



Protectofier

COMBUSTION SAFEGUARD
Form 6642 VT

Single Burner Supervision, Manual Pushbutton Ignition,
Plug-in SS100A FLAME-PAK, Plug-in Control Relays,
Plug-in U300M TIMOFIER for Purge (with or without Limited Ignition Trial Cycle).

Power on PROTECTOFIER terminals L1 and L2 provides power to electronic network.

Power on PROTECTOFIER terminal 12 (thru permissive safety limits circuit).

1. "ACF" CHECK relay "C" is energized thru N.C. contact of "ACF" FLAME relay "F", and timer cam switch "CTP1" in starting position (N.C. in zero time position).
2. Cam timer motor "CTP" is energized thru cam switch "CTP3" in purge position thru N.C. "F" contact for purging cycle.
 - a. "TIMER" light is lighted to indicate timer motor is energized.
3. At approximately 6 seconds*, cam switch contact "CTP2" closes to hold in CHECK relay coil "C" thru CHECK relay contact "C" thereby providing a holding circuit around the safe-start checking circuit in step 1.
4. At approximately 8 seconds*, cam switch contact "CTP1" opens in safe-start circuit and CHECK relay "C" coil is held energized as noted in step 3.

*Approximate times — dependent on total motor time.
5. At end of purge cycle, cam switch contact "CTP3" switches to the ignition trial position.
 - a. Cam timer motor "CTP" is de-energized to stop.
 - b. "TIMER" light goes out.
 - c. "PURGED" light, if used, will light. (If "PURGED" light is used, it must be a neon type).
6. Turn "BURNER/ALARM" selector switch to the "ON" position.

7. Press and hold "START" pilot pushbutton.

- a. Internal wire jumper in plug-in TIMOFIER provides circuit to cam timer motor and to "TIMER" light.
- b. "TIMER" light is lighted and cam timer motor is started for limited ignition trial cycle.
- c. Pilot solenoid valve is energized to open.
- d. Ignition transformer is energized to provide electric spark ignition for pilot.

8. With pilot flame established, "ACF" FLAME relay "F" is energized.

- a. FLAME relay "F" contacts transfer.
 - 1) N.C. "F" contact in safe-start checking circuit opens.
 - 2) N.O. "F" contact in CHECK "C" relay holding coil circuit closes.
 - 3) N.C. "F" contact in cam switch "CTP3" purge position circuit opens.
 - 4) N.O. "F" contact in cam switch "CTP3" ignition position circuit closes. This contact, in series with CHECK relay "C" contact, provides power to PROTECTOFIER terminal 4 to energize pilot valve solenoid and any other circuits connected to this terminal.

(over)



PROTECTION CONTROLS, INC.

Power Equipment Company
Manufacturers Representative
2011 Williamsburg Rd. Richmond, VA 23231
(804) 236-3800 Fax (804) 236-3882

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

- 5) N.O. "F" contact in series circuit with N.O. "C" contact between PROTECTOFIER terminals 9 and 8 closes to energize main gas valve. "FLAME-ON" indicator light to indicate flame circuit established can also be connected in parallel with main valve between PROTECTOFIER terminal 8 and terminal L2.
- 6) Neon lamp on PROTECTOFIER chassis will glow to indicate pilot flame established.
9. "START" button can be released when flame has been established. Timer will run to zero time position and stop. Cam contact "CTP2" opens and CHECK relay coil is held energized thru series circuit of FLAME and CHECK relay contacts.

Failure to establish pilot flame during limited ignition trial cycle de-energizes ignition transformer and pilot valve. Timer will continue to run for additional purge cycle before next ignition trial. Release "START" button.

PROTECTOFIER units not provided with limited ignition trial cycle do not have the internal wire jumper in the plug-in

TIMOFIER. Therefore, when "START" button is depressed, the N.C. contact of the "START" button breaks the circuit to the timer motor as well as to the "TIMER" light. Ignition will be sustained for as long as the "START" button is held depressed.

Flame failure during operation de-energizes fuel valves and PROTECTOFIER automatically goes into new purge cycle.

Power interruption to PROTECTOFIER terminal 12 de-energizes relays and valves. Resumption of power will cause timer motor "CTP" to run to the completion of its cycle plus another safe-start check and complete purge.

Failure of CHECK relay "C" to prove safe-start check will cause the timer motor to continuously recycle and prevent any ignition.

PROTECTOFIER models without purge timing but with ignition trial cycle have a built-in delay or off-time which requires a waiting period (usually of timing equal to the ignition trial cycle) before another ignition relight attempt can be made.

POWER EQUIPMENT CO.

