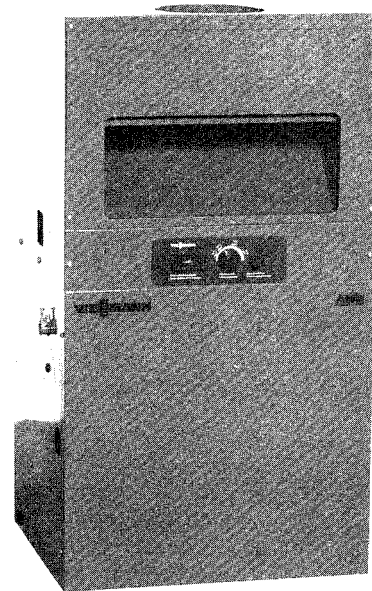


**IMPORTANT: READ AND SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE**



**FOR YOUR SAFETY**

If you smell gas:

1. Open windows.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately call your gas supplier.

**FOR YOUR SAFETY**

Do not store or use gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.

**WARNING**

Should overheating occur or the gas supply fail to shut off, do not disconnect the electrical supply to a pump. Instead, shut off the gas supply at a location external to the appliance.

Before operating this boiler/burner unit, make sure you fully understand its method of operation. Your heating contractor should always perform the initial start-up and explain the system.

The installation of this unit shall be in accordance with local codes or, in the absence of local codes, the CAN/CGA-B149.1-M86 Installation Codes for Gas Burning Appliances.

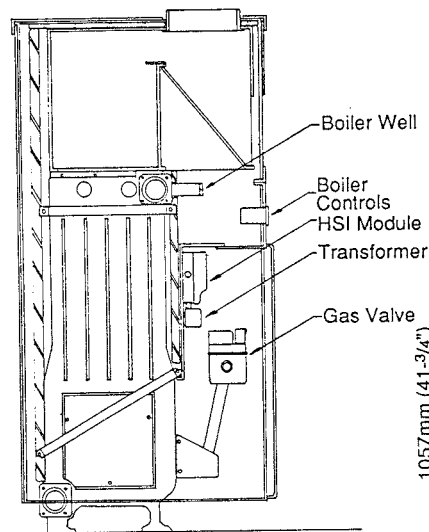
<b>Contents:</b>	<b>Page:</b>
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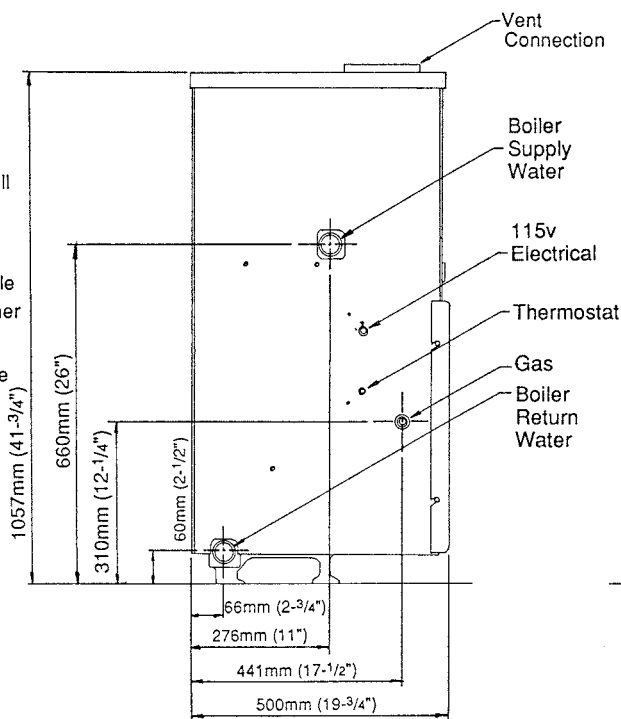


## Atola EC – Technical Data

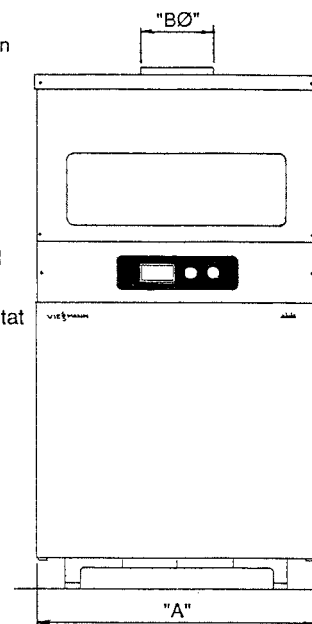
Cutaway View



Left Side



Front View



Model	CGA Input	CGA Output	Width "A"	Vent Conn. "BØ"	Gas Conn.	Water Conn.	Cast Iron Sections	Burners	Water Content	Weight	Steady State Efficiency
EC-80	80,000 Btu/h 23 kW	66,400 Btu/h 19 kW	350mm 14"	5"	1/2"	1-1/4"	3	2	9.9 ltr 2.6 USgal	106 kg 233 lbs	83%
EC-100	100,000 Btu/h 29 kW	83,000 Btu/h 24 kW	450 mm 17-3/4"	6"	1/2"	1-1/4"	4	3	13.2 ltr 3.5 USgal	130 kg 285 lbs	83%
EC-115	115,000 Btu/h 34 kW	95,450 Btu/h 28kW	450 mm 17-3/4"	6"	1/2"	1-1/4"	4	3	13.2 ltr 3.5 USgal	130kg 285 lbg	83%
EC-140	140,000 Btu/h 41 kW	116,200 Btu/h 34 kW	550 mm 21-3/4"	7"	1/2"	1-1/4"	5	4	16.5 ltr 4.3 USgal	157 kg 345 lbs	83%
EC-155	155,000 Btu/h 45 kW	128,650 Btu/h 38 kW	550 mm 21-3/4"	7"	1/2"	1-1/4"	5	4	16.5 ltr 4.3 USgal	157 kg 345 lbs	83%

High Altitude – Reduce input and output by 10%  
kW figures are approximate

All sizes available with Propane Gas.

### Boiler handling

The boiler is shipped on a pallet in a wooden crate. Remove crating and pallet as necessary.

### Boiler location — Minimum clearances to combustibles

(all measurements from boiler enclosure)

Left side: 300mm (12")  
Right side: 25mm (1")  
Front: 150mm (6")  
Top: 450mm (18")  
Rear: 25mm (1")  
Floor: Non-combustible.

### Recommendation

If boiler is located in a confined space, install main gas shut-off valve (gas cock) and main power supply switch in easily accessible location outside the confined space.

### Combustion air supply

This boiler needs fresh air for safe operation and must be installed so there are provisions for adequate combustion and ventilation air.

Observe and follow Section 5 CAN/CGA-B 149.1-M86 Natural Gas Installation Code (or latest edition).

