HomeSeal Xpress (HSX) Technical Manual for Residential New Construction

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Introduction

Thank you for your purchase of a HomeSeal Xpress sealant system; we are thrilled to have you on board in reclaiming homeowner comfort and HVAC efficiency. This manual serves as a baseline of knowledge to get you up and running as well as a reference for new operators, for any questions or clarifications please do not hesitate to reach out to your Technical Support team at + 1 (800) 772-6459

For comments, questions, improvements, and ideas, please contact your Residential Application Engineer through the Dealer Marketing Toolbox: https://aeroseal.com/res/dealer-toolbox/

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1 IMPORTANT PRODUCT INFORMATION

1.1 Technical Support Product Information:

The following information is helpful to have on-hand when calling in for support. You may wish to record this information here and keep this User Guide accessible.

Aeroseal's Tech Service Group is here to help you with all of your technical support needs: + 1 (800) 772-6459

Dealer:	Date of Purchase:
Product(s) Owned:	Case ID(s):

1.2 Safety Information

The primary concern of Aeroseal is that this equipment is operated and maintained with the safety of the

Homeowner, Technician, and Equipment in mind. To assure safe and reliable operation:

- Read and understand this manual before attempting to install or operate this equipment.

- Assure that the appropriate personnel are informed on the contents of this manual.

- Assure that this manual is kept with the equipment, or if possible, permanently affixed to it.

- Be aware of the appropriate safety data sheets (SDS) located in Section 7

1.3 Intended Use

The HomeSeal Xpress System (HSX) is the latest generation of Duct Sealing equipment from Aeroseal LLC that allows the user to seal the ductwork of a residential system fully, efficiently, and accurately on an active building site. Specifically, this manual is written with Residential New Construction projects in mind, other situations will be addressed in the forthcoming HSX Technical Manual for Existing Residences.

1.4 Electromagnetic Interference

The HomeSeal Xpress System is designed and built to minimize electromagnetic interference with other devices. However, if interference is noticed:

- Increase separation between or remove interfering device from vicinity of HSX (or vice versa, whichever is most appropriate).

- Contact Aeroseal Tech Support if interference persists.

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1.5   Safety Symbols

> ⚠️ **WARNING:**
> Indicates a potentially hazardous situation which could result in serious injury or product damage.

> ⚠️ **CAUTION:**
> Indicates a potentially hazardous situation which <u>may</u> result in minor injury or product damage, unintentional misuse, or unsafe practices.

> ⛔ **CAUTION:**
> Indicates a potentially hazardous situation which could result in product damage, unintentional misuse, or unsafe practices.
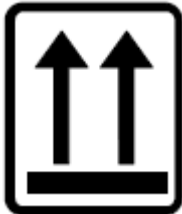
1.6   Shipping Symbols

Caution Shipping Damage

Fragile

Proper Shipping Orientation

Max Stacking Height

(Refer to "n" Number on Package)

1.7   Transportation / Storage Conditions

Ambient Temperature Range:	-40°C to 80°C (-40°F to 176°F)
Relative Humidity:	0% to 95% (non-condensing)
Atmospheric Pressure:	3 PSI to 16 PSI

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1.8   Items Included in Original Shipment

Part Num.	Count	Description	Visual Reference
SA00021	1	HSX Fanbox	
SA00237	1	HSX Pump Box	
FR00147	1	HSX Spare Parts Kit	
MT00421	2	LIQUID DISPENSING BOTTLE FOR NOZZLE CLEANUP	
82ASF0138	1	PICKUP TUBE ASSEMBLY	
82AS1445	1	FLUSH BOTTLE	

AERO-052	1	10" CLAMP	
82ASF5075	1	BLUE TUBE – 75'	
AERO-123	1	ELECTRIC KNIFE (model will vary)	
AERO-067C	3	POWER CORD – 100'	
82ASF0141	1	12" Clamp	
AERO-051	1	12" FLANGE	

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82ASF6029	2	MINI SCRUBBER	
82ASF6032	1	LAPTOP & PRINTER CASE	
82ASF6016	1	AEROSEAL UPGRADED SUPPLY KIT	

1.9   Major Components and Locations

Pumpbox (left) and Fanbox (right)
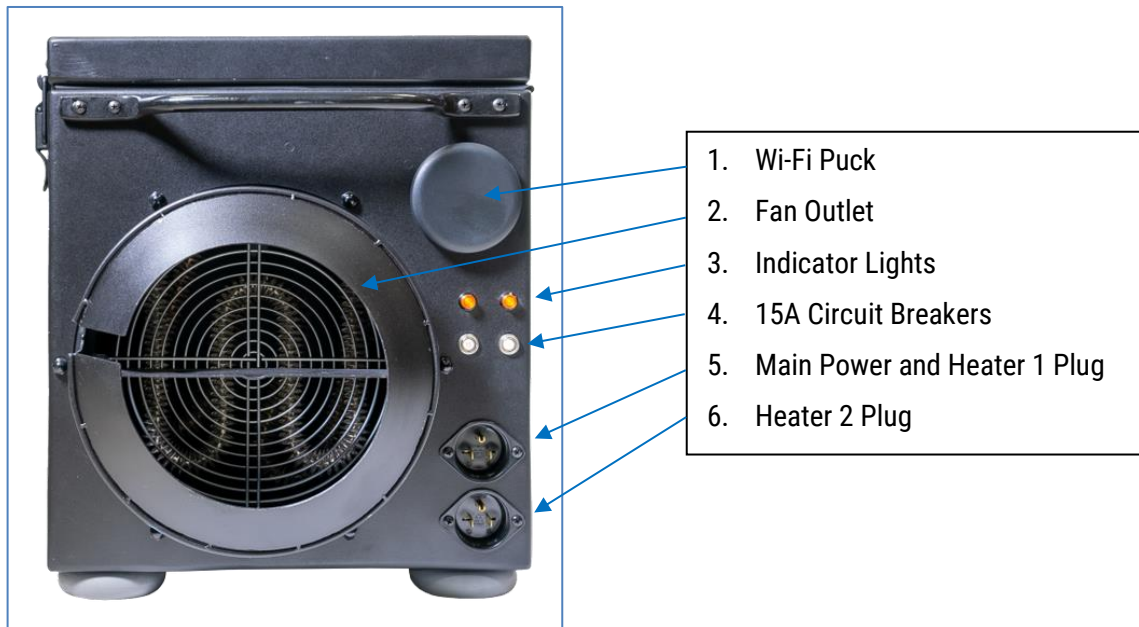
1. Wi-Fi Puck
2. Fan Outlet
3. Indicator Lights
4. 15A Circuit Breakers
5. Main Power and Heater 1 Plug
6. Heater 2 Plug

