

**Project: West Hampstead Square**

**Document Number: WHS\_016-KBS-TS41**

**Document Title: Technical Submittal 41- Boiler and CHP Flue**

	NAME	DATE
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**PROPOSED STATUS:** For approval

REVISION	DATE OF ISSUE	REASON / HISTORY
A	07.10.15	First Issue

C0629	PTS	SL	01	A
<b>JOB CODE</b>	<b>DOCUMENT TYPE</b>	<b>FLOOR / AREA</b>	<b>SHEET</b>	<b>REVISION</b>



## Technical Submittal

<b>Project: West Hampstead Square</b>		<b>Contractor: OHMG</b>		
<b>Job No: C0629</b>		<b>Package No:</b>		
<b>Technical Submission No: 41</b>		<b>Issue Date: 20/1/14</b>		
		<b>Approval Required By Date: ASAP</b>		
<b>Description of Equipment:</b>		<b>Boiler and CHP flue</b>		
<b>Location of Equipment:</b>		<b>Block B</b>		
<b>Manufacturer/Supplier:</b>		<b>Deltavent</b>		
<b>Equipment Type and Reference:</b>		<b>Single and Twinwall</b>		
<b>Specification References:</b>				
<b>Deviations to Above</b>				
<b>Drawing Details:</b>				
<b>Specification/Samples Attached:</b>		<b>Technical Datasheets</b>		
<b>Approval Status</b> A B C		<b>Comments:</b>		
<b>Company:</b>		<b>Reviewer</b>	<b>Comments</b>	<b>Date</b>
<b>Consultant:</b>				
<b>Architect:</b>				

## Deltavent

A multi-purpose, twin-wall, prefabricated Stainless Steel duct system manufactured for the conveyance of all associated products of combustion from a wide range of combustion and process equipment. Deltavent is capable of withstanding continuous flue gas temperatures of up to 760°C and has been designated as (H1) for pressure resistance in accordance with BS EN 1856-1.

### The Deltavent systems are designed for use where

- A four hour fire rating is specified
- A watertight flue system is specified

### Application Examples

- Diesel Generator Exhausts
- Fan Assisted Flue System
- Condensing Boilers
- Kitchen Extract
- C.H.P Systems
- Smoke Extract
- Oil and Gas Fired Boilers
- Incinerators/Cremators: use heavy duty flanges for jointing (Ultra seal)

### Quality Assurance

The complete range of components are manufactured, tested, and where required, installed within scope of stringent quality controlled conditions in accordance with EN ISO 9001:2008 and BS EN 1856-1/2:2009. When requested, A1 Flue Systems shall submit copies of type test reports relating to product performance in addition to the "Certificate of Registration" administered by the British Standards Institute.

### Fire Rating

The Deltavent system has been successfully assessed by the Loss Prevention Council for Fire Resistance A fire rating of 4 hours can be achieved in accordance with stability and integrity criteria of BS 476: part 20. If required, A1 Flue Systems shall submit all test reports in support.

## Construction

Delatvent sectional lengths/fitting components are fabricated in a variety of diameters and lengths with continuously welded vertical seams. The Deltavent system also utilises four insulated/non-insulated annular variation options to provide a required minimum external case surface temperature. Inner liner coupler characteristics consist of male and female connection sockets complete with a 10mm 90° right angled flange formed at either end of all components. Deltavent joints shall be secured by clamping an externally fitted V-Band over the mating flanges of the adjoining components. Sealant, available from A1 Flue Systems, should be applied to the inside profile of the V-Band and to both flange faces before installation. Closure of the space between parallel external case components shall be achieved by first inserting a pre-cut length of insulation into the annulus void between the joining lengths and securing it into position using a profiled Clamp Band which locates within the grooves formed in all outer cases.

## Product Description- Standard Number:

EN 1856-1: The standard for system chimney products - requirements for metal chimneys. Comprising of a series of essential harmonised European Standards and elements for both single and multi-wall chimney products with rigid metallic liners.

EN 1856-2: Requirements for metal chimneys- part 2: Metal flue liners and connecting flue pipes. Relates to the essential harmonised European Standards and elements of all products used to convey the products of combustion from appliances to the outside atmosphere.

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), all the provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the above standard(s) under system 2+ are applied and that the factory production control fulfils all the prescribed requirements. All components are manufactured to BS EN No 1856-1-2:2009. Chimneys-Requirements For Metal Chimneys. Certificate number: **0086-CPR-599465**.

### The CE Designation Scheme

The compliance of a chimney system product to the relevant technical performance characteristics according to the designation scheme is described by the following example.

Product Description	Product Designations						
System Chimney Product	EN 1856-1	T450	H1	D	V1	L20091	G(50)
Metal Flue Liners	EN 1856-2	T160	P1	W	V1	L20056	O(50)
Connecting Flue Pipe	EN 1856-2	T200	P1	W	V2	L50056	G(50)
	Standard Number	Temperature Level °C	Pressure Level N,P,H	Condensate Resistance	Corrosion Resistance	Flue Liner Specification	Soot Fire Resistance

### Product Specification

Deltavent is a twinwall stainless steel prefabricated chimney system with a 25/50/75/100mm thick rockwool high density insulation. The liner is constructed from 0.71mm grade 304 stainless steel with a continuous seam weld across its length. The relevant technical performance classifications and designations for Deltavent are:

Standard	Product Designations					
BS EN 1856-1	Temperature Class	Pressure Class	Condense Resistance	Corrosion Class	Material Specification Liner Grade + Thickness	Soot Fire Resistance
	T600	H1	D	VmL	20070	G(300)
				V2	50070	
				VmL	20090	
				V2	50090	

Standard	Product Designations					
BS EN 1856-1	Temperature Class	Pressure Class	Condense Resistance	Corrosion Class	Material Specification Liner Grade + Thickness	Soot Fire Resistance
	T450	H1	D	VmL	20070	G(50)
				V2	50070	
				VmL	20090	
				V2	50090	

Standard	Product Designations					
BS EN 1856-1	Temperature Class	Pressure Class	Condense Resistance	Corrosion Class	Material Specification Liner Grade + Thickness	Soot Fire Resistance
	T200	H1	W	VmL	20070	O(50)
				V2	50070	
				VmL	20090	
				V2	50090	

**Product Technical Information According To BS EN 1856-1 Par.7 and Annex ZA.1**

Essential Characteristics Requirements According To BS EN 1856-1	Levels and/or classes: Informative Data	Document	Additional Information
Internal diameters Par.4.b	Available in diameters of 150mm-1200mm	Manufacturer's declared	Product catalogue Factory Production Control (Continuous Surveillance)
Liner Material Par. 4 .a and Par. 6.7.2	304 (1.4301 X5CrNi 18-10) 0.7mm + 0.9mm 316 (1.4404 X2CrNiMo 17-12-2)0.7mm + 0.9mm	Manufacturer's declared	Product catalogue Factory Production Control (Continuous Surveillance)
Wind Load Resistance Par. 7.2 .d and Par. 6.2.3.2	Limitations of height location of exposed section of the chimney shall be 2.5 meters Maximum distance between lateral supports shall be 3.0 meters. Complied with the applied load of 312Kg on 200 Ø sections and fittings.	Manufacturer's declared Test report 19404/1/2	Annex A + Typical Installation
<b>Compressive strength Par.7.2.e and Par.6.2.1</b>			
Chimney sections and fittings Par.6.2.1.1 Chimney support Par.6.2.1.2	Chimney sections, fittings and Supports shall withstand an intensity of load of at least 3 x the declared design load, as per EN 1859 ( Designated by the distance between supports)	Test report 19404/1 + test report AL3484	Annex A + Typical Installation
Tensile strength Par.6.2.2	Chimney shall withstand a load of at least 1.5 x manufacturer's declared, as per EH 1859	Test report 19404/1	
Lateral strength Par.6.2.3	Non-vertical installation. Maximum distance unsupported at 45° of 1.5 meters Vertical installation. Maximum spacing of lateral supports of 3.0 meters	Manufacturer's declared	Annex A + Typical Installation
Distance to combustibles, temperature related Par.7.2.f and Par.6.6.1	T600: 300mm T450:50mm T200:50mm	Test report 19404/1	
Flow resistance Par.7.2.g and Par.6.6.7	Mean value of roughness as per EN 13384-1:2002 Table B.4. 0.001mm	Manufacturer's declared Test report 19404/1	
Thermal resistance Par.7.2.h and Par.6.6.3	14.51 M <sup>2</sup> k/Kw at T200°C	Test report 19404/1	
Thermal performance Par.6.61	Performance tests for designations	Test report 19404/1	Appendix A tests 4, 5, 6, 9, 10, and 11
Accidental human contact Par.6.6.2	Provide protective shield and/or place warning signs in access areas	Test report 19404/1	Appendix A tests 1, 2, 3, and 8
Gas tightness Par.6.5 and Table 1	The leakage rate for gas tightness 0.00064 l/s/m <sup>2</sup> . Designation (H1)	Test report 19404/1	Factory Production Control (Continuous Surveillance)
Sootfire resistance Par.6.4	G(50):Yes Applies O(50):No	Test report 19404/1	
Water vapour diffusion resistance Par.6.6.4	D(Dry) T450 +T600 W(Wet)T200	Test report 19404/1/2	
Durability against corrosion Par.6.7	Stainless steel 304 (1.4301) or 316 (1.4404) 0.7mm and 0.9mm grades	Manufacturer's declared	Product catalogue

## **Single Skin Deltavent**

A multi-purpose lightweight, prefabricated Stainless Steel duct system designed to convey all associated products of combustion from a wide range of combustion and process appliances. Single-Skin Deltavent benefits from the ability to withstand continuous exhaust gas temperatures of up to 760°C and has been designated as (H1) for pressure resistance in accordance with BS EN 1856-1-2.

### **The Single-Skin Deltavent Systems are designed for use where**

- A four hour fire rating is specified
- A positive pressure, relatively high temperature exhaust duct system is specified
- A watertight flue system is specified

### **Application Examples**

- Condensing Boilers
- Smoke Extract
- C.H.P Systems
- Fan Assisted Flue System
- Kitchen Extract
- Flue Dilution

### **Quality Assurance**

The complete range of components are manufactured, tested and where required installed within scope of stringent quality controlled conditions in accordance with EN ISO 9001:2008 and BS EN 1856-1/2:2009. When requested, A1 Flue Systems shall submit copies of type test reports relating to product performance in addition to the "Certificate of Registration" administered by the British Standards Institute.

### **Fire Rating**

The Single-Skin Deltavent system has been successfully assessed by the Loss Prevention Council for Fire Resistance. A fire rating of 4 hours can be achieved in accordance with stability and integrity criteria of BS 476: part 20. If required, A1 Flue Systems shall submit all test reports in support.



**Construction**

Single-Skin Deltavent sections/fittings are fabricated in a variety of diameters and lengths with a continuously welded vertical seam. The (coupler) characteristics consist of male and female connection sockets complete with a 10mm 90° right angled flange formed at either end of all components. Single-Skin Deltavent joints shall be secured by clamping an externally fitted V-Band over the mating flanges of the adjoining components. Sealant available from A1 Flue Systems, should be applied to the inside profile of the V-Band and to both flange faces before installation.

**Product Description- Standard Number**

EN 1856-1: The standard for System chimney products - requirements for metal chimneys. Comprising of a series of essential harmonised European Standards and elements for both single and multi-wall chimney products with rigid metallic liners.

EN 1856-2: Requirements for metal chimneys- part 2: Metal flue liners and connecting flue pipes. Relates to the essential harmonised European Standards and elements of all products used to convey the products of combustion from appliances to the outside atmosphere.

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), all the provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the above standard(s) under system 2+ are applied and that the factory production control fulfils all the prescribed requirements. All components are manufactured to BS EN No 1856-1-2:2009. Chimneys- Requirements For Metal Chimneys. Certificate number: **0086-CPR-599465**.

### The CE Designation Scheme

The compliance of a chimney system product to the relevant technical performance characteristics according to the designation scheme is described by the following example.

Product Description	Product Designations						
System Chimney Product	EN 1856-1	T450	H1	D	V1	L20091	G(50)
Metal Flue Liners	EN 1856-2	T160	P1	W	V1	L20056	O(50)
Connecting Flue Pipe	EN 1856-2	T200	P1	W	V2	L50056	G(50)
	Standard Number	Temperature Level °C	Pressure Level N,P,H	Condensate Resistance	Corrosion Resistance	Flue Liner Specification	Soot Fire Resistance

### Product Specification

Single wall product, manufactured from 0.71mm thick 304 grade stainless steel with a continuous seam weld across its length. The relevant technical performance classifications and designations for Deltavent Singlewall are:

Standard	Product Designations					
BS EN 1856-2	Temperature Class	Pressure Class	Condense Resistance	Corrosion Class	Material Specification Liner Grade + Thickness	Soot Fire Resistance
	T600	H1	D	VmL	20070	G(50)
				V2	50070	
				VmL	20090	
				V2	50090	

Standard	Product Designations					
BS EN 1856-2	Temperature Class	Pressure Class	Condense Resistance	Corrosion Class	Material Specification Liner Grade + Thickness	Soot Fire Resistance
	T200	H1	W	VmL	20070	G(50)
				V2	50070	
				VmL	20090	
				V2	50090	

Essential Characteristics Requirements According To BS EN 1856-1	Levels and/or classes: Informative Data	Document	Additional Information
Internal diameters Par.4.b	Available in diameters of 150mm-1200mm	Manufacturer's declared	Product catalogue Factory Production Control (Continuous Surveillance)
Liner Material Par. 4 .a and Par. 6.7.2	304 (1.4301 X5CrNi 18-10) 0.6mm + 0.7mm 316 (1.4404 X2CrNiMo 17-12-2)0.6mm + 0.7mm	Manufacturer's declared	Product catalogue Factory Production Control (Continuous Surveillance)
Wind Load Resistance Par. 7.2 .d and Par. 6.2.3.2	Limitations of height location of exposed section of the chimney shall be 2.5 meters Maximum distance between lateral supports shall be 3.0 meters. Complied with the applied load of 312Kg on 200 Ø sections and fittings.	Manufacturer's declared Test report 19404/1/2/3/4	Annex A + Typical Installation
<b>Compressive strength Par.7.2.e and Par.6.2.1</b>			
Chimney sections and fittings Par.6.2.1.1 Chimney support Par.6.2.1.2	Chimney sections, fittings and Supports shall withstand an intensity of load of at least 3 x the declared design load, as per EN 1859 ( Designated by the distance between supports)	Test report 19404/1/2/5 + test report AL3484	Annex A + Typical Installation
Tensile strength Par.6.2.2	Chimney shall withstand a load of at least 1.5 x manufacturer's declared, as per EH 1859	Test report 19404/1/2/5	
Lateral strength Par.6.2.3	Non-vertical installation. Maximum distance unsupported at 45° of 1.5 meters Vertical installation. Maximum spacing of lateral supports of 3.0 meters	Manufacturer's declared	Annex A + Typical Installation
Distance to combustibles, temperature related Par.7.2.f and Par.6.6.1	T600: 50mm T200:50mm	Test report 19404/1/3/4	
Flow resistance Par.7.2.g and Par.6.6.7	Mean value of roughness as per EN 13384-1:2002 Table B.4. of rigid liners, rigid connecting flue pipes and fittings shall be 0.001m.	Manufacturer's declared Test report 19404/1/3/4	
Thermal resistance Par.7.2.h and Par.6.6.3	Single-skin Deltavent pressure resistant flue liner is not insulated		
Thermal performance Par.6.61	Performance tests for designations	Test report 19404/13/4	Appendix A tests 4, 5, 6, 9, 10, and 11
Accidental human contact Par.6.6.2	Provide protective shield and/or place warning signs in access areas	Test report 19404/1/3/4	Appendix A tests 1, 2, 3, and 8
Gas tightness Par.6.5 and Table 1	The leakage rate for gas tightness 0.00064 l/s/m <sup>2</sup> . Designation (H1)	Test report 19404/1/3/4	Factory Production Control (Continuous Surveillance)
Sootfire resistance Par.6.4	G(50):Yes Applies O(50):No	Test report 19404/1/3/4	
Water vapour diffusion resistance Par.6.6.4	D(Dry) T450 +T600 W(Wet)T200	Test report 19404/1/3/4	
Durability against corrosion Par.6.7	Stainless steel 304 (1.4301) or 316 (1.4404) 0.7mm and 0.9mm grades	Manufacturer's declared	Product catalogue

# Twin Wall

Twinwall is a Stainless Steel, prefabricated exhaust/duct system which is fully welded and available in diameters 100mm id through to 1200mm id. Twinwall also benefits from a selection of insulated/non-insulated annulus' varying in sizes. (25mm – 100mm)

There are two specific types of Twinwall products available, the TF is a general purpose chimney flue for the use with gas or oil fired appliances and the HG is a high grade Twinwall flue, also for the use with gas or oil fired appliances, where a higher specification is required.

Relatively low external skin temperatures can be obtained with Twinwall, through selection of the correct material grade and annulus thickness, dependent on the flue gas temperature a minimum 50mm clearance must be maintained from the outer skin to all combustible materials.

**The Twinwall systems are designed for use where;**

- A four hour fire rating is specified
- A negative pressure exhaust/duct system is specified

**Application examples;**

- Pressure Jet Burner
- Atmospheric Burner
- Gas Fires
- Flue Dilution
- Ventilation/Extract

The complete range of Twinwall chimney products have been successfully tested in accordance with B5476 part 20 for stability and integrity during a 4 hour fire test carried out at the Loss Prevention laboratories, Borehamwood. A copy of the full test report is available at A1 Flue Systems Head Office. All our products are also manufactured, and where required, installed within the scope of ISO 9001 : 2000 quality assurance system.

**BSRIA Test Results**

Twinwall chimney systems – Classification and Designation

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T450	H1	D	VxL20056 or VxL50056	G(50)

**Specifications:**

This catalogue provides all dimensional details for the TF and HG Twinwall system.

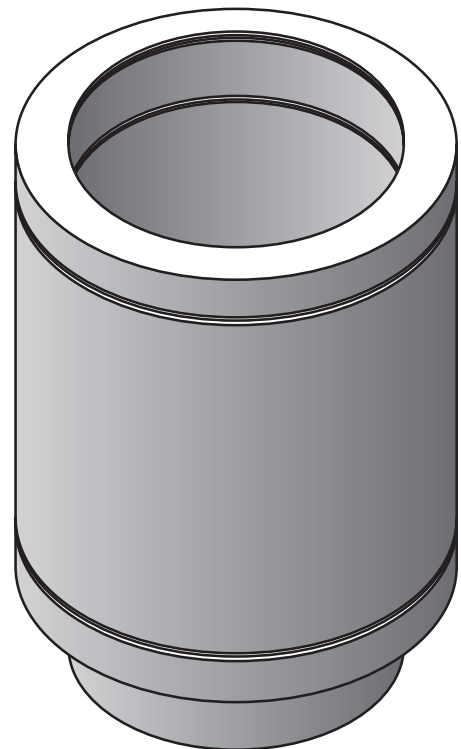
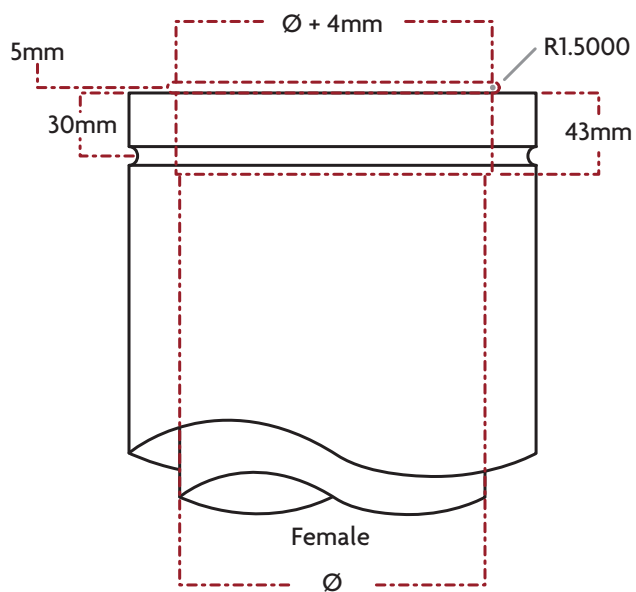
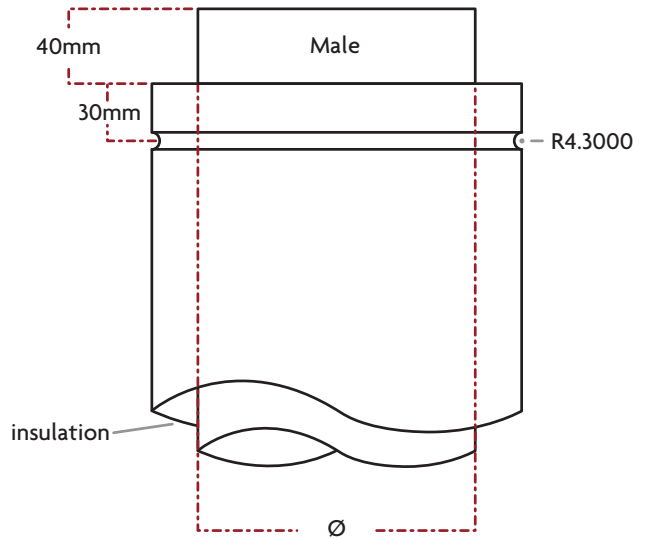
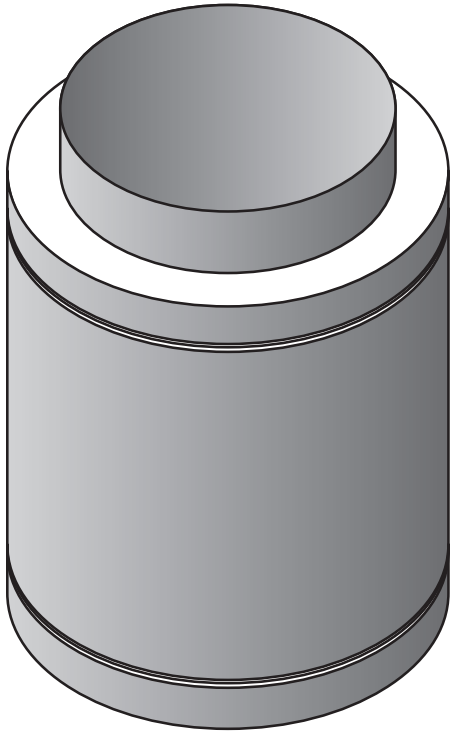
**Twinwall Material**

	Std. Construction TF flue	Std. Construction HG flue
Liner	FULLY WELDED 0.6/0.7mm Grade 304 s/s	FULLY WELDED 0.6/0.7mm Grade 316 s/s
Outer case	FULLY WELDED 0.7mm Grade 304 s/s	FULLY WELDED 0.7mm Grade 304 s/s
	Alternative to special order, Brushed s/s (outer case only)	
Maximun flue gas temperature	All systems 540°C max	

NOTE: Both liner and external case of the Twinwall products are manufactured using 0.6/0.7mm grade Stainless Steel. The seam consists of a 10mm overlap joint which is resistance welded.

A standard working tolerance of +/- 1mm or 1degree is applied to all components within the Twinwall range.

Construction of Twinwall Flue

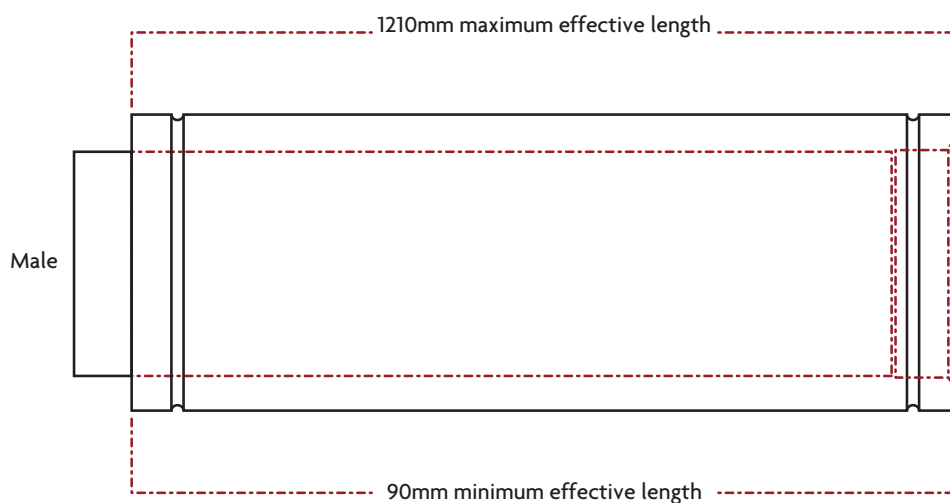


# Twinwall

## Straight Lengths.

Straight Lengths are available as standard in 150mm, 300mm, 420mm, 570mm, 760mm, 875mm and 1210mm lengths, with exception to 100m diameter pipe which has a maximum effective length of 875mm.

We also manufacture any fixed length between the Standard Lengths to your specification.



## Prior to Installation

Before installation of the Twinwall flue you must be aware, in a vertical application it is essential that the components are installed with male spigot down against the flow of gases. this will allow condensates, if any, to remain within the flue.

The Twinwall system also uses two types of sealant. For low temperature systems, 150 degrees and below, a high durability/low temp silicone sealant is used and for systems with temperatures in excess of 150-350 degrees, high temperature sealant is used. The correct sealant must be used to ensure the durability and strength of joints. Sealant is chosen according to the flue type and gas temperature.

Sealants for all applications are available and are supplied with the product. Where Twinwall is used externally, sealant must be applied under the external joint bands, (in the grooves of the outer case) to prevent the ingress of water.

## Installation

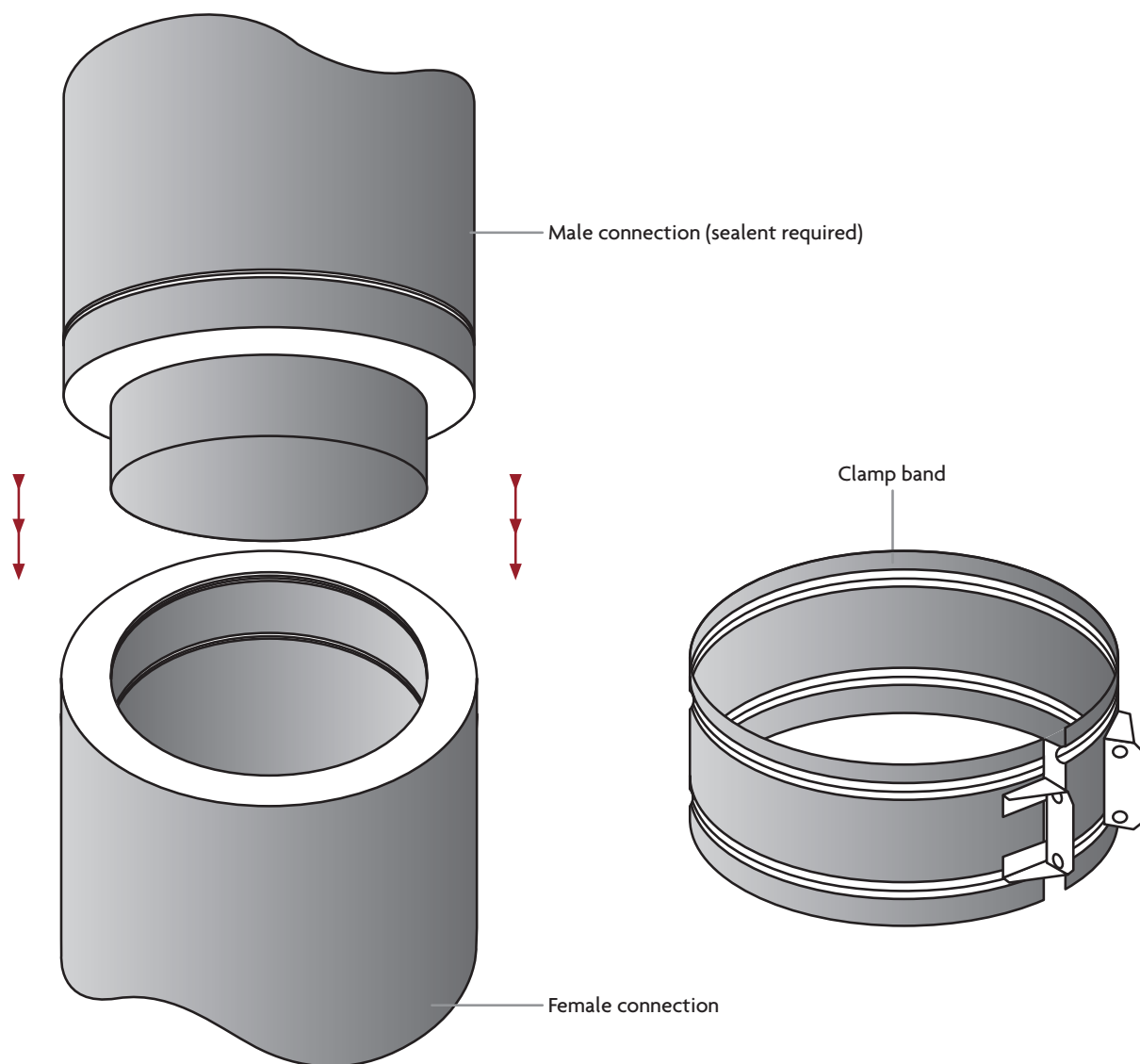
Ensure all components that require sealant are clean from any dirt, grease and other contaminants. Once the decontamination has been achieved, apply an adequate amount of sealant around the male locating spigot. (Refer to illustration)

Using the locating spigot of the male as a guide, simply push/slot the two parts of Twinwall together. ( Male spigot runs down).

**CAUTION: It is extremely important for nothing to pierce either the internal liner or outer at any time of installation.**

The final process of assembly is fitting the Clampband. This has been designed to connect both outer flue parts together using a groove either end for location and is secured into position using the Stainless Steel nuts and bolts provided.

**NOTE: If Twinwall is exposed to external elements i.e. (rain or snow) it is essential a bead of sealant is also applied into the grooves underneath the Clampband to prevent the ingress of moisture.**



**NOTE:** Do not pull or bend the Clampband in any way when installing, as this will alter the shape of its profile. Simply slide the Clampband along the two adjoining lengths. Once the band is situated in the correct position tightly fasten the joint using the nuts and bolts provided.



# Twinwall

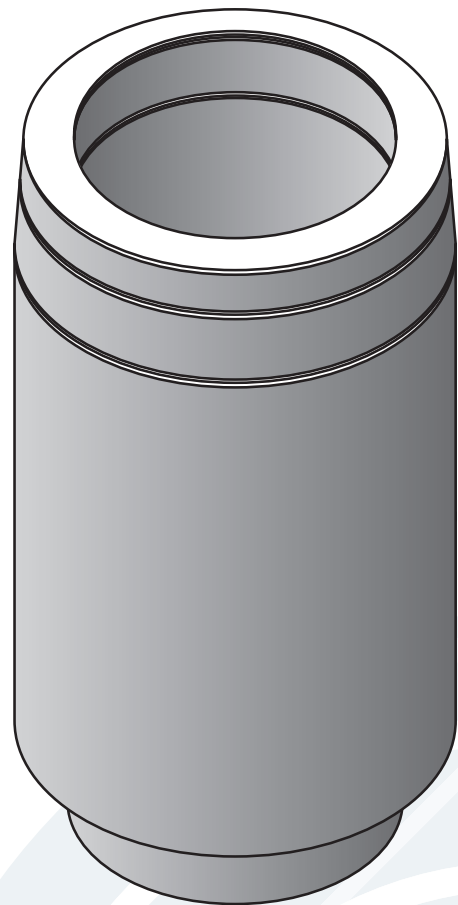
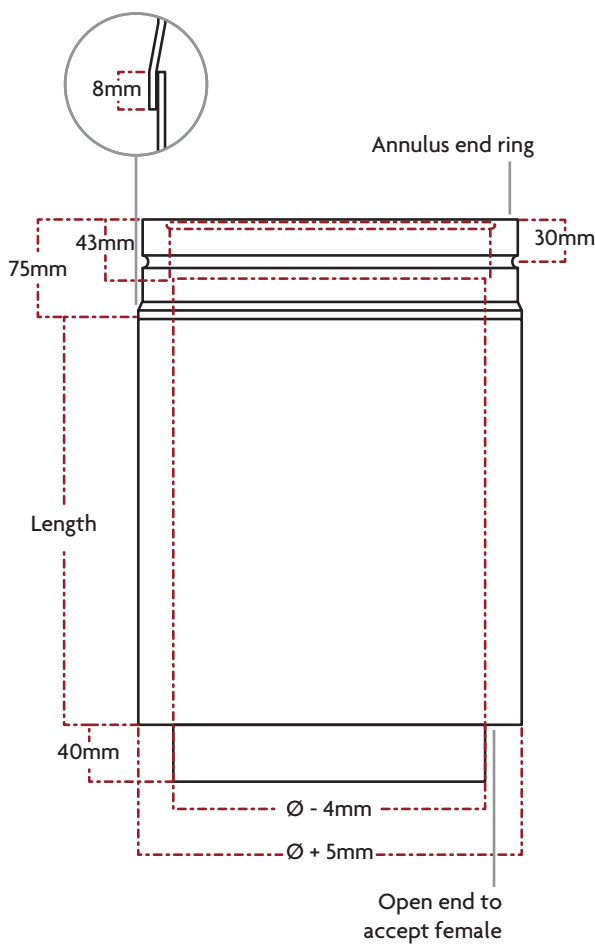
## Twinwall Adjustable Lengths.

Twinwall Adjustable Lengths have been successfully designed to allow for greater flexibility when measuring or installing a chimney system. This component is very important, as measurements cannot always be obtained.

The effectiveness of this component is established with both internal liner and outer case being manufactured in irregular diameters, and to the values provided (as standard). This enables the Adjustable Length to become telescopic, giving you the exact length required.

Once the Adjustable Length is in position and the length required has been achieved, it is then secured by means of a Clampband.

Adjustable Lengths are available with either a 25mm, 50mm, 75mm or 100mm annulus (as standard), and in lengths comprising of 150mm, 300mm and 450mm. Specifications above can also be accommodated.



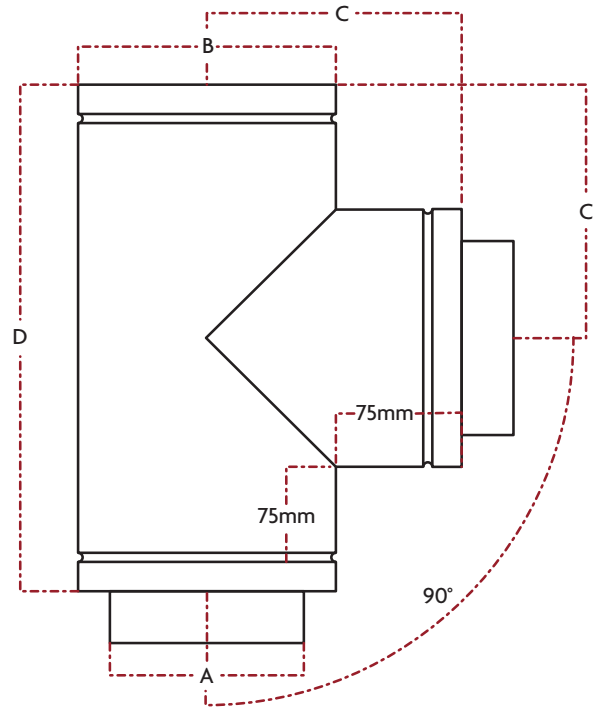
**CAUTION:** Adjustable Lengths DO NOT LOAD BEAR and should never be placed in a vertical rise unless sufficient support is in place.

## Twinwall Tees

### 90degree Tees

90 degree Tees allow for the change in direction of a Twinwall chimney system whilst giving you accessibility for an Inspection/Clean-Out Door or a moisture release drain point.

The 90 degree Tee is widely used at the base of a vertical rise. However, 90 degree Tees can also be adjoined in multiples creating complete header sets and supplied with a reduced branch diameter, giving you the option and flexibility to reduce the connecting flue diameter and if needed change the position of the chimney flue run.



### Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
C	150	163	175	188	200	213	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
D	300	326	350	376	400	426	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200

### Twinwall 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
C	175	188	200	213	225		250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	
D	350	376	400	426	450		500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	

### Twinwall 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050		
C	200	213	225		250		275	300	325	350	375	400	425	450	475	500	525	550	575	600		
D	400	426	450		500		550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200		

### Twinwall 100

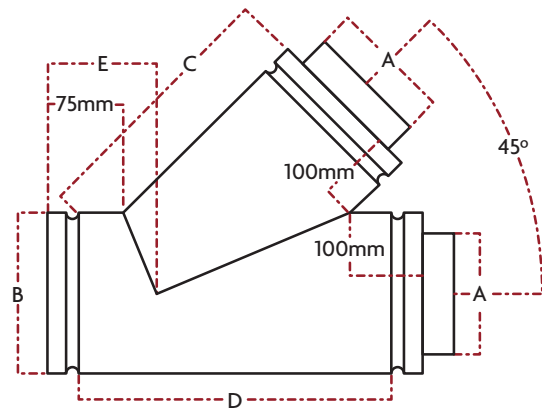
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050			
C	225		250		275		300	325	350	375	400	425	450	475	500	525	550	600	600			
D	450		500		550		600	650	700	750	800	850	900	950	1000	1050	1100	1200	1200			

# Twinwall

## 135 degree Tees

The 135 degree Tee is also widely used at the base of a vertical rise but gives the added advantage of a swept entry to reduce resistance to the flow of the flue gases.

All dimensions given below are standard minimum. However, the possibility of manufacturing and supplying a non-standard Tee with or without a reduced branch diameter and at values above those given is also available on request.



To calculate Tee body length;  
 $\text{Ø} / \cos \text{angle} + 175 + (\text{insulation} + \cos \text{angle})$ .

## Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	150	165	200	225	250	275	300	350	400	450	500	550	600	650	700	750
C	281	311	341	372	402	432	462	522	583	643	704	764	824	885	945	1005
D	387	423	458	494	529	564	599	670	741	812	882	953	1094	1094	1165	1236
E	106	111	116	116	127	132	137	147	158	168	179	189	210	210	220	230

## Twinwall 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	
C	341	372	402	432	462		522	583	643	704	764	824	885	945	1005	
D	485	494	529	564	599		670	741	812	882	953	1023	1094	1165	1236	
E	116	122	127	132	137		147	158	168	179	189	199	210	220	230	

## Twinwall 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	250	375	300		350		400	450	500	550	600	650	700	750		
C	402	432	462		522		583	643	704	764	824	885	945	1005		
D	529	564	599		670		741	812	882	953	1023	1094	1165	1236		
E	127	132	137		147		156	168	179	189	199	210	220	230		

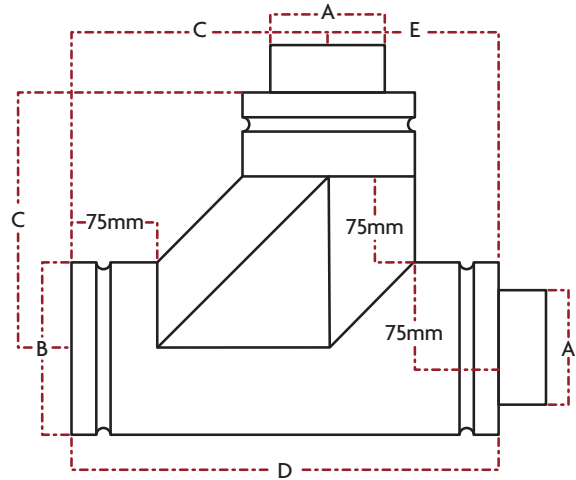
## Twinwall 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	300		350		400		450	500	550	600	650	700	750			
C	462		522		583		643	704	764	824	885	945	1005			
D	599		670		741		812	882	953	1023	1094	1165	1236			
E	137		147		158		168	179	189	199	210	220	230			

### 90 degree Booted Tees

The 90 degree Booted Tee has been specifically designed to allow for a change in direction but gives the added advantage of a swept entry or exit, reducing resistance to the flow of flue gases.

This equal Tee can also be manufactured and supplied at values above those given and with a reduced diameter branch and at certain angles on request.



### Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950
C	225	238	250	263	275	288	300	325	350	375	400	425	450	475	500	525	550	575	600	625
D	375	403	425	449	475	504	525	575	625	675	725	775	825	875	925	975	1025	1075	1125	1175
E	150	163	175	188	200	213	225	250	275	300	325	350	375	400	425	450	475	500	525	550

### Twinwall 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	
C	250	263	275	288	300		325	350	375	400	425	450	475	500	525	550	575	600	625	
D	425	449	475	504	525		575	625	675	725	775	825	875	925	975	1025	1075	1125	1175	
E	175	188	200	213	225		250	275	300	325	350	375	400	425	450	475	500	525	550	

### Twinwall 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950		
C	275	288	300		325		350	375	400	425	450	475	500	525	550	575	600	625		
D	475	504	525		575		625	675	725	775	825	875	925	975	1025	1075	1125	1175		
E	200	213	225		250		275	300	325	350	375	400	425	450	475	500	525	550		

### Twinwall 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950			
C	300		325		350		375	400	425	450	475	500	525	550	575	600	625			
D	525		575		625		675	725	775	825	875	925	975	1025	1075	1125	1175			
E	225		250		275		300	325	350	375	400	425	450	475	500	525	550			

# Twinwall

## Twinwall Elbows

Twinwall Elbows are used when a change in direction is required within a chimney system. By adjoining and incorporating Elbows with various Straight Lengths and Adjustable Lengths, offsets can be tailor made to suit your requirements.

All information provided below for all Elbows are standard minimum. However, the possibility of manufacturing and supplying Elbows with one or both centre lines extended and at any angle including those given is available on request.

The entire range of Twinwall Elbows consist of fixed internal

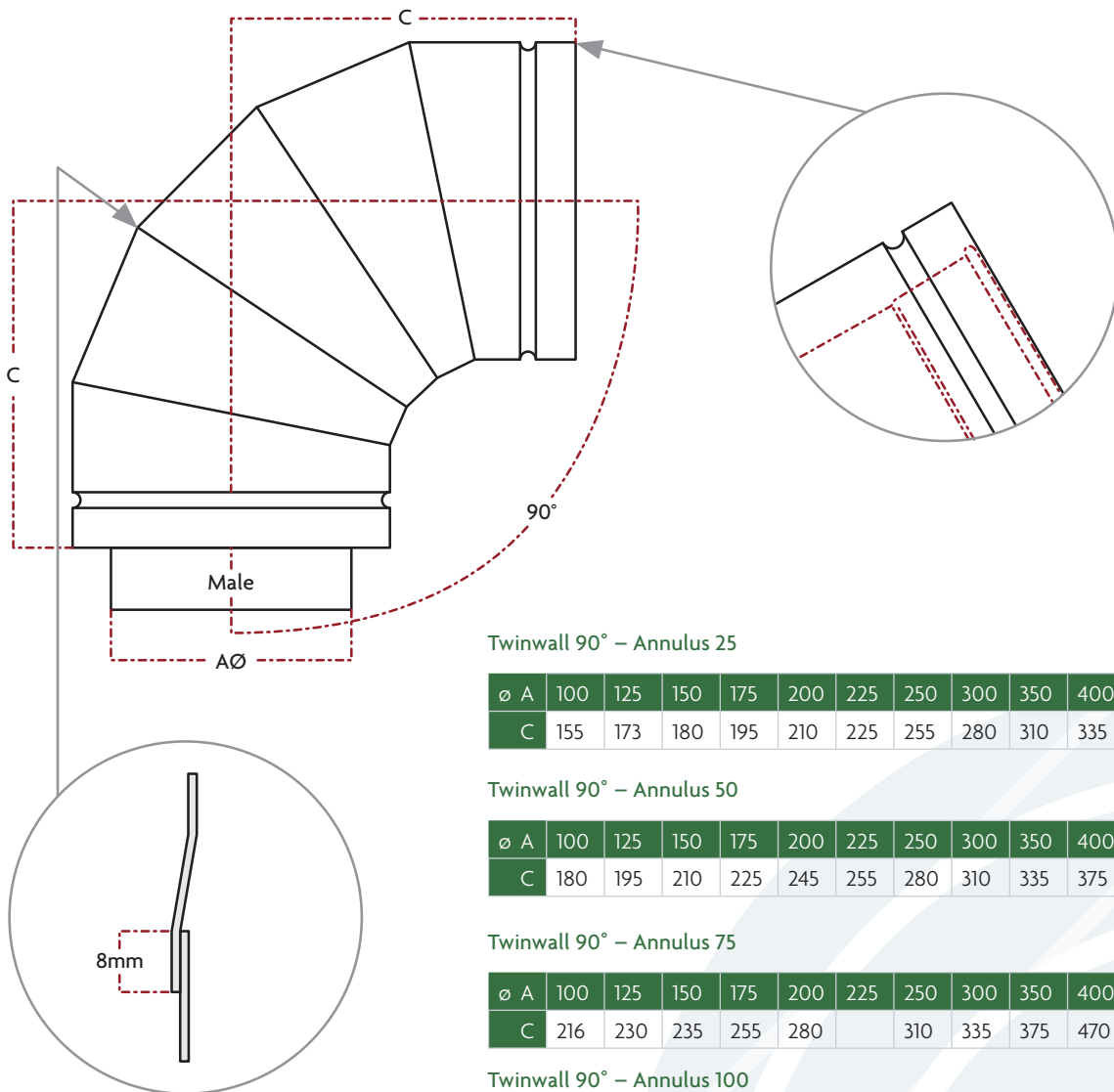
and external liner segments which are joined with an 8mm overlap joint, Spot Welded together.

**CAUTION: Twinwall Elbows DO NOT LOAD BEAR.**

500 $\phi$  – 750 $\phi$  All 90degree Elbows consist of two 45degree Elbows.

750 $\phi$  and above 90degree Elbows consist of three 30degree Elbows and 60degree Elbows consist of two 30degree Elbows.

1000 $\phi$  and above 45degree Elbows consist of two 22.5degree Elbows.



Twinwall 90° – Annulus 25

$\phi$ A	100	125	150	175	200	225	250	300	350	400	450
C	155	173	180	195	210	225	255	280	310	335	375

Twinwall 90° – Annulus 50

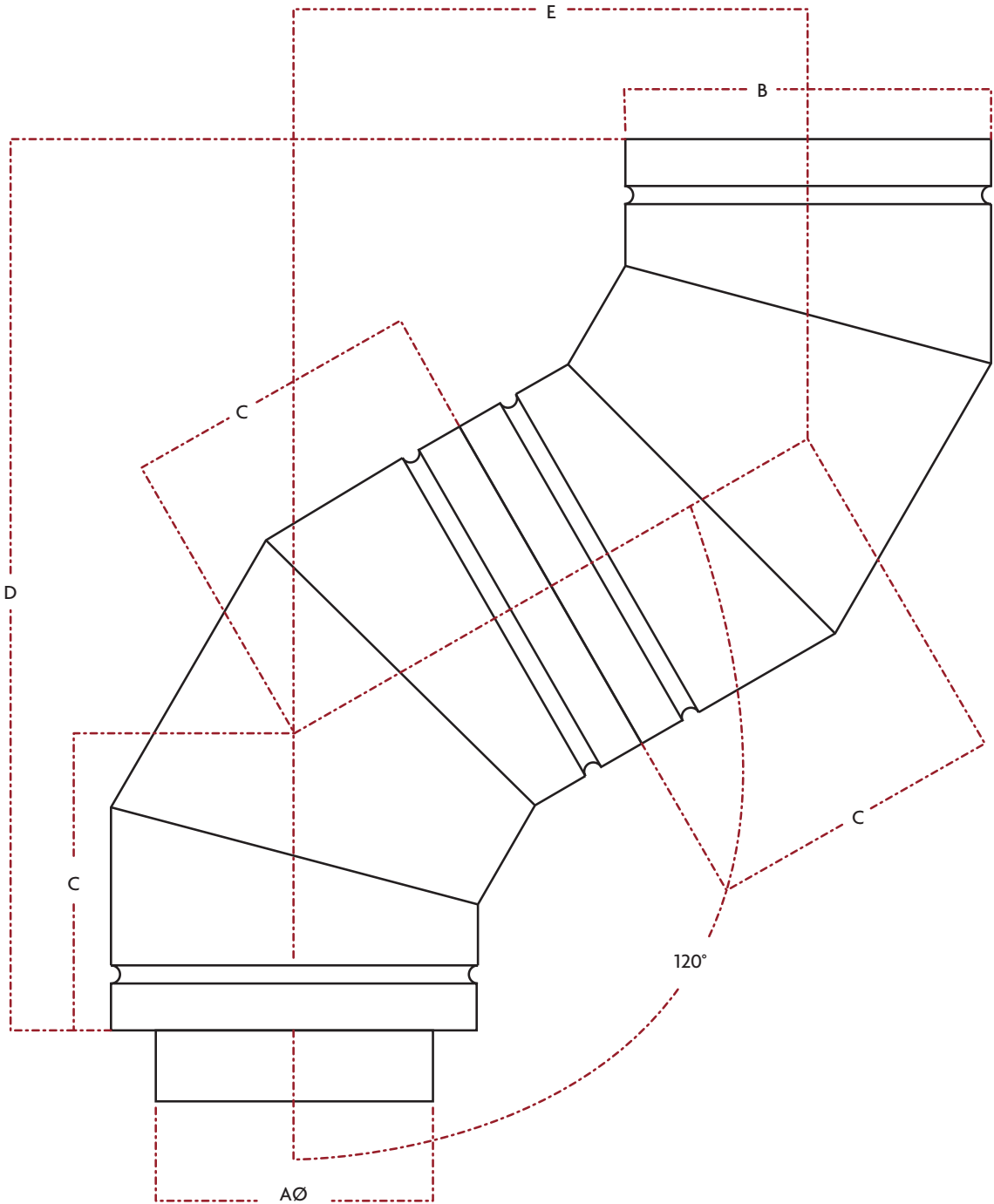
$\phi$ A	100	125	150	175	200	225	250	300	350	400	450
C	180	195	210	225	245	255	280	310	335	375	470

Twinwall 90° – Annulus 75

$\phi$ A	100	125	150	175	200	225	250	300	350	400	450
C	216	230	235	255	280		310	335	375	470	483

Twinwall 90° – Annulus 100

$\phi$ A	100	125	150	175	200	225	250	300	350	400	450
C	235	255	280		310		335	375	470	483	507



# Twinwall

## Twinwall 60° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750
C	115	120	125	130	140	150	160	170	200	220	230	240	260	300	320	340
D	345	360	375	390	420	450	480	510	600	660	690	720	780	900	960	1020
E	199	208	217	225	242	260	277	294	346	381	398	416	450	520	554	589

## Twinwall 60° – Annulus 50

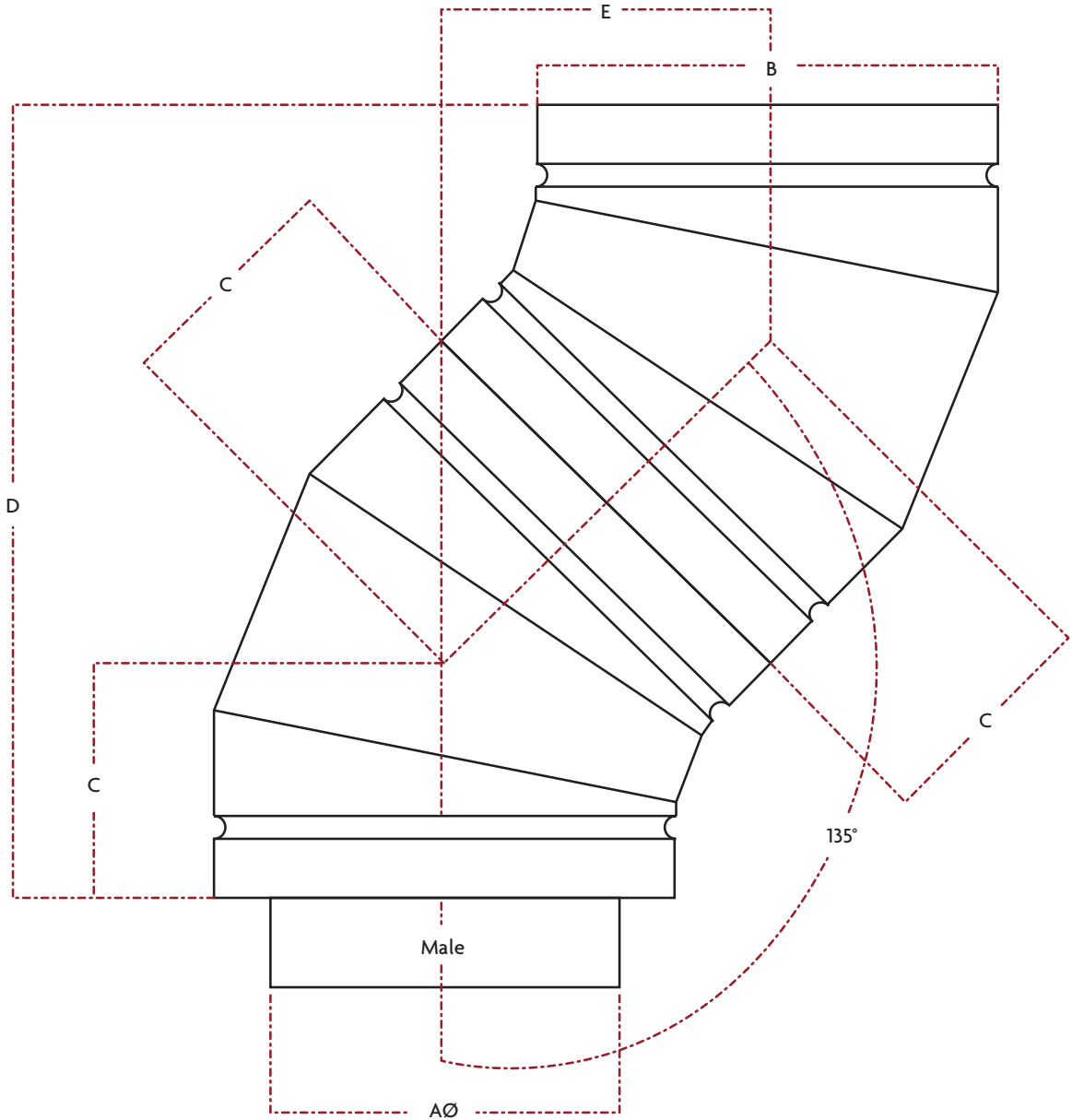
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800
C	125	130	140	150	160		170	200	220	230	240	260	300	320	340	446
D	375	390	420	450	480		510	600	660	690	720	780	900	960	1020	1338
E	217	225	242	260	277		294	346	381	398	416	450	520	554	589	772

## Twinwall 60° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850
C	140	150	160		170		200	220	230	240	260	300	320	340	446	461
D	420	450	480		510		600	660	690	720	780	900	960	1020	1338	1383
E	242	260	277		294		346	381	398	416	450	520	554	589	772	798

## Twinwall 60° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	300		350		400		450	500	550	600	650	700	750	800	850	900
C	160		170		200		220	230	240	260	300	320	340	446	461	476
D	480		510		600		660	690	720	780	900	960	1020	1338	1383	1428
E	277		294		346		381	398	416	450	520	554	589	772	798	824





# Twinwall

## Twinwall 45° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
C	90	95	100	105	110	115	130	135	150	160	175	195	200	210	230	240	320	330	341	351	361	372
D	381	402	423	444	468	489	552	573	636	678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578
E	127	134	141	148	156	163	184	191	212	226	247	276	283	297	325	339	453	467	482	496	511	526

## Twinwall 45° – Annulus 50

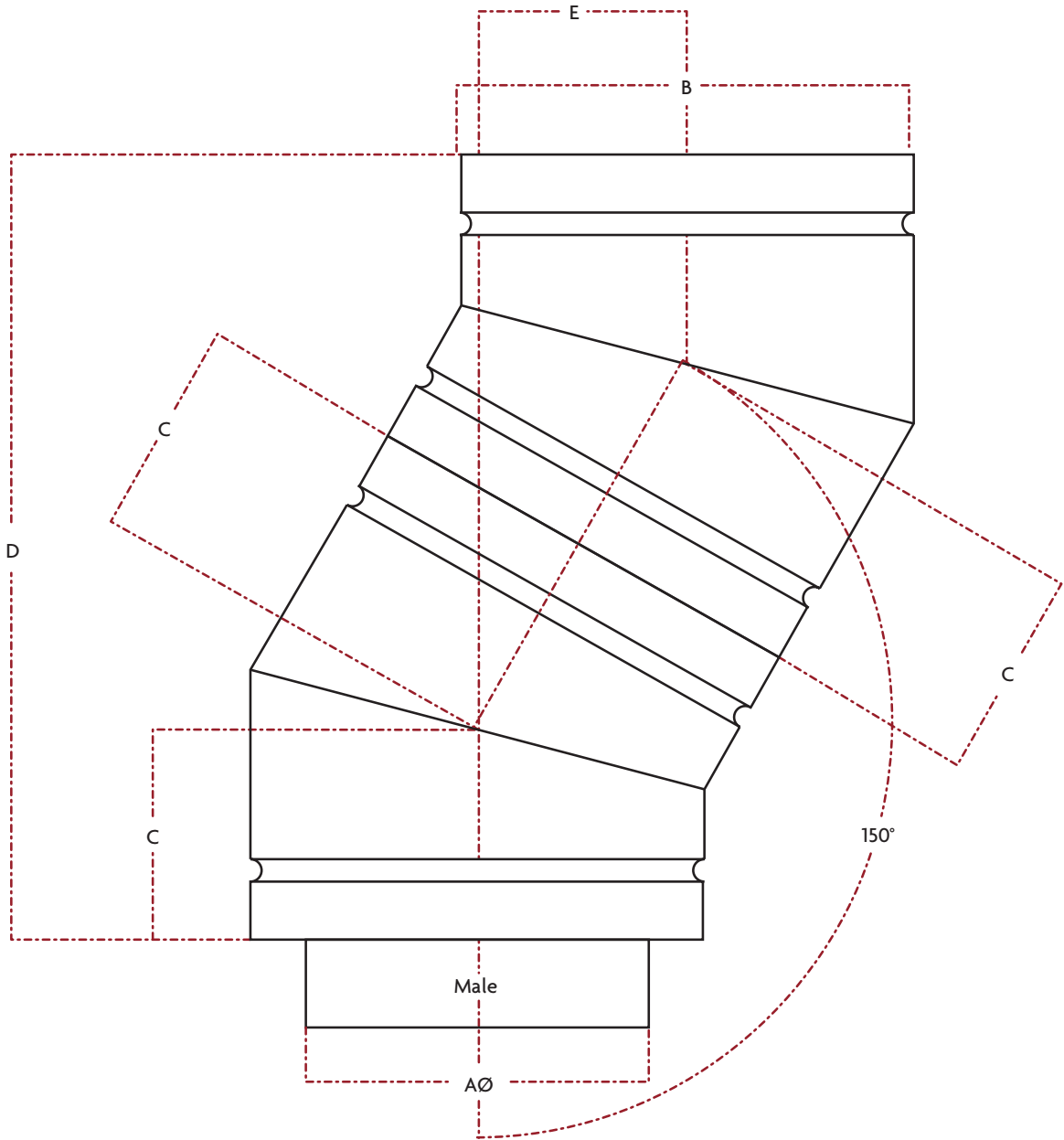
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
C	100	105	110	115	130		135	150	160	175	195	200	210	230	240	320	330	341	351	361	372	382
D	423	444	468	489	552		573	636	678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578	1620
E	141	148	156	163	184		191	212	226	247	276	283	297	325	339	453	467	482	496	511	526	540

## Twinwall 45° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150
C	110	115	130		135		150	160	175	195	200	210	230	240	320	330	341	351	261	372	382	392
D	468	489	552		573		636	678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578	1620	1662
E	156	163	184		191		212	226	247	276	283	297	325	339	453	467	482	496	511	526	540	554

## Twinwall 45° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
C	130		135		150		160	175	195	200	210	230	240	320	330	341	351	361	372	382	392	402
D	552		573		636		678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578	1620	1662	1707
E	184		191		212		226	247	276	283	297	325	339	453	467	482	496	511	526	540	554	569



# Twinwall

## Twinwall 30° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	75	79	82	85	90	93	102	108	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268
D	280	292	306	317	336	347	381	403	429	455	478	504	522	597	634	672	773	799	725	847	873	899	922	948	974	1000
E	75	79	82	85	90	93	102	108	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268

## Twinwall 30° – Annulus 50

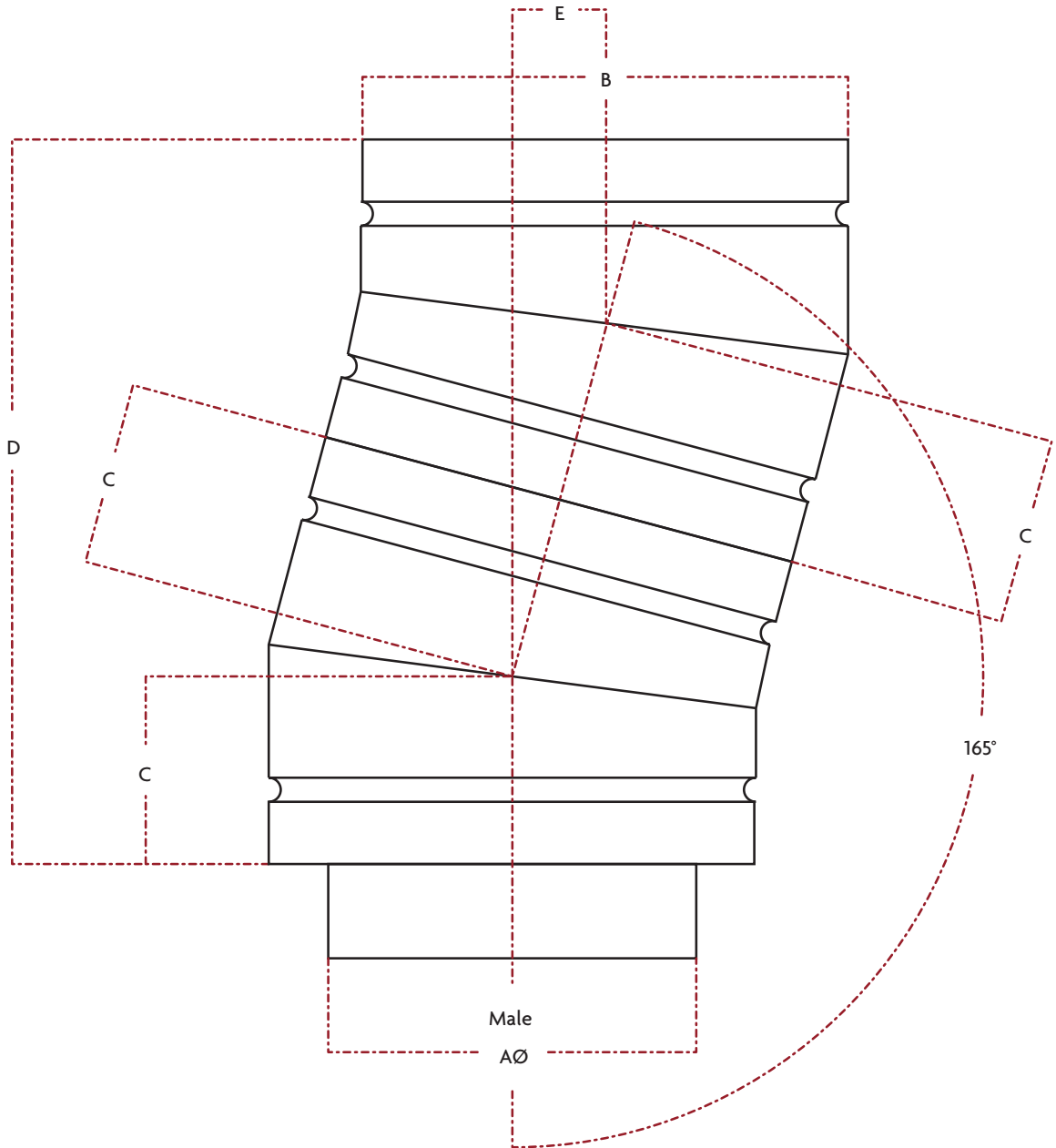
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	82	85	90	93	102		106	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	266	275
D	306	317	336	347	381		403	429	455	478	504	522	597	634	672	773	799	725	847	873	899	922	948	974	1000	1028
E	82	85	90	93	102		108	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275

## Twinwall 30° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	90	93	102		108		115	122	128	128	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282
D	336	347	381		403		429	455	478	478	522	597	634	672	773	799	725	847	873	899	922	948	974	1000	1028	1052
E	90	93	102		108		115	122	128	128	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282

## Twinwall 30° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	102		108		115		122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282	289
D	381		403		429		455	478	504	522	597	634	672	773	799	725	847	873	899	922	948	974	1000	1028	1052	1079
E	102		108		115		122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282	289



# Twinwall

## Twinwall 15° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	65	69	69	70	72	74	77	84	87	91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184
D	257	272	272	274	282	290	303	328	342	367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723
E	34	36	36	36	37	38	40	43	45	47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95

## Twinwall 15° – Annulus 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	69	70	72	74	77		84	87	91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184	188
D	272	274	282	290	303		328	342	367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723	738
E	36	36	37	38	40		43	45	47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95	97

## Twinwall 15° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	72	74	77		84		87	91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184	188	192
D	282	290	303		328		342	367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723	738	753
E	37	38	40		43		45	47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95	97	99

## Twinwall 15° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	77		84		87		91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184	188	192	196
D	303		328		342		367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723	738	753	769
E	40		43		45		47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95	97	99	101

### Drain Lengths

The purpose of a Drain Length is to relieve the flue system from any unwanted moisture (condensate). Introducing such items in the design is paramount for prolonging reliability of an appliance.

