

Saint Roch

Cast Iron Boilers

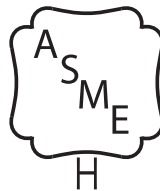


Saint Roch S10 Boiler Series 3-7 Section Boilers

Boiler Manual And Installation
Instructions for Atmospheric Venting

(See Direct Venting addendum for Direct Vent installations)

**Please Read Instructions Carefully
Save for Future Reference**



Conforms to UL Std. 726

Pending

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.

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.

Manufactured by:
SAINT ROCH S.R.L
Via Berardo Maggi, 4
25124 Brescia (BS) ITALY

Distributed By:
QHT, INC.
3560 LAFAYETTE ROAD
BLDG. 2, UNIT A
PORTSMOUTH, NH 03801
PHONE: 603-334-6400 FAX: 603-334-6401
REV. 2024

Dear Customer

Thank you for purchasing a Saint Roch "S10" SERIES Boiler

Saint Roch's new S10 series boilers are lighter, contain less water and are stronger than other three pass boilers on the market. The Hydrolevel 3250 "Fuel Smart" controller is designed to work in conjunction with the DHW indirect tank and your space heat zones. The electronic controller will decrease fuel consumption during periods of inactivity by controlling the burner based on your needs and habits.

We realize that it is not possible to answer all questions about the S10 series boiler in this manual. Reading this installation manual does not make the reader an expert in all aspects of installation and operation of the boiler. It does not replace the need for a qualified licensed heating contractor. We urge you to contact your installing contractor, dealer or us if you have any question about any aspect of your boiler's performance. We require your contractor to complete efficiency tests using appropriate instruments and record burner performance on page 25.

The controls and accessories listed in this manual are intended to serve as guidelines rather than specific recommendations. We realize other makes and models of the specified devices are available and some can be used as successfully as those we specify. The installing contractor is the best judge of a system's specific requirements, as well as the local availability of certain makes and models of controls and accessories. The preceding does not apply, however, to the equipment that comes with every boiler, such as the overheat control (Hydrostat 3250) and the pressure relief valve. The installation of the specific devices supplied with every boiler is absolutely necessary for safe operation the boiler and protection of the heating system.

All St. Roch boilerblocks are built in accordance with the ASME boiler and pressure vessel code and bear the "H" stamp. The S10 has a limited lifetime warranty (refer to back of manual), a copy of which is provided with the boiler. Please complete the online warranty registration as the warranty will be void without your boiler's serial number (located on a plate on the front leg of the boiler), date of installation and the name of your installer.

Thank you for purchasing a Saint Roch Boiler system. If you have questions or comments, please don't hesitate to contact us immediately.

Sincerely yours,
Jim Quincy

Table of Contents

	Section	Page
Important Information		3
Homeowner Information For Gas		4
General Information	1	5
Boiler Block Assembly	2	6
Boiler Location	3	7
Installation of Boiler Trim Components	4	8,9
Piping The Boiler	5	10
Intake Venting	6	11,12
Exhaust Venting	7	13
Common Exhaust Venting	7.1	14
Gas Venting	7.2	14
Burner Setup	8	15
Oil Burner Setup	8.1	16
Gas Burner Setup	8.2	17

	Section	Page
Gas Line Piping	9	18
Boiler Casing Assembly	10	19
Baffle Locations	11	20
Wiring	12	20
Hydrolevel Wiring	12.1	21
Oil Burner Wiring	12.2	22
Gas Burner Wiring	12.3	23
Commissioning	13	24
Maintenance	14	24
Installer Notes	15	25
Warranty		

⚠ WARNING
IMPORTANT INFORMATION
Please read this page carefully.

Homeowner:

- For homeowner or person responsible for simple start-up and routine maintenance of the system. Instructions must be followed to assure proper operation of your boiler.

In addition, it is your responsibility to:

- Have boiler and burner installed by a qualified installer.
- Have boiler and burner serviced annually by a qualified service technician.
- Review and understand start-up and routine maintenance procedures with qualified service technician.
- Perform routine maintenance as described on page 24

Service Technician:

- For a qualified service technician who has the necessary equipment to check the boiler and system performance, and is responsible for start-up and service of boiler and system.
- All instructions in this manual must be followed to assure proper operation of this boiler.
- Annually service boiler and burner to assure proper operation. See page 25 for service record.
- Review and explain start-up and routine maintenance procedures with homeowner.

⚠ WARNING ⚠ WARNING ⚠ WARNING

- Fire, explosion, asphyxiation and electrical shock hazard. Improper installation could result in death or serious injury. Read this manual and understand all requirements before beginning installation.
- Modification, substitution or elimination of factory equipped, supplied or specified components could result in death or serious injury.
- Installation or venting a boiler or any other oil appliance with improper methods or materials may result in serious injury or death due to fire or to asphyxiation from poisonous gases such as carbon monoxide which is odorless and invisible.
- Fire, Explosion, Asphyxiation, Electrical shock hazard, Flooding will result in damages such as electrical problems, corrosion, inoperative parts, mold and other unforeseen issues which can occur over time. Any equipment determined by a professional as damaged by a flood, defined as excess of water or other liquid, shall be replaced. Failure to follow these directions will result in a Hazardous Situation.

⚠ WARNING

Symptoms of CO poisoning include the following:

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

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

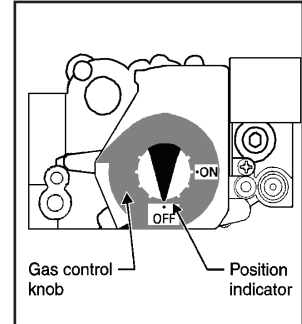
United States installations must comply with:

- State and local plumbing, heating and electrical codes.
- National codes where applicable.
- Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1, – latest edition, when required.
- National Electrical Code, ANSI/NFPA 70, – latest edition and any additional national, state or local codes.

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 S10 series boilers are wet base design, sectional, cast-iron boilers for forced hot water heating systems. The boilers are shipped pre-assembled from the factory in lengths from three to seven sections. They are designed for firing with oil or gas power burners, which are packed separately along with the jacket and controls for shipping purposes.

When the boiler is received, check the contents to ensure there are no shortage or damage to any part of the boiler system. With every boiler, you should receive a boiler block, jacket, trim kit and a burner (oil or gas).

Trim Kit Components:

1 - Hydrostat 3250plus High Limit w/LWCO built in	1 - 3/4" Boiler drain
1 - 3/4" Electrowell	1 - Cera-fiber Pad for floor of combustion chamber
1 - 3/4" X 3" Nipple	1 - Burner Mounting Hardware & Flue Collar Tabs.
1 - 1/4" pressure/temp gauge	1 - 3/4" 90° Elbow
1 - 30 PSI Pressure relief valve	(Gas systems only) 1 - Double acting barometric damper and spill switch

USE ONLY THE UL LISTED BOILER COMPONENTS AND UL/CSA LISTED OIL OR GAS BURNER COMPONENTS SUPPLIED WITH THE BOILER SYSTEM.

Technical Information

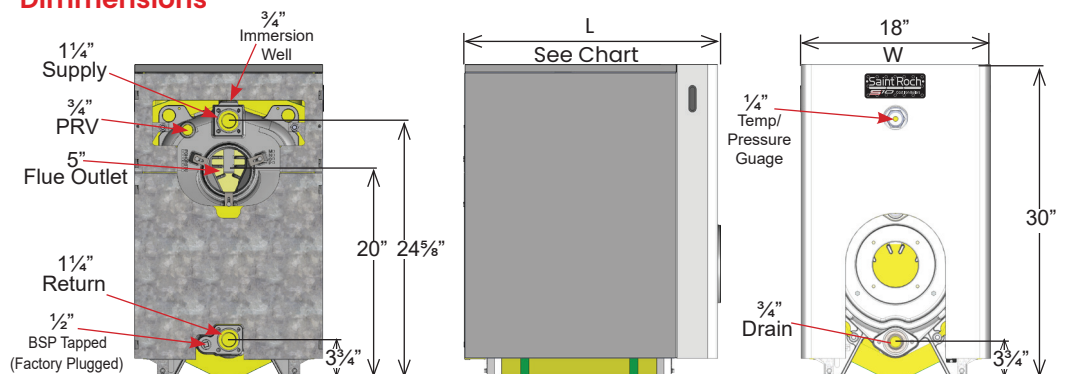
Pending----->



Product Code	# of Sections	Length (Inch)	Water Content (gal)	Weight (Lbs)	Energy Star Compliant Rating	Heating Capacity (BTU/HR)	Net Input (BTU/HR)	Output (BTU/HR)	Efficiency Gas(%)	Efficiency Oil(%)
S10/3	3	16.25	3.5	240	Energy Star Compliant Rating	62	71	53	85*	87.7
S10/4	4	20.25	4.7	297	Energy Star Compliant Rating	95	109	81	85*	87.6
S10/5	5	24.25	5.7	354	Energy Star Compliant Rating	130	150	111	85*	87.4
S10/6	6	28.25	6.7	409	Energy Star Compliant Rating	162	185	138	85*	87.4
S10/7	7	32.25	7.7	466	Energy Star Compliant Rating	205	235	174	85*	87.3

