

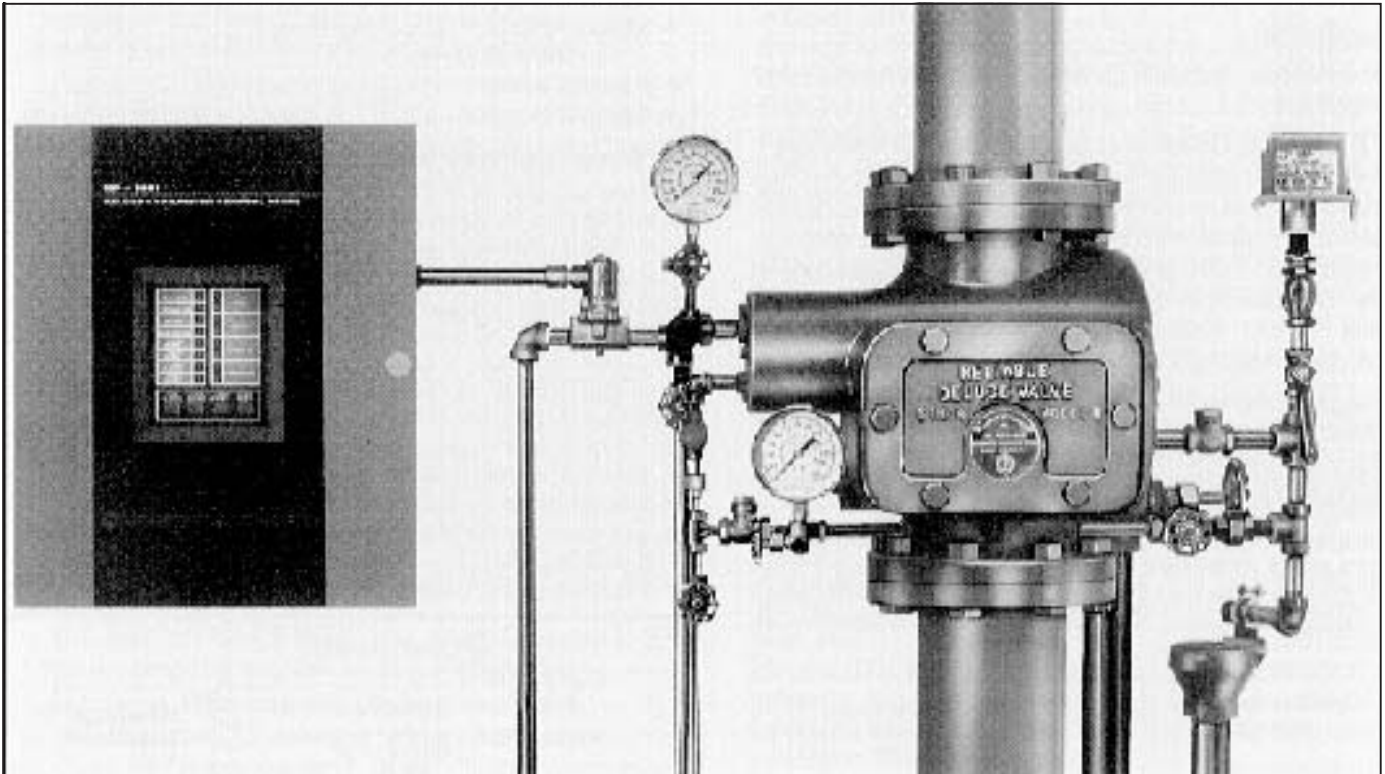
# Reliable®

## Supertrol Electrical Systems

## Instructions for Installation, Operation, Care and Maintenance

For Deluge and Preaction Systems

Listed by Underwriters Laboratories, Inc.  
Approved by Factory Mutual Research Corporation,  
and other fire insurance and governmental agencies  
in the United States and foreign countries.



## Systems Description

### General

Supertrol Systems include supervised, low voltage, fire detection systems and electrically operated Reliable deluge valves. Supertrol Systems provide electric-hydraulic control of:

Deluge Systems—Figure 1

- Open Sprinkler located in hazardous areas.
- Open spray nozzles located to protect a specific hazard.

Pre-Action Systems—Figure 2

- Automatic, sealed sprinklers located in unheated areas or water sensitive areas in which it is desirable to keep piping empty prior to a fire.

Double Interlock Systems—Bulletin 707

- For Refrigerated areas where accidental water into the system would cause system damage. One detector and one sprinkler are required to operate before water flow occurs.

Approvals

UL—Supertrol Components Listed

FM—Supertrol Single Area and Two Area Systems Using Thermal Detectors and Class A Detector Wiring Approved

N.Y.C. MEA No. 419-91-E

### Description

All Reliable Supertrol Systems are composed of two main sections:

#### I. Electrical Detection and Actuation Section

This section detects the fire either thermally or by detecting products of combustion and operates the deluge valve. Any listed 24 Vdc normally open 2 or 4 wire detector; for example, thermal detectors or smoke detectors in either photoelectric or ionization types may be used. Model RP-1001 Releasing Panels control Supertrol Systems. This unique panel is available in three versions:

1. Single Area Panel—Controls one deluge valve in one fire area.
2. Two Area Panel—Controls two deluge valves in two separate fire areas.
3. Single Area Cross Zoned Panel—Two independent groups of detectors are intermixed and cross zoned to control one deluge valve in one fire area. Each

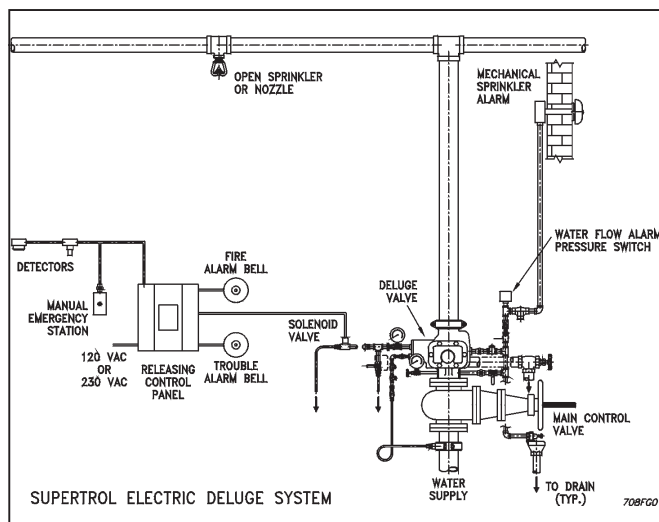


Figure 1

group of detectors is spaced in accordance with the detector listing and NFPA 72E.

All panels supply power to operate detectors, alarms and solenoid valves. Detector, alarm bell and solenoid valve circuits are constantly supervised such that electrical faults in these circuits cause a trouble condition to announce. The Model RP-1001 Releasing Panel accommodates either Class A detector circuitry—a single break or single ground fault in the detector loop does not impair normal fire operation, or Class B detector circuitry—a single break or ground fault results in a trouble signal but normal fire operation may be impaired while trouble persists.

In the event of a primary 120/230 (Vac) power failure, the system automatically switches to battery power. Battery options are available; however, FM requires batteries that will supply power for a minimum of 90 hours. The Model RP-1001 Panel contains a charging circuit which constantly maintains the batteries at full charge.

The components which make up the Electrical Detection and Actuation Section are:

- Fire Detectors
  - Thermal Detectors
  - Smoke Detectors
- Manual Emergency Stations
- Model RP-1001 Releasing Panels
  - Standby Batteries
- Electric Bells
- Solenoid Valve

#### II. Water Delivery and Distribution Section

This section delivers and distributes water or other extinguishing agents on the fire. When operated by the RP-1001 Panel, the deluge valve releases the extinguishing agent into a network of piping supplying sprinklers or nozzles which efficiently distribute the extinguishing agent on the fire.

The components which make up the water delivery and distribution section are:

- Deluge Valve
- Electric and/or Mechanical Waterflow Alarms
- Check Valve With Drain—Pre-Action System Only
- Supervisory Air Maintenance Supply—Pre-Action System Only
- Nozzles or Sprinklers

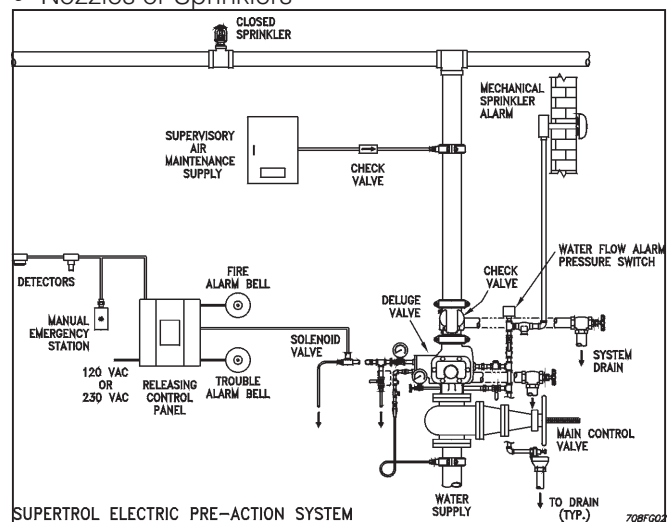


Figure 2

## System Installation And Service

### General

**Control Panel** – The Model RP-1001 Releasing Panel current output is 2.2 amps maximum. The total current drain for all system components: remote trouble signal, alarm bell, solenoid valve and smoke detector must not exceed this output.

The electrical control unit, standby batteries and rectifier are in one panel. The panel should be mounted at a convenient observable location near the deluge valve.

All wiring shall be installed in accordance with the National Electrical Code and the manufacturers drawings. Wire no smaller than No. 14 AWG shall supply A.C. power to the panel. The panel requires 120/220 Vac, 1.2 amp input power.

Prior to powering the panel or installing optional modules, complete all wiring for the detectors, alarm and trouble bells, A.C. power and solenoid valve.

Check all wiring for continuity and shorts. Connect detector, alarm and trouble bell and solenoid valve wiring to the panel as shown on the appropriate Field Wiring Diagram (Figures 3 – 14). Prior to connecting batteries and A.C. power, refer to the RP-1001 installation booklet and the appropriate Test Outline in this bulletin for start-up sequence and indications of correct operation.

Two 12V – 12 AH batteries are required for 90 hours of standby condition. These are maintenance free and leak proof gel cell batteries. These batteries require 48 hours to reach full charge after connection to the panel.

**Detectors** – Smoke detectors must be an approved normally open two wire type without auxiliary relay or 4 wire with relay. They must be installed in accordance with approved spacing (Ref. NFPA 72E) and with the manufacturer's instructions. No more than 20 Model PSD-7125 or 30 Model CPD-7021 smoke detectors shall be installed in one detector circuit. Any number of approved normally open thermal detectors or manual emergency stations may be installed in one detector circuit. Thermal detectors must also be installed in accordance with approved spacing and with the manufacturer's instructions. Thermal detectors and/or manual emergency stations may be intermixed with smoke detectors in the same detector circuit.

The detector circuit resistance shall not exceed 200 ohms. Resistance may be measured as follows:

Disconnect detector circuit wires from panel.

Short terminals of detector furthest from panel.

Measure resistance—each of the disconnected wires to the other.

Resistance shall not exceed 200 ohms.

Maximum wire length is as follows:

Wire Size	Pull Length to Furthest Detector	Total Loop Length
18 AWG	10,000'	20,000'
16 AWG	16,000'	32,000'
14 AWG	24,000'	48,000'
12 AWG	40,000'	80,000'

Continuity of detector circuit wiring must be maintained when adding detectors, as shown on Field Wiring Diagrams, to maintain circuit supervision. In addition, both wires of the circuit must be broken at each detector termi-

nal screw. When wired in this manner, any attempt to disconnect a detector will operate the trouble signal.

The detector circuit will lock-up for either an alarm or trouble condition. After the alarm condition is corrected, operate the reset switch to restore the system to normal. Trouble annunciation resets automatically when trouble conditions are corrected.

**Alarm Bell** – A polarized alarm bell, horn or strobe light should be located where the alarm will readily be noticed. An end of line resistor must be installed after the furthest alarm device as shown on the Field Wiring Diagram to maintain circuit supervision. If no alarm device is connected, circuit continuity must be maintained by a 4.7K ohm resistor connected across the alarm circuit terminals. Never short or jumper these terminals. Wire size for the alarm circuit should be No. 14 AWG.

**Trouble Indication** – A non-silenceable remote trouble bell may be connected to the trouble dry contacts. Form C dry contacts must be powered from the terminals marked 24VNR. The trouble bell circuit terminals must be left vacant when not used.

