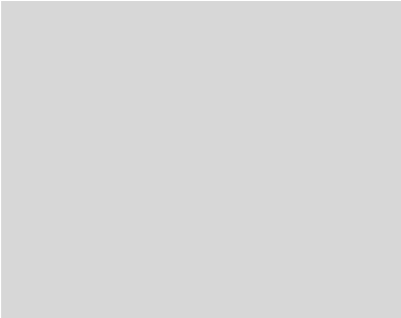


# ACESIAN

FM APPROVED CMT™ DUCTWORKS & FITTINGS





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# Company Profile

Since 1998, Acesian Technologies Pte Ltd (formerly known as Linair Technologies Limited) is the one-stop provider of environmental solutions and integrated services to diverse industries including the semiconductor, wastewater treatment, chemical, pharmaceutical, and biotechnology industries.

Tapping into the experience of our key global partners, we have established a strong position in the duct manufacturing industry through our uncoated welded stainless steel and FM 4922 approved Ethylene Tetrafluoroethylene (ETFE) coated stainless steel ductworks. Being FM 4922 Approved, our ductworks are used for fume and smoke removal without the necessity of internal fire protection sprinklers which are highly corrosion resistant against both flammable and non-flammable corrosive/toxic fumes in exhaust systems. Acesian is always at the cutting edge of new technology to provide the best turnkey solutions that meet the increasing demands and expectations of our clients.

We also offer solutions that provide critical environment airflow control for critical locations such as Healthcare, Laboratories, Clean rooms, and also Universities. With our real-time "true" venturi flow measurement feedback and control, together with ETFE coating, it is the ideal choice for critical airflow services as it not only provides energy savings but also handles highly flammable or corrosive fumes in exhaust systems; ensuring a safe environment for work.



# Our Facilities



## **Main Office**

### **Acesian Technologies Pte Ltd**

Acesian Technologies Pte Ltd is our main office located in Singapore. It is the main hub that connects the whole base of operations from our trusted customers to our factory and our warehouse. Additionally, our Singapore quality class service certificate indicates our value-added service and efficiency toward our client

## **Warehouse**

### **Acesian Technologies Pte Ltd**

Our warehouse is located in Singapore as well, where all our finished products are housed. Accounted for quality checks to ensure the highest quality and standards of delivery. To provide a service that is beyond your expectation.



## **Factory**

### **Acesian Engineering (M) Sdn Bhd**

Our Malaysia factory is located in Johor Bahru, managed by a very experienced team with unrivaled industry knowledge and technical expertise. AESB is a leading ductwork manufacturer and supplier, specializing in ETFE-coated stainless steel ducts and fittings, uncoated stainless steel ducts and fittings, environmental airflow control devices – Fast Response Venturi Dampers and other specialized exhaust system components.

# Qualification Certificate



**FM Approval - ETFE**



**SQC Certificate**



**ISO Certificate**

# Ducting & Fittings

## Our Challenge

Generally, most ductwork is constructed with materials such as PVC, FRP, POLYCARBONATE and etc. However, due to the undesirable flame process and amount of smoke generated during fires, these materials are prohibited for non-sprinkler applications in the market.

On the other hand, with the increase in the development of the semiconductor industry, there is an up climbing demand for exhaust fume systems for clean room operation with the purpose of fireproofing and cost-effectiveness to avoid unscheduled operation interruption by fire.

## The Solution

CMT is a composite of highly corrosive resistance ETFE bonded to the toughness of stainless steel. Meeting the Factory Mutual Requirements,

Ethylene Tetrafluoroethylene (ETFE) is chemical resistant & anti-corrosion. It is also a fire-resistant coating, and it will continue operating at the temperature.

Tough stainless steel ensures integrity through fire disasters and chemical spills. It is cost-effective as it can be used In the non-sprinkler application and it is easy to install on-site.



# Quality Assurance

## Ductwork:

The exterior metal material is 304 or 316 stainless steel.

Proper checking will be performed on the stainless steel substrate to ensure the welding and surface treatment have been done properly before coating.

## Coating Material:

Ethylene Tetrafluoroethylene (ETFE)

Coating Thickness: 280µm

Spark Testing Voltage: 2-0 KV

## Codes and Standards:

1. Passed the Factory Mutual (FM) Research Corporation clean room materials flammability test class 4910.
2. Approved by the Factory Mutual (FM) Research Corporation Standard 4922.
3. Achieve both ASTM E-84 & SMACNA Standards.

## Repair:

ETFE coating can be repaired for field damage by using a hot air gun





# The Hallmark of Quality & Caliber



## Simple Installation

ACESIAN ducts & fittings are available in any customized size and with the modular component designing system, it deducts any requirement to cut or grind at the site. Customizing to meet any special needs or requests, the fabrication would ensure the simplicity of installation and eliminates any process of grinding, sandblasting, or welding during the assembly on site.

## Excellent Corrosion Resistance

Ethylene Tetrafluoroethylene (ETFE) is a tough and abrasion-resistant material that is virtually unaffected by all industrial chemicals. It is also resistant to alkalis, halogens, inorganic compounds, and strong inorganic acids.

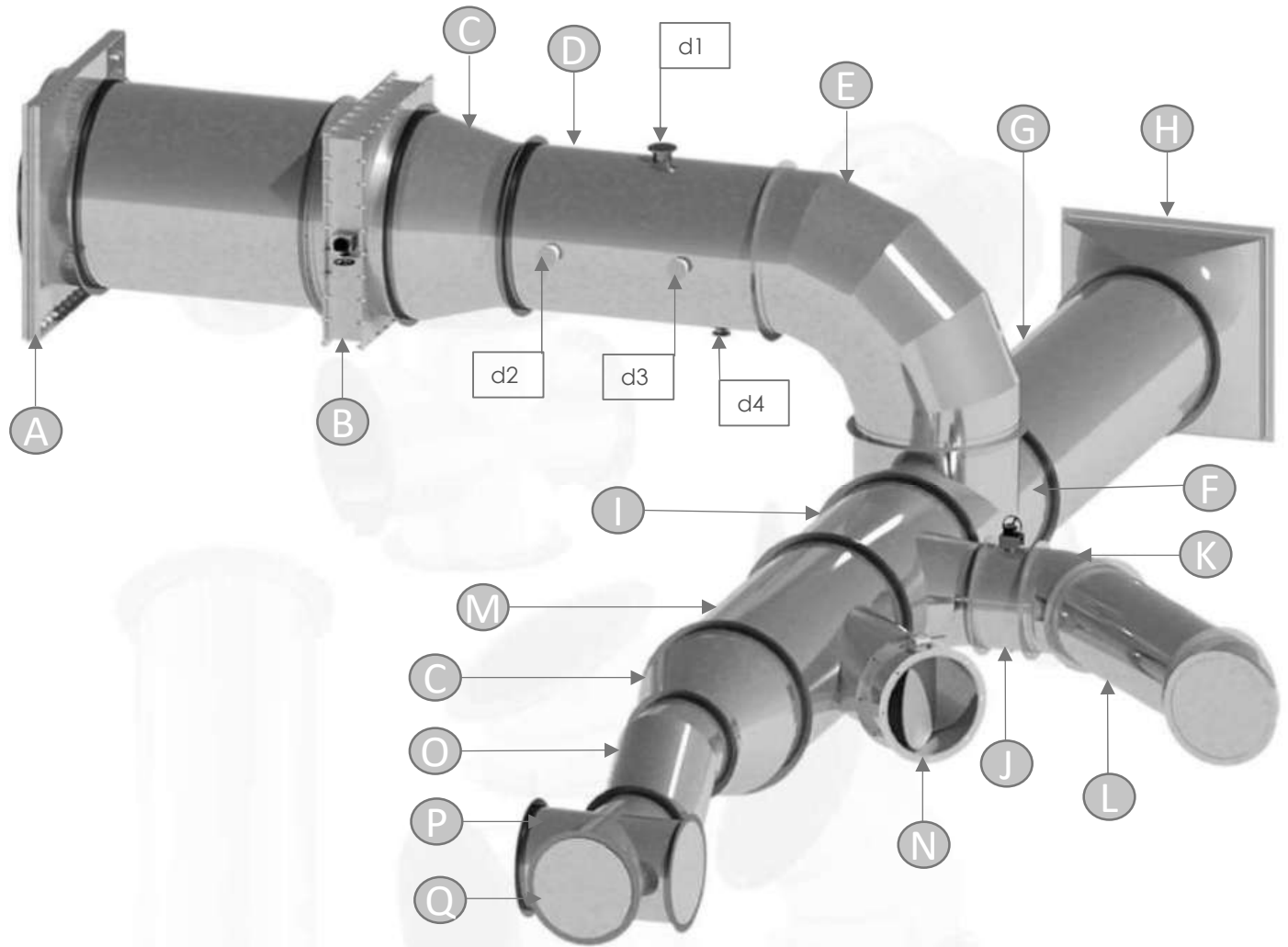
## Most Cost Effectiveness

With approval from Factory Mutual, ACESIAN's ducts are the most corrosive exhaust fume system for use in smoke vapor systems without sprinklers. Using ACESIAN's ducts reduces the expenses of buying, maintaining, and installation of sprinkler facilities. Additionally, it is easy to clean and decontaminate. Accompanied by no leakage problems, ACESIAN's ducts & fittings also aid in the reduction of the cost of insurance and loss of unscheduled interruption by fire.

