

# PACKAGED UNITS KITS AND ACCESSORIES

506218-02  
7/2022  
Supersedes 4/2022

## D4P120 & D4S SMOKE DETECTOR KITS

### INSTALLATION INSTRUCTIONS FOR SMOKE DETECTOR KITS USED WITH KC/KG/KH024-090 & LG/LC/LH/LD 036-074 UNITS

#### Shipping and Packing List

##### 21Z11; 603408-11

##### Single-sensor kit contains the following:

- 1 - Smoke detector sensor
- 1 - Smoke detector power board
- 1 - Supply bracket
- 1 - Supply brace
- 1 - Return bracket (used on KC, KG & KH units only)
- 1 - Return brace (used on KC, KG & KH units only)
- 1 - Power harness
- 1 - Supply or return air harness
- 1 - Jumper harness
- 1 - Metal sampling tube
- 1 - Plastic exhaust tube
- 1 - Magnet
- 1 - Sensor manufacturer's instructions
  - #10 - 16 X 3/4" sheet metal screws
  - #8 - 32 X 1" thread-forming screws

##### 21Z12; 603408-12

##### Dual-sensor kit contains the following:

- 2 - Smoke detector sensors
- 1 - Smoke detector power board
- 1 - Supply bracket
- 1 - Supply brace
- 1 - Return bracket (used on KC, KG & KH units only)
- 1 - Return brace (used on KC, KG & KH units only)
- 1 - Power harness
- 1 - Supply and return air harness
- 2 - Metal sampling tubes
- 2 - Plastic exhaust tubes
- 2 - Magnets
- 1 - Sensor manufacturer's instructions
  - #10 - 16 X 3/4" sheet metal screws
  - #8 - 32 X 1" thread-forming screws

#### Application

**LG, LC, LH, and LD Units** -- Smoke detector will send a 24Vac signal to the unit controller when smoke is sensed. Unit controller default mode will de-energize unit.

**KC, KG and KH Units** -- Smoke detector will interrupt the 24Vac signal to the unit control circuit when smoke is sensed. Unit will be de-energized.

#### Identify Harnesses

Three harnesses are provided in the single sensor kit and two harnesses are provided in the dual sensor kit. Use wire labels, length of harnesses and number and size of connectors to determine appropriate harnesses used in each application. Refer to figure 1 for 53W78 single sensor kits and figure 2 for 54W79 dual sensor kits.

#### Installation

Turn the electrical power to unit OFF at disconnect switch.

### **⚠ WARNING**

**Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional installer, service agency or the gas supplier.**

### **⚠ WARNING**

**To prevent serious injury or death:**

1. **Lock-out/tag-out before performing maintenance.**
2. **If system power is required (e.g., smoke detector maintenance), disable power to blower, remove fan belt where applicable, and ensure all controllers and thermostats are set to the "OFF" position before performing maintenance.**
3. **Always keep hands, hair, clothing, jewelry, tools, etc., away from moving parts.**

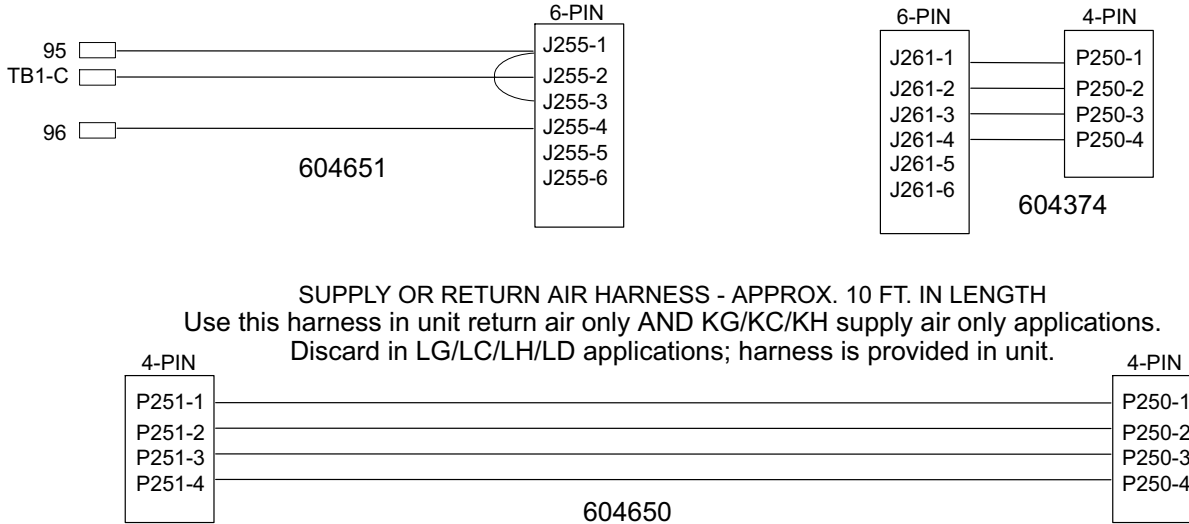
### **⚠ CAUTION**

**As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.**

**HARNESS IDENTIFICATION (not to scale)  
53W78 SINGLE SENSOR KITS  
(SUPPLY AIR ONLY OR RETURN AIR ONLY  
APPLICATIONS)**

**POWER HARNESS - 2 FT. IN LENGTH**  
Used in KG/KC/KH applications.  
Discard in LG/LC/LH/LD applications.

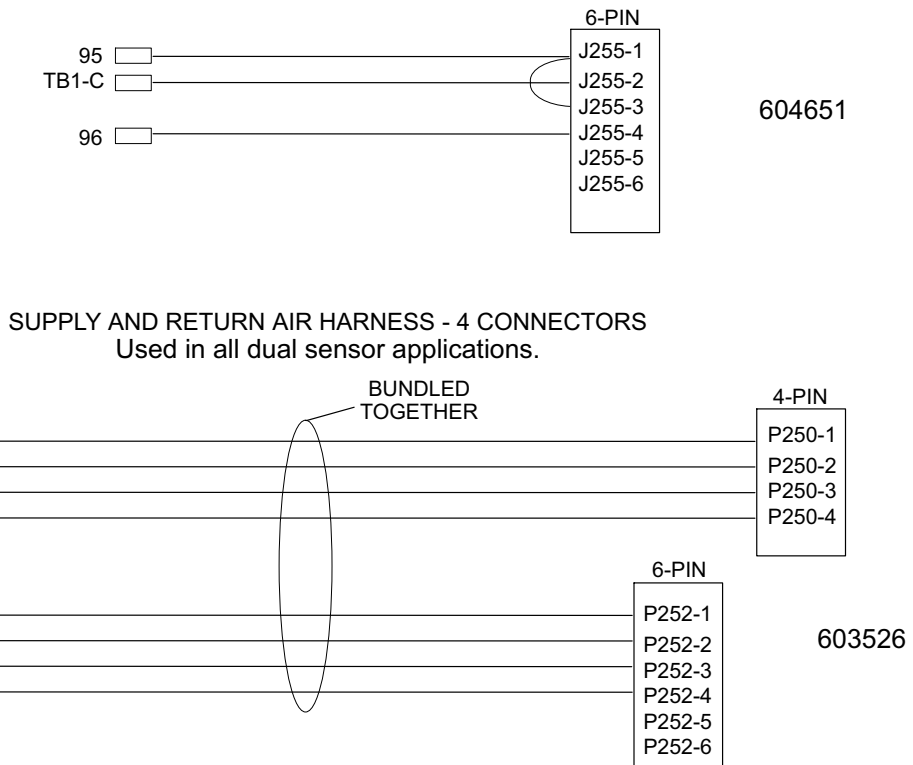
**JUMPER HARNESS - 4" IN LENGTH**  
Used in LG/LC/LH/LD supply air only applications.  
Discard harness in other applications.



**FIGURE 1**

**HARNESS IDENTIFICATION (not to scale)  
53W79 DUAL SENSOR KITS  
(COMBINATION SUPPLY AIR AND RETURN AIR APPLICATIONS)**

**POWER HARNESS - 2 FT. IN LENGTH**  
Used in all KG/KC/KH unit applications.  
Discard in all LG/LC/LH/LD unit applications.



**FIGURE 2**

## Installation - continued

### Smoke detector sensor and power board installation

Use manufacturer's instructions provided with smoke detector to install sensor(s) and power board. Refer to figure 3 for location of power board, supply air sensor and return air sensor on units with an economizer. For location of return air sensor on units without an economizer, refer to figure 4 for KC, KG and KH units, and figure 5 for LG, LC, LH, and LD units.

### Sampling tube installation

- 1 - Slide metal sampling tube onto the back side of the sensor as shown in figure 6. When sensor is installed in return air applications, slide plastic exhaust tube onto back side of the sensor as shown in figure 6.  
**NOTE - Plastic exhaust tube is NOT used in supply air applications and should be discarded.**
- 2 - Orient sampling tube so that holes point toward the air stream.