Fanbox, Front

1. USB Plug
2. Ambient Pressure Port
3. Duct Pressure Port
4. Reference Pressure Port
5. Gate Movement Indicator Light
6. Automatic Gate

Fanbox, Rear

1. Sprayer Assembly Hose
2. Prime Assist Button
3. Quick Prime Button
4. Power Indicator Light
5. Pumpbox Plug
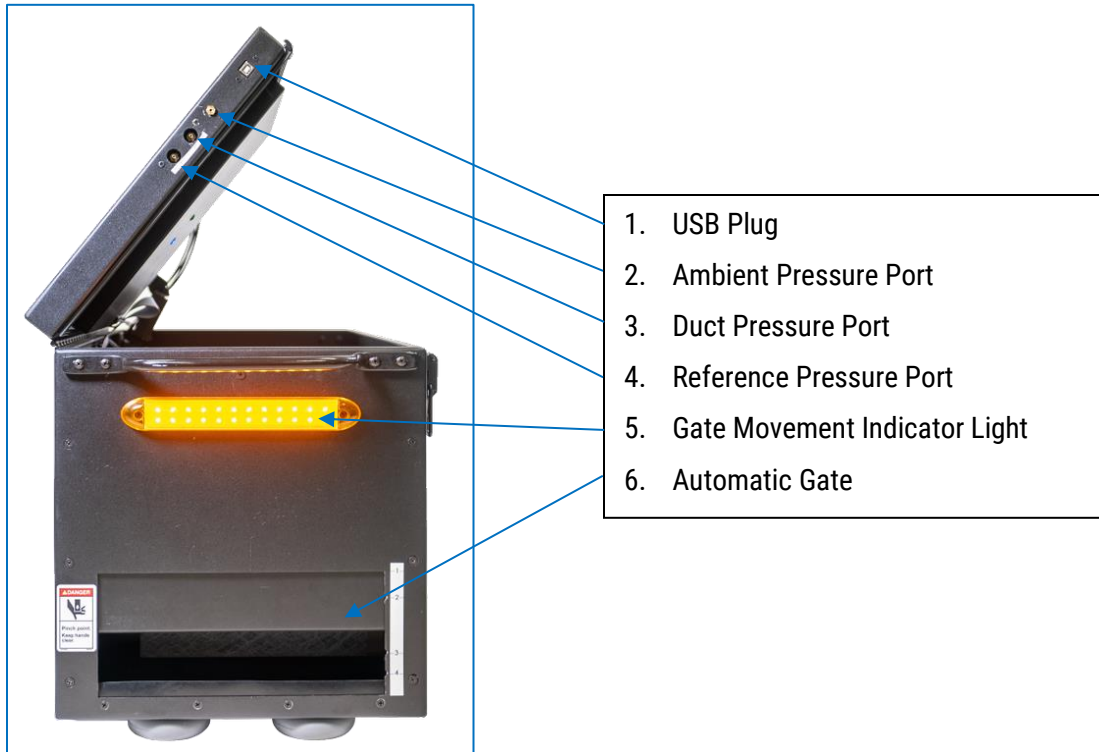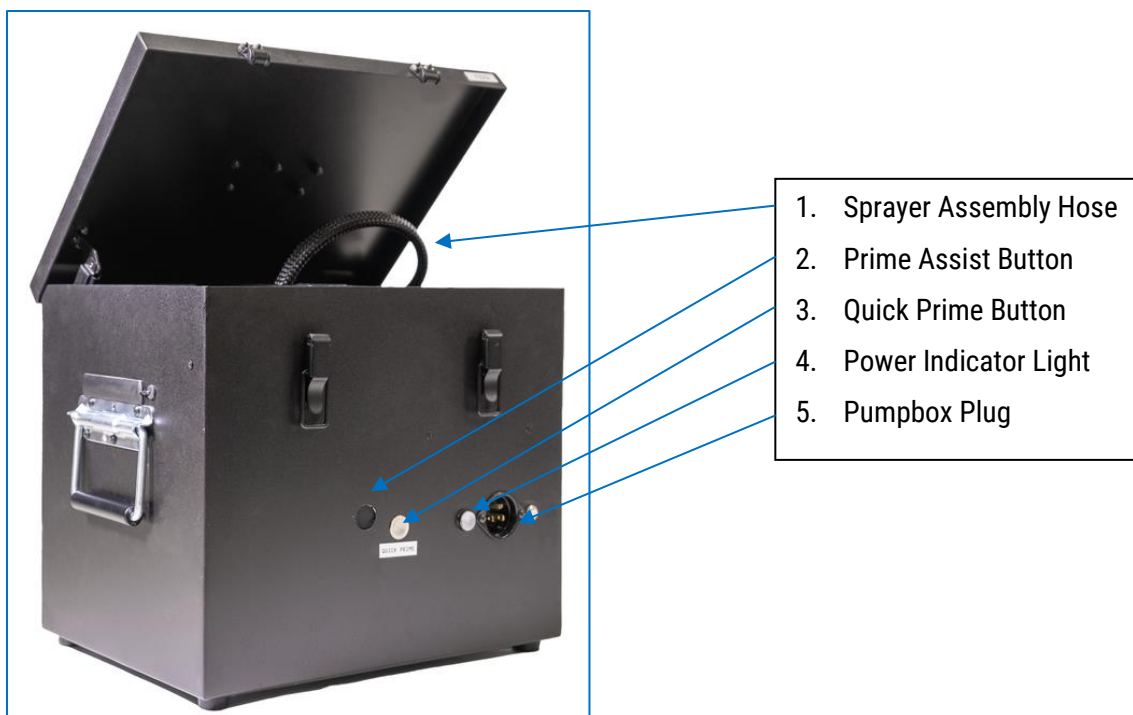
Pumpbox, Side

