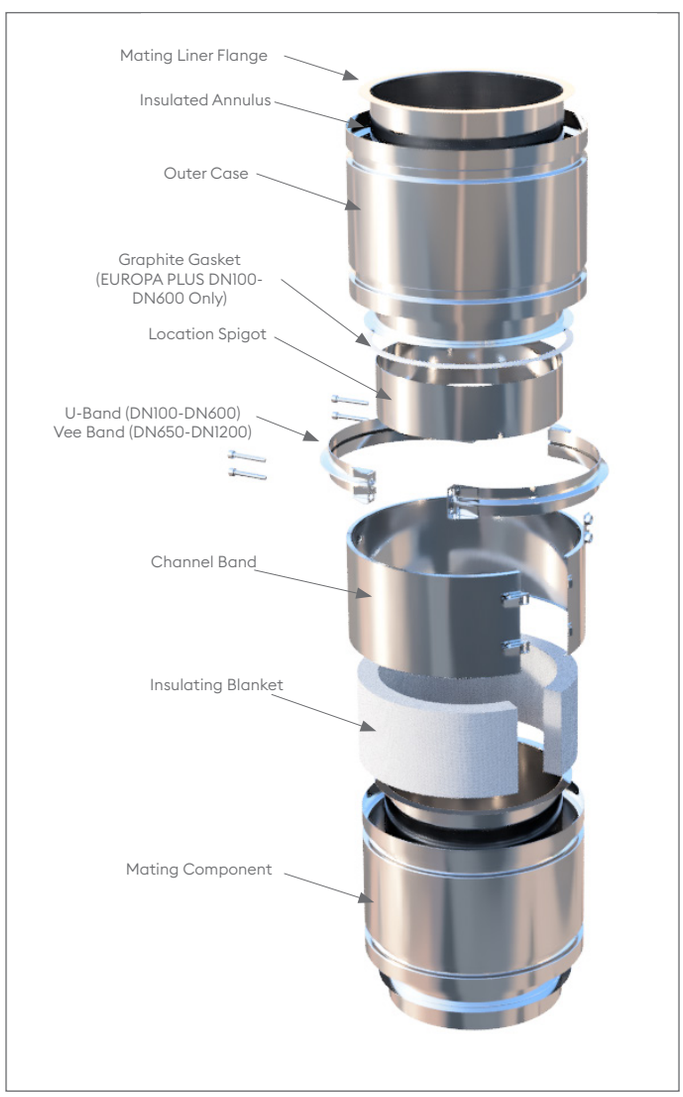
Due to the high temperature and pressure capability of the flanged joint, adequate provision has to be made for the expansion and contraction of the liner throughout the system. Provision for expansion is provided by the use of Expansion Bellows or Expansion Lengths, depending on the application. Expansion components are required for each change of direction, between fixed points and within long runs. Adequate bracing must be provided where expansion components are used. Refer to pages 11, 12 and 13 for further information.

Installation Instructions

The systems high pressure and high temperature integrity is achieved by utilising a mating flanged jointing system. The flange is contained around its circumference with a clamp band. Depending on the internal diameter of the product, either a U-Band (DN100-DN600) or a Vee Band (DN650-DN1200) will be used. Internal diameters up to DN600 are supplied complete with a composite graphite gasket fitted to the face of the flange to provide pressure integrity to the joint. Above DN600 and depending on the exhaust gas temperature, pressure integrity is achieved using either a high or low temperature sealant, which is applied around the face of the flange and around the circumference of the internal channel of the Vee Band. Once the clamp band is tightened as per the following installation instructions, a length of insulating blanket is applied around the joint to maintain insulation integrity and the joint is finished with a Channel Band. The Channel Band may be further sealed with a external weathering sealant if used in an external application.

Location Spigots - Location Spigots are factory fitted and supplied as standard to aid the alignment of the flanges during installation. It is important that the product is installed with the Location Spigot facing back towards the appliance.

General Overview Of Construction and Joint Design

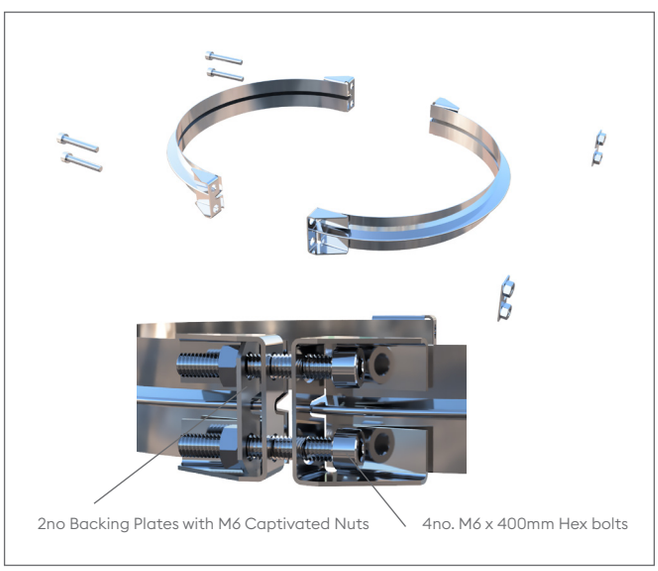


EUROPA PLUS Joint Assembly

Prior to assembly of the joint, it is important to ensure that the surface of the flanges are clean and free of any dirt or grit. Where the internal diameter is less than DN650, it is also important to ensure that the Graphite Gasket is securely bonded to the face of the flange and that there is no evidence of splits, cracks or any other damage that could compromise the integrity of the seal. The product should be assembled so that the orientation of the Location Spigot faces towards the appliance. When moving larger diameter EUROPA PLUS components, NEVER attempt to move the product by rolling on its flange. Always use a suitable trolley or lifting system.

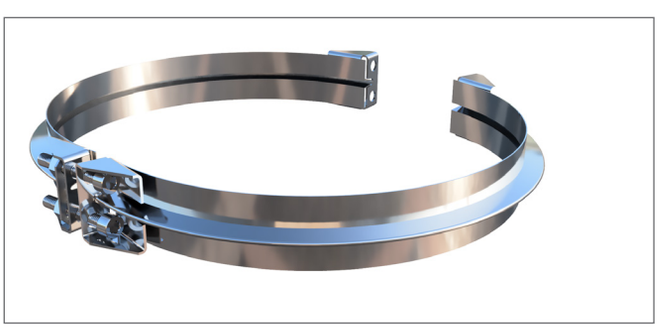
Vee Band and U-Band Assembly

The type of clamp band used depends on the internal diameter of the component. For diameters up to and including DN600, the U-Band is supplied as standard. Above DN600 the Vee Band is supplied as standard. The clamp band is designed to clamp around the mating flanges of the two components being installed. Both band types are assembled in the same way.



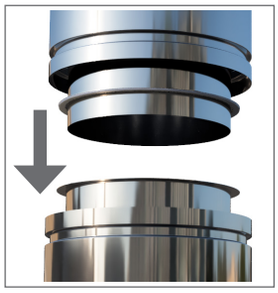
Either a Vee Band or U-Band is supplied complete with each component, depending on the product type. Each band is supplied with 4no. M6 x 40mm Hex bolts and 2no Backing Plates which incorporate captive nuts to aid installation.

Take the two halves of the band and create a loose joint on one side using the supplied fixings. The band is then ready for assembly.



EUROPA PLUS (DN100 - DN600)

1. Ensure that the Location Spigot and Graphite Gasket are at the bottom of the component, facing back to the appliance outlet. Simply align the flanges by inserting the Location Spigot into the preceding component. When the two elements are assembled, both flanges should sit flat against the Graphite Gasket. No additional sealant is required.



EUROPA PLUS (DN650 - DN1200)

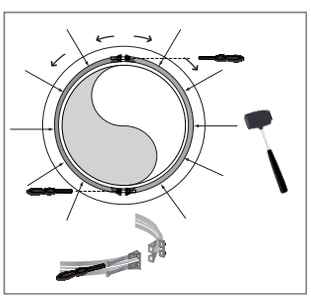
Above DN600 the EUROPA PLUS product requires the application of either a high or low temperature sealant to assemble the joint, depending on the application.

1. Ensured all flange surfaces are free from grit, grease and contaminants. Apply a bead of either high or low temperature sealant, depending on application to the face of one flange. Using the Location Spigot, align the flanges and bring the two halves together so that the flanges meet. Remove any excess sealant from the circumference of the mating flanges.

2. Taking the previously assembled Vee Band, apply the required sealant type, filling the internal groove of the Vee Band. Ensure that the sealant is applied around the full inner circumference and there are no gaps to compromise the integrity of the Vee Band when fully assembled.

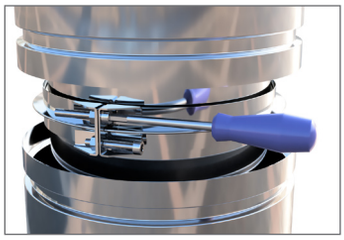
The following assembly instructions are the same for all sizes.

3. Place either the Vee Band or U-Band around the mating flanges of the two components, depending on product size. Once located, gently tap around the circumference of the band, starting at the hinge previously made, to ensure that it is correctly aligned. Repeat for the opposite half of the band. Install the remaining fixings and tighten both sides of the band alternatively until tight. Continue this process of gently tapping around the circumference and alternatively tightening the fixings until there is no further movement and the faces of the bracket meet.

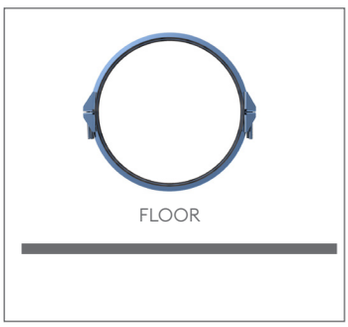


The bolts at this point should be tightened to a torque of approx. 4Nm.

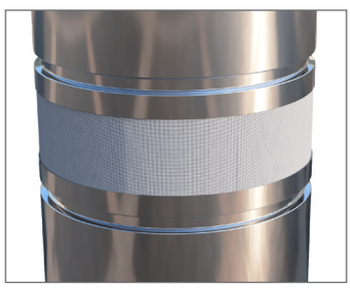
Care should be taken when using high speed / high torque electrical screwdrivers as this may cause potential galling of the threads. It is recommended that Copper Grease Lubricant is used on the threads if required or low speed / low torque settings are used.



If installing the product horizontally, the bands should be installed so that clamps and fixings are as per diagram opposite.



4. Apply the supplied insulation blanket around the joint, ensuring that full insulation integrity is maintained between the two mating components. Ensure that the insulating blanket is also pushed fully into the cavity of both sections. The insulation strip should be applied in one continuous length and slightly overlapped at the end.



5. Place the Channel Band around the joint, locating it in the respective grooves in the upper and lower component. Secure the Channel Band using the provided fixings. Where used externally, on vertical runs, apply a bead of suitable weathering sealant in the groove at the upper edge of the Channel Band and at the overlap at its edge. Where used externally on horizontal runs, the same process should be applied to both grooves and where it overlaps at its edges. Ensure that the toggle clips or fixings are on the underside of the product when installed horizontally.

Joint Sealant Types (For EUROPA PLUS (DN650 - DN1200)

The integrity of the joint between components is dependent upon the use of the correct sealant. The choice of sealant will depend on the performance designation required for the intended application.

Low Temperature Sealant (T250 Max 5000Pa Positive)

Provided in 310ml cartridges for application by a standard skeleton gun. Ideal for low temperature applications where the flue gas temperature does not exceed 300°C or where the required performance classification does not exceed T250 and where high levels of condensation can be expected in the system. The low temperature sealant can also be used to weather the Channel Band when the product is installed outside. It is important to allow sufficient time for the sealant to cure, always follow the usage instructions on the cartridge.

High Temperature Sealant (T600 Max 5000Pa positive)

Provided in 310ml cartridges for application by a standard skeleton gun. Used for high temperature applications where the flue gas temperatures can exceed 250°C or where the required performance classification requires a T600 rating, such as electrical generation and large scale Combined Heat and Power (CHP) plant. The high temperature sealant is ceramic based and can withstand temperatures up to 1100°C. It is important to allow sufficient time for the sealant to fully cure. For more information, please follow the usage instructions on the cartridge. Failure to follow correct curing process may cause failure of the joint during service, especially on high temperature applications.

IMPORTANT:

1. Both sealants have been specially selected and tested on EUROPA PLUS as part of the CE and UL type testing. No other sealant should be used, as this could compromise the performance specification and integrity of the joint, and invalidate the warranty.
2. It is important that the curing time and process for each sealant is properly followed as per the usage instruction on the cartridge. Failure to follow the guidance may compromise the performance of the joint.
3. Following the recommended curing process, it is recommended that on first firing, the flue gas temperature is increased uniformly over a period of two hours up to the operating temperature to allow final conditioning of the sealant. It is not recommended to shock the system on the first operation after the sealant has been applied.

Sikaflex

This product can be used as an external sealant and where the product is to be painted.

Thermal Expansion

EUROPA PLUS features a flanged liner to provide a continuous inner wall to support high temperature and high pressure applications. For this reason, expansion and contraction within the system due to temperature must be compensated for within the overall system design. Any length of vent where expansion is likely to exceed 6mm between two fixed points must incorporate an expansion component to compensate for thermal movement.

In all cases the rate of expansion must be calculated and this can be approximated using the simplified formula's below. The rate of expansion is directly related to the materials coefficient of linear expansion, the temperature rise of the liner above ambient (ΔT) and the length of chimney section being calculated. For simplicity it is normal to use the maximum flue gas temperature, as generally this will be greater than the liner temperature and the mean flue gas temperature throughout the chimney system.

$$\text{Expansion} = 0.016 \times L \times \Delta T$$

Where:
Expansion = Length chimney section expands (mm)
L = Length of chimney section (Mtrs)
ΔT = Rise in flue gas temperature above ambient (°C)

Example
A 25 metre run of EUROPA PLUS is subjected to a maximum flue gas temperature of 550°C above ambient, based on an ambient temperature of 15°C .

Expansion = 0.016 X 25 X 550 = 220mm

In the example above and due to the high temperature application, Expansion Bellows would need to be installed between fixed points in this section. As the maximum axial compression of the Expansion Bellow is 120mm, two bellows should be employed within this section.

The flanged inner liner has negligible flexing capacity, and in addition, elbows, tees etc. are not designed to withstand bending moment forces resulting from expansion. Where such components are used, adequate bracing must be employed as detailed within this document.