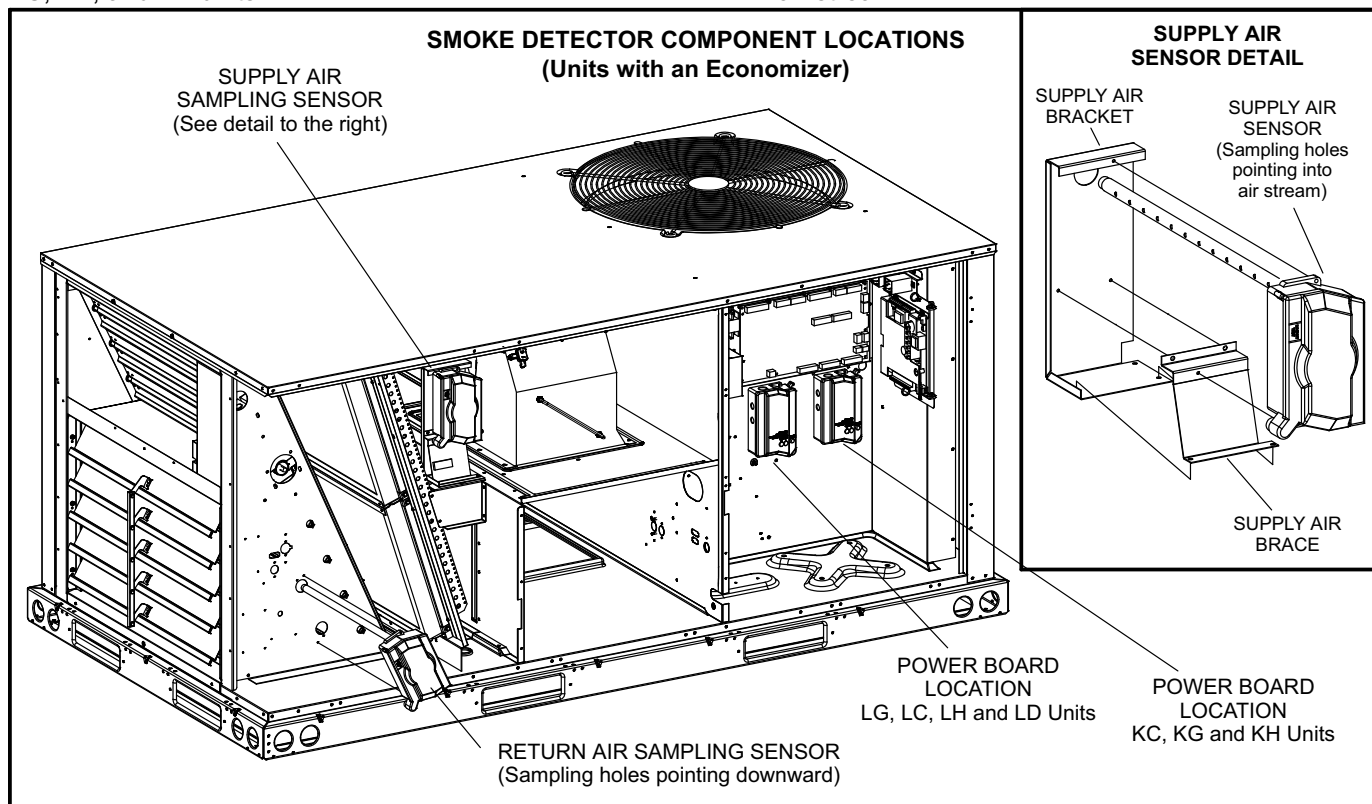


FIGURE 3

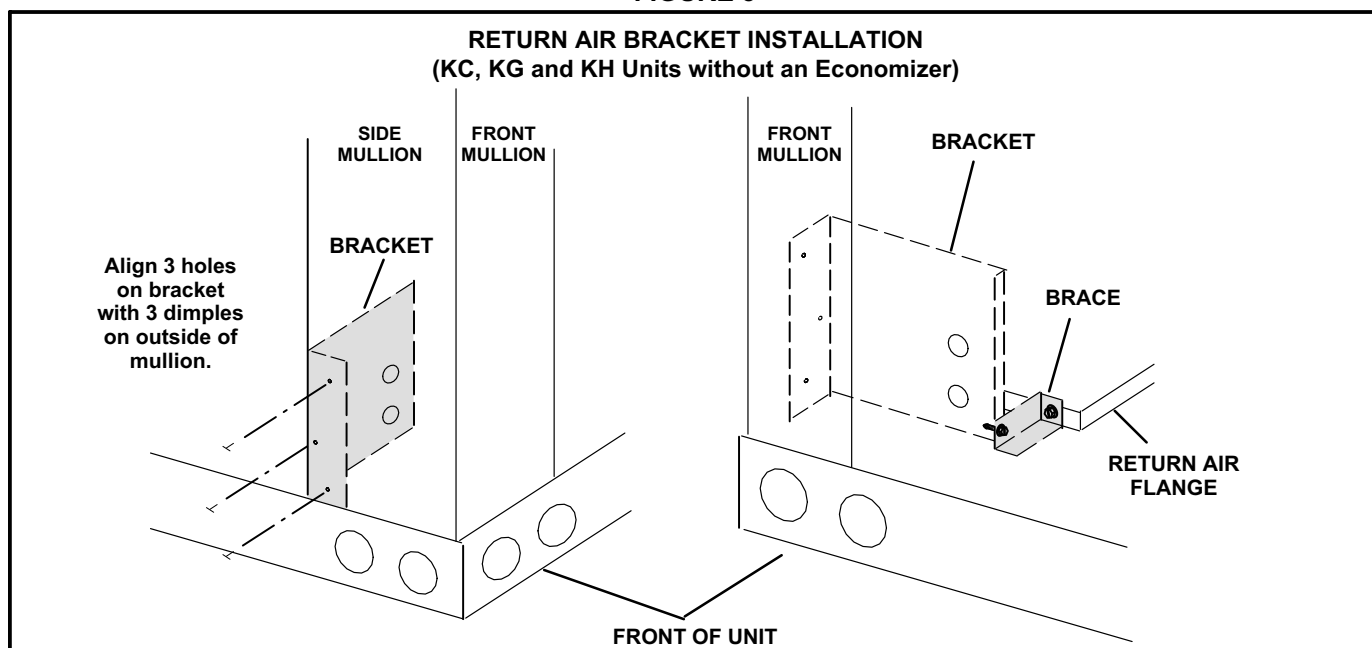
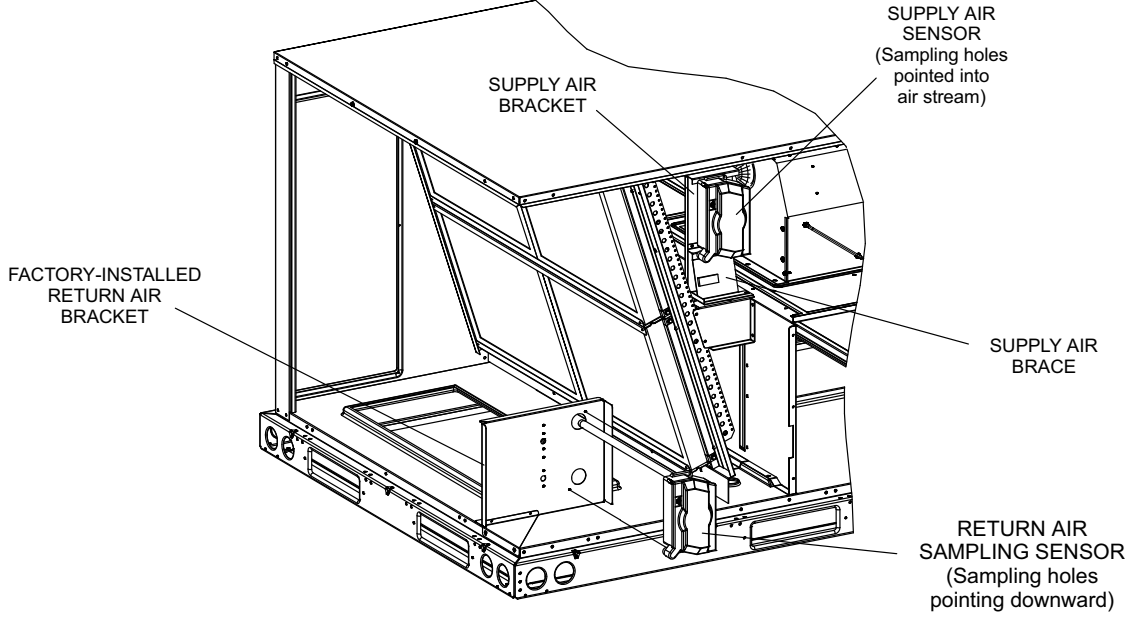


