

APPLICATION

Most building codes require a certain amount of fresh air to overcome the effects of CO₂ during times when the space is occupied. Use of fresh air dampers on HVAC equipment is an inexpensive way to allow fresh air into the building. McDaniel Metals offers both a manual and motorized fresh air damper to fit Lennox light commercial packaged equipment. The manual fresh air damper is installed and fixed in place to allow a certain amount of fresh air to circulate at all times. The motorized fresh air damper includes a small two position actuator that opens the damper when the indoor blower is running and closes the damper when the blower turns off.

MANUAL FRESH AIR DAMPER INSTALLATION

1. Remove the damper assembly from its container and inspect for damage or shortages
2. Locate and remove the filter access panel and evaporator access panel below it.
3. Attach the damper panel in place of the evaporator access panel with the screws removed in step 2.
4. Locate the 5/16 set screws at the bottom of the slide damper and loosen them.
5. Slide the damper down until the damper is positioned to provide the correct amount of fresh air. See 'DETERMINING DAMPER SET POINT' section for guidance.
6. Tighten the set screws.
7. Assemble the hood.
8. Use the screws provided to secure the hood to the damper.
9. Reinstall the filter access door.

MOTORIZED FRESH AIR DAMPER INSTALLATION

1. Remove the damper assembly from its container and inspect for damage or shortages.
2. Locate and remove the filter access panel and evaporator access panel below it.
3. Attach the damper panel in place of the evaporator access panel with the screws removed in step 2.
4. Locate the 5/16 set screws at the bottom of the slide damper and loosen them.
5. Slide the damper down until the damper is positioned to provide the correct amount of fresh air. See 'DETERMINING DAMPER SET POINT' section for guidance.
6. Tighten the set screws.
7. Assemble the hood.
8. Use the screws provided to secure the hood to the damper.
9. Locate the economizer/damper harness in the evaporator section and remove the factory installed jumper and plug the male 15 pin damper plug into the unit harness. **NOTE: Please leave the factory jumper with the unit should it be needed for future service.**
10. Reinstall the filter access door.

DETERMINING DAMPER SET POINT

While it is possible to estimate the amount of fresh air by visually adjusting the manual fresh air damper, a more accurate determination can be made using a digital thermometer and the equation below.

$$(T_o \times O_A) + (T_r \times R_A) = T_m$$

T_o = Outdoor air temperature

O_A = Percent of outdoor air

T_r = Return air temperature

R_A = Percent of return air

T_m = Resulting mixed air temperature

Example:

Fresh air required is 10% outdoor air.

