

BAXI LUNA 310 Fi

TECHNICAL INFORMATION

Baxi Luna Wall-Hung Boiler Commissioning Checklist

Please attend to each of these items before calling for technical assistance

	Venting connected and secure
	Power supply properly polarized
	Relay in place and properly wired to thermostat
	All isolation valves are open
	Air has been purged from heating system
	No visible water leaks (drip stains)
	Pressure gauge stable at 1.5mbar
	Gas pressure settings are correct
	Hot system flush performed
	User manual left on site

It is very important that these steps be carried out in order to have the boiler operate without any additional service required.

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Baxi Luna 310fi Features & Benefits

- Gas-fired wall hung combination boiler
- Input from 126,000 BTUH to 45,000 BTUH
- Output from 105,000 BTUH to 35,000 BTUH
- Automatically modulates output to meet demand
- “On Demand” domestic hot water with no storage tank
- Prioritizes to domestic hot water & does not mix heating water with domestic hot water
- Direct vent, sealed combustion
- Comes complete with 4” concentric vent termination, 90-degree vent elbow & valve kit (pre-swaged to accept 3/4” & 1/2” copper pipe)
- Reduces mechanical room from 100 sq.ft. to 6 sq. ft. --saving valuable floor space
- Can be mounted in closets or between kitchen cabinets
- Virtually silent operation
- User friendly control panel, featuring individual heating & DHW controls
- Easy service access from front of unit and diagnostic LED’s for easy trouble shooting
- Built-in circulation pump
- Built-in relief valve
- Built-in pump timer (circulates pump for 5 minutes every 24 hours if system has not operated)
- Built-in automatic air vent
- Built-in expansion tank
- Built-in backflow preventer
- Built-in Hi-Limit, frost protection, low water cut-out controls
- Built-in pressure gauge
- 10-year warranty on heat exchangers; extended parts and labour warranties available
- Outdoor reset control option
- Attractive leasing programs available

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BAXI

With the boiler in place on the wall, measure the distance from the face of the flue elbow to the outside of the wall (X) fig.3. Transfer this measurement onto the outside air duct. Take this measurement from a spot about ½ inch back from the terminal fixing screw. Do this so that if you ever need to remove the termination cap you can access the screws.

Mark around the duct and cut off the excess duct. Transfer the measurement of the waste piece of duct onto the smaller flue duct fig.4 and cut this off.

Make sure that the flue duct is not cut short, as this will cause problems

Standard venting

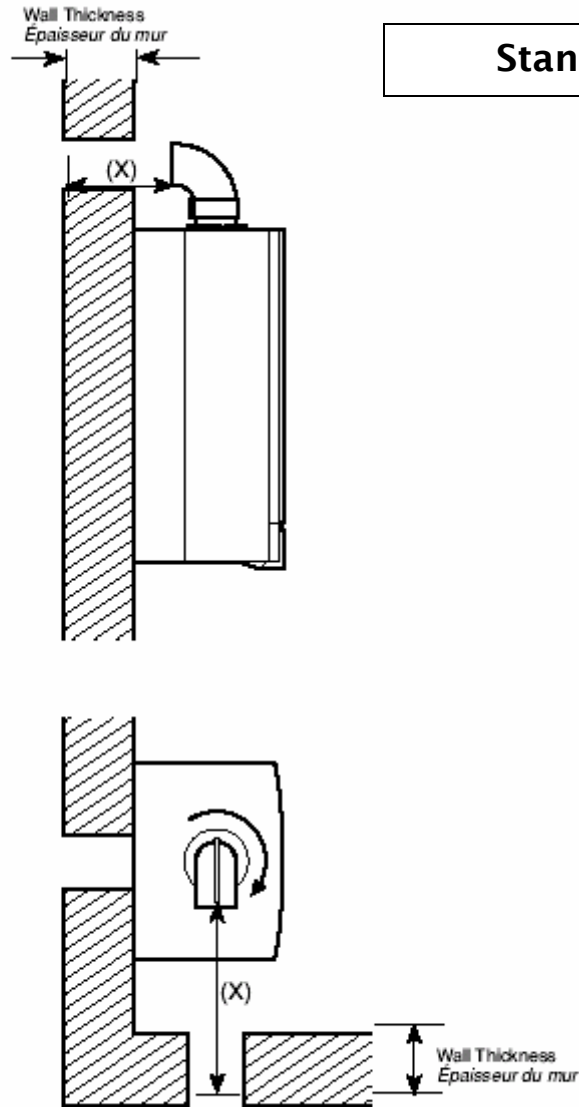


Fig. 3

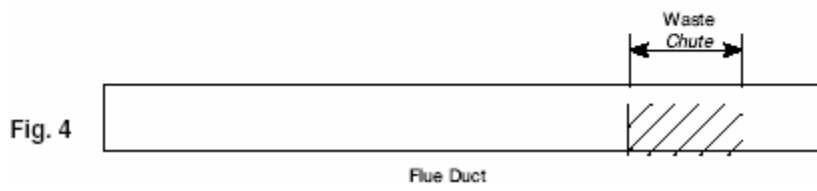
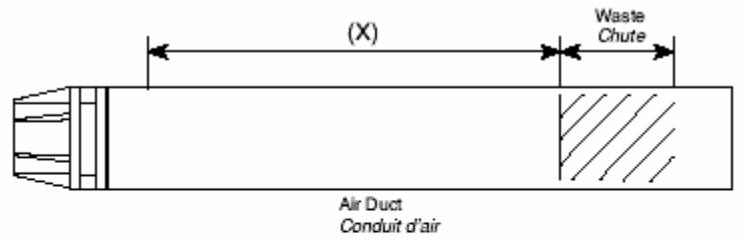
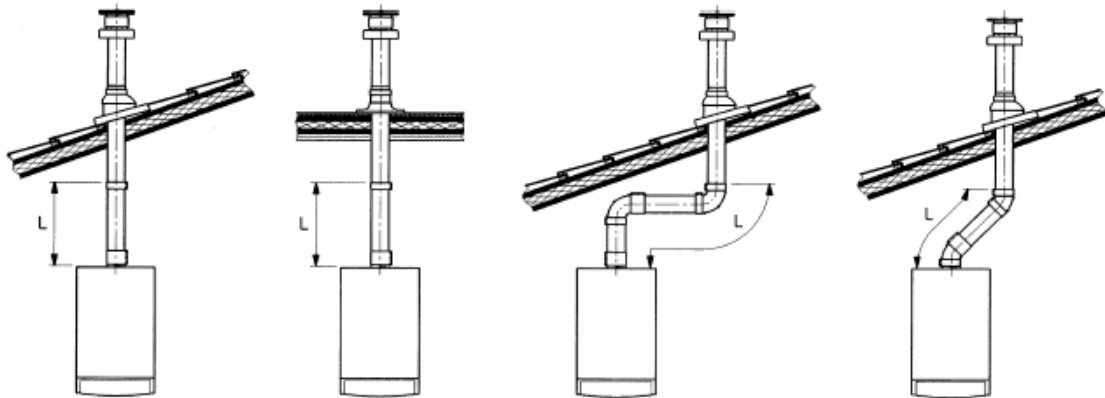
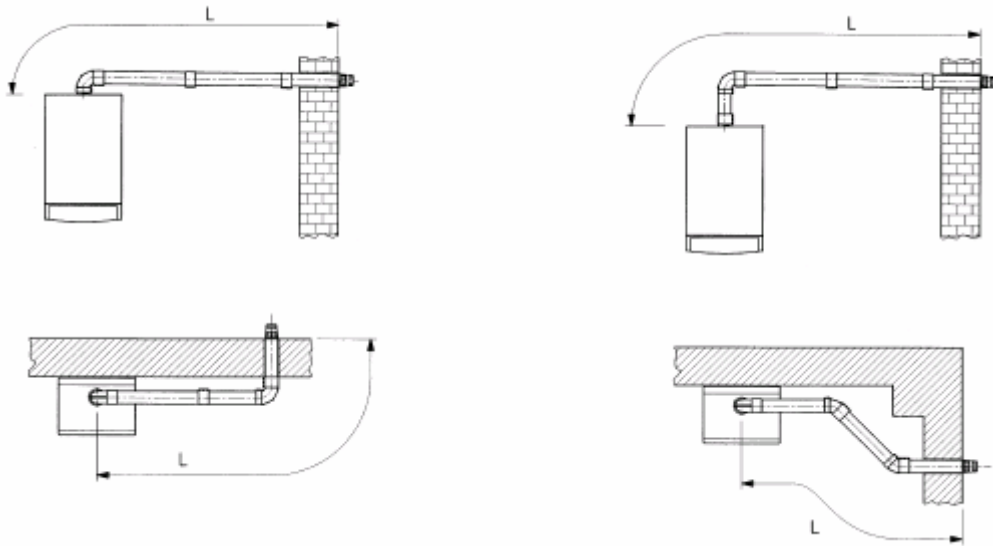


