

# CROWN

## Instructions for Installation and Connection of Oil Burner to Furnace

For Furnace Models:

CHB68-112L

CHC68-96L

CLBF68-112L

CLBR68-112L

### **WARNING**

Failure to follow these instructions exactly may result in a fire or explosion causing property damage, personal injury or loss of life.

DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

What to do if you find an oil leak:

- DO NOT try to operate this appliance.
- If possible, close the manual fuel shutoff valve on the oil supply tank.
- Immediately call your oil supplier. Follow the oil supplier's instructions.
- If you cannot reach your oil supplier, call the fire department.

A qualified installer, service agency, or the oil supplier must perform installation and service.

These instructions should be:

- read prior to installation.
- retained for qualified service personnel
- reviewed before performing any service or maintenance.

Crown Boiler Company  
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**Only qualified service personnel shall perform installation and service.**

**⚠ CAUTION:**

- **ONLY a qualified oil-heating contractor shall install and adjust this oil burner, using calibrated combustion test instruments, to ensure safe and reliable operation of the furnace.**
- **ONLY two (2) oil burner models shall be used with the Crown furnaces,**
  - **R.W. Beckett model AF specification number EFL-102, or**
  - **Carlin Combustion model EZ1-HP specification number 10250.**
- **This furnace has been tested and approved for use when burning No. 2 distillate fuel (home heating) oil ONLY.**

**Introduction:**

These instructions list the steps required to field install a R.W. Beckett or a Carlin Combustion oil burner assembly in any of the Crown oil-fired furnace models previously noted. The factory ships all Crown furnace models without the oil burner installed. The burner package is separate from the furnace. As one of several tasks necessary to complete installation of the furnace, the burner must be removed from the shipping carton, mounted in the furnace, and connected to the furnace wiring harness. Consult the furnace instruction manual, Crown Oil-Fired Central Furnace Installation, Operation, and Service Manual with User's Information Section, for further assembly and adjustment requirements.

The size of nozzle installed in the oil burner determines the rate of heat output from (heating capacity of) the furnace. **Four (4) heat input rates are permissible: 85,000; 105,000; 120,000; and 140, 000 BTUH.**

Base oil nozzle selection (i.e. heating capacity of the furnace) on a rate of heat loss (heating load) calculation performed for the building. Use the procedures developed in manuals provided by the Air Conditioning Contractors of America (ACCA) or the American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE) to make these calculations.

Refer to the Residential Load Calculation, Manual J, from the ACCA, and the ASHRAE Handbook Fundamentals volume, from ASHRAE, for recommended practices in heating load calculation for a residence. To obtain copies of these publications for a fee, contact the ACCA and the ASHRAE at the addresses given in Appendix A of the furnace instruction manual.

**Installation:**

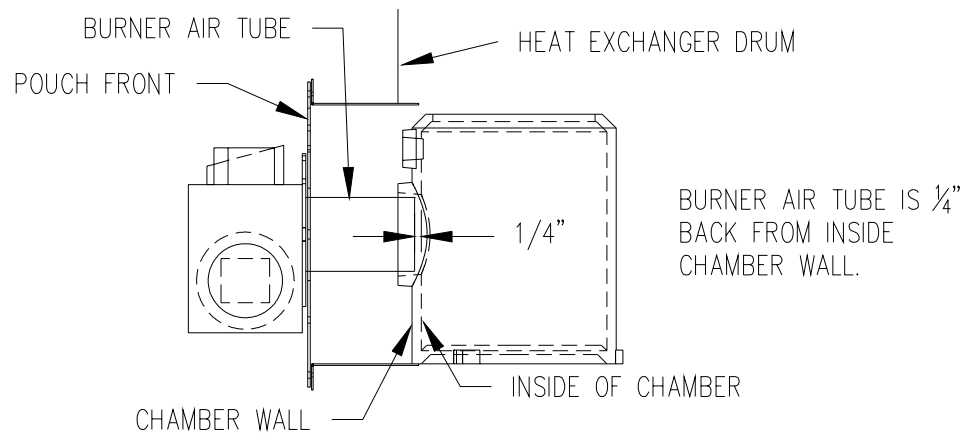
The oil burner ships in a carton separate from the furnace. In the field, it is necessary to mount the oil burner, secure it to the furnace, and connect the wiring harness to complete the burner installation. Refer to the following steps.

