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Nomenclature Definitions

Nominal inside diameter (duct size) ......................... ØD
Nominal outside diameter (fitting size) .................... Ød1, Ød2, Ød3, Ød4
Material thickness (gauge) ................................. t
Installed height .................................................. H
Center line radius ............................................. r_c
Installed length ................................................ L
Fitting slip dimension ........................................ e

All measurements in inches (in or ") unless otherwise noted
All angles in degrees (°)
# Linx Smart Part
## Nomenclature / Abbreviations

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>Designation And Description</th>
<th>PRODUCT</th>
<th>Designation And Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DUCT</td>
<td>SC = Corrugated Single Wall Round Spiral Duct &lt;br&gt; SN = Non corrugated Single Wall Round Spiral Duct</td>
<td>ELBOWS</td>
<td>E = 1.5 Radius Elbow Stamped Or With 3 - 5 Gores &lt;br&gt; ER = 1.0 Radius Elbow Stamped Or With 3 - 4 Gores</td>
</tr>
<tr>
<td>REDUCERS</td>
<td>RC = Reducer Concentric Male &lt;br&gt; RCF = Reducer Concentric Female &lt;br&gt; RE = Reducer Eccentric Male &lt;br&gt; REF = Reducer Eccentric Female</td>
<td>END CAPS</td>
<td>ED = End Duct &lt;br&gt; EF = End Fitting</td>
</tr>
<tr>
<td>COUPLINGS</td>
<td>CD = Coupling Duct &lt;br&gt; CF = Coupling Fitting</td>
<td>TAKE-OFFS</td>
<td>PT = Straight Take Off &lt;br&gt; PR = Radius Take Off</td>
</tr>
<tr>
<td>TEES</td>
<td>TBH = Bull Head Tee &lt;br&gt; TRBH = Reducing Bull Head Tee &lt;br&gt; TB = Tee With Boot Tap &lt;br&gt; TRB = Reducing Tee With Boot Tap &lt;br&gt; TC = Tee With Conical Tap &lt;br&gt; TRC = Reducing Tee With Conical Tap &lt;br&gt; TS = Straight Tee &lt;br&gt; TRS = Reducing Straight Tee</td>
<td>CROSSING TEES</td>
<td>XB = Boot Style Crossing Tee &lt;br&gt; XRB = Reducing Boot Style Crossing Tee &lt;br&gt; XC = Conical Crossing Tee &lt;br&gt; XRC = Reducing Conical Crossing Tee &lt;br&gt; XS = Crossing Tee &lt;br&gt; XRS = Reducing Crossing Tee &lt;br&gt; XV = Lateral Crossing Tee &lt;br&gt; XRV = Reducing Lateral Crossing Tee</td>
</tr>
<tr>
<td>LATERAL TEES</td>
<td>TV = Tee With Lateral Tap &lt;br&gt; TRV = Reducing Tee With Lateral Tap</td>
<td>Y-BRANCH</td>
<td>Y = Y Branch</td>
</tr>
<tr>
<td>TAPS</td>
<td>PB = Boot Tap &lt;br&gt; PBF = Boot Tap Flat &lt;br&gt; PS = Press Tap &lt;br&gt; PV = Lateral Tap &lt;br&gt; PVF = Lateral Tap Flat &lt;br&gt; PC = Conical Tap &lt;br&gt; PCF = Conical Tap Flat</td>
<td>DAMPERS</td>
<td>DS = Damper &lt;br&gt; DT = Damper &lt;br&gt; DSIL = Combination Damper with Take-Off &lt;br&gt; DSILR = Combination Damper with Take-Off &lt;br&gt; DSPS = Combination Damper with Saddle Tap</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONNECTION</th>
<th>DIAMETER (INCH)</th>
<th>PART DESIGNATION</th>
<th>MATERIAL</th>
<th>GAUGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>Diameter</td>
<td>See Chart Above</td>
<td>G6 = G60 Galvanized &lt;br&gt; G9 = G90 Galvanized &lt;br&gt; S4 = S304 Stainless &lt;br&gt; S6 = S316 Stainless &lt;br&gt; GN = Galvanneal / Paint Grip &lt;br&gt; AL = Aluminum</td>
<td>Gauge</td>
</tr>
<tr>
<td></td>
<td>Eg = U</td>
<td>Eg = 16</td>
<td>Eg = CD</td>
<td>Eg = G6</td>
</tr>
<tr>
<td></td>
<td>Eg = 24</td>
<td></td>
<td></td>
<td>Eg = 24</td>
</tr>
</tbody>
</table>

= Linx Safe 16” Diameter Coupling Duct In Galvanized 24 Gauge
Linx Safe Connection

Benefits of the Linx Safe Duct System

- A complete line of self-sealing spiral duct and fittings
- Factory installed gasket - no loose parts
- Fast and easy installation
- Environmentally friendly, no harmful sealers required
- Installation not contingent on weather
- Performance rated from -20°F to +212°F
- Double lipped gasket minimizes the risk of leakage in the event of damage
- Meets SMACNA’s Leakage Class 3
- Gasket U.L. classified rating (Flame Spread - 0 / Smoke Developed - 0) in accordance with ASTM standard E84 and ANSI / UL 723
- Rolled over edges for easier installation, reduces risk of injury and adds strength
- Adjustability - fittings can be rotated 360º during installation and still maintain the seal’s integrity

The Linx Safe self-sealing duct system is based on a U-profile, EPDM rubber gasket. This gasket is located in a groove at the end of the fitting and is securely attached by a stainless steel band. This design ensures that the rubber gasket is always held in the correct position.

When the fitting is inserted into the spiral duct, the gasket folds back forming a seal against the inside of the spiral duct eliminating the need for any duct sealer.

In order to achieve optimum sealing for all diameters, various gasket sizes are used as shown in the table below.