Fig. 4

Duct can be cut with a hacksaw

Coaxial venting



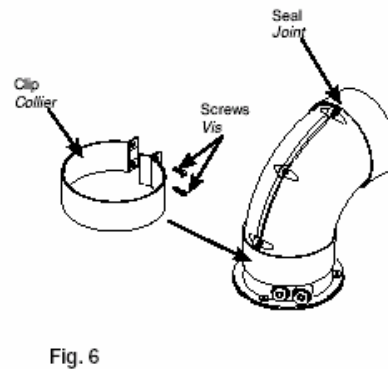
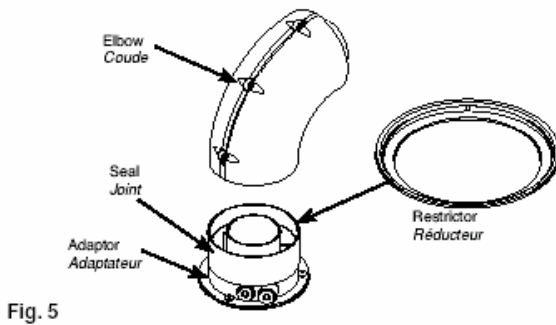
The coaxial (concentric) venting has a maximum operating length of 4mtr. (13.2 ft) in either the horizontal or vertical configuration. The elbow supplied with the standard horizontal flue is not included in any equivalent length calculations. Any additional “in line” bends in the flue **must** be taken into consideration.

A 45° bend = 0.5 mtr (19.5”) A 90° bend = 1.0 mtr. (39.5”)

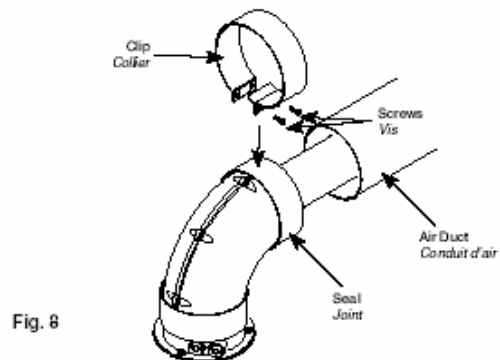
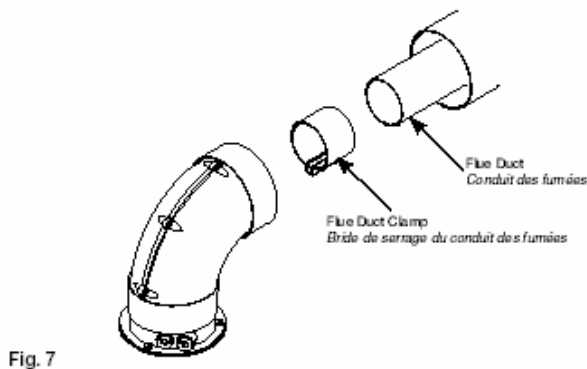
The illustrations above show examples of maximum equivalent vent lengths. Note in the vertical configuration the vent is measured from the top of the boiler to the underside of the vertical termination fitting.

**Coaxial venting is classed as
'0' clearance to combustibles.**

Vent restrictor and clamps



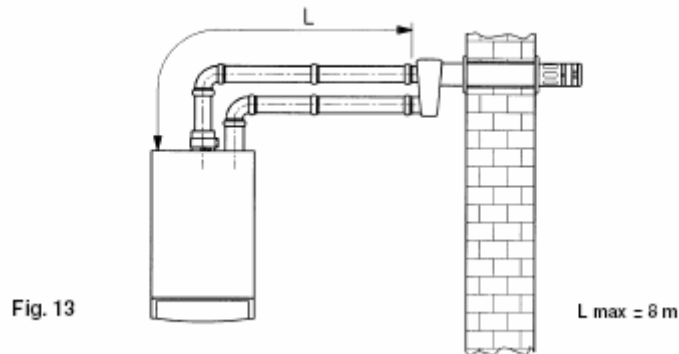
The boiler is supplied with a vent restrictor ring (fig.5) fitted in the flue connection. This is needed if the vent length is [less than 1.5 mtr. \(5ft\)](#). For venting lengths more than 1.5 m., remove and discard.



The venting is joined together with clamps. These clamps are supplied with each piece of vent ducting or fitting. The inner flue duct uses a metal clamp. This clamp is used as is, no sealant is required. The outer air duct is used with the silicone gasket seal. This gasket allows the air duct to be fitted with a gap between the air ducts if in a tight spot; the gap allows the inner clamp to be tightened before the outer clamp is tightened.

Two pipe venting

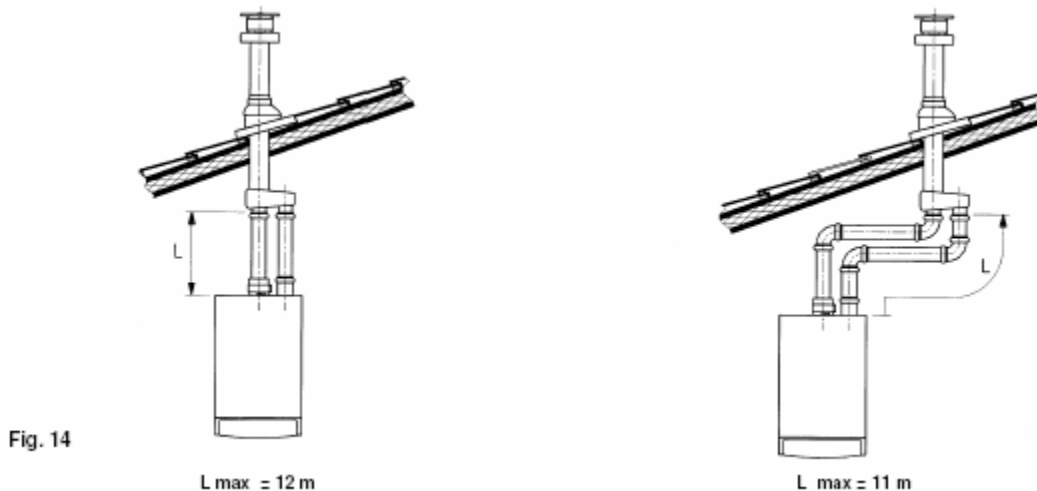
For venting lengths greater than 4 mtr. (13.2 ft) two separate air ducts are required



The maximum vent length for two pipe venting in the horizontal configuration is 8 m. (26.3 ft). Any “in line” bends **must** be taken into consideration for the equivalent vent length calculation.

A 45° bend = 0.25 m (10”). A 90° bend = 0.5 m (19.5”).

IMPORTANT: ensure a minimum downward slope of 1 cm per each metre of duct length toward the outside (1/4” per each 3ft).



The maximum vent length for two pipe venting in the vertical configuration is 12 m. (39.3ft). Any “in line” bends **must** be taken into consideration for equivalent vent length calculation.

A 45° bend = 0.25 m. (10”). A 90° bend = 0.5 m. (19.5”).

IMPORTANT: if the flue duct exceeds 6 mtrs the condensate collector kit (supplied as an accessory) must be fitted close to the boiler.

