

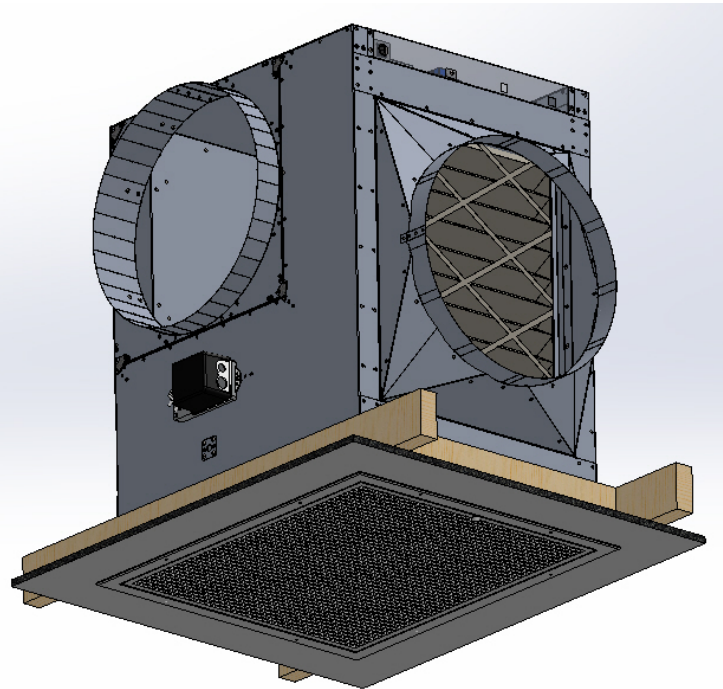
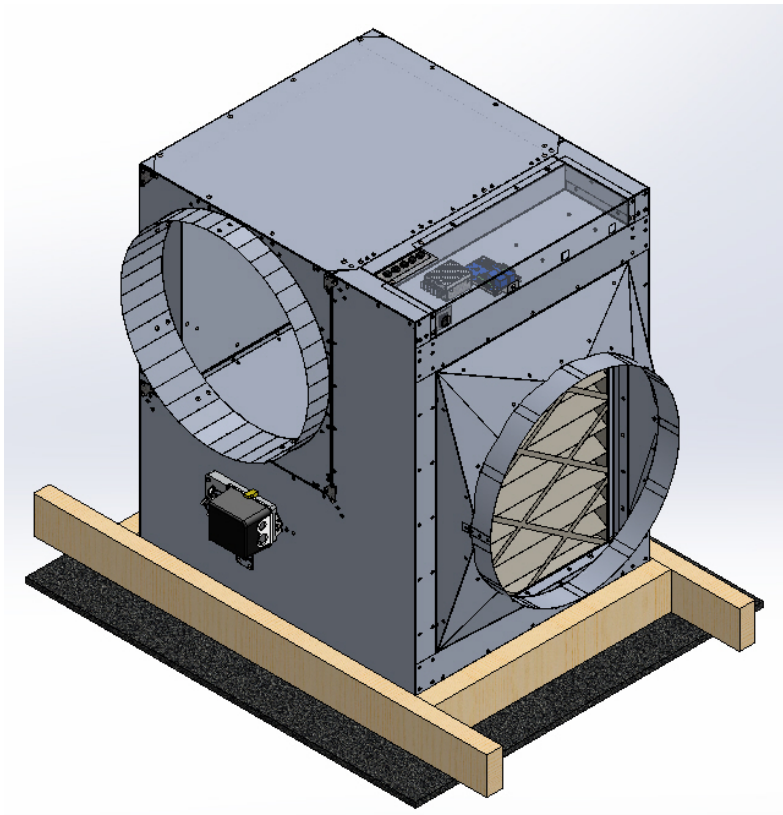
Order#: _____

S/N: _____
(Required for Warranty)



EC2 Residential Economizer

Installation and Operation Manual



Thank you for purchasing an AirScape® Residential Economizer.

Your economizer has been designed to provide your home with natural, quiet, and energy-efficient cooling for many years.

Please take a few minutes to read over this manual and its accompanying documents to make sure you are prepared to install the Economizer.

Before installing this economizer, inspect it and all of its parts for any damage that may have been sustained during shipping. If you suspect this economizer was damaged during shipping, contact AirScape technical support by phone at 1.866.448.4187, or email at experts@airscapefans.com.

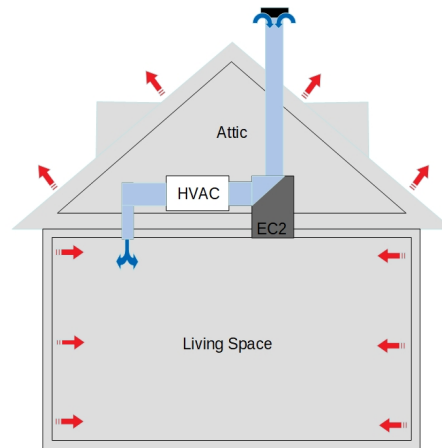
DO NOT INSTALL DAMAGED EQUIPMENT!

THEORY OF OPERATION

As a home heats up during the day, a large amount of heat is retained in its structure and contents. These materials give off their heat slowly and continue to heat the home's interior even if the outdoor temperature is comfortable. Homeowners are then forced to endure either uncomfortable hot indoor temperatures, or the expense of air conditioning. The AirScape® Economizer resolves this dilemma by using the cool outdoor air to cool the home. If the outside temperature is lower than the inside temperature and the economizer is on, the logic on the Control Board will change the door on the Economizer to allow cool outside Air to enter the house through a replaceable filter.

The Economizer has been designed for quiet and efficient operation. As such, we strongly recommend running the Economizer through the night to extract the maximum possible amount of heat from the home. This not only helps maintain a comfortable indoor temperature, but essentially "pre-cools" the home ahead of the next day's rise in temperature, which reduces, or can even eliminate, the need for traditional air conditioning. This can reduce power consumption drastically.

Note: Economizers can not be used in high humidity regions.



Economizer Location Guidelines

- The Economizer replaces the return Grill.
- Within the attic, locating the Economizer near an electrical outlet or power supply can minimize the need for additional electrical work.
- Place the Air-Inlet Cap in a North facing wall, gable or roof if possible, as this is the coldest position.

SAFETY INFORMATION



Some of the principles of this product's safe installation and operation are not immediately obvious. Read the following safety information before continuing further:



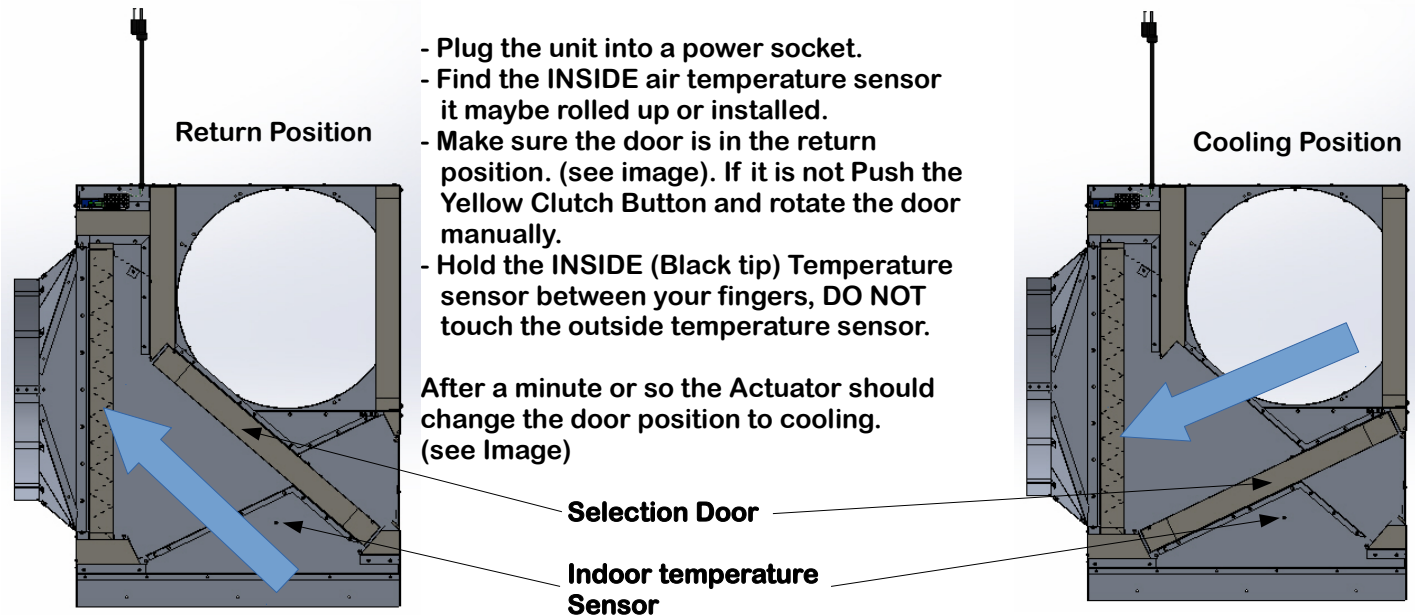
- **Never** force open the damper door(s), this could severely damage the actuator. **Always** depress the actuator's yellow clutch release before manually opening or closing the damper door(s).
- Before installing or servicing this Economizer, switch power off at the home's electrical panel to reduce the risk of damaging circuit boards, fire, electrical shock, or injury.
- In the event of actuator failure, this unit's door may be stuck in the "open" position, allowing very hot or cold air (depending on season) to enter the HVAC system, which could potentially damage your furnace or air-conditioner. Periodically check to ensure that the unit's door is opening and closing as intended. In the event of actuator failure, enter the attic and manually close the door to the recirculate position
- **This unit can only be used on 24" on-center framing.**
- Install this unit in accordance with this manual and all local codes and standards.