The standard Linx Safe gasket is made from a material resistant to ozone, UV rays, and temperature fluctuations. A silicone gasket for special applications is also available. The standard Linx Safe gasket is rated for temperatures from -20°F to +212°F (silicone gasket rated for temperatures from -94°F to +302°F).
Duct System Leakage Classification

The graph below represents a selected series of leakage classes as defined by the formula \( C_L = F/P^{0.65} \). The formula defines leakage class as the relationship between leakage rate, duct surface area, and pressure.

Since the calculation of leakage class is based on several relevant factors, leakage class is a comprehensive method of assigning allowable leakage rates. This enables the designer to address all major system factors by simply assigning a leakage class.

Linx Safe meets ASHRAE's Leakage Class 3 requirements without the use of any duct sealants.

\[ F = \text{Leakage rate per unit of duct surface (cfm/100 sq. ft.)} \]
\[ C_L = \text{Leakage Class} \]
\[ P = \text{Static pressure (lwg)} \]
Linx Safe Assembly Instructions

Preparations For Assembly

• Check that all ductwork to be used in the system is Linx Safe and is undamaged. All Linx Safe fittings must be used with calibrated spiral duct certified by Linx Industries.

• Do not use any ductwork that has been damaged in such a way that it may jeopardize the air tightness or structural strength of the system.

• Store all ductwork in a well organized and weather proof storage area to minimize the risk of damage.

• Cut all spiral duct at right angles and carefully remove any burrs from the cut edges. Installation is easier and the risk of damaging the gasket is reduced if there are no burrs.

Assembly

1. Start by inserting the turned-over edge of the fitting into the spiral duct (figure 1).

2. Check that the first lip of the gasket is in contact with the edge of the spiral duct all the way around and sticks straight out so that the lip is not twisted in one direction or the other.

3. Push the end of the fitting into the spiral duct. Turning the fitting slightly aids insertion. Removal, if necessary, is also aided by turning (figure 2).

4. Secure the fitting in the spiral duct using self-tapping screws or airtight pop rivets. Quantities and sizes to be used are shown in the table below. Do not use more fasteners than specified.

5. Fasteners should be positioned 1/2 inch from the bead stop to prevent damage to the gasket (figure 3).

<table>
<thead>
<tr>
<th>Spiral Pipe Dia. (in)</th>
<th>Screw Dia. (in)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5</td>
<td>1/8</td>
<td>2</td>
</tr>
<tr>
<td>6-10</td>
<td>1/8</td>
<td>3</td>
</tr>
<tr>
<td>12-24</td>
<td>1/8</td>
<td>4</td>
</tr>
<tr>
<td>26-50</td>
<td>1/8</td>
<td>6</td>
</tr>
<tr>
<td>52-60</td>
<td>1/8</td>
<td>8</td>
</tr>
</tbody>
</table>

6. Placement of the fastening screws should be opposite from one another evenly spaced around the circumference, much like the procedure for tightening lug nuts on a tire. Start where the distance between the spiral duct and the fitting is largest (figure 4).

Carefully seal any holes left by measurements, removed screws, pop rivets, etc.
Rectangular to Round Conversion

\[ D_e = 1.30 \left( \frac{ab^{0.625}}{a+b}^{0.250} \right) \]

- \( D_e \): round equivalent of rectangular duct for equal friction and capacity (inch)
- \( a \): length of one side of rectangular duct (inch)
- \( b \): length of adjacent side of rectangular duct (inch)

Source: 2017 ASHRAE Fundamentals, p. 21.8

Example
Convert rectangular duct 22" x 12" to equivalent round
\[ a = 22, \ b = 12; \text{ from above table} \]
\[ D_e = 17.6, \ \text{use 18" diameter} \]
## Specifications

### MATERIAL

<table>
<thead>
<tr>
<th>Material</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galvanized steel</td>
<td>conforming to ASTM standards A653 and A924</td>
</tr>
<tr>
<td>Stainless steel type 304L</td>
<td>conforming to ASTM standard A240*</td>
</tr>
<tr>
<td>Stainless steel type 316L</td>
<td>conforming to ASTM standard A240*</td>
</tr>
<tr>
<td>Aluminum 3003-H14</td>
<td>conforming to ASTM standard 8209*</td>
</tr>
</tbody>
</table>

### SURFACE FINISH

<table>
<thead>
<tr>
<th>Material</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galvanized steel</td>
<td>(galvanized in accordance with latest SMACNA HVAC Duct Construction Standards)</td>
</tr>
<tr>
<td>Stainless steel type 304L</td>
<td>- 2B Mill Finish (#4 finish available upon request)</td>
</tr>
<tr>
<td>Stainless steel type 316L</td>
<td>- 2B Mill Finish (#4 finish available upon request)</td>
</tr>
<tr>
<td>ProCoat™ (outside only)</td>
<td>or ProCoat™ Plus (inside and outside) on duct and/or fittings</td>
</tr>
<tr>
<td></td>
<td>· Standard color = white (additional color options available)</td>
</tr>
<tr>
<td></td>
<td>· Average coating thickness of 4 mils (0.004 inch)</td>
</tr>
<tr>
<td></td>
<td>· ProCoat™ to meet or exceed 500 hour Salt Spray Test per ASTM B117</td>
</tr>
<tr>
<td></td>
<td>· ProCoat™ Plus to meet or exceed 3,000 hour Salt Spray Test per ASTM B117</td>
</tr>
<tr>
<td>Antimicrobial</td>
<td>Linx AM™ is EPA registered for HVAC applications as a water based microbiostatic formula designed for control growth of microorganisms.</td>
</tr>
</tbody>
</table>

### THICKNESS

Material thickness constructed from galvanized steel in accordance with the latest SMACNA’s HVAC Duct Construction Standards for +10" water gauge pressure. **Consult factory for negative pressure systems.**

### CONSTRUCTION

A. Duct is of spiral lock seam construction with a mechanically formed seam locking indentation evenly spaced along the spiral seam. All spiral duct 8" diameter and larger shall incorporate multiple corrugations between spiral seams.

