⚠WARNING

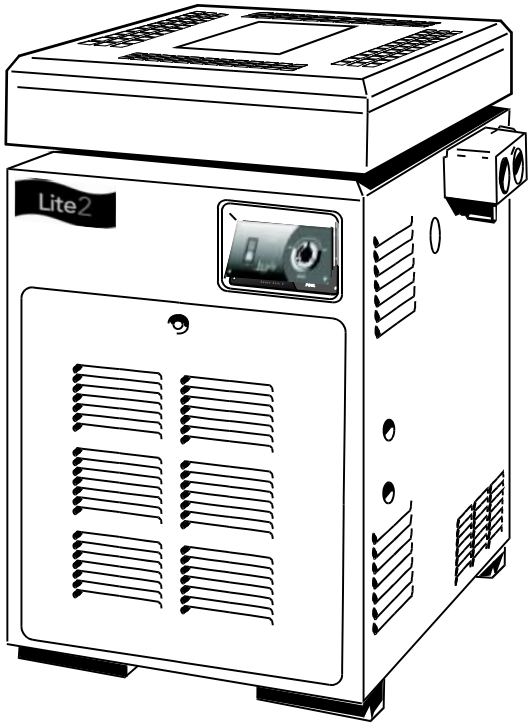
FOR YOUR SAFETY - This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exists. In the event no such state or local requirement exists, the installer or maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all of the instructions in this manual can be followed exactly. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death. Improper installation and/or operation can create carbon monoxide gas and flue gases which can cause serious injury, property damage, or death. For indoor installations, as an additional measure of safety, Zodiac Pool Systems, Inc. strongly recommends installation of suitable Carbon Monoxide detectors in the vicinity of this appliance and in any adjacent occupied spaces. Improper installation and/or operation will void the warranty.

Installation and Operation Manual

Lite 2™
Model LG
Pool and Spa Heater

Natural Gas or LPG Gas

CE



⚠WARNING

Read this manual in its entirety. If these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death.

The GAS SAFETY (INSTALLATION AND USE) REGULATIONS 1998 as amended, place statutory requirements on gas users.

This heater is certified to European requirements for use only as a swimming pool or spa heater. The heater must not be used for any other purpose and must be installed and serviced by a qualified professional. The heater must be operated strictly in accordance with the user's instructions and applicable laws. If the heater is installed in a room, it must be separated from a living space, and adequate air supply and ventilation must be provided and maintained.

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

H0208700G

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SECTION 1. General Information

1A. Introduction

This manual provides installation, operation, and owner's instructions for the Lite 2 Model LG millivolt pool and spa heater, sizes 125 through 400. The Lite 2 range of heaters has been tested and certified by British Gas to the latest draught of European Standard, PREN656, and the appliance is manufactured in accordance with all required quality procedures (Certificate N:BG/EC-87/95/46/M7, PI number 87AQ46). LG performance characteristics are listed in Table 1. General data for the model LG is listed in Table 2. The basic configuration of the LG heater is shown in Figure 1.

1B. Description

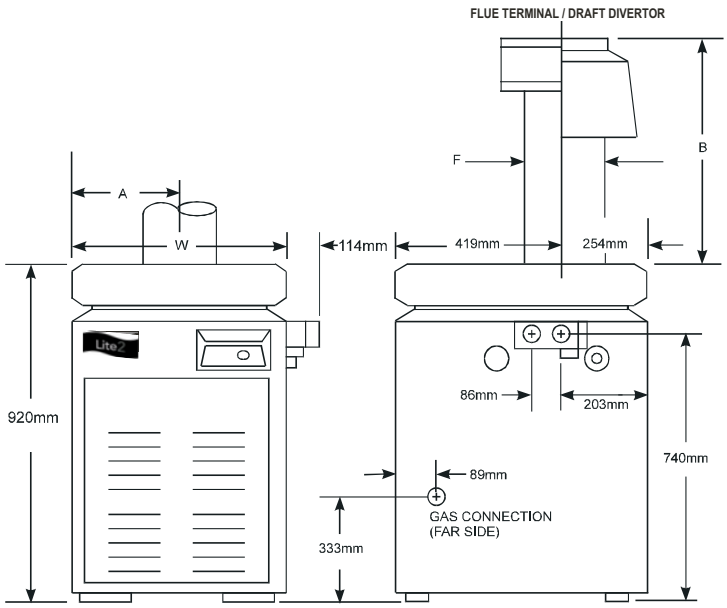
The model LG is a compact, high performance pool heater. The heater converts heat from the pilot into electricity which operates the controls.

Table 1. LG Performance Specifications

	LG Size (in BTU Input)									
	125 BTU		175 BTU		250 BTU		325 BTU		400 BTU	
	Nat. Gas	LPG	Nat. Gas	LPG	Nat. Gas	LPG	Nat. Gas	LPG	Nat. Gas	LPG
Heat Input Gross (kW)	36.6	36.6	51.3	51.3	79.6	75.0	103.4	97.4	117.2	117.2
Heat Input Net (kW)	33.0	33.7	46.2	47.2	71.7	69.0	93.2	89.6	105.6	107.8
Heat Output (kW)	28.4	28.4	39.7	39.7	56.8	53.5	73.8	69.5	90.8	90.8
Burner Pressure (mbar)	10	28-30	10	28-30	10	28-30	10	28-30	10	28-30
Gas Rate (m^3/h)	3.5	—	4.9	—	7	—	9.1	—	11.2	—
Gas Rate (m^3/h) G30 G31	—	1.05 1.38	—	1.48 1.93	—	2.3 2.99	—	2.99 3.89	—	3.47 4.52
Flue Gas Volume 4.5% C02, 120C (l/sec)	32.1	—	44.9	—	64.1	—	83.9	—	102.8	—
Flue Gas Volume 5.5% C02, 135C (l/sec) G30 G31	—	32.3 31.8	—	45.3 44.5	—	70.3 69.1	—	91.4 89.7	—	106.4 104.2
Injector Diameter (mm and marking)	(2.26) Marked 43	(1.4) Marked 54	(2.26) Marked 43	(1.4) Marked 54	(2.26) Marked 43	(1.4) Marked 54	(2.26) Marked 43	(1.4) Marked 54	(2.26) Marked 43	(1.4) Marked 54
Appliance Category Natural Gas LPG				I_{2H} I_{3+}						
Inlet Pressure(mbar) Natural Gas LPG				20 G30 @ 28-30 mbar G31 @ 37 mbar						
Note: The above LPG heat inputs apply up to an altitude of 600m. Above this altitude, de-rate the heat input by 4% for every 300m.										

Table 2. Model LG General Data

	LG Size				
	125	**175**	**250**	**325**	**400**
Water Capacity (L)	0.81	0.95	1.16	1.35	1.57
Minimum Water Flow (l/min)	75.7	75.7	94.6	113.6	113.6
Maximum Static Head (bar)	5.1	5.1	5.1	5.1	5.1
Maximum Outlet Temp (C)	40	40	40	40	40
Dry Weight (kg)	84	91	103	114	128
Gas Connection	3/4 in Bsp (Rc 3/4)	3/4 in Bsp (Rc 3/4)	3/4 in Bsp (Rc 3/4)	3/4 in Bsp (Rc 3/4)	3/4 in Bsp (Rc 3/4)
Water Inlet Connection	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)
Water Outlet Connection	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)	2 in Bsp (Rc 2)



Flue Dimensions

	Flue Diameter (F)	Width (W)	Outdoor (External Terminal)		Indoor Draught Divertor	
Size	**mm**	**mm**	**A mm**	**B mm**	**A mm**	**B mm**
125	125	381	197	358	197	455
175	150	457	234	370	235	630
250	175	572	290	476	292	635
325	200	679	346	457	345	635
400	225	849	410	527	406	660

Figure 1. General Configuration

⚠WARNING
Do not connect the heater to any external source of electricity. The Jandy Lite 2 Model LG heater has a built in thermoelectric generator. It provides a completely self-contained electrical system. Any attempt to make electrical connections to an external source will damage the heater, and could be dangerous.

The heater can be installed indoors (using the draught divertor and a suitable flue system) or outdoors (using a flue system or with the outdoor flue terminal assembly, which is available as an optional extra).

Zodiac Pool Systems, Inc., specifically designs this appliance to heat fresh water swimming pools and spas. Do not use it as a heating boiler or general service water heater. For special applications, consult your Jandy dealer.

1C. Warranty

The LG heater is sold with a limited factory warranty. A copy of the warranty is shown on the back cover of this manual.

The warranty does not cover damage caused by improper installation, or field modification, or to the heat exchanger by corrosive water.

SECTION 2. Installation Instructions

2A. Statutory Information

It is the law that all gas appliances are to be installed only by competent persons (e.g., members of the Confederation of Registered Gas Installers [CORGI]) in accordance with the Gas Safety (Installation and Use) Regulations, 1994. Failure to install appliances correctly could lead to prosecution.

The LG heater, as supplied, has been tested and certified by British Gas to PREN656 for use with natural and LPG gases. LG heaters are only permitted to be installed in the open air or in a room which is separated from living rooms and provided with appropriate ventilation directly to the outside.

⚠WARNING
The LG heater is certified to European requirements for use only as a swimming pool or spa heater. The LG heater must not be used for any other purpose and must be installed and serviced by a qualified professional. The LG heater must be operated strictly in accordance with the manufacturer's instructions. If the LG heater is installed in a room, adequate air supply and ventilation must be provided and maintained. Never store any materials within the area of the heater or ventilation openings.

It is important that no external control devices (e.g., flue dampers, economizers, etc.) be directly connected to the LG heater unless covered by these installation and servicing instructions or otherwise recommended in writing by Zodiac Pool Systems, Inc. If in doubt please ask. Any direct connection of a control device not approved by Zodiac Pool Systems, Inc., could invalidate the British Gas certification, the normal LG heater warranty, and could also violate applicable gas safety regulations.

2B. General Installation Requirements

The LG heater must be installed by competent persons (e.g., CORGI member). The LG heater must be installed in accordance with the relevant requirements of the Gas Safety Regulations, current I.E.E. Regulations, Model Water Bylaws, local Water Authority Bylaws, and any relevant requirements of local gas region, local authority, and relevant British Standard Codes of Practice and Building Regulations. Table 3 lists regulations for small and large pipe installations.

All gas-fired products require correct installation to assure safe operation. The requirements for heaters include the following:

1. Appropriate site location (clearances)
2. Non combustible surface
3. Sufficient combustion air and ventilation air
4. Adequate venting of combustion products
5. Adequate water flow
6. Properly sized gas pipe
7. Regular maintenance

2C. Reversible Water Connections

Zodiac Pool Systems, Inc., ships the LG heater with the water connections on the right side. It could

Table 3. Pipe Installation Regulations

Small Pipes		Large Pipes	
		British Gas Publications:	
		IM2	Purging Procedures of Non-Domestic Gas Installations
		IM5	Soundness Testing Procedures for Industrial and Commercial Gas Installations
BS.6891	Installation of Low Pressure Pipework	IM11	Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters
			IM16 Guidance notes on the Installation of Gas Pipework, Boosters, and Compressors in Customer's Premises Equal to or Greater than 25 mm (non-domestic)
		BS.6644	Installation of Gas Fired Hot Water Boilers 60kW to 2MW.
		CP341	Water Supply
		Model Water Bylaws	

Note: Manufacturer's notes must not be taken in any way as overriding statutory obligations.

be necessary, or helpful, to switch the connections to the left side to improve access for service.

To make this change, a trained service technician should reverse the heat exchanger before beginning the installation.

Follow these step-by-step instructions and use the accompanying illustrations.

1. Remove heater door.
2. If there is a flue terminal or draught diverter (indoor) on top of the heater, remove it.
3. Remove all hex-head screws fastening the top and lift the top assembly straight up (see Figure 2).
4. Remove the screw holding the rainshield to the rear of the heater. Remove the rainshield assembly and set it aside.
5. Remove screws that fasten the gap closures and put them aside. Remove gap closures.
6. Remove bracket under the front header, which holds capillary of the manual reset thermostat (see Figure 2).
7. Remove the two heat exchanger end baffles from inside the flue collector. To remove the baffles, first remove the screws securing them to the top of the front and rear combustion chamber panels.
8. Remove the screws securing the two flue collector holddown clamps and remove the clamps (see Figure 3). Remove flue collector.
9. Remove the three jacket/plug grommets and drain plugs (see Figure 2). One is located under the water connections on the right side of the heater. The other two are on the left side of the heater. Gently pry the button plug from the heater jacket located on the right side of the heater.
10. Tag and disconnect the white wire on the pressure switch (PS) and the white wire at the terminal block.
11. Remove plastic tie wraps and pull the white wires out of the front compartment through the vestibule cover and coil them on the heat exchanger.

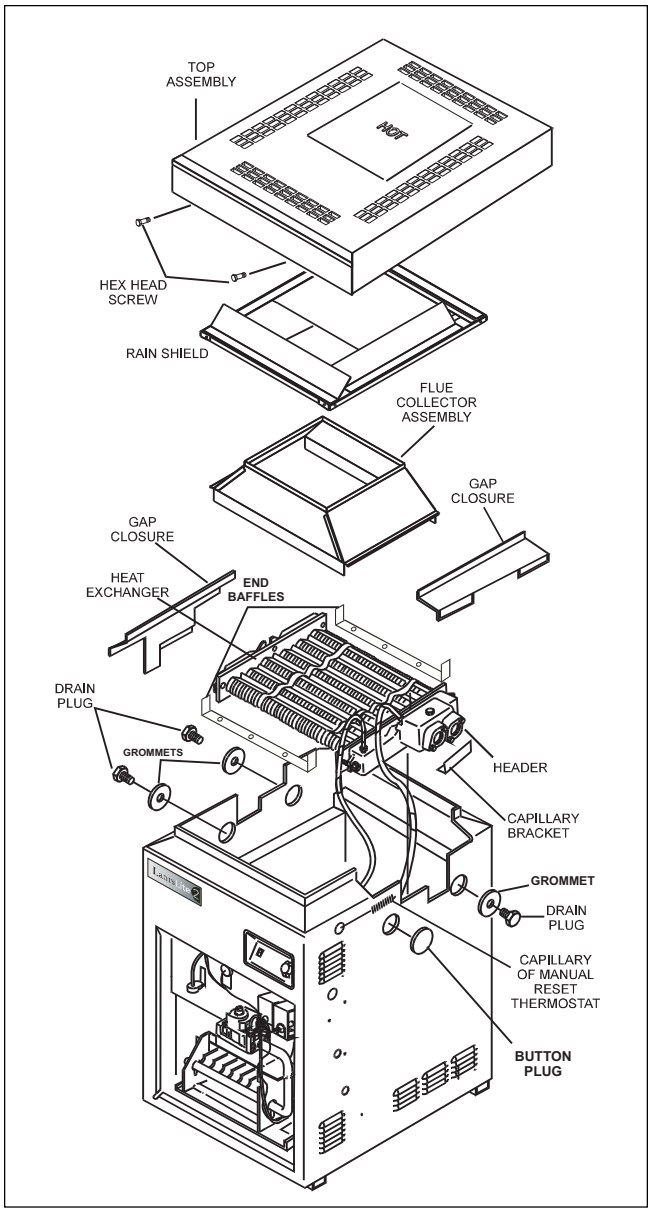


Figure 2. Heat exchanger reversal.

