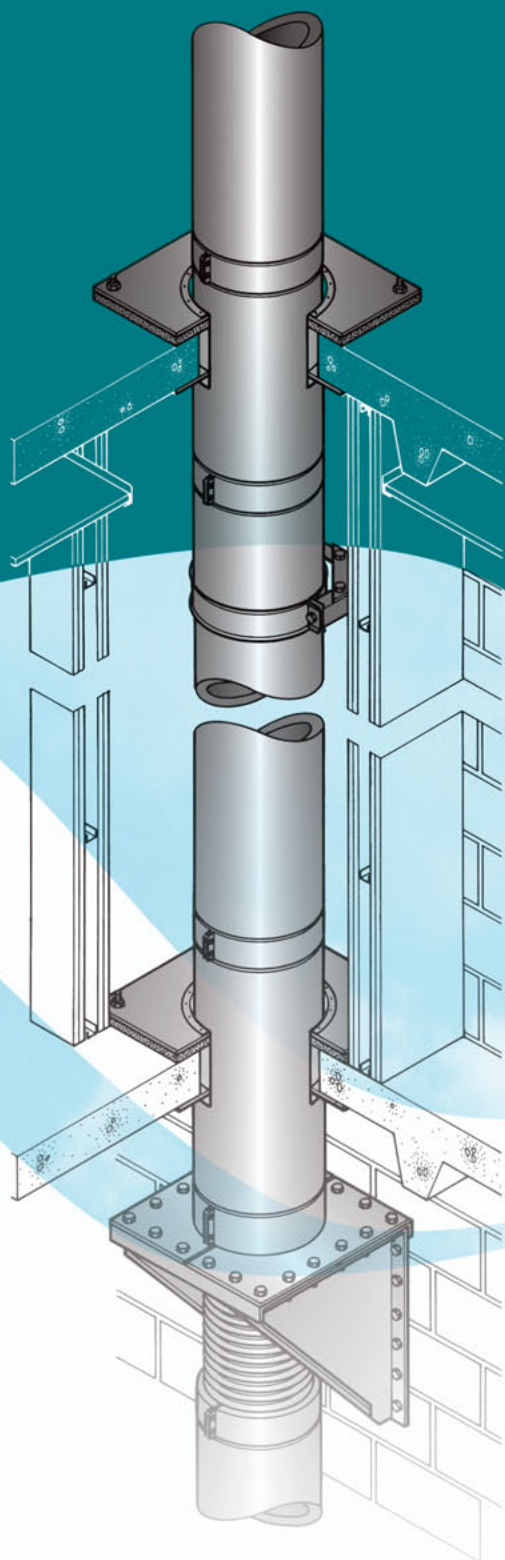


# EUROPA

High Pressure Twin-Wall  
Stainless Steel  
Multi-Purpose  
Exhaust Duct and  
Chimney System





The “Europa” system is a multi-application twin walled product designed to convey gases, particles, fumes, smoke and products of combustion from a wide range of engineering combustion and process equipment.

It is a lightweight engineered system designed to resist pressure up to 1500mm (60”) w.g.

See pressure tightness data under Tables section on page 33.

Europa is suitable for a continuous flue gas operating temperature of 760°C and for 1000°C intermittent use, and can be used internally and externally. The system consists of straight lengths and a variety of fittings, which in combination with its pressure resistance features, enables it to be used in a multiplicity of configurations.

The Europa system is designed to be used as an alternative to conventional heavy gauge welded steel and lightweight ducting. By comparison to these other materials, it is more easily, quickly and economically installed.

The system utilises a specially designed joint between components which provides a pressure resistant and structural inner liner, a 25mm air gap insulating annulus as standard and an outer casing.

**Europa is available in a variety of formats dependant on both the type of equipment it is to serve, and the temperature of the gases it carries. In addition to the standard 25mm air-gap product, a mineral fibre insulated annulus can be provided 25mm, 50mm, 75mm and 100mm thick. Note that some of the dimensions of the wider annulus options will be different from the standard dimensions quoted in this catalogue. Dimensional differences as well as details of the performance criteria for these variations is available on request.**

### ASSEMBLY

The liner has flanges at each end which when butted are secured and sealed with a Vee Band and sealant. Channel Bands are used to close the annulus at the Vee Band joint.

### EXPANSION ALLOWANCE

As the method of assembly for Europa provides a continuous inner wall, expansion of the vent in its entirety must be allowed for. See the sections on Expansion on pages 5, 16, 17 and 22.

### FIRE RATING

The system has been assessed by the Loss Prevention Council for Fire Resistance, in both horizontal and vertical structure penetration. A Fire Rating of 4 hours can be achieved in accordance with the stability and integrity criteria of BS 476:1987 for duct type B. See page 39.

### JOINT SEALANTS

Low temperature sealant for applications up to 300°C flue gas temperature. Provided in 310ml skeleton gun cartridges.

High temperature sealant for applications up to 1000°C gas temperature. Provided in 310ml skeleton gun cartridges.

### SUPPORTS

The Europa system must be supported using only SFL components, in conjunction with suitable steel work as necessary. Care is needed to ensure that supports capable of accommodating expansion (where appropriate) are correctly applied.

### PATENTS

SFL “Europa” is manufactured under one or more patents.

### QUALITY ASSURANCE

The Europa System is manufactured under a Quality Assurance Scheme, Certificate No. FM 01079, administered by British Standards in accordance with BS EN ISO9001: 2000.



FM01079

## SPECIFICATION

The Europa system is available in 16 sizes between 150mm and 1200mm (6" to 48") internal diameter. Larger diameters are normally used for extract systems. For this reason, catalogue items for the 700mm-1200mm diameter range are not as comprehensive as the smaller diameter range. If such components are required, please consult SFL. Flange to flange installed straight lengths are 500, 750 and 1000mm long (20", 30" and 40"). External diameter is 52mm greater than internal diameter for full range.

Construction material variations for standard 25mm annulus Europa as well as their 3 digit code prefix are shown below, and they relate to lengths and pipe fittings only. When ordering product, please use the required code in front of the 4 digit catalogue descriptions code to arrive at a 7 digit product description. For example, a 350mm diameter 45° Elbow with 316L Liner and Aluminised Steel Outer will have order code 1762414. All other components have a predetermined 7 digit code by which they should be ordered.

Code No. Prefix	Liner	Outer	Insulation
172	316L Stainless	Aluminised Steel	Mineral Wool
174	316L Stainless	304 Stainless Steel	Mineral Wool
176	316L Stainless	Aluminised Steel	Air Gap
178	316L Stainless	304 Stainless	Air Gap

**INNER LINER** 1mm thick type 316L stainless steel.  
(1.2mm for diameters of 1000mm and above)  
All welded continuous construction with integral flange at each end.

**ANNULUS** 25mm nominal air gap maintained with spacer/locating bands for inner liner and outer casing.

**OUTER SKIN** Aluminised steel 0.6mm for 150 to 600mm dia.  
0.8mm for 700 to 1200mm dia.

Where required for personnel hazard, modular insulation is available which is clad on the external surface.

## ADDITIONAL OPTIONS

Inner Liner only construction is available for condensing boiler application. Diameters greater than 1200mm are available subject to application. Larger annulus variants (up to 600mm diameter) are available. Further information on request.

## WEATHER PROTECTION

Any aluminised steel outer skin version should be used internally only. Where such material is used on an incomplete site, protection (where possible) should be applied to ensure that adverse weather conditions and building materials do not contaminate the outer skin. All stainless steel specification is recommended for any external application.

Galvanised support bracketry should be considered for internal application and stainless steel bracketry for external application. If the galvanised version is used externally, it should have a suitable paint system applied.

## INSTALLATION & HANDLING

Installation instructions are provided with support components, and are separately available. These must be consulted to ensure the provision and correct application of the components used in any configuration. Components with external diameter in excess of 652mm diameter are relatively heavy, and consideration should be given to strategic site handling when such product is delivered, stored and applied.

## DESIGN SERVICE

SFL can arrange a complete design and optional installation service - details on application.

SFL employ a policy to ensure continued improvements. We therefore reserve the right to make changes and improvements without prior notice.

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## PRODUCT INFORMATION

### APPLICATIONS

PRODUCT	FEATURES	SPECIFICATION
<b>SMOKE EXTRACT</b>	<ul style="list-style-type: none"> <li>★Always twin skin.</li> <li>★For mechanical or natural extraction.</li> <li>★Round to square adaptors can be supplied for extract fans and branch runs.</li> </ul>	<p><b>Standard Specification</b></p> <p>Inner Liner: 1mm thick type 316L stainless steel, (1.2mm for 1000mm diameter and above). All welded construction, with integral flange at each end.</p> <p>Annulus: 25mm nominal air gap maintained with spacer/ locating bands which locate inner liner and outer casing.</p> <p>Outer Skin: 0.6mm thick aluminised steel, (0.8 for 700mm diameter and above).</p> <p>Diameter: From 150mm-1200mm Annulus can be insulated to order.</p>
<b>WASTE GAS EXTRACT</b>	<ul style="list-style-type: none"> <li>★No site welding.</li> <li>★Pressure resistance enables diameter reduction subject to allowable back pressures on the appliance.</li> <li>★Ideal for condensing and semi-condensing boilers.</li> <li>★Suitable for all fuels.</li> </ul>	<p><b>Boilers</b> For use with boilers burning gas and light oil standard specification applies. With heavy oil and solid fuels use 316L inner liner.</p> <p><b>Generators</b> <b>Standard Specification.</b></p> <p><b>Other applications</b> Consult SFL. Diameter: From 150mm-600mm in varying increments. Annulus can be insulated to order.</p>
<b>KITCHEN EXTRACT</b>	<ul style="list-style-type: none"> <li>★Twin skin preferred. Single skin should be additionally protected.</li> </ul>	<p><b>Standard Specification – as above</b> Diameter: From 150mm-600mm in varying increments.</p>
<b>LIGHTWEIGHT PARTICLE MOVEMENT</b>	<ul style="list-style-type: none"> <li>★Invariably single skin.</li> <li>★Diameters in excess of 250mm subject to consultation with SFL.</li> <li>★Can be extended or re-routed as required.</li> </ul>	<p><b>Standard Specification – as above</b> Diameter: 150mm; 175mm; 200mm; 250mm.</p>
<b>FIRE RATED SERVICE TRUNKING</b>	<ul style="list-style-type: none"> <li>★Always twin skin.</li> <li>★Conduit access special to order.</li> <li>★Can be tailor made to customer requirements.</li> </ul>	<p><b>Standard Specification – as above</b> With a highly insulated internal sleeving. Diameter: From 150mm-1200mm. Annulus can be insulated to order.</p>
<b>REFUSE/LAUNDRY CHUTES</b>	<ul style="list-style-type: none"> <li>★Invariably single skin.</li> <li>★Can be tailor made to customer requirements.</li> </ul>	<p><b>Standard Specification – as above</b></p>

## CHOICE OF MATERIALS AND CHIMNEY ENVIRONMENT

The material used for the inner liner of Europa, type 316L stainless steel, is corrosion resistant and long lasting when used with conventional gas, liquid and solid fuels in an environment free of chemical contaminants. Type 316L stainless steel alloy is particularly suited to withstand the corrosive attack of combustion by products of high sulphur/chlorine fuels, as well as for gas, low sulphur content oils, such as 35 second and wood. However, care must be exercised to ensure that chemicals containing halogen or chlorinated compounds will not contaminate the combustion air supplied to the equipment being served by Europa.

The use or storage of chemicals, particularly those containing chlorine or chlorides, in the vicinity of the equipment, or the presence of such substances in the fuel or the combustion air supply may lead to early product deterioration. Substances which may cause attack of chimney materials include:

Chlorinated or halogenated dry cleaning or metal cleaning solvents, fluorocarbon refrigerants, hydrochloric, sulphuric and other acids, fluorocarbon aerosol, vinyl plastics when burnt, chlorine, bleach and cleaning solutions, titanium tetrachloride, plating and etching baths and solutions.

All externally exposed surfaces and Europa components (other than stainless steel) should be protected by the application of a suitable paint-protection system. Contact SFL for details.

It is recommended that any external application of Europa should always be of all stainless steel materials.

## THERMAL EXPANSION

As the method of assembly for Europa provides a continuous inner wall, expansion of the vent must be allowed for. Any length of vent where expansion is likely to exceed 6mm between two fixed points, i.e., boiler outlet and elbow, wall supports, etc. must incorporate an expansion component to compensate for thermal movement.

The outer casing is free to expand independently of the inner liner. Floor and Wall Guides must be located to allow for the movement of any adjacent Channel Bands. As a general rule, expansion of the Europa system can be calculated by using the following formula: Liner expansion will be 1mm per metre per 50°C rise of gas temperature.

For example:

A 25 metre run of Europa subjected to a flue gas temperature of 470°C above ambient. ( $\Delta t$ )

$$= 1 \times 25 \times \frac{470}{50} = 235$$

Therefore, total expansion which needs to be accommodated is 235mm. See the nomograph on page 32 for accurate expansion guide. Always assume 1100°C for catering equipment extract ducts to allow for duct fire.

Correctly installed the chimney will expand and contract along its entire length dependent upon the temperatures to which it is subjected. Conventional methods of attaching guys and braces directly to the outer wall must therefore **not** be used.

Guide Band assemblies will provide adequate support to the chimney and at the same time allow for thermal movement. Any additional support required for extensions of the vent beyond a roof or parapet level may require additional supports depending upon the freestanding height.

The Telescopic Flashing should always be used where Europa is subjected to vertical expansion through a roof.

## JOINT DETAILS AND SEALANTS

All flange to flange inner liner joints are identical.

To provide protection to high temperature sealant whilst it is drying, it is necessary to apply low temperature sealant during the jointing process.

Assembly is accomplished in four easy stages.

1. Having ensured that they are free from grit, grease and contaminants, apply low temperature silicone sealant to one flange surface and bring the parallel flanges of the two elements together.

2. Loosely connect the two halves of the Vee Band at one end only, and apply appropriate sealant to fill the groove of the Vee Band.
3. Position the Vee Band over the butted flanges and tightly clamp both joints using the nuts and bolts provided.

N.B. On horizontal runs of the vent, locate the securing nut and bolt joints on either side of the vent **not** top and bottom.

Light tapping with a rubber or nylon headed mallet all round the Vee Band while tightening the clamps is necessary to ensure the alignment and a tight fit of the flanges. Repeat procedure (usually 2-3 times), until the screws will no longer tighten.

4. Locate the channel band over the joint so that the turned ends sit in the grooves and secure with the nuts and bolts provided.

N.B. For outdoor installation, apply a bead of suitable sealant in the groove at the upper edge of the channel band and at the overlap at its end. \*If the product is to be painted, use Sikaflex sealant. Contact SFL for further details.

### CAUTIONS

1. The channel bands are designed to slide in their mating grooves. Do not attach by screws into the outer casing.
2. Do not allow screws or bolts to penetrate the inner liner or outer skin at any point.

The integrity of the joint between components is dependent upon the use of the correct sealant. Choice of sealant will be influenced by the application of the Europa. There are two sealants:

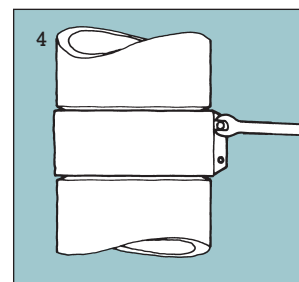
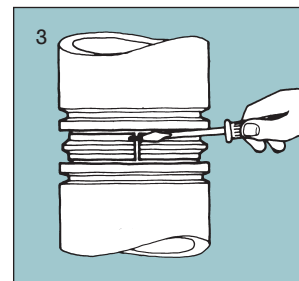
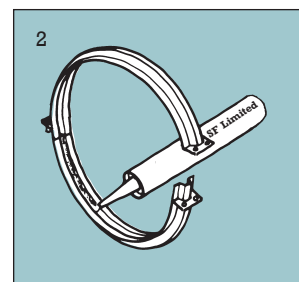
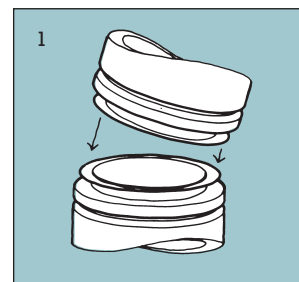
#### Low temperature Sealant

Provided in 310ml cartridges for application by standard skeleton gun. Suitable for any application where the flue gas temperature does not exceed 300°C.

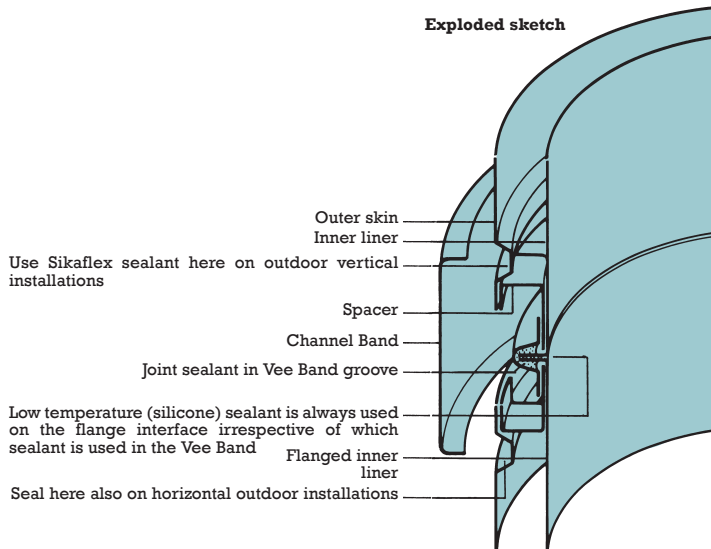
#### High temperature Sealant

Provided in 310ml cartridges for application by standard skeleton gun. Suitable for any application where the flue gas temperatures exceed 300°C.

**Both sealants have been specially selected for Europa. No other sealants must be used, or the joint integrity and performance cannot be guaranteed by SFL.**

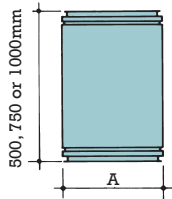


Exploded sketch



**Lengths**

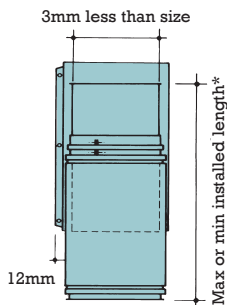
Fixed straight sections are available in three lengths. 500mm, 750mm and 1000mm. These are actual installed lengths. Each component is provided with a Vee Band.



Size	Dim.	Code numbers		
	A	500	750	1000
150mm	202	xxx1406	xxx1206	xxx1006
175mm	227	xxx1407	xxx1207	xxx1007
200mm	252	xxx1408	xxx1208	xxx1008
250mm	302	xxx1410	xxx1210	xxx1010
300mm	352	xxx1412	xxx1212	xxx1012
350mm	402	xxx1414	xxx1214	xxx1014
400mm	452	xxx1416	xxx1216	xxx1016
450mm	502	xxx1418	xxx1218	xxx1018
500mm	552	xxx1420	xxx1220	xxx1020
600mm	652	xxx1424	xxx1224	xxx1024
700mm	752	xxx1428	xxx1228	xxx1028
800mm	852	xxx1432	xxx1232	xxx1032
900mm	952	xxx1436	xxx1236	xxx1036
1000mm	1052	xxx1440	xxx1240	xxx1040
1100mm	1152	xxx1444	xxx1244	xxx1044
1200mm	1252	xxx1448	xxx1248	xxx1048

**Expansion Length**

Designed to provide expansion movement between two fixed elements. Two versions are available. Selection of the short or long version will be determined by the amount of expansion and application. This component is NOT loadbearing. See data on pages 16 and 32. Provided with a Vee Band, an outer cover, an appropriate standard length and Installation Instructions. This component is NOT as pressure resistant as standard components. See the Expansion Length pressure data graph on page 33. Use Bellows if both expansion and pressure resistance is required.

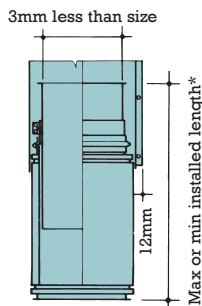


Size	Code numbers	
	Short	Long
150mm	xxx2706	xxx2606
175mm	xxx2707	xxx2607
200mm	xxx2708	xxx2608
250mm	xxx2710	xxx2610
300mm	xxx2712	xxx2612
350mm	xxx2714	xxx2614
400mm	xxx2716	xxx2616
450mm	xxx2718	xxx2618
500mm	xxx2720	xxx2620
600mm	xxx2724	xxx2624
700mm		xxx2628
800mm	Not available	xxx2632
900mm		xxx2536
1000mm		xxx2640
1100mm		xxx2644
1200mm		xxx2648

\*See data on page 16.

**Adjustable Length**

Designed to provide an adjustable link between two fixed elements. NOT loadbearing. Two versions are available. Selection of the short or long version will be determined by the amount of adjustment required. See Table on page 17. Provided with a Vee Band, an outer cover, an appropriate standard length and Installation Instructions. NOT to be used to accommodate expansion. Where it is not possible to utilise an Adjustable Length, special lengths can be made to order. (Min 150mm installed length).

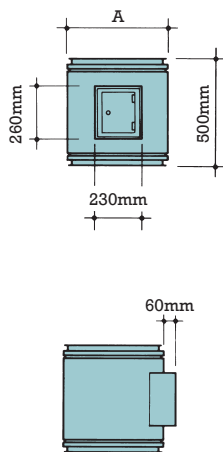


\*See data on page 17.

Size	Code numbers	
	Short	Long
150mm	xxx2906	xxx2806
175mm	xxx2907	xxx2807
200mm	xxx2908	xxx2808
250mm	xxx2910	xxx2810
300mm	xxx2912	xxx2812
350mm	xxx2914	xxx2814
400mm	xxx2916	xxx2816
450mm	xxx2918	xxx2818
500mm	xxx2920	xxx2820
600mm	xxx2924	xxx2824
700mm		xxx2828
800mm	Not available	xxx2832
900mm		xxx2836
1000mm		xxx2840
1100mm	Not available	xxx2844
1200mm		xxx2848

**Inspection Length**

This component provides a means of access for cleaning. It does NOT loadbear. This component does not take pressure.

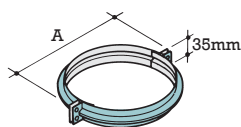


Aperture size: 140 x 200mm

Size	Dimension A	Code number
150mm	202	xxx6806
175mm	227	xxx6807
200mm	252	xxx6808
250mm	302	xxx6810
300mm	352	xxx6812
350mm	402	xxx6814
400mm	425	xxx6816
450mm	502	xxx6818
500mm	552	xxx6820
600mm	652	xxx6824
700mm	752	xxx6828
800mm	852	xxx6832
900mm	952	xxx6836
1000mm	1052	xxx6840
1100mm	1152	xxx6844
1200mm	1252	xxx6848

### Vee Band

Used to connect and secure two components. Provided as standard for each component.

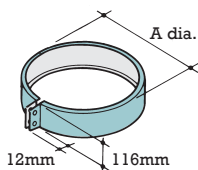


A; clearance over joint clips

Size	Dimension A	Code number
150mm	195	xxx4806
175mm	220	xxx4807
200mm	245	xxx4808
250mm	295	xxx4810
300mm	345	xxx4812
350mm	395	xxx4814
400mm	445	xxx4816
450mm	495	xxx4818
500mm	545	xxx4820
600mm	645	xxx4824
700mm	745	xxx4828
800mm	845	xxx4832
900mm	945	xxx4836
1000mm	1045	xxx4840
1100mm	1145	xxx4844
1200mm	1245	xxx4848

### Channel Band

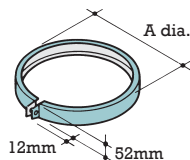
Used to close off the annulus at every joint and conceals the Vee Band. Order separately as required.



Size	Dimension A	Code number
150mm	204	xxx4706
175mm	229	xxx4707
200mm	254	xxx4708
250mm	304	xxx4710
300mm	354	xxx4712
350mm	404	xxx4714
400mm	454	xxx4716
450mm	504	xxx4718
500mm	554	xxx4720
600mm	654	xxx4724
700mm	754	xxx4728
800mm	854	xxx4732
900mm	954	xxx4736
1000mm	1054	xxx4740
1100mm	1154	xxx4744
1200mm	1254	xxx4748

### Narrow Channel Band

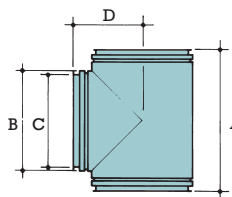
Used to close off the annulus at any joint where the Vee Band secured flanges are providing support, or the component flange is connected to the apparatus. Order separately as required.



Size	Dimension A	Code number
150mm	204	xxx4606
175mm	229	xxx4607
200mm	254	xxx4608
250mm	304	xxx4610
300mm	354	xxx4612
350mm	404	xxx4614
400mm	454	xxx4616
450mm	504	xxx4618
500mm	554	xxx4620
600mm	654	xxx4624
700mm	754	xxx4628
800mm	854	xxx4632
900mm	954	xxx4636
1000mm	1054	xxx4640
1100mm	1154	xxx4644
1200mm	1254	xxx4648

### 90° Tee

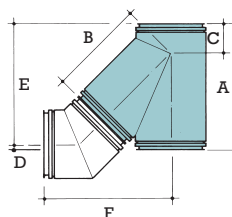
Designed to provide connection, a change of direction and cleaning access if required. Can also be used in multiples for header configuration. May be ordered with branch having smaller diameter than main body. (Dimensions B & C). NB This component will support a maximum of 1 m of Europa located vertically above it. Provided with two Vee Bands.



