Jacuzzi®

J-HN250C, J-HN400C Heater

Installation and Operating Instructions

WARNING: IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT, CAUSING PROPERTY DAMAGE, PERSONAL INJURIES, OR DEATH

DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITYOF THIS HEATER OT OTHER APPLIANCES.

WHAT TO DO IF YOU SMELL GAS

DO NOT TRY TO LIGHT ANY APPLIANCE.DO NOT TOUCH ANY ELECTRICAL SWITCH: DO NOT USE ANY PHONE IN YOUR HOME OR BUILDING.

IMMEDIATELY CALL YOUR GAS SUPPLIER FROM A NEIGHBORS PHONE.

FOLLOW THE GAS SUPPLIERS INSTRUCTIONSIF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL YOUR FIRE DEPARTMENT.

INSTALLATION AND SERVICE MUST BE PERFORMED BY A QUALIFIED INSTALLER, SERVICE AGENCY OR THE GAS SUPPLIER

Jacuzzi®

⚠ WARNING

FOR YOUR SAFETY PLEASE READ BEFORE OPERATING

WARNING: IF YOU DO NOT FOLLOW THESE INSTRUCTIONS EXACTLY, A FIRE OR EXPLOSION MAY RESULT, CAUSING PROPERTY DAMAGE, PERSONAL INJURIES, OR DEATH.

INSTALLATION, OPERATION AND SERVICE MANUAL –

FOR YOUR SAFETY- THIS HEATER MUST BE INSTALLED AND SERVICED ONLY BY AUTHORIZED PERSONNEL QUALIFIED FOR POOL HEATER INSTALLATION, IMPROPER INSTALLATION, UNAUTHORIZED MODIFICATION, AND/OR IMPROPER SERVICING AND OPERATION, CAN CAUSE SERIOUS INJURIES, PROPERTY DAMAGE, OR DEATH.

FOR AN ADDITIONAL SAFETY MEASURE, JACUZZI® STRONGLY ADVICES ALL INDOOR INSTALLATIONS HAVE A CARBON MONOXIDE DETECTOR(S) PROPERLY INSTALLED IN THE VICINITY OF THE HEATER, AND IN ANY ADJACENT OCCUPIED SPACES.

IMPROPER INSTALLATION, SERVICING, MAINTENANCE, AND/OR OPERATION WILL VOID THE WARRANTY.

⚠ WARNING

WARNING: IMPROPER INSTALLATION, ADJUSTMENT, MODIFICATION, SERVICE OR MAINTENANCE CAN CAUSE IMPROPER OPERATION RESULTING IN PROPERTY DAMAGE, PERSONAL INJURIES, OR DEATH. INSTALLATION AND SERVICE MUST BE PERFORMED BY A QUALIFIED INSTALLER, SERVICE AGENCY, OR JACUZZI®.

FOR YOUR SAFETY	**WHAT TO DO IF YOU SMELL GAS** DO NOT TRY TO LIGHT ANY APPLIANCE. DO NOT TOUCH ANY ELECTRICAL SWITCH: DO NOT USE ANY PHONE IN YOUR HOME OR BUILDING. IMMEDIATELY CALL YOUR GAS SUPPLIER FROM OUT SIDE THE BUILDING. FOLLOW THE GAS SUPPLIERS INSTRUCTIONS IF YOU CANNOT REACH YOUR GAS SUPPLIER, CALL YOUR FIRE DEPARTMENT.
	DO NOT STORE OR USE GASOLINE OR OTHER FLAMMABLE VAPORS AND LIQUIDS IN THE VICINITYOF THIS HEATER OT OTHER APPLIANCES.

NOTICE TO INSTALLERS/ CODE REQUIREMENTS

This appliance must be installed in accordance with all local codes and/or the latest edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and the latest edition of the National Electrical Code, NFPA 70 for the USA installations.

Installations in Canada must be done in accordance with the latest edition of CAN/CGA-B149.1 or .2 and the latest edition of CSA C22.1 the Canadian Electric Code, part 1.

This Pool Heater, when installed in the USA, must be electrically grounded and bonded in accordance with all local codes, or in the absence of local codes, with the National Electrical Code (NEC), NFPA 70,or in Canada, installation must be in accordance with the CSA C22.1, the Canadian Electric Code , part 1

⚠ WARNING

WARNING: High voltage is present in some heater circuits making it mandatory that any electrical maintenance and repairs be attempted only by properly qualified personnel.

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

⚠ DANGER

CARBON MONOXIDE GAS IS DEADLY: Exhaust gases from this pool heater may contain toxic levels of Carbon Monoxide , a dangerous and poisonous gas that you cannot see or smell

SAVE THESE INSTRUCTIONS

SAFETY INFORMATION AND CONSUMER ADVICE

WARNING

The US Consumer Product Safety Commission warns that elevated water temperatures can be hazardous, See advice below for safe water temperature guidelines before setting temperature.

1. **Spa or Hot tub water temperatures should never exceed 104° F (40°C). A temperature of 100° F is considered safe for a healthy adult. Special caution is recommended for small children**
2. **Drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness, resulting in drowning**
3. **Pregnant Women Beware! Soaking in water above 102° F (39° C) can cause fetal damage during the first three (3) months of pregnancy leading to the possibility of a brain damaged or deformed baby. Pregnant women should stick to the 100° F (38° C) maximum rule**
4. **Before entering the spa or hot tub, the user should verify the water temperature with an accurate, independent thermometer, as a check. Spa or hot tub heater thermostats may very in regulating water temperatures by as much as 4° F (2.2° C)**
5. **Persons with a medical history of heart disease, circulatory problems, diabetes, or blood pressure problems should obtain theirs doctors advice before using spa's or hot tubes.**
6. **Persons taking medications which induce drowsiness, such as antihistamines or anticoagulants should not use spas or hot tubs**

WARNING

Should overheating in the heater occur or should the gas supply fail to shut off, turn off the manual gas control valve to the heater. Do not continue to use this heater if any part has been under water. Immediately call a qualified service technician to inspect the heater and to replace any part of control system and/or gas control which has been under water.

SAFETY WARNINGS AND CAUTIONS

The HiNRG heater has been engineered to provide a long and safe life and incorporates state of the art safety features including several redundant (back up) safety devices. But long term safe operation is also dependent on proper installation and regular service and inspection of the heater and venting systems. The following section serves to highlight the hazards present with all gas fired pool heaters.

WARNING FOR YOUR SAFETY!

This heater must be installed and serviced by a Professional Service Technician, qualified pool Heater installation and maintenance. Some jursdictions may require that installers be Licensed. Check with your local building code authority about contractor licensing requirements. Improper installation and/or operation could create carbon monoxide in flue gases which could cause serious injuries, or death. Improper installation and/or operation will void the warranty.

RISK OF FIRE OR EXPLOSION FROM INCORRECT FUEL USE

Do not try to operate a pool heater set up for Natural Gas on Propane or the reverse. Only Qualified Gas appliance service professionals should attempt to convert the heater from one fuel to another with advice and instructions from the manufacture.

Alternately, the heater may require conversion at a factory authorized repair depot. Serious malfunction of the burner can occur which may result in loss of life. The heater is available for operation on Natural Gas or Propane Gas only – it is not designed to operate on any other fuels. Refer to the nameplate for the type of gas the heater is factory equipped for use with, only use fuel gas stated on nameplate.

RISK OF FIRE OR EXPLOSION FROM FLAMMABLE VAPORS

Do not store Gasoline (petrol), cleaning fluids, paint, varnishes, or other flammable liquids near or in the same room as the heater

RISK OF EXPLOSION IF HEATER IS INSTALLED NEAR PROPANE STORAGE TANKS

Propane (LPG) gas is heavier than air which causes the gas to settle (pool) in the lowest point of the room. Without dissipating. Any leaking source is highly dangerous. Consult local codes and fire protection authorities about specific installations requirements and restrictions. Locate the heater away from propane Gas Storage and filling equipment as specified by the latest editions of the Standard for Storage and Handling of Liquefied Petroleum Gases, CAN/CSA B149.2, or the National Fuel Gas Code, ANSI Z223.1/NFPA 54.

RISK OF FIRE, CARBON MONOXIDE POISONING, OR ASPHYXIATION FROM LEAKING EXHAUST VENT, OR IF INCORRECTLY VENTED.

Only qualified service technicians should attempt to service the heater and/or vent system, as leakage of exhaust flue gases or flammable gases may result from improper servicing. This heater **does not use a draft hood** and the exhaust is under positive pressure from burner fan blower. The heater is supplied with an integral vent system for outdoor installations. A factory vent conversion kit is available for installations in enclosures (Canada) or indoor installations (USA) use only the specified listed vent pipe (ducts) and fittings for Category III vents, when the heater is installed in an enclosure or indoors. In Canada, this heater can only be installed outdoors, or in an enclosure that is not normally occupied and has no openings directly connected (communicating) to occupied areas, See Venting Section of this manual for more details.

DANGER

CARBON MONOXIDE IS DEADLY

EXCESSIVE CARBON MONOXIDE EXPOSURE CAN CAUSE BRAIN DAMAGE OR DEATH

TH U.S CONSUMER PRODUCT SAFETY COMMISION WARNS THAT CARBON MONOXIDE IS AN INVISIBLE KILLER.CARBON MONOXIDE IS A COLORLESS AND ODORLESS GAS.

Exhaust from this pool heater may contain toxic levels of carbon monoxide, a dangerous and poisonous gas you cannot see or smell. Symptoms of carbon monoxide exposure or poisoning include dizziness, headache, nausea, weakness, sleepiness, involuntary muscle twitching, vomiting, and clouded thinking.

If you experience any of the above symptoms, immediately turn off the heater, leave the area of the heater and get fresh air immediately. The heater is unsafe to continue in operation and will require a thorough inspection of ti and its venting system by a qualified gas appliance servicing professional, before being returned to service.

Never use the heater in an indoor installation without the factory specified proper venting system and lisited vent components.

Do not use this heater inside the home or in enclosed areas such as garages, covered patios, cabanas or similar structures, unless a proper vent system meeting both the factory recommendations and the recommendations of the National Fuel Gas Code or CGA-B149.1 or .2 is properly installed.

If used outdoors, install away from open windows, doors, vents. Other openings, and away from air handling equipment (air conditioners etc) using recommended clearances noted in venting requirements section of this manual.

Newly commissioned vent systems should be tested for proper vent performance by a qualified gas appliance service professional. And the heater should be tested each heating season for proper operation including inspection of all venting system. The use of a portable Carbon Monoxide (combustion) analyzer to test for optimum system operation is STRONGLY RECOMMENDED.

IT IS STRONGLY RECOMMENDED THAT BATTERT OPERATED, LISITED CARBON MONOXIDE DETECTORS(ALARMS) BE INSTALLED IN ANY OCCUPIED SPACES ADJACENT TO INSTALLED HEATER, AND FOR INDOOR HEATER INSTALLATIONS INSTALL AN ADDITIONAL CARBON MONOXIDE DETECTOR(ALARM) NEAR THE LOCATION OF THE HEATER

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INTRODUCTION

Congratulations on your purchase of a Jacuzzi® J-HN Series Pool and Spa Heater. Proper installation and service of your new heating system and correct chemical maintenance of the water will ensure years of enjoyment. The Jacuzzi® J-HN Series Heater is a compact lightweight and highly efficient gas fired pool and spa heater. It is equipped with features that take advantage of new technology to provide a user friendly, efficient and environmentally friendly pool or spa heater.
The Jacuzzi® J-HN Series heater can safely be connected to PVC pipe. It accepts a wide range of water flow rates from as little as 31gallons (120 liters) per minute making it perfectly suitable for energy efficient variable speed pool and spa pumps. In addition, it is equipped with electronic start up and an accurate electronic thermostat to ensure ease of use and accurate temperature control. The electronic display shows at a glance the operational status of the heater.