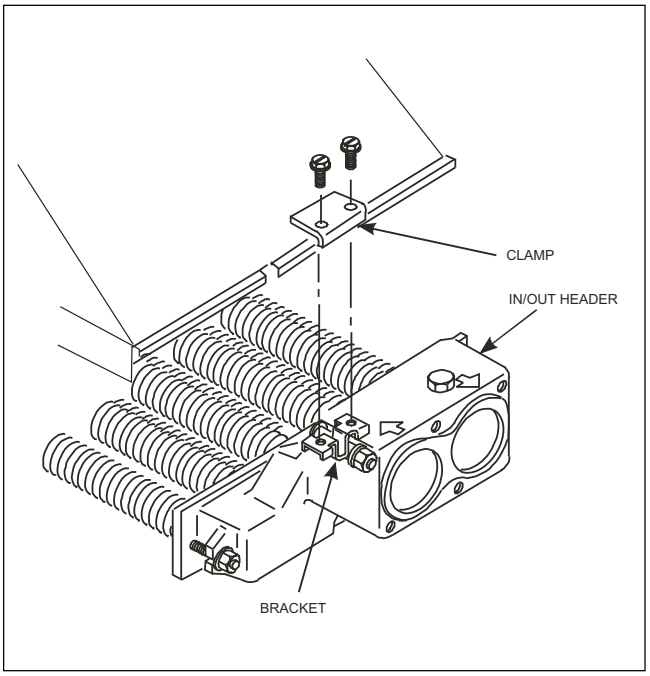


Figure 3. Flue collector holddown brackets.

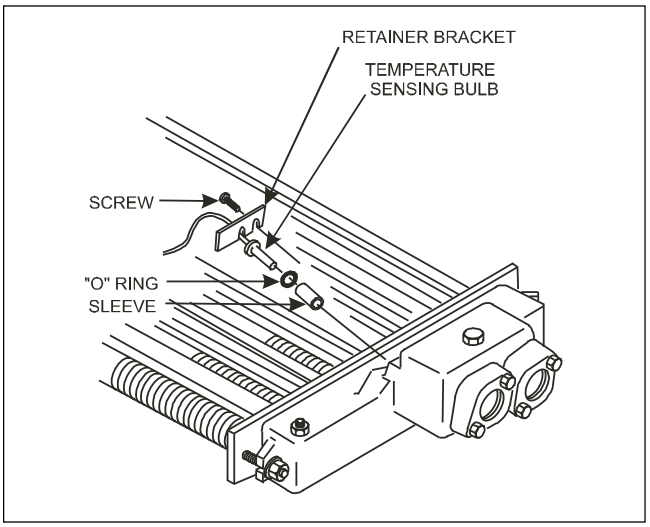


Figure 4. Temperature sensing bulb.

12. Unscrew the nut on the brass compression fitting securing the pressure switch to the header. Remove tube from header and gently bend it out of the way.

13. Loosen the screw securing the temperature sensing bulb retainer bracket. Slide the retainer bracket off the bulb flange and remove the bulb from the header (see Figure 4). Remove the white pressure retainer clip from the vestibule panel (allow pressure switch to float). Pull pressure switch tube through vestibule cover hole into the front compartment, then pull thermostat bulb assembly through same hole.

⚠Caution

It may be necessary to have help lifting the heat exchanger out and replacing it.

14. Lift out the heat exchanger assembly and set it aside. Make sure that the insulation strips on the tops of the combustion chamber sides remain in place. Re-install heat exchanger 180 degrees from its original position (header left).

15. Remove the plastic bushing from the hole on the right side of vestibule cover. Re-install it in the hole on the left vestibule cover.

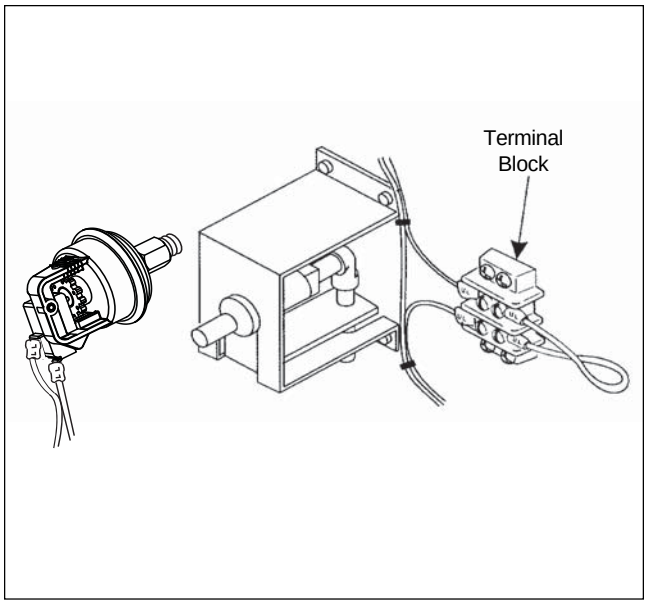


Figure 5. Terminal block.

16. Re-route the thermostat bulb assembly, then the pressure switch tube through the hole in the left side of the vestibule cover.

17. Re-install the temperature sensing bulb in the header, and fasten it with the retainer bracket and screw.

18. Re-install the nut, at end of pressure switch line, into the compression fitting in the header.

19. Route the white wiring beside the heat exchanger and down to the original location. Be careful to keep the wires away from the flue collector. Secure white wires to the pressure switch tube with tie straps.

20. Connect the white wire labeled PS to the pressure switch and the other white wire to its original location at the terminal block (see Figure 5).

21. Replace jacket/plugs grommets, and re-install the drain plugs. Tighten securely. Replace the button plug into the remaining hole in the jacket.

22. Install the flue collector assembly. Be sure the bottom lips are inside the grooves on the front and rear combustion chamber panels and are not pinching any wires.

23. Use the screws removed earlier to replace the two heat exchanger end baffles. Mount one to the top of the rear combustion chamber panel and the other to the top of the front combustion chamber panel. Before tightening the screws, be sure to push the baffles against the flue collector sides, closing all gaps.

24. Drill capillary hole (20mm diameter) symmetrically opposite to one on right hand side of jacket. Remove the grommet from the hole on the right side of the heater and place it in the new hole. Re-route capillary and re-install the bracket.

25. Attach the flue collector holddown clamps to the clips located under the two center header bolts.

26. Replace the gap closures and tighten the screws securely.

27. Double-check to make sure the wiring is not pinched against sharp edges, or resting on the flue collector assembly.

28. Re-install rainshield assembly and replace the screw securing it to the rear of the jacket.

29. Replace the top assembly. Make sure the tabs are outside the heater jacket. Fasten the top assembly with the hex-head screws.

30. Install plastic tie wraps on wiring in the front compartment (vestibule).

31. Install heater door.

32. Reinstall the flue terminal or draught diverter, if one was removed.

2D. Site Location

2D-1. Indoor Installation

The Lite 2 LG)heater is designed and certified for indoor installation only when equipped with a draught divertor and flue system. Check the literature or rating plate for the correct LG Lite 2 draught divertor part numbers. Install the draught divertor without modification.

⚠WARNING

Improper installation or maintenance can cause nausea or asphyxiation from carbon monoxide in flue gases which could result in severe injury, property damage, or death.

Place the heater in an area where leakage of the heater or connections will not result in damage to the area around the heater or to the structure. If this is not possible, provide a suitable drain pan to catch and divert any leakage. The pan must not restrict air flow.

Table 4. Minimum Heater Clearances From Combustible Surfaces

Side of Heater	Minimum Clearance mm
Rear	150
Piping	300
Blank	150
Front	450
Above Heater	1120

Place the heater to provide adequate clearance on all sides for inspection, (see Table 4, Page 7) service and to provide adequate air circulation for proper operation. Make sure that the location of the heater complies with the requirements detailed in these instructions for ventilation, clearances, and flue system.

2D-2. Outdoor Installation

Place the heater in an area where leakage of the heater or connections will not result in damage to the area around the heater or to the structure. If this is not possible, provide a suitable drain pan to catch and divert any leakage. The pan must not restrict air flow.

Place the heater in an open, unroofed area, and keep the clearances detailed in Table 4.

Do not place the heater in an area where leaves or other combustible materials can gather around the base or on top of the heater.

Do not place the heater close to sprinklers that could spray water on it. Excess water could damage the heater.

The heater must be installed at least 1.52 meters from the edge of the pool or spa unless separated from the pool or spa by a solid fence, wall, or other permanent barrier. If you are placing the heater under an overhang, there must be a minimum clearance of 1.12 meters above the top of the heater. The area under the overhang must be open on three sides. This stops combustion gases from being diverted into living areas through doors, windows, or gravity inlets. Protect the heater from direct water drainage.

Do not place the heater with the top of the casing (flue outlet) within 2 meters of any opening into a building (see Figure 6).

Due to the chance of down-draughts caused by high wind conditions, place the heater at least 1 meter from vertical surfaces, such as nearby buildings and walls. The addition of an outdoor flue terminal assembly which is optional, may ease the problem.

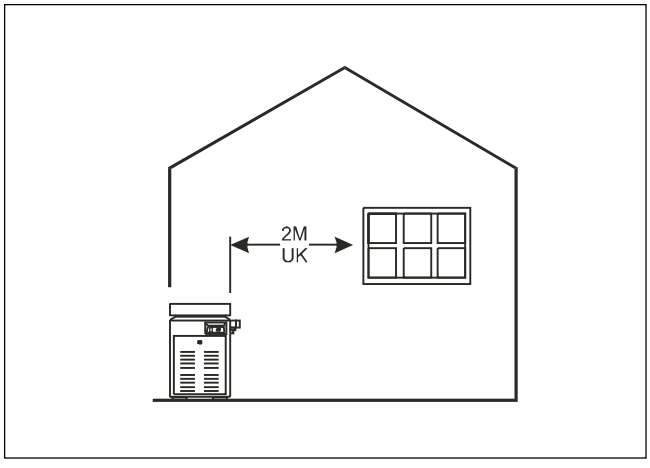


Figure 6. Outdoor heater location.

2D-3. Flooring - Typical Installation

Except as described below, place all heaters on a noncombustible surface. A heater can be placed on a combustible floor by placing a non-combustible base under the heater, available from Zodiac Pool Systems, Inc. See the heater rating plate for the base part number. Do not place the heater directly on carpeting

Table 5. Ventilation Requirements

Position of Air Vents	Air Vent Areas (Air Direct From Outside)
High Level	270 cm^2 plus 2.25 cm^2 per kW in excess of 60 kW total rated input
Low Level	540 cm^2 plus 4.5 cm^2 per kW in excess of 60 kW total rated input

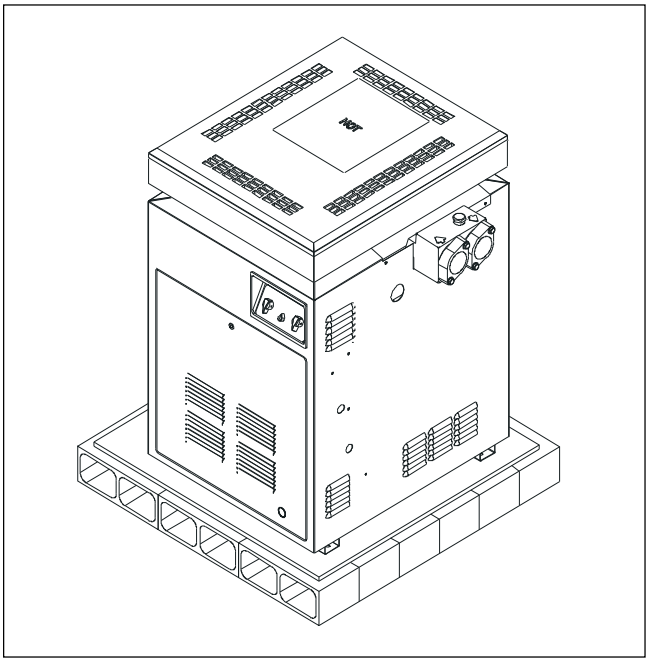


Figure 7. Non-combustible platform.

without placing a base or platform between the carpeting and the heater. The base or platform may be made of hollow masonry no less than 102 millimeters (mm) thick, covered with sheet metal at 24 gauge thick. The masonry must be laid with ends unsealed and joints matched to let air flow from side to side and through the masonry (see Figure 7).

2E. Combustion and Ventilation Air Supply

All indoor installations must have uninterrupted openings to outside air for combustion and ventilation. Table 5 shows the net free opening areas required at both ceiling and floor for the different heater sizes.

2F. Flue Specifications

2F-1. Outdoor Installation

The LG heater is ready for installation outdoors. Make sure the installation instructions are followed. If the installation is in an area that has draught conditions, an outdoor flue terminal assembly, which is optional, may be obtained from Zodiac Pool Systems, Inc.

2F-2. Indoor Installation

The LG heater can be installed indoors using the draught divertor available from Zodiac Pool Systems, Inc., and a flue system complying with the National and European Standards in addition to the Building Regulations (see Section 2).

2F-3. Flue System (Indoor)

Connect the draught divertor to a flue system of at least the same diameter, and end at least 0.61 meters above the highest point of the roof or other object that is within 3 meters of the vent. Install a certified terminal which allows a full equivalent opening for flue products (see Figure 8). There must be at least 600mm of vertical flue above the drafthood. Bends in the flue should not exceed 45° to the vertical.

To make sure the heater operates safely and satisfactorily, the flue system must be able to completely remove combustion products at all times. The number of bends and lengths of horizontal flue pipe used should be kept to a minimum in order to reduce gas flow resistance.

Compliance with the recommendations made in BS.6644, British Gas publication IM11, Flues for Commercial and Industrial Gas Fired Boilers and Air Heaters, and the 1956 Clean Air Act Memorandum, 3rd Edition, should be strictly observed where applicable.

The flue design should avoid the formation of excessive quantities of condensate. For this reason, it is recommended that all flues be insulated and lined. For brick or similar structures, a stainless steel rigid or flexible flue liner (Grade 304/316) may be used in conjunction with a 50 mm (minimum) thick layer or vermiculite or perlite granules between the liner and the inner skin of the chimney body.