*All S10 boilers are shipped standard as Energy Star compliant (Gas does not qualify)

Dimensions

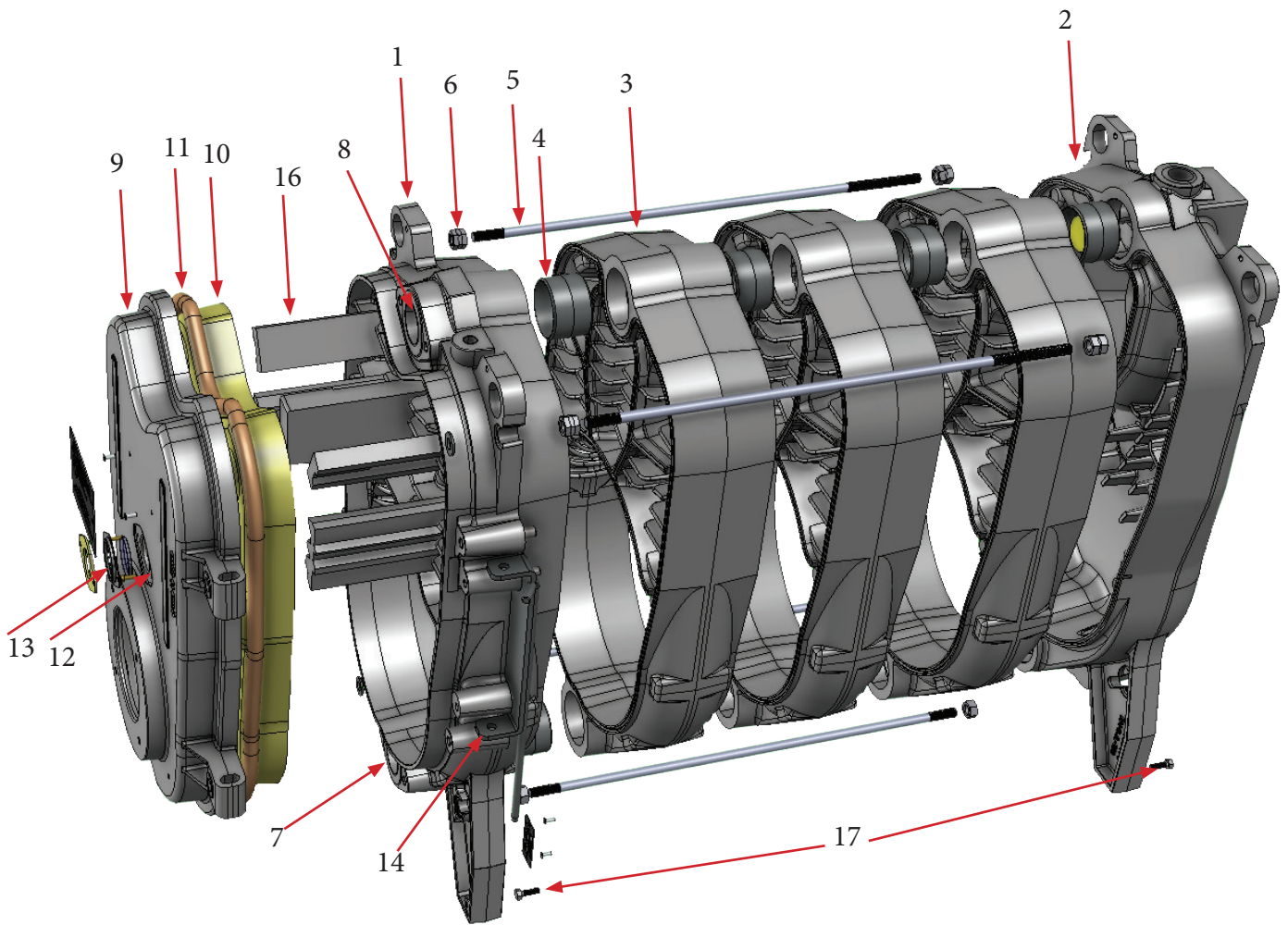


2. Boiler Block Assembly

All S10 series boilers are shipped from the factory in assembled boiler blocks.

Boiler Block Component Parts:

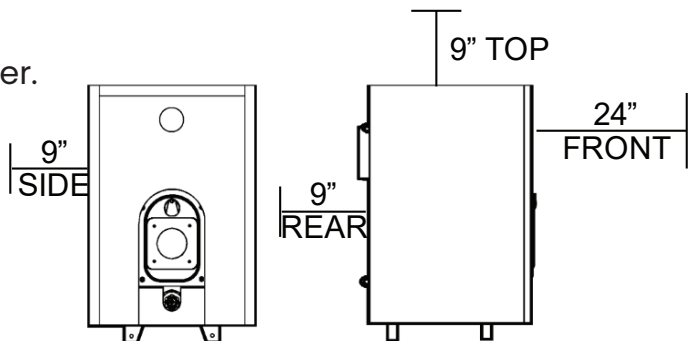
- | | |
|---|-------------------------------------|
| 1. Front Section | 9. Full Swing Boiler Door |
| 2. Rear Section | 10. Boiler Door Insulation |
| 3. Intermediate Section | 11. Boiler Door Gasket |
| 4. Steel Push Nipples | 12. 1/4" Plug Over Fire Test Port |
| 5. Tie Rod | 13. Fire Sight Port |
| 6. Tie Rod Nut & Washer | 14. Boiler Door Hinge Bracket |
| 7. 1 1/4" Bushing & Gasket For 3/4" Drain | 15. Door Mounting Bolts (Qty 4) |
| 8. 1 1/4" x 1/4" Temp/Pressure Bushing | 16. Boiler Baffles |
| | 17. Bottom Bolts For Casing Bracket |



3. Boiler location

The following are the minimum clearances to construction or combustible materials:

1. 9" from the top, sides, and rear of the boiler.
2. 18" from the flue pipe in any direction.
3. 24" from the front of the boiler.



DANGER

The boiler must be located on a non-combustible floor. A smooth, level concrete floor is recommended. Locate the boiler as close as possible to the chimney. If the boiler is installed on combustible flooring, consult local authorities for proper method of covering floor. The boiler must not be installed on carpeting.

Caution: Do not store or use flammable materials, chemicals or flammable liquids, especially gasoline, in the vicinity of this heating appliance.

If the boiler is to be installed in a "direct vent" configuration, please refer to the Direct Vent Addendum supplied with the Direct Vent Kit.

PROVISIONS FOR COMBUSTION AIR AND VENTILATION AIR MUST BE IN ACCORDANCE WITH SECTION 5.3, "AIR FOR COMBUSTION AND VENTILATION", OF THE NATIONAL FUEL GAS CODE, ANSI Z223.1, OR APPLICABLE PROVISIONS OF THE LOCAL BUILDING CODES.

DO NOT INSTALL THE BOILER UNTIL PROPER COMBUSTION AIR HAS BEEN ARRANGED.

WARNING

Boiler is certified as an indoor appliance. Do not install boiler outdoors or locate where it will be exposed to freezing temperatures.

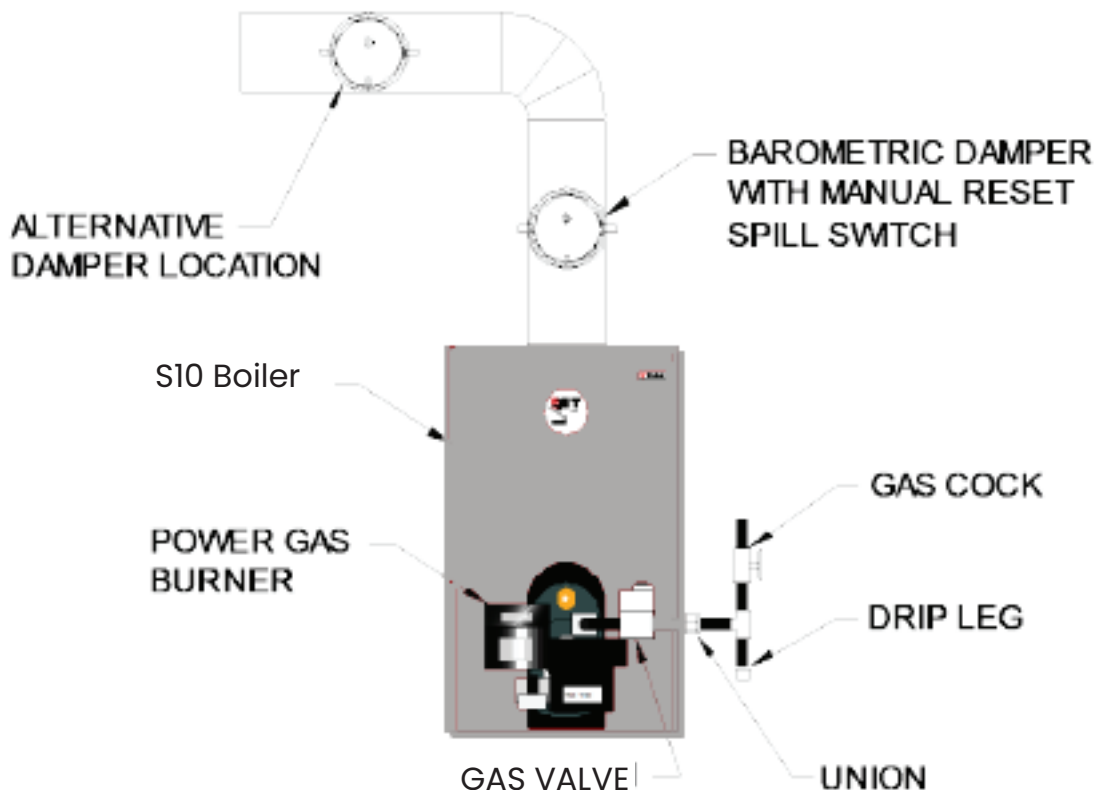
4. Installation of Boiler Trim Components

