

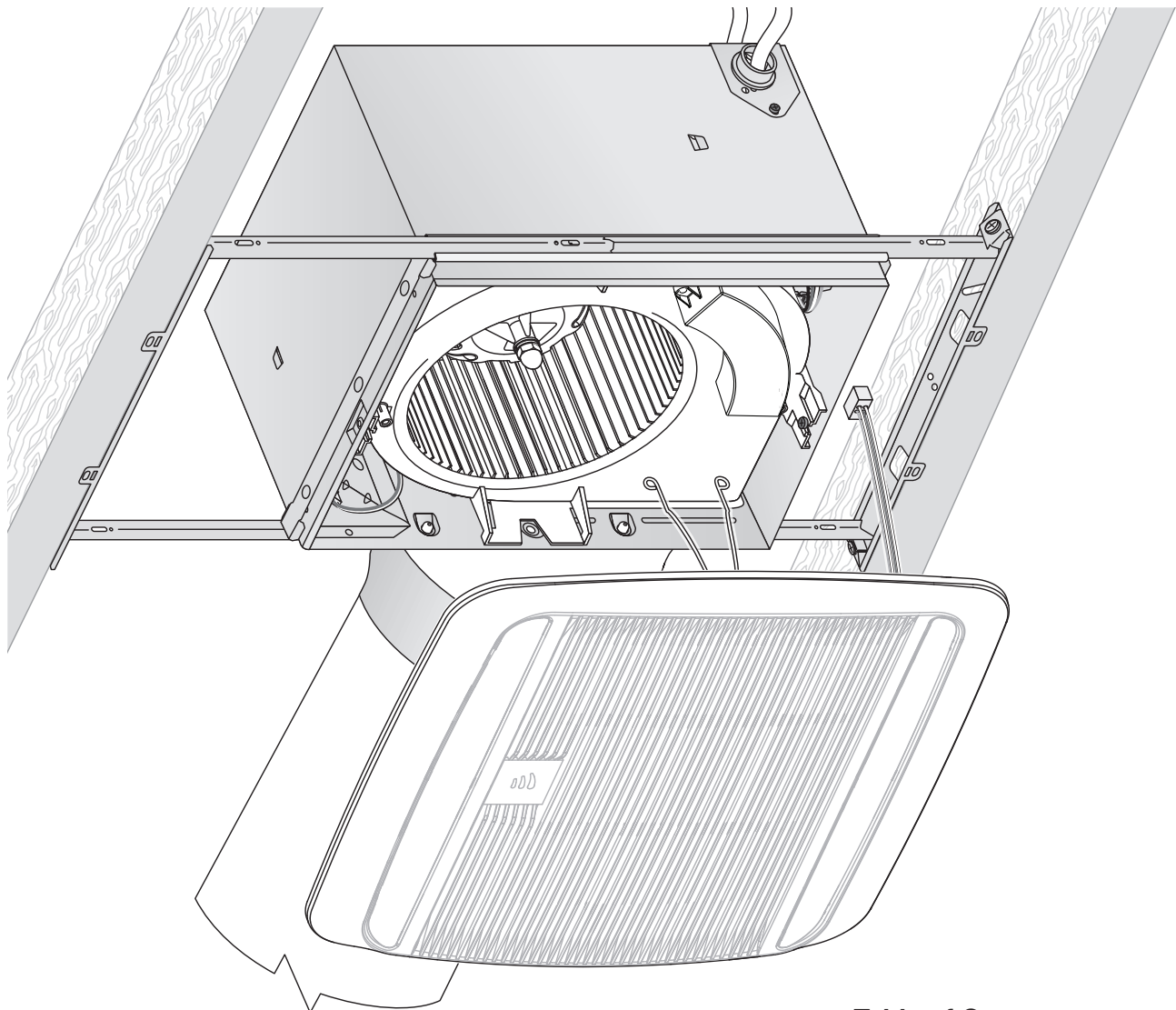
## READ AND SAVE THESE INSTRUCTIONS

Installer: leave this guide with homeowner.

### **XB110HL1**

X1 | Single-Speed Ventilation Fan with Dimmable Light and Humidity Sensor

### **INSTALLATION GUIDE**



**Easy installation in both  
new construction and retrofit**

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**WARNING**  

**TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

1. Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer at the address or telephone number listed in the warranty.
2. Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
3. Installation work and electrical wiring must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction codes and standards.
4. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and the local code authorities.
5. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
6. Ducted fans must always be vented to the outdoors.
7. Use only ON/OFF switch, mechanical timer or relay-switched control.
8. Acceptable for use over a tub or shower when connected to a GFCI (Ground Fault Circuit Interrupter) - protected branch circuit.
9. This unit must be grounded.

**CAUTION** 

1. For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.
2. This product is designed for installation in flat ceilings. Sensor will not function reliably if product is not installed in flat ceiling. **DO NOT MOUNT THIS PRODUCT IN A WALL.**
3. To avoid motor bearing damage and noisy and/or unbalanced impellers, keep drywall spray, construction dust, etc. off power unit.
4. Please read specification label on product for further information and requirements.

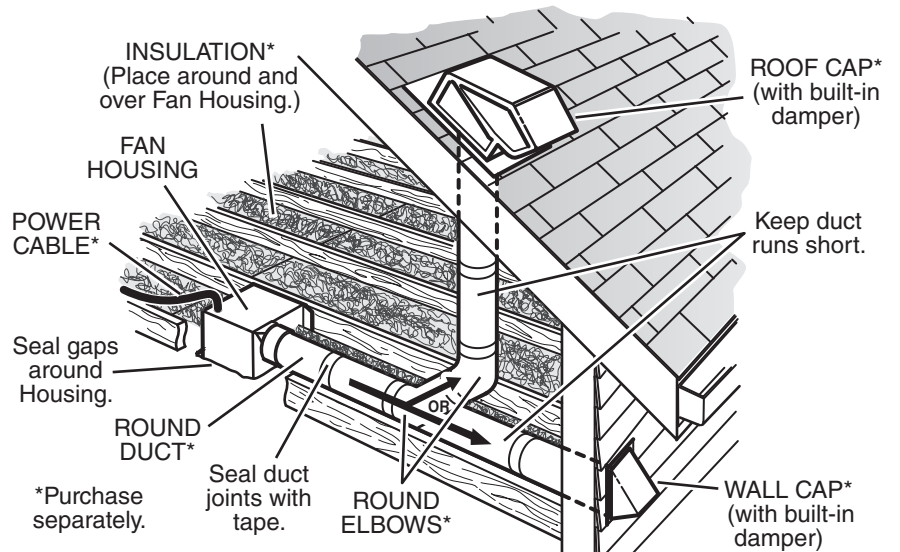


**Typical Installation**

- Installation is the same for:



- Fits in 2" x 8" ceiling construction.
- Infinitely adjust the fan position between joists from 14" to 24" on center.



The ducting from this fan to the outside of the building has a strong effect on the air flow, noise and energy use of the fan. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated airflow.

6-inch round rigid metal duct is recommended for best performance.

