



# SMART SEAL GASKETED SPIRAL METAL DUCT INSTALLATION MANUAL



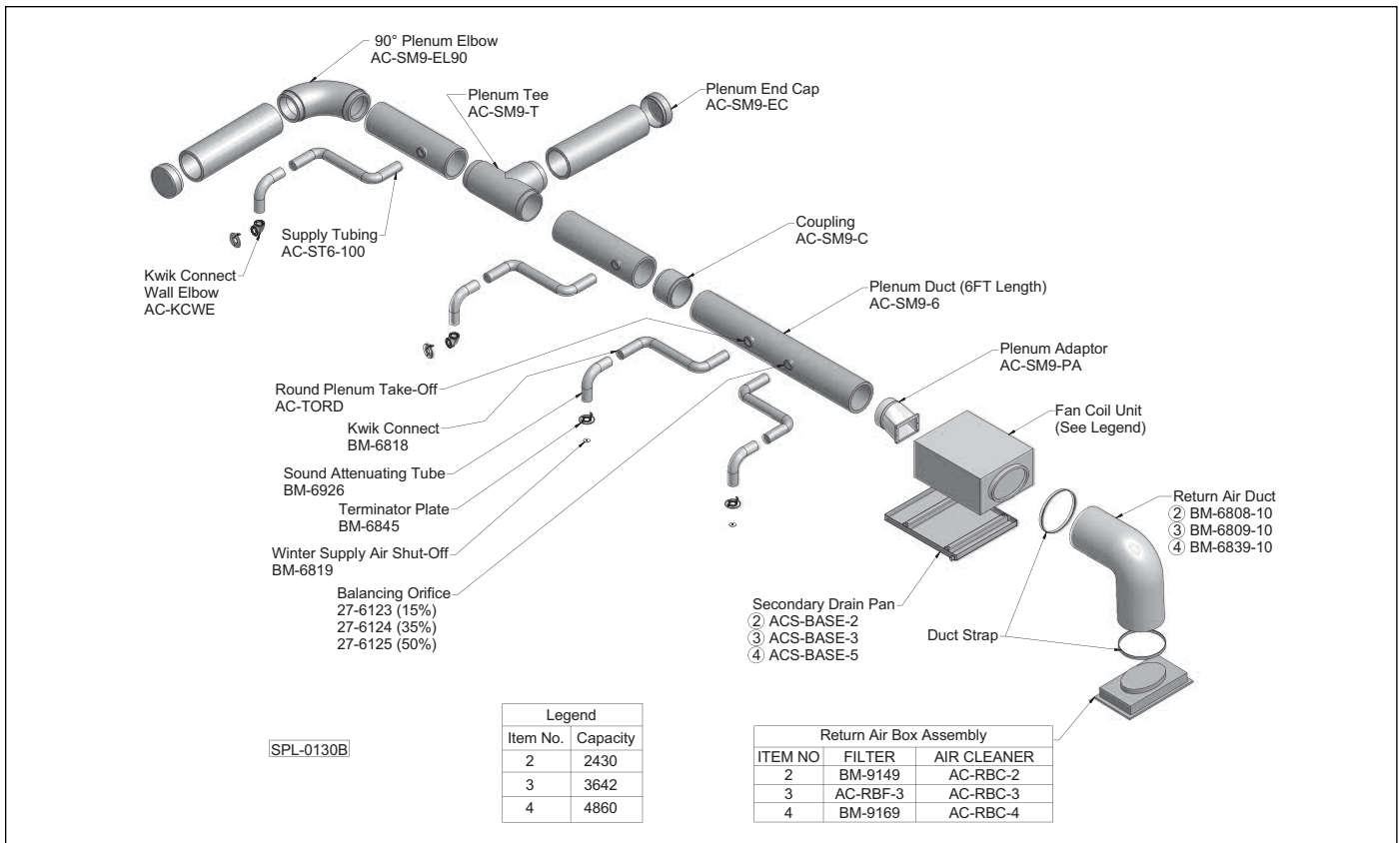
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## SECTION 1: INTRODUCTION

The following terms are used throughout this manual to bring attention to the presence of potential hazards or to important information concerning the product:

**NOTICE:** Used to notify of special instructions on installation, operation or maintenance which are important to equipment but not related to personal injury hazards.





