

Purpose/Application

National and local safety standards and codes recognize the ability of air duct systems to transfer smoke, toxic gases, and flame from area to area. Sometimes smoke can be of such quantity as to be a serious hazard to life safety unless blowers are shut down and dampers are actuated. The primary purpose of duct smoke detection is to prevent injury, panic, and property damage by reducing the spread (recirculation) of smoke. The detector samples air currents passing through a duct and gives dependable performance for management of smoke and combination fire smoke dampers. Duct smoke detection can also serve to protect the air conditioning system itself from fire and smoke damage.

There are several important documents that provide guidance concerning the performance, application and installation of duct detectors:

- 1) NFPA Standard 90A, *Installation of Air Conditioning and Ventilating Systems*
- 2) NFPA Standard 92A, *Recommended Practice for Smoke Control Systems*
- 3) NFPA Standard 72, *National Fire Alarm Code*
- 4) NFPA Standard 101, *Life Safety Code*
- 5) UL Standard 268A, *Standard for Smoke Detectors for Duct Applications*
- 6) ASHRAE Handbook and Product Directory, "Fire and Smoke Control"
- 7) System Sensor, *Guide for Proper Use of Smoke Detectors in Duct Applications.*

Duct detectors are:

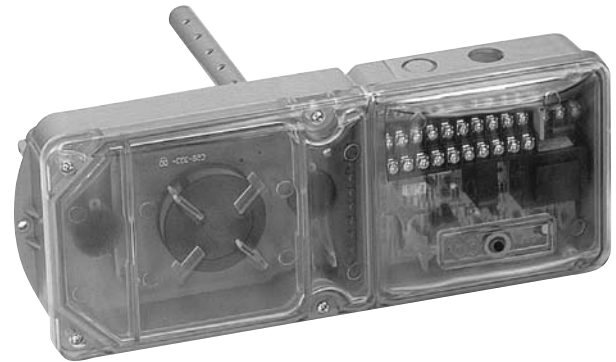
NOT a substitute for an open area smoke detector.
NOT a substitute for early warning detection, and
NOT a replacement for a building's regular fire detection system.

Specifications

| | |
|------------------------------|--------------------------------------|
| Type: | Photoelectric |
| Air duct velocity: | 100 to 4000 fpm (.5 m/s to 20.3 m/s) |
| Operating temperature range: | 32°F to 131°F (0°C to 55°C) |
| Operating humidity range: | 10% to 93% R.H. |
| Operation Voltage: | 24 VAC/DC or 120/240 VAC |

Features

- Textured cover for convenient visual inspection.
- The detector provides a trouble signal in the event that the front cover is removed.
- Integral filter system included to reduce dust and residue effects on detector and housing, thereby reducing maintenance and servicing.
- Terminal connections are of the strip and clamp method suitable for 12-18 AWG wiring.
- Outside mounting tabs for easy connection to sleeve or ductwork (when detector ships loose).



Configuration

Maximum wall thickness: 6 in. (152mm) on FSD & SSFSD applications
(Consult factory for walls greater than 6 in. [152mm])

Actuator Location: Must be right hand drive
Must be externally mounted

Detector Location: Mounts opposite actuator side
Must be external

Sampling tubes longer than three feet must be supported on each end. Holes in duct smoke detector sampling tubes must face into the airflow.

Availability

For use with all FSD, SSFSD, SMD, SSSMD, and CFSD models. Not available on SMDR models.

Listings

UL 268A

Refer to Greenheck Installation Supplement: Part #463813 IOM-Smoke Detector Supplement

Sleeve Length

- Height less than 25 in. (635mm): 24 in. (610mm) sleeve (15 in. [381mm] 'A' dimension)
(detector mounted parallel to sleeve)
- Height greater than or equal to 25 in. (635mm): 21 in. (533mm) sleeve (11 in. [279mm] 'A' dimension)
(detector mounted perpendicular to sleeve)

Figure 1: Label applied to dampers with factory mounted duct smoke detectors.

Smoke detector requires 100 fpm minimum air velocity in duct. For damper activation requirements when system velocity is less than 500 fpm, the local authority having jurisdiction should be consulted.

Refer to smoke detector installation instructions and Greenheck IOM - Smoke Detector Supplement FS for dampers with factory mounted duct smoke detectors.

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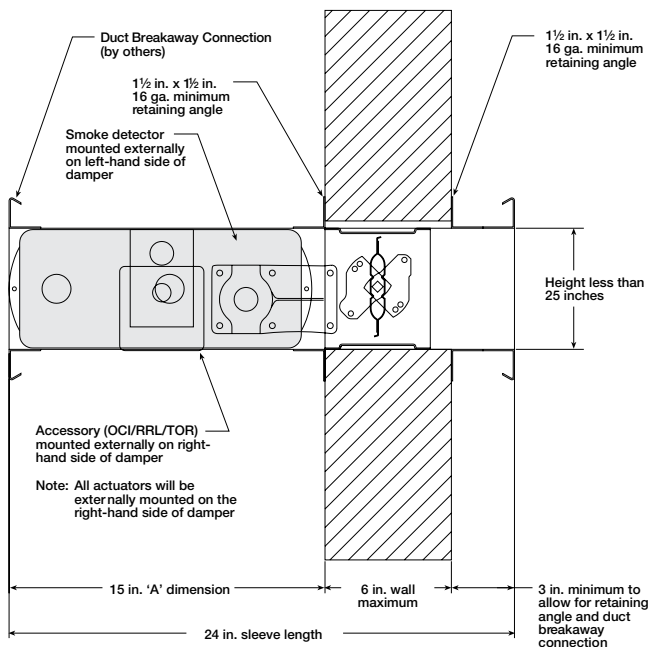


Figure 2: Smoke detector mounting orientation for dampers less than 25 inches (635mm) in height.

