McGill AirFlow Corporation

An enterprise of United McGill Corporation - Founded in 1951

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Acousti-K27® Double-Wall Round UNI-GASKET™ Fitting and Related Product Dimensions

McGill AirFlow Corporation offers UNI-GASKET fittings featuring an EPDM rubber gasket that provides a reliable, airtight seal. Testing has shown that UNI-GASKET fittings meet or exceed SMACNA[1] Class 3 for leakage at - 20 in. wg to + 20 in. wg. Each fitting is constructed of an inner liner[7] surrounded by a layer of fiberglass insulation and covered by a solid metal pressure shell. The insulation is available in 1-, 2-, and 3-inch standard thicknesses and a maximum of 1.5 pounds per cubic foot (pcf) density[6] to meet the thermal and acoustical performance requirements. The galvanized steel construction[5] meets SMACNA's 10 in. wg positive pressure standards[2]. UNI-GASKET fittings are compatible and available with all of McGill AirFlow's round, double-wall duct types in 1-inch increments for 5- through 12-inch diameters outer shells and in 2-inch increments in 14- through 24-inch outer shell diameters.

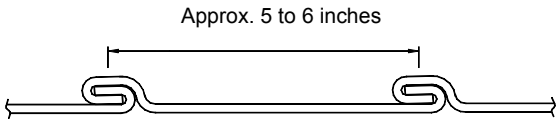
Table 1 - Positive Pressure, Double-wall, Round Duct and Fitting, Outer Shell Galvanized Steel Gauges

Diameters (inches)	UNI-SEAL™ Spiral Lockseam Duct[3]	UNI-RIB® Spiral Lockseam with Standing Rib Duct[3,4]	UNI-GASKET™ Fittings
3	28	NA	26
4	28	NA	26
5	28	NA	26
6	28	NA	26
7	28	NA	26
8	28	NA	26
9	28	28	26
10	28	28	26
11	26	28	24
12	26	28	24
14	26	28	24
16	24	28	22
18	24	28	22
20	24	28	22
22	24	28	22
24	24	28	22

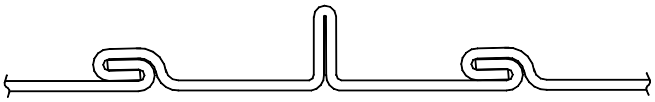
[1] SMACNA is the Sheet Metal and Air Conditioning Contractors National Association.
[2] McGill AirFlow double-wall, round duct and ungasketed fittings are available in diameters of 3 through 90 inches in many gauges of various materials. See the Double-Wall Round Duct and Fittings Dimensions booklet for the full range of available sizes.
[3] Standard lengths of round UNI-SEAL and UNI-RIB duct are 10, 12, and 20 feet; longer lengths are available on special order.
[4] The rating of +10 in. wg for Spiral Lockseam with Standing Rib Duct is based on McGill AirFlow laboratory testing.
[5] Available in galvanized, paintable galvanized, and SilverGuard™ precoated ductwork with antimicrobial.
[6] Standard insulation density is 1.0 pcf.
[7] Standard inner shell gauges are 28 gauge spiral 3-8 inch diameter and 28 gauge ribbed spiral 9-24 inch diameter.

Duct Construction

Spiral Lockseam

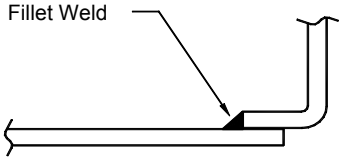


Spiral Lockseam with Standing Rib

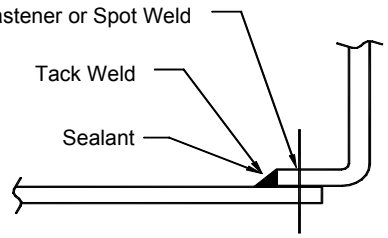


Fitting Construction

Solid Welded

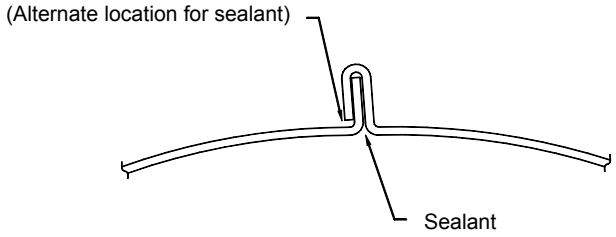


Spot Welded, Tack Welded or Mechanically Fastened



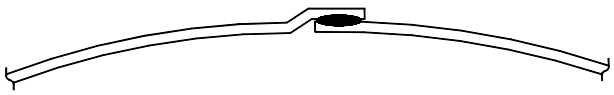
Sealed with United Duct Sealer™ (Water Based)

Standing Lockseam



Sealed with United Duct Sealer™ (Water Based)

Resistance Welded Lap Seam



Sealed with United Duct Sealer™ (Water Based)

Dimensioning:

All alphanumeric dimensions are in inches; all angles are in degrees.

A	**-**	Main barrel inlet diameter
B	**-**	Main barrel outlet diameter
C or D	**-**	Branch tap diameter (Note: On tee and lateral fittings with two taps, C is the branch closest to the inlet of the fitting. On cross fittings, C is the larger of the two taps.)
R	**-**	Centerline radius
S	**-**	Slip-fit dimension of a fitting
F, H, J, L, Q, V, Z, m, α	**-**	Miscellaneous dimensions (refer to specific drawings)
θ or Φ	**-**	Angular measurements (refer to specific drawings)
#	**-**	Number of elbow gores
t	**-**	Insulation/liner thickness

Designations:

McGill AirFlow uses a designation system that simplifies product nomenclature. Gasketed fitting products can be accurately identified using a concise alphanumeric designator. Each character in the designation defines a characteristic of the product.

Example: KR0PT refers to a double-wall (K), round (R), 10 in. wg positive pressure class (0), straight tee tap (PT).

1st Character: **Wall Configuration - K**R0PT

K = Double-wall

2nd Character: **Shape -** K**R**0PT

R = Round

3rd Character: **Pressure Class -** KR**0**PT

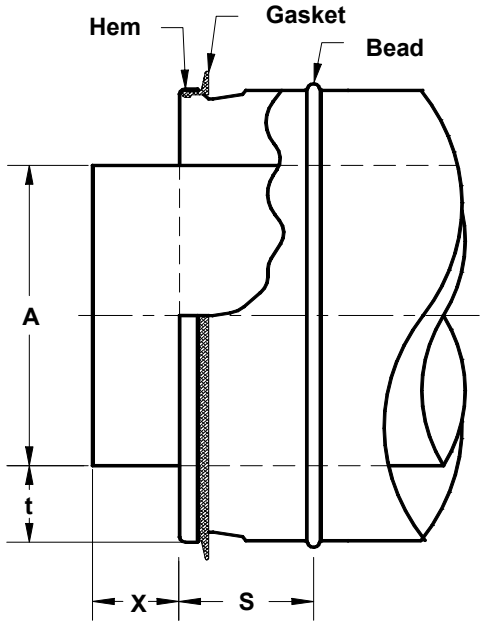
0 = +4 to +10 in. wg
S = standard gauge of product type

4th and Subsequent Characters: **Product Type -** KR0**PT**

PT = Straight Tee Tap (90^E branch tap)

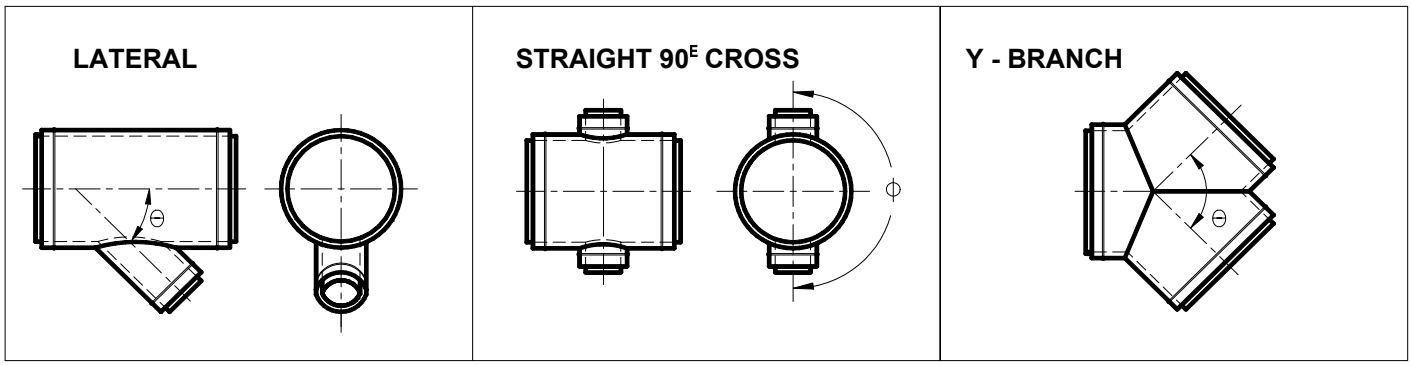
General Notes:

- Dimensions other than diameters are held within a ± 1/4-inch tolerance.
- Given diameters of double-wall, round fittings are sized to slip fit into the same diameter of double-wall, round duct. Double wall gasketed fittings will have a projecting inner liner slip fit section as shown below.



Where:
S = 1 ½ inches for outer shell diameters # 8 inches
S = 1 ⅝ inches for outer shell diameters $ 9 inches
X = 1 inch for inside shell diameters # 7 inches
X = 2 inches for inside shell diameters $ 8 inches
t = insulation wall thickness

- Galvanized steel meets ASTM Numbers A653 and A924
- Unless otherwise specified fittings, will be solid inner liner and duct will be perforated inner liner.
- Unless ordered otherwise, the branch taps of laterals, crosses, and lateral crosses are installed at standard angles to the fittings' bodies and to each other, as shown in the following drawings:

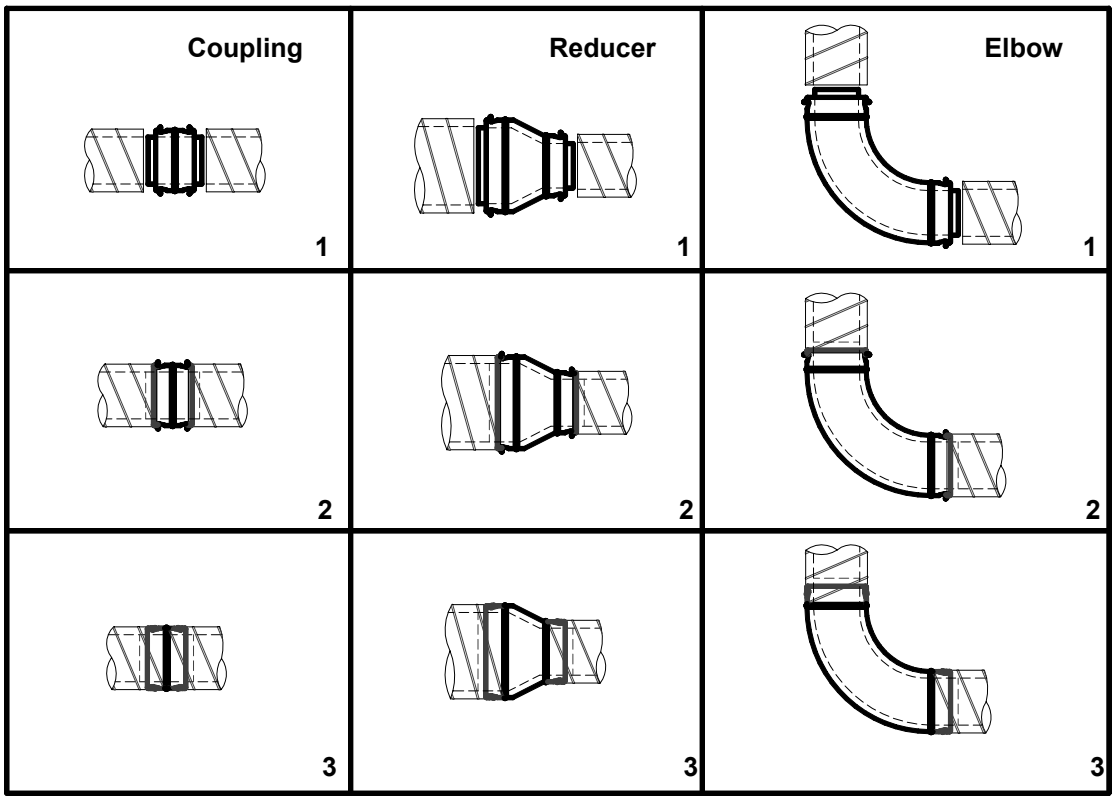


For all:
Laterals - θ standard = 45^E
Straight Crosses - θ standard = 90^E, Φ standard = 180^E
Lateral Crosses - θ standard = 45^E, Φ standard = 180^E
Y-Branches - θ standard = 90^E

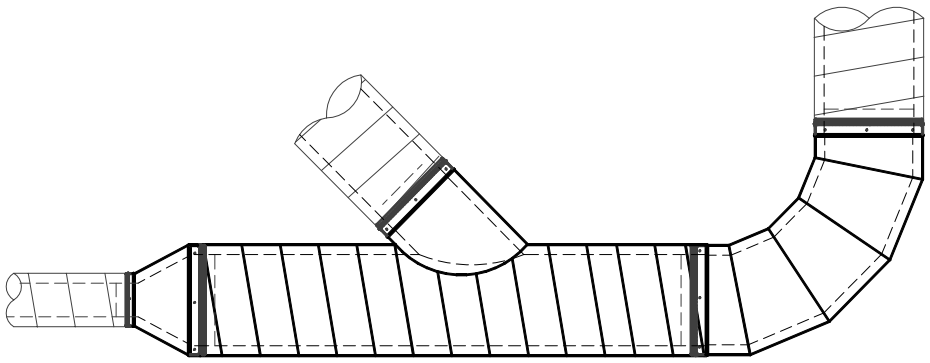
Note: Φ is the included angle between taps as viewed in cross section (standard is 180^E). When ordering fittings of nonstandard Φ, please include an end view sketch.

