

HANGERS & REINFORCEMENT

Clutcher®



- Can be used on a variety of mechanical systems
- Cable & Clutcher sold separately
- Eliminates the need to stock pre-cut cable
- Tapered bore design for fast and easy installation
- Easily adjust hanging height by hand
- Extremely Strong
- Offers a 5 to 1 safety factor
- Available in variety of sizes for different weights
- Items can be hung at angles up to 60° from vertical
- Lightweight design reduces the risk of on-site accidents
- Aesthetically pleasing
- Seismic tested and conforms to ICC Code guidelines EG284
- Available in galvanized steel only

LOAD RATINGS

Size	Box/Quantity	Bag/Quantity	Bag/Boxes
CL10	200	10	20
CL20	150	10	15
CL30	50	5	10
CL40	25	5	5

DECLUTCHER



CLTOOL1020

PACKAGING INFO

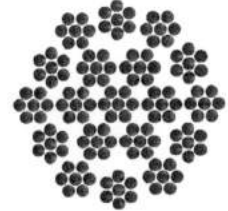
Clutcher Part #	Load Rating	Recommended Ductmate Steel Cable *
CL10	125lbs.	WR10
CL20	250lbs.	WR20
CL30	650lbs.	WR30
CL40	1250lbs.	WR40

HANGERS & REINFORCEMENT

STEEL CABLE

Ductmate steel cable is designed for the suspension of HVAC and other mechanical systems. This product has been designed to be used in conjunction with Ductmate's Cablemate Systems.

- Aircraft quality zinc coated steel cable
- Superior strength
- Supplied in coils to reduce waste
- Coils were designed for strength and ease of use
- Available in a variety of sizes and lengths



7x19



7x7

TECHNICAL and PACKAGING INFORMATION

7x7

Part #	Description	Breaking Load	Length
WR10500	#10 Steel Cable	826 lbs. (specified)	500'/Spool
WR101000	#10 Steel Cable	826 lbs. (specified)	1000'/Spool
WR20500	#20 Steel Cable	1697 lbs. (specified)	500'/Spool
WR201000	#20 Steel Cable	1697 lbs. (specified)	1000'/Spool

7x19

Part #	Description	Breaking Load	Length
WR30500	#30 Steel Cable	4199 lbs. (specified)	500'/Spool
WR301000	#30 Steel Cable	4199 lbs. (specified)	1000'/Spool
WR40500	#40 Steel Cable	7065 lbs. (specified)	500'/Spool
WR401000	#40 Steel Cable	7065 lbs. (specified)	1000'/spool

Steel Cable CUTTER



HFWRG

Also available:

Part #	Description
HFCCS	Corner Cleat Saddle for rectangular duct edges
HFWRG	Steel Cable Cutter for WR10 & WR20 Steel Cable
CLTOOL1020	Declutcher for CL10 & CL20

FREQUENTLY ASKED QUESTIONS (FAQ'S)

What are the advantages of using the *Clutcher System* over current methods?

Current methods of hanging ductwork using, all-thread, strapping, strap buckles, brackets, saddles etc. are all labor intensive to install. The longer the installation time - the greater the cost to hang ductwork. The only tool needed to install the *Clutcher System* is a steel wire rope cutter. In addition to the timesavings on installation, the clutcher is versatile (it can be hung at up to 60 degrees from vertical if needed), lightweight, safer to handle, and visually attractive.

Will the wire rope start to cut into the spiral duct?

On a wrap around installation on spiral pipe, the weight of the pipe is supported on the wire, which passes around the bottom 60 to 70% of the pipe circumference, so that the weight is evenly distributed. This creates a relatively low load per linear inch of wire rope, so there is insufficient direct pressure at any given point to cause damage.

Can I exceed the working load limit (WLL)?

No. The *Clutcher System* is a design load rated system - each size is specifically designed to carry a designed weight maximum (125#, 250#, 650#, & 1,250#). The 5:1 safety factor is there for just that reason - SAFETY. The *Clutcher System*, as designed, offers the customer the most options in sizing and heavier load capabilities of any wire rope system on the market.

Can I use any manufacturer's wire rope?

No. The *Clutcher System's* wire rope is an aircraft quality wire rope that has been tested with the clutcher as a system. If other wire rope is used with the clutcher, Ductmate will no longer assume any responsibility or guarantee the system.

What is aircraft quality wire rope?

Aircraft quality wire rope is a quality classification. We offer four size ranges and diameters of wire rope in the *Clutcher System*. Wire rope is designated by two figures, the first indicating the number of strands and the second, the number of wires per strand. In the two smaller sizes the 10 and 20 wire rope are 7x7 and the two larger sizes the 30 and 40 wire rope are 7x19. This means that the 7x7 rope has a total of 49 individual wires and the 7x19 rope has a total of 133 individual wires. In the manufacturing of aircraft quality wire rope, there is NO splicing allowed with any of these separate wires.

Is the *Clutcher System* an “approved” hanging system?

Ductmate's *Clutcher System* has been tested and approved by SMACNA per Chapter 4, Hangers & Supports, HVAC Duct Construction Standards, Metal & Flexible, 2nd Edition for use in hanging both spiral and rectangular ductwork. We will furnish copies of the approval letters on request.

Is there any problem with metal-to-metal contact?

The wire rope is zinc galvanized, as is the sheet metal used for the vast majority of ductwork, so there is no chemical reaction issue.

If it is used to hang copper or brass pipe there is a potential of creating a galvanic reaction (corrosion of the sacrificial metal). In hanging mechanical systems where this is a possibility, protective plastic tubing can be used to protect the point of contact.

Will consulting engineers accept the *Clutcher System*?

In the vast majority of cases of acceptance, the engineer, once he is made aware of the fact that SMACNA has tested and approved the system, will allow it's use. Eighty to ninety percent of the mechanical consulting engineers use the AIA *MasterSpec*® standard specification. This specification roughly states that as long as the hanging system is approved by SMACNA, it will be allowed.

Can the system be used in a swimming pool ventilation system?

No. This is a chlorine rich environment and it would attack the wire rope just as it would attack the galvanized sheet metal if it were allowed in these areas.

Is the *Clutcher System* available in stainless steel?

Presently it is not available. A marketing study is being prepared to research the total potential sales. The results may lead us to manufacturing a stainless wire rope system in the future.

Has it been approved for seismic applications?

The wire rope system has been submitted for seismic testing, and we are awaiting the results of these tests.

ACCESS DOORS

INSTALLATION INSTRUCTIONS

1
PEEL BACK OFF
TEMPLATE AND APPLY TO
DUCTWORK IN DESIRED
LOCATION

2
OPENING CAN BE MADE WITH
HAND-HELD PLASMA CUTTER
OR BY CONVENTIONAL
METHODS

3
INSERT DOOR INTO OPENING
AT AN ANGLE AND TIGHTEN KNOBS

4
DO NOT OVERTIGHTEN KNOBS.
NEOPRENE GASKET ASSURES
AIRTIGHT SEAL

ORDERING INFORMATION

(Samples: DRI161236GA; WRI161236GA)

DUCTMATE Access Doors						
Door Type	Insulation *	Door Size	Duct Diameter (for round duct only)		High Temp Door Class **	Alloy
D = Rect. or Hi-Temp Rect. DR = Round or Hi-Temp Round DC = Clean Out DO = Observation DC = Circular	I = Insulated U = Uninsulated	<u>Rectangular Doors</u>	6 = 5" - 6"	28 = 25" - 28"	F1 - 1000° F F2 - 2300° F	GA = GALVANIZED GN = GALVANNEALED AZ = ALUMINIZED S4 = 304 STAINLESS S6 = 316 STAINLESS BI = BLACK IRON PVC = PVC Coated Available in 24" x 18" un- insulated models only.
		84 = 8" x 4" (oval shaped) 106 = 10" x 6" 128 = 12" x 8" 1814 = 18" x 14" 2418 = 24" x 18" (oval shaped) ***	9 = 7" - 9" 11 = 10" - 11" 14 = 12" - 14" 16 = 15" - 16" 18 = 17" - 18" 20 = 19" - 20" 22 = 21" - 22" 24 = 23" - 24"	32 = 29" - 32" 36 = 33" - 36" 40 = 37" - 40" 44 = 41" - 44" 48 = 45" - 48" 52 = 49" - 52" 56 = 53" - 56" 62 = 57" - 62"		
		<u>Round Doors</u>	(Fits Duct Dia.)			
		84 = 8" x 4" 128 = 12" x 8" 1612 = 16" x 12" 2418 = 24" x 18"	5" - 14" 10" - 20" 17" - 60" 29" - 60"			

W.D.C.I. Access Doors (all are oval shaped)						
Door Type	Insulation *	Door Size	Duct Diameter (for round duct only)		High Temp Door Class **	Alloy*
W = Flat WR = Round	I = Insulated U = Uninsulated	<u>Rectangular Doors</u>	7 = 5" - 7"	32 = 29" - 32"	F1 - 1000° F F2 - 2300° F	GA = GALVANIZED GN = GALVANNEALED AZ = ALUMINIZED S4 = 304 STAINLESS S6 = 316 STAINLESS BI = BLACK IRON
		106 = 10" x 6" 1612 = 16" x 12" 2418 = 24" x 18"	9 = 8" - 9" 12 = 10" - 12" 14 = 13" - 14" 16 = 15" - 16" 20 = 17" - 20" 24 = 21" - 24" 28 = 24" - 28"	36 = 33" - 36" 40 = 37" - 40" 44 = 41" - 44" 48 = 45" - 48" 52 = 49" - 52" 56 = 53" - 56" 60 = 57" - 60"		
		<u>Round Doors</u>	(Fits Duct Dia.)			
		84 = 8" x 4" 106 = 10" x 6" 128 = 12" x 8" 1612 = 16" x 12" 2418 = 24" x 18"	5" - 14" 5" - 28" 10" - 20" 17" - 60" 29" - 60"	(over 60" consult factory)		

*INSULATION CLASSIFICATION ONLY USED WHEN USING PREFIXES D OR DR

**ONLY USED WHEN ORDERING HIGH TEMPERATURE DOORS

NOTE: ALL ACCESS DOORS MAY NOT BE AVAILABLE IN ALL ALLOYS

***NOTE: THE DUCTMATE 24" X 18" ACCESS DOOR, AND ALL W.D.C.I. DOORS CONSIST OF ONLY TWO LAYERS OF PRECISION STAMPED STEEL. A POLYESTER FIBER FIBER MATTED BETWEEN THE INNER AND OUTER DOOR PANELS PROVIDES INSULATION.

ROUND DUCT CONNECTOR SYSTEM

SPIRALmate®



SPIRALMATE CLOSURE RING

Cold-formed galvanized steel Closure Ring maintains the duct connection.



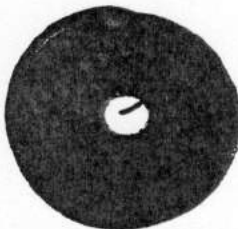
SPIRALMATE FLANGE

Flange is cold-formed galvanized steel with an integral mastic to form an air-tight connection with duct end.

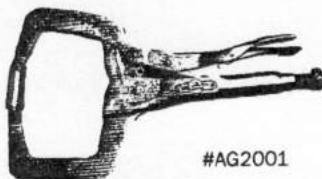


SPIRALMATE INNER RING

Cold-formed galvanized steel Inner Ring is specially designed for use with Spiralmate on double wall spiral pipe.



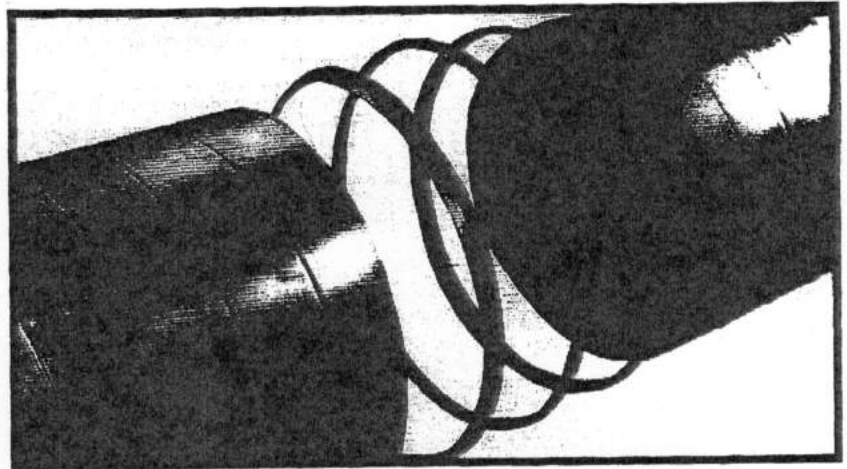
NEOPRENE GASKET TAPE



#AG2001

ALIGNMENT GRIPS

A modified vise grip to help you do a better job and save time.



MONEY SAVING VALUE ADDED FEATURES

QUICK & SIMPLE TO INSTALL • SUBSTANTIAL REDUCTION IN LABOR & TIME
 AIR TIGHT • NO ADDITIONAL SEALANTS REQUIRED • CLEAN APPEARANCE • USED
 AS AN ARCHITECTURAL FEATURE • CAN BE INSTALLED ON-SITE • INCREASES
 STRUCTURAL INTEGRITY OF DUCT • PRICE COMPARES TO ANGLE RINGS OR
 COUPLERS REQUIRING SEALANT • FLANGES ADJUST TO MODERATE PIPE
 DIAMETER VARIATIONS • ONE-BOLT CLOSURE BAND CONNECTION • WORKS ON
 DOUBLE-WALL PIPE • EASY ALIGNMENT OF FITTINGS • FITS SPIRAL SEAM AND
 MOST RIBBED PIPE

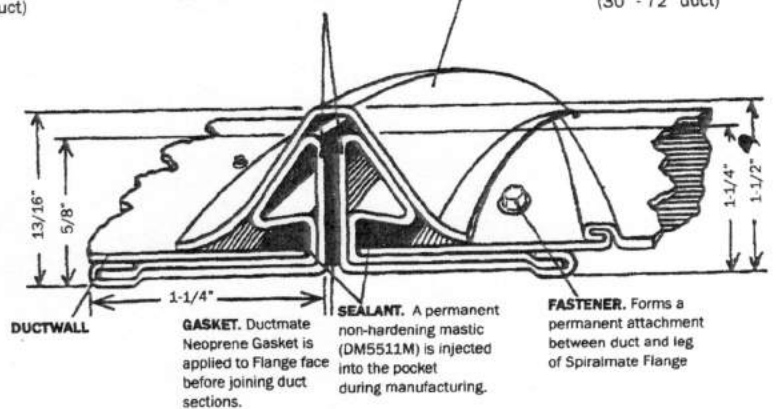
Duct Sizes From 8" - 72" in 2" Increments Standard
 (1" Increments And Sizes Larger Than 72" Consult Factory)

SPIRALMATE - SMALL
 (8" - 38" duct)

FLANGES. One ring is attached to the end of each duct section to be mated.

CLOSURE RING. Tightening Closure Ring applies pressure to the Flanges to lock the duct joint into an air-tight, permanent connection.

SPIRALMATE-LARGE
 (30" - 72" duct)



DUCTWALL

GASKET. Ductmate Neoprene Gasket is applied to Flange face before joining duct sections.

SEALANT. A permanent non-hardening mastic (DM5511M) is injected into the pocket during manufacturing.

FASTENER. Forms a permanent attachment between duct and leg of Spiralmate Flange

ROUND DUCT CONNECTOR SYSTEM SPECIFICATIONS

TECHNICAL DATA

The characteristics of a particular connection or joint are usually referenced to the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Manuals. SMACNA encourages the use of new technology, but does not endorse proprietary products. The Spiralmate Duct Connector System has been tested by Professional Service Industries, Inc., a division of Pittsburgh Testing Laboratories, with test results as noted. No external sealant was used and the certified test results reveal:

Virtually No leakage at up to 18" WG positive pressure or down to 10" WG negative pressure

Testing was performed on a single-wall connection. Complete test data is available upon request.

DIMENSIONS

Refer to Cross Section on previous page.

LIMITATIONS

The Spiralmate Small Profile Round Duct Connector is not recommended for applications with spiral duct gauges heavier than 20 GA or lighter than 28 GA. The Spiralmate Large Profile Round Duct Connector is not recommended for applications with spiral duct gauges heavier than 16 GA or lighter than 28 GA. Both Spiralmate Profiles will accept 12 GA longitudinal duct seam. Some duct manufacturers may weld on the seams to keep them from falling apart once the duct is manufactured. These welds may need to be ground down so they can fit the pocket. This will not compromise the duct seam as long as the spiral flanges are attached just after grinding.

TECHNICAL SERVICES

Detailed assembly and installation instructions & videos showing step-by-step procedures are available from the manufacturer and are sent to all new customers. Factory-trained personnel are available upon request at no charge to instruct new customers in the use of the Spiralmate System

COMPOSITIONS & MATERIALS

The Spiralmate Round Duct Connector Systems consist of the following components:

- Two mating Round Duct Connector Flanges of roll-formed galvanized steel with an integral sealant. Large Profile 20 ga., Small Profile 22 ga.
- A Closure Ring of roll-formed galvanized steel. Large Ring 18 ga., Small Ring 20 ga.
- Mastic: Ductmate DM5511M
- Gasket: Neoprene and Ductmate 440

COMPOSITIONS & MATERIALS FOR SPIRALMATE INNER RING

The Spiralmate Round Duct Connector Systems consist of the following components:

One Inner Ring roll-formed from 16 ga. galvanized steel.

SPIRALMATE ORDERING INFORMATION

(HOW TO ORDER USING PART NUMBER VARIATIONS, EXAMPLE: SM28GA)

INSULATION SIZE	CONNECTOR TYPE	CONNECTOR SIZE	ALLOY
<p><i>Example: 1</i></p> <ul style="list-style-type: none"> 1 = 1" 2 = 2" <p>*Only for Inner Ring</p>	<p><i>Example: SM</i></p> <ul style="list-style-type: none"> SM = SPIRALMATE IR = INNER RING 	<p><i>Example: 28</i></p> <p>(PART # = CONNECTOR DIA) 28 = 28" DIAM.</p> <ul style="list-style-type: none"> SMALL PROFILE SIZES 8" thru 38" (WEIGHT = .33 X diam. in. ±) LARGE PROFILE SIZES 30" thru 72" (WEIGHT = .54 X diam. in. ±) <p>Both profiles available in odd, even, & metric sizes.</p> <p>INNER RING</p> <p>(PART # = INSIDE DIAM. OF DUCT) 36 = 36" ID DIAM.</p> <ul style="list-style-type: none"> 8" THRU 72"* (WEIGHT = .15 X diam. in. ±) <p>* NOTE: 8" & 10" Inner Ring only available for 1" insulation</p>	<p><i>Example: GA</i></p> <ul style="list-style-type: none"> GA = GALVANIZED GN = GALVANNEALED AZ = ALUMINIZED S4 = 304 STAINLESS S6 = 316 STAINLESS PVC = PVC COATED

GASKETING	
PART #	DESCRIPTION
NEO 5/16X3/4	NEOPRENE (50' ROLLS/750' PER CASE, @ 15LBS/PER CASE)

NOTE: SPIRALMATE CONNECTOR SYSTEM COMES COMPLETE WITH 2 FLANGES AND 1 CLOSURE RING. ADDITIONAL FLANGE RINGS AND CLOSURE RINGS ALSO SOLD SEPARATELY. NEOPRENE GASKET IS RECOMMENDED AROUND THE CIRCUMFERENCE OF THE SPIRALMATE FLANGE. SMALL AMOUNT OF 440 BUTYL GASKET REQUIRED AT BREAK IN FLANGE. SEE GASKETING FOR SPECIFICATIONS.

GASKET CALCULATION: DIAMETER + 1-1/2" X 3.1415 = (LI + 12 PER JOINT) X (NUMBER OF RELATED SIZES) = SIZE TOTAL

TOTAL FOOTAGE DETERMINED BY ADDING ALL SIZES TOTAL.

#NUTRUNL - Special long socket for large profile Spiralmate Closure Ring
#NUTRUNS - Special long socket for small profile Spiralmate Closure Ring

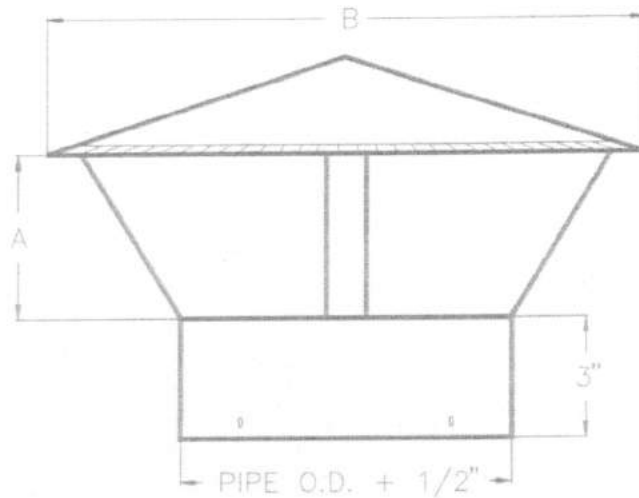
RAIN CAP (PCR)

Designed to terminate a chimney.
Minimizes entrance of rain.