Trim Kit Components

- 1 - Hydrostat 3250plus High Limit w/LWCO
 - 1 - Hydrostat $\frac{3}{4}$ " Short Electro Well
 - 1 - $\frac{1}{4}$ " Combo pressure/temp gauge
 - 1 - $\frac{3}{4}$ " X 3" Nipple
 - 1 - 30 PSI pressure relief valve
 - 1 - $\frac{3}{4}$ " Boiler drain
 - 1 - Fiber Pad for bottom of the combustion chamber
 - 1 - $\frac{3}{4}$ " 90° Elbow
 - 1 - Packet of Burner Mounting Hardware
 - 3 - S10 Boiler Breech Collar Tabs with Hex Bolts
- (Gas systems only)**
- 1 - Double acting barometric damper with spill switch

USE ONLY ULC LISTED BOILER COMPONENTS AND UL/CSA LISTED OIL OR GAS BURNER SUPPLIED WITH THE BOILER SYSTEM.

Please refer to the figure below for Barometric Damper location for either oil or gas and refer to the following page for the proper location of the trim components.

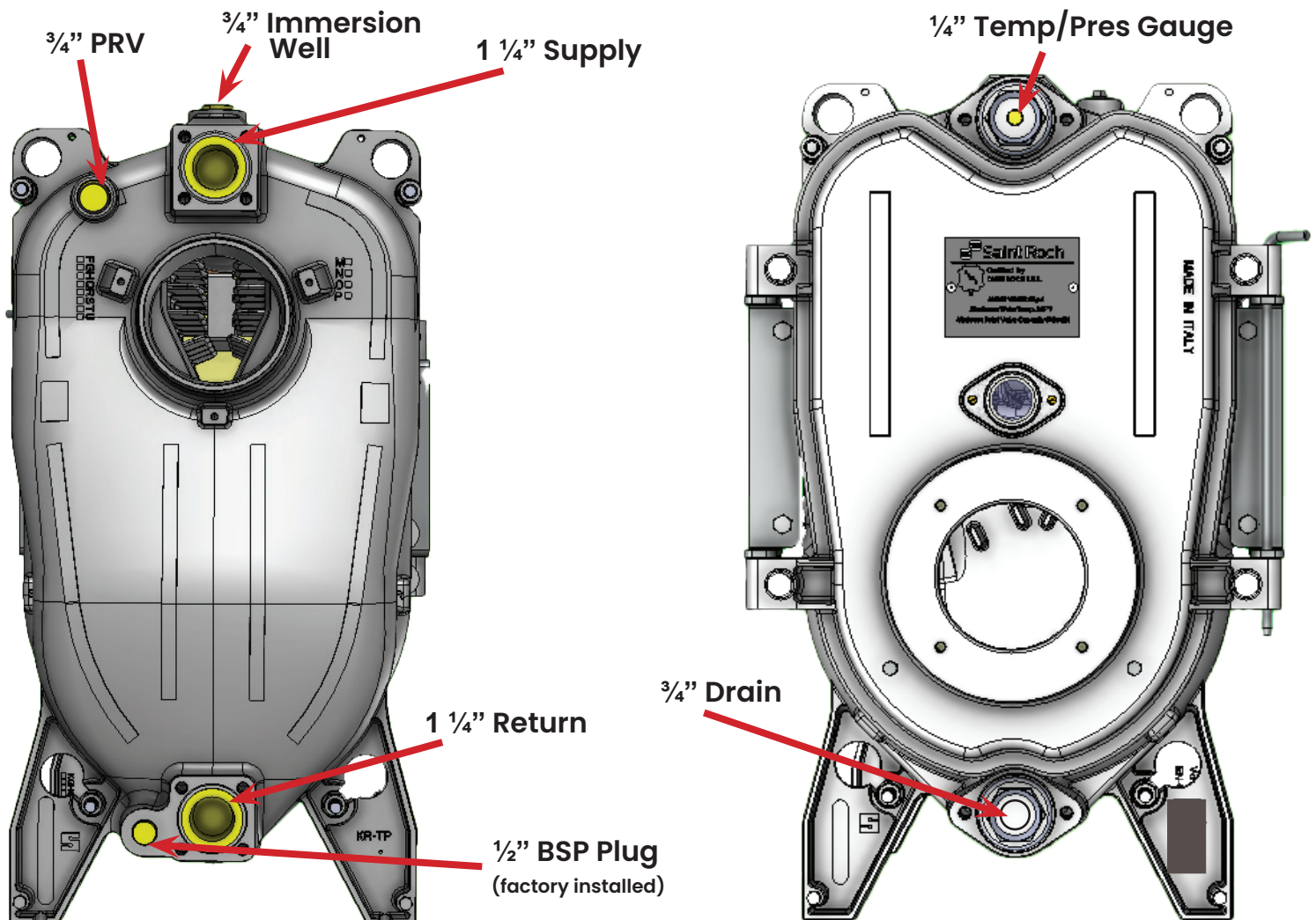


NOTE: See Page 17 for available gas burners in North America

4. Installation of Boiler Trim Components (Continued...)

1. Install high limit control sensor in $\frac{3}{4}$ " tapping on top of rear boiler section using the $\frac{3}{4}$ " immersion well. All tapings and joints should be sealed with piping compound. The high limit can be adjusted up to 220F, and should be set to the desired temperature by the installer. The differential is also adjustable between 5 and 30 degrees. It should be set as close to 30 degrees as possible to prevent short cycling of the boiler. If you are installing a Hydrostat 3250plus, screw the unit to side panel of the boiler as close to the immersion well as possible using the tabs on the hydrostat. Run the sensor from behind the aquastat to the immersion well and fix it according to manufacturer's instructions.
2. Install Pressure Relief Valve in upper rear section tapping with 3" nipple & $\frac{3}{4}$ " elbow
3. Install $\frac{3}{4}$ " boiler drain in lower front section tapping.
4. Install combination pressure/temperature gauge in the upper front section tapping. **The gauge must be tightened using a wrench and not your hand.**
5. Place the 12" x 12" Cera-fiber blanket on the floor of the combustion chamber of the boiler.

Boiler Tapping Diagram:



5. Piping The Boiler

All piping must conform to state and local codes. Page 9 shows the location and size of the boiler tapings. It is recommended to install unions and gate valves at the inlet and outlet of the boiler, so it may be readily isolated for service.

For Canadian installations, a low water cut off is required if the boiler is installed above the level of radiation. Even if the boiler is installed below the level of radiation it is strongly recommended that a low water cut off be installed. Install manual and/or automatic air venting devices at the high points in the system to eliminate trapped air. The weight of all piping should be supported by suitable hangers and floor stands, not by the boiler's purging/expansion station. Clearance for hot water pipes are 1 inch to combustibles. The make-up water line must be piped into the boiler and be fitted with a backflow preventer and a pressure reducing valve to reduce line pressure to 10 to 15 psi.

In the case of a gas installation, the boiler should be installed such that the gas ignition system components are protected from water (dripping, spraying, etc.) during appliance operation and service (circulator replacement, condensate trap, control replacement, etc.).

If the boiler is to be used in conjunction with a chilled water system, it must be piped with the appropriate valves to ensure the chilled medium does not enter the boiler. If the boiler is connected to heating coils in an air handling system, where the coils could be exposed to cold air circulation, provisions for freeze protection control must be installed. The boiler must have flow control valves or other automatic means to prevent gravity circulation of the boiler water during the cooling cycle.

NOTE: If the heating system is to be filled with antifreeze, use only formulations expressly made for hydronic heating systems (such as propylene glycol). Do not use automotive types of antifreeze (ethylene glycol). Use of antifreeze will alter system output and characteristics. Consult a factory representative for details or assistance.

SAFETY RELIEF VALVE

1. The safety relief valve should be piped into one of the two upper tapings in the rear of the boiler
2. The relief valve should be installed using the hardware supplied in the trim kit without valving between the PRV and the boiler.
3. Pipe the discharge for the safety relief valve with copper tube within 3" from the floor without any valving.
4. Make sure installation of the pipe conforms to local codes.