⚠**WARNING**: The appliance is not intended for use by young children or infirm person without supervision. Please ensure that young children are supervised to ensure that they do not play with the appliance.

⚠**WARNING**: Electrical maintenance and repairs of this equipment must only be done by qualified persons in accordance with the latest edition of the National Electrical Code, NFPA 70 ("NEC") and/or all applicable local and state codes and ordinances. Installations in Canada must be in accordance with the latest edition of CSA C22.1 – the Canadian Electric Code, part 1 ("CEC")Improper installation could cause an electrical hazard which may result in death or serious injury to pool users, installers or others due to electrical shock, and/or property damage. Always disconnect power to the pool pump at the house circuit breaker before servicing the pump. Failure to do so could result in death or serious injury to pool users, installers or others. To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

SAFETY RULES

Spa or hot tub water temperature should never exceed 104˚F (40° C).
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.
Pregnant women beware! Soaking in water above 100˚F (38° C) during the first three months of pregnancy can cause fetus damage.
Before entering the spa or hot tub, the user should check the water temperature with an accurate thermometer, spa or hot tub thermostats may err in regulating water temperatures by as much as 4˚F (2° C).
Persons with a medical history of heart disease, circulatory problems, diabetes or blood pressure problems should obtain their physician's advice before using spas or hot tubs.
Persons taking medications which induce drowsiness, such as tranquilisers, antihistamines or anticoagulants, should not use spas or hot tubs.

⚠**WARNING**! Should overheating occur or the gas supply fails to shut off, turn off the manual gas control valve to the appliance. Do not use this heater if any part has been under water. For your safety – read before lighting
This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
BEFORE OPERATING smell all around the appliance area 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 electrical switch. Do not use any telephone in your building. Immediately call your gas supplier from a neighbor's house. Follow the gas suppliers instructions. If you cannot reach your gas supplier, call the Fire Department.

⚠**WARNING: DO NOT PLACE ARTICLES ON OR AGAINST THIS APPLIANCE**

⚠**WARNING: DO NOT USE OR STORE FLAMMABLE MATERIALS NEAR THIS APPLIANCE**

⚠**WARNING: DO NO SPRAY AEROSOLS IN THE VICINITY OF THIS APPLIANCE WHILE IT IS IN OPERATION.**
NOTE – SERVICING SHALL BE CARRIED OUT ONLY BY AUTHORIZED PERSONNEL.

⚠**WARNING – Carbon Monoxide Gas – a potential by product of an incorrectly installed and vented heater can be deadly or cause irreparable brain damage. Heater must be installed by an authorized person and all ventilation must comply with these instructions and applicable codes and standards. NEVER enclose an outdoor heater. Never block the flue or heater louvres. NEVER leave articles on top of or leaning against Heater. Indoor Heaters MUST be installed with adequate and permanent ventilation in accordance with all applicable codes and these instructions.**

⚠**CAUTION – This heater is suitable for 220Vac connection only**

⚠**WARNING – Risk of carbon monoxide poisoning or asphyxiation. Never install a draft diverter with this appliance. Ensure adequate and permanent ventilation according to all codes is provided when installing indoors. ENSURE only the manufacturers flue kit is used when installed indoors. DO NOT INSTALL standard heater INDOORS unless manufacturer flue kit is installed.**

OPERATING INSTRUCTIONS

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 loss of life

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not attempt to light the burner by hand

B. BEFORE OPERATING, smell all around the heater area 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 safe area away from the heater. Follow the gas suppliers instructions. If you cannot reach your gas supplier, call the fire department.

C. If the gas valve is malfunctioning and not admitting gas to burner, don't try to repair it, call a qualified service technician. Force or attempted repair mat result in a fire or explosion.

D. Do not use this heater 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 and any gas control which has been under water

OPERATING INSTRUCTIONS

1. ⚠STOP! Read the safety information above on this label
2. Turn Off all electrical power to the Heater
3. Do not attempt to light the burner by hand
4. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP!, Follow "B" in the safety information above on this label. If you don't smell gas, go to the next step.
5. Turn on the water circulation pump.
6. Turn on the power to the heater and press the Pool/Spa button to select Pool or spa.
7. Set the thermostat to desired setting and the ON/OFF switch to the "ON" position.
8. The Heater will take approximately 125 seconds to complete ignition cycle. The heater will reattempt to ignite the burner automatically repeating the final ignition sequence for a total of three (3) attempts before locking out system.
9. If the appliance does not operate, turn heater power supply off. Repeat instructions 5 to 7 above. If the appliance still does not ignite, call your service technician

TO TURN OFF GAS TO HEATER

1. TURN OFF ALL ELECTRIC POWER TO THE HEATER IF SERVICE IS TO BE PERFORMED.
2. Turn off manual Gas tap in gas supply line prior to Heater

CHEMICAL BALANCE

⚠**WARNING** It is imperative that correct chemical balance be maintained in your pool and spa water, otherwise corrosion of your heater may occur. **Corrosion of the heat exchanger voids warranty.** Your local pool shop specialist or spa retailer can advise correct chemical balance. Your water should be checked and maintained regularly by a pool water professional. As a guide the following parameters may be used.

pH	7.2 to 7.6
Total Alkalinity (ppm)	80 to 120
Calcium Hardness (ppm)	150 to 250
Salinity (ppm)	4000 max. Excessive salt can damage your heater

You should test your water chemical balance at least on a weekly basis.

Excessive sanitiser can damage your heater. Chlorine should not exceed 3 ppm and bromine should not exceed 5 ppm. Salt chlorinators, especially when used on spa pools or indoor or covered pools, can easily produce excessive chlorine levels which will damage the heater internals.

CORROSION PREVENTION IN HEATERS

All Gas pool and spa heaters incorporate copper or copper nickel to make their heat exchangers as it is the most efficient material in transferring heat from the combustion chamber into the water. The typical life expectancy of a well maintained pool/spa heater is between 5 and 12 years.
The addition of sanitiser (Chlorine, Bromine etc.) and other water balancing and conditioning chemicals can increase the rate of wear and tear on the heat exchanger and associated parts in your heater.
There are three most common reasons for heat exchanger corrosion which can be avoided with a little care and attention.

1. Excessive Sanitiser.
   This means too much Chlorine or Bromine in the water. Be careful, if the level of Chlorine or Bromine is excessively high, your test kit (and the pool shops) may not read accurately or indeed may show a nil reading. Any time a salt chlorinator is operating for extended periods (when heating the swimming pool from cold), particularly if the weather is overcast or the pool is enclosed or covered, the Chlorine level may exceed normal levels. When heating a Spa or Pool, turn the chlorinator down or off for the duration of the heating period.

2. Out of balance water.
   The water balance is a combination of pH, total alkalinity, Calcium hardness and temperature. Balanced water will help prevent corrosion of your heater. Balanced water should be between a pH of 7.2 - 7.6.

3. The addition of acid to lower pH.
   Acid must always be added in small quantities and spread over the pool surface evenly, not added in to the skimmer. Do not add a Gallon at a time, add a cup full each day to lower your pH.

⚠**WARNING**: If you have a **salt chlorinated** INDOOR pool or COVERED pool be very careful of the level of Chlorine being produced. If you use a salt chlorinated spa be very careful of the level of Chlorine as the Chlorinator is usually sized for the pool and therefore should be switched off when heating the spa. Leaving the chlorinator on can raise the chlorine level very rapidly in a small volume of water.

These comments are intended as a guide only and are not definitive answers or recommendations on pool water chemistry. Astral Pool's intention is to provide a little understanding of the potential problems of water chemistry and the dangers of corrosion to heaters (and other pool equipment and fittings).

YOUR WATER SHOULD BE ADJUSTED & BALANCED PRIOR TO ANY CORRODED PARTS BEING REPLACED.

DIGITAL THERMOSTAT OPERATION

DESCRIPTION

The sophisticated digital thermostat provides temperature read out, set point temperature, operating status of the heater and any fault conditions.

TEMPERATURE DISPLAY

The temperature display indicates water temperature in the inlet of the heater. Therefore the pump must be operating for an accurate pool or spa water temperature to be displayed.

Comfortable pool temperature is between 78˚F and 86˚F (26° & 30° C). Normal spa temperature is between 96˚F and 101˚F.(36° & 38° C) To select your desired temperature press the up or down button repeatedly until the desired temperature is reached.

To prevent rapid cycling of the heater, the thermostat has an inbuilt time delay which prevents the heater from turning on for two minutes after the set point has been reached. If the time delay is activated, the symbol "L" will be displayed on the LCD screen on the front of the heater. This is part of normal operation.

Should a fault condition occur, the heater will lock out and prevent further heating. A lock out condition is indicated by the symbols F0 to F3. To reset a lock out condition, turn the power off for five seconds.

When the water temperature is heated to within 1.8 F of the thermostat set point, the Jacuzzi® J-HN Series heater burner will turn down so that the set point is not exceeded. In addition, the set point is maintained very accurately, so that when using your spa or pool, you will notice very little variation in water temperature.

POWER LOSS TO UNIT

The following will happen in event of power loss to the unit;

WHILE THE UNIT IS ON OR IN LOCK OUT MODE

The unit will turn off. If power is restored before the fan has time to stop, around 10 seconds then the unit will not light. You will need to turn off power to the unit and wait for 10 seconds or until fan has stopped and then turn the power back on. Turn the unit on if it's not already. The unit will relight.
If the power is off for more than 10 seconds or enough time for the fan to stop then the unit will turn back on and relight automatically once the power is restored.

WHILE THE UNIT IS OFF

When power is restored the unit will remain in the off mode.

DISPLAY SYMBOL INDICATION

Under fault conditions the thermostat will display a set of alpha numeric symbols to indicate the status of the heater. The meaning of each symbol and action to be taken are listed as follows:

SYMBOL	MEANING	ACTION
Temp Display	Unit has power	No Action
F0	Heater locked off, thermistor wire disconnected or water at 36°F (0° C) (freeze conditions).	If water temperature reads greater than 36°F) (0° C), phone for service.
F1	Thermostat reads greater than 113°F.(45°C)	Allow water to cool below 104°F (40° C), turn heater off then on again.
F2	Mechanical Hi Limit greater than 109°F or 125°F (43° or 52°C) and/or Low water flow	Allow water to cool below 86°F (30° C), turn heater off then on again. Make sure water is flowing through heater.
F3	Thermistor Fault.	Service required. www.Jacuzzipool.com
L	Heater locked out on time delay for 2 minutes.	No Action. Heater will automatically reset after the time delay.
	Pump operating and sufficient water pressure to operate heater.	No Action.
	Thermostat calling for heat. Electronic Flame Supervision operating.	No Action.
	Burner Operating	No Action

MAINTENANCE

It is recommended that you check the following at least every six months and at the beginning of every swimming season.

1. Examine the flue outlet and panel louvers for blockages. Make sure there are no obstructions to the flow of air to or from the appliance.
2. Keep the heater area clear and free of combustibles and flammable liquids. Chlorine should not be stored in the vicinity of the heater. Chlorine and acid vapors, when drawn through a heater, can rapidly cause corrosion of the heat exchanger.
3. Keep the heater area free from garden refuse and debris. This will help prevent insects nesting in the unit and ensure extended life and reliability of your heater.
4. Have your heater professionally inspected at least every 2 years or when used daily for 6 months each year, have it inspected once a year.

WINTER OPERATION

If the pool is not being used for a month or more, turn the heater off at the main gas isolation valve. For areas where there is no danger of freezing, water should circulate through your heater all year long even though you are not heating your pool.

It is necessary to drain the water from the heater where freezing is possible. This may be done by loosening the inlet or outlet barrel union. If the heater is below water level, isolate it from the pool first by closing shut off valves before and after the heater.