B. Fittings shall be manufactured using one or more of the following construction methods:

- Overlapped edges stitch welded along the entire length of the fitting
- Standing seam gore locked and internally sealed
- Button punched and internally sealed
- Elbows 3" through 12" diameter will be die stamped and continuously stitch welded.

### CONNECTIONS

Fitting ends shall be sized to slip-fit into spiral duct of the same nominal size. Fitting to fitting connections shall be made by use of duct size “CF” couplings. Duct to duct connections require fitting size “CD” couplings.

### JOINT SEALING

Fitting ends are equipped with factory installed, double-lipped, U-profile gaskets. When installed in spiral duct per manufacturer’s installation instructions, the gasket creates a seal against the interior of the spiral duct. The system tightness shall be factory warranted to meet SMACNA’s Leakage Class 3 performance.

If no gasket is used, all joints must be sealed by the installer during the installation process. The type of sealant used as well as the method and level of application should be as directed by the specification and in accordance with the sealant manufacturer’s published installation instructions.

### GASKET

The gasket shall be EPDM rubber. The gasket is located in a groove at the end of the fitting and securely fastened by means of a stainless steel band. In order to achieve optimum sealing for all diameters, different size gaskets shall be used. The gasket shall be classified by Underwriters Laboratories for flame spread and smoke developed 0 / 0 in accordance with ASTM E84-91a. A silicone gasket meeting the same performance may be offered by duct manufacturer for special applications.
### Tolerances for Spiral Duct

<table>
<thead>
<tr>
<th>Ø D (inch)</th>
<th>Ø D Tolerance (inch) min.-max.</th>
<th>t* (gauge)</th>
<th>t** (gauge)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2.950 - 2.986</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>4</td>
<td>3.950 - 3.986</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>5</td>
<td>4.950 - 4.986</td>
<td>28</td>
<td>28</td>
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<tr>
<td>6</td>
<td>5.950 - 5.986</td>
<td>28</td>
<td>28</td>
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<tr>
<td>7</td>
<td>6.950 - 6.986</td>
<td>28</td>
<td>28</td>
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<tr>
<td>8</td>
<td>7.950 - 7.986</td>
<td>28</td>
<td>28</td>
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<tr>
<td>9</td>
<td>8.950 - 8.986</td>
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<tr>
<td>10</td>
<td>9.950 - 9.986</td>
<td>28</td>
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<td>10.950 - 10.986</td>
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<td>12</td>
<td>11.950 - 11.986</td>
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<tr>
<td>13</td>
<td>12.950 - 13.969</td>
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<td>14</td>
<td>15.936 - 15.969</td>
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<td>15</td>
<td>16.936 - 16.969</td>
<td>28</td>
<td>28</td>
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<tr>
<td>16</td>
<td>18.936 - 18.972</td>
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<td>17</td>
<td>19.938 - 19.972</td>
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<td>18</td>
<td>21.938 - 21.972</td>
<td>26</td>
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<tr>
<td>19</td>
<td>23.938 - 23.976</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>20</td>
<td>25.936 - 25.976</td>
<td>26</td>
<td>26</td>
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<tr>
<td>21</td>
<td>27.934 - 27.976</td>
<td>24</td>
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<tr>
<td>22</td>
<td>29.924 - 29.969</td>
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<td>31.924 - 31.969</td>
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<td>33.924 - 33.969</td>
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<td>35.924 - 35.988</td>
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<td>26</td>
<td>37.912 - 37.976</td>
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<td>45.912 - 45.986</td>
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<td>31</td>
<td>47.912 - 47.988</td>
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<td>32</td>
<td>49.912 - 49.988</td>
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<td>33</td>
<td>51.913 - 51.992</td>
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<td>53.913 - 53.992</td>
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<td>57.909 - 57.992</td>
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<td>37</td>
<td>59.909 - 59.992</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>38</td>
<td>61.882 - 61.909</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

** In accordance with the latest SMACNA HVAC Duct Construction Standards for +10% wg

** Linx Industries Manufacturing Standard

*** “-----” = Not currently available

### Weight Tolerance ±10%

### Thickness Tolerance ±10%

### Angular Tolerance

### Surface/Finish

Die stamped products of G90 construction.

Stainless steel fittings provided with a 2B mill finish.

Coated products have a minimum surface hardness of 2H when tested per ASTM D33-69-92A with an average thickness of 4 mils. ProCoat™ (OD only) or ProCoat™ Plus (ID & OD) coated duct.

---

**Fitting Dimension For Flange Connections**

Our products are designed with a male/female slip connections. For Linx Safe Connections, refer to the e-dimension listed in the chart above.

<table>
<thead>
<tr>
<th>Factory-applied Flange</th>
<th>Collar Length</th>
<th>Make-up Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>3&quot;</td>
<td>3&quot; + flange thickness</td>
<td></td>
</tr>
</tbody>
</table>

---

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**Spiral Duct**

**SC / SN**  
Old Designation | SR / SRNC

**Description**
- corrugated spiral lock seam duct
  - SMACNA RL-1 spiral seam
  - evenly spaced integral seam locking feature
  - multiple corrugations on all duct 8” - 60” all other diameters available upon request
  - standard lengths: 120” built in accordance with the latest SMACNA HVAC Duct Construction Standard for +10 iwg
  - available lengths:
    - G6, G9, and GN - 12” - 240”
    - S4 and S6 - 12” - 240”
    - AL - 12” - 120”

- non corrugated spiral lock seam duct
  - SMACNA RL-1 spiral seam
  - evenly spaced integral seam locking feature
  - available in diameters 3” - 60” all other diameters available upon request
  - standard lengths: 120” built in accordance with the latest SMACNA HVAC Duct Construction Standard for +10 iwg
  - available lengths:
    - G6, G9, and GN - 12” - 240”
    - S4 and S6 - 12” - 240”
    - AL - 12” - 120”