Ordering Options

Factory Mounted

Smoke detector will be wired to a 4 in. x 4 in. (102mm x 102mm) handi-box. The closure device (if RRL or TOR) will also be wired to the handi-box. Dampers provided with the smoke detector option will include single point wiring as standard (includes RRL, OCI, TOR, detectors, and multiple actuators).

Shipped Loose

Shipped loose smoke detector will only include the detector itself (no mounting hardware or bracket seals). The duct size will have to be specified in order to allocate the appropriate length sampling tube. Adhere to all national and local codes.

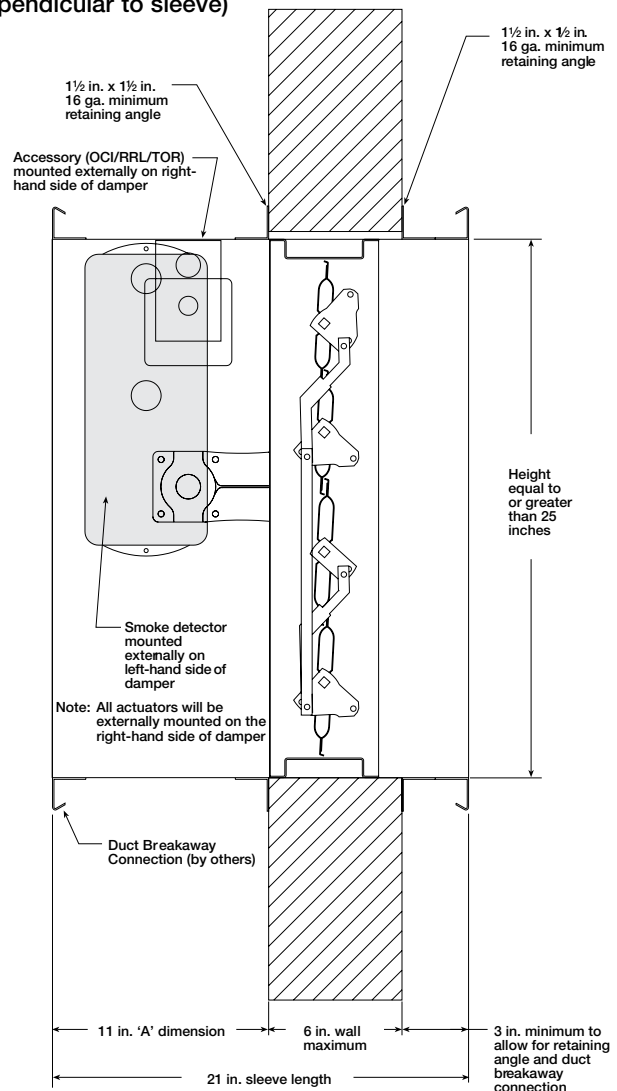


Figure 3: Smoke detector mounting orientation for dampers equal to or greater than 25 inches (635mm) in height.

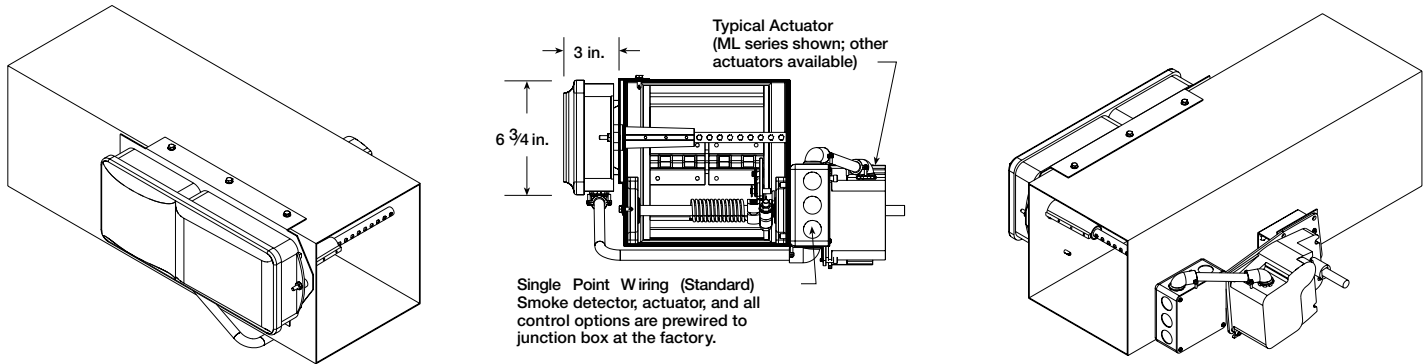
IMPORTANT!

Dampers ordered with shipped loose smoke detectors will have the standard sleeve length, not a longer sleeve to accommodate the smoke detector installation. If smoke detectors are intended to be field mounted on the damper sleeve, the damper sleeve length and 'A' dimension will need to be manually changed to the requirements indicated under 'Sleeve Length'.

