Medium Rooftop Units
12.5 to 27.5 Tons
Field-Installed Smoke Detectors

Installation Instructions

Part No. CRSMKKIT002A01, CRSMKSEN002A01

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SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes, including ANSI (American National Standards Institute) Z223.1. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguisher available for all brazing operations.

It is important to recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury and/or death.

Before beginning any modification, be certain that the main-line electrical disconnect switch is in the OFF position. Close the main gas supply shutoff valve. Tag disconnect switch and gas valve with suitable warning labels.

GENERAL

These instructions cover the installation of a return and/or supply smoke detectors in rooftop equipment from 12.5 to 25 tons. These apply to Gas-Electric, Electric-Electric and Heat Pump units. Table 1 outlines the accessory quantities required, depending on the desire for which option is needed.

Table 1 — Return and/or Supply Smoke Detector Requirements

	CRSMKKIT002A01	CRSMKSEN002A01
Return Smoke	1	1
Supply Smoke	1	1
Return and Supply Smoke	1	2

The primary intent of these detectors is to shut down the unit's air delivery services upon an alarm trip. They are not designed as a substitute for an open area smoke detector, a substitute for early warning detection, or a replacement for a building's regular fire detection system. Smoke detectors are not designed to detect toxic gases which can build up to hazardous levels in some fires. These devices will not operate without electrical

power. As fires frequently cause power interruptions, it is recommended that the installer further safeguards with your local fire protection specialist and code enforcement agency.

The new field-installed smoke detector kit includes an additional sensor bracket (50HE000361) and replaces the previous 10 ft and 5 ft sensor cables with two 15 ft sensor cables to accommodate the new mounting location. The new bracket and cables are compatible with older model smoke detectors; purchase of a new smoke detector is not necessary to utilize the new mounting location, bracket, and cables. See Table 2 for model usage. See Tables 3 and 4 for package contents.

Table 2 — Model Usage

ACCESSORY PART NUMBER USAGE	MODEL	SIZE
CRSMKKIT002A01, CRSMKSEN002A01	48/50HC	17-28
	48/50LC	14-26
	48/50TC	17-30
	50TCQ	17, 24
	548J	17, 24
	551J, 581J	17-28
	558J, 580J	17-30
	RAH, RGH	181-303
	RAS, RGS	210-336
	RHS	181, 243

Table 3 — Sensor Package Contents CRSMKSEN002A01

ITEM	PART NUMBER	QTY
Sensor Kit	HK50ZT001	1

Table 4 — Package Contents CRSMKKIT002A01

ITEM	PART NUMBER	QTY
Standard Harness Assembly	50HEHMRASTA01	1
SystemVu Harness	50LCHMRASTXA01	1
Pickup Tube	RN20ZT034	2
Sensor Cable (15 ft)	RM91ZT015	2
Connector	HW92JY003	2
Screw #8	AL56AU168	7
Sampling Tube	48HG503589	1
EMT to Seal Tight Connector	48HG501713	1
Sensor Bracket	48HG501658	1
Sensor Bracket	50HE000361	1
Screw #10	AL48AM217	10
Flexible Tube	50HE501410	1
Wire Ties	HY76TB125	6
Smoke Controller	HK28ZT001	1
Pickup Tube Coupling	HW40FA001	1
Sensor Bracket Return Vertical	50HE503632	1
Bracket Support Return Vertical	50HE503846	1
Pickup Tube Support Bracket Vertical	50HE002048	1
Sensor Bracket Return Horizontal	50HE503843	1
Bracket Support Return Horizontal	50HE503633	1
Pickup Tube Support Bracket Horizontal	50HE503844	1

DESCRIPTIONS

Controller

The controller includes a controller housing, a printed circuit board, and a clear plastic cover. The controller can be connected to one or two compatible duct smoke sensors. The clear plastic cover is secured to the housing with a single captive screw for easy access to the wiring terminals (see Fig. 1 and 2). For wiring most units, see Fig. 3. For wiring SystemVu™ units, see Fig. 4 and for wiring 48/50LC units, see Fig. 5. See Table 5 for controller specifications.

Sensor

The sensor includes a plastic housing, a printed circuit board, a clear plastic cover, an exhaust tube, and a sampling tube. The exhaust tube and sampling tube are attached during installation. The clear plastic cover permits visual inspections without having to disassemble the sensor. The cover attaches to the sensor housing using four captive screws and forms an airtight chamber around the sensing electronics.

System

The smoke detector is comprised of a controller and one or two sensors. Its primary function is to shut down the rooftop unit in order to prevent smoke from circulating throughout the building. It is not to be used as a life saving device. When these smoke detectors are factory installed on the units listed above, no additional sampling tubes are required to be field installed.

The controller is designed for multiple operating voltages and provides relay contacts for connection to fire alarm systems, HVAC controls, and other auxiliary functions. A remote test/reset station can be connected to the controller to provide these functions.

For installations using two sensors, the duct smoke detector does not differentiate which sensor signals an alarm or trouble condition. The sensor uses a process called differential sensing to prevent gradual environmental changes from triggering false alarms. A rapid change in environmental conditions, such as smoke from a fire, causes the sensor to signal an alarm state but dust and debris accumulated over time does not.

Air is introduced to the duct smoke detector's sensing chamber through a sampling tube that extends into the HVAC duct and is directed back into the ventilation system through an exhaust tube. The difference in air pressure between the two tubes pulls the sampled air through the sensing chamber. When a sufficient amount of smoke is detected in the sensing chamber, the sensor signals an alarm state and the controller automatically takes the appropriate action to shut down fans and blowers, change over air handling systems, notify the fire alarm control panel, etc.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in damage to equipment.

Excess temperature differentials between the ambient air and the sampled air can produce unwanted condensation inside the sensor, which may cause the sensor to function improperly. Precautions should be taken to limit the temperature range and the amount of condensation to which the sensor is exposed.

Table 5 — Controller Specifications

FEATURE	DESCRIPTION	MEASUREMENTS
Dimensions	Controller only	6.75 x 5.45 x 1.90 in.
	Controller and detector	14.51 x 5.45 x 1.90 in.
Operating environment	Temperature	–20°F to 158°F (–29°C to 70°C)
	Humidity	10% to 93% RH, non-condensing
Wire size	High voltage terminals	12 to 22 AWG
	All others	14 to 22 AWG
Operating voltages	20 to 29 VAC	175mA
	24 VAC	500mA at 50/60 Hz
	120 VAC	100 mA at 50Hz
		75mA at 60 Hz
	220/240 VAC	53mA at 50 Hz
		40 mA at 60 Hz
Operating current	20 to 29 VDC	175 mA
	24 VAC	500 mA at 50/60 Hz
	120 VAC	100 mA at 50 Hz
		75 mA at 60 Hz
	220/240 VAC	53 mA at 50 Hz
		40 mA at 60 Hz
LED indicators	Red (alarm)	—
	Yellow (trouble)	—
	Green (power)	—
Relays	Alarm initiation relay	Quantity: 1 Style: Normally open Ratings: 2.0A at 30 VDC (resistive)
	Auxiliary relay	Quantity: 1 Style: Form C Ratings: 10A at 30 VDC, 10A at 250 VAC
	Supervision (trouble) relay	Quantity: 1 Style: Form C Ratings: 2.0A at 30 VDC (resistive)

FEATURES

The smoke sensor incorporates the following features:

- Environmental compensation with differential sensing for reliable, stable, and drift-free sensitivity.
- Magnet-activated test/reset switch on sensors.
- PCB mounted photoelectric sensor with on-board intelligence.
- Cover tamper switch for added security.
- Alarm, Trouble, Dirty, and Power status LEDs (see Fig. 1).
- Extended temperature and air velocity ranges.
- Capable of adding an additional sensors (for a total of two) using the same controller.
- Multiple operating voltages.
- No tools required to access field connection terminals.
- Recessed momentary switch for test/reset of the detector.
- One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
- Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
- One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
- Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.

See Table 6 for smoke detector specifications.

Table 6 — Detector Specifications

FEATURE	CHARACTERISTICS
Sensor	8.70 x 5.45 x 1.90 in.
Smoke detection method	Photoelectric
Operating environment	Same as controller
Air velocity (min-max)	100 to 4,000 ft/min
Pressure differential (min-max)	0.005 to 1.00-in.
Sensitivity	0.67 to 2.48% obscuration/ft
	Wire size: 14 to 22 AWG
Reset time	2 second maximum
Power up time	8 second maximum
Alarm test response time	5 to 7 seconds
LED indicators	Red (alarm)
	Yellow (trouble)
	Yellow (dirty)
	Green (power)

INDICATORS

Normal State

The smoke detector operates in the normal state in the absence of any trouble conditions and when its sensing chamber is free of smoke. In the normal state, the Power LED on both the sensor and the controller are on and all other LEDs are off.