SmartSeal duct components shown above without factory supplied R8.0 insulated jacketry.

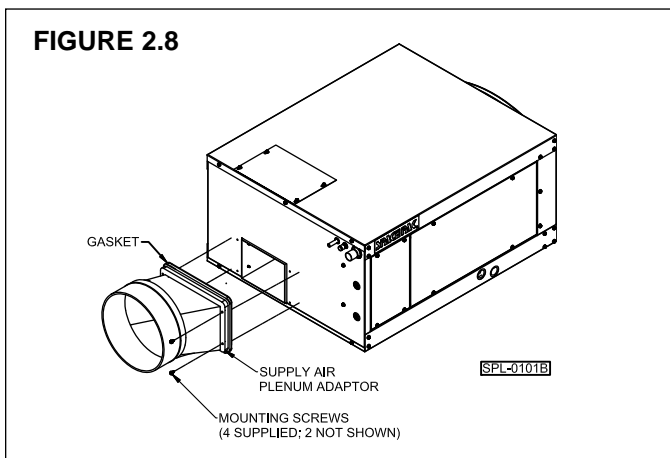
## SECTION 2: INSTALLATION

### STEPS 1 AND 2: REFER TO FAN COIL UNIT INSTALLATION MANUAL STEP 3: ATTACHING SUPPLY AIR PLENUM ADAPTOR (AC-SM9-PA)

**NOTICE:** If unit is to be located in the attic and installed through ceiling joists, attach supply air plenum adaptor in attic.

#### A. HORIZONTAL DISCHARGE: Refer to Figure 2.8.

Remove backing from gasket and mate it to fan coil unit so blower opening is centered in plenum adaptor opening and adaptor is flush with bottom of unit. Place plenum adaptor over discharge opening and align with the (4) unit holes surrounding the blower opening. Secure adaptor to unit with sheet metal screws provided.



#### B. TO CONVERT TO VERTICAL DISCHARGE: Refer to Figure 2.9A & 2.9B

Tools required: 1/4", 5/16", 3/8", 7/16" box wrenches and nut drivers, 5/32" Allen wrench, utility knife & Malco S-3 offset hand seamer (3" duct-bill pliers).

Field supplied: latex caulk, UL classified duct liner adhesive (or equivalent).

**NOTICE:** An Electric Heat Module cannot be installed after unit has been field converted to vertical supply air discharge (due to resulting blower housing obstruction).

Refer to Figure 2.9A for Steps 2 to 8a.