Installation:

- Make sure the end of the duct or gasketed fitting is not damaged.
- Insert the extended inner collar of the fitting into the liner of the adjacent duct section.
- Insert the outer gasketed collar of the fitting into the spiral duct up to the fitting bead. Turning the fitting slightly as it is inserted may make installation easier.
- Secure the fitting to the duct with self-tapping screws uniformly located around the circumference according to SMACNA recommendations. Use at least one screw for every 15 inches of circumference with a minimum of three screws for 14-inch or smaller diameters.
- The following chart illustrates some typical gasketed assemblies:

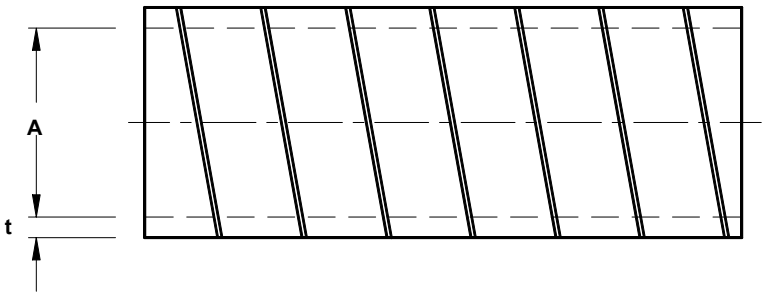


- The following figure illustrates gasketed fittings assembled to ductwork with a manifolded tap:



ACOUSTI - K27® DUCT

(Spiral lockseam)



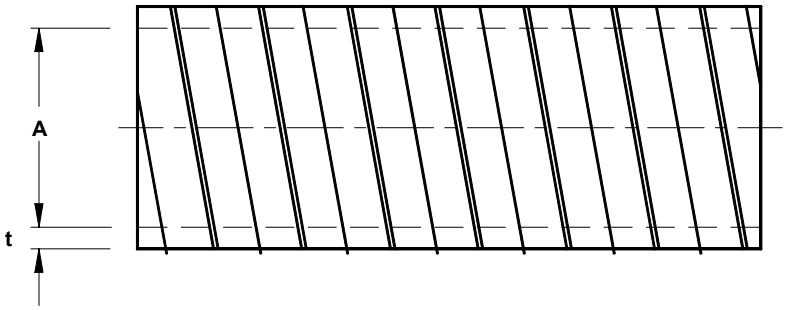
Designation:
KR0SD

Diameters:

3-inch minimum inner liner
84-inch maximum outer shell

UNI-RIB - K27® DUCT

(Spiral lockseam with a standing rib between the seams)

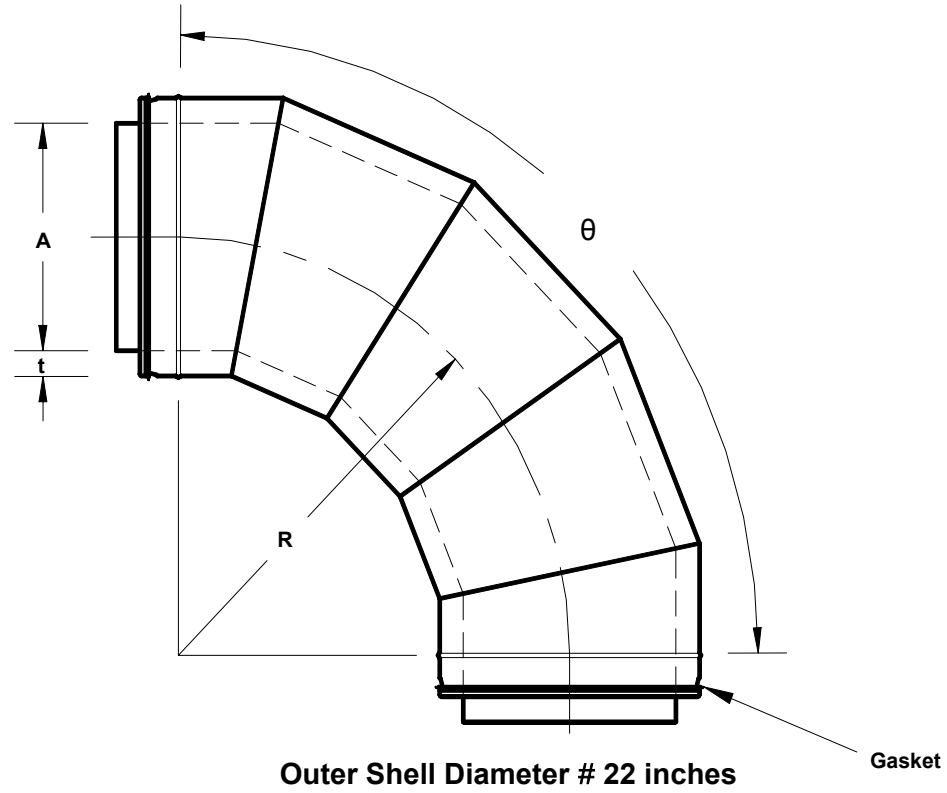


Designation:
KRSRD

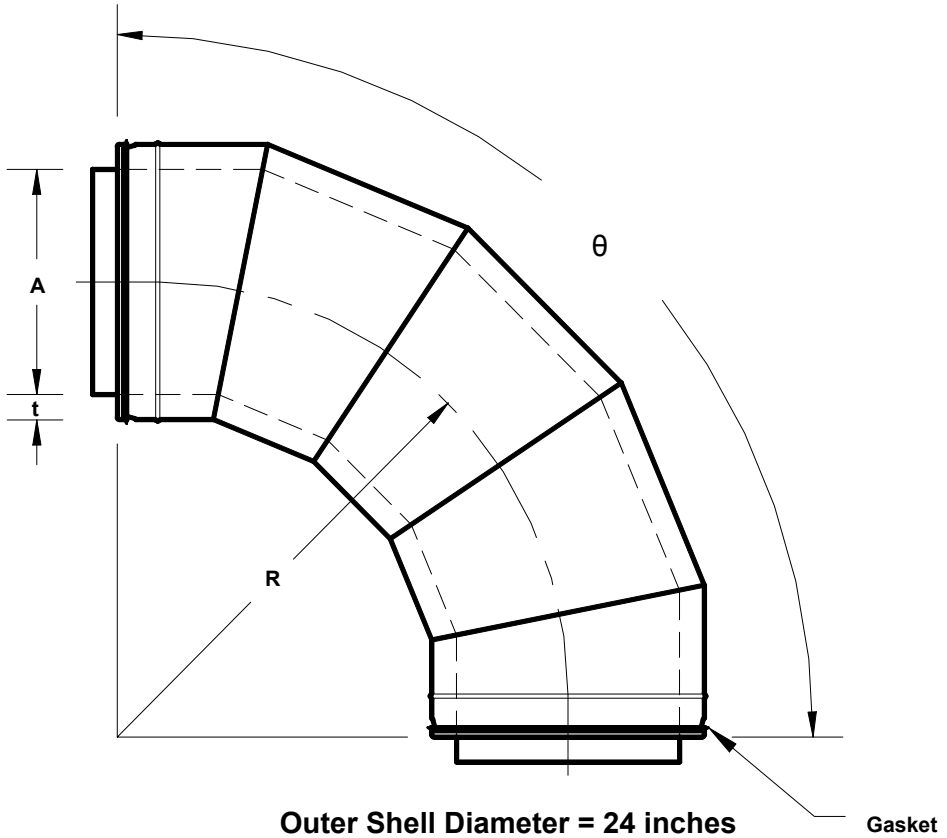
Diameters:

3-inch minimum inner liner
9-inch minimum outer shell
60-inch maximum outer shell

GORED ELBOW



Outer Shell Diameter # 22 inches



Outer Shell Diameter = 24 inches

Designation:
KR0E#-θ

Where:

θ	Number of gores (#)
0-35^{E}	2
36-71^{E}	3
72-90^{E}	5

For elbows where θ exceeds 90^{E}, add one gore for each additional 18^{E} or fraction thereof.

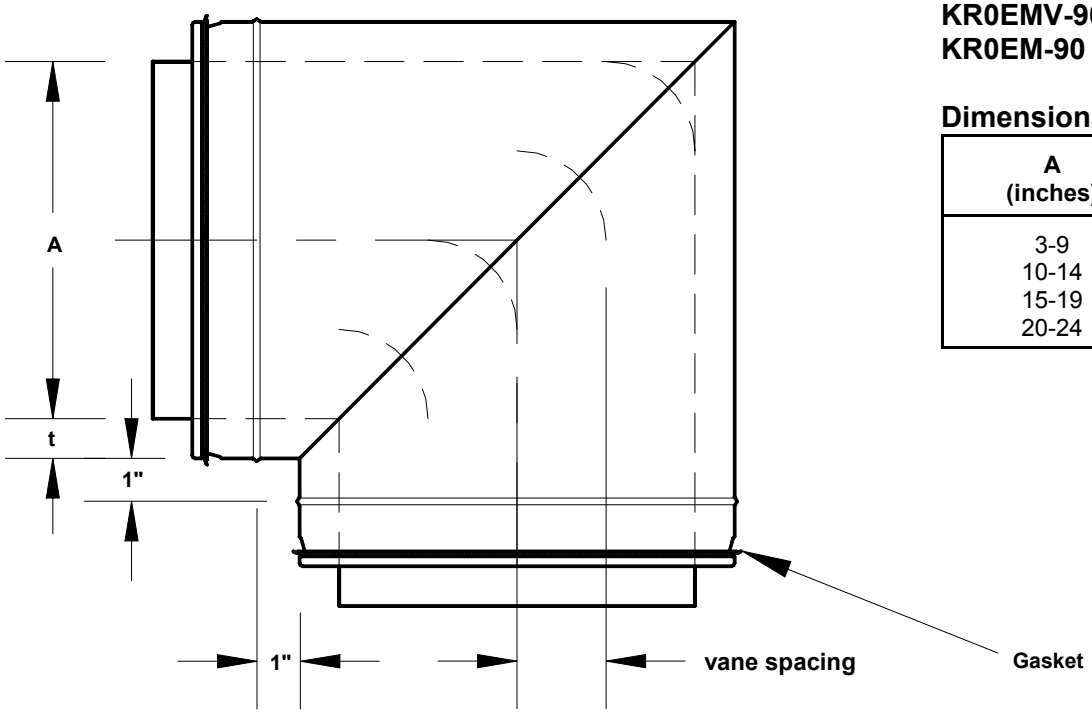
Dimensions:

R – 1.5 (A+2t)

Note:

1. McGill AirFlow UNI-SEAM (standing seam) construction will be used on the following available sizes: 9- through 12-inches in 1-inch increments, 14- through 24-inches in 2-inch increments.
2. Nonstandard elbows with a different centerline radius and a different number of gores are available.
3. The outer shell for 1.5 centerline radius elbows may be made of pleated or die stamped construction, depending on diameter and pressure class.