6. Intake Venting

1. Be certain adequate air is available for combustion and ventilation.

a.) Boiler located in unconfined space:

Installation in large areas, such as basements, can usually be assumed to provide sufficient air.

b.) Boiler located in confined space : (See Figure A. on page 12)

If all air for combustion and ventilation is to come from within the building:

Two (2) openings shall be provided with one (1) opening commencing within 12 inches from the ceiling and one (1) opening commencing within 12 inches from the floor of the enclosure. These openings shall not be located closer than 3 inches from either the top or bottom of the enclosure and shall be open to areas connecting freely with the outdoors. The area of each opening shall not be less than one square inch per 1000 BTU/HR. of total input rating of all appliances within the enclosure; with a minimum of 100 square inches for each opening.

If all the air for combustion and ventilation is to come from outside the building:

Two (2) openings shall be provided with one opening commencing within 12 inches from the top and an opening commencing within 12 inches from the bottom of the enclosure. These openings shall not be located closer than 3 inches from either the top or bottom of the enclosure, and shall connect directly or by ducts too the outdoors. The area of each opening shall be equal to one square inch per 4000 BTU/HR of total input rating. If ducts are used to convey the air, vertical ducts require areas of one square inch per 4000 BTU/HR. Horizontal ducts require one square inch per 2000 BTU/HR. Ducts shall have the same cross sectional area as the full area of the louver openings.

The upper opening is essential for maintenance of proper air circulation with the boiler and to maintain proper control temperatures. When a duct is used for ventilation, check for louver free net area and correct for screen resistance to ensure that the sufficient ventilation area has been satisfied. DO NOT INSTALL THE BOILER UNTIL PROPER COMBUSTION AIR HAS BEEN ARRANGED.

6. Intake Venting (Continued...)

c.) Boiler located in a room under negative pressure:

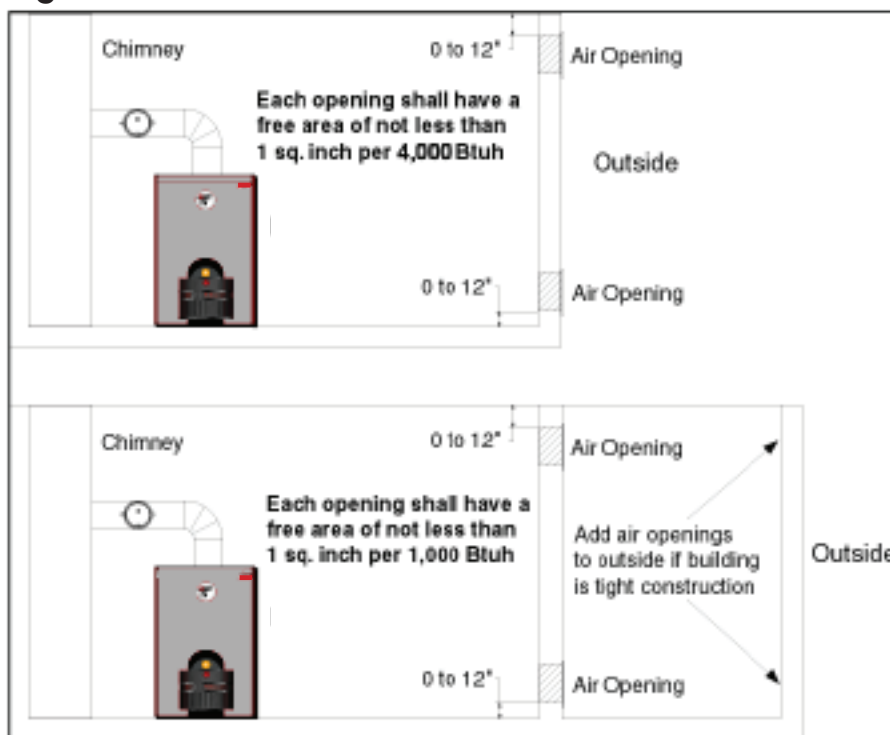
If the boiler is to be installed within a home where the operation of exhaust fans, attic fans, kitchen ventilation systems, clothes dryers or fireplaces may create severe negative vent pressures causing unsatisfactory combustion and venting, special provisions should be made for additional make-up air to supply the other air requirements. If building is of tight construction, combustion air requirements may not be met and combustion air ducts from outside may be necessary. Please refer to NFPA No. 31.

Tight Construction (as defined by ANSI Z223.1):

1. Walls and ceilings exposed to the outside atmosphere have a continuous water vapor retarder with a rating of 1 perm or less with openings sealed with gaskets, etc..
2. Weather-stripping has been added on open able windows and doors, and caulking or sealants are applied to areas such as: joints around windows and door frames, between sole plates and floors, between wall ceiling joints, between wall panels, at penetrations for plumbing, electrical, and gas lines, and in other openings.

If the building is of tight construction, air openings must be provided from the outside, with appropriate sizing depending on amount of BTU/HR as shown in Figure A. The boiler room must never be under a negative pressure, even if the appliance is installed as direct vent. Always provide air openings sized not only to the dimensions required for the firing rate of all appliances, but also to handle the air movement rate of the exhaust fans or air movers using air from the building or boiler room.

Figure A.

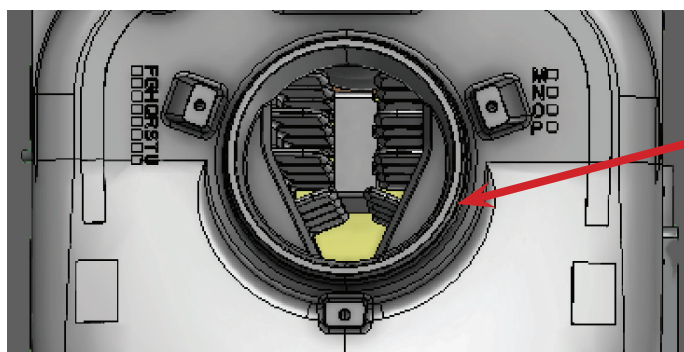


7. Exhaust Venting

The S10 boiler is a high efficiency unit that requires proper venting. The boiler must be vented to the outdoors by means of a tile lined masonry or a approved pre-fabricated chimney of the size and height recommended by the manufacturer or by a listed "power venting" unit which provides draft by mechanical means. In many installations, particularly older interior and most exterior chimneys, a corrosion resistant liner should be installed and may be required by code. Please consult the liner manufacturer for the appropriate chimney liner.

The flue-gas exit of the chimney must be located at least 24 inches above any part of the building structure within 4 feet of the chimney. Be sure the chimney and smoke pipe won't become obstructed by rodents, bird nests, soot buildup, chimney liner deterioration, etc.. If using a "power venter" system, it is suggested that it should be installed on the leeward side of the house. (Please consult with the manufacturer of "power venter" for requirements concerning clearances from combustibles and distances from doors and windows.) The "venter" must be installed by a licensed burner mechanic and done in accordance with local codes. This is a very low stack temperature boiler so caution should be used when connecting to an outside built chimney. Proper chimney sizing is important to prevent damage due to possible condensation of low flue gas temperatures. Should you have concern that the flue gases could condense, you should consider lining the chimney or using a listed, "power venting" or the QHT direct vent system. If "power venting" is used to discharge flue gases, then the power vent unit should be equipped with a postpurge control such as a delay-off, timing control to prevent problems with fogging and nozzle post drip. If the boiler is installed as a direct vent unit, it must be installed using the D-S10-DV0 or D-S10-DVF-5/4 direct vent kit supplied by QHT Inc.

The exhaust pipe connection from the boiler to the chimney should be as short as possible, with a minimum number of elbows. The vent pipe must have a vertical rise of at least 1/4 inch per foot of horizontal run. The vent pipe must be of the same diameter as the flue outlet on the boiler. The chimney connector should have a minimum thickness of 26 gauge, corrosion resistant (galvanized) steel, and be assembled with a minimum of three (3) sheet-metal screws in each joint. In some one and two story houses, a barometric draft control is not required as the S/10 is designed to be pressure-fired. However in high draft situations which exceed the flue gas resistance through the boiler, a barometric draft control is recommended. The over fire draft should be positive and between 0 and .06 inches of water column. The draft at the breech should be enough to overcome the resistance through the boiler.



5" Flue Collar

7.1 Common Exhaust Venting

If this boiler is replacing one which was part of a common venting system, it is likely that the vent is too large to vent the appliances still attached to it. To prevent this, at the time of removal, the following steps shall be followed with each appliance remaining connected to the common venting system. Place each appliance in operation, while the other appliances remaining connected to the common venting system are not in operation.

1. Seal any unused openings in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion or other deficiencies which could cause an unsafe condition.
3. Insofar as practical, close all building doors and windows and all doors between the space in which the appliance remaining connected to the common venting system is located and other spaces of the building. Turn on any appliance not connected to the common vent system. Turn on all exhaust fans except for summer exhaust fans. Close the fireplace damper if applicable.
4. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.
5. Test for spillage at the barometric damper opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.
6. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return the doors, windows, exhaust fans, fireplace dampers and any other gas-burning appliance to their previous condition of use.
7. Any improper operation of the common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1 and/or CAN/CGA B149, Installation Codes. When resizing any portion of the common venting system, the common venting system should be resized to approach the minimum size as determined using the appropriate tables in Part 11 of the National Fuel Gas Code, ANSI Z223.1, and/or CAN/CGA B149, Installation Codes.