SUPPLIES INCLUDED IN THE BOX

Prior to installation, please verify all of the following items were received with the Economizer:

- Economizer Assembly (see last page for identification of parts)
- Filter Rails & Filter
- Low Voltage Bracket, Switch and Cover Plate
- Openable Cube-Core Grille (incl. 8 powder-coated wood screws)
- Hardware Kit with square bit driver (incl 22 Assembly Screws, 9 mounting screws)
- IOM and Warranty Card (and/or QR Code link)

Once all received parts are verified, perform an operational test **BEFORE** installing it in the attic.



This is a good time to write down the serial number(s) on this IOM, which will save you a trip to the attic if you require Tech Support.

REQUIRED TOOLS & SUPPLIES NOT INCLUDED

In addition to the included items listed above, the following tools and supplies are required to install the fan:

- Safety Glasses
- Drywall Cutter (new installs)
- Cordless screwdriver with Phillips head and miscellaneous drill bits
- High quality latex caulk
- Lumber matching dimensions of the attic joists (e.g. 2"x6", 2"x8", etc.) and cut to fit according to the instructions in the Installation section (new installs)
- An Outdoor Air-Inlet Cap (may require an adapter) and HVAC 18" duct appropriate for your installation and hardware and Tape to connect duct to the Economizer.

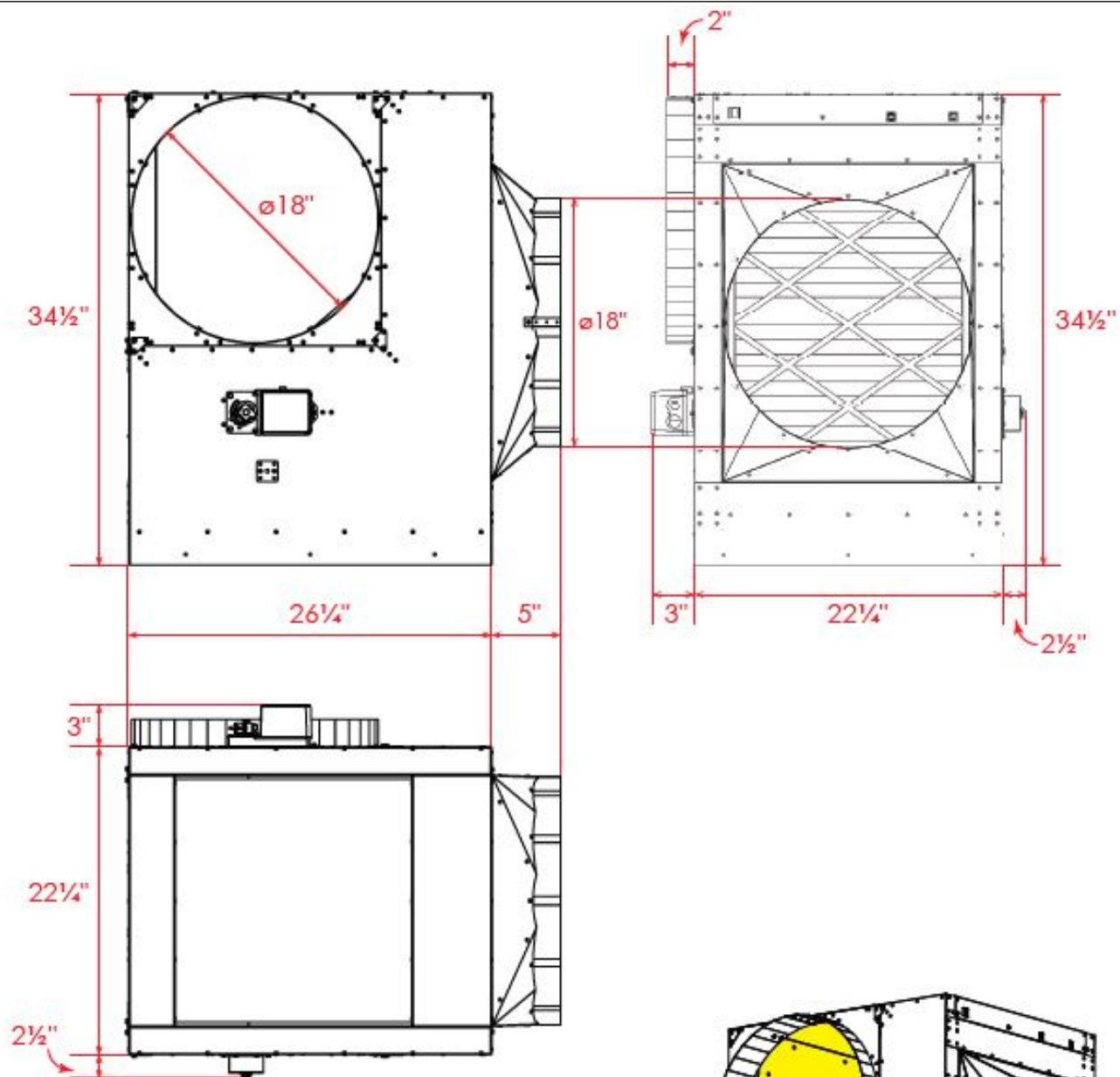
ELECTRICAL REQUIREMENTS

The EC2 Economizer model requires a 120 volt power supply.

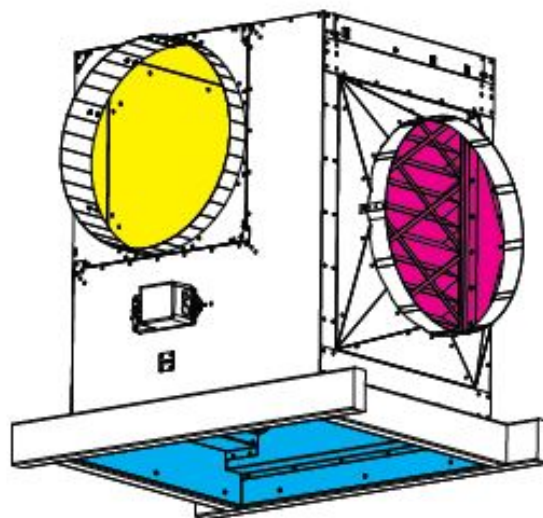
The Economizer has a factory-installed, 10 ft. power cord. Consider this length when choosing a location for this Economizer. Depending on the location of existing outlets in the attic, the installation of an additional outlet may be required.

All wiring and connections must be made according to this manual and acceptable wiring standards. All local codes must be followed. Consult an electrician if necessary.

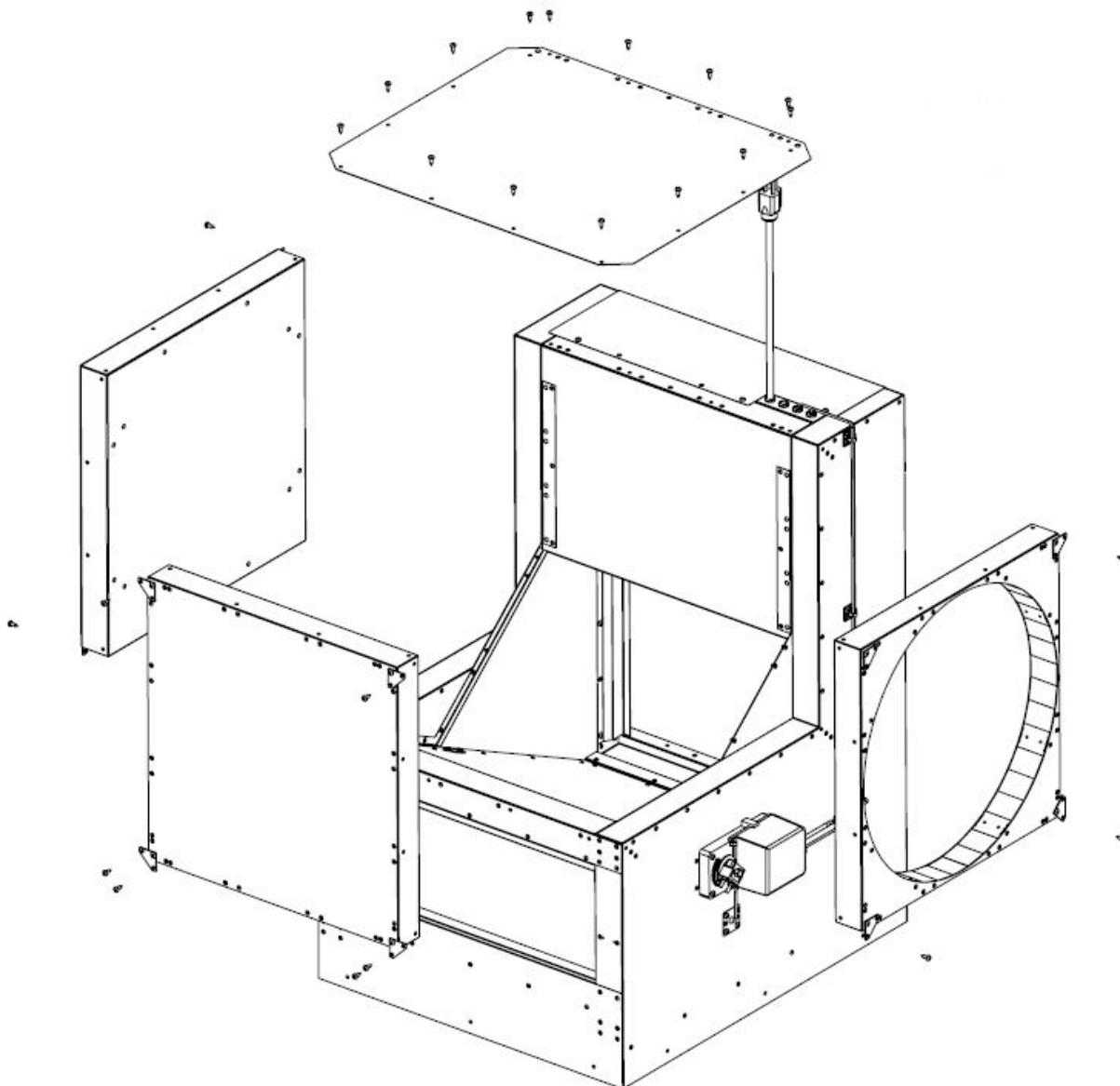
DIMENSIONS (FULLY-ASSEMBLED)



