

Supply and Sound Attenuator Duct Twist-Fit System® Installation Instructions

GENERAL

This manual provides installation instructions for connecting the Unico System® supply tubing and sound attenuator using the Twist-Fit System (TFS). Refer to Bulletin 30-055 if using non-TFS connectors. Table 1 below lists the duct models compatible with the TFS connectors.

Table 1. Duct R-Factor

| Model | Outside Dia, inch [mm] | R-factor °F·hr/ft²/Btu [W/m²·K] | |
|--|------------------------|------------------------------------|-------------|
| | | Rated* | Effective** |
| UPC-25T UPC-26TC | 3.5 [89] | 3.3 [18.7] | 4.0 [22.7] |
| UPC-25T-R4 UPC-26TCR4 UPC-26TDR4 | 4.0 [102] | 4.2 [23.8] | 5.8 [32.9] |
| UPC-25T-R6 UPC-26TCR6 | 5.0 [127] | 6.0 [34.0] | 9.5 [53.9] |
| UPC-25T-R8 UPC-26TCR8 | 6.0 [152] | 8.0 [45.4] | 13.7 [77.8] |

* per ADC Flexible Duct Standard, based on flat thickness, $k=0.24 \text{ Btu-in/h}\cdot\text{ft}^2\cdot^\circ\text{F}$

** per ASHARE 2001 Fundamentals Handbook p. 23.21, based on curved thickness

These instructions presume that the duct system design conforms to the Unico duct system design manual, Bulletin 40-40.

INSTALLATION

Tools and Parts required:

- Utility knife
- Wire Cutter (to cut sound attenuator)
- UL 181B-FX tape

There are five basic components to a branch duct (outlet run) as shown below. There is always an end (E) and a beginning (A). The other components (B)(C)(D) will depend on the application.

Outlet (A) to Sound Attenuator (B)

All Twist-Fit System outlets (A) connect to the sound attenuator (B) in the same manner.

1. The UPC-26T is reversible – one end has a white half-coupling; the other end has a black half-coupling. Be sure to match the end of the sound attenuator to the color of the outlet. If wrong color, turn the duct around.
2. Line up the tabs, holding both the outlet and the tube connector,
3. Insert the tabs and twist until the tabs lock (usually 1 to 3 clicks).
4. Wrap a length of aluminum tape around the connection to ensure there are no leaks.

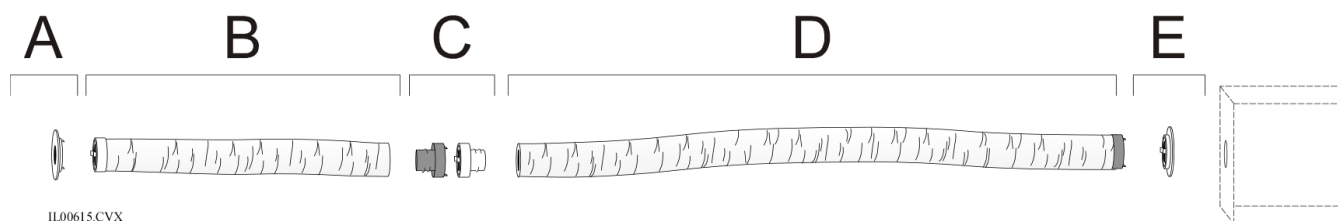


Figure 1. Example Branch Duct.

CONFORMS TO UL STD 181
CERTIFIED TO
CAN/ULC STD S110-M86



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Note — Specifications, Ratings, and Dimensions are subject to change without notice.

