

# Section 8300 Index

## INSTALLATION & MAINTENANCE, AND ELECTRICAL INFORMATION .....74

Instructions for installation and maintenance information. Also, electrical stats with wattage and amp information.

## RELAY SWITCHES .....74



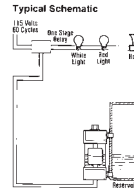
Ordering information on two stage relays, with and without covers.

## SINGLE STAGE LIQUID LEVEL AND RELAY SWITCHES .....72



Designed to shut down machinery or turn on warning devices when the liquid supply fails or recedes to a predetermined level.

## SINGLE STAGE LIQUID LEVEL SWITCHES SCHEMATICS .....73



The control relay turns on white light for adequate liquid level. Turns off white light and turns on red light and horn for low levels.

# Single Stage Liquid Level Switches

**SINGLE STAGE LIQUID LEVEL SWITCHES** are designed to shut down machinery or turn on warning devices when the liquid supply fails or recedes to a predetermined level. This is especially important in automated plants which demand bearing protection to safeguard against downtime and costly repairs.

The units are ideal for monitoring the oil level in unattended automated plants, large bearings, gear cases, transformers, circuit breakers, oil tanks, and cutting oil reservoirs on screw machines, along with many other applications. They can be wired to flash a warning light, sound a howler, shut down a machine, or signal a computer.

The switch with a clear acrylic reservoir is used for remote indication of low liquid levels. The top outlet can be piped directly into the reservoir, or it can be vented to the outside for use on applications with atmospheric pressure.

The switch less reservoir is designed for internal use on open or pressure tanks. Simplicity makes these switches reliable in operation. When the liquid in the reservoir recedes to the low level, a magnet carried inside of the float actuates a reed switch within the central pipe.

The magnetic reed switch is single pole-single throw and is intended for pilot control only. It is potted into an auxiliary tube with silicone rubber for protection against shock and moisture. This reed switch assembly is screwed into the lower end of the liquid control switch and can be removed without draining the float chamber. An Oil-Rite relay is recommended.

## SPECIFICATIONS:

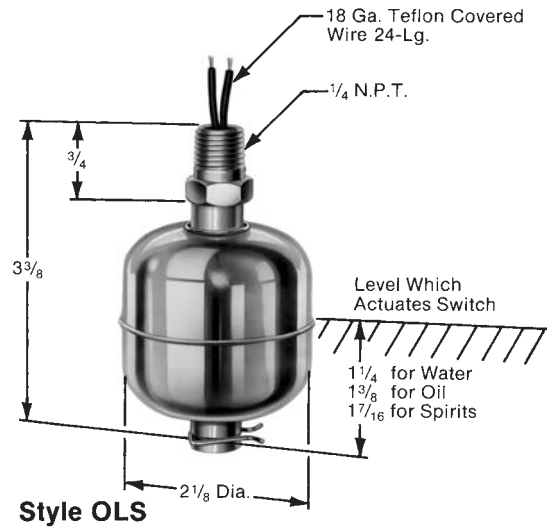
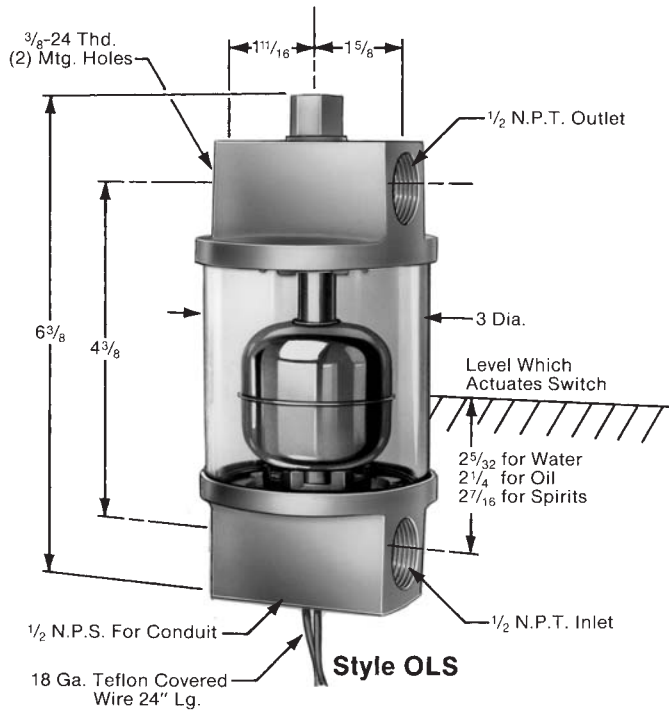
- Temperature
    - With Housing 170° F. Max.
    - Less Housing 220° F. Max.
  - Pressure
    - With Housing 125 P.S.I. Max.
    - Less Housing 200 P.S.I. Max.
  - Reed Switch
    - Contact Rating - Resistive Load
      - 120 Volt A.C. .4A.
      - 240 Volt A.C. .2A.
      - 480 Volt A.C. \*N/ R
      - 24 Volt D.C. 1.0A.
      - 120 Volt D.C. .4A.
      - 220 Volt D.C. .2A.
  - End Plates Aluminum Alloy
  - Float Chamber Acrylic
  - Float Stainless Steel
  - Gaskets Buna-N
- (\*Not Recommended)