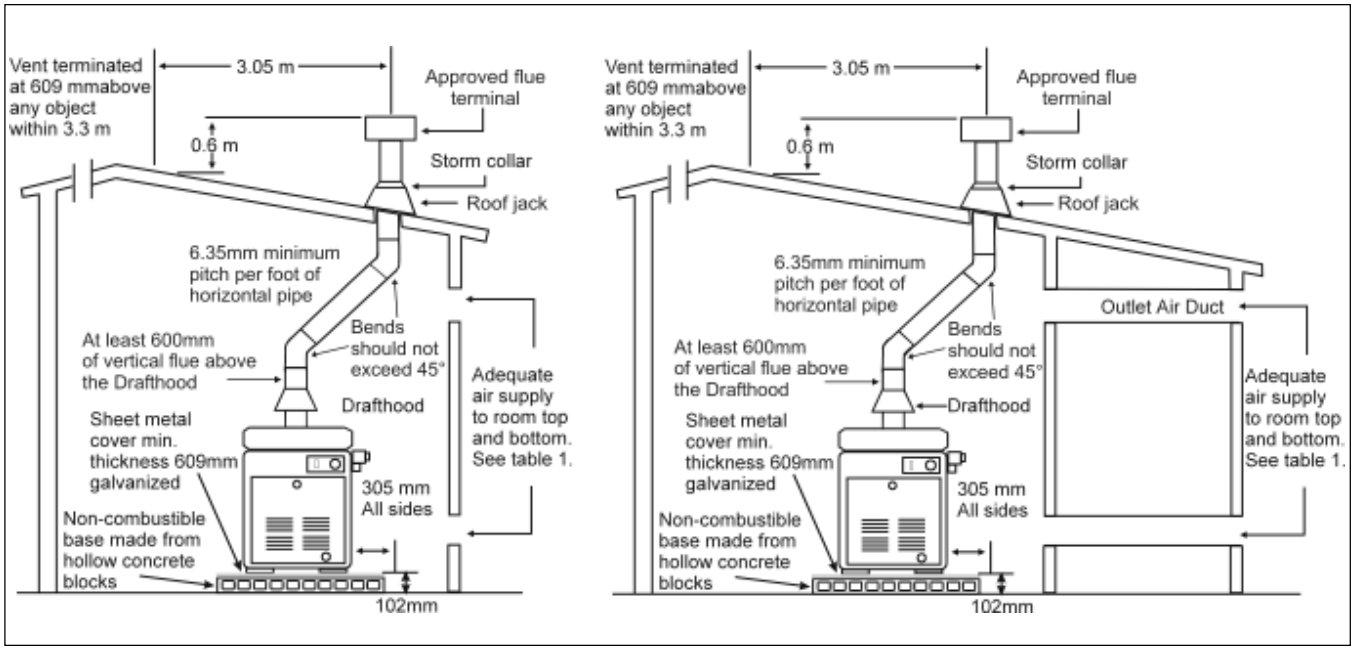


Figure 8. Flue system.

Liners should be sealed at both top and bottom. Drainage points should be provided at the bottom of all vertical flue sections. Drain pipes should be:

1. No less than 25 mm inside diameter.

2. Made from acid condensate resistant material (e.g., stainless steel).

3. Positioned so that pipe runs and discharge points are not subject to the effects of frost and flue gases cannot leak into the boiler room.

2G. Gas Supply and Piping

If there is any doubt regarding the capacity of any existing service pipes or the size required for new service pipes then the advice of the gas supplier should be requested. Installation pipework should be fitted and tested for gas soundness in accordance with Table 3.

Zodiac Pool Systems, Inc., recommends the gas inlet pipe sizes listed in Table 6.

Provide and fit a gas service cock and union external to the heater for servicing purposes (see Figure 9).

Before operating the heater, test for gas soundness in accordance with the publications listed in Table 3. Do not use a naked flame. If the supply gas pressure is less than required, check for undersized pipe between the tank and the heater, a restrictive fitting, or an empty tank.

Table 6. Pipe Size Requirements

	Distance from Gas Meter		
Model Size	**0-15 m mm**	**15-30 m mm**	**30-60 m mm**
125	22	28	28
175	28	28	35
250	28	35	35
325	35	35	42
400	35	42	42

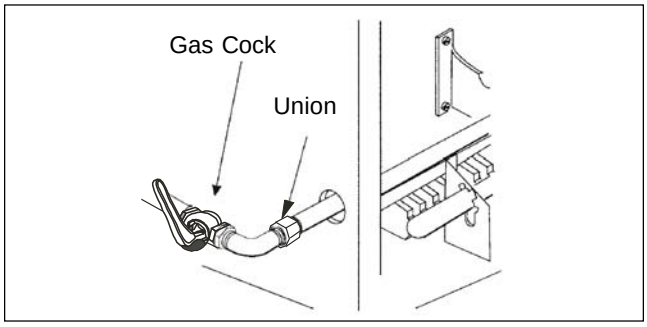


Figure 9. Fitting a gas service cock.

2H. Electrical Wiring

2H-1. General Information

⚠WARNING

Do not connect the heater to any external source of electricity. The Jandy Lite 2 Model LG heater has a built-in thermoelectric generator. It provides a completely self-contained electrical system. Any attempt to make electrical connections to an external source will damage the heater, and could be dangerous.

Figure 10 shows a typical wiring diagram for the LG heater. The heater wiring diagram can also be found on the inside of the heater.

2H-2. Auxiliary Time Clock Wiring

If a time clock is to be installed to control the filter pump operation, we recommend (for the reason of efficiency) the clock have its own low voltage (Fireman's) switch to turn off the heater before turning off the pump. The switch should shut off the

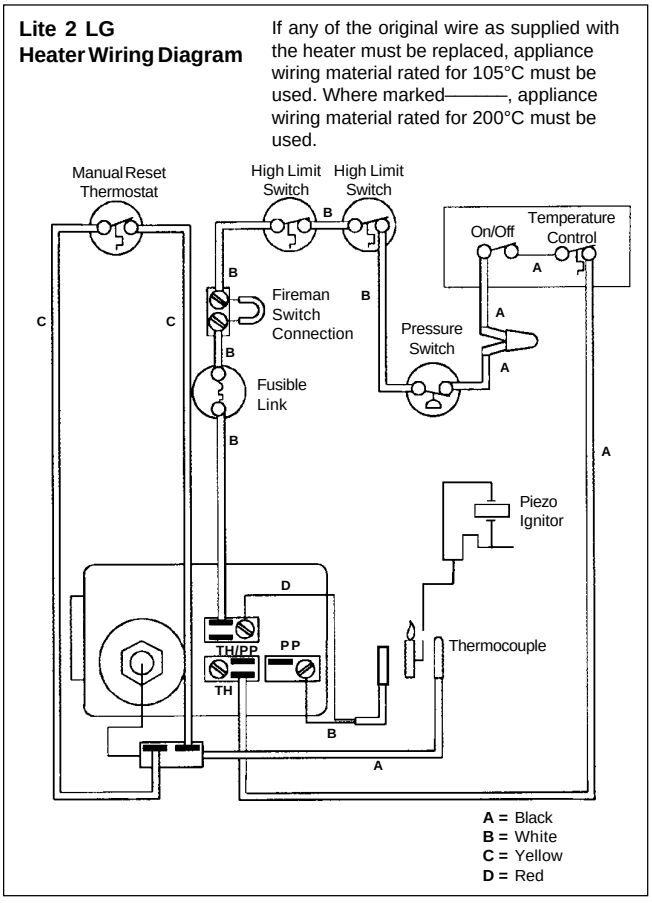


Figure 10. Typical wiring diagram.

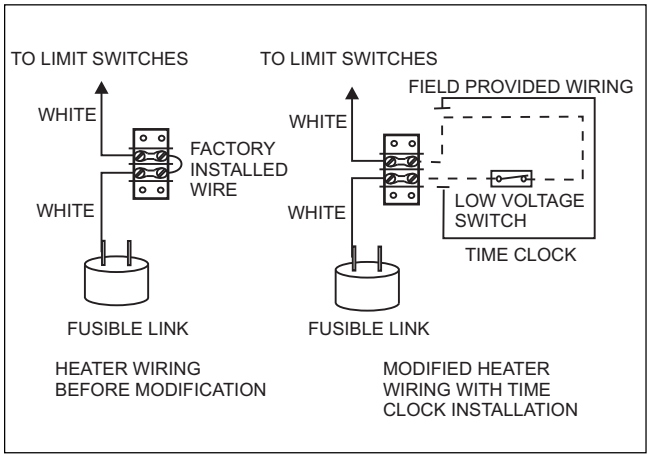


Figure 11. Time clock wiring.

heater about 15 minutes before the filter pump shuts off. To install a time clock auxiliary switch into the heater wiring, follow these steps (see Figure 11):

1. Remove the service door.

2. Remove the factory-installed wire between terminals 1 and 2 on the terminal block (see Figure 5).

3. Connect the wires from the time clock auxiliary switch to the two terminals. Use 14 gauge copper wire with insulation at least 1.2 mm thick, and a temperature rating of 105 degrees Celsius (°C) or greater. The length of the wire between the heater and the time clock should not exceed 4.57 m. The contact points of the time clock switch should be silver, or a low resistance alloy.

2I. Water Piping

2I-1. General Information

High temperature plastic piping (CPVC Schedule 80) may be connected directly to the inlet/outlet header providing that the controls keep the filter pump running at least 15 minutes after the heater is turned off. Plastic materials may be used in pipes, fittings, grids, and other elements of the filter system if acceptable by the authorities having jurisdiction (see Figure 12). If unacceptable, use a metal heat sink pipe between the filter and the heater (see Figure 15).

Install a check valve if there is any chance of back siphoning when the pump stops (see Figure 13). Do not install any other valve or variable restriction in the piping between the heater outlet and the pool, unless it is necessary to increase back pressure, or is being used as a diverter valve.

The heater has 50 mm universal header couplings. You can connect threaded 50 mm iron or copper pipe or unthreaded 38 mm iron or copper pipe without an adapter. CPVC pipe can be used by first installing the CPVC nipples, provided with this heater, into the cast iron fittings (see Figure 12).

2I-2. Automatic Chlorinators (Chemical Feeders)

Any excessive concentration of chlorine in the pool heater can be very destructive. Heater damage caused by an excessive concentration of chlorine is not covered by the warranty. All chlorinators should be downstream of the heater.

Equip the chlorinator with an anti-siphoning (back flow) device so that chlorine will not siphon into the heater after the pump is shut off.

Wire the chlorinator so it cannot operate unless the filter pump is running. If the chlorinator has an independent clock control, be sure the filter and chlorinator clocks are synchronized.

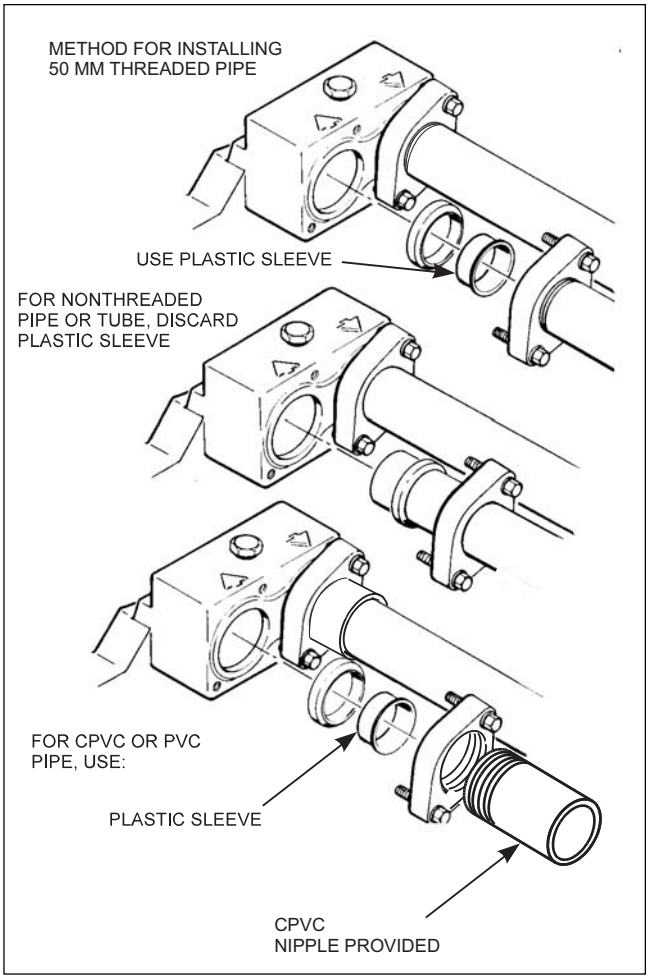


Figure 12. Piping connections.

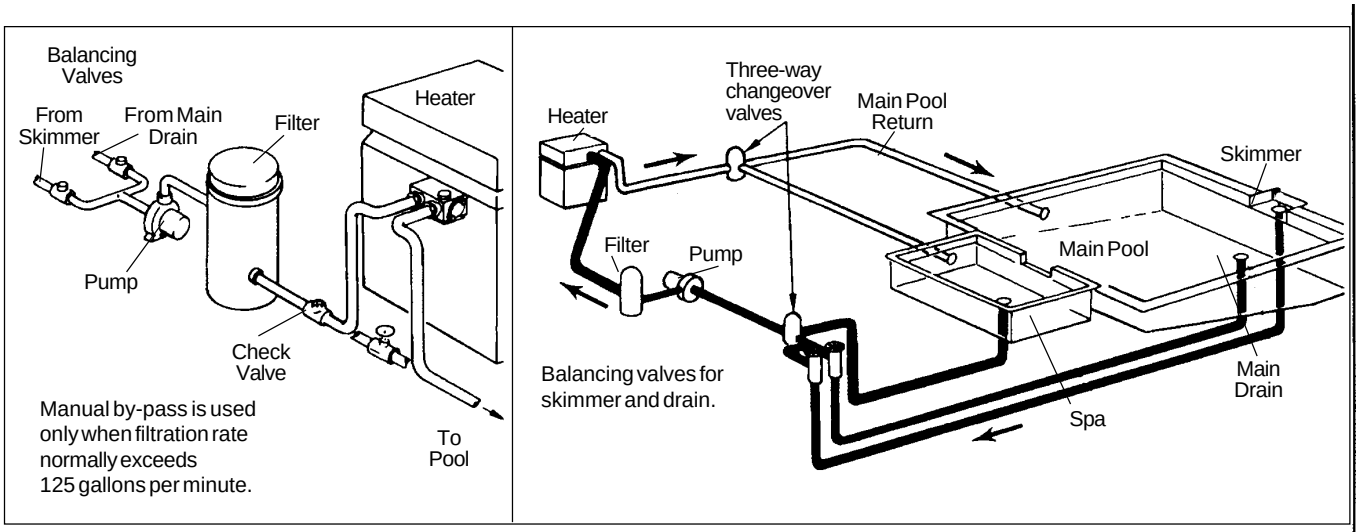


Figure 13. Typical installation.

If the chlorinator is equipped with its own pump, install it so that it introduces the chlorine downstream from the heater, and, if possible, below the level of the heater outlet fitting.

2J. Pressure Relief Valve

A pressure relief valve is not furnished with the Lite 2 heater. Local plumbing codes may require it.

To install a pressure relief valve:

1. Remove the 19 mm brass plug on top of the header and screw in the valve (see Figure 14).
2. The setting of the valve should be at or below the lowest working pressure of any component in the filter system.

2K. Pressure Switch Adjustment

The pressure switch is pre-set at the factory for normal pool installations. Do not adjust the pressure switch unless the installation involves special conditions such as:

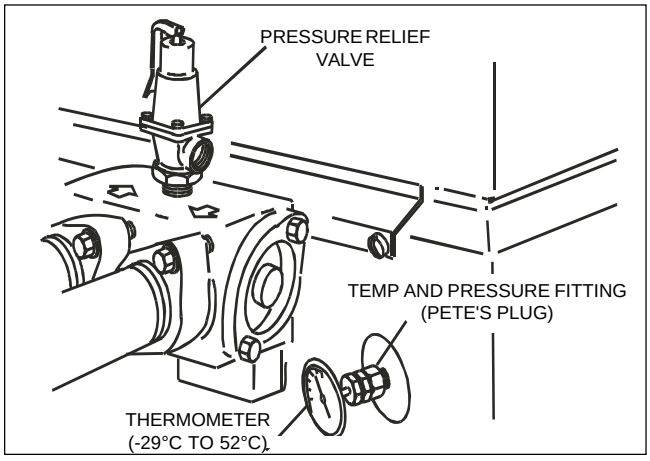


Figure 14. Thermometer and pressure relief valve location.