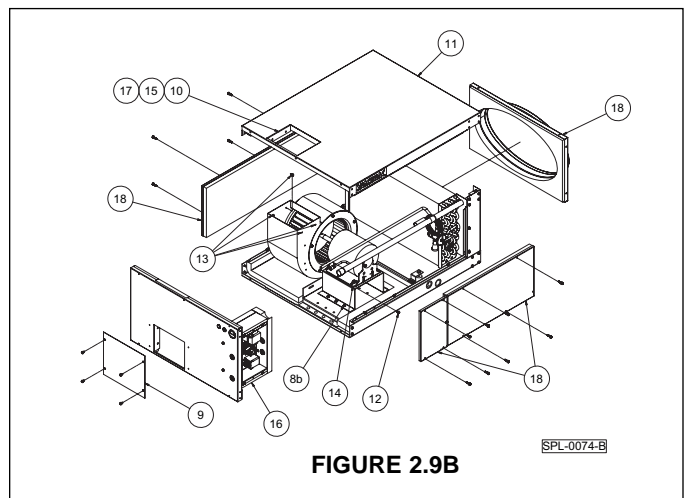
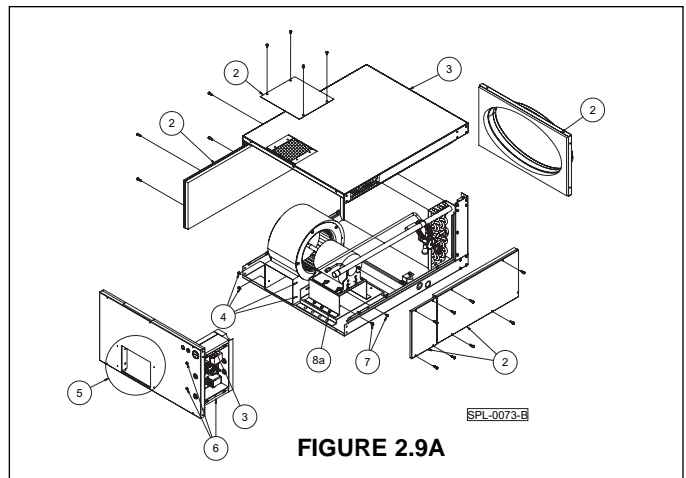
1. Place unit horizontally on a flat raised surface.
2. Remove all side access panels, return air panel and cover plate from top panel.
3. Remove top panel by removing top/center screw from electric control box and panel screws.
4. Remove (4) screws securing front panel flange to blower housing.
5. Remove sealant around discharge opening.
6. Remove (3) remaining screws from electrical control box. Set box aside.
7. Remove (2) screws attaching blower housing to motor support channel flange.
- 8a. Remove (6) screws attaching motor mounting base to motor support channel.

Refer to Figure 2.9B for Steps 8b to 18.

- 8b. Shift motor mounting base (and blower housing) back toward coil to second set of mounting lugs on motor support channel. Rotate blower housing up 90°. Reattach base with screws.
9. Cut insulation from discharge air location on top panel (opening dimensions shown in Figure 2.3 of unit manual). Insert cut piece into opening. Apply adhesive per manufacturer's instructions. Attach cover plate to front of unit.
10. Bend both flanges 90° into cabinet using 3" duct-bill pliers. Pliers should engage full jaw depth (1-1/4") and be centered on flange.
11. Insert blower housing into top panel. Reattach panel to unit.
12. Align hole in blower housing with lower slot in motor support channel flange. Attach housing to flange with (1) previously removed screw.
13. Align (4) holes in top panel flange with holes in blower housing. Attach with removed screws.
14. Assure blower wheel is centered in inlet and discharge of blower housing. If required, adjust by loosening (4) bolts securing motor. Shift motor and refasten. For blower wheel adjustments, loosen set screw (not shown), shift wheel and refasten.
15. Apply latex caulk to seal between blower housing and top panel.
16. Reinstall electrical control box.
17. Plenum adaptor can be installed so offset faces either end of fan coil unit. Remove backing from gasket and mate it to fan coil unit so blower opening is centered in plenum adaptor opening. Place plenum adaptor over discharge opening and align with the (4) unit holes surrounding the blower opening. Secure adaptor to unit with sheet metal screws provided.

**NOTICE: Check that all inside cabinet surfaces are covered with insulation, add insulation if required. An uninsulated panel will "sweat" and condensate will form on the cabinet.**

18. Replace all panels and screws.



## SECTION 3: ATTACHING AIR PLENUM ADAPTOR

**STEPS 4 THRU 7: REFER TO FAN COIL UNIT INSTALLATION MANUAL**

### STEP 8: INSTALLING AIR DISTRIBUTION COMPONENTS (Plenum Duct and Plenum Take-offs)

All plenum duct and supply tubing runs as well as room terminator locations must be in accordance with air distribution system requirements listed in Section 1 of fan coil unit installation, operation and maintenance manuals. Where taping is required, use UL 181A approved tape.

Tools Required: SpacePak Pliers (PTO Clip Spreader), saw (hand or reciprocating), drill fitted with 2-1/8" arbores hole saw, 1/4" nut driver and utility knife.