<table>
<thead>
<tr>
<th>Ød</th>
<th>Length</th>
<th>Material</th>
</tr>
</thead>
</table>
| 8” - 60” | SC = Spiral Pipe Corrugated  
SN = Spiral Pipe Non-corrugated | 12” - 240”  
AL Only - 12” - 120” |
| 3” - 60” | G6 = Galvanized  
G9 = G90 Galvanized  
S4 = S304 Stainless  
S6 = S316 Stainless  
GN = Galvanneal / Paint Grip  
AL = Aluminum |  |

Smart Part Number: 16SC120G9
Elbows

Description
1.5” radius 90° elbow

- die stamped
- continuous stitch welded
- rolled edges
- galvanized steel only
- available in diameters 3”- 12”
  note: 11” diameter is fabricated

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>16</td>
<td>E = Elbow</td>
<td>90</td>
</tr>
</tbody>
</table>

Smart Part Number: U16E90

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**Elbows**

1.0” radius 90° elbow

- die stamped
- continuous stitch welded
- rolled edges
- **galvanized steel only**
- available in diameters 3” - 12”
  note: 11” diameter is fabricated

**Description**

\[ r_c = 1.0 \times d_1 \]
\[ \text{\(d_1\)} \]

***ER 90***

Old Designations | BU / BFU

---

**Description**

1.0” radius 90° elbow

- 4-piece gored
- internally sealed
- available in diameters 3” - 48”
  note: ER 90 elbows 50” diameter and larger supplied as two ER 45 elbows and a CF coupling

\[ r_c = 1 \times d_1 \]
\[ \text{\(d_1\)} \]

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>(\text{(d_1)})</th>
<th>Designation</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>3” - 12” = Stamped</td>
<td>ER = Elbow</td>
<td>90</td>
</tr>
<tr>
<td>3” - 48” = Gored</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: **U16ER90**
**Elbows**

**Description**

1.0” radius 60° elbow

- die stamped
- continuous stitch welded
- rolled edges
- **galvanized steel only**
- available in diameters 3” - 12”
  note: 11” diameter is fabricated

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>3” - 12” = Stamped</td>
<td>3” - 60” = Gored</td>
<td>60</td>
</tr>
</tbody>
</table>

**Smart Part Number:** U16ER60
Elbows

Description
1.5” radius 45° elbow

- die stamped
- continuous stitch welded
- rolled edges
- galvanized steel only
- available in diameters 3” - 12”
  note: 11” diameter is fabricated

Description
1.5” radius 45° elbow

- 3-piece gored
- internally sealed
- available in diameters 3” - 60”

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>3” - 12” = Stamped 3” - 60” = Gored</td>
<td>E = Elbow</td>
<td>45</td>
</tr>
</tbody>
</table>

Smart Part Number: U16E45
Elbows

Description
1.0” radius 45° elbow
- die stamped
- continuous stitch welded
- rolled edges
- **galvanized steel only**
- available in diameters 3”- 12”
  note: 11” diameter is fabricated

Description
1.0” radius 45° elbow
- 3-piece gored
- internally sealed
- available in diameters 3”- 60”

Order Example
- **Connection**: Ød1
- **Designation**: 3” - 12” = Stamped
  3” - 60” = Gored
- **Angle**: ER = Elbow
  45

**Smart Part Number**: U16ER45
### Elbows

**Description**

1.0” radius 30° elbow

- die stamped
- continuous stitch welded
- rolled edges
- **galvanized steel only**
- available in diameters 3" - 12"
  note: 11" diameter is fabricated

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>3” - 12” = Stamped</td>
<td>ER = Elbow</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>3” - 60” = Gored</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: **U16ER30**

---

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Elbows

1.0” radius 15° elbow

- die stamped
- continuous stitch welded
- rolled edges
- galvanized steel only
- available in diameters 3” - 12”
  note: 11” diameter is fabricated

\[ r_c = 1 \times d_1 \]
\[ \theta d_1 \]

1.0” radius 15° elbow

- 2-piece gored
- internally sealed
- available in diameters 3” - 60”

\[ r_c = 1 \times d_1 \]
\[ \theta d_1 \]

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>3” - 12” = Stamped</td>
<td>ER = Elbow</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3” - 60” = Gored</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: U16ER15
Elbows

**BM / BMV**

Old Designations | BMU / BMVU

---

**Description**

**mitered elbow**

- rolled edge
- 2" standard throat length
- available in diameters 4" - 60"

**Description**

**mitered elbow with vanes**

- rolled edge
- 2" standard throat length
- turning vanes evenly spaced
- available in diameters 4" - 60"
- number of vanes vary by diameter
  - Ø 4"-10" = 2 vanes
  - Ø 12"-14" = 3 vanes
  - Ø 16"-20" = 4 vanes
  - Ø 22"-60" = 5 vanes

---

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Dia (Inch)</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>4&quot; - 60&quot;</td>
<td>BM = Mitered Elbow</td>
</tr>
<tr>
<td>U</td>
<td>16</td>
<td>BMV = Mitered with vanes</td>
</tr>
</tbody>
</table>

**Smart Part Number:** U16BM

---

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Reducers

Concentric Reducer
- Galvanized construction only

**Description**

**Dimension (die stamped)**

<table>
<thead>
<tr>
<th>Ød1</th>
<th>Ød2</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>inch</td>
<td>inch</td>
<td>inch</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>⅜</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>⅜</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>⅜</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>⅜</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>⅜</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>⅜</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>⅜</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>1⅛</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>2⅛</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>1⅛</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>⅜</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
<td>⅜</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>1⅛</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>2⅛</td>
</tr>
<tr>
<td>10</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>8</td>
<td>1⅛</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>⅜</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>2⅛</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>1⅛</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>12</td>
<td>1⅛</td>
</tr>
</tbody>
</table>

**Order Example**

Connection | Ød1 / Ød2 | Designation | Ød2 |
--|--|--|--|
U = Safe | Diameter | RC = Concentric Reducer Male | RCF = Concentric Reducer Female |
3” - 12” | | | |
U | 14 | RC | 12 |

