

## Rectangular Double Wall Duct and Fittings

Corken Steel Products' double wall rectangular duct and fittings are one part of our complete line of HVAC products. Double wall rectangular duct is constructed with TDC end treatments. There are two different types of application:

- Acoustical double wall for noise control
- Thermal double wall duct for temperature control

Straight double wall duct comes standard with stiffening beads. Double wall duct is fabricated with either Snap Lock or Pittsburgh longitudinal seams. Sealant is available in the seams upon request. Double wall duct is manufactured completely assembled with TDC corners installed. All sizes shall be listed using inside dimensions.

### *Acoustical Double Wall*

Standard acoustical double wall is for noise control. Constructed of a perforated inner shell surrounded by a layer of insulation and covered by a solid outer shell. The perforated inner shell has 3/32" diameter holes staggered at 3/16" on center for a clear area of 23%.

#### **SOLID OUTER SHELL**

| Material                | Thickness     | ASTM      | Type    | Duct        | End Treatment |
|-------------------------|---------------|-----------|---------|-------------|---------------|
| Galvanized              | 26 - 18 gauge | A-653     | G60-G90 | 44½" - 65½" | TDC           |
| Paint Grip24 - 18 gauge | A-653         | A60       | 55½"    | TDC         |               |
| PVS/PVC                 | 24-18 gauge   | A-653     | 4 x 4   | 55½"        | TDC           |
| Aluminum.032 - .040     | B-316         | 3003 H-14 | 44½"    | TDC         |               |
| Stainless Steel         | 24 - 20 gauge | A-240     | 304     | 44½"        | TDC           |

#### **PERFORATED INNER SHELL**

| Material   | Thickness     | ASTM  | Type    | Duct | End Treatment |
|------------|---------------|-------|---------|------|---------------|
| Galvanized | 26 - 18 gauge | A-653 | G60-G90 | 55½" | TDC           |

### *Thermal Double Wall*

Thermal double wall is for temperature control. Constructed of a solid shell surrounded by a layer of insulation and covered by a solid outer shell.

#### **SOLID OUTER AND INNER SHELL**

| Material                | Thickness     | ASTM      | Type    | Duct        | End Treatment |
|-------------------------|---------------|-----------|---------|-------------|---------------|
| Galvanized              | 26 - 18 gauge | A-653     | G60-G90 | 44½" - 65½" | TDC           |
| Paint Grip24 - 18 gauge | A-653         | A60       | 55½"    | TDC         |               |
| PVS/PVC                 | 24-18 gauge   | A-653     | 4 x 4   | 55½"        | TDC           |
| Aluminum.032 - .040     | B-316         | 3003 H-14 | 44½"    | TDC         |               |
| Stainless Steel         | 24 - 20 gauge | A-240     | 304     | 44½"        | TDC           |

### ***Fittings***

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Corken Steel manufactures double wall fittings in most sizes and configurations. All double wall fittings are fabricated with stiffening beads on duct sizes 19" in width and larger, exceeding 10 square feet of unbraced panel. This requirement is applicable to 20 gauge or less in thickness and 3" W.G. or less. Most double wall fittings are fabricated with Pittsburgh seams. Double wall fittings are completely assembled with all accessories installed (TDC corners, vane and rail, etc.)

### ***Turning Vane and Rail***

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Corken Steel utilizes several types of turning vane and rail, recommended for use in square throat elbows and tees. Using turning vane and rail in certain applications can enhance performance of the HVAC duct system. Test data is available upon request.

Maximum unsupported vane length

- 4" single turning vane – 36" maximum length
- 2" double turning vane – 48" maximum length
- 4" double turning vane – 72" maximum length
- 4" acoustical vane – 72" maximum length

When exceeding maximum vane length, vanes can be installed in sections or a tie rod can be tack welded to the face of the turning vane.

### ***Transverse Joint and Intermediate Reinforcement***

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Corken Steel uses Tie Rod Reinforcement: Threaded inserts installed into each end of thin wall (emt) conduit. These are installed internally at both the joint and/or intermediate duct spacing.

