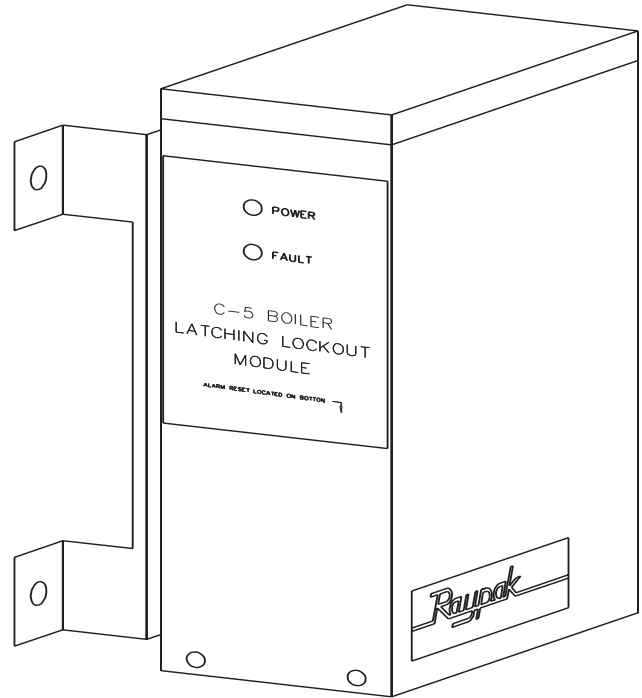


# INSTALLATION <sup>APPROVED</sup> AND OPERATING INSTRUCTIONS

## C-5 Latching Lockout Module



**FOR YOUR SAFETY:** Do not store or use gasoline or other flammable vapors and liquids or other combustible materials in the vicinity of this or any other appliance. To do so may result in an explosion or fire.

**NOTE:** The instructions in this manual are for the use of qualified individuals specially trained and experienced in the installation and maintenance of this type of equipment and related system components. Installation and service personnel are required by some states to be licensed. Persons not qualified shall not attempt to install, service, or maintain this equipment.

This manual should be maintained in legible condition and kept adjacent to the variable speed pump or in a safe place for future use.



Effective: 10-20-21  
Replaces: 04-09-08  
P/N 240722 Rev. 3

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**Please Register Now...**

And receive the full privileges of a Raypak controls user. Simply complete and return the attached card. This information helps us to access ordering information in case of loss, damage or theft. We will contact you in the unlikely event that any adjustments or modifications are ever required for your unit.

**Revision 3 reflects the following changes:**

Reformatted and rearranged into InDesign. Text changed throughout and whole sections extensively edited, added, or removed. Figure 1 through 4 are new. Added Section 10 "Replacement Parts".

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Before operating this product, please read these instructions completely.

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# 1. WARNINGS

## Pay Attention to these Terms

|                  |   |
|------------------|---|
| <b>▲ DANGER</b>  | Indicates the presence of immediate hazards which will cause severe personal injury, death or substantial property damage if ignored.                                       |
| <b>▲ WARNING</b> | Indicates the presence of hazards or unsafe practices which could cause severe personal injury, death or substantial property damage if ignored.                            |
| <b>▲ CAUTION</b> | Indicates the presence of hazards or unsafe practices which could cause minor personal injury or product or property damage if ignored.                                     |
| <b>CAUTION</b>   | CAUTION used without the warning alert symbol indicates a potentially hazardous condition which could cause minor personal injury or product or property damage if ignored. |
| <b>NOTE</b>      | Indicates special instructions on installation, operation, or maintenance which are important but not related to personal injury hazards.                                   |

**IMPORTANT NOTICE:** These instructions are intended for use by qualified personnel who are specifically trained and experienced in the installation of this type of equipment and related system components. Installation and service personnel may be required by some states to be licensed. If your state requires certification, be sure your contractor bears the appropriate license. Only qualified persons shall attempt to repair this equipment. Repair must be according to these instructions.

