OPERATION AND
SERVICE GUIDE
O-380G
OCT. 1998

FLOAT AND PROBE SWITCHES

MODELS 6, 7, 7R, and 8

Refer to Bulletin A-101.

DESCRIPTION

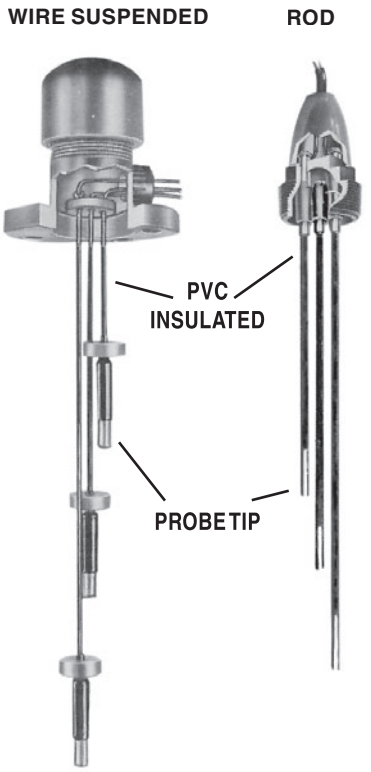
Float switches are used for the automatic control of pump motors, to start the motor at a preset high level and stop the motor at a preset lower level. For applications where the pump motor HP is greater than the specified electrical rating or 3 phase, the float switch is used for pilot duty on a magnetic or manual starter which controls the pump motor for start and stop.

VOLTAGE	MOTOR HORSEPOWER RATING		
	MODEL #6	MODELS #7 & #7R (2 Pole)	MODEL #8
115V, 1f	1	2	1
230V, 1f	1	3	1
230V, 3f 575-460, 3f	–	5	–

⚠ ***WARNING*: TO AVOID SHOCK HAZARD, DISCONNECT ALL POWER BEFORE INSTALLING OR SERVICING DEVICE.**

MODEL #6 - PROBE SWITCH

LIQUID	SECONDARY COIL VOLTAGE	MAX. AMPS ACROSS PROBES	MINIMUM SPECIFIC COND. OF LIQUID (Micromho/cm)
Acid or caustic solution - plating solution	40	.117	4,630
Weak acid or caustic solution	90	.053	940
Sewage - most water	220	.022	150
Very soft water	360	.013	59
Steam condensate	480	.011	38
D.I. or distilled water	800	.006	11



DESCRIPTION

Probe switch liquid level control consists of a relay or relays, a holder to support the probes in the liquid and the corrosion-resistant electrodes. This system utilizes the liquid as an electrical conductor to complete the secondary circuit between the upper and lower probes. The pump motor will operate once the upper electrode is wetted as long as the lower level probes are in the liquid and will automatically shut-off the motor when the middle probe is out of the liquid. The electrode circuit (secondary) voltage being generated from the primary coil has no connection with the power, thus a very low amperage is all that exists in the second circuit (see chart).

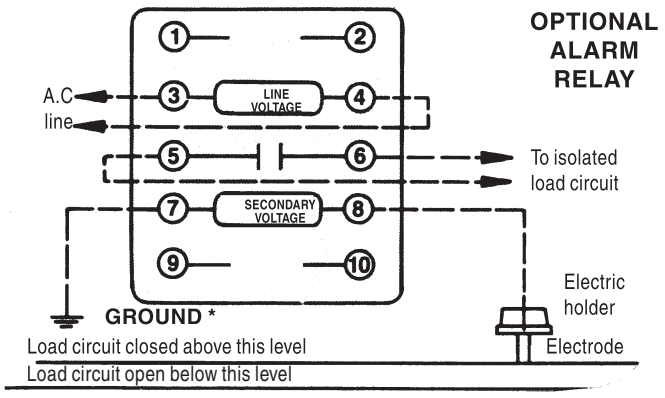
⚠ ***CAUTION:*** The secondary voltage across the probes is whatever is designated on the secondary coil (terminals 7 & 8) not the line voltage. The probes should be installed so that human contact with the exposed probe tip is avoided.

