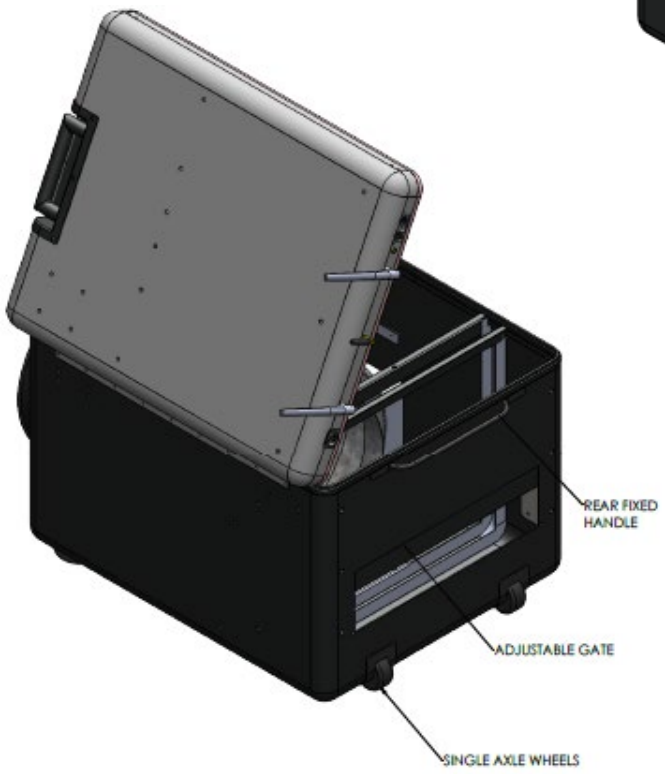
HARDWARE & SOFTWARE SET UP

1.1 COMPONENTS

1.1.1 FANBOX

The fanbox contains:

- Nozzle assembly
- Air outlet/layflat connection point
- Luggage handle for carrying
- Rear/fixed carrying handle
- Single axle wheels



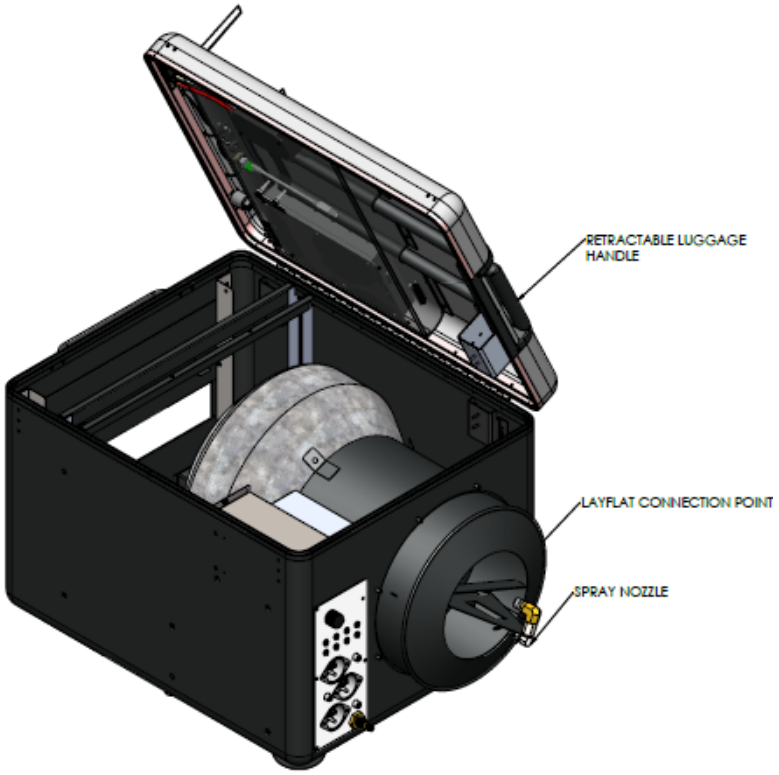


Figure 1: Front and Rear Fanbox

The front panel includes:

- Fan control knob
- Amber-relay lights
- Green and red component lights
- 15A poppers/breakers
    - Main = 3 amps
    - H1 = 13 amps
    - H2 = 13 amps
- Compressed air inlet
- Heater coils 1 and 2

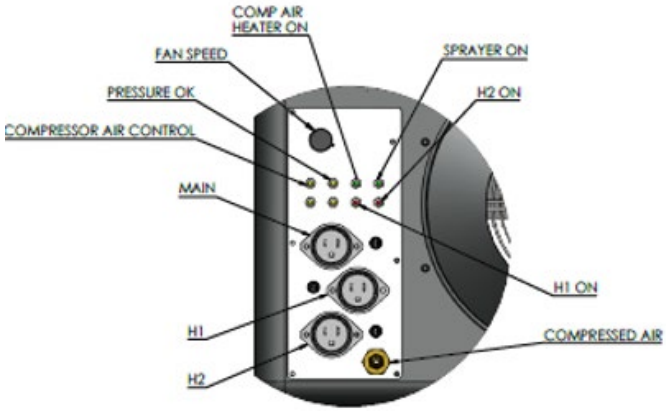


Figure 2: Fanbox Front Panel

The fanbox lid includes:

- (2) Wifi antenna
- Temperature sensor
- Humidity sensor
- GMS antenna
- USB-B bulkhead
- Outside pressure reference
- Reference pressure
- Duct pressure
- Negative fanbox pressure
- Manometer
- Internet status indicator
- Power indicator
- RMS board
- 16-pin port bulkhead to RMS board

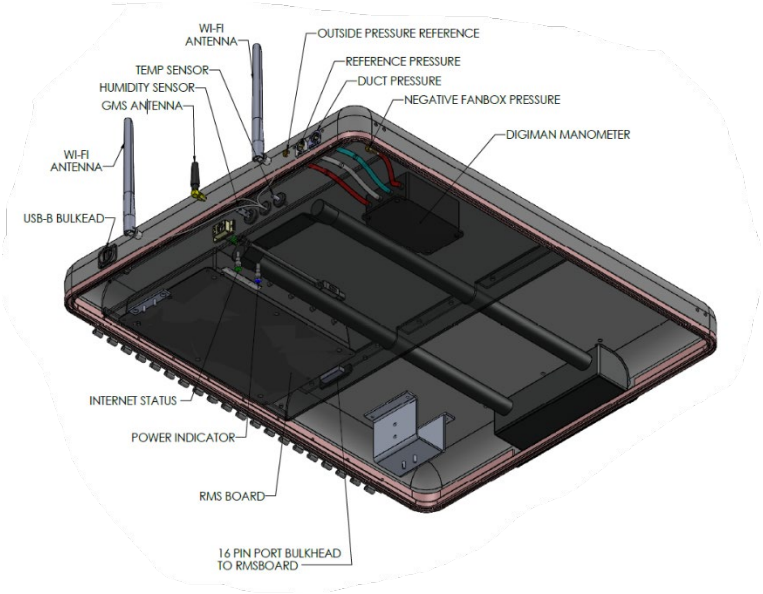


Figure 3: Lid components

The interior includes:

- Inlet gate
- Fanbox filter
- Flush/water jug
- Fan
- Pump head
- Nozzle heater
- Heater cylinder

