

esa SERIES

ESA-3000 **INSTALLATION** **GUIDE**



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This guide is for reference only. Before proceeding with installation, ensure compliance with all applicable building codes in your region.

PREPARATION

Number of Exchangers and Positioning

The exchanger(s) can be installed on either side of your building. However, the ideal location depends on several parameters. It is strongly recommended to consult a certified ESA representative to determine the optimal position and number of exchangers required for your building type and size. Provide the following information when speaking with your ESA representative:

- Minimum and first-stage ventilation requirements.
- Location of fresh air inlets and exhaust fans.
- Available wall space.
- Building width, length, and sidewall height.
- Location of water, gas, heating lines, and fans.
- Prevailing outdoor winds.
- Curtain-sided or solid-wall building.

SPACING

Two recommended positioning options are available for ESA-3000 units. Other options are possible; please contact us for further information.

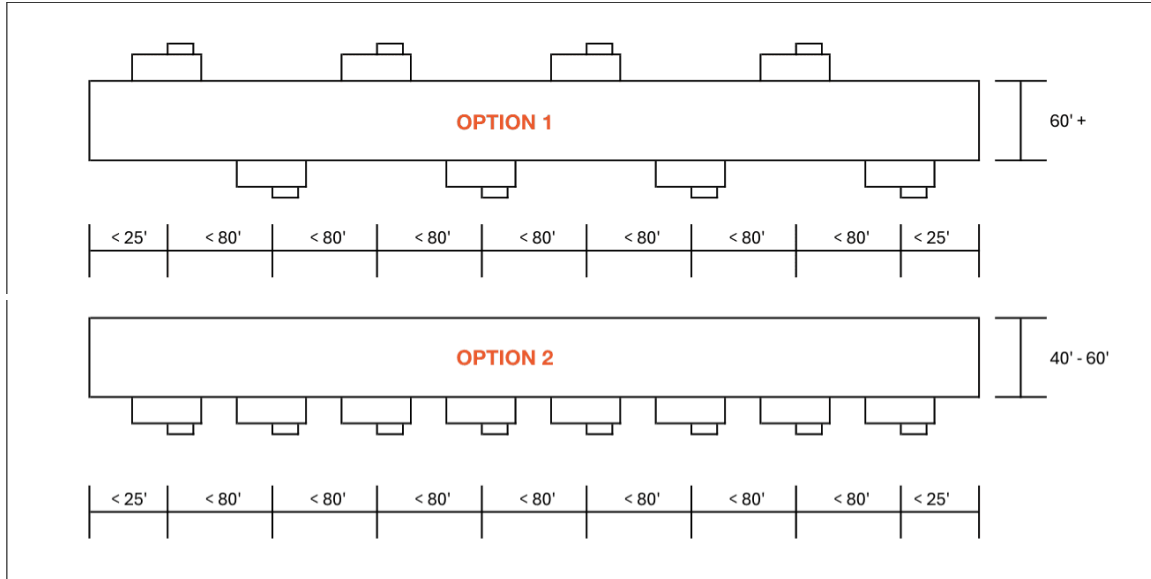


Figure 1 Positioning of all ESA-3000

Generally, option 1 is recommended for buildings over 60 feet wide. Option 2 is recommended if your building is between 40 and 60 feet wide. This option may also be possible for wider buildings by changing the orientation of the air distribution. Contact us to find out more about this option.

It is also important to leave clearances around exchangers to enable maintenance and servicing operations to be carried out. Here are the recommended minimum distances. Note that it is very important to maintain a minimum clearance of 35-3/4" in front of each unit (inside the building).

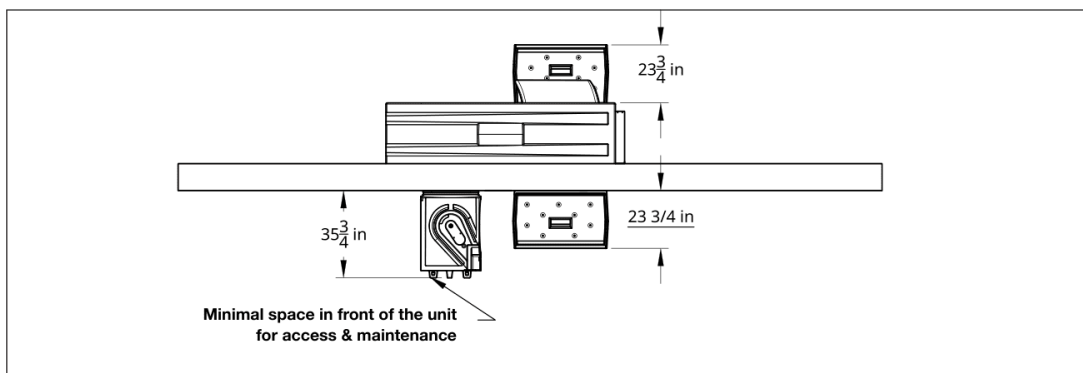


Figure 2 Positioning of each ESA-3000 relative to the wall

We also recommend keeping a minimum distance of 12" between the unit and the ceiling, and 12" between the unit and the floor. These spaces are necessary to open the unit's doors to gain access to the cores.

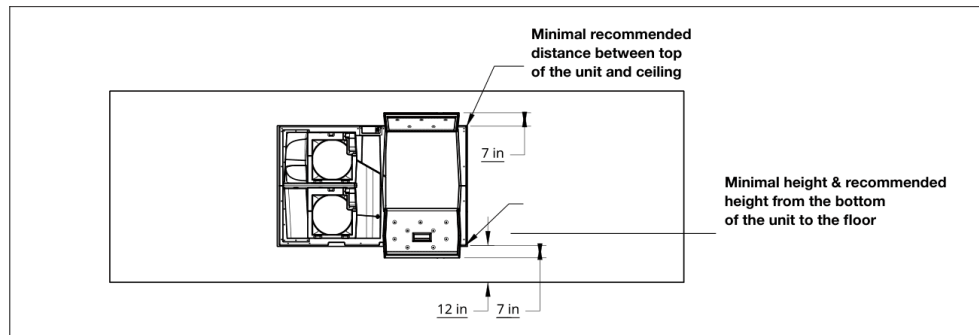


Figure 3 Positioning of each ESA-3000 relative to the height on the wall

ROUGH STUD OPENING (RSO)

Opening dimensions for each ESA-3000 : 96" x 60.5"

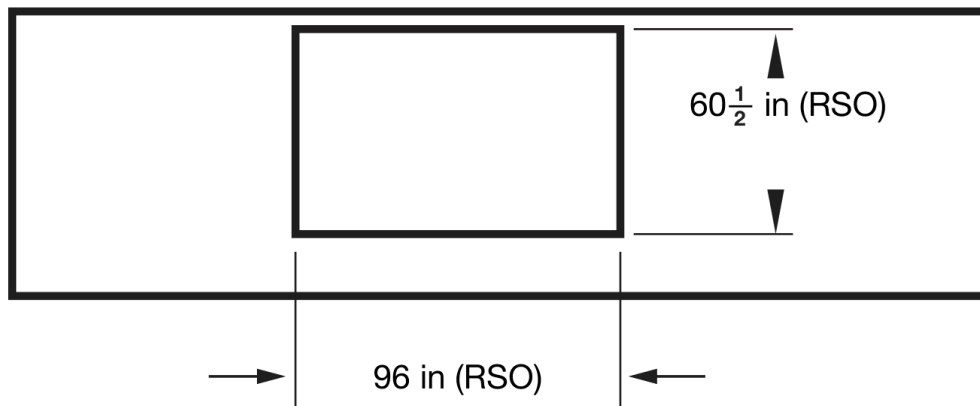


Figure 4 Opening dimensions for each ESA-3000

HEAT EXCHANGER - DIMENSIONS

- **Material** : HDPE UV15
- **Dimensions** : 93-3/4" (length) 59-7/8" (height) 35-7/8" (depth); see Figure 5
- **Tolerances (Length)** : 93-3/4" (-0" + 1 1/4")
- **Tolerances (Height)** : 59-7/8" (-0" + 5/8")

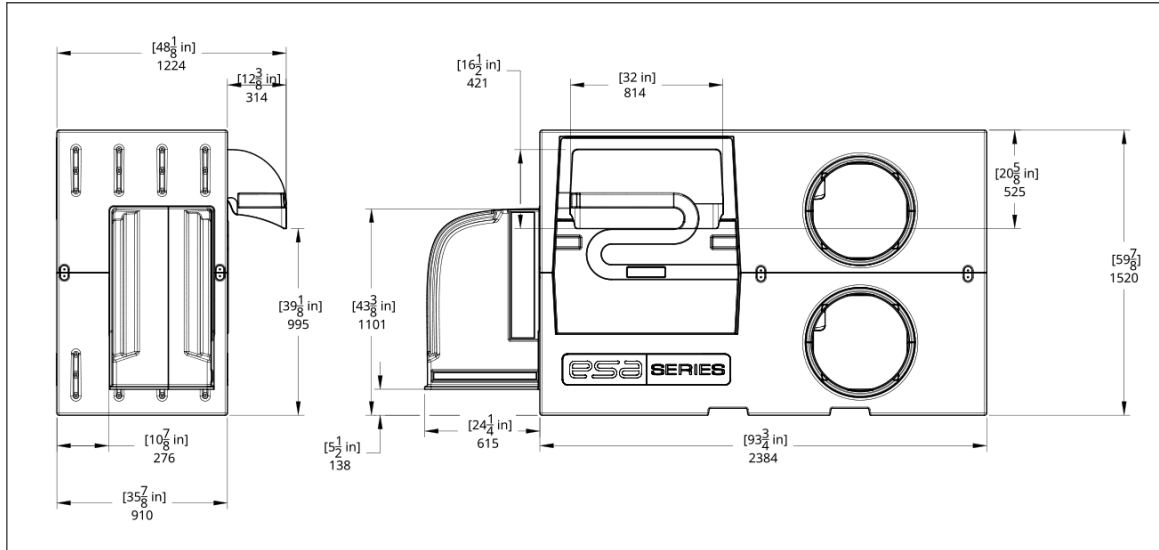


Figure 5 Dimensions for each ESA-3000

SHIM PLACEMENT (Optional)

If you decide to use shims (not required), below is a picture showing optimal shim placement to ensure weight is properly distributed. Shims should be 0.5 inches thick. Remaining gaps should be filled with insulating material.