## New Construction Installation

### Tools needed

- Power screwdriver with a Phillips bit
- Phillips screwdriver
- Flathead screwdriver
- Pliers
- Wire insulation stripper
- Wire cutter

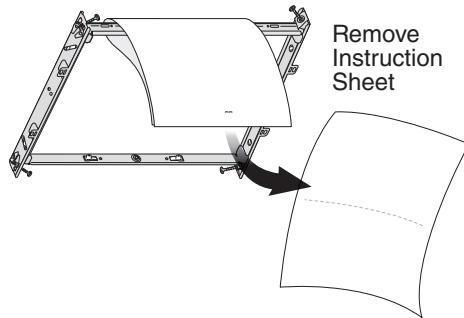
### Materials needed

- 6" round metal ducting recommended for best performance.  
Use of other ducting is acceptable but may impact performance.
- Roof cap or wall cap (built-in damper recommended)
- Tape to seal duct connections
- Electrical wiring and supplies per local code requirements

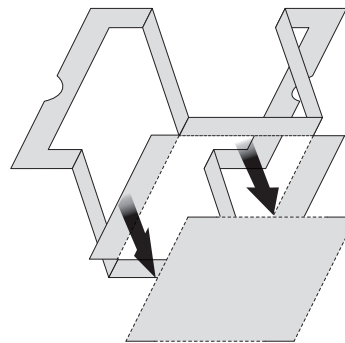
## 1 Remove Packaging



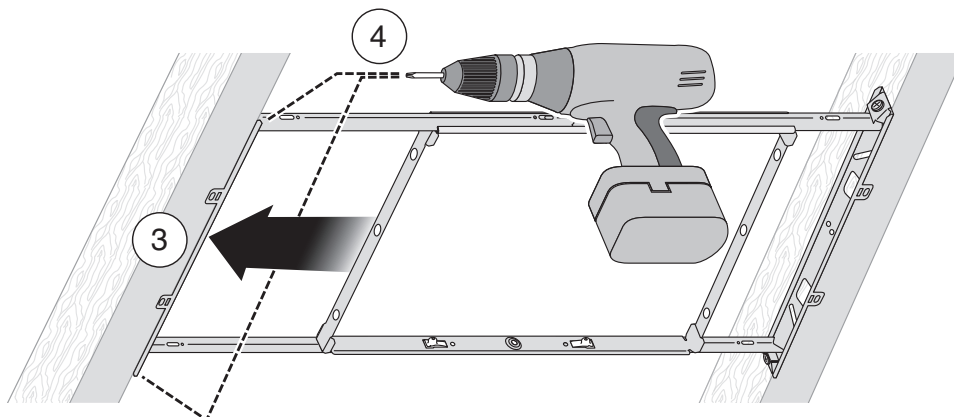
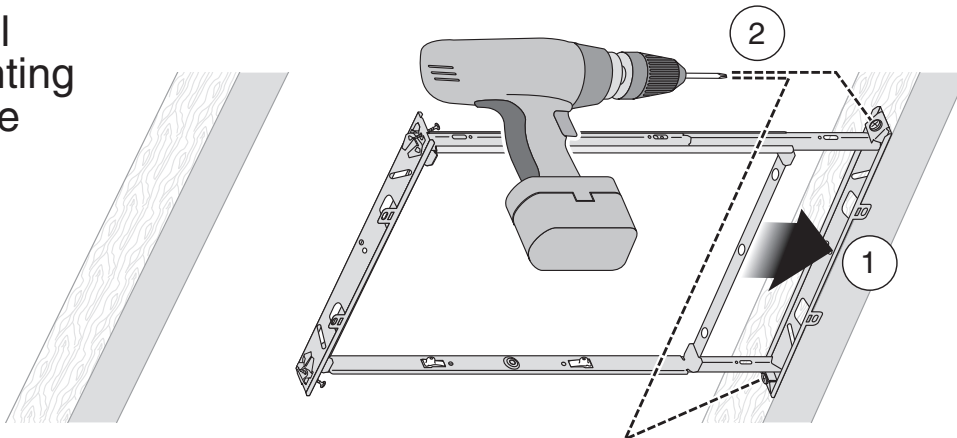
Parts Bag holds Knockout Plate and six (6) screws



Punch out Mask from packaging. See Step 6.

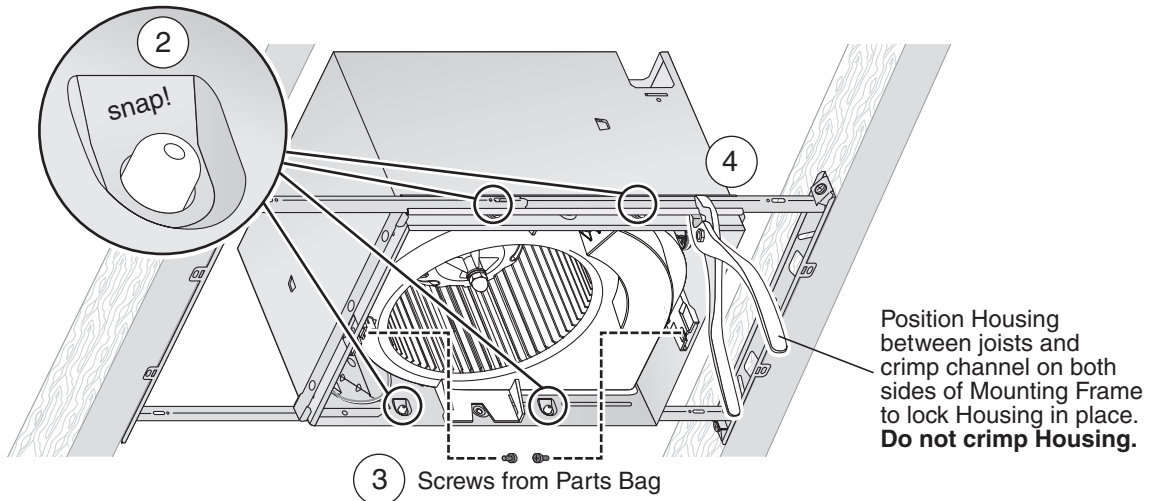
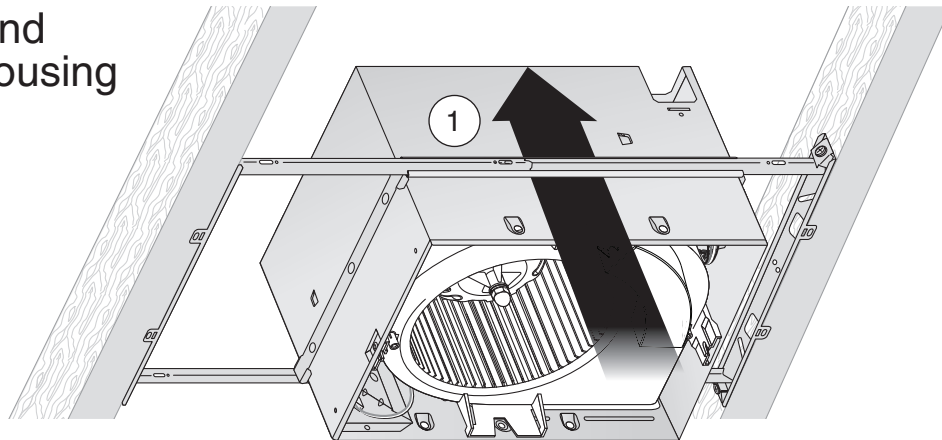