Alarm State

The smoke detector enters the alarm state when the amount of smoke particulate in the sensor's sensing chamber exceeds the alarm threshold value (see Table 7 on page 14).

Upon entering the alarm state:

- The sensor's Alarm LED and the controller's Alarm LED turn on.

- The contacts on the controller's two auxiliary relays switch positions.
- The contacts on the controller's alarm initiation relay close.
- The controller's remote alarm LED output is activated (turned on).
- The controller's high impedance multiple fan shutdown control line is pulled to ground Trouble state.

The duct smoke detector enters the trouble state under the following conditions:

- A sensor's cover is removed and 20 minutes pass before it is properly secured.
- A sensor's environmental compensation limit is reached (100% dirty).
- A wiring fault between a sensor and the controller is detected.

An internal sensor fault is detected upon entering the trouble state:

- The contacts on the controller's supervisory relay switch positions (see Fig. 1).
- If there is a sensor fault, the sensor's Trouble LED and the controller's Trouble LED will turn on.
- If 100% dirty, the sensor's Dirty LED turns on and the controller's Trouble LED flashes continuously.
- If there is a wiring fault between a sensor and the controller, the controller's Trouble LED turns on but not the sensor's Trouble LED.

NOTE: All trouble LEDs are closed by the duct smoke detector. The trouble condition must be cleared and then the duct smoke detector must be reset in order to restore it to the normal state.

Multiple Detector Operation

The interconnect feature of the smoke detector allows up to 15 smoke detectors to be connected to each other, typically for multiple fan shutdown applications. When one of the smoke detectors goes into alarm, it operates as described above. On the remaining smoke detectors not in alarm, only the following occurs:

- The auxiliary relay contacts switch positions.
- The remote LED output is activated (turned on).

INSTALLATION

Installing Controller (Supply, Return, or Both)

1. Locate smoke controller in kit (see Fig. 1).
2. Remove plastic cover from controller (see Fig. 2).
3. With harness from kit, plug the harness to controller as shown in wiring label (see Fig. 3-5).
4. For return smoke, locate 15 ft sensor cable (RM91ZT015) and plug into phone jack (RJ45) on smoke sensor by routing cable through one of the knock outs in plastic case. For supply smoke, use the additional 15 ft cable (RM91ZT015). For both supply and return, utilize both cables.
5. Reinstall the plastic cover.
6. Using two #8 screws, mount assembly into pre-drilled holes located next to central terminal board oriented as shown in diagram (see Fig. 6).
7. Complete the wiring of the harness into the unit control terminal board as shown in wiring diagram (see Fig. 3-5).
8. Cut smoke detector jumper on control terminal board as shown in Fig. 8 and 9.

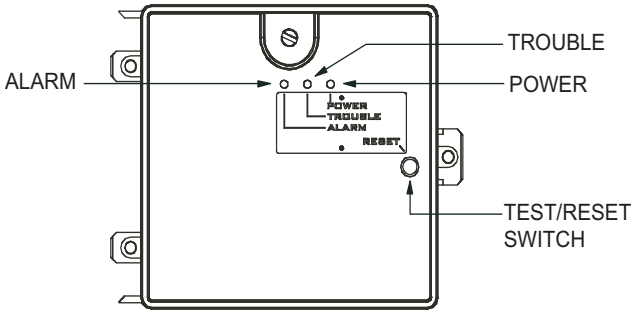


Fig. 1 — Controller Assembly

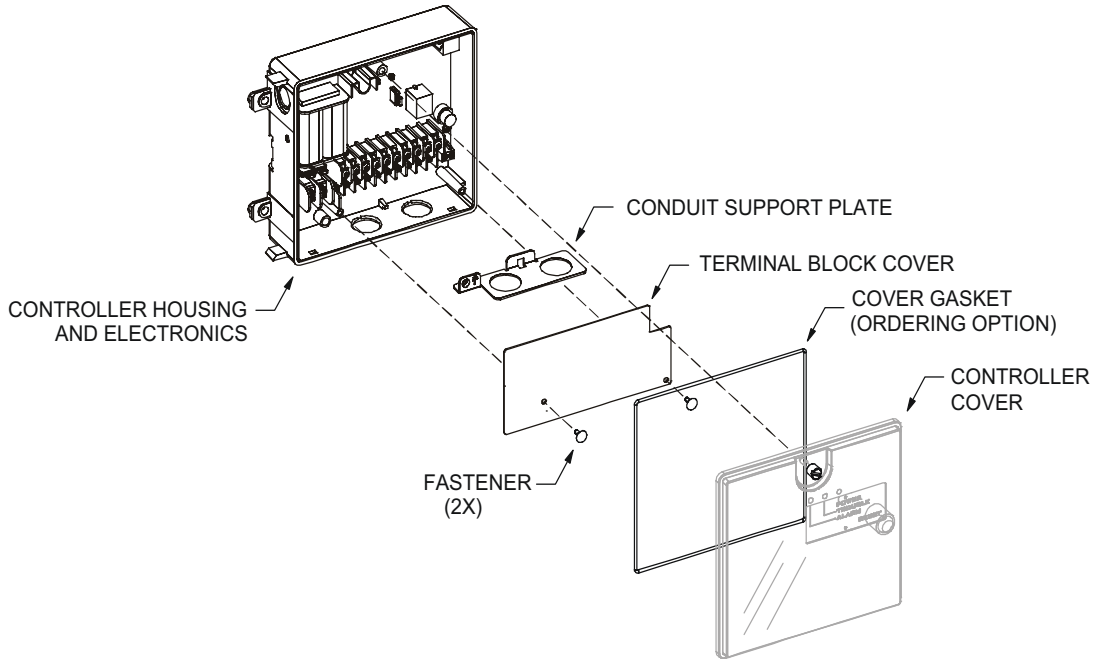


Fig. 2 — Controller Exploded View

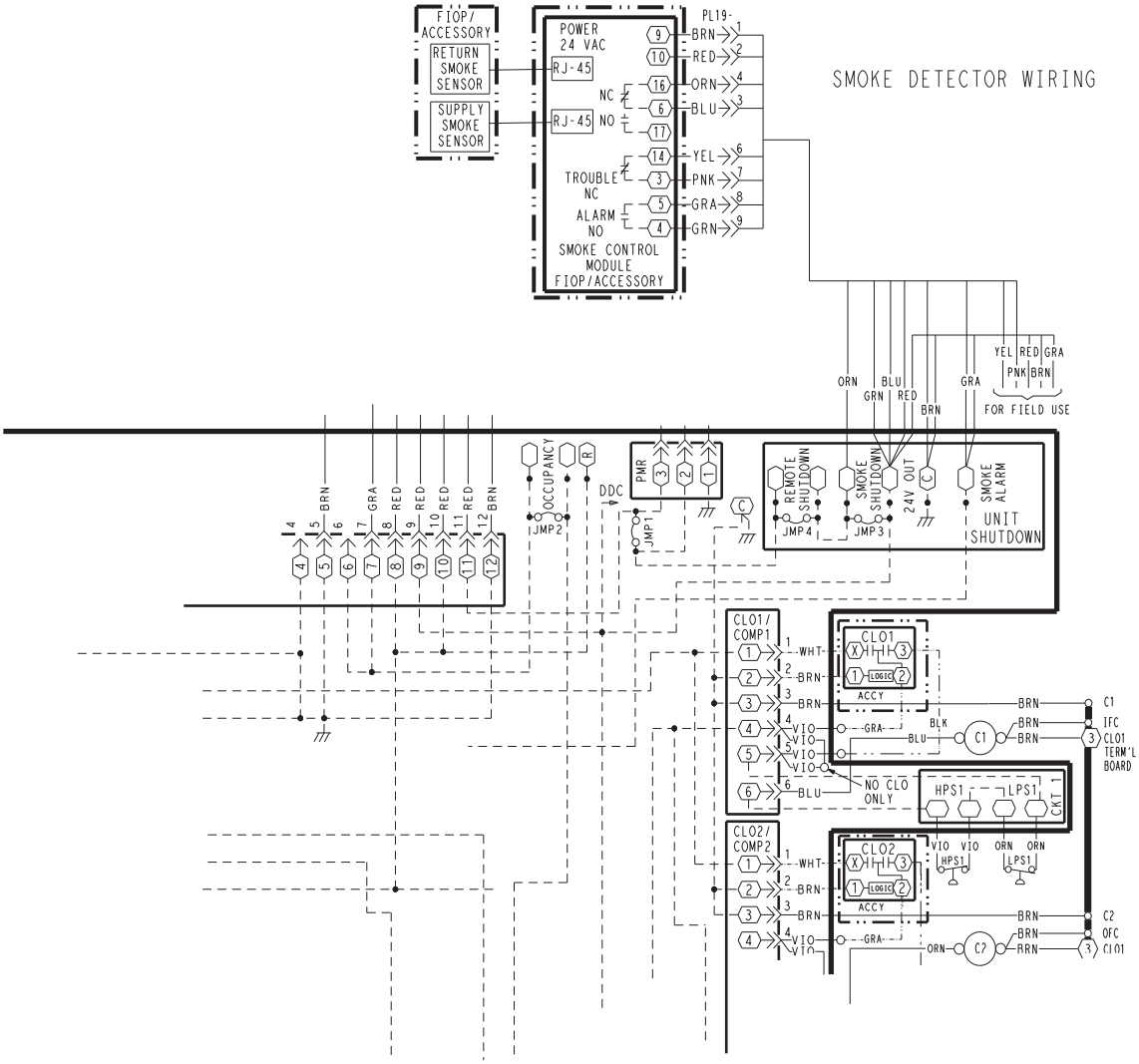


Fig. 3 — Smoke Detector Wiring (Not Used for 48/50LC Models)

