Technical Manual for Euroseal 4.0

REV 6.0 2026

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Customer and Contents Protection

The dealer should:

- Keep customers away from areas where high sealant concentrations may exist.
- Ventilate using a scrubber fan and, if possible, box fans in areas that may be exposed to escaping sealant.
- Keep customers away from work areas near ladders, in attics, or in tight workspaces.
- Prevent accidental spillage by using a tarp under equipment setup and performing any product dilution outside of the building. If accidental spillage occurs, clean up immediately using adherent remover or other solvent(s).
- Use a liquid-tight tarp under the aerosol injector to prevent spillage of liquid sealant onto finished floors. The tarp should extend at least 6 ft. / 2 m from the injector under the lay-flat tubing.
- Take care when removing the lay flat tubing from the injector to assure that any potential liquid sealant in the tubing or machine does not contact the customer's floors.
- Keep the equipment clean and free of liquid sealant at all times.
- During operation, ensure the emergency switch is connected with the main power input. If the power needs to be interrupted at any time, turn the switch to OFF.

Technician Safety

CAUTION: INHALATION HAZARD

CAUTION: TOUCH HAZARD

The safety of technicians performing the sealing work is top priority. Aeroseal recommends that proper respiratory protection should be worn when in spaces with high aerosol concentrations and that technicians be provided with skin protection (gloves) for use with the solvent, and fiber masks or cartridge respirators with organic/particulate canisters for use in duct zones.

Additional recommended safety precautions include:

- Not overextending reaches if using tall ladders during the diagnostic or sealing process.
- Using only approved electrical connections for the injector machine, including GFIC pigtails.
- Using scrubber fans to ventilate areas where sealant material may escape from leaky duct sections.
- Wearing protective glasses when removing register grilles.
- Wearing liquid-tight gloves when using solvents.
- Wearing respiratory protection when working in areas with sealant particles in the air.

- Sensitive individuals or individuals regularly submitted to high sealant particle concentrations should wear cartridge respirators with organic/particulate canisters.

TABLE 1: SAFETY SYMBOLS

	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	WARNING indicates a potential Electric hazard
	NOTICE indicates important information that if not followed, may cause damage to equipment.
	Personal protective equipment required: Gloves
	Personal protective equipment required: Dust Masks
	Personal protective equipment required: Respirator

Safety Procedures

 **CAUTION: ELECTRICAL HAZARD**

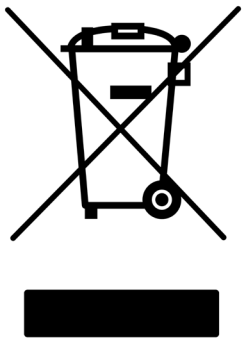
There are safety features in the software and hardware to control the sealing process. In case of an emergency the operator should unplug all three power cords into the machine. These safety procedures include:

- The air heaters in the 14 in. / 355 mm diameter heater cylinder are wired through Snap-disk thermostats that cut power to the individual heater circuits if the temperature at the snap disks reach approximately 93°C.
- The nozzle is fitted with a thermostat that cuts out at approximately 165°C.
- The software provides alarms and warning if the discharge temperature exceeds 65°C.

It is recommended that the operator:

- Do not open any electrical control panel or the heater cylinder while power is applied. Electric shock is possible.
- Use only grounded electrical circuits and cords.
- Use cords with Ground Fault Circuit Interrupters (GFCIs) pigtails.

THE SEALING MACHINE SHOULD NOT BE OPERATED IF THERE IS SEALANT MATERIAL ON THE HEATER-CYLINDER HEATERS OR INSULATORS



WEEE Label for Electronic Equipment Disposal

4 EQUIPMENT KIT

TABLE 2: EQUIPMENT KIT

Item	Description
1	Euroseal 4.0 Core System
2	Euroseal Low Seal Vent Box
3	Blue Duct Mask
4	Fiberglass Filter, 16 x 20 x 1 in. / 406 x 508 x 25.4 mm
5	Duct Seal LT Sealant
6	Euro Booster Fanbox (accessory)
7	37 in. / 939.8mm mobile job box
8	5-Micron Air Filter with Adapter Fitting to Air Hose
9	Air Compressor Filter Assembly
10	12 in. / 304.8mm diameter Modified Clamp with Black Handle
11	12 in. / 304.8mm Clamp
12	12 in. / 304.8mm Diameter Flange
13	75 ft. / 22.86m Blue Tubing
14	Spare Parts Kit
15	WYE Kit 12-10-10 60 degrees
16	Power cords
17	50 ft. / 15.24m Blue Tube
18	Blue tube t-assembly, 25 ft. / 4.62m
19	Pickup tube
20	32 oz. / 946.3 mL spray bottle
21	14 in. / 355.6mm flange
22	10 in. / 254mm Clamp
23	14 in. / 355.6mm Clamp
24	Flush bottle

25	Fre-thane 95a polyurethane tube
26	Emergency Switch

5 SUPPLIES

Start-up equipment and supplies:

- Air Compressor (not included)
  - Continuous duty air compressor with at least 90 psi pressure and maximum 125 psi, Flow - 6.5 SCFM @ 100 psi, with oil and moisture filters and an output pressure regulator | 620, 528 Pa - 861845 Pa, Flow 2.83 l/s @ 689476 Pa
- Aeroseal Manufactured Scrubber Fan(s) (not included)
  - FIVE Ultra-Allergen Disposable Filters > MERV 13 filtration (3 - 10 micron particles)
- Generator (not included)
  - 5 kW / 5.5 kVA (for operating the machine)
  - 10 kW / 12.5 kVA (for operating machine, compressor and accessories)
- Oil and moisture filter (recommended)
  - Desiccant dryer 7 SCFM flow / 125 psi minimum | 3.58 l/s 861845 Pa
  - Regenerative dryer with an oil coalescent filter to deliver clean, oil-free, and dry air
- Booster fan box (not included; add-on component)
  - 540 CFM | 254.85 l/s
- Start-up supplies (sealant, ductmask, clamps, cleaning solvent, foam)

Equipment and Supplies

The following is a list of tools, equipment and supplies that typically are needed (or recommended) for performing duct sealing.

Tools

- Two 50 ft. / 15.24 m extension cords
- Two step ladders: 8 ft. to 12 ft. / 2.4m to 3.6m
- Measuring tape
- Screw gun with self-taping screws
- Tin shears
- Round-injection-hole cutter (e.g. Malco hole cutter, nibbler, snips, reciprocating saw, 76.2mm hole saw)
- Flashlight, razor knife
- Standard box of hand tools
- Shop vac, dustpan, clean-up materials
- Vice mounted in truck
- Circuit breaker finder
- Voltmeter AC/DC for testing/troubleshooting
- 9 V dc battery for testing/troubleshooting

Safety Equipment

- GFCIs for all circuits

- Double-strap type particulate masks at a minimum
- Respirator with organic-vapor/particle canisters (e.g., North Model 7700-30 or 5500-30 half-mask respirator, fitted with particulate/organic-vapor (Black/Magenta) cartridges 7581P100 (Grainger 6T452 2004))
- Eye wash
- Safety glasses
- Rubber gloves
- Emergency Switch