**Solenoid Valve** – The solenoid valve must be installed with its "in" port toward the deluge valve top chamber or push rod chamber. See the Electrical Operation section of Bulletin 503 when used with a Model A Deluge Valve or Bulletin 501 when used with a Model B or BX Deluge Valve. The ½" piping connecting the solenoid valve to the pilot line trim is field supplied

The solenoid valve circuit is supervised when wired as shown on the Field Wiring Diagrams. No E.O.L. resistor is to be used. Never jumper or short the solenoid valve circuit terminals.

**Water Supply Control Valve Tamper Switch** – A control valve tamper switch may be connected to the supervisory circuit (In #4) on the Field Wiring Diagrams. Remove the resistor from those terminals prior to making the connection. The water supply control valve position indicator switch contacts must be open when the control valve is open.

**Valve and Trim** – When used in a Supertrol System, the deluge valve should be trimmed using the Basic and Wet Pilot Line Trim Sets, refer to Bulletin 501/503 for details. The Basic Trim provides connections for a mechanical sprinkler alarm as well as for a water flow alarm pressure switch. The Wet Pilot Trim makes provision for mounting the solenoid valve.

Any check valve capable of reliably sealing 1-1½ psi supervisory air pressure may be used as the system riser check valve in a Pre-Action system. A drain and trimmings to provide 6" to 10" of prime water must be installed on the system side of this check valve. A Pre-Action system must be absolutely leak tight to properly maintain supervisory air pressure.

**Water Flow Alarm Pressure Switch** – When a water flow alarm pressure switch is installed in the deluge valve basic trim, the switch is pressure operated to actuate electric alarms and shunt trip devices when water enters the system. Refer to the installation sheet packed with each switch and Bulletin 608 for details.

**Mechanical Sprinkler Alarm** – The Reliable Model C Mechanical Sprinkler Alarm is operated by water flow when the deluge valve has opened. Refer to Bulletin 613 for installation information.

**Supervisory Air Supply** – The Models B and C Air Compressor Panels and the Model C Pressure Maintenance Device are supervisory pressure devices which include a separate check valve assembly. The check valve is to be connected to the sprinkler piping with its flow arrow pointing toward the sprinkler piping. This connection can be made at any convenient location on the system side of the riser check valve, at least 2 ft. above the prime water elevation. The check valve protects the supervisory devices from excessive pressure when water flows into the sprinkler system.

### **Testing**

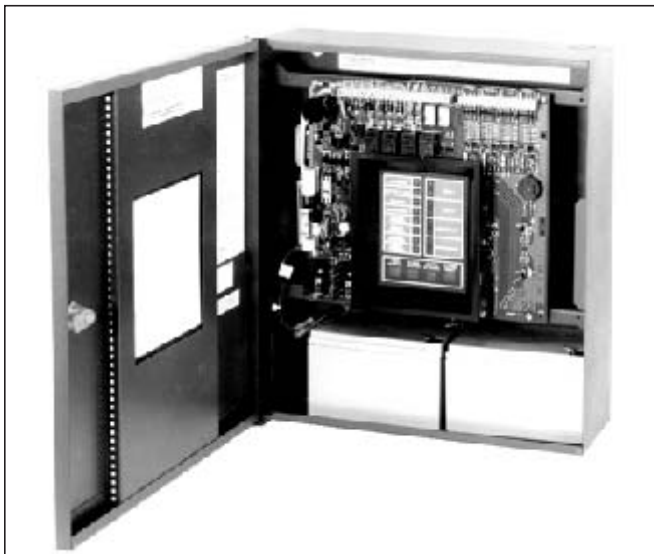
Refer to the section entitled “Testing Detection System Without Operating Deluge Valve” of Bulletin 501/503 prior to testing.

**Warning** – When system is tied into an auxiliarized fire alarm box the local Superintendent of Fire Alarms should be present during all testing. He will connect the city circuit to the box and shunt the box until the test is completed. He should also be present to shunt the box any time a test is made on the auxiliarized system.

**Detectors** – Close system water supply control valve prior to testing detectors. Test detectors with an appropriate testing device. When detectors have returned to normal, push reset button on panel. After completion of tests, reset deluge valve per Bulletin 501/503 and open water supply control valve.

**Emergency Stations** – Close water supply valve prior to testing. Test by opening station with test key. Restore emergency station to normal condition, push reset button on panel. Reset deluge valve per Bulletin 501/503 and open water supply control valve at termination of testing.

**Regularity of Testing** – System should be tested frequently, at least twice a year. Tests shall be made under the direct supervision of the owner and/or authorities having jurisdiction. A complete record shall be made of all tests. After each test the system shall be restored to the normal operating condition. Tests should be held during daylight hours and all occupants shall be notified in advance as to the time of testing and sounding of alarms.



### **Model RP-1001 Releasing Panel**

Model RP-1001 Releasing Panels are compact single enclosure units containing power supply, standby batteries, battery charger and detector, waterflow, tamper, alarm and solenoid valve connections. These control panels are single area panels that include DIP switches for field setting as two area or single area cross zoned versions. These control panels are microprocessor controlled with mounting slots for any two of the three optional module boards. The optional module connectors are located at J5 and J8 on Field Wiring Diagrams. Opt1 jumper wire must be cut to install module on J5 and Opt2 jumper wire must be cut to install module on J8, to enable module supervision. Refer to the RP-1001 booklet for installation information.

#### **Specifications:**

##### **AC Power**

120 VAC, 50/60 Hz, 1.2 amps

230 VAC, 50 Hz, .65 amps

Wire size: Minimum #14 AWG with 600V insulation

##### **Initiating Circuits**

Power-limited circuitry

Operation: Class A/Class B

Standby voltage: 24 VDC (ripple - 10mV p/p)

Alarm current: 15 mA minimum

Short circuit current: 40 mA maximum

Maximum detector current in standby: 2 mA per zone

Maximum loop resistance - 200 ohms

End-of-line resistor: 4.7K ohms, 1/2 watt

Detector loop current is sufficient to ensure operation of one alarmed detector per zone.

Supervisory current: 5 mA

##### **Indicating Appliance and Releasing Circuits**

Power-limited circuitry

Maximum voltage drop due to wiring: 2 VDC

Standby voltage: 24 VDC

Fuses: 2 AG, 4 amperes

Total current to all external devices: 2.25 amps  
Maximum

Maximum signaling current per circuit: 1.5 amps

End-of line resistor: 4.7K ohms, 1/2 watt

##### **Alarm and Trouble Relays**

2.0 amps @ 30 VDC

.5 amps @ 30 VAC

##### **24 VNR Non-resettable Power**

Total DC current available from this output is up to 200mA

Maximum ripple voltage 10mV p/p

##### **Dimensions**

14.5" wide 16" high x 5" deep

## Optional Module Boards

For Module specifications and installation instructions, refer to Notifier Document #15150, "RP-1001 Deluge/Preaction Control Panel".

**I Transmitter Module (4XTM)** – The Transmitter Module provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity circuits. Also included is a DISABLE switch and disable trouble LED. As a jumper option, the alarm reverse polarity circuit will open on trouble if no alarm exists.

**I Remote Annunciator (RZA-4X)** – The Remote Annunciator mounts on a standard single-gang box and provides the following:

- System Trouble LED (yellow)
- Local Piezo Sounder
- Silence Switch (for local sounder)
- Alarm/Waterflow Bell Detected LED (red)

- Waterflow/Supervisory Bell LED (red)
  - Releasing Circuit 1 LED (red)
  - Releasing Circuit 2/Supervisory Bell LED (red)
- Note: The Remote Annunciator requires the use of an Annunciator Driver module (below).

**I Annunciator Driver Module (4XLM)** – The Annunciator Driver module supports the RZA-4X Remote Annunciator. The Annunciator Driver Module mounts to the main board, occupying one of the two option connectors.

**I Zone Relay Module (4XZM)** – The Zone Relay module provides Form-C contacts for the following:

- Alarm/Waterflow Bell
- Waterflow/Supervisory Bell
- Releasing Circuit 1
- Releasing Circuit 2/Supervisory Bell
- System Alarm
- System Trouble

## Model RP-1001 Supertrol Panel

### Installation

- Surface mount the control panel at a convenient observable location near the deluge valve.
- Prior to connecting the control panel, complete all wiring to detectors, alarm and trouble bells, and solenoid valve as shown on the appropriate Field Wiring Diagram. Observe compliance with all applicable codes.
- Thermal and smoke detectors may be intermixed in the same detector circuit.
- Check all wiring for short circuits and continuity.
- Check control panel DIP switches for proper setting as shown on Field Wiring Diagrams. DIP switches are factory set for single zone panel. Field setting is required for two area and cross-zoned panels as shown on the Field Wiring Diagrams. Slide switches to position shown then reset panel..

- Connect detector, alarm bell, trouble bell and solenoid valve wiring to panel according to Field Wiring Diagram. Alarm and trouble bell polarity must be observed.
- Connect the non-energized A.C. power wires to the terminals indicated on the Field Wiring Diagram.
- Install (2) batteries as shown in Field Wiring Diagram. DO NOT INSTALL battery jumper wires, only install all other battery wires.
- Test per appropriate Control Panel Test Outline.
- Circuit continuity must be maintained across terminals (B+ and B-) marked Out #1, #2, #3, #4, and In #1, #2, #3, #4. Never short or jumper these terminals. If no devices are connected, install a 4.7K ohm 1/2 watt resistor.
- If problems are encountered during testing, see trouble shooting guide on page 21.

Field Wiring Diagrams for the Single Area Control Panel are shown on the following figures:

Fig.	Detector Type	Detector Circuit Wiring	Approvals
3	Thermal	Class A	UL Listed FM Approved
4	Smoke	Class A	UL Listed
5	Thermal	Class B	UL Listed
6	Smoke	Class B	UL Listed

Field Wiring Diagrams for the Two Area Control Panel are shown on the following figures:

Fig.	Detector Type	Detector Circuit Wiring	Approvals
7	Thermal	Class A	UL Listed FM Approved
8	Smoke	Class A	UL Listed
9	Thermal	Class B	UL Listed
10	Smoke	Class B	UL Listed

Field Wiring Diagrams for the Single Area Cross Zoned Panel are shown on the following figures:

Fig.	Detector Type	Detector Circuit Wiring	Approvals
11	Thermal	Class A	UL Listed
12	Smoke	Class A	UL Listed
13	Thermal	Class B	UL Listed
14	Smoke	Class B	UL Listed

**Model RP-1001  
Single Area Releasing Panel**

This control panel is used where one fire area is protected by one deluge valve. This panel provides detector, alarm and solenoid valve circuitry for operation of

one deluge valve. The necessary power supply, as well as, standby emergency power supply, battery charger and rectifier circuitry are contained within this panel.

Test Outline Single Area Control Panel																							
Operation	Simulates	AC Power	System Alarm	Release	Supervisory	System Trouble	Circuit Trouble	Alarm Silence	Power Trouble	Zone 1		Zone 2		Waterflow		Supervisory		Solid Tone	Rapid Beep	Slow Beep	Low Battery *	Ground Fault *	
										Trouble	Alarm	Trouble	Alarm	Trouble	Alarm	Trouble	Alarm						
1. Initial Set Up: a. Connect Battery Jumpers, No. A.C. b. Press Tone Silence Switch						On															On		
2. Power AC Line	Normal Standby Condition	On																					
3. Press and Hold System Reset		On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On				
4. a. Press AC Circuit Breaker Button b. Release AC Circuit Breaker Button	AC Power Failure					On															On		
	AC Power Restored	On																					
5. Temporarily Remove Both Battery Jumpers	Battery Failure	On				On			On												On	On	
6. Temporarily Disconnect Wire From Terminal Marked Out #1 B+	Break in Alarm Bell CKT.	On				On	On														On		
7. Temporarily Short Terminals Marked Out #1 B+ & B-	Short in Alarm Bell CKT.	On				On	On														On		
8. Temporarily Short to Ground Terminal Marked Out #1 B-	Ground Fault	On				On			On												On		On
9. Temporarily Disconnect Wire From Terminal Marked Out #3 B+	Break in Solenoid Valve CKT.	On				On	On														On		
10. Temporarily Disconnect Wire From Terminal Marked In #1 B+	Break In Smoke/Heat Detector CKT.	On				On				On											On		
11. Temporarily Disconnect Wire From Terminal Marked In #2 B+	Break In Manual Pull Detector CKT.	On				On						On									On		
12. Temporarily Disconnect Wire From Terminal Marked In #3 B+	Break In Waterflow Detector CKT.	On				On								On							On		
13. Temporarily Disconnect Wire From Terminal Marked In #4 B+	Break in Supervisory Detector CKT.	On				On										On					On		
14. Temporarily Short Terminals Marked in #1 B+ & B- Press Alarm Silence Press Reset	Smoke/Heat Detector Operation	On	On	On							On						On						
		On	On	On				On		On													
		On																					
15. Temporarily Short Terminals Marked In #2 B+ & B- Press Alarm Silence Press Reset	Manual Pull Station Detector Operation	On	On	On								On						On					
		On	On	On				On				On											
		On																					
16. Temporarily Short Terminals Marked in #3 B+ & B- Press Alarm Silence Press Reset	Waterflow Detector Operation	On	On											On				On					
		On	On					On						On									
		On																					
17. Temporarily Short Terminals Marked In #4 B+ & B- Press Tone Silence Press Reset	Supervisory Detector Operation	On			On											On			On				
		On			On										On								
		On																					
18. Operate Detector Press Reset	Fire	On	On	On							On								On				
		On																					