**▲ WARNING:** Improper installation, adjustment, alteration, service or maintenance may damage the equipment, create a hazard resulting in asphyxiation, explosion, fire, electric shock, personal injury or property damage, and will void the warranty.

**▲ CAUTION:** More than one (1) supply source. This appliance has provisions to be connected to more than one (1) supply source. To reduce the risk of electric shock, disconnect all such connections before servicing.

**▲ CAUTION:** Risk of electric shock. More than one (1) disconnect switch may be required to de-energize the equipment before servicing.

**NOTE:** Minimum 18 AWG, 105°C, stranded wire must be used for all low voltage (less than 30 volts) external connections to the unit. Solid conductors should not be used because they can cause excessive tension on contact points. Install conduit as appropriate. All high voltage wires must be the same size (105°C, stranded wire) as the ones on the unit or larger.

## 2. INTRODUCTION

Thank you for selecting the Raypak C-5 Latching Lockout Module (kit 006042 for field-installation). It is our sincere hope that you will enjoy it's outstanding design and ease of use.

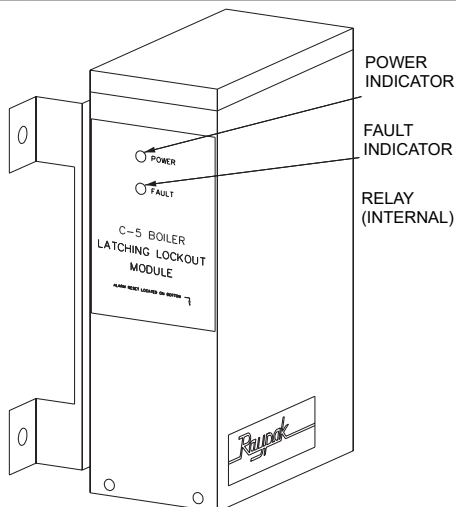
The C-5 Module is a solid-state electronic ignition fault latching detector and indicator that has been engineered to enhance safety, simplify troubleshooting and minimize equipment downtime.

The C-5 Module adds manual-reset on ignition fault to a Raypak appliance equipped with the Honeywell S8600 ignition control. If the unit shuts down on an ignition fault, the C-5 prevents the unit from being restarted simply by removing and restoring main power. Instead, the unit cannot operate until the reset button on the bottom of the C-5 module is pushed. This function is required by the CSD-1 boiler code.

CSD-1 compliance also requires lockout ignition with 15-second lockout timing.

| Standard Indicator Lights |   |
|---------------------------|---|
| <b>Power</b>              | GREEN indicates power is available to the Latching Lockout Module.        |
| <b>Fault</b>              | RED (flashing) indicates a fault has occurred and ignition is locked out. |
| <b>Relay (internal)</b>   | RED (on board near relay) indicates relay is actuated.                    |

| Reset of Fault condition |   |
|--------------------------|---|
| <b>Reset</b>             | A closure between Pins 1 and 2 of P2 will clear a fault, all fault indications, and allow the ignition process to resume. Without a reset the fault will be "remembered", even in a power-down condition. |



(GREEN) INDICATES THAT 24 VAC IS BEING SUPPLIED TO LATCHING FAULT DETECTOR.

(RED) INDICATES A FAULT HAS OCCURRED AND IGNITION IS LOCKED OUT.

(RED, ON BOARD, INSIDE) INDICATES RELAY IS ENERGIZED.