## Superior Reliability

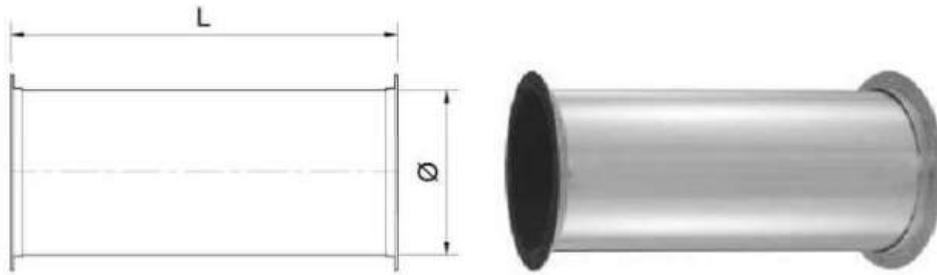
Made with 304 or 316 stainless steel, it ensures that the users are able to withstand any damage from water leaks, impact damage, and aggressive chemical spills; even in an event of a fire, our ducts & fittings would not burn, melt or collapse.

# Our Product



Item	Description
A	Blast Gate Damper
B	Parallel Multiblade Damper
C	Reducer
D	Duct with Ports
d1	Sprinkler Port
d2	KF
d3	Test Port
d4	Drain Port
E	90° Elbow
F	Straight Tee
G	Staight Duct (2420 mm Length)
H	Transformation
I	Boot Tee
J	Single Blade Volume Control Damper (Worm Gear Type)
K	60°, 45°, 30° Elbow
L	Staight Duct (1200 mm Length)
M	Y-Tee
N	Single Blade Volume Control Damper (Handle Type)
O	Offset
P	Cross Tee
Q	Blind Plate

## Straight Duct



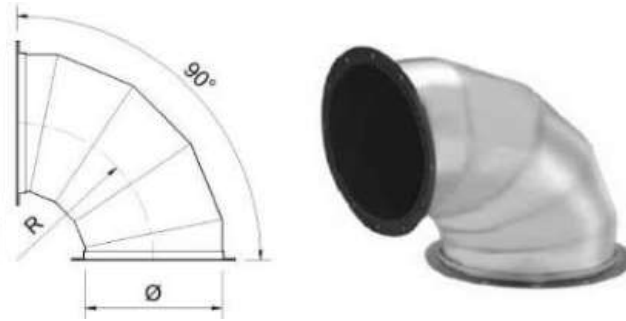
Coated Article Number	Bare Article Number	Ø Diameter (mm)	Thickness (mm) Length (L) 1200 mm	Thickness (mm) Length (L) 2420 mm
CSD - 0100	BSD - 0100	100	0.9	NA
CSD - 0150	BSD - 0150	150		
CSD - 0200	BSD - 0200	200		
CSD - 0250	BSD - 0250	250		
CSD - 0300	BSD - 0300	300		
CSD - 0350	BSD - 0350	350		
CSD - 0400	BSD - 0400	400		
CSD - 0450	BSD - 0450	450		
CSD - 0500	BSD - 0500	500		
CSD - 0550	BSD - 0550	550		
CSD - 0600	BSD - 0600	600		
CSD - 0650	BSD - 0650	650		
CSD - 0700	BSD - 0700	700		
CSD - 0750	BSD - 0750	750		
CSD - 0800	BSD - 0800	800		
CSD - 0850	BSD - 0850	850		
CSD - 0900	BSD - 0900	900		
CSD - 0950	BSD - 0950	950		
CSD - 1000	BSD - 1000	1000	1.0	1.2
CSD - 1100	BSD - 1100	1100		
CSD - 1200	BSD - 1200	1200	1.2	1.5
CSD - 1300	BSD - 1300	1300		
CSD - 1400	BSD - 1400	1400	1.5	2.0
CSD - 1500	BSD - 1500	1500		
CSD - 1600	BSD - 1600	1600		
CSD - 1700	BSD - 1700	1700		
CSD - 1800	BSD - 1800	1800		
CSD - 1900	BSD - 1900	1900		
CSD - 2000	BSD - 2000	2000		

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

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## 90° Gore Elbow



Coated Article Number	Bare Article Number	Ø Diameter (mm)	R Radius (mm)	Gore (pc)	Thickness (mm)
CE90 - 0100	BE90 - 0100	100	R = Ø	4 pc	0.9
CE90 - 0150	BE90 - 0150	150			
CE90 - 0200	BE90 - 0200	200			
CE90 - 0250	BE90 - 0250	250			
CE90 - 0300	BE90 - 0300	300		5 pc	
CE90 - 0350	BE90 - 0350	350			
CE90 - 0400	BE90 - 0400	400			
CE90 - 0450	BE90 - 0450	450			
CE90 - 0500	BE90 - 0500	500			
CE90 - 0550	BE90 - 0550	550			
CE90 - 0600	BE90 - 0600	600			
CE90 - 0650	BE90 - 0650	650			
CE90 - 0700	BE90 - 0700	700			
CE90 - 0750	BE90 - 0750	750			
CE90 - 0800	BE90 - 0800	800			
CE90 - 0850	BE90 - 0850	850			
CE90 - 0900	BE90 - 0900	900		1.0	
CE90 - 0950	BE90 - 0950	950		1.2	
CE90 - 1000	BE90 - 1000	1000			
CE90 - 1100	BE90 - 1100	1100			

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- Large Elbows above Diameter 1100 will be manufactured as smaller fittings
- More specifications may be available upon request.

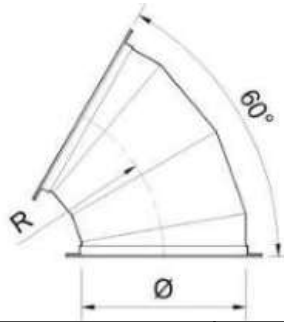
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## 60° Gore Elbow



Coated Article Number	Bare Article Number	Ø Diameter (mm)	R Radius (mm)	Gore (pc)	Thickness (mm)
CE60 - 0100	BE60 - 0100	100	R = 1.5 Ø	2 pcs	0.9
CE60 - 0150	BE60 - 0150	150	R = Ø	4 pcs	
CE60 - 0200	BE60 - 0200	200			
CE60 - 0250	BE60 - 0250	250			
CE60 - 0300	BE60 - 0300	300			
CE60 - 0350	BE60 - 0350	350			
CE60 - 0400	BE60 - 0400	400			
CE60 - 0450	BE60 - 0450	450			
CE60 - 0500	BE60 - 0500	500			
CE60 - 0550	BE60 - 0550	550			
CE60 - 0600	BE60 - 0600	600			
CE60 - 0650	BE60 - 0650	650			
CE60 - 0700	BE60 - 0700	700			
CE60 - 0750	BE60 - 0750	750			
CE60 - 0800	BE60 - 0800	800			
CE60 - 0850	BE60 - 0850	850			
CE60 - 0900	BE60 - 0900	900			1.2
CE60 - 0950	BE60 - 0950	950			
CE60 - 1000	BE60 - 1000	1000			
CE60 - 1100	BE60 - 1100	1100			

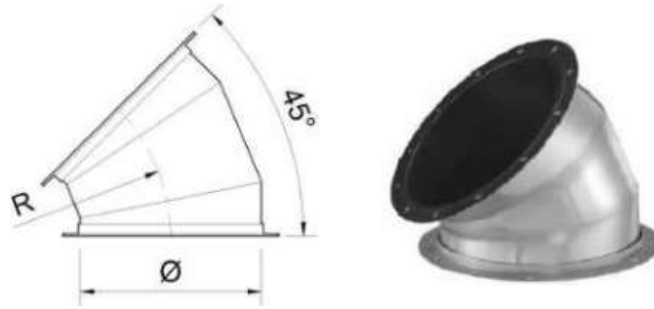
**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- Large Elbows above Diameter 1100 will be manufactured as smaller fittings
- More specifications may be available upon request.