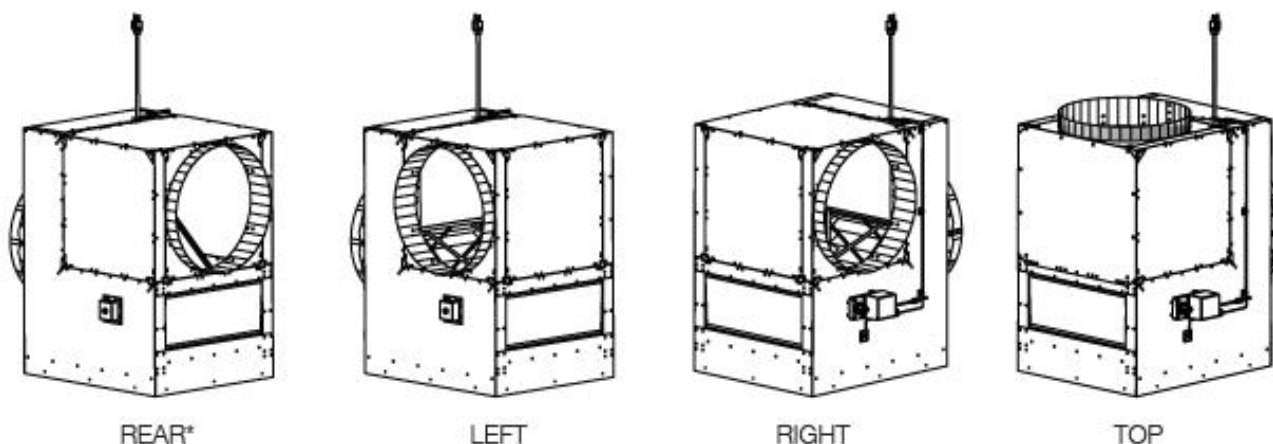
- Outdoor Air Inlet
- Supply to Air Handler
- Return from Indoors



OUTDOOR AIR INLET OPTIONS



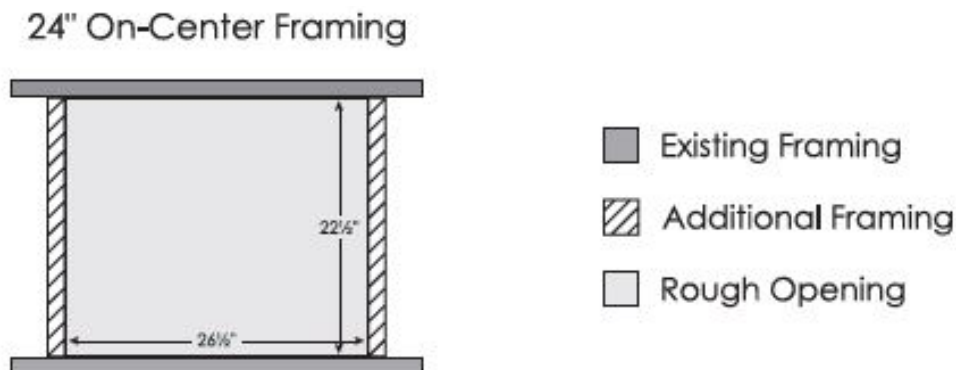
By unscrewing the triangular tabs at each corner of the economizer's side panels (as shown at left), its outdoor air inlet can be positioned to face to the rear, top, left, or right (as shown below). Re-screw the tabs once the outdoor air inlet is in the best position for your application. **NOTE:** these are low torque sheet metal screws, **DO NOT** over tighten. Once your configuration is determined, we recommend sealing the seams between the pieces with a high-quality latex caulk.



**The "Rear" configuration is the default position in which the unit is shipped.*

INSTALLATION

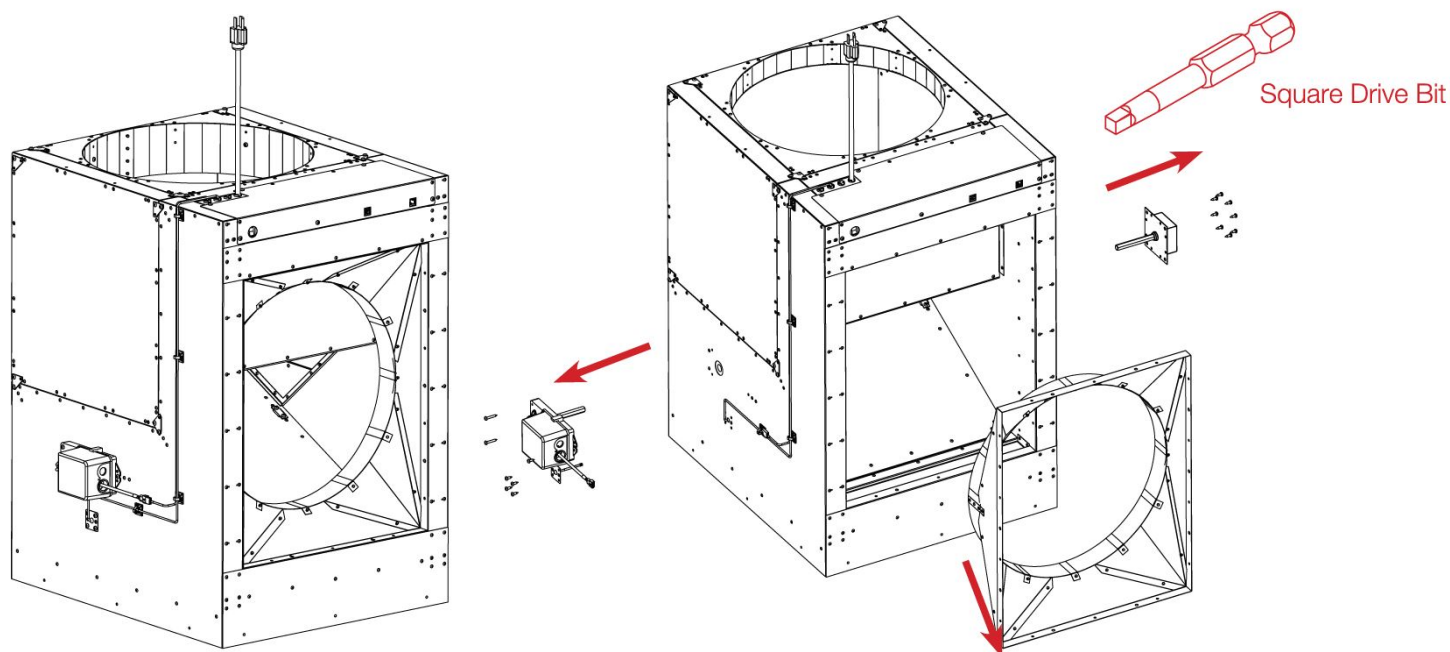
Using appropriately sized lumber (e.g. 2" × 6", 2" × 8", etc.) cut to fit, frame in a rough opening from the living space into the attic as shown below. Cut out the drywall inside of the framing to create the rough opening. Best method is to drill holes in the inside corners of the created framing and then saw out the piece from the living space. Clean-up can be made much easier by using a tarp and/or box to catch the falling debris.



****This unit can ONLY be used 24" On-Center Framing***

To ensure that all air drawn in by the HVAC fan will be from inside the house, use a good quality latex caulk to seal all wood-to-wood and wood-to-metal joints to create an air-tight enclosure.