⚠**CAUTION:** If the heater has been drained for freezing conditions, do not turn on until the system is circulating water

INSTALLATION

⚠**WARNING:** THIS APPLIANCE MUST BE INSTALLED BY A LICENSED AND BONDED POOL EQUIPMENT INTALLERS. AUTHORISED PERSON. Refer to heater data plate for specifications of gas type, gas consumption, burner pressure and water pressure.
This appliance must be installed in accordance with local regulations and
For a heater in which no provision is made for a vent permanently open between the water circuit and atmosphere a pressure relief valve must be fitted in accordance with

LEVELLING OF THE HEATER

With OUTDOOR Installations it is advisable to have the Heater Level from left to right across the heater and have it slightly angled (approx. 5°) to the rear to help with drainage of the Flue from water after rain.

FLOW RATES

The Jacuzzi® J-HN Series Heater requires a minimum of 31Gallons (120 liters) per minute (254 ft^3/h)(7.2 m3/hr) and a maximum flow rate of 132 Gallons (500 liters) per minute (1059 ft^3/h) (30 m3/hr). It is recommended that an external bypass valve capable of bypassing some water be installed when flow rates exceed 99 gallons (375 liters) per minute (794 ft^3/h) (22.5 m3/hr).

WATER CONNECTIONS

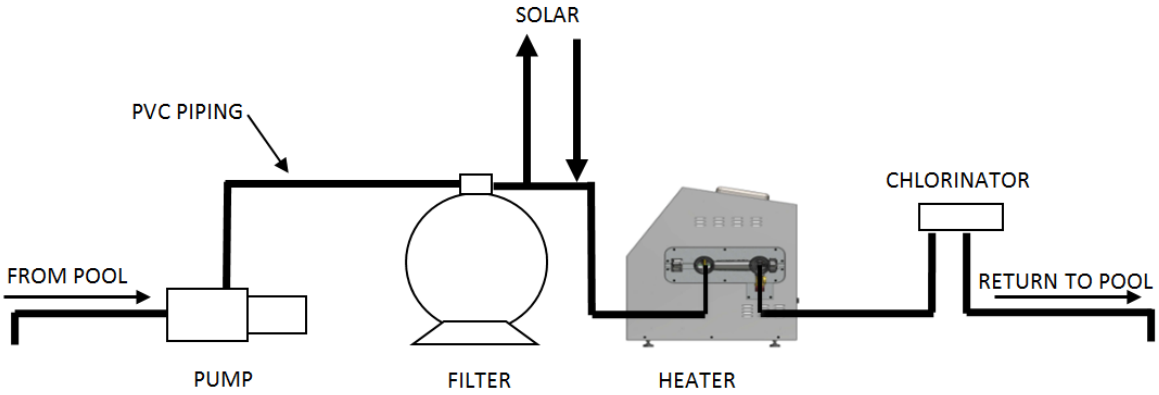
The heater should always be installed after the pump and filter. The water connections are located on the right hand side of the heater. The inlet and outlet are clearly marked. Water connections require 2" high pressure PVC glue-in plumbing. It is recommended that Class 12 (PN12) pipe be used to connect to the heater.
All automatic sanitising devices must be installed after the heater and in such a way that the sanitiser cannot enter the heater without first mixing with the water in the pool or spa. Sanitisers that are connected prior to the heater will void heater warranty.
A non-return valve is not required to be fitted between the filter and the heater.

GAS SUPPLY LINE INSTALLATION

Check heater rating plate to verify the type of fuel gas your heater is equipped to burn. Generally, natural gas is supplied at a lower pressure from the local gas utility and requires larger diameter piping than a propane installation. Propane (LPG) typically requires the installation of a storage tank, and often the LPG supplier will size and place the tank and the required LPG regulators and piping. Consult your local LPG supplier for assistance with your LPG installation. The pipe sizing charts that follow are all based on Natural Gas with a specific gravity of 0.65, and Propane (LPG) with a specific gravity of 1.55.
The utility provided (natural gas) meter in new construction is often a source of excessive pressure loss unless sized for the additional load of a pool heater used in combination with all other appliances in the home (being supplied from the same line). Consult your local natural gas company.
Generally, the longer the piping run, the higher the pressure drop (loss). Usually based on your delivery pressure (at your utility supplied as meter and house gas pressure regulator) as a starting point pressure. Larger diameter piping, while costly, has less frictional gas pressure losses than smaller piping. The pipe sizing tables that follow are based on piping downstream (after) your gas meter running up to the heater. Elbows are a costly source of pressure drop (loss), each being equivalent to the loss from 3 additional feet of straight piping. So minimise their use. Step the piping size down as close to the heater as possible.
The Jacuzzi® J-HN series heater requires a minimum supply pressure of 5 in w.c. for natural gas and 11 in w.c. for propane (LPG). These pressure (dynamic pressure) must be verified under load (heater fired) as an incorrect reading (static pressure) wil be obtained with heater off. The heater may not operate correctly without proper gas supply pressure (see page 32 for further details.)
All the gas supply piping installation must conform to all local codes, and must conform to the requirements of the latest edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54 for US installations, or in Canada with the latest edition of CSA B149.1, Natural Gas and Propane Installation Codes.
Always install a manual shut-off valve (gas cock) and sediment trap outside of the heater cabinet – immediately before gas line enters heater. Do not install a gas line union inside heater cabinet.

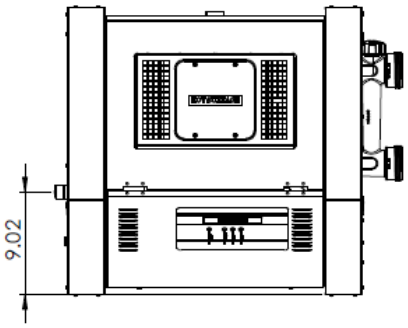
The piping installation must be tested for leaks and is typically tested at pressures above ½ psig – therefore piping must be isolated from other gas appliances in use during pressure testing. Check with your local gas company or local building code inspection department for local code requirements.

PLUMBING DIAGRAM

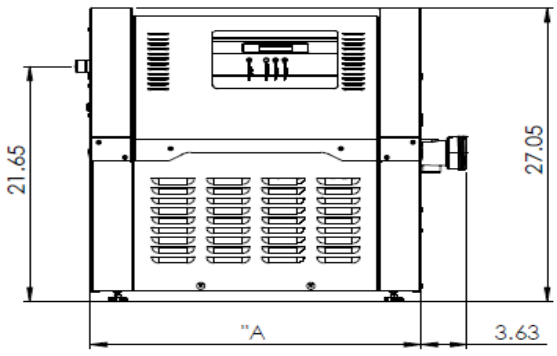


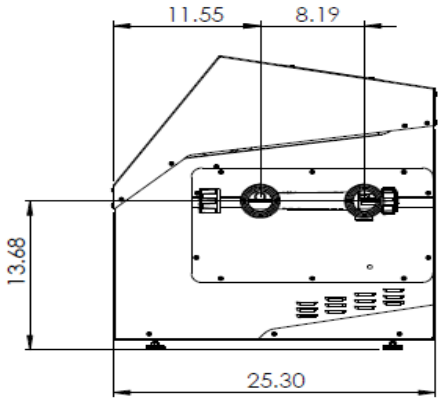
1. Plumbing in high pressure 2" (50mm) PVC pipe.
2. Connections to heater in Class 12 or higher.
3. All Salt System Chlorinators or Sanitisers to MUST be installed after the heater.

HEATER DIMENSIONS



Heater Model	Dimension "A"
J-HN 250C	25.98"
J-HN 400C	33.85"



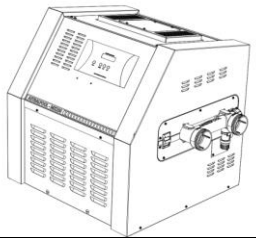
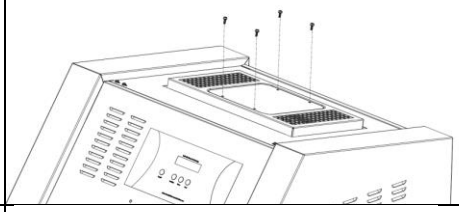
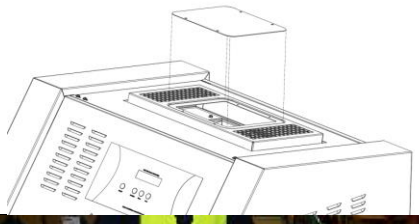


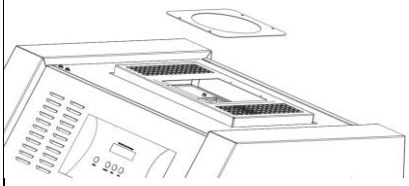
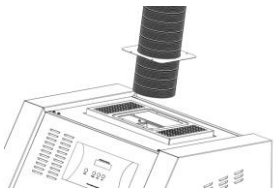
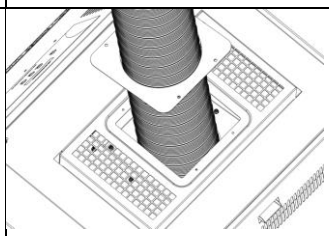
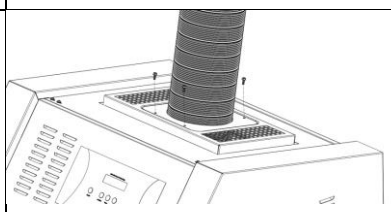
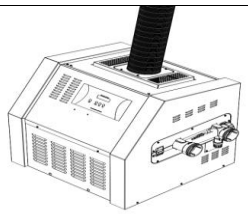
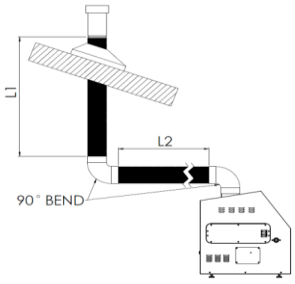
INDOOR FLUE INSTALLATION

For indoor installations a 5" (125mm) flue and termination cowl must be fitted to the heater. The heater may be installed with a maximum of 52 feet (15 meters) of flue including 3 bends or of 26 feet (8 meters) of flue with a total of 5 bends. **Note; Maximum length for HiNRG 250/400 Propane is 28 feet (8.5 meters)**
The flue and termination cowl must be ordered from www.Jacuzzipool.com

Part # 78285 13 feet (4 meters) spiral flue with termination cowl

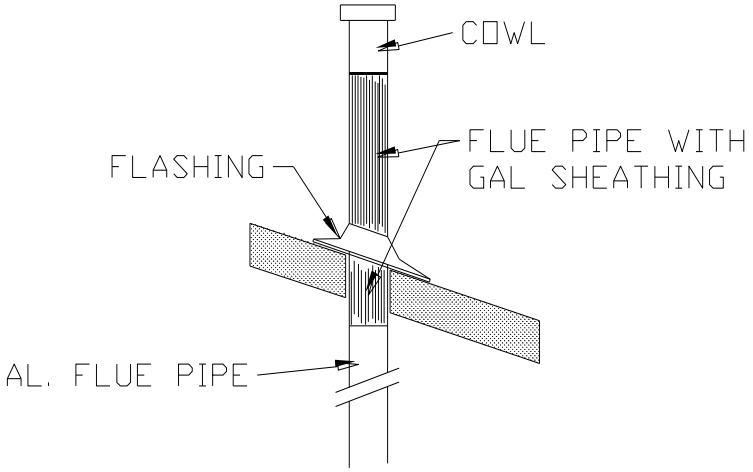
Part # 78249 13 feet x 5" (4 meter x 125mm) flue extension (maximum of three additional to make a total length of 52 feet (16 meters)
Note; Maximum length for HiNRG 250/400 Propane is 28 feet (8.5 meters
Heater must be installed to local or state regulations. Access and suitable working areas must be available to the heater.
Flue pipe is supplied with a galvanized sleeved end for the external application and an non sleeved aluminum end for fitment to appliance. The flue pipe can be cut shorter with a knife/saw.