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## 45° Gore Elbow



Coated Article Number	Bare Article Number	Ø Diameter (mm)	R Radius (mm)	Gore (pc)	Thickness (mm)
CE45 - 0100	BE45 - 0100	100	R = 1.5 Ø	2 pc	0.9
CE45 - 0150	BE45 - 0150	150	R = Ø	3 pc	
CE45 - 0200	BE45 - 0200	200			
CE45 - 0250	BE45 - 0250	250			
CE45 - 0300	BE45 - 0300	300			
CE45 - 0350	BE45 - 0350	350			
CE45 - 0400	BE45 - 0400	400			
CE45 - 0450	BE45 - 0450	450			
CE45 - 0500	BE45 - 0500	500			
CE45 - 0550	BE45 - 0550	550			
CE45 - 0600	BE45 - 0600	600			
CE45 - 0650	BE45 - 0650	650			
CE45 - 0700	BE45 - 0700	700			
CE45 - 0750	BE45 - 0750	750			
CE45 - 0800	BE45 - 0800	800			1.0
CE45 - 0850	BE45 - 0850	850			
CE45 - 0900	BE45 - 0900	900			
CE45 - 0950	BE45 - 0950	950			
CE45 - 1000	BE45 - 1000	1000			
CE45 - 1100	BE45 - 1100	1100			
CE45 - 1200	BE45 - 1200	1200			
CE45 - 1300	BE45 - 1300	1300	1.2		
CE45 - 1400	BE45 - 1400	1400			
CE45 - 1500	BE45 - 1500	1500			
					1.5

**Note :**

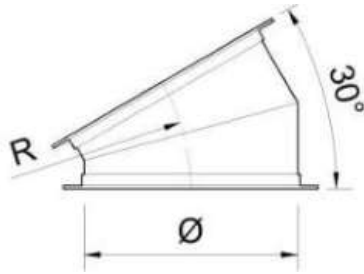
- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- Large Elbows above Diameter 1500 will be manufactured as smaller fittings
- More specifications may be available upon request.

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### 30° Gore Elbow



Coated Article Number	Bare Article Number	Ø Diameter (mm)	R Radius (mm)	Gore (pc)	Thickness (mm)		
CE30 - 0100	BE30 - 0100	100	R = 1.5 Ø	2 pcs	0.9		
CE30 - 0150	BE30 - 0150	150					
CE30 - 0200	BE30 - 0200	200					
CE30 - 0250	BE30 - 0250	250	R = Ø			3 pcs	1.5
CE30 - 0300	BE30 - 0300	300					
CE30 - 0350	BE30 - 0350	350					
CE30 - 0400	BE30 - 0400	400					
CE30 - 0450	BE30 - 0450	450					
CE30 - 0500	BE30 - 0500	500					
CE30 - 0550	BE30 - 0550	550					
CE30 - 0600	BE30 - 0600	600					
CE30 - 0650	BE30 - 0650	650					
CE30 - 0700	BE30 - 0700	700					
CE30 - 0750	BE30 - 0750	750					
CE30 - 0800	BE30 - 0800	800					
CE30 - 0850	BE30 - 0850	850					
CE30 - 0900	BE30 - 0900	900					
CE30 - 0950	BE30 - 0950	950					
CE30 - 1000	BE30 - 1000	1000					
CE30 - 1100	BE30 - 1100	1100					
CE30 - 1200	BE30 - 1200	1200					
CE30 - 1300	BE30 - 1300	1300					
CE30 - 1400	BE30 - 1400	1400					
CE30 - 1500	BE30 - 1500	1500					
CE30 - 1600	BE30 - 1600	1600					
CE30 - 1700	BE30 - 1700	1700					
CE30 - 1800	BE30 - 1800	1800					
CE30 - 1900	BE30 - 1900	1900					
CE30 - 2000	BE30 - 2000	2000					

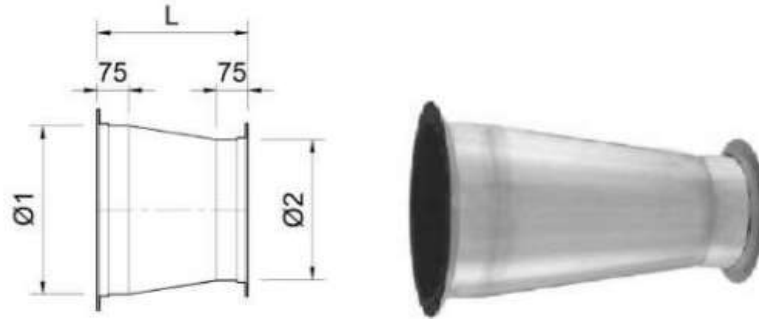
**Note:**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- Large Elbows above Diameter 2200 will be manufactured as smaller fittings
- More specifications may be available upon request.

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## Reducer



Coated Article Number	Bare Article Number	Ø 1 Diameter (mm)	Ø 2 Diameter (mm)	L Length (mm)	Thickness (mm)
CRE - 0100	BRE - 0100	100	smaller than Ø 1	300 or customer's request	0.9
CRE - 0150	BRE - 0150	150			
CRE - 0200	BRE - 0200	200			
CRE - 0250	BRE - 0250	250			
CRE - 0300	BRE - 0300	300			
CRE - 0350	BRE - 0350	350			
CRE - 0400	BRE - 0400	400			
CRE - 0450	BRE - 0450	450			
CRE - 0500	BRE - 0500	500			
CRE - 0550	BRE - 0550	550			
CRE - 0600	BRE - 0600	600			
CRE - 0650	BRE - 0650	650			
CRE - 0700	BRE - 0700	700			
CRE - 0750	BRE - 0750	750			
CRE - 0800	BRE - 0800	800			
CRE - 0850	BRE - 0850	850			
CRE - 0900	BRE - 0900	900			
CRE - 0950	BRE - 0950	950			
CRE - 1000	BRE - 1000	1000			1.0
CRE - 1100	BRE - 1100	1100			1.2
CRE - 1200	BRE - 1200	1200			
CRE - 1300	BRE - 1300	1300			
CRE - 1400	BRE - 1400	1400			
CRE - 1500	BRE - 1500	1500			
CRE - 1600	BRE - 1600	1600			
CRE - 1700	BRE - 1700	1700			
CRE - 1800	BRE - 1800	1800			
CRE - 1900	BRE - 1900	1900	1.5		
CRE - 2000	BRE - 2000	2000			

**Note:**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

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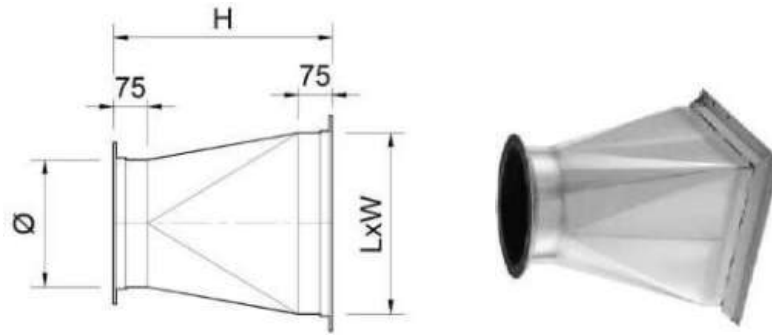
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### Transformation (Square to Round)



Coated Article Number	Bare Article Number	Ø Diameter (mm)	L x W Length x Width (mm)	H Height (mm)	Thickness (mm)
CSTR - 0100	BSTR - 0100	100	Customer's request	300 or customer's request	0.9
CSTR - 0150	BSTR - 0150	150			
CSTR - 0200	BSTR - 0200	200			
CSTR - 0250	BSTR - 0250	250			
CSTR - 0300	BSTR - 0300	300			
CSTR - 0350	BSTR - 0350	350			
CSTR - 0400	BSTR - 0400	400			
CSTR - 0450	BSTR - 0450	450			
CSTR - 0500	BSTR - 0500	500			
CSTR - 0550	BSTR - 0550	550			
CSTR - 0600	BSTR - 0600	600			
CSTR - 0650	BSTR - 0650	650			
CSTR - 0700	BSTR - 0700	700			
CSTR - 0750	BSTR - 0750	750			
CSTR - 0800	BSTR - 0800	800			
CSTR - 0850	BSTR - 0850	850			
CSTR - 0900	BSTR - 0900	900			
CSTR - 0950	BSTR - 0950	950			
CSTR - 1000	BSTR - 1000	1000			
CSTR - 1100	BSTR - 1100	1100			
CSTR - 1200	BSTR - 1200	1200			
CSTR - 1300	BSTR - 1300	1300			
CSTR - 1400	BSTR - 1400	1400			
CSTR - 1500	BSTR - 1500	1500			
CSTR - 1600	BSTR - 1600	1600			
CSTR - 1700	BSTR - 1700	1700			
CSTR - 1800	BSTR - 1800	1800			
CSTR - 1900	BSTR - 1900	1900			
CSTR - 2000	BSTR - 2000	2000			
					1.0
					1.2
					1.5