Where two or more Wall Support Assemblies or Support Plates are used to vertically support a chimney, adequate provision must be made for expansion between the fixed points. This is achieved by using an expansion component one joint below the upper support component to prevent compression at ambient temperatures. By initially calculating the maximum height between vertical support components, the expansion can then be calculated based on the above formula. The number of expansion component will depend on the amount of expansion calculated between the fixed distance between the two supports.

Guide Band Assemblies including Wall / Floor Guides and Support Cradles when adequately fixed, allow for lateral loading while allowing for thermal movement of the system. It is important that any Guide Band or similar component is located to allow for the movement of any adjacent Channel Band or Expansion Component.

The Telescopic Flashing should always be used where the product is subject to vertical expansion through the roof.

Table 1: Simplified Thermal Expansion Chart

Thermal Expansion (mm)

Length (Metres)	Flue Gas Rise °C 100	200	300	400	500	600	700
8.5	14	27	41	54	68	82	95
8.0	13	26	38	51	64	77	90
7.5	12	24	36	48	60	72	84
7.0	11	22	34	45	56	67	78
6.5	10	21	31	42	52	62	73
6.0	10	19	29	38	48	58	67
5.5	9	18	26	35	44	53	62
5.0	8	16	24	32	40	48	56
4.5	7	14	22	29	36	43	50
4.0	6	13	19	26	32	38	45
3.5	6	11	17	22	28	34	39
3.0	5	10	14	19	24	29	34
2.5	4	8	12	16	20	24	28
2.0	3	6	10	13	16	19	22
1.5	2	5	7	10	12	14	17
1.0	2	3	5	6	8	10	11
0.5	1	2	2	3	4	5	6

Thermal Expansion Components

EXPANSION BELLOWS (LINED)

Mainly used on generators and turbine applications. For positive pressures applications up to 5000Pa and where the flue gas temperature does not exceed 600°C, the Expansion Bellow must be used. The Lined Expansion Bellow has a straight 316L liner to protect the component from the build up of soot and other deposits within its convolutions, and eliminates turbulence and flow effects. It is used in both horizontal and vertical orientations for axial and vibrational movement only, and must be accurately supported and guided. This component will not accommodate lateral movement or lateral offset, and parallel misalignment should be eliminated. In vertical installations, the liner attachment to the Expansion Bellows is positioned at the uppermost end to prevent trapping of water, dirt or other foreign materials between the liner and the Expansion Bellow. The lined Expansion Bellow requires careful placement of support guides to ensure there is adequate clearance to compensate for thermal movement. Care must be taken not to pre-stress or compress the Expansion Bellow during installation.

When the Expansion Bellows is installed between two fixed points, it should be installed nearer to the support furthest away from the appliance. To ensure axial alignment, lateral bracing Guides or Cradles must be fitted close to and upstream to the Expansion Bellow. Guides should be located approximately 150mm - 300mm from the downstream end of the Expansion Bellow.

Do not locate an Expansion Bellow adjacent to an Elbow or fitting; the liner movement could be impeded.

The maximum axial compression between two fixed points is 120mm. Where the calculated expansion is greater, additional Expansion Bellows will need to be installed. Where multiple Expansion Bellows are required, it is considered best practice to separate them between fixed lengths.

Expansion Bellows must never be installed with any compression or be used for a field fit. It must always be installed at its full uncompressed length in ambient conditions.

Where installed in proximity to combustible materials, the Insulated Bellow Jacket must be fitted around the Expansion Bellow.

Expansion Bellow Orientation and Dimensions

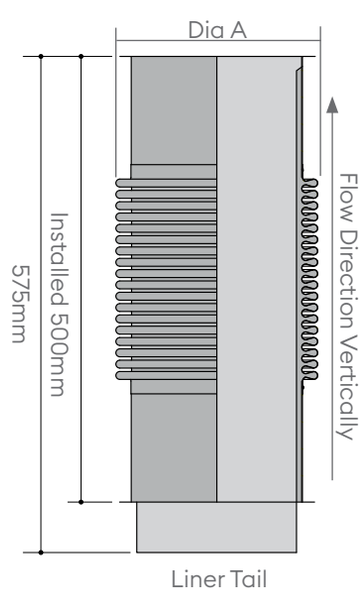
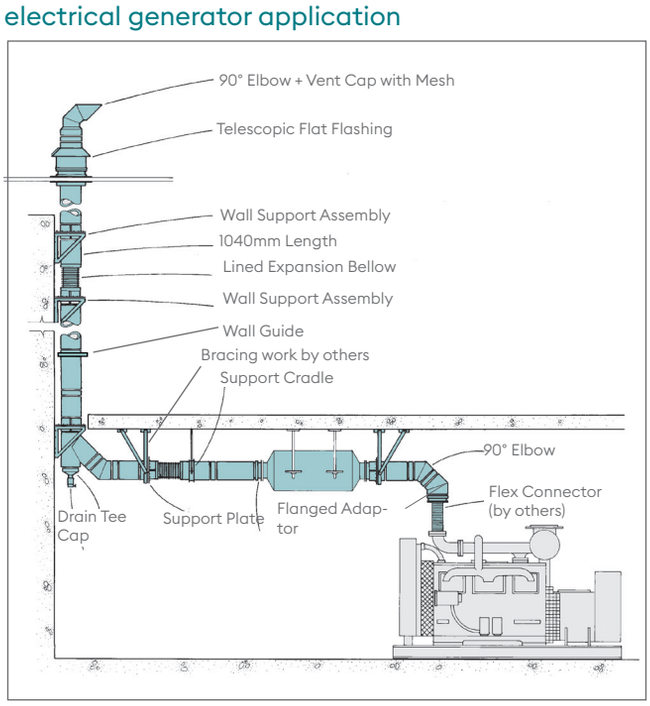


Table 2: Expansion Bellow - Technical Data

Size	Dia A	Axial Spring Rate	
mm	mm	N/mm	Kg/mm
100	133	16	1.6
150	184	18.5	1.9
175	209	21.3	2.2
200	238	21	2.1
250	290	91	9.3
300	356	15.4	1.6
350	405	73	7.4
400	469	69.2	7.1
450	502	37	3.8
500	570	80.2	8.2
550	605	43	4.4
600	684	77.6	7.9
650	723	111	11.32
700	786	90	9.18
750	837	97	9.89
800	888	103	10.50
850	923	144	14.68
900	989	106	10.81
950	1020	159.5	16.26
1000	1096	138.5	14.12
1100	1198	152.2	15.52
1200	1299	166	16.93

Typical installation using Expansion Bellows on an electrical generator application

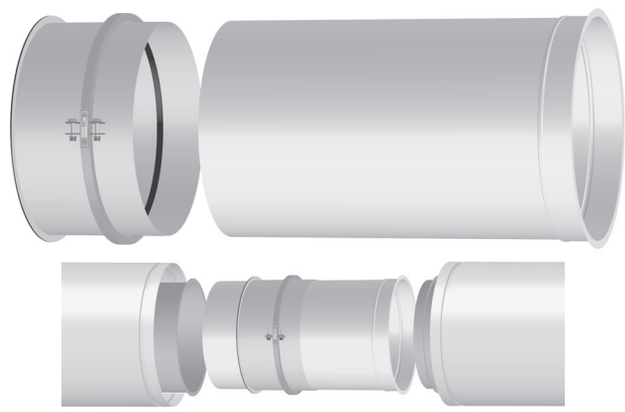


IMPORTANT: Expansion Bellows due to their function need to be considered within the overall maintenance program of the system. In general Expansion Bellows have an anticipated life of around 5000 expansion / contraction cycles before potential fatigue may occur.

EXPANSION LENGTH

The Expansion Length is a universal solution for both high pressure / high temperature and low pressure / low temperature applications, such as condensing systems and CHP units, where the flue gas temperature will not exceed 450°C and where the positive pressure is limited to a maximum of 1500Pa internally and 5000Pa externally. For generators and higher temperature application (T600), use Expansion Bellows.

General Assembly



Graphite Rope Seal

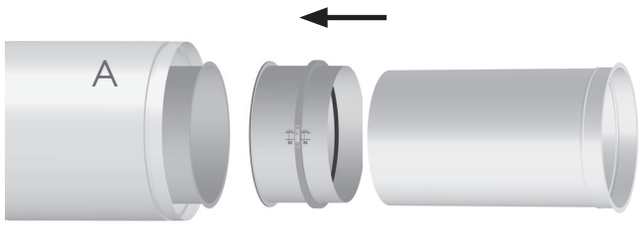
The Expansion Length consists of a Flanged Seal Housing assembly, Slip Section, Cover Jacket and Blanket Insulation. The component when assembled allows the Slip Section to expand and contract within the Flanged Seal Housing assembly and into the preceding length. Pressure and condensate resistance is achieved by the Graphite Seal that is located between two components as per the image to the left. The component is supplied assembled with the Containment Band locating the Graphite Seal in the correct position. It is advised not to disassemble the Containment Band.

IMPORTANT:

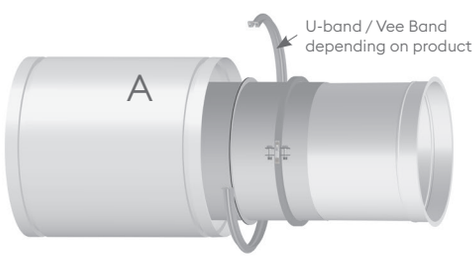
Before installation, consideration needs to be given to both the length to be made up and the calculated expansion within the section under consideration. Expansion Lengths are available in two sizes (Short - 500mm and long - 750mm) and offer a maximum and minimum extension as detailed within Table 3. The actual dimensions within the table do not make allowance for thermal expansion, which would require the minimum extension to be increased if the component is assembled almost closed. The Expansion Length due to the Slip Section should always pass into an existing length. The selection of either the Short or Long version will be determined by the amount of expansion and application. Under no circumstance should the Slip Section pass into either an Elbow or Tee component. Like Expansion Bellows, the Expansion Length should be installed between two fixed points. For expansion allowance, use the calculation method provided under the Thermal Expansion section. When the Expansion Length is installed between two fixed points, it should be installed nearer to the support furthest away from the appliance. To ensure axial alignment, lateral bracing must be employed close to and upstream to the Expansion Length

EXPANSION LENGTH (Installation and Assembly)

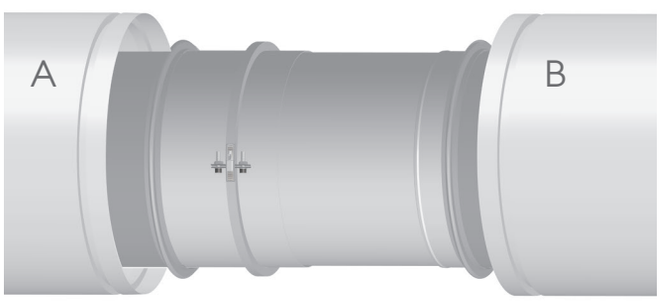
1. With the Seal Compression Band loosened (as supplied), allow the Slip Section to pass into the preceding length 'A', ensuring that the Slip Section engages at least half the diameter of the product. Please also see note on expansion allowance.



2. Apply the U-Band or Vee Band depending on size around the flange and tighten as per the usual installation method required to assemble a standard flanged joint. During this operation, ensure that the weight of the Expansion Length is supported to prevent any damage to the mating flange.

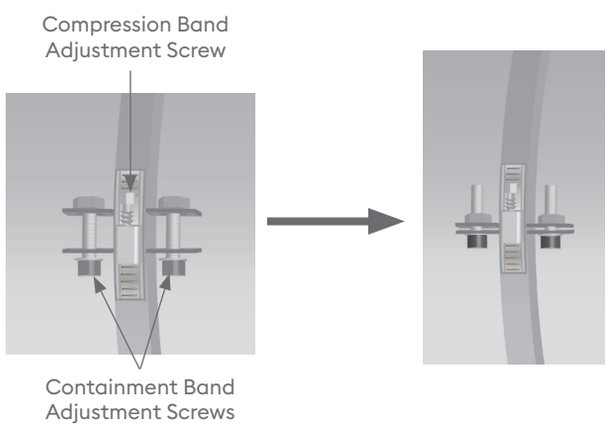


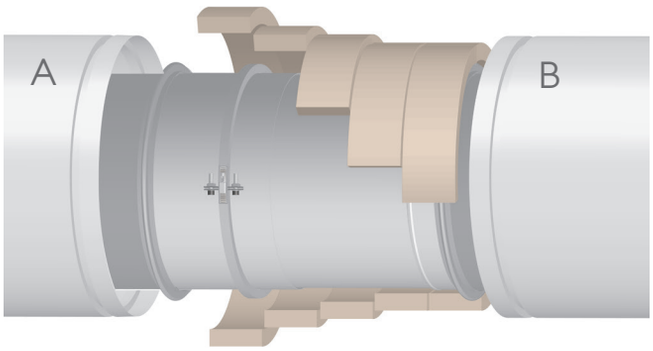
3. Join component 'B' to the Expansion Length and apply / tighten the U-Band / Vee Band to complete the joint.



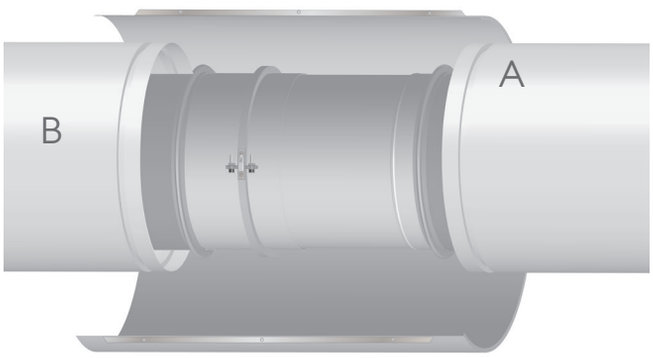
With the slip section now in place, the compression band can be tightened to 4Nm and the containment band tightened until it meets.

When assembling the Vee Bands, the correct sealant must be used when making the joint.





Apply the insulation strips around the circumference of the liner. It is important to ensure that the insulation joints are overlapped and a final check should be made to ensure that full integrity of insulation is maintained over the section.



Locate the Cover Jacket in the groove of length 'A'. The lower end of the Cover Jacket lies flush over the preceding length 'B' to allow for expansion. Secure the Cover Jacket in place using the hardware provided. The fixings should be located on the underside when installed on horizontal runs. For external applications apply a bead of external sealant around the groove of length 'A' and the Cover Jacket. Ensure sufficient room for expansion when fitting lateral supports.

IMPORTANT: *The Slip Section is designed to slide into an existing straight length. Do not use the Slip Section to pass into Elbows or Tees as there is a risk of obstruction.*

IMPORTANT: Where EUROPA PLUS is used on condensing system, always allow an adequate incline (3°-5°) from drainage. Where horizontal routes are required, the greater the slope the better. Failure will lead to premature corrosion of the product.

