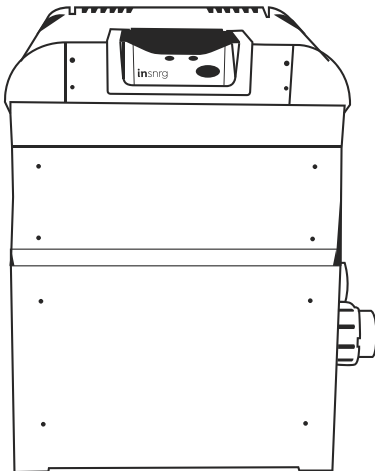


INSTALLATION & OPERATING MANUAL  
**Gi Gas Heater**

# A COMPLETE GUIDE TO YOUR GAS HEATER



**insnrg**

# CONGRATULATIONS ON YOUR PURCHASE OF THIS PRODUCT.

**THIS MANUAL HAS BEEN CAREFULLY DEVELOPED TO  
GIVE YOU ALL THE INFORMATION YOU NEED TO GET THE  
BEST VALUE FROM YOUR PURCHASE.**

It is important that you read through the manual to identify the key areas you need to understand, particularly the following:

- Health and Safety Concerns
- Installation requirements
- How to operate the major features of the unit
- The importance of maintenance
- If you have a problem, what to trouble shoot before you contact your professional
- Finally, your entitlements under your product warranty.

Insnrq have developed their product to provide you with the ultimate experience and are sure you will be delighted with your purchase.

**Please note:** This manual has been designed to cater for installation rules and codes in the USA, Canada and Australia. Specific rules and regulations for each country has been highlighted by the National flag of each country. Please ensure you follow the installation rules specific to your country.

# THE IMPORTANT BITS

## **04** **SECTION 1:** We care about your safety

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- Carbon Monoxide
- Important Tips for Hot Tubs & Spas

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- Replacement Parts
- Warranty

## SECTION 1

# WE CARE ABOUT YOUR SAFETY



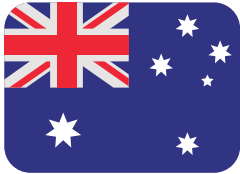
## **IMPORTANT WARNINGS**

**Please read this manual carefully  
BEFORE installing, operating or  
servicing the Gas Heater.**

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

This Appliance is not intended for use by young children or infirm persons without supervision. Please ensure that young children are supervised so that they do not play with the appliance.

# LOCAL CODES



## **AUSTRALIA**

Must be installed in accordance with the installation instructions, local gas fitting regulations, Standards Australia Installation Code AS/NZ 5601 and any other relevant statutory authorities.



## **CANADA**

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



## **USA**

Installation in USA must be in accordance with all local codes and/or the latest edition of the National Fuel Gas Code, ANSI Z223.1 and the latest edition of the National Electrical Code, NFPA 70 (US).

## **NOTICE TO INSTALLERS**

This appliance must be installed by an authorized person.

This appliance must be installed in accordance with the installation instruction, local gas fitting regulations, any local regulatory standards and any other relevant statutory authorities.

Refer to date plate for details of gas type, gas consumption and burner pressure.

This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exists. In the event no such state or local requirement exists, the installer or maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all the instructions in this manual can be followed exactly.

Electrical maintenance and repairs of this equipment must only be done by qualified persons in accordance with national and local regulations.

This product must be commissioned and tested for satisfactory operation by the licenced installer before leaving.

# SAFETY INSTRUCTIONS

## **Risk of fire or explosion from incorrect fuel use or faulty fuel conversion.**

Do not try to run a heater set up for natural gas on propane gas or vice versa. Only qualified service technicians should attempt to convert heater from one fuel to the other. Do not attempt to alter the rated input or type of gas by changing the orifice. If it is necessary to convert to a different type of gas, discuss with your Insnrng supplier and purchase the appropriate conversion kits. Serious malfunction of the burner can occur which may result in loss of life. Any additions, changes, or conversions required in order for the appliance to satisfactorily meet the application needs must be made by a qualified professional using approved parts. The heater is available for use with natural gas or LP (propane) gas only. It is not designed to operate with any other fuels. Refer to the nameplate for the type of gas the heater is equipped to use.

## **Risk of fire or explosion from flammable vapors.**

Do not store gasoline, cleaning fluids, varnishes, paints, or other volatile flammable liquids near heater or in the same room with heater.

## **Risk of explosion if unit is installed near propane gas storage.**

Propane (LP) gas is heavier than air. Consult local codes and fire protection authorities about specific installation requirements and restrictions. Locate the heater away from propane gas storage and filling equipment as specified by the Standard for the Storage and Handling of Liquefied Petroleum Gases, CAN/CSA B149.2 (latest edition) or ANSI/NFPA 58 (latest edition).

**Risk of fire, carbon monoxide poisoning, or asphyxiation if exhaust venting system leaks.** Only qualified service technicians should attempt to service the heater, as leakage of exhaust products or flammable gas may result from incorrect servicing.

**Risk of asphyxiation if exhaust is not correctly vented. Follow venting instructions exactly when installing heater.** Do not use a draft hood with this heater, as the exhaust is under pressure from the burner blower and a draft hood will allow exhaust fumes to blow into the room housing the heater. The heater is supplied with an integral venting system for outdoor installation. A vent conversion kit is available for installations in enclosures (Canada) or indoors (U.S.). Use the specified venting, and only the specified venting, when heater is installed in an enclosure or indoors. In Canada, this pool heater can only be installed outdoors or in an enclosure that is not normally occupied and has no openings directly into occupied areas.

**Wiring errors can cause improper and dangerous operation and can also destroy the control board.** Label all wires prior to disconnection when servicing controls.

Connect heater to 240 Volt, 60 Hz., Single Phase power only in USA/Canada. Connection in Australia is by supplied 3 Pin, 10 Amp Plug and Lead only. Verify proper operation after servicing.

**Do not allow children to play on or around heater or associated equipment.** Never allow children to use the pool or spa without adult supervision.

**Read and follow other safety information contained in this manual prior to operating this pool heater.**



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



**WARNING:** DO NOT SPRAY AEROSOLS IN THE VICINITY OF THE APPLIANCE WHILE IT IS IN OPERATION



**WARNING:** SERVICING OF THIS APPLIANCE MUST ONLY BE UNDERTAKEN BY AN AUTHORISED PERSON. SERVICING INSTRUCTIONS ARE AVAILABLE FROM INSNRG OR [HTTPS://WWW.INSNRG.COM/GI-GAS-HEATER](https://www.insnrg.com/gi-gas-heater) .



# CARBON MONOXIDE

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

For indoor installations, it is highly recommend the installation of suitable Carbon Monoxide detectors in the vicinity of this appliance and in any adjacent occupied spaces as an additional measure of safety.

## 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.

# IMPORTANT TIPS FOR HOT TUB & SPA INSTALLATIONS:

The following **“Safety Rules for Hot Tubs,”** recommended by the U.S. Consumer Product Safety Commission, should be observed when using the spa. Consult heater operation and installation instructions for water temperature guidelines before setting temperature:

- 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.
- 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.
- **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 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**.
- 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 1°F/ 1°C.

- Person with a medical history of **heart disease, diabetes, circulatory or blood pressure** problems should consult their physician before using a hot tub or spa.
- **Person taking any medication** which induces drowsiness (e.g., tranquilizers, antihistamines, or anticoagulants) should not use spas or hot tubs.
- Prolonged immersion in hot water can induce hyperthermia.
- Hyperthermia occurs when the internal body temperature reaches a level of 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

## SECTION 2

WE WANT YOU TO BE DELIGHTED WITH YOUR PURCHASE, CORRECT INSTALLATION WILL PROLONG LIFE AND MAXIMISE THE PERFORMANCE OF THIS UNIT.

The following section will outline how to install your heater to get the best results. To operate correctly, your Gas Heater needs a reliable supply of **Gas, Water** and **Air**.

By adhering to the following instructions, you will ensure the best combination.

**Insnrq highly recommend the use of qualified service technicians to ensure the best performance as well as the health and safety of your family.**