2 pipe venting will have to have the flue vent pipe insulated from combustible materials

Luna 310 control panel

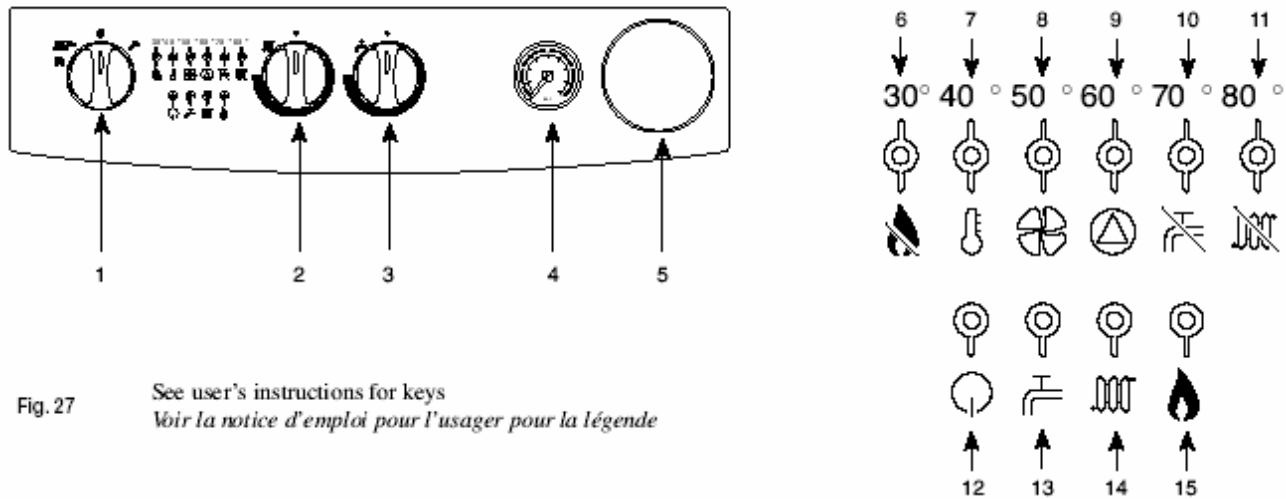


Fig. 27

See user's instructions for keys
Voir la notice d'emploi pour l'utilisateur pour la légende

The control panel selector switch (#1) has three positions: center is the off position; to the right is hot water mode only, and to the left is the heating and hot water mode. If the switch is turned fully to the left, this will reset the controls if a fault light is flashing.

[The reset is spring operated and will return to the normal position.](#)

The heating thermostat control (#2) will control the heating closed loop temperature with the T.RISC. in the [off position](#) from 30°C (85°F) to 85°C (180°F). With the T.RISC. in the [on position](#) the heating closed loop temperature will operate from 30°C (85°F) to 45°C (110°F).

The domestic hot water thermostat (#3) will control the temperature of the hot water to a maximum of 65°C (149°F). The domestic hot water temperature at the tap will depend on three factors,

1. The set position of the thermostat knob.
2. The temperature of the cold water entering the boiler.
3. The flow rate of hot water leaving the boiler.

The minimum flow of hot water needed to bring the boiler on is 2.5 l/m (0.5 gpm). The maximum flow is controlled by the flow regulator to 12.7 l/m (2.8 gpm. Imperial, 3.3 gpm US).

Boiler LED display

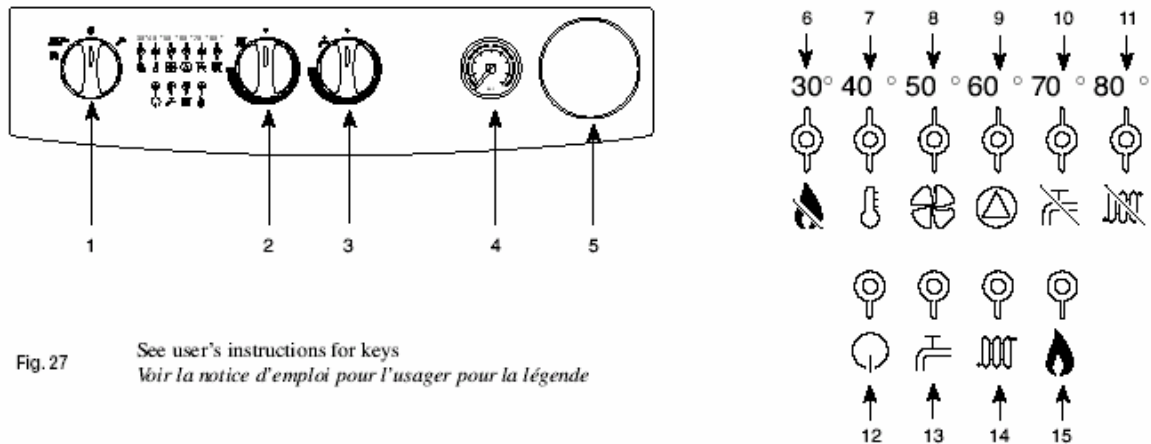


Fig. 27

See user's instructions for keys
 Voir la notice d'emploi pour l'utilisateur pour la légende

The control panel pressure gauge #4 shows the pressure of the closed loop heating system. The system pressure must be between 1 Bar and 1.5 Bar (15 psi and 21 psi). If the pressure falls below 0.5 Bar (7.5 PSI), the low water cut off will operate and the boiler will not fire. If the water pressure in the closed loop has to be continually topped up, [there is a leak in the system](#), which must be found and repaired.

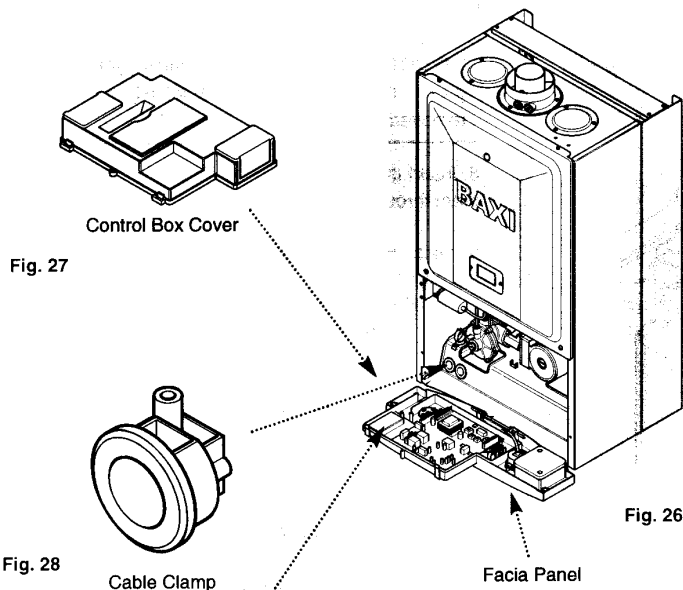
The other symbols and LED lights on the control panel are for the closed loop temperature display and for troubleshooting. The red LED's numbers 6-11 have a dual function, they will light up in progression to show the temperature of the closed loop and remain constantly illuminated. If a fault develops, the appropriate LED will begin to flash.

LED 12 will be on all of the time the boiler is turned on. LED 13 or 14 will light up when there is a call for Hot water (13) or Heating (14), there will only ever be one or the other of these LED's on, never both at the same time. LED 15 will light and stay on to show that the burner is alight and operating.

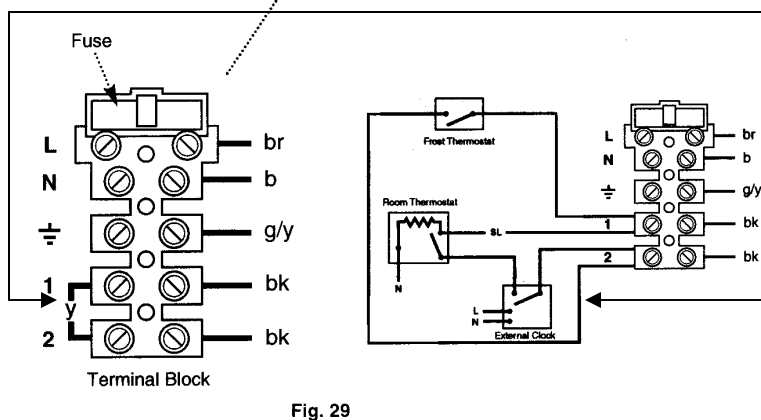
The flashing LED's will indicate the following faults:

- 6. Flame failure
- 7. High Limit thermostat operated
- 8. Fault with the Fan, Air pressure switch or the Venting
- 9. Fault with the Pump or Low system pressure
- 10. Faulty Hot Water Sensor
- 11. Faulty Heating Sensor

Electrical and room thermostat

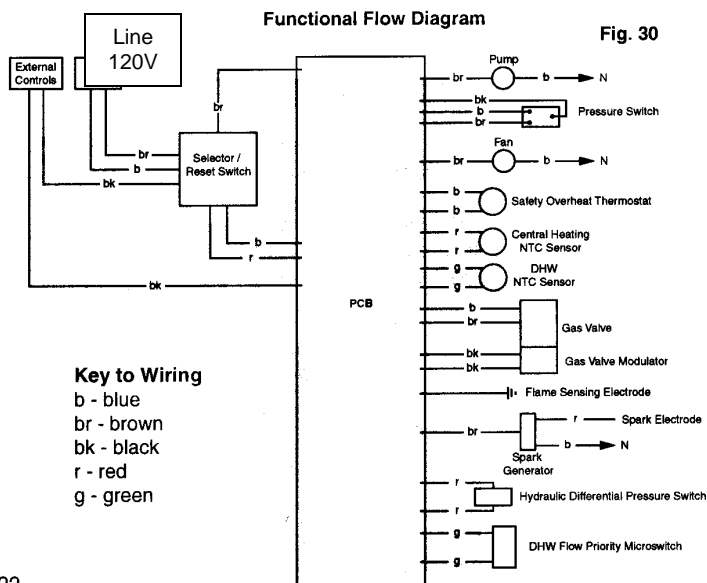


The BAXI LUNA 3.10 is supplied with a 1-meter cord, ready to plug into a nearby power outlet. This boiler is polarity sensitive, before commissioning the boiler electrical system checks should be done. These should be performed with a suitable meter, and include checks for Ground Continuity, Resistance to Ground, Short Circuit and Polarity.