Provides low flow resistance.

Flow Resistance

$K = 0.5$



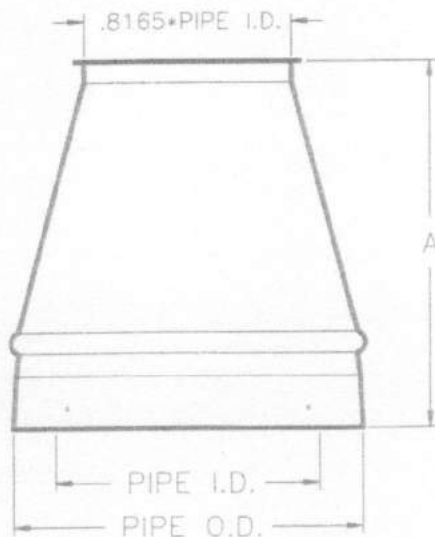
PIPE I.D.	DIM. A	DIM. B
6" to 16"	4 1/4"	PIPE I.D. + 10"
18" to 28"	7 3/8"	PIPE I.D. + 12"
30" to 40"	10 3/8"	PIPE I.D. + 16"
42" to 48"	12 1/2"	PIPE I.D. + 18"

EXIT CONE (PCE)

Designed to increase the exit stack velocity by 50%.

Requires the use of a Tee Cap - Drain (PTD) at the bottom of the chimney.

Flow Resistance $K = 1.25$



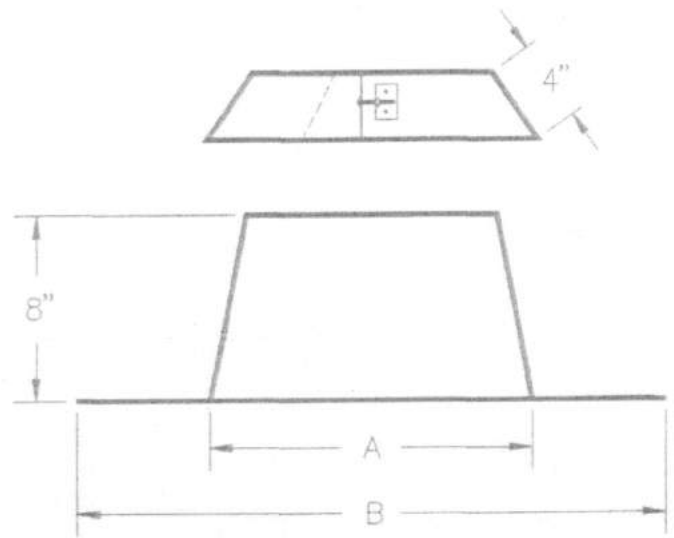
PIPE I.D.	DIM. A	0.8165 * PIPE I.D.
6"	11 1/4"	4 7/8"
8"	12 1/4"	6 1/2"
10"	13 1/4"	8 1/8"
12"	14 1/4"	9 3/4"
14"	15 1/4"	11 1/2"
16"	16 1/4"	13"
18"	17 1/4"	14 3/4"
20"	18 1/4"	16 3/8"
22"	19 1/4"	18"
24"	20 1/4"	19 1/2"
26"	21 1/4"	21 1/4"
28"	22 1/2"	22 7/8"
30"	23 1/2"	24 1/2"
32"	24 1/2"	26 1/8"
34"	25 1/2"	27 3/4"
36"	26 1/2"	29 3/8"
38"	27 1/2"	31"
40"	28 1/2"	32 5/8"
42"	29 1/2"	34 1/4"
44"	30 1/2"	35 7/8"
46"	31 1/2"	37 1/2"
48"	32 1/2"	39 1/4"

ROOF FLASHING (F, F1, F2)

Used to provide weather protection where the chimney penetrates the roof.

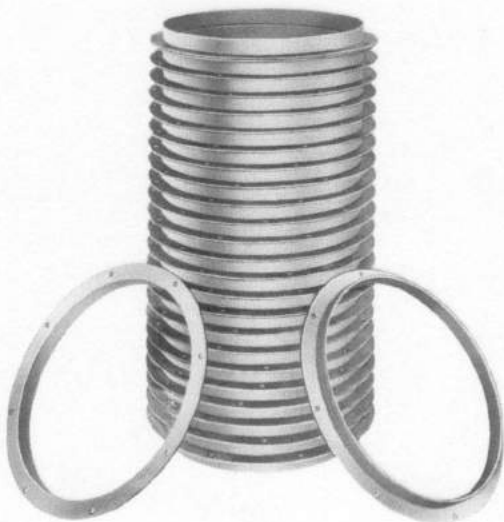
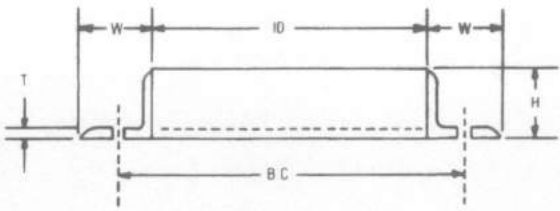
Three models are available to accommodate various roof pitches.

The Storm Collar (FC) is included.



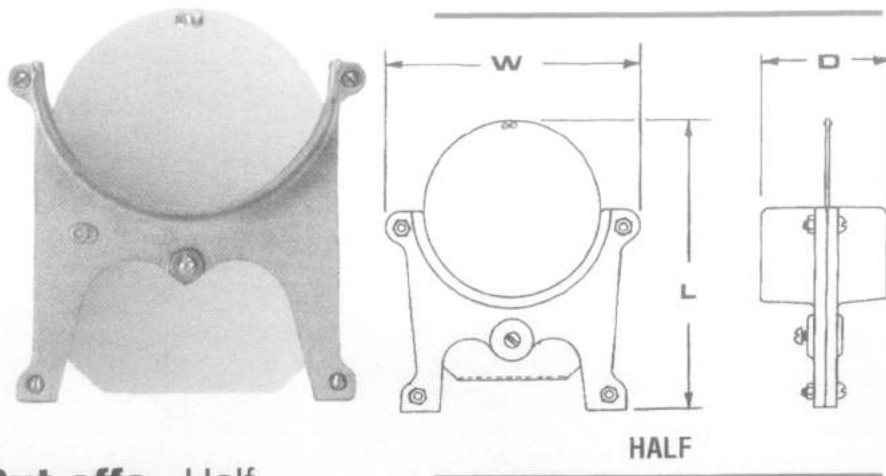
PIPE I.D.	DIM. A	DIM. B
6"	14"	24"
8"	16"	24"
10"	18"	28"
12"	20"	28"
14"	22"	32"
16"	24"	32"
18"	26"	36"
20"	28"	36"
22"	30"	40"
24"	32"	40"
26"	34"	44"
28"	36"	44"
30"	38"	48"
32"	40"	48"
34"	42"	52"
36"	44"	54"
38"	46"	56"
40"	48"	58"
42"	50"	60"
44"	52"	62"
46"	54"	64"
48"	56"	66"

Stock Angle Rings, Pressed and Rolled Steel



K&B pressed and rolled steel angle rings are used widely in joining ductwork together in dust and fume control work. All rings are of black steel, unpainted. Most sizes are in stock for immediate shipment. Through 14" diameter, angle rings are press formed, and above 14", roll formed and welded. They are available with or without holes—bolts not included. Larger angles, channels, bars and other sizes rolled to order in steel, aluminum, stainless and other alloys. Square and rectangular flanges are also available. All angle rings and flanges are punched on automatic equipment.

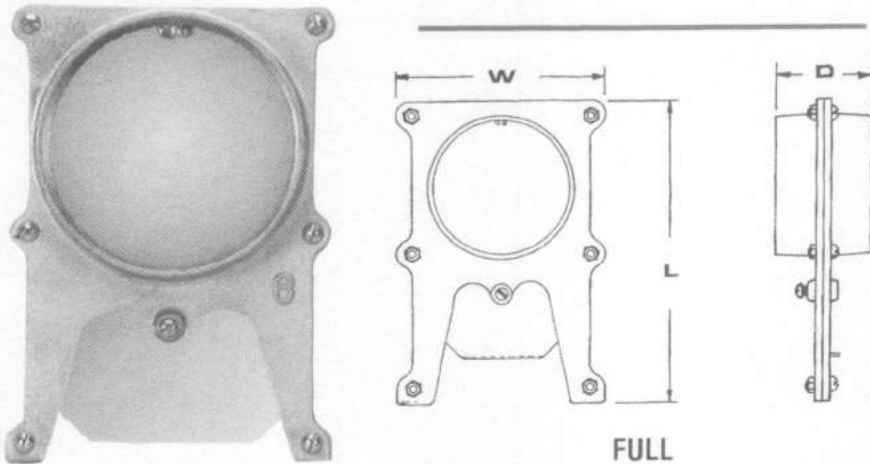
	SIZE	H	W	T	ID	NO. HOLES	SIZE HOLES	B C	WEIGHT LBS.		
PRESSED	3	7/8	1	10 Ga	3 1/4	6	9/32	4 1/4	.70	48	
	4	1 1/16	1	10 Ga	4 1/4	6	9/32	5 1/4	.85		
	5	1	1	10 Ga	5 1/4	6	9/32	6 1/4	1.18		24
	6	1	1	10 Ga	6 3/4	6	9/32	7 1/4	1.38		
	7	1	1 1/8	10 Ga	7 1/4	6	3/8	8 1/2	1.73	12 per box	
	8	1	1 1/8	10 Ga	8 1/4	6	3/8	9 1/4	1.90		
	9	1 1/8	1 1/4	10 Ga	9 1/4	6	7/16	10 1/4	2.55	30	
	10	1 1/4	1 1/2	10 Ga	10 1/4	6	7/16	11 1/4	3.05		
	11	1 1/4	1 3/8	10 Ga	11 1/4	6	7/16	12 1/4	3.25	12 per box	
	12	1 1/4	1 1/2	10 Ga	12 1/4	8	7/16	14	3.88		
	13	1 1/2	1 1/2	10 Ga	13 1/4	8	7/16	15	4.25	30	
	14	1 1/2	1 1/2	10 Ga	14 1/4	8	7/16	16	4.75		
	15	1 1/2	1 1/2	3/16	15 1/4	8	7/16	17	7.25	24 pieces per bundle	
	16	1 1/2	1 1/2	3/16	16 1/4	8	7/16	18	8.00		
17	1 1/2	1 1/2	3/16	17 1/4	8	7/16	19	8.25			
18	1 1/2	1 1/2	3/16	18 1/4	8	7/16	20	8.50			
19	1 1/2	1 1/2	3/16	19 1/4	12	7/16	20 3/4	8.75			
20	1 1/2	1 1/2	3/16	20 1/4	12	7/16	21 3/4	9.50			
21	1 1/2	1 1/2	3/16	21 1/4	12	7/16	22 3/4	10.25			
22	1 1/2	1 1/2	3/16	22 1/4	12	7/16	23 3/4	10.75			
23	1 1/2	1 1/2	3/16	23 1/4	12	7/16	24 3/4	11.25			
24	1 1/2	1 1/2	3/16	24 1/4	12	7/16	25 3/4	11.50			
25	1 1/2	1 1/2	3/16	25 1/4	16	7/16	26 3/4	12.00			
26	2	2	3/16	26 1/4	16	7/16	28 3/4	16.75	12 pieces per bundle		
27	2	2	3/16	27 1/4	16	7/16	29 3/4	17.38			
28	2	2	3/16	28 1/4	16	7/16	30 3/4	18.00			
29	2	2	3/16	29 1/4	16	7/16	31 3/4	18.75			
30	2	2	3/16	30 1/4	16	7/16	32 3/4	19.50			
31	2	2	3/16	31 1/4	16	7/16	33 3/4	20.38			
32	2	2	3/16	32 1/4	16	7/16	34 3/4	20.75			
33	2	2	3/16	33 1/4	16	7/16	35 3/4	21.25			
34	2	2	3/16	34 1/4	16	7/16	36 3/4	22.00			
35	2	2	3/16	35 1/4	16	7/16	37 3/4	22.50			
36	2	2	3/16	36 1/4	16	7/16	38 3/4	23.00			
37	2	2	3/16	37 1/4	24	7/16	39 3/4	23.75			
38	2	2	3/16	38 1/4	24	7/16	40 3/4	24.50	12 pieces per bundle		
39	2	2	3/16	39 1/4	24	7/16	41 3/4	25.00			
40	2	2	3/16	40 1/4	24	7/16	42 3/4	25.75			
41	2	2	3/16	41 1/4	24	7/16	43 3/4	26.13			
42	2	2	3/16	42 1/4	24	7/16	44 3/4	26.50			
43	2	2	3/16	43 1/4	24	7/16	45 3/4	27.38			
44	2	2	3/16	44 1/4	24	7/16	46 3/4	28.00			
45	2	2	3/16	45 1/4	24	7/16	47 3/4	28.63			
46	2	2	3/16	46 1/4	24	7/16	48 3/4	29.00			
47	2	2	3/16	47 1/4	24	7/16	49 3/4	29.88			
48	2	2	3/16	48 1/4	24	7/16	50 3/4	30.75			
49	2	2	3/16	49 1/4	24	7/16	51 3/4	31.50		6 pieces per bundle	
50	2	2	3/16	50 1/4	24	7/16	52 3/4	32.00			
52	2	2	3/16	52 1/4	24	7/16	54 3/4	33.75			
54	2	2	3/16	54 1/4	24	7/16	56 3/4	35.00			
56	2	2	3/16	56 1/4	24	7/16	58 3/4	36.25			
58	2	2	3/16	58 1/4	32	7/16	60 3/4	37.50			
60	2	2	3/16	60 1/4	32	7/16	62 3/4	38.75			
62	2	2	3/16	62 1/4	32	7/16	64 3/4	40.00			
64	2	2	3/16	64 1/4	32	7/16	66 3/4	41.50			
66	2	2	3/16	66 1/4	36	7/16	68 3/4	42.75			
68	2	2	3/16	68 1/4	36	7/16	70 3/4	44.00			
70	2	2	3/16	70 1/4	36	7/16	72 3/4	45.25			
72	2	2	3/16	72 1/4	36	7/16	74 3/4	46.50			



Cut-offs - Half

Cast aluminum cut-offs with galvanized steel slide gates. Cut-offs are used to balance systems, or save air, heat and power when machine is not in use. All cut-offs are furnished with set screws so blade may be firmly placed for volume control. To install, cut slot in pipe and sheet metal screw collar to pipe. Larger sizes are also available.

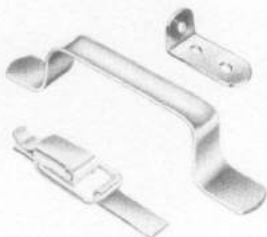
HALF CUT-OFFS				
Dia.	W	L	D	WT. - Lbs.
3"	4 ³ / ₈ "	4 ³ / ₄ "	2 ³ / ₁₆ "	.8
4"	5 ¹ / ₂ "	6"	2 ¹ / ₂ "	1.2
5"	6 ³ / ₈ "	6 ⁷ / ₈ "	2 ¹ / ₄ "	1.4
6"	7 ¹ / ₂ "	9"	2 ⁷ / ₈ "	2.0
7"	8 ³ / ₈ "	9 ¹ / ₂ "	2 ¹ / ₁₆ "	2.5
8"	9 ⁵ / ₈ "	10 ¹ / ₂ "	2 ³ / ₄ "	3.2
9"	11"	11 ¹ / ₄ "	2 ³ / ₄ "	3.5
10"	11 ¹ / ₄ "	13"	3"	4.2
12"	13 ³ / ₄ "	15 ³ / ₄ "	3"	5.5
14"	16 ¹ / ₂ "	17 ¹ / ₂ "	4 ¹ / ₄ "	8.6



Cut-offs - Full

Full cut-offs are used the same as half cut-offs, except to install. The pipe will fit over the collar of the cut-off on both ends. They are also furnished with set screws so blade may be firmly placed for volume control. Larger sizes are also available.

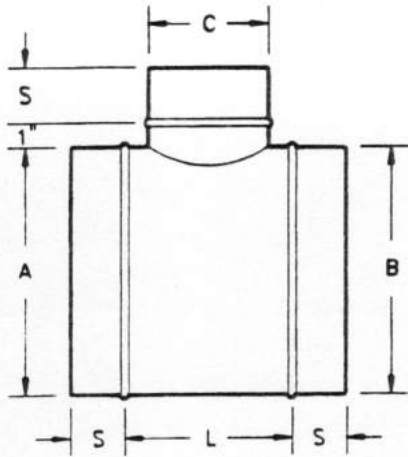
FULL CUT-OFFS				
Dia.	W	L	D	WT. - Lbs.
2"	3 ³ / ₈ "	4 ³ / ₈ "	1 ¹ / ₈ "	.9
3"	4 ¹ / ₄ "	5 ³ / ₈ "	2 ¹ / ₄ "	1.2
4"	5 ³ / ₈ "	6 ³ / ₄ "	2 ¹ / ₁₆ "	1.8
5"	6 ³ / ₈ "	8 ¹ / ₈ "	2 ¹ / ₁₆ "	2.7
6"	7 ¹ / ₈ "	10"	2 ³ / ₄ "	3.4
7"	8"	11 ¹ / ₈ "	2 ⁵ / ₈ "	3.4
8"	9 ¹ / ₄ "	12"	3 ³ / ₈ "	5.5
9"	10 ¹ / ₂ "	13 ⁵ / ₈ "	3 ⁵ / ₈ "	5.5
10"	11 ³ / ₈ "	14 ³ / ₈ "	3 ⁵ / ₈ "	7.4
12"	13 ³ / ₈ "	16 ¹ / ₄ "	3 ⁵ / ₈ "	8.7
14"	15 ³ / ₄ "	19"	4 ¹ / ₄ "	11.7
16"	18"	21 ¹ / ₄ "	4 ¹ / ₄ "	14.9
18"	20 ¹ / ₄ "	32 ³ / ₄ "	6 ¹ / ₈ "	33.7
20"	22 ¹ / ₄ "	33 ³ / ₄ "	6 ¹ / ₈ "	43.0



Catches, Lugs & Handles

Lugs are fabricated of 1/8" x 1" band iron, zinc plated; 2" and 1" legs with holes. Catches, fast and easy operating, are used for clean-out doors and similar applications. Handles are fabricated from 16 gauge steel.