1. The top of the heater is installed 1 m or more below the surface of the pool.
2. If any part of the filter system is 1 m or more above the top of the heater jacket.

NOTE: Do not make the pressure switch adjustment if the heater is installed more than 4.6 m below or 1.9 m above the pool surface. Consult Zodiac Pool Systems, Inc., for recommendations.

On some installations, the piping from the heater to the pool is very short. The back pressure could be too low to trigger the pressure switch. If this happens, it may be necessary to install a directional fitting, or elbows, where the return line enters the pool. This will increase back pressure enough for the heater to operate properly.

2L. Temperature Rise

When the installation is complete, the installer should then take a temperature rise. Use the figures in Table 7 to verify proper water flow through the heater.

Table 7. Temperature Rise And Minimum Flow Rates

Size	Temperature Rise Minimum °C	Temperature Rise Maximum °C	Minimum Flow Rate l/s
125	15	20	1.5
175	18	24	1.5
250	18	24	1.9
325	16	21	2.3
400	17	22	2.3

An automatic, built-in bypass valve maintains proper flow through the heater at flow rates less than 7.9 liters per second (l/s). If the system filter-flow rate exceeds 7.9 l/s, a manual bypass valve is required. Figure 15 shows a manual bypass valve installed between the heater inlet and outlet. To set the bypass valve, follow this procedure:

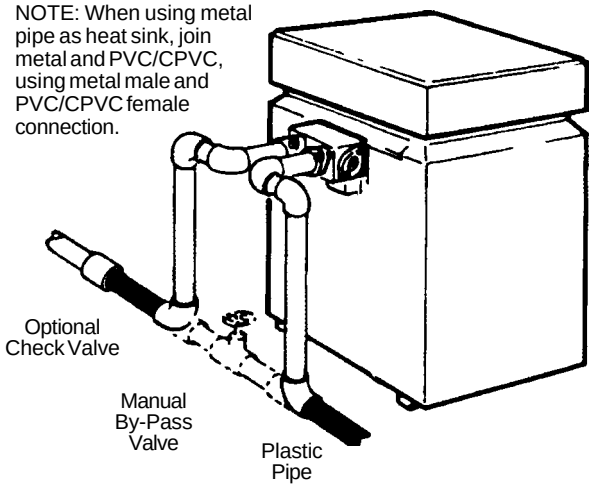


Figure 15. Heater piping.

1. Clean the pool filter.
2. With the filter pump off, remove the drain plug. The plug is found on the right side of the heater.
3. Replace the drain plug with a thermometer inserted through a temperature and pressure fitting (Pete's Plug) (see Figure 14).
4. If there is a manual bypass valve installed, close it.
5. Make sure the heater is off by moving the rocker switch to the OFF position.
6. Start the filter pump and wait 3 minutes.
7. Record the thermometer reading (this represents pool water temperature).
8. Turn the heater on following the lighting and shutdown instructions found on the inside of the control compartment.
9. Let the heater run for at least 5 minutes before recording the new thermometer reading.
10. If the temperature reading is outside the minimum/maximum numbers shown in Table 7, gradually open the manual bypass valve until the temperature rise is obtained (the temperature rise is the difference between the temperature reading with the heater off and the temperature readings with the heater running for several minutes.
11. Be sure the thermometer reading remains steady for at least 3 minutes.

SECTION 3.
Operating Instructions

3A. Start-Up Procedure

Full lighting and shutdown instructions are found on the label attached inside the service door of the heater and in the user's instructions.

⚠WARNING

Flue pipes, draught divertors, hoods, tops, and water fittings get hot! These surfaces can cause serious burns. Do not touch these surfaces when the heater is operating. For external installations, the addition of an outdoor flue terminal assembly will reduce the temperature on the top.

⚠WARNING

Keep all objects off the top of the heater. Blocking air flow could cause a safety hazard, damage to the heater, and may void the warranty.

⚠WARNING

LP Models: To avoid possible injury, fire and explosion, read and follow these precautions and all instructions on this heater before lighting the pilot. This heater uses LP gas which is heavier than air and will remain at ground level if there is a leak. Before lighting, sniff at ground level. **If you smell gas**, follow these rules:

1. DO NOT light matches. DO NOT turn electric lights or switches on or off in area. DO NOT use an electric fan to remove the gas from area.
2. Shut off gas at LP tank and gas service cock.
3. Telephone gas company for instructions. Give your name, address and phone number.

If your LP tank runs out of fuel, turn off gas at the heater. After the tank is re-filled, the heater must be relit in accordance with the instructions found on the inside of the door. DO NOT attempt repairs on the gas control or heater. Tampering is dangerous and voids all warranties.

⚠WARNING

Natural Gas Models: To avoid possible injury, fire and explosion, read and follow these precautions and all instructions on this heater before lighting the pilot. **If you smell gas**, follow these rules:

1. DO NOT light matches. DO NOT turn electric lights or switches on or off in area. DO NOT use an electric fan to remove the gas from area.
2. Shut off gas at gas service cock.
3. Telephone gas company for instructions. Give your name, address and phone number.

DO NOT attempt repairs on the gas control or heater. Tampering is dangerous and voids all warranties.

When lighting or relighting the pilot, always turn the temperature control to its lowest setting. Turn the rocker switch to OFF.

With any new pool or spa installation, run the filter pump with the heater off long enough to completely clean the water. This removes any installation residue from the water. Clean the filter at the end of this operation before starting the heater. When raising the temperature of a cold pool, remove all time clock settings. This lets the filter system and heater operate continuously until the water reaches the temperature setting on the thermostat. When that happens, the heater will automatically shut off, but the filter pump will keep running.

3B. Temperature Control

The temperature control (see Figure 16) is calibrated at the factory. It covers a range from approximately 21 to 40°C. Always use an accurate pool thermometer to test the pool water temperature.

Figure 16. LG temperature control.

3C. Lighting and Shutdown

3C-1. Lighting the Heater

Full lighting and shutdown instructions can also be found attached to the wall inside the control compartment door.

1. Remove the service door on the front of the heater.
2. Press down and release the red button marked “O” on the gas control valve (see Figure 17).
3. Turn the rocker switch to OFF and turn the temperature control to its lowest setting.
4. Make sure that the manual gas cock is open.
5. Push in the white button on the gas control and keep it fully depressed (see Figure 17).

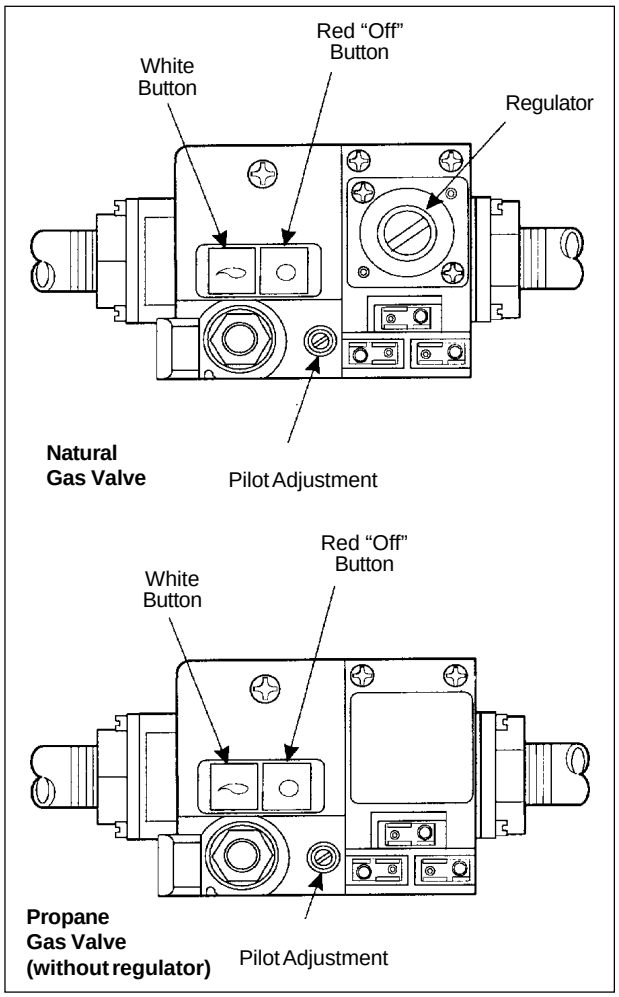


Figure 17. Gas control valves.

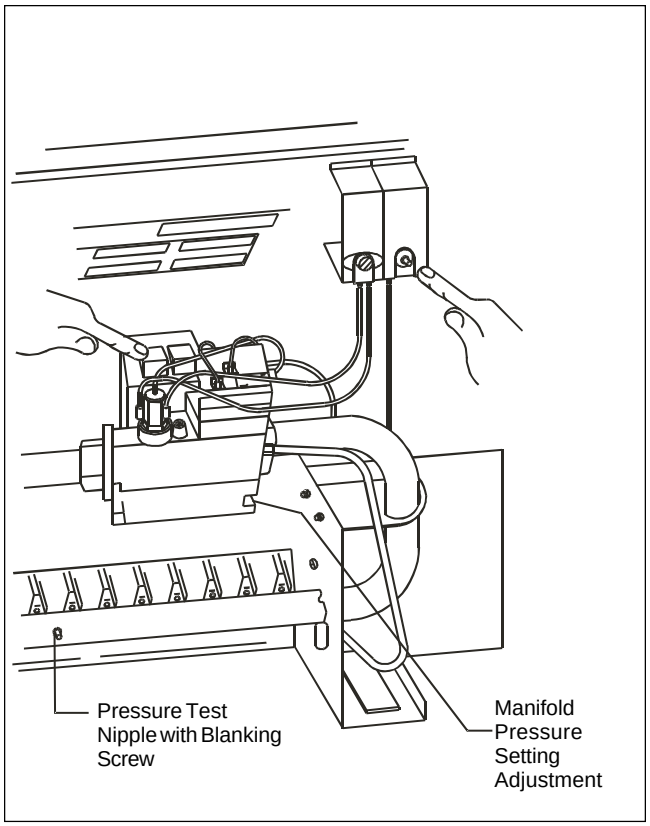


Figure 18. Lighting the pilot.

At the same time repeatedly push the button of the ignitor (see Figure 18) to produce a spark at the pilot burner. When the pilot has lit, keep the button on the gas valve fully pushed in for another 30 seconds.

6. Release the white button and verify that the pilot is lit.

7. If the pilot burner does not remain lit when the button is released, press and release the red button. Wait at least 3 minutes and then repeat the lighting procedure from step 5.

8. If the pilot cannot be established, check that the pilot burner flame correctly envelops the thermocouple tip by 10 to 13 mm. If not, check that the pilot adjustment screw on the gas control (see Figure 17) is fully unscrewed, then turn it one turn back in. Check that the thermocouple lead connections at the gas control and at the overheat thermostat are clean and secure. Repeat from step 5.

9. Replace the service door.

10. Turn the rocker switch to ON.

11. Set temperature control to against the TEMPLOK tab. The main burner should light. Until the water reaches a temperature of about 21°C (70°F), it is normal to have some water accumulating in the base of the heater.

12. Set the time clock, if one is installed.

3C-2. Relighting the Heater

If the pilot goes out, repeat steps 5 through 7 in Section 3C-1.

3C-3. Shut-Down Procedure

1. To turn the main burner off, turn the rocker switch to OFF.

2. To turn the heater off (including the pilot), press the red button on the gas valve.

3C-4. Putting the Heater In Operation (Commissioning)

1. When the heater has lit, remove the service door and check all gas connections for soundness with leak detection fluid.

2. Check the manifold (burner) pressure setting and adjust as necessary (see Table 1).

3. Start the adjustment procedure with the heater cold, on full load, and with the temperature control set at maximum. This will ensure, as far as possible, that thermostatic shutdown does not interfere while the pressure is being checked and adjusted.

4. Remove the blanking screw in the manifold (burner) setting pressure test nipple (see Figure 18) and securely connect a suitable gas pressure gauge.

5. Light the heater and allow it to operate for about 15 minutes to stabilize the burners.

6. Check the pressure and adjust it for the appropriate heater size. The manifold

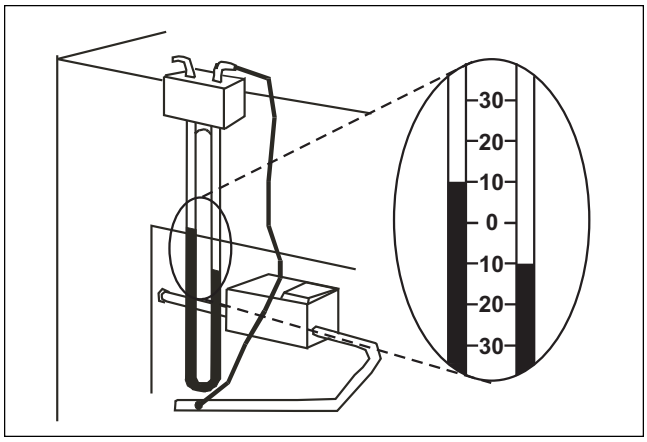


Figure 19. Manifold Press Check

pressure setting adjuster is found on the gas control (valve).

7. Remove the dust cover over the adjuster and, using a screwdriver, turn the screw beneath clockwise to increase or anti-clockwise to decrease the pressure. Replace the dust cover when finished

8. Turn off the burner, disconnect the gas pressure gauge, and replace the blanking screw in the manifold setting pressure test nipple.

9. Relight and check for gas soundness.

10. Perform a spillage test in accordance with BS.5440:1 to check for spillage of combustion products from the heater draught diverter.

11. Check that the main burner responds correctly to manual ON/OFF operations of any controls fitted in the gas control circuit.

12. Check the operation of the flame failure safety device using the following steps:

    a. Extinguish the main burner and pilot burner by turning off the main gas inlet cock.

    b. Check that the flame failure device is heard to close within 1 minute.

    c. Wait 3 minutes, then turn on the gas and re-light the pilot.

13. Refit the service door and return all controls to the required settings.

3C-5. Filter Pump Operation

It is recommended that the filter pump must continue running for at least 15 minutes after the heater shuts off to prevent damage to the system piping.

NOTE: If overheating happens, or the gas supply fails to shut off, turn off the main burners only. You can either position the rocker switch to OFF, or open the service door and press the red button on the gas control. For a complete shutdown, turn off the manual gas service cock.

3D. Inlet/Outlet Temperatures

The outlet piping carries a large volume of water from the heater to the pool, but only a small portion of that water is heated. The rest is bypassed. For that reason, the pipping will not feel hot to the touch.

3E. Seasonal Care

3E-1. Spring and Fall Operation

During periods of cold but not freezing weather, turn the thermostat down to the MIN setting if you are only going to use the pool occasionally. This will prevent the pool from becoming chilled and minimize the time required to raise the pool water back up to the desired temperature.

If you are not going to use the heater for a long period of time, shut it down completely, following the instructions in Section 3C-3.

