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Onga Pty. Ltd. ABN 27 004 856 204

L300076-09/04



Residential



Agricultural



Process

Should the installer or owner be unfamiliar with the correct installation or operation of this type of equipment you should contact the distributor/manufacturer for the correct advice before proceeding with the installation or operation of the product. **Onga recommend that an earth leakage or residual current protection device and Surge Protection be fitted to all installations.** (Refer to Page 6 for details).



Owner's Manual



200 Series Hydromassage Pumps



Relax - you've bought an Onga ...

Congratulations on your decision to purchase an Onga product. Onga is one of the best known brands in its field, with a proud local and International reputation.

Onga is a brand for reliability, value for money and technological innovation.

You will find Onga product wherever people need to move water in 3 broad markets covering:



Residential

Technologically advanced solutions for moving and treating water in the Home, Garden, Pool and Spa.



Agricultural

Innovative Stock and Crop water management solutions for Primary Industries.



Process

Water movement products for Building services, Emergency services and Original Equipment manufacturers.

- 6) Swimming pools or spa equipment will not be warranted where the Langelier saturation index 'pH' range is outside 7.2 to 7.6 and they have not been regularly treated with chlorine or bromine based sanitising systems, or other recognised sanitising systems.

Spare Parts:

Spare parts are usually stocked for a reasonable period of time following last production.

Onga does not warrant that spare parts will be made available for the whole of the reasonable period and reserves its right to cease supplying spare parts or providing facilities for repair of spare parts in circumstances which are beyond its control including the requirement to remove spare parts from sale as a consequence of changes in the law or otherwise as it deems fit.

How to get service: In Australia please contact 1800 664 266 In New Zealand please contact 0800 664 269
Claims under this warranty must give evidence of date of purchase, model and serial number of the product and the claimants name, address and telephone number.

- 1) To obtain warranted service, you will be required to provide to either Onga state office or recommended service agent:-
 - a) the product;
 - b) confirmation in writing specifying the nature of your claim;
 - c) proof providing date of original purchase;
 - d) full contact details including name and address;
 - e) the serial number of the product if any.
- 2) The product is to be forwarded by the customer freight paid to an Authorised Onga service agent. Infield service by an authorised Onga Service Agent will incur a travel, removal & reinstallation fee to adjudicate on warranty issues. Authorised warranty will be free of charge for the first 12 month period from date of the first consumer purchase.
- 3) Warranty service work will be denied or suspended, on equipment not readily accessible to service personnel, that is products that are behind barriers, tiled or bricked in, installed in roofs or second story external walls including inaccessible power points.
- 4) Any service of any product which is found to be faulty due to abuse, misuse or improper installation will be charged to the owner at the service agents current servicing hourly rate.

Limitation of implied warranties:

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Exclusion of damages:

ONGA'S LIABILITY IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. ONGA SHALL NOT BE LIABLE FOR:

- 1) DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE OF BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
- 2) ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.
- 3) ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY.

Effective law:

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Nothing in this warranty limits or restricts, or is intended to derogate from, any right or remedy which the purchaser or ultimate user of the product may have pursuant to Australian state and/or Australian federal consumer protection legislation, New Zealand Sale of Goods Act, Consumer Guarantees Act, Fair Trading Act or any other relevant and applicable New Zealand legislation or authority and where necessary shall so be read and construed.

IMPORTANT
Please attach your sales invoice/docket here as proof of purchase should warranty service be required.
Please do not return Warranty - Retain for your records.

Purchased From _____

Purchase Date _____ Serial No _____ Model No _____

Onga Product Warranty

Onga warrants that, when this product is used for the purpose it was designed, is correctly housed and vented against weather, vermin, dust etc., that it will be free of material and manufacturing defects at the time of the original purchase.

This warranty is limited to the cost of the product and does not cover third party costs including the costs of electricians, plumbers, etc. unless authorised by Onga pumps.

TERMS AND CONDITIONS APPLICABLE INTERNATIONALLY

How long the warranty is effective Internationally

- 1) This Onga product is warranted for 12 months for all parts from the date of the first consumer purchase. Should any parts fail as a result of such defects within the specified period, the part will be replaced free of charge. (This does not include travel charges, removal and reinstallation charges.)

