Operators Instructions for Econ-o-Flame Waste Oil Furnace

Table of Contents

Page

Installation Section

Placement of furnace:

When installing your Econo-o-Flame waste oil furnace, do not place the furnace closer than 36 inches to any combustible materials. If the chimney needs to pass close to combustibles, be certain the chimney is an insulated type which is approved for contact with flammable material. Keep all volatile types of materials or liquids such as gasoline, paint thinners and cleaning solvents far removed from the burner unit. Be sure the heating system is installed in accordance with all local, state and federal codes. The furnace is wired for 115V, 60HZ and needs to have a separate 25 amp electrical service provided to the furnace. A 24V wall mounted thermostat is a part of the heating package and will need to be hooked in to the terminal strip on the burner unit.

Chimney hookup:

A good chimney is an important component in the satisfactory performance of your heating system. We recommend that the flue pipe and the chimney are tightly sealed and have a smooth inside surface. The inside area of the flue pipe should be at least as large as the flue outlet collar on the furnace and wherever possible we recommend that the chimney be 25% larger than the flue collar. Avoid elbows and horizontal sections as much as possible. The chimney should be at least two feet higher than any nearby roof or building. It is recommended to have a clean-out door located at the bottom of the chimney.

Draft objectives:

The ideal draft (measured in the flue pipe close to the furnace) is .04 to .07 inches of water column. In situations where the draft is very strong it may affect the performance of the burner. Difficult startups and erratic flame pattern may occur while lowering the efficiency of the furnace. In situations where the draft is weak, fumes may leak in to the inside of the building instead of being pulled out through the chimney.

If the draft is too strong, a barometric draft control should be installed. If the draft is too weak, consult a chimney specialist for directives to strengthen the draft.

Air supply:

The waste oil burner requires a filtered, constant and reliable source of compressed air. Required air volume is about ¾ CFM per gallon of oil being burned. Required air pressure is from 10 to 35 PSI depending on nozzle size and BTU output.

Oil supply:

The recommended arrangement for the oil supply is to have an inside storage tank where the oil will be warmed to room temperature. The oil should be drawn at least two inches from the bottom of the tank to prevent picking up water or debris. A floating suction line is preferable. A one inch drain valve should be installed at the bottom of the tank so water and other contaminants can periodically be drained from the tank.

Pump to tank hookup:

In order to obtain the maximum lifting capacity the pump is designed for, the instructions supplied by the pump manufacturer must be carefully followed. Most pumps do not have the capability of sucking the oil more than ten feet vertically or thirty feet horizontally. If the application demands more distance, a booster pump is available from your dealer. The booster pump must be installed according to the above specific conditions.

Startup:

1. The oil preheat control must be set so the oil is between 155° and 180°. The required oil temperature may vary depending on the type of oil being used and the pressure setting of the air and oil regulators.
2. The compressed air pressure setting should be approximately twice the oil pressure setting. For example, if the oil pressure is set at 7 PSI, the air pressure should be set to 15 PSI. This is only approximate since each burner needs to be adjusted according to specific conditions. Nozzle size and chimney and draft conditions will affect the manner of burning, so you will need to discover which setting is best in each situation. The blower intake opening on the burner will also need to be set. Usually, the higher the oil pressure, the more the air intake needs to be opened. When all adjustments are correct, there should be very little smoke coming from the chimney. If a smoking problem occurs, refer to *Trouble Shooting: Erratic Burning and Smoking.*
3. The settings of the fan and limit control are set to be operated under normal conditions. The three adjustable settings on the control may be changed to provide the best performance possible. See instruction sheet provided by manufacturer of the control.
4. After the wall thermostat has been properly installed (see installation instructions provided by the thermostat manufacturer), it will need to be set at the desired room temperature. When testing the furnace, set the thermostat ten degrees higher than room temperature so the burner will start.

Troubleshooting Section

Erratic burning and smoking:

1. Oil must be of good quality, free of water, antifreeze and all foreign matter.
2. The orifice in the oil nozzle must be completely open. It may need to be cleaned using compressed air. To clean, remove the nozzle using a 5/8" socket and blow air backward through the nozzle. It is not necessary to disassemble the nozzle to clean it. Make sure the O-ring at the base of the nozzle is in good condition. See point 5 under *Burner will not ignite.*
3. Be certain that the flame retention head is clean and undamaged. There must also be proper clearance between the electrodes and the flame retention head. See pg. 7.
4. Check if oil and air pressure settings are correct. Smoking can occur from too little or too much pressure. See #2 under *Startup.*
5. Check oil temperature on burner thermostat. Should be 150 to 160 degrees.
6. Check if spark is weak. See #4 under *Burner will not ignite.*
7. Check draft in stove pipe. See *Draft objectives* on pg. 1.