AERO**SEAL**

1.10 Controls and Indicators

In general, the HSX System is controlled via the Smart Seal Windows Application installed on the provided Aeroseal Laptop. Some of the most important controls can be found in the following screens:
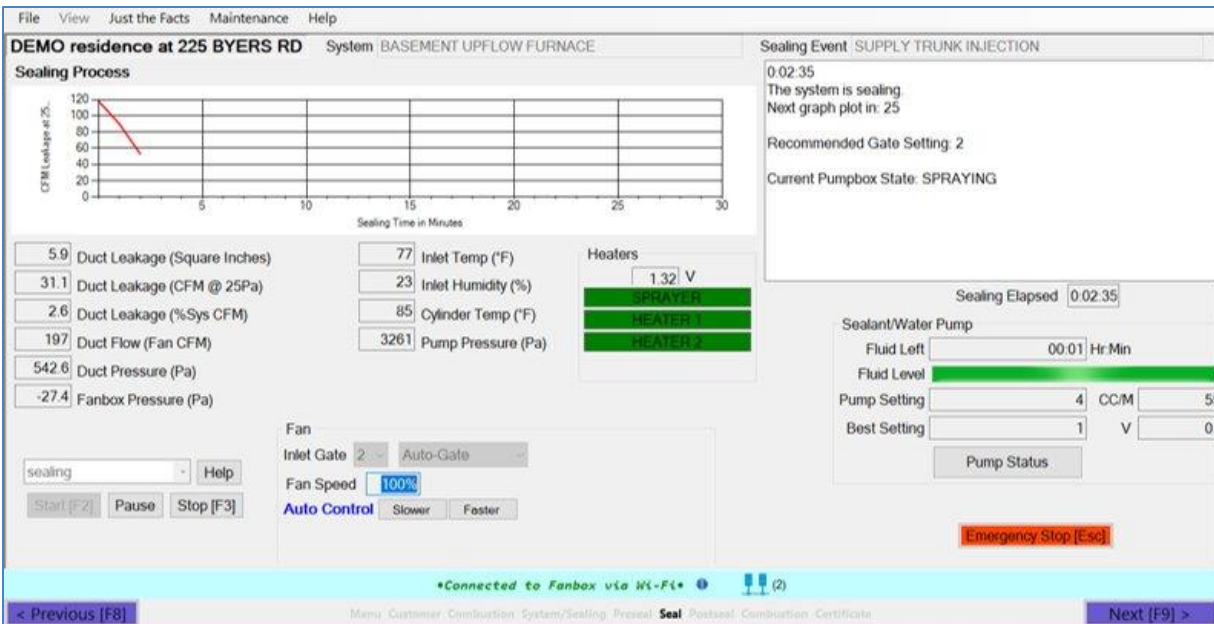
Smart Seal – Sealing Screen

Smart Seal – Connectivity Screen
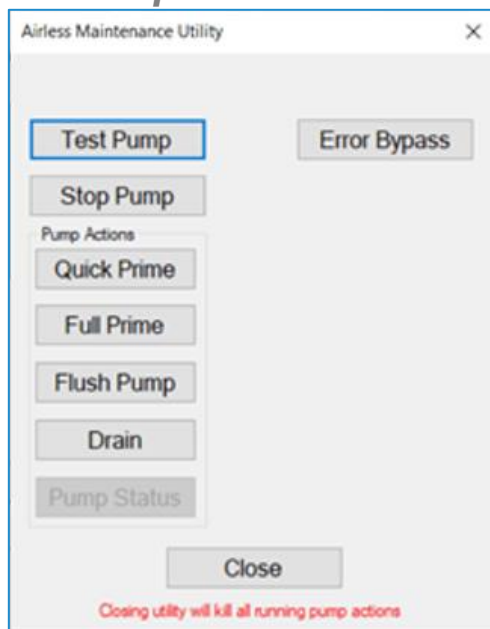
Smart Seal – Airless Maintenance Utility

The Status of the Fanbox and Pumpbox can be determined by observing the status pop up window in the software. The Pumpbox also includes an external LED that shows whether Power is being properly supplied. The LED on the back of the Fanbox will blink twice when plugged in to show power is being supplied. It will also remain lit whenever the automatic gate is moving.

Fanbox Automatic Gate LED
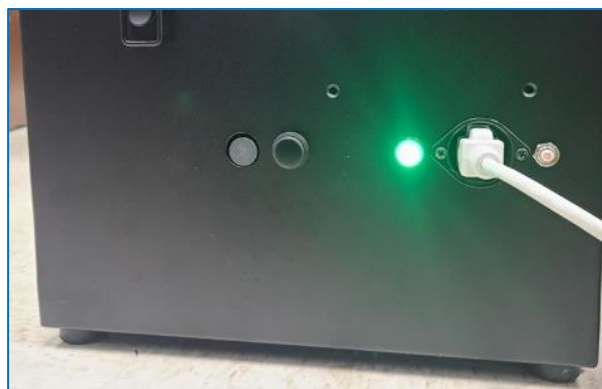
Green Pumpbox LED

1.11   Operating Environment

Ambient Temperature Range:	-10°C to 60°C (-4°F to 176°F)
Relative Humidity:	0% to 99%
Atmospheric Pressure:	3 PSI to 16 PSI

1.12   Weights and Dimensions

- When used as delivered, the HSX Pump Box and HSX Fanbox have the following, weights, and dimensions:

Item	Weight	Dimensions
Fanbox	58 lbs.	15" (w) x 32.5" (l) x 16.5" (h)
Pumpbox	34 lbs.	13" (w) x 19" (l) x 15" (h)

1.13   Environmental Support Surface

- No portion of the HSX should rest in standing water, though resting on damp ground is acceptable.

