

# Installation Instructions

## LUOV Series Direct Vent Oil Furnace

### SAFETY CONSIDERATIONS

Installation of oil fired heating units shall be in accordance with the regulation of authorities having jurisdiction and the CAN/CSA B139 or USA/NFPA No. 31-1992 installation code for oil burning equipment.

DO NOT operate furnace in a corrosive atmosphere containing chlorine, fluorine or any other damaging chemicals.

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

Oil fired appliances shall be connected to flues. If chimney is used, it must use a 3" diameter stainless steel liner, insulated, maximum vertical length is 30' and horizontal maximum length is 20' . If sidewall terminal is used the maximum horizontal length is 20' .

Maximum capacity of individual tank used shall be 250 gallons and must be located at least 5' from the appliance. Local codes will govern the size of vents and fillers as the type of caps used. 1<sup>1</sup>/<sub>4</sub>" IPS and 2" IPS are generally accepted as minimum sizes for vent and fill pipes respectively. The burner oil line shall not be less than 3/<sub>8</sub>" O.D. copper tubing for runs 50' or less and 1/<sub>2</sub>" O.D. copper tubing for longer runs. A manual shut-off valve and an oil filter shall follow in sequence from tank to burner. Be sure that the oil line is clean before connecting to the burner. The oil line should be protected to eliminate any possible damage. Installations having the fuel oil tank below the burner level must use a two pipe fuel supply system with an appropriate fuel oil pump (more than 8' lift use 2 stage pump and more than 16' an auxiliary pump).

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9800161  
CERTIFY/CERTIFIED TO  
CAN/CSA B140.4



9800161  
CONFORM TO  
UL Std. 727

**International Comfort Products Corporation (USA)**  
Lewisburg, TN USA 37091

# 1. Safety Labeling and Signal Words

## Danger, Warning and Caution

The signal words **DANGER**, **WARNING** and **CAUTION** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING** and **CAUTION** will be used on product labels and throughout this manual and other manuals that may apply to the product.

## Signal Words

**DANGER** - Immediate hazards which WILL result in death or serious injury.

**WARNING** - Hazards or unsafe practices which COULD result in death or injury.

**CAUTION** - Hazards or unsafe practices which COULD result in personal injury or product or property damage.

## Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:

**WARNING**

The signal word **CAUTION** is used throughout this manual in the following manner:

**CAUTION**

## Product Labeling

Signal words are used in combination with colors and/or pictures on product labels. Following are examples of product labels with explanations of the colors used.

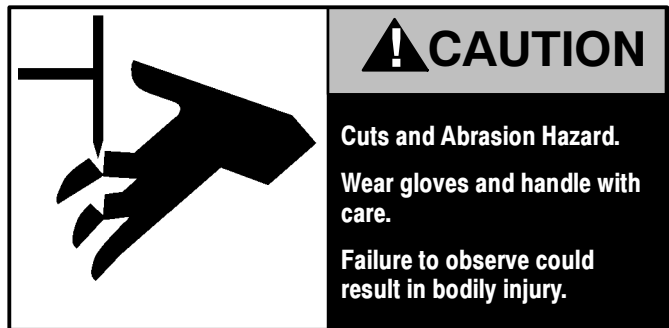
## Danger Label

White lettering on a black background except the word **DANGER** which is white with a red background.



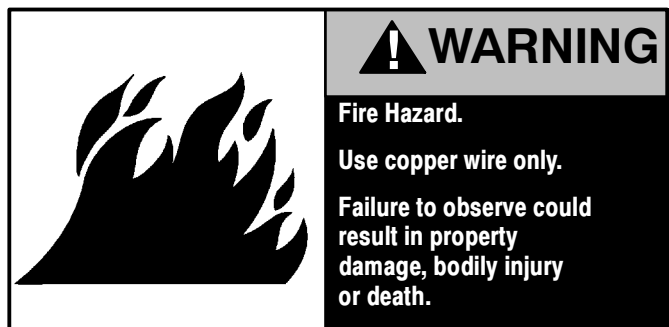
## Caution Label

White lettering on a black background except the word **CAUTION** which is black with a yellow background.



## Warning Label

White lettering on a black background except the word **WARNING** which is black with an orange background.



Burner No. \_\_\_\_\_ Model \_\_\_\_\_ Date of Installation \_\_\_\_\_

Service Telephone: Day \_\_\_\_\_ Night \_\_\_\_\_

Dealer's Name and Address \_\_\_\_\_

#### REPORT OF TEST

Date of Test \_\_\_\_\_

CO<sub>2</sub> \_\_\_\_\_ % Stack Net \_\_\_\_\_ Draft: at Stack \_\_\_\_\_ Over Fire

Firing Rate \_\_\_\_\_ GPH/US Smoke No. \_\_\_\_\_

Note \_\_\_\_\_ Test Made By \_\_\_\_\_

## 2. Safe Installation Requirements

### **WARNING**

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation **MUST** conform with local codes or, in the absence of local codes, with codes of the country having jurisdiction.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in furnace malfunction, property damage, personal injury and/or death.

**NOTE:** It is the personal responsibility and obligation of the customer to contact a qualified installer to ensure that the installation is adequate and conforms to governing codes and ordinances.

### **WARNING**

The furnace must be installed in a level position, never where it will slope to the front.

If the furnace were installed in that position, oil could drain into the furnace vestibule and create a fire hazard, instead of draining properly into the combustion chamber.

- This furnace is **NOT** approved for installation in mobile homes, trailers or recreation vehicles.
- You must have a sufficient supply of fresh air for combustion and ventilation to the area in which the furnace is located.
- Do **NOT** use this furnace as a construction heater or to heat a building that is under construction.
- Use only the Type of fuel oil approved for this furnace (see **Rating Plate** on unit). Overfiring will result in failure of heat exchanger and cause dangerous operation.
- Visually check all oil line joints for signs of wetness which would indicate a leak.