1	Pool Heater – Outdoor Model.	
2	Using a Phillips Head Screw driver unscrew 4 x Screws from Flue Cover Plate.	
3	Remove Flue Cover Outdoor Insert.	
4	Pre bend the flue where required. Bends are made by curving the flue pipe around a gentle radius such as a pipe or knee. Do not over bend and kink flue pipe. Keep bends to a minimum and use as large as radius as possible. Minimum internal radius is 10"(250mm). Bends can be straightened if required.	

5	Take the Flue Cover Indoor Insert.	
6	Take the Flue and FEED it through the Indoor Insert.	
7	Fit flue pipe to appliance (non-sleeved end of flue). Fit by sliding it over the flue connection spigot as far as possible.	
8	Slide Indoor Insert Panel down the flue and Screw into position with 4 x Screws.	
9	Pool Heater – Indoor Model.	
10	Form extra bends where required. Care should be taken when forming bends to not create a low point where condensation may collect. Condensation should be able to drain to the heater or out the flue outlet. The flue should be bracketed at intervals of 1 M using standard 5" (125 mm) standoff brackets available at most plumbing suppliers.	

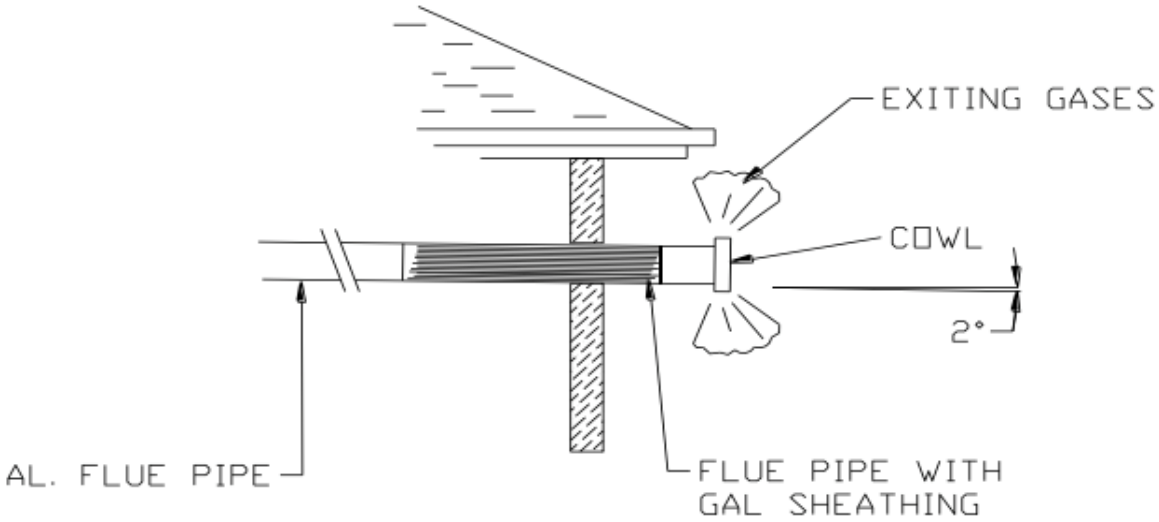
ROOFTOP TERMINATIONS

All flue exiting the roof must be shielded with the gal cover. Extra lengths of gal can be supplied. Decktite fittings / flashings must be attached to the galvanized flue cover. Brace flue in high wind applications.
Locate flue cowl onto reduced end of the gal outer covering / flue pipe. Attach with rivets / screws to hold into place.



WALL TERMINATIONS

Ensure location is suitable as flue gases exit all around cowl and may blow back onto walls, eaves and features causing discolouration or mould and moisture issues. Condensation will occur around the flue exit area and condensation may drip from the flue outlet.
All flues exiting the wall must be shielded with the gal cover. Extra lengths of gal can be supplied. Decktite fittings / flashings / wall exiting covers must be attached to the galvanized flue cover.
For long extensions of flue exiting the wall bracing may be required in high wind applications.
Locate flue cowl onto reduced end of the gal outer covering / flue pipe. Attach with rivets / screws to hold into place. Ensure a drain hole in the cowl is facing down.
The flue pipe must slope slightly towards the cowl for the last horizontal run (approx 2°) to allow condensation to drain.



CLEARANCES

Installation clearances must comply with Local or State laws. The heater is approved for installation at reduced clearances as below.

			SURFACE TYPE	
			COMBUSTIBLE	NON COMBUSTIBLE
CLEARANCES (inches)	OUTDOOR	FRONT	12" (300mm)	12" (300mm)
		BOTH SIDES	12" (300mm)	12" (300mm)
		REAR	12" (300mm)	2" (50mm)
		ABOVE	40" (1039mm)	40" (1039mm)
	INDOOR	FRONT	12" (300mm)	12" (300mm)
		BOTH SIDES	12" (300mm)	12" (300mm)
		REAR	12" (300mm)	2" (50mm)
		ABOVE	20" (500mm)	20" (500mm)

N.B. HEATERS MUST BE INSTALLED ON A FIREPROOF BASE

VENTILATION

When installing the heater indoors, it is imperative that an adequate supply of fresh air is provided for combustion. Failure to provide adequate ventilation voids all warranties and may be a danger to persons or property.

Two permanent openings shall be provided directly to outside. The openings shall be located to ensure the distance between the top of the upper opening and the ceiling of the room or enclosure, and the distance between the bottom of the lower opening and the floor of the room or enclosure does not exceed 5% of the height of the room or enclosure.

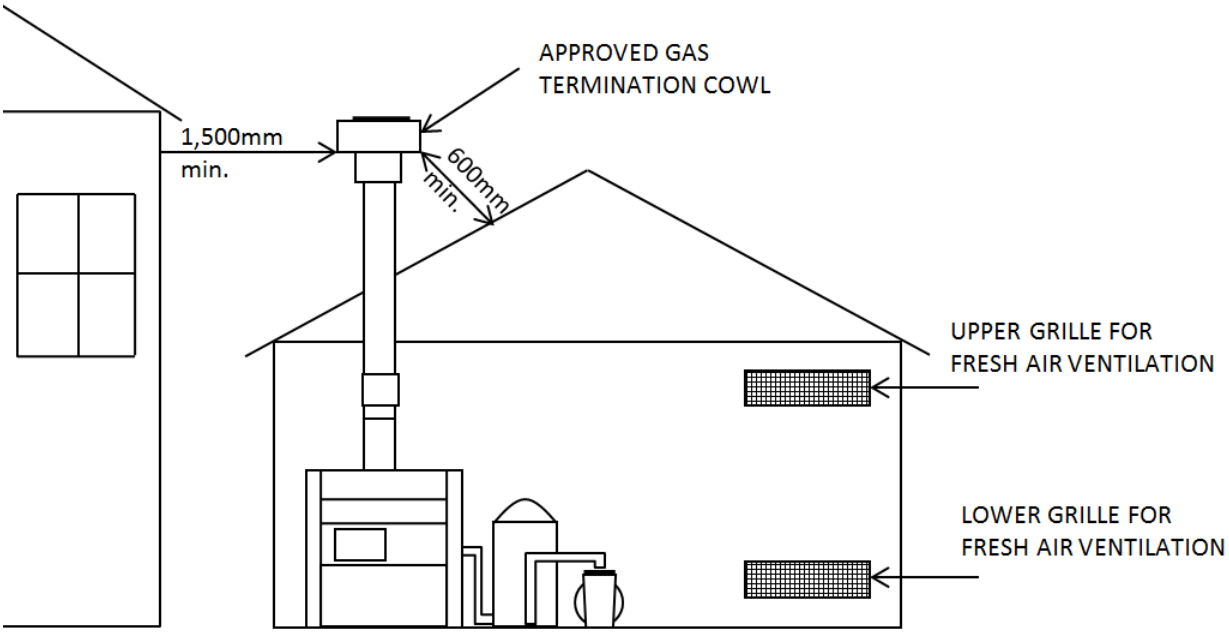
The minimum vertical dimension of any free ventilation opening shall be 1/4" (6 mm).

The minimum free ventilation area provided directly outside by each opening shall be:

MODEL	AREA (in^2)
J-HN 250	116 (75,000 mm2)
J-HN 400	186 (120,000mm2)

If ventilation provided is obtained from an adjacent room then these areas will increase.

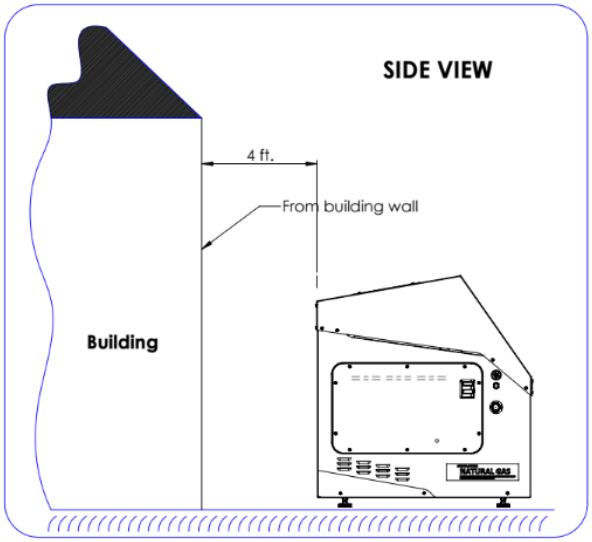
The following diagram is provided as a guide only. All flue works and installation work must be carried out by an authorized person. Venting and flue connections installation must conform to local regulations. Care must be taken to provide the correct ventilation and correct flue connections materials in close proximity to combustible surfaces.

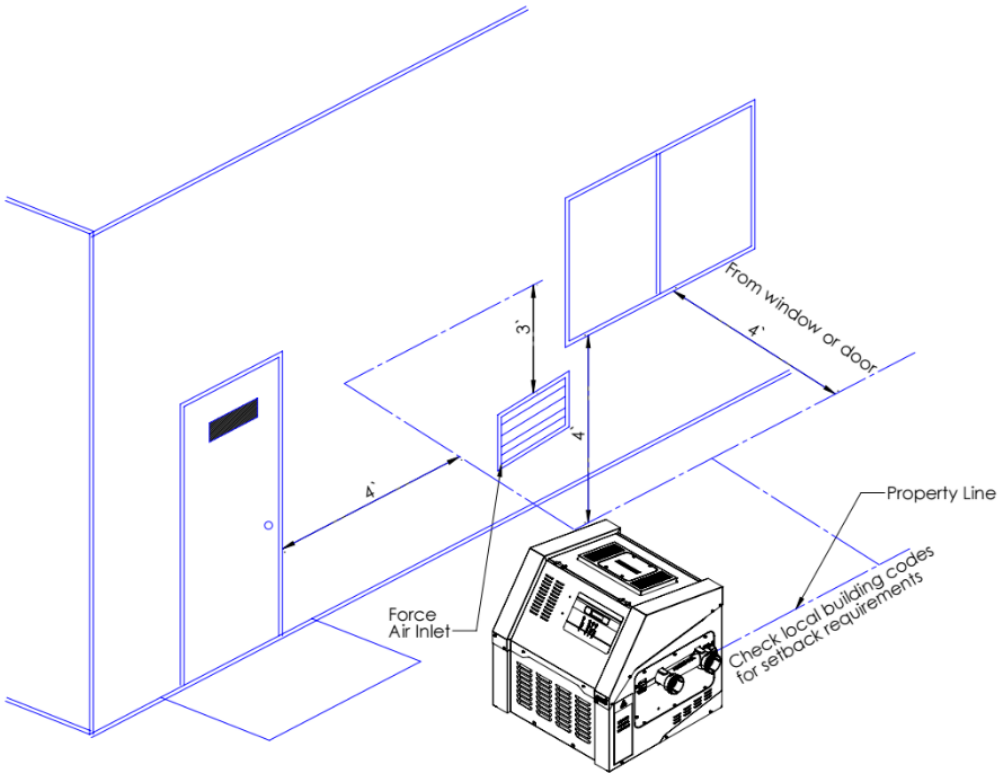


⚠**WARNING**: Do not install spa blowers in the same room as a gas heater. This is potentially dangerous to spa users.

