

Model 6508KV and 6510KV Make-Up Air Damper Kit

Installation Instructions

⚠ WARNING

Significant depressurization of the home can lead to back drafting of combustion appliances or chimneys which can cause build-up of dangerous levels of chemicals inside the home and lead to asphyxiation. The make-up air system design must be done by a qualified design professional.

The Model 65##KV Make-Up Air Kit provides components that are to be used for the installation of a make-up air duct which can be used to prevent home depressurization that occurs when larger kitchen range hoods (generally those that exhaust greater than 400 cfm) are operating. The negative pressure caused by the range hood, will draw some make-up air in through openings in the home; this quantity of air can be significant, and should be measured using a blower door test or similar procedure to determine how much additional make-up air is needed. The additional make-up air is drawn in through the installed make-up air duct; the goal is to achieve proper pressure balance. If the make-up air duct is connected to the return ductwork of the HVAC system (see **FIGURE 3**), additional negative pressure can be made available to draw in even more air when the make-up air system is interlocked with the HVAC system.

Excessive negative pressures in the home can result in improper venting of combustion appliances and fireplaces and thus the design of the make-up air system must be done by a qualified professional with knowledge of all relevant local building codes and equipment manufacturer specifications to determine:

1. if make-up air is required
2. how much make-up air is needed
3. what must be done to install the system safely
4. whether or not the make-up air needs heating, cooling or moisture control

INCLUDED IN THE KIT

- (1) Model 65## Normally Closed 24VAC Damper
 - 6508 = 8" diameter damper
 - 6510 = 10" diameter damper
- (1) Model 50 Current Sensing Relay
- (1) Part No. 4010 Transformer

AIRFLOW SPECIFICATIONS

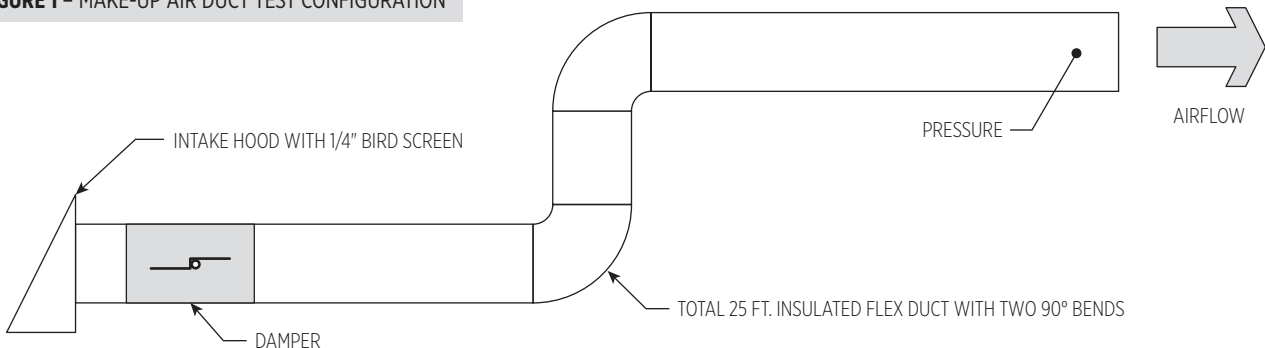
⚠ CAUTION

Improper duct sizing can lead to insufficient make-up airflow and reduced performance. Use the airflow specifications provided as a guide to select the correct size(s) of make-up air duct/damper.

TABLE 1 – TYPICAL AIRFLOW THROUGH MAKE-UP AIR DUCT (FIGURE 1)

Available Negative Pressure		Make Up Airflow (CFM)	
"w.c.	Pa	6508KV (8")	6510KV (10")
-0.02	-5	55	115
-0.04	-10	75	160
-0.06	-15	95	195
-0.08	-20	110	235
-0.10	-25	125	265
-0.20	-50	185	390
-0.30	-75	225	490
-0.40	-100	260	565
-0.50	-125	295	640
-0.60	-150	320	705

FIGURE 1 – MAKE-UP AIR DUCT TEST CONFIGURATION



TYPICAL DUCT INSTALLATION

⚠ WARNING

Sharp edges may cause injury from cuts. Wear appropriate hand/eye protection when cutting or handling ductwork.

DIRECT DUCTING

Use this method when there is no existing duct system or access to the existing duct system is not practical (see **FIGURE 2**).

1. Install a register(s) with the desired neck diameter at the desired location in the kitchen so that the air is directed toward the range hood.
2. Install an intake hood of the desired diameter and with a bird screen at an appropriate location in an outside wall. Make sure the intake hood is not located near any exhaust hoods or other sources of contaminants, and that the hood is mounted higher than any expected snow drift line.
3. Run a duct between the register and intake hood. Insulated ductwork is required to prevent condensation.
4. Install the properly sized, normally closed damper in the duct as close to the intake hood as possible. Insulate the damper to prevent condensation.