## 2 Install Mounting Frame

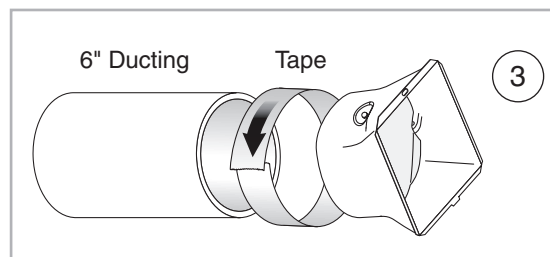
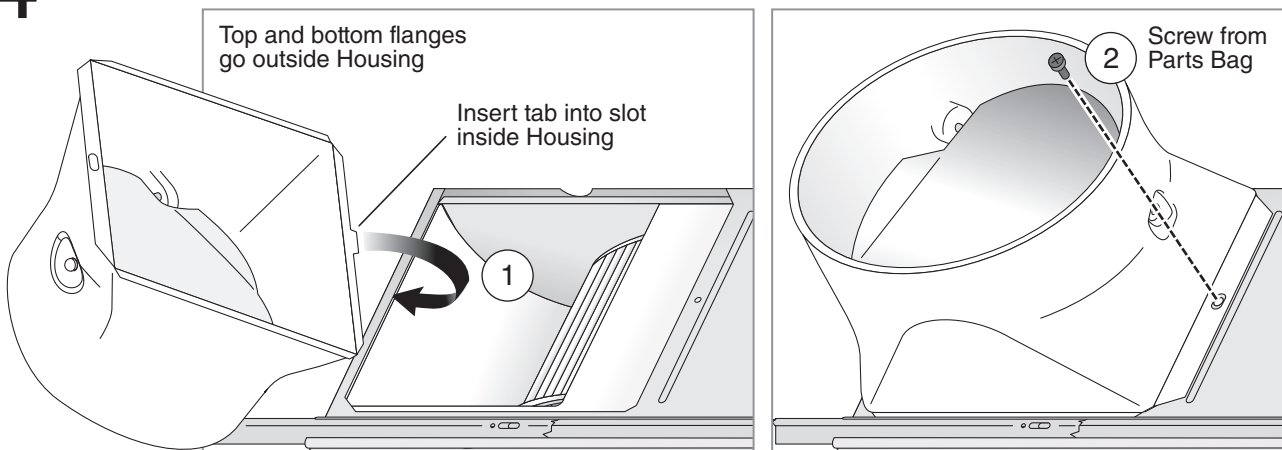


## New Construction Installation

### 3 Snap-in and Secure Housing



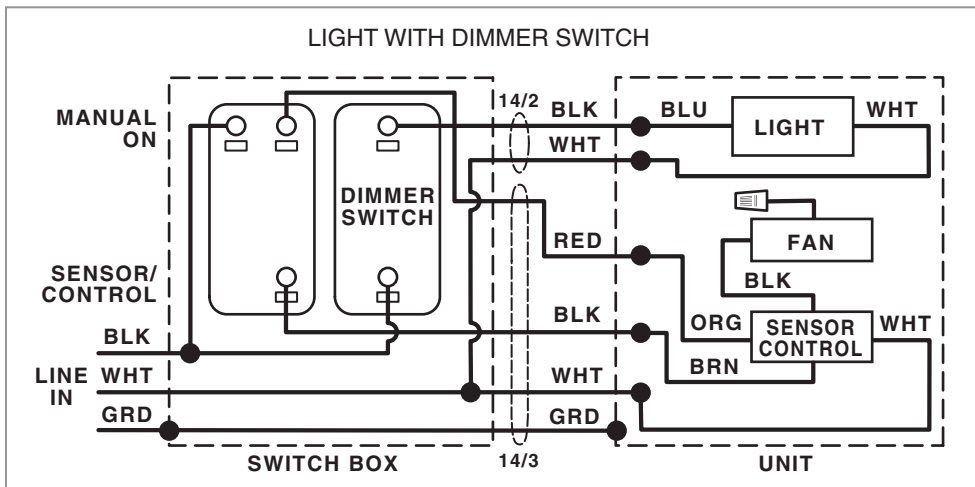
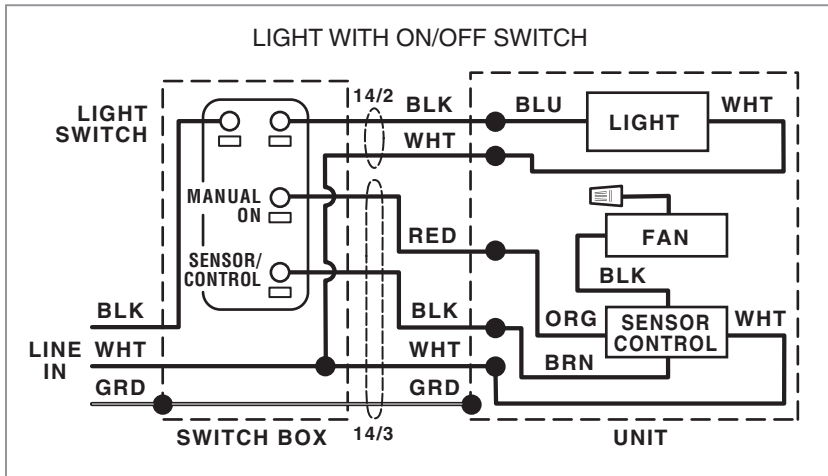
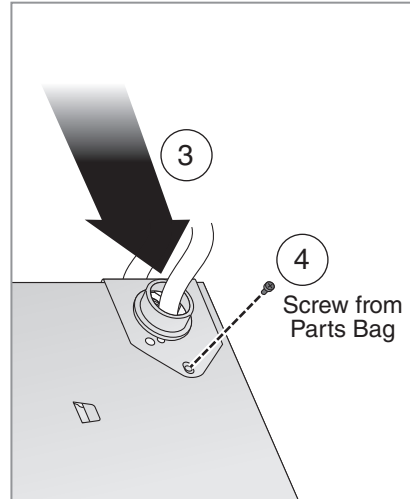
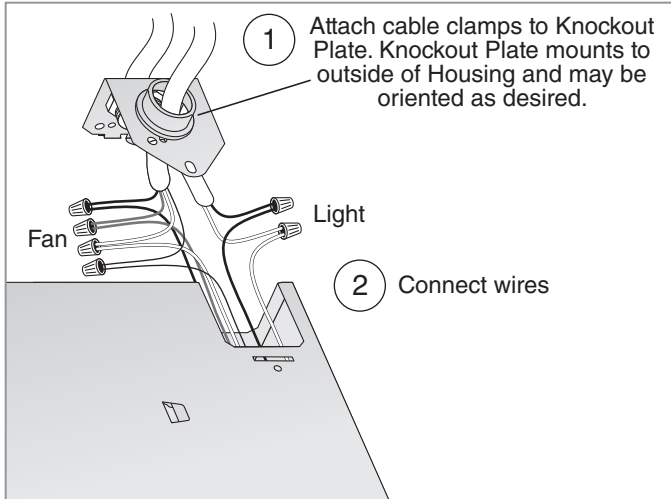
### 4 Attach Duct Connector and Ducting



## New Construction Installation

### 5 Connect Wires and Install Knockout Plate

- Run 120VAC electrical wiring to the installation location.
- Use proper UL-approved connectors to secure wiring to the Knockout Plate provided in Parts Bag.
- Connect wires as shown in wiring diagram.



- See OPERATION section on page 12 for details.
- SENSOR/CONTROL switch turns humidity control on for automatic operation and off for fan cleaning and maintenance purposes.
- MANUAL-ON switch directly turns fan on/off.
- MANUAL-ON switch is not required to manually turn fan on (see page 10).
- SENSOR/CONTROL switch may be located where it is not easily accessed for everyday usage; it may need to be labeled and located where it can't be turned on without being seen from fan to comply with local and national codes.

