



AirScape™

3.1 SINGLE SPEED WHOLE HOUSE FAN INSTALLATION AND OPERATION GUIDE

CONGRATULATIONS on your purchase of the AirScape 3.1 Whole House Fan. This fan is designed to provide you with quiet, natural, energy-efficient cooling for many years.

Please take a few minutes to read over the sections below to make sure you are prepared for the installation. The building owner/occupant should read the section "Choosing a Location" below so that the 3.1 WHF will be correctly located to maximize effectiveness and efficiency of operation.

If you (or your installer) have any questions regarding the installation, operation, or maintenance, please see AirScape technical support at www.airscapefans.com or call 1.866.448.4187.

WHAT'S IN THE BOX

Prior to beginning installation, please verify that you received all the accessories with the whole house fan. The packages should include:

- fan assembly & reducer
- damper door enclosure with grille
- special insulated acoustical connection duct
- 25' duct tape
- 8 metal and 8 wood screws
- installation instructions
- 25' chain
- 3 s-hooks
- 3 eye bolts and hardware

WHAT YOU WILL NEED

- 2 lengths of 18g insulated wire
- single toggle wall switch, plate and electrical mounting box
- flat head screwdriver
- cordless screwdriver w/ Philips head bit
- lumber matching dimensions of the attic joists
- high quality latex caulk

THEORY OF OPERATION

Before you get started with installation, it's important to understand how your AirScape works so you can make the best installation choices and get the most out of your new equipment.

Through the length of a summer day, a large amount of heat accumulates in the structure of your home. This heat build up can take a long time to dissipate (just feel the bricks on your house long after sunset) and can keep your A/C working overtime well into the night, even when evening air has cooled off. Your new AirScape fan is designed to quietly and economically drain this heat from your building using freely available outdoor air rather than expensively conditioned air, and, at the same time, cool the ambient air and the occupants of the home with fresh night breezes.

Evening cooling with a whole house fan is not a new idea, however AirScape is a new type of whole house fan. While the traditional whole house fan is big, noisy and inefficient, the AirScape 3.1 is designed to be whisper quiet while still delivering enough airflow to effectively cool houses as large as 4000 sq. ft. And it's designed to work on a different operating principle.

Traditional whole house fans use massive airflow to create a very fast air change and an immediate cooling effect by generating a noticeable indoor breeze. While this can be immediately gratifying, the problem is that excessive noise and intrusiveness makes them hard to live with, so they typically are not run for extended periods of time. And that's the problem. If you turn it off, indoor air temperature shoots back up because there is still lots of retained heat in the building itself. Only continuous and prolonged airflow can drain this heat off. And that's what your AirScape unit will do -- quietly and efficiently.

So keep in mind that your AirScape fan is NOT designed to provide instant "spot-cooling" by creating strong indoor breezes. Rather, it is designed to deliver optimal airflow for a prolonged, quiet cooling cycle. When used properly, this is VERY effective for both comfort and energy savings, but it does take a little longer for occupants to feel the effects of the initial air change.

