



INSTALLATION AND OPERATION MANUAL



Jandy Pro Series JXi™ Gas-Fired Pool and Spa Heater Models 200, 260, 400

⚠ WARNING

If these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death.

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 exist. 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.

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

WHAT TO DO IF YOU SMELL GAS

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

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Table of Contents

Section 1. General Information	3	Section 7. Operating Instructions	27
1.1 Introduction.....	3	7.1 First-Time Start-Up Procedure	27
1.2 Technical Assistance	3	7.2 Starting the Heater	27
1.3 Consumer Information and Safety.....	3	7.3 TO TURN OFF GAS TO THE HEATER	28
1.4 Warranty	4	7.4 Normal Operation	28
1.5 Certification Codes and Standards.....	4	7.5 Operating the Controller	28
1.6 General Operation Description.....	4	7.6 Setting up Heater Options	29
1.7 Safety Controls.....	4	7.7 Operating the Heater	29
Section 2. Installation Requirements.....	5	7.8 Temperature Set Point Lock	31
2.1 Introduction.....	5	7.9 Shutting Down the Heater	31
2.2 Materials Installer Must Provide	5	Section 8. Maintenance.....	31
2.3 Specifications	5	8.1 Winterizing.....	31
2.4 Heater Components	6	8.2 Spring Start-up	31
2.5 Dimensions.....	7	8.3 Inspection and Service	31
2.6 Clearances	7	Section 9. Troubleshooting	33
2.7 Field Assembly	8	9.1 Common Problems.....	33
2.8 Location Requirements	8	9.2 Service Diagnostic Messages	34
Section 3. Venting.....	10	9.3 Ignition Control LED Service Codes.....	34
3.1 Combustion Air Supply	10	Section 10. Professional Service and	
3.2 Exhaust Venting	10	Maintenance.....	35
3.3 Vent Pipe Sizing and Installation	11	10.1 Gas Pressure Offset Test	35
Section 4. Gas Connections	14	Section 11. Spare Parts.....	35
4.1 Install Piping and Check Gas Supply	14	11.1 Ordering Information	35
4.2 Special Precautions for LP Gas.....	16	11.2 JXi Major Components	36
Section 5. Water Connections.....	16	11.3 Cabinet Assembly Spare Parts List	
5.1 Water Piping Connections	16	and Exploded Parts Diagram	37
5.2 Pump Sizing	17	11.4 Heat System Spare Parts List	
5.3 Plumbing Connections	18	and Exploded Parts Diagrams.....	38
5.4 Water Pressure Switch Adjustment	18	11.5 Water System Spare Parts List	
5.5 Check Valve Installation	19	and Exploded Parts Diagrams.....	41
5.6 Reversing the Water Connections	19	11.6 Electrical System Spare Parts List	
5.7 Pressure Relief Valve Installation.....	19	and Exploded Parts Diagrams	42
5.8 Auxiliary Components, Chlorinators,		Section 12. Water Chemistry	43
Ozone Generators, and Sanitizing Chemicals .	21		
Section 6. Electrical Connections.....	22		
6.1 General Information.....	22		
6.2 Service Access	22		
6.3 Main Power	23		
6.4 Bonding	24		
6.5 Optional Remote Controls	24		

Section 1. General Information

1.1 Introduction

This manual provides installation and operation instructions for the Jandy Pro Series JXi pool and spa gas heater product line.

Read the installation and operation instructions completely before proceeding with the installation.

1.2 Technical Assistance

For technical support or questions, contact your local Zodiac® distributor or Zodiac Pool Systems, Inc. at 800.822.7933.

1.3 Consumer Information and Safety

WARNING

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

The heater is designed and manufactured to provide many years of safe and reliable service when installed, operated, and maintained according to the information in this manual and the installation codes referred to throughout. Be sure to read and comply with all warnings and cautions.

1.3.1 Spa/Hot Tub Safety Rules

WARNING

The following "Safety Rules for Hot Tubs," recommended by the U.S. Consumer Product Safety Commission, should be observed when using the spa.

WARNING

The U.S. Consumer Product Safety Commission warns that elevated water temperature can be hazardous. Consult heater operation and installation instructions for water temperature guidelines before setting temperature.

1. Spa or hot tub water temperature should never exceed 104°F (40°C). One hundred degrees Fahrenheit (100°F [38°C]) is considered safe for a healthy adult. Special caution is recommended for young children.
2. The drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness, and subsequently result in drowning.

3. **Pregnant women take note!** Soaking in water above 102°F (38.5°C) can cause fetal damage during the first three (3) months of pregnancy (which could result in the birth of a brain-damaged or deformed child). If pregnant women are going to use a spa or hot tub, they should make sure the water temperature is below 100°F (38°C) maximum.
4. The water temperature should always be checked with an accurate thermometer before entering a spa or hot tub. Temperature controls may vary by as much as 1F°/1C°.
5. Persons with a medical history of heart disease, diabetes, circulatory or blood pressure problems should consult their physician before using a hot tub or spa.
6. Persons taking any medication which induces drowsiness (e.g., tranquilizers, antihistamines, or anticoagulants) should not use spas or hot tubs.
7. Prolonged immersion in hot water can induce hyperthermia.

Hyperthermia occurs when the internal body temperature reaches a level several degrees above the normal body temperature of 98.6°F (37°C). Symptoms include dizziness, fainting, drowsiness, lethargy, and an increase in the internal body temperature. The effects of hyperthermia include:

- Lack of awareness of impending hazard
- Failure to perceive heat
- Failure to recognize need to leave spa
- Physical inability to leave spa
- Fetal damage in pregnant women
- Unconsciousness resulting in a danger of drowning

1.3.2 Swimming Pool Energy Saving 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 American Red Cross® recommends a maximum water temperature of 78°F (26°C). Use an accurate pool thermometer. A difference of 4F° (2°C), between 78°F and 82°F (26°C and 28°C), will use as much as 40% more gas.
2. Carefully monitor the water temperature of your pool in the summertime. You can reduce heater usage due to warmer air temperatures.
3. Find the proper setting on the pool heater temperature control and use the Set Point Lockout feature to discourage further adjustments.

4. Set the pump 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 temperature control setting by 8 or 10 degrees during the week. Reset it to the 78°F (26°C) level a day or so before you plan to use the pool.
6. During the winter or when on vacation for longer than a week, shut down the heater by following the shutdown instructions found on the inside of 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.

1.4 Warranty

This heater is sold with a limited factory warranty. Details are included with this heater.

Make all warranty claims to a Zodiac® dealer or directly to the factory. Claims must include the heater serial number and model (this information can be found on the rating plate), installation date, and name of the installer. Shipping costs are not included in the warranty coverage.

The warranty does NOT cover damage caused by improper assembly, installation, operation or field modification. Also, damage to the heat exchanger by corrosive water is NOT covered by the warranty.

NOTE Keep this manual in a safe place for future reference when inspecting or servicing the heater.

1.5 Certification Codes and Standards

The heater is design-certified by CSA (Canadian Standards Association) compliant with the latest edition of the *Standard for Gas Fired Pool Heaters*, ANSI® Z21.56 in the USA and CSA 4.7 in Canada.

All Jandy Pro Series heaters must be installed in accordance with the local building and installation codes as per the utility or Authority Having Jurisdiction (AHJ).

In the absence of local codes, refer to the latest edition of the following national codes for installation:

1. In the United States, the *National Fuel Gas Code*, NFPA® 54/ANSI Z223.1. Pay particular attention to the chapter addressing *Venting of Equipment*.
2. In Canada, the *Natural Gas and Propane Installation Code*, CAN/CSA-B149.1. **Minimum combustion air requirements MUST be**

followed for proper and safe operation. The Jandy Pro Series JXi heater may not operate properly when installed with only the minimum combustion air openings allowed in CAN/CSA-B149.1.

The JXi pool and spa heaters meet or exceed the requirements of energy conservation regulations, such as those in California, Hawaii, New York, Oregon and other states that have disallowed the use of continuously lit pilot type ignition sources. In addition, the natural gas models of this heater comply with the California South Coast Air Quality Management District's (SCAQMD) Rule 1146.2 for Nitrogen Oxide (NOx) emissions.

Any changes to the heater, gas controls, air orifice, gas orifices, wiring, draft diverter, or improper installation may void the warranty. If change is required to any of the above, consult the factory.

1.6 General Operation Description

In the JXi heater, the blower draws air and fuel through specially designed orifices for both air and gas, then delivers the precise mixture to the burner located inside the combustion chamber. The combustion chamber is completely sealed and contains the heat exchanger, which surrounds the burner. Once combustion gases pass through the heat exchanger, the flow is directed through an exhaust duct located on the side of the combustion chamber, where it vents to the atmosphere.

1.7 Safety Controls

The JXi heater is equipped with the following safety controls to protect internal components and prolong the life of the heater.

1.7.1 Air Flow Switch

The air flow switch monitors the vacuum (negative pressure) within the blower housing. The air flow switch is factory set and the ignition module will not operate unless the air pressure switch and all safety switches are satisfied.

1.7.2 Water Pressure Switch

Operating the heater without sufficient water flow may severely damage the heater. If water flow to the heater is restricted, the water pressure switch prevents the burner from firing. The control panel will display an error message to indicate water flow is insufficient.

NOTE: If the heater is installed below the level of the pool, (or more than two feet above the pool level), the pressure switch setting must be adjusted. See "5.4 Water Pressure Switch Adjustment" on page 18 for guidelines.

1.7.3 Water Temperature Control

All heater models are equipped with an electronic control which senses water temperature by means of a thermistor and controls heater operation to bring the water to the temperature selected. It has an option for two (2) separate thermostat settings which are typically used to set pool and spa temperatures.

1.7.4 Ignition Control

The ignition control provides energy for ignition of the air/gas mixture, monitors the flame and controls the gas valve. When the temperature control calls for heat, the ignition control initiates the start-up process by first purging the combustion chamber gases. The ignition control will then energize the igniter and open the gas valve when the igniter surface is sufficiently hot. During the start-up process and after ignition, the ignition control system is continually monitoring the flame condition. If the control senses an unstable flame it will close the gas valve as a safety precaution.

Section 2. Installation Requirements

2.1 Introduction

Install the JXi in accordance with the procedures in this manual, local codes and ordinances, and in accordance with the latest edition of the appropriate national code. See “1.5 Certification Codes and Standards” on page 4.

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

- Field assembly (if required)
- Appropriate site location (clearances) and flooring (see “2.6 Clearances” on page 7)
- Sufficient combustion and ventilation air
- Properly sized gas meter and piping
- Proper electrical wiring (if required)
- Adequate water flow

This manual provides the information needed to meet these requirements. Review all applications and installation procedures before continuing the installation. See “2.7 Field Assembly” on page 8 for NOTE on operating the heater in areas with below freezing conditions.

2.2 Materials Installer Must Provide

For ALL Installations

- The correct size gas pipe to supply gas from gas meter to heater (see “4.1 Install Piping and Check Gas Supply” on page 14).
- Gas shut-off valve to be installed in gas line outside of the heater jacket.
- Manual gas shut off valve must be installed in an accessible location, within 6’ upstream of heater.
- A suitable gas union joint to connect heater to gas line outside of heater.
- Plumbing materials for providing sediment trap (drip leg) in gas line between the manual gas valve and heater (see “4.1 Install Piping and Check Gas Supply” on page 14).
- 120 VAC or 240 VAC power supply. (A junction box is not needed at the heater; connections are made inside of the heater jacket.)

For Special Installations

- INDOOR INSTALLATIONS: Factory authorized vent pipe or elbows sized for indoor installations (US) and/or outdoor shelter installations (Canada).
- PVC PIPE CONNECTIONS: Primer and cement suitable for cementing CPVC pipe to PVC pipe. Coupling for connecting factory-supplied CPVC pipe unions to PVC pool plumbing

2.3 Specifications

Installation Location

- Natural Gas (USA) - Certified for indoor and outdoor
- Natural Gas (CANADA) - Certified for outdoor and covered shelter installations
- Liquid Propane (USA) - Certified for indoor and outdoor installations
- Liquid Propane (CANADA) - Certified for outdoor and covered shelter installations
NOTE: Indoor installation is not recommended for liquid propane heaters. Review information in Special Precautions for liquid propane heaters (Section 4.1).

Minimum Clearance from Combustible Material

- 6 inch (15 cm) minimum clearance distance from all surfaces
See Section 2.6 for more information.

Gas Pipe/Heater Gas Valve Connection

- Natural Gas: 3/4" NPT
- Liquid Propane: 3/4" NPT
- For gas pipe sizing requirements, see *Table 4*.

Supply Gas Type

- Natural Gas
- Liquid Propane

Inlet Gas Supply Pressure
<ul style="list-style-type: none"> Natural Gas: Minimum 4.0" WC Maximum 10.5" WC Liquid Propane: Minimum 4.0" WC Maximum 14.0" WC
Gas Valve Offset Pressure
<ul style="list-style-type: none"> Natural Gas: - 0.2" WC (when heater is running) Liquid Propane: - 0.2" WC <p>*NOTE: All readings must be taken while the heater is operating.</p>
Water Pipe/Heater Connection
<ul style="list-style-type: none"> 2" unthreaded slip PVC or CPVC pipe Jandy Pro Series union
Water Flow Rate
<ul style="list-style-type: none"> Minimum: 30 gpm (76 lpm) Maximum: 100 gpm (454 lpm)
Working Water Pressure
<ul style="list-style-type: none"> Maximum: 50 psi Minimum: 2 psi
Exhaust Vent Connection Size (Category I)
<p>Use type B double-wall gas vent, per table 13.1(a) NFPA 54</p> <ul style="list-style-type: none"> Model 200: 6 " Model 260: 7 " Model 400: 8 "
Exhaust Vent Connection Size (Category III)
<p>See Section 3.0 for information.</p>
Electrical Supply
<ul style="list-style-type: none"> 120 VAC 240 VAC (factory setting)
High Altitude
<ul style="list-style-type: none"> Appliances are normally de-rated when installed at high elevation. This is not necessary with the JXi heater because it has a special venturi-type combustion system which self-compensates for changes in barometric pressure. Air flow through the blower inlet pulls the correct flow of gas into the burner regardless of air density. Proper combustion and high efficiency are assured without special adjustment or changes to the heater. The JXi heaters are CSA certified for elevations of up to 4500 feet above sea level. At elevations above 4500 ft., the heater BTU output can be expected to be reduced by 4% for every 1000 feet over 4500 feet above sea level.

2.4 Heater Components

- Gas Valve** - The gas valve controls gas flow into the burner. It enables flow only when the temperature control requires heat and only if all safety controls enable operation. It is also a negative pressure regulator, where it maintains a gas pressure of -0.2" WC below the air pressure at the blower inlet. It regulates the gas pressure to -0.2" WC less than the air pressure at the blower inlet. This is necessary for proper operation of the burner system and cannot be accomplished with common (positive pressure) gas valves.
- Combustion Blower and Air Orifice** – The blower pulls air and fuel gas in through their respective orifices and mixes the two gases before forcing the fuel/air mixture through the burner for combustion. During normal operation the fan will turn on before flame initiation to ensure that the combustion chamber is clear before the igniter is energized. Additionally, the fan will run after the flame is extinguished in order to clear the combustion chamber of exhaust gas.
- Pool/Spa Water Temperature Control** - The JXi heater models are equipped with an electronic control, which senses water temperature by means of a thermistor and controls heater operation to attain and maintain the water according to the temperature selected. It has an option for two (2) separate thermostat settings, which are typically used to set pool and spa temperatures.
- Ignition Control** - The ignition control provides energy for ignition of the air/gas mixture, monitors the flame and controls the gas valve. When the temperature control calls for heat, the ignition control provides a pre-purge of the combustion chamber. Once the pre-purge is complete the ignition control then applies electrical power to a hot surface igniter. When the igniter attains sufficient temperature, the ignition control opens the gas valve. Immediately after ignition, the control system will look for characteristics of a stable flame and de-energize the igniter. If flame is not detected shortly after opening the gas valve the control system will close the valve to prevent further gas release. The ignition control will attempt to start 2 more times before an ignition fault is displayed.
- Igniter** - The hot-surface igniter is constructed of a ceramic material that attains a temperature great enough to ignite the air/fuel mixture, when an electric current is applied.

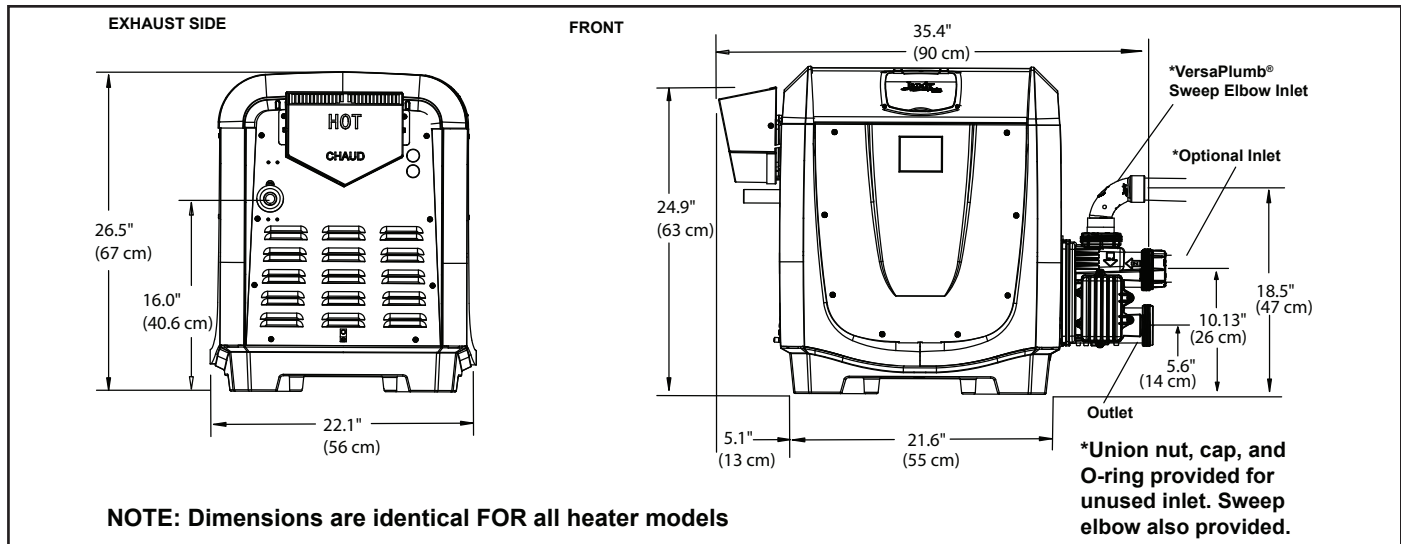


Figure 1. General Configuration

6. **High Limit Switches** - Two (2) limit switches - one at the heat exchanger first pass (135°F/57°C) and one at the heat exchanger outlet (150°F/65°C) -- prevent water of excessive temperatures from being discharged from the heater. If either switch senses excessive temperature, the gas valve will close and combustion will stop.
7. **Water Pressure Switch** - Operating the heater without sufficient water flow may severely damage the heater. This control senses whether or not water is available to the heater by measuring back pressure at the header inlet. If the pool water pump fails or the water filter is blocked, the pressure switch prevents operation of the burner. The display will indicate a no flow fault to alert you that water pressure is insufficient.

NOTE: If the heater is installed below the surface level of the pool, (or more than two feet above the pool level), the pressure switch setting must be adjusted. See “5.4 Water Pressure Switch Adjustment” on page 18.

8. **Vent Temperature Limit (240°C/464°F)**- This is a single use switch, which detects abnormal temperatures in the vent system. It is mounted to the exhaust duct. Excessive temperatures will cause the switch to open. Excessive temperatures can be caused by inadequate water flow or a compromised heat exchanger. The vent temperature limit switch will open the safety circuit which shuts off the gas valve and shuts down the heater. If this limit is activated/tripped, the heater cannot be safely operated without first determining the cause and without replacing the limit switch with an exact replacement.
9. **Air Pressure Switch** - The air pressure switch monitors the vacuum (negative pressure) within the blower housing. This switch verifies that air is flowing through the combustion system by sensing pressure. It shuts off the heater if air flow is inadequate.

2.5 Dimensions

See “Figure 1. General Configuration” on page 7 for exterior dimensions and dimensions to critical connections.

2.6 Clearances

In both indoor installations (US) and outdoor shelter installations (Canada), the heater must be placed to provide clearances on all sides for maintenance and inspection, as well as maintain minimum distances from combustible surfaces.

NOTE Clearances are manufacturer’s tested values. These are given as minimum values. Where local and national codes apply, and if the clearance values specified in the applicable codes are different than those listed in this manual, use the greater value to ensure safest operation.

2.6.1 Combustible Surfaces

The following minimum clearances must be maintained from combustible surfaces during operation. See “2.6.2 Service Clearance” on page 8 for clearances required for service and inspection.

TOP:	6 inches (15 cm)
EXHAUST SIDE:	6 inches (15 cm) from surface of the exhaust vent
HEADER SIDE:	6 inches (15 cm)
DOOR PANELS:	6 inches (15 cm)

The dimensions shown in “Figure 1. General Configuration” on page 7 are certified by CSA for USA and Canada (outdoor shelter). In Canada, 24 inches (60 cm) clearance is required per CSA B149.1, section 4.14.2.

2.6.2 Service Clearance

Heater must be installed at least 5 feet (1.5 m) from the inside wall of a pool unless the heater is separated from the pool by a solid fence, wall or other permanent solid barrier. For US installations, at least 18 inches (22.5 cm) access must be available from at least one door panel for service, inspection, and repair. In Canada, at least 24 inches (30 cm) is required for service, inspection, and repair. See “Figure 2. Service Clearance Requirements” on page 8.

If installing in a garage, consult the applicable National Building Code for proper placement of protective bollards or posts to prevent the heater from damage.

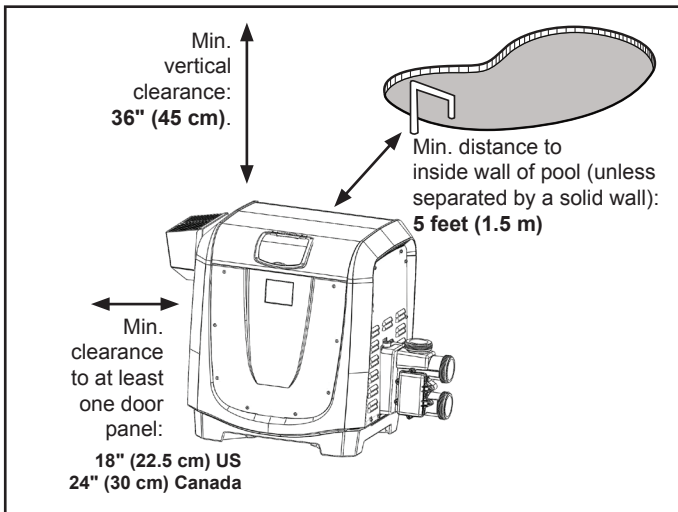


Figure 2. Service Clearance Requirements

2.7 Field Assembly

The JXi heater is shipped from the factory with an exhaust vent configured for outdoor installation.