7.2 Gas Venting

For boilers connected to gas vents or chimneys, vent installations shall be in accordance with part 7, Venting of Equipment, of the National Fuel Gas Code, ANSI Z223.1 or Section 7, Venting Systems and Air Supply for Appliances, of the CAN/CGA B149, Installation Codes, or applicable provisions of the local building codes.

Vent connectors serving appliances vented by natural draft shall not be connected into any portion of mechanical draft systems operating under positive pressure.

8. 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 13.5% 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.

8.1 Oil Burner Setup

This page is only for boilers using an oil burner. If a gas burner is being used, please refer to page 17 for the proper setup of the burner and gas lines.

Energy Star Compliant Ratings

BURNER MANUFACTURER: CARLIN

Boiler Model:	S10/3	S10/4	S10/5	S10/6	S10/7
Burner Model:	EZ-51735A	EZ-51735A	EZ-97550M	EZ-97550N	EZ-97550N
Firing Rate:	.51	.78	1.07	1.32	1.68
Insertion Depth:	3"	3"	4.75"	4.75"	4.75"
Nozzle:	.40X70	.65X70	.85X70	1.00X70	1.25X60
Spray Pattern:	B	B	A	B	B
Pump Pressure:	170 psi	145 psi	165 psi	115/185 psi	110/175 psi
Head/Bar:	.5	3	2	4	6
Air Gate:	15%	40%	65%	75%	85%

NOTE: EZ-Select replaces the former EZ-1 HP

BURNER MANUFACTURER: RIELLO

Boiler Model:	S10/3	S10/4	S10/5	S10/6	S10/7
Burner Model:	40 F3	40 F3	40 F5	40 F5	40 F10
Firing Rate:	.51	.78	1.07	1.32	1.68
Insertion Depth:	3"	3"	3"	3"	3"
Nozzle:	.40X80	.65X60	.85X60	1.00X60	1.25X60
Spray Pattern:	B	W	W	W	B
Pump Pressure:	160 psi	160 psi	160 psi	175 psi	175 psi
Head /Bar:	1	1	1.0	2	2
Air Gate:	4	4	2.8	3.5	2.4

BURNER MANUFACTURER: BECKETT

Boiler Model:	S10/3	S10/4	S10/5	S10/6	S10/7
Burner Model:	QHT 303	QHT 304	QHT 305	QHT 306	TBD
Firing Rate:	.51	.78	1.07	1.32	
Insertion Depth:	2 ¾"	5"	4.5"	5.5"	
Nozzle:	.40x45	.60X60	.85X45	1.00X45	
Spray Pattern:	W	W	W	A	
Pump Pressure:	175	175	175	175	
Head Type:	L2	L2	V1	L1	
Head /Air	0	0	0	1	
Air: Band / Shutter	6/0	0/0	0/9	2/7	

8.2 Gas Burner Setup

This page is only for boilers using a gas burner. If an oil burner is being used, please refer to page 16 for the proper setup of the burner.

BURNER MANUFACTURER: CARLIN

Boiler Model:	S10/3		S10/4		S10/5		S10/6		S10/7	
Burner Model:	EZ-GAS		EZ-GAS		EZ-GAS		EZ-GAS		EZ-GAS	
Input (MBH):	73		109		153		189		tbd	
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)		
Manifold Pressure:	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%		

BURNER MANUFACTURER: RIELLO

Boiler Model:	S10/3		S10/4		S10/5		S10/6		S10/7	
Burner Model:	40 R120		40 R120		40 R200		40 R200		40 R400	
Input (MBH):	73		109		153		189		231	
Fuel Type:	Nat	LP	Nat	LP	Nat	LP	Nat	LP	Nat	LP
Orifice:	A6	A15	A7	A16	B5	B15	B6	B16	C3	C13
Manifold Pressure:	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"	3.5"
Head Setting:	.5	2	2.5	3	2.1	3	4	4	2.5	2
Air Gate:	2.1	2.0	2.5	2.8	2.1	2.5	3.3	3.25	2.1	1.6

Note: Consult burner manufacturers literature 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.

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

The chart to the right can be used to determine the flow rate depending upon the time per revolution and the size of the gas meter dial.

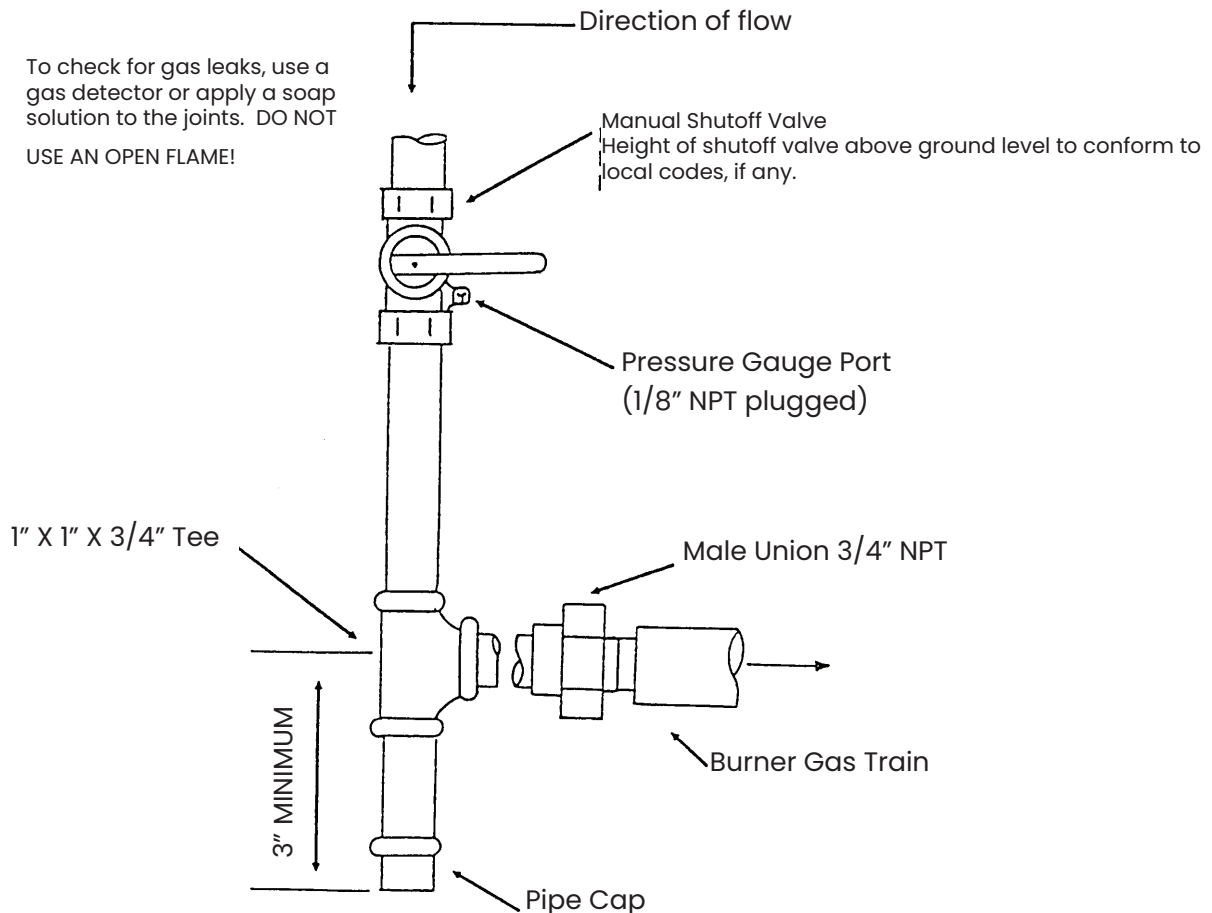
Seconds Per Revolution	Size of Gas Meter Dial (Cubic Foot)		
	.5	1	2
20	90	180	360
25	72	144	288
30	60	120	240
35	51	103	206
40	45	90	180
45	40	80	160
50	36	72	144
55	33	65	131
60	30	60	120

9. 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.

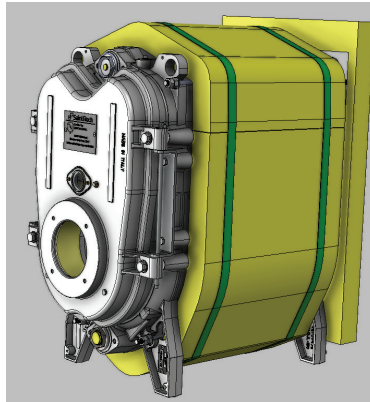
When installing the boiler, make sure a pipe compound resistant to the action of liquefied petroleum is used. Check piping for leaks. Always check leaks with a water and soap solution. **DO NOT USE A FLAME FOR CHECKING GAS LEAKS**
The boiler and its individual shut-off valve must be disconnected from the gas supply piping during any pressure testing of that piping at test pressures in excess of 1/2 psi.



