

# Kenyon Engineering Pte Ltd



## ETFE Coated Ducts



# Kenyon Engineering

Headquartered in Singapore, Kenyon Engineering Pte Ltd was founded in 1988 to work with chemical and petrochemical process companies in the undertaking of mechanical and electrical (M&E) projects. Over the years, we have consolidated our experiences and expertise and have increasingly moved into more capital and knowledge intensive projects. To further support our growing operations in China, we have established regional offices in Suzhou, Chengdu, and Tianjin.

Today, our group of experienced engineers and designers undertake turnkey projects in Civil, Mechanical, and Electrical works, with a focus in the electronics, pharmaceuticals, and high-purity gas industries. Kenyon also manufactures ETFE (Ethylene TetrafluoroEthylene) coated ducts and fabricates ultra purity gas panels.

Kenyon Engineering aims to be a one-stop solutions provider for all its clients' engineering needs.

We currently have a staff of nearly 600 strong, with 326 people in our Singapore office and the remainder spread among our Chinese offices.

## History and Highlights

**1988**

Kenyon Engineering is founded

**2000**

Kenyon Engineering wins the Singapore Enterprise 50 award

**2001**

Kenyon Engineering wins the Singapore Enterprise 50 award

**2003**

Kenyon Technology Suzhou is founded

**2004**

Kenyon Engineering Suzhou is founded

**2006**

Kenyon Engineering Chengdu is founded

**2007**

Kenyon Technology Tianjin is founded

Kenyon Engineering wins the Singapore Enterprise 50 award

**2008**

Kenyon Engineering wins the Singapore Enterprise 50 award



## ETFE Coated Ducts

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Our state of the art manufacturing plants for ETFE coated ducts are located in Suzhou, Chengdu, and Tianjin in China. They are equipped with the latest production equipment and complemented with a testing laboratory for strict quality control. Kenyon's ETFE coated stainless steel ducts are manufactured to meet the Factory Mutual (FM) Research Standard 4922 and 4910. We are one of the few companies in China to have garnered FM Approval.

We believe ETFE stainless steel coated ducts are an excellent solution for handling the corrosive fume exhaust and process piping systems used in industries that utilize aggressive chemicals in their production process. The ETFE coating far surpasses other materials in chemical resistance and Kenyon's proprietary coating technology ensures superior bonding to the stainless steel, resulting in a coating that will not delaminate. Moreover, as stainless steel ducts do not burn, they do not require the use of internal sprinklers.

Our ducts are simple to install and can be easily field-modified to suit on-site conditions. Our ducts come in standard sizes but can also be customized to meet SMACNA and other relevant standards.



## **Ethylene Tetrafluoroethylene (ETFE)**

ETFE (Ethylene Tetrafluoroethylene) is a thermoplastic fluoropolymer based on an alternating copolymer of ethylene ( $C_2H_4$ ) and tetrafluoroethylene ( $C_2F_4$ ).

### **Key Properties of ETFE Fluoropolymer**

- . Chemical resistance

ETFE provides excellent resistance to virtually all chemicals and solvents that can cause rapid deterioration of other plastics.

- . Mechanical strength

It has superior mechanical strength, stiffness and good resistance to stress cracking. It has a higher tensile strength and greater crush resistance than other fluoropolymers. ETFE also offers a low coefficient of friction and its oil / water repellency renders it an excellent coating material for low flow resistance.

- . Good electrical properties

ETFE is an excellent insulator.

- . Non-flammable

As tested by Underwriters Laboratories, ETFE has 94V-0 flammability rating, which according to ASTM D165, is non-flammable.

- . Great weatherability

It screens out ultraviolet (UV) rays but does not deteriorate as a result of exposure to UV.

- . Outstanding performance over a wide range of temperature

It is corrosion resistant, and has stable mechanical and electrical properties over a wide temperature range of  $-100^{\circ}C$  to  $150^{\circ}C$ .

# Kenyon Production Facilities

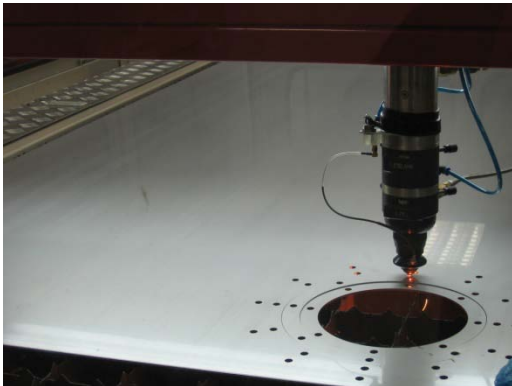
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## Duct Fabrication using Precision Laser Cutting Machine

Kenyon's stainless steel fabrication department adopts the most up-to-date duct and fitting fabrication techniques including the use of the C.N.C. Precision Laser Cutting Machine. We employ highly skilled sheet metal workers and experienced welders.

## Laboratory

In order to ensure the quality of our products, we carry out tests in our laboratory, employing the latest analyzing techniques to check incoming materials, semi-finished goods and outgoing products. Tests carried out include analysis of the quality of raw materials, welding quality, corrosion resistance, peel test, high voltage holiday test and microscopic examinations. All tests are carried out with the requirements of clients and the relevant product standards such as the Chinese National (GB) and SMACNA/ASHRAE standards in mind.



# Production Process

## Surface Preparation

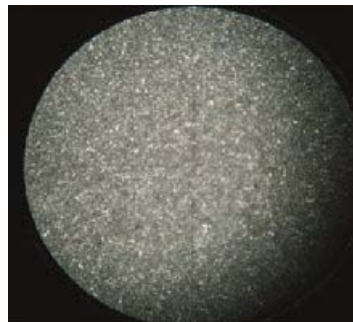
The blasting process is performed in an enclosed room. The fine dust produced is filtered and collected by the dust collector plant. Oil-free compressed air is used during grit blasting to ensure that surfaces are not contaminated with oil. The ducts are cleaned with compressed air and thoroughly wiped clean with industrial alcohol.

## Coating Process

Our coating process is performed using various combinations of spray systems and ovens. Ducts bigger than 1.5m diameter are coated using the conventional walk-in ovens. For ducts of a smaller diameter, Kenyon has developed and filed patent for the world's first fully automatic ETFE duct coating process. In this process, the duct to be coated is mounted inside a rotating oven where it is heated up very evenly. An automatic spray gun head will then enter the inside of the duct at the preset speed and sprays while the duct is rotating. The primer coat applied is allowed to cure before the application of a top coat. Excellent coating is achieved compared to the conventional coating method.

## Pinhole Testing

Coating thickness measurements are taken with a calibrated thickness gauge. A high voltage spark test is carried out to ensure that there is no pinhole in the coating. Any pinholes detected will be marked and repaired. Spot repairs are carried out by sprinkling powder onto the repair spot and heated until the powder melts and blends in with the existing coating.

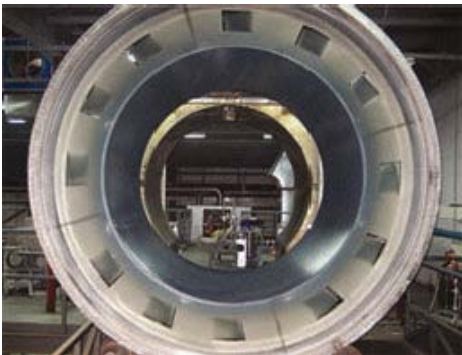


## Rigorous Testing Procedure

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### We Undertake a Rigorous Testing of our Products

We at Kenyon undertake a much more rigorous testing process than our industry peers. We undertake a total of four inspections: We first conduct a pinhole test immediately after coating the stainless steel ducts. We conduct a second test after the washing of the ducts, and a third test after transporting to site, but before installation. The final pinhole testing is done as we are installing the ducts. This testing is conducted on the bottom duct, by the section. We believe we are the only company in the industry to conduct this final testing. In addition, to incentivize our workers to conduct a minute examination of the ducts for any pinholes, we award the workers \$10 for each pinhole that they find.