⚠ CAUTION

Keep air temperatures entering the HVAC equipment within manufacturer recommendations to prevent voiding equipment warranty. Make-up air system design is to be done by a qualified HVAC professional.

DUCTING TO THE HVAC SYSTEM

Use this method when there is an existing duct system and it is accessible (see **FIGURE 3**).

1. Install an intake hood of the desired diameter and with a bird screen at an appropriate location in an outside wall. Make sure the intake hood is not located near any exhaust hoods or other sources of contaminants, and that the hood is mounted higher than any expected snow drift line.
2. Run a duct between the intake hood and the return plenum of the HVAC system. Locating the return duct connection close to the HVAC system maximizes the negative pressure available for drawing in outside air when the HVAC system is running. Insulated ductwork is required to prevent condensation.
3. Install the properly sized, normally closed damper in the duct as close to the intake hood as possible. Insulate the damper to prevent condensation.

FIGURE 2 – DIRECT DUCTING

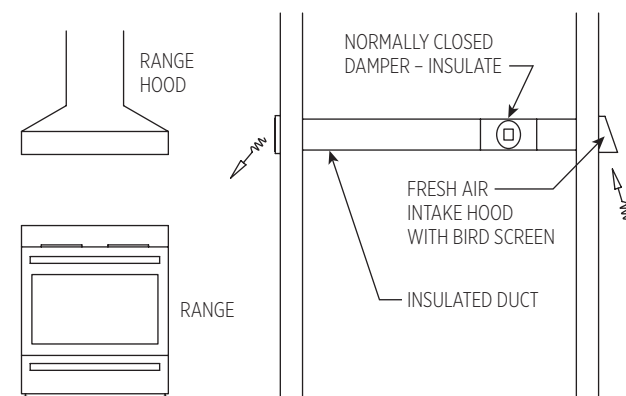
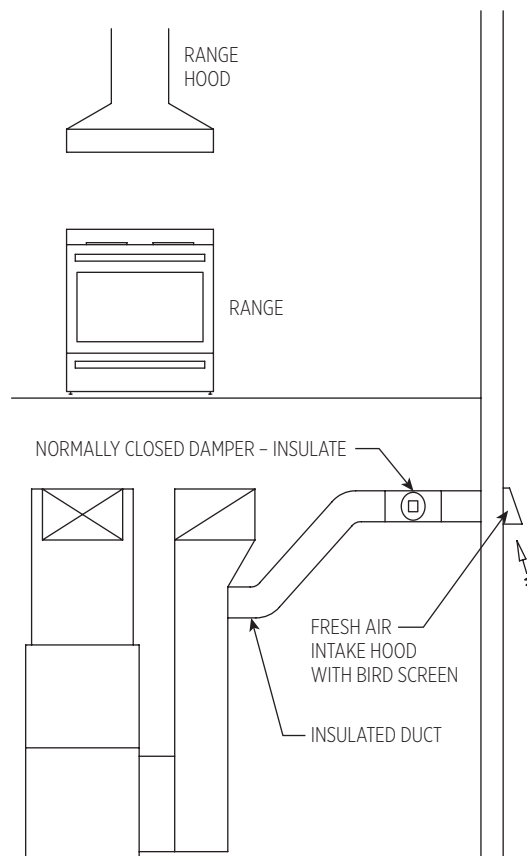


FIGURE 3 – DUCTING TO HVAC SYSTEM



SYSTEM WIRING

⚠ WARNING

120-volts can cause serious injury from electrical shock. Disconnect electrical service before starting installation or service. Leave electrical service disconnected until installation or service is complete.

⚠ CAUTION

Improper wrapping of exhaust hood blower wire around current sensing relay can result in the make-up air damper failing to open. Make sure that system is fully operational at all exhaust hood speeds before using the range.

1. Install the transformer to any junction box near where the damper is installed. Wire the transformer to the line voltage in the junction box.
2. Run a 2-wire (18-22 AWG) cable from the transformer to the damper and another cable from the transformer to the range hood.
3. Install the Model 50 relay in accordance with the instructions provided with the relay. You must know the current draw of the exhaust hood – use either a clamp-on ammeter or the data plate rating to determine the exhaust fan current draw at the slowest speed for which make-up air is required. Clamp the bracket of the Model 51 around one more wire wraps as shown in **FIGURE 4**.
4. Complete the system wiring as shown in **FIGURE 5**.
5. **Optional:** Interlock to HVAC system blower – use to increase negative pressure at the intake duct and increase make-up airflow

⚠ CAUTION

Wiring to the HVAC control while live can cause damage. Disconnect electrical service to the HVAC equipment before wiring and restore power after all wiring is complete.

To operate the HVAC system blower whenever the kitchen vent hood operates and the damper opens, install a 24-volt, single pole, double throw (SPDT) relay and wire as shown in **FIGURE 6**. Locate and/or label the relay so that it is easily identifiable as an interlock relay for kitchen vent make-up air.