## **FOLLOW STEP BY STEP FOR THE BEST OUTCOME:**



**LOCATION & DIMENSIONS**



**CLEARANCES**



**OUTDOOR INSTALLATIONS**



**INDOOR INSTALLATIONS -  
VENTING REQUIREMENTS**



**GAS CONNECTIONS**



**WATER CONNECTIONS**



**BELOW POOL WATER INSTALLATIONS**



**WATER CHEMISTRY**



**ELECTRICAL CONNECTIONS**

# LOCATION OF HEATER

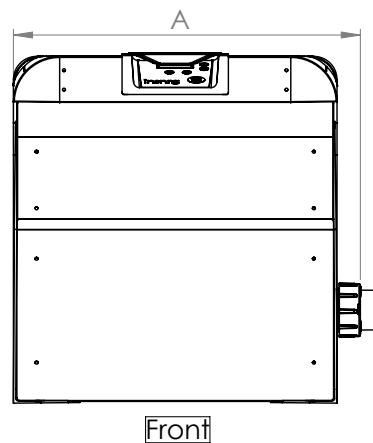
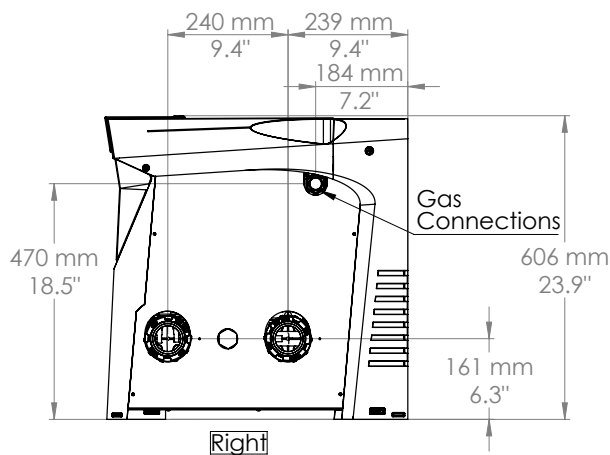
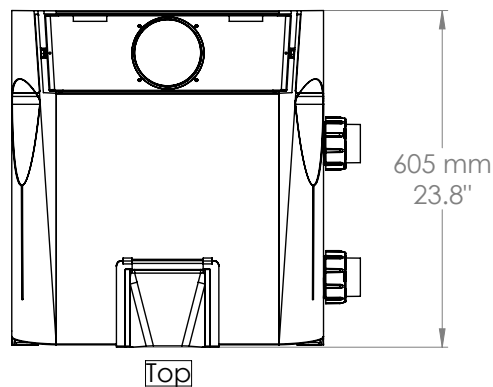
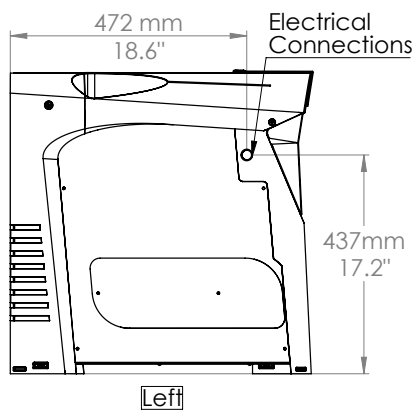
## **PLAN THE POSITION OF THE HEATER SO THAT IT WILL BE:**



1. Free of water, flooding and sprinklers. Avoid installation in sumps, below roof lines without gutters, or at the bottom of a run off
2. On a stable fireproof base that does not leave the heater suspended by pipework or electrical connections, allow movement through vibration and ensure no strain is put on connections or other equipment
3. Is accessible for disconnection and service
4. Within reach of the power supply
5. Complies with these instructions and all local codes and regulations

**DO NOT  
STORE OR USE  
GASOLINE OR  
OTHER FLAMMABLE  
VAPORS AND  
LIQUID IN THE  
VICINITY OF THIS  
OR ANY OTHER  
APPLIANCE.**

# DIMENSIONS



MODEL	HEATER WIDTH "A"	
	(mm)	(in)
GI 160	495	19.5
GI 265	605	23.8
GI 420	765	30.1



# CLEARANCES

The heater must be installed in a location that allows clearances for maintenance and inspection. Minimum distances from combustible surfaces must also be maintained. 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 prevailing local conditions such as wind speed and direction, proximity and height of obstructions that may block ventilation, and proximity to public access areas.

## **SERVICE CLEARANCE:**

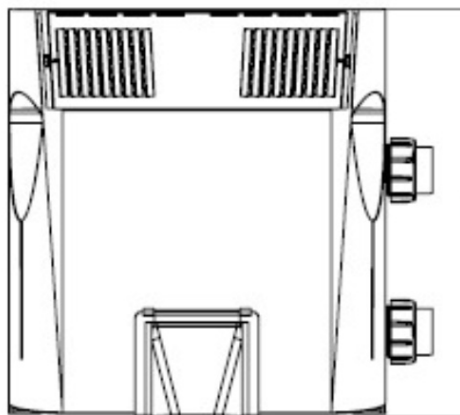
A minimum of 300mm (12") is required on both the Front and Top Panels for any service requirements.

## **COMBUSTIBLE SURFACES:**

Each heater face requires a 150mm (6") clearance from combustible surfaces.

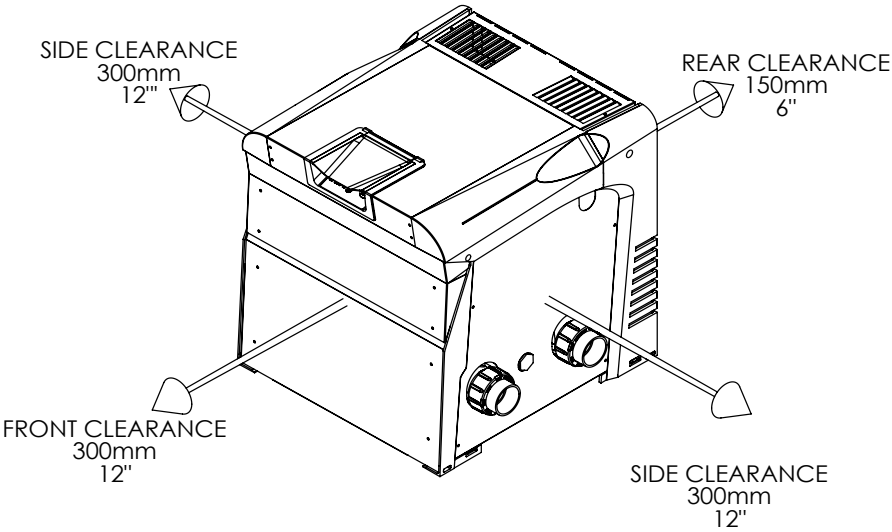
Although it is not advisable, the heater base can be placed on a combustible surface for operation.

**However, do not install the heater on carpet.**

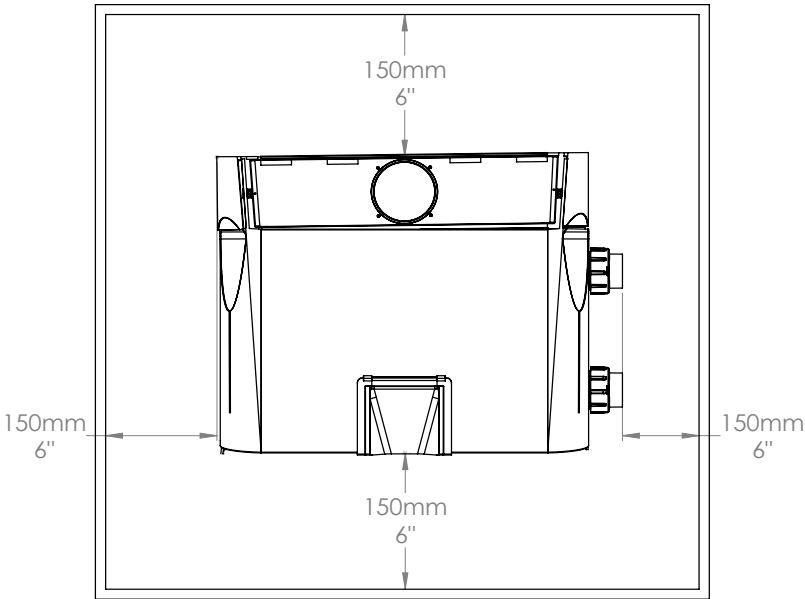




# OUTDOOR CLEARANCE



# INDOOR CLEARANCE



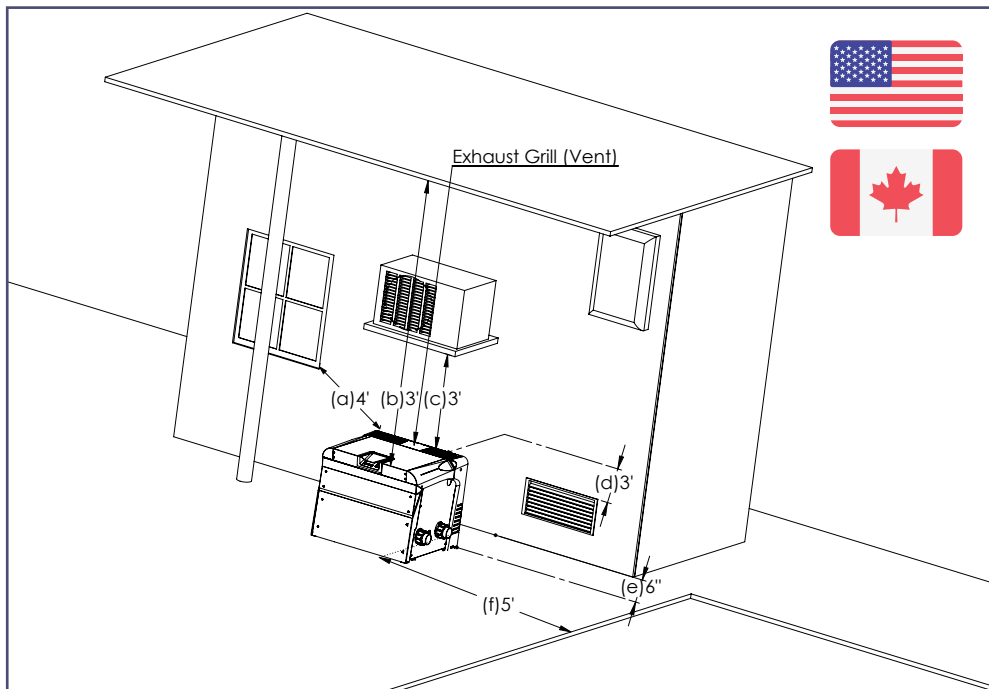
# OUTDOOR INSTALLATIONS -

## UNITED STATES AND CANADA



### Locate the heater:

- On a level Solid Surface
- 5 ft from inner pool edge unless separated by a permanent solid barrier, i.e. a wall or fence **(f)**
- In an open area, not under a deck or other structure
- Away from doors windows or louvers that connect in any way to occupied or inhabited areas of the building.  
NOTE: In Canada the top of the exhaust vent must be at least 10 feet from any building opening.
- Away from rainwater runoff
- Away from potential sprinkler water intrusion
- So that the top of the heater is at least 3 feet below any overhang **(b & c)**
- So that the top surface of the heater is at least 3 feet above any forced air inlet within 10 feet **(d)**