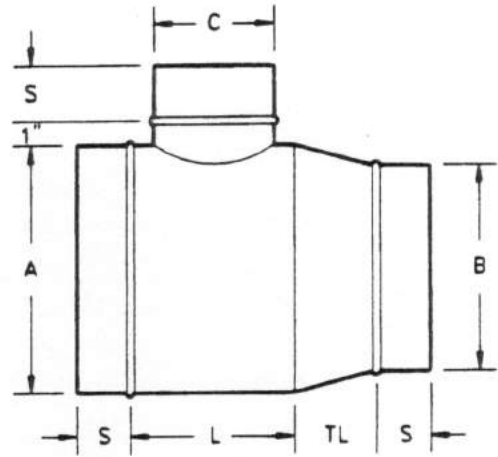
$L=C+2$



T-90
TEE

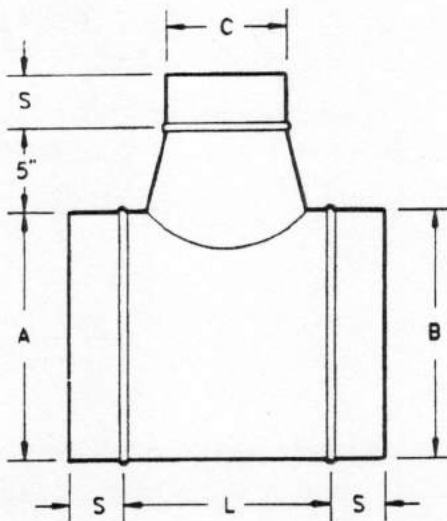
$L=C+2$

SEE PAGE 9 FOR TL



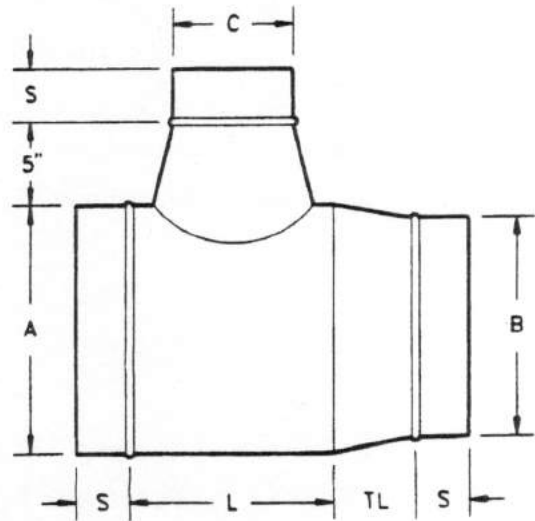
TR-90
REDUCING TEE

$L=C+4$



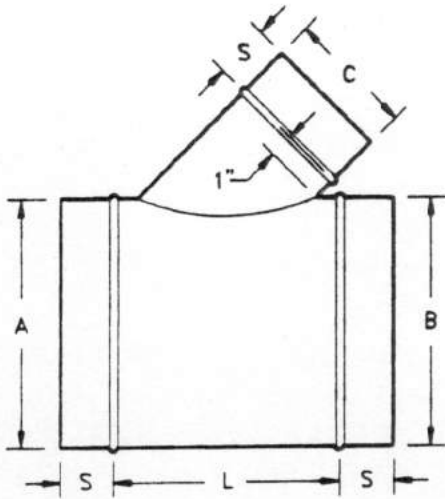
TC-90
CONICAL TEE

$L=C+4$



TRC-90
REDUCING CONICAL TEE

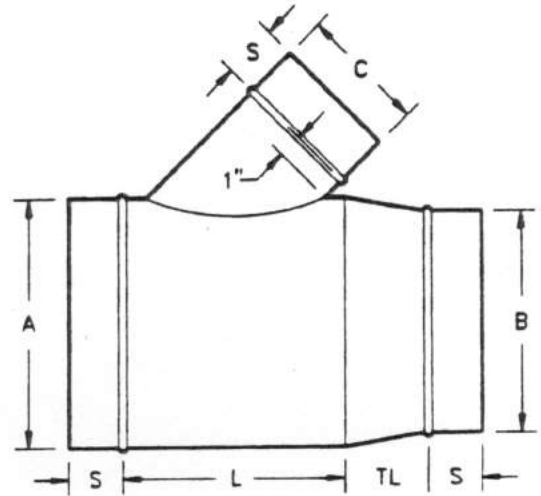
$$L=(1.414 \times C)+2$$



L-45
LATERAL

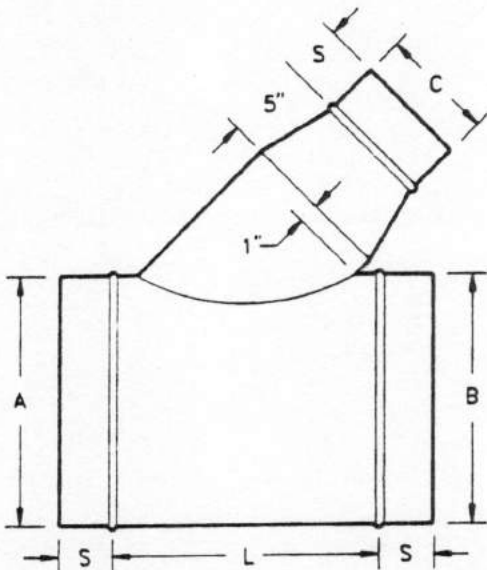
$$L=(1.414 \times C)+2$$

SEE PAGE 9 FOR TL



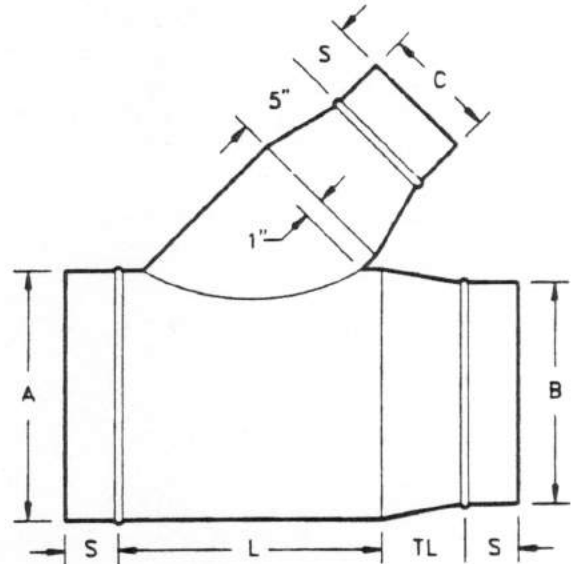
LR-45
REDUCING LATERAL

$$L=(1.414 \times (C+2))+2$$



LC-45
CONICAL LATERAL

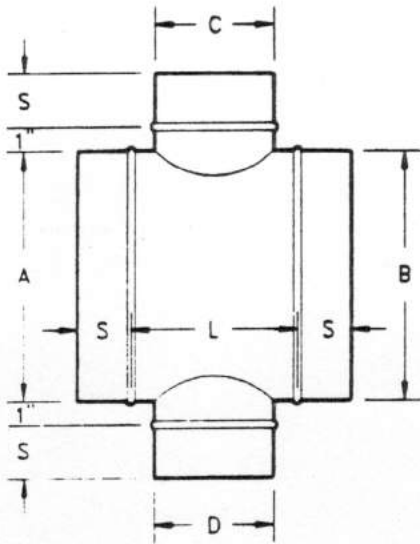
$$L=(1.414 \times (C+2))+2$$



LRC-45
REDUCING CONICAL LATERAL

$L=C+2$

$C \geq D$

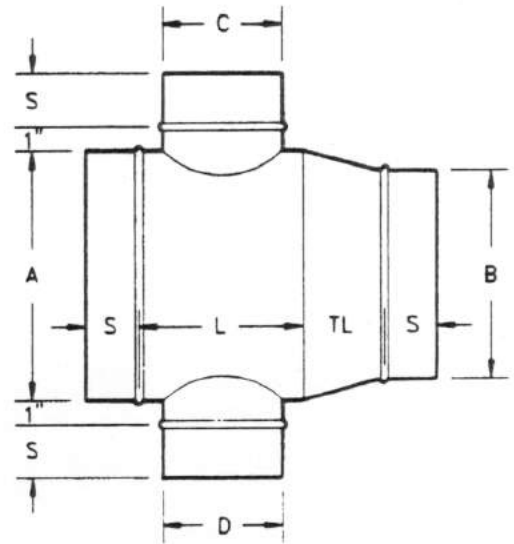


TX-180
TEE CROSS

$L=C+2$

$C \geq D$

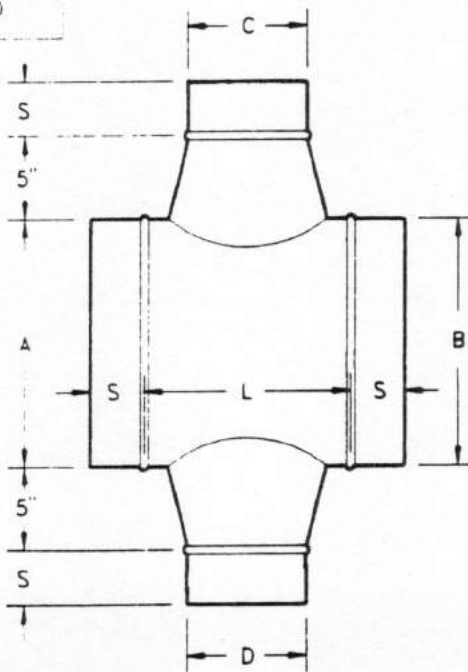
SEE PAGE 9 FOR TL



TXR-180
REDUCING TEE CROSS

$L=C+4$

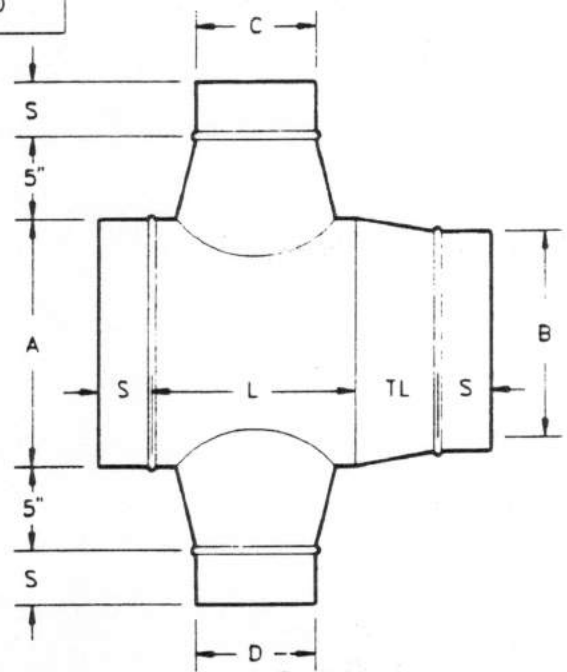
$C \geq D$



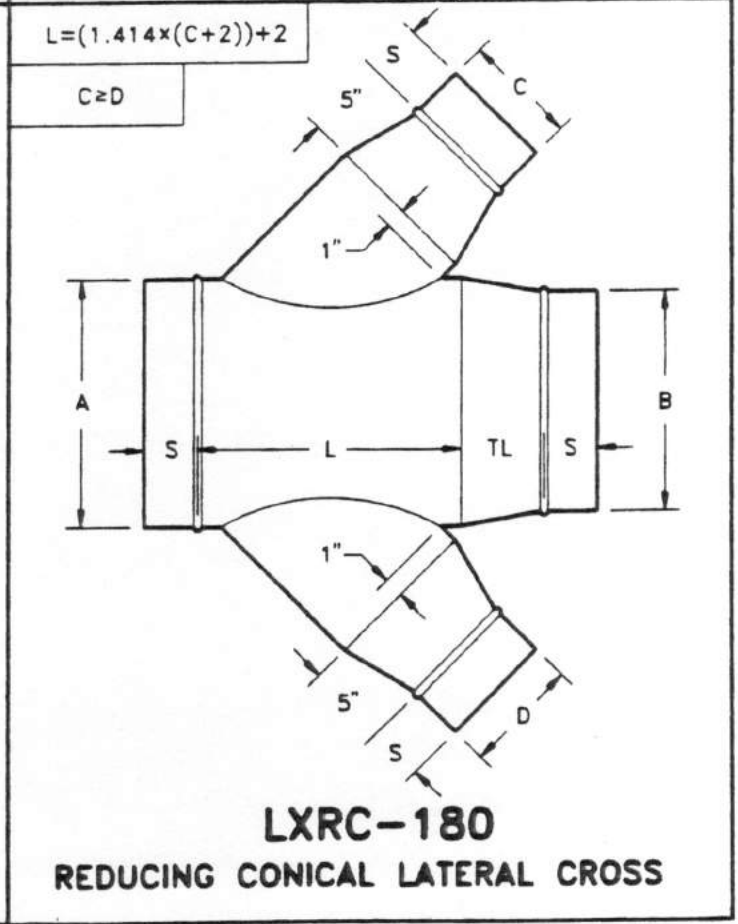
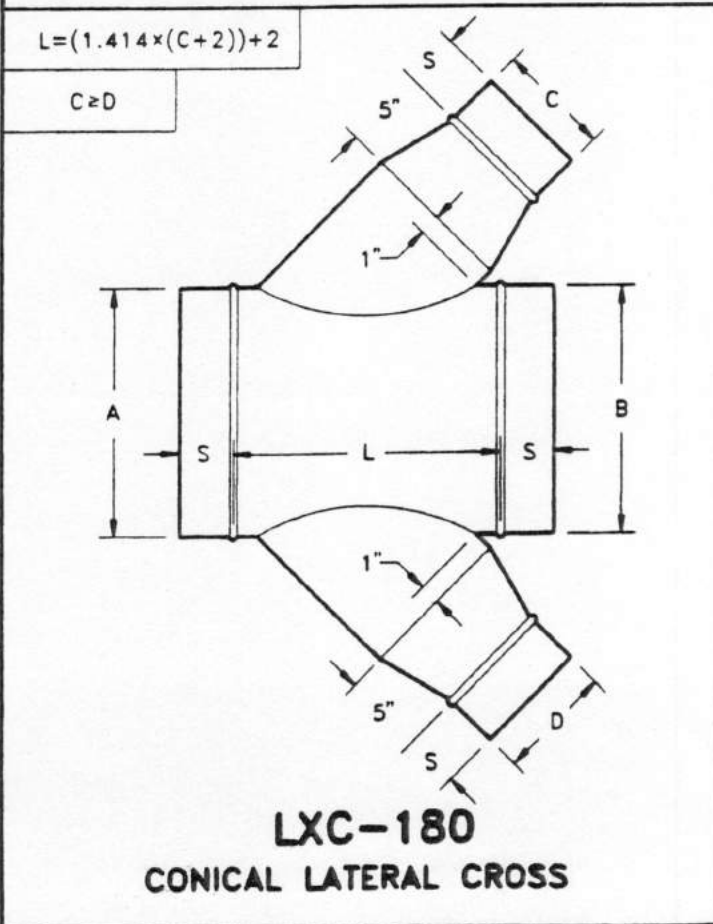
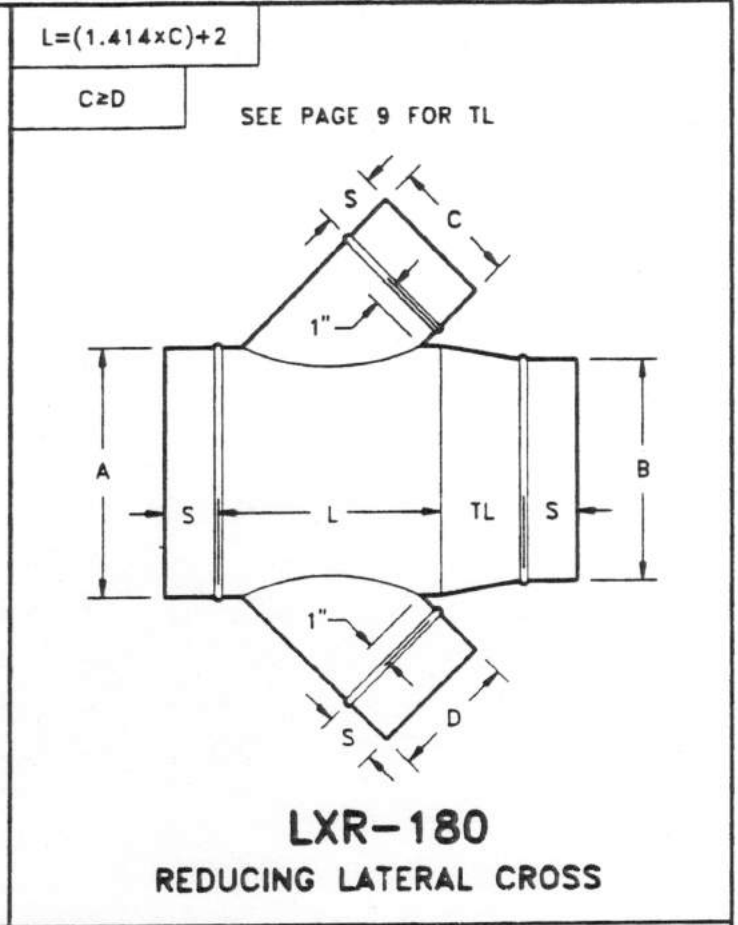
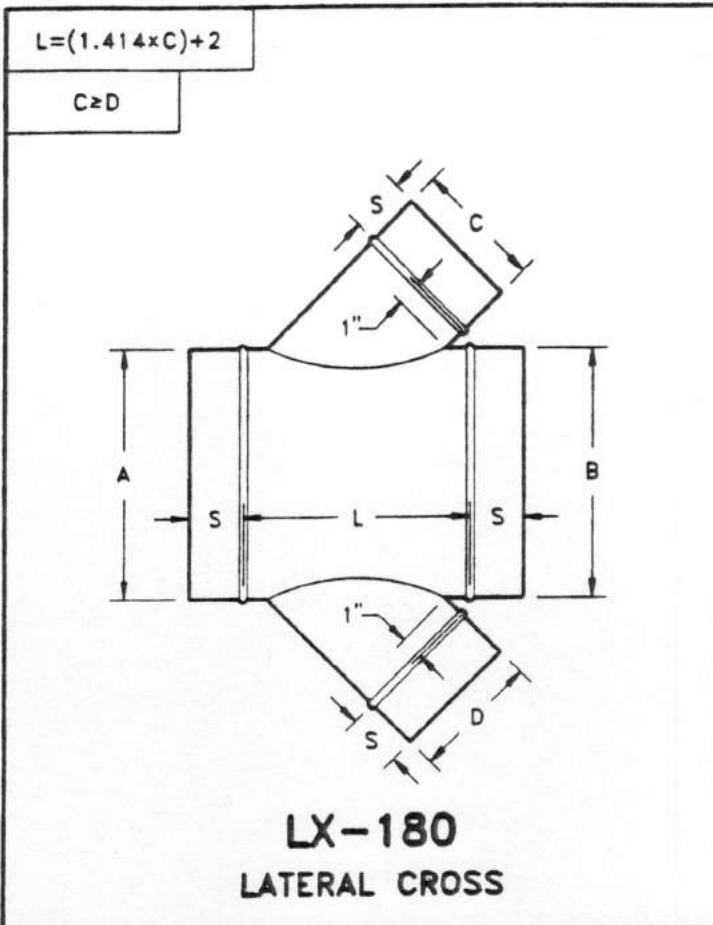
TXC-180
CONICAL TEE CROSS

$L=C+4$

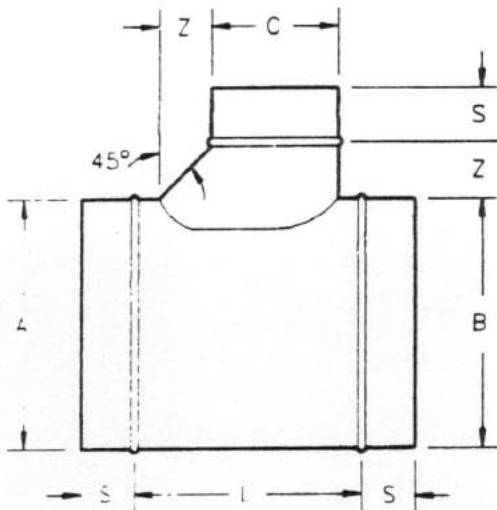
$C \geq D$



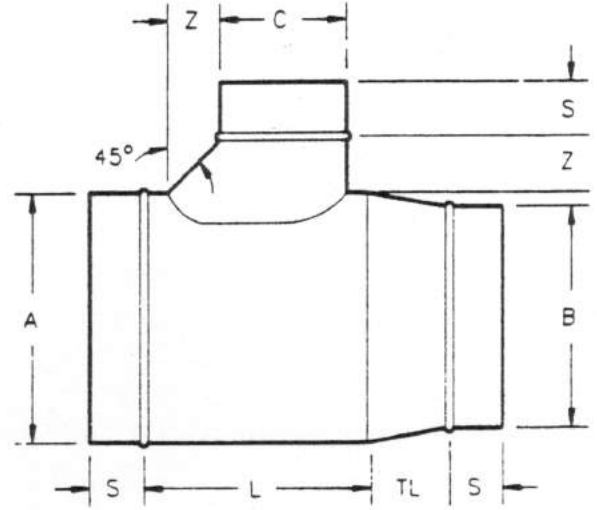
TXRC-180
REDUCING CONICAL TEE CROSS



SEE PAGE 9 FOR TL

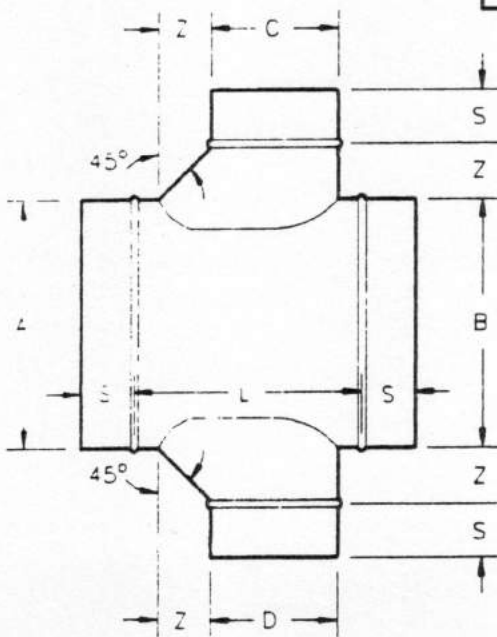


SHT-90
SHOE TEE

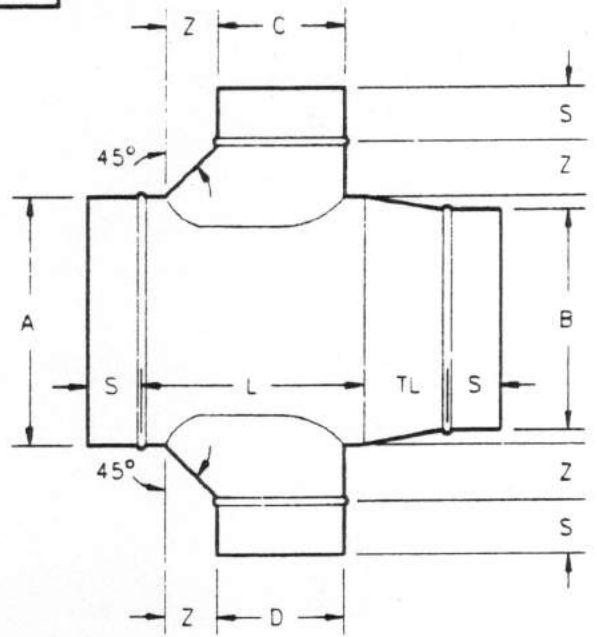


SHTR-90
REDUCING SHOE TEE

$L = Z + C + 2$	
$3 \leq C \leq 6$	$Z = 3$
$7 \leq C \leq 16$	$Z = 6$
$17 \& \text{UP}$	$Z = 10$