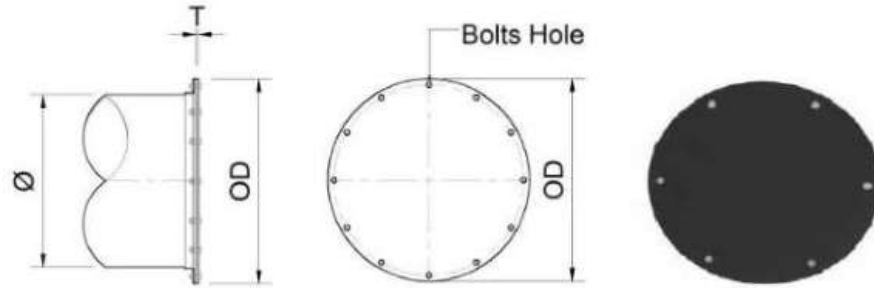
**Note :**

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## Blind Plate



Coated Article Number	Bare Article Number	Ø Diameter (mm)	OD Outside Diameter (mm)	Reinforcement	Thickness (mm)
CBP - 0100	BBP - 0100	100	156	N/A	3.0
CBP - 0150	BBP - 0150	150	206		
CBP - 0200	BBP - 0200	200	260		
CBP - 0250	BBP - 0250	250	310		
CBP - 0300	BBP - 0300	300	368		
CBP - 0350	BBP - 0350	350	417		
CBP - 0400	BBP - 0400	400	467		
CBP - 0450	BBP - 0450	450	517		
CBP - 0500	BBP - 0500	500	578		
CBP - 0550	BBP - 0550	550	628		
CBP - 0600	BBP - 0600	600	678		
CBP - 0650	BBP - 0650	650	728		
CBP - 0700	BBP - 0700	700	778		
CBP - 0750	BBP - 0750	750	828		
CBP - 0800	BBP - 0800	800	878		
CBP - 0850	BBP - 0850	850	928		
CBP - 0900	BBP - 0900	900	978		
CBP - 0950	BBP - 0950	950	1028	2 x Angle Bar 30mm x 30mm x 3mm	
CBP - 1000	BBP - 1000	1000	1079		
CBP - 1100	BBP - 1100	1100	1178		
CBP - 1200	BBP - 1200	1200	1278		
CBP - 1300	BBP - 1300	1300	1378		
CBP - 1400	BBP - 1400	1400	1478	2 x 2 Angle Bar 40mm x 40mm x 4mm	
CBP - 1500	BBP - 1500	1500	1578		
CBP - 1600	BBP - 1600	1600	1703		
CBP - 1700	BBP - 1700	1700	1803		
CBP - 1800	BBP - 1800	1800	1903		
CBP - 1900	BBP - 1900	1900	2003		
CBP - 2000	BBP - 2000	2000	2102	2 x 2 Angle Bar 50mm x 50mm x 5mm Angle Flange 1PC	

**Note :**

- More specifications may be available upon request.

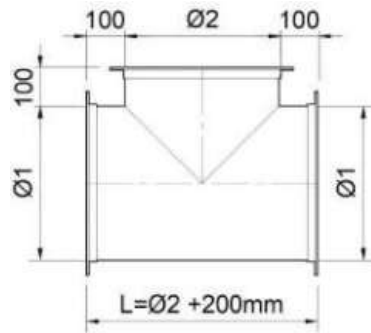
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## Straight Tee



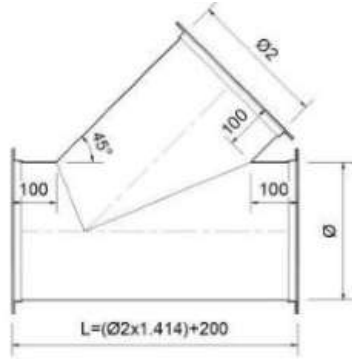
Coated Article Number	Bare Article Number	Ø 1 Diameter (mm)	Ø 2 Diameter (mm)	L Length (mm)	Thickness (mm)
CST - 0100	BST - 0100	100	Smaller than or equal to Ø 1	Ø 2 + 200	0.9
CST - 0150	BST - 0150	150			
CST - 0200	BST - 0200	200			
CST - 0250	BST - 0250	250			
CST - 0300	BST - 0300	300			
CST - 0350	BST - 0350	350			
CST - 0400	BST - 0400	400			
CST - 0450	BST - 0450	450			
CST - 0500	BST - 0500	500			
CST - 0550	BST - 0550	550			
CST - 0600	BST - 0600	600			
CST - 0650	BST - 0650	650			
CST - 0700	BST - 0700	700			
CST - 0750	BST - 0750	750			
CST - 0800	BST - 0800	800			1.0
CST - 0850	BST - 0850	850			
CST - 0900	BST - 0900	900			
CST - 0950	BST - 0950	950			
CST - 1000	BST - 1000	1000			
CST - 1100	BST - 1100	1100			
CST - 1200	BST - 1200	1200			
CST - 1300	BST - 1300	1300	1.2		
CST - 1400	BST - 1400	1400			
CST - 1500	BST - 1500	1500			
CST - 1600	BST - 1600	1600			
CST - 1700	BST - 1700	1700			
CST - 1800	BST - 1800	1800			
CST - 1900	BST - 1900	1900			
CST - 2000	BST - 2000	2000			
					1.5
					2.0

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

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**45° Tee**


Coated Article Number	Bare Article Number	Ø 1 Diameter (mm)	Ø 2 Diameter (mm)	L Length (mm)	Thickness (mm)
C45T - 0100	B45T - 0100	100	Smaller than or equal to Ø 1	$(\text{Ø } 2 \times 1.414) + 200$	0.9
C45T - 0150	B45T - 0150	150			
C45T - 0200	B45T - 0200	200			
C45T - 0250	B45T - 0250	250			
C45T - 0300	B45T - 0300	300			
C45T - 0350	B45T - 0350	350			
C45T - 0400	B45T - 0400	400			
C45T - 0450	B45T - 0450	450			
C45T - 0500	B45T - 0500	500			
C45T - 0550	B45T - 0550	550			
C45T - 0600	B45T - 0600	600			
C45T - 0650	B45T - 0650	650			
C45T - 0700	B45T - 0700	700			
C45T - 0750	B45T - 0750	750			
C45T - 0800	B45T - 0800	800			
C45T - 0850	B45T - 0850	850			
C45T - 0900	B45T - 0900	900			
C45T - 0950	B45T - 0950	950			
C45T - 1000	B45T - 1000	1000			
C45T - 1100	B45T - 1100	1100			
C45T - 1200	B45T - 1200	1200			
C45T - 1300	B45T - 1300	1300			
C45T - 1400	B45T - 1400	1400			
C45T - 1500	B45T - 1500	1500			
C45T - 1600	B45T - 1600	1600			
C45T - 1700	B45T - 1700	1700			
C45T - 1800	B45T - 1800	1800			
C45T - 1900	B45T - 1900	1900			
C45T - 2000	B45T - 2000	2000			
					1.0
					1.2
					1.5

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

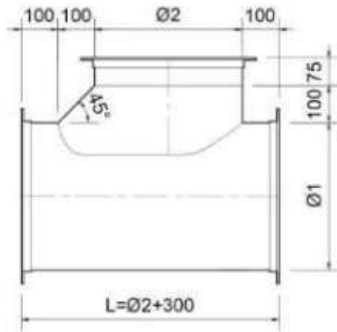
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## Boot Tee