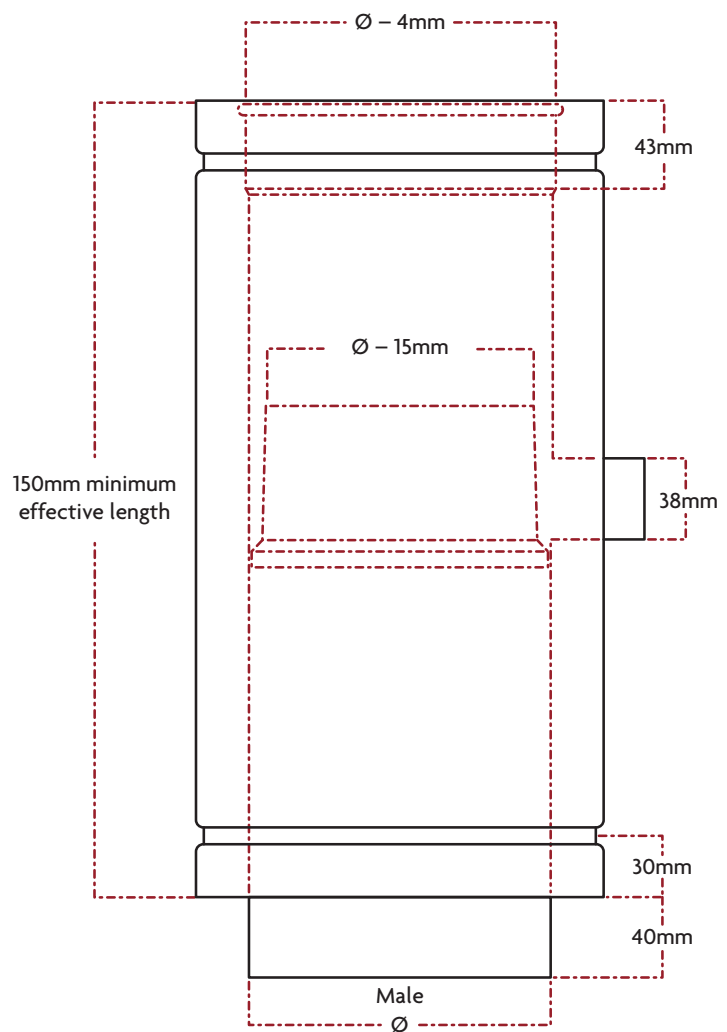
Drain Lengths consist of a 1/2 inch Stainless Steel B.S.P threaded socket which is fully welded onto the inner liner. Drains are obtainable in Twinwall Standard Lengths and can also be fitted to non-standard lengths above our minimum. (Refer to illustration)

### Vertical

Vertical Drain Lengths are manufactured and supplied complete with Drain Traps integrated within the internal liner. This 'Trap' collects and diverts all moisture directly too and out of the drain, however this item reduces the internal diameter which may effect exhaust velocity.

### Horizontal

Horizontal Drain Lengths do not have the Internal Drain Tap fitted and should be incorporated, either at the end or in several positions within a run with a 5° incline.

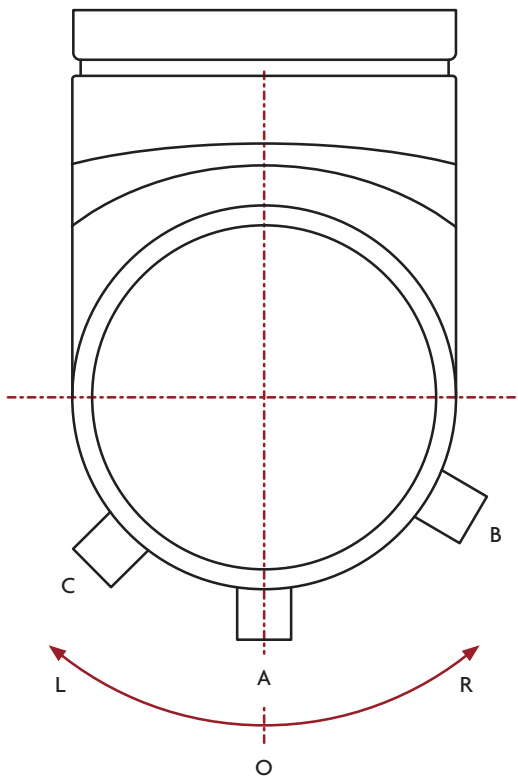
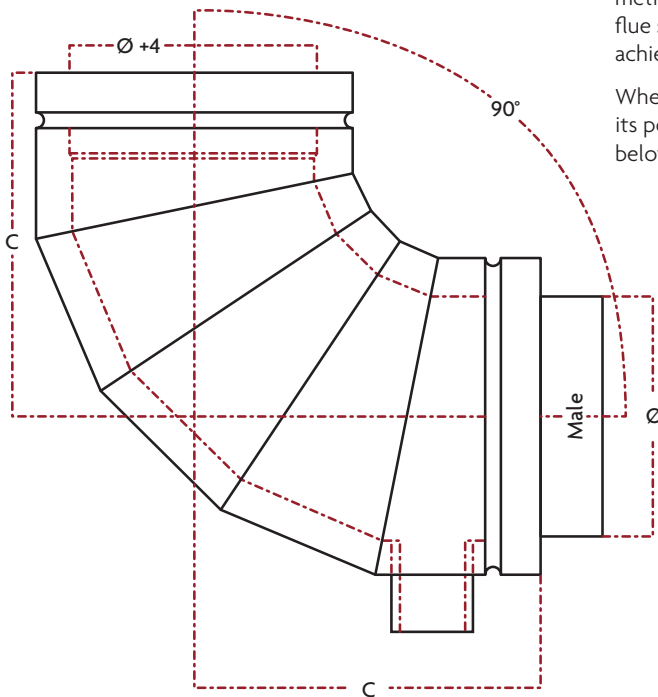


# Twinwall

## Drains in Elbows

Incorporating drains with Elbows can also be an effective method of moisture (condensate) removal from within a flue system. This component allows for drain positions to be achieved where space is at a minimum.

When drains are to be fitted within a male end of an Elbow, its position should be established using the method shown below..



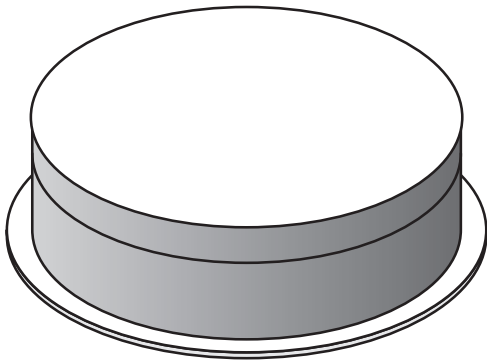
## Elbows viewed on male end

Drain for an upright Elbow (drain "A") will be designated O.

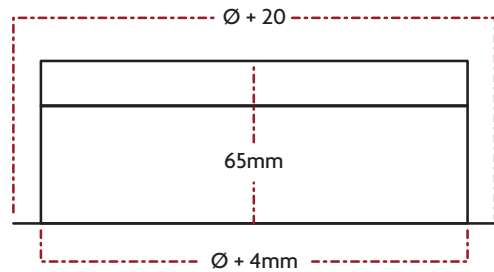
Other drains will be designated either L (left) or R (right) and the angle from position O. i.e Drain "B" will be R60 and "C" will be L45.

### Clean Out Door (C.O.D)

This component is used to close off the unused openings within a Twinwall flue system, and is secured in position either horizontally or vertically using the Stainless Steel Hex Hs self drill screws provided.

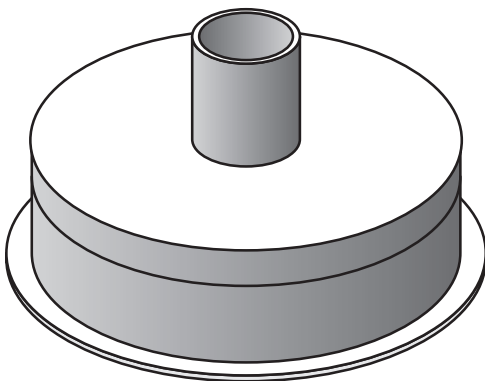


Female

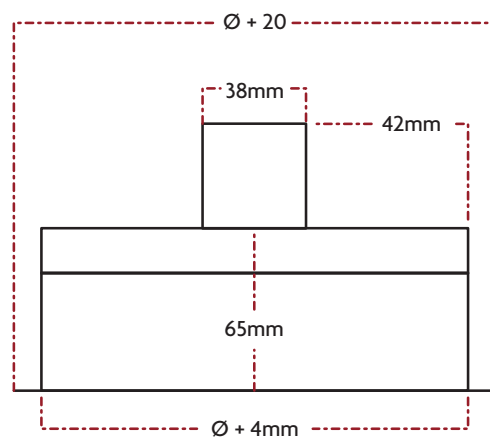


Although the Twinwall product is not for use on condensing appliances, certain factors i.e. open outlets (Top Stubs) allow access to the driving rain resulting in moisture buildup. Therefore, the ability to manufacture and supply a C.O.D complete with a 1 inch Stainless Steel threaded B.S.P

connection is available on request. These caps are positioned to close off the unused opening on the underside of the Base Tee, permitting pipe work to be attached for the removal of any moisture (rain).



Female



**NOTE:** All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater than those given can also be accommodated to your requirements.



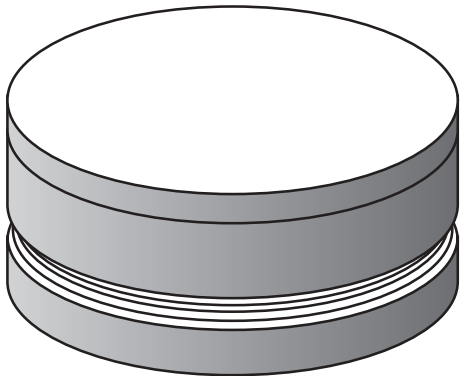
# Twinwall

## Insulated C.O.D

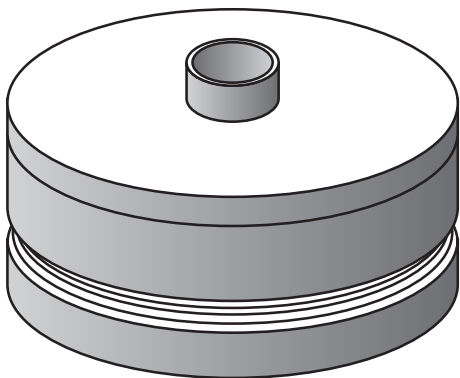
In some cases a relatively high internal and low external temperature is required. Therefore, A1 Flue systems have successfully developed and manufactured an insulated Clean Out Door which can be supplied with or without a drain connection and is available with either a 25mm, 50mm, 75mm or 100mm annulus.

This C.O.D can also be installed either horizontally or vertically and will be fixed in position using the external locking Clampband method.

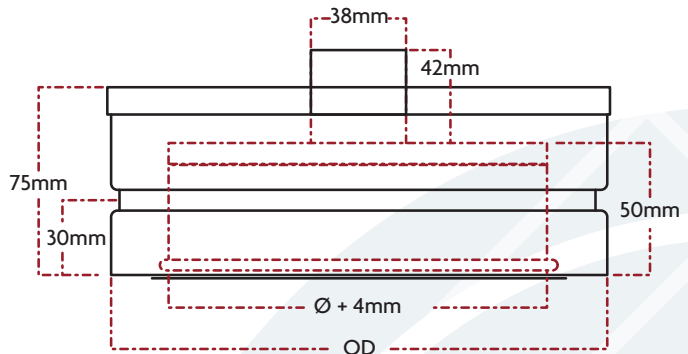
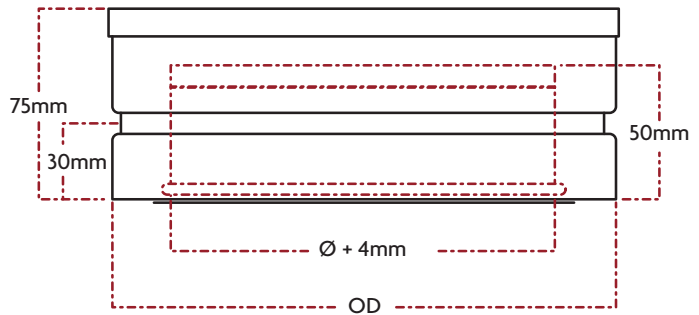
NOTE: All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater than those given can also be accommodated to your requirements.



Female



Female



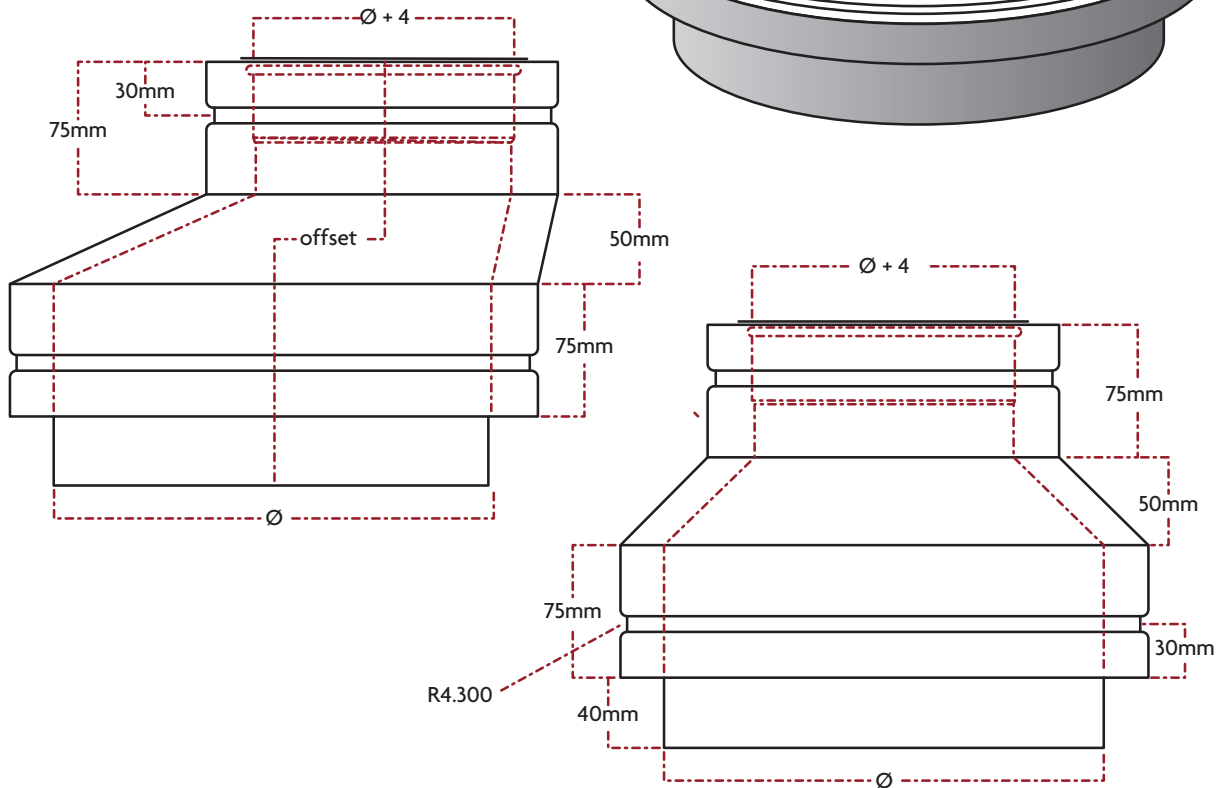
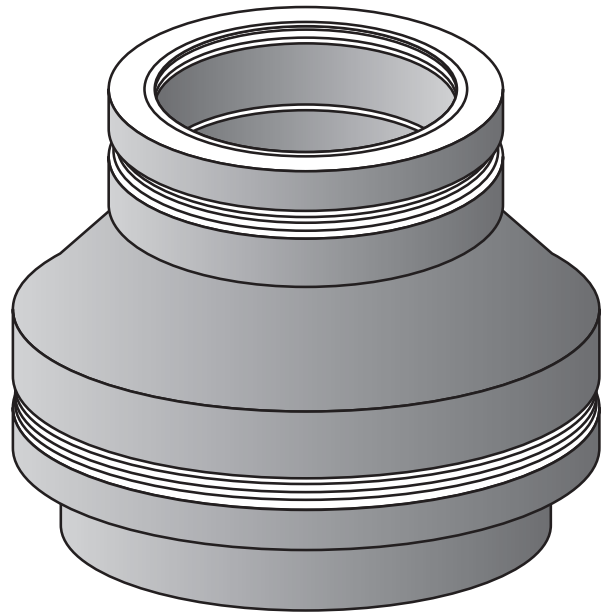
### Reducers and Increases

A Reducer/Incraser is the most effective and efficient method of diameter change within a flue system.

This special item from the Twinwall range allows for a steady transition of flue gases to limit resistance, and is available to order in all diameters and at custom lengths above or including those given.

Reducers and Increases are processed and manufactured using the same method, so the location of itDs male or female profile determines the application of use.

A1 Flue Systems acknowledge that there may be certain times where space is restricted, therefore the possibilities of developing unique items such as; offsets, reduced offsets or increased offsets is often achievable, however the degree of offset may result in the lengthening of Reducer or Increase. (refer to illustration)



NOTE: All dimensions given are (standard minimum).

# Twinwall

## Appliance Adaptors

Two types of Appliance Adaptors are available for this product, both of which are designed to facilitate (assist) the connection of the either vertically or horizontally positioned Twinwall to an appliance outlet.

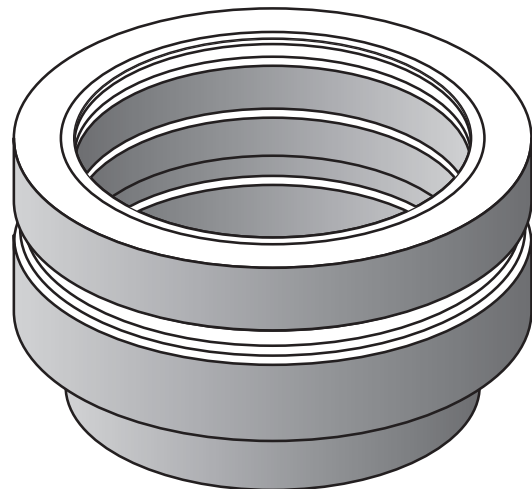
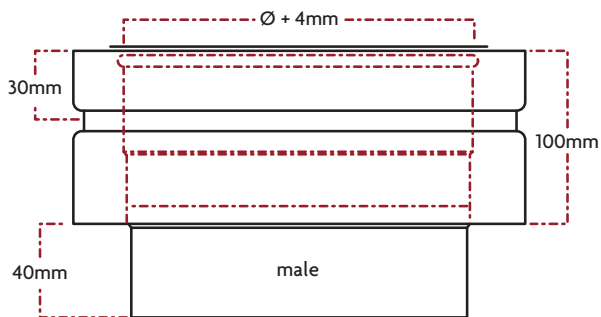
Manufacturing capabilities allow for the male connection spigot on either design to be supplied in all regular and irregular diameters and at increased lengths above those given.

## NOTE:

- All dimensions provided are standard minimum
- All Appliance Adaptors consisting of diameters under 150mm are to be manufactured using, 0.7/0.6mm Grade 304 or 316 Stainless Steel.

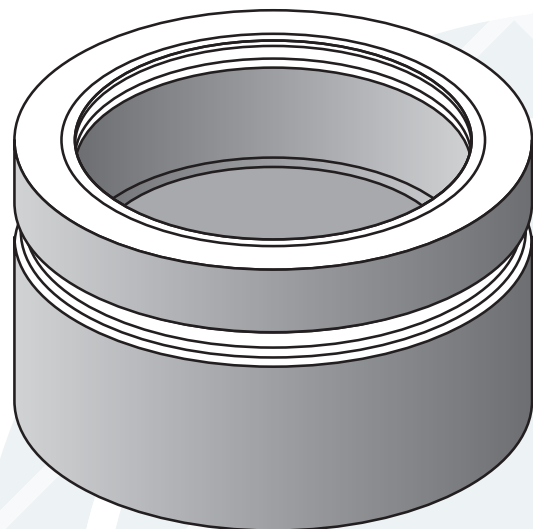
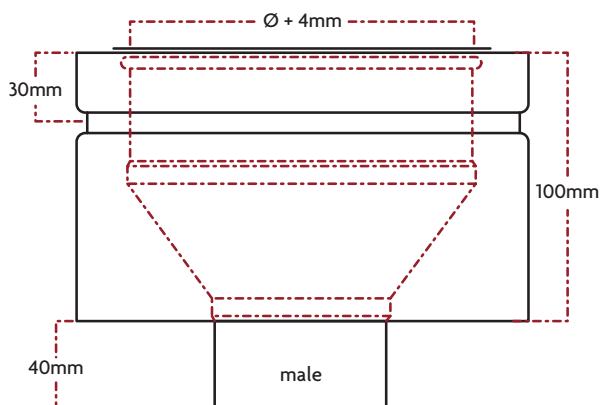
## 2 - Piece Inner

Use where boiler female connections within +/- 10mm of flue liner  $\varnothing$



## 3-Piece Inner

Use where boiler female connection exceeds +/- 10mm of flue liner  $\varnothing$



### Fire Stop Kits

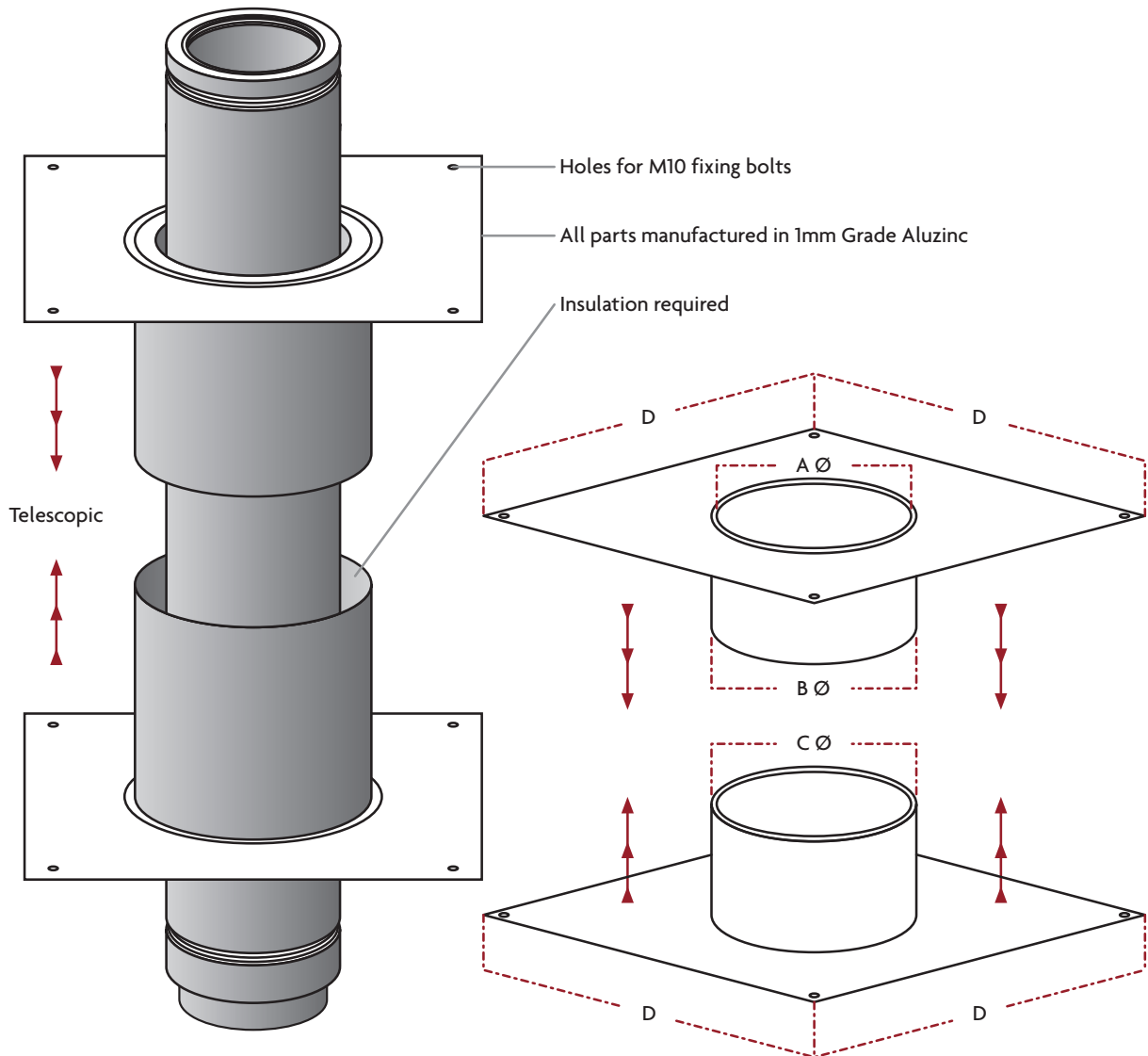
Fire Stop Assembly Kits are used to provide protection against the heat dissipation when passing through a combustible material.

The effectiveness of this component is established by the separation of chimney flue case and the adjacent combustible structure. This separation method allows for the

passing chimney to be completely enclosed (encased) within a fire resistant insulation in order to reduce heat transfer through both conduction and convection.

All dimensions provided below relate to the 25mm annulus Twinwall. However, dimensions for the 50, 75 and 100 can also be established using this table.

ø	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	156	181	206	231	256	281	306	356	406	456	506	556	606	656	706	756	806	856	906	956	1006	1056	1106	1156	1206	1256
B	200	225	250	275	300	325	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	204	229	254	279	304	329	354	404	454	504	554	604	654	704	754	804	854	904	954	1004	1054	1104	1154	1204	1254	1304
D	350	375	400	425	450	475	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450



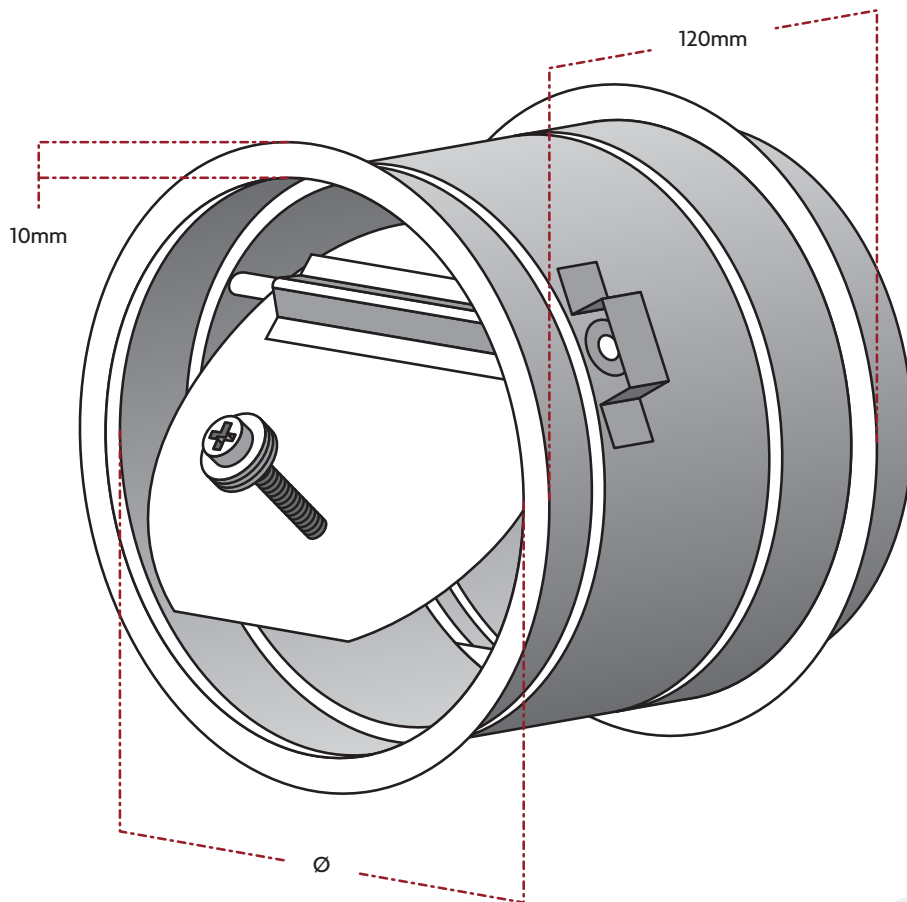
# Twinwall

## Draught Stabiliser

Draught Stabilizers are used for the control of draught within a Twinwall chimney system, caused by the effect of lighter flue gases rising within the chimney stack.

The effectiveness of the Draught Stabilizer is established using a swinging vertical gate pivoted slightly above centre,

such that under static conditions the gate will hang vertically down. This gate can be weighted accordingly so that it is lighter or heavier to move, and in doing so varies the draught (suction) level.



This component is manufactured (as standard) to the values provided using either 1mm Grade 304 or 1mm Grade 316 and is secured into position with a V-Band. This enables frequent easy access for both cleaning and inspections.

**NOTE:** There are certain locations where these devices are best situated, for example; within a vertical part of the boiler connection for effect on the individual appliance, at the end of a combined header or below the Base Tee of the riser for overall effect.

### Twinwall Terminations

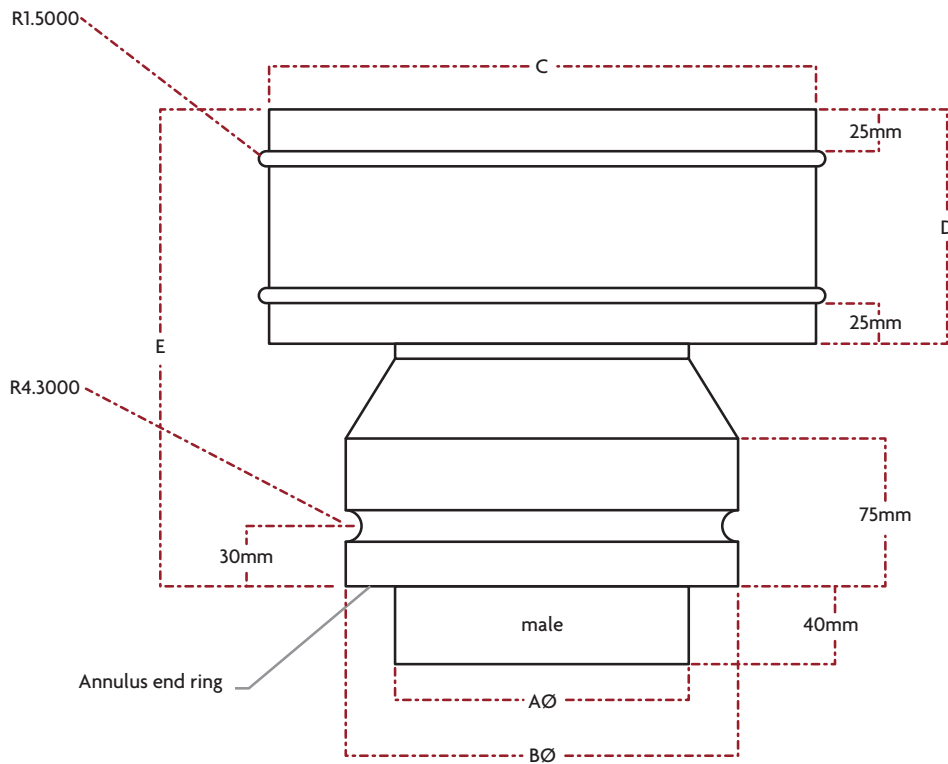
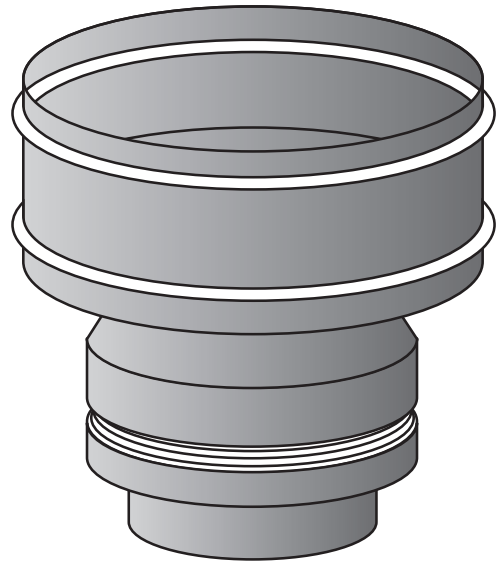
Five types of terminations are available for the Twinwall product, all of which have been designed to allow/aid the safe release of flue gases whilst giving a decorative end finish.

Twinwall Terminations all comprise of male locating spigots and are fixed/secured to the top section of a vertical rise using the locking Clampband provided.

### Universal Terminals

Designed for the use with atmospheric gas burning appliances with a restrictive outlet to prevent bird access.

All dimensions given below are for (standard minimum) Universal Terminals, however larger diameters or dimensions can be accommodated to suit your requirements.



### Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650
C	234	259	284	309	334	359	404	454	554	638	722	802	891	1030
D	121						172		202	222	241	260	280	305
E	230						260		331	350	369	415	434	459

# Twinwall

## Raincap Terminations

### Raincaps

Designed for a multiple of appliances as well as providing a less restrictive all weather protected vent into the atmosphere.

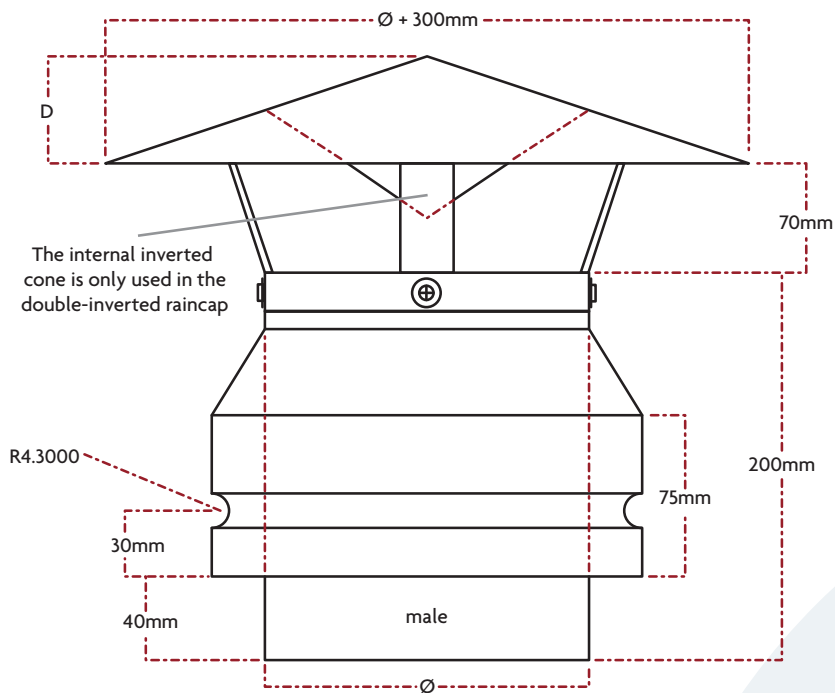
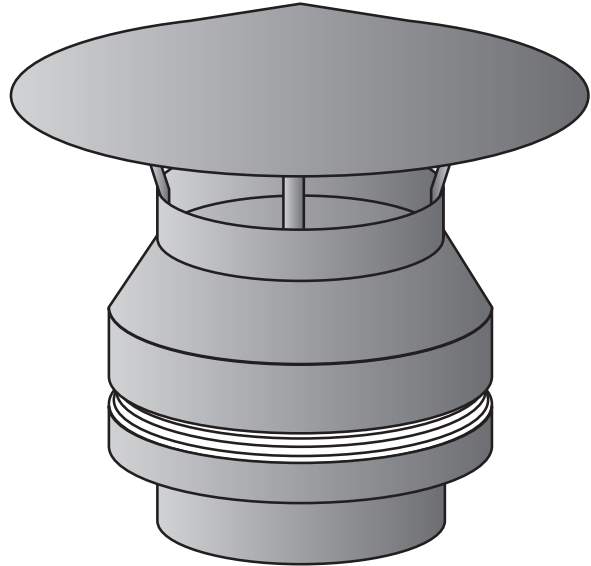
### Double-Inverted Raincaps

For the use on induced draught systems to prevent back pressure within the flue.

NOTE: Picture illustrations and values provided refer to (standard minimum). However, unique non-standard Raincaps consisting of values greater than those given can also be accommodated if required.

100Ø - 250Ø D = 40mm

300Ø - Above D = 75mm



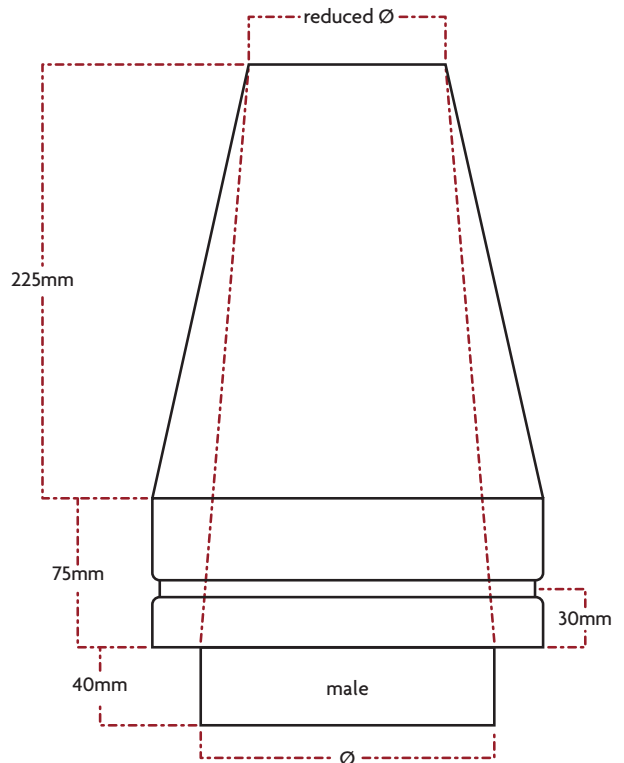
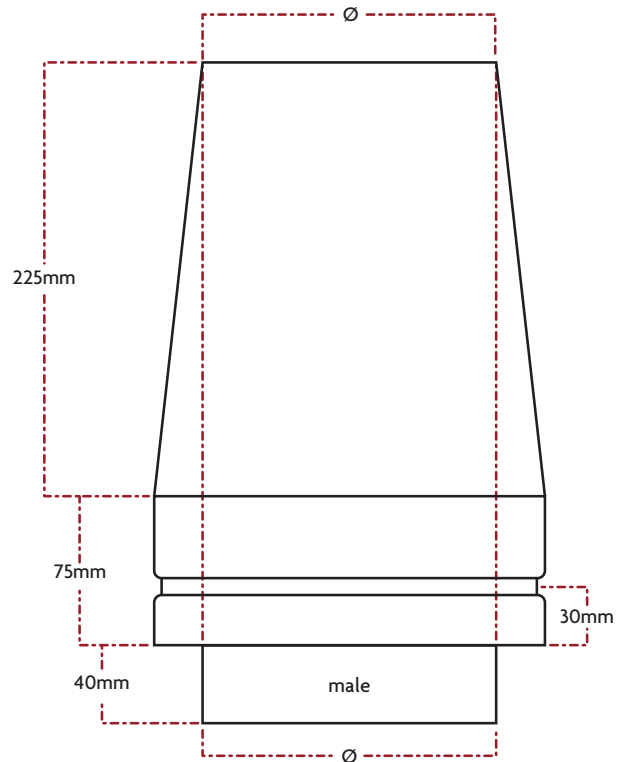
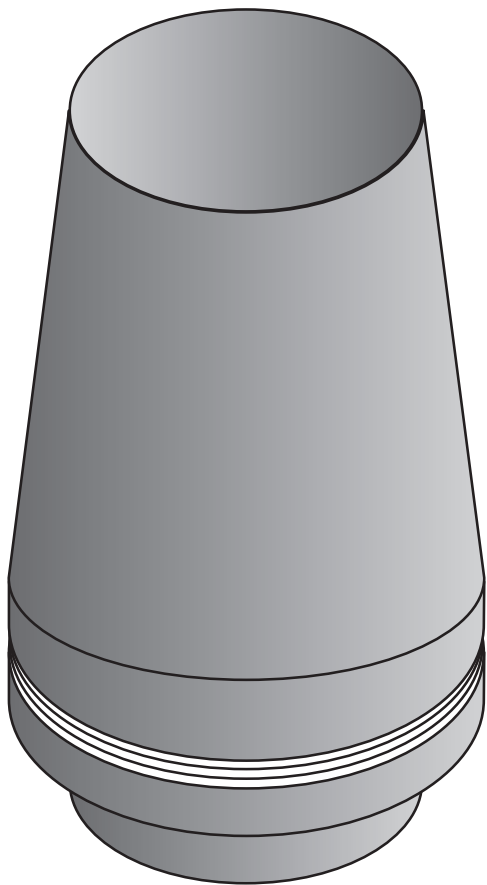
### Top Stub Terminations

Top Stubs allow for the unrestricted rapid release of flue gases into the atmosphere.

The effectiveness of the Twinwall terminal is established by its outlet diameter (free surface area). This outlet can be manufactured and supplied with or without Stainless Steel mesh and at a reduced diameter if required, which will increase velocity of it's existing gases.

Due to the nature of this open outlet design, it is recommended that the Twinwall Top Stub should always work in conjunction with either a moisture (condensate) release point at the base of a vertical rise, or with a vertical Drainage Length fitted with an Internal Drain Drip.

**NOTE: All dimensions given are (standard minimum).**





# Twinwall

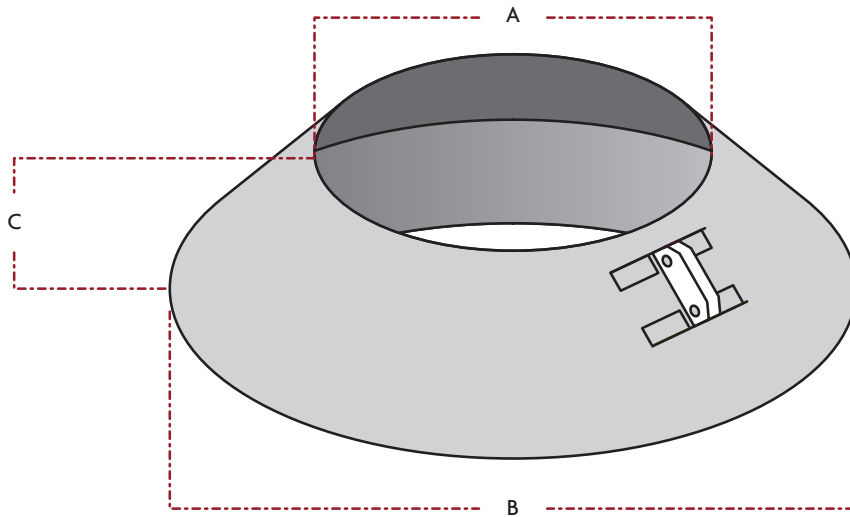
## Storm Collars

Storm Collars are obtainable in two well established designs, which are to be used to apply an all weather impermeable seal around a Twinwall vertical rise immediately after the exit through a Flashing.

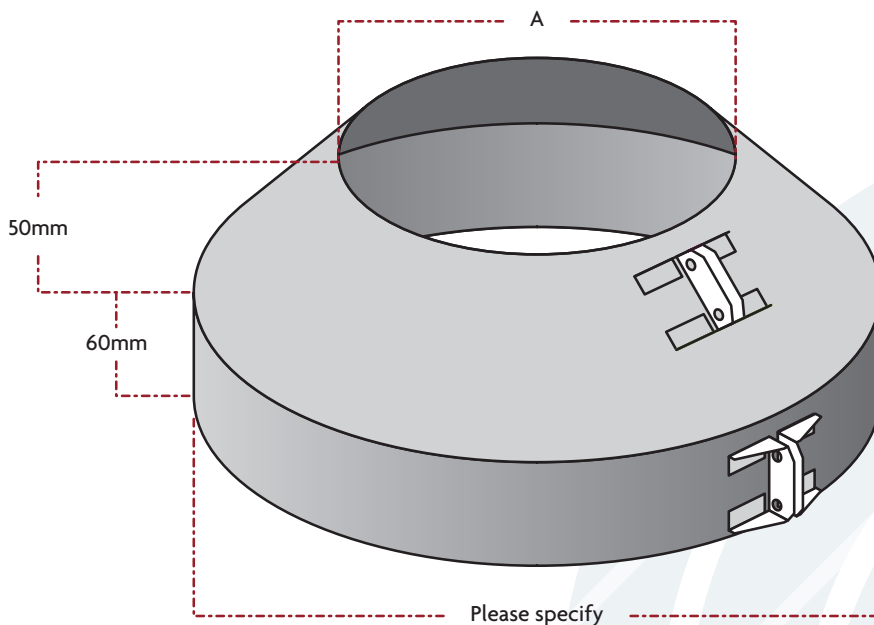
Once the positioning has been achieved (directly above a Flashing), the angled profile of the Storm Collar will divert

and deny any access between chimney flue case and Flashing upstand to all adverse weather.

All dimensions provided below are a (standard minimum). However, non-standard dimensions and diameters can also be accommodated if required.



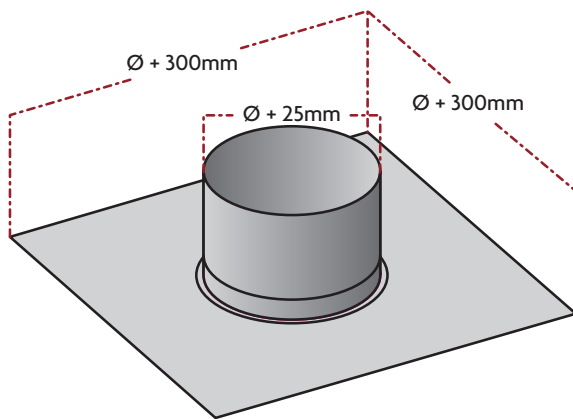
ø	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
B	300	325	350	375	400	425	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	80								100								150									



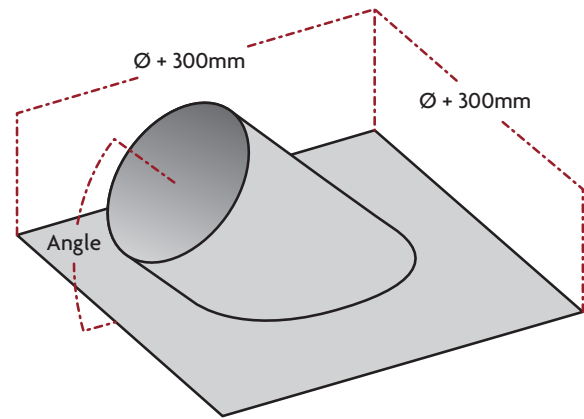
## Flashings

Flashings are to be used as an effective method of providing weather protection to all building structures immediately after roof or chimney penetration of a vertically rising Twinwall chimney.

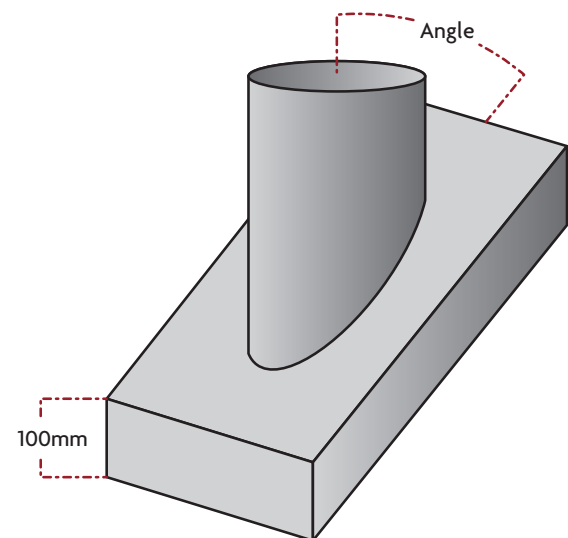
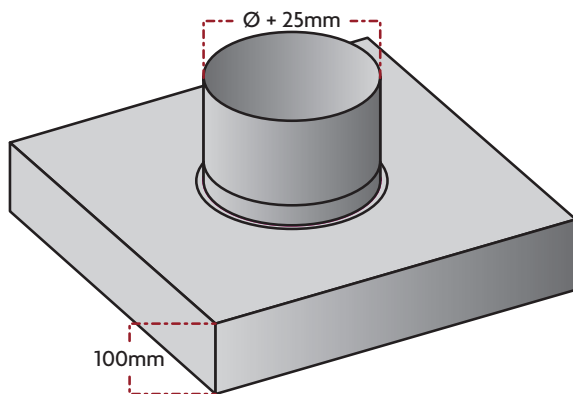
### Flat Flashings



Two types of Flashings are obtainable for this system, both of which can be fabricated and supplied to suit all roof angles and chimney flue diameters including the irregular.



### Box Flashings



NOTE: Picture illustrations and values provided are for standard items. However, unique Flashings combined with multiple upstands and increased values can also be accommodated if required.

# Twinwall

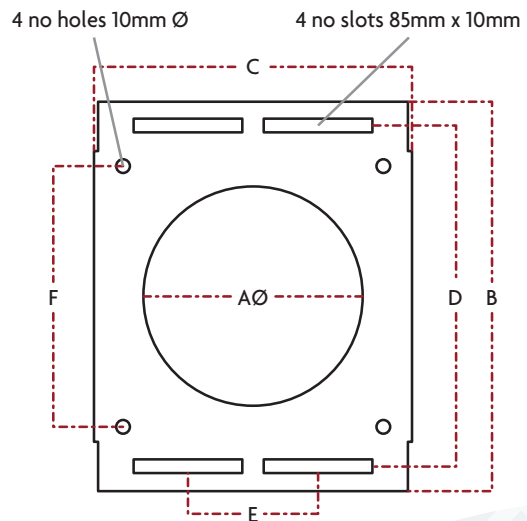
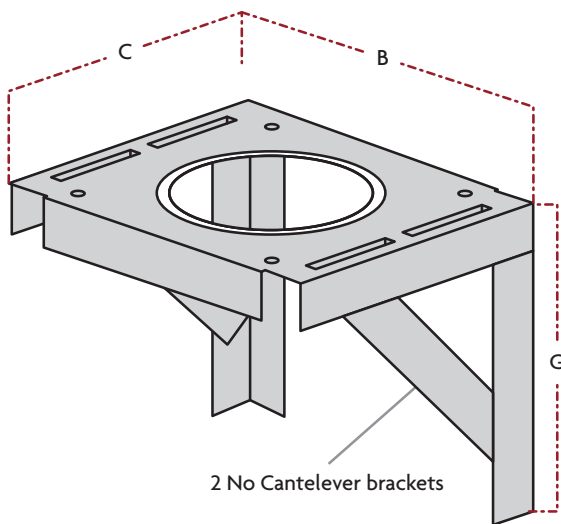
## Support Components

The complete range of support components listed below have been successfully designed and tested to accommodate the chimney's weight whilst providing flexibility and ease on installation as well as stability after installation.

### Base Wall Support

Base Wall Supports provide load bearing lateral support for the vertically adjoined Twinwall. This component is suitable for supporting on both Uni-Strut or Cantelever Brackets and can be manufactured in either 3mm Stainless Steel (for external applications) or 3mm Galvanized Steel (for internal applications).

NOTE: Picture illustrations and values provided are for standard items. However, unique Base Wall Supports combined with multiple through holes and increased values can also be accommodated if required.



	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
ø A	106	131	156	181	206	231	256	306	356	406	456	506	556	606	656	706	756	806	856	906	956	1006
B	290	290	312	331	357	382	434	478	529	580	631	682	752	803	854	905	944	994	1044	1094	1144	1194
C	234	234	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	252	252	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	83	83	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	188	188	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	225	225	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096

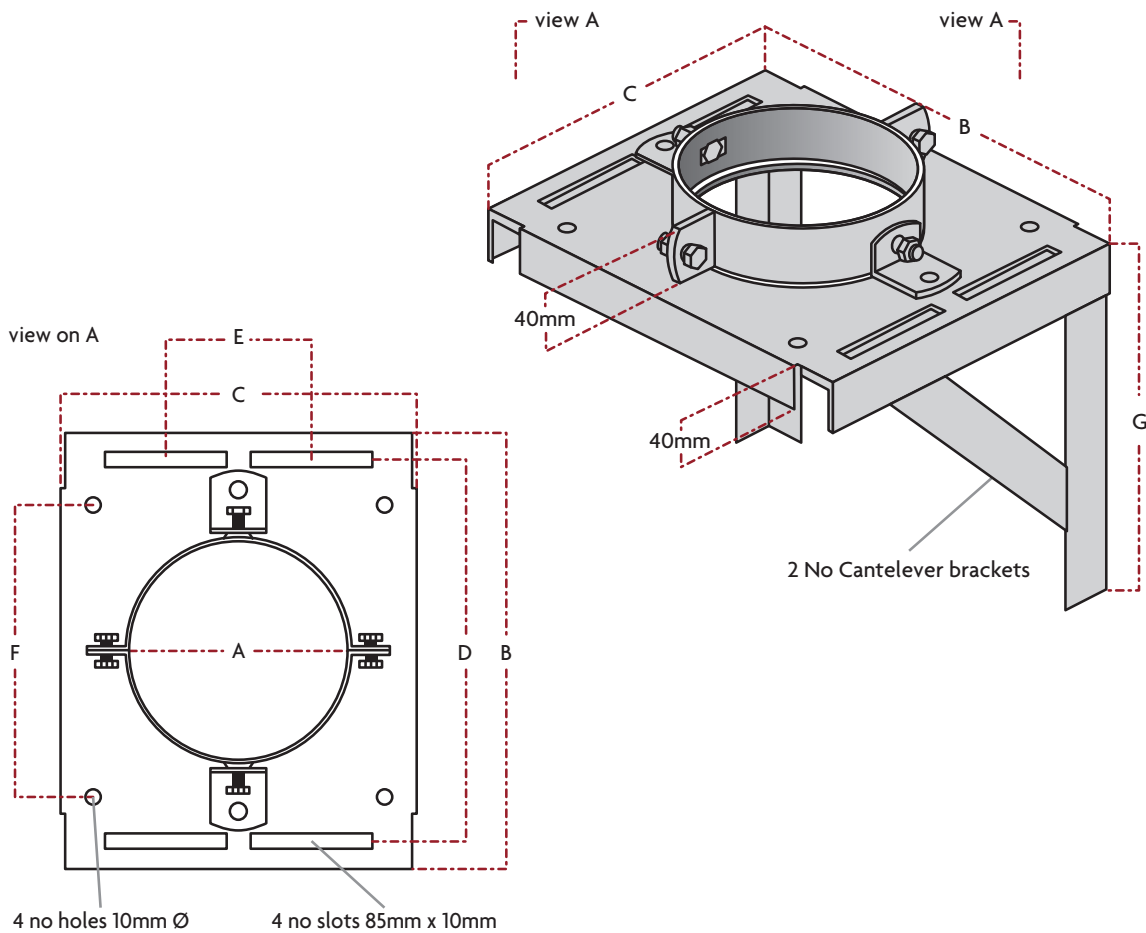
### Intermediate Wall Support

Intermediate Wall Supports are to be incorporated where additional lateral and vertical support is required within a Twinwall vertical rise when weight loads exceed 450kg.

This component is manufactured to the values provided below (as standard) in both Stainless Steel and Galvanized Steel. However, non-standard unique Intermediate Wall

Support designs combining multiple chimney rises and increased values can also be accommodated to your requirements.

**NOTE:** The Intermediate Wall Support is also suitable for supporting of either Uni-strut or Cantelever brackets.



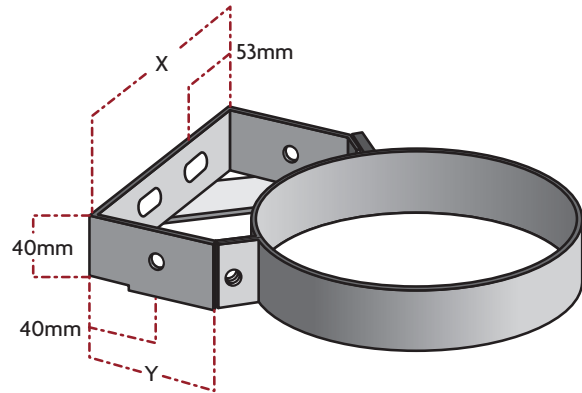
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	312	331	357	382	434	478	529	580	631	628	752	803	854	905	944	994	1044	1094	1144	1194
C	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	254	273	299	324	356	400	451	502	553	604	654	705	756	807	848	896	946	996	1046	1096

# Twinwall

## B-Type

B-Types have been designed to achieve lateral stability and the accurate alignment of a flue system. These brackets apply a 50mm clearance (as standard) between the adjacent structure and external case of the adjoining flue, and must be used at intervals not exceeding 3 metres.

B-Types up to and including 700 diameter can be manufactured in both 2mm Stainless Steel (for external applications) or Galvanized Steel (for internal applications). 750 diameter and above are to be manufactured using 3mm Stainless or Galvanized Steel.

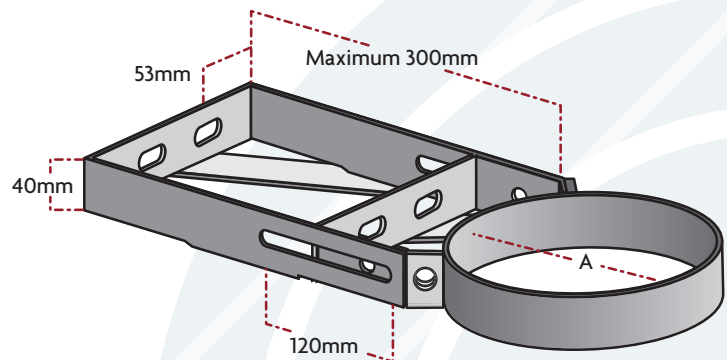
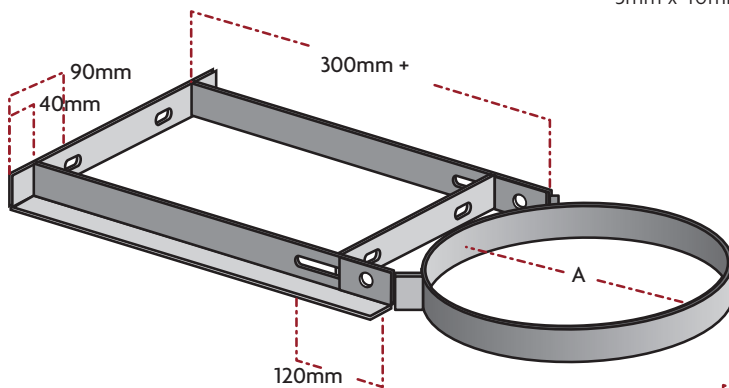


ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
X	173	195	217	238	260	303	346	390	433	476	520	563	606	650	693	736	779	823	866	909	953	996	1039	1083
Y	90	96	102	108	115	127	140	152	165	177	190	202	215	227	240	252	265	277	290	302	313	326	338	351

## Adjustable B-Type

Adjustable B-Types have also been designed to provide lateral stability as well as allowing for a greater clearance (stand off) between the adjacent structure and the external case of adjoining flue.

This item consists of a standard B-Type bracket incorporated within an adjustable carriage which can be manufactured in both Stainless and Galvanized steels and can be custom built to your requirements. However, if the clearance needed exceeds 300mm, in order to achieve structural/lateral stability the Adjustable B-Type must be constructed using 3mm x 40mm x 40mm angled steel (see illustration).