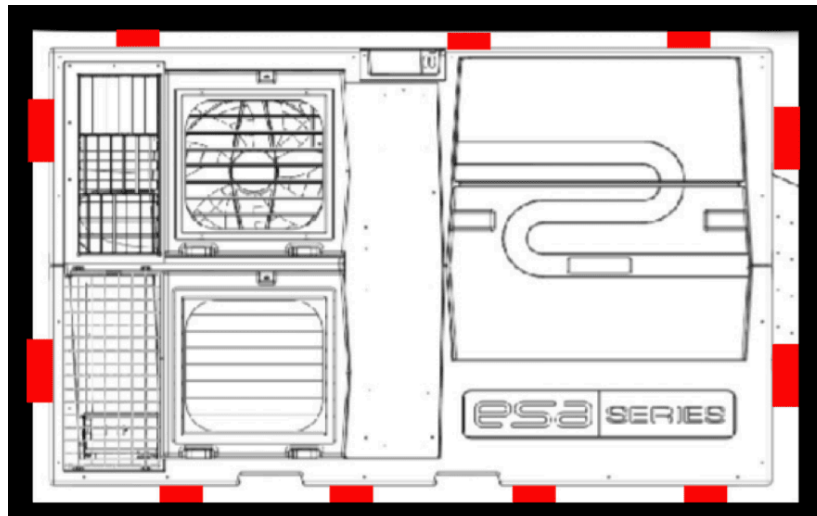


Figure 6 Shim placement

INSTALLATION

PARTS LIST

Item	Part number	Description	Quantity
1	ESA-3000-BT-0202	Upper flange #1	1
2	ESA-3000-BT-0201	Side flanges #2 et #3	2
3	ESA-3000-BT-0203	Bottom flange #4	1
4	QNC-0002-0027	Screws #8 x 3"	20 (+5)
5	QNC-0002-0039	Screws #14 x 3/4"	30 (+2)
6	HE301	ESA-Series Monitor	1

NOTE Before installing your exchanger in the wall, please make sure the framing is in compliance with all applicable building codes. If you're installing Winter covers on your exchangers, you'll only need to install the top flange. Follow steps 1 and 2, then go to the WINTER COVERS INSTALLATION (OPTIONAL) Annex to continue installation.

1. HARDWARE BOX

Before beginning installation, open the exchanger doors to retrieve the box of hardware required for installation.

2. UPPER FLANGE #1

- a. Prepare the positioning of the upper frame #1 for the exchanger, according to Figure 7

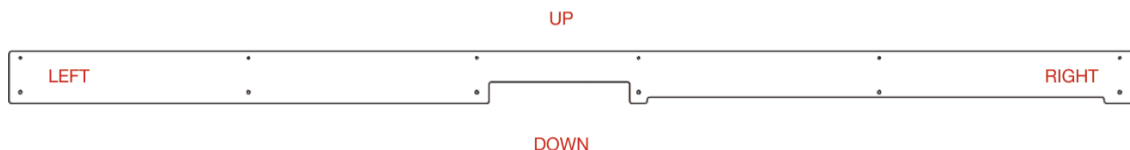


Figure 7 Upper flange #1 placement

NOTE If you are installing Winter covers on your exchangers, you will only need to install the upper metal frame. Once this step is completed, proceed to the *Winter cover* Appendix. If you are not installing Winter covers, proceed to the next step.

- b. Align the Upper flange #1 with the exchanger, as shown in Figure 8.
- c. Screw it in place with six (6) #14 x 3/4" screws provided (item 5), starting from center. The smaller holes are meant for 3" screws and will be installed later.

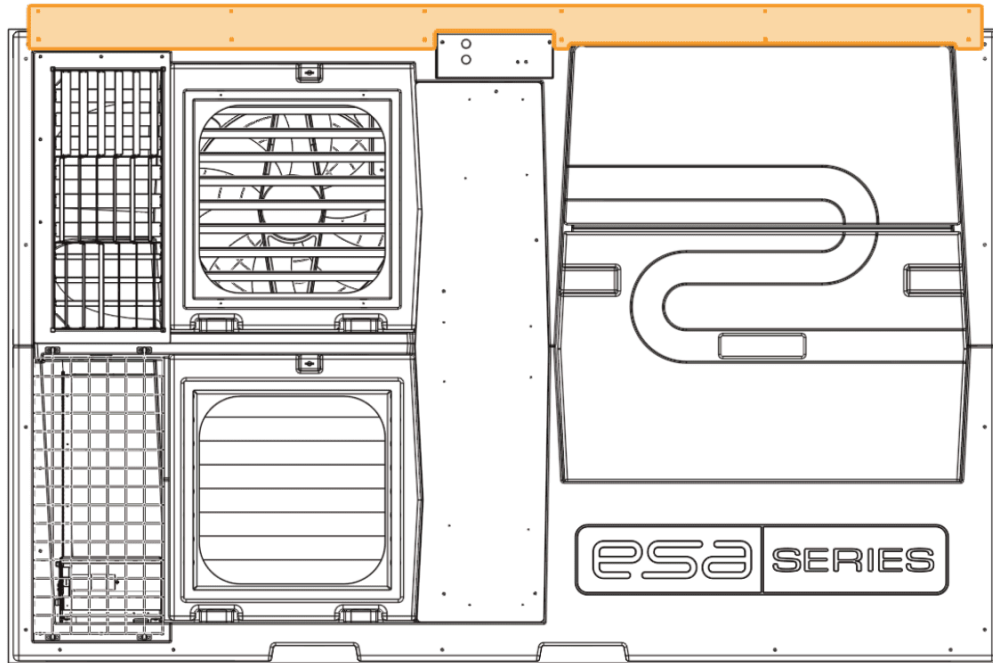


Figure 8 Alignment of the upper frame #1 with the exchanger.

3. FLANGE #2 AND #3

- a. Starting with the left side, align the Side flange #2 (item 2) making sure there is no gap between the upper flange #1 and that the rounded corner are on the outside.
- b. Screw it in place with four (4) #14x3/4" screws provided (item 5), starting from center. The smaller holes are meant for 3" screws and will be installed later.
- c. Repeat the steps 1 and 2, for the Side flange #3.

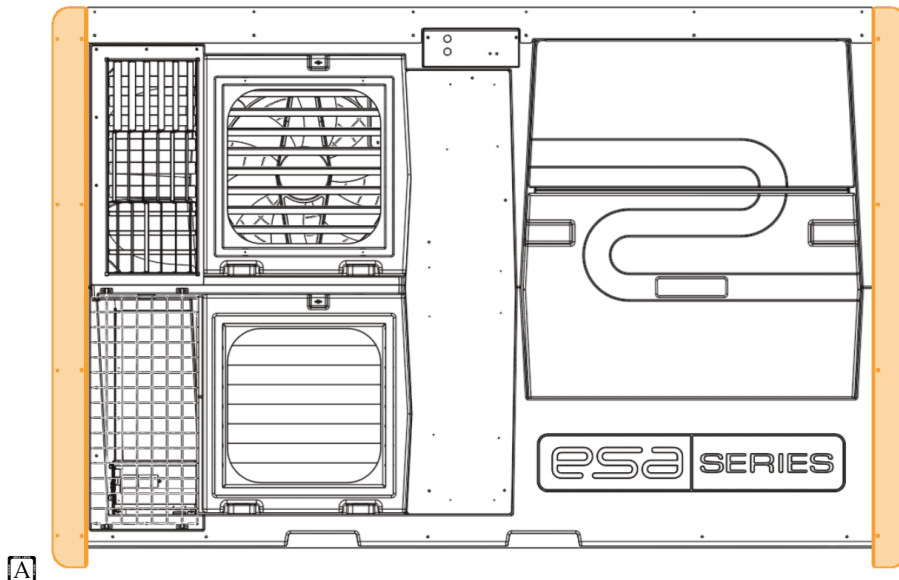


Figure 9 Alignment of Side flanges #2 and #3

4. FLANGE #4

- a. Prepare the positioning of the Bottom frame #4 for the exchanger, according to Figure 10.