- Connect furnace to a sidewall terminal or chimney liner.
- The “*Check and Adjustments*” starting on page 7 are vital to the proper and safe operation of the heating system. Take the time to be sure they are all done.
- Follow the rules of the NFPA Pamphlet No. 31 (for USA) and B-139 (for Canada) or local codes for locating and installing the oil storage tank.
- Follow a regular service and maintenance schedule for efficient and safe operation.
- Before servicing, allow furnace to cool. Always shut off electricity and fuel to furnace when servicing. This will prevent electrical shock or burns.
- Seal supply and return air ducts.
- The vent system **MUST** be checked to determine that it is the correct type and size.
- Install correct filter type and size.
- Unit **MUST** be installed so electrical components are protected from direct contact with water.

### Safety Rules

Your unit is built to provide many years of safe and dependable service providing it is properly installed and maintained. However, abuse and/or improper use can shorten the life of the unit and create hazards for you, the owner.

- A. The U.S. Consumer Product Safety Commission recommends that users of oil-burning appliances install carbon monoxide detectors. There can be various sources of carbon monoxide in a building or dwelling. The sources could be gas-fired clothes dryers, gas cooking stoves, water heaters, furnaces, gas-fired fireplaces, wood fireplaces, and several other items. Carbon monoxide can cause serious bodily injury and/or death. Therefore, to help alert people of potentially dangerous carbon monoxide levels, you should have carbon monoxide detectors listed by a nationally recognized agency (e.g. Underwriters Laboratories or International Approval Services) installed and maintained in the building or dwelling (see Note).

- B. There can be numerous sources of fire or smoke in a building or dwelling. Fire or smoke can cause serious bodily injury, death, and/or property damage. Therefore, in order to alert people of potentially dangerous fire or smoke, you should have fire and smoke detectors listed by Underwriters Laboratories installed and maintained in the building or dwelling (see Note below).

**Note:** The manufacturer of your furnace does not test any detectors and makes no representations regarding any brand or type of detector.

- C. To ensure safe and efficient operation of your unit, you should do the the following:

1. **Thoroughly read this manual and labels on the unit.** This will help you understand how your unit operates and the hazards involved with oil.
2. **Do not use this unit if any part has been under water.** Immediately call a qualified service technician to inspect the unit and to replace any part of the control system and any oil control which has been under water.
3. **Never obstruct the vent grilles, or any ducts that provide air to the unit.** Air must be provided for proper combustion and ventilation of flue gases. Carbon monoxide or "CO" is a colorless and odorless gas produced when fuel is not burned completely or when the flame does not receive sufficient oxygen.

### 3. Locating the Furnace

#### Location

Locate the furnace as closely as possible to the chimney or vent terminal, providing ample clearance to permit easy accessibility for cleaning the inside of the furnace, the removal of filters, blower, motors, controls and flue connections. The furnace may be installed on a combustible floor

Minimum Installation Clearances from Combustible Materials	
Supply Plenum - Top & Sides	1"
Breaching	9"
Sides - Left Side - Right Side	1"
Front - From Furnace	24"
Rear	1"
Vent Tube	1"

**NOTE:** The return air connection can be made to either side or both sides or up through the bottom of the unit.

The furnace must be installed level for safe quiet operation.

#### Oil Tank and Piping

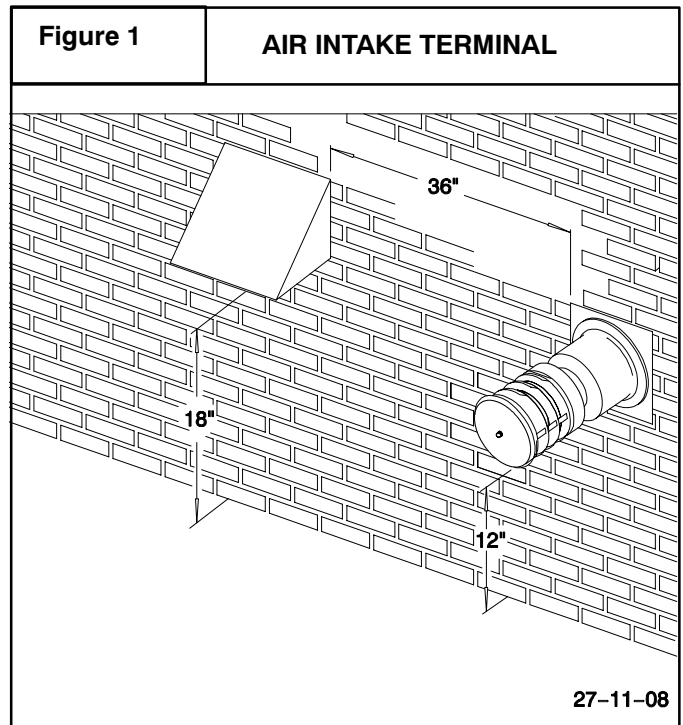
Maximum capacity of individual tank used shall be 250 gallons and must be located at least 5' from appliance. Local codes will govern the size of vents and the type of caps used. 1 1/4" IPS and 2" IPS are generally accepted as minimum size vent and fill pipes respectively. The burner oil line shall be 3/8" O.D. copper tubing for runs 50' or less and 1/2" O.D. copper tubing for longer runs. A manual shut-off valve and an oil filter shall follow sequence from tank to burner. Be sure that the oil line is clean before connecting to the burner. The oil line should be protected to eliminate any possible damage. Installations having the fuel oil tank below the burner level must employ a two pipe fuel supply system with an appropriate fuel pump (more than 8' lift use 2 stage pump and more than 16' an auxiliary pump).

#### Combustion Air

Furnaces require ventilation openings to provide supply air for proper combustion from inside and vent air must comply with the latest Oil Burning Equipment Installation Code CAN/CSA B139 or USA/NFP 31-1992 of latest edition.

The *Riello* and *Beckett* burner are built to obtain combustion air from outside. Sewer pipe drain or 1" insulated aluminum or vinyl sleeve of 3" can be used.