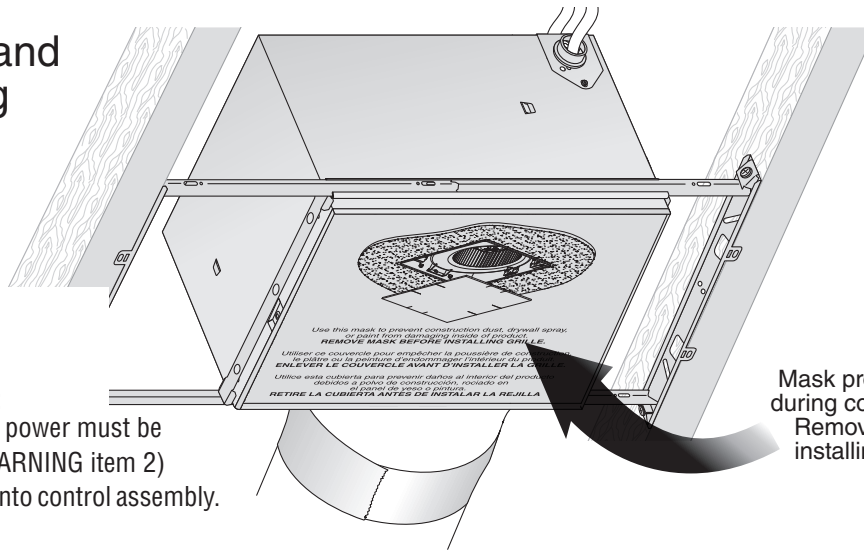
## New Construction Installation

### 6 Insert Mask and Finish Ceiling

- Install ceiling material.
- Cut out around Housing.

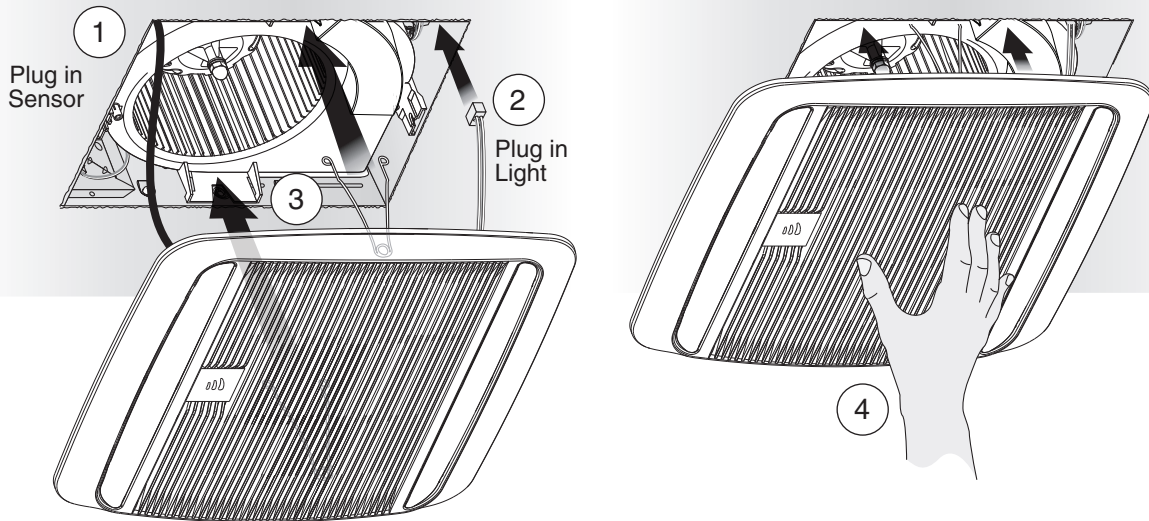
**CAUTION**    
**IN ORDER TO PREVENT  
 MOTOR/CONTROL DAMAGE:**

If the blower was unplugged, power must be disconnected (see page 2, WARNING item 2) before inserting motor plugs into control assembly.



Mask protects unit during construction. Remove before installing Grille.

### 7 Install Grille



# Retrofit Installation

## Tools needed

- Power screwdriver with a Phillips bit
- Phillips screwdriver
- Flathead screwdriver
- Pliers
- Wire insulation stripper
- Wire cutter
- Ruler
- Pencil
- Drywall saw
- Claw hammer or pry bar
- Utility knife

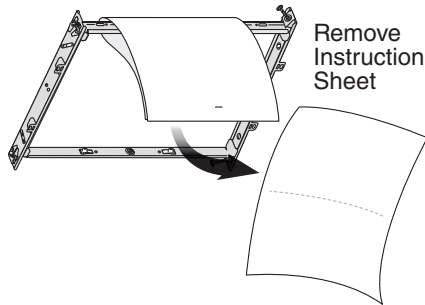
## Materials needed

- Tape to seal duct connections
- Existing rigid duct will require the addition of a short length of flexible duct
- Electrical wiring and supplies per local code requirements

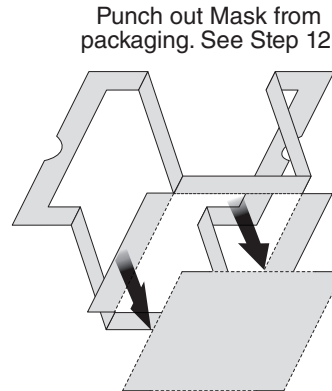
### 1 Remove Packaging



Parts Bag holds Knockout Plate and six (6) screws



Remove Instruction Sheet



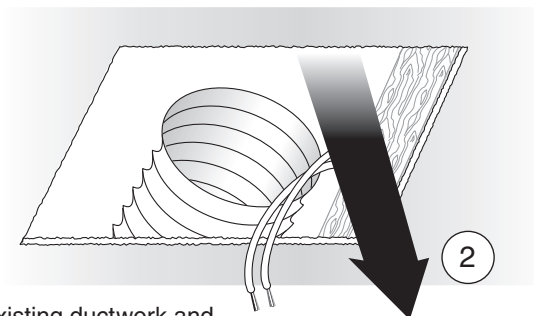
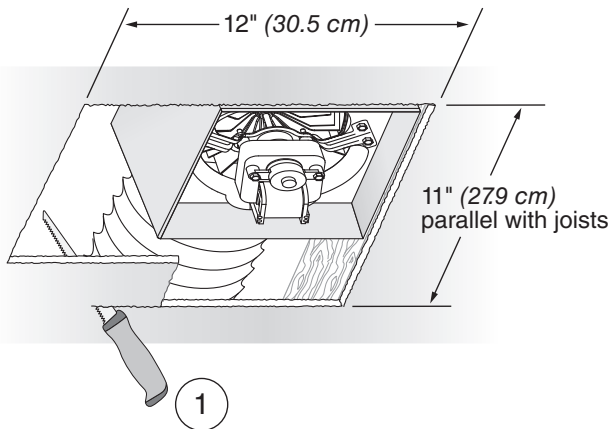
Punch out Mask from packaging. See Step 12.