### Attention

The boiler must not be located in areas or rooms where chemicals are stored, or aggressive vapours (for example hair spray, perchloroethylene or carbon tetra chloride), high dust levels or high humidity levels are present. Heat exchanger corrosion might occur and reduce the lifetime of the boiler significantly. If above criteria are not properly observed and boiler damage results, any warranty on the complete boiler and related components will be null and void.

Please read the boiler warranty card.

### General Information

Please read and observe the following instructions carefully before installing the boiler.

Standard factory high limit aquastat settings approximately 90°C (195°F).

Boiler standard-equipped with 30 psi ASME-rated pressure relief valve. This 30 psi pressure relief valve may be exchanged at the job site with a 50 psi ASME rated pressure relief valve only by strictly observing the minimum relief valve capacity in lb/h marked on the nameplate. The maximum allowable working pressure is 50psi.

Be aware that best overall system performance is achieved when all components are properly sized. Sizing of the required circulating pump according to the pipe layout and calculation of a proper volume expansion tank is vital to obtain the system's peak performance.

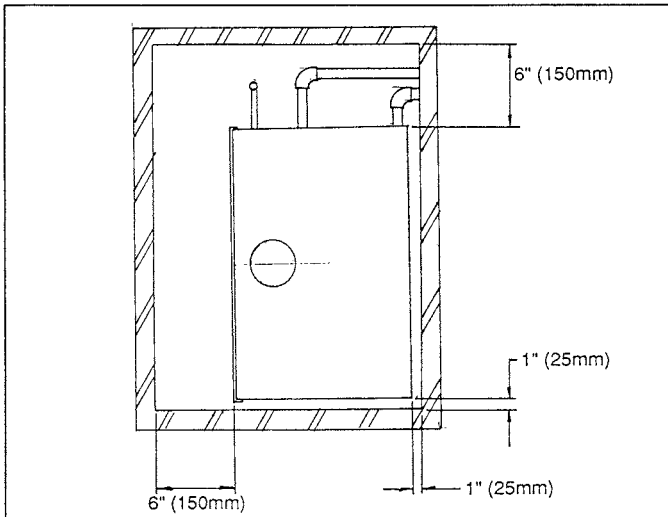


Fig. 1 Closet Installation: Minimum clearances (Top)

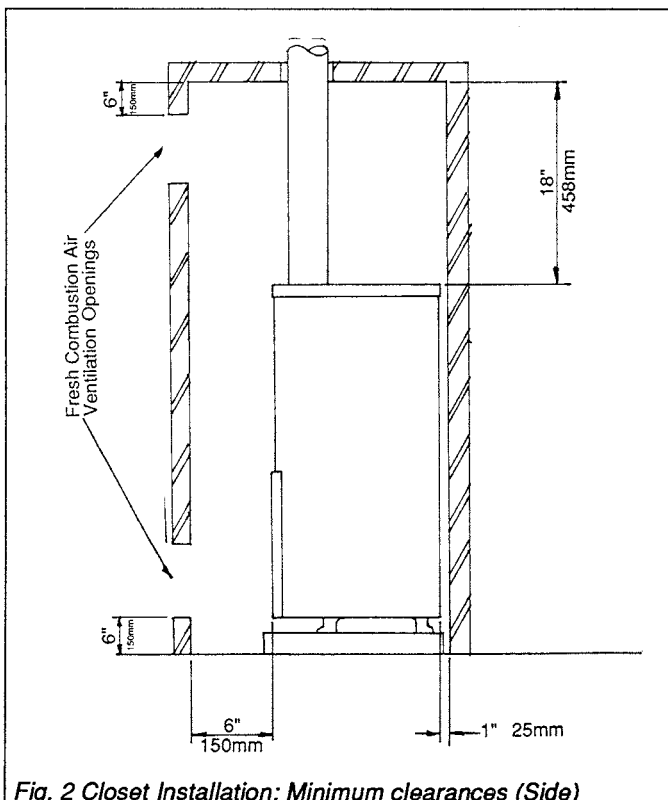


Fig. 2 Closet Installation: Minimum clearances (Side)

### Excerpt from our warranty terms

Boiler is not covered under any warranty terms for damages resulting from the following:

Improper application and installation, installation by unqualified personnel, ignorance of instructions, improper service and maintenance work, incorrect replacement component selection or application, incorrect field wiring. Full warranty applies only when boiler is installed and operated according to instructions and used only with the proper gas and the applicable gas pressures.

Please read boiler warranty card.

### Standard equipment

- Wet base sectional cast iron heat exchanger with stainless steel burners.
  - Boiler completely assembled with vertical draft diverter.
  - Hot Surface ignition.
  - 24 VAC redundant seat gas valve.
  - Boiler fully insulated with 1 1/2" fiberglass wraparound blanket.
  - Boiler control panel with adjustable operating limit, fixed high limit and temperature gauge.
  - One 20 VA 120/24 VAC transformer.
  - Pressure relief valve, pressure gauge and fittings.
  - One cleaning brush
- Optional:
- Millivolt Ignition System

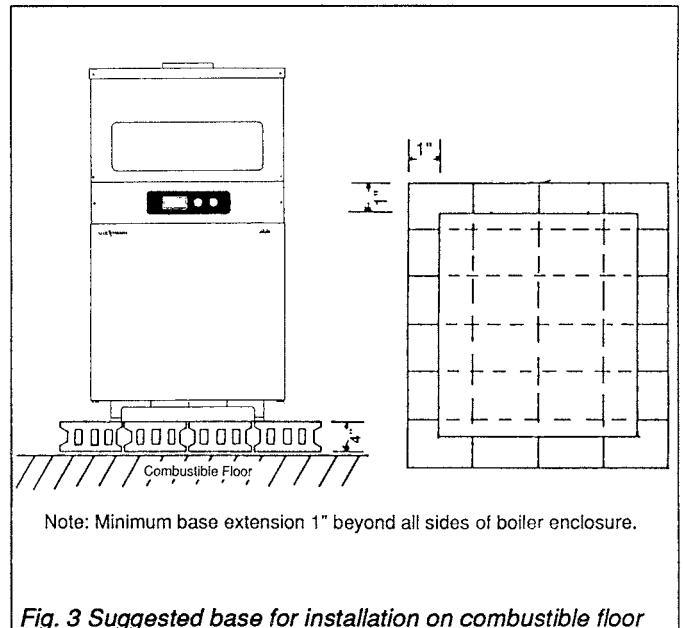


Fig. 3 Suggested base for installation on combustible floor

### Installation of Atola series base for boiler installation on combustible floor

#### Placement of boiler

1. Check the base with your local codes.
2. Locate the base so that minimum clearances of boiler to combustible materials are maintained as outlined in installation manual.
3. Base must be constructed of hollow concrete blocks, minimum height 100mm (4").
4. The base must extend beyond the boiler enclosure by at least 25mm (1") on all sides.
5. The blocks must be placed to provide an unbroken concrete surface under the boiler, with the hollows running continuously and horizontally.

