Elbows

Standard & Reducing Elbows are available in any size and degree with optional radius

Typical Standards Shown

30° Gored Elbow (E-2-30)

45° Gored Elbow (E-3-45)

60° Gored Elbow (E-4-60)

90° Gored Elbow (E-5-90)

Dimensions shown are standard. Longer radius or more gore sections are available.
For other than standard, consult factory.
Special Application Elbows for sharp turns, changing diameters & improved airflow

90° Mitered Elbow 2-Piece (E-2-M-90)

Vanes provide smoother airflow with sharp turns

3" to 7" = 1 vane
8" to 24" = 2 vane
For larger sizes consult factory

Die-Formed Elbow (E-1-90)

Die-Formed Elbow (E-1-45)

Reducing Elbow (RE-5-90)

Available in any size and degree with optional radius

Die-formed elbows from 20 gauge are available in both 90° and 45°. Ten standard diameters from 3” to 12” are available. 14” are available on special order.
Tee’s – 90°  

**Plain Tee, 180° Cross Tee & 135° Cross Tee**

**Plain Tee**

(T-1)

Dimensions to be listed in order of A, D

**180° Cross Tee**

(T-2-180)

Dimensions to be listed in order of A, C, D

**135° Cross Tee**

(T-2-135)

Dimensions to be listed in order of A, C, D

Typical radial angle shown. Any angle available.
Double Parallel Tee, 90° 4-Branch Cross & 135° 4-Branch Cross

Dimensions to be listed in order of A, C, D

Double Parallel Tee (T-2-P)

Dimensions to be listed in order of A, C, D, E, F

90° 4-Branch Cross (T-4-90)

Typical radial angle shown. Any angle available.

Dimensions to be listed in order of A, C, D, E, F

135° 4-Branch Cross (T-4-135)

Typical radial angle shown. Any angle available.
Tee’s – 90°

180° 4-Branch Cross Tee, Reducing Tee & 180° Reducing Cross Tee

180° 4 Branch Cross
(T-4-180)

Reducing Tee
(T-1-R)

180° Reducing Cross
(T-2-R-180)

Dimensions to be listed in order of A, C, D, E, F

Dimensions to be listed in order of A, B, D

Dimensions to be listed in order of A, B, C, D

2.5" 2.5" 2.5" D
D + 4"

2.5" 2.5" 2.5" D
D + 4"

2.5" 2.5" 2.5" D
D + 4"

Typical radial angle shown. Any angle available.

Typical radial angle shown. Any angle available.

Typical radial angle shown. Any angle available.
Airflow Tee & Reducing Airflow Tee

Tee’s – 90°

Airflow Tee
(AFT-1)

Dimensions to be listed in order of A, D

Reducing Airflow Tee
(AFT-1-R)

Dimensions to be listed in order of A, B, D

Engineering Note

Recommended for HVAC only.
Close coupling of elbows and branch fittings should be avoided if at all possible. The total pressure loss of two close-coupled fittings will generally be greater than the sum of the individual fitting losses. For example: both the 45° lateral and 45° elbow individually are proved to be low loss fittings. However, when they are joined to form a 90° branch, the combined performance is not as good as a conical tee or the airflow tee. This is a particularly important point to consider because the airflow tee (this page) or conical tee (next page) is less expensive and is more compact than the combination lateral-elbow. For best economy, the designer should use the conical tee or combination tee when low branch losses are important; and the straight 90° tee should be used when a higher loss fitting can be tolerated.
Tee’s – 90°

Conical Tee, Conical Reducing Tee
& Bullhead Tee

Conical Tee
(T-1-C)

Conical Reducing Tee
(T-1-C-R)

Bullhead Tee

Dimensions to be listed in order of A, D

Dimensions to be listed in order of A, B, D

Dimensions to be listed in order of A, B, C
45° Lateral, Tapered Reducing Lateral, 30° Lateral & Saddles

Available in any angle. Standard is 45°

45° Lateral  
(L-1)

Tapered Reducing Lateral  
(Standard)  
(L-1-R)

L = (1.414 x D) + 2

L and O vary with A, B, D (Consult Factory)

2” 1” 2”

Dimensions to be listed in order of A, D

Available in any angle

30° Lateral  
(L-1-30)