## WARNING FOR VENT LOCATIONS



### 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

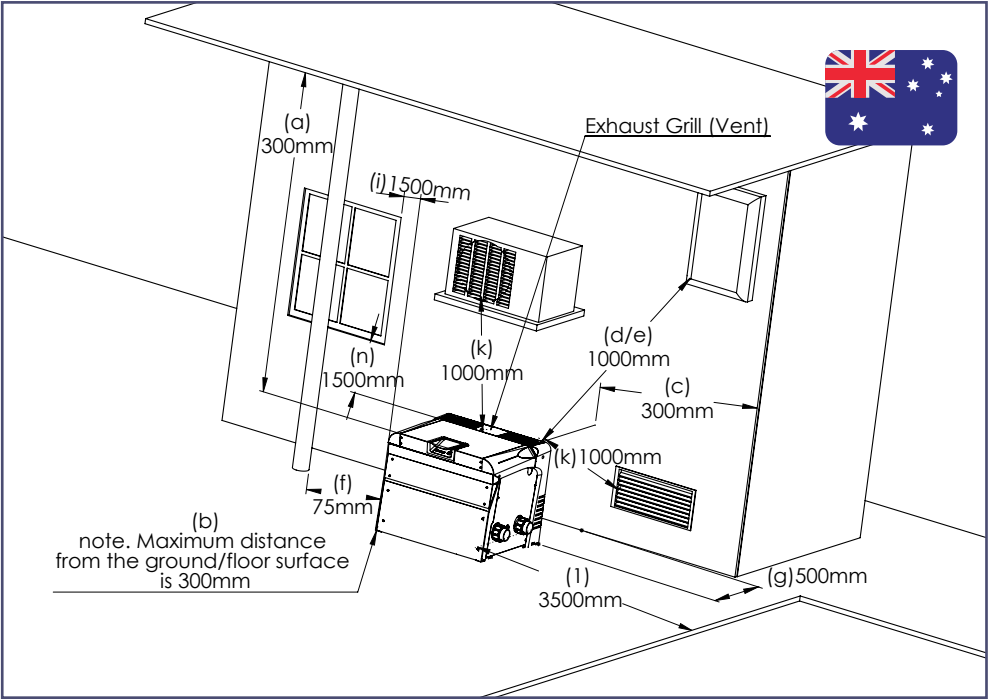
Do not install the heater with the top of the vent assembly within 10 feet (3.0 m) of any opening into a building. Local codes and installation requirements may vary.

## AUSTRALIA

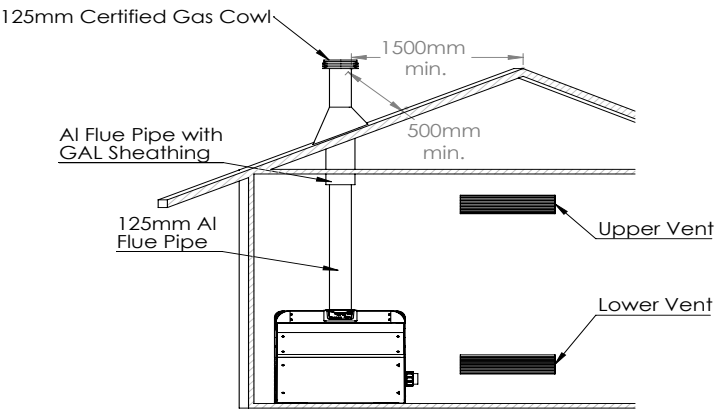


### Locate the heater:

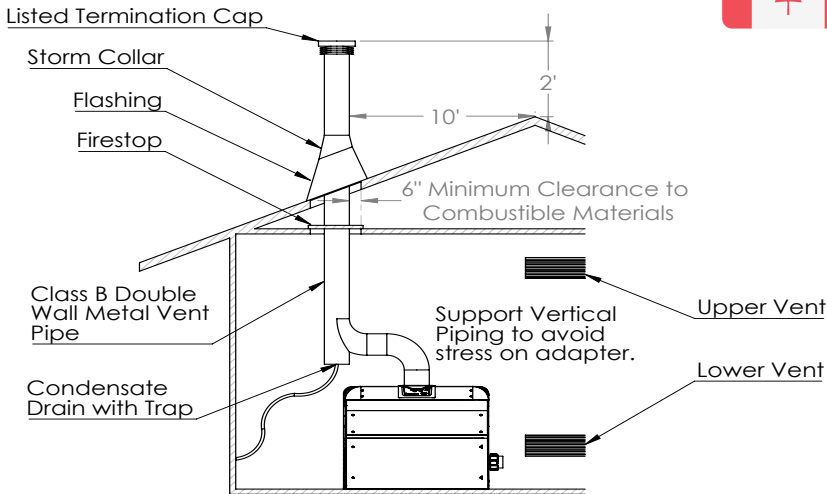
- On a level Solid Surface
- 3500mm from inner pool edge unless separated by a permanent solid barrier, i.e. a wall or fence **(l)**
- In an open area, not under a deck or other structure
- Away from doors windows or louvers that connect in any way to occupied or inhabited areas of the building.
- Away from rainwater runoff
- Away from potential sprinkler water intrusion
- So that the top of the heater is at least 1000mm below any overhang **(k)**
- So that the top surface of the heater is at least 1000mm above any forced air inlet within 1000mm **(k)**

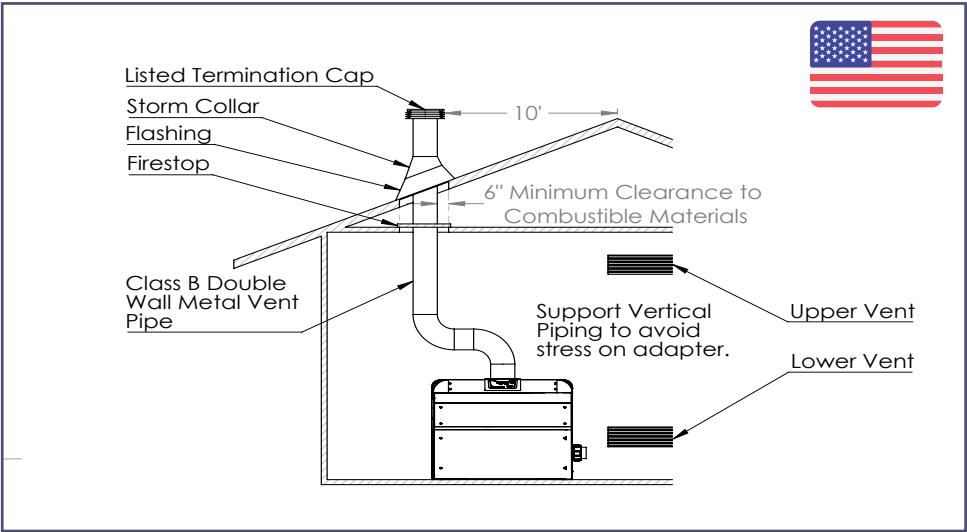


# INDOOR INSTALLATIONS – VENTING REQUIREMENTS



Canada





**NOTE: MAXIMUM VERTICAL FLUE LENGTH IS 16m**

**Natural Ventilation direct from Outside**

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 plant room, and the distance between the bottom of the lower opening and the floor of the plant room does not exceed 5% of the height of the plant room.

Natural Ventilation can be sourced from a non-habitable adjacent room provided the adjacent room has the same ventilation as the direct outside requirement.

**The minimum free ventilation area provided by each opening is as per the following table:**

Minimum Free Ventilation for each opening				
Model	Direct Outside		Via Adjacent Room	
	Square inch	Square cm	Square inch	Square cm
GI 160	37.0	238.5	73.9	477.0
GI 265	61.6	397.50	123.2	795.0
GI 420	98.6	636.0	197.2	1,272.0

# GAS CONNECTIONS

The Installation of Gas piping 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 greater than or equal to 1/2 psi (3.5kPa).

The gas fitting line should be installed by an authorised person and comply with local regulations and Australian Standard code AS/NZ 5601. The gas line from the meter will usually be of a larger size than the gas inlet connection.

## **REFER TO BELOW TABLE FOR CORRECT GAS INLET PIPING LENGTH FROM THE GAS METER TO THE HEATER.**

- Check the gas meter to make sure it will supply enough gas to the heater and any other appliances using the same gas supply. If unsure, contact your local gas utility to confirm.
- Install a manual gas shutoff valve outside the heater body for service and safety. Never install the shutoff valve inside the body of the heater.
- Install a sediment trap and union ahead of the gas controls and outside the heater body.
- Do not use a restrictive gas cock.