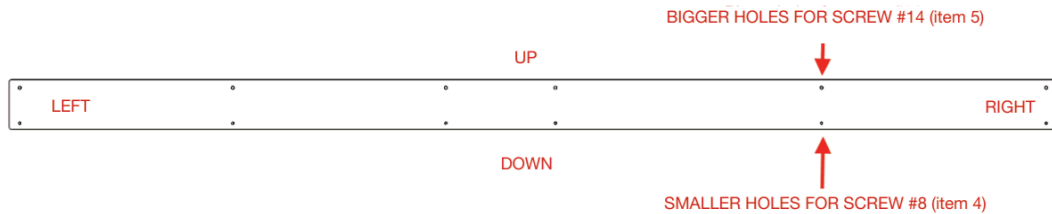


Figure 10 Bottom flange #4 placement

- b. Position bottom flange #4, ensuring there are no gaps between it and the side frames. Make sure to completely cover the forklift openings.
- c. Secure it in place using six (6) supplied #14 x 3/4" screws (item 5), starting from the center, in the larger holes, specifically the top row of holes on frame #4. The 3" screws will be used later.

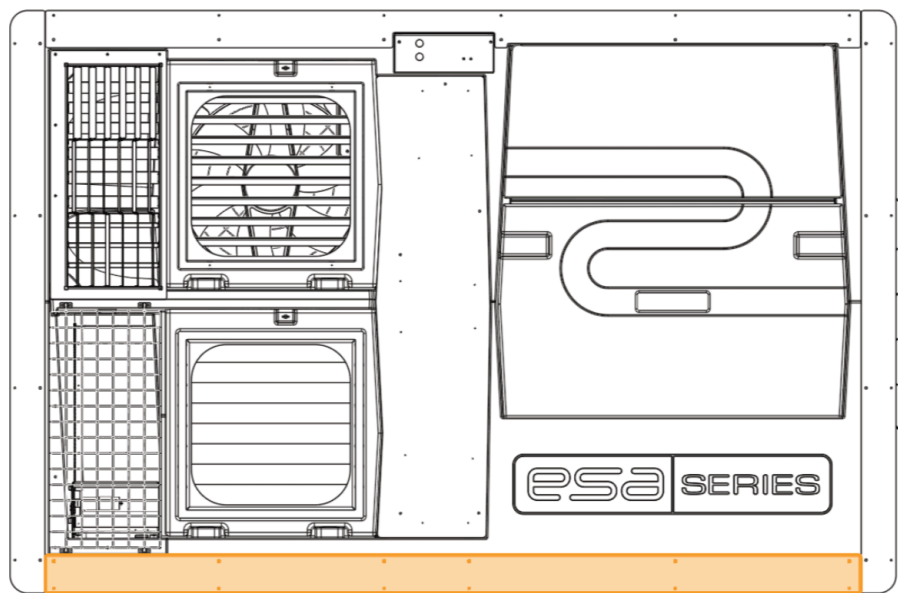


Figure 11 Alignment of Bottom flange #4

- d. Fix the ESA-3000 in place with the twenty (20) #8 x 3 deck screws included in the installation kit (item 4). There must be a screw in each hole of each flange.

5. FLASHING

- a. From the outside, install the flashing on top of the exchanger. The side of the trim parallel to the wall must be positioned behind the building's exterior cladding, according to the Figure 12. Screw the drip moulding to the wall only.

NOTE Do not screw onto the exchanger.

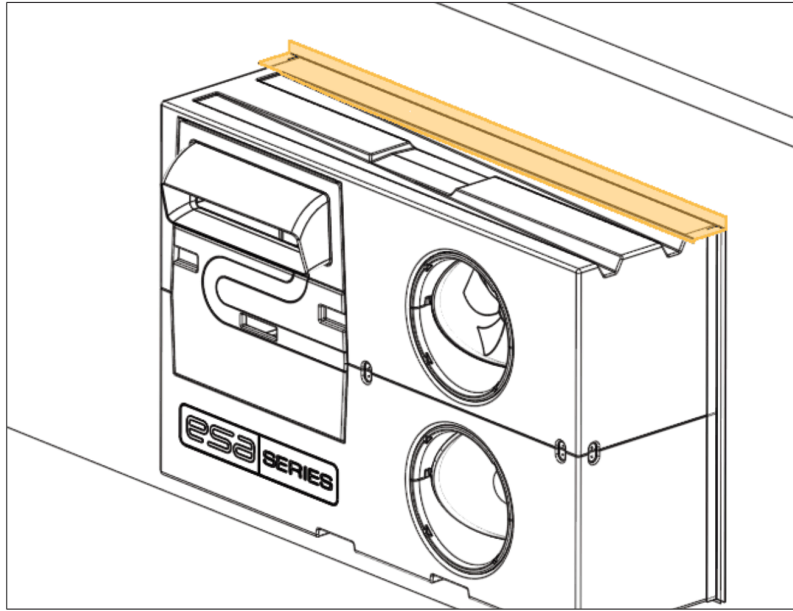


Figure 12 Positioning of the Upper drip trim

6. EXTERIOR ANGLE J TRIMS

- a. Also, install an exterior angle J trim on each side of the exchanger, according to Figure 13.

NOTE Do not screw onto the exchanger.

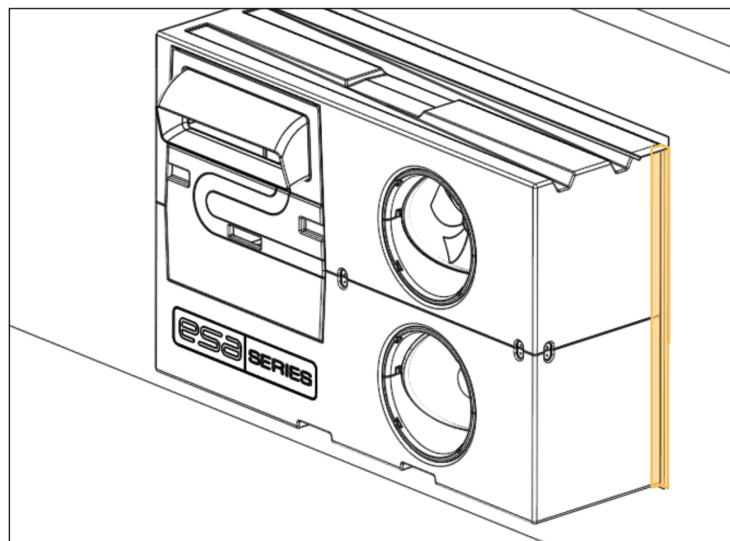


Figure 13 Positioning of the Side drip trims

- b. After the installation is completed, use spray foam and outdoor rated sealant to insulate and seal the heat exchanger. Also, open the exchanger doors to remove the cardboard that protects the cores.

6. INTAKE INSTALLATION

- a. Screw in place the intake with four (4) #14 x 3/4" screws provided according to Figure 14.

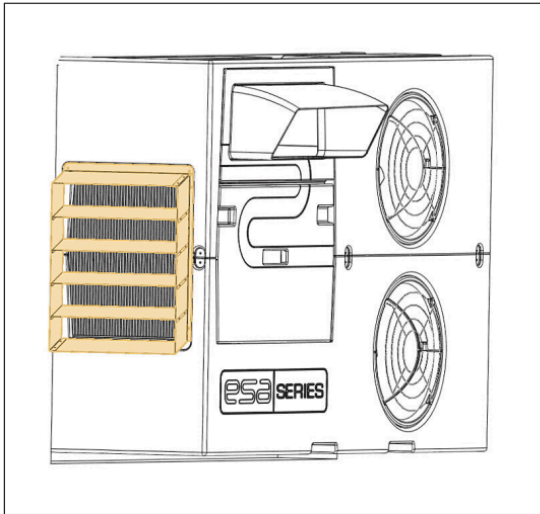
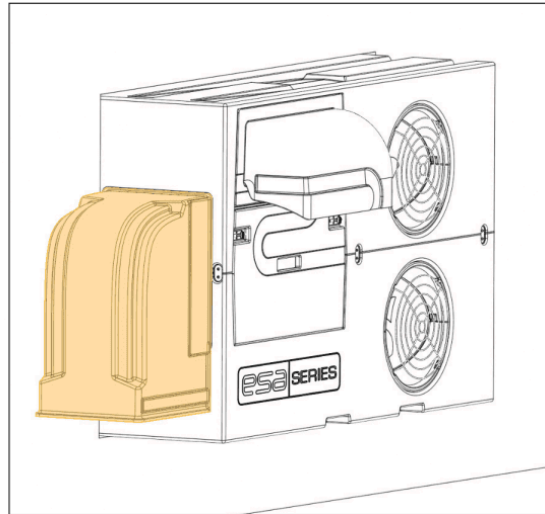


Figure 14 Air Intake Model 1



Model 2

7. EXHAUST INSTALLATION

- a. Open the rear door and insert the exhaust vent on it, according to Figure 15. While standing beneath the open door, screw in place using six (6) #14 x 3/4" screws.