MITERED 90^{E} ELBOW WITH VANES



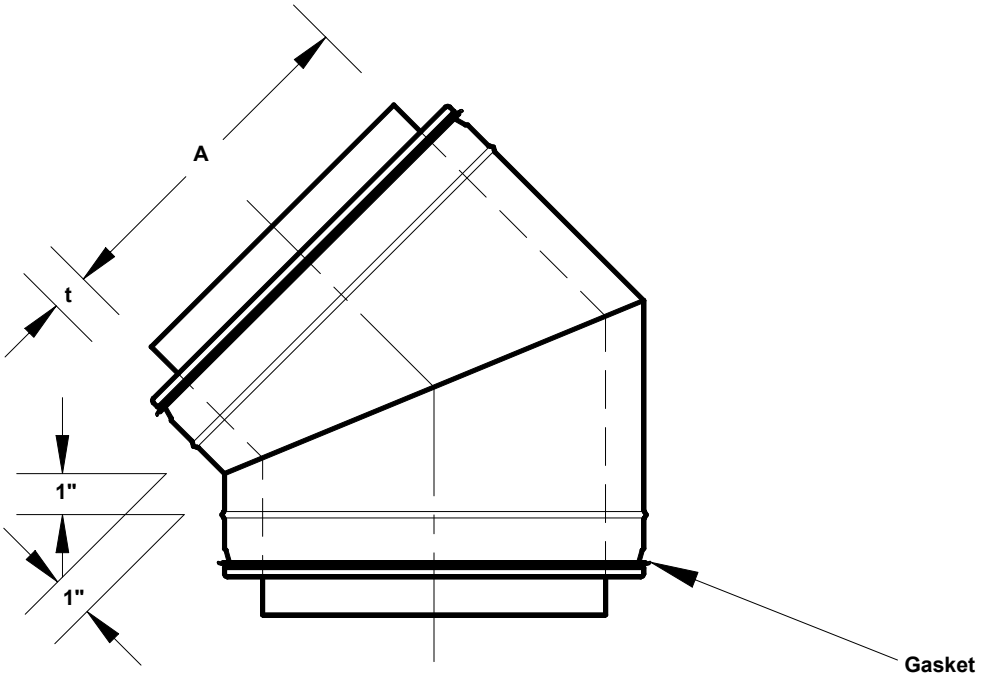
Designation:
KR0EMV-90
KR0EM-90 (without vanes)

Dimensions:

A (inches)	Number of vanes (#)
3-9	2
10-14	3
15-19	4
20-24	5

MITERED 45^{E} ELBOW

Designation:
KR0EM-45

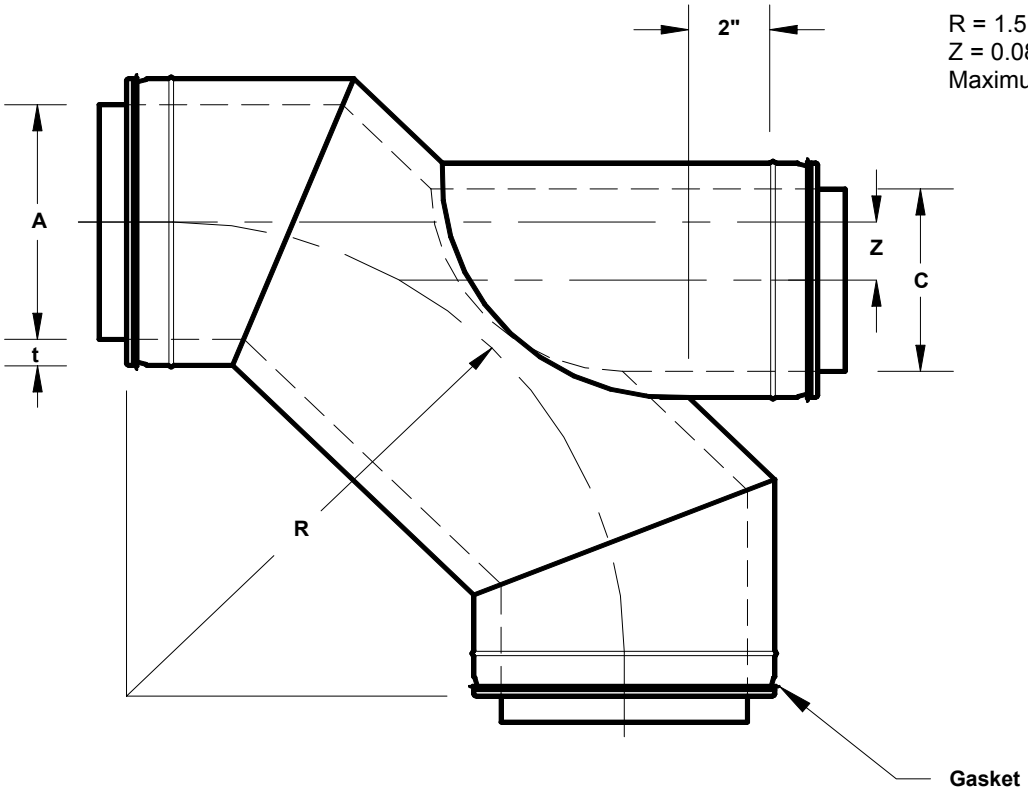


HEEL TAPPED 90^{E} ELBOW

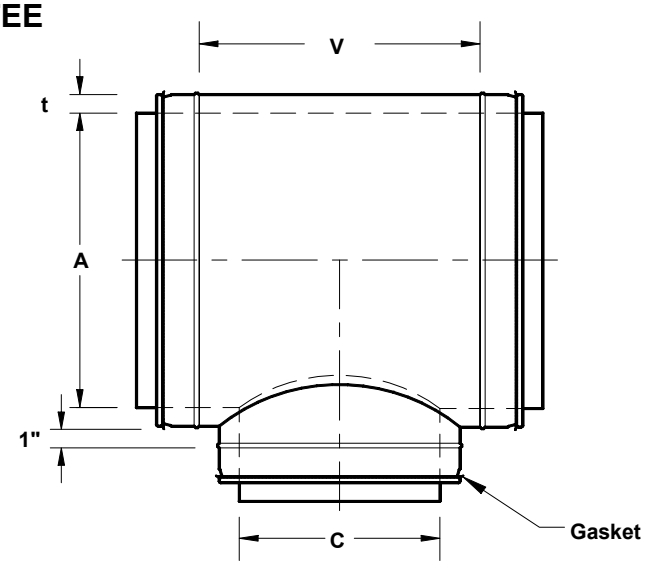
Designation:
KR0ET3-90

Dimensions:

R = 1.5 (A + 2 t)
Z = 0.086 (A + 2 t)
Maximum C = A



STRAIGHT TEE

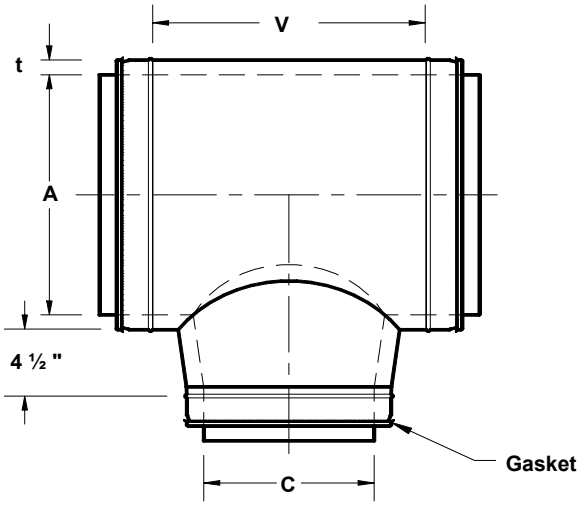


Designation:
KR0T

Dimensions:

V = C + 2 +2t
Maximum C = A

CONICAL TEE

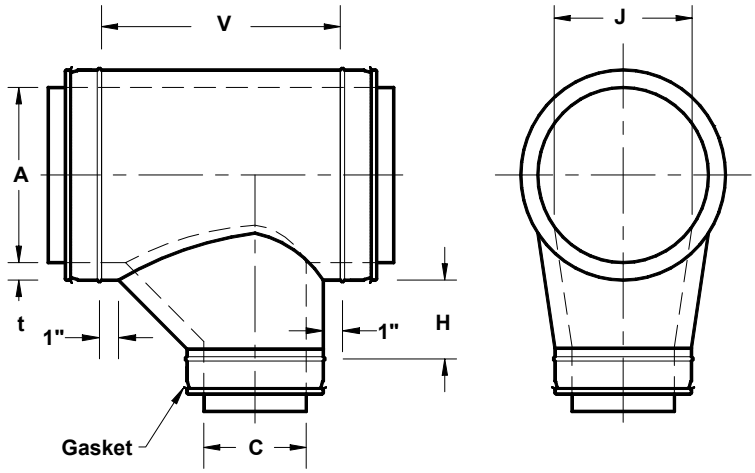


Designation:
KR0TC

Dimensions:

V = C + 4 +2t
Maximum C = A - 2

LO-LOSS™ TEE



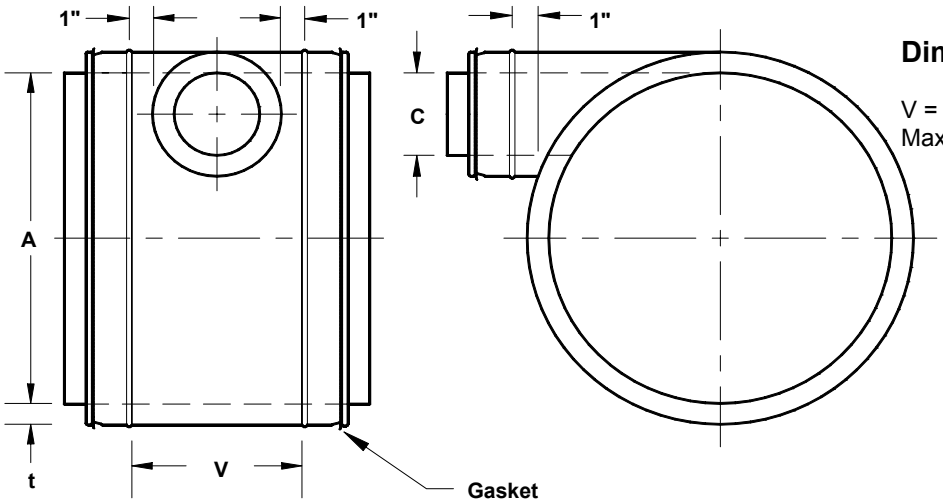
Designation:
KR0TL

Dimensions:

V = C + H + 1½ + 2t
J = C + 2 (for C # A - 2)
J = C (for C > A - 2)
Maximum C = A

Available Tap (C) Sizes (inches)	H (inches)
3-8	4½
9-14	7½
16- 24	10½

TANGENTIAL TEE

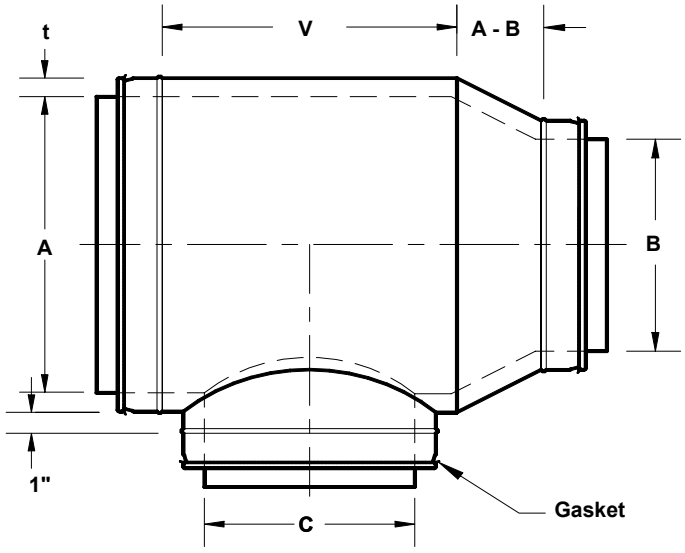


Designation:
KR0TT

Dimensions:

V = C + 2 + 2t
Maximum C = A

REDUCING STRAIGHT TEE

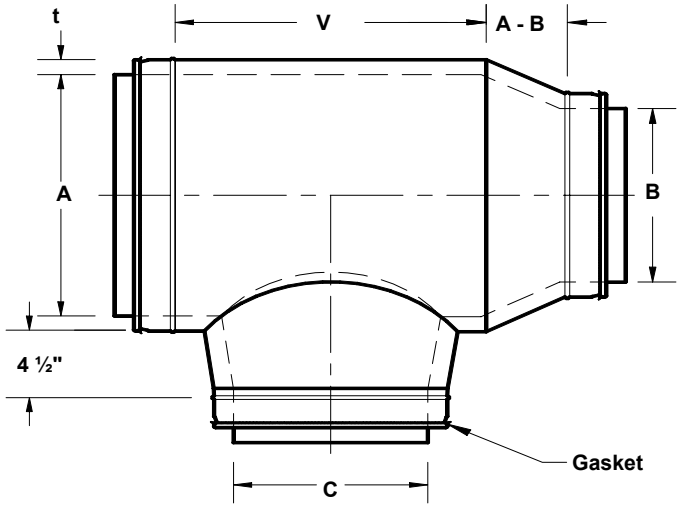


Designation:
KR0TR

Dimensions:

V = C + 2 + 2t
Maximum C = A
A - B (1-inch minimum, 12-inch maximum)

REDUCING CONICAL TEE



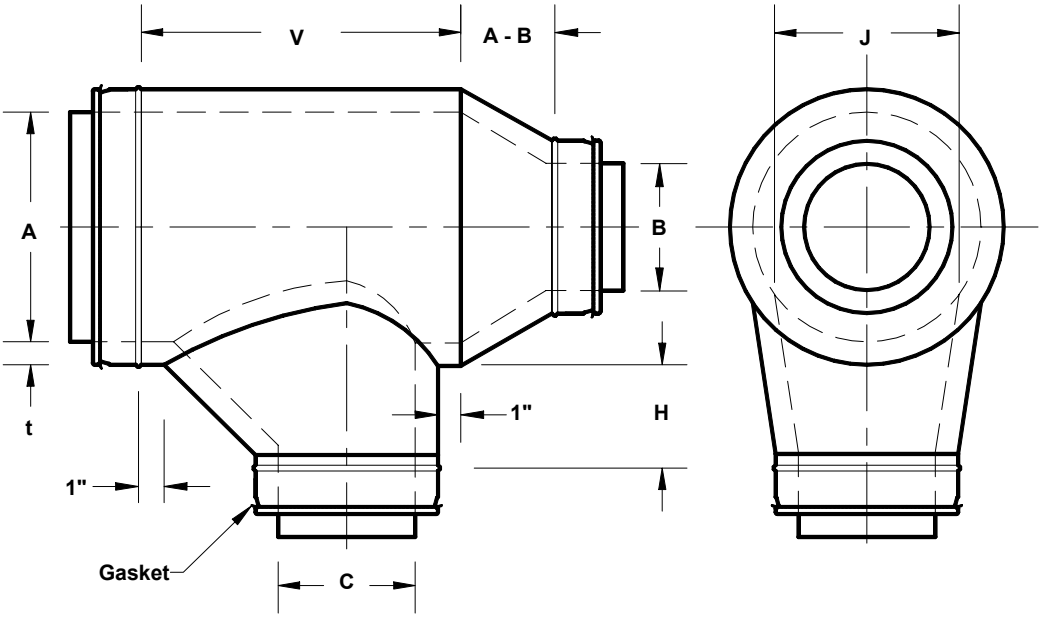
Designation:
KR0TCR

Dimensions:

V = C + 4 + 2t
Maximum C = A - 2
A - B (1-inch minimum, 12-inch maximum)

TEES

REDUCING LO-LOSS™ TEE



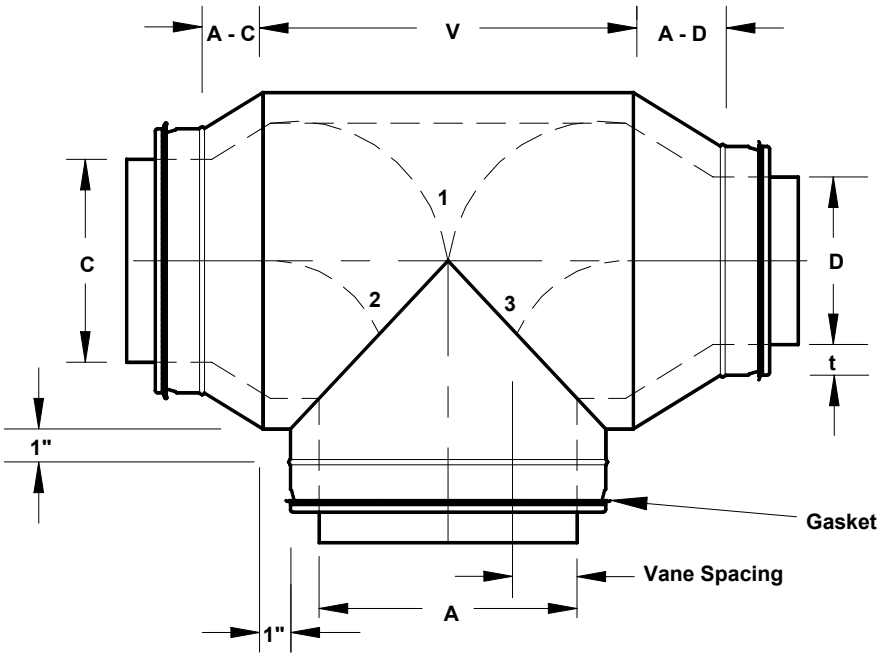
Designation:
KR0TLR

Dimensions:

V = C + H + 1½ +2t
J = C + 2 (for C # A - 2)
J = C (for C > A - 2)
Maximum C = A
A - B (1-inch minimum 12-inch maximum)

Available Tap (C) Sizes (inches)	H (inches)
3-9	4½
9-14	7½
16- 24	10½

REDUCING BULLHEAD TEE WITH VANES



Designation:
KR0TBVR
KR0TBR (without vanes)

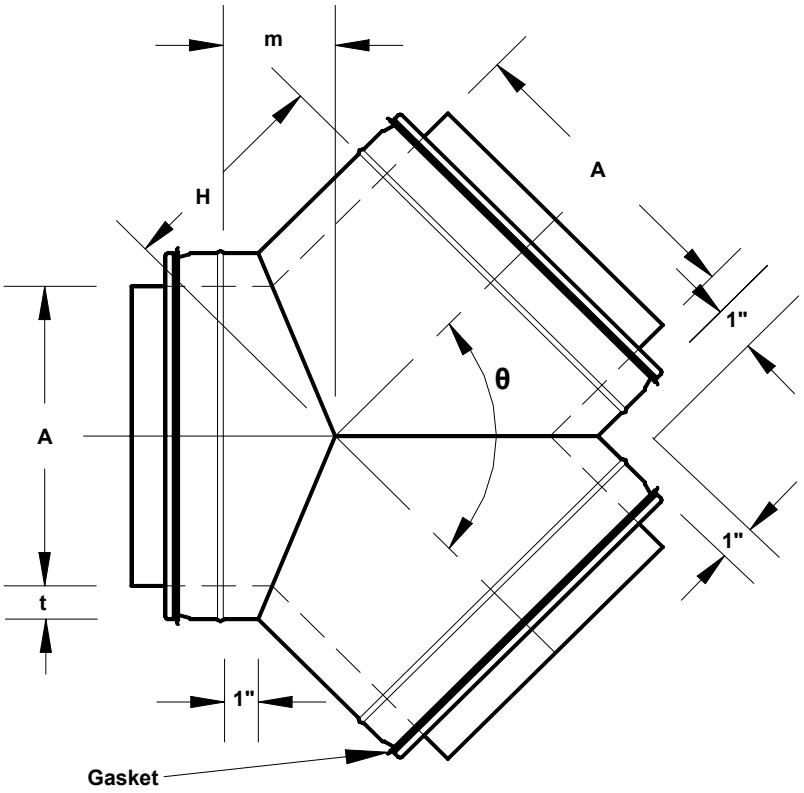
Dimensions:

V = A + 2 + 2t

A - C or A - D
(1-inch minimum or 12-inch maximum)

A (inches)	Number of Vanes (#)
3-6	1
7-9	3
10-24	5

Y-BRANCH



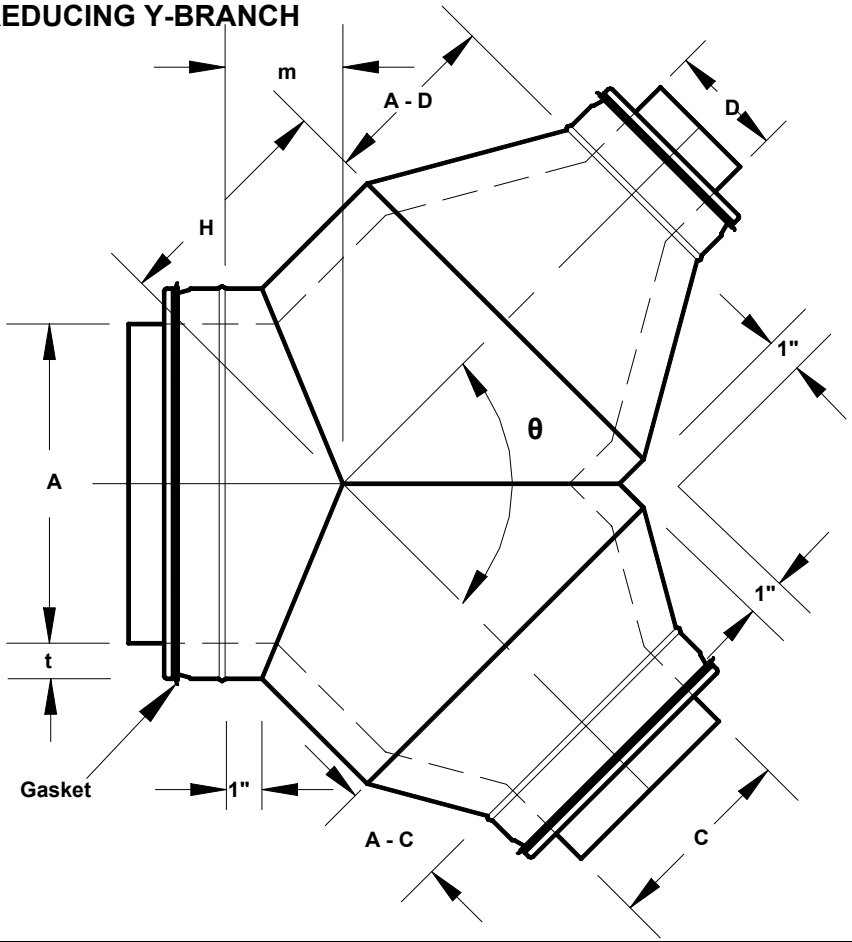
Designation:
KR0Y
(-θ if θ … 90E)

Dimensions:

$$H = \frac{A + 2t}{2\tan\frac{\theta}{2}} + 1$$

$$m = \frac{A + 2t}{2}\tan\frac{\theta}{4}$$

REDUCING Y-BRANCH



Designation:
KR0YR
(-θ if θ … 90E)

Dimensions:

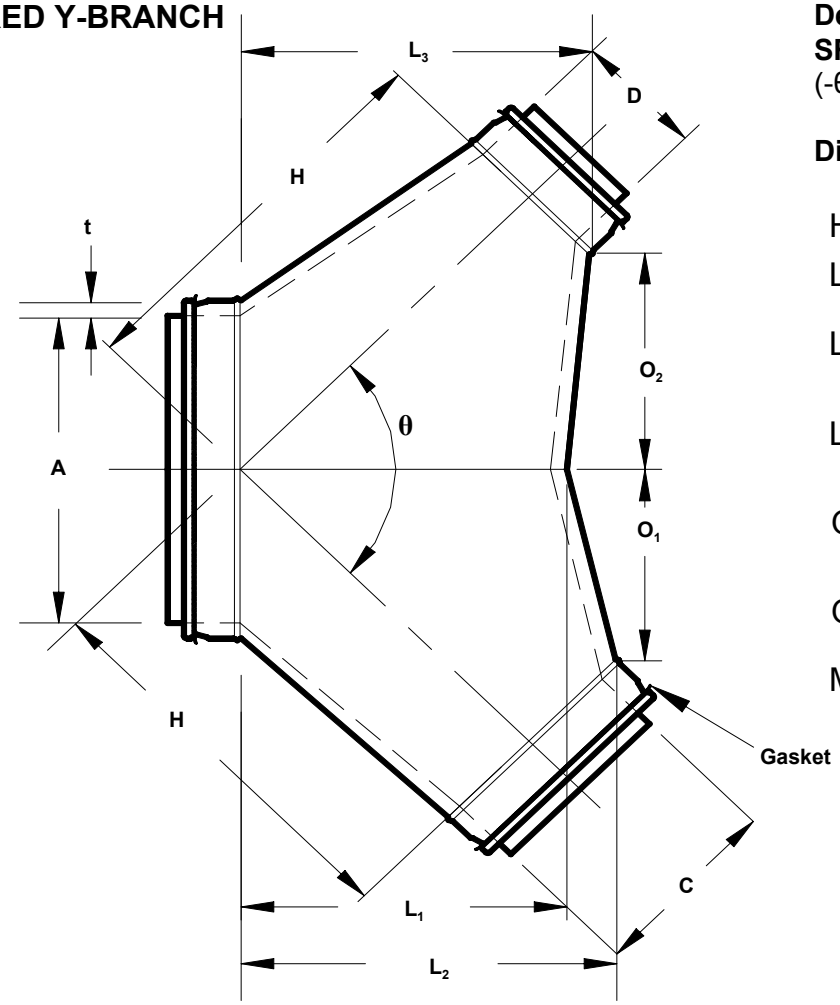
$$H = \frac{A + 2t}{2\tan\frac{\theta}{2}} + 1$$

$$m = \frac{A + 2t}{2}\tan\frac{\theta}{4}$$

A - C or A - D
(1-inch minimum or 12-inch maximum)

Maximum C or D = A

TAPERED Y-BRANCH



Designation:
SR0YP
(-θ if θ ... 90E)

Dimensions:

$$H = 1.25A$$

$$L_1 = A + t$$

$$L_2 = [H x \cos\frac{\theta}{2}] + [\frac{C}{2} x \sin\frac{\theta}{2}]$$

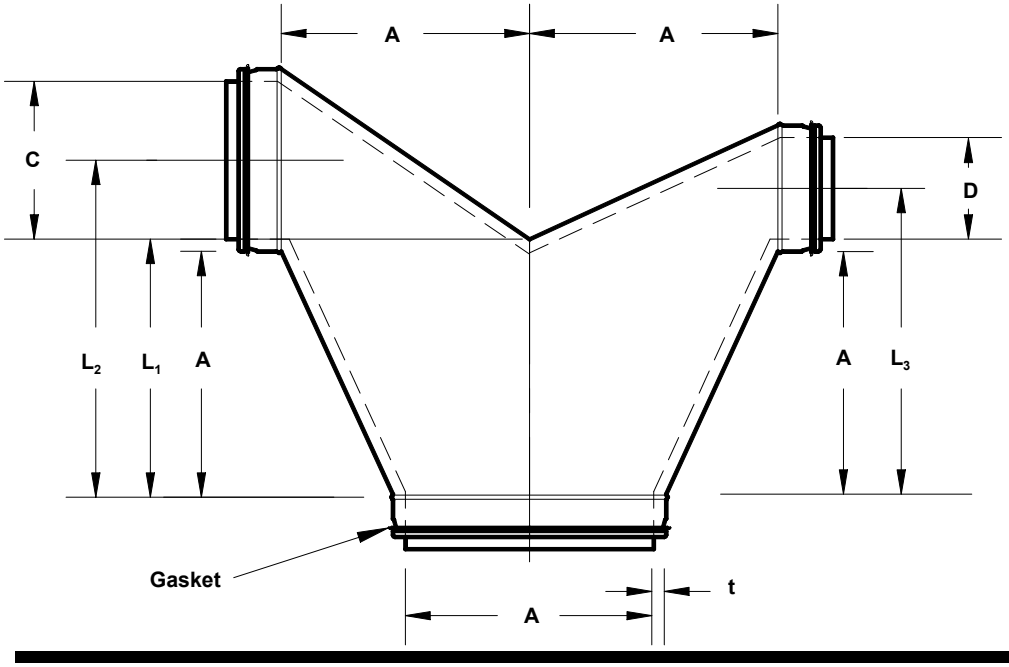
$$L_3 = [H x \cos\frac{\theta}{2}] + [\frac{D}{2} x \sin\frac{\theta}{2}]$$

$$O_1 = [H x \sin\frac{\theta}{2}] - [\frac{C}{2} x \cos\frac{\theta}{2}]$$

$$O_2 = [H x \sin\frac{\theta}{2}] - [\frac{D}{2} x \cos\frac{\theta}{2}]$$

Maximum C or D = A

VEE FITTING



Designation:
SR0VE
SR0VER
(reducing shown)

Dimensions:

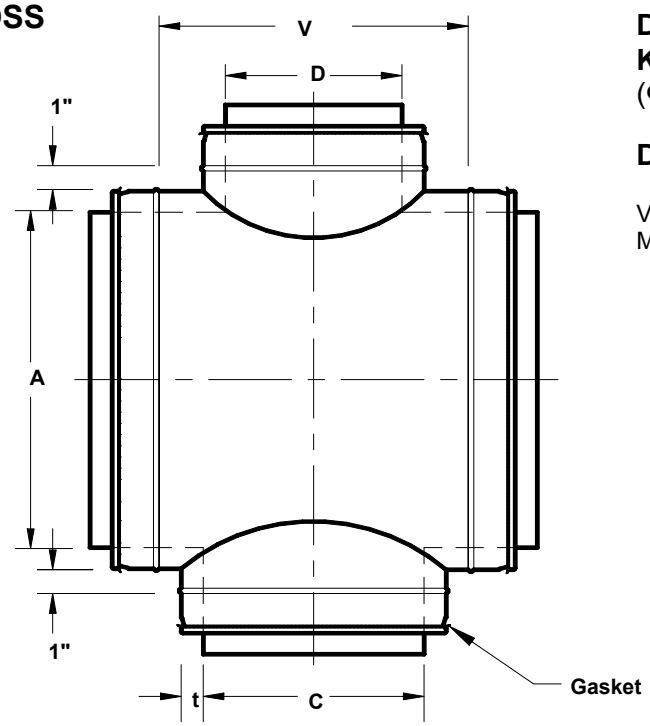
$$L_1 = A + t$$

$$L_2 = L_1 + \frac{C}{2}$$

$$L_3 = L_1 + \frac{D}{2}$$

Maximum C or D = A

STRAIGHT 90^{E} CROSS

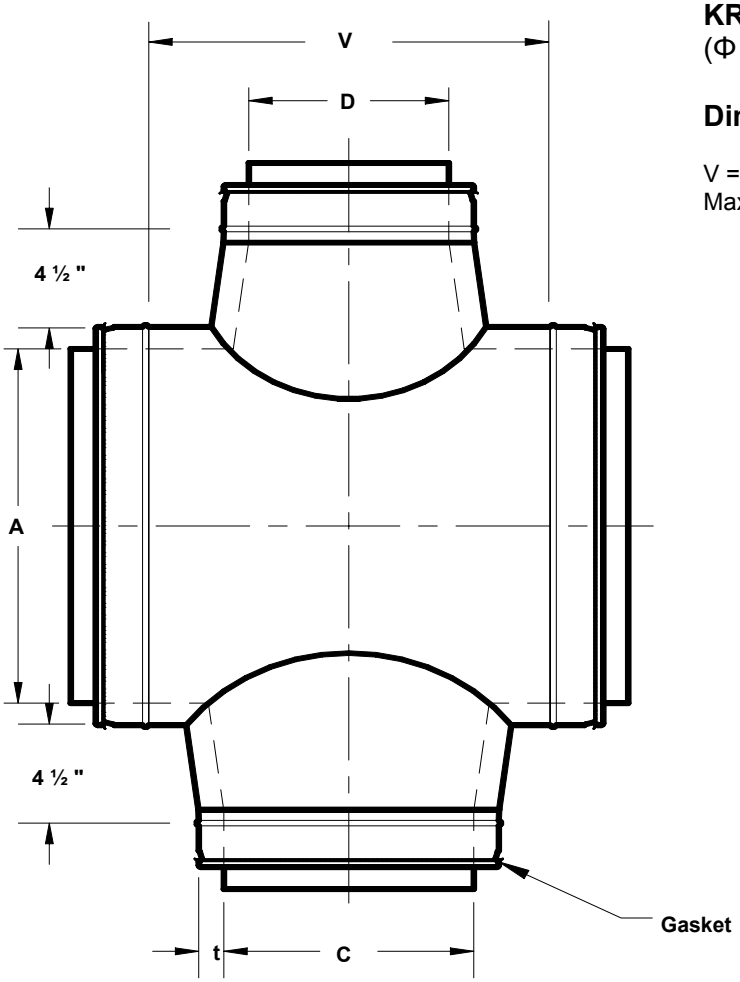


Designation:
KR0TX
(Φ if Φ ... 180°)

Dimensions:

V = C + 2
Maximum C or D= A

CONICAL 90^{E} CROSS

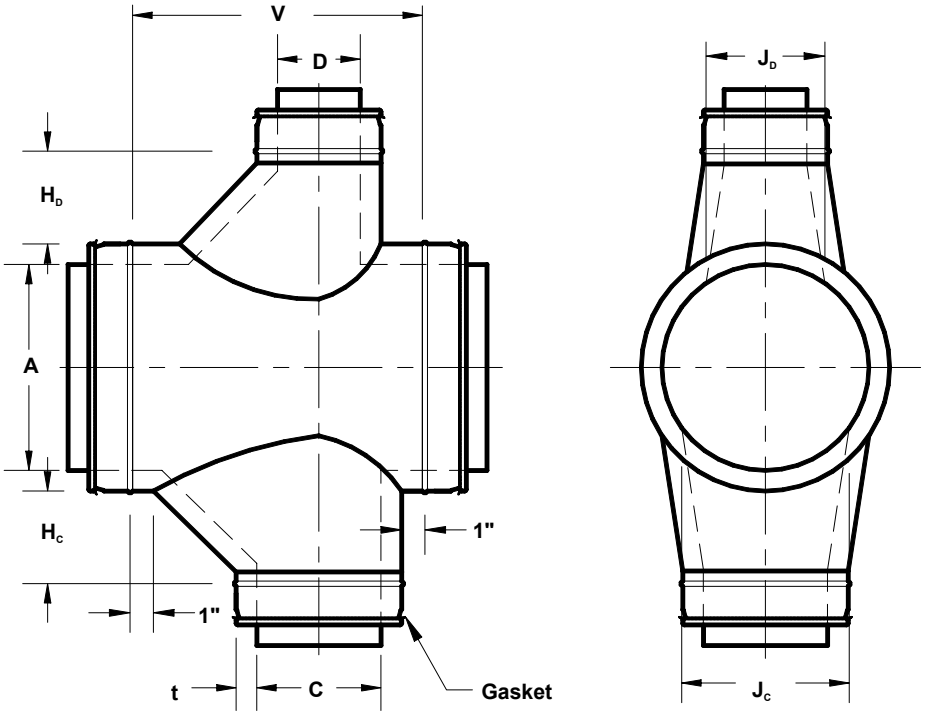


Designation:
KR0TXC
(Φ if Φ ... 180°)

Dimensions:

V = C + 4 + 2t
Maximum C or D = A - 2

LO-LOSS™ 90^E CROSS



Designation:
KR0TXL
(Φ if Φ ... 180°)