10. Boiler Jacket Assembly

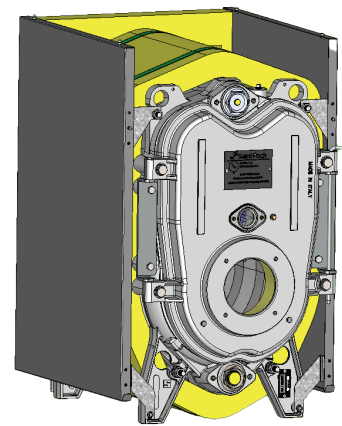
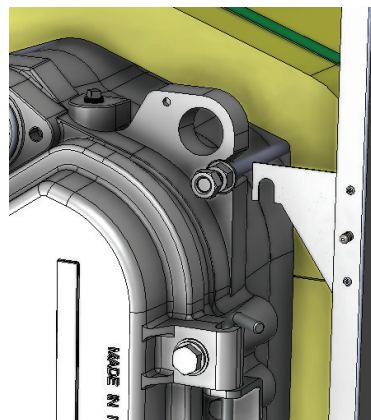
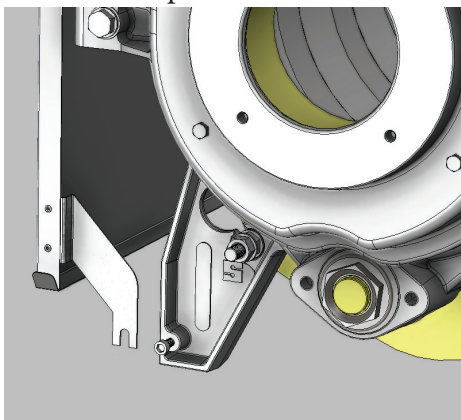
STEP 1

Put the insulation on the boiler block



STEP 2

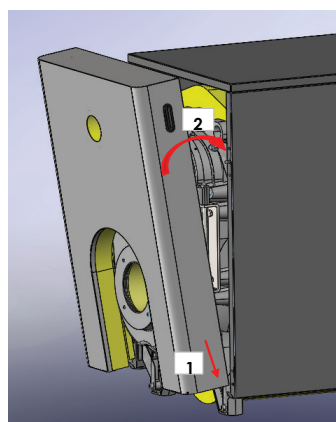
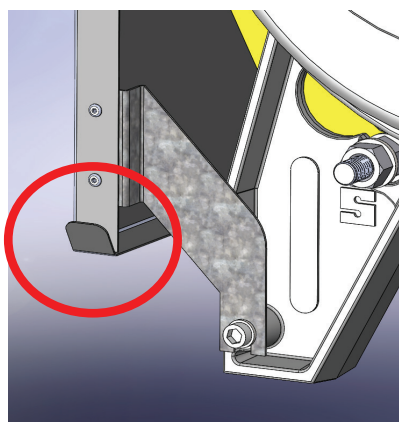
Put the Side panels on



Bracketts Hang onto boiler tie rods on top, and 4mm allen key bolt on the bottom. Tighten up the 17mm nut on top rod and lower bolt to secure the side panels.(front and back)

STEP 3

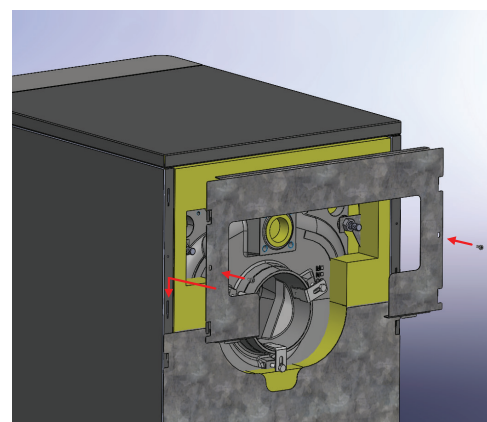
Put the Side panels on



Tabs on the bottom of side panel guide front panel into position and then the top pins snap into side panels.

STEP 4

Put the back panels on

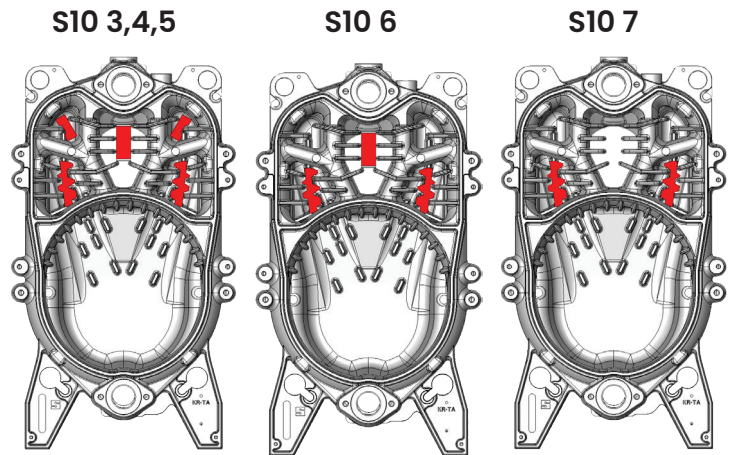
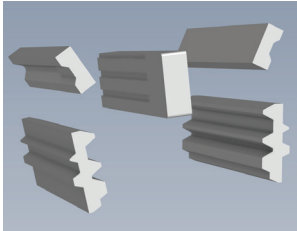


Back panels have tabs that go into key holes, slide down into position as shown, two panels, top and bottom. Bottom goes on first. (2) Sheet metal screws secure top rear panel. Top Casing Panel Snaps into Casing Pins on top of side panels.

11 Baffle Locations

BAFFLES ARE FACTORY INSTALLED.

Removable cast iron baffles help transfer combustion heat and reduce the outgoing exhaust temperatures which increases the efficiency. If the steady state flue temperature is too low, less than 325° F, the baffles may be removed to increase the flue temperature.



12. Wiring

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 casing 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 and/or the Canadian Electrical Code Part 1, CSA C22.1, Electrical Code.

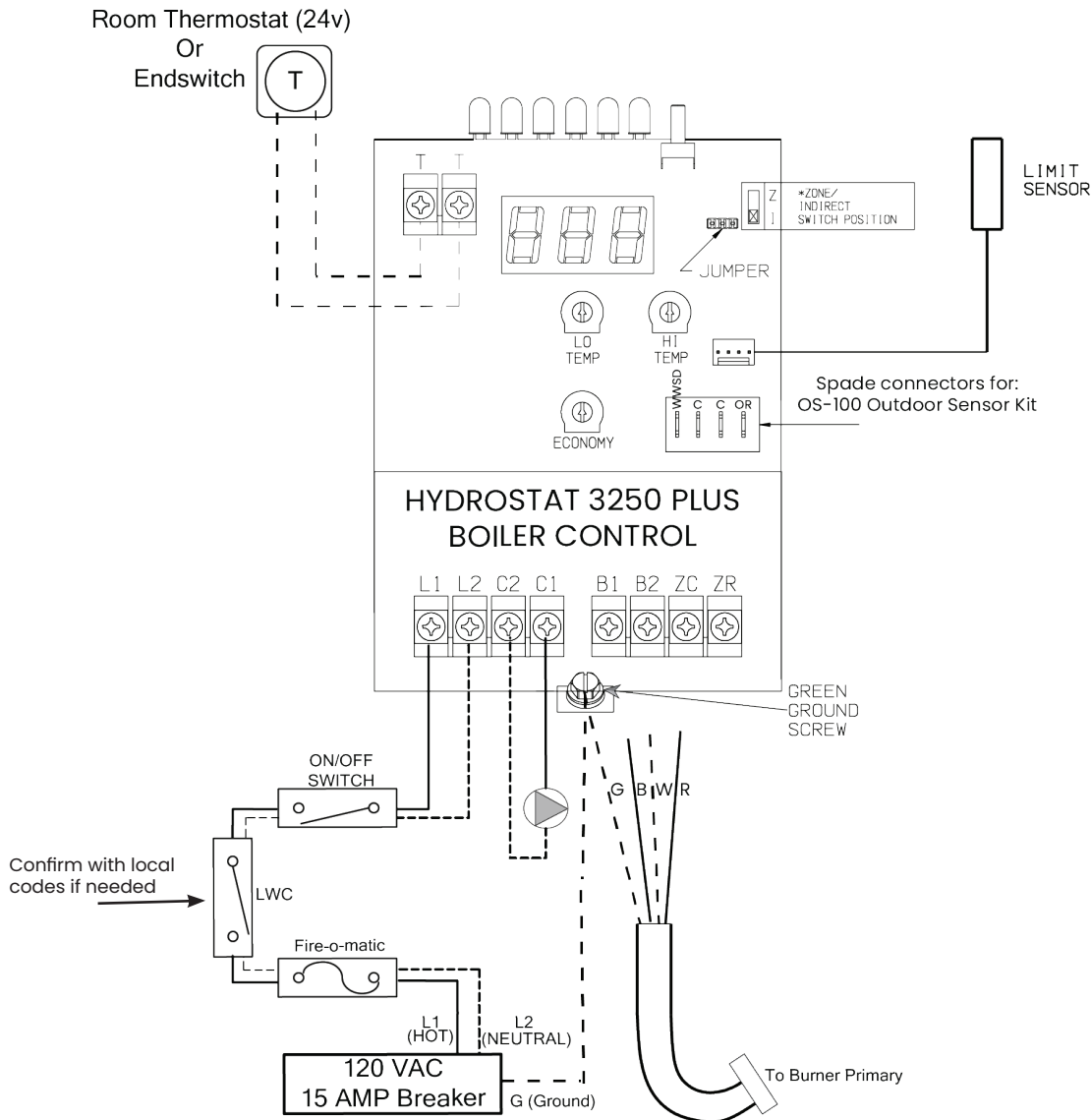
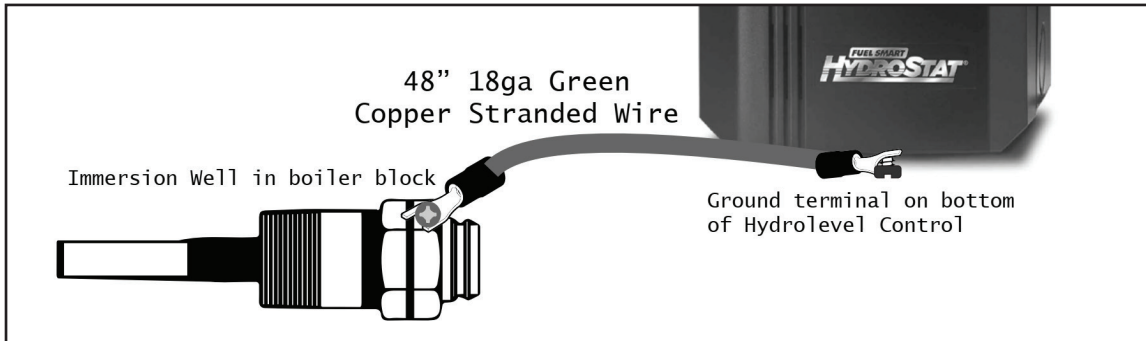
Since the boiler is equipped with a swinging burner door, the supplied 48" long burner wiring harness with 4-prong quick disconnect plug needs to be used. The short end of the wiring harness needs to be wired to the burner following the respective burner wiring diagram in the subsequent pages of this manual. The long end of the wiring harness needs to be wired into the burner operating control located at the installers discretion.

