

Direct Vent Addendum

For the following Boilers

Biasi B10 Series

Saint Roch S10 & SRU Series

Installation Manual For The Following Kits:

DVF-4 Rigid Kit for Bio, #2 fuel oil & gas (6" appliance adaptor)

D-S10-DVF/5-4 Rigid Kit for Bio, #2 fuel oil & gas (5" appliance adaptor)

D-DVO-410 Flexible Kit for Bio, #2 fuel oil (6" appliance adaptor)

D-S10-DVO Flexible kit for Bio, #2 fuel oil (5" appliance adaptor)

No damper & spill switch required for direct vent gas applications

WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

Danger

WHAT TO DO IF YOU SMELL GAS:

- Do not try to light any appliance
- Do not touch any electric switch; do not use any phone in your building
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you can not reach your gas supplier call the fire department
- Installation and service must be performed by a qualified licensed installer, service agency or the gas supplier.



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IMPORTANT INFORMATION

Please read this page carefully!

ALL BOILERS MUST BE INSTALLED IN ACCORDANCE WITH NATIONAL, STATE AND LOCAL PLUMBING, HEATING AND ELECTRICAL CODES AND ORDINANCES, AS WELL AS THE REGULATIONS OF THE SERVING ELECTRICAL, WATER AND GAS UTILITIES.

All systems should be designed by competent licensed heating contractors, and only persons knowledgeable in the layout and installation of heating systems should attempt the installation of the Biasi B10, Saint Roch SRU & S10 boilers. It is the responsibility of the installing contractor to see that all controls are correctly installed and operating properly when the installation is completed.

Do not burn volatile garbage, gasoline, naphtha or other flammable liquids other than No. 2 fuel oil. All flammable liquids (especially gasoline), chemicals, rags, paper, wood scraps, debris, etc., should be kept away from the boiler at all times. Keep the boiler area clean and free of all fire hazards.

Please read the literature and warranties supplied by the manufacturers of the various accessory equipment. This equipment is warranted by the respective manufacturers, not by QHT, Inc. Each piece of equipment must be installed and used according to the recommendations of the manufacturer.

Codes and Regulations:

Installation of the boiler, burner, oil tank and related equipment must conform to national, state and local regulating agencies and codes applicable to the installation of the equipment. In the absence of local requirements, the following codes apply:

- A. NFPA - #31 Installation of Oil Burning Equipment
- B. NFPA - #70 National Electric Code
- C. NFPA - #211 Chimneys and Vents
- D. ANSI - #Z223.1 National Fuel Gas Code
- E. ANSI - Domestic Gas Conversion Burner
- F. CAN/CGA - B149 Installation Codes
- G. ANSI - CSD-1
- H. CSA - C22.1 Canadian Electrical Code, Part 1

The above codes are available from:

National Fire Protection Association (NFPA) CSA International

Battery March Park 8501 East Pleasant Valley Road Quincy, MA 02269 Cleveland, OH 44134

<http://www.nfpa.org> <http://www.csa-international.org>

WARNINGS

Any appliance that burns natural gas, propane gas, fuel oil, or coal is capable of producing carbon monoxide (CO). Carbon monoxide (CO) is a gas which is odorless, colorless and tasteless but is very toxic. CO is lighter than air and thus may travel throughout the building.

BRIEF EXPOSURE TO HIGH CONCENTRATIONS OF CO, OR PROLONGED EXPOSURE TO LESSER AMOUNTS

OF CO MAY RESULT IN CARBON MONOXIDE POISONING. EXPOSURE CAN BE FATAL AND EXPOSURE TO HIGH CONCENTRATIONS MAY RESULT IN THE SUDDEN ONSET OF SYMPTOMS INCLUDING UNCONSCIOUSNESS.

Symptoms of CO poisoning include the following:

- * dizziness
- * vision problems
- * shortness of breath
- * headache
- * loss of muscle control
- * unclear thinking
- * nausea
- * weakness
- * unconsciousness

The symptoms of CO poisoning are often confused with those of influenza, and the highest incidence of poisoning occurs at the onset of cold weather or during flu season. A victim may not experience any symptoms, only one symptom, or a few symptoms. Suspect the presence of carbon monoxide if symptoms tend to disappear when you leave your home.

The following signs may indicate the presence of carbon monoxide:

- Hot gasses from appliance, venting system pipes or chimney, escaping into the living space.
- Flames coming out around the appliance.
- Yellow colored flames in the appliance.
- Stale or smelly air.
- The presence of soot or carbon in or around the appliance.
- Very high unexplained humidity inside the building.

IF ANY OF THE SYMPTOMS OCCUR, OR IF ANY OF THE SIGNS OF CARBON MONOXIDE ARE PRESENT, VACATE THE PREMISES IMMEDIATELY AND CONTACT A QUALIFIED HEATING SERVICE COMPANY, THE GAS COMPANY OR THE FIRE DEPARTMENT.

ONLY QUALIFIED, LICENSED SERVICE CONTRACTORS SHOULD PERFORM WORK ON YOUR BIASI B10, SAINT ROCH SRU & S10 BOILER.

HOMEOWNER INFORMATION FOR GAS

TO START UP THE APPLIANCE

1. STOP! Read the safety information on the side of the boiler. DO NOT START THE BOILER UNLESS ALL CLEANOUT DOORS ARE SECURED AND SEALED. (Skip to step 9 for oil burning boilers)

2. Set thermostat to lowest setting

3. Turn off all electric power to the appliance

4. Do not attempt to light the burner by hand

5. Turn the manual shut off on the combination gas valve clockwise to the off position.

6. Wait five minutes to clear out any gas. Then smell for gas, including near the floor.

If you smell gas, STOP!

- Do not try to light any appliance.
- Do not touch any electric switch; do not use any phone in your building
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you can not reach your gas supplier call the fire department

7. If you don't smell gas, go to the next step.

8. Return the manual valve on the combination gas valve to the on position by reversing step "5".

9. Turn on all electric power to the appliance.

10. Set thermostat to the desired setting.

11. If the burner fails to light you may press the reset button once. If the appliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier. DO NOT ATTEMPT TO START THE BURNER WHEN EXCESS GAS HAS ACCUMULATED, WHEN THE UNIT IS FULL OF VAPOR, OR WHEN THE COMBUSTION CHAMBER IS VERY HOT.

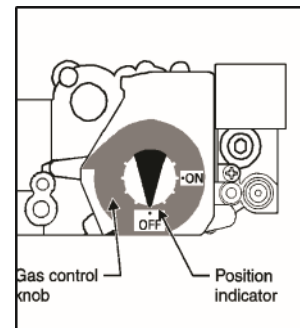
NOTE: ALWAYS KEEP THE MANUAL FUEL SUPPLY VALVE SHUT OFF IF THE BURNER IS SHUT DOWN FOR AN EXTENDED PERIOD OF TIME.

TO TURN OFF GAS APPLIANCE

Set the thermostat to the lowest setting.

Turn off electric power to the appliance if service is to be performed.

Turn the gas control valve to the off position.



1. GENERAL INFORMATION

The QHT Direct Vent components have been designed and packaged so that the Biasi B-10 boilers, Saint Roch UNIVERSAL & S10 boilers can be directly vented to the outside. Properly maintained, these boiler systems are unsurpassed in efficiency and will provide years of trouble-free operation.

In addition to the standard Biasi or Saint Roch boiler package, the Direct Vent Package is supplied with a kit containing the standard make-up air and appropriate exhaust system piping and hoods for your application. The last piece of the complete package is a direct vent specific burner.

The Direct Vent Systems are a non-powered positive pressure vent hood system for gas or oil fired appliances that provides an outlet for exhaust gases and an intake for combustion air. The hood is designed to direct the hot exhaust gases away from the structure without the aid of a motorized fan. All of the internal parts in contact with the flue gases are made from corrosion resistant stainless steel.

QHT, Inc Direct Vented Boiler Include:

- Biasi B10/3 through B10/6 can be direct vented.
- Saint Roch S10/3 through S10/6 can be direct vented.
- Saint Roch SRU30 & SRU40 can be direct vented.

2. INSTALLATION CLEARANCES

Boilers in rooms shall be installed with the clearances from combustible materials not less than indicated below. Combustible materials are those made of or surfaced with wood, compressed paper, plant fibers, plastics, or other material that will ignite and burn, whether flame proofed or not, or whether plastered or not.

The boiler must not be installed on combustible flooring. The boiler is approved for installation on non combustible flooring only. The boiler must not be installed on carpeting or vinyl flooring.

Minimum clearances to combustible construction are as follows:

TOP-24 IN. FRONT-12 IN.