To connect an external control to the boiler, remove yellow link wire between terminals 1 and 2 and connect the cables here

IMPORTANT: The external control **MUST** be suitable for 120V switching. The output from terminal 1 and 2 is 120V



To gain access to the control PCB, undo the screws that keep the control panel in place and lower the control panel. On the back left side of the control panel is the PCB cover. Remove the two screws holding this cover in place, push the retaining clips and lift the cover up and toward you. If you are just checking the 3.15amp fuse do not remove the full cover, just 'pop' the access panel on the left.

Electronic PCB jumper settings

When the jumper is in the OFF position:

T.RISC.	boiler heating temperature range 30 - 85°C
GPL	operation of system with NATURAL gas
T-off	3-minute heating stand-by time
POMPA	pump post-circulation time (in heating) of 3 minutes after ambient thermostat cut-in

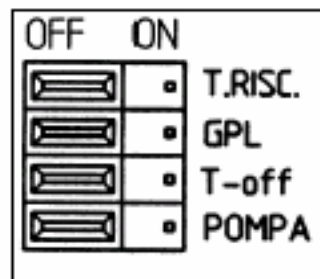


Fig. 29

When the jumper or the switch is in the ON position:

T.RISC.	boiler heating temperature range 30 - 45°C
GPL	operation of system with LPG
T-off	10-seconds heating stand-by time
POMPA	continuous operation of pump during heating

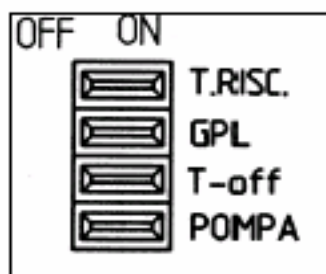


Fig. 30

NB Make sure that electrical power supply has been disconnected

On the electronic PCB, you will find four jumpers, which allow you to make some changes to the operation of the boiler. These jumpers have two pins; with the jumper fixed on the two pins (Fig.30), the switch is 'on', with the jumper on the left pin only (Fig.29), the switch is 'off'. When you unpack the boiler from the shipping carton, you will find that the only jumper in the 'on' position is the **T-off** jumper. This will allow the burner to re-light after a 10 second delay, when operating in the **heating** mode; **we recommend this be moved to the 'off' position**. This will allow the burner to stay off for 3 minutes, once the boiler thermostat has turned it off. This will stop the boiler from 'short cycling' and creating low temperatures in the vent during cold weather, thus preventing the vent from icing up.

The **T.RISC.** jumper in the 'off' position allows the boiler to operate from 30°C - 85°C (85°F - 180°F). In the 'on' position, it will operate from 30°C - 45°C (85°F - 110°F). This is for systems requiring low temperatures such as radiant floor systems.

The **GPL** jumper will be set by the factory for natural gas or propane.

The **POMPA** jumper in the 'off' position starts and stops the boiler pump when the boiler operates. In the 'on' position the boiler pump will run continuously when the heating operation is selected.

Turn off the power when changing jumper positions

Gas Valve and how to set the gas pressures

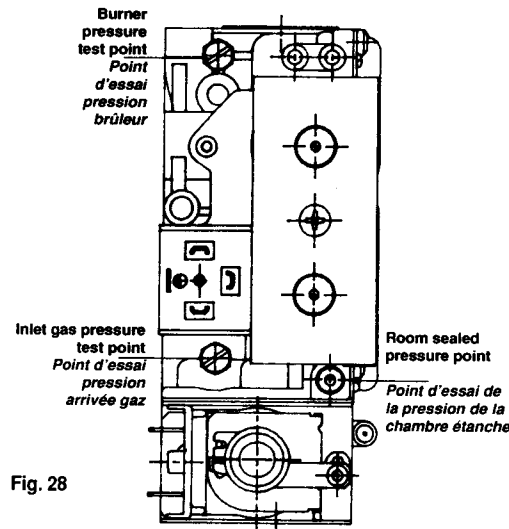
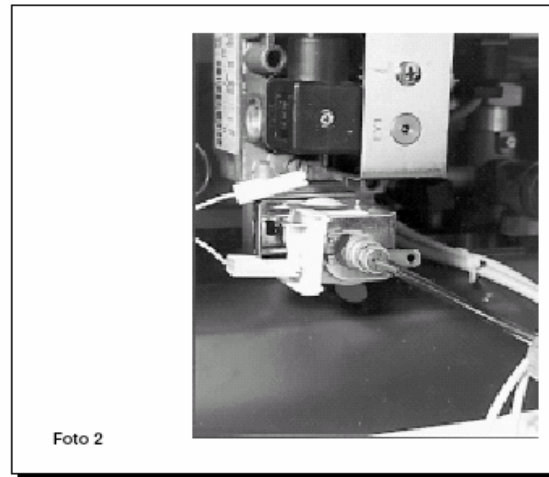
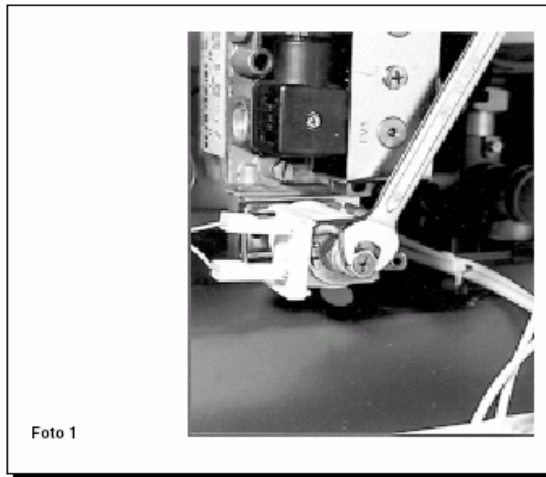


Fig. 28

The gas valve has a [working](#) inlet pressure of 7" w.c. for natural gas, and 11" w.c. for LP gas. There is a pressure drop through the valve of approximately 1" w.c. As the maximum operating gas pressure for natural gas is 5.6" w.c. and 9.8" w.c. for LP gas, it is important to test the gas pressure at the inlet test point with the hot water running.

The gas valve on the LUNA boiler is a fully electronic modulating gas valve. That is to say, it will automatically adjust the operating gas pressure to meet the demand on the boiler at that time. When there is a high demand, the gas pressure will go up to high fire to satisfy that need. As the temperature of the water in the boiler increases, the gas pressure will automatically reduce to save energy. With conventional firing boilers or furnaces, the appliance is either on or off, firing at the preset heat output of that particular unit. If it is say, a 75,000 BTU furnace, it will fire at 75,000 BTUs until either the appliance thermostat or the room thermostat is satisfied, and then shut off, then fire up at 75,000 BTUs again and so on until the end of the heat cycle. With modulation, the boiler will start at 75,000 BTUs, but will recognize that as the system starts to heat it no longer need the same 75,000 BTUs to do the same job, and will start to fire at 70,000 BTUs then 65,000 and then 60,000 and so on until either of the thermostats are satisfied. The boiler will modulate in [both](#) the heating and the domestic hot water mode. When operating in the domestic hot water mode, [the burner must stay alight](#) to avoid fluctuating hot water from the hot tap, therefore, you [must](#) check the high and low gas pressures.

Checking and setting the high and low gas pressure



Contrary to popular belief, most gas appliances are not factory set. Even if they say they are factory tested, an on-site check will invariably reveal varying degrees of accuracy.