Table 3 - Expansion Length - Minimum and Maximum Length

Expansion Length							
Size (mm)	Short (6XX27XX)		Long (6XX26XX)		Size (mm)	Long (6XX26XX)	
	Min (mm)	Max (mm)	Min (mm)	Max (mm)		Min (mm)	Max (mm)
100	203	457	203	707	**600**	203	457
150	203	432	203	682	**650**	218	432
175	203	420	203	670	**700**	218	407
200	203	407	203	657	**750**	218	382
250	203	382	203	632	**800**	218	357
300	203	357	203	607	**850**	218	332
350	203	332	203	582	**900**	218	557
400	203	307	203	557	**950**	218	532
450	-	-	203	532	**1000**	218	507
500	-	-	203	507	**1100**	218	457
550	-	-	203	482	**1200**	218	407

The above dimensions do not make allowances for thermal expansion, which requires the 'Min' dimension to be increased if the component is assembled almost closed. The dimensions detail above are based on a minimum engagement of the Slip Length into the preceding pipe by 1/2 X Internal Diameter.

VARIABLE LENGTHS

The Variable Length is designed to fit into a preceding standard fixed length. Its purpose is to allow a degree of adjustment between two non-load bearing fixed lengths where a standard length would not be suitable. The Variable Length must not be used to correct misalignment or be used as an expansion component. Always use a Support Plate or Wall Support Assembly above to take the vertical loading.

The Variable Length comprises a sliding inner slip section, flanged at one end only. This slip section is sized to fit closely inside a standard pipe section. A Seal Ring is provided to prevent the inner section from slipping after assembly. The sliding outer jacket is stainless steel to the same specification as standard product.

Observe the following steps in making up a short length assembly for the Variable Length and refer to the data below and associated drawings.

Variable Length - Assembly

Figure 1

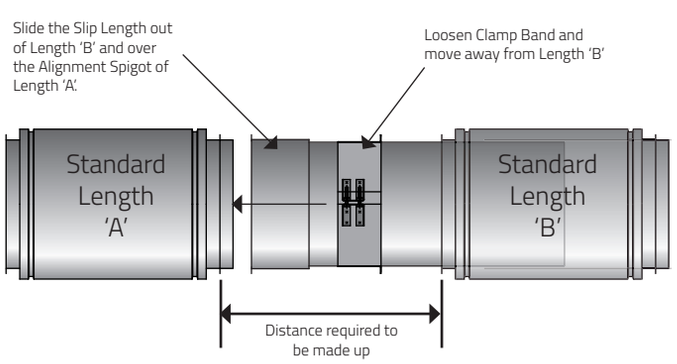
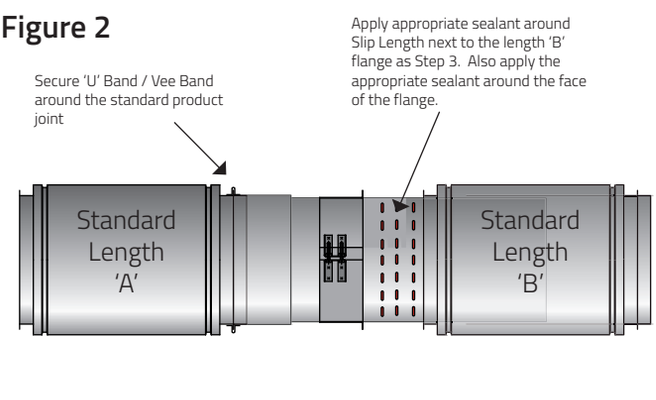
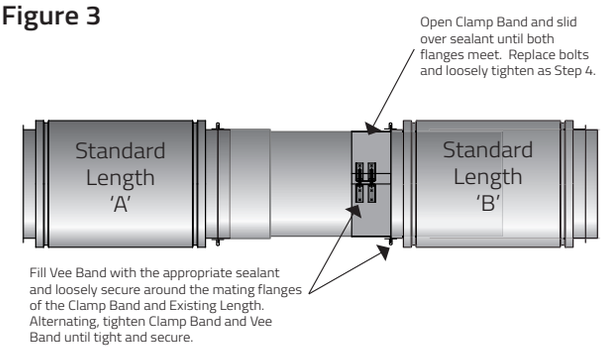


Figure 2



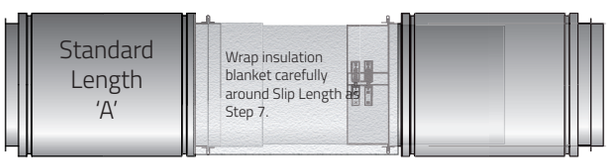
1. Determine length between flanges of adjacent sections.
2. Insert slip section into preceding length and extend out to the required length, ensuring that there is a minimum of 1/2 internal diameter of engagement. Where the required length is short, the slip section can be cut back in the field; however care must be taken to ensure that the cut end of the Slip Section is free of burrs. Remove bolts on the Clamp Band and leave it on the Slip Length, away from the joint to be made.
3. Apply three 8mm continuous beads of the appropriate sealant around the Slip Length adjacent to the pipe flange on length 'B', and equally spaced around the circumference of the slip section within the Clamp Band width (See Figure 2). Also apply sealant around the face of the flange. Secure the 'U' / Vee Band around the standard joint of Length A as per normal installation method.

Figure 3



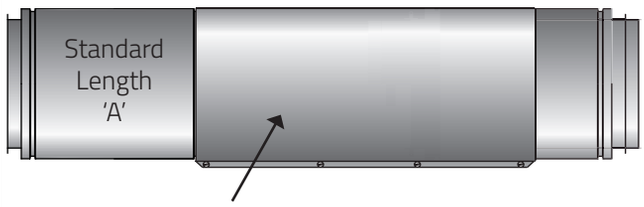
4. A Vee Band set is supplied for use with the Clamp Band joint and should not be confused with the 'U' Band .
5. Open out Clamp Band and slide over sealant until the flange mates with the flange of length 'B'. Replace the bolts and loosely clamp in position. Fill the Vee Band with appropriate sealant, and loosely fit to the joint of length 'A'. See Figure 3.
6. Alternating between the Seal Ring and the Vee Band, tighten the bolts, thus securing the Variable Length to the preceding length 'A'.

Figure 4



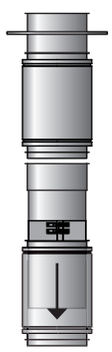
7. Cut the supplied insulation blanket to length and carefully wrap around the inner liner, ensuring that there are no gaps and the insulation integrity is maintained between lengths 'A' and 'B'. See Figure 4.

Figure 5

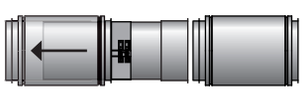


8. Locate the Cover Jacket in the groove of length 'A'. The lower end of the Cover Jacket lies flush over the preceding length 'B'. Secure the Cover Jacket in place using the hardware provided. The fixings should be located on the underside when installed on horizontal runs.
9. For external applications apply a bead of external sealant around the groove of length 'A' and the Cover Jacket joint.

Orientation of Variable Length in System



Vertical
When installed vertically, the Slip Length points downwards



Horizontally or Inclined
When installed horizontally, the Slip Length points down stream towards the appliance

Minimum and Maximum Installed Length for Adjustable / Variable Length

Adjustable / Variable Length							
Size (mm)	Short (6XX29XX)		Long (6XX26XX)		Size (mm)	Long (6XX28XX)	
	Min (mm)	Max (mm)	Min (mm)	Max (mm)		Min (mm)	Max (mm)
100	130	457	130	707	**650**	145	432
150	130	432	130	682	**700**	145	407
175	130	419.5	130	670	**750**	145	382
200	130	407	130	657	**800**	145	357
250	130	382	130	632	**850**	145	332
300	130	357	130	607	**900**	145	557
350	130	332	130	582	**950**	145	532
400	130	307	130	557	**1000**	145	507
450	130	282	130	532	**1100**	145	457
500	130	257	130	507	**1200**	145	407
550	130	232	130	482			
600	130	207	130	457			

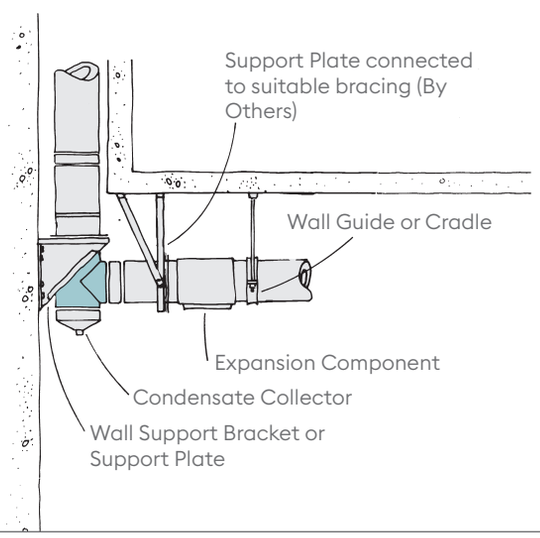
FITTINGS

Tees (135°, 90°, 93° and 95°)

Where used in the vertical chimney, Tees can either be supported from above or below using a Support Plate or Wall Support Bracket. Where the Tee is positioned on top of the support component, reference must be made to the maximum vertical loading of the component. When installed at the bottom of a vertical chimney a Condensate Collector should be fitted on the base of the tee to remove rain water, condensation and any combustion residue from the system. The Condensate Collector should be connected to a suitable drain.

When used as a manifold inlet tee on condensing systems, it is recommended that there is at least a 3° - 5° slope to allow for the back flow of condensation through the system. Tees can also be used as inspection and clean-out components when fitted with a Blanking Plate.

Figure 6 - Typical installation of Tee



It is important that the Tee is protected against any axial expansion acting in a perpendicular plain. Where the rate of expansion is likely to be greater than 6mm, a Support Pate and Expansion component should be used downstream of the branch as per Figure 6. The Support Plate should be adequately braced back to the structure or in such a way as to resist axial movement against the Support Plate. Please note that the bracing bracketry is supply by others and usually fabricated on site. See Table 2 for axial spring rate.

Elbows (15°, 30°, 45° 85°, 87° and 90°)

The Elbows facilitate 15°, 30°, 45°, 85°, 87°and 90° changes of direction. All elbows must be protected from thermal expansion and bending forces. For offset data see component range details in sales brochure.

Sloped or horizontal offsets in the vertical portion of a chimney above the breaching should be avoided except where absolutely necessary. Sloped offsets require more expansion joints and secure bracing above and below elbows. Special care must be exercised in designing the bracing for elbows because these and other fittings, only take limited forces to any bending moments. Additional rigid supports may be needed to hold chimney supports in position. See Figure 7 and application drawings. The length of offset, must be determined by the strength considerations of the product. The maximum dimension between supports is given on the Guide and Lateral Bracing Table on page 24.

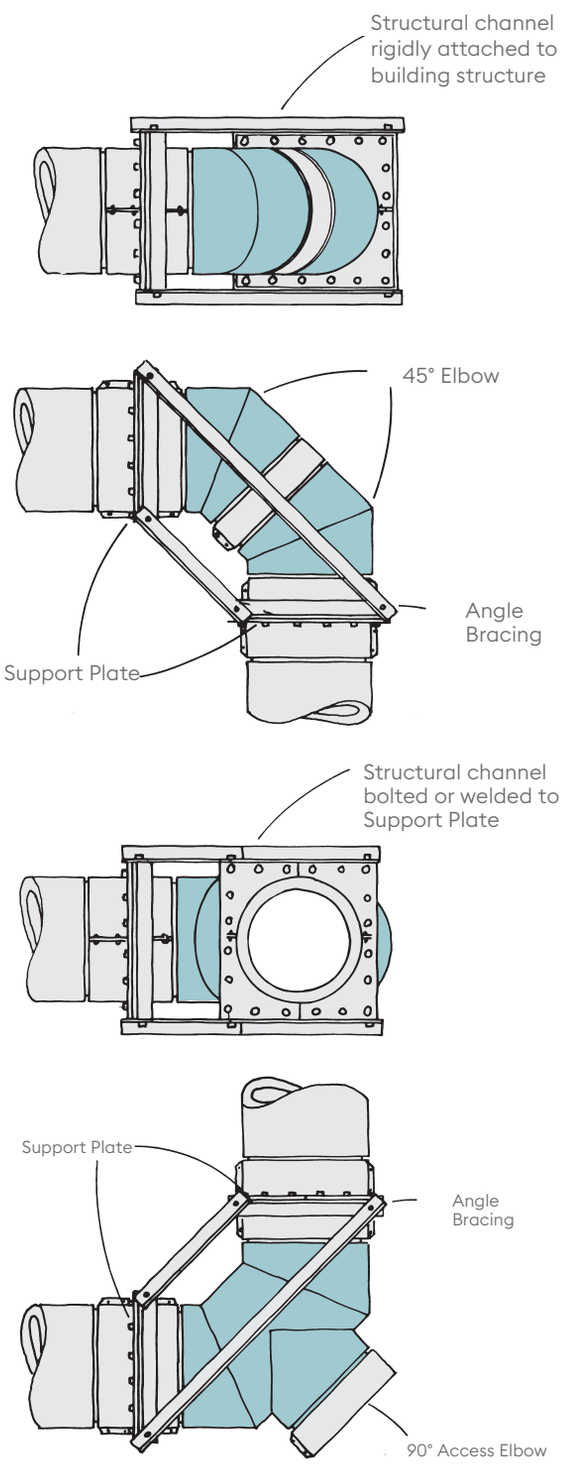
To assure proper guidance of expansion joints, and to prevent unnecessary joint bending, use an adequate number of supports at closer intervals. When it is necessary to provide additional structural stiffening at the elbows or fittings, rigidity can be provided by using an additional Support Plate located at the other end of the elbow or fitting and bolting lateral braces across the corners using angle iron bracing. Refer to Figure 7.