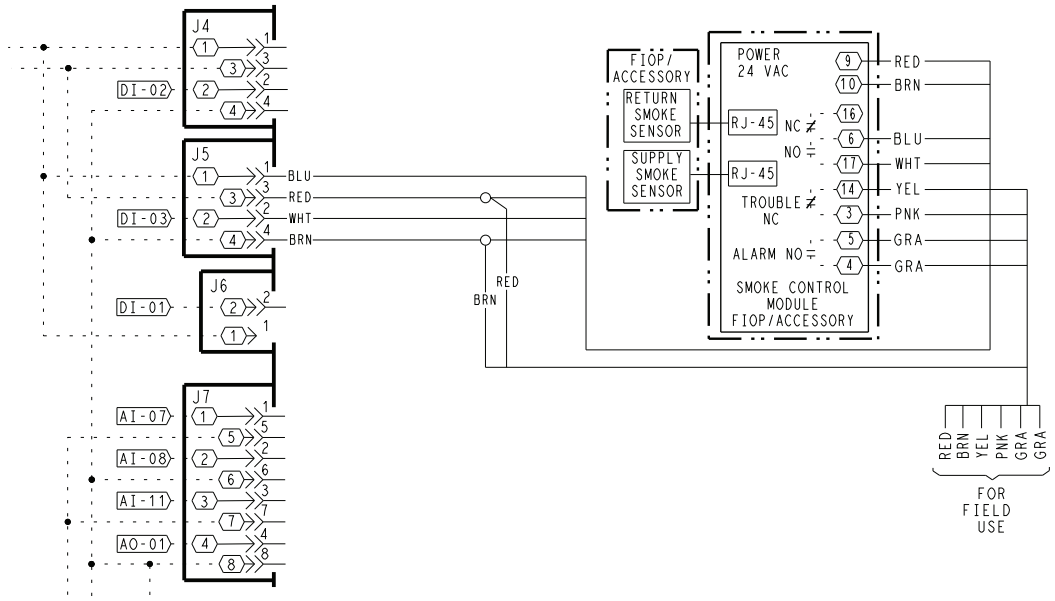


Fig. 4 — SystemVu™ Smoke Detector Wiring

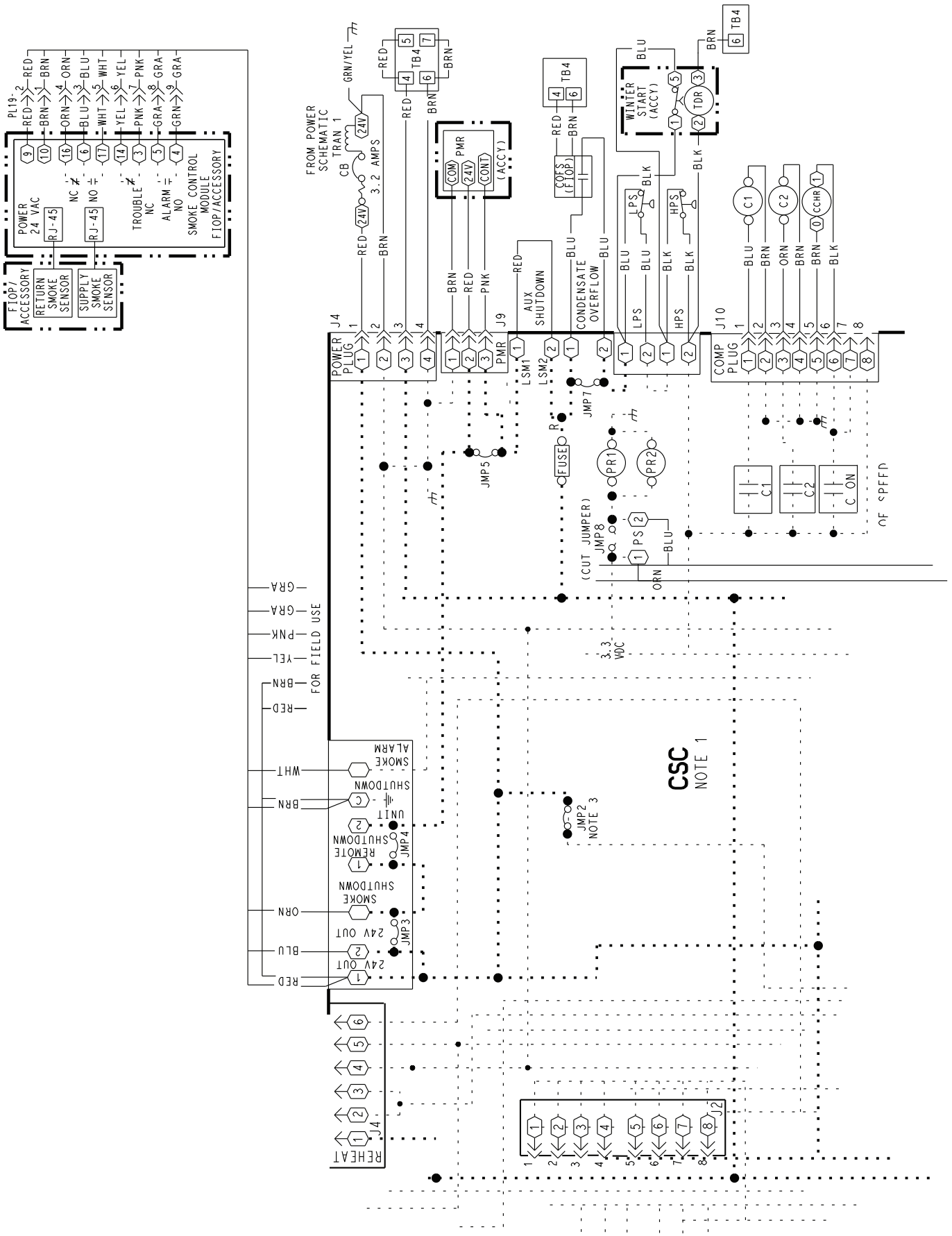


Fig. 5 — 48/50LC Smoke Detector Wiring

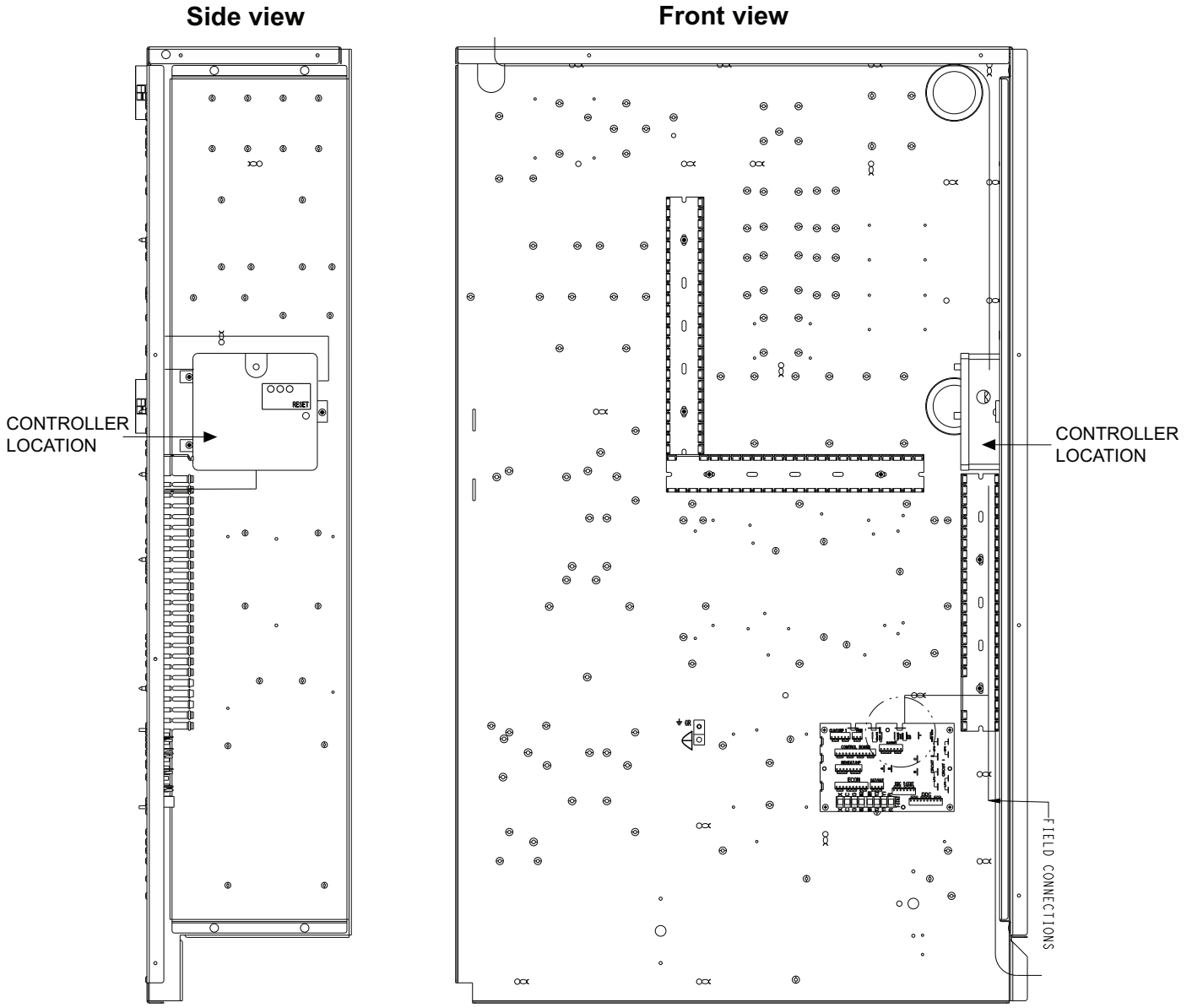


Fig. 6 — Return Smoke Sensor

Installing Return Smoke Sensor

1. Locate sensor from the CRSMKSEN002A01 kit (see Fig. 7).
2. Remove plastic cover from the sensor (see Fig. 10).
3. Connect both pick up tubes (RN20ZT034) using the coupling. Utilizing the intake adapter from the smoke sensor, snap the adapter onto the end of the pick up tube. The small bumps inside the adapter will fit into the pickup tube's two concentric holes on the end of the tube. Plug the other end of the pickup tube with the red cap (see detail A in Fig. 10).
4. Set the pick up tube aside for later use. Using two #8 screws, install the smoke sensor to either the vertical or horizontal bracket, depending on the return duct configuration. Install the corresponding bracket support. See (Fig. 11) for locating the bracket with smoke sensor into the return section for vertical configuration and (Fig. 12) for horizontal configuration.