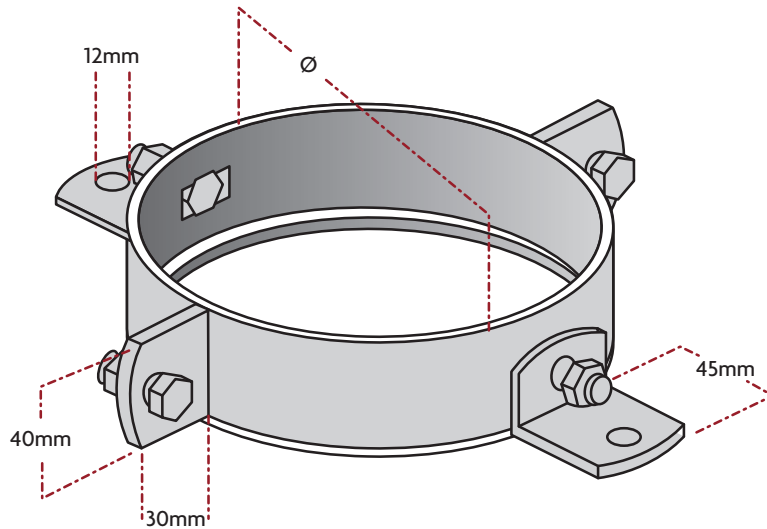
### Universal Rings

Universal Rings are to be used to achieve the lateral stability and accurate alignment of a Twinwall chimney system.

This component is available both with or without swivel lugs incorporated and is suitable for supporting horizontal or inclined runs, off 10mm Drop Rod at intervals not exceeding

3metres.

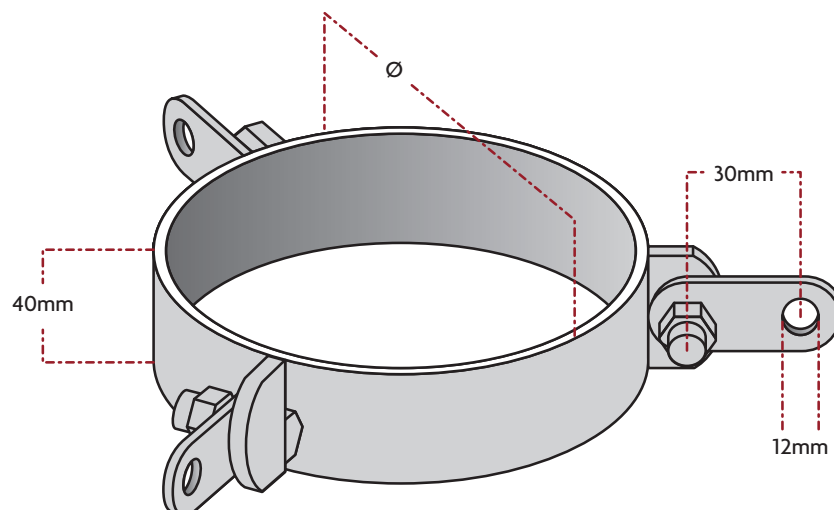
Universal Rings are manufactured using either Stainless or Galvanized Steels and to the values provided below. However, non-standard unique items can also be accommodated if required.



### Guy Wire Bracket

Guy Wire Brackets must be used to apply extra lateral support to the top section, of a Twinwall vertical rise when the last fixing position above the roof is more than 2.5metres below the chimney termination.

This bracket component is available in both Stainless or Galvanized Steels to the values provided below, and will require either suitable wires/cables or support rods/bars to be fixed to part of the adjacent building or rigid structure.



# Twinwall

EXCELLENCE • PRIDE  
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Tel: +44 (0)1623 860 578 Fax: +44 (0)1623 835 548 [info@a1flues.co.uk](mailto:info@a1flues.co.uk) [www.a1flues.co.uk](http://www.a1flues.co.uk)

-DECLARATION OF CONFORMITY -



**EC-DECLARATION OF CONFORMITY**

Issued in accordance with the Construction Products Regulation (2011) EU No: 305/2011

**Product Description:** Multipurpose Singlewall Insulated Stainless Steel Flue/Chimney  
Product To Take Both Positive And Negative Pressurised Waste Gases And  
Combustion Products From Appliance To Atmosphere.

**Trade Name:** **-Single Skin Deltavent-**

**Manufacturer Address:** A1 Sheet Metal Flues Ltd  
T/A A1 Flue Systems  
Maun Way  
Boughton Industrial Estate  
New Ollerton  
Newark  
Nottinghamshire  
NG22 9ZD

**Certificate Number:** 0086-CPR-599465

We Declare That This Product Has Been Designed And Manufactured In Accordance With The Following Harmonised Standards:

**BS EN 1856-1:2009**  
**BS EN 1856-2:2009**

**-Chimneys-Requirements For Metal Chimneys-**

System Or Systems Of Assessment And Verification Of Constancy Of Performance Of The Construction Product As Set Out In Construction Products Regulation (2011) Annex V:

**bsi.**  
bsi  
Headquarters389  
Chiswick High Road  
London  
W4 4AL  
United Kingdom

**System 2+**  
BSI Have issued the certification of factory production



Certificate Number: 1273  
ISO 9001: 2008



Being the responsible person appointed by the manufacturer, and employed by A1 Flue Systems

**Mr K. C. Moir**  
**Managing Director**

**Date Of Issue:** 1st July 2013

**EXCELLENCE • PRIDE**  
**PASSION • PRECISION**

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Tel: +44 (0)1623 860 578 Fax: +44 (0)1623 835 548 info@a1flues.co.uk www.a1flues.co.uk

A1 Sheet Metal Flues is a limited company. Registered in London No. 1260404.

**-DELTAVENT SINGLEWALL PRODUCT -**



# -DECLARATION OF CONFORMITY -



0086

## EC-DECLARATION OF CONFORMITY

Issued in accordance with the Construction Products Regulation (2011) EU No: 305/2011

**Product Description:** Multipurpose Double Wall Insulated Stainless Steel Flue/Chimney Product To Take Both Positive And Negative Pressurised Waste Gases And Combustion Products From Appliance To Atmosphere.

**Trade Name:** **-Deltavent-**

**Manufacturer Address:** A1 Sheet Metal Flues Ltd  
T/A A1 Flue Systems  
Maun Way  
Boughton Industrial Estate  
New Ollerton  
Newark  
Nottinghamshire  
NG22 9ZD

**Certificate Number:** 0086-CPR-599465

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**-Chimneys-Requirements For Metal Chimneys-**

System Or Systems Of Assessment And Verification Of Constancy Of Performance Of The Construction Product As Set Out In Construction Products Regulation (2011) Annex V:

**bsi.**  
bsi  
Headquarters389  
Chiswick High Road  
London  
W4 4AL  
United Kingdom

**System 2+**  
BSI have issued the certification of factory production



Certificate Number: 1273  
ISO 9001: 2008



0086

Being the responsible person appointed by the manufacturer, and employed by A1 Flue Systems

Mr K. C. Moir  
Managing Director

**Date Of Issue:** 1st July 2013

EXCELLENCE • PRIDE  
PASSION • PRECISION

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Tel: +44 (0)1623 860 578 Fax: +44 (0)1623 835 548 info@a1flues.co.uk www.a1flues.co.uk

A1 Sheet Metal Flues is a limited company. Registered in London No. 1260404.

## -DELTAVENT PRODUCT -

# Certificate of conformity of the factory production control

This is to certify that:

**A1 Sheet Metal Flues Ltd**  
**t/a A1 Flue Systems**  
Maun Way  
Boughton Industrial Estate  
New Ollerton  
Newark  
NG22 9ZD  
United Kingdom

Holds Certificate No:

**0086-CPR-599465**

In respect of:

**EN 1856-1:2009**

## **System Chimney Products**

**Comprising of single and multi-wall system chimney products with rigid metallic liners (chimney sections, chimney fittings and terminals, including supports) with nominal diameter up to and including 1200 mm, used to convey the products of combustion from appliances to the outside atmosphere.**

In compliance with Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the above construction product.

This certificate attests that all the provisions concerning the assessment and verification of constancy of performance described in Annex ZA of the above standard under system 2+ are applied and that the factory production control fulfils all the prescribed requirements set out above.

For and on behalf of BSI,  
a Notified Body for the above Regulation  
(Notified Body Number 0086):



Gary Fenton, Global Assurance Director

This certificate remains valid as long as the test methods and/or factory production control requirements included in the harmonised standard(s), used to assess the performance of the declared characteristics, do not change and the product(s), and the manufacturing conditions in the plant(s) are not modified significantly.

First Issued: 10 July 2013

Latest Issue: 10 July 2013

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# Certificate of conformity of the factory production control

No. 0086-CPR-599465

Manufacturing Plant

**A1 Sheet Metal Flues Ltd**

t/a A1 Flue Systems

Maun Way

Boughton Industrial Estate

New Ollerton

Newark

NG22 9ZD

United Kingdom



First Issued: 10 July 2013

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...making excellence a habit.™



**A1** FLUE  
SYSTEMS

Product catalogue

# Single-Skin Deltavent

Single-Skin Deltavent is a light weight, prefabricated exhaust/duct system which is fully welded and available in sizes 150mm id through to 1200mm id.

The complete range of Single-Skin Deltavent products have been successfully tested to BS476 Part 20 for stability and integrity during a 4 hour test carried out at the Loss Prevention laboratories, Borehamwood. A copy of the full test report is available at A1 Flue Systems Head Office. All our products are also manufactured, and where required, installed within the scope of ISO 9001 : 2008 quality assurance system.

## The Single-Skin Deltavent systems are designed for use where;

- A four hour fire rating is specified
- A positive pressure relatively high temperature exhaust/duct system is specified
- A watertight flue system is specified

## Application examples;

- Condensing Boilers
- C.H.P. Systems

- Fan Assisted Flue Systems
- Kitchen Extract Systems
- Smoke Extract Systems
- Flue Dilution

Testing carried out at BSRIA on both Single-Skin Deltavent and Twinwall Deltavent, in accordance with BS:EN1856-1 (2003), BS:EN1856-2 (2004) and BS:EN1443 (2004). The charts below show the classification and designations:

## First designation

Free standing installation, used in an open installation environment such as access shaft or external building. If used between floors then non-combustible material shall be used to protect the flooring from the fire plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T600	H1	D	VL20056 or VxL50056	G(300)

## Second designation

Corner installation with ventilated floor plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T450	H1	D	VxL20056 or VxL50056	G(50)

## Third designation

Corner installation with enclosure and ventilated floor plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T200	H1	W	VxL20056 or VxL50056	O(50)

## Fourth designation

Corner installation with ventilated floor plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T200	H1	W	VxL20056 or VxL50056	O(50)
BSEN1856-2	T200	H1	W	VxL20056 or VxL50056	O(50)
BSEN1856-2	T600	H1	D	VxL20056 or VxL50056	O(50)

## Specifications

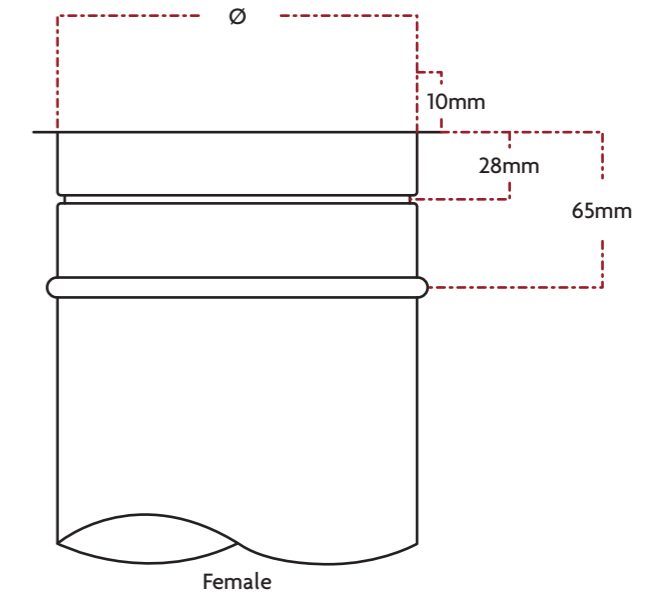
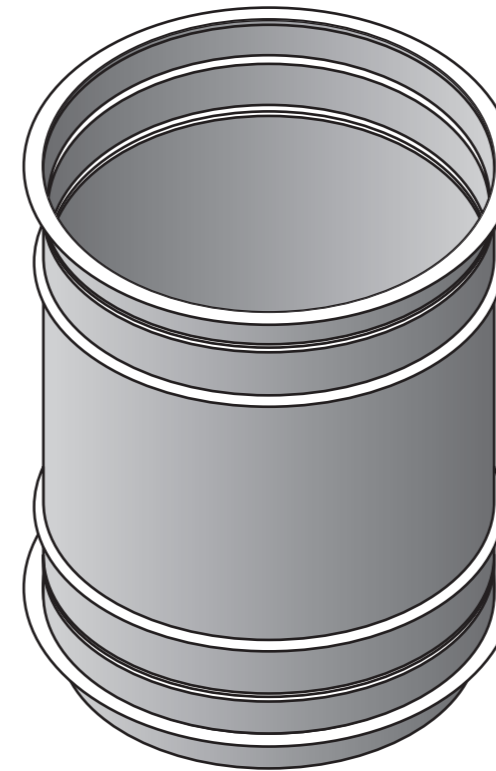
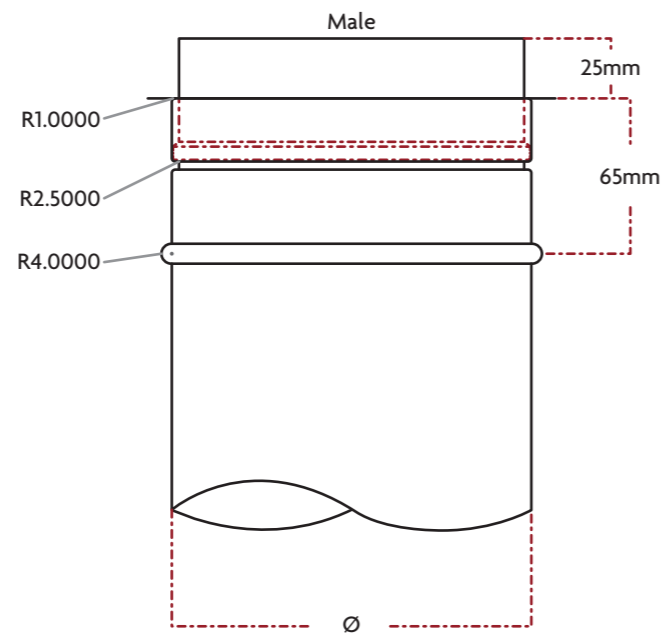
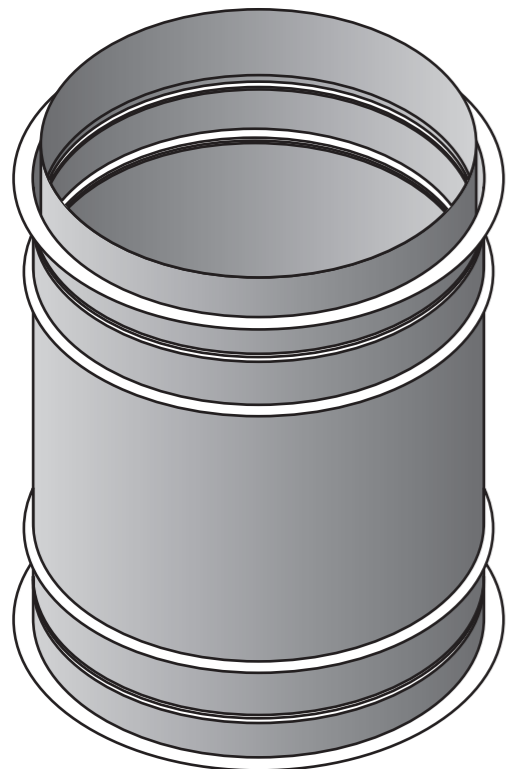
### Single-Skin Deltavent Material

	Std. Construction	Alternative to special order
150ø-600ø	FULLY WELDED 0.7mm Grade 304 s/s	FULLY WELDED 1mm Grade Brushed s/s FULLY WELDED 0.7/1mm Grade 316-304 s/s
600ø-1200ø	FULLY WELDED 1mm Grade 304 s/s	FULLY WELDED 1mm Grade Brushed s/s FULLY WELDED 1mm Grade 316 s/s
Tested pressure	Capable of withstanding positive pressures up to 5000 Pascals	
Maximum flue gas temperature	All systems 760°C max	

NOTE: There are two jointing methods used for the seams on our Single-Skin Deltavent systems, 0.7mm grade products consist of a 10mm overlap joint which is resistance welded and all 1mm grade products consist of a butt joint which is Tig welded.

A standard working tolerance of +/- 1mm or 1° is applied to all components within the Single-Skin Deltavent range.

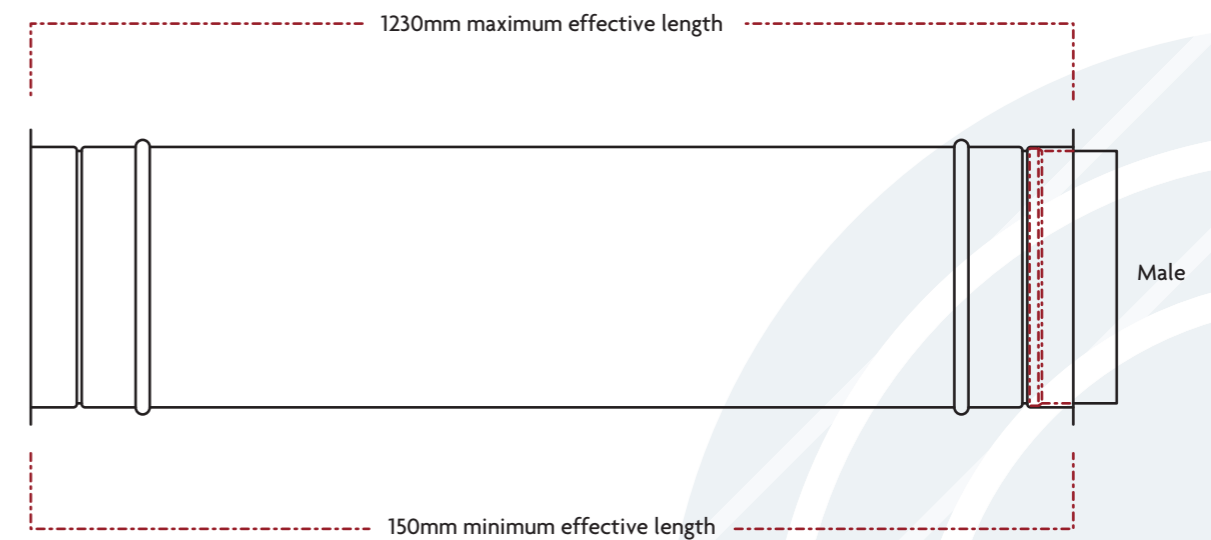
### Construction of Deltavent flue



### Straight lengths.

Straight lengths are available as standard in 300mm, 450mm, 600mm, 750mm, 1000mm and 1200mm lengths. These are all the installed effective lengths.

We also manufacture any fixed length between the standard lengths to your requirements.



### Prior to installation

Before installation of the Single-Skin Deltavent flue you must be aware, in a vertical application it is essential that the components are installed with male spigot down against the flow of gases. This will allow condensates, if any, to remain within the flue.

The Single-Skin Deltavent system also uses two types of sealant. For low temperature systems, 150° and below, a high durability/low temp silicone sealant is used and for systems with temperatures in excess of 150-550°, high temperature ceramic exhaust paste is used. The correct sealant must be used to seal the two connection flangers. Sealant is chosen according to the flue type and gas temperature.

Sealants for all applications are available and are supplied with the product.

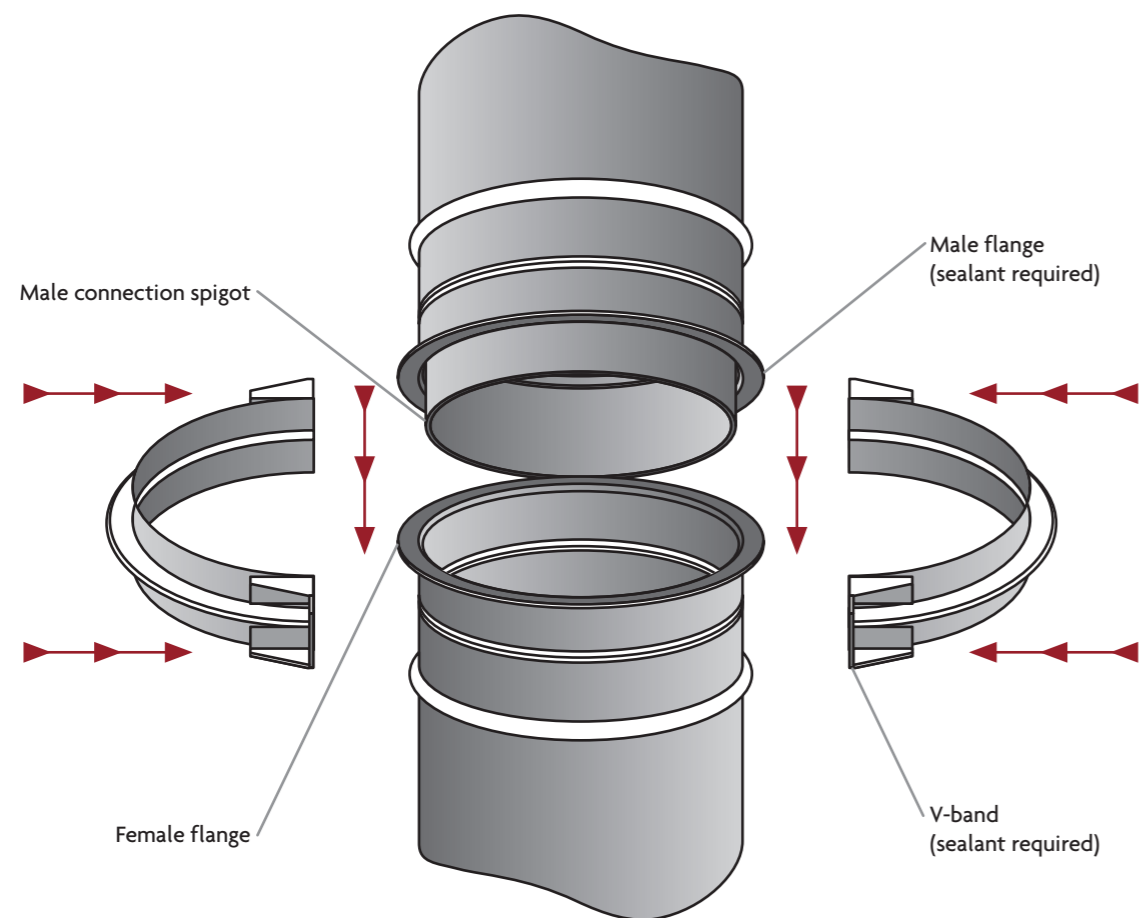
### Installation

Ensure all components that require sealant are clean from any dirt, grease and other contaminants. Once the decontamination has been achieved, apply an adequate amount of sealant to the male flange connection. (Refer to illustration)

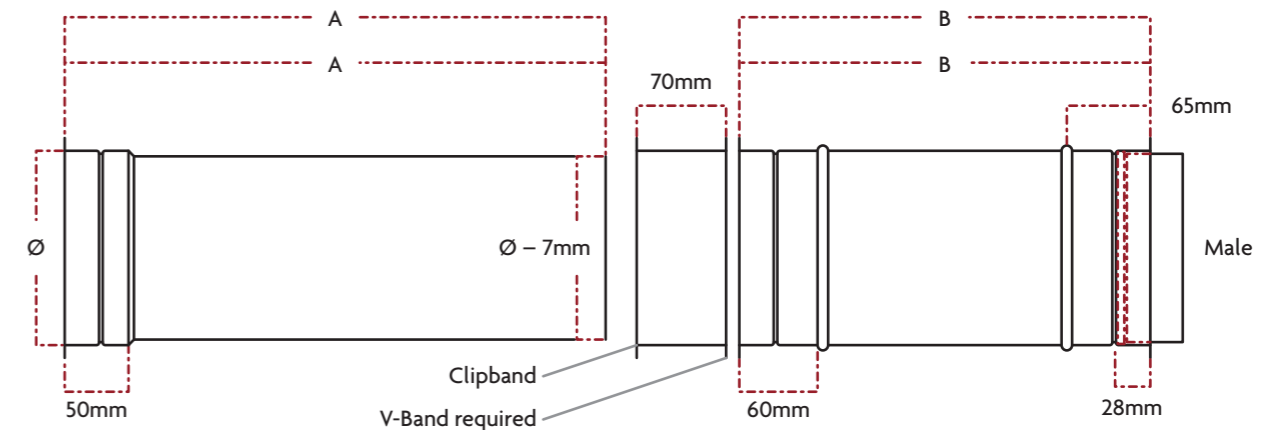
Using the locating spigot of the male as a guide, simply push/slot the two parts of Single-Skin Deltavent together. (Male spigot runs down).

The next step is to fit the V-Band supplied. This has been designed as a two piece item for easy assembly, and must also be free from any contaminants i.e. grease or oil. Sealant is then to be applied into the groove of the V-Band before fitting. Position both V-Band parts around the Single-Skin Deltavent with the 10mm connection flangers located within the groove. Tightly fasten both joints using the Stainless Steel nuts and bolts provided.

**CAUTION: It is extremely important for nothing to pierce the flue at any time of installation. Please note during installation the weld should always be installed to at least 90° to the floor.**



### Single-Skin Deltavent adjustable lengths



450-650 adjustable & expansion lengths; A = 410mm  
600-950 adjustable & expansion lengths; A = 560mm

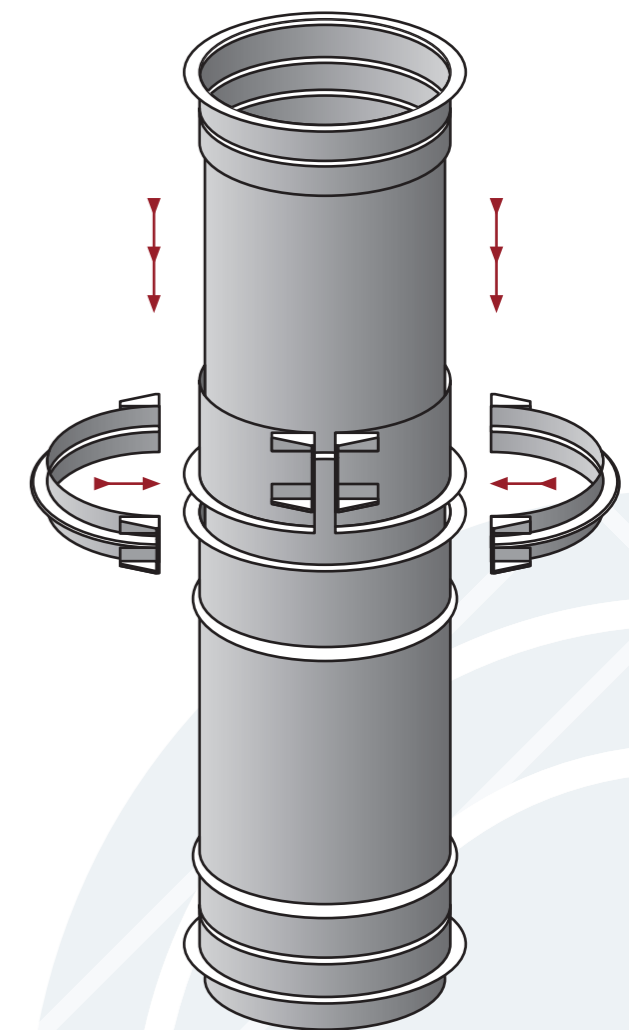
450-650 adjustable & expansion lengths; B = 300mm  
600-950 adjustable & expansion lengths; B = 465mm

Single-Skin Deltavent Adjustable Lengths have been successfully designed to allow for greater flexibility when measuring or installing a chimney system. This component is very important, as measurements cannot always be obtained.

This component is obtainable in both 450mm-650mm and 600mm-950mm lengths (as standard), complete with a locking Clipband, V-Band and suitable Coverband if required. Non-standard Adjustable Lengths consisting of dimensions above those given can also be accommodated.

Once the Adjustable Length is in position and the length required has been achieved, it is then secured using both V-Band and Clipband. (refer to illustration)

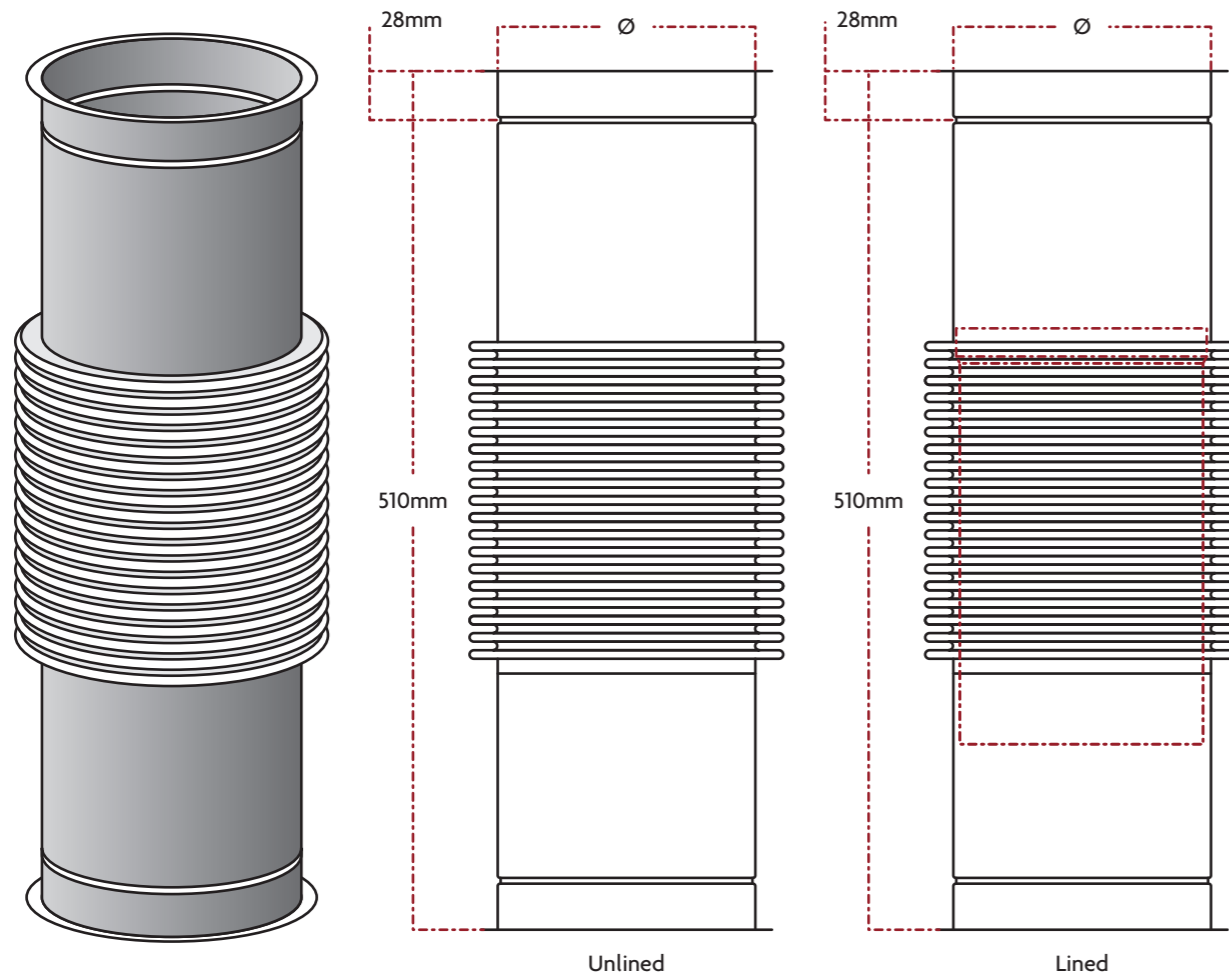
**CAUTION: Adjustable lengths DO NOT LOAD BEAR and should never be placed in a vertical rise unless sufficient support is in place.**



### Single-Skin Deltavent Expansion Bellows

The Expansion Bellow is designed to compensate for thermal and mechanical movement from within a chimney run whilst maintaining a high pressure seal.

This item from the Single-Skin Deltavent range is for use with Diesel Engines and Gas Turbine Exhaust Systems and are available either lined or unlined.



**NOTE:** Expansion Bellows for the Deltavent are to be concealed using a cover jacket, this is for the protection against external environments and human intervention. (Cover jacket provided separately)

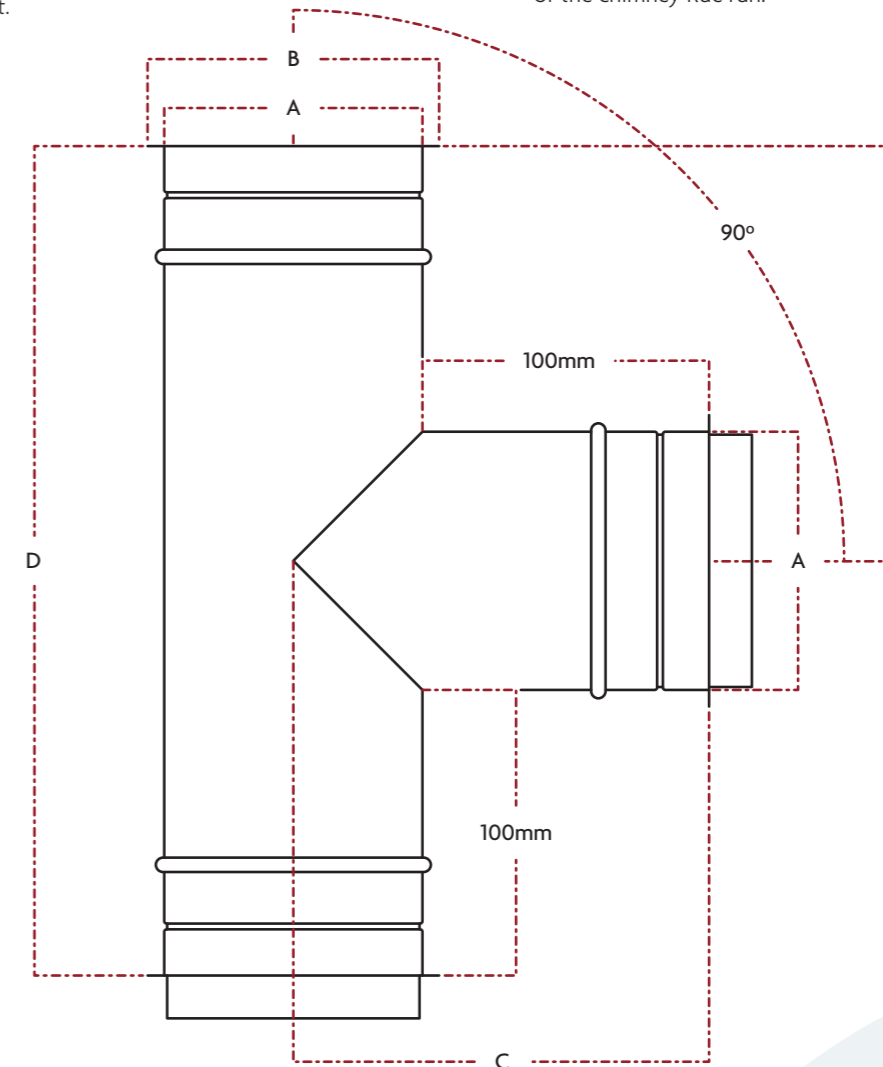
Lined Bellows allow for better transition of flue gases to atmosphere, however this restricts the movement of the Bellow to linear expansion only.

### Single-Skin Deltavent Tees

#### 90° Tees

90° Tees allow for the change in direction of a Single-Skin Deltavent chimney system whilst giving you accessibility for an Inspection/Clean-Out Door or a moisture release drain point.

The 90° Tee is widely used at the base of a vertical rise. However, 90° Tees can also be adjoined in multiples creating complete header sets and supplied with a reduced branch diameter, giving you the option and flexibility to reduce the connecting flue diameter and if needed change the position of the chimney flue run.



### Single-Skin Deltavent

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	170	195	220	245	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020
C	175	188	200	213	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
D	350	376	400	426	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200

All values provided are (standard minimum). Non-standard values above those given can also be accommodated if required.

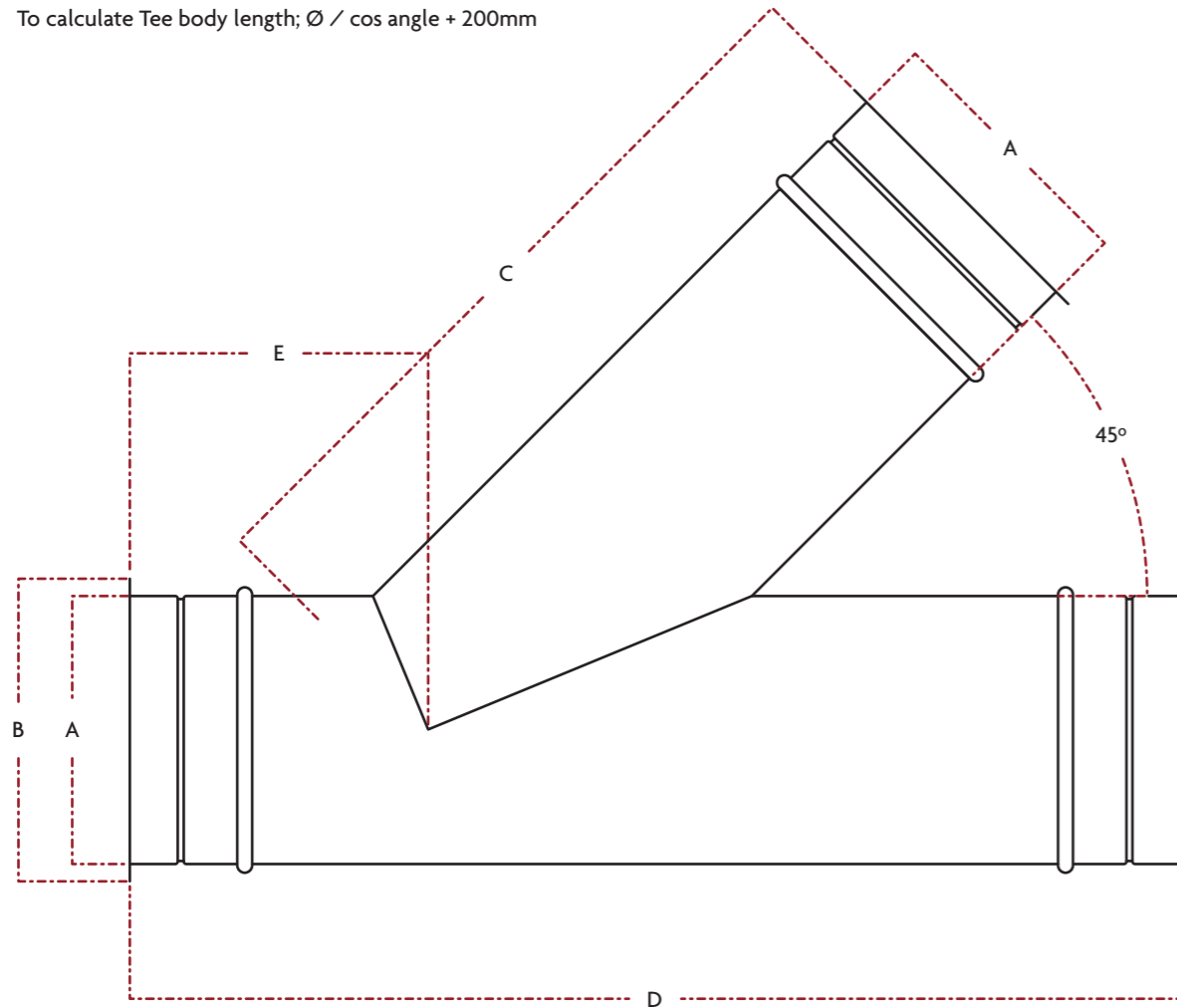


### 135° Tees

The 135° Tee is also widely used at the base of a vertical rise but gives the added advantage of a swept entry to reduce resistance to the flow of the flue gases.

All dimensions given below are standard minimum. However, the possibility of manufacturing and supplying a non-standard Tee with or without a reduced branch diameter and at values above those given is also available on request.

To calculate Tee body length;  $\varnothing / \cos \text{angle} + 200\text{mm}$



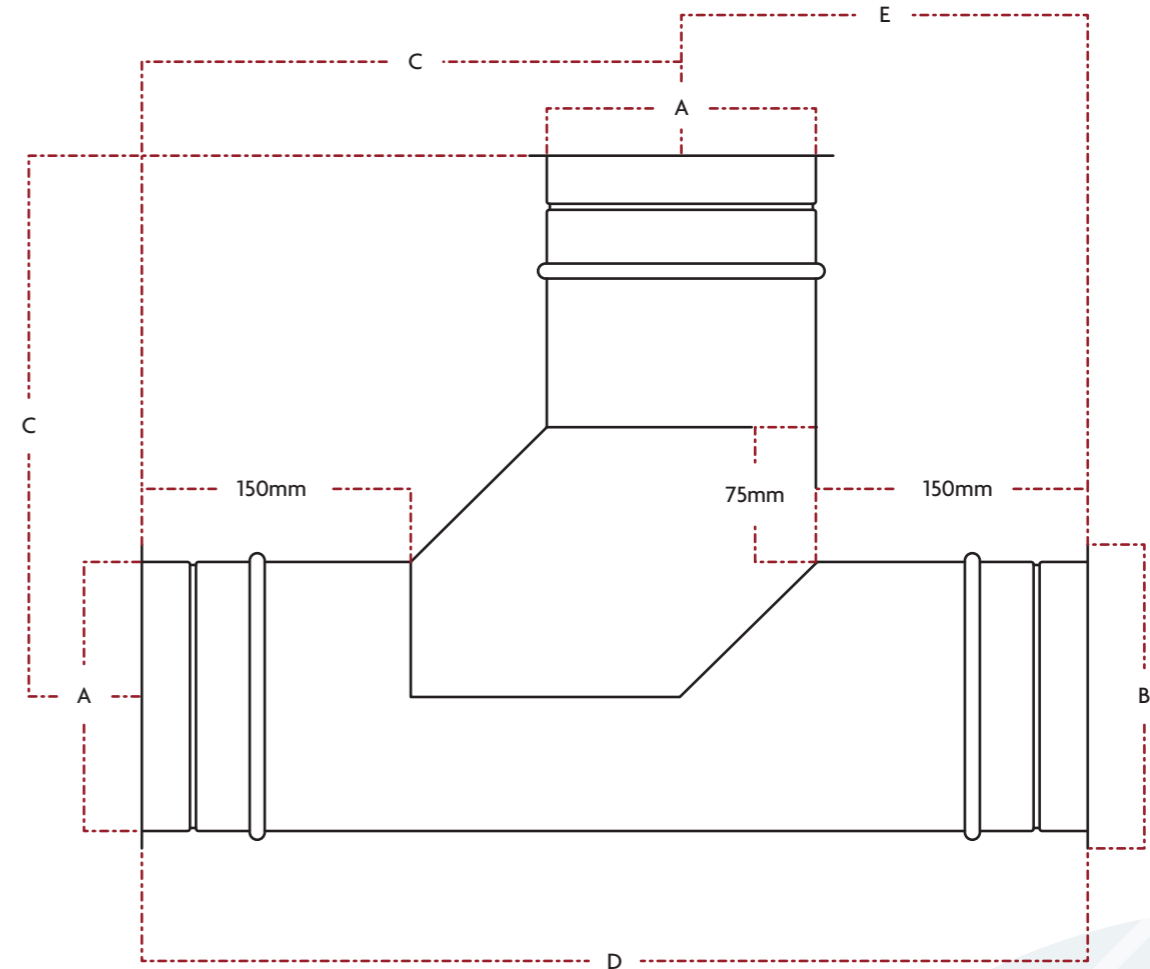
Single-Skin Deltavent

∅ A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750
B	170	195	220	245	270	320	370	420	470	520	570	620	670	720	770
C	281	311	341	371	401	462	522	582	643	703	763	824	884	944	1005
D	412	447	482	518	554	624	694	765	836	907	977	1048	1119	1189	1260
E	131	136	141	146	151	162	172	182	193	203	213	224	234	244	255

### 90° Booted Tees

The 90° Booted Tee has been specifically designed to allow for a change in direction but gives the added advantage of a swept entry or exit, reducing resistance to the flow of flue gases.

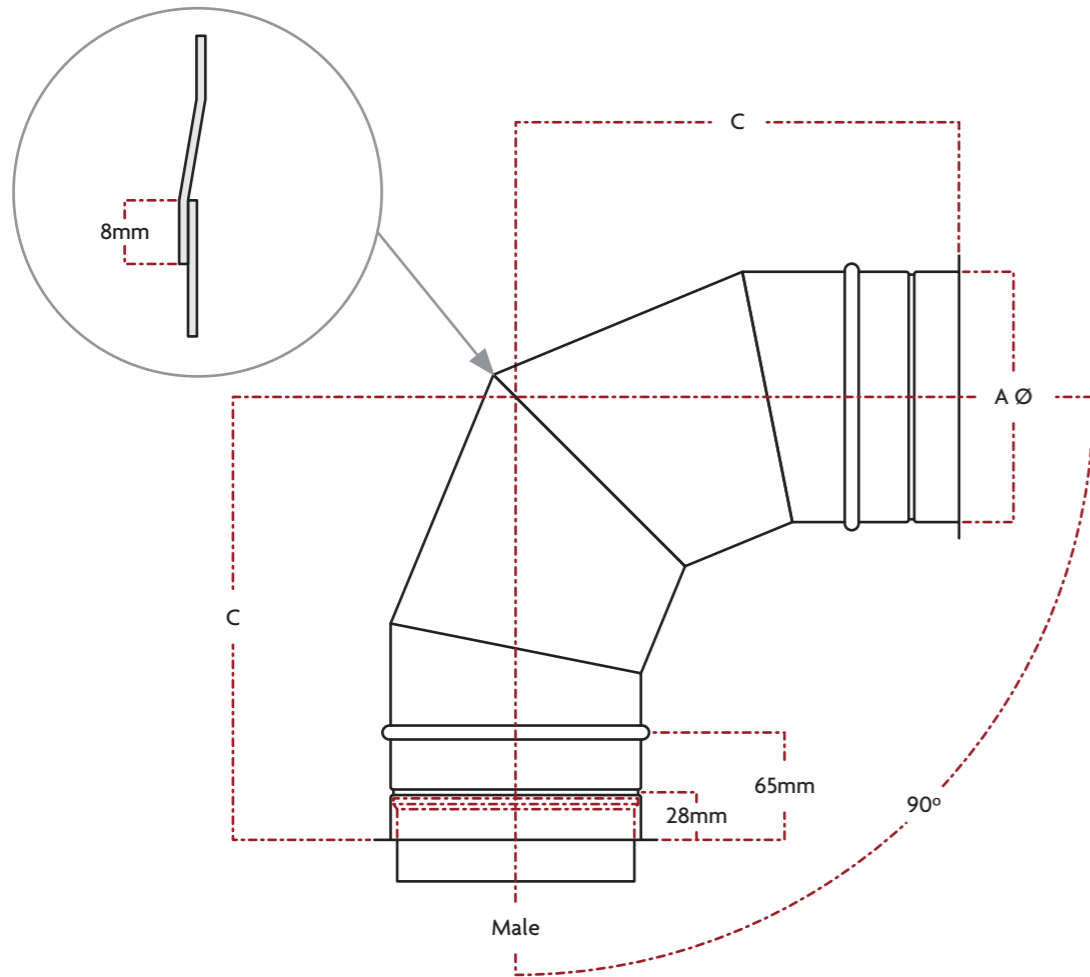
This equal Tee can also be manufactured and supplied at values above those given and with a reduced diameter branch at certain angles on request.



Single-Skin Deltavent

∅ A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850
B	170	195	220	245	270	320	370	420	470	520	570	620	670	720	770	820	870
C	300	313	325	338	350	375	400	425	450	475	500	525	550	575	600	625	650
D	525	551	575	601	625	675	725	775	825	875	925	975	1025	1075	1125	1175	1225
E	225	238	250	263	275	300	325	350	375	400	425	450	475	500	525	550	575

## Single-Skin Deltavent Elbows



Single-Skin Deltavent Elbows are used when a change in direction is required within a chimney system. By adjoining and incorporating Elbows with various Straight Lengths and Adjustable Lengths, offsets can be tailor made to suit your requirements.

All information provided below for all Elbows are (standard minimum). However, the possibility of manufacturing and

supplying Elbows with one or both centre lines extended and at any angle including those given is available on request.

The entire range of Single-Skin Deltavent Elbows consist of fixed liner segments which are joined with an 8mm overlap joint, Resistance Welded together.

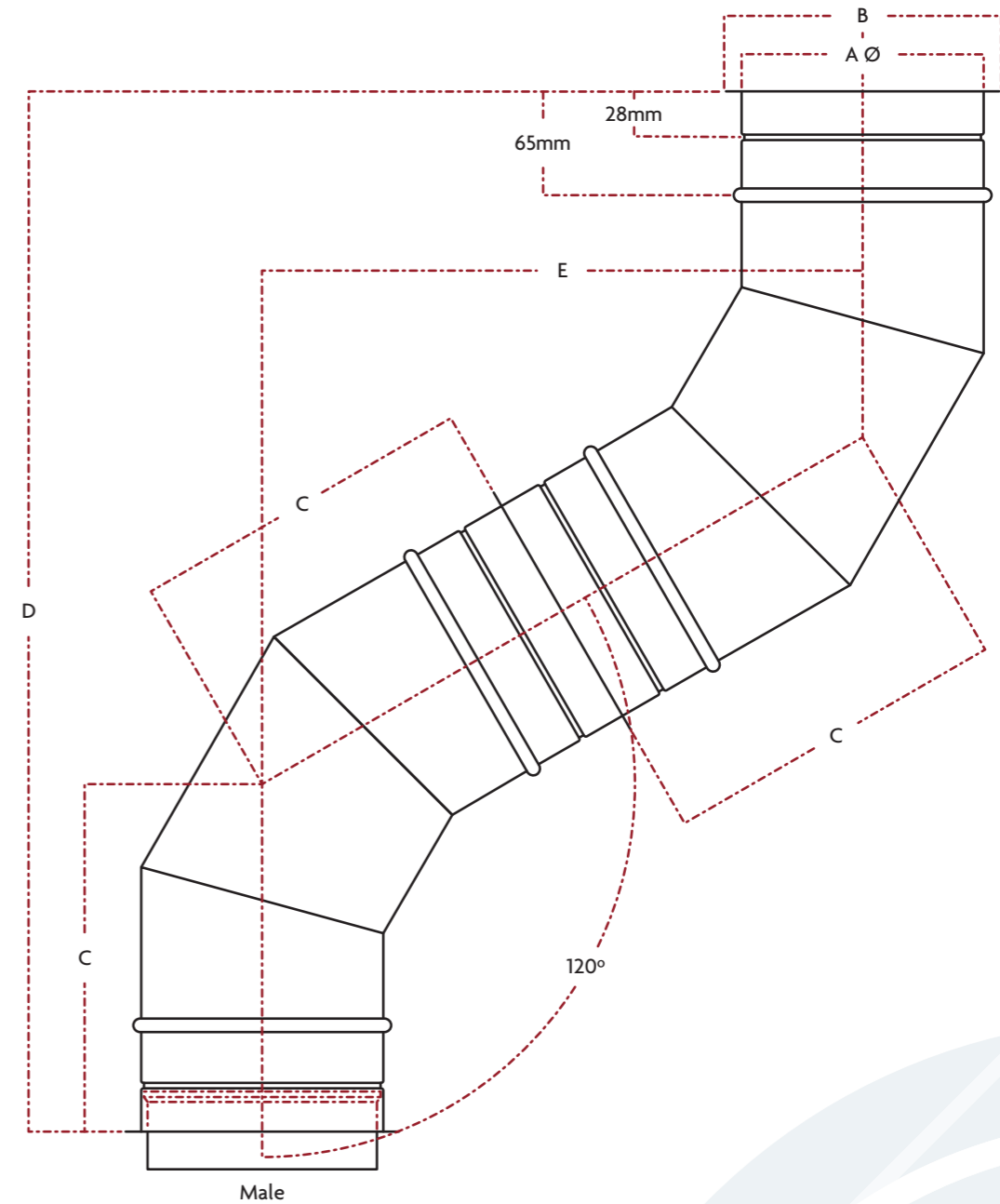
ø A	150	175	200	225	250	300	350	400	450
C	230	245	260	275	305	330	360	385	425

**CAUTION: Single-Skin Deltavent Elbows DO NOT LOAD BEAR.**

500ø - 750ø All 90° Elbows consist of two 45° Elbows.

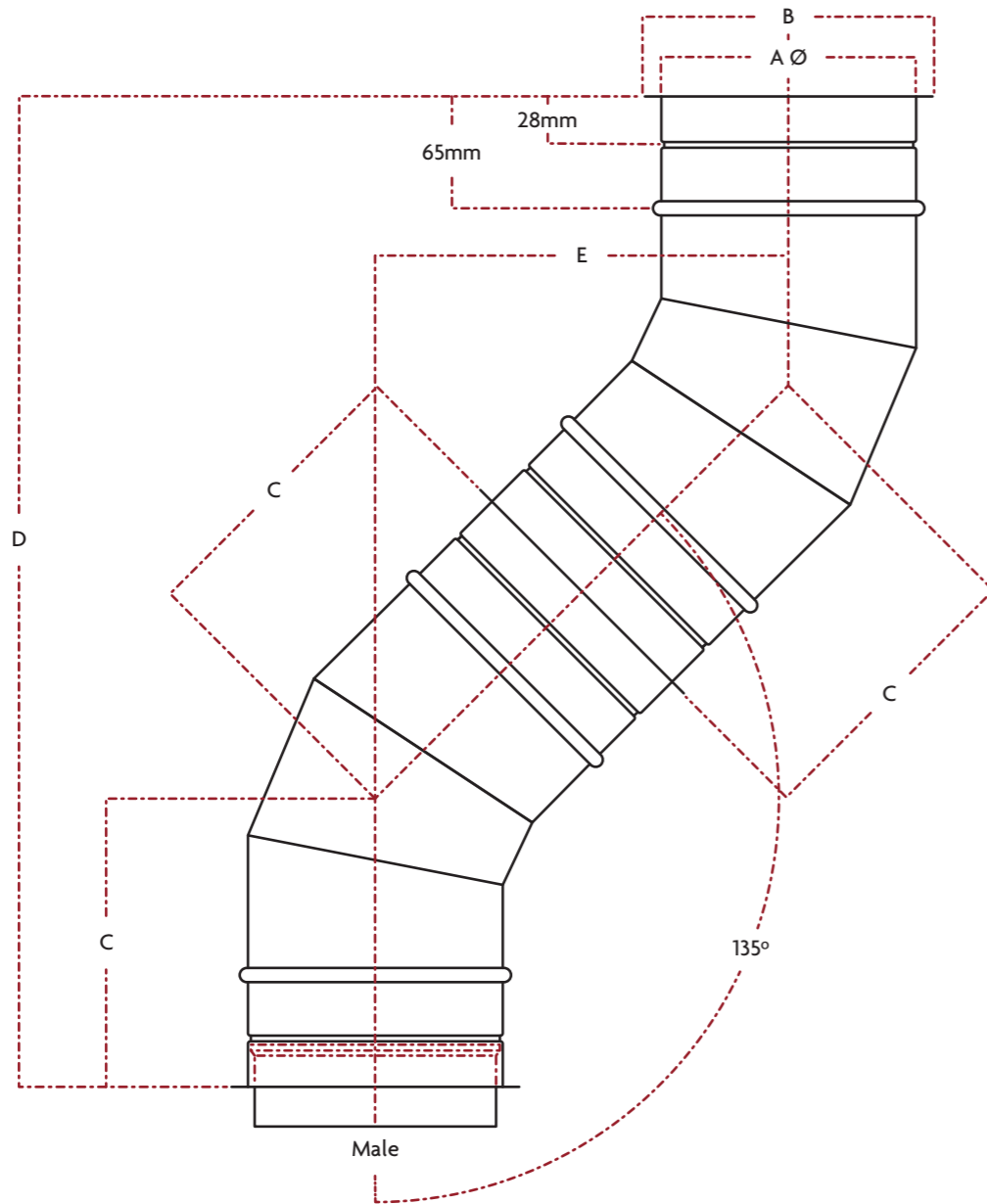
750ø and above 90° Elbows consist of three 30° Elbows and 60° Elbows consist of two 30° Elbows.

1000ø and above 45° Elbows consist of two 22.5° Elbows.



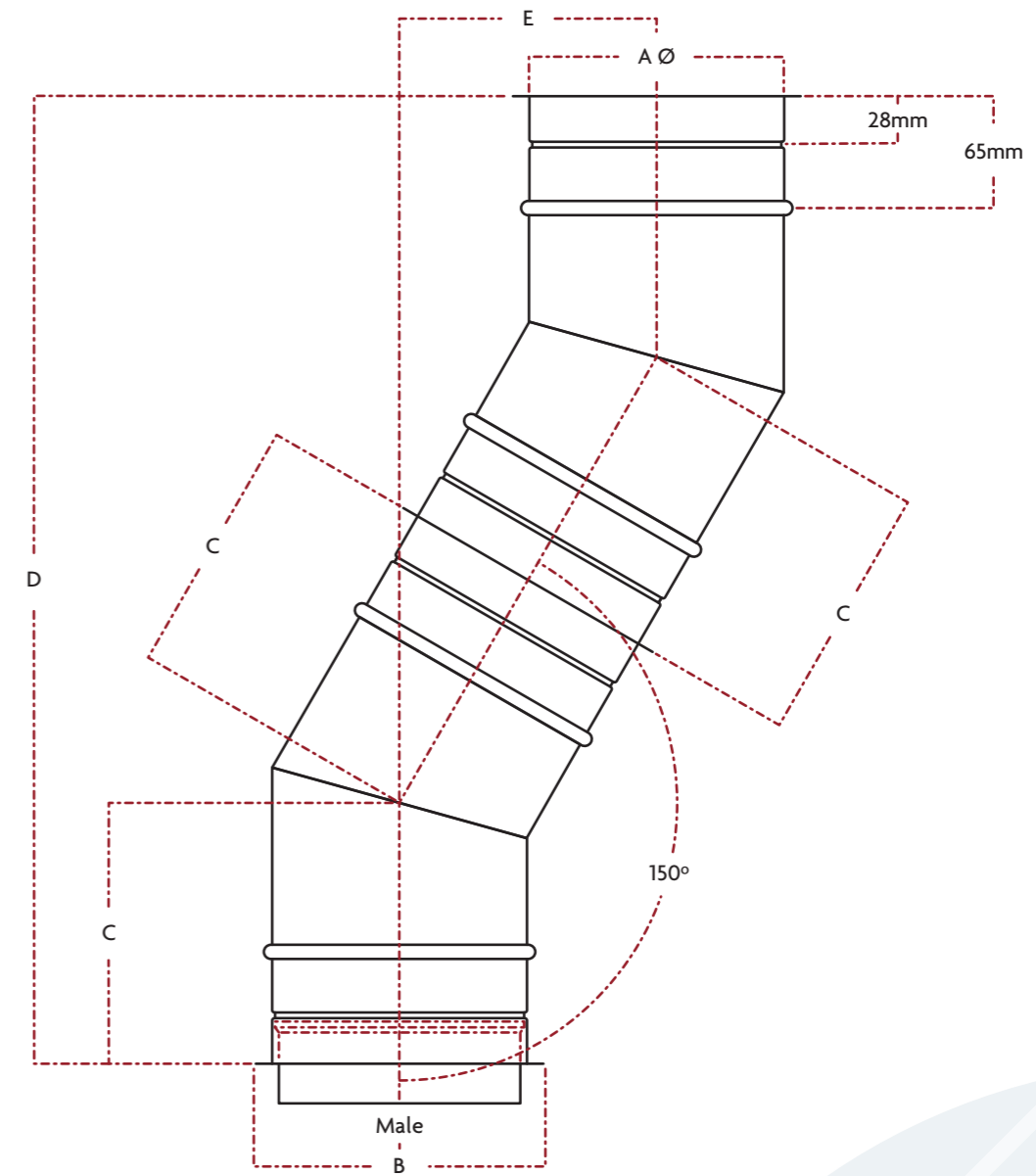
## Single-Skin Deltavent 60° Elbow

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	170	195	220	245	270	320	370	420	470	520	570	620	670	720
C	175	180	190	200	210	220	250	270	280	290	310	350	370	390
D	525	540	570	600	630	660	750	810	840	870	930	1050	1110	1170
E	303	312	329	346	364	381	433	468	485	502	537	606	641	675



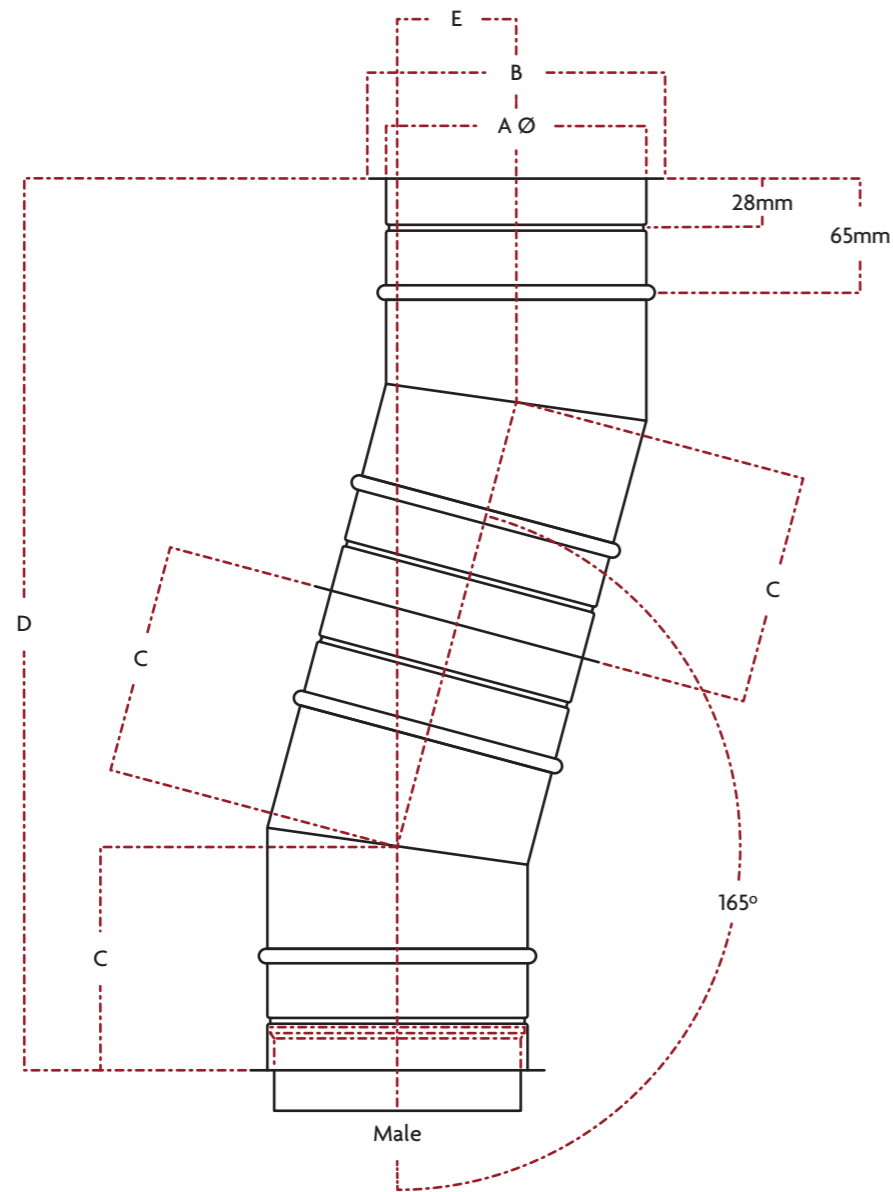
Single-Skin Deltavent 45° Elbow

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	150	155	160	165	180	185	200	210	225	245	250	260	280	290	370	380	391	401	411	476	486	496	506	516
D	512	529	546	563	616	632	683	717	768	836	854	888	956	990	1263	1297	1335	1369	1403	1625	1659	1693	1728	1762
E	212	219	226	233	255	262	283	297	318	346	354	368	396	410	523	537	553	567	581	673	687	701	716	730



Single-Skin Deltavent 30° Elbow

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	170	915	220	245	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220
C	132	135	140	143	152	158	165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318
D	493	504	522	534	567	590	616	642	664	690	709	784	821	858	959	985	1008	1034	1060	1088	1108	1135	1161	1187
E	132	135	140	143	152	158	165	172	178	185	190	210	220	230	357	264	270	277	284	291	297	304	311	318



### Drain Lengths.

The purpose of a Drain Length is to relieve the flue system from any unwanted moisture (condensate). Introducing such items in the design is paramount for prolonging reliability of an appliance.