Coated Article Number	Bare Article Number	Ø 1 Diameter (mm)	Ø 2 Diameter (mm)	L Length (mm)	Thickness (mm)
CBT - 0100	BBT - 0100	100	Smaller than or equal to Ø 1	Ø 2 + 300	0.9
CBT - 0150	BBT - 0150	150			
CBT - 0200	BBT - 0200	200			
CBT - 0250	BBT - 0250	250			
CBT - 0300	BBT - 0300	300			
CBT - 0350	BBT - 0350	350			
CBT - 0400	BBT - 0400	400			
CBT - 0450	BBT - 0450	450			
CBT - 0500	BBT - 0500	500			
CBT - 0550	BBT - 0550	550			
CBT - 0600	BBT - 0600	600			
CBT - 0650	BBT - 0650	650			
CBT - 0700	BBT - 0700	700			
CBT - 0750	BBT - 0750	750			1.0
CBT - 0800	BBT - 0800	800			
CBT - 0850	BBT - 0850	850			
CBT - 0900	BBT - 0900	900			
CBT - 0950	BBT - 0950	950			
CBT - 1000	BBT - 1000	1000			
CBT - 1100	BBT - 1100	1100			
CBT - 1200	BBT - 1200	1200	1.2		
CBT - 1300	BBT - 1300	1300			
CBT - 1400	BBT - 1400	1400			
CBT - 1500	BBT - 1500	1500			
CBT - 1600	BBT - 1600	1600			
CBT - 1700	BBT - 1700	1700			
CBT - 1800	BBT - 1800	1800			
CBT - 1900	BBT - 1900	1900			
CBT - 2000	BBT - 2000	2000			
					1.5
					2.0

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

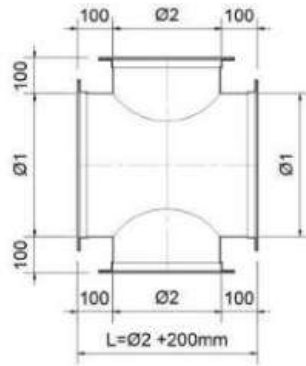
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### Cross Tee



Coated Article Number	Bare Article Number	Ø 1 Diameter (mm)	Ø 2 Diameter (mm)	L Length (mm)	Thickness (mm)
CCT - 0100	BCT - 0100	100	100	Ø 2 + 200	0.9
CCT - 0150	BCT - 0150	150	150		
CCT - 0200	BCT - 0200	200	200		
CCT - 0250	BCT - 0250	250	250		
CCT - 0300	BCT - 0300	300	300		
CCT - 0350	BCT - 0350	350	350		
CCT - 0400	BCT - 0400	400	400		
CCT - 0450	BCT - 0450	450	450		
CCT - 0500	BCT - 0500	500	500		
CCT - 0550	BCT - 0550	550	550		
CCT - 0600	BCT - 0600	600	600		
CCT - 0650	BCT - 0650	650	650		
CCT - 0700	BCT - 0700	700	700		
CCT - 0750	BCT - 0750	750	750		
CCT - 0800	BCT - 0800	800	800		
CCT - 0850	BCT - 0850	850	850		
CCT - 0900	BCT - 0900	900	900		1.0
CCT - 0950	BCT - 0950	950	950		2.0
CCT - 1000	BCT - 1000	1000	1000		
CCT - 1100	BCT - 1100	1100	1100		
CCT - 1200	BCT - 1200	1200	1200		
CCT - 1300	BCT - 1300	1300	1300		
CCT - 1400	BCT - 1400	1400	1400		
CCT - 1500	BCT - 1500	1500	1500		
CCT - 1600	BCT - 1600	1600	1600		
CCT - 1700	BCT - 1700	1700	1700		
CCT - 1800	BCT - 1800	1800	1800		
CCT - 1900	BCT - 1900	1900	1900		
CCT - 2000	BCT - 2000	2000	2000		

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

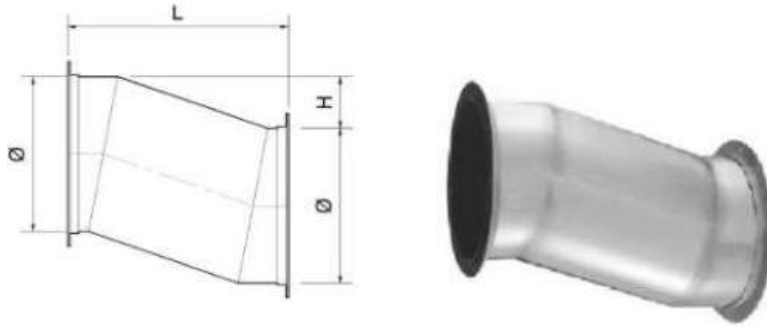
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## Offset



Coated Article Number	Bare Article Number	Ø Diameter (mm)	H Height (mm)	L Length (mm)	Thickness (mm)
COS - 0100	BOS - 0100	100	Customer's request	Customer's request	0.9
COS - 0150	BOS - 0150	150			
COS - 0200	BOS - 0200	200			
COS - 0250	BOS - 0250	250			
COS - 0300	BOS - 0300	300			
COS - 0350	BOS - 0350	350			
COS - 0400	BOS - 0400	400			
COS - 0450	BOS - 0450	450			
COS - 0500	BOS - 0500	500			
COS - 0550	BOS - 0550	550			
COS - 0600	BOS - 0600	600			1.2
COS - 0650	BOS - 0650	650			
COS - 0700	BOS - 0700	700			
COS - 0750	BOS - 0750	750			
COS - 0800	BOS - 0800	800			1.5
COS - 0850	BOS - 0850	850			
COS - 0900	BOS - 0900	900			
COS - 0950	BOS - 0950	950			
COS - 1000	BOS - 1000	1000			
COS - 1100	BOS - 1100	1100			
COS - 1200	BOS - 1200	1200			
COS - 1300	BOS - 1300	1300			
COS - 1400	BOS - 1400	1400			
COS - 1500	BOS - 1500	1500			
COS - 1600	BOS - 1600	1600			
COS - 1700	BOS - 1700	1700			
COS - 1800	BOS - 1800	1800			
COS - 1900	BOS - 1900	1900			
COS - 2000	BOS - 2000	2000	2.0		

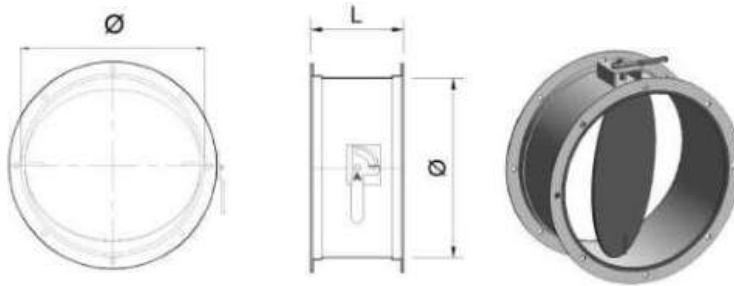
**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
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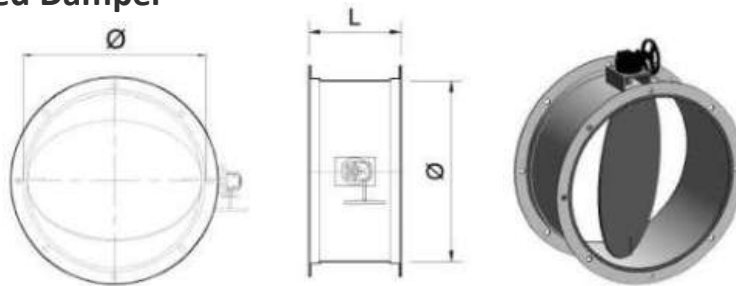
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### Volume Control Damper



Coated Article Number	Bare Article Number	Ø Diameter (mm)	L Length (mm)	Actuation	Thickness (mm)
CVD - 0100	BVD - 0100	100	150	Handle	0.9
CVD - 0150	BVD - 0150	150			
CVD - 0200	BVD - 0200	200			
CVD - 0250	BVD - 0250	250	224		

### Worm Gear Operated Damper



Coated Article Number	Bare Article Number	Ø Diameter (mm)	L Length (mm)	Actuation	Thickness (mm)
CWD - 0100	BWD - 0100	100	150	Worm Gear	0.9
CWD - 0150	BWD - 0150	150			
CWD - 0200	BWD - 0200	200			
CWD - 0250	BWD - 0250	250	224		
CWD - 0300	BWD - 0300	300			
CWD - 0350	BWD - 0350	350			
CWD - 0400	BWD - 0400	400			
CWD - 0450	BWD - 0450	450			
CWD - 0500	BWD - 0500	500			
CWD - 0550	BWD - 0550	550			
CWD - 0600	BWD - 0600	600			
CWD - 0650	BWD - 0650	650			