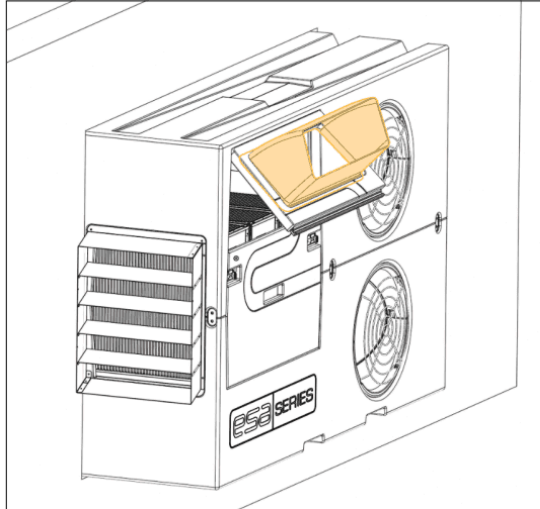
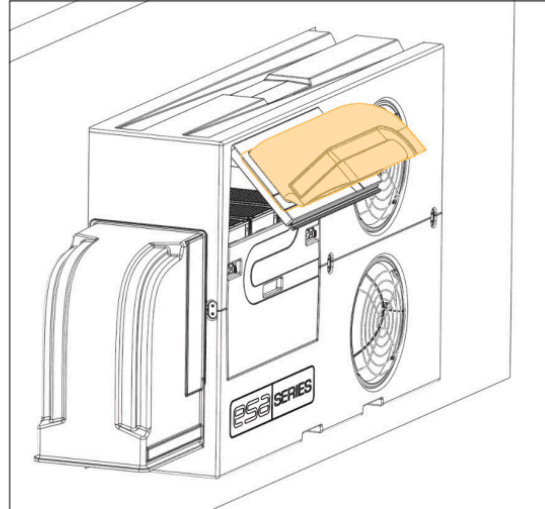


Figure 15 Air Exhaust Model 1



Model 2

DRAIN PIPE

Whether installing for 2 or 3 levels, certain recommendations must be followed to ensure a compliant installation, according to ESA. When two or three air exchangers are installed one above the other, a drain pipe must be installed under the upper exchanger(s) to prevent water from spilling onto the lower exchanger(s). The diagrams with numbered pipes are shown on the next two pages; 2-Level Installation and 3-Level Installation:

- a. ALL pipes and pipe connections must be glued using the appropriate adhesive.
- b. For 2-level installations, use 60° slopes for the #4 pipes. Never use a 90° elbow or a straight drain pipe under the exchanger.
- c. For 3-level installations, use 67.5° slopes for the #4 pipes. Never use a 90° elbow or a straight drain pipe under the exchanger. Position the elbows and Y-fitting first, then cut the lengths of the #4 and #6 pipes. Start with the 2nd level to facilitate installation.
- d. The maximum drain length is 16 feet, due to the length of the heating cable. The minimum distance between the floor and the drain end is 1.5 feet, to prevent ice from building up under the drain during cold periods.
- e. Install heating cables in the drains of the 2nd- and 3rd-level exchangers.
- f. Drain pipes can be 2" or 3", but insulation must be applied around the pipes, especially for 2" installations. Apply 3/8" to 1/2" insulation around all drain pipes.
- g. Recommendations for ESA3000 use:
 - i. Keep the exchangers powered on at all times, even between batches.
 - ii. Perform a 60-minute defrost cycle at the end of each batch. This process defrosts and dries the cassettes during the off-period and prepares the exchangers for the next batch.
- h. Installation suggestions:
 - i. It is possible to add an elbow via the end of the pipe to prevent dirty water from the exchanger from splashing onto the building.
 - ii. It is recommended to place a slab or gravel at the drain outlet to prevent mud formation.

Installation of the Heating Cable in the Drain

Installing heating cables in the drains of the 2nd and 3rd level exchangers prevents ice buildup. Upon delivery of your exchangers, the respective heating cables will already be connected and positioned in the central section of the unit. To complete the installation, follow the steps below:

1. Remove the central panel door.
2. Pass the heating cable through the orange cap and seal it properly.



Figure 16 Location of the orange plug in the central panel

3. Open the interior doors and remove the two leftmost exchange cores.
4. Insert the heating cable into the drain and ensure it extends beyond the end of the drain pipe on the exterior.

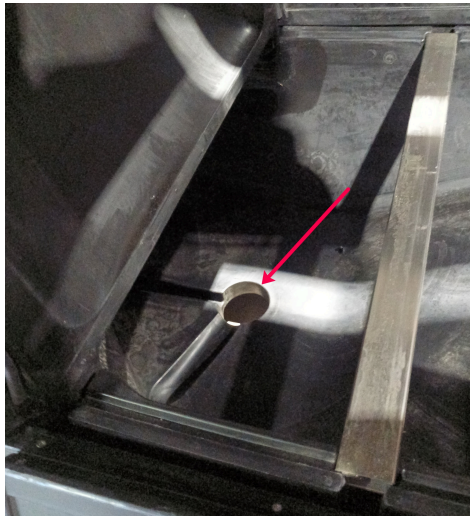


Figure 17 Location of the drain

5. Drill a hole at the end of the drain pipe, according to the red dot shown in the Figure 18, and insert a zip tie to secure the heating cable to the edge of the pipe.



Figure 18 Wrapping of the heating cable around the end of the drain

6. The excess heating cable must be wrapped around the exterior end of the drain, as illustrated in the Figure 18, and secured properly.
7. Reinstall the exchange cores and close the doors of the exchanger inside the building.

DRAIN PIPE INSTALLATION FOR 2RD-LEVEL

It is possible to install 45° and 22.5° elbows to replace the two (2) 60° elbows.

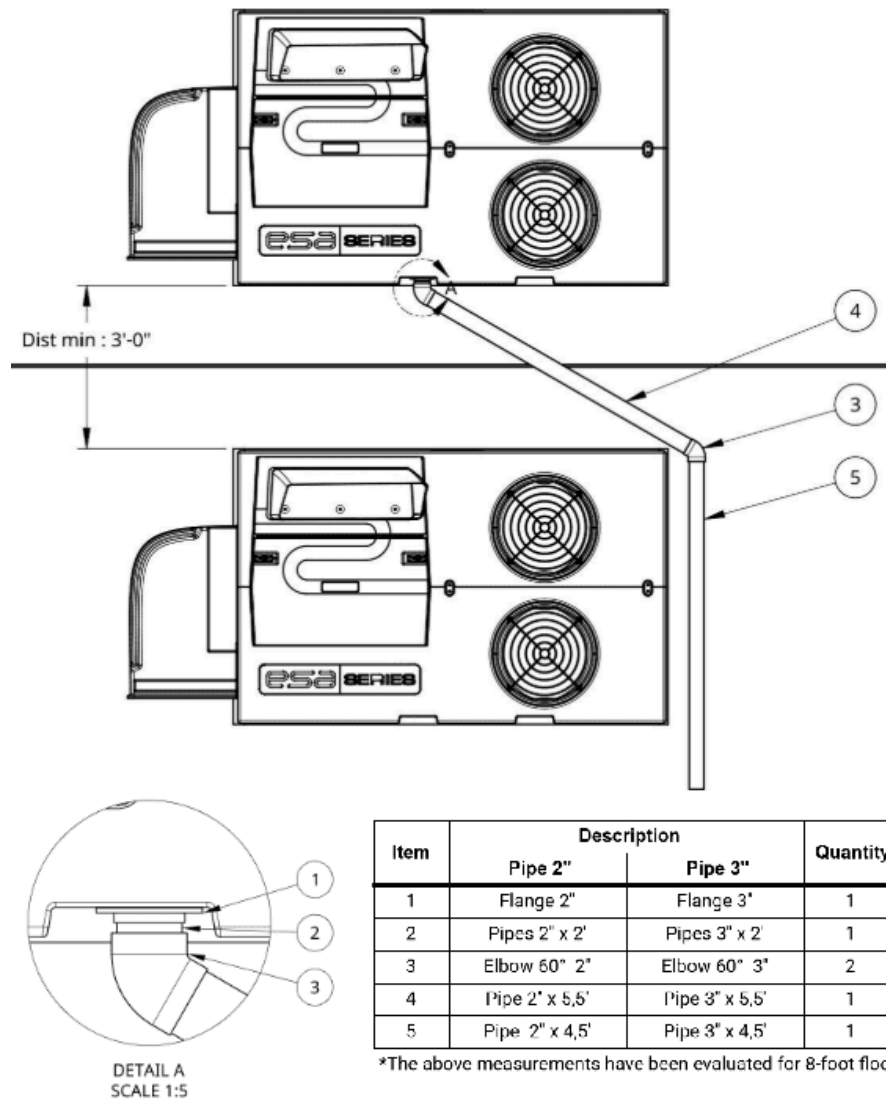
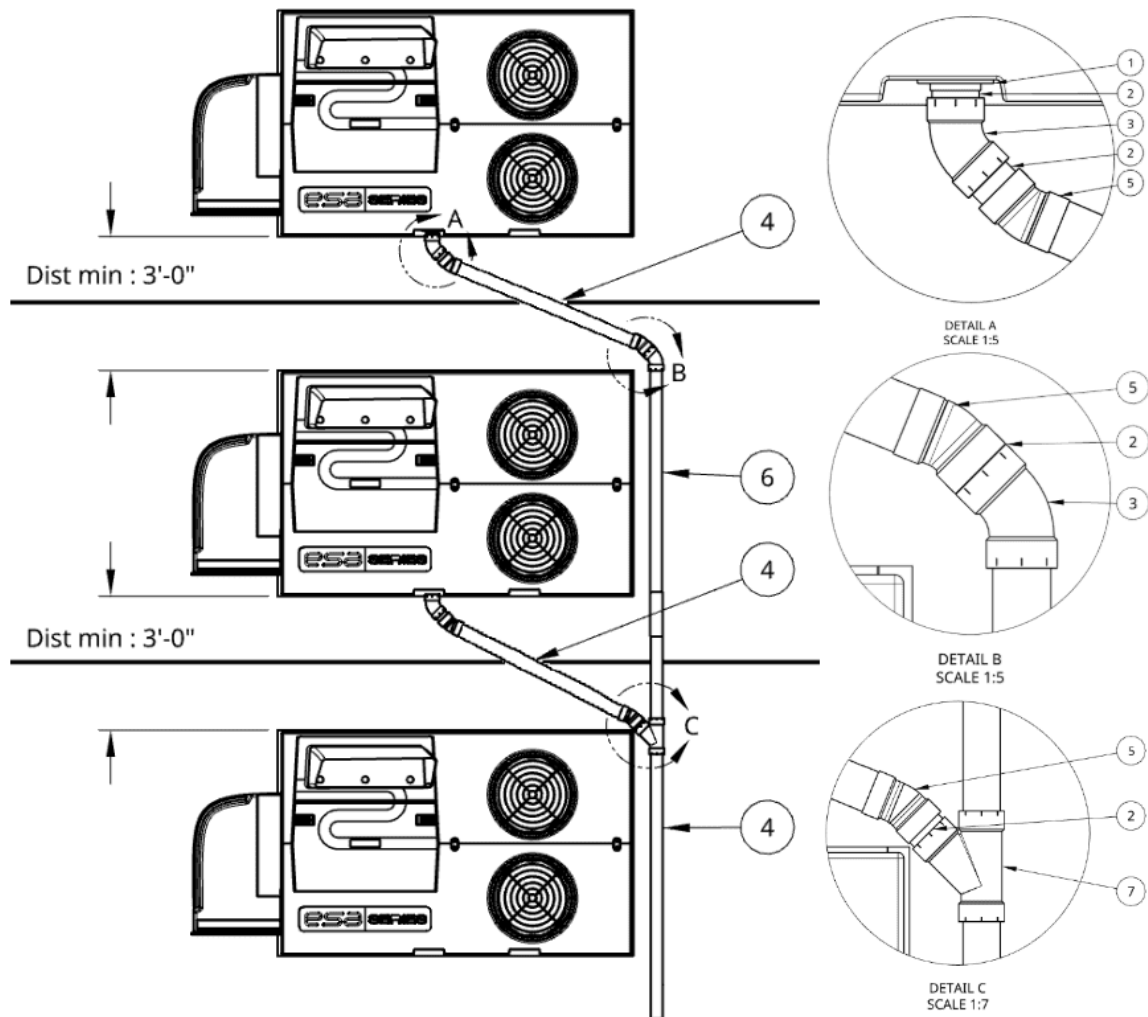