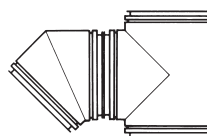
Size	Dimensions A	B	C	D	Code number
150mm	400	202	150	185	xxx1906
175mm	400	227	175	198	xxx1907
200mm	500	252	200	210	xxx1908
250mm	500	302	250	235	xxx1910
300mm	600	352	300	260	xxx1912
350mm	600	402	350	285	xxx1914
400mm	700	452	400	310	xxx1916
450mm	700	502	450	335	xxx1918
500mm	750	552	500	360	xxx1920
600mm	825	652	600	410	xxx1924
700mm	1000	752	700	460	xxx1928
800mm	1050	852	800	510	xxx1932
900mm	1150	952	900	560	xxx1936
1000mm	1250	1052	1000	610	xxx1940
1100mm	1350	1152	1100	660	xxx1944
1200mm	1500	1252	1200	710	xxx1948

### 135° Tee

Designed to provide connection, a change of direction and cleaning access if required. Can also be used to enable header connections to be made. May be ordered with branch having smaller diameter than main body. NB This component will support a maximum of 1 m of Europa located vertically above it. Provided with two Vee Bands.



Size	Dimensions A	B	C	D	E	F	Code number
150mm	500	328	172	-4	504	474	xxx2006
175mm	500	358	142	1	499	504	xxx2007
200mm	600	388	212	6	594	534	xxx2008
250mm	600	449	151	16	584	596	xxx2010
300mm	700	509	191	27	673	655	xxx2012
350mm	750	570	180	38	712	715	xxx2014
400mm	825	630	195	47	778	777	xxx2016
450mm	900	690	210	58	842	836	xxx2018
500mm	950	751	199	69	881	896	xxx2020
600mm	1100	871	229	89	1011	1017	xxx2024
700mm	1250	992	258	110	1140	1138	xxx2028
800mm	1400	1113	287	130	1270	1260	xxx2032
900mm	1525	1233	292	151	1374	1379	xxx2036
1000mm	1675	1354	321	174	1501	1500	xxx2040
1100mm	1800	1475	325	192	1608	1622	xxx2044
1200mm	1950	1596	354	213	1737	1742	xxx2048



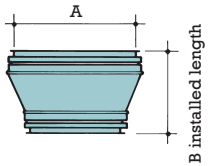
An alternative way to achieve a 135° connection is to connect a 45° Elbow to the branch of a 90° Tee.

Channel Bands or Narrow Channel Bands must be ordered separately as needed.

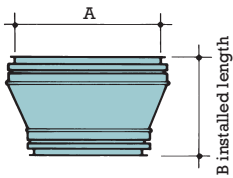
Where xxx's are used for the first 3 digits, replace with the prefix codes which determine the material options described on page 2/3 under the heading "SPECIFICATION".

### Tapered Increaser/Reducer

Used to change vent diameter by single or two steps. Provided with a Vee Band to suit flue size. (If used as a "reducer", a Vee Band of "A" diameter must be ordered separately).



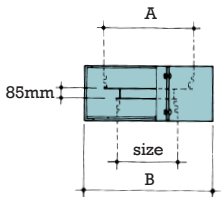
Size	Dimensions			Code number
	A	B	"K"	
<b>One Step</b>				
150mm	200	300	0.100	xxx1506
175mm	200	300	0.026	xxx1507
200mm	250	300	0.060	xxx1508
250mm	300	300	0.044	xxx1510
300mm	350	300	0.033	xxx1512
350mm	400	300	0.026	xxx1514
400mm	450	300	0.020	xxx1516
450mm	500	300	0.017	xxx1518



Size	Dimensions			Code number
	A	B	"K"	
<b>Two Step</b>				
150mm	250	400	0.217	xxx1606
175mm	250	400	0.137	xxx1607
200mm	300	400	0.163	xxx1608
250mm	350	400	0.127	xxx1610
300mm	400	400	0.101	xxx1612
350mm	450	400	0.083	xxx1614
400mm	500	400	0.068	xxx1616
450mm	600	500	0.101	xxx1618
500mm	600	400	0.049	xxx1620
600mm	700	400	0.037	xxx1624
700mm	800	400	0.029	xxx1628
800mm	900	400	0.023	xxx1632
900mm	1000	400	0.019	xxx1636
1000mm	1100	400	0.016	xxx1640
1100mm	1200	400	0.014	xxx1644

### Step Increaser/Reducer

Non-load bearing version of above, for use in limited access area. Other variables are available to order. Provided with a Vee Band to suit flue size. (If used as a "reducer", a Vee Band of "A" diameter must be ordered separately).

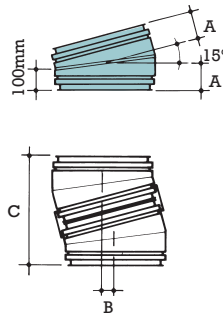


Size	Dimensions			Code number
	A	B	"K"	
150mm	200	254	0.191	xxx1706
175mm	200	254	0.055	xxx1707
200mm	250	304	0.130	xxx1708
250mm	300	354	0.093	xxx1710
300mm	350	404	0.070	xxx1712
350mm	400	454	0.550	xxx1714
400mm	450	504	0.044	xxx1716
450mm	500	554	0.036	xxx1718
500mm	600	654	0.093	xxx1720

ALL ELBOWS MUST BE PROTECTED FROM THERMAL EXPANSION AND BENDING FORCES. THEY DO NOT LOADBEAR. See the data on page 32.

### 15° Elbow

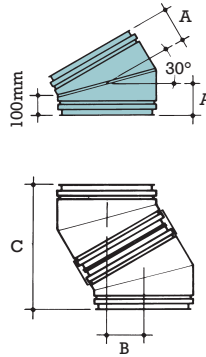
Designed to change direction by 15°. Provided with a Vee Band.



Size	Dimensions			Code number
	A	B	C	
150mm	113	58	444	xxx2206
175mm	115	59	452	xxx2207
200mm	117	60	460	xxx2208
250mm	120	62	472	xxx2210
300mm	123	64	484	xxx2212
350mm	126	65	495	xxx2214
400mm	130	67	511	xxx2216
450mm	133	69	523	xxx2218
500mm	136	70	535	xxx2220
600mm	143	74	562	xxx2224
700mm	150	77	588	xxx2228
800mm	156	81	614	xxx2232
900mm	163	84	640	xxx2236
1000mm	169	88	665	xxx2240
1100mm	176	91	691	xxx2244
1200mm	182	94	717	xxx2248

### 30° Elbow

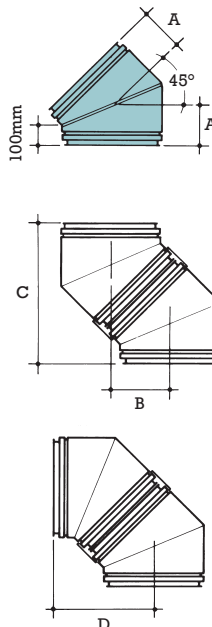
Designed to change direction by 30°. Provided with a Vee Band.



Size	Dimensions			Code number
	A	B	C	
150mm	127	127	474	xxx2306
175mm	130	130	485	xxx2307
200mm	134	134	500	xxx2308
250mm	141	141	526	xxx2310
300mm	147	147	549	xxx2312
350mm	154	154	575	xxx2314
400mm	161	161	601	xxx2316
450mm	167	167	623	xxx2318
500mm	174	174	649	xxx2320
600mm	187	187	698	xxx2324
700mm	201	201	749	xxx2328
800mm	214	214	799	xxx2332
900mm	228	228	849	xxx2336
1000mm	241	241	899	xxx2340
1100mm	254	254	949	xxx2344
1200mm	268	268	999	xxx2348

### 45° Elbow

Designed to change direction by 45°. Provided with a Vee Band.

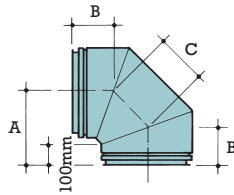


Size	Dimensions				Code number
	A	B	C	D	
150mm	142	201	485	343	xxx2406
175mm	147	208	502	355	xxx2407
200mm	152	215	519	367	xxx2408
250mm	163	231	557	394	xxx2410
300mm	173	245	591	418	xxx2412
350mm	183	259	625	442	xxx2414
400mm	194	274	662	468	xxx2416
450mm	204	288	696	492	xxx2418
500mm	214	303	731	517	xxx2420
600mm	235	332	802	567	xxx2424
700mm	256	362	873	617	xxx2428
800mm	277	391	945	668	xxx2432
900mm	297	420	1015	717	xxx2436
1000mm	318	450	1085	767	xxx2440
1100mm	339	479	1156	817	xxx2444
1200mm	359	508	1227	867	xxx2448

Channel Bands or Narrow Channel Bands must be ordered separately as needed.

Where xxx's are used for the first 3 digits, replace with the prefix codes which determine the material options described on page 2/3 under the heading "SPECIFICATION".





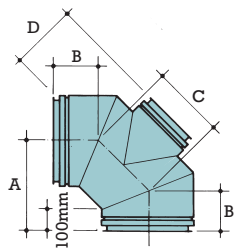
### 90° Elbow

Designed to change direction by 90°. Provided with a Vee Band.

Size	Dimensions			Code number
	A	B	C	
150mm	236	142	134	xxx8506
175mm	249	147	144	xxx8507
200mm	261	152	154	xxx8508
250mm	286	163	175	xxx8510
300mm	311	173	196	xxx8512
350mm	336	183	217	xxx8514
400mm	361	194	237	xxx8516
450mm	386	204	258	xxx8518
500mm	411	214	279	xxx8520
600mm	461	235	320	xxx8524
700mm	511	256	361	xxx8528
800mm	561	276	403	xxx8532
900mm	611	297	444	xxx8536
1000mm	661	318	486	xxx8540
1100mm	711	339	527	xxx8544
1200mm	761	359	569	xxx8548

### 90° Access Elbow

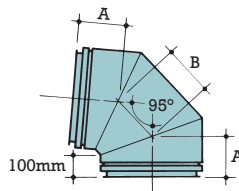
Designed to change direction by 90°, and made with a branch for several applications. Used with a Drain Tee Cap or Blanking Plate for access and cleaning. Used to provide connection of two appliances to one vent. Provided with two Vee Bands.



Size	Dimensions				Code number
	A	B	C	D	
150mm	296	142	218	185	xxx8606
175mm	312	147	233	198	xxx8607
200mm	327	152	248	210	xxx8608
250mm	359	163	277	235	xxx8610
300mm	390	173	306	260	xxx8612
350mm	420	183	335	285	xxx8614
400mm	452	194	365	310	xxx8616
450mm	483	204	394	335	xxx8618
500mm	513	214	423	360	xxx8620
600mm	576	235	482	410	xxx8624
700mm	638	256	541	460	xxx8628
800mm	700	276	599	510	xxx8632
900mm	762	297	658	560	xxx8636
1000mm	824	318	716	610	xxx8640
1100mm	887	339	775	660	xxx8644
1200mm	948	359	833	710	xxx8648

### 95° Elbow

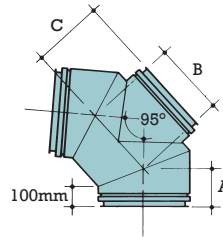
Designed to change direction by 95°. Provided with a Vee Band.



Size	Dimensions		Code number
	A	B	
150mm	142	134	xxx8706
175mm	147	144	xxx8707
200mm	152	154	xxx8708
250mm	163	175	xxx8710
300mm	173	196	xxx8712
350mm	183	217	xxx8714
400mm	194	237	xxx8716
450mm	204	258	xxx8718
500mm	214	279	xxx8720
600mm	235	320	xxx8724
700mm	256	361	xxx8728
800mm	276	403	xxx8732
900mm	297	444	xxx8736
1000mm	318	486	xxx8740
1100mm	339	527	xxx8744
1200mm	359	569	xxx8748

### 95° Access Elbow

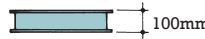
Designed to change direction by 95°, and made with a branch for several applications. Used with a Drain Tee or Blanking Plate for access and cleaning. Used to provide connection of two appliances to one vent. Provided with two Vee Bands.



Size	Dimensions			Code number
	A	B	C	
150mm	142	218	185	xxx8806
175mm	147	233	198	xxx8807
200mm	152	248	210	xxx8808
250mm	163	277	235	xxx8810
300mm	173	306	260	xxx8812
350mm	183	335	285	xxx8814
400mm	194	365	310	xxx8816
450mm	204	394	335	xxx8818
500mm	214	423	360	xxx8820
600mm	235	482	410	xxx8824
700mm	256	541	460	xxx8828
800mm	276	599	510	xxx8832
900mm	297	658	560	xxx8836
1000mm	318	716	610	xxx8840
1100mm	339	775	660	xxx8844
1200mm	359	833	710	xxx8848

### Hood Transition

Used to provide connection to flanged outlet of appliance or hood.



Size	Code number
150mm	xxx4206
175mm	xxx4207
200mm	xxx4208
250mm	xxx4210
300mm	xxx4212
350mm	xxx4214
400mm	xxx4216
450mm	xxx4218
500mm	xxx4220
600mm	xxx4224
700mm	xxx4228
800mm	xxx4232
900mm	xxx4236
1000mm	xxx4240
1100mm	xxx4244
1200mm	xxx4248

### Appliance Connector

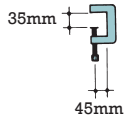
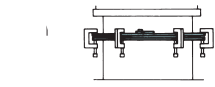
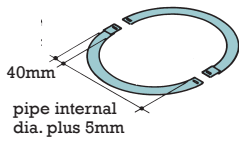
Used to provide a straight connection to equipment. The component is only flanged at one end.



Size	Code number
150mm	xxx8906
175mm	xxx8907
200mm	xxx8908
250mm	xxx8910
300mm	xxx8912
350mm	xxx8914
400mm	xxx8916
450mm	xxx8918
500mm	xxx8920
600mm	xxx8924

Channel Bands or Narrow Channel Bands must be ordered separately as needed.

Where xxx's are used for the first 3 digits, replace with the prefix codes which determine the material options described on page 2/3 under the heading "SPECIFICATION".



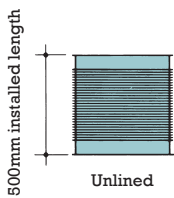
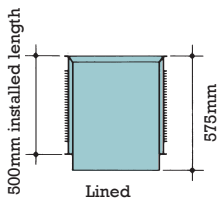
### Flanged Boiler Kit

Designed to secure vent to appliance/boiler outlet flange. The kit comprises 2 x 180° overlapping rings, countersunk screws and nuts, and suitable quantity of flange clamps.

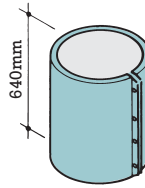
Size	Number of Clamps	Code number
150mm	4	xxx5406
175mm	4	xxx5407
200mm	4	xxx5408
250mm	5	xxx5410
300mm	6	xxx5412
350mm	7	xxx5414
400mm	8	xxx5416
450mm	9	xxx5418
500mm	10	xxx5420
600mm	12	xxx5424
700mm	14	xxx5428
800mm	16	xxx5432
900mm	18	xxx5436
1000mm	20	xxx5440
1100mm	22	xxx5444
1200mm	24	xxx5448

### Expansion Bellows

A pressure tight expansion joint for use with Diesel Engine and Gas Turbine exhaust systems. There are two versions, and both types should be protected with a Bellows Jacket where the component is exposed to external environments. The LINED version protects the internal convolutions of the Bellows, but limits any movement to linear expansion only. The UNLINED version isolated vibration and compensates for slight misalignment. Both types are provided with a Vee Band.



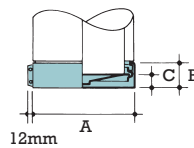
Size	Code numbers	
	Lined	Unlined
150mm	xxx3006	xxx3106
175mm	xxx3007	xxx3107
200mm	xxx3008	xxx3108
250mm	xxx3010	xxx3110
300mm	xxx3012	xxx3112
350mm	xxx3014	xxx3114
400mm	xxx3016	xxx3116
450mm	xxx3018	xxx3118
500mm	xxx3020	xxx3120
600mm	xxx3024	xxx3124
700mm	xxx3028	xxx3128
800mm	xxx3032	xxx3132
900mm	xxx3036	xxx3136
1000mm	xxx3040	xxx3140
1100mm	xxx3044	xxx3144
1200mm	xxx3048	xxx3148



### Bellows Jacket

Used to close off the annulus of a Bellows. The outside diameter of the jacket for sizes 300mm and above is 10mm greater than the standard product outer diameter.

Size	Code number
150mm	xxx9006
175mm	xxx9007
200mm	xxx9008
250mm	xxx9010
300mm	xxx9012
350mm	xxx9014
400mm	xxx9016
450mm	xxx9018
500mm	xxx9020
600mm	xxx9024
700mm	xxx9028
800mm	xxx9032
900mm	xxx9036
1000mm	xxx9040
1100mm	xxx9044
1200mm	xxx9048



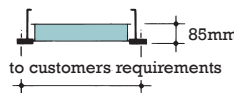
### Blanking Plate

Used to close off the unused opening of Tees and branched Elbows where used for cleaning access.

Size	Dimensions			Code number
	A	B	C	
150mm	203	116	58	xxx7406
175mm	228	116	58	xxx7407
200mm	253	116	58	xxx7408
250mm	303	116	58	xxx7410
300mm	353	116	58	xxx7412
350mm	403	116	58	xxx7414
400mm	453	116	58	xxx7416
450mm	453	116	58	xxx7418
500mm	503	116	58	xxx7420
600mm	553	116	58	xxx7424
700mm	653	300	242	xxx7428
800mm	753	300	242	xxx7432
900mm	953	300	242	xxx7436
1000mm	1053	300	242	xxx7440
1100mm	1153	300	242	xxx7444
1200mm	1253	300	242	xxx7448

### Flange Adaptor

Designed to secure Europa vent or bellows apparatus. When ordering please quote the number of holes and their diameter. Also quote the pitch circle diameter and diameter of flange.



See details on page 19 for ordering requirements

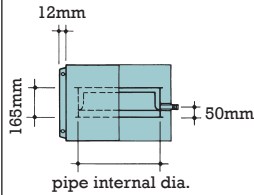
Size	Code number
150mm	xxx4406
175mm	xxx4407
200mm	xxx4408
250mm	xxx4410
300mm	xxx4412
350mm	xxx4414
400mm	xxx4416
450mm	xxx4418
500mm	xxx4420
600mm	xxx4424
700mm	xxx4428
800mm	xxx4432
900mm	xxx4436
1000mm	xxx4440
1100mm	xxx4444
1200mm	xxx4448

Channel Bands or Narrow Channel Bands must be ordered separately as needed.

Where xxx's are used for the first 3 digits, replace with the prefix codes which determine the material options described on page 2/3 under the heading "SPECIFICATION".

### Drain Section

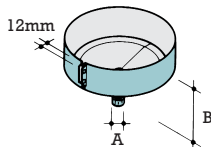
For use with open vent terminations for draining off rainwater from inside of vent. Should be located inside building to protect against freezing. Provided with a Vee Band and an Outer Jacket. Incorporates a 1" BSP externally threaded stainless steel drain tube with protective plastic cap.



Size	Code number
150mm	xxx4006
175mm	xxx4007
200mm	xxx4008
250mm	xxx4010
300mm	xxx4012
350mm	xxx4014
400mm	xxx4016
450mm	xxx4018
500mm	xxx4020
600mm	xxx4024
700mm	xxx4028
800mm	xxx4032
900mm	xxx4036
1000mm	xxx4040
1100mm	xxx4044
1200mm	xxx4048

### Drain Tee Cap

Used to close off the unused opening of Tees where used for header configurations, and provide cleaning access. Also for use at the bottom of a vertical run for condensate removal. Can also be used to provide drain or reservoir facilities for grease ducts. Stainless steel drain fitted which is externally threaded 1" BSP for diameters 150mm to 350mm and 2" BSP for diameters 400mm to 1200mm. Secured with a Vee Band, (not provided), and provided with a clamp cover and galvanised threaded end cap.

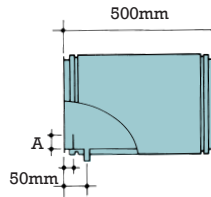


B; flange to bottom of drain

Size	Dimensions		Code number
	A	B	
150mm	1" BSP	100	xxx3606
175mm	1" BSP	100	xxx3607
200mm	1" BSP	100	xxx3608
250mm	1" BSP	100	xxx3610
300mm	1" BSP	100	xxx3612
350mm	1" BSP	100	xxx3614
400mm	2" BSP	100	xxx3616
450mm	2" BSP	100	xxx3618
500mm	2" BSP	100	xxx3620
600mm	2" BSP	100	xxx3624
700mm	2" BSP	100	xxx3628
800mm	2" BSP	100	xxx3632
900mm	2" BSP	215	xxx3636
1000mm	2" BSP	235	xxx3640
1100mm	2" BSP	255	xxx3644
1200mm	2" BSP	275	xxx3648

### Duct Drain

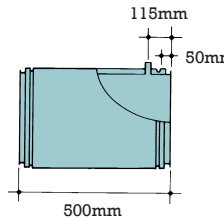
Used in a horizontal position, this component is designed to drain off grease/residues inside grease ducts. It has a small vertical dam to channel the run off to a 1 1/2" BSP parallel internally threaded stainless steel drain tube with galvanised plug. Provided with a Vee Band.



Size	Dimension A	Code number
150mm	23	xxx3806
175mm	27	xxx3807
200mm	30	xxx3808
250mm	38	xxx3810
300mm	46	xxx3812
350mm	53	xxx3814
400mm	61	xxx3816
450mm	69	xxx3818
500mm	76	xxx3820
600mm	91	xxx3824
700mm	105	xxx3828
800mm	121	xxx3832
900mm	135	xxx3836
1000mm	150	xxx3840
1100mm	165	xxx3844
1200mm	180	xxx3848

### Nozzle Section

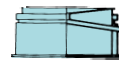
For use as a fire suppression nozzle or hot water/detergent maintenance section (where used as a grease duct). Fitted with a 1 1/2" BSP parallel internally threaded stainless steel drain tube with galvanised plug.



Size	Code number
150mm	xxx3906
175mm	xxx3907
200mm	xxx3908
250mm	xxx3910
300mm	xxx3912
350mm	xxx3914
400mm	xxx3916
450mm	xxx3918
500mm	xxx3920
600mm	xxx3924
700mm	xxx3928
800mm	xxx3932
900mm	xxx3936
1000mm	xxx3940
1100mm	xxx3944
1200mm	xxx3948

### Anchor Plate with Condensate Collector

Used at the bottom of a vertical run of Europa, to provide condensate drainage facilities. The drain tube is 15mm dia., made from 1mm thick stainless steel and projects 50mm from outer Europa wall.

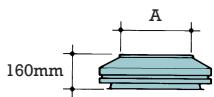


For dimensional data see page 29.

Size	Code number
150mm	xxx4106
175mm	xxx4107
200mm	xxx4108
250mm	xxx4110
300mm	xxx4112
350mm	xxx4114
400mm	xxx4116
450mm	xxx4118
500mm	xxx4120
600mm	xxx4124
700mm	xxx4128
800mm	xxx4132
900mm	xxx4136
1000mm	xxx4140
1100mm	xxx4144
1200mm	xxx4148

Channel Bands or Narrow Channel Bands must be ordered separately as needed.

Where xxx's are used for the first 3 digits, replace with the prefix codes which determine the material options described on page 2/3 under the heading "SPECIFICATION".



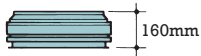
### Tapered Vent Terminal

Designed to terminate the vent and to increase the discharge velocity. Provided with a Vee Band.

Size	Dimension A	Code number
150mm	124	xxx3206
175mm	145	xxx3207
200mm	165	xxx3208
250mm	201	xxx3210
300mm	250	xxx3212
350mm	290	xxx3214
400mm	331	xxx3216
450mm	373	xxx3218
500mm	414	xxx3220
600mm	497	xxx3224
700mm	577	xxx3228
800mm	661	xxx3232
900mm	742	xxx3236
1000mm	825	xxx3240
1100mm	907	xxx3244
1200mm	990	xxx3248

### Parallel Vent Terminal

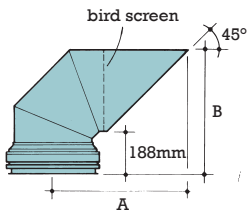
An open ended terminal. Provided with a Vee Band.



Size	Code number
150mm	xxx6706
175mm	xxx6707
200mm	xxx6708
250mm	xxx6710
300mm	xxx6712
350mm	xxx6714
400mm	xxx6716
450mm	xxx6718
500mm	xxx6720
600mm	xxx6724
700mm	xxx6728
800mm	xxx6732
900mm	xxx6736
1000mm	xxx6740
1100mm	xxx6744
1200mm	xxx6748

### Exhaust Terminal – Vertical

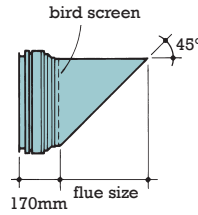
Designed to be used where Europa is applied as a generator exhaust duct, and where a vertical run is required to discharge horizontally. Fitted with a bird screen and provided with a Vee Band.



Size	Dimensions		Code number
	A	B	
150mm	246	338	xxx7006
175mm	278	363	xxx7007
200mm	313	388	xxx7008
250mm	382	438	xxx7010
300mm	448	488	xxx7012
350mm	516	538	xxx7014
400mm	585	588	xxx7016
450mm	651	638	xxx7018
500mm	719	688	xxx7020
600mm	854	788	xxx7024
700mm	990	888	xxx7028
800mm	1126	988	xxx7032
900mm	1260	1088	xxx7036
1000mm	1396	1188	xxx7040
1100mm	1533	1288	xxx7044
1200mm	1668	1389	xxx7048

### Exhaust Terminal – Horizontal

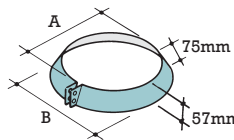
Designed to be used where Europa is applied as a generator exhaust duct, and where the terminal discharges at the end of a horizontal run. Fitted with a bird screen and provided with a Vee Band.



Size	Code number
150mm	xxx7106
175mm	xxx7107
200mm	xxx7108
250mm	xxx7110
300mm	xxx7112
350mm	xxx7114
400mm	xxx7116
450mm	xxx7118
500mm	xxx7120
600mm	xxx7124
700mm	xxx7128
800mm	xxx7132
900mm	xxx7136
1000mm	xxx7140
1100mm	xxx7144
1200mm	xxx7148

### Open Vent Closure Ring

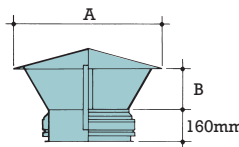
Provides closure for end of annulus when open termination is needed.