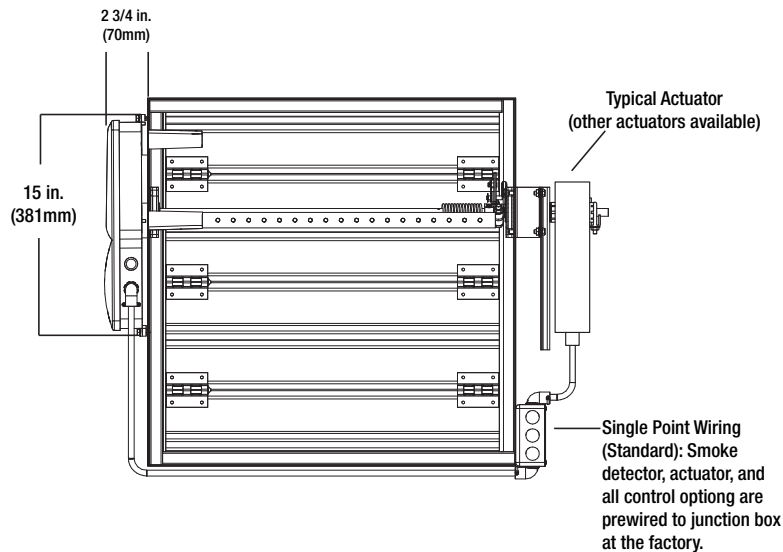
SPACE ENVELOPES

ELECTRICAL RATINGS

Dampers Less Than 25 Inches (635mm) In Height



Dampers Equal To Or Greater Than 25 Inches (635mm) In Height



Electrical Ratings

| | | | | |
|-----------------------|--------------------|--------------------|--------------------|----------------------|
| Power Supply Voltage: | 20-29 VDC | 24 VAC 50-60 Hz | 120 VAC 50-60 Hz | 220/240 VAC 50-60 Hz |
| Input Capacitance: | 270 μ F max. | 270 μ F max. | N/A | N/A |
| Reset Voltage: | 3.0 VDC min. | 2.0 VAC min. | 10 VAC min. | 20 VAC min. |
| Reset Time: | 0.6 sec. max. | 0.6 sec. max. | 0.6 sec. max. | 0.6 sec. max. |
| Power Up Time: | 34 sec. max. | 34 sec. max. | 34 sec. max. | 34 sec. max. |
| Alarm Response Time: | 2-17 sec. | 2-17 sec. | 2-17 sec. | 2-17 sec. |
| Sensitivity Test: | See detector label | See detector label | See detector label | See detector label |

Current Requirements

| | | | | |
|-----------------------|-------|------------|------------|------------|
| Max. Standby Current: | 15 mA | 35 mA RMS | 25 mA RMS* | 15 mA RMS* |
| Max. Alarm Current: | 70 mA | 125 mA RMS | 35 mA RMS* | 25 mA RMS* |

Contact Ratings

| | |
|-----------------------------------|-------------------------------------|
| Alarm Initiation Contacts (SPST): | 2.0A @ 30 VAC/DC (0.6 power factor) |
| Alarm Auxiliary Contacts (DPDT): | 10A @ 30 VDC 10A @ 250 VDC |

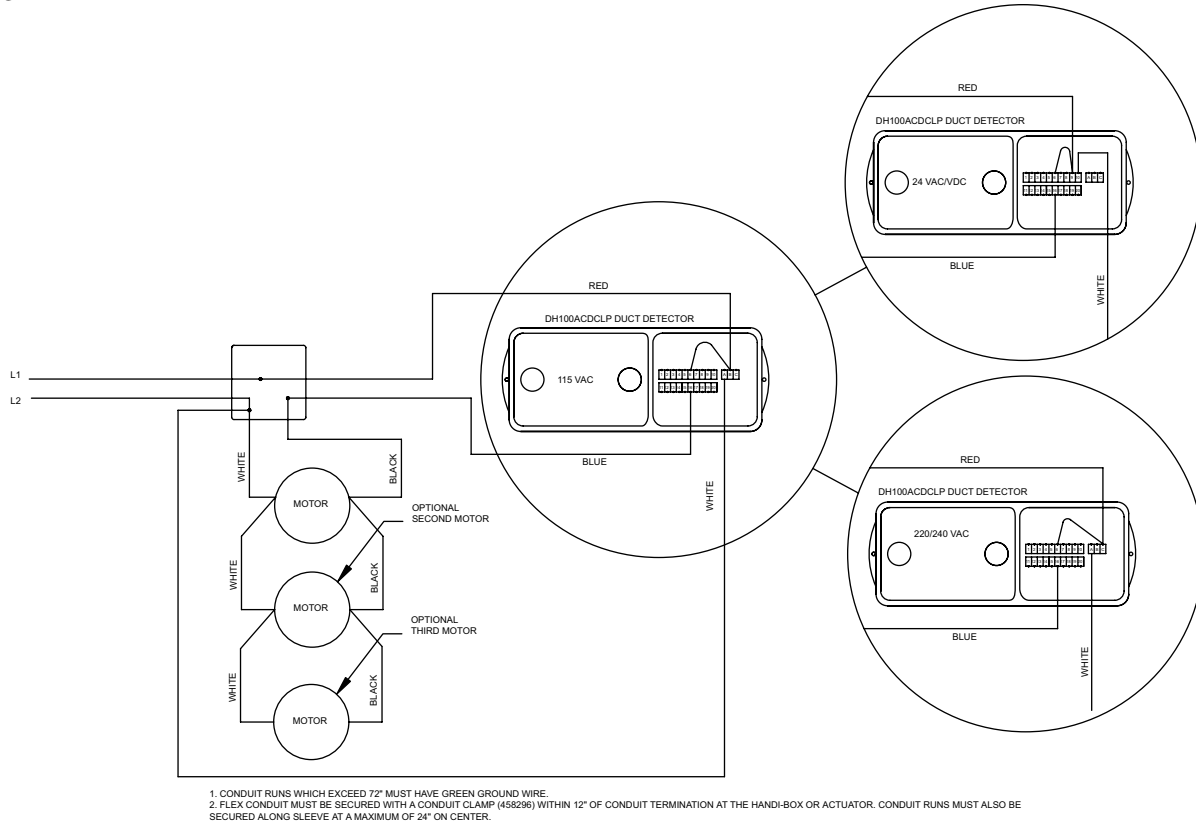
Note: Alarm auxiliary contacts must switch 100 mA minimum at 5 VDC. Alarm auxiliary contacts shall not be connected to initiating circuits of control panels. Use the alarm initiation contact for this purpose.