# ETFE Duct Fittings



Straight Duct



90° Straight Tee Joint



45° Lateral Tee Joint



Cross Joint



Y-Cross Joint



90°/60°/45°/30°/15°  
Elbow



Offset



Concentric Reducer



Square-to-Round  
Transition



Flat Ring Flange

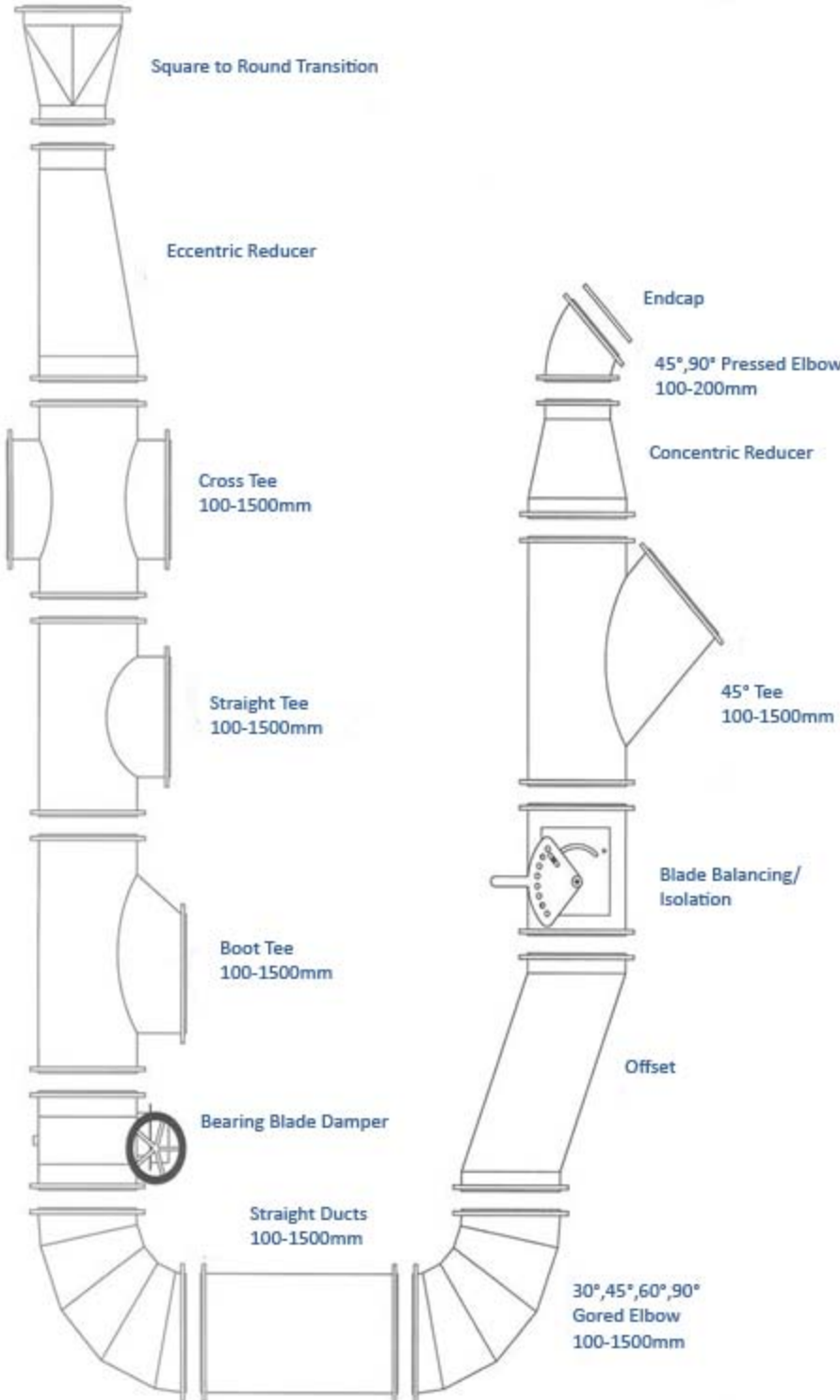


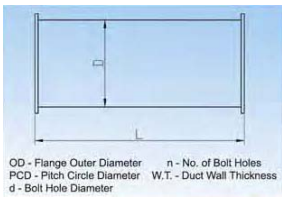
Single-Blade Damper



Multi-Blade Damper

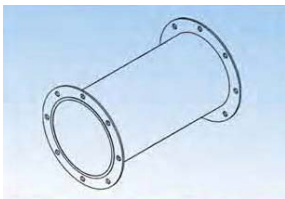
# ETFE Duct Fittings





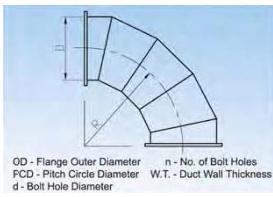
## ETFE Duct Fittings: Straight Duct

D(mm)	L (mm)	OD (mm)	PCD (mm)	d (mm)	n	W.T. (mm)	Type of Flange
100	1200	153	132	8	6	1	3 mm flat ring flange
150	1200	203	182	10	8	1	3 mm flat ring flange
200	1200	253	232	10	8	1	3 mm flat ring flange
250	1200	303	282	10	8	1	3 mm flat ring flange
300	1200	353	332	10	12	1	3 mm flat ring flange
350	1200	413	386	10	12	1	3 mm flat ring flange
400	1200	483	446	12	14	1	40x20x3 angle flange
450	1200	533	496	12	14	1	40x20x3 angle flange
500	1200	583	546	12	16	1	40x20x3 angle flange
550	1200	633	596	12	16	1	40x20x3 angle flange
600	1200	683	646	12	18	1	40x20x3 angle flange
650	1200	733	696	12	18	1	40x20x3 angle flange
700	1200	803	758	12	20	1.2	50x25x5 angle flange
750	1200	853	808	12	22	1.2	50x25x5 angle flange
800	1200	903	858	12	24	1.2	50x25x5 angle flange
850	1200	953	908	12	26	1.2	50x25x5 angle flange
900	1200	1003	958	12	28	1.2	50x25x5 angle flange
950	1200	1053	1008	12	30	1.2	50x25x5 angle flange
1000	1200	1103	1058	12	32	1.2	50x25x5 angle flange
1050	1200	1153	1108	12	34	1.2	50x25x5 angle flange
1100	1200	1203	1158	12	36	1.5	50x25x5 angle flange
1150	1200	1253	1208	12	36	1.5	50x25x5 angle flange
1200	1200	1303	1258	12	38	1.5	50x25x5 angle flange
1250	1200	1353	1308	12	40	1.5	50x25x5 angle flange
1300	1200	1403	1358	12	40	1.5	50x25x5 angle flange
1350	1200	1453	1408	12	42	1.5	50x25x5 angle flange
1400	1200	1503	1458	12	44	1.5	50x25x5 angle flange
1450	1200	1553	1508	12	46	1.5	50x25x5 angle flange
1500	1200	1604	1559	12	46	1.5	50x25x5 angle flange
1550	1200	1654	1609	12	48	2	50x25x5 angle flange
1600	1200	1704	1659	12	50	2	50x25x5 angle flange
1650	1200	1754	1709	12	52	2	50x25x5 angle flange
1700	1200	1804	1759	12	52	2	50x25x5 angle flange
1750	1200	1854	1809	12	54	2	50x25x5 angle flange
1800	1200	1904	1859	12	54	2	50x25x5 angle flange
1850	1200	1954	1909	12	56	2	50x25x5 angle flange
1900	1200	2004	1959	12	58	2	50x25x5 angle flange
1950	1200	2054	2009	12	60	2	50x25x5 angle flange
2000	1200	2104	2059	12	62	2	50x25x5 angle flange
2050	1200	2154	2109	12	62	2	50x25x5 angle flange



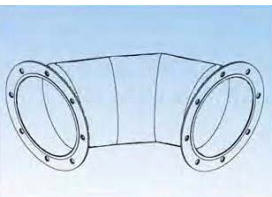
## ETFE Duct Fittings: Straight Duct

D(“)	L(“)	OD(“)	PCD(“)	d(“)	n	W.T. (gage)	Type of Flange
4	4	6-1/8	5-3/16	5/16	6	20	1/8" flat ring flange
6	4	8-1/8	7-5/16	3/8	8	20	1/8" flat ring flange
8	4	10-1/8	9-5/16	3/8	8	20	1/8" flat ring flange
10	4	12-1/8	11-5/16	3/8	8	20	1/8" flat ring flange
12	4	14-1/8	13-5/16	3/8	12	20	1/8" flat ring flange
14	4	16-1/8	15-5/16	3/8	12	20	1/8" flat ring flange
16	4	19-1/8	17-15/16	1/2	14	20	1-1/2"x3/4"x1/8" angle flange
18	4	21-1/8	19-15/16	1/2	14	20	1-1/2"x3/4"x1/8" angle flange
20	4	23-1/8	21-15/16	1/2	16	20	1-1/2"x3/4"x1/8" angle flange
22	4	25-1/8	23-15/16	1/2	16	20	1-1/2"x3/4"x1/8" angle flange
24	4	27-1/8	25-15/16	1/2	18	20	1-1/2"x3/4"x1/8" angle flange
26	4	29-1/8	27-15/16	1/2	18	20	1-1/2"x3/4"x1/8" angle flange
28	4	32-1/8	30-1/2	1/2	20	18	2"x1"x3/16" angle flange
30	4	34-1/8	32-1/2	1/2	22	18	2"x1"x3/16" angle flange
32	4	36-1/8	34-1/2	1/2	24	18	2"x1"x3/16" angle flange
34	4	38-1/8	36-1/2	1/2	26	18	2"x1"x3/16" angle flange
36	4	40-1/8	38-1/2	1/2	28	18	2"x1"x3/16" angle flange
38	4	42-1/8	40-1/2	1/2	30	18	2"x1"x3/16" angle flange
40	4	44-1/8	42-1/2	1/2	32	18	2"x1"x3/16" angle flange
42	4	46-1/8	44-1/2	1/2	34	18	2"x1"x3/16" angle flange
44	4	48-1/8	46-1/2	1/2	36	17	2"x1"x3/16" angle flange
46	4	50-1/8	48-1/2	1/2	36	17	2"x1"x3/16" angle flange
48	4	52-1/8	50-1/2	1/2	38	17	2"x1"x3/16" angle flange
50	4	54-1/8	52-1/2	1/2	40	17	2"x1"x3/16" angle flange
52	4	56-1/8	54-1/2	1/2	40	17	2"x1"x3/16" angle flange
54	4	58-1/8	56-1/2	1/2	42	17	2"x1"x3/16" angle flange
56	4	60-1/8	58-1/2	1/2	44	17	2"x1"x3/16" angle flange
58	4	62-1/8	60-1/2	1/2	46	17	2"x1"x3/16" angle flange
60	4	64-1/8	62-1/2	1/2	46	17	2"x1"x3/16" angle flange
62	4	66-1/8	64-1/2	1/2	48	14	2"x1"x3/16" angle flange
64	4	68-1/8	66-1/2	1/2	50	14	2"x1"x3/16" angle flange
66	4	70-1/8	68-1/2	1/2	52	14	2"x1"x3/16" angle flange
68	4	72-1/8	70-1/2	1/2	52	14	2"x1"x3/16" angle flange
70	4	74-1/8	72-1/2	1/2	54	14	2"x1"x3/16" angle flange
72	4	76-1/8	74-1/2	1/2	54	14	2"x1"x3/16" angle flange
74	4	78-1/8	76-1/2	1/2	56	14	2"x1"x3/16" angle flange
76	4	80-1/8	78-1/2	1/2	58	14	2"x1"x3/16" angle flange
78	4	82-1/8	80-1/2	1/2	60	14	2"x1"x3/16" angle flange
80	4	84-1/8	82-1/2	1/2	62	14	2"x1"x3/16" angle flange
82	4	86-1/8	84-1/2	1/2	62	14	2"x1"x3/16" angle flange