Figure 19 Drain pipe installation for 2nd-Level

DRAIN PIPE INSTALLATION FOR 3RD-LEVEL



Item	Description		Quantity
	Pipe 2"	Pipe 3"	
1	Flange 2"	Flange 3"	2
2	Pipes 2" x 2'	Pipes 3" x 2'	6
3	Elbow 45° 2"	Elbow 45° 3"	3
4	Pipe 2" x 4,5'	Pipe 3" x 4,5'	3
5	Elbow 22,5° 2"	Elbow 22,5° 3"	3
6	Pipe 2" x 8'	Pipe 3" x 8'	1
7	Y Fitting 45° 2"	Y Fitting 45° 3"	1

*The above measurements have been evaluated for 8-foot floor:

Figure 20 Drain pipe installation for 3rd-Level

CLEANING SYSTEM

IMPORTANT INFORMATION

- Suggested flow and pressure for the main water supply: 12 GPM @ 25 PSI
- Maximum pressure for the main water supply: 35 PSI
- Do not use tools to tighten pipe connectors. Over-tightening may cause breakage or leaks. **HAND TIGHTEN ONLY.**
- It is recommended to install a manual valve upstream of the system.
- Ensure that installations comply with local codes in your area. Contact a certified plumber to ensure your installations are compliant and safe. Consult them for advice regarding expansion joints and to determine whether installing a water meter is appropriate for your setup.

1. MAIN WATER SUPPLY CONNECTION TO THE SYSTEM

- a. Connect and glue the pipes to the system to the water in your building and to the exchanger, according to the Figure 21.

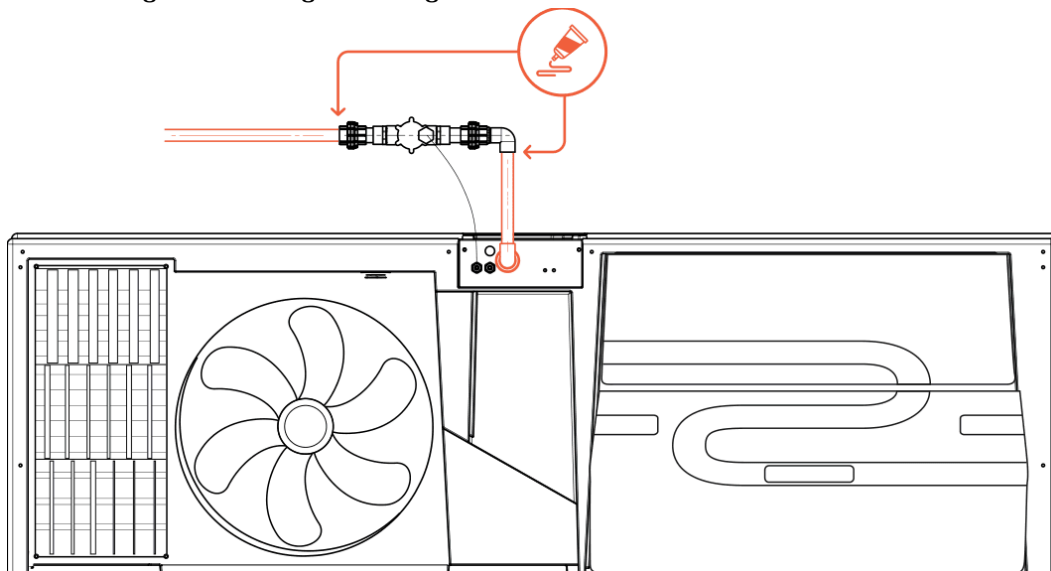


Figure 21 Main supply water

2. NOZZLES INSTALLATION

- a. Apply two (2) turns of teflon tape on every of the six (6) nozzles and screw them by hand. Do not overtighten.

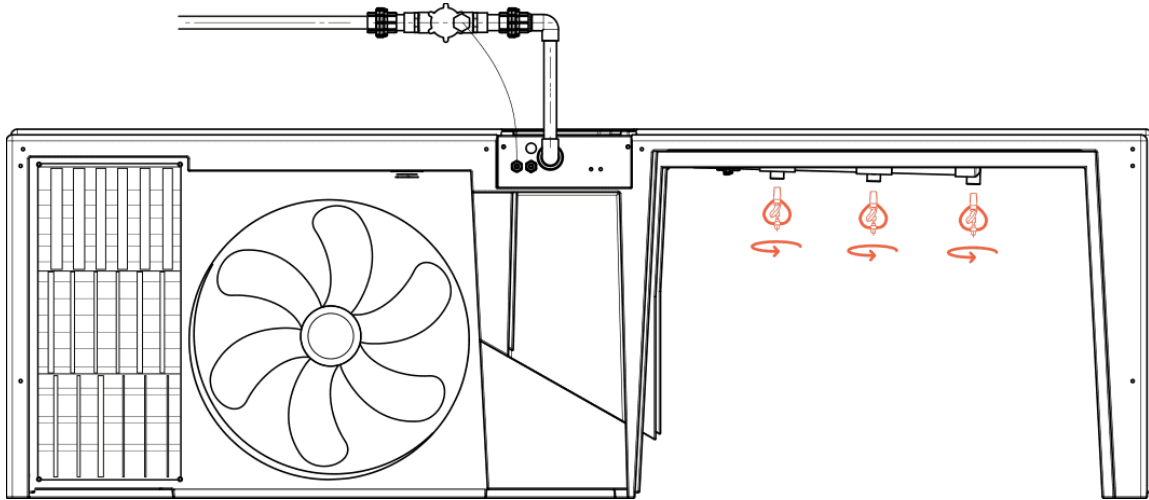


Figure 22 Nozzles installation

ELECTRICITY AND COMMUNICATION

IMPORTANT : Work with a licensed electrician and make sure your connections comply with local codes and standards.

a. ELECTRICAL CONNECTIONS

- a. The 240VAC cable (SJ00W 3c/14 AWG) is connected to a manual control device, namely the power disconnect switch supplied by ESA. This switch will safely disconnect all conductors at the power supply point. Each ESA-3000 must have its own dedicated switch. Figure 23 illustrates the switch supplied by ESA.