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- 1) Remove the oil burner from the shipping carton and remove any shipping materials adhering to the burner. Collect and save the burner mounting gasket and any instructions furnished with the burner.
- 2) If it is necessary to adjust the heating capacity of the furnace, by changing the oil burner nozzle, refer to the following directions.
  - a) The oil nozzle is factory installed in the oil burner. To change the oil nozzle, remove the nozzle through the front end of the burner air tube. Consult the oil burner manufacturer's operating instructions (included with the burner) for detailed instructions on this procedure.
  - b) Install an appropriate replacement nozzle of the correct size, spray angle, and spray type. Refer to the Specification Sheets, in Appendix C of the furnace instruction manual, for nozzle recommendations.
- 3) On highboy furnace models, remove the burner access panel. This panel will be the **upper** access panel on the front of the furnace. On lowboy models, remove the **front** access panel. On horizontal / counterflow models, the burner is mounted on the **front** surface of the furnace.
- 4) Remove the three (3), 5/16 in. brass hex machine screw nuts and the three (3) steel flat washers from the threaded studs protruding through the burner mounting plate on the furnace. **Retain this hardware for later reuse.**
- 5) Rough handling of the furnace may occur while in transit. Under some conditions, the combustion chamber can shift out of position. The chamber should seat properly on the base of the heat exchanger. Check for proper alignment of the burner air tube with the circular opening in the combustion chamber and trial fit the burner to check the insertion depth of the oil burner into the combustion chamber. It may be necessary to remove the burner mounting plate to get sufficient access to the chamber.

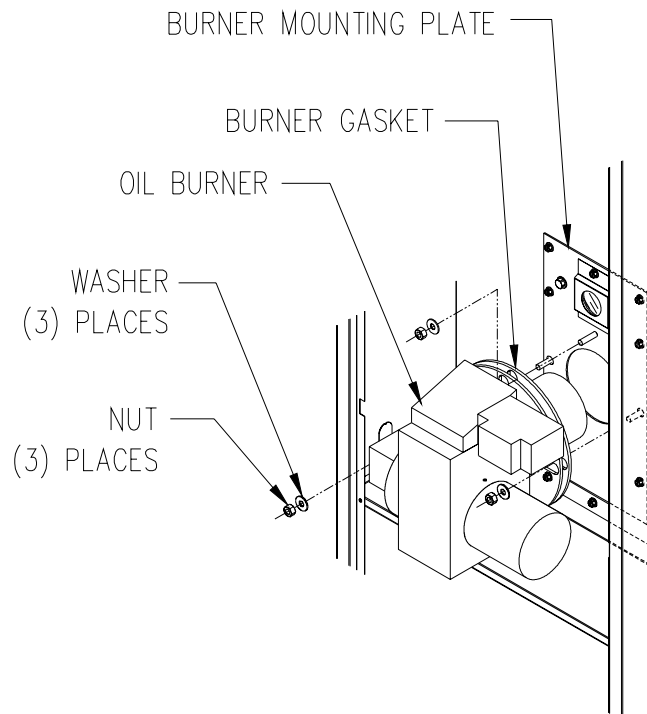
**The end of the burner air tube should be inserted no farther than 1/4 inch back from the inside surface of the combustion chamber, refer to Figure 1. DO NOT** allow the burner head, at the end of the burner air tube, to physically touch or protrude into the chamber. High temperatures in the combustion chamber can result in damage to the tube, the burner head, or both. A distance greater than 1/4 inch back from the inside chamber wall may cause oil spray impingement on the combustion chamber wall and subsequent sooting and the formation of carbon char deposits.

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**Figure 1: Side View of Correct Burner Insertion into Combustion Chamber**