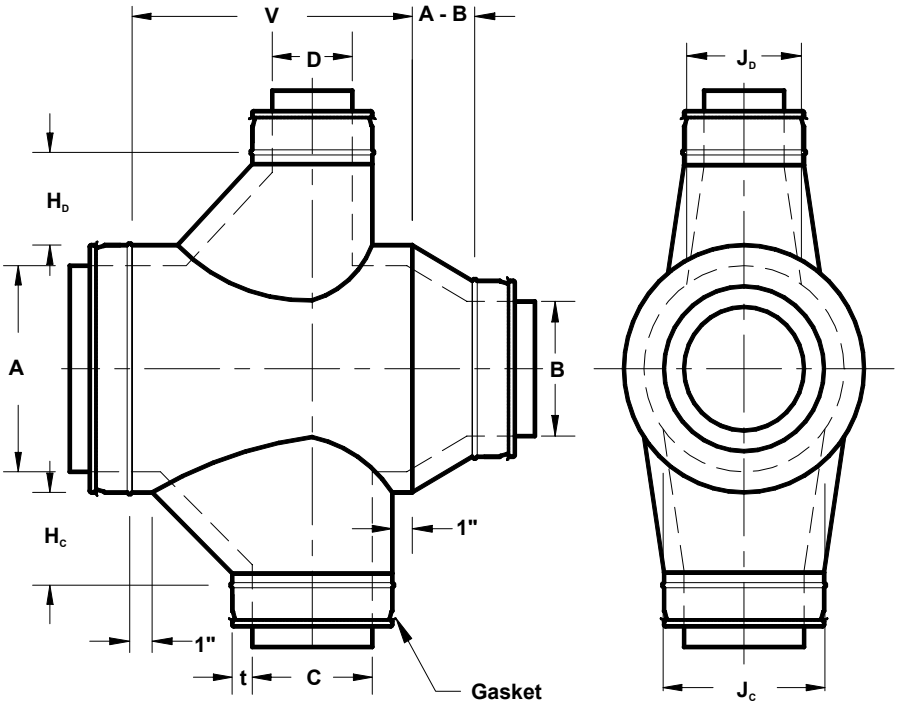
Dimensions:

$V = C + H_C + 2 + 2t$
$J_C = C + 2$ (for C # A - 2)
$J_C = C$ (for C > A - 2)
$J_D = D + 2$
$J_D = D$ (for D > A - 2)

Maximum C = A

C or D Sizes (inches)	H_C or H_D (inches)
3-9	4½
9-14	7½
16- 24	10½

REDUCING LO-LOSS™ 90^E CROSS



Designation:
KR0TXLR
(Φ if Φ ... 180°)

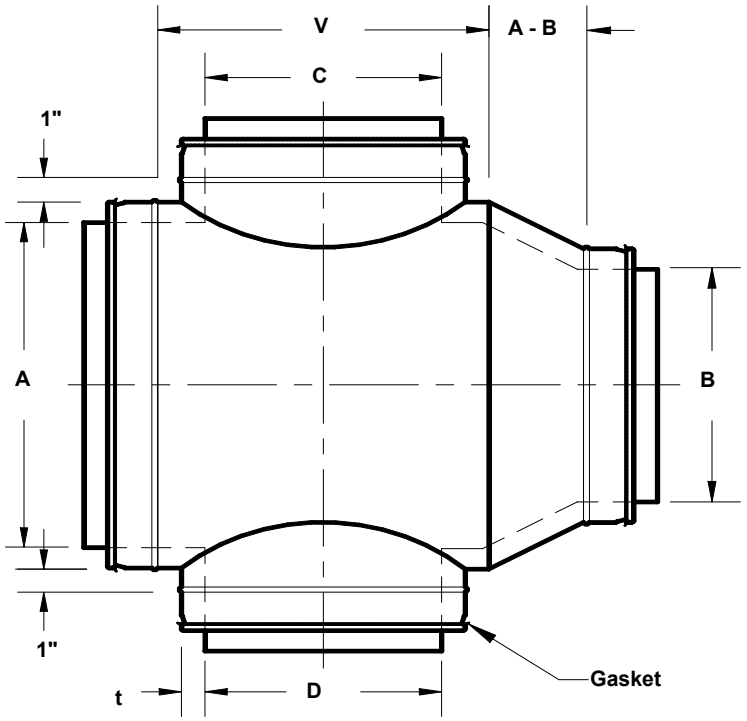
Dimensions:

$V = C + H_C + 2 + 2t$
$J_C = C + 2$ (for C # A - 2)
$J_C = C$ (for C > A - 2)
$J_D = D + 2$

Maximum C = A
A - B (1-inch minimum, 12-inch maximum)

C or D Sizes (inches)	H_C or H_D (inches)
3-9	4½
9-14	7½
16- 24	10½

REDUCING STRAIGHT CROSS

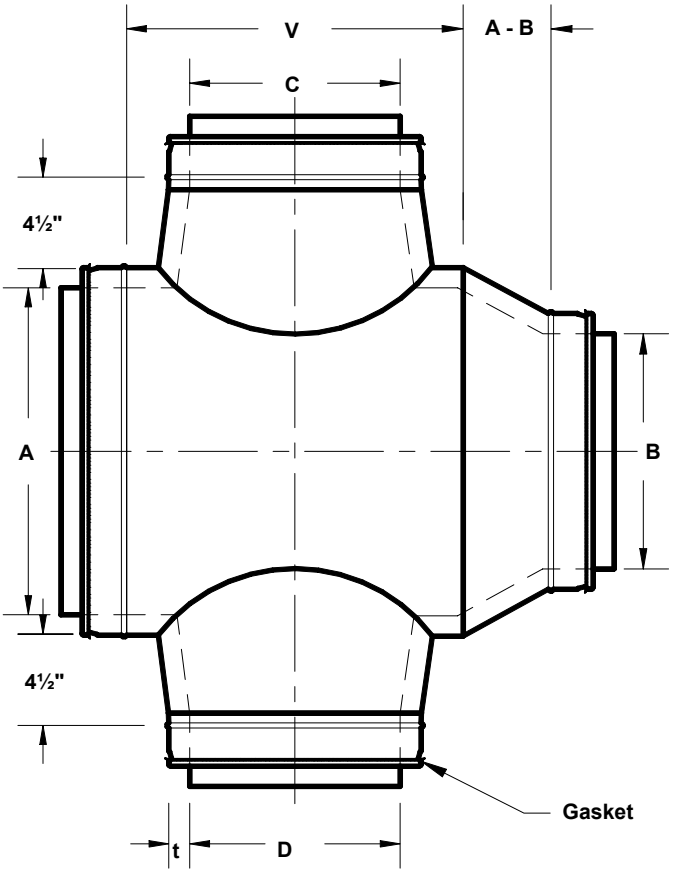


Designation:
KR0TXR
(Φ if Φ ... 180°)

Dimensions:

V = C + 2 + 2t
Maximum C or D = A
A - B (1-inch minimum, 12-inch maximum)

REDUCING CONICAL CROSS

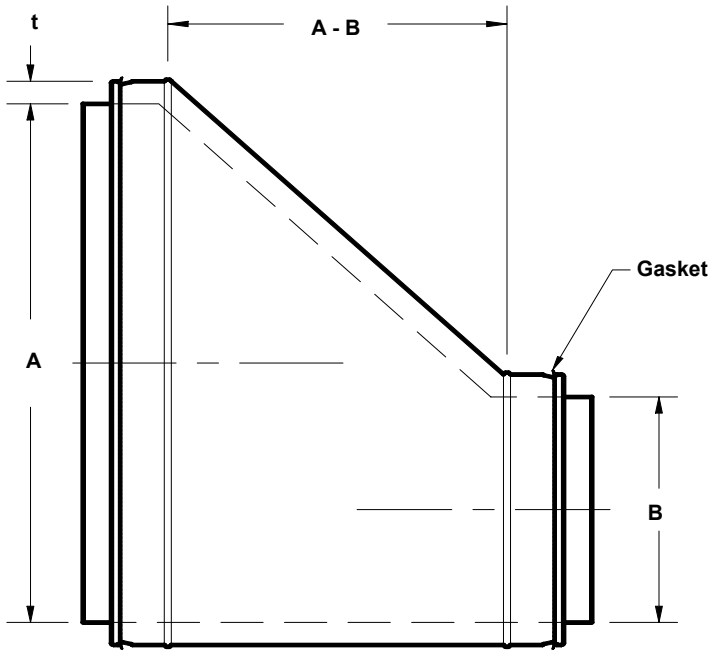


Designation:
KR0TXCR
(Φ if Φ ... 180°)

Dimensions:

V = C + 4 + 2t
Maximum C or D = A - 2
A - B (1-inch minimum, 12-inch maximum)

ECCENTRIC REDUCER

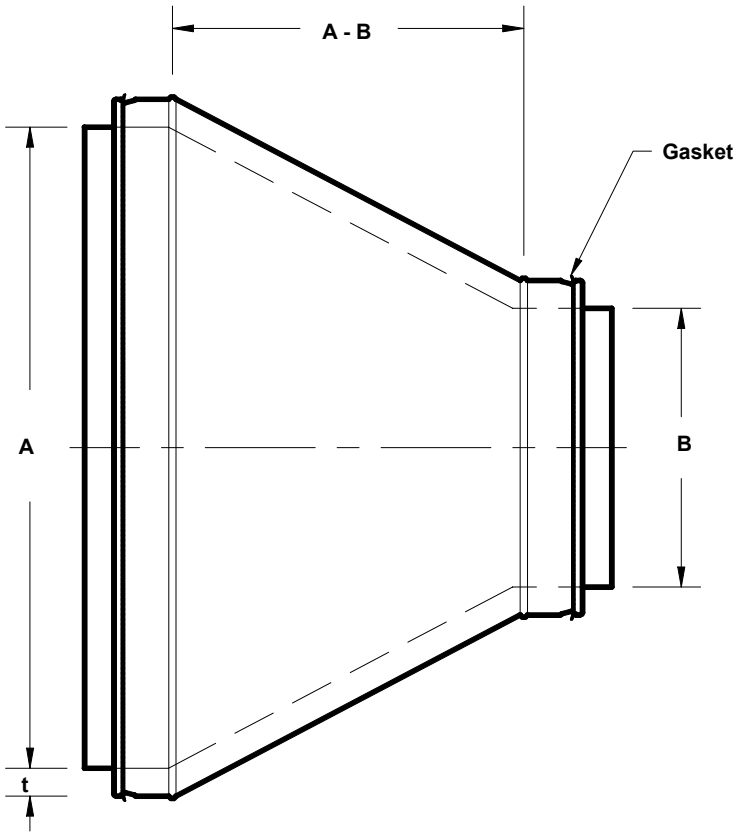


Designation:
KR0RE

Dimensions:

A - B (4-inch minimum 12-inch maximum)

CONCENTRIC REDUCER

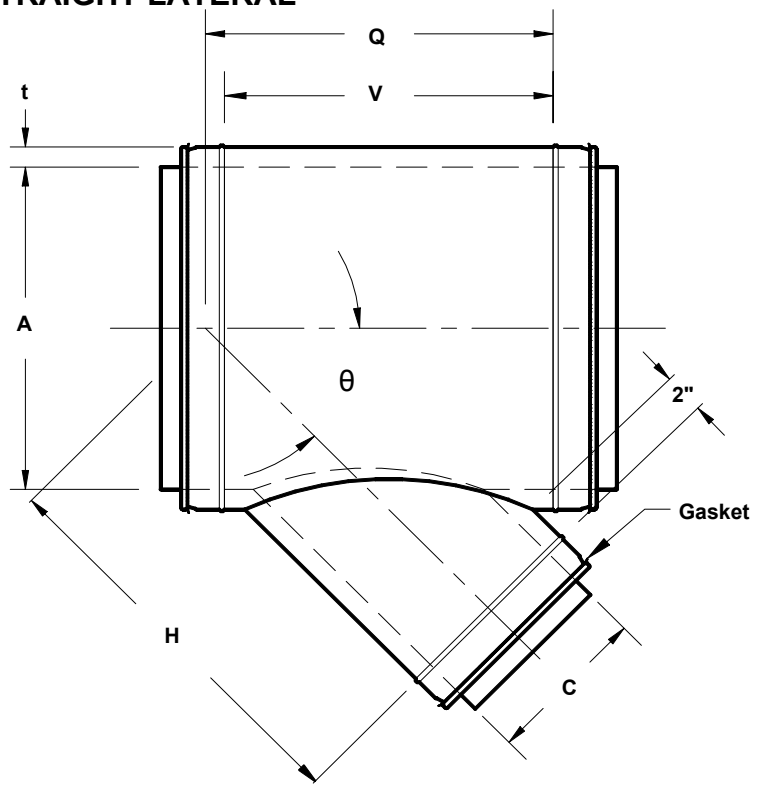


Designation:
KR0R

Dimensions:

A - B (1-inch minimum 12-inch maximum)