The heater is also design-certified for indoor installations in the United States and outdoor shelter installations in Canada. The heater has a flue collar for indoor installations. See “3.3.1 Vent Pipe or Elbow Increaser Installation (Category I and Category III)” on page 11 for detailed instructions).

Check specifications in Section “2.3 Specifications” on page 5 for appropriate vent connection size (Category I).

Water connections are provided on the right side of the heater but can be changed to the left side by rotating the heater 180 degrees, so the water manifold is on the left, then rotating the top panel so that the control panel faces the operator.

NOTE: If the heater is to be operated in below freezing conditions it should be installed in a protected outdoor shelter. See “2.8.3 Indoor Installations (and Outdoor Shelter, Canada)” on page 9.

2.8 Location Requirements

CAUTION

When pool equipment is located below the pool surface, a leak from any component can cause large scale water loss or flooding. Zodiac Pool Systems, Inc., cannot be responsible for such water loss or flooding or resulting damage.

Location of the heater below or above the pool water level affects operation of its water pressure switch. See sections on water piping and heater start-up for more information.

All criteria given in the following sections reflect minimum clearances as stated in the national standards. However, each installation must also be evaluated, taking into account the prevailing local conditions such as wind speed and direction, proximity and height of walls that may block ventilation, and proximity to public access areas.

2.8.1 Flooring

The heater must be installed on a level, solid, and firm surface or platform. Although it is always advisable to install the heater on a non-combustible surface, the JXi-series has been CSA-certified for installation on solid, firm, and level combustible surfaces.

2.8.2 Outdoor Installation

The heater is factory configured for outdoor installation.

! WARNING

United States

Do not install the heater with the top of the vent assembly within 4 feet (1.22 m) horizontally, 4 feet (1.22 m) below or less than 1 ft (300 mm) above of any opening into a building. Local codes and installation requirements may vary.

Canada

Do not install the heater with the top of the vent assembly within 10 feet (3.0 m) of any opening into a building. Local codes and installation requirements may vary.

- Locate the heater on a level surface in an **open, unroofed area**. If the heater is to be installed inside a contained area, refer to, “Section 3. Venting” on page 10 for venting requirements.
- Do not install the heater under a deck.
- Do not locate the heater below or adjacent to any doors, glass openings, louvers, grills, etc., which connect in any way with an inhabited area of a building, even though the access might be through another structure (e.g., a garage or utility room).
- In Canada, install the heater so that the top of the vent is at least 10 feet (3.0 m) from any building opening. See “Figure 3. Outdoor Heater Installation” on page 9.

- The top surface of the heater must be at least 3 feet (1 m) above any forced air inlet, or intake ducts located within 10 feet (3.0 m) horizontally.
- The area under an overhang must be open on three sides to prevent combustion gases from being diverted into living areas through doors, windows, or gravity inlets.
- In the United States install the heater so that there is at least a three (3) foot (1 m) clearance between the bottom of the overhang to the top of the heater exhaust vent.
- If the heater is installed close to a structure, protect it from rain water runoff with rain gutters on the roof or other measures.
- Do not locate the heater near irrigation sprinkler systems that could spray water on it. Water from sprinklers can damage controls and electronic components.
- Be sure to divert rain water runoff away from heater

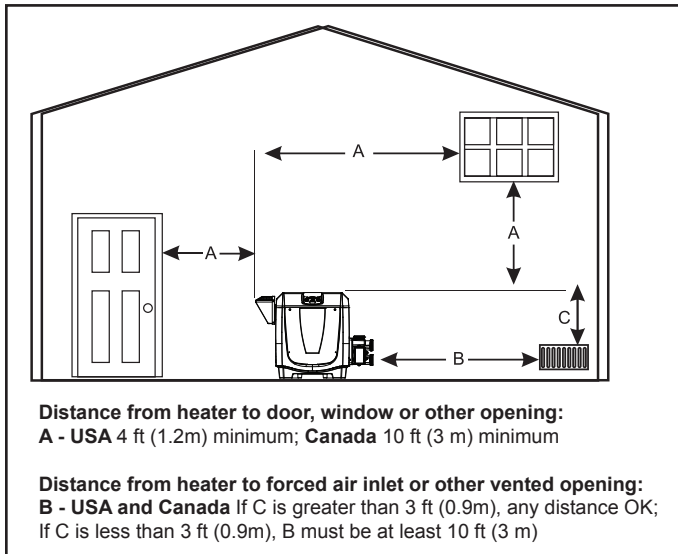


Figure 3. Outdoor Heater Installation

Outdoor Installations in Florida:

Due to the high risk of extreme weather conditions in Florida, the heater is required to be securely fastened to the equipment pad to meet the applicable requirements of the Florida Building Code. See “Figure 4. Anchor Heater To Equipment Pad” on page 9

NOTE: Mounting screws are not provided with this heater. Use size 1/4" x 2-1/4" long galvanized or plated concrete screws and washers.

1. Place the heater on the equipment pad.
2. Drill a hole in the concrete at each of the brackets on each corner of the heater. (The correct size drill bit is usually provided with the concrete screws when purchased).
3. Place a screw in each of the holes and fasten the heater to the concrete pad. **Do not over-torque the screws.**

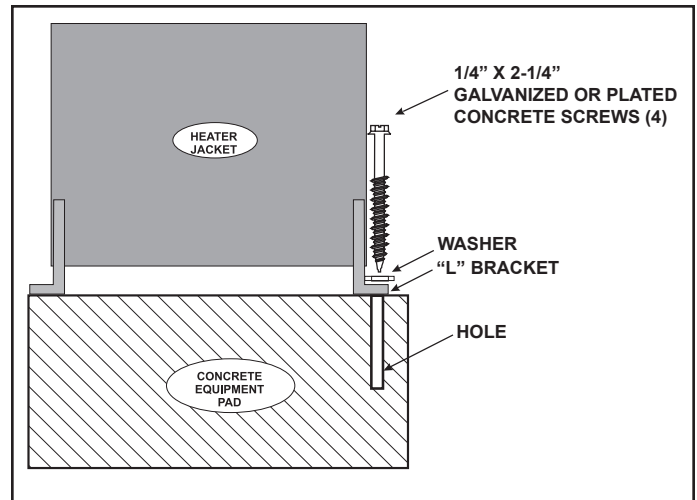


Figure 4. Anchor Heater To Equipment Pad

NOTE: Other jurisdictions may have similar requirements for extreme weather. Check your local codes for details.

2.8.3 Indoor Installations (and Outdoor Shelter, Canada)

⚠ WARNING United States

Do not install the heater with the top of the vent assembly within 4 feet (1.22 m) horizontally, 4 feet (1.22 m) below or less than 1 ft (300 mm) above of any opening into a building. Be sure to consult local codes and installation requirements as some jurisdictions may have varying and more stringent requirements.

Canada

Do not install the heater with the top of the vent assembly within 10 feet (3 m) of any opening into a building. Be sure to consult local codes and installation requirements as some jurisdictions may have varying and more stringent requirements.

The heater is CSA design-certified for indoor installations in the US and for outdoor shelter installations in Canada. To install for outdoor shelter area, you will need to remove the vent housing and the exhaust grate.

When pool equipment is installed indoors, appropriate containment and drain should be provided to prevent property damage in the event of equipment leaks.

NOTE: An outdoor shelter is an unoccupied enclosure which does not communicate directly with occupied areas.

All outdoor shelter installations (Canada only) must have uninterrupted openings to outside air for combustion and ventilation. The installation must be in accordance with the latest edition of CAN/CSA B149.1.

Zodiac Pool Systems, Inc., does not recommend outdoor shelter installations that depend on internal air for combustion. See “Table 1. Air Openings to Outside” on page 10.

Due to the higher risks and hazards of Liquid Propane (LP) gas, Zodiac® does not encourage installation of LP gas heaters indoors. Please be sure to refer to section “4.2 Special Precautions for LP Gas” on page 16 for additional precautions that must be considered for LP gas.

Section 3. Venting

3.1 Combustion Air Supply

As outlined in the latest edition of ANSI® standard Z223.1 (NFPA® 54), the heater location must be properly vented to provide sufficient air supply for proper combustion and ventilation of the surrounding area.

In general, these requirements specify that the room in which a heater is installed should be provided with two permanent air supply openings:

- one within 12 inches (305 mm) of the ceiling
- one within 12 inches (305 mm) of the floor

All indoor installations must have openings to outside air for combustion, ventilation, and dilution of flue gases from inside the building. Do not, under any circumstances, install this product in an indoor location which does not provide combustion air to the appliance from outside the building.

In addition, the heater must be completely isolated and protected from any source of corrosive chemical fumes such as those emitted by trichlorethylene, perchloroethylene, chlorine, etc.

WARNING

Do not store any chemicals, cleaners, or other corrosive material near combustion air openings or in the room. Avoid locating appliance vents in the vicinity of combustion air openings. Failure to prevent corrosive materials from mixing with combustion air can result in reduced heater life and unsafe heater operation.

Minimum Net Free Open Area* for Combustion Openings (square inches/centimeters)

*Area indicated is for one of two openings:
one 12 inches from floor level, one 12 inches from ceiling level.

Model	Direct from outside		Duct from outside	
	in ²	cm ²	in ²	cm ²
JXi 200	50	323	100	645
JXi 260	65	419	130	839
JXi 400	100	645	200	1291

Table 1. Air Openings to Outside

NOTE: If using screens and/or metal louvers, compensate by adding 50% additional area to each opening. If using wood louvers, each opening must be at least four times the area indicated in the table above.

For special conditions, refer to Section 9.3.3.1 NFPA 54 ANSI Z223.

The information in “Table 1. Air Openings to Outside” on page 10 is not applicable in installations where exhaust fans or blowers of any type are used. Consult a Professional Engineer (P.E.) to ensure that installations where exhaust fans or blowers are used are designed and installed in accordance with all applicable local and national installation codes.

Outside Air Supply: When combustion air is supplied directly through an outside wall, each opening should have a minimum free area of 1 square inch per 4,000 BTU/h (1.2kW) input of the total input rating of all appliances in the enclosed area.

If air is provided through horizontal ducts, each opening and duct must provide 1 square inch of flow area for each 2000 BTU/h (0.6 kW). These requirements are summarized in “Table 1. Air Openings to Outside” on page 10.

Exhaust Fans or Vents: Any equipment which exhausts air from the room where the heater is installed can deplete the combustion air supply or reverse the natural draft action of the venting system. This could cause flue products to accumulate in the room. Additional air must be supplied to compensate for such exhaust.

The information in “Table 1. Air Openings to Outside” on page 10 is not applicable in installations where exhaust fans or blowers of any type are used. Such installations must be designed by a Professional Engineer (P.E.).

3.2 Exhaust Venting

When converted to indoor and outdoor shelter venting configuration, the JXi has a flue collar for attachment to the venting for category I vertical venting and category III vertical and horizontal venting. **The only correct procedure for vent pipe sizing is to do so in accordance with “Table 2. Category I Vent Pipe Sizing Table” on page 12, Section “3.3.2 Vertical Venting (Category I)” on page 12 of this manual for Category I or “Table 3. Category III Vent Pipe Sizing Table” on page 14, Section “3.3.3 Vertical or Horizontal Venting (Category III)” on page 12 of this manual for Category III, along with the applicable installation code as stated in the following warning and Table 13.1(a) and 13.1 (b) per NFPA 54.**

⚠ WARNING

Vent pipe materials, sizing, and installation must be as required by the National Fuel Gas Code NFPA 54/ANSI® Z223.1 or the Canadian Installation Codes for Gas Appliances CAN/CSA-B149.1. Undersized pipe can result in inadequate venting and oversize pipe can result in vent condensation. Improper selection of vent pipe material, incorrect sizing of the pipe, and misinstallation of vent piping can result in release of combustion products to the indoors. This can cause serious injury or death by Carbon Monoxide poisoning or asphyxiation.

Note that with horizontal Category III type vent installations, the venting diameter is four (4) inches and AL29-4C stainless steel. The JXi flue collar fits 4-inch vent pipe and elbows. See “3.3.3 Vertical or Horizontal Venting (Category III)” on page 12 for procedure to connect vent pipe and elbows.

3.3 Vent Pipe Sizing and Installation

The JXi may be installed with venting as a Category I or Category III appliance.

- **Category I:** A Category I appliance is a vented appliance that operates with a non-positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent. Category I installations are vented vertically and terminate at the roof.
- **Category III:** A Category III appliance is a vented appliance that operates with a positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent. Category III installations can be vented via a side wall.

In all installations (Category I and Category III):

- Avoid terminating heater vents near air conditioning or air supply fans. Fans can pick up exhaust flue products from the heater and return them inside the building, creating a possible carbon monoxide or other health hazard.
- Selection of vent pipe type and material must be carefully considered depending on the type of installation. Zodiac® strongly recommends using high quality vent pipe materials, which are corrosion resistant and suitable for the specific installation being considered
- Do not locate the vent terminal where flue products could strike against building materials and cause degradation.
- Vent opening should be well away from trees or other obstructions that would prevent free air flow to and from vent terminal.

- Do not terminate the vent under decks, stairways, or car ports.

3.3.1 Vent Pipe or Elbow Inserter Installation (Category I and Category III)

1. Remove the exhaust body.
2. Remove the rain shield. See “Figure 5. Remove Exhaust Body and Rain Shield” on page 11.

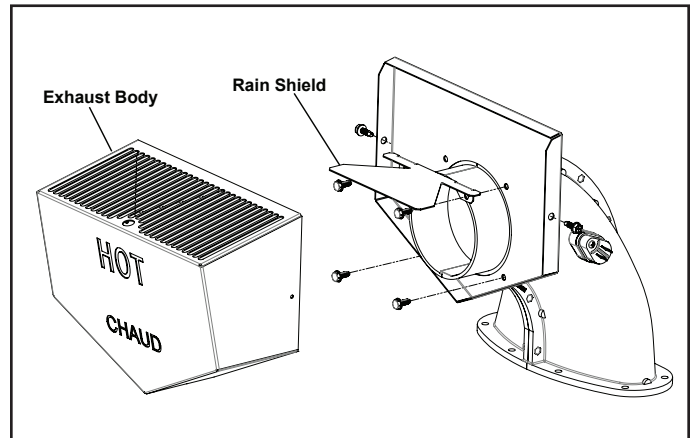


Figure 5. Remove Exhaust Body and Rain Shield

3. **Category I:** Install a 4 inch double-wall appliance adapter and an increaser to meet the vent size requirements per Table 2. See “Figure 6. Category I Installation Configuration” on page 11.

Category III: Install vent connector or elbow to the flue collar according to the specific installation instructions from the vent connector or elbow component manufacturer.

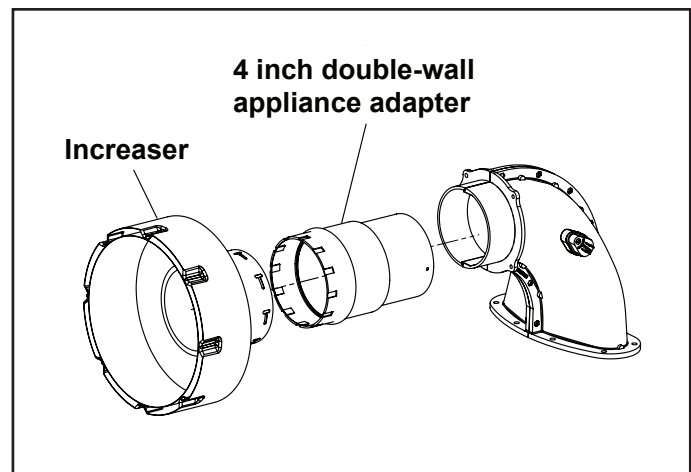


Figure 6. Category I Installation Configuration

4. Wipe the socket of the vent body with rubbing alcohol using a clean cloth or paper towel, then dry with a different clean cloth.
5. Connect the 4 inch double-wall appliance adapter for category I or vent connector for category III to the flue collar and fasten with three (3) sheet metal screws, as shown in “Figure 7. Correct position of screws on vent collar” on page 12.

NOTE: It is important to position the three screws so the seal in the flue collar is not compromised. Begin with first screw at 3 o'clock position from top of the flue collar seam. Install screws 2 and 3 in positions 120 degrees apart. See "Figure 7. Correct position of screws on vent collar" on page 12

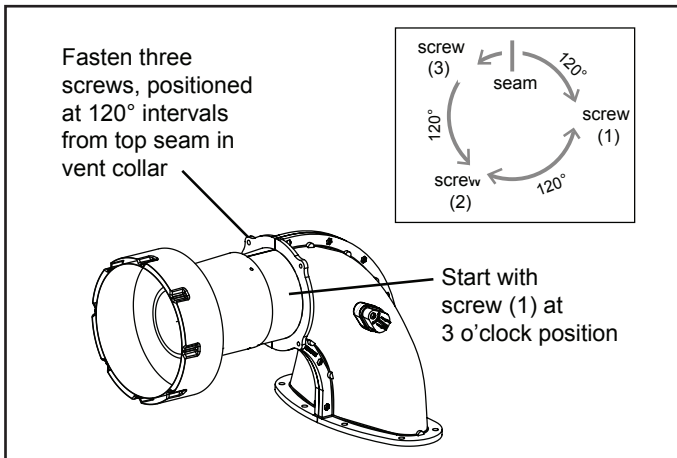


Figure 7. Correct position of screws on vent collar

6. Apply high temperature silicone RTV at the connection to seal, as shown in "Figure 8. Seal Connection with RTV" on page 12.

NOTE: Use a minimum 600°F (315°C) temperature rated RTV.

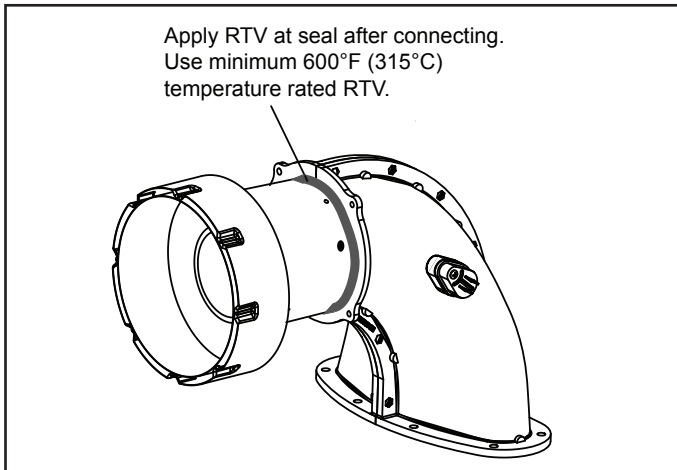


Figure 8. Seal Connection with RTV

3.3.2 Vertical Venting (Category I)

All indoor installations and outdoor shelter installations require an approved 4 inch double-wall appliance adapter and increaser to be connected to the JXi 4-inch flue collar for Type B installations. Increases are available in steps up to a maximum of four sizes larger. 4 inch double-wall appliance adapters and increasers can be obtained from manufacturers such as Amerivent or Duravent®. See "2.3 Specifications" on page 5 for details. All vent installations must be made in accordance with local, state, or provincial codes and with:

- National Fuel Gas Code ANSI® Z223.1 (NFPA® 54), latest edition; pay particular attention to the chapter addressing "Venting of Equipment." Applicable

provisions of additional applicable local building codes may also need to be followed.

- Canada CAN/CSA B149.1.

Vent the JXi heater vertically in a negative pressure (non-positive draft) system in accordance with the National Fuel Gas Code NFPA 54 / ANSI Z223.1 or the Canadian Natural Gas and Propane Installation Code, CAN/CSA-B149.1. A type B double-wall vent connector is required. The heater must not be used to support the vent pipe.

Note that the tables for fan-assisted appliances include both maximum and minimum vent loading figures in the NFPA 54. The primary purpose of the maximum ratings are to ensure that the vent operates with negative pressure throughout its length. The minimum rating refers to the firing rate.

1. Determine the correct vent size for your heater according to "Table 2. Category I Vent Pipe Sizing Table" on page 12.

Heater Size	Vent Size
JXi 200	6" (15cm)
JXi 260	7" (18cm)
JXi 400	8" (20cm)

Table 2. Category I Vent Pipe Sizing Table

2. Install a 4 inch double-wall appliance adapter and an increaser. See "3.3.1 Vent Pipe or Elbow Increaser Installation (Category I and Category III)" on page 11.
3. Following the vent connector's manufacturer instructions attach the vent pipe to the increaser and further secure them with sheet metal screws. Before connecting, wet a clean cloth or paper towel with rubbing alcohol and wipe the socket of the vent body. Dry with a different clean cloth. Vent piping must be adequately supported with no low spots or sagging that could allow condensate to collect. The heater must not be used to support the vent pipe. Horizontal runs must be sloped upwards away from the heater to a vent terminal at a minimum of 1/4 " per horizontal foot (2 cm/m).
4. Install the vent pipe so it can expand and contract freely with temperature changes.

Note: Do not run the heater vent into a common vent with any other appliance.

3.3.3 Vertical or Horizontal Venting (Category III)

When the installation requires horizontal venting in excess of what is allowed for Category I installations or calls for horizontal discharge, the JXi may be installed with a Category III venting system.