| | |
|--------------------------|---------------------------|
| Trouble Contacts (SPDT): | 2.0A @ 30 VDC (resistive) |
|--------------------------|---------------------------|

WIRING DIAGRAMS

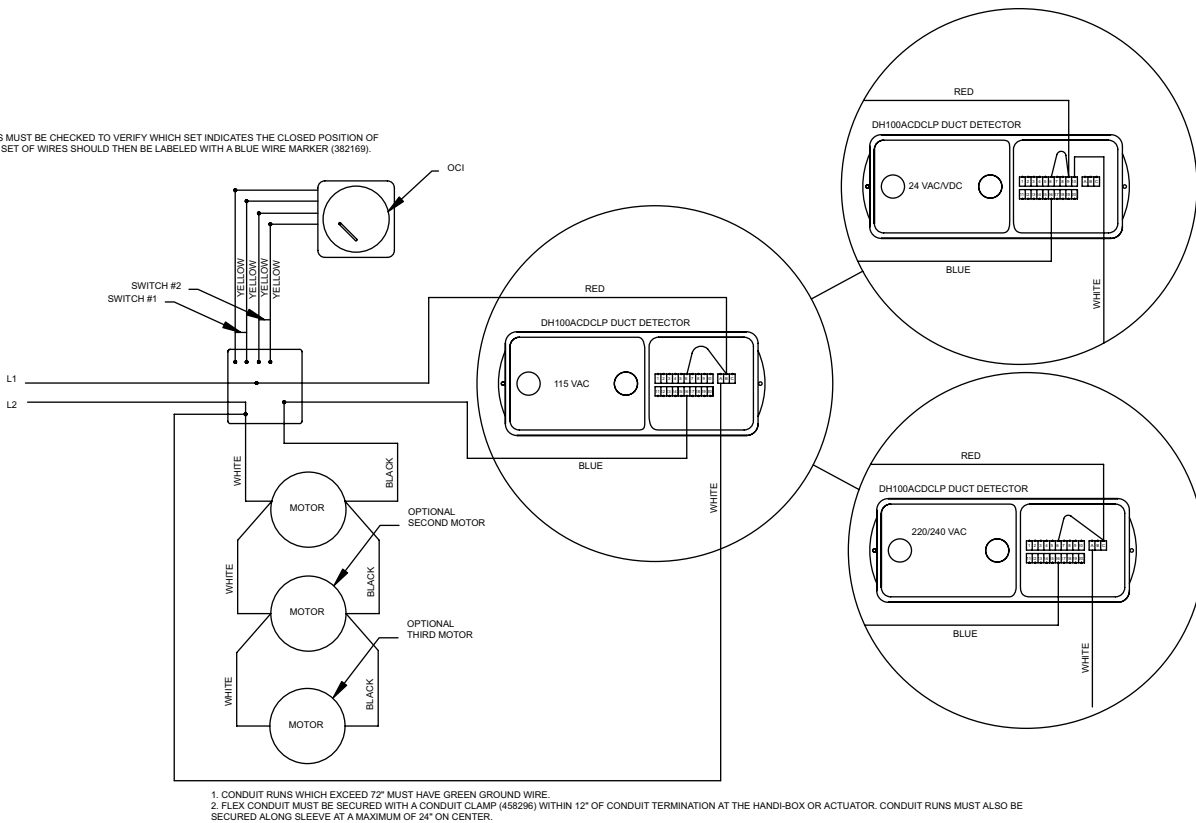
DUCT SMOKE DETECTOR

Fusible Link



OCI

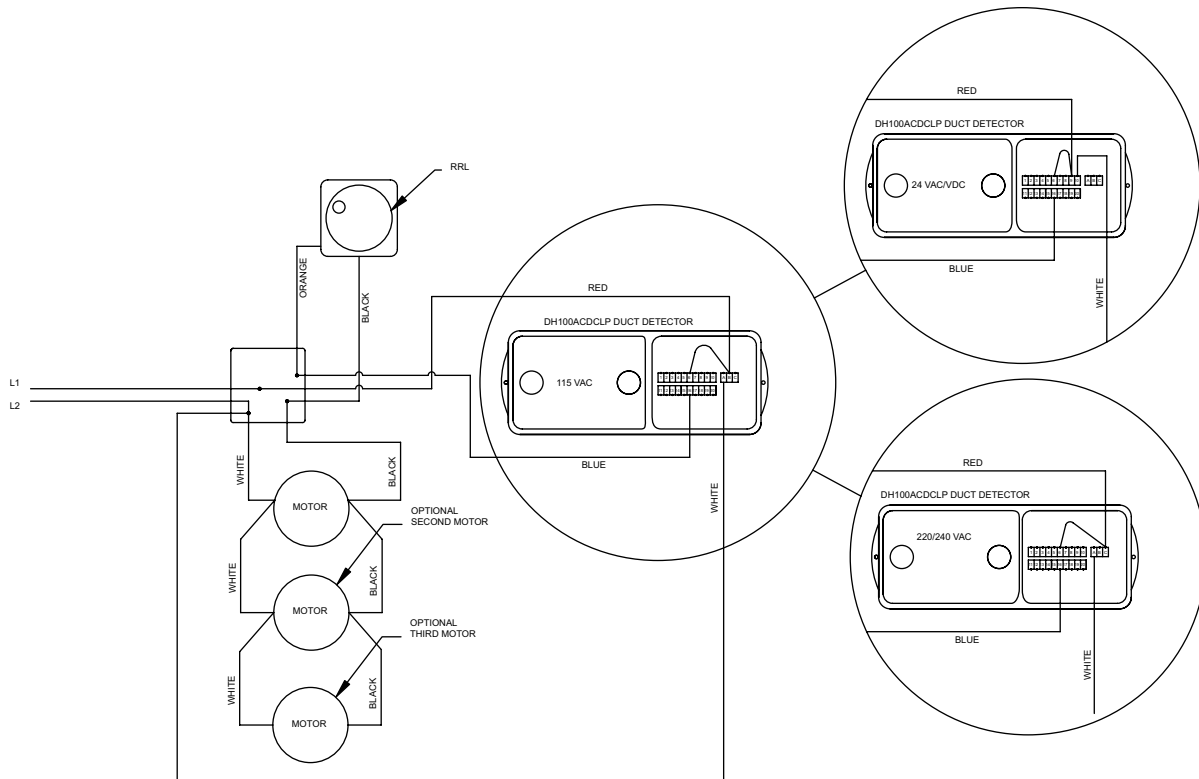
THE OCI WIRES MUST BE CHECKED TO VERIFY WHICH SET INDICATES THE CLOSED POSITION OF DAMPER. THIS SET OF WIRES SHOULD THEN BE LABELED WITH A BLUE WIRE MARKER (382169).