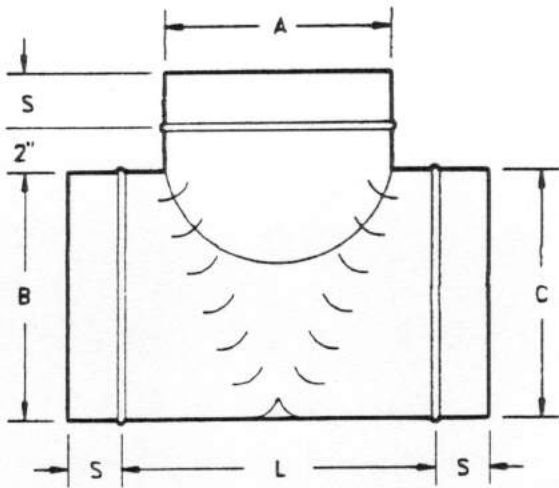


SHTX-180
SHOE TEE CROSS



SHTXR-180
REDUCING SHOE TEE CROSS

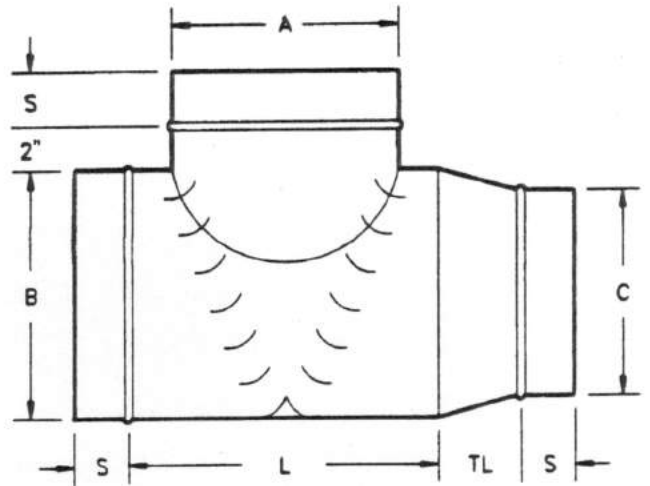
$L=A+4$



TB-90
BULLHEAD TEE

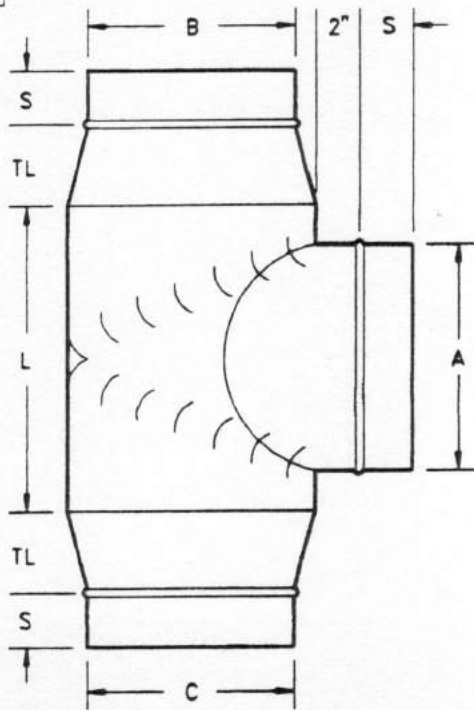
$L=A+4$

SEE PAGE 9 FOR TL



TBR-90
REDUCING BULLHEAD TEE

$L=A+4$

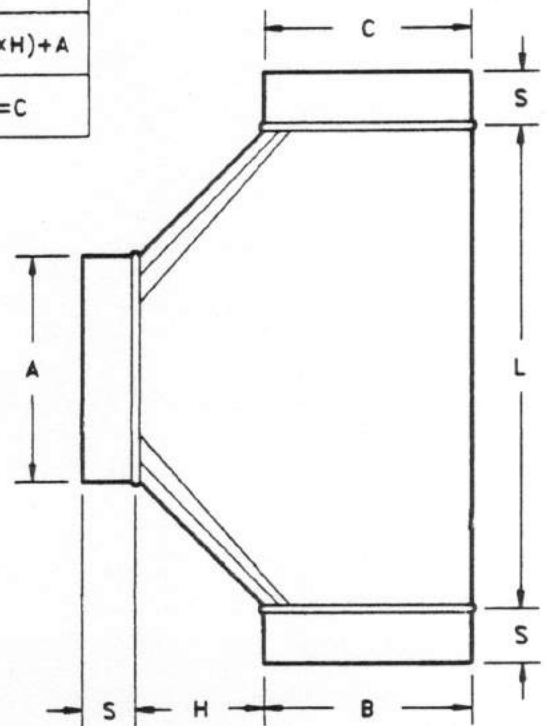


TBDR-90
DOUBLE REDUCING BULLHEAD TEE

$H=A-B+6$

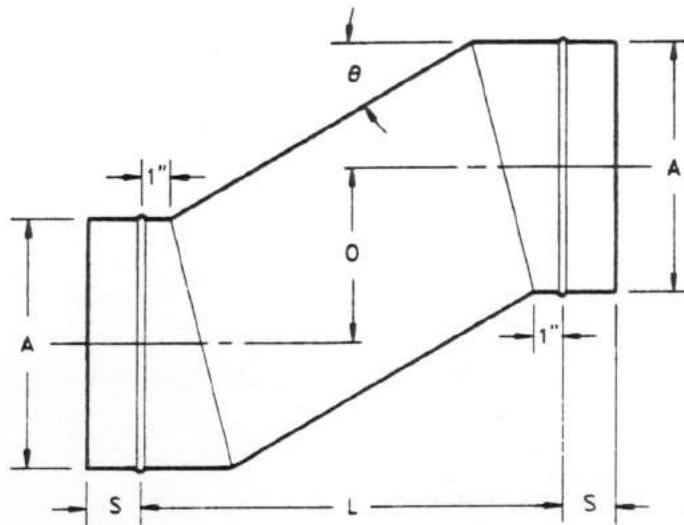
$L=(2 \times H)+A$

$B=C$

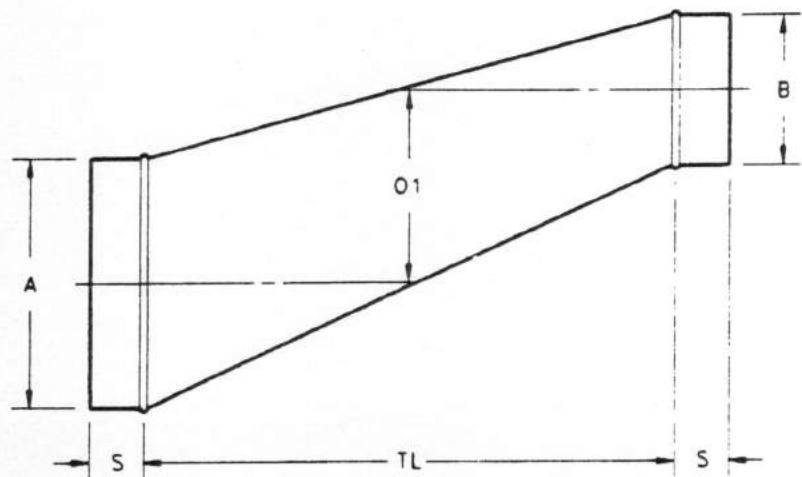
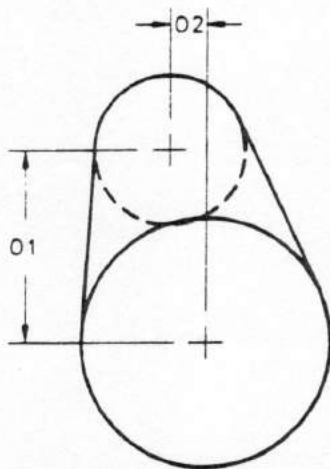


TBS-90
STANDARD BULLHEAD TEE

IF L IS NOT SPECIFIED, $\theta = 30$ DEGREES



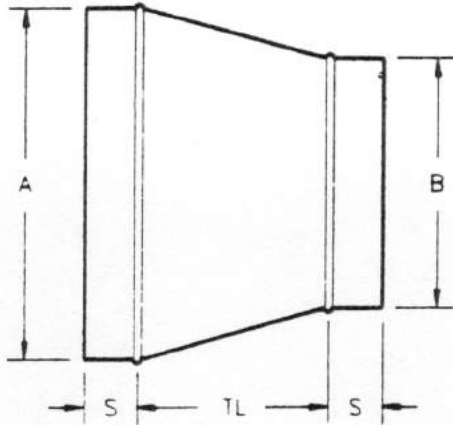
OF
OFFSET



OFR
REDUCING OFFSET

$$TL = A - B + 1$$

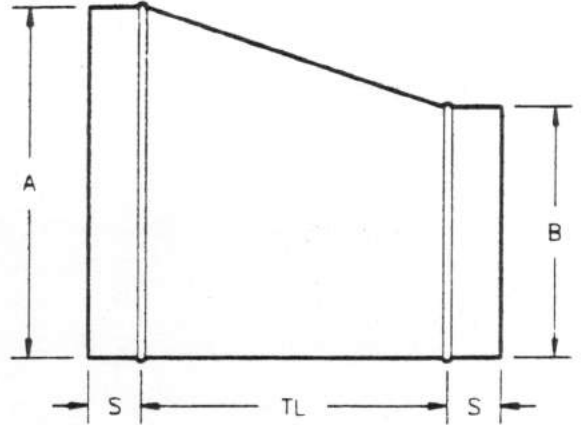
$$3 \leq TL \leq 18$$



CT
CONCENTRIC TAPER

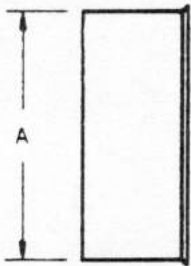
$$TL = 2 \times (A - B)$$

$$3 \leq TL \leq 24$$



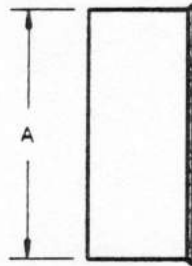
ET
ECCENTRIC TAPER

FITS INSIDE
SPIRAL PIPE



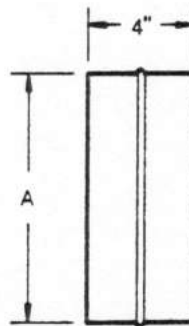
EP

FITS OVER
FITTING



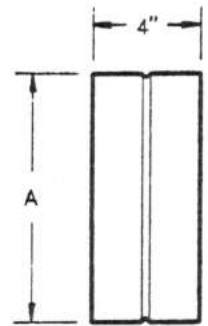
EC
END CAP

PIPE TO PIPE
CONNECTION



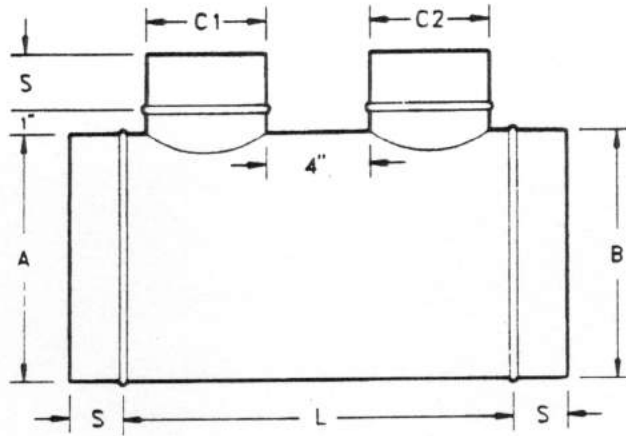
MC
MALE COUPLING

FITTING TO FITTING
CONNECTION



FC
FEMALE COUPLING

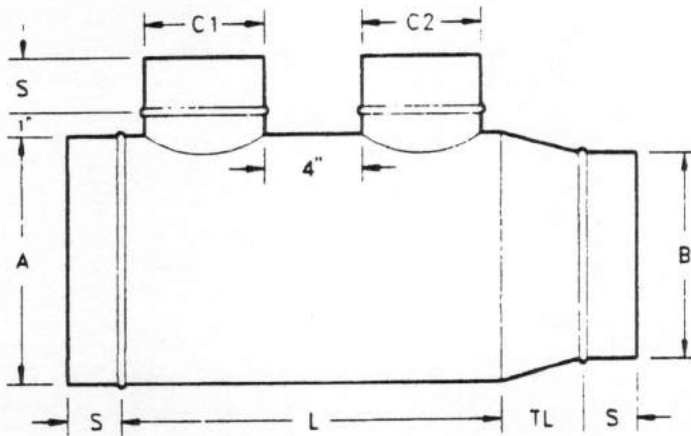
$L=C1+C2+6$



TD-90
DOUBLE TEE

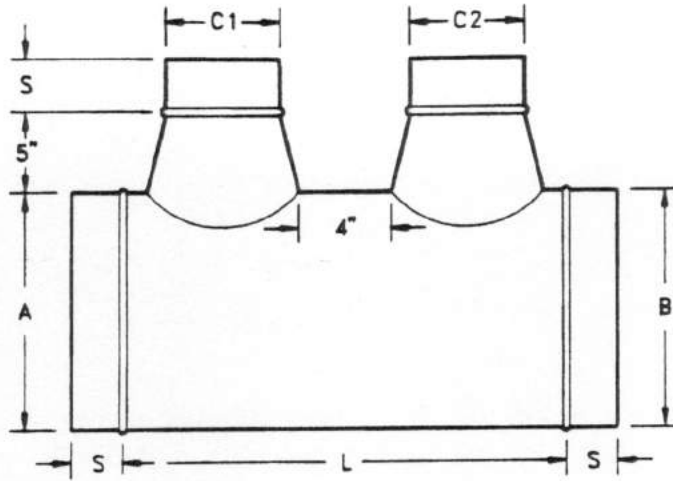
$L=C1+C2+6$

SEE PAGE 9 FOR TL



TDR-90
REDUCING DOUBLE TEE

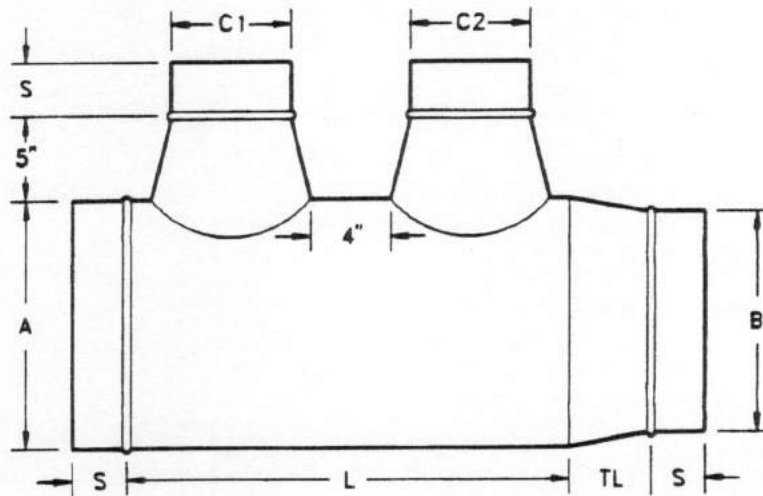
$L=C1+C2+10$



TDC-90
CONICAL DOUBLE TEE

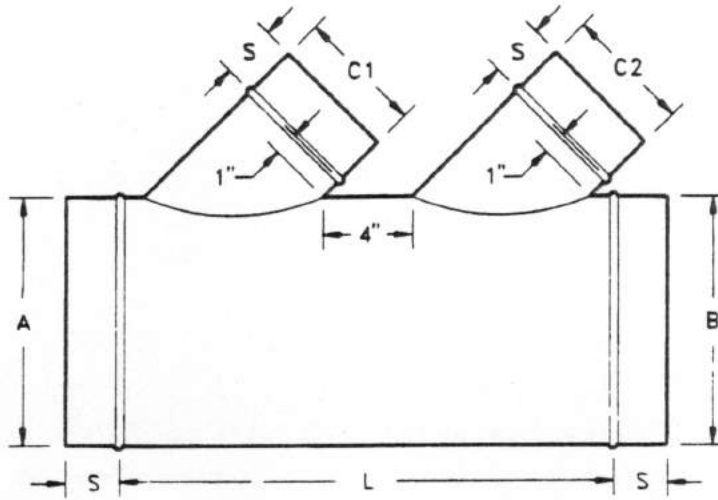
$L=C1+C2+10$

SEE PAGE 9 FOR TL



TDRC-90
REDUCING CONICAL DOUBLE TEE

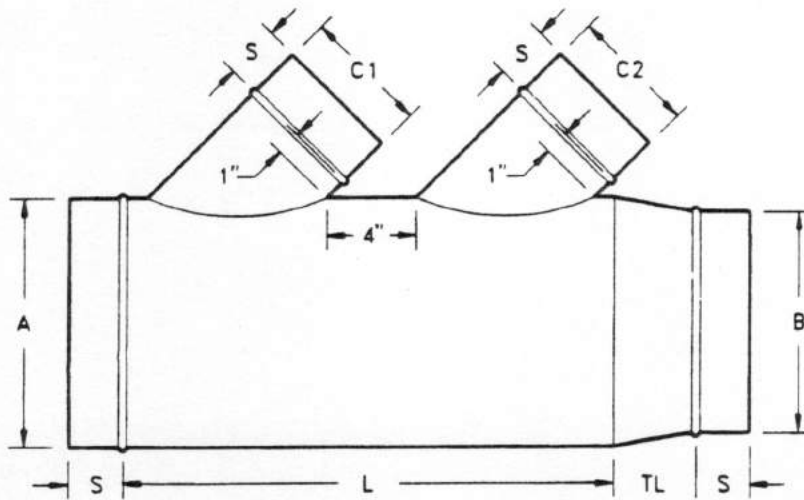
$$L = (1.414 \times (C1 + C2)) + 6$$



LD-45
DOUBLE LATERAL

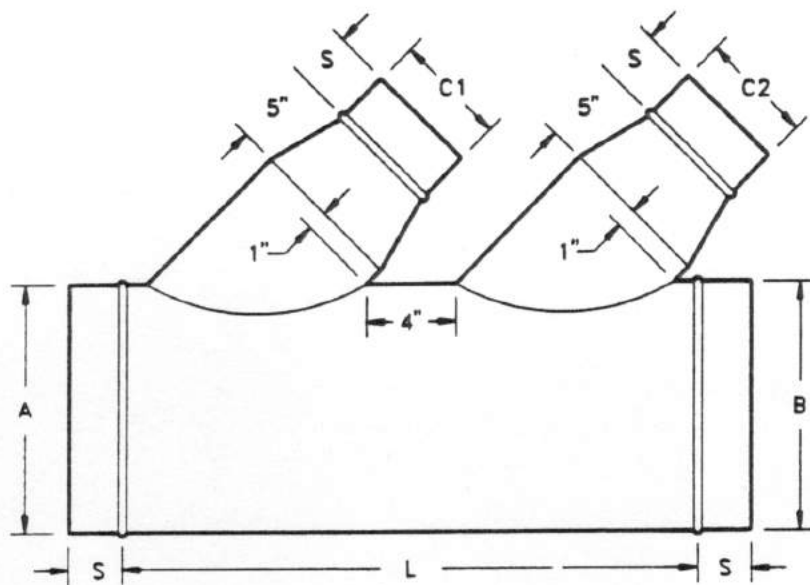
$$L = (1.414 \times (C1 + C2)) + 6$$

SEE PAGE 9 FOR TL



LDR-45
REDUCING DOUBLE LATERAL

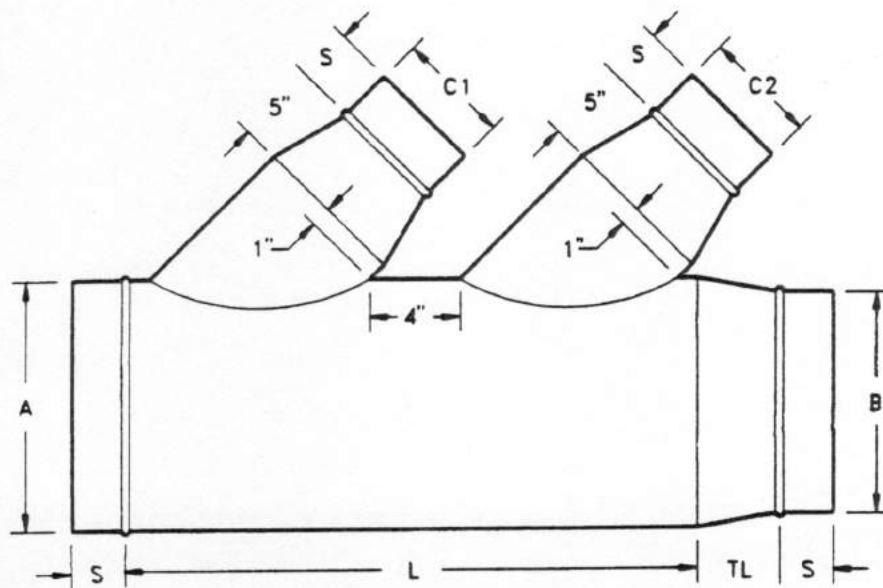
$$L = (1.414 \times (C1 + C2 + 4)) + 6$$