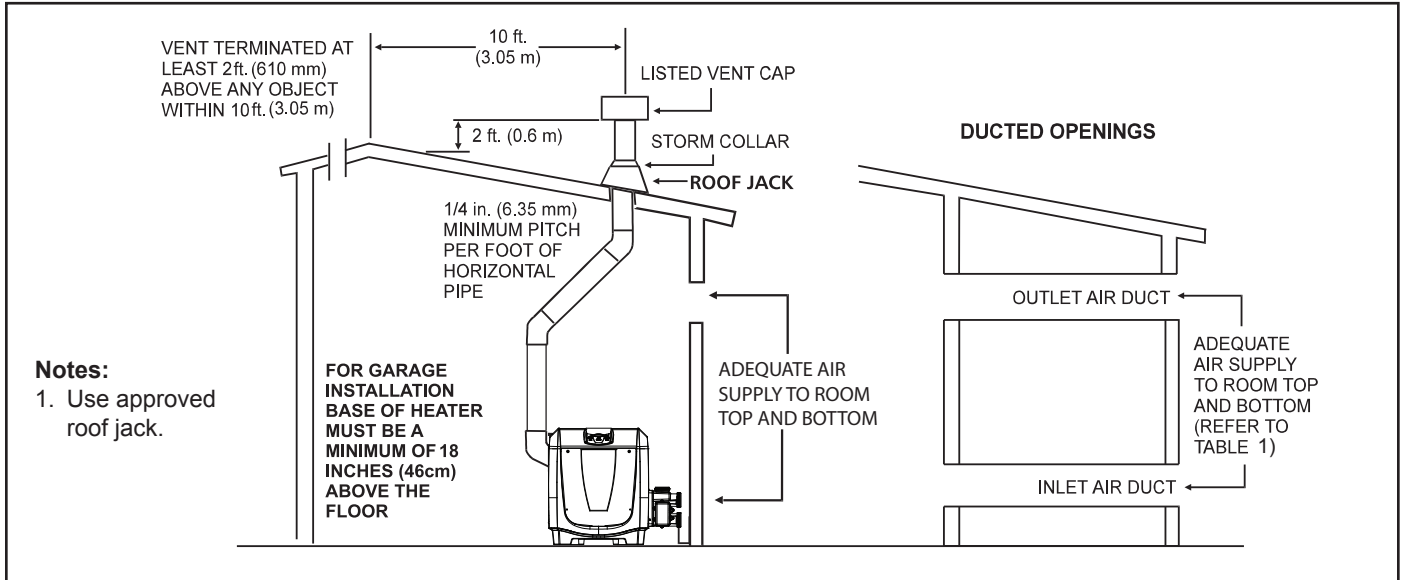


Figure 9. Indoor Installation Venting (USA) or Outdoor Shelter (Canada) for Category I

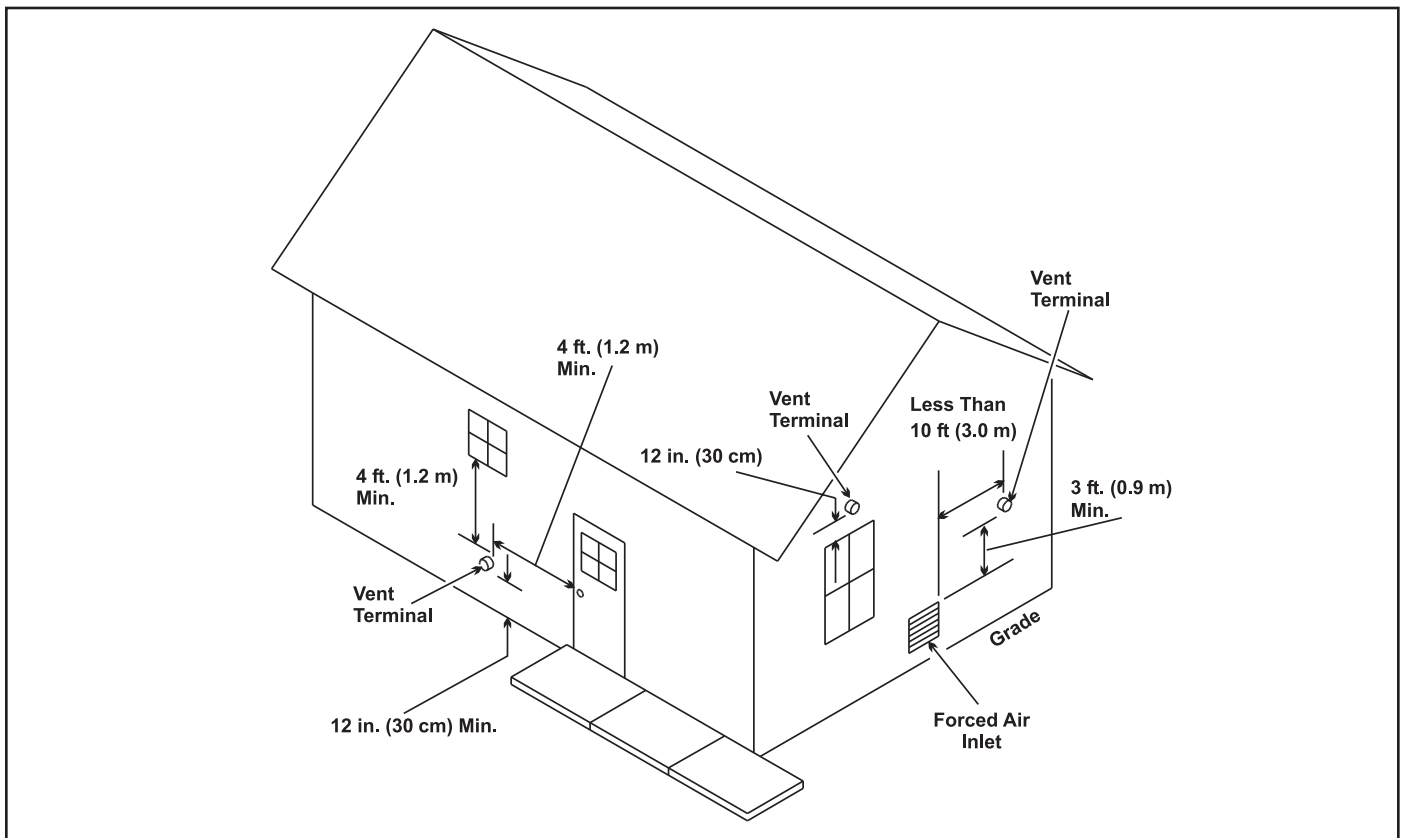


Figure 10. Side Wall Vent Terminals for Category III (US installations). Refer to CSA B149 for requirements specific to Canadian installations. Check local installation codes which may require greater minimum distances from windows and doors to be maintained.

Vent the heater either vertically or horizontally using A129-4C stainless steel components. Consult manufacturers such as Z-Flex® or Heat Fab® to obtain approved components. Venting materials must comply with UL® 1738 for Category III, Special Gas Vent. In Canada, the venting materials must be ULC S636 compliant. Vent piping must be supported with no low spots or sagging that could allow condensate to collect.

The heater must not be used to support the vent pipe. Horizontal runs must be sloped upwards away from the heater to a vent terminal at a minimum of 1/4 inch per horizontal foot (2 cm/m).

It is recommended that vent runs over 18 feet be insulated to reduce condensation and/or use a condensate trap in the vent run close to the heater, especially in certain cold climate installations.

See “Table 3. Category III Vent Pipe Sizing Table” on page 14 for recommended vent size and run lengths without elbows. For each elbow installed, reduce the run length by 12 feet (3.7m)

Heater Size	Vent Size	Special Gas Vent Length (vertical or horizontal) in feet (metres)
JXi 200	4" (10cm)	TBD (m)
JXi 260	4" (10cm)	50' (15m)
JXi 400	4" (10cm)	50' (15m)

Table 3. Category III Vent Pipe Sizing Table

Side wall vents must be installed and located in accordance with the National Fuel Gas Code NFPA® 54 / ANSI® Z223.1 or the Canadian Natural Gas and Propane Installation Code CAN/CSA-B149.1. In addition, always consult your local installation codes. Some local installation codes may have requirements that exceed those of the national codes. The product must be installed in accordance with the codes being enforced by the local Authority Having Jurisdiction (AHJ). See “Figure 9. Indoor Installation Venting (USA) or Outdoor Shelter (Canada) for Category I” on page 13.

IMPORTANT NOTE In the Commonwealth of Massachusetts, additional requirements, covered in document CMR 248 5.00, which supersede some of the requirements of ANSI Z223.1 (NFPA 54) apply to Side Wall Horizontally Vented appliances. If installing this product using an approved side-wall horizontal vent system in the Commonwealth of Massachusetts, be sure to adhere to these additional requirements. These requirements include verbiage that says that the property owner is to ensure that Carbon Monoxide Detectors are installed in the vicinity of the appliance and also on all levels of the dwelling in which the appliance is installed. For further instructions, contact Zodiac Pool Systems, Inc., Technical Support Department at 800.822.7933 (in Canada: 888.647.4004)

1. Install the vent connector or elbow See “3.3.1 Vent Pipe or Elbow Increaser Installation (Category I and Category III)” on page 11.
2. Install the vent pipe so it can expand and contract freely with temperature changes. Before connecting, wet a clean cloth or paper towel with rubbing alcohol and wipe the socket of the vent body.
3. Follow installation instructions from the manufacturer of the special gas vent components.

WARNING

Incorrect design and installation of heater vents and ducts can result in personal injury, damage to property, or death. To avoid such hazards, the heater must be installed only by a qualified professional service technician.

3.3.4 Precautions Against Common Venting:

Seek the assistance of a Registered Professional Engineer for proper design of a common venting system.

Zodiac Pool Systems, Inc. does not recommend using a common vent to vent multiple appliances through a common duct. However, if no other option is deemed available by the installer, each appliance must have its own vent temperature limit switch. All vent limit switches must be wired in series so as to prevent any appliance from firing in the event of a blocked vent. An outside draft inducer must be installed to pull and create negative pressure in the vent system. Refer to ANSI® Z223.1 or in Canada CAN/CSA B149.1 for more information on common venting multiple appliances. Do not connect vent systems of different categories to the same venting system.

WARNING

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

3.3.5 Inspection and Replacement of Existing Vent System with New Components

When replacing an existing pool heater with the JXi, it is recommended that a new appropriate venting system is installed with the new heater. However, if the existing venting system must be used, be sure to carefully inspect the existing system to ensure that it is in good condition and appropriate for the JXi heater. Replace any parts that are not in serviceable condition before completing the installation.

Section 4. Gas Connections

4.1 Install Piping and Check Gas Supply

Gas piping installation must be in accordance with the latest edition of ANSI Z223.1 and all local codes. In Canada, the installation must be in accordance with CAN/CSA B149.1 and all local codes that apply.

The heater must be isolated from the gas supply piping system by closing the individual manual shut off valve during any pressure testing of the gas supply piping system at test pressure equal to or less than 1/2 psi (3.5kPa).

The heater and its individual shut off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).

⚠ WARNING

The JXi pool and spa heaters are designed for use with either natural gas or LP gas. Check the rating plate on the front of the combustion chamber to be sure that the heater is designed to use the type of gas being supplied. **DO NOT ATTEMPT TO CONVERT THIS HEATER FOR USE WITH ANY OTHER TYPE OF FUEL OTHER THAN THE FUEL TYPE FOR WHICH IT WAS CONFIGURED AT THE FACTORY AND WHICH IS MARKED ON THE NAMEPLATE.**

CAUTION

Permanent damage to the gas valve will occur if the installation procedures are not followed correctly.

1. Refer to “Table 4. Supply Gas Pipe Size Requirements*” on page 15 for correct gas inlet piping length from the gas meter to the heater. When sizing gas lines, calculate three (3) additional feet of straight pipe for every elbow used.

Distance from Gas Meter						
Heater Size	0-50 feet (0-15 m)		50-100 feet (15-30 m)		100-200 feet (30-60 m)	
	in.	mm	in.	mm	in.	mm
JXi 200	1	25	1-1/4	32	1-1/4	32
JXi 260	1-1/4	32	1-1/4	32	1-1/4	32
JXi 400	1-1/4	32	1-1/2	38	1-1/2	38

Notes:

- Numbers are for natural gas (0.65 Sp. Gr.) based on 1/2 inch (3.45 kPa) water column pressure drop. Check supply pressure with a manometer, and local code requirements for variations. **For LP gas, reduce pipe diameter by one size, but maintain a minimum 3/4 inch diameter.**
- Check supply pressure and local code requirements before proceeding with installation.
- Consider pipe fittings when determining gas pipe sizing.
- Table shows the minimum supply gas pipe size required. Larger pipe size can be used if required by local code or if desired.
- It is critical that the incoming gas supply pressure at the heater is within the maximum and minimum pressure requirements. If the range of acceptable supply pressure is not provided, the gas supply system to the heater must be modified to meet pressure requirements.

Table 4. Supply Gas Pipe Size Requirements*

2. Check the gas meter to make sure it will supply enough gas to the heater and any other appliances using the same heater.

NOTE: The gas line from the meter is usually larger than the gas valve. Therefore, you will need to reduce connecting pipe as necessary. Make this reduction as close to the heater as possible.

3. Install a manual gas shutoff valve for service and safety.
4. Install a sediment trap and union ahead of the gas controls and outside the heater panels, as shown in “Figure 11. Manual Shut-off Valve and Sediment Trap” on page 15. Do not use a restrictive gas cock. **DO NOT USE FLEXIBLE GAS PIPING**, it will restrict the gas flow to the heater.

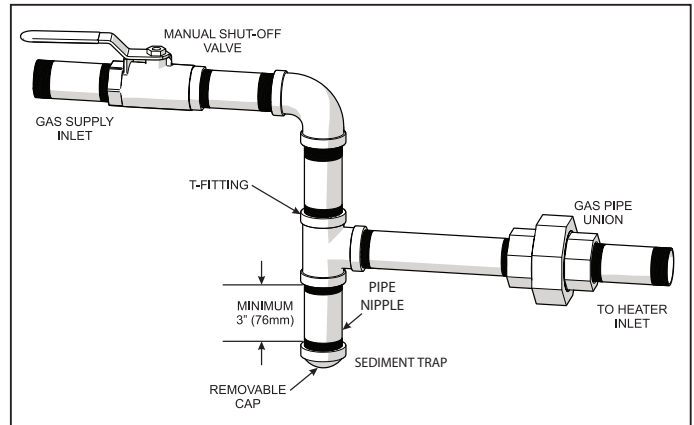


Figure 11. Manual Shut-off Valve and Sediment Trap

NOTE: Close shutoff valve and disconnect the heater to isolate the heater before pressure testing the gas supply system.

5. Connect a manometer to the supply pressure port on the gas valve. While the heater, and when possible, while all other gas burning appliances supplied by the common gas delivery system, are operating, confirm the gas supply pressure is correct according to “Table 5. Gas Supply Pressure Requirements” on page 15.

Gas Pressure	Natural	Propane
	Inches W.C.	
Maximum inlet	10.5	14
Minimum inlet	4	4
Gas Offset	- 0.2	- 0.2

Notes:

- All readings must be taken while the heater is operating.
- Any adjustments or readings made while the heater is off will result in poor performance and problems.

Table 5. Gas Supply Pressure Requirements

6. If the gas supply pressure is less than required, check for undersized pipe between the meter and the heaters, a restrictive fitting, or an undersized gas meter.
7. Before operating the heater, test the complete gas supply system and all connections for leaks using a soap solution. **Do not use an open flame to test for leaks.**

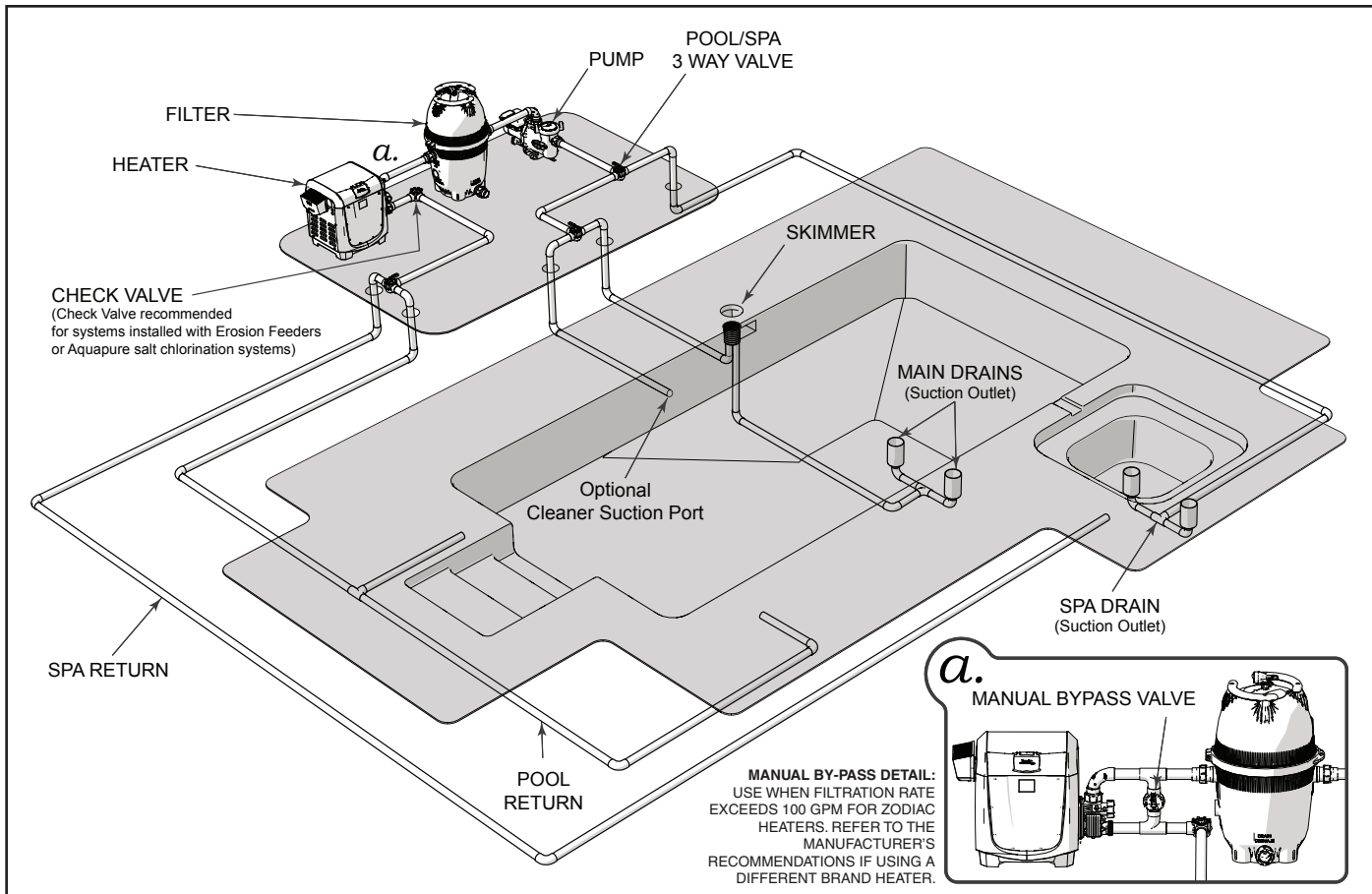


Figure 12. Typical Water Piping Configuration

CAUTION

Some leak test solutions (including soap and water) may cause corrosion or stress cracking. Rinse the piping with water after testing.

8. Test gas offset pressure. See “Section 10. Professional Service and Maintenance” on page 35.

WARNING

Failure to replace the 1/8 inch NPT gas valve plugs on inlet, gas offset pressure ports, and cap on the manifold pressure adjustment screw, can result in property damage, severe injury, or death.

4.2 Special Precautions for LP Gas

Under the same environmental conditions, liquid propane (LP) gas is more dense or heavier than air and will more readily collect or pool in enclosed areas if adequate ventilation is not provided for. It is not recommended to install LP gas heaters in enclosed areas such as pits. Locate heaters a safe distance from LP gas cylinders and filling equipment. Consult the National Fuel Gas Code (NFPA® 54/ANSI® Z223.1, latest edition), the Liquefied Petroleum Gas Code (NFPA 58, latest edition), the Natural Gas and Propane Installation Code in Canada (CAN/

CSA B149.1, latest edition), and any other local codes and fire protection authorities about specific installation restrictions in your area.

For ALL installations the combustion air openings requirements and NFPA54 / ANSI Z223.1 MUST be followed for safe and proper operation.

Section 5. Water Connections

5.1 Water Piping Connections

Install pool system components with connections as illustrated in “Figure 12. Typical Water Piping Configuration” on page 16.

Any configuration other than as illustrated in “Figure 12. Typical Water Piping Configuration” on page 16 can affect the operation of the water pressure switch. Locating the heater above or below the pool water surface can also affect operation of the switch.

NOTE: When pool equipment is located below the pool surface, Zodiac Pool Systems, Inc. is not responsible for any large scale water loss, flooding or damage caused by a leak.

The heater must be protected from back-siphoning of water, which can result in dry starts. If there is any chance of back-siphoning, provide a check valve between the pool and the filter pump inlet.

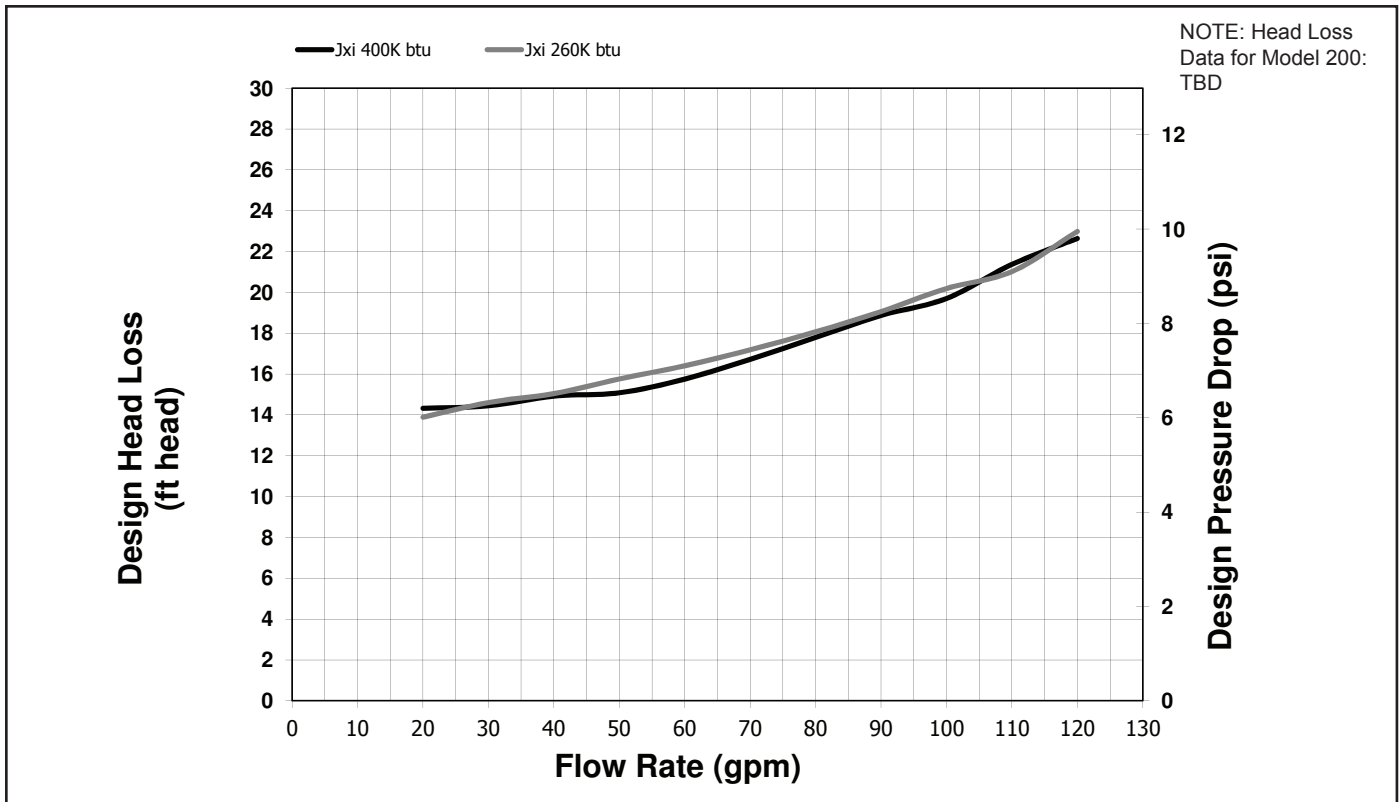


Figure 13. Head Loss Chart

5.2 Pump Sizing

The internal flow bypass within the heater manifold will accommodate flows delivered to the heater from a minimum of 30 gallons per minute (gpm) to a maximum flow of 100 gpm, depending on the heater model. A manual bypass valve should be installed when the pump flow exceeds 100 gpm.