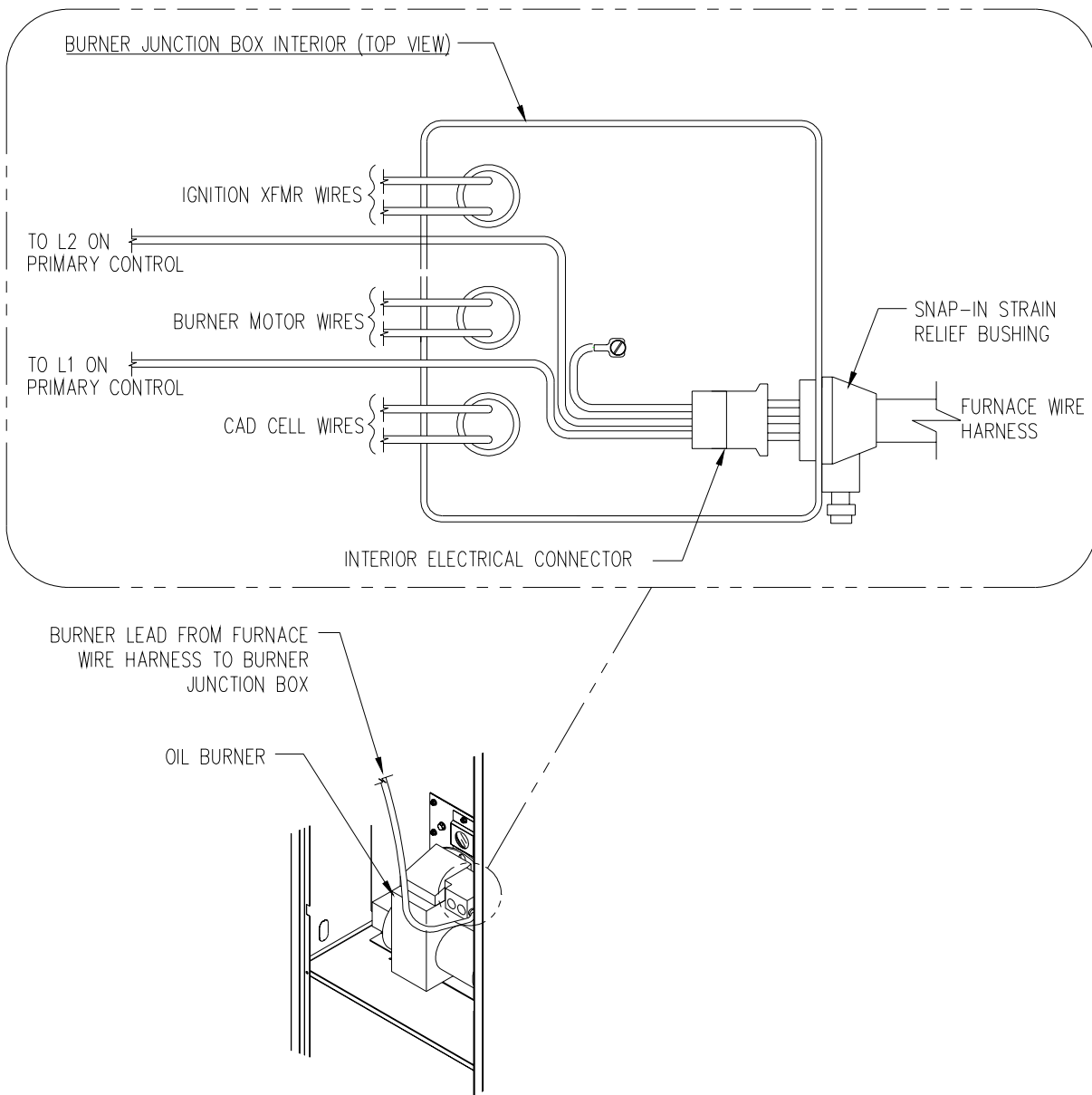
- 6) Reinstall the burner mounting plate, if removed, and push the burner flange gasket (included with the burner) on to the burner mounting plate threaded studs. Seat the gasket against the mounting plate.
- 7) Reusing the fasteners removed in step (4) [three (3), 5/16 in. brass hex nuts and three (3) steel flat washers], install and secure the burner to the mounting studs protruding through the burner mounting plate, refer to Figure 2. (For counterflow / horizontal units, refer to the section of the furnace instruction manual entitled "Horizontal / Counterflow Furnace Setup")



**Figure 2: Installing and Securing the Oil Burner to the Furnace Mounting Plate**

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- 8) The burner and wiring harness are equipped with mating, three (3) pole, quick-connect, electrical couplings. To make the connection between the burner wiring harness and the furnace wiring harness, open the burner junction box cover (the oil primary control serves as the cover) and remove a knockout slug from the right-hand side of the burner junction box.
- 9) Insert the electrical coupling from the furnace wiring harness through the knockout hole in the burner junction box. Snap together the furnace electrical coupling with the oil burner electrical coupling, refer to Figure 3.



**Figure 3: Connecting the Furnace Wiring Harness to the Burner Wiring Harness**

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**NOTICE: On the horizontal / counterflow furnace wiring harness, remove the lock-ring from the end of the flexible metal conduit connector BEFORE connecting the electrical couplings.**

10) On the highboy and lowboy furnace wiring harnesses, snap the strain relief fitting into the knockout opening in the burner junction box. On the horizontal / counterflow furnace wiring harness, insert the conduit fitting through the knockout opening in the burner junction box and thread on the lock-ring from the inside of the junction box. Tighten the lock-ring until it is snug.

11) Close and secure the junction box cover on the burner.

The oil burner provided with this furnace requires additional installation, set-up, and proper adjustment. Refer to the furnace instruction manual and the oil burner manufacturer's operating instructions for detailed information on the following items.

- Completion of fuel line connections to burner
- Initial firing of burner
- Adjusting the fuel pump pressure
- Setting the draft control
- Adjusting the burner combustion air