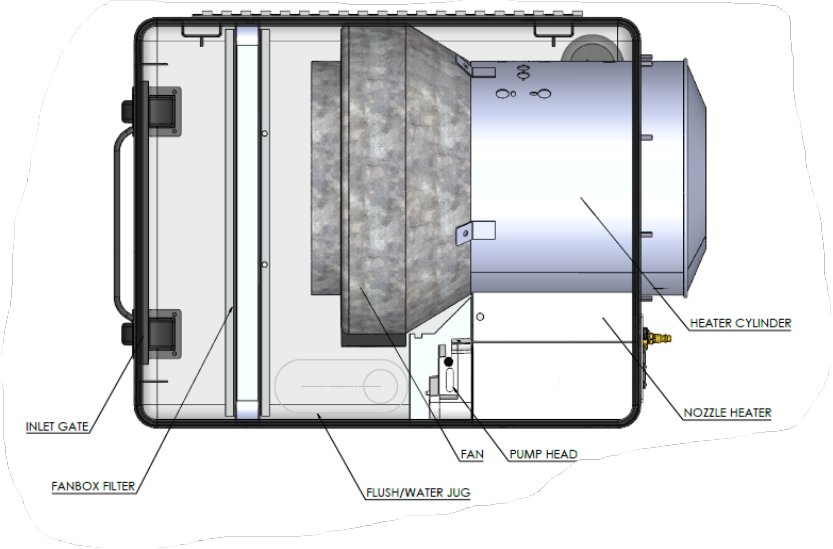


Figure 4: Fanbox interior

1.1.2 COMPRESSOR

HSC 4.0 requires a continuous duty 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.

1.1.3 LAYFLAT

Layflat is the clear plastic sheeting that runs from the fanbox to the duct system. The layflat is attached to the fanbox using the foam lined clamp.

1.1.4 LT SEALANT

LT duct sealant is a safe, non-toxic, low VOC acrylic polymer. It is heated and aerosolized by the HSC equipment and sprayed into the duct system. The sealant seals gaps up to 5/8" size. Any opening larger than 5/8 should be manually repaired.

Sealant is mold and mildew resistant, warrantied for 10 years and is used my other industries like paint and medical devices. It is advisable to take conservative precautions when in use. For more information see Section 4.4.6.

1.1.5 SCRUBBER FAN

The HomeSeal Connect 4.0 includes a free-standing 1500cfm fan in a box covered with (5) Merv14 filters. The fan is used to "inhale" airborne particles from the air. Place the scrubber fan near the inlet gate of the fanbox if used in areas of heavy overspray and fogging. Ideal places include living spaces or where homeowners keep personal items.

1.1.6 WYE KIT

A Wye Kit is intended to split the flow of aerosolized sealant into two streams to deal with tricky situations. See APPENDIX C: Wye Kit for additional information.

1.1.7 SUPPLY KIT

The basic supply kit that ships with HSC 4.0 includes:

- 1 bottle of all-purpose cleanber
- 1 roll of 36" layflat tuning
- 18 rolls of blue duct mask
- 3 sheets of corrugated plastic
- 8 pieces of closed-cell foam
- 1 bottle of fog juice
- 1 fog machine

An upgraded kit provides an additional roll of layflat tubing, 24 rolls of duct mask, and six sheets of corrugated plastic.

The parts kit includes cleaning tools, spray nozzles, flush tubes, spare sealant filter screens and nozzle tools.

1.1.8 RECOMMENDED TOOLS & MATERIALS

Tools

- (3-4) 50 FT 12/3 extension cords
- Power strip with surge protection
- Step Ladders: 8 ft. & 10 ft. and step ladders
- Sturdy folding table 6 ft.-10 ft.
- (2-3) 25' – 35' tape measures
- (2) Cordless ratcheting screw guns/drivers
- ¼" and 5/16" magnetic driver attachments
- Sheet metal snips: Reds & Greens (right & left-handed)
- (2) Step bit, drill bits
- (2-3) Strong flashlights
- (2-3) Razor utility knives
- Standard set of hand tools
- Shop-vac, broom & dustpan, clean-up materials
- 20" Box fans (optional)
- Malco hole cutter (optional) 2"-20"

Safety Equipment

- Ground Fault circuit interrupters (GFCIs) for all circuits
- Particulate masks (double-strap type)
- Work gloves

- Kevlar Sleeve
- Eye protection

Supplies

- 5/16” Hex head, self-tapping sheet metal screws (at least ¾” in length)
- White-head register/grille/diffuser screws
- (2-3) Rolls of plastic sheeting (.31 mil rolls)
- Sheet metal for injection hole patching (~26 gauge)
- ¼” Zip Screws
- (2-3) Roll-Mastic tape: 3” width (HardCast 1402/1403 recommended)
- Bucket of Duct Mastic -with application brushes
- (2 rolls) 3” Foil HVAC tape (3m cold-weather tape recommended)
- Painter’s tape (blue or green)
- Floor runners / canvas drops, shoe covers
- Box of low-lint shop towels (for cleaning nozzle assembly)