Saddles

Available with or without boot

L = (2 x D) + 2

Dimensions to be listed in order of A, D

Dimensions to be listed in order of D, P. Standard boot has 2” perimeter around branch.
### Optional 45° Reducing Lateral, 45° Double Parallel Lateral & Reducing Lateral Cross

#### Available in any angle

**Optional 45° Reducing Lateral**  
(O-L-1-R)

- Dimensions to be listed in order of A, B, D

**45° Double Parallel Lateral**  
(L-2)

- Dimensions to be listed in order of A, C, D

**Reduction Lateral Cross**  
(Full Taper Standard)  
(L-2-R) @ 180°

- Dimensions to be listed in order of A, B, C, D

L and O vary with A, B, C, D (Consult Factory)

---

L = (1.414 x D) + 2  
L = 1.414 x (C + D) + 2
Multi-Branch Laterals (Manifolds)

Available in any angle

How to Order

To order a multi-branch lateral (or manifold), first give the dimensions of A, B, C, D, E, F, G, etc. Then give the branch angle (45° standard) and the radial angles if needed.

Example 1: 12 x 6 x 3 x 4 x 5 x 6 x 7 with 45° branch angles. All branches at radial angle 0°

Example 2: 8 x 6 x 4 x 4 x 4 x 4 with 45° branch angles. Branches C and E at radial angle 0°. Branches D and F at radial angle 180°.

Example 1

Branch angle available in any angle from 30° to 90°

Example 2
Y-Branch or Pant Wye, Reducing Y-Branch, Concentric Reducer & Eccentric Reducer

**Y-Branch or Pant Wye (Y-2)**

Dimensions to be listed in order of A, B

- Available in any degree

**Reducing Y-Branch (Y-2-R)**

Dimensions to be listed in order of A, B, C

- Available in any degree

**Concentric Reducer (C-1-R)**

Any length available.

Dimensions to be listed in order of A, B

- Standard

**Eccentric Reducer (E-C-1-R)**

X varies with A and B. Consult factory.

Dimensions to be listed in order of A, B

- X
Specialty Fittings

Plugs & Caps
Pipe Plug (P-1) fits into pipe
Fitting Cap (P-1-F) fits over fitting

Couplings
Pipe Coupling (C-1) fits into pipe
Fitting Coupling (C-1-F) fits over fitting

Table 17-1 Ball Joint Dimensions

<table>
<thead>
<tr>
<th>D</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Wgt. Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3”</td>
<td>5 3/4</td>
<td>4 3/4</td>
<td>23°</td>
<td>1</td>
</tr>
<tr>
<td>4”</td>
<td>7 1/4</td>
<td>6 1/4</td>
<td>23°</td>
<td>1.75</td>
</tr>
<tr>
<td>5”</td>
<td>9</td>
<td>7 3/4</td>
<td>27°</td>
<td>2.5</td>
</tr>
<tr>
<td>6”</td>
<td>7 1/4</td>
<td>8 1/4</td>
<td>27°</td>
<td>3</td>
</tr>
<tr>
<td>7”</td>
<td>10 1/4</td>
<td>7 1/4</td>
<td>22°</td>
<td>4</td>
</tr>
<tr>
<td>8”</td>
<td>13</td>
<td>11</td>
<td>27°</td>
<td>7</td>
</tr>
<tr>
<td>9”</td>
<td>14 1/4</td>
<td>12</td>
<td>27°</td>
<td>8</td>
</tr>
<tr>
<td>10”</td>
<td>14 1/4</td>
<td>11 1/4</td>
<td>22°</td>
<td>9</td>
</tr>
<tr>
<td>12”</td>
<td>16 1/4</td>
<td>12 1/4</td>
<td>20°</td>
<td>10</td>
</tr>
</tbody>
</table>

Spun steel galvanized ball joints provide flexibility in ducts that serve moving equipment such as cutter heads. The duct can swing through an arc while maintaining exhaust flow. Available in 3” through 12” diameter.

Register Saddle

List dimensions in order of A, B, P.
L is available in any length.
Floor Sweeps

As the leader in the industry, Spiral Manufacturing Co., Inc. does not put doors on the open area of Floor Sweeps for safety reasons. The use of Blast Gates 42˝ above the floor saves severed fingers and back injuries.

