

Service

⚠ WARNING

ELECTRICAL SHOCK, FIRE, OR EXPLOSION HAZARD.

Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.

Improper servicing could result in dangerous operation, serious injury, death, or property damage.

Before servicing, disconnect all electrical power to furnace.

When servicing controls, label all wires prior to disconnecting. Take care to reconnect wires correctly. Verify proper operation after servicing.

At the beginning of each heating season, system should be checked as follows by a qualified service technician:

Blower

Check the blower wheel for debris and clean if necessary. The blower motors are prelubricated for extended bearing life. No further lubrication is needed.

⚠ WARNING

The blower access panel must be securely in place when the blower and burners are operating. Gas fumes, which could contain carbon monoxide, can be drawn into living space resulting in personal injury or death.

Filters

All G43UF filters are installed external to the unit. Filters should be inspected monthly. Clean or replace the filters when necessary to ensure proper furnace operation. Table 1 lists recommended filter sizes.

Exhaust and air intake pipes

Check the exhaust and air intake pipes and all connections for tightness and to make sure there is no blockage.

NOTE - After any heavy snow, ice or frozen fog event the furnace vent pipes may become restricted. Always check the vent system and remove any snow or ice that may be obstructing the plastic intake or exhaust pipes.

Electrical

- 1 - Check all wiring for loose connections.
- 2 - Check for the correct voltage at the furnace (furnace operating).
- 3 - Check amp-draw on the blower motor.
Motor Nameplate _____ Actual _____

Winterizing and Condensate Trap Care

- 1 - Turn off power to the unit.
- 2 - Have a shallow pan ready to empty condensate water.

- 3 - Remove the drain plug from the condensate trap and empty water. Inspect the trap then reinstall the drain plug.

Cleaning Heat Exchanger

If cleaning the heat exchanger becomes necessary, follow the below procedures and refer to figure 1 when disassembling unit. Use papers or protective covering in front of furnace while removing heat exchanger assembly.

- 1 - Turn off electrical and gas supplies to the furnace.
- 2 - Remove the upper and lower furnace access panels.
- 3 - Mark all gas valve wires and disconnect them from valve.
- 4 - Remove gas supply line connected to gas valve. Remove gas valve/manifold assembly.
- 5 - Remove sensor wire from sensor. Disconnect 2-pin plug from the ignitor.
- 6 - Disconnect wires from flame roll-out switches.
- 7 - Remove burner box cover and remove four burner box screws at the vestibule panel and remove burner box. Set burner box assembly aside.
NOTE - If necessary, clean burners at this time. Follow procedures outlined in Burner Cleaning section.
- 8 - Loosen three clamps and remove flexible exhaust tee.
- 9 - Remove 3/8 inch rubber cap from condensate drain trap and drain. Replace cap after draining.
- 10 - Disconnect condensate drain line from the condensate trap. Remove condensate trap (it may be necessary to cut drain pipe). Remove screws that secure condensate collars to either side of the furnace and remove collars. Remove drain tubes from cold end header collector box.
- 11 - Disconnect condensate drain tubing from flue collar. Remove screws that secure both flue collars into place. Remove flue collars. It may be necessary to cut the exiting exhaust pipe for removal of the fittings.
- 12 - Disconnect the 2-pin plug from the combustion air inducer. Remove four screws which secure combustion air inducer to collector box. Remove combustion air inducer assembly. Remove ground wire.
- 13 - Mark and disconnect all combustion air pressure tubing from cold end header collector box.
- 14 - Mark and remove wires from pressure switch. Remove pressure switch. Keep tubing attached to pressure switch.
- 15 - Remove electrical junction box from the side of the furnace.
- 16 - Mark and disconnect any remaining wiring to heating compartment components. Disengage strain relief bushing and pull wiring and bushing through the hole in the blower deck.
- 17 - Remove the primary limit from the vestibule panel.
- 18 - Remove two screws from the front cabinet flange at the blower deck. Spread cabinet sides slightly to allow clearance for removal of heat exchanger.