## Gas Pipe Sizing (USA/CAN)



- Pipe Sizing for Gas Line Connections
- Maximum Equivalent Pipe Length (Ft)
- Natural Gas at 1,000 BTU per Cubic Foot
- Propane Gas at 2,500 BTU per Cubic Foot

Model	3/4"		1"		1 1/4"		1 1/2"		2"	
	NG	PG	NG	PG	NG	PG	NG	PG	NG	PG
GI 160	25'	70'	110'	215'	385'	515'				
GI 265	20'	50'	70'	150'	250'	500'	600'			
GI 420		10'	20'	60'	100'	150'	200'	450'	400'	

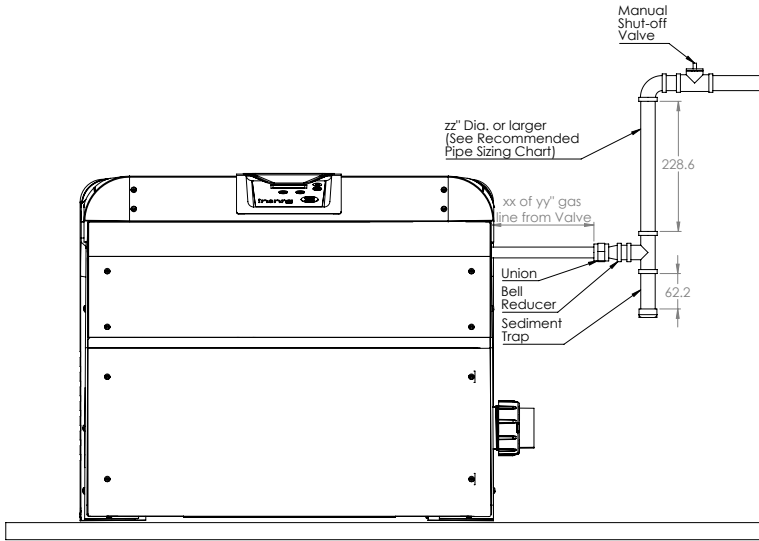
## Gas Pipe Sizing (AUS)



- Pipe Sizing for Gas Line Connections
- Maximum Equivalent Pipe Length (m)
- Natural Gas Supply Pressure of 1.1kPa and pressure drop of 0.075kPa
- Propane Gas Supply Pressure of 3.0kPa and pressure drop of 0.25kPa

Model	20mm		25mm		32mm		40mm		50mm	
	NG	PG	NG	PG	NG	PG	NG	PG	NG	PG
GI 160	3	30	14	120	50		140			
GI 265		12	6	50	18	160	45		220	
GI 420		5	2	25	8	80	20	200	90	

Note: Gas Pipe Sizing Tables are indicative only. All pipe sizing should be calculated



## INSTALLATION OF SEDIMENT TRAP

Install a sediment trap and union located outside the heater panels in accordance with National Gas code requirements. Do not use a restrictive gas cock. The sediment trap shall be either a tee fitting with a capped nipple in the bottom outlet which can be removed for cleaning, or any other device recognized as an effective sediment trap. All gas piping should be tested after installation in accordance with local codes.

			INSNRG GAS HEATER					
MODEL	NAME		Gi 160		Gi 265		Gi 420	
	NUMBER		21315	213157	21325	213257	21340	213407
GAS TYPE			NATURAL	PROPANE	NATURAL	PROPANE	NATURAL	PROPANE
GAS INLET RATE (MJ/h)			160	160	265	265	400	400
TTP (kPa)	INLET	MIN.	1.13	2.75	1.13	2.75	1.13	2.75
		MAX.	3.50	3.50	3.50	3.50	3.50	3.50
		OUTLET OPERATING		0.01	0.00	-0.01	0.00	-0.15
EFFICIENCY (%)			81.4	81.4	81.1	81.1	82.3	82.3
OUTPUT (kW)			36	36	59	59	89	89

## OPERATION PERFORMANCE CHECK PROCEDURE

1. Ensure heater is turned off.
2. Remove top access panel.
3. Slacken screw in test nipple 5 and attach manometer.
4. Ensure screw in test nipple 8 is screwed down and closed.
5. Start pool pump.
6. Turn heater on.
7. Allow heater to start.
8. Test for gas leaks at all gas connection points up to and after valve.
9. Ensure inlet gas pressure abides by table 1.

**If inlet gas pressure ok and there are no gas leaks, then continue with step 8.**

***If not, disconnect heater from power and close gas valve on inlet gas line. Please contact an authorised person and do not operate heater.***

10. Turn off heater.
11. Remove manometer from test nipple 5.
12. Ensure screw in test nipple 5 is screwed down and closed.
13. Slacken screw in test nipple 8 and attach manometer.
14. Turn gas analyser on, ready to test combustion.
15. Start pool pump.
16. Turn heater on.
17. Allow heater to start.
18. Check outlet gas pressure on manometer as per table 1.
19. Place gas analyser probe in the flue outlet in direct contact with combustion gas.
20. Adjust outlet gas pressure if required as per step E) under SET START GAS VOLUME to meet desired results and outlet operating gas pressure.
21. If required, Adjust CO<sub>2</sub> as per PRECISION CO<sub>2</sub> ADJUSTMENT.
22. Look through sight glass to ensure no yellow flames are visible.

**IF combustion results are ok, and a yellow flame can not be seen, then proceed to step 23.**

***If desired combustion results can not be achieved, disconnect heater from power and close gas valve on inlet gas line. Please contact an authorised person and do not operate heater.***

23. Turn heater off.
24. Remove manometer and tighten test nipple 8.
25. Fit top access panel.
26. Turn heater on again and ensure heater ignites.
27. Make sure combustion results remain within specification.

## **GAS VALVE PRESSURE ADJUSTMENT**

**Warning:** Only a trained and authorised person should adjust the gas valve pressure and offset adjustments

**Warning:** Do not attempt without a calibrated combustion analyser and digital manometer

**Warning:** Do not adjust gas valve regulator in the normal manner. Follow these instructions carefully.

**Minimum Inlet Pressure:** 1.1 kPa (4.5" w.c.)

**Maximum Inlet Pressure:** 2.75 kPa (11" w.c.)

Your heater has been pre calibrated in the factory for optimum combustion. Only minor adjustments should be necessary. In general, following precision CO<sub>2</sub> Adjustment Instructions.

### **Desired Results:**

**CO<sub>2</sub>:** Between 7% and 9%

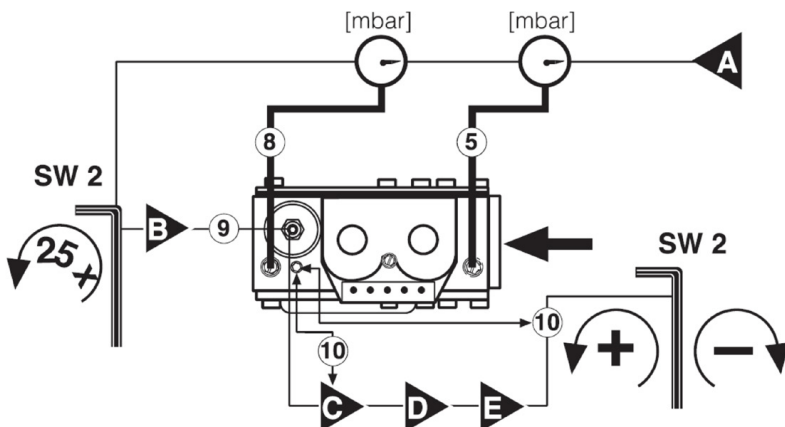
**CO:** Between 10ppm and 60 ppm

**Excess Air:** Between 25% and 40%

**Stack Temperature:** 160 to 200 degree C rise (320F to 400F Rise)

## SET START GAS VOLUME

- A)** Slacken screw in test nipple. Connect pressure gauge to test nipples 5 and 8.
- B)** Relieve pressure controller by turning setting screw 9 anticlockwise (max. 25 turns).
- C)** Turn setting screw 10 anticlockwise to max. starting load.
- D)** Connect pressure gauge to test nipples 5 and 8.
- E)** Set start load/nozzle pressure with setting screw 10:
- **Higher nozzle pressure:** Turn screw **anticlockwise**.
  - **Lower nozzle pressure:** Turn screw **clockwise**.