3E-2. Winter Operation

In areas where freezing temperatures occur, and the pool or spa will not be used, have your service technician perform the following steps:

1. Shut OFF the gas valve and the LPG tank, unless it supplies other appliances.

2. Completely drain the heater before the first frost. To drain the heater, remove the drain plugs (see Figure 20).

3. After all water has drained from the heater, remove any mineral buildup in the openings.

4. Grease the threads in the header for winter protection, but do not replace the plugs.

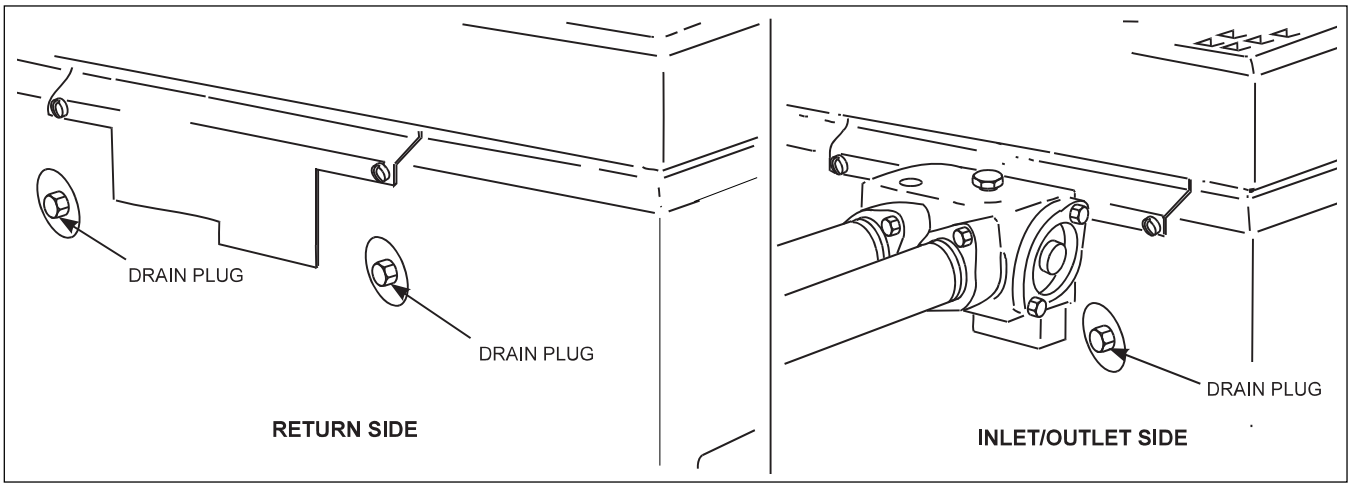


Figure 20. Heater drain locations.

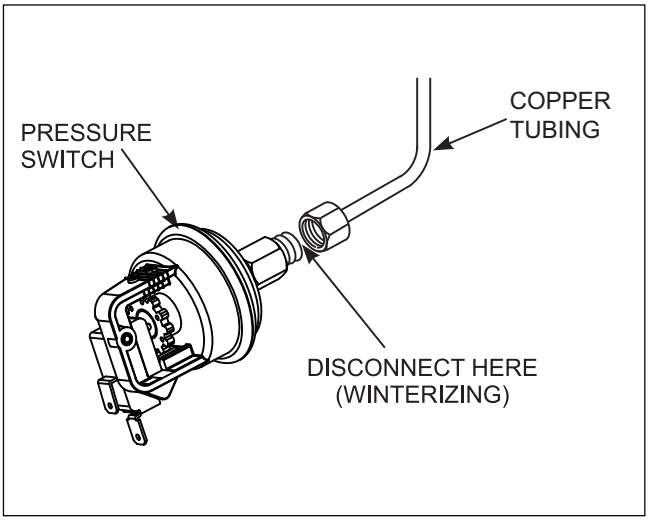


Figure 21. Pressure switch copper tubing.

5. Disconnect the pressure switch from the copper tubing (see Figure 21).

6. Use compressed air to blow out any standing water in the heat exchanger.

In areas subject to only short freeze periods, turn off the heater and run the filter pump continuously for the length of the cold period.

3F. Water Chemistry

3F-1. For Pool

The mineral content of swimming pool water increases daily, due to natural evaporation and the addition of algicidal and sanitizing chemicals. If you allow the mineral concentration in the pool to get too high, the minerals will precipitate out of the water and deposit on the walls of the pool, in the filter system, and in the heater tubes. To protect your heater from damage, you must take the precaution of maintaining the ph factor of the pool water between 7.4 and 7.6.

3F-2. For Spa

The control of chemical balance in a spa is more critical than in a swimming pool for satisfactory heater operation.

Spas are used more often than a swimming pool. The size, high water temperature, and heavy usage, mean chemical values in a spa can differ greatly. The lack of the right chemical content can result in unsanitary water conditions, and affect the life of the heater.

Maintaining sanitary water conditions in a spa can only be done by regular water changes and the proper addition of sanitizing chemicals. See Table 8 for the recommended levels for certain mineral concentrations.

Table 8. Mineral Concentration Levels

Test	Recommended Level
Free Chlorine or Total Bromine	1.0 to 3.0 ppm 2.0 to 4.0 ppm
pH	7.2 to 7.6
Total Alkalinity (TA)	100 to 150 ppm
Calcium Hardness (CH)	200 to 400 ppm
Langelier Saturation Index (LSI)	-0.5 to +0.5
Cyanuric Acid	30 to 150 ppm
Total Dissolved Solids (TDS)	Less than 1500 ppm
Copper	0 ppm

3F-3. Corrosion

The corrosive action of spa water is increased by the following:

1. Low pH - acidity
2. Low total alkalinity - bicarbonates
3. Low calcium hardness - soft water

NOTE: Zodiac Pool Systems, Inc., does not warrant heat exchangers damaged by corrosive water.

3F-4. Testing

Zodiac Pool Systems, Inc., recommends that owners purchase a test kit and use it regularly. A minimum kit is one which will measure chlorine, pH level, and alkalinity.

The pool or spa owner should have a professional service technician perform more extensive chemical testing and water changing.

3G. Swimming Pool Energy Savings Tips

Zodiac Pool Systems, Inc., offers the following recommendations to help conserve fuel and minimize the cost of operating your pool heater without sacrificing comfort.

1. The Red Cross recommends a maximum water temperature of 25°C. Use an accurate pool thermometer. A difference of 4 degrees, from 25 to 28°C will use as much as 40% more gas.

2. Carefully monitor the water temperature of your pool in the summer time. You can reduce heater usage due to warmer air temperatures.

3. Find the proper setting on the pool heater temperature control. Use the TEMP-LOK to discourage further adjustments.

4. Set the filter time clock to start the pump no earlier than 6:00 AM during the pool heating season. This is the time when nightly heat loss balances.

5. If the pool is only going to be used on weekends, reduce the heater thermostat setting by 8 or 10 degrees during the week. Reset it to the 25°C level a day or so before you plan to use the pool.

6. During the winter, and when on holiday for longer than a week, follow the instructions in Section 3 to shut down the heater.

7. Where possible, shelter the pool from prevailing winds with well-trimmed hedges or other landscaping, cabanas, or fencing.

8. Always use a pool cover when practical. Besides providing a valuable safety feature, a pool cover will reduce heat loss, conserve chemicals, and reduce the load on filter systems.

3H. Periodic Inspection (Routine Service)

⚠WARNING

Improper installation or maintenance can cause nausea or asphyxiation from carbon monoxide in flue gases which could result in severe injury, property damage, or death.

Zodiac Pool Systems, Inc., designs and constructs the Lite 2 heater for a long performance life when installed and operated properly under normal conditions. Have regular inspections at least annually by registered gas service personnel to keep the heater operating efficiently. The service technician should check the following:

1. Keep the top of the heater clear of all debris. Make sure there is no collection of flammable materials, leaves, paper, etc., around or under the heater.

2. Keep the pool heater area clean and free of all combustible materials, gasoline and other liquids, and vapors.

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

4. Check for spider webs in the pilot and main burner orifices — especially at Spring start up.

5. Make a regular visual check of the main burner and pilot flame patterns (see Figure 22).

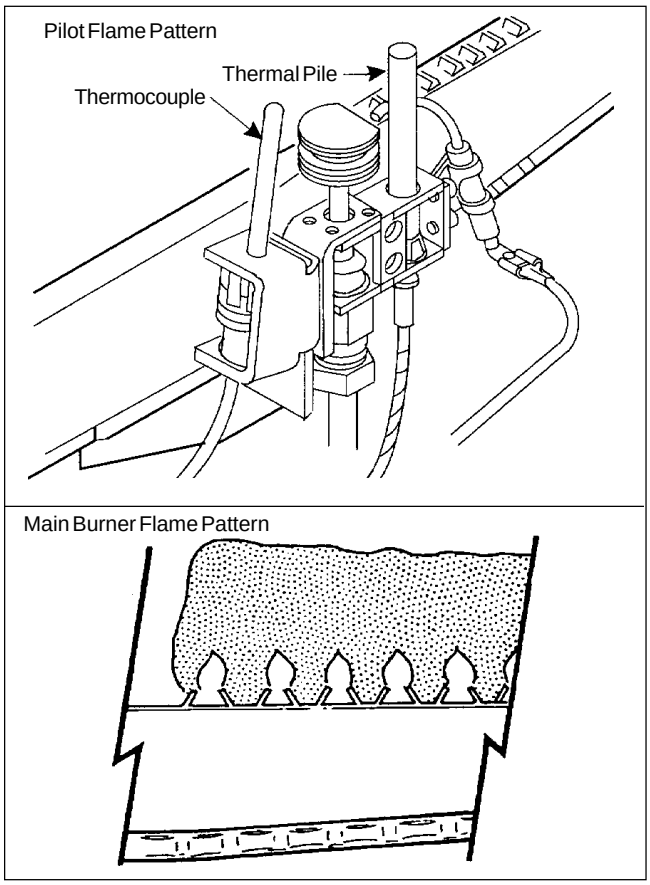


Figure 22. Pilot and main burner flame patterns.

6. Inspect the gas and millivolt controls annually to assure safe and dependable operation.

Specifically, check the following:

a. High limit switch
b. Pressure switch
c. Automatic gas valve
d. Temperature control

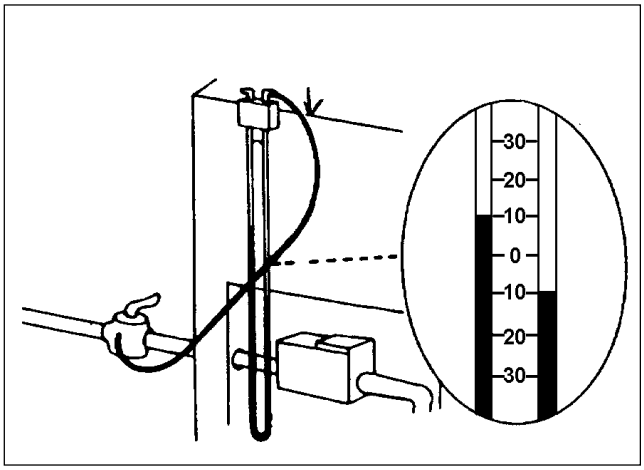


Figure 23. Testing inlet pressure.

7. Inspect the external surfaces of the heat exchanger tubes for soot buildup by placing a mirror between and under the burners when the heater is firing. Remove soot if it has collected on the tubes, and correct the cause.

8. Inspect the internal surfaces of the heat exchanger tubes annually. Remove any buildup of scale.

Controls can deteriorate over a period of years. A regular inspection schedule, with repair or replacement as needed, will keep the heater performing properly.

SECTION 4. Maintenance

4A. Gas Pressure Tests

Use the following procedures to test the inlet gas pressure (see Figure 23). A manometer kit is available from Zodiac Pool Systems, Inc. Instructions for its use are included in the kit.

1. Turn the heater OFF and close the gas service cock.
2. Remove the inlet pressure test point sealing screw and connect a pressure gauge from the manometer kit.
3. Turn the gas service cock on, and light the pilot and main burner.
4. See Table 1 for the gas inlet pressure. A tolerance of $\pm$1.5 mbar is acceptable.

5. Turn the heater and gas service cock to OFF.
6. Disconnect the manometer pressure gauge.

7. Refit the sealing screw and turn on the gas service cock.

8. Test for gas soundness.

9. Relight the heater.

All of the other parts of the pool system have an effect on heater operation. These parts include the pump, filters, and strainers, valves, gas supply, and time clocks. Before going on with these heater-related maintenance procedures, make sure the:

1. Pump is operating properly.
2. Filter and strainers are not clogged.
3. Valves in the piping system are not closed.
4. Time clocks are properly adjusted.

4B. Pressure Switch Adjustment

The pool filter must be clean before making this adjustment (see Figure 24).

> **⚠WARNING**
> Never adjust pressure switch to turn heater on, **ONLY** off.

1. Turn the rocker switch on the control panel to OFF.
2. Set the pool thermostat to MAX.
3. Start the filter pump.
4. Turn rocker switch to ON. Heater should start.
5. With your fingers, turn the adjustment sprocket very slowly clockwise until the heater goes off.
6. Slowly turn the pressure switch adjustment sprocket counterclockwise one-quarter turn. The heater should come back on.

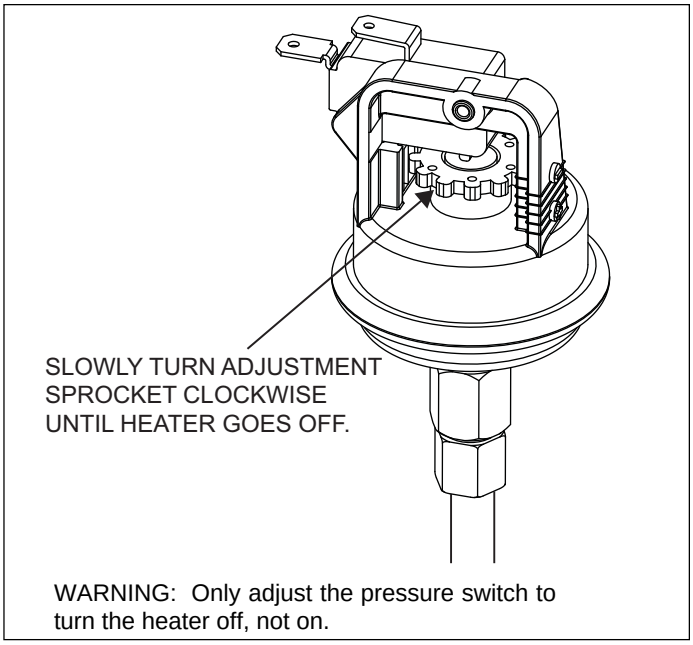


Figure 24. Pressure switch adjustment.

7. Check the adjustment by turning the filter pump off. The heater should shut off immediately. If it does not, restart the filter pump and repeat steps 5 and 6. Check the adjustment.
8. Return the pool thermostat to the desired temperature.
9. When the pressure switch is properly adjusted, the heater should come on about 10 seconds after the filter pump is started and shut off right after the pump shuts off.

It may be necessary to repeat these steps to get a proper setting. The switch must be set so that the heater will not fire unless the pump is running. If a proper setting cannot be reached, contact the factory service department.

10. Reinstall the door.

4C. Replacing the Gas Valve

> **⚠WARNING**
> Never attempt to repair the gas valve. Such attempts will void the warranty, and could lead to dangerous results.