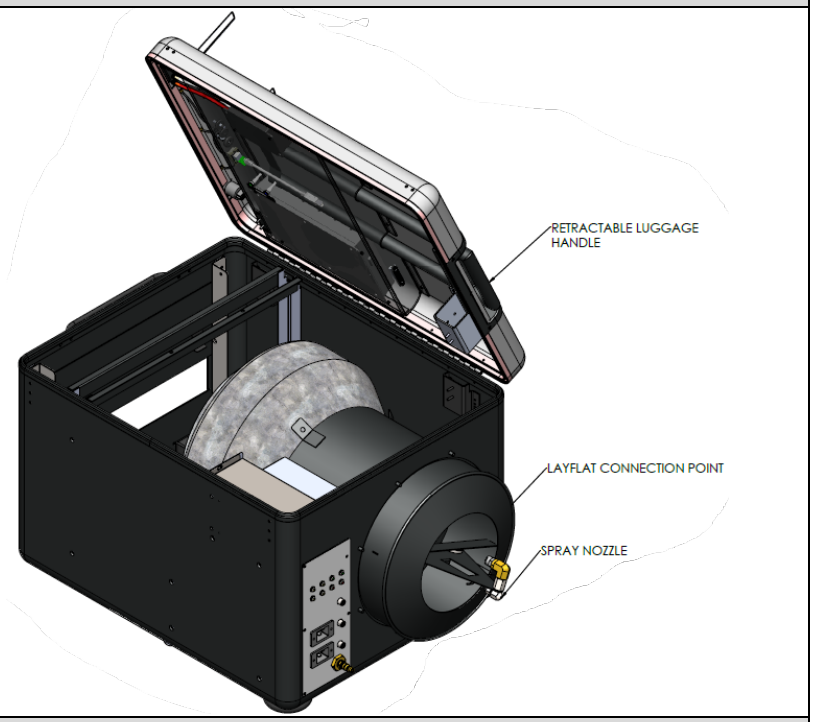
Supplies

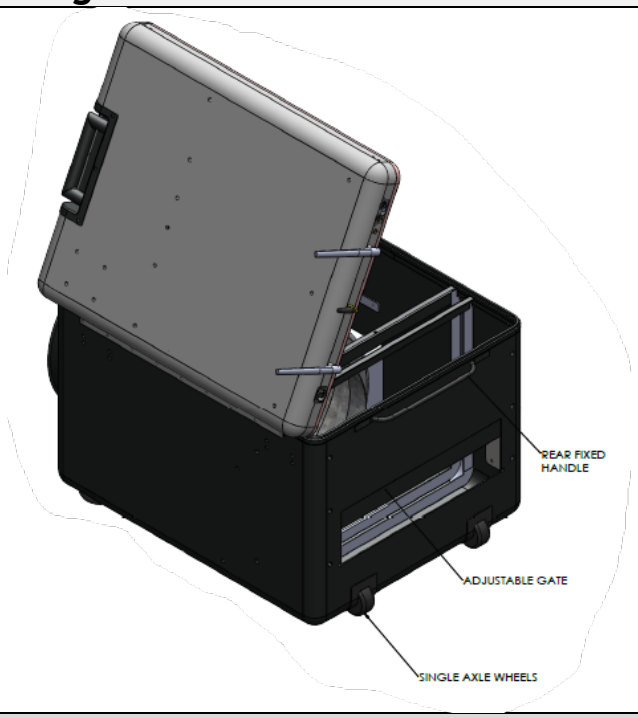
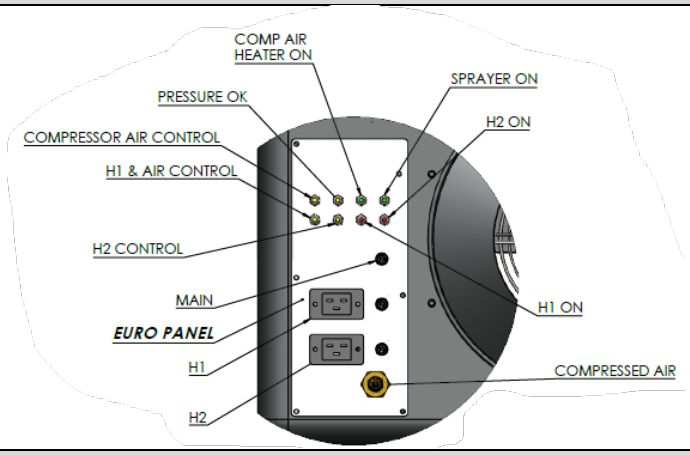
- Three tarps or 3 ft. to 12 ft. / 0.9m to 3.6m runner tarps
- Sheet metal for injection-hole repairs
- Duct insulation, spray adhesive
- Mastic and mesh
- Extra print cartridges, paper

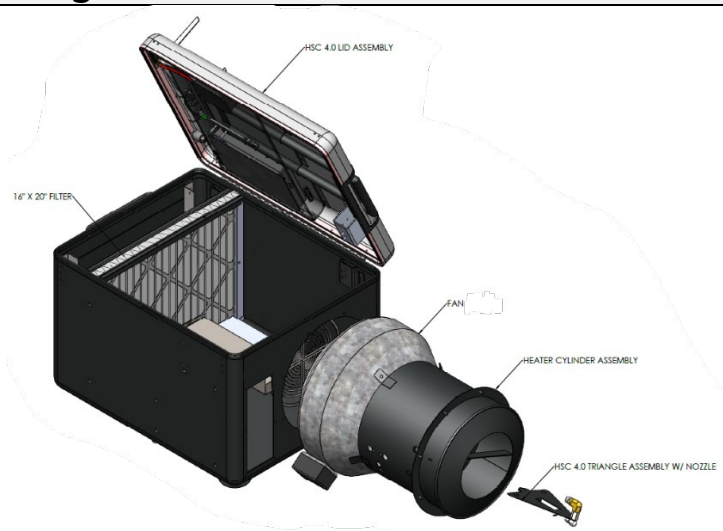
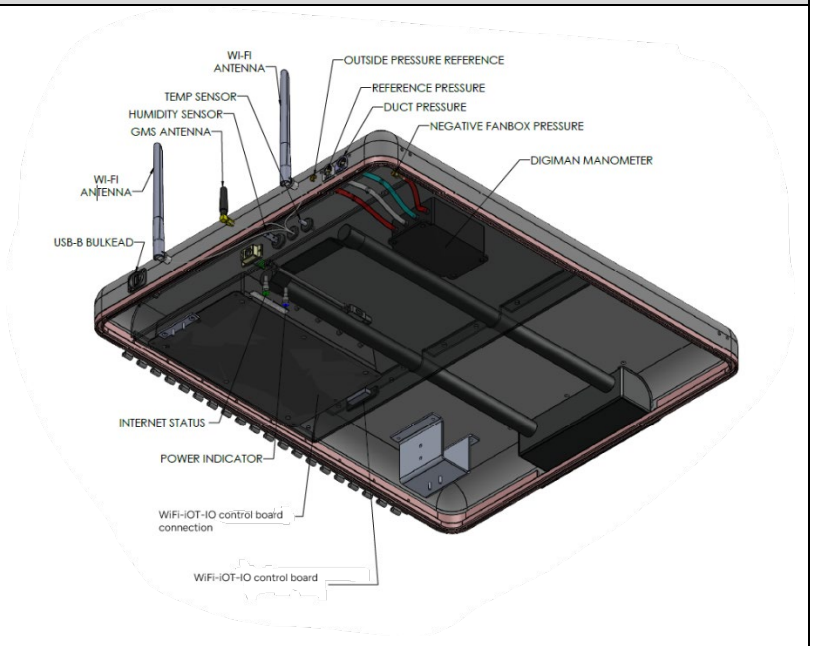
6 EQUIPMENT OVERVIEW

6.1 MAJOR COMPONENTS

TABLE 3: MAJOR COMPONENTS

Assembly	Image
Exterior	
Nozzle Assembly Connection Point (Only for rolling on flat surfaces - not intended for stairs)	
Air Outlet Layflat Connection Point	
Luggage Handle	
Rear/Fixed Carrying Handle	
Single Axle Wheels	
Exterior Rear	
Rear fixed handle	
Adjustable inlet gate	

Assembly	Image
Single Axle Wheels	
Front	
Amber - Relay Lights	
Green & Red - Component/Energized Lights	
15A Popper/Breaks	
Power Connections	
Main Power Indicator LED = 3 amps	
Main + H1 = 10 amps (A) H2=6.5A	
Interior	
Filter	
Fan	
Heater Cylinder Assembly	

Assembly	Image
Triangle Assembly with Nozzle	
Lid	
WiFi-iOT-IO control board	
WiFi-iOT-IO control board connection	
Main Power Indicator Lights (Blue)	
Internet Status (Green/Flashing when actively communicating)	
USB-B Bulkhead Laptop Cable Connector (Backup to wireless connections)	
WiFi Antenna (2)	
LTE/GMS Network Antenna	
Humidity Sensor	
Temperature Sensor	
Outside Pressure Reference	
Reference Pressure Port	
Duct Pressure Port (Blue Tube Connection)	
Negative Fanbox Pressure Port	
Manometer	

7 HARDWARE & SOFTWARE SET UP

7.1 SITE SET UP

WEAR PERSONAL PROTECTION EQUIPMENT

Supply Side

For the supply side of the duct system, the aerosol injection point is typically just downstream of the evaporator coil. The choice of injection point must consider the following:

1. Generally, use the largest injection flange possible (14 in. vs. 12 in. vs 10 in. / 354mm, 304.8mm, 355.6mm to reduce velocities (and therefore wall deposition) at the injection point.
2. To reduce wall deposition opposite the flange, use the deepest trunks possible for the injection. Do not use trunks less than 8 in. / 203.2mm across.
3. Always use DuctMask on the inside duct walls near the injection point to avoid permanent deposition on those walls. Note that it does not stick well to many internal duct liners.
4. Access for injection can be made by cutting a new opening, removing a connecting duct, or occasionally through the access hole for the humidifier.
5. In situations where the furnace is being removed for replacement, the injection connection is typically made using a collar mounted to a cardboard or rigid insulation board.
6. The hole for the injection flange in sheet metal plenums can be made with a Malco hole cutter, a nibbler, a reciprocating saw, or snips. If using a Malco hole cutter or reciprocating saw, as well as some types of nibblers, care must be taken to avoid dropping filings into the furnace or coil, and the opening site must be vacuumed.
7. Choose a configuration that facilitates isolating the air handling equipment.

The connection between the flange and the duct system is typically submitted to large forces, and, therefore, must be mechanically fastened with something other than tape. For metal plenums, use self-taping screws to connect the flanges to plenum openings. Tape the flange to the plenum from the inside of the flange to prevent sealant particles from escaping. By taping from the inside, the pressure that builds up in the duct system during sealing tends to make the tape seal more tightly, rather than lifting external tape off the joint by pushing it away. Taping from the inside also tends to keep the flange clean. When sealing is complete, cut a sheet metal patch, re-apply any insulation that was removed onto the patch, and then mastic and screw the patch to the plenum.

7.1.1 BLOCK DESIGNED OPENINGS

There are methods to block commercial duct work. Sheet metal pans, magnetic sheets, closed cell foam, and cardboard are common blocking methods.