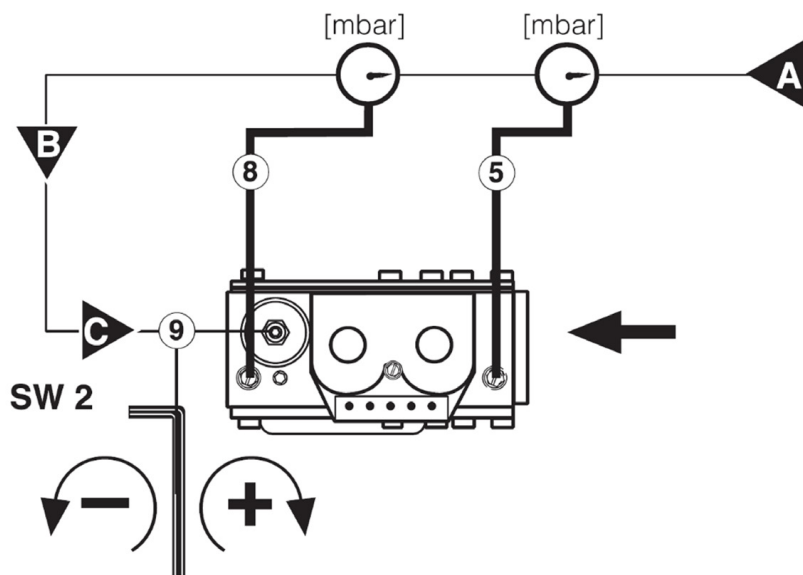
## SETTING GOVERNOR

**A)** Slacken screw in test nipple. Connect pressure gauge to test nipples 5 and 8.

**B)** Start up gas burning appliance.

**C)** Set governor to pilot value setting screw 9:

- **Higher nozzle pressure:** Turn screw **clockwise**
- **Lower nozzle pressure:** Turn screw **anticlockwise**



## PRECISION CO2 ADJUSTMENT

### Precision CO2 adjustment

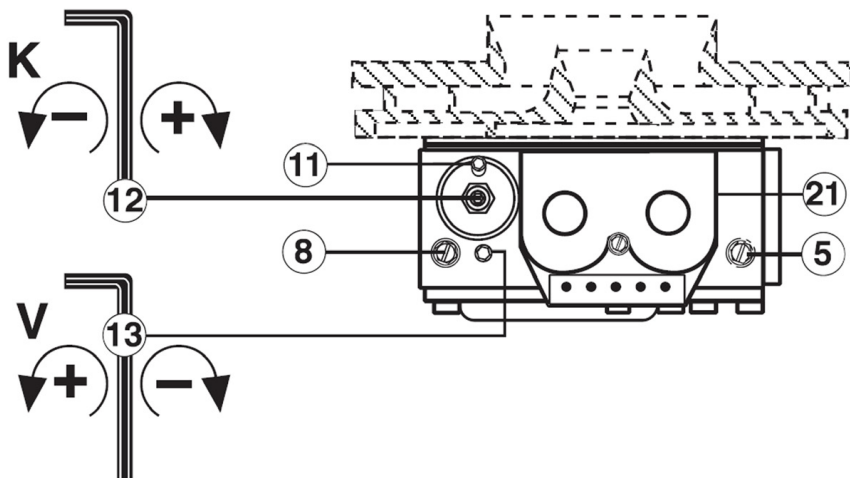
Start up heater.

**A)** Preset the offset on measurement connection 8 to 0Pa with K-screw 12 (2mm...) Measuring device resolution  $\pm 0,5$  Pa min.

**B)** Boiler in “Max” setting.

**C)** Adjustment at V-screw 13

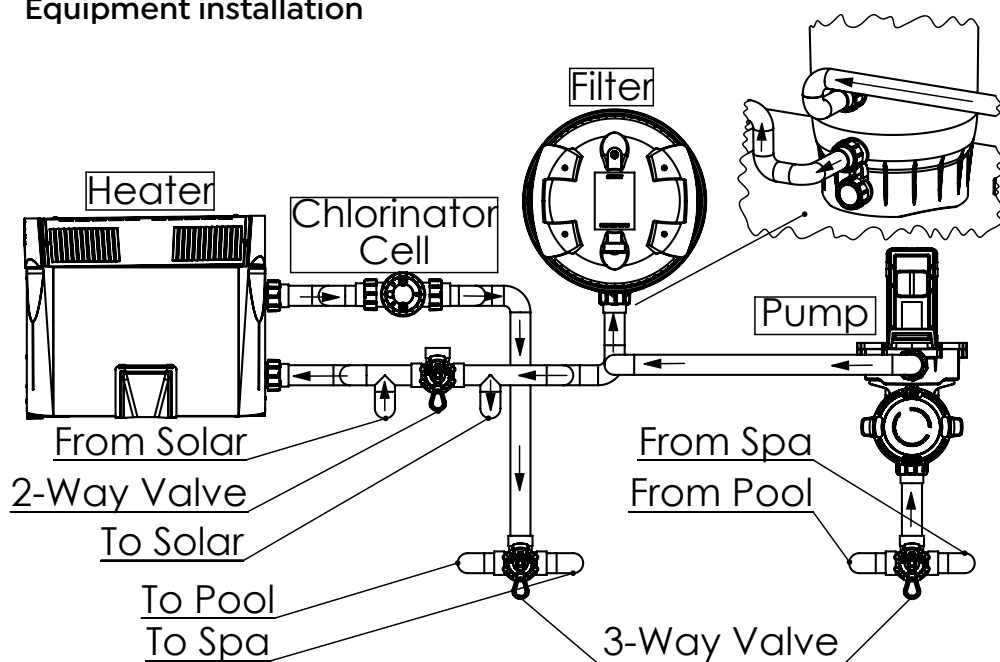
- **Higher CO2 value:** Turn screw 13 **anticlockwise**.
- **Lower CO2 value:** Turn screw 13 **clockwise**.



# WATER CONNECTIONS

For best results the heater requires proper water flow and pressure for its operation. See below for the preferred installation. The filter pump discharges to the filter, the filter discharges to the heater, and the heater discharges directly to the pool or spa. Any chemical feeder or salt chlorinator needs to be installed downstream of the heater. Ideally, install a chemical resistant one-way check valve between the heater and the chemical feeder to prevent back-siphoning through the heater when the pump is off. Failure to follow these recommendations can potentially cause the Heat Exchanger to corrode and void any manufacturing warranty.

## Equipment installation

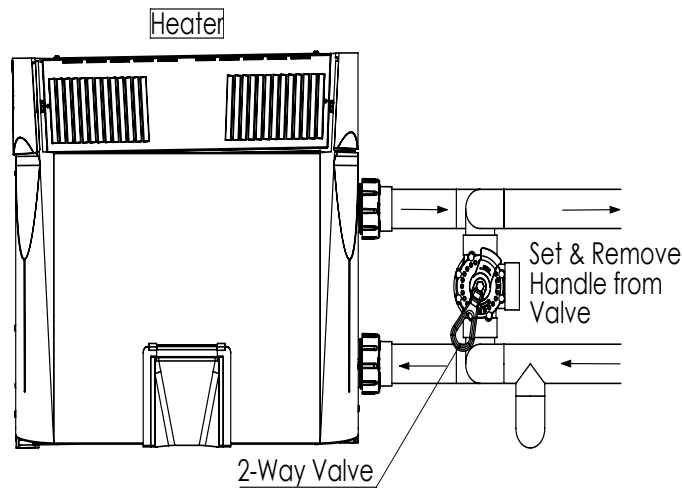




The table below outlines the minimum and maximum flow rates for the optimal performance of the heater. Installation of a manual bypass valve is required when the pump flow exceeds 500 lpm / 130 gpm.

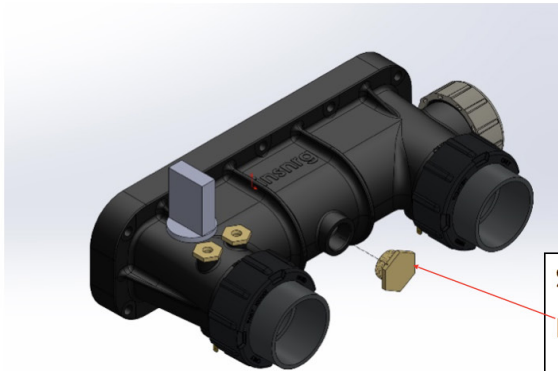
Model	Min	Max
GI 160	120 lpm / 30 gpm	500 lpm / 130 gpm
GI 265	120 lpm / 30 gpm	500 lpm / 130 gpm
GI 420	120 lpm / 30 gpm	500 lpm / 130 gpm

BI-PASS VALVE INSTALLATION

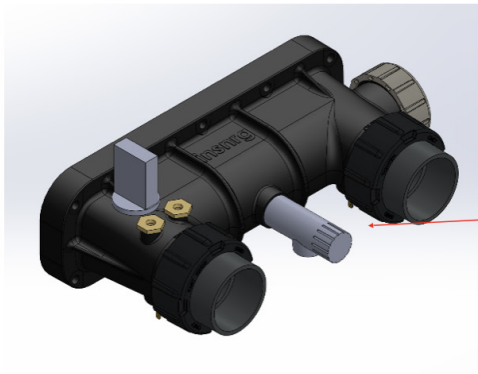


Where the flow rate exceeds the maximum 130 gpm / 500 lpm, a manual bypass should be installed and adjusted. After installing the valve, adjust to bring the flow rate to within the acceptable range. Then remove the valve handle to lock into place and avoid any tampering. Make sure to keep handle in a safe area should you need for future adjustments.

FITMENT OF PRESSURE RELIEF VALVE



Step 1:  
Remove brass plug



Step 2:  
Fit pressure relief  
valve 350kPa.  
 $\frac{3}{4}$ " NPT thread.

Fitment must comply with AS1271 and PRV must have a total steam discharge capacity not less then the values listed in table 2.

HEATER MODEL	kg/h
Gi 160	68
Gi 265	85
Gi 420	136

## TIPS FOR CORRECT WATER SUPPLY

- Minimise the amount of shut-off valves or other flow restrictions that could prevent flow through the heater (except for winterizing valves where needed). To switch flow between the pool and spa, use a diverter valve, ideally connected to a valve actuator for ease of use by all the family.
- Ensure that the labelled inlet and outlet are plumbed in correctly, if plumbed in backwards, the heater will cycle continuously. Connect the heater directly to 2" PVC pipe, using the unions provided. Heat sinks are not required. The low thermal mass of the heater will prevent overheating of the piping connected to the pump even if the heater shuts down unexpectedly.
- In most cases Energy Efficient and two-speed pumps will not develop enough pressure on the lowest set speeds to operate the heater. For two-speed pumps, correct by running the pump at high speed only to operate the heater. Variable Speed Pumps can be tuned to exactly the speed required for optimal performance. Ask your pool professional for more information.
- Automatic Pool Cleaners significantly affect the flow rate of water through the heater. We highly recommend not running an automatic pool cleaner whilst the heater is operating. If the cleaner is plugged (for example by leaves), there may not be adequate flow to the heater. Do not rely on the pressure switch in this case.
- It is also important to regularly maintain your selected filter and ensure that it is regularly cleaned to the requirements laid out in the appropriate operation manual. A dirty filter will increase pressure in the system and therefore reduce flow rate causing the heater not to operate at its best.