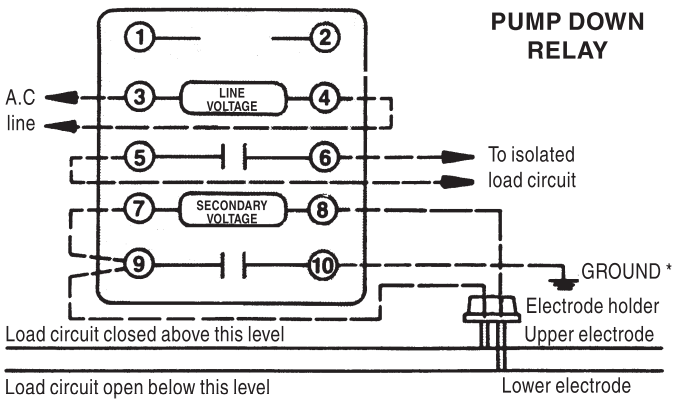
ADJUSTMENTS

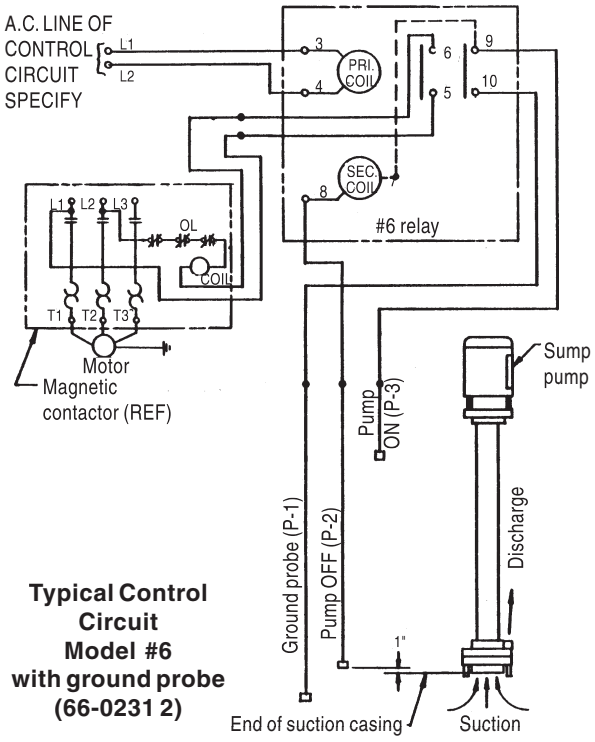
Probe lead wires are connected to the probe holder and lengths of wire can be cut and attached inside of the probe holder. Cut the wires to the proper length so that the pump will start at the desired upper level and the lower level is set so that the pump impeller is never below the liquid level. If the probe switch is equipped with a ground probe*, set the length of the wire so that the probe will always be in the liquid. For rod style probes, cut liquid end to correct length. Be certain not to cut end with threads. Remove ½" of insulating jacket from cut end.

⚠ CAUTION: PROBES AND HOUSINGS ARE NOT EXPLOSION-PROOF.