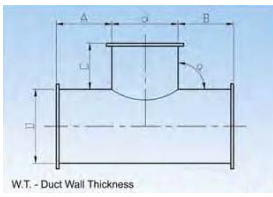
## ETFE Duct Fittings: 90°/ 60°/ 45°/ 30°/ 15° Elbow

D(mm)	R (mm)	OD (mm)	PCD (mm)	d (mm)	n	W.T. (mm)	Type of Flange
100	100	153	132	8	6	1	3 mm flat ring flange
150	150	203	182	10	8	1	3 mm flat ring flange
200	200	253	232	10	8	1	3 mm flat ring flange
250	250	303	282	10	8	1	3 mm flat ring flange
300	300	353	332	10	12	1	3 mm flat ring flange
350	350	413	386	10	12	1	3 mm flat ring flange
400	400	483	446	12	14	1	40x20x3 angle flange
450	450	533	496	12	14	1	40x20x3 angle flange
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650	650	733	696	12	18	1	40x20x3 angle flange
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1050	1050	1153	1108	12	34	1.2	50x25x5 angle flange
1100	1100	1203	1158	12	36	1.5	50x25x5 angle flange
1150	1150	1253	1208	12	36	1.5	50x25x5 angle flange
1200	1200	1303	1258	12	38	1.5	50x25x5 angle flange
1250	1250	1353	1308	12	40	1.5	50x25x5 angle flange
1300	1300	1403	1358	12	40	1.5	50x25x5 angle flange
1350	1350	1453	1408	12	42	1.5	50x25x5 angle flange
1400	1400	1503	1458	12	44	1.5	50x25x5 angle flange
1450	1450	1553	1508	12	46	1.5	50x25x5 angle flange
1500	1500	1604	1559	12	46	1.5	50x25x5 angle flange
1550	1550	1654	1609	12	48	2	50x25x5 angle flange
1600	1600	1704	1659	12	50	2	50x25x5 angle flange
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1950	1950	2054	2009	12	60	2	50x25x5 angle flange
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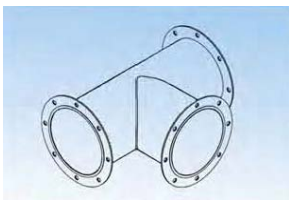
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D(“)	L(“)	OD(“)	PCD(“)	d(“)	n	W.T. (gage)	Type of Flange
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10	4	12-1/8	11-5/16	3/8	8	20	1/8" flat ring flange
12	4	14-1/8	13-5/16	3/8	12	20	1/8" flat ring flange
14	4	16-1/8	15-5/16	3/8	12	20	1/8" flat ring flange
16	4	19-1/8	17-15/16	1/2	14	20	1-1/2"x3/4"x1/8" angle flange
18	4	21-1/8	19-15/16	1/2	14	20	1-1/2"x3/4"x1/8" angle flange
20	4	23-1/8	21-15/16	1/2	16	20	1-1/2"x3/4"x1/8" angle flange
22	4	25-1/8	23-15/16	1/2	16	20	1-1/2"x3/4"x1/8" angle flange
24	4	27-1/8	25-15/16	1/2	18	20	1-1/2"x3/4"x1/8" angle flange
26	4	29-1/8	27-15/16	1/2	18	20	1-1/2"x3/4"x1/8" angle flange
28	4	32-1/8	30-1/2	1/2	20	18	2"x1"x3/16" angle flange
30	4	34-1/8	32-1/2	1/2	22	18	2"x1"x3/16" angle flange
32	4	36-1/8	34-1/2	1/2	24	18	2"x1"x3/16" angle flange
34	4	38-1/8	36-1/2	1/2	26	18	2"x1"x3/16" angle flange
36	4	40-1/8	38-1/2	1/2	28	18	2"x1"x3/16" angle flange
38	4	42-1/8	40-1/2	1/2	30	18	2"x1"x3/16" angle flange
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48	4	52-1/8	50-1/2	1/2	38	17	2"x1"x3/16" angle flange
50	4	54-1/8	52-1/2	1/2	40	17	2"x1"x3/16" angle flange
52	4	56-1/8	54-1/2	1/2	40	17	2"x1"x3/16" angle flange
54	4	58-1/8	56-1/2	1/2	42	17	2"x1"x3/16" angle flange
56	4	60-1/8	58-1/2	1/2	44	17	2"x1"x3/16" angle flange
58	4	62-1/8	60-1/2	1/2	46	17	2"x1"x3/16" angle flange
60	4	64-1/8	62-1/2	1/2	46	17	2"x1"x3/16" angle flange
62	4	66-1/8	64-1/2	1/2	48	14	2"x1"x3/16" angle flange
64	4	68-1/8	66-1/2	1/2	50	14	2"x1"x3/16" angle flange
66	4	70-1/8	68-1/2	1/2	52	14	2"x1"x3/16" angle flange
68	4	72-1/8	70-1/2	1/2	52	14	2"x1"x3/16" angle flange
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78	4	82-1/8	80-1/2	1/2	60	14	2"x1"x3/16" angle flange
80	4	84-1/8	82-1/2	1/2	62	14	2"x1"x3/16" angle flange
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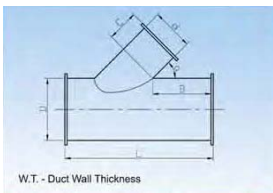
## ETFE Duct Fittings: Tee Joint

D(mm)	d (mm)	A (mm)	B (mm)	C (mm)	a (°)	W.T. (mm)	Type of Flange
100	100	100	100	100	90	1	3 mm flat ring
150	150	100	100	100	90	1	3 mm flat ring
200	200	100	100	100	90	1	3 mm flat ring
250	250	100	100	100	90	1	3 mm flat ring
300	300	100	100	100	90	1	3 mm flat ring
350	350	100	100	100	90	1	3 mm flat ring
400	400	125	125	125	90	1	40x20x3 angle flange
450	450	125	125	125	90	1	40x20x3 angle flange
500	500	125	125	125	90	1	40x20x3 angle flange
550	550	125	125	125	90	1	40x20x3 angle flange
600	600	125	125	125	90	1	40x20x3 angle flange
650	650	125	125	125	90	1	40x20x3 angle flange
700	700	150	150	150	90	1.2	50x25x5 angle flange
750	750	150	150	150	90	1.2	50x25x5 angle flange
800	800	150	150	150	90	1.2	50x25x5 angle flange
850	850	150	150	150	90	1.2	50x25x5 angle flange
900	900	150	150	150	90	1.2	50x25x5 angle flange
950	950	150	150	150	90	1.2	50x25x5 angle flange
1000	1000	150	150	150	90	1.2	50x25x5 angle flange
1050	1050	150	150	150	90	1.2	50x25x5 angle flange
1100	1100	150	150	150	90	1.5	50x25x5 angle flange
1150	1150	150	150	150	90	1.5	50x25x5 angle flange
1200	1200	150	150	150	90	1.5	50x25x5 angle flange
1250	1250	175	175	175	90	1.5	50x25x5 angle flange
1300	1300	175	175	175	90	1.5	50x25x5 angle flange
1350	1350	175	175	175	90	1.5	50x25x5 angle flange
1400	1400	175	175	175	90	1.5	50x25x5 angle flange
1450	1450	175	175	175	90	1.5	50x25x5 angle flange
1500	1500	175	175	175	90	1.5	50x25x5 angle flange
1550	1550	200	200	200	90	2	50x25x5 angle flange
1600	1600	200	200	200	90	2	50x25x5 angle flange
1650	1650	200	200	200	90	2	50x25x5 angle flange
1700	1700	200	200	200	90	2	50x25x5 angle flange
1750	1750	200	200	200	90	2	50x25x5 angle flange
1800	1800	200	200	200	90	2	50x25x5 angle flange
1850	1850	200	200	200	90	2	50x25x5 angle flange
1900	1900	200	200	200	90	2	50x25x5 angle flange
1950	1950	200	200	200	90	2	50x25x5 angle flange
2000	2000	200	200	200	90	2	50x25x5 angle flange
2050	2050	200	200	200	90	2	50x25x5 angle flange