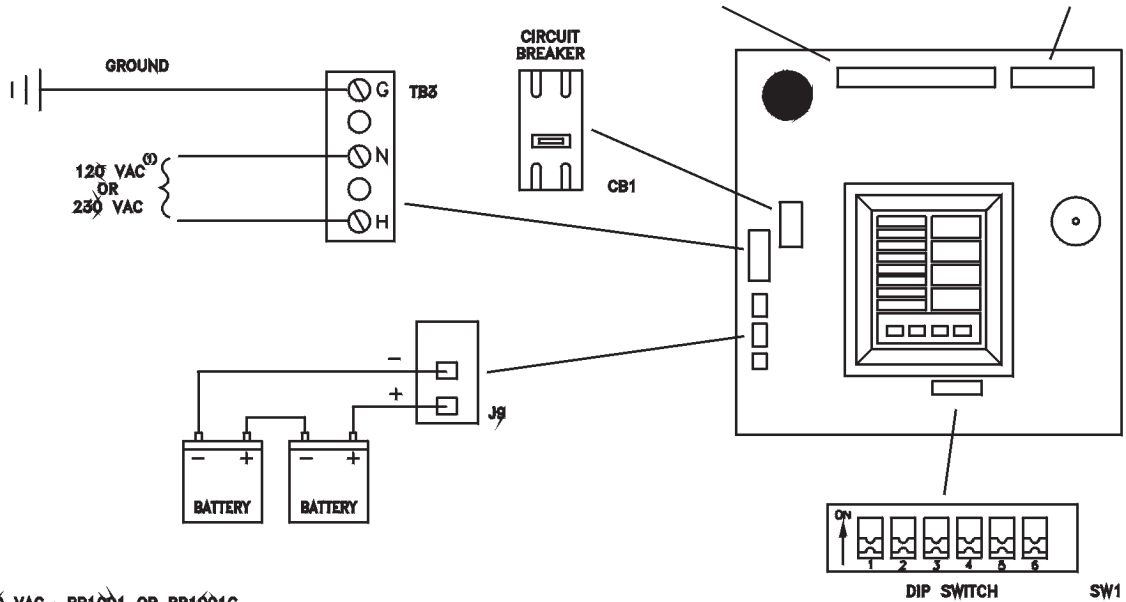
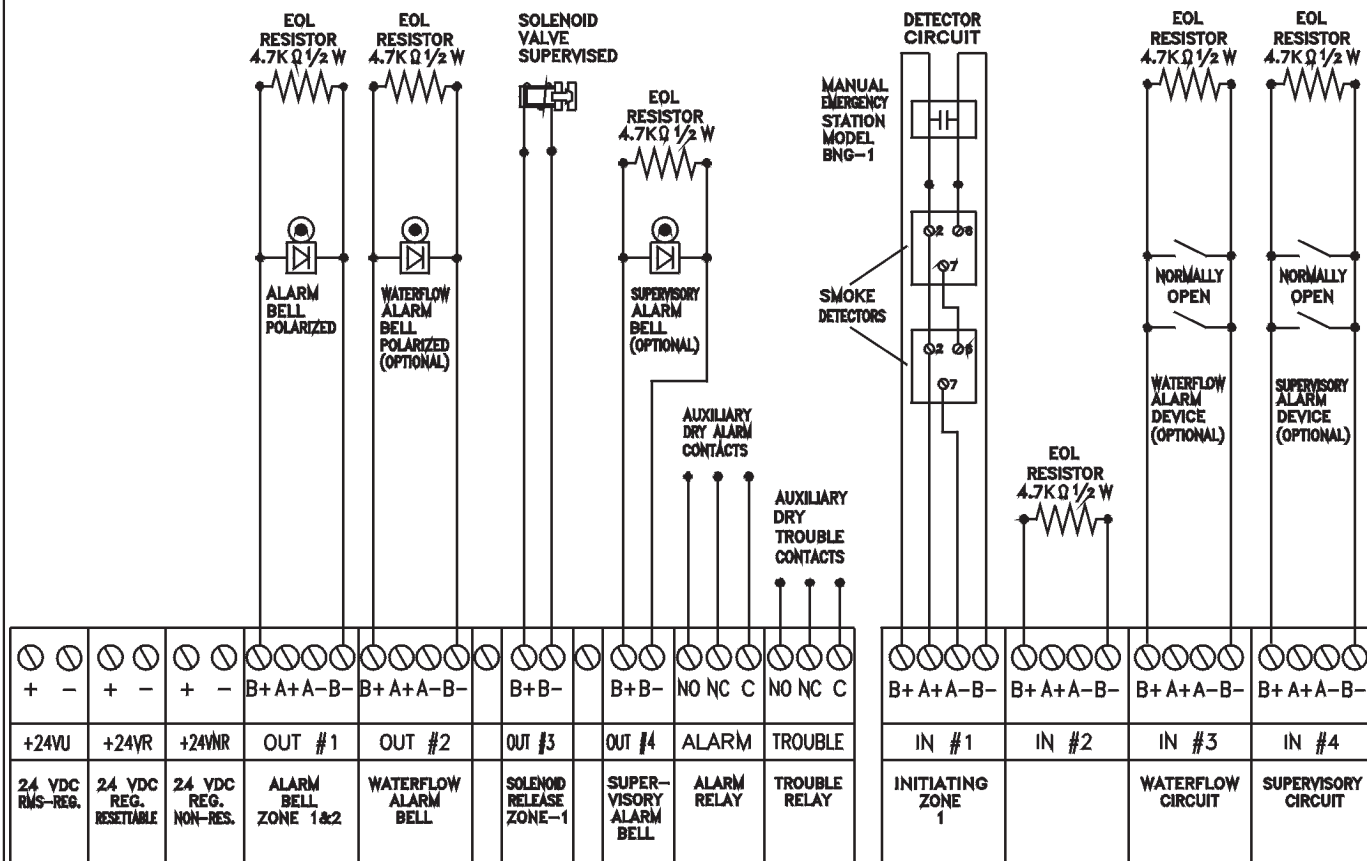
\* Yellow L.E.D. Visible Below Center Control Panel.



Fig. 4

FIELD WIRING DIAGRAM – SINGLE AREA CONTROL PANEL

- Class 'A' Detector Circuit Wiring
- Smoke Detector:  
Photoelectric, Model PSD 7155, Base Model 70-201000-001  
Ionization, Model CPD 7021, Base Model 70-201000-001
- U.L. Listed

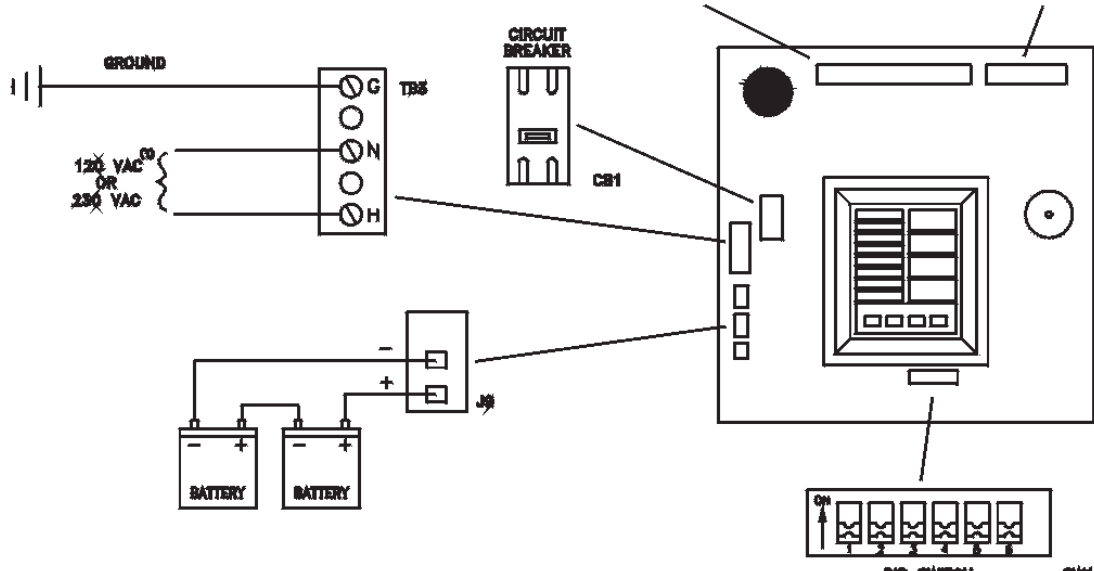
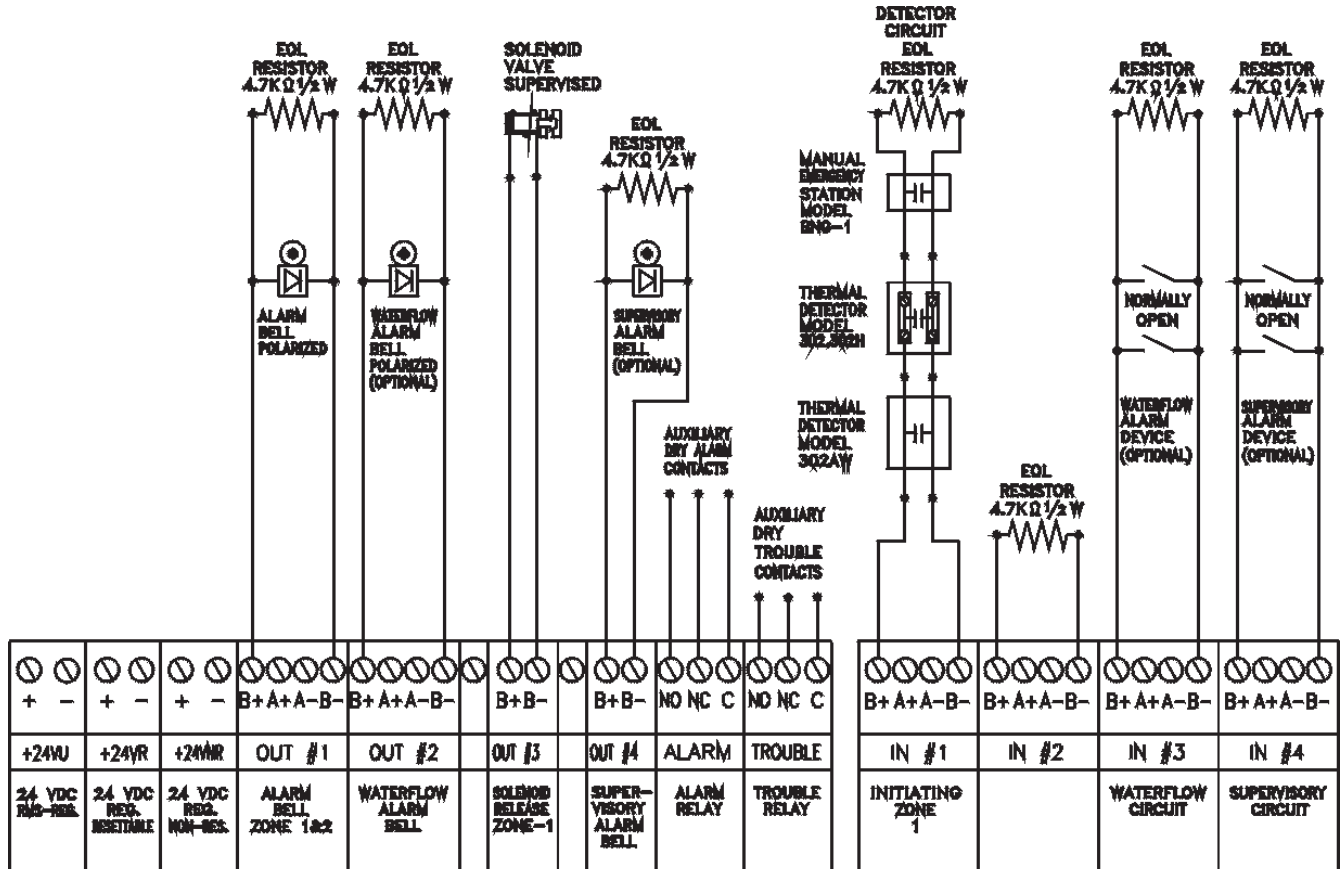