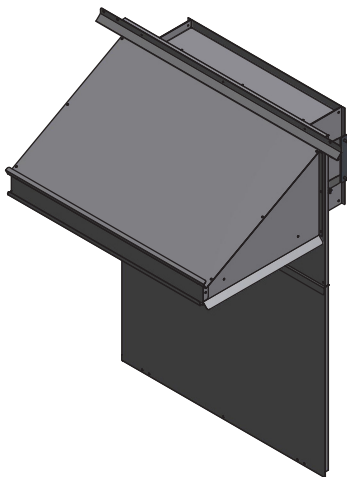
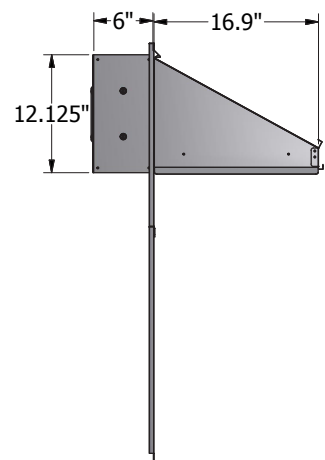
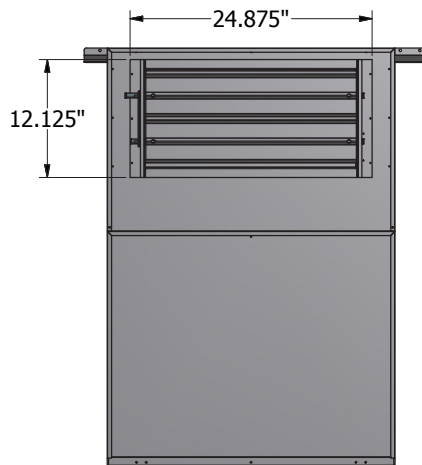
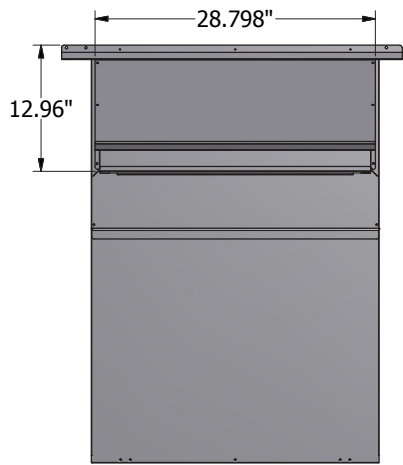
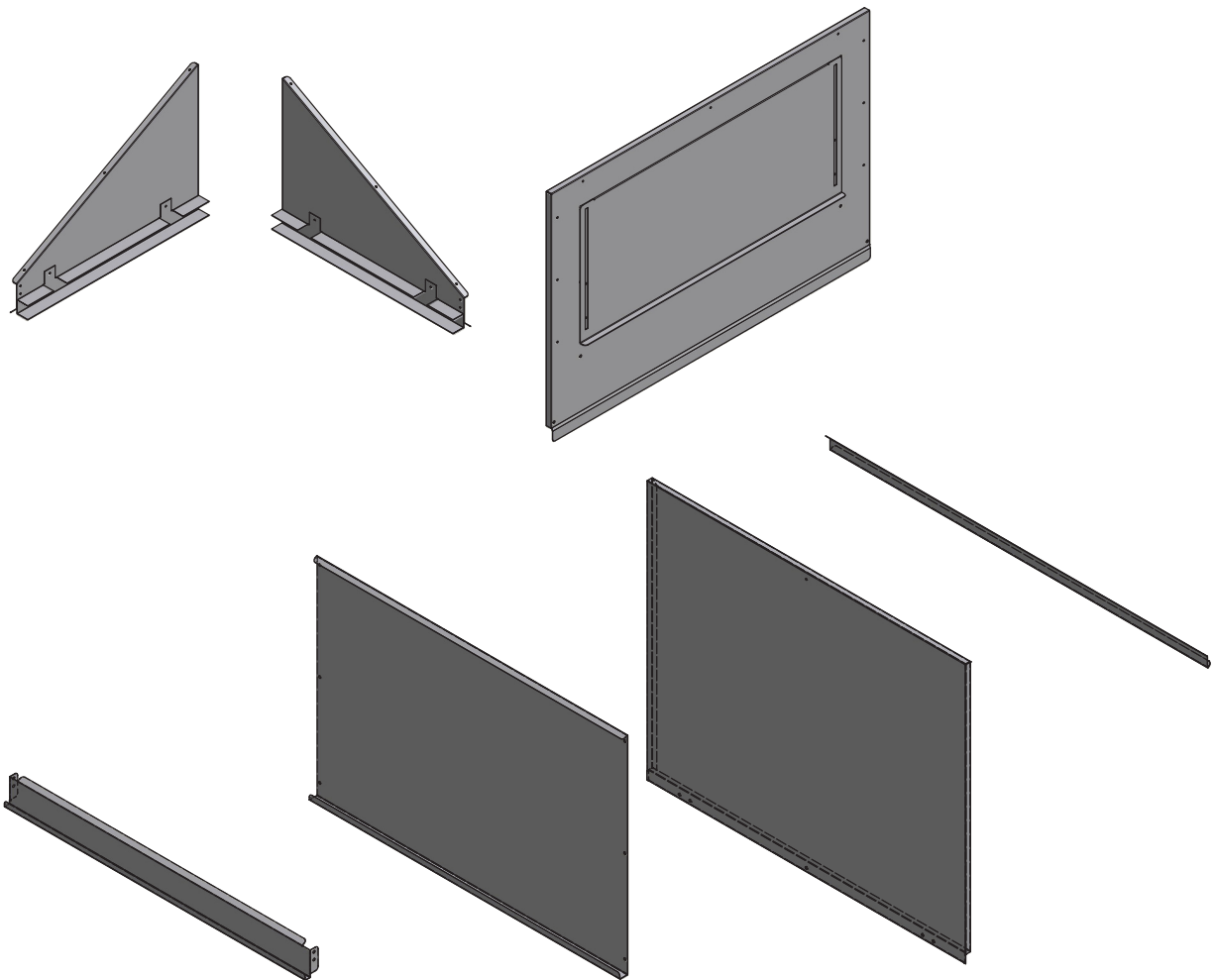
Outdoor air temperature is 60 degrees F.