For closed cell foam:

1. With the blade knife, cut the closed-cell foam ½ in. / 38.1mm larger than the boot or space to be blocked. The foam expands and creates a tight seal.
    a. Boots: Insert the foam flush with 100% of the edges touching all four sides
    b. Larger plenum or Trunk Lines: Add support to avoid bowing or collapsing lines during the seal.

7.1.2 ISOLATE AIR HANDLING EQUIPMENT

Place blocking materials anywhere upstream or downstream of the equipment to protect form airborne sealant. Make sure the material makes a tight seal, holds internal pressure, and does not allow sealant to pass.

Blocking material can include:

- Corrugated plastic (sign board)
- Thermo-pan
- Cardboard
- Sheet metal
- Magnetic sheet with tape on all edges of the magnet

7.1.3 CUT INJECTION POINT

Select an injection point near the air handling equipment with the largest flange it can accommodate.

Note: If there is no space to accommodate the 10 in. round / 254mm injection flange, perform a reverse injection. This allows the aerosolized sealant particles to enter the ducts from the far end of the duct system.

7.1.4 INSTALL WYE KIT

A Wye connection can be used in place of the traditional injection point. Connect the “wye” to ducts at least 10 in. / 254mm in diameter; however, two 8 in. / 203.2mm diameter ducts can be used if there is no other way to seal the system. Smaller ducts imply higher speeds and more loss of sealant on the duct walls. When using a “Wye” for injection, follow these procedures:

1. Use two ducts on the same end of the duct system. Using ducts from opposing ends reduces airflow and transport of sealant and creates a dead zone in the middle of the duct system.
2. Limit fan flows 50 CFM / 23 l/s over the duct leakage in 25 CFM. High air speeds cause loss of sealant on the duct walls.
3. Connect the Wye at least 8 ft. / 2.4m from the injector so that sealant particles will have sufficient time to dry.

Note: Use a Wye to connect add-on fans (booster fans), to seal large commercial ductwork.

Why 24 in. / 609.6mm layflat on two downstream legs of the Wye?

Using 36 in. / 609.6mm layflat typically fills up the equipment room area and movement in/ out of doors is difficult. Also, it is cumbersome to connect onto a smaller injection point.

- Fan flows using this method should be limited to 250 CFM / 424.75 m^3/h over the duct leakage in 25 CFM / 42.47 m^3/h. High air speeds cause loss of sealant on the duct walls.
- “Wye” should be located at least 2.4m from the injector so that sealant particles will have a sufficient time to dry.
- Connect to the duct system using 10 in. / 254mm quick-connect collars or connect via reducers to inverted boots that match the dimensions of the boots into which you are injecting into.
- Seal the inverted boots to the existing boots by taping from the inside.

7.2 EQUIPMENT SET-UP

Inspect all parts of the equipment that come in contact with the liquid sealant. Make sure that the nozzle and the sealant tubing are not clogged. Clogged nozzles or tubing can cause low sealant flow, and therefore low sealing rates. An indication of clogging is bouncing liquid lines during sealing or low sealant consumption compared to the fluid level indicator.

Sealing Equipment Location

To minimize the possibility of accidental spillage of liquid sealant, protective tarps must be used whenever the sealing equipment is located within the living space.

When choosing the location for the unit the angle needs to be adjusted to keep the nozzle pointed slightly up from the middle of the lay flat tubing. The angle of the lay flat tubing should be parallel to the nozzle (preferably horizontal). The nozzle tip should be at least 2.43m from the duct injection point or any sharp bend in the lay flat tubing.

7.2.1 LAYFLAT ATTACHMENT

Layflat is used to connect the Euroseal machine to the ductwork. Attach flexible plastic material between the fanbox and injection point(s). Allow a minimum of 2.5m straight and level before any turns or connections. This allows for the proper drying of the airborne sealant prior to entering the ducts.

Attach the layflat to the machine and ductwork using the provided clamps. Always check for layflat leaks after clamping, by feeling for airflow around the clamp with the fan in operation

Handle the layflat carefully. Do not drag the heavy roll on the ground, which might tear the layflat when inflated during use.

Note: To avoid any low temperature or high humidity issues, as well as disturbing the layflat, it is recommended to bring the fanbox inside the building.

7.2.2 NOZZLE

Euroseal uses a standard air compressor to atomize the liquid with a high-pressure, high-velocity jet. This patented atomization nozzle uses no moving parts within the Aeroseal equipment and has high level of reliability as long as the appropriate air compressor is used. The nozzle uses an air gap to reduce heating of the liquid until after atomization, thereby reducing clogging. (See Figure 1)

Figure 1: Nozzle

When using this compressed-air atomizer, it is important to utilize an effective dryer system to treat the compressed air. The atomization Nozzle contains an in-line compressed-air heater that shorts out if water condenses in the line.

When this heater shorts, sealing rates decrease significantly, and liquid deposition will occur either in the duct system or in the layflat tubing.

For the dryer to be effective, it must be a system that is rated for continuous use. The provided 5-micron filter removes most moisture from the airline and needs to be installed at the machine.

If using a refrigerated dryer, CONNECT THE AIR LINE FROM THE COMPRESSOR TO THE DRYER BEFORE TURNING ON THE DRYER to avoid freezing of the air line in the dryer.

Components

Euroseal equipment uses an Atomization Nozzle with several components built into the nozzle, including:

- Compressed air heater
- Temperature sensor to monitor the condition of the compressed air heater
- High-pressure air connection
- Thermostatic safety switches

CAUTION: HOT

1. Take the arrowhead nozzle assembly from the fanbox.
2. Pass the sealant tube through the carrier hole at the back of the metal arrowhead.
3. Turn the nozzle head slightly to the side and insert the stainless-steel piece into the nozzle. The tube should penetrate the nozzle by 1 mm.
4. Slide grooved grommets into place.
5. Straighten the tube.
6. Turn entire assembly over.
7. Attach to fanbox using the magnets on the dimples and line up the magnets and dimples to hold the assembly in the correct position.

8. Push the braided airline into the nozzle. The button pops up.
9. Press button to disconnect.

7.2.3 CONNECT MANOMETER & BLUE TUBE

The blue tube connects the fanbox manometer to the duct system. Plug into the blue port on the back of the fanbox and the other end should be inserted into the duct system for pressure reading. Place into ducts at the furthest point from the injection point. For a clear path, ensure no kinks, restrictions, or damage to the tube.

7.2.4 CONNECT MANOMETER TO DUCT SYSTEM

- Measures and monitors positive duct pressure
- Calculates flow and monitors leakage throughout testing and sealing
- Placed into ducts at the furthest point from the injection point
- Ensure clear path with no kinks, restrictions, or damage to the tubing

7.2.5 SEALANT BOTTLE INSTALL

Do not place the sealant jug in the Euroseal fanbox until you are ready to seal. (See Figure 2)

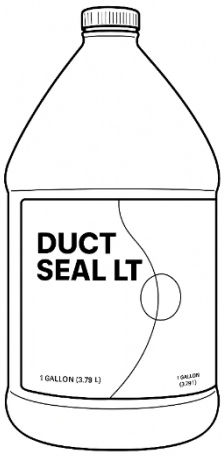


Figure 2: Sealant Bottle

The equipment pumps undiluted sealant through silicone pump tubing. Sealant that has any lumps or coagulation should not be used. The steps are:

1. Shake the sealant bottle vigorously first before putting it inside the box.
2. Inspect the sealant container for any signs of coagulation.
3. Replace the bottle cap with the sealant pick-up tube assembly. **Note**: The pump tubing should be kept on the “blind” screw inside the machine when the sealant container is not in use.
4. Place the sealant jug in the Euroseal fanbox and connect the tubing from the sealant pump to the pick-up tube.

DO NOT STORE SEALANT IN FREEZING TEMPERATURES OR EXTREME HEAT. THIS WILL RENDER YOUR SEALANT USELESS. Operating temperatures are >4°C; Storage temperatures are 0°C to 48°C. Do not freeze.

7.2.6 230V ELECTRICAL CONNECTION & POWER CORDS

CAUTION: ELECTRICAL HAZARD

Use separate electrical connections for each power cord, which requires 10 amps. (See Figure 3)

- Ensure each cord is pulling from an individual, unloaded circuit or generator circuit.
- Consider using GFIC pigtails on all electrical cords.
- Reset all tripped breakers.

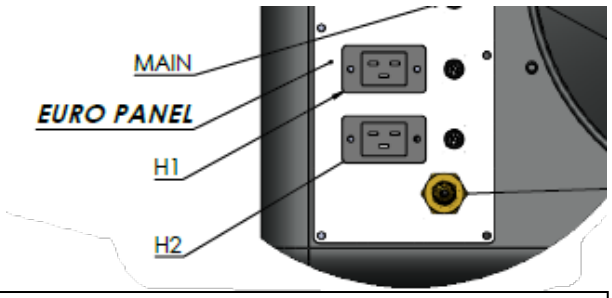


Figure 3: Front Panel Electrical Connections

CAUTION: ELECTRICAL HAZARD

For the Emergency Switch, connect the two 230V cords from the wall outlet to the input side of the switch. Connect the cords of the pigtail cord to the Euroseal 4.0 system. Rotate the switch to the ON position to allow power to the system. The Emergency Switch is required when using the Euro 4.0 system. (See Figure 4)

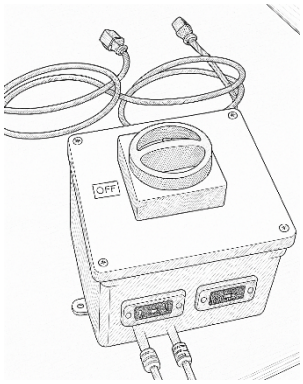


Figure 4: Emergency Switch

7.2.7 SCRUBBER FAN

CAUTION: LIFT HAZARD

Always start the Scrubber Fan prior to initiating injection and assure that it is fitted with appropriate MERV 14 or better rating pleated filters, e.g., 3M Filterete Ultra-Allergen. Requires its own electrical connection on a breaker separate from H1 and H2 heater cords.