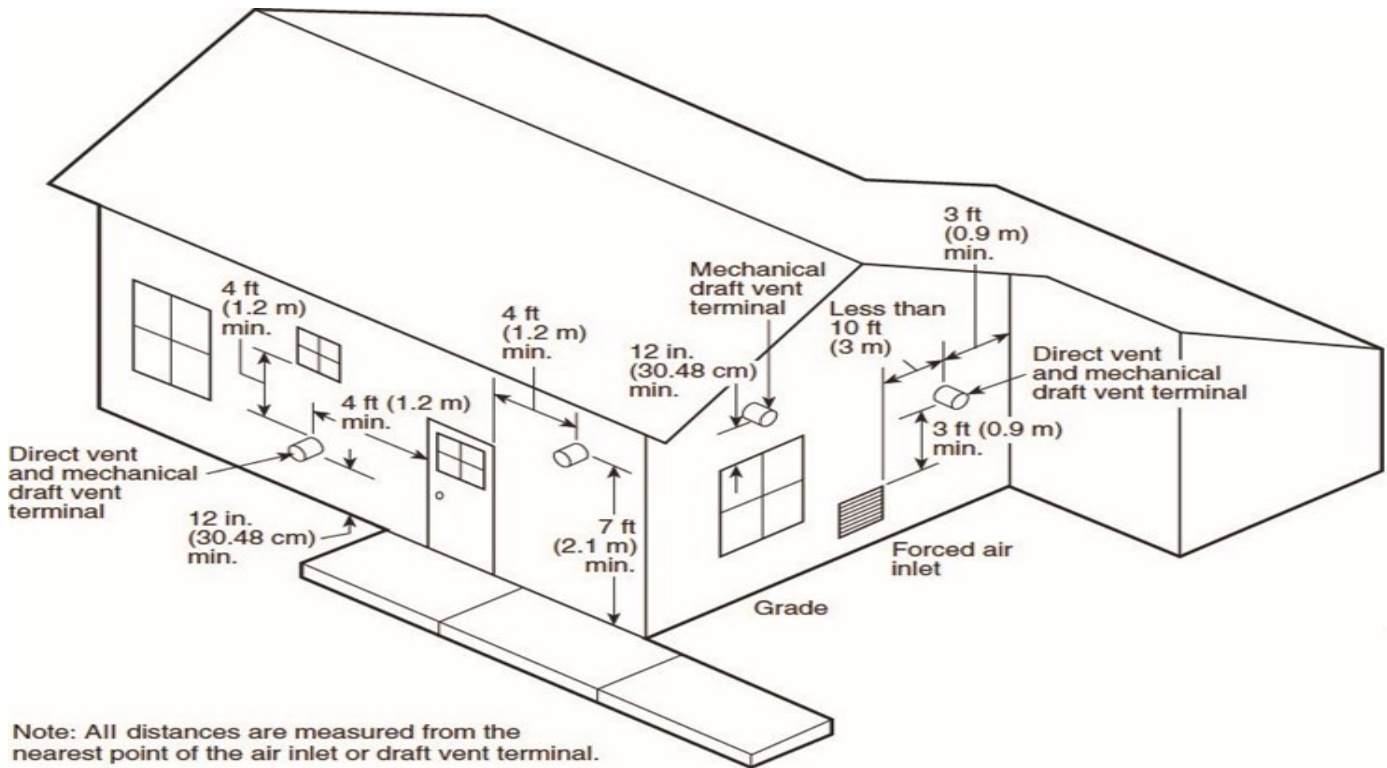
FLUE CONNECTOR DOUBLE WALL DIRECT VENT PIPING – 2”

REAR-2 IN. SIDES-2 IN.

Consult NFPA-31 for construction techniques where the above minimum clearances cannot be obtained. Recommended clearances for servicing can be found in the boiler manual.

The Exhaust Hood must be installed on the leeward side of house and conform to the following guidelines:

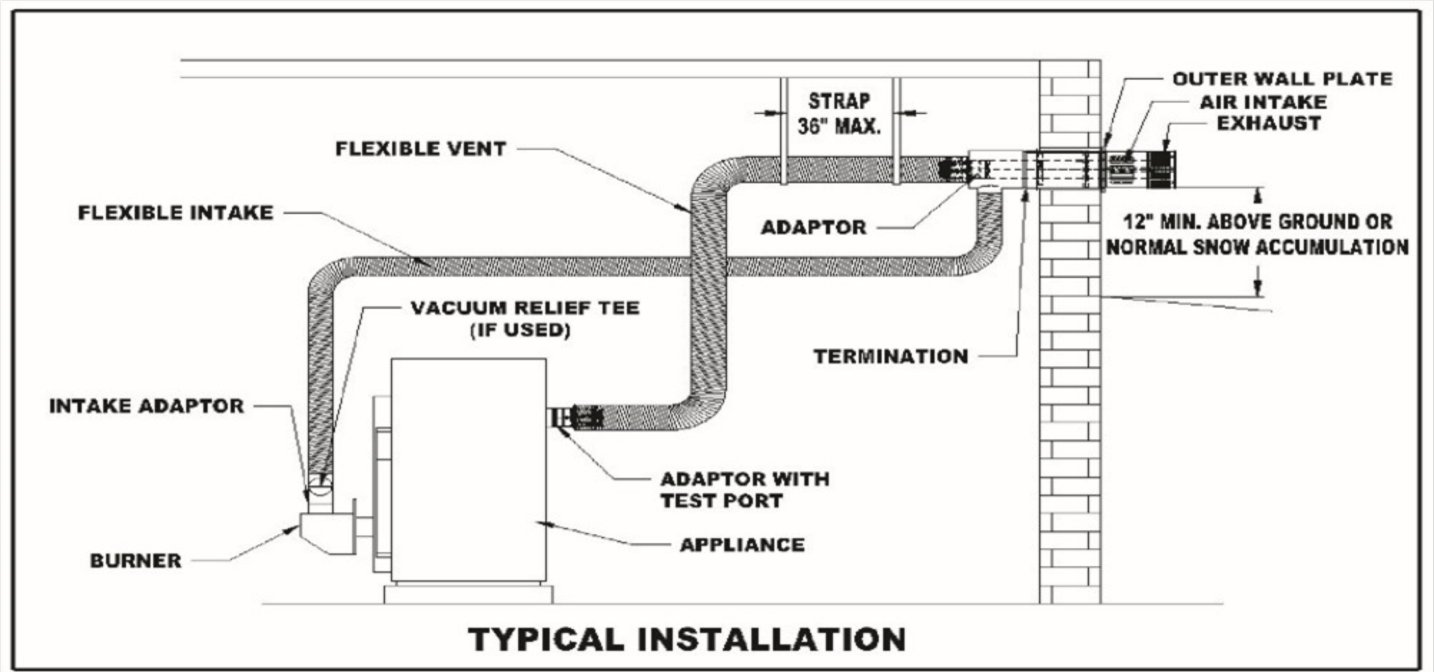
1. The Vent hood shall be installed 12" above ground level or 12" above nominal snow level of the region of the installation, which ever is higher.
2. The Vent hood shall not be less than 3 feet above any forced air inlet to the house.
3. The Vent hood shall not be less than 4 feet below, 4 feet horizontally, or 1 foot above any door, window or gravity inlet into any building.
4. The Vent hood shall not be less than 3 feet from any obstruction above the hood.
5. The Vent hood shall not be less than 3 feet from any obstructions horizontally in all directions.
6. The Vent hood shall not be less than 2 feet from an adjacent building.
7. The Vent hood shall be not less than 7 feet above grade when located adjacent to public walkway.
8. The Vent hood shall be located so that flue gasses are not directed to jeopardize people, overheat combustible structures, materials or enter buildings.
9. Minimum of 4' horizontal clearance from electric meters, gas meters, regulators and relief equipment.
10. All joints in system are to be sealed to prevent leakage of products of combustion in the building.
11. Avoid installing exhaust hood on North, West, or prevailing wind side of the house.



3. D-DVO-410, D-S10-DVO VENT KIT & INSTALLATION

Vent Installation:

1. Vent Pipe bend radius is 12" minimum
2. Support vent pipe with metal strapping every 36"
3. Maximum wall thickness is 14". Call Z-Flex for recommendations on thicker walls
4. System is not designed for common venting. Use for single boiler only.
5. Appliance adaptor test port is included for combustion test for proper burner adjustment.