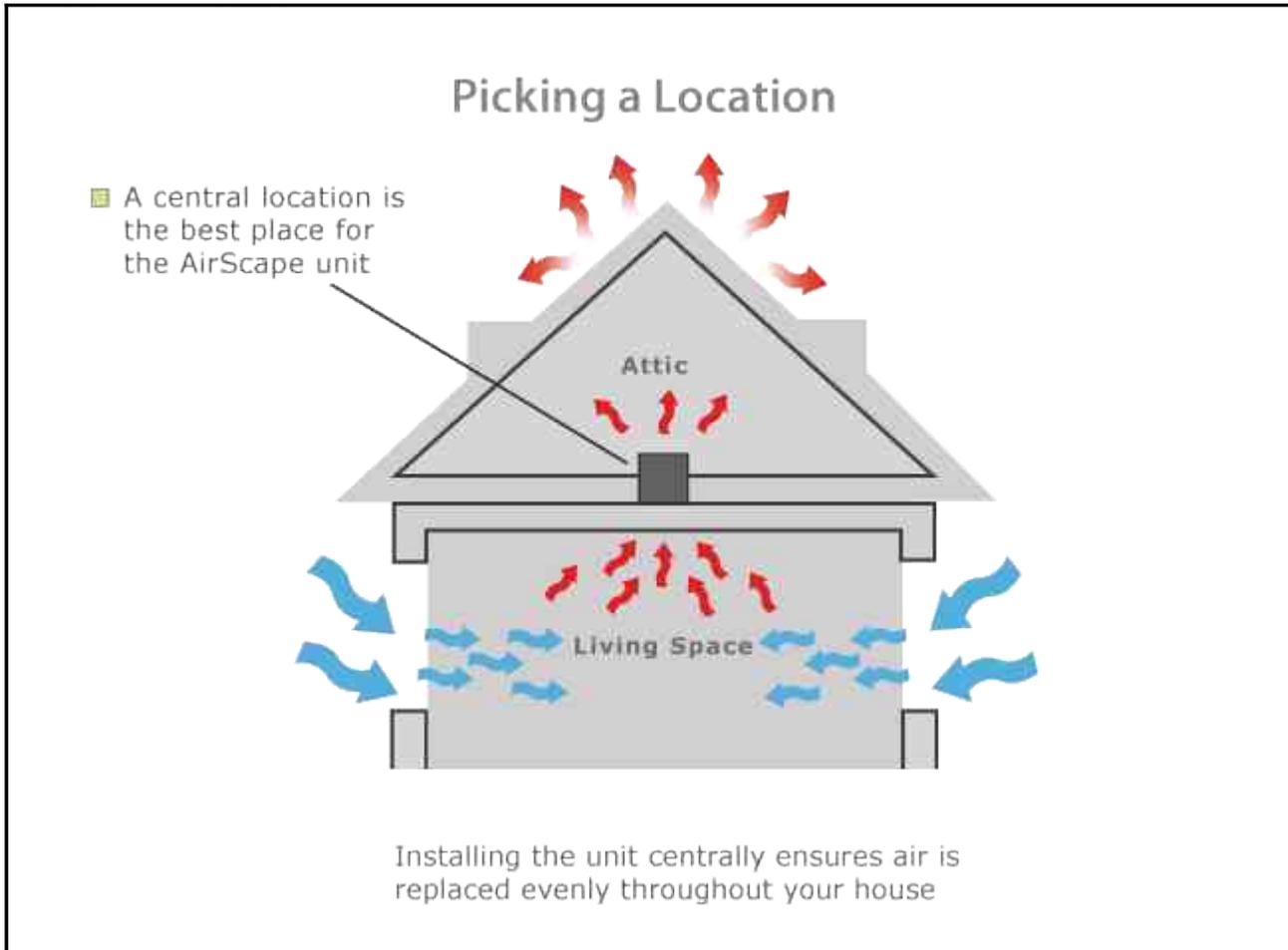
Important Operating Tips

- Only use it when the outdoor air is cooler than your indoor air.
- Make sure your A/C is off when you run the fan or you'll be blowing expensive conditioned air right out of your house!
- We recommend running your AirScape all night long. Here's why: The goal is to cool your entire house down, not just the air. It takes time to pull the heat out of the sheet rock, structure and contents of a house. By ventilating all through the night, the house starts the next day thoroughly cooled so you can delay or eliminate running energy consuming air conditioning the next day. AirScape Whole House Fans are very energy efficient so running on low speed through the night costs just pennies.
- Use high speed to quickly cool down the house and low speed to run quietly through the night.
- Never operate the unit without opening a window – this can create negative pressure in the house and cause dangerous backdrafting with gas appliances.
- You can control where the cooling effect is focused by which windows you open. Just visualize the path the air will take between the open windows and the unit. Generally, the longer the path, the more cooling effect.
- If your home has a basement, extra cooling effect can be achieved by drawing air in through the basement windows.

CHOOSING A LOCATION

The diagram below (**figure 1**) illustrates how cool air enters an open window and replaces hot air that is exhausted by the 3.1 WHF into the attic.

FIGURE 1 - Location



Guidelines for locating your whole house fan

- AWAY from windows that will be opened so cool air is required to travel a long path to the fan, providing maximum benefit
- At the highest point possible to exploit natural convective action
- Close to an outlet or power supply to minimize electrical work
- Typically, the ideal location in a two-story home is in the open area at the top of the stairs
- Try avoid narrow spaces close to bedrooms, as this could amplify noise at night (when noise perception is strongest)

Ceiling or Wall?

The 3.1 WHF intake box can be mounted in the horizontal or vertical orientation. Our recommended location is on a ceiling in the horizontal orientation -- keep in mind that it makes sense to place the unit high to eliminate the hottest air.