## Installation

Install pressure relief valve and pressure gauge directly to boiler supply. No isolation valve must be installed between boiler supply and pressure relief valve.

Before boiler is connected to a piping/heating system which has previously been in service (boiler is a replacement boiler), piping system should be flushed thoroughly with water in order to remove sludge or other contaminants, especially in large piping systems such as old gravity pipe layouts.

Check system for pipe leaks, defective valves etc. and make required corrections immediately.

## Circulating pump

A pump aquastat must be installed by the mechanical contractor. The aquastat must be installed in the supply pipe as close to the boiler as possible. Minimum water supply temperature for pump start-up is 40°C (104°F). Minimum return water temperature is 35°C (95°F). Units can be ordered with factory supplied, boiler mounted pump aquastat and relay.

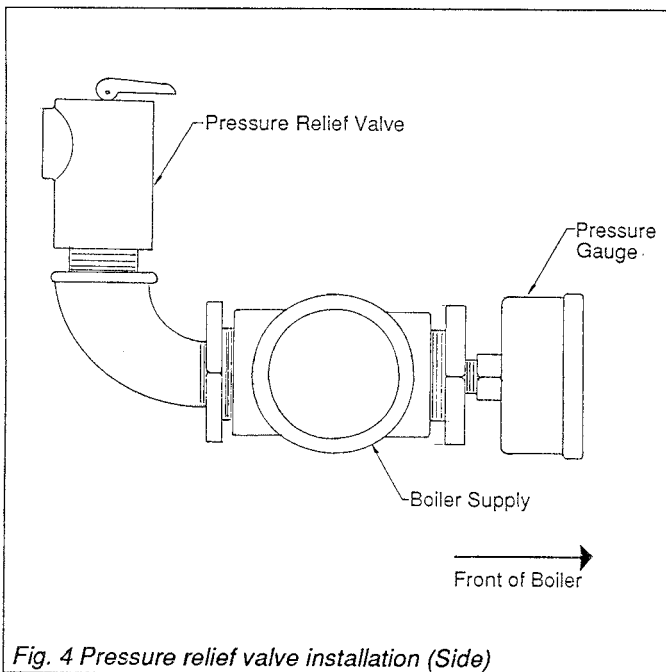


Fig. 4 Pressure relief valve installation (Side)

## Boiler piping in heating/cooling application

The boiler, when used in connection with a refrigeration system, must be installed so the chilled medium is piped in parallel to the boiler with appropriate valves to prevent the chilled medium from entering the boiler. (Fig. 5).

The boiler piping system of a hot water heating boiler connected to heating coils located in air handling units where they may be exposed to refrigerated air circulation must be equipped with flow control valves or other automatic means to prevent gravity circulation of the boiler water during the cooling cycle.

Check installation instructions of chiller manufacturer carefully for additional requirements.

Cooling season starts: Close valve V1 and open valve V2.  
Heating season starts: Close valve V2 and open valve V1.

A metal tag should be attached to these valves as to purpose.

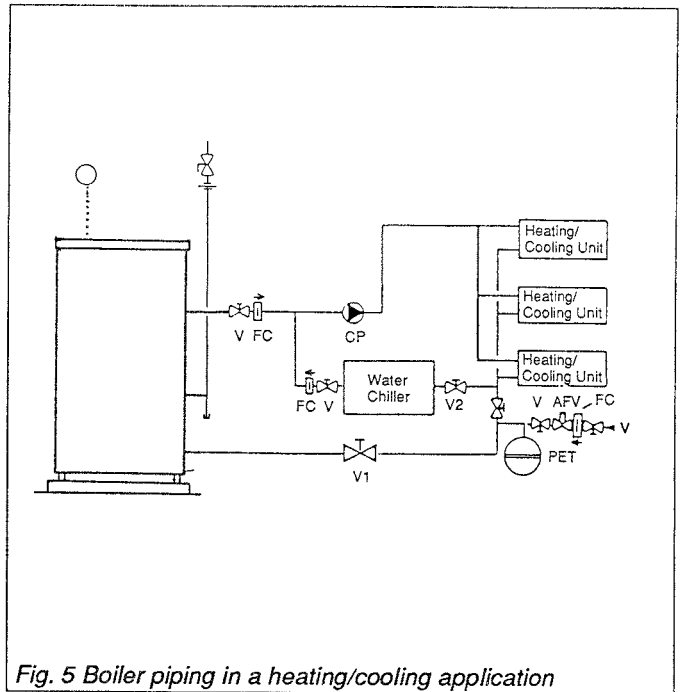


Fig. 5 Boiler piping in a heating/cooling application

## Initial system fill

Treatment for boiler feed water should be considered in areas on known problems, such as high mineral content and hardness. In areas where freezing might occur, an antifreeze may be added to the system water to protect the system. Please adhere to the specifications given by the antifreeze manufacturer.

Please observe that an antifreeze/water mixture may require a backflow preventer within the automatic water feed and influence components such as diaphragm expansion tanks, radiation etc. A 40% antifreeze content will give freeze-up protection to -25°C (-31°F). Do not use antifreeze other than specifically made for hot water heating systems. System also may contain components which might be negatively affected by antifreeze. Check total system frequently when filled with antifreeze.

## Boiler venting

The mounted boiler draft hood must not be altered or modified in the field.

The boiler should be located as close to the chimney as possible. The vent connection must be made in the shortest possible way with minimum elbows.

## ATTENTION

When the vertical vent pipe becomes the chimney itself, the weight must not be supported by the vertical draft diverter on the boiler.

Avoid long horizontal runs of vent pipe. Horizontal runs must be supported by appropriate means to prevent sagging. Horizontal runs should have not less than 1/4" rise per ft. from the boiler to the vent terminal.

Metal strapping must be used to support horizontal runs every 4 ft.

Use approved vent materials only. For venting purposes, a B-0, B-1, B-1½ or C vent may be used.

Observe and follow CAN/CGA-B149.1 M86 (or latest edition) and local authorities and regulations.

With this boiler installation, it is recommended to install an approved liner within a masonry or unlined chimney. Observe and follow local rules and regulations.

The vent connector of this boiler must not be connected into any portion of mechanical draft systems operating under positive pressure.

Based upon proper chimney and breeching size, the boiler may be vented into a chimney/breeching with a direct-fired (atmospheric-fired) gas water heater. Observe national codes, local rules and regulations.