- Use pleated filters specifically designed to capture smaller particles.
- Face the outlet of the scrubber in a direction where is it not blowing onto any of the walls. Small particles may pass through the scrubber fan filtration and be blown out of the fan outlet. If the fan outlet discharge is within 15 feet of any items or walls, those

items or walls should be covered with a protective tarp to prevent any sealant from sticking to them.
- Wear appropriate personal protection equipment.


CAUTION: WEAR PERSONAL PROTECTIVE EQUIPMENT

The high-flow scrubber fan is fitted with small-particle filters that provide an acceptable environment. **Note**: It is recommended that technicians wear N95 NIOSH approved dust mask when working in areas of high overspray concentration.

The sealant is non-toxic. The technician working in the presence of high overspray concentration day in and day out should take the proper preventive precautions to avoid significant inhalation/ingestion of the Aeroseal sealant.

- Connect the compressed-air hose between the compressor and the 5 Micron filter then install this at the fanbox along with the inlet pressure gauge assembly (do not install the 5 Micron filter at the compressor). Connect to two separate circuits.

7.2.8 BOOSTER FANBOX


CAUTION: LIFT HAZARD

For leaky duct systems or large duct systems, it may not be possible to get sufficient duct pressure and flow for conducting a sealing event. Using multiple fanboxes helps increase the air flow and the duct pressure to acceptable levels (>10 Pa). This can help avoid multiple equipment set-ups by increasing the length of ductwork that can be sealed.

Connect to one circuit.

7.2.9 COMPRESSOR

Set up the Compressor and the desiccant dryer in a location where:
- Compressor power cord can reach an unused outlet
- Compressor noise is minimized
- Water in the tank is drained and the hoses are free of moisture

If your machine was shipped with a 5 Micron Air filter, then install this at the machine along with the pressure gauge.

7.3 LAPTOP & SMARTSEAL SET UP

The laptop computer includes SmartSeal software, which is used to control the sealing process. Although laptop computers are designed to be more resistant to transport than a desktop computer, they still need to be treated with more care than most tools used in the HVAC business.

The laptop computer is connected to the unit's lid via a USB cable or wirelessly. Mounted inside the lid of the machine is a series of electronic boards and circuitry including the Digiman manometer and wireless control board. These are the digital devices processing all the inputs/outputs to and from the laptop computer.

The following operation and maintenance procedures are recommended:

- The laptop should be stored in a cool dry place when not in use. It should never be kept in an extremely hot or cold truck or left directly in sunlight for extended periods.
- The laptop should be turned off when not in use.
- Cover the computer when sealing in areas of high particle concentration (foggy areas).
- To shut down the computer, exit the program, select **Start** on the bottom of the desktop, and select **Shut Down**.
- The computer screen should be closed when not in use.
- The keyboard of the laptop needs to be kept free of dirt and moisture.
- The laptop should always be shut down when being moved. Sudden movement when it is on can cause extensive damage to the hard drive and result in loss of data. Hard drive failure caused by jarring or misuse is expensive to repair and may void any warranty on the laptop.
- Additional software installed by the Dealer onto the Aeroseal laptop can cause problems with the software.

Video games, music download software, or sexually explicit materials shall not be loaded onto these computers. These programs are often gateways for viruses and other malicious programs. If a laptop needs to be reformatted, the software will need to be reinstalled at Aeroseal's factory location.

Interface

The Aeroseal machine incorporates custom electronics that interface between the Aeroseal software and the hardware devices like the manometer, sensors, and digital speed controller. The Digiman manometer is the "reading" tool that measures pressures. The Digiman also controls the fan.

The control board is the "brain" tool that controls the injection process, including the sealant pump, sealant atomization and both heaters.

Do not subject the Digiman pressure ports to large pressure differentials (i.e., greater than 1000 Pa).

In the event of communication problems between the laptop and machine, please call Tech Support to help resolve the issue.

CONNECT LAPTOP TO FANBOX WIFI ROUTER

1. Turn on fanbox.
2. Find available WiFi networks.
3. Select the fanbox ID.
4. Connect to the WiFi.

If the laptop is out-of-range of the WiFi:

- At 20 seconds, the laptop will sound an alert. Regular operation can be resumed if connection is restored within 10 seconds. Provides an audible warning.
- At 30 seconds, the laptop will sound different alert. The fanbox enters safe mode: fan on, pump off, compressed air off. Press START to resume operation.
- The laptop has a connection tone when it is back in range.

8 OPERATIONS

Euroseal 4.0 is intended for dealers and certified Aeroseal technicians trained in the use and maintenance of the sealing equipment.

8.1 PREPARATION

Follow The 5 F's to prepare the jobsite for a sealing event. (See Figure 5)

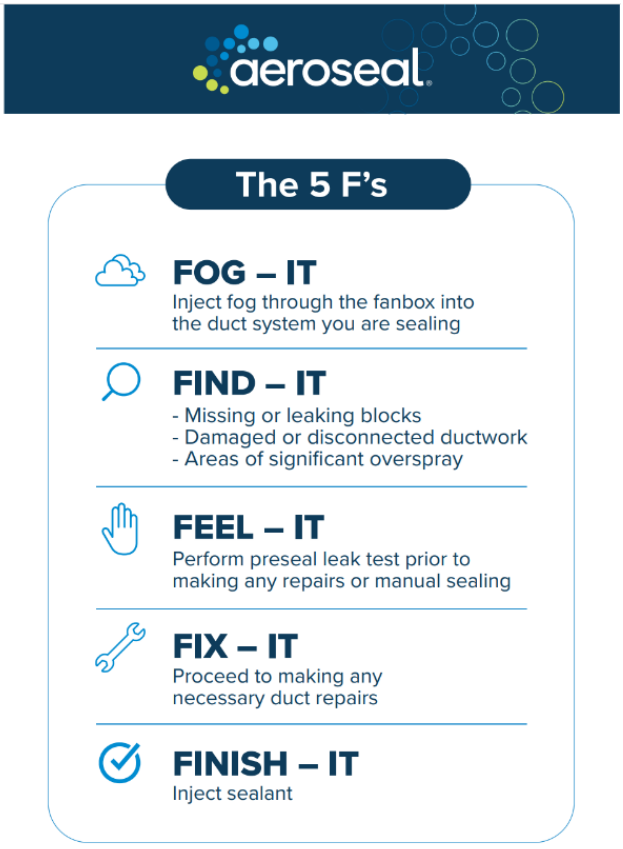


Figure 5. Five F's

Aeroseal Sealing Procedures

Key things to remember when using the Aeroseal machine include:

1. Check all liquid connections for tightness before injecting.
2. Always locate and start the Scrubber Fan prior to initiating injection and assure that it is fitted with appropriate MERV 14 or better rating pleated filters (e.g., 3M Filterete Ultra-Allergen).
3. Connect the compressed-air hose between the compressor and the 5 Micron filter then install this at the fanbox along with the inlet pressure gauge assembly (do not install the 5 Micron filter at the compressor).
4. Plug in all heaters on the Heater Cylinder to get a better sealing rate.

All aerosol injections must be performed under the control of the computer-control hardware and software package provided by AEROSEAL, which includes automatic safety shutoff of injection in case of inadequate pressure, overheating, inadequate flow, excessive pressure, or increases in duct leakage.

OPERATING THE EQUIPMENT WITHOUT THE SOFTWARE SAFEGUARDS WILL VOID THE WARRANTY AND POTENTIALLY VOID DEALER RIGHTS TO THE AEROSEAL PROCESS.

8.1.1 BEST PRACTICES

During the preparation phase, consider the following best practices:

CAUTION: ELECTRICAL HAZARD

WEAR PERSONAL PROTECTION EQUIPMENT

- Use ground fault protection when using outlets
- Ensure ducts are thoroughly inspected
- Use a fog machine with high-density liquid to find leaks before sealing
- The PreSeal leak test is recommended prior to making any manual and/or mechanical repairs or hand sealing. This ensures the seal certificate is as accurate as possible.

Manage Overspray

Best practices for managing overspray during the sealing event include:

- Ensure all openings are blocked
- During pre-seal, if the leak is unusually high, inspect the area for leaks
- If overspray is noticed or the sealing graph is flatlined, identify and block leaks
- Use scrubber fans to move air
- Pressurized the space
- Take care not to push or pull sealant into the fanbox during sealing

Equipment Protection: Ensure the air handling equipment is isolated from sealant particles.

Technician Safety: Turn on scrubber fans.