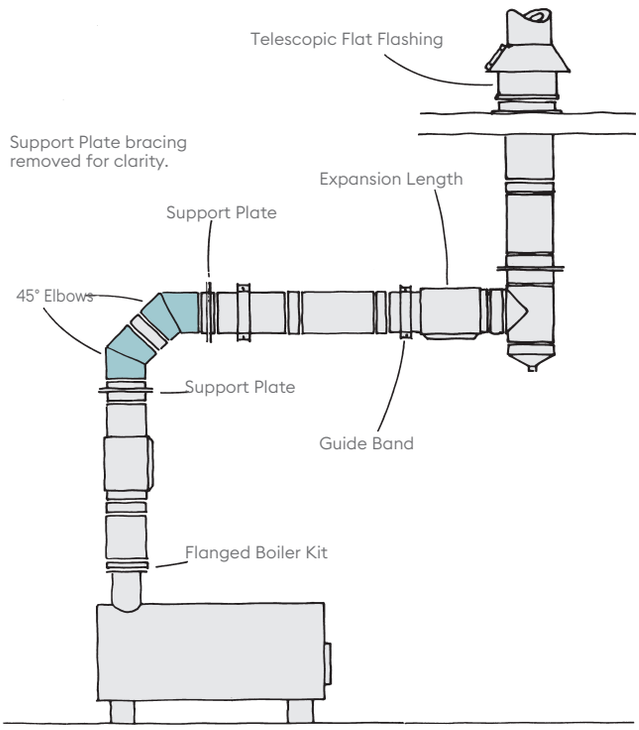
The 90° / 85° Access Elbow allows for inspection, access, sweeping through the system and can also be used as a drainage component. Depending on requirement, either a Blanking Cap or Condensate Collector is fitted to the access branch.

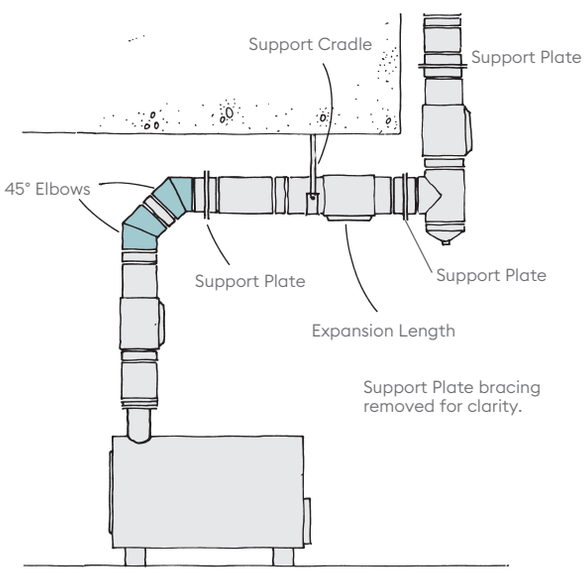
The 85°and 87° Elbow are used on condensing systems to provide a 5° or 3° slope to allow for the back flow of condensation through the system to a suitable drainage component. Where EUROPA PLUS products are used on condensing systems, it is critical that adequate provision within the system is made to allow for the removal of condensate from the system.

Figure 7 - Bracing / Stiffening Methods

Structural alternatives for stiffening Elbows when using either Plate Support or Wall Support. (The bracing shown is one possible method. Actual bracing should be designed with configuration and building/structure in mind).







With frequent support, there is no structural or operating limit to the length of horizontal or sloped portions of a EUROPA PLUS installation, providing the system meets the capacity, pressure drop or available draught requirements of the appliance or equipment. The carrying capacity of EUROPA PLUS supports and their structural attachments must consider the weight of the offset plus whatever vertical vent is carried by the support. The maximum offset between lateral supports is as per page 24. The ends of any sloped or horizontal offset must be anchored to prevent over-stressing elbows, and to ensure proper operation of expansion joints. The vertical section of chimney above the offset must also be supported or anchored, and guided where necessary. The drawings illustrate a variety of ways to brace elbows to ensure the structural integrity of the component. Supports such as those shown in the drawing must be securely anchored to walls, posts or locally fabricated rigid framework.

Supports suspended by threaded rod or from small size angles or straps are not satisfactory to resist bending moments in offsets.

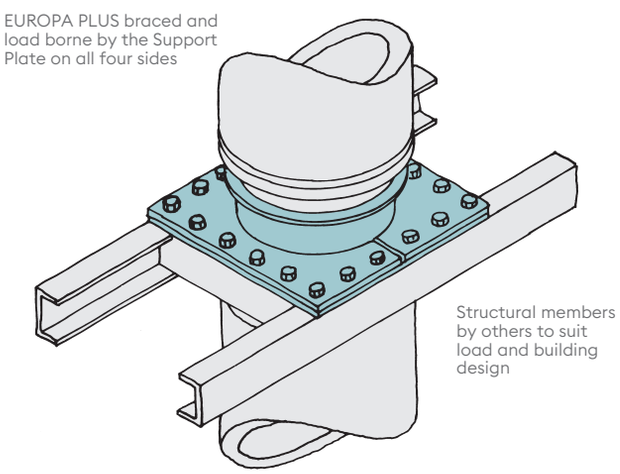
SUPPORT PLATES

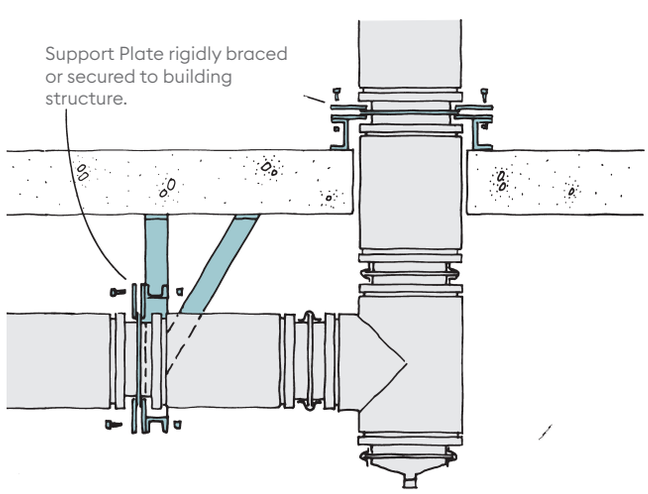
Satisfactory performance of the system requires that the product is rigidly braced and supported to accommodate thermal expansion.

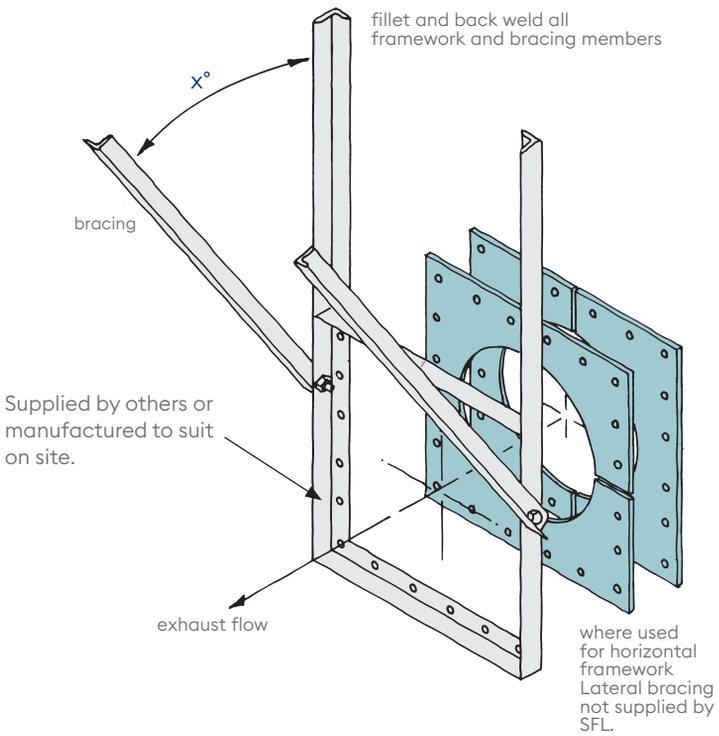
The Support Plate Assembly consists of a 170mm installed length of liner flanged at both ends, and with a centrally located inner welded flange. Pairs of plates are assembled with half sections aligned 90° rotated on each side of central flange, and then bolted to adjacent steel framework on all four sides of the component.

The clamping force applied to the flange thus positioned is anchored against upward, downward and angular displacements.

The assembly provides the maximum strength support for a vertical chimney. It is used to maintain positive joint alignment, and support for expansion joints in both horizontal and vertical applications. Between any two fixed points in a system or wherever an expansion joint must slide to prevent bending of tees or elbows. Locate and secure Support Plates as necessary by means of structural ties to the building. This may require the supports both upstream and downstream of a tee, which would then be protected from excessive expansion stresses.
See the load bearing and lateral bracing data on pages 23-24 to determine frequency of use of this component.
These load bearing characteristics are dependent on the use of M10 bolts being used to adequately secure the Support Plate to the adjacent structure.

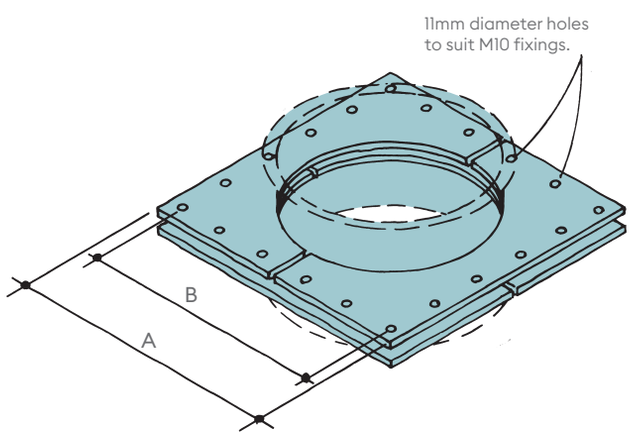


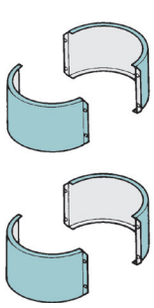




NB: If bracing is used, minimum x° angle is 30°. If bracing is not used, welded frame members must be attached to structure members to provide rigidity of framework.

Size	Framework material (Minimum dimensions)	Bracing material (Minimum dimensions)
150 - 500mm	50 x 25 x 5mm	50 x 50 x 5mm
550 - 1200mm	125 x 45 x 6mm	75 x 75 x 6mm





As the Support Plate interrupts the Cavity of the EUROPA PLUS construction, a Cover Jacket Set should be used to close the Cavity on each side of the Plate joint. See page 16 for further information. Adequate blanket insulation is provide for wrapping around the joint prior to the assembly of the Cover Jacket Set.

Size	25mm Insulation		50mm Insulation		100mm Insulation	
	A	B	A	B	A	B
100mm	252	212	302	262	402	362
150mm	302	262	352	312	452	412
175mm	327	287	377	337	477	437
200mm	352	312	402	362	502	462
250mm	402	362	452	412	552	512
300mm	452	412	502	462	602	562
350mm	502	462	552	512	652	612
400mm	552	512	602	562	702	662
450mm	602	562	652	612	752	712
500mm	652	612	702	662	804	754
550mm	702	662	752	712	854	804
600mm	752	712	804	764	904	854
650mm	804	754	854	804	954	904
700mm	854	804	904	854	1004	954
750mm	904	854	954	904	1054	1004
800mm	954	904	1004	954	1104	1054
850mm	1004	954	1054	1004	1154	1104
900mm	1054	1004	1104	1054	1204	1154
950mm	1104	1054	1154	1104	1254	1204
1000mm	1154	1104	1204	1154	1304	1254
1100mm	1254	1204	1304	1254	1404	1354
1200mm	1354	1304	1404	1354	1504	1454

NOTE: The above dimensions for the Support Plate are valid for the Flanged Support Plate as used with the Wall Support Bracket.

WALL SUPPORT ASSEMBLY

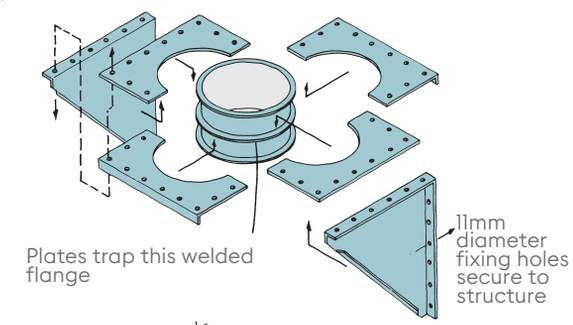
The Wall Support Assembly is designed to take the vertical loading of the product where it rises vertically internally or externally to the building. It can also be use as a bracing / thrust bracket for the expansion components to act against.

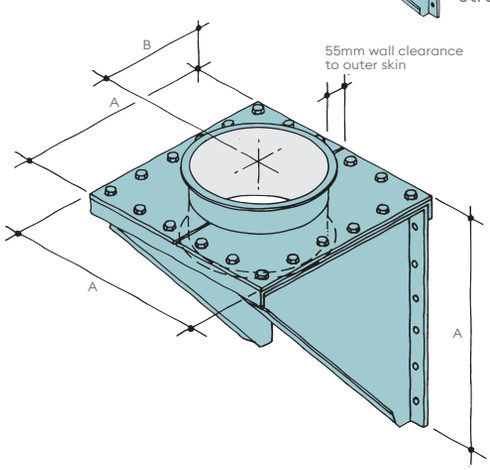
4" - 24" (100mm - 600mm) Version

This package consists of a Support Plate, the plates of which have one set with flanged edges, and a pair of triangular side plates, and a 170mm integral length with a central flange.

The application is very important. The side support must always be orientated so that they are on the load bearing side of the trapped EUROPA PLUS welded liner joint. The load bearing features may be either mechanically (weight) or thermally (expansion) induced, and it is the greater of these which will determine the orientation of the construction. The assembly must be tightly bolted using all the nuts and bolts provided.