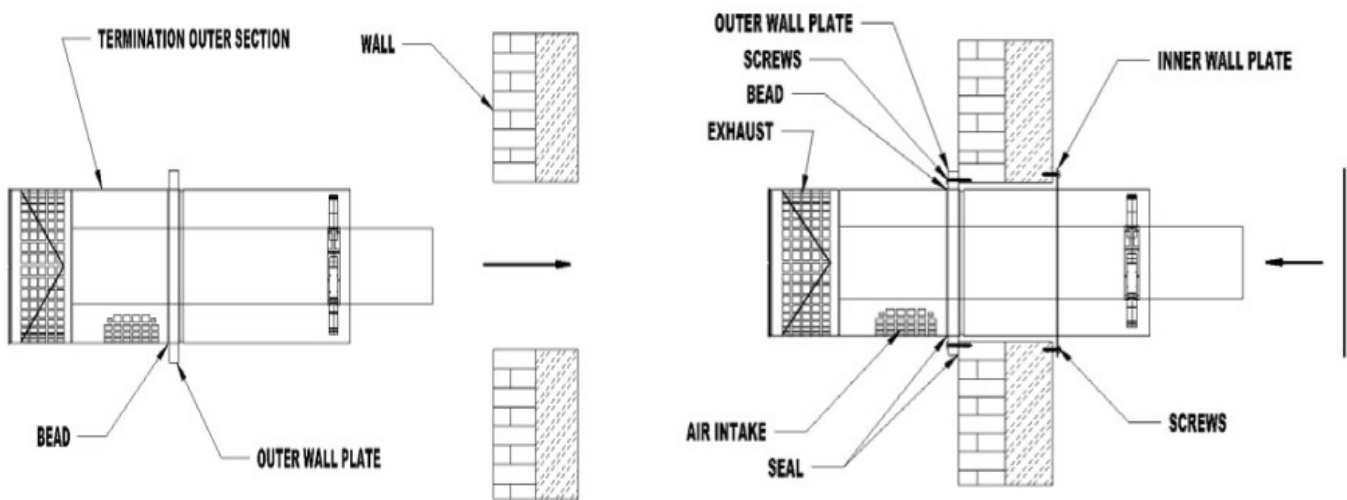


Items included in kit	QTY	Part Number
D-2OILVNT0410	1	Insulated Vent Pipe 4" x 10'
D-2OILCON64IP—for Biasi B10 & Saint Roch SRU Series	1	Vent Adaptor 6" x 4" (Biasi B10 & Saint Roch SRU)
D-2OILCON54IP—For Saint Roch S10 Series	1	Vent Adaptor 5" x 4" (Saint Roch S10)
D-2OILTRM404	1	DVO 4" CONCENTRIC TERMINATION
D-2SILRRTV106X	1	RTV HIGH TEMP SEALANT
D-7HS72XX	2	4" CLAMP
D-VRV-4	1	4" Vacuum Relief Valve Tee
4RA43	1	Riello Burner Adaptor
4RA44	1	Beckett Burner Adaptor
C-BLRT-151505 (B10 & SRU Boiler only)	1	1-1/2" X 1-1/2" X 1/2" BLACK IRON TEE(1/2" BRANCH TAPPING)
C-BLRT-12512505 (S10 boiler only)		1-1/4"X1-14"X1/2" BLACK MALLEABLE TEE(1/2" BRANCH TAPPING)
C-BUB0403	1	Steel Hex Bushing
C-CPO-220A848-060C	1	220° Limit w/1/2" Immersion Well
4 x 4 Adaptor	1	4" Flex to Concentric Termination

3.1 DVO TERMINATION INSTALLATION

Termination Installation

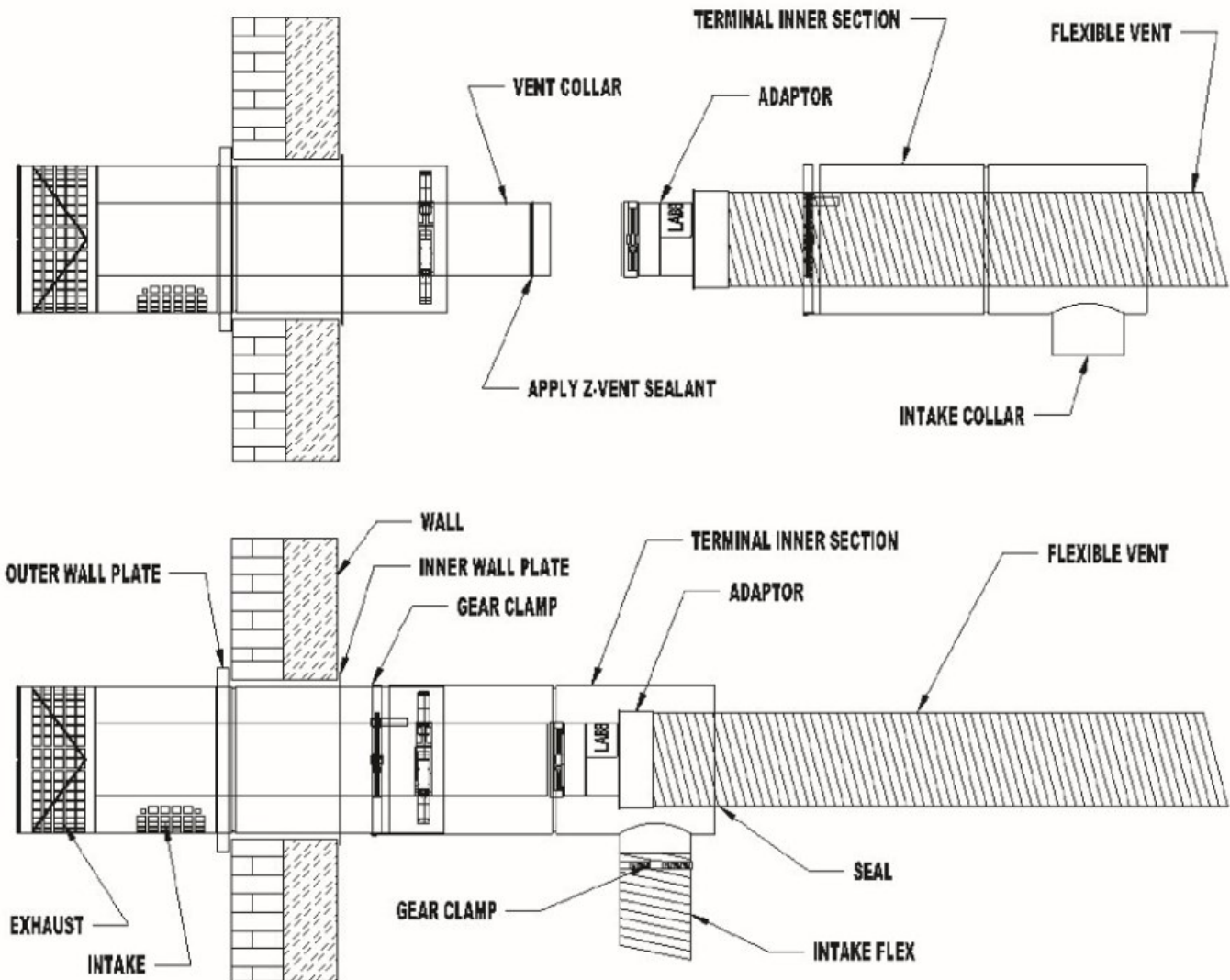
1. Determine proper location for termination.
2. Cut an 8-1/2" hole through the wall.
3. Pull apart the inner and outer termination sections
4. From outside the building, insert the outer section through the wall until it rests against the wall. Position the outer section so that the air intake is on the bottom. Secure to outer wall using four screws. Seal with a weather proof sealant around the edge to avoid water from entering.
5. From the inside, slide the inner wall plate over the outer section and secure it to the wall with four screws.



3.2 DVO TERMINATION CONNECTION

Termination Connection

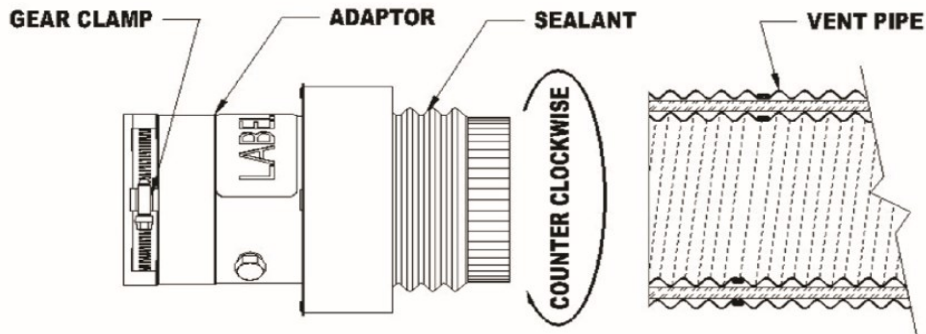
1. Slide the terminal inner section over the flexible vent pipe.
2. Attach the adaptor as per the joint assembly instructions.
3. Apply a bead of sealant around the flue collar and slide on adaptor and tighten gear clamp.
4. Seal the seam on the adaptor.
5. Slide the terminal inner section over the terminal outer section and secure by tightening the gear clamp.
6. Stretch the intake flex to the desired length and slide over intake collar and secure by tightening the gear clamp.
7. Seal the gap between the vent pipe and the terminal inner section with silicone sealant.