(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E

Fig. 5

**FIELD WIRING DIAGRAM – SINGLE AREA CONTROL PANEL**

- Class 'B' Detector Circuit Wiring
- Thermal Detector:  
Interior, Models 302 and 302H  
Weather Proof, Model 302AW
- U.L. Listed

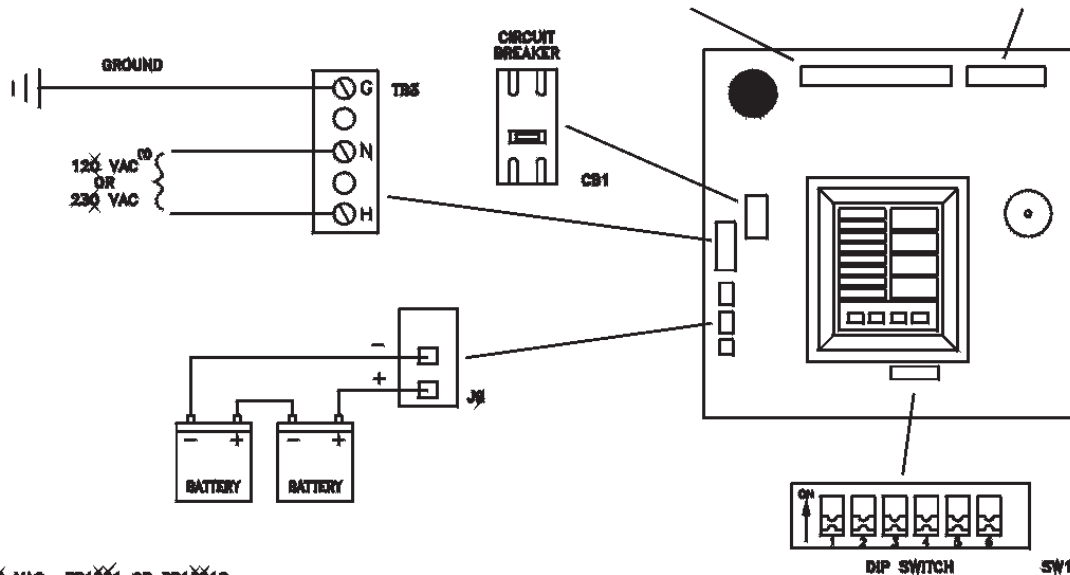
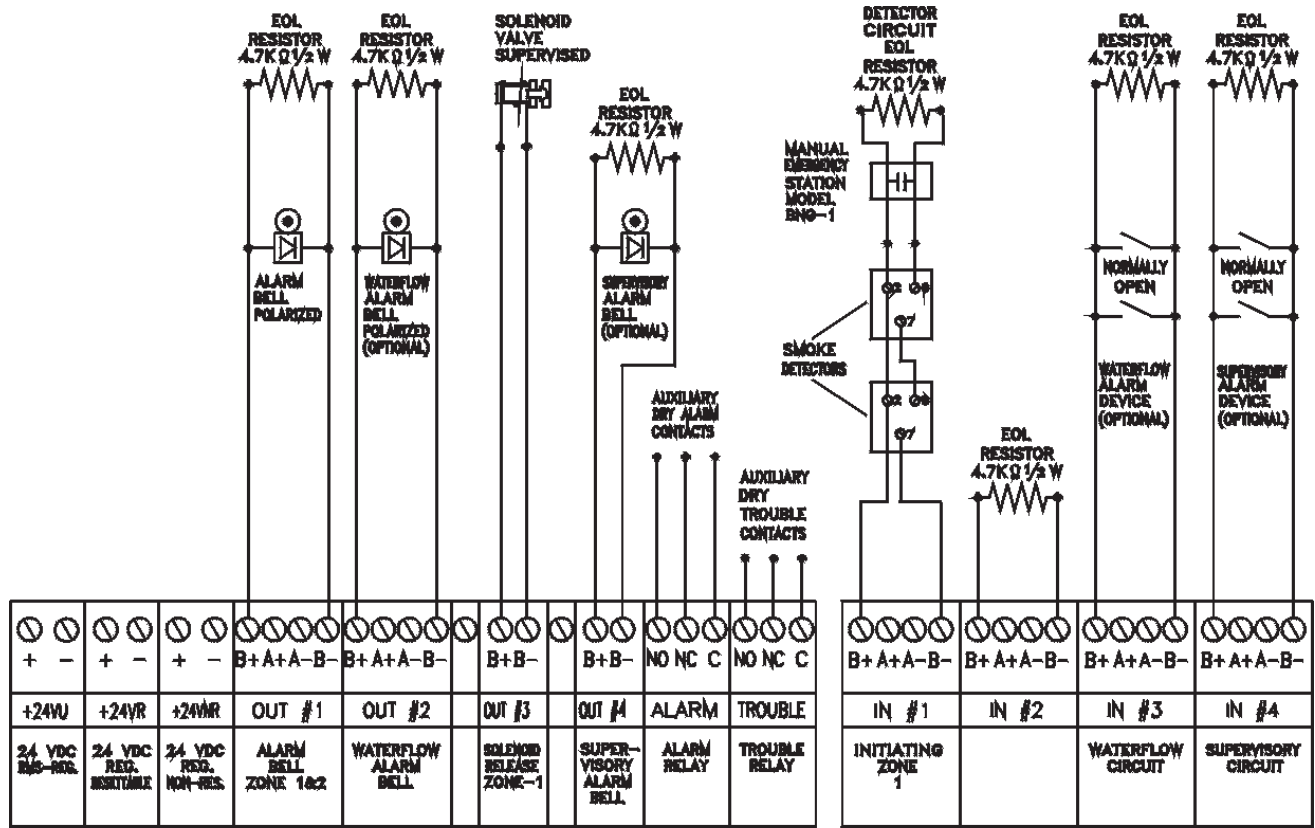


(1) 120 VAC - RP1001 OR RP1001C  
230 VAC - RP1001E

Fig. 6

FIELD WIRING DIAGRAM – SINGLE AREA CONTROL PANEL

- Class 'B' Detector Circuit Wiring
- Smoke Detector:  
Photoelectric, Model PSD 7155, Base Model 70-201000-001  
Ionization, Model CPD 7021, Base Model 70-201000-001
- U.L. Listed



(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E

**Model RP-1001 Supertrol  
Two Area Releasing Panel**

This control panel is used where two nearby areas are protected by two independent deluge valves. Two independent sets of detector and solenoid valves circuits and

one common alarm circuit are powered by a common power supply, battery charger, standby emergency power supply and rectifier circuitry.

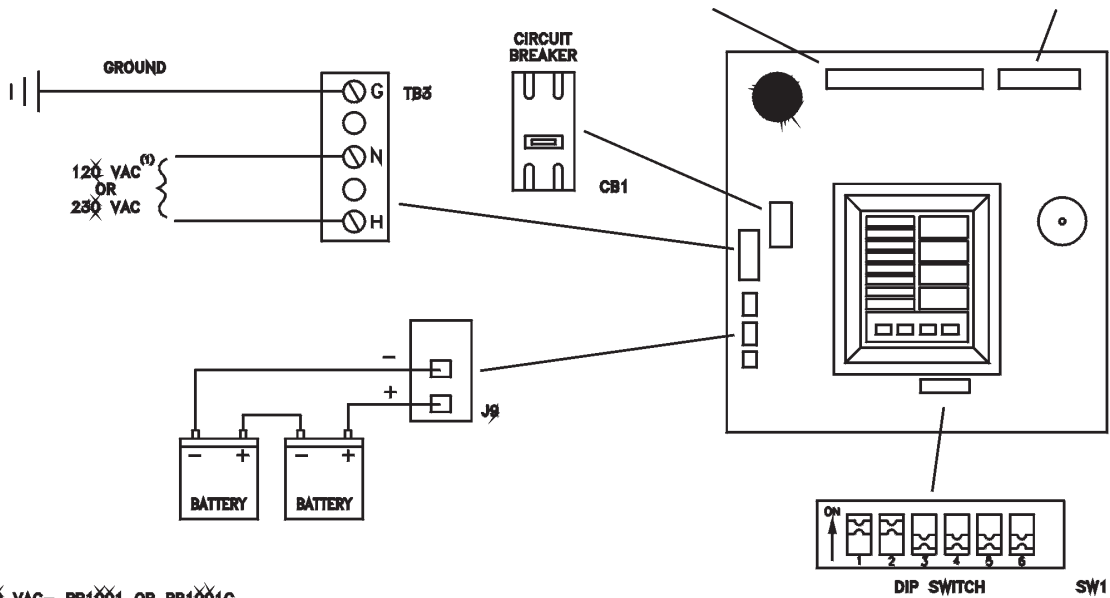
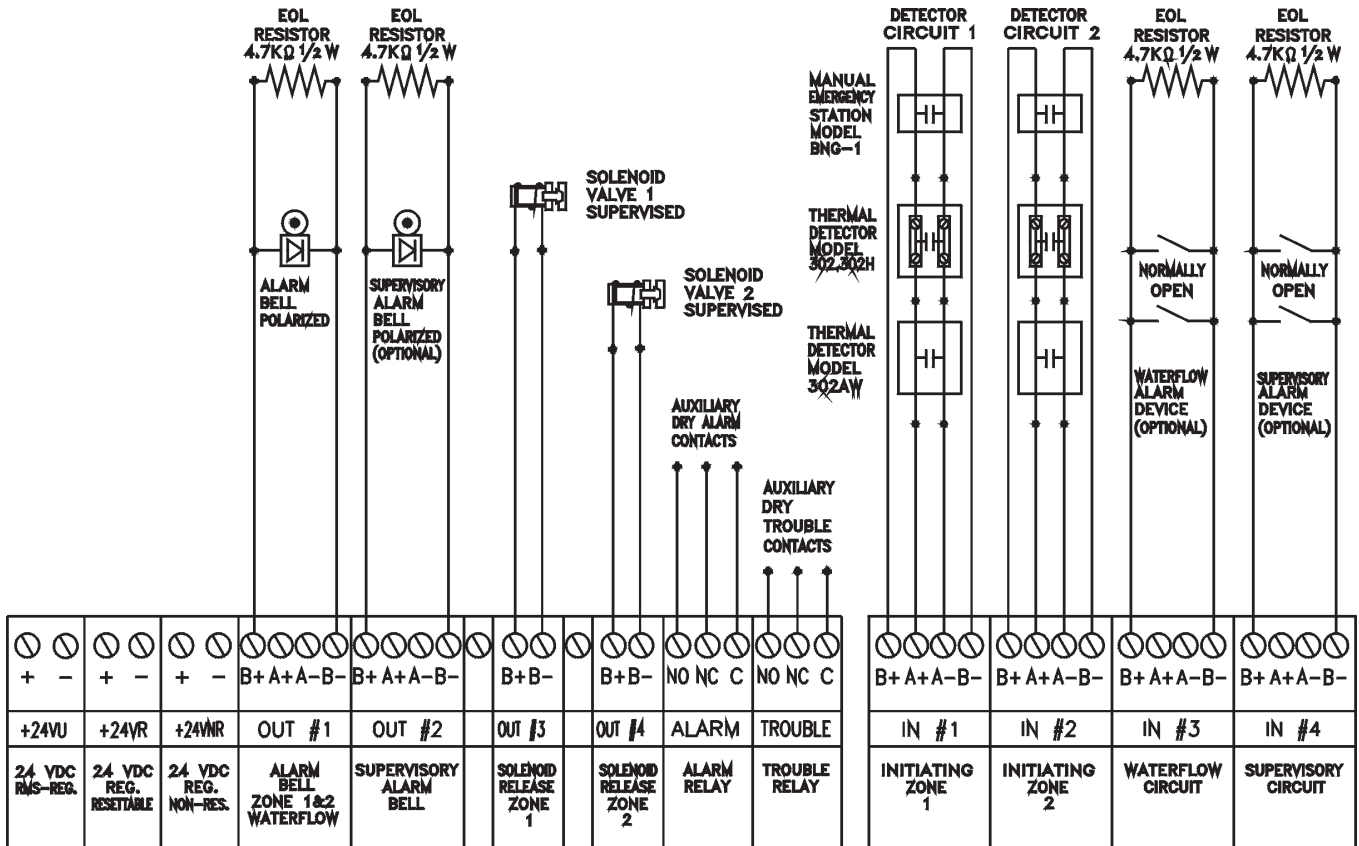
Test Outline Two Area Control Panel		AC Power	System Alarm	Release	Supervisory	System Trouble	Circuit Trouble	Alarm Silence	Power Trouble	Zone 1		Zone 2		Waterflow		Supervisory		Solid Tone	Rapid Beep	Slow Beep	Low Battery *	Ground Fault *	
Operation	Simulates									Trouble	Alarm	Trouble	Alarm	Trouble	Alarm	Trouble	Alarm						
1. Initial Set Up: a. Connect Battery Jumpers, No. A.C. b. Press Tone Silence Switch					On																On		
2. Power AC Line	Normal Standby Condition	On																					
3. Press and Hold System Reset		On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On				
4. a. Press AC Circuit Breaker Button b. Release AC Circuit Breaker Button	AC Power Failure AC Power Restored	On				On															On		
5. Temporarily Remove Both Battery Jumpers	Battery Failure	On				On			On												On	On	
6. Temporarily Disconnect Wire From Terminal Marked Out #1 B+	Break in Alarm Bell CKT.	On				On	On														On	On	
7. Temporarily Short Terminals Marked Out #1 B+ & B-	Short in Alarm Bell, CKT.	On				On	On														On		
8. Temporarily Short to Ground Terminal Marked Out #1 B-	Ground Fault	On				On			On												On		On
9. Temporarily Disconnect Wire From Terminal Marked Out #3 B+	Break in Solenoid Valve CKT.1	On				On	On														On		
10. Temporarily Disconnect Wire From Terminal Marked In #4 B+	Break In Solenoid Valve CKT.2	On				On	On														On		
11. Temporarily Disconnect Wire From Terminal marked In #2 B+	Break In Detector CKT.1	On				On				On											On		
12. Temporarily Disconnect Wire From Terminal Marked In #2 B+	Break In Detector CKT.1	On				On				On											On		
13. Temporarily Disconnect Wire From Terminal marked In #3 B+	Break in Waterflow Detector CKT.	On				On								On							On		
14. Temporarily Disconnect Wire From Terminal Marked In #4 B+	Break in Supervisory Detector CKT.	On				On											On				On		
15. Temporarily Short Terminals Marked In #B+ & B- Press Alarm Silence Press Reset	Detector Operation CKT. 1	On On On	On On On	On On On						On			On						On				
16. Temporarily Short Terminals Marked in #2 B+ & B- Press Alarm Silence Press Reset	Detector Operation CKT.2	On On On	On On On	On On On			On					On	On						On				
17. Temporarily Short Terminals Marked In #3 B+ & B- Press Tone Silence Press Reset	Waterflow Detector Operation	On On On	On On On	On On On						On			On						On				
18. Temporarily Short Terminals Marked In #3 B+ & B- Press Tone Silence Press Reset	Fire Zone 1	On On On			On												On		On				
19. Operate Detector Press Reset	Fire Zone 2	On On	On On	On On						On									On				