The combustion air intake terminal shall be located in the same wall and 3' from the vent terminal (if used) at least 18" above ground level. (**Figure 1**)



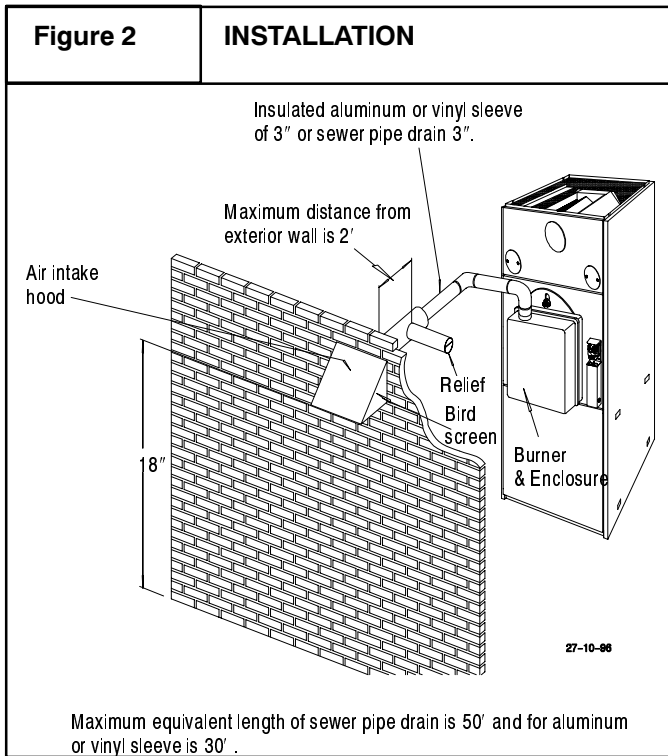
When the furnace uses a chimney liner as vent, the combustion air intake can be located on any wall at least 18" above ground level.

(If a gas meter or gas regulator are in the same area, a distance of 3' is required between these components and the intake terminal).

#### CAUTION

**Keep the area around the combustion air intake terminal free of snow, ice and debris.**

## 4. Installation



### If Required

A water trap may be necessary on the fresh air intake pipe.

The installation must be done on a horizontal run nearest to the burner.

Water trap must be filled with water to prevent any infiltration of air by this opening.

Combustion air intake pipe shall slope upward from the furnace towards the terminal  $\frac{1}{4}$ " per 1' and it should be supported every 3' to prevent sagging. All joints should be sealed with a suitable sealant.

Combustion air intake pipe of 3" can carry combustion air for an input of 0.50 gph to 1.25 gph.

### Flue Connection

If through the wall venting is used, only the complete through-the-wall venting kit listed with the appliance must be used. Maximum allowable horizontal vent tube is 20'.

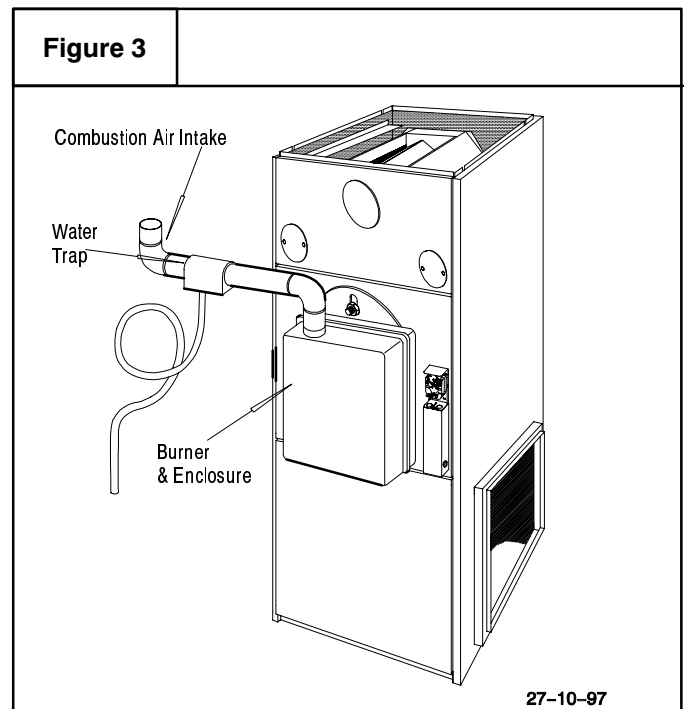
### CAUTION

Insure that the area around the combustion air intake terminal is free of snow, ice and debris.