FIGURE 4 – WIRE WRAPPING

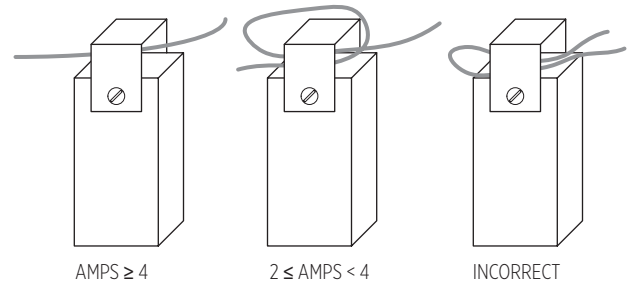
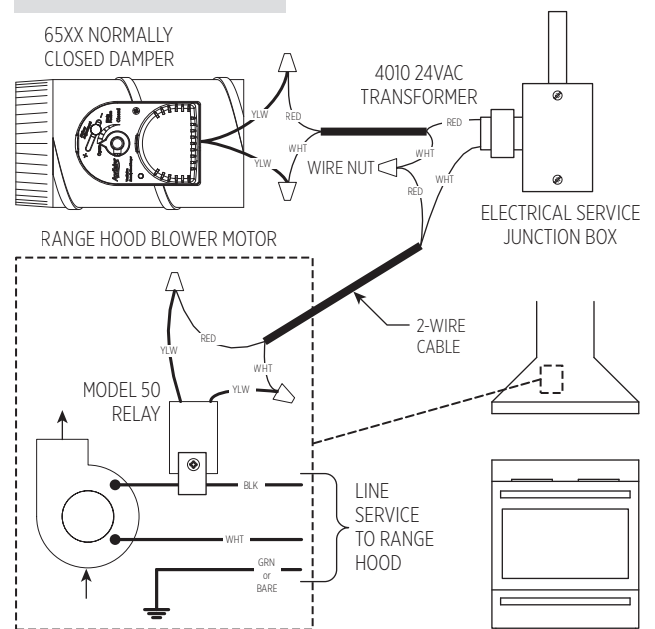
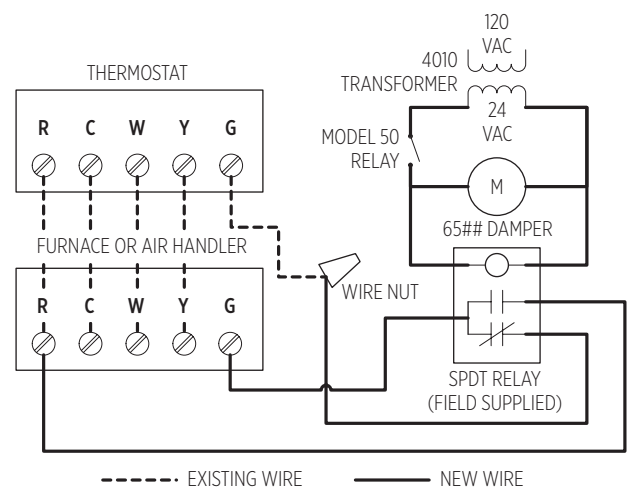


FIGURE 5 – SYSTEM WIRING



NOTE: THE MODEL 50 RELAY CANNOT BE USED WITH A DC MOTOR.

FIGURE 6 – OPTIONAL INTERLOCK TO HVAC SYSTEM



START UP

WARNING

WARNING: Significant depressurization of the home can lead to back drafting of combustion appliances or chimneys which can cause build-up of dangerous levels of chemicals inside the home and lead to asphyxiation. Verify that the make-up air system is properly balancing the pressure inside the home at all ventilation hood operating speeds before using the range.

1. Restore electrical service to the kitchen exhaust and to the transformer.
2. Turn on the kitchen exhaust fan. If multiple speeds are available, turn it on to the slowest speed for which ducted make-up air is required.
3. Verify that the damper is open – it takes no more than 45 seconds for the damper to open completely.
4. Turn off the kitchen exhaust fan and ensure that the damper closes.

TROUBLESHOOTING

DAMPER OPEN ALL THE TIME

24-volts is present at the damper when the kitchen vent hood is not operating, which would result from improper wiring or a damaged Model 50 relay. Disconnect the Model 50 from all wires and measure the resistance between the two yellow leads of the Model 50. If the resistance is zero or near zero, the Model 50 is damaged and should be replaced. If the Model 50 is not damaged, check the wiring.

DAMPER DOES NOT OPEN WITH RANGE HOOD

No voltage is present at the damper when the kitchen vent hood is operating. Verify that there is 24VAC present at the transformer. If voltage is available, verify that the kitchen vent hood is drawing four (4) or more amps or that multiple wire wraps are being used (see **FIGURE 4**). If the range hood has multiple speeds, measure the current draw of the hood at the lowest speed for which make-up air is needed.

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