WIRING DIAGRAMS

DUCT SMOKE DETECTOR

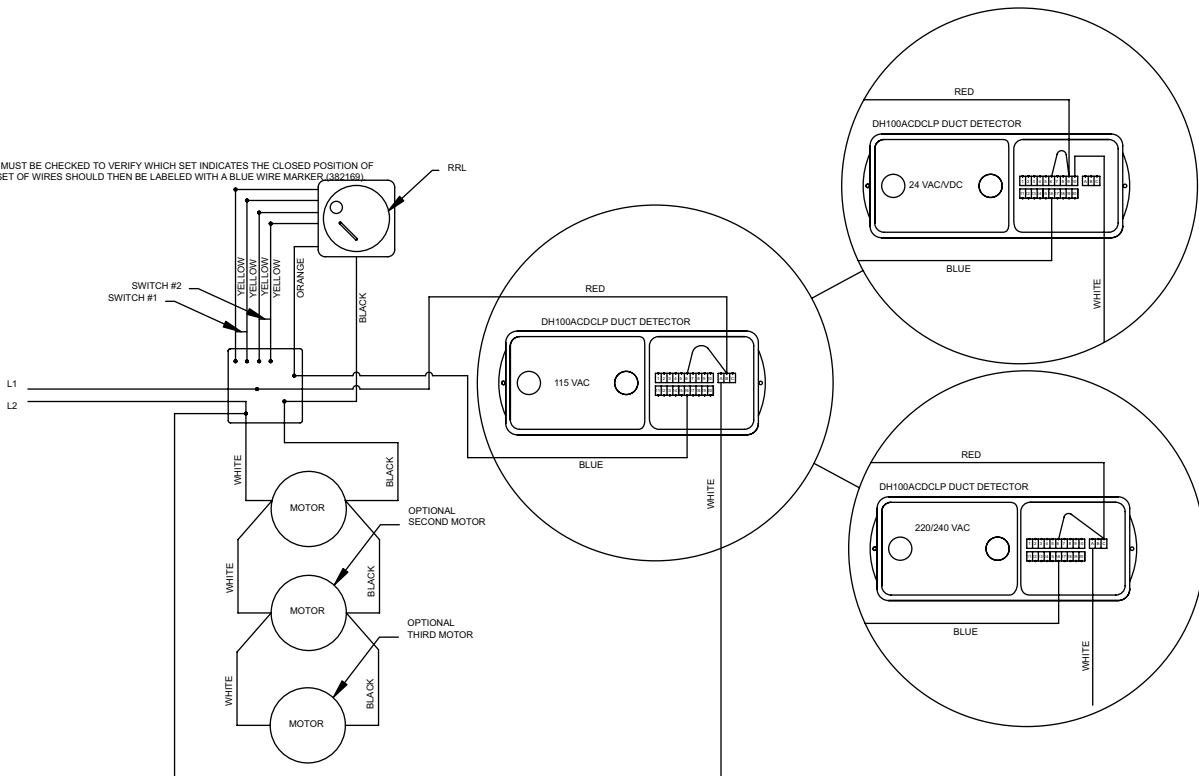
RRL



1. CONDUIT RUNS WHICH EXCEED 72" MUST HAVE GREEN GROUND WIRE.
2. FLEX CONDUIT MUST BE SECURED WITH A CONDUIT CLAMP (458296) WITHIN 12" OF CONDUIT TERMINATION AT THE HANDI-BOX OR ACTUATOR. CONDUIT RUNS MUST ALSO BE SECURED ALONG SLEEVE AT A MAXIMUM OF 24" ON CENTER.