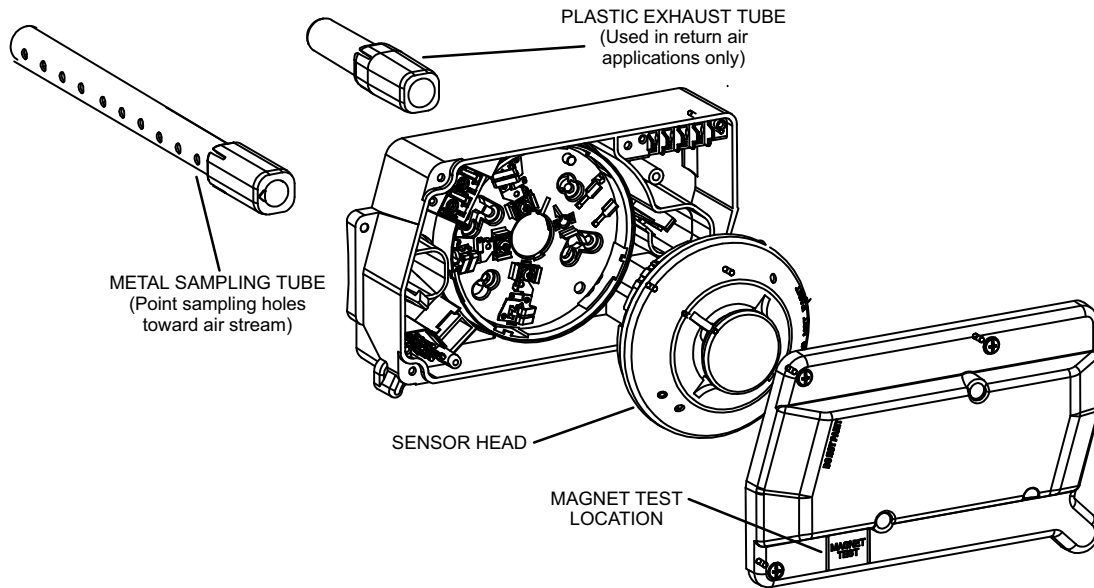
FIGURE 4

**SMOKE DETECTOR COMPONENT LOCATIONS  
(LG/LC/LH/LD Units Without an Economizer)**

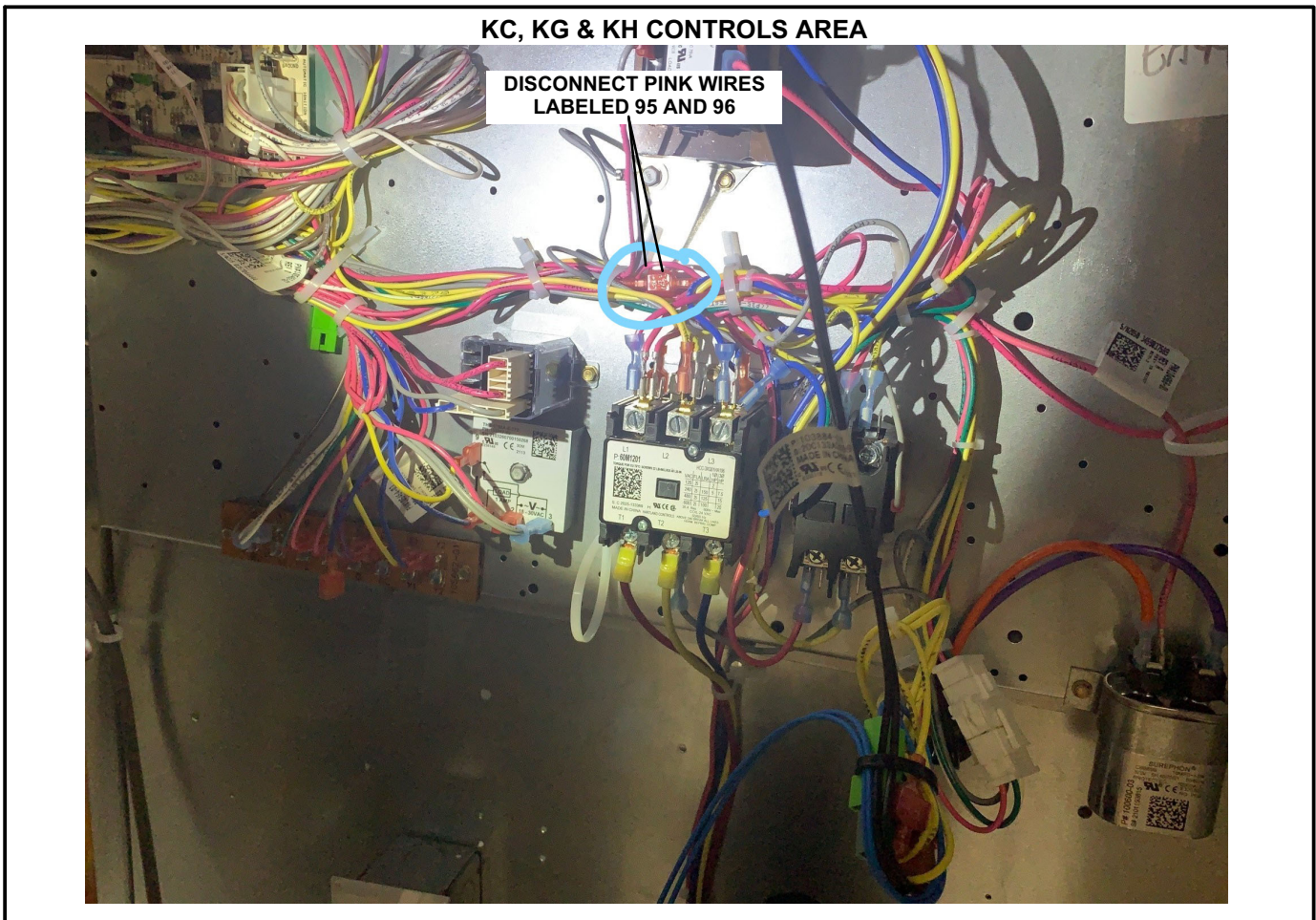


**FIGURE 5**

**SMOKE DETECTOR SENSOR WITH SAMPLING TUBE AND EXHAUST TUBE**



**FIGURE 6**

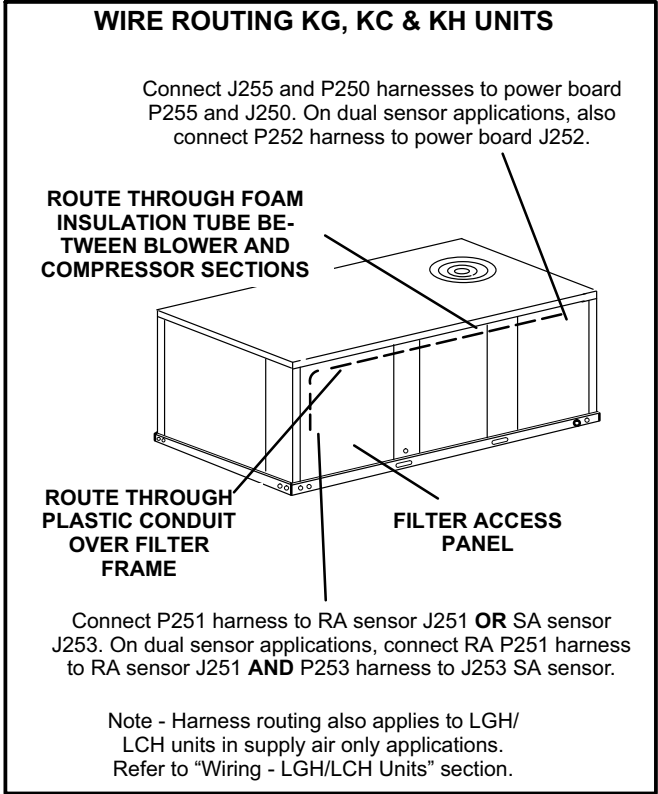


**FIGURE 7**

**Wiring - KG/KC/KH Units**

- 1 - Locate and disconnect pink wires labeled 95 and 96 in the control area above compressor. See figure 7.
- 2 - Connect wires labeled 95, 96 and TB1-C from the kit harness to wires labeled 95, 96 and TB1-C in unit.
- 3 - Route harness wires to the top of the unit. Secure to existing bundle of wires and route to control area above compressor. See figure 8. Make sure wires are secured away from other components.
- 4 - Make jack/plug connections as shown in figure 9 when installing return air smoke detector only, figure 10 when installing supply air smoke detector only, and figure 11 when installing both supply and return air smoke detectors. Refer to respective wiring diagrams in figure 12, 13 and 14.

*NOTE - In single-sensor applications, the wiring harness is sized for return air applications. There will be excess wiring in supply air applications. Gather excess wire and secure away from other components.*

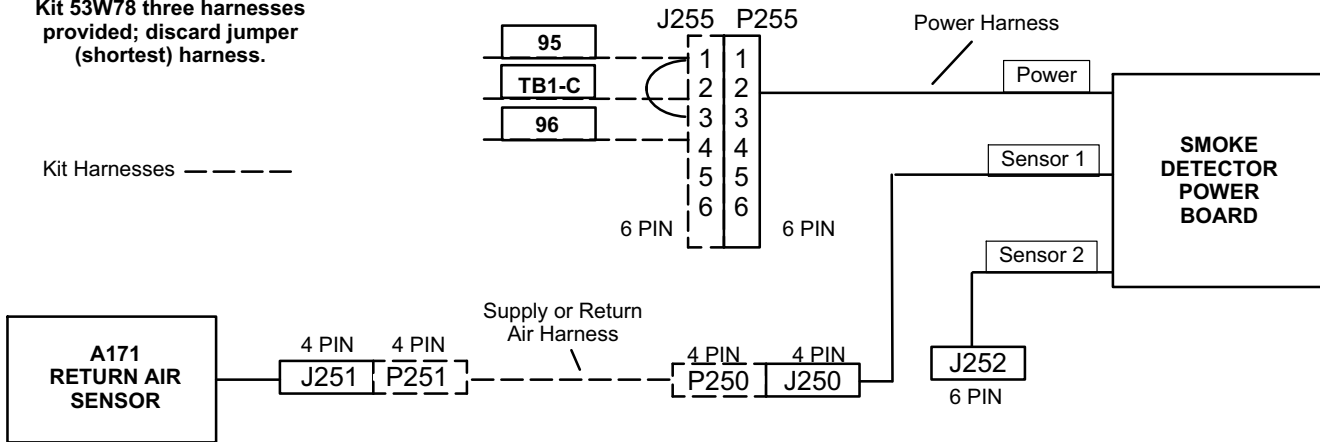


**FIGURE 8**

**KC, KG or KH Unit Application with Single Return Air Smoke Detector**  
 (Note: Verify that power board DIP switch is set to 1)

Kit 53W78 three harnesses provided; discard jumper (shortest) harness.