- The resting surface should be flat and level.

- The Fanbox shall be elevated by at least 1 foot off the ground to allow for full inflation of the layflat.

- The Pump Box shall be positioned close enough to the Fanbox that the Sealant Line is not overextended or put under tension.

- *Note:* *This product was tested to the International Safe Transit Association Standard ISTA 3A, and should withstand normal transportation and operational drops, shocks, and vibrations. However, during transportation, all HSX System equipment should be secured and stowed within the transportation vehicle, similar to any other piece of sensitive equipment.*

1.14   Clearance Requirements

- The Fanbox should not have any obstructions within 6 feet of the inlet gate or within 2 feet of the sides.

- All reference pressure tubes or ports (located on the Fanbox lid above the automatic gate) should be shielded from windy conditions as this can cause high variability in pressure measurement.

- All envelope pressure tubes should be kept out of the line of incoming Fanbox flow.

- The Blue Tube, the duct pressure measurement tube, shall be placed in the furthest point from the Fanbox within the duct system and a minimum of 6 feet away from the nozzle.

1.15   Electrical Requirements

- The HSX Requires three separate electrical circuits, each with the capacity to run 1500 Watts of power. The standard plug size for the (1) Pump Box input and (2) Fanbox inputs are NEMA 5-15 (3-prong 120V outlets)

2 OPERATION OVERVIEW – SEALING A NEW CONSTRUCTION HOME

The following is a high-level overview of performing an Aeroseal job, use this as a reminder for experienced operators. In-depth information is contained in the subsequent sections.

2.1 Site Survey

If available, walk through the site or review plans before the day of the job. This allows the operator and helper to precut register blocks and furnace isolation.

2.2 Site Preparation

On the day of the seal the operator and a helper arrive at the scheduled time. The HSX and support equipment are brought in, blocking of registers and equipment completed, the injection point is cut, and the HSX is connected to the injection point.

2.3 Pre-Seal Test

Builder and residence information is entered into Smart Seal and a sealing event is set up in the software. The Pre-Seal Test is conducted to establish the initial volume of leakage the HVAC system has.

2.4 Seal Event

The sealing process is started through Smart Seal, during the seal the operator and helper walk through the residence to ensure register blocking is secure and any other large leakage areas are manually sealed as required.

2.5 Post-Seal Test

At the seal event's completion, the Post-Seal Test is conducted to measure the final volume of leakage in the system. The final certificate is saved to the laptop.

2.6 Closeout and Cleanup

The HSX is disconnected from the HVAC equipment and removed from the residence. All blocking and isolation are removed, and the injection point patched with appropriate materials.

3 INITIAL SETUP

3.1 Smart Seal Software

3.1.1 Initial Setup

- Time and Date

   Verify that the time and date on your laptop is correct for your location.

- Upload

   Upon first opening Smart Seal, the program will require the operator to perform an upload to the Aeroseal database. This must be done while the laptop is connected to the internet. Subsequent uploads are required at least once every 31 days. It is recommended to upload by the 5th of every month to ensure that seals from the previous month are billed appropriately.

   Note: Failure to upload for a period greater than 31 days will cause Smart Seal to stop operating until an upload is accomplished.

- Initial Contractor Information

   Smart Seal will prompt the operator to enter relevant information to associate the software and hardware with the correct contractor. All lines with an asterisk (*) are required.

- Logo

   A logo can be uploaded to be displayed on the certificate printed at the end of the seal. Save an appropriate image file to the "Documents" folder on the laptop and use the "Browse" button on the Contractor Information page to select it.

   Note: The logo can be updated by navigating back to the Contractor Information pop up through Maintenance>Configuration>Contractor Info

3.2 Home Seal Xpress

3.2.1 Unpacking

Carefully unpackage all equipment and reference the included packing slip to verify that all items are accounted for. If an item is missing, please contact Aeroseal immediately to have it delivered as soon as possible.

3.2.2 Nozzle Setup

Prior to performing the first seal with any new nozzle, disassemble it and rinse with clean water (Section 5.2.2). Nozzles may not spray on initial use due to friction with the interior Viton rubber seal.

3.2.3 Initial Power Sequence

Verify operation of the HSX by plugging the top plug on the Fanbox and the single plug on the Pump Box to separate 120-Volt 15-Amp circuits. The LED indicators on the side of the Pump Box and inside the lid of the Fanbox will turn on when powered.

Verify connectivity by connecting the laptop to the HSX, this can be accomplished either through a USB connection on the lid of the Fanbox to the laptop or by connecting to the Fanbox via its onboard Wi-Fi network. The network name is "aerosealXXXX" where the four "X" s are the associated Fanbox Case ID. If not already setup the Wi-Fi password is located inside the Fanbox on the lid.

3.3 Ancillary Equipment

3.3.1 Generator

For most residential new construction sites only a limited amount of power is available, Aeroseal recommends carrying a generator capable of 13,000 Surge Watts and 10,500 Rated Watts. A known reliable generator is the

NorthStar 13,000. Be sure to follow all manufacturer's instructions and keep up on regular maintenance, without reliable power a seal job can quickly turn into a work-stoppage situation.

3.3.2   Foam blockers

Included in the HSX shipment is a set of eight 1-½" thick sheets of closed cell foam. These may be cut, using the supplied electric knife, to block registers as well as the HVAC equipment. In general, measure the vent opening or other cavity to be blocked and carefully cut the foam to ½" larger in each dimension. For example, to block a 4″ x 10″ register, cut the foam to 4 ½" x 10 ½". For future repeated use, label both faces of the cut blocker with the dimensions and store in a clean, dry, location.