# BELOW POOL WATER INSTALLATIONS

If the heater is installed below the water level of the Pool, the Pressure Switch must be adjusted by your professional installer.

A flow switch is required if the heater is installed more than 6' (1.8m) above the pool water level, or 6' (1.8m) below the pool water level. These levels are outside of the operating capability of the supplied pressure switch.

If the pressure switch cannot be adjusted a flow switch must be installed and wired to the pressure switch safety circuit in the heater.

## **TO CHECK THE OPERATION OF THE SWITCH:**

- 1.** Pressure switch should only be checked and adjusted with clean skimmer, pump basket and filter. Ensure Pump Basket, Skimmer and Filters have been cleaned prior to adjusting Pressure Switch.
- 2.** Connect the heater to mains power supply and turn power on. The thermostat **SHOULD** Not have a light above the Flow indication.
- 3.** Turn on pump. A light should now appear above the flow indication.
- 4.** Turn pump off. The light above the flow indicator should now be off.
- 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.

## TO ADJUST PRESSURE SWITCH:

1. Pressure switch should only be checked and adjusted with clean skimmer, pump basket and filter. Flow indicator should be off.
2. Turn on pump.
3. View the display and confirm the flow light on the LCD is on.
4. With the pump running, if no flow light is on, slide the toggle on the pressure switch up to allow adjustment, then rotate the knurled wheel anti clockwise (as viewed from above) until the flow light is displayed.
5. Switch pump off.
6. Check the flow light has turned off.
7. If the flow light is on for more than one second after the pump has been turned 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.

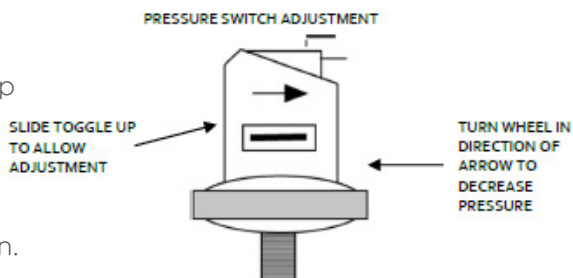
11. If pressure switch cannot be made to activate heater when pump is turned on and off, a flow switch may need to be purchased and fitted. Contact your local authorised

professional.

**WARNING:** If the pressure switch cannot be adjusted correctly, DO NOT OPERATE THE HEATER, contact your local authorised professional for assistance.

12. 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.



# WATER CHEMISTRY

Correct water balance not only provides you with the best water quality that all your family and friends can enjoy, it also ensures the longevity of your Gas Heater purchase. Incorrect water balance can affect components of the Gas Heater, reduce the performance and affect your warranty entitlements.

The Heat Exchanger has specially selected elements that enhance the heating capacity of your Gas Heater. These elements can corrode if exposed to high chlorine levels and pH levels outside of the recommended levels below. **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
Chlorine (ppm)	2.0 to 4.0
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 4 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.

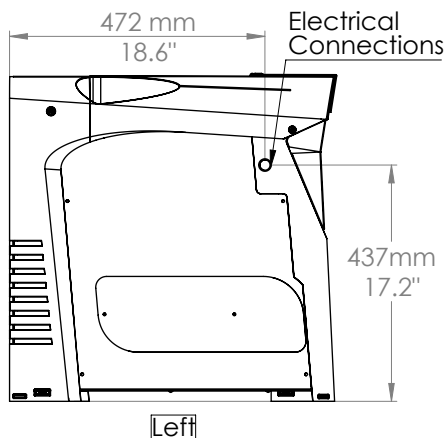
# ELECTRICAL CONNECTIONS



**Heater operates on 220 V AC power supply only.**



**The heater is supplied with a 1.8m lead with 3 pin 10 amp plug.**



1. All wiring must be in accordance with all applicable codes.
2. The heater, when installed, must be electrically grounded and bonded in accordance with local codes or, in the absence of local codes, with the National Electrical Code or the Canadian Electrical Code (as applicable). A bonding lug is provided on the outside of the panel under the vent for this purpose.
3. Electrical power circuits to the pool heater must follow local codes and National Electrical Code or Canadian Electrical Code (as applicable).

**4.** All wiring between the heater and devices not attached to it, or between separate devices which are installed in the field, must be “Type T” wire rated for 35°C rise.

**5.** All line voltage wiring shall be enclosed in approved flexible conduit, and shall be securely attached to the field wiring box located inside the access door panel. The conduit or cable connector at the field wiring box should contain an insulating bushing or its equivalent to prevent abrasion of the wires as they enter the box.

**6.** The filter pump should run continuously when the heater is on, and for at least 5 minutes after the heater turns off. Any switches in the pump circuit (including circuit breakers) that can disconnect the pump must also disconnect the heater.

**7.** Do not wire single-pole switches, including protective devices, into a grounded line. The heater is not sensitive to polarity. Connect the L1 of the power supply to the black wire, the L2 or neutral lead to the red wire, and the ground wire to the green wire. A time clock controlling the filter pump should have a low-voltage Fireman’s Switch that switches off the heater at least 15 minutes before shutting off the pump.





## SECTION 3

# NOW TO HAVE SOME FUN

Let's get the most out of your gas  
heater!

## TURNING ON/OFF

Your InsnrG Gas Heater is a high performance unit and therefore we have designed its features to replicate the latest trends in high performance vehicles, even down to the on/off switch.

Once your unit is installed, simply press the **Start/Stop** button to start operation of your heater.



# IGNITION PROCESS



Your display screen will identify all you need to know to ensure the Gas Heater is operating correctly.

## Use the following steps to ignite every time:



1. **Turn on Operating Pump** and look for a symbol to appear above the '**FLOW**' mark.

If this symbol doesn't appear check for any reason why the water is not flowing through the heater. It could be a Valve closed, the Filter needs cleaning, or the Pool cleaner is blocking water flow. Clean out the system and try again.

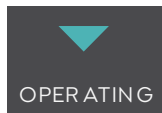


2. Press the '**START/STOP**' button



3. Wait for a symbol to appear above the '**IGNITION**' mark. You should also hear the Gas Heater clicking and looking to ignite. This could take a number of times depending on Gas supplier and location of the heater.

If symbol doesn't appear check your supply of gas. Could be empty gas bottles, a valve has been turned off, your supply has been stopped for some reason. If heater has not been used for a few weeks, the gas may need to charge up the lines again. Check system and try again.



4. When the unit is operating correctly a symbol will appear above the '**OPERATING**' mark and your water is being heated to your desires.

# ADJUSTING THE TEMPERATURE

**Now let's get your water to the perfect temperature for swimming.**

## **IDEAL TEMPERATURE:**

Every person is different and likes the water temperature to suit themselves. However, experience has identified the following temperatures as the preferred level for swimming:

- **Pool**  
26-28 degrees celsius OR 78-82 degrees fahrenheit
- **Spa**  
36-38 degrees celsius OR 96-100 degrees fahrenheit

Your Insnrq heater has a digital display to enable you to set to exactly what temperature you desire.

## **HOW TO SET TEMPERATURE:**

Simply look at the screen which will tell you the current temperature of the water, then adjust the Set Point by pressing the **'UP' or 'DOWN'** buttons as you require.

Once the Gas Heater reaches the Set Point, the Heater will turn off but continuously monitor the water temperature. Once it drops below the set point, it will fire up again and continue to heat your water (this is dependent on supply of water and gas).

## OTHER FEATURES: MODE BUTTON

1. To switch between pool and spa temperature press **MODE** to select Pool Temperature.
2. Adjust **UP** or **DOWN** to select your desired swimming temperature.
3. Now press **MODE** again to select Spa Temperature. Press **UP** or **DOWN** to select your desired spa temperature.
4. Once completed, there is no need to adjust the up or down temperature to change between pool or spa settings. Simply press **MODE** to select Pool or Spa.

When connected to an Insnrg Chlorinator or Automation System via Bluetooth or RJ 485 cable, changing the mode on the heater from Pool to Spa will also adjust connected equipment to pool or spa mode.

# REMOTE CONTROL OPERATION

## *Now, let's get to the exciting stuff.*

Your Insnrg Gas Heater has the ability to integrate with Insnrg's pool automation system and connect to your home Wi-Fi to enable control of your pool and spa temperature any time your Smart Phone has an Internet connection.

## WHAT YOU WILL NEED:

1. A Vi combined Chlorinator and Automation Controller or inTouch Expansion module.
2. The inTouch Internet Portal
3. Cat 5 Cables connecting the gas heater to the Automation System and inTouch Portal.
4. Download the Insnrg inTouch Portal from the App Store or Google Play Store
5. Once downloaded, set-up an account. This will give you a user name and password.
6. Go to "portal connect" and pair your inTouch portal with your home Wi-Fi.
7. For further details contact your Insnrg dealer or Insnrg direct.