Smart Part Number: U14RC12
Reducers

**RC / RCF**

Old Designations | RCLU / RCLFU

---

**Description**

fabricated concentric reducer

- \( L_1 = (\Phi d_1 - \Phi d_2)^* \)
  - \((^*)\) minimum 4"

- \( \Phi D \) end slips onto fitting end
- \( L_1 = (\Phi D - \Phi d_2)^* + e \) dimension (page 11)
  - \((^*)\) minimum 4"

---

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1 / ØD</th>
<th>Ød2</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>Diameter</td>
<td>RC = Concentric Reducer</td>
<td>RCF = Concentric Reducer Female</td>
</tr>
<tr>
<td>U</td>
<td>16</td>
<td>RC</td>
<td>Diameter</td>
</tr>
</tbody>
</table>

Smart Part Number: **U16RC14**

---

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Reducers

Description
fabricated eccentric reducer

- \( L_1 = (\Omega d_1 - \Omega d_2)^* \)
  
  (\( * \)) minimum 4"

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød / ØD</th>
<th>Designation</th>
<th>Ød2</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>Safe</td>
<td>RE = Eccentric Reducer</td>
<td></td>
</tr>
<tr>
<td>RC</td>
<td>16</td>
<td>REF = Eccentric Reducer Female</td>
<td>14</td>
</tr>
</tbody>
</table>

Smart Part Number: U16RC14

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Description

45° boot-style tap

- installed on flat side of duct or plenum

Dimensions

If $\varnothing d3 \leq 8", H = 4"
If $\varnothing d3 = 9"-14", H = 7"
If $\varnothing d3 = 15"-26", H = 10"
If $\varnothing d3 = 27"-46", H = 13"
If $\varnothing d3 = 47"-60", H = 16$

Order Example

Connection  $\varnothing d3$  Designation

<table>
<thead>
<tr>
<th>U</th>
<th>Fitting Diameter</th>
<th>PBF = Boot-style tap</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: U14PBF

Description

45° combination boot-style saddle tap

Dimensions

If $\varnothing d3 \leq 8", H = 4"
If $\varnothing d3 = 9"-14", H = 7"
If $\varnothing d3 = 15"-26", H = 10"
If $\varnothing d3 = 27"-46", H = 13"
If $\varnothing d3 = 47"-60", H = 16$

Order Example

Connection  $\varnothing d3$  Designation  $\varnothing D$

<table>
<thead>
<tr>
<th>U</th>
<th>Fitting Diameter</th>
<th>PB = Combination boot-style saddle tap</th>
<th>Duct Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>16</td>
<td>PB00</td>
<td>00</td>
</tr>
</tbody>
</table>

Smart Part Number: U16PB00
### Description

**Pressed Saddle Tap**
- radius entry
- limited to galvanized steel only
- available in Ød3 or tap diameters 3"-16", exceptions listed below

**Fabricated Saddle Tap**
- sizes listed below
- \( X = 1" \)

### Pressed Saddle Taps - Ød3 (inch)

<table>
<thead>
<tr>
<th>ØD (inch)</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>6</td>
<td>x</td>
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<td>7</td>
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<tr>
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<tr>
<td>14</td>
<td>x</td>
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<td>x</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>ØD3</th>
<th>Designation</th>
<th>ØD</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>Diameter</td>
<td>PS = Saddle tap</td>
<td>Diameter</td>
</tr>
</tbody>
</table>

Smart Part Number: **U3PS7**
Taps

PV45 / PC
Old Designations | PSVU / PSCU

**Description**
fabricated 45° lateral tap for round

- H = 2.5"
- special order: 15°, 30°, 60°
  i.e. for a 15° U12PV1520

**Description**
conical saddle tap

- H = 6"
- L = Ød3 + 2"

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød3</th>
<th>Designation</th>
<th>ØD</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>22</td>
<td>PV45 = 45° Lateral Tap Round</td>
<td>32</td>
</tr>
<tr>
<td>PC = Conical Saddle Tap</td>
<td></td>
<td>Duct Diameter</td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: **U22PV32**
Taps

PVF45 / PCF

Old Designations | PSVF / CTFU

Description
fabricated 45° lateral tap for flat surface

- H = 2.5"
- special order: 15°, 30°, 60°
i.e. for a 15° U12PVF1520

Description
conical tap for flat surface

- H = 6"
- L = Ød3 + 2"
- flat lip = ¾" - 5/8" depending on diameter

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød3</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>Diameter</td>
<td>PVF45 = 45° Lateral Tap Flat</td>
</tr>
<tr>
<td>PCF = Conical Saddle Tap Flat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: U12PVF45
Tees

Description
bullhead tee

- \( L = \varnothing d1 + 6" \)

TBHV (with turning vanes) shown below.

Description
bullhead reducing tee

- \( L = \varnothing d1 + 6" \)
- \( L1 = (\varnothing d1 - \varnothing d3)^* \)
- \( L2 = (\varnothing d1 - \varnothing d2)^* \)

( * ) minimum 4"

TRBHV (with turning vanes) shown below.
### Tees

#### Description

45° boot-style tee

- assembled with PB tap
- \( \Omega d3 \leq \Omega d1 \) diameter
- \( L2 = \Omega d3 + H2 + 4" \)
- If \( \Omega d3 \leq 8" \), \( H2 = 4" \),
  - If \( \Omega d3 = 9-14" \), \( H2 = 7" \),
  - If \( \Omega d3 = 15-26" \), \( H2 = 10" \),
  - If \( \Omega d3 = 27-46" \), \( H2 = 13" \), and
  - If \( \Omega d3 = 47-60" \), \( H2 = 16" \)