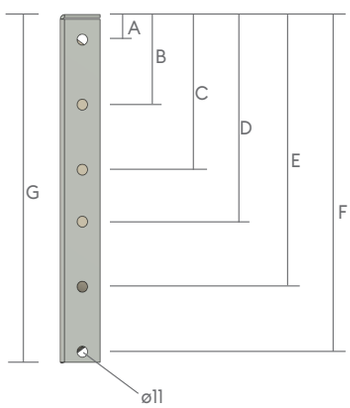
Exploded View



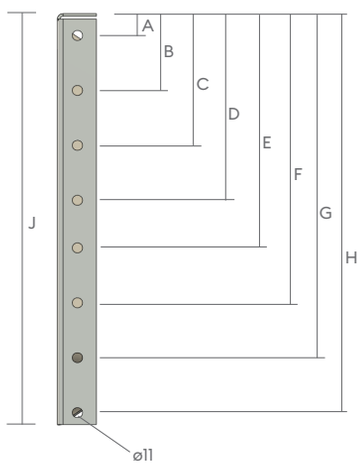


Rear Wall Bracket Fixing Locations

Ø100 - Ø250 Size



Ø300 - Ø600 Size



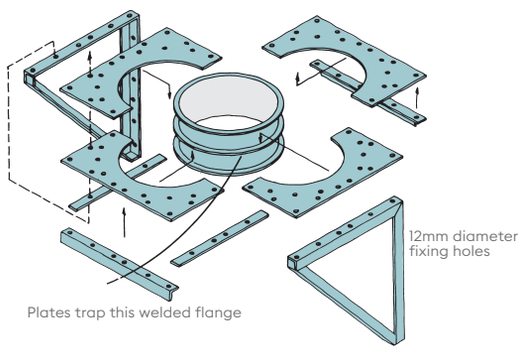
Cavity (mm)			Dimensions (mm)	
25	50	100		
Size (mm)			A	B
100	-	-	252	131
150	100	-	302	156
175	-	-	327	169
-	175	-	377	193
-	-	175	477	
200	150	-	352	181
250	200	100	402	206
300	250	150	452	231
350	300	200	502	256
400	350	250	552	281
450	400	300	602	306
500	450	350	652	331
550	500	400	702	356
600	550	450	750	381
For larger sizes refer to Heavy Duty Wall Support Assembly				

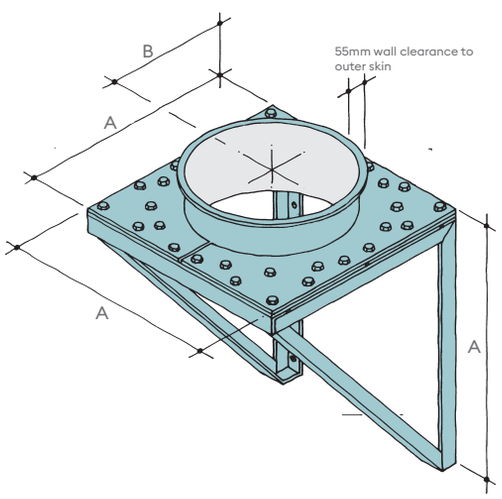
Insulation Thickness (mm)			Fixing Dimensions (mm)						
25	50	100							
Size (ID mm)			A	B	C	D	E	F	G
100	-	-	25	65	105	157	197	237	250
150	100	-	25	77	129	183	235	287	300
175	-	-	25	83	141	196	254	312	325
200	150	-	25	90	155	207	272	337	350
-	175	-	25	96	167	220	291	362	375
250	-	100	25	102	179	233	310	387	400

Insulation Thickness (mm)			Fixing Dimensions (mm)								
25	50	100									
Size (ID mm)			A	B	C	D	E	F	G	H	I
300	250	150	25	85	145	205	257	317	377	437	450
-	-	175	25	89	153	217	270	334	398	462	475
350	300	200	25	93	161	229	283	351	419	487	500
400	350	250	25	101	177	253	309	385	461	537	550
450	400	300	25	110	195	280	332	417	502	587	600
500	450	400	25	118	211	304	358	451	544	637	650
550	500	400	25	126	227	328	384	485	586	687	700
600	550	450	25	135	245	355	407	517	627	737	750

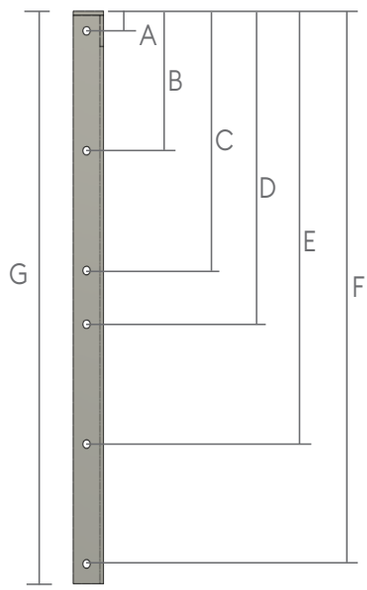
650mm to 1200mm Heavy Duty Version

The heavy-duty wall support bracket is used on larger sizes covering 650mm to 1200mm on standard 25mm Cavity products. It is also used for 50mm Cavity products at 600mm and 100mm Cavity products at 500mm and above.
Supplied complete with a Support Plate, a pair of triangular side plates, two cross members, two spacers and the integral 170mm Single Wall Support Length.





Rear Wall Support Bracket Fixing Locations (Heavy Duty Version)

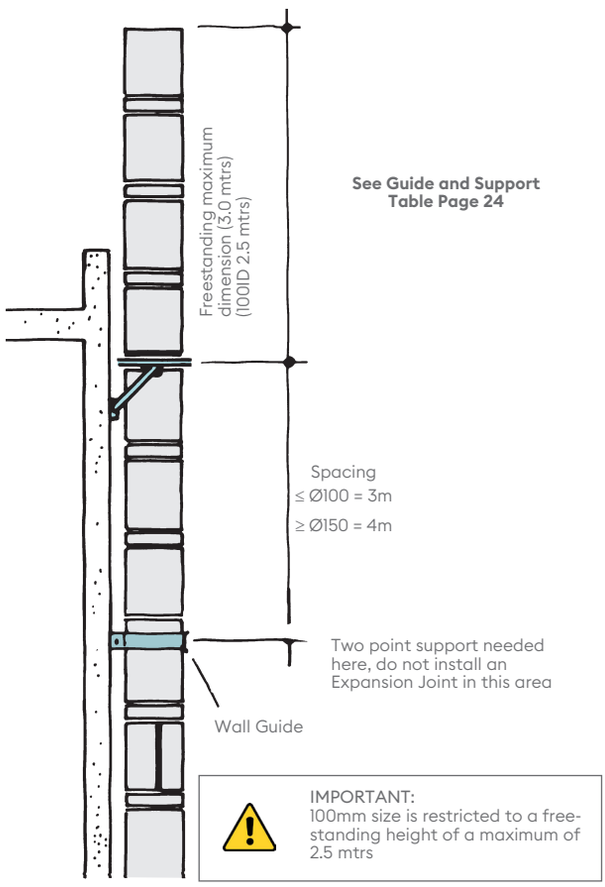


Cavity (mm)			Dimensions (mm)	
25	50	100		
Size (mm)			A	B
-	-	500	804	406
-	-	550	854	431
-	600	-	804	
650	-	-	804	406
700	650	-	854	431
750	700	600	904	456
800	750	650	954	481
850	800	700	1004	506
900	850	750	1054	531
950	900	800	1104	556
1000	950	850	1154	581
-	1000	900	1204	606
1100	-	950	1254	631
1200	-	-	1354	681
-	1100	1000	1304	656
-	1200	1100	1404	706
-	-	1200	1504	756

Insulation Thickness (mm)			Fixing Dimensions (mm)						
25	50	100							
Size (ID mm)			A	B	C	D	E	F	G
650	-	500	28	197	367	443	612	782	804
700	650	550	28	210	392	468	650	832	854
750	700	600	28	222	417	493	687	882	904
800	750	650	28	235	442	518	725	932	954
850	800	700	28	247	467	543	762	982	1004
900	850	750	28	260	492	568	800	1032	1054
950	900	800	28	272	517	593	837	1082	1104
1000	950	850	28	272	517	593	837	1082	1154
-	1000	900	28	285	542	618	875	1132	1204
1100	-	950	28	197	567	643	912	1182	1254
-	1100	1000	28	322	617	693	987	1282	1304
1200	-	-	28	335	642	718	1025	1332	1354
-	1200	1100	28	347	667	743	1062	1382	1404
-	-	1200	28	372.5	717	793	1137.5	2056	1504

All fixing holes are drilled to 12mm diameter. The Heavy Duty Support Brackets are constructed from 6mm 304 stainless angled bar.

Figure 8 Bracing for maximum free standing height above last support.



When attached to a masonry wall or suitable non-combustible structure the Wall Support must be secured with fixings which are adequate for the stresses and load bearing requirements.
The Wall Support forms a fixed point in the support system; thus expansion movement above and below must be allowed for during system design. The Wall Support is suitable for use as a support just below the point where a chimney becomes freestanding. For such use, a Wall Guide should be installed at a distance no greater than 3.0m ≤ Ø100 or 4.0m ≥ Ø150 below the Wall Support to stabilise the exposed end and thus resist side forces due to wind, see Figure 8.

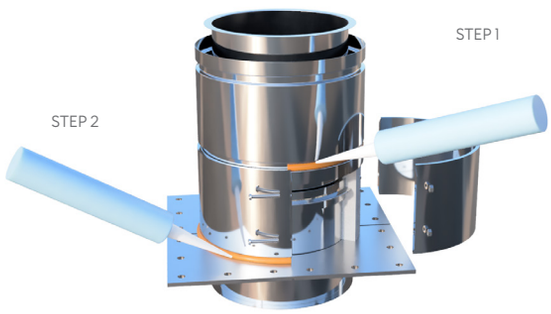
The height of the product between supports must be measured from the expansion length or expansion bellows, which must be used below each support.

Cover Jacket Sets

Cover Jacket Sets are used to close off the annulus on each side of either the Wall Support or Support Plate. The supplied insulation blanket is wrapped around the joint prior to fitting the Cover Jacket. Where the Support Plate or Wall Support Bracket is installed externally, a bead of external sealant should be applied in the groove at the upper edge of the Cover Jacket and also around the circumference of the interface between the Support Plate and lower Cover Jacket edge.

The opposite Cover Jacket image is shown on a Support Plate. The same installation method is also applied to the Wall Support Assembly.

Weathering external Cover Jacket Sets



After the insulation blanket has been wrapped around the open joint cavity, follow the steps below.

STEP 1: Apply external sealant around the internal circumference of the Channel Band groove in the adjacent component and assemble Cover Jacket Set using the fixings supplied.

STEP 2: Apply external sealant around the circumference of the bottom of the Cover Jacket Set where it contacts the Support Plate.

GUIDE BANDS AND LATERAL BRACING

These components are designed to allow the EUROPA PLUS chimney to expand and contract. Any linear movement through the support is permitted by designed clearances.

Nevertheless, the location of lateral Guide Bands or other lateral bracing components is important and they must always be located just upstream (nearer the appliance) of a joint so that the expansion of the outer casing and hence the Channel Band Clamp joint, moves away from the support unimpeded.

N.B. Supports and Guides described here are only suitable for attachment to non-combustible structure.

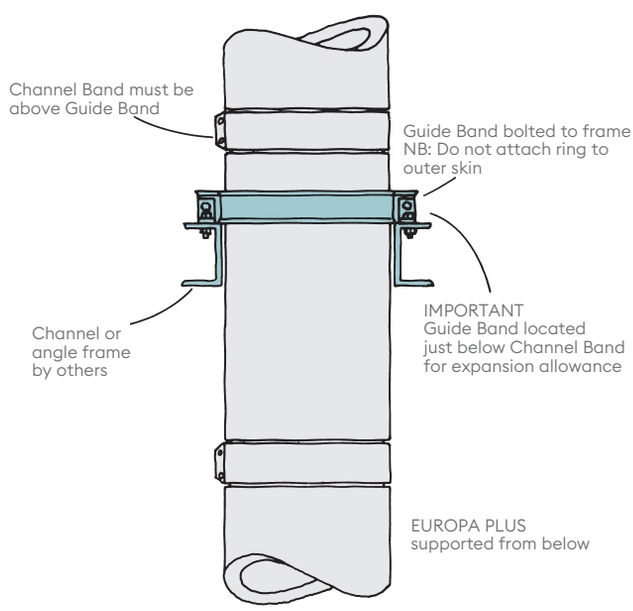
GUIDE BAND AND SUPPORT CRADLE

The Guide Band is used as an expansion / lateral guide for EUROPA PLUS by attachment to suitable structure.

For horizontal applications, either a Guide Band or a Support Cradle may be suspended by rods or other types of rigid brace.

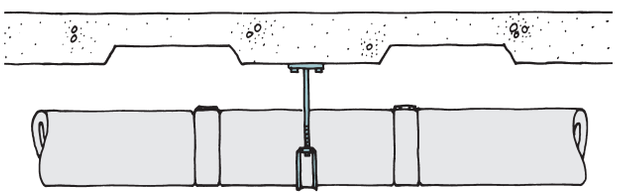
The Guide Band inside diameter is 5mm larger than the outside diameter of the EUROPA PLUS system to allow for sliding movement during thermal expansion.

Guide Band

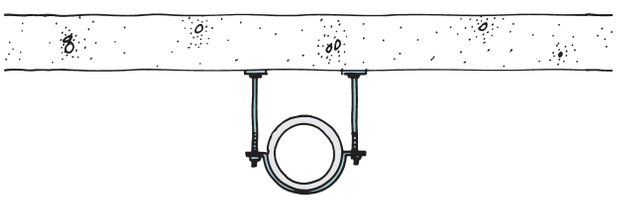


Support Cradle

The Support Cradle is mainly used to laterally support and guide horizontal and inclined runs of Europa Plus. The Support Cradles can be suspended using M10 threaded bar or by the use of rigid braces. Either way the fixings and attaching structure must be suitable to take the weight of the system. As with all other lateral support components, they should be place upstream of the Channel Band to allow clearance for expansion and contraction of the system.



Support Cradle

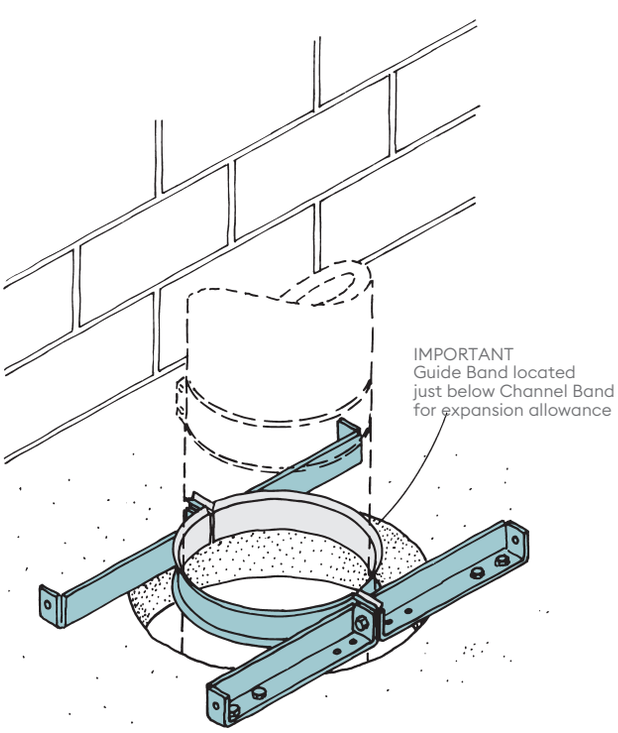


For lateral support and loadings see page 24.

Floor Guide

The Floor Guide comprises a Guide Band, four short angle sections and associated nuts and bolts. See drawing. The component is used as shown where the EUROPA PLUS can be braced on its passage through the floor opening.