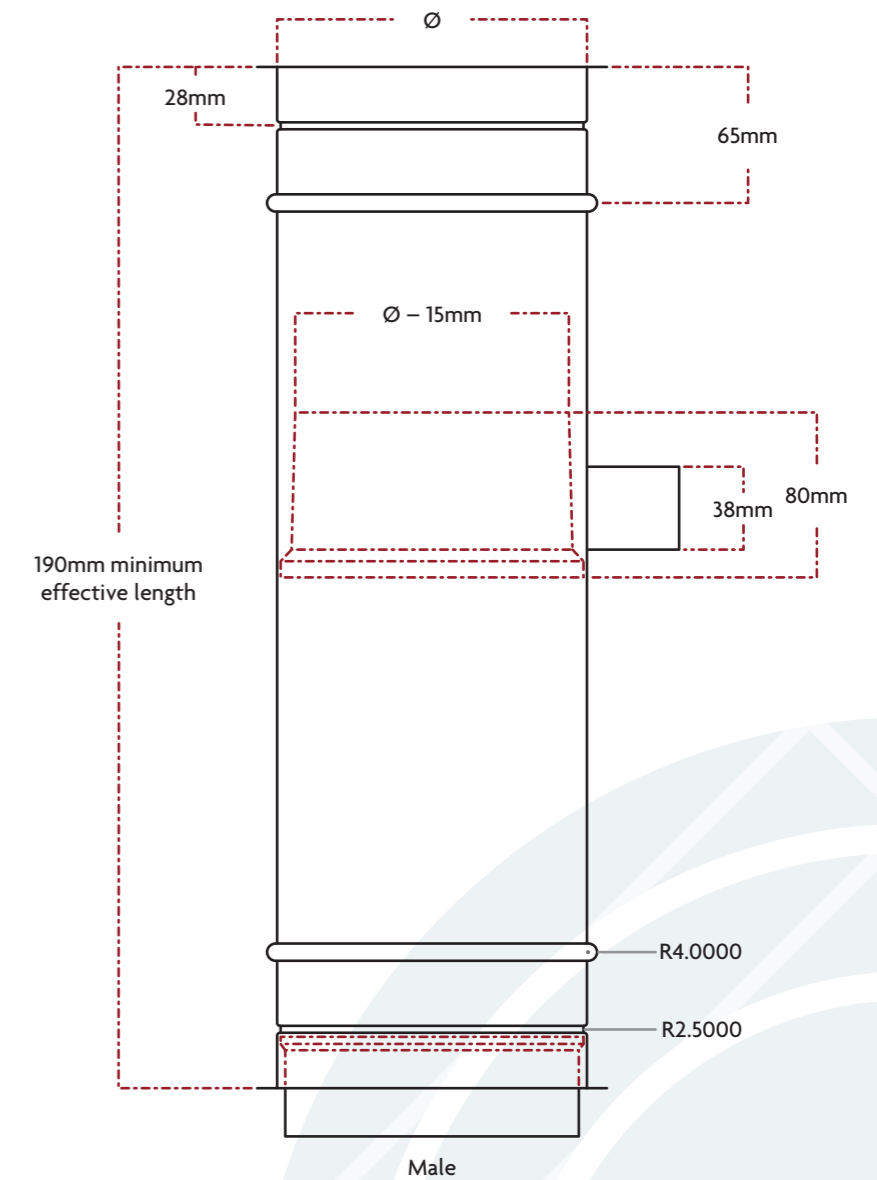
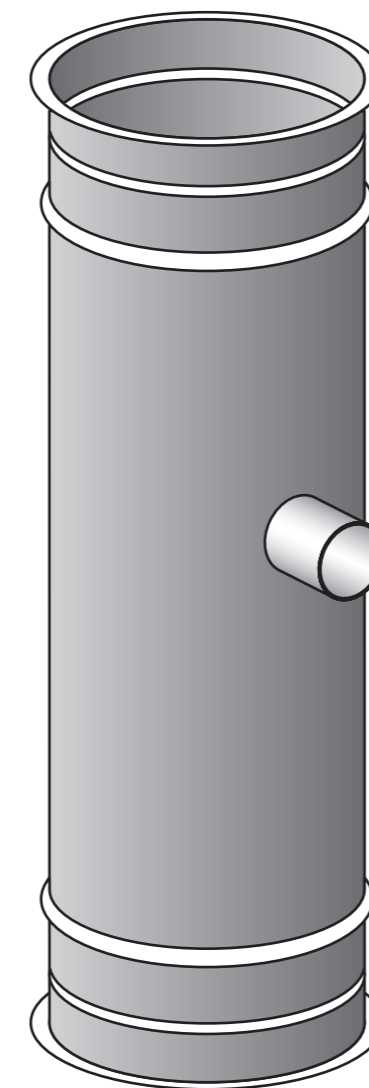
Drain Lengths consist of a linch stainless steel B.S.P threaded socket which is fully welded onto the flue. Drains are obtainable on Single-Skin Deltavent standard lengths and can also be fitted to non-standard lengths above our minimum. (Refer to illustration)

### Vertical

Vertical Drain Lengths are manufactured and supplied complete with Drain Traps integrated within the liner. This 'Trap' collects and diverts all moisture directly to and out of the drain, however this item reduces the internal diameter which may effect exhaust velocity.

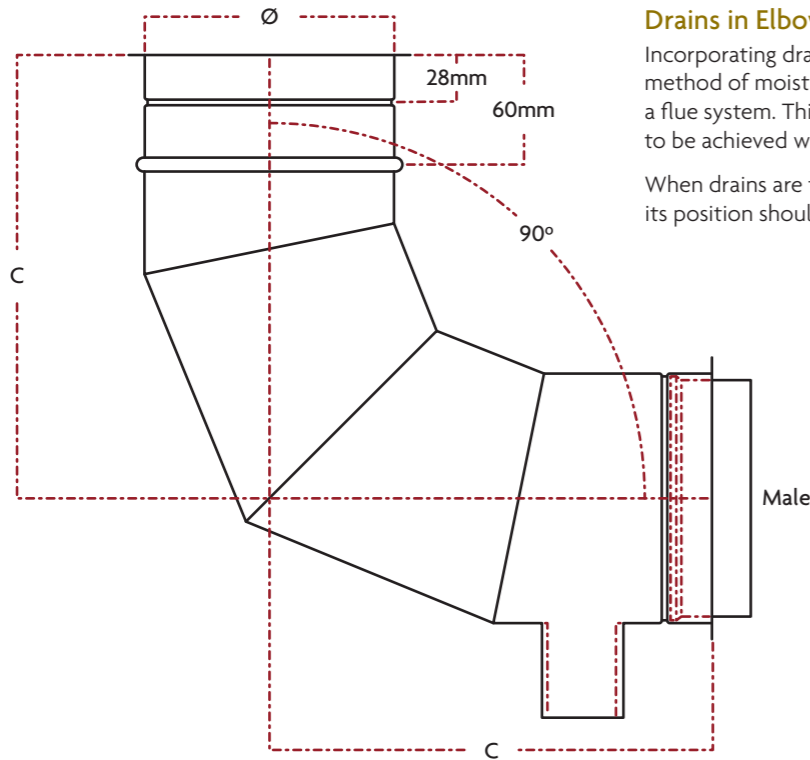
### Horizontal

Horizontal Drain Lengths do not have the Internal Drain Tap fitted and should be incorporated, either at the end or in several positions within a run with a 5° incline.



Single-Skin Deltavent 15° Elbow

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	170	195	220	245	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220
C	119	120	122	124	127	134	137	141	144	147	151	164	173	175	203	206	209	213	216	219	222	226	230	234
D	469	471	479	487	500	526	539	554	568	578	593	645	682	690	798	811	821	837	850	860	873	889	904	920
E	62	62	63	64	66	69	71	73	75	76	78	85	90	91	105	107	108	110	112	113	115	117	119	121



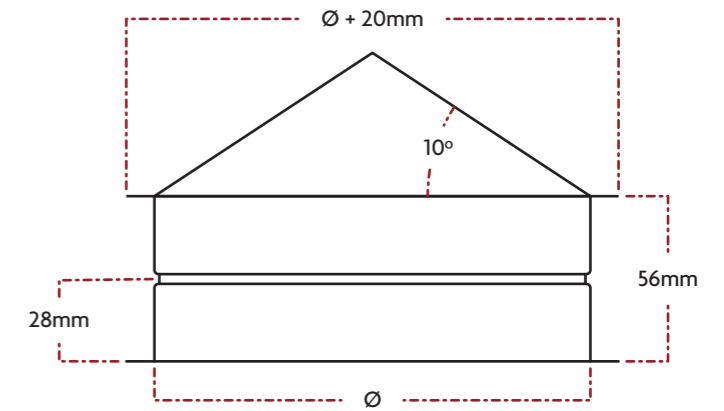
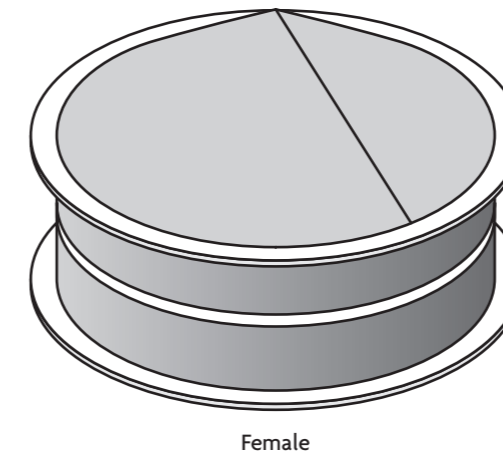
**Drains in Elbows**

Incorporating drains with Elbows can also be an effective method of moisture (condensate) removal from within a flue system. This component allows for drain positions to be achieved where space is at a minimum.

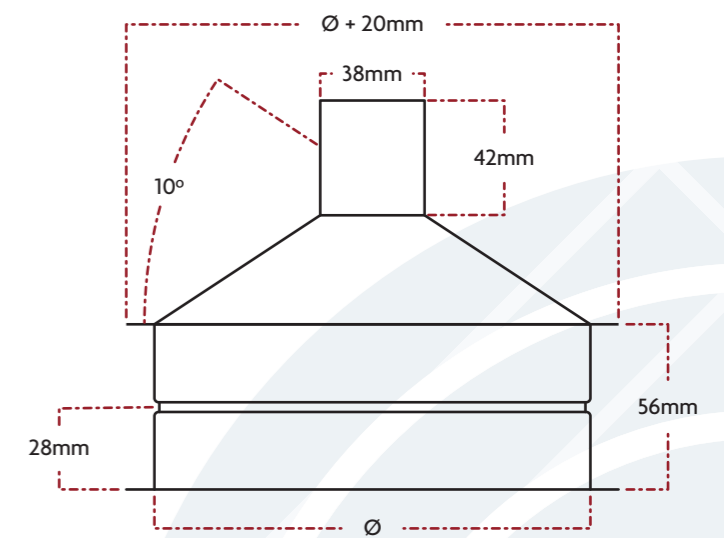
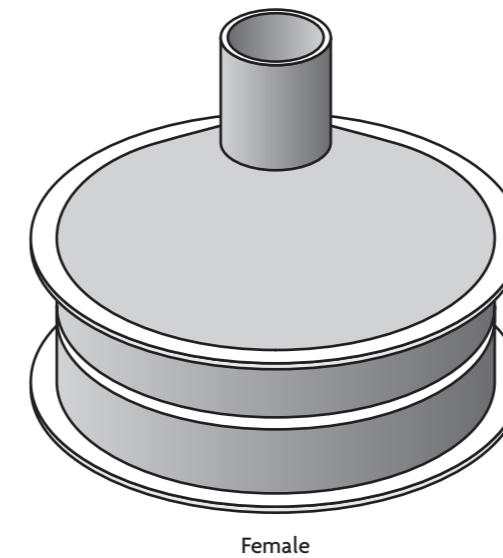
When drains are to be fitted within a male end of an Elbow, its position should be established using the method shown.

**Clean Out Door (C.O.D)**

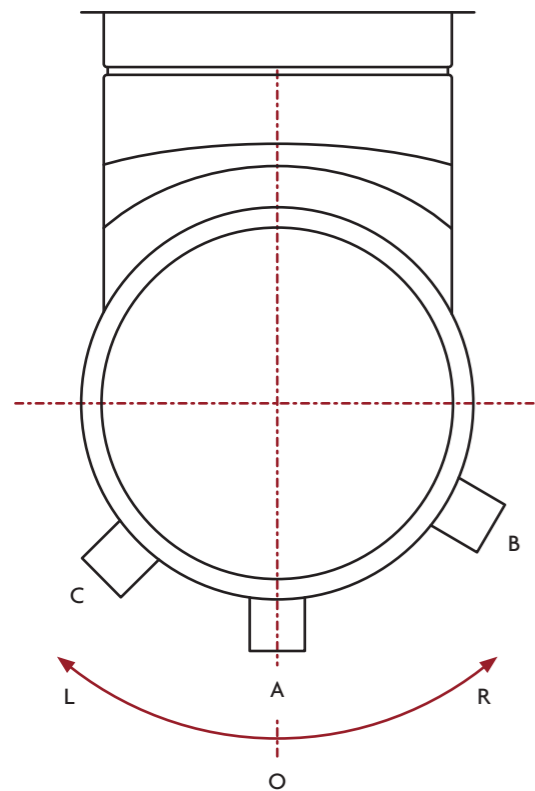
This component is used to close off the unused openings within the flue system. These caps can be installed either horizontally or vertically and are secured with flanged V-Band joint, which is easily removed to enable access for cleaning and inspections.



The ability to manufacture Clean Out Doors complete with a 1 inch Stainless Steel threaded B.S.P socket is also available on request. These caps are positioned to close off the unused opening on the underside of the Base Tee, permitting pipe work to be attached for the removal of any condensate (moisture) buildup.



**NOTE:** All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater than those given can also be accommodated to your requirements.



**Elbows viewed on male end**

Drain for an upright Elbow (drain "A") will be designated O. Other drains will be designated either L (left) or R (right) and the angle from position O. i.e Drain "B" will be R60 and "C" will be L45.

### Reducers and Increases

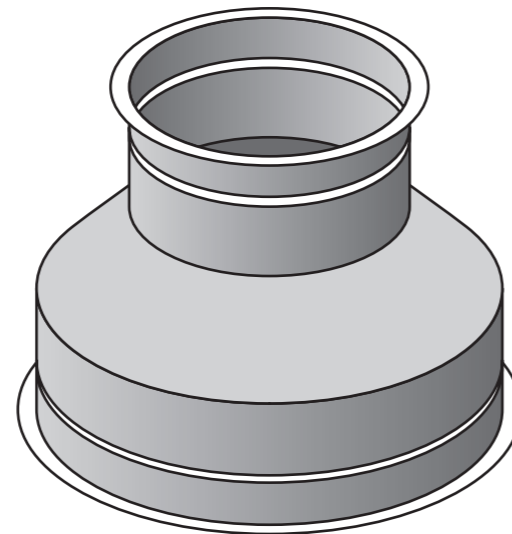
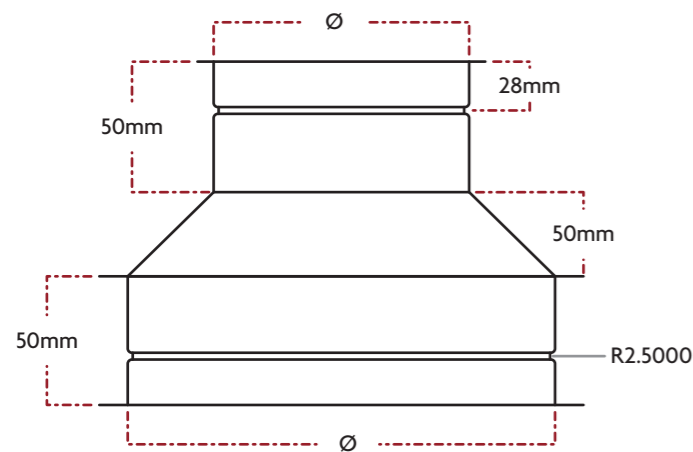
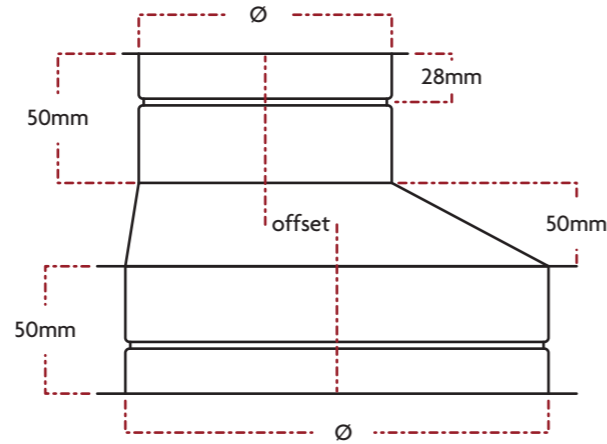
A reducer/increaser is the most effective and efficient method of diameter change within a flue system.

This special item from the Single-Skin Deltavent range allows for a steady transition of flue gases to limit resistance, and is available to order in all diameters and at custom lengths above or including those given.

Reducers and Increases are processed and manufactured using the same method, so the location of its male or female profile determines the application of use.

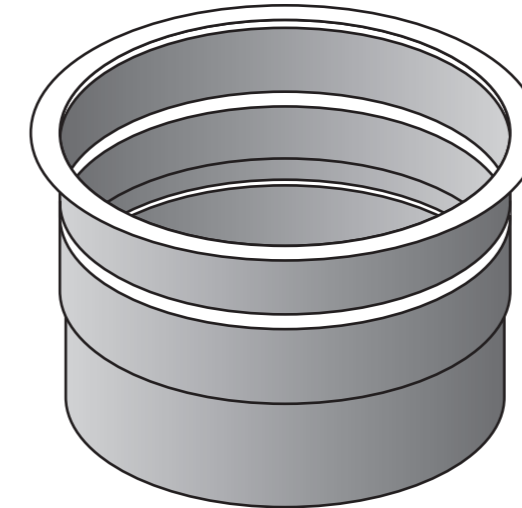
A1 Flue Systems acknowledge that there may be certain times where space is restricted, therefore the possibilities of developing unique items such as; offsets, reduced offsets or increased offsets is often achievable, however the degree of offset may result in the lengthening of reducer or increaser. (refer to illustration)

**NOTE: All dimensions given are (standard minimum).**



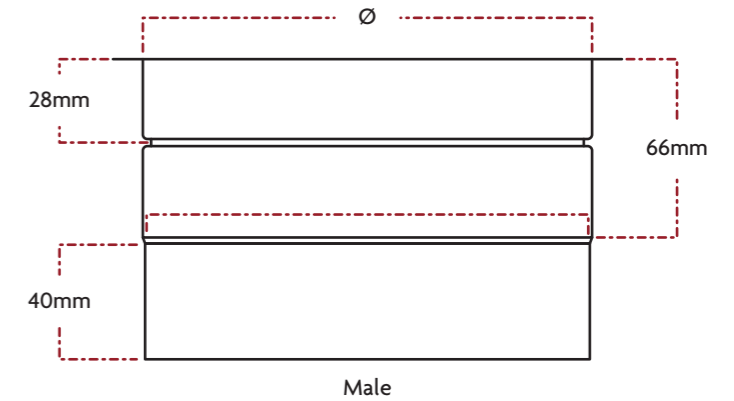
### Appliance Adaptors

Two types of Appliance Adaptors are available for this product, both of which are designed to facilitate (assist) the connection of the either vertically or horizontally positioned Single-Skin Deltavent to an appliance outlet.



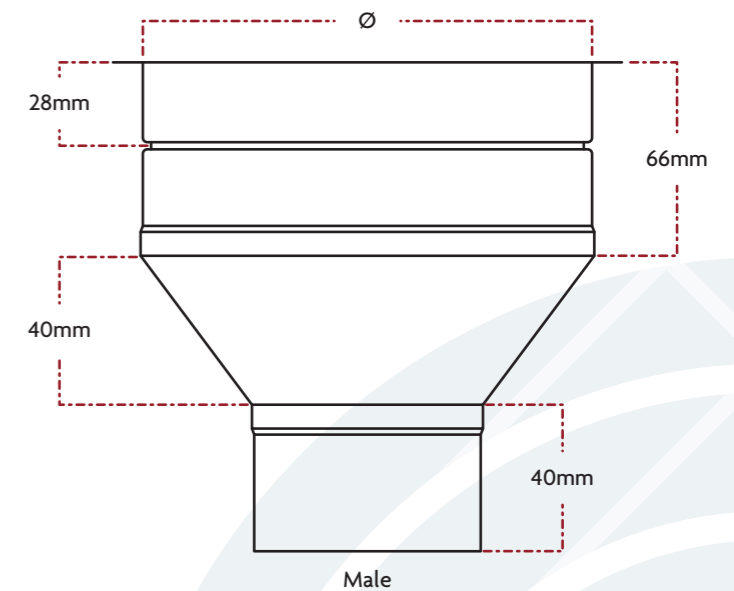
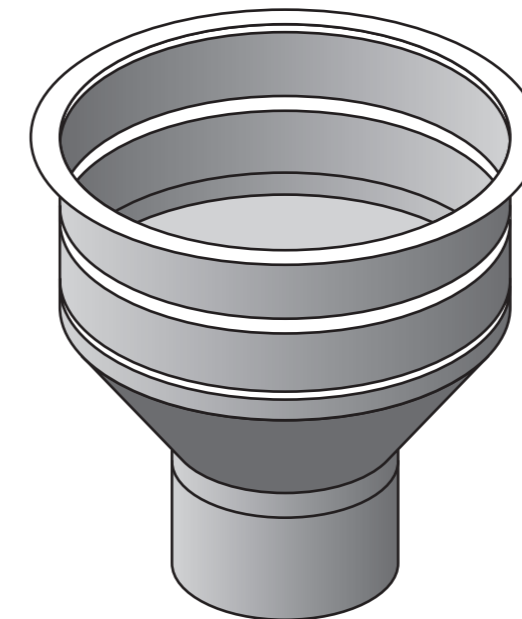
#### 2-Piece Inner

Use where boiler female connections within +/- 10mm of flue liner Ø.



#### 3-Piece Inner

Use where boiler female connection exceeds +/- 10mm of flue liner Ø.



Manufacturing capabilities allow for the male connection spigot on either design to be supplied in all regular and irregular diameters and at increased lengths above those given.

#### NOTE:

- All dimensions provided are standard minimum
- All Appliance Adaptors consisting of diameters under 150mm are to be manufactured using, 0.7/0.6mm Grade 304 or 316 Stainless Steel.

### Fire Stop Kits

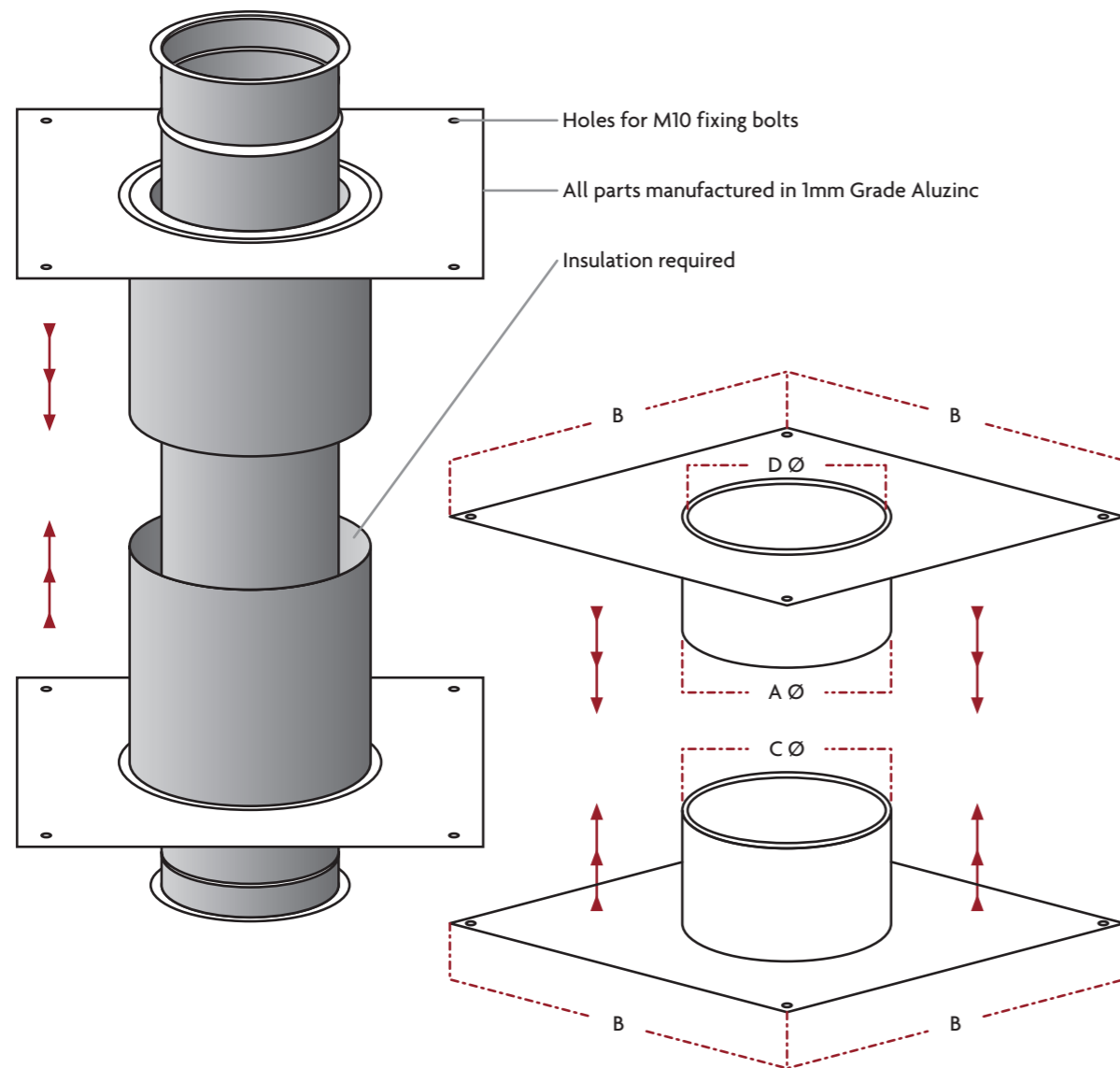
Designed to be applied where the deltavent Single-skin chimney system requires a compartmental fire rating for both horizontal and vertical structure penetrations of up to four hours.

This component is manufactured in accordance with

BS-EN 1856-1 (2009) and has been successfully assessed by the Loss Prevention Council.

**CAUTION: In cases of appliances producing flue gas temperatures exceeding 70°C, it must be advised that you refer to our Deltavent range.**

ø	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
B	400	425	450	475	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450
C	204	229	254	279	304	354	404	454	504	554	604	654	704	754	804	854	904	954	1004	1054	1104	1154	1204	1254
D	177	197	222	247	272	322	372	422	472	522	572	622	672	722	772	822	872	922	972	1022	1072	1122	1172	1222

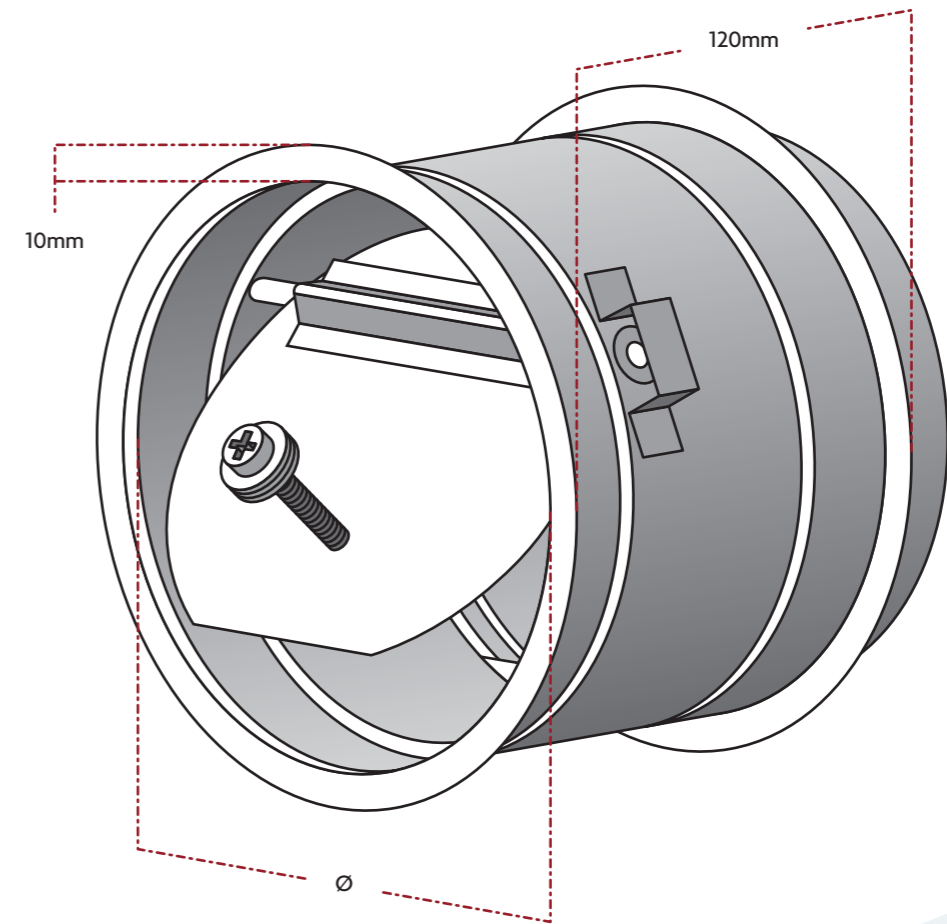


### Draught Stabiliser

Draught Stabilisers are used for the control of draught within a Single-Skin Deltavent chimney system, caused by the effect of lighter flue gases rising within the chimney stack.

The effectiveness of the Draught Stabiliser is established using a swinging vertical gate pivoted slightly above center,

such that under static conditions the gate will hang vertically down. This gate can be weighted accordingly so that it is lighter or heavier to move, and in doing so varies the draught (suction) level.



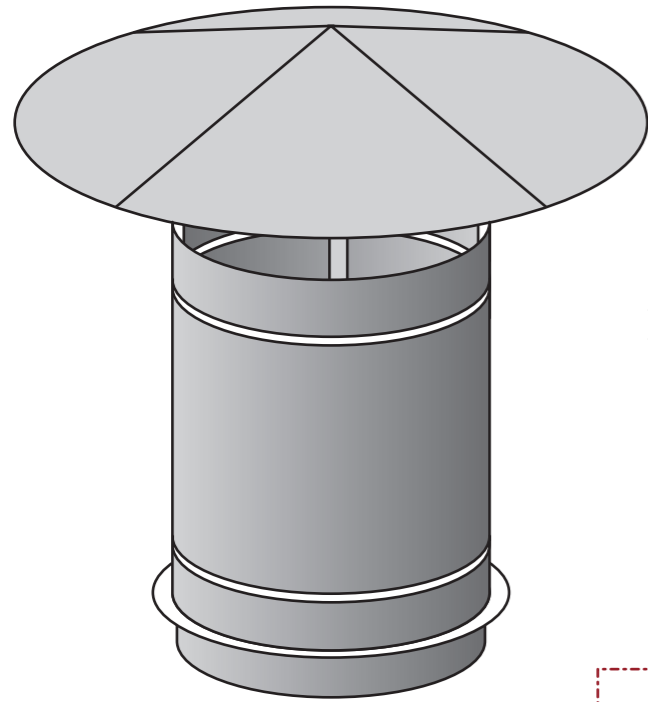
This component is manufactured (as standard) to the values provided using either 1mm Grade 304 or 1mm Grade 316 and is secured into position with a V-Band. This enables frequent easy access for both cleaning and inspections.

**NOTE:** There are certain locations where these devices are best situated, for example; within a vertical part of the boiler connection for effect on the individual appliance, at the end of a combined header or below the Base Tee of the riser for overall effect.

**Terminations**

Three types of terminations are available for the Single-Skin Deltavent product, all of which have been designed to allow/aid the safe release of flue gases whilst giving a decorative end finish.

Single-Skin Deltavent terminals comprise of male locating spigots conjoined within a 10mm connection flange. All are fixed/secured to the top section of a vertical rise using both V-Band provided.

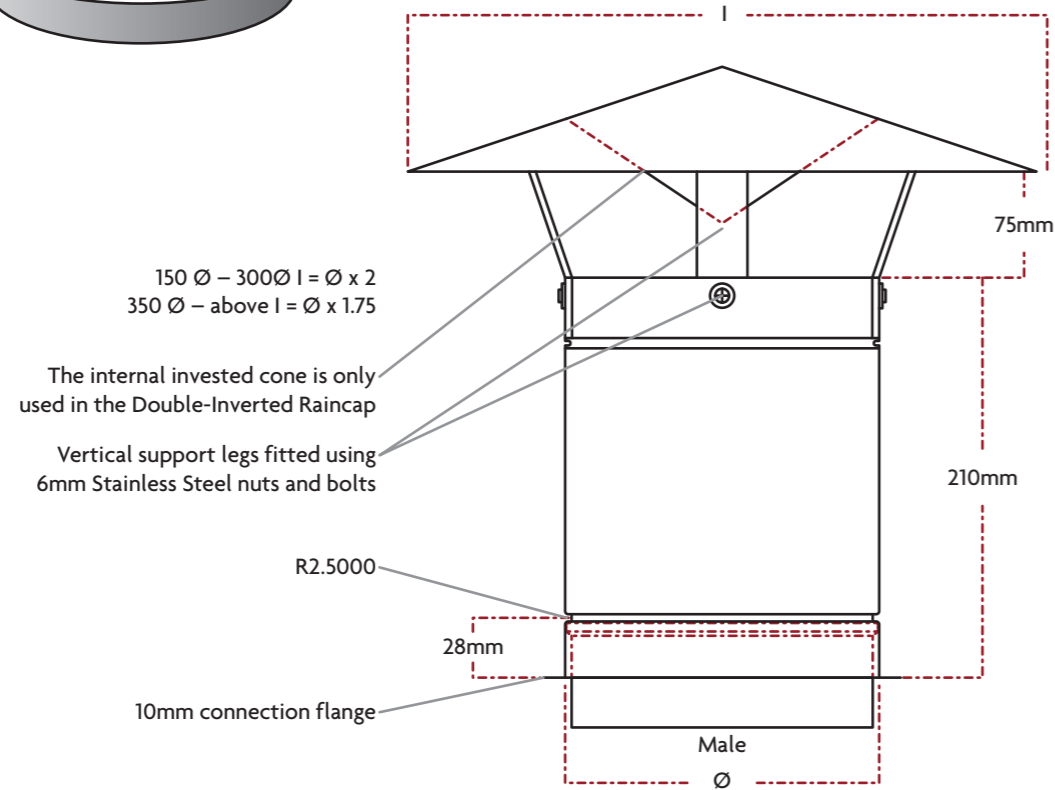


**Raincaps**

Designed for a multiple of appliances as well as providing a less restrictive all weather protected vent into the atmosphere.

**Double-Inverted Raincaps**

For the use on induced draught systems to prevent back pressure within the flue.



**Single-Skin Deltavent Mesh Top**

Mesh Tops allow for the unrestricted rapid release of flue gases into the atmosphere.

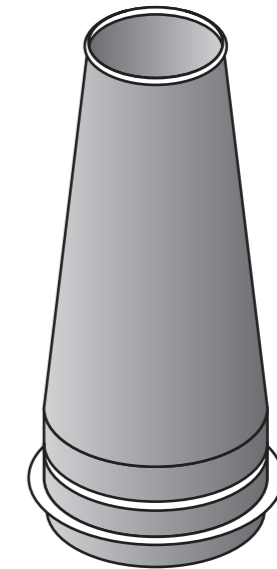
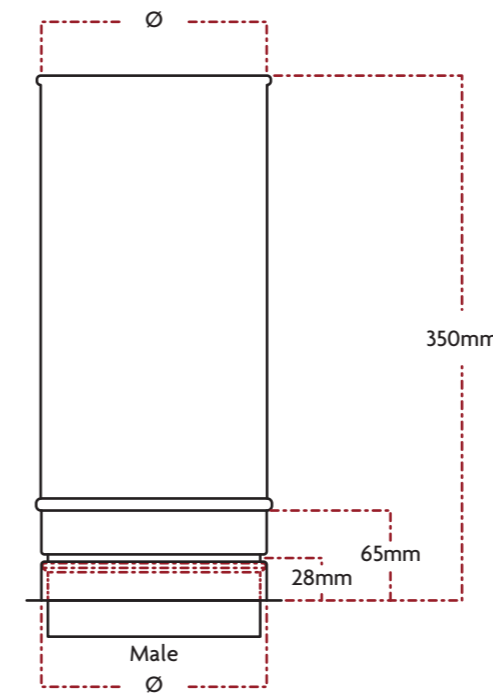
The effectiveness of the Single-Skin Deltavent terminal is established by its outlet diameter (free surface area). This outlet can be manufactured and supplied with or without Stainless Steel mesh and at a reduced diameter, which will increase velocity of its existing gases.

Due to the nature of this open outlet design, it is recommended that the Single-Skin Deltavent Mesh Top should always work in conjunction with either a moisture (condensate) release point at the base of a vertical rise, or with a vertical Drainage Length fitted with an Internal Drain Tap.

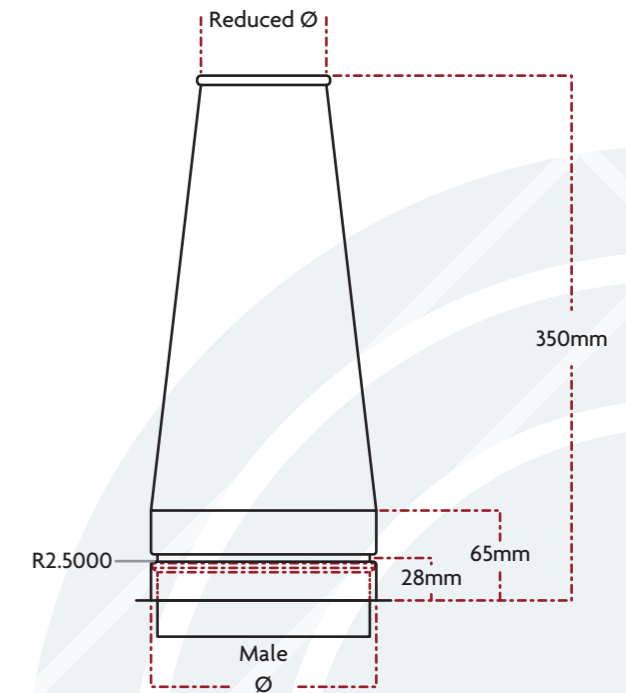
**NOTE: All dimensions provided above are for (standard minimum). Non-standard Mesh Tops consisting with dimensions greater than those given can also accommodated to your requirements.**



Male



Male





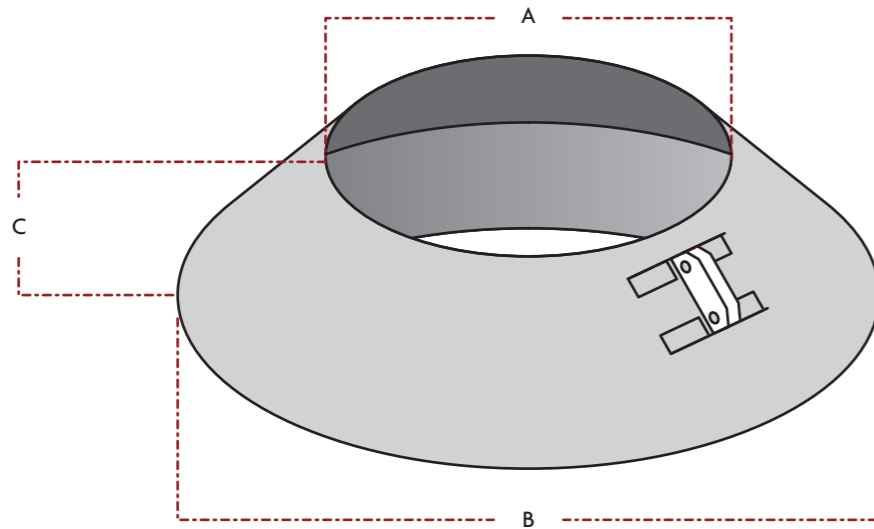
### Storm Collars

Storm Collars are obtainable in two well established designs, which are to be used to apply an all weather impermeable seal around a Single-Skin Deltavent vertical rise immediately after the exit through a Flashing.

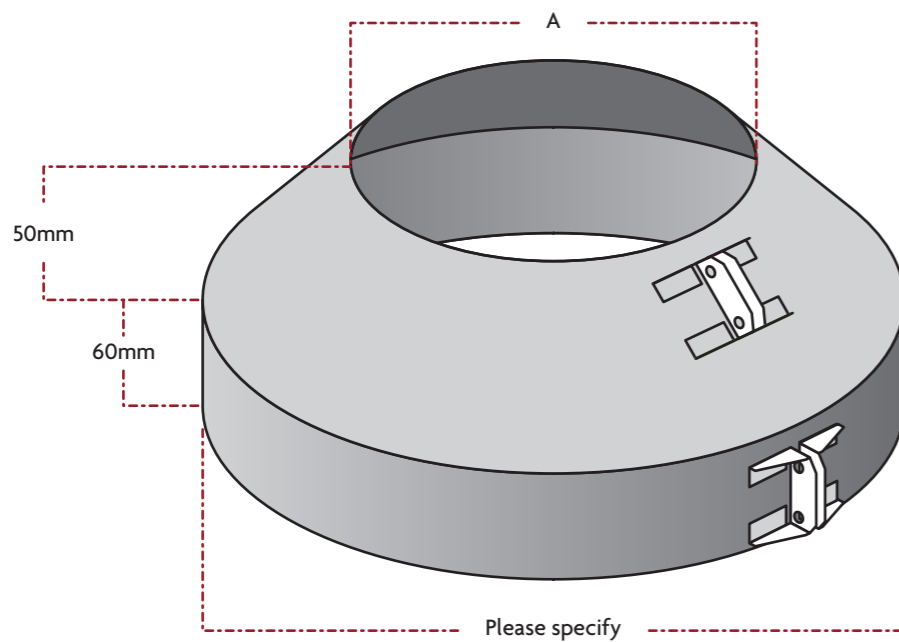
Once the positioning has been achieved (directly above a flashing), the angled profile of the Storm Collar will divert

and deny any access between chimney flue case and Flashing upstand to all adverse weather.

All dimensions provided below are a (standard minimum). However, non-standard dimensions and diameters can also be accommodated if required.



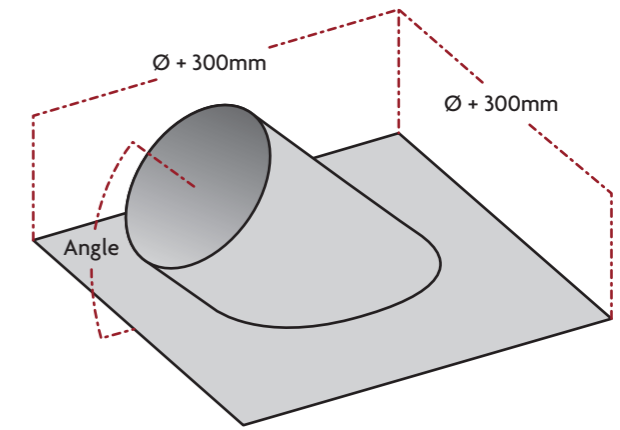
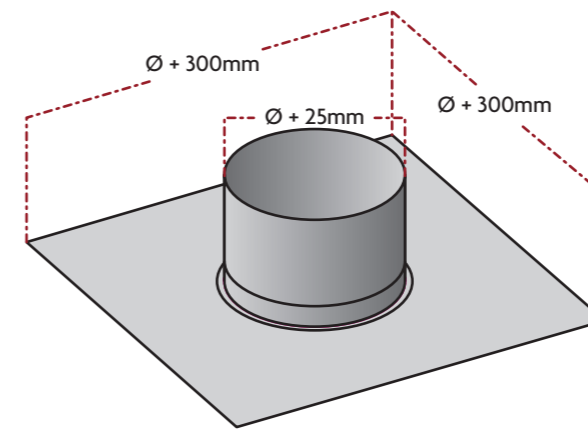
ø	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300	350	375	400	425	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	80				100								150											



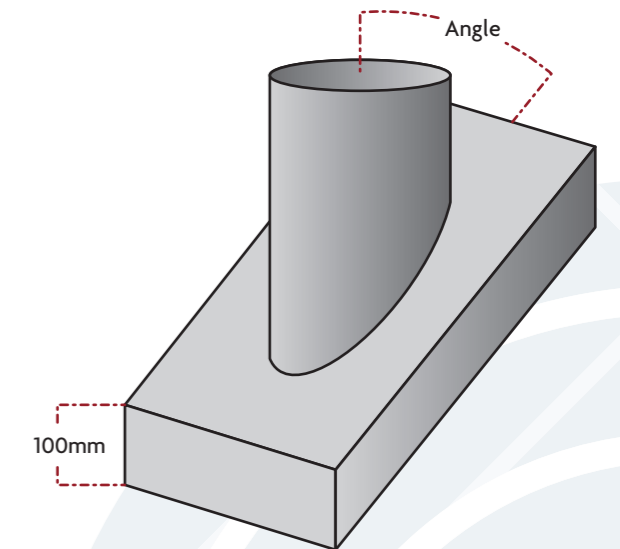
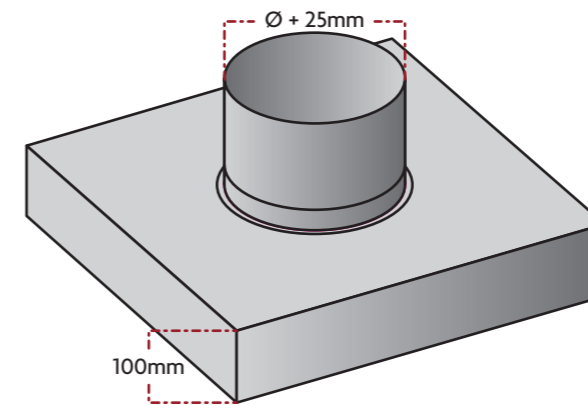
### Flashings

Flashings are to be used as an effective method of providing weather protection to all building structures immediately after roof or chimney penetration of a vertically rising Single-Skin Deltavent chimney.

#### Flat Flashings



#### Box Flashings



NOTE: Picture illustrations and values provided are for standard items. However, unique Flashings combined with multiple upstands and increased values can also be accommodated if required.

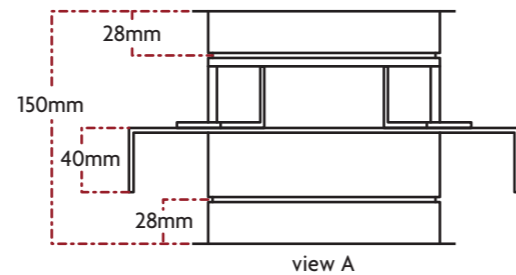
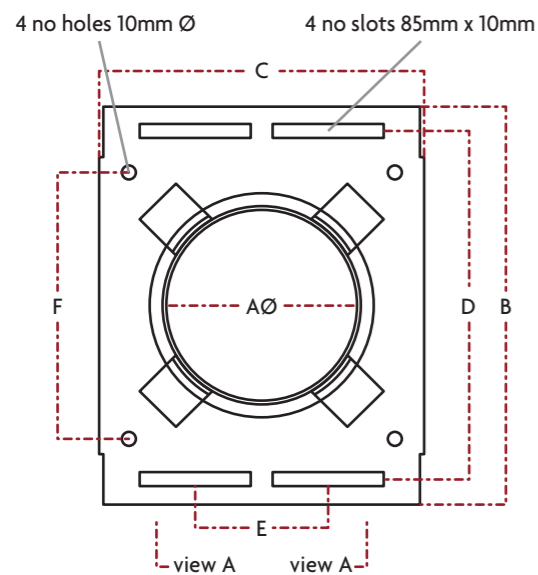
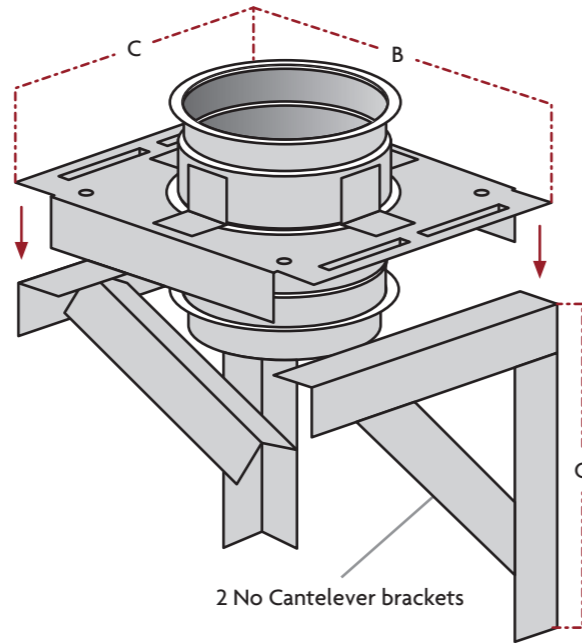
### Support Components

The complete range of support components listed below have been successfully designed and tested to accommodate the chimney's weight whilst providing flexibility and ease on installation as well as stability after installation.

#### Thrust Support Plate

Thrust Support Plates provide load bearing lateral support for the vertically adjoined Single-Skin Deltavent. This component is suitable for supporting on both Uni-Strut or Cantelever brackets and can be constructed in either 3mm Stainless Steel (for external applications) or 3mm Galvanized Steel (for internal applications).

**NOTE:** Picture illustrations and values provided are for standard items. However, unique Thrust Support Plates combined with multiple Thrust Collars and increased values can also be accommodated if required.



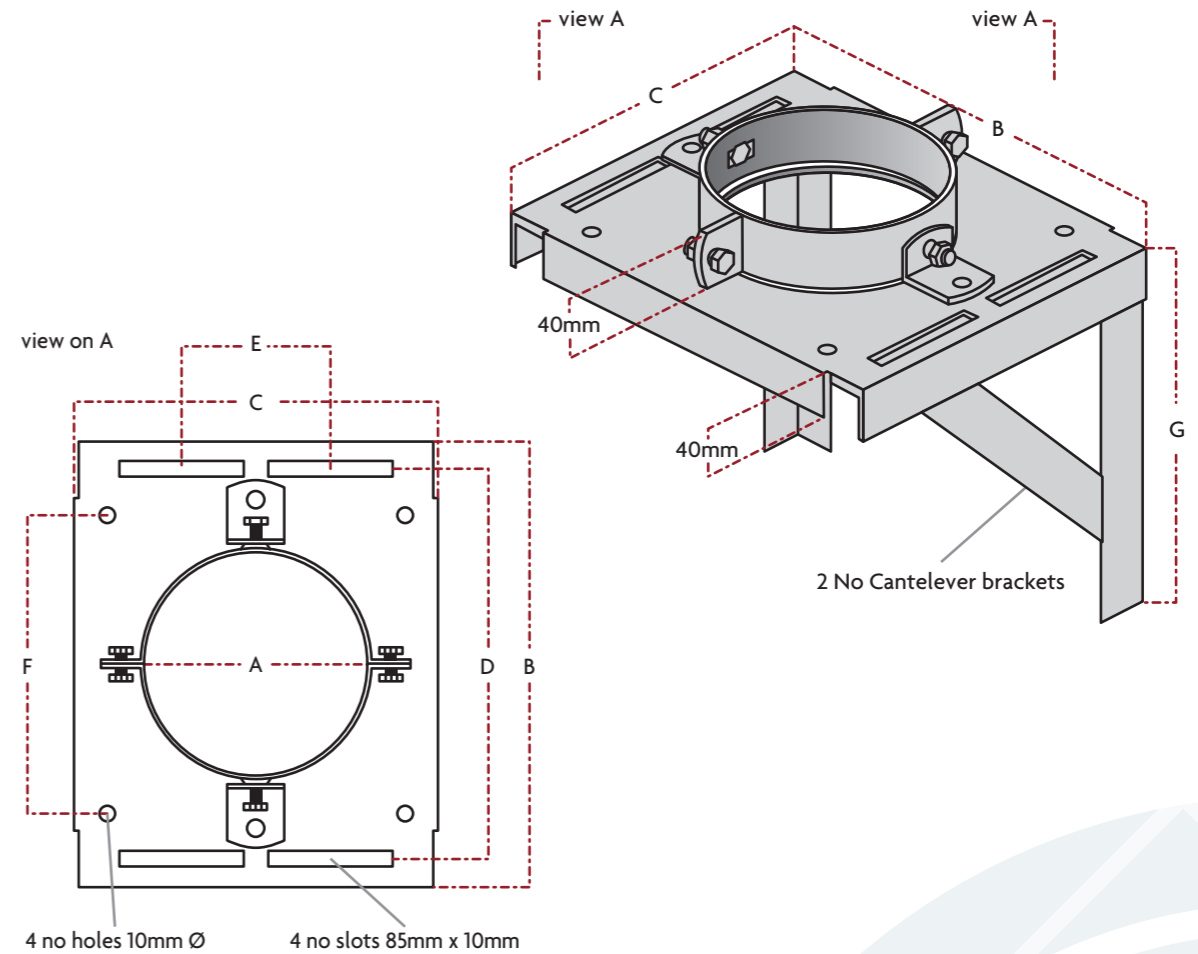
### Intermediate Wall Support

Intermediate Wall Supports are to be incorporated where additional lateral and vertical support is required within a Single-Skin Deltavent vertical rise when weight loads exceed 450kg.

This component is manufactured to the values provided below (as standard) in both Stainless Steel and Galvanized

Steel. Non-standard unique Intermediate Wall Support designs combining multiple chimney rises and increased values can also be accommodated to your requirements.

**NOTE:** The Intermediate Wall Support is also suitable for supporting of either Uni-strut or Cantelever brackets.



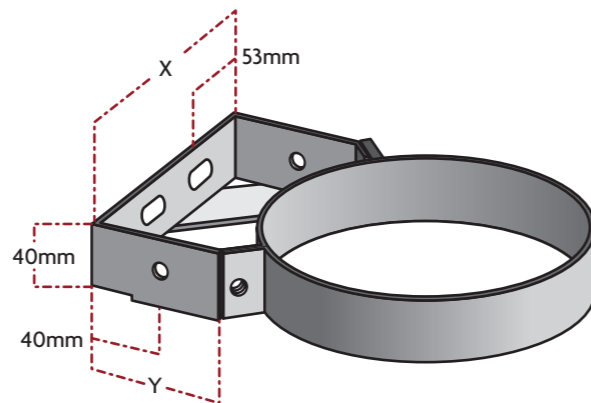
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	312	331	357	382	434	478	529	580	631	628	752	803	854	905	944	994	1044	1094	1144	1194
C	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	254	273	299	324	356	400	451	502	553	604	654	705	756	807	848	896	946	996	1046	1096

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	312	331	357	382	434	478	529	580	631	628	752	803	854	905	944	994	1044	1094	1144	1194
C	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	254	273	299	324	356	400	451	502	553	604	654	705	756	807	848	896	946	996	1046	1096

### B-Type

B-Types have been designed to achieve lateral stability and the accurate alignment of a flue system. These brackets apply a 50mm clearance (as standard) between the adjacent structure and external case of the adjoining flue, and must be used at intervals not exceeding 3 metres.

B-Types up to and including 700 diameter can be manufactured in both 2mm Stainless Steel (for external applications) or Galvanized Steel (for internal applications). 750 diameter and above are to be manufactured using 3mm Stainless or Galvanized Steel.

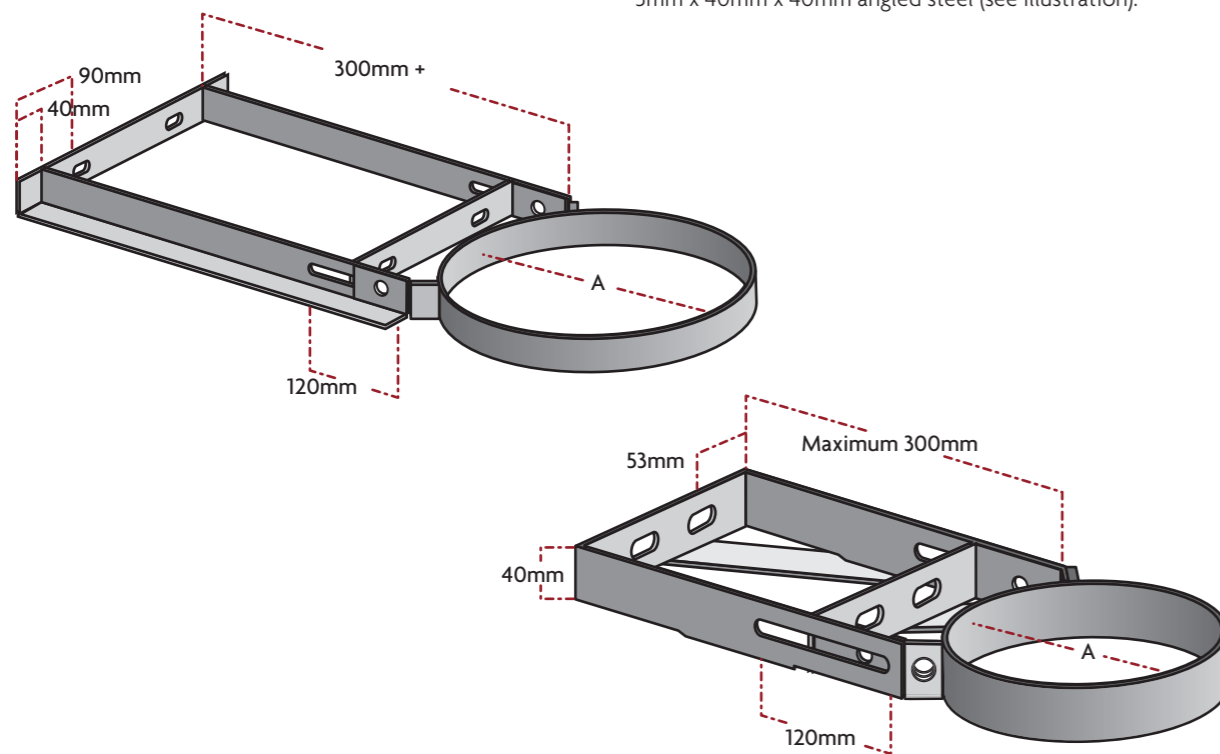


ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
X	173	195	217	238	260	303	346	390	433	476	520	563	606	650	693	736	779	823	866	909	953	996	1039	1083
Y	90	96	102	108	115	127	140	152	165	177	190	202	215	227	240	252	265	277	290	302	313	326	338	351

### Adjustable B-Type

Adjustable B-Types have also been designed to provide lateral stability as well as allowing for a greater clearance (stand off) between the adjacent structure and the external case of adjoining flue.

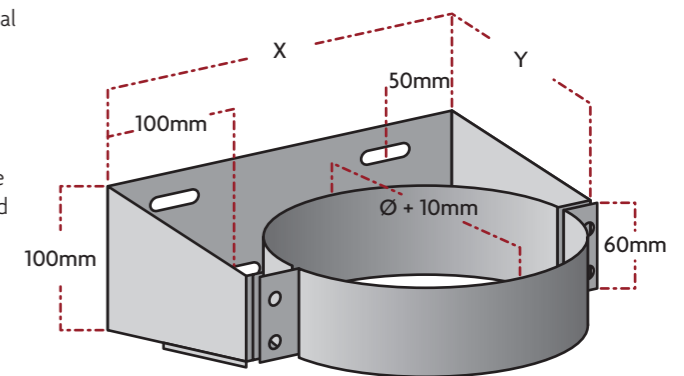
This item consists of a standard B-Type bracket incorporated within an adjustable carriage which can be manufactured in both Stainless and Galvanized steels and can be custom built to your requirements. However, if the clearance needed exceeds 300mm, in order to achieve structural/lateral stability the Adjustable B-Type must be constructed using 3mm x 40mm x 40mm angled steel (see illustration).



### Guide B-Type

Guide B-Types are used to permit the movement of thermal expansion from within a Single-Skin Deltavent vertical run. This free movement design allows both the internal and external integrity to not be compromised at any time.

The Guide B-Type also applies a 50mm clearance (as standard) between an adjacent structure and external case of the adjoining flue and is obtainable in both Stainless and Galvanized steels.