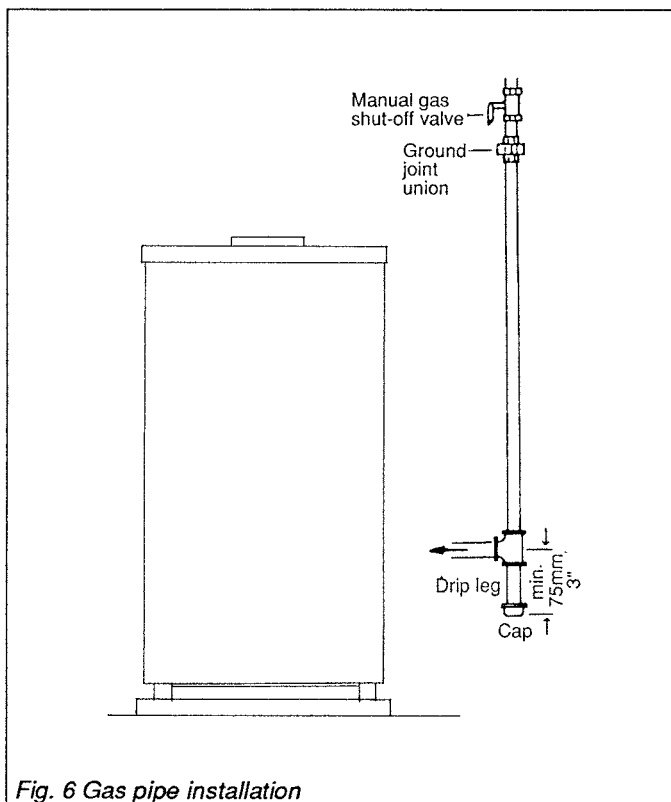


Fig. 6 Gas pipe installation

**Chimney**

Uninsulated outside chimneys may chill the flue gases in cold weather which may cause condensation. Proper consideration must be given to shortest possible vent connection, type of vent, chimney size, chimney liner, etc.

Before connecting boiler to existing chimney, inspect chimney for inside and outside condition.

**Boiler – gas piping**

Before connecting gas boiler to gas line, install main gas shut-off valve, union, and capped drip leg. See Fig. 6.

Size gas supply piping to boiler according to local utility requirements.

Identify the main shut-off valve as such with a tag and familiarize owner of boiler with this valve.

Support piping by proper suspension method. Piping must not rest on or be supported by boiler.

**Testing – gas pipe**

The boiler and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at pressures in excess of 14”w.c. (3.5 kPa).

The boiler must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 14”w.c. (3.5 kPa).

Unions and manifold have been factory-tested. Leak test must be repeated during initial trial operation of burner by mechanical contractor.

Never check for gas leaks with an open flame. Use approved spray liquid or soap water solution for bubble test.

**Gas pressure – Orifice sizes**

Natural gas

Minimum gas valve inlet pressure 6”w.c.  
Maximum gas valve inlet pressure 14”w.c.

Propane Gas

Minimum gas valve inlet pressure 12”w.c.  
Maximum gas valve inlet pressure 14”w.c.

**Manifold – orifices – natural gas (1,000 Btu/cu. ft.)**

Boiler size EC	Orifices required	Low Altitude	High Altitude	Gas valve/manifold pressure “w.c.
		0-610m 0-2000ft. Orifice size Ø	610-1370m 2000-4500ft. Orifice size Ø	
80	2	2.95	2.80	3.5
100	3	2.70	2.60	3.5
115	3	2.90	2.75	3.5
140	4	2.75	2.65	3.5
155	4	2.90	2.80	3.5

**Manifold – orifices – propane (2,500 Btu/cu. ft.)**

Boiler size EC	Orifices required	Orifice size	Low Altitude	High Altitude
			0-610m 0-2000ft. Gas valve/manifold pressure “w.c.	610-1370m 2000-4500ft. Gas valve/manifold pressure “w.c.
80	2	1.80	10”	8”
100	3	1.65	10”	8”
115	3	1.75	10”	8”
140	4	1.70	10”	8”
155	4	1.75	10”	8”

**Millivolt pilot burner**

Pilot burner orifice – natural gas No. 26  
Pilot burner orifice – propane gas No. 24

All orifice sizes given in mm! Orifice size is stamped onto each orifice for identification. When ordering orifices, state boiler size, type of gas, number of orifices required and orifice size.

**Gas burner**

Two types of Main Burner Ignition Systems are available:

1. Hot Surface Ignition (HSI)
2. Millivolt Standing Pilot Ignition System.

**Gas burner removal**

The main gas burner manifold with the individual stainless steel burners mounted may be easily removed from the boiler by:

1. Closing the main gas shut-off valve.
2. Disconnecting all power to boiler.
3. Removing front cover panel from boiler.
4. Breaking ground joint union before gas valve.
5. Disconnect wiring to gas valve. When installed, disconnect wiring from hot surface igniter sensor and ground connection.
6. Loosen manifold bolts. (Do not remove, only loosen.) Lift and pull out complete gas burner with manifold (Fig. 7) to front.

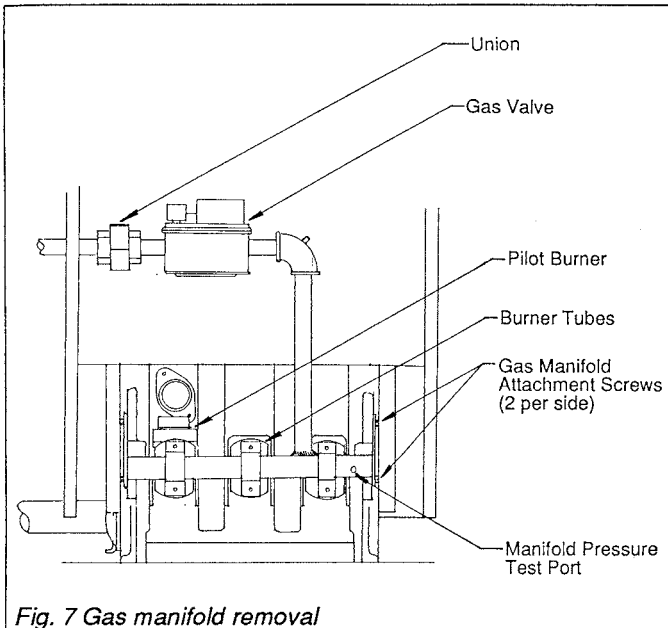


Fig. 7 Gas manifold removal

**Gas input — CAUTION**

Do not exceed input rating stamped on name plate of boiler.

1. Close main gas shut-off valve.
2. Disconnect main power supply to boiler.
3. Close main gas shut-off valve.
4. Remove plug (1/8") on manifold. Install test plug and connect U-tube manometer.
5. Place boiler/burner in operation. See page 6.
6. Read manifold gas pressure and compare with stamped rating on nameplate. If necessary, adjust pressure on gas valve.  
If using meter clocking method: Ensure there is no gas flow through the meter other than to the boiler being checked. Other appliances must remain off, including their pilot burners.
7. Deactivate boiler, reinstall 1/8" plug, place boiler in operation again.
8. Repeat gas leak test at plugs (1/8") and ensure tightness.

**Main burner**

Proper flame: Upper main flame cone with light orange colouring, sharply defined individual flames, (Fig. 8).

Underfired: Lazy-burning main flame cone, mushy flame appearance throughout, smaller flame sizes than in Fig. 8.

Overfired: Increased burner noise, higher flame sizes than in Fig. 8.