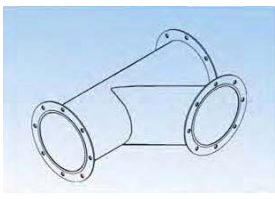
## ETFE Duct Fittings: Tee Joint

D(“)	d(“)	A(“)	B(“)	C(“)	a(°)	W.T. (gage)	Type of Flange
4	4	4	4	4	90	20	1/8" flat ring flange
6	6	4	4	4	90	20	1/8" flat ring flange
8	8	4	4	4	90	20	1/8" flat ring flange
10	10	4	4	4	90	20	1/8" flat ring flange
12	12	4	4	4	90	20	1/8" flat ring flange
14	14	4	4	4	90	20	1/8" flat ring flange
16	16	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
18	18	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
20	20	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
22	22	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
24	24	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
26	26	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
28	28	6	6	6	90	18	2"x1"x3/16" angle flange
30	30	6	6	6	90	18	2"x1"x3/16" angle flange
32	32	6	6	6	90	18	2"x1"x3/16" angle flange
34	34	6	6	6	90	18	2"x1"x3/16" angle flange
36	36	6	6	6	90	18	2"x1"x3/16" angle flange
38	38	6	6	6	90	18	2"x1"x3/16" angle flange
40	40	6	6	6	90	18	2"x1"x3/16" angle flange
42	42	6	6	6	90	18	2"x1"x3/16" angle flange
44	44	6	6	6	90	17	2"x1"x3/16" angle flange
46	46	6	6	6	90	17	2"x1"x3/16" angle flange
48	48	6	6	6	90	17	2"x1"x3/16" angle flange
50	50	7	7	7	90	17	2"x1"x3/16" angle flange
52	52	7	7	7	90	17	2"x1"x3/16" angle flange
54	54	7	7	7	90	17	2"x1"x3/16" angle flange
56	56	7	7	7	90	17	2"x1"x3/16" angle flange
58	58	7	7	7	90	17	2"x1"x3/16" angle flange
60	60	8	8	8	90	17	2"x1"x3/16" angle flange
62	62	8	8	8	90	14	2"x1"x3/16" angle flange
64	64	8	8	8	90	14	2"x1"x3/16" angle flange
66	66	8	8	8	90	14	2"x1"x3/16" angle flange
68	68	8	8	8	90	14	2"x1"x3/16" angle flange
70	70	8	8	8	90	14	2"x1"x3/16" angle flange
72	72	8	8	8	90	14	2"x1"x3/16" angle flange
74	74	8	8	8	90	14	2"x1"x3/16" angle flange
76	76	8	8	8	90	14	2"x1"x3/16" angle flange
78	78	8	8	8	90	14	2"x1"x3/16" angle flange
80	80	8	8	8	90	14	2"x1"x3/16" angle flange
82	82	8	8	8	90	14	2"x1"x3/16" angle flange



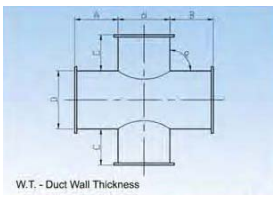
## ETFE Duct Fittings: Y Joint

D(mm)	d (mm)	A (mm)	B (mm)	C (mm)	a (°)	W.T. (mm)	Type of Flange
100	100	340	150	150	45	1	3 mm flat ring
150	150	410	150	150	45	1	3 mm flat ring
200	200	480	150	150	45	1	3 mm flat ring
250	250	550	150	150	45	1	3 mm flat ring
300	300	620	150	150	45	1	3 mm flat ring
350	350	690	150	150	45	1	3 mm flat ring
400	400	815	200	200	45	1	40x20x3 angle flange
450	450	885	200	200	45	1	40x20x3 angle flange
500	500	955	200	200	45	1	40x20x3 angle flange
550	550	1025	200	200	45	1	40x20x3 angle flange
600	600	1100	200	200	45	1	40x20x3 angle flange
650	650	1170	200	200	45	1	40x20x3 angle flange
700	700	1240	200	200	45	1.2	50x25x5 angle flange
750	750	1310	200	200	45	1.2	50x25x5 angle flange
800	800	1380	200	200	45	1.2	50x25x5 angle flange
850	850	1450	200	200	45	1.2	50x25x5 angle flange
900	900	1520	200	200	45	1.2	50x25x5 angle flange
950	950	1590	200	200	45	1.2	50x25x5 angle flange
1000	1000	1660	200	200	45	1.2	50x25x5 angle flange
1050	1050	1730	200	200	45	1.2	50x25x5 angle flange
1100	1100	1800	200	200	45	1.5	50x25x5 angle flange
1150	1150	1870	200	200	45	1.5	50x25x5 angle flange
1200	1200	1945	200	200	45	1.5	50x25x5 angle flange
1250	1250	2065	250	250	45	1.5	50x25x5 angle flange
1300	1300	2135	250	250	45	1.5	50x25x5 angle flange
1350	1350	2205	250	250	45	1.5	50x25x5 angle flange
1400	1400	2275	250	250	45	1.5	50x25x5 angle flange
1450	1450	2345	250	250	45	1.5	50x25x5 angle flange
1500	1500	2415	250	250	45	1.5	50x25x5 angle flange
1550	1550	2490	250	250	45	2	50x25x5 angle flange
1600	1600	2560	250	250	45	2	50x25x5 angle flange
1650	1650	2630	250	250	45	2	50x25x5 angle flange
1700	1700	2700	250	250	45	2	50x25x5 angle flange
1750	1750	2770	250	250	45	2	50x25x5 angle flange
1800	1800	2840	250	250	45	2	50x25x5 angle flange
1850	1850	2910	250	250	45	2	50x25x5 angle flange
1900	1900	2980	250	250	45	2	50x25x5 angle flange
1950	1950	3050	250	250	45	2	50x25x5 angle flange
2000	2000	3120	250	250	45	2	50x25x5 angle flange
2050	2050	3190	250	250	45	2	50x25x5 angle flange



## ETFE Duct Fittings: Y Joint

D(“)	d(“)	A(“)	B(“)	C(“)	a(°)	W.T. (gage)	Type of Flange
4	4	14	6	6	45	20	1/8” flat ring flange
6	6	17	6	6	45	20	1/8” flat ring flange
8	8	20	6	6	45	20	1/8” flat ring flange
10	10	23	6	6	45	20	1/8” flat ring flange
12	12	25	6	6	45	20	1/8” flat ring flange
14	14	28	6	6	45	20	1/8” flat ring flange
16	16	33	8	8	45	20	1-1/2”x3/4”x1/8” angle flange
18	18	36	8	8	45	20	1-1/2”x3/4”x1/8” angle flange
20	20	39	8	8	45	20	1-1/2”x3/4”x1/8” angle flange
22	22	41	8	8	45	20	1-1/2”x3/4”x1/8” angle flange
24	24	44	8	8	45	20	1-1/2”x3/4”x1/8” angle flange
26	26	47	8	8	45	20	1-1/2”x3/4”x1/8” angle flange
28	28	50	8	8	45	18	2”x1”x3/16” angle flange
30	30	53	8	8	45	18	2”x1”x3/16” angle flange
32	32	56	8	8	45	18	2”x1”x3/16” angle flange
34	34	58	8	8	45	18	2”x1”x3/16” angle flange
36	36	61	8	8	45	18	2”x1”x3/16” angle flange
38	38	64	8	8	45	18	2”x1”x3/16” angle flange
40	40	67	8	8	45	18	2”x1”x3/16” angle flange
42	42	70	8	8	45	18	2”x1”x3/16” angle flange
44	44	73	8	8	45	17	2”x1”x3/16” angle flange
46	46	75	8	8	45	17	2”x1”x3/16” angle flange
48	48	78	8	8	45	17	2”x1”x3/16” angle flange
50	50	83	10	10	45	17	2”x1”x3/16” angle flange
52	52	86	10	10	45	17	2”x1”x3/16” angle flange
54	54	89	10	10	45	17	2”x1”x3/16” angle flange
56	56	91	10	10	45	17	2”x1”x3/16” angle flange
58	58	94	10	10	45	17	2”x1”x3/16” angle flange
60	60	97	10	10	45	17	2”x1”x3/16” angle flange
62	62	100	10	10	45	14	2”x1”x3/16” angle flange
64	64	103	10	10	45	14	2”x1”x3/16” angle flange
66	66	106	10	10	45	14	2”x1”x3/16” angle flange
68	68	108	10	10	45	14	2”x1”x3/16” angle flange
70	70	111	10	10	45	14	2”x1”x3/16” angle flange
72	72	114	10	10	45	14	2”x1”x3/16” angle flange
74	74	117	10	10	45	14	2”x1”x3/16” angle flange
76	76	120	10	10	45	14	2”x1”x3/16” angle flange
78	78	122	10	10	45	14	2”x1”x3/16” angle flange
80	80	125	10	10	45	14	2”x1”x3/16” angle flange
82	82	128	10	10	45	14	2”x1”x3/16” angle flange