### A Vent Shall Not Terminate

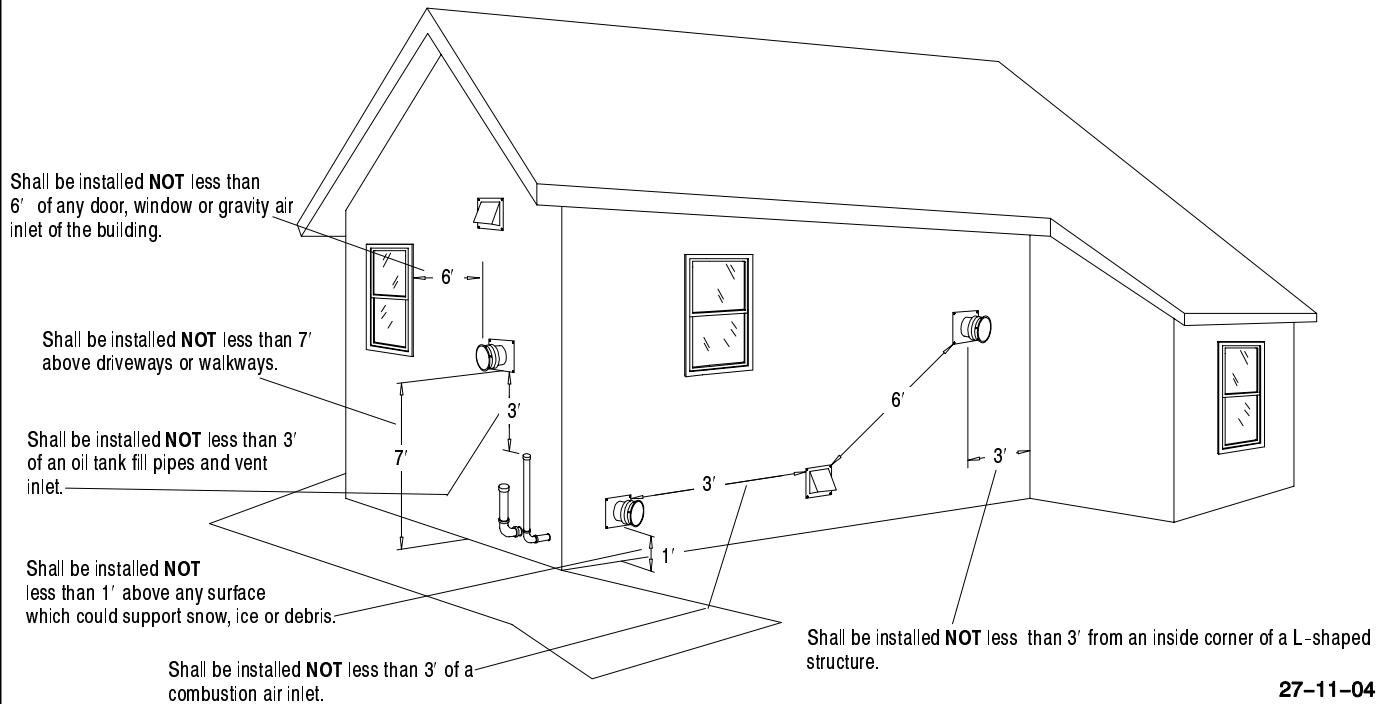
- A) Directly above a paved sidewalk or a paved driveway that is located between two buildings, and that serves both buildings.

- B) Less than 7' (2.13m) above any paved sidewalk or any paved driveway;
- C) Within 6' (1.8m) of a window, door, or mechanical air supply inlet to any building, including soffit opening;
- D) Above a gas meter/regulator assembly within 3' (1 m) horizontally of the vertical centerline of the regulator;
- E) Within 6' (1.8m) of any gas service regulator vent outlet or within 3' (1 m) of an oil tank vent or tank fill inlet;
- F) Less than 1' (.3m) above grade level;
- G) Within 3' (1m) of any combustion inlet, unless the appliance is otherwise certified;
- H) Within 6' (1.8m) of the property line;
- I) Underneath a veranda, porch, or deck;
- J) So that the flue gases are directed at combustible materials or any opening of surrounding buildings that are within 6' (1.8 m);
- K) Less than 3' (1m) from an inside corner of an L-shaped structure;
- L) So that the bottom of the vent termination opening is less than 1' (.3 m) above any surface that may support snow, ice or debris;
- M) So that the flue gases are directed toward brickwork, or other construction, in such a manner that may cause damage from heat or condensate from flue gases.



**Figure 4****CODE REQUIREMENTS FOR SIDEWALL VENTER**

Shall not be installed so that flue gases are directed towards brickwork, mortar or other constructions, in such a manner which could cause damage from heat or condensate from the flue gases.

**27-11-04****Installation of the Flex Vent Flue Pipe**

Maximum allowable vent length is 20'. Select a position for the vent terminal as per the clearances required under the CAN/CSA B139.

Side-wall vented with 10', 15' or 20' Flexmaster® (Canada) or Z-flex® (USA) 3" flexible stainless steel vent pipe or chimney vented with stainless liner.

See article of CSA B139 above. (Figure 4)

The flex vent flue pipe is rated for 1" clearance to combustible material.

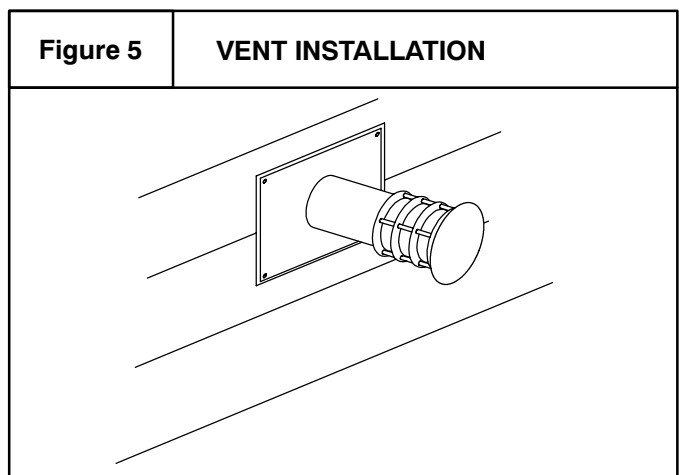
The vent terminal is rated for 0" clearance to combustible material.

Keep flexible tube as short and direct as possible.