Figure 1. Indicator Lights

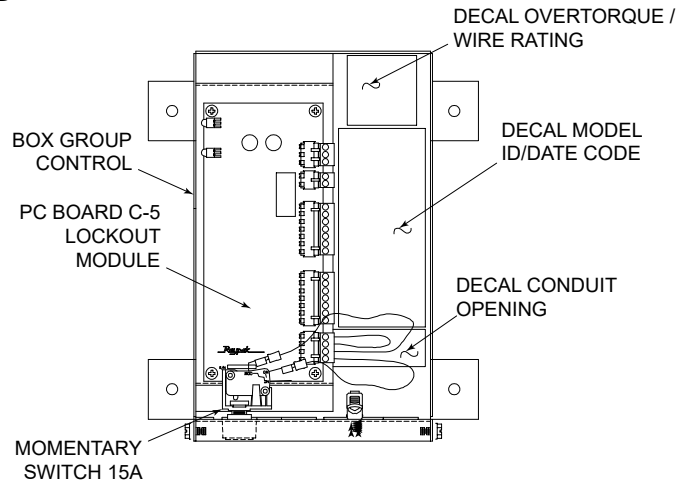


Figure 2. Interior Detail

## 3. INSTALLATION AND MOUNTING

If the C-5 Latching Lockout Module was not installed on the boiler by the factory, care should be taken to select a suitable mounting location for the enclosure. The C-5 Latching Lockout Module should be mounted on the side of the boiler. See Figure 3.

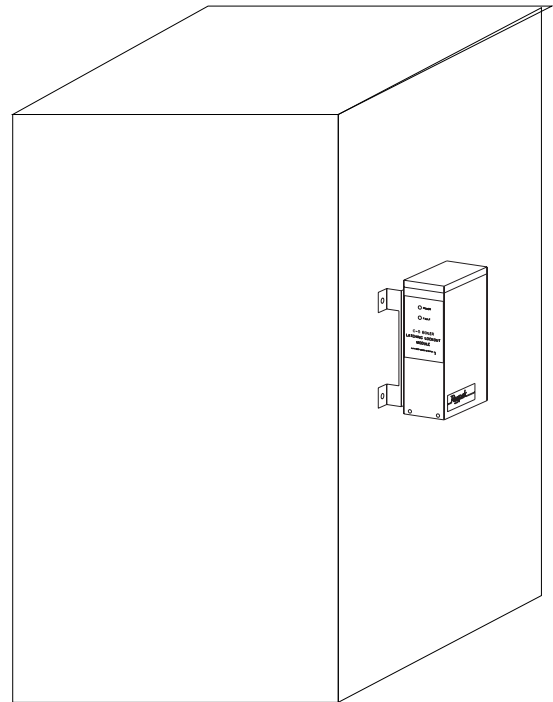


Figure 3. Module Location on Boiler

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**NOTE:** 18AWG stranded wire must be used for all connections to the circuit board. Solid conductors should not be used because solid wire conductors can cause excessive tension on contact points.

## 4. MECHANICAL INSTALLATION

Install the Module, as shown in **Figure 3**, on the side of the boiler. The Module must be mounted vertically with the conduit holes facing downward. The conduit holes are sized to accommodate standard 1/2" conduit fittings. If additional or larger conduit fittings are required, the holes should be located on the bottom of the module. See **Figure 4**.

Mount the Module with the supplied hardware in four (4) places.

The minimum required service clearance is 18" (457 mm) clearance from the front, and 6" (152 mm) clearance on all other sides.

An electrical distribution sub-panel containing appropriate disconnect switches and surge suppressor is required at or near the equipment location(s).

Any wiring harnesses must be protected by appropriate conduit.

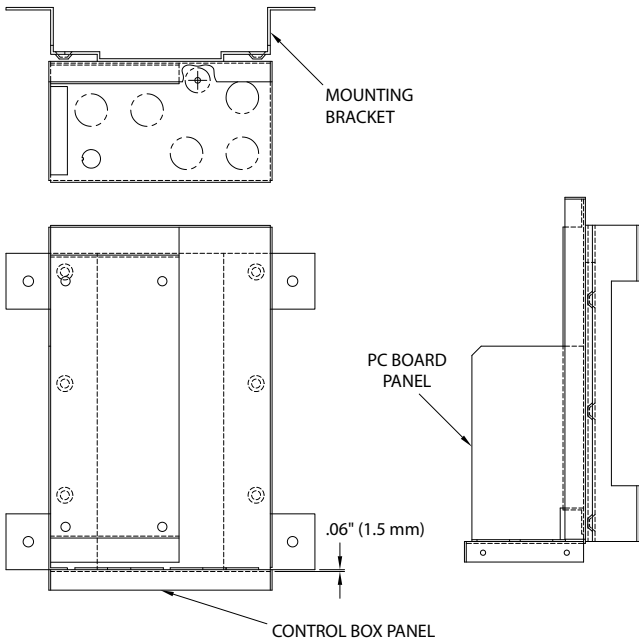


Figure 4. C-5 Module Enclosure and Mounting Bracket

## Electrical Characteristics

The C-5 Module wires into the 24V control wiring of the unit.

