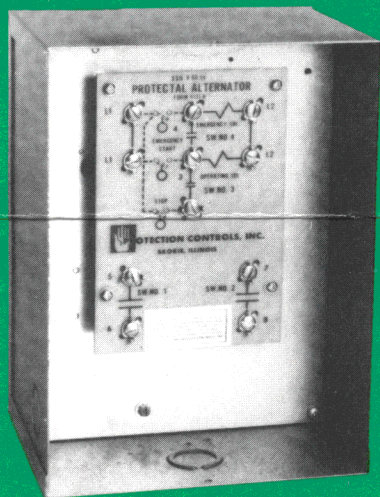


FORM 6111**PROTECTAL
ALTERNATOR**

**AUTOMATICALLY ALTERNATES PUMPING
EQUIPMENT FOR DUPLEX AIR OR FLUID
HANDLING APPLICATIONS**

- Field proven
- Simple Installation
- Mechanical Memory
- Motor Rated Contacts
- Compact Design
- Rugged Dependability



Form 6111-R

OPERATION

The **Protectal ALTERNATOR** automatically alternates cycling of duplex loads in the following systems:

One Float System—Form 6111-S Normal Pumping Requirements In continuous, or on-off pumping applications, the Protectal ALTERNATOR extends pump life - insures that both pumps work at alternate intervals for equal distribution of pump wear; this prevents possible deterioration of an inactive pump or motor system.

Two Float System—Form 6111-D Increased Pumping Requirements If, during normal cycle, fluid-handling volume is increased beyond the capacity of one pump, the emergency solenoid of the ALTERNATOR automatically teams-up the other pump to assist until normal volume is resumed. The unit can also be supplied with an alarm to provide emergency warning.

Three Float System—Form 6111-R Extended Cycle Pumping Requirements Frequent cycling is reduced with the addition of a third float positioned well below the cycle start float switch. ALTERNATOR solenoid auxiliary switches provide extended pumping with either or both pumps until the third float switch signals the end of the cycle.

Pump Failure. In emergencies, the ALTERNATOR automatically actuates the second pump, which takes over every cycle until replacement of defective pump can be made. (Form 6111-D and Form 6111-R.)

The Protectal ALTERNATOR is actuated by conventional pilot devices — float controls, pressure switches, thermostats, probes, etc., and its two heavy-duty solenoid coils (one for emergency use) unfailingly operate separate pump switches at predetermined intervals or when specific fluid levels are reached. Fool-proof alternating mechanism has minimum of moving parts—requires no lubrication or adjustments for minimum maintenance.

APPLICATIONS

TYPICAL USES include the alternation of pumping sets for handling air, oil or compressed air, boiler water return systems, sump and sewage equipment, air conditioning and refrigeration equipment, storage tanks and various fluid handling operations.

SIMPLE INSTALLATION

Simplified Wiring permits fast installation without removing the "packaged" component panel from its housing. Wiring panel layout permits either line voltage or auxiliary power source to be used to operate the solenoids. Convenient knock-outs also provided. Contacts for across-the-line, single-phase applications ... pilot control for three-phase motor applications.

SPECIFICATIONS

Contact Rating: ¾ h.p. at 115 VAC and 1½ h.p. at 230 VAC.
Power Input: 115 or 230 VAC, 50/60 Hz. (specify voltage).
Components: Ratchet-type alternating (life-time lubricated) mechanism, heavy-duty solenoids with encapsulated coils, U/L listed switches and terminal connections—all mounted on removable panel.
Dimensions: NEMA 1 6¾" wide x 5¾" deep. Available also in NEMA Types 4, 7, 12 enclosures and open type for panel mounting.

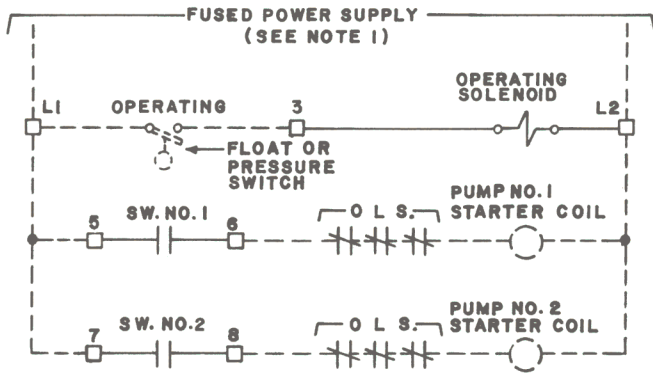
**PROTECTION CONTROLS, INC.****POWER EQUIPMENT CO.***Manufacturers Representative*