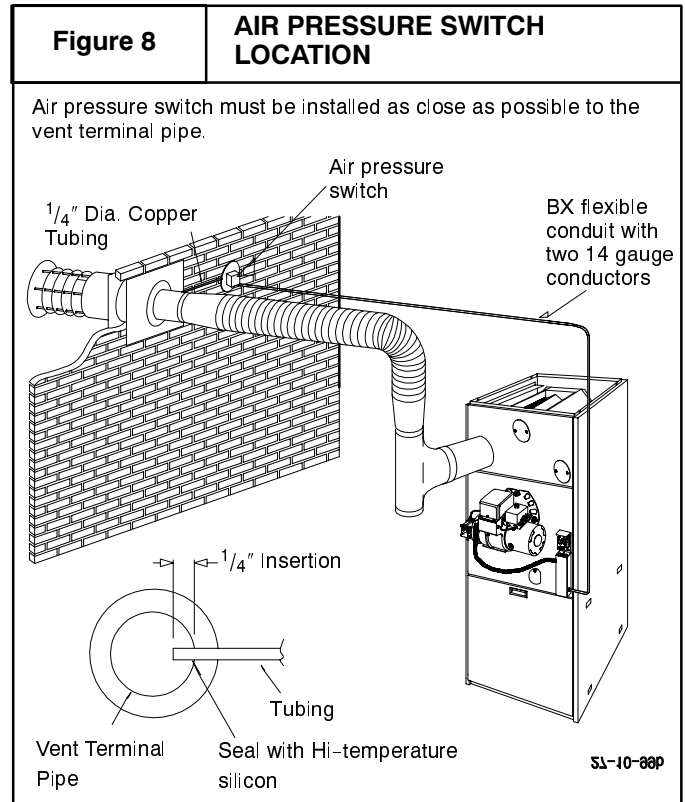
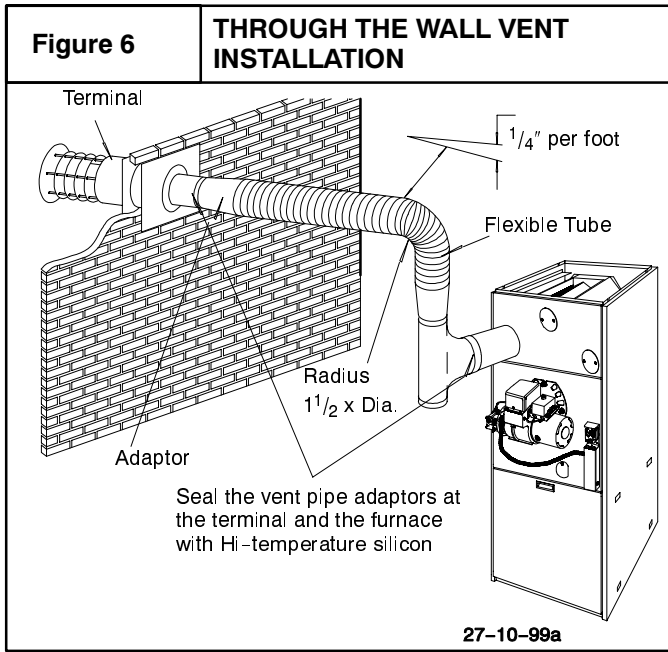
**Through the Wall Vent Installation (Figure 5 and Figure 6)**

1. Drill pilot hole from inside through rim joist, wall board, siding, etc. The bit must be long enough to penetrate through to exterior.
2. Drill or cut using a reciprocating saw, a round opening of 5" diameter having the pilot hole as center.
3. Knock out material exposing round opening through the wall.
4. Slide the vent terminal from outside the building until the holding plate touches the wall.

5. Caulk gap between the holding plate and the wall. Use four screws to fix the holding plate.



6. Insert the inside plate and tighten the collar.
7. After determining the measurement of Flex-vent needed, cut with a hacksaw. Allow for the adapters in your measurement (bend radius  $1\frac{1}{2}$ " x diameter).
8. Twist vent adapter onto each end of the vent by turning the adapter counter clockwise until it has been screwed tightly and the outer collar of the vent adapter is overlapping the outside of the vent.
9. Support the flexible tube into position with all horizontal runs rising  $\frac{1}{4}$ " per foot.

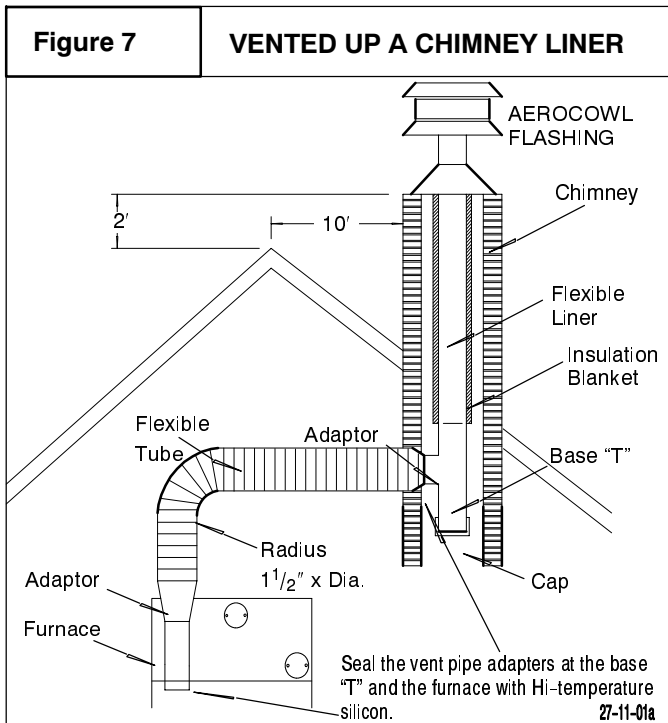


### Vertical Venting Using a Chimney Liner

Up to 30' vertical a 3" diameter stainless steel insulated liner shall be used, the insulation shall be 1" thick and wire mesh wrapped.

A stainless steel tee shall be installed at the base of the chimney liner. Cut flex vent, screw adaptors and support as per **Figure 7**.

**NOTE:** Maximum allowable horizontal vent tube is 20'. Only the complete venting kit listed with the appliance as a package must be used for the horizontal vent.



### CAUTION

**The air pressure switch MUST be used when the furnace is vented by the side wall.**

### Air Pressure Switch Location (Figure 8)

Install the air pressure switch as close as possible to the vent terminal pipe. Use 1/4" diameter copper tubing (not supplied) between vent terminal pipe and the air switch at the inlet for pressure (Hi). Seal the tubing at the vent terminal pipe with hi-temperature silicon. Use Bx flexible conduit with two (2) 14 gauge conductors to make electrical connections of the air pressure switch terminals common and normally closed and the furnace at the brown wire wires between Hi limit and burner. (See Wiring Diagram).

The air pressure switch is pre-adjusted at +0.10" w.c. The switch function is to interrupt the burner operation when the inside terminal pressure exceed normal conditions.

### Wiring

Turn off electric power at fuse box or service panel before making any electrical connections and ensure a proper ground connection is made before connecting line voltage.

All electrical wiring must conform with local codes, ordinances and the Canadian Electrical Code or USA/NFPA No 70-1992 or latest edition.