- Power: 24VAC, 60 Hz
- Power draw: 0.5 amp

## Electrical Installation

Apply 24 VAC to Pins 1 and 3 of Terminal P1 to power the Module.

## 5. CHECK YOUR POWER SOURCE

Using a volt-ohm meter, check the following voltages at the circuit breaker panel:

- AC = 108 Volts AC Minimum, 132 Volts MAX Hot to Ground (Black to Green)
- AB = 108 Volts AC Minimum, 132 Volts MAX Hot to Neutral (Black to White)
- BC = Must be less than 1.0 Volts AC Neutral to Ground (White to Green)

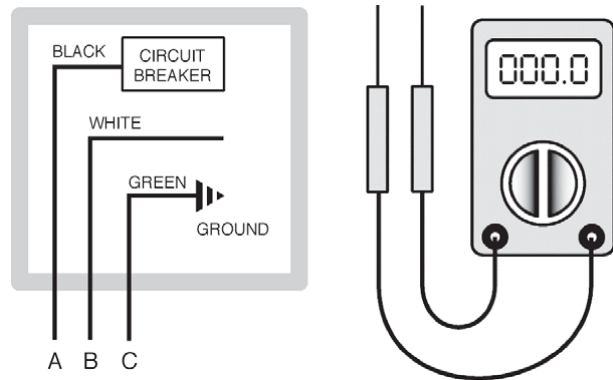


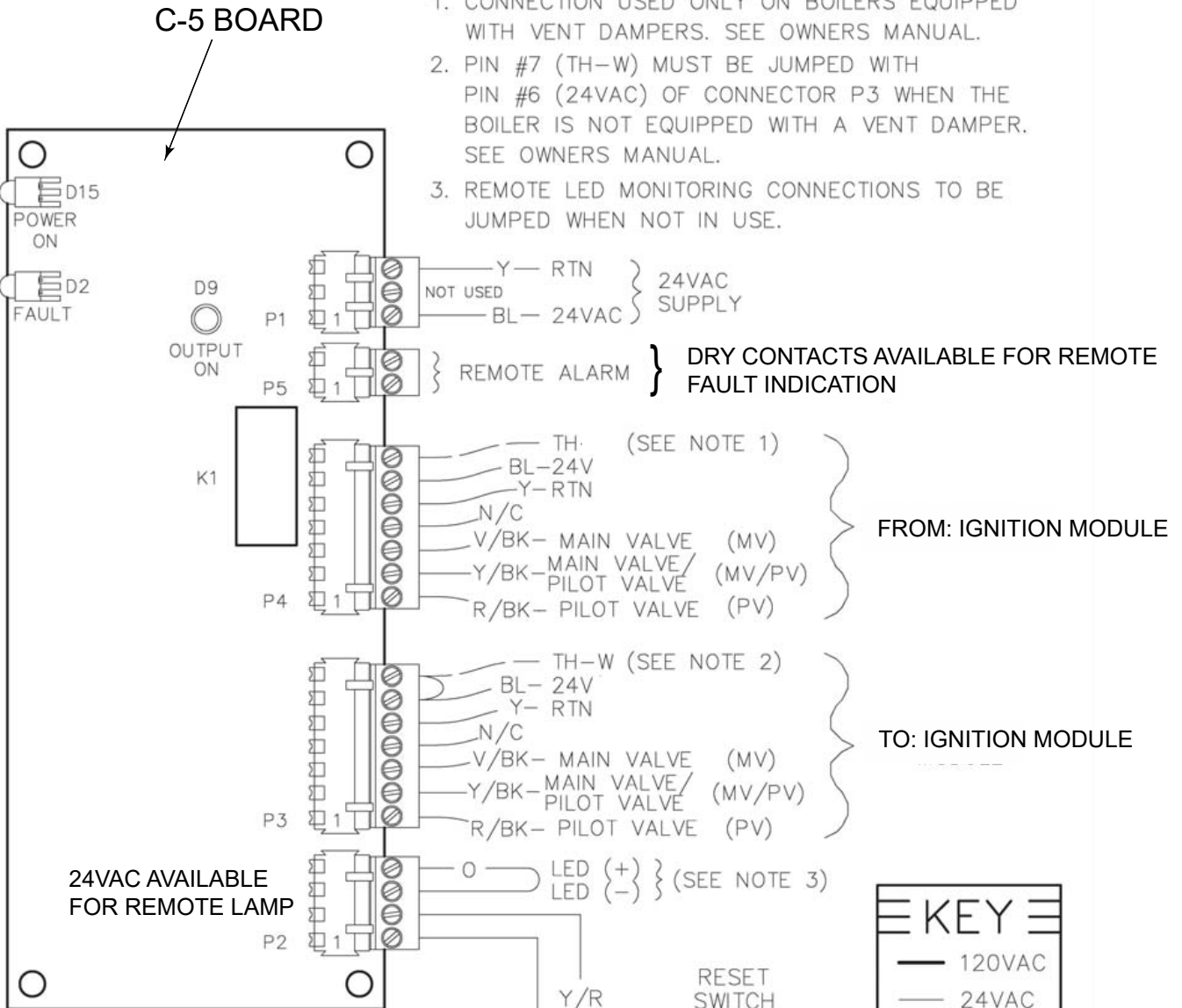
Figure 5. Circuit Breaker Voltage Check

# 6. FIELD WIRING CONNECTION POINTS

**NOTE:** Tighten terminal strip clamping screws to 4 in-lbs. Breakage from over-torquing is not covered under warranty. Use 18 AWG stranded copper conductors only. For supply connections, use 18AWG stranded or larger wires rated at min. 75°C (167°F).

## NOTES

1. CONNECTION USED ONLY ON BOILERS EQUIPPED WITH VENT DAMPERS. SEE OWNERS MANUAL.