To install a manual bypass valve:

1. Connect ball valve between water inlet and outlet. See “a.” in “Figure 12. Typical Water Piping Configuration” on page 16

IMPORTANT: The system water pump must be capable of providing no less than 30 gpm of flow through the heater. Flow rates at less than 30 gpm may cause nuisance operation causing the heater to turn off or damage to the heater.

2. Adjust the valve to bring the flow rate within the acceptable range. See “Table 6. Recommended Flow Rate Adjustment” on page 17.

Model	Min gpm (lpm)	Max gpm (lpm)
JXi 200	30 (114)	100 (379)
JXi 260	30 (114)	100 (379)
JXi 400	30 (114)	100 (379)

Table 6. Recommended Flow Rate Adjustment

3. Remove the valve handle to avoid tampering.

5.2.1 Pump Sizing for New Pool Construction:

When sizing a pump for the system, the head loss for all system components must be added together when determining the design flow rate. Component “Head Loss at Flow” curves are available from equipment manufacturers.

NOTE: In order to properly establish head loss at flow for a filter, remember that a “dirty” filter can typically add 10 psi of additional head loss (23 extra feet of head). This must be considered when sizing a pump for a new pool system.

5.2.2 Pump Sizing for Replacement in an Existing Pool:

If the JXi heater replaces a different model of heater, determine if the existing pump is capable of providing the minimum flow of no less than 30 gpm indicated in “Table 6. Recommended Flow Rate Adjustment” on page 17 for the specific model. JXi heaters are high efficiency heaters. Heaters typical of this construction may have higher head loss characteristics than the one being replaced.

IMPORTANT: Heater failure due to insufficient water flow is not covered under warranty. See measurements in the Head Loss Chart. See “Figure 13. Head Loss Chart” on page 17.

5.3 Plumbing Connections

The heater has a standard 2 inch water header and coupling design. With this feature, only nominal two inch PVC or CPVC may be connected to the heater. However, by installing the appropriate pipe adapters and two (2) short pieces of two-inch plastic pipe (supplied by the installer), any size existing pipe may be fitted to the heater.

5.3.1 Optional Water Inlet Piping

The water inlet can be piped in one of two possible configurations. The heater comes with a Zodiac® Sweep Elbow for increased hydraulic performance and efficiency. The sweep elbow also provides the advantage of its exclusive interface with the Zodiac AquaLink® RS temperature sensor. The sweep elbow may be installed in the top inlet connection, and the cap and plug with O-ring installed to close off the unused side port. See “Figure 14. Top Inlet Piping Using the Versa Plumb Sweep Elbow” on page 18. This configuration may be preferred for Versa Plumb® piping to mating components

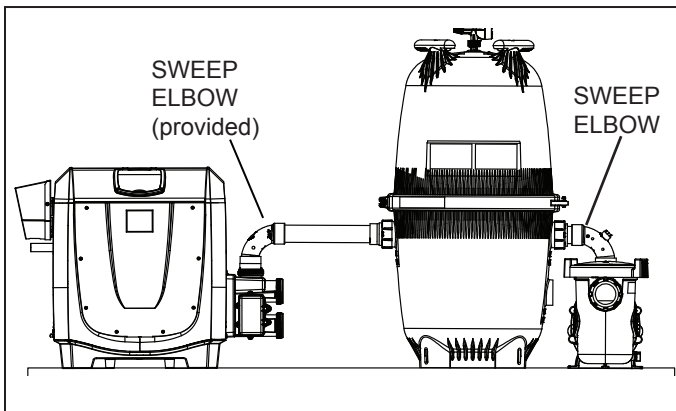


Figure 14. Top Inlet Piping Using the Versa Plumb Sweep Elbow

Optionally, the top inlet opening may be capped with the union nut and cap, and plug with O-ring provided, then the water inlet port on the side directly above the outlet port may be used. See “Figure 15. Optional Side Inlet Piping” on page 18

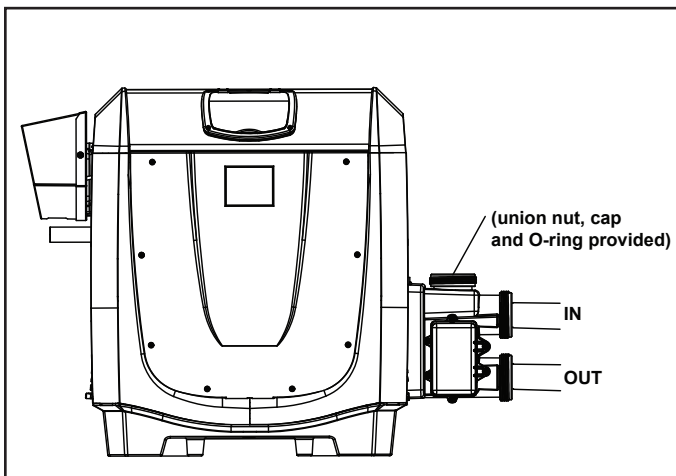


Figure 15. Optional Side Inlet Piping

⚠ WARNING

To avoid an electrical shock hazard, which can result in serious injury or death, ensure that all electrical power to the system is turned off before approaching, inspecting or troubleshooting any leaking valves or plumbing that may have caused other electrical devices in the surrounding area to get wet.

⚠ WARNING



Follow all filter manufacturer's instructions. **NEVER** attempt to assemble, disassemble or adjust the filter when there is pressurized air in the system. Starting the pump while there is any pressurized air in the system can cause the filter lid to be blown off, which can cause death, serious personal injury or property damage.

5.3.2 To install the Sweep Elbow

1. Clean the cut ends of the pipe and both ends of the sweep elbow(s) with an appropriate NSF® approved All Purpose cleaner/primer. Glue the sweep elbow(s) onto the cut pipe ends using an appropriate All Purpose NSF approved adhesive/glue.

NOTE Zodiac Pool Systems, Inc. recommends Weld-On® 724™ PVC to CPVC Cement to glue Schedule 40 PVC.

2. After the glue is cured, close the pressure relief valve on top of the filter.
3. Return all valves to their operating positions.
4. Turn on power to the heater.
5. Turn on the pump to check for water leaks.
6. Restore the gas supply to the heater.
7. Start the system and check for proper water flow.

5.4 Water Pressure Switch Adjustment

CAUTION

The water pressure switch should be adjusted to turn the heater off when the pump is off. Setting the switch to close at too low flow can damage the appliance. Adjust the switch to turn the heater off, not on.

The pressure switch is preset at the factory for activation at 2 psi (14 kPa). If the heater is installed below the surface level of the pool, more than two feet above the pool level, or any time the pressure is measured at 1 psi or greater with the system pump off the pressure switch setting must be adjusted.

Location of the heater above or below the pool water surface can also affect the operation of the switch. The factory installed switch can accommodate elevations not exceeding 6 feet above the pool water surface or 11 feet below pool water surface. If the heater water connections are outside this range Consult your local Zodiac® representative for recommendations.

Make sure the pool filter is clean before making any pressure switch adjustment. A dirty filter will restrict the water flow and the pressure switch cannot be adjusted properly.

5.4.1 To adjust the water pressure switch

NOTE: It is recommended that a Pressure Release Valve (PRV) be installed prior to taking any of the steps below. See “5.7 Pressure Relief Valve Installation” on page 19

1. Set the heater control to the “OFF” mode.
2. Remove the header side panel to access the water pressure switch.
3. Start the filter pump and confirm by means of a voltmeter that the pressure switch closes (if the switch fails to close, replace it with a switch that has a lower minimum setting).
4. Set the heater control to either **POOL** or **SPA**. Heater should start.
5. With your fingers, turn the adjustment sprocket very slowly clockwise until the heater goes off. See “Figure 16. Adjust Pressure Switch” on page 19

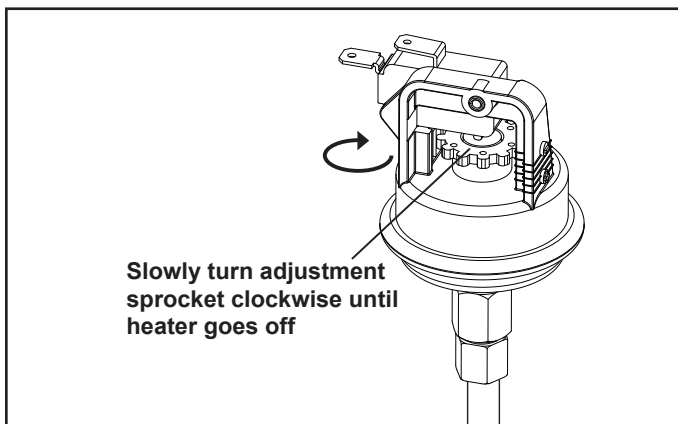


Figure 16. Adjust Pressure Switch

6. Slowly turn the pressure switch adjustment sprocket **counterclockwise** one-quarter turn. The heater should come back on.
7. Check the adjustment by turning the filter pump OFF. The burners should shut off immediately. If they do not, restart the filter pump and repeat Steps 6 and 7. Check the adjustment again.
8. Return the pool temperature control to the desired temperature.

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.

5.5 Check Valve Installation

When any equipment is located below the surface of the pool or spa, back-siphoning can occur, which is when the pump stops and a pressure-suction differential is created. Check valves should be installed in the piping system to isolate the equipment from the pool or spa if there is any chance of back-siphoning. Always install a check valve if there is a chemical feeder installed in the system. See “5.8 Auxiliary Components, Chlorinators, Ozone Generators, and Sanitizing Chemicals” on page 21.

⚠ WARNING

A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

Do not install any shutoff valve in the piping between the heater outlet and the pool, unless it is being used as a diverter valve. Always use care when installing chemical feeders so that there is no back-siphoning of chemical into the heater, filters, or pump. Make sure the feeder outlet line is downstream of the heater and a positive seal noncorrosive check valve is installed between the feeder and the heater.

5.6 Reversing the Water Connections

The JXi heater is shipped with water connections on the right side, but the top panel can be rotated to adapt to left-side water connections. This procedure involves turning the heater and then removing and rotating the top panel of the heater. The heater wiring procedure must be done only by a trained service technician.

5.7 Pressure Relief Valve Installation

A pressure relief valve (PRV) is recommended in all installations, and is mandatory in any installation in which the water flow can be restricted between the heater outlet and the pool/spa.

A pressure relief valve is not supplied with the JXi heater. However, it is recommended that a pressure relief valve be installed and may even be required by local codes. Be sure to check any applicable installation codes in your area to determine whether a pressure relief valve is required.

The maximum working pressure of this heater is 50 psi. Be sure to take into consideration the maximum allowable pressure of the other components in the system when selecting a PRV. Any pressure relief valve installed must

comply with provisions of the standard described in ANSI® Z21.22 for the United States or CSA 4.4 in Canada.

5.7.1 Install a pressure relief valve

- To complete the installation you will need the following parts:

- 1" length of 3/8" threaded pipe nipple
- 3/4" elbow 90°
- 3/8" X 3/4" reducing bushing
- 3/4" 50 PSI relief valve

NOTE: Above parts are available in Replacement Kit# R0336101. See "11.5 Water System Spare Parts List and Exploded Parts Diagrams" on page 41 for details

- 3/4" discharge pipe
 - 3/4" elbow 90° for discharge
 - 3/4" threadless discharge pipe
- Turn off the electrical power to the heater.
 - Turn off the main gas supply to the heater.
 - If the heater has been operating, ensure you allow enough time for remaining water in the heat exchanger to cool down before beginning. It is recommended that protective gloves be worn during the entire procedure.
 - Make sure the filter pump is off and will remain off for the duration of the installation procedure.
 - If the heater is below the surface level of the water in the pool or spa, close all shut-off valves between the heater and the pool.
 - Remove drain plug from manifold and allow all water to drain from heat exchanger.

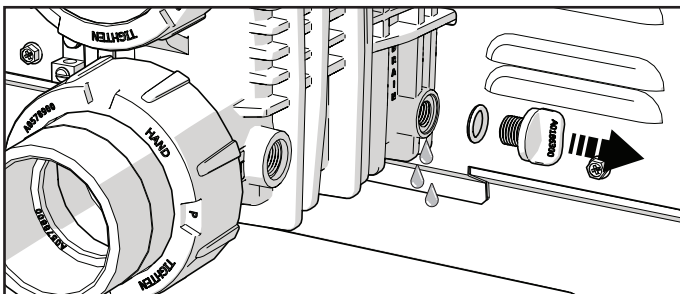


Figure 17. Remove Drain Plug

- Locate the threaded boss on the outlet port of the in/out header (beside the "out" arrow). See "Figure 18. Locate and Drill Boss" on page 20.
- Note the dimple at the center of the bottom of the boss. Using the dimple to center the drill bit, drill a 1/4" diameter hole through the bottom of the boss, taking care not to damage the surrounding plastic threads. See "Figure 18. Locate and Drill Boss" on page 20. (TIP: Drilling a 1/8" diameter hole first will help prevent thread damage.)

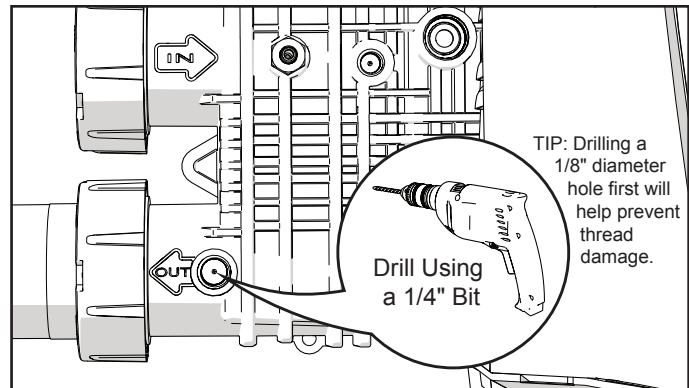


Figure 18. Locate and Drill Boss

- Each male connection should be first wrapped in 5-6 turns of Teflon® tape.

⚠ CAUTION

Use Teflon® tape only on the threads of the pipe nipple attachment to the plastic header. Do not use any pipe compound or pipe dope on the threads or any part that comes into contact with the plastic headers. These compounds may damage the header over a period of time.

- Assemble the threaded nipple, reducing bushing, elbow and pressure relief valve (PRV) as shown in "Figure 19. Pressure Relief Valve (PRV) Assembly" on page 20.
- Make sure that all connections are snug. Do not overtighten.
- The final orientation of the pressure relief valve (PRV) will have the discharge opening facing away from the heater manifold.

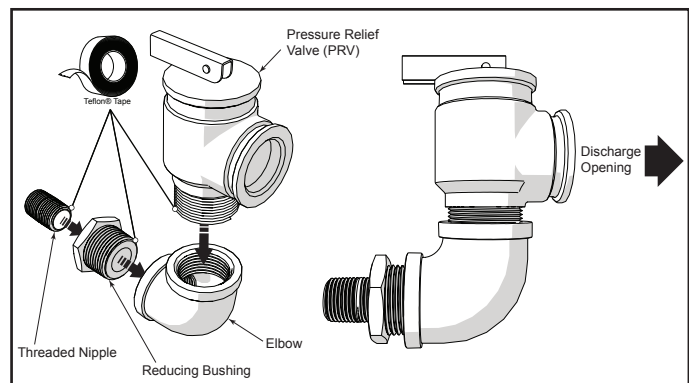


Figure 19. Pressure Relief Valve (PRV) Assembly

- Wrap the open end of the nipple in 5-6 turns of Teflon® tape. Install the pressure relief valve assembly at the heater manifold.
- Using the assembly as leverage make sure to get a snug fit. Do not overtighten. See "Figure 20. Install PRV Assembly at Heater Manifold" on page 21
- The final orientation of the pressure relief valve should be vertically aligned with the discharge opening facing away from the heater manifold.

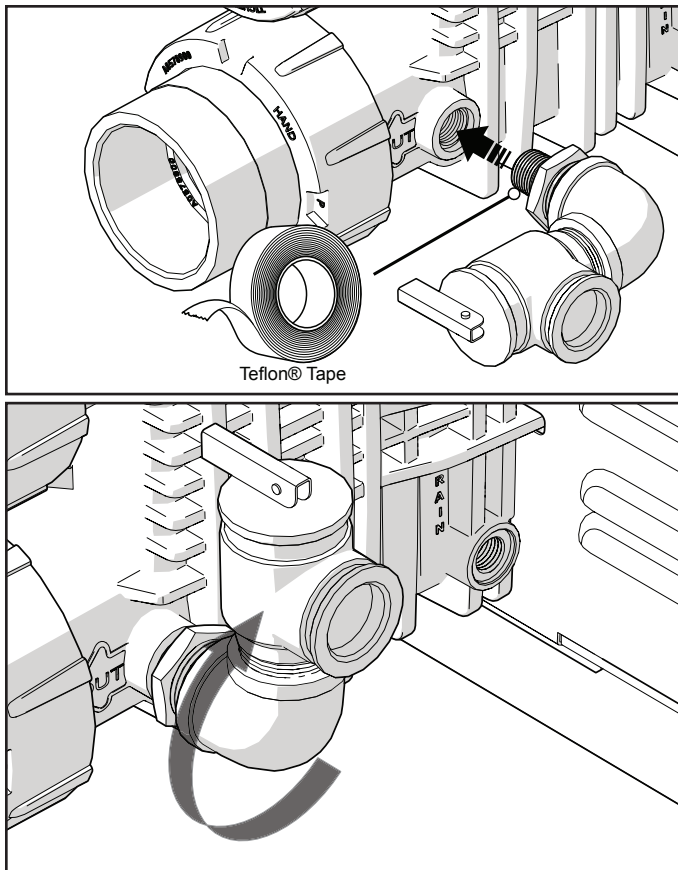


Figure 20. Install PRV Assembly at Heater Manifold

17. Install a discharge pipe from the pressure relief valve discharge opening to a safe area. This is a precaution to prevent the possibility of personal injury or property damage in the event scalding water is discharged from the pressure relief valve.
18. Install the discharge pipe so that there is no trapped or standing water in the piping.
19. Discharge piping must be facing down, terminating with a threadless nipple, no less than 6" from floor. See "Figure 21. Install Discharge Pipe" on page 21.

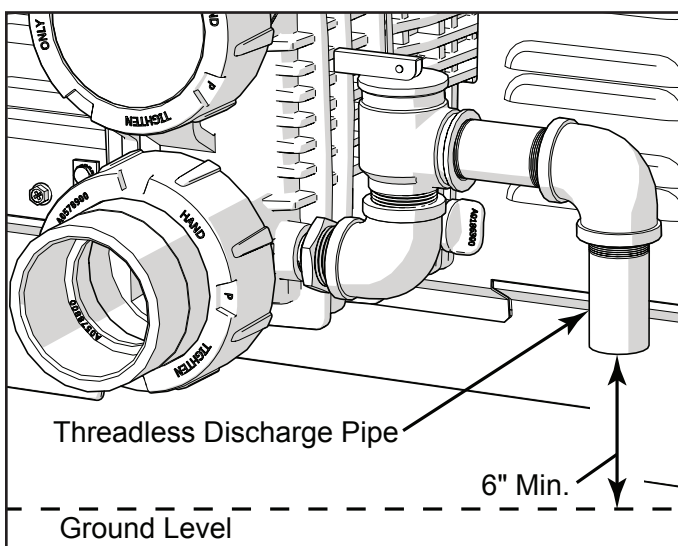


Figure 21. Install Discharge Pipe

20. Discharge piping must be open with no reducers or shut-off valves or other restrictions.
21. To ensure the continued proper operation of the pressure relief valve, the valve should be tested once a year. To test, lift the lever with the circulation system running to ensure that water will pass through. When the lever is down, there should be no leaks from the outlet.

5.8 Auxiliary Components, Chlorinators, Ozone Generators, and Sanitizing Chemicals

The JXi heater is manufactured with materials that are not compatible with high concentrations of ozone, chlorine, bromine, or other sanitizing chemicals. Heater damage caused by excessive chemicals or improper ozonization is not covered by the Zodiac Pool Systems, Inc., warranty. Be sure to adhere to the following:

- When ozone is injected upstream of the heater, install an off gas mixing chamber, or an ozone bypass system between the heater and the ozone injector to prevent ozone and air from entering the heater.
- When chemical feeders are used, plumb the feeder downstream of the heater and install an in-line check valve between the heater and the feeder (a minimum of 18 inch is required between the heater and the check valve).
- Wire any electrical chemical feeder so that it cannot operate unless the filter pump is running. If the feeder has an independent clock control, synchronize it with the filter clock.
- Never deposit chemicals directly in the pool skimmer.

Section 6. Electrical Connections

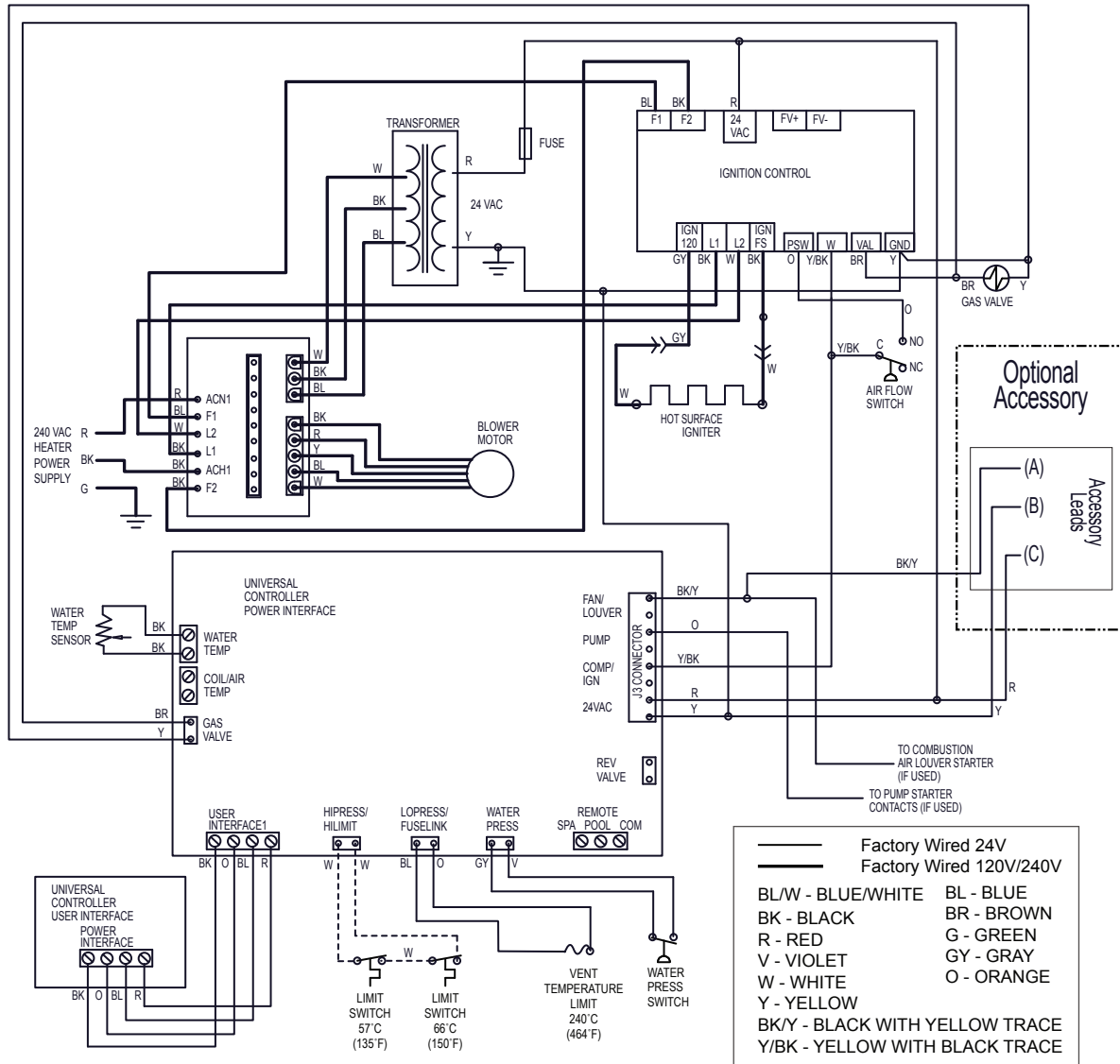


Figure 22. JXi Connections/ Schematic Wiring Diagram

⚠ WARNING
ELECTRICAL SHOCK HAZARD. This heater contains wiring that carries high voltage. Contact with these wires may result in severe injury or death.