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PROTECTOFIER

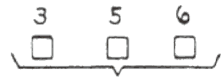
MANUAL OPERATION

SS100 A FLAME PAK

C - CHECK RELAY
F - FLAME RELAY

SINGLE BURNER PROTECTOFIER

(FORM 6642 VT GROUP M3101)



NO CONNECTIONS.

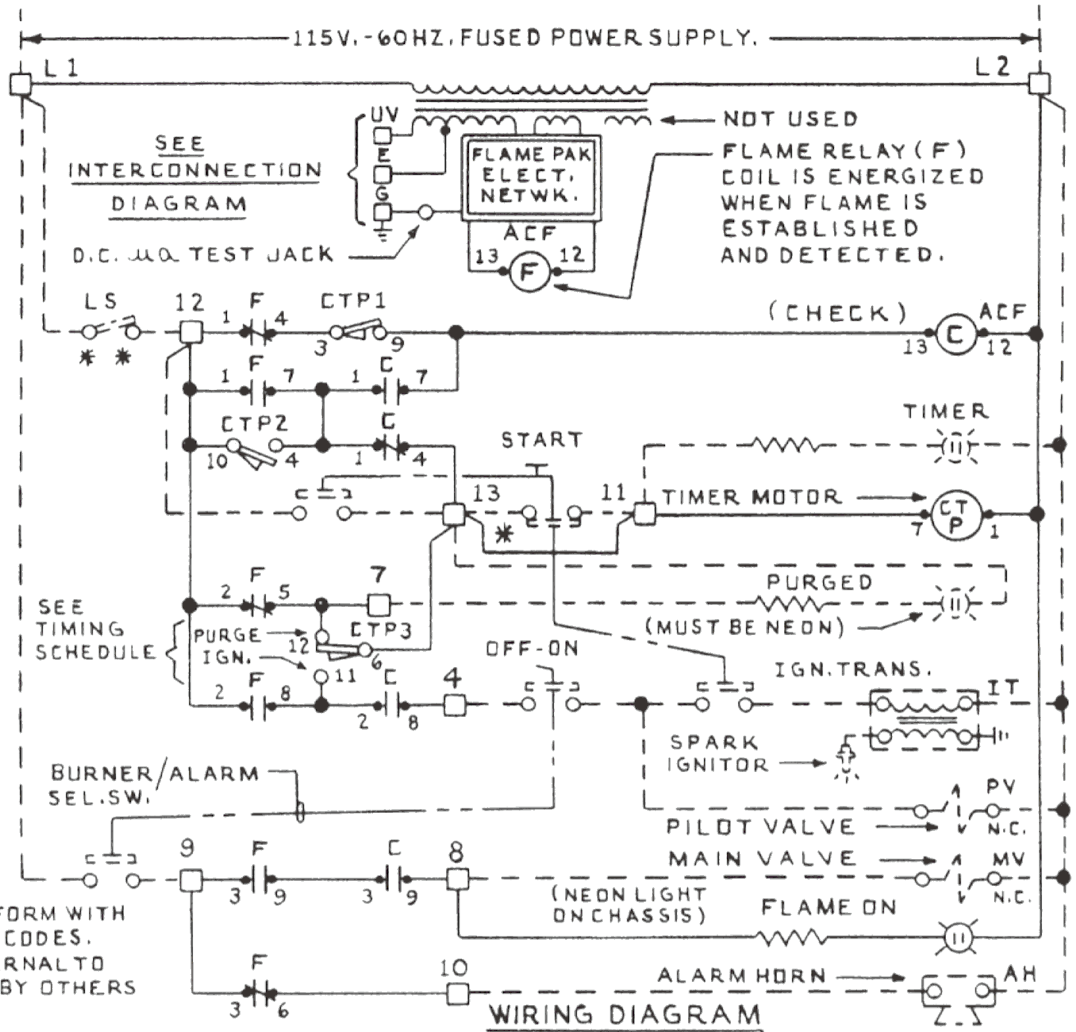
* - JUMPER IN U300M MAN. TIMOFIER FOR IGN. TRIAL UNITS ONLY.

** - SAFETY INTLK. SERIES CIRCUIT, FUEL AND AIR PRESS. SWS., VENT. FANS, ETC., AS REQ'D.

NOTE: TIMER CAMS (CTP) SHOWN IN ZERO TIME POSITION. CTP2 CLOSES BEFORE CTP1 OPENS.

□ - INTERNAL WIRING.
--- EXTERNAL WIRING.

NOTE:
WIRING AND INSTALLATION TO CONFORM WITH NATIONAL AND LOCAL ELECTRICAL CODES.
WIRING AND EQUIPMENT EXTERNAL TO PROTECTOFIER TO BE FURNISHED BY OTHERS UNLESS OTHERWISE SPECIFIED.



NOTES:

FLAME WIRE TO BE NO. 14 TYPE TW. 600V. INSULATED WIRE OR EQUAL. FLAME WIRE MUST NOT BE IN SAME CONDUITS WITH POWER WIRING.