STRAIGHT LATERAL



Designation:
KR0L
(-θ if θ ... 45E)

Dimensions:

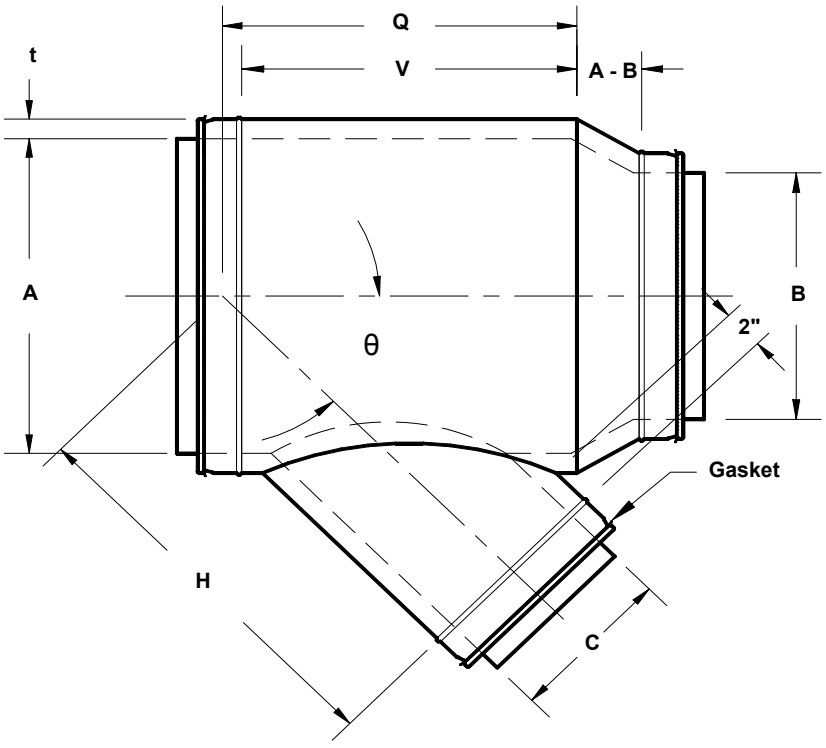
$$V = \frac{C + 2t}{\sin\theta} + 2$$

$$Q = \frac{A + 2t}{2\tan\theta} + \frac{C + 2t}{2\sin\theta} + 1$$

$$H = \frac{A + 2t}{2\sin\theta} + \frac{C + 2t}{2\tan\theta} + 2$$

Maximum C = A

REDUCING LATERAL



Designation:
KR0LR
(-θ if θ ... 45E)

Dimensions:

$$V = \frac{C + 2t}{\sin\theta} + 2$$

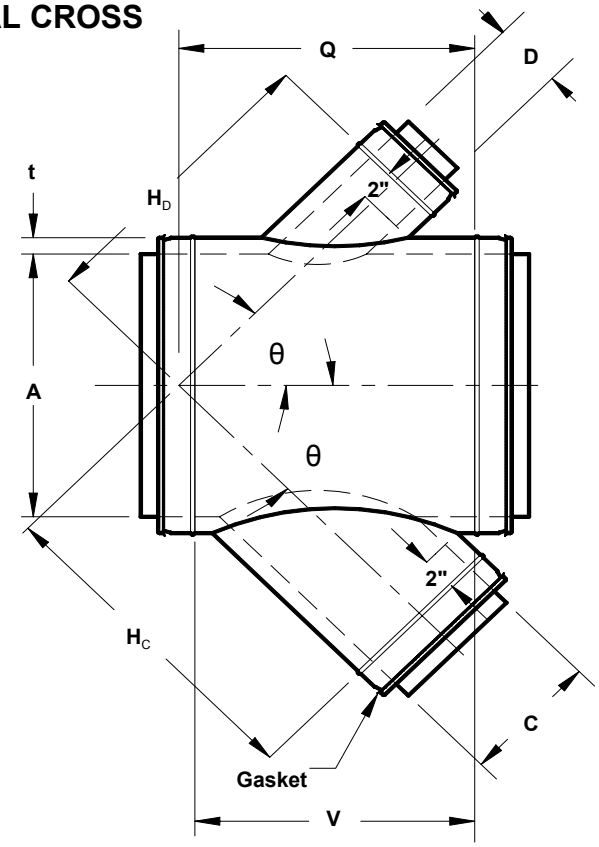
$$Q = \frac{A + 2t}{2\tan\theta} + \frac{C + 2t}{2\sin\theta} + 1$$

$$H = \frac{A + 2t}{2\sin\theta} + \frac{C + 2t}{2\tan\theta} + 2$$

Maximum C = A

A - B (1-inch minimum 12-inch maximum)

LATERAL CROSS



Designation:
KR0LX
(-θ if θ ... 45E, Φ if Φ ... 180°)

Dimensions:

$$V = \frac{C + 2t}{\sin\theta} + 2$$

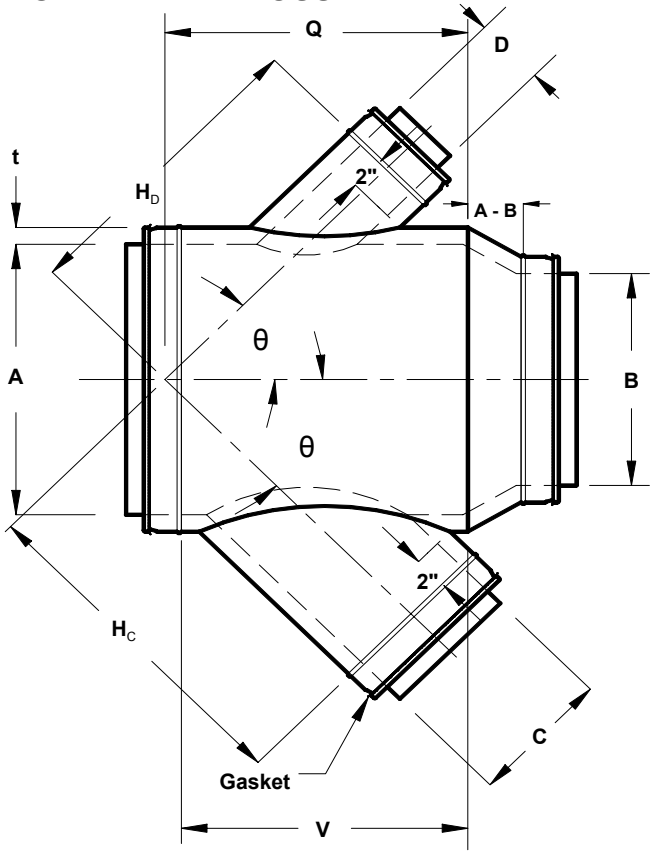
$$Q = \frac{A + 2t}{2\tan\theta} + \frac{C + 2t}{2\sin\theta} + 1$$

$$H_C = \frac{A + 2t}{2\sin\theta} + \frac{C + 2t}{2\tan\theta} + 2$$

$$H_D = \frac{A + 2t}{2\sin\theta} + \frac{D + 2t}{2\tan\theta} + 2$$

Maximum C or D = A

REDUCING LATERAL CROSS



Designation:
KR0LXR
(-θ if θ ... 45E, Φ if Φ ... 180°)

Dimensions:

$$V = \frac{C + 2t}{\sin\theta} + 2$$

$$Q = \frac{A + 2t}{2\tan\theta} + \frac{C + 2t}{2\sin\theta} + 1$$

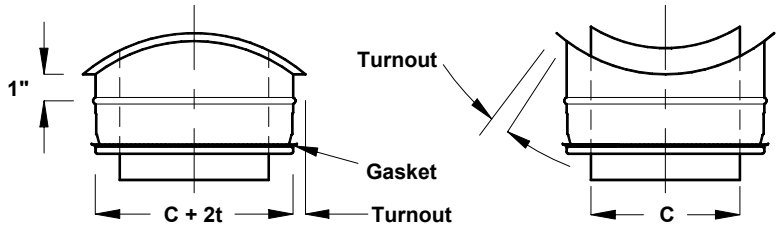
$$H_C = \frac{A + 2t}{2\sin\theta} + \frac{C + 2t}{2\tan\theta} + 2$$

$$H_D = \frac{A + 2t}{2\sin\theta} + \frac{D + 2t}{2\tan\theta} + 2$$

Maximum C or D = A

A - B (1-inch minimum 12-inch maximum)

CONTOURED FLANGED STRAIGHT TEE TAP



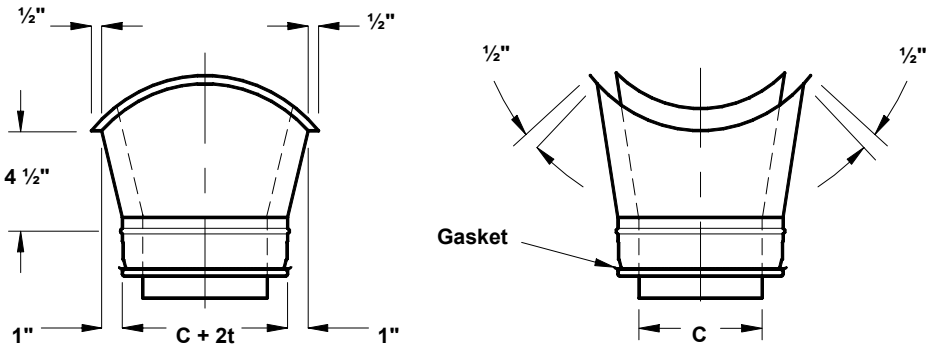
Designation:
KR0PT

Dimensions:

Specify diameter of duct, to which tap will be attached, as A

Maximum C = A

CONTOURED FLANGED CONICAL TEE TAP



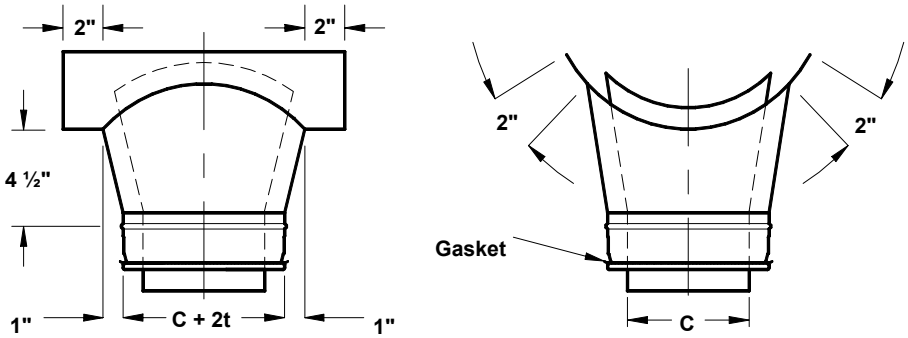
Designation:
KR0PTC

Dimensions:

Specify diameter of duct, to which tap will be attached, as A

Maximum C = A - 2

SADDLE CONICAL TEE TAP



Designation:
KR0PTCS

Dimensions:

Specify diameter of duct, to which tap will be attached, as A

Maximum C = A - 2

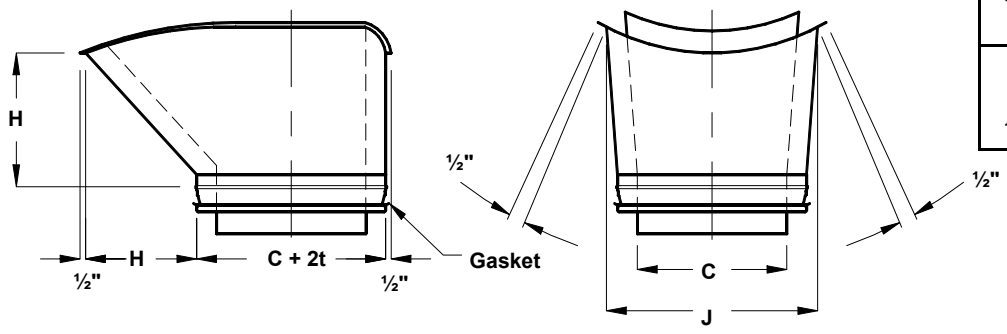
CONTOUR FLANGED LO-LOSS™ TEE TAP

Designation:
KR0PTL

Dimensions:

J = C + 2 + 2t (for C # A - 2)
J = C + 2t (for C > A - 2)
Maximum C = A

Available Tap Outer Wall (C) Sizes (inches)	H (inches)
4, 6, and 8 10, 12, and 14 16, 18, 20, 22,and 24	4½ 7½ 10½



