

Annex L (normative)

Maintenance — Residential installations

Note: *This Annex is a mandatory part of this Code.*

L.1 Regular maintenance

L.1.1

The owner or operator of the oil-burning equipment shall ensure, at least once per year, that it is maintained in accordance with Clauses [L.1.2](#) to [L.5](#).

Note: *Maintenance should also be in accordance with the manufacturer's instructions.*

L.1.2

Except for bottom outlet tanks installed in accordance with Clause [6.3.9](#) of CSA B139.2, tanks shall be tested for water at the bottom of the tank. Where found, the water shall be removed.

L.1.3

The sight gauge shall be inspected to ensure that it is operating. The sight gauge shall be replaced, if necessary.

L.1.4

The fuel pump pressure shall be checked to ensure that the pressure conforms to the appliance manufacturer's requirements. The fuel pump shall be adjusted or replaced as necessary.

L.1.5

The fuel pump's automatic cut-off valve or separate control valve shall be checked to ensure that it is operating as intended. The fuel pump shall be repaired or replaced as necessary.

L.1.6

The electrodes shall be cleaned and adjusted. The electrodes shall be replaced as necessary.

L.1.7

The nozzle shall be inspected to determine whether it conforms to the manufacturer's indicated flow rate, spray angle, and pattern. The nozzle shall be replaced, if necessary, with a similar type. If a sizing change is justified, the nozzle shall be replaced with a nozzle of greater or lesser capacity. If flame impingement is present, the nozzle shall be replaced with a nozzle with a flow rate and spray angle that will prevent flame impingement, as verified by a visual inspection of the flame pattern produced by the new nozzle.

L.1.8

The combustion chamber shall be inspected and repaired or replaced as necessary.

L.1.9

The heat exchanger shall be inspected and, where necessary, the vent passages and vent pipes shall be cleaned.

L.1.10

The operation of the high-temperature-limit control shall be checked and, if necessary, replaced.

L.1.11

The safety timing and the flame-out timing shall be checked. The applicable combustion control(s) shall be replaced, if necessary.

L.1.12

The CO₂ level shall be measured at the location specified in Clause 13.2.2 of CSA B139.1.0 and Clause 11.2.1 of CSA B139.2.

L.1.13

The flue-gas temperature shall be measured at the location specified in Clause 13.2.2 of CSA B139.1.0 and Clause 11.2.1 of CSA B139.2 to determine whether it meets the temperature requirements of Clause 13.2.5.1 of CSA B139.1.0 and Clause 11.2.4.1 of CSA B139.2. If not, the appropriate measures shall be taken to bring the flue-gas temperature below the specified maximum.

L.1.14

The over-fire pressure (draft) shall be measured to ensure that it satisfies the requirements of the burner/appliance manufacturer. The draft shall be adjusted, if necessary.

L.1.15

The pressure (draft) in the vent shall be measured at the location specified in Clause 13.2.2 of CSA B139.1.0 and Clause 11.2.1 of CSA B139.2 to determine whether it conforms to that specified on the appliance and in the manufacturer's certified instructions. The necessary measures shall be taken to ensure that the specified pressure (draft) can be maintained during the normal operation of other building venting/exhaust systems.

L.1.16

The smoke density shall be measured at the location specified in Clause 13.2.2 of CSA B139.1.0 and Clause 11.2.1 of CSA B139.2 to determine whether it is within the burner/appliance manufacturer's recommended range. If necessary, changes or adjustments shall be made so that the smoke density will remain within that range.

L.1.17

The barometric damper shall be inspected and cleaned and, if necessary, shall be adjusted or replaced with a certified barometric damper.

L.1.18

If an anticipator is present, the thermostat shall be inspected. If necessary, the thermostat shall be adjusted.

L.1.19

The chimney shall be inspected and any debris found shall be removed. If necessary, the chimney shall be cleaned or repaired, or both.

L.1.20

The fuse serving the appliance shall be appropriate and correctly sized.

L.2 Fuel filters

L.2.1

The fuel filter element shall be inspected and, if necessary, replaced with a fuel filter element and gasket suitable for the installed system.