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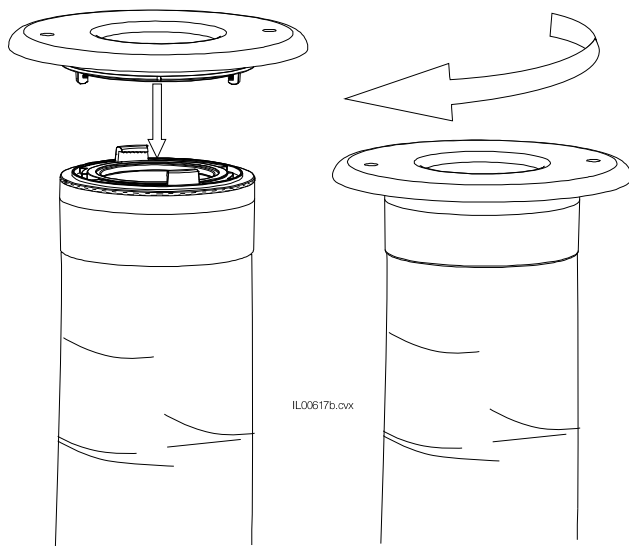


Figure 2. Installing Outlet (A) to Duct (B)

Connect Sound Attenuator (B) to Aluminum Supply tubing (D)

The UPC-25T and UPC-26T come with Twist-Fit System Coupling pre-installed. If duct is to be cut to a shorter length, it is necessary to use a UPC-38T TFS Coupling Kit (see next section).

NOTE: Support the duct every 6 feet to prevent sagging. This will help to reduce restriction within the duct and allow for the most efficient air flow.

Note: The minimum bend radius of the duct is 6-inches (152-mm).

1. Install a foam gasket (part no. A02418-001) included with the coupling kit (UPC-38T) to one of the half-couplings. It doesn't matter which one.
2. Align the tabs on the Twist-Fit System Couplings with the slots of the other Coupling. Twist the couplings until locked (a small click should be heard).
3. Wrap a length of aluminum tape around the connection to prevent leaks.

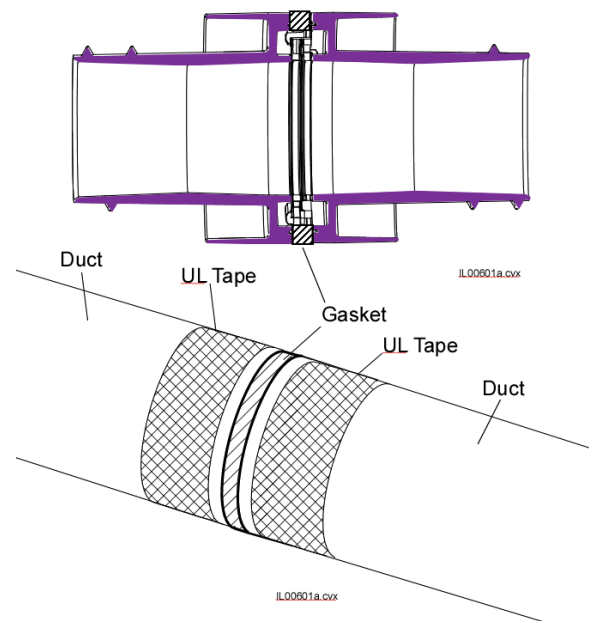


Figure 3. Connecting two ducts

Install a Half-Coupling (C)

If a shorter length of duct is necessary and the duct must be cut, use the following steps:

1. Using a utility knife, cut through the outer jacket, insulation and inner tube of the duct at the desired length. Use wire cutters to snip the tube wire of the sound attenuator.
2. Pull back the insulation of the tubing about 4-inches (102-mm) to expose the inner aluminum or nylon core.
3. Insert a Twist-Fit System Coupling into the duct and turn counterclockwise until tight.

Note: Threads on Twist-Fit System Couplings are **LEFT-HAND**

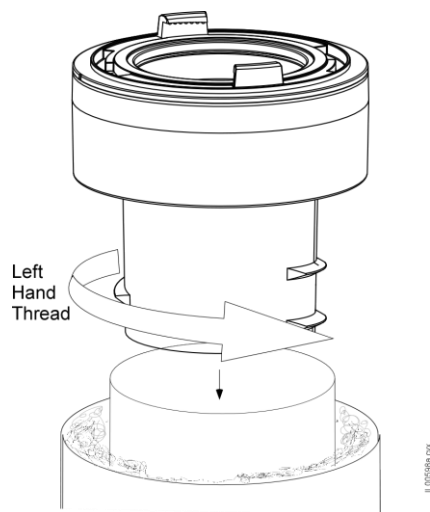


Figure 4. Installing a Half-Coupling

If the sound attenuator appears loose and the half-coupling easily falls out, then use a 12 inch (300 mm) nylon tie to secure the half-coupling in place. Pull the tie tight and cut off the excess. If the half-coupling appears loose on the aluminum duct, use a metal clamp (Part No. UPC-53).