   a. Before securing sensor bracket to the unit, ensure that the bracket's location will align with pickup tube support bracket. There are two different pickup tube support brackets depending on duct configuration.
5. Once the brackets are installed, the pickup tube can now be slid into the support bracket. Before snapping the pickup tube fitting end into the smoke sensor, align the pick up tube's sensing holes so that they face the direction of airflow. This is shown in Fig. 11 and 12. If the unit is a vertical return, orient the holes toward the vertical opening. If the unit is horizontal return, orient the holes away from evaporator coil.
6. Utilizing the 15 ft cable previously installed, plug sensor end into RJ45 connector by entering sensor through knockout. Ensure that knockout is sealed utilizing grommet which is mounted on cable.
7. Reinstall plastic cover.
8. Utilize wire ties provided to secure cable to control box harness. Avoid sharp edges or inhibiting components in the control box.
9. If return sensor only is desired, restore power and refer to sensor and controller tests sections.

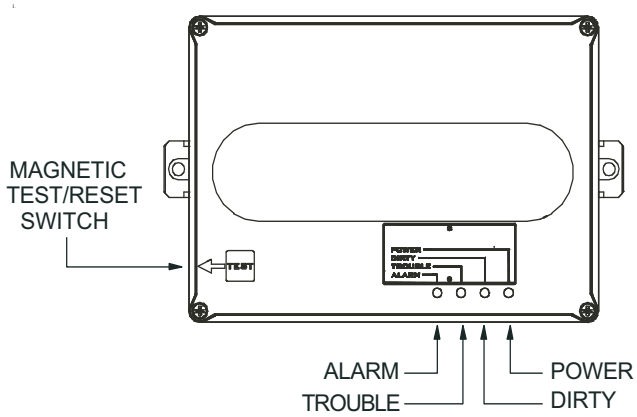


Fig. 7 — Sensor Assembly

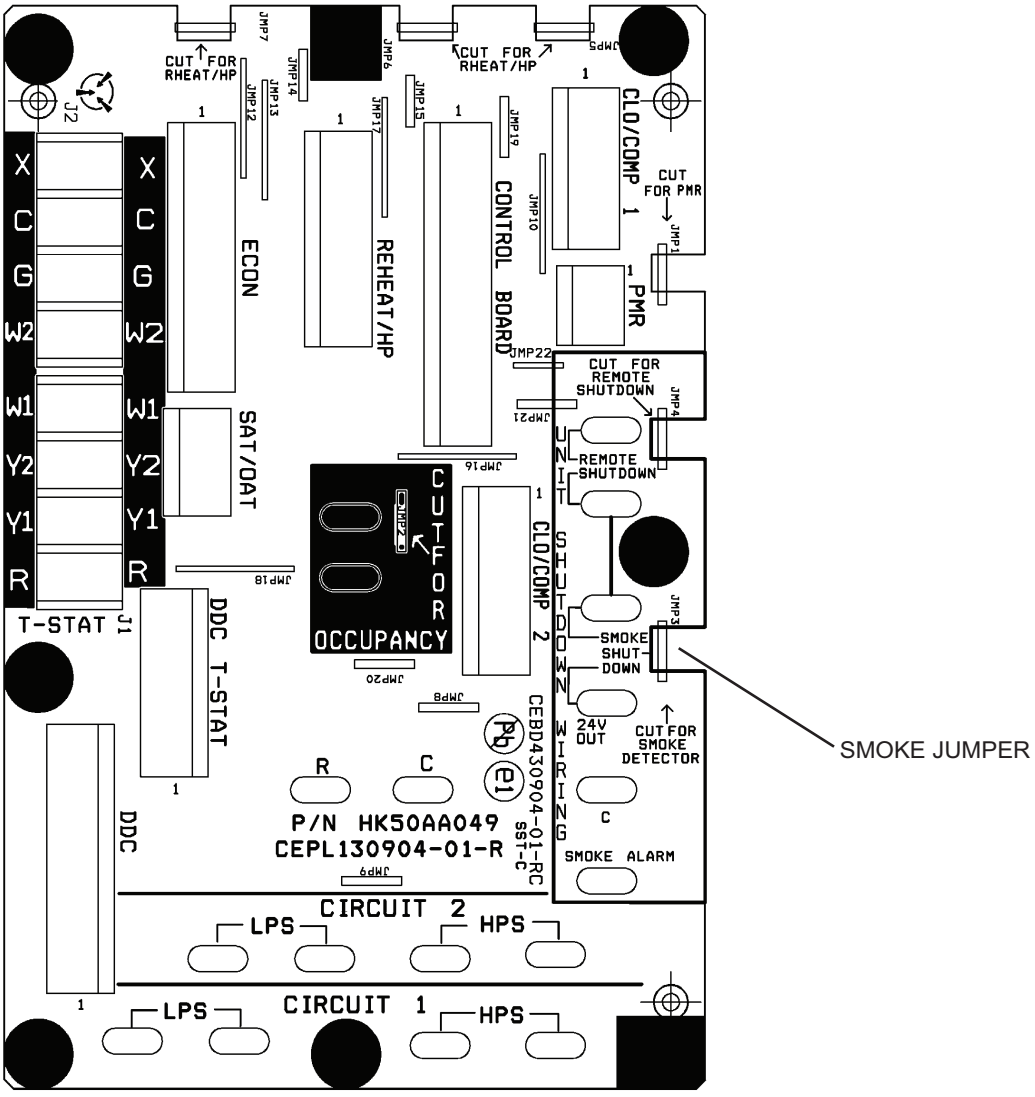


Fig. 8 — Central Terminal Board (Not Used for 48/50LC Models)

