

BURNER INSTALLATION INSTRUCTIONS - UML/LRF *DIRECT VENT* OIL FURNACES

WARNING

Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read these instructions and understand all requirements, including requirements of authority having jurisdiction, before beginning installation. Installation not complete until appliance operation verified per Installation, Operation & Maintenance Manual provided with furnace.

Wiring Harnesses

This burner kit is furnished with multiple wiring harnesses.

UML wiring harnesses are installed on the burner. **LRF** wiring harness is provided loose in the box.

Application for **UML** furnace, proceed to **Installation Procedure**.

Application for **LRF** furnace, change burner wiring harnesses as follows:

1. Remove low voltage **UML** wiring harness.
 - a. Disconnect Blue and Yellow wires from TR-TW (or T1-T2) terminals on primary control.
 - b. Remove and discard wiring harness.
 - c. Riello burner only - Insert provided 5/8" plastic flush plug in 5/8" hole in burner housing where low voltage **UML** harness was previously located.
 2. Remove line voltage **UML** wiring harness.
 - a. Disconnect Black, White and Violet wires from primary control or terminal strip.
 - b. Remove flexible conduit connector from burner. To remove Arlington type Snap-Tite connectors, insert small screwdriver under the tab on the spring clip. Expand the spring clip until it pops off the connector. See Figure 1.
 - c. Remove wiring harness from burner.
 - d. Discard wiring harness.
 3. Install **LRF** wiring harness into burner junction box or burner housing in place of **UML** harness. Use provided strain relief bushing.
 4. Connect burner wiring per wiring diagram found on inside of blower door or in Installation, Operation & Maintenance manual.
 - a. Connect Black, White and Violet line voltage wires as the wires removed in step 2 above.
 - b. Connect Blue and Yellow low voltage wires as the wires removed in step 1 above.
 5. For Beckett burners, low voltage Blue and Yellow wires are routed from the junction box to the primary control TR-TW terminals as shown in Figure 2.
 6. Proceed to Installation Procedure.
- ### Installation Procedure
1. Beckett NX and Riello 40BF3 burners are factory equipped for 0.65 USGPH firing rate. Riello 40BF5 burner is factory equipped for 0.75 USGPH firing rate. If that is the desired firing rate then burner setup is complete. Go to Step 3.
 2. Setup burner for other desired firing rate per Chart 2 or Chart 3 on page 2. Insure burner electrodes remain aligned per manufacturer's specification.
 3. Place furnished burner mounting gasket on burner mounting studs on furnace.
 4. Place burner on burner mounting studs on furnace. Insure burner is in upright position for installed flow configuration of furnace (i.e. upflow, downflow, horizontal left, horizontal right).
 5. Install furnished 3/8"-16 flange nuts on studs.
 6. Install combustion air intake pipe and blocked vent safety switch (pressure switch) and connect pressure switch tubing per Direct Vent Supplemental Instructions provided with furnace.

(Note: Riello burner kits include multiple intake air connector pipes to cover multiple installation options. Not all pipes will necessarily be used for any given installation.)

 - a. **UML** – blocked vent safety switch and associated pressure switch tubing for UML furnace is provided with furnace. **DO NOT** use the blocked vent safety switch included with this burner kit for UML furnace. It is for LRF furnace. Refer to Chart 1.
 - b. **LRF** – blocked vent safety switch and associated pressure switch tubing for LRF furnace is provided with this burner kit. Refer to Chart 1.
 7. Connect burner wiring to furnace control.
 - a. **UML:**
 - i. Connect 6 pole burner wiring plug to 6 pole receptacle on front of furnace.
 - ii. Connect Blue/Yellow burner wiring harness as follows:
 01. Blue/Yellow wires to 2 pole receptacle on front of furnace.
 02. Yellow/Yellow wires to blocked vent safety switch (pressure switch) terminals.
 - b. **LRF:**
 - i. Connect 6 pole burner wiring plug to 6 pole receptacle from control box.
 - ii. Connect unused yellow low voltage wires in furnace control harness to blocked vent safety switch (pressure switch) terminals.
 8. Highlight installed model and firing rate on Alternate Input Chart on furnace rating plate.
 9. Burner installation is complete.
 10. Follow startup and adjustment procedures in Installation, Operation & Maintenance manual provided with furnace.

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Figure 1 - Arlington Type Snap-Tite Connector - Spring Clip



Figure 2 - Beckett Control



Chart 1 - Blocked Vent Safety Switch (Pressure Switch) Application Data

Furnace Model	Burner Model	Pressure Switch Part Number	Pressure Switch Setpoint
UML	Beckett NX	240011288	0.50" W.C.
UML	Riello 40BF3/40BF5	240011288	0.50" W.C.
LRF	Beckett NX	240011862	0.65" W.C.
LRF	Riello 40BF3/40BF5	240011861	0.42" W.C.

Chart 2 - Beckett NX Oil Burner Setup

Beckett NX Series Oil Burners (For use with direct vent units using outdoor combustion air only)						
Furnace Model	Burner Model	Delavan Nozzle	Pump Pressure [PSIG]	Flow Rate [USGPH]	Low Firing Rate Baffle	Air Setting
UML(V)65ANXU LRF(V)65NXU	NX56LQ	0.50 / 60°W	140	0.55	Yes	3
UML(V)80ANXU LRF(V)80NXU	NX56LQ	0.50 / 60°W	175	0.65	Yes	3.25
UML(V)90ANXU LRF(V)90NXU	NX56LQ	0.60 / 60°W	175	0.75	No*	3.25
UML(V)100ANXU LRF(V)100NXU	NX56LQ	0.65 / 60°W	175	0.85	No*	3.75

* Burner is factory equipped with low firing rate baffle. Remove for 0.75 and 0.85 USGPH firing rates.

Chart 3 - Riello 40BF Oil Burner Set-Up

Riello 40BF3/40BF5 Series Oil Burners (For use with direct vent units using outdoor combustion air only)						
Furnace Model	Burner Model	Delavan Nozzle	Pump Pressure [PSIG]	Flow Rate [USGPH]	Turbulator Setting	Air Setting
UML(V)65ARBU LRF(V)65RBU	40BF3	0.50 / 90°B	125	0.55	0.0	4.25
UML(V)80ARBU LRF(V)80RBU	40BF3	0.55 / 80°B	140	0.65	1.0	5.25
UML(V)90ARBU LRF(V)90RBU	40BF5	0.65 / 80°B	140	0.75	0.0	3.75
UML(V)100ARBU LRF(V)100RBU	40BF5	0.75 / 80°B	130	0.85	0.0	4.25

NOTE: Riello 40BF3 burner is required for 0.55 and 0.65 USGPH firing rates.
Riello 40BF5 burner is required for 0.75 and 0.85 USGPH firing rates.

Above settings are preliminary settings only. Final adjustments must be made using combustion test instruments as outlined in the Installation, Operation & Maintenance manual provided with furnace.