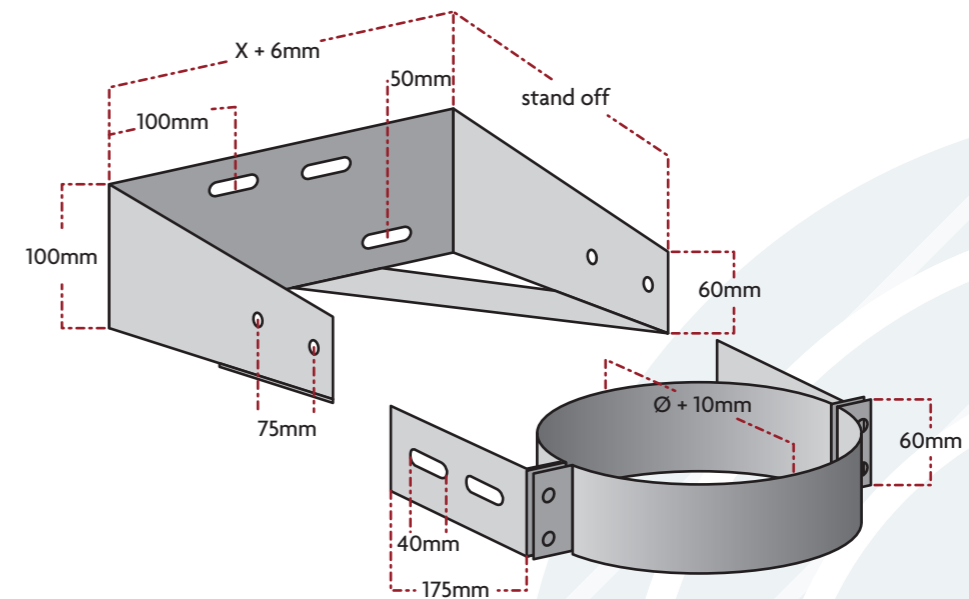
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
X	227	252	277	302	327	377	427	477	527	577	627	677	727	777	827	877	927	977	1027	1077	1127	1177	1227	1277
Y	125	138	150	163	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650

### Adjustable Guide B-Types

Adjustable Guide B-Types are offered when a greater clearance (stand off) between the adjacent structure and external case of the adjoining flue is desired, applying flexibility on both the design and installation of a Single-Skin Deltavent chimney system.

**CAUTION: THIS BRACKET HAS NO LOAD BEARING CAPABILITY.**

Manufacturing capabilities allow for this bracket component to be constructed in either Stainless or Galvanized steel and to your custom requirements.



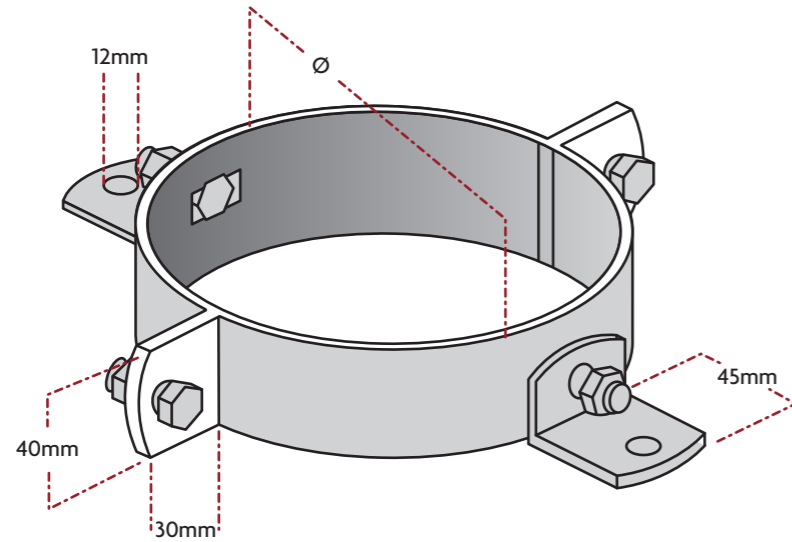
**Universal Rings**

Universal Rings are to be used to achieve the lateral stability and accurate alignment of a Single-Skin Deltavent chimney system.

This component is available both with or without swivel lugs incorporated and is suitable for supporting horizontal or

inclined runs, off 10mm Drop Rod at intervals not exceeding 3 metres.

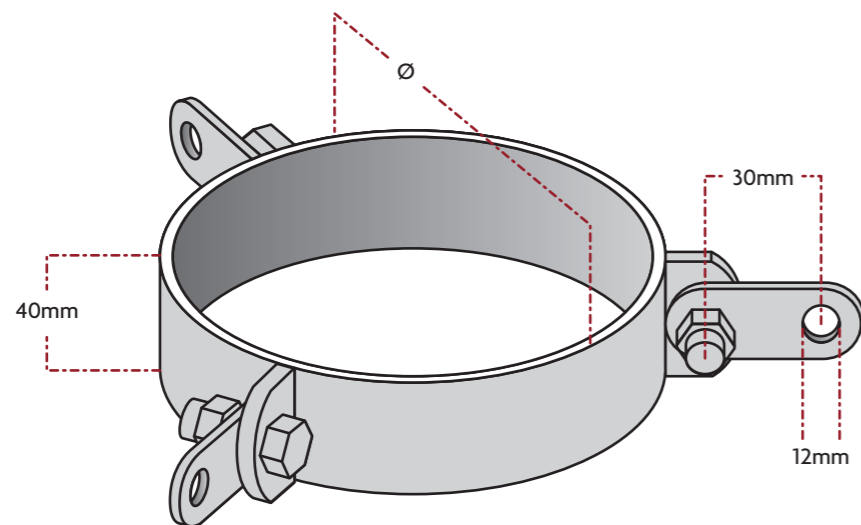
Universal Rings are manufactured using either Stainless or Galvanized steels and to the values provided below. However, non-standard unique items can also be accommodated if required.



**Guy Wire Bracket**

Guy Wire Brackets must be used to apply extra lateral support to the top section, of a Single-Skin Deltavent vertical rise when the last fixing position above the roof is more than 2.5metres below the chimney termination.

This bracket component is available in both Stainless and Galvanized steels to the values provided below, and will require either suitable wires/cables or support rods/bars to be fixed to part of the adjacent building or rigid structure.



# Twin Wall

Twinwall is a Stainless Steel, prefabricated exhaust/duct system which is fully welded and available in diameters 100mm id through to 1200mm id. Twinwall also benefits from a selection of insulated/non-insulated annulus' varying in sizes. (25mm – 100mm)

There are two specific types of Twinwall products available, the TF is a general purpose chimney flue for the use with gas or oil fired appliances and the HG is a high grade Twinwall flue, also for the use with gas or oil fired appliances, where a higher specification is required.

Relatively low external skin temperatures can be obtained with Twinwall, through selection of the correct material grade and annulus thickness, dependent on the flue gas temperature a minimum 50mm clearance must be maintained from the outer skin to all combustible materials.

## The Twinwall systems are designed for use where;

- A four hour fire rating is specified
- A negative pressure exhaust/duct system is specified

## Application examples;

- Pressure Jet Burner
- Atmospheric Burner
- Gas Fires
- Flue Dilution
- Ventilation/Extract

The complete range of Twinwall chimney products have been successfully tested in accordance with B5476 part 20 for stability and integrity during a 4 hour fire test carried out at the Loss Prevention laboratories, Borehamwood. A copy of the full test report is available at A1 Flue Systems Head Office. All our products are also manufactured, and where required, installed within the scope of ISO 9001 : 2008 quality assurance system.

## BSRIA Test Results

Twinwall chimney systems – Classification and Designation

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T450	H1	D	VxL20056 or VxL50056	G(50)

## Specifications:

This catalogue provides all dimensional details for the TF and HG Twinwall system.

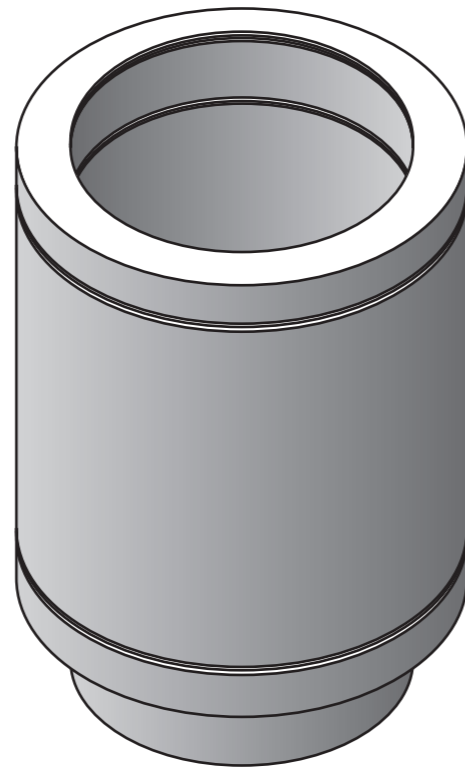
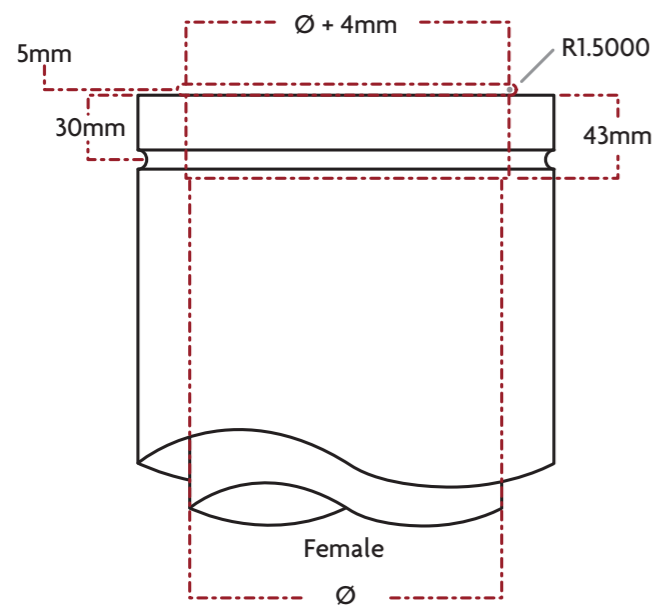
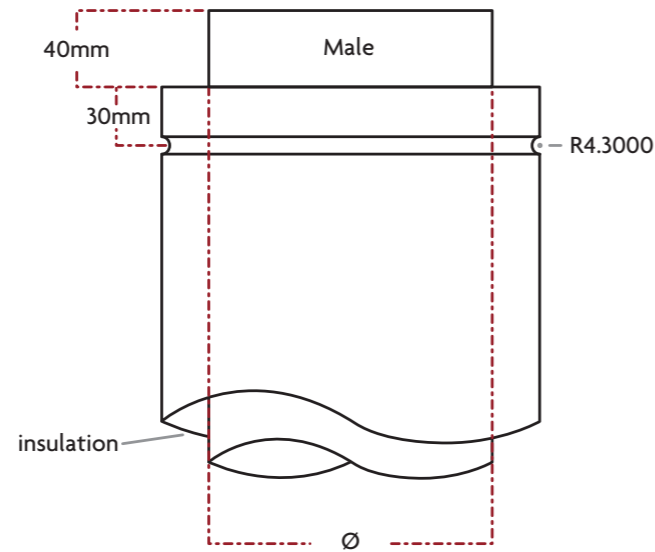
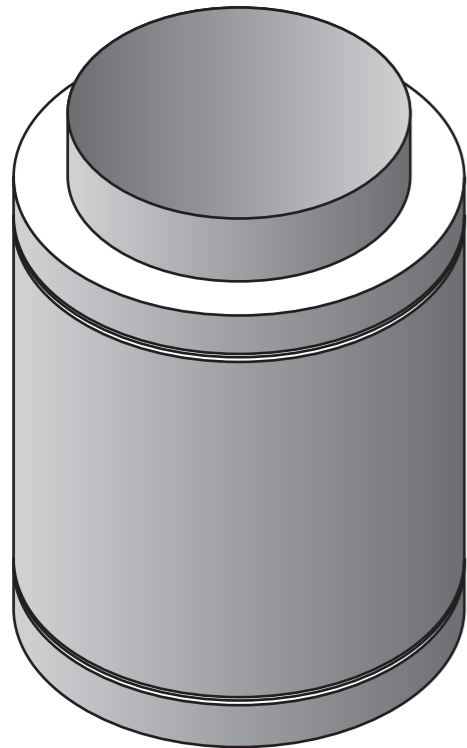
## Twinwall Material

	Std. Construction TF flue	Std. Construction HG flue
Liner	FULLY WELDED 0.6/0.7mm Grade 304 s/s	FULLY WELDED 0.6/0.7mm Grade 316 s/s
Outer case	FULLY WELDED 0.7mm Grade 304 s/s	FULLY WELDED 0.7mm Grade 304 s/s
	Alternative to special order, Brushed s/s (outer case only)	
Maximum flue gas temperature	All systems 540°C max	

NOTE: Both liner and external case of the Twinwall products are manufactured using 0.6/0.7mm grade Stainless Steel. The seam consists of a 10mm overlap joint which is resistance welded.

A standard working tolerance of +/- 1mm or 1degree is applied to all components within the Twinwall range.

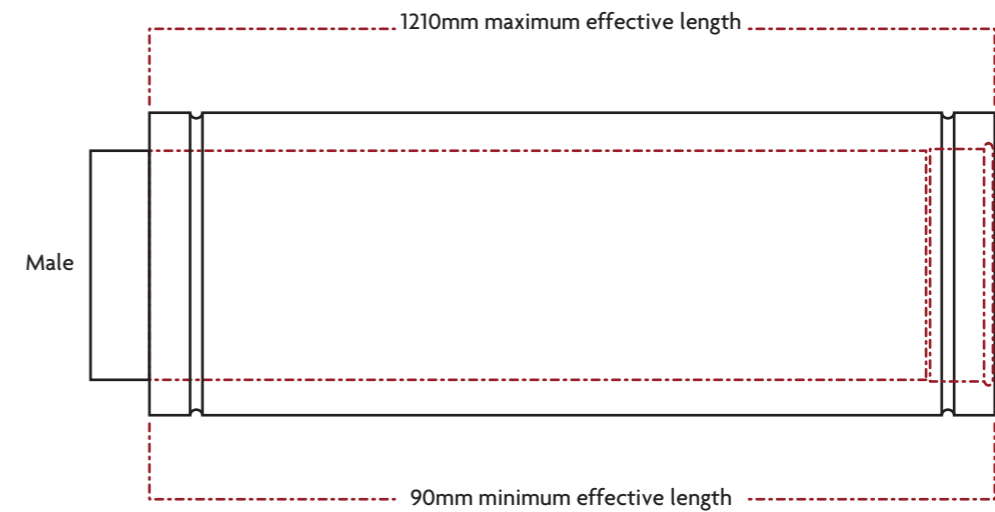
Construction of Twinwall Flue



**Straight Lengths.**

Straight Lengths are available as standard in 150mm, 300mm, 420mm, 570mm, 760mm, 875mm and 1210mm lengths, with exception to 100m diameter pipe which has a maximum effective length of 875mm.

We also manufacture any fixed length between the Standard Lengths to your specification.



**Prior to Installation**

Before installation of the Twinwall flue you must be aware, in a vertical application it is essential that the components are installed with male spigot down against the flow of gases. this will allow condensates, if any, to remain within the flue.

The Twinwall system also uses two types of sealant. For low temperature systems, 150 degrees and below, a high durability/low temp silicone sealant is used and for systems with temperatures in excess of 150-350 degrees, high temperature sealant is used. The correct sealant must be used to ensure the durability and strength of joints. Sealant is chosen according to the flue type and gas temperature.

Sealants for all applications are available and are supplied with the product. Where Twinwall is used externally, sealant must be applied under the external joint bands, (in the grooves of the outer case) to prevent the ingress of water.

**Installation**

Ensure all components that require sealant are clean from any dirt, grease and other contaminants. Once the decontamination has been achieved, apply an adequate amount of sealant around the male locating spigot. (Refer to illustration)

Using the locating spigot of the male as a guide, simply push/slot the two parts of Twinwall together. ( Male spigot runs down).

**CAUTION:** It is extremely important for nothing to pierce either the internal liner or outer at any time of installation.

The final process of assembly is fitting the Clampband. This has been designed to connect both outer flue parts together using a groove either end for location and is secured into position using the Stainless Steel nuts and bolts provided.

**NOTE:** If Twinwall is exposed to external elements i.e, (rain or snow) it is essential a bead of sealant is also applied into the grooves underneath the Clampband to prevent the ingress of moisture.

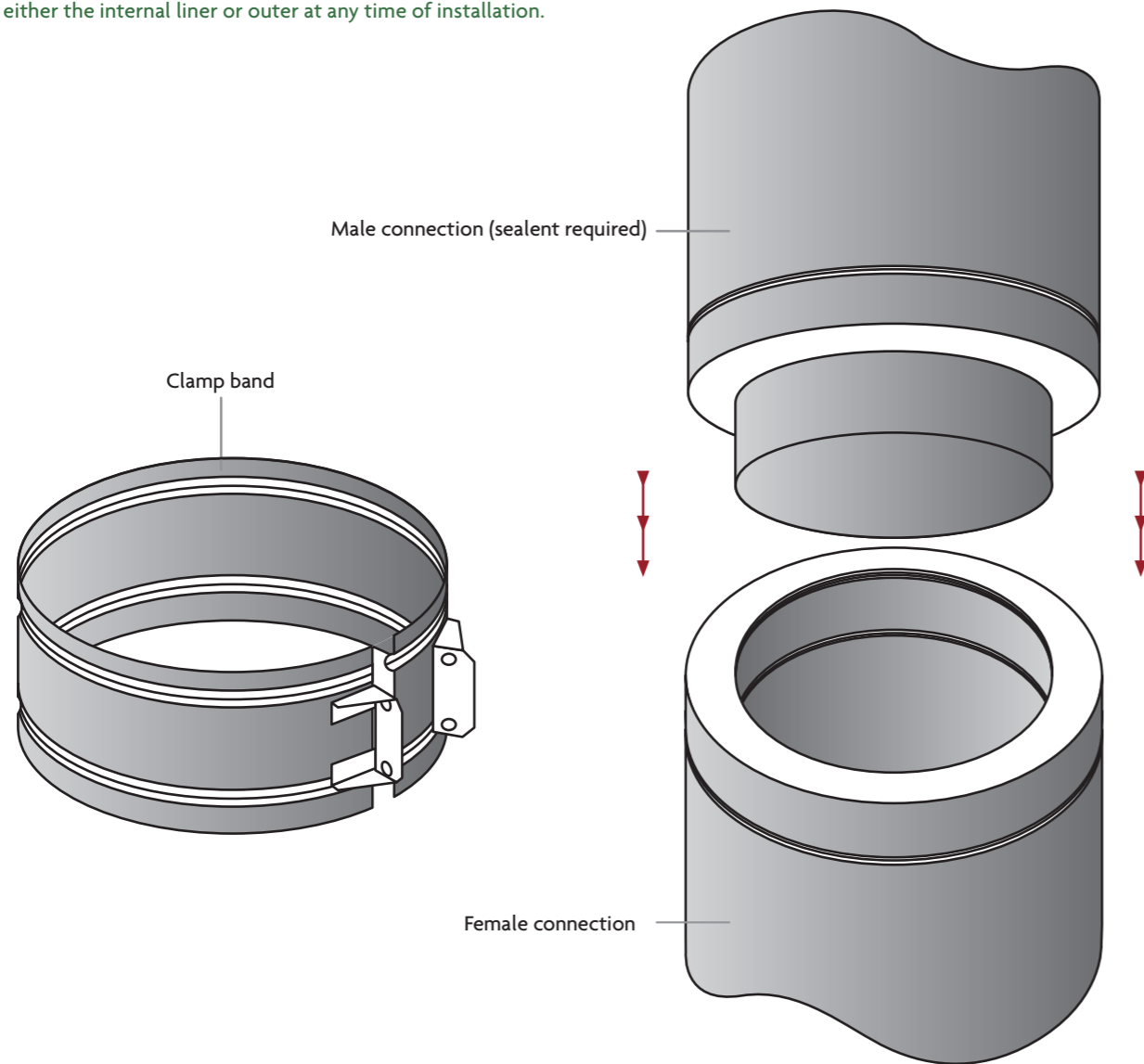
**Twinwall Adjustable Lengths.**

Twinwall Adjustable Lengths have been successfully designed to allow for greater flexibility when measuring or installing a chimney system. This component is very important, as measurements cannot always be obtained.

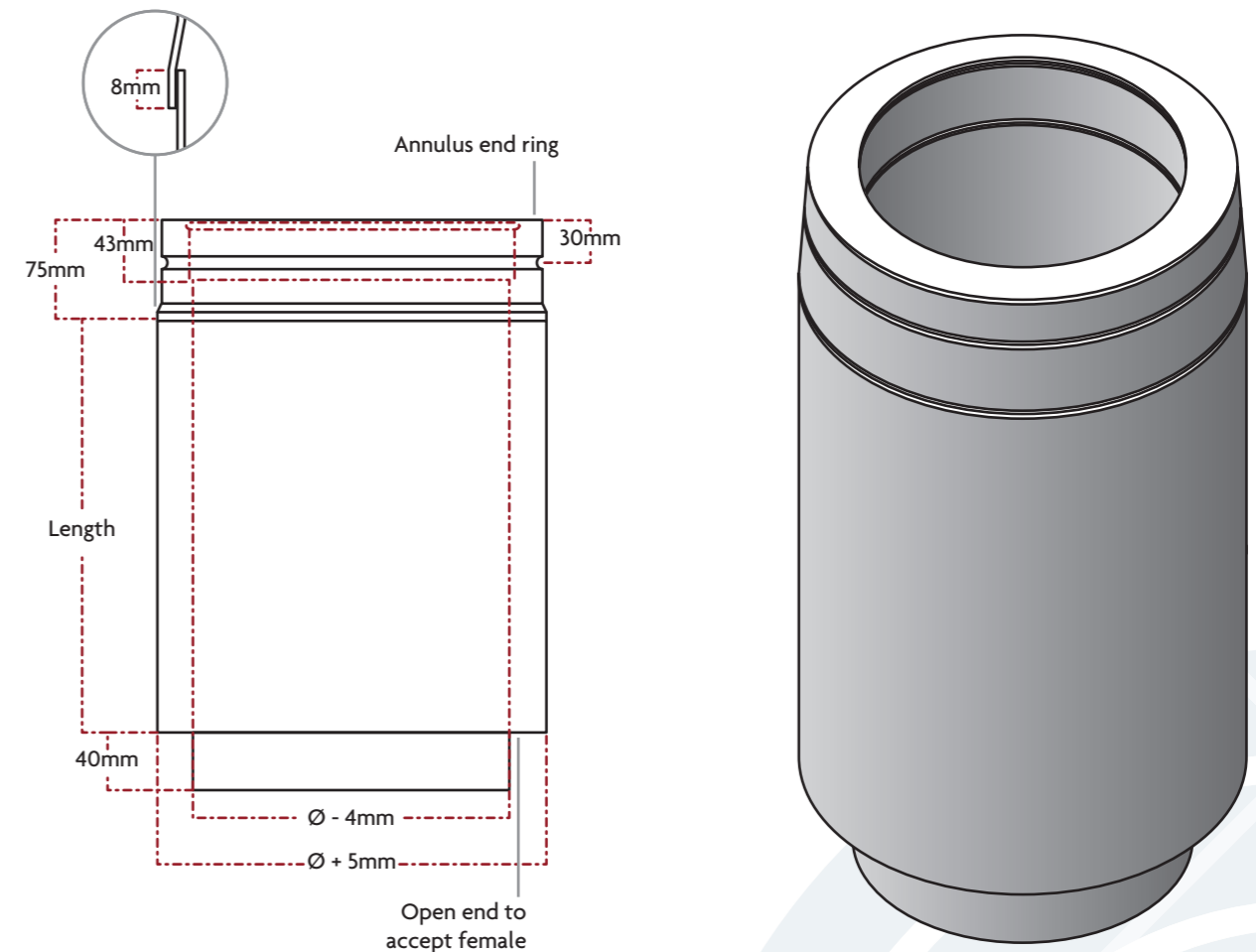
The effectiveness of this component is established with both internal liner and outer case being manufactured in irregular diameters, and to the values provided (as standard). This enables the Adjustable Length to become telescopic, giving you the exact length required.

Once the Adjustable Length is in position and the length required has been achieved, it is then secured by means of a Clampband.

Adjustable Lengths are available with either a 25mm, 50mm, 75mm or 100mm annulus (as standard), and in lengths comprising of 150mm, 300mm and 450mm. Specifications above can also be accommodated.



**NOTE:** Do not pull or bend the Clampband in any way when installing, as this will alter the shape of it's profile. Simply slide the Clampband along the two adjoining lengths. Once the band is situated in the correct position tightly fasten the joint using the nuts and bolts provided.



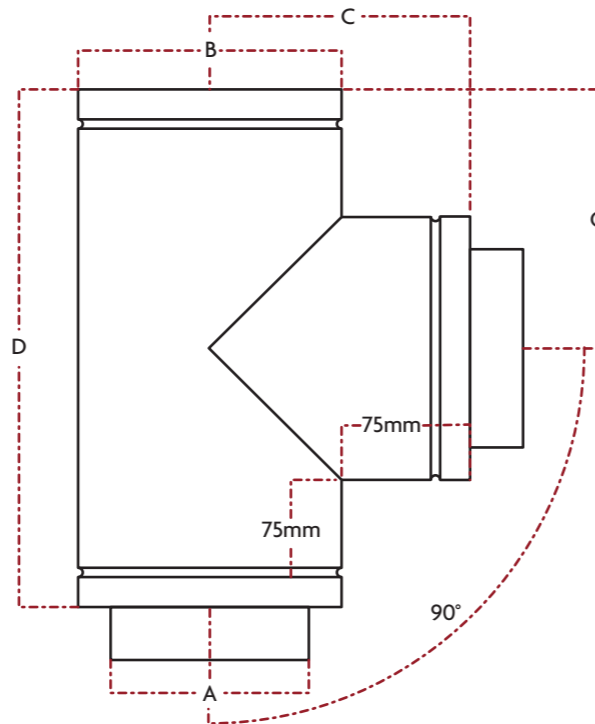
**CAUTION:** Adjustable Lengths DO NOT LOAD BEAR and should never be placed in a vertical rise unless sufficient support is in place.

## Twinwall Tees

### 90degree Tees

90 degree Tees allow for the change in direction of a Twinwall chimney system whilst giving you accessibility for an Inspection/Clean-Out Door or a moisture release drain point.

The 90 degree Tee is widely used at the base of a vertical rise. However, 90 degree Tees can also be adjoined in multiples creating complete header sets and supplied with a reduced branch diameter, giving you the option and flexibility to reduce the connecting flue diameter and if needed change the position of the chimney flue run.



### Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
C	150	163	175	188	200	213	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600
D	300	326	350	376	400	426	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200

### Twinwall 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
C	175	188	200	213	225		250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	
D	350	376	400	426	450		500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	

### Twinwall 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050		
C	200	213	225		250		275	300	325	350	375	400	425	450	475	500	525	550	575	600		
D	400	426	450		500		550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200		

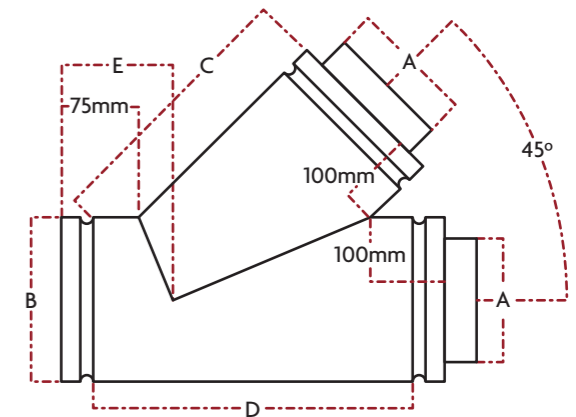
### Twinwall 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050			
C	225		250		275		300	325	350	375	400	425	450	475	500	525	550	600	600			
D	450		500		550		600	650	700	750	800	850	900	950	1000	1050	1100	1200	1200			

### 135 degree Tees

The 135 degree Tee is also widely used at the base of a vertical rise but gives the added advantage of a swept entry to reduce resistance to the flow of the flue gases.

All dimensions given below are standard minimum. However, the possibility of manufacturing and supplying a non-standard Tee with or without a reduced branch diameter and at values above those given is also available on request.



To calculate Tee body length;  
 $\text{Ø} / \cos \text{angle} + 175 + (\text{insulation} + \cos \text{angle})$ .

### Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	150	165	200	225	250	275	300	350	400	450	500	550	600	650	700	750
C	281	311	341	372	402	432	462	522	583	643	704	764	824	885	945	1005
D	387	423	458	494	529	564	599	670	741	812	882	953	1094	1094	1165	1236
E	106	111	116	116	127	132	137	147	158	168	179	189	210	210	220	230

### Twinwall 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	
C	341	372	402	432	462		522	583	643	704	764	824	885	945	1005	
D	485	494	529	564	599		670	741	812	882	953	1023	1094	1165	1236	
E	116	122	127	132	137		147	158	168	179	189	199	210	220	230	

### Twinwall 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	250	375	300		350		400	450	500	550	600	650	700	750		
C	402	432	462		522		583	643	704	764	824	885	945	1005		
D	529	564	599		670		741	812	882	953	1023	1094	1165	1236		
E	127	132	137		147		156	168	179	189	199	210	220	230		

### Twinwall 100

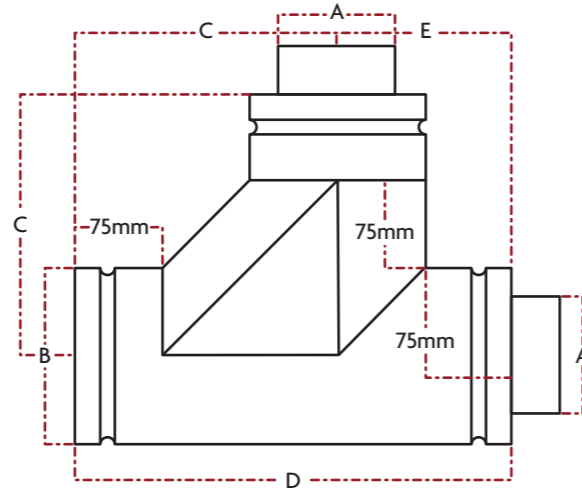
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	300		350		400		450	500	550	600	650	700	750			
C	462		522		583		643	704	764	824	885	945	1005			
D	599		670		741		812	882	953	1023	1094	1165	1236			
E	137		147		158		168	179	189	199	210	220	230			



### 90 degree Booted Tees

The 90 degree Booted Tee has been specifically designed to allow for a change in direction but gives the added advantage of a swept entry or exit, reducing resistance to the flow of flue gases.

This equal Tee can also be manufactured and supplied at values above those given and with a reduced diameter branch and at certain angles on request.



### Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950
C	225	238	250	263	275	288	300	325	350	375	400	425	450	475	500	525	550	575	600	625
D	375	403	425	449	475	504	525	575	625	675	725	775	825	875	925	975	1025	1075	1125	1175
E	150	163	175	188	200	213	225	250	275	300	325	350	375	400	425	450	475	500	525	550

### Twinwall 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	
C	250	263	275	288	300		325	350	375	400	425	450	475	500	525	550	575	600	625	
D	425	449	475	504	525		575	625	675	725	775	825	875	925	975	1025	1075	1125	1175	
E	175	188	200	213	225		250	275	300	325	350	375	400	425	450	475	500	525	550	

### Twinwall 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950		
C	275	288	300		325		350	375	400	425	450	475	500	525	550	575	600	625		
D	475	504	525		575		625	675	725	775	825	875	925	975	1025	1075	1125	1175		
E	200	213	225		250		275	300	325	350	375	400	425	450	475	500	525	550		

### Twinwall 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950			
C	300		325		350		375	400	425	450	475	500	525	550	575	600	625			
D	525		575		625		675	725	775	825	875	925	975	1025	1075	1125	1175			
E	225		250		275		300	325	350	375	400	425	450	475	500	525	550			

### Twinwall Elbows

Twinwall Elbows are used when a change in direction is required within a chimney system. By adjoining and incorporating Elbows with various Straight Lengths and Adjustable Lengths, offsets can be tailor made to suit your requirements.

All information provided below for all Elbows are standard minimum. However, the possibility of manufacturing and supplying Elbows with one or both centre lines extended and at any angle including those given is available on request.

The entire range of Twinwall Elbows consist of fixed internal

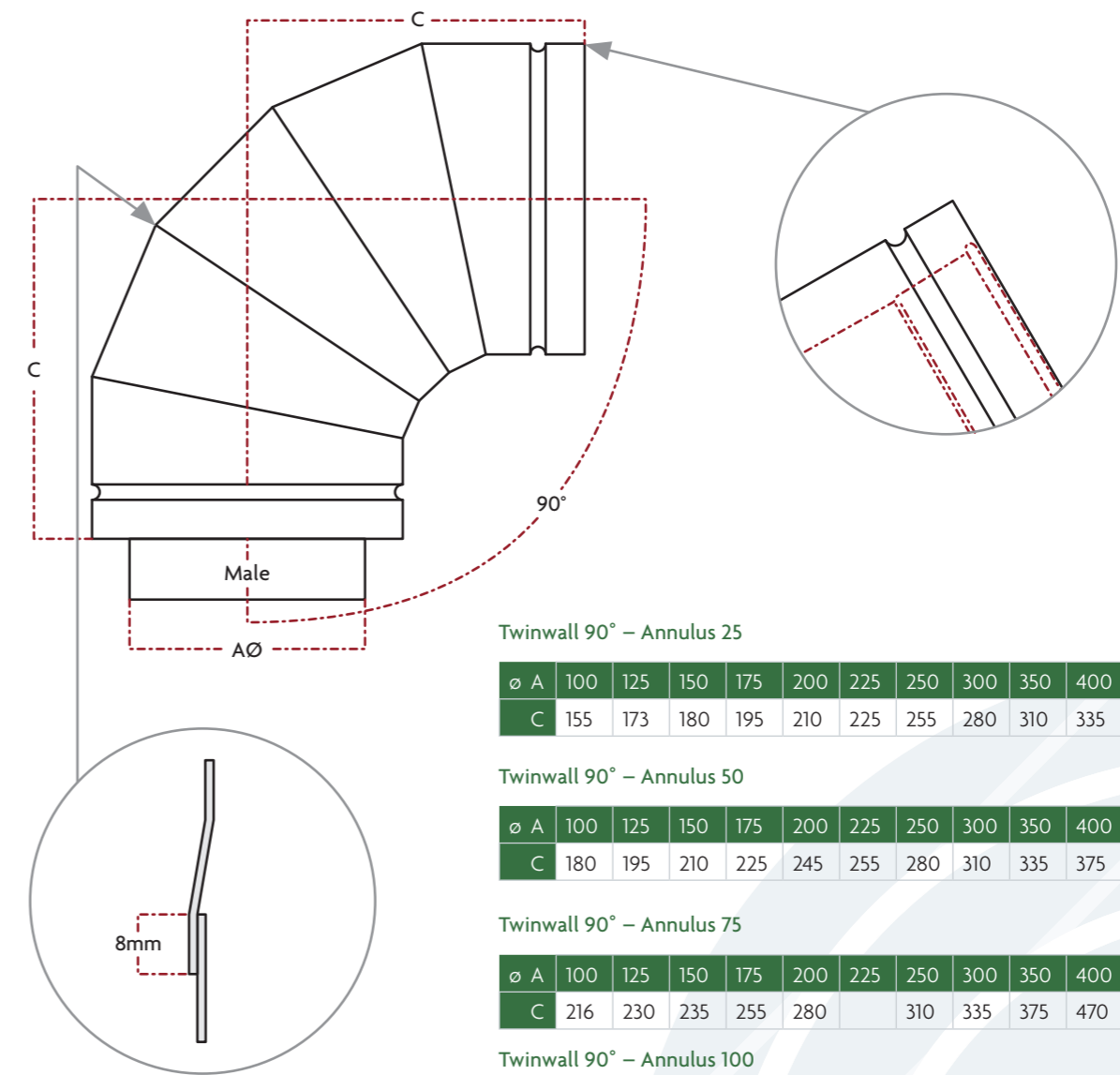
and external liner segments which are joined with an 8mm overlap joint, Spot Welded together.

**CAUTION: Twinwall Elbows DO NOT LOAD BEAR.**

500ø – 750ø All 90degree Elbows consist of two 45degree Elbows.

750ø and above 90degree Elbows consist of three 30degree Elbows and 60degree Elbows consist of two 30degree Elbows.

1000ø and above 45degree Elbows consist of two 22.5degree Elbows.



### Twinwall 90° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450
C	155	173	180	195	210	225	255	280	310	335	375

### Twinwall 90° – Annulus 50

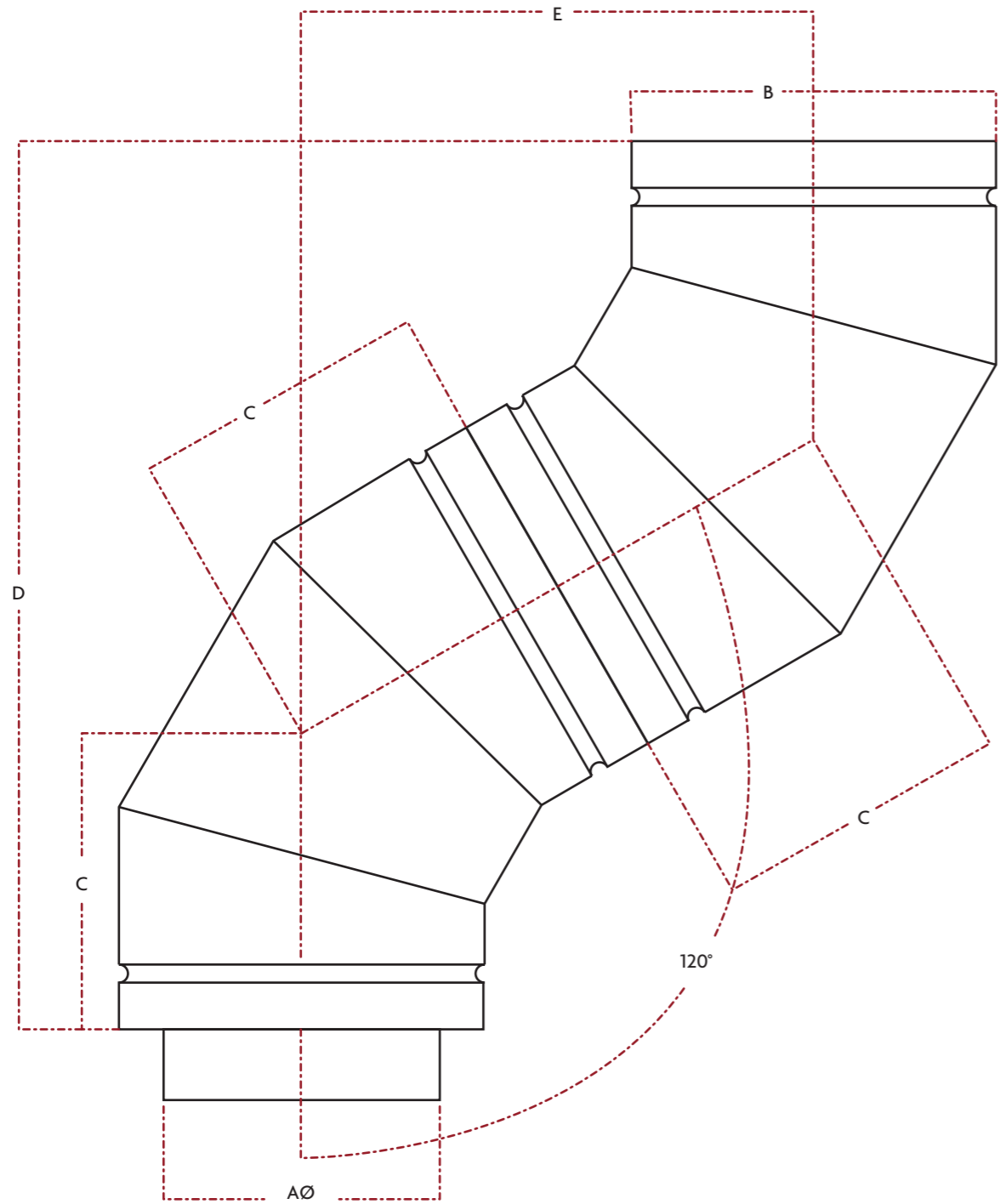
ø A	100	125	150	175	200	225	250	300	350	400	450
C	180	195	210	225	245	255	280	310	335	375	470

### Twinwall 90° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450
C	216	230	235	255	280		310	335	375	470	483

### Twinwall 90° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450
C	235	255	280		310		335	375	470	483	507



Twinwall 60° – Annulus 25

∅ A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750
C	115	120	125	130	140	150	160	170	200	220	230	240	260	300	320	340
D	345	360	375	390	420	450	480	510	600	660	690	720	780	900	960	1020
E	199	208	217	225	242	260	277	294	346	381	398	416	450	520	554	589

Twinwall 60° – Annulus 50

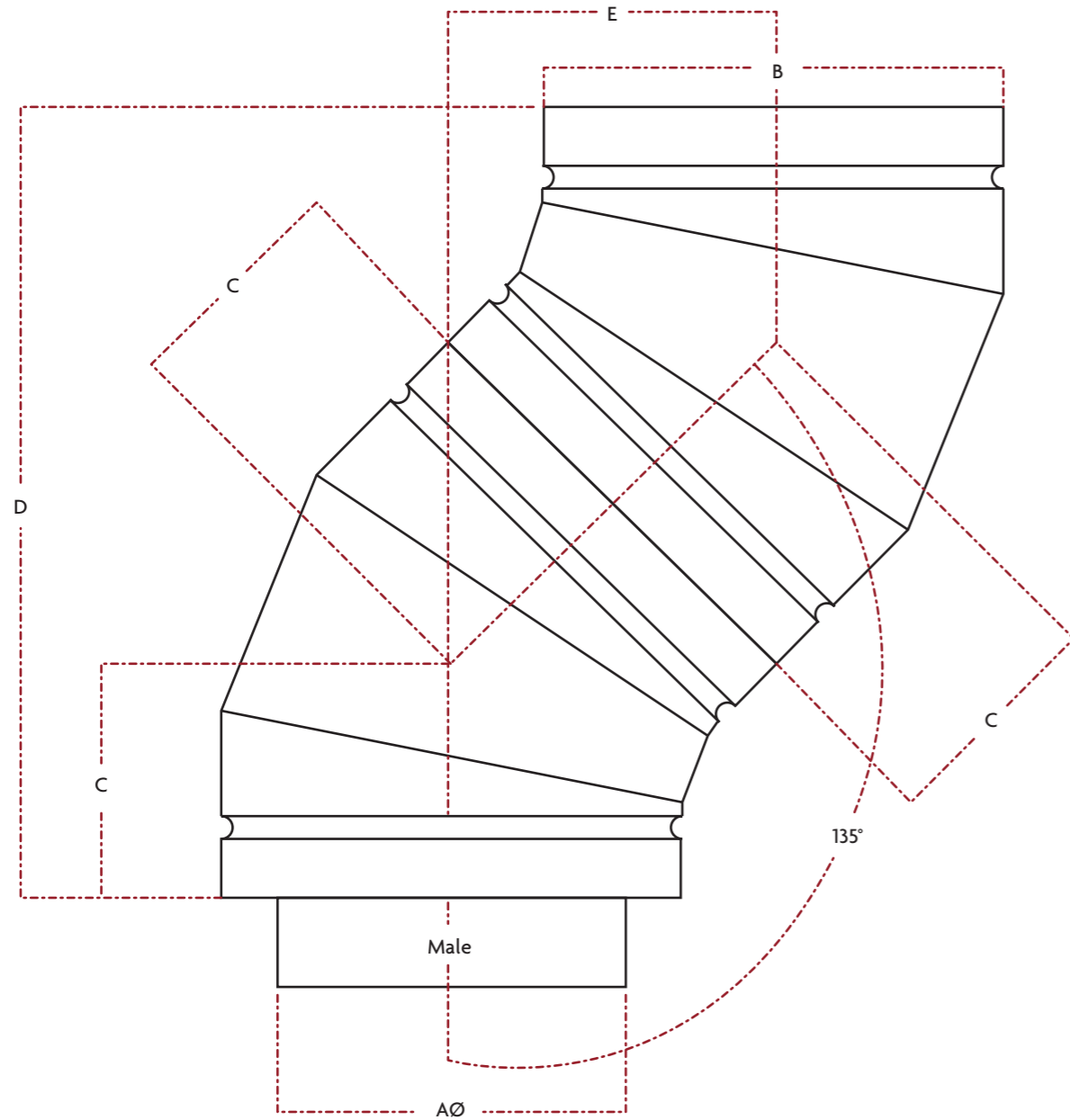
∅ A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800
C	125	130	140	150	160		170	200	220	230	240	260	300	320	340	446
D	375	390	420	450	480		510	600	660	690	720	780	900	960	1020	1338
E	217	225	242	260	277		294	346	381	398	416	450	520	554	589	772

Twinwall 60° – Annulus 75

∅ A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850
C	140	150	160		170		200	220	230	240	260	300	320	340	446	461
D	420	450	480		510		600	660	690	720	780	900	960	1020	1338	1383
E	242	260	277		294		346	381	398	416	450	520	554	589	772	798

Twinwall 60° – Annulus 100

∅ A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	300		350		400		450	500	550	600	650	700	750	800	850	900
C	160		170		200		220	230	240	260	300	320	340	446	461	476
D	480		510		600		660	690	720	780	900	960	1020	1338	1383	1428
E	277		294		346		381	398	416	450	520	554	589	772	798	824



Twinwall 45° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
C	90	95	100	105	110	115	130	135	150	160	175	195	200	210	230	240	320	330	341	351	361	372
D	381	402	423	444	468	489	552	573	636	678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578
E	127	134	141	148	156	163	184	191	212	226	247	276	283	297	325	339	453	467	482	496	511	526

Twinwall 45° – Annulus 50

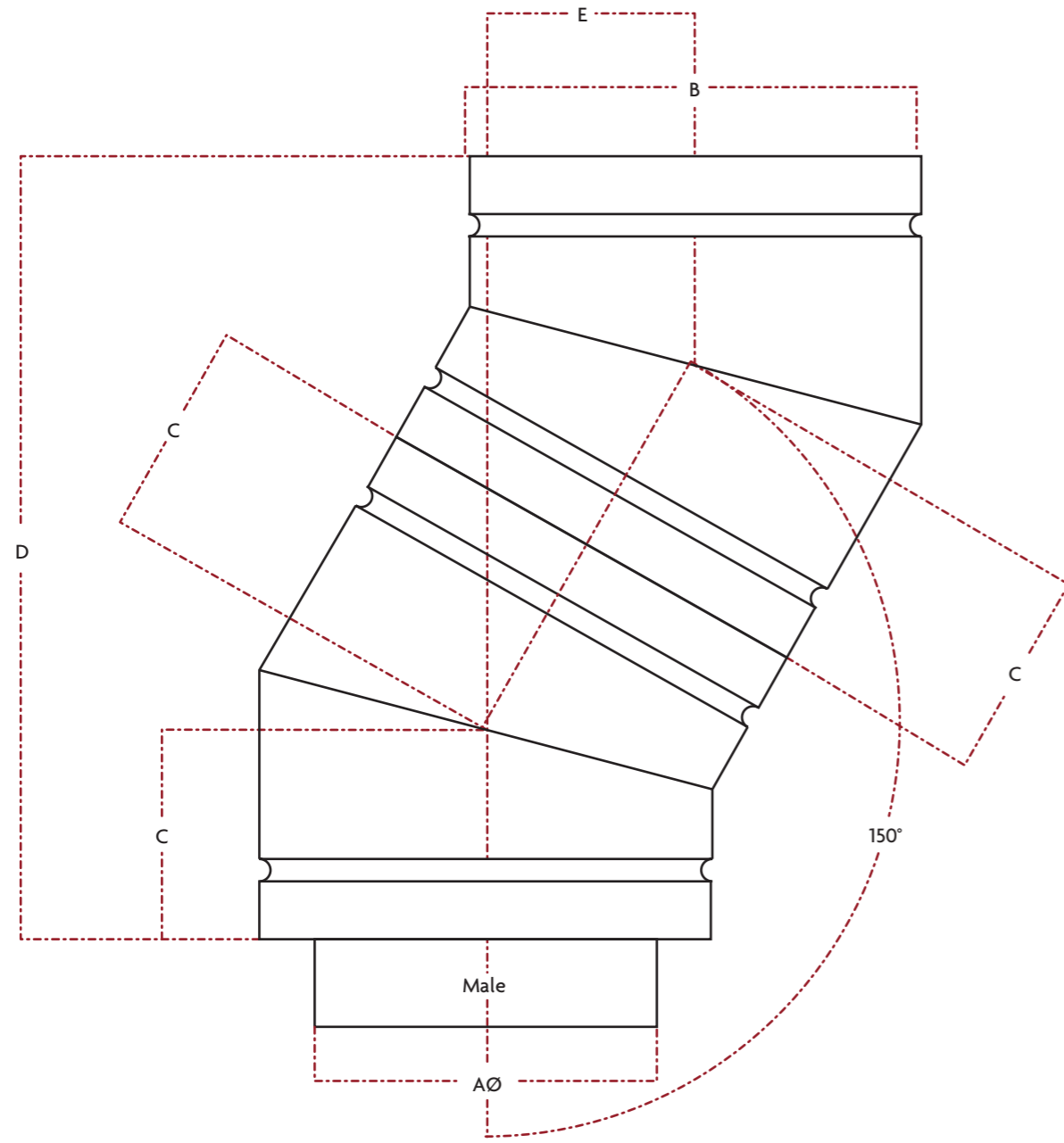
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
C	100	105	110	115	130		135	150	160	175	195	200	210	230	240	320	330	341	351	361	372	382
D	423	444	468	489	552		573	636	678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578	1620
E	141	148	156	163	184		191	212	226	247	276	283	297	325	339	453	467	482	496	511	526	540

Twinwall 45° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150
C	110	115	130		135		150	160	175	195	200	210	230	240	320	330	341	351	261	372	382	392
D	468	489	552		573		636	678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578	1620	1662
E	156	163	184		191		212	226	247	276	283	297	325	339	453	467	482	496	511	526	540	554

Twinwall 45° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
C	130		135		150		160	175	195	200	210	230	240	320	330	341	351	361	372	382	392	402
D	552		573		636		678	741	828	849	891	975	1017	1359	1401	1446	1488	1533	1578	1620	1662	1707
E	184		191		212		226	247	276	283	297	325	339	453	467	482	496	511	526	540	554	569



Twinwall 30° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	75	79	82	85	90	93	102	108	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268
D	280	292	306	317	336	347	381	403	429	455	478	504	522	597	634	672	773	799	725	847	873	899	922	948	974	1000
E	75	79	82	85	90	93	102	108	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268

Twinwall 30° – Annulus 50

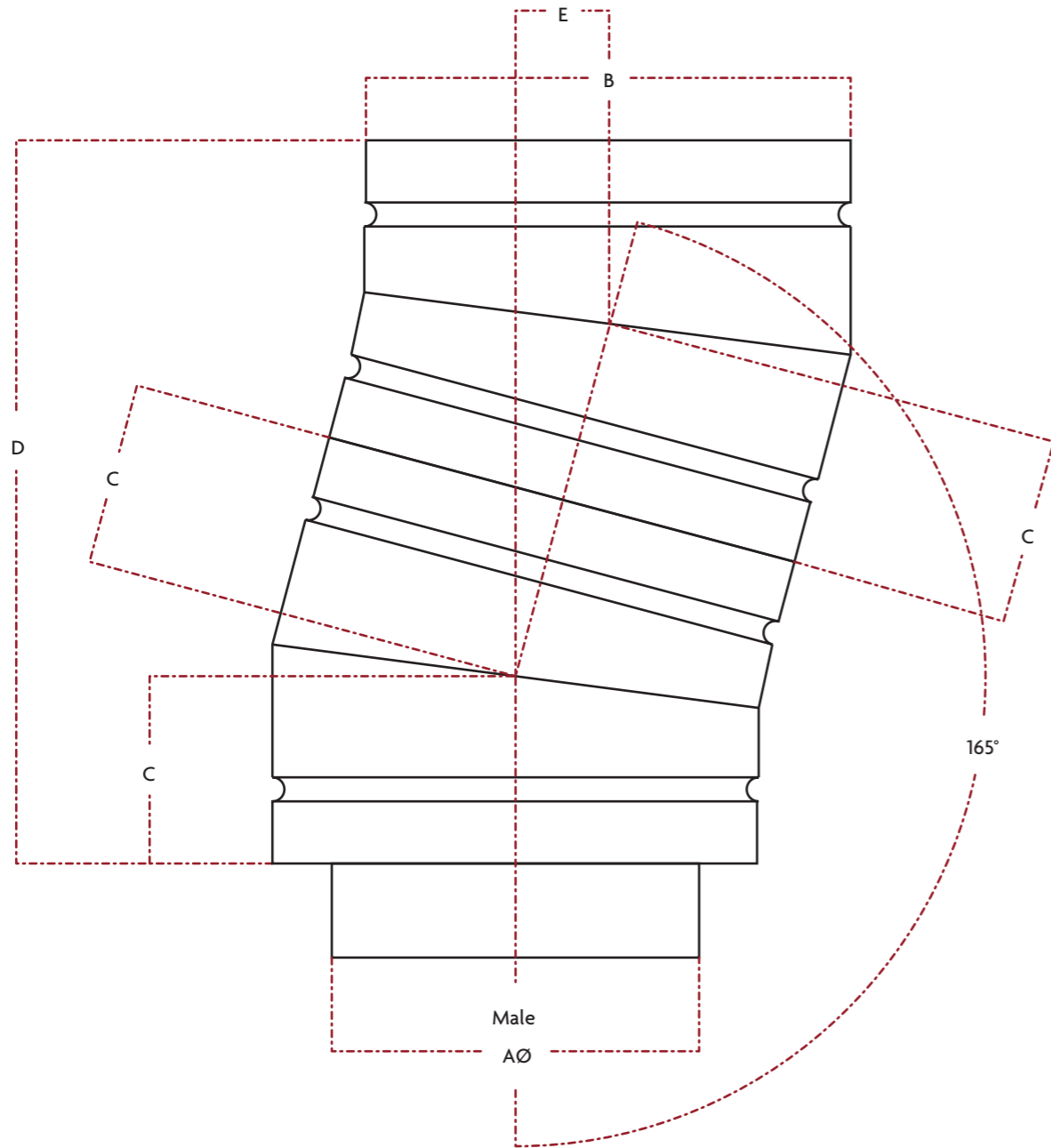
ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	82	85	90	93	102		106	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	266	275
D	306	317	336	347	381		403	429	455	478	504	522	597	634	672	773	799	725	847	873	899	922	948	974	1000	1028
E	82	85	90	93	102		108	115	122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275

Twinwall 30° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	90	93	102		108		115	122	128	128	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282
D	336	347	381		403		429	455	478	478	522	597	634	672	773	799	725	847	873	899	922	948	974	1000	1028	1052
E	90	93	102		108		115	122	128	128	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282

Twinwall 30° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	102		108		115		122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282	289
D	381		403		429		455	478	504	522	597	634	672	773	799	725	847	873	899	922	948	974	1000	1028	1052	1079
E	102		108		115		122	128	135	140	160	170	180	207	214	221	227	234	241	247	254	261	268	275	282	289



Twinwall 15° – Annulus 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	65	69	69	70	72	74	77	84	87	91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184
D	257	272	272	274	282	290	303	328	342	367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723
E	34	36	36	36	37	38	40	43	45	47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95

Twinwall 15° – Annulus 50

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	69	70	72	74	77		84	87	91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184	188
D	272	274	282	290	303		328	342	367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723	738
E	36	36	37	38	40		43	45	47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95	97

Twinwall 15° – Annulus 75

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	72	74	77		84		87	91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184	188	192
D	282	290	303		328		342	367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723	738	753
E	37	38	40		43		45	47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95	97	99

Twinwall 15° – Annulus 100

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	77		84		87		91	94	97	101	114	123	125	153	156	159	163	166	169	172	176	180	184	188	192	196
D	303		328		342		367	371	381	396	448	485	493	601	614	624	639	653	663	676	692	707	723	738	753	769
E	40		43		45		47	49	50	52	59	64	65	79	81	82	84	86	87	89	91	93	95	97	99	101

**Drain Lengths**

The purpose of a Drain Length is to relieve the flue system from any unwanted moisture (condensate). Introducing such items in the design is paramount for prolonging reliability of an appliance.

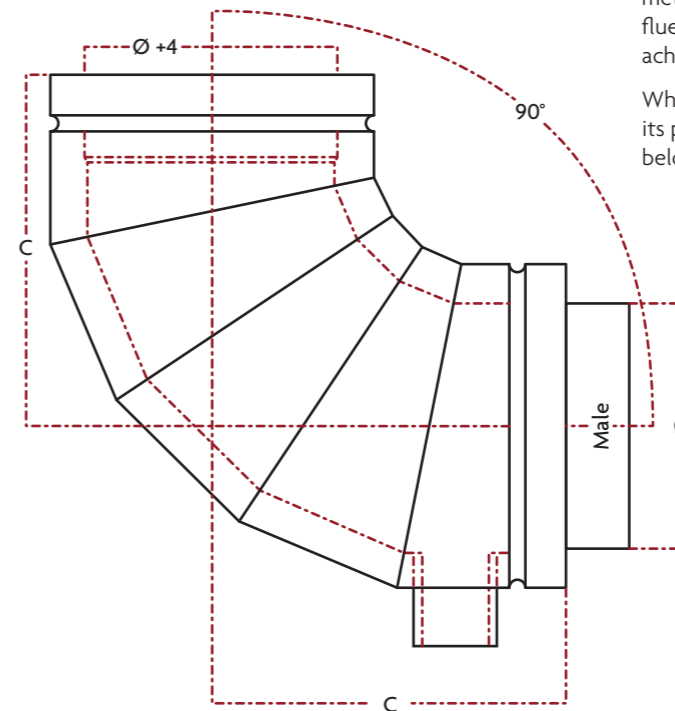
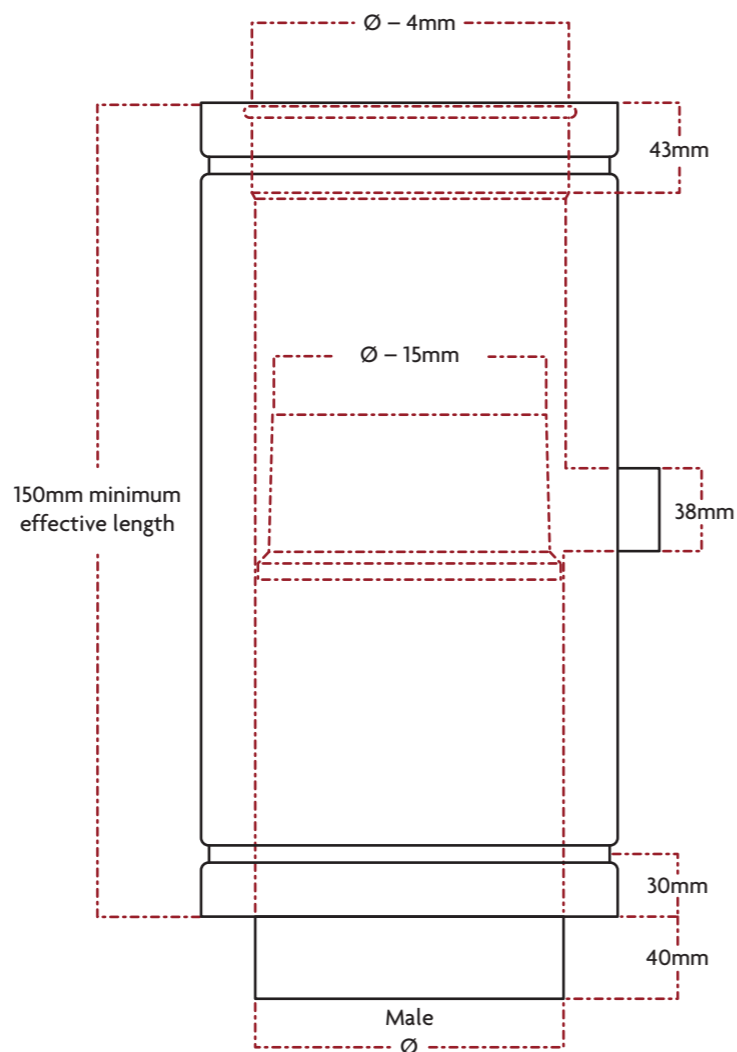
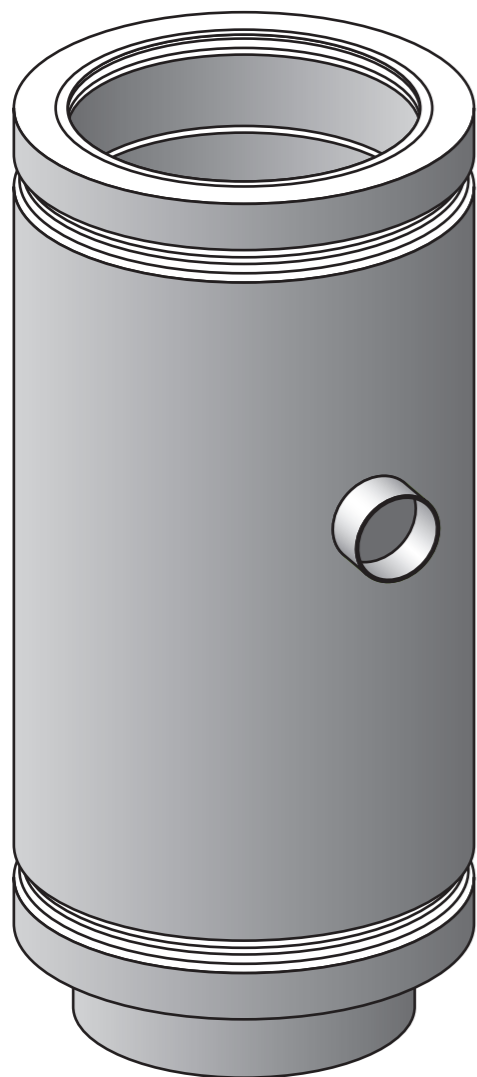
Drain Lengths consist of a 1inch Stainless Steel B.S.P threaded socket which is fully welded onto the inner liner. Drains are obtainable in Twinwall Standard Lengths and can also be fitted to non-standard lengths above our minimum. (Refer to illustration)

**Vertical**

Vertical Drain Lengths are manufactured and supplied complete with Drain Traps integrated within the internal liner. This 'Trap' collects and diverts all moisture directly too and out of the drain, however this item reduces the internal diameter which may effect exhaust velocity.

**Horizontal**

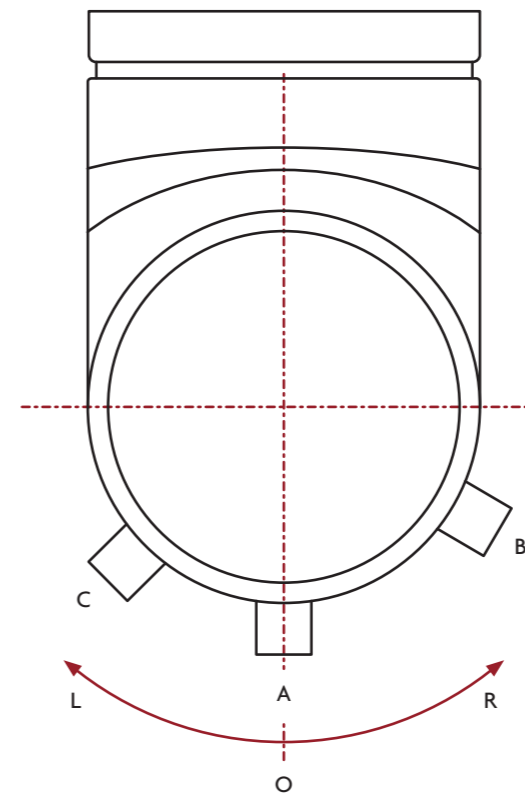
Horizontal Drain Lengths do not have the Internal Drain Tap fitted and should be incorporated, either at the end or in several positions within a run with a 5° incline.