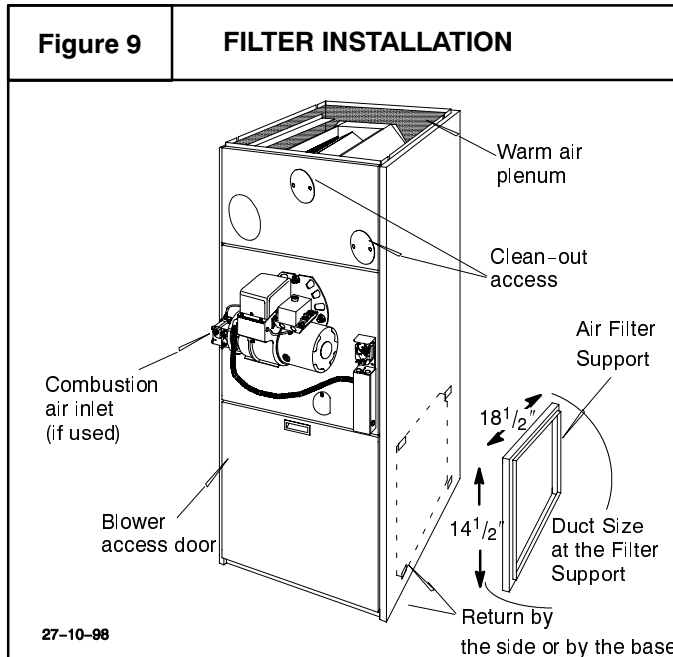
Make all line voltage and ground connections with copper wires #14 AWG 90°C from a 15 Amp. power supply circuit through the unit.

### Ductwork

These furnaces are listed to be installed with ducts. If the furnace is located in a confined space the return air duct must be extended to the outside of this confined space.

## Filters (Figure 9)

The furnace should never be operated without return air filter(s). In addition to permitting circulation of dust and other suspended particles, there is a possibility of bearing failure resulting from these foreign materials in the blower and motor housing. Inspect or replace filters once each month. Filters must be replaced only with same type and size certified (USA UL, CAN ULC).



**NOTE:** A dirty air filter causes inefficiency and higher operating costs.

In the model LUOV the installer has to place the filter support between the furnace and the return air duct. Following the markings make the opening on the selected side. Fix the air filter support and the return air duct. (See **Figure 9**)

Side or bottom return air connections are acceptable. A/C coil (if used) must be installed in the supply air plenum.

## Fan Control

Fan side of the fan and limit switch should not be higher than 110° F for "FAN ON" and 95° F setting for "FAN OFF".

## High Limit Control

High limit cut-off is factory set. This setting may be reduced but should never be increased.

A replacement limit control must be identical to that supplied as original equipment. (See Parts List)

The limit control of the LUOV model is equipped with an air baffle under the control element.

## Summer Fan Operation

During the summer, continuous air circulation can be obtained by pushing the manual fan switch from the "auto" position to the "on" position.

## Combustion Safety Control

Operation and checking of the primary control is outlined in detail with the enclosed burner manufacturer literature.

## Burner (shipped with 0.50 GPH nozzle installed)

Make all burner adjustments accordingly to the burner manufacturer instructions and (**Table 1** page 9).

Burners listed with these units:

*BECKETT AF II 85 and RIELLO 40 BF3.*

*BECKETT* burner is equipped with a pre purge and post purge timer plus a solenoid valve.

*RIELLO* burner is equipped with a post purge timer.

**NOTE:** Adjustment of all controls should only be made by a competent service person. Control setting and blower speed should be in accordance with the recommendations of the National Warm Air Heating and Air Conditioning Association.

## Before Start Up

These furnaces with the burners listed use a positive pressure over fire with sufficient intensity to vent the flue products out by a vent terminal or a chimney liner.

Positive pressure over fire requires careful attention by the installer and service person to the sealing at the furnace venting and at the vent terminal inlet. After service, the service person will have to check around the burner collar at the burner plate and around the clean-out covers at the heat exchanger for any leaks.

Sealant (if needed) to be used is high temperature silicone G/E RTV 106 or equivalent.

## Burner Start Up

Before starting the burner, be sure the fuel tank is adequately filled with clean oil (use No. 2 fuel oil) and the blower door is in place.

The burner is to be adjusted so that the smoke density is no greater than No. 0 on the Shell-Bacharach test scale. The flue gases should contain between 12% to 14 1/2% CO<sub>2</sub> when tested with combustion test equipment.

You may notice a slight odor the first time your furnace is operated, this will soon dissipate. It is only the oil used on the parts during manufacturing.

Operate the unit for a few minutes prior to refiring. It is important to clear the binders contained in the combustion chamber material before testing.

Provide a hole 1/4" dia. in the vent adapter collar and when tests are completed seal this opening by using a sheet metal screw or metal tape.

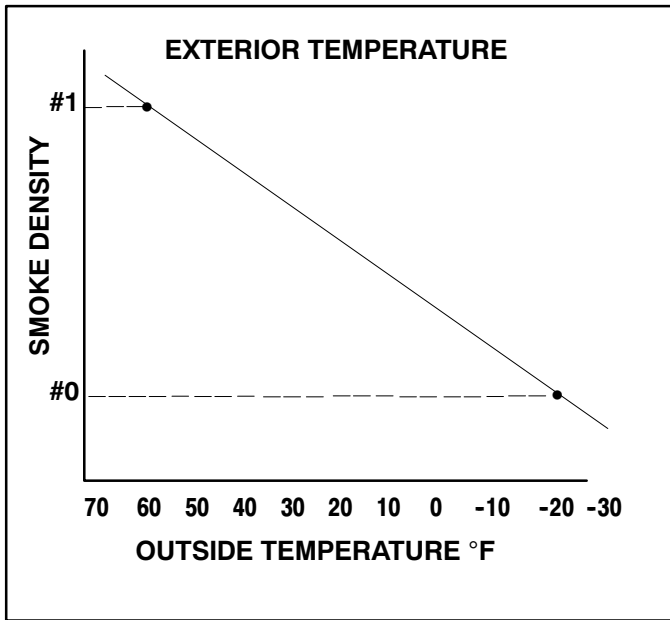
1. Supply electrical power to furnace.  
If the unit has a Riello burner, the post purge cycle will start and stop after the time selected.
2. Open the shut-off valve in the oil supply line to the burner.
3. Set the thermostat to call for heat.
4. When the burner relay is energized the pre purge timer and the burner motor starts for 15 sec.
5. After the pre purge, the motor solenoid valve and the ignition transformer are energized.
6. Vent the fuel unit as soon as the burner starts rotating. To vent attach a clear plastic hose over the vent plug, loosen the plug and catch the oil in an empty container. Tighten the plug when all the air is purged.



