

# Service Bulletin

**SF-041**

DATE: January 7, 2011  
TO: All Service and Parts Managers  
SUBJECT: Induced Draft Furnace Heat Exchanger Inspection Procedure

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the Air Conditioning Heating and Refrigeration Institute (AHRI)

The following method of checking heat exchangers is recommended by Goodman and Amana for our induced draft furnaces when a heat exchanger is suspected of being faulty:

- 1) Look for flame disturbances; Start the furnace and observe changes in the flame pattern as the air circulating blower starts operating. Look for floating flames, flame rollout, or flame distortion. These conditions could indicate a split seam, crack, deterioration of the heat exchanger or gasketing material, or physical separation of the connected parts. Flame disturbance that occurs after the blower comes on is a good indication that a heat exchanger problem may exist. Other air leaks in the vicinity of the burners may also cause flame disturbances and must be corrected.
- 2) Measure CO levels in the airstream; **Note: To ensure accuracy of the measurements, take more than one reading and average the results to obtain the CO level.** With the furnace running, measure the CO level in the return airstream near the furnace and record the value. Then, measure the CO in the supply air stream and record the value. If there is no measurable difference in the CO level between the supply and return airstreams, it is likely that the furnace is not leaking CO into the airstream.

If there is no difference in the CO concentration between the supply and return airstreams, but there is CO detected in the airstream, there may be another source of CO in the home such as other gas fired appliances, an automobile operating in a garage, or a fireplace in operation. Discuss the elevated CO levels and the possible other sources with the homeowner.

- 3) Measure CO in the flue pipe; Allow the furnace to warm up for at least 10 minutes. Measure the CO in the flue pipe using a properly calibrated combustion analyzer. If the CO reading is less than 200 PPM, no further action is necessary. If the CO reading is above 200 PPM, proceed to step #4.
- 4) Verify Proper Installation; Verify that the furnace's installation complies with installation requirements and any applicable codes.

Verify Proper Installation Cont'd;

**Note: It is important to verify proper installation and setup before removing a heat exchanger.** Verify the gas orifice size, gas input rate and manifold pressure. Verify proper conversion to LP gas and high altitude if applicable. Also check vent for blockage or holes, proper vent length and fittings. Check for adequate combustion air to the furnace.

Check furnace for proper condensate drainage if applicable. Check burner alignment.

Make corrections as necessary and then recheck CO in a flue gas sample. If the CO is still at 200 PPM or higher in the flue gas, proceed to step #5.

- 5) Visually Inspect Heat Exchanger; Disassemble the furnace until you can visually inspect all heat exchanger exterior surfaces. Any crack or hole that is big enough to affect combustion will be visible to the naked eye. Do not use water or smoking agents to check for leaks. Furnace heat exchanger joints are not hermetically sealed and not designed to be water tight.

If there are splits, cracks, or holes, the heat exchanger must be replaced.

**Note:** Other methods and products may be available commercially but are not Goodman approved test methods. The use of water, liquids, and sprays being introduced into the supply air stream and possibly other products are not approved by Goodman. Test results based on their use are not considered valid by Goodman. Therefore; a warranty claim for a faulty heat exchanger will be held to these standards.

Technical Services Department • 1810 Wilson Parkway • Fayetteville, TN 37334  
Main: 888.593.9988 • Service Fax: 713.316.5541

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