- 19 - Remove screws along vestibule sides and bottom which secure vestibule panel and heat exchanger assembly to cabinet. Remove two screws from blower rail which secure bottom heat exchanger flange. Remove heat exchanger from furnace cabinet.
 - 20 - Back wash heat exchanger with soapy water solution or steam. **If steam is used it must be below 275°F (135°C) .**
 - 21 - Thoroughly rinse and drain the heat exchanger. Soap solutions can be corrosive. Take care to rinse entire assembly.
 - 22 - Reinstall heat exchanger into cabinet making sure that the clamshells of the heat exchanger assembly are resting on the support located at the rear of the cabinet. Remove the indoor blower to view this area through the blower opening.
 - 23 - Re-secure the supporting screws along the vestibule sides and bottom to the cabinet.
 - 24 - Reinstall cabinet screws on front flange at blower deck.
 - 25 - Reinstall the primary limit on the vestibule panel.
 - 26 - Route heating component wiring through hole in blower deck and reinsert strain relief bushing.
 - 27 - Reinstall pressure switch and reconnect pressure switch wiring.
 - 28 - Carefully connect combustion air pressure switch hosing from pressure switch to proper stubs on cold end header collector box.
 - 29 - Reinstall condensate collars on each side of the furnace. Reconnect drain tubing to collector box.
 - 30 - Reinstall condensate trap on same side as exhaust pipe. Reconnect condensate drain line to the condensate trap.
 - 31 - Reinstall electrical junction box.
 - 32 - Reinstall the combustion air inducer. Reconnect the 2-pin plug to the wire harness.
 - 33 - Use securing screws to reinstall flue collars to either side of the furnace. Reconnect exhaust piping and exhaust drain tubing.
 - 34 - Replace flexible exhaust tee on combustion air inducer and flue collars. Secure using three existing hose clamps.
 - 35 - Reinstall burner box assembly in vestibule area.
 - 36 - Reconnect flame roll-out switch wires.
 - 37 - Reconnect sensor wire and reconnect 2-pin plug from ignitor.
 - 38 - Secure burner box assembly to vestibule panel using four existing screws. **Make sure burners line up in center of burner ports.**
 - 39 - Reinstall gas valve manifold assembly. Reconnect gas supply line to gas valve.
 - 40 - Reinstall burner box cover.
 - 41 - Reconnect wires to gas valve.
 - 42 - Replace the blower compartment access panel.
 - 43 - Refer to instruction on verifying gas and electrical connections when re-establishing supplies.
 - 44 - Follow lighting instructions to light and operate furnace for 5 minutes to ensure that heat exchanger is clean and dry and that furnace is operating properly.
 - 45 - Replace heating compartment access panel.
- Cleaning the Burner Assembly**
- 1 - Turn off electrical and gas power supplies to furnace. Remove upper and lower furnace access panels.
 - 2 - Mark all gas valve wires and disconnect them from the valve.
 - 3 - Disconnect the gas supply line from the gas valve. Remove gas valve/manifold assembly.
 - 4 - Mark and disconnect sensor wire from the sensor. Disconnect 2-pin plug from the ignitor at the burner box.
 - 5 - Remove burner box cover and remove four screws which secure burner box assembly to vest panel. Remove burner box from the unit.
 - 6 - Use the soft brush attachment on a vacuum cleaner to gently clean the face of the burners. Visually inspect the inside of the burners and crossovers for any blockage caused by foreign matter. Remove any blockage.
 - 7 - Reconnect the sensor wire and reconnect the 2-pin plug to the ignitor wiring harness.
 - 8 - Reinstall the burner box assembly using the existing four screws. Make sure that the burners line up in the center of the burner ports.
 - 9 - Reinstall the gas valve manifold assembly. Reconnect the gas supply line to the gas valve. Reinstall the burner box cover.
 - 10 - Reconnect the gas valve wires to the gas valve.
 - 11 - Replace the blower compartment access panel.
 - 12 - Refer to instruction on verifying gas and electrical connections when re-establishing supplies.
 - 13 - Follow lighting instructions to light and operate furnace for 5 minutes to ensure that heat exchanger is clean and dry and that furnace is operating properly.
 - 14 - Replace heating compartment access panel.

Planned Service

A service technician should check the following items during an annual inspection. Power to the unit must be shut off for safety.

Fresh air grilles and louvers (on the unit and in the room where the furnace is installed) - Must be open and unobstructed to provide combustion air.

Burners - Must be inspected for rust, dirt, or signs of water.

Vent pipe - Must be inspected for signs of water, cracked, damaged or sagging pipe, or disconnected joints.

Unit appearance - Must be inspected for rust, dirt, signs of water, burnt or damaged wires, or components.

Blower access door - Must be properly in place and provide a seal between the return air and the room where the furnace is installed.

Return air duct - Must be properly attached and provide an air seal to the unit.

Operating performance - Unit must be observed during operation to monitor proper performance of the unit and the vent system.

Combustion gases - Flue products must be analyzed and compared to the unit specifications.

Problems detected during the inspection may make it necessary to temporarily shut down the furnace until the items can be repaired or replaced.

Instruct the homeowners to pay attention to their furnace. Situations can arise between annual furnace inspections that may result in unsafe operation. For instance, items innocently stored next to the furnace may obstruct the combustion air supply. This could cause incomplete combustion and the production of carbon monoxide gas.

Ignition Control Board Diagnostic Codes

DIAGNOSTIC CODES		
Make sure to Identify LED'S Correctly.		
LED #1 (Red)	LED #2 (Green)	DESCRIPTION
SIMULTANEOUS SLOW FLASH	SIMULTANEOUS SLOW FLASH	Power on - Normal operation. Also signaled during cooling and continuous fan.
SIMULTANEOUS FAST FLASH	SIMULTANEOUS FAST FLASH	Normal operation - signaled when heating demand initiated at thermostat.
SLOW FLASH	ON	Primary or secondary limit switch open. Limit must close within 3 minutes or unit goes into 1 hour Watchguard.
OFF	SLOW FLASH	Pressure prove switch open. OR: Blocked inlet/exhaust vent; OR: Pressure switch closed prior to activation of combustion air inducer.
ALTERNATING SLOW FLASH	ALTERNATING SLOW FLASH	Watchguard -- burners failed to ignite or lost flame 5 times during single heating demand.
SLOW FLASH	OFF	Flame sensed without gas valve energized.
ON	SLOW FLASH	Rollout switch open. OR: 12-pin connector improperly attached.
ON	ON	Circuit board failure or control wired incorrectly.
ON	OFF	
OFF	ON	
FAST FLASH	SLOW FLASH	Main power polarity reversed. Switch line and neutral.
SLOW FLASH	FAST FLASH	Low flame signal. Measures below 1.5 microamps. Replace flame sense rod.
ALTERNATING FAST FLASH	ALTERNATING FAST FLASH	Improper main ground. OR: Line voltage below 90 volts.

NOTE - Slow flash rate equals 1 Hz (one flash per second). Fast flash rate equals 3 Hz (three flashes per second). Minimum flame sense current = 0.5 microAmps.