REQUIRED VENTING AREA

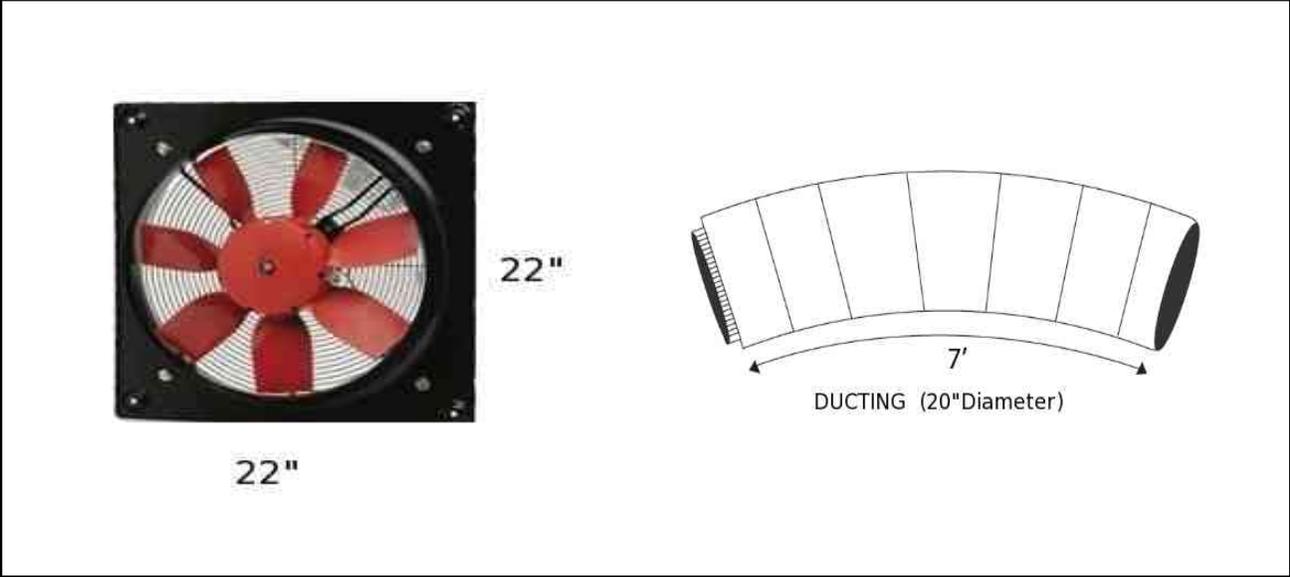
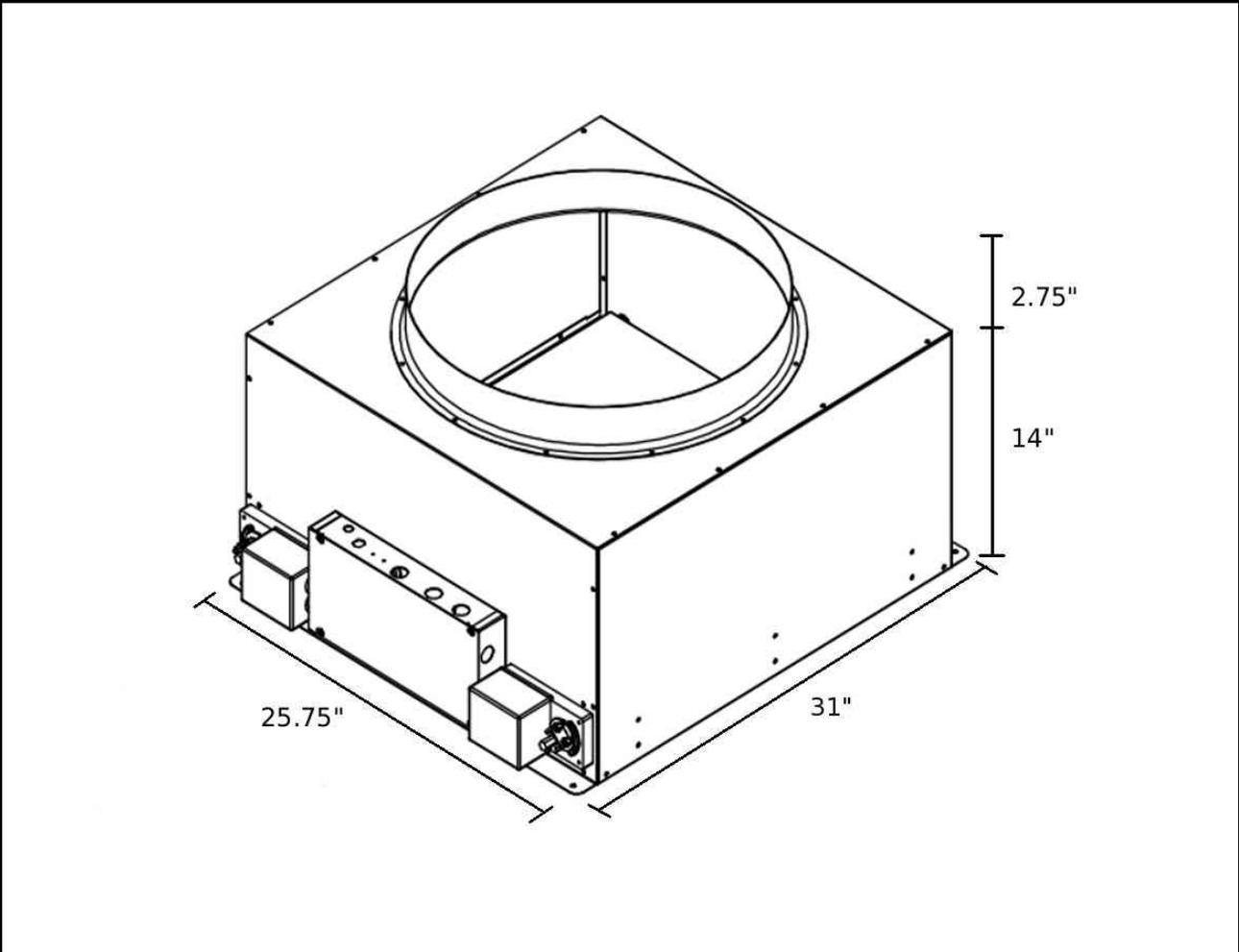
For proper operation of your AirScape unit, it is CRITICAL that your attic has sufficient venting area; otherwise the hot air cannot easily escape and creates back-pressure that can substantially reduce the performance of your new whole house fan. The AirScape 3.1 requires a MINIMUM of 6.0 square feet of "net free" venting area in your attic to allow for proper exhaust. This means that it requires the equivalent of a 2 ft by 3 ft unobstructed hole. Since most attics have multiple vents, often of different types, and since most vents are partially obstructed by louvers and/or bug/animal screens, you'll need to do some calculations to make sure your venting is sufficient. While it is our experience that most properly constructed houses have the required venting, not all do. And because this is so critical to the proper operation of your unit, it is important that you verify it.

Different types of vent designs have different ratios of obstruction caused by louvers and screening and manufacturers typically publish these numbers. If this information is not available to you, a ratio of 50% is a good rule of thumb. For example a typical 24" x 24" louver, with a gross area of 4 sq. ft. would have a net free area of 2 sq. ft.

Vent Type	Length	Width	Net Free Area (NFA%)	Calculation L x W x NFA / 144
Louver	16"	16"	50 %	= 16 x 16 x 0.5 /144 = 0.89 sq ft
Ridge Vent	48"	not used	13 %	= 48 x0.13 /12 = 0.52 sq ft
Eave Vent	12"	4"	50 %	= 12 x 4 x 0.5 /144 = 0.16 sq ft

UNIT PARTS & DIMENSIONS

FIGURE 2 - Parts & Dimensions



INSTALLATION - CARPENTRY

The 3.1 WHF has been designed to fit a 22½" x 26½" wall or ceiling opening, which corresponds to 24" on-center (O.C.) framing. With a few extra steps, the 3.1 WHF can be installed in situations with 16" O.C. framing.

The first step is to construct a simple "box" with inside dimensions of 22½" x 26½". The 3.1 WHF damper enclosure can be mounted in any orientation, so the following directions can apply to both ceiling and wall mounting.

For 24" on-center framing:

The illustration below (**figure 3**) shows the framing using 2"x8" joists. The joists are 24" on-center and have a net space between them of 22½". Two 2x8's, 26½" long have been nailed in place to form the box. If your joists or trusses use 2" x "another depth", please substitute the appropriate depth pieces.

