

Euroseal 4.0 Operations

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

1.1 PREPARATION

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

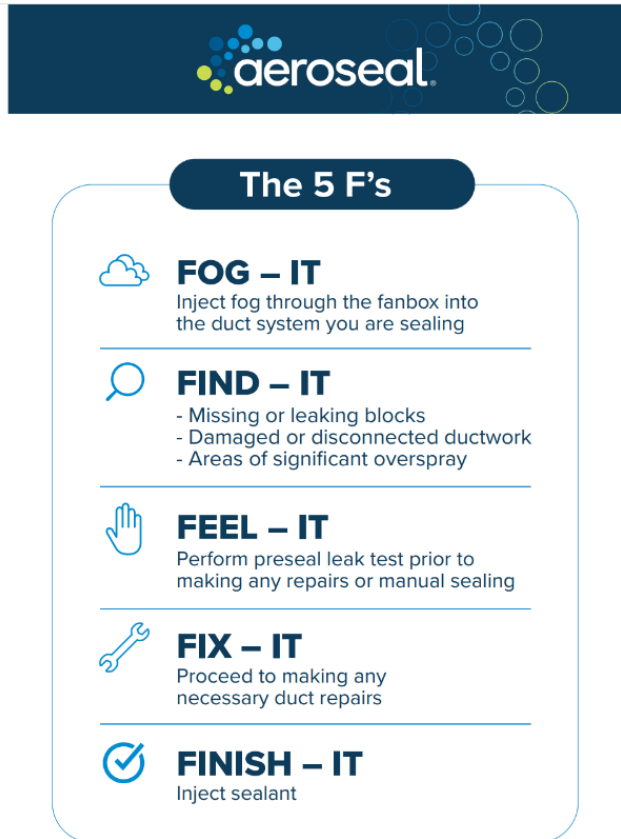


Figure 5. Five F's

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.

1.1.1 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.

1.2 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.

1.2.1 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 will be the first event to seal. Confirm at the prompt.

1.2.2 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.

1.2.3 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.

1.2.4 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.

1.2.5 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.

1.2.6 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.

1.2.7 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.

1.2.8 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.

1.3 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.