3.3 DVO JOINT ASSEMBLY

JOINT ASSEMBLY

1. Apply Sealant to “threaded” end of the vent adaptor.
2. Insert the threaded end into the vent pipe. Screw the adaptor into the vent pipe in a counter clockwise direction. The adaptor should be inserted fully until it is tight. If it does not completely screw into the vent, unscrew and repeat.
3. Tighten the gear clamp on to the outer sleeve to complete the joint assembly.

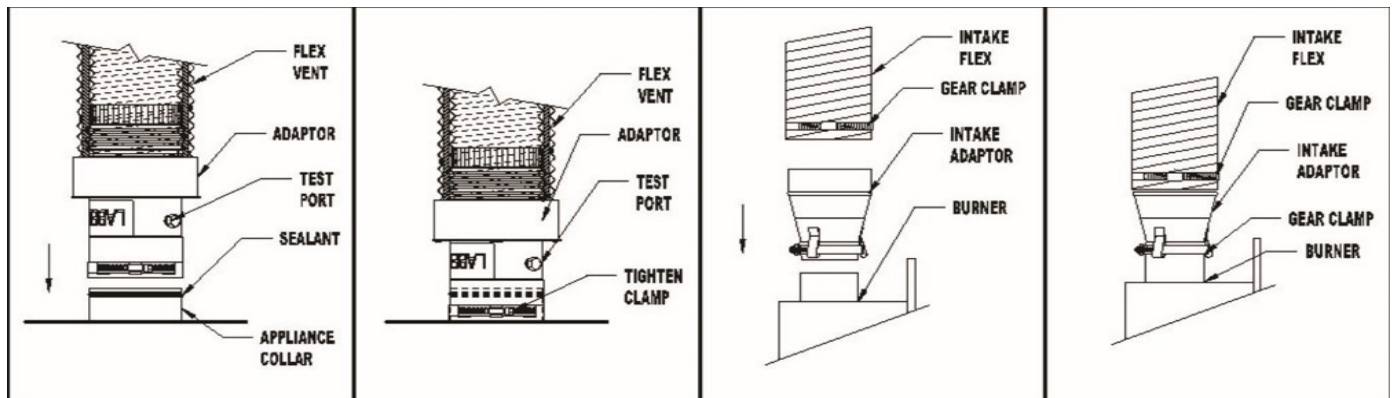


JOINT ASSEMBLY #1

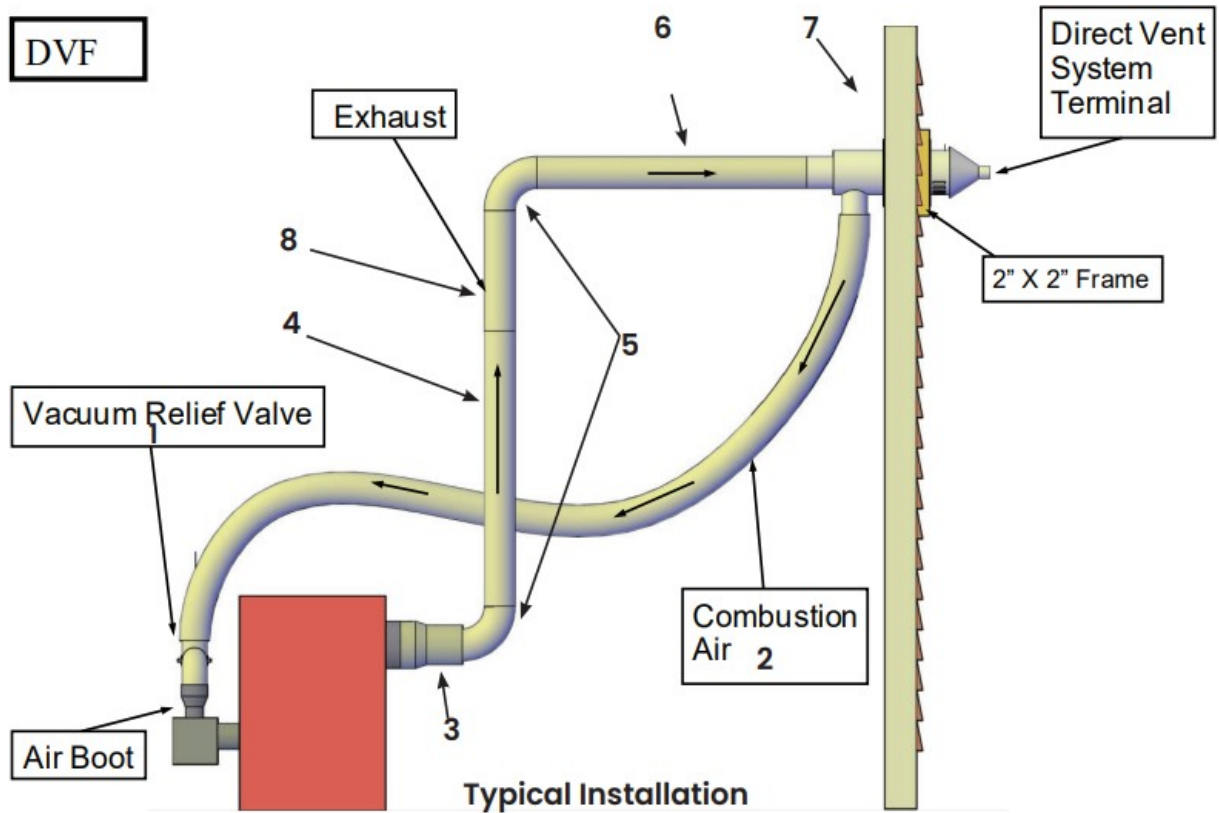
3.4 DVO APPLIANCE CONNECTION

APPLIANCE CONNECTION

1. Connect the appliance adapter to the appliance collar as per joint assembly.
2. Apply Sealant around the appliance flue collar.
3. Slide the appliance adapter over the flue collar.
4. Tighten the gear clamp around collar.
5. Install the burner air adaptor. Tighten integral clamp.
6. Put the gear clamp over the intake flex and slide flex over large end of adapter. Tighten clamp.
7. Install Vacuum relief damper.



4. DVF-4 & D-S10-DVF/5-4 RIGID VENT KIT INSTALLATION



Ref #	Description	QTY	Part Number
1	4" VACUUM RELIEF VALVE	1	D-VRV-4
2	ALUMINUM FLEX DUCT 4" DIA. X 8' LENGTH	1	D-AL 4 X 8
3	OIL VENT PRO REDUCER 6"-4" W/TESTPORT (400312) Biasi B10 & St Roch SRU	1	D-400312
3a	OIL VENT PRO REDUCER 5"-4" W/TESTPORT (xxxxxx) St Roch S10	1	D-xxxxxx
4	24" QHT DIRECT VENT PIPE EXTENSION-4" DIA	1	D-4PVP-24
5	QHT DIRECT VENT KIT 90 DEGREE ELBOW-4" DIA	2	D-4PVP-E90
6	36" QHT DIRECT VENT PIPE EXTENSION-4" DIA	1	D-4PVP-36
7	DVF OIL VENT PRO TERMINATION-4x7" (hood only) (400300)	1	D-47PVP-OKA
8	18" QHT DIRECT VENT PIPE ADJUSTABLE-4"DIA	1	D-4PVP-18A
NL	1-1/2" X 1-1/2" X 1/2" BLACK IRON TEE (B10 &SRU Boilers Only)	1	C-BLRT-151505
NL	1-1/4" X 1-1/4" X 1/2" BLACK IRON TEE (S10 Boiler Only)	1	C-BLRT-12512505
NL	SELCO 220F LIMIT W/ 1/2" IMMERSION WELL, 60" CABLE	1	C-CPO-220AP48-060C
NL	3/4" X 1/2" BLACK IRON BUSHING	1	C-BLB-0705

The DVF System must be installed where provisions do not exist for the ducting of combustion products to the outside. The direct vent connector shall not pass through any floor or ceiling. The burner exhaust must be ducted directly to the vent hood through listed exhaust pipes provided. The exhaust pipe throughout its entire length must be readily accessible for inspection, cleaning and replacement. The venting system should be installed and supported in accordance with the National Fuel Gas Code, ANSI Z223.1, CAN/CGA B149 or in accordance with any local codes