**Normally Open**  
Contacts close with descending level.

**Normally Closed**  
Contacts open with descending level.

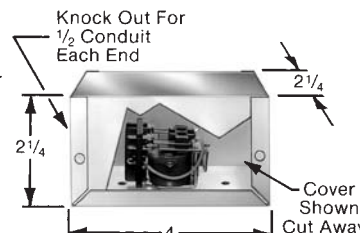
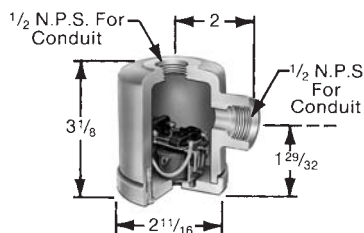
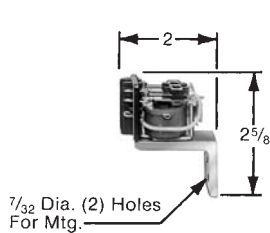
## When Ordering Specify:

- Catalog Number



Catalog Number	One Stage Liquid Level Switch	Contacts
B-2364-1	With Housing	Normally Open
B-2364-2	With Housing	Normally Closed

Catalog Number	One Stage Liquid Level Switch	Contacts
B-1519-1	Less Housing	Normally Open
B-1519-2	Less Housing	Normally Closed



Model Number	Relay
A-3160-1	Panel Mounting

Model Number	Relay
A-4621-1	Cast Conduit Box

Model Number	Relay
A-3138-1	In Dust Cover

## Single Stage Relay

Relays are U.L. and C.S.A. Approved  
Contact: D.P.D.T., 10 Amps @ 115 VAC.  
Resistive Load  
Electrical Characteristics

## When Ordering Relay Specify:

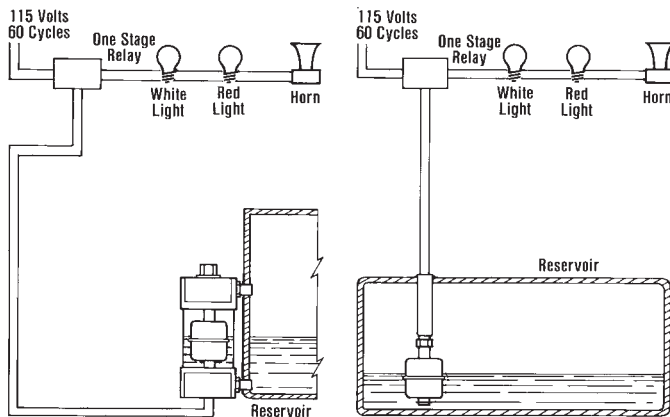
- Model Number
- Voltage and Frequency

# Single Stage cont.

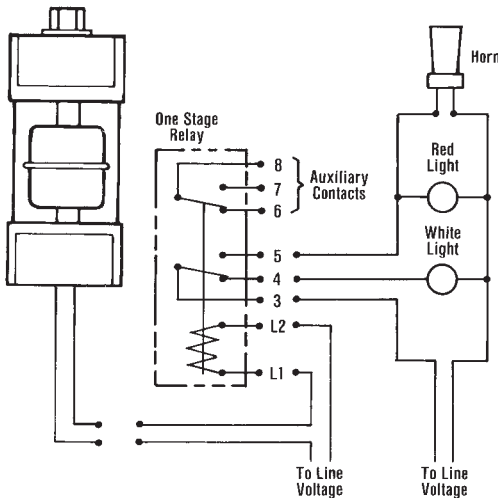
## SINGLE STAGE

When the liquid level in the tank is above a predetermined level, the white light is on indicating an adequate liquid supply. When the liquid level falls below this predetermined level, the magnet in the float actuates the reed switch, which in turn signals the control relay. The control relay then turns off the white light and turns on the red light and horn to indicate a low liquid supply level. This DPDT switch arrangement also allows for auxiliary contacts so other indication or switching may be initiated at the low level signal.