RRL/OCI

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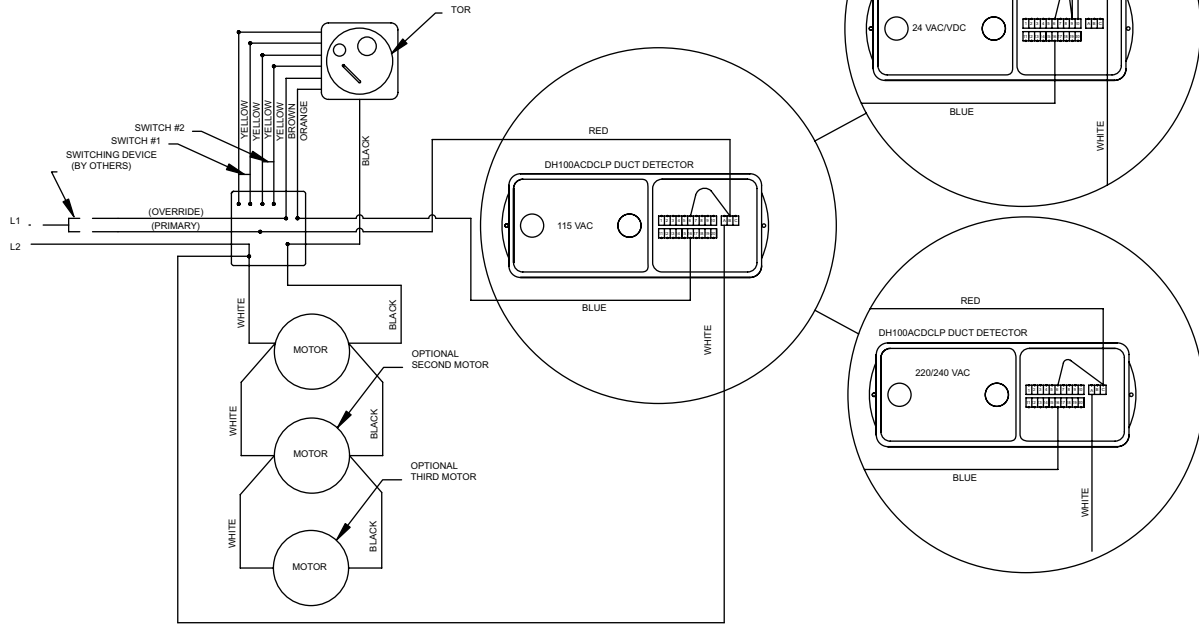
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WIRING DIAGRAMS

DUCT SMOKE DETECTOR

TOR

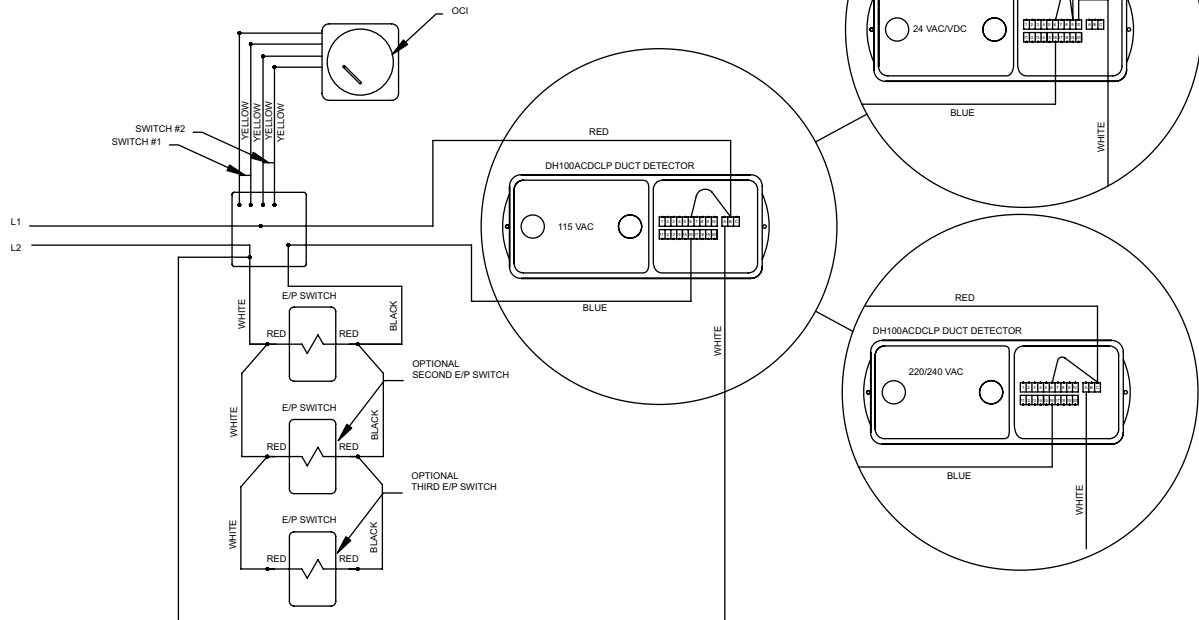
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OCI w/ EP Switch