⚠**WARNING**: Do not store chemicals or fuel in the same room as the gas heater. This may cause fire or explosion. When installing in a garage the Jacuzzi® J-HN Series Heaters must be installed 17"(450mm) above floor level.

OUTDOOR VENTING INSTALLATION-DIAGRAM AND CLEARANCES





VENTING GUIDELINES FOR ALL OUTDOOR INSTALLATIONS (EXCEPT OUTDOOR SHELTER INSTALLATIONS).

HORIZONTAL OR VERTICAL VENTING (CATEGORY III) REQUIREMENTS:

The heater requires the use of a Jacuzzi® J-HN series indoor vent adaptor kit to adapt the built-in stackless vent for use with 5" (125mm) category III vent pipe. **The maximum vent run must not exceed 50 ft of equivalent straight vent pipe. pipe for all models except HiNRG 400 Propane where Max Vent run for HiNRG 250/400 Propane is 28 feet(8.5 meters)**
Install the vent pipe to comply with all local codes and the provisions of the National Fuel Gas Code, ANSI Z223.1/NFPA 54 for US installations, and Natural Gas and Propane Installation Code, CSA B149.1 for Canadian installations. Additionally, the Category III listed vent fittings, vent terminals and vent pipe often has installation requirements stated from the manufacturer of those components – these must also be followed. Maintain all clearances between the vent pipe and combustion surfaces required by the manufacturer's instructions and all code requirements.
Do not exceed the maximum stated vent runs (stated in equivalent straight pipe runs), taking into consideration all elbows and other fittings that contribute to frictional losses and reduced exhaust efficiency.

Each 90 degree elbow reduces the maximum possible horizontal vent run by an equivalent 10 ft.(3.04 meters)
Each 45 degree elbow reduces the maximum possible horizontal vent run by an equivalent 5 ft. (1.52 meters)
The Vent Chart gives the maximum allowable vent runs taking into consideration the effect of added elbows.

Maximum Reduced Horizontal or Vertical Vent Run - 5 in (125mm) Category III Vent			
90 Elbows		45 Elbows	
Quantity	Max. Vent run ft (m)	Quantity	Max. Vent run ft (m)
0	50 (15.2)	0	50 (15.2)
1	40 (12.2)	1	45 (13.7)
2	30 (9.1)	2	40 (12.2)
3	20 (6.1)	3	35 (10.7)
4	10 (3.0)	4	30 (9.1)

HORIZONTAL OR VERTICAL VENTING REQUIREMENTS FOR CATEGORY III, POSITIVE PRESSURE VENTS

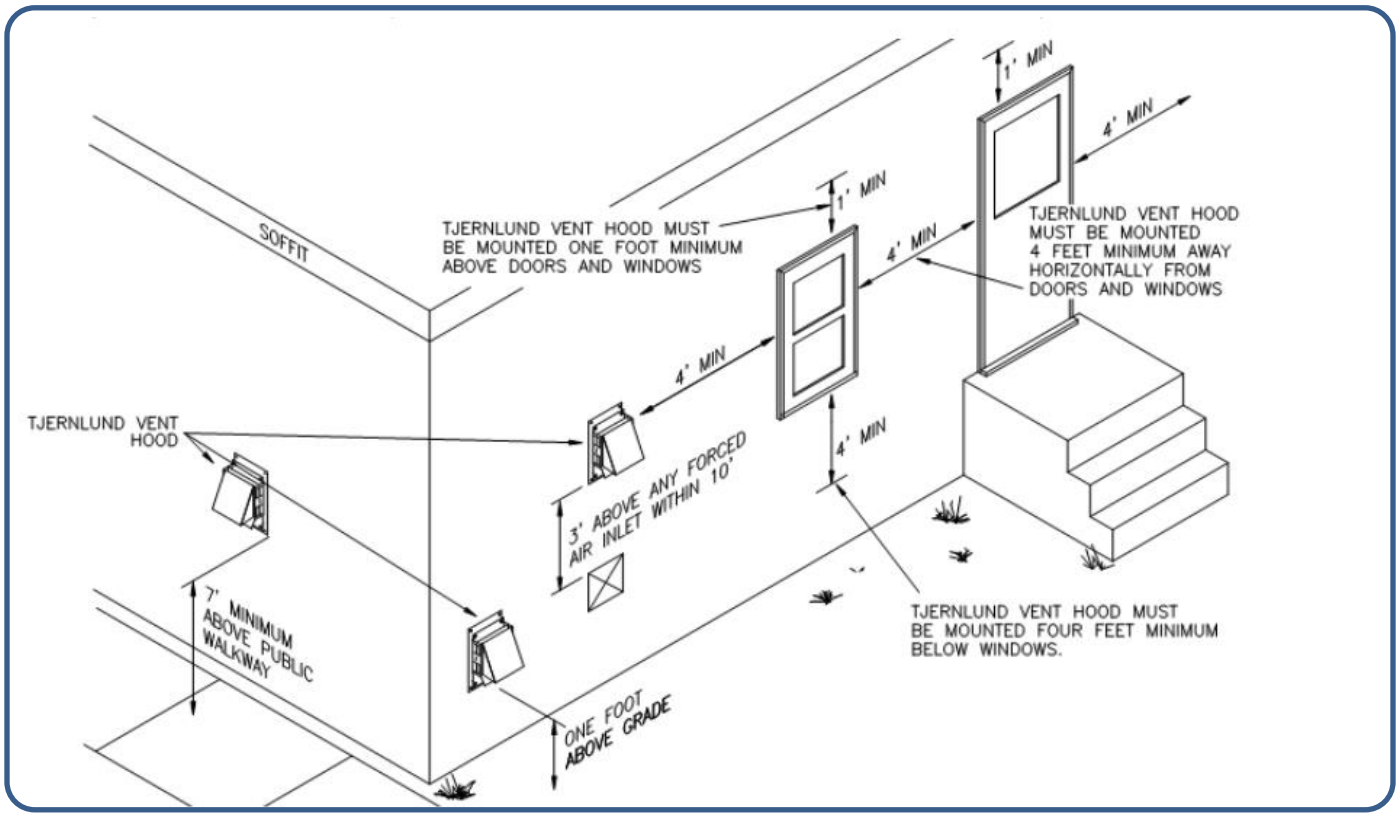
The Jacuzzi® J-HN series heater is a category III gas appliance which requires the use of approved/listed Category III vent pipe and fittings. The heater is a semi-premix burner, forced-draft design which uses positive pressure to force flue gases through the vent pipe to the outside. As flue gases are under positive pressure, they may escape into the building if there are any cracks or loose joints in the vent pipe or its fittings, or with a faulty installation. The Category III vent pipe must be of a sealed-seam construction, listed for use with Category III gas appliances with flue gas temperatures less than 400 F (204 C) . The Jacuzzi® J-HN series heaters operates with maximum exhaust (flue) gas temperatures of approximately 446 F (230 C). Vent pipes meeting the requirements of UL 1738 and of an approved non-corrosive material, such as aluminium, stainless steel, or galvanized steel are acceptable for use with this appliance. (Selkirk Saf-T-Vent EZ Seal products are one acceptable source). For long vent runs, a condensate leg, located near the heater may be necessary to handle vent pipe condensation. The use of listed approved roof jacks, thimbles, and/or side vent terminals are required – the manufacturers of these vent accessories and vent pipe have their own clearance requirements – consult the respective manufactures literature. In the absence of vent manufactures requirements, the requirements of the Uniform mechanical code must be met. It is recommended that vent runs over 25 ft (8.5 Meters) may need to be insulated, or of special sealed-seam double wall construction to reduce vent condensation problems which may require the use of condensate leg in the vent of system, typically placed immediately after the heater. Condensation problems may be aggravated in installations in cold prevailing climates. Short horizontally terminated vent runs of fewer than 10 ft (3 meters) typically do not have condensation issues.

The Jacuzzi® J-HN series heater is listed for use with horizontal through-the-wall venting, when a proper listed side wall vent terminal is used. The following is a list of Manufactures and model numbers of side-wall vent terminals acceptable for use with the Jacuzzi® J-HN Series heater.

SIDE VENT TEMINALS SUITABLE FOR USE WITH Jacuzzi® J-HN series Heaters FOR HORIZONTAL, CATEGORY III VENT SYSTEMS	
Tjernlund Model	Tjernlund Model VH1-6" Vent Hood (reqs. A 6 in to 5 in dia reducing adaptor
Saf – T – Vent Model	Saf – T – Vent EZ Seal Model 5590Cl Special Gas Vent, 5 in dia.

When installing a (horizontal) listed side vent terminal, following all the instructions and recommendations of the respective vent's manufacturer for connection to the heaters vent pipe.

HORIZONTAL VENTING REQUIREMENTS FOR CATEGORY III, POSITIVE PRESSURE VENTS-HORIZONTAL VENT TERMINATION



Clearances-Sidewall Vent Installation (applies to all listed vents, Tjernlund shown)

HORIZONTAL VENT TERMINATION REQUIREMENTS

The side vent terminal must comply with all the clearances to building openings (shown in above diagram):

For US installations the side vent terminal must:

- Be a minimum of 7 feet above grade to an adjacent walkway or similarly inhabited areas.
- Be a minimum of 4 feet from gas meters, gas regulators and electrical meters.
- Be a minimum of 4 feet below or horizontally from, or 1 foot above, any doors, windows or air inlets to buildings.
- Be a minimum of 3 feet above any forced air inlet to buildings, within a radius of 10 feet.
- Be a minimum of 12 in. above finished grade, or above typical snow accumulation levels.
- Be installed with at least 3 in. and at most 12 in. of clearance from outside of wall (refer to vent manufactures instructions).

For US , allow a minimum, of 3 feet (1 m) vertical clearance from terminal to a roof/deck overhang.

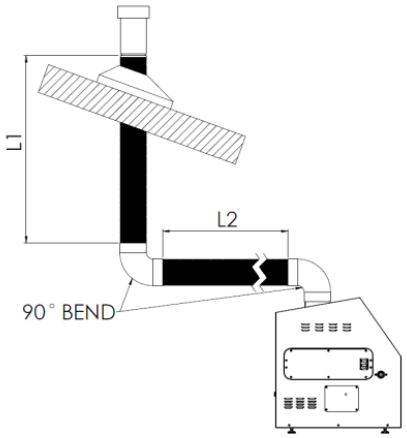
VERTICAL VENTING REQUIREMENTS FOR CATEGORY III, POSITIVE PRESSURE VENTS – VERTICAL VENTING AND VERTICAL VENT TERMINATIONS

VERTICAL VENT REQUIREMENTS

Refer to pages 20 and 21 for general venting requirements applicable to vertical vents used for indoor applications.
Additional vertical venting requirements:

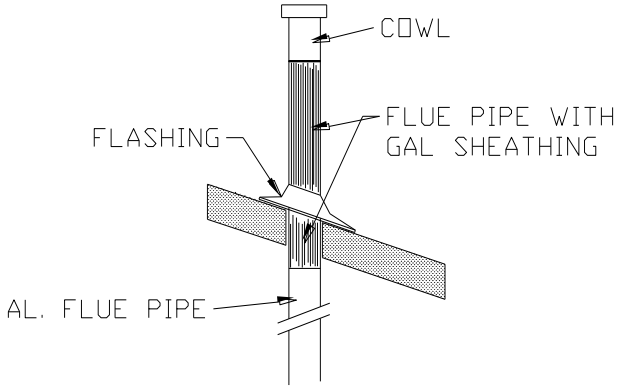
a) Vent pipe must be allowed room to expand with increasing flue gas temperatures. Support the vent pipe in accordance with all installation codes or local code requirements to reduce strain on the vent pipework and fittings. Horizontal runs exceeding 10 feet (3 meters) should be sloped towards the heater at a minimum of 0.25in (6mm). rise per foot (1/3 meter) of vent run. A condensate trap (leg) may be required to handle/collect condensate for proper drainage.

b) Use only Listed (approved) firestops for all floor and ceiling penetrations, and use only Listed thimble fittings for all wall penetrations. Do not modify thimbles or firestops by stuffing the airgaps with insulation material. Use only Listed roof jacks, roof flashing for all roof penetrations. The vent must be orientated vertically as it passes through roof.