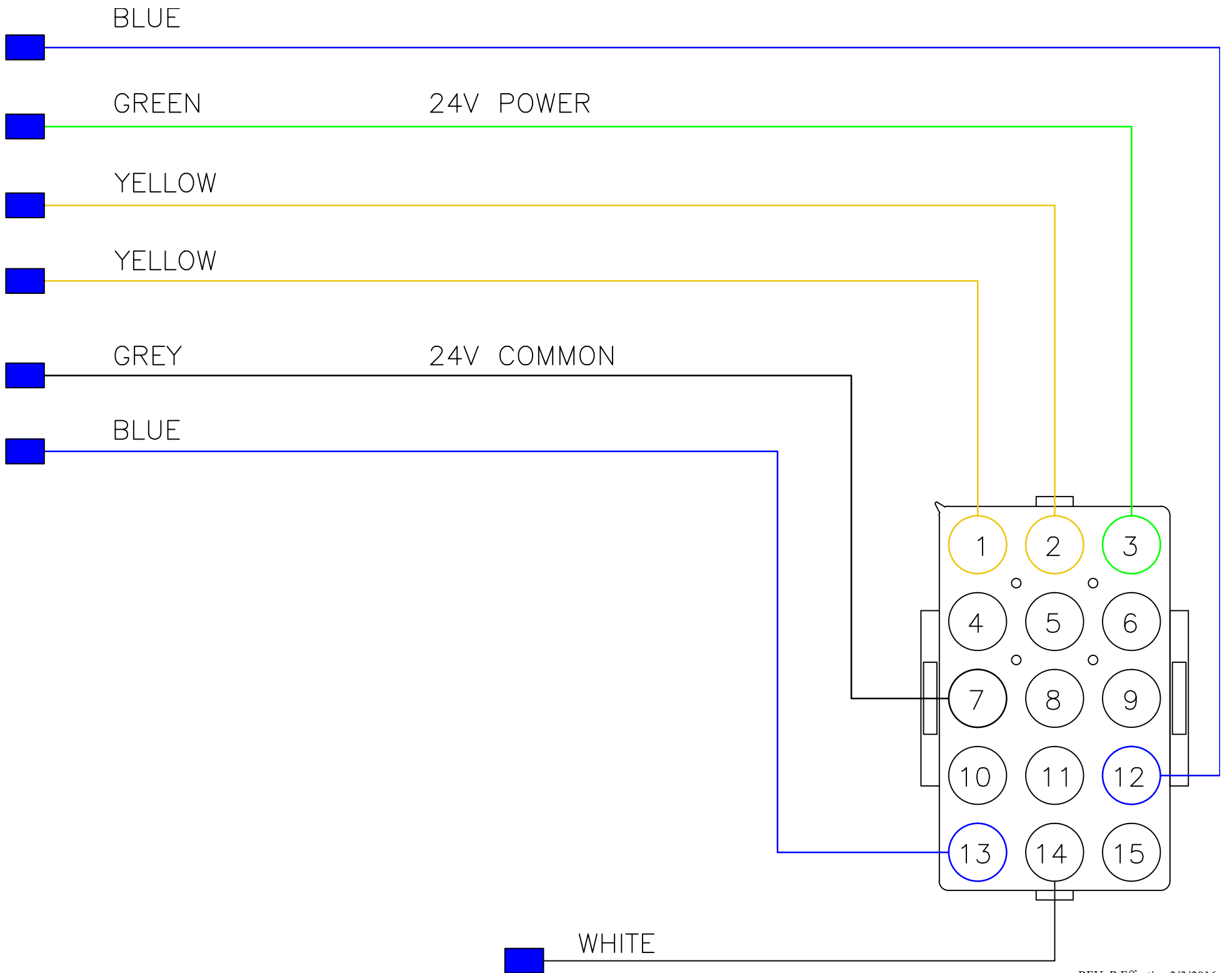
Return air temperature is 75 degrees F.