For 16" on-center framing:

The illustration below (**figure 3**) shows the framing using 2"x8" joists. The joists are 16" on-center and have a net space between them of 14½". The following 2x8's (4 qty. 14½", 1 qty. 26½" long) have been nailed in place to form the box (If your joists or trusses use 2" x "another depth", please substitute the appropriate depth pieces). Note that you will end up with a box with inside dimensions of 22½" x 26½" with a joist running through it. This "extra" joist will not significantly disturb the air stream.

Next, use a stud finder to locate the studs from below or drill pilot holes from above to outline the grille opening in the drywall ceiling. Cut the opening with a drywall cutter. The opening should be 22½" x 26½".

Position the 3.1 WHF damper enclosure on top of the joists. Rotate the enclosure as required so that there is easy access to the electrical box. The actuator end of the damper box has two "key holes" which are used to attach the damper box to the joists. Mark the location of the "key holes" on the joists by placing the damper box over the rough opening. Remove the damper box and fasten two of the provided wood screws so that the screw head is slightly above the joist. Position damper box over the "key holes" and slide to lock into position. Use remaining screws to finish attaching the damper box to the joists.

From the living area use a good quality latex caulk to seal all wood-to-wood and wood-to-metal joints to create an air-tight enclosure. This is important to ensure that all air drawn in by the fan will be from inside the house.

Next attach the interior grille to the joists with the included white painted screws. If you have 16" O.C. framing, you may need to trim or cut a small section of the grille flange to accommodate the middle stud (**see figure 4**).

FIGURE 3 – Framing

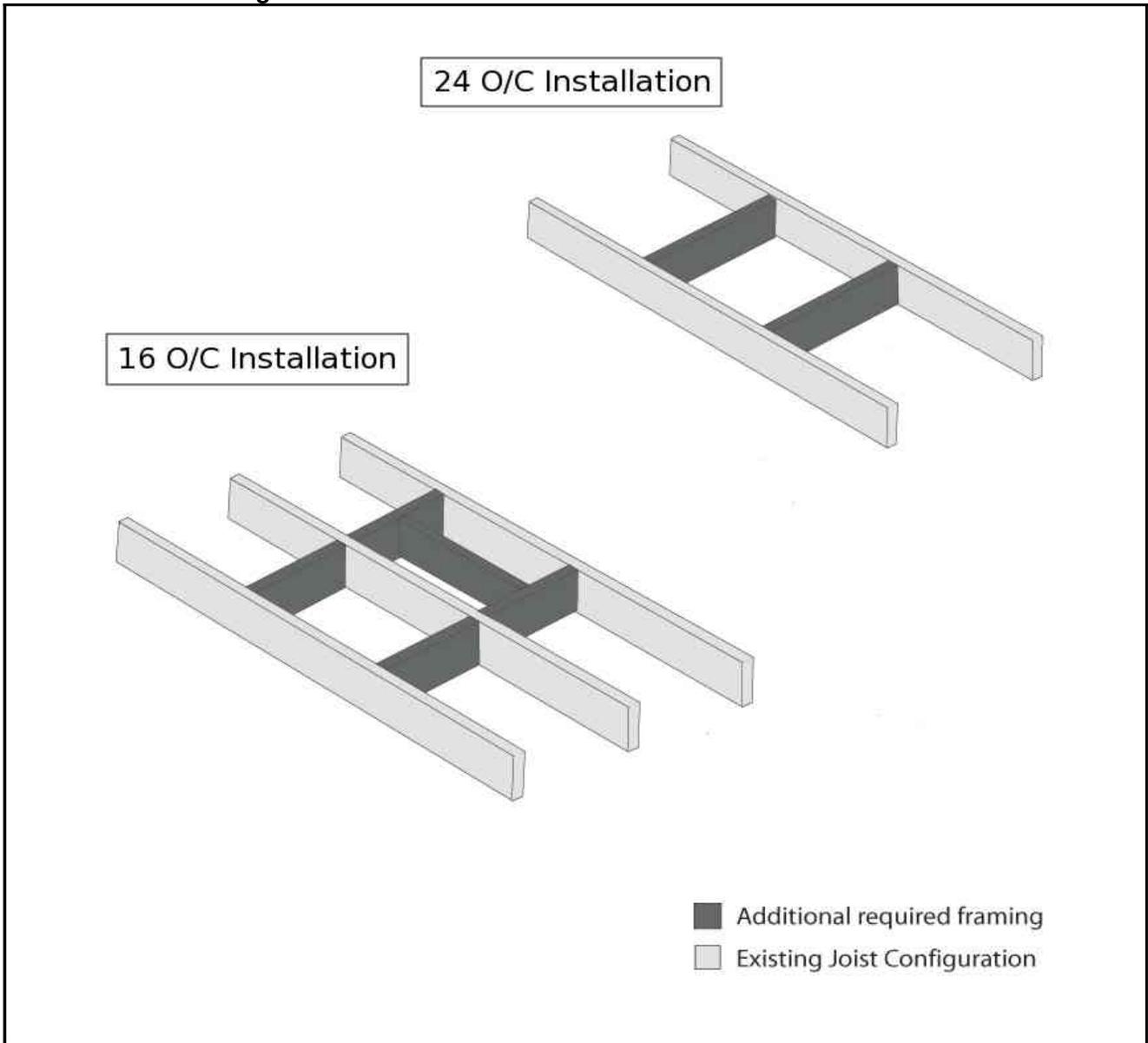


FIGURE 4 – Grille Notch -- ONLY 16" O/C Installations.