INSTALLING THE EC2 ECONOMIZER

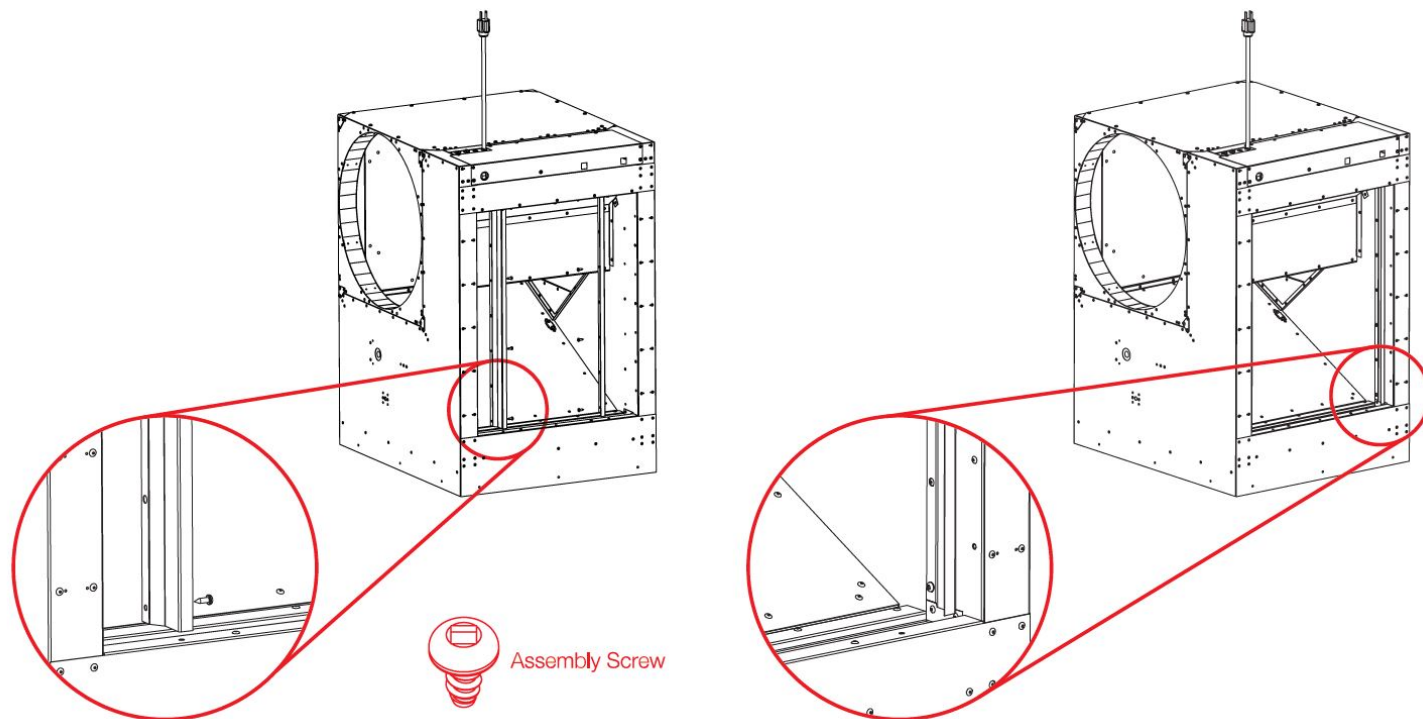


The economizer will arrive with the actuator assembly, bearing assembly, indoor temperature sensor, and return duct adapter installed. The return duct adapter must be removed to install the filter rails. For the unit to fit through the rough opening into the attic, the actuator assembly, bearing assembly, and indoor temperature sensor will also need to be removed.

Remove these components by unscrewing them from the main body of the economizer. The provided square bit driver can be used with a handheld drill. **DO NOT OVER-TORQUE SCREWS.**

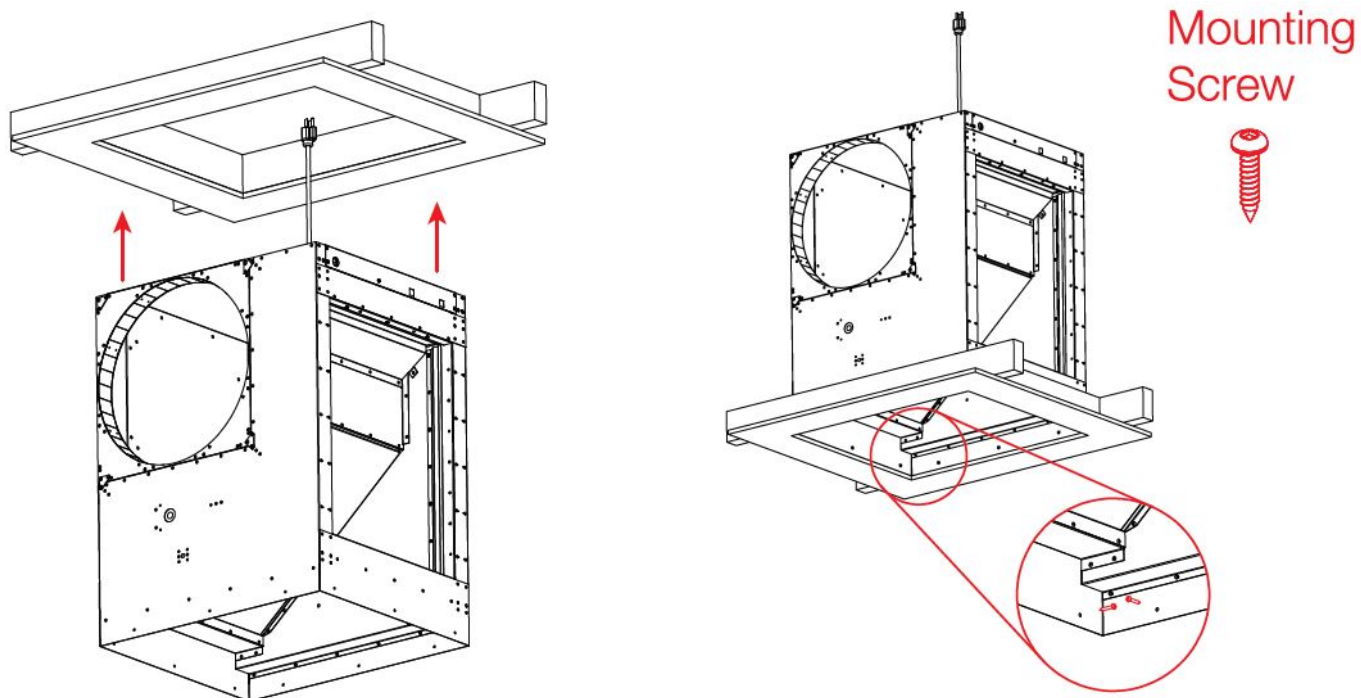
If your attic access is large enough to accommodate the economizer without removing these components, use that access to move the unit into the attic.

INSTALLING THE EC2 ECONOMIZER - CONTINUED



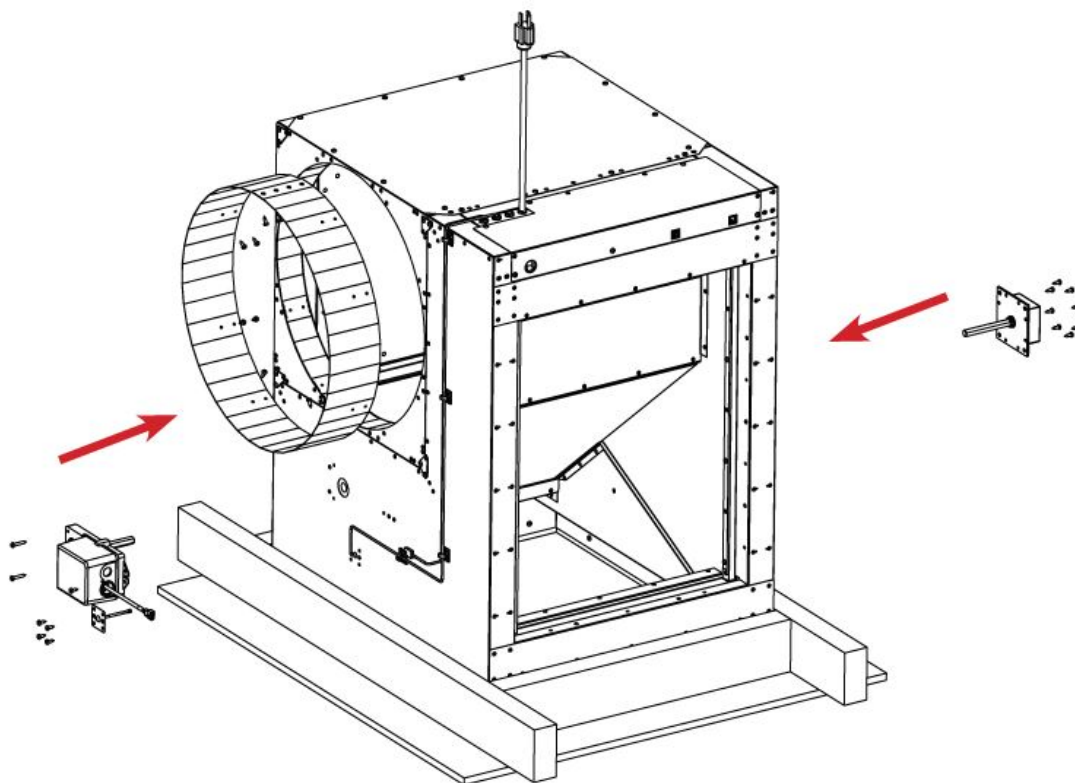
Once the return air adapter has been removed, install the filter rails as shown above. Use 8 of the provided assembly screws.

Then, pass the unit into the attic. Holding the unit in place within the rough opening, secure it to the framing using 10 of the provided mounting screws as shown below.