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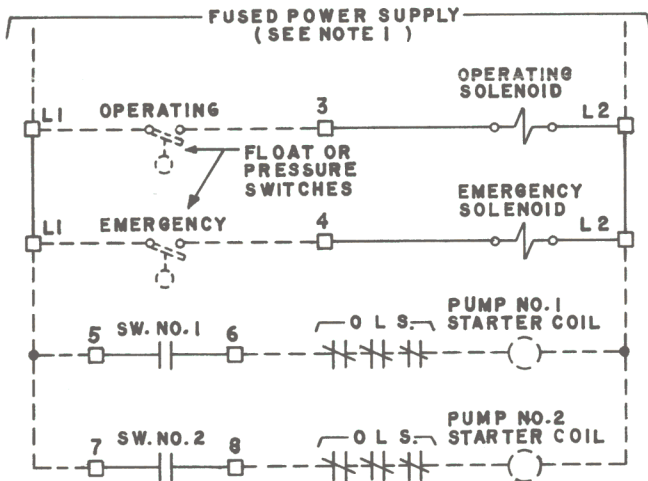
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PROTECTALTERNATOR



FORM 6111-S ONE FLOAT SYSTEM

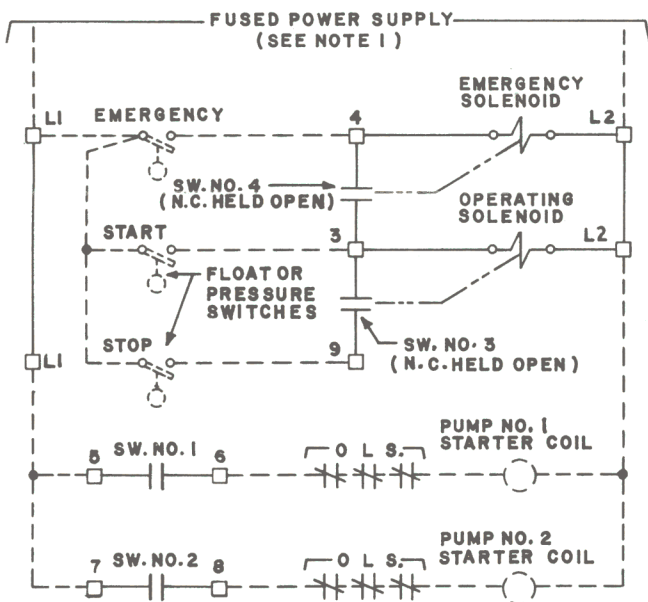
CYCLE OPERATION — The operating switch (float or pressure) closes, energizing the operating solenoid through terminal 3. The operating solenoid actuates either switch No. 1 or switch No. 2 energizing its respective pump motor or motor starter. Opening of the control switch deenergizes the operating solenoid and the pump motor is shut off. The pumps are alternately energized on successive cycles by means of a ratchet-type alternating mechanism.



FORM 6111-D TWO FLOAT SYSTEM

CYCLE OPERATION — The operating switch (float or pressure) closes, energizing the operating solenoid through terminal 3. The operating solenoid actuates either switch No. 1 or switch No. 2 energizing its respective pump motor or motor starter. Opening of the control switch de-energizes the operating solenoid and the pump motor is shut off. The pumps are alternately energized on successive cycles by means of a ratchet-type alternating mechanism.

EMERGENCY OPERATION — The emergency switch (float or pressure) closes if the demand exceeds the capacity of one pump. The emergency solenoid is energized through terminal 4. Both switch No. 1 and switch No. 2 are operated by the emergency solenoid energizing their respective pump motors or motor starters. Opening of the emergency control switch returns pump control to CYCLE OPERATION with either pump No. 1 or pump No. 2 continuing until the operating control switch opens.



FORM 6111-R THREE FLOAT SYSTEM

CYCLE OPERATION — The start switch (float or pressure) closes energizing the operating solenoid through terminal 3. The operating solenoid actuates either switch No. 1 or switch No. 2 energizing its respective pump motor or motor starter. Switch No. 3 is also actuated by the operating solenoid. When actuated, switch No. 3, in series with the stop switch (float or pressure), electrically holds in the operating solenoid. The pump will continue to run after the start switch opens and until the stop switch opens de-energizing the operating solenoid. The pumps are alternately energized on successive cycles by means of a ratchet-type alternating mechanism.

EMERGENCY OPERATION — The emergency switch (float or pressure) closes if the demand exceeds the capacity of one pump. The emergency solenoid is energized through terminal 4. Both switch No. 1 and switch No. 2 are operated by the emergency solenoid energizing their respective pump motors or motor starters. Switch No. 4 is also actuated by the emergency solenoid. The emergency solenoid and the operating solenoid will continue to be energized through switches No. 3 and No. 4 and both pumps will run until the stop switch opens.

- NOTES**
- 1) Power supply must match voltage rating (115 or 230 VAC, 50/60 HZ) indicated on ALTERNATOR.
 - 2) When single phase motors are to be controlled directly by the ALTERNATOR switches, connect motors to terminals 6 & L2 and to terminals 8 & L2. Maximum motor h.p. rating: 3/4 h.p. at 115 VAC and 1 1/2 h.p. at 230 VAC.
 - 3) Indicates terminals & wiring in ALTERNATOR.
 Indicates external wiring.
 - 4) N.O. or N.C. float or pressure switch contacts are to be connected in accordance with desired pumping operation.
 - 5) Installation, operation and maintenance shall conform with National Fire Protection Association standards, national and local codes, and authorities having jurisdiction.