**Drains in Elbows**

Incorporating drains with Elbows can also be an effective method of moisture (condensate) removal from within a flue system. This component allows for drain positions to be achieved where space is at a minimum.

When drains are to be fitted within a male end of an Elbow, its position should be established using the method shown below..

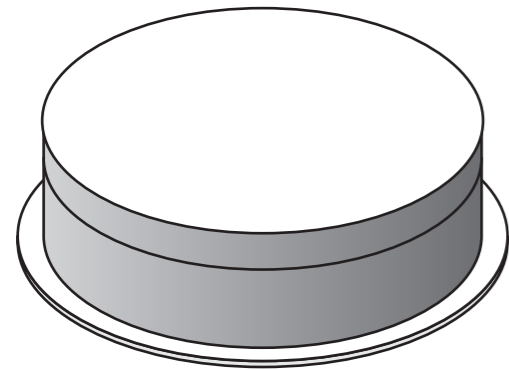


**Elbows viewed on male end**

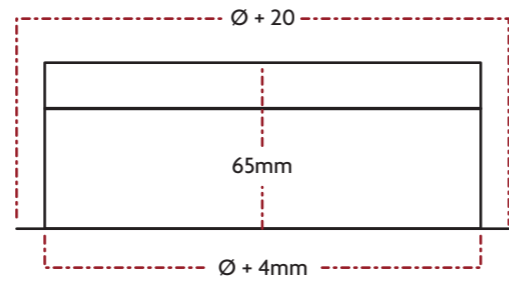
Drain for an upright Elbow (drain "A") will be designated O. Other drains will be designated either L (left) or R (right) and the angle from position O. i.e Drain "B" will be R60 and "C" will be L45.

**Clean Out Door (C.O.D)**

This component is used to close off the unused openings within a Twinwall flue system, and is secured in position either horizontally or vertically using the Stainless Steel Hex Hs self drill screws provided.

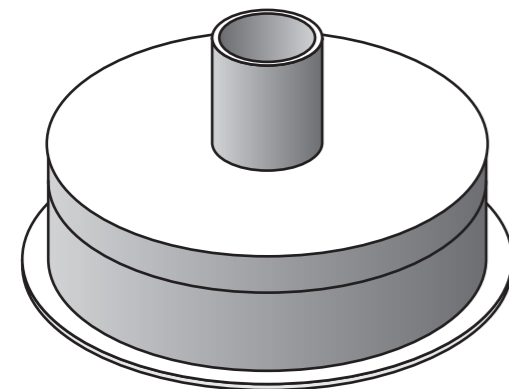


Female

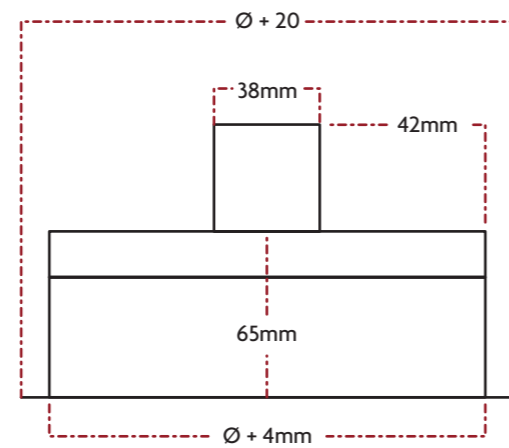


Although the Twinwall product is not for use on condensing appliances, certain factors i.e. open outlets (Top Stubs) allow access to the driving rain resulting in moisture buildup. Therefore, the ability to manufacture and supply a C.O.D complete with a 1 inch Stainless Steel threaded B.S.P

connection is available on request. These caps are positioned to close off the unused opening on the underside of the Base Tee, permitting pipe work to be attached for the removal of any moisture (rain).



Female



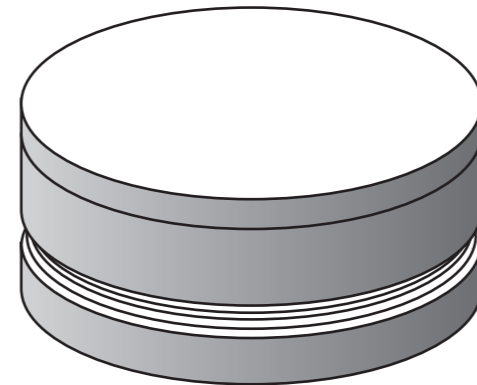
NOTE: All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater then those given can also be accommodated to your requirements.

**Insulated C.O.D**

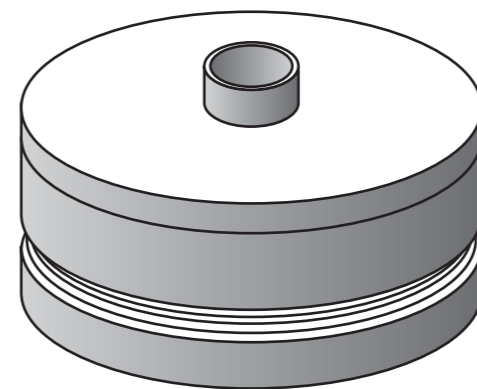
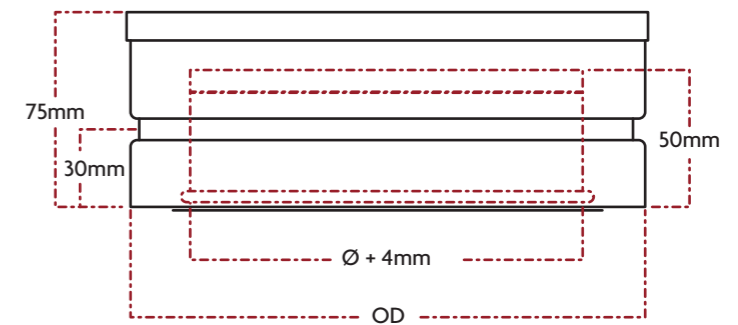
In some cases a relatively high internal and low external temperature is required. Therefore, A1 Flue systems have successfully developed and manufactured an insulated Clean Out Door which can be supplied with or without a drain connection and is available with either a 25mm, 50mm, 75mm or 100mm annulus.

This C.O.D can also be installed either horizontally or vertically and will be fixed in position using the external locking Clampband method.

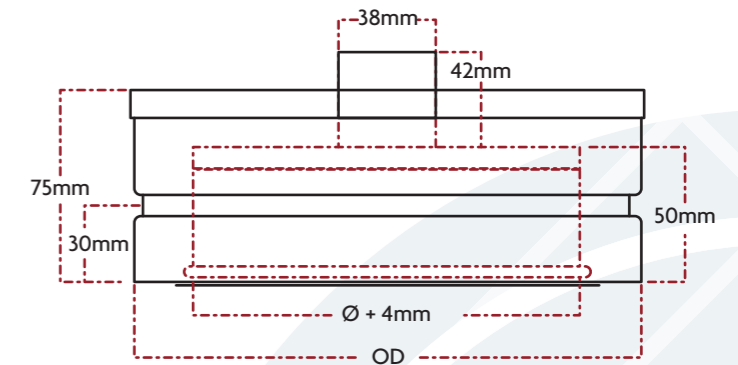
NOTE: All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater than those given can also be accommodated to your requirements.



Female



Female



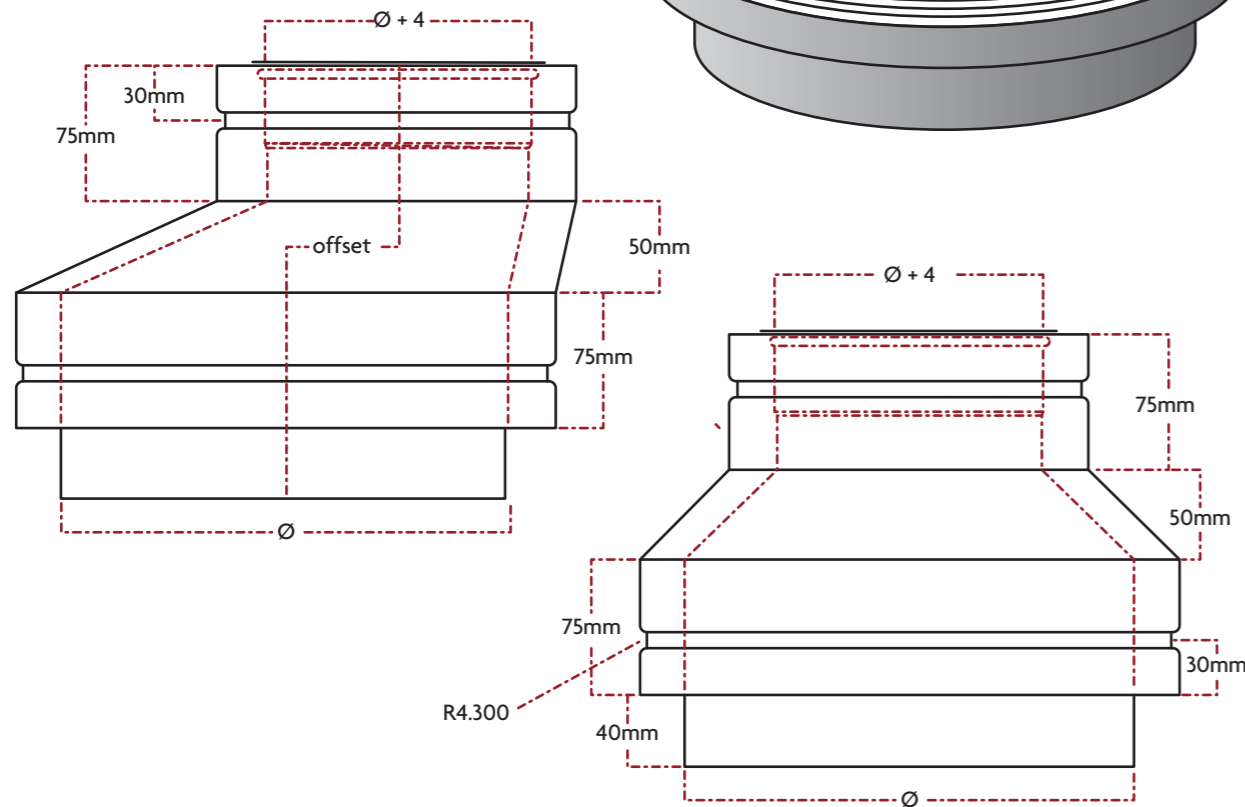
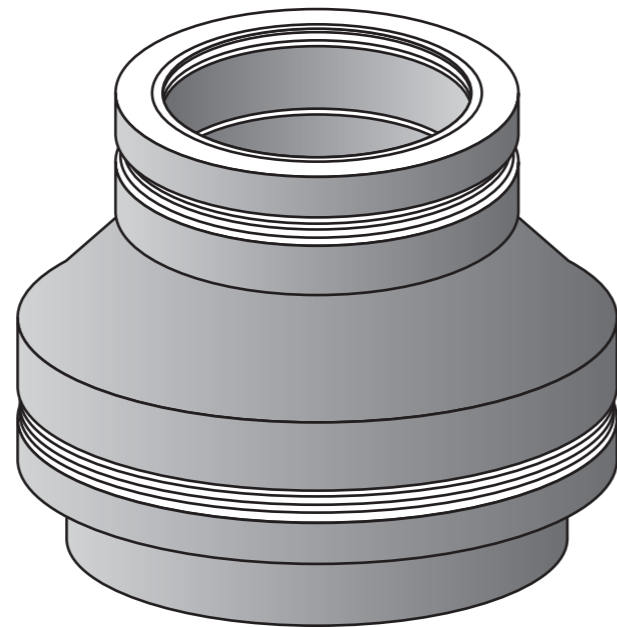
**Reducers and Increases**

A Reducer/Incraser is the most effective and efficient method of diameter change within a flue system.

This special item from the Twinwall range allows for a steady transition of flue gases to limit resistance, and is available to order in all diameters and at custom lengths above or including those given.

Reducers and Increases are processed and manufactured using the same method, so the location of itDs male or female profile determines the application of use.

A1 Flue Systems acknowledge that there may be certain times where space is restricted, therefore the possibilities of developing unique items such as; offsets, reduced offsets or increased offsets is often achievable, however the degree of offset may result in the lengthening of Reducer or Incraser. (refer to illustration)



NOTE: All dimensions given are (standard minimum).

**Appliance Adaptors**

Two types of Appliance Adaptors are available for this product, both of which are designed to facilitate (assist) the connection of the either vertically or horizontally positioned Twinwall to an appliance outlet.

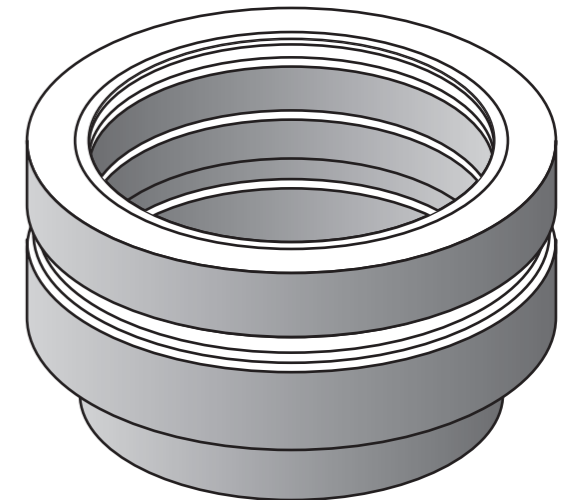
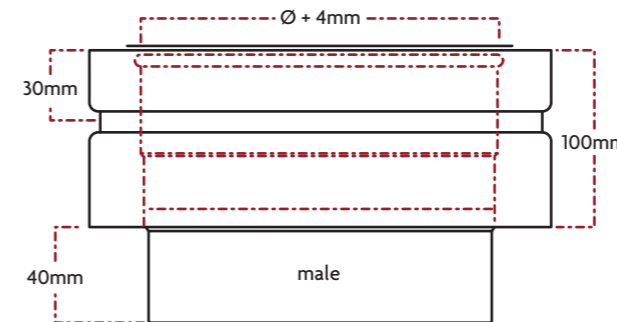
Manufacturing capabilities allow for the male connection spigot on either design to be supplied in all regular and irregular diameters and at increased lengths above those given.

**NOTE:**

- All dimensions provided are standard minimum
- All Appliance Adaptors consisting of diameters under 150mm are to be manufactured using, 0.7/0.6mm Grade 304 or 316 Stainless Steel.

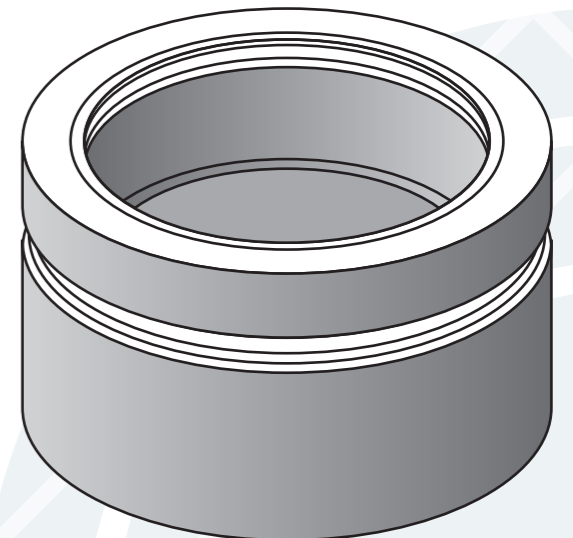
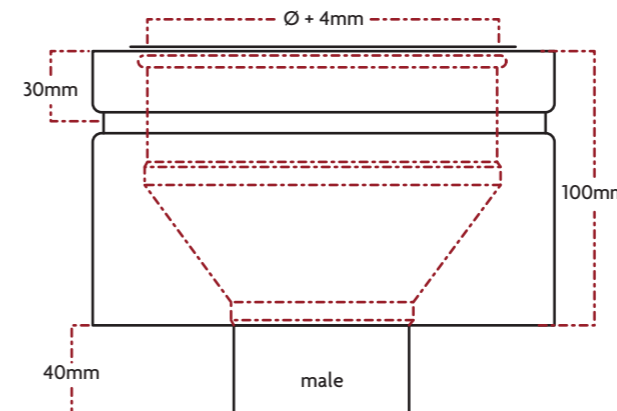
**2 - Piece Inner**

Use where boiler female connections within +/- 10mm of flue liner Ø



**3-Piece Inner**

Use where boiler female connection exceeds +/- 10mm of flue liner Ø





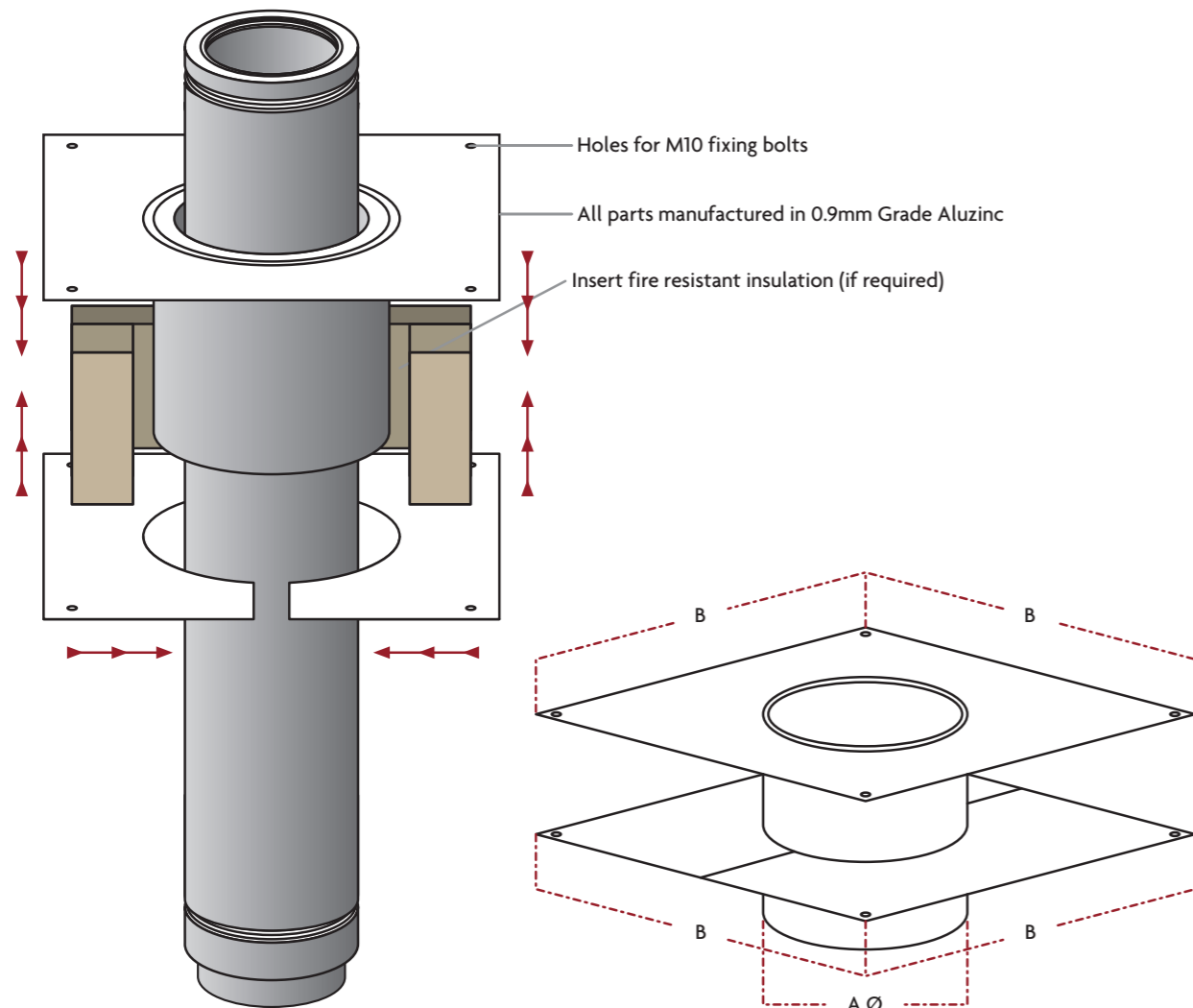
### Fire Stop Kits

Designed to be applied where the Twinwall chimney system requires a compartmental fire rating for both horizontal and vertical structure penetrations of up to four hours.

This component is manufactured in accordance with BS-EN 1856-1 (2009) and has been successfully assessed by the Loss prevention Council.

All dimensions provided below relate to the 25mm annulus Twinwall. However, dimensions for the 50, 75 and 100 can also be established using this table.z

ø	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	156	181	206	231	256	281	306	356	406	456	506	556	606	656	706	756	806	856	906	956	1006	1056	1106	1156	1206	1256
B	350	375	400	425	450	475	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450

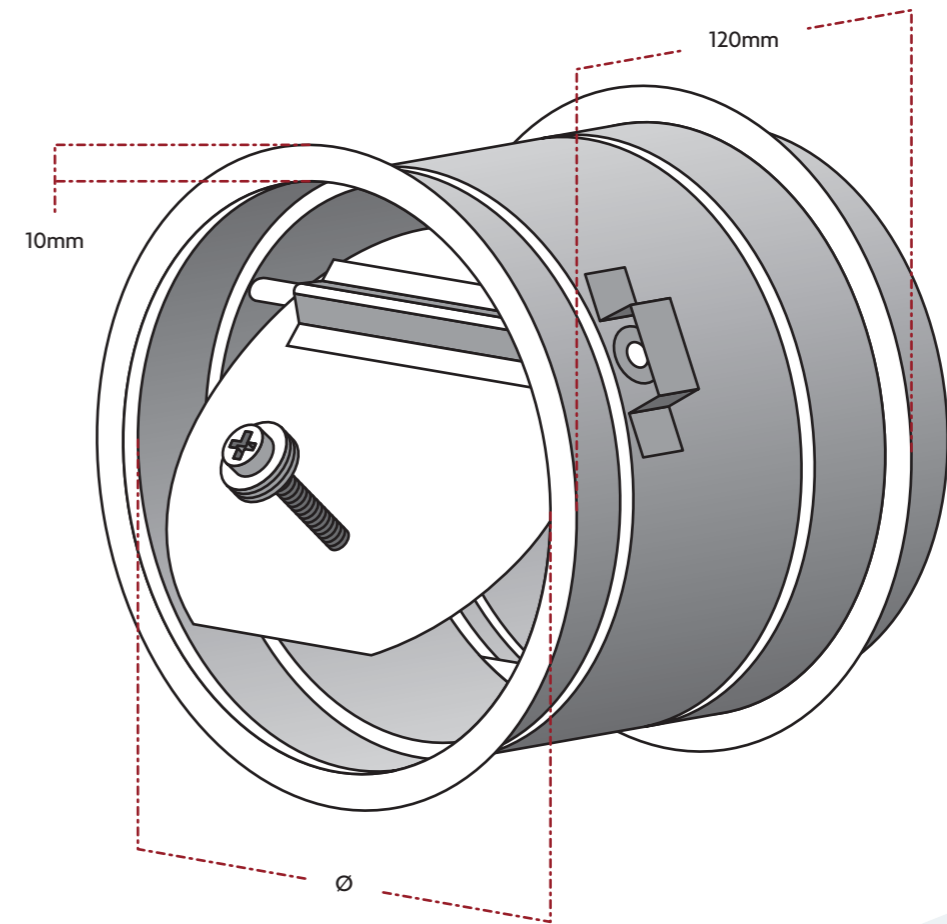


### Draught Stabiliser

Draught Stabilizers are used for the control of draught within a Twinwall chimney system, caused by the effect of lighter flue gases rising within the chimney stack.

The effectiveness of the Draught Stabilizer is established using a swinging vertical gate pivoted slightly above centre,

such that under static conditions the gate will hang vertically down. This gate can be weighted accordingly so that it is lighter or heavier to move, and in doing so varies the draught (suction) level.



This component is manufactured (as standard) to the values provided using either 1mm Grade 304 or 1mm Grade 316 and is secured into position with a V-Band. This enables frequent easy access for both cleaning and inspections.

**NOTE:** There are certain locations where these devices are best situated, for example; within a vertical part of the boiler connection for effect on the individual appliance, at the end of a combined header or below the Base Tee of the riser for overall effect.

### Twinwall Terminations

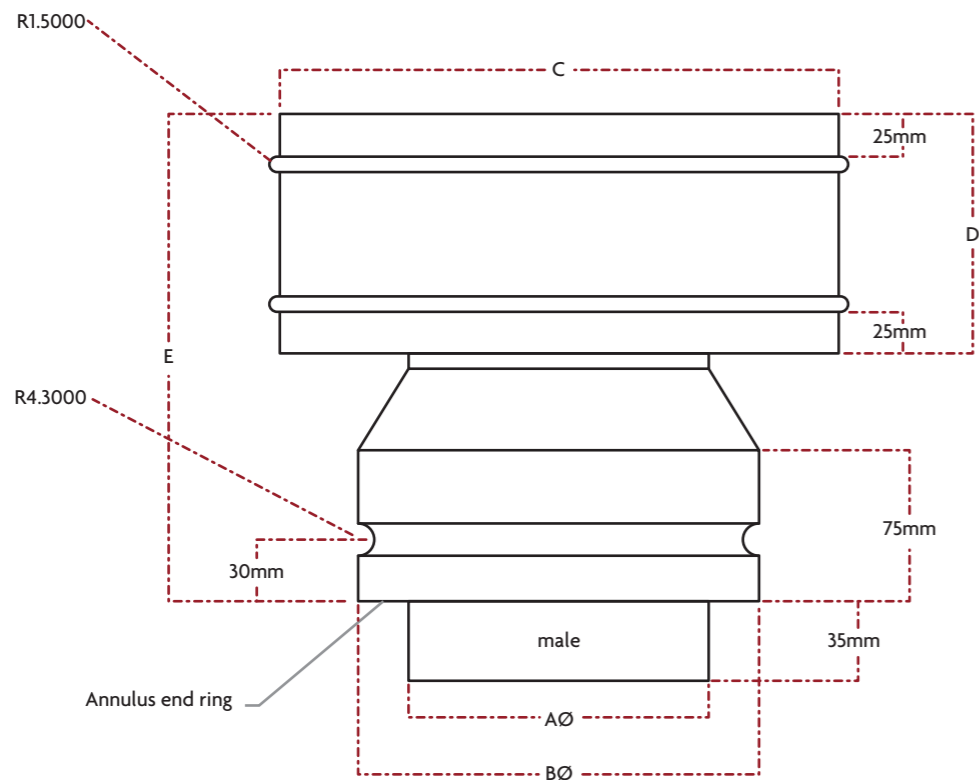
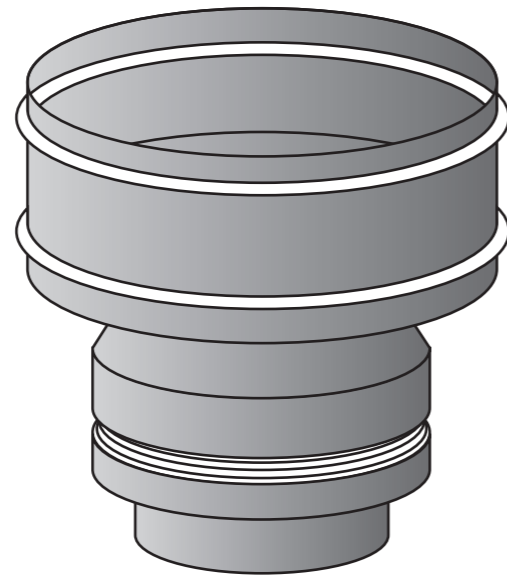
Five types of terminations are available for the Twinwall product, all of which have been designed to allow/aid the safe release of flue gases whilst giving a decorative end finish.

Twinwall Terminations all comprise of male locating spigots and are fixed/secured to the top section of a vertical rise using the locking Clampband provided.

### Universal Terminals

Designed for the use with atmospheric gas burning appliances with a restrictive outlet to prevent bird access.

All dimensions given below are for (standard minimum) Universal Terminals, however larger diameters or dimensions can be accommodated to suit your requirements.



Twinwall 25

ø A	100	125	150	175	200	225	250	300	350	400	450	500	550	600
B	150	175	200	225	250	275	300	350	400	450	500	550	600	650
C	234	259	284	309	334	359	404	454	554	638	722	802	891	1030
D				121				172	202	222	241	260	280	305
E			230					260	331	350	369	415	434	459

### Raincap Terminations

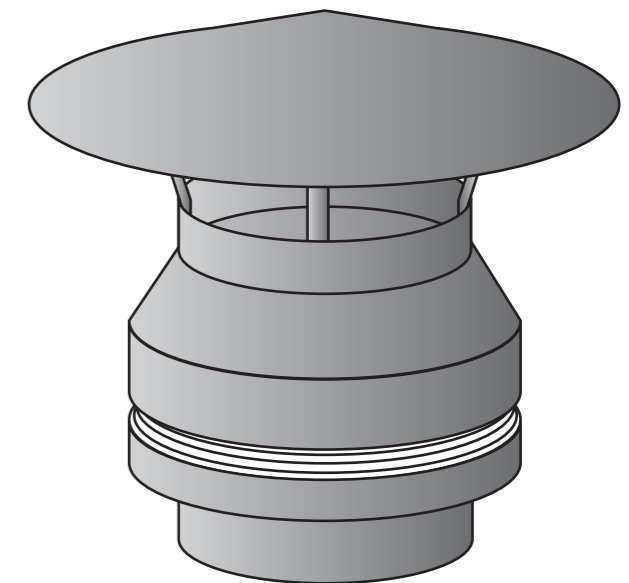
#### Raincaps

Designed for a multiple of appliances as well as providing a less restrictive all weather protected vent into the atmosphere.

#### Double-Inverted Raincaps

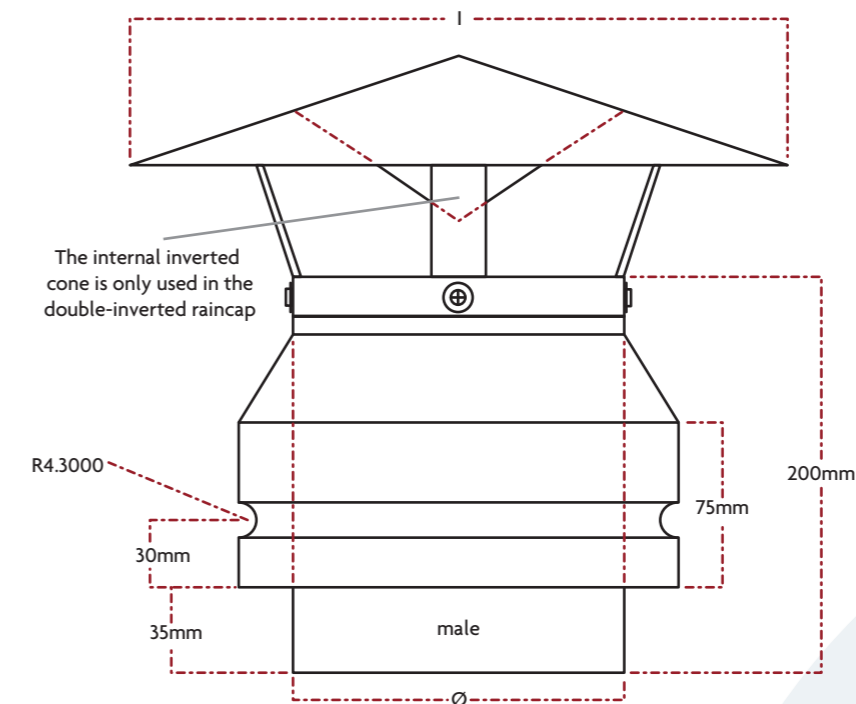
For the use on induced draught systems to prevent back pressure within the flue.

**NOTE:** Picture illustrations and values provided refer to (standard minimum). However, unique non-standard Raincaps consisting of values greater than those given can also be accommodated if required.



100Ø - 300Ø I = Ø x 2

350 Ø - Above I = Ø x 1.75



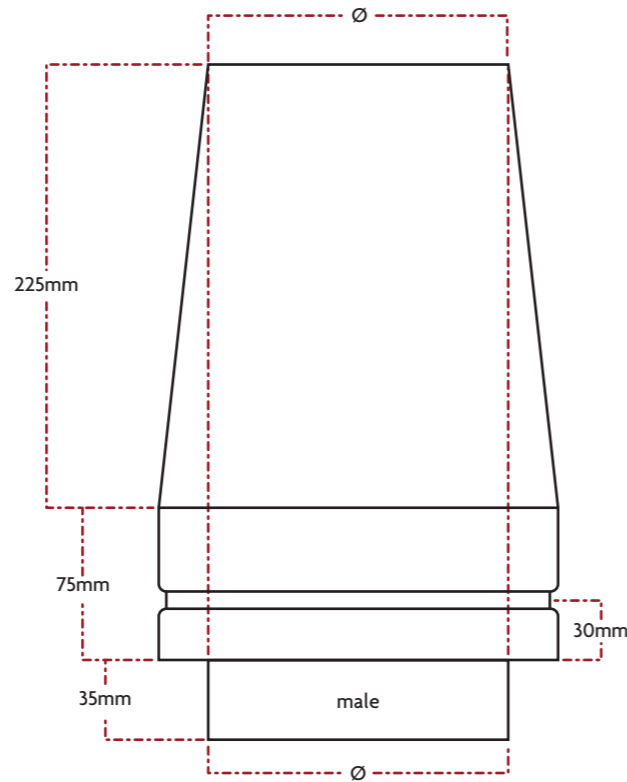
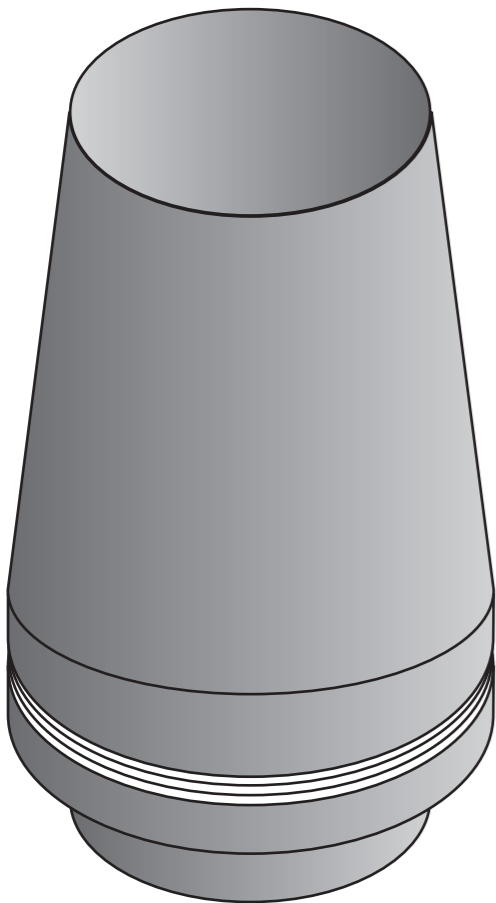
### Top Stub Terminations

Top Stubs allow for the unrestricted rapid release of flue gases into the atmosphere.

The effectiveness of the Twinwall terminal is established by its outlet diameter (free surface area). This outlet can be manufactured and supplied with or without Stainless Steel mesh and at a reduced diameter if required, which will increase velocity of its existing gases.

Due to the nature of this open outlet design, it is recommended that the Twinwall Top Stub should always work in conjunction with either a moisture (condensate) release point at the base of a vertical rise, or with a vertical Drainage Length fitted with an Internal Drain Drip.

**NOTE:** All dimensions given are (standard minimum).



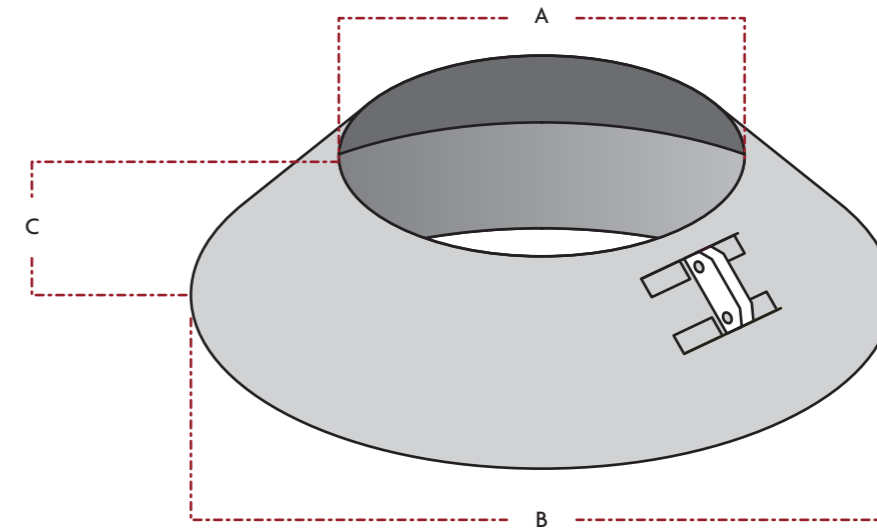
### Storm Collars

Storm Collars are obtainable in two well established designs, which are to be used to apply an all weather impermeable seal around a Twinwall vertical rise immediately after the exit through a Flashing.

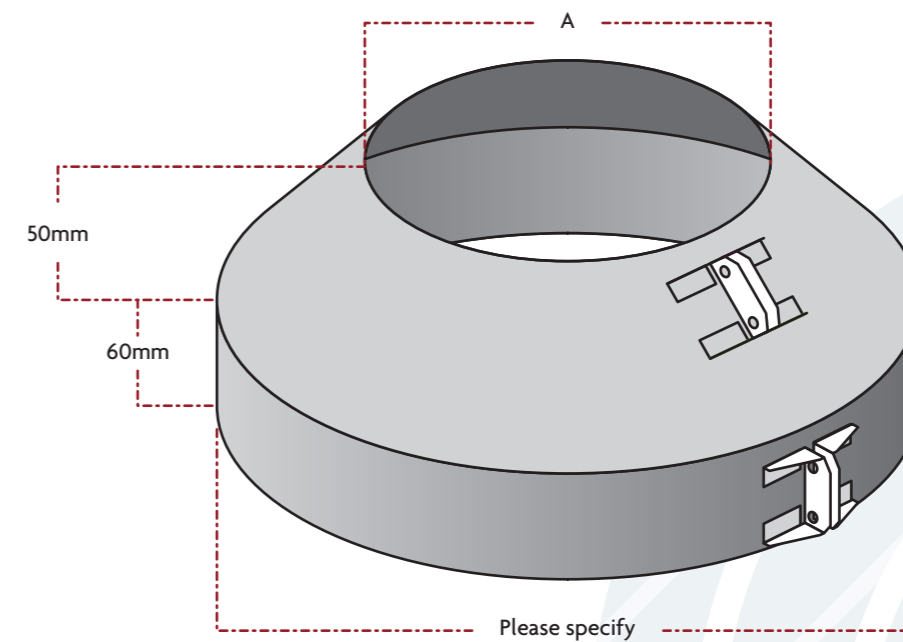
Once the positioning has been achieved (directly above a Flashing), the angled profile of the Storm Collar will divert

and deny any access between chimney flue case and Flashing upstand to all adverse weather.

All dimensions provided below are a (standard minimum). However, non-standard dimensions and diameters can also be accommodated if required.



ø	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
B	300	325	350	375	400	425	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	80						100						150													

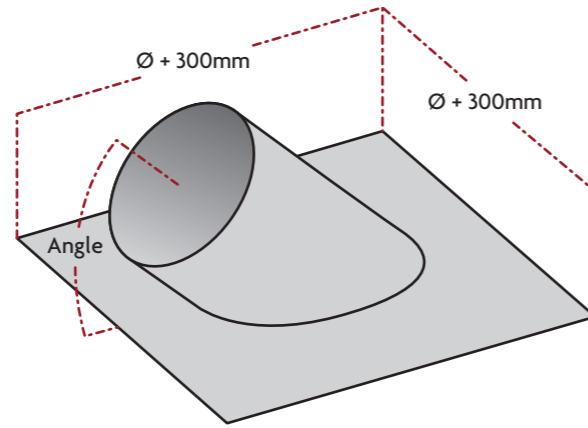
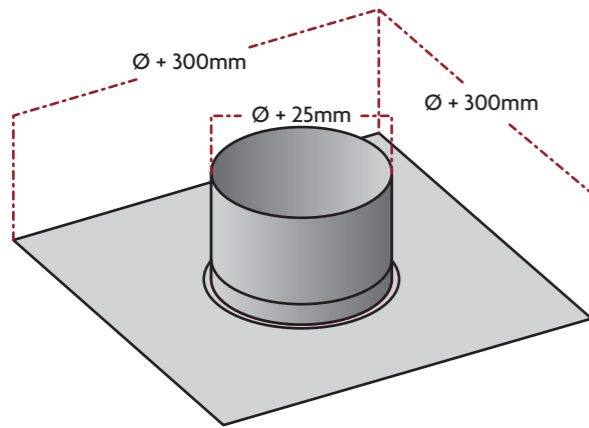


**Flashings**

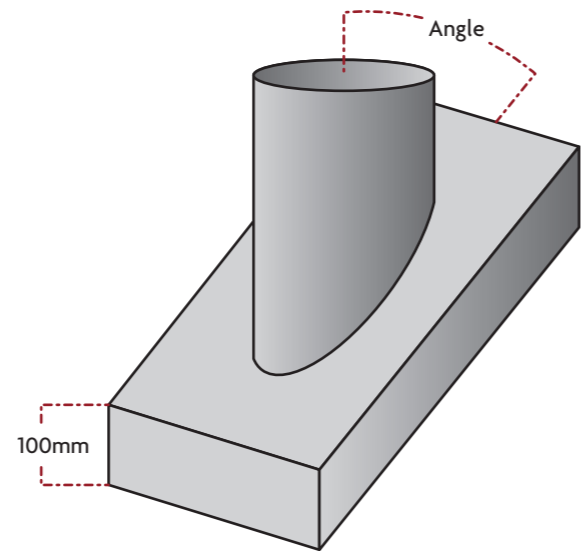
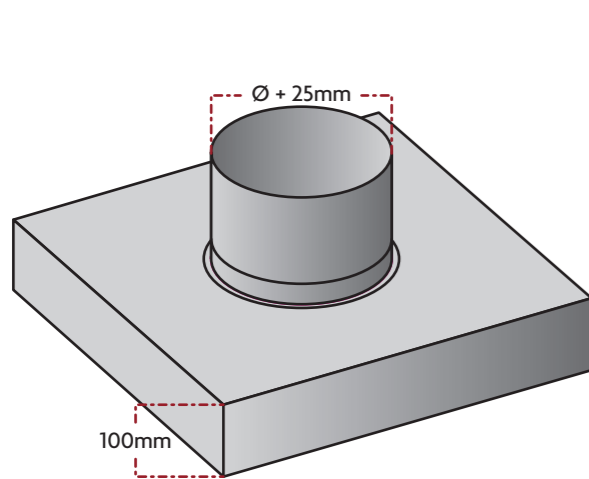
Flashings are to be used as an effective method of providing weather protection to all building structures immediately after roof or chimney penetration of a vertically rising Twinwall chimney.

Two types of Flashings are obtainable for this system, both of which can be fabricated and supplied to suit all roof angles and chimney flue diameters including the irregular.

**Flat Flashings**



**Box Flashings**



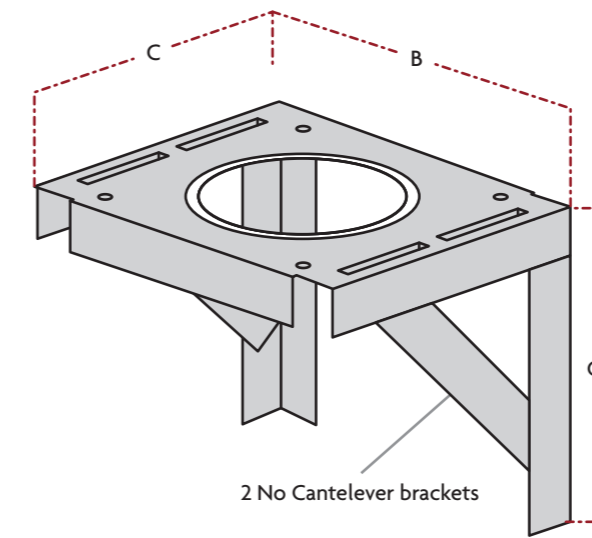
NOTE: Picture illustrations and values provided are for standard items. However, unique Flashings combined with multiple upstands and increased values can also be accommodated if required.

**Support Components**

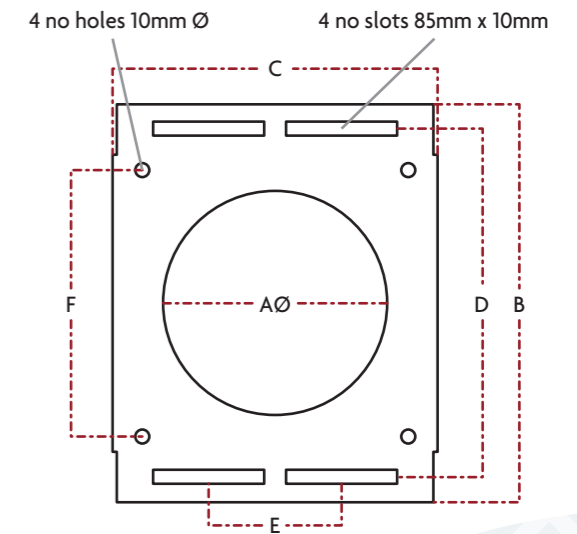
The complete range of support components listed below have been successfully designed and tested to accommodate the chimney's weight whilst providing flexibility and ease on installation as well as stability after installation.

**Base Wall Support**

Base Wall Supports provide load bearing lateral support for the vertically adjoined Twinwall. This component is suitable for supporting on both Uni-Strut or Cantelever Brackets and can be manufactured in either 3mm Stainless Steel (for external applications) or 3mm Galvanized Steel (for internal applications).



NOTE: Picture illustrations and values provided are for standard items. However, unique Base Wall Supports combined with multiple through holes and increased values can also be accommodated if required.



	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
ø A	106	131	156	181	206	231	256	306	356	406	456	506	556	606	656	706	756	806	856	906	956	1006
B	290	290	312	331	357	382	434	478	529	580	631	682	752	803	854	905	944	994	1044	1094	1144	1194
C	234	234	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	252	252	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	83	83	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	188	188	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	225	225	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096

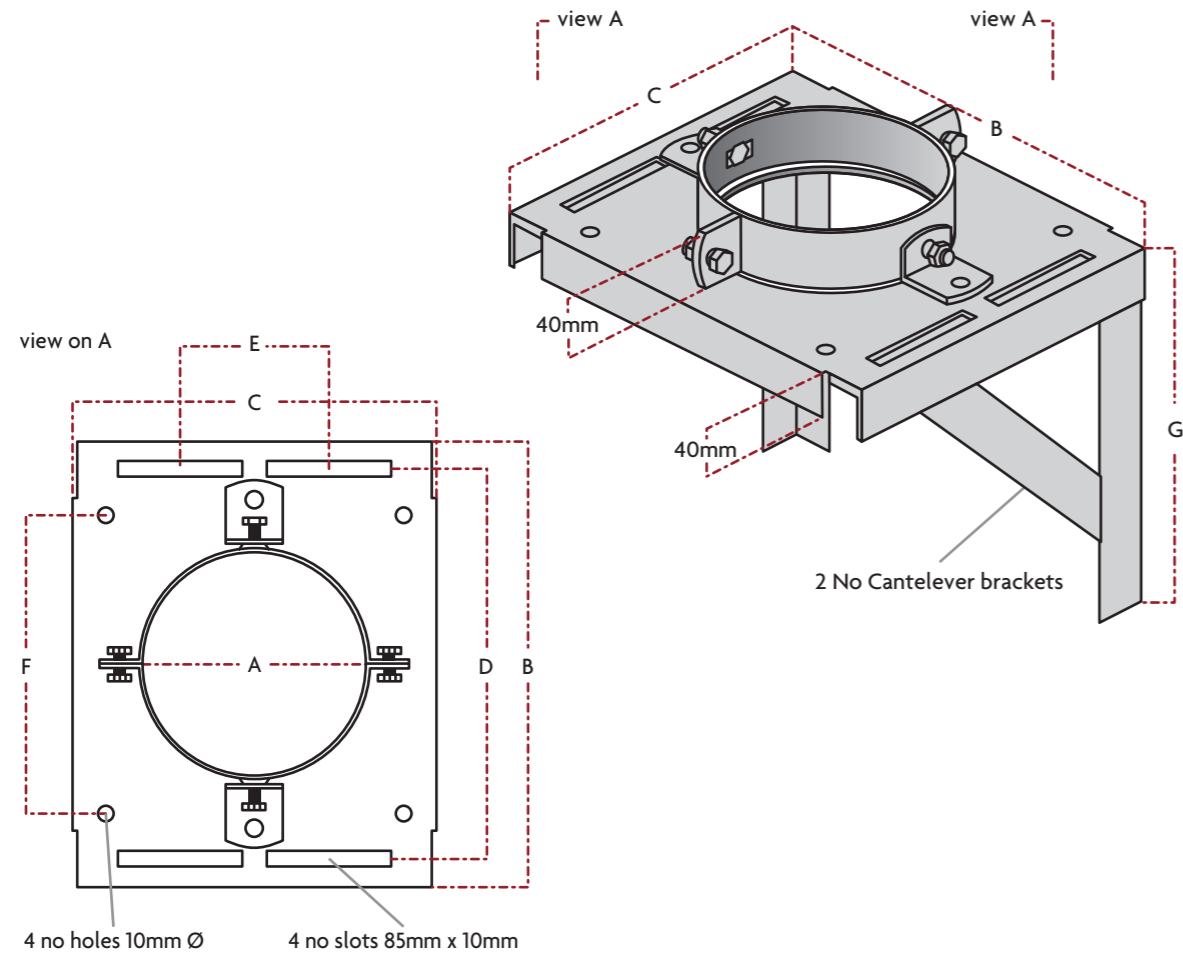
**Intermediate Wall Support**

Intermediate Wall Supports are to be incorporated where additional lateral and vertical support is required within a Twinwall vertical rise when weight loads exceed 450kg.

This component is manufactured to the values provided below (as standard) in both Stainless Steel and Galvanized Steel. However, non-standard unique Intermediate Wall

Support designs combining multiple chimney rises and increased values can also be accommodated to your requirements.

**NOTE: The Intermediate Wall Support is also suitable for supporting of either Uni-strut or Cantelever brackets.**

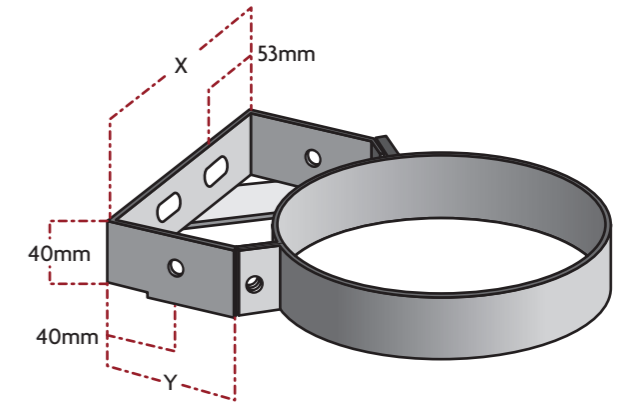


ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	312	331	357	382	434	478	529	580	631	628	752	803	854	905	944	994	1044	1094	1144	1194
C	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	254	273	299	324	356	400	451	502	553	604	654	705	756	807	848	896	946	996	1046	1096

**B-Type**

B-Types have been designed to achieve lateral stability and the accurate alignment of a flue system. These brackets apply a 50mm clearance (as standard) between the adjacent structure and external case of the adjoining flue, and must be used at intervals not exceeding 3 metres.

B-Types up to and including 700 diameter can be manufactured in both 2mm Stainless Steel (for external applications) or Galvanized Steel (for internal applications). 750 diameter and above are to be manufactured using 3mm Stainless or Galvanized Steel.

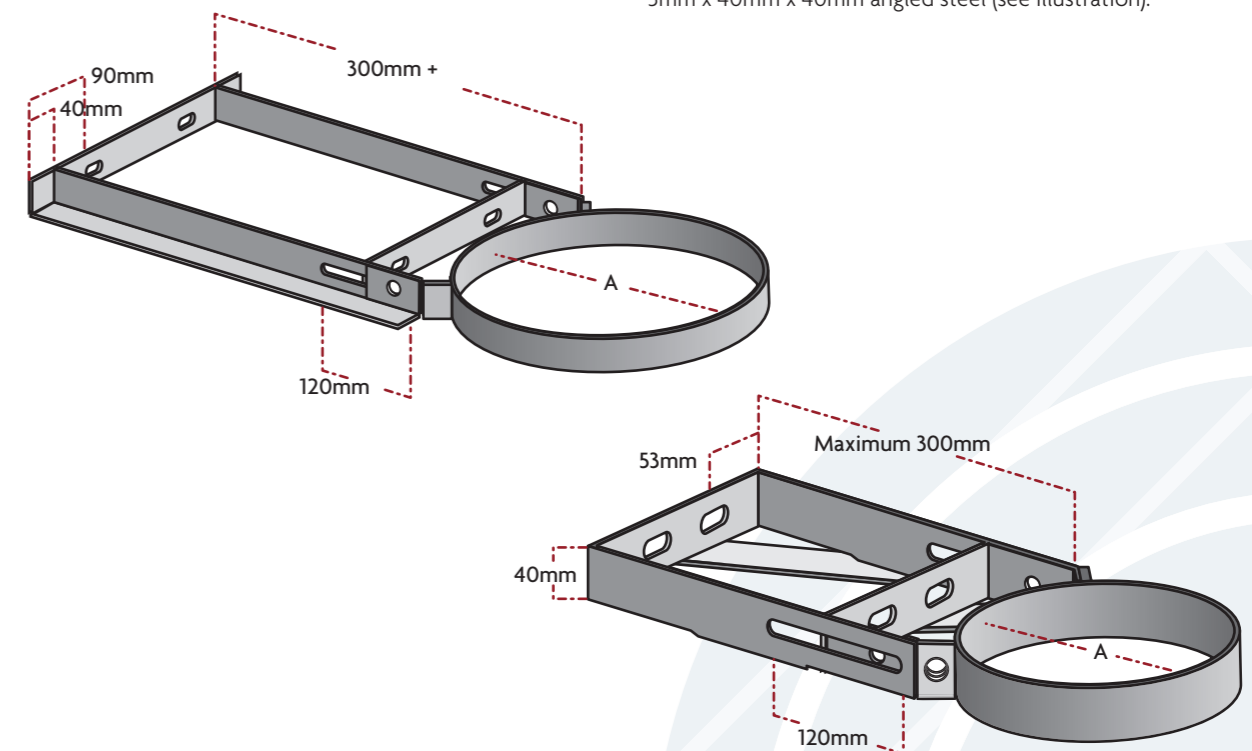


ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
X	173	195	217	238	260	303	346	390	433	476	520	563	606	650	693	736	779	823	866	909	953	996	1039	1083
Y	90	96	102	108	115	127	140	152	165	177	190	202	215	227	240	252	265	277	290	302	313	326	338	351

**Adjustable B-Type**

Adjustable B-Types have also been designed to provide lateral stability as well as allowing for a greater clearance (stand off) between the adjacent structure and the external case of adjoining flue.

This item consists of a standard B-Type bracket incorporated within an adjustable carriage which can be manufactured in both Stainless and Galvanized steels and can be custom built to your requirements. However, if the clearance needed exceeds 300mm, in order to achieve structural/lateral stability the Adjustable B-Type must be constructed using 3mm x 40mm x 40mm angled steel (see illustration).



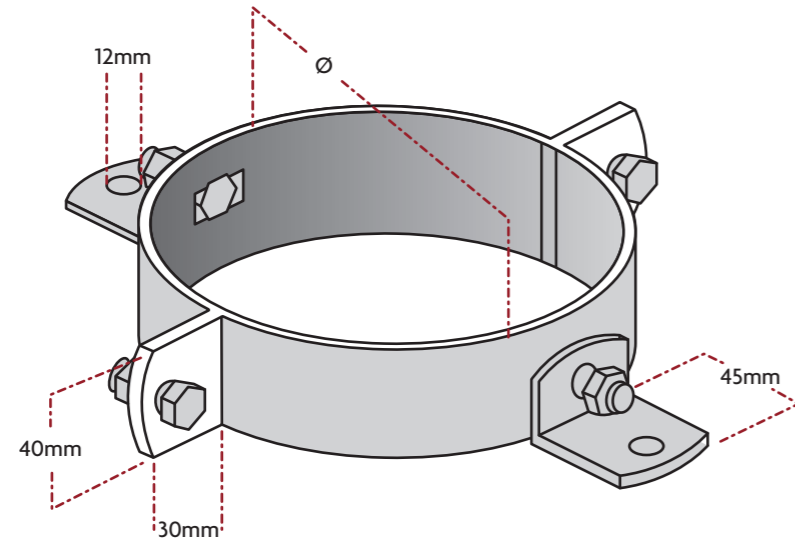
**Universal Rings**

Universal Rings are to be used to achieve the lateral stability and accurate alignment of a Twinwall chimney system.

This component is available both with or without swivel lugs incorporated and is suitable for supporting horizontal or inclined runs, off 10mm Drop Rod at intervals not exceeding

3metres.

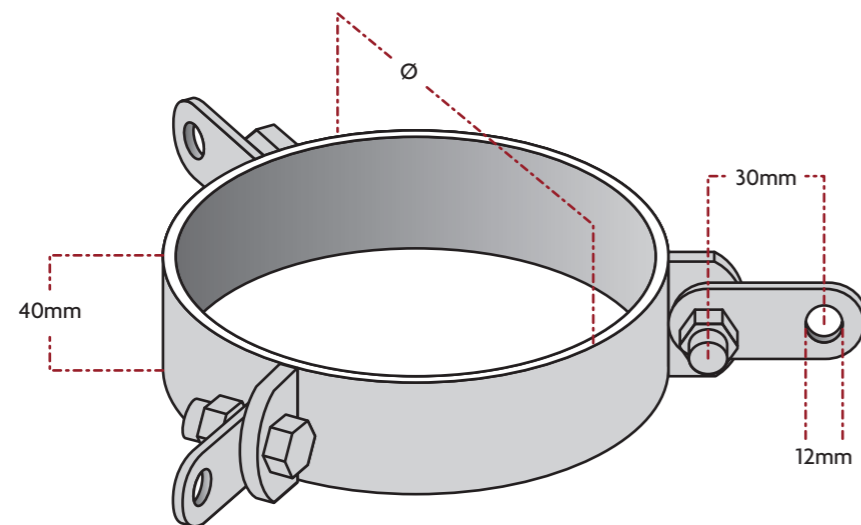
Universal Rings are manufactured using either Stainless or Galvanized Steels and to the values provided below. However, non-standard unique items can also be accommodated if required.



**Guy Wire Bracket**

Guy Wire Brackets must be used to apply extra lateral support to the top section, of a Twinwall vertical rise when the last fixing position above the roof is more than 2.5metres below the chimney termination.

This bracket component is available in both Stainless or Galvanized Steels to the values provided below, and will require either suitable wires/cables or support rods/bars to be fixed to part of the adjacent building or rigid structure.



# Deltavent

Deltavent is a Twinwall Stainless Steel, prefabricated exhaust/duct system available as Deltavent 25 with a 25mm insulating gap or Deltavent 50 with a 50mm high mineral wool insulation. 75mm and 100mm annulus' available on request.

The complete range of Deltavent products have been successfully tested to B5476 Part 20 for stability and integrity during a 4 hour test carried out at the Loss Prevention laboratories, Borehamwood. A copy of the full test report is available at A1 Flue Systems Head Office. All our products are also manufactured, and where required, installed within the scope of ISO 9001 : 2008 quality assurance system.

### The Deltavent systems are designed for use where;

- A four hour fire rating is specified
- A positive pressure high temperature exhaust/duct system is specified - A watertight flue system is specified

### Application examples;

- Diesel Generator Exhausts - Condensing Boilers
- C.H.P. Systems

- Fan Assisted Flue Systems - Kitchen Extract Systems
- Smoke Extract Systems
- Incinerators/Cremators - use heavy duty flanges for jointing (Ultraseal)

Testing carried out at BSRIA on both Twinwall Deltavent and Singlewall Deltavent, in accordance with BS:EN1856-1 (2003), BS:EN1856-2 (2004) and BS:EN1443 (2004). The charts below show the classification and designations:-

### First designation

Free standing installation, used in an open installation environment such as access shaft or external building. If used between floors then non-combustible material shall be used to protect the flooring from the fire plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T600	H1	D	VL20056 or VxL50056	G(300)

### Second designation

Corner installation with ventilated floor plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T450	H1	D	VxL20056 or VxL50056	G(50)

### Third designation

Corner installation with enclosure and ventilated floor plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T200	H1	W	VxL20056 or VxL50056	O(50)

Designation for 25mm air gap is as follows

### Fourth Designation

Corner installation with ventilated floor plate assembly.

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-1	T200	H1	W	VxL20056 or VxL50056	O(50)

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-2	T200	H1	W	VxL20056 or VxL50056	O(50)

Standard	Temperature class	Pressure class	Resistance to condensate class	Corrosion resistance class	Sootfire resistance class
BSEN1856-2	T600	H1	W	VxL20056 or VxL50056	O(50)

### Specifications;

This catalogue provides all dimensional details for the Deltavent system, which is available in sizes 150mm id through to 1200mm id.