Size	Dimensions		Code number
	A	B	
150mm	152	248	xxx3306
175mm	177	273	xxx3307
200mm	202	298	xxx3308
250mm	252	348	xxx3310
300mm	302	398	xxx3312
350mm	352	448	xxx3314
400mm	402	498	xxx3316
450mm	452	548	xxx3318
500mm	502	598	xxx3320
600mm	602	698	xxx3324
700mm	702	798	xxx3328
800mm	802	898	xxx3332
900mm	902	998	xxx3336
1000mm	1002	1098	xxx3340
1100mm	1102	1198	xxx3344
1200mm	1202	1298	xxx3348

### Vent Cap

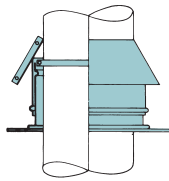
Provides some protection from rain penetration on vent terminal. Provided with a Vee Band.



Size	Dimensions		Code number
	A	B	
150mm	260	71	xxx3406
175mm	305	85	xxx3407
200mm	346	94	xxx3408
250mm	430	121	xxx3410
300mm	520	146	xxx3412
350mm	650	167	xxx3414
400mm	735	193	xxx3416
450mm	820	217	xxx3418
500mm	905	243	xxx3420
600mm	1080	294	xxx3424

Channel Bands or Narrow Channel Bands must be ordered separately as needed.

Where xxx's are used for the first 3 digits, replace with the prefix codes which determine the material options described on page 2/3 under the heading "SPECIFICATION".



See dimensional data on page 30

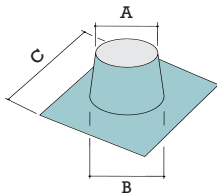
### Telescopic Flat Flashing

This component weatherproofs the Europa's passage through the roof, and must be used where the expansion of the duct is calculated to exceed 100mm. The telescopic drum section of the Flashing is secured to the roof. The storm collar is located with silicone sealant to the outer Europa skin and is free to rise with expansion. Provided with Installation Instructions.

Size	Code number
150mm	1757206
175mm	1757207
200mm	1757208
250mm	1757210
300mm	1757212
350mm	1757214
400mm	1757216
450mm	1757218
500mm	1757220
600mm	1757224
700mm	1757228
800mm	1757232
900mm	1757236
1000mm	1757240
1100mm	1757244
1200mm	1757248

### Flat Flashing

For flat or nearly flat roof penetration. All aluminium. NB If vertical expansion exceeds 100mm, use the Telescopic Flat Flashing.

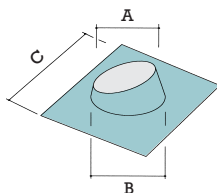


Size	Dimensions			Code number
	øA	øB	C square	
150mm	210	300	495	70000009
175mm	240	330	610	70000010
200mm	260	350	610	70000011
250mm	310	400	610	70000012
300mm	360	450	660	70000013
350mm	410	500	762	70000014
400mm	460	550	862	70000015
450mm	510	600	914	70000016
500mm	560	650	965	70000017
600mm	660	750	1066	70000019
700mm				
800mm				
900mm				
1000mm				
1100mm				
1200mm				

Details on Application

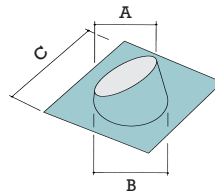
### 5°-30° Flashing

For sloping roof penetrations of angles between 5° and 30°. All aluminium.



Size	Dimensions			Code number
	øA	øB	C square	
150mm	210	304	508	70053009
175mm	240	335	550	70053010
200mm	260	361	578	70053011
250mm	310	419	610	70053012
300mm	360	476	678	70053013
350mm	410	533	762	70053014
400mm	460	652	952	70053015
450mm	510	710	1010	70053016
500mm	560	766	1066	70053017
600mm	660	880	1180	70053019
700mm				
800mm				
900mm				
1000mm				
1100mm				
1200mm				

Details on Application

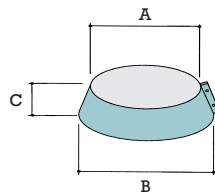


### 32°-45° Flashing

For sloping roof penetrations of angles between 32° and 45°. All aluminium.

Size	Dimensions			Code number
	øA	øB	C square	
150mm	210	403	610	70324509
175mm	240	428	650	70324510
200mm	260	475	678	70324511
250mm	310	546	737	70324512
300mm	360	617	820	70324513
350mm	410	689	889	70324514
400mm	460	750	1041	70324515
450mm	510	812	1124	70324516
500mm	560	892	1220	70324517
600mm	660	1034	1300	70324519
700mm				
800mm				
900mm				
1000mm				
1100mm				
1200mm				

Details on Application



### Storm Collar

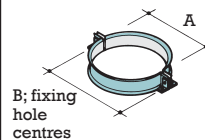
Used over a flashing and secured to outer skin. Provided with silicone sealant.

Size	Dimensions			Code number
	A	B	C	
150mm	202	301	70	70123409
175mm	227	330	70	70123410
200mm	252	351	70	70123411
250mm	302	401	70	70123412
300mm	352	451	70	70123413
350mm	402	501	70	70123414
400mm	452	625	150	70123415
450mm	502	675	150	70123416
500mm	552	725	150	70123417
600mm	652	825	150	70123419
700mm				
800mm				
900mm				
1000mm				
1100mm				
1200mm				

Details on Application

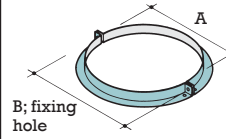
### Guide Band

Non load-bearing guiding and lateral support, which locates the vent and at the same time permits thermal movement. Provided with Installation Instructions.



B; fixing hole centres

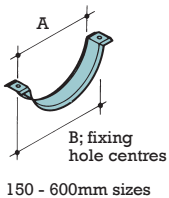
150 - 600mm sizes



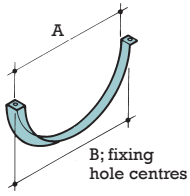
B; fixing hole centres

700 - 1200mm sizes

Size	Dimensions		Code numbers	
	A	B	Galv. St	Stain St.
150mm	207	259	1757506	1777506
175mm	232	284	1757507	1777507
200mm	257	309	1757508	1777508
250mm	307	359	1757510	1777510
300mm	357	409	1757512	1777512
350mm	407	459	1757514	1777514
400mm	457	509	1757516	1777516
450mm	507	559	1757518	1777518
500mm	557	609	1757520	1777520
600mm	657	709	1757524	1777524
700mm	757	814	1757528	1777528
800mm	857	914	1757532	1777532
900mm	957	1014	1757536	1777536
1000mm	1057	1114	1757540	1777540
1100mm	1157	1214	1757544	1777544
1200mm	1257	1314	1757548	1777548



150 - 600mm sizes



700 - 1200mm sizes

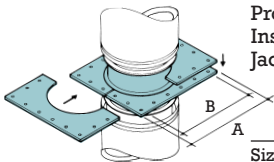
### Support Cradle

Provides cradle support for horizontal runs.

Size	Dimensions		Code numbers	
	A	B	Galv. St	Stain St.
150mm	207	259	1757606	1777606
175mm	232	284	1757607	1777607
200mm	257	309	1757608	1777608
250mm	307	359	1757610	1777610
300mm	357	409	1757612	1777612
350mm	407	459	1757614	1777614
400mm	457	509	1757616	1777616
450mm	507	559	1757618	1777618
500mm	557	609	1757620	1777620
600mm	657	709	1757624	1777624
700mm	757	814	1757628	1777628
800mm	857	914	1757632	1777632
900mm	957	1014	1757636	1777636
1000mm	1057	1114	1757640	1777640
1100mm	1157	1214	1757644	1777644
1200mm	1257	1314	1757648	1777648

### Support Plate Assembly

Intended as the main load carrying support of the vent assembly. Consists of a set of plates which clamp on a centrally welded flange of a 170mm integral length of liner, also provided. Plates are assembled with half sections aligned 90° rotated on each side of the welded flange. Matching holes allow 10mm bolts and nuts to clamp the flange joints to adjacent steel-work, thus forming a sandwich type assembly capable of supporting up to 60m of vertical vent. Can also be used as a fixed anchor point. NB Assembly MUST be mounted on all 4 sides on suitable angle or channel iron frame attached to the structure. Provided with a Vee Band and Installation Instructions. Order Cover Jacket Set separately.



Size	Dimensions		Code numbers	
	A	B	Galv. St	Stain St.
150mm	302	262	1758306	1778306
175mm	327	287	1758307	1778307
200mm	352	312	1758308	1778308
250mm	402	362	1758310	1778310
300mm	452	412	1758312	1778312
350mm	502	462	1758314	1778314
400mm	552	512	1758316	1778316
450mm	602	562	1758318	1778318
500mm	652	612	1758320	1778320
600mm	752	712	1758324	1778324
700mm	854	804	1758328	1778328
800mm	954	904	1758332	1778332
900mm	1054	1004	1758336	1778336
1000mm	1154	1104	1758340	1778340
1100mm	1254	1204	1758344	1778344
1200mm	1354	1304	1758348	1778348

### Cover Jacket Set

Used to close off the annulus on each side of a Support Plate or Wall Support.

Size	Code numbers	
	Galv. St	Stain St.
150mm	1758106	1778106
175mm	1758107	1778107
200mm	1758108	1778108
250mm	1758110	1778110

300mm	1758112	1778112
350mm	1758114	1778114
400mm	1758116	1778116
450mm	1758118	1778118
500mm	1758120	1778120
600mm	1758124	1778124
700mm	1758128	1778128
800mm	1758132	1778132
900mm	1758136	1778136
1000mm	1758140	1778140
1100mm	1758144	1778144
1200mm	1758148	1778148

### Wall Support Assembly

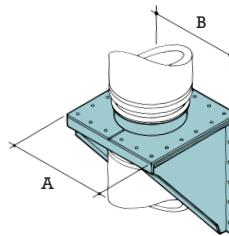
Designed to provide either vertical or horizontal piping systems support. For loadbearing characteristics see the table on page 36.

#### 150mm to 600mm diameter

This version provides 55mm clearance between the support structure and the Europa outer skin. The assembly consists of:

1. A special support plate assembly which has plain plates on the top side and flanged plates on the under side. The plates clamp on a centrally welded flange of an integral 170mm length liner, also provided.
2. A pair of triangular side supports which can be orientated either above or below the assembly or to either side depending upon characteristics of the loading to which it will be subjected.

Provided with a Vee Band and Installation Instructions. Order Cover Jacket Set separately.



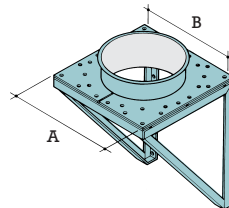
Size	Dimensions		Code numbers	
	A	B	Galv. St	Stain St.
150mm	302	262	1758406	1778406
175mm	327	287	1758407	1778407
200mm	352	312	1758408	1778408
250mm	402	362	1758410	1778410
300mm	452	412	1758412	1778412
350mm	502	462	1758414	1778414
400mm	552	512	1758416	1778416
450mm	602	562	1758418	1778418
500mm	652	612	1758420	1778420
600mm	752	712	1758424	1778424

#### 700mm to 1200mm diameter

This version provides a minimum wall clearance of 55mm between the support structure and the Europa outer skin. The assembly consists of:

1. Two sets of support plates.
2. Two cross members.
3. A pair of triangular side brackets.
4. Two spacers.
5. A 170mm integral length.

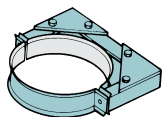
The assembly can be orientated above or below or to either side of the joint depending upon characteristics of the loading to which it will be subjected. See page 21



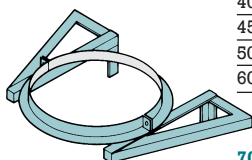
Size	Dimensions		Code numbers	
	A	B	Galv. St	Stain St.
700mm	854	804	1758428	1778428
800mm	954	904	1758432	1778432
900mm	1054	1004	1758436	1778436
1000mm	1154	1104	1758440	1778440
1100mm	1254	1204	1758444	1778444
1200mm	1354	1304	1758448	1778448

## Wall Guide

There are two versions, the second of which commences on diameters 700mm and above. The assembly must be used at intervals on long vertical runs to assure free in-line expansion of chimney and expansion joints. Both versions provide a 55mm clearance between the outer skin of the Europa and the adjacent structure. Provided with Installation Instructions.



For dimensional data see page 23



### 150mm to 600mm diameter

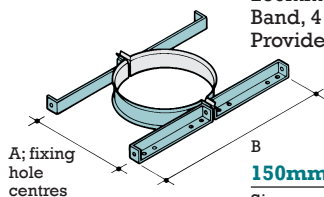
Size	Code numbers	
	Galv. St	Stain St.
150mm	1757906	1777906
175mm	1757907	1777907
200mm	1757908	1777908
250mm	1757910	1777910
300mm	1757912	1777912
350mm	1757914	1777914
400mm	1757916	1777916
450mm	1757918	1777918
500mm	1757920	1777920
600mm	1757924	1777924

### 700mm to 1200mm diameter

Size	Code numbers	
	Galv. St	Stain St.
700mm	1757928	1777928
800mm	1757932	1777932
900mm	1757936	1777936
1000mm	1757940	1777940
1100mm	1757944	1777944
1200mm	1757948	1777948

## Floor Guide

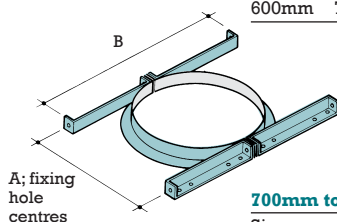
Installed at each floor level to ensure correct vertical alignment and free expansion. Maximum hole through floor equals pipe inside diameter plus 250mm. Assembly consists of a Guide Band, 4 struts and bolts and nuts. Provided with Installation Instructions.



A; fixing hole centres

### 150mm to 600mm diameter

Size	Dimensions		Code numbers	
	A	B	Galv. St	Stain St.
150mm	271	686	1758006	1778006
175mm	296	686	1758007	1778007
200mm	321	686	1758008	1778008
250mm	371	686	1758010	1778010
300mm	421	686	1758012	1778012
350mm	471	826	1758014	1778014
400mm	521	826	1758016	1778016
450mm	571	826	1758018	1778018
500mm	621	826	1758020	1778020
600mm	721	826	1758024	1778024



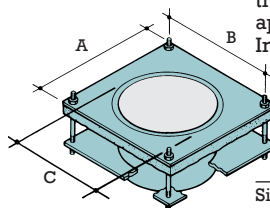
A; fixing hole centres

### 700mm to 1200mm diameter

Size	Code numbers			
	Galv. St	Stain St.		
700mm	814	1012	1758028	1778028
800mm	914	1012	1758032	1778032
900mm	1014	1012	1758036	1778036
1000mm	1114	1512	1758040	1778040
1100mm	1214	1512	1758044	1778044
1200mm	1314	1512	1758048	1778048

## Firestop Kit for Fast Track Buildings

Designed to be applied where Europa passage through structures requires a compartmental fire rating of up to 4 hours, (stability and integrity). See this section on this components application on page 38. Provided with Installation Instructions.



Size	Dimensions			Code number
	A	B	C	
150mm	380	340	208	1757306
175mm	405	340	233	1757307
200mm	430	390	258	1757308
250mm	480	440	308	1757310
300mm	530	490	358	1757312
350mm	580	540	408	1757314
400mm	630	590	458	1757316
450mm	680	640	508	1757318
500mm	730	690	558	1757320
600mm	830	790	658	1757324
700mm	930	890	758	1757328
800mm	1030	990	858	1757332
900mm	1130	1090	958	1757336
1000mm	1232	1190	1058	1757340
1100mm	1330	1290	1158	1757344
1200mm	1430	1390	1258	1757348

## Joint Sealants

### Low temperature

Suitable for sealing the vent joints where gas temperatures do not exceed 300°C. Capable of resisting a pressure of 1500mm w.g. The sealant is supplied in standard 310ml cartridges for use in a standard skeleton gun.

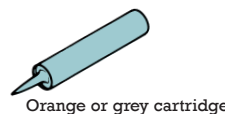


Turquoise cartridge

Code number 1756506

### High temperature

Suitable for sealing the vent joints where gas temperatures exceed 300°C. Capable of resisting a pressure of 1500mm w.g. The sealant is supplied in 310ml cartridges for use in a standard skeleton gun.



Orange or grey cartridge

Code number 1683108

## Weathering Sealant (Sikaflex)

Provided in 310ml cartridge for application to Channel Band joints on vertical external Europa applications. See joint detail drawing on page 5.



Code number 1758206

Size	Number of joints per cartridge (310ml) of sealant:	
	Vee Band	Channel Band
150mm	14.0	10.7
175mm	12.3	9.5
200mm	11.0	8.6
250mm	9.0	7.1
300mm	7.6	6.1
350mm	6.6	5.4
400mm	5.8	4.8
450mm	5.2	4.3
500mm	4.8	3.9
600mm	4.0	3.3
700mm	3.5	2.9
800mm	3.0	2.5
900mm	2.7	2.3
1000mm	2.5	2.1
1100mm	2.2	1.9
1200mm	2.0	1.7

**EXPANSION LENGTH**

**Structural steelwork and supports which are not of SFL provision are illustrated to show possible support methods only. Adequate support criteria for Europa must be competently calculated. Please cross refer to “Thermal Expansion” on page 5.**

This component is not designed to resist high\* pressure, and it is not loadbearing. Use the Bellows for such application.

The Expansion Length can be used to make up odd lengths of pipe as needed in short runs, and serves as an expansion joint for Thermal Expansion in larger runs of pipe.

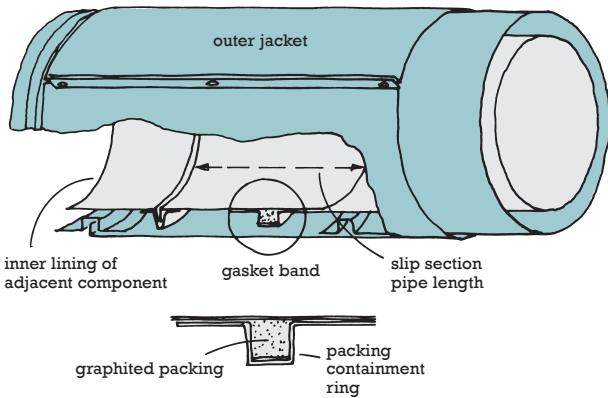
The Expansion Length comprises a sliding inner section, flanged on one end only. This sliding piece is sized to fit closely inside a standard 500mm or 750mm length with which it is provided as ordered. At the sliding joint, the assembly is fitted with a special graphited packing seal.

**Do not pull the assembly apart, as it requires a lengthy re-assembly process.**

The sliding outer jacket is placed around the outside of the completed assembly with the turned end locating in one of the grooves normally used by a Channel Band. It must also slide in order to avoid expansion stresses.

During assembly, the inner liner must be inserted into the adjacent element with which it is provided, a distance equivalent to not less than half the diameter of the product. Selection of either the short or long version will be determined by the amount of expansion and application. See drawings and Tables for installed expansion tolerance data.

\*See Pressure Tightness data on page 33.



**Installed Distance Between Joints “A” & “B” (See drawing)**

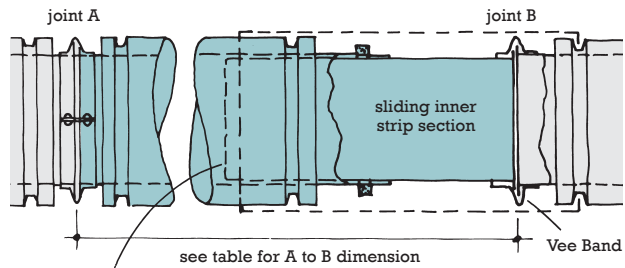
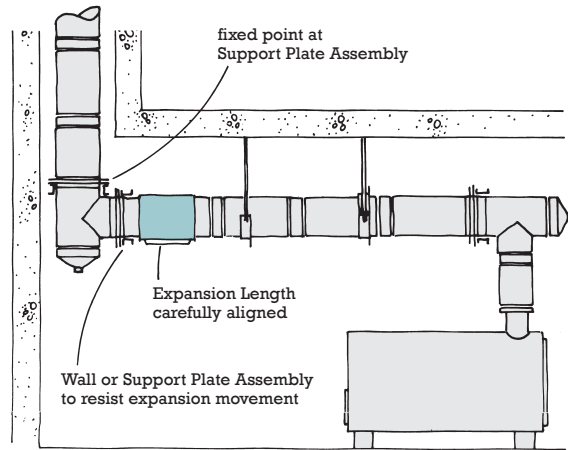
Size	Short Version		Long Version	
	Min (mm)	Max (mm)	Min (mm)	Max (mm)
150mm	550	932	800	1432
175mm	550	922	800	1420
200mm	550	907	800	1407
250mm	550	882	800	1382
300mm	550	857	800	1357
350mm	550	832	800	1332
400mm	550	807	800	1307
450mm	550	782	800	1282
500mm	550	757	800	1257
600mm	550	707	800	1207
700mm			800	1157
800mm			800	1107
900mm			1050	1557
1000mm			1050	1507
1100mm			1050	1457
1200mm			1050	1407

The actual dimensions **do not** make allowances for thermal expansion, which would require the “Min” dimension to be increased if the component is assembled almost closed.

**Application**

N.B. When calculating stress loading, the mechanical and thermally induced loads must be summed.

When the expansion length is installed between two fixed points, it should be installed nearer to the support furthest away from the apparatus. To ensure axial alignment, lateral bracing Support Assemblies must be fitted close and upstream to the Expansion Length.



this end must be down for vertical installation, and must be away from apparatus in horizontal application.

The Table below provides expansion data to increase the minimum figure if appropriate.

**Thermal Expansion (mm)**

Length (Metres)	Flue Gas Rise °C									
	100	200	300	400	500	600	700	800	900	1000
8.5	17	34	51	68	85	102	119	136	153	170
8.0	16	32	48	64	80	96	112	126	144	160
7.5	15	30	45	60	75	90	105	120	135	150
7.0	14	28	42	56	70	84	98	112	126	140
6.5	13	26	39	52	65	78	91	104	117	130
6.0	12	24	36	48	60	72	84	96	108	120
5.5	11	22	33	44	55	66	77	88	99	110
5.0	10	20	30	40	50	60	70	80	90	100
4.5	9	18	27	36	45	54	63	72	81	90
4.0	8	16	24	32	40	48	56	64	72	80
3.5	7	14	21	28	35	42	49	56	63	70
3.0	6	12	18	24	30	36	42	48	54	60
2.5	5	10	15	20	24	30	35	40	45	50
2.0	4	8	12	16	20	24	28	32	36	40
1.5	3	6	9	12	15	18	21	24	27	30
1.0	2	4	6	8	10	12	14	16	18	20
0.5	1	2	3	4	5	6	7	8	9	10



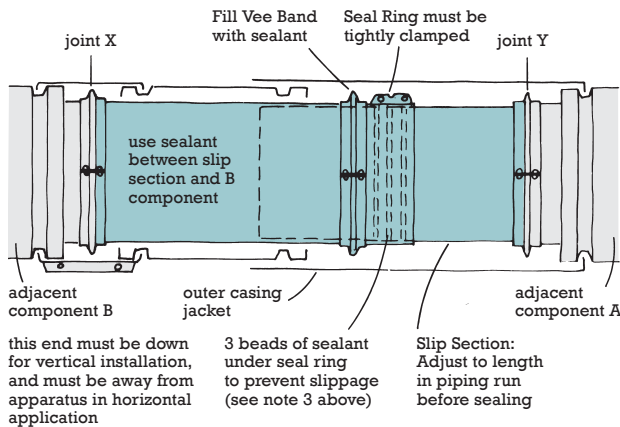
## ADJUSTABLE LENGTH

This component is not loadbearing and must not be used to accommodate expansion.

The Adjustable Length comprises a sliding inner section, flanged at one end only. This sliding piece 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 aluminised steel to the same specification as standard product.

Observe the following steps in making up a short length assembly for the Adjustable Length and refer to the data below and drawing.

1. Determine length between flanges of adjacent sections.
2. Extend slip section to required length. Remove bolts from the seal ring and leave it on slip section, away from the joint to be made.
3. Apply three 8mm diameter beads of the appropriate sealant around the slip section adjacent to the pipe flange, and equally spaced within the seal ring width. *See drawing.* Removing the slip section may make this easier. (If high temperature sealant is being used, apply an additional bead of low temperature silicone sealant to each side of the high temperature sealant to provide protection whilst the sealant cures).
4. Open out seal ring and slide over sealant until the flange mates with the flange of element "B". Replace the bolts and loosely clamp in position. Fill the Vee Band with sealant, and loosely fit to the joint.
5. Install the Adjustable Length between required sections or in desired position, and fit the Vee Bands, tighten the seal ring followed by the Vee Band.



This data illustrates the minimum and maximum distance that can be applied between the Vee Band Joints at each end of the Adjustable Length.

### Installed Distance Between Joints "X" & "Y"

Size	Short Version		Long Version	
	Min (mm)	Max (mm)	Min (mm)	Max (mm)
150mm	580	882	830	1432
175mm	580	870	830	1420
200mm	580	857	830	1407
250mm	580	832	830	1382
300mm	580	807	830	1357
350mm	580	782	830	1332
400mm	580	757	830	1307
450mm	580	732	830	1282
500mm	580	707	830	1257
600mm	580	657	830	1207
700mm			830	1157
800mm			830	1107
900mm			1080	1557
1000mm			1080	1507
1100mm			1080	1457
1200mm			1080	1407

## EXPANSION BELLOWS

Expansion Bellows will be required where gas pressures exceed 150mm w.g. (can be used for lower pressures if required). The components will easily accommodate the system pressure of 1500mm w.g. and tolerate vibration movement. The anticipated life of the Bellows is 10,000 cycles.

Pages 43 and 44 illustrate typical application.

Wherever possible the lined Bellows should be used. This has a 1mm thick straight stainless steel liner to protect the Bellows from the build up of grit within the convolutions, and eliminates turbulence and flow effects. It is used anywhere in a system for axial and vibration movements only, and must be accurately supported and guided. This component will not accommodate lateral movement and lateral offset and parallel misalignment should be eliminated. In vertical installations, the liner attachment to the Bellows is positioned at the uppermost end to prevent trapping of water, dirt or other foreign materials between it and the Bellows. The lined Bellows requires careful placement of support guides to avoid prevention of thermal movement. In horizontal use, the Bellows must be attached with the free end away from the appliance. Care must be taken **not** to pre-stress or compress the component during installation.