TERMS AND CONDITIONS APPLICABLE IN AUSTRALIA AND

NEW ZEALAND

- 1) YOU SHOULD CAREFULLY READ THE INSTRUCTIONS SUPPLIED PRIOR TO USING THIS ONGA PRODUCT.
This product is to be installed and operated in accordance with the instructions provided. This warranty will not apply if it is used in a manner otherwise than in accordance with the instructions.

What the warranty covers:

Onga warrants its products to be free of defects in material and workmanship during the warranty period. If a product proves to be defective in material or workmanship during the warranty period, then Onga will, at its sole option repair or replace the product with a like product. Replacement product or parts may include re-manufactured or refurbished parts or components.

How long the warranty is effective:

- 1) **This Onga product is warranted for 12 months for all parts from the date of the first consumer purchase.**
- 2) **Where this Onga product is sold for commercial application as defined in the relevant Trade Practices and Consumer Protection legislation the warranty shall be for a period of six months from the date of purchase by the end user.**
- 3) **Ancillary equipment including but not limited to plastics and metal fittings, electrical controls (including touch pads), bladders, pressure switches, filter cartridges, pressure gauges, etc. shall be warranted for a period of twelve months only in relation to consumer applications and six months in relation to commercial applications.**

Who the warranty protects:

This warranty is valid only for the consumer purchaser.

What the warranty does not cover:

- 1) **Damage, deterioration or malfunction resulting from:**
 - a) **accident, misuse, negligence, fire, water, lightning, or other acts of nature, unauthorised product modification or failure to follow instructions supplied with the product;**
 - b) **repair or attempted repair by anyone not authorised by Onga;**
 - c) **any damage to the product due to shipment;**
 - d) **removal or installation of the product;**
 - e) **causes external to the product such as electric power fluctuations or failure;**
 - f) **use of supplies or parts not meeting Onga specifications;**
 - g) **normal wear and tear;**
 - h) **water ingress or exposure to abnormal corrosive conditions or "run dry" conditions;**
 - i) **any other cause which does not relate to a product defect.**
- 2) **Damage caused to the product as a consequence of use of another manufacturer's product used in conjunction with Onga and affiliate companies.**
- 3) **This warranty does not cover such products as combustion engines or other component parts of units not manufactured by Onga, but where possible Onga will make available to purchaser the benefit of any warranty of that manufacturer.**
- 4) **This warranty does not cover underwater light bulbs, underwater lights will only be warranted if wiring is to approved standards, and an approved transformer incorporating thermistors has been used, running the light not submerged in water will void warranty.**
- 5) **Hydrostatic relief valve supplied separately or incorporated in products are sold with the express understanding that such products offer limited hydrostatic relief and no offer is made or implied as to the suitability of such products for a specific application as their condition at the time of sale are unknown and beyond Onga's control. It is the responsibility of the installer to ensure that the performance of the valve meets the required application.**

Onga 200 Series Hydromassage Pumps

Models 2378, 2388, 2398 and 2408 (Air Switch, without heater)

Models 2371, 2381, 2391 and 2401 (Hot Pump, Air Switch)

Models 2373, 2383, 2393 and 2403 (Hot Pump Electronic - Bathronic)

Models 2372, 2382, 2392 and 2402 (Hot Pump Electronic - Bathmaster)

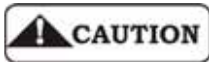
The range of Onga 200 Series Hydromassage pumps have been designed specifically for spa bath (Whirlpool) applications giving maximum performance for the ultimate relaxing spa experience.

The Onga Hydromassage Pumps provide excellent hydraulic performance in a compact and extremely quiet design. Designed to circulate hot water in spa baths (Whirlpools) these pumps incorporate a special internal design to ensure the pump self drains eliminating the build up of unhygienic/stale water.