### 2 Switch Off Power

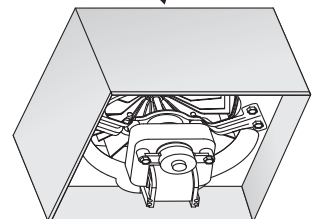
**WARNING** ⚡

Before removing existing fan, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

### 3 Enlarge Ceiling Opening and Remove Existing Fan



Existing ductwork and wiring left in place

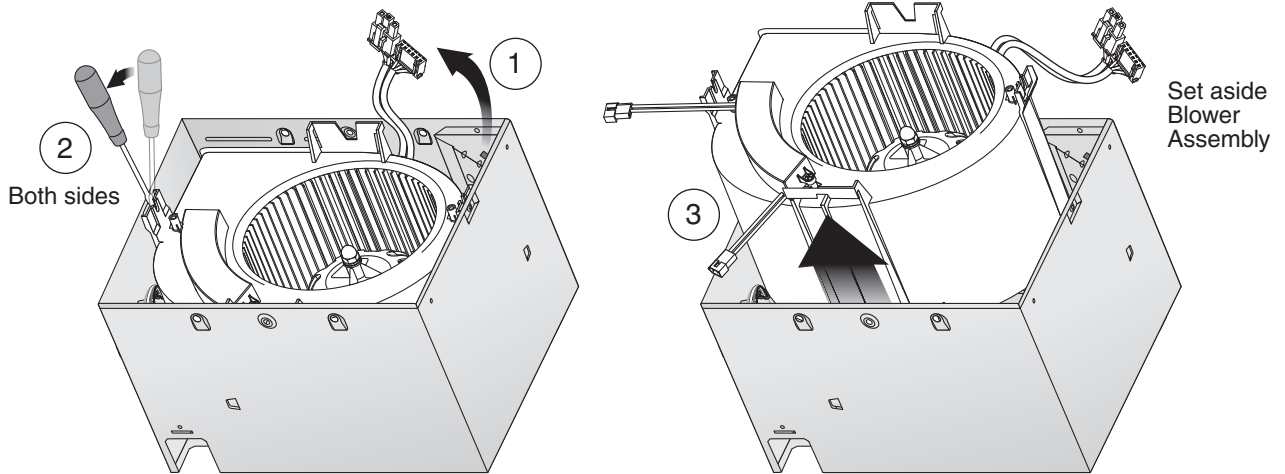


### 4 Examine Wiring

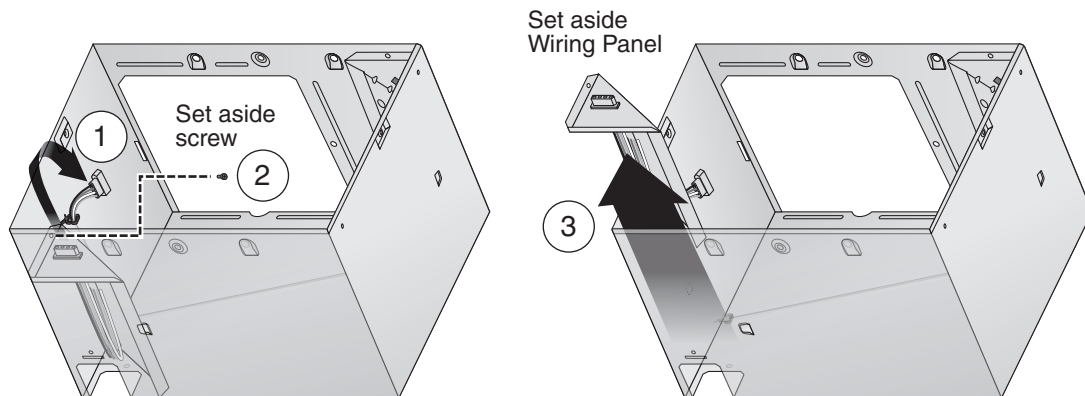
Examine the existing wiring to make sure it is not damaged. If any damage is found, **DO NOT CONTINUE INSTALLATION** of this product. Contact a qualified person(s) for repair.