#### Plenum Duct Installation

**NOTICE: SmartSeal duct fittings are made to fit tight, assuring a proper seal. Care should be taken when handling these fittings as damage could result in an improper fit and a difficult installation process.**

All tees, elbows and branch runs must be a minimum of 24" from the fan coil unit or any other tee, elbow or branch run. Keep all tees and elbows to a minimum to keep system pressure drop on larger layouts to a minimum. SmartSeal spiral metal duct comes in 6-foot lengths and may be cut to length.

SmartSeal spiral metal duct can be suspended using vinyl duct strapping or plumber's strap. Duct should be supported every 3 feet with a minimum of two supports per 6 foot length.

Begin installing plenum duct by sliding insulation and metalized jacket back several inches to expose end of first straight duct length (14" min. length). Place the straight duct length level with and around the hemmed edge of the plenum adaptor. Apply pressure and the straight duct length will slip into place, stopping at the bead/pipe stop (see Figure 2.10A). Starting at the largest radial gap between fitting and duct, use (3) self-tapping sheet metal screws, placed 1/2" from the bead/pipe stop and spaced evenly around the circumference of the duct connection (see Figure 2.10B). The gasket and fittings are designed to allow adequate room to secure the screws per SMACNA standards. Carefully seal any holes left by measurements, removed screws, etc.

**[Suggested location for Figures 2.10A and 2.10B]**

Cover plenum adaptor with extra insulation wrap included with straight plenum duct section. Insulation wrap is to be flush against the unit and secured with UL 181A tape. Reposition duct insulation and jacket to completely cover duct connection. Seal jacket seams with UL 181A tape.

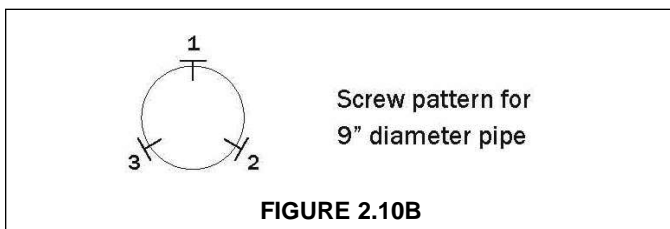
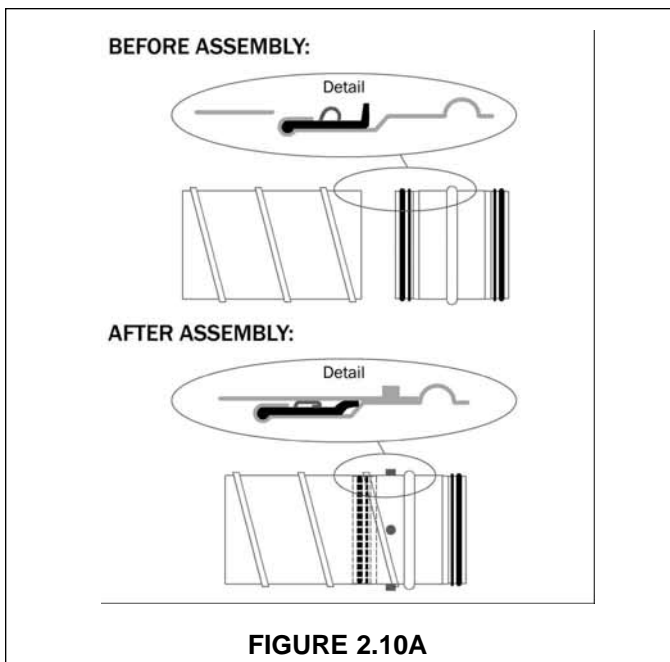
To add another length of straight duct, a coupling is required. Slide insulation and jacketry of the previously installed straight duct length back several inches, place the coupling level with and inside the straight duct, and apply pressure until coupling slips into place, stopping at the bead/pipe stop (see Figure 2.10A). Use (3) self-tapping sheet metal screws, placed 1/2" from the bead/pipe stop and spaced evenly around the circumference of the duct connection (see Figure 2.10B). Repeat when connecting the additional length of straight duct. Cover all connections/couplings with insulation and jacket, and seal jacket seam with UL 181A tape.

