



# Intermittent Ignition Series Oil Primary Control



- Controls oil burner, oil valve (if required) and the ignition transformer in response to a call for heat.
- ICM patented energy transfer technology ensures fuel valve and pump will only be energized if the control is properly functioning
- LED aids in testing and troubleshooting
- Enclosed safety switch with external reset button
- Replacement for popular competitive models

## Application Guide & Installation Instructions for ICM1501, ICM1502 and ICM1503

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### Application

ICM's Intermittent Ignition Oil Primary Control is ideal for residential oil-fired burners used in boilers, forced air furnaces, water heaters and other oil burning appliances where pre/post-purge is not a safety requirement. It uses a C554A Cadmium Sulfide (cad cell) Flame Detector to monitor the burner flame. In the event of flame failure or flame loss, the control will shut the system down. In the event of a lockout, pressing and holding in the red external reset button for three seconds will manually reset the safety switch. (For added safety, the button press is activated upon release to ensure that the button can not be permanently held in.)

A status indicator LED on the control board indicates the function of the control and can be used to aid in testing and/or troubleshooting the control. To initiate a manual lockout of the system, press and hold the reset button when the status LED is off.

There is a slight delay before the heat call is implemented. This is to verify the call is valid.

2. Make the line voltage connections as shown in Fig. 1.
3. Splice the leads with solderless connectors.
4. Feed the low voltage cad cell leads through the hole below the low voltage terminal strip.

### Low Voltage Wiring Connections:

After mounting the control, make low voltage connections to screw terminals by connecting the cad cell leads to the F-F terminals and thermostat leads to the T-T terminals.

### Starting the System



#### **WARNING! IMPORTANT SAFETY INFORMATION!**

**Fire or Explosive Hazard!** Be sure the combustion chamber is free of oil or oil vapor before starting the system. Failure to comply with this warning may cause damage to the control or other property, and could result in severe personal injury, or death.

1. Make sure the system is powered. Check the circuit breaker or fuse and close the system switch, if provided.
2. Open the shut-off valve in the oil supply line.
3. Use the thermostat to initiate a call for heat
4. Press and hold the red reset button for three seconds and release.

The burner should light and operate until a call for heat ends.

### Installation



#### **WARNING! IMPORTANT SAFETY INFORMATION!**

**Electrical Shock Hazard!** Turn off all power sources before servicing this control. Be sure to shut power off at the main service panel by removing the fuse or switching the appropriate circuit breaker to the off position. More than one disconnect may be involved. Failure to comply with this warning may cause damage to the control or other property, and could result in severe personal injury, or death.

1. Please read and follow these instructions carefully. Failure to do so can result in damage to the control, or could lead to severe personal injury.
2. Ensure the control is right for your application. Review all timings and specifications on the product label and packaging.
3. Only a trained, experienced service technician should attempt to install this control.
4. After installing control, thoroughly test it and verify it is operating correctly.

**CAUTION:** Be sure the combustion chamber is free of oil or oil vapor before starting the system.

#### Mounting Location:

This control is designed to mount on a 4" X 4" j-box, directly on the main burner housing, or inside the appliance cabinet. When replacing a unit, mount the new oil primary in the same location as the old control. If you need to mount the control in a different location, use the replacement control as a template to mark the new mounting holes and pre-drill the holes before wiring. Use #8 screws (not supplied).

Check to ensure the operating temperatures are within -40°F to +130°F (-40°C to +54°C).

#### Wiring:

**CAUTION:** Wiring MUST comply with all local/national codes and ordinances. **DO NOT** exceed the load ratings listed on the control.

1. Be sure that all line voltage connections are in a wiring enclosure such as a junction box or the appliance wiring compartment.

### Checking Safety Features

#### Simulate Flame Failure

1. Start the system by following the steps under "Starting the System".
2. With the system running, close the shut-off valve in the oil supply line.
3. Lockout should occur within the safety timing specified on the unit label and packaging. The ignition and motor should stop and the oil valve close.
4. Restart the system by re-opening the oil shut-off valve and pushing in the red reset button (hold for 3-seconds) and releasing it.

#### Simulate Ignition Failure:

1. Start the system by following the steps under "Starting the System", but **DO NOT** open oil supply shut off valve.
2. The safety switch should lock out based on the safety switch timing indicated on the unit label and packaging. The ignition and motor should stop and the oil valve close.
3. Restart the system by re-opening the oil shut-off valve and pushing in the red reset button (hold for 3-seconds) and releasing it.

#### Simulate Power Failure:

1. Start the system by following the steps under "Starting the System".
2. With the burner running, turn off the power to the system by tripping the circuit breaker or removing the fuse. The burner should stop.
3. The burner should restart when power is restored.

## Troubleshooting and Maintenance



### **WARNING! IMPORTANT SAFETY INFORMATION!**

**Electrical Shock Hazard!** Only a trained, experienced service technician should attempt to install this control. Replace the control if operation is not as described in the safety features and checking section.

#### **Status LED Indicator Conditions:**

**LED OFF** - No power to the control, no call at T-T, or normal operation.

**LED ON SOLID** - CAD Cell indicates no flame or in lockout condition.

#### **Initial Checks:**

1. Ensure that the control is wired properly. Check all connections.
2. Make sure there is power to the control, burner motor and ignitor transformer.
3. The limit control should be closed.