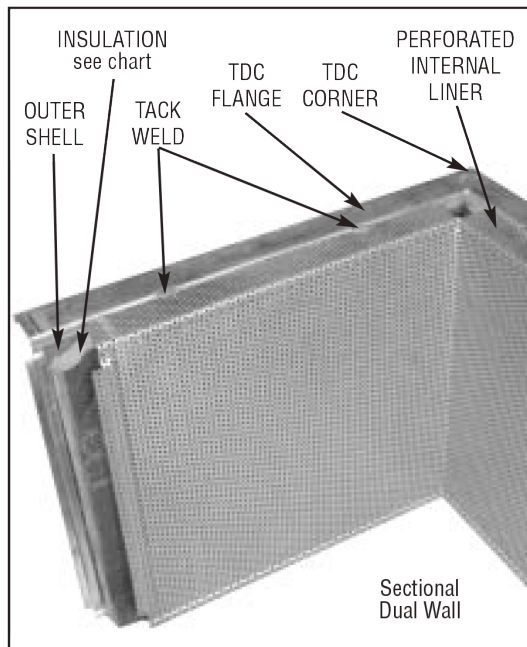
## Insulation

Double wall rectangular duct is a dependable, erosion resistant alternative to lined rectangular duct, providing improved protection for insulation exposed to the airstream. In double wall rectangular duct a metal inner liner ensures that high airflow velocities cannot separate insulation by pulling away from the duct's outer wall and creating erosion or airflow problems.

Duct liner shall be of the specified materials, thickness, and density of the contractor's request. All sizes shall be listed using inside dimensions. Each layer of duct liner shall be attached with a minimum of 90% coverage of adhesive at the liner contact surface area.

Corken Steel constructs each piece with an inner shell (perforated or solid) surrounded by a layer of insulation and covered by a solid outer shell. The insulation is used in both acoustical and thermal duct systems.

Standard insulation is 1" thick with 1½ lb. per cubic foot density. See chart below for specifications. Many other thicknesses and densities are available – Consult factory for additional information.



## SOUND ABSORPTION COEFFICIENTS

(ASTM C 423, Type A Mounting)

1/3 Octave Band Center Frequency (cycles/sec.)

| Type              | 125 | 250 | 500 | 1000 | 2000 | 4000 | NRC |
|-------------------|-----|-----|-----|------|------|------|-----|
| 1" - 1½ # Cu. Ft. | .09 | .31 | .55 | .72  | .86  | .93  | .60 |
| 2" - 1½ # Cu. Ft. | .18 | .58 | .79 | 1.02 | 1.06 | .99  | .85 |
| 1" - 3 # Cu. Ft.  | .09 | .28 | .63 | .86  | .91  | .92  | .65 |

Coefficients determined per ASTM E 795 Type A Mounting

Note: Pressure classifications are based on SMACNA Second Edition 1995

## THERMAL CONDUCTANCE "C" AND RESISTANCE "R"

(ASTM C 177)

| Product           | Mean Temperature 75°F (24°)    |                               |
|-------------------|--------------------------------|-------------------------------|
|                   | Conductance "C" <sup>(1)</sup> | Resistance "R" <sup>(2)</sup> |
| 1" - 1½ # Cu. Ft. | .28 (1.59)                     | 3.6 (.36)                     |
| 2" - 1½ # Cu. Ft. | .14 (.80)                      | 7.1 (1.26)                    |
| 1" - 3 # Cu. Ft.  | .24 (1.36)                     | 4.2 (.73)                     |

<sup>(1)</sup> The lower the value, the better the performance.

<sup>(2)</sup> The higher the value, the better the performance.

$$\begin{array}{ccc} \text{"C" units:} & & \text{"R" units:} \\ \frac{\text{BTU}}{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}} & \left( \frac{\text{W}}{\text{m}^2 \cdot ^\circ\text{C}} \right) & \frac{\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}}{\text{BTU}} \quad \left( \frac{\text{m}^2 \cdot ^\circ\text{C}}{\text{W}} \right) \end{array}$$

## Specification Compliance

SMC standard insulation meets the requirements of the following codes and specifications:

NFPA 90A and NFPA 90B

NAIMA Standard AHC-101

ASTM C 1071 Type 1 Replaces HH-I-545B Type 1