

Lennox 20J91

Lennox 20J91 Flame Sensor Instruction Manual

Model: 20J91

1. INTRODUCTION

The Lennox 20J91 Flame Sensor is a critical safety component designed for use in heating systems. Its primary function is to detect the presence of a flame in the combustion chamber. If a flame is not detected when expected, or if it extinguishes unexpectedly, the sensor signals the control board to shut down the gas supply, preventing the accumulation of unburnt fuel and ensuring safe operation. This manual provides essential information for the proper installation, operation, maintenance, and troubleshooting of your 20J91 Flame Sensor.

2. SAFETY INFORMATION

Always prioritize safety when working with heating systems. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, personal injury, or loss of life. Read all instructions thoroughly before proceeding. Only qualified service technicians should install or service this equipment. Disconnect all electrical power to the unit before performing any service or maintenance.

3. SETUP AND INSTALLATION

The Lennox 20J91 Flame Sensor is designed for specific heating system models. Refer to your heating system's service manual for exact placement and wiring diagrams. The following steps provide a general overview:

- Power Disconnection:** Ensure all electrical power to the heating unit is completely disconnected at the main breaker or fuse box.
- Access Combustion Chamber:** Carefully open the access panel to the combustion chamber where the flame sensor is located.
- Remove Old Sensor:** Disconnect the wiring from the existing flame sensor. Use a wrench or socket to carefully unthread and remove the old sensor from its mounting bracket.
- Inspect Mounting Area:** Clean any soot or debris from the mounting area to ensure proper seating of the new sensor.
- Install New Sensor:** Insert the new Lennox 20J91 Flame Sensor into the mounting hole. Hand-tighten first, then use a wrench to secure it firmly, but do not overtighten.
- Connect Wiring:** Reconnect the electrical wiring to the new flame sensor. Ensure connections are secure and free from corrosion.

- 7. **Verify Placement:** Confirm that the sensor tip is positioned correctly within the flame path as specified by the heating system manufacturer.
- 8. **Restore Power:** Close the access panel and restore electrical power to the heating unit.
- 9. **Test Operation:** Initiate a heating cycle and observe the flame ignition and sensor operation to ensure proper functionality.



Image 1: A typical Lennox 20J91 Flame Sensor, showing its ceramic insulator and metal rod, ready for installation. This image illustrates the component's design and connection point.

4. OPERATING PRINCIPLES

The 20J91 Flame Sensor operates on the principle of flame rectification. When a flame is present, it ionizes the air between the sensor rod and the grounded burner. This ionized gas conducts a small electrical current, which is then rectified (converted from AC to DC) by the flame sensor and sent to the control board. The control board monitors this rectified current. If the current is within the acceptable range, it confirms the presence of a flame and allows the heating cycle to continue. If the current drops below a threshold, indicating a lost flame, the control board will initiate a safety shutdown.

5. MAINTENANCE

Regular maintenance of the flame sensor is crucial for reliable and safe operation of your heating system. A dirty flame sensor is a common cause of intermittent heating issues.

- **Annual Inspection:** It is recommended to inspect and clean the flame sensor annually, preferably before the heating season begins.
- **Cleaning Procedure:**
 - a. Disconnect all electrical power to the heating unit.
 - b. Carefully remove the flame sensor as described in the installation section.
 - c. Using fine-grit sandpaper (e.g., 180-220 grit) or a Scotch-Brite pad, gently clean the metal rod of the sensor. Do not use steel wool or abrasive cleaners that can leave residue.
 - d. Wipe the sensor with a clean, dry cloth to remove any residue.
 - e. Reinstall the sensor and reconnect the wiring.
 - f. Restore power and test the heating system.
- **Wiring Check:** Periodically check the wiring connection to the flame sensor for corrosion, looseness, or damage.

6. TROUBLESHOOTING

If your heating system is experiencing issues related to flame detection, consult the following troubleshooting guide:

Symptom	Possible Cause	Solution
Burners ignite, then shut off shortly after.	Dirty or faulty flame sensor.	Clean the flame sensor (refer to Maintenance section). If issue persists, replace the sensor.
Furnace cycles on and off frequently (short cycling).	Intermittent flame sensor signal.	Inspect and clean the flame sensor. Check wiring connections.
No ignition, or ignition attempts fail.	Flame sensor not detecting flame, or igniter issue.	Ensure igniter is working. Clean or replace flame sensor. Verify gas supply.

Symptom	Possible Cause	Solution
Error code related to flame detection on control board.	Faulty flame sensor or control board.	Consult your heating system's manual for specific error code interpretation. Clean or replace flame sensor. If issue persists, professional diagnosis of the control board may be required.

Note: For complex issues or if you are unsure about any step, it is highly recommended to contact a qualified HVAC technician.

7. SPECIFICATIONS

The following specifications are for the Lennox 20J91 Flame Sensor:

- **Model:** 20J91
- **Manufacturer:** Lennox
- **Part Number:** 20J9101
- **Material:** Ceramic (insulator)
- **Measuring Range:** No Flame - Flame Present
- **Item Dimensions (L x W x H):** Approximately 7 x 9 x 3 inches (packaging/overall unit, sensor itself is smaller)
- **Mounting Type:** Door Mount (referring to furnace access door for sensor location)
- **Output Type:** Push Button (likely referring to a reset button on a compatible control board, not the sensor itself)
- **Smart Home Compatibility:** Not Smart Home Compatible

8. WARRANTY AND SUPPORT

For specific warranty information regarding the Lennox 20J91 Flame Sensor, please refer to the documentation provided with your heating system or contact Lennox directly. Warranty terms typically vary based on the product and region.

For technical support or assistance with installation and troubleshooting beyond the scope of this manual, please contact a certified HVAC professional or Lennox customer service.

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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