4. Stuff the insulation and jacket of tubing underneath the outer ring of the Twist-Fit System Coupling. Using UL-181B Duct Tape, tape all the way around at the seam to prevent leaks.

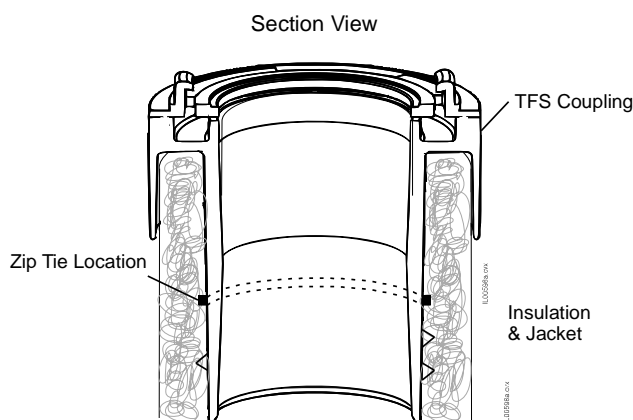


Figure 5. How to install coupling to duct

Connecting Duct (D) to Takeoff (E)

Connect the duct to the takeoff in the same way you connect the outlet.

1. Cut a 2 inch (50 mm) hole in the duct where you want to install the takeoff.
2. Use 4 sheet metal screws to attach the takeoff to the duct. Use the appropriate takeoff (Table 2). Use the curved takeoff if the main duct (plenum) is round. The curved takeoff will work for duct

diameters between 6 and 12 inches (150 to 300 mm) diameter.

Table 2. Plenum Take off table

| Duct Size | Plenum | |
|-----------|-------------|------------|
| | Round Metal | Flat Metal |
| 2-Inch | UPC-28T | UPC-28TF |

3. If a balancing orifice is needed, insert it into the recessed portion of the takeoff.
4. Connect the duct to the takeoff using the same twist-lock procedure for the outlets.

Special Instructions for Wood Outlets (UPC-57T)

Wood outlets (UPC-57T) have a black TFS connector so turn the sound attenuator around and connect it to the black half-coupling.

Note: The black and the white half-couplings are identical except for color.

Special Procedure for Spot Cooling

For spot cooling applications, use just the aluminum duct so the duct can be bent and pointed properly. Then attach a twist-fit finish plate (part number A02412-G01) on the end of the duct instead of an outlet. It is not necessary to wrap the connection with aluminum tape.

Special instructions for Plenum Outlets.

Instead of an outlet, attach a TFS finish plate directly to the takeoff. It is not necessary to wrap the connection with aluminum tape.

Special Instructions for R6 and R8 Duct

The R6 and R8 duct have two layers of insulation and two vapor barriers. Pull back the outer vapor barrier and insulation to expose the inner vapor barrier. The TFS half-coupling should be installed on the inner vapor barrier the same as for the smaller diameter ducts (previous section).

For TFS ceiling outlets pass the inner duct through the 4-inch (100 mm) hole in the ceiling, secure the outlet to the ceiling and then push back the outer vapor barrier behind the wall. Adding tape to the end is optional. It is not needed.

For couplings, push back the outer insulation and vapor barrier, wrap the seam with insulation tape, then wrap aluminum tape around the insulation tape.

For takeoffs, pull back the outer vapor barrier and insulation, attach the duct to the takeoff, then push the insulation and outer vapor barrier back into place.

Sealing the outer layer with aluminum tape is optional. It is not necessary.