The Guide Band inside diameter is (5mm) larger than the outside diameter of the EUROPA PLUS system to allow for sliding movement during thermal expansion.



N.B. Fixings for attachment to structure not provided.

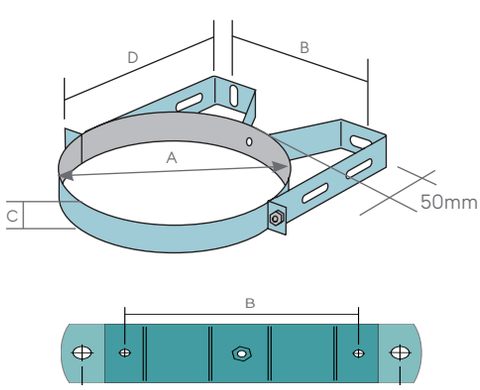
Wall Guides

These components comprise of a Guide Band or an Angle Ring with associated bracketry and nuts and bolts for assembly. They do not include the fixings for attachment to the structure. The latter must be provided by the installer and should be of sufficient and suitable strength to ensure adequate attachment.

Both versions are designed to provide 50mm clearance from the outer casing of EUROPA PLUS to non-combustible structures. The assembly is intended to resist lateral or side loads only, and must not be used to carry the weight of a vertical EUROPA PLUS system.

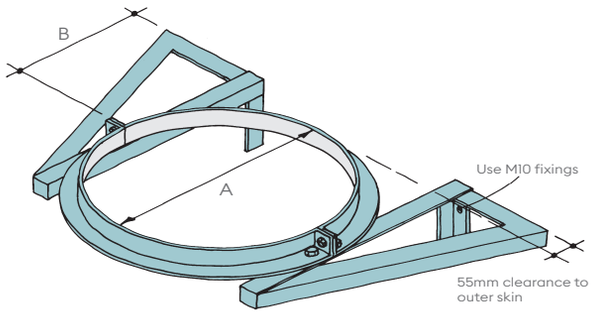
The assemblies are not to be used for attachment to any combustible structure. If EUROPA PLUS must be attached to a combustible wall, spacers should be used which maintain the minimum clearance required and also minimise heat conduction through supporting metal parts. Refer to clearances on pages 2 and 26. The Guide Bands inside diameter is 5mm larger than the outside diameter of the EUROPA PLUS to allow for sliding movement during thermal expansion.

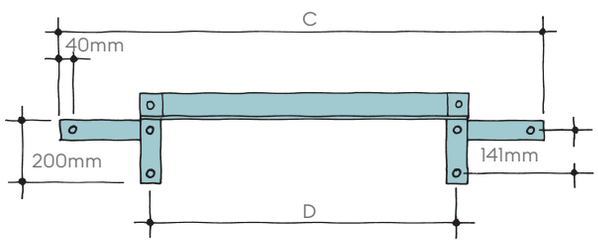
100mm - 600mm Wall Guides



Cavity (mm)			Dimensions (mm)		C	D
25	50	100				
Size (mm)			A	B		
100	-	-	154	117	50	125.5
150	100	-	205	166	50	151
175	-	-	234	195	50	165
200	150	-	255	216	50	175.5
250	200	100	305	266	50	200.5
300	250	150	355	316	50	225.5
350	300	200	405	372	50	250
400	350	250	455	422	75	275
450	400	300	505	473	75	300
500	450	350	555	523	75	325
550	500	400	605	573	75	350
600	550	450	655	624	75	375
For larger sizes refer to Heavy Duty Wall Support Assembly						

650mm to 1200mm Heavy Wall Guides





Cavity (mm)			Dimensions (mm)			
25	50	100				
Size (mm)			A	B	C	D
650	600	500	708	406	1136	764
700	650	550	758	431	1200	814
750	700	600	808	456	1264	864
800	750	650	858	481	1328	914
850	800	700	908	506	1390	964
900	850	750	958	531	1454	1014
950	900	800	1008	556	1518	1064
1000	950	850	1058	581	1582	1114
-	1000	900	1108	606	1644	1165
1100	-	950	1158	631	1708	1214
	1100	1000	1208	656	1772	1265
1200	-	-	1258	681	1834	1314
-	1200	1100	1308	706	1898	1365
-	-	1200	1408	756	2026	1465

FLASHINGS

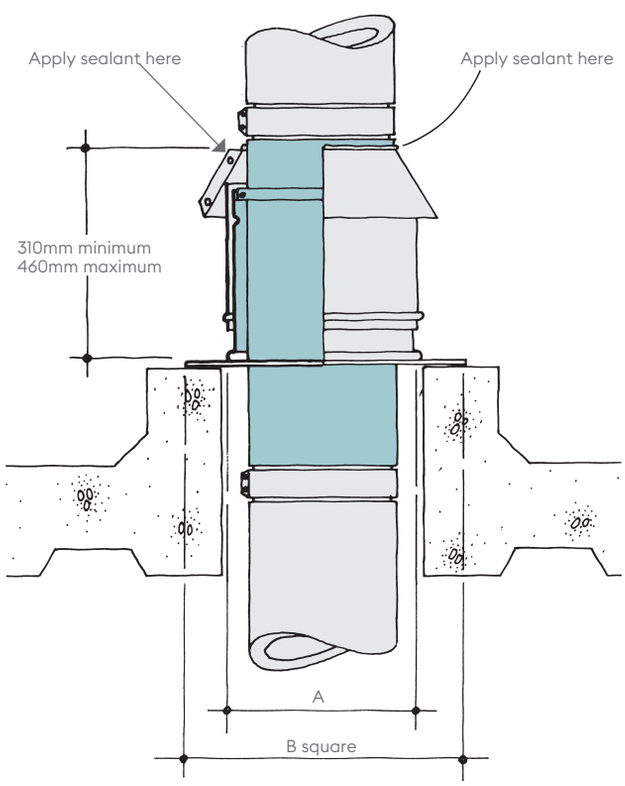
Flat Flashings and Adjustable Flashings (5°-30°/32°-45°) will permit weathering where the chimney passes through the roof structure. The drawing shows a typical application and features the use of the Storm Collar to weatherproof the flashing cone/outer casing interface. Please note that the chimney must be allowed to ride vertically through the cone of the flashing under expansion conditions. The Storm Collar must be secured and sealed with the provided sealant to the outer casing of the chimney. Locate as close to the top of the cone of the flashing as possible so that despite expansion, weatherproofing is maintained.

A vertical upward discharge (such as with the Parallel Vent Terminal) provides the most effective means of dispersing chimney gases. Such terminations, however, will allow entry of rain and will require a drainage component.

A Vent Cap is only partially effective in excluding rain. With all EUROPA PLUS terminations where rain is likely to enter the chimney, the following components can be used:

1. A Drain Section located at least 5 diameters below the chimney outlet, but above any Tee or Elbow.
2. A Drain Tee Cap fitted to a suitable drain (use a trap or valve in the drain if the system is under positive pressure).

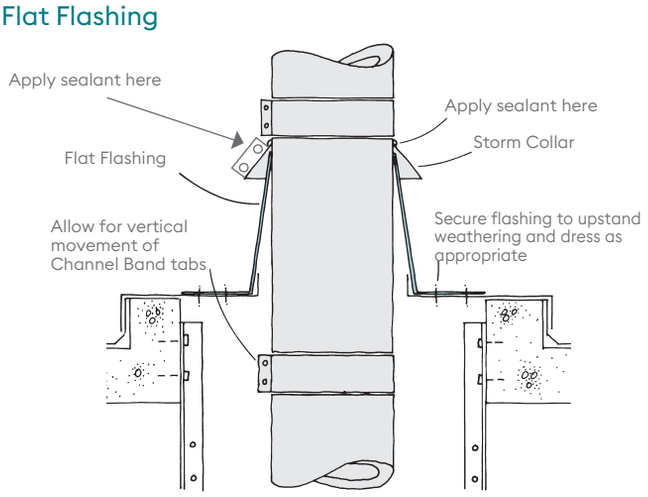
Telescopic Flat Flashing



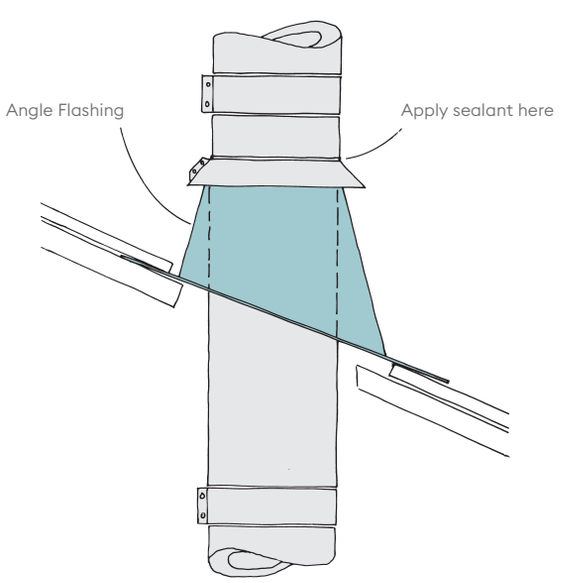
Telescopic Flashing Con't

Size	Dimensions (mm)	
	A	B
100mm	216	610
150mm	266	610
175mm	291	610
200mm	316	610
250mm	366	610
300mm	416	723
350mm	466	723
400mm	516	965
450mm	566	965
500mm	616	965
550mm	666	965
600mm	716	965

Flat Flashing



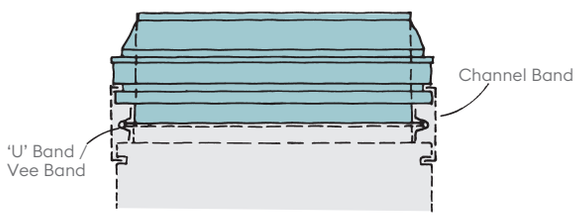
Adjustable Flashing



TERMINATIONS

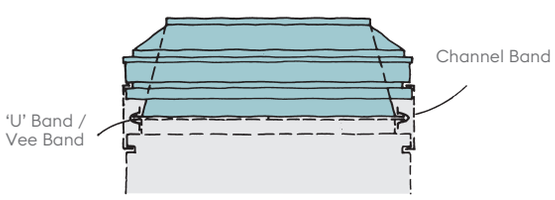
Parallel vent Terminal

This component must be secured to the top end of the chimney/ vent in exactly the same way as standard components. Being open ended, depending upon application a Drain Section or Drain Tee Cap may be required in the vent run.



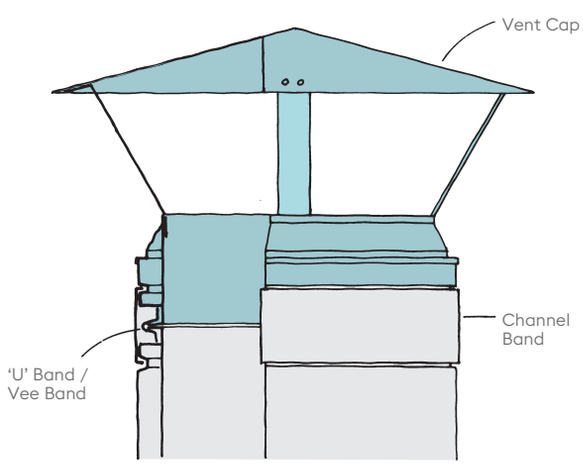
Tapered Vent Terminal

This component must be secured to the top end of the chimney/ vent in exactly the same way as standard components. Being open ended, depending upon application a Drain Section or Drain Tee Cap may be required in the vent run.



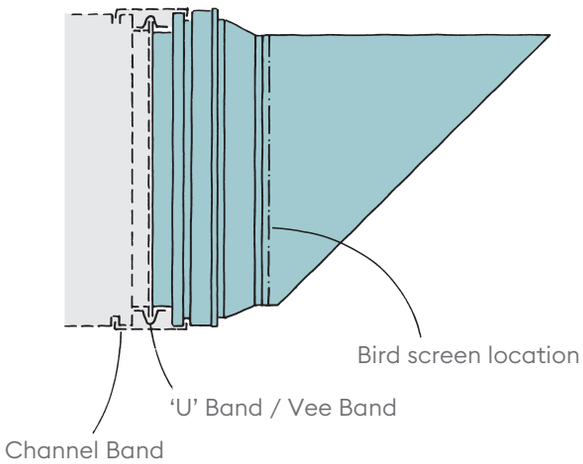
Vent Cap

The Vent Cap combines partial protection against rain entry with low exit flow resistance. It must be located and secured to the top of the final element with a 'U' Band / Vee Band and a Channel Band.



Horizontal Exhaust Terminal

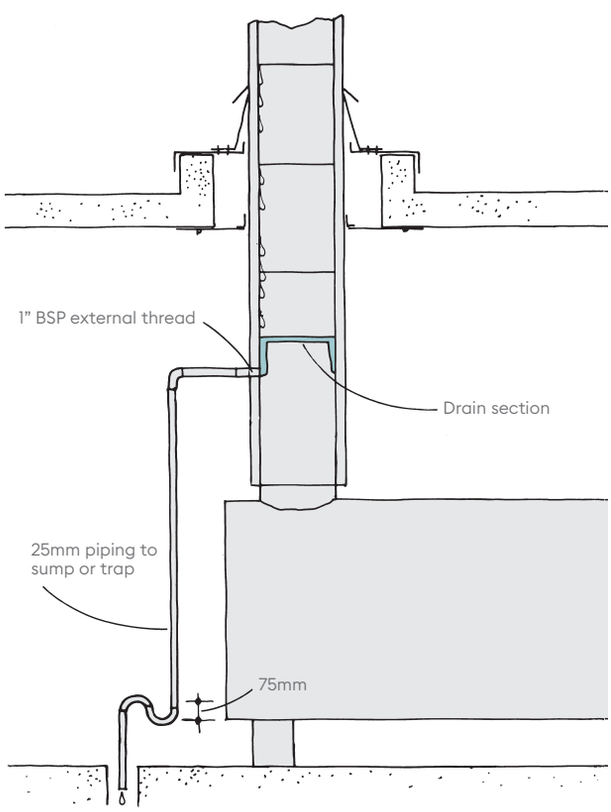
Secure to the horizontal discharge with a 'U' Band / Vee Band and Channel Band, and with the 45° slope facing down.



DRAINAGE COMPONENTS

Vertical Drain Section

Where rain enters the chimney outlet which is positioned directly over the appliance, this component can be used. The Drain Section is designed to trap any rain water or condensation running down the inside of the vent and it is collected in a limited capacity gutter which is drained to an external wall or to a suitable drain / gully.



The component should be installed internally in a vertical chimney, thus lessening the chance of freezing. The drain line should be run to a water seal or trap, to suit pressure in the system.