\* Yellow L.E.D. Visible Below Center Control Panel.

Fig. 7

FIELD WIRING DIAGRAM — TWO AREA CONTROL PANEL

- Class 'A' Detector Circuit Wiring
- Thermal Detector:  
Interior, Models 302 and 302H  
Weather Proof, Model 302AW
- U.L. Listed, F.M. Approved



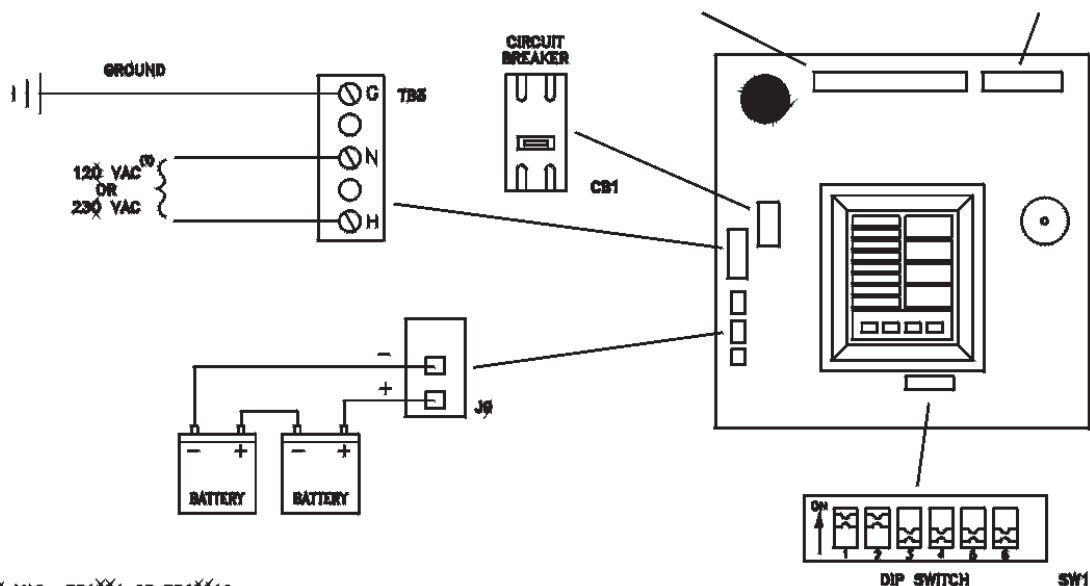
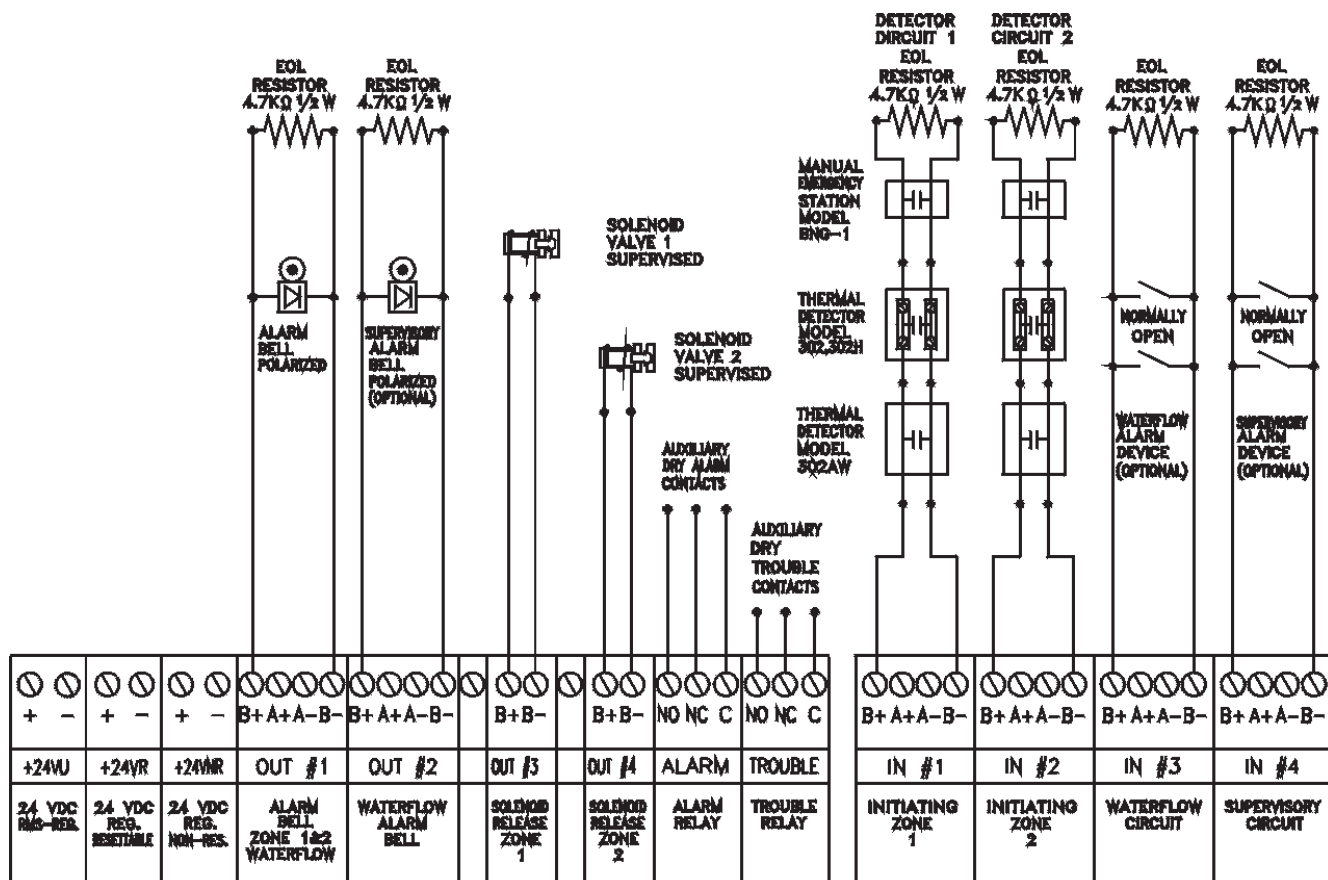
(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E



Fig. 9

FIELD WIRING DIAGRAM – TWO AREA CONTROL PANEL

- Class 'B' Detector Circuit Wiring
- Thermal Detector:  
Interior, Models 302 and 302H  
Weather Proof, Model 302AW
- U.L. Listed

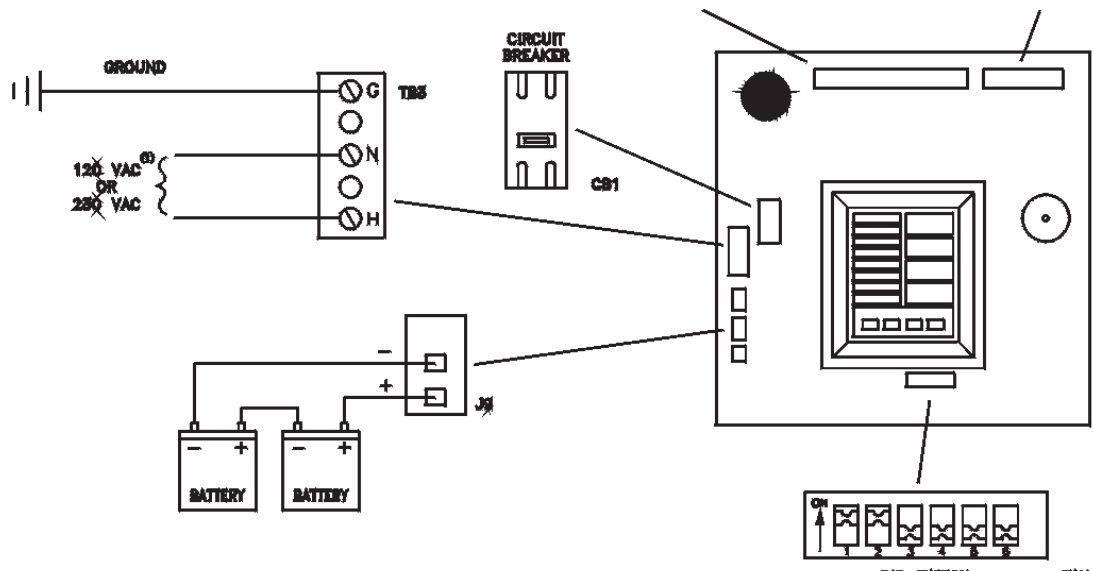
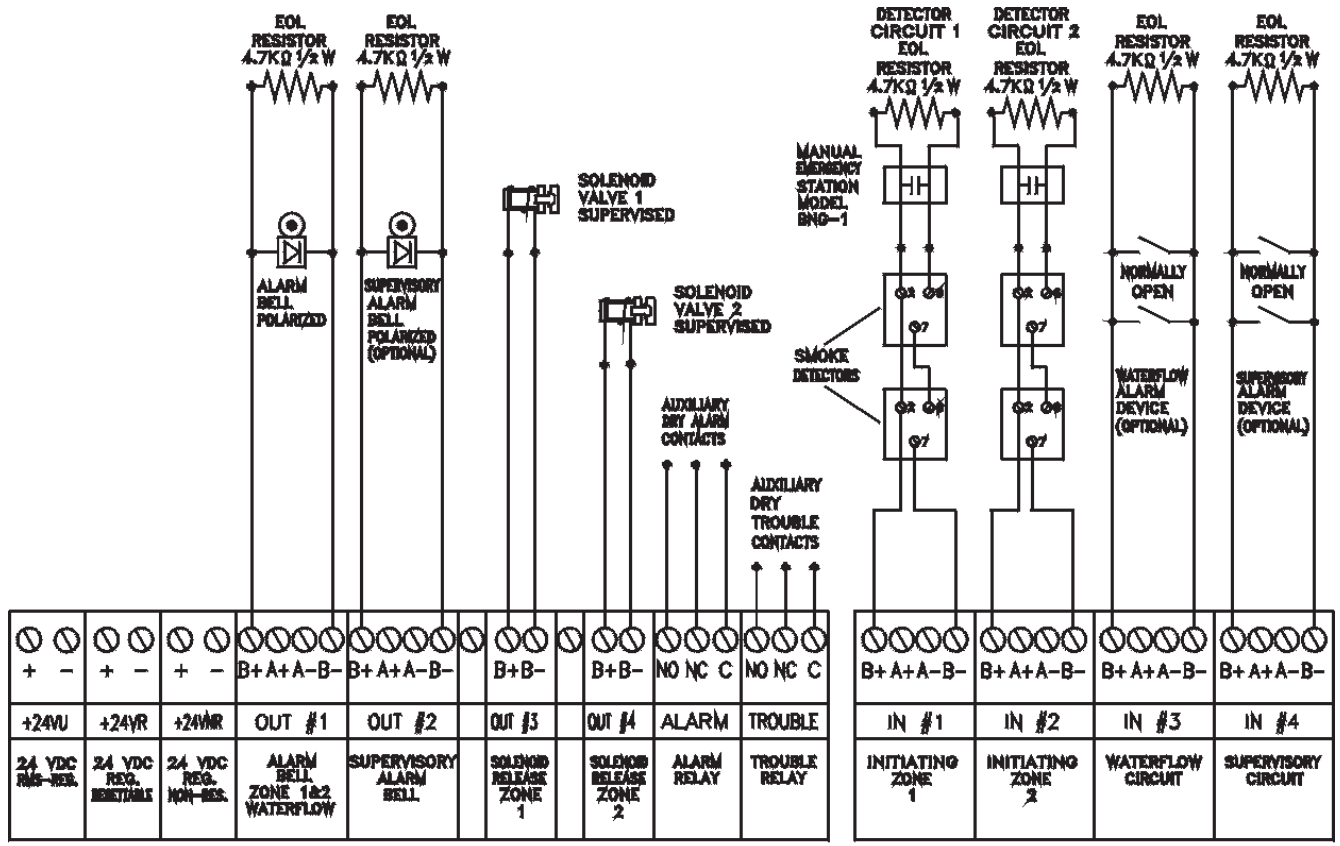