## SECTION 4

# OOPS, SOMETHING'S NOT RIGHT?

Maintenance, Trouble Shooting,  
Replacement Parts, Warranty &  
Contact Section

# MAINTENANCE

## MAINTAINING YOUR GAS HEATER

**Like your motor vehicle, to keep your heater running in peak condition, we recommended a regular pro-active check at least every six months and at the beginning of every swimming season. Include the following:**

- 1. Examine the Gas Heater**, particularly the flue outlet and panel louvers for blockages. You are looking for anything that can potentially block the air-flow to and around the Gas Heater. Remove any obstructions.
- 2. Remind yourself of the safety rules and clearances**, reread the first section of this manual. Then check the area around the heater and remove any combustibles and flammable liquids. Chlorine and Acid especially should not be stored in the vicinity of the heater. The vapours from these chemicals if drawn through a heater, can rapidly cause corrosion of the heat exchanger and other valuable components.
- 3. Check the heater area for any garden refuse and debris.** Not only does it affect air flow and can be a potential fire hazard, the garden waste can encourage insects to nest in the unit and affect the life and reliability of your heater. A quick spray of Insect surface spray around the outside of the Gas Heater is also recommended (NOTE: ensure the Gas Heater is not operating).
- 4. To really get the best results and ensure your Heater is operating at full capacity**, have your heater professionally inspected at least every 2 years. If you use your heater on a daily basis, have it inspected once a year. This is like an insurance for your heater, it will ensure all is running well and give you many years of enjoyment.

# 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.

## **IF YOU LIVE IN AN AREA THAT HAS THE POTENTIAL FOR YOUR POOL WATER TO FREEZE, IT IS VERY IMPORTANT TO READ THE FOLLOWING:**

When water freezes, it expands. Due to the high performance of your Insnrg Gas Heater any expansion of water inside the heater can cause significant and costly damage when it expands. Therefore, it is vital to drain the water from the heater anywhere where freezing is a possibility. The easiest way to drain the heater is by loosening the inlet and/or outlet barrel union and allowing the water to drain away. If the heater is below water level, remember to close the valves before and after the heater first to isolate the heater from the pool and eliminate the possibility of draining the pool, then loosen the inlet/outlet unions and drain.



## **CAUTION**

If the heater has been drained for freezing conditions, remember to turn the pump on first to circulate the water and fill the heater before turning the Gas Heater on.

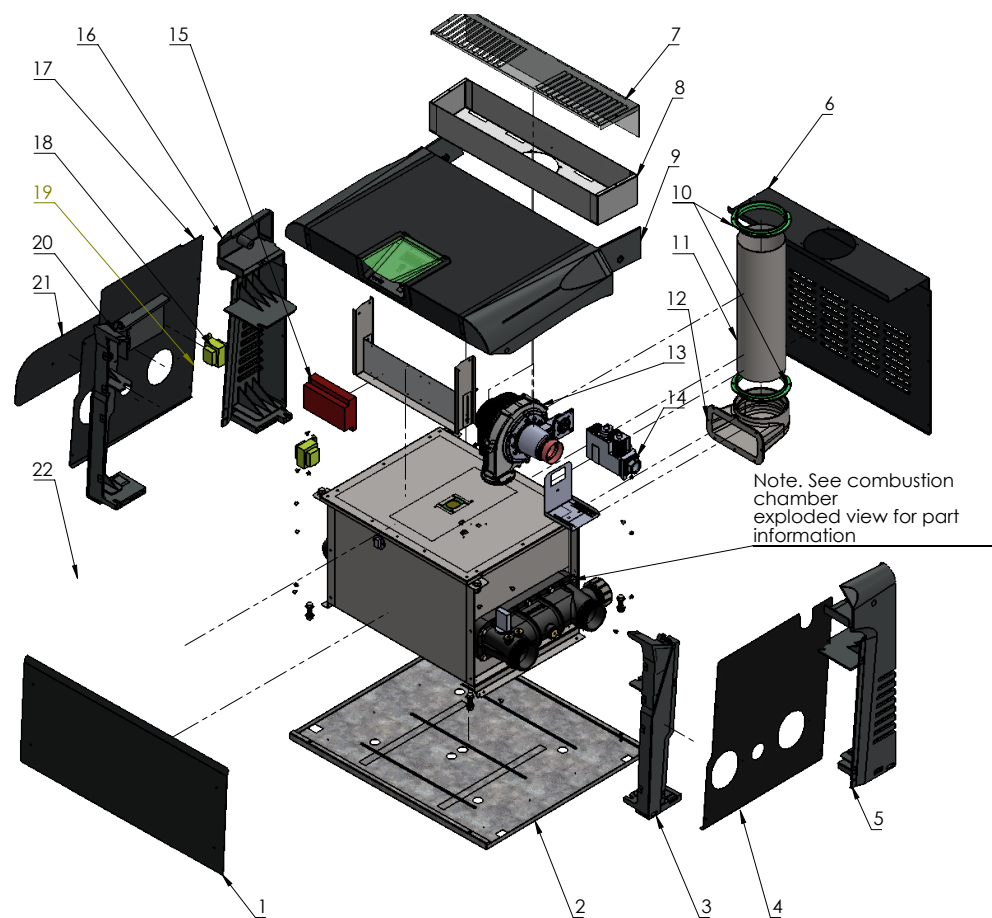
# TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	REMEDY
<b>Pump not operating</b>	<ul style="list-style-type: none"><li>• No power.</li><li>• Pump defective.</li><li>• Incorrectly wired.</li><li>• Time clock settings not synchronized with actual time.</li></ul>	<ul style="list-style-type: none"><li>• Check circuit breakers &amp; power source.</li><li>• Replace the pump.</li><li>• Recheck wiring.</li><li>• Check time clock setting.</li></ul>
<b>Unstable combustion</b>	<ul style="list-style-type: none"><li>• Wrong gas.</li></ul>	<ul style="list-style-type: none"><li>• Make sure the gas supply matches the gas type indicated on the rating plate.</li></ul>
<b>(1) heater turns off and on</b>	<ul style="list-style-type: none"><li>• Lean fuel/air mixture — low supply pressure</li></ul>	<ul style="list-style-type: none"><li>• Correct gas supply inlet pressure to: - (NATURAL GAS) 4.0 " W.C. min - 10.5" W.C. max - (PROPANE) 4.0 " W.C. min - 14.0" W.C. max</li></ul>
<b>(2) heater ignites slowly</b>	<ul style="list-style-type: none"><li>• Lean fuel/air mixture — too much combustion air.</li></ul>	<ul style="list-style-type: none"><li>• Offset pressure should be -0.2" W.C. Use a digital differential manometer to verify correct offset pressure. Adjust offset pressure as needed.</li></ul>
<b>(3) flame lifts and goes out</b>	<ul style="list-style-type: none"><li>• Rich fuel/air mixture — high manifold pressure.</li></ul>	<ul style="list-style-type: none"><li>• 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.</li></ul>
<b>(4) short yellow streaked flame</b>	<ul style="list-style-type: none"><li>• Rich fuel/air mixture — too little combustion air.</li></ul>	<ul style="list-style-type: none"><li>• Gas meter too small.</li><li>• Gas line from meter to heater too small.</li><li>• Check blower inlet grill for obstruction.</li></ul>
<b>Not enough heat</b>	<ul style="list-style-type: none"><li>• Heater size inadequate</li></ul>	<ul style="list-style-type: none"><li>• Replace with heater of higher output</li></ul>
<b>(1) Heater is slow to heat up</b>	<ul style="list-style-type: none"><li>• Filter pump not running long enough</li></ul>	<ul style="list-style-type: none"><li>• Replace TRV</li></ul>
<b>(2) Heater not maintaining set temperature</b>	<ul style="list-style-type: none"><li>• Thermal regulator valve (TRV) is opening early or is permanently open.</li></ul>	<ul style="list-style-type: none"><li>• Heater is condensing. Flue product moisture will condense at the start-up until the heater water temperature reaches the normal operating conditions.</li></ul>
<b>(3) Low temperature rise</b>	<ul style="list-style-type: none"><li>• Heater plumbed backwards</li></ul>	<ul style="list-style-type: none"><li>• Correct the plumbing.</li></ul>

SYMPTOM	POSSIBLE CAUSE	REMEDY
<b>Heater pounding or knocking</b>	<ul style="list-style-type: none"> <li>• Water flow through heater too low.</li> <li>• Failed Thermal Regulating Valve (TRV)</li> </ul>	<ul style="list-style-type: none"> <li>• Look for obstruction or closed valve in system</li> <li>• Check for damaged internal bypass</li> <li>• Variable speed pump set too low</li> <li>• Dirty filter or baskets</li> </ul>
<b>Igniter lights but heater does not fire</b>	<ul style="list-style-type: none"> <li>• Gas valve is not ON</li> <li>• Air in gas line.</li> <li>• No power to gas valve</li> <li>• Low gas pressure/volume</li> <li>• High burner throat pressure</li> <li>• Gas valve</li> </ul>	<ul style="list-style-type: none"> <li>• Flip the switch to “on” position</li> <li>• Cycle ignition sequence until air is out of the gas line</li> <li>• Check controls for proper operation</li> <li>• Check supply pressure/volume and verify proper gas supply pipe size.</li> <li>• Replace gas valve</li> </ul> <p>NOTE: Gas valve failures are extremely rare. Please confirm this as the root problem before replacing.</p>