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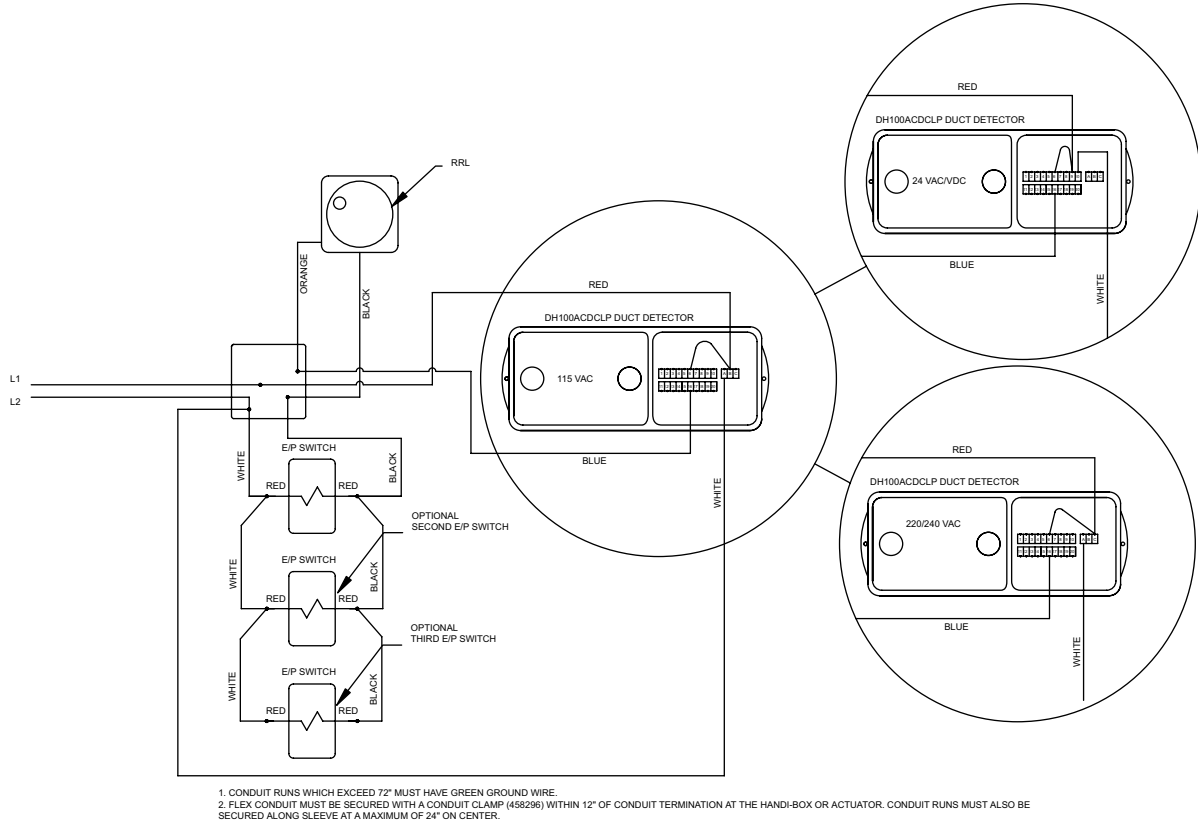