VERTICAL VENT TERMINATION REQUIREMENTS

Use a Listed (ANSI) Vent Cap (vent terminal) to terminate the vertical vent run. The vent pipe and Vent Cap must be orientated vertically above the roof. The Vent Cap terminal must be a minimum of 3 feet (1 meter) above the point at which it passes through the roof; and additionally the terminal must also be a minimum of 2 feet (600mm) above the highest point of the roof lying within a radius of 10 feet (3 meters) from the Vent Cap (vent terminal). *Both conditions must be met.* In Canada, the vent terminal (Vent Cap) must have a minimum clearance of 4 feet (1.2m) form any gas meters, gas regulators, electric meters, or similar equipment.



⚠WARNING

There is a risk of carbon monoxide poisoning or asphyxiation if vent and/or its components are not properly installed in accordance with all manufactures instructions. The vent pipe joints must be sealed to prevent escape of flue gases. Verify that all vent components from different manufactures are compatible. Follow all vent component manufactures instructions, all local code requirements, and the requirements of the National Fuel Gas Code, NFPA 54 (for US

COMBUSTION AIR SUPPLY (INDOOR INSTALLATION)

In all indoor installations, including garages, utility rooms, and outdoor enclosure, ONLY the fuel gas (Nat Gas or Propane) is delivered under pressure up to the pool heater. The air (oxygen) required for clean combustion is drawn into the heater from the air surrounding the heater. The air supplying the heater must in turn be pulled into the room through vent openings between the room and either the air (atmosphere) outside the building, OR from other areas of the building that the room (housing the heater) is connected with.

BECAUSE OF CURRENT, MODERN HIGH ENERGY EFFICIENT (TIGHTLY SEALED) CONSTRUCTION IT IS STRONGLY RECOMMENDED THAT THE INSTALLATION ONLY DEPEND ON AIR FROM OUTSIDE OF THE BUILDING.

Two equally sized separate vent (louvered or grilled) openings are required for the room.

a) One room vent opening in located within 1 foot (300mm)of the rooms ceiling.
b) The second room vent opening is located within 1 foot (300mm) of the rooms floor.
c) The tables only allow for ventilation of the pool heater, if any other gas-fired appliances are installed in the same room the size of the vent openings from the room must be carefully evaluated to account for the total load of all the gas-fired appliances co-located with the pool heater, including the case of multiple pool heaters in commercial installations.

The use of two vent opening allows sufficient air to be brought into the room while allowing the room to breathe.

** NET FREE OPEN AREA (MINIMUM) FOR EACH OPENING, SQUARE INCHES (SQ Centimeters)
** (The area of the opening blocked by the louvers is deducted from totals

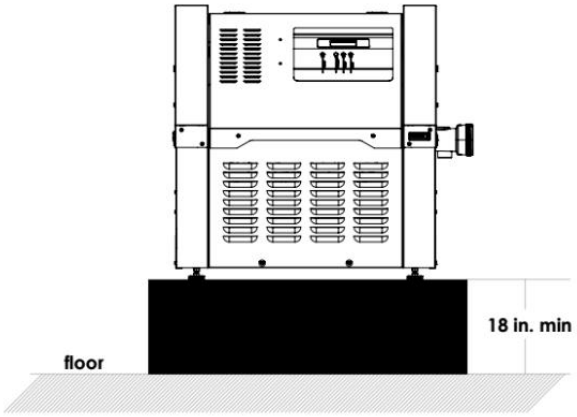
	ALL AIR SUPPLIED FROM INSIDE BUILDING	ALL AIR SUPPLIED FROM INSIDE BUILDING	COMBINED AIR MIN, OPENING	COMBINED AIR MIN, OPENING
HEATER MODEL	Combustion Air Min. Opening	Ventilation Air Min Opening	Combustion Air Min. Opening	Ventilation Air Min Opening
J-HN250	300 (1935)	300 (1935)	75 (484)	75 (484)
J-HN400	350 (2258)	350 (2258)	88 (565)	88 (565)

Note: Ideally the heater is situated near (within 25 feet) (7.6 meters)of the room vent openings, for ideal combustion and ventilation air supply. In certain installations in commercial buildings or when the heater can only be installed far away from outside walls of the building, it may be necessary to provide either passive air supply ducts leading from the outside of the building to near the heater or it may even be necessary to provide for a powered air make – up ventilation system which used a blower to force air to proximity of heater installation (Tjernlund is one manufacturer of Listed air make-up systems).

UTILITY ROOM AND GARAGE INSTALLATIONS REQUIREMENTS

Check with local code jurisdictions, for the most recent building code requirements as there are new restrictions in a few states such as Massachusetts which disallow LPG installations in garages.
Follow all requirements for indoor vent installations on pages 20-21. Additionally for utility rooms or garages, install the heater on an elevated base providing the heater with at least 18 in (500mm) clearance from the floor of the utility room/garage. For garages, protect the heater with a barrier from vehicle damage.

For Canada this pool heater must be installed only in a room that is not regularly occupied and which has no openings leading to (communicating with) any human occupied areas.



⚠WARNING

Fires/Explosions Hazard: Garages and Utility rooms are often used to store volatile chemicals including: Gasoline, varnishes, paints etc. which create a fire/explosion hazard and the chemical fumes are corrosive and can damage the heater.

ELECTRICAL CONNECTION

All pool or spa equipment connected to mains power should be protected by an RCD circuit breaker.

This appliance must only be serviced by an authorized person qualified to perform electrical service on gas fired appliances. High voltage present in some heater circuits. Disconnect power at branch breaker supplying power to pool heater before servicing.

⚠WARNING

High voltage is present in some heater circuits making it mandatory that any electrical maintenance and repairs be attempted only by properly qualified personnel.

This appliance must be installed and electrically grounded and bonded in accordance with local regulations and the latest edition of the National Electrical Code (NEC), NFPA 70 for US installations.

GAS CONNECTION

The gas connection is on the left side of the heater. A 3/4" Fl. connection is provided for gas line connection. An approved manual shut off valve must be installed in the gas fitting line before the heater.

The gas fitting line should be installed by an authorized person and comply with local regulations The gas line from the Gas meter will usually be of a larger size than the gas inlet connection.

The heater gas valve has a built in pressure regulator and 2 x ⅛" pressure test points. On starting the heater, a manometer must be used and the supply inlet pressure checked while the heater is running against the heater data plate. Incorrect inlet pressures may void warranty and may result in service charges, should service be required. Gas valves are pre-set and should only be adjusted by trained Jacuzzi technicians or qualified gas fitters.

⚠WARNING
Propane (LPG) is heavier than air and will pool in low spots. Do not place heater in a pit or other locations where leaking gas might collect as this can lead to an explosion.

GAS PIPE SIZING TABLES

Natural Gas Pipe Sizing – Low Pressure from Meter (iron or plastic pipe)

DISTANCE FROM GAS	MODEL	Jacuzzi J-HN250	Jacuzzi J-HN400
METER TO HEATER	BTU/hr (nom)	250,000	399,000
0 to 50 ft		1"(25mm)	1 1/4"(31mm)
50 to 100ft		1 1/4"(31mm)	1 1/4"(3.1mm)
100 to 200 ft		1 1/2"(37mm)	1 1/2"(37mm)
200 to 300 ft		1 1/2"(37mm)	2"(50mm)

5" Static Pressure with 0.5" pressure drop during heater operation
Assumes no other gas appliance connected to Gas Line

Propane Gas Pipe Sizing – Low Pressure Single Stage regulation 11" gas Line Supply

DISTANCE FROM GAS	MODEL	Jacuzzi J-HN250		Jacuzzi J-HN400	
TO HEATER	BTU/hr (nom)	250,000		399,000	
		IRON PIPE	TUBE	IRON PIPE	TUBE
		1"(25mm)	1 1/8" (28mm)	1"(25mm)	
		1"(25mm)	1 1/8" (28mm)	1 1/4" (31mm)	
		1 1/4" (31mm)		1 ½" (37mm)	
		1 1/4" (31mm)		1 ½" (37mm)	

11" Static Pressure with 0.5" pressure drop during heater operation
Assumes no other gas appliance connected to Gas Line

Gas Pipe Sizing Tables are indicative only. All pipe sizing should be calculated by an authorized person.

⚠**WARNING:** Propane is heavier than air and will settle if heater is installed in a pit or low position. Do not install a propane heater in an area where gas may accumulate. Propane Installations must comply with ANSI/NFPA 58 in US and local authority regulations and standards

WATER PRESSURE SWITCH ADJUSTMENT

The Jacuzzi® J-HN Series Pool Heater incorporates a water pressure switch which allows the burner to operate only when the circulating pump is operating. The pressure switch is designed to operate with the heater installed up to 10' feet above or below the surface level of the pool or spa.
It is imperative that the following be undertaken by the person who is commissioning (first starting) your pool or spa heater. On initial start-up of the heater it may be necessary to adjust the water pressure activation switch.
This switch is located on the inlet / outlet header. The pressure switch is a safety device, designed to allow operation of the heater only when the circulating pump is on and there is sufficient water flow through the heater. It must shut the heater down immediately after the pump is switched off.

TO CHECK THE OPERATION OF THE SWITCH:

1. Check water pump hair and lint basket is clean and free of debris and backwash sand filter or clean cartridge filter. Pressure switch should only be check and adjusted with clean skimmer, pump basket and filter.
2. Connect the heater to mains power supply and turn power on. The thermostat should not yet display "θ".
3. Turn on pump. The thermostat should now display "θ".
4. Turn pump off. The thermostat should no longer display "θ".
5. If display does not respond in this way, adjust the pressure switch as detailed below. If display responds correctly, perform a final check with the heater operating – see the section below titled "Starting the heater".

TO ADJUST PRESSURE SWITCH:

1. Connect the heater to mains power supply and turn power on. The thermostat should not yet display "θ".
2. Turn on pump.
3. View the display of the heater to confirm the "θ" has appeared on the LCD display on front of heater.
4. If no symbol is present, slide the toggle up to allow adjustment, then rotate knurled wheel anti clockwise (as viewed from above) until "θ" is displayed.
5. Switch pump off.
6. View LCD display to confirm the "θ" has disappeared.
7. If "θ" symbol is present when pump is OFF or "θ" does not disappear within 1 (one) second of pump turning off, the pressure switch must be adjusted.
8. With Pump turned OFF, turn knurled wheel clockwise to increase the pressure required to activate the switch.
9. Repeat steps 2 to 8 until symbol appears and disappears when pump turns on and off.
10. When the pressure switch is correctly set, slide the toggle down to lock the knurled wheel in position.
11. If pressure switch cannot be made to activate heater when pump is turned on and off, a flow switch may need to be purchased and fitted. Contact your local Astral Pool office for details.

