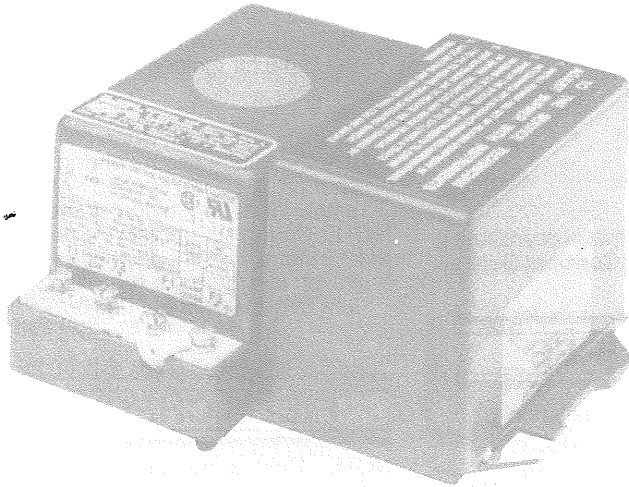




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INSTRUCTION MANUAL

ELECTRONIC OIL BURNER PRIMARY CONTROL AND IGNITOR



The CCT Model 42130-02 Oil Burner Ignitor/Control provides an interrupted duty electronic ignition and recycle type primary control mounted on a single baseplate. The 42130-02 model is designed to mount directly on top of standard flame retention oil burners, and offers the following features.

- ☐ Patented interrupted duty electronic ignitor provides longer trouble-free operation and lower operating costs.
- ☐ Provides 5 to 10 second ignition overrun time after the "trial for ignition" period to prevent nuisance lockouts.
- ☐ Provides 24 VAC thermostatic control.
- ☐ Provides 30 second safety switch timing with externally mounted manual reset button.
- ☐ Control, ignitor, and cadmium sulfide flame detector are each field replaceable and interchangeable on most standard flame retention burners.
- ☐ Can be used with standard cadmium sulfide flame detector.
- ☐ Control, ignitor, and cadmium sulfide cell enclosures and mounting plate are made of light weight, high impact plastic for ease of handling and installation.
- ☐ Control, ignitor, and cadmium sulfide cell are prewired at the factory, reducing normal installation time.
- ☐ Provides external low voltage terminal strip with screw terminals for ease of installation.
- ☐ Safety monitor circuit will shut down burner in the event the motor relay contacts stick.

MODEL 42130-02

SPECIFICATIONS

MODEL NO. 42130-02 SERIES

CONTROL

Power Consumption:

120 VAC, 60 Hz, 10 VA

Motor Load Relay Contacts:

Full Load 10A

Locked Rotor 60A

Ignition Sequence: Interrupted duty

Safety Switch Timing: 30 seconds.

Recycle Time: 60-120 Seconds

Ambient Operating Temperature: 32-144 Degrees F. Interrupted Duty

Anticipator: current = .2A 32-120 Degrees F. Constant Duty

Recommended CAD resistance (burner running) = less than 1500 ohms.

IGNITOR

Power Consumption:

120 VAC, 60 Hz, 60 VA

Output Power: 14KV, 30mA RMS

Secondary Grounding: Midpoint

Ambient Operating Temperature: 32-144 degrees F. Interrupted Duty
32-120 degrees F. Constant Duty

INSTALLATION PROCEDURES

1. Read all instructions carefully prior to beginning installation.
2. The 42130-02 Series is designed to mount directly on top of the burner housing (Fig. 1). The baseplate is secured with two (2) screws through the hinge and two (2) hold-down clamps on the ignitor side.

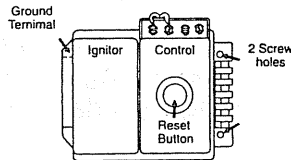


FIG. 1 42130-02 MOUNTING

WIRING

CAUTION: Disconnect power supply before wiring to avoid electrical shock and damage to the Controller/Ignitor

NOTE: All wiring must comply with applicable codes and local ordinances.

1. Unclamp and swing open unit, exposing wires.
2. **Line wiring:** Hook up orange, black and white wires, referring to Fig. 2A.

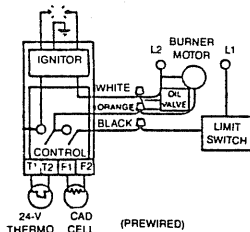


FIG. 2A 42130-02 WIRING DIAGRAM

3. **CAD cell** is factory installed and connected to "F1, F2" terminals on low voltage strip. To replace full assembly, refer to "Photocell" section under Service.
4. **Thermostat** wires should be directly connected to low voltage terminals marked T1, T2. For most electronic Set Back Thermostats, connect red low voltage wire to T1 (for White Rogers model 1F 90-51 connect white lead to T-1, red lead to T-2).

