



AIR HANDLING

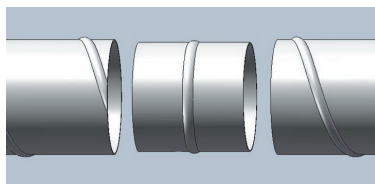
SYSTEMS

Installing Your Air Handling System

This wealth of information has been developed to help facilitate your air handling system installation. Please take a few minutes and familiarize yourself with the many TIME SAVING ways to install spiral pipe and fittings.

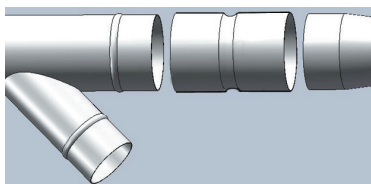
Important: Dust Collection and Fume systems must have 45-degree branch entries. All stock Air Handling Systems Tees are made with 45-degree branch entries. Only when you are installing low-pressure with low velocity Heating and Air Conditioning systems can you use 90-degree branch tees.

Pipe-To-Pipe Connection



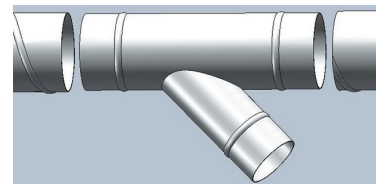
Spiral pipes are connected together by a sleeve type coupling (Part No. COUP). The coupling has a small-end and is slipped into the pipe sections.

Fitting-To-Fitting Connection



Fitting-to-Fitting connections can be made by using a large end coupling (Part No. COU2) or by cutting a short length of spiral pipe and using this length of pipe as a large end coupling.

Fitting-To-Pipe Connection



All fittings are sized to slip into mating pipe sections or flexhose. No additional coupling will be needed.

Securing and Sealing the Connection

It is very important to note that you must seal all field joints airtight. We recommend clear silicone caulking in tube form. Apply the silicone one-inch inside each large end completely around the circumference. Never use duct tape as it will dry rot over a short period of time and will open up leaks. Work the fitting into the pipe until the pipe is up to the bead on the fitting. Then drill rivet holes using # 30 drill bit through both layers of ducting. Put a safe number of 1/8 diameters by 3/8 long steel pop rivets with steel pins around the circumference of each assembly. It is best to leave the bottom free from rivets between four o'clock to eight o'clock if possible. After the system is completely installed apply a coating of silicone over the outside of each joint, smooth out with a glove and let cure.

Never install sheet metal screws as fasteners, as they will catch pieces of wood and eventually clog the system. The velocity of air along with wood dust will wear the screw out over a period of time. This will cause the screws to fall out, and the pipe could possibly fall down if not supported sufficiently.

Friction Loss and Air Leakage

Two problems with high velocity systems are friction loss and air leakage. The installer has to install the high-pressure system without causing possible friction losses or air leakage problems. Do not crimp the ends of the fittings to make assembly easier. The crimping puts interference in the air stream, which adds friction loss to the system. Crimping can also create noise problems. Excessive clearances in sizing of the pipe and fittings can cause problems in sealing the system to make it airtight. Hunting and patching leaks in an installed system is tedious and stressful.

Your duct and fittings are sized to fit tightly for 3 good reasons.

1. The joint has a minimum friction loss condition.
2. The tight fit makes the joint easy to seal against air leakage
3. Noise is reduced with a tighter joint.

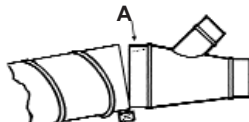
The installer must assemble the duct, couplings, and fittings with the factory controlled fit clearances. The following sketches illustrate the basic principles of joining round duct and fittings.

Starting the fitting into the duct.



A sharp blow by a sheet metal hammer or mallet on the top of the fitting collar can cause the collar to seat into the duct. But, be careful not to dent the collar.

Starting the collar into duct, impact at A.



When a sub-assembly is put together on the floor, raise the end of the duct to support it off the floor by a piece of wood. Tilt the fitting slightly and start the bottom part of the fitting collar into the duct.

Starting the collar into duct, drive blade B in direction of arrow.



A strip of metal can be slipped into the space between the duct and fitting and driven around the joint circumference. The fitting is worked to keep the collar in, but do not push hard enough to bind the end of the duct and fitting so the fitting can't slip into the end of the duct.

Other techniques for assembly include

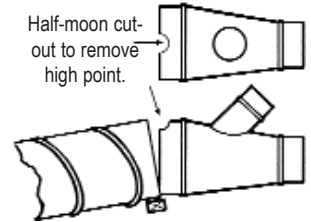
Starting the collar into large diameter duct.

If the duct is a large diameter, it will sag slightly in relation to the fitting. One person straddling the duct can compress the duct sideways by using hand and knee pressure. The other person can jiggle the fitting and work it into the duct.



Cut-out to ease assembly into duct.