The component is supplied in two parts, firstly the actual liner component comprising of the internal drain section and threaded boss and secondly the outer Cover Jacket.

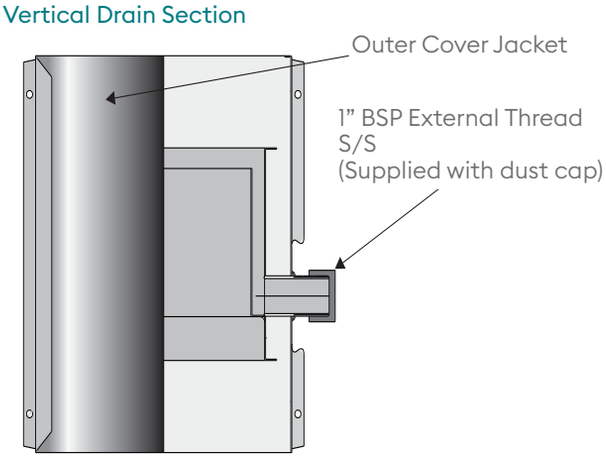
Firstly install the single wall drain section in the normal way between two length, ensuring that the drain boss is located on the required side.

Using the provided insulating blanket, wrap this around the liner ensuring continuity and integrity of insulation between the two sections.

The Cover Jacket is designed to locate over the boss with the flanged ends locating into the Channel Band grooves on the outer case of the mating components.

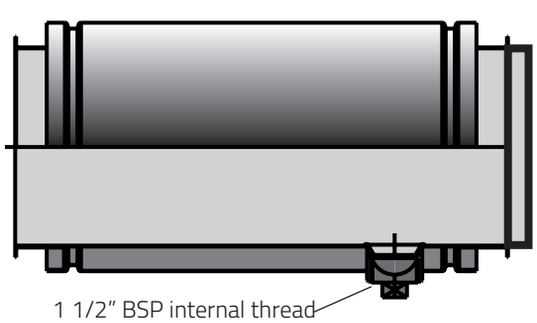
Using the nuts and bolts provide, tighten the Cover Jacket to complete the joint.

Vertical Drain Section



Duct Drain Section

Designed for use mainly in systems that produce high levels of condensation or on process application where the venting system may need to be washed through as part of an ongoing maintenance programme, such as grease ducts. The Duct Drain should ideally be installed within a horizontal run with a minimum of a 3° fall, to allow any liquid to back flow to the drainage point. The Duct Drain Section also includes an internal dam to aid drainage The Duct Drain Section is fitted with a 1½" BSP internally threaded drain connection.



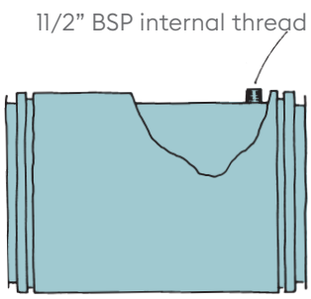
CHECK WITH DAN ON HOW EUROPA PLUS PLUS 1000-1200 TEE CAPS AND DRAINS ARE MANUFACTURED.

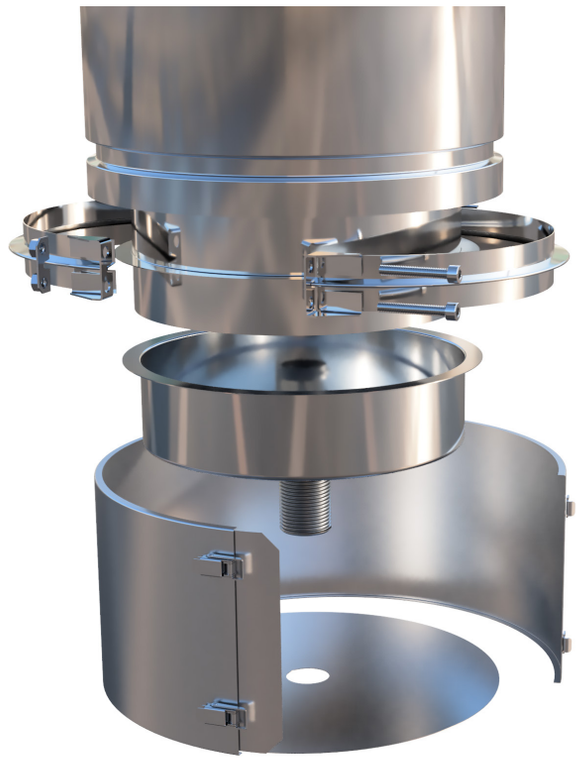
CHECKED TO HERE

Nozzle Section

The Nozzle Section is the same basic construction as the Duct Drain with the sector dam removed.

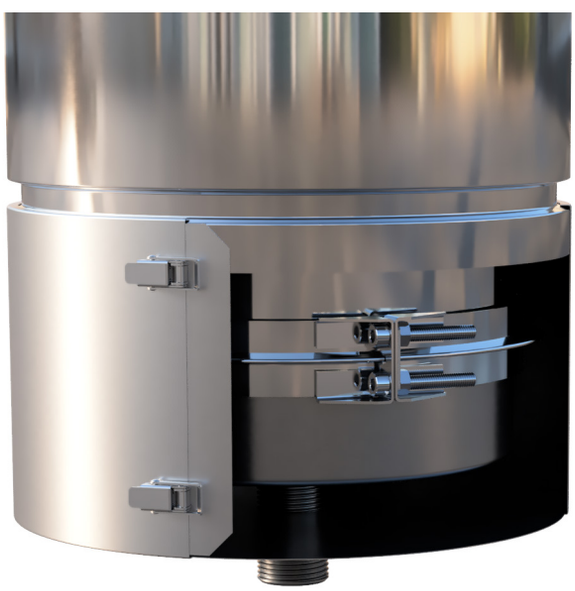
The component is designed to be used so that the tapping is on the side or top of the section and has an internal 1 ½" BSP thread. Under normal circumstances the tapping is plugged, but in such a way that access permits the injection of fire extinguishing chemicals in the event of a fire occurring through the ignition of accumulated grease within the system. The same access can also be used to facilitate hot water flushing so that the entire grease duct system can be scrubbed down. Alternatively, the same tapping can be used as a test point or permanent sampling point.





Drain Tee Caps and Blanking Plates

The Drain Tee Cap is primarily used at the base of a vertical stack to drain condensation and potential rain ingress from the chimney. This is usually facilitated by the use of a 90° or 135° Inlet Tee at the base of the chimney, where the Drain Tee Cap is located on the base of the tee as per drawing below.



NOTE: Insulating blanket has been removed from the above image for clarity. Ensure the insulating blanket is both wrapped around and under the assembly prior to fitting the Cover Band.

Drain Tee Cap - Boss Sizes

Vent Size	Drain Boss Size
100mm - 350mm	1" BSP
400mm - 1200mm	2" BSP

1. Assemble the Drain Tee Cap to the spigot end of the component and complete the joint in the normal way.
2. Wrap the supplied insulation blanket around the cap to maintain insulation integrity of the product.
3. Position Cover Band over threaded boss and locate in grove and fix in position using the supplied fixings.
4. Apply a suitable sealant around the interface between the Cover Jacket and the threaded boss if the component is fitted externally as well as around the top of the Cover Jacket.

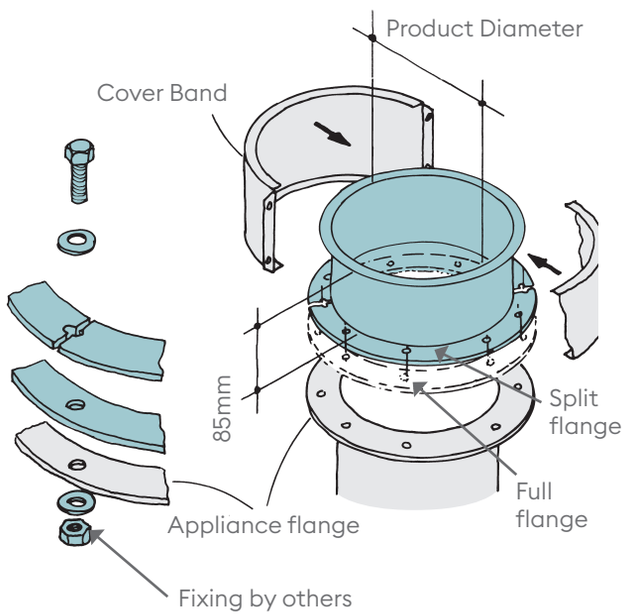
Blanking Plate

The Blanking Plate is used to close off the unused opening of Tees and branched Elbows where used for cleaning and inspection. The installation procedure is the same as that for the Drain Tee Cap with the exception that there is no drain boss.

ADAPTORS

Custom Flanged Adaptor (All Products)

The Custom Flanged Adaptor is manufactured to the customer's requirements as detailed at time of order. This component consists of an 85mm length of liner, Cover Jacket, one purpose made full flange and one split flange. A continuous bead of appropriate sealant is applied around the appliance flange. The full purpose made flange is then located and aligned over the appliance flange. A continuous bead of appropriate sealant is then applied around the liner flange face and the purpose made flange and aligned. The two sides of the split flange are then located over the liner flange and aligned with the holes in the mating flange. Nuts and Bolts are then inserted and loosely tightened. Once all nuts and bolts are located, tighten all nuts in an alternating pattern until the pipe flange is seated firmly between the Flanged adaptor and appliance.

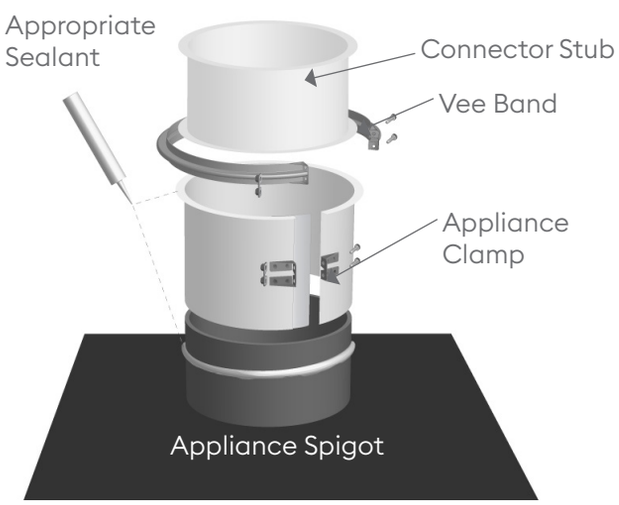


Standard Appliance Adaptor

The Standard Appliance Adaptor has the same nominal OD as the product liner and an installed length of 150mm. Bespoke sizes can be made to order as required to fit the appliance outlet.
The Appliance Adaptor is installed to the mating component using the standard installation method, It is recommended that the tail of the spigot engages by at least 65mm into the appliance spigot. Once located, apply a bead of the appropriate sealant around the interface between the adaptor tail and the appliance spigot. This component is non-loadbearing and no weight should be transmitted to the appliance from the venting system above. Always ensure that adequate support and bracing above this component.

Adjustable Boiler Adaptor

The Adjustable Boiler Adaptor is designed to seal the flanged liner to an appliance equipped with an unflanged outlet. The Adaptor Clamp allows a degree of adjustment to fit over the outside diameter of the appliance outlet. This component does not provide any load bearing support and must be isolated from loads and expansion forces using support component from the range.
Apply a continuous bead of appropriate sealant around the outside of the appliance outlet allowing for a minimum engagement 64mm. Loosen the bolts on the Adaptor Clamp and slide over the appliance outlet taking into account the minimum engagement and ensuring that it is positioned over the sealant. Tighten the bolts to ensure a good compressive fit between the Adaptor and the outside of the appliance outlet. Position and align the Connector Stub to the Adaptor Clamp, apply the appropriate sealant to the Vee Band and tightly secure around the mating flanges, tapping and tightening three times as necessary.



Once the Vee Band is applied, the upper Connector Stub flange is connected to the EUROPA PLUS product in the conventional way using either a 'U' Band or VEE Band depending on diameter.

Bespoke Component

At SFL we understand that there are occasions when our standard range of components is just not enough to service every application or installation route.
As a manufacturer, SFL are ideally placed to manufacture bespoke components to the customers specification. Whether such components are bespoke Adaptors, Tees, Elbows, Multi-Inlet Manifolds, SFL can manufacture to suit your requirements. SFL have a dedicated technical sales team who can appraise your requirements and offer bespoke solutions within the context of the product range. For further information, please provide a dimensional drawing detailing your requirements to our Technical Sales Team, who will review and offer bespoke solutions to your problem. SFL have a number of standard templates available for a range of bespoke components that can be sent to the customer to aid design.

CAD Blocks in dwg format are also available upon request for EUROPA PLUS.

LOAD BEARING CAPACITY OF SUPPORT COMPONENTS

When calculating loading, the mechanical and thermally induced loads must be summed. Elbows do not loadbear.

Size	EUROPA PLUS (Approx. Weight Per Metre Kg)		
	25mm Cavity	50mm Cavity	100mm Cavity
100mm	6	10	16
150mm	8	12	19
175mm	9	13	20
200mm	10	14	21
250mm	12	16	25
300mm	14	19	28
350mm	16	22	31
400mm	19	24	33
450mm	21	27	36
500mm	23	29	39
550mm	25	31	42
600mm	28	34	44
650mm	41	44	64
700mm	44	48	68
750mm	47	50	73
800mm	50	53	77
850mm	53	57	82
900mm	56	60	86
950mm	64	68	95
1000mm	68	71	100
1100mm	74	78	109
1200mm	81	85	118

Above weights include 'U' / Vee Band and Channel Band

Size	Support Plates	Wall Supports	Tees (Base Supported)
	Loading (Kg)	Loading (Kg)	Loading (Kg)
100mm	425	400	100
150mm	450	450	100
175mm	525	500	100
200mm	600	550	125
250mm	750	625	150
300mm	900	700	175
350mm	1050	800	200
400mm	1250	875	225
450mm	1350	950	250
500mm	1500	1050	275
550mm	1650	1125	312
600mm	1800	1200	350
650mm	1887	1287	375
700mm	1975	1375	400
750mm	2062	1462	425
800mm	2150	1550	450
850mm	2250	1625	475
900mm	2350	1700	500
950mm	2425	1787	525
1000mm	2500	1875	550
1100mm	2500	1875	600
1200mm	2500	1875	650

All four sides MUST be supported

These loads can only be attained by using adequate fixings to a suitable structure

Good practice dictates that a tee should be suspended from a support component, so that the tee is not subject to loading from the above components. The above values relate to where a tee sits on the support component and loaded by components above.