1.2 JOB SITE

Worksite

1. Perform a home walk-through:
   - Greet the homeowner and introduce team
   - Explain that a theatrical fog test will be used prior to injecting sealant so that any areas of overspray/damaged ductwork will be identified.
   - Verify number and sizes of registers in the home to be blocked.
     Use shoe covers and/or floor protection. (Look out for pets, infants, people with allergies).
2. Check for combustion appliances inside the home and determine if a Combustion Area Zone (CAZ) test is required.
3. Turn off HVAC. Deenergize the HVAC equipment attached to the duct system being sealed at the disconnect switch or circuit breaker.

1.3 EQUIPMENT SET-UP

Bring in all equipment necessary for the seal. (HSC? extension cords? compressed air hose? blocking ~~-~~ masking materials? layflat? etc¡)

Table 8¡.HSC.0¡6.Set_Up.Components

Quantity	Item
1	Jenny Brand Portable Air Compressor 115 V, 1.5 hp, Single Phase, 6.5 CFM @ 100 psi, 8-gallon tank, at least 125 psi cut-out
1	Desiccant Dryer

3	Standard Extension Cords 12 Gauge, 120 V US Plug, 50 Ft.
1	Laptop with Aeroseal software installed and configured by the factory
1	HomeSeal Connect 4

1.4 PREPARATION

1.4.1 BLOCK DESIGNED OPENINGS

Block all openings, like registers and grilles, in the envelope.

1. With the blade knife, cut the closed-cell foam ½" 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.
2. Use medium-duty duct mask or roll mastic tape to do the following:
    a. Fully cover hard floor registers
    b. Apply around edges of carpet floor registers. Be sure to tuck in around the openings to create a barrier
    c. Fully cover the entire area around drywall registers. Apply mask over the entire diffuser area.

Note: Reopen dampers when finished.

1.4.2 SUPPLY AND RETURN

For the supply side of the duct system, the aerosol injection point is typically just downstream of the evaporator coil. Return side injection typically occurs upstream of the fan at the return plenum, or sometimes through the filter grille opening.

Careful inspection of the return system should be used to determine which end of the system is most appropriate for injecting sealant material. Return systems with multiple grilles are often best sealed by injecting near the plenum, whereas systems with one or two Filter Grilles are often best sealed by injecting at a Filter Grille.

1.4.3 FIND THE BEST LOCATION AND CUT INJECTION POINT

Choose injection technique (flange, wye, direct plenum) and position the HSC nearby. Measure out 36" layflat to connect the fanbox to the chosen injection technique while ensuring an 8 ft straight section is present immediately after the fanbox flange. Options / injection methods include:

- **Flange**: Cut into duct to create an 80 sq in round hole suitable for furnace isolation access. Attach flange to opening. Tape inside of plenum opposite of opening.
- **Wye**: Select two adjacent registers and connect layflat to the Wye kit.
- **Direct plenum**: Strap down or tape layflat to direct plenum access. Select an injection point near the HVAC equipment with the largest flange it can accommodate.

1.4.4 ISOLATE HVAC EQUIPMENT

Isolate HVAC using appropriate blocking material/technique (foam block, corrugated plastic, sheet metal, tape, etc.) to ensure no airborne sealant enters the equipment. Make sure the material makes a tight seal, holds internal pressure, and does not allow sealant to pass.

1.4.5 ATTACH LAYFLAT TO DUCT SYSTEM

Once the Aeroseal equipment is set up near the injection site:

- Attach 36” plastic layflat between the fanbox and injection point(s). Allow a minimum of 8’ straight and level before any turns or connections. This allows for the proper dehydration of the airborne sealant prior to entering the ducts.
- Take care with the roll to avoid damaging the material.

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 home.

1.4.6 SET UP HSC 4.0

7¡0¡❷7 ELECTRICAL.POWER.REQUIREMENTS

Identify and connect extension cords to three separate electrical circuits.