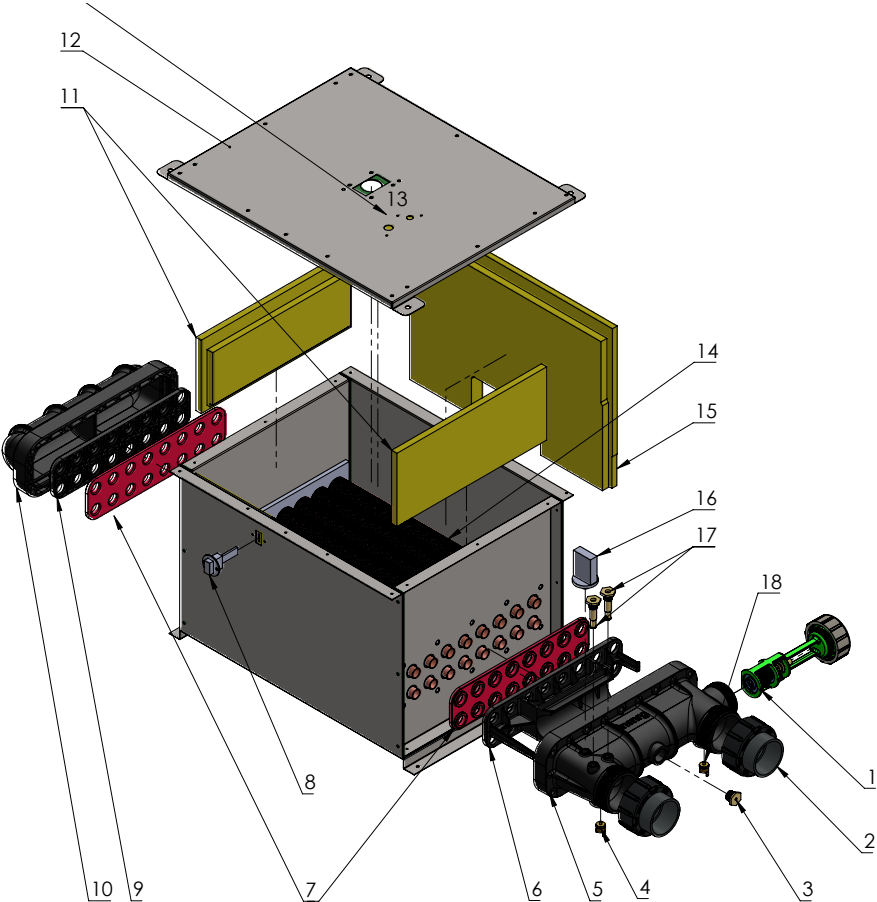
# REPLACEMENT PARTS

## GAS HEATER



ITEM	PART NUMBER	DESCRIPTION	exploded view/Qty.
1	21C15101015	Front Lower Cover (150 Heater)	1
1	21C25101019	Front Lower Cover (250 Heater)	1
1	21C40101023	Front Lower Cover (400 Heater)	1
	21C15106009	Base (150 Heater)	1
2	21C25106010	Base(250 Heater)	1
	21C40106011	Base(400 Heater)	1
3	21C01401003	Front Right Pillar	1
4	21C01101013	Right Cover	1
5	21C01401005	Rear Right Pillar	1
6	21C15101018	Rear Cover (150 Heater)	1
6	21C25101022	Rear Cover (250 Heater)	1
6	21C40101026	Rear Cover (400 Heater)	1
7	21C40101112	Flue Cover	1
8	21C40101011	Outdoor Flue Box	1
9	21215001	Top Assembly (150 Heater)	1
9	21225002	Top Assembly (250 Heater)	1
9	21240003	Top Assembly (400 Heater)	1
10	21C01602003	Flue Collar	1
11	21C01106001	Flue Tube	1
12	21C01203001	Flue Manifold	1
13	21201	Blower Assembly Combustion	1
14	21C01501001	Gas Valve	1
15	21C01506001	Heater Control Module	1
16	21C01401006	Rear Left Pillar	1
17	21C01101014	Left Cover	1
18	21C01508001	Transformer (Left) (USA)	1
19	21211	Terminal Block	1
20	21C01401004	Front Left Pillar	1
21	21C01101027	Blanking Plate	1
22	21C15101016	Front Upper Cover (150 Heater)	1
22	21C25101020	Front Upper Cover (250 Heater)	1
22	21C40101024	Front Upper Cover (400 Heater)	1

**COMBUSTION CHAMBER**





ITEM	PART NUMBER	DESCRIPTION	exploded view/QTY.
1	21201010	Thermostatic Bypass Valve	1
2	15201001	Union Assembly 2" 50mm [2]	2
3	21101201001	Pressure Relief Bung	1
4	21101513001	High-Limit Switch (52C/135F) (USA)	1
5	21101405001	Heater Inlet Header	1
6	21101405003	Heater Inlet Header Insert	1
7	21101602002	Heater Header Gasket [2]	2
8	21101501001	Hot Surface Ignitor	1
9	21101405004	Heater Return Header Insert	1
10	21101405002	Heater Return Header	1
11	21101601003	Heat Brick (Side) [2]	2
12	21215001	Burner Assembly (150 Unit)	1
12	21225002	Burner Assembly (250 Unit)	1
12	21240003	Burner Assembly (400 Unit)	1
13	21101510001	Flame Sensor	1
14	21215020	Heat Exchanger Assembly (150 Unit)	1
14	21225021	Heat Exchanger Assembly (250 Unit)	1
14	21240022	Heat Exchanger Assembly (400 Unit)	1
15	21115601008	Heat Brick (Rear) (150 Unit)	1
15	21125601005	Heat Brick (Rear) (250 Unit)	1
15	21140601001	Heat Brick (Rear) (400 Unit)	1
16	21101505001	Water Pressure Sensor	1
17	21101201002	Brass Thermistor Well [2]	2
18	21101513001	High-Limit Switch (52C/135F)	1

F

E

D

C

B

A

# WARRANTY

Insnrq products are designed and manufactured to the highest possible standards of performance.

## **Australian Consumer Law**

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

## **Warranty Period and Conditions**

Insnrq Techne Pty. Ltd. (hereinafter “the Company”) is pleased to warrant to the original retail purchaser that this product shall be free of manufacturing and material defects for a period of three (3) years from the original invoice date subject to the following conditions:

1. The product is purchased new from an authorised Insnrq dealership in Australia, New Zealand or North America.
2. This warranty is not assignable and applies to the original retail purchaser only and the original receipt, invoice or any other proof of purchase must be retained and produced if requested by the Company.
3. Nothing in this warranty shall apply to any defects caused by misuse or abuse, neglect, accident, extremes of climate, dampness, humidity, reasonable fair wear and tear and/or any causes other than defects in manufacturing and materials. Proper care and maintenance information is detailed in the Owner’s Manual for this product which you must follow.
4. Where a defect is physically visible or otherwise affects the exterior surfaces of the product, you must notify the Company of such defect within fourteen (14) days from the date of your purchase.
5. If the product is bought as a demonstration, refurbished, ex-rental, discontinued or otherwise previously unboxed unit, the warranty applicable shall be limited to twelve (12) months only.

## Warranty Claim Procedure

PARTS	WARRANTY PERIOD
Cabinet, refractory insulation and combustion chamber	5 years
Components such as gas valve, thermostat, pilot, wiring, burner, gaskets	3 years
Heat exchanger, inlet and return water headers	3 years
Hot surface ignitor	10,000 hours or 7,000 ignition attempts

To exercise your rights under this warranty, you must:

Within fourteen (14) days of you becoming aware of any defect, report the following details to the dealership from which the product was purchased:

- Your name, address and contact information;
- Model, and serial number of the product; and
- A detailed description of the defect.

On receipt of the above information, the Company will allocate to your dealership an Insnrg Authorisation Number (IAN).

Depending on the model type, how it is installed, and the defect reported, your nominated dealership will advise on how the warranty service will be performed. This could include, but not limited to, return of product to the dealership, return of product to the company, or a visit by qualified service technician to your poolside.

If advised to return the product, place the defective product in secure packaging, clearly label it with the IAN number allocated and send it to the address of the authorised service agent which will be advised by your dealership.

The Company will not be liable for any transportation costs, or in the event that a poolside call is arranged with an authorised service technician, costs of technician's travel time if the defect is found not to be covered by the consumer guarantees.

In the case of returned product, the authorised service technician or dealership will contact the purchaser when the product has been repaired and is ready for collection.

The Company will repair or replace at its absolute discretion your product at no cost for parts or labour in accordance with the terms stated in this warranty provided that the reported defect is able to be located by the technical staff assigned to the product. If the technical staff is unable to locate the defect, you



We know that you will get many years of enjoyment from this product.

Insnrg has been founded by persons with over 120 years experience in the Pool and Spa industry.

We pride ourselves on developing products that are specifically created for your backyard lifestyle. We are continuously developing new products and ideas to make pool ownership easier and fun.

Should you wish to keep updated with our progress and hear first hand our new products and developments, please feel free to stay in touch by using any or all of the below methods:

#### **SNAIL MAIL**

64 Duerdin Street,  
Clayton, VIC, 3168

#### **LANDLINE**

1800 INSNRG (1800 467674)

#### **WEBSITE**

[www.insnrg.com](http://www.insnrg.com)





PRODUCTS IN PERFECT SYNERGY

Specifications subject to change without notice