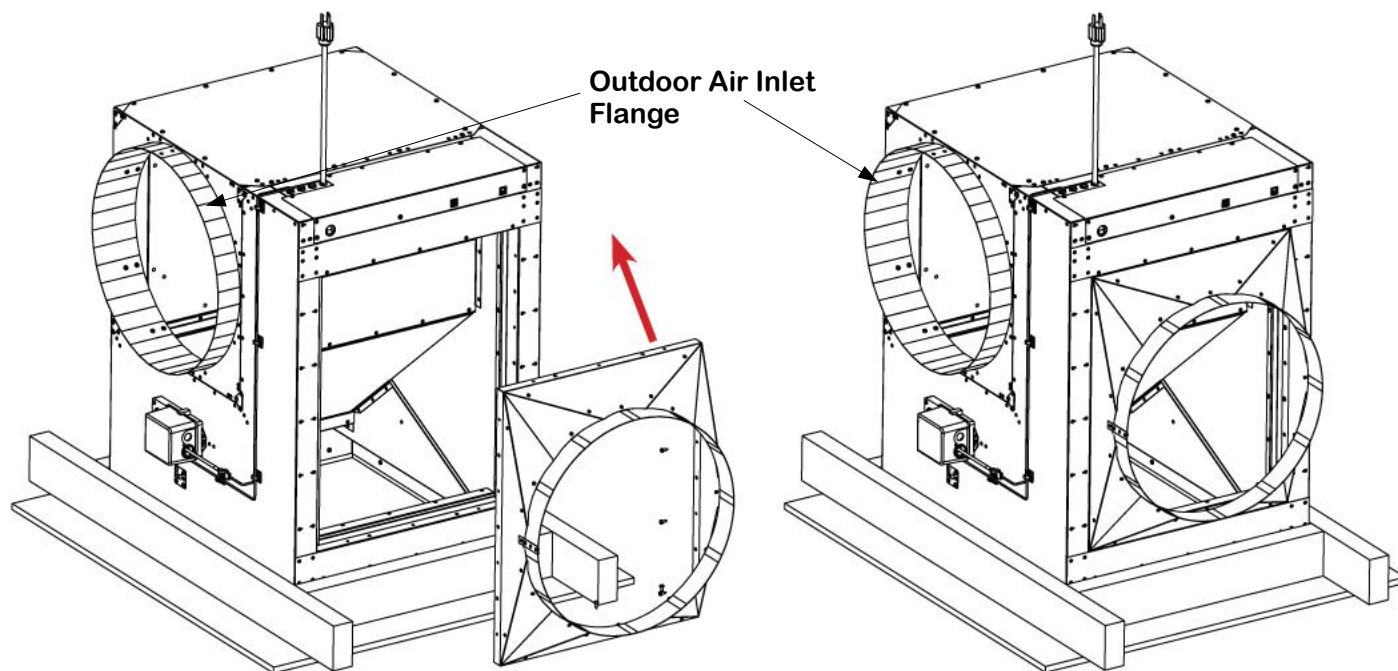
DO NOT OVER-TORQUE SCREWS

INSTALLING THE EC2 ECONOMIZER - CONTINUED



With the unit secured to the framing, enter the attic and reinstall the actuator and bearing assemblies, and the indoor temperature sensor. Check for proper door function by depressing the actuator's yellow clutch and opening and closing the door manually. Use the adhesive zip-tie mounts to secure the actuator and indoor temperature sensor wiring flush against the body of the economizer.

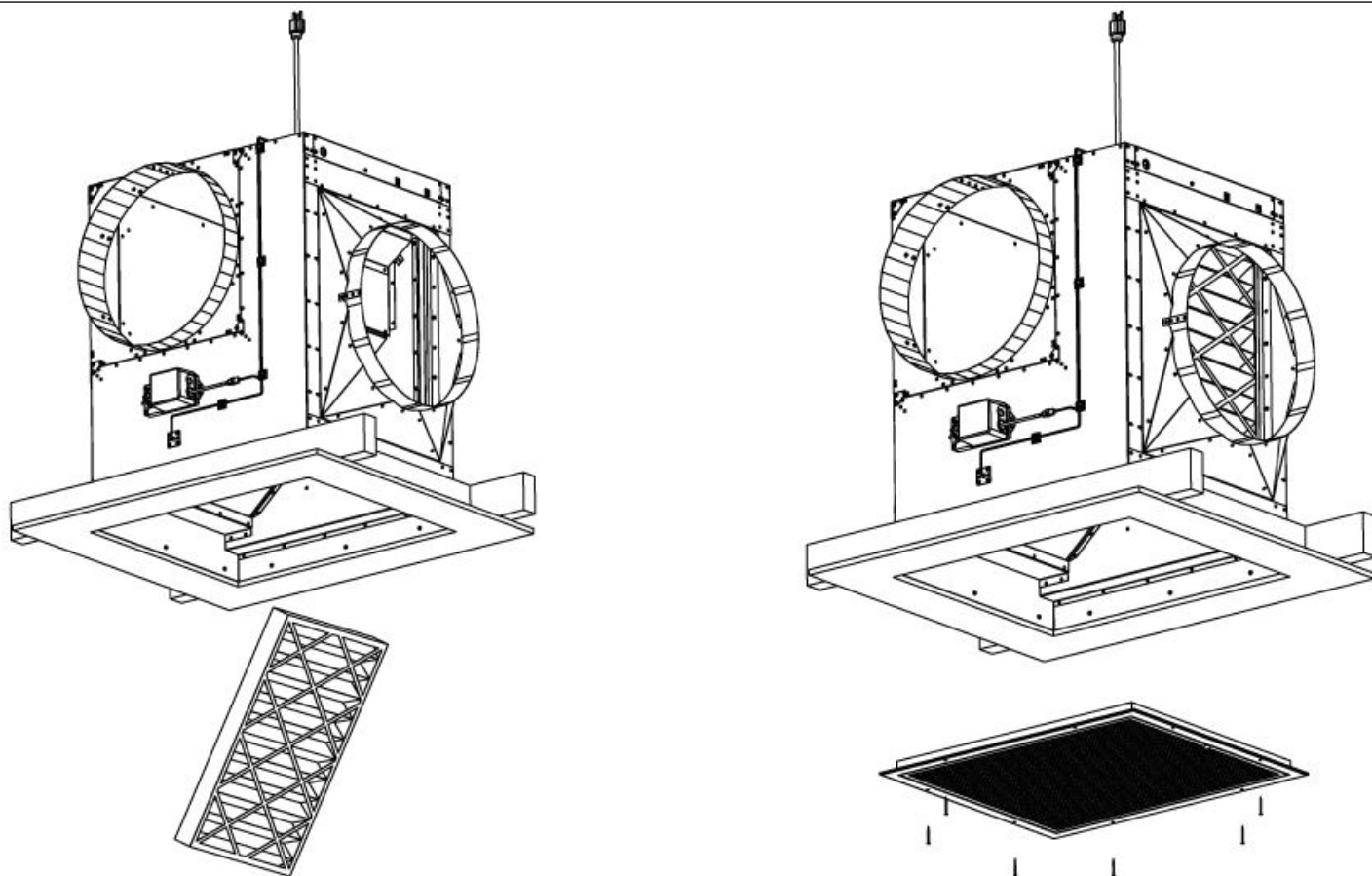
Remove and then reinstall the outdoor air inlet's circular flange so that the flange is to the outside of the unit.



Reinstall the return air duct adapter so that the circular flange is now to the outside of the unit.

DO NOT OVER-TORQUE SCREWS

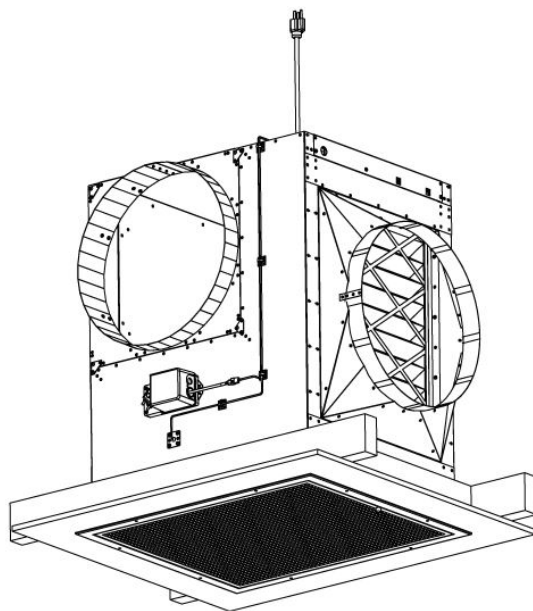
INSTALLING THE EC2 ECONOMIZER FILTER & GRILLE



With the unit mounted to the framing and fully assembled, return to the living space and insert the provided filter into the filter rails as shown above.

Then, use a high-quality latex caulk to seal all wood-to-wood and wood-to-metal seams within the space formed by the economizer and framing.

Finish by mounting the grille to the framing using the eight white wood screws provided. We strongly recommend pre-drilling holes in the framing for these screws; be careful to prevent them from stripping.



INSTALLATION WIRING & CONTROL

This economizer has been designed to interface with any standard, powered residential thermostat with a "common" wire. **This unit cannot be used with battery-powered thermostats.**

The common wire is usually blue or black and identified by the letter "C."

In most cases, new connections can be made between the thermostat and economizer without modifying the existing wiring. If modifications to existing wiring are necessary, consult a licensed electrician.

This AirScape Economizer is designed with a lockout function (on/off switch), to prevent the use of outside air when conditions are not ideal for reasons other than temperature: for example, low air quality, smoke or high allergen count. **The installation of this lockout function is highly recommended in regions that experience unsuitable air conditions, even infrequently.**

To install this lockout function, install the standard wall switch (provided with the low voltage bracket) in a convenient location, such as adjacent to the thermostat. Wire the wall switch to the terminal contacts inside the economizer junction box, as illustrated below, using 18awg (min.) wire. Install the mounting bracket according to figures 1–3 below. Return to the attic and connect the 18 Gauge two conductor cable to the euro-style connector in the control box (see image below and Wiring Configurations)

Run this cable from the electrical box to the location of the switch. NOTE: this is a low-voltage cable, building codes generally require low-voltage cable to be run through shielded conduit. Connect the cable to the switch. Mount the switch with the cover plate to the mounting bracket with the provided white screws. As shown in figure 4.