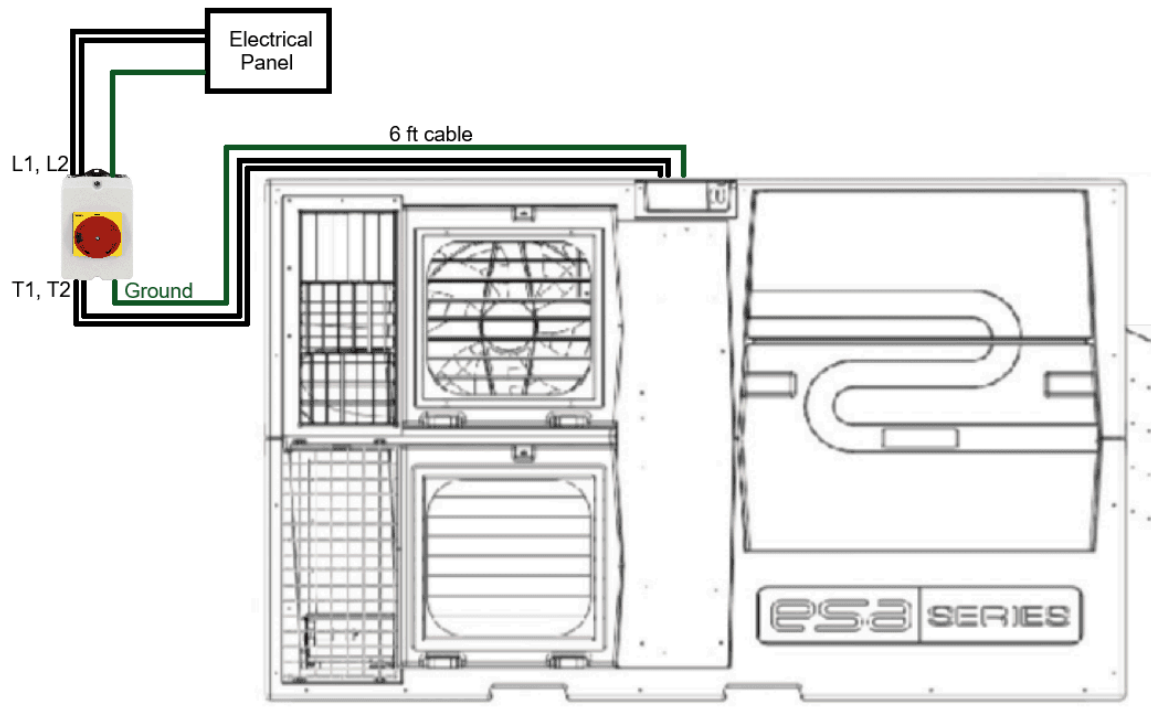


Figure 23 Exchanger Disconnect switch and electrical connections

- b. Figure 24 illustrates the wiring diagram required to power each ESA-3000. The *Load* side is already connected by ESA; the licensed electrician must connect the *Line* (Supply) side according to the wiring diagram shown in Figure 24.

Supported electrical input : **240V 50-60 HZ Power Source, single phase.**

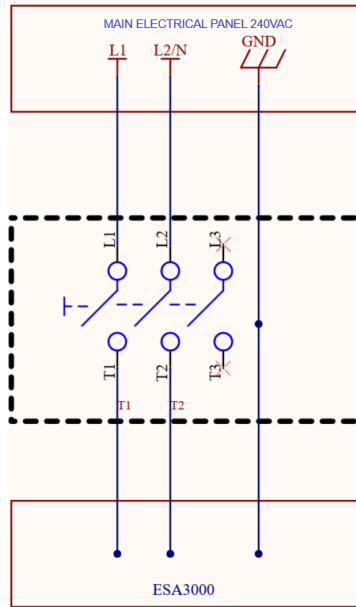


Figure 24 Wiring diagram

- b. The power supply must be protected by an appropriate circuit breaker. It is important to note that each ESA-3000 has a nominal current of 7 amps.

c. COMMUNICATION CONNECTIONS

The 0-10V or Modbus cable (CMG 3c/18awg) must be routed to your fan controller. Consult your manufacturer's representative for details.

0-10V Communication

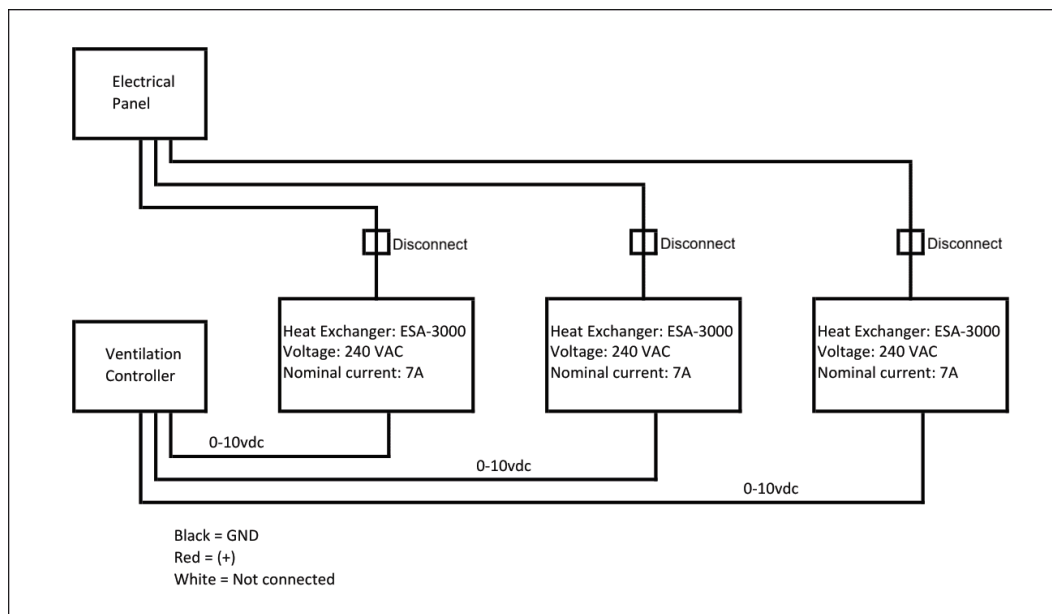


Figure 25 0-10V Control Connection

Modbus Control Communication

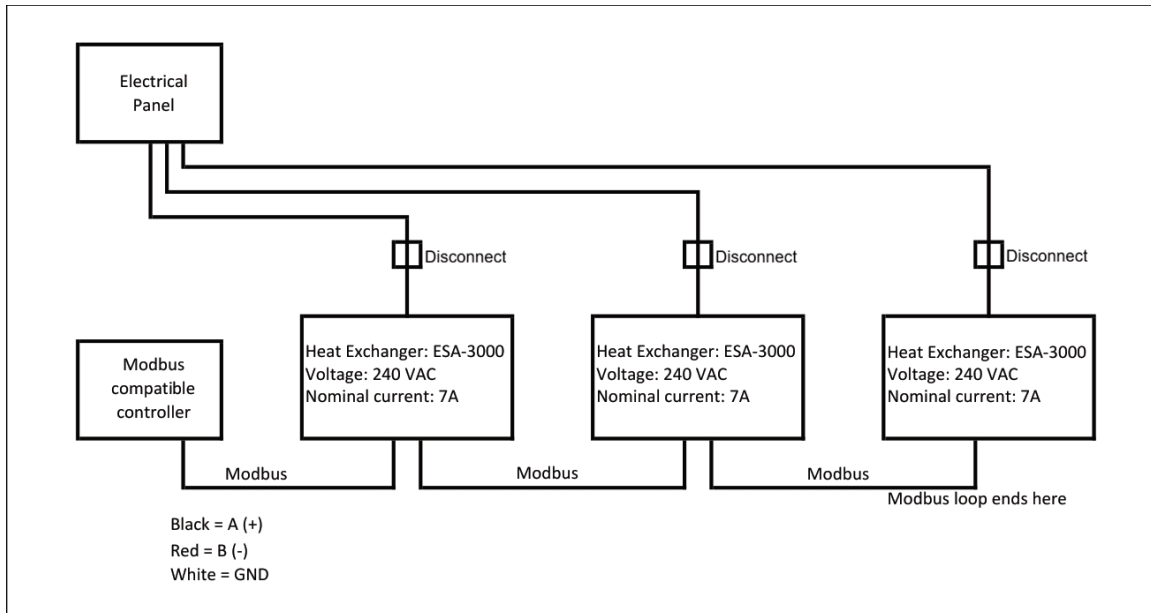


Figure 26 Modbus Control Connection

NOTE If your controller is a Maximus, it is important to verify that the Modbus control connections (White, Red and Black), as shown in Figure 27, matches the configuration illustrated in Figure 26. **WARNING**, connect the shield to *Earth Ground*, not on the *White (-)*.