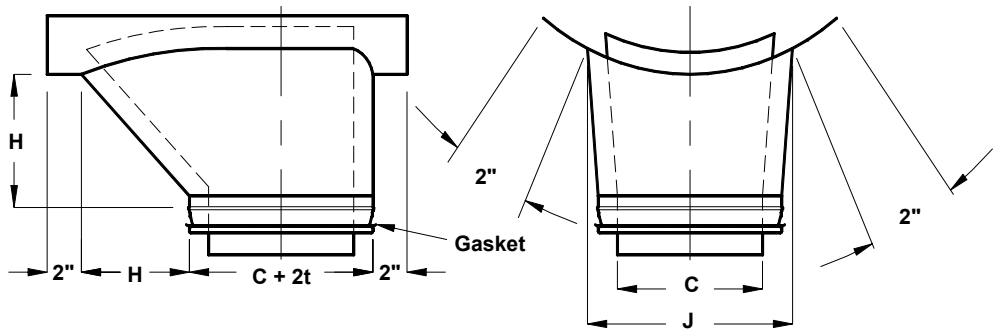
SADDLE LO-LOSS™ TEE TAP

Designation:
KR0PTLS

Dimensions:

J = C + 2 + 2t (for C # A - 2)
J = C + 2t (for C > A - 2)
Maximum C = A

Available Tap Outer Wall (C) Sizes (inches)	H (inches)
4, 6, and 8 10, 12, and 14 16, 18, 20, 22,and 24	4½ 7½ 10½

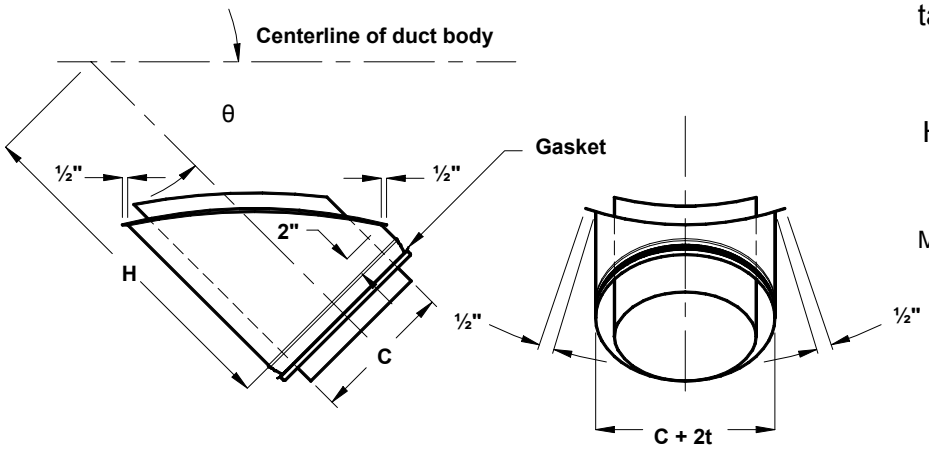


CONTOURED FLANGED LATERAL TAPS

Designation:
KR0PL
(-θ if θ … 45[E])

Dimensions:

Specify diameter of duct, to which tap will be attached, as A



$$H = \frac{A}{2\sin\theta} + \frac{C}{2\tan\theta} + 2$$

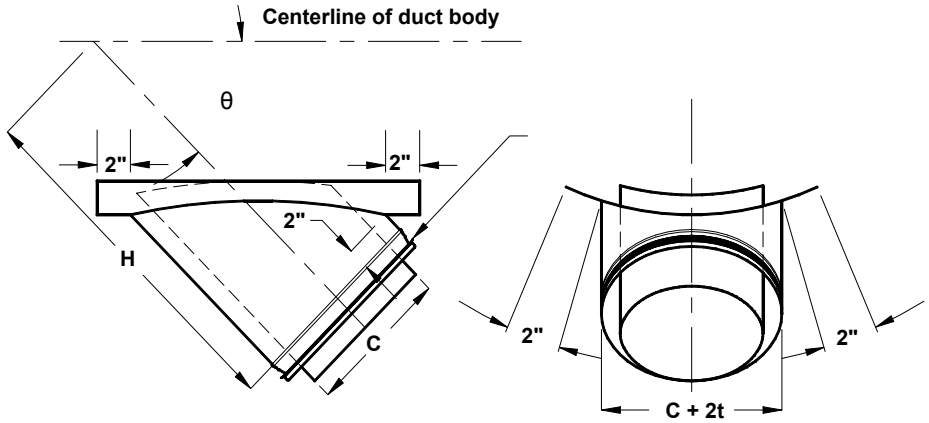
Maximum C = A

SADDLE LATERAL TAPS

Designation:
KR0PLS
(-θ if θ … 45[E])

Dimensions:

Specify diameter of duct, to which tap will be attached, as A



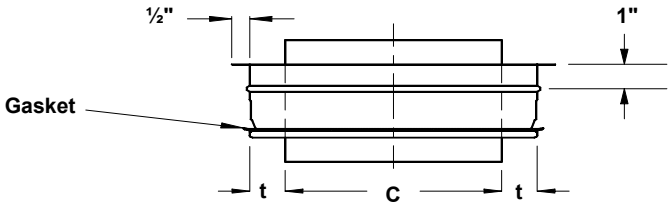
$$H = \frac{A}{2\sin\theta} + \frac{C}{2\tan\theta} + 2$$

Maximum C = A

TAPS OFF FLAT SURFACE

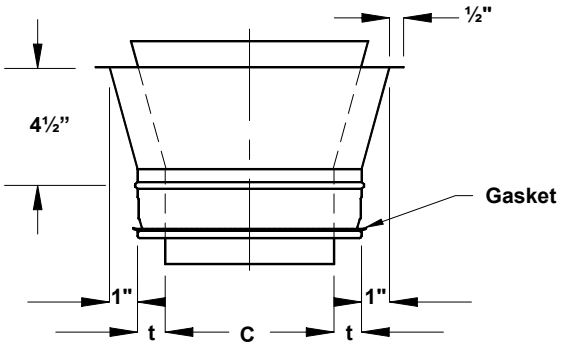
STRAIGHT TAP OFF FLAT SURFACE

Designation:
KR0PT

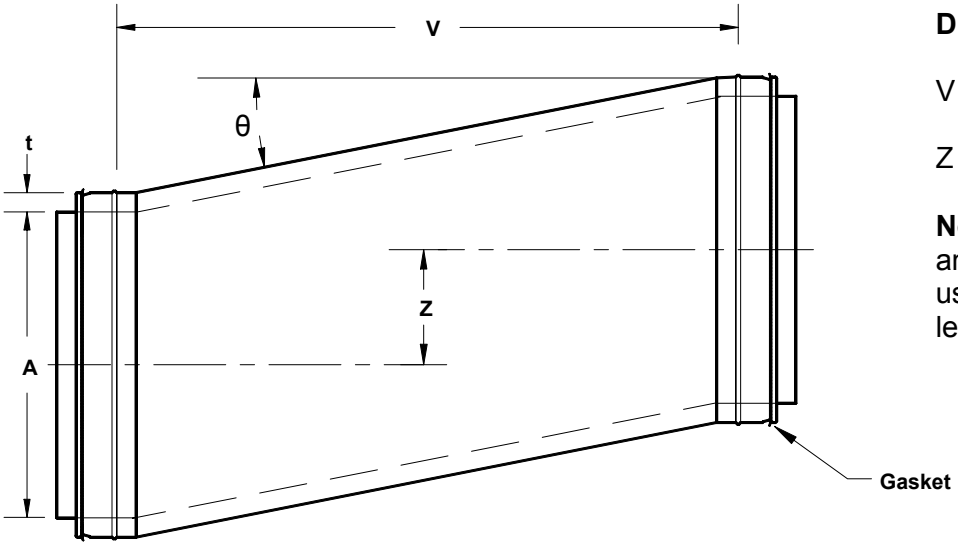


CONICAL TAP OFF FLAT SURFACE

Designation:
KR0PTC



OFFSET



Designation:
KR0Z

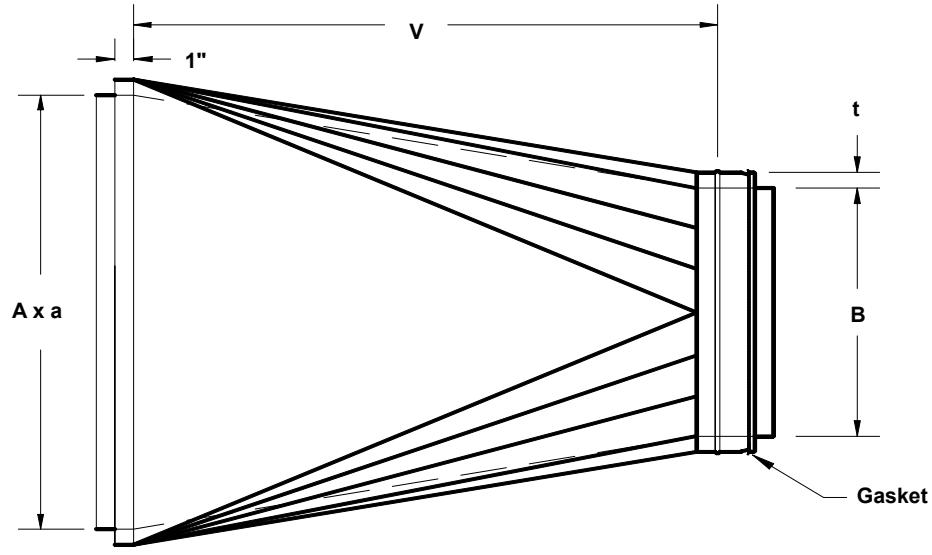
Dimensions:

V = 2 (A + 2t)

Z = Must be specified

Note: Z should not exceed 0.75 A or angle be larger than 60E. If larger, use fabricated elbows and a straight length of duct.

SQUARE-TO-ROUND



Designation:
KR0QR

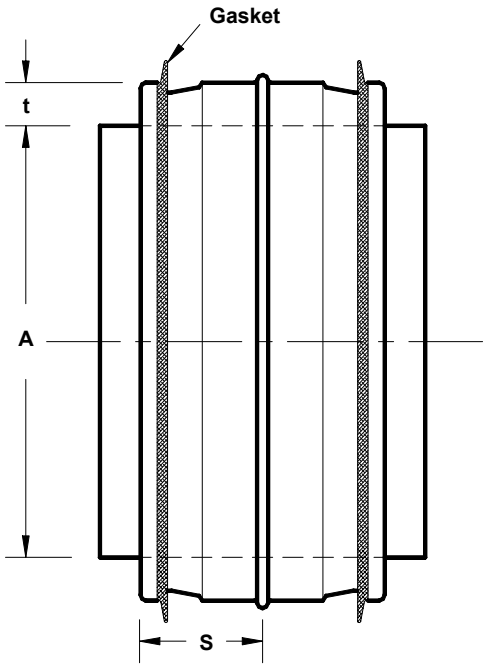
Dimensions:

V = 12, 24, 36, or 48

A = Major axis of rectangular side
a = Minor axis of rectangular side

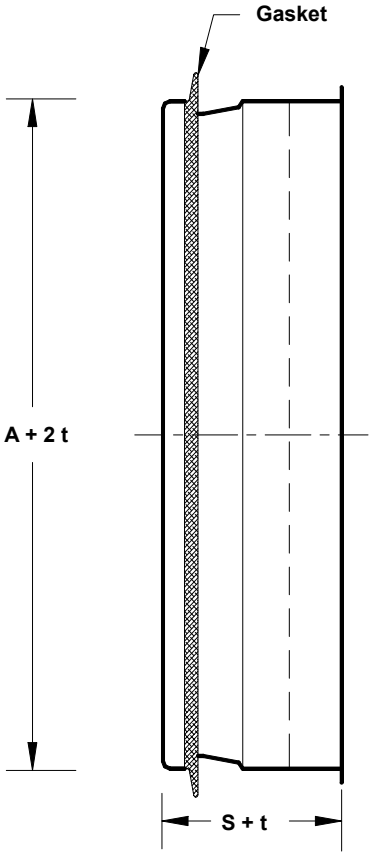
COUPLING and END PLUG

COUPLING



Designation:
KR0C

END PLUG



Designation:
KR0ENPL

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