Fig.1

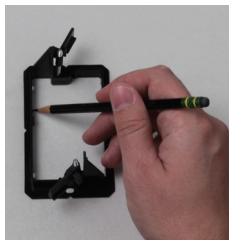


Fig.2

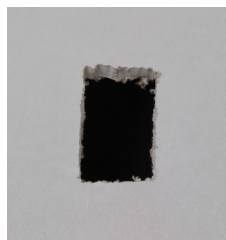


Fig.3

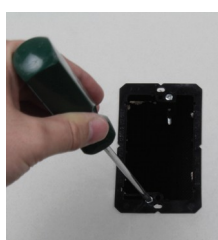
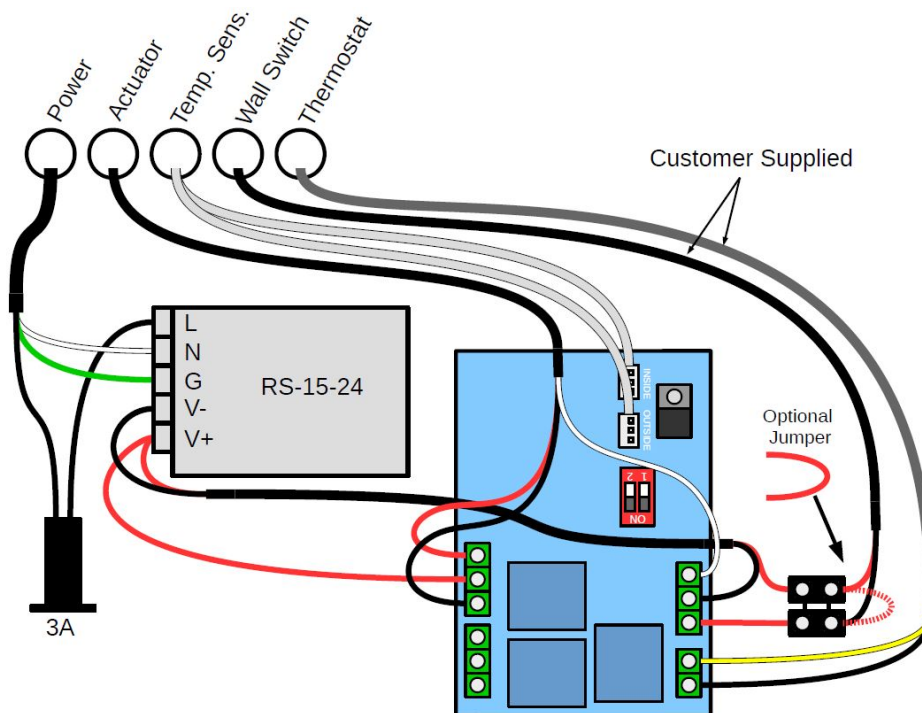


Fig.4

Fig.5

Note: If you prefer not to install the lockout function. The jumper has been wired across the contacts. This option provides no way for the user to disable the automated usage of outside air, and as such is not the recommended configuration.



WIRING CONFIGURATIONS

Follow all local codes and standards when wiring this unit. First, open the economizer's control board access panel as shown below. Use the wiring diagrams on the next page to wire this unit in the configuration best suited to your particular home; punch-outs through which to route wiring have been incorporated into the unit. When finished, reinstall the control board access panel.

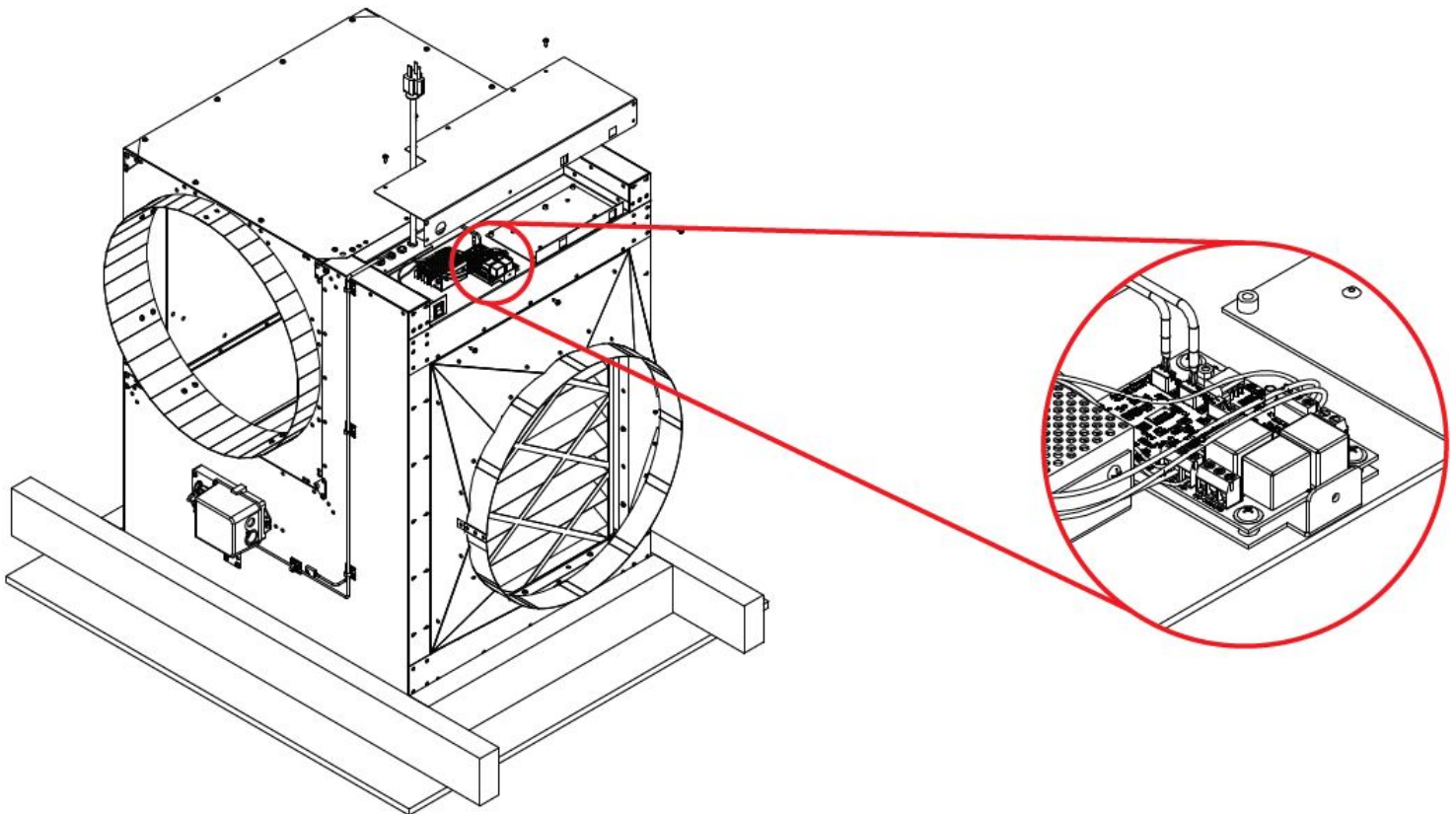
The economizer can be wired in one of two configurations: "Cooling Assist" and "Cooling Interrupt."

- In the "Cooling Assist" configuration, the economizer opens to let in outdoor air whenever:
 - 1) it is cooler outside than inside; and,
 - 2) the thermostat calls for cooling. In this configuration, the air conditioner's compressor continues to run while the economizer is open.
- In the "Cooling Interrupt" configuration, the economizer opens to let in outdoor air when the above conditions are satisfied. However, in this configuration, the economizer also turns off the air conditioner's compressor.
- Note: that if the lock out function switch was installed it needs to be on for both configuration options