3.3.3   Balloon blockers

A trial set of inflatable register and equipment blockers is included in the HSX shipment. These can be used in place of the closed cell foam and are especially useful in registers which are under cabinets or otherwise difficult to access. Inflate the blockers until they are firmly secured within the ductwork or plenum and close the attached valve. Blockers with sealant residue can be cleaned with a mild detergent and warm water. Punctures can be patched with appropriate patch kits such as those for bicycle tubes or inflatable mattresses.

4 EQUIPMENT OPERATION

4.1 Building Preparation

4.1.1 Blocking

Block every outlet of the HVAC system with an impermeable material which can withstand approximately 1,000 Pascals of pressure during the sealing process. Depending on operator preference this can be the provided foam or balloon blockers or, in some cases, a layer of high-tack duct masking tape.

4.1.2 Injection Point

To allow ample airflow into the ductwork, a hole with a minimum cross-sectional area of 80 square inches should be cut into the plenum (approximately 10 inches in diameter). If the HVAC equipment is not yet installed, a cap can be manufactured to inject through where the equipment would sit. In either case, mount the 12" flange to metal ductwork with self-tapping screws in each mounting hole or 1 ½" drywall screws backed up with metal attachment plates in duct board plenums.

4.1.3 Isolation

If the HVAC equipment is installed, isolate the coil and heat exchanger from the flow of sealant by installing a foam blocker slightly larger than the plenum or insert and inflate a furnace blocking balloon. Other materials may be used so long as they provide a sufficient seal against the airflow and can withstand the pressure generated during the sealing process.

4.2 Smart Seal Software

4.2.1 Connectivity

Connect Smart Seal to the Fanbox through a USB connection on the lid of the Fanbox to the laptop or via its onboard Wi-Fi network. The network name is "aerosealXXXX" where the four "X" s are the associated Fanbox Case ID. The text at the bottom of the screen will change from "Disconnected from Fanbox" to "Connected to Fanbox via USB" or "Connected to Fanbox via Wi-Fi."

4.2.2 Entering Customer Information

- From the home screen of Smart Seal, select "Create New Customer" and enter the required information.

- If performing a seal for a builder instead of an individual homeowner, enter the builder's name in the "First Name" field and "RNC" in the "Last Name" field. Select "Save Customer" and press "Next" or the F9 key to proceed.

4.2.3 Preseal Combustion Safety Test

The Preseal Combustion Safety Test (commonly referred to as a CAZ (Combustion Appliance Zone) test) is used to determine whether negative pressures can be created in zones with naturally vented combustion appliances. This test can only be completed after all building envelope materials (sheathing, insulation, drywall, windows, doors, etc.) have been installed. If the residence is not complete, select "No" to both questions on the Preseal Combustion Safety Test screen and continue to the System/Sealing screen by pressing "Next" or the F9 key.

If a CAZ test is required:

- Run one pressure tube from duct reference port to the outside or to a vented attic.

- Either locate the Fanbox in the room with the HVAC equipment or run a second pressure tube from the reference port to the zone being tested.

- Smart Seal will then make three prompted measurements:

    o Baseline pressure

    o Pressure with all exhaust fans, including the clothes dryer, turned on.

o   Pressure with all the exhaust fans still, the HVAC equipment on, and all interior doors closed.

A second Combustion Safety Test, completed after the seal, will duplicate these measurements to determine if the negative pressure condition has worsened.

4.2.4   Entering Equipment Information

- Select "Add System" near the top of the page and provide a description of the HVAC equipment, generally this is entered as the type of system, where it is located, and its configuration (for example "Furnace Basement Up flow").

- Enter the equipment model if available as well as the tonnage and furnace BTU. If no furnace will be installed, enter "0".

- Select "Save System" to save this configuration to the current customer.

- Select "Add Sealing Event" to begin entering information about the seal to be performed.

- Enter a brief description of the event such as "Supply Plenum Injection."

- Select whether the equipment is set up to seal the supply, the return, or both.

- Select the maximum duct pressure according to the weakest materials in the HVAC system (i.e., if a system is primarily sheet metal with one or two flexible duct runs, select "600 Pa" for flex.

- Select "Save Event" and press "Next" or the F9 key to proceed to the Pre-Seal Test.

Note on data quality - Data entered in Smart Seal is uploaded directly to Aeroseal's Seal Database, this information is used to study duct leakage and communicate energy savings to utilities, government agencies, and other interested parties. The higher quality the data is that is entered the more precise Aeroseal can be in its measurements and energy modeling. This data leads to homeowner rebates for duct sealing and further market adoption of advanced sealing using aerosol above mastic and other traditional methods.

4.2.5   Pre-Seal Leakage Test

- Ensure the HSX is connected to the HVAC equipment, all blocking is complete, and the duct pressure tube is inserted into the register farthest from the injection point.

- On the "Preseal" screen select "Start" or press the F3 key after The Pre-Seal Leakage Test will proceed automatically.

- The test is performed by ramping up the Fanbox fan and measuring the resultant airflow at 25 Pascals (Pa).

- When the test is complete, the results will post automatically to the Test Results section on the left-hand side of page.

- Proceed to the Seal screen by pressing "Next" or the F9 key.

4.2.6   Sealing

- Begin the seal by pressing "Start" or the F2 key. The sealing process will begin automatically after selecting the volume of sealant remaining in the sealant jug (25, 50, 75, or 100%).

- Initially the fan will ramp up to an appropriate flowrate and the system will begin to warm up utilizing the two on-board electric heaters.

- After approximately two minutes of pre-heating the pump box will begin to pressurize and inject sealant into the fan flow.

- The Sealing Process graph will automatically update every 60 seconds with the estimated leakage remaining at CFM_{25}.

- o *Note: Due to the mathematical extrapolation that occurs when converting CFM (Cubic Feet per Minute) at a higher pressure down to CFM_{25} the software may interpret the current leakage as lower than measured, to ensure code compliance be sure to continue the sealing event until the Sealing Process graph shows at least 10 CFM below the intended target. The final graph, displayed on the test certificate, will show this difference as an upward spike at the end. The only value required for code compliance is the final leakage value in CFM_{25}.*

- When the estimated effective leakage is below five square inches Smart Seal will provide a pop-up warning. Selecting "OK" will advance the sealing event to the cooldown sequence. If additional sealing is required, it may be continued by selecting "Sealing" from the dropdown menu in the bottom left and pressing "Start" or the F2 key.