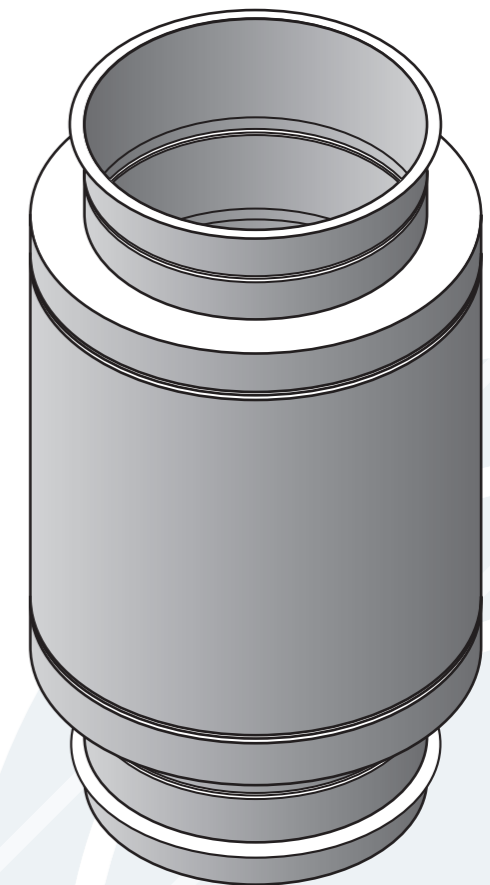
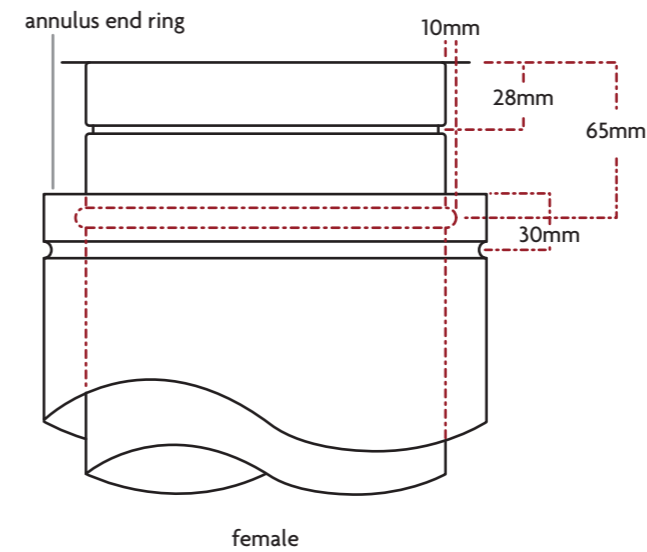
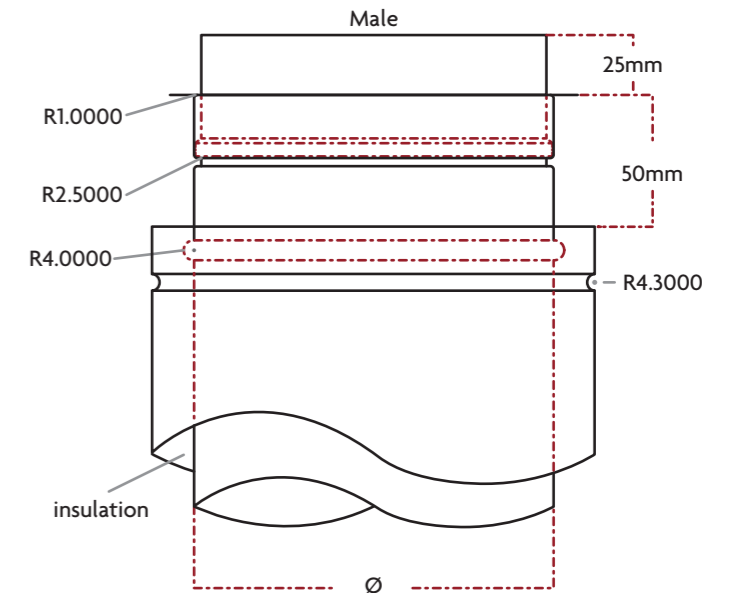
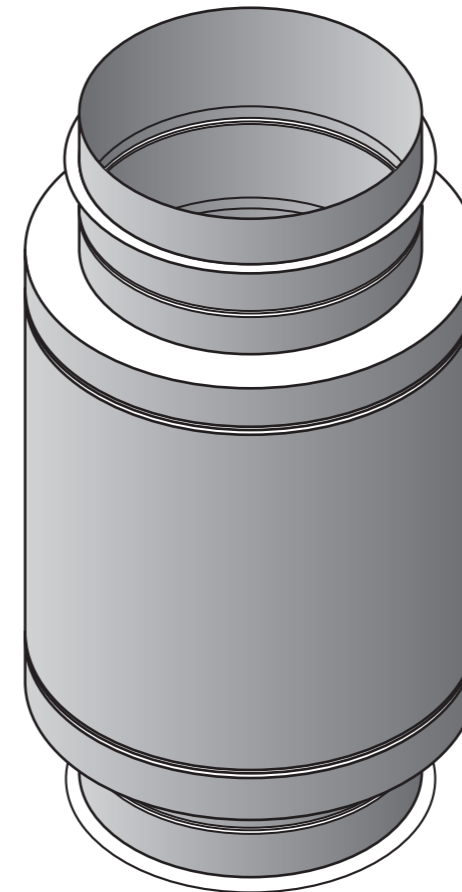
### Deltavent Material

	Std. Construction	Alternative to special order
Liner	FULLY WELDED 0.7/1mm Grade 304 s/s	FULLY WELDED 0.7/0.1mm Grade 316 s/s
Outer case	FULLY WELDED 0.7/1mm Grade 304 s/s	FULLY WELDED 0.7mm Grade 304 s/s
Tested Pressure	Capable of withstanding positive pressures up to 5000 Pascals	
Maximum flue gas temperature	All systems 760°C max	

NOTE: There are two jointing methods used for the seams on our Deltavent systems, 0.7mm grade products consist of a 10mm overlap joint which is resistance welded and all 1mm grade products consist of a butt joint which is Tig welded.

A standard working tolerance of +/- 1mm or 1 degree is applied to all components within the Deltavent range.

### Construction of Deltavent flue

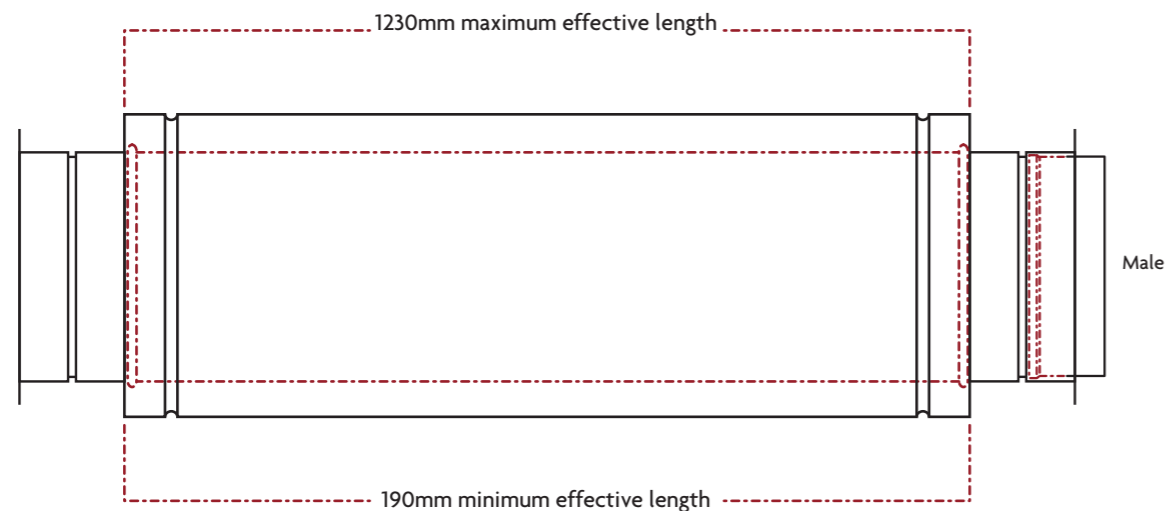




### Straight Lengths.

Straight Lengths are available as standard in 300mm, 450mm, 600mm, 750mm, 1000mm and 1200mm lengths. These are all installed effective lengths.

We also manufacture any fixed length between the standard lengths to your requirements.



### Prior to Installation

Before installation of the Deltavent flue you must be aware, in a vertical application it is essential that the components are installed with male spigot down against the flow of gases. this will allow condensates, if any, to remain within the flue.

The Deltavent system also uses two types of sealant. For low temperature systems, 150 degrees and below, silicone sealant is used. For hotter systems, between 150-760 degrees, high temperature ceramic exhaust sealant is used. The correct sealant must be used to seal the two inner flangers. Sealant is chosen according to the flue type and gas temperature.

Sealants for all applications are available and are supplied with the product. Where Deltavent is used externally, sealant must be applied under the external joint bands, (in the grooves of the outer case) to prevent the ingress of water.

### Installation

Ensure all the components that require sealant are clean from any dirt, grease and other contaminants. Once the decontamination has been achieved, apply an adequate amount of sealant to the male flange connection. (Refer to illustration)

Using the locating spigot of the male as a guide, simply push/slot the two parts of Deltavent together. ( Male spigot runs down).

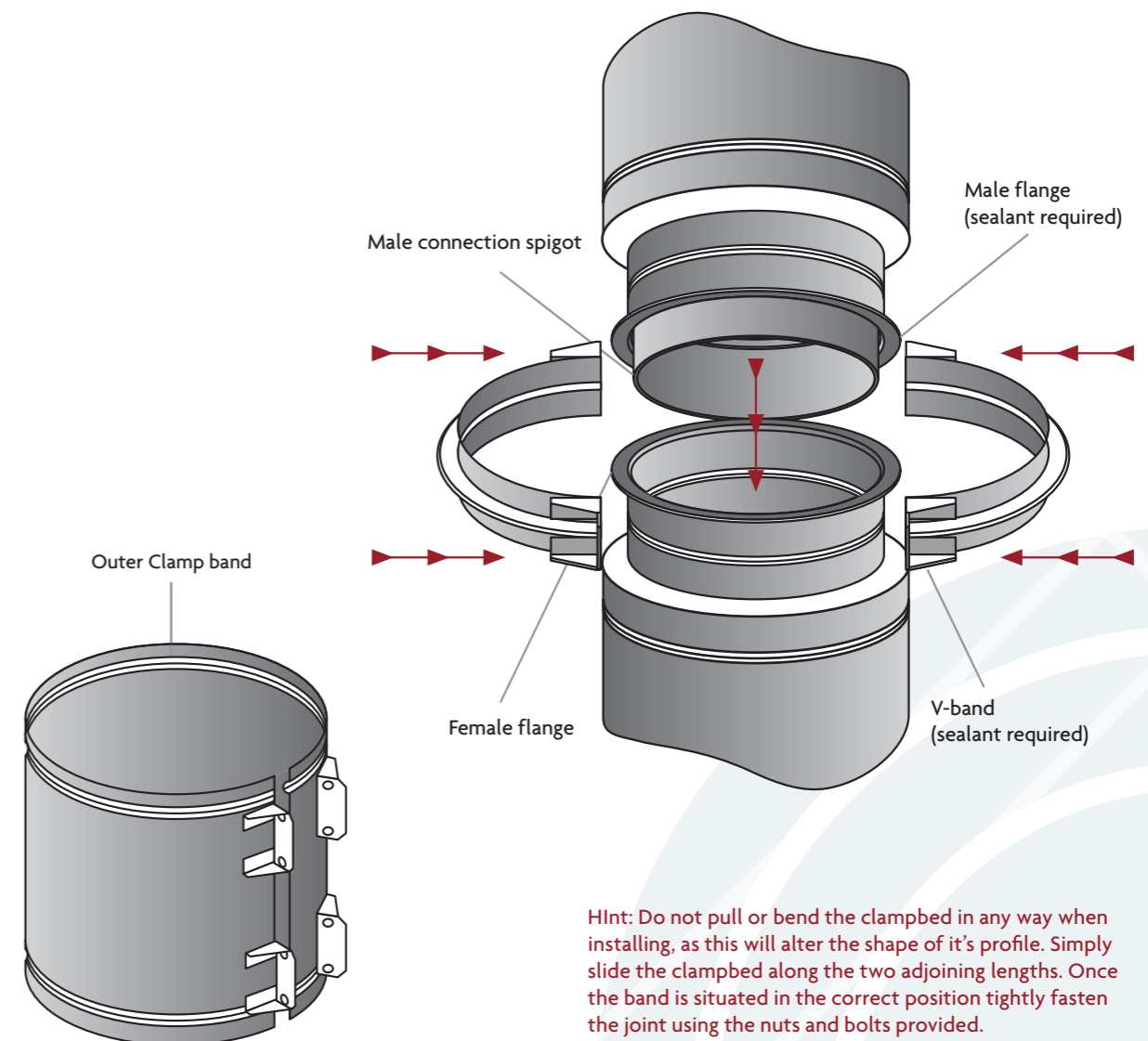
The next step is to fit the V-Band supplied. This has been designed as a two piece item for easy assembly, and must also be free from any contaminants i.e. grease or oil. Sealant is then to be applied into the groove of the V-Band before

fitting. Position both V-Band parts around the Deltavent with the 10mm connection flangers located within the groove. Tightly fasten both joints using the Stainless Steel nuts and bolts provided.

**CAUTION: It is extremely important for nothing to pierce either the internal liner or outer case at any time of installation. Please note during installation the weld should always be installed to at least 90° to the floor.**

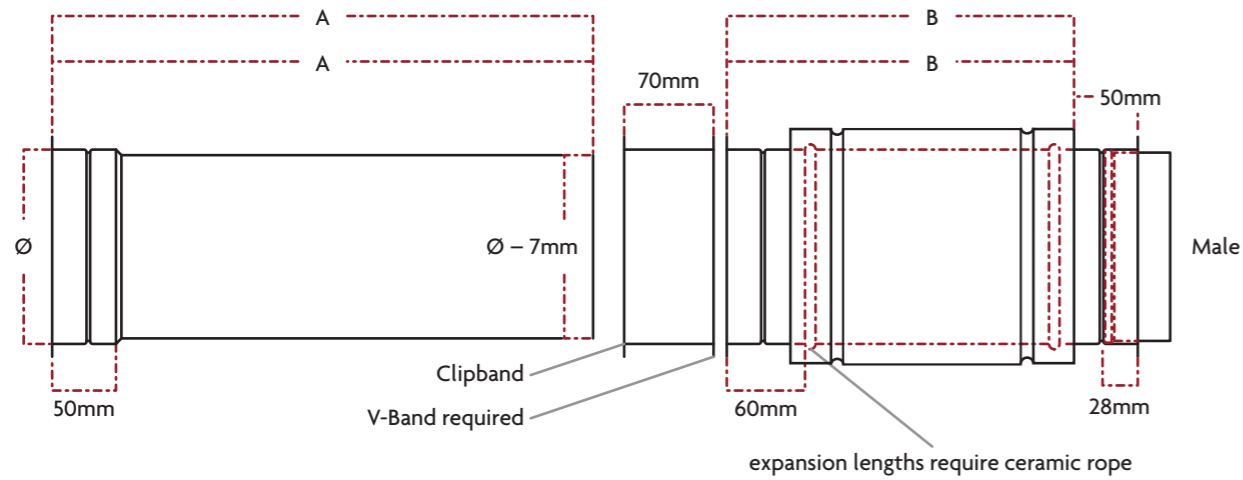
Fitting the outer Clampband is the final process of assembly. This has been designed to connect both outer flue parts together using a groove either end for location.

**NOTE: If Deltavent is exposed to external elements i.e. (rain or snow) it is essential a bead of sealant is also applied into the grooves underneath the band.**



**Hint: Do not pull or bend the clamped in any way when installing, as this will alter the shape of it's profile. Simply slide the clamped along the two adjoining lengths. Once the band is situated in the correct position tightly fasten the joint using the nuts and bolts provided.**

### Deltavent Adjustable and Expansion Lengths.



- 450-650 adjustable & expansion lengths; A = 420mm
- 600-950 adjustable & expansion lengths; A = 570mm
- 450-650 adjustable & expansion lengths; B = 213mm
- 600-950 adjustable & expansion lengths; B = 358mm

#### Deltavent Adjustable Lengths.

Adjustable Lengths have been successfully developed to allow for greater flexibility when measuring or installing a Deltavent chimney system.

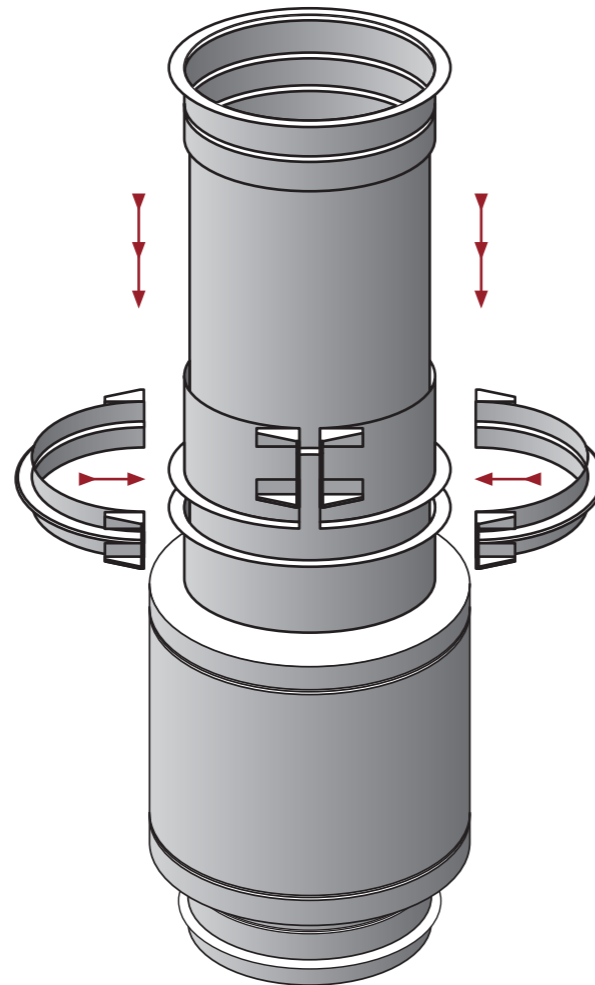
This component is obtainable in both 450mm-650mm and 600mm-950mm lengths (as standard), complete with a locking Clipband, V-Band and suitable Coverband if required. Non-standard Adjustable Lengths consisting of dimensions above those given can also be accommodated.

Once the Adjustable Length is in position and the length required has been achieved, it is then secured using both V-Band and Clipband. (refer to illustration)

#### Deltavent Expansion Lengths.

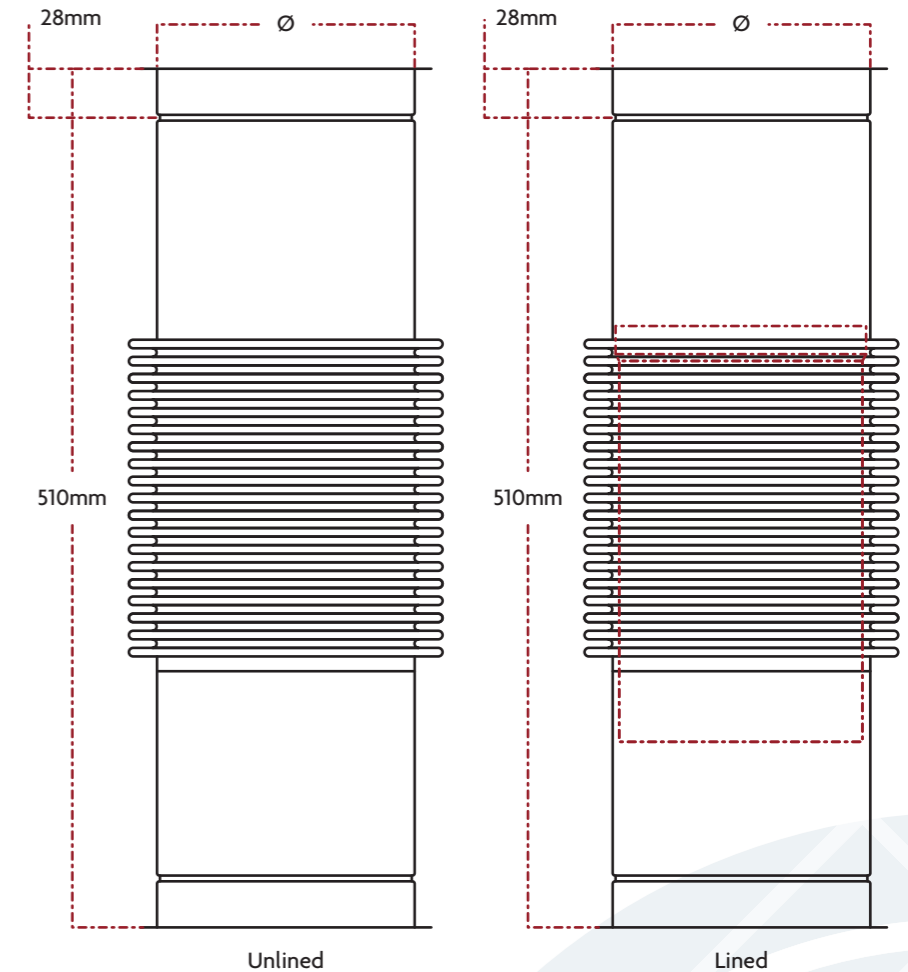
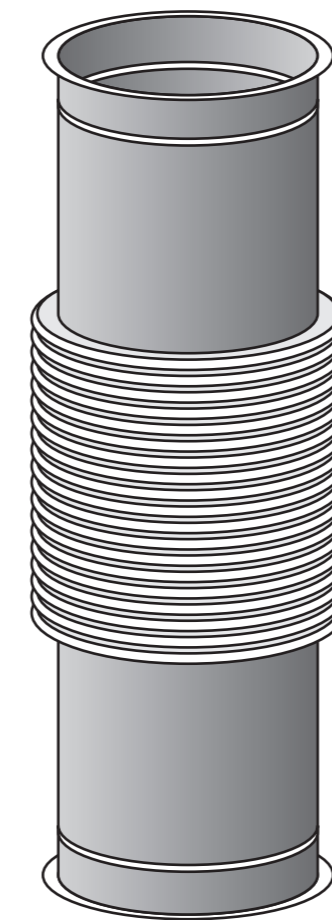
The Deltavent Expansion Length has been designed to allow expansion between two fixed points, for use with negative pressure and low positive pressure systems.

This component does not require any form of locking Clipband or V-Band and will be manufactured and fitted with a fire retardant ceramic rope, located between both liner skins. (Refer to diagram)



### Deltavent Expansion Bellows

The Expansion Bellow is designed to compensate for thermal and mechanical movement from within a chimney run whilst maintaining a high pressure seal.



**NOTE:** Expansion Bellows for the Deltavent are to be concealed using a cover jacket, this is for the protection against external environments and human intervention. (Cover jacket provided separately)

Lined Bellows allow for better transition of flue gases to atmosphere, however this restricts the movement of the Bellow to linear expansion only.

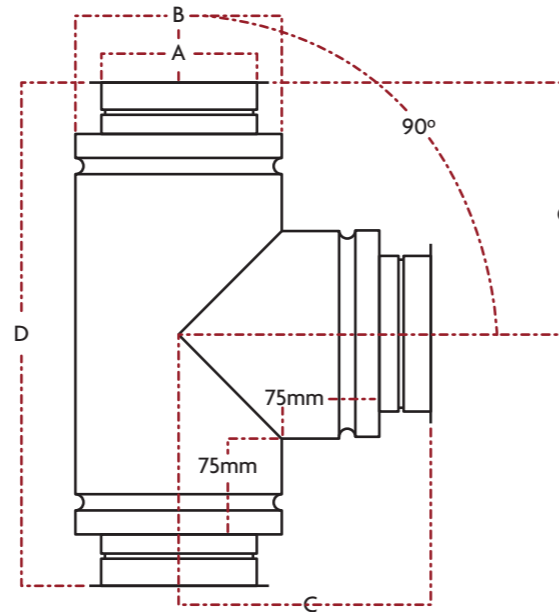
### Deltavent Tees

#### 90 degree Tees

90 degree Tees allow for the change in direction of a Deltavent chimney system whilst providing accessibility for an inspection/clean-out door or a moisture release drain point.

The 90 degree Tee is widely used at the base of a vertical rise. However, 90 degree Tees can also be adjoined in multiples creating complete header sets and supplied with a reduced branch diameter, giving you the option and flexibility to reduce the connecting flue diameter and if needed change the position of the chimney flue run.

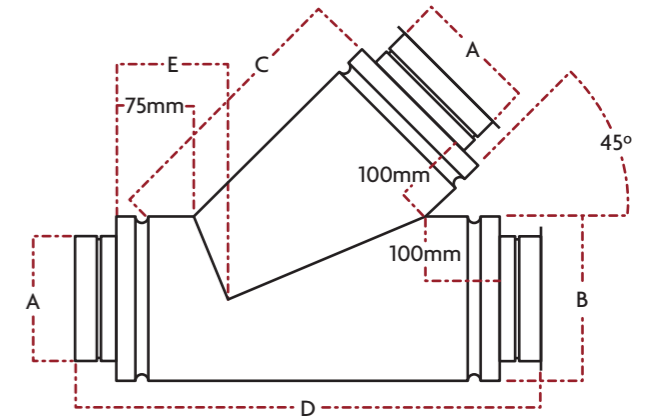
All values provided are standard minimum. Non-standard values above those given can also be accommodated if required.



#### 135 degree Tees

The 135 degree Tee is also widely used at the base of a vertical rise but gives the added advantage of a swept entry to reduce resistance to the flow of the flue gases.

All dimensions given below are standard minimum. However, the possibility of manufacturing and supplying a non-standard Tee with or without a reduced branch diameter and at values above those given is also available on request.



To calculate Tee body length;  
 $\varnothing / \cos \text{angle} + 275 + (\text{insulation} + \cos \text{angle})$ .

#### Deltavent 25

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
C	225	238	250	263	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625
D	450	475	500	525	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250

#### Deltavent 50

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
B	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	
C	250	263	275		300	325	350	375	400	425	450	475	500	525	550	575	600	625	
D	500	525	550		600	650	700	750	800	900	900	950	1000	1050	1100	1150	1200	1250	

#### Deltavent 75

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
B	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000		
C	275		300		325	350	375	400	425	450	475	500	525	550	575	600	625		
D	550		600		650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250		

#### Deltavent 100

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950
B	350		400		450	500	550	600	650	700	750	800	850	900	950	1000			
C	300		325		350	375	400	425	450	475	500	525	550	575	600	625			
D	600		650		700	750	800	850	900	950	1000	1050	1100	1150	1200	1250			

#### Deltavent 25

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	200	225	250	275	275	350	400	450	500	550	600	650	700	750
C	391	421	451	482	482	572	633	693	753	814	874	935	995	1055
D	557	591	628	664	664	770	841	912	982	1053	1124	1195	1265	1335
E	166	171	177	182	182	197	208	218	229	239	249	260	270	280

#### Deltavent 50

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	250	275	300	325	350	400	450	500	550	600	650	700	750	
C	451	482	512	542	572	633	693	753	814	874	935	995	1055	
D	628	663	699	734	770	841	912	982	1053	1124	1195	1265	1335	
E	177	182	187	192	197	208	218	229	239	249	260	270	280	

#### Deltavent 75

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	300	325	350		400	450	500	550	600	650	700	750		
C	512	542	572		633	693	753	753	814	874	935	995	1055	
D	699	734	770		841	912	982	982	1124	1195	1265	1335		
E	187	192	197		208	218	229	229	249	260	270	280		

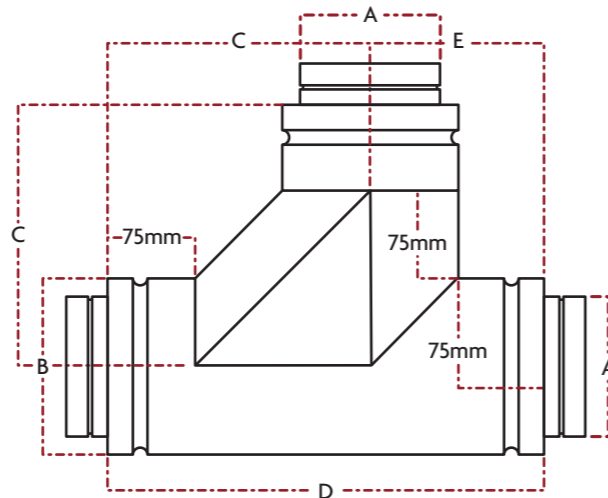
#### Deltavent 100

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	350		400		450	500	550	600	650	700	750			
C	572		633		693	753	814	874	935	995	1055			
D	770		841		912	982	1053	1124	1195	1265	1335			
E	197		208		218	229	239	249	260	270	280			

### 90 degree Booted Tees

The 90 degree Booted Tee has been specifically designed to allow for a change in direction but gives the added advantage of a swept entry or exit, reducing resistance to the flow of flue gases.

This equal Tee can also be manufactured and supplied at values above those given and with a reduced diameter branch at certain angles on request.



### Deltavent 25

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850
C	300	313	325	338	350	375	400	425	450	475	500	525	550	575	600	625
D	525	551	575	601	625	675	725	775	825	875	925	975	1026	1075	1125	1175
E	225	238	250	263	275	300	325	350	375	375	425	450	475	475	525	550

### Deltavent 50

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800
B	250	275	300		350	400	450	500	550	600	650	700	750	800	850	
C	325	338	350		375	400	425	450	475	500	525	550	575	600	625	
D	575	601	625		675	725	775	825	875	925	975	1025	1075	1125	1175	
E	250	263	275		300	325	350	375	400	425	450	475	500	525	550	

### Deltavent 75

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800
B	300		350		400	450	500	550	600	650	700	750	800	850		
C	350		375		400	425	450	475	500	500	550	575	600	625		
D	625		675		725	775	825	875	925	925	1025	1075	1125	1175		
E	275		300		325	325	375	375	425	425	475	500	525	550		

### Deltavent 100

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800
B	350		400		450	500	550	600	650	700	750	800	850			
C	375		400		425	450	475	500	525	550	575	600	625			
D	675		725		775	825	875	925	975	1025	1075	1125	1175			
E	300		325		350	375	400	425	450	475	500	525	550			

### Deltavent Elbows

Deltavent Elbows are used when a change in direction is required within a chimney system. By adjoining and incorporating Elbows with various Straight Lengths and Adjustable Lengths, offsets can be tailor made to suit your requirements.

All information provided below for all Elbows are standard minimum. However, the possibility of manufacturing and supplying Elbows with one or both centre lines extended and at any angle including those given is available on request.

The entire range of Deltavent Elbows consist of fixed internal

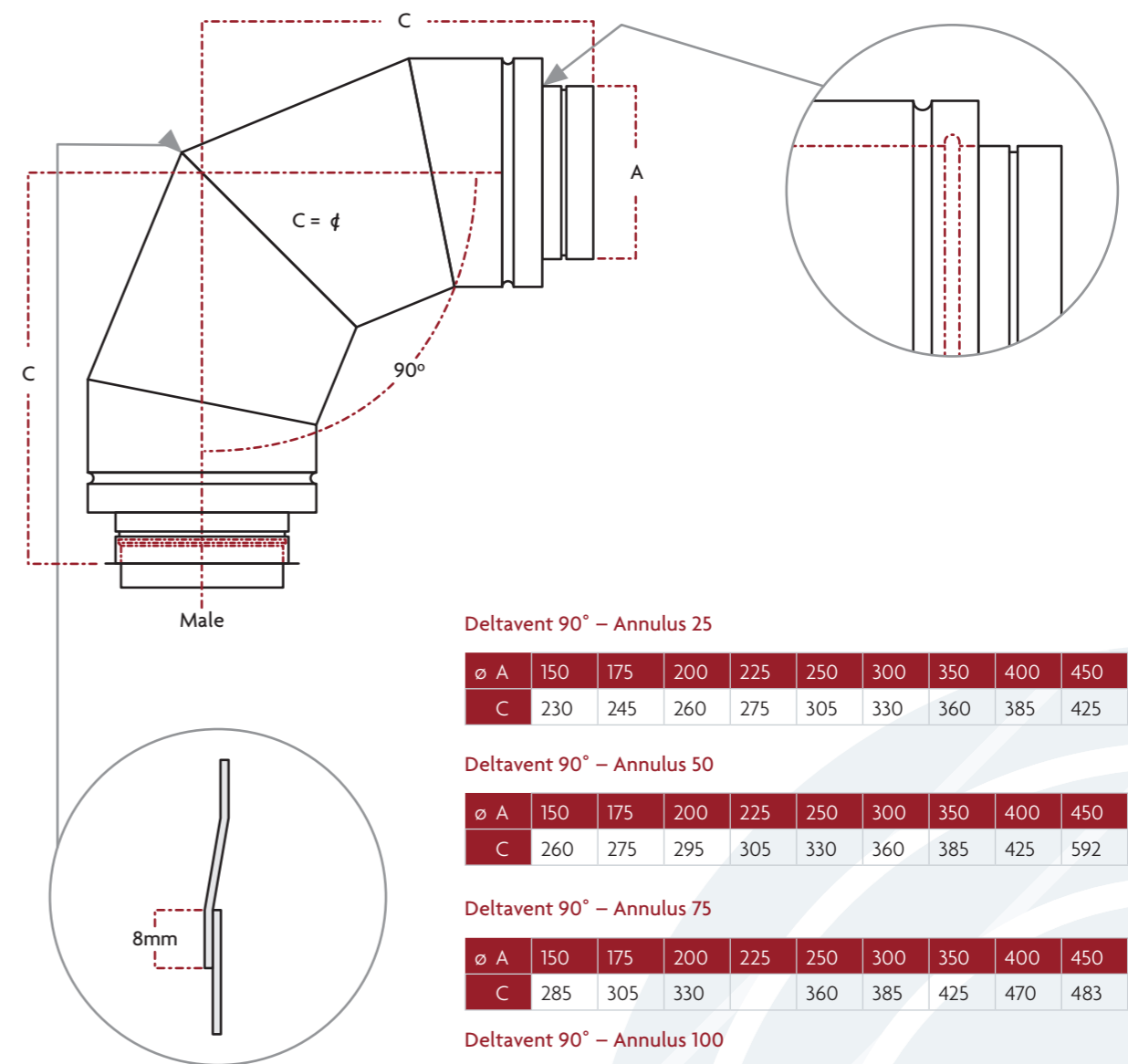
liner segments which are joined with an 8mm overlap joint, Resistance Welded together.

**CAUTION: Deltavent Elbows DO NOT LOAD BEAR.**

500ø - 750ø All 90degree Elbows consist of two 45degree Elbows.

750ø and above 90degree Elbows consist of three 30degree Elbows and 60degree Elbows consist of two 30degree Elbows.

1000ø and above 45degree Elbows consist of two 22.5degree Elbows.



### Deltavent 90° – Annulus 25

ø A	150	175	200	225	250	300	350	400	450
C	230	245	260	275	305	330	360	385	425

### Deltavent 90° – Annulus 50

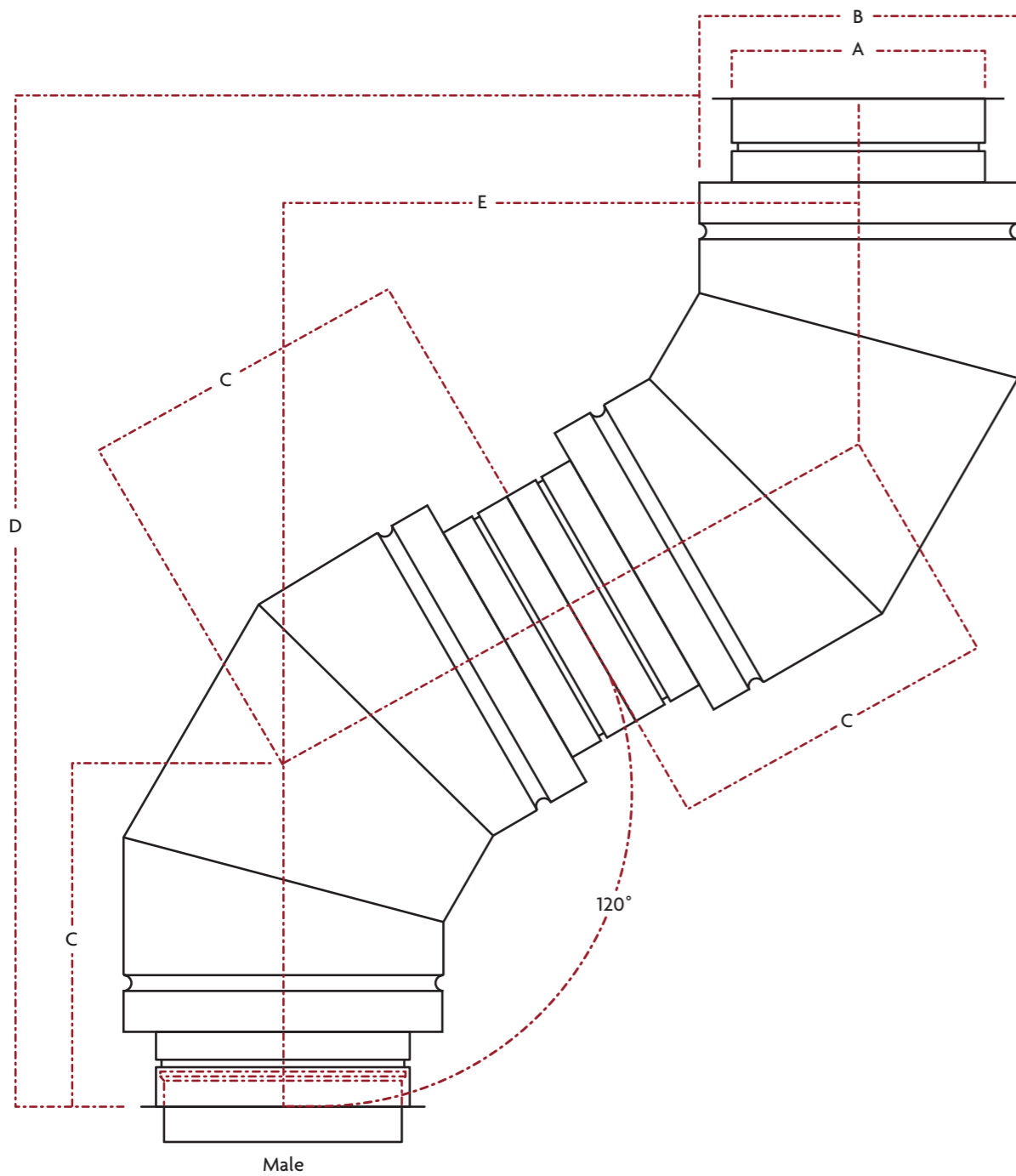
ø A	150	175	200	225	250	300	350	400	450
C	260	275	295	305	330	360	385	425	592

### Deltavent 90° – Annulus 75

ø A	150	175	200	225	250	300	350	400	450
C	285	305	330		360	385	425	470	483

### Deltavent 90° – Annulus 100

ø A	150	175	200	225	250	300	350	400	450
C	330		360		385	425	470	483	507



Deltavent 60° – Annulus 25

∅ A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750
C	175	180	190	200	210	220	250	270	280	290	310	350	370	390
D	525	540	570	600	630	660	750	810	840	870	930	1050	1110	1170
E	303	312	329	346	364	381	433	468	485	502	537	606	641	675

Deltavent 60° – Annulus 50

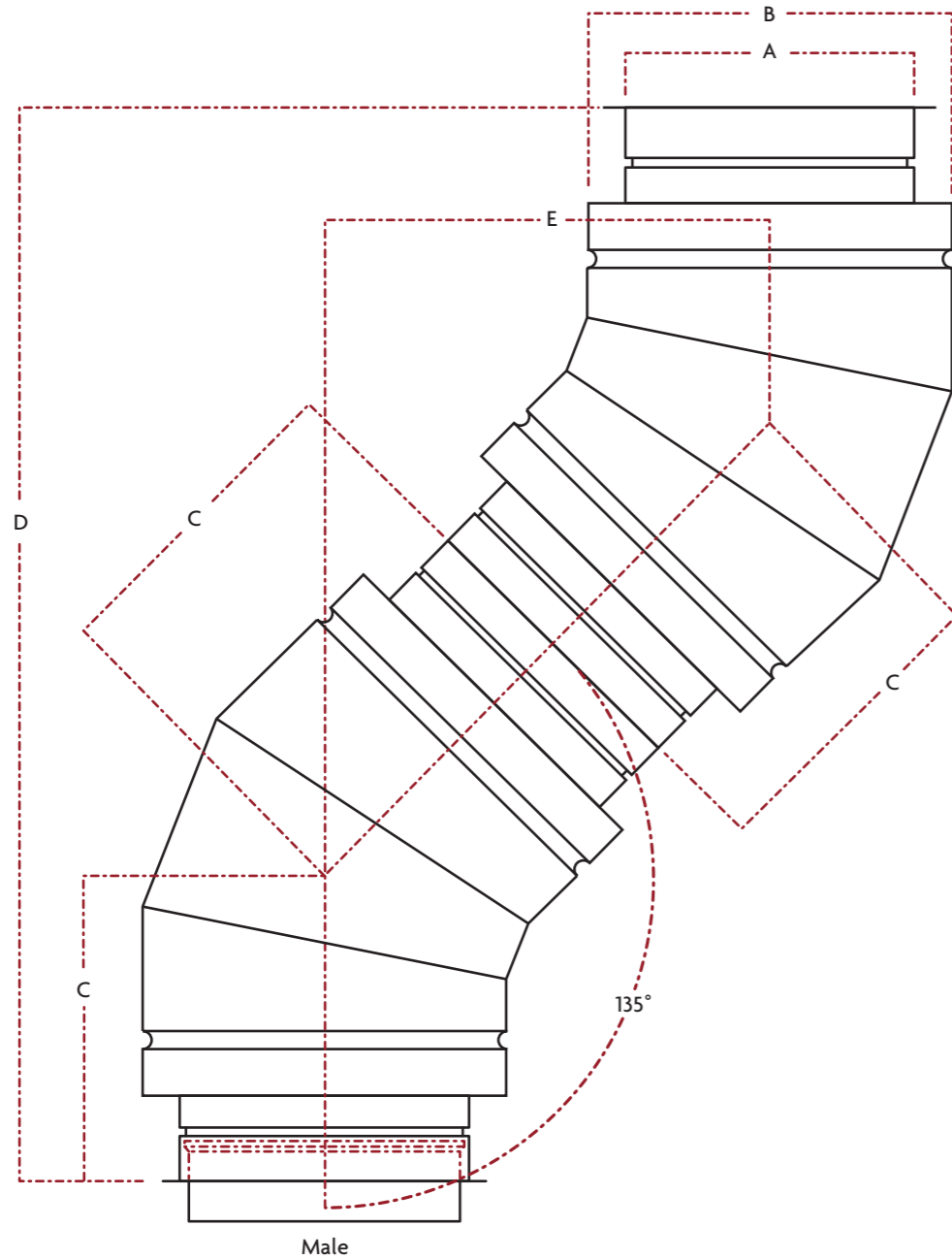
∅ A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	250	275	300		350	400	450	500	550	600	650	700	750	800
C	190	200	210		220	250	270	280	290	310	350	370	390	554
D	570	600	630		660	750	810	840	870	930	1050	1110	1170	1662
E	329	346	364		381	433	468	485	502	537	606	641	675	960

Deltavent 60° – Annulus 75

∅ A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	300		350		400	450	500	550	600	650	700	750	800	850
C	210		220		250	270	280	290	310	350	370	390	554	569
D	630		660		750	810	840	870	930	1050	1110	1170	1662	1707
E	364		381		433	468	485	502	537	606	641	675	960	986

Deltavent 60° – Annulus 100

∅ A	150	175	200	225	250	300	350	400	450	500	550	600	650	700
B	350		400		450	500	550	600	650	700	750	800	850	900
C	220		250		270	280	290	310	350	370	390	554	569	582
D	660		750		810	840	870	930	1050	1110	1170	1662	1707	1746
E	381		433		468	485	502	537	606	641	675	960	986	1008



**Deltavent 45° – Annulus 25**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	150	155	160	165	180	185	200	210	225	245	250	260	280	290	370	380	391	401	411	476	486	496	506	516
D	512	529	546	563	616	632	683	717	768	836	854	888	956	990	1263	1297	1335	1369	1403	1625	1659	1693	1728	1762
E	212	219	226	233	255	262	283	297	318	346	354	368	396	410	523	537	553	567	581	673	687	701	716	730

**Deltavent 45° – Annulus 50**

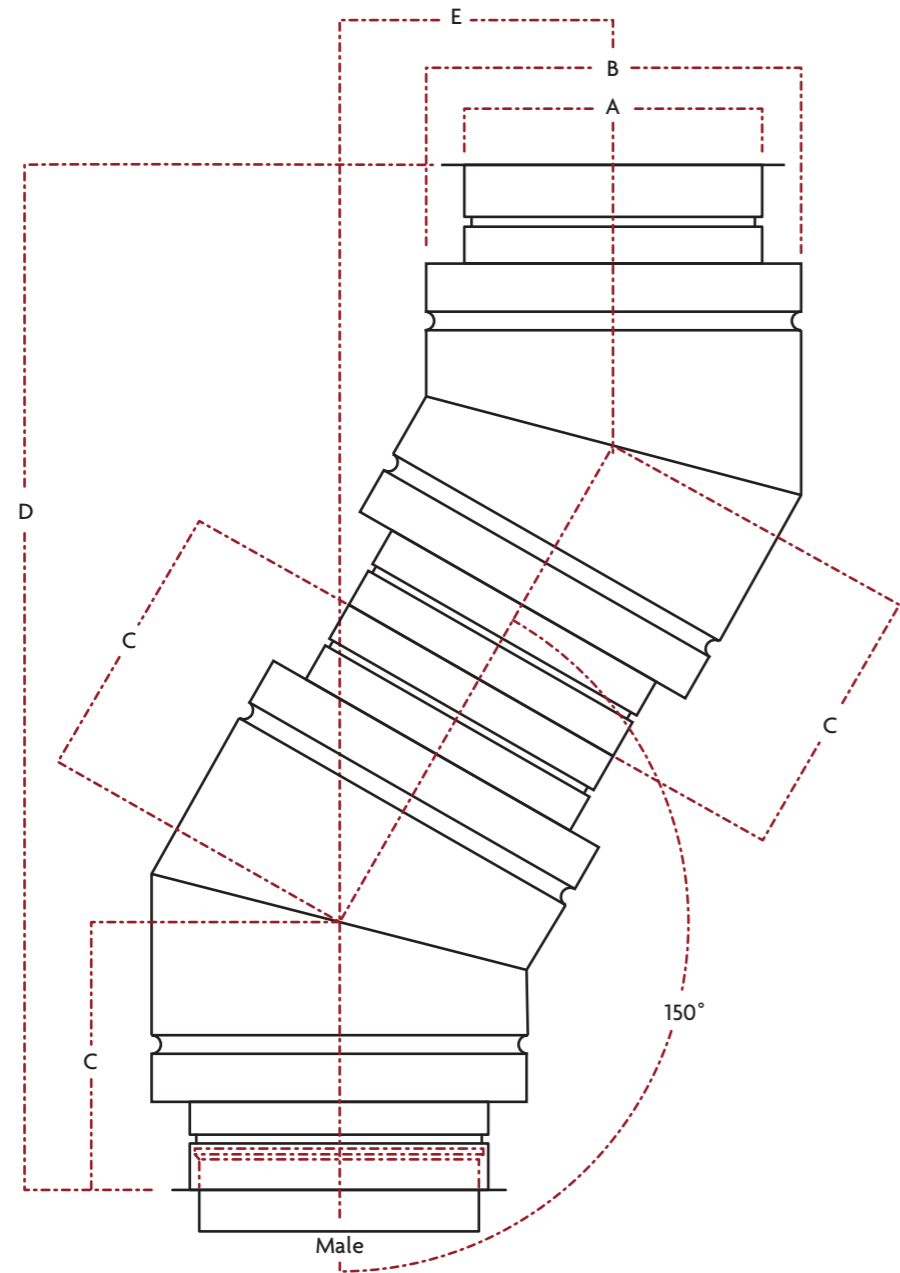
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	160	165	180		185	200	210	225	245	250	260	280	290	370	380	391	401	411	476	486	496	506	516	526
D	546	563	616		632	683	717	768	836	854	888	956	990	1263	1297	1335	1369	1403	1625	1659	1693	1728	1762	1796
E	226	233	256		262	283	297	318	346	354	368	396	410	523	537	553	567	581	673	687	701	716	730	744

**Deltavent 45° – Annulus 75**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	180		185		200	210	225	245	250	260	280	290	370	380	391	401	411	476	486	496	506	516	526	536
D	616		632		683	717	768	836	854	888	956	990	1263	1297	1335	1369	1403	1625	1659	1693	1728	1762	1796	1830
E	256		262		283	297	318	346	354	368	396	410	523	537	553	567	581	673	687	701	716	730	744	758

**Deltavent 45° – Annulus 100**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	185		200		210	225	245	250	260	280	290	370	380	391	401	411	476	486	496	506	516	526	536	546
D	632		683		717	768	836	854	888	956	990	1263	1297	1335	1369	1403	1625	1659	1693	1728	1762	1796	1830	1864
E	262		283		297	318	346	354	368	396	410	523	537	553	567	581	673	687	701	716	730	744	758	772



**Twinwall 30° – Deltavent 25**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	132	135	140	143	152	158	165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318
D	493	504	522	534	567	590	616	642	664	690	709	784	821	858	959	985	1008	1034	1060	1086	1108	1135	1161	1187
E	132	135	140	143	152	158	165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318

**Twinwall 30° – Deltavent 50**

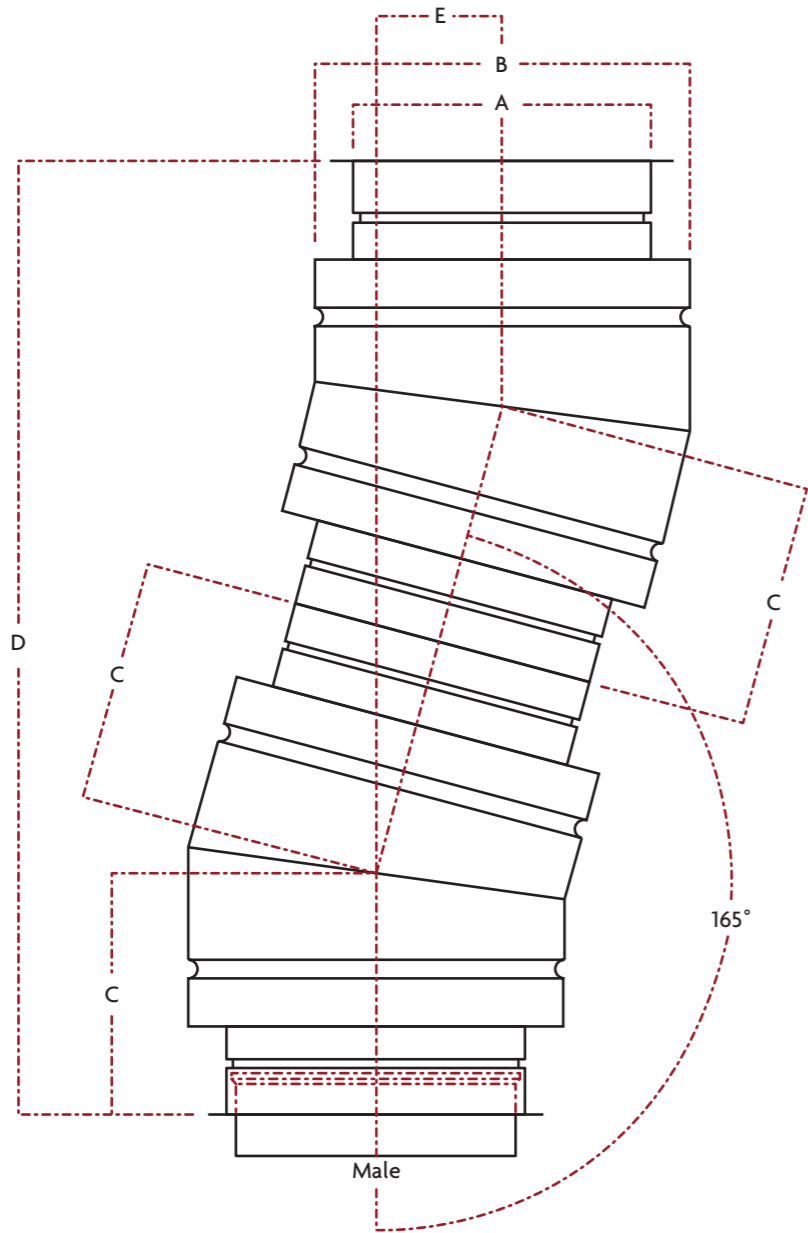
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	140	143	152		158	165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318	325
D	522	534	567		590	616	642	664	690	709	784	821	858	959	985	1008	1034	1060	1086	1108	1135	1161	1187	1213
E	140	143	152		158	165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318	325

**Twinwall 30° – Deltavent 75**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	152		158		165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318	325	332
D	567		590		616	642	664	690	709	784	821	858	959	985	1008	1034	1060	1086	1108	1135	1161	1187	1213	1239
E	152		158		165	172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318	325	332

**Twinwall 30° – Deltavent 100**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	158		165		172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318	325	332	339
D	590		616		642	664	690	709	784	821	858	959	985	1008	1034	1060	1086	1108	1135	1161	1187	1213	1239	1265
E	158		165		172	178	185	190	210	220	230	257	264	270	277	284	291	297	304	311	318	325	332	339



**Deltavent 15° – Annulus 25**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
C	119	120	122	124	127	134	137	141	144	147	151	164	173	175	203	206	209	213	216	219	222	226	230	234
D	469	471	479	487	500	526	539	554	568	578	593	645	682	690	798	811	821	837	850	860	873	889	904	920
E	62	62	63	64	66	69	71	73	75	76	78	85	90	91	105	107	108	110	112	113	115	117	119	121

**Deltavent 15° – Annulus 50**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	250	275	300		350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300
C	122	124	127		134	137	141	144	147	151	164	173	175	203	206	209	213	216	219	222	226	230	234	238
D	479	487	500		526	539	554	568	578	593	645	682	690	798	811	821	837	850	860	873	889	904	920	935
E	63	64	66		69	71	73	75	76	78	85	90	91	105	107	108	110	112	113	115	117	119	121	123

**Deltavent 15° – Annulus 75**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	300		350		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
C	127		134		137	141	144	147	151	164	173	175	203	206	209	213	216	219	222	226	230	234	238	242
D	500		526		539	554	568	578	593	645	682	690	798	811	821	837	850	860	873	889	904	920	935	951
E	66		69		71	73	75	76	78	85	90	91	105	107	108	110	112	113	115	117	119	121	123	125

**Deltavent 15° – Annulus 100**

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
B	350		400		450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	134		137		141	144	147	151	164	173	175	203	206	209	213	216	219	222	226	230	234	238	242	246
D	526		539		554	554	578	593	645	682	690	798	811	821	837	850	860	873	889	904	920	935	951	966
E	69		71		73	73	76	78	85	90	91	105	107	108	110	112	113	115	117	119	121	123	125	127



**Drain Lengths.**

The purpose of a Drain Length is to relieve the flue system from any unwanted moisture (condensate). Introducing such items in the design is paramount for prolonging reliability of an appliance.

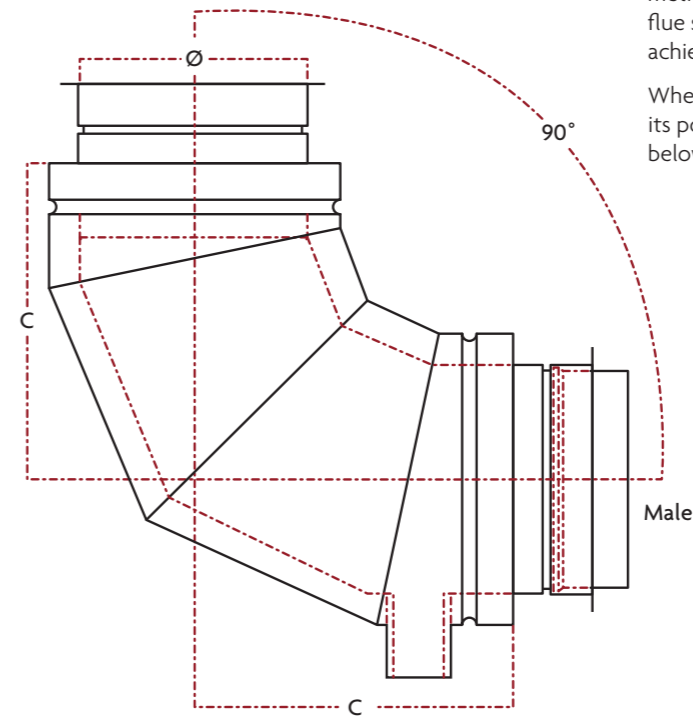
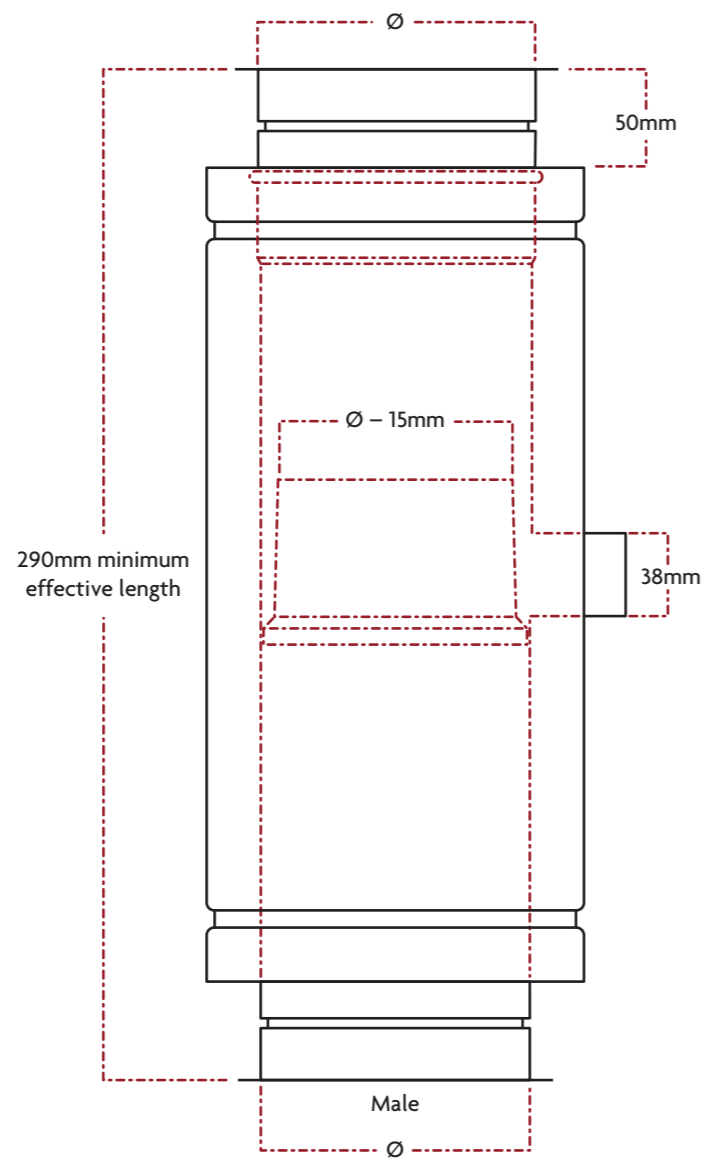
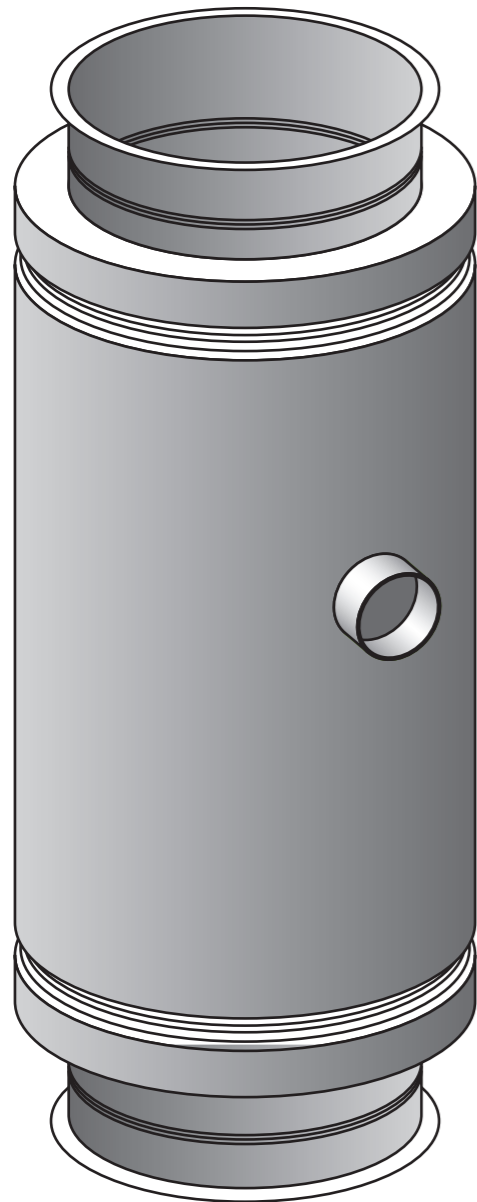
Drain Lengths consist of a 1inch Stainless Steel B.S.P threaded socket which is fully welded onto the inner liner. Drains are obtainable in Deltavent standard lengths and can also be fitted to non-standard lengths above our minimum. (Refer to illustration)

**Vertical.**

Vertical Drain Lengths are manufactured and supplied complete with Drain Traps integrated within the internal liner. This DTrapD collects and diverts all moisture directly too and out of the drain, however this item reduces the internal diameter which may effect exhaust velocity.

**Horizontal.**

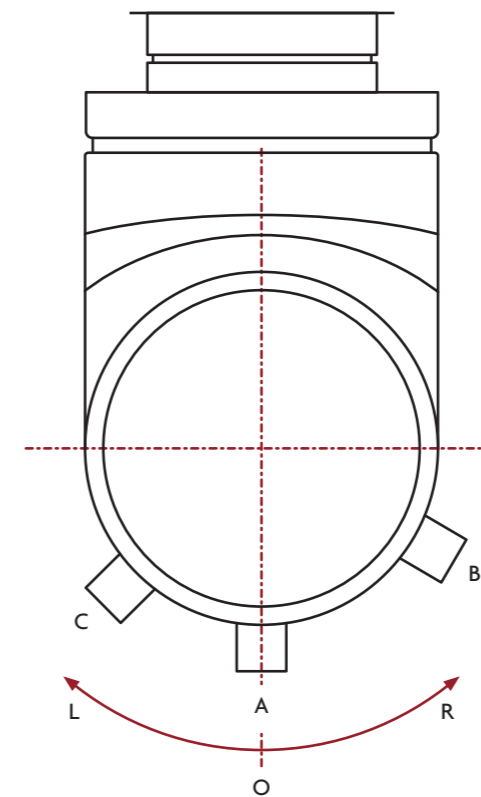
Horizontal drain lengths do not have the Internal Drain Tap fitted and should be incorporated, either at the end or in several positions within a run with a 5degree incline.



**Drains in Elbows**

Incorporating drains with Elbows can also be an effective method of moisture (condensate) removal from within a flue system. This component allows for drain positions to be achieved where space is at a minimum.

When drains are to be fitted within a male end of an Elbow, its position should be established using the method shown below.