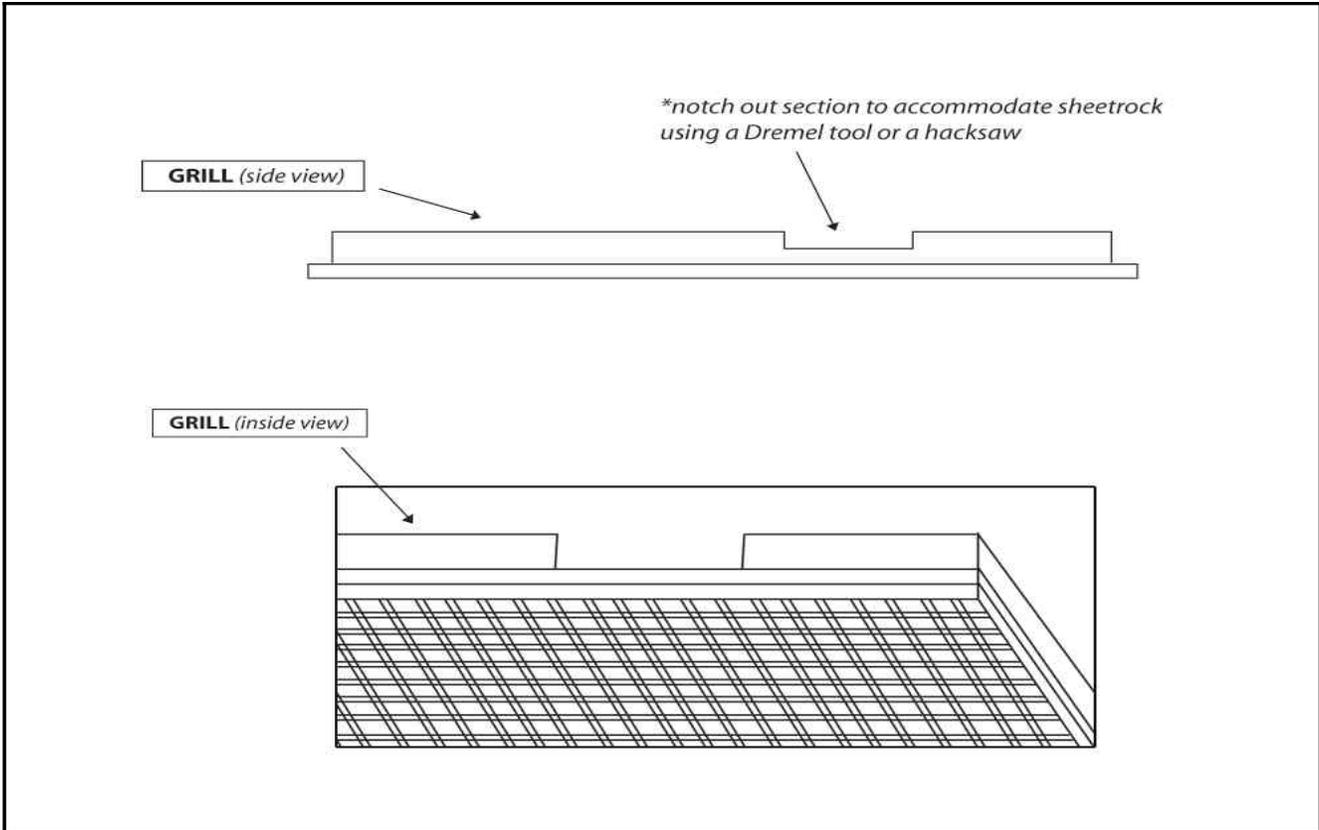
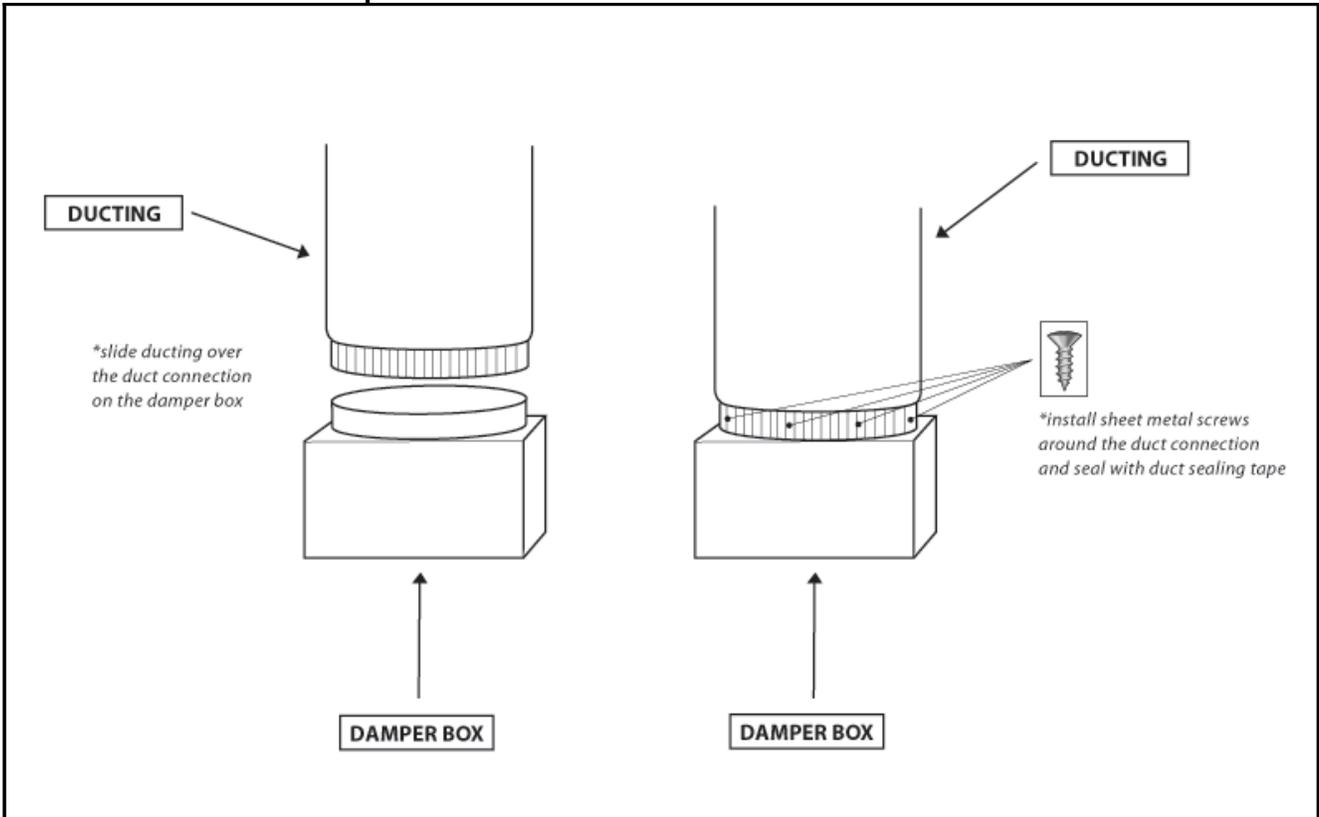