**Pilot burner (Millivolt Ignition System)**

To inspect flame, turn pilot burner cover lid to left.

**ATTENTION: Use pliers or screwdriver only; lid is hot!**

Proper flame: See Fig. 9 Pilot burner flame must show one tip on left side towards thermocouple (flame tip appearance: slight upwards curl) and one pointing towards main burner (flame tip appearance: straight forward).

Underfired: Lazy-burning overall flame. Flame tip pointing towards thermocouple is not properly touching thermocouple. Flame tip towards main burner is short and outer flame cone tip curls upward.

Overfired: Increased pilot burner noise, long inner and outer flame cone towards main burner.

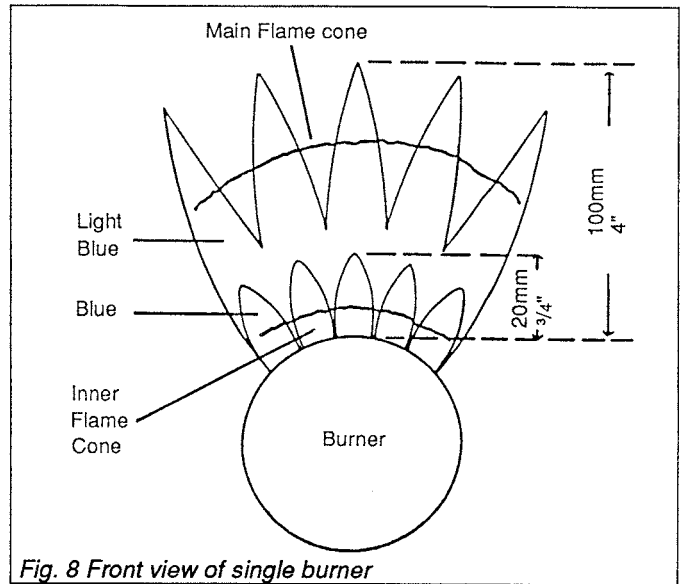


Fig. 8 Front view of single burner

**Burner wiring**

Wiring diagrams are shown on page 9. All wiring must be properly grounded! Before attempting to wire unit, disconnect power supply at main service panel first.

All electrical wiring must be in accordance with the Canadian Electrical Code C22.1, Part 1.

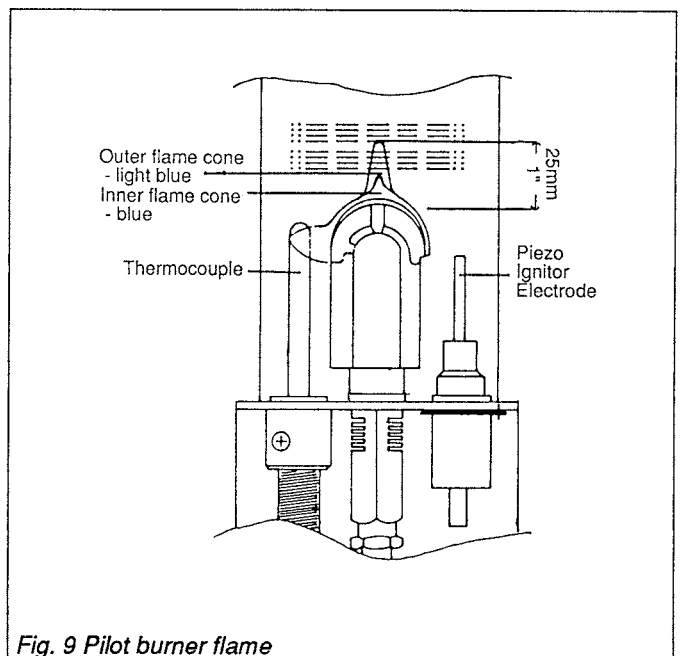


Fig. 9 Pilot burner flame

**Electrical connection**

1. Remove front cover panel.
2. Remove HSI module from junction box.
3. Feed all main power wiring through opening in left boiler side panel and into junction box.

**Ignition system wiring**

Detailed ignition system wiring is shown in the boiler wiring diagram (page 9).

**System start-up procedure**

If the system was shut down for an extended period of time, have a qualified service technician restart and recondition your system.

1. Check if all national and/or local rules and regulations have been adhered to on this installation. Do not attempt to start the boiler if you smell gas. If you smell gas, open windows. Do not touch electrical switches, extinguish any open flame, close all gas valves immediately. Call your gas supplier immediately.
2. Check system for proper water fill (cold fill pressure). Make sure that complete system is properly vented. Adjust automatic feed valve to proper desired fill pressure.  
Do not tamper with the unit or controls.  
Never burn garbage or paper in the unit or leave combustible materials around it.

**Additional attention must be given to the following paragraphs**

1. Once system water is heated, deactivate circulating pump/boiler and vent system of any remaining air within piping, radiation and boiler.
2. Check for proper boiler circulation, pump, zone valve, thermostat or operating control functions.
3. Check high limit aquastat by dialing it to a setting below the water temperature in the boiler. The gas burner must be deactivated. Turning the dial back to a setting higher than the present boiler water temperature must result in reactivation of gas burner.
4. Cycle boiler on/off with the operating control (thermostat) to verify proper operation.

**Annual shut-down**

If boiler is used for comfort heating only and not for domestic hot water as well, the boiler/heating system should be shut down during the summer time.

1. Turn down operating control (thermostat).
2. Disconnect main power switch.
3. Close main gas shut-off valve and turn knob on gas valve to "off" position.

**ATTENTION**

If system is subject to freezing temperatures and is not filled with antifreeze for protection, the system including the boiler must be drained of water. Valve before automatic feed valve (if installed) must be closed; any other valves, air vents and drain valves must stay open.

**Advise the operator/ultimate owner**

1. Of the proper system operation sequence.
2. Explain the equipment as well as the need for combustion air.
3. Demonstrate an emergency shut-down, what to do and what not.

**Before leaving jobsite**

Fill in and sign warranty card for boiler and hand over to owner for record keeping.

**Maintenance**

**Inspections during heating season**

**Attention Owner**

You have purchased a heating boiler of top quality — Congratulations!

In order to ensure that the boiler continues to operate at its peak performance, safety and efficiency, observe and follow the recommendations for maintenance, inspection and service routine. Early detection of problems and their

immediate repair will usually result in less damage, lower repair cost and continued safe operation.

**By Owner – frequently**

- Check pressure gauge for correct system (water) pressure. Check for water on floor from discharge pipe of the pressure relief valve or any other pipe, pipe joint, valve or air vent.
- Check for moisture, water, or appearance of rust on flue gas pipes or their joints.
- Ensure that nothing is obstructing the flow of combustion ventilation air and no chemicals, garbage, gasoline, combustible materials, flammable vapours and liquids are stored (not even temporarily) in the vicinity of the boiler.