LDC-45
CONICAL DOUBLE LATERAL

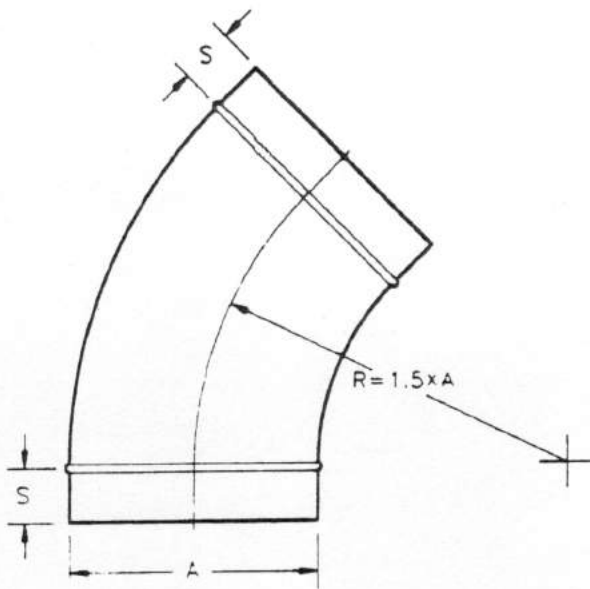
$$L = (1.414 \times (C1 + C2 + 4)) + 6$$

SEE PAGE 9 FOR TL

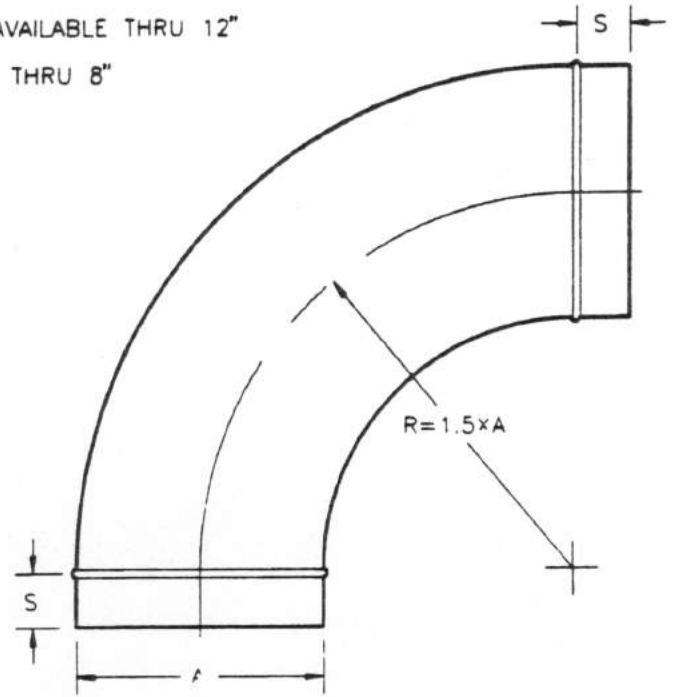


LDRC-45
REDUCING CONICAL DOUBLE LATERAL

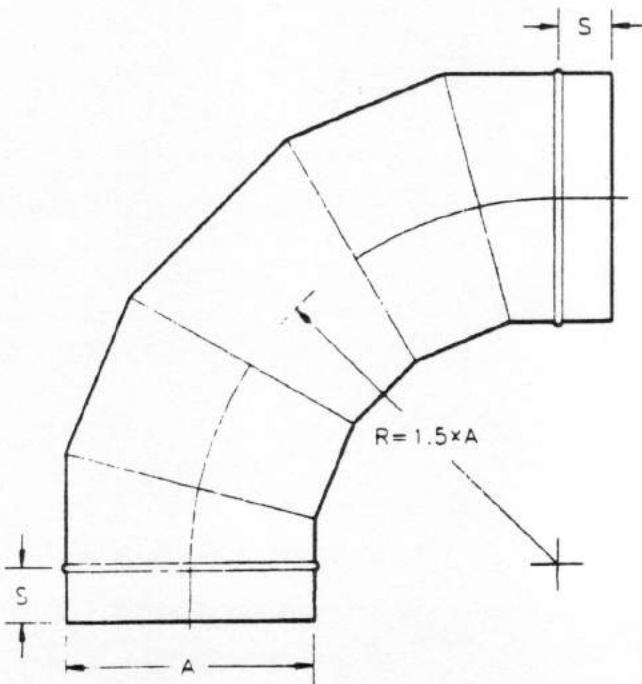
DIE FORMED ELBOWS AVAILABLE THRU 12"
STOCK SIZES THRU 8"



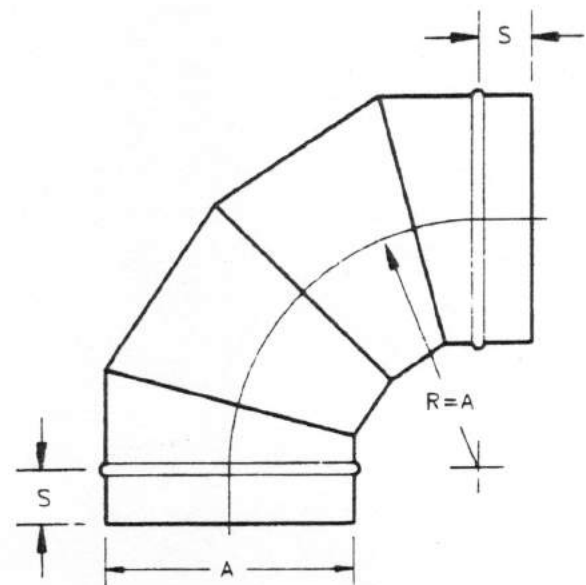
D-45
DIE FORMED 45°



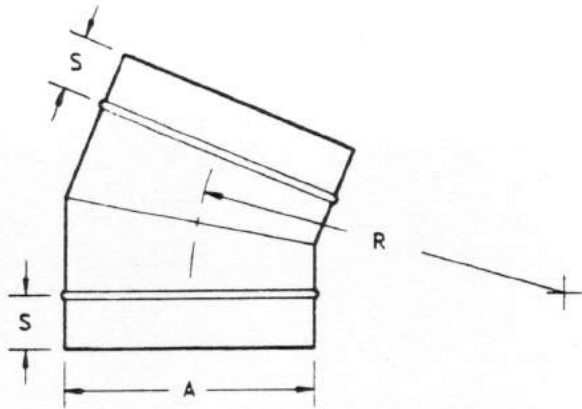
D-90
DIE FORMED 90°



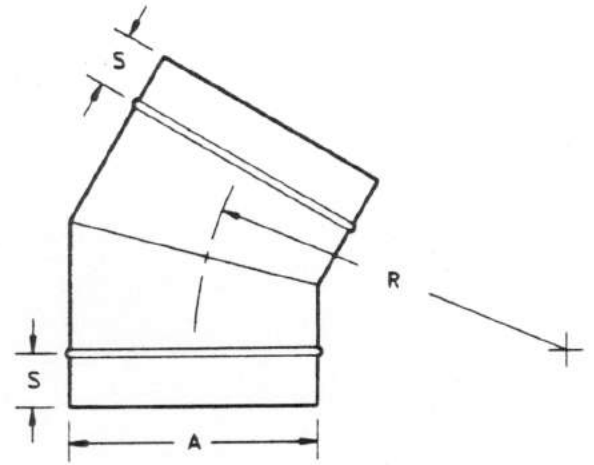
EL90-5
90° ELBOW (5 PIECE)



EL90SR-4
90° ELBOW (4 PIECE)

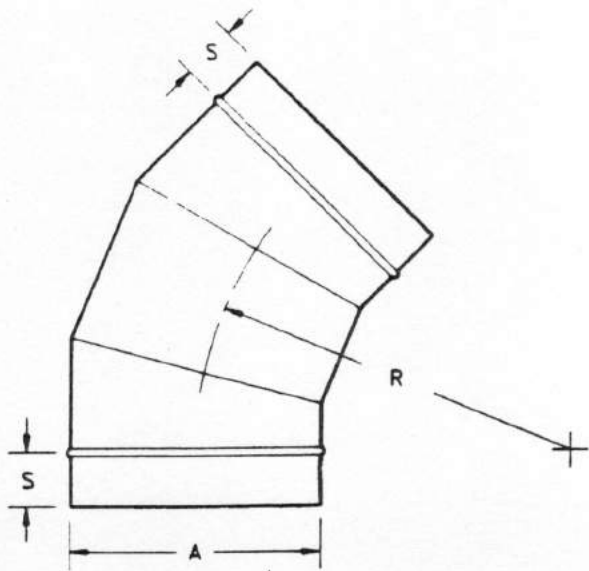


EL-22
22 1/2° ANGLE

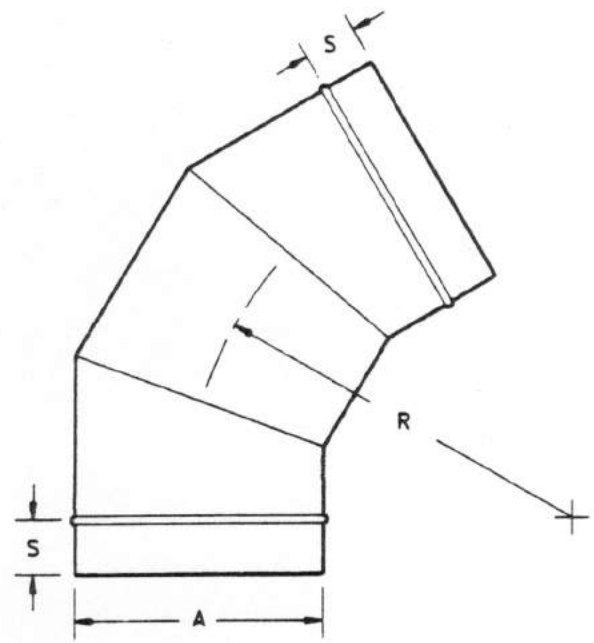


EL-30
30° ANGLE

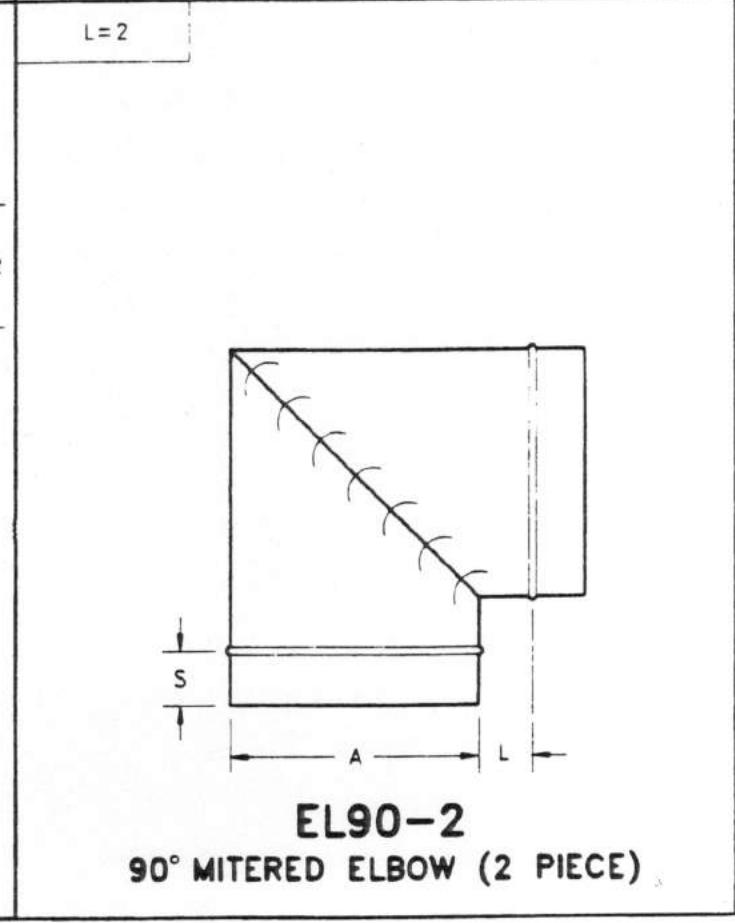
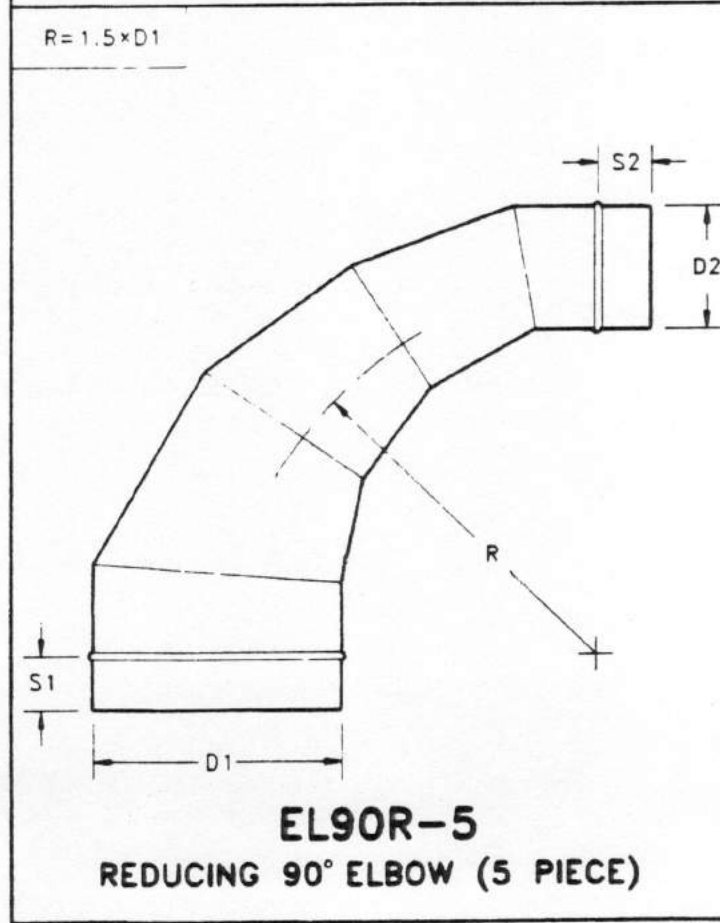
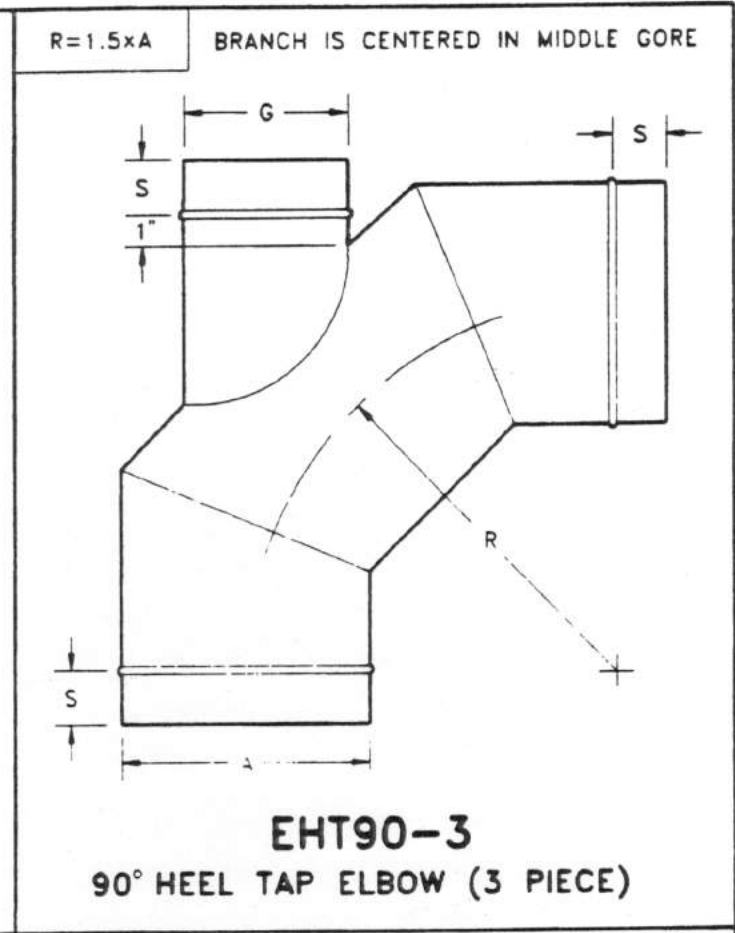
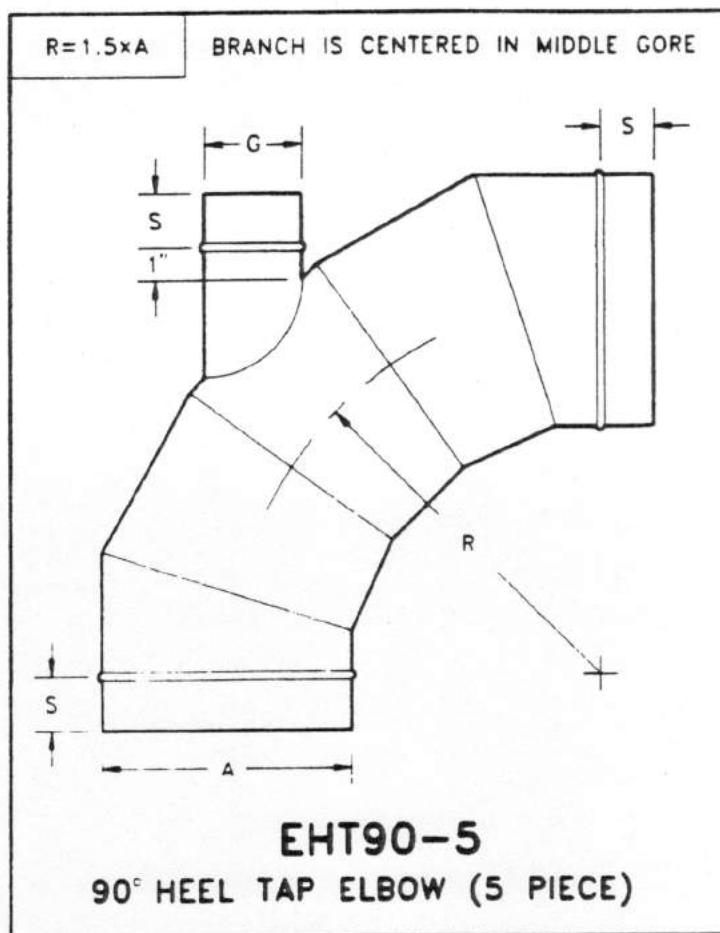
$R = 1.5 \times A$