Kit Harnesses -----

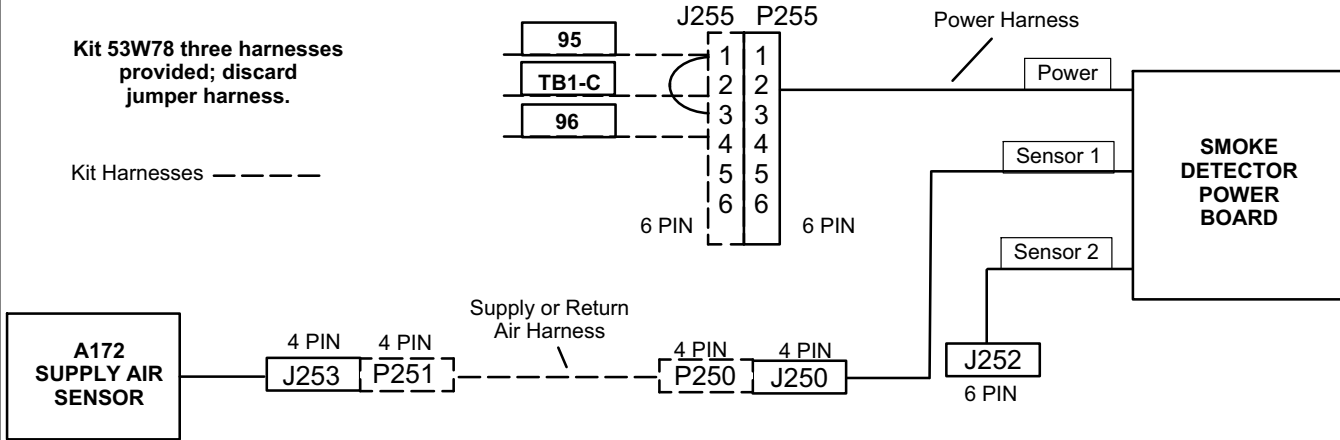


**FIGURE 9**

**KC, KG or KH Unit Application with Single Supply Air Smoke Detector**  
 (Note: Verify that power board DIP switch is set to 1)

Kit 53W78 three harnesses provided; discard jumper harness.

Kit Harnesses -----

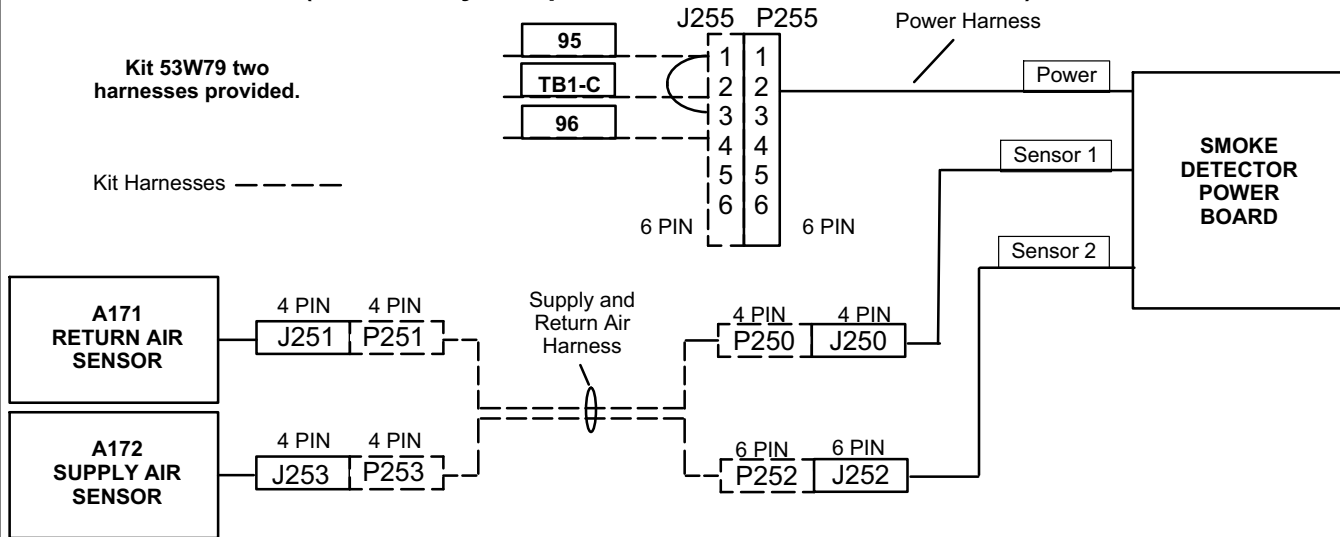


**FIGURE 10**

**KC, KG or KH Unit Application with Return Air and Supply Air Smoke Detector**  
 (Note: Verify that power board DIP switch is set to 2)

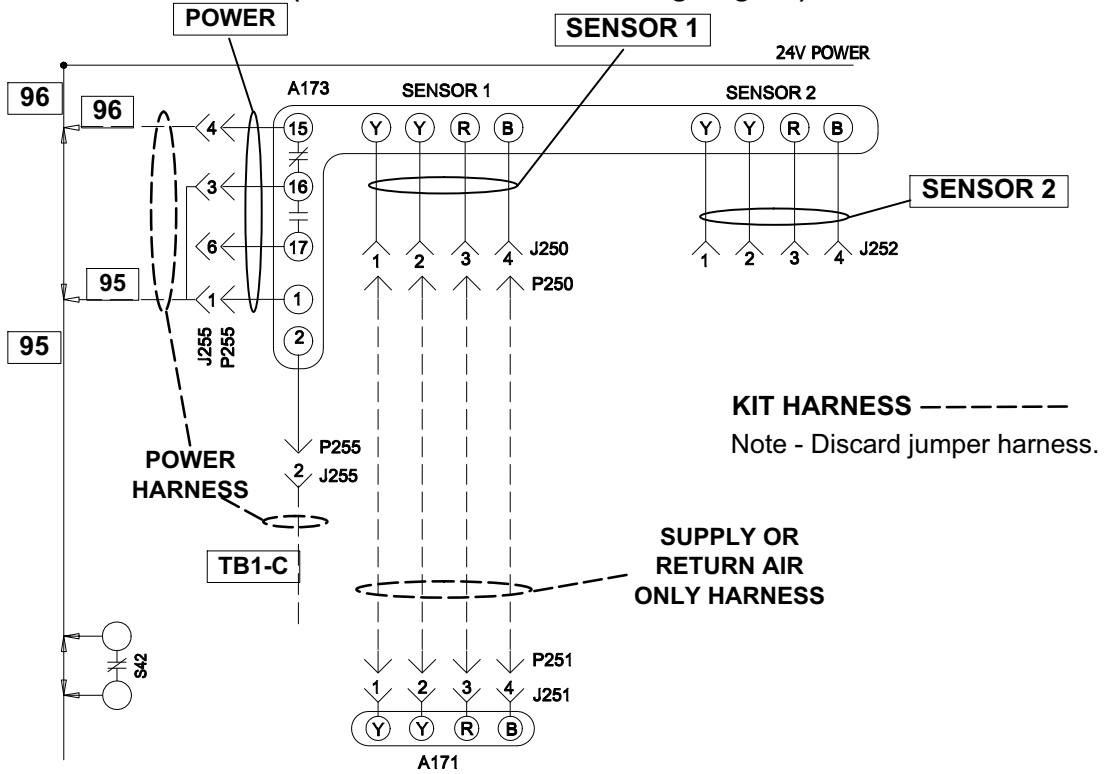
Kit 53W79 two harnesses provided.