### Typical Schematic

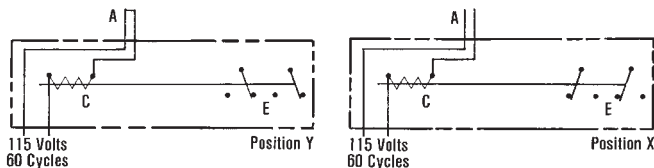


### Wiring Diagram



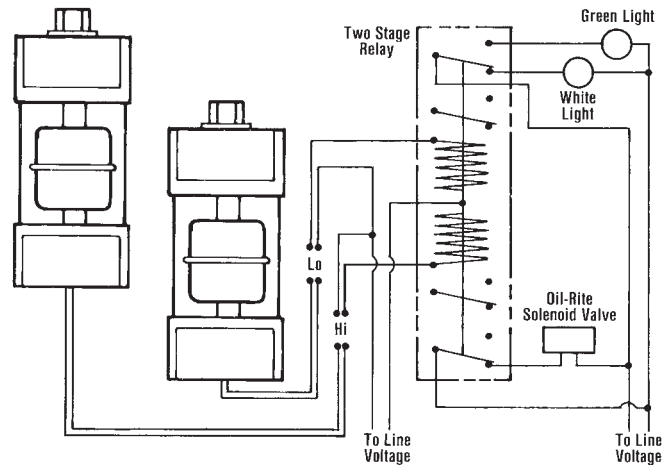
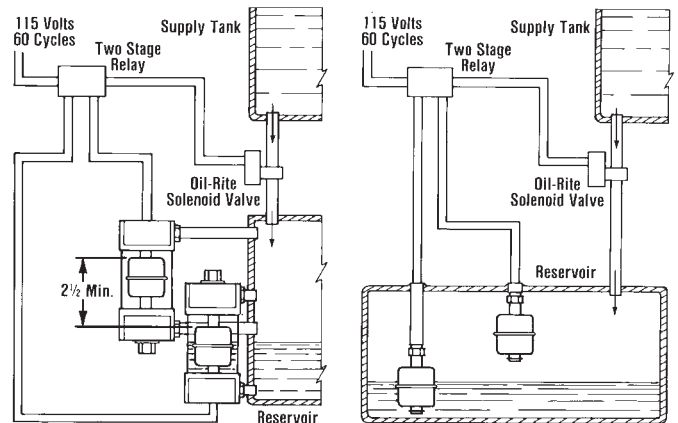
## ONE STAGE RELAY

Closing circuit (a) energizes coil (c) of relay which triggers and holds contacts (e) in position Y. When circuit (a) is open contacts (e) return to position X.



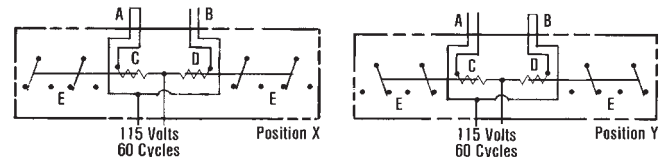
## TWO STAGE ACTUATION USING TWO SINGLE STAGE SWITCHES

Two single stage switches can be used for hi-low actuation when the actuation levels required are further apart than on the two stage level switch. When the liquid in the dispenser falls to a predetermined low level, a magnet in the lower float actuates a reed switch, which in turn actuates the control relay. This control relay turns on the white light and opens the solenoid valve, allowing liquid from the supply tank to refill the dispenser. When the liquid level in the dispenser rises to a predetermined high level, the magnet in higher float actuates a reed switch, which in turn actuates the control relay. This control relay turns on a green light and closes the solenoid valve thus stopping the flow of the liquid from the supply tank to the dispenser.

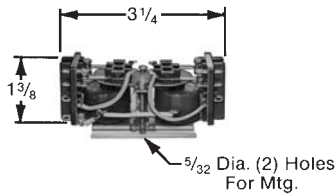


## TWO STAGE RELAY

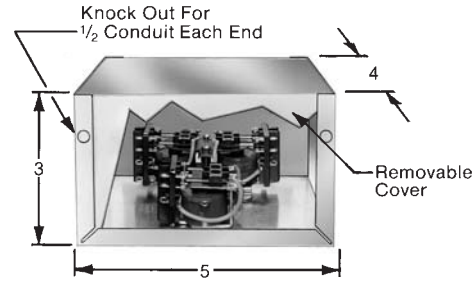
Closing circuit (a) with circuit (b) open energizes relay coil (c) which triggers and holds contacts (e) in position (x). Only a momentary closing of circuit (c) is necessary to attain position (x). Closing circuit (b) with circuit (a) open energizes coil (d) of relay which triggers and holds contacts (e) in position (y). Only a momentary closing of circuit (d) is necessary to attain position (y). The 4 P.D.T. contacts can be used to open or close separate individual circuits.