(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E

Fig. 10

FIELD WIRING DIAGRAM – TWO AREA CONTROL PANEL

- Class 'B' Detector Circuit Wiring
- Smoke Detector:
  - Photoelectric, Model PSD 7155, Base Model 70-201000-001
  - Ionization, Model CPD 7021, Base Model 70-201000-001
- U.L. Listed



(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E

708FG10A

**Model RP-1001**  
**Single Area Cross Zoned Releasing Panel**

This control panel is used to protect one fire area while providing an additional feature which minimizes deluge valve operation caused by possible false activation of one detector. Two independent circuits of detectors, intermixed each, spaced in accordance with its listed spacing, are installed in one fire area. At least one detector from each circuit must operate before the deluge valve

is opened.

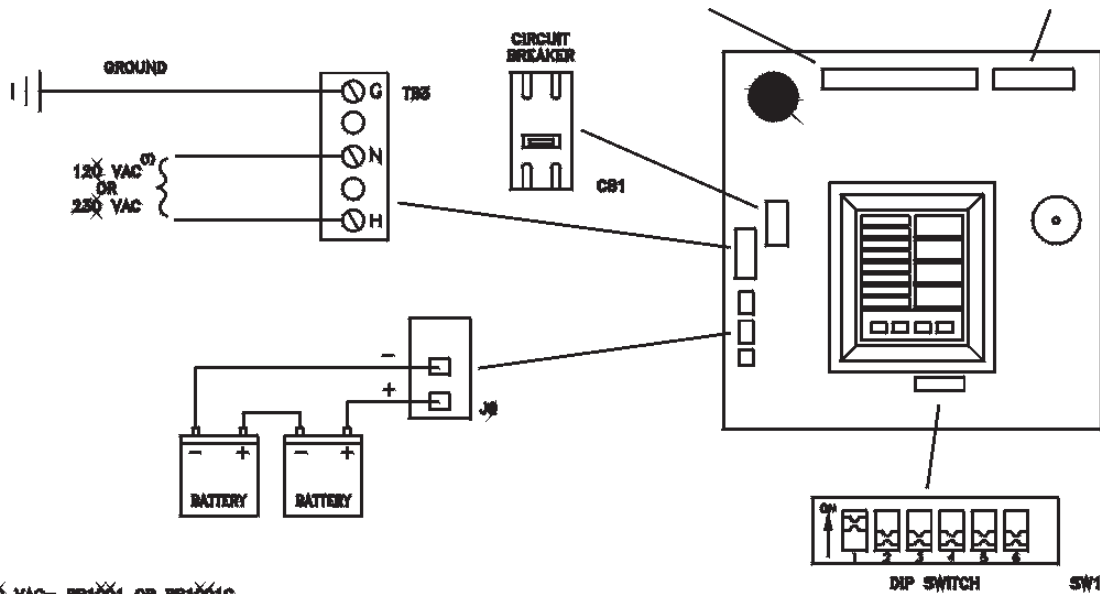
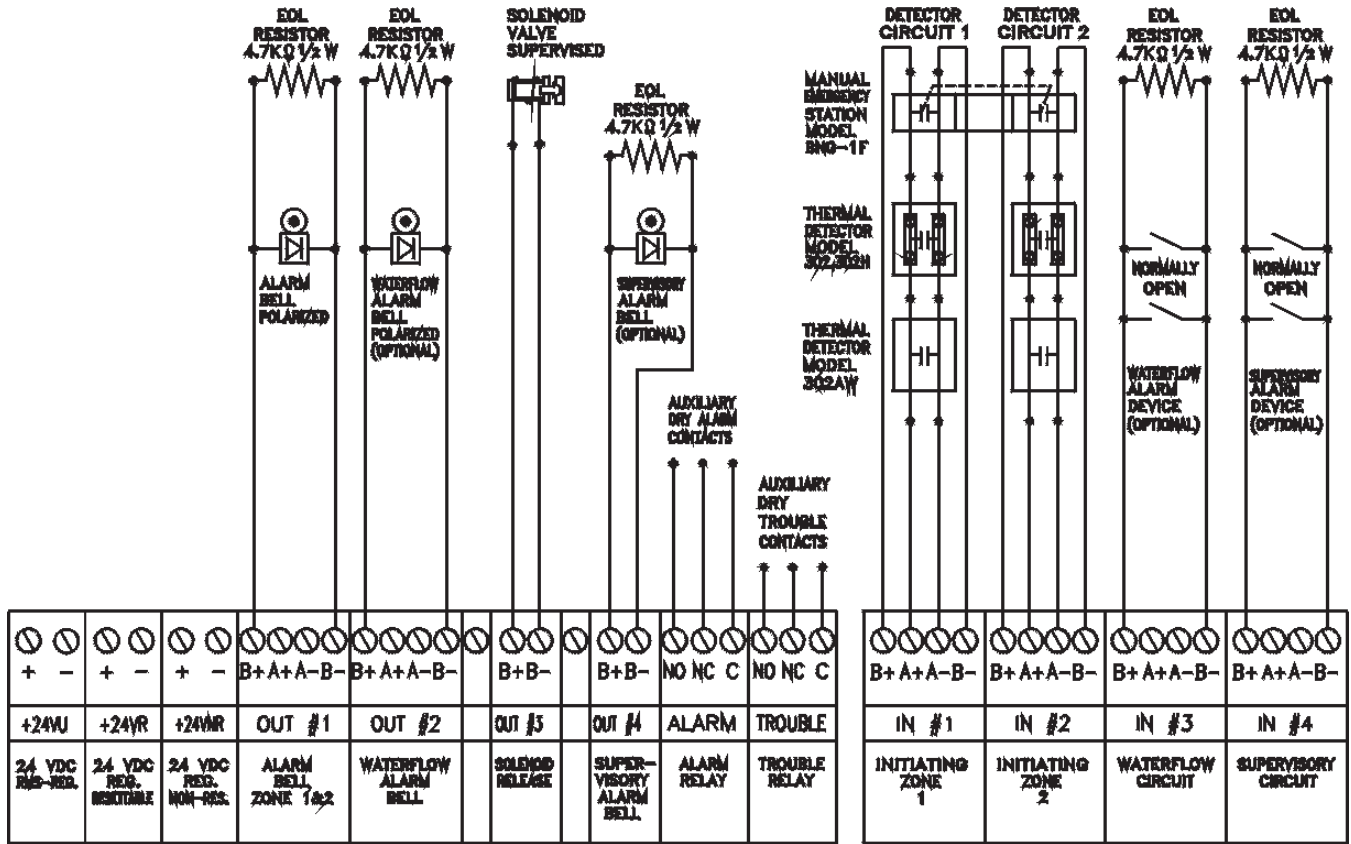
The panel contains two cross zoned detector circuits which operate one alarm and one solenoid valve circuit. Power supply, battery charger, standby emergency power supply and rectifier circuits are contained within this panel.

Test Outline Singled Area Cross Zoned		AC Power	System Alarm	Release	Supervisory	System Trouble	Circuit Trouble	Alarm Silence	Power Trouble	Zone 1		Zone 2		Waterflow		Supervisory		Solid Tone	Rapid Beep	Slow Beep	Low Battery *	Ground Fault *		
Operation	Simulates									Trouble	Alarm	Trouble	Alarm	Trouble	Alarm	Trouble	Alarm							
1. Initial Set Up: a. Connect Battery Jumpers, No. A.C. b. Press Tone Silence Switch					On																On			
2. Power AC Line	Normal Standby Condition	On																						
3. Press and Hold System Reset		On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On	On					
4. a. Press AC Circuit Breaker Button b. Release AC Circuit Breaker Button	AC Power Failure				On																On			
	AC Power Restored	On																						
5. Temporarily Remove Both Battery Jumpers	Battery Failure	On			On			On													On	On		
6. Temporarily Disconnect Wire From Terminal Marked Out #1 B+	Break in Alarm Bell CKT.	On			On	On															On	On		
7. Temporarily Short Terminals Marked Out #1 B+ & B-	Break in Alarm Bell, CKT.	On			On	On															On			
8. Temporarily Short to Ground Terminal Marked Out #1 B-	Ground Fault	On			On			On													On		On	
9. Temporarily Disconnect Wire From Terminal Marked Out #3 B+	Break in Solenoid Valve CKT.2	On			On	On															On			
10. Temporarily Disconnect Wire From Terminal Marked In #4 B+	Break In Solenoid Valve CKT.2	On			On	On															On			
11. Temporarily Disconnect Wire From Terminal marked In #2 B+	Break In Detector CKT. 1	On			On				On												On			
12. Temporarily Disconnect Wire From Terminal Marked In #3 B+	Break In Detector CKT. 1	On			On				On												On			
13. Temporarily Disconnect Wire From Terminal marked In #4 B+	Break in Waterflow Detector CKT.	On			On								On								On			
14. Temporarily Disconnect Wire From Terminal Marked In #4 B+	Break in Supervisory Detector CKT.	On			On										On						On			
15. Temporarily Short Terminals Marked In #B+ & B- Press Alarm Silence Press Reset	Detector Operation CKT. 2	On	On	On								On						On						
		On	On	On						On		On												
		On																						
16. Temporarily Short Terminals Marked In #1B+ & B- and In #2 B+ & B- Press Alarm Silence Press Reset	Detector Operation CKT. 1 & 2	On	On	On							On							On						
		On	On	On			On				On													
		On																						
17. Temporarily Short Terminals Marked In #3B+ & B- Press Tone Silence Press Reset	Waterflow Detector Operation	On	On	On									On						On					
		On	On	On						On		On												
		On																						
18. Temporarily Short Terminals Marked In #4 B+ & B- Press Tone Silence Press Reset	Supervisory Detector Operation	On			On										On				On					
		On			On										On									
		On																						
19. Operate Detector Zone 1 & Zone 2 Press Reset	Fire Zone1 & 2	On	On	On							On								On					
		On																						

Fig. 11

FIELD WIRING DIAGRAM – CROSS ZONED CONTROL PANEL

- Class 'A' Detector Circuit Wiring
- Thermal Detector:  
Interior, Models 302 and 302H  
Weather Proof, Model 302AW

