

# Introduction to Smartseal® System



## System Preparation



Welcome to AEROSEAL® training for the SmartSeal equipment. We will now go into an in depth presentation on the equipment, duct seal preparation, sealing and completion.

We have now divided the AeroSeal® training manual into seven segments so that the technician who needs to review a specific area of the training can find it easily. The seven segments are the Introduction, the Equipment, the Equipment Setup, Duct Sealing Process, System Preparation, Running AeroSeal® and Maintaining the Equipment.

Introduction is an overview of the AeroSeal® process. The Equipment segment is information about the pieces of equipment that make up the AeroSeal® system. Equipment Setup shows the way the equipment is powered, connected together and connected to the duct system to be sealed. Ready for sealing describes different applications of duct systems and some of the criteria that needs to be addressed for sealing. Running AeroSeal® describes operation of the computer control with the fan box air intake with the sealant injection rate. Maintaining the Equipment discusses and places emphasis on the injection nozzle, cleaning the nozzle as well as disassembly and replacing the nozzle components.

This segment is the first of the series, the Introduction to the AeroSeal® process.

# Sealant Preparation



No Preparation Needed

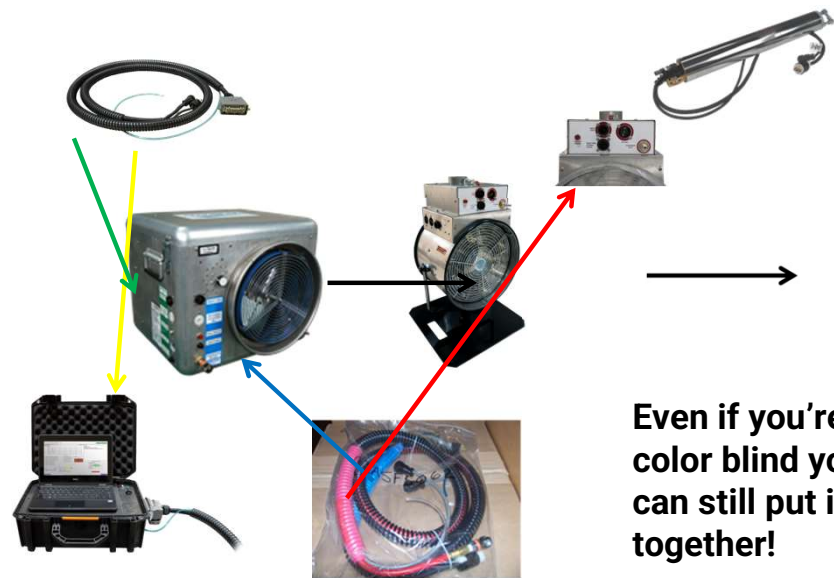
## WATCH OUTS

- Inspect the sealant – do not use sealant that has begun to coagulate
- Replace the cap with the sealant pick-up tube



Sealant does not require any special mixing. Shake well before use. The equipment pumps undiluted sealant through tubing. Sealant that has any lumps or coagulation may not be used. Sealant should be kept in a conditioned environment. Freezing or over temperature conditions renders the sealant less efficient and in many cases useless.

## Equipment Preparations



**Even if you're  
color blind you  
can still put it  
together!**

The AeroSeal duct sealing system is based upon a patented process for injecting sealant particles to seal the leaks with all vent openings temporarily blocked. The patented aerosol injection machine aerosolizes the sealant, evaporates the water in the sealant, and pressurizes the duct system with air that carries the particles to the leaks. In a properly prepared duct system, the only outlets for the aerosol-laden air are duct leaks. The sealant particles travel to these leaks, attaching to the wall at the leaks and then to each other, thereby reducing the size of the duct leaks until they are sealed.

## Nozzle Angle



The AeroSeal heater cylinder is designed to tilt as to meet your nozzle angle requirements.

## Equipment Location

- Where do you put the computer case?
- Where do you put the heater cylinder?
- Where do you put the fan box?
- Where's the injection point?
- Where's my compressor?

To determine the best sealing equipment location, I like to start with my Injection Point(s)

The Computer Control Case (Figure 31) should be set-up in a location where:

- the 10' standard length or the 25-foot optional length Umbilical Cord # 1 can reach the Fan Box
- where the Installer (and potentially the Customer) can comfortably watch the screen.
- Where the Fan Box and Heater Cylinder can be seen, if possible

Heater Cylinder: When choosing the location for the Heater Cylinder, remember that the angle of the Heater Cylinder needs to be adjusted to keep the nozzle pointed slightly up from the middle of the lay flat tubing, and that the angle of the lay flat tubing should not exceed 45 degrees near the nozzle. Also remember that the nozzle tip in the Heater Cylinder should be at least 6 to 8 feet from the duct injection point or any sharp bend in the lay flat tubing

The Fan Box can be located as much as 50 feet from the Heater Cylinder, and as much as 25 feet from the Control Case with optional umbilical's. The Fan

Box and Heater Cylinder shall be handled and located so as to not damage the owner's property

Set-up the Compressor and Compressed-Air Dryer in a location where:

- the 125-foot extension cord can reach an unused outlet
- the compressor noise is minimized (e.g. mechanical room or roof)
- Assure that the compressor can deliver 90psi to the heater cylinder injection point. Maximum psi that should be supplied to the heater cylinder is 140psi. The safety pressure switch is rated for 150psi.

## Layflat Connections



Between Fan Box and  
Heater Cylinder



Heater Cylinder and Duct  
System

Fan Box to the Heater Cylinder using 24" layflat tubing

- \* clamps it to the Fan Box with one 14" clamp, and to the Heater Cylinder with the other 14" clamp.
- \* The only restriction on the length of layflat tubing between the Fan Box and the Heater Cylinder is the length of Umbilical Cord #2.
- \* 36" layflat tubing can be utilized, however it is much bulkier and unnecessary

## Large Duct – Multiple Fan Box



When the system is in this type of configuration, ensure that the AeroSeal system (fan box, heater section, control box, computer and injection point) is downstream of the “booster” fan(s).

Multiple fans are often necessary to maintain adequate velocities in Large Cross Sectional Ductwork or Extremely leaky duct systems with no ductwork disconnects or large openings greater than 5/8”

- a. The target velocity for horizontal trunks should be over 150 FPM
- b. Trunk velocities should generally be kept above 30 FPM, even near the end of the sealing process
- c. As an example, a 48” by 20” trunk duct being pressurized with two Fan Boxes would have a velocity at full flow (max leakage) of 180 FPM



## Types of Injections

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- External Atomization - Standard
- Direct Injection – Not Standard
  - Call Aeroseal if you encounter an application for direct injection

Direct Injection can be useful in places where injection points are hard or impossible to obtain. You will need the optional 50ft umbilical for this method.

## Pressurize System

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Now that you have the system blocked, the equipment setup...Manually pressurized system.

**LISTEN, LOOK, LOCATE AND FIX**

Locating and fixing larger leaks will save time and reduce the chances for overspray.

# Questions?

This is the end of this slide module. Do you have any questions?