Figure 27 Modbus Control Connection with Maximus

ESA-Series Monitor Connection

The monitor allows the manufacturer to upload a new software version to the exchanger.

Install the monitor in your control room. Do not install the monitor near high-voltage sources.

Plug in the power and connect the Ethernet cable to your internet modem (ESA Series Monitor shown in Figure 28).

A blue light should illuminate on the front, and yellow and green lights will turn on at the back of the device, indicating normal operation.



Figure 28 ESA-Series Monitor

START-UP AND PROGRAMMING

1. START UP

Once the electrical connections and the monitor are connected, the exchangers must be activated to complete the startup procedure. Before proceeding, ensure that the cardboard above the exchanger cores has been removed from your exchangers.

Startup Steps:

- a. Turn the exchangers' circuit breakers to ON.
- b. Verify that the green light on each exchanger is illuminated.
- c. Call us at 1-855-573-2877 to configure each ESA-3000:
 - i. Ensure that the ESA Monitor communicates properly with each ESA-3000.
 - ii. Set the exchangers to Recovery mode.
 - iii. If there is a Modbus control, each exchanger must be identified in the client's controller.
 - iv. Provide the farm manager's information to ESA in preparation for creating the *ESA Command* account.

2. PROGRAMMING

Then schedule a meeting with your local representative to adjust your ventilation stages and plan your automatic cleaning cycles, the duration and frequency of which are adjustable.

The duration and frequency of the cleaning cycles are adjustable. Note that during the winter months, manual cleaning should not be performed if the exchangers are not in *Recovery* mode.

NOTE If your exchangers are controlled by a 0-10 volt connection, take note of the document explaining how it works in the section *0-10V ESA-3000 Control*.

Modbus ESA-3000 Control

For Modbus programming of your ESA-3000 units, please consult your local representative.

0-10V ESA-3000 Control

The purpose of this guide is to explain how the ESA-3000 reacts to the voltage applied to it. The ESA-3000 operates in heat recovery ventilation mode (*Recovery*) or in forced ventilation mode (*Bypass*).

It is also important to know that the ESA-3000 operates with a choice of two 0-10V control modes: 0-10V B mode (*Recovery* only) or 0-10V C mode (*Recovery* and *Bypass*).

1. 0-10V B mode (Recovery only)

When the ESA-3000 is in this mode, it varies speed between 0% and 100% according to a control signal from 0 to 10V, according to the Figure 29.

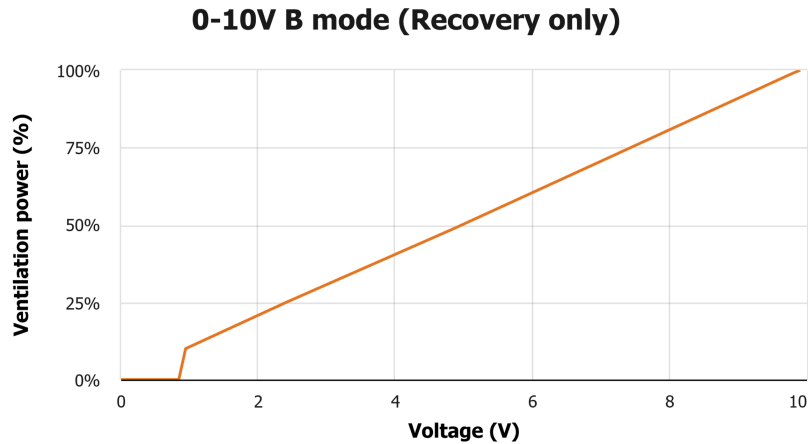


Figure 29 Voltage curve of 0-10V B mode (*Recovery* only)

2. 0-10V C mode (Recovery and Bypass)

When the ESA-3000 is in this mode, it operates with a control signal from 0 to 10V, according to the Figure 30:

- When the voltage is from 1V to 5V, the exchanger is in *Recovery* mode.
- When the voltage is between 5.1V and 10V, the exchanger is in *Bypass* mode.

There is a dead zone when the voltage is between 5.1V and 5.3V. If this voltage is sent to the exchanger, it will shut down with the fans in *Bypass* mode.

It is important to verify that the voltage sent by the controller matches the voltage received by the unit. The voltage can be verified in the *ESA Command* application.

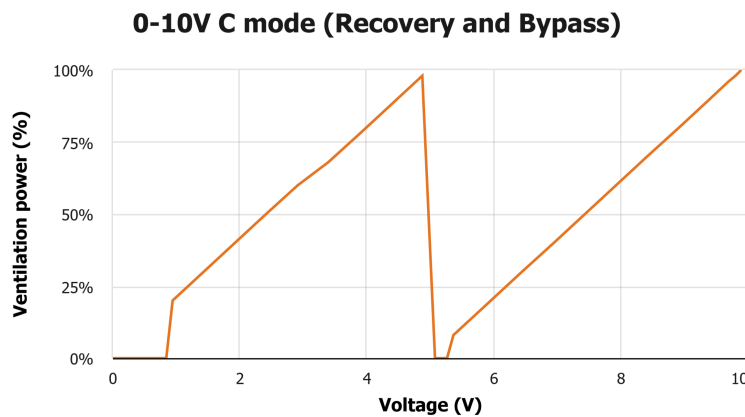


Figure 30 Voltage curve of 0-10V C mode (*Recovery* and *Bypass*)

PREVENTATIVE CARE AND MAINTENANCE

Disconnect power to the exchanger units before proceeding with cleaning.  

1. EXCHANGER CORES CLEANING

We recommend inspecting the exchanger cores after each cycle. The frequency and duration of automatic cleaning cycles may vary depending on the application and the type of litter.

When performing manual cleaning with a pressure washer, it is important to follow the conditions below to prevent damage and extend the service life of the exchanger cores.

Do not hesitate to manually clean your units as often as needed. Although the units can be equipped with an automatic cleaning system, it is recommended to perform manual cleaning at **least two (2) times per year**. The units can be cleaned using a pressure washer, provided the criteria below are respected.

Important Recommendations:

- Maximum 1200 PSI
- Nozzle with a minimum 20-degree spray angle (no direct jet)
- Maintain a minimum distance of 12 inches from the surface

If necessary, mild soaps or gentle cleaning agents may be used. Rinse thoroughly afterward.

Manual cleaning steps

- a. Open the latches and the unit doors.
- b. Lift the retaining bar that holds the exchanger cores in place.

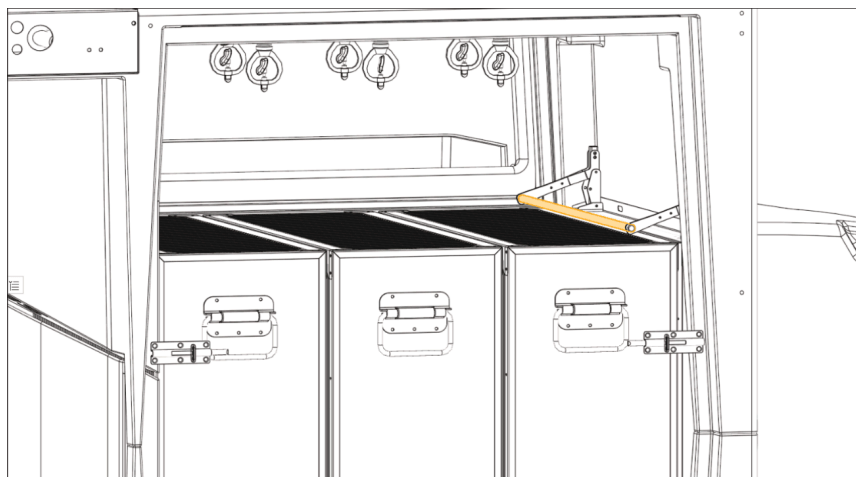


Figure 31 Retaining bar to be lifted before removing the cores

- c. Using the handles, remove the three (3) exchanger cores from the unit.

- d. Carefully move the exchanger cores to your cleaning area.
- e. Clean the exchanger cores using a pressure washer, following the *Important Recommendations* above.
- f. Once cleaning is complete, reinstall the three (3) exchanger cores and lower the retaining bar.
- g. Close the unit doors and secure with the door latches.

PRO TIP: During the summer months, before using a pressure washer, use a blower to remove dry debris from inside the units, particularly from the exchanger cores. It is important to maintain a sufficient distance (minimum 12 inches) between the blower and the exchanger cores to avoid damage.

2. GENERAL UNIT CLEANING

It is recommended to perform a general cleaning of your units 1 or 2 per year.

Cleaning steps

- a. Remove the gravity dampers and the exchanger cores from the unit.
- b. Blow out excess dry dust.
- c. Using a pressure washer, clean both the interior and exterior of the unit.

NOTE When cleaning the intake and exhaust ducts, it is important to avoid directing the pressure washer spray toward the fan connectors and the humidity sensors to prevent damage.