Refer to page 22 for oil wiring diagrams and page 23 for gas wiring diagrams. Refer to Hydrolevel instructions for priority zone wiring.

12.1 Hydrolevel Wiring

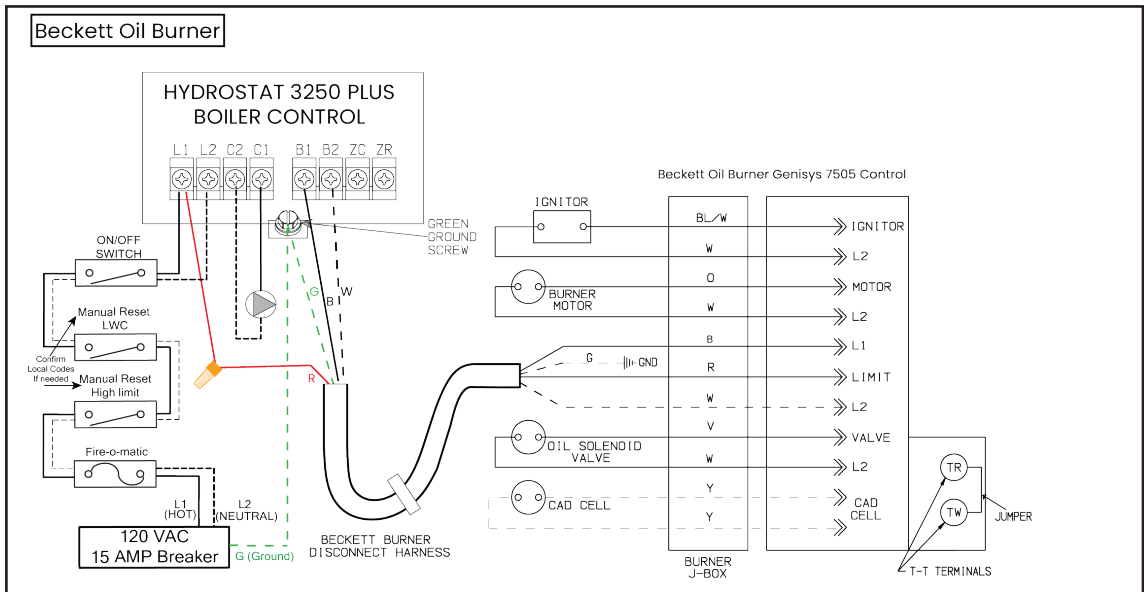
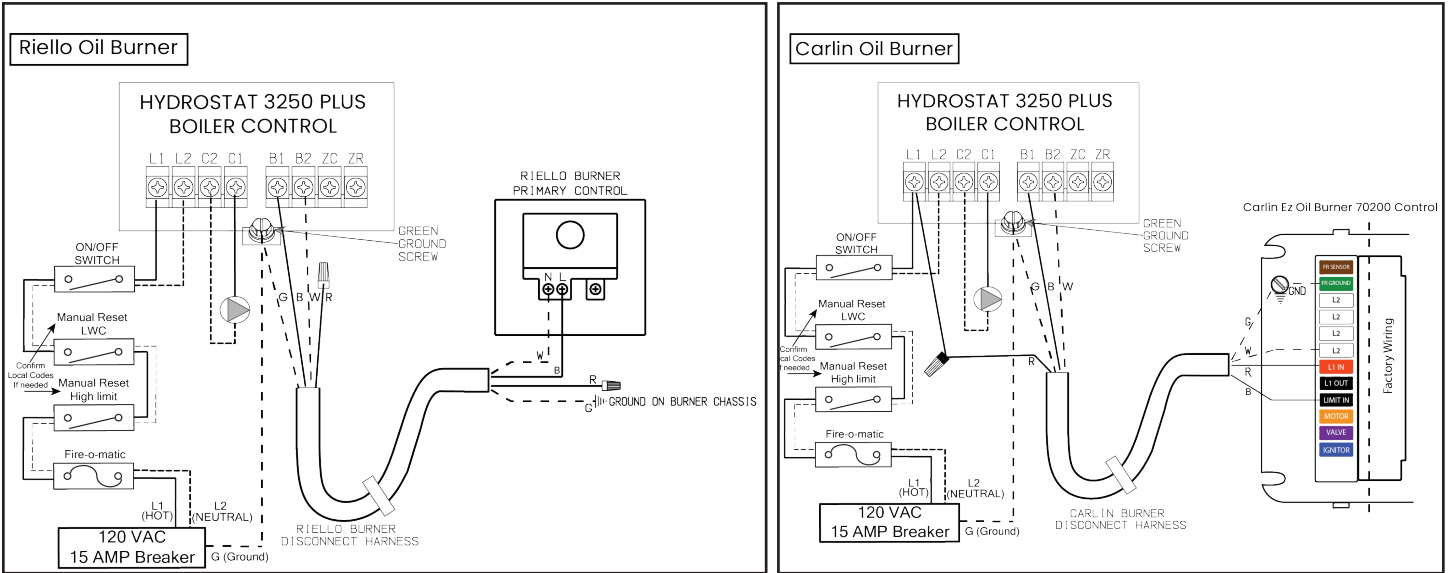
Hydrolevel 3250 controller Low Water Cutoff

QHT has added a ground wire and provided a mechanical connection for grounding the Hydrolevel Immersion well back to the 3250 grounding lug.