Kit Harnesses -----



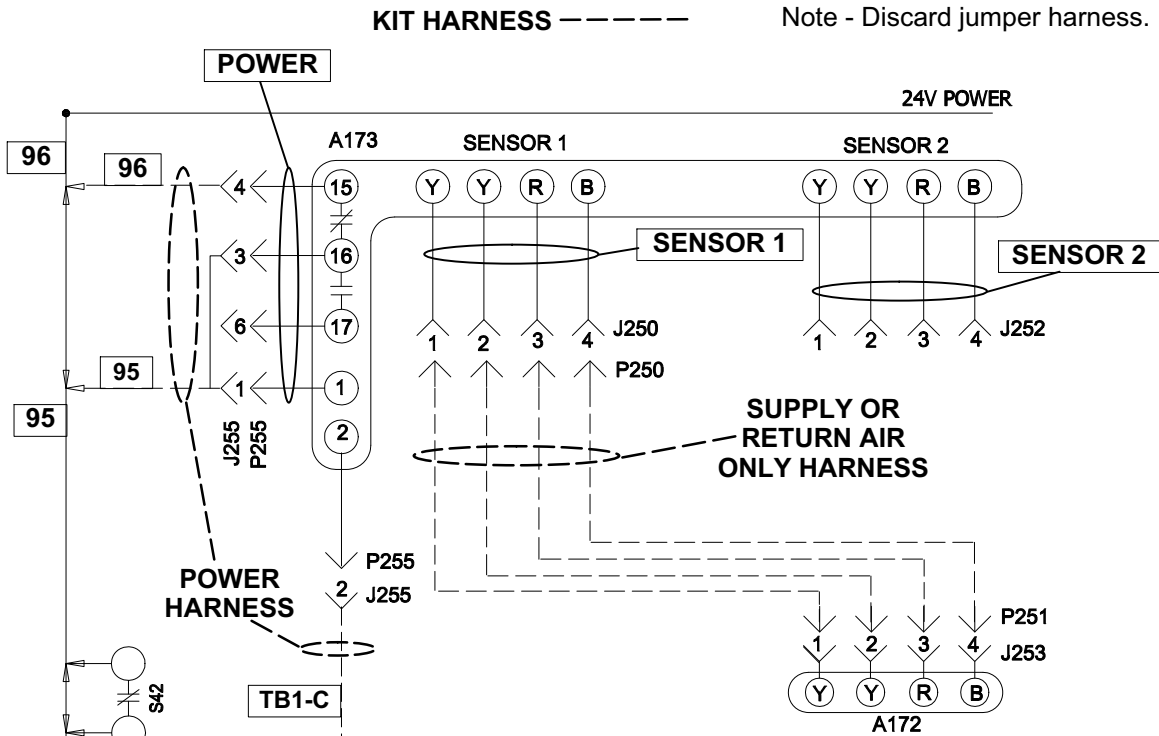
**FIGURE 11**

**KG/KC/KH SMOKE DETECTOR WIRING - RETURN AIR ONLY**  
 (refer to unit "B" section wiring diagram)



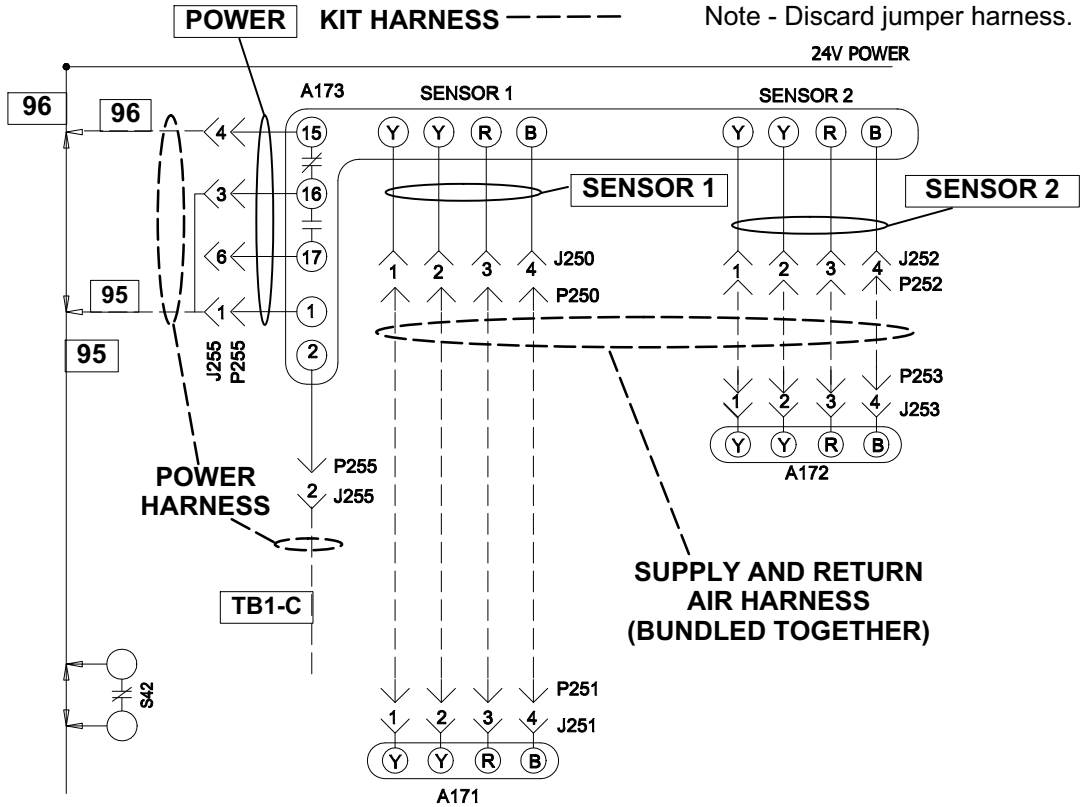
**FIGURE 12**

**KG/KC/KH SMOKE DETECTOR WIRING - SUPPLY AIR ONLY**  
 (refer to unit "B" section wiring diagram)



**FIGURE 13**

**KG/KC/KH SMOKE DETECTOR WIRING - SUPPLY AND RETURN AIR**  
 (refer to unit "B" section wiring diagram)



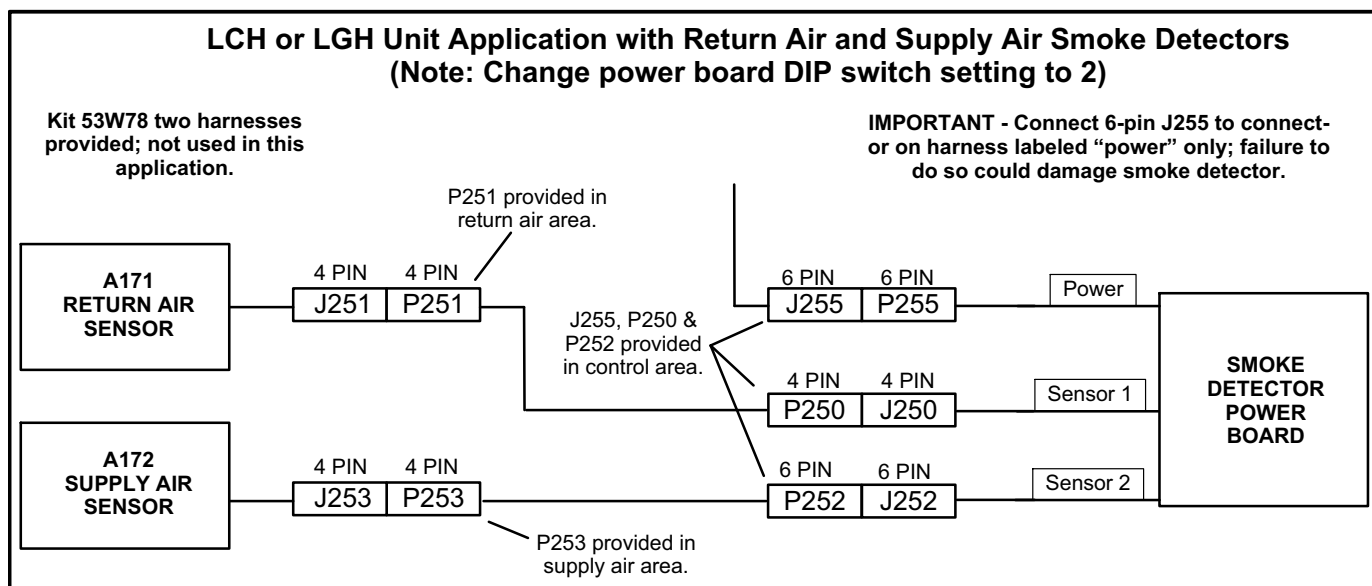
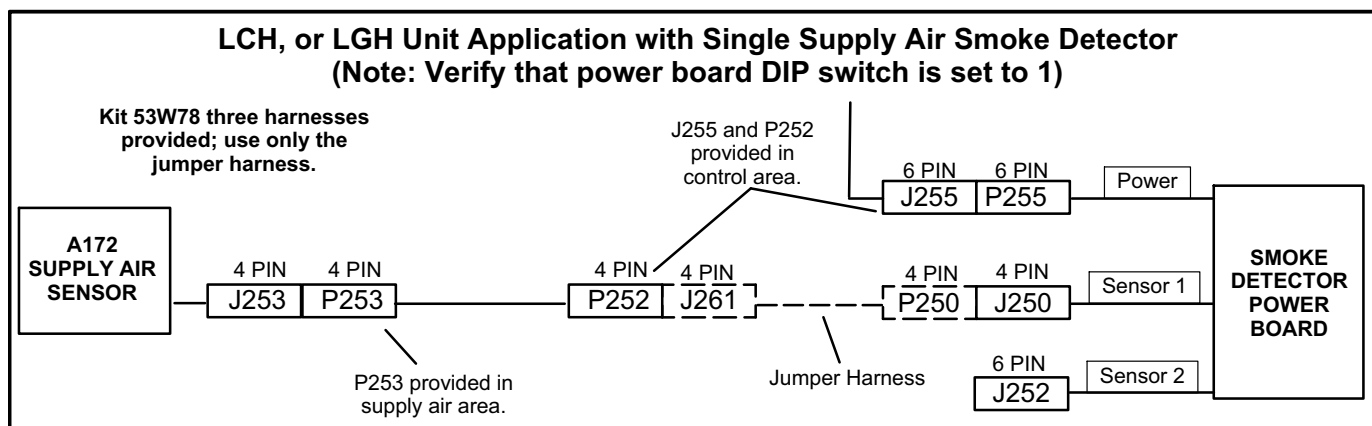
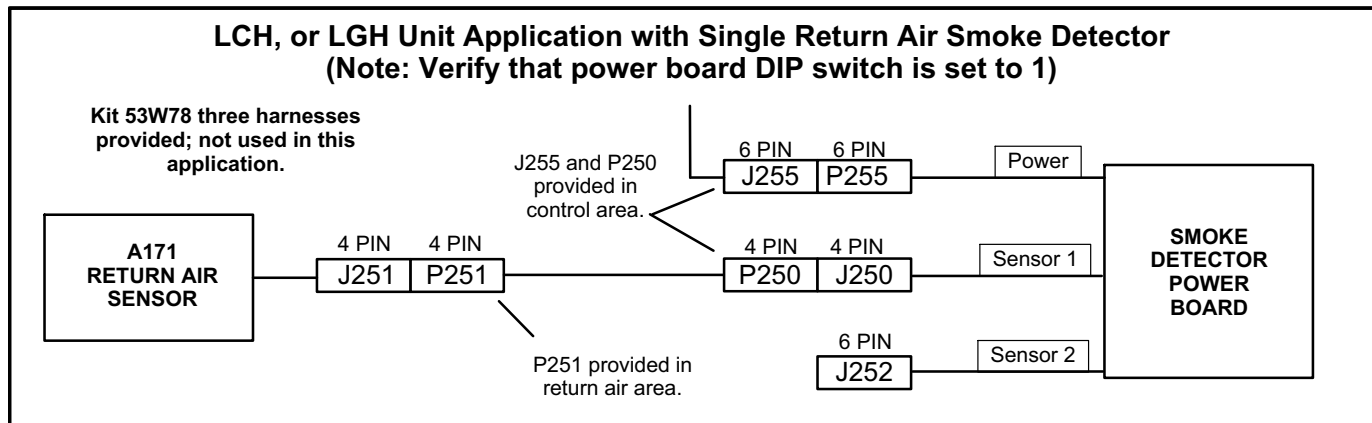
**FIGURE 14**