FIGURE 5 – Duct to Damper Enclosure Connection



DUCT AND FAN CONNECTIONS

Begin by removing the two screws that hold the damper collar in place for shipping. Attach damper collar to the damper box using provided screws (including the two screws removed previously). The damper collar should now extend up from the top of the damper box assembly.

Attach the metal collar end of the flexible duct to the damper enclosure by sliding the duct collar over the damper box duct collar (**see figure 5**). Secure the connection by first using the self-drilling sheet metal screws and then seal the joint with the included duct tape.

Attach the other end of the duct work to the reducer already attached to the back of the fan. Slide the metal collar of the duct work over the metal reducer and use the self-drilling sheet metal screws to attach to the fan. Finish by wrapping the joint with the provided tape to make the joint airtight.

HANGING THE FAN

Attach provided eye bolts to three locations on attic rafters. The eye bolts should be attached as close to the center of the rafter as possible. Use a section of the included chain and 2 s-hooks (one attached to each eye bolt) to hang the fan by the middle eyelet (the fan will hang in a diamond orientation). Use two other sections of chain and s-hooks to hang the fan from the two remaining eyelets. Adjust the individual chains so that each chain supports some of the fan weight and so that the duct is gently bent 90 degrees for maximum sound attenuation (**see figures 6 and 7**). Use pliers to close the s-hooks to secure the chains to the eye bolts.

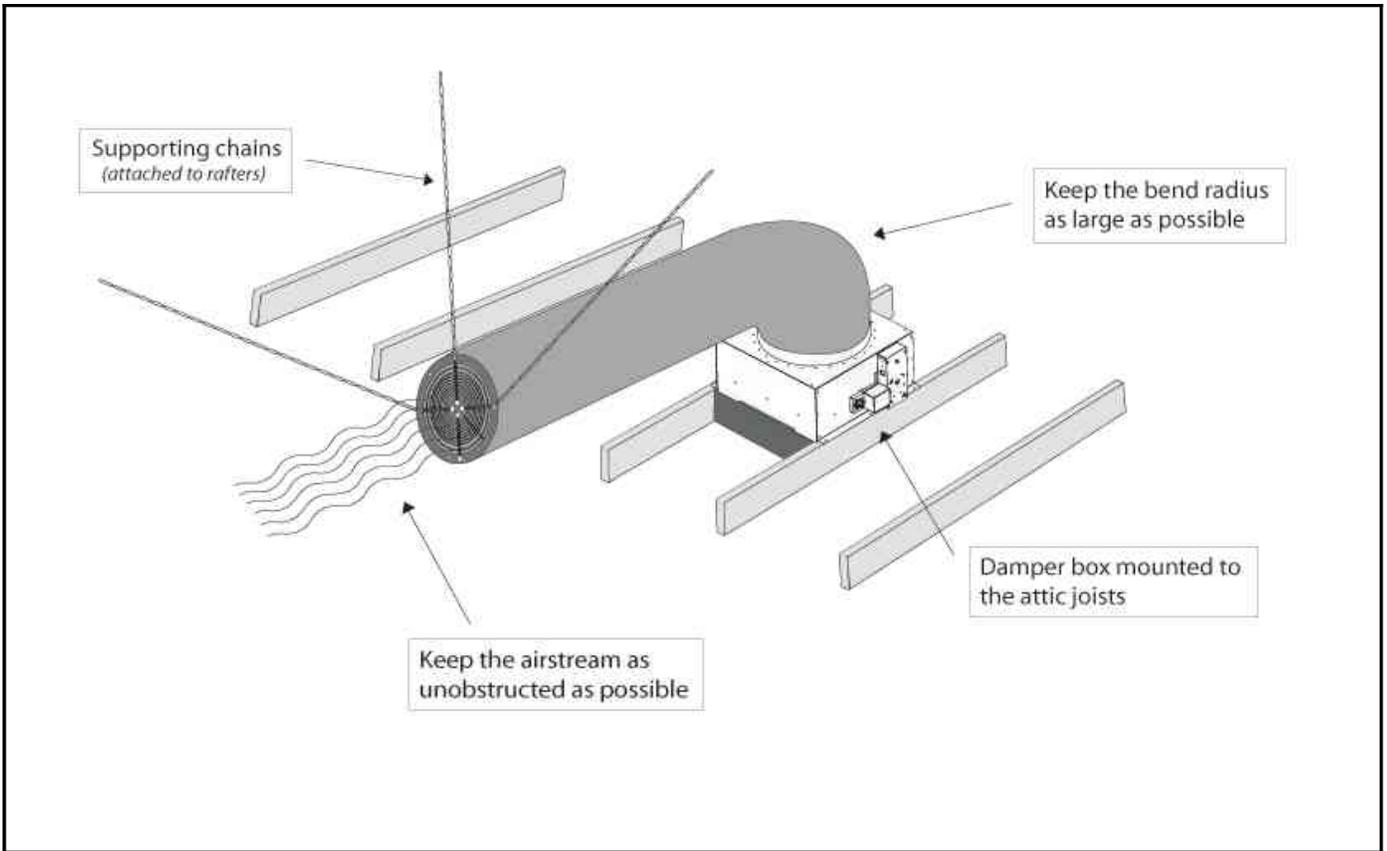
Avoid sharp bends in the duct or contact with metal fixtures, pipes, or conduits. The duct section immediately before the fan should be as straight as possible to ensure smooth airflow to the fan.