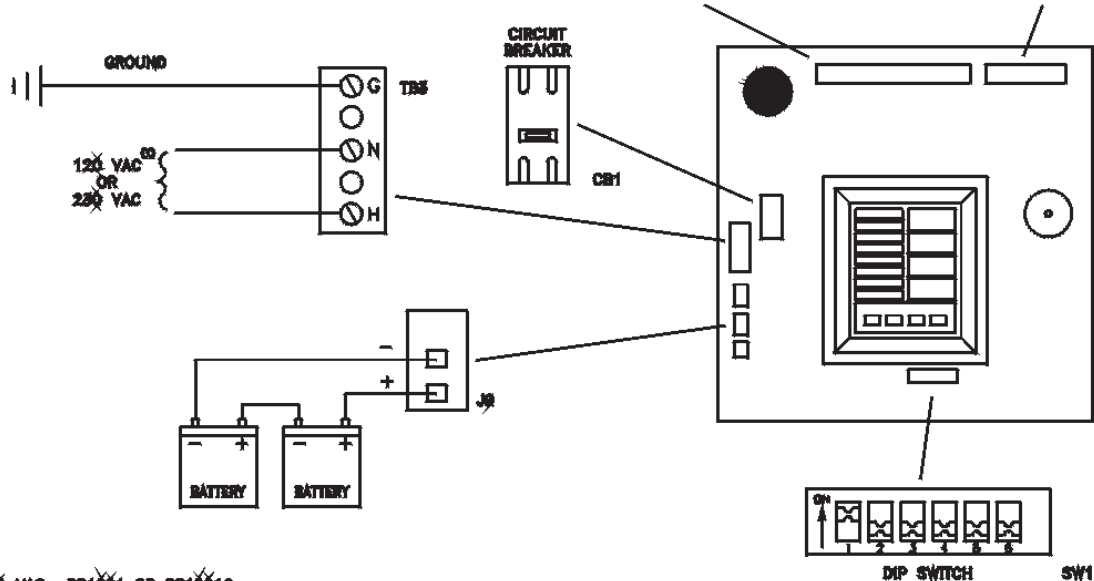
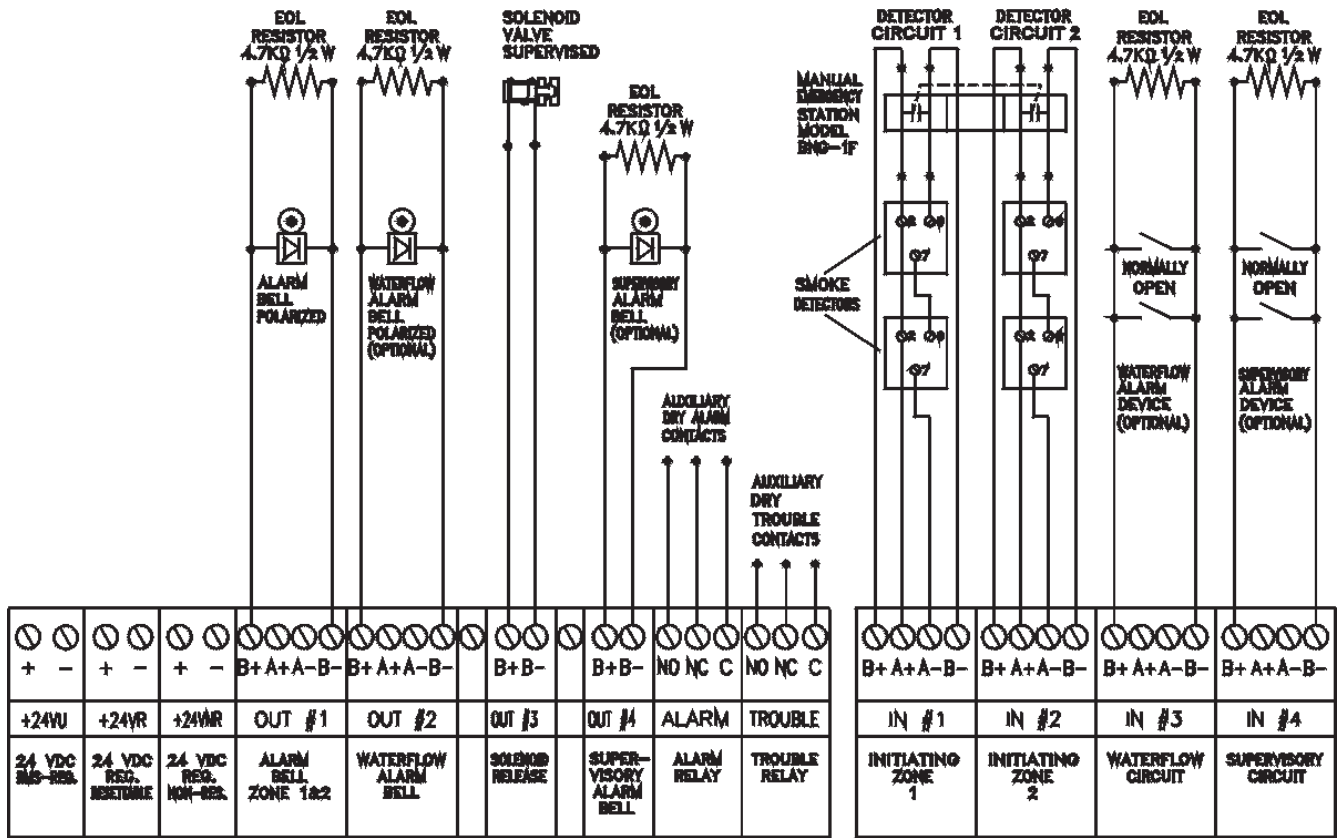


(1) 120 VAC- RP1001 OR RP1001C  
250 VAC- RP1001E

Fig. 12

FIELD WIRING DIAGRAM – CROSS ZONED CONTROL PANEL

- Class 'A' Detector Circuit Wiring
- Smoke Detector: Photoelectric, Model PSD 7125, Base Model 70-201000-001  
Ionization, Model CPD 7021, Base Model 70-201000-001
- U.L. Listed



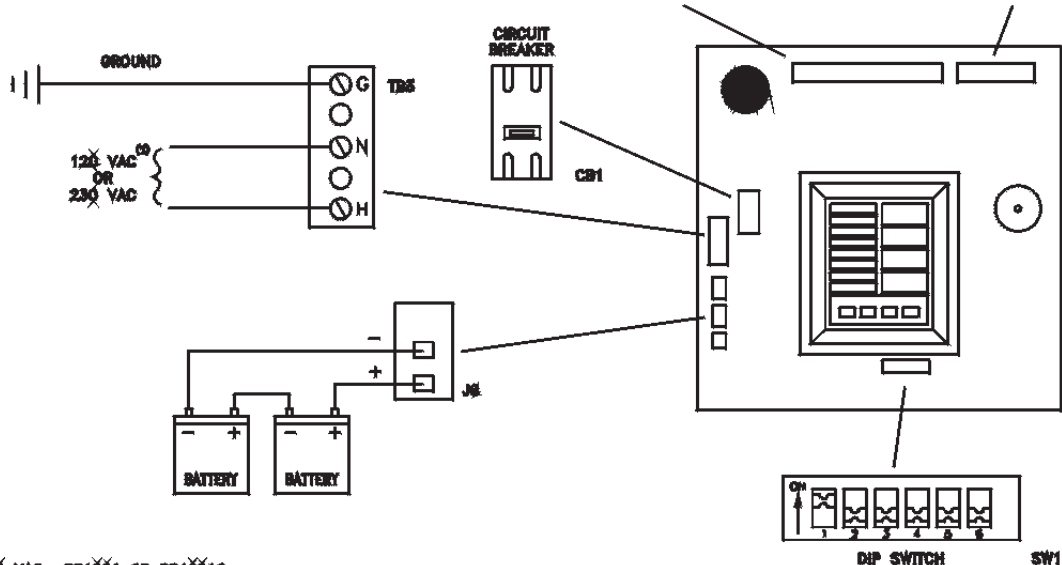
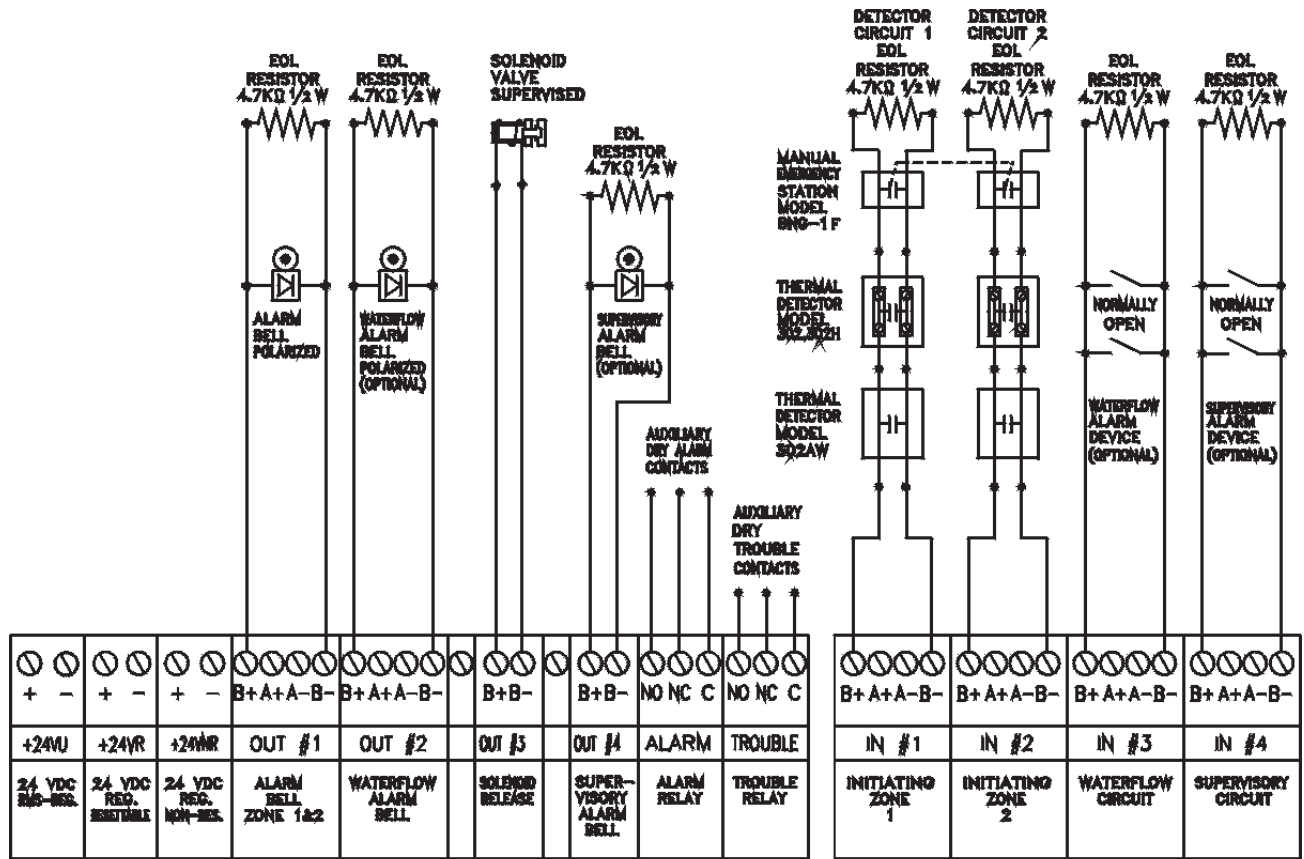
(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E

708912A

Fig. 13

FIELD WIRING DIAGRAM – CROSS ZONED CONTROL PANEL

- Class 'B' Detector Circuit Wiring
- Thermal Detector:  
Interior, Models 302 and 302H  
Weather Proof, Model 302AW
- U.L. Listed



(1) 120 VAC- RP1001 OR RP1001C  
230 VAC- RP1001E



## Trouble Shooting Guide for Model RP-1001 Releasing Panel

The following table provides a simplified trouble shooting guide which indicates corrective action for the more common problems which may occur. This guide first separates the panel and the field wiring (Steps A thru C). The panel is then tested (Step D). If the panel tests properly in Step D, the problem has then been isolated to the field wiring. Steps E1 thru E8 systematically reconnect the panel and the field wiring. This allows the problem to be specifically located and corrected in the field wiring.

Prior to testing, notify the local Superintendent of Fire Alarms, then close main valve.

