Nos. 622-6, 622-12, 623-6 623-12 PHOTOELECTRIC SMOKE DETECTORS

GENERAL

These units may be used with any compatible 6VDC or 12VDC control unit. The 6V (-6) units, for example, may be connected to the Ademco No. 508 Fire Alarm Control combination burglar/fire controls in the No. 340R and 342R series. The 623 types are calibrated to alarm when smoke in the detection chamber reaches the typical fixed sensitivity setting of 1.5% obscuration per foot or when the ambient temperature is sufficiently high to activate the unit's heater detector. The 622 types alarm when smoke in the chamber reaches 1.5%. (They are not equipped with a heat detector.)

PRINCIPLE OF OPERATION

The detection portion of each unit consists of an optical frame assembly which fits into a light-tight smoke detection chamber called a labyrinth.

Under a "no smoke" condition, the light source LED projects a beam of light through a bullet lens and across the detection chamber onto the light pipe. The light from the light source LED is transmitted through the light pipe onto the regulating photocell.

The regulating photocell sees a predetermined amount of light. If the intensity of the light source LED should vary with environmental conditions, the regulating photocell automatically adjusts current to the light source LED as necessary to maintain the predetermined light intensity. This maintains the unit's original sensitivity.

The smoke cell is a light-sensitive photocell which is located at an angle to the light beam. The smoke cell is in darkness under the "no smoke" condition. When smoke in the detection chamber reaches the nominal 1.5% per foot sensitivity setting, sufficient light from the light source LED is reflected off the smoke particles onto the smoke cell to lower the resistance of the smoke cell and cause an alarm signal.

SYSTEM CONNECTION

NOTE: Detector operating voltage range must be compatible with the control panel's power supply output voltage.

Each unit contains one set of Form A(SPST) alarm contacts for connection to the alarm initiating circuit, and two sets of Form C (SPDT) alarm contacts for auxiliary functions.

NON-LATCHING FEATURE

Standard production detectors latch in on alarm and have a latching alarm indicator LED on the outer surface of the housing. A detector in alarm can be reset by momentarily interrupting power to the unit. In the event a non-latching detector is required, cutting the wire jumper on the P.C. board as indicated in the illustration will void the latching feature. Non-latching detectors will automatically reset when smoke clears the detection chamber or, in the case of the 623 types, when the ambient temperature is sufficiently reduced.

POWER SUPERVISION

Supervision of power is necessary and is accomplished by installing an End of Line Relay Assembly 633, or its equivalent. The E.O.L. Relay Assembly contacts are closed when energized and are wired in series with the alarm loop. Power failure or a break in the power loop de-energizes the E.O.L. Assembly, causing the relay contacts to open. This results in a trouble signal at the control panel.

LOCATION

The detector should be mounted on the ceiling not less than six inches from a side wall. Exact detector location shall be determined by an evaluation based on engineering judgement supplemented, if possible, by field tests. For additional information information on detector location and spacing, contact the National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210, and request a copy of NFPA Number 72E, the Standard on Automatic Fire Detectors.

INSTALLATION

The detector is provided with a separate steel mounting plate which attaches to standard four inch square or octagonal electrical boxes, with box size as required by the National Electrical Code for the number and size of conductors used. A prewired plug-in connector attached to and protruding through the mounting plate affords easy connection to system wiring.

NOTE: Do not install detector in locations where the normal ambient temperature exceeds 100°F (37.8°C).

TO MOUNT:

* Connect pigtails from mounting plate connector to system wiring, observing the color code shown in Wiring Diagram.

* Loosen, but do not remove, the electrical box screws.

* Attach the mounting plate to the electrical box by engaging the appropriate keyslots in the mounting screws. Turn the plate clockwise to achieve the desired detector orientation and tighten the mounting screws.

* Attach the detector to the mounting plate by inserting the guide pins into the holes on the mounting plate. Press the detector so that the snap lock feature fastens the detector to the mounting plate.