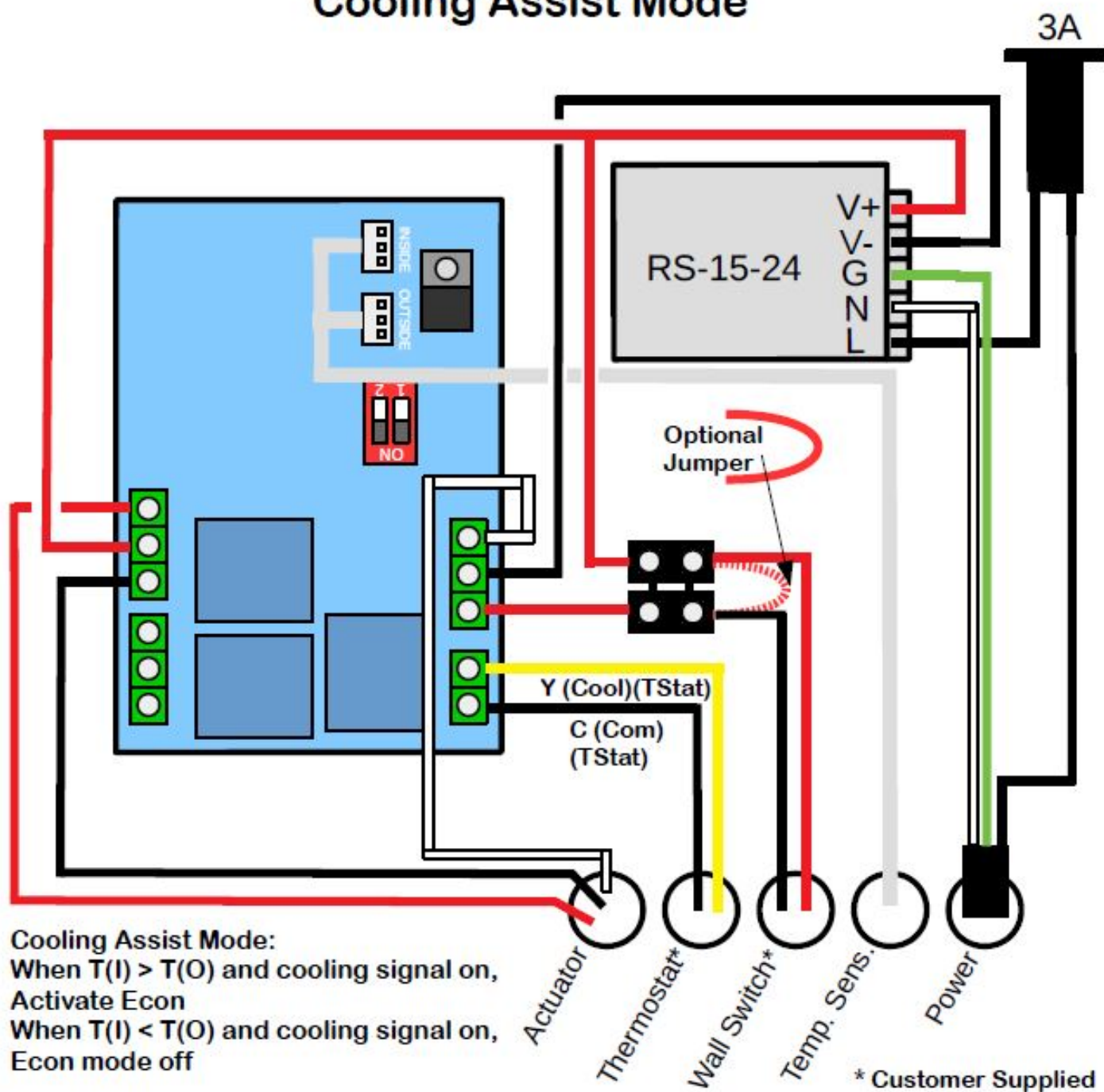
The "Cooling Assist" configuration is appropriate for all but the most humid climate regions (in these regions, economizers are NOT appropriate).

The "Cooling Interrupt" configuration can provide additional efficiency gains in regions that are particularly arid, and in which temperatures fall quickly each evening.

If you choose the "Cooling Interrupt" configuration, we strongly recommend setting the control board's DIP switches to the $\geq 10^{\circ}$ F temperature differential setting. The DIP switch settings are discussed on page 14 of this manual.



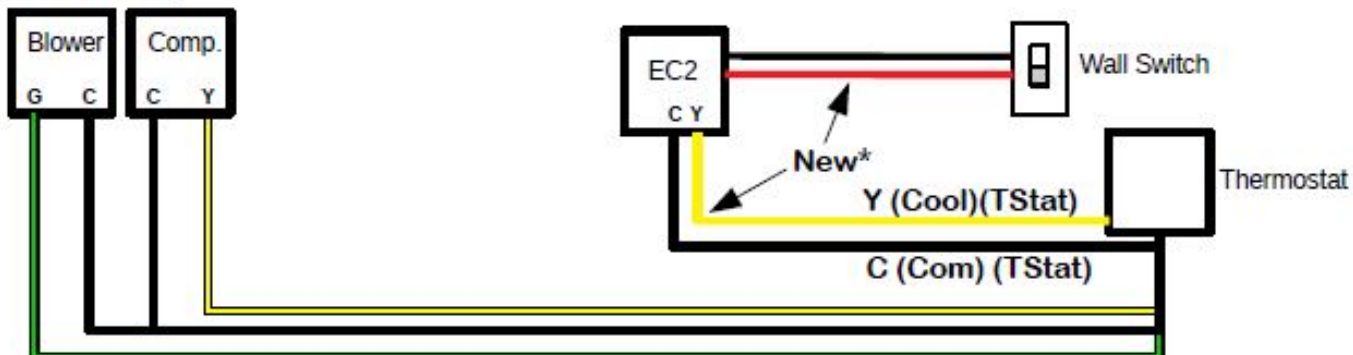
Cooling Assist Mode



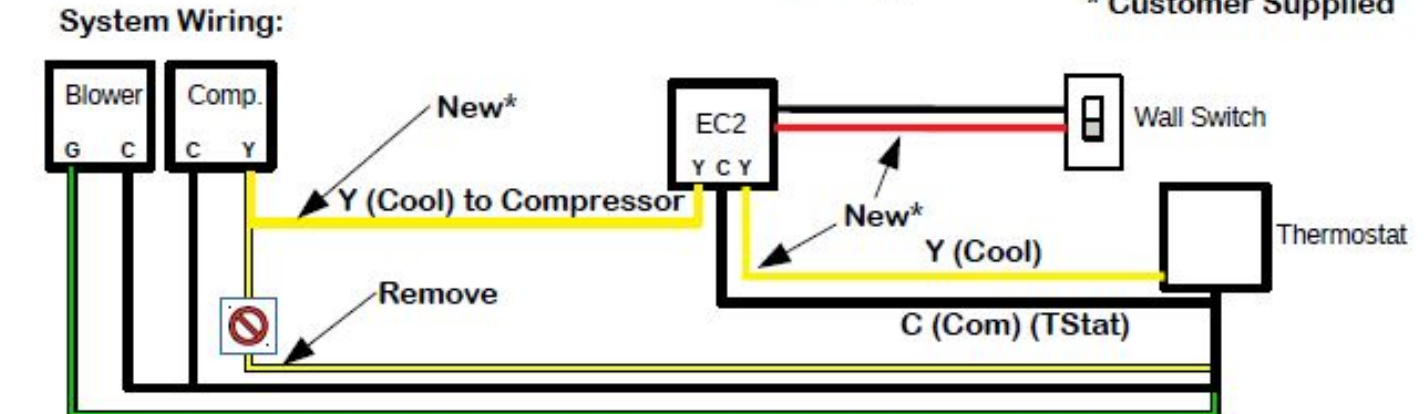
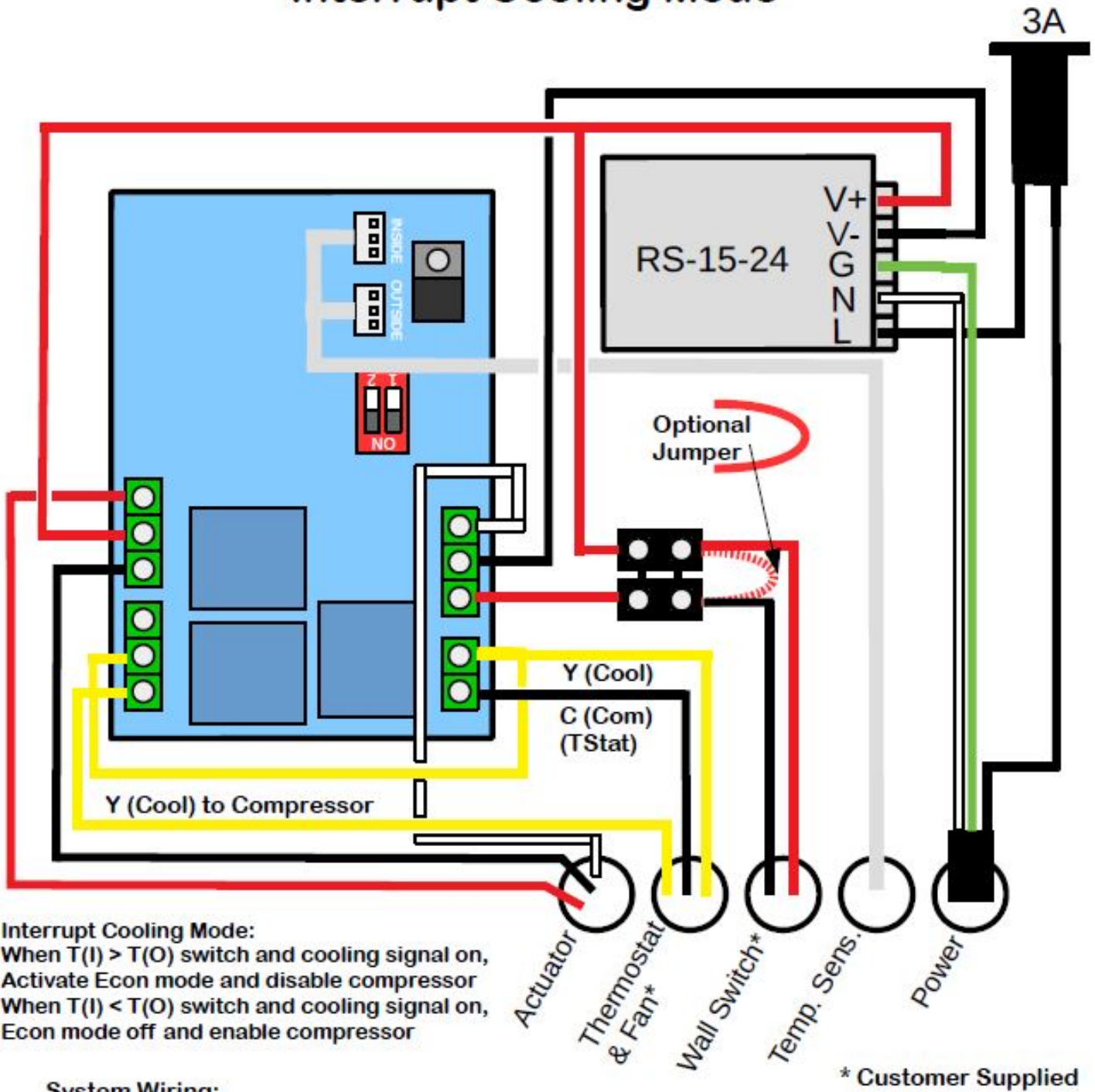
Cooling Assist Mode:
 When $T(I) > T(O)$ and cooling signal on,
 Activate Econ
 When $T(I) < T(O)$ and cooling signal on,
 Econ mode off