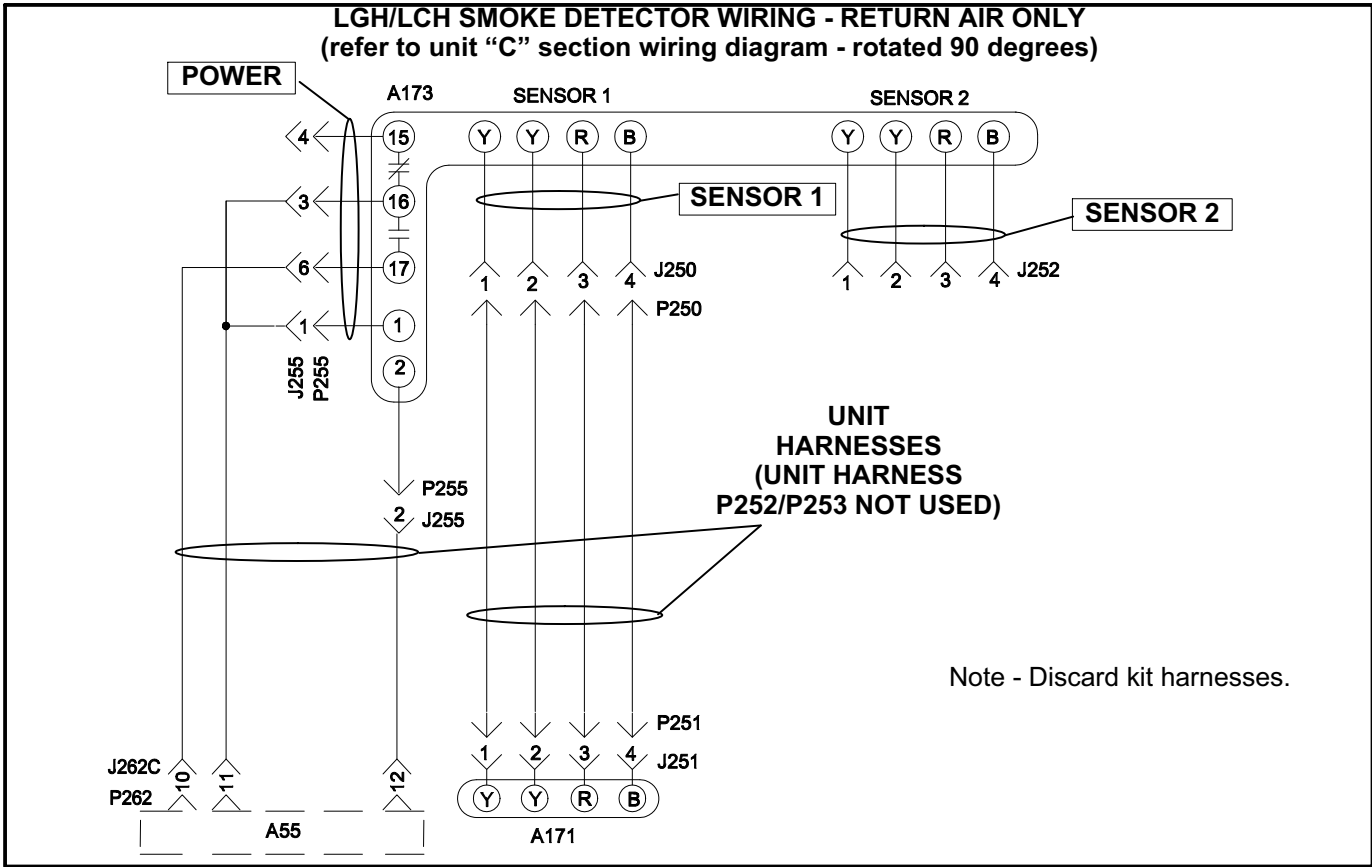


## Wiring - LGH & LCH Units

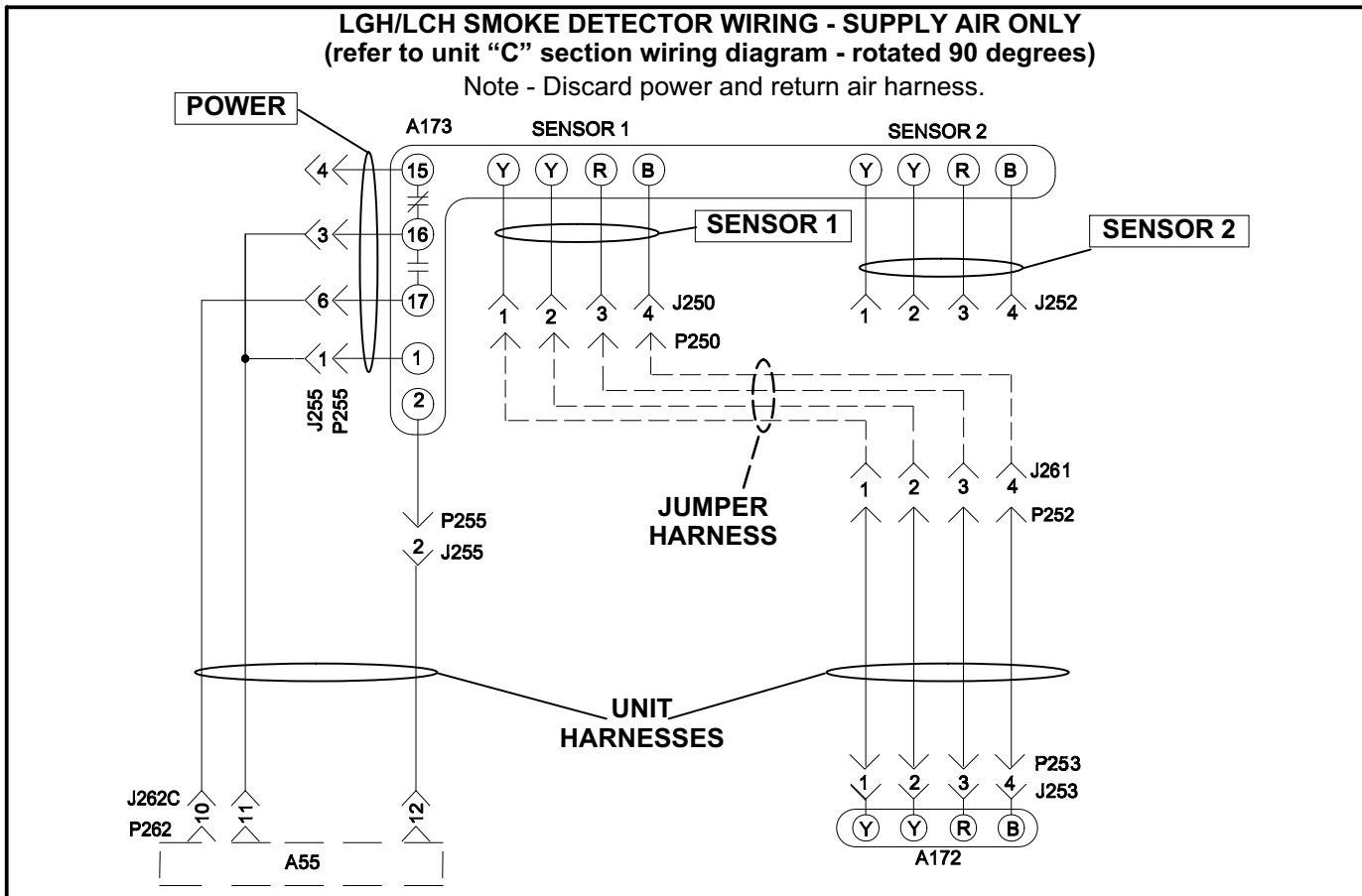
Make jack/plug connections as shown in figure 15 when installing return air smoke detector only, figure 16 when installing supply air smoke detector only and figure 17 when installing both supply and return air smoke detectors. Refer to wiring diagrams in figure 18, 19 and 20.