Once the fan is properly positioned, plug the fan power cord into the female receptacle located on the side of the electrical box on the damper unit.

FIGURE 6- Hanging the Fan



FIGURE 7 – Installation View



INSTALLATION - WIRING (HARDWIRED SWITCH)



Please make sure that local codes and standards are followed when performing the following steps. Make sure that the appropriate circuit breakers are turned off and that the unit is unplugged when performing these steps.

Step 1: Run 2 wire cables, 18 gauge or thicker for the 24 VDC low-voltage wiring, from the damper enclosure to a single pole toggle switch. The wire cable and wall switch are NOT supplied with the unit but are widely available.

Attach one wire to the COM RED terminal on the control board. Attach the second wire to the START BLACK terminal. Attach one wire to one of the screws on the wall switch and then connect the second wire to the other available screw. (as shown in **figure 8** below.) It does not matter which wire is connected to which screw on the switch. Once the connections are made, secure the faceplate.

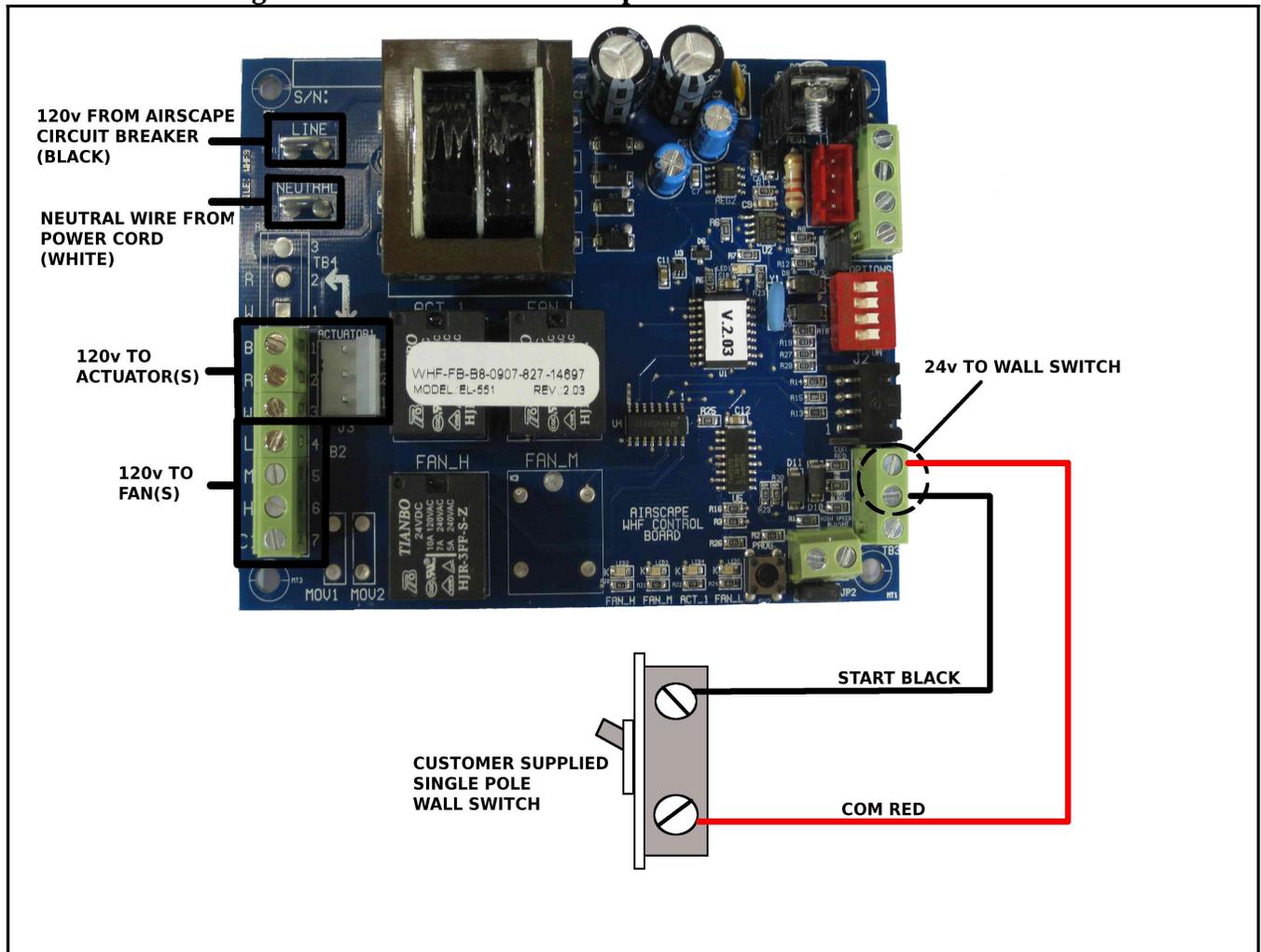
Step 2: When ready, plug-in the power cord into a 120-volt outlet with uninterrupted power.