#### Description

45° boot-style tee with reducer

- assembled with PB tap
- \( \Omega d3 \leq \Omega d1 \) diameter
- \( L2 = (\Omega d3 + H2 + 4") + (\Omega d1 - \Omega d2)" \)
- If \( \Omega d3 \leq 8" \), \( H2 = 4" \),
  - If \( \Omega d3 = 9-14" \), \( H2 = 7" \),
  - If \( \Omega d3 = 15-26" \), \( H2 = 10" \),
  - If \( \Omega d3 = 27-46" \), \( H2 = 13" \), and
  - If \( \Omega d3 = 47-60" \), \( H2 = 16" \)

\(( * ) \) minimum of 4"
## Crossing Tees

### Description

#### 45° boot-style crossing tee

- assembled with PB taps
- \( \varnothing d3 \) and \( \varnothing d4 \) \( \leq \) \( \varnothing d1 \) diameter
  \( \varnothing d3 \geq \varnothing d4 \)
- \( L = \varnothing d3 + H2 + 4" \)
- If \( \varnothing d3 \leq 8" \), \( H2 = 4" \),
  - If \( \varnothing d3 = 9-14" \), \( H2 = 7" \),
  - If \( \varnothing d3 = 15-26" \), \( H2 = 10" \),
  - If \( \varnothing d3 = 27-46" \), \( H2 = 13" \), and
  - If \( \varnothing d3 = 47-60" \), \( H2 = 16" \)

![Diagram of 45° boot-style crossing tee](image1)

### Description

#### 45° boot-style crossing tee with reducer

- assembled with PB taps
- \( \varnothing d3 \) and \( \varnothing d4 \) \( \leq \) \( \varnothing d1 \) diameter
  \( \varnothing d3 \geq \varnothing d4 \)
- \( L = (\varnothing d3 + H2 + 4") + (\varnothing d1 - \varnothing d2) \)
- If \( \varnothing d3 \leq 8" \), \( H2 = 4" \),
  - If \( \varnothing d3 = 9-14" \), \( H2 = 7" \),
  - If \( \varnothing d3 = 15-26" \), \( H2 = 10" \),
  - If \( \varnothing d3 = 27-46" \), \( H2 = 13" \), and
  - If \( \varnothing d3 = 47-60" \), \( H2 = 16" \)

( * ) minimum of 4"
Tees

TC / TRC
Old Designations | TCCU / TCCRU

Description
conical tee

- \( L = \varnothing d_3 + 8" \)
- \( H = 6" \)
- \( \varnothing d_1 \) must be 2" or larger than \( \varnothing d_3 \)

\[ L = (\varnothing d_3 + 8") + (\varnothing d_1 - \varnothing d_2)* \]
\[ H = 6" \]
\( \varnothing d_1 \) must be 2" or larger than \( \varnothing d_3 \)
( * ) minimum of 4"

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>( \varnothing d_1 )</th>
<th>Designation</th>
<th>( \varnothing d_3 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>14</td>
<td>TC = Conical Reducing Tee</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: U14TC12

Description
conical reducing tee

- \( L = (\varnothing d_3 + 8") + (\varnothing d_1 - \varnothing d_2)* \)
- \( H = 6" \)
- \( \varnothing d_1 \) must be 2" or larger than \( \varnothing d_3 \)

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>( \varnothing d_1 )</th>
<th>Designation</th>
<th>( \varnothing d_2 )</th>
<th>( \varnothing d_3 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>14</td>
<td>TRC = Conical Reducing Tee With Reducer</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: U14TRC1212
# Crossing Tees

**XC / XRC**
Old Designations | XCCU / XCCRU

## Description
- **Conical Crossing Tee**
  - \( L = \phi d_3 + 8" \)
  - \( H = 6" \)
  - \( \phi d_1 \) must be 2" or larger than \( \phi d_3 \)
  - \( \phi d_3 \geq \phi d_4 \)

## Conical Reducing Crossing Tee
- \( L = (\phi d_3 + 8") + (\phi d_1 - \phi d_2)^* \)
- \( H = 6" \)
- \( \phi d_1 \) must be 2" or larger than \( \phi d_3 \)
- \( \phi d_3 \geq \phi d_4 \)
- \( ^* \) minimum of 4"

## Order Example

### Conical Crossing Tee

<table>
<thead>
<tr>
<th>Connection</th>
<th>( \phi d_1 )</th>
<th>Designation</th>
<th>( \phi d_3 )</th>
<th>( \phi d_4 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>14</td>
<td>XC</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: U14XC1212

### Conical Reducing Crossing Tee

<table>
<thead>
<tr>
<th>Connection</th>
<th>( \phi d_1 )</th>
<th>Designation</th>
<th>( \phi d_2 )</th>
<th>( \phi d_3 )</th>
<th>( \phi d_4 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>14</td>
<td>XRC</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: U14XRC121212

---

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Tees

**TS / TRS**
Old Designations | TCPU / TCPRU

---

**Description**

assembled tee with die-stamped or fabricated PS

- \( L = \varnothing d_3 + 6" \)

---

**Description**

assembled reducing tee with die-stamped or fabricated PS

- \( L = (\varnothing d_3 + 6") + (\varnothing d_1 - \varnothing d_2) \) *
- \(^*\) minimum of 4"
Crossing Tees

Description
assembled crossing tee with die-stamped or fabricated PS

- Ød3 ≥ Ød4
- L = Ød3 + 6"

Description
assembled reducing crossing tee with die-stamped or fabricated PS

- Ød3 ≥ Ød4
- L = (Ød3 + 6") + (Ød1 - Ød2)*

(* ) minimum of 4"

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Ød2</th>
<th>Ød3</th>
<th>Ød4</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>14</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: U14XS1212

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Ød2</th>
<th>Ød3</th>
<th>Ød4</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>14</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: U14XRS121212
**Tees**

**TV45 / TRV 45**

Old Designations | TV / TVRU

---

**Description**

45° lateral tee

- \[ L = \varnothing d3 \left[ \frac{1}{\sin(45)} \right] + 4" \]
- \[ H = 2.5" \text{ (constant)} \text{ (throat height)} \]
- special order: 15° - 30° - 60°
  
i.e. \( U - \varnothing d1 - TV15 - \varnothing d3 \)