L.2.2

If the system is equipped with a fuel or water separator, the fuel strainer or water separator shall be cleaned, inspected, drained, and, if necessary, replaced with a new unit suitable for the installed system.

Note: A new gasket is required even when the existing strainer or water separator is re-installed.

L.2.3

The fuel or water separator housing/canister shall be inspected and, if any signs of corrosion are found, replaced with a housing/canister suitable for the installed system.

L.2.4

Where the fuel filter element/casing is of a single-use design, the fuel filter element/casing shall be replaced with a fuel filter element/casing suitable for the installed system.

L.3 Forced-air furnaces

L.3.1

If an add-on air conditioner or heat pump is present, the return air temperature and the supply air temperature in the bonnet shall be measured to determine whether the temperature rise and bonnet temperatures are within the range specified by the manufacturer and other applicable codes and standards or, in the absence of such requirements, 50 °C (90 °F).

Note: Over time, the air conditioner or heat pump coil often becomes blocked with dirt or lint.

L.3.2

In a residential application, if there is a return air inlet within 1.8 m (6 ft) of the furnace or within an enclosed space or furnace room containing the furnace, the inlet shall be closed and sealed.

L.3.3

The air filters shall be inspected and shall be cleaned or replaced, as necessary.

L.3.4

If an electronic air cleaner is part of the heating system, the generation of ozone shall be prevented by ensuring that the airflow through the air cleaner is sufficient and passes through the entire air cleaner.

L.3.5

The blower assembly shall be inspected and, if necessary, shall be cleaned and lubricated.

L.3.6

If a blower fan belt is present, it shall be determined whether the tension is adjusted properly, whether the belt is in proper alignment, and whether the belt is in good condition. The blower fan belt shall be adjusted or replaced, as necessary.

L.3.7

A test for heat exchanger leaks shall be conducted if, during a service call, any of the following symptoms of a leaky heat exchanger is in evidence:

- a) the owner or other building occupants report odours that could be attributable to products of combustion during furnace operation or at start-up;
- b) an O₂ or CO₂ test in the vent indicates that excessive dilution of the flue gases is occurring after the air circulation blower starts operation;
- c) greasy or oily soot is present at duct connections or registers; or
- d) there is any reason for suspicion, such as excessive moisture within the building, history of the furnace type, or customer complaints of illness during the heating season.

L.3.8

The heat exchanger shall be tested for leaks using one of the following:

- a) a smoke bomb;
- b) a smoke pencil (draft detector) to determine whether the forced-air-circulating fan pressurizes the heat-exchanger combustion zone when the heat exchanger is hot and when it is cool (two tests) and when the vent pipe has been removed and the vent opening of the furnace has been blocked or sealed; or
- c) an electronic flue-gas analyzer to check for any CO or CO₂ in excess of the normal ambient levels within the warm air distribution supply plenum, with the air distribution fan off.

Note: *The test specified in Item b) is considered to be the most accurate and acceptable test.*

L.3.9

If the test conducted in accordance with Clause L.3.7 or L.3.8 indicates that there is a leak in the heat exchanger, the heat exchanger or the furnace shall be replaced.

L.4 Boilers

L.4.1

The system shall be inspected for leaks and, if necessary, shall be adjusted or repaired.

L.4.2

The circulating pump, if present, shall be inspected to ensure that it is working properly and, if necessary, shall be lubricated.

L.4.3

The system pressure shall be checked to determine whether it exceeds the boiler manufacturer's or system designer's maximum and whether the pressure is sufficiently high for proper circulation with the installed head pressure. The system pressure shall be adjusted, if necessary.

L.4.4

The pressure-relief valve shall be checked to determine whether it is operating correctly. If necessary, the pressure-relief valve shall be replaced.

L.4.5

The automatic fill valve, if present, shall be checked and, if necessary, shall be adjusted or replaced.

L.4.6

The expansion tank shall be checked to determine whether it is operating as intended. If necessary, the expansion tank shall be recharged with air or shall be replaced.

L.5 Domestic hot-water heaters

The operating controls shall be checked (see Clause 13.2.1 of CSA B139.1.0 and Clause 11.1 of CSA B139.2).