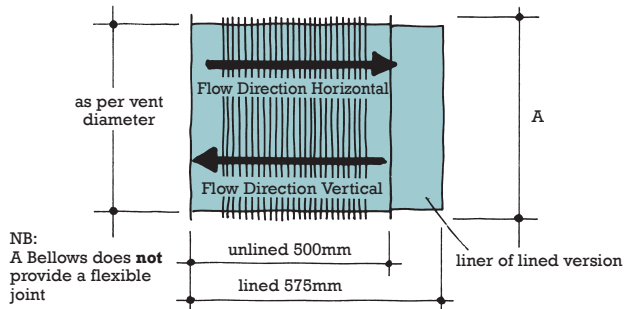
For any "Europa" venting system requiring low axial expansion forces the Unlined Bellows will deflect with minimum friction at a known "spring rate". The values for spring rates given in the table, assume that there are no other frictional constraints and also proper alignment of the liner in the case of the Lined Bellows.

### Application

When calculating stress loading, the mechanical and thermal induced loads must be summed.

When the Bellows is installed between two fixed points, it should be installed nearer to the support furthest away from the apparatus. To ensure axial alignment, lateral bracing Support Assemblies must be fitted close to and upstream to the Bellows. *See pages 43 and 44.*

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



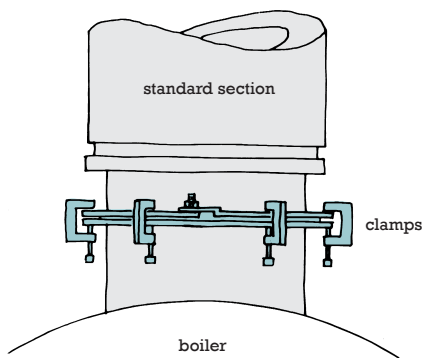
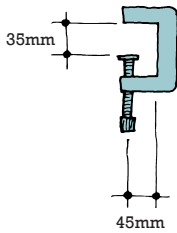
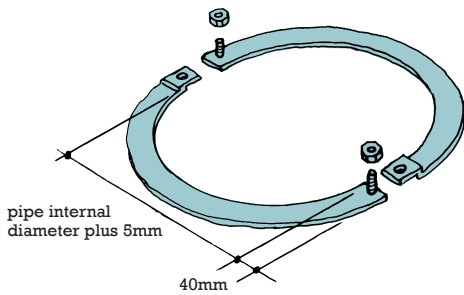
Size	Diam. A (mm)	Axial Spring Rate (N/mm)	Spring Rate (kg/mm)	Lateral Offset from Centre Line (Unlined only) (mm)	Angular Offset Degrees (Unlined only) (mm)
150mm	188	12.6	1.3	15.5	25.0
175mm	213	14.6	1.5	13.5	22.0
200mm	238	16.6	1.7	12.0	20.0
250mm	288	20.6	2.1	9.5	16.0
300mm	356	20.5	2.1	7.5	13.0
350mm	406	22.6	2.3	6.5	11.0
400mm	456	25.7	2.6	6.0	10.0
450mm	506	28.9	3.0	5.0	9.0
500mm	556	32.0	3.0	4.5	9.0
600mm	656	38.2	3.9	4.0	7.0
700mm	756	45.0	4.6	4.0	7.0
800mm	856	51.0	5.2	3.5	6.0
900mm	956	57.0	5.8	3.2	5.5
1000mm	1056	63.0	6.4	3.0	5.0
1100mm	1156	69.0	7.0	2.3	4.5
1200mm	1256	75.0	7.7	2.5	4.0

N.B. The axial compression available for all sizes is 120mm.

**FLANGED BOILER KIT**

Use this component to connect the flanged end of any Europa element on to the flanged flue gas outlet of apparatus.

1. The two halves must be linked and bolted to make the appropriate ring around the exposed liner above the flange.
2. Apply appropriate Europa sealant to interface of flanges.
3. Locate the flanges together and secure with the appropriate number of clamps located at equal distance around the flange circumference.

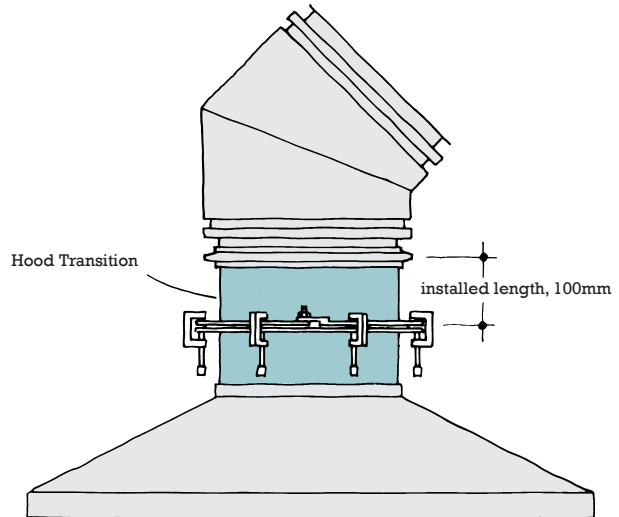


Size	150	175	200	250	300	350	400	450
No. of clamps	4	4	4	5	6	7	8	9

Size	500	600	700	800	900	1000	1100	1200
No. of clamps	10	12	14	16	18	20	22	24

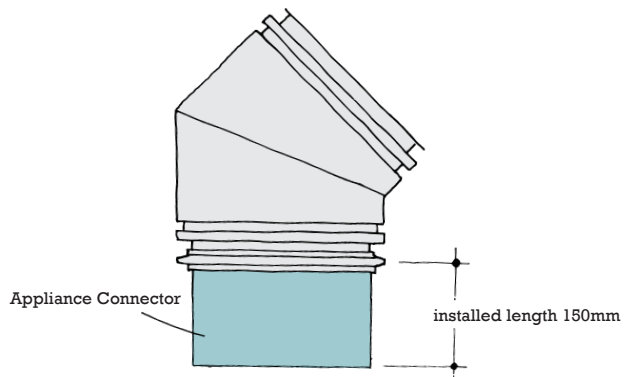
**HOOD TRANSITION**

This component which is a short liner length can be connected to the boiler/appliance/hood using a Flanged Boiler Kit with the upper flange being secured to any Europa element in the conventional manner.



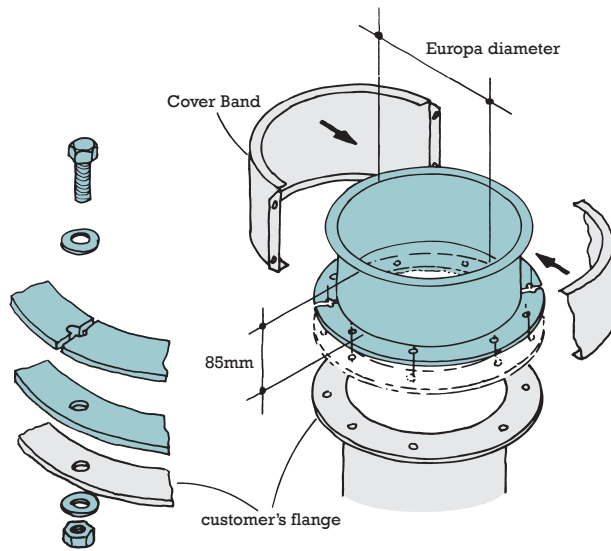
**APPLIANCE CONNECTOR**

This is a 150mm length of liner, flanged at one end only. Secure to any Europa element in the conventional manner, and utilise/connect the protecting spigot to the appliance as required.

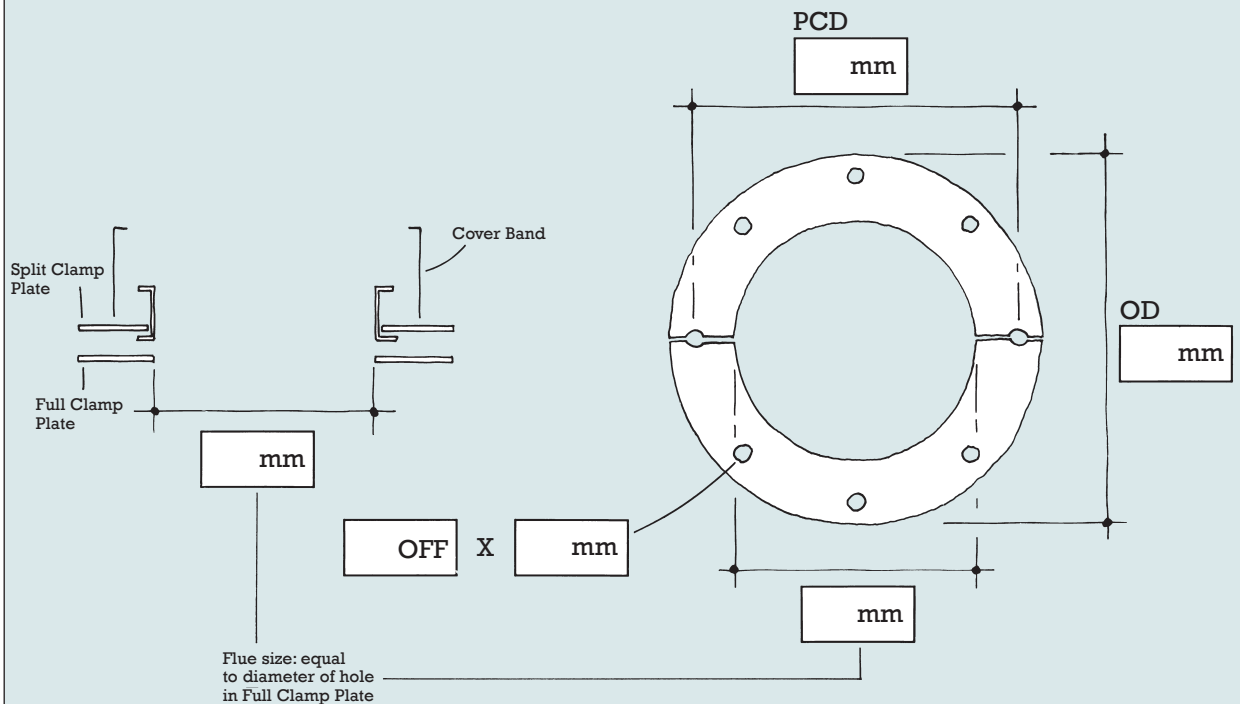


## FLANGE ADAPTOR

This component, which consists of an 85mm length of liner and a purpose made flange, is used to connect the Europa system to a ready flanged appliance. The bottom liner flange is secured to the apparatus with a split flange, the dimensions of which as well as the hole positions, have been previously identified. The drawing illustrates assembly and indicates the dimensions which are required when the component is ordered. Nuts and bolts are not provided.



PLEASE PHOTOCOPY THIS SECTION, FILL IN BOXES AND SEND WITH ORDER



**SUPPORT PLATE ASSEMBLY**

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

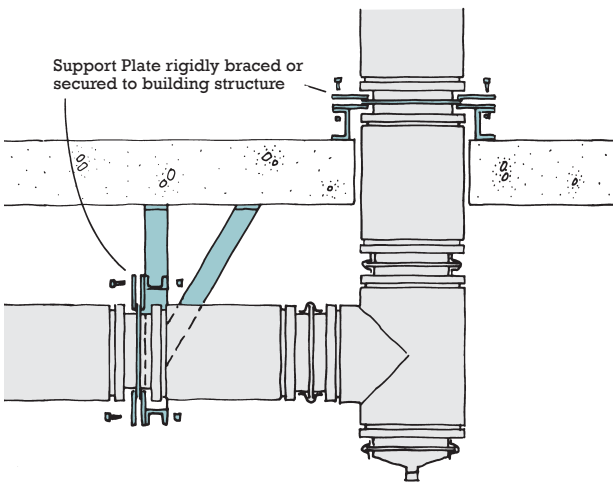
The Support Plate Assembly consists of a 170mm installed length of liner flanged at both ends, and with a centrally located inner welded flange. Pairs of plates are assembled with half sections aligned 90° rotated on each side of central flange, and then bolted to adjacent steel framework **on all four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

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

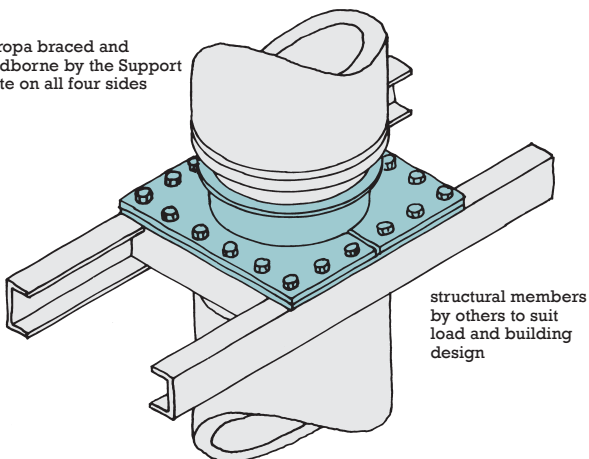
The assembly provides the maximum strength support for a vertical chimney/vent. It is used to maintain positive joint alignment, and support for expansion joints in both horizontal and vertical application. Between any two fixed points in a system or wherever an expansion joint must slide to prevent 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 Loadbearing and Lateral bracing data on pages 36 and 37 to determine frequency of use of this component.

These load bearing characteristics are dependent on the use of 12mm dia. bolts being used to adequately secure the Plate Support to the adjacent structure. See drawing.

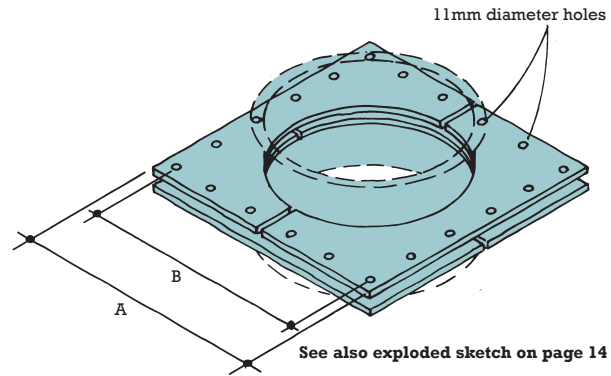


Europa braced and loadborne by the Support Plate on all four sides

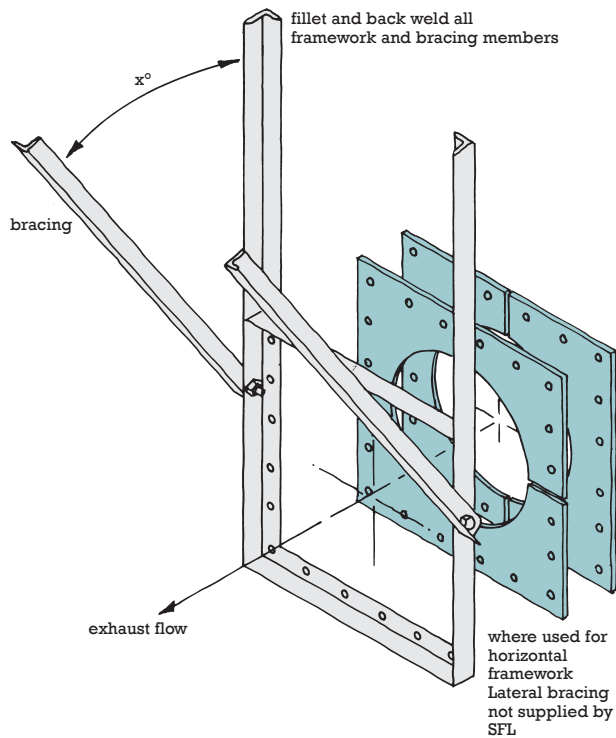


As the Support Plate interrupts the annulus of the Europa construction, a Cover Jacket Set should be used to close the annulus on each side of the Plate joint.

Size	Dimensions	
	A	B
150mm	302	262
175mm	327	287
200mm	352	312
250mm	402	362
300mm	452	412
350mm	502	462
400mm	552	512
450mm	602	562
500mm	652	612
600mm	752	712
700mm	854	804
800mm	954	904
900mm	1054	1004
1000mm	1154	1104
1100mm	1254	1204
1200mm	1354	1304



illustrations not to scale



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
600 - 1200mm	125 x 45 x 6mm	75 x 75 x 6mm

## WALL SUPPORT ASSEMBLY

### 150mm to 600mm diameter 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.

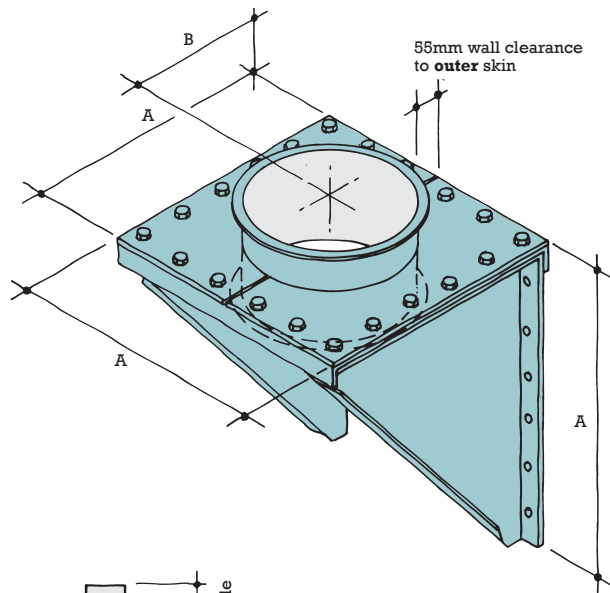
### 700mm to 1200mm diameter version

This package consists of a Support Plate, a pair of steel triangular side frames, two cross members, two spacers and the integral 170mm length.

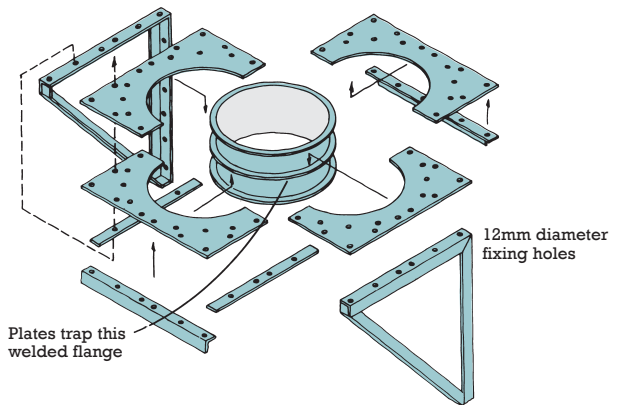
The application of either type is very important. The side support **must** always be orientated so that they are on the **loadbearing** side of the trapped Europa welded liner joint. The loadbearing features may be either mechanically (weight) or thermally (expansion) induced, and it is the greater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

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 2-3 metres below the Wall Support to stabilise the exposed end and thus resist side forces due to wind. See the *Loadbearing and Lateral bracing data on pages 36 and 37 to determine frequency of use of this component.*

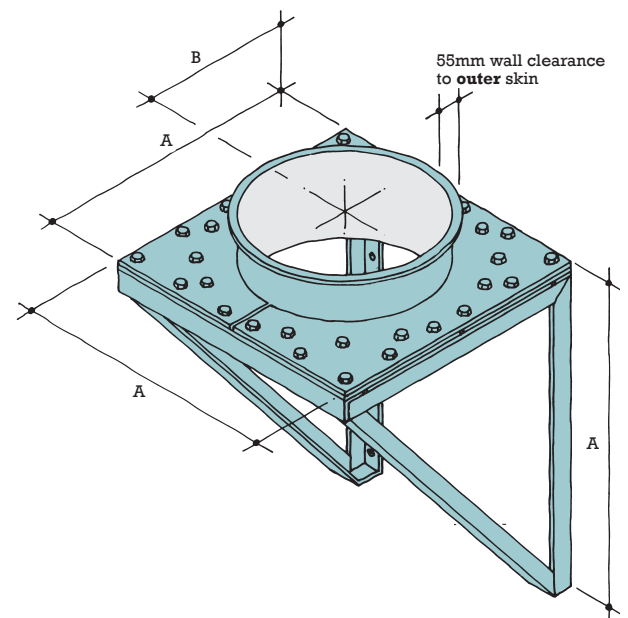
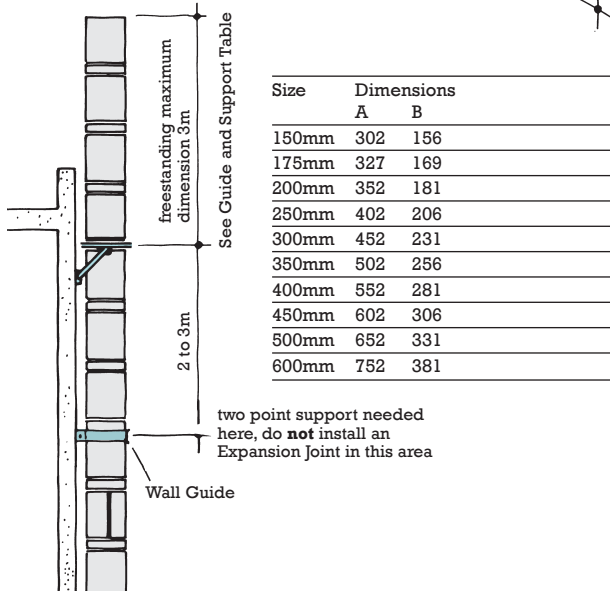
The height of Europa between supports must be measured from the expansion length or bellows, which must be used below each support.



Exploded assembly of 150mm to 600mm diameter version



Exploded assembly of 700mm to 1200mm diameter version



Size	Dimensions	
	A	B
700mm	854	431
800mm	954	481
900mm	1054	531
1000mm	1154	581
1100mm	1254	631
1200mm	1354	681

As the Wall Support interrupts the annulus of the Europa construction, a Cover Jacket Set should be used to close the annulus on each side of the Plate Joint.

## GUIDE ASSEMBLIES, LATERAL BRACING

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

Nevertheless, the location of these Supports 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.

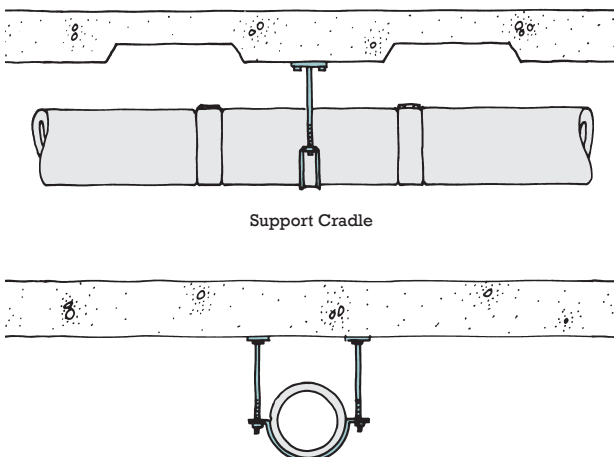
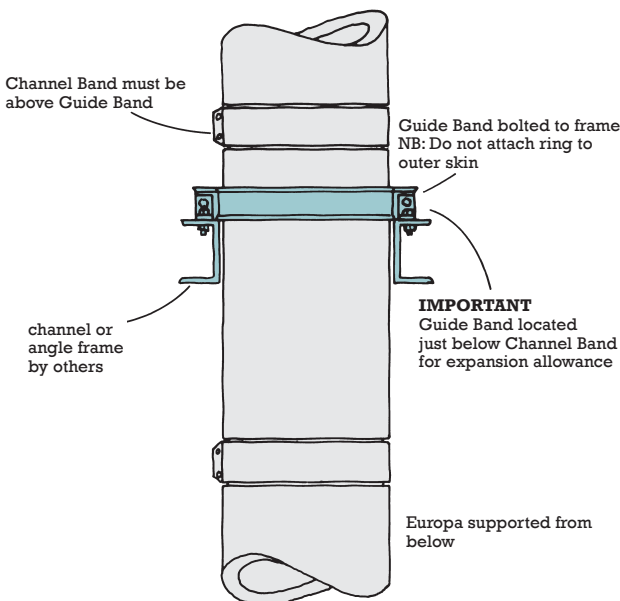
N.B. Supports and Guides described here are only suitable for attachment to non-combustible structure.

### GUIDE BAND AND SUPPORT CRADLE

The Guide Band is used as an expansion guide for Europa 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. See the typical application drawings on pages 43 to 49.

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

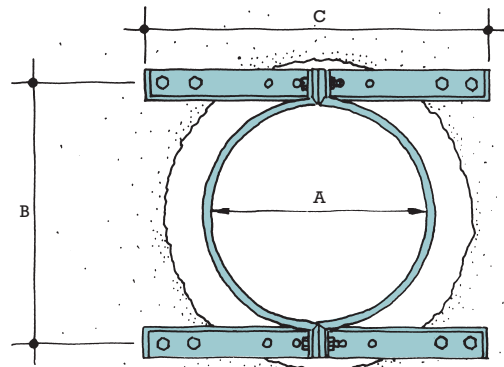
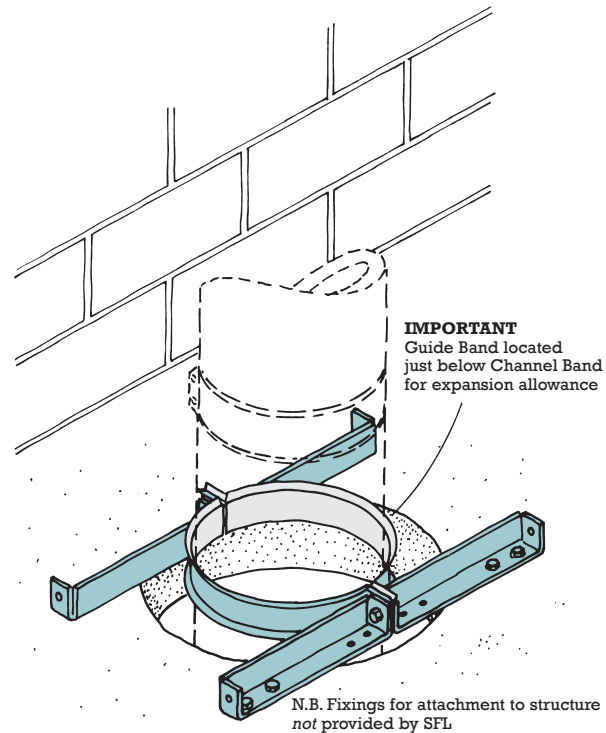


For Support Frequency see Guide and Lateral Bracing Table on page 37.