The control wall switch must be mounted in an approved electrical box large enough to accommodate the entering wires. Use approved methods such as wire nuts to connect wire ends.

General wiring notes:

- Local codes and standards must be followed in the installation of this unit.
- The power requirements of 120 volts, 6 amps must be taken into account when allocating power from existing electrical circuits.

FIGURE 8 – Wiring with hardwired switch and power cord



STARTUP AND OPERATION

- Make sure that all wiring and connections have been made per this manual and acceptable wiring standards.
- Make sure that no tools or construction debris have been left in the 3.1 WHF.
- Verify that the 3.1 WHF power switch is in the "off" position and turn on electrical power at the circuit breaker.
- Put the power switch to the "on" position. The damper doors should begin opening immediately. Allow for the time delay for the fan to start. It will take roughly 30 seconds after the damper doors have started to open for the fan to start.
- When the power switch is moved to the "off" position, the fan should shut down and the damper door begin to close. The door will shut tightly within 60 seconds.

TIMECLOCKS - AUTOMATED CONTROLS

Customers may want to control the 3.1 WHF with a time clock or other automated device. General considerations for this are:

- The device must have dry contacts (no power on contacts).
- Do not use any automated device which may repeatedly turn the fan on and off within a 3 minute period.
- Please consult your installer or AirScape directly if you have any questions regarding the suitability of an electric control device.

MAINTENANCE

There is no routine maintenance required for the 3.1 WHF other than to make sure that the fan blades and damper are kept clean of any possible build up of lint or other debris.

Blocking the fan discharge during operation could cause premature fan failure if internal temperatures rise to a very high level. Ensure that no items are placed within 2 feet of the fan discharge path.

SAFETY INFORMATION



Not so obvious - Please Read:

Do not operate the 3.1 WHF without a window or door open.

This fan is meant for general ventilation. It has **NOT** been designed to vent particle laden and/or explosive mixtures of air.

Not for use in kitchens.

Never force open the doors. Always use clutch releases located on Actuators before attempting to manually open or close damper doors.

TROUBLESHOOTING



Before servicing the unit, switch power off at the electrical panel to reduce the risk of electrical shock, fire, or injury.

The 3.1 WHF has been factory tested. If you have problems with the unit please take a few minutes to run through the following troubleshooting procedures before calling for assistance.

1) Symptom: Unit does not start

Possible causes: No power to unit.

Suggestion 1: Check power to the unit and wiring at both the switch and the unit mounted junction box.

Suggestion 2: Check the re-settable circuit breaker on damper enclosure electrical box.

Suggestion 3: If power is verified at the unit, remove all control wiring from the low voltage control side. Jumper COM (RED) terminal to START (BLK) terminal. The fan should start and the damper door should open. When the jumper is removed the fan should stop and the damper should close. If the start/stop sequence checks out then there is an issue with field wiring to the switch or remote.

2) Symptom: Damper does not open

Possible causes: No power to damper actuator or damper shaft loose.

Suggestion: Check power to unit and wiring. The actuator (actuator mounted terminal block, not circuit board) should always have power to terminal 3, and terminal 2 when the fan is running (open damper). Terminal 1 should be the neutral. Verify that the actuator jaws are closed tight on the damper shaft.

3) Symptom: Damper door opens but fan does not start

Possible causes: Wiring issue between fan and damper enclosure.

Suggestion: Verify wiring connections between fan and damper enclosure electrical box.

If you continue to have issues with the unit, or have questions about the installation and wiring, please contact AirScape technical support by email at experts@airscapefans.com or call 1-866-448-4187.

LIMITED WARRANTY

AirScape warrants from the date of purchase that the product supplied by AirScape is free of defects in material and workmanship for a period of 3 years. This includes all moving parts, motors, dampers, and damper actuators.

If a failure of the product occurs, contact AirScape at 866-448-4187 and give the model number of the product, the purchase date, proof of purchase, and a description of the problem. AirScape will cover shipping charges during the first 6 months of warranty. Customer is responsible for all inbound and outbound shipping charges after the initial 6 month period.

Once a problem is diagnosed, and proof of purchase is verified, AirScape will have the option of shipping the necessary repair part(s) to the Customer or having the product returned to AirScape for repair or replacement.

If AirScape finds the returned product to be in operating condition, the product will be returned to the customer at customer's expense. AirScape reserves the right to obtain a credit card authorization for possible freight charges or non-return of defective parts/unit.

Specific warranty exclusions:

Except as provided by this express warranty, the goods are sold without any implied warranties. This limited warranty does not cover labor or field diagnosis, nor does it cover failure of the installer to follow installation instructions, damage resulting from accident, misuse or abuse, lack of maintenance, improper installation. In no event, shall AirScape be liable for any special, incidental, or consequential damages resulting from any defect in material or workmanship. It is expressly understood that Buyer's sole and exclusive remedy shall be repair or replacement of defective parts.

UNIT SPECIFICATIONS

Damper Box Size:	31"x25.75"x16.75" -- LxWxH
Duct Length:	7 feet
Duct Diameter:	20
Rough Opening:	22.5"x26.5"
Grille Outer Dimensions:	24.5"x28.5"
Grille Build:	Aluminum with cube core center - powder coated white
Electrical:	115 VAC, 60 Hz
Fan Energy Consumption:	630 watts
Speeds:	Single speed fan
Airflow:	3141 CFM
Acoustical:	51.5 dBA
Installation:	Installs easily between 24" O/C joists. Can be easily placed over 16" o/c joists.
Operation:	Single toggle switch (not supplied with unit)
Insulation:	R10 insulated damper blades
Warranty:	3 years