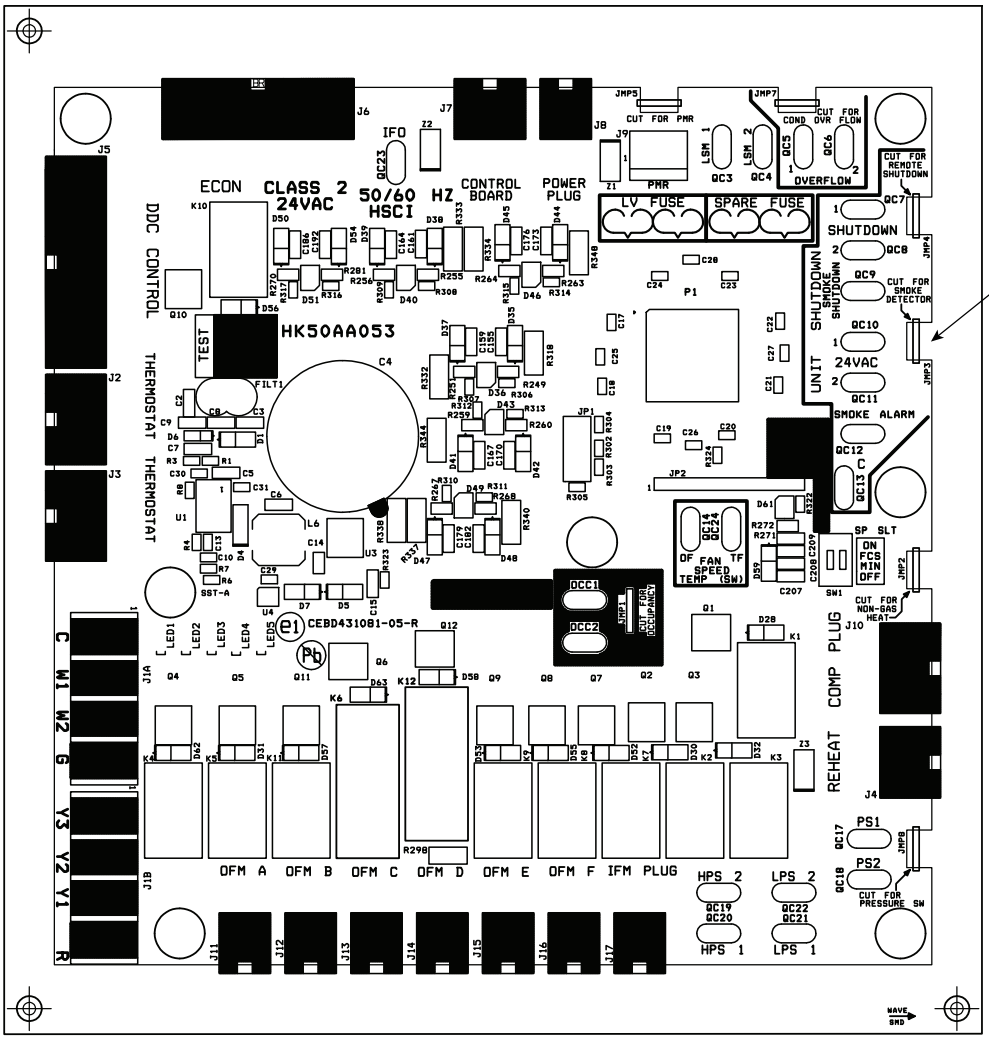


Fig. 9 — 48/50LC Control Board

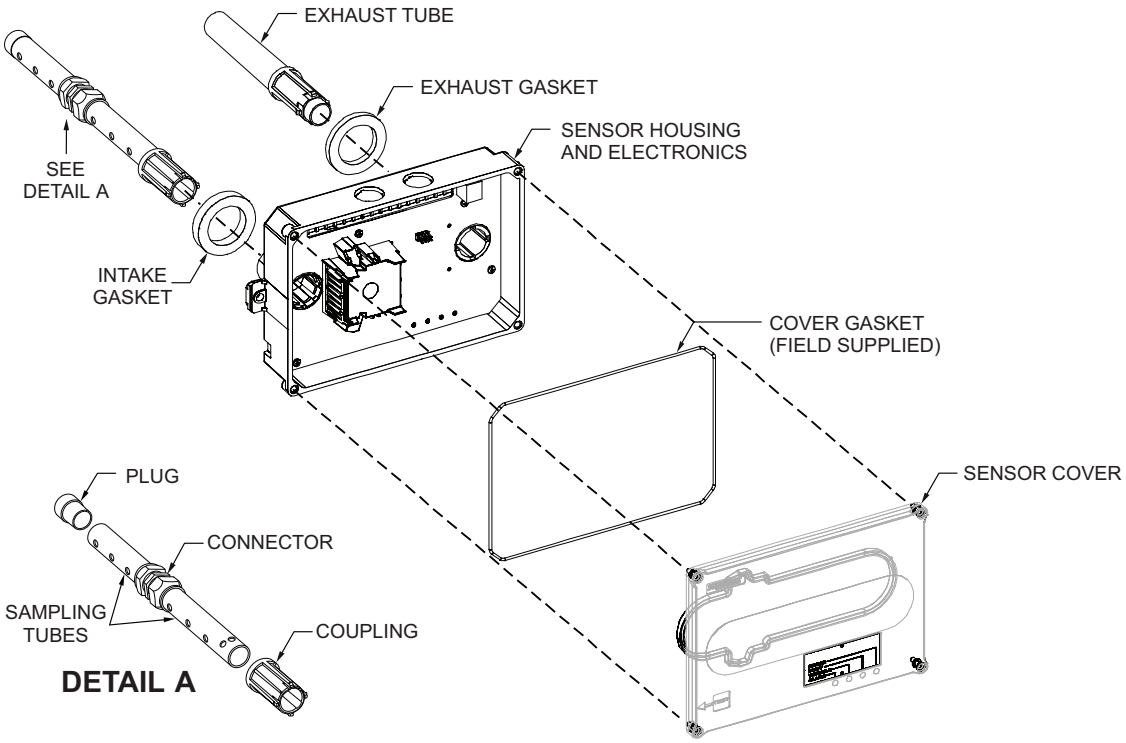


Fig. 10 — Smoke Sensor Exploded View

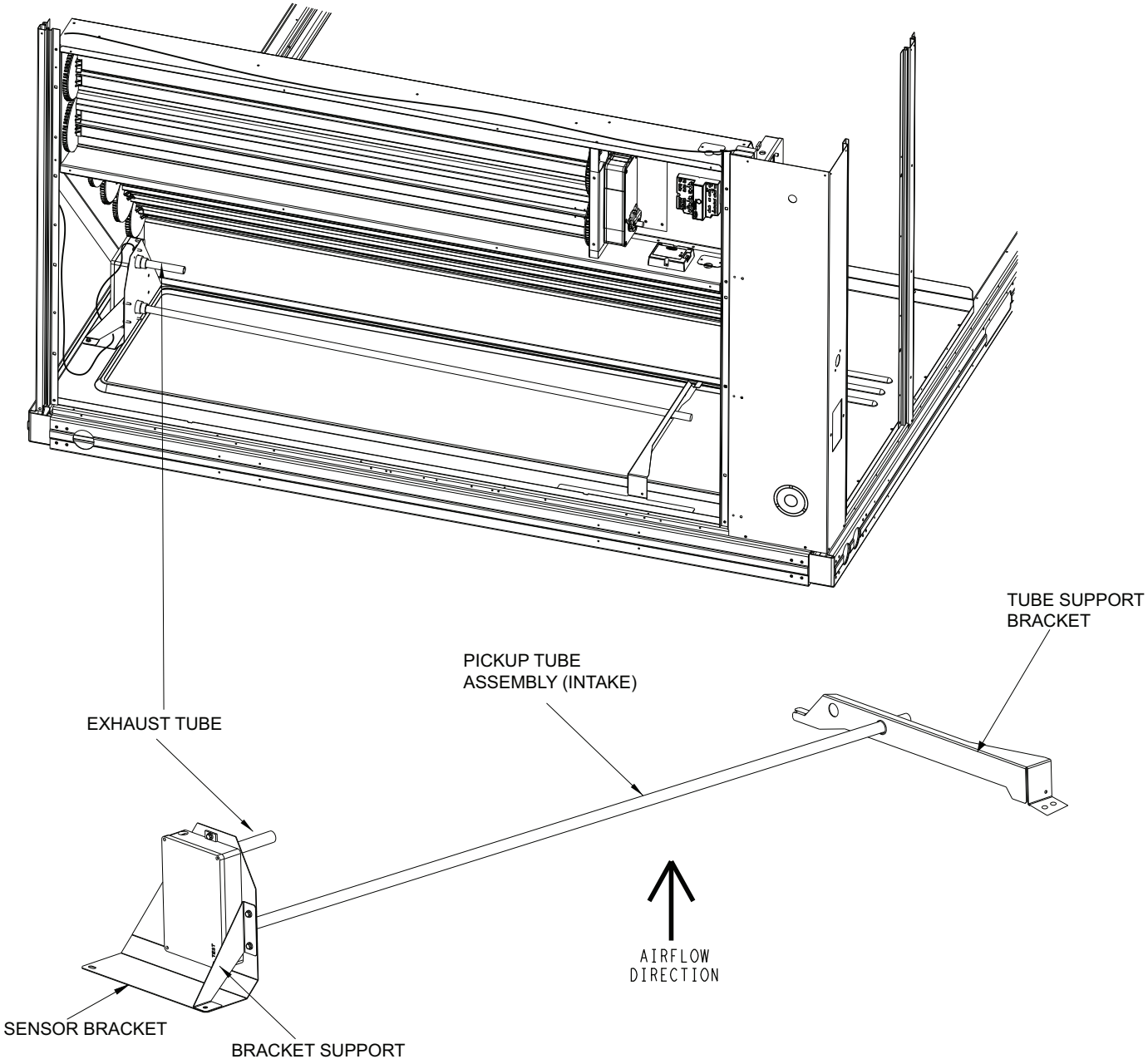


Fig. 11 — Vertical Return Sensor Assembly and Location

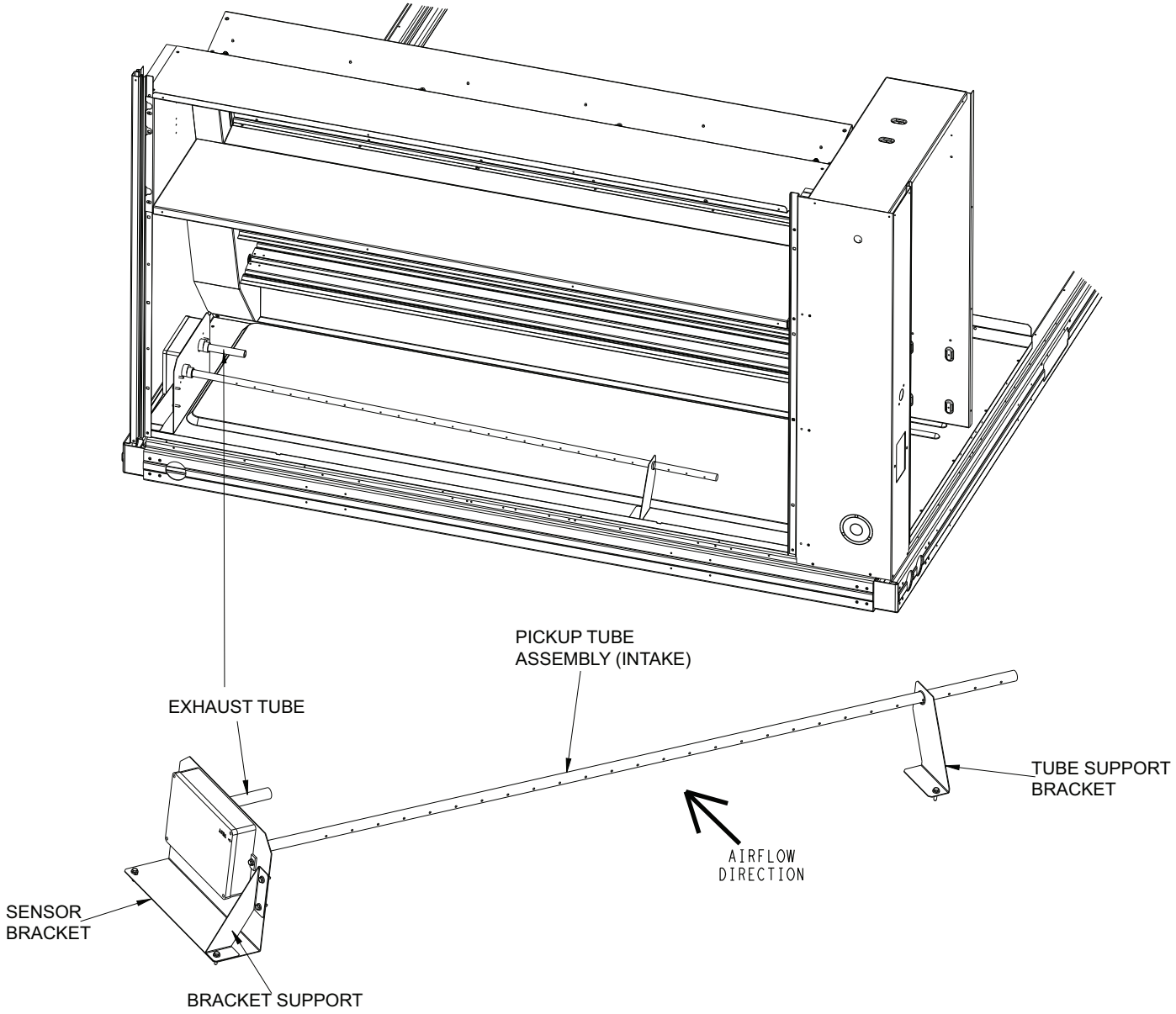