IGNITION CABLE MUST BE RUN IN SEPARATE CONDUIT TO SPARK ELECTRODE. (DO NOT MIX WITH 115V. WIRING.)

INSTALLATION, OPERATION AND MAINTENANCE SHALL CONFORM WITH NATIONAL FIRE PROTECTION ASSOC. STANDARDS, NATIONAL AND LOCAL CODES, AND AUTHORITIES HAVING JURISDICTION.

U300M MANUAL TIMOFIER TIMING

| RANGE | PURGE (MIN.) | IGN. (SEC.) |
|-------|--------------|-------------|
| M- | MIN. | SEC. |

PROTECTION CONTROLS, INC.

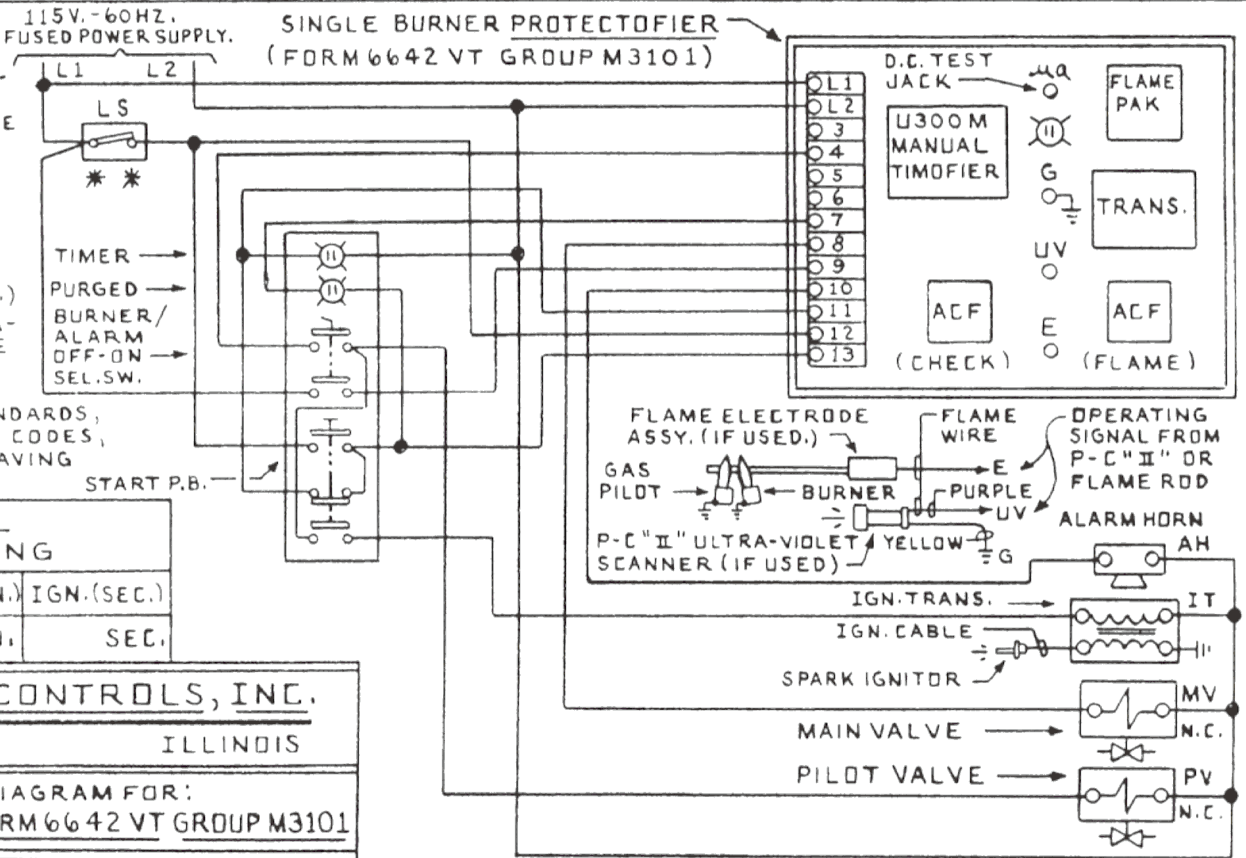
CHICAGO, ILLINOIS

WIRING DIAGRAM FOR: PROTECTOFIER FORM 6642 VT GROUP M3101

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| JOB NO. | DRWN. BY | DATE | DRAWING NO. |
| | H.R.V. | 12-11-84 | X-241 |

REV. AND REDRAWN 12-11-84

SINGLE BURNER PROTECTOFIER (FORM 6642 VT GROUP M3101)



INTERCONNECTION DIAGRAM