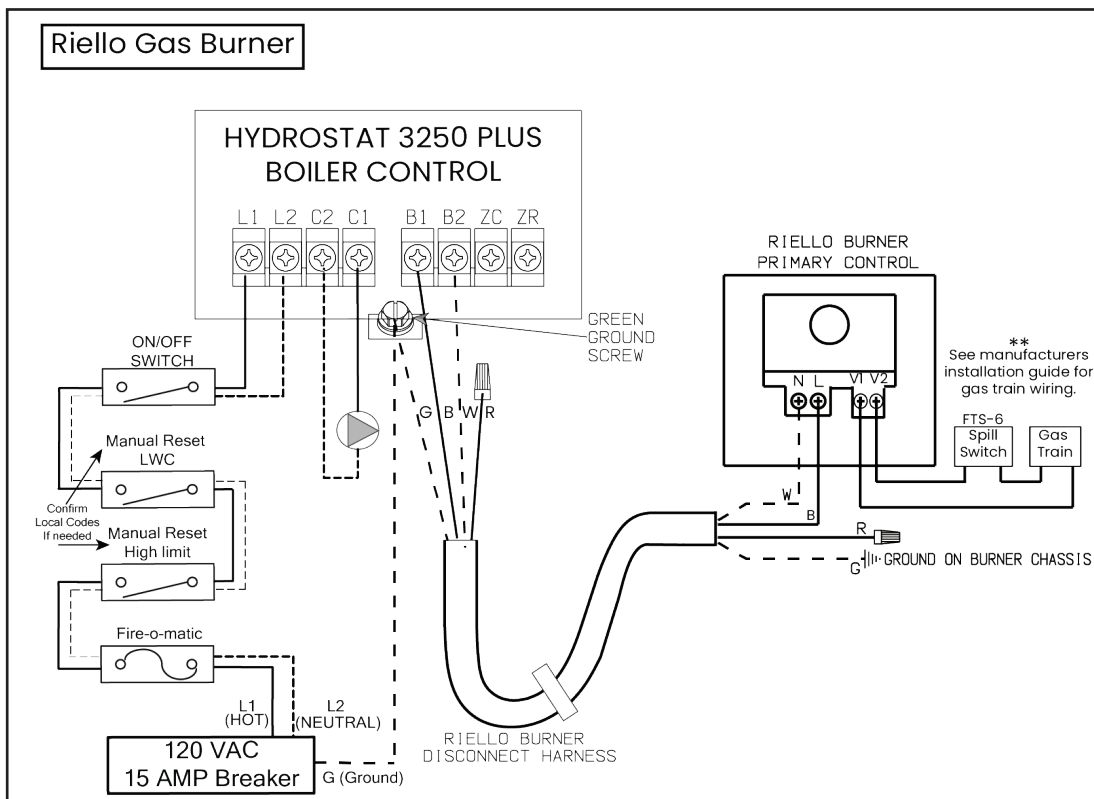
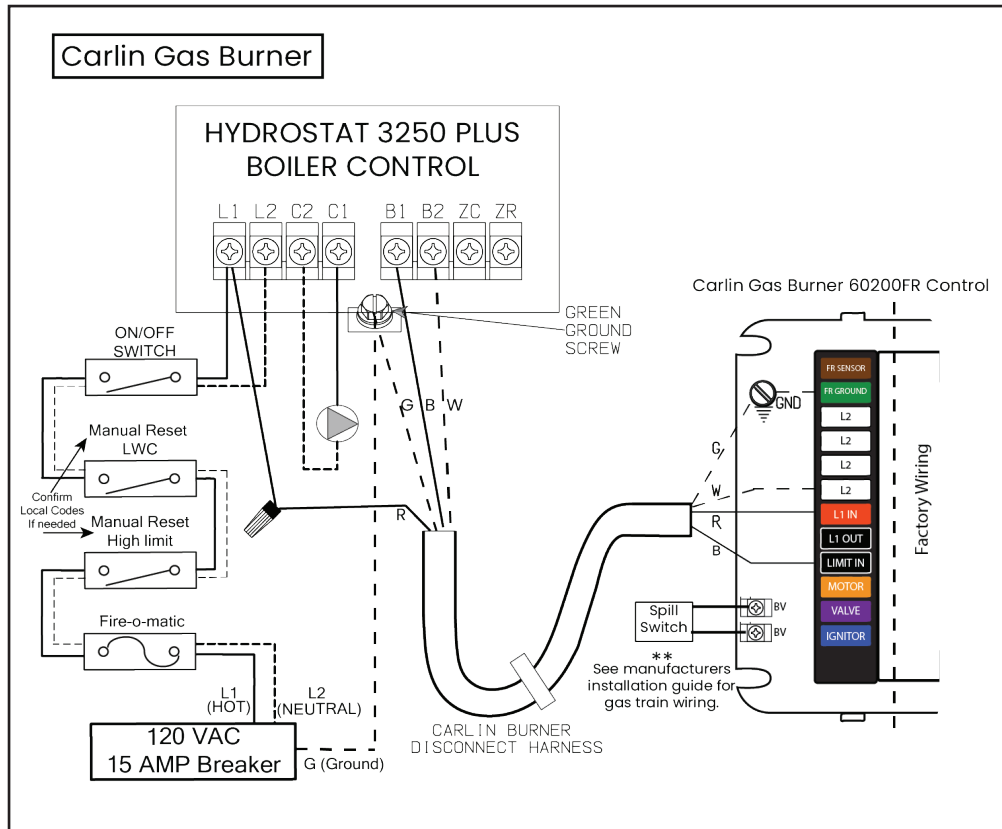
NOTE: All wiring must be done in accordance with applicable state, local and national codes. Use only copper conductors.

12.2 Oil Burner Wiring



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

12.3 Gas Burner Wiring



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

13. 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.

14. Maintenance

The S10 boiler system should be serviced once a year.

1. Turn boiler safety switch off.
2. Open swing door.
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 16 or 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.

15. 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:

Comments/Notes:

Warranty for S10 Residential Cast-Iron Water Boilers

FIRST YEAR-WARRANTY FOR S10 SERIES RESIDENTIAL HOT WATER BOILERS: Quincy Hydronic Technology (QHT) warrants that its cast-iron boiler and casing are free from defects in material and workmanship for one year from the date of installation. If the boiler is found to be defective within this period, QHT will replace the boiler block or casing.

LIFETIME WARRANTY-WARRANTY FOR THE CAST IRON BOILER BLOCKS OF THE S10 SERIES RESIDENTIAL BOILERS: Saint Roch warrants that the cast-iron sections and nipples of the Saint Roch S10 boilers are free from defects in material and workmanship for the lifetime of the original purchaser in a single family home installation. If the S10 boiler block is then found to be defective, QHT and Biasi will replace the original cast iron boiler block.

These warranties are subject to the condition that a heating contractor whose principal occupation is the sale and installation of heating equipment must have installed the boiler.

PARTS, WHICH ARE COVERED, consist of all materials supplied by Saint Roch, identified by QHT's part numbers in its literature. Other parts supplied in the casing, trim kit or in the burner pack carry their own warranty and each manufacturer has responsibility for its own products.

NOTE: ANY PART, WHICH IS REPLACED UNDER WARRANTY, CARRIES ONLY THE UNEXPIRED PORTION OF THE ORIGINAL WARRANTY.

OWNER RESPONSIBILITIES:

1. Provide for proper installation, which includes pressure relief and pressure reducing valves and high limit safety controls on closed systems.
2. Provide qualified annual service to prolong proper operation and service.
3. Insure that boiler is installed with approved burner and that installation conforms to all codes and ordinances.
4. This warranty does not apply to boilers, which are subject to misuse, abuse, neglect, alteration, accident, excessive temperature, excessive pressure, or corrosive water or atmosphere.
5. Owner will be responsible for return of faulty components to Portsmouth, NH, freight pre-paid.

1. QHT and Saint Roch will not be responsible for:
2. Components that are part of the heating system, but were not manufactured by Saint Roch or QHT as part of the boiler.
3. The workmanship of the installers of S10 boilers. Furthermore, this warranty does not assume any liability for unsatisfactory performance caused by improper installation.
4. Any costs for labor to remove or replace the faulty component.
5. Improper burner application or adjustments, control settings, care or maintenance.
6. Any damage associated with corrosion or leakage due to the use of "non-barrier", plastic pipe in the heating system.

***THIS WARRANTY DOES NOT EXTEND TO ANYONE EXCEPT THE FIRST PURCHASER AT RETAIL AND ONLY WHEN THE BOILER IS IN THE ORIGINAL INSTALLATION SITE.**

***IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY. SAINT ROCH AND QHT EXPRESSLY DISCLAIM AND EXCLUDE ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY.**

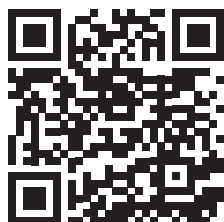
THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE.

For prompt warranty service, notify the installer, who, in turn, will notify the distributor from whom he purchased the boiler. If this does not result in corrective action, contact Saint Roch through Quincy Hydronic Technology (Address Below) with details in support of the warranty claim. All claims must be processed through proper trade channels. Contact with Saint Roch directly is not recommended for rapid claim settlement.

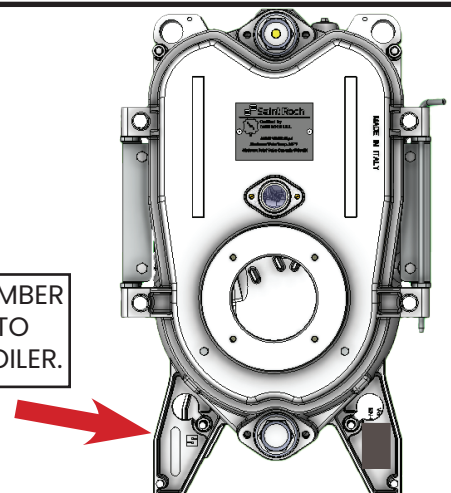
QHT, Inc.
3560 Lafayette Road
Bldg 2, Unit A
Portsmouth, NH, 03801
Tel. (603) 334-6400

To register your boilers warranty please visit:
www.qhtinc.com/warranty-registration

Or Scan the QR Code:



LOCATE BOILER SERIAL NUMBER
ON METAL PLATE RIVETED TO
FRONT SIDE LEG OF THE BOILER.



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, 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. QHT remains committed to providing energy conservation with low environmental impact.



3560 Lafayette Rd
Portsmouth, NH 03801
800-501-7697
www.qhtinc.com