If adding a fitting such as an elbow or tee to straight duct lengths, a coupling is not required as the fittings come with the appropriate gasketing installed for a proper seal when mated with straight duct length. All fittings are manufactured to slip fit into SmartSeal spiral duct.

Continue adding plenum lengths and other fittings as needed. Extra insulation and jacketry is provided with the straight duct lengths and should be used to cover all connected fittings. Seal all jacket seams with UL 181A tape.

**NOTICE: Straight plenum duct sections can be cut to length. However, be sure to cut duct straight and remove any resulting burrs. Failure to do so may result in an improper seal and system failure.**

Installation of end caps (at the end of all plenum runs) should be completed after all plenum take-offs have been installed. The duct shavings produced with plenum take-off installation will be blown into the space to be conditioned if sealed into duct system.



## Plenum Take-off Installation

Mark locations for take-offs on plenum duct. All take-off locations must be a minimum of 18" from any plenum tee, plenum elbow or the fan coil unit. SpacePak recommends take-offs be placed 12" apart and that any (2) not be installed directly across from each other (on opposite sides of the duct).

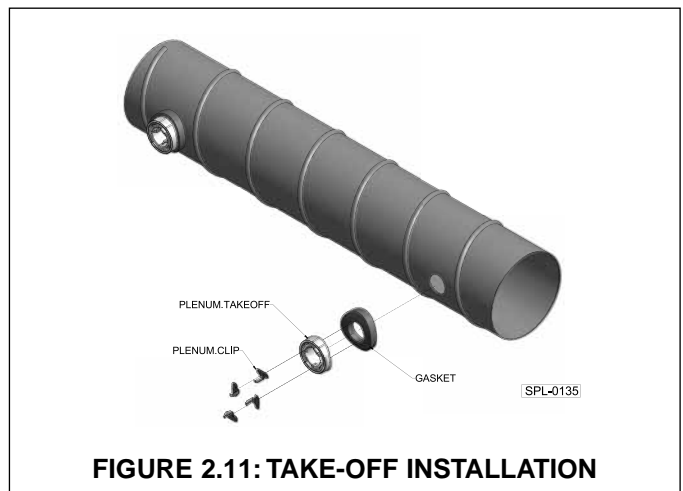
At marked location cut 2-1/8" diameter hole with hole saw. Begin in reverse to cut through jacket sleeve and insulation and stop when hole saw teeth contacts duct. Switch drill to forward and continue to cut through duct. Remove any loose duct shavings around hole.

With utility knife, make (4) 2" cuts into jacket and insulation around hole (90° apart). Move insulation away from hole so the 4" diameter take-off gasket can be applied completely to duct surface.

Remove backing from take-off gasket and press it on duct location so as not to cover the hole.

**NOTICE: Gasket must be installed to seal plenum take-off to prevent air leakage.**

Seat take-off in hole so the curvature matches that of the duct (see Figure 2.11 - duct shown without insulation and jacket). Insert (1) plenum clip (green) into a slot opening, then slide down. Apply enough pressure to take-off so clip grabs inside of duct. Repeat the procedure with another clip opposite the first (180°). Using SpacePak pliers secure both clips so they "click" flush with interior of duct. Complete by inserting (2) more plenum clips in remaining slots and install as above.



**NOTICE: All four clips must be installed to assure air tight fitting between plenum take-off and plenum.**

The insulation and jacket around installed take-off will be repositioned when attaching supply tubing/kwik-connect assembly covered in unit's installation, operation and maintenance manual (Section 2).

After all required plenum take-offs have been installed, clear interior duct system of loose shavings. Starting the fan coil unit, prior to assembly of end caps, will clear the system.

Install plenum end cap at the end of each run. Connect end cap to plenum duct by following procedure described in Plenum Duct Installation for other plenum fittings. Tape jacket seams with UL 181A approved tape.

Installation instructions for room terminators, sound attenuating tubing and supply tubing are provided in installation manual supplied with fan coil unit (Section 2).