Manual Check: Manually turn the fan to full speed, and then walk the entire duct system, checking every register, listening for leaks or unsealed registers, and looking for any evidence of air flow into the living space.

8.2 SMARTSEAL SOFTWARE OPERATION

After the worksite has been thoroughly prepared, the seal event is managed directly from the SmartSeal software. Before starting a new job, ensure the fanbox has power, look for the available WiFi and fanbox ID, and connect.

8.2.1 NEW PROJECT

To start a new job in Smart Seal, follow these steps:

1. Click **New**.

PROJECT INFORMATION

2. Complete all the required fields in the **Project Information** screen. **Note**: SMACNA is specific to North America.
3. Click **Save Customer**.
4. Click **Next**.

SYSTEM AND SEAL EVENT INFORMATION

5. In the **System** screen, click **Add System** and complete the required fields. Note: In this section, Operating Process is for the system.
6. Click **Save System**.
7. Click **Add Seal Event**. Complete the required fields. Note: In this section, Operating Pressure is for the specific duct work being sealed. This value is used for the software logic, tests, and individual seal certificate.
8. Click **Save Event**. It's possible to add multiple seal events for each system. Each will have its own certificate.
9. Click **Next**. A confirmation screen displays. Under **Sealing Event**, the item selected with be the first event to seal. Confirm at the prompt.

8.2.2 PRESEAL

The first step in the sealing process is to establish a baseline of how much leakage exists in the duct system before the sealing is actually performed. **Note**: Use a 50cc sealant for ductwork with high leakage.

10. At the **PreSeal Leakage** Test screen, at the **Select Gate Setting** field, select **2**. Ensure the setting on the fanbox is 2.
11. Click **Start**. The software may prompt a change to the gate setting due to the conditions of the ductwork. Lower leakage rates may need lower gate settings; higher leakage rates may need the largest gate setting: **1**.
12. Click **Next** to continue to the Seal screen.

8.2.3 SEAL

This screen is a calculated representation of what the leakage in the ductwork is doing.

The seal process will stop/pause in the case of excessive or inadequate duct pressure, overheating, flow of sealant, or increases in duct leakage. Before resuming sealing, locate the source of the problem, make the necessary changes to correct the problem, and then resume sealing.

Click **EMERGENCY STOP** at any time to stop the seal event.

13. Install sealant jug in the fanbox.
14. Click **Start**.
15. At the pop-up, select the amount of sealant in the sealant bottle.
16. Click **Continue**. The system ramps up the heater and fan, performs a nozzle clog check, and then proceeds to the seal.
17. During the seal, watch the following:
    a. **Sealing Profile Graph Line**: the graph line provides a graphic representation of the actual duct leakage over time. It shows real-time results from sealing the leaks in the duct system.
    b. **Sealant Rate**: The software monitors the sealant rate based upon the pump speed and will pause the injection process if the sealant bottle is almost empty. Additionally, software does real-time calculations to determine the amount of sealant that duct system can handle.
    c. **Inlet Gate**: The software ensures that the gate setting matches the setting recommendation and the actual setting. This is important so the correct flow and leakages are recorded.
    d. **Duct Pressure**: Minimum duct pressure is 10 Pa; any pressure below 10 Pa will require sectioning of the duct work to get a workable pressure, manually sealing large leaks, or connecting two fanboxes via a Wye.
    e. **Temperature and Humidity**: Sensors monitor temperature and humidity. Temperatures should stay within 5 degrees of each other; relative humidity should be between 30% and 80%. **Note**: Humidity above 80% may cause the sealing process to run more slowly since the software limits the allowable pump speed.
    f. **Heater**:
        i. The software determines that maximum sealant flow rate based upon how many heaters are plugged in, as well as the air flow rate, inlet temperature, and humidity.
        ii. The more heaters that are plugged in, the greater amount of sealant can be evaporated, and therefore injected.
        iii. The heater indicators turn green when turned on by the computer.
        iv. There is a corresponding voltage above the indicators, where the highest voltage corresponds to both heaters being plugged in.

v. When the signal to run the pump activates it will turn the nozzle heater button green as well.

g. **Fan Speed**: Software controls fan speed based on the set maximum duct pressure.

18. Click **Stop** when conditions do not allow for further sealing. Know when to stop:
    a. The sealing graph line flattens out.
    b. Sealant flow rate is at the lowest gate setting (4) and duct pressure reaches the goal. This may be when duct leakage below 5% of air handling system fan flow or 85% of leakage has been sealed.
19. Select **Yes** at the pop-up to confirm the seal should be stopped.

8.2.4 FLUSH

The flush process removes sealant from the clear liquid tubes by running clean water through the lines.

20. Replace the bottle of sealant with a bottle of water.
21. Determine the length of time to flush. It is recommended that flush duration is 2 minutes.
22. Click **Start Flushing**. The process will stop when the duration setting is reached. The software turns off the sealant pump and the compressed air heater. **Note**: It does not stop the fanbox fan or the flow of compressed air for 2 minutes to cool down.

8.2.5 COOL DOWN

Once the Flush process is complete, the software turns off the sealant pump and heaters, but does not turn off the fanbox fan for at least 2 minutes to cool down the nozzle and heaters in the 1355.6mm cylinder.

To re-start the sealing process at this point, wait for the cool down process to complete.

8.2.6 POSTSEAL

23. Click **Start**. The software will converge on the operating pressure selected in the input screen. Some movement of the dials occurs during the process.
    a. If a system is sealed very tight the computer can have trouble converging on a pressure on larger gate openings. Lower your gate to 3 or 4 if you have sealed down tight. This also can be remedied by directing the computer to converge at a higher pressure. You can do this by typing the letter “T” at any time that the Post-Seal Leakage (or Pre-Seal) screen is up. You can then type in a pressure up to 100 Pa, which can make it easier to converge.
    b. Post-seal values will be displayed with the final results of the sealed duct system.
    c. After leaks are measured, if needed, return to the sealing screen to reach target leakage.

8.2.7 CERTIFICATE

24. Click **Certificate** to view, print, or save the event certificate.

25. Click **Run additional seals for current customer** if additional events were entered.
26. At the rendered certificate screen, click **Print/Save Certificate**.

Note: Before you print out the job certificate, make sure that all customer details (like name and address) are correct. After printing, all fields get locked, and you will NOT be able to make any further changes to the certificate.

All customers shall be provided with a printed or electronic copy of the Certificate of Completion generated by or verifying the sealing job.

8.2.8 CLEAN UP

Installer must always take precautions to prevent spillage on carpet, furniture, and other personal property, as sealant can be difficult to remove.

- Disconnect lay flat tubing from the duct.
- Tie the injection assembly end in a knot and then roll the tubing before taking it outside. Be sure not to leak any sealant material that may have collected in the tubing.
- Inspect supply plenums to be certain that coil/fan plugs have been removed.
- Re-install grilles and immediately vacuum any debris that falls.
- For sheet metal systems, repair the Injection Flange Connection by installing a sheet metal patching plate over the injection hole. For internally lined ductwork, glue a round section of duct insulation of the same size as the hole onto the patch before screwing it over the injection hole. Once the patch is in place, seal it on the outside with metal-foil tape or water-based mastic.
- Restart the HVAC system and assure that it is operating properly.

Accidental spillage

- Soak up excess liquid with absorbent materials such as disposable towels, paper towels, etc. Place absorbent materials in plastic bags or other suitable containers for later disposal. Residual material may be removed by wiping with water-dampened rags or by flushing with water. Remove as much as possible, repeating as necessary and for as long as the residue will continue to be removed.
- Dried (set) sealant on Aeroseal sealing equipment and accessories can be removed with cleaner by soaking small parts in a container with a tight-fitting lid, or by wiping, brushing, or spraying and then wiping dry with rags.
- Remove sealant and cleaner from skin immediately by washing affected areas with soap and water as soon as possible after contact. For emergency and other first aid procedures, refer to the SDS sheets.

Disposal

The information provided herein is for disposal of very minor volumes of sealant, as would be expected for normal use of the Aeroseal process. Undiluted sealant material is typically supplied in cases of four one-gallon containers.

Absorbent materials from minor clean-up operations can be disposed as solid trash in sanitary trash landfills. Excess liquid sealant (up to 1 gallon) can be absorbed into soil or sand in a can or

an open top plastic container and allowed to dry air. When dry, the container can be disposed as solid trash. An alternative method involves freezing the liquid, separating the solid mass from the liquid. The solid portion can be disposed as solid general trash. The liquid can normally be disposed through the municipal sanitary waste system. Sealant imparts a white, milky color to water that may not be removed or sufficiently diluted by the treatment facility.

Each municipality has their own regulations and restrictions related to the disposal of materials through the sanitary sewer system. The local regulatory agency should be contacted and advised if small amounts of sealant are expected to be regularly discharged into the sanitary sewer system. Sealant, as with any chemical product, must not be disposed of into Storm Sewers or onto open land.

8.3 SEAL DATA UPLOAD

Per the sublicense agreement, a software upload process with Aeroseal must happen at least once per month via the Internet. It is recommended that the upload process is done by the 5th of the month.

Failure to upload for a period of greater than 31 days will cause the Aeroseal software to stop working. It is important to upload computers within a 30-day period to continue using the Aeroseal software and is required according to the sublicense agreement.