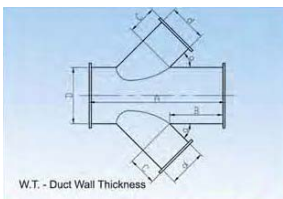
## ETFE Duct Fittings: Cross Joint

D(mm)	d (mm)	A (mm)	B (mm)	C (mm)	a(°)	W.T. (mm)	Type of Flange
100	100	100	100	100	90	1	3 mm flat ring flange
150	150	100	100	100	90	1	3 mm flat ring flange
200	200	100	100	100	90	1	3 mm flat ring flange
250	250	100	100	100	90	1	3 mm flat ring flange
300	300	100	100	100	90	1	3 mm flat ring flange
350	350	100	100	100	90	1	3 mm flat ring flange
400	400	125	125	125	90	1	40x20x3 angle flange
450	450	125	125	125	90	1	40x20x3 angle flange
500	500	125	125	125	90	1	40x20x3 angle flange
550	550	125	125	125	90	1	40x20x3 angle flange
600	600	125	125	125	90	1	40x20x3 angle flange
650	650	125	125	125	90	1	40x20x3 angle flange
700	700	150	150	150	90	1.2	50x25x5 angle flange
750	750	150	150	150	90	1.2	50x25x5 angle flange
800	800	150	150	150	90	1.2	50x25x5 angle flange
850	850	150	150	150	90	1.2	50x25x5 angle flange
900	900	150	150	150	90	1.2	50x25x5 angle flange
950	950	150	150	150	90	1.2	50x25x5 angle flange
1000	1000	150	150	150	90	1.2	50x25x5 angle flange
1050	1050	150	150	150	90	1.2	50x25x5 angle flange
1100	1100	150	150	150	90	1.5	50x25x5 angle flange
1150	1150	150	150	150	90	1.5	50x25x5 angle flange
1200	1200	150	150	150	90	1.5	50x25x5 angle flange
1250	1250	175	175	175	90	1.5	50x25x5 angle flange
1300	1300	175	175	175	90	1.5	50x25x5 angle flange
1350	1350	175	175	175	90	1.5	50x25x5 angle flange
1400	1400	175	175	175	90	1.5	50x25x5 angle flange
1450	1450	175	175	175	90	1.5	50x25x5 angle flange
1500	1500	175	175	175	90	1.5	50x25x5 angle flange
1550	1550	200	200	200	90	2	50x25x5 angle flange
1600	1600	200	200	200	90	2	50x25x5 angle flange
1650	1650	200	200	200	90	2	50x25x5 angle flange
1700	1700	200	200	200	90	2	50x25x5 angle flange
1750	1750	200	200	200	90	2	50x25x5 angle flange
1800	1800	200	200	200	90	2	50x25x5 angle flange
1850	1850	200	200	200	90	2	50x25x5 angle flange
1900	1900	200	200	200	90	2	50x25x5 angle flange
1950	1950	200	200	200	90	2	50x25x5 angle flange
2000	2000	200	200	200	90	2	50x25x5 angle flange
2050	2050	200	200	200	90	2	50x25x5 angle flange



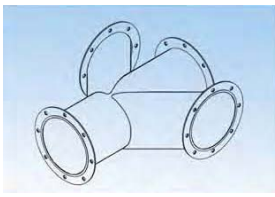
## ETFE Duct Fittings: Cross Joint

D(“)	d(“)	A(“)	B(“)	C(“)	a(°)	W.T. (gage)	Type of Flange
4	4	4	4	4	90	20	1/8" flat ring flange
6	6	4	4	4	90	20	1/8" flat ring flange
8	8	4	4	4	90	20	1/8" flat ring flange
10	10	4	4	4	90	20	1/8" flat ring flange
12	12	4	4	4	90	20	1/8" flat ring flange
14	14	4	4	4	90	20	1/8" flat ring flange
16	16	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
18	18	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
20	20	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
22	22	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
24	24	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
26	26	5	5	5	90	20	1-1/2"x3/4"x1/8" angle flange
28	28	6	6	6	90	18	2"x1"x3/16" angle flange
30	30	6	6	6	90	18	2"x1"x3/16" angle flange
32	32	6	6	6	90	18	2"x1"x3/16" angle flange
34	34	6	6	6	90	18	2"x1"x3/16" angle flange
36	36	6	6	6	90	18	2"x1"x3/16" angle flange
38	38	6	6	6	90	18	2"x1"x3/16" angle flange
40	40	6	6	6	90	18	2"x1"x3/16" angle flange
42	42	6	6	6	90	18	2"x1"x3/16" angle flange
44	44	6	6	6	90	17	2"x1"x3/16" angle flange
46	46	6	6	6	90	17	2"x1"x3/16" angle flange
48	48	6	6	6	90	17	2"x1"x3/16" angle flange
50	50	7	7	7	90	17	2"x1"x3/16" angle flange
52	52	7	7	7	90	17	2"x1"x3/16" angle flange
54	54	7	7	7	90	17	2"x1"x3/16" angle flange
56	56	7	7	7	90	17	2"x1"x3/16" angle flange
58	58	7	7	7	90	17	2"x1"x3/16" angle flange
60	60	8	8	8	90	17	2"x1"x3/16" angle flange
62	62	8	8	8	90	14	2"x1"x3/16" angle flange
64	64	8	8	8	90	14	2"x1"x3/16" angle flange
66	66	8	8	8	90	14	2"x1"x3/16" angle flange
68	68	8	8	8	90	14	2"x1"x3/16" angle flange
70	70	8	8	8	90	14	2"x1"x3/16" angle flange
72	72	8	8	8	90	14	2"x1"x3/16" angle flange
74	74	8	8	8	90	14	2"x1"x3/16" angle flange
76	76	8	8	8	90	14	2"x1"x3/16" angle flange
78	78	8	8	8	90	14	2"x1"x3/16" angle flange
80	80	8	8	8	90	14	2"x1"x3/16" angle flange
82	82	8	8	8	90	14	2"x1"x3/16" angle flange



## ETFE Duct Fittings: Y-Cross Joint

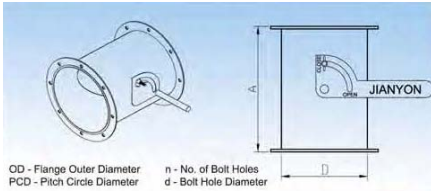
D(mm)	d (mm)	A (mm)	B (mm)	C (mm)	a(°)	W.T. (mm)	Type of Flange
100	100	340	150	150	45	1	3 mm flat ring flange
150	150	410	150	150	45	1	3 mm flat ring flange
200	200	480	150	150	45	1	3 mm flat ring flange
250	250	550	150	150	45	1	3 mm flat ring flange
300	300	620	150	150	45	1	3 mm flat ring flange
350	350	690	150	150	45	1	3 mm flat ring flange
400	400	815	200	200	45	1	40x20x3 angle flange
450	450	885	200	200	45	1	40x20x3 angle flange
500	500	955	200	200	45	1	40x20x3 angle flange
550	550	1025	200	200	45	1	40x20x3 angle flange
600	600	1100	200	200	45	1	40x20x3 angle flange
650	650	1170	200	200	45	1	40x20x3 angle flange
700	700	1240	200	200	45	1.2	50x25x5 angle flange
750	750	1310	200	200	45	1.2	50x25x5 angle flange
800	800	1380	200	200	45	1.2	50x25x5 angle flange
850	850	1450	200	200	45	1.2	50x25x5 angle flange
900	900	1520	200	200	45	1.2	50x25x5 angle flange
950	950	1590	200	200	45	1.2	50x25x5 angle flange
1000	1000	1660	200	200	45	1.2	50x25x5 angle flange
1050	1050	1730	200	200	45	1.2	50x25x5 angle flange
1100	1100	1800	200	200	45	1.5	50x25x5 angle flange
1150	1150	1870	200	200	45	1.5	50x25x5 angle flange
1200	1200	1945	200	200	45	1.5	50x25x5 angle flange
1250	1250	2065	250	250	45	1.5	50x25x5 angle flange
1300	1300	2135	250	250	45	1.5	50x25x5 angle flange
1350	1350	2205	250	250	45	1.5	50x25x5 angle flange
1400	1400	2275	250	250	45	1.5	50x25x5 angle flange
1450	1450	2345	250	250	45	1.5	50x25x5 angle flange
1500	1500	2415	250	250	45	1.5	50x25x5 angle flange
1550	1550	2490	250	250	45	2	50x25x5 angle flange
1600	1600	2560	250	250	45	2	50x25x5 angle flange
1650	1650	2630	250	250	45	2	50x25x5 angle flange
1700	1700	2700	250	250	45	2	50x25x5 angle flange
1750	1750	2770	250	250	45	2	50x25x5 angle flange
1800	1800	2840	250	250	45	2	50x25x5 angle flange
1850	1850	2910	250	250	45	2	50x25x5 angle flange
1900	1900	2980	250	250	45	2	50x25x5 angle flange
1950	1950	3050	250	250	45	2	50x25x5 angle flange
2000	2000	3120	250	250	45	2	50x25x5 angle flange
2050	2050	3190	250	250	45	2	50x25x5 angle flange