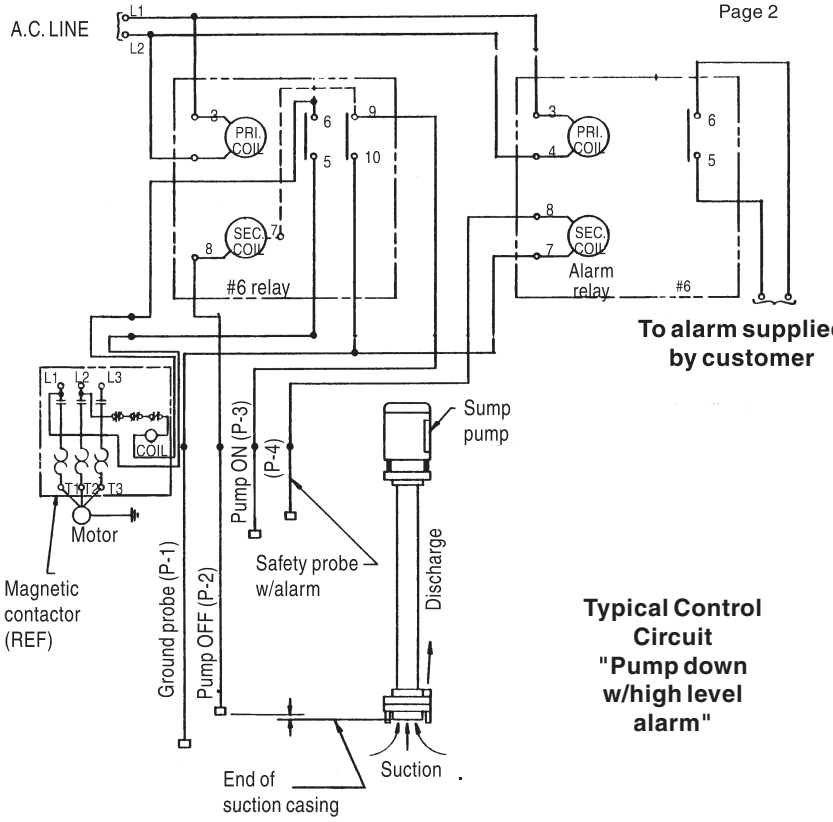
BASIC 6 WIRING DIAGRAM AND OPERATION







Typical Control Circuit Model #6 with ground probe (66-0231 2)



Typical Control Circuit "Pump down w/high level alarm"

MODELS #7 & 7R - FLOAT SWITCH

WIRING

If the float switch is purchased with the pump and motor, the float switch is wired to either the motor or starter as required. If the float switch is purchased separately, then the customer wires the float switch to his pump and motor. Wire motor according to local or national electrical codes.

ADJUSTMENTS

1. Upper collar on titanium rod determines the upper level of the solution (pump on level). Adjust by loosening set screw on side of collar and lock at desired position.
2. Lower collar on titanium rod determines the low shut-off of pump and motor. Adjust collar for liquid level desired.
3. Allow the pump to go through several cycles to be sure that liquid levels are correct.
4. Each float switch has a compensating spring which can be adjusted for different weights of float. This should be adjusted (via nut) if there is a problem with float weight, due to liquid specific gravity.

REVERSE ACTION

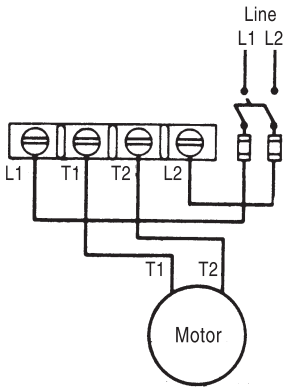
The Model #7, Nema 1 enclosure can be used for reverse action where a pump would be used for filling a remote tank. A remote assembly should be used and the bearing pin moved from position A to position B.

MODEL #7R - FLOAT SWITCH

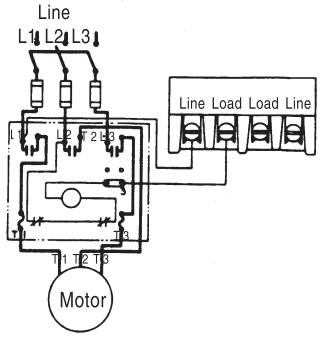
Same as Model #7 except mounted remote from pump and motor.

NOTE: All #7 Float Switches

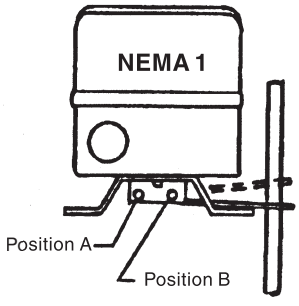
The titanium rod must be free to travel entire activation length. It can not hit bottom of sump. Also, the guide bracket must be at least 1½" above the bottom of the titanium rod low level point so that at high level point the guide rod does not become free of the guide bracket. This is a particular point to check on #7R assembly.

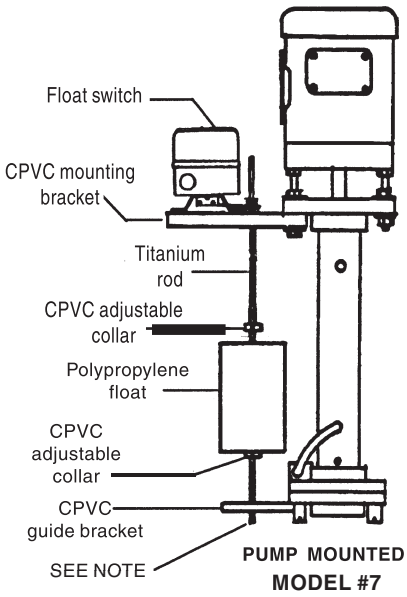


DOUBLE POLE SINGLE PHASE



FLOAT SWITCH WITH A.C. STARTER





PUMP MOUNTED MODEL #7

MODEL #8 - FLOAT SWITCH

DESCRIPTION

These two-pole switches are designed to control the liquid in pumps or open tanks. Switches are normally supplied for sump operation (close contacts on liquid rise) and factory adjusted to operate with weights. May also be used for tank filling. See adjustment instructions.