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

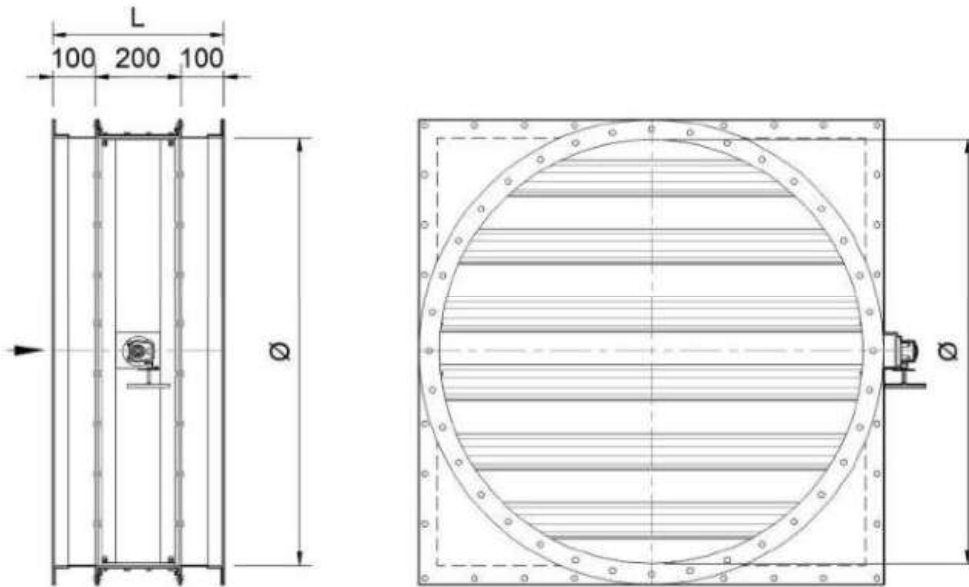
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## Parallel Multiblade Damper



Coated Article Number	Bare Article Number	Ø Diameter (mm)	L Length (mm)	Actuation	Thickness (mm)	
					Coated	Bare
CPBD - 0700	BPBD - 0700	700	400	1pc Worm Gear	2.0	1.5
CPBD - 0750	BPBD - 0750	750				
CPBD - 0800	BPBD - 0800	800				
CPBD - 0850	BPBD - 0850	850				
CPBD - 0900	BPBD - 0900	900				
CPBD - 0950	BPBD - 0950	950				
CPBD - 1000	BPBD - 1000	1000		2pcs Worm Gear	2.0	2.0
CPBD - 1100	BPBD - 1100	1100				
CPBD - 1200	BPBD - 1200	1200				
CPBD - 1300	BPBD - 1300	1300				
CPBD - 1400	BPBD - 1400	1400				
CPBD - 1500	BPBD - 1500	1500				
CPBD - 1600	BPBD - 1600	1600				
CPBD - 1700	BPBD - 1700	1700				
CPBD - 1800	BPBD - 1800	1800				
CPBD - 1900	BPBD - 1900	1900				
CPBD - 2000	BPBD - 2000	2000				

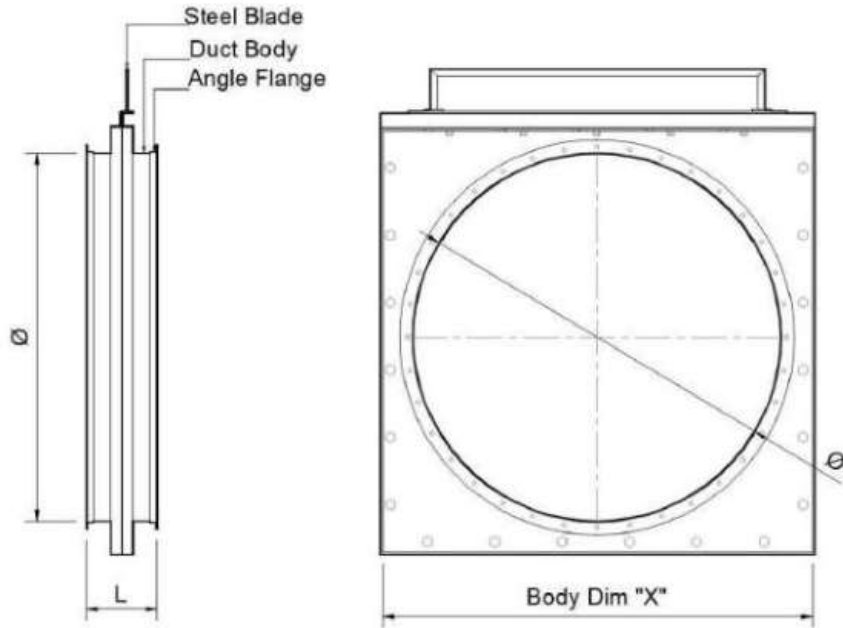
**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

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## Blast Gate Damper



Coated Article Number	Bare Article Number	Ø Diameter (mm)	X Body Dim (mm)	L Length (mm)	Body Thickness (mm)	Blade Thickness (mm)	No. of Blade
CBG - 0100	BBG - 0100	100	Ø + 100	200	1.0	6.0	1
CBG - 0200	BBG - 0200	200					
CBG - 0300	BBG - 0300	300					
CBG - 0400	BBG - 0400	400	Ø + 110		1.2		
CBG - 0500	BBG - 0500	500					
CBG - 0600	BBG - 0600	600					
CBG - 0700	BBG - 0700	700					
CBG - 0800	BBG - 0800	800	Ø + 125		1.5		2
CBG - 0900	BBG - 0900	900					
CBG - 1000	BBG - 1000	1000					
CBG - 1100	BBG - 1100	1100					
CBG - 1200	BBG - 1200	1200	Ø + 150	2.0			
CBG - 1300	BBG - 1300	1300					
CBG - 1400	BBG - 1400	1400					
CBG - 1500	BBG - 1500	1500					
CBG - 1600	BBG - 1600	1600					
CBG - 1700	BBG - 1700	1700					
CBG - 1800	BBG - 1800	1800					
CBG - 1900	BBG - 1900	1900			3		
CBG - 2000	BBG - 2000	2000					

**Note :**

- Ductworks thickness is built on SMACNA "Round Industrial Duct Construction standards" Classes 1 and 5 at pressure -2500 Pa (-10 in. wg). It also can be changed upon customer's request.
- More specifications may be available upon request.

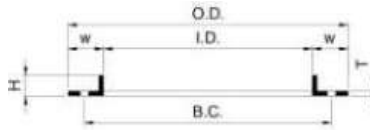
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## Angle Flange



O.D. : Outside Diameter  
 I.D. : Inside Diameter  
 B.C. : Bolt Circle Diameter  
 H : Angle Height  
 T : Angle Thickness  
 W : Flange Width

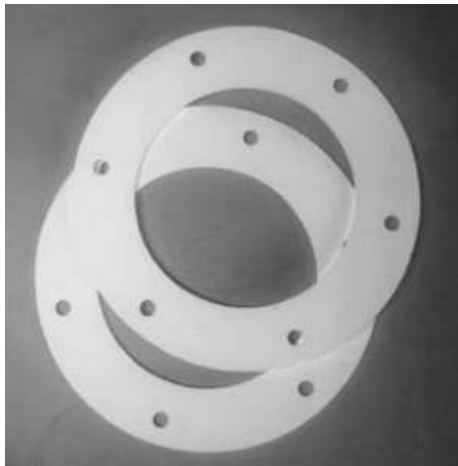
Duct Size		Flange size		Details						
		ID	OD	Thickness	Width	Height	PCD/B.C.	Hole	Bolt Size	Hole Number
in	mm	mm	mm	mm	mm	mm	mm	mm	in	nos
4	100	103	156	3.0	25.4	17	133	8.5	1/4	6
6	150	153	206	3.0	25.4	17	183	8.5	1/4	6
8	200	203	260	3.0	27	18	233	8.5	1/4	8
10	250	253	310	3.0	27	18	283	8.5	1/4	10
12	300	303	368	3.0	32	20	340	11	3/8	12
14	350	353	416	3.0	32	20	388	11	3/8	12
16	400	403	466	3.0	32	20	438	11	3/8	16
18	450	453	528	3.0	38	20	488	11	3/8	16
20	500	503	578	3.0	38	20	544	11	3/8	20
22	550	553	628	3.0	38	20	594	11	3/8	20
24	600	603	678	3.0	38	20	644	11	3/8	20
26	650	653	728	3.0	38	20	694	11	3/8	24
28	700	703	778	3.0	38	20	744	11	3/8	24
30	750	753	828	3.0	38	20	794	11	3/8	28
32	800	803	878	3.0	38	20	844	11	3/8	28
34	850	853	928	3.0	38	20	894	11	3/8	32
36	900	903	978	3.0	38	20	944	11	3/8	32
38	950	953	1028	3.0	38	20	994	11	3/8	36
40	1000	1003	1078	4.0	38	38	1044	13.5	1/2	36
42	1050	1053	1128	4.0	38	38	1094	13.5	1/2	40
44	1100	1103	1178	4.0	38	38	1144	13.5	1/2	40
46	1150	1153	1228	4.0	38	38	1194	13.5	1/2	44
48	1200	1203	1278	4.0	38	38	1244	13.5	1/2	44
50	1250	1253	1328	4.0	38	38	1294	13.5	1/2	48
52	1300	1303	1378	4.0	38	38	1344	13.5	1/2	48
54	1350	1353	1428	4.0	38	38	1394	13.5	1/2	52
56	1400	1403	1478	4.0	38	38	1444	13.5	1/2	52
58	1450	1453	1528	4.0	38	38	1494	13.5	1/2	56
60	1500	1503	1578	4.0	38	38	1544	13.5	1/2	56
62	1550	1553	1628	4.0	38	38	1594	13.5	1/2	60
64	1600	1603	1703	5.0	50	50	1660	13.5	1/2	60
66	1650	1653	1753	5.0	50	50	1710	13.5	1/2	64
68	1700	1703	1803	5.0	50	50	1760	13.5	1/2	64
70	1750	1753	1853	5.0	50	50	1810	13.5	1/2	68
72	1800	1803	1903	5.0	50	50	1860	13.5	1/2	68
74	1850	1853	1953	5.0	50	50	1910	13.5	1/2	72
76	1900	1903	2003	5.0	50	50	1960	13.5	1/2	72
78	1950	1953	2053	5.0	50	50	2010	13.5	1/2	74
80	2000	2002	2102	5.0	50	50	2060	13.5	1/2	74
88	2200	2202	2302	5.0	50	50	2260	13.5	1/2	80
92	2300	2302	2402	5.0	50	50	2360	13.5	1/2	88
96	2400	2402	2502	5.0	50	50	2460	13.5	1/2	92
100	2500	2502	2602	5.0	50	50	2560	13.5	1/2	96
104	2600	2602	2702	5.0	50	50	2660	13.5	1/2	100
108	2700	2702	2802	5.0	50	50	2760	13.5	1/2	100
112	2800	2802	2902	5.0	50	50	2860	13.5	1/2	100
120	3000	3002	3102	5.0	50	50	3060	13.5	1/2	104