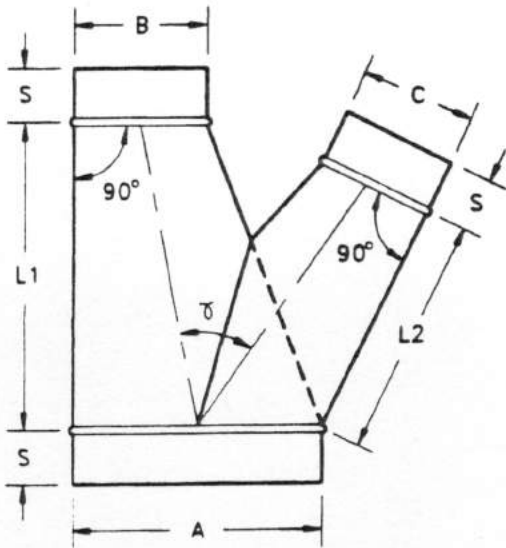


EL-45
45° ANGLE

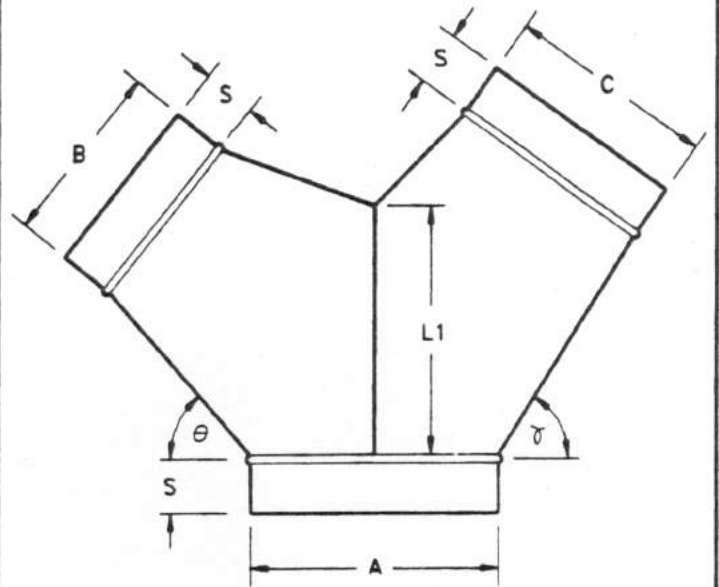


EL-60
60° ANGLE





YE-L90
ECCENTRIC WYE BRANCH

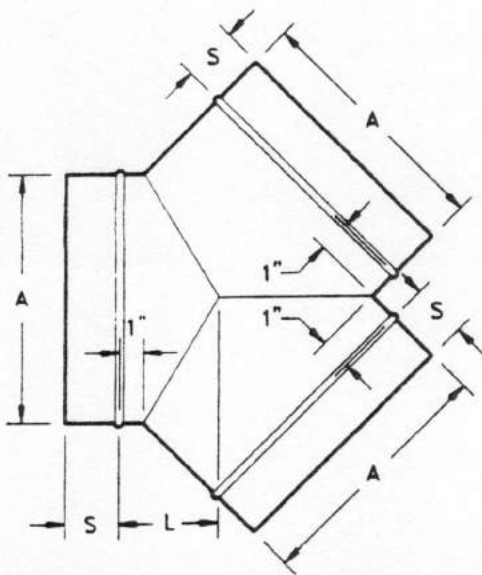


YRT
TAPERED REDUCING WYE BRANCH

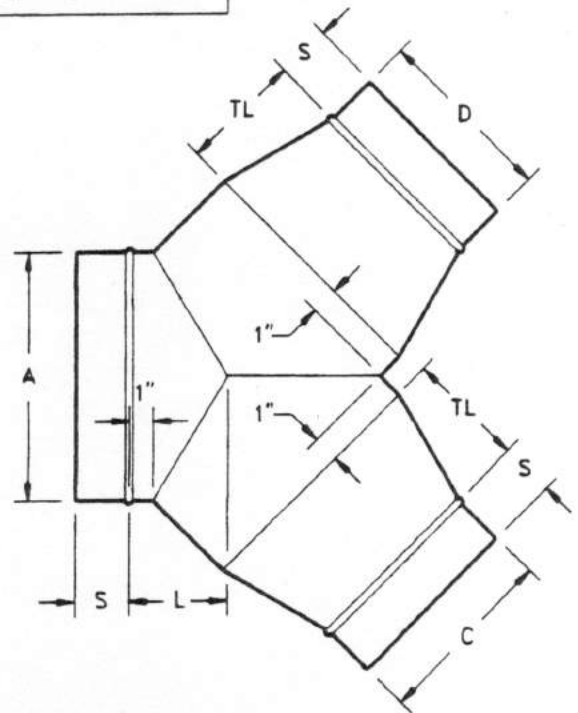
$$L = ((A+2) \times 0.4142) + 1$$

$$L = ((A+2) \times 0.4142) + 1$$

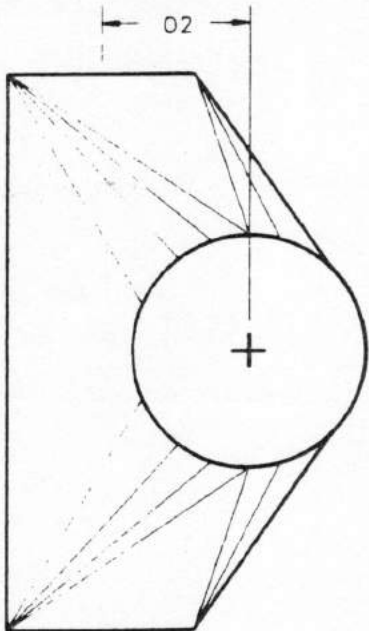
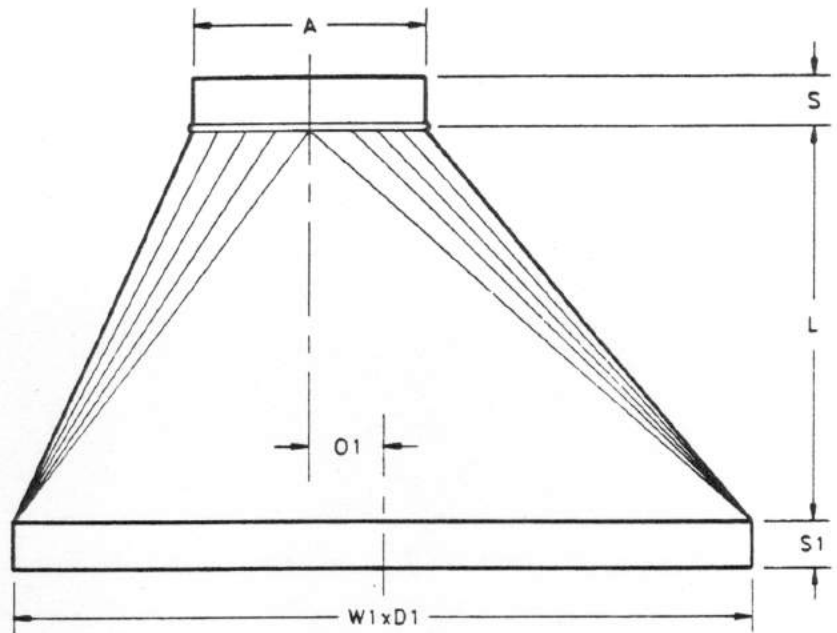
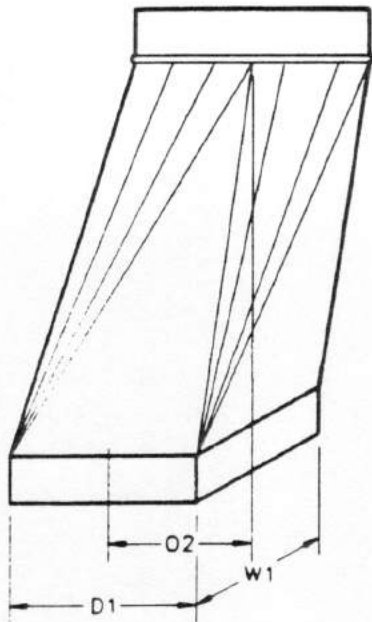
SEE PAGE 9 FOR TL



Y-45
WYE BRANCH



YR-45
REDUCING WYE BRANCH



STRAIGHT S1 CAN BE ORDERED WITH ANY OF THE FOLLOWING CONNECTIONS:

1. SLIP & DRIVE
2. TDF
3. DUCTMATE
4. ANGLE FRAME
5. RAW - LENGTH S1 TO BE SPECIFIED WHEN ORDERING

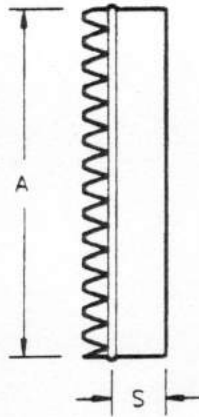
CONCENTRIC:

$$L = W1 - A + 3"$$

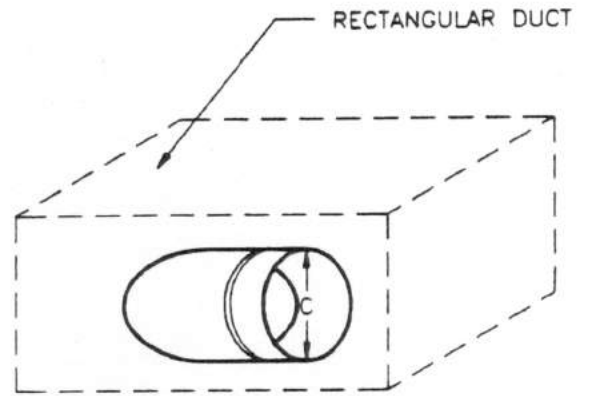
SINGLE OFFSET & DOUBLE OFFSET:

L WILL BE COMPUTED BASED ON THE LARGER ANGLE NOT TO EXCEED 30°

SQRND
SQUARE TO ROUND

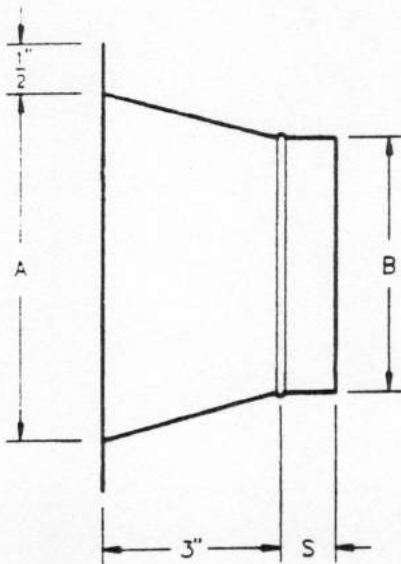


SC
START COLLAR



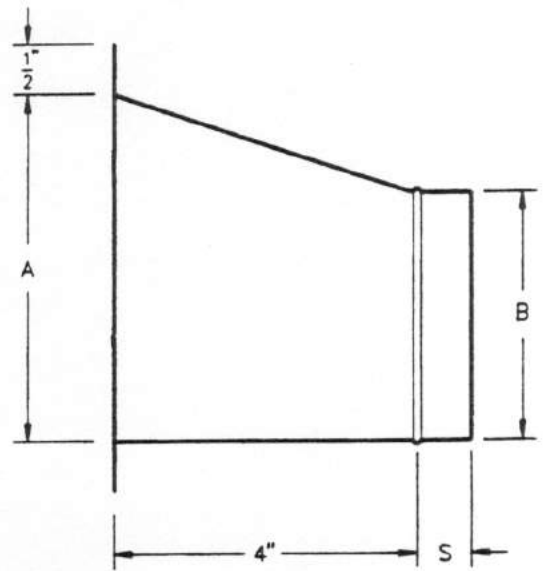
ST-45
45° START TAP

$A=B+2$



CST
CONICAL START TAP

$A=B+2$

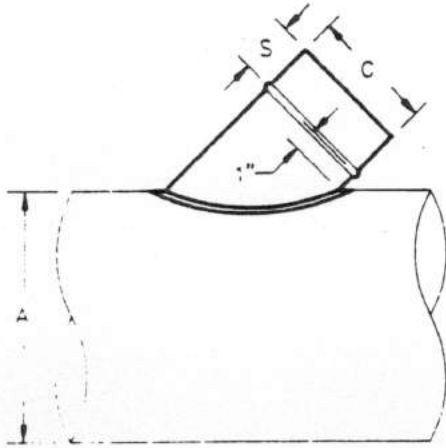


EST
ECCENTRIC START TAP

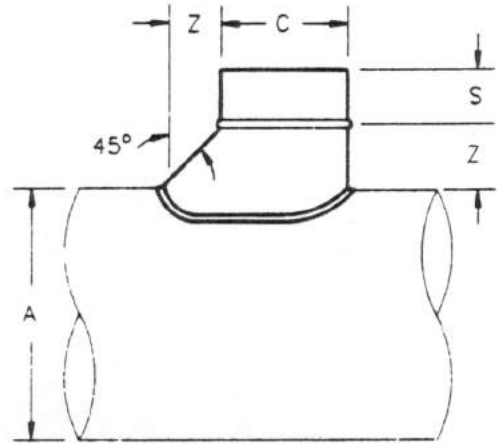
$3 \leq C \leq 6$ $Z=3$

$7 \leq C \leq 16$ $Z=6$

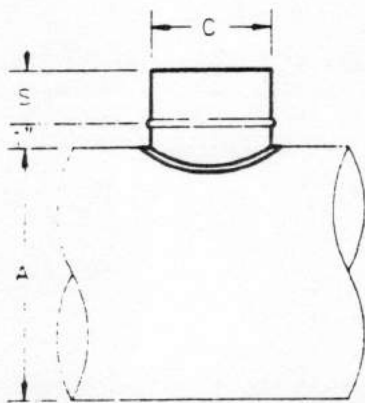
17&UP $Z=10$



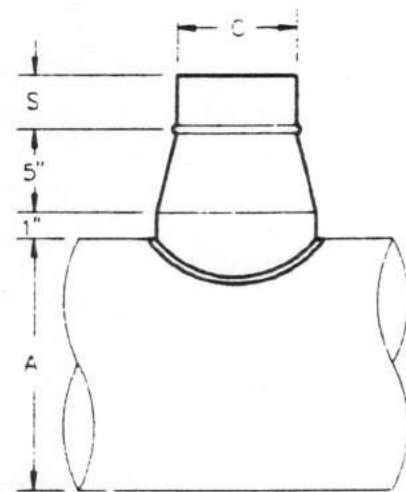
TFM-45
45° TAP



STFM-90
90° SHOE TEE

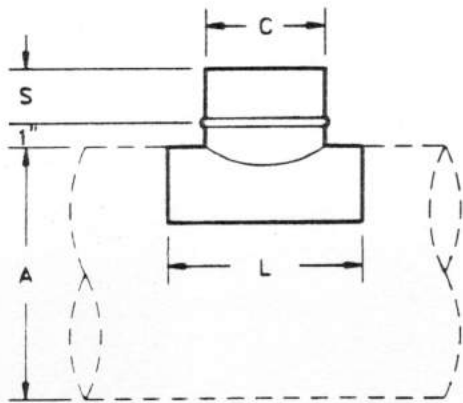


TFM-90
90° TAP



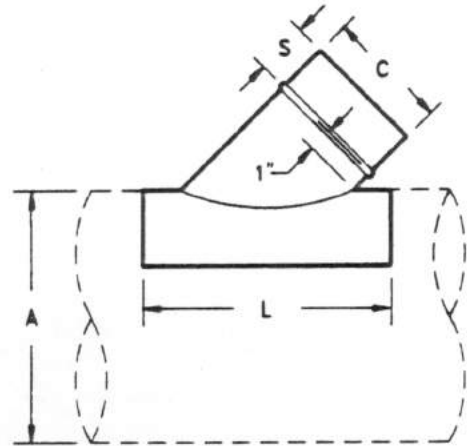
TCFM-90
90° CONICAL TAP

$$L=C+4$$



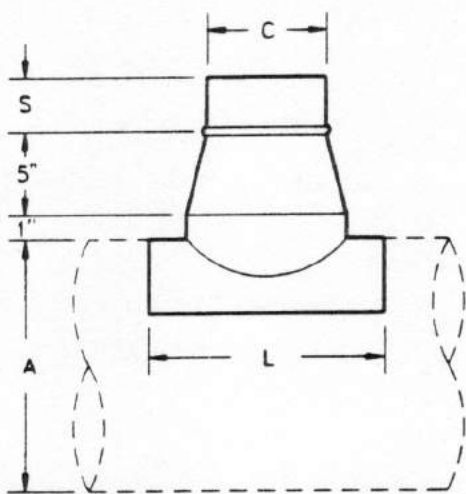
SDFM-90
90° SADDLE TAP

$$L=(1.414 \times C)+4$$



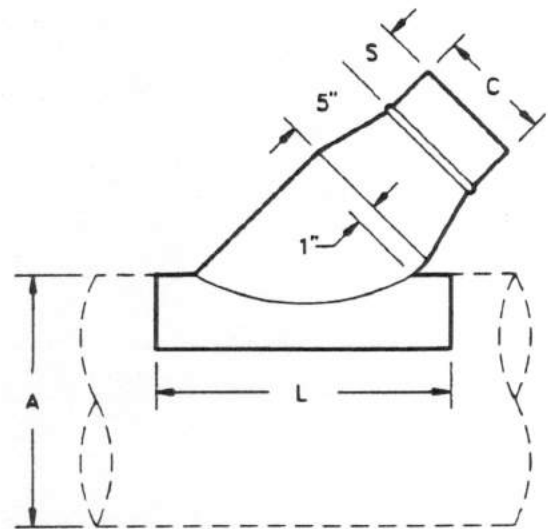
SDFM-45
45° SADDLE TAP

$$L=C+6$$



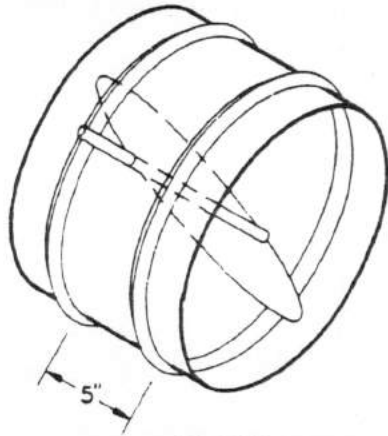
SDCFM-90
90° CONICAL SADDLE TAP

$$L=(1.414 \times (C+2))+4$$

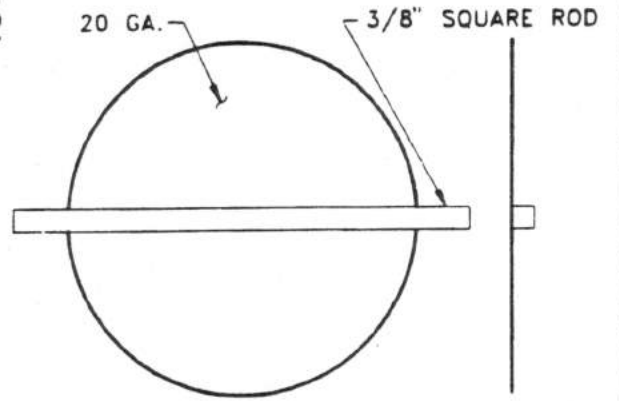


SDCFM-45
45° CONICAL SADDLE TAP

DAMPERS



DPR-L
LOW VELOCITY DAMPER SECTION



DPRFM-L
LOW VELOCITY DAMPER

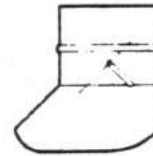
DAMPERS CAN BE ORDERED INSTALLED IN ANY OF THE ILLUSTRATIONS SHOWN BELOW



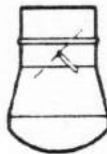
90° TAP



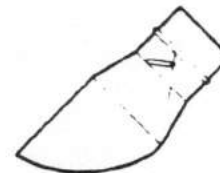
45° TAP



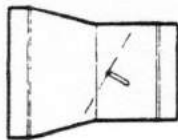
90° SHOE TEE



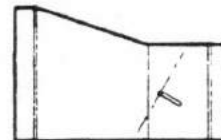
90° CONICAL TAP



45° CONICAL TAP



CONCENTRIC TAPER

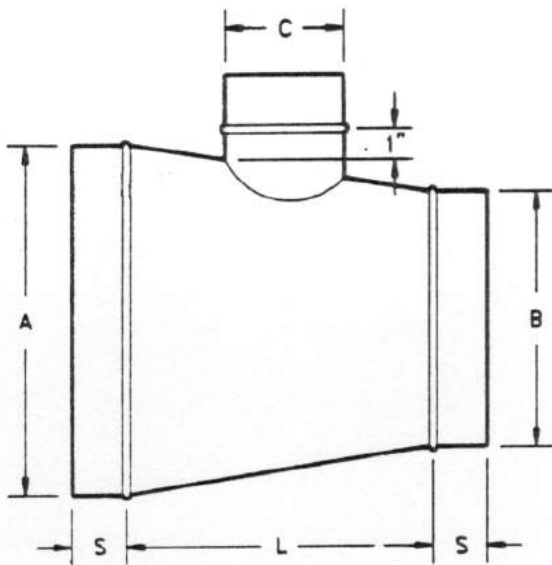


ECCENTRIC TAPER



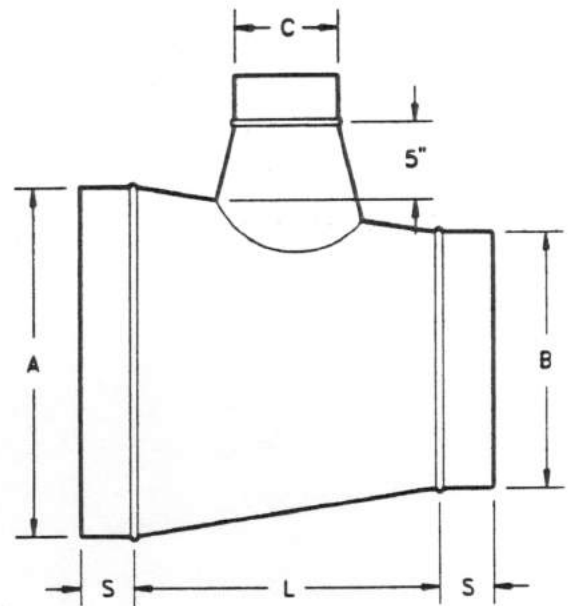
SPIRAL PIPE

$L=C+4$



TR-T90
REDUCING TEE

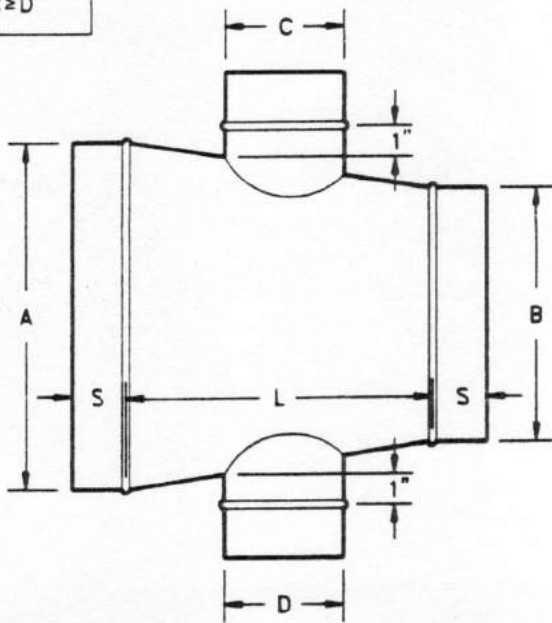
$L=C+6$



TRC-T90
REDUCING CONICAL TEE

$L=C+4$

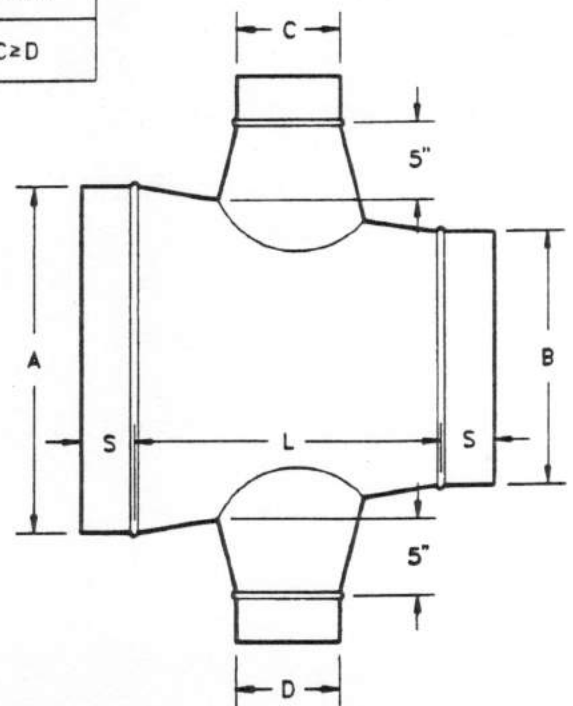
$C \geq D$



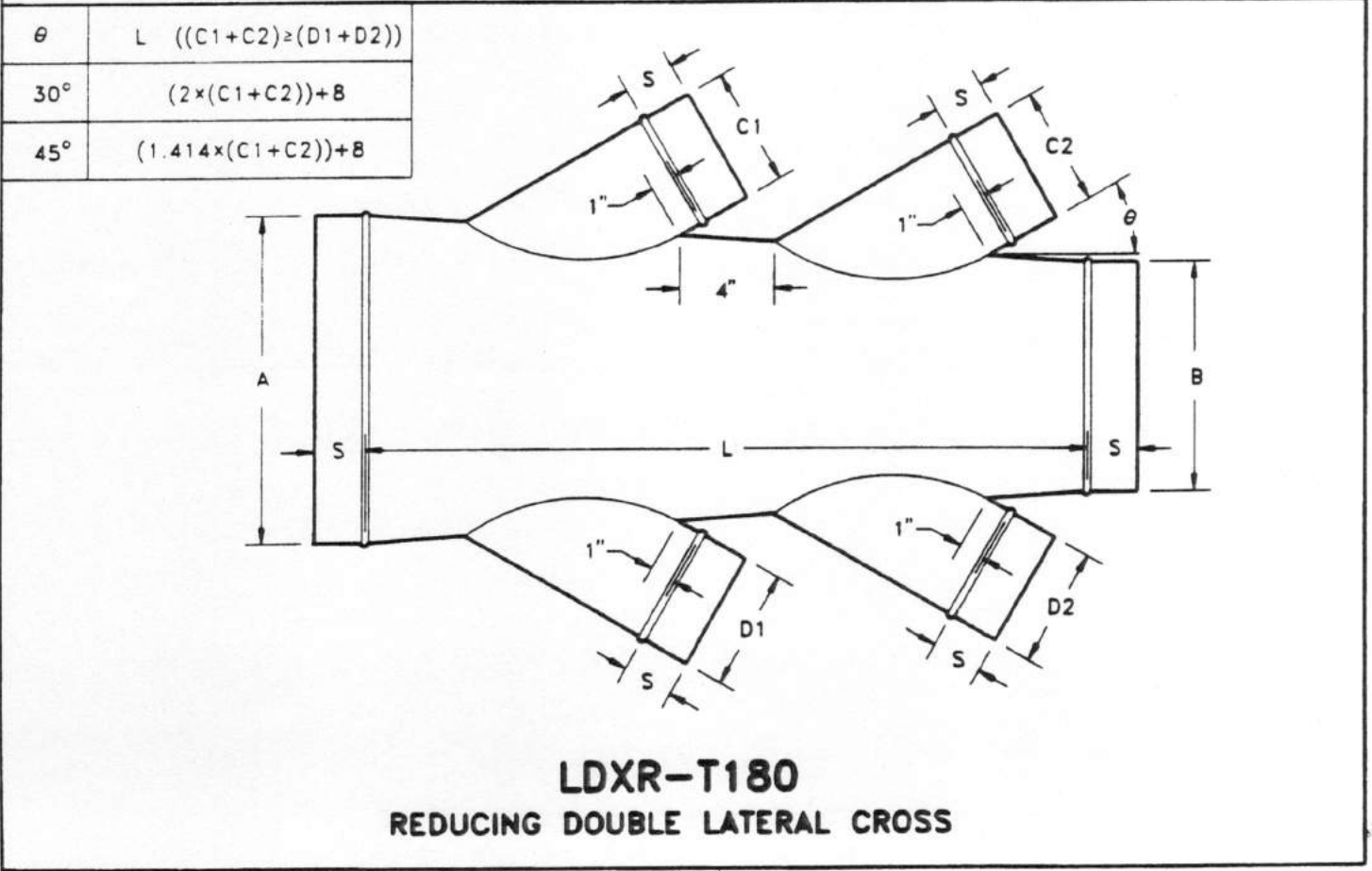
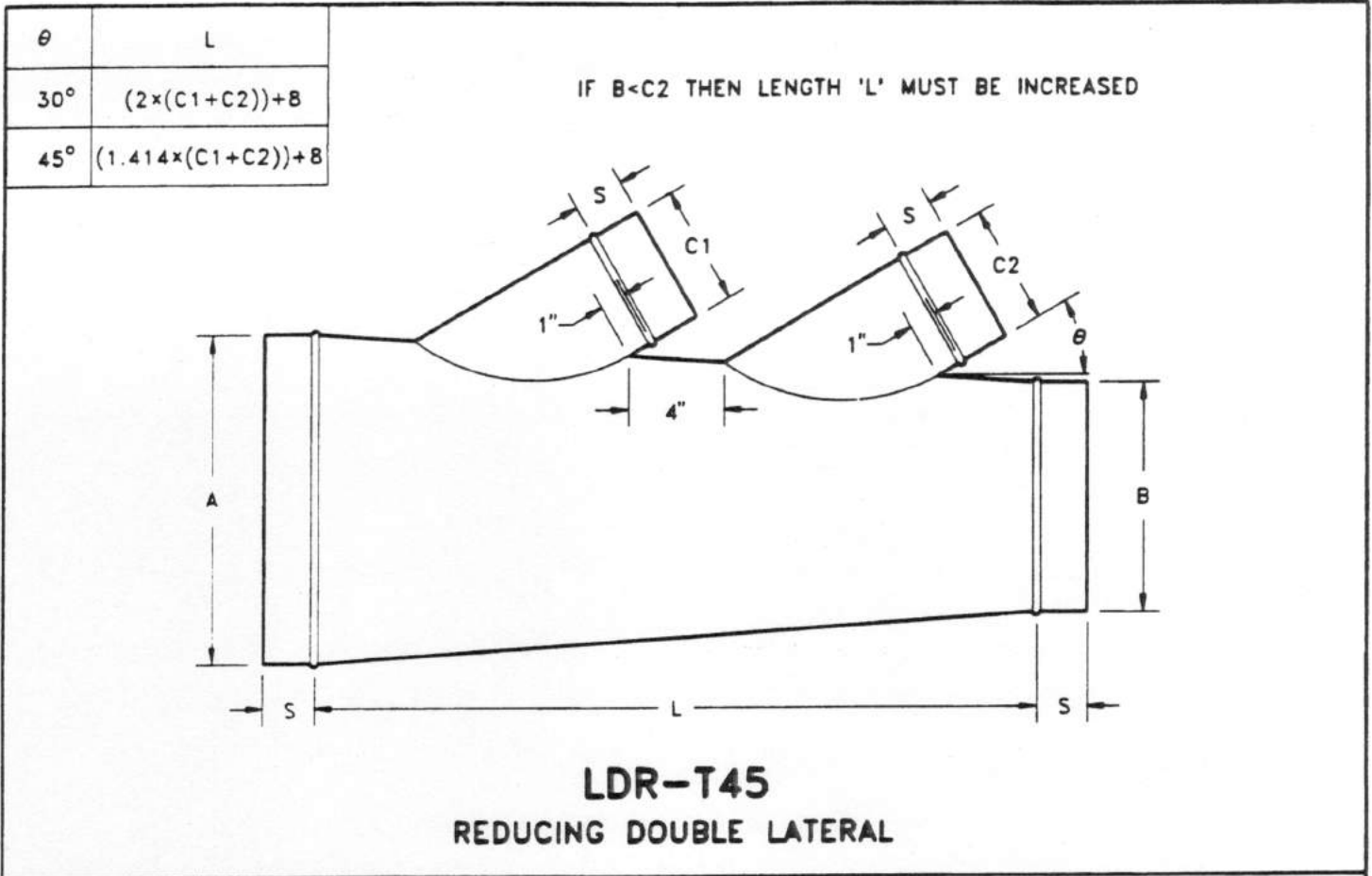
TXR-T180
REDUCING TEE CROSS

$L=C+6$

$C \geq D$



TXRC-T180
REDUCING CONICAL TEE CROSS



θ	L
30°	$(2 \times C) + 4$
45°	$(1.414 \times C) + 4$

IF B < C THEN LENGTH 'L' MUST BE INCREASED

LR-T45
REDUCING LATERAL

θ	L (C > D)
30°	$(2 \times C) + 4$
45°	$(1.414 \times C) + 4$

LXR-T45
REDUCING LATERAL CROSS

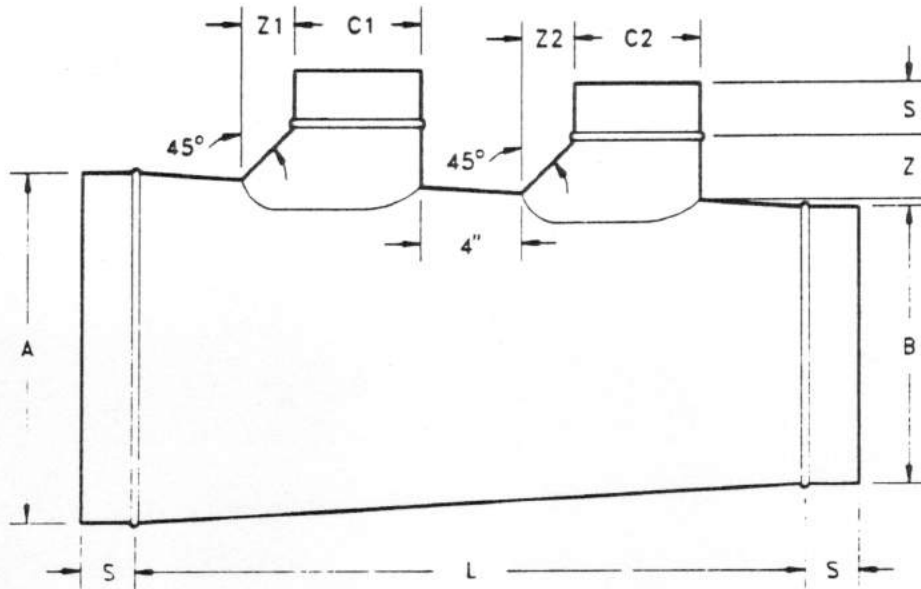
$L = Z + C + 4$
$3 \leq C \leq 6 \quad Z = 3$
$7 \leq C \leq 16 \quad Z = 6$
$17 \text{ \& UP } \quad Z = 10$

SHTR-T90
REDUCING SHOE TEE

SHTXR-T180
REDUCING SHOE TEE CROSS

$$L = C1 + C2 + Z1 + Z2 + 8$$

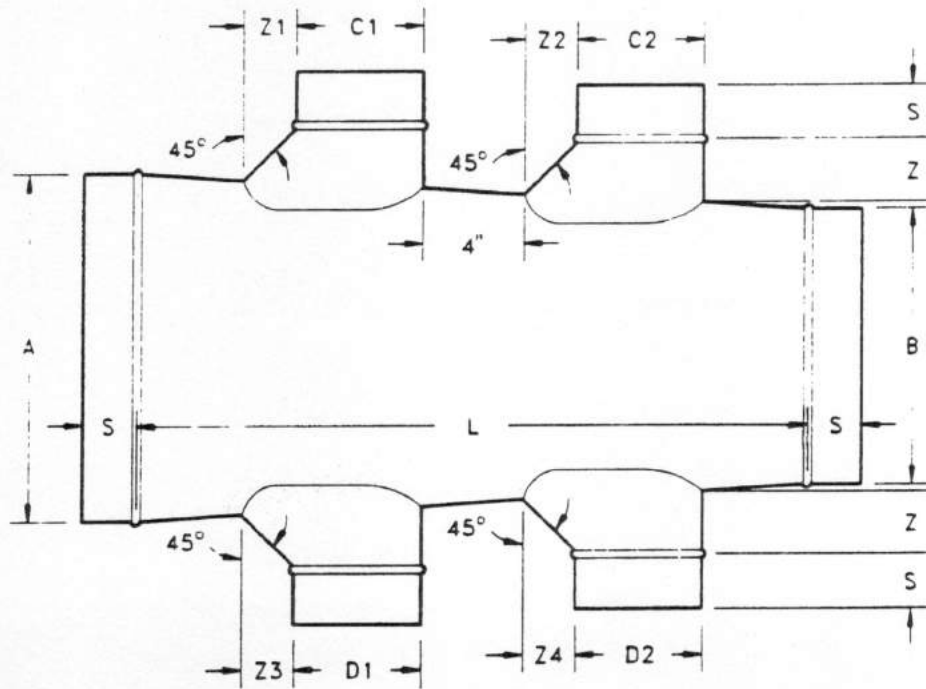
IF $B < C2$ THEN LENGTH 'L' MUST BE INCREASED
SEE PAGE 6 FOR 'Z' DIMENSIONS



SHTR-T90
REDUCING DOUBLE SHOE TEE

$$L = C1 + C2 + Z1 + Z2 + 8 \quad (C1 + C2) \geq (D1 + D2)$$

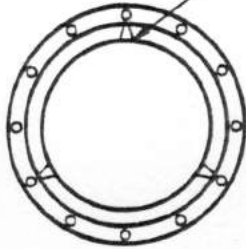
SEE PAGE 6 FOR 'Z' DIMENSIONS



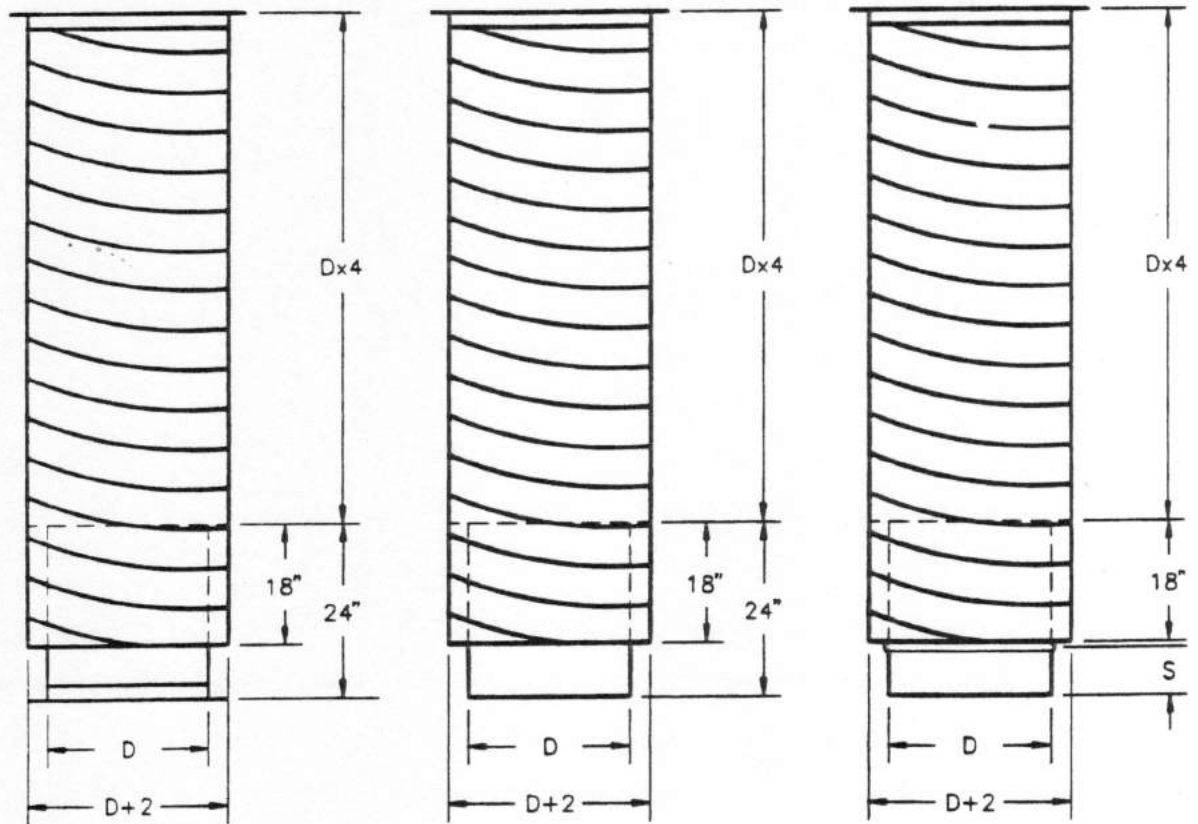
SHTDXR-T180
REDUCING DOUBLE SHOE TEE CROSS