2. PIN #7 (TH-W) MUST BE JUMPED WITH PIN #6 (24VAC) OF CONNECTOR P3 WHEN THE BOILER IS NOT EQUIPPED WITH A VENT DAMPER. SEE OWNERS MANUAL.
3. REMOTE LED MONITORING CONNECTIONS TO BE JUMPED WHEN NOT IN USE.



## WARNINGS

4. FOR SUPPLY CONNECTIONS, USE 18AWG STRANDED OR LARGER WIRES RATED AT LEAST 75°C (167°F).
5. USE COPPER CONDUCTORS ONLY
6. DO NOT ALLOW ANY LIVE ELECTRICAL COMPONENTS TO REST ON BOTTOM OF ENCLOSURE.

| KEY   |            |
|-------|------------|
| —     | 120VAC     |
| —     | 24VAC      |
| - - - | FIELD WIRE |
| BK    | BLACK      |
| BR    | BROWN      |
| BL    | BLUE       |
| G     | GREEN      |
| O     | ORANGE     |
| R     | RED        |
| V     | VIOLET     |
| W     | WHITE      |
| Y     | YELLOW     |
| GR    | GRAY       |

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## 7. FIELD WIRING INSTALLATION

The C-5 Module is installed in series between the Boiler Control and the ignition module.

Refer to the wiring diagram for the required wire connections on the boiler.