### Sizes Available

<table>
<thead>
<tr>
<th>Size</th>
<th>W</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>4˝</td>
<td>10</td>
<td>6</td>
<td>8 (\frac{1}{4})</td>
<td>3 (\frac{1}{2})</td>
</tr>
<tr>
<td>5˝</td>
<td>20</td>
<td>6</td>
<td>8 (\frac{1}{4})</td>
<td>3 (\frac{1}{2})</td>
</tr>
<tr>
<td>6˝</td>
<td>20</td>
<td>6</td>
<td>8 (\frac{1}{4})</td>
<td>3 (\frac{1}{2})</td>
</tr>
</tbody>
</table>

Other sizes are available on request.

Dust Nozzles

Radial Arm Saw hoods along with Chop Saw Hoods are designed to be located behind the sawblade in a fixed position. All standard hoods are made of 18 gauge galvanized steel.

### Sizes Available

<table>
<thead>
<tr>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>E</th>
<th>F</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>4˝</td>
<td>4</td>
<td>8</td>
<td>14 (\frac{1}{2})</td>
<td>5 (\frac{1}{2})</td>
<td>1 (\frac{1}{2})</td>
</tr>
<tr>
<td>5˝</td>
<td>5</td>
<td>8</td>
<td>14 (\frac{1}{2})</td>
<td>6</td>
<td>1 (\frac{1}{2})</td>
</tr>
<tr>
<td>6˝</td>
<td>6</td>
<td>10</td>
<td>16 (\frac{1}{2})</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>

Other sizes are available on request.

Bellmouths

Bellmouth fittings are designed to the highest engineering standards for maximum performance. They are used as a take-off for a fast, solid, and highly efficient connection. This conversion fitting, from a flat plenum or duct into Spiral pipe greatly reduces turbulence and noise. The pressure drop characteristics are superior to any other design.

### Standard Radius Bellmouth

<table>
<thead>
<tr>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>R</th>
<th>Wt. Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3˝</td>
<td>8</td>
<td>2.5</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>4˝</td>
<td>9</td>
<td>2.5</td>
<td>1.5</td>
<td>1.3</td>
</tr>
<tr>
<td>5˝</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>6˝</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>7˝</td>
<td>13</td>
<td>3</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>8˝</td>
<td>14</td>
<td>3</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>9˝</td>
<td>15</td>
<td>3</td>
<td>2</td>
<td>2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>A</th>
<th>B</th>
<th>R</th>
<th>Wt. Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10˝</td>
<td>16</td>
<td>3</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td>11˝</td>
<td>19</td>
<td>4</td>
<td>3</td>
<td>3.6</td>
</tr>
<tr>
<td>12˝</td>
<td>20</td>
<td>4</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>14˝</td>
<td>22</td>
<td>4</td>
<td>3</td>
<td>4.4</td>
</tr>
<tr>
<td>16˝</td>
<td>26</td>
<td>5</td>
<td>4</td>
<td>6.5</td>
</tr>
<tr>
<td>18˝</td>
<td>28</td>
<td>5</td>
<td>4</td>
<td>7.1</td>
</tr>
<tr>
<td>20˝</td>
<td>30</td>
<td>5</td>
<td>4</td>
<td>7.3</td>
</tr>
</tbody>
</table>

See page 19 for more hoods.
Semi-circular flaps (butterfly damper) cover the exhaust stack when fan is off. When fan is on, flaps are forced out of the way to provide a clear path for air movement. The built-in gutter system is designed to prevent rain and snow from entering the stack. Made from galvanized Spiral pipe for strength and durability; available in most sizes. Pre-assembled for immediate installation. Available with or without Vanstone flange. See pages 24 and 25.
Rectangular to Round (Standard)

Shown with formed flange out

When ordering with flange, list dimensions in order of A¹, A², A³, A⁴, B, X.
When ordering without flange, list dimensions in order of A¹, A³, B, X.

Rectangular to Round (Offset)

Shown with offset round, rectangular end, and raw (plain end) T¹

When ordering with flange and offset round, list dimensions in order of A¹, A², A³, A⁴, B, X, B¹, B².
When ordering without flange, list dimensions in order of A¹, A³, B, X, B¹, B², T¹.