Note :

• More specifications may be available upon request.

# Accessories

## EPTFE Full Face Gasket sheet



## Physical Properties

Item	Standard
Length Tensile Strength	17.0 Mpa
Cross Tensile Strength	27. Mpa
Compressive Strength	14.7 Mpa
Max Compressive Strength	20 Mpa
Density	0.65-0.95g/cm <sup>3</sup>
Temperature	-240 to 260°C
Compressibility	63-65%
Recovery	8-10%
Leakage	0.1~0.2 x 10 <sup>-4</sup> cm <sup>3</sup> /s

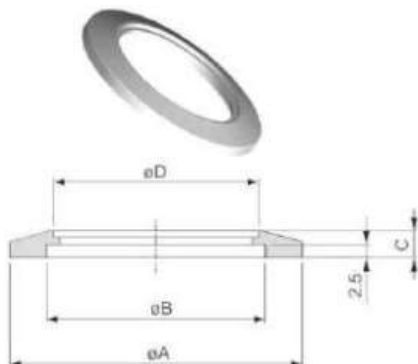
## Sizes Detail

Size	Test Port	Cap
1/4"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
3/8"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
1/2"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
3/4"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
1"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
1 1/2"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
1 1/4"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)
2"	NPT Male Threaded (SS304)	NPT Female Threaded (Teflon)

## Test Port



## KF Flange



## Sizes Detail

Model No	Materials	A	B	C	C
KF10B12	304 S.S	30	12.2	5	12.9
KF16B19	304 S.S	30	17.2	5	19.3
KF25B25	304 S.S	40	26.2	5	25.7
KF40B38	304 S.S	55	41.2	5	38.4
KF50B51	304 S.S	75	52.2	5	51
KF63B63	304 S.S	87	70	5	63.7
KF80B76	304 S.S	114	83	12	76.4
KF100B102	304 S.S	134	102	12	101.8
KF160B153	304 S.S	153	153	12	152.9

## Mechanical Specifications

### Duct Thickness (SMACNA)

Ø Diameter (MM)	L Length (MM)	-1000PA THK(MM)	-2000PA THK(MM)	-2500PA THK(MM)	-3000PA THK(MM)	-3500PA THK(MM)	-4500PA THK(MM)	-5000PA THK(MM)
100	1200	0.9	0.9	0.9	0.9	0.9	0.9	0.9
150								
200								
250								
300								
350								
400								
450								
500								
550								
600								
650								
700								
750								
800								
850								
900								
950								
1000								
1050								
1100								
1150								
1200								
1250								
1300								
1350								
1400								
1450								
1500								
1550								
1600								
1650								
1700								
1750								
1800								
1850								
1900								
1950								
2000								

Note :

- More specifications may be available upon request.

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**Mechanical Specifications**
**Duct Thickness (SMACNA)**

Ø Diameter (MM)	L Length (MM)	-1000PA THK(MM)	-2000PA THK(MM)	-2500PA THK(MM)	-3000PA THK(MM)	-3500PA THK(MM)	-4500PA THK(MM)	-5000PA THK(MM)
100	N/A	N/A						
150								
200								
250								
300								
350								
400								
450								
500								
550								
600	2420	0.9	0.9	1.0	1.2	1.2	1.2	1.5
650			1.0	1.2			1.5	
700		1.0	1.2	1.2	1.5	1.5	1.5	2.0
750				1.2				
800				1.5				
850		1.2	1.5	1.5	2.0	2.0	2.0	2.0
900								
950								
1000								
1050		1.5	2.0	2.0	2.0	2.0	2.0	2.5
1100								
1150								
1200								
1250								
1300		As Customer's Request	As Customer's Request					
1350								
1400								
1450								
1500								
1550								
1600								
1650								
1700								
1750								
1800								
1850								
1900								
1950								
2000								

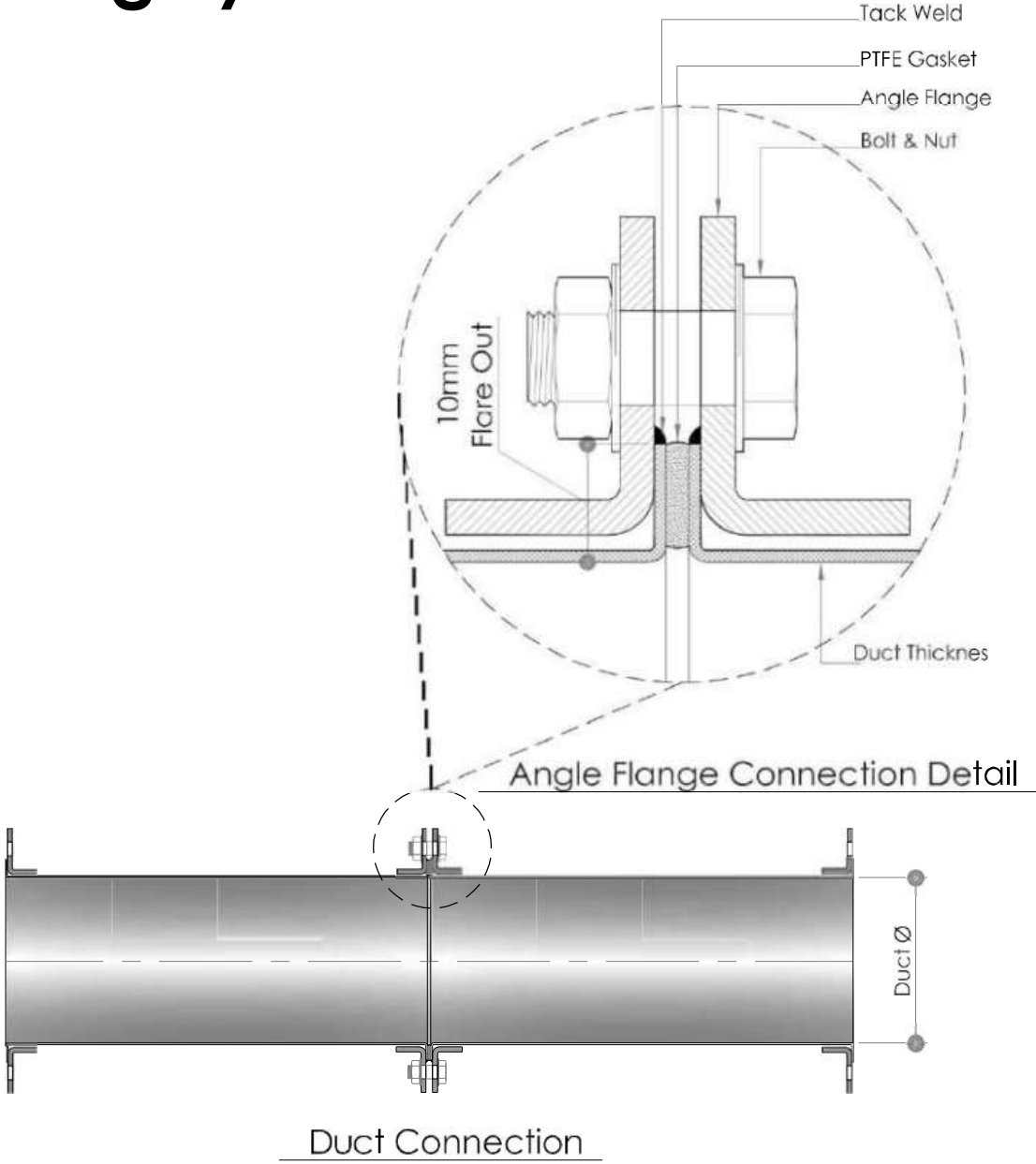
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# Joining System