- The cooldown sequence will begin automatically by turning off the heaters and continuing the run the fan. During this time, the bottom cable on the fanbox which powers Heater 2, may be unplugged. The cooldown sequence will continue for at least 60 seconds.

- When the unit is cool, proceed to the Post-Seal Leakage Test by pressing "Next" or the F9 key.

4.2.7   Post-Seal Leakage Test

- The Post-Seal Leakage Test will proceed the same as the Pre-Seal Leakage Test.

- On the "Postseal" screen select "Start" or press the F3 key after The Post-Seal Leakage Test will proceed automatically.

- When the test is complete, the results will post automatically to the Test Results section on the left-hand side of page.

- Proceed to the next screen by pressing "Next" or the F9 key.

  - o If a Combustion Safety Test was performed at the beginning of the job, Smart Seal will proceed to the "Post Seal Combustion Safety Test" screen/

  - o If a Combustion Safety Test was not performed at the beginning of the job, Smart Seal will proceed to the "Certificate" screen.

- *Note: if the Post-Seal Leakage test fails to complete, the duct pressure target may need to be increased due to the low airflow coming from the fanbox. Increase the target pressure by pressing "Target" and entering a number which is as low as possible but achievable by the Fanbox. Generally, 35-50 Pascals will allow the test to complete.*

4.2.8   Postseal Combustion Safety Test

If a Preseal Combustion Safety Test was performed, Smart Seal will prompt to complete a second test to determine the amount of change in negative pressure following sealing.

- Replicate the original test as closely as possible.

- Run one pressure tube from duct reference port to the outside or to a vented attic.

- Either locate the Fanbox in the room with the HVAC equipment or run a second pressure tube from the reference port to the zone being tested.

- Smart Seal will then make three prompted measurements:

  - o Baseline pressure

  - o Pressure with all exhaust fans, including the clothes dryer, turned on.

  - o Pressure with all the exhaust fans still, the HVAC equipment on, and all interior doors closed.

Note: If the area in which the test is performed is now experiencing a higher negative pressure, remediation might be required. This can include adding a pass-thru vent to the door serving the HVAC equipment, adding additional return ductwork, or increasing the HVAC filter size. This should be performed by a professional HVAC technician.

4.2.9   Certificate

Upon the seal's completion, a certificate detailing the initial and final leakage is generated. Save this document to the laptop by pressing the "Certificate" button and saving the document to the desired folder. The certificate may also be printed from this screen.

After saving or printing the certificate, if additional seals are to be performed for the residence, press "Run additional seals for the current customer" and Smart Seal will return to the "Add Event" screen.

4.2.10   Uploads and Updates

An upload to the Aeroseal database can be requested by first being connected to the internet and navigating to Maintenance > Upload to Aeroseal. This process will complete automatically and check for software updates. Updates should be installed whenever they are available.

Note: Failure to upload for a period greater than 31 days will cause Smart Seal to stop operating until an upload is accomplished.

4.2.11   License Fee

Per the sublicense agreement, signed by the contractor, the license fee covers fully sealing two HVAC systems in a single residence; any seals beyond two per system (supply and return on each) will incur an additional license fee.

4.3   Home Seal Xpress

4.3.1   Power On Sequence

- Connect the two plugs on the Fanbox and single plug on the Pump Box to three separate 120V 15A circuits in the home or directly to the generator.

4.3.2   Pumpbox to Fanbox connection

- Uncoil the braided hose from inside the Pumpbox and bring the sprayer assembly to the front of the Fanbox.

- Attach the sprayer magnetic contact points to the top side of the matching dimples on metal sprayer holder on the front of the Fanbox. Slide the rubber boot through the slot on the side of the nose of the Fanbox.

- Attach a clean nozzle to the outlet of the sprayer assembly solenoid valve utilizing the onboard nozzle tool. The nozzle should be first tightened with the tool fully engaged and then tightened a second time with the tool only engaged with the outermost section of the nozzle to sufficiently seat both sections.

- *Note: The previously used nozzle can be broken down into its four component pieces and stored in a container with cleaning solution (Buckeye Workout or similar) until time allows to clean multiple nozzles at the same time.*

4.3.3   Fanbox to HVAC connection, layflat tubing

- 36" layflat tubing is used to create an artificial piece of ductwork through which sealant is injected into the HVAC system. A minimum of 8 feet of straight, level, layflat is required directly in front of the Fanbox. Any additional length should be kept as short as possible. Every additional length of layflat decreases the seal time.

- To HSX – Attach the 36" layflat to the nose of the Fanbox by first passing several inches through the 10" clamping ring and evenly distributing the layflat around the edge. Install the layflat and clamping ring to the nose of the Fanbox and insert the supplied cotter pin to secure the clamp handle.

- To Flange – Pull the layflat from the Fanbox to the installed injection flange on the HVAC equipment. Ensure there are no twists or tight turns in the run and attach to the flange using the supplied 12" clamp ring.

4.3.4 Duct Pressure Measurement Tube (Blue Tube)

- Connect the provided "Blue Tube" (75 feet) to the duct pressure port located on the lid of the Fanbox and route it through the residence to the farthest accessible register in the ductwork from the injection point. The blue tube can be pressed next to the register blocker or pushed through the foam blockers by first creating an opening with a sharp tool. The end of the Blue Tube must not be obstructed and should be positioned fully within the ductwork.

4.3.5 Loading Sealant

- Place a gallon jug of sealant inside of the Pumpbox and drop the pickup tube assembly into the sealant, attach the lid securely. Connect the small (1/8" inner diameter) silicone tube to the matching barbs on the pickup tube assembly and interior of the Pumpbox, this connects the inlet to the pump to a supply of sealant. Connect the large silicone tube (1/4" inner diameter) to the matching barbs on the pickup tube assembly and interior of the Pumpbox, this connects the drain from the pump to the sealant container completing a closed loop of sealant supply.