Data Upload Procedure

1. Establish a connection to the Internet. Aeroseal is not responsible for establishing a connection to the Internet, nor is Aeroseal responsible for supporting your laptop's connection to your office network.
2. Verify the internet connection.
3. Start the Smart Seal program.
4. Select the menu choice to upload data to Aeroseal. The upload process will start automatically. If there is an internet connection the program will shut down and restart on its own. The software license is now refreshed and ready to use.
5. During the upload process, the software will prompt you if a new update is available. Click **Yes** to get the latest software version.
6. If you forget to do an upload in a month, you may encounter a dialog box as shown below. Click **Upload to Aeroseal** to proceed.

9 LOW SEAL PROTOCOL

Low level leakage protocols are designed to prevent sealant back flow into your machine, which may cause sealant to coat the internal components of your equipment.

For low flow protocol mode, use 15cc sealant tube.

- Sealant deposition on the heater coils may cause a smoke/ odor issue when using the machine.
- Deposition on the fan blades will cause it to jam up, unbalanced rotor and result in accelerated failure.

Follow these steps to keep the machine clean, even while sealing to low levels.

Standard sealing stops once leaks have been sealed to a certain m^3/h. This is achieved when the duct pressure has increased beyond desired 'safe' levels or if the air flow has reduced below 150 CFM / 71 l/s.

Sealing stops once the graph reaches point where it is no longer decreasing but has gone flat. If the graph has gone flat, it may not be possible to seal any lower due to the size of the holes being sealed. The largest possible opening that can be sealed efficiently is $5/8^{th}$ in. / 15.8mm. Often, the duct has been sealed to a desirable level by this point, but in certain circumstances additional sealing may be necessary to achieve specifications or standards.

The following protocol should be followed when getting to a low leakage level is necessary:

1. Connect the Euroseal vent box (Figure 6) to the farthest point in the duct work. Install the MERV 14 filter and close the lid. Install the 8.5 in. / 203.2mm plug in it.

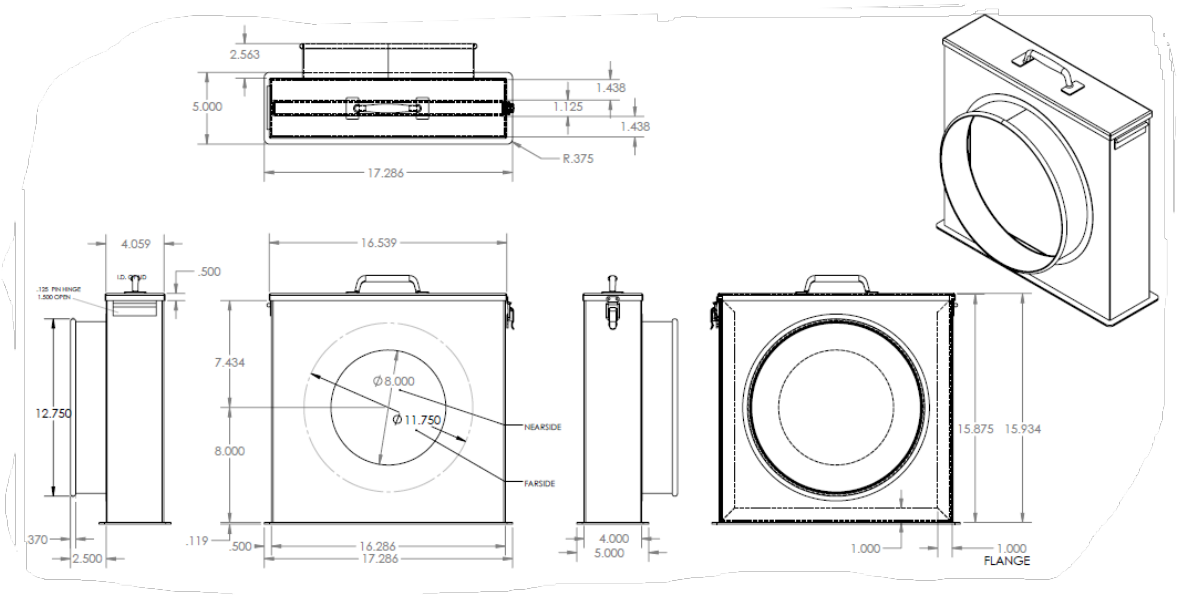


Figure 6: Euro Vent Box

2. Proceed with operational set-up steps. The steps defined below are necessary to keep sealant overspray from backflowing into the machine.
3. Run Pre-Seal and Seal operations.
4. Follow software prompts for gate changes, as needed.
5. When leakage is at 150 CFM / 71 l/s, the software prompts 'Low Flow protocol' mode.
6. Option #1: Click **Yes**. (Figure 7)
7. Acknowledge the alarm to proceed.

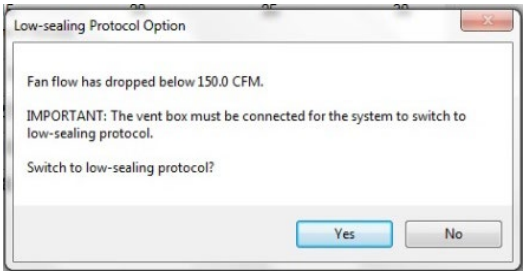


Figure 7. Low Sealing Protocol Pop-Up

8. Continue seal process. **Note**: "Danger of raining sealant" alarm is active during the process. "No flow detected" alarm occurs when fan box pressure goes to 0 or positive.
9. To preview leakage numbers, pause the sealing process, change the gate setting to 3 or 4, and document the numbers. Return to gate setting 2 to restart the seal. This is the best chance of reducing any alarms – and keep the spray moving forward inside the ductwork (+ve flow).

CAUTION: HOT

Note: In low flow zone, the cylinder heaters are ON and will heat the machine even in the pause mode. If you encounter an alarm, you may want to pause sealing and open up the fanbox so hot air exhausts out and cools the machine.

10. Proceed to Flush mode.
11. Replace sealant bottle with a water bottle.
12. Click **Start**. In the event of a Raining Sealant alarm, acknowledge the alarm to continue flushing, or exit out if the tubing is clean.
13. After flush, the system will automatically go into the cool down mode. After cooldown, the software will keep the fan running. **Note**: disconnect the bottom heater to quicken the cool down process. Click **Stop** to manually interrupt the cooldown process.

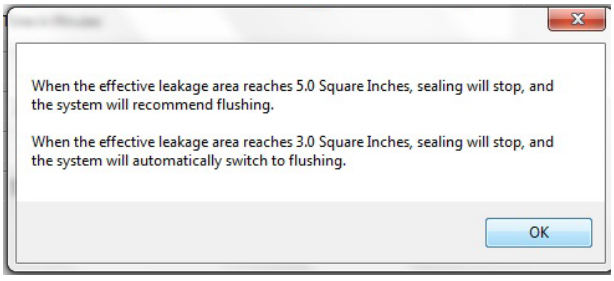


Figure 8. 5.0 sq.in. & 3.0 sq. in. / 19.3cm^2 & 32.2cm^2

14. Flush the ductwork by removing the foam plug on the vent box. The Merv14 filter will catch the spray particles.
15. After the duct is filled with fresh air, put back the foam plug and get ready to do the post seal test.

16. Option #2: Use this option for sealing down to ELAs of 20cm^2 or if you cannot connect the vent box. Click **No**.
17. At the pop-up alarm(s), click **OK** to acknowledge.
18. Software alerts you when ELA reaches 32cm^2 (Figure 8).
19. Click **Start** to restart sealing or select **Flushing** from the dropdown menu.
20. If **Start** selected, software continues to monitor for leakage. The seal pauses when it reaches 3 sq. in. / 20cm^2. The software autoselects **Flushing**. (Figure 10)
21. When Flushing is selected, replace sealant bottle with a water bottle. (Figure 10)
22. Click **Start**. In the event of a Raining Sealant alarm, acknowledge the alarm to continue flushing, or exit out if the tubing is clean.

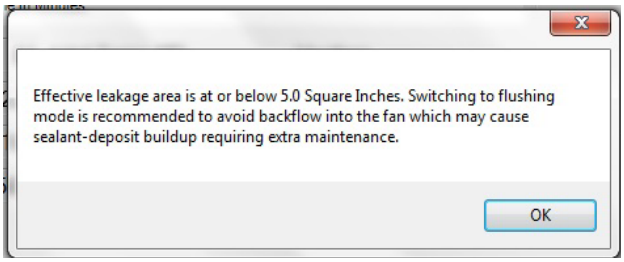


Figure 9. Flush Recommendation Alert

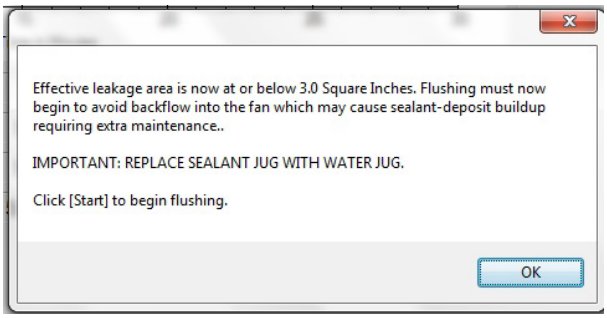


Figure 10. Flush Alert

23. After flush, the system will automatically go into the cool down mode. After cooldown, the software will keep the fan running. **Note**: disconnect the bottom heater to quicken the cool down process. Click **Stop** to manually interrupt the cooldown process.
24. Proceed with Post Seal. **Note**: If there is No flow (or no leakage), the fan box pressure will be positive. The software will NOT have any reading to measure.
    - Tip #1: Try testing with 100% fan speed and going down to Gate# 3 (preferred) or 4.
    - Tip #2: As a last option, put a small hole in the layflat (for air to flow so that fanbox measures at least 0.5 Pa.
    - Tip #3: Click **T** to change the target pressure to the actual duct pressure.
25. Redo the post seal if needed.
26. Proceed with Certificate.