**Periodically**

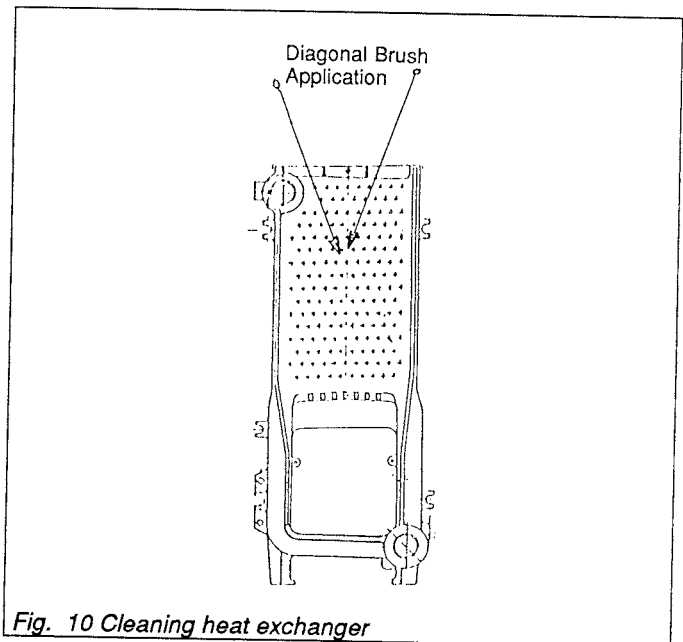
- Inspection of low water cut-offs, including flushing of float types (if used).
- Inspect flow switch (if used).
- Inspect main burner flame and pilot burner (see page 5).

**Service agency — annually**

**Boiler servicing – heat exchanger cleaning**

A service/inspection of the boiler and the system is recommended once per year.

Before heating season starts, boiler/burner should be serviced by a qualified service agency.



*Fig. 10 Cleaning heat exchanger*

**Cleaning heat exchanger (flue gas passageways)**

1. Disconnect power supply to boiler and all heating related components.
2. Close main gas shut-off valve. Allow boiler to cool if necessary.
3. Remove front panel.
4. Remove gas burner assembly from boiler (refer to gas burner removal procedure, page 5).
5. Refer to Fig. 11 for draft hood removal. Disconnect vent pipe from draft hood outlet.
6. Remove top panel from boiler, (4 screws).
7. Remove rear panel, 6 screws).
8. Remove screws securing mid panel, upper front panel and control panel to side panels, (4 screws per side).
9. Remove side panels, (3 screws per side).

10. Remove top insulation and loosen insulation jacket to reveal screws securing draft hood to cast iron heat exchanger, (4 screws).
11. Carefully pry draft hood from heat exchanger.
12. Clean fins by brushing diagonally through sections.
13. Inspect combustion chamber by using flashlight between front section legs.
14. Before reinserting burner manifold, clean stainless steel burners with soft brush.
15. Inspect ignition system. Check igniter on Hot Surface Ignition for cracks or other deterioration. On standing pilot systems it is recommended to install a new thermocouple every two years for optimum performance.
16. Reverse steps 4 through 11 to reassemble boiler. Seal draft hood to casting using a high temperature RTV type sealant.

**Additional check points of annual service inspection**

Check boiler draft hood (inside and outside) and flue gas pipe condition, chimney connection and chimney itself.

Check pressure relief valve, system pressure and verify proper operation of automatic feed if installed.

Check heating pipe joints, valves, air vents, etc. System leaks must be corrected immediately to avoid further defects. The cause of defect must also be determined in order to avoid further problems.

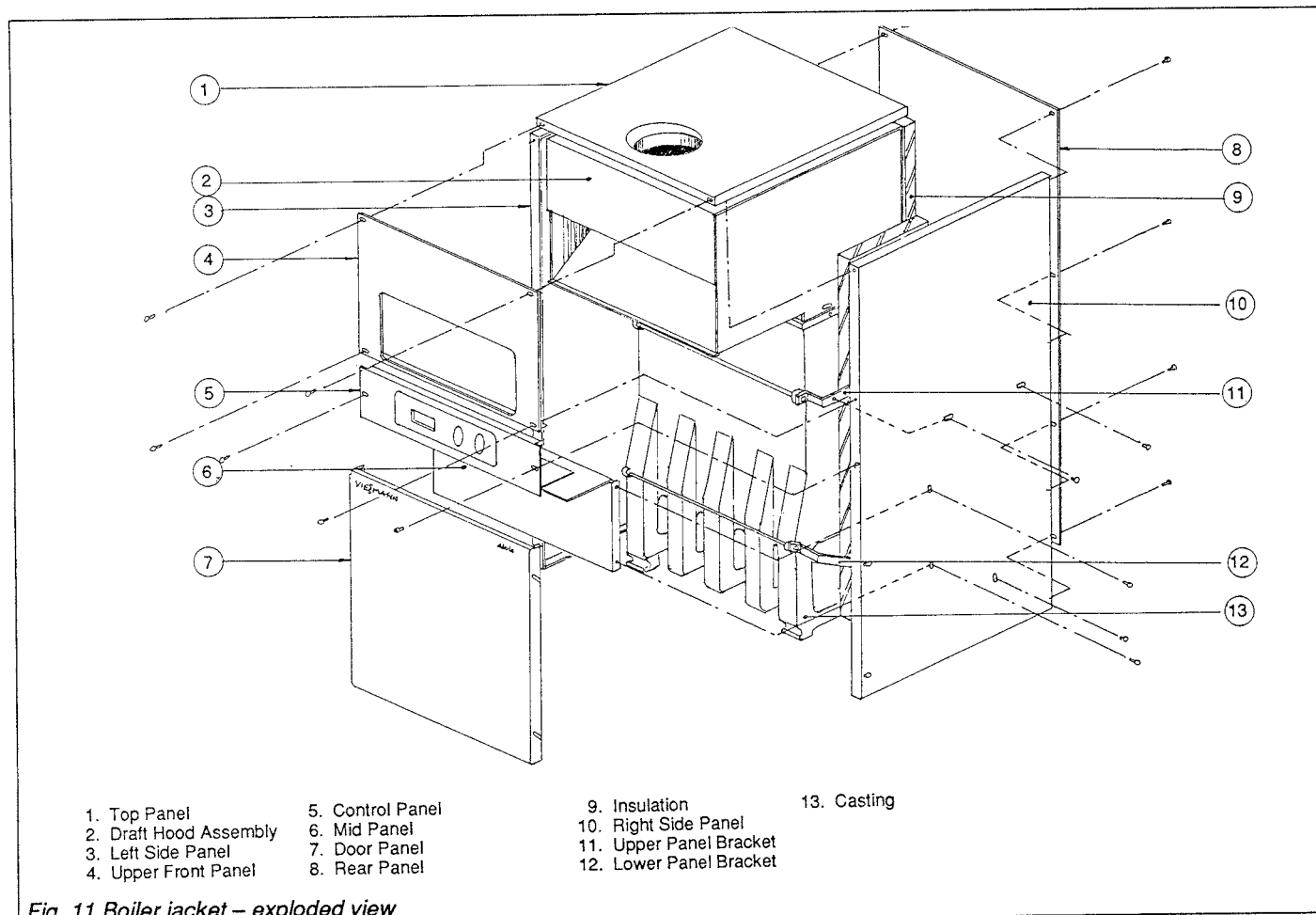
Check for proper combustion air supply and ventilation for the boiler.