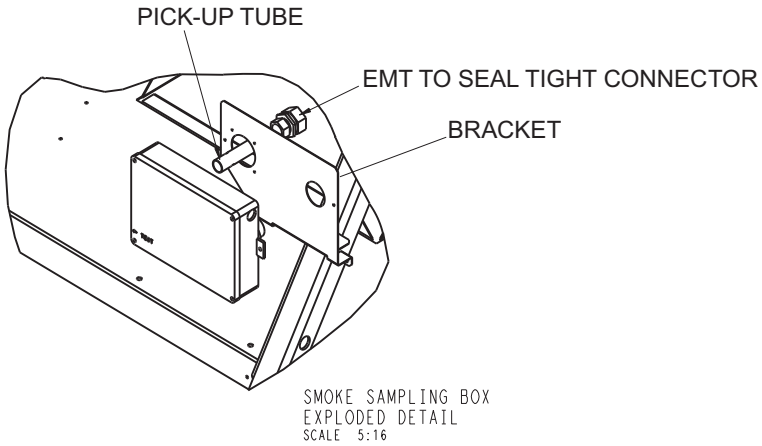
Fig. 12 — Horizontal Return Sensor Assembly and Location

Installing Supply Smoke Sensor

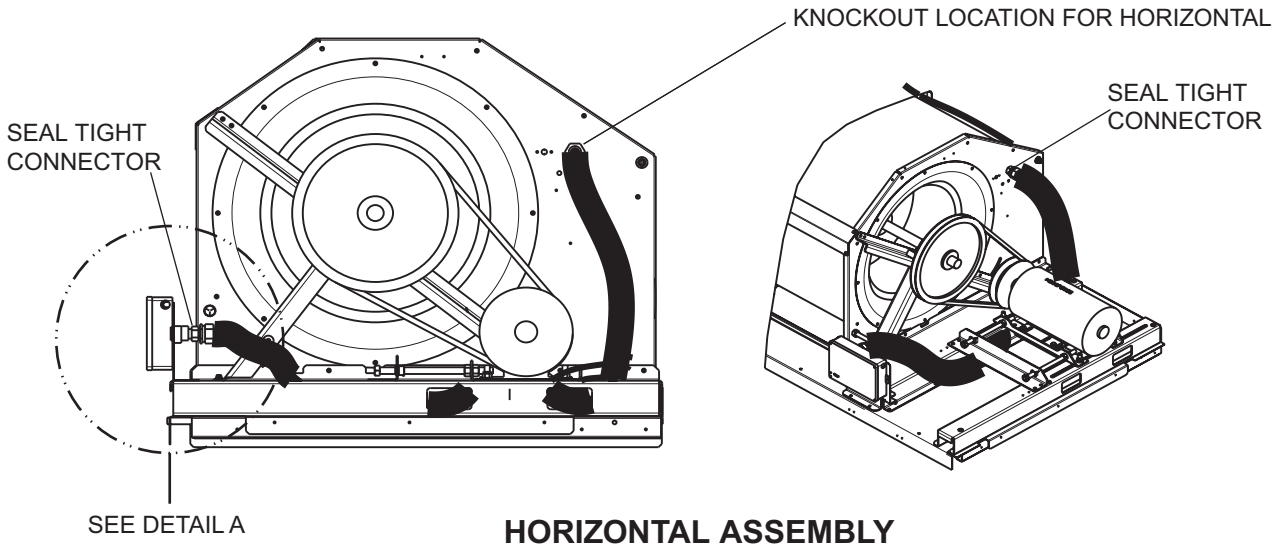
1. Remove blower access panel.
2. Locate bracket and secure to fan deck as shown in diagram. Secure with #10 screws provided in kit (see Fig. 13 and 14).