### 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 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 to allow for sliding movement during thermal expansion.



Size	Dimensions		
	A	B	C
150mm	207	271	686
175mm	232	296	686
200mm	257	321	686
250mm	307	371	686
300mm	357	421	686
350mm	407	471	826
400mm	457	521	826
450mm	507	571	826
500mm	557	621	826
600mm	657	721	826
700mm	757	814	1000
800mm	857	914	1000
900mm	957	1014	1000
1000mm	1057	1114	1000
1100mm	1157	1214	1000
1200mm	1257	1314	1000

## WALL GUIDE

These components comprise 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 erector and should be of sufficient and suitable strength to ensure adequate attachment.

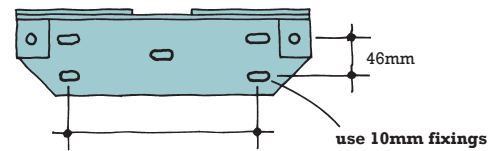
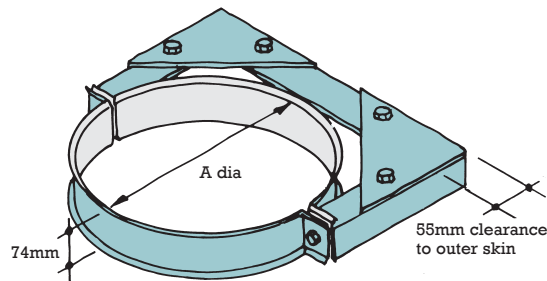
Both versions are designed to provide 55mm clearance from the outer casing of Europa to non-combustible structures. The assembly is intended to resist lateral or side loads **only**, and

must not be used to carry the weight of a vertical Europa assembly. See drawing.

The assemblies are not to be used for attachment to any combustible structure. If Europa 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. See table on page 37 for safe clearance criteria.

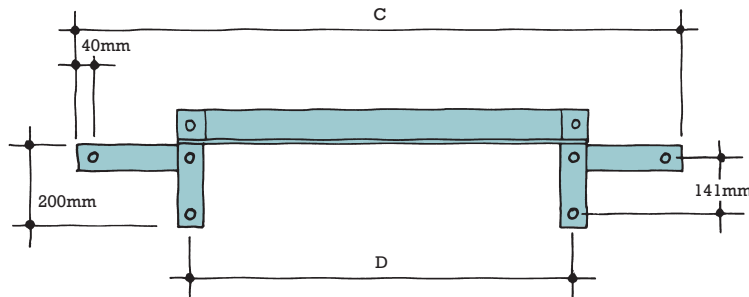
The Guide Band inside diameter is 5mm larger than the outside diameter of the Europa to allow for sliding movement during thermal expansion.

### 150mm to 600mm diameters

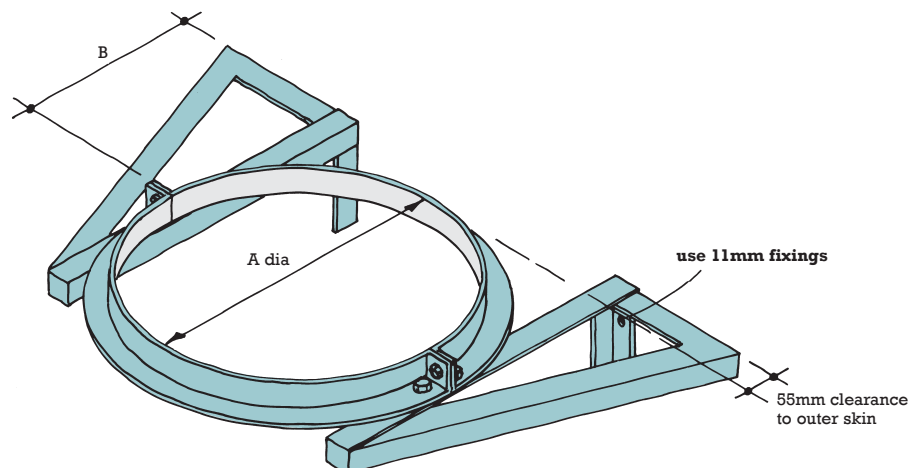


Size	Dimensions	
	A	B
150mm	207	200
175mm	232	200
200mm	257	225
250mm	307	263
300mm	357	313
350mm	407	363
400mm	457	413
450mm	507	463
500mm	557	513
600mm	657	613

### 700mm to 1200mm diameters



Size	Dimensions			
	A	B	C	D
700mm	757	640	1200	814
800mm	857	690	1328	914
900mm	957	740	1454	1014
1000mm	1057	790	1582	1114
1100mm	1157	840	1708	1214
1200mm	1257	890	1834	1314



## FITTINGS

All Tees, Elbows, Increases, Offsets, Manifolds and Drainage Components must be protected from expansion greater than 6mm.

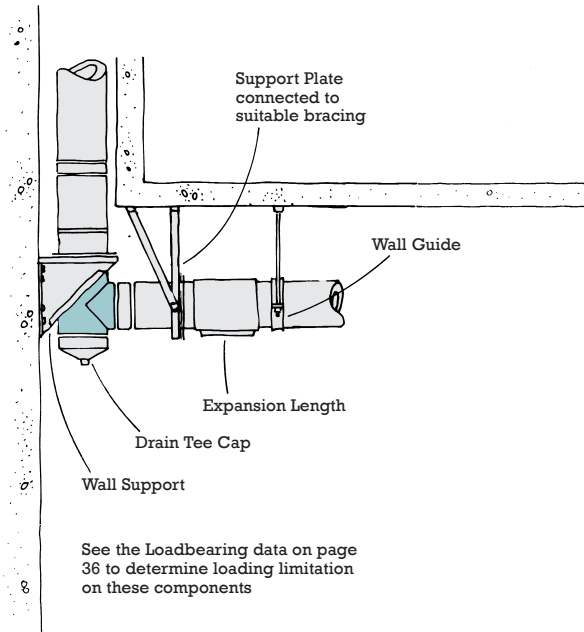
### 90° & 95° TEES

The 90° and 95° Tees will support vertical chimney/vent when they are supported from below, and are designed to join horizontal connection into vertical application and provide a drain or inspection fitting. For the latter application, the Drain Tee Cap is installed at the base of the Tee and, where required piped to a suitable drain.

When placed on top of a supporting framework or flat plate, the Tee Cap closure becomes inaccessible and cannot be removed. Consequently, where access is required there are two options:

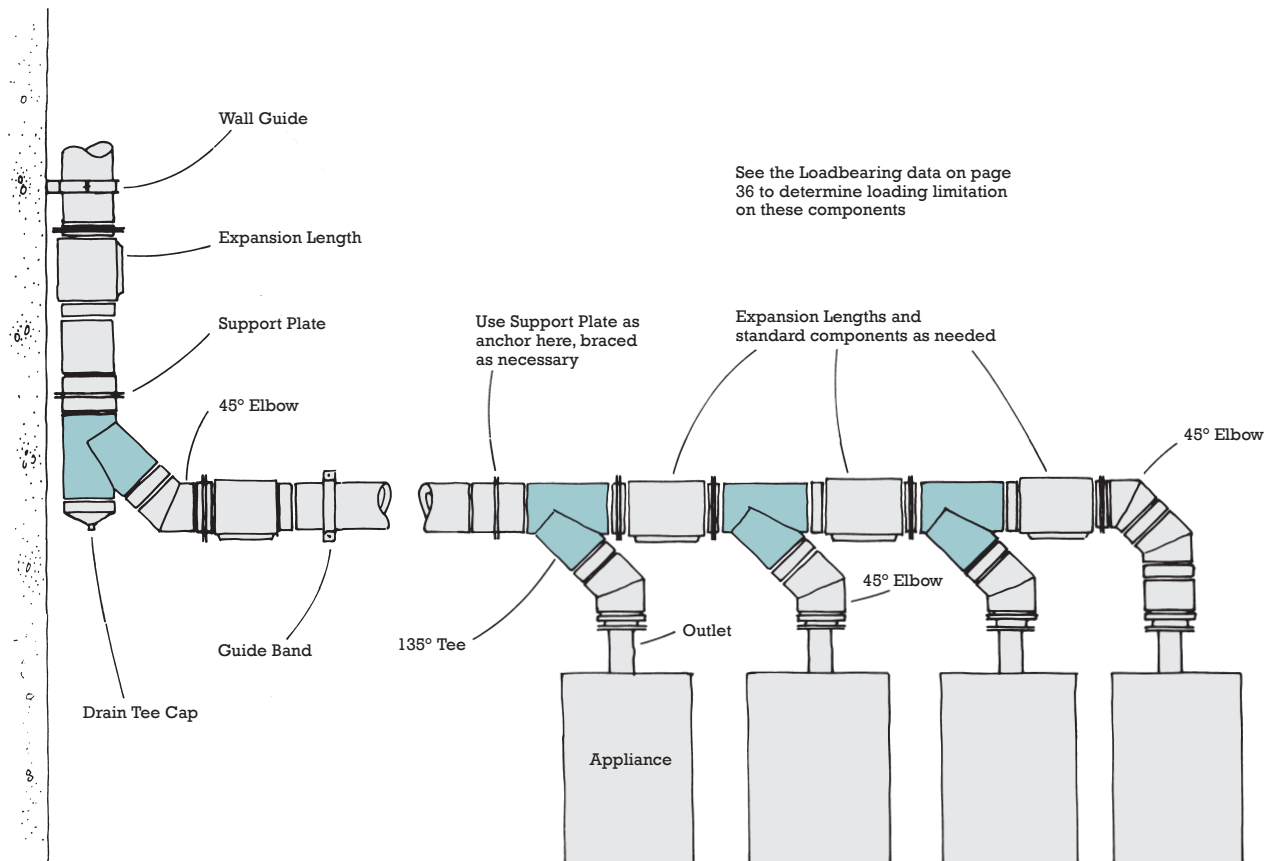
1. Use a Support Plate or Wall Support at the upper Tee Joint or above. See drawing.
2. Support the Tee from its lower joint with a Support Plate or Wall Support if appropriate, and use an additional 500mm standard pipe length or a Hood Transition below the support beneath which a Drain Tee Cap can be located.

It is preferable to always connect the drain fitting of the Drain Tee Cap to a suitable Drain. This will permit rain entering the chimney to wash down, dilute and remove any corrosive combustion condensates. Also, always install the Tee Cap with sealant on the mating surfaces of the flange, as well as in the groove of the Vee Bands. This will prevent leaks and ensure that the drain functions as intended. See section on "Drainage" page 28.



### 135° TEE

Use of this component allows a 45° entry to the vertical chimney, and support requirements are similar to those dictated for the 90° Tee. Use of this component necessitates the use of a 45° elbow if there is a horizontal breaching configuration. See drawings.

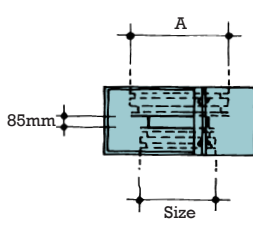




## INCREASER/REDUCERS

Where space is limited, the Step Increaser provides the necessary increase with an installed length of 85mm.

Tapered Increasers provide a gradual change of diameter over the installed length shown on the table. Two versions are available, one providing a one step increase/decrease and the other providing a two step increase/decrease. Provided with a Vee Band to suit the Flue Size. See drawing.



85mm

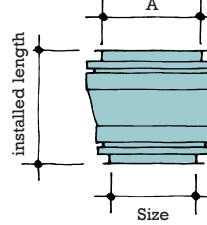
A

Size

"k" - see table

Step Increaser/Reducer		
Size	Dimension A	"k"
150mm	200	0.191
175mm	200	0.055
200mm	250	0.130
250mm	300	0.093
300mm	350	0.070
350mm	400	0.550
400mm	450	0.044
450mm	500	0.036
500mm	600	0.093

If these products are used as Reducers, a Vee Band to suit "A" dia. must be purchased separately.

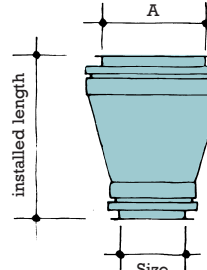


installed length

A

Size

Single Step



installed length

A

Size

Two Step

"k" - see table

Tapered Increaser/Reducer			
Size	Dimension A	Installed Length	"k"
<b>Single Step</b>			
150mm	200	300	0.100
175mm	200	300	0.026
200mm	250	300	0.060
250mm	300	300	0.044
300mm	350	300	0.033
350mm	400	300	0.026
400mm	450	300	0.020
450mm	500	300	0.017
<b>Two Step</b>			
150mm	250	400	0.217
175mm	250	400	0.137
200mm	300	400	0.163
250mm	350	400	0.127
300mm	400	400	0.101
350mm	450	400	0.083
400mm	500	400	0.068
450mm	600	500	0.101
500mm	600	400	0.049
600mm	700	400	0.037
700mm	800	400	0.029
800mm	900	400	0.023
900mm	1000	400	0.019
1000mm	1100	400	0.016
1100mm	1200	400	0.014

## USE OF ELBOWS, OFFSETS & MANIFOLDS

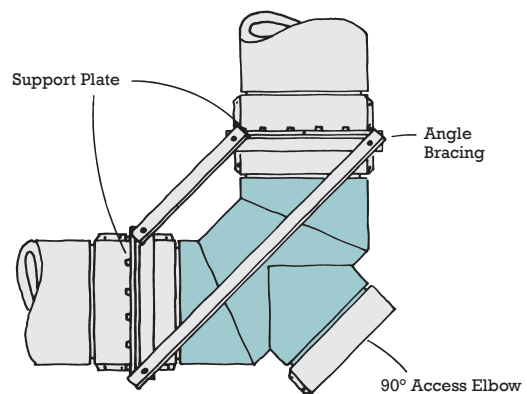
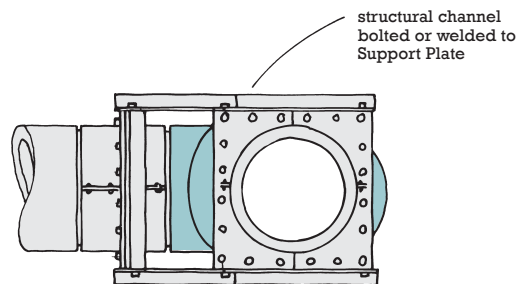
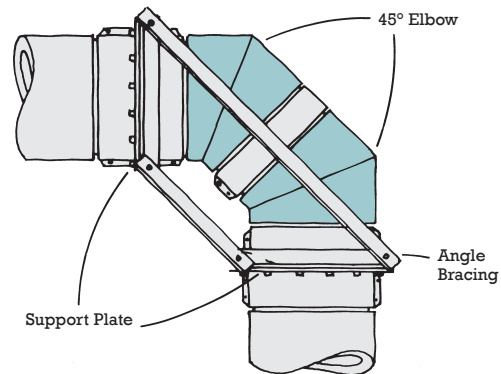
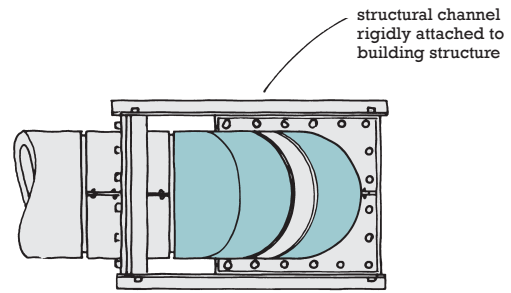
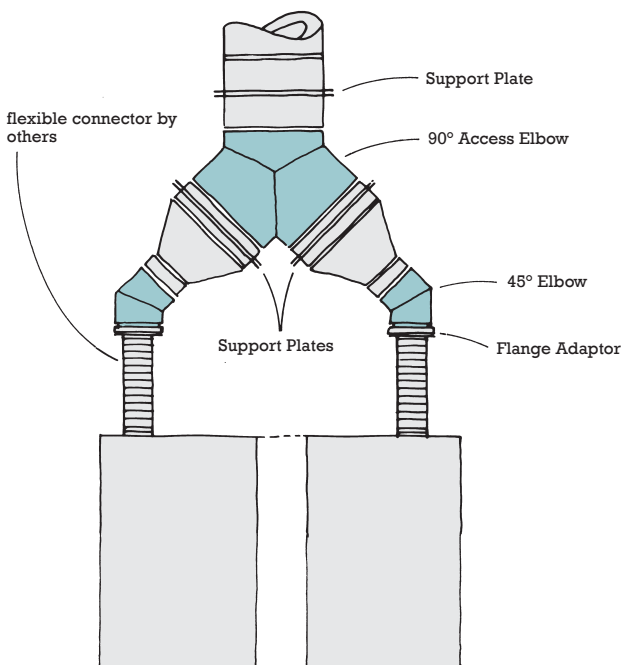
The Elbows provide joints to make up 15°, 30° or 45° changes of direction. **All elbows must be protected from thermal expansion and bending forces. For offset data see component range details on page 8.**

Sloped or horizontal offsets in the vertical portion of a chimney/vent 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 drawings on page 24 and application drawings on pages 43 to 49.

The length of offset, must be determined by the Europa strength considerations. The maximum dimension between supports are given on the Guide and Lateral Bracing Table on page 37.

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. See drawing.

The 90° Access Elbow is useful where the vertical chimney must be located between two boilers or where an engine has dual exhaust outlets. It does not load-bear. It may be suspended from a Support Plate or Wall Support, and the usual precautions for avoiding thermal expansion deformation must be observed. See drawing.

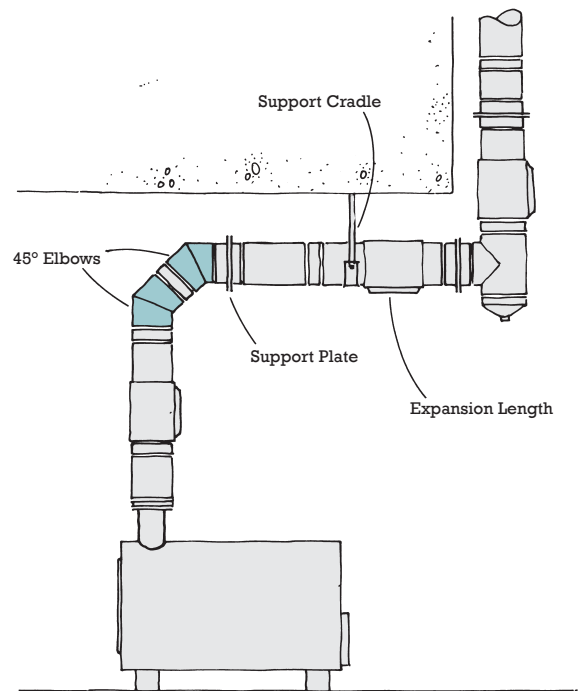
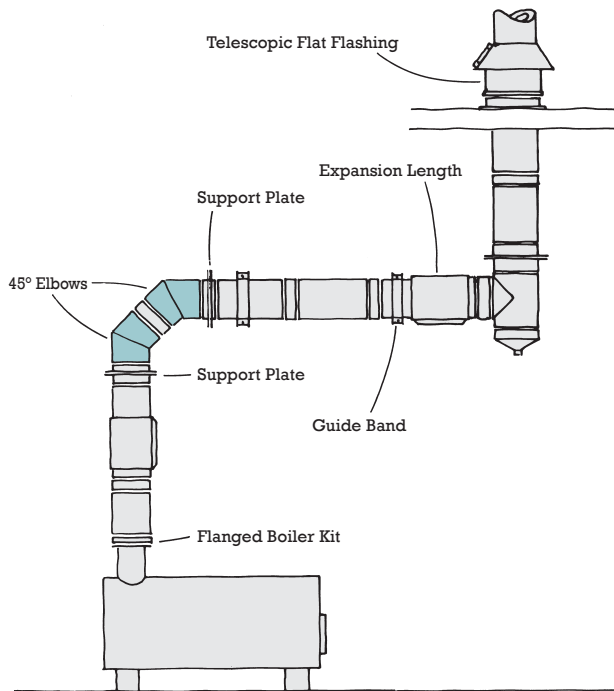


**Structural alternatives for stiffening Elbows when using either Plate Support or Wall Support. (The bracing shown is one possible method. Actual bracing should be designed with configuration and building/structure in mind).**

With frequent support, there is no structural or operating limit to the length of horizontal or sloped portions of a Europa installation providing the system meets the capacity, pressure drop or available draught requirements of the appliance or equipment. The carrying capacity of Europa supports and their structural attachments must consider the weight of the offset plus whatever vertical vent is carried by the support.

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 for offset supports to obtain structural stability.

Re-supports such as those shown in the drawing must be securely anchored to walls, posts or locally fabricated rigid frame work. Supports suspended by threaded rod or from small size angles or straps are not satisfactory to resist bending moments in offsets.



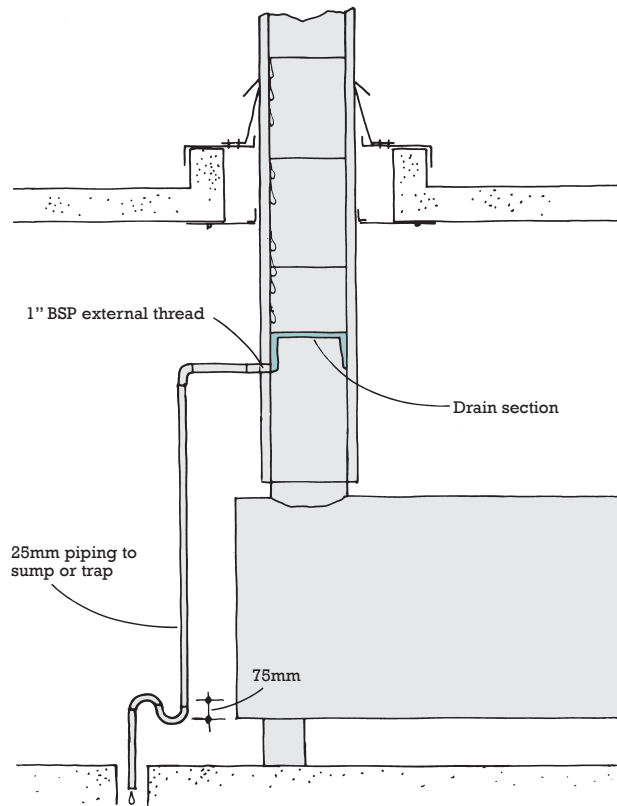
## DRAINAGE

Where the Europa is to be used for catering equipment and extract ducts, additional requirements are needed which enable the chimney to be effectively cleaned and which facilitates the collection of grease condensates. There are also occasions where the open end of the vent when subjected to excessive rainfall conditions would justify the use of a Drain Section rather than the use of a Drain Cap, and in some cases

## DRAIN SECTION

Where rain enters the chimney outlet this component can be used. See section on Terminations Page 30. The Drain Section is designed to trap any water running down the inside of the vent and it is collected in a limited capacity gutter which is drained to the external wall.

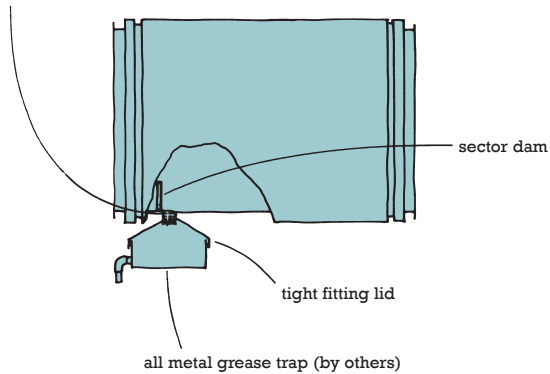
The component should be installed internally in a vertical chimney, thus lessening the chance of freezing. The drain line should be run to a water seal or trap, to suit pressure in the system. See drawing.



## DUCT DRAINS

When the Grease Duct is correctly installed with a minimum slope to the drain coupling of 20mm per metre horizontal run, "puddling" of grease or residues will not occur at site other than at the drain couplings because of the functional location of the dams. The material in the duct can easily drain to an externally located trap (supplied by others). See drawing.

1 1/2" BSP internal thread coupling goes directly through cover of grease trap

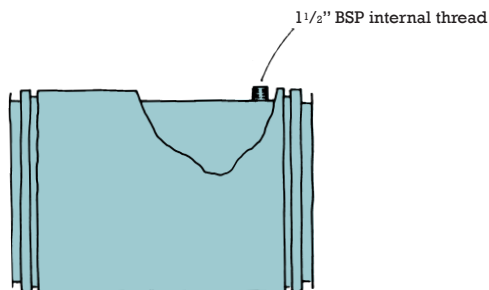


NB: No drain piping allowed if used only to trap grease.

## NOZZLE SECTION

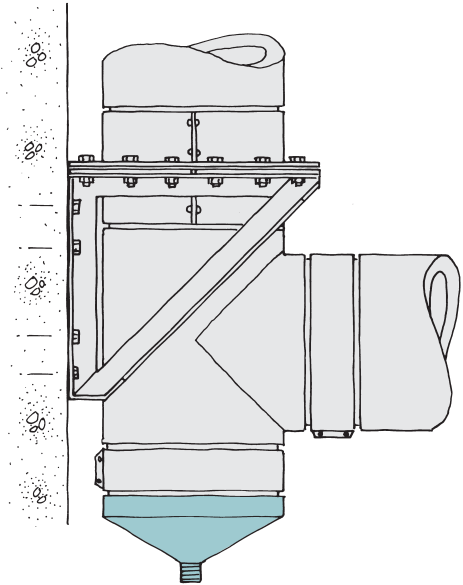
The Nozzle Section is the same basic construction of the Duct Drain with the sector dam removed. See drawing.