Check for combustible material or chemicals stored too close to the boiler. Operate high limits by dialing lower settings, switching burner on/off to verify function of same. If low water cut-off is installed, check and verify proper function according to manufacturer's instructions. If oil lubricated circulating pump is used, check for proper lubrication.

Check for gas-tight connection of gas piping, unions, gas valve and manifold.

Check proper ignition and gas burner operation.

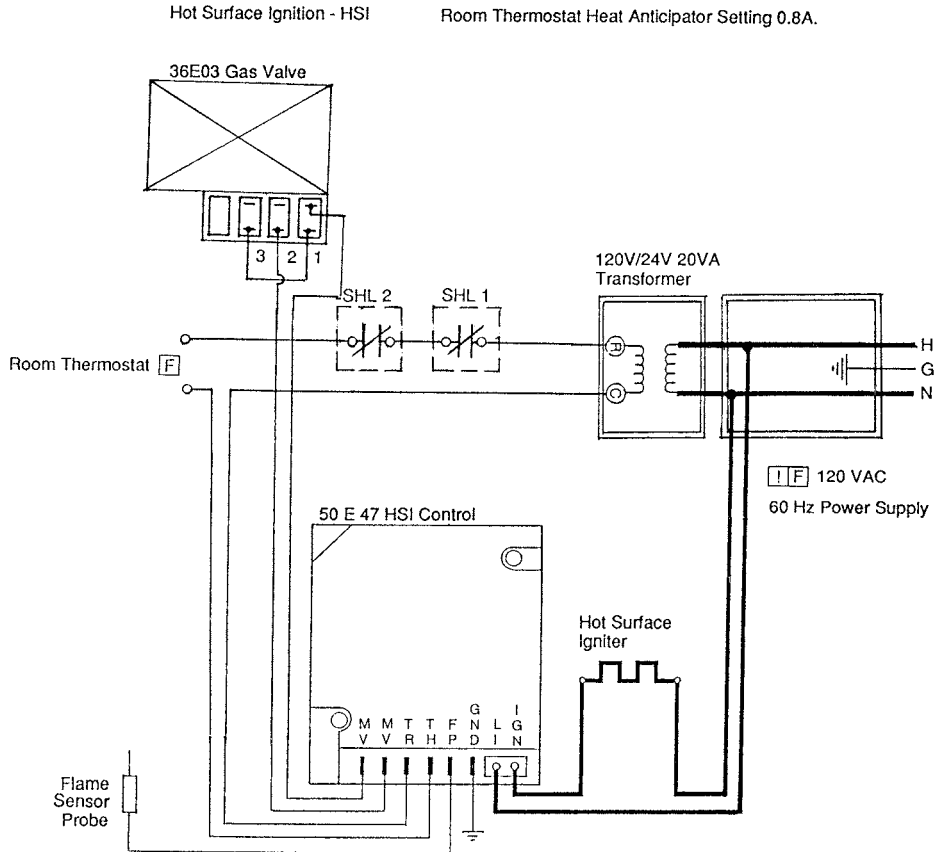
Combustion test must be performed by a competent service technician.