If the gas valve is found to be defective, replace it by following these instructions.

1. Remove the service door.
2. Follow the shutdown procedures on the lighting and shutdown label to turn off the gas valve.
3. Turn off the main gas supply at the manual gas cock or the meter.
4. Unscrew the screws that fasten the gas inlet flange to the gas valve (see Fig. 25).
5. Remove the two screws that fasten the anti-rotation bracket on the left side of the gas valve.
6. Remove the pilot gas pipe from the gas valve.

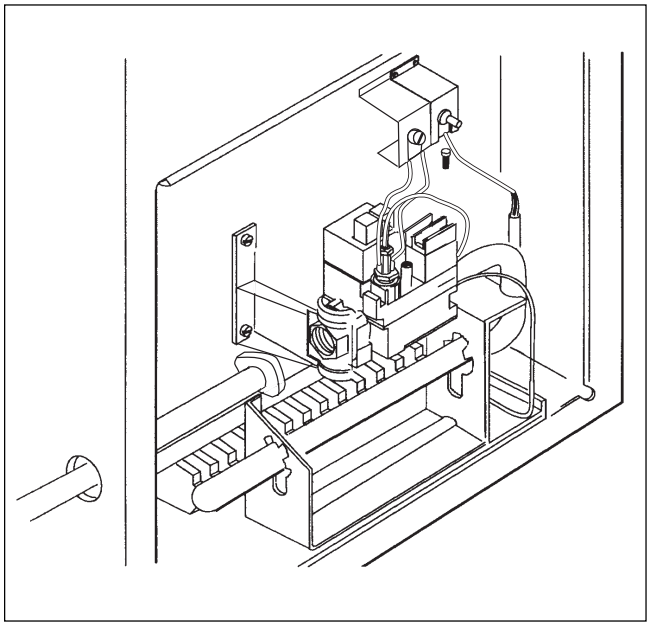


Figure 25. Gas valve removal.

⚠Caution
Label all wires prior to disconnection. Wiring errors can cause improper and dangerous operation.

7. Tag and remove all wires from the gas valve terminals.
8. Unscrew the screws that fastens the burner manifold flange to the gas valve. Replace the gas valve and flange "O" rings and re-assemble in reverse order.
9. Before operating the heater, test the complete gas supply system, including all fittings, for leaks by using a soap solution.
10. Follow the lighting instructions on the lighting and shutdown label.

4D. Removal of Gas Burners

1. Turn off the main gas supply at the manual gas cock or the meter.
2. Unscrew the screws that fastens the gas inlet flange to the gas valve (see Fig. 25).

⚠Caution
Label all wires prior to disconnection. Wiring errors can cause improper and dangerous operation.

3. Tag and remove all wires from the gas valve terminals.
4. Remove the two screws that fasten the anti-rotation bracket to the inner panel, and the three screws attaching the manifold bracket.
5. Slide the burner tray out of the heater (see Fig. 26).

NOTE: Due to the sharp edges on the metal burner, wear protective gloves for the next steps.

6. Grasp the burner firmly, and push it away from the manifold until it is clear of the orifice. Slide it out of the burner tray (see Fig. 27).
7. To replace the burner, insert the rear into the slot at the rear of the burner tray, line it up with the proper orifice and snap it into position.
8. Reinstall the burner tray by sliding it back into the heater and fasten it with the two brackets.
9. Reconnect the gas piping, turn on the gas supply, and check the system for leaks using a soap solution.
10. Reconnect the electrical wires to the gas valve according to the wiring diagram found on the inside of the heater.

If the burner being removed is the one with the pilot attached, follow these additional procedures after step 6, above.

1. Disconnect the pilot gas tube from the gas valve.
2. Detach the pilot burner assembly from the burner bracket and remove the burner according to the instructions in step 6.
3. Install the pilot burner assembly on the new burner.

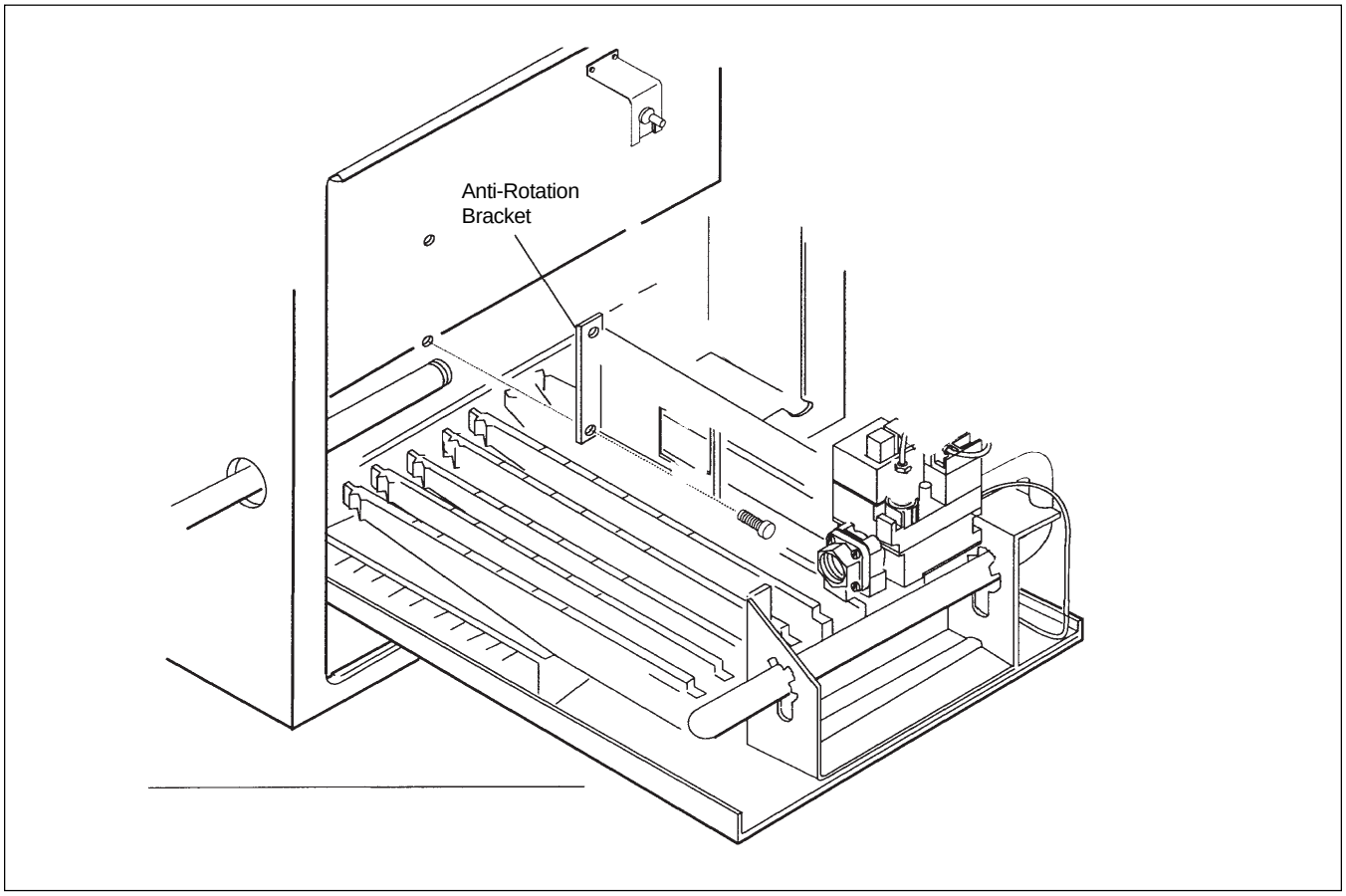


Figure 26. Burner tray removal.

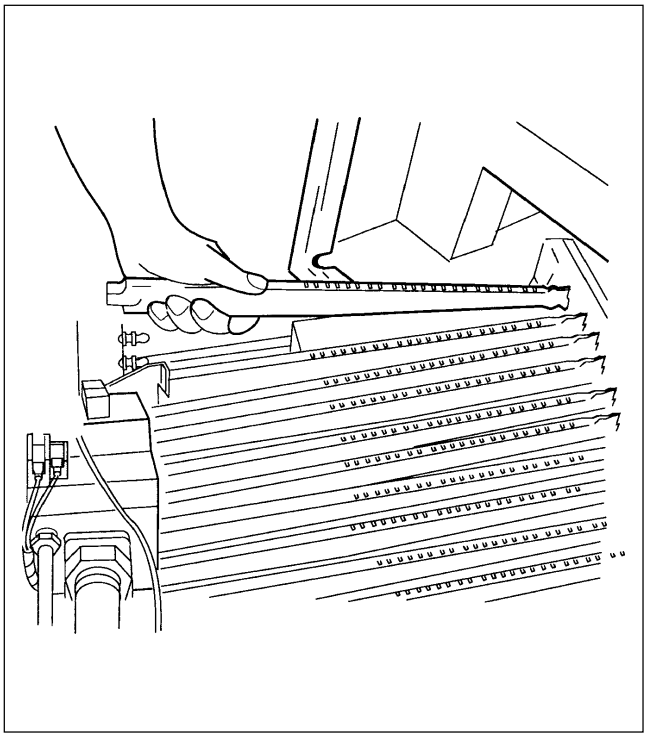


Figure 27. Gas burner removal.

4. Install the burner in the burner tray.
5. Reconnect the pilot gas tube to the pilot assembly and gas valve.

4E. Heat Exchanger

4E-1. Periodic Inspection of Heat Exchanger Water Passages

Scale can build up inside the heat exchanger tubes. The easiest way to determine the degree of scale buildup is to periodically inspect the tubes. Perform this inspection after 60 days of operation, and after 120 days of operation. This will establish a regular inspection routine.

An inspection and cleaning of the complete heat exchanger can only be done by removing it from the heater (see Section 2C for removal instructions).

4E-2. Cleaning the Heat Exchanger

⚠ Caution
Black carbon soot buildup on a dirty heat exchanger can be ignited by a random spark or flame. To prevent this happening, dampen the soot deposits with a wet brush or fine water spray before servicing the heat exchanger.

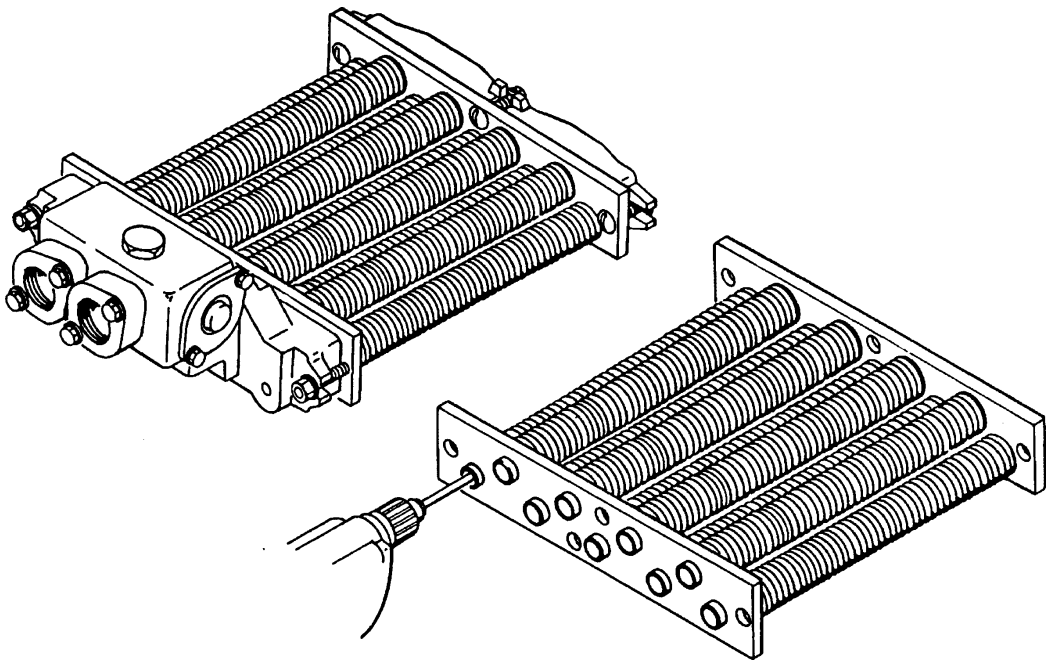
A light accumulation of soot or corrosion on the outside of the tubes can be easily removed with a wire brush after the heat baffles are removed. Follow the instructions in Section 2 to remove the heat exchanger.

Clean the heat exchanger using the following steps:

1. Remove the front and rear headers from the tube assembly (see Section 2).
2. Remove the tube baffles by first removing the spring retaining clip, then lifting out the baffles.
3. Clean the exterior of the baffles using a wire brush. **READ THE CAUTION AT THE BEGINNING OF THIS SECTION!**
4. Ream the insides of the tubes (see Fig. 28).
5. Take the reamer out often to remove lime powder and prevent the drill from binding in the tube.

NOTE: Use only the correct carbide tipped reamers which are available from Zodiac Pool Systems, Inc.

6. Install new gaskets. Do not reuse the old ones.
7. Tighten the header bolts progressively, starting with the two outside bolts. Maximum torque is 20 inch pounds (27 Newton-meters [Nm]). Do not over-tighten.
8. Replace the baffles and retaining clip.
9. Pressure test the heat exchanger for leaks with city water before reinstalling (see Fig. 28).
10. When placing the heat exchanger back in the boiler, carefully hold the ceramic fiber apart and lower the heat exchanger into place.



Notes:
1. **When pressure relief valve is used, it must be removed and the hole plugged, as shown when pressure testing heat exchanger.**
2. **Remove the plug and reinstall pressure relief valve before turning on filter pump.**
3. **Be sure tubes are dry, to make reaming easy.**

Figure 28. Heat exchanger cleaning.

11. If a header bolt is stripped in the process of reassembly, drive it out of the header plate and replace it (see Section 6, Parts List).

4F. Automatic Flow Control Valve

The automatic flow control valve has only one moving part, normally requires no service, and will withstand normal pool water for many years. Extremely high acid or chlorine concentration or hard water could damage valve parts.

To determine if the valve is stuck open:

1. Shut off the filter pump.

2. Remove the flow control cap.

3. Make a visual inspection of the disc. If the disc is not properly seated, or does not move smoothly back and forth on the shaft, disassemble the valve and overhaul it (see Fig. 29).

4. If parts are pitted due to corrosion by excessive acid or chlorine in the pool water, they should be replaced (see Section 6, Parts List).

SECTION 5. Field Installation for External Flue Terminal or Draught Divertor

5A. General Information

These instructions apply to all external flue terminal (outdoor installation only) and draught divertor (indoor installation only) Lite 2 pool and spa heaters, Sizes 125 through 400.

⚠ WARNING

This product must be installed and serviced by a professional service technician, qualified in pool and spa heater installation and maintenance. Improper installation and/or operation can cause nausea or asphyxiation from carbon monoxide in flue gases which could result in severe injury, property damage, or death. Improper installation and/or or operation will void the warranty.

When installing a new pool heater that will connect to existing flueing, some adaptation of the flue system will be required. This is due to variations in flue centerlines with the replacement heaters. Refer to the heater installation instructions for details of the required flue system and appropriate standards.