## ETFE Duct Fittings: Y-Cross Joint

D(“)	d(“)	A(“)	B(“)	C(“)	a(°)	W.T. (gage)	Type of Flange
4	4	14	6	6	45	20	1/8" flat ring flange
6	6	17	6	6	45	20	1/8" flat ring flange
8	8	20	6	6	45	20	1/8" flat ring flange
10	10	23	6	6	45	20	1/8" flat ring flange
12	12	25	6	6	45	20	1/8" flat ring flange
14	14	28	6	6	45	20	1/8" flat ring flange
16	16	33	8	8	45	20	1-1/2"x3/4"x1/8" angle flange
18	18	36	8	8	45	20	1-1/2"x3/4"x1/8" angle flange
20	20	39	8	8	45	20	1-1/2"x3/4"x1/8" angle flange
22	22	41	8	8	45	20	1-1/2"x3/4"x1/8" angle flange
24	24	44	8	8	45	20	1-1/2"x3/4"x1/8" angle flange
26	26	47	8	8	45	20	1-1/2"x3/4"x1/8" angle flange
28	28	50	8	8	45	18	2"x1"x3/16" angle flange
30	30	53	8	8	45	18	2"x1"x3/16" angle flange
32	32	56	8	8	45	18	2"x1"x3/16" angle flange
34	34	58	8	8	45	18	2"x1"x3/16" angle flange
36	36	61	8	8	45	18	2"x1"x3/16" angle flange
38	38	64	8	8	45	18	2"x1"x3/16" angle flange
40	40	67	8	8	45	18	2"x1"x3/16" angle flange
42	42	70	8	8	45	18	2"x1"x3/16" angle flange
44	44	73	8	8	45	17	2"x1"x3/16" angle flange
46	46	75	8	8	45	17	2"x1"x3/16" angle flange
48	48	78	8	8	45	17	2"x1"x3/16" angle flange
50	50	83	10	10	45	17	2"x1"x3/16" angle flange
52	52	86	10	10	45	17	2"x1"x3/16" angle flange
54	54	89	10	10	45	17	2"x1"x3/16" angle flange
56	56	91	10	10	45	17	2"x1"x3/16" angle flange
58	58	94	10	10	45	17	2"x1"x3/16" angle flange
60	60	97	10	10	45	17	2"x1"x3/16" angle flange
62	62	100	10	10	45	14	2"x1"x3/16" angle flange
64	64	103	10	10	45	14	2"x1"x3/16" angle flange
66	66	106	10	10	45	14	2"x1"x3/16" angle flange
68	68	108	10	10	45	14	2"x1"x3/16" angle flange
70	70	111	10	10	45	14	2"x1"x3/16" angle flange
72	72	114	10	10	45	14	2"x1"x3/16" angle flange
74	74	117	10	10	45	14	2"x1"x3/16" angle flange
76	76	120	10	10	45	14	2"x1"x3/16" angle flange
78	78	122	10	10	45	14	2"x1"x3/16" angle flange
80	80	125	10	10	45	14	2"x1"x3/16" angle flange
82	82	128	10	10	45	14	2"x1"x3/16" angle flange

# ETFE Duct Fittings: Dampers

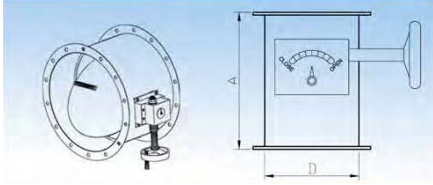


Single Blade Damper with Hand Lever

D (mm)	A (mm)	OD (mm)	PCD (mm)	d (mm)	n	Type of Flange
100	100	153	132	8	6	3 mm thick flat ring flange
150	150	203	182	10	8	3 mm thick flat ring flange
200	200	253	232	10	8	3 mm thick flat ring flange
250	250	303	282	10	8	3 mm thick flat ring flange
300	300	353	332	10	12	3 mm thick flat ring flange
350	350	413	386	10	12	3 mm thick flat ring flange

D (")	A (")	OD (")	PCD (")	d (")	n	Type of Flange
4	6	6-1/8	5-3/16	5/16	6	1/8" flat ring flange
6	8	8-1/8	7-5/16	3/8	8	1/8" flat ring flange
8	10	10-1/8	9-5/16	3/8	8	1/8" flat ring flange
10	10	12-1/8	11-5/16	3/8	8	1/8" flat ring flange
12	12	14-1/8	13-5/16	3/8	12	1/8" flat ring flange
14	14	16-1/8	15-5/16	3/8	12	1/8" flat ring flange

## ETFE Duct Fittings: Dampers

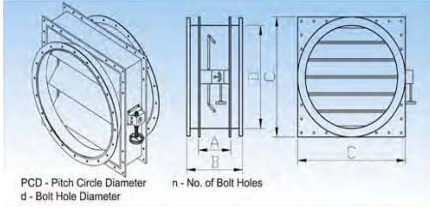


Single Blade Damper with Hand Lever

D (mm)	A (mm)	OD (mm)	PCD (mm)	d (mm)	n	Type of Flange
400	403	483	446	12	14	40x20x3mm angle flange
450	453	533	496	12	14	40x20x3mm angle flange
500	503	583	546	12	16	40x20x3mm angle flange
550	553	633	596	12	16	40x20x3mm angle flange
600	603	683	646	12	18	40x20x3mm angle flange

D (")	A (")	OD (")	PCD (")	d (")	n	Type of Flange
16	16	19-1/8	17-15/16	1/2	14	1-1/2"x3/4"x1/8" angle flange
18	18	21-1/8	19-15/16	1/2	14	1-1/2"x3/4"x1/8" angle flange
20	20	23-1/8	21-15/16	1/2	16	1-1/2"x3/4"x1/8" angle flange
22	22	25-1/8	23-15/16	1/2	16	1-1/2"x3/4"x1/8" angle flange
24	24	27-1/8	25-15/16	1/2	18	1-1/2"x3/4"x1/8" angle flange

# ETFE Duct Fittings: Dampers

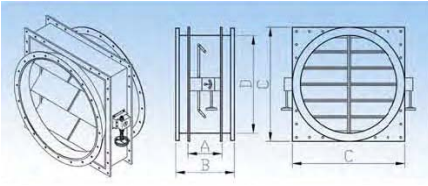


Multi-Blade Damper with Worm Gear Drive.

D (mm)	A (mm)	B (mm)	C (mm)	PCD (mm)	d (mm)	n	Type of Flange
650	210	400	750	696	12	18	40x20x3mm angle flange
700	210	400	800	758	12	20	50x25x5mm angle flange
750	210	400	850	808	12	22	50x25x5mm angle flange
800	210	400	900	858	12	24	50x25x5mm angle flange
850	210	400	950	908	12	26	50x25x5mm angle flange
900	210	400	1000	958	12	28	50x25x5mm angle flange
950	210	400	1050	1008	12	30	50x25x5mm angle flange
1000	210	400	1100	1058	12	32	50x25x5mm angle flange

D (")	A (")	B (")	C (")	PCD (")	d (")	n	Type of Flange
26	8-1/2	16	30	27-15/16	1/2	18	40x20x3mm angle flange
28	8-1/2	16	32	30-1/2	1/2	20	50x25x5mm angle flange
30	8-1/2	16	34	32-1/2	1/2	22	50x25x5mm angle flange
32	8-1/2	16	36	34-1/2	1/2	24	50x25x5mm angle flange
34	8-1/2	16	38	36-1/2	1/2	26	50x25x5mm angle flange
36	8-1/2	16	40	38-1/2	1/2	28	50x25x5mm angle flange
38	8-1/2	16	42	40-1/2	1/2	30	50x25x5mm angle flange
40	8-1/2	16	44	42-1/2	1/2	32	50x25x5mm angle flange

## ETFE Duct Fittings: Dampers

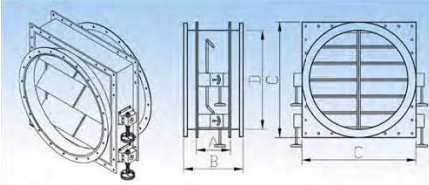


Multi-Blade Damper with Double Worm Gear Drives

D (mm)	A (mm)	B (mm)	C (mm)	PCD (mm)	d (mm)	n	Type of Flange
1050	210	400	1150	1108	12	34	50x25x5mm angle flange
1100	210	400	1200	1158	12	36	50x25x5mm angle flange
1150	210	400	1250	1208	12	36	50x25x5mm angle flange
1200	210	400	1300	1258	12	38	50x25x5mm angle flange
1250	210	400	1350	1308	12	40	50x25x5mm angle flange
1300	210	400	1400	1358	12	40	50x25x5mm angle flange
1350	210	400	1450	1408	12	42	50x25x5mm angle flange
1400	210	400	1500	1458	12	44	50x25x5mm angle flange
1450	210	400	1550	1508	12	46	50x25x5mm angle flange
1500	210	400	1600	1559	12	46	50x25x5mm angle flange

D (")	A (")	B (")	C (")	PCD (")	d (")	n	Type of Flange
42	8-1/2	16	46	44-1/2	1/2	34	2"x1"x3/16" angle flange
44	8-1/2	16	48	46-1/2	1/2	36	2"x1"x3/16" angle flange
46	8-1/2	16	50	48-1/2	1/2	36	2"x1"x3/16" angle flange
48	8-1/2	16	52	50-1/2	1/2	38	2"x1"x3/16" angle flange
50	8-1/2	16	54	52-1/2	1/2	40	2"x1"x3/16" angle flange
52	8-1/2	16	56	54-1/2	1/2	40	2"x1"x3/16" angle flange
54	8-1/2	16	58	56-1/2	1/2	42	2"x1"x3/16" angle flange
56	8-1/2	16	60	58-1/2	1/2	44	2"x1"x3/16" angle flange
58	8-1/2	16	62	60-1/2	1/2	46	2"x1"x3/16" angle flange
60	8-1/2	16	64	62-1/2	1/2	46	2"x1"x3/16" angle flange