- Make all the burner adjustments accordingly to the burner manufacturer instructions. Use the following chart to start the adjustments.

Table 1		Burner Preliminary Adjustments				
Input GPH	Nozzle GPH	Pump Pressure Lbs/Po <sup>2</sup>	Beckett AFII-B5		Riello 40BF3	
			Stop Screw Size	Air Setting	Tubulator Setting	Air Sampler Setting
.50	.50	100	0	3	0	3.2
.60	.50	144	0	3	1	3.8
.65	.50	169	0	3	1.5	4.0
.75	.65	133	3	4	1.5	4.4

When the adjustment is made OFF heating season use the following chart to balance the combustion according to the exterior temperature.



- When the thermostat is satisfied the burner motor stays in operation for the post purge cycle and the valve closes, combustion is complete.
- Burner motor stops after the post purge time setting.

### Pre Purge Cycle

This cycle has a fixed value of 15 sec.

### Post Purge Cycle (Figure 10 and Figure 11)

This cycle is easily field adjustable of 0 to 6 min.

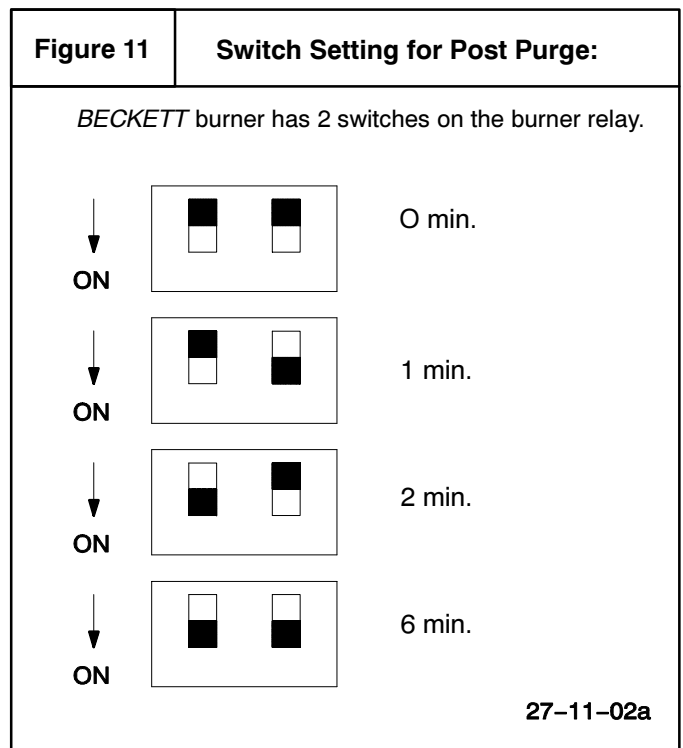
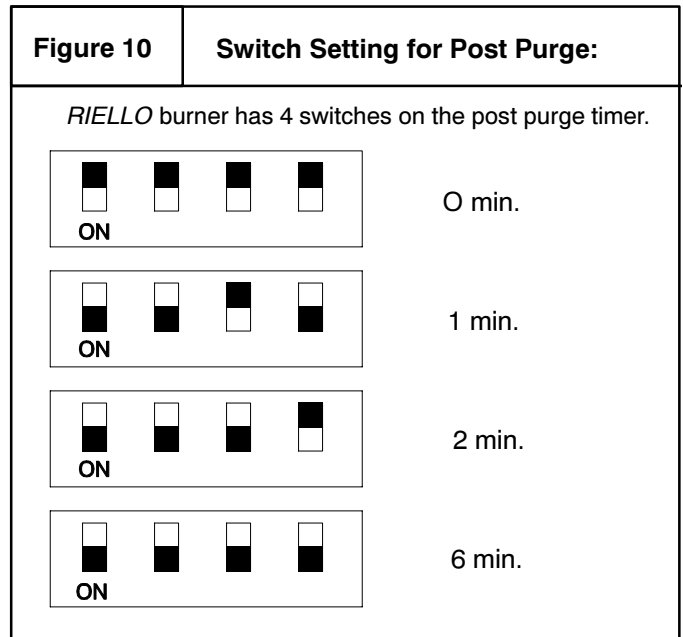
### Settings and Tests

Operate the furnace long enough to stabilize all temperatures (15 min. from cold start). Adjust the oil pump for the input selected (see **Table 2**). Adjust the smoke density at No. 0 or with a slight trace.

A CO<sub>2</sub> test should be taken. The reading should be between 12% and 15%.

Stack temperature should be recorded. The reading should be between 350°F and 560°F.

The adjustments of the post purge cycle should be set at 2 min. to provide at least 10 air changes of the heat exchanger.



Over fire pressure - the reading should be between 0.065 and 0.22" w.c., if the wind is moderate or absent.

Thermostat Heat	
Anticipator	0.2 AMP
Post Purge Timer	2 MIN. or more
Smoke Density	0 to slight trace

Table 2		Pump Pressure						
Model No.	Nozzle	Pump Pressure PSI	Input BTU/Hr.	Output BTU/Hr.	Stack Temperature °F	CO <sub>2</sub> %	Combustion Eff. %	Over Fire Pressure " w.c.
LUOV	0.50	100	69,700	59,200	480°F	14.0	84.8	0.085
	0.50	144	83,600	70,700	500°F	14.2	84.6	0.12
	0.50	169	90,600	76,100	540°F	14.4	84.0	0.17
	0.65	133	104,500	88,000	560°F	15.0	84.0	0.22

Fan speed must be checked for air temperature rise through the furnace. Select motor speed to reach temperature rise shown. Motor is a four speed motor, which is adaptable to varying air flow requirements by changing the blower speed tap used. Air temperature rise is the temperature difference between supply and return air.