With this in mind, after installing the boiler we [strongly](#) recommend that you set up the gas pressure. There are two gas pressures to set, high fire and low fire. Once these are checked and adjusted if necessary, the boiler will then modulate automatically between high and low fire.

[Set the high fire before the low fire setting.](#)

To set the high fire, open an unrestricted hot tap, the boiler will fire up and go up to high fire. The high fire gas pressure [must be 5.6" w.c.](#)

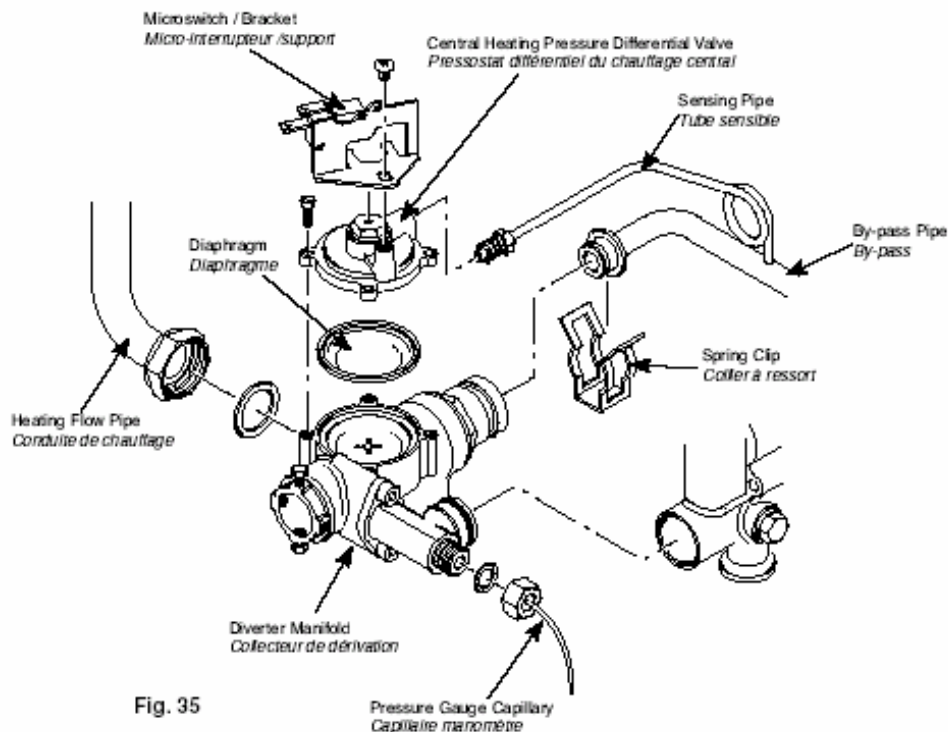
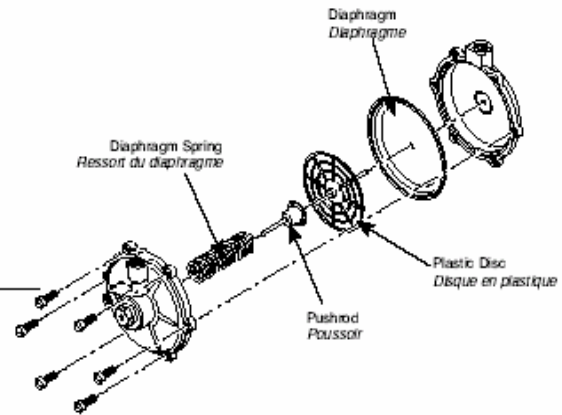
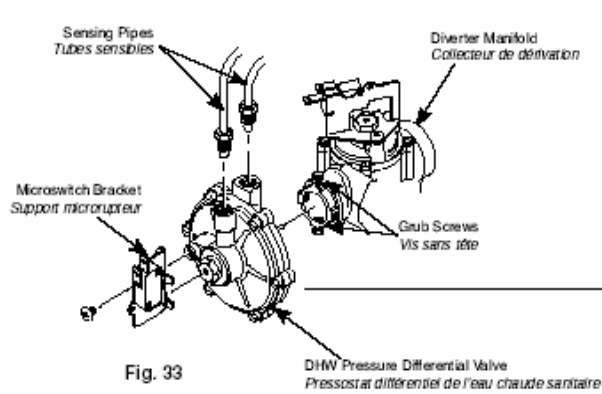
If this is not correct, you will need to adjust the gas valve in the following manner.

With a 10mm wrench on the gas valve modulating pin ([see foto 1](#)); turn the nut clockwise to increase the gas pressure, or turn it counter clockwise to reduce the gas pressure. If the boiler starts to modulate down before you have set the gas pressure, remove one wire from the solenoid coil for a short time to cool the boiler.

The low fire gas pressure can only be set once the high fire setting is correct. The low fire gas pressure [must be 0.7" w.c.](#)

After you have checked the high fire, and with the hot tap still running remove one of the wires from the solenoid coil ([see foto 2](#)); the burner will drop to low fire. If the low fire gas pressure is not correct, it can be adjusted by turning the [red philips screw](#) in the center of the modulating pin ([see foto 2](#)). Turn the [red screw](#) clockwise to increase the gas pressure, or turning counter clockwise will reduce the gas pressure. Reattach the solenoid wire.

Diverter valve assembly



The 3-port valve and pressure differential valve are located on the left side of the boiler. This valve diverts the hot water from the primary heat exchanger either to the hydronic-heating loop or to the secondary plate heat exchanger to heat the domestic hot water. The default position of this valve is in the heating mode. The valve does not change position until a hot tap is opened. The cold water from the main or from a well passes through the inlet manifold and operates the DHW differential valve. The valve will move forward closing the port to the heating loop and opening the port to the secondary heat exchanger. The output from the boiler is either 100% in the heating mode or 100% in the DHW mode, never both together.

DHW venturi and flow regulator

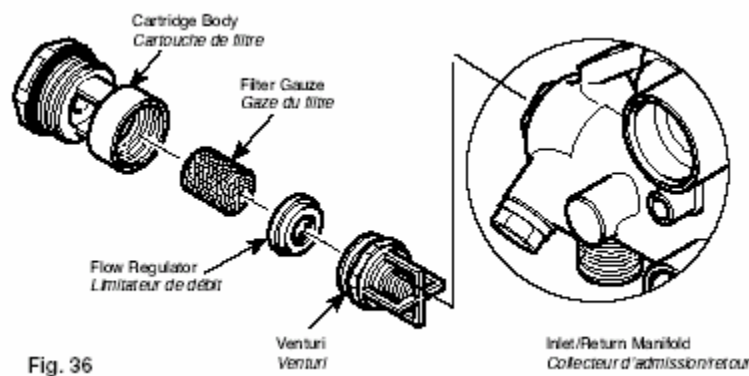
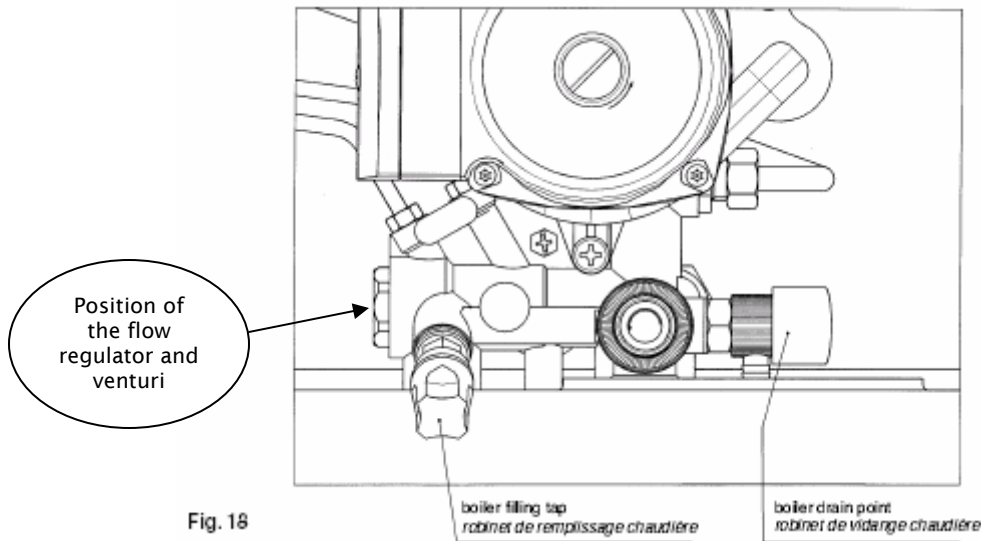


Fig.36 shows the flow regulator and venturi assembly. The venturi makes the DHW pressure differential valve operate. Water flowing through the inlet manifold passes quicker through the venturi; this lowers the pressure on the front of the DHW diaphragm and increases the pressure on the back. This allows the diaphragm to move forward, which in turn allows the 3-port valve to move forward closing the heating port and opening the DHW port.