4.1 DVF RIGID MAKE-UP AIR

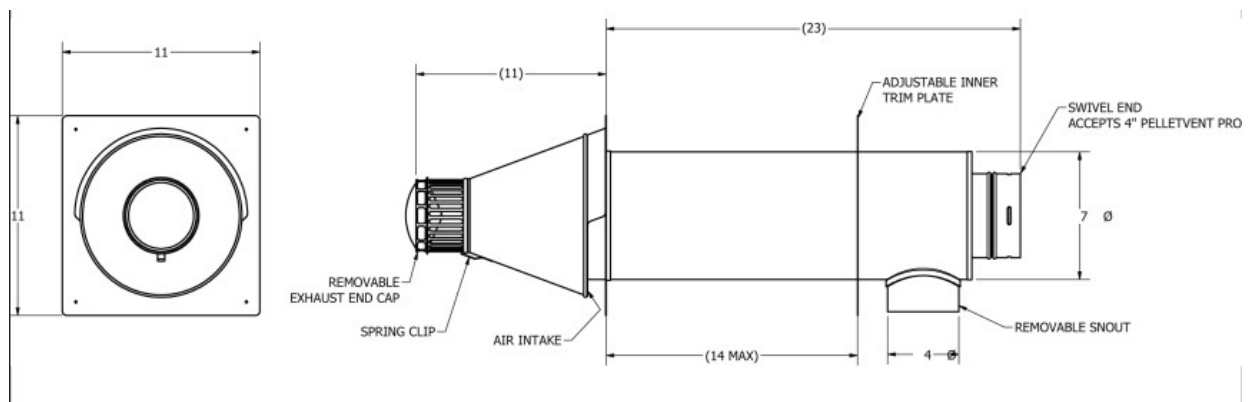
Installation of DVF Make-up Air:

1. Use 4 inch diameter flex pipe that is provided in the kit or a comparable single wall metal pipe. The maximum allowable length of intake pipe is twenty feet not including elbows.
2. Begin installing the 4" tee to the burner (Riello requires the supplied 3" to 4" increaser to be installed first). Secure all joints on the intake with three screws each.
3. Install the supplied vacuum relief damper in the branch of the tee making sure that it is mounted with all labeling right side up and perfectly horizontal.
4. In the last run leg of the tee install the aluminum flex pipe.
5. Finally attach the other end of the flex pipe to the intake port on the concentric hood.
6. Inspect the intake system and make sure all connections are secure and then seal each joint with silicone or aluminum tape.

4.2 DVF RIGID EXHAUST/TERMINATION

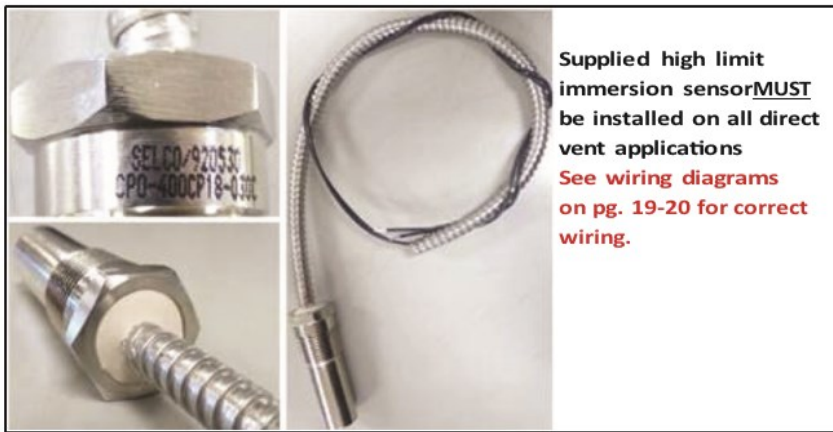
Installation of DVF Exhaust:

1. Begin by locating a suitable location for the exhaust to breach the wall. This location should be at least 12" above ground level or the expected snow level, and on the leeward side of the house. Consult page 6 for required distances from windows, doors, etc. The hood location must also allow for an upward slope of a 1/4" per foot for the exhaust piping.
2. Once the hood location has been determined, cut a 8" hole for a non combustible wall, or a 9" hole for a combustible wall. Using 2" X 2", Frame a box around the hole on the outside of the house so the flange is mounted away from the siding. Attach the hood to the outside of the house using appropriate screws to support the hood. Use one screw through each of the predrilled holes on the trim plate of the hood. Do not drill or screw through the hood at all.
3. Once the hood is secure, mock up the rest of the vent kit. Start by fitting the boiler adapter onto the boiler and securing it in place with the locking band on the adapter. Install the rest of the vent sections that are required to complete your job. Connect the next piece of pipe by pushing the female end of the pipe over the male end of the boiler adapter. Once the pipe is fully seated, twist the female end clockwise until the locking mechanism is engaged. Do not screw into the pipe or add sealant to the pipe as this could compromise the factory seal. Continue in this way until the entire kit is complete from the boiler to the vent hood. It is allowable to add extra sections of pipe to the vent kit up to 20 equivalent feet. Each 90 degree elbow is 3 equivalent feet and each 45 degree elbow is 1.5 equivalent feet.
4. Once you are satisfied with the fit of the exhaust, make sure that the vent pipe is properly supported every three feet with an upward slope to the hood of 1/4" every foot.



5. POST PURGE SAFETY LIMIT INSTALLATION

The electricity to the boiler shall come from a dedicated breaker in the electric service box. A service switch should be mounted on the side of the boiler so the burner technician can service the burner and controls. The electrical wiring should be routed so as not to interfere with normal servicing of the boiler. Wiring done in the field between devices not attached to boiler shall conform with the temperature limitations for type T wire (63F/35C) or other specified wire as applicable when installed in accordance to manufacturer's instructions and wiring diagrams. If an external electrical source is utilized, the boiler, when installed, must be electrically bonded to ground in accordance with the requirements of the authority having jurisdiction or, in the absence of such requirements, with the National Electrical Code, ANSI/NFPA 70 or Canadian Electrical Code Part I, CSA C22.1, Electrical Code. The Post Purge Immersion Limit is installed to ensure that if the boiler exceeds 220° F, all power is disconnected to the burner. The Limit should be mounted on the supply side of the boiler into the supplied tee. To wire the post purge Limit please refer to the schematics for your specific burner on the following pages



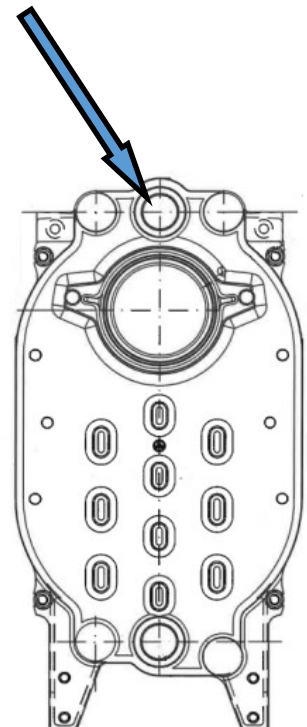
1. **SRU boiler** —Install immersion well in one of the 3/4" tapping's on the back of the boiler. Use the supplied 3/4" x 1/2" bushing.
2. **S10 boiler** —Install the included 1-1/4 tee in the rear tapping. Do not use the top tapping. This is used for the LWCO Electro-Well.
3. **B10 boiler**—Install the included 1-1/2 tee in the top rear tapping.



SRU



S10



B10

6. BURNER SETUP

Good, reliable operation with a minimum of service, starts with attention to the small details:

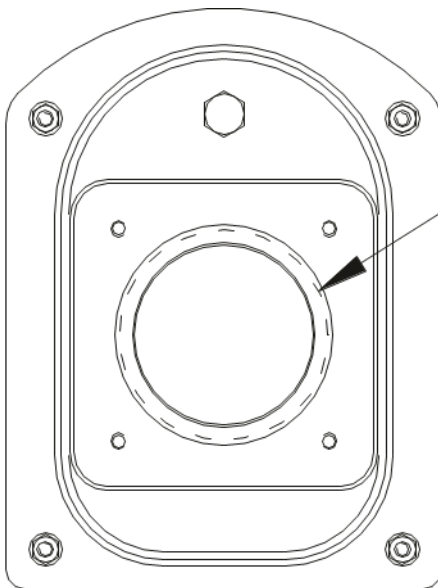
Oil:

1. Setting the nozzle position and electrodes to the manufactures specs using the manufacturer's gauges.
2. Installing a quality micron filter at the burner. (replace old oil lines and clear sludge)
3. Making careful/tight flare connections, without couplings, on oil suction line.
4. Checking fuel pump pressure is set to specs on following page.
5. Checking draft at the breeching to insure it is adequate to overcome flue gas resistance. (-.02 to -.04 in. w.c.)
6. Setting the air band properly with well maintained instruments. A good target is 12% to 12.5% of (CO₂).
7. To achieve the rated efficiency level the CO₂ should be set to 12.5% CO₂.