- Priming – Sealant is primed into the airless pump by pressing the "Quick Prime" button on the outside of the Pumpbox. The pump will run for approximately 10 seconds to attempt to draw in sealant, if sealant is not seen flowing through both sets of silicone tubing press the "Quick Prime" button again and press the "Prime Assist" Button to the left of the Quick Prime button several times.

- *Note: The Prime Assist Button requires much more force to press than the Quick Prime Button, ensure it is moving at least 1/8th of an inch to operate properly.*

4.3.6 Power-Down Sequence

- With the unit cool, disconnect any remaining electrical plugs, pressure tube connections, and layflat from the Fanbox and Pumpbox.

- Pinch and remove the silicone tubing connections inside of the Pumpbox, rinse the tubing and Pickup Tube Assembly with water.

- Coil the braided nozzle hose and store inside of the Pumpbox.

4.3.7 Storage

IMPORTANT: The Pumpbox must not be stored in freezing conditions as the pump is always filled with fluid. Allowing the pump to freeze can crack the pump casting and void the manufacturer's warranty.

4.3.8 Adding Heat in Cold Environments

Often, in new construction homes, the sealing rate is diminished by cold temperatures. This can be mitigated by adding heat into the system by directing an electric, diesel, or kerosene heater into the inlet gate of the HSX. Keep any heaters of this kind at least 3 feet away from the Fanbox. The maximum inlet temperature that the Fanbox can handle is 150°F.

5 MAINTENANCE

Use this quick reference to keep track of maintenance activities on a per seal/day/month basis. Keeping up with regular maintenance of the HSX will greatly increase its operational life.

Maintenance Activities

Fanbox and Smart Seal

Tasks	Frequency			Est. Labor (mins)
	Every Seal	Daily	Monthly	
Inspect sealant condition	✔			1
Inspect/Replace Fanbox filter		✔		1
Inspect/Replace Scrubber filter		✔		3
Clean/inspect sealant buildup on inlet gate			✔	3
Clean/inspect sealant buildup on tube fittings on fan box lid			✔	2
Clean/inspect sealant buildup on Fanbox breakers			✔	2
Laptop: complete Smart Seal upload to Aeroseal			✔	2
Laptop: complete Smart Seal updates			✔	2
Laptop: complete Windows update			✔	10

Pumpbox and Nozzle

Tasks	Frequency			Est. Labor (mins)
	Every Seal	Weekly	Every 2 weeks	
Remove attached nozzle and break it down for cleaning	✔			1
Clean the 2 clear plastic tubes on sealant cap barbs	✔			3
Clean/inspect sealant buildup on pump box "IN/OUT" barbs	✔			2
Clean/inspect sealant buildup on sealant jug cap barbs	✔			2
Clean nozzles accumulated from one week's jobs		✔		10
Replace sealant filter on the pickup tube		✔		2
Flush pump box with water			✔	5
Inlet barb cleaning (After full flush and drying pump using quick prime)			✔	10
2X Solenoid cleaning (After full flush and drying pump using quick prime)			✔	10
Full prime (After full flush)			✔	1

5.1 Smart Seal Software and Laptop

5.1.1 Updates

- Whenever an upload occurs from Smart Seal the software will also check for updates. Be sure to install updates as soon as they become available. Smart Seal is constantly evolving with quality-of-life updates as well as more technical updates which prolong the life of the equipment and ensure an efficient seal event.

- Windows updates should be performed as they become available as well. If a Windows update causes anything to stop working in Smart Seal, please contact the Technical Support team immediately.

5.1.2 Uploads

- An upload to the Aeroseal database can be requested by first being connected to the internet and navigating to Maintenance > Upload to Aeroseal. This process will complete automatically and check for software updates. Updates should be installed whenever they are available.

- *Note: Failure to upload for a period greater than 31 days will cause Smart Seal to stop operating until an upload is accomplished.*

5.2 Home Seal Xpress

5.2.1 Flushing

Every two weeks, the pump located inside the Pumpbox must be fully flushed with clean water to ensure no sealant accumulates within the pump.

- Supply power to the top outlet of the Fanbox and the outlet on the Pumpbox, connect the equipment to Smart Seal via the onboard Wi-Fi network.

- Connect the flush bottle with at least a half-gallon of clean water to the Pumpbox inlet (1/8" silicone tubing).

- Remove the nozzle from the sprayer assembly and replace with the white flushing adapter.

- Position the drain line from the Pumpbox (1/4" silicone tubing) and the nozzle flushing adapter so they will flow into a bucket or other watertight container.

- In Smart Seal, select Maintenance>Airless Maintenance Utility and press the "Flush Pump" button. The pump will proceed to pump water from the flush bottle for approximately two minutes to clear the internal components.

    o At this point, the solenoids in the Pumpbox may also be cleaned, disconnect power, and clean them to keep both maintenance activities on the same schedule.

- Replace the flush bottle with a bottle of sealant and click the 'Full Prime' button, the pump will prime with fresh sealant for approximately 30 seconds.

    o *Note: This process will prime both the fluid pump as well as the sprayer assembly, ensure the flushing adapter is installed and directed to an appropriate waste container. Do not perform a "Full Prime" with a nozzle installed.*

- Disconnect the electrical connections to the Fanbox and Pumpbox

- Remove all silicone tubing as well as the flushing adapter and rinse with clean water.

- Material flushed from the pump can be solidified with paint hardener and disposed of with regular garbage.

5.2.2   Nozzle

Nozzles can be cleaned and assembled as a batch to reduce the overall time spent cleaning. Do not use the same nozzle over multiple days of sealing events without cleaning it.


Nozzle Assembly

- The nozzle can be broken down into four parts by separating the head from the body using both nozzle tools.

- Allow the nozzle parts to soak in cleaning solution for at least 15 minutes, and up to a week.