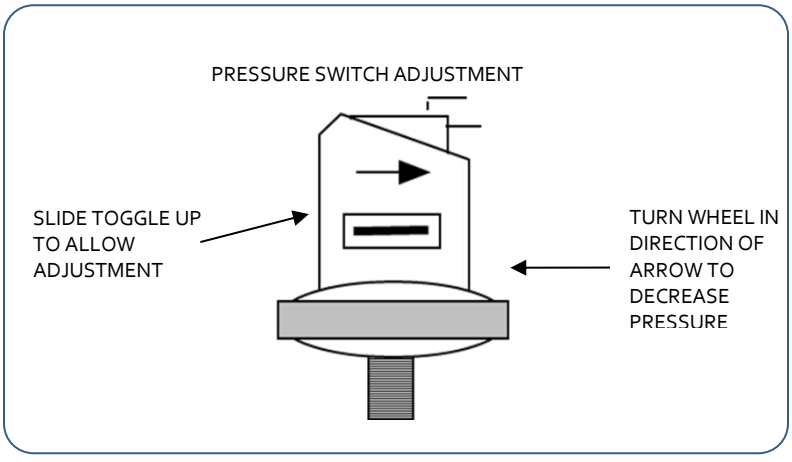
⚠WARNING

: If the pressure switch cannot be adjusted correctly, DO NOT OPERATE THE HEATER, contact www.Jacuzzipool.com or an Authorized Service Agent for advice.

1. Perform a final check with the heater operating.

It is imperative that the heater is installed so that it does not operate when the circulating pump stops. Recommended methods to achieve this are:

a) Correct adjustment of internal pressure switch. Ensure heater does not turn on two or three minutes after circulating pump is turned off.
b) Installation of an external flow switch may be preferred under certain installations where internal pressure switch does not turn heater off when circulator stops.



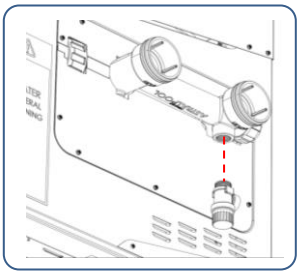
⚠WARNING

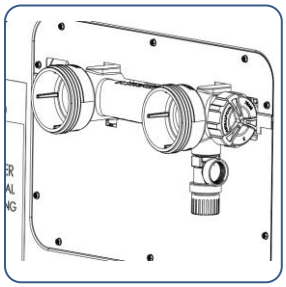
If pressure switch cannot be adjusted correctly. DO NOT OPERATE THE HEATER, contact Jacuzzi® or an Authorised Service Agent for advice. If heater is more than 5 feet (1.5 METERS) above or more than 1 foot (300MM) below the level of the pool/spa water line (measured from pressure switch to water line), you are exceeding the range of the pressure switch and a FLOW SWITCH MAY BE REQUIRED. The flow switch replaces the pressure switch and is wired to pressure switches wiring.

FITMENT OF PRESSURE RELIEF VALVE

- A Pressure relief valve must be installed in accordance with local codes and installed vertically.
- Have an authorised service technician replace the header 78660 with 78660PRV. Refer to page 25 of service instructions "REPLACEMENT OF INLET/OUTLET HEADER".
- Locate Pressure Relief port at the outlet of the header. Fit a pressure relief valve complying with and having a total steam discharge capacity, in BTUS/hr, not less than the value listed in the table below.

MODEL HEATER	lb/h
250	187
400	299





NORMAL HEATER OPERATION (LOGIC)

Ignition sequence

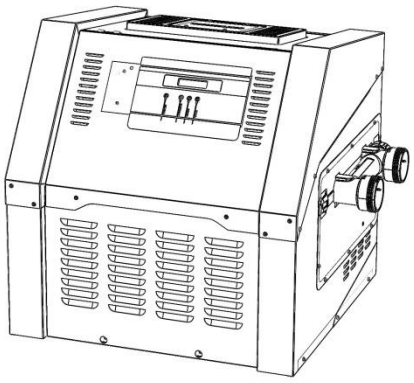
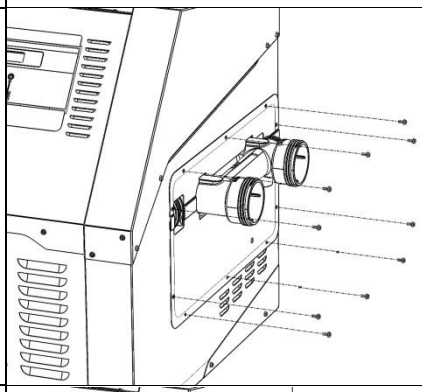
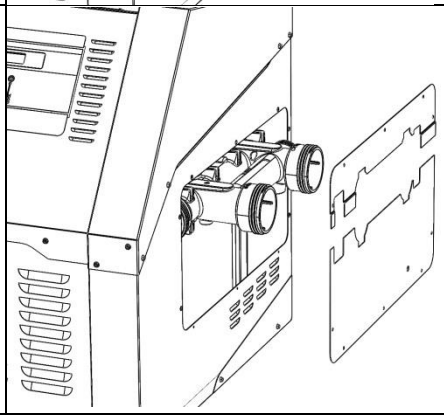
1. Heater is powered.
2. Heater is turned on.
3. 24Vac is sent from the controller to check water pressure switch is closed (for sufficient flow), and 104 F (45 C) and 131 F (55 C) high limits are closed. (All safety controls must remain in a closed 24Vac circuit for heater to operate).
4. Thermostat calls for heat via the thermocouple in the inlet/outlet header.
5. If the temperature is under 40 C and >1 degree below the set point the fan starts at a reduced ignition/firing rate.
6. The ignition module then looks to see the normally open air pressure switch has closed. It must register the switch closing to prove that it wasn't stuck in the closed position.
7. When it's proven the fan is operating the fan will run at a reduced speed for a period of 30 seconds to purge the combustion chamber of any unburnt gas.
8. After 30 seconds of "pre-purge" the ignition module will energize the hot surface ignitor with 220Vac.
9. The ignitor will power up for 90 seconds.
10. After 90 seconds the ignition module will energize the gas valve with 24Vac to open.
11. The gas valve will open for 5 seconds.
12. A flame signal must be registered within the 5 seconds for the valve to remain open.
13. At this point the controller will increase the combustion fan speed to its maximum setting for that particular model heater.
14. The heater will continue to run as long as there is a flame signal until the inlet water reaches the set temperature.

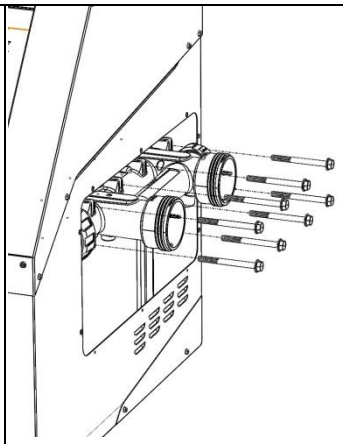
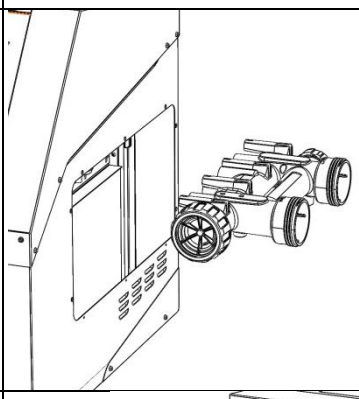
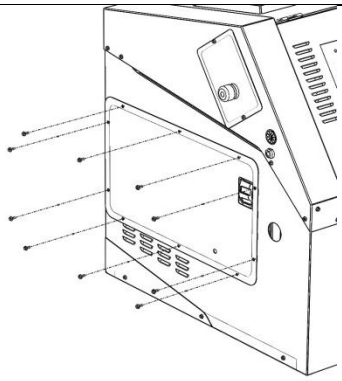
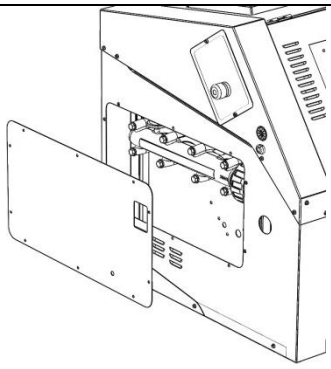
Should the heater fail to ignite or no flame sensing occurs,
Gas valve is de-energized
Fan continues to run on high speed
30 seconds later a reattempt for ignition occurs
Maximum of 3 ignition attempts occurs
After which ignition pack locks out.

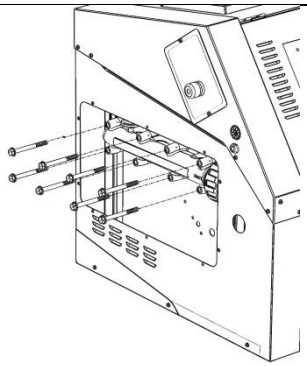
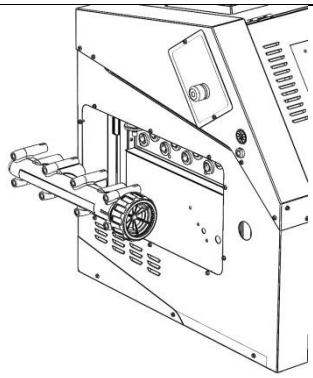
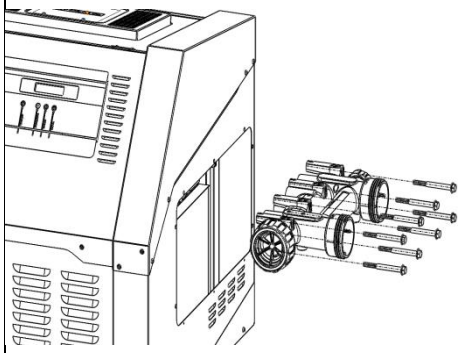
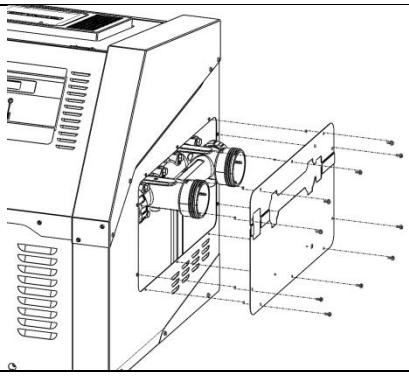
⚠ WARNING

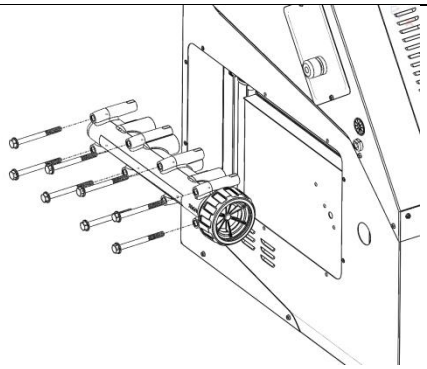
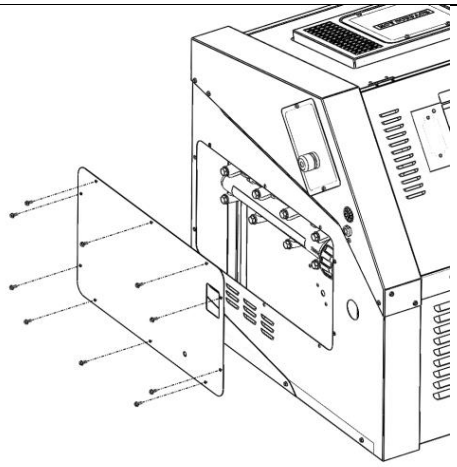
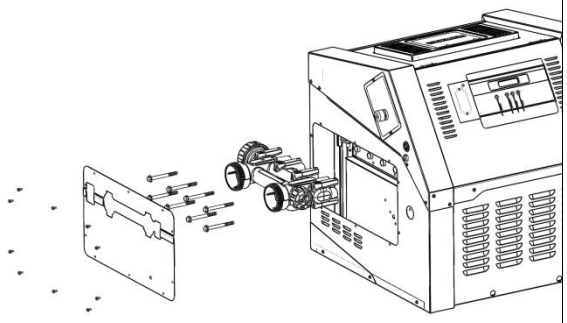
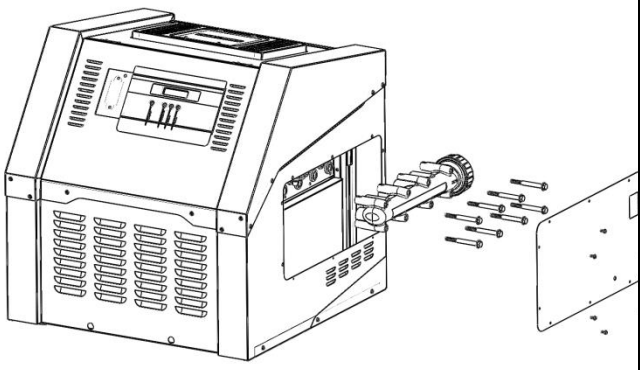
This appliance must only be serviced by an authorised person qualified to perform electrical service on gas fired appliances. High Voltage present in some heater circuits. Disconnect power at branch breaker supplying power to pool heater before servicing.