To ensure proper burner setup, gauges should be used to check things such as the pump pressure, CO₂ levels, CO levels, etc...

Gas:

1. Checking the electrode, orifice size, and flame rod settings against manufacturer's specs to insure proper operation.
2. Installing properly sized gas piping according to BTU input required and length of gas line run.
3. Making sure there is proper manifold pressure before and after the gas valve using a calibrated manometer.
4. Checking draft at the breeching to insure it is adequate to overcome flue gas resistance. (-.02 to -.04 in. w.c.)
5. Setting the air band properly with well maintained instruments. A good target is 9.5% to 10.0% of (CO₂) for natural gas, or 11.0% to 11.5% of (CO₂) for LP gas.



IMPORTANT NOTE FOR CARLIN & BECKETT BURNERS

For Biasi B10 boilers, the insulation block on the burner door must be trimmed to 4.25" to accept the large diameter blast tubes with Carlin & Beckett burners. Damages to the refractory will not be covered under warranty if not trimmed properly.



6.1 OIL BURNER SETUP FOR BIASI B10 BOILERS

Burner Manufacturer: Carlin				
Boiler Model	B10/3	B10/4	B10/5	B10/6
Burner Model	EZ-SELECT	EZ-SELECT	EZ-SELECT	EZ-SELECT
Firing Rate	.50	.78	1.06	1.33
Insertion Depth	3.0"	3.0"	3.0"	3.0"
Nozzle	.40x45	.64x70	.85x60	1.00x60
Spray Pattern	A	A	A	B
Pump Pressure	155 psi	150 psi	150 psi	160 psi
Head/Bar/Turb	.50	.60/.65	.85/1.00	.85/1.00
Air Gate	.50	.75	1	1.2

Burner Manufacturer: Riello			
B10/3	B10/4	B10/5	B10/6
40 BF3	40 BF3	40 BF5	40 BF5
.51	.78	1.06	1.33
3.5"	3.5"	3.5"	3.5"
.50x80	.65x80	.85x60	1.00x60
W	W	W	W
180 psi	175 psi	150 psi	175 psi
0	1	1	3
3.2	4.7	3.4	5

Burner Manufacturer: Beckett		
Boiler Model	B10/4	B10/5
Burner Model	NX (NEC1104)*	NX (NEC1105)
Firing Rate	.78	1.06
Insertion Depth	6.0"	6.0"
Nozzle	.65x60	.75x60
Spray Pattern	B	B
Pump Pressure	180 psi	180 psi
Head Type	NX90LB	NX90LB
Head Position	3.00	4

6.2 OIL BURNER SETUP FOR SAINT ROCH SRU BOILERS

Burner Manufacturer: Carlin		
Boiler model	SRU30	SRU40
Burner model	EZ-97550J	EZ-97550J
Firing Rate	1.00	1.25
Insertion Depth	4.5"	4.5"
Nozzle	.85x70	1.00x70
Spray pattern	B	B
Pump Pressure	150 psi	155 psi
Head/Bar	2	3
Air Gate	40%	45%

Burner Manufacturer: Riello		
Boiler model	SRU30	SRU40
Burner model	TDB	TBD
Firing Rate		
Insertion Depth		
Nozzle		
Spray pattern		
Pump Pressure		
Head/Bar		
Air Gate		

6.3 GAS BURNER SETUP FOR BIASI B10 BOILERS

Burner Manufacturer: Carlin								
Boiler Model	B10/3		B10/4		B10/5		B10/6	
Burner Model	EZ-GAS		EZ-GAS		EZ-GAS		EZ-GAS	
Input MBH	80		110		140		175	
Fuel Type	NAT	LP	NAT	LP	NAT	LP	NAT	LP
Orifice	#11 (.191)	#25 (.150)	#1 (.228)	#15 (.180)	LET F (.257)	#5 (.206)	5/16 (.312)	1/4 (.250)
Man Press	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
Air Gate	30%	30%	40%	48%	20%	20%	36%	41%

6.4 GAS BURNER SETUP FOR SAINT ROCH SRU BOILERS

Burner Manufacturer: Carlin				
Boiler Model	SRU30		SRU40	
Burner Model	EZ-GAS		EZ-GAS	
Input MBH	140		175	
Fuel Type	NAT	LP	NAT	LP
Orifice	LET K (.281)	#1 (.228)	LET P (.323)	7/64 (.266)
Man Press	3.5"	3.5"	3.5"	3.5"
Air Gate	28%	25%	45%	55%

6.5 OIL BURNER SETUP FOR SAINT ROCH S10 BOILERS

Burner Manufacturer: Carlin				
Boiler Model	S10/3	S10/4	S10/5	S10/6
Burner Model	EZ-SELECT	EZ-SELECT	EZ-SELECT	EZ-SELECT
Firing Rate	.50	.78	1.06	1.33
Insertion Depth	3.0"	3.0"	3.0"	3.0"
Nozzle	.40x45	.64x70	.85x60	1.00x60
Spray Pattern	A	A	A	B
Pump Pressure	155 psi	150 psi	150 psi	160 psi
Head/Bar/Turb	.50	.60/.65	.85/1.00	.85/1.00
Air Gate	.50	.75	1	1.2

6.6 GAS BURNER SETUP FOR SAINT ROCH S10 BOILERS

Burner Manufacturer: Carlin								
Boiler Model	S10/3		S10/4		S10/5		S10/6	
Burner Model	EZ-GAS		EZ-GAS		EZ-GAS		EZ-GAS	
Input MBH	80		110		140		175	
Fuel Type	NAT	LP	NAT	LP	NAT	LP	NAT	LP
Orifice	#11 (.191)	#25 (.150)	#1 (.228)	#15 (.180)	LET F (.257)	#5 (.206)	5/16 (.312)	1/4 (.250)
Man Press	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
Air Gate	30%	30%	40%	48%	20%	20%	36%	41%

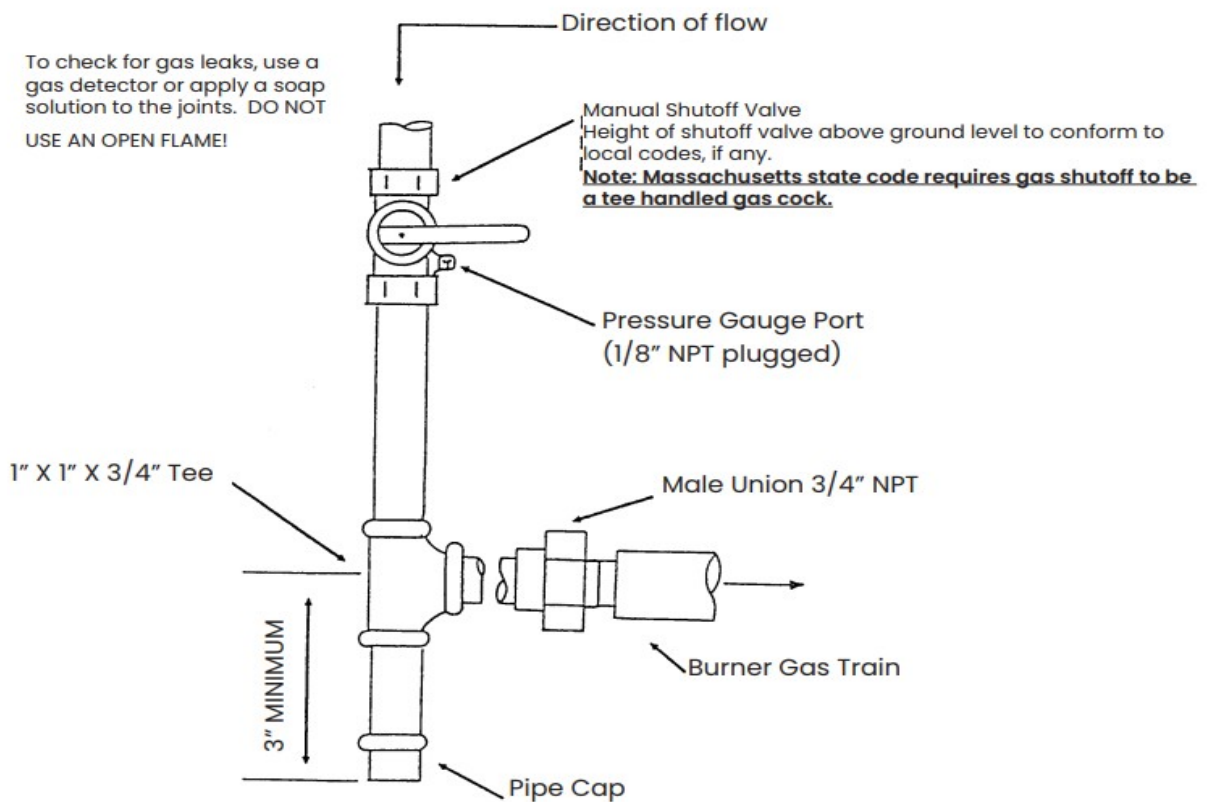
Note: Consult burner manufacturers manual for gas manifold diagram and controls. To determine how much gas is coming into the burner, or to set the gas meter correctly, the following formula can be used. The chart to the below can be used to determine the flow rate depending upon the time per revolution and the size of the gas meter dial.