To remove this assembly, close the cold-water inlet valve under the boiler and open a hot tap to relieve the pressure in the plumbing pipe work. Fig.18 shows the position of the assembly under the pump. The assembly can be removed by un-screwing counterclockwise and lifting out. Check the filter, flow regulator and venturi for debris, rinsing in clean water as necessary.

Reassemble in reverse order.

NTC - SENSOR

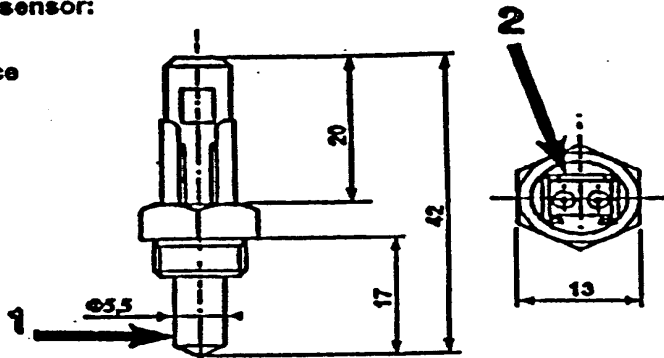
In the boiler there are two NTC sensors: a) "Heating System" control
b) "Domestic Hot Water" outlet control

The two sensors are interchangeable and their features are given in the diagram here below

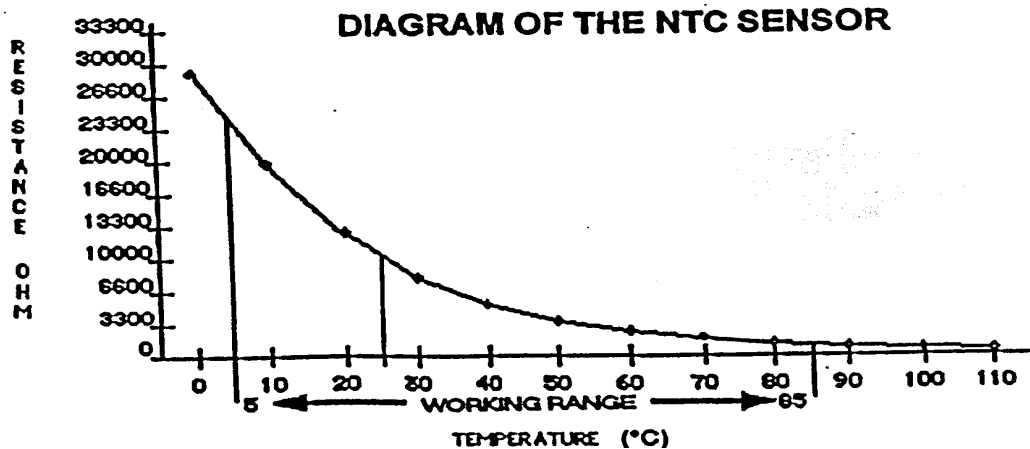
Some values of the NTC sensor:

Temperature	Electric Resistance
0°C	28270 Ω
25°C	10000 Ω
45°C	4913 Ω
90°C	1266 Ω

- 1- Sensor body
2- Electric connection

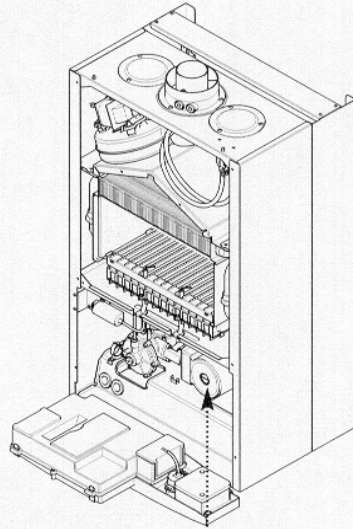


SENSOR: NTC thermistor - electric resistance at 25 °C: 10000 Ohm +/- 1%;
-coeff. B (25 - 85 °C): 3430 +/- 1%;
-temperature range: - 10 + 100 °C.



NTC (Negative Temperature Coefficient) sensors, also known as thermistors. There are two sensors in the LUNA 3.10 Fi boiler. The **primary** flow sensor is located in a dry well, on the outlet pipe from the main heat exchanger. The **DHW** sensor is located in the outlet manifold of the secondary heat exchanger, this is in the waterway. Both sensors are the same part number. A thermistor is a heat sensitive resistor, and should show a resistance if electrically tested. Although any given resistance is directly proportional to a corresponding temperature, measurement of resistance at a specific temperature is usually beyond the scope of the installer. If the **primary** sensor is replaced, a suitable thermal grease must be used, failure to do so will result in ineffective temperature sensing. One fault with an NTC sensor is that it could go 'open circuit' at high temperature.

Grundfos Pump



The pump used in the **Luna 3.10 Fi** boiler is the Grundfos UPS high head series. This pump has been specially designed by Grundfos for **BAXI**. The pump body incorporates an automatic air bleeder for venting the air from the boiler. If the boiler is the highest point in the heating system, the air will vent through the AAV. If you have pipe work or equipment above the boiler this AAV will **not** vent all of the air from the system, a suitable vent must be fitted at the highest point in the system. Available pump head for the heating system see the graph below.

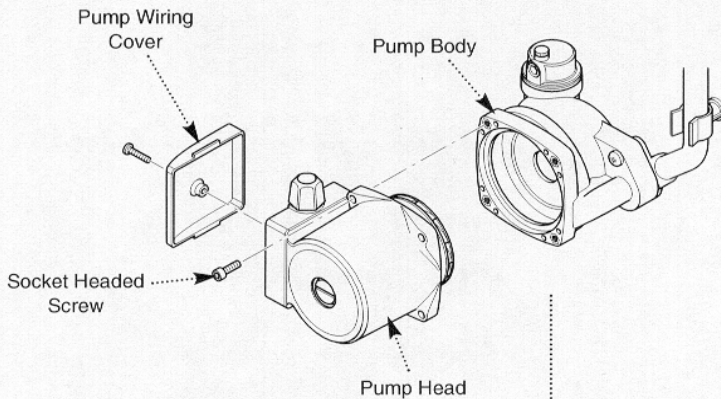
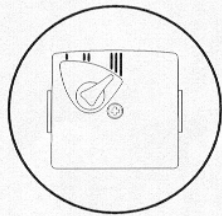
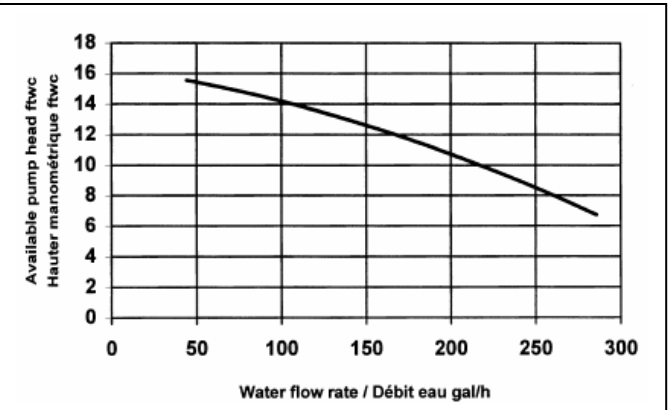


Fig. 54



Pump Setting

Fig. 55

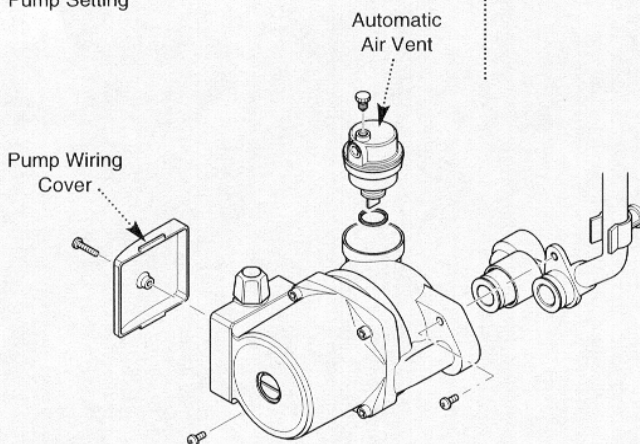


Fig. 56

The pump moves the water in the boiler and the heating system through the primary heat exchanger, and when in the DHW mode through the secondary heat exchanger also. **Whatever is in the heating system pipe work and equipment will pass through the pump.** If the installation, be it new or old has not been flushed correctly the debris, oil and flux in the system will damage the rotor and bearings in the pump. We recommend that the system be flushed before opening the shut off valves to the boiler; this will prevent debris from being pushed through the boiler. Then run the boiler to maximum temperature, drain and flush again. This will remove any oil and flux remaining in the system.