10 MAINTENANCE

Fanbox nozzle

Proper cleaning and maintenance will reduce the risk of nozzle overheating and is critical for proper sealant droplet formation in the ducts.

Clean the nozzle after every seal. It is critical to follow cleaning procedures to ensure that there are no obstructions in key components of the injection system.

Required Tools: (See Figure 11)

- HSC nozzle assembly
- Air nozzle cleaning brushes
- Dental picks
- Hot (tap) water
- Cleaner
- (2) plastic cups
- Disposable shop towels
- Nitrile gloves

Figure 11: Cleaning Tools

See Figure 12 for a full diagram for cleaning the nozzle.

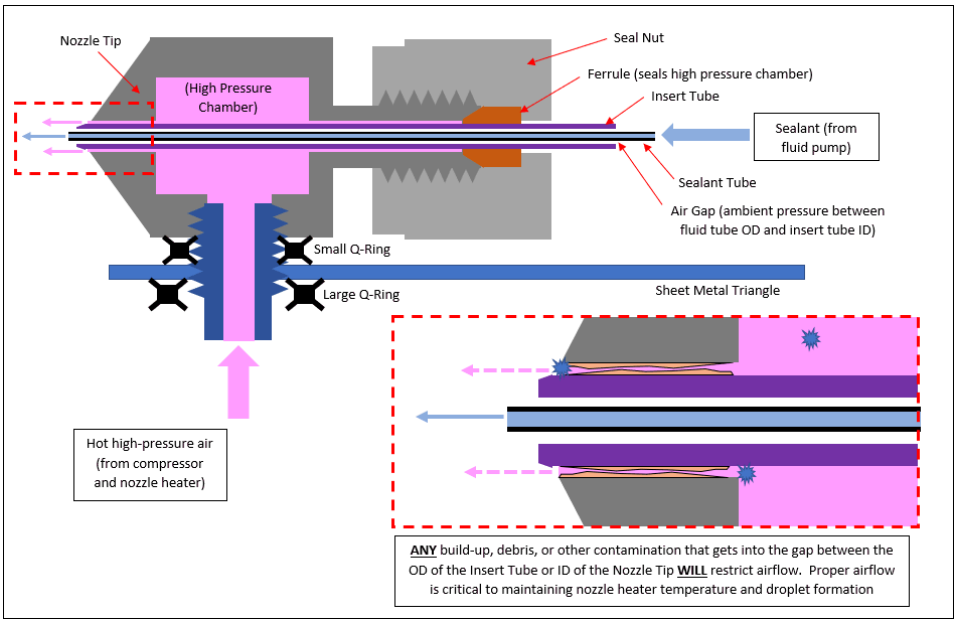


Figure 12: Nozzle Diagram

Disassemble

1. Remove fluid line and braided hose.
2. Remove triangle assembly from fanbox.
3. Hold nozzle securely.
4. Twist bottom elbow to separate pieces from sheet metal triangle.
5. Separate Q-rings, loosen nozzle compression nut, separate nozzle, insert tube and ferrule. (See Figure 13)

Note: This prevents damage to the Q-ring under the nozzle tip (cuts and abrasions on the Q-ring can cause debris to collect inside the nozzle assembly which will block airflow and cause overheating).

Figure 13: Disassemble nozzle parts

Inspection

1. Inspect for build-up on insert tube: (See Figure 14)
    a. Visually inspect for an amber color or other residue
    b. "Fingernail check" by feeling for any resistance change along the tube.
2. Inspect for build-up in the nozzle ID.
3. Inspect for damage on the Q-rings.

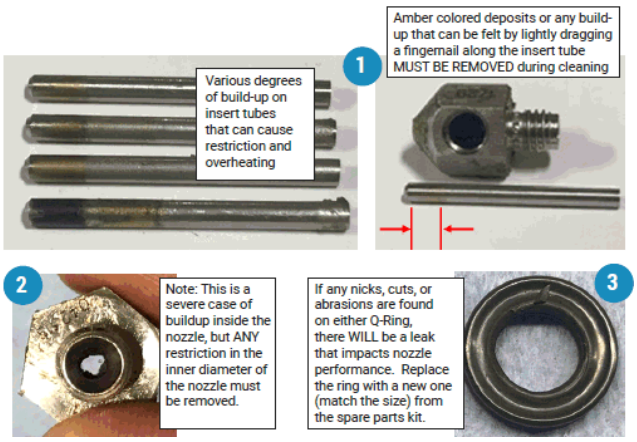


Figure 14: Inspect

Clean

1. Soak the nozzle in cleaner. (See Figure 15)
2. Rinse and soak for 2 minutes in hot water, be sure to agitate during soak time.
3. Wipe exterior of all parts with clean shop towels.
4. Clean ALL interior surfaces with small air nozzle cleaning brushes and dental picks.
    a. Using brushes reduces the chance of leaving debris/lint inside the nozzle components.
    b. twisting the brush clockwise during insertion and/or use of dental picks into the part can help pull debris to the outside edges where it can easily cleaned.
5. Rinse parts in hot water and blow dry (inside/outside) with filtered compressed air.
6. If any surface is still tacky or has smeared adhesive, repeat steps 1-5.

Figure 15: Clean

Reinspect

- Inspect critical areas on parts before reassembly.
- Wipe sheet metal triangle with cleaner and a shop towel.
- Rinse and dry.

Reassemble

1. Assemble nozzle. (See Figure 16)
2. Check for ferrule deformation and cracks (from overtightening).
3. Assemble triangle. (See Figure 17)
4. Large Q-ring fully installed onto the inlet elbow (push flush to the shoulder on the fitting).
5. Small Q-ring on top of the sheet metal triangle (push flush to the triangle).
6. Hold the nozzle stationery and thread the inlet elbow into it (appx 2 turns).
7. Finish with the nozzle and inlet elbow aligned as shown.

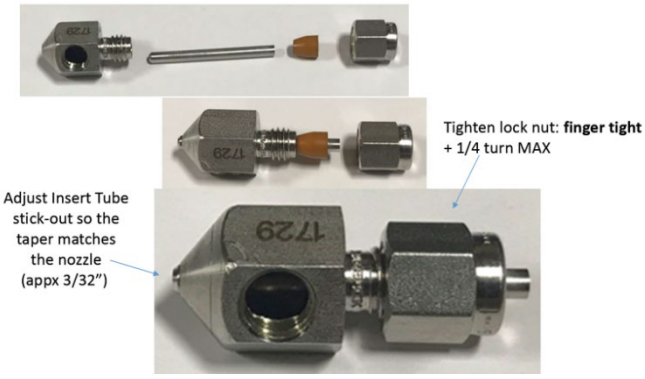


Figure 16: Reassemble Nozzle

NOTE: The nozzle assembly may not feel fully "tight" when correctly assembled. It should not rattle on the triangle, but over compressing the Q-Rings (3rd turn on the inlet elbow) will create leaks and cause issues with droplet formation.

8. Reinstall onto the fanbox (insert and align fluid tube, connect braided hose).

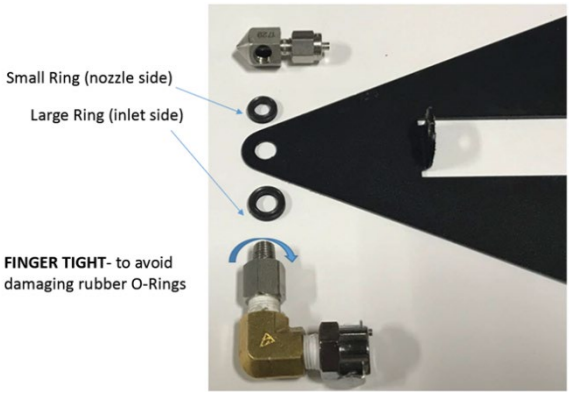


Figure 17: Triangle

Nozzle

1. Remove the sealant nut and washer first.
2. Loosen the liquid nut and push the liquid tube back through the nozzle.
3. Loosen the nozzle standpipe lock nut and rotate the nozzle tail toward you about 45 degrees.
4. Remove the compression fitting and the 3.18mm tube and ferrule.
5. Notice the burnt sealant on the outside of the 3.18mm tube – be sure to remove this old sealant using steel wool before reassembly.
6. Insert reamer into the nozzle tip by hand and spin the reamer to remove any baked-on sealant. Blow out the scrapings using compressed air to complete the cleaning. This cleaning will restore your nozzle to like-new condition.
7. Insert 1/8th in. / 3.18mm tube back into the nozzle tip and center the tube while tightening the compression fitting. Do not over-tighten the compression fitting or you will damage the tube.
8. Rotate the compressed air nozzle back in-line with the liquid tube. Slide the liquid tube back into place sticking out approximately 1mm from the nozzle tip and tighten its compression fitting only finger tight. Make use of the alignment tool to get both nozzle and sealant end aligned. Then add ¼ turn to both compression fittings using the supplied adjustable wrench.
9. Replace the cleanout screw and washer. Reamer may be purchased from Aeroseal or online from a machine shop supply company. You will need a reamer.
10. Do not soak nozzle tip in cleaner before routine cleaning. This would turn the sealant into jelly and become difficult to remove completely. For best results, wait until the nozzle is dry with no water present. This makes it easier to remove external sealant from the nozzle body.
11. Aeroseal recommends cleaning the nozzles after every four or five uses.
12. After each use, blow out the sealant and air tube of the nozzle using the blowout tool provided in your maintenance kit. Inside this kit you will also find a small alignment tool

and a small drill bit. These are used to clear the sealant tube and cooling gap on the nozzle prior to next usage. Simply insert the small drill bit into the sealant tube and make sure it is free and clear. Then insert the small alignment tool into the nozzle head over the sealant tube. Make sure the tool can be seen in between the two nuts that tighten the ferrules. Then clean off any sealant residue and dirt.