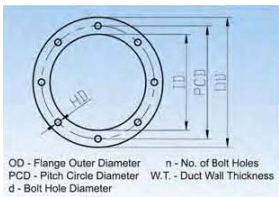
## ETFE Duct Fittings: Dampers



Multi-Blade Damper with 4 Worm Gear Drives

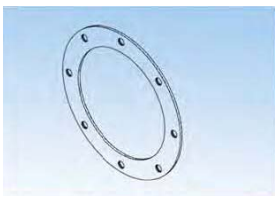
D (mm)	A (mm)	B (mm)	C (mm)	PCD (mm)	d (mm)	n	Type of Flange
1550	210	400	1650	1609	12	48	50x25x5mm angle flange
1600	210	400	1700	1659	12	50	50x25x5mm angle flange
1650	210	400	1750	1709	12	52	50x25x5mm angle flange
1700	210	400	1800	1759	12	52	50x25x5mm angle flange
1750	210	400	1850	1809	12	54	50x25x5mm angle flange
1800	210	400	1900	1859	12	54	50x25x5mm angle flange
1850	210	400	1950	1909	12	56	50x25x5mm angle flange
1900	210	400	2000	1959	12	58	50x25x5mm angle flange
1950	210	400	2050	2009	12	60	50x25x5mm angle flange
2000	210	400	2100	2059	12	62	50x25x5mm angle flange
2050	210	400	2150	2109	12	62	50x25x5mm angle flange

D (")	A (")	B (")	C (")	PCD (")	d (")	n	Type of Flange
62	8-1/2	16	66	64-1/2	1/2	48	2"x1"x3/16" angle flange
64	8-1/2	16	68	64-1/2	1/2	50	2"x1"x3/16" angle flange
66	8-1/2	16	70	64-1/2	1/2	52	2"x1"x3/16" angle flange
68	8-1/2	16	72	64-1/2	1/2	52	2"x1"x3/16" angle flange
70	8-1/2	16	74	64-1/2	1/2	54	2"x1"x3/16" angle flange
72	8-1/2	16	76	64-1/2	1/2	54	2"x1"x3/16" angle flange
74	8-1/2	16	78	64-1/2	1/2	56	2"x1"x3/16" angle flange
76	8-1/2	16	80	64-1/2	1/2	58	2"x1"x3/16" angle flange
78	8-1/2	16	82	64-1/2	1/2	60	2"x1"x3/16" angle flange
80	8-1/2	16	84	64-1/2	1/2	62	2"x1"x3/16" angle flange
82	8-1/2	16	86	64-1/2	1/2	62	2"x1"x3/16" angle flange



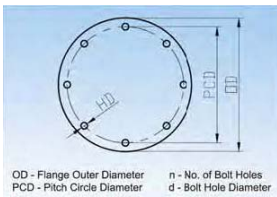
## ETFE Duct Fittings: Flanges

D(mm)	ID (mm)	OD (mm)	PCD (mm)	d (mm)	N	Type of Flange
100	103	153	132	8	6	3 mm flat flange
150	153	203	182	10	8	3 mm flat flange
200	203	253	232	10	8	3 mm flat flange
250	253	303	282	10	8	3 mm flat flange
300	303	353	332	10	12	3 mm flat flange
350	353	413	386	10	12	3 mm flat flange
400	403	483	446	12	14	40x20x3mm angle flange
450	453	533	496	12	14	40x20x3mm angle flange
500	503	583	546	12	16	40x20x3mm angle flange
550	553	633	596	12	16	40x20x3mm angle flange
600	603	683	646	12	18	40x20x3mm angle flange
650	653	733	696	12	18	40x20x3mm angle flange
700	703	803	758	12	20	50x25x5mm angle flange
750	753	853	808	12	22	50x25x5mm angle flange
800	803	903	858	12	24	50x25x5mm angle flange
850	853	953	908	12	26	50x25x5mm angle flange
900	903	1003	958	12	28	50x25x5mm angle flange
950	953	1053	1008	12	30	50x25x5mm angle flange
1000	1003	1103	1058	12	32	50x25x5mm angle flange
1050	1053	1153	1108	12	34	50x25x5mm angle flange
1100	1103	1203	1158	12	36	50x25x5mm angle flange
1150	1153	1253	1208	12	36	50x25x5mm angle flange
1200	1203	1303	1258	12	38	50x25x5mm angle flange
1250	1253	1353	1308	12	40	50x25x5mm angle flange
1300	1303	1403	1358	12	40	50x25x5mm angle flange
1350	1353	1453	1408	12	42	50x25x5mm angle flange
1400	1403	1503	1458	12	44	50x25x5mm angle flange
1450	1453	1553	1508	12	46	50x25x5mm angle flange
1500	1504	1604	1559	12	46	50x25x5mm angle flange
1550	1554	1654	1609	12	48	50x25x5mm angle flange
1600	1604	1704	1659	12	50	50x25x5mm angle flange
1650	1654	1754	1709	12	52	50x25x5mm angle flange
1700	1704	1804	1759	12	52	50x25x5mm angle flange
1750	1754	1854	1809	12	54	50x25x5mm angle flange
1800	1804	1904	1859	12	54	50x25x5mm angle flange
1850	1854	1954	1909	12	56	50x25x5mm angle flange
1900	1904	2004	1959	12	58	50x25x5mm angle flange
1950	1954	2054	2009	12	60	50x25x5mm angle flange
2000	2004	2104	2059	12	62	50x25x5mm angle flange
2050	2054	2154	2109	12	62	50x25x5mm angle flange



## ETFE Duct Fittings: Flanges

D (")	ID (")	OD (")	PCD (")	d (")	n	Type of Flange
4	4-1/8	6-1/8	5-3/16	5/16	6	1/8" flat ring flange
6	6-1/8	8-1/8	7-5/16	3/8	8	1/8" flat ring flange
8	8-1/8	10-1/8	9-5/16	3/8	8	1/8" flat ring flange
10	10-1/8	12-1/8	11-5/16	3/8	8	1/8" flat ring flange
12	12-1/8	14-1/8	13-5/16	3/8	12	1/8" flat ring flange
14	14-1/8	16-1/8	15-5/16	3/8	12	1/8" flat ring flange
16	16-1/8	19-1/8	17-15/16	1/2	14	1-1/2"x3/4"x1/8" angle flange
18	18-1/8	21-1/8	19-15/16	1/2	14	1-1/2"x3/4"x1/8" angle flange
20	20-1/8	23-1/8	21-15/16	1/2	16	1-1/2"x3/4"x1/8" angle flange
22	22-1/8	25-1/8	23-15/16	1/2	16	1-1/2"x3/4"x1/8" angle flange
24	24-1/8	27-1/8	25-15/16	1/2	18	1-1/2"x3/4"x1/8" angle flange
26	26-1/8	29-1/8	27-15/16	1/2	18	1-1/2"x3/4"x1/8" angle flange
28	28-1/8	32-1/8	30-1/2	1/2	20	2"x1"x3/16" angle flange
30	30-1/8	34-1/8	32-1/2	1/2	22	2"x1"x3/16" angle flange
32	32-1/8	36-1/8	34-1/2	1/2	24	2"x1"x3/16" angle flange
34	34-1/8	38-1/8	36-1/2	1/2	26	2"x1"x3/16" angle flange
36	36-1/8	40-1/8	38-1/2	1/2	28	2"x1"x3/16" angle flange
38	38-1/8	42-1/8	40-1/2	1/2	30	2"x1"x3/16" angle flange
40	40-1/8	44-1/8	42-1/2	1/2	32	2"x1"x3/16" angle flange
42	42-1/8	46-1/8	44-1/2	1/2	34	2"x1"x3/16" angle flange
44	44-1/8	48-1/8	46-1/2	1/2	36	2"x1"x3/16" angle flange
46	46-1/8	50-1/8	48-1/2	1/2	36	2"x1"x3/16" angle flange
48	48-1/8	52-1/8	50-1/2	1/2	38	2"x1"x3/16" angle flange
50	50-1/8	54-1/8	52-1/2	1/2	40	2"x1"x3/16" angle flange
52	52-1/8	56-1/8	54-1/2	1/2	40	2"x1"x3/16" angle flange
54	54-1/8	58-1/8	56-1/2	1/2	42	2"x1"x3/16" angle flange
56	56-1/8	60-1/8	58-1/2	1/2	44	2"x1"x3/16" angle flange
58	58-1/8	62-1/8	60-1/2	1/2	46	2"x1"x3/16" angle flange
60	60-1/8	64-1/8	62-1/2	1/2	46	2"x1"x3/16" angle flange
62	62-1/8	66-1/8	64-1/2	1/2	48	2"x1"x3/16" angle flange
64	64-1/8	68-1/8	66-1/2	1/2	50	2"x1"x3/16" angle flange
66	66-1/8	70-1/8	68-1/2	1/2	52	2"x1"x3/16" angle flange
68	68-1/8	72-1/8	70-1/2	1/2	52	2"x1"x3/16" angle flange
70	70-1/8	74-1/8	72-1/2	1/2	54	2"x1"x3/16" angle flange
72	72-1/8	76-1/8	74-1/2	1/2	54	2"x1"x3/16" angle flange
74	74-1/8	78-1/8	76-1/2	1/2	56	2"x1"x3/16" angle flange
76	76-1/8	80-1/8	78-1/2	1/2	58	2"x1"x3/16" angle flange
78	78-1/8	82-1/8	80-1/2	1/2	60	2"x1"x3/16" angle flange
80	80-1/8	84-1/8	82-1/2	1/2	62	2"x1"x3/16" angle flange
82	82-1/8	86-1/8	84-1/2	1/2	62	2"x1"x3/16" angle flange