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 1/2" 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 vent/duct. The same access can also be used to facilitate hot water flushing so that the entire grease duct system can be scrubbed down.



## DUCT DRAINS

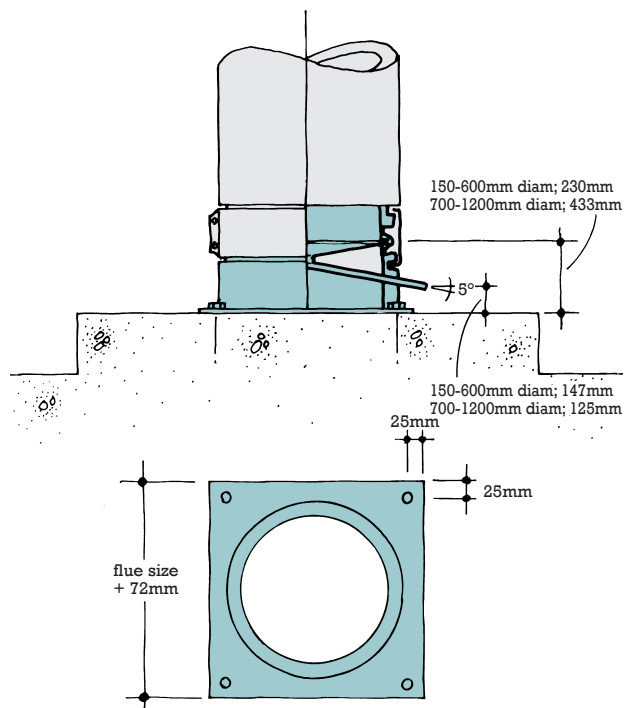
The drawing features the typical application of this component, and its application is self-explanatory. Please refer to the section on 90° Tees reference location of this component.



Drain:  
1" BSP external thread for 150mm to 350mm diameters  
2" BSP external thread for 400mm to 1200mm diameters

## ANCHOR PLATE WITH CONDENSATE COLLECTOR

Used at the bottom of a Europa run and below a Tee. Length of vent above this component must not exceed 13m before an additional loadbearing support should be used. No cap is fitted to the stainless steel drain. The Anchor Plate must be secured to solid foundations through 4 x 10mm diameter holes in the base plate.



**TERMINATION**

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 silicone rubber provided 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.

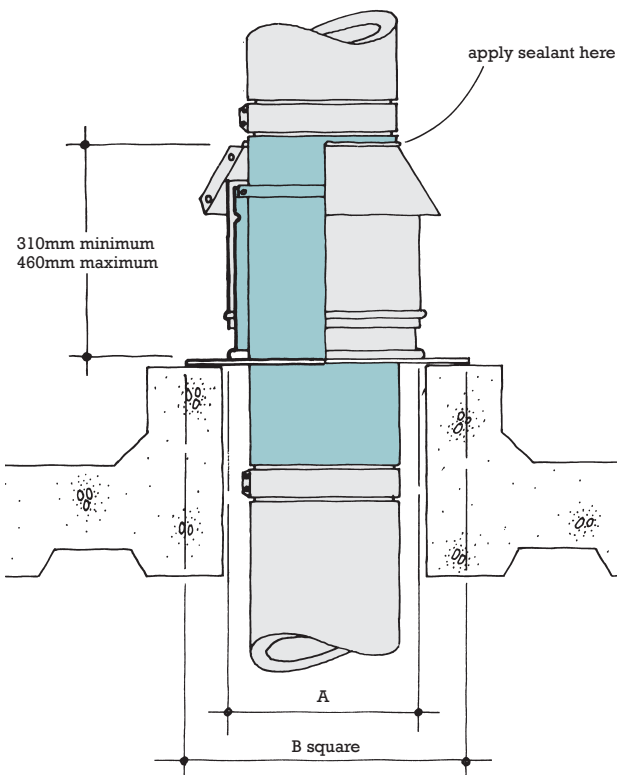
A vertical upward discharge (such as with the Tapered Vent Terminal or Open Vent Closure Ring) provides the most effective means of dispersing chimney gases. Such terminations, however, will allow entry of rain. See page 28 for notes on Drainage.

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

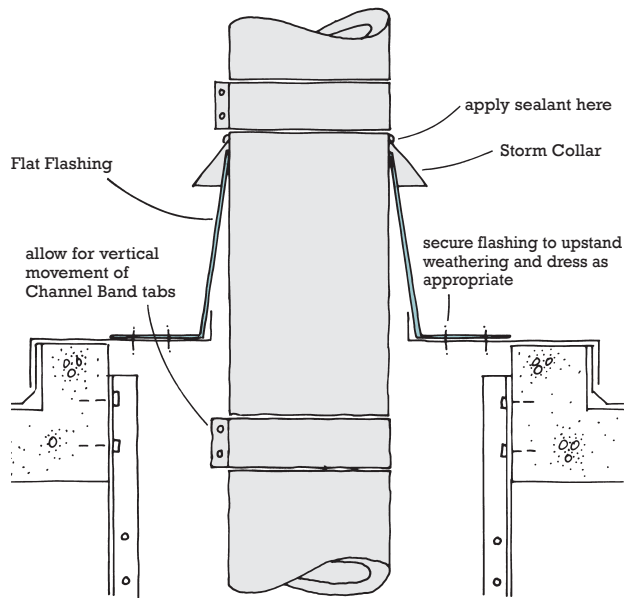
1. A Drain Section located at least 5 diameters below the chimney outlet, but above any Tee or Elbow.
2. A Drain Tee Cap fitted to a suitable drain (use a trap or valve in the drain if the system is under positive pressure).

**TELESCOPIC FLAT FLASHING**

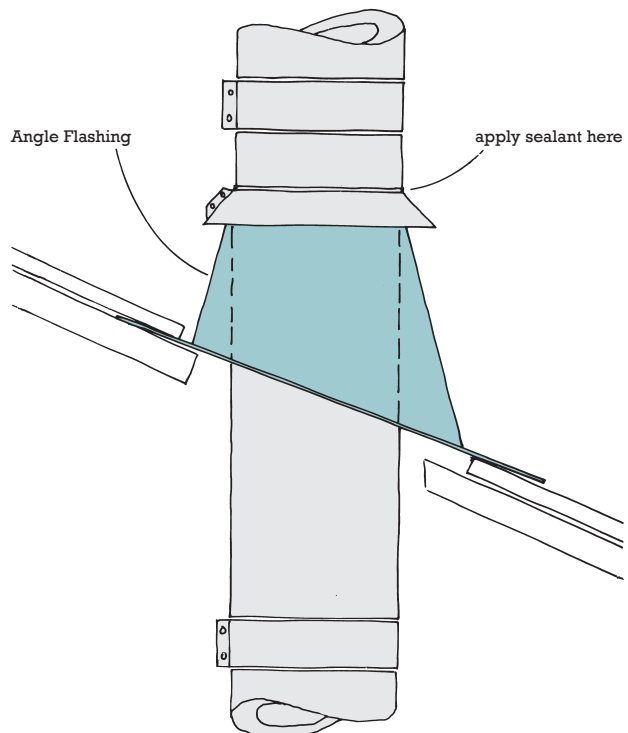
Size	Dimensions	
	A	B
150mm	266	508
175mm	291	546
200mm	316	570
250mm	366	610
300mm	416	666
350mm	466	712
400mm	516	762
450mm	566	812
500mm	616	864
600mm	716	965
700mm	812	1064
800mm	912	1164
900mm	1012	1264
1000mm	1112	1364
1100mm	1212	1464
1200mm	1312	1564



**FLAT FLASHING**

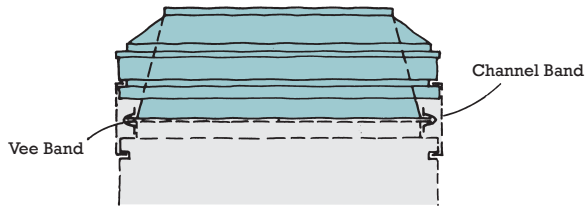


**ADJUSTABLE FLASHING**



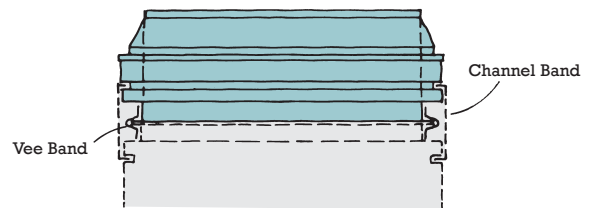
### TAPERED VENT TERMINAL

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.



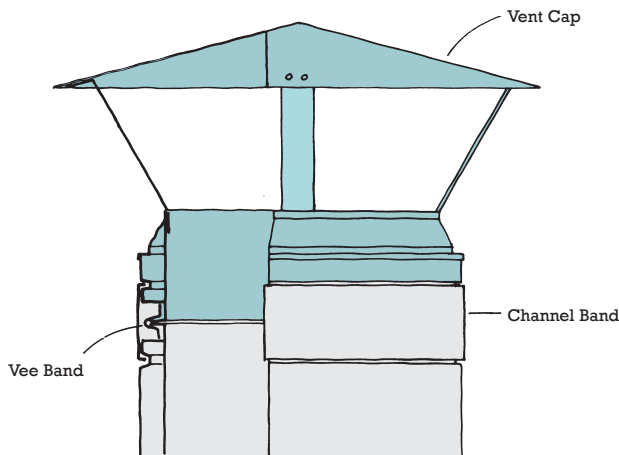
### PARALLEL VENT TERMINAL

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.



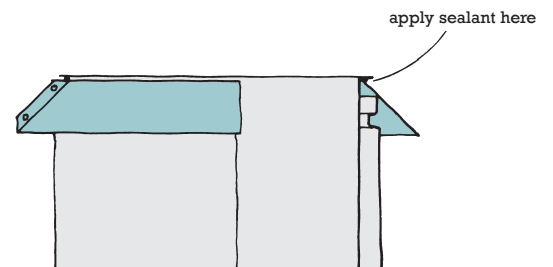
### VENT CAP

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 Vee Band and a Channel Band.



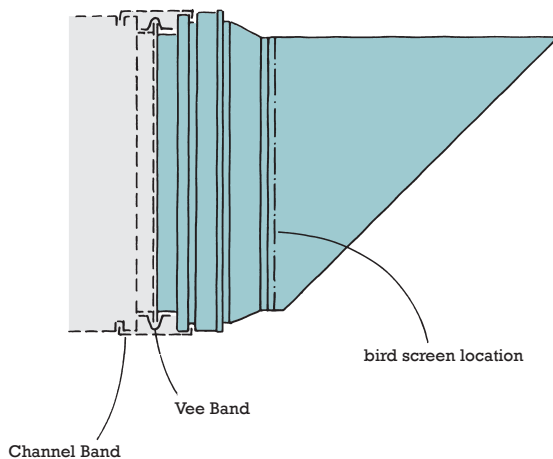
### OPEN VENT CLOSURE RING

This closes the annulus on the top of the last section of the chimney/vent and provides an open end with no reduction in internal diameter. The ring is secured by means of bolts through the end tabs. The component should be located under the top flange of the final element, pushed up as far as it will go and the bolts secured. It should be sealed at its upper edge under the flange with silicone sealant.



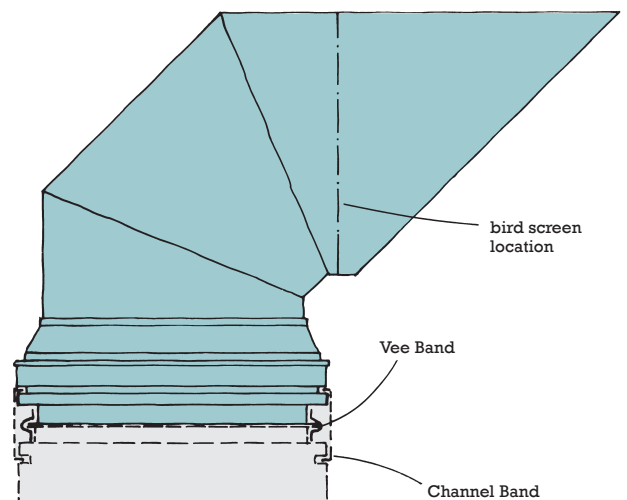
### EXHAUST TERMINAL - HORIZONTAL

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



### EXHAUST TERMINAL - VERTICAL

Secure to the final length with a Vee Band and Channel Band.



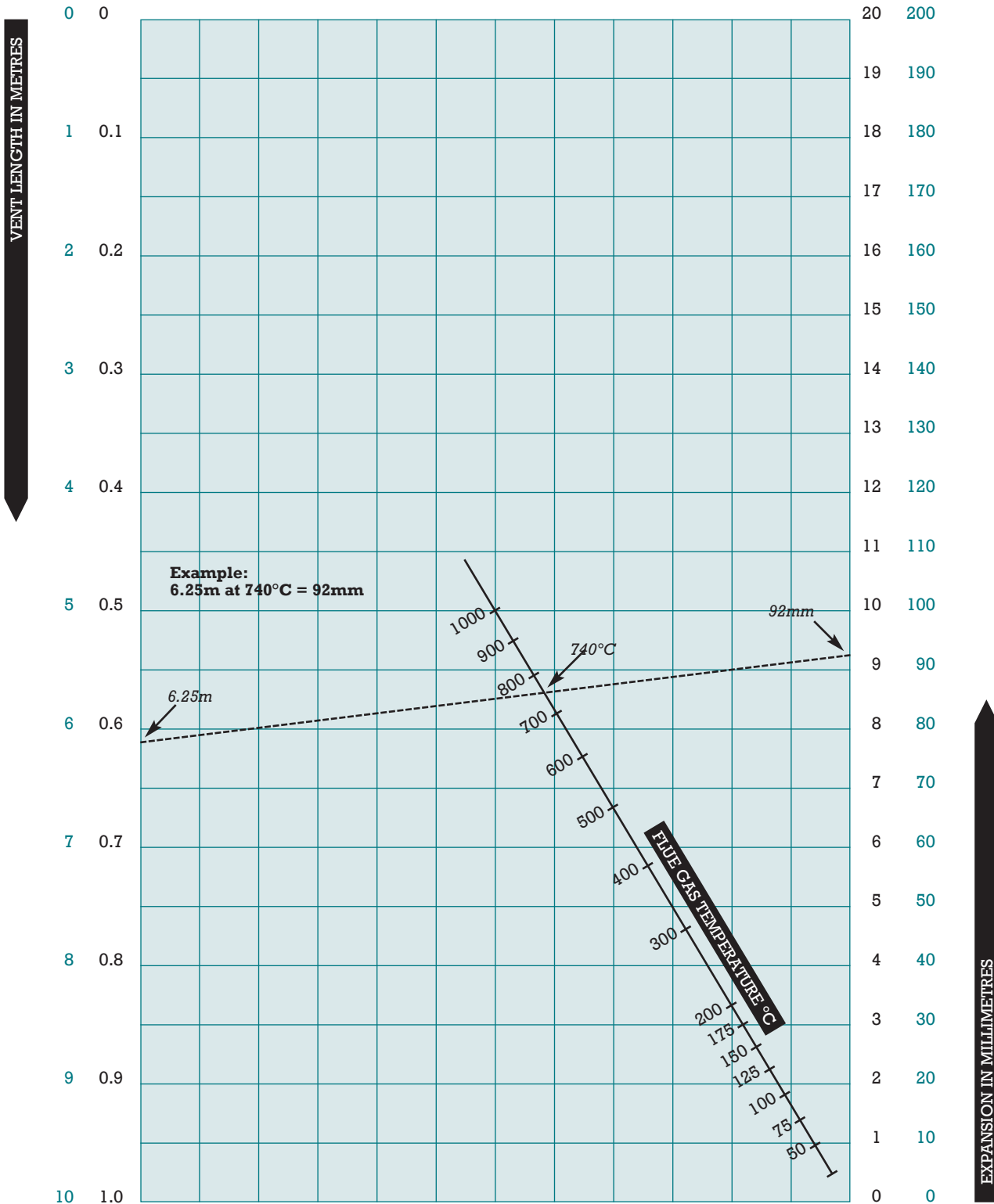
**EXPANSION RATE**

This nomograph indicates maximum expansion for which support arrangements and the configuration **must** allow.

Actual expansion will depend on levels of subsidiary insulation and degree of vent exposure.

**How to use:**

Draw a straight line from the "appropriate" point on the "length" scale across the appropriate point on the temperature scale and read off the "expansion" scale.



Use black figures for 0 – 10 metre  
Use green figures for 10 – 100 metre

See also section on expansion on page 4.



## PRESSURE TIGHTNESS

Europa is capable of withstanding considerable positive and negative pressures when used for various applications. In the absence of any British Standards relating to the pressure resistant characteristics of vent systems, we have identified DIN 24194 as the only pertinent European standard to which appropriate reference can be made, and this is translated below.

If Europa is installed in accordance with our installation instructions, the system will conform to the most stringent requirement of Tightness – Class IV at 7500 Pa. ie., With High Temperature sealant, (eg diesel generators) the leakage rate will not exceed:

$$0.3348\text{m}^3/\text{hr}/\text{m}^2 \text{ (} 0.093 \text{ l/s/m}^2 \text{ @ } 7500 \text{ Pa.}$$

With Low Temperature sealant, (eg boiler vents and condensing systems), the leakage rate will not exceed:

$$0.02016\text{m}^3/\text{hr}/\text{m}^2 \text{ (} 0.0056 \text{ l/s/m}^2 \text{ @ } 200 \text{ Pa.}^*$$

*\*The European Chimney Standards will quote this figure based on the requirements in any existing European standard.*

Where Europa is used for conventional duct application, and applied in accordance with our instructions, it will, when tested in accordance with DW/143,\* fully meet the requirements of DW/142, Class D.\*

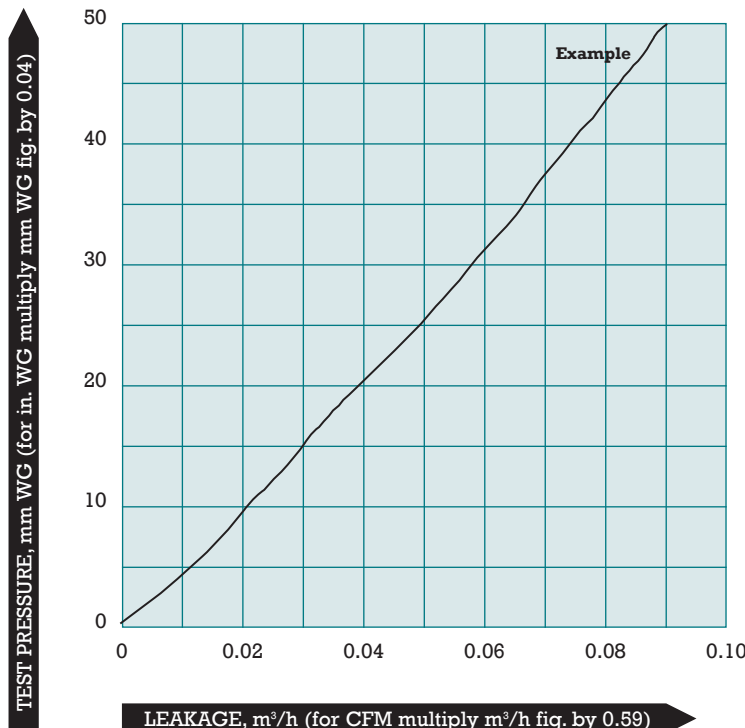
*\*Published by the Heating & Ventilating Contractors Association.*

### DIN 24194 – TIGHTNESS: Leakage from Duct Systems (Channel Systems)

Tightness – Class	Duct – System	Permitted Leakage, m <sup>3</sup> /s/m <sup>2</sup> at Test Pressure*			Comments
		200Pa	400Pa	1000Pa	
Class I: For ducts (channels) without demands. Folded ducts, for example, garages, workshop halls, gym and leisure places. The duct is manufactured without additional sealing.	Without demands	–	–	–	For ducts of form F
Class II: For duct systems with increased demands. Folded ducts, for example, conference rooms, lecture halls, offices, for air for laboratories, normal area in hospitals, channels or ducts which lead into rooms which are within the use range of room Class I and II. At these ducts some sealing measures are necessary. This results in a higher expense than tightness Class I.	With increased demands	0.84 x 10 <sup>-3</sup>	1.32 x 10 <sup>-3</sup>	2.4 x 10 <sup>-3</sup>	For ducts of form F
Class III: For duct systems with especially high demand. Folded or welded ducts; folded ducts, for example, hospitals and rooms which have to be in clean conditions within the use range of room Class I and II. For folded ducts sealing measures are necessary in every case. This results in a higher expense than tightness Class II.	With especially high demands	0.28 x 10 <sup>-3</sup>	0.44 x 10 <sup>-3</sup>	0.8 x 10 <sup>-3</sup>	For ducts of form F and S
Class IV: For channels with highest demands. Welded ducts, for example, nuclear power isotope areas and radiation areas. This results in an increased expense in sealing measures compared with tightness Class III.	With highest demands	0.093 x 10 <sup>-3</sup>	0.15 x 10 <sup>-3</sup>	0.27 x 10 <sup>-3</sup>	Mainly for form S

*\*Static pressure difference between inner pressure and ambient pressure (overpressure or low pressure).*

### Leakage versus Pressure for the Expansion Length



The **Expansion Length** will not accommodate high pressures. Use this graph to determine appropriate leakage.

**This example relates to 150mm diameter.** Leakage for any other diameter can be estimated by proportioning the diameters.

Leakage at 25mm wg = 0.0496m<sup>3</sup>/h for 150mm diameter. (As graph)

Leakage at 25mm wg for other diameters, eg 500mm is calculated as follows:

$$\frac{\pi \times 500}{\pi \times 150} \times 0.496 = 3.33 \times 0.0496 = 0.1652\text{m}^3/\text{h.}$$

The Expansion Length can only be used in a system designed to meet pressure resistance limits defined as Class A in DW/142.\*

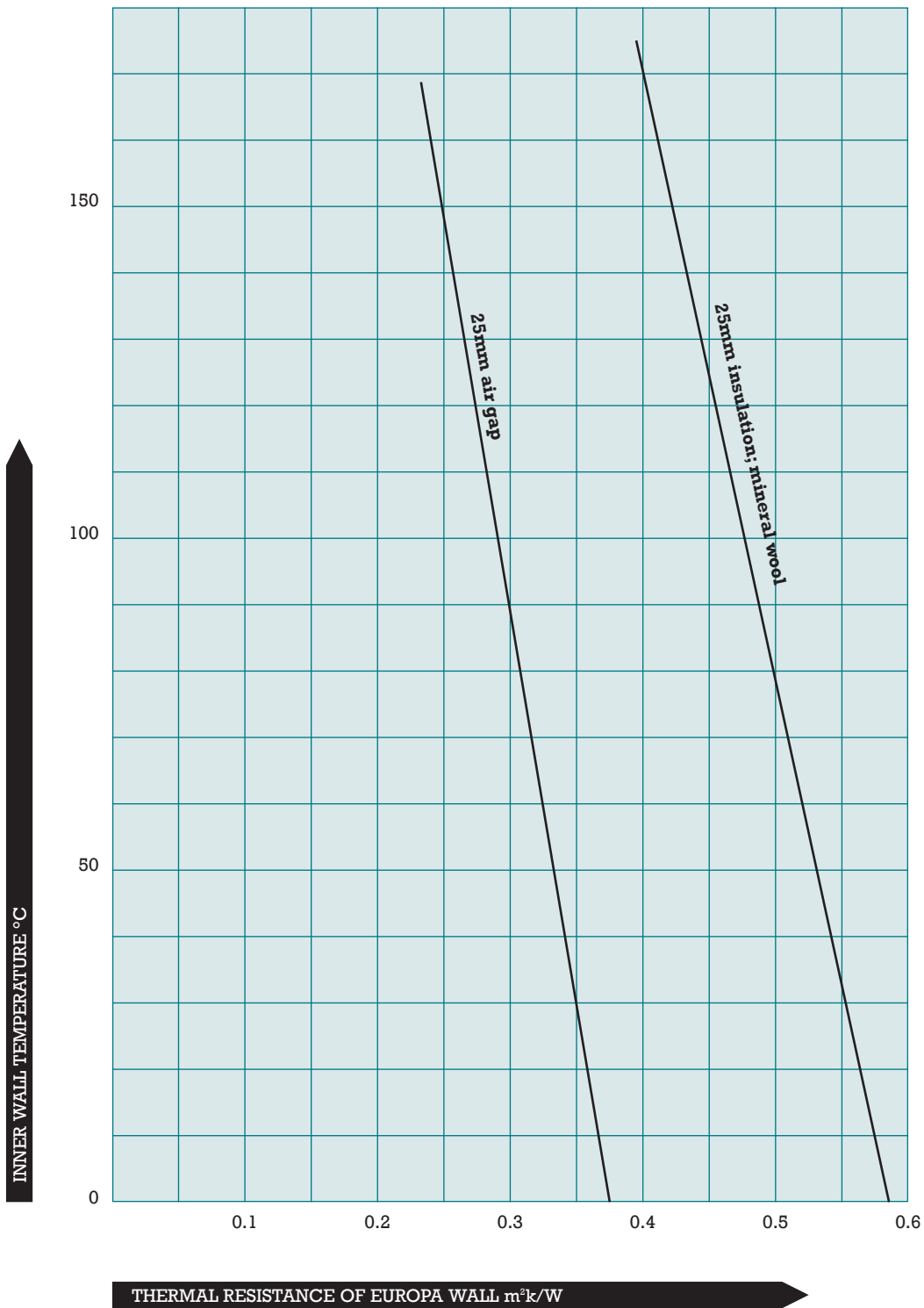
*\*Published by the Heating & Ventilation Contractors Association.*

## THERMAL RESISTANCE OF THE EUROPA WALL IN OPEN ROOM CONDITIONS

Velocity: 4.0 m/s.