#### **Check Oil Primary Relay:**

**NOTE:** You will need an insulated jumper wire with both ends stripped to perform the following tests.

1. Disconnect the cad cell leads from the F-F terminals.
2. Using the thermostat, initiate a call for heat and reset the safety switch. The burner should start.
3. Using the insulated jumper wire, jumper the F-F terminals. The burner should continue to run. (NOTE: The jumper connection must be made during the safety switch timing period indicated on the control label and/or packaging.)

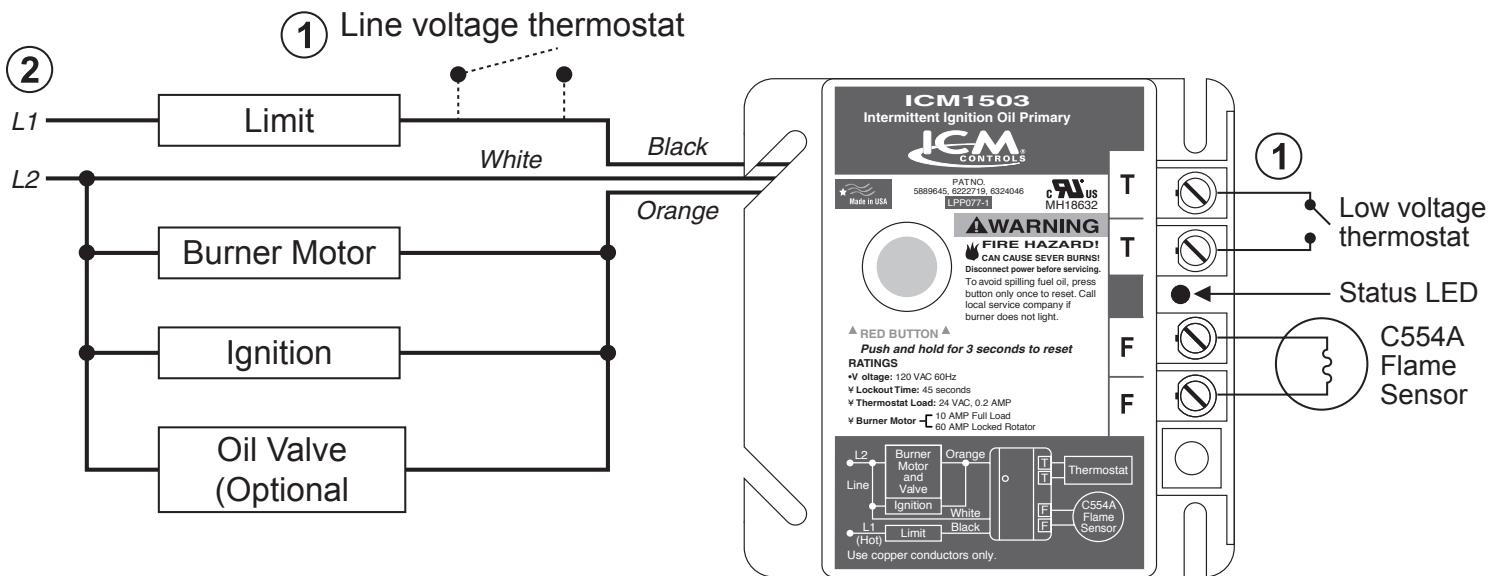
4. Following the safety switch timing period, remove the jumper wire. This should cause the burner to shut down.
5. If the oil primary control does not function as described in the above sequence, replace the control. Do not attempt to open or repair the control.

#### **Check Cad Cell:**

1. Disconnect the power to the control. You can verify the power is off using a voltmeter.
2. Disconnect the cad cell leads from the F-F terminals.
3. Wipe down the cad cell face with a clean, non-abrasive cloth.
4. Ensure that the cad cell is securely positioned in its socket. Do not disturb the position of the cad cell.
5. Reconnect the cad cell leads to the F-F terminals.
6. Reconnect the power to the control.
7. Using the thermostat, initiate a call for heat.
8. Press the red safety switch (hold for three seconds and release). The burner should turn on.
9. If the oil primary control does not turn on or if the safety switch trips, replace the cad cell with a C554A flame sensor.

## Wiring Diagram - Figure 1

- ① For line voltage thermostats, jumper T-T terminals and install line voltage thermostat in series with Limit.
- ② Provide disconnect and overload protection in accordance with local and national codes.



## ONE-YEAR LIMITED WARRANTY

The Seller warrants its products against defects in material or workmanship for a period of one (1) year from the date of manufacture. The liability of the Seller is limited, at its option, to repair, replace or issue a non-case credit for the purchase prices of the goods which are provided to be defective. The warranty and remedies set forth herein do not apply to any goods or parts thereof which have been subjected to misuse including any use or application in violation of the Seller's instructions, neglect, tampering, improper storage, incorrect installation or servicing not performed by the Seller. In order to permit the Seller to properly administer the warranty, the Buyer shall: 1) Notify the Seller promptly of any claim, submitting date code information or any other pertinent data as requested by the Seller. 2) Permit the Seller to inspect and test the product claimed to be defective. Items claimed to be defective and are determined by Seller to be non-defective are subject to a \$30.00 per hour inspection fee. This warranty constitutes the Seller's sole liability hereunder and is in lieu of any other warranty expressed, implied or statutory. Unless otherwise stated in writing, Seller makes no warranty that the goods depicted or described herein are fit for any particular purpose.

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