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

6.1 General Information

Wiring connections must be made exactly as shown in the wiring diagram found on the inside of the heater door. The heater must include a definite means of grounding. There is a bonding lug on the right side of the heater, where a bond wire must be attached. For specific wiring connections. See "Figure 22. JXi Connections/ Schematic Wiring Diagram" on page 22.

6.2 Service Access

The electrical component panel may be rotated up and away from the heater body for easier access to the electrical system. With the front panel removed, press the tab in the raceway as shown in "Figure 23. Electrical System Service Access" on page 23, then rotate the panel upward. The latch should hold in place.

NOTE: Before the raceway can be rotated for the first time a shipping zip tie must be cut. This zip tie is threaded at the raceway release point See "Figure 23. Electrical System Service Access" on page 23. While cutting this zip tie be sure not to damage or abrade any of the wires.

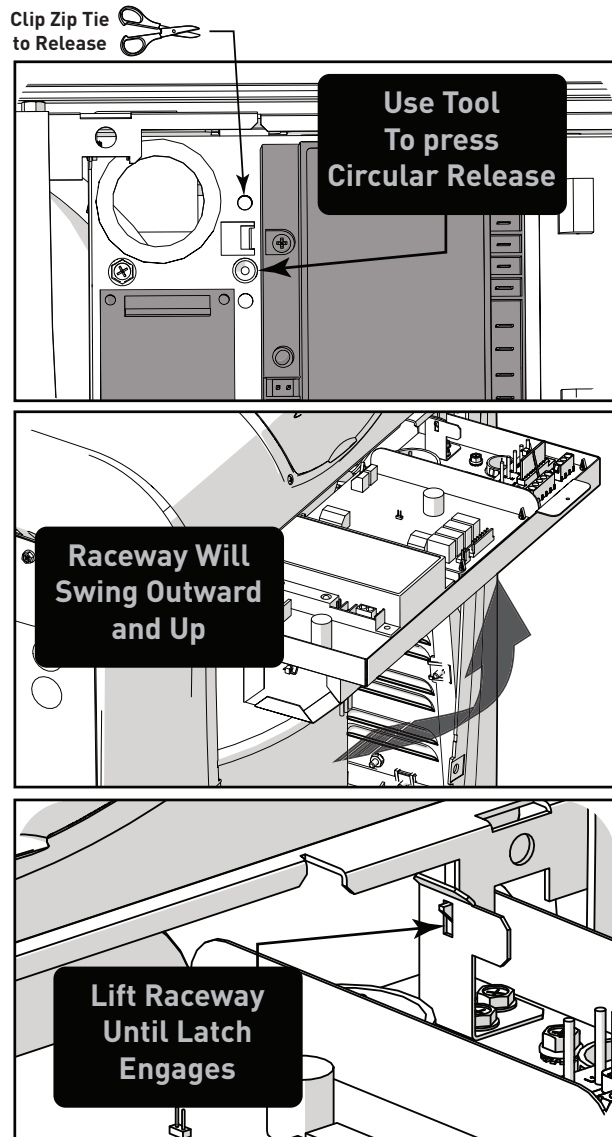


Figure 23. Electrical System Service Access

6.3 Main Power

Electrical wiring must be in accordance with the latest edition of the National Electric Code® (NEC®), ANSI®/National Fire Protection Association® (NFPA®) 70, or in Canada, the Canadian Electrical Code (CSA® C22.1) unless local code requirements indicate otherwise.

The heater comes factory-wired intended for use with 240 Volt, 60 Hz AC field electrical supply. To use 120 Volt, 60 Hz AC requires changing the position of the voltage selector board on the power distribution board. This must be done by a certified electrician only, as with all wiring. Be sure that the power source to the heater is turned off or disconnected before servicing.

NOTE If the heater is converted to accept 120V, the “Hot” wire of the 120V power supply has to be connected to the black wire (ACH1) on the power distribution board and the “Neutral” wire of the 120V power supply has to be connected to the red wire (ACN1) of the power distribution board.

To wire the heater to 120V or 240V/60 Hertz (Hz):

1. Remove the front door panel of the heater.
2. Connect the wires from the power source to the leads on the heater (Figure 21).

NOTE No external junction box is required.

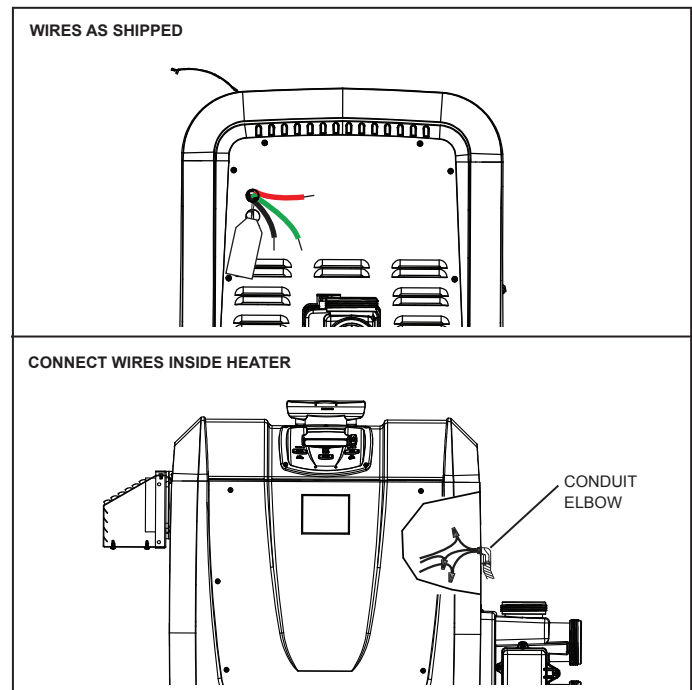


Figure 24. Field Wiring Connections

6.3.1 Converting the Heater for a 120V Power Source

⚠ WARNING

ELECTRICAL SHOCK HAZARD. To avoid an electrical shock hazard, which can result in serious injury or death, ensure that all electrical power to the system is turned off before approaching, inspecting, or troubleshooting any leaking plumbing that may have caused electrical devices in the surrounding area to get wet.

The heater is configured at the factory to operate at 240 VAC, 60 Hz; to convert the heater to 120 Volt, 60 Hz AC, reverse the voltage selector board on the power distribution board before the heater is connected to a power source:

To convert the heater to 120V 60 Hertz (Hz):

1. Identify the power distribution board on the heater to the right of the ignition control on the raceway. See “Figure 25. Power Distribution Board” on page 24.

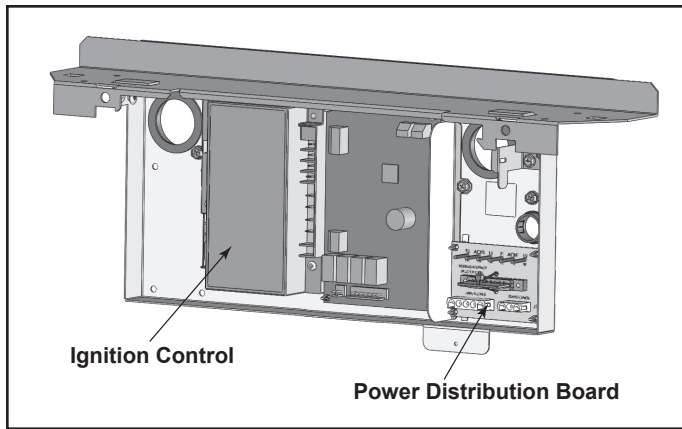


Figure 25. Power Distribution Board

2. Cut the plastic wire tie fastening the voltage selector board in place and discard it. Be careful not to abrade or damage any wiring or other components. Unplug the voltage selector board from the receptacle. See “Figure 26. Power Distribution Board With Voltage Selector Board Installed for 240 VAC” on page 24.

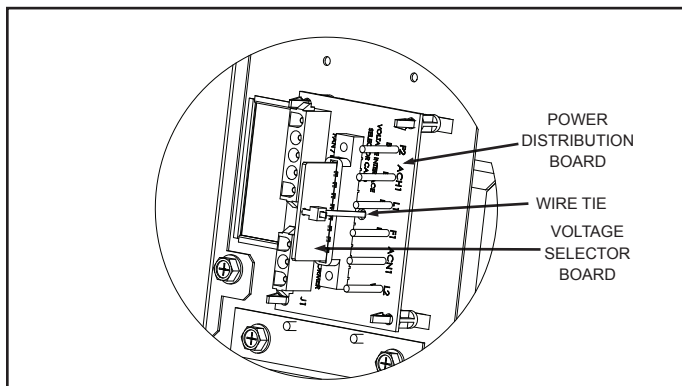


Figure 26. Power Distribution Board With Voltage Selector Board Installed for 240 VAC

3. Rotate the voltage selector board 180° and reinsert it into the receptacle so that the hole in the board is not visible. Be sure that the board is securely seated in the receptacle.

NOTE The voltage selector board is keyed so that it will fit in only one (1) direction for either selected voltage (either side of the board).

6.4 Bonding

CAUTION

To prevent premature failure of the appliance resulting from stray voltages and voltage differentials, the heater must be bonded to other equipment which is part of the pool plumbing system with a solid copper wire not smaller in diameter than 8 AWG (6 AWG in Canada).

Zodiac Pool Systems, Inc., requires that the appliance be connected to a “bonding loop” that includes all electrical equipment in the system and on the equipment pad. Bonding lugs must be connected with a solid copper wire

not smaller than 8 AWG (6 AWG in Canada). Failure to do so will void the Zodiac Pool Systems, Inc. warranty.

Additionally, in the United States the National Electrical Code® (NEC®) and in Canada the Canadian Electrical Code (CEC), require that all metallic components of a pool structure, including reinforcing steel, metal fittings and above ground components be bonded together (forming an “equipotential bonding grid”) with a solid copper conductor not smaller than an 8 AWG (6 AWG in Canada).

The NEC and CEC also require that the equipment and/or appliances associated with the pool water circulating system, including, but not limited to, pump motors and heaters, be bonded together as part of the equipotential bonding grid. Zodiac Pool Systems, Inc. provides a special labeled bonding lug on the right side of the heater to accommodate this requirement.

6.5 Optional Remote Controls

The JXi pool/spa heater controls can be wired for remote operation. All Zodiac® AquaLink® Control Systems will permit the heater to be operated by remote control.

If you are setting up a new pool or spa system, call your local Jandy Pro Series distributor or Zodiac Pool Systems, Inc., 800.822.7933, for information on the correct Control System to meet your needs.

⚠ WARNING

RISK OF ELECTRIC SHOCK WHICH CAN RESULT IN SERIOUS INJURY OR DEATH. Before attempting installation or service, ensure that all power to the device is disconnected/turned off at the circuit breaker.

Electrical wiring must be in accordance with the latest edition of the National Electric Code (NEC), ANSI®/ National Fire Protection Association (NFPA®) 70, unless local code requirements indicate otherwise.

Refer to “Figure 22. JXi Connections/ Schematic Wiring Diagram” on page 22.

6.5.1 Connecting to a Remote Pool-Off-Spa Selector (3-Wire Connection)

Install the Remote Pool-Off-Spa Selector:

1. Turn off the power to both the pool/spa control system and the heater unit.
2. Remove the front panel door.
3. Run the wires from the pool/spa control system through the opening located on the lower right or left hand side of the heater.
4. Connect the wiring from the pool/spa control system to the heater remote control terminal.
5. Connect the three wires to Spa, Pool & Common terminals of the J6 terminal bar.

6. Reinstall door panel.
7. Restore power to the heater and the pool/spa control system.

Configure the Control Panel:

1. Make sure the control is OFF.
2. Press and hold MENU, then the POOL and SPA buttons for 7 seconds to access Service Setup mode.

NOTE The display will revert back to OFF after 1 minute since the last key press.

3. Press Up or Down to display REMOTE.
4. Press MENU, **REMOTE OFF** (default remote) is displayed.
5. Use Up or Down to scroll through the Remote options until **HI-LO-COM** is displayed, then press **MENU** to select.
6. Press **POOL** or **SPA** to exit Service Setup mode.

6.5.2 Connecting to an AquaLink® Control System or Remote TSTAT (2-Wire Connection)

An interrupt (on/off-type) remote can be connected as a Remote TSTAT to turn the heater on or off but not perform any other function. When using this type of connection, remember to set the heater control to “SPA” and set the thermostat control to maximum.

Consult with the Zodiac Pool Systems, Inc. Technical Support Department, 800.822.7933 (in Canada: 888.647.4004), for questions about installing non-Zodiac remote controls.

Install the Remote TSTAT:

1. Turn off the power to both the pool/spa control system and the heater unit.
2. Remove the front panel door.
3. Run the wires from the pool/spa control system through the opening located on the lower right or left hand side of the heater.
4. Connect the wiring from the pool/spa control system to the heater remote control terminal.
5. Connect the two wires to Pool and Common (not Spa) on the J6 terminal bar.
6. Reinstall door panel.
7. Restore power to the heater and the pool/spa control system.

NOTE If you install a time clock to control the filter pump operation, it is recommended that the time 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 heater about 15 minutes before the filter pump shuts off. This will allow for a more efficient operation by removing any residual heat contained in the heat exchanger back to the pool.

CAUTION

To avoid damage to the heater, **do not connect the power supply of the heater to the output side of the clock** if your time clock simply interrupts the high voltage power supply or has a high voltage output. Doing so will prevent the blower from purging the residual heat from the heater when the heater turns off. The blower must be allowed to run for 45 seconds after the heater shuts off.

Configure the Control Panel:

1. Make sure the control is OFF.
2. Press and hold MENU, then the POOL and SPA buttons for 5 seconds to access Service Setup mode.

NOTE The display will revert back to **OFF** after 1 minute since the last key press.

3. Press MENU, **REMOTE OFF** (default remote) is displayed.
4. Use Up or Down to scroll through the Remote options until **REMOTE TSTAT** is displayed, then press **MENU** to select.
5. Press **POOL** or **SPA** to exit Service Setup mode.
6. Press **SPA** to adjust the set point to the maximum 40°C (104°F).

6.5.3 “Smart” Communication via RS-485

To provide “smart” communication between the JXi and a power center board (PCB) (AquaLink® RS, AquaLink PDA, and AquaLink Z4) through a red four-pin RS485 connector, your PCB must have the appropriate firmware. To determine the REV of the AquaLink RS PCB firmware in your system, refer to Table 7.

Components	REV MMM or lower	REV N or higher
RS485 Connectors	One (1) set of four (4)	Two (2) sets of four (4)
JVA Sockets 24 VAC	Located on top of board	Located on bottom of board
Relay Sockets 24 VDC	10 total sockets. Eight (8) located on bottom, two (2) on top of board	11 total sockets. All located on bottom of board.

Table 7. AquaLink RS Power Center Board Identifying Features

Do not connect more than two (2) wires to any of the terminals in the Control System when connecting peripheral devices. If connecting the heater to the control system creates this situation, then a Multiplex PCB kit must be used. Call your distributor or Zodiac Pool Systems, Inc., to order the kit.

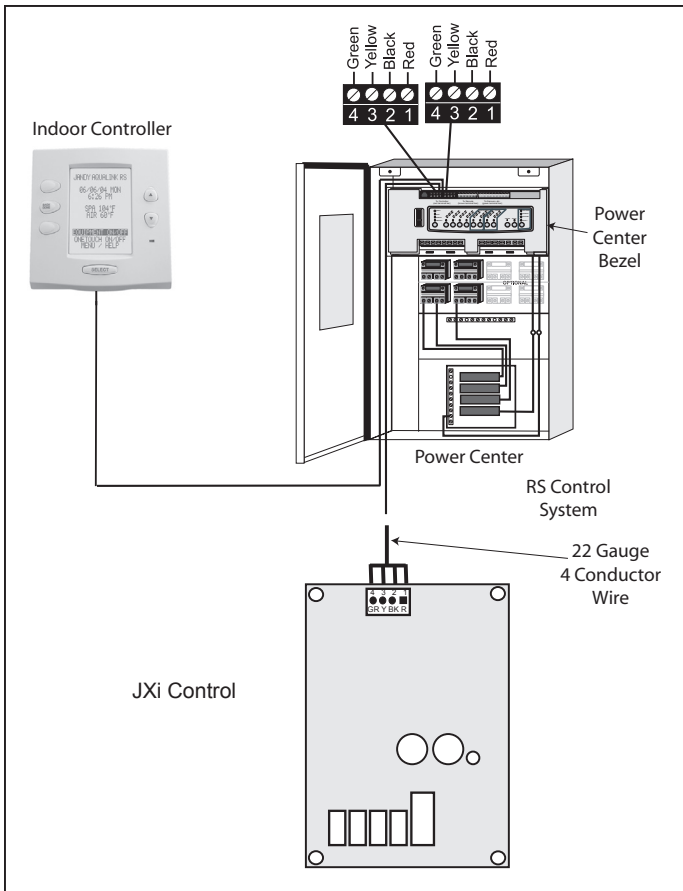


Figure 27. Wiring the JXi to a Zodiac® Remote

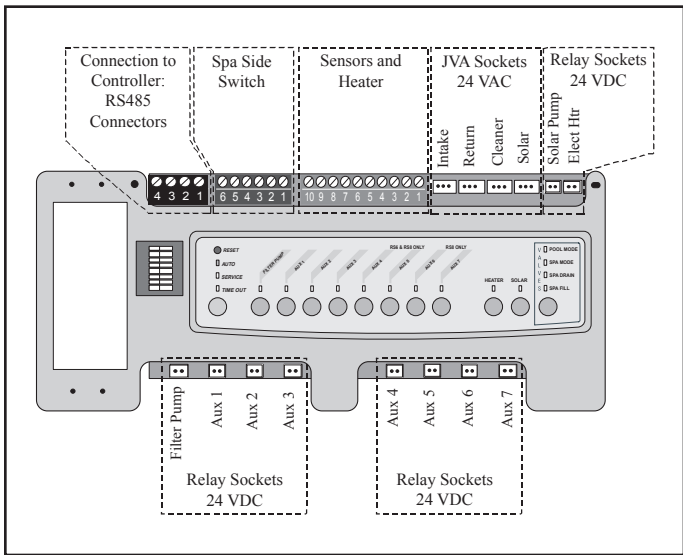


Figure 28. PCB with firmware REV MMM or lower

If your PCB firmware is REV MMM or lower, connect via a 2-wire connection. See “6.5.2 Connecting to an AquaLink® Control System or Remote TSTAT (2-Wire Connection)” on page 25.

If your PCB firmware is REV N or higher:

1. Turn off the power to both the heater and the controller.
2. Open the power center enclosure and remove the front dead panel.

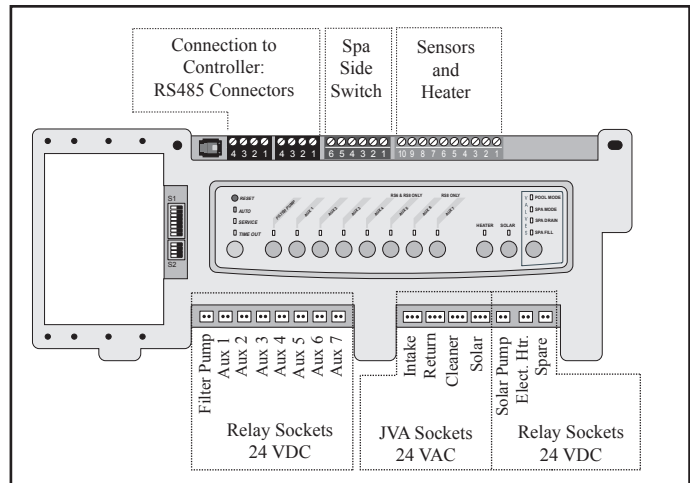


Figure 29. PCB with firmware REV N or higher

NOTE Only an AquaLink® RS System with firmware revision "N", or higher, will support the heater interface. Refer to “Table 7. AquaLink RS Power Center Board Identifying Features” on page 25 along with “Figure 28. PCB with firmware REV MMM or lower” on page 26 and “Figure 29. PCB with firmware REV N or higher” on page 26 to determine the REV of your system’s firmware. If it is "N" or higher, continue with these procedures. If it is MMM or lower, follow the procedures in *Section “6.5.2 Connecting to an AquaLink® Control System or Remote TSTAT (2-Wire Connection)” on page 25.*

NOTE Only a PDA System with firmware revision 4.1, or higher, will support the heater interface.

3. Use 22 gauge 4-conductor wire to run between the heater and the RS control and match the wire color order. See “Figure 27. Wiring the JXi to a Zodiac® Remote” on page 26.
4. The wires coming from the heater can be “doubled up” on the red terminal bar with the four (4) wires from the indoor controller.

NOTE If you need to install more than two (2) wires in each terminal, order a Zodiac® Multiplex PCB Kit, which includes the Multiplex Board (Zodiac part # 6584). Never put more than two (2) wires into each of the pins of the terminal bar.

5. Check all wiring, then apply power to both the heater and the control system. Verify operation in either Service or Auto mode. Refer to your Control System manual for operating instructions.

When the heater is connected to an external controller, all functionality of the heater control panel is disabled, therefore heater functions can be controlled only from the controller.

To restore heater control panel functionality after connecting to an external controller:

1. Turn power to the heater ON. The heater display shows: **JANDY REMOTE ONLINE PUSH MENU TO DISABLE.**

2. Press MENU to remove message and restore functionality to the heater control panel.

To return functionality to RS:

1. Turn power to the heater OFF then back ON.
2. Press MENU for 5 seconds to access Setup Mode.
3. Choose **JANDY REMOTE**.