- A. Disconnect A.C. power from panel.
- B. Disconnect one end of each yellow battery jumper wire.
- C. Disconnect all external wiring from control panel. Install 4.7 ohm 1/2 watt resistors to terminals (B+ and B-) marked as follows:
  1. Out #1, #2, #3, #4 and In #1, #2, #3, #4. If a resistor is present, do not add another but verify its resistance - 4.7K ohm, replace if faulty.
  2. Alarm and Trouble terminals remain vacant.

D. Test panel as follows:

Operation

Panel Indication

1. Connect Batteries. Connect AC Power. Reset Circuit breakers.  
Press Silence and Reset Switches. AC ON  
All L.E.D's on Center Panel & Buzzer ON  
AC ON
2. Press and hold Reset Switch.
3. Release Reset Switch.

The above indication is normal therefore external wiring should be investigated.

E. The external circuit containing the problem may be identified by observing the control panel lights when reconnecting each external circuit, individually:

1. Alarm Circuit - Remove resistor from terminals marked Out #1 B+ & B- and connect alarm bell, observing correct polarity.

Symptom	PROBABLE CAUSE	CORRECTION
<ul style="list-style-type: none"> <li>• System Trouble</li> <li>• Circuit Trouble</li> </ul>	Open Circuit in Wiring	Repair
	E.O.L Resistor Omitted	Install
	Non Polarized Bell Installed	Replace with Polarized Bell
	Short in Alarm CKT	Repair
	Polarity Reversed	Correct Bell Polarity

2. Trouble Bell Circuit - Connect trouble bell to terminals marked Trouble observing correct polarity.

<ul style="list-style-type: none"> <li>• Bell does not ring during trouble condition. Simulate trouble by temporarily removing wire from terminal marked Out #1 B+</li> </ul>	Polarity Reversed	Correct Polarity
	Open CKT. In Wiring	Repair
	Faulty Bell	Replace
	Bell of Incorrect Voltage	Replace with 24 Vdc Bell

3. Solenoid Valve Circuit - Remove resistor from terminals marked Out #3 B+ & B- and connect solenoid valve.

<ul style="list-style-type: none"> <li>• Circuit Trouble</li> <li>• System Trouble</li> </ul>	Open CKT. In Wiring	Repair
	Open CKT. In Solenoid	Replace

4. Additionally for Two Area Panel - Remove resistor from terminals marked Out #4, B+ & B- and connect solenoid valve 2.

<ul style="list-style-type: none"> <li>• Circuit Trouble</li> <li>• System Trouble</li> </ul>	Open CKT. In Wiring	Repair
	Open CKT. In Solenoid	Replace

5. Detector Circuit 1 Class A - Prior to connecting wires to panel, confirm continuity between wires to be connected to terminals marked IN #1 B+ and IN #1 A+, and terminals marked IN #1 B- and In #1 A-. Confirm no continuity exists between wires to be connected to terminals marked IN #1 B-, and terminals marked IN #1 A+ and IN #1 A-. Remove resistor from terminal marked IN #1. Connect wires fro detectors to terminals per appropriate field wiring diagram.

<ul style="list-style-type: none"> <li>• Circuit Trouble</li> <li>• System Trouble</li> </ul>	Open in Either Detector Loop	Repair
	Short to Ground on Either Detector Loop Wire	Repair
<ul style="list-style-type: none"> <li>• Power Trouble</li> <li>• System Trouble</li> <li>• Ground Fault</li> </ul>	Short, Loop to Loop	Repair
	Detector Activated	Remove Heat or Smoke Press. Reset Switch
	Detector Faulty	Replace

6. Detector Circuit 1 Class B – Remove resistor from terminal marked In #1. Connect wires from detectors to terminals B+ and B- per appropriate field wiring diagram.

<ul style="list-style-type: none"> <li>• Zone 1 Trouble</li> <li>• System Trouble</li> </ul>	Open In Detector Loop	Repair
	E.O.L. Resistor Omitted	Add
<ul style="list-style-type: none"> <li>• Power Trouble</li> <li>• System Trouble</li> </ul>	Short to Ground on Either Detector Loop Wire	Repair
	Short, Wire to Wire	Repair
<ul style="list-style-type: none"> <li>• Zone 1 Alarm</li> <li>• Alarm</li> </ul>	Detector Activated	Remove Heat or Smoke Press Reset Switch
	Detector Faulty	Replace

7. Additionally for Cross Zoned and Two Area Panels:  
 Detector Circuit 2 Class A – Prior to connecting wires to panel, confirm continuity between wires to be connected to terminals marked IN #2 B+ and IN #2 A+, and terminals marked IN #2 B- and IN #2 A-. Confirm no continuity exists between wires to be connected to terminals marked IN #2 B+ and IN #2 B-, and terminals marked IN #2 A+ and IN #2 A-. Remove resistor from terminal marked IN #2. Connect wires from detectors to terminals per appropriate field wiring diagram.

<ul style="list-style-type: none"> <li>• Zone 2 Trouble</li> <li>• System Trouble</li> </ul>	Open in Either Detector Loop	Repair
	Short to Ground on Either Detector Loop Wire	Repair
<ul style="list-style-type: none"> <li>• Zone 2 Alarm</li> <li>• Alarm</li> </ul>	Short, Loop to Loop	Repair
	Detector Activated	Remove Heat or Smoke, Press Reset Switch
	Detector Faulty	Replace

8. Detector Circuit 2 Class B - Remove resistor from terminal marked IN #2. Connect wires from detectors to terminals B+ and B- per appropriate field wiring diagram

<ul style="list-style-type: none"> <li>• Zone 2 Trouble</li> <li>• System Trouble</li> </ul>	Open in Detector Loop	Repair
	E.O.L. Resistor Omitted	Add
<ul style="list-style-type: none"> <li>• Power Trouble</li> <li>• Ground Fault</li> <li>• System Trouble</li> </ul>	Short to Ground on Either Detector Loop Wire	Repair
	Short, Wire to Wire	Repair
<ul style="list-style-type: none"> <li>• Zone 2 Alarm</li> <li>• Alarm</li> </ul>	Detector Activated	Remove Heat or Smoke, Press Reset Switch
	Detector Faulty	Replace

## Supervisory Pressure Maintenance Supplies General

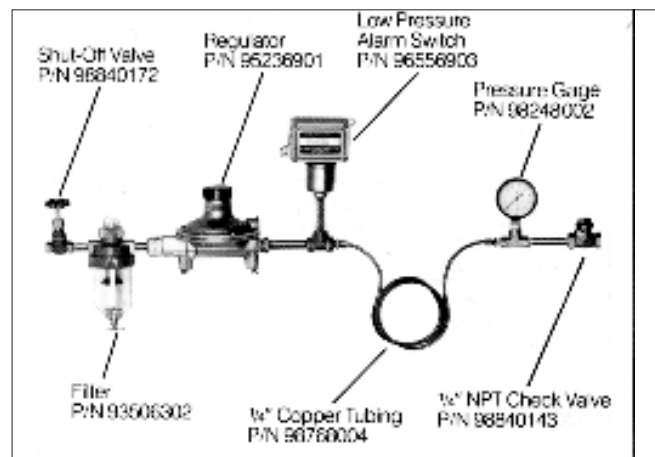
Reliable Supervisory pressure maintenance supplies provide low pressure air or nitrogen gas to the sprinkler piping of a Pre-Action system. Leakage caused by damage to the piping or closed sprinklers will cause the supervisory pressure to drop thereby activating a trouble annunciating device.

### Model C Pressure Maintenance Device

Model	Part No.	Description	Low Pressure Alarm Switch Elec. Rating
C	6704030000	Supervisory Pressure- Owners Air or Nitrogen Gas	Single Pole, Double Throw, 15 Amp, 120/240 Vac 10 Amp, 12 Vdc Inductive 0.50 Ap, 125 Vdc Inductive
W x H x D Inches	Shipping Weight Lbs.	Approvals	
26 x 15 x 6	9	UL Listed FM Approved NYC BS&A 587-75-SA	

The Model C Pressure Maintenance Device is a supervisory supply for use where a clean, dependable and continuous (24 hours per day, 7 days per week) owners air or dry nitrogen source is available. The 1/4" NPT check valve is to be connected at the sprinkler piping with its flow arrow pointing towards the sprinkler piping, and at least 2 ft.

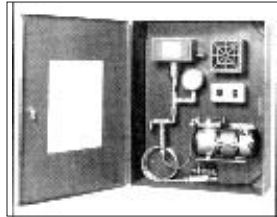
above the riser check valve priming water elevation. The 1/4" copper tubing is used to connect the check valve/gauge assembly to the 1/4" tee at the regulator outlet. The Model C Maintenance Device reduces 40 to 100 psi supply pressures to approximately 30 oz/in2 outlet pressure. A separate annunciating device (not included) must be connected to the low pressure switch, this switch is factory set to transfer contacts when the supervisory pressure falls below approximately 11 oz/in2.



## Model B Air Compressor Panel

Model	Part No.	Description	Low Pressure Alarm Switch Elec. Rating
B	6702010000	Self-contained Supervisory Air Compressed Panel	1.5 Amp., 120 Vac, 60 Hz
W x H x D Inches	Mounting Dim W X H Inches	Shipping Wgt. Lbs.	Approvals
16 x 20 x 6	14¼ x 18¼	27	UL Listed FM Approved NYC BS&A No 587-75-SA

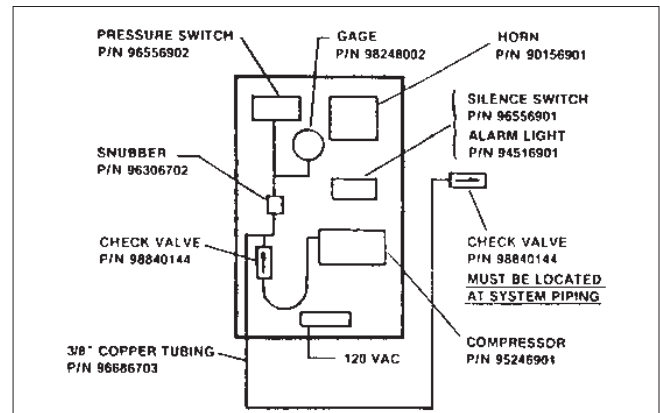
The Model B Air Compressor Panel is a self-contained supervisory air supply. The panel is supplied with a separate assembly consisting of a check valve, copper tubing and tubing connector. The ¼" NPT check valve must be installed at the sprinkler piping with its flow arrow pointing towards the sprinkler piping and at least 2 ft. above the riser check valve priming water elevation. The copper tubing connects the other end of the check valve to the air compressor panel air outlet .



The panel is intended for wall mounting and contains an integral low air pressure trouble horn. The panel will supply approximately 30 oz/in<sup>2</sup> air pressure and the horn will sound

for pressures less than approximately 11 oz/in<sup>2</sup>. A silence switch is provided to silence the horn (but not the trouble light) while supervisory pressure builds up or while repairs are being made. Optional Water Supply Control Valve tamper switch contacts must be open when control valve is open. 120 Vac power connections are terminals L1 and L2. Note: 1. Small capacity compressor require long initial fill time.

2. Special Wrench P/N 6917000000 for pressure switch cover screws located on top of switch.



## Maintenance Model B Air Compressor Panel

The following table provides a simplified trouble shooting guide which indicates the corrective maintenance for the more common problems which may occur.

	Symptom	Probable Cause	Correction
A.	Pressure Too Low 1. Compressor runs continuously.	Leak	Isolate system from compressor panel and test as follows: 1. Remove 3/8" from 1/4" check valve at system riser and cap with finger as a seal. 2. Run compressor until gauge indicates pressure. 3. With compressor off, relieve pressure to bring gauge into readable range, then reseal. 4. Steady gauge indicates no leak at panel; therefore, leak is in system repair. 5. Dropping gauge indicates leak at panel-repair or replacing leaking component.
		2. Compressor doesn't run.	No power at panel Pressure switch out of adjustment.
B.	Compressor cycles excessively.	Leak upstream of ¼" valve at system riser	Repair, See A.1 Above
C.	Horn sounds before compressor starts as pressure decreases (silence switch in normal position).	Pressure switch out of adjustment.	Adjust as follows: 1. Remove cover using special wrench taped to pressure switch. 2. Adjust hex screw at left using 1/4" open end wrench. 3. Raise horn set point by moving wrench handle to left. 4. Lower horn set point by moving wrench handle to right. 5. Adjust switch to turn horn at 11±1 oz/in <sup>2</sup> on decreasing pressure.

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- Spray nozzles
- Alarm valves
- Retard chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Supertrol electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

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The equipment presented in this bulletin is to be installed in accordance with the latest pertinent Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.

Products manufactured and distributed by Reliable have been protecting life and property for over 70 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

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