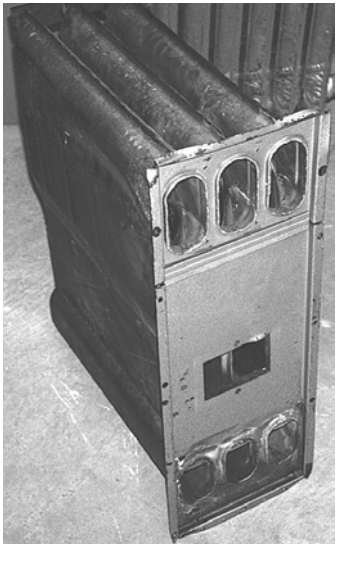
8.9 Inspecting Furnace Heat Exchangers

SWS Detail: 5.05 Combustion Safety; 5.0501 Combustion Appliance Zones; 5.0502 Combustion Air; 5.8801 Equipment Removal

Leaks in heat exchangers are a common problem, causing the flue gases to mix with house air. Ask clients about respiratory problems, flue-like symptoms, and smells in the house when the heat is on. Also, check around supply registers for signs of soot, especially with oil heating. All furnace heat exchangers should be inspected as part of weatherization. Consider using one or more of these six options for evaluating heat exchangers.

1. Look for rust at exhaust ports and vent connectors.
2. Look for flame-impingement on the heat exchanger during firing and flame-damaged areas near the burner flame.
3. Observe flame movement, change in chimney draft, or change in CO measurement when blower is activated and deactivated.
4. Measure the flue-gas oxygen concentration before the blower starts and then again just after the blower starts. There should be no more than a 1% change in the oxygen concentration.
5. Examine the heat exchanger by shining a bright light on one side and looking for light on the other side using a mirror to look into tight locations.
6. Employ chemical detection techniques, according to the manufacturer's instructions.



Furnace heat exchangers: Although no heat exchanger is completely airtight, it shouldn't leak enough to display the warning signs described here.