Model No.	Input BTU/Hr.	Blower Motor	Blower Size	Motor Speed 0.20" ESP	Motor Speed 0.50" ESP	Air Filter	Temperature Rise
LUOV	69,700	1/3	10-8T	Low	Med-Low	16" x 20"	73° to 80°
	83,600	1/3		Med-Low	Med-High	16" x 20"	77° to 79°
	90,600	1/3		Med-High	High	16" x 20"	71° to 74°
	104,500	1/3		High	High	16" x 20"	77° to 83°

### Shutting Burner Off

1. Turn off disconnect switch.
2. If closing down for the summer, close the valve(s) in the suction line.

### Restart if Burner Should Stop

1. Set thermostat lower than the room temperature.
2. Press the reset button on the burner primary control (relay).
3. Set thermostat higher than the room temperature for 10 seconds and set lower than room temperature. This will start pre purge cycle. Repeat twice.
4. Set thermostat higher than the room temperature .
5. If the burner motor does not start or ignition fails, turn off the disconnect switch and CALL YOUR SERVICEMAN

DO NOT ATTEMPT TO START THE BURNER WHEN EXCESS OIL HAS ACCUMULATED, WHEN THE FURNACE IS FULL OF VAPOR, OR WHEN THE COMBUSTION CHAMBER IS VERY HOT.

ALWAYS KEEP THE FUEL SUPPLY VALVE SHUT OFF IF THE BURNER IS SHUT DOWN FOR AN EXTENDED PERIOD OF TIME.

### Furnace Maintenance (by a qualified technician)

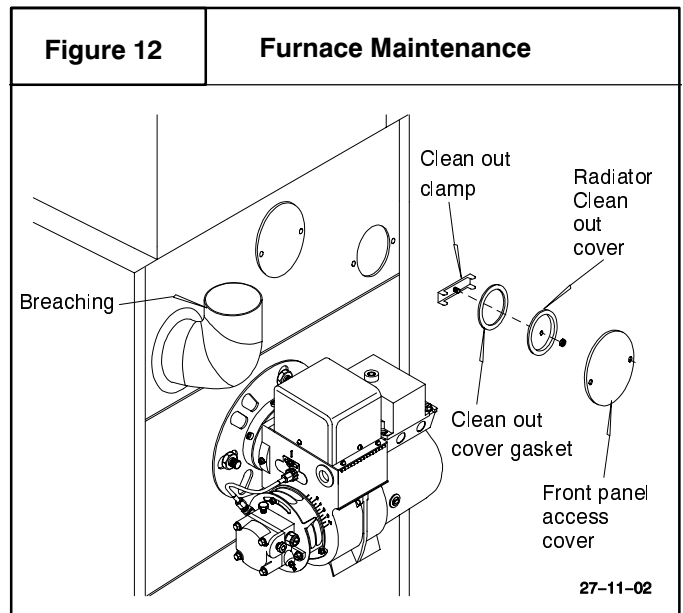
Turn off power to furnace before any disassembly or service.

Burner compartment and blower compartment should be cleaned periodically. Remove any dirt and lint that may have accumulated.

The bearings on the direct drive motor are permanently lubricated and do not require oiling.

Replace disposable type filters before they become clogged by same type, size and certified as the original.

The furnace and flue pipe should be cleaned once a year by a qualified service technician. (See Figure 12)



Shut off electric supply.

Remove flue tube at the furnace breach. Check for soot deposits. If there are no soot deposits in the secondary heat exchanger, cleaning will not be necessary. If scaling or soot are present, it should be cleaned. Seal the vent pipe after cleaning with high temperature silicon.

Remove the two screws that secure each of the two front division panel access covers. Remove the covers.

Loosen the nut that secures each of the radiator clean out covers. It is not necessary to completely take them off.

Shift covers slightly to disengage the holding clamp inside the radiator. Lift out being careful of not to damage the gasket.

Vacuum these passages as far back as the cleaning tool will reach.

### CAUTION

**Do not use any commercially available soot remover. This furnace has fiber type refractory combustion chamber. Normal servicing of this unit does not require cleaning of the combustion chamber. Use extreme care if for any reason you have to work in the area of the combustion chamber.**

Replace the parts in reverse order after the passages are cleaned. Be careful not to damage the gaskets.

Remove the air pressure tubing at the air pressure switch, blow through it and reinstall the tubing.

## 5. Oil Burner

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Once a year, prior to the beginning of the heating season have your oil burner inspected by your Service Technician. To inspect it:

1. Check firing head and clean if necessary.
2. Re-adjusting electrode setting before replacing.
3. Replace nozzle.
4. Adjust the burner.

**DO NOT TAMPER WITH THE UNIT OR CONTROLS. CALL YOUR SERVICE TECHNICIAN.**

**BEFORE CALLING FOR SERVICE, CHECK THE FOLLOWING:**

1. Check oil tank gauge and check if the oil tank valve in oil is open.
2. Check fuse or circuit breaker.

3. Check if shut-off switch is "ON".
4. Reset thermostat above room temperature.
5. If the ignition does not appear turn off the disconnect switch and call your qualified service technician.

**IF COMBUSTION CHAMBER HAS TO BE REPLACED, THE INSTALLATION INSTRUCTIONS OF THE CHAMBER WILL BE WITH THE CHAMBER.**

**WHEN ORDERING REPLACEMENT PARTS SPECIFY THE COMPLETE FURNACE MODEL NUMBER.**

**NOTE:**

Nozzle position and electrode adjustment - See burner manufacturer instructions.

Tannic filter cartridge should be replaced annually. A complete combustion test must be performed after any service of the unit.