# Two Stage Relays



Model Number	Two Stage Relay
A-3081-11	Panel Mounting



Model Number	Two Stage Relay
A-3179-1	In Dust Cover

**Two Stage Relay** 4 P.D.T., 10 Amps @ 115 Volts Resistive

Electrical Characteristics  
Relays are U.L. and C.S.A. Approved.

**When Ordering Relay Specify:**

- Model Number
- Voltage and Frequency

## ELECTRICAL CHARACTERISTICS FOR SINGLE STAGE RELAYS

Voltages	Normal	Contracts	
	Power	Poles	Ratings
230 Volts, 60 cy.	2.2 VA	DPDT	10 A Res.
115 Volts, 60 cy.	2.2 VA	DPDT	10 A Res.
24 Volts, 60 cy.	2.2 VA	DPDT	10 A Res.
12 Volts, 60 cy.	2.2 VA	DPDT	10 A Res.
6 Volts, 60 cy.	2.2 VA	DPDT	10 A Res.
110 Volts, DC	1.2 W	DPDT	10 A Res.
24 Volts, DC	1.2 W	DPDT	10 A Res.
12 Volts, DC	1.2 W	DPDT	10 A Res.
6 Volts, DC	1.2 W	DPDT	10 A Res.

Inrush current approximately 10-20% higher than holding current.

Pull in on AC — 72% of Normal AC Volts at 77° F.  
Dropout on AC — 30% of Normal AC Volts at 77° F.  
Pull in on DC — 68% of Normal DC Volts at 77° F.  
Dropout on DC — 17% of Normal DC Volts at 77° F.

## ELECTRICAL CHARACTERISTICS FOR TWO STAGE RELAYS

Voltages	Normal	Contracts	
	Power	Poles	Ratings
230 Volts, 60 cy.	6 VA	DPDT	10 A Res.
115 Volts, 60 cy.	6 VA	DPDT	10 A Res.
24 Volts, 60 cy.	6 VA	DPDT	10 A Res.
12 Volts, 60 cy.	6 VA	DPDT	10 A Res.
6 Volts, 60 cy.	6 VA	DPDT	10 A Res.
110 Volts, DC	1.2 W	DPDT	10 A Res.
24 Volts, DC	1.2 W	DPDT	10 A Res.
12 Volts, DC	1.2 W	DPDT	10 A Res.
6 Volts, DC	1.2 W	DPDT	10 A Res.

Inrush current approximately 10-20% higher than holding current.

Pull in on AC — 72% of Normal AC Volts at 77° F.  
Dropout on AC — 30% of Normal AC Volts at 77° F.  
Pull in on DC — 68% of Normal DC Volts at 77° F.  
Dropout on DC — 17% of Normal DC Volts at 77° F.

### INSTALLATION

1. Mount switch with suitable brackets or connectors to suit the application.
2. Be sure to locate switch at correct height for proper functioning and switch actuation. The relation of the liquid to the lower liquid inlet is shown on the respective drawing.
3. Mount switch upright, within 10° of vertical, to minimize friction of float on central pipe.
4. Wire switch according to basic wiring diagram. An optional conduit box, designed for these switches, can be attached to the switch.
5. Use the switch with the suggested control relay for best performance and long life. If the switch is used without the suggested Oil-Rite relay, be sure to keep the switch load within the resistive load rating, as specified.

### MAINTENANCE

1. Very little maintenance is required but preventive maintenance is in order by an inspection at regular intervals.
2. Inspect switch and relay visually and check for leaks, loose bolts or nuts, buoyancy of float, loose wire connections, etc.
3. Actuate reed switch by lowering and raising float. If this is not possible, remove the reed switch assembly with a screwdriver through the lower end of the central pipe and check reed switch with a small magnet. The reed switch can be removed without disturbing the liquid.
4. In the event of a reed switch failure, replace the entire reed switch assembly, as all reed switches are permanently sealed in tubing for shock and moisture protection.
5. Check relay functioning and contacts.