Luna 310 & 1.31 Flushing Procedure

The procedure for flushing the closed loop is as follows:

- Connect a hose to the system drain tap
- Close the boiler heating supply valve (this will allow clean water to be flushed through the boiler first)
- Open the drain tap on the closed loop
- Open the fill valve on the boiler (the blue handle under the boiler)]
- When you see clear water coming from the hose, close the fill valve
- Now open the boiler heating supply valve and close the return valve
- Open the fill valve on the boiler (this will flush the rest of the system)
- When you see clear water coming from the hose, close the fill valve
- Close the drain tap and remove the hose
- Pressurize the system to the correct pressure on the pressure gauge

BAXI LUNA 310 Fi Troubleshooting Guide

Before getting started, remember...

Most of the faults experienced on start up are field issues associated with items **external** to the boiler. These are mostly simple problems, such as:

- Venting installed incorrectly
- Air in the system (system must be fully purged)
- Air in the gas line
- Undersized gas line
- System not flushed (cold flush then hot flush)
- Incorrect connection of external equipment
- Leaks in the Heating system and pipe-work

All BAXI LUNA boilers are tested during manufacture for correct operation and are shipped to you factory tested for correct operation. Notwithstanding, while commissioning the boiler, a few items need to be checked:

- Inlet gas pressure (static and working inlet pressure of boiler running at maximum output)
- Maximum and minimum burner pressures
- Power supply for polarity and ground

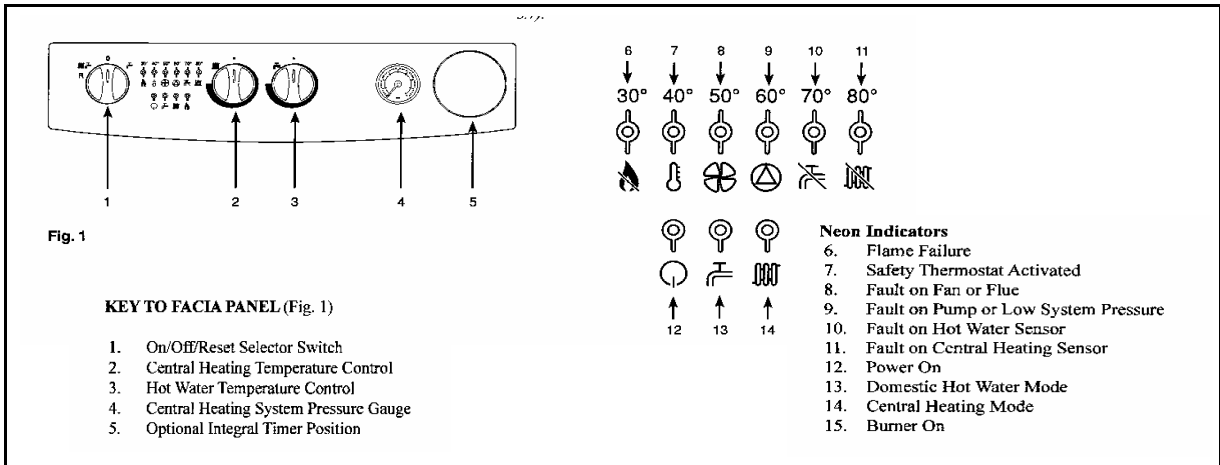
When troubleshooting **BAXI LUNA** boilers, avoid changing parts prematurely do not jump to the conclusion that a boiler component is defective. For example:

- Parts such as the control PCB are changed incorrectly, when it is another component supplying false information to it.
- The pump is sometimes changed unnecessarily because it has stopped operating. A pump operational fault is normally the result of contamination from a dirty hydronic system – in which case, the pump can be removed and cleaned (after which the heating system must be flushed and cleaned), and then returned to normal operation.

Get all the information before going to the job site.....

Get as much information from your customer before you go to the boiler: model of boiler; type of venting; type of system and layout connected to the boiler; how long has the system been installed, and is this an isolated breakdown or are they repeatedly resetting the boiler? Don't be afraid to ask the obvious questions! Does your customer know how to reset the boiler? (Just unplugging the lead and replacing it, or turning the boiler off and on again will not reset the logic board.) They have to turn the switch to "R" to restart the boiler. Is there any water in the system? Where is the needle on the pressure gauge? ***This may save an unnecessary trip to the job site.***

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Fault	Cause	Suggested Solutions
Boiler does not start no LED's lit.	No power at the boiler	<ul style="list-style-type: none"> ▪ Check 120 Vac at power cord outlet. ▪ Check if main 3.15 amp boiler fuse has blown.
Boiler does not start but #12 LED is lit.	#14 LED not lit (call for heat)	<ul style="list-style-type: none"> ▪ No signal from external control. Remove wires from thermostat connections 1&2 at terminal strip and jumper it. If boiler starts replace switching relay.
Boiler does not start but #12 LED is lit.	#13 LED not lit (call for DHW)	<ul style="list-style-type: none"> ▪ Open DHW tap fully, has pin moved out from DHW differential assembly to close micro switch (green wires)? No; DHW flow valve diaphragm damaged replace. If diaphragm OK clean and lubricate DHW valve rod.Yes; check continuity across DHW micro switch, replace if faulty.
Boiler does not start but #12 and #13 or #14 LED's are lit.	<p>Low water pressure</p> <p>Primary/DHW sensor faulty.</p> <p>Pump not operating</p> <p>Air in system</p> <p>Flow switch faulty</p>	<ul style="list-style-type: none"> ▪ Re-pressurize heating system till pressure gauge reads between 1-2 Bar on gauge. Check for and repair leaks in heating system. ▪ Check DHW/ Primary temperature sensors for cold resistance of approx 11 K Ω (resistance reduces with increase in temp), replace if faulty. ▪ Check for 120 V at pump, if no power and sensors OK, replace main PCB. ▪ 120 V at pump, but pump not turning. Release jammed pump by removing vent cap on front of pump and turning shaft counter-clockwise. If pump will not turn. Drain boiler, remove pump head release and clean pump cartridge. ▪ If pump is running but the flow switch has not closed, or is "bouncing" up and down, purge air from the pump and heating system. ▪ If pump is running but flow switch has not closed; has pin moved out from diverter valve to close micro switch?No; flow switch diaphragm damaged, replace. If diaphragm Ok clean and lubricate flow switch rod.Yes; check continuity across primary flow micro switch, replace if faulty.
Pump running, flow switch closed fan not running	Air switch not operating	<ul style="list-style-type: none"> ▪ Check air switch has not stuck in the open position. To check, remove room sealed door on boiler and pull suction tube from fan venturi. Gently suck on the end of the sensing tube, you should hear the air switch operating. Re-connect the sensing tube and retry lighting boiler, (signal from PCB to fan on start is via the NC terminals on the air switch). If air switch OK replace PCB.