$$\text{Ft}^3/\text{hr} = [3600/(\text{sec. per rev})] * (\text{size of gas meter})$$

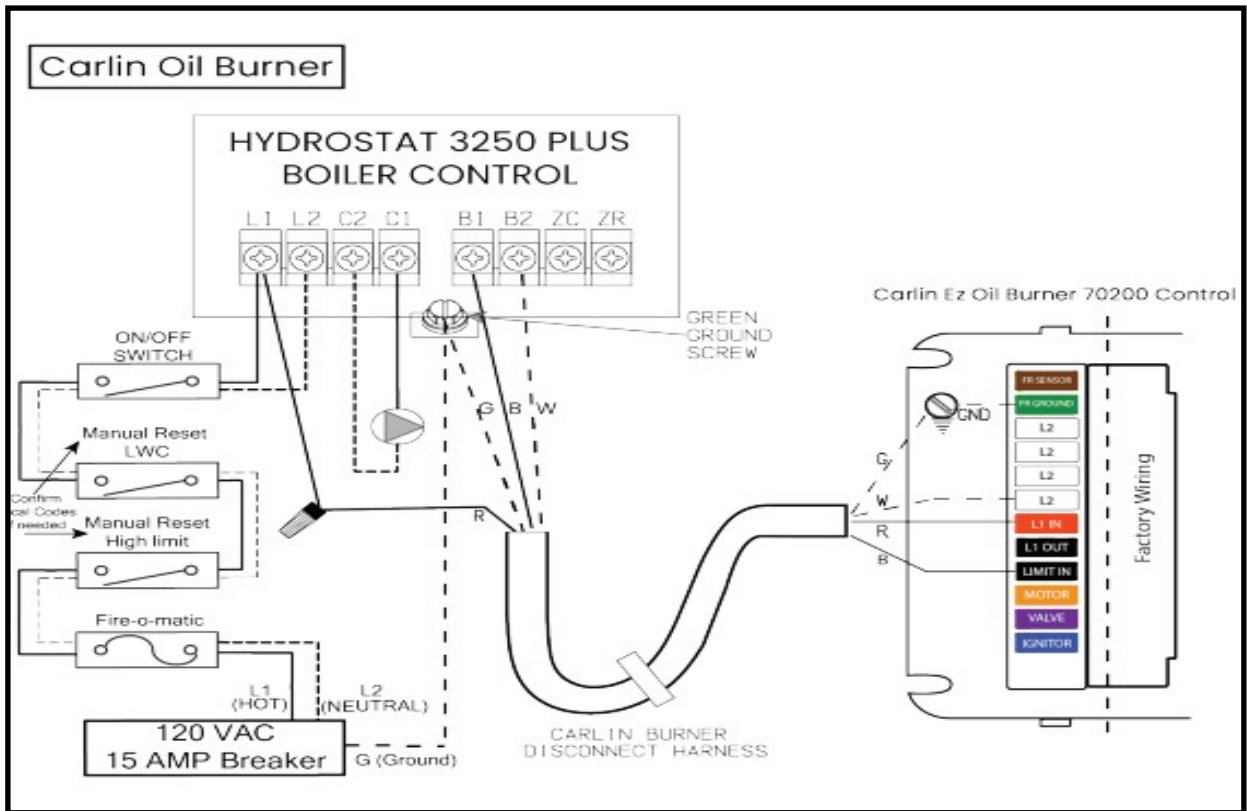
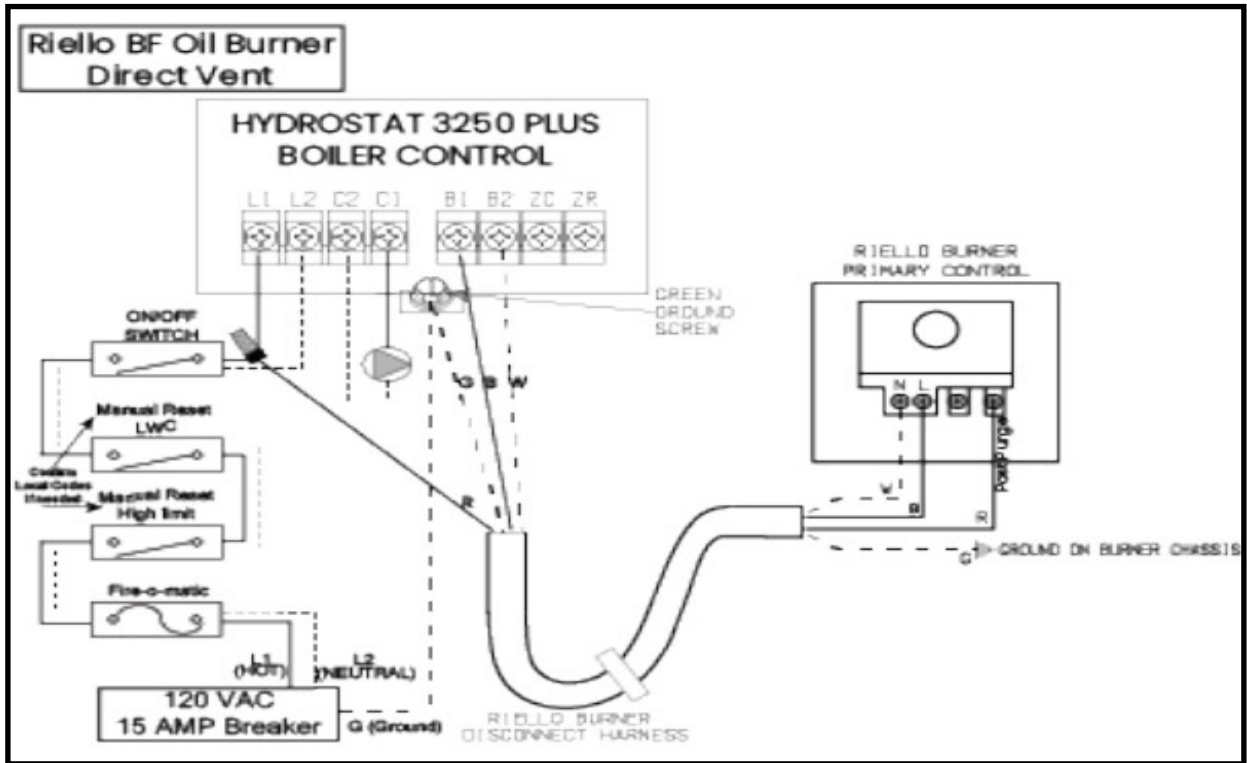
Seconds per revolution	Size of gas meter in cubic feet		
	.5	1	2
20	90	180	360
25	72	144	288
30	60	120	240
35	51	103	206
40	45	90	180
45	40	80	160
50	36	72	144
55	33	65	131
60	30	60	120

7. GAS LINE PIPING

Gas supply piping is to be sized and installed properly in order to provide a supply of gas sufficient to meet the maximum demand without undue loss of pressure between the meter and the boiler. Consult with the National Fuel Gas Code ANSI Z223.1 for proper sizing of gas piping for various lengths and diameters. Locate a drop pipe adjacent to, but not in front of the boiler. Locate a tee in the drop pipe at the same elevation as the gas inlet connection to the boiler. Extend the drop line with a nipple towards the floor and cap to form a sediment trap. Install a shut off valve before the tee with sediment trap and a union after the tee before the combination gas valve. When installing the boiler, make sure a pipe compound resistant to the action of liquefied petroleum is used. Check piping for leaks. Always check leaks with a water and soap solution. **DO NOT USE A FLAME FOR CHECKING GAS LEAKS** The boiler and its individual shut-off valve must be disconnected from the gas supply piping during any pressure testing of that