NOTE: If installing the bracket in units with serial numbers with 1016 or below, use 48HG501658 and see Fig. 13. If installing the bracket in units that have serial numbers starting with 1116 and beyond, use 50HE000361 and see Fig. 14. The first four digits of a unit's serial number indicate the week and year of manufacture, respectively.

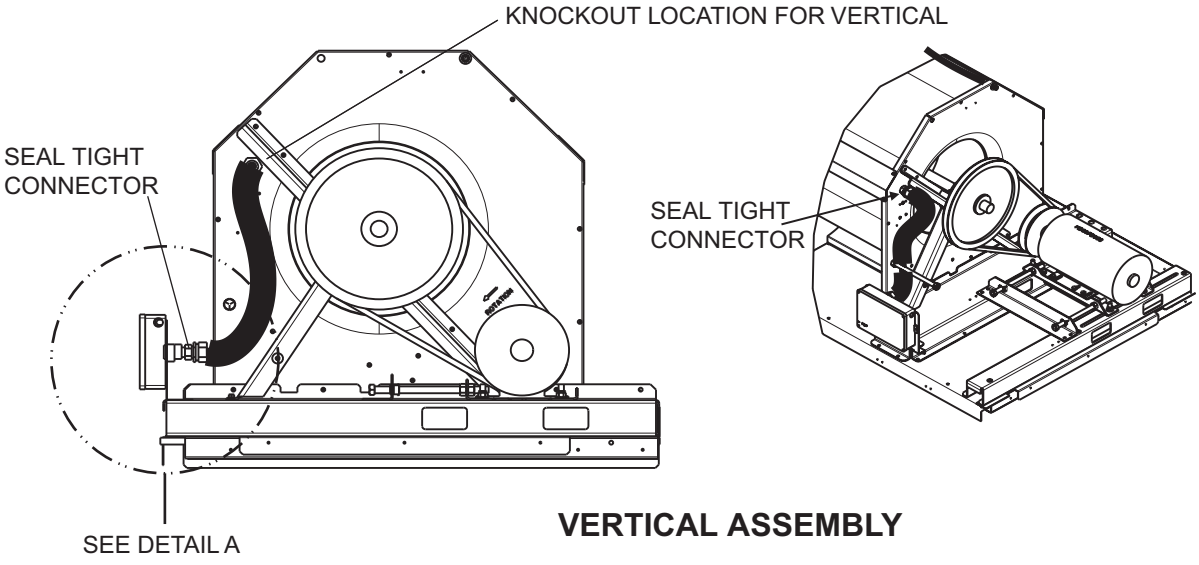
3. Locate sensor from the CRSMKSEN002A01 kit (see Fig. 7).
4. Remove plastic cover from sensor (see Fig. 10).
5. Mount sensor to bracket as shown in figure using two #8 screws.
6. Install plastic adapter into the smoke sensor.
7. Locate short pick up tube and EMT (electrical metallic tubing) to seal tight connector. Secure adapter to pickup tube.
8. Locate seal tight and secure it to the adapter. Snap assembly into the smoke sensor.
9. Remove $^{7}/_{8}$-in. knockout in blower side plate. Refer to Fig. 13 for location depending on configuration of unit.
10. Locate box to seal tight connector located in kit. Snap connector into knockout hole.
11. Route seal tight to connector install and complete connection. Refer to Fig. 13 for routing of seal tight. Ensure that seal tight does not obstruct operation of blower. Cut any excess seal tight.
12. Route 15 ft cable through opening on lower right of control box. Route with indoor fan wires securing cable to wires utilizing wire ties provided.
13. Route into sensor through knockout hole and plug end into RJ45 connector. Ensure that knockout hole is sealed with grommet mounted to cable.
14. Reinstall plastic cover.
15. Installation is complete. Refer to sensor and controller section.



DETAIL A



HORIZONTAL ASSEMBLY



VERTICAL ASSEMBLY

Fig. 13 — Supply Smoke Detector Installation Location (Bracket 48HG501658)

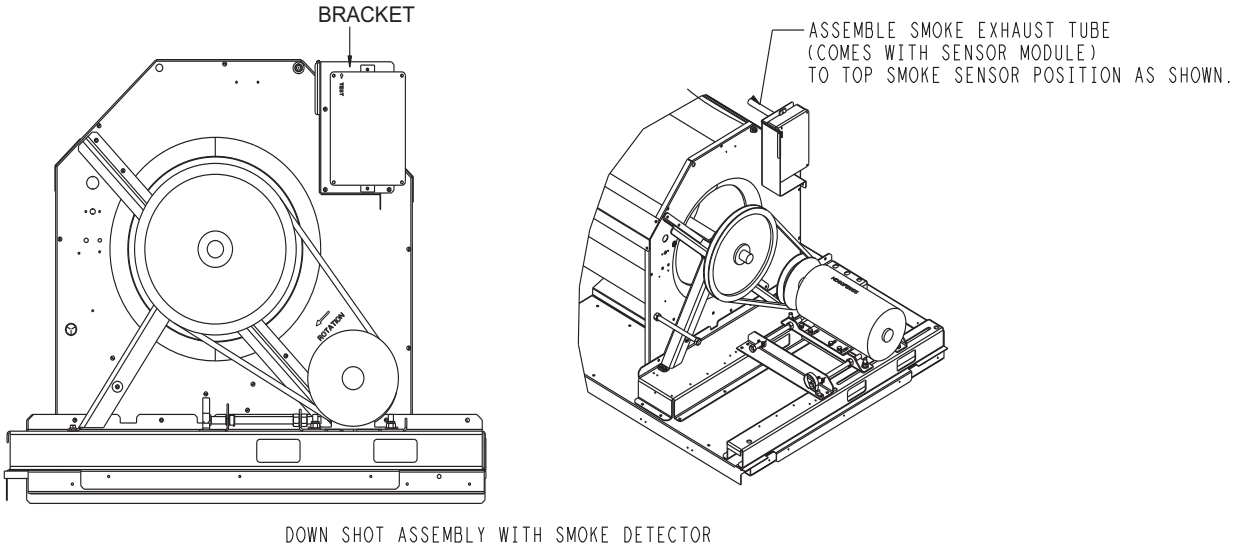


Fig. 14 — Supply Smoke Detector Installation Location (Bracket 50HE000361)

SENSOR AND CONTROLLER TESTS

Sensor Alarm Test

The sensor alarm test checks a sensor's ability to signal an alarm state. This test requires that you use a field provided SD-MAG test magnet.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

This test places the duct detector into the alarm state. Unless part of the test, disconnect all auxiliary equipment from the controller before performing the test. If the duct detector is connected to a fire alarm system, notify the proper authorities before performing the test.

SENSOR ALARM TEST PROCEDURE

1. Hold the test magnet where indicated on the side of the sensor housing for seven seconds.
2. Verify that the sensor's Alarm LED turns on.
3. Reset the sensor by holding the test magnet against the sensor housing for two seconds.
4. Verify that the sensor's Alarm LED turns off.

Controller Alarm Test

The controller alarm test checks the controller's ability to initiate and indicate an alarm state.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

This test places the duct detector into the alarm state. Disconnect all auxiliary equipment from the controller before performing the test. If the duct detector is connected to a fire alarm system, notify the proper authorities before performing the test.

CONTROLLER ALARM TEST PROCEDURE

1. Press the controller's test/reset switch for seven seconds.
2. Verify that the controller's Alarm LED turns on.
3. Reset the sensor by pressing the test/reset switch for two seconds.
4. Verify that the controller's Alarm LED turns off.

Dirty Controller Test

The dirty controller test checks the controller's ability to initiate a dirty sensor test and indicate its results.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

Pressing the controller's test/reset switch for longer than seven seconds will put the duct detector into the alarm state and activate all automatic alarm responses.

DIRTY CONTROLLER TEST PROCEDURE

1. Press the controller's test/reset switch for two seconds.
2. Verify that the controller's Trouble LED flashes.

Dirty Sensor Test

The dirty sensor test provides an indication of the sensor's ability to compensate for gradual environmental changes. A sensor that can no longer compensate for environmental changes is considered 100% dirty and requires cleaning or replacing. A field-provided SD-MAG test magnet must be used to initiate a sensor dirty test. The sensor's Dirty LED indicates the results of the dirty test as shown in Table 7.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

Holding the test magnet against the sensor housing for more than seven seconds will put the duct detector into the alarm state and activate all automatic alarm responses.