A handy tip to remember if close quarters interfere with the movement necessary for starting the fitting into the duct is to cut out a shallow half-moon in the end of the fitting collar. You will find that this removes the "high point" so that the fitting collar will easily enter the duct.



A few more tips

If the joint assembly is in the air, the procedure is the same as described above, except that it is not necessary to prop the end off the floor as the overhead position provides room for maneuvering the fitting. It is recommended that you use angle iron flanged ring connections on large diameter round duct. Angle rings will help in holding the spiral pipe round and make for an easier installation when making connections in the air.

The following suggestions are proven methods of speeding up the assembly:

1. If the job conditions permit, much time can be saved by making sub-assemblies of duct and fittings on the floor and hoisting into position with duct lifts or rope pulls. This minimizes the amount of scaffold work. Floor sub-assemblies are put together faster if supports are provided, such as adjustable work stands with rollers. This keeps the workers from crawling on the floor and provides conditions for faster work.
2. All workers must handle duct and fittings with reasonable care. Every dent and mashed pipe makes the job that much tougher when assembling the duct and fittings. Before starting to assemble a fitting or length of duct that has been dented or distorted from rough handling, the part must be trued up. This will eliminate wasted effort and may eliminate an objectionable projection into the air stream. A hammer and dolly can be used to true up the duct and collars. Tapered flaring cones shouldn't be used to true up fittings, because they may over flare the fitting collar, making assembly very difficult.

Summary

1. Fittings and small-end couplings (COUP) are male sized to slip inside spiral pipe and flexhose.
2. Spiral pipe, flexhose and large-end couplings (COU2) have female ends sized to slip over standard fittings and small-end couplings. You may use a short length of spiral pipe as a female coupling to make fitting-to-fitting connection.
3. Spiral pipe will not slip inside another spiral pipe. A small-end coupling (COUP) must be used for each pipe-to-pipe connection.
4. Important Note: If a fitting seems the same size as the pipe, slightly flare open end of pipe by tapping with hammer.

Hangers

Horizontal run: On smaller duct sizes a one-piece band strap around the duct can support horizontal runs with a single suspension hanger. When the duct size increases, a Heavy Duty (two piece) Hanger (HANG) is required. There is a minimum recommendation of one support hanger for each 10-foot length of horizontal run. A minimum of one support on each branch, which must be installed no matter how short the horizontal run may be. Arrangements of many fittings close together will require frequent hangers because large unsupported fittings create a great stress on the joint. A precaution in hanging high-pressure duct is DO NOT use screws to secure hangers to duct. Sooner or later, these screws will LEAK!

Vertical run: Clamps with extended ears supported by the floor. Clamps with knee bracing, or a pedestal at base of run. In addition, for a vertical run you can use a horseshoe shaped clamp with extended ears bolted to the wall. A pedestal with a base can be mounted on the floor or on a machine and then vertically run up for clamping to the spiral pipe or fittings.

Required Tools:

- Each installer must wear **Leather Palm Work Gloves**.
- **Safety Glasses** must be worn by each person in the area of installation.
- 3/8 High-speed **Electric Pistol Drill** 2200 RPM, must be reversible. The reversible capabilities will help if you need to remove pop rivets.
- One deluxe **Pop Rivet Gun**
- 3/8-inch long by 1/8-inch diameter **Steel Pop Rivets** with steel pins.
- **#30 Short Drill Bits (9/64)** which is the clearance required for 1/8-inch pop rivets.
- **1/4-inch Drill Bits** to make a hole in the spiral pipe to cut a length using a jig saw.
- **Jigsaw** and high-speed metal cutting blades 18 to 24 teeth per inch. Start jigsaw blade in the 1/4 inch hole and cut around the diameter of the pipe. Or, **Reciprocating Saw** with fine tooth metal cutting blade.
- **Left and Right Sheet Metal Hand Snips**.
- Plumb Bob
- 25 foot or longer **Tape Measure** and a short thin strapping tape measure
- Black felt **Marker**
- Strip of metal 16 gauge thick 1 inch wide by approx.10 inches long to be used when assembling small and large end together.
- Two Visegrips
- Two large flathead Screwdrivers over 12 inches or longer in length.
- Caulking gun and clear silicone caulking.
- Sheet metal hammer and rawhide mallet
- If you are sub assembling your system on the ground cut up a dozen or so blocks of wood 1 inch by 2 inch by approx.18 inches long. Place the blocks under the spiral pipe when you reduce duct diameter to support the smaller spiral pipe.
- A 50-foot by 3/8-inch or larger diameter rope to help raise the duct section in to place.

Important: Many states and localities have codes and regulations governing sales, construction, installation and or use of Products for certain purposes, which may vary from those in neighboring areas. While Air Handling Systems by Manufacturers Service Co., Inc. attempts to assure that its Products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the Product is installed or used. Before purchase and use of a Product, please review the Product application, national & local codes, regulations, and be sure that the Product, installation, and use will be in compliance.



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