For Offset Square to Round a print is required.
Rectangular duct is available in almost any size or shape.
Ends are available in:
- Raw (plain end) — $T^1$ & $T^2$ remain straight
- Formed Flange — $T^1$ & $T^2$ are turned out
- Angle Iron Flange — 1”, 1 1/4”, 1 1/2” & 2”
- Ductmate 35 and more

No job is too large or too small for Spiral Manufacturing; and no matter what size your job, you can expect the highest quality and the best service.

Angle iron plain or punched (optional)

List dimensions in order of $A$, $B$, $R$, $L$, $T^1$, $T^2$
Duct liner absorbs equipment and air rush noises over a broad spectrum of sound. Glass fiber construction traps noise and dissipates it within the fiber matrix. Air is delivered, not noise. It also performs as a thermal insulation to conserve energy.

Performance Characteristics
(Sound Absorption)

DENSITY lbs. per cu. ft. Thickness | Noise Reduction Coefficients at Frequencies |
<table>
<thead>
<tr>
<th></th>
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<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.5</td>
<td>.17</td>
<td>.52</td>
<td>.57</td>
<td>.69</td>
<td>.82</td>
<td>.86</td>
</tr>
<tr>
<td>.19</td>
<td>.54</td>
<td>.61</td>
<td>.74</td>
<td>.86</td>
<td>.90</td>
<td>.70</td>
</tr>
<tr>
<td>.23</td>
<td>.62</td>
<td>.74</td>
<td>.82</td>
<td>.87</td>
<td>.88</td>
<td>.87</td>
</tr>
<tr>
<td>.25</td>
<td>.64</td>
<td>.78</td>
<td>.87</td>
<td>.94</td>
<td>.92</td>
<td>.80</td>
</tr>
<tr>
<td>.32</td>
<td>.70</td>
<td>.83</td>
<td>.91</td>
<td>.92</td>
<td>.91</td>
<td>.85</td>
</tr>
</tbody>
</table>

Application Note
Zinc on galvanized pipe melts at 788°F. The Manual of Industrial Ventilation Recommended Practice, 23rd Edition, suggests that operating temperatures not exceed 400°F. Standard duct liner maximum temperature rating 250°F. R-value of duct liner per inch of thickness = 3.6. Aluminized Type 1 - 1250°F.

Perforated Section
(Actual Size)

Performance Chacteristics
(Sound Absorption)

DENSITY lbs. per cu. ft. Thickness | Noise Reduction Coefficients at Frequencies |
<table>
<thead>
<tr>
<th></th>
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<tr>
<td>1.5</td>
<td>.17</td>
<td>.52</td>
<td>.57</td>
<td>.69</td>
<td>.82</td>
<td>.86</td>
</tr>
<tr>
<td>.19</td>
<td>.54</td>
<td>.61</td>
<td>.74</td>
<td>.86</td>
<td>.90</td>
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<td>.23</td>
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<td>.74</td>
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<td>.87</td>
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<tr>
<td>.25</td>
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<td>.78</td>
<td>.87</td>
<td>.94</td>
<td>.92</td>
<td>.80</td>
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<tr>
<td>.32</td>
<td>.70</td>
<td>.83</td>
<td>.91</td>
<td>.92</td>
<td>.91</td>
<td>.85</td>
</tr>
</tbody>
</table>

All values are measured at 75°F mean temperature. K factor is expressed as Btu/in./ft²/°F. R is the reciprocal of K.
Dual Wall 60° & 90° Elbows, Dual Wall Plain Tee & Dual Wall Reducing Tee.

Dual Wall 60° Elbow (DW-E-4-60)

All 90° elbows are of 5 piece construction, and all 45° elbows are of 3 piece construction. Elbow centerline radius is not less than \(1\frac{1}{2}\) times the inside duct diameter.

When ordering, list dimensions in order of: \(D^1, D^2\)

Dual Wall 90° Elbow (DW-E-5-90)

When ordering, list dimensions in order of: \(D^1, D^2\)

Dual Wall Plain Tee (DW-T-1)

When ordering, list dimensions in order of: \(A^1, A^2, D^1, D^2\)

Dual Wall Reducing Tee (DW-T-1-R)

When ordering, list dimensions in order of: \(A^1, A^2, B^1, B^2, D^1, D^2\)

All fittings in this catalog are available in dual wall construction. See examples above.