Table 7 — Dirty Sensor LED Description

FLASHES	DESCRIPTION
1	0-25% dirty (Typical of a newly installed detector)
2	25%-50% dirty
3	51%-75% dirty
4	76%-99% dirty

DIRTY SENSOR TEST PROCEDURE

1. Hold the test magnet where indicated on the side of the sensor housing for two seconds.
2. Verify that the sensor's Dirty LED flashes.

Changing the Dirty Sensor Test

By default, sensor dirty test results are indicated by:

- The sensor's Dirty LED flashing.
- The controller's Trouble LED flashing.
- The controller's supervision relay contacts toggle.

The operation of a sensor's dirty test can be changed so that the controller's supervision relay is not used to indicate test results. When two detectors are connected to a controller, sensor dirty test operation on both sensors must be configured to operate in the same manner.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

Changing the dirty sensor test operation will put the detector into the alarm state and activate all automatic alarm responses. Before changing dirty sensor test operation, disconnect all auxiliary equipment from the controller and notify the proper authorities if connected to a fire alarm system.

TO CONFIGURE THE DIRTY SENSOR TEST OPERATION

1. Hold the test magnet where indicated on the side of the sensor housing until the sensor's Alarm LED turns on and its Dirty LED flashes twice (approximately 60 seconds).
2. Reset the sensor by removing the test magnet then holding it against the sensor housing again until the sensor's Alarm LED turns off (approximately 2 seconds).

Remote Station Test

The remote station alarm test checks a test/reset station's ability to initiate and indicate an alarm state. See Table 8 for remote keyed attenuator and test/reset station specifications.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

This test places the duct detector into the alarm state. Unless part of the test, disconnect all auxiliary equipment from the controller before performing the test. If the duct detector is connected to a fire alarm system, notify the proper authorities before performing the test.

SD-TRK4 REMOTE ALARM TEST PROCEDURE

1. Turn the key switch to the RESET/TEST position for seven seconds.
2. Verify that the test/reset station's Alarm LED turns on.
3. Reset the sensor by turning the key switch to the RESET/TEST position for two seconds.
4. Verify that the test/reset station's Alarm LED turns off.

Table 8 — Remote Keyed Attenuator and Test/Reset Station Specifications (KA-99ZT-003)

FEATURE	CHARACTERISTICS
Compatibility with electrical boxes	North American 1-gang box
	Standard 4-in. square box, 1 1/2-in. deep, with 1-gang cover
LED indicators	Red (alarm)
	Yellow (trouble)
	Green (power)
LED type	Clear lens
Wire size	14 to 22 AWG
Resistance per wire	10 Ω max
Operating current	Same as controller specification
Operating voltages	24 VDC, 24v at 50/60 Hz
	120v at 50/60 Hz
	220/240v at 50/60 Hz
Compatible detectors	Four-wire smoke detectors
Operating environment	Temperature: 32°F to 131°F (0°C to 55°C)
	Humidity: 93% RH, non-condensing
Storage temperature	–20°C to 60°C (–4°F to 140°F)

REMOTE TEST/RESET STATION DIRTY SENSOR TEST

The test/reset station dirty sensor test checks the test/reset station's ability to initiate a sensor dirty test and indicate the results. It must be wired to the controller (see Fig. 15) and configured to operate the controller's supervision relay. For more information, see "Changing the Dirty Sensor Test."

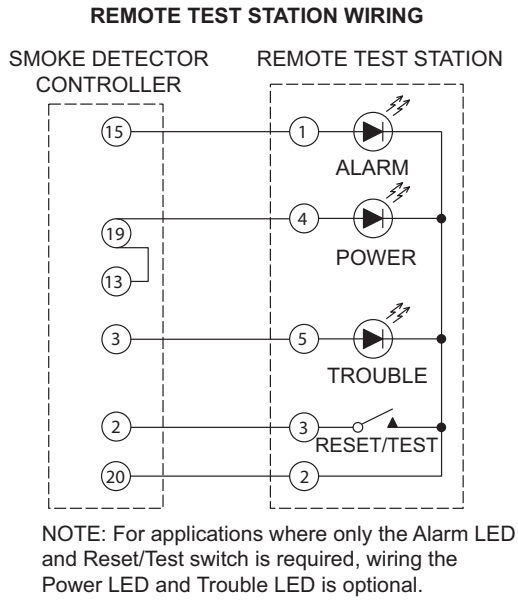


Fig. 15 — Remote Test Station Wiring

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

If the test/reset station's key switch is left in the RESET/TEST position for longer than seven seconds, the detector will automatically go into the alarm state and activate all automatic alarm responses.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

Holding the test magnet to the target area for longer than seven seconds will put the detector into the alarm state and activate all automatic alarm responses.

DIRTY SENSOR TEST USING AN SD-TRK4

1. Turn the key switch to the RESET/TEST position for two seconds.
2. Verify that the test/reset station's Trouble LED flashes.

DETECTOR CLEANING

Cleaning the Smoke Detector

Clean the duct smoke sensor when the Dirty LED is flashing continuously or sooner, if conditions warrant.

IMPORTANT: Failure to follow this notice may result in personnel and authority concern.

If the smoke detector is connected to a fire alarm system, first notify the proper authorities that the detector is undergoing maintenance then disable the relevant circuit to avoid generating a false alarm.

1. Disconnect power from the duct detector then remove the sensor's cover (see Fig. 16).
2. Using a vacuum cleaner, clean compressed air, or a soft bristle brush, remove loose dirt and debris from inside the sensor housing and cover. Use isopropyl alcohol and a lint-free cloth to remove dirt and other contaminants from the gasket on the sensor's cover.
3. Squeeze the retainer clips on both sides of the optic housing then lift the housing away from the printed circuit board.
4. Gently remove dirt and debris from around the optic plate and inside the optic housing.
5. Replace the optic housing and sensor cover.
6. Connect power to the duct detector then perform a sensor alarm test.

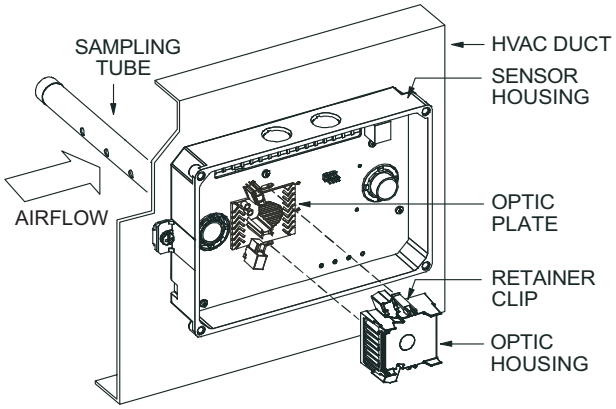


Fig. 16 — Sensor Cleaning Diagram

TROUBLESHOOTING

Controller's Trouble LED is On

1. Check the Trouble LED on each sensor connected to the controller. If a sensor's Trouble LED is on, determine the cause and make the necessary repairs.
2. Check the wiring between the sensor and the controller. If wiring is loose or missing, repair or replace as required.

Controller's Trouble LED is Flashing

1. One or both of the sensors is 100% dirty.
2. Determine which Dirty LED is flashing, then clean that sensor assembly as described in the detector cleaning section.

Sensor's Trouble LED is On

1. Check the sensor's Dirty LED. If it is flashing, the sensor is dirty and must be cleaned.
2. Check the sensor's cover. If it is loose or missing, secure the cover to the sensor housing.
3. Replace sensor assembly.

Sensor's Power LED is Off

1. Check the controller's Power LED. If it is off, determine why the controller does not have power and make the necessary repairs.
2. Check the wiring between the sensor and the controller. If wiring is loose or missing, repair or replace as required.

Controller's Power LED is Off

1. Make sure the circuit supplying power to the controller is operational. If not, make sure JP2 and JP3 are set correctly on the controller before applying power.
2. Verify that power is applied to the controller's supply input terminals. If power is not present, replace or repair wiring as required.

Remote Test/Reset Station's Trouble LED Does Not Flash When Performing a Dirty Test, But the Controller's Trouble LED Does

1. Verify that the remote test/station is wired as shown in Fig. 15. Repair or replace loose or missing wiring.
2. Configure the sensor dirty test to activate the controller's supervision relay. See "Changing sensor dirty test operation."

Sensor's Trouble LED is On, But the Controller's Trouble LED is OFF

Remove JP1 on the controller.

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