5B. Installation Procedures

Zodiac Pool Systems, Inc., ships the LG heaters with the low-profile top for an outdoor installation. To install either the Jandy draught divertor (required on all indoor installations) or the external flue terminal (outdoor installations), follow these procedures:

1. Remove the top plate, stamped "HOT", by slipping a fine-blade screwdriver into the slot and prying it up (see Fig. 30).

2. Remove the top by removing all eight screws connecting it to the jacket (see Fig. 31).

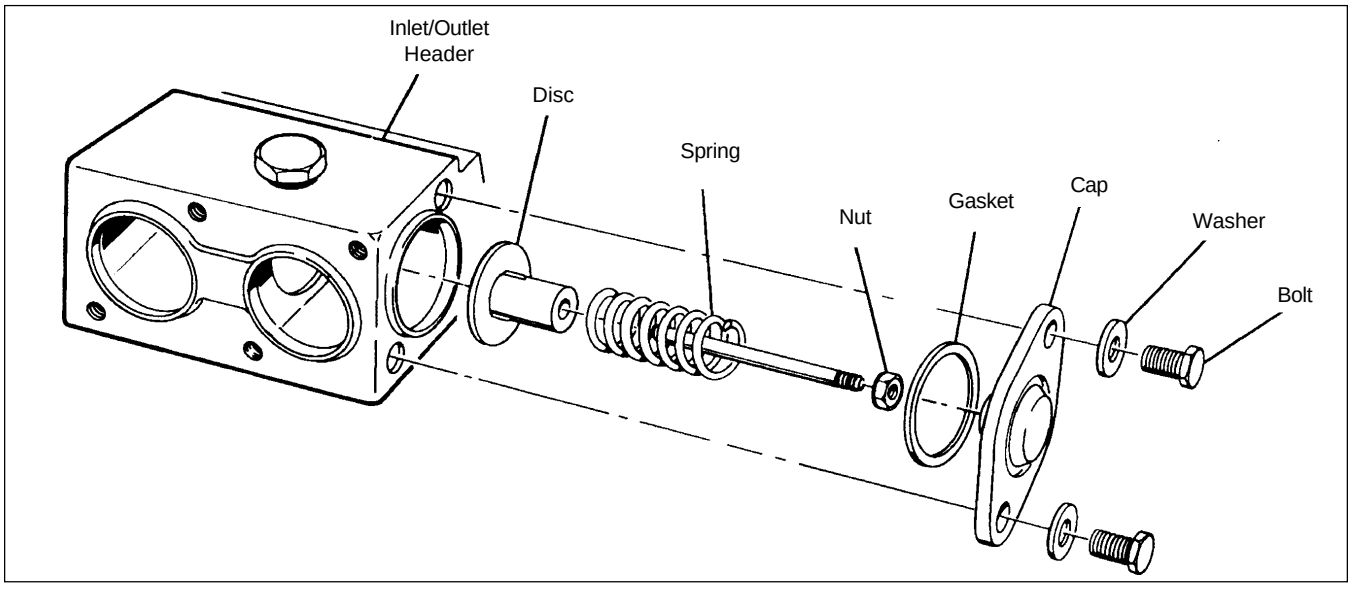


Figure 29. Flow control assembly.

3. Remove the rainguard assembly (see Fig. 32). If installing an indoor Draught Diverter, discard the rainguard. If installing an External Flue Terminal, set the rainguard aside to be re-installed later.

4. Remove the two screws securing the left vestibule cover (see Fig. 33). The cover can be discarded.

5. Remove the flue terminal or draught diverter and accessories from the carton.

6. Place transition plate securely on top of flue collector so flue gases will not leak (see Fig. 34).

7. If installing an External Flue Terminal, remove the entire back panel of the rainguard (see Fig. 35).

8. If installing an External Flue Terminal, re-install the rainguard (see Fig. 36).

9. Replace heater top and all eight screws (see Fig. 37).

10. Slide the adapter plate up over the bottom of the stack extension. Fit the stack extension on top of the collar of the flue transition plate (see Fig. 38).

11. Seat the adapter plate on the top assembly, and secure it with screws supplied in the kit (see Fig. 39).

12. Attach the clips to the adapter plate by securing the slotted side of the clips with the screws in the kit (see Fig. 40).

13. Use the holes in the clips as guides to drill three 1/8" dia. holes in the stack.

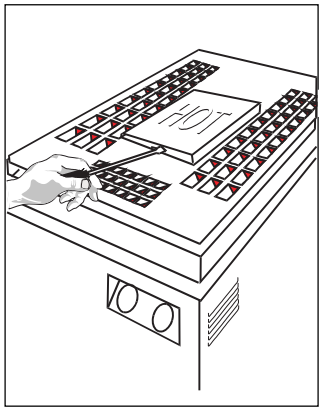


Figure 30. Removal of Top Plate

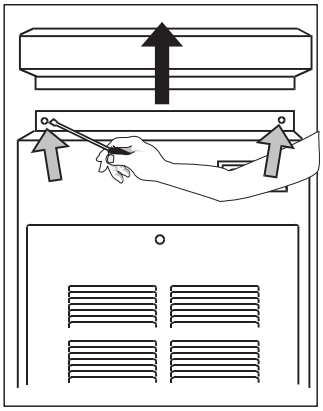


Figure 31. Removal of the Top

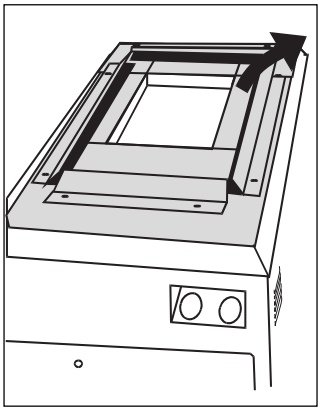


Figure 32. Removal of Rainguard Assembly

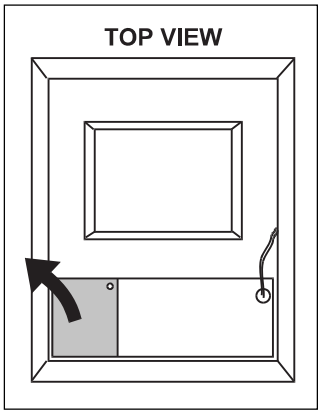


Figure 33. Removal of Vestibule Cover

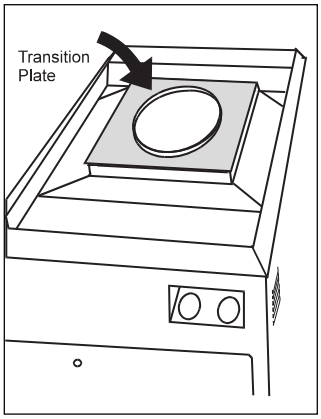


Figure 34. Installation of Transition Plate

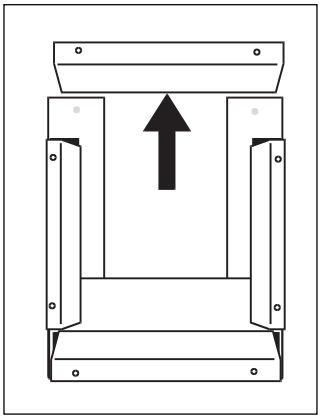


Figure 35. Removal of the Back Portion of Rainguard

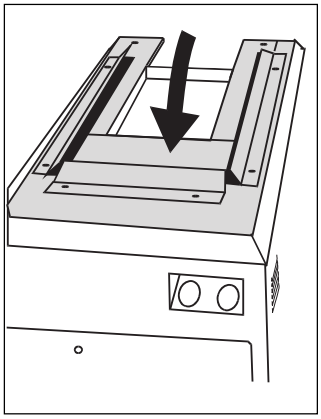


Figure 36. Rainguard Reinstallment

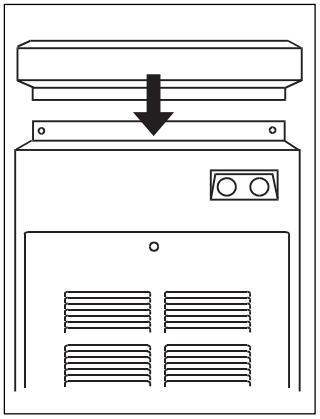


Figure 37. Installation of the Top of the Heater

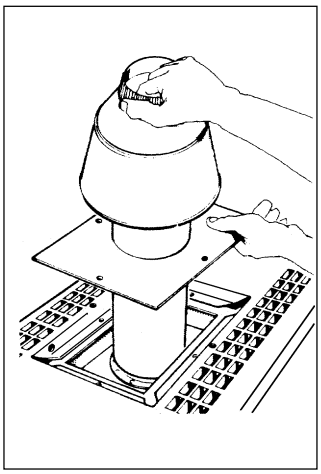


Figure 38. Installation of the Adapter Plate

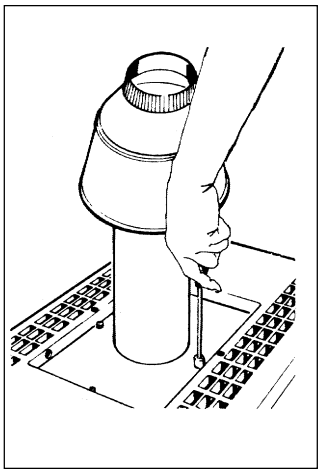


Figure 39. Fastening the Adapter Plate

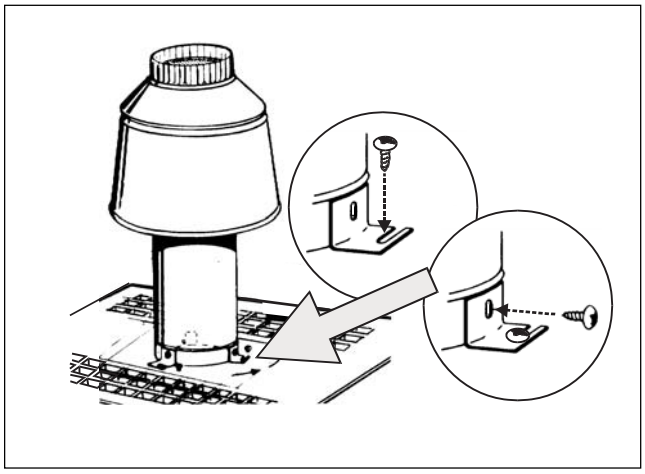


Figure 40. Fastening the Stack

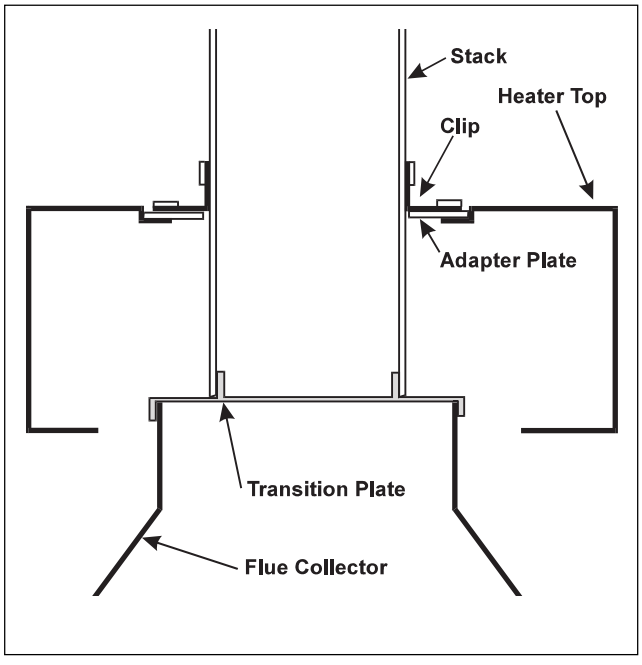


Figure 41. Finished Installation

14. Secure the stack to the clips with the screws supplied in the kit (see Fig. 40).

15. Figure 41 shows a cross-section of the finished installation.

SECTION 6.
Parts List for Lite 2 Model LG Heaters

6A. General Information

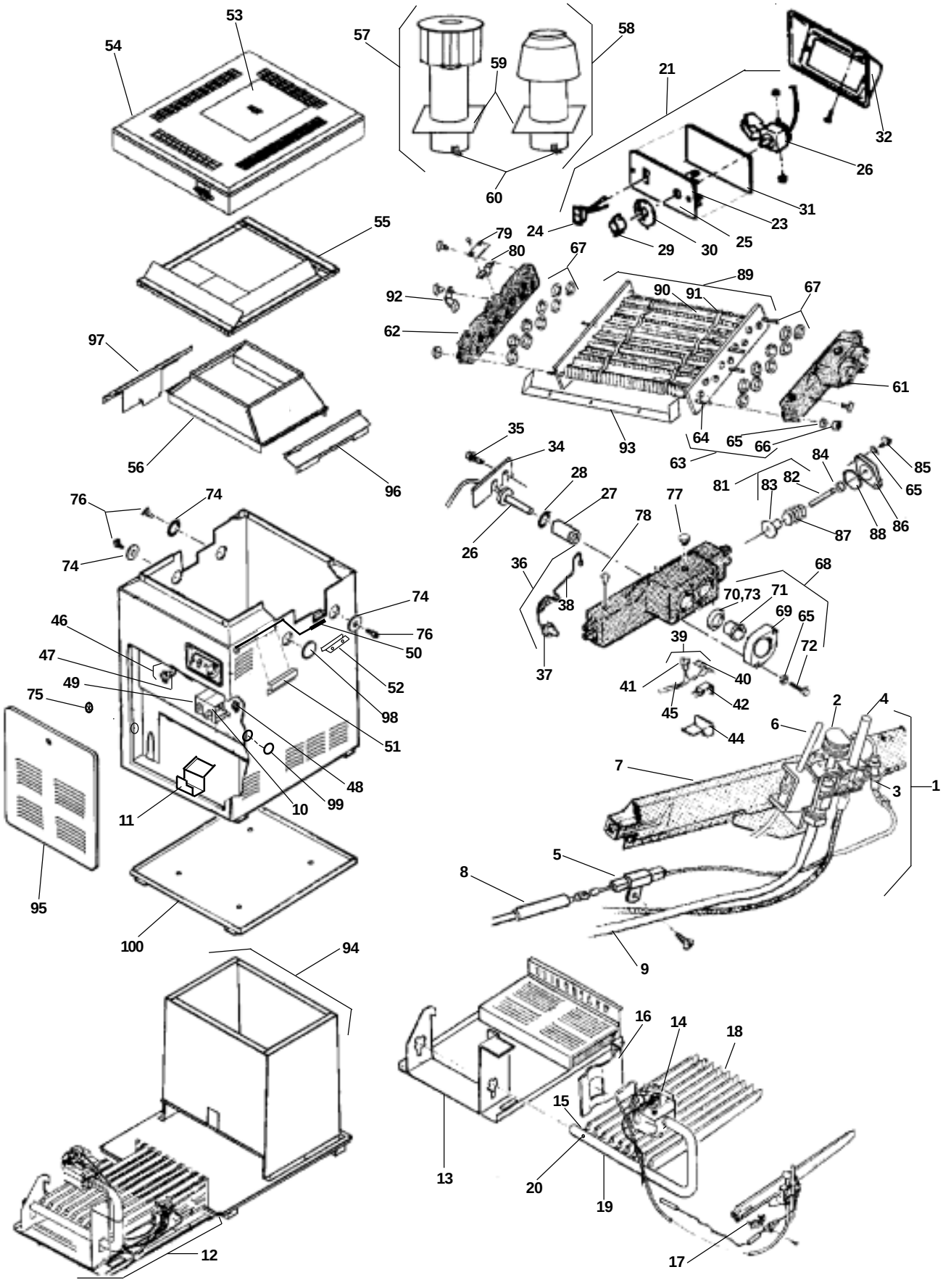
To order or purchase parts for the Model LG Lite 2 pool and spa heaters, contact your nearest Jandy dealer or distributor. If they cannot supply you with what you need, contact the techical support department at Zodiac Pool Systems, Inc., 6000 Condor Drive, Moorpark, California, 93021, Telephone 800.822.7933.