Actuator
 Thermostat*
 Wall Switch*
 Temp. Sens.
 Power
 * Customer Supplied

System Wiring:



Interrupt Cooling Mode



INSTALLATION WIRING & CONTROL- CONTINUED

Outdoor Temperature Sensor:

The economizer's outdoor temperature sensor is factory installed. It originates from the unit's control board and is routed through the punch-outs. 50 ft. of wire have been provided to allow for the best possible placement. Route the sensor to the outside and place it according to the following tips:

- It is best to mount the sensor at least two feet above ground level.
- The sensor can be placed in the Outside Air Inlet duct as close to the outside as possible.
- Install the sensor on a North facing wall, away from any exposure to direct sunlight.
- Avoid locating the sensor beneath an eave that itself is located above a lower-story roof (which would expose the sensor to radiant heat or heat pooling).
- Avoid locating the sensor in an area exposed to excessive vibration or electrical noise.

DIP Switch Configurations:

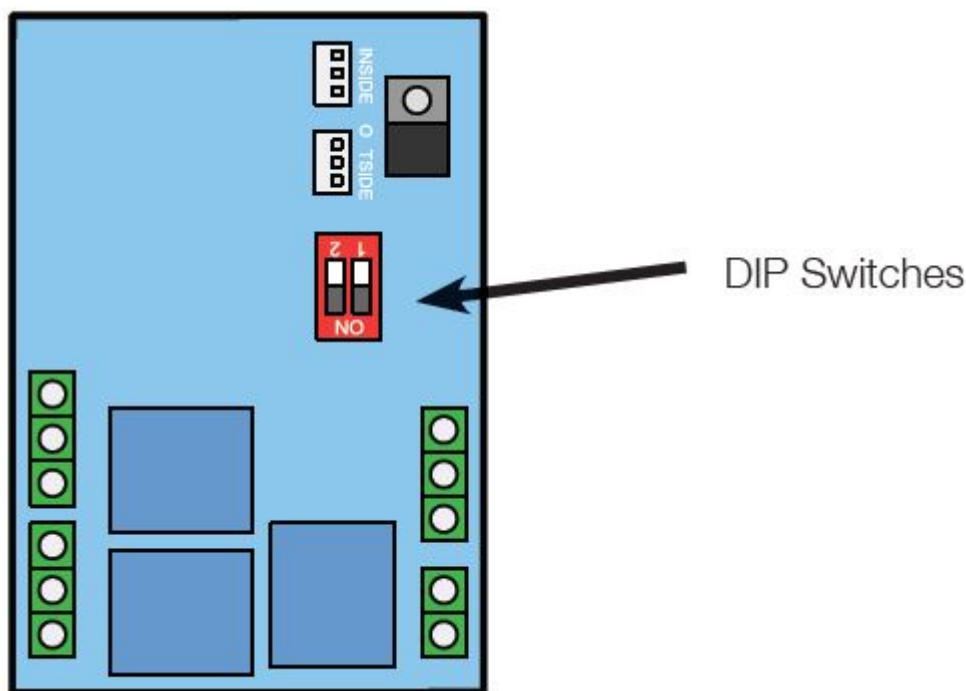
Changing the configuration of the DIP switches on the economizer's control board allows you to increase or decrease the indoor - outdoor temperature differential at which the unit will open. For example, at a 5° differential, the unit will open whenever it is 5° or more cooler outdoors than indoors.

The 0° differential setting is provided to allow fresh air into the home for indoor air quality benefits.

The DIP switches are located on the control board, as shown below.

The available configurations are:

Switch 1	Switch 2	Temperature Differential
ON	ON	$\geq 10^{\circ} \text{ F}$
ON	OFF	$\geq 5^{\circ} \text{ F}$
OFF	OFF	$\geq 0^{\circ} \text{ F}$



Power:

Once all wiring connections have been made, connect the unit to power using the factory installed power cord.

FILTER

A MERV-8 filter cassette with nominal dimensions 18" x 24" x 2" is included with every economizer (actual dimensions: 17.375" x 23.375" x 1.75").

The MERV-8 arrestance will remove $\geq 90\%$ of airborne particulates from the outdoor air being drawn in through the economizer.

Regular filter changes are critical to the economizer's efficient operation. To replace the filter, simply open the grille, slide the used filter out of the filter rails, and slide the new filter into the filter rails in its place. Finish by closing the grille. **Replacement filters can be ordered online at www.hvacquick.com.**

While the filter's dimensions are a standard size, we do NOT recommend replacing the MERV-8 standard filter with a filter of any higher or lower arrestance. A lower arrestance filter may allow very fine particulates to accumulate on the equipment "downstream" of the economizer, compromising their proper operation. A high arrestance filter will ***force the central air handler to work against excessively low pressure, retarding efficiency.***

START-UP AND OPERATION

Before starting this economizer for the first time, verify that:

1. All wiring and connections have been made according to this manual and acceptable wiring standards, and that this manual and all local codes and standards have been followed in this fan's installation.
2. No tools or construction debris have been left in, on, or around the economizer.
3. The Economizer's power cord has been plugged into a 120-volt outlet with uninterrupted power.

When running this Economizer for the first time, make sure to observe the door changing from Recirculation mode to Outside Air Mode and back to Recirculation mode (off) from the living space.

MAINTENANCE

There is no routine maintenance required for this Economizer other than making sure that the economizer door functions properly, and changing the filter

A re-settable circuit breaker is located on the fan-mounted electrical box to protect circuit boards from power surges. In the case of a power surge, this breaker can be reset by simply pushing the button back in.

TROUBLESHOOTING

Before servicing your economizer, turn off power to it at your home's electrical panel to reduce the risk of electrical shock, injury, fire, and / or circuit board damage.

Your AirScape Economizer has been factory tested. If you encounter problems with the unit, please take a few minutes to run through the following troubleshooting procedures before calling for technical support.

Symptom: Unit does not operate

Possible causes: No power to unit, outside temperature too high for settings

Suggestion 1: Verify that the Damper Door is limited and held by the damper doors actuator shaft.

Suggestion 2: Check the re-settable circuit breaker, check for power, power at the switch and the control board.

Suggestion 3: Check for 24VDC at the actuator(s) harness and the control board actuator wire connections.

Suggestion 4: Check is Control Board Interlock Off (LED ON) or Interlock on (LED OFF)

Suggestion 5: Check is Control Board in Econ Mode (LED ON) or Normal Mode (LED OFF)

If problems are encountered contact AirScape technical support at [1.866.448.4187](tel:1.866.448.4187) or by email at experts@airscapefans.com for further assistance.

SPECIFICATIONS EC2 ECONOMIZER

Dimensions: 26 1/4" x 22 1/4" x 34 5/16" (L x W x H)

Weight : 22.5 lbs

Tested Power: 3 Watts

Insulation: R-10 (2" EPS)

Rough Opening: 22 1/2" x 26 1/2"

Electrical: 120 VAC, 60 Hz

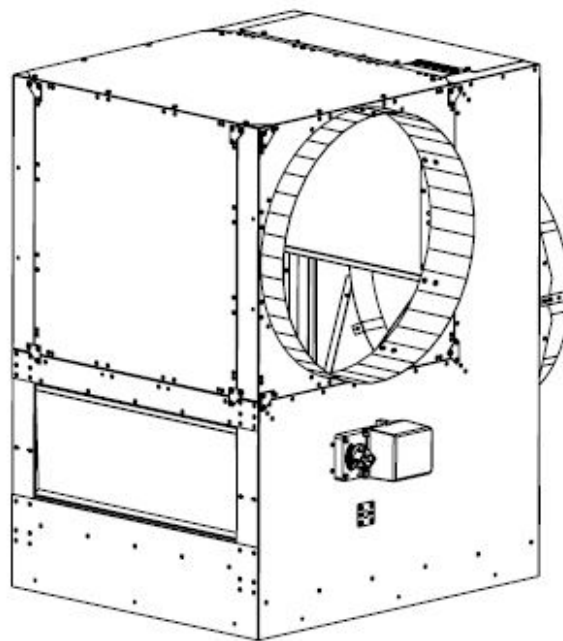
Installation: Installs on 24" O/C joists **ONLY!**

Controls: Low Voltage Logic Board

Switching max. 6A 220V

Warranty: 3 years parts; 1 years controls

** Actual performance will vary from installation to installation.
Due to our continual product improvement efforts, performance ratings and specifications are subject to change without notice.*



Front

INSTALLATION NOTES