TO REMOVE:

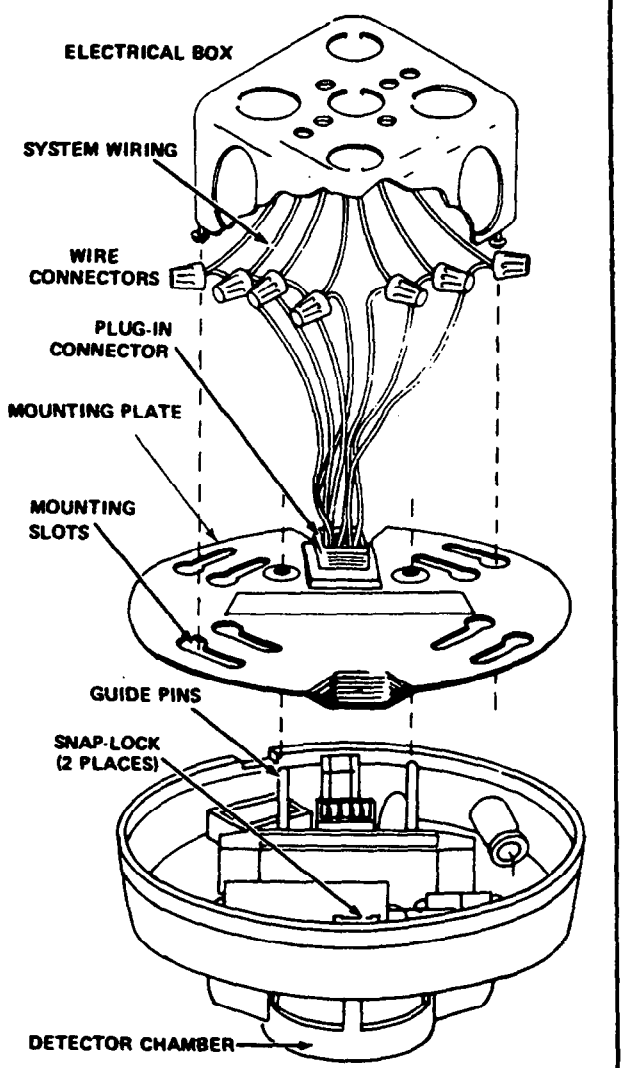
* Insert a screwdriver one-half inch into the slot on the side of the detector housing and turn or pry down. This will disengage the snap lock and the male and female ends of the connector. Removal instructions are indicated on the face of the detector.

TESTING

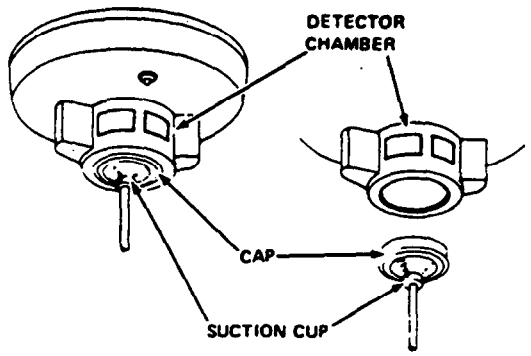
The detectors have a built-in test feature so each unit can be functionally tested without generating smoke. Applying a magnet to the area of the alarm indicator light will operate a reed switch which illuminates a test LED within the unit's optical enclosure. Illumination of the test LED reflects light onto the smoke cell, duplicating the condition which occurs when smoke enters the detection chamber.

MAINTENANCE

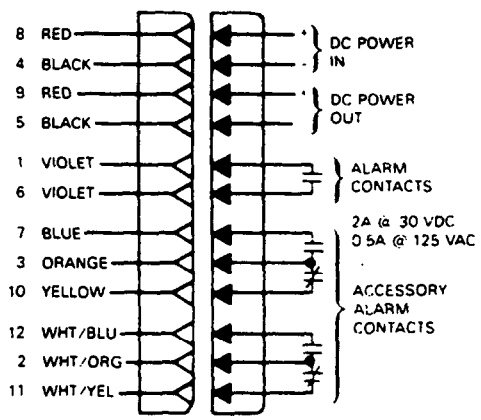
While no regularly scheduled maintenance is recommended, periodic cleaning of the detection chamber may be needed when detectors are located in abnormally dirty or dusty environments.