6B. PARTS LIST

Key No	Description	Model No	ORDER PART NO
	PILOT GAS SYSTEM - LLG		
1	Pilot, Main Burner Assembly, NAT	All	10806401
1	Pilot, Main Burner Assemby, LPG	All	10806402
2	Pilot Burner, NAT	All	10802401
2	Pilot Burner, LPG	All	10802402
3	Pilot Electrode	All	W0040000
4	Pilot Generator	All	W0036901
5	Ceramic Insulator Assembly	All	10418819
6	Thermocouple	All	W0036500
7	Burner, Main w/Pilot Bracket	All	10457500
8	High Voltage Lead Assembly	All	E0214200
9	Pilot Tubing	All	10820502
10	Piezo Lighter Assembly	All	R0355900
11	Pilot Condensate Shield	All	R0323300
	MAIN GAS ASSEMBLY		
12	Burner Tray Assy, NAT *(Note 1)*	125-400	10817801-05
12	Burner Tray Assy, LPG *(Note 1)*	125-400	10818401-05
13	Burner Tray, Shelf Only	125-400	R0317001-05
14	Gas Valve, NAT	All	V0075300
14	Gas Valve, LPG	All	V0075500
15	Gas Orifice, NAT *(Note 1)*	All	L0032200
15	Gas Orifice, LPG *(Note 1)*	All	L0032900
16	Anti-Rotation Bracket	All	10818501
17	Mounting Bracket Assembly	All	10419200
18	Burner, Main	All	L0052300
19	Burner Manifold	125	L0052200
19	Burner Manifold	175	L0006300
19	Burner Manifold	250	L0006400
19	Burner Manifold	325	L0006500
19	Burner Manifold	400	L0006600
20	Gas Valve Fitting	All	10807800
	ELECTRICAL SYSTEM		
21	Temperature Control Assembly	All	10846602
22	Wire Set (Not Shown)	All	R0332700
23	Plate Assembly	All	10903300
24	On-Off Switch	All	R0099800
25	Temperature Control Label	All	H0209800
26	Temperature Contol with Sensor	All	R0318800
27	Protector Sleeve, Bulb	All	10444900
28	“O” Ring, Temperature Control Bulb	All	E0116400
29	Thermostat Knob, Black	All	R0010700
30	Stop Plate, “Temp-Lok”	All	10583100
31	Temperature Control Gasket	All	S0070000
32	Bezel	All	S0069800
33	Stop Plate Screw (Not Shown)	All	F0033300
34	Temperature Sensor Retainer Bracket	All	10447300
35	Retainer Bracket Screw	All	F0009100
36	Pressure Switch & Siphon Loop Assembly	All	R0097600
37	Pressure Switch, 2 PSI	All	R0013200
38	Siphon Loop Assembly	All	R0057800
37	Pressure Switch, 1 PSI	All	R0011300
37	Pressure Switch, 1-10 PSI	All	R0015500
39	High-Limit Switch Set	All	R0023200
40	High-Limit Switch, 135° F	All	R0022700
41	High-Limit Switch, 150° F	All	R0023000
42	High-Limit Switch Retainer Clip	All	10418400
43	High-Limit Switch Retainer Boot (Not Shown)	All	S0098900
44	High-Limit Switch Cover	All	10418301
45	High-Limit Switch Wire Harness	All	10419300
46	Fusible Link Assembly	All	R0012200
47	Fusible Link Bracket	All	10479901
48	Terminal Block	All	R0097800
49	Overheat Thermostat Assembly	All	10818201
50	Thermostat only	All	E0155300
51	Capillary Cover and Insulation	All	R0356000
52	Sensor Cover and Insulation	All	R0356100
	VENT SYSTEM		
53	Top Filler Plate	125-400	R0343701-05
54	Top Enclosure	125-400	R0356201-05
55	Rainshield Kit	125-400	R0318301-05
56	Flue Collector Assembly	125	10844201
56	Flue Collector Assembly	175-400	R0316402-05
57	Outdoor Flue terminal	125-400	10561501-05
58	Indoor Draught diverter	125-400	10561406-10
59	Adapter Plate	125-400	10535301-05
60	Clip	All	10211000
	WATER SYSTEM		
61	Inlet/Outlet Header, 2"	All	R00356300
61	Inlet/Outlet Header, Bronze, 2"	All	R0016800
62	Return Header	All	R0058300
62	ReturnHeader, Bronze	All	R0054600
63	Header Bolt Assembly *(Set of 8)*	All	R0057000
64	Bolt for Headers, 2 1/2"	All	F0046100
65	Washer for Headers	All	F0011100
66	Nut for Headers	All	F0003100
67	Header Gasket Assembly *(Set of 18)*	All	R0050800
68	Flange & Gasket Assembly *(Set of 2)*	All	R0332600
69	Flange, 2"	All	10822900
70	Flange Gasket, 2"	All	S0078000
71	Flange Sleeve, 2"	All	S0078200
72	Flange Bolt	All	F0031700
73	Flange Gasket, 1 1/2 - 2"	All	S0078100
74	Grommet for Drain Plug	All	R0316300
75	Grommet, Slitted	All	S0071100
76	Brass Plug, 1/4”	All	P0026800
77	Brass Plug, 3/4"	All	P0027000
78	Brass Connector	All	P0019701
79	Flue Collector Hold Down Clamp	All	10726200
80	Hold Down Bracket		
81	By-Pass Assembly	All	R0013100
82	By-Pass Valve Rod	All	S0079800
83	By-Pass Valve Disc	All	R0011500
84	Nut (For Rod)	All	F0048400
85	Hex Bolt, 3/8”-16 x 1”	All	F0041600
86	By-Pass Valve Control Cap (Iron)	All	S0069101
86	By-Pass Valve Control Cap (Bronze)	All	10557400
87	By-Pass Valve Spring, Purple	125	S0079900
87	By-Pass Valve Spring, White	175	S0061400
87	By-Pass Valve Spring, Red	250	S0061300
87	By-Pass Valve Spring, Blue	325	S0061200
87	By-Pass Valve Spring, Black	400	S0070100
88	By-Pass Valve Gasket	All	R0011400
89	Heat Exchanger Tube Assembly	125-400	R0018101-05
90	Heat Exchanger Baffle (8 Required)	125-400	10697401-05
91	Baffle Retainer	All	S0083900
92	Heat Exchanger Support Clip	All	10457000
93	Heat Exchanger End Baffle	125-400	R0332301-05
	FIREBOX COMPONENTS		
94	Combustion Chamber Assembly	125-400	R0316701-05
	JACKET COMPONENTS		
95	Door with Latch	125-400	R0356501-05
96	Gap Closure, Inlet/Outlet	All	10448201
97	Gap Closure, Return	All	10448301
98	Button Plug, 1-4/3”	All	F0035300
99	Button Plug, 7/8”	All	F0032300
	OPTIONAL COMPONENTS		
100	Non Combustible Base	125-400	10521701-05
	Pressure Relief Valve 3/4" NPT, 75 PSI	All	R0040400
	Touch Up Spray Paint, Pewter & Black	All	R0335800

Notes:

1. For altitudes 2,000 Ft above sea level, call factory for orifice size.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Limited Warranty

Zodiac Pool Systems, Inc. ("Zodiac") warrants all Baracuda®, Jandy®, and Polaris® brand products to be free from manufacturing defects in materials and workmanship for a period of one (1) year from the date of retail purchase, with the following exceptions:

1. Jandy heat pumps are warranted for two (2) years. Heat pump compressors and heat exchangers are warranted for five (5) years.
2. Electronic salt water chlorine generators are warranted for three (3) years, with the exception of the Jandy AquaPure® Ei Series, which is warranted for one (1) year.
3. Jandy NeverLube® valves are warranted for the life of the pool on which they were originally installed.
4. In-floor cleaning heads are warranted for the life of the pool on which they were originally installed, if originally installed with Zodiac's in-floor cleaning valves. In-floor cleaning hydraulic valves, UltraFlex® 2 valve housings, and leaf removal deck canisters are warranted for three (3) years.
5. Baracuda X7 Quattro®, S3, and Polaris 9300S cleaners are warranted for two (2) years.
6. Frames for Polaris ATV®, 280, 360, 380, 480 and 3900S cleaners are warranted for five (5) years.
7. Kontiki cleaners are warranted for ninety (90) days.
8. Pool cleaner wear-and-tear items including, but not limited to, bags, filter canisters, tires, sweep hoses, sweep hose scrubbers, surface disks, shoes, belts, rollers, scrubbers, brushes, and footpads, are not warranted.
9. Refrigerant and other expendables are not warranted.
10. Replacement products, or parts, provided at no charge are warranted only until the original finished good's warranty has expired. Purchased replacement parts are warranted for ninety (90) days from the date of retail purchase, with the exception of electronic salt water chlorine generator cells and electrodes, which are warranted for one (1) year.

For warranty information specific to Nature2® brand products, please see the owner's and installation manuals for those products.

This warranty applies only to products purchased and utilized in the 50 United States and Canada, is limited to the first retail purchaser, is not transferable, and does not apply to products that have been moved from their original installation sites. The liability of Zodiac shall not exceed the replacement of the defective product or its parts, and does not include transportation costs, costs for labor to service or repair the defective product, or any items or materials required to make the repair including, but not limited to, refrigerant and other expendables. Zodiac is not responsible for charges or delays incurred when a servicer is unable to perform service due to lock outs, animals, intolerable pool or spa water temperature when entry into pool or spa is required to perform service, service refusals, etc. No reimbursements will be made for loss and/or usage of water, fuel or other resources resulting from product defect. A third party service provider may charge the end-user customer for parts and/or labor required to resolve any issue not covered under warranty, such as improper installation. Zodiac is not responsible for these charges. Product discoloration, or any other cosmetic or superficial damage or deterioration, regardless of its cause, is not covered by this warranty. This warranty does not cover failures, defects, malfunctions or complaints resulting from any of the following:

1. Failure to properly install, operate or maintain the product in accordance with Zodiac's published installation, operation and/or maintenance manuals.
2. The workmanship of any installer of the product.
3. Use of non-factory authorized parts or accessories in conjunction with the product(s).
4. Product modifications or adjustments that are not in accordance with Zodiac's published installation, operation and/or maintenance manuals.
5. Not maintaining proper pool and/or spa chemical balance [pH levels between 7.2 and 7.8, with ideal range being between 7.4 and 7.6; Total Alkalinity (TA) between 80 to 120 ppm; Total Dissolved Solids (TDS) less than 2000, not including salt ppm].
6. Corrosion, erosion, scaling, calcification or other conditions caused by water hardness, chemical imbalance, or lack of product maintenance.
7. Chemical contamination of combustion air; or improper use of pool/spa chemicals, such as introducing chemicals upstream of the heater or cleaner hose, or through the skimmer; or use of copper-based algaecides in conjunction with Nature2 products.
8. Abuse, damage during transit or installation, mis-handling, tampering, vandalism, alterations, accidents, fires, floods, storms, earthquakes, power surges, lightning, pets or other animals, insects and/or their hives or nests, negligence, or acts of God.
9. Not grounding and/or bonding as specified, mis-wiring, loose wiring, cut or kinked wires, loose cable connections, incorrect wire runs, incorrect breaker size, breaker(s) in "off" position, improper wire gauge, moisture in electrical conduit, improper electrical supply, dead batteries, incorrect plumbing, inadequate size of pipe and/or fittings, cross-threading, over-tightening, under-tightening, glue drips or residue, improperly secured covers, improper valve placement or usage, unsynchronized valve actuators, valve actuators in "off" position, improper gas pipe sizing, lack of fuel, inadequate heater vent pipe sizing, programming errors, or removal of in-line filter screens from pool cleaners.
10. Freezing, corrosion, cracking, overheating, warping, flooding, moisture intrusion or any other condition caused by or related to weather, climate, improper winterization, improper equipment placement, inadequate ventilation, inadequate water circulation, roof run-off, sprinklers, irrigation systems, or lights or other products on or near the pool/spa or pool/spa equipment pad.
11. Operating the product at water flow rates below minimum, or above maximum, specifications. Operating any product or piece of equipment including, but not limited to, pumps, with insufficient quantities of water.
12. Improper equipment sizing, or product mis-applications including, but not limited to, unsuitable application of a pool cleaner, or use of residential products on commercial applications.
13. Dirty, clogged, blocked, covered or obstructed plumbing, cleaner parts, chlorine generator cells or sensors, pump strainer baskets, pump impellers, heater orifices (including blockage by spider webs), heater grills, doors, flue boxes, flue vents or flue collectors, filter elements, or filter breather tubes.
14. Collateral damage caused by failure of any component including O-rings, pump strainer baskets, DE grids, sand filter laterals, or cartridge elements.

This is the only warranty given by Zodiac. No one is authorized to make any other warranties on behalf of Zodiac. IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE EXPRESS WARRANTIES LISTED ABOVE. Some states and/or provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Zodiac expressly disclaims and excludes any liability for consequential, incidental, indirect, or punitive damages for breach of any expressed or implied warranty. In no event shall Zodiac be liable for incidental or consequential damages of any nature, including damage to vinyl liners, plaster, aggregate-based pool surfaces, tile, stone, coping, fixtures, skimmers or skimmer covers, plumbing, drains, equipment covers or shelters, landscaping, animals, plants, or dwellings. Some states and/or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. Certain vinyl liner patterns are particularly susceptible to rapid surface wear or pattern removal caused by objects coming into contact with the vinyl surface, including pool brushes, pool toys, floats, fountains, chlorine dispensers, and automatic pool cleaners. Some vinyl liner patterns can be seriously scratched or abraded by rubbing the surface with a pool brush. Ink from the pattern can also rub off during the installation process or when it comes into contact with objects in the pool. Zodiac is not responsible for, and this warranty does not cover, pattern removal, cuts, abrasions or markings on vinyl liners.

This warranty gives you specific legal rights. You may also have other rights that vary by state and/or province. For warranty consideration, contact the original dealer and provide the following information: proof of purchase, model number, serial number, date of retail purchase, and date of installation. The dealer will contact the factory to obtain instructions regarding the claim and to determine the location of the nearest independent service company. If the dealer is not available, you can locate an independent service company in your area by visiting www.baracuda.com, www.jandy.com, or www.polarispool.com, or by emailing our Technical Support department at techsupport.vista@zmp-zodiac.com, or by calling our Technical Support department at 800-822-7933. In Canada, call 888-647-4004. All returned parts must have a Returned Material Authorization number to be evaluated under the terms of this warranty.

H0208700G

Jandy®

Zodiac Pool Systems, Inc.
6000 Condor Drive, Moorpark, CA, USA 93021 • 800.822.7933 FAX 877.327.1403