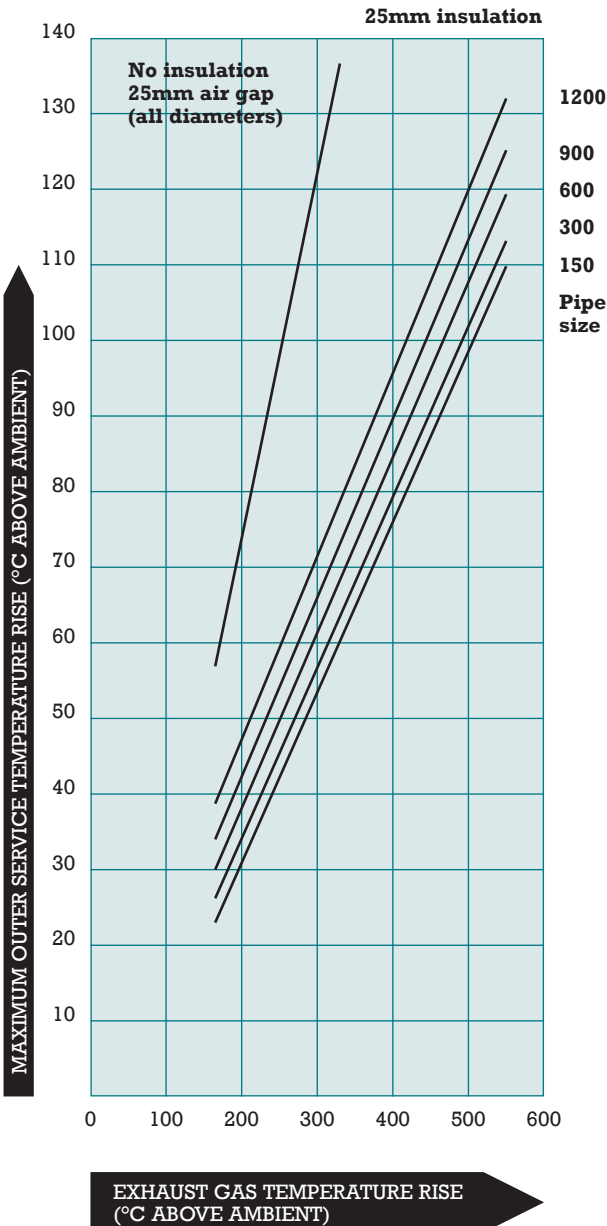
Ambient air temperature: 27°C.

Diameter: 200mm.



## OUTER SKIN TEMPERATURES IN OPEN ROOM CONDITIONS

The graph below is intended to be a guide only. It is indicative of the likely outer skin temperatures for any particular Europa application, but cannot be exact as each situation requires a calculation and knowledge of mass flow, velocity of the gases, and the location and situation of the chimney, ie: enclosed non-ventilated, enclosed ventilated, not enclosed, external, etc.



## RESISTANCE COEFFICIENTS

COMPONENT	"k"
Lengths	$25 \times L/d$
Expansion Length	$25 \times L/d$
Adjustable Length	$25 \times L/d$
Bellows Unlined	$25 \times L/d$
Bellows Lined	$25 \times L/d$
Duct Drain	$25 \times L/d$
Nozzle Section	$25 \times L/d$
Parallel Vent Terminal	$25 \times L/d$
Exhaust Terminal Horizontal	$25 \times L/d$
Exhaust Terminal Vertical	$25 \times L/d$
90° and 95° Tee	1.25
135° Tee	0.4
15° Elbow	0.06
30° Elbow	0.12
45° Elbow	0.15
90° Elbow	0.6
90° Access Elbow (used for access)	0.6
90° Access Elbow (used as a "y" connector)	0.6
95° Elbow	0.6
95° Access Elbow	0.6
Tapered Vent Terminal	1.25
Vent Cap	0.5
Drain Section	0.25
Reducer/Increaser	See table for individual item description on page 8.

L = Length in Metres  
d = Diameter in Millimetres

## WEIGHT OF LENGTHS & SUPPORT COMPONENTS

Size	Lengths, per metre run, (kg)			Support components				
	Single Wall*	Air Gap Annulus**	Mineral Wool Insulated Annulus***	Support Plate (kg)	Wall Support (kg)	Guide Band (kg)	Wall Guide (kg)	Floor Guide (kg)
150mm	3.9	6.2	8.7	4.80	9.52	2.08	3.36	5.24
175mm	4.6	7.6	10.4	5.60	10.93	2.24	3.69	5.40
200mm	5.3	8.2	11.3	6.24	12.26	2.41	3.99	5.57
250mm	6.6	10.0	13.9	7.62	15.06	2.73	5.02	5.89
300mm	7.9	11.8	16.4	9.69	18.69	3.05	5.64	6.21
350mm	9.2	13.7	18.9	11.26	21.95	3.37	6.62	7.06
400mm	10.5	17.1	23.0	12.88	25.39	3.72	7.26	7.41
450mm	11.8	19.1	25.7	14.56	29.02	4.01	7.85	7.70
500mm	13.2	21.1	28.4	16.73	33.28	4.32	8.86	8.01
600mm	15.7	25.0	33.7	19.93	41.05	5.00	10.13	8.69
700mm	18.4	29.1	39.0	39.38	77.25	12.48	29.28	21.89
800mm	21.6	33.1	44.4	46.47	88.77	14.04	31.94	23.46
900mm	23.6	37.1	49.8	54.02	100.75	15.61	34.65	25.02
1000mm	31.3	46.2	60.1	63.17	114.32	17.18	37.36	26.59
1100mm	34.7	51.0	66.2	71.74	127.35	18.70	40.03	28.11
1200mm	37.8	55.5	72.1	80.77	140.81	20.31	45.35	29.72

\* Inclusive of 1 Vee Band

\*\* Inclusive of 1 Vee Band and 1 Channel Band

\*\*\*Inclusive of 1 Vee Band, 1 Channel Band and Insulation at mean density of 270 kg/m<sup>3</sup>.

## LOADBEARING CAPACITY OF SUPPORT COMPONENTS

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

Size	Support Plates (kg)	Wall Supports (kg)	Flanged Boiler Kit and Clamp Flange (kg)	Tees (Supported on their base) (kg)
150mm	450	450	225	100
175mm	525	500	250	100
200mm	600	550	300	125
250mm	750	625	375	150
300mm	900	700	450	175
350mm	1050	800	525	200
400mm	1250	875	600	225
450mm	1350	950	675	250
500mm	1500	1050	750	275
600mm	1800	1200	900	350
700mm	1975	1375	1050	400
800mm	2150	1550	1200	450
900mm	2350	1700	1350	500
1000mm	2500	1875	1500	550
1100mm	2500	1875	1650	600
1200mm	2500	1875	1800	650

All four sides **must** be supported.

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

Subject to limit imposed by appliance manufacturer.

## PROXIMITY TO COMBUSTIBLES

(WHERE PRODUCT IS CARRYING HOT GASES)

### Clearance from combustibles

The required clearance from combustibles will be dependent on the gas temperature within the Europa Vent. The table below provides the minimum air gap clearances that must be maintained between the outer skin of the chimney and constructional materials.

This data relates to air gap insulated product. Consult SFL for information related to alternative construction.

Materials	Applications	Diameter	Temperature and clearance:		
			540°C continuous 760°C intermittent	760°C continuous	260°C continuous 1100°C short duration (grease fire)
Combustible	Combustion equipment: External	All diameters	150mm	380mm	–
	Internal	All diameters	250mm	380mm	–
	Catering equipment extract*	150 to 250mm	–	–	125mm
		300mm	–	–	180mm
		350mm	–	–	175mm
		400mm	–	–	200mm
		450mm	–	–	225mm
		500mm	–	–	250mm
		600mm	–	–	450mm
		700mm	–	–	450mm
		800mm	–	–	450mm
		900mm	–	–	450mm
		1000mm	–	–	450mm
		1100mm	–	–	450mm
	1200mm	–	–	450mm	
	Smoke duct	1500mm to 900mm	250mm Clearance – all applications		
		1000mm to 1200mm	450mm Clearance – all applications		

\*N.B. Always assume 1100°C for catering equipment extract ducts to allow for duct fire.

### Clearance from non-combustible materials

50mm is the minimum clearance that should be maintained, although greater dimensions may be necessary for access.

## GUIDE AND LATERAL BRACING

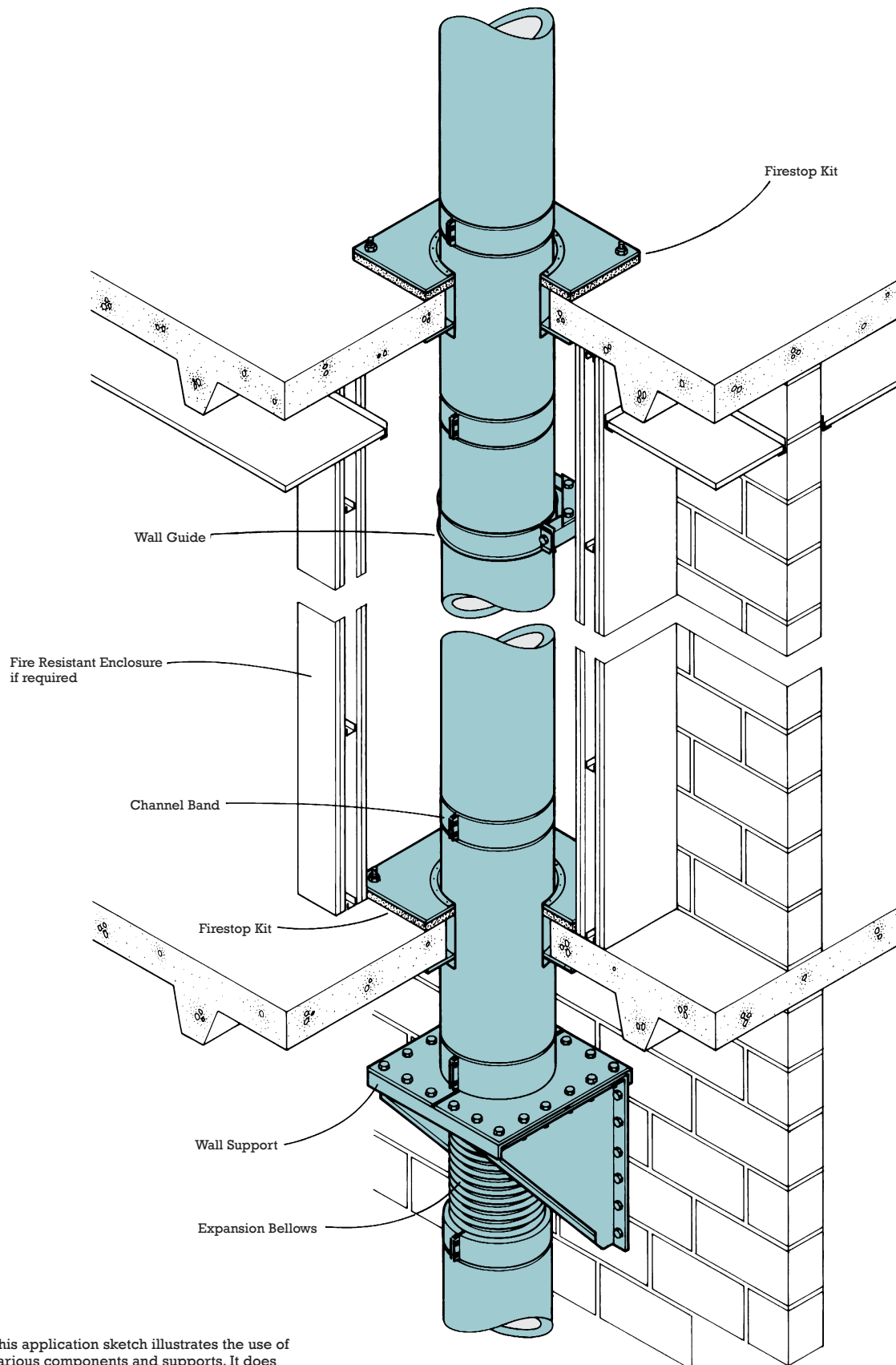
The Europa must be adequately supported or given lateral bracing in accordance with this Table, bearing in mind the loading characteristics as per page 36.

Size	Application: Vertical	Horizontal	Freestanding Height above last Guide or Support
All sizes	4.0m	4.0m	3.0m

## FIRE RATING DETAIL

Europa has been assessed by the Loss Prevention Council for Fire Resistance, in both horizontal and vertical structure penetration.

A fire rating of 4 hours can be achieved in accordance with the stability and integrity criteria of BS 476: Part 24: 1987 for duct type B.



This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.

# FOUR HOUR FIRE RATING



## CERTIFICATE OF FIRE APPROVAL

This is to certify that

The product(s) detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations for use on offshore installations classed with Lloyd's Register, and for use on offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

**Manufacturer** SFL  
**Address** Pottington Business Park  
 Barnstaple  
 Devon, EX31 1LZ  
 United Kingdom (UK)  
**Type** FIRE RESTRICTING DUCTING  
**Equipment Description** A-0 Equivalent Fire Resistant Ducting - Type: "EUROPA"  
 Exhaust Ducting and Chimney System (150mm to 1200mm  
 diameter, 1.2mm thick, 316 grade stainless steel)  
**Specified Standard** British Standard BS 476 : Part 24 : 1987  
 ISO 6944 - 1985

The attached Design Appraisal Document forms part of this certificate. This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

Date of issue 8 December 2004 Expiry date 7 December 2009  
 Certificate No. SAS F040440 Signed   
 Sheet No 1 of 2 Name M. Farrier  
 Surveyor to Lloyd's Register EMEA  
 A Member of the Lloyd's Register Group

Note:

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid Certificate.

THIS DOCUMENT IS SUBJECT TO THE PROVISIONS ON THE REVERSE



**Lloyd's Register EMEA**  
 71 Fenchurch Street, London, EC3M 4BS  
 Telephone 020 7423 2940 Fax 020 7397 4246  
 Email dcg-stat@lr.org

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### DESIGN APPRAISAL DOCUMENT

Date	8 December 2004	Quote this reference on all future communications	LPA/SSS/FSS/FITA/MF
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#### ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. SAS F040440

This Design Appraisal Document forms part of the Certificate.

#### APPROVAL DOCUMENTATION

Loss Prevention Council (LPC), Borehamwood, United Kingdom, Test Report Nos. TE 6696, dated October 1988 and TE 7109, dated October 1989 and LPC Appraisal No. CC81971, dated August 1992.

#### CONDITIONS OF CERTIFICATION

- May be used for A-60 equivalent applications when constructed of twin walls, inner wall 1.2mm thick, 316 grade stainless steel, outer wall 0.55mm thick, 316 grade stainless steel separated by a suitable A-60 insulation system.
- Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype.

#### PLACE OF PRODUCTION

SFL  
 Pottington Business Park  
 Barnstaple  
 Devon, EX31 1LZ  
 United Kingdom (UK)



Martin Farrier  
 Senior Surveyor  
 Dry Cargo Ship Section  
 Statutory Department  
 Marine Support Group  
 Lloyd's Register EMEA

#### Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).

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## SPECIFIERS DATA SHEET

The data adjacent and on the next page is provided to offer abridged or full specification sheets which can be transcribed or photocopied as appropriate. They are designed to accompany documentation prepared by a consultant/specifier who wishes to make direct reference to the application of Europa. The same information is available separately on request, and is called the **EUROPA SPECIFICATION SHEET**.

The separate specification sheet also incorporates the following note:

### NOTES

1. Bolts, screws, plugs etc for fixing to the building fabric are not provided.
2. All special components are subject to agreement with the chimney system manufacturer.
3. Generally, for gas fired appliances, cleaning access in addition to the access available at any tees within the chimney is not required, unless specifically indicated on the drawings.
4. The outer casing of the chimney system can be painted, to special order, to any RAL colour. Contact UK Sales and Marketing Office for full details.
5. Fire stop assemblies to comply with clause 3 are available.
6. A dilution air intake may be necessary to reduce the flue gas temperature before entering the SFL Europa System.
7. 304 grade stainless steel outer casing is recommended for the top 3 exposed sections (min).
8. Open type terminals are recommended for all heavy oil, solid fuel or waste material fired installations.
9. The system internal diameter should be calculated in accordance with the BS EN 13384-1&2. A computerised chimney sizing service is available from SFL.

## EUROPA SPECIFICATION SHEET

### ABRIDGED SPECIFICATION

The system shall be a \*\* mm internal diameter, pre-fabricated, twin wall, pressure resistant system, type **EUROPA**, as manufactured by **SFL, POTTINGTON BUSINESS PARK, BARNSTAPLE, DEVON EX31 1LZ**.

It shall be installed in the position indicated on the drawings and shall include all components necessary to provide a complete and satisfactory installation.

The components shall be manufactured under quality controlled conditions certificated to BS EN ISO 9001:2000.

The inner liner shall be 1mm gauge 316L grade stainless steel\*.

The outer casing shall be aluminised mild steel for internal use and 304 grade stainless steel for external use.

The construction shall incorporate a 25mm air gap between the inner liner and outer casing.

The complete system shall be suitable for a positive test pressure, at the equipment outlet, of (1500mm wg. max or 15KPa).

The installation shall comply with **SFL EUROPA SPECIFICATION SHEET**.

*\*See clauses 6 & 7 of full specification for alternative material and insulation specification related to fuel and application.*

*\*\*See note 9.*



## EUROPA SPECIFICATION SHEET

### FULL SPECIFICATION

#### 1 CONSTRUCTION

- 1.1 The system shall be prefabricated under quality controlled factory conditions. It shall be of twin wall construction, having a 25mm air gap between the inner liner and outer casing. The vertical seam of the inner liner shall be continuously welded and shall have a 12mm flange formed on each end of the liner.
- 1.2 The vent sections and fittings shall be joined by clamping a Vee Band over the mating flanges of adjacent components. Sealant supplied by the manufacturer shall be applied to the inside of the Vee Band before fitting and also to the flange faces. The inner liner shall be the structural load bearing component and expansion of the liner due to changes in gas temperature shall be catered for by bellow(s) fitted, as necessary, throughout the system. Expansion length(s) can be used if no positive pressure is produced by the unit.
- 1.3 The outer casing shall be non-loadbearing and shall be retained around the liner by suitable spacing clips. A Channel Band fitted in grooves in the outer casing shall be provided to close the space between adjacent components.

#### 2 QUALITY ASSURANCE

The manufacture of the system shall be by a firm certificated under BS EN ISO9001: 2000. When requested the manufacturer shall submit to the "engineer" copies of the relevant "certificate of registration" for the products specified.

#### 3 FIRE RATING

The system shall have a 4-hour fire rating when installed using the appropriate fire stop assemblies and within a suitable enclosure which prevents contact with the outer casing. Assessment shall be by the Lloyds Register or equivalent to BS 476 Part 24. Where required the manufacturer shall submit to the engineer test reports in support of the above. *See note 5.*

#### 4 PERFORMANCE

Working pressure: (at boiler outlet)

- (a) With Expansion Lengths up to 13mm wg. (0.13 KPa).
- (b) With Expansion Bellows up to 1500mm wg. (15 KPa).

Temperature (max*)	Continuous	Intermittent
Expansion Lengths	600°C	750°C
Expansion Bellows	760°C	1000°C

(min) 10°C above flue gas acid dew point on the inner liner surface throughout the system.

#### 5 COMPONENTS

- 5.1 The system shall comprise of a full range of starting components, Lengths, Tees and Elbows, Load Bearing Components, Flashings and Terminals necessary to provide a complete system.
- 5.2 The load-bearing and wind load capacity of all components when installed within a system shall have been determined by the manufacturer using appropriate structural tests and analysis. Details of the maximum loading for each item shall be indicated in the installation instructions. *See clause 8.1.* When required the manufacturer shall submit relevant test reports in support of the above to the "engineer".
- 5.3 A complete set of the bolts and nuts necessary for the correct assembly of each accessory shall be provided, with each unit, by the manufacturer. *See note 1.*
- 5.4 Special components shall be available if required. A detailed dimensioned drawing of the item(s) shall be provided for the manufacturer by the erector. *See note 2.*

#### 6 MATERIAL

Lengths and Fittings

Inner Liner and all surfaces in contact with flue gases shall be 1mm gauge stainless steel as per the following schedule.

- Gas – 35 sec oil: 304 grade;
- Heavy oil; solid fuel
- incinerators or modular applications: 316L grade.

Outer casing: *See note 4*

Interior use: aluminised steel

Exterior use: stainless steel 304

Components

Stainless steel/galvanised steel

Stainless steel shall be to BS 1449 Part 2. Aluminised steel shall be mild steel to BS 1449 Part 1 with LM6 hot dipped aluminised coating of not less than 13 microns. Hot dip galvanising shall be to BS 729.

#### 7 INSULATION

Mineral fibre insulation shall be installed either within the product annulus by the manufacturer or externally on site by the erector if necessary.

- (a) to meet the minimum operating conditions specified in clause 4.
- (b) where the vent is installed close to combustible material.
- (c) to prevent a personnel hazard. *See note 10.*

The specification for the insulation required for a particular application shall be as recommended by the manufacturer.

#### 8 INSTALLATION

- 8.1 A set of installation instructions covering the installation of all components and accessories shall be provided with the product by the manufacturer. The installation of the complete system shall be strictly in accordance with the manufacturer's instructions. *For termination see note 8.*
- 8.2 Each change in direction of the system shall be by means of an "easy sweep" bend using a combination of Elbows, or Elbows and 135° Tees. A 90° Tee shall only be used where site dimensions do not facilitate an "easy sweep" arrangement.
- 8.3 The manufacturer's load-bearing and lateral support components **must** be used in every case. Where these components require to be extended to suit site conditions a suitable Extension Bracket shall be supplied and fitted by the installer. Extension Brackets shall be manufactured from a suitable gauge to suit the application.
- 8.4 Adequate access shall be provided throughout the chimney system to enable service personnel to clean the system or inspect the Bellows, when fitted, without dismantling the exhaust.
- 8.5 A Condensate Collector(s), as provided by the manufacturer, shall be installed throughout the system as necessary. The Collector(s) shall be fitted with a screwed boss to facilitate the installation of drain pipe(s) by others.
- 8.6 The system shall be fixed to the unit outlet using an adaptor provided by the unit manufacturer. The Adaptor to be packed with fibre rope and fire cement to provide a gas seal. If necessary a purpose-made Adaptor shall be provided by the erector to make the transition from the unit outlet to the manufacturer's Adaptor.

#### 9 PACKAGING

Components shall be packaged at the factory to provide protection during transit. The manufacturer's catalogue number shall be clearly printed on all packaging.