## Retrofit Installation

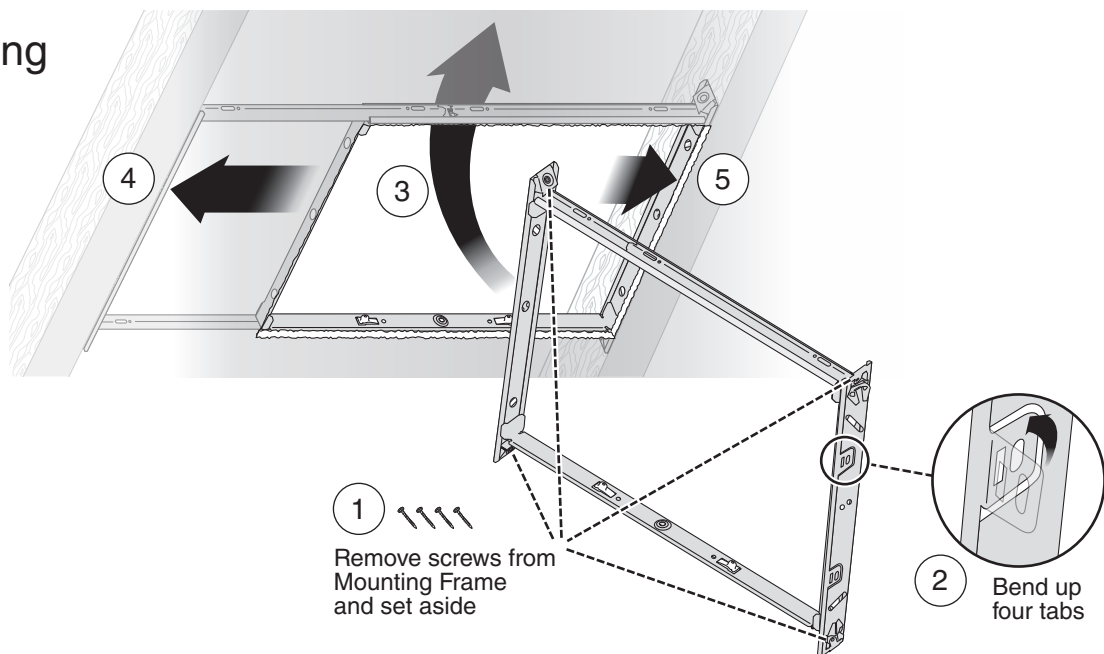
### 5 Remove Blower Assembly



### 6 Remove Wiring Panel



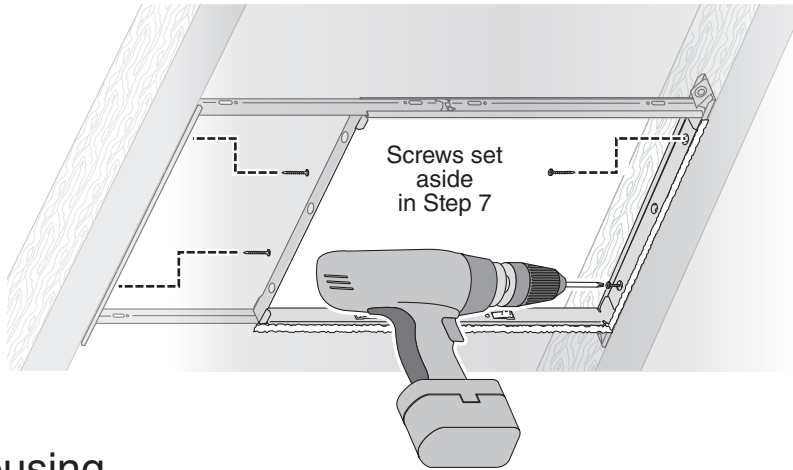
### 7 Insert Mounting Frame



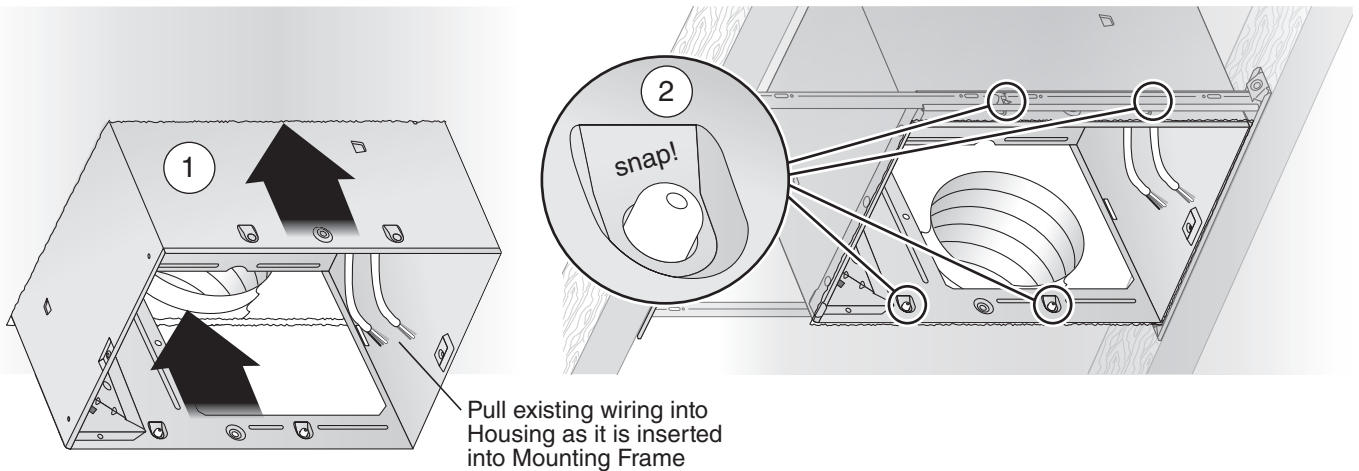


## Retrofit Installation

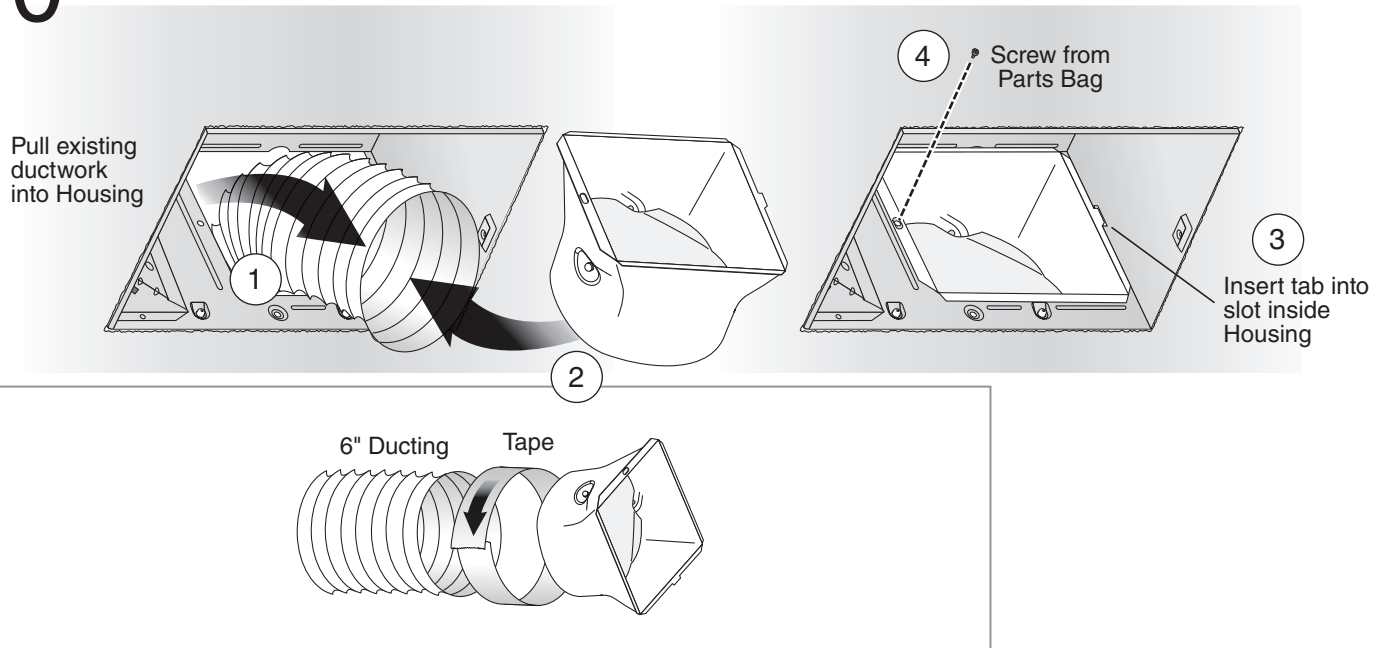
### 8 Secure Mounting Frame



### 9 Snap-in Housing



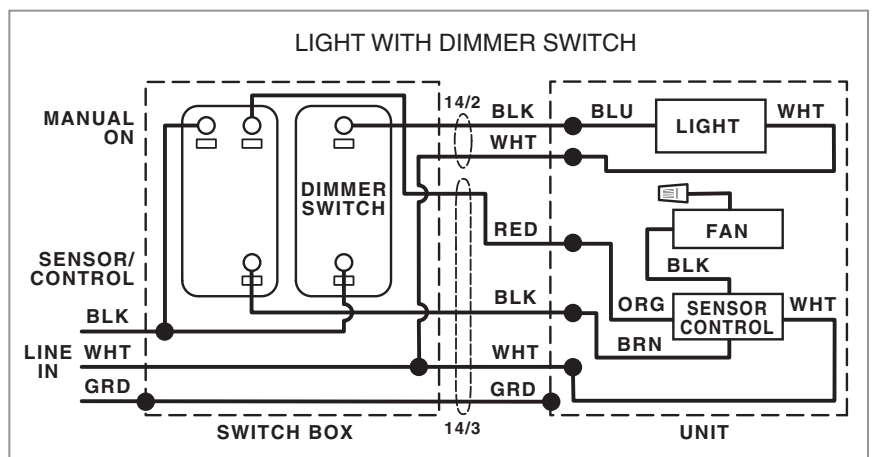
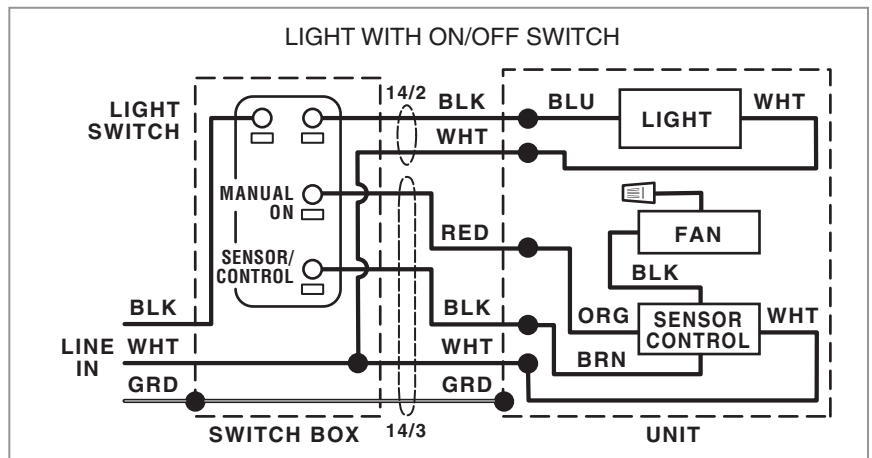
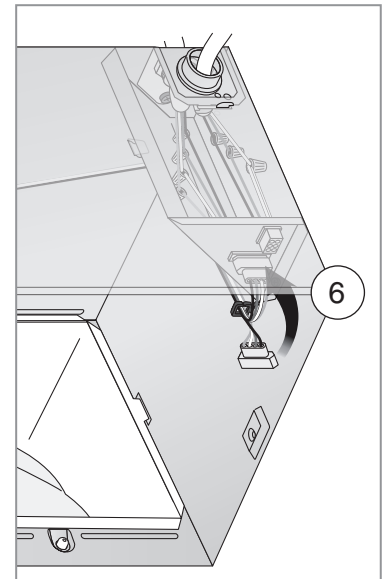
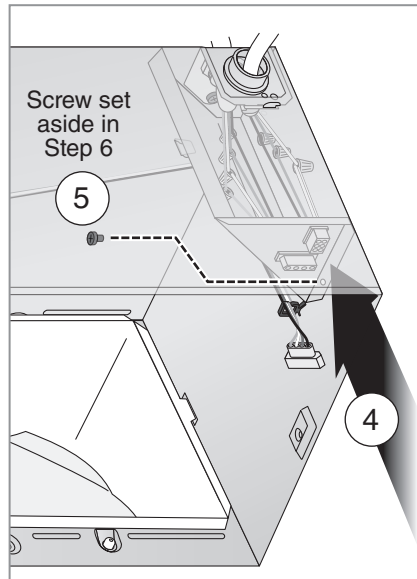
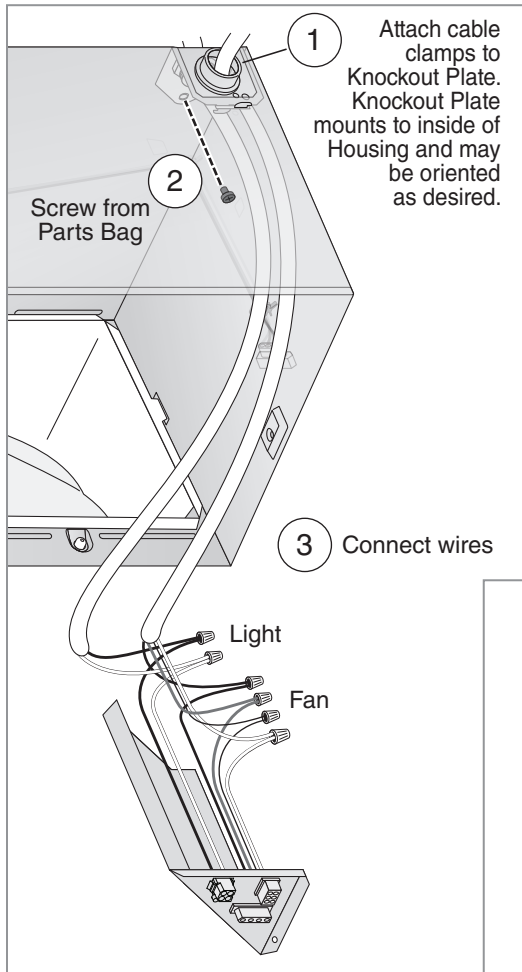
### 10 Attach Ducting and Duct Connector