Section 7. Operating Instructions

7.1 First-Time Start-Up Procedure

WARNING

Vent pipes and heater tops get hot! These surfaces can cause serious burns. Do not touch these surfaces while the heater is in operation.

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

Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the heater.

Do not attempt repairs on the gas controls or appliance. Tampering is dangerous and voids all warranties.

1. Confirm that pool water is flowing normally through the pool system and equipment.
2. If it is a new pool or spa installation, operate the filter pump with the heater off long enough to completely clean the water. This will remove any installation residue from the water.
3. Clean the filter before starting the heater.
4. Start the heater in either Pool or Spa mode. See “7.6 Setting up Heater Options” on page 29.
5. Start the heater. See “7.2 Starting the Heater” on page 27.
6. When the heater starts, confirm there is adequate water flow by touching the outlet header. The header should not be hot. Normally, water temperature will rise only a few degrees as it passes through the heater, and a “hot” header or pipe indicates low water flow.

If ignition is unsuccessful:

If ignition is unsuccessful, or the flame fails during normal operation, the ignition control shuts off the gas valve. The heater will then go through a post purge process and attempt to establish stable combustion two additional times. If ignition is unsuccessful after three attempts, the system shuts down and will automatically attempt to restart after one hour.

To reset the heater to provide three (3) attempts to start:

1. Turn OFF the control then turn it back ON.
2. Access either the Pool or Spa mode.

7.2 Starting the Heater

Follow the instructions outlined below to start the heater. Refer to the Lighting and Shutdown Instructions label on the inside lid panel of the heater. See “Figure 32. Lighting and Shutdown Instructions Label on Top Panel” on page 30.

WARNING

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

7.2.1 IMPORTANT SAFETY INFORMATION

Read Before You Start:

- (A) This appliance does not have a pilot light. It is equipped with an ignition device, which automatically lights the heater. Do NOT try to light the burners by hand.
- (B) BEFORE OPERATING, smell all around the appliance for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the Fire Department.
- (C) Use only your hand to switch on or off the gas control switch. Never use tools. If the switch appears broken or will not move, don't try to repair it, call a qualified service technician. Force or attempted repair may result in fire or explosion.
 - (D) Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system which has been under water.

OPERATING INSTRUCTIONS

Refer to the Lighting and Shutdown Instructions. See “Figure 32. Lighting and Shutdown Instructions Label on Top Panel” on page 30, located inside the top panel.

1. **STOP! Read IMPORTANT SAFETY INFORMATION in previous section.**
2. Set temperature thermostat controls to their lowest setting and turn off the controller. Make sure the display shows GAS HEATER IS OFF.
3. Turn off all electrical power to the heater at the junction box.

NOTE: This appliance is equipped with an ignition device which automatically lights the heater. Do NOT try to light the burner by hand.
4. Remove the heater rear panel or top.
5. Toggle gas control switch to OFF position. See “Figure 30. Gas Valve” on page 28.

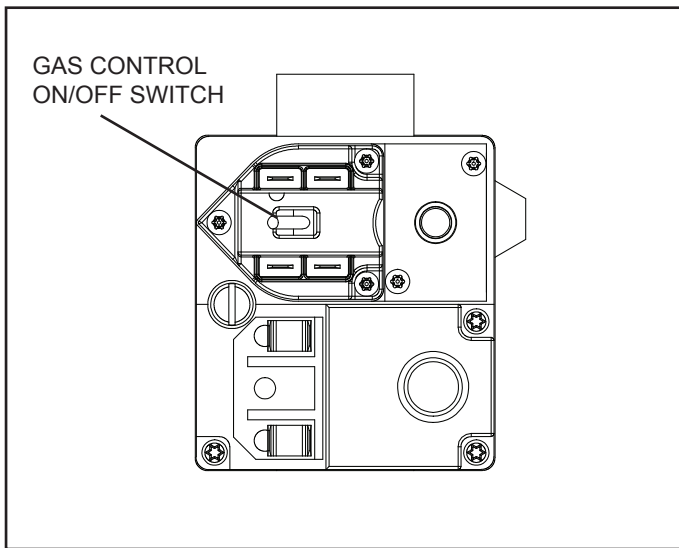


Figure 30. Gas Valve

6. Wait five (5) minutes to clear out any gas, then smell for gas, including near the floor. **IF YOU SMELL GAS, STOP!** Follow instructions in section “7.2.1 IMPORTANT SAFETY INFORMATION” on page 27 item (B) **WHAT TO DO IF YOU SMELL GAS.**
7. If no gas is detected, toggle gas control switch to ON position.
8. Replace the rear panel or top.
9. Turn on electrical power to the heater.
10. Turn the controller ON by pressing POOL or SPA and set the temperatures as necessary.

NOTE: If the heater does not start, check that the filter pump is ON, the filter is clean and that water is flowing to the pool. If the heater still does not operate, follow the procedure below (Shut Down) to turn off gas supply to the heater.

⚠ WARNING

When the heater is fired for the first time, the combustion chamber refractory binder material is driven out by the heat of the flame. White smoke and/or sharp odors may be emitted from the vent during this period. Do not inhale combustion product fumes at any time, and especially when these fumes are being emitted. This “burn-in” period will last only a few minutes.

7.3 TO TURN OFF GAS TO THE HEATER

1. Set temperature thermostat controls to their lowest setting and turn off the controller. Make sure the display shows GAS HEATER IS OFF.
2. Turn off all electrical power to the heater at the junction box.
3. Remove the rear panel or top.
4. Toggle gas control switch to OFF.
5. Shut off the external gas supply valve to the heater. If your gas valve has a handle on it, move the handle so that it is perpendicular to the pipe.
6. Replace the rear panel or top.

7.4 Normal Operation

During normal operation, the control system measures the temperature of the water flowing through the heater and will begin the start-up process if the temperature is below the set point. If the blower pressure switch senses adequate airflow when the blower starts, the ignition sequence begins. Following a pre purge, the igniter is energized, then the gas valve opens. As long as a flame is sensed at the burner, operation continues until the temperature of the water entering the heater reaches the temperature control setting.

7.5 Operating the Controller

Unless the heater is connected to a remote controller, all operations are set up and programmed through the control panel on the top of the heater. See “Figure 31. Main Control Panel” on page 28.

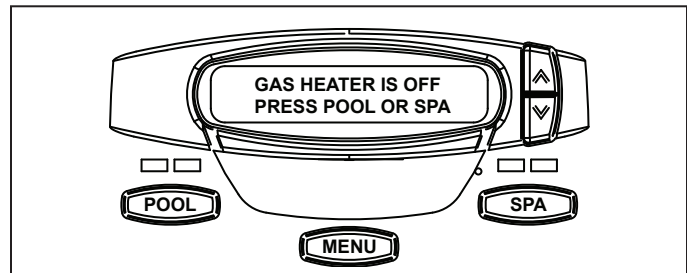


Figure 31. Main Control Panel

NOTE The display reverts to **OFF** after one minute of inactivity since the last key was pressed.

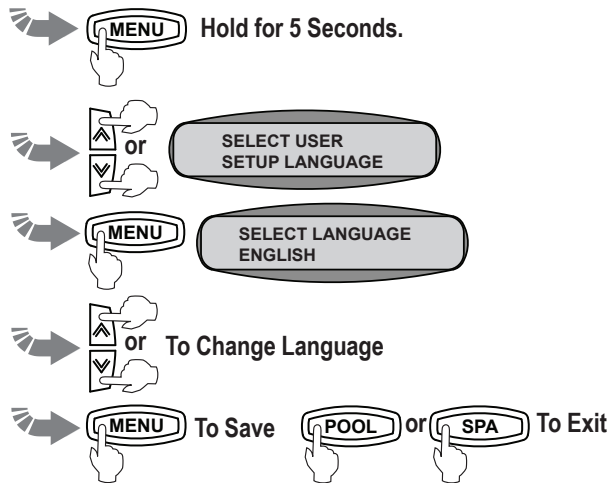
7.6 Setting up Heater Options

Before using the heater for the first time, set up the following options:

- **Languages:**
Set a default display language
- **Temperature Scale:**
Set temperatures to be displayed in either Celsius or Fahrenheit scale
- **Display Light Timeout:**
Set the display light to turn off after a specific interval of inactivity

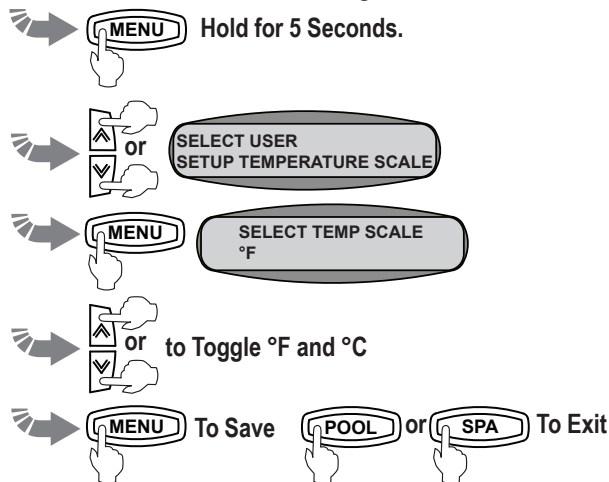
7.6.1 To Program the Display Language

Control must be OFF to begin.



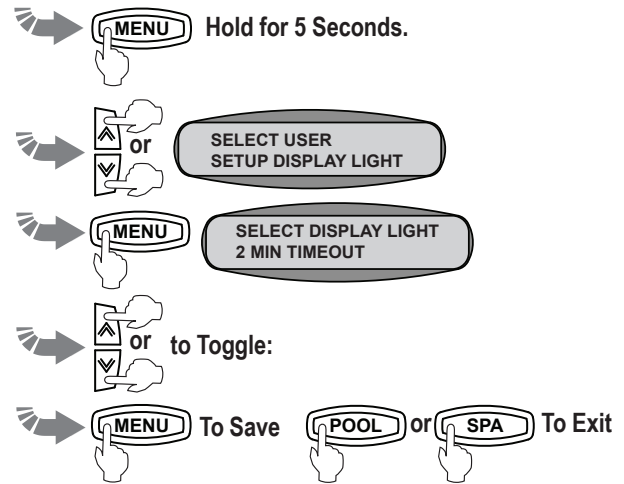
7.6.2 To Program the Temperature Scale (F or C)

Control must be OFF to begin.



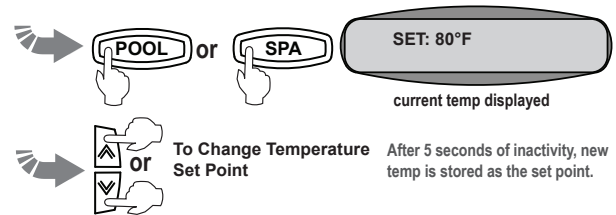
7.6.3 To Program Display Light to Turn Off Automatically

Control must be OFF to begin.



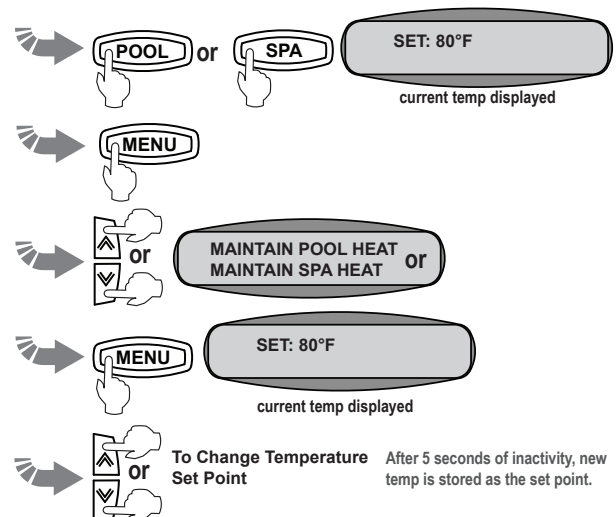
7.7 Operating the Heater

7.7.1 To Turn on Pool or Spa Heat



7.7.2 To Maintain Pool or Spa Heat (optional Relay and Wiring Required)

If connected, the Maintain Heat mode monitors the pool water temperature 24 hours a day by turning the pool pump on and sampling the water temperature. When the water temperature drops below the programmed temperature set point, the controller automatically starts heating the pool.



FOR YOUR SAFETY READ BEFORE OPERATING

⚠ WARNING If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury, or death.

- (A) This appliance does not have a pilot light. It is equipped with an ignition device which automatically lights the heater. Do NOT try to light the burners by hand.
 (B) BEFORE OPERATING, smell all around the appliance for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

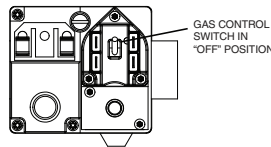
WHAT TO DO IF YOU SMELL GAS

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

- (C) Use only your hand to activate the gas control switch. Never use tools. If the switch will not move by hand, do not try to repair it. Call a qualified service technician. Force or attempted repair may result in fire or explosion.
 (D) Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system which has been under water.

OPERATING INSTRUCTIONS

1. **STOP!** Read the safety information above on this label.
- 2.* Set the thermostat to lowest setting and turn appliance switch to OFF.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the heater. Do not try to light the burners by hand.
5. Remove the top panel.
6. Turn gas control switch to OFF position
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
8. Turn gas control switch to ON position.
9. Replace the top panel.
10. Turn on all electric power to appliance.
- 11.* Set thermostat to desired setting and switch appliance from OFF to either POOL or SPA.
12. If the appliance will not operate, check that the filter pump is on, the filter is clean and water is flowing to the pool. Otherwise, follow the instructions "To Turn Gas Off" and call your service technician or gas supplier.



TO TURN GAS OFF

- (1) Remove top panel.
- (2) * Set the thermostat to lowest setting and switch appliance to OFF.
- (3) Turn off all electrical power to the appliance if service is to be performed.
- (4) Turn gas control switch to OFF position.
- (5) Replace top panel.

* See manual for details of operation and thermostat control.

POUR VOTRE PROPRE SÉCURITÉ LISEZ CECI AVANT D'UTILISER LE CHAUFFE-EAU

⚠ AVERTISSEMENT Si vous ne suivez pas ces directives à la lettre, un incendie ou explosion peut en être le résultat. Ceci causera des dommages aux biens, des blessures personnelles ou la mort.

- (A) Cet appareil n'est pas muni d'une veilleuse. Il est muni d'un appareil d'allumage qui déclenche le chauffe-eau automatiquement. Ne pas essayer d'allumer les brûleurs à la main.
 (B) AVANT DE METTRE EN MARCHÉ, assurez-vous qu'il n'y a aucune odeur de gaz autour de l'appareil. Assurez-vous qu'il n'y a aucune odeur de gaz près du plancher, car certains gaz sont plus lourds que l'air et on peut en accumuler au plancher.

QUOI FAIRE S'IL Y A UNE ODEUR DE GAZ

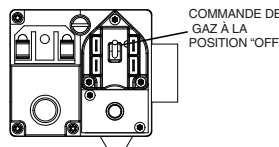
- Ne pas essayer de mettre en marche quelque appareil que ce soit.
- Ne touchez à aucun interrupteur électrique. Ne pas faire usage d'un appareil téléphonique dans votre édifice.
- Contactez immédiatement à partir du téléphone d'un voisin votre fournisseur de gaz. Suivez ses directives.
- Si vous ne pouvez pas joindre avec votre fournisseur de gaz, appelez le service des incendies.

- (C) Utilisez seulement votre main pour opérer le bouton de la commande de gaz. Ne jamais utiliser un outil. S'il est impossible d'opérer le bouton à la main, n'essayez pas de le réparer. Appelez un technicien de service qualifié. L'utilisation d'une force quelconque peut avoir pour résultat un feu ou une explosion.

- (D) Ne pas utiliser cet appareil si une pièce quelconque a été submergée. Contactez immédiatement un technicien qualifié afin de faire examiner l'appareil et faire remplacer toute pièce du système de contrôle ainsi que toute commande de gaz qui aurait été submergée.

MODE D'EMPLOI

1. **ARRÊTEZ!** Lisez les directives de sécurité ci-dessus sur cette étiquette.
- 2.* Réglez le thermostat au plus bas et mettez la commande de l'appareil à la position OFF.
3. Éteignez toute alimentation électrique de l'appareil.
4. Cet appareil est muni d'un dispositif d'allumage qui met le chauffe-eau en marche automatiquement. Ne pas essayer d'allumer les brûleurs à la main.
5. Enlevez le panneau supérieure.
6. Tournez l'interrupteur de commande de gaz jusqu'à la position ON.
7. Attendez pendant cinq (5) minutes afin que le gaz se dissipe. Assurez-vous qu'il n'y a aucune odeur de gaz, même au niveau du plancher. S'il y a une odeur de gaz ARRÊTEZ-VOUS! Suivez l'étape « B » ci-dessus. S'il n'y a pas d'odeur de gaz, procédez à la prochaine étape.
8. Tournez l'interrupteur de commande de gaz jusqu'à la position OFF.
9. Remplacez le panneau supérieure.
10. Mettez l'appareil sous tension.
- 11.* Réglez le thermostat comme désiré et tournez le bouton de commande de la position OFF à la position POOL ou SPA.
12. Si l'appareil ne se met pas en marche, assurez-vous que la pompe du filtre fonctionne, que le filtre soit propre et qu'il y ait un débit d'eau vers la piscine. Autrement suivez les directives.



INTERRUPTION DE L'ALIMENTATION EN GAZ

- (1) Enlevez le panneau supérieure.
- (2) * Réglez le thermostat au plus bas et mettez le bouton de commande à OFF.
- (3) Interrompez toute alimentation électrique à l'appareil si on doit faire de l'entretien ou réparation.
- (4) Tournez l'interrupteur de commande de gaz jusqu'à la position OFF.
- (5) Remplacez le panneau supérieure.

* Voir le manuel pour les détails concernant l'opération du contrôle de thermostat.

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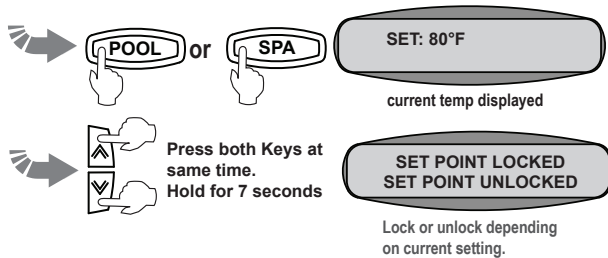
Figure 32. Lighting and Shutdown Instructions Label on Top Panel

7.7.3 To Turn the Heater Off

When the control panel is OFF, the screen displays:
GAS HEATER IS OFF PRESS POOL OR SPA.

7.8 Temperature Set Point Lock

Once you have programmed pool temperature and spa temperature set points, you can lock them so that they may not be changed inadvertently.



7.9 Shutting Down the Heater

Refer to "Figure 32. Lighting and Shutdown Instructions Label on Top Panel" on page 30.

Complete shutdown instructions are as follows:

1. Set temperature thermostat controls to their lowest setting and turn off the controller. Make sure the display shows OFF.
2. Turn off all electrical power to the heater at the junction box.
3. Remove the top panel of the heater.
4. Turn the gas valve control switch to OFF.
5. Shut off the external gas supply valve to the heater. If your gas valve has a handle on it, move the handle so that it is perpendicular to the pipe.
6. Replace the top panel.

Section 8. Maintenance

⚠ WARNING

Do not try to operate the heater if the water temperature is below 40 °F (4°C)

If the heater is not going to be used for an extended period of time and in colder climates, shut it down completely. See "7.9 Shutting Down the Heater" on page 31 and refer to "Figure 32. Lighting and Shutdown Instructions Label on Top Panel" on page 30.

8.1 Winterizing

In areas where freezing temperatures occur in winter and the pool or spa will not be used, the pool should be winterized by a qualified pool service technician:

To Winterize Your Heater:

1. Turn off the electrical supply and the main gas supply to the heater.

2. Remove the heater access panel.
3. Turn off gas supply to the heater following the shut-down instructions. See "7.9 Shutting Down the Heater" on page 31 and "Figure 32. Lighting and Shutdown Instructions Label on Top Panel" on page 30.
4. Remove the drain plug from the inlet/outlet header and completely drain the heater before the first frost.
5. Inspect the gasket on the drain plug. Store the drain plug in a safe place for winter.
6. Cover the vent grill with plastic so that snow will not accumulate and freeze on top of the combustion chamber.
7. Remove and drain the pressure switch tubing.

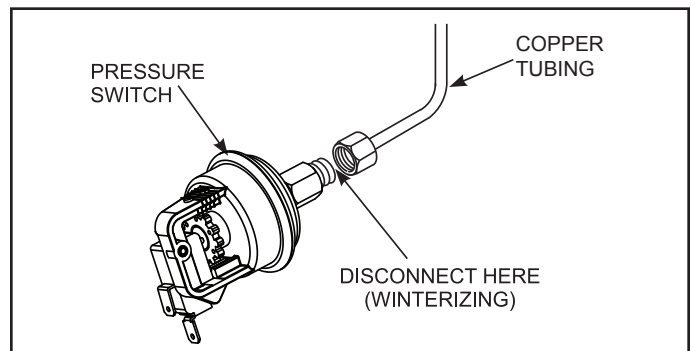


Figure 33. Pressure Switch Copper Tubing

8.2 Spring Start-up

When winterized, the heater should be reassembled by a qualified professional technician in the Spring.

To Start Up Your Heater:

1. Reinstall the drain plug.
2. Uncover the vent grill.
3. Reattach copper tubing to water pressure switch.
4. Make sure power is supplied to the pump.
5. Turn on the filter pump and circulate water through the heater for 5 minutes. Check for leaks while circulating.
6. Turn on the main gas supply to the heater at the gas cock outside the heater jacket.
7. Turn on the heater according to "7.9 Shutting Down the Heater" on page 31 and "Figure 32. Lighting and Shutdown Instructions Label on Top Panel" on page 30.

8.3 Inspection and Service

⚠ WARNING

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

The heater is designed and constructed to provide long performance life when installed and operated properly under normal conditions. Periodic inspections, especially at spring start-up, are important to keep your heater running safely and efficiently through the years. Zodiac Pool Systems, Inc. recommends that the homeowner inspect the heater on a regular basis (especially after abnormal weather conditions), and arrange to have a professional inspection at least once a year by a qualified service technician.

⚠ WARNING

For your safety, when starting the heater, keep your head and face away from the exhaust grill opening and blower inlet grill to prevent any risk of personal injury. Make sure all doors/panels are securely in place and stand back from the heater.

8.3.1 Guidelines for Homeowner Inspection:

⚠ WARNING

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

⚠ WARNING

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

1. Keep the top of the heater, under the heater, and surrounding area clear of all debris and combustible materials such as paper, leaves, etc.
2. If there is a pressure relief valve, check for corrosion in and around the valve. If there is corrosion, turn off the filter pump and replace the pressure relief valve.
3. Once a year check that water is running freely through the pressure relief valve. To check, turn on the filter pump and lift the release lever on the top of the valve.
4. Be sure combustion air and ventilation openings are not blocked.