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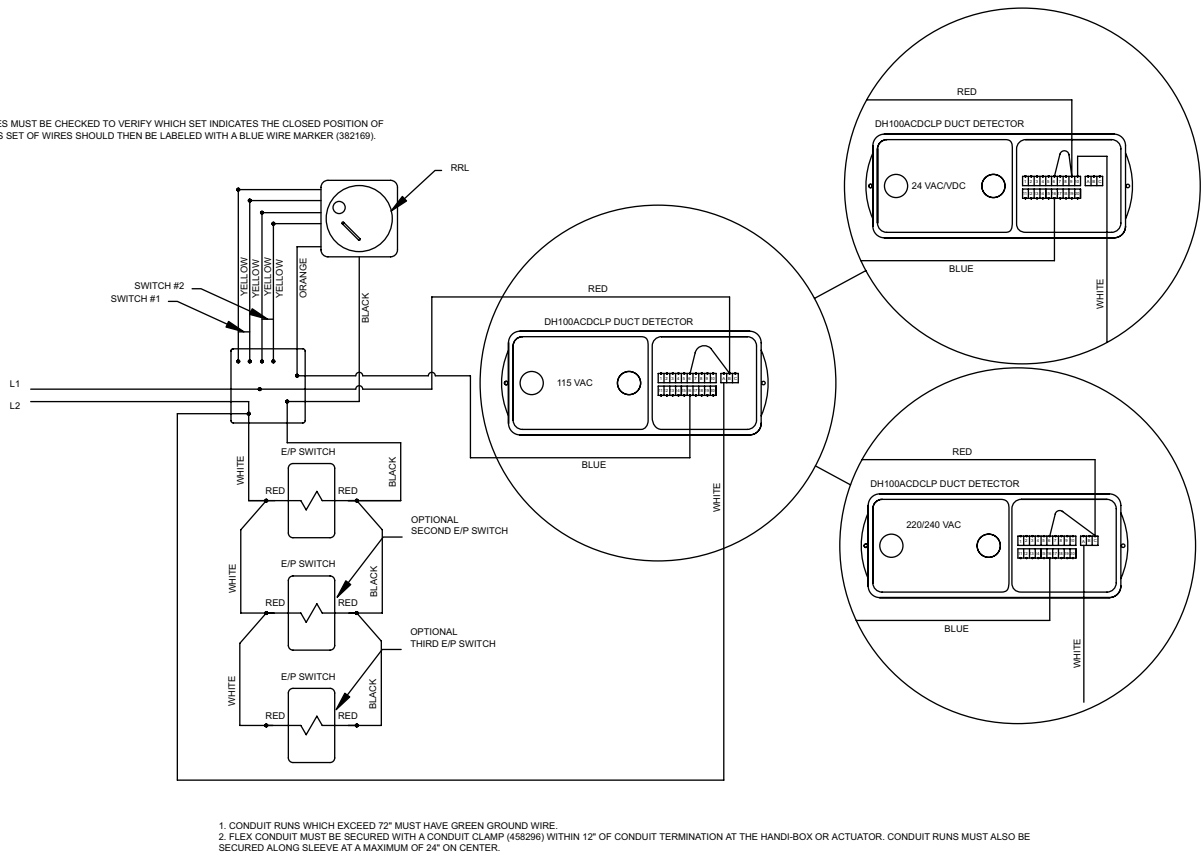
DUCT SMOKE DETECTOR

RRL W/ EP Switch



RRL/OCI W/ EP Switch

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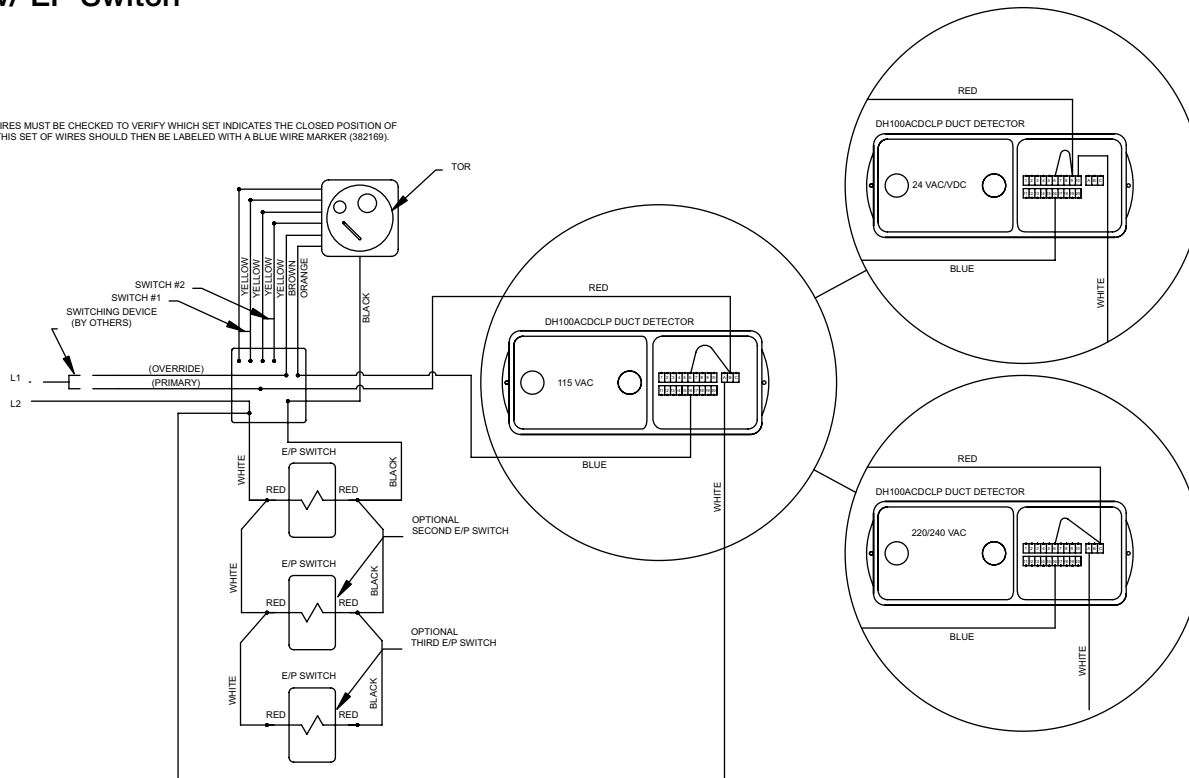


WIRING DIAGRAMS

DUCT SMOKE DETECTOR

TOR w/ EP Switch

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