## Retrofit Installation

# 11 Install Knockout Plate, Connect Wires and Reinstall Wiring Panel

- Use proper UL-approved connectors to secure wiring to the Knockout Plate provided in Parts Bag.
- Connect wires as shown in wiring diagram.

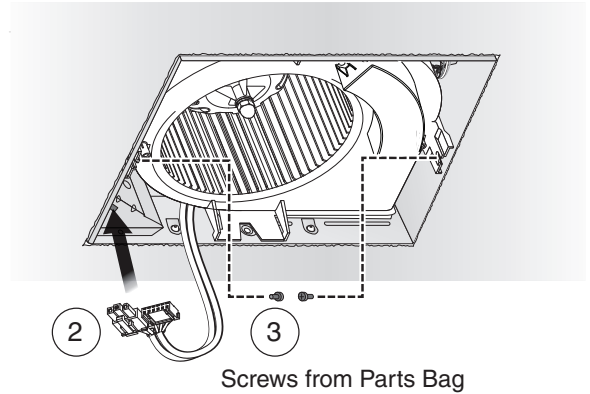
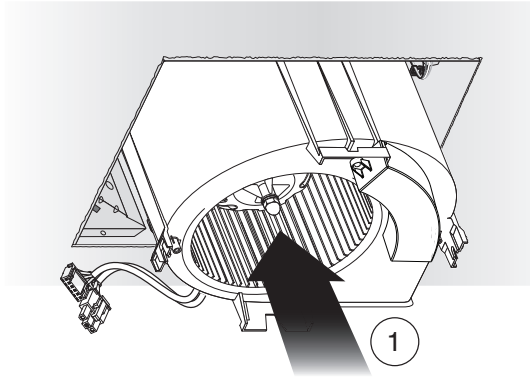


- See OPERATION section on page 12 for details.
- SENSOR/CONTROL switch allows humidity control to be turned on for automatic operation and off for fan cleaning and maintenance purposes.
- Toggle mode can be used to manually turn fan on.
- SENSOR/CONTROL switch may be located where it is not easily accessed for everyday usage; it may need to be labeled and located where it can't be turned on without being seen from fan to comply with local and national codes.

## Retrofit Installation

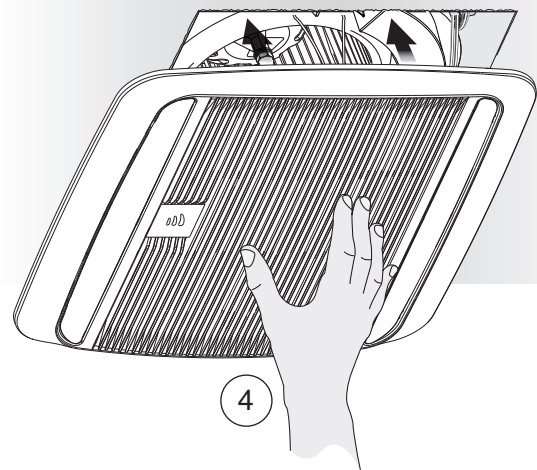
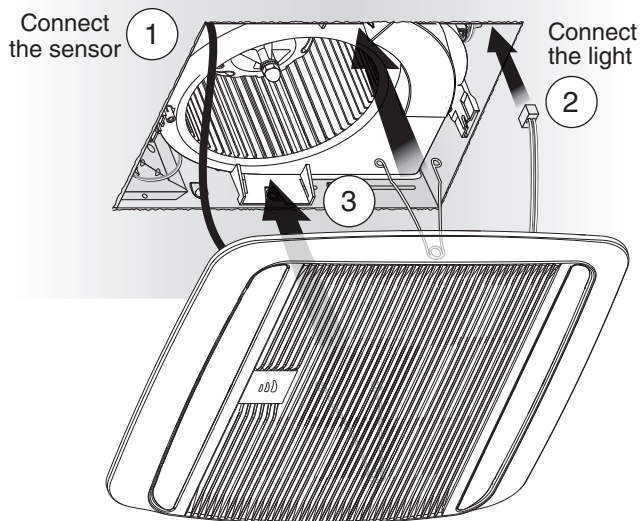
### 12 Reinsert and Secure Blower Assembly

**CAUTION** ⚠ ⚡ **IN ORDER TO PREVENT MOTOR/CONTROL DAMAGE:**  
Power must be disconnected (see page 2, WARNING item 2) before inserting motor plugs into control assembly.



If ceiling repairs are needed, place Mask in Housing after Blower Assembly is secured. See New Construction Installation Step 6. Remove Mask before installing Grille.

### 13 Install Grille



**WARNING** ⚡ Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

## Operation

It is normal for this ventilation fan to take approximately 5 seconds to start running after it is turned on.