8.3.2 Guidelines for Professional Inspection:

1. Check for loose or broken wires and terminal connections.
2. Check the water pressure switch by turning the

filter pump off and on several times. The burner should go off immediately after the pump stops. The fan will continue to run for 45 seconds after the burner shuts down. An ignition sequence should start shortly after the pump is turned back on.

3. Conduct an inspection of the TRV once a year.
4. Inspect the electrical controls, specifically:
 - a. High limit switches.
 - b. Water pressure switch.
 - c. Automatic gas valve.
 - d. Power interface/Temperature control.
 - e. Vent temperature limit switch.
 - f. Control circuit fuse.
 - g. Ignition control.
 - h. Air pressure switch.
5. Inspect the inlet grill at the blower for blockage, leakage, and corrosion.
6. Inspect the combustion blower for damage.
7. Conduct a normal operating cycle and observe that the sequence proceeds as intended.
8. If the heater is equipped with a pressure relief valve, clean any accumulated corrosion and make sure that water runs freely when lever is lifted.
9. Inspect the outside of the combustion chamber and blower for corrosion and indication of improper operation.
10. Regularly inspect electrical controls for deterioration. Repair and replace as necessary.
11. Visually check the main burner flame. To obtain a good line of sight, remove the user interface from the top panel of the heater. See “Figure 34. Remove Heater Top to View Sight Glass” on page 32.

NOTE: If heater top panel has been reversed with water connections to the left of the user interface glass, remove heater top to view sight glass.

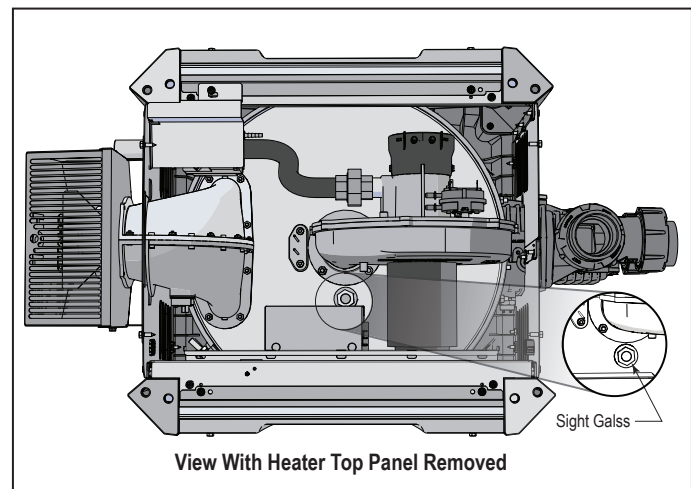


Figure 34. Remove Heater Top to View Sight Glass

Section 9. Troubleshooting

9.1 Common Problems

Zodiac Pool Systems, Inc. strongly recommends that you call a qualified service technician to perform all service and repairs on the heater. To locate a licensed or qualified technician or independent service company, check your local yellow pages or visit: www.zodiacpoolsystems.com, and click on Dealer Locator.

The following table lists some of the most common problems when running the heater. Most problems occur when the heater is started for the first time after installation or at spring start-up.

Symptom	Possible Cause	Remedy
Pump not operating	<ul style="list-style-type: none"> No power. Pump defective. Incorrectly wired. Time clock settings not synchronized with actual time. 	<ul style="list-style-type: none"> Check circuit breakers and power source. Replace the pump. Recheck wiring. Check time clock setting.
Unstable combustion- (1) heater turns off and on (2) heater ignites slowly (3) flame lifts and goes out (4) short yellow streaked flame	<ul style="list-style-type: none"> Wrong gas. Lean fuel/air mixture— low supply pressure. Lean fuel/air mixture— too much combustion air. Rich fuel/air mixture— high manifold pressure. Rich fuel/air mixture— too little combustion air. 	<ul style="list-style-type: none"> Make sure the gas supply matches the gas type indicated on the rating plate. Correct gas supply inlet pressure to: <ul style="list-style-type: none"> (NATURAL GAS) 4.0 " W.C. min - 10.5" W.C. max (PROPANE) 4.0 " W.C. min - 14.0" W.C. max Using a digital differential manometer to check results. Increase offset gas pressure by rotating the adjustment screw clockwise. Using a digital differential manometer to check results. Decrease offset gas pressure by rotating the adjustment screw counter-clockwise. Offset pressure needs to be set to —0.2" W.C. Connect a digital differential manometer to blower throat and gas valve port to obtain differential. Make sure the differential value falls within the specified range for the heater size (see Table TBD). Gas meter too small. Gas line from meter to heater too small. Check blower inlet grill for obstruction.
Not enough heat (1) heater is slow to heat up (2) heater not maintaining set temperature	<ul style="list-style-type: none"> Heater size inadequate. Filter pump not running long enough. 	<ul style="list-style-type: none"> Replace with heater of higher output.
Heater pounding or knocking	<ul style="list-style-type: none"> Water flow through heater too low. Failed Thermal Regulating Valve (TRV). 	<ul style="list-style-type: none"> Look for obstruction or closed valve in system. Check for damaged internal bypass. Variable speed pump set too low Dirty filter or baskets
Low temperature rise	<ul style="list-style-type: none"> Low water temperature. Heater plumbed backwards. 	<ul style="list-style-type: none"> Heater is condensing. Flue product moisture will condense at the start-up until the heater water temperature reaches the normal operating conditions. Faulty or broken Thermal Flow Regulator (TRV). Correct the plumbing.
Igniter lights but does not fire	<ul style="list-style-type: none"> Gas valve is not ON. Air in gas line. No power to gas valve. Low gas pressure/volume. High burner throat pressure. Gas valve failed. 	<ul style="list-style-type: none"> Flip the switch to "on" position. Cycle ignition sequence until air is out of the gas line. Check controls for proper operation. Check supply pressure/volume and verify proper gas supply pipe size. Replace gas valve.

9.2 Service Diagnostic Messages

The controller monitors several functions of the heater. In the event of a malfunction, the controller will display a FAULT message. The following table lists the Heater Service Messages along with potential causes and remedies.

Fault Message	Possible Cause	Remedy
NO FLOW	<ul style="list-style-type: none"> Pump is not running. Low pump pressure. Pressure switch fault. Variable speed pump set too low. 	<ul style="list-style-type: none"> Check breakers and power source, recheck wiring, set time clock and current time. Clean filter or clear blockage, check position of valve in plumbing system. Make sure return eyeball fittings are installed on the wall of the pool Adjust or replace pressure switch. Adjust variable speed pump. Refer to qualified service personnel.
FAULT-HIGH LIMIT	<ul style="list-style-type: none"> Water temperature in heater exceeds the internal limit. Limit switch fault. 	<ul style="list-style-type: none"> Inspect vent for obstructions or blockages. Indoor installations, check vent pipe for bird, insect or rodent activity that could cause a blockage. Replace switches. Refer to qualified service personnel.
FAULT-FUSELINK/FIELD	<ul style="list-style-type: none"> Vent temp limit fault (Ensure fusible link is rated for 240°C- and is marked with red paint) 	<ul style="list-style-type: none"> Identify and correct loose connections. Replace vent temperature limit switch. Refer to qualified service personnel.
FAULT-CHECK IGN CONTROL	<ul style="list-style-type: none"> Broken, split, pinched or disconnected air pressure switch tubing. Fan not operating. Fan running slow or premature fan failure. Air flow restricted at intake or discharge. Broken igniter. Low gas supply pressure/volume. No flame at burner. 	<ul style="list-style-type: none"> Check tubing and replace if necessary. Correct fault or replace fan. Replace igniter. Verify proper wiring for 120 VAC or 240 VAC. Check for proper clearances around heater and for adequate room ventilation if enclosed. Inspect for blockage or restriction at discharge of flue. Check ignition control LED codes (see Section 9.3, Ignition Control LED Service Codes). Verify that the size, length and number of elbows on the gas supply line meet national codes. Identify and correct loose wiring connections, or problems with igniter, gas valve, or ignition control. Refer to qualified service personnel.
FAULT-SHORTED H2O SENSOR OR FAULT-OPEN WATER SENSOR	<ul style="list-style-type: none"> Faulty wiring or connection. Failed water temperature sensor. 	<ul style="list-style-type: none"> Inspect water temperature sensor wiring. Ensure sensor is connected correctly into the PIB PCB. Replace water temperature sensor. Refer to qualified service personnel.
FAULT-PUMP	<ul style="list-style-type: none"> Status message indicating the filter pump is currently turned OFF when the heater system programmed in Maintain Temp mode. 	<ul style="list-style-type: none"> No Service Required. This is normal when the control is in a Maintain Temp mode.

9.3 Ignition Control LED Service Codes

In addition to service diagnostic messages, the ignition controller has an LED light that flashes to indicate various ignition control faults. The table below lists the LED codes and the corresponding fault description. To diagnose possible cause and remedy, refer to Section 9.2, Service Diagnostic Messages.

LED Code	Fault Description
The LED light is on continuously.	Ignition Control Fault. Refer to qualified service personnel.
LED single flash.	Air flow fault.
LED double flash.	Flame exists when there is NO call for heat. Refer to qualified service personnel.
LED triple flash.	Ignition lockout (heater has made three (3) unsuccessful attempts to fire and is in a soft lockout condition).

Section 10. Professional Service and Maintenance

⚠ WARNING

SERVICING SAFETY

Service procedures can be hazardous because they involve fuel gas, electricity, moving parts and procedures which require testing or temporary bypass of safety controls. For this reason, the heater must be serviced only by a qualified professional service technician.

IMPROPER SERVICE HAZARD

The heater incorporates unique design features. Incorrect service of this heater can result in personal injury or damage to property. To avoid such hazards, the heater must be serviced only by a qualified professional service technician.

Zodiac Pool Systems, Inc. strongly recommends that you call a qualified service technician to perform all service and repairs on the heater. To locate a licensed or qualified technician or independent service company in your area, contact Zodiac Technical Support at:

1-800-822-7933 (USA)

www.zodiacpoolsystems.com -Dealer Locator tab

Before servicing the heater:

- Confirm that the heater control is set to either POOL or SPA
- Confirm the temperature set point for either Pool or Spa is set high enough to make the heater operate given the current water temperature.

10.1 Gas Pressure Offset Test

1. Connect a tee to the hose from the fan inlet to the gas valve vent port.
2. Connect a shorter hose to the opposite side of the tee to the gas valve vent port.
3. Connect the third part of the tee with a hose to the positive side of the digital manometer.
4. Connect a second tee to the gas manifold pressure port.
5. Connect a short hose to the opposite side of the tee to the gas manifold pressure port.
6. Connect a hose between the third part of the tee to the negative side of the manometer.
7. Start the heater and record the gas offset pressure with the heater running and the sealing cap firmly in place.
8. If the offset is incorrect, adjust the gas valve until the correct pressure is obtained. See “Table 5. Gas Supply Pressure Requirements” on page 15.
9. Remove the tees and replace the hoses to the vent port at the gas valve and the other hose to the gas manifold port at the gas valve.

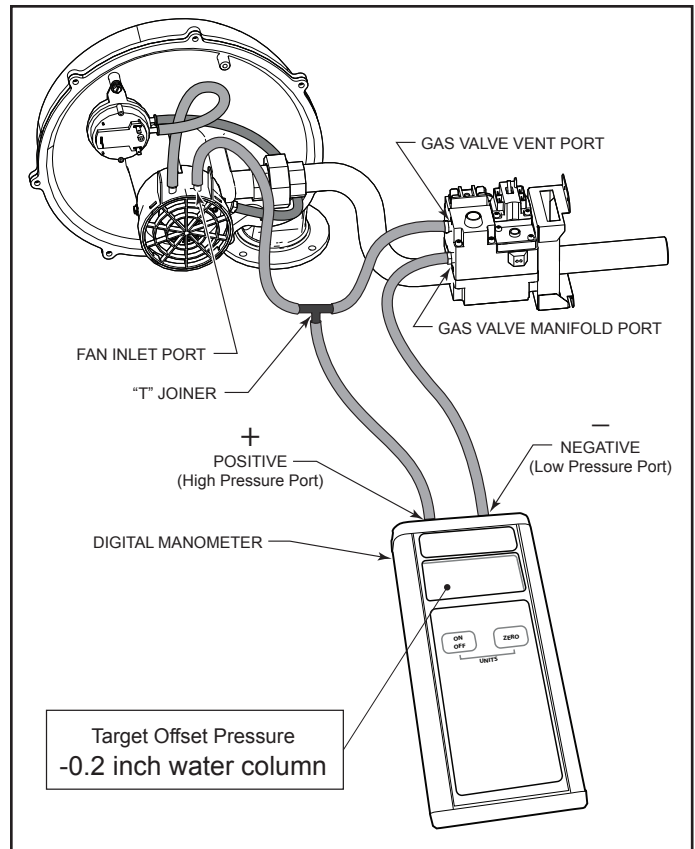


Figure 35. Gas Pressure Offset Test

IMPORTANT MAINTENANCE NOTE

We recommend that before each pool session, the Thermal Regulator Valve (TRV) be inspected for proper operation and replaced if there are signs of scaling or corrosion.

The TRV ensures the heater operates at its optimal efficiency and if properly maintained will extend the life of the heater.

Section 11. Spare Parts

11.1 Ordering Information

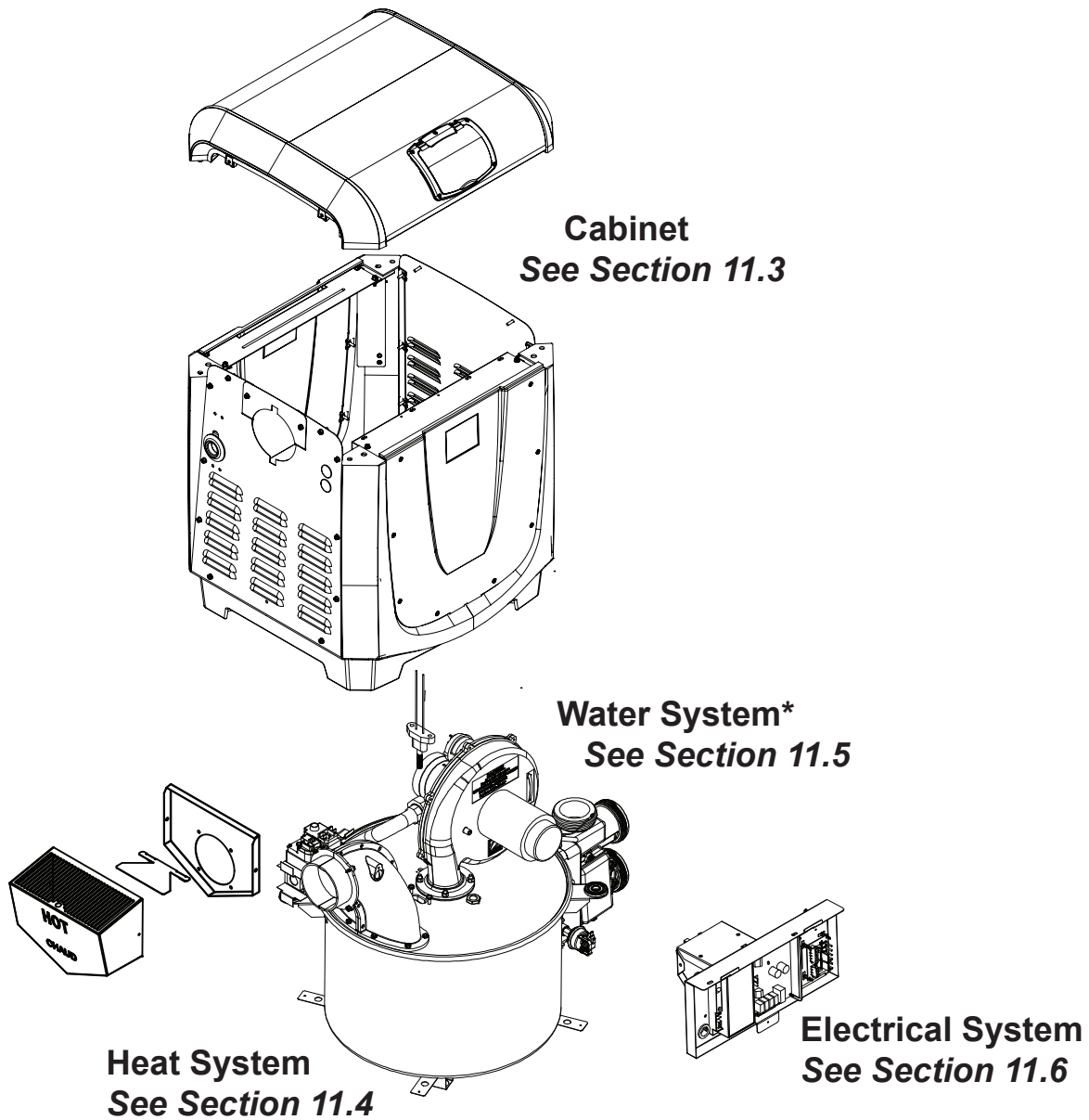
Using genuine Zodiac factory replacement parts helps to ensure the ongoing quality and reliability of our products.

Unauthentic parts might seem okay on the surface, but they often fall short of factory standards, and they typically lack the backing you get from an established, global manufacturer like Zodiac. Plus, the use of unauthentic parts voids all factory warranties.







Zodiac does not sell parts directly to pool owners, so when it's time for maintenance, please see your local Preferred Professional Provider (PPP) of genuine parts. You can find a PPP at www.zodiacpoolsystems.com/parts.

NOTE To identify the correct part, you will need to know the model number, serial number and type of gas when applicable. This information can be found on the rating plate sticker, which is located inside the heater on the outside of the combustion chamber.

11.2 JXi Major Components



*** Heater also ships with the following goody bag components**
For replacement part listing see section 11.5.1, Item 9.

Union Nut	 X2
Tailpiece	 X2
O-Ring	 X2
90° Sweep Elbow	
Installation and Operation Manual	
Universal Controller Quick Guide	

11.3 Cabinet Assembly Spare Parts List and Exploded Parts Diagram

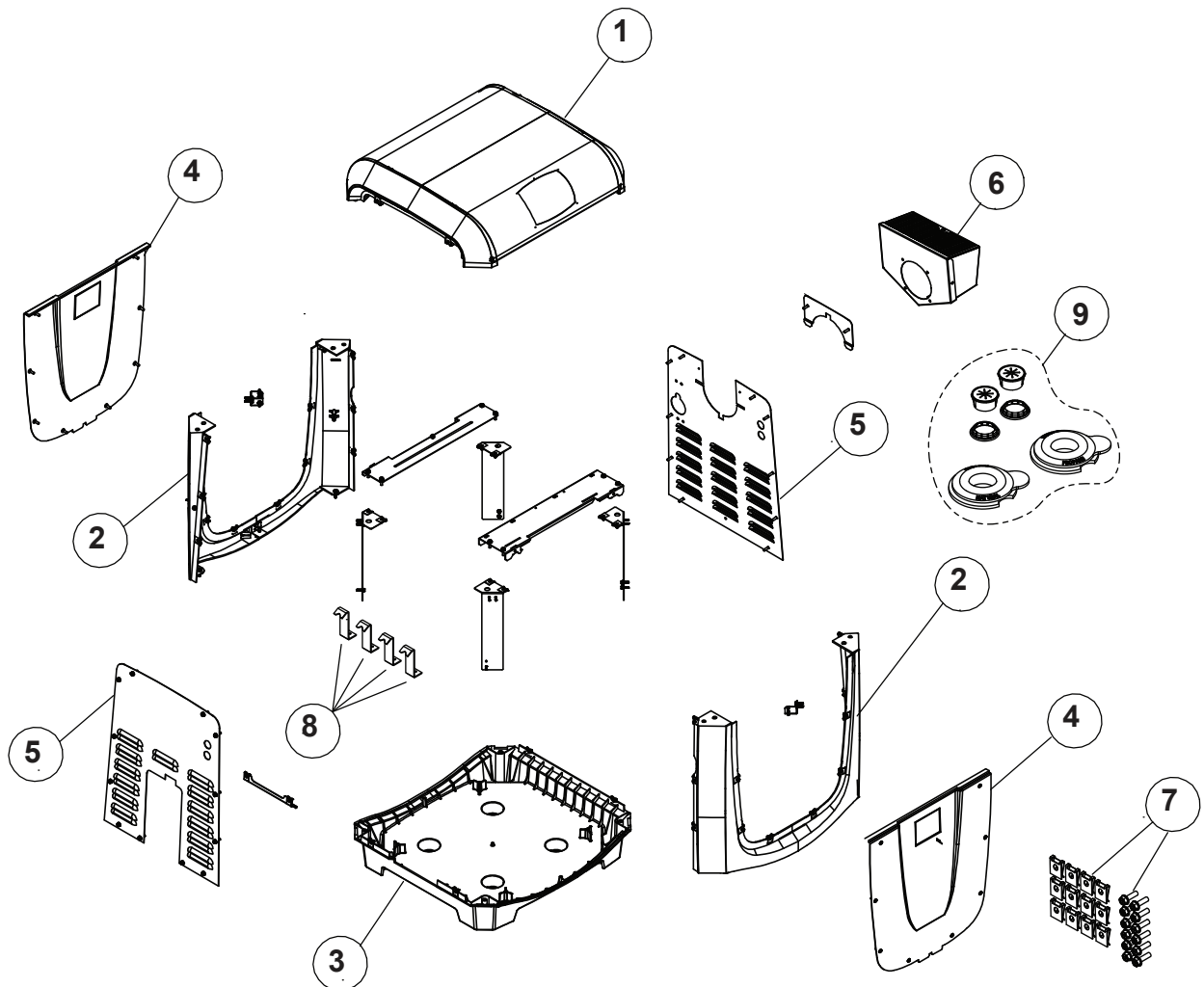
11.3.1 Cabinet Assembly Spare Parts List

Key No*	Description	model 200	model 260	model 400
1	Heater Jacket Top Kit (no User Interface)	R0592400	R0592400	R0592400
2	Corner Post Kit, Left/Right (set of 2)	R0592500	R0592500	R0592500
3	Heater Base Kit	R0592600	R0592600	R0592600
4	Front or Back Panel Kit	R0592700	R0592700	R0592700
5	Side Panel Kit (set of 2) Kit	R0592900	R0592900	R0592900
6	Vent Terminal Housing Kit	R0593100	R0593100	R0593100
7	Jacket Hardware Kit (speed nuts, screws, jacket clips)	R0593300	R0593300	R0593300
8	Anchor Brackets Kit (set of 4)	R0593400	R0593400	R0593400
9	Jacket Hole Plug Kit	R0591800	R0591800	R0591800
10**	Complete Replacement Box Packaging Kit	R0593600	R0593600	R0593600