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Ød3</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>14</td>
<td>TV = 45° Lateral Tee</td>
<td></td>
</tr>
<tr>
<td>TR</td>
<td></td>
<td></td>
<td>08</td>
</tr>
</tbody>
</table>

Smart Part Number: **U14TR08**

---

**Description**

45° lateral reducing tee

- \[ L = \varnothing d3 \left[ \frac{1}{\sin(45)} \right] + 4"+(\varnothing d1 - \varnothing d2)^* \]
- \[ H = 2.5" \text{ (constant)} \text{ (throat height)} \]
  
( * ) minimum of 4

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Ød2</th>
<th>Ød3</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>14</td>
<td>TRV = 45° Lateral Tee With Reducer</td>
<td>12</td>
<td>08</td>
</tr>
</tbody>
</table>

Smart Part Number: **U14TRV1208**

---
Crossing Tees

Description
45° lateral crossing tee

- dimension data for Ød4 = Ød3 only
  \[ L = (1.414 \times Ød3) + 4" \]
- \( H = 2.5" \) (constant throat height)
  \( Ød3 \geq Ød4 \)
- special order: 15°- 30°- 60°
  i.e. XV 15° - aa - bb - cc

Description
45° lateral reducing crossing tee

- dimension data for Ød4 = Ød3 only
  \[ L = (1.414 \times Ød3) + 4" + (Ød1 - Ød2) \]
- \( H = 2.5" \) (constant throat height)
- \( Ød3 \geq Ød4 \)
  \(( * ) \) minimum of 4"

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Ød3</th>
<th>Ød4</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>Diameter</td>
<td>XV = 45° Lateral Crossing Tee</td>
<td>Diameter</td>
</tr>
<tr>
<td>U</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: **U14XV1212**

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Ød2</th>
<th>Ød3</th>
<th>Ød4</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>Diameter</td>
<td>XRV = 45° Lateral Crossing Tee With Reducer</td>
<td>Diameter</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>14</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

Smart Part Number: **U14XRV121212**
Y-branch

description:
directional split fitting: 45°

- special order: 15°, 30°, 60°
i.e. Y 15° - aa - bb - cc
- special order: Ød3 or Ød4 ≤ Ød1
- special order: Ød3 ≤ Ød4

Dimensions

| H1 | = | (Ød3 × 0.5) + (Ød1 × 0.9) | x | (Ød3 × 0.5) |
| O1 | = | (Ød3 × 0.5) + (Ød1 × 0.8) | x | (Ød1 × 0.5) |
| H2 | = | (Ød4 × 0.5) + (Ød1 × 0.9) | x | (Ød4 × 0.5) |
| O2 | = | (Ød4 × 0.5) + (Ød1 × 0.8) | x | (Ød1 × 0.5) |

M1 = H1 + (Ød3 × 0.5) 0.707 - (Ød1 × 0.5) + O1 - (Ød3 × 0.5) 0.707
M2 = H2 + (Ød4 × 0.5) 0.707 - (Ød1 × 0.5) + O2 - (Ød4 × 0.5) 0.707

CL1 = [ (Ød1 × 0.5) + O1 - (Ød3 × 0.5) 0.707 ] / 0.707
CL2 = [ (Ød1 × 0.5) + O2 - (Ød4 × 0.5) 0.707 ] / 0.707

Note: These dimensions apply for 45° only. Please call for dimensions on special orders.

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Ød2</th>
<th>Ød3</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y = 45° Directional Split</td>
<td>14</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

Smart Part Number: U16Y1414
Description

one-piece offset

\[
L_{\text{min}} = \left[ \frac{\phi d_1}{4} \right] + \left[ \frac{Z}{0.577} \right] + 4
\]

\[L_{\text{max}} = 60''\]

Note: SMACNA recommends that offsets be 60° or less

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
<th>Z</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>16</td>
<td>Z</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

Smart Part Number: U16Z4
Couplings

CD / CF
Old Designations | NPU / MF

Description

Coupling used for joining spiral duct

- If Ø 3"-20", L = ⅜"
- If Ø 22"-26", L = ⅜"
- If Ø 28"-60", L = ⅝"

Description

Coupling for joining fittings

- If Ø 3"-9", L = 3⅜"
- If Ø 10"-14", L = 5⅛"
- If Ø 16"-26", L = 6⅜"
- If Ø 28"-38", L = 8⅜"
- If Ø 40"-60", L = 10⅛"

Order Example

Connection Ød1 / Ød Designation

U = Safe Diameter CD = Coupling For Spiral CF = Coupling For Fitting

U 16 CD

Smart Part Number: U16CD

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End Caps

Description
end cap for spiral duct

- If Ø 3"-20", L = ⅜",
  If Ø 22"-26", L = ½"
  If Ø 28"-60", L = ⅝"

Description
end cap for fittings

- If Ø 3"-9", L = 1⅛",
  If Ø 10"-14", L = 2⅛",
  If Ø 16"-26", L = 3⅛",
  If Ø 28"-38", L = 4",
  If Ø 40"-60", L = 4⅛/"
Take-offs

**Description**

- take-off/starting collar
  - installed on flat side of duct or plenum
  - available in diameters 3” - 60”

**Order Example**

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
</tr>
</thead>
</table>
| U = Safe   | 3” - 60” = Take-Off Starting Collar  
|            | 4” - 16” = Bellmouth Take-Off      |
| PT = Take-Off Starting Collar |
| PR = Bellmouth Take-Off        |

Smart Part Number: **U16PT**

**Description**

- stamped radiused bellmouth take-off
  - available in 4”-16” (not including 11”)
  - installed on flat side of duct or plenum
Dampers

Description
manual balancing damper w/ full blade

- for use in systems where a complete shut-off of air flow is not required
- gasketed shaft-mounted load bearing bushing to minimize air leakage
- integral shaft-blade assembly
- 2" sheet metal insulation stand-off
- damper cup height = 2"
- locking blade quadrant w/damper position indicator
- full fitting body assembly with bead stop

