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COMBUSTION SAFEGUARD Form 6642 VBTNR

Single Burner Supervision, Automatic Purge and Ignition, Non-Relight,
Plug-in SS100A FLAME -PAK, Plug-in Control Relays,
Plug-in U300A TIMOFIER for Purge and Ignition Trial Cycle.

1. Power on PROTECTOFIER terminals L1 and L2 provides power to electronic network.
 - a. Terminal L1 must be powered before terminal L2.
2. "ACF" CHECK relay "C" is energized thru N.C. contact of "ACF" NON-RELIGHT relay "NR" and N.C. contact of "ACF" FLAME relay "F", low voltage winding of SS3CP TRANSFORMER, SAFETY LOCKOUT switch circuit, and operating control circuit. Power on terminal 12 thru a closed N.O. "C" contact starts combustion blower. Power on terminal 5 thru combustion air pressure switch and starter interlock (jumper terminal 1 to 5 if not used). Normally open "C" contact from terminal 5 provides holding circuit for "C" coil.
3.
 - a. Power on PROTECTOFIER terminal 6 thru permissive safety limits; timer motor is powered from terminal 6 thru N.O. "C" contact and N.C. "NR" contact.
 - b. "TIMER" light is on.
4. Timer cam switch "CTP1" transfers after 2 seconds to directly energize the cam timer motor for duration of starting cycle.
5. At end of purge cycle, timer cam switches "CTP2" and "CTP3" close; starting trial for ignition.
 - a. Cam switch "CTP3" closes to energize "ACF" NON-RELIGHT relay "NR". SAFETY LOCKOUT switch circuit loop closes thru a N.O. "N.R." contact.
 - b. Cam switch "CTP2" closes to energize ignition transformer (from terminal 7 thru low fire start [L.F.S.] switch to terminal 8) and also energize pilot solenoid valve (thru N.C. contact of FLAME relay "F") from PROTECTOFIER Terminal 9 (jumper terminal 7 to 8 if L.F.S. not used).
6. With pilot flame established "ACF" FLAME relay "F" is energized. FLAME relay "F" contacts transfer.
 - a. N.C. "F" contact is safe-start checking and SAFETY LOCKOUT circuit opens.
 - b. N.O. "F" contact in pilot valve circuit (from terminal 9) closes to energize pilot valve around timer cam switch "CTP2".
 - c. N.C. "F" contact in pilot valve circuit (from terminal 9) opens to isolate timer cam switch "CTP2" from pilot valve.
 - d. N.O. "F" contact in main valve circuit (from terminal 10) closes to energize main valve. Neon lamp on PROTECTOFIER chassis will glow to indicate pilot flame is established.
 - e. Control relay (external) energizes, N.O. "CR" contact closes between terminals 7 & 8 (if L.F.S. used).
7. Cam timer will stop at the end of starting cycle, "ACF" NON-RELIGHT relay "NR" held energized thru closed N.O. "NR" contact when "CTP3" cam switch opens. Failure to establish pilot flame during limited ignition trial cycle will cause SAFETY LOCKOUT switch contacts to open circuit to check "C" coil. CHECK relay is de-energized, pilot valve is de-energized and electric ignition is stopped. With no flame signal, main valve remains de-energized. Timer continues to run thru cam switch "CTP1" to zero time position and stops. SAFETY LOCKOUT requires manual reset.

(over)



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INSTALLATION, OPERATION AND MAINTENANCE SHALL CONFORM WITH NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS, NATIONAL AND LOCAL CODES, AND AUTHORITIES HAVING JURISDICTION. ANY MODIFICATION VOIDS APPROVALS.

8. If the operating control opens, the circuit between terminals 3 & 4, fuel valves are de-energized. When the operating control closes again, a new cycle starts with the safe-start check, complete purge and new ignition trial.
9. An interruption in the combustion blower circuit between L1 and 5 drops out the check relay. Blower and fuel valves are de-energized. If circuit between 3 & 4 is still closed, control goes into new safe start check, new purge and another ignition trial.
10. An interruption in the safety limit circuit de-energizes fuel valves. When the FLAME relay responds to loss of flame, SAFETY LOCKOUT circuit is energized to lock-out system and stop blower.
11. Failure of CHECK relay "C" to prove safe-start check will cause the timer motor to remain de-energized and prevent cycling of the PROTECTOFIER.

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