Primary control shuts off motor:

1. Read instructions concerning Primary Control, pg. 6.
2. Check oil and air pressure settings. See section 2 under *Startup.*
3. Check oil temperature. Should be 150-160 degrees. (At high oil and air pressures the oil temperature may need to be about 10 degrees hotter.)
4. Check spark. See #4 under *Burner will not ignite.*
5. Clean cad cell.
6. Clean flame retention head. See pg. 7.
7. Change to good oil. See #5 under *Burner will not ignite.*
8. Check for defective components.

Motor will not start:

1. Be certain toggle switch is turned to *ON* position.
2. Check reset on primary control. (Only after reading instructions on *Primary Control* on pg. 6.
3. Check and clean cad cell.
4. Check reset on burner motor.
5. Check for tripped breaker in electrical panel.

Burner does not develop proper oil pressure:

1. Check setting of oil regulator.
2. Bleed air from oil pump.
3. Change oil filter or clean screen in filter. Also clean oil pump screen.
4. Check for leaking fitting in oil suction line.
5. Check for defective solenoid valve.

Burner will not ignite:

1. Check setting on wall thermostat.
2. Check oil temperature. See #1 under *Startup.*
3. Check pressure settings of oil and air. See #1 and #2 under *Startup.*
4. Check spark. If spark is weak or nonexistent check setting of electrodes. (See page 8) Also check clearance between flame retention head and electrodes. (see pg. 7) If spark is still inadequate, check for faulty electrical components.
5. Check if oil is atomizing properly. Oil should spray out in a fine mist. If it is not doing so, see *Burner does not develop proper oil pressure, pg. 4.*
6. Try other oil. After replacing with good oil, bleed all air from pump, preheater and oil lines. In order to keep motor running until oil pressure is obtained, set the primary control to “Pump Prime” mode. See Primary control instructions provided.

Maintenance Section

1. Drain water from air regulator reservoir as necessary.
2. Clean oil filter semi-annually or as necessary.
3. Clean screen on oil pump annually or as necessary.
4. Clean flame retention head monthly or as necessary.
5. Clean inside of furnace, flue pipe and chimney annually or sooner. After cleaning check condition of all equipment and replace as necessary.

Additional Safety Instructions

1. Never start burner if excess oil or vapor have accumulated in the combustion area.
2. Do not push reset button on primary control until you have read the instructions on pg. 6.
3. Clean the flue pipe and chimney at least one time per year. Clean furnace as recommended on pg. 5 under *Maintenance.*
4. Do not add flammable ingredients such as gasoline, paint thinner or cleaning solvents to the oil being burned in the heating unit.
5. Always have fuel supply shut off when burner is not in use.
6. Do not use furnace as an incinerator.
7. Keep all flammable material and liquids removed from the burner area.
8. Do not use burner with cad cell disconnected.
9. Do not operate burner without a hookup to a proper chimney. See pg. 1 for chimney hookup.
10. Make certain electrical service has been inspected and approved and meets all local, state, and national codes. See pg. 1 under *Installation.*
11. Never fire burner with furnace access doors open.
12. Always disconnect electrical supply before opening access door to furnace.

Primary Control

Read these instructions before pushing reset button on primary control.

The primary control is located on the box located above the burner motor. It has a red button which needs to be pushed for resetting the control. **Do not push the reset button repeatedly** when no combustion occurs. It is possible that vaporized oil was sprayed into the combustion area before the burner had shut off. If excess oil is sprayed into the combustion area while there is no proper combustion, it can cause an explosion. If excess oil has accumulated in the combustion area, allow the furnace to cool off before starting it again. A hot furnace has more tendency of exploding than a cold furnace.

Whenever the primary control shuts off the power, it is an indication that something is wrong with the burner unit. You should try to find the problem and have it corrected. When trying to correct the problem, first try to discover if it is an electrical problem or if it is a problem relating to the oil supply. For possibilities of what could be wrong check under *Troubleshooting* on pgs. 3 and 4. If the problem cannot be corrected call your service man.

Additional instructions on the primary control are provided in a separate pamphlet.