## ETFE Duct Fittings: End Cap

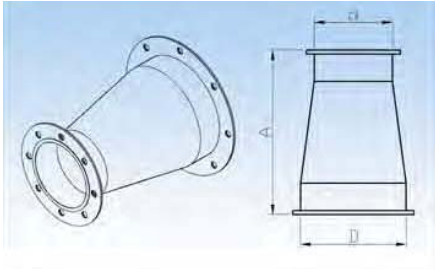
D(mm)	OD (mm)	PCD (mm)	d (mm)	n	Type of Flange
100	153	132	8	6	3 mm flat ring flange
150	203	182	10	8	3 mm flat ring flange
200	253	232	10	8	3 mm flat ring flange
250	303	282	10	8	3 mm flat ring flange
300	353	332	10	12	3 mm flat ring flange
350	413	386	10	12	3 mm flat ring flange
400	483	446	12	14	40x20x3mm angle flange
450	533	496	12	14	40x20x3mm angle flange
500	583	546	12	16	40x20x3mm angle flange
550	633	596	12	16	40x20x3mm angle flange
600	683	646	12	18	40x20x3mm angle flange
650	733	696	12	18	40x20x3mm angle flange
700	803	758	12	20	50x25x5mm angle flange
750	853	808	12	22	50x25x5mm angle flange
800	903	858	12	24	50x25x5mm angle flange
850	953	908	12	26	50x25x5mm angle flange
900	1003	958	12	28	50x25x5mm angle flange
950	1053	1008	12	30	50x25x5mm angle flange
1000	1103	1058	12	32	50x25x5mm angle flange
1050	1153	1108	12	34	50x25x5mm angle flange
1100	1203	1158	12	36	50x25x5mm angle flange
1150	1253	1208	12	36	50x25x5mm angle flange
1200	1303	1258	12	38	50x25x5mm angle flange
1250	1353	1308	12	40	50x25x5mm angle flange
1300	1403	1358	12	40	50x25x5mm angle flange
1350	1453	1408	12	42	50x25x5mm angle flange
1400	1503	1458	12	44	50x25x5mm angle flange
1450	1553	1508	12	46	50x25x5mm angle flange
1500	1604	1559	12	46	50x25x5mm angle flange
1550	1654	1609	12	48	50x25x5mm angle flange
1600	1704	1659	12	50	50x25x5mm angle flange
1650	1754	1709	12	52	50x25x5mm angle flange
1700	1804	1759	12	52	50x25x5mm angle flange
1750	1854	1809	12	54	50x25x5mm angle flange
1800	1904	1859	12	54	50x25x5mm angle flange
1850	1954	1909	12	56	50x25x5mm angle flange
1900	2004	1959	12	58	50x25x5mm angle flange
1950	2054	2009	12	60	50x25x5mm angle flange
2000	2104	2059	12	62	50x25x5mm angle flange
2050	2154	2109	12	62	50x25x5mm angle flange



## ETFE Duct Fittings: End Cap

D (")	OD (")	PCD (")	d (")	n	Type of Flange
4	6-1/8	5-3/16	5/16	6	1/8" flat ring flange
6	8-1/8	7-5/16	3/8	8	1/8" flat ring flange
8	10-1/8	9-5/16	3/8	8	1/8" flat ring flange
10	12-1/8	11-5/16	3/8	8	1/8" flat ring flange
12	14-1/8	13-5/16	3/8	12	1/8" flat ring flange
14	16-1/8	15-5/16	3/8	12	1/8" flat ring flange
16	19-1/8	17-15/16	1/2	14	1-1/2"x3/4"x1/8" angle flange
18	21-1/8	19-15/16	1/2	14	1-1/2"x3/4"x1/8" angle flange
20	23-1/8	21-15/16	1/2	16	1-1/2"x3/4"x1/8" angle flange
22	25-1/8	23-15/16	1/2	16	1-1/2"x3/4"x1/8" angle flange
24	27-1/8	25-15/16	1/2	18	1-1/2"x3/4"x1/8" angle flange
26	29-1/8	27-15/16	1/2	18	1-1/2"x3/4"x1/8" angle flange
28	32-1/8	30-1/2	1/2	20	2"x1"x3/16" angle flange
30	34-1/8	32-1/2	1/2	22	2"x1"x3/16" angle flange
32	36-1/8	34-1/2	1/2	24	2"x1"x3/16" angle flange
34	38-1/8	36-1/2	1/2	26	2"x1"x3/16" angle flange
36	40-1/8	38-1/2	1/2	28	2"x1"x3/16" angle flange
38	42-1/8	40-1/2	1/2	30	2"x1"x3/16" angle flange
40	44-1/8	42-1/2	1/2	32	2"x1"x3/16" angle flange
42	46-1/8	44-1/2	1/2	34	2"x1"x3/16" angle flange
44	48-1/8	46-1/2	1/2	36	2"x1"x3/16" angle flange
46	50-1/8	48-1/2	1/2	36	2"x1"x3/16" angle flange
48	52-1/8	50-1/2	1/2	38	2"x1"x3/16" angle flange
50	54-1/8	52-1/2	1/2	40	2"x1"x3/16" angle flange
52	56-1/8	54-1/2	1/2	40	2"x1"x3/16" angle flange
54	58-1/8	56-1/2	1/2	42	2"x1"x3/16" angle flange
56	60-1/8	58-1/2	1/2	44	2"x1"x3/16" angle flange
58	62-1/8	60-1/2	1/2	46	2"x1"x3/16" angle flange
60	64-1/8	62-1/2	1/2	46	2"x1"x3/16" angle flange
62	66-1/8	64-1/2	1/2	48	2"x1"x3/16" angle flange
64	68-1/8	66-1/2	1/2	50	2"x1"x3/16" angle flange
66	70-1/8	68-1/2	1/2	52	2"x1"x3/16" angle flange
68	72-1/8	70-1/2	1/2	52	2"x1"x3/16" angle flange
70	74-1/8	72-1/2	1/2	54	2"x1"x3/16" angle flange
72	76-1/8	74-1/2	1/2	54	2"x1"x3/16" angle flange
74	78-1/8	76-1/2	1/2	56	2"x1"x3/16" angle flange
76	80-1/8	78-1/2	1/2	58	2"x1"x3/16" angle flange
78	82-1/8	80-1/2	1/2	60	2"x1"x3/16" angle flange
80	84-1/8	82-1/2	1/2	62	2"x1"x3/16" angle flange
82	86-1/8	84-1/2	1/2	62	2"x1"x3/16" angle flange

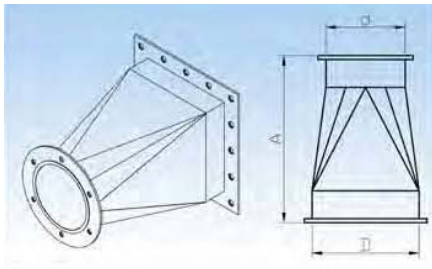
## ETFE Duct Fittings: Others



### Reducers

We can fabricate them in any configuration specified.

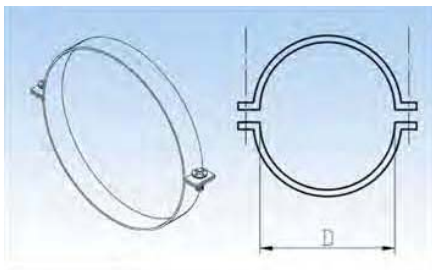
Typically,  $A \geq D-d + 150 \text{ mm}$  ( $A \geq D-d + 6''$ ) and our standard product is  $A = D-d + 150 \text{ mm}$  ( $A = D-d + 6''$ ).



### Square-to-Round Transition

We can fabricate them in any configuration specified.

Typically,  $A \geq D-d + 150 \text{ mm}$  ( $A \geq D-d + 6''$ ) and our standard product is  $A = D-d + 150 \text{ mm}$  ( $A = D-d + 6''$ ).



### Supporting Brackets

$D \leq 400 \text{ mm}$

( $D \leq 16''$ )

$450 \leq D \leq 850 \text{ mm}$

( $18'' \leq D \leq 34''$ )

$900 \leq D \leq 1450 \text{ mm}$

( $36'' \leq D \leq 58''$ )

$D \geq 1500 \text{ mm}$

( $D \geq 60''$ )

23x3mm Flat Bar

(1"x1/8")

40x4mm Flat Bar

(1-1/2"x5/32")

50x5mm Flat Bar

(2"x3/16")

75x5mm Flat Bar

(3"x3/16")

Installation at intervals of 1500mm to 2400 mm (60" to 95")

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