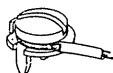


FIG. 2B RECOMMENDED TERMINATION

5. **Ground** connection is made by contact of the baseplate ground terminal and the baseplate hold-down clamps on the burner housing. Refer to Fig. 1.
6. **Ignitor springs** should be checked for proper contact to burner electrodes.

START-UP PROCEDURE

CAUTION: Insure that combustion chamber is free of oil or vapors before starting system.

1. Push in, and hold reset button 3 seconds, then release to reset the control.
2. Set thermostat to call for heat.
3. Open all oil line valves.
4. Close line switch; ignitor and motor should immediately start.
5. Safety switch lockout will occur if flame is not established during the start-up 30 second "trial for ignition" period; to restart, the safety switch must be manually reset.
6. Control will provide a 5 to 10 second ignition overrun time after the "trial for ignition" period to prevent nuisance lockouts.

7. Burner will turn off when call for heat is satisfied.
8. If flame failure occurs during a run, the motor will immediately shut off. A 60-120 second "recycle" delay will begin followed by a new "trial for ignition" period.

NOTE: During set-up, recycle period can be eliminated by pushing reset button.

9. Power loss during a run will cause the burner to safely shutdown and begin a normal "trial for ignition" upon power restoration.

FIELD CHECKOUT PROCEDURE

NOTE: Only a trained service technician should complete the following safety checkout.

1. **Flame Failure Check:** To simulate flame failure, shut off the oil supply hand valve at the end of "trial for ignition". Immediately after the flame goes out, the motor will stop for 60 to 120 seconds, then both ignitor and motor will restart. After 30 seconds, the control will go into lock-out, shutting down the ignitor and control. Turn on the oil supply then depress and hold the red reset button for 3 seconds to restore flame. Burner will restart in 3-5 seconds.
2. **Power Failure Check:** After establishing flame, turn off the power; burner will immediately stop. Restore power, and burner should begin normal start-up within 90-120 seconds of loss of power.
3. If control does not operate as described, check wiring and installation. If problems persist, perform a system component checkout outlined in the Service Section.

WARNING: Do not connect an external voltage to the thermostat terminals T1 and T2. This will damage the control and may result in a dangerous operating condition.

Before attaching the thermostat wires to terminals T1 and T2, connect an AC voltmeter across the unconnected thermostat wires. The maximum voltage measured should be no more than 5 volts AC. If higher than 5 volts AC is measured, check for a 24 volt transformer that is not isolated from the thermostat wires. Examples of accessories that may require a 24 volt transformer are: air conditioner, humidifier or electronic air cleaner. If a 24 volt transformer is found that is not isolated from the T1 and T2 terminals, an isolation relay must be added. If you need assistance please call tech service, 1-800-989-2275.

SERVICE

The 42130-02 Series Ignitor/Controller is preset at the factory and requires no field adjustment. The control, ignitor, and CAD cell assembly are field replaceable and in the event of failure or damage to any part, replace only with OEM service parts.

1. **Ignitor:** The 41000 Series is a constant duty ignitor designed to operate in conjunction with the 42130-02 Controller. If the ignitor fails to spark:
 - A. Turn off power and fuel supply.
 - B. Check all connections.
 - C. Check that the spring terminals are making contact with burner electrodes.
 - D. If no fault is found in A through C, remove the ignitor from the baseplate by removing two screws on underside of baseplate (Fig 3).

SERVICE CONTINUED

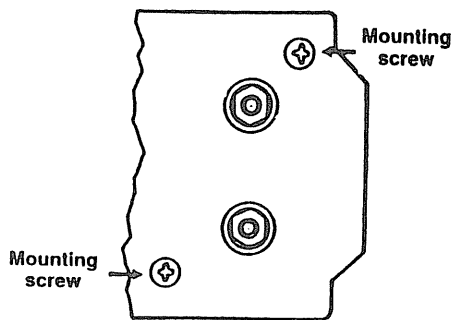


FIG. 3 IGNITOR MOUNTING

- E. Disconnect ignitor from control by cutting blue and white control leads at least 4 inches from control

NOTE: Transformer testers cannot be reliably used to test the output of the ignitor because of the high frequency content in the ignitor's output.

- F. Cut new ignitor (PN41000) leads 4 inches minimum from bottom of ignitor. Splice white lead of the control to the white lead of the ignitor. Splice the remaining lead of the control with the remaining lead of the ignitor. (Use medium wire nuts provided.)
- G. Tuck wire nuts and excess wire under ignitor and re-screw new ignitor to baseplate.
- H. Connect proper electrode terminals to ignitor as shown. Refer to figures 4A thru 4C.

Control: With ignitor disconnected, the control can be checked for proper operation.