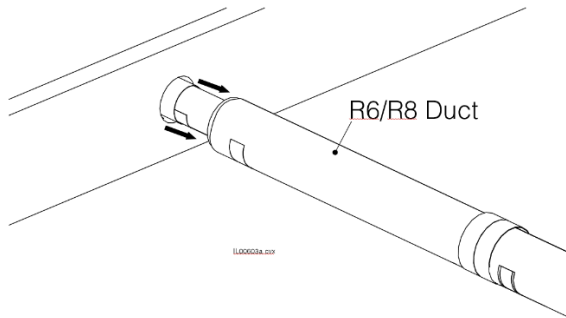


Figure 6a. R6/R8 duct pulled back to allow to fit through 4-inch hole

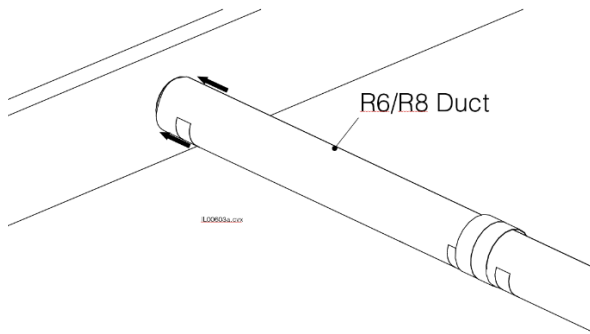


Figure 6b. R6/R8 duct released to wall

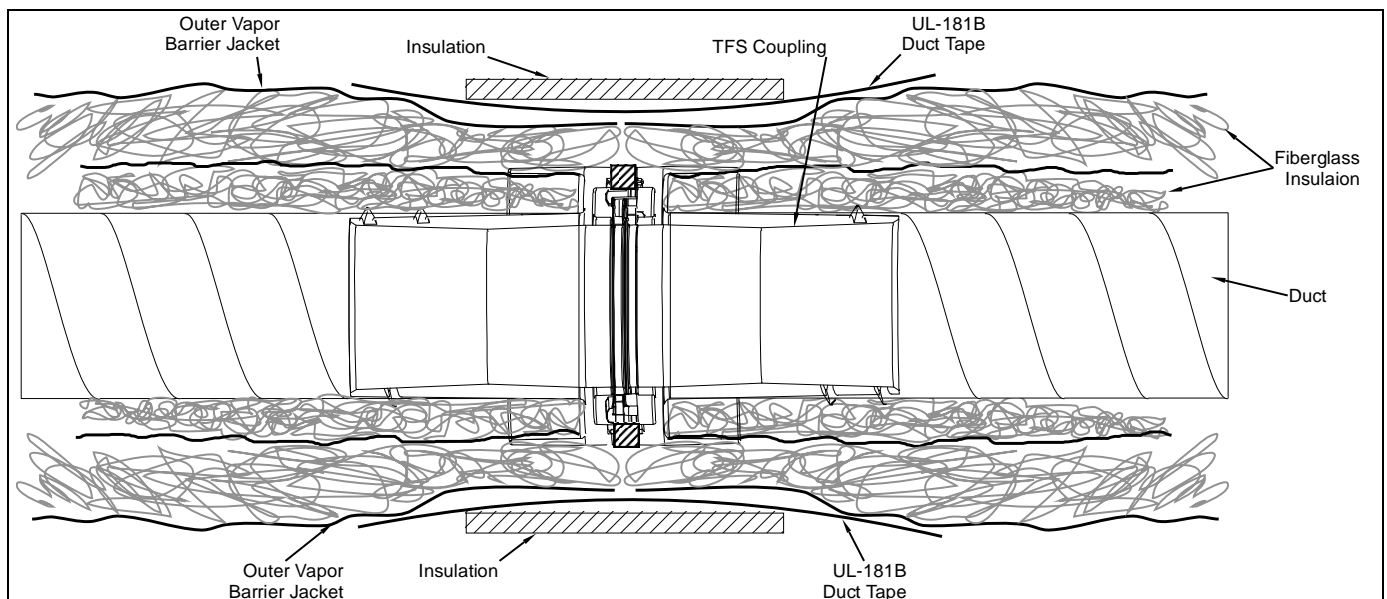


Figure 7. R6 and R8 Duct Connection Assembly