* Key No refers to Section 11.3.2 Cabinet Assembly Exploded Parts Diagram

** Not Shown

11.3.2 Cabinet Assembly Exploded Parts Diagram



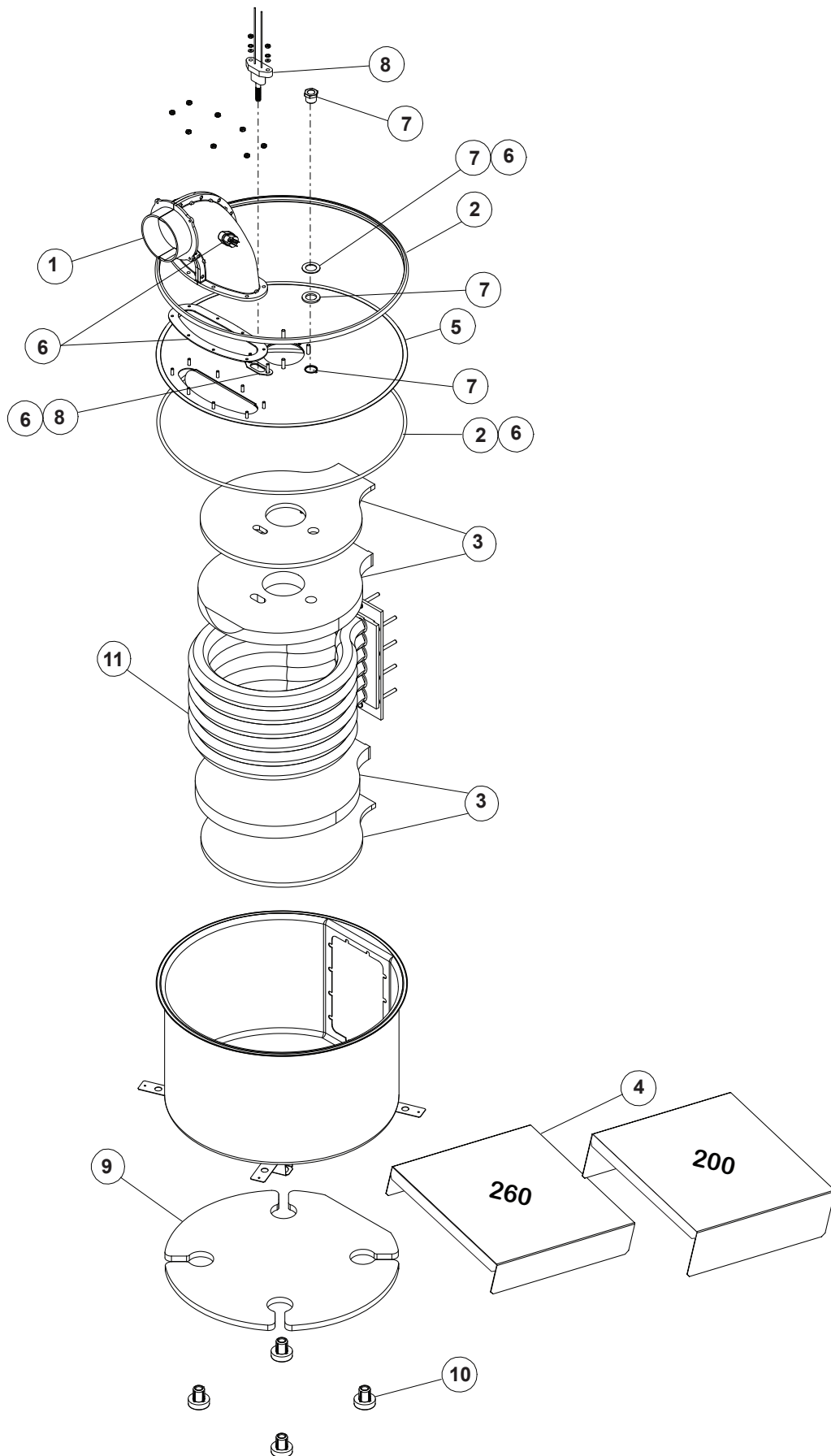
11.4 Heat System Spare Parts List and Exploded Parts Diagrams

11.4.1 Combustion Chamber Assembly Spare Parts List

Key No*	Description	model 200	model 260	model 400
1	Exhaust Elbow Assembly Kit	R0590200	R0590200	R0590200
2	Band Clamp Kit	R0590400	R0590400	R0590400
3	Refractory Kit, Internal	R0590500	R0590500	R0590500
4	Combustion Chamber Shelf (set of 2: Models 200, 260)	R0590700	R0590700	R0590700
5	Combustion Chamber Lid Kit	R0590800	R0590800	R0590800
6	Gasket Kit	R0590900	R0590900	R0590900
7	Sight Glass Kit	R0305400	R0305400	R0305400
8	Ignitor Kit	R0457502	R0457502	R0457502
9	Insulation Kit, External	R0591000	R0591000	R0591000
10	Isolator Kit (Thermal)	R0593200	R0593200	R0593200
11	Heat Exchange Assembly	R0589402	R0589403	R0589405

* Key No refers to Section 11.4.2 Combustion Chamber Assembly Exploded Parts Diagram

11.4.2 Combustion Chamber Assembly Exploded Parts Diagram



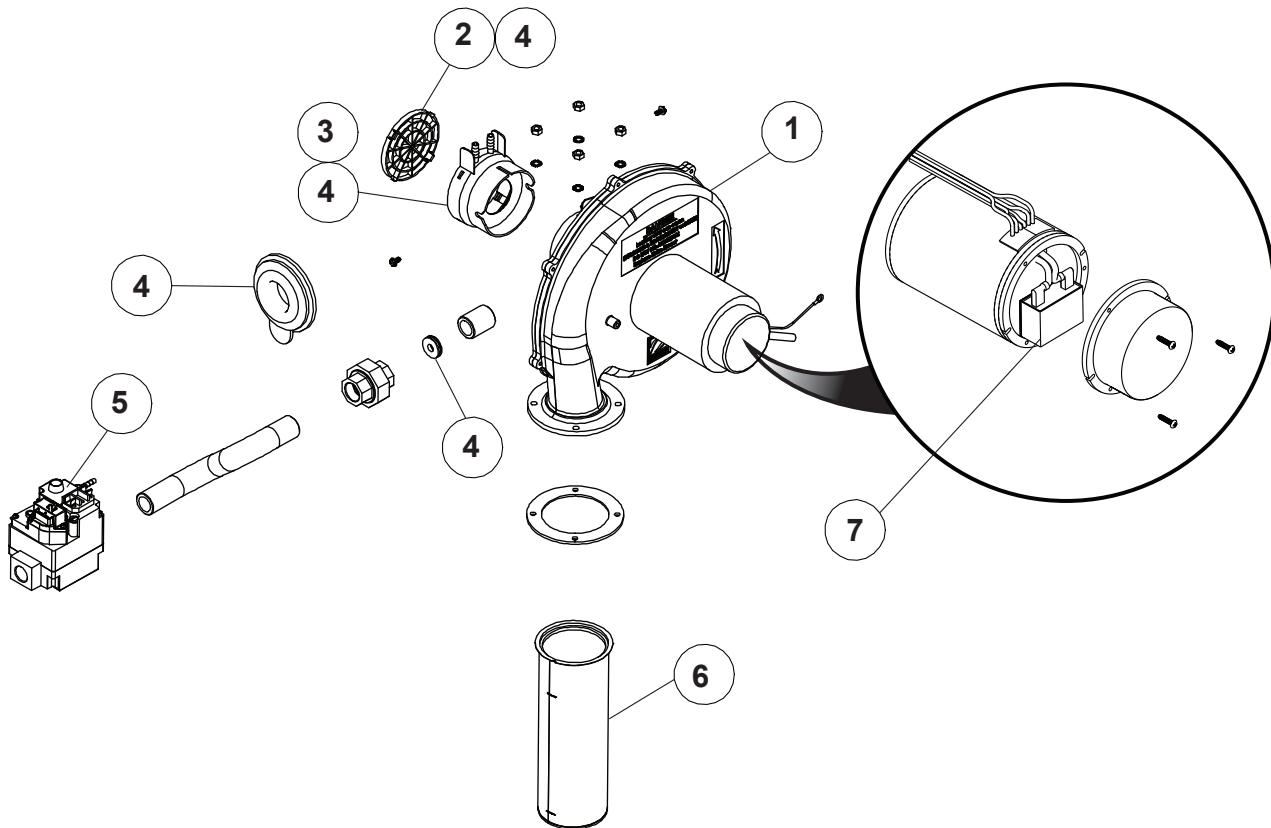
11.4.3 Burner Assembly Spare Parts List

Key No*	Description	model 200		model 260		model 400	
		**N	**LP	N	LP	N	LP
1	Blower Assembly Kit	R0591100	R0591100	R0591100	R0591100	R0591100	R0591100
2	Air Intake Grate Kit	R0591200	R0591200	R0591200	R0591200	R0591200	R0591200
3	Blower Intake Orifice Kit	R0591302	R0591312	R0591303	R0591313	R0591305	R0591315
4	Fuel Orifice Kit	R0591601	R0591605	R0591602	R0591606	R0591604	R0591608
5	Gas Valve	R0591400	R0591400	R0591400	R0591400	R0591400	R0591400
6	Burner Kit	R0591702	R0591702	R0591703	R0591703	R0591705	R0591705
7	Capacitor Kit	R0614500	R0614500	R0614500	R0614500	R0614500	R0614500

* Key No refers to Section 11.4.4 Burner Assembly Exploded Parts Diagram

** N - Natural Gas; LP - Liquid Propane

11.4.4 Burner Assembly Exploded Parts Diagram



11.5 Water System Spare Parts List and Exploded Parts Diagrams

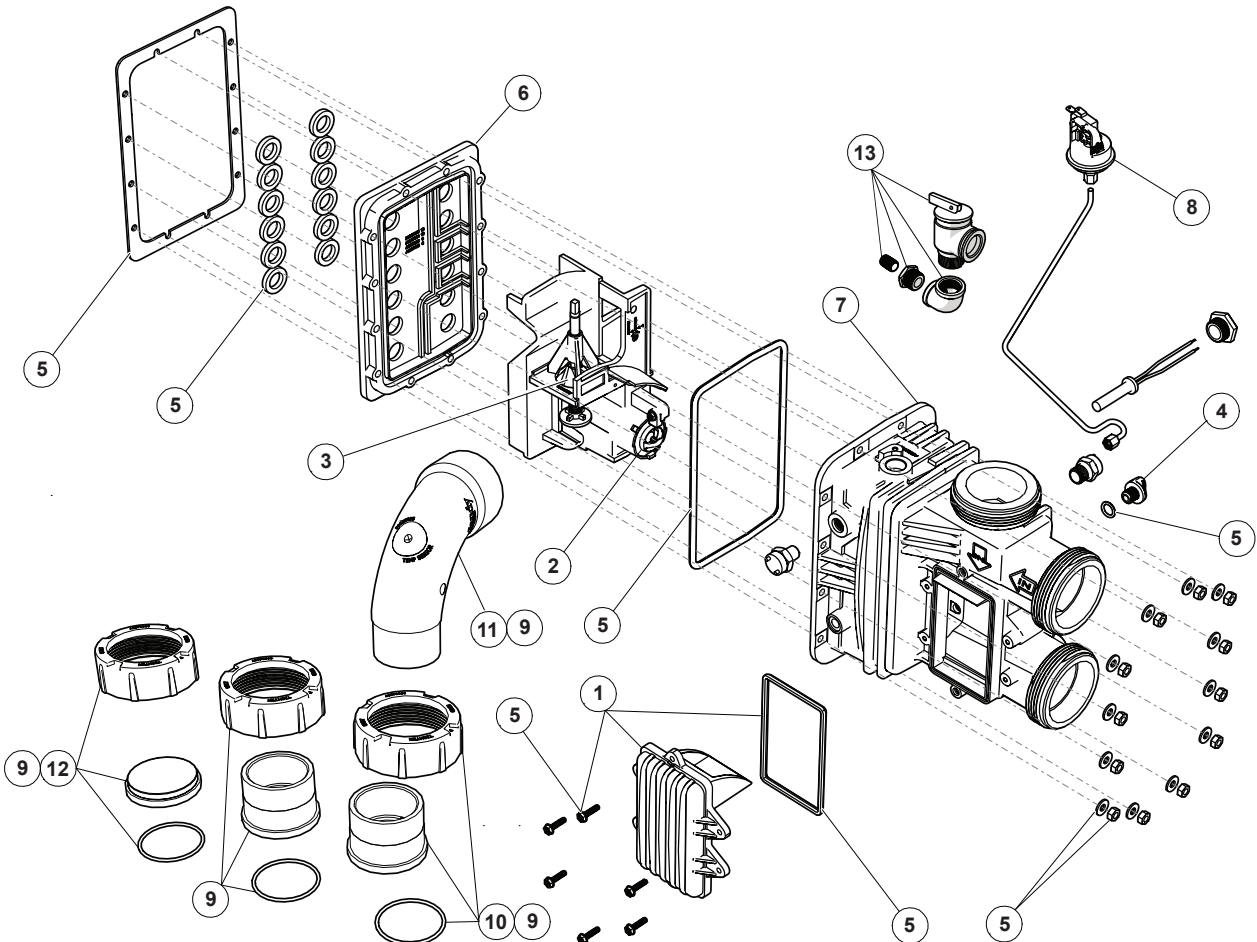
11.5.1 Manifold Assembly Spare Parts List

Key No*	Description	model 200	model 260	model 400
1	Access Door Kit (with O-Ring Seal and Screws)	R0589600	R0589600	R0589600
2	Thermal Regulator Valve Kit (TRV)	R0589700	R0589700	R0589700
3	Bypass Kit	R0589800	R0589800	R0589800
4	Drain Plug Kit	R0446000	R0446000	R0446000
5	Gasket and Seals Kit	R0589500	R0589500	R0589500
6	Manifold Backplate Kit	R0590002	R0590003	R0590005
7	Manifold, 3 Port (no backplate included; must order separately)	R0590100	R0590100	R0590100
8	Water Pressure Switch Kit	R0457001	R0457001	R0457001
9	Goody Bag Kit†	R0593500	R0593500	R0593500
10	Universal Half Union Kit (1 Ea, requires 2 kits for full unit replacement)	R0522900	R0522900	R0522900
11	Sweep Elbow Aqualink® Temp Sensor	SEAQL1001	SEAQL1001	SEAQL1001
12	Drain Cap Assembly Kit	R0523000	R0523000	R0523000
13	Pressure Relief Valve (PRV) Install Kit	R0336101	R0336101	R0336101

* Key No refers to Section 11.5.2 Manifold Assembly Exploded Parts Diagram.

† Goody Bag Kit Also Includes the Installation and Operation Manual and the Universal Controller Quick Guide

11.5.2 Manifold Assembly Exploded Parts Diagram



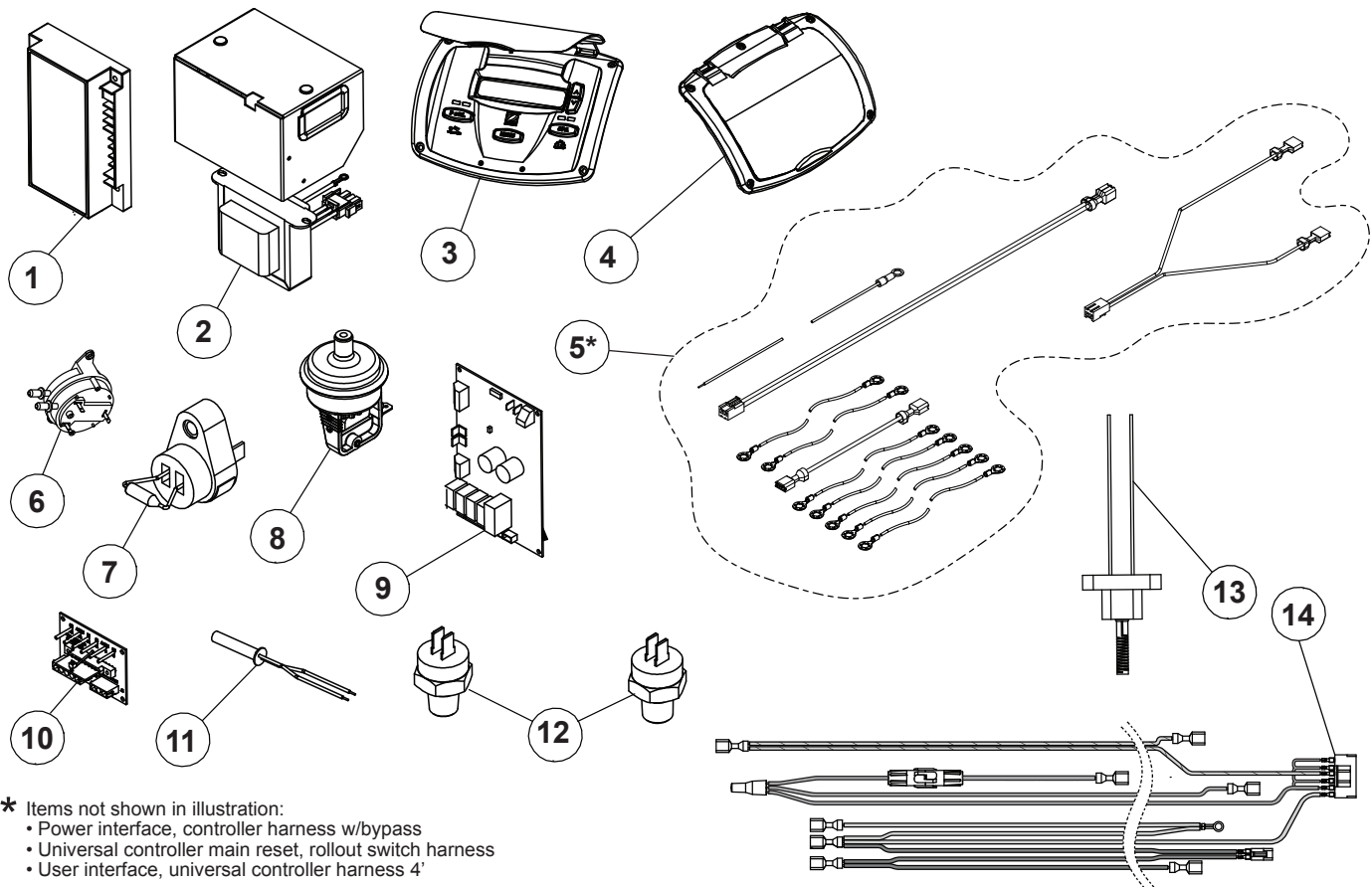
11.6 Electrical System Spare Parts List and Exploded Parts Diagrams

11.6.1 Electrical System Spare Parts List

Key No*	Description	model 200	model 260	model 400
1	Ignition Control Kit	R0456900	R0456900	R0456900
2	Transformer Kit	R0456300	R0456300	R0456300
3	User Interface Kit	R0591901	R0591901	R0591901
4	User Interface Lid Kit	R0592000	R0592000	R0592000
5	Wiring Harness Kit	R0592100	R0592100	R0592100
6	Air Pressure Switch Kit	R0456400	R0456400	R0456400
7	Vent Limit Switch Kit	R0524300	R0524300	R0524300
8	Water Pressure Switch Kit	R0013200	R0013200	R0013200
9	Universal Controller PCB Kit	R0458200	R0458200	R0458200
10	Power Distribution PCB Kit	R0458100	R0458100	R0458100
11	Temperature Sensor Kit	R0456500	R0456500	R0456500
12	High Limit Temperature Sensors Kit	R0592300	R0592300	R0592300
13	Igniter Kit	R0457502	R0457502	R0457502
14	Power Interface Harness	R0457700	R0457700	R0457700

* Key No refers to Section 11.6.2 Electrical System Exploded Parts Diagram

11.6.2 Electrical System Exploded Parts Diagram



Section 12. Water Chemistry

Proper Water Balance is the key to the enjoyment of your pool or spa experience and to the long life of your heater.

The pH of your pool or spa’s water is one of the factors that has the most impact on indicating how properly balanced the water is. The other factors are: temperature, total alkalinity, calcium hardness and total dissolved solids. Cold water is typically more acidic (corrosive), while hot water that is not properly balanced could lead to a scale forming (basic) condition. While the heater is in operation, if the PH is allowed to rise above 7.8 and the calcium hardness and total alkalinity are not properly maintained; calcium in the water could lose solubility, coating the copper tubes inside the heat exchanger. This will restrict the flow of water resulting in reduced efficiency and possible damage to the heater.

If the pH is allowed to drop below 7.2, and the alkalinity is not properly maintained, the water will become more acidic. Acidic water has a tendency to dissolve metal components in the pool plumbing with the copper heat exchanger in the heater being a prime target.

PH, Total Alkalinity (TA), temperature, Calcium Hardness and Total Dissolved Solids (TDS) play a role in whether the water is either corrosive or scale forming. These factors are combined in the Langelier Saturation Index, which is a method for determining whether or not water is properly balanced. See “Table 8. Water Saturation Index” on page 43 below.

Saturation Index = pH + AF + CF + TF -12.1*					
A-Factor=(AF), C-Factor=(CF), T-Factor=(TF)					
Total Alkalinity		Calcium Hardness		Temperature	
A-Factor		C-Factor		T-Factor	
PPM	Factor Value	PPM	Factor Value	°F	Factor Value
5	= 0.7	5	= 0.9	32	= 0.0
25	= 1.4	25	= 1.0	37	= 0.1
50	= 1.7	50	= 1.3	46	= 0.2
75	= 1.9	75	= 1.5	53	= 0.3
100	= 2.0	100	= 1.6	60	= 0.4
150	= 2.2	150	= 1.8	66	= 0.5
200	= 2.3	200	= 1.9	76	= 0.6
300	= 2.5	300	= 2.1	84	= 0.7
400	= 2.6	400	= 2.2	94	= 0.8
800	= 2.9	800	= 2.5	105	= 0.9

A saturation index of 0 is perfectly balanced
 A negative saturation index has corrosive tendencies
 A positive saturation index has scaling tendencies
 A saturation index of +0.3 or -0.3 is ideal
 *-12.1 should be changed to -12.2 if Total Dissolved Solids (TDS) measure at 1,000 ppm or greater

Table 8. Water Saturation Index

The practice of putting tablet-based sanitizers in the skimmer basket can produce heavily chlorinated water with very low pH in contact with metal parts of the heater that can cause serious damage. Practices like this should be discontinued and the use of floating sanitizer dispensers and check valves as backflow preventers with inline erosion-style feeders should be encouraged.

If acidic conditions are present, there could be signs of metal in the pool water that could cause staining on the floor of your pool. This might manifest itself in the form of brown stains on the finish of your pool bottom or pool water discoloration. Your local pool dealer can test for metals in your water or can provide you with a test kit.

Every effort should be made to maintain the water balance of your pool or spa in the proper range. Ignoring this very important component of your pool’s water chemistry can make the water less enjoyable to bathe in and result in permanent damage to your heater and/or complete failure of individual components.

Zodiac Pool Systems does not warrant heat exchangers damaged by corrosive water issues or from the build-up of calcium in the heater’s heat exchanger. Any questions regarding proper water balance can be directed to our product support line at Zodiac® or to your local pool dealer.

NOTE: The Thermal Regulator Valve (TRV) is an indicator of how well the water balance is being maintained. The TRV should be inspected before each pool season to ensure it is clean and operating properly. If you see signs of calcium buildup (scale-forming or base water) or corrosion (acidic water) the TRV should be replaced and your water balanced.



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