Disconnect the ignition connection pins listed below from the boiler, cut off the female spade lugs, strip back the wire 1/4 inch, and reconnect to connector P3 of the C-5 board.

| From:<br>Boiler Ignition<br>Module Pin # | Color            | Name         | To:<br>C-5, P3<br>Pin # |
|--|------------------|--------------|-------------------------|
| 1  | Violet/Black     | MV           | 1                       |
| 2  | Yellow/<br>Black | MV/PV        | 2                       |
| 3  | Red/Black        | PV           | 3                       |
| 4  |                  | GND          | 4                       |
| 5  | Yellow           | 24 VAC (GND) | 5                       |
| 6  | Blue             | 24 VAC (HOT) | 6                       |

Connect 24 VAC power to the C-5 board:

| From:<br>Boiler Power | Color  | Name      | To:<br>C-5, P1<br>Pin # |
|-----------------------|--------|-----------|-------------------------|
| 24 Hot                | Blue   | 24 Hot    | 1                       |
| 24 Return             | Yellow | 24 Return | 3                       |

Connect reset switch (N/O):

| From:<br>Switch | Color      | To:<br>C-5, P2<br>Pin # |
|-----------------|------------|-------------------------|
| Wiper           | Yellow/Red | 1                       |
| N/O             | Yellow/Red | 2                       |

## 8. INSTALLATION VERIFICATION PROCEDURE

### Register

Before proceeding any further, please verify that the user registration form has been completed and mailed.

### Mechanical Installation

Verify that the mechanical installation has been completed in accordance with the instructions.

### System Module Installation

Verify electrical power wiring connections.

Verify electrical connection torque requirements.

Verify Power Test has been completed successfully.

## 9. POWER TEST

### Check Power

Utilizing a Volt-Ohm-Meter (VOM) monitor the following on the Boiler for proper voltage levels. See "Check Your Power Source" on page 6.

## 10. REPLACEMENT PARTS

The following kits are offered for replacing components of the C-5 module:

| <u>Kit #</u> | <u>Description</u>                  |
|--------------|-------------------------------------|
| 005641F      | Kit, Test/Reset Switch              |
| 006203F      | Kit, PC Board, C-5 Latching Lockout |



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11. WARRANTY

LIMITED WARRANTY
C-5 Latching Fault Detector

SCOPE OF WARRANTY:

Raypak, Inc. ("Raypak") warrants to the original owner the Control System to be free from defects in materials and workmanship under normal use and service for the applicable warranty period.

APPLICABLE WARRANTY PERIOD

The effective date of warranty coverage is the date of original installation, of the Control System, by a qualified electrician or by a RAYPAK authorized service technician.

WARRANTY EXCLUSIONS

This Limited Warranty does not apply:

- 1. if the control system is not properly installed by a qualified technician...
2. to damage or malfunctions resulting from failure to properly install...
3. if the rating plate(s) or serial number(s) are altered...
4. if the System is modified in any way...
5. to damage or failure from abuse, accident, act of nature...
6. to accessories, rubber or plastic parts...
7. if the System is moved from its original installation site...

LABOR AND SHIPPING COSTS

This Limited Warranty does not cover labor costs for service, removal or reinstallation of any part nor shipping charges to or from RAYPAK'S designated repair center...

HOW TO MAKE A WARRANTY CLAIM

To make a warranty claim, promptly ship (postage prepaid) or carry the defective part to a designated RAYPAK Service Dealer or Service Station in the United States, supplying proof of purchase and date of installation and the model and serial numbers.

EXCLUSIVE WARRANTY - LIMITATION OF LIABILITY

This is the only warranty given by RAYPAK. No one is authorized to make any other warranties on Raypak's behalf. ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIOD SPECIFIED ABOVE.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

We suggest you immediately complete the information below and retain this Limited Warranty Certificate in case warranty service is needed.

RAYPAK, INC. SERVICE DEPARTMENT
2151 Eastman Ave, Oxnard, California 93030
Telephone: (805) 278-5300 FAX (805) 278-5489

The following information must be provided when you write or call:

Original Owner Daytime Telephone Number

Complete Mailing Address

City State Zip Code Installation Site

Model Number Contractor/Installer

Date of Installation Serial Number

Raypak, Inc., 2151 Eastman Ave, Oxnard, CA 93030 (805) 278-5300 FAX (805) 278-5489 Litho in U.S.A.