Note:
- Ød1 > 14" equipped with extended handle and a reinforced damper blade
- Ød1 > 24" provided with 2" bracket stand-off

Dimension

<table>
<thead>
<tr>
<th>Ød1</th>
<th>‘L’</th>
<th>Shaft</th>
</tr>
</thead>
<tbody>
<tr>
<td>inch</td>
<td>inch</td>
<td>inch x inch</td>
</tr>
<tr>
<td>4</td>
<td>3.9</td>
<td>5/16*</td>
</tr>
<tr>
<td>5</td>
<td>3.9</td>
<td>5/16*</td>
</tr>
<tr>
<td>6</td>
<td>3.9</td>
<td>5/16*</td>
</tr>
<tr>
<td>7</td>
<td>3.9</td>
<td>5/16*</td>
</tr>
<tr>
<td>8</td>
<td>3.9</td>
<td>5/16*</td>
</tr>
<tr>
<td>9</td>
<td>3.9</td>
<td>5/16*</td>
</tr>
<tr>
<td>10</td>
<td>3.5</td>
<td>5/16*</td>
</tr>
<tr>
<td>12</td>
<td>3.5</td>
<td>5/16*</td>
</tr>
<tr>
<td>14</td>
<td>3.5</td>
<td>5/16*</td>
</tr>
<tr>
<td>16</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>18</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>20</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>22</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>24</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>26</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>28</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>30</td>
<td>3.75</td>
<td>5/16*</td>
</tr>
<tr>
<td>32</td>
<td>10.4</td>
<td>1**</td>
</tr>
<tr>
<td>34</td>
<td>10.4</td>
<td>1**</td>
</tr>
<tr>
<td>36</td>
<td>10.4</td>
<td>1**</td>
</tr>
</tbody>
</table>

- 2" shaft extensions available
- 1" square tube shaft

Order Example

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød1</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U</td>
<td>Safe</td>
<td>DS = Balancing Damper With Full Blade</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>DSW = Damper With Cable-Operating Option</td>
</tr>
</tbody>
</table>

Smart Part Number: U16DS
Take-offs

DSIL / DSILR

Old Designations | DSILU / DSILRU

Description

gasketed take-off with damper

- lengths (in):
  - diameters 4” - 9”: L = 5 1/2”
  - diameters 10” - 14”: L = 5 6/8”
  - diameters 16” - 24”: L = 6 1/8”
- shaft = 5/16” x 5/16”
- 2” shaft extension available

Description
gasketed bellmouth take-off with damper

- assembled with PR radiused bellmouth take-off
- lengths:
  - diameters 4” - 9”: L = 7 7/8”
  - diameters 10” - 14”: L = 9”
  - diameters 16”: L = 10 1/4”
- shaft = 5/16” x 5/16”
- 2” shaft extension available

Note: 11” is not available

Order Example

Connection | Ød1 | Designation
--- | --- | ---
U = Safe Diameter | DSIL = Take-Off With Damper
DSILR = Bellmouth Take-Off With Damper

Smart Part Number: U16DSIL
Description
 Damper (DS) with saddle tap (PS) base

- shaft = 5/16” x 5/16”
- 2” shaft extensions available

Available in the following sizes (√):

<table>
<thead>
<tr>
<th>Ød</th>
<th>Ød3</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>✓</td>
</tr>
<tr>
<td>7</td>
<td>✓</td>
</tr>
<tr>
<td>8</td>
<td>✓</td>
</tr>
<tr>
<td>9</td>
<td>✓</td>
</tr>
<tr>
<td>10</td>
<td>✓</td>
</tr>
<tr>
<td>12</td>
<td>✓</td>
</tr>
<tr>
<td>14</td>
<td>✓</td>
</tr>
<tr>
<td>16</td>
<td>✓</td>
</tr>
<tr>
<td>18</td>
<td>✓</td>
</tr>
<tr>
<td>20</td>
<td>✓</td>
</tr>
<tr>
<td>22</td>
<td>✓</td>
</tr>
<tr>
<td>24</td>
<td>✓</td>
</tr>
</tbody>
</table>

Order Example

Connection Ød Ød3 Designation ØD
U = Safe See Chart Above DSPA = Damper With Saddle Tap 4” - 24”
U  8  DSPS  16

Smart Part Number: U8DSPS16
Dampers

Description
balancing damper with a gasketed blade for complete air-flow shut-off

- gasketed shaft-mounted load bearing bushing to minimize air leakage
- integral shaft-blade assembly
- 2" sheet metal insulation stand-off
- locking blade quadrant w/damper position indicator
- full fitting body assembly with bead stop
- shaft = 5/16” x 5/16”
- damper cup height = 2"
- 2" shaft extension available
- available in stainless steel Ø4”-12"

Note: dampers with Ød1 > 24” have 2” bracket in place of cup-shaped stand-off.

Dimension
Length (L) in inches by diameter:
- 4”-9”, L = 3.9”
- 10”-14”, L = 3.5”
- 16”-24”, L = 3.75”

Order Example
Connection Ød1 Designation
U = Safe Diameter DT = Balancing Damper

Smart Part Number: U04DT
**Square-to-Round**

**Description**
square to round transition

- available in Ø 4”- 60”
- 2” raw edge rectangular end
- L = length
  - minimum = 12”
  - max = 60”
- a = rectangular width
- b = rectangular height
- special order: offset styles available

<table>
<thead>
<tr>
<th>Connection</th>
<th>Ød</th>
<th>Designation</th>
<th>L</th>
<th>a</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>U = Safe</td>
<td>4”- 60”</td>
<td>RRT = Square To Round</td>
<td>Length</td>
<td>Width</td>
<td>Height</td>
</tr>
<tr>
<td>U</td>
<td>10</td>
<td>S</td>
<td>14</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

Smart Part Number: U10RRT141213