### Modes

(For reference, wiring diagrams are on pages 5 and 10.)

#### Humidity sensing:

1. Turn sensor/control wall switch on (make sure manual-on wall switch is off if it is installed).
2. Sensor monitors humidity level for (a) moderate to rapid rise or (b) above set-point.
3. Fan operates at certified airflow rate to reduce humidity.
4. When humidity decreases, fan enters time delay mode. (See below.)

**Manual-on** (optional manual-on wall switch must be installed):

1. Turn manual-on wall switch on (sensor/control wall switch can be on or off).
2. Fan operates at certified airflow rate.
3. Fan turns off when manual-on wall switch is turned off.

**Toggle** (for manual operation when optional manual-on wall switch is not installed or manually activated timed-off is desired):

1. Turn sensor/control wall switch on (make sure manual-on wall switch is off if it is installed).
2. Wait at least one-second.
3. Turn switch off for less than one-second.
4. Turn switch back on.
5. Fan will operate at certified airflow rate and enter time delay mode. (See next.)

#### Time Delay:

Fan continues to run until user-adjustable TIME delay has passed, then fan turns off.

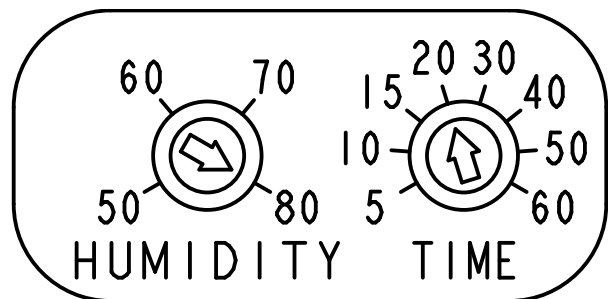
#### To Set User-Adjustable Humidity Sensitivity\*\*

Using a small, flat-blade screwdriver, carefully rotate HUMIDITY adjustment until arrow points to desired humidity level shown in percent relative humidity (%RH).

#### To Set User-Adjustable Time Delay\*\*

Using a small, flat-blade screwdriver, carefully rotate TIME adjustment until the arrow points to the desired minutes of time delay.

\*\* User-adjustable controls are located in corner of Fan Housing behind Grille.



## Cleaning and Maintenance

### CAUTION

#### IN ORDER TO PREVENT MOTOR/CONTROL DAMAGE:

DO NOT remove motor plug to stop spinning motor. Power must be disconnected (see WARNING on previous page) before motor plug is removed or inserted into control assembly.

#### To Clean

For quiet and efficient operation, long life and attractive appearance, remove Grille and vacuum interior of unit with a dusting brush attachment.

Do not use cleaning sprays, solvents or water on, or near, the sensor.

Motor is permanently lubricated and never needs oiling. If motor is making excessive or unusual noises, replace Control Assembly and Motor.

## Troubleshooting

Before continuing, turn off power as previously noted in WARNING section on previous page and CAUTION section at the top of this page.

#### Symptom: Fan does not run.

- Check for an open fuse or circuit breaker in the building's service panel.
- Check that the two (2) plug-in connections for the Motor and the Control are seated firmly in place.
- Check two (2) plug-in connections for Sensor and its Control are seated firmly in place.
- Check that the Blower Wheel spins freely.

#### Symptom: Humidity mode does not operate fan.

- Check two (2) plug-in connections for Sensor and its Control are seated firmly in place.

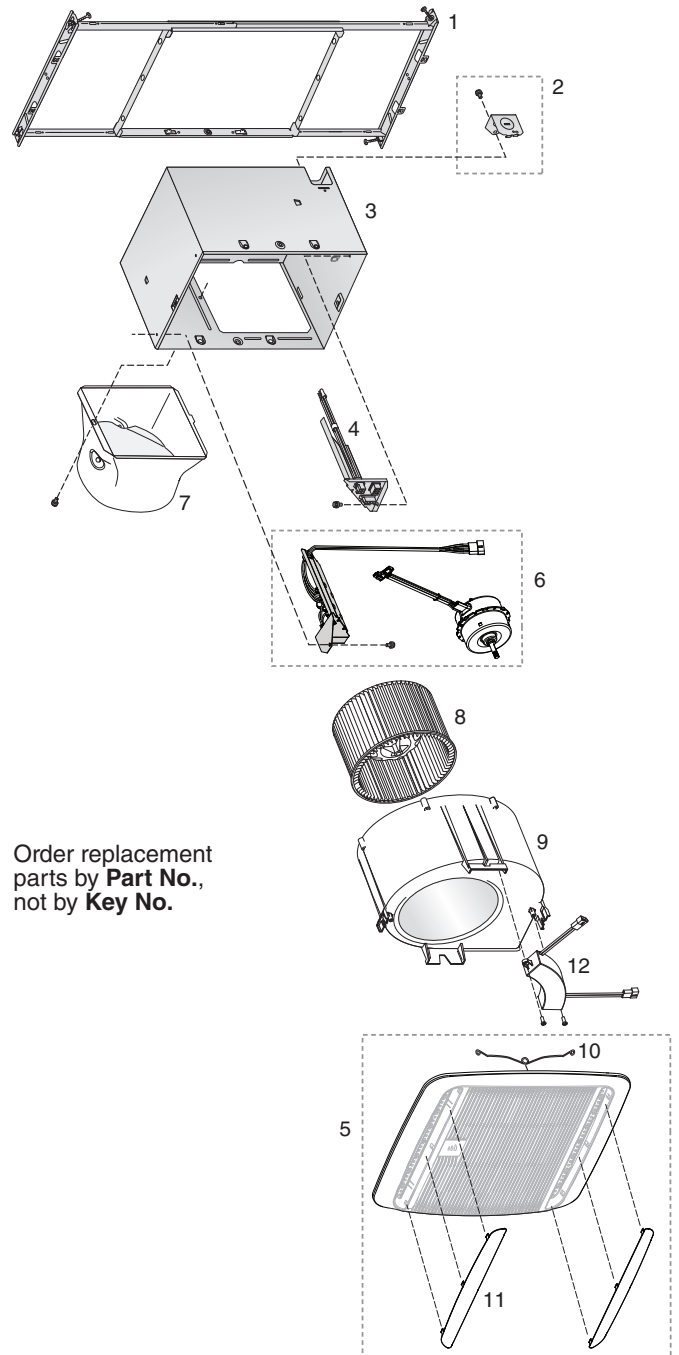
#### Symptom: The fan runs erratically.

- Check that the Blower Wheel is firmly attached to the Motor shaft and both spin freely.

#### Symptom: The fan seems noisy.

- Check that the back draft damper in the fan's Duct Connector pivots freely. Screws used to attach the duct to the Duct Connector may be preventing the damper from opening.
- Check that the back draft damper in the wall or roof cap pivots freely. These dampers are sometimes mistakenly painted shut or obstructed by bird and insect debris.

## Service Parts



Order replacement parts by **Part No.**, not by **Key No.**

Key No.	Part No.	Description
1	97018349	Mounting Frame
2	97018721	Knockout Plate & Screws
3	97018382	Housing
4	97020894	Wiring Panel/Harness Assembly
5	97020952	Humidity Control Assembly & Grille Assembly (includes 10, 11)
6	1102586	Control Assembly & Motor
7	97018331	Duct Connector - 6"
8	99020301	Blower Wheel
9	97018768	Scroll Assembly
10	99140208	Grille Spring (2 req'd)
11	99111711	Lens (2 req'd)
12	99271625	LED Driver