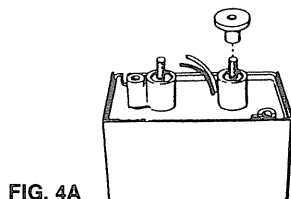


FIG. 4A

- A. With line voltage meter leads connected to the controls, blue and white wires (for ignitor), turn power supply on, leaving fuel supply OFF and thermostat set for heat. (cover CAD cell)

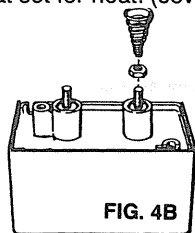


FIG. 4B

- B. If blue and white leads are providing 115 VAC for 12 seconds then the ignitor should be replaced.

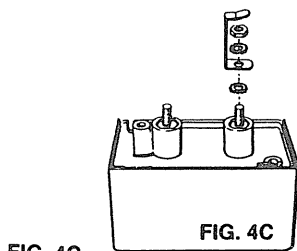


FIG. 4C

- C. If blue and white leads are providing 115 VAC for over 45 seconds, then both ignitor and control should be replaced.
- D. If blue and white leads provide no power at all then;
1. No power is getting to controller (check power supply.)
 2. CAD cell is seeing light and preventing startup.
 3. Control is not functioning properly and should be replaced with correct 14290 series control.
 4. Ignitor and CAD cell from defective control can be used with 14290 replacement control.

NOTE: Disconnect line voltage before attempting control replacement.

Replacement Controls

Aero Burner
Beckett Burner
Carlin Burner

Part Number

14290-02ARS
14290-02AOS
14290-02BOS

3. Photocell

- A. Check cell by unplugging and measuring it's resistance across it's pins; covered, it should be over 50Kohms; when exposed to light, it should be under 10K.
- B. Further check system operation by replacing cell into unit (Fig. 5), reset control, and attempt normal "trial for ignition."



FIG. 5

- C. If cell fails "B", replace and try again.
- D. Should the entire cell assembly require replacement, disconnect leads from P.C. board terminal strip, and remove ignitor (Step 1). Refer to Fig. 3. Remove 2 screws from control cover, and release cover from baseplate with a small screwdriver (Fig. 6).

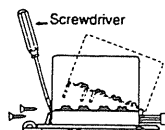
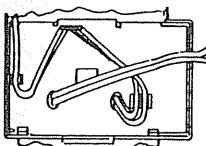
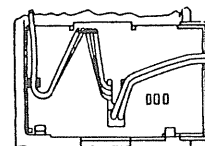


FIG. 6

With control cover tipped up, remove old CAD cell leads and replace with new CAD cell leads. Route leads as shown in FIG. 7.



Baseplate #14278



Baseplate #14281

FIG. 7

- E. Snap control cover back on baseplate, and re-insert the two screws. Connect CAD cell leads to control low voltage terminals marked F1, F2.
- F. Assemble ignitor as in service section.

TROUBLESHOOTING TIPS

1. Burner (control) will not come on.
 - A. No power to control.
 - B. Control is in lock out, (press reset for a minimum of 4 seconds).
 - C. CAD cell seeing light.
 - D. Excessive air flow or draft causing flame to leave burner head.
 - E. Control motor relay is stuck closed (see note below).
2. Burner (control) will light then shut down after a short time only to restart after approx. two minutes.
 - A. CAD cell is defective.
 - B. Air leaking into oil line causing flameout.
 - C. Defective nozzle causing flame to be erratic.
 - D. Excessive back pressure causing flame to be erratic.
3. Control locks out after 15 seconds.
 - A. No oil to burner.
 - B. Shorted electrodes.
 - C. Nozzle clogged.
 - E. Ignitor module defective.
 - F. CAD cell defective.

NOTE: CCT Safety Monitor Circuit (S.M.C.) is designed to totally disable the control in the event the motor relay contacts are stuck closed.

For further assistance please call 1-800-989-2275

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40100-02, 40200-02, 42130-02 & 42230-02 CONTROLS

CAUTION! PLEASE REVIEW FOR APPLICATIONS USING POWER VENTERS

The *Safety Monitoring Circuit* is an integral part of the CCT-02 version Oil Primary Safety Control. The design constantly monitors the position of the motor relay contacts when there is no call for heat. This monitoring assures that the control will not operate if the motor relay contacts are welded.

When the CCT Control is used in a system which utilizes a power venter with a solid state timing relay, an isolation relay must be added. This relay prevents the voltage associated with the *Safety Monitoring Circuit* from inadvertently powering the power venter.

SEE BELOW FOR WIRING DIAGRAMS AND APPROVED RELAYS

Insert the normally open contacts of a mechanical relay, with a 120 VAC coil, with a **maximum resistance of 3900 ohms** between the orange wire of the control and the input of the solid state timing relay. Connect the 120 VAC coil of the mechanical relay between the orange and white wires. If the relay that is used stays energized or chatters when -02 control is off, the coil resistance is probably higher than 3900 ohms.

Examples of relays that have been tested and will operate satisfactorily are: Honeywell R4222, R8222, R8228, R4228 Series with 120 VAC coil; Potter and Brumfield KHU-17A11-120VAC; KRP-11AG-120VAC.