GUIDE AND LATERAL BRACING

The EUROPA PLUS Plus product must be adequately supported or given lateral bracing in accordance with the following table, bearing in mind the above loading characteristics and product weights.

EUROPA PLUS (DN100 - DN600)

Size	Application		Freestanding height above last Support or Guide
	Vertical	Horizontal	
100mm*	4.0 Mtrs	2.5 Mtrs	2.5 Mtrs
150mm - 600mm*	4.0 Mtrs	3.0 Mtrs	3.0 Mtrs

** Where the Cavity is insulated with either 50mm or 100mm insulation, the maximum horizontal distance between supports is reduced to 2.5 metres.*

EUROPA PLUS (DN650 - DN1200)

Size	Application		Freestanding height above last Support or Guide
	Vertical	Horizontal	
650mm - 1200m	4.0 Mtrs	4.0 Mtrs	3.0 Mtrs

FIRE RESISTANCE

All EUROPA PLUS products are suitable for applications that required fire resistance as below:

EUROPA PLUS DN100 - DN600

Tested by Appos Laboratories to EN 1366-13 - Fire resistance tests for service installations - Chimneys. Report 22/32302474-2. Classification as detailed under EN 13501-2:

$$EI\ 180\ (i \rightarrow o)\ h_o\ v_e$$

Also assessed for a period of 4 hours fire resistance against the integrity criteria of BS 476 part 20.

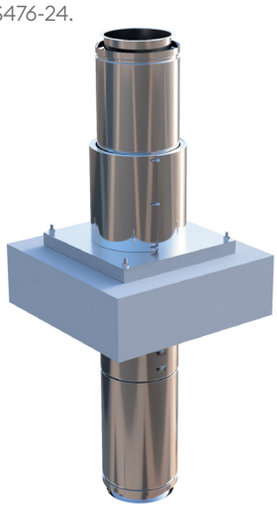
EUROPA PLUS (DN650 - DN1200)

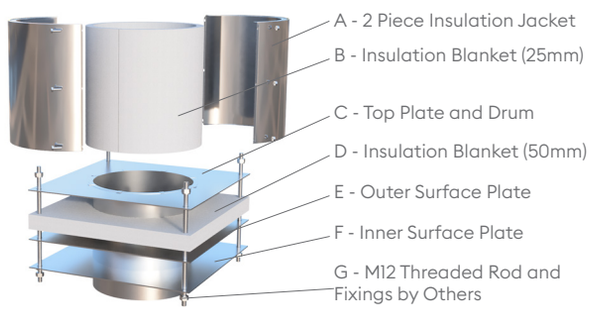
Has been assessed against the stability and integrity criteria of BS 476 Part 24 for a period of 4 hours for duct type B covering both an internal fire within the system and an engulfment external to the system as well as the firestop arrangement through the penetration. Test report No: TE6696, TE7109 & CC10845.

Firestop Components

FastTrack Firestop (DN650 - DN1200) BS 476-24

The FastTrack Firestop is used where the vent passes through a non-combustible masonry floor or wall, ensuring a fire resistance of four hours through the compartment in accordance with the integrity criteria of BS476-24.





The FastTrack Firestop is supplied as a kit based on the outside diameter of the product. All components are manufactured from galvanised steel plate, with the exception of the two piece Insulation Jacket, which is manufactured from 304 stainless steel. The FastTrack Firestop is assembled on site using the method below:

1. Start by ensuring that the M12 threaded suspension rods are of adequate length for the penetration of the insulation area. The length equates to approximately 98mm + Wall / Floor Thickness.

2. The Outer Surface Plate (E) can be used to mark the hole positions on the installation area. First mark the four 12mm hole position, ensuring the plate is held level and accurately positioned. Remove the plate and drill the holes all the way through the attaching structure using a 12.5mm masonry drill bit. With the holes drilled, bolt the plate to the structure and mark the large central hole position (plus 2-3mm radially to allow for clearance). Remove the plate and proceed to bore the central hole using a suitable tool.

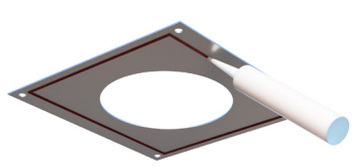


Figure 9

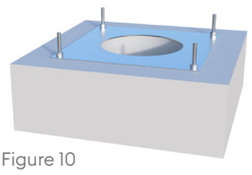


Figure 10

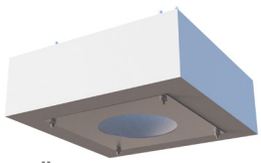


Figure 11

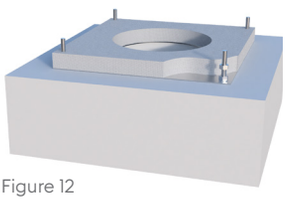


Figure 12

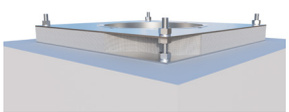


Figure 13

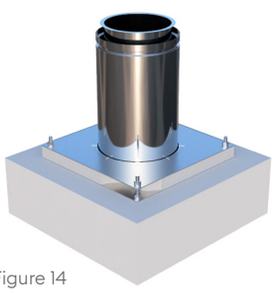


Figure 14

NOTE: Insulation has been removed on corner for clarity of instruction. Ensure the whole surface of the Outer Surface Plate is fully insulated.

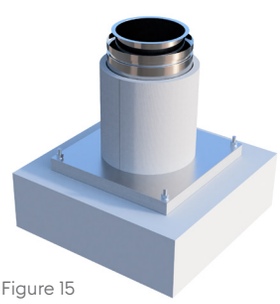


Figure 15

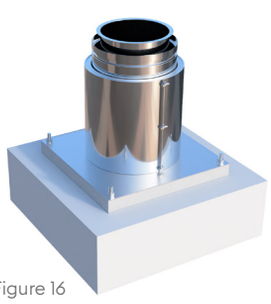


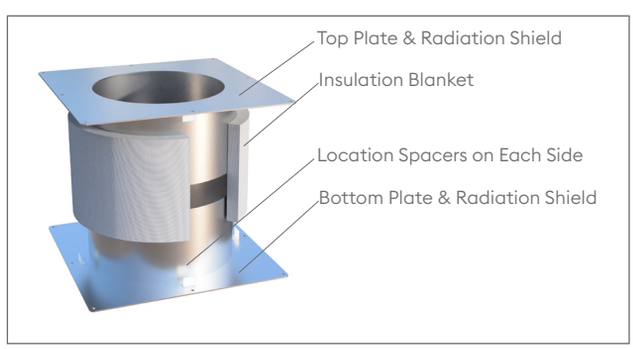
Figure 16

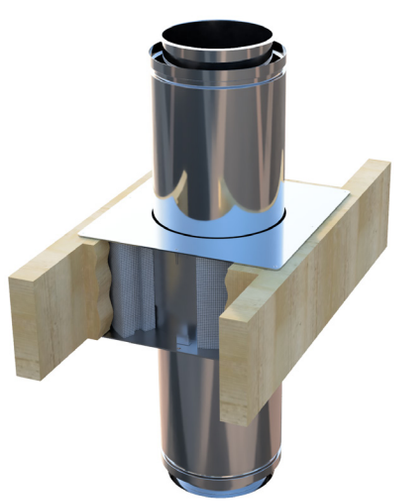
3. Apply a bead of Intumescent sealant to the underside of the Outer Surface Plate (E) Figure 9.
4. Position the Outer Surface Plate (E) over the pre-drilled holes. Locate an M12 nut and washer approximately 70mm down on each threaded bar and insert through the 12.5mm pre-drilled as Figure 10.
5. Position the Inner Surface Plate (F) over the protruding threaded rods on the underside of the structure and secure using M12 nuts and washers. Tighten the nuts to secure both the Outer Surface Pate (E) and the Inner Surface Plate (F) as Figure 11.
6. Position a nut and washer, so that the top of the nut is approximately 38mm from the Outer Surface Plate (E) on each of the four threaded rods. Using the 50mm thick insulation blanket, cover the Outer Surface Plate and carefully cut the centre hole. Ensure that there is total continuity of insulation over the area and the insulation is up tight to the central hole as Figure 12.
7. Carefully lower the Top Plate and Drum (C) down through the central hole and over the threaded rods. The Plate should sit directly on the nut and washer as per point 6. It maybe necessary to adjust the nuts up and down until the insulation blanket is compressed from the original 50mm thickness to the required 38mm thickness. Once the nuts are set, fix the Top Plate and Drum in position using four washers and nuts. Check insulation is sound and trim any excess around the edges. Once complete, the insulation thickness should be compressed from 50mm to 39mm. See Figure 13.
8. Continue with the installation of the venting system, ensuring that there are no joint within the structure or 350mm above the surface of the Top Plate and Drum (C) as Figure 14. Once the vent section has been passed through the FastTrack assembly, check that the insulation has not been compromised within and the insulation is tight up against the internal drum and covering the full surface area of the plates.
9. Using the supplied 100mm x 25mm blanket insulation strips, wrap the outer case of the vent from the base of the Top Plate and Drum (C) to a height of 300mm as Figure 15.
10. Locate one part of the Insulation Jacket (A) around one side of the insulated pipe. The inner facing flange is design to locate under the cleats on the Top Plate and Drum (C). Using the same method, position the other half of the Insulating Jacket around the other side so that the holes in the two halves of the Insulation Jacket align. Using the supplied M6 fixings, secure the two halves of the Insulating Jacket in place. The Insulation Jacket should compress the insulating blanket around the vent to approximately 19mm, See Figure 16. This completes the insulation of the Fasttrack Firestop Assembly.

Standard Firestop 30 Minute Fire Resistance

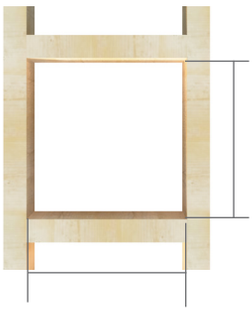
COMBUSTIBLE PENETRATIONS - All Sizes

The Standard Firestop is used where the vent has to pass through a combustible compartment, such as a timber floor, offering a fire resistance of 30 minutes. The penetration assembly consists of a top and bottom galvanised steel plate each fitted with an integrated radiation shield. When installed the two halves of the Radiation Shield slide inside one another to facilitate a floor thickness from 150mm - 250mm. Location Spacers are positioned on the surface of each side of the plate to allow location of adjacent floor joist. The assembly is designed to maintain a clearance of 50mm to any adjacent floor joist. The outer area around the outside of the radiation shield is packed with 128Kg/m^3 insulating blanket, which is supplied separately.





Note: Part of insulation removed for clarity of instruction in images.



Framing Dimensions

Due to different joist spans used in construction it maybe required to construct a timber frame through which the Floor Penetration Assembly will pass. This can be constructed with the use of noggins. The internal dimensions of the frame for the Penetration Assembly should be constructed to the required clearance given in Table 4 from the outer case of the product.

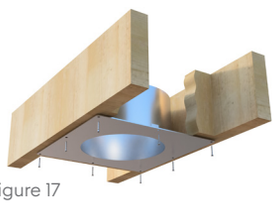


Figure 17

1. Once the frame is constructed, offer the Bottom Plate & Radiation Shield up through the frame from the underside. The Location Spacers should locate against the inside of the frame timbers. Once in position, screw the plate to the timbers on the underside of the frame. See Figure 17.

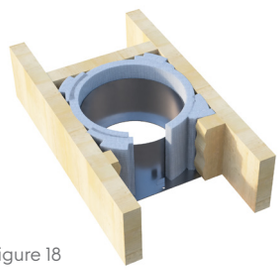


Figure 18

2. With the Bottom Plate & Radiation Shield fixed in position, fill the space around the Radiation Shield with insulating blanket as provided, making sure that all the corners of the frame are fully insulated. See Figure 18.

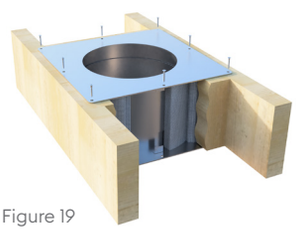


Figure 19

3. With the insulation fully filling the void around the outside of the lower Radiation Shield, slide the Top Plate and Radiation Shield over the Lower Plate Radiation Shield. Bring the plate flush and square with the timbers. The location spacers should position the plate correctly within the top of the frame. Finish the assembly by screwing the top plate into the timbers as Figure 19. The vent can now be installed through the penetration assembly. Due to the required clearance the vent may require a degree of manipulation when passing through the floor penetration assembly. See Figure 20.

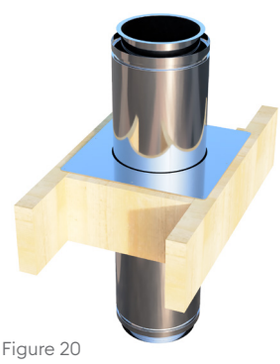


Figure 20

Note: Insulation and timber has been removed in above image for clarity of instruction. Ensure that the aperture is fully insulated before continuing.

EN1366-13 EI 180 Firestop (DN100 - DN600)

For information regarding the installation of the EN1366-13 EI 180 Firestop system, please refer to the dedicated installation instructions available from SFL. It is important that the design and installation of the system are undertaken in accordance with the EN 13501-2 Classification Report for EUROPA PLUS.

Distance to Combustible Materials

All EUROPA PLUS insulated products are designed to offer a 50mm clearance to combustible when installed within an open environment up to an internal diameter of 200mm. For larger diameters the distance to combustible is increased as per the table below. The declared distance to combustible is based on the standard 25mm insulated Cavity as tested to EN 1856-1 with a continuous flue gas temperature of 600°C, and intermittent temperature of 700°C and a sootfire simulation at 1000°C for 30 minutes.

Where the product is installed within a combustible enclosure, the distance should be increased to 100mm from the outer surface of the product. For larger diameters the distance to combustible is increased as per the table below. It is important that both the enclosure and any associated pass-through, such as floors and ceilings are ventilated using SFL's Ventilated Firestop Components. For more information, please discuss with SFL's Technical Sales team.

Table 4: Required Clearance To Combustible Material

Insulated Cavity (25, 50 & 100mm)

Internal Diameter	Distance to combustible from outside diameter of vent	
	Open Environment	Combustible Ventilated Shaft
100mm - 200mm	50mm	100mm
350mm - 450mm	75mm	150mm
500mm - 600mm	100mm	200mm
650mm and Above	200mm	400mm

Single Wall (Max Flue Gas Temperature 200°C)

Internal Diameter	Distance to combustible from outside diameter of vent
	Open Environment
100mm - 200mm	200mm
350mm - 450mm	300mm
500mm - 600mm	400mm
650mm and Above	800mm

Notes:

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