The kit jumper harness is used in single supply air applications only. Route harness as shown in figure 8. Discard harnesses in other applications.



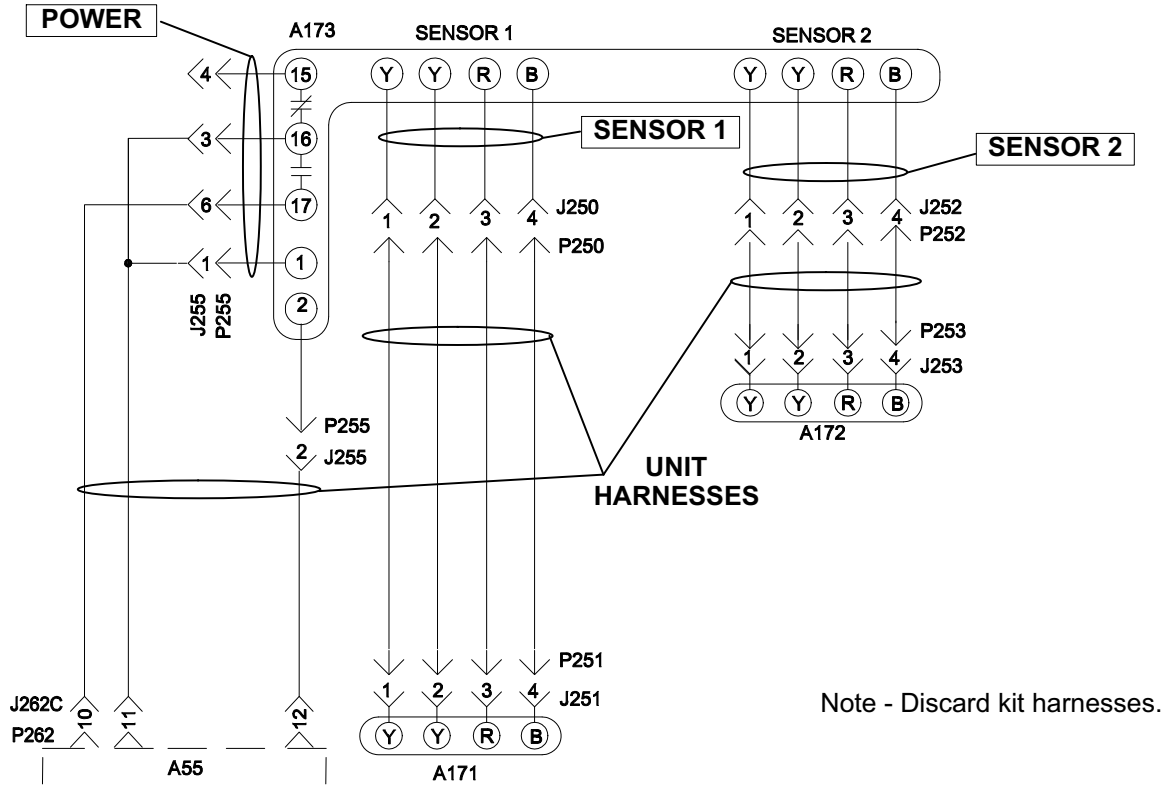


**FIGURE 18**



**FIGURE 19**

**LGH/LCH SMOKE DETECTOR WIRING - SUPPLY AND RETURN AIR**  
 (refer to unit "C" section wiring diagram - rotated 90 degrees)



**FIGURE 20**

## Wiring - LGM, LCM, LGT, LCT, LHT, LDT

Make jack/plug connections as shown in figure 21 when installing return air smoke detector only, figure 22 when installing supply air smoke detector only and figure 23 when installing both supply and return air smoke detectors. Refer to wiring diagrams in figure 24.

The kit jumper harness is used in single supply air applications only. Route harness as shown in figure 8. Discard harnesses in other applications.