INSTALLATION OF WEIGHTS AND CABLE FOR PLASTIC CABLE

1. Place the cable eyelet over the hook on the switch lever. Do not crimp or bend for switch lever hook.
2. Thread upper weight onto plastic cable with large hole down.
3. Determine upper liquid level (pump turn-on level) and tie a knot in the plastic cable to support weight at the selected liquid level.
4. Slide the weight down over the knot.
5. Thread lower weight onto plastic cable.
6. Determine lower liquid level (pump turn-off level) and tie a knot in plastic cable to support weight at the selected liquid level.
7. Slide the weight down over the knot.
8. Cut off excess cable below the lower weight.

NOTE: Lower weight must be placed high enough on the cable that it will not rest on pump base or bottom of tank or sump pit. If loose end of cable is fastened to the base of the sump pump, be sure there is sufficient slack to permit the control operating arm to move upward until it hits the stop in the case without being restricted by the cable.

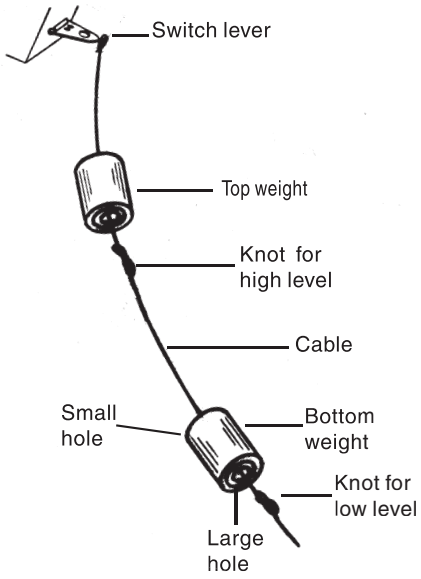


FIGURE 1

ADJUSTMENTS (Refer to Figure 2)

The switch contacts should open or cut out (sump operation) when the liquid level drops to expose about one half of the lower weight. If the switch operates before this level is reached, the counterbalance spring is too tight and should be loosened slightly. Turn adjusting screw counterclockwise (out of spring). If switch does not open contacts when lower weight is about one-half exposed, tighten screw slightly (into spring). Operation should be rechecked to insure proper operation.

TANK FILLING OPERATION:

Turn switch upside down (adjusting screw is at the top) and adjust as follows:

1. Loosen spring.
2. Depress switch lever and move spring from position "A" to position "B".
3. Turn adjusting screw clockwise until contacts open on liquid rise.

Mounting bracket can be moved to opposite side of case, if required. Follow adjustment instructions outlined above except for reverse action.

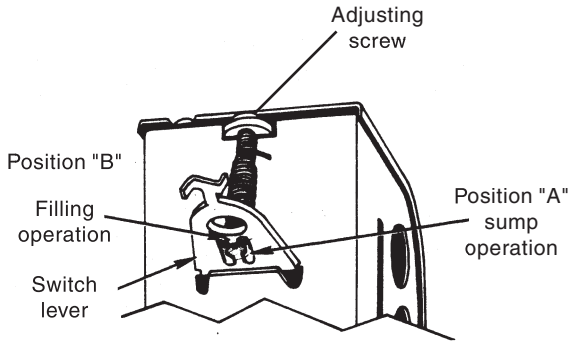


FIGURE 2
SPRING POSITIONS

CAUTION:

Disconnect power supply before wiring connections are made to prevent possible electric shock or damage to equipment.

All wiring should be in accordance with the National Electrical Code and local regulations. Switches have "quick wiring" terminals. Just push bare wire end under screw and tighten - no preforming of wire loop required. A grounding screw may be provided on some models.

CHECKOUT PROCEDURE

The operation should be rechecked to be sure that the switch contacts will close when the liquid level rises and covers about one-half of the upper float.

After the switch is installed, it should be run through one complete cycle to be sure that all components are functioning properly.

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