Technical Data

Inlet	40mm Barrel union
Outlet	40mm Barrel union
Installation Zone	For domestic applications is in accordance with Zone 1, AS/NZS 3000:2000.
Maximum Total Head	237x = 10.3m 238x = 12.0m 239x = 13.5m 240x = 14.5m
Maximum Ambient Temperature	55°C
Maximum Water Temperature	70°C *
*capable of pumping 70°C, not recommended for spa bath applications	
Hot Pumps	
Primary Heating Temperature cut-out	40°C
Secondary "Safety" Heater cut-out	45°C
IP Rating Hot Pumps	IP55
IP Rating Pumps without heater	IP55**
**(Rotating parts have been assessed to IEC60034.5 requirements)	
Sound Pressure level	65dBa @ 1 metre

PUMP APPLICATION



The Onga Hydromassage pumps have been specifically designed for use in spa baths (Whirlpools). They should not be used for any other purpose without first consulting your Onga dealer or Onga representative.

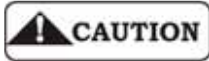
The Onga Hydromassage pump is NOT a self priming pump. Ensure there is sufficient water to completely fill the pump casing (flooded suction) before operating the pump.

Do not use the pump if there is a possibility that the water in the pump is frozen.

Hot Pumps: The spa bath (whirlpool) heater element is not recommended for use in chemically treated water.

Europe; incorporate a heater element which is suitable for spa pool (Hot Tub).

SPA PUMP POSITION



To avoid water damage to property from leaking connections or normal wear, the pump must be installed on a well drained site or a properly constructed drain tray.

If the pump is supplied separately to the spa bath, position the pump as close as possible to the spa. This will ensure optimum spa jet performance.

PUMP INSTALLATION:

- The pump mount must be Solid - Level - Rigid - Vibration free (to reduce vibration and pipe stress, bolt the pump to the pump mount).
- Install the pump suction inlet higher than bath suction fitting. (Refer Fig 1.) This allows the pump to drain completely when the bath is emptied in accordance with Local Health Regulations.
- Ensure suction pipe has an even rise from the spa bath (Whirlpool) suction inlet to avoid air locks (otherwise the spa pump may not prime). (Refer Fig. 1)
- Ensure discharge pipe has an even rise from the pump to the spa bath (Whirlpool) connection to avoid air locks.
- Protect pump from excess moisture, external weather (where applicable).
- Allow adequate access for servicing pump & piping.

Item	Description	Qty	Item	Description	Qty
1	Motor	1	8	Baffle	1
2	Nut, Tail & O'ring Kit	1	9	Airswitch (Not Shown)*	1
2A	O'ring – Barrel Union	2	10	Cover & O'ring Assy.	1
3	Tail Assy.	1	11	Screws – Cover	8
4	Casing	1	12	Screws – Casing	4
5	Diffuser	1	13	Nuts – Casing	4
6	Impeller	1	14	Base & Screws Kit	1
7A	Mechanical Seal Kit	1	15	Heater Module Assy.**	1
7B	O'ring – Casing	1	16	Casing PCB Module***	1
7C	Shaft Sleeve	1	17	PCB – Heater Module***	1
7D	O'ring – Shaft Sleeve	1	18	Screws – PCB Casing	4
			19	Touch Pad Assy.***	1
Model and serial number of pumps must be given when ordering spare parts					

* Applicable models only.

** Hot & Electronic models only.

*** Electronic models only.

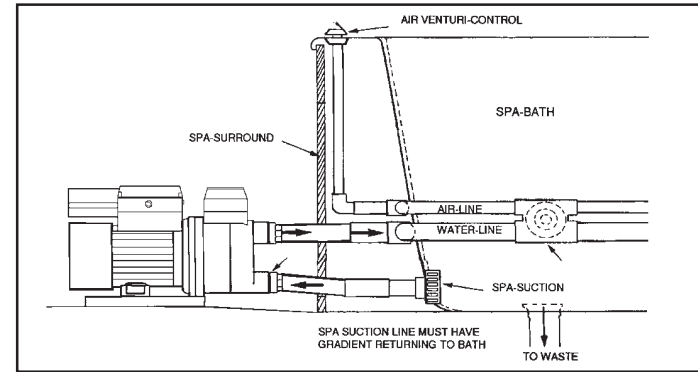