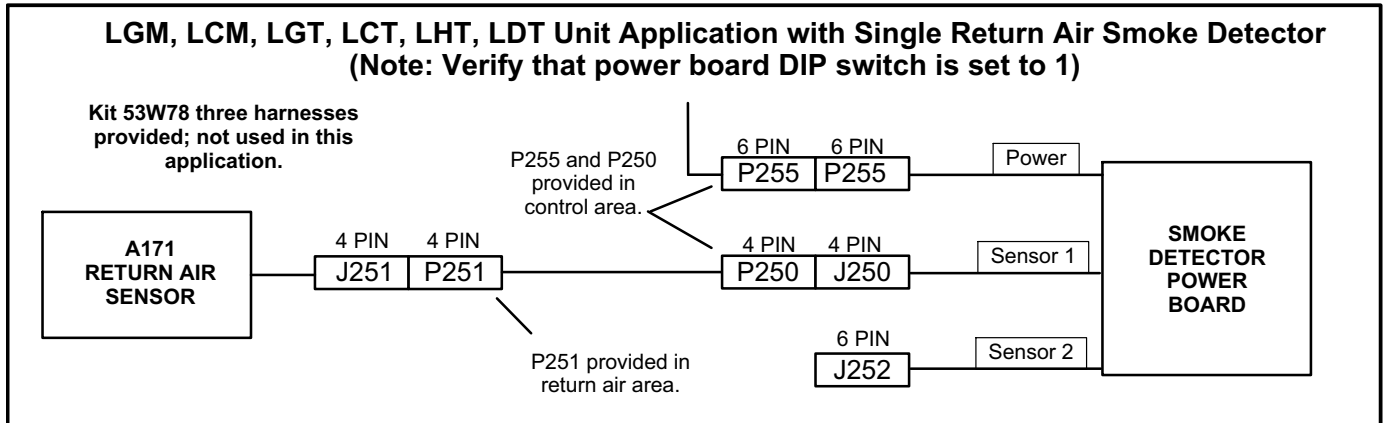


FIGURE 21

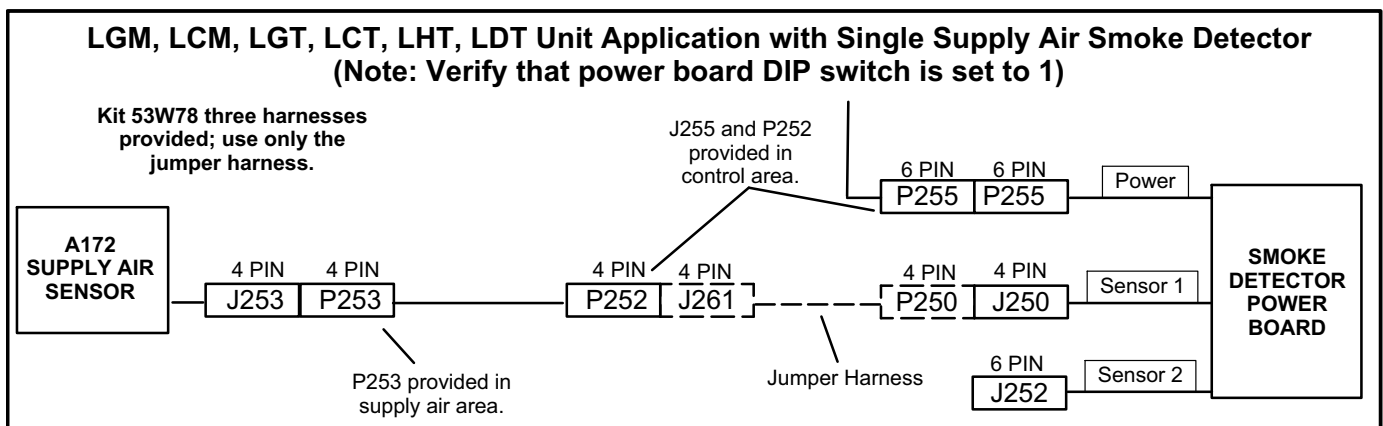


FIGURE 22

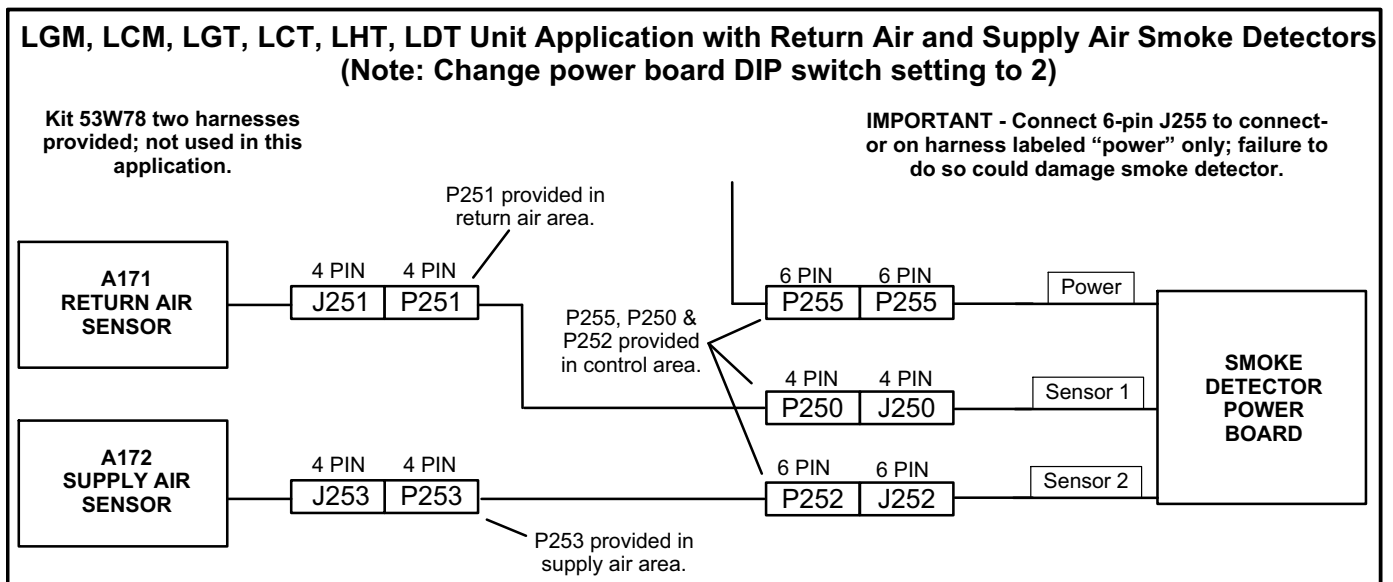
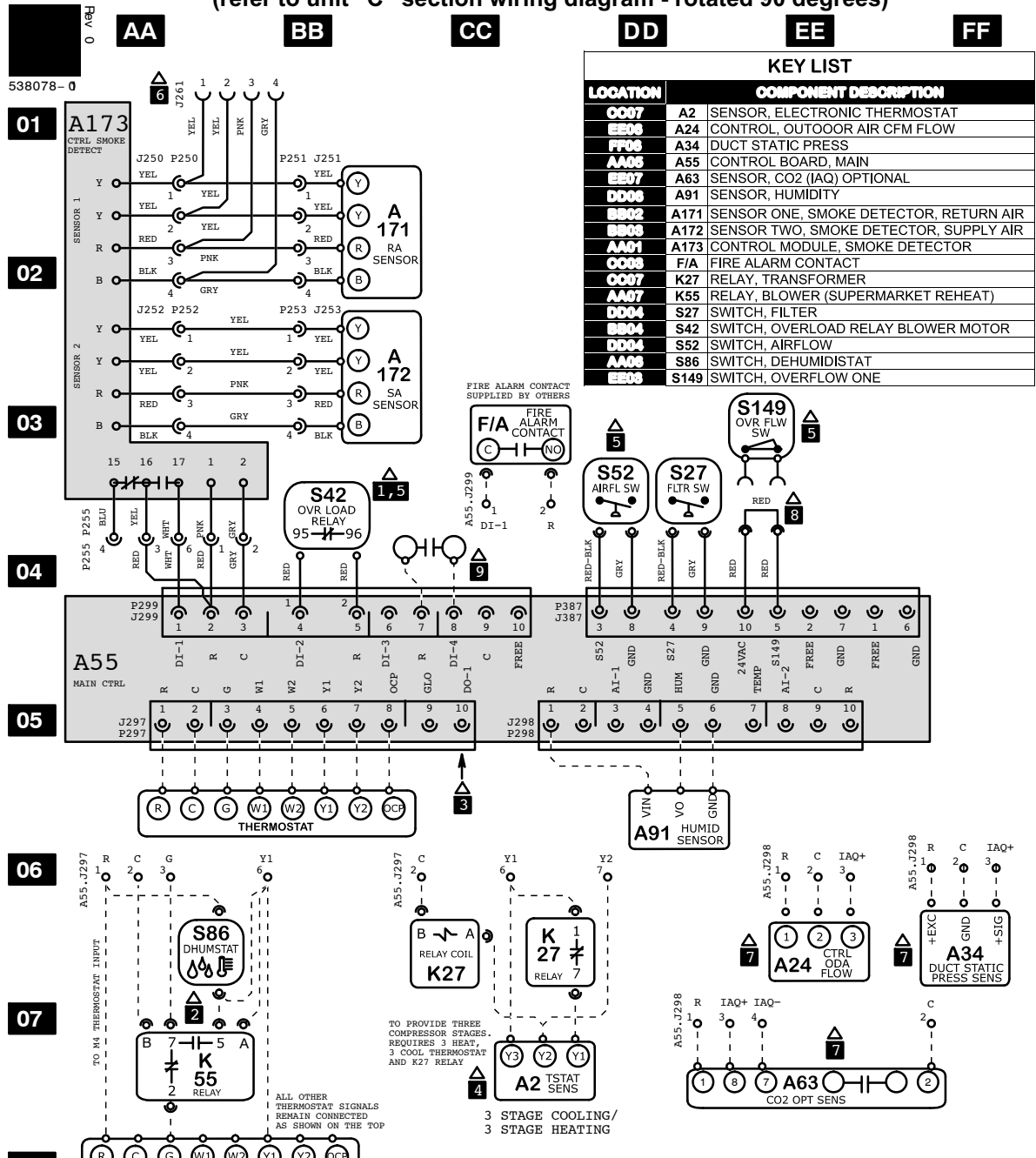


FIGURE 23

**LGM, LCM, LGT, LCT, LHT, LDT SMOKE DETECTOR WIRING - SUPPLY AND RETURN AIR**  
 (refer to unit "C" section wiring diagram - rotated 90 degrees)



| KEY LIST |                       |  |
|----------|-----------------------|--|
| LOCATION | COMPONENT DESCRIPTION |  |
| 0007     | A2                    | SENSOR, ELECTRONIC THERMOSTAT          |
| 0006     | A24                   | CONTROL, OUTDOOR AIR CFM FLOW          |
| FF06     | A34                   | DUCT STATIC PRESS                      |
| AA06     | A55                   | CONTROL BOARD, MAIN                    |
| 0007     | A63                   | SENSOR, CO2 (IAQ) OPTIONAL             |
| DD06     | A91                   | SENSOR, HUMIDITY                       |
| 0002     | A171                  | SENSOR ONE, SMOKE DETECTOR, RETURN AIR |
| 0003     | A172                  | SENSOR TWO, SMOKE DETECTOR, SUPPLY AIR |
| 0001     | A173                  | CONTROL MODULE, SMOKE DETECTOR         |
| 0008     | F/A                   | FIRE ALARM CONTACT                     |
| 0007     | K27                   | RELAY, TRANSFORMER                     |
| AA07     | K55                   | RELAY, BLOWER (SUPERMARKET REHEAT)     |
| DD04     | S27                   | SWITCH, FILTER                         |
| 0004     | S42                   | SWITCH, OVERLOAD RELAY BLOWER MOTOR    |
| DD04     | S52                   | SWITCH, AIRFLOW                        |
| AA06     | S86                   | SWITCH, DEHUMIDISTAT                   |
| 0006     | S149                  | SWITCH, OVERFLOW ONE                   |

- 01** 538078-0
- 02** A173 CTRL SMOKE DETECT
- 03** A171 RA SENSOR
- 04** A172 SA SENSOR
- 05** A55 MAIN CTRL
- 06** S86 DHUMSTAT
- 07** K27 RELAY
- 08** K55 RELAY
- 09** DENOTES OPTIONAL COMPONENTS AND WIRING
- CLASS II FIELD WIRING
- | NOTES |   |
|-------|---|
| 1     | FOR MOTORS WITH S42 EXTERNAL OVERLOAD LESS INVERTER, SEE INVERTER WITH BY PASS FOR S42 HOOK UP  |
| 2     | USE S86 DEHUMIDISTAT AND K55 FOR OPTIONAL SUPERMARKET REHEAT SCHEME, PRODIGY PARAMETERS NEED TO BE MODIFIED UNDER THE SETTINGS MENU OR VIA UC SOFTWARE FOR SIMULTANEOUS HEATING AND COOLING |
| 3     | P297-10 (SR) IS SERVICE RELAY OUTPUT (24VAC) IF USED CONNECT TO AN INDICATOR LIGHT  |
| 4     | THERMOSTAT HOOKUP FOR PROGRAMMABLE CONFIGURATION OF THE BOARD (A55)   |
| 5     | PRODIGY SETTINGS MUST BE MODIFIED WHEN S42, S52, S149 ARE INSTALLED   |
| 6     | CONNECT P252 OF A172 SENSOR TO J261 ON SUPPLY AIR SMOKE DETECTOR ONLY   |
| 7     | FROM A63, A34 & A24, ONLY ONE CAN BE USED AT A TIME   |
| 8     | REMOVE JUMPER TO INSTALL S149   |
| 9     | EXTERNAL HUMIDITROL CONTACTS  |

**10** Model: LC, LG, LH, LD Series RTU  
 Thermostat  
 Voltage: All Voltages  
 Supersedes: N/A Form No: 538078-01 Rev: 0

|           |           |            |           |           |
|-----------|-----------|------------|-----------|-----------|
| HEATING   | COOLING   | COOLING    | ACCS      | ACCS      |
| SECTION A | SECTION B | SECTION B3 | SECTION C | SECTION D |

WIRING DIAGRAM FLOW

**FIGURE 24**

## Test Magnet(s)

A test magnet is provided in a bag assembly with each sensor. Remove the magnet from the bag assembly and place it on a metal surface near the sensor. The magnet is used during test procedures.

## Maintenance and Test Procedure Instructions

The sensor manufacturer's instructions, which are provided with each sensor, outline information on maintenance and test procedures. Place these instructions in the literature pouch for future reference.