Table 4: Air Compressor Maintenance

Procedure	Daily	Weekly	Monthly	Annually (200 Hrs.)
Check pump oil level	X			
Oil leak inspection	X			
Drain condensation in air tanks	X			
Check for unusual noise/vibration	X			
Check for air leaks	X			
Inspect belt(s)	X			
Inspect air filter(s). Clean or replace if necessary		X		
Clean exterior of compressor		X		
Check safety relief valve			X	
Check belt adjustment			X	
Check and tighten all bolts			X	
Check air connections and compressor joints for leaks			X	
Change pump and/or engine oil				X

NOTICE **The pump oil must be changed after the first 20 hours of operation. The will remove contaminants contained in the crankcase due to break-in.**

Table 5: Component Maintenance

Item	Maintenance Instruction
Gate	The gate must flow freely open and close. If the gate is stiff moving up and down, it is typically due to sealant overspray. Use WD-40 to loosen the gate.
Pump head	This piece of the machine is the most difficult of all to clean. There are several moving parts to check. If you have a hard time turning the pump center screw (large) with a screwdriver, try WD-40 on it and work it in. It should turn but will be a bit stiff. Also make sure that the black slide connectors are in proper position. Use a soft rag to finish up the cleaning.
Filter	Recommend replacing the fiberglass filter at least every 6 seals.
Pick-up tube	After each use, the pick-up tube should be rinsed out thoroughly to ensure proper sealant flow from sealant bottle during operation.

Item	Maintenance Instruction
Fanbox	Using a wet soapy rag, wipe down the exterior of the fanbox to get as much off as possible. Then spray cleaner on it. Wait about a minute or two and wipe off very well. If there is a slight residue, this can be removed with warm soapy water. The inside can be cleaned in the same way. If you have had a major spill of sealant in the box, wipe it up as soon as you can. If you have a buildup of sealant on your heaters, please contact tech support and they will walk you through how to get them clean. A visual check of all electrical connections under the lid is something to look at as well, due to vibration from moving the unit from place to place. Make sure the electrical connections are secure and tight. Check the bulkhead connectors for tightness as well. If loose, tighten. These are the blue tube connecters located on the rear of the fanbox lid.
Sheet Metal	Apply the cleaner with a spray bottle. Allow the solvent to sit for several minutes. Once the solvent has had time to soak in, use a plastic brush to work it in. Clean up residue with a rag and repeat again with clean paper towel. Once the residue has been cleaned up, rinse again with water to pick up the remaining residue.
Sprayer	WARNING: Do not soak nozzle tips in solvent while attached to the nozzle. The chance of solvent ingress into compressed air heater and consequent damage is high. Use a spray bottle to lightly coat the nozzle and Aeroseal equipment. Let the solvent soak in for several minutes. Use a plastic brush to work the solvent on the affected areas. Wipe down with clean dry rags or paper towels. Rinse with water to clean the remaining residue. **Note**: unfinished or unpainted aluminum surfaces will discolor if left for periods longer than 15 minutes.

10.1 Maintenance Schedule

	EVERY SEAL	DAILY	MONTHLY	DURATION
Clean Nozzle Assembly	X	X	X	15 Mins
Inspect Sealant Condition	X	X	X	1 Min
Drain Compressor Air Tanks	X	X	X	2 Mins
Inspect Compressed Air Filters/Fittings	X	X	X	2 Mins

Clean/Inspect Pump & Rollers		X	X	5 Mins
Inspect/Replace Fanbox Filter		X	X	1 Mins
Inspect/Replace Air Scrubber Filters		X	X	3 Mins
Clean/Inspect Sealant Buildup on Inlet Gate			X	3 Mins
Clean/Inspect Sealant Buildup on Tube Fittings on Lid			X	2 Mins
Clean/Inspect Sealant Buildup on Fanbox Breakers			X	2 Mins
Laptop: Upload			X	2 Mins
Laptop: Updates			X	2 Mins
Laptop: Windows Updates			X	10 Mins

11 CHECKLIST FOR COMMERCIAL JOBS

Mobilization & Planning

Note: All jobs lasting more than two business days will require a storage room or locked cage for the equipment to reside in during off hours.

	Task
□	Determine labor hours for set up, parking, building access, roof access, and if freight elevators are available. Is there access to the floor that the equipment is sealing from?
□	Check for open or drop ceilings, if VAV boxes, sensors, or vane type dampers have access easily.
□	Determine the type of registers and blocking points needed to seal the system.
□	Measure duct work and plenums to determine if unconventional blocking and other preparations are required. Note quantity, size, and type of blocking materials for each duct section.
□	Determine injection points and availability of utilities like air and power.
□	Look for any potential noise-related concerns in and around where the compressor and generator are located. Notify the customer that noisy fans and scrubbers will be located in potentially occupied spaces.

□	Check if there are special site permits and regulations that need to be followed, including timing and restricted times.
□	Check to make sure your customer notifies all relevant departments of the event.
□	Estimate the sealant by the type of duct system. Special requirements should be factored into the estimate such as high ceilings, special equipment, or any extra hourly labor man hours need to complete the job. Do not forget shift differential if using temporary labor services. Accommodations, locations and/or drive time should also be considered.
□	Acquire all available prints for the duct work. This helps determine the sensor and accessory locations.
□	Plan to have the service tech that normally services the system you are sealing and/or the building engineer on site.
□	Determine if thermal imaging equipment, cameras, or scopes are needed to evaluate ductwork. Consider adding a provision to the estimate if this additional cost is not standard.
□	Determine the number of technicians, tools, and accessories for the job. Handheld radios are convenient to coordinate with a central command on the job site.

Site Preparation

	Task
□	Cover electronics in the conditioned space. Static may cause sealant particles to stick to electronics like computer screens.
□	Make sure you have access to ALL rooms (server rooms/ storage closets, etc.). **DO NOT START SEALING** if you do not have access to the doors (unless you have personally validated that there are no duct openings).
□	Coordinate with the facilities manager to turn off the air handling system or get authorization to turn off the systems. Note: The building engineer may want to have their person operate the systems.
□	Determine communication protocol with your customer (who to call for what for emergencies during non- normal hours). Communication is especially important when jobs occur during nigh time or holidays. Make sure you know the 'drop dead' time for the completing the job and restoring all systems to normal.
□	Determine how to manage overspray (remove the particles from reaching the conditioned space is imperative); there are two ways to accomplish this task.

	Options include a) pressurizing the conditioned space b.) scrub the particles into an approved filter by use of forced air. Get absufficient number of HEPA scrubbers with hoses & mounting arrangements. Recommend that the mounting arrangements are made in advance of the job.
□	Turn off fire detection to the affected area during the process. The building engineer will need to be on site to approve the protection services being cut and/or to manually oversee such services during the sealing process. The sealant particles closely resemble smoke in size in microns and will set off all standard smoke detectors. The fire department and/or monitoring company will need to be contacted in advance in case of any false alarms due to the system not being fully shut down.
□	Request from the building engineer a pigtail consisting of four separate 120V 15 amp circuits within 7.62m of the sealing process. Schedule electricians to move or lengthen the pigtail when required.
□	Prepare materials to block openings like registers. Magnetic sheets can be used to block openings; however, there may be cases where custom pans or sheet metal pieces may need to be constructed. Do a PreSeal walkthrough to determine if any special items need to be fabricated prior to the job.
□	Use carts to move equipment during the sealing process. This will reduce setup and tear down times.
□	Bring drop cloth, tarps, and safety equipment as specified in the Aeroseal training.

After Sealing job (De-mobilization)

	Task
□	Reconnect disconnected areas and remove all blocking and isolating materials. (Make sure you have ALL blocks removed – do an inventory).
□	Turn on power to affected areas and check for air flow.
□	Clean up.
□	Check for any sticky spots.
□	Ensure that building is clear of your personnel and inform building engineer the job is completed.

12 SEALANT MATERIAL SPECIFICATIONS

Contact Tech Support for additional information.