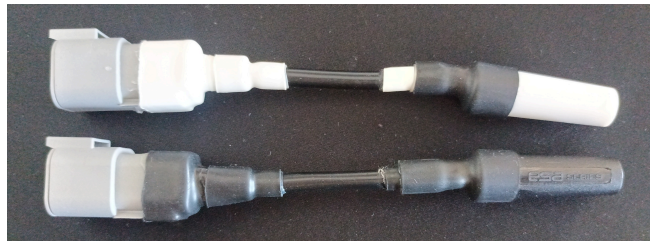


Figure 32 Humidity sensors

- d. Reinstall the exchanger cores after cleaning, following the instructions in the *Exchanger Core Cleaning* section.

APPENDICES

WINTER COVERS INSTALLATION (OPTIONAL)

- a. Build a frame around the unit using 2" × 6" lumber (not supplied). The frame must have a RSO of 58" × 91". Use #8 × 3" deck screws (not supplied) to secure the frame to the wall.
- b. Use the 18 #14 × 3" screws (supplied) to secure the unit in place by fastening through the frame into the unit flange. **Do not overtighten**, as this may damage the plastic threads and compromise the structural integrity of the installation.
- c. Cut an opening in the upper section of the frame (as shown by the red circle in Figure 33) to allow passage of the water and electrical lines.

NOTE The #14 × 3" screws may be replaced with #8 × 3" screws; however, to maintain the structural integrity of the installation, more than 18 screws will be required. Refer to the table below for the exact quantity per side of the unit.

Screws	Top Side	Left & Right Sides	Bottom Side
#14 x 3" (provided)	6	4 each side	10
Optional Substitution #8 x 3" (not provided)	6	4 each side	15

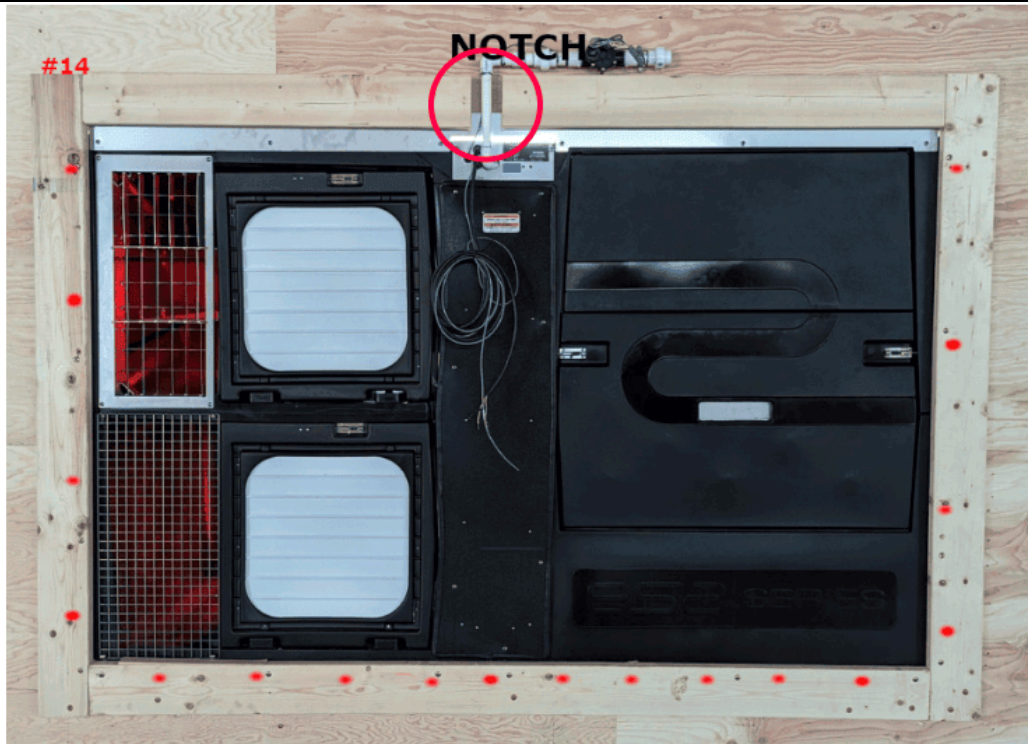


Figure 33 Screw positioning on each side of the frame

- d. Once the wooden frame is installed, add a second layer of 2" × 6" lumber over the frame, as shown as the Figure 34.



Figure 34 Second layer of 2" × 6"

- e. Install the two (2) latches on each door.
- f. Position the two (2) doors in the closed position on the unit.
- g. Secure the eight (8) hinge screws into the second layer of 2" × 6" lumber.



Figure 35 Winter covers installed, open position

- h. Close the doors and install four (4) plastic wing fasteners per door.
- i. Once the winter covers have been installed, proceed to Step 5 of the INSTALLATION.

INSTALLATION OF LIGHT TRAP (OPTIONAL)

- a. Remove the central *Light trap* assembly from the metal frame.
- b. Ensure that power to the unit is disconnect. Never remove guards with power still present.
- c. Remove the two (2) original fan guards and keep the four (4) screws.

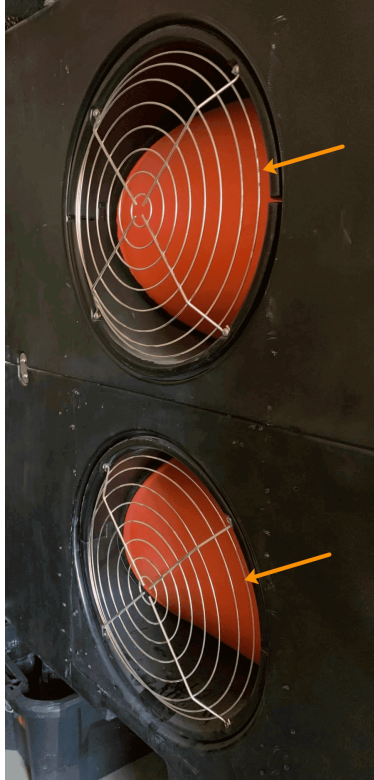


Figure 36 Original fan guards to be removed

- d. Use the two (2) top tabs of the frame to position it on the unit. Maintain pressure on the frame until it is secured, as the tabs do not support the weight of the frame.
- e. Center the frame with the two (2) openings of the fans, as shown in Figure 37. If necessary, use a level to ensure the frame is straight.

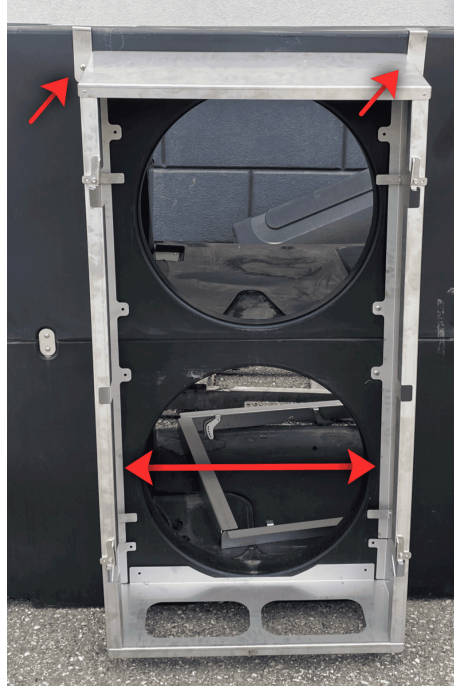


Figure 37 Frame positioning relative to the unit

- f. Fasten the frame using the 12 screws through the frame's mounting holes, as shown in Figure 38.



Figure 38 Screw locations for securing the frame

- g. Install the central *Light Trap* assembly into the frame by sliding it inside.
- h. Turn the four (4) latches to the closed position to hold the assembly in place, as illustrated in Figure 39.

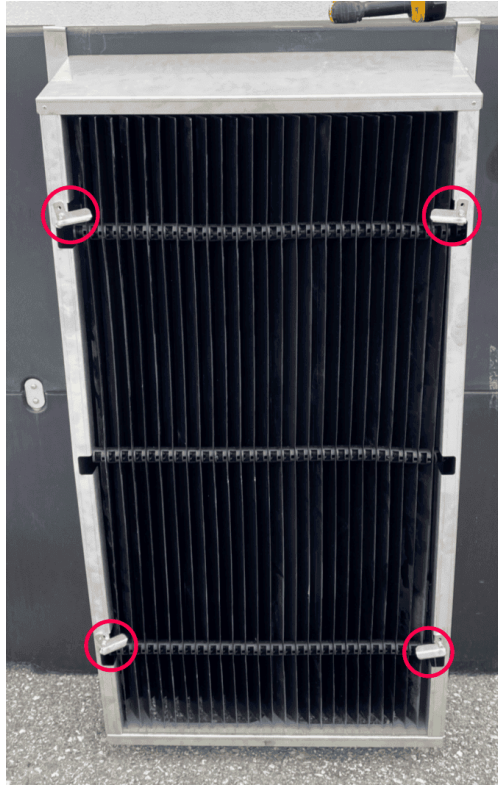


Figure 39 Latches in the closed position

- i. Heat the unit along the sides of the frame with a torch until you see a slight color change in the plastic.
- j. Apply a continuous bead of 418 urethane sealant, as shown in Figure 40– Arrow 2, along the entire length of the frame to fill the gap between the frame and the unit.



Figure 40 Correct application of 418 urethane at Arrow 2



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