EXHAUST STACK

3 SPACERS EQUALLY SPACED
WELDED TO DUCT



ANGLE RING WELDED TO TOP
FOR ATTACHING GUY WIRES (TYP)



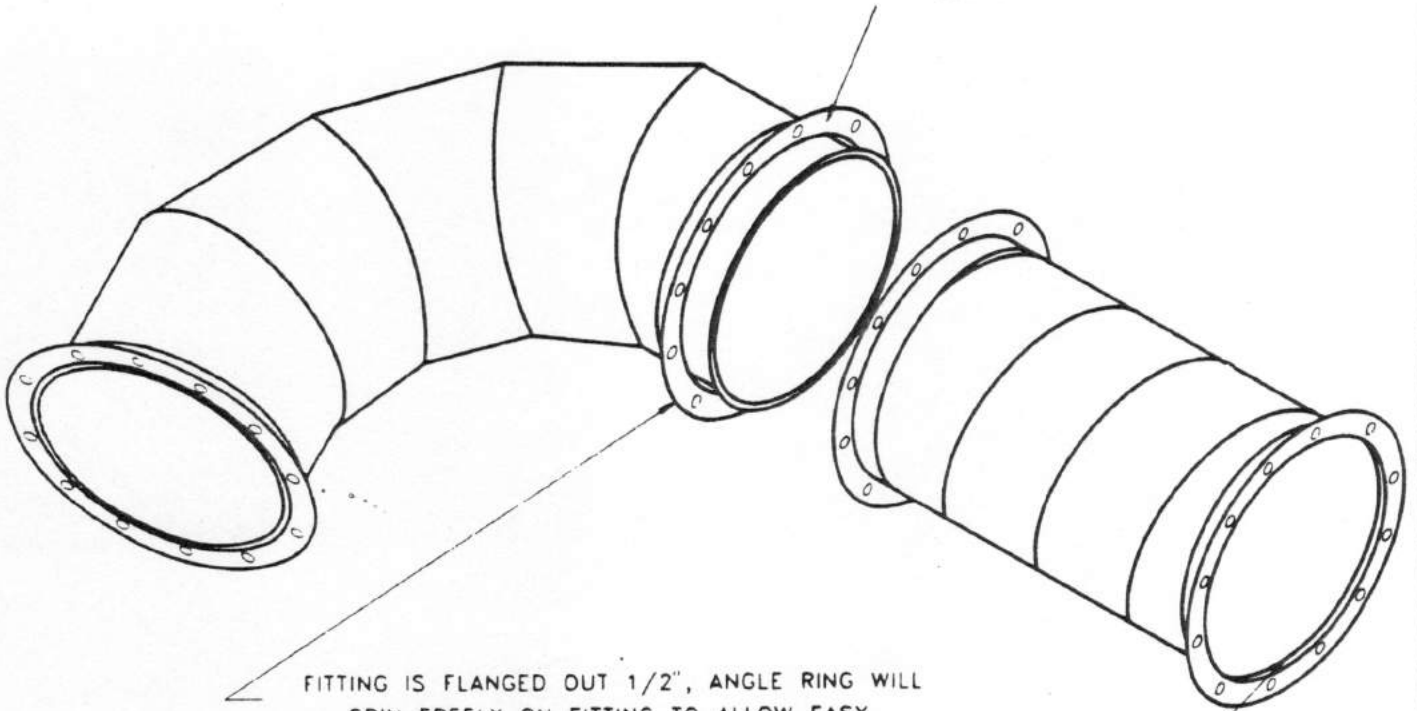
ES-A
ANGLE
CONNECTION

ES-B
RAW SPIRAL
CONNECTION

ES-C
SLIP FIT
CONNECTION

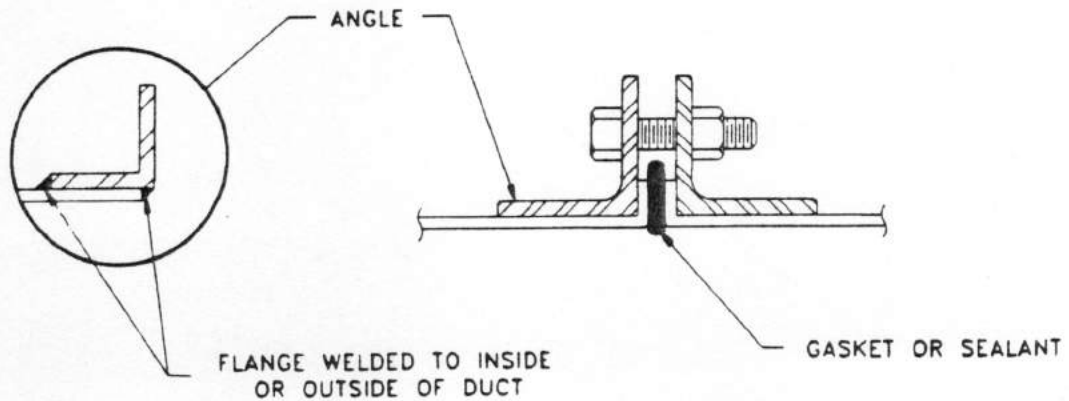
TYPICAL FLANGE CONNECTION

APPLY GASKET OR SEALANT (IN FIELD)
WHERE COMPANION FLANGES MEET TO
ASSURE AIR TIGHT CONNECTION



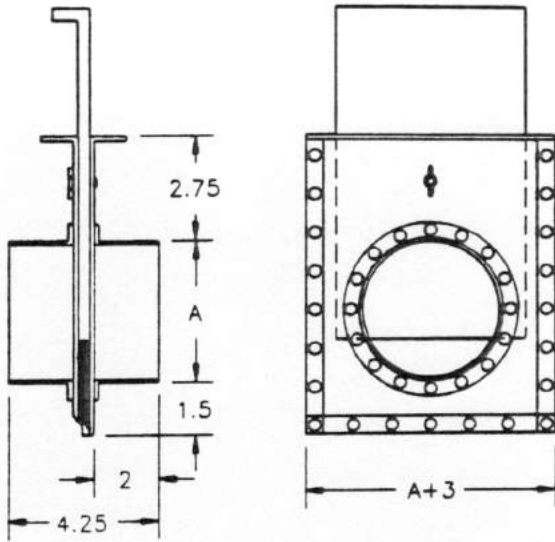
FITTING IS FLANGED OUT 1/2", ANGLE RING WILL
SPIN FREELY ON FITTING TO ALLOW EASY
ALIGNMENT OF HOLES WITH DUCT

ANGLE RING WELDED SOLID TO INSIDE OF DUCT



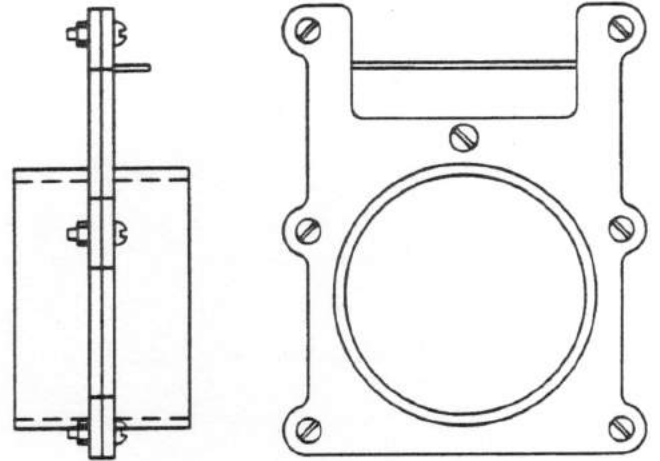
FLANGE WELDED TO INSIDE
OR OUTSIDE OF DUCT

GASKET OR SEALANT



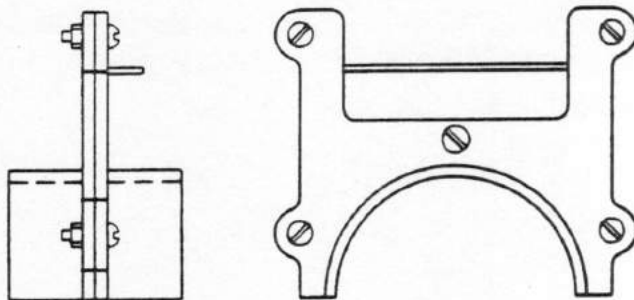
FFGATE
FABRICATED BLAST GATE

SIZES ARE AVAILABLE FROM 2" TO 9" DIAMETER
AND EVEN SIZES 10" TO 20" DIAMETER

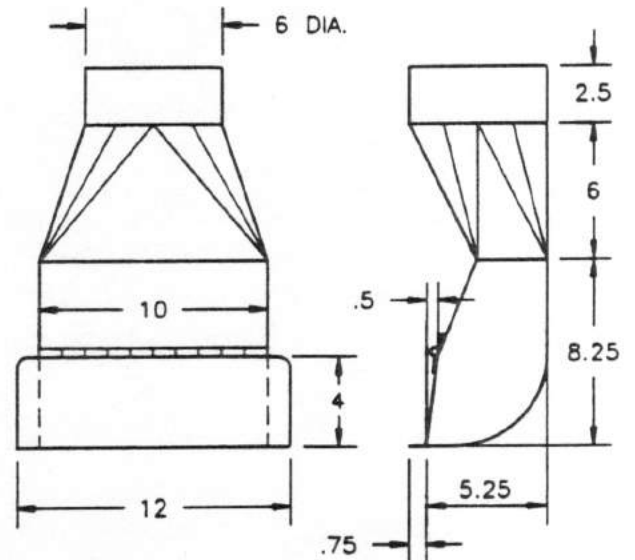


CFGATE
CAST BLAST GATE

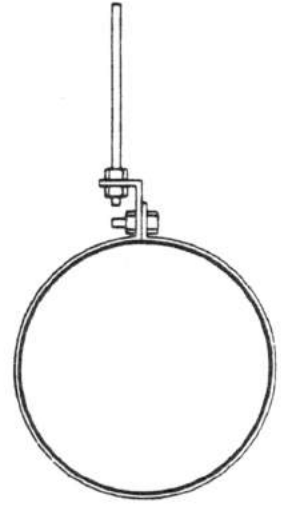
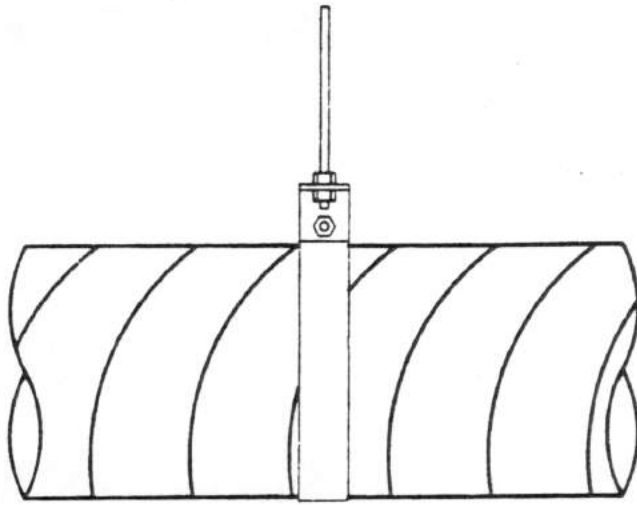
SIZES ARE AVAILABLE 3" TO 9" DIAMETER



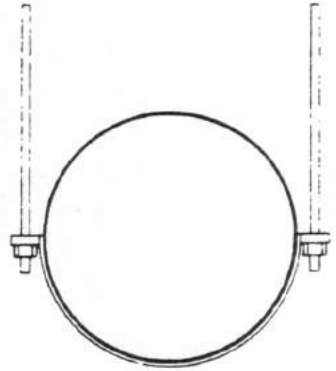
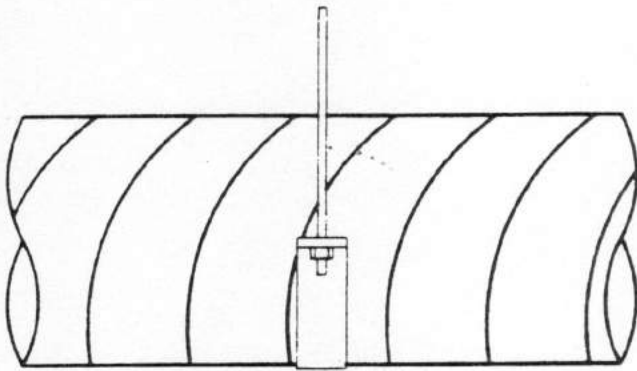
CHGATE
CAST HALF GATE



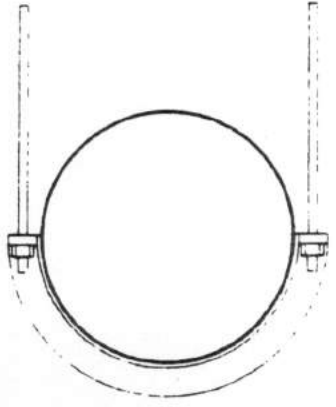
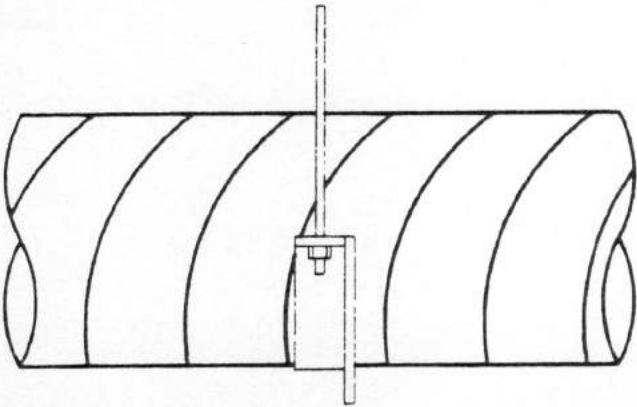
FSWP
FLOOR SWEEP



FULL STRAP HANGER
3-28 INCH DIAMETER DUCT



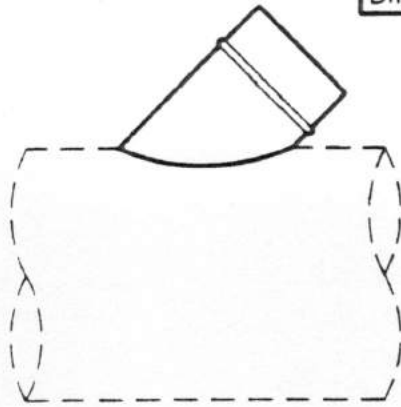
HALF STRAP HANGER
3-28 INCH DIAMETER DUCT



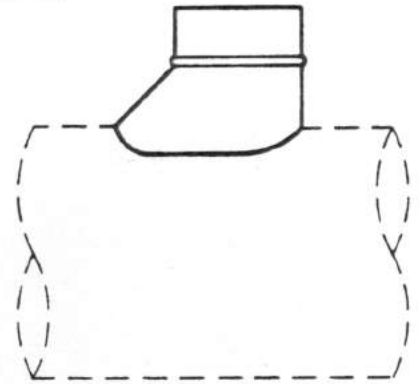
ANGLE SADDLE HANGER
30 INCH DIAMETER DUCT AND UP

MANIFOLD ASSEMBLIES

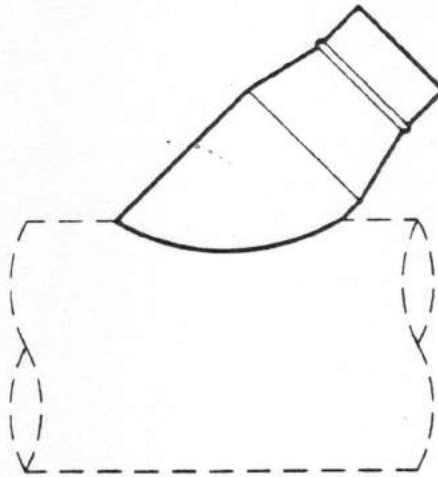
REFER TO PAGE 25 FOR
DIMENSIONAL REFERENCES



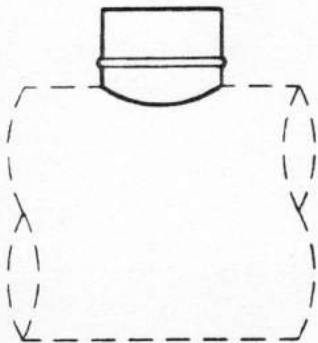
TA-45
45° TAP



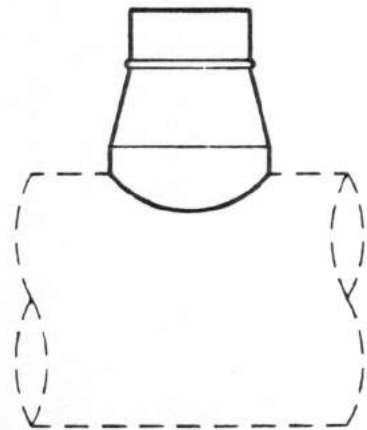
STA-90
90° SHOE TEE



TCA-45
45° TAP

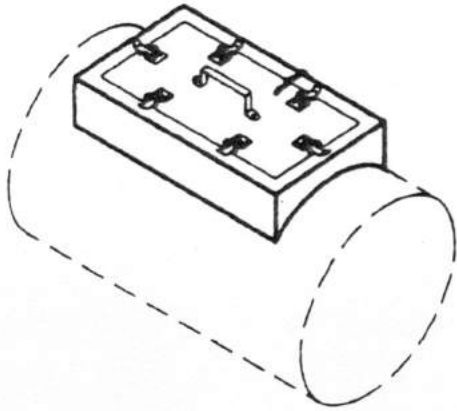


TA-90
90° TAP

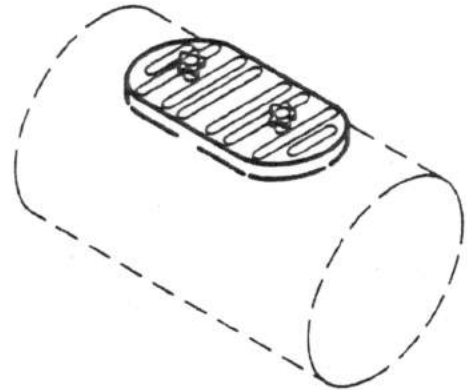


TCA-90
90° CONICAL TAP

MANIFOLD ASSEMBLIES

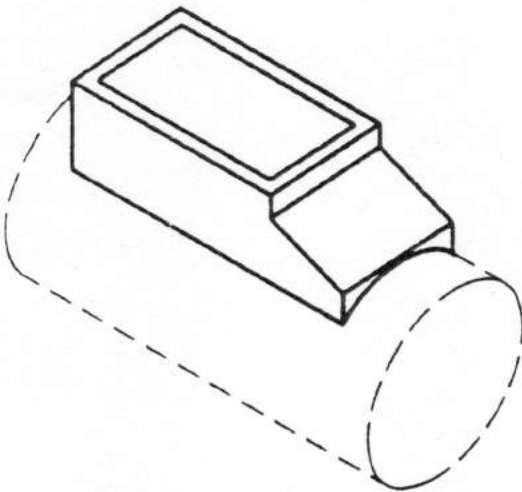


AD-NR-A
NEGATIVE RELIEF ACCESS DOOR

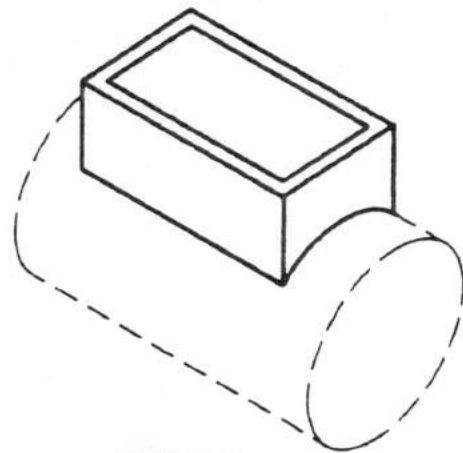


AD-SC-A
SCREW HANDLE ACCESS DOOR

REFER TO PAGE 22 FOR
DIMENSIONAL REFERENCES



RB45-A
REGISTER BOX



RB-A
REGISTER BOX