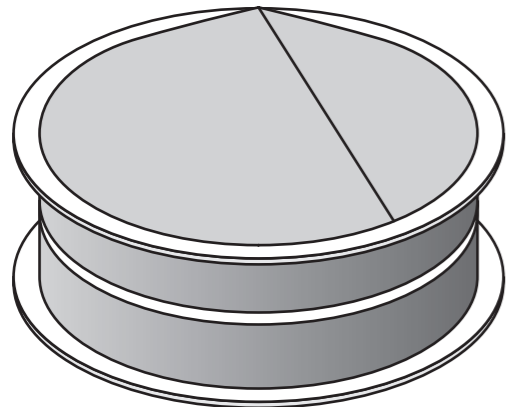


**Elbows viewed on male end**

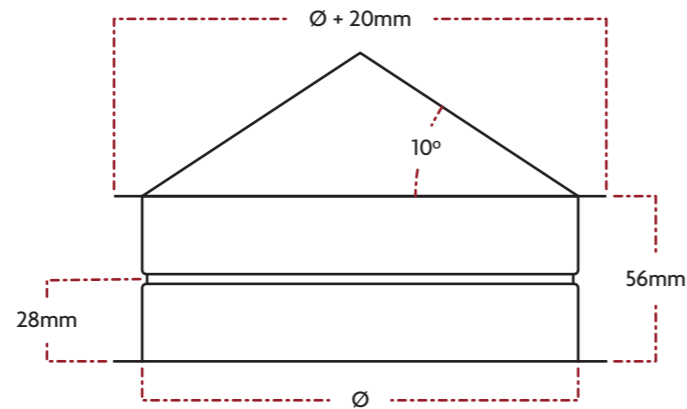
Drain for an upright Elbow (drain "A") will be designated O. Other drains will be designated ether L (left) or R (right) and the angle from position O. i.e Drain "B" will be R60 and "C" will be L45.

### Clean Out Door (C.O.D)

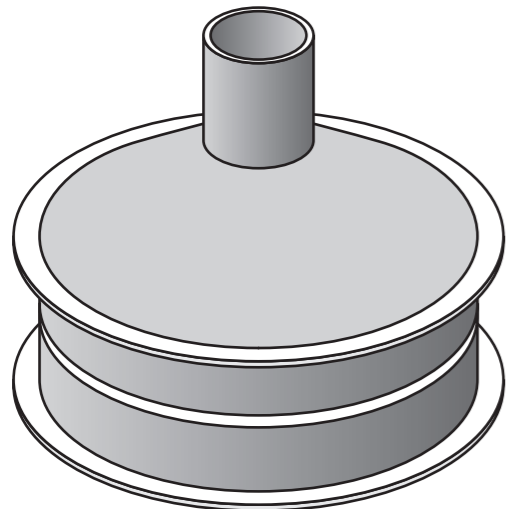
This component is used to close off the unused openings within the flue system. These caps can be installed either horizontally or vertically and are secured with flanged V-Band joint, which is easily removed to enable access for cleaning and inspections.



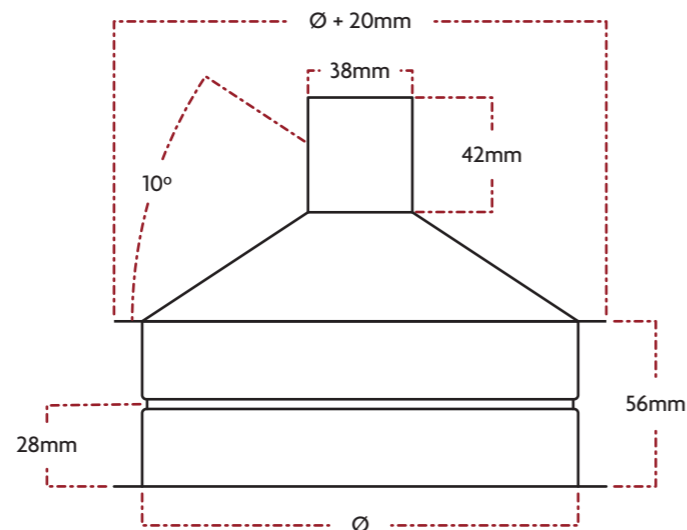
Female



The ability to manufacture Clean Out Doors complete with a 1 inch Stainless Steel threaded B.S.P socket is also available on request. These caps are positioned to close off the unused opening on the underside of the Base Tee, permitting pipe work to be attached for the removal of any condensate (moisture) buildup.



Female

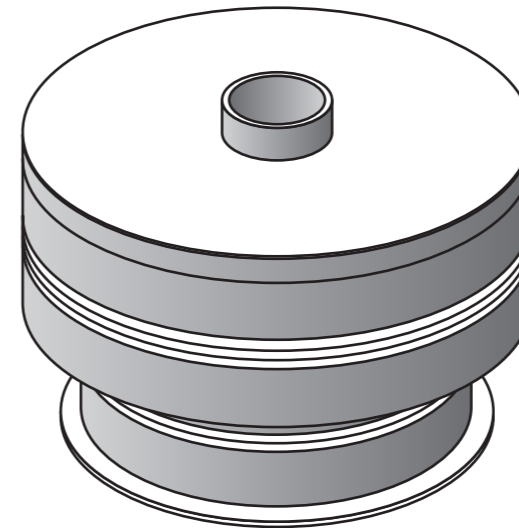
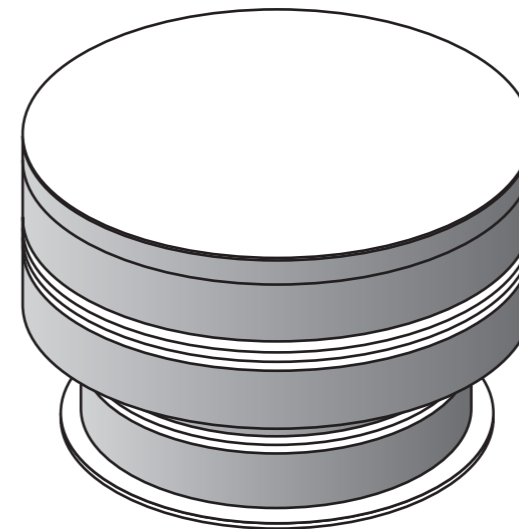


NOTE: All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater then those given can also be accommodated to your requirements.

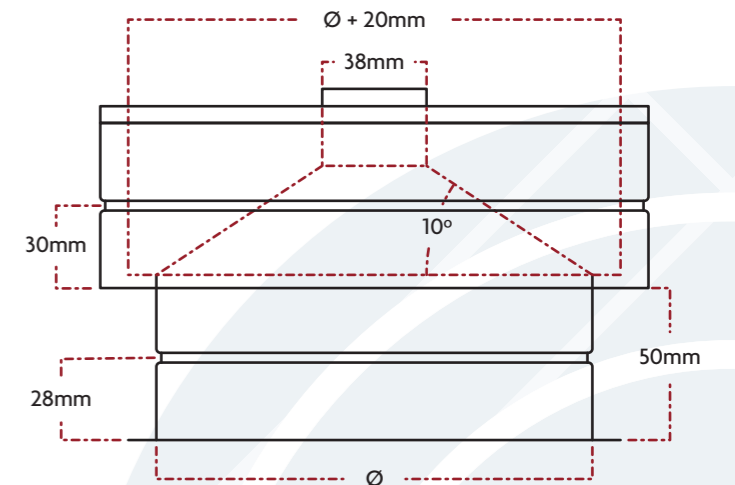
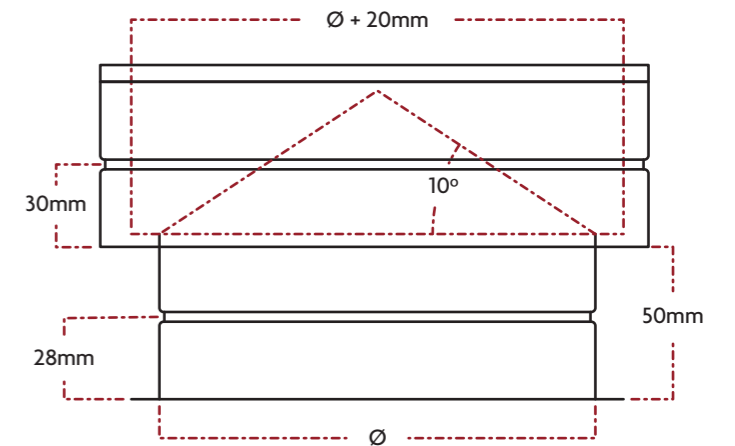
### Insulated C.O.D

In some cases a high internal and low external temperature is required. Therefore, A1 Flue systems have successfully developed and manufactured an insulated Clean Out Door which can be supplied with or without a drain connection and is available with a 25mm, 50mm, 75mm or 100mm annulus.

This C.O.D can also be installed either horizontally or vertically and will be fixed in position using both, flanged V-Band and external locking Clampband methods.



NOTE: All dimensions provided above are for (standard minimum). Non-standard C.O.Ds consisting with dimensions greater than those given can also be accommodated to your requirements.



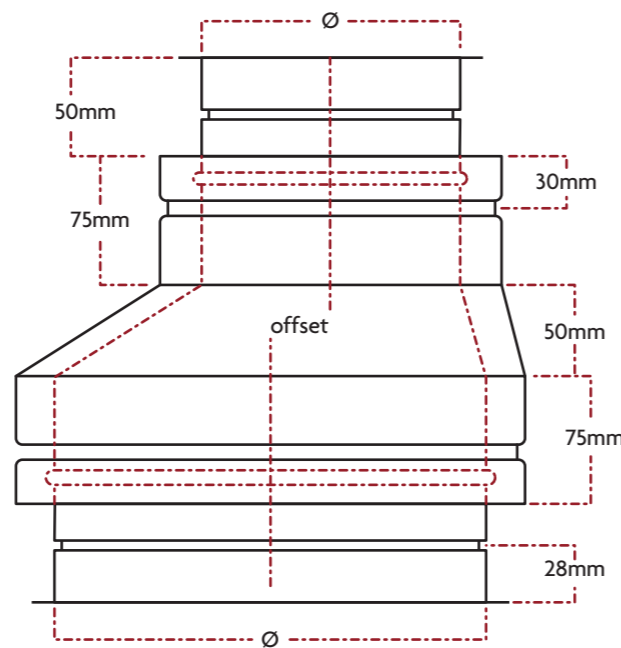
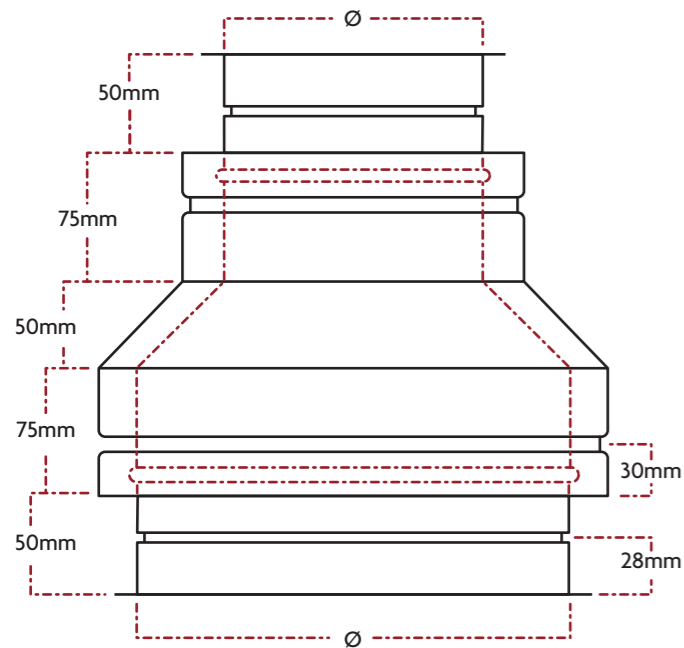
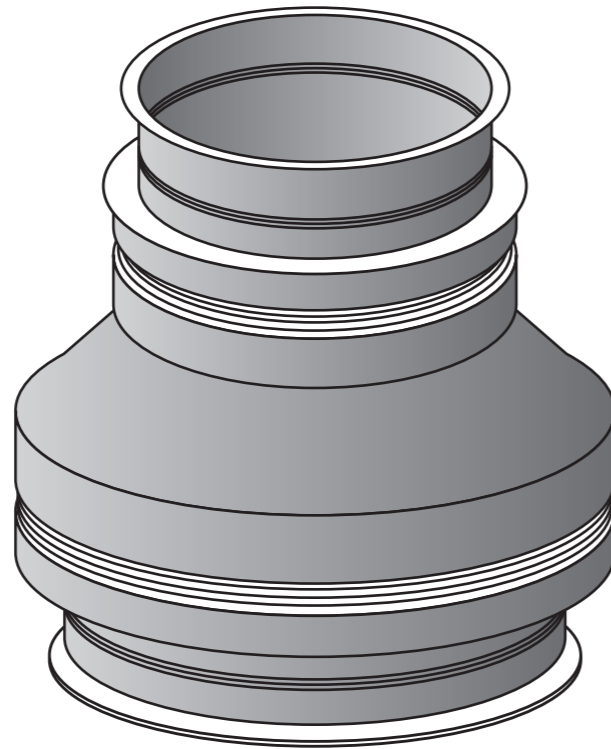
**Reducers and Increases**

A reducer/increaser is the most effective and efficient method of diameter change within a flue system.

This special item from the Deltavent range allows for a steady transition of flue gases to limit resistance, and is available to order in all diameters and at custom lengths above or including those given.

Reducers and Increases are processed and manufactured using the same method, so the location of itDs male or female profile determines the application of use.

A1 Flue Systems acknowledge that there may be certain times where space is restricted, therefore the possibilities of developing unique items such as; offsets, reduced offsets or increased offsets is often achievable, however the degree of offset may result in the lengthening of reducer or increaser. (refer to illustration)



NOTE: All dimensions given are (standard minimum).

**Appliance Adaptors**

Two types of Appliance Adaptors are available for Deltavent, both of which are designed to facilitate (assist) the connection of the either vertically or horizontally positioned Deltavent to an appliance outlet.

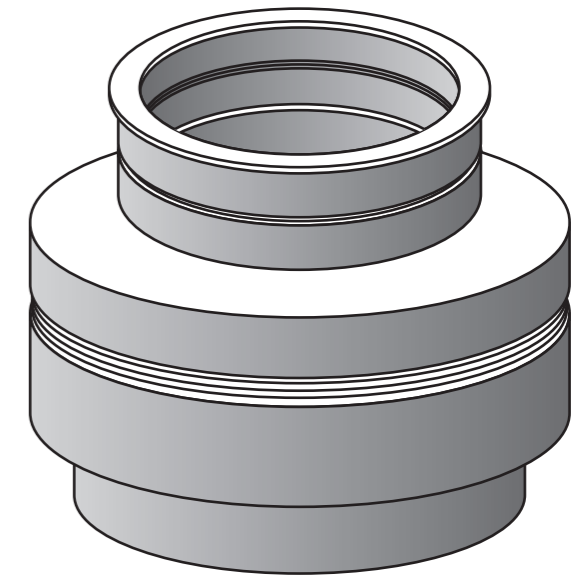
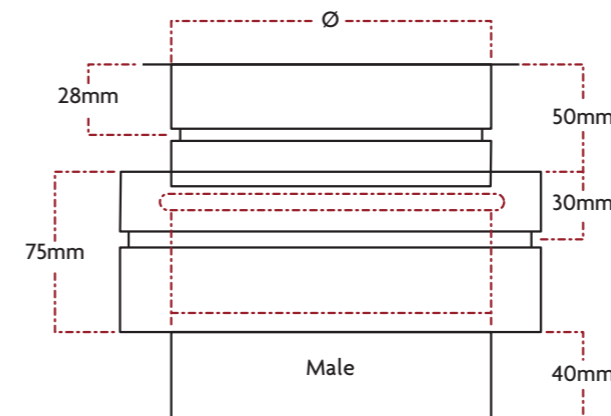
Manufacturing capabilities allow for the male connection spigot on either design to be supplied in all regular and irregular diameters and at increased lengths above those given.

**NOTE:**

- All dimensions provided are standard minimum
- All Appliance Adaptors consisting of diameters under 150mm are to be manufactured using, 0.7/0.6mm Grade 304 or 316 Stainless Steel.

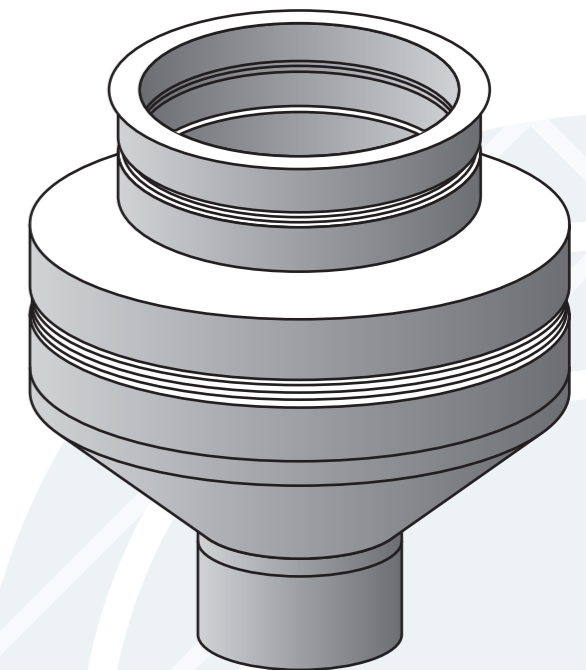
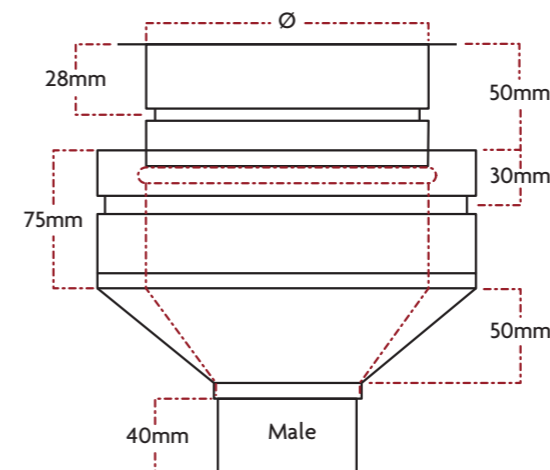
**2-Piece Inner**

Use where boiler female connections within +/- 10mm of flue liner  $\varnothing$



**3-Piece Inner**

Use where boiler female connection exceeds +/- 10mm of flue liner  $\varnothing$



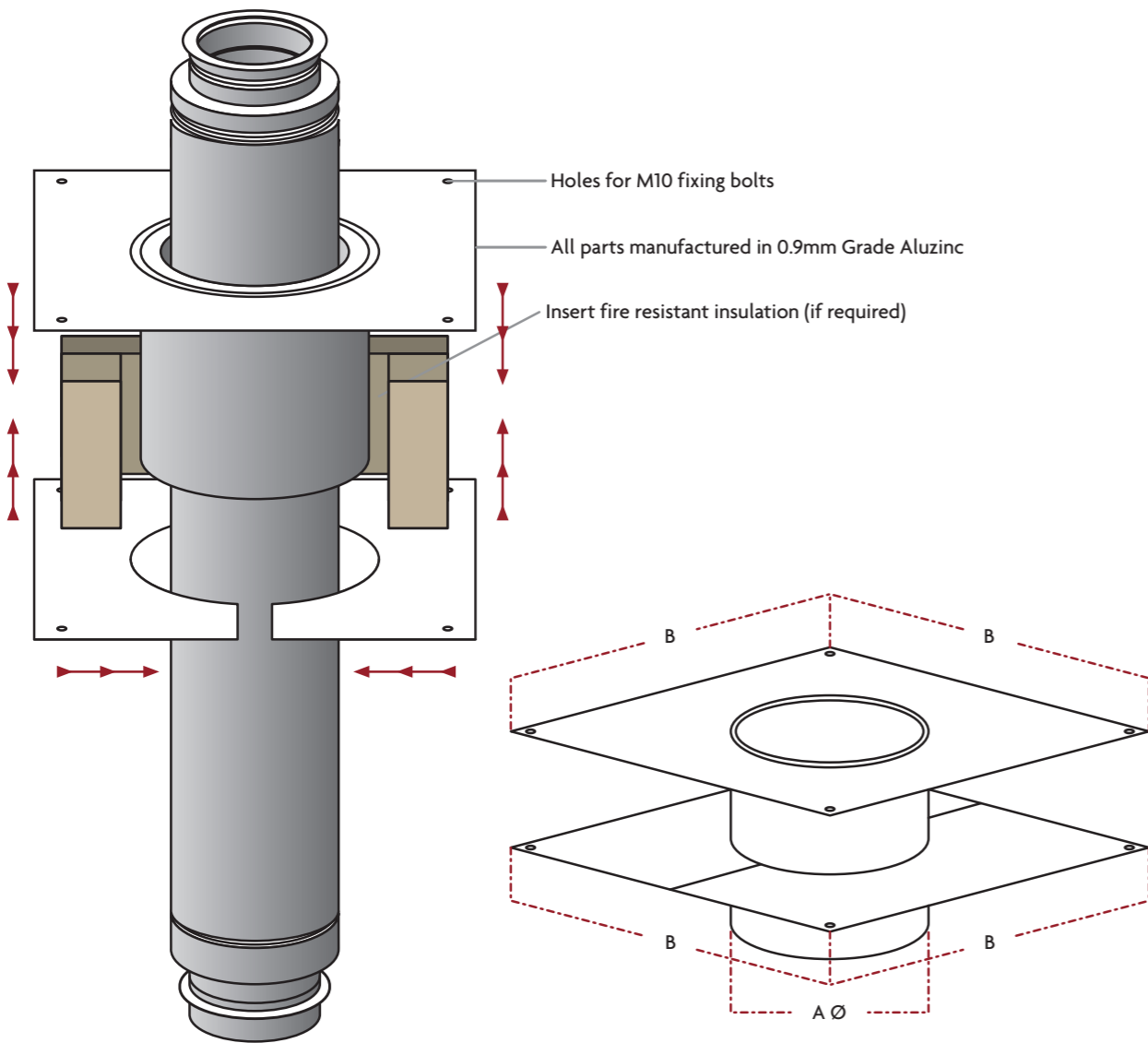
### Fire Stop Kits

Designed to be applied where the Deltavent chimney system requires a compartmental fire rating for both horizontal and vertical structure penetrations of up to four hours.

This component is manufactured in accordance with BS-EN 1856-1 (2009) and has been successfully assessed by the Loss prevention Council.

All dimensions provided below relate to the 25mm annulus Deltavent. However, dimensions for the 50, 75 and 100 can also be established using this table.

ø	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	206	231	256	281	306	356	406	456	506	556	606	656	706	756	806	856	906	956	1006	1056	1106	1156	1206	1256
B	400	425	450	475	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450

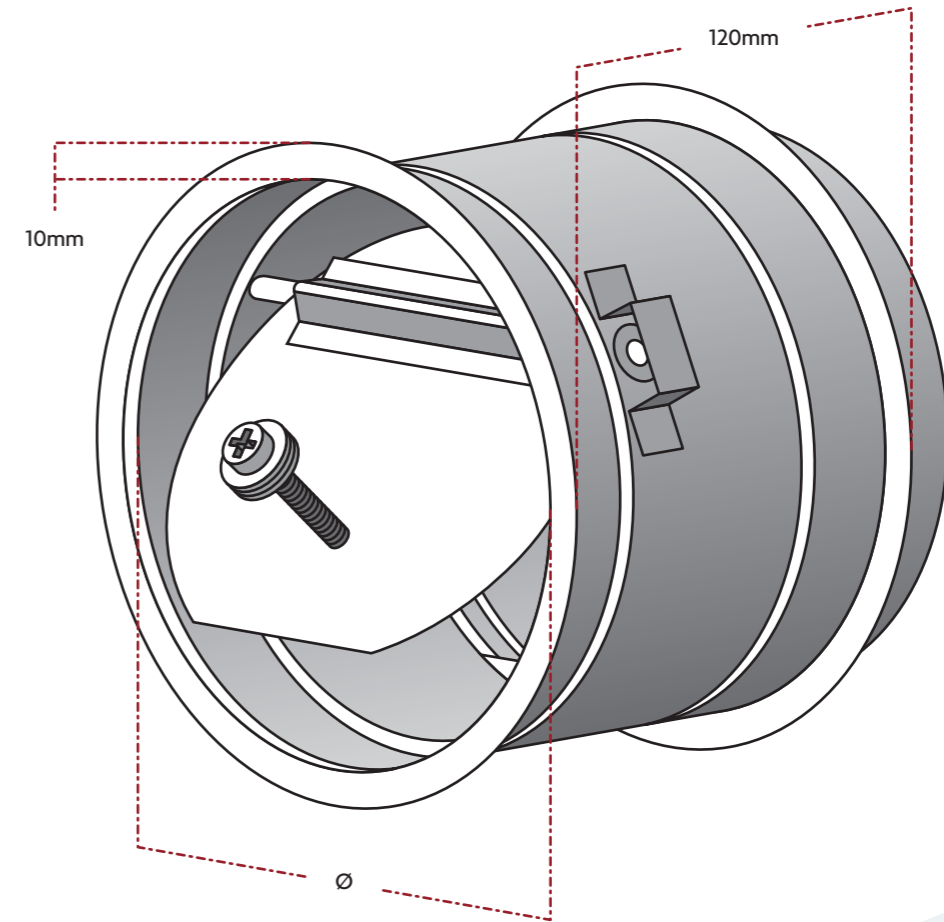


### Draught Stabilizer

Draught Stabilizers are used for the control of draught within a Deltavent chimney system, caused by the effect of lighter flue gases rising within the chimney stack.

The effectiveness of the Draught Stabilizer is established using a swinging vertical gate pivoted slightly above centre,

such that under static conditions the gate will hang vertically down. This gate can be weighted accordingly so that it is lighter or heavier to move, and in doing so varies the draught (suction) level.



This component is manufactured (as standard) to the values provided using either 1mm Grade 304 or 1mm Grade 316 and is secured into position with a V-Band. This enables frequent easy access for both cleaning and inspections.

**NOTE:** There are certain locations where these devices are best situated, for example; within a vertical part of the boiler connection for effect on the individual appliance, at the end of a combined header or below the Base Tee of the riser for overall effect.

**Terminations**

Three types of terminations are available for the Deltavent product, all of which have been designed to allow/aid the safe release of flue gases whilst giving a decorative end finish.

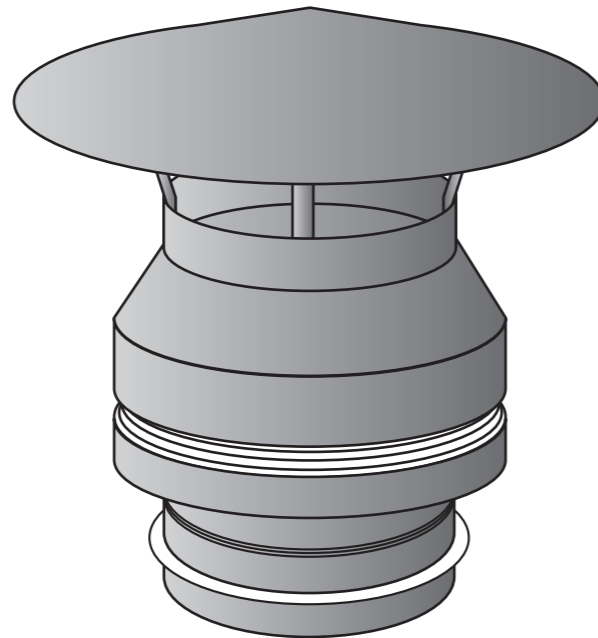
Deltavent terminals comprise of male locating spigots conjoined within a 10mm connection flange. All are fixed/secured to the top section of a vertical rise using both V-Band and locking Clampband provided.

**Deltavent Raincaps**

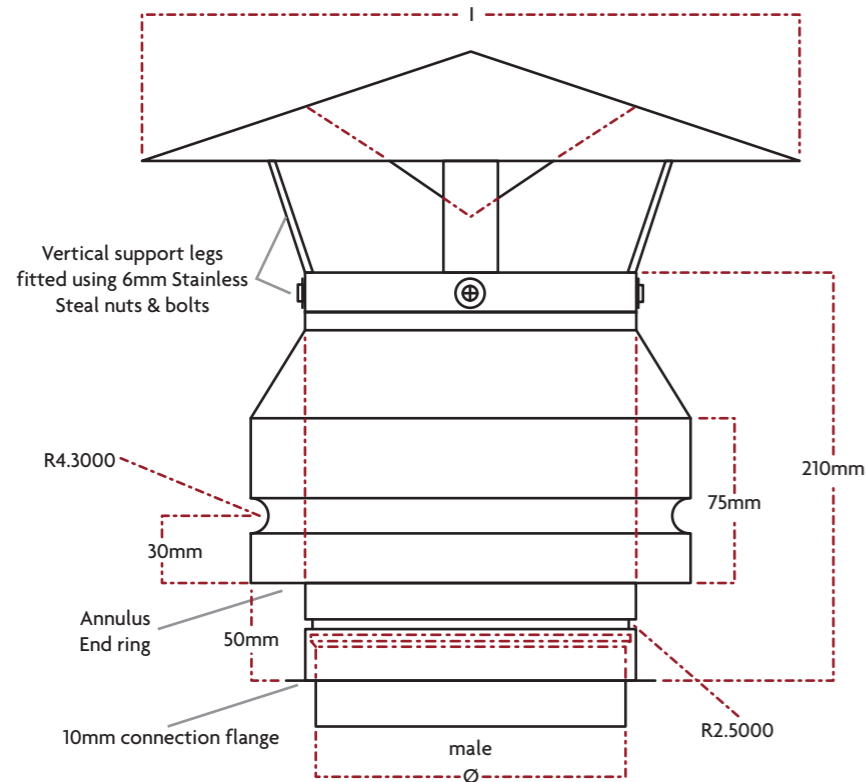
Designed for a multiple of appliances as well as providing a less restrictive all weather protected vent into the atmosphere.

**Deltavent Double-Inverted Raincaps**

For the use on induced draught systems to prevent back pressure within the flue. The internal inverted cone is only used in the Double-Inverted Raincap.



150Ø - 300Ø I = Ø x 2  
350Ø - Above I = Ø x 1.75



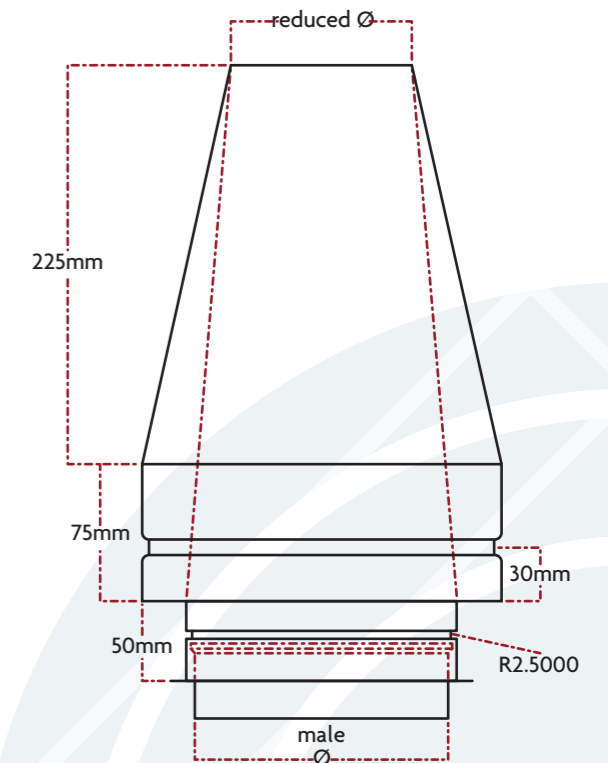
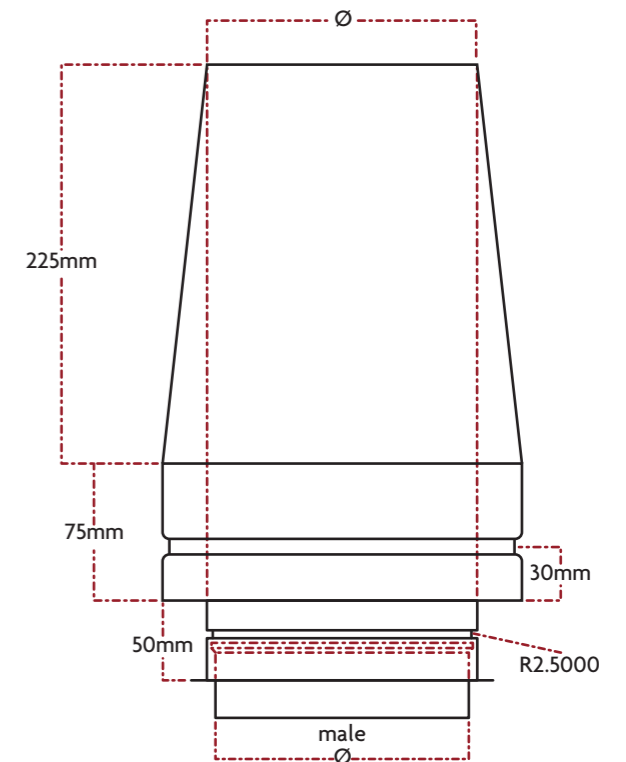
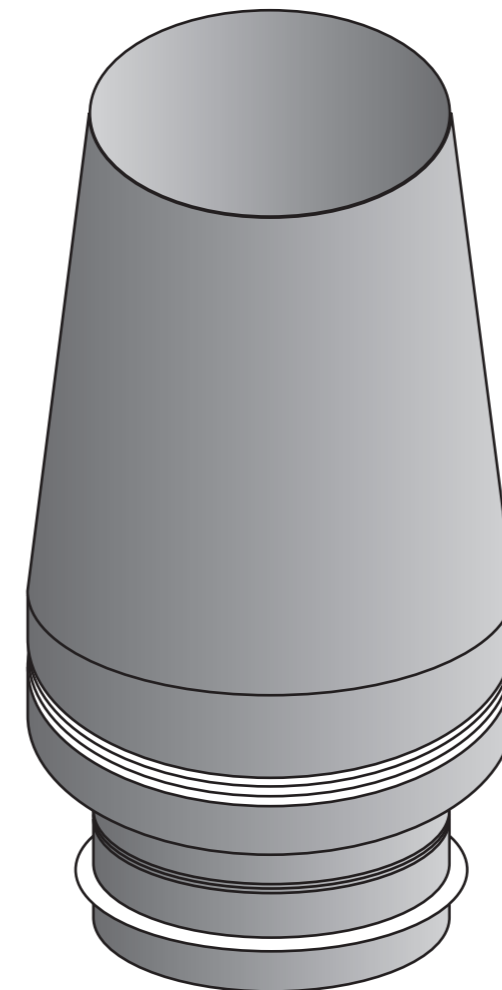
**Deltavent Top Stub**

Top Stubs allow for the unrestricted rapid release of flue gases into the atmosphere.

The effectiveness of the Deltavent terminal is established by its outlet diameter (free surface area). This outlet can be manufactured and supplied with or without Stainless Steel mesh and at a reduced diameter if required, which will increase velocity of it's existing gasses.

Due to the nature of this open outlet design, it is recommended that the Deltavent Top Stub should always work in conjunction with either a moisture (condensate) release point at the base of a vertical rise, or with a vertical Drainage Length fitted with an Internal Drain Drip.

**NOTE: All dimensions given are (standard minimum).**



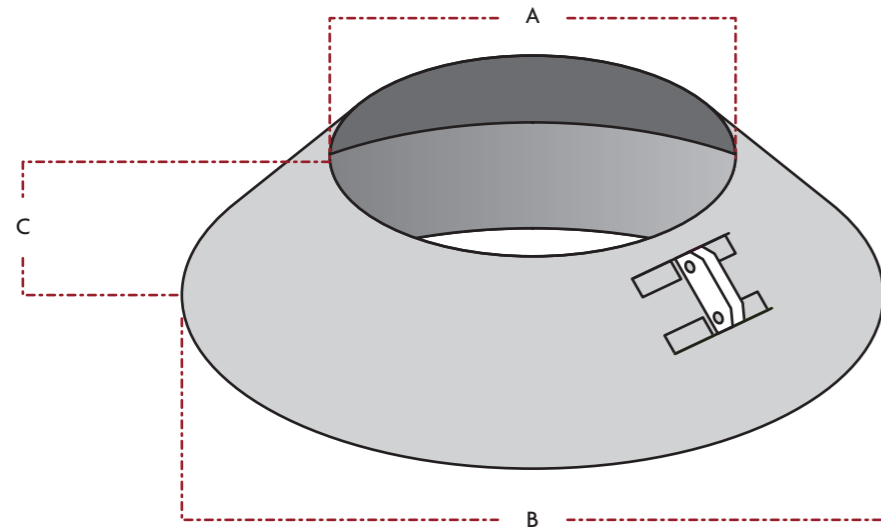
### Storm Collars

Storm Collars are obtainable in two well established designs, which are to be used to apply an all weather impermeable seal around a Deltavent vertical rise immediately after the exit through a Flashing.

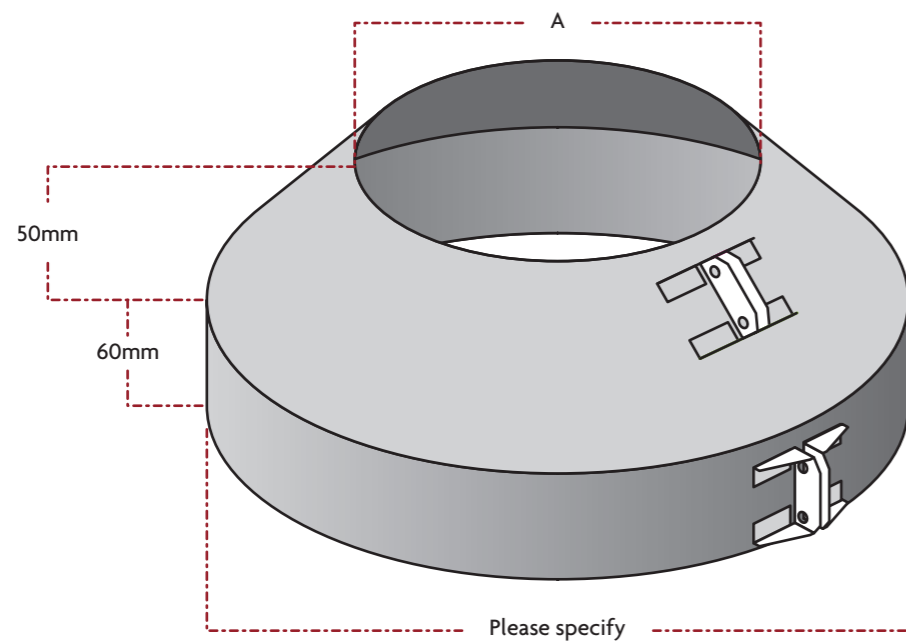
Once the positioning has been achieved (directly above a flashing), the angled profile of the Storm Collar will divert

and deny any access between chimney flue case and Flashing upstand to all adverse weather.

All dimensions provided below are a (standard minimum). However, non-standard dimensions and diameters can also be accommodated if required.



ø	100	125	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
A	150	175	200	225	250	275	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
B	300	325	350	375	400	425	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
C	80							100							150											

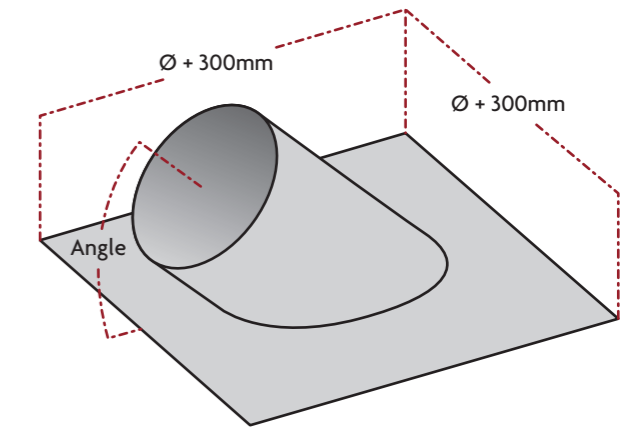
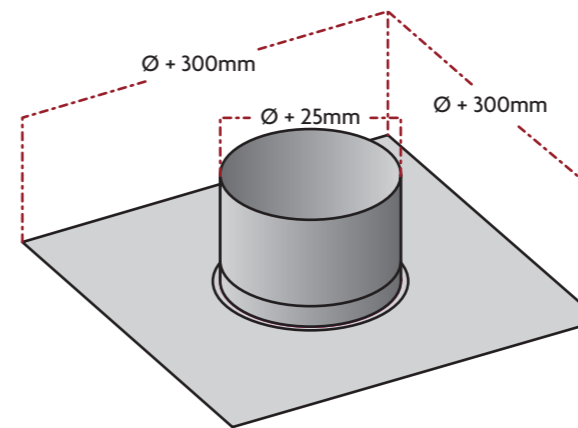


### Flashings

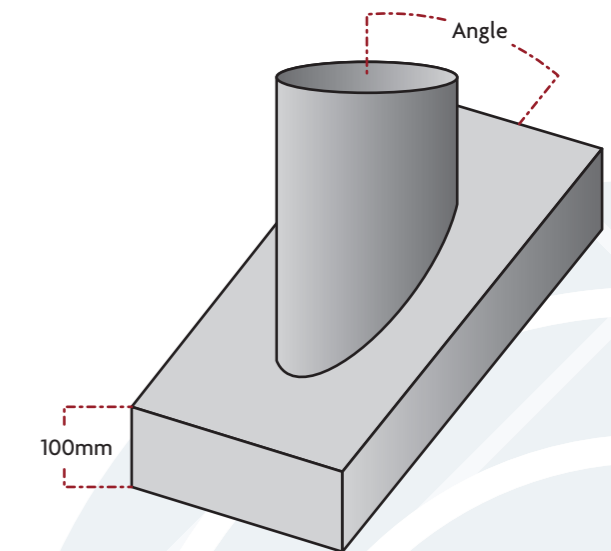
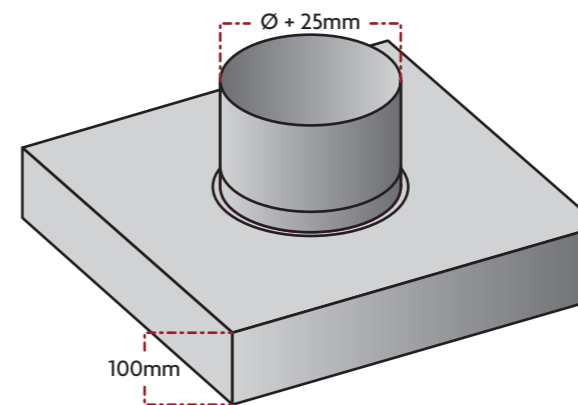
Flashings are to be used as an effective method of providing weather protection to all building structures immediately after roof or chimney penetration of a vertically rising Deltavent chimney.

Two types of Flashings are obtainable for this system, both of which can be fabricated and supplied to suit all roof angles and chimney flue diameters including the irregular.

#### Flat Flashings



#### Box Flashings



NOTE: Picture illustrations and values provided are for standard items. However, unique Flashings combined with multiple upstands and increased values can also be accommodated if required.

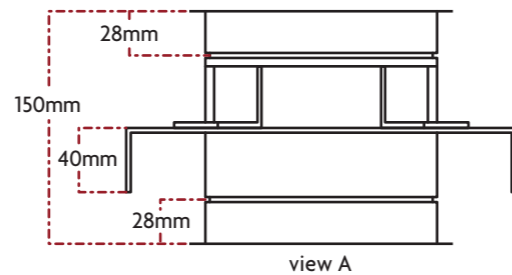
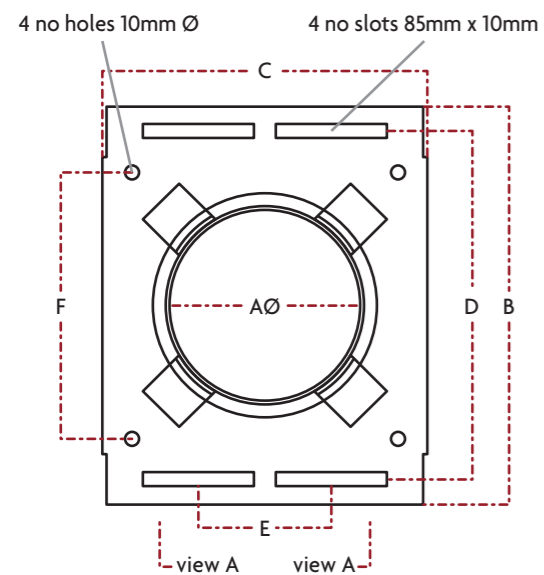
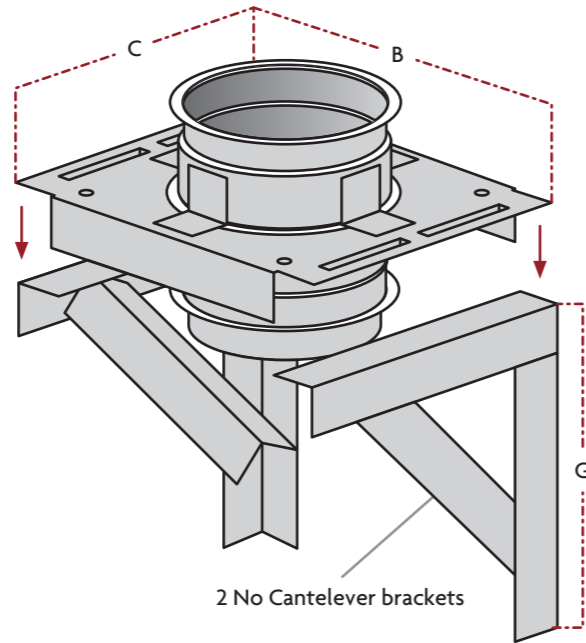
### Support Components

The complete range of support components listed below have been successfully designed and tested to accommodate the chimney's weight whilst providing flexibility and ease on installation as well as stability after installation.

#### Thrust Support Plate

Thrust Support Plates provide load bearing lateral support for the vertically adjoined Deltavent. This component is suitable for supporting on both Uni-Strut or Cantelever brackets and can be constructed in either 3mm Stainless Steel (for external applications) or 3mm Galvanized Steel (for internal applications).

**NOTE:** Picture illustrations and values provided are for standard items. However, unique Thrust Support Plates combined with multiple Thrust Collars and increased values can also be accommodated if required.



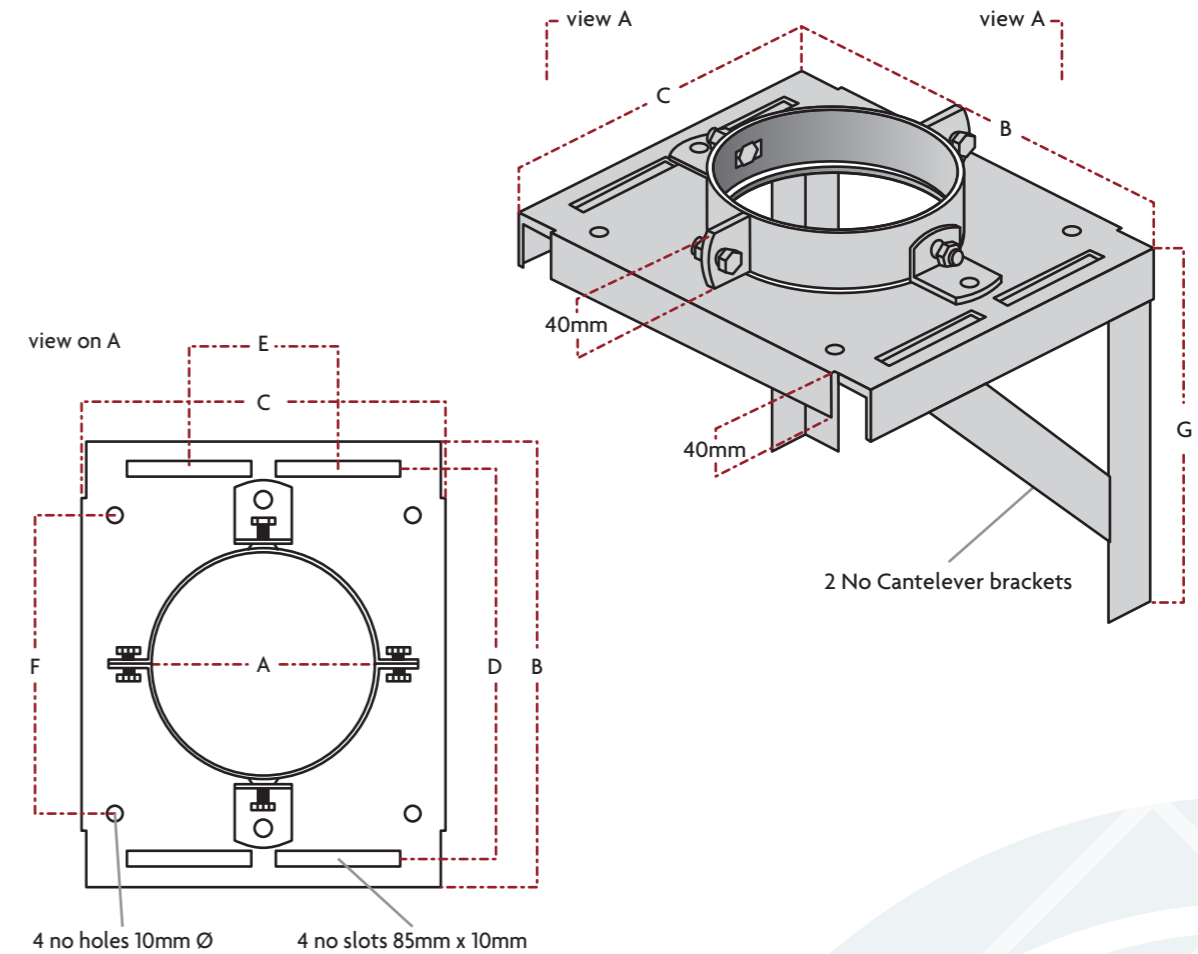
### Intermediate Wall Support

Intermediate Wall Supports are to be incorporated where additional lateral and vertical support is required within a Deltavent vertical rise when weight loads exceed 450kg.

This component is manufactured to the values provided below (as standard) in both Stainless Steel and Galvanized Steel. However, non-standard unique Intermediate Wall

Support designs combining multiple chimney rises and increased values can also be accommodated to your requirements.

**NOTE:** The Intermediate Wall Support is also suitable for supporting of either Uni-strut or Cantelever brackets.



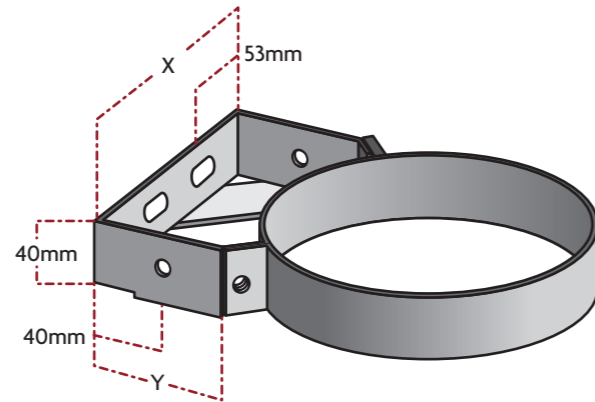
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	312	331	357	382	434	478	529	580	631	628	752	803	854	905	944	994	1044	1094	1144	1194
C	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	254	273	299	324	356	400	451	502	553	604	654	705	756	807	848	896	946	996	1046	1096

ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
B	312	331	357	382	434	478	529	580	631	628	752	803	854	905	944	994	1044	1094	1144	1194
C	254	273	299	324	356	400	451	502	553	604	654	705	756	807	846	896	946	996	1046	1096
D	272	291	317	342	394	439	489	540	591	642	712	763	814	865	904	954	1004	1054	1104	1154
E	103	122	148	173	205	249	300	351	402	453	503	554	605	656	695	745	795	845	895	945
F	208	227	253	278	310	354	405	456	507	558	608	659	710	761	795	850	900	950	1000	1050
G	254	273	299	324	356	400	451	502	553	604	654	705	756	807	848	896	946	996	1046	1096

### B-Type

B-Types have been designed to achieve lateral stability and the accurate alignment of a flue system. These brackets apply a 50mm clearance (as standard) between the adjacent structure and external case of the adjoining flue, and must be used at intervals not exceeding 3 metres.

B-Types up to and including 700 diameter can be manufactured in both 2mm Stainless Steel (for external applications) or Galvanized Steel (for internal applications). 750 diameter and above are to be manufactured using 3mm Stainless or Galvanized Steel.

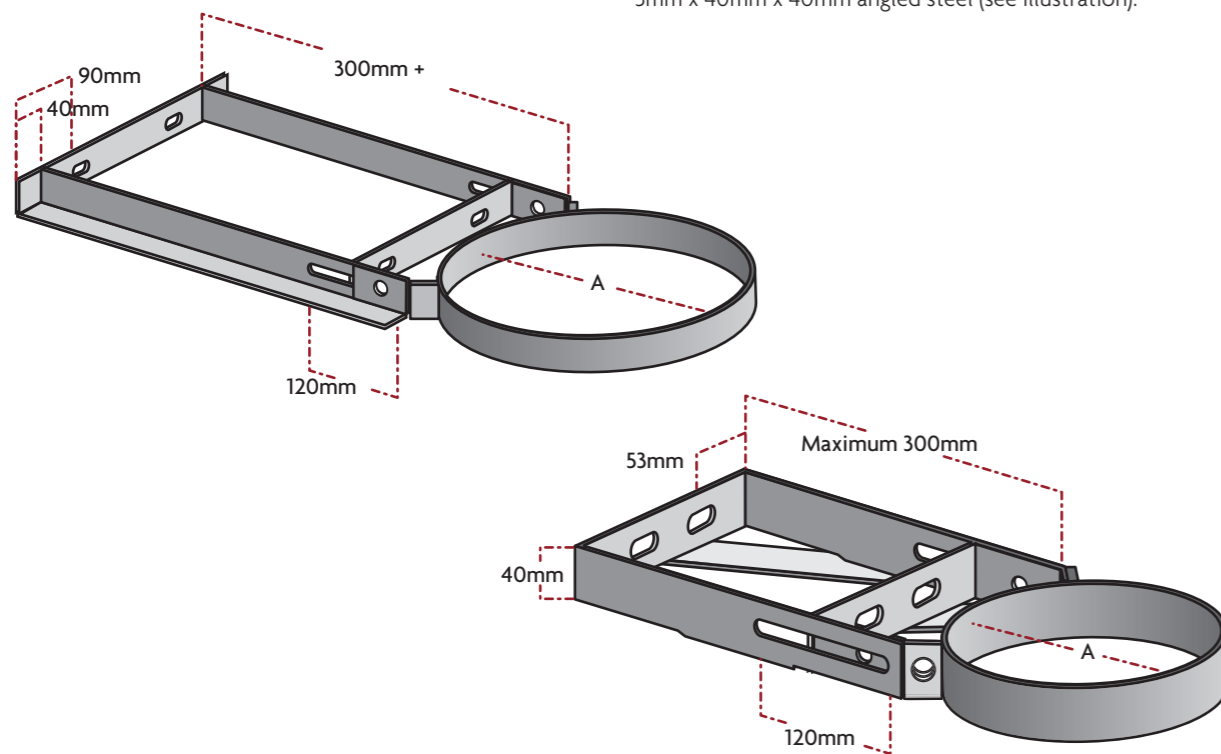


ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
X	173	195	217	238	260	303	346	390	433	476	520	563	606	650	693	736	779	823	866	909	953	996	1039	1083
Y	90	96	102	108	115	127	140	152	165	177	190	202	215	227	240	252	265	277	290	302	313	326	338	351

### Adjustable B-Type

Adjustable B-Types have also been designed to provide lateral stability as well as allowing for a greater clearance (stand off) between the adjacent structure and the external case of adjoined flue.

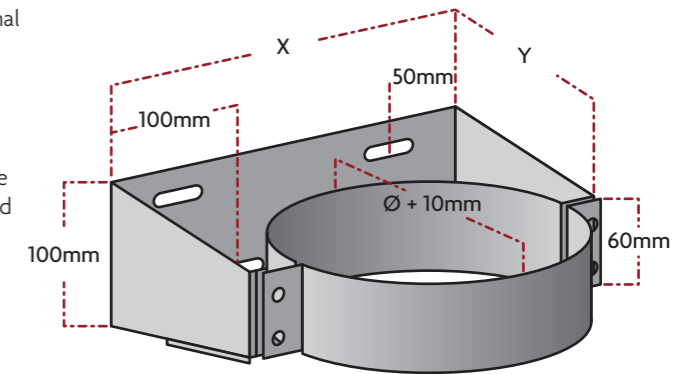
This item consists of a standard B-Type bracket incorporated within an adjustable carriage which can be manufactured in both Stainless and Galvanized steels and can be custom built to your requirements. However, if the clearance needed exceeds 300mm, in order to achieve structural/lateral stability the Adjustable B-Type must be constructed using 3mm x 40mm x 40mm angled steel (see illustration).



### Guide B-Type

Guide B-Types are used to permit the movement of thermal expansion from within a Deltavent vertical run. This free movement design allows both the internal and external integrity to not be compromised at any time.

The Guide B-Type also applies a 50mm clearance (as standard) between an adjacent structure and external case of the adjoining flue and is obtainable in both Stainless and Galvanized steels.



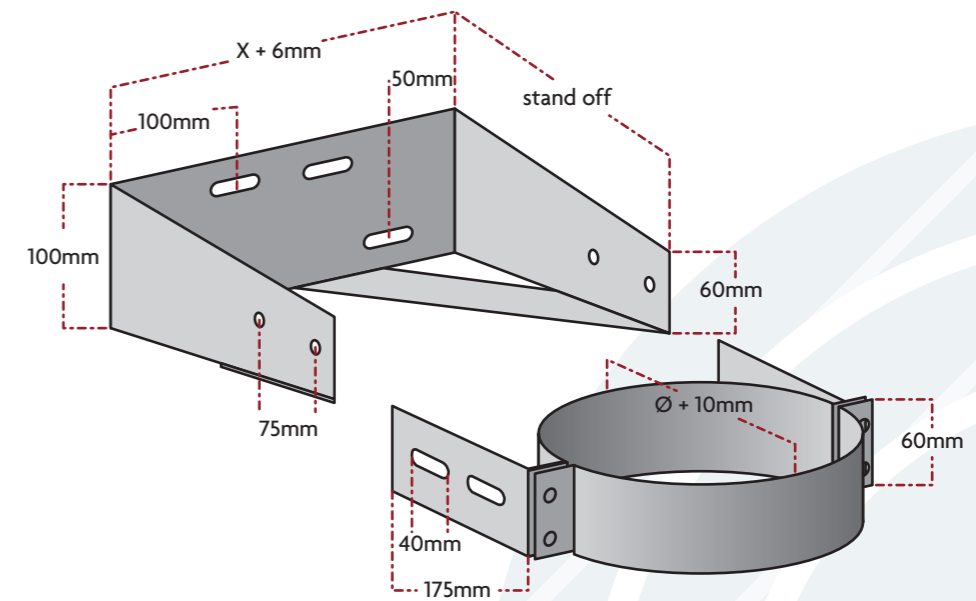
ø A	150	175	200	225	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
X	227	252	277	302	327	377	427	477	527	577	627	677	727	777	827	877	927	977	1027	1077	1127	1177	1227	1277
Y	125	138	150	163	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	650

### Adjustable Guide B-Types

Adjustable Guide B-Types are offered when a greater clearance (stand off) between the adjacent structure and external case of the adjoining flue is desired, applying flexibility on both the design and installation of a Deltavent chimney system.

**CAUTION: THIS BRACKET HAS NO LOAD BEARING CAPABILITY.**

Manufacturing capabilities allow for this bracket component to be constructed in either Stainless or Galvanized steel and to your custom requirements.





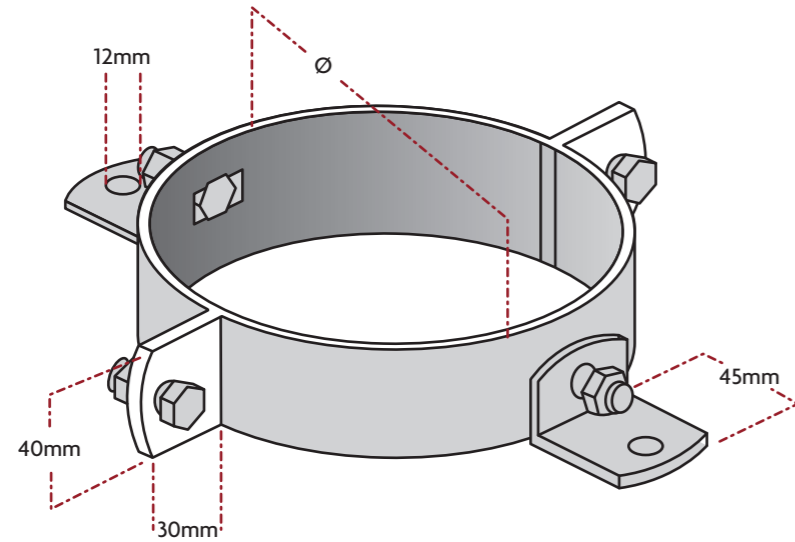
**Universal Rings**

Universal Rings are to be used to achieve the lateral stability and accurate alignment of a Deltavent chimney system.

This component is available both with or without swivel lugs incorporated and is suitable for supporting horizontal or inclined runs, off 10mm Drop Rod at intervals not exceeding

3metres.

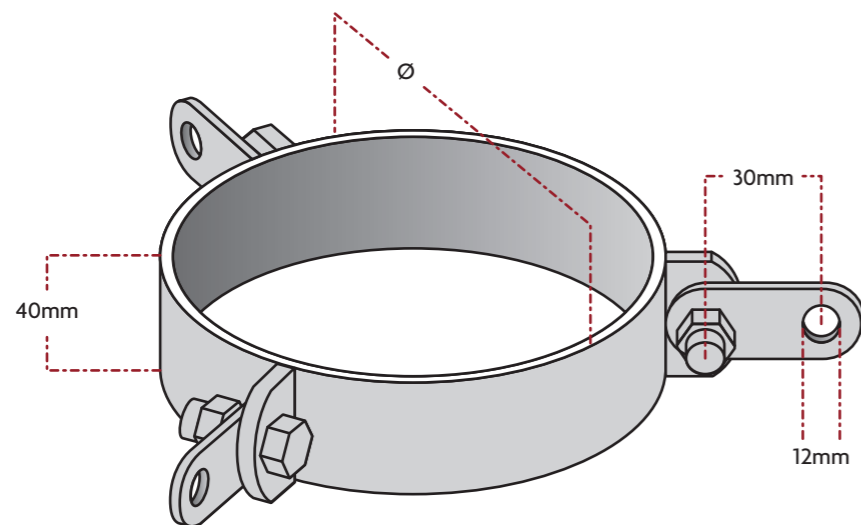
Universal Rings are manufactured using either Stainless or Galvanized steels and to the values provided below. However, non-standard unique items can also be accommodated if required.



**Guy Wire Bracket**

Guy Wire Brackets must be used to apply extra lateral support to the top section, of a Deltavent vertical rise when the last fixing position above the roof is more than 2.5metres below the chimney termination.

This bracket component is available in both Stainless and Galvanized steels to the values provided below, and will require either suitable wires/cables or support rods/bars to be fixed to part of the adjacent building or rigid structure.





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