The HSC 4 requires three separate electrical circuits, each with the capacity to run 1500 Watts of power. The standard plug size for the three fanbox inputs are NEMA 5-15 (3-prong 120 V outlets).

An alternative to using three separate outlets is to use 240/120 adapter plugged into 240 V utility outlet.

A generator like a NorthStar c13000s commercial-grade portable generator with electric start with 13,000 surge watts and 10,500 rates watts is a good source of external power.

CAUTION: Use ground fault circuit protection when using household electrical outlets.

7¡0¡❷8 Compressed.Air

Connect compressed air to the air compressor. Ensure air compressor is on and providing 100 psi at the fanbox gauge.

7¡0¡❷9 Manometer.™.Pressure

Connect the pressure (blue) tube between the fanbox manometer and the furthest register/opening of the system being sealed.

- Measures and monitors positive duct pressure
- Calculates 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.

The two most important pressure inputs used to calculate leakage are:

- Fanbox pressure (Negative)

- Duct pressure (Positive)

It's critical to have the inlet gate match between the fanbox and the software screen setting. The software can calculate the pressure drops over the entire duct system by comparing the inlet gate/fanbox pressure to the duct pressure at the oppositive end of the duct system.

When the fanbox is used outside of the home envelope, do the following:

- Connect an additional tube to the reference pressure port on the fanbox
- Run the reference tube inside the home envelope to a calm area

Windy conditional may cause a disturbance at the reference pressure and/or ambient pressure ports which may cause software alarms, delays, and inaccurate readings. Best practice is to bring the fanbox into the home envelope to avoid these issues if at all possible.

7¡0¡20 Sealant

LT-Duct Sealant is an acrylic-polymer solution.

- Safe/non-toxic (low VOC)
- Water soluble in liquid state
- Used in other industries like paint and medical devices
- Mold and mildew resistant due to its antimicrobial properties
- Test/warranty for 10 years
- Conservative precautions recommended when solution is aerosolized

Ensure a full gallon of sealant is placed into the fanbox, the sealant tubing is laced through the peristaltic pump in the proper orientation, and the sealant tube tip protrudes just beyond the nozzle tip.

DO NOT STORE SEALANT IN FREEZING TEMPERATURES OR EXTREME HEAT. THIS WILL RENDER YOUR SEALANT USELESS. Optimal temperatures are 40°F to 120°F.

LT sealant used in HomeSeal equipment does not require any special mixing. The equipment pumps undiluted sealant through special Master flex tubing. Sealant that has any lumps or coagulation should not be used. The steps are:

1. Inspect the sealant gallon for any signs of coagulation.
2. Replace the bottle cap with the sealant pick-up tube assembly.
3. Place the sealant jug in the HomeSeal box and connect the tubing from the sealant pump to the pick-up tube. Note: the pump tubing should be kept on the "blind" screw inside the HomeSeal box when the sealant container is not in use.

Do not place the sealant jug in the fanbox until you are ready to seal.

1.5 LAPTOP & AEROSUITE

1.5.1 WINDOWS UPDATES

Just like with all computers, Windows occasionally needs to perform updates. It is recommended to check for Windows updates once a week.

1.5.2 AEROSUITE UPDATES

1.5.3 CONNECT LAPTOP TO FANBOX WIFI ROUTER

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

The laptop should stay close to the fanbox/router. If the laptop is out-of-range of the WiFi:

- At 20 seconds, the laptop has a clang sound. Regular operation can be resumed if connection is restored within 10 seconds.
- At 30 seconds, the laptop has a boat horn sound. 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.

1.5.4 CONNECTIVITY & SYNC

After connecting to the Wifi network, log into AeroSuite using the Case ID for both username and password.

- Basic information about the system can be found in the **Settings** > **Registry** section of AeroSuite.
- For **Profile**, dealers enter their company information and logo.
- **About** identifies the software version, Aeroseal contact information, and the **Check for Updates** button. It is recommended to check for software updates frequently.
- **Component Checks** can be performed to ensure the equipment is in good operating condition.

Sync is a critical function of AeroSuite. Per the licensing agreement, users must sync their systems every month. AeroSuite will prompt users to sync if more than 30 days has passed since the last sync.