- Rinse all four parts with clean water and remove any sealant residue with the provided tubing brushes and dental picks.

- Reassemble by first combining the impeller and spring, placing this assembly into the body of the nozzle with the Viton rubber seal facing the body, and reinstalling the head with the nozzle tool.

5.2.3   Solenoids

There are two solenoids associated with the Pumpbox that must be disassembled and cleaned once every two weeks, generally after flushing the pump. One is part of the sprayer assembly and the second is located inside the pumpbox beneath the removable tray on the left-hand side. Disconnect power to the pumpbox before disassembling the solenoids. The hydraulic and electrical lines do not need to be removed to perform this maintenance.

- Remove the nut and washer retaining the solenoid coil with a 9/16" wrench.

- Match the pins on the provided Solenoid Wrench Nut with the solenoid body and turn counterclockwise to loosen and remove the center post.
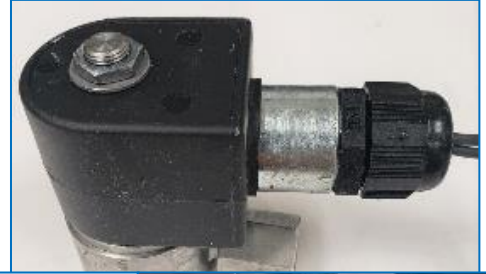
- Remove the solenoid core, spring, and plug, leave the black O-ring in the solenoid body.


- Rinse all parts with clean water, use provided picks and brushes to remove any sealant residue.

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- Reassemble by first inserting the plug back into the solenoid body. This is a tight fit, ensure it is seated properly.

- Insert the core with plunger back into the solenoid plug, place spring in the hole on the top of the core.

- Reinstall the center post with the Solenoid Wrench Nut. Do not overtighten.
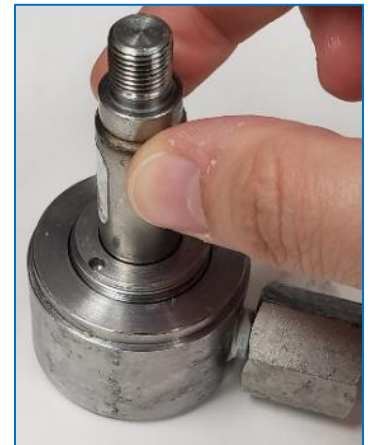
- Reinstall the solenoid coil with the metal ring facing the solenoid body. Fasten in place with washer and 9/16" nut.

5.2.4   Inlet Check Valve

- The Inlet Check Valve must be cleaned every two weeks to ensure proper operation.

- First, remove any fluid from inside the pump by disconnecting the 1/8" ID silicone tubing from the sealant or flush jug and pressing the "Quick Prime" button.

- Loosen the hose clamp holding the inlet tube to the check valve with a screwdriver and remove the inlet tube.

- Remove the brass check valve body with the provided 7/8" socket, separate the valve body, spring, and check valve ball.

- Clean the interior of the valve body, the spring, and the ball with clean water. Additionally, wipe out the valve seat on the top of the pump with a clean rag or paper towel.

- If there is visible damage to the O-Ring installed on the barb fitting, replace it with an alternate from the Spare Parts Kit.

- Reassemble the check valve by first inserting the spring into the pump, setting the check valve ball on top, and reinstalling the check valve body with the 7/8" socket.

- Reattach the inlet tube and tighten the hose clamp with a flathead screwdriver.

- Reinstall the 1/8" ID silicone tubing and press the "Quick Prime" button to prime the pump.

- *Note: Due to fully draining the pump, priming may take several attempts.*

6 TROUBLESHOOTING

6.1 Smart Seal Software

6.1.1 Errors and warnings

- Smart Seal will display a pop-up window and pause the seal whenever an error has occurred. Follow the instructions on the pop-up to remediate the error and press "Start" or the F3 key to return to sealing.

- If no instructions are listed, it is a more technical problem that should be addressed by Technical Support. Technical Support can be reached 24/7 at the tech support hotline: 1 (800) 772-6459

6.2 Home Seal Xpress

Mechanical components of the HSX have been selected to be robust but user serviceable when required. For the minor issues below, the operator should be able to remedy them with little to no issue. For any other issues, Technical Support can be reached 24/7 at the tech support hotline: 1 (800) 772-6459

6.2.1 Failure to prime.

Several common issues which can cause the Pumpbox to not fully prime the pump (and their remedies) are listed below.

- Sealant filter clogged (Replace the sealant filter)

- Insufficient sealant (Add more sealant)

- Clogged tubing or brass barbs (Clean barbs with dental picks or replace tubing)

6.2.2 Automatic Gate not moving.

The Automatic Gate is equipped with a robust linear motor, however there are situations which could cause the gate to not move. Check the following points prior to contacting Technical Support.

- Electrical connection – Ensure that the plug to the Automatic Gate, inside the Fanbox, is fully seated.

- Sealant build up – In extreme cases, sealant built up on the gate can cause it to move slowly or not move at all. Clean the gate fully with Buckeye Workout or a citrus based cleaner to remove sealant

- Racking – If the guides for the sides of the gate become loose over time, the gate can move slightly in the horizontal direction and become stuck. Ensure the gate is plumb and tighten the gate guides inside of the Fanbox

7 SDS

7.1   **Duct Seal –** The most up to date SDS can be found at: **https://aeroseal.com/sds/**

7.2   **Buckeye Workout Cleaner –** **https://www.buckeyeinternational.com/media/Workout5007.pdf**

8 REVISION HISTORY

Rev. 001 – Initial Draft. January 2023

Rev. 002 – First production release. February 14, 2023

    Formatting. Removed errant references to previous equipment.

Rev.003 – Clarity Improvements. April 19, 2023

    Added notes:

- Replace O-ring on inlet check valve if there is visible damage
- Keep nozzle removed during "Full Prime" sequence
- Pre-clean nozzles prior to first seal
- Do not allow the Pumpbox to freeze

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