$$(0.1 \times 60) + (0.9 \times 75) =$$








$$6.0 + 67.5 = 73.5$$

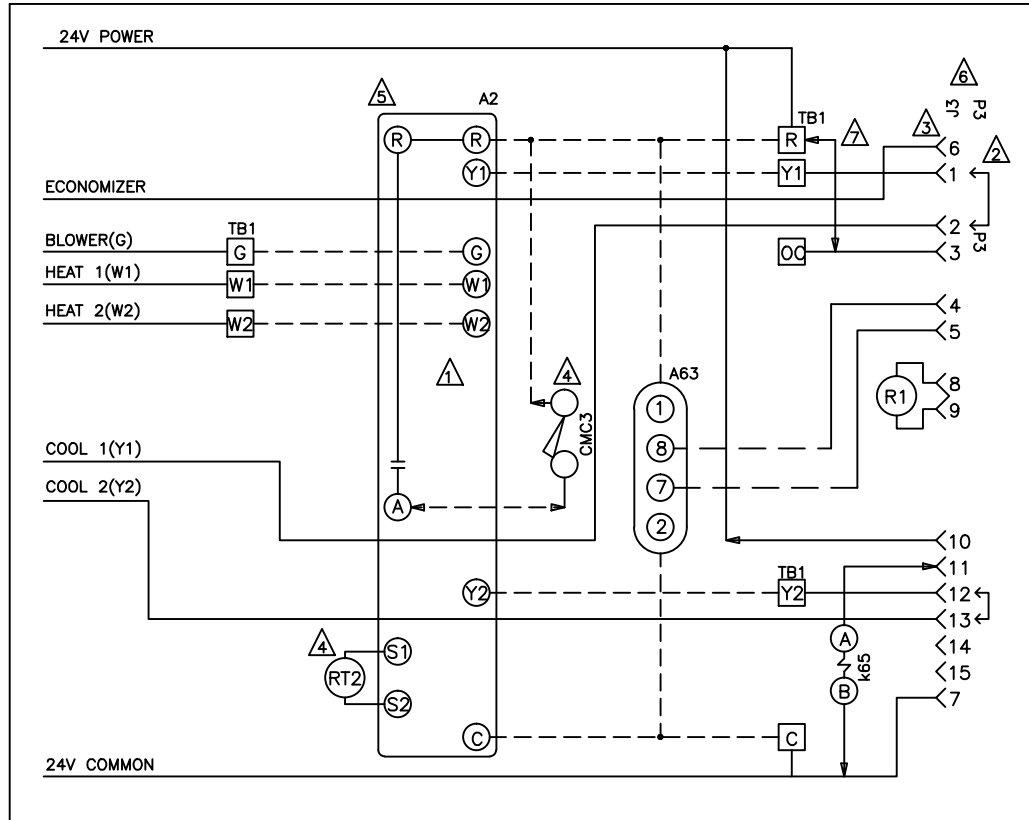
Mixed air temperature will be 73.5 degrees F when the O_A is 60 degrees F and the R_A is 75 degrees F with 10% outdoor air.



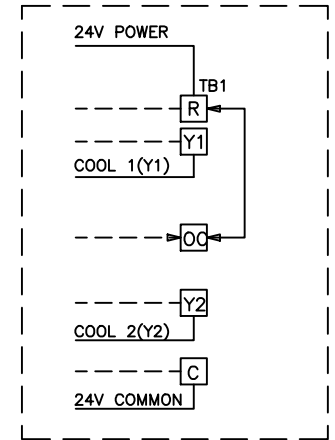


KEY	DESCRIPTION
	COMPONENT
A2	ELECTRONIC THERMOSTAT SENSOR
A63	CO2 SENSOR
CMC3	TIME CLOCK
J3	UNIT ECONOMIZER PLUG
K65	EXHAUST FAN RELAY
P3	ECONOMIZER BYPASS PLUG
R1	MIXED AIR SENSOR
RT2	REMOTE THERMOSTAT SENSOR
TB1	CLASS II VOLTAGE TERMINAL STRIP

-  THERMOSTAT SUPPLIED BY USER
-  REMOVE P3 WHEN ECONOMIZERS USED. ONLY ON KCA, KGA, AND KHA 180 THROUGH 300 UNITS
-  J3 MAXIMUM LOAD 20VA 24VAC CLASS II
-  TIME CLOCK CONTACTS (OPTIONAL) CLOSED OCCUPIED
-  TOUCH SCREEN THERMOSTAT
-  J3 AND P3 ARE NOT USED ON KCA, KGA, AND KHA 092 THROUGH 150 UNITS WITHOUT ECONOMIZER
-  REMOVE JUMPER BETWEEN TB1-R AND TB1-OCP WHEN USING A NIGHT SETBACK THERMOSTAT



← OPTIONAL COMPONENTS
 - - - FIELD WIRING



CONNECTION SCHEME FOR KCA, KGA, AND KHA 092 THROUGH 150 UNITS WITHOUT ECONOMIZER ONLY

POWER

1. TERMINAL STRIP TB1 ENERGIZES THERMOSTAT COMPONENTS WITH 24VAC.

OPERATION

2. TB1 RECEIVES DATA FROM THE ELECTRONIC THERMOSTAT A2 (Y1, Y2, W1, W2, G, OCP). THE 24VAC SIGNAL FROM TB1 ENERGIZES THE APPROPRIATE COMPONENTS FOR HEAT OR COOL DEMAND.

TYPICAL WIRE DIAGRAM FOR ALL 112-LX-XX MOTORIZED DAMPERS