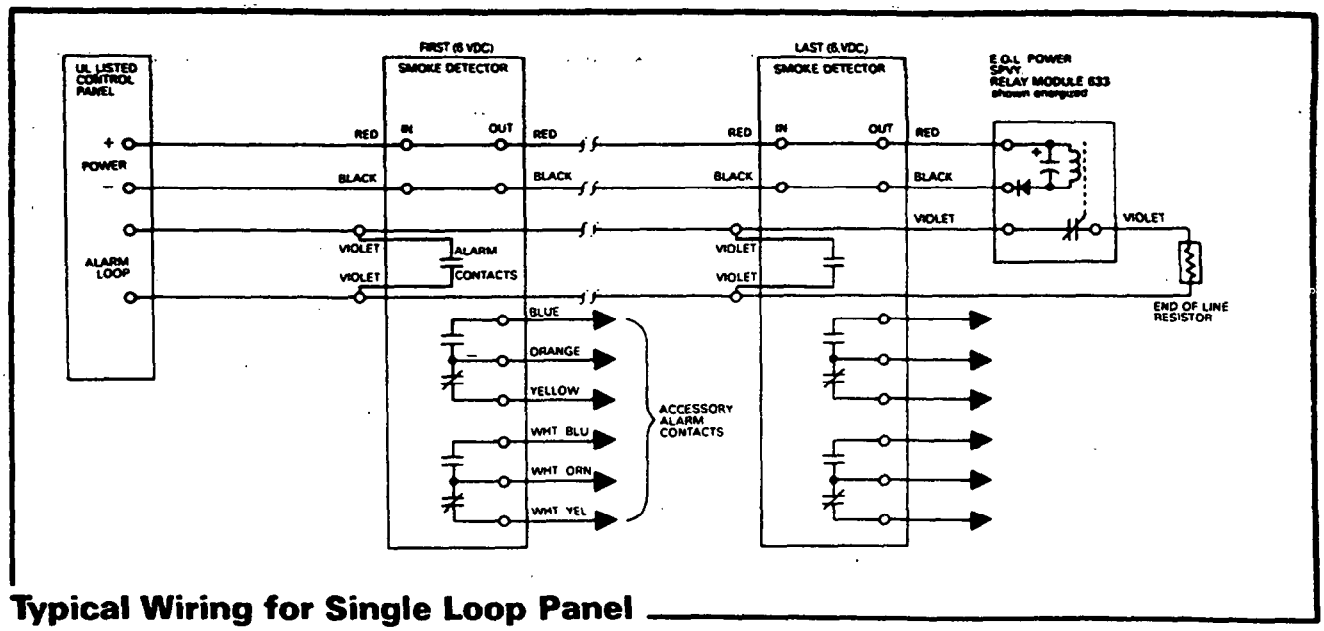
Installation of Detector



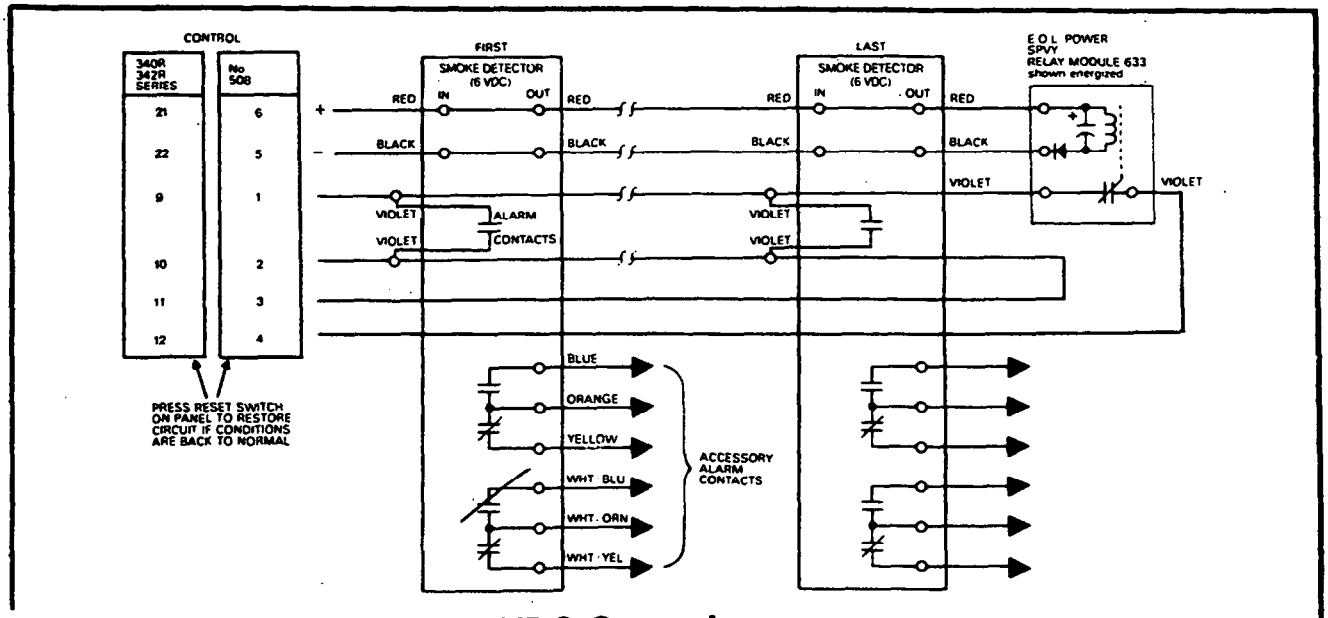
Detector Cap Removal



Detector Wiring Diagram



Typical Wiring for Single Loop Panel



Typical Wiring for Ademco 6VDC Controls

CAUTION: Disconnect power to the unit before cleaning.

The plastic cap on the external end of the detection chamber snaps out and may be removed with a suction cup, allowing full access to all parts of the detection chamber. A low-pressure air line or vacuum may be used to clean the detection chamber.

NOTE: The smoke detection photocell normally is in darkness. When the chamber cap is removed for cleaning, the photocell is exposed to light. Photocells undergo a temporary shift in characteristics when exposed to high light levels. Because photocells have a "memory", the detector should be allowed to recover for about thirty minutes after the cap replacement before the unit is repowered.