Bolt Diameter	Torque (pounds x Foot)
5/16" (M6)	22
3/8" (M10)	36
7/16" (M12)	60



## Chemical Resistance

Chemical Categories	Chemical		Temp. (°C)	Days	Retention (%)	
					Elongation	Wt. Gain
Inorganic Acids	Conc. Hydrochloric acid	35%	100	10	100	0.0
	Sulfuric acid	78%	121	10	100	0.1
		98%	121	10	100	0.0
	Oleum		25	10	96	1.3
	Nitric acid	25%	100	14	100	—
		60%	120	10	100	0.7
		70%	60	60	100	—
		70%	120	7	10	—
	Fuming nitric acid		25	10	92	0.6
	Hydrofluoric acid		25	7	95	0.1
Phosphoric acid	30%	100	10	97	-0.4	
	85%	121	10	92	0.4	
Chromic acid	50%	100	10	98	0.3	
Alkalis	Sodium hydroxide	10%	120	10	97	0.0
		50%	120	10	100	-0.3
	Potassium	20%	100	7	100	0
	Ammonium hydroxide	15%	66	7	98	0.1
Other Inorganic Compounds	Chlorine		90	10	94	—
			120	7	85	7
			150	10	41 (Strength)	—
	Bromine		60	7	100	0.1
	Hydrogen peroxide		25	7	98	0.0
	Water		100	7	100	0.0
	Phosphorus trichloride		75	7	99	—
	Phosphorus oxychloride		100	7	99	—
	Silicon tetrachloride		55	7	100	—
	Sulfuric chloride		70	7	100	6
Carbon disulfide		100	30	98	1	
Ferric chloride	25%	70	7	100	6	
Amines	Aniline		25	11	98	0.1
			120	30	82	1.6
	N-methylaniline		120	30	100	0.0
	N-butylamine		78	7	93	5
	N-dibutylamine		120	30	99	0.0
			159	7	72	—
	N-tributylamine		120	30	95	—
	Pyridine		116	11	100	3.8
	Ethylenediamine		25	11	100	—
			117	11	96	2
Triethylamine		90	11	90	1.5	
Dimethylformamid		25	11	100	0.4	
		120	11	95	2.7	
Dimethylacetamide		121	7	98	3.6	
Aromatic compounds	Phenol		100	11	100	0.3
			120	11	67	0.9
	Benzaldehyde		120	11	94	2.3
	Chlorobenzene		25	11	87	0.4
			120	11	98	3.6
	Nitrobenzene		25	11	98	0.2
			120	11	96	3
	Benzene		80	11	95	2.6
	Toluene		111	11	100	2.6
Xylene		120	11	88	2.5	
Cresol		120	11	80	1.7	

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## Chemical Resistance

Chemical Categories	Chemical	Temp. (°C)	Days	Retention (%)	
				Elongation	Wt. Gain
Chlorine compounds	Chloroform	25	11	100	1.6
		61	11	80	1.7
	Carbon disulfide	25	11	100	0.1
		77	11	80	5
	Methylene chloride	40	11	100	3.9
	Trichloroethylene	87	11	100	4.8
	Perchloroethylene	77	11	100	5.5
	Ethylene dichloride	84	11	88	3.8
	Freon 113	47	11	—	3.8
Epichlorohydrin	117	11	78	3.7	
Benzoyl chloride	120	30	100	0.0	
Ethers	Propylene oxide	25	11	82	3.2
	Tetrahydrofuran	25	11	98	2.3
		66	11	92	4.2
	Dioxane	105	11	86	6
	Ethylether	25	11	87	1
Cellosolve	121	11	88	1.3	
Ketones	Acetone	25	11	97	2.3
		56	11	93	2.5
	Methylethylketone	25	11	100	1.6
		80	11	100	3.1
	Methylisobutylketone	25	11	—	0.3
		116	11	100	3.3
Acetophenone	121	11	80	2.5	
Cyclohexanone	121	11	72	5.2	
Organic acid	Glacial acetic acid	25	11	87	0.7
		118	11	80	2.2
	Oxalic acid	120	11	100	0.1
	Citric acid	120	11	87	0.1
	Stearic acid	120	11	83	0.1
	Formic acid	100	11	100	0.1
	Glycolic acid	120	11	98	0.0
	Chloroacetic acid	100	11	100	0.6
	Trichloroacetic acid	100	11	84	2.5
Phthalic acid	120	11	100	0.1	
Lactic acid	119	11	98	0.1	
Ester	Ethyl acetate	25	11	100	2.3
		77	11	100	3.4
	Butyl acetate	120	11	88	3.5
	Dimethyl phthalate	25	11	87	0.4
Alcohols	Methanol	65	11	93	0.3
	Ethanol	78	11	98	0.6
	Cyclohexanol	120	11	88	1.2
	Benzyl alcohol	120	11	92	0.8
	Propyl alcohol	97	11	93	0.7
	Diacetone alcohol	120	11	91	2.8
Other hydrocarbones	Hexane	69	11	84	1.1
	Skidrol 500B	120	11	100	0.6
	Mineral oil ASTM No.3	120	11	96	0.2
	Octane	120	11	98	0.2
	Octene	120	11	99	1.1
	Cyclohexane	81	11	94	1.4
	Decalin	120	7	95	—
	Dimethylsulfoxide	120	11	89	1.3
Acetonitrile	82	11	93	1.5	

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# Instructions for Assembling ETFE Coated Duct Fume

1. Flange covers should not be removed until flanges are ready to be bolted into position or sealing faces may become damaged or distorted. If covers are removed for inspection, they should be replaced immediately.
2. In order to avoid damage and pinhole on the surface, the installation engineers should be careful while moving the ducted fume.
3. ETFE-coated duct fume must use a soft pure PTFE Gasket (Polytop Seal) when connecting the flange. Gasket specification is shown in table 1.
4. Threads must be clean and well-lubricated. And washers should be used to ensure correct torque. The bolt should be tightened alternately and evenly, following the sequence shown in diagram 1.
5. If a flange leak occurs and the bolts of the leaking side have been properly tightened, they should not be tightened further or permanent damage to the sealing face may result. Instead, the bolts on the opposite side should be loosened a half turn at a time and then the bolts on the leaking side should be tightened by the same amount. If the leak persists, the gasket should be changed.
6. If leakage occurs after the system has been cycled at an elevated temperature, it should cool down to ambient temperature, to have further inspection and maintenance.
7. No welding, brazing, soldering, or flame cutting that can permanently damage duct-coated layer should be done close to the metal housings unless adequate precautions are taken to prevent exposure to excessive heat.

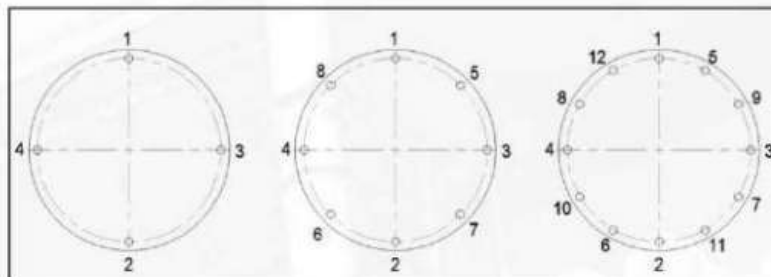


Diagram 1: Bolts Tightening Method

Ducts Diameter (mm)	Code No.	Width of gasket (mm)
Ø25~125	TS-100-3	3
Ø150~275	TS-100-5	5
Ø300~600	TS-100-6	7
UPØ625	TS-100-9	10

Table 1: Specification of PTFE Gasket (Polytop Seal)

# Ducting Project References



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