**Fig. 11 Boiler jacket – exploded view**



### Atola-EC With Hot Surface Ignition



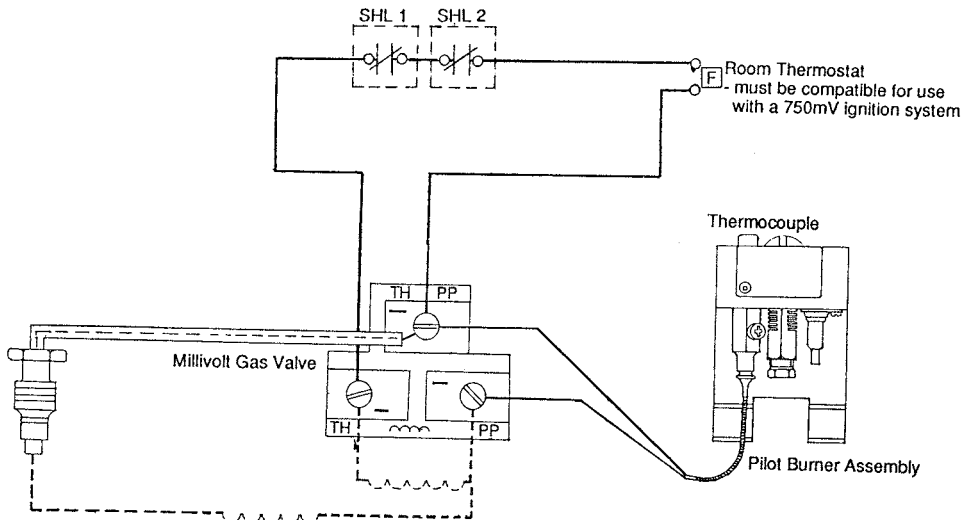
[F] Field Supplied

[I] Provide Disconnect Means and Overload Protection as Required

SHL 1 Safety High Limit 110°C (230°F)  
Fixed, Manual Reset

SHL 2: Operating Limit, Adjustable

### Atola-EC With Millivolt Ignition



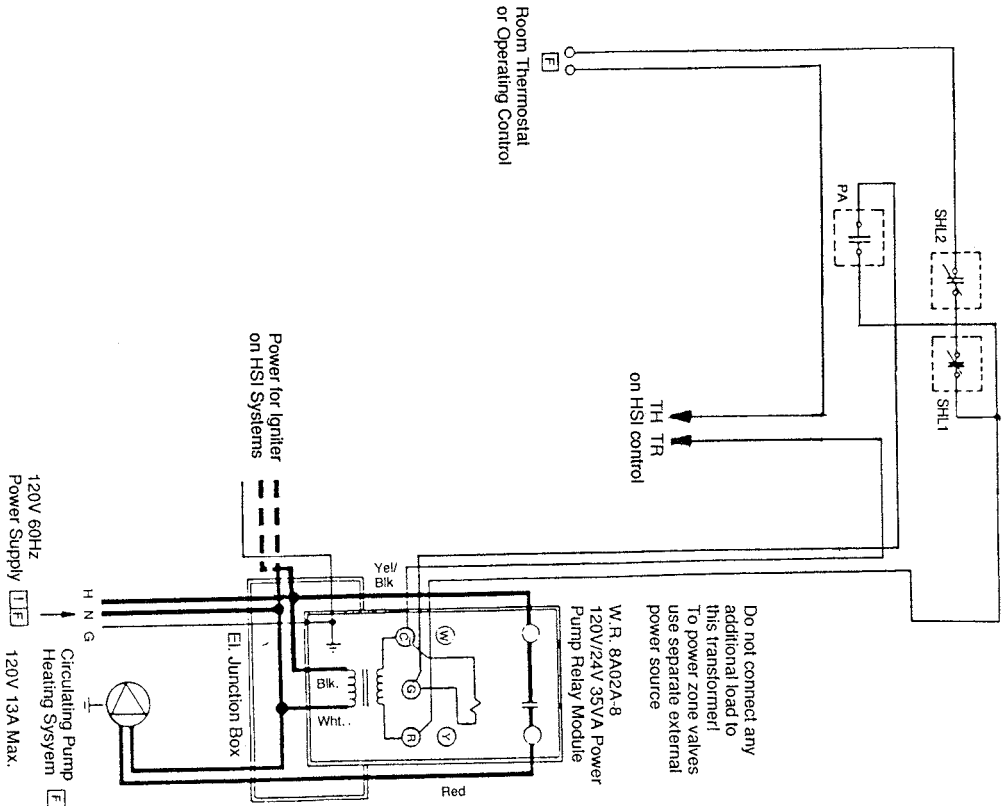
[F] Field Supplied

SHL 1 Safety High Limit 110°C (230°F)  
Fixed, Manual Reset

SHL 2: Operating Limit, Adjustable

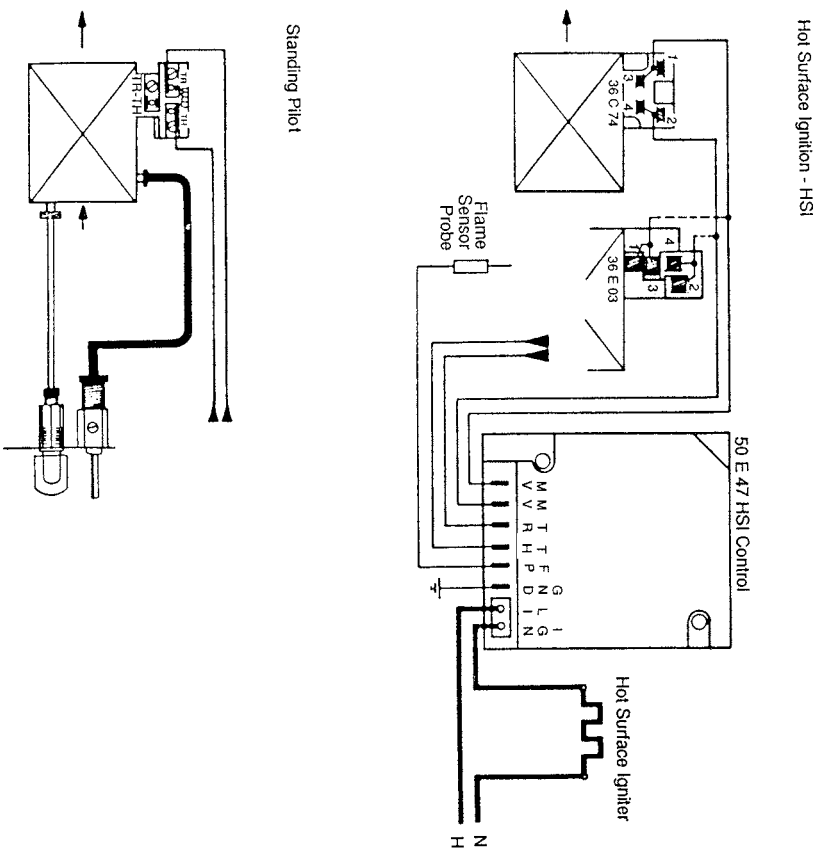
Max. wire length between boiler and thermostat:  
2 Wire 18 Gauge Cable: 30 ft. (9m)  
2 Wire 16 Gauge Cable: 50 ft. (15m)

# Atola EC with pump aquastat



- [E] Field Supplied
- PA - Pump Aquastat Control with fixed settings  
Pump on at 40°C (104°F)  
Pump off at 33°C (91°F)
- [I] Provide disconnect means and overload protection as required
- SHL1 - Safety High Limit 110°C (230°F)  
Fixed, Manual Reset
- SHL2 - Safety High Limit  
Adjustable
- H - Hot
- N - Neutral
- G - Ground

# Atola Boiler Ignition Systems



Room thermostat heat anticipator Settings  
Single seat gas valve: Setting 0.2A.  
Redundant seat gas valve setting 0.6A.

The combustion analysis and trouble shooting information contained herein should only be considered by a qualified service technician.

<b>STANDING PILOT — Millivolt</b>		
<b>Trouble</b>	<b>Cause</b>	<b>Cure</b>
Pilot burned out	No gas, or gas supply was temporarily interrupted.	Check position of main gas shut-off valve or purge gas line of air.
	Plugged pilot burner orifice	Remove orifice and clean.
	Gas pressure too high or too low	Adjust (see page 5).
	Defective thermocouple	Replace.
Pilot burner will not light	Damaged pilot burner	Replace.
	Piezo ignitor defective	Replace.
	Ignition electrode defective	Replace.
Pilot burner will not light	Gap between ignition electrode and pilot burner too wide	Adjust electrode positioning or bend electrode tip (spacing to pilot burner max 3mm (1/8")). Bend carefully due to ceramic!
	Defective electrode or ignitor connection	Clean and attach properly.
Main burner will not light	Boiler temperature too high (high limit lock-out)	Wait for boiler to cool down. Reset fixed high limit.
	Gas valve knob still in pilot position	Turn to "on" position.
	Room thermostat setting too low	Increase setting.
	Poor contact in thermostat circuit	Check all wiring and connections.
Pilot flame out once main burner is on	Bad thermocouple connection on gas valve	Check, clean, tighten or replace thermocouple.
	Improperly heated thermocouple	Adjust pilot (see page 6).
	Gas valve defective	Replace.
<b>HOT SURFACE IGNITION</b>		
<b>Trouble</b>	<b>Cause</b>	<b>Cure</b>
Element will not heat up	Boiler temperature too high (high limit lock-out)	Wait for boiler to cool down. Reset fixed high limit.
	Room thermostat setting too low	Increase setting.
	No power	Check power supply.
	Ignitor element defective	Replace.
	Defective wire or connection to module	Replace wire.
Main burner will not light	Defective module	Replace.
	Boiler temperature too high (high limit lock-out)	Wait for boiler to cool down. Reset fixed high limit.
	Gas valve knob in "off" position	Turn knob to "on".
	No gas, or gas supply has been temporarily interrupted	Check position of main gas shut-off valve or purge gas line of air.
	Module defective	Replace.
Main burner will not light	Gas valve defective	Replace.
	Defective ignitor/sensor	Replace.
Main burner will light and turn off again within safety timing of module	Defective module	Replace.