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Fault	Cause	Suggested Solutions
Fan running, #8 (50°) fault code flashing.	<p>Air switch not operating?</p> <p>Moisture in air switch suction tube.</p> <p>Dirt in fan venturi.</p> <p>Scale at venturi port</p> <p>Severe local wind conditions.</p> <p>Incorrect vent length or configuration.</p>	<ul style="list-style-type: none"> ▪ This may be due to excess vent outside of building. Trim vent back to wall. Insulate vent in unconditioned spaces. ▪ Remove fan transition bend and inspect for debris. ▪ Remove fan transition bend and inspect for scale and deposits. Clear venturi port with #32 index drill. If this does not cure problem replace fan venturi. Note: scaling is probably due to vent sloping toward the boiler, ensure that vent is sloping toward the terminal. ▪ Check position of terminal, avoid terminating where other buildings and plantings will affect boiler flue operation. ▪ Check for incorrect vent installation or excess vent length. ▪ If all of the above are OK replace air switch.
Boiler does not light #6 (30°) fault code flashing.	<p>No spark at burner.</p> <p>No gas pressure at gas valve burner test port.</p>	<ul style="list-style-type: none"> ▪ Check for 120 V at the spark generator. If voltage at spark generator, replace spark generator. No voltage at spark generator, replace main PCB. ▪ Check gas supply to boiler, is gas shut off valve open? ▪ Check gas valve main solenoids with power turned off. Approx 175 Ω cold resistance on both main coils. If low or open, change gas valve. ▪ Check inlet screen for blockage on inlet side of the gas valve.
Boiler lights then goes out, #6 (30°) fault code flashing.	<p>No ground to boiler.</p> <p>Flame lifting off burner or 'ghosting'.</p> <p>Weak or no signal from flame sensor.</p>	<ul style="list-style-type: none"> ▪ Check for good ground at outlet and at boiler. ▪ Exhaust venting has come apart, check installation. If long horizontal run of vent suggest using support spacers, available as an accessory. ▪ Exhaust vent does not extend to the end of the terminal, rectify fault. ▪ Air supply to boiler insufficient, check for blockage and correct vent installation. ▪ Air in gas line. ▪ Check for minimum 1 mA flame current from flame sensing electrode No; clean or replace electrode. Yes; replace main PCB.
Boiler will not modulate.	<p>Minimum gas pressure to high.</p>	<ul style="list-style-type: none"> ▪ Remove black wire from modulating coil while boiler operating, check low fire gas setting. Reset if required. ▪ Remove modulating pin and inspect. Check that when end is pulled it springs back into place. If broken replace (this is usually broken when inlet gas pressure is low, too much adjustment has been made on pin to try to get boiler to high fire). ▪ Check voltage across modulating coil when operating, approx 10 Vdc high fire 1.5 Vdc low fire. ▪ Cold resistance on modulating coil approx 40Ω (with power off), if low or open replace coil.

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Fault	Cause	Suggested Solutions
Boiler short cycling.	Heating output has not been set. Short cycling on a short heating circuit.	<ul style="list-style-type: none"> ▪ Set the "Max R" on the control PCB to match the heating system requirements, see chart on page 25 in manual for settings. ▪ In a smaller system make sure the T-Off Jumper on the PCB is set to the left, this will give a 3 min. delay when the burner turns off in the heating mode. ▪ If zone valves are present in system, the internal bypass is not designed to handle system flow, it is only used for boiler pump protection. Install a separate pressure-activated bypass, a buffer tank or a low loss header.
Whistling noise from boiler.	High fire when using Glycol in system.	<ul style="list-style-type: none"> ▪ BAXI recommends that only 25% inhibited propylene glycol solutions (specially formulated for hydronic systems) be used in the LUNA boiler. Ethylene glycol is toxic and can attack gaskets and seals used in hydronic systems. Check that the glycol ratio is not more than the recommended amount yearly, a higher ratio can affect the pump performance causing noise at high fire. Note: Anti-freeze solutions expand more than water -- e.g 50% by volume solution expands 4.8% in volume for a temperature increase from 32°F to 180°F, while water expands 3% with the same temperature rise. Allowances must be made for this expansion in the system design. 30% mixture of glycol will result in a BTU output loss of 15% with a 5% increase in head against the boiler pump. A 50% mixture of glycol will result in a BTU output loss of 30%, with a 50% increase in head against the boiler pump.
Fluctuating DHW temperature at tap.	Boiler cycles on/off Erratic burner pressure. Burner pressure fluctuates from high to low fire. Fluctuating temperature at shower.	<ul style="list-style-type: none"> ▪ Check that low fire is not set to high. Reset if required. ▪ Check burner pressure at gas valve test port with manometer while boiler operating. If gas pressure fluctuates erratically suspect either primary sensor is out of calibration or the DHW sensor is dirty. Replace one or both sensors. ▪ Check burner pressure at gas valve test port with manometer while boiler operating. If gas pressure fluctuates from high to low then back to high suspect that the DHW plate exchanger is dirty or scaled up. Remove and clean/ de-scale with suitable cleaner, or replace heat exchanger. ▪ If the boiler is being used with a well, make sure the supply pressure is good. If the pump setting is set for 40 Psi-on/60 Psi-off, try 50 Psi-on/70 Psi-off. ▪ If previous checks are OK check the temperature of the hot water at a single tap (not single lever tap). If the temperature is stable (within 3-5°f) at this tap suspect that the shower valve cartridge is dirty or faulty, clean or replace cartridge. Note: taps that have internal plastic parts tend to cause fluctuations in water flow. Plastic has a faster expansion rate than brass as the water heats it up it tends to expand and slow the water flow. The tap then needs to be opened further to let the water flow faster, which in turn increases the water flow through the boiler.
Hot water not hot enough.	Incorrect gas pressure. Faulty/Dirty NTC sensor.	<ul style="list-style-type: none"> ▪ Check that the boiler has the correct maximum gas pressure. ▪ Check that the DHW sensor is not dirty or scaled up. Check that sensor is not out of calibration (10 K Ω @ 25°C). Replace if faulty. ▪ If PCB has been changed has the boiler thermostat knob been fitted correctly?

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Fault	Cause	Suggested Solutions
	Cold water mixing with hot to taps. Water temperature in the winter.	<ul style="list-style-type: none"> ▪ Check that the flow from the hot tap is not more than 3.3 GPM (18 seconds to fill a 1 gallon bucket). If bucket fills faster the tap is mixing with cold water. ▪ During the winter months the cold water temperature entering the boiler can be 10°f lower than in the summer, this will reduce the hot water by 10°f at full flow.
No water pressure at bath tap.	Flow restrictor in boiler.	<ul style="list-style-type: none"> ▪ There is not a problem with the hot water pressure It is essential to educate the user how the boiler uses the flow regulator to get the correct temperature rise at full flow. Bath taps are normally 3/4" and in some cases with a 3/4" supply pipe. With a restrictor fitted to the boiler it may appear as if there is a problem with the flow rate.
Little or no hot water at tap.	Hot and cold pipes crossed at boiler.	<ul style="list-style-type: none"> ▪ Suspect the installer has connected the hot outlet pipe to the inlet valve. To check operate the heating in order to warm up the domestic hot water heat exchanger. Open hot tap; if incorrectly installed, the right hand 1/2" pipe, which should remain cold will become warm.
Boiler slow to start in DHW mode. Boiler has been operating for some time with no problems until hot/cold problem ie: with shower becomes apparent.	Dirt in the 3 port diverter valve. Dirt in DHW venturi. Dirty DHW heat exchanger.	<ul style="list-style-type: none"> ▪ Diverter valve does not fully close in the DHW mode. To check, with heating cold or cool, run the hot water and feel the heating supply pipe approx 2-3 feet from the boiler. If the pipe gets hot this indicates that the 3 port valve is not closing fully. Strip diverter valve, clean and lubricate, or replace. ▪ If the hot tap needs to be fully opened before the boiler fires, there is dirt in the venturi. Strip down and clean the water pressure sensor (venturi). ▪ This can be especially true when the boiler has been installed on an existing system. Suspect contamination from older parts of system. Surfaces of DHW heat exchanger has been coated, not allowing heat transfer to take place from the primary water, with the result that the boiler shuts down on its safety thermostat. ▪ If in a hard water area, suspect the potable side of the heat exchanger is scaled up causing the same problem. De-scale or replace DHW heat exchanger.
#6 (30°f) fault code.	Flame failure.	<ul style="list-style-type: none"> ▪ Check gas supply, flame signal or ground to boiler.
#7 (40°f) fault code.	Safety thermostat activated.	<ul style="list-style-type: none"> ▪ Check continuity across thermostat terminals, when cool more than 10Ω resistance. ▪ Check for scaling or contamination in primary heat exchanger.
#8 (50°f) fault code.	Fault on fan or flue.	<ul style="list-style-type: none"> ▪ Check venting, fan venturi, air switch sensing tubes and air switch.
#9 (60°f) fault code.	Fault on pump or low system pressure.	<ul style="list-style-type: none"> ▪ Check low system pressure, air in system, jammed or faulty pump.
#10 (70°f) fault code.	Fault on DHW sensor.	<ul style="list-style-type: none"> ▪ Check DHW sensor for correct resistance reading or is open circuit.
#11 (80°f) fault code.	Fault on primary sensor.	<ul style="list-style-type: none"> ▪ Check primary sensor for correct resistance reading or is open circuit. <p>Note: in some instances the #6 (30°f) fault will flash as well as another fault code light. This is because the boiler will show this fault code if the boiler has not detected a flame after 10 seconds on start up.</p>