#### 10 WASTE MATERIAL

When the system is to be connected to an appliance combusting waste material, full details of the type of waste material must be submitted to the chimney manufacturer in writing and their recommendations regarding the chimney system's performance parameters and material specification obtained and implemented. *See note 6.*

## EUROPEAN INDEPENDENT ASSESSMENT DATA

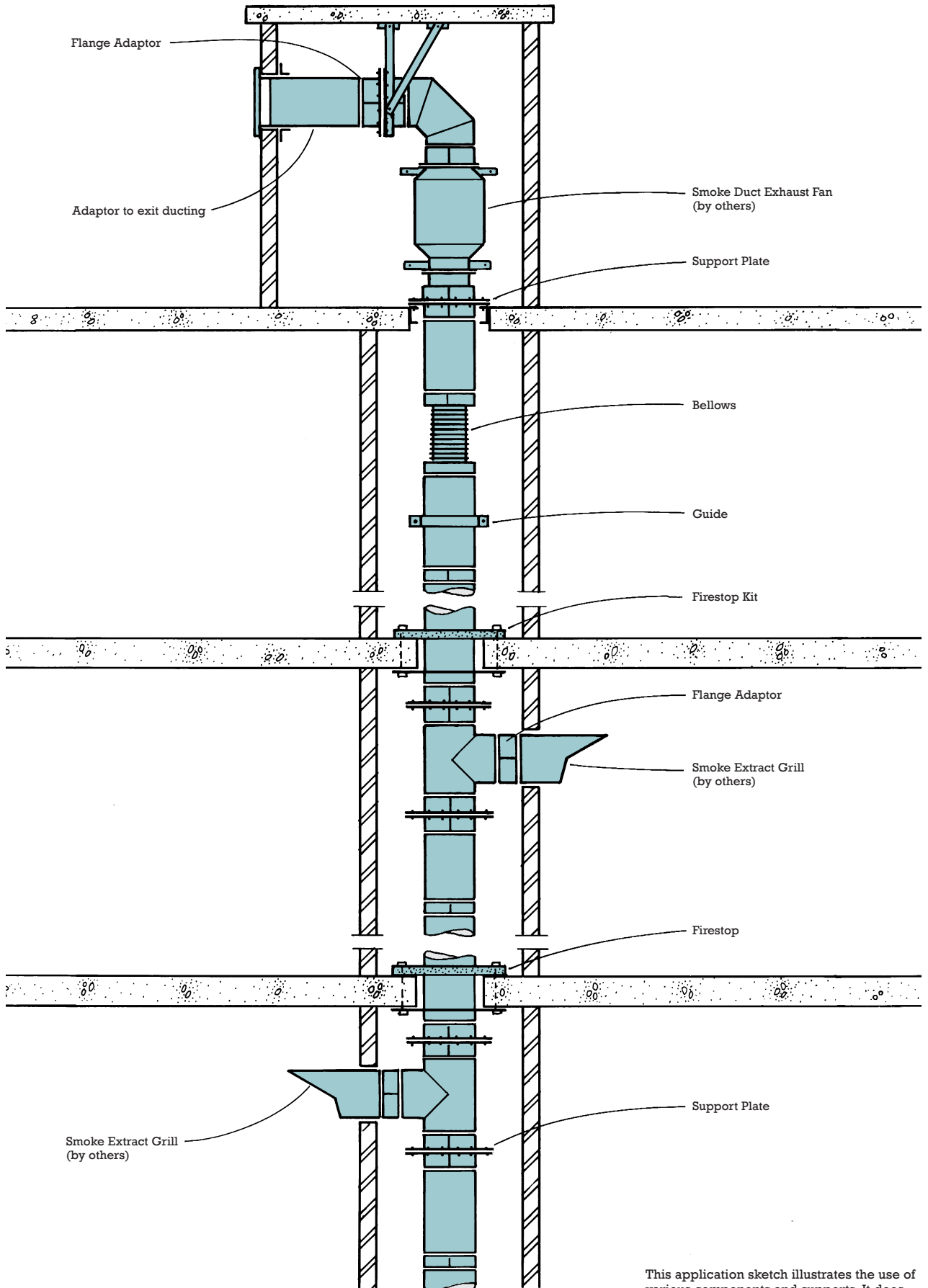
Application	Qualification
Europa Chimney Licence Germany.	Institut Fur Bautechnik Reference 77.1.234
Tests to DIN 4133. Structural calculation for steel chimneys.	Technical University Munich Reference 1155/12 1987
Vertical Load Test.	Technical University Munich Reference 2163/12 Jan. 1988
Boiler application tests (for uninsulated product).	CSTB France Avis Technique
Support System Tests.	Technical University Munich Reference 1059/ba/1o/2163/12 and 2051
Thermal performance and internal fire test to DIN 18160.	MPA Dortmund Reference 23.0924.5.86
Internal/external fire, gas tightness, sweeping and corrosion tests.	MPA Dortmund
Corrosion resistance tests for steel chimneys. DIN 18160 part 6 & guidelines.	MPA Dortmund Reference 33 0901 586
Condensing appliance assessment.	Gas Warms Institut Germany Reference 7185 23/02/87
Corrosion tests for Condensing oil and gas boilers. DIN 4705 Pt 1.	TUV Munich Reference 141 3570 30/09/88
4 Hour Fire Rating test.	MPA Dortmund Reference 23 0341 8.87 20/08/87
Horizontal & vertical 4 hour fire rating assessment to BS476 Part 24. See data on page 33.	Loss Prevention Council References TE6696, TE7109 and Appraisal No CC81971
Gas tightness tests after 500,000 load changes.	Technical University Munich Reference 2163/12 20/10/789
Wind Loading Tests.	Technical University Munich Reference 1131/12 07/03/89

## TESTS OUTSIDE EUROPE

Europa, (American version – PS) is UL and ULC listed for:  
Grease Duct (Kitchen Extract).  
Building Heating Appliance Chimney.  
Industrial Chimney to 1400°F (760°)

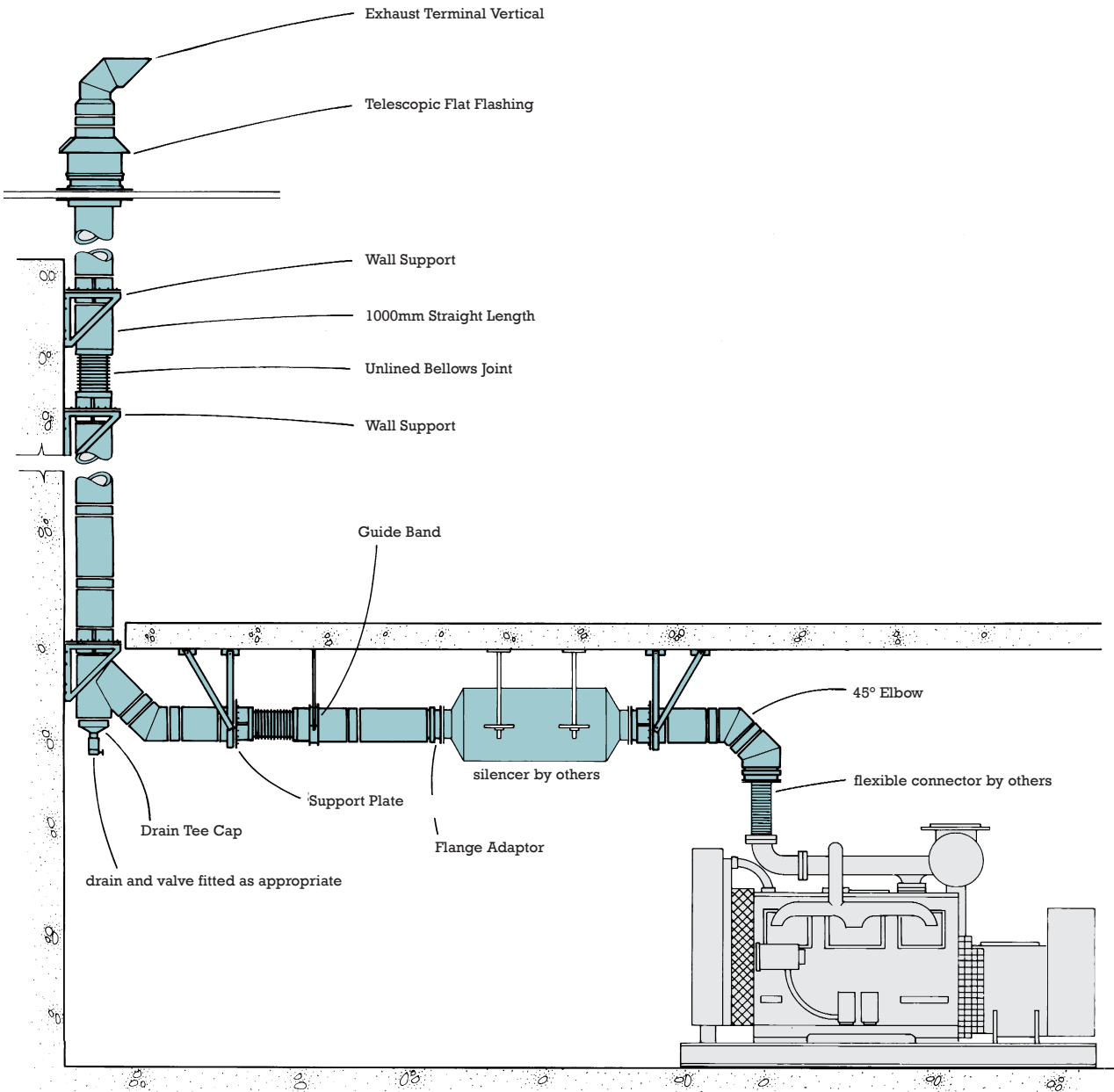
Other Approvals:  
US Coast Guard.  
Canadian Coast Guard.  
American Bureau of Shipping.  
Approved in New York for Generator Exhausts.  
Tested on the Shake Table in California for seismic zone requirements up to zone 4.

FIRE RATED SMOKE EXTRACT



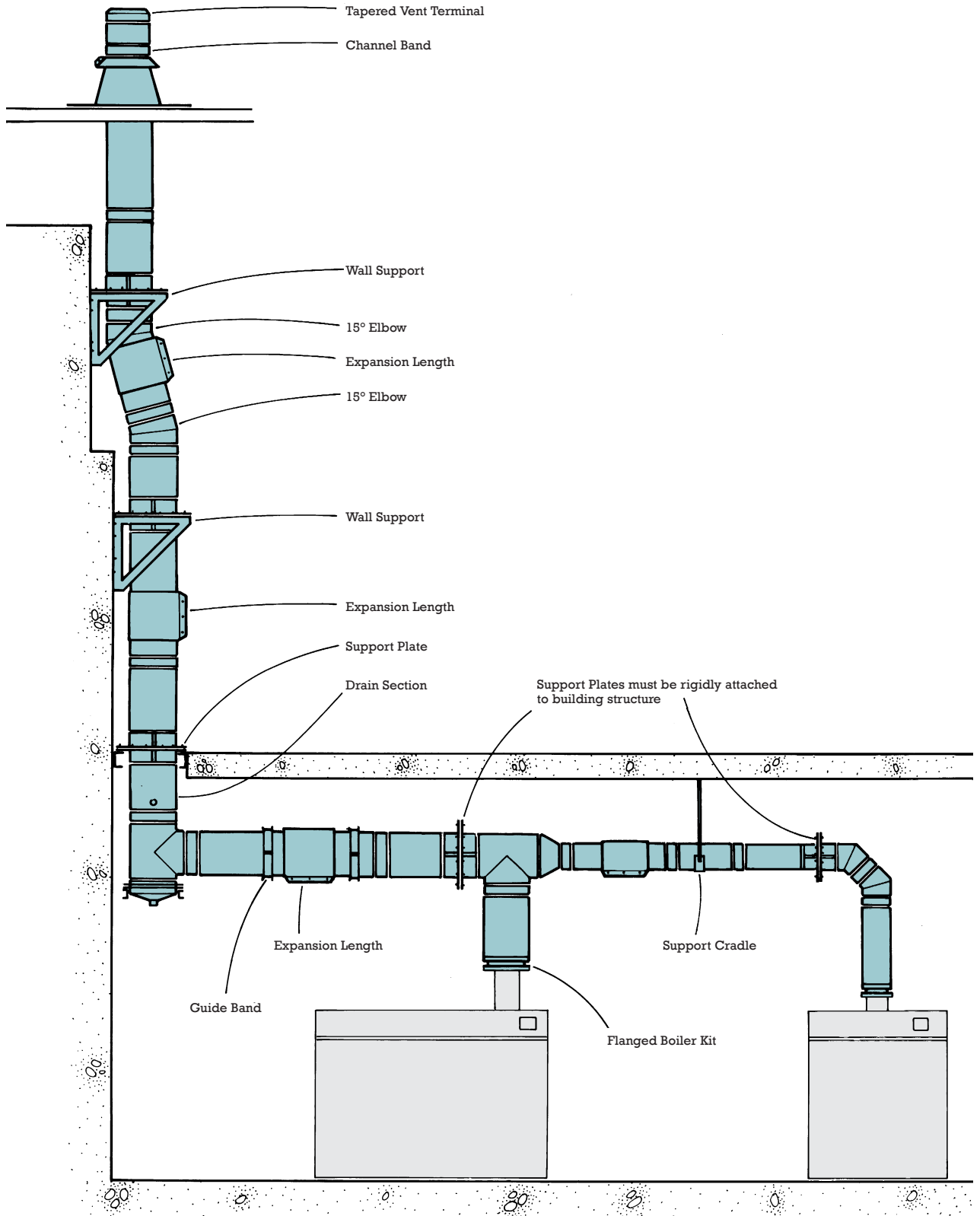
This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.

# DIESEL GENERATOR EXHAUST



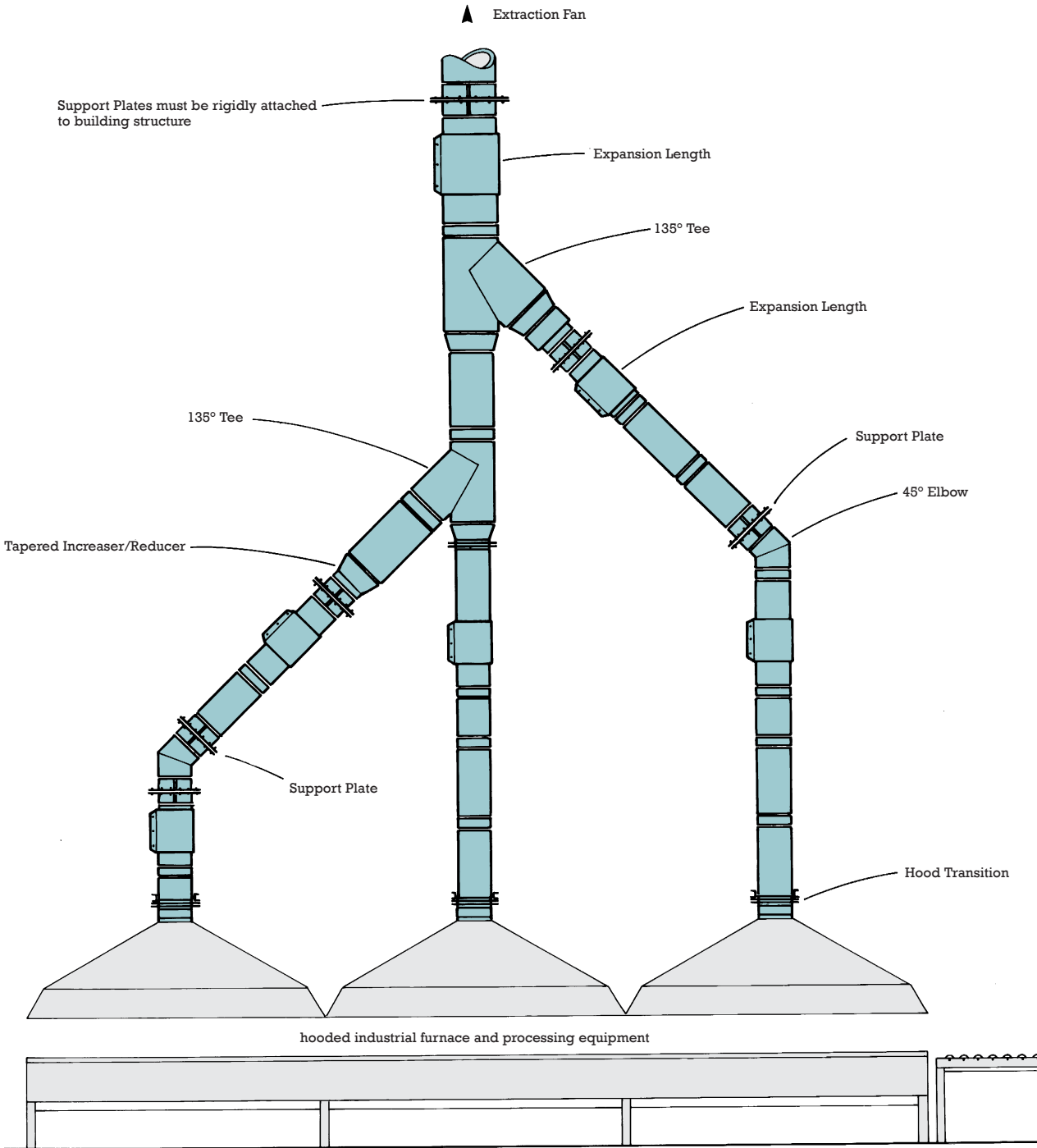
This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.

## BOILER AND WASTE GAS EXTRACT



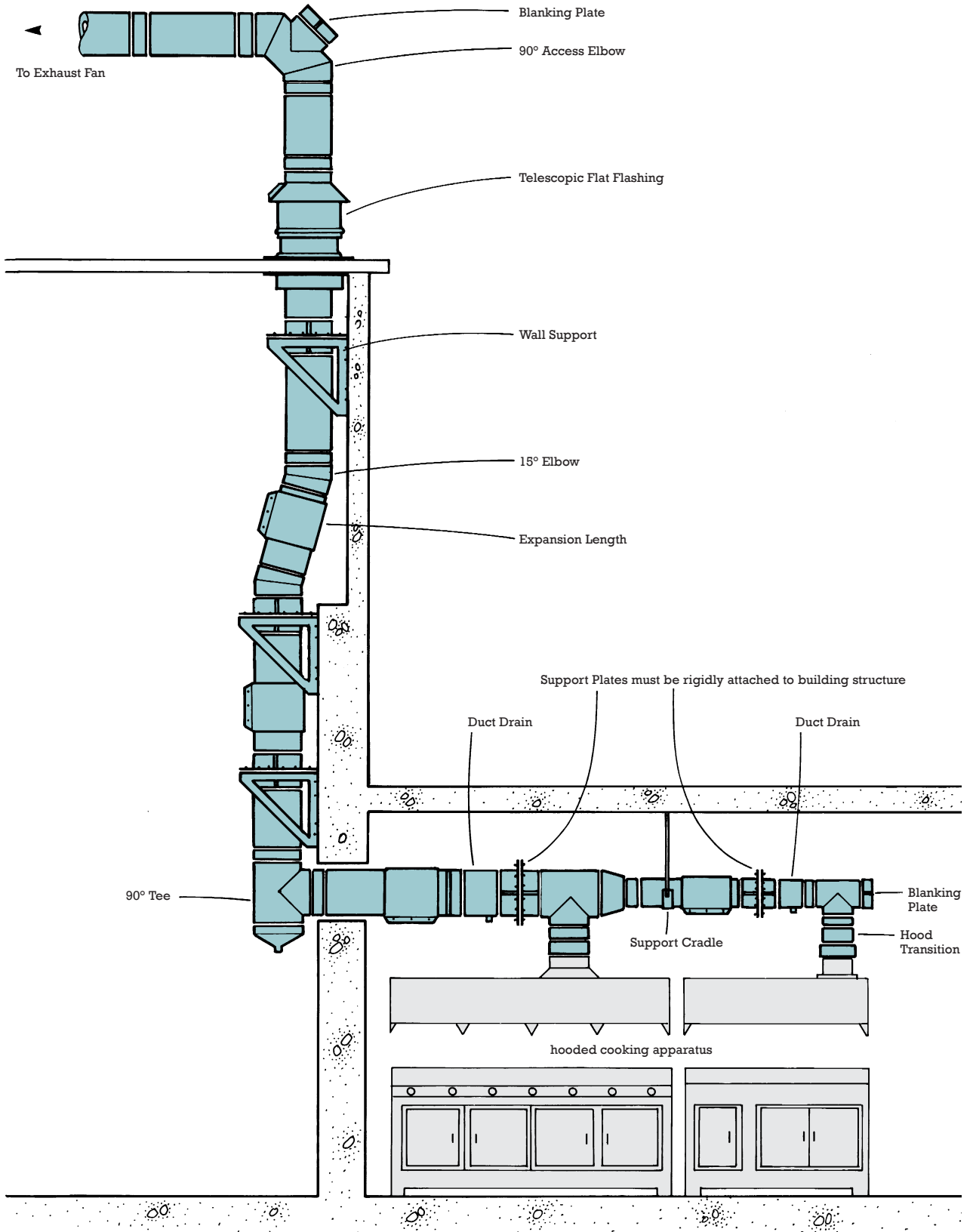
This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.

# INDUSTRIAL PROCESS FUME EXTRACTION



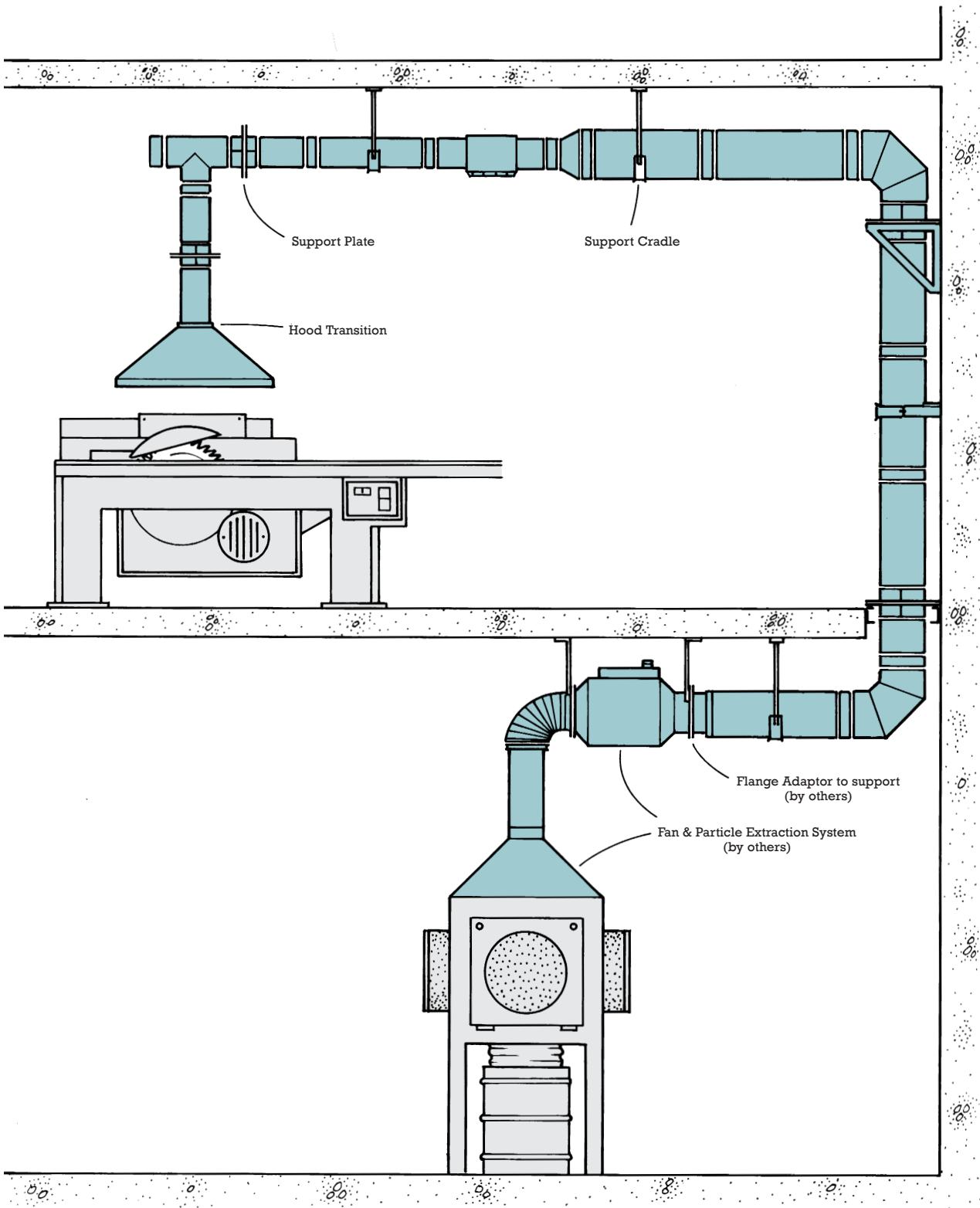
This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.

## CATERING/KITCHEN EXTRACT DUCT



This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.

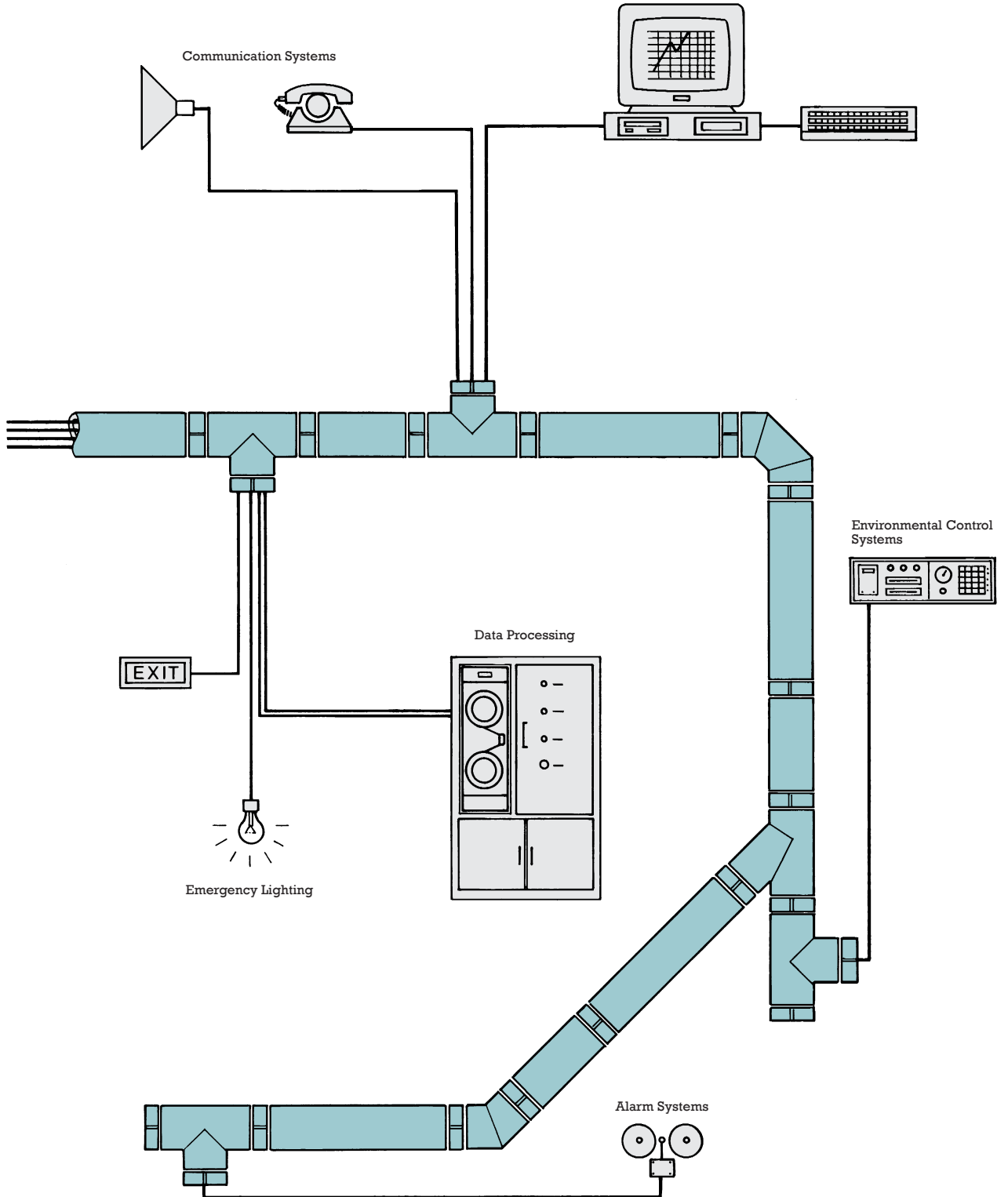
## LIGHTWEIGHT PARTICLE MOVEMENT



This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.



## FIRE PROTECTED SERVICE TRUNKING



This application sketch illustrates the use of various components and supports. It does not necessarily typify an actual installation. The supports used may be less or more than depicted depending on actual application.





**FURTHER INFORMATION**

A full design, supply and erection service can be arranged for commercial and industrial applications. Information on these services, which utilize computer aided chimney sizing and freestanding mast design/configuration, is available, along with further details of the full range of SFL prefabricated flues and chimneys, from the Sales and Customer & Export Services Office.

The information contained in this brochure was accurate at the date of publishing. However the company reserves the right to introduce at any time modifications and changes of details as may be necessary. To avoid any misunderstanding, interested parties should contact the company to confirm whether any material alterations have been made since the date of this brochure.



**UK Sales and Customer & Export Services**

SFL, Pottington Business Park, Barnstaple, Devon EX31 1LZ  
Tel: 01271 326633 Fax: 01271 334303 [www.sfl.uk.com](http://www.sfl.uk.com) [info@sfl.uk.com](mailto:info@sfl.uk.com)  
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