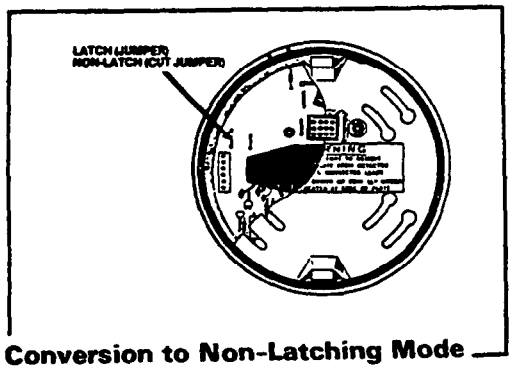
SPECIAL CONSIDERATIONS

* The detector's light source is an LED. Detectors should be returned to the supplier if service is required.

* Start-up current consumption of each detector should be considered when planning power supply requirements.

MODELS AVAILABLE

TYPE	DESCRIPTION	VOLTAGE
623	smoke detector with 135°F heat detector	specify 6VDC(-6) or 12VDC(-12)
622	smoke detector without heat detector	
633	end-of-line relay assembly	



Conversion to Non-Latching Mode

ELECTRICAL SPECIFICATIONS

MODEL:	623-6 622-6	623-12 622-12
Voltage	6-9VDC	12-16VDC
Typical Current @ 25°C	.005A	.005A
Start-Up Current (Approx. 2 min.)	.025A	.025A
Current Alarm	.085A	.050A
Current E.O.L. Relay Assembly	.060A	.035A

Contact Rating
All smoke detectors: 2A, 30 VDC; 0.5A, 125 VAC
E.O.L. Assembly: 1A, 30 VDC; 0.5A, 125 VAC

Dimensions
All smoke detectors: 6" diameter x 2-3/4" deep
E.O.L. Assembly: 3-1/4" x 1-3/8" x 3/4"