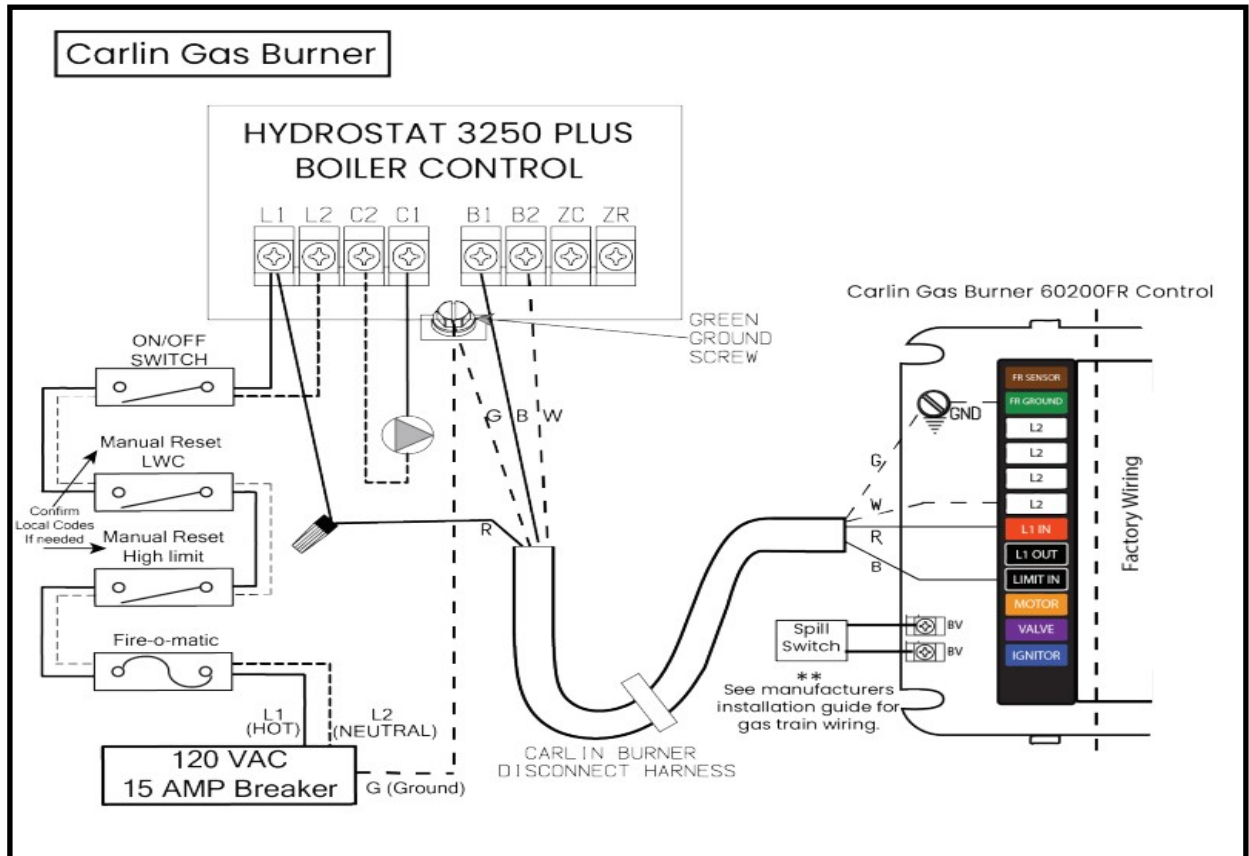


8. WIRING, OIL BURNERS



NOTE: All wiring must be done in accordance with applicable state, local and national codes. Use only copper conductors.

9. WIRING, GAS BURNERS



NOTE: All wiring must be done in accordance with applicable state, local and national codes. Use only copper conductors.

10. SYSTEM STARTUP

“For Your Safety Read Before Operating”

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Refer to the user’s information manual provided with this boiler. Installation and service must be performed by a qualified installer, service agency or the gas supplier

WARNING: If installed as a direct vent boiler, make sure after service that both the vent intake and exhaust are both properly reinstalled and sealed. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

A) BEFORE OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

*Do not try to light any appliance * Do not touch any electric switch; do not use any phone in your building

* Immediately call your gas supplier from a neighbor’s phone. Follow the gas supplier’s instructions. * If you can not reach your gas supplier call the fire department

B) Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS:

1. STOP! Read the safety information above.
2. Set thermostat to lowest setting
3. Turn off all electric power to the appliance
4. Do not attempt to light the burner by hand
5. Smell for gas, including near the floor. **If you smell gas, STOP!** Follow “B” in the safety information above on this label. If you don’t smell gas, go to the next step.
6. Turn on all electric power to the appliance.
7. Set thermostat to the desired setting.
8. Once the system is lit, inspect the entire installation.
9. Make sure the pressure in the boiler is stable.
10. Test both high limits by lowering their set points below the temperature of the boiler one at a time. If either aquastat fails to shut the burner down replace it immediately.
11. Simulate a loss of fuel by shutting the oil valve. Once the valve is closed the burner should go into post-purge and then lockout.
12. Reset the burner before turning the oil back on to simulate ignition failure. After ignition failure the burner should go through a purge period and then lockout.
13. Open the oil valve and return the burner to operation. While the burner is running, trip the breaker at the panel, that should disable the burner and all other heating controls.
14. Once it is determined that the system is operating properly, proceed to tuning up the burner using the proper instruments. If you do not have any instruments, do not place this unit in operation until you have a competent burner technician tune up the burner.

11. COMMISSIONING

Before a gas boiler may be put into operation and tested, it's gas connection must be leak tested. After installation of oil/gas-fired boiler, operation and performance tests shall be conducted to make certain that the burner is operating in an acceptable manner and that all safety controls and devices function properly. It is critical that the high limit, low water cutoff and burner "cad cell" relay be checked for normal operation before leaving the job.

CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

12. MAINTENANCE

The boiler system should be serviced once a year.

1. Turn boiler safety switch off.
2. Open lower swing door and remove upper clean out plate.
3. Brush upper passages first and then clean combustion chamber of any debris with brush and vacuum.
4. Remove smoke pipe and clean out debris from cleaning or soot build up.
5. Inspect smoke pipe for any corrosion before reinstalling. Replace if necessary.
6. Consult the burner manufacturers manual for annual maintenance of the burner.
7. Once the burner has been serviced, check the combustion and verify it against Section 8 on page 17 of this manual.
8. Inspect the boiler and make sure it is operating normally, i.e. temperature and pressure.
9. Inspect the Pressure Relief Valve and manually set it off to ensure it is operating normally and not leaking.
10. If a Low Water Cut-Off is installed follow the manufactures suggested maintenance and test procedures.
11. Adjust room thermostat so there is a call for heat and test boiler high limit for proper operation.
12. Remove all combustible materials from around boiler and ensure the area is free of debris so the burner has adequate intake air supply.

NOTICE

Verify proper operation of high limit, low water cutoff and burner "cad cell" after servicing

13. INSTALLER NOTES

System Checklist		
Boiler Model #:	Serial #:	
Original Purchaser:	Installer:	
_____	_____	
_____	_____	
_____	_____	
Burner Checklist		
Burner Manufacturer:	Burner Fuel Type:	
Burner Model #:	Burner Serial #:	
Input:	Pump/Manifold Pressure:	
Nozzle/Orifice:	Head Setting:	Air Setting:

Burner Performance Test:	Install	Year 1	Year 2	Year 3	Year 4	Year 5
Gross Stack Temp						
Room Temp (Ambient)						
Net Stack Temp						
CO2						
O2						
Smoke Reading						
Combustion EFF%						

Comments/Notes

Setting the Standard for Indoor Comfort, Environmental Integrity and Fuel Efficiency!

QHT supplies the most durable, fuel efficient and environmentally sustainable boilers and radiators available. From its Portsmouth, NH warehouse facility, QHT assembles and distributes an extensive range of steel panel radiators, towel bars, boilers and fan convectors. In most cases, all the products shown can be shipped next day to almost anywhere in the USA.

QHT has worked 35 years as a manufacturers' representative for HVAC products sold to wholesale distributors in the U.S. and Canada. Customer service and support are the key to QHT's business. From troubleshooting radiator piping to working through problems with wall hung or floor standing boilers, the staff at QHT will take care of your needs. In addition to providing specialized packaging and shipping services, QHT product support extends to giving on-site training seminars for fan convectors, radiators, boilers, burners and controls.

QHT represents several manufacturers of boilers and radiators including Saint Roch. QHT remains committed to providing energy conservation with low environmental impact.

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