HEADER CONVERSION TO LEFT HAND HEADER INLET/OUTLET

1	J-HN series POOL HEATER-OUTDOOR MODEL-RIGHT HAND SIDE WATER CONNECTION	
2	USING A PISTOL CLUTCH TYPE TORQUE CONTROL SCREWDRIVER , UNSCREW 10 X SCREWS FROM IN/OUT HEADER COVER PLATE TOP AND BOTTOM JOB TORQUE SETTING 1.8 FT/IBS (2.5±0.1Nm):	
3	REMOVE IN/OUT HEADER COVER PLATE TOP AND BOTTOM	

4	REMOVE 8X HEX HEAD BOLTS WITH CLICK TYPE TORQUE WRENCH WITH 7/8" SOCKET JOB TORQUE SETTING 2.6 FT/IBS (3.6±0.2 Nm):	
5	REMOVE RIGHT HAND SIDE MANIFOLD	
6	USING A PISTOL CLUTCH TYPE TORQUE CONTROL SCREWDRIVER , UNSCREW 10 X SCREWS FROM RETURN HEADER COVER PLATE JOB TORQUE SETTING 1.8 FT/IBS (2.5±0.1Nm):	
7	REMOVE RETURN HEADER COVER PLATE	

8	REMOVE 8X HEX HEAD BOLTS WITH CLICK TYPE TORQUE WRENCH WITH 7/8" SOCKET JOB TORQUE SETTING 2.6 FT/IBS (3.6±0.2Nm):	
9	REMOVE LEFT HAND SIDE MANIFOLD	
1	INSTALL RIGHT HAND SIDE MANIFOLD USING 8X HEX HEAD BOLTS WITH CLICK TYPE TORQUE WRENCH WITH 7/8" SOCKET JOB TORQUE SETTING 2.6 FT/IBS (3.6±0.2 Nm):	
2	ATTACH IN/OUT HEADER COVER PLATE TOP AND BOTTOM USING A PISTOL CLUTCH TYPE TORQUE CONTROL SCREWDRIVER , SCREW 10 X SCREWS FROM IN/OUT HEADER COVER PLATE TOP AND BOTTOM JOB TORQUE SETTING 1.8 FT/IBS (2.5±0.1Nm):	

3	INSTALL LEFT HAND SIDE MANIFOLD USING 8X HEX HEAD BOLTS WITH CLICK TYPE TORQUE WRENCH WITH 7/8" SOCKET JOB TORQUE SETTING 2.6 FT/IBS (3.6±0.2 Nm):	
4	ATTACHE RETURN HEADER COVER PLATE USING A PISTOL CLUTCH TYPE TORQUE CONTROL SCREWDRIVER , SCREW 10 X SCREWS FROM IN/OUT HEADER COVER PLATE TOP AND BOTTOM JOB TORQUE SETTING 1.8 FT/IBS (2.5±0.1 Nm):	
1		

TESTING GAS PRESSURE

1. **Note – burner gas pressure must be measured when unit is operating**.
2. Set thermostat to "OFF".
3. Remove screws from front thermostat panel and open.
4. Loosen screw from ⅛" brass test point located on outlet side of gas valve (between the valve and the burner).
5. Connect manometer tube to test point.
6. Set thermostat to "ON" and wait for burner to ignite.
7. Once burner has ignited, the manometer must indicate the nominal inlet pressure listed below.
8. Remove the regulator cap on the gas valve and adjust the regulator pressure to achieve the specified burner operating pressure.
9. If the regulator cannot be adjusted to achieve the specified burner pressure, it is likely the gas line to the appliance is insufficient.
10. Remove manometer.
11. Tighten test point screw.
12. Replace regulator cap.
13. Refit covers.

⚠**WARNING**: Important to check that Test point screw has been refitted and tightened.

		Jacuzzi® J-HN Series Heater Model			
		J-HN250C		J-HN400C	
		NATURAL	PROPANE	NATURAL	PROPANE
GAS INLET RATES (BTU/h)		250,000	250,000	399,000	390,000
GAS TEST POINT PRESSURE (lbs)	INLET STATIC	2.3" MIN. 10.5" MAX.	11" MIN. 14" MAX.	3" MIN. 10.5" MAX.	9.3" MIN. 14" MAX.
	INLET OPERATING (HIGH FIRE)	>4.5" WC	>10" WC	>4.5" WC	>10" W.C
	BURNER OPERATING (HIGH FIRE)	2.6" W.C	8.8" W.C	2.6" W.C	8.8" W.C
CO LEVELS (ppm)		10 to 30 max	10 to 30 max	10 to 30 max	10 to 30 max

PERFORMANCE DETAILS

TO CHECK BURNER PERFORMANCE

1. Start pool pump supplying water to Gas Heater and ensure heater is turned off
2. Set up manometer to outlet side of gas valve
3. Turn the Heater on at the on/off switch
4. Increase temperature set point above the actual water temperature
5. Allow the heater to start
6. Ensure heater is running at full fan rate
7. Inspect flame from the flame inspection port on left hand side of the heater and ensure flames are blue
8. Check gas pressure on Manometer
9. Remove regulator cap on gas valve and adjust gas rate screw to achieve nominated burner pressure
10. Inspect flame again ensuring flame is blue in colour
11. Turn heater off and ensure the flame cuts out and the pressure switch symbol on the thermostat screen disappears
12. Turn heater on again, and ensure the thermostat displays "L" for lockout. Wait 2 minutes and the heater should then reignite.
13. Lower front door and secure shut.

TROUBLESHOOTING

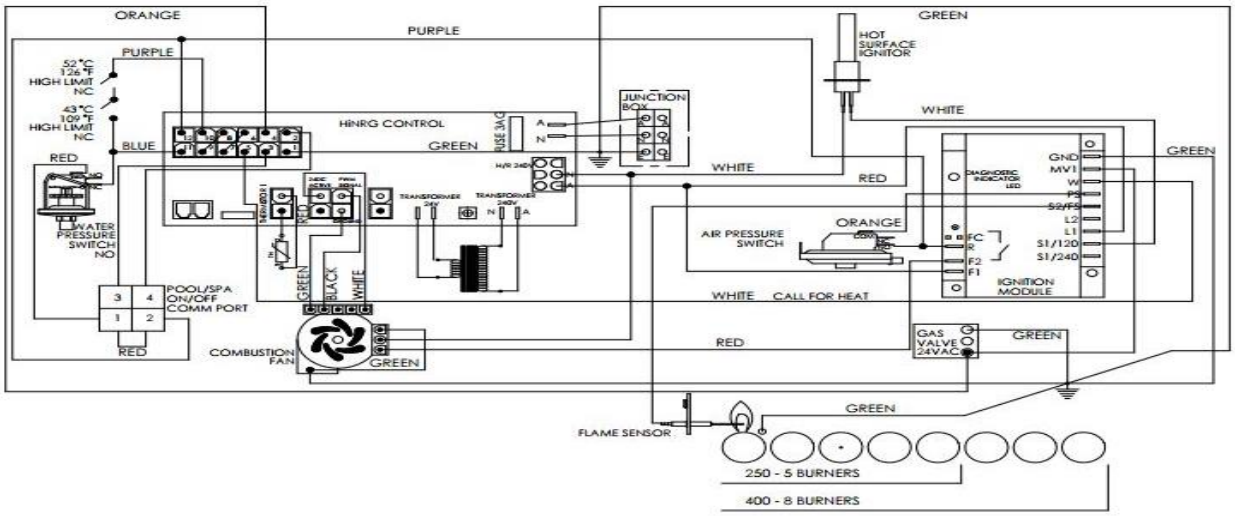
HEATER WILL NOT LIGHT	
Possible cause	**Action**
No display	Check if power to heater is turned on
Pump not running	Start pump
Pump air locked	Check for leaks
Filter dirty	Clean filter
Pump strainer basket clogged	Clean strainer
Thermostat turned off	Turn on
Set temperature lower than water temperature	Increase set temperature
Water too hot-fault condition displayed	Refer to fault indication table
Gas turned off	Turn gas cock on
Heater in a Fault condition	Refer to fault indication table
HEATER SHORT CYCLING (RAPID ON AND OFF OPERATION)	
Possible cause	**Action**
Insufficient water flow	Clean filter and pump strainer
HEATER MAKING KNOCKING NOISES	
Possible cause	**Action**
Low water flow	Check pump condition
Heater operating after pump has shut off	Shut off gas supply and call for service
Heat exchanger scaled	Shut off gas supply and call for service

IGNITION MODULE LED FLASH CODE

LED INDICATION	FAULT MODE
Steady On	Internal Control Failure
1 Flash	Airflow Fault (35-66 models)
2 Flashes	Erroneous Flame Signal
3 Flashes	Lockout

If the heater cannot be made to perform correctly, please contact the www.Jacuzzipool.com

Jacuzzi® J-HN Series Series WIRING DIAGRAM



MAINTENANCE OF YOUR POOL HEATER

Maintenance Schedule: You new product incorporates moving parts and withstands high velocity water with chemicals in it. Some of these parts will wear in the normal course of use and require regular checks and maintenance. Performing these checks and maintenance will identify parts that have worn and require repair/replacement before further serious damage is sustained. A small amount of regular care and attention to your pool equipment will help ensure long life and trouble free performance.

To protect against extremes of temperature, your unit is vented to allow expensive electronics to cool. Ants and some insects are often attracted to the warmer, dry environment inside the enclosure. We recommend that, with power turned off, you spray a surface insecticide on the surfaces surrounding the control to prevent ant and insect ingress. Repeat every three months or as necessary.

Timing	Maintenance Check	Service action (if required)
Monthly	Operate heater for 15 min to clear residues and ensure correct operation	Start circulation pump and turn heater on, leaving to run for a few minutes. This will clear flue passages and keep components working properly
Three Monthly	Check inlet/outlet O-rings for leaks	Isolate Pump, turn power off, clean and grease O rings or replace if necessary
Three Monthly	Check surroundings for leaves, debris and flooding Check for insects/ants	Remove debris from around the base of the heater and rectify if any flooding. Clear vegetation from around the flue Spray a surface insecticide on the surfaces around the unit to prevent ant and insect ingress.
Annually	Check gas pressures Check Burner, pilots and ignition systems	Call Service technician to perform annual gas checks and routine maintenance Must be completed by an authorised person

Important note: Regular maintenance is important to ensure long life and trouble free performance of your pool equipment. If unable to perform the maintenance yourself, contact your local Jacuzzi office who will arrange a trained service technician to perform the maintenance for you.

Record your Equipment details here for quick reference:

Model No.: _____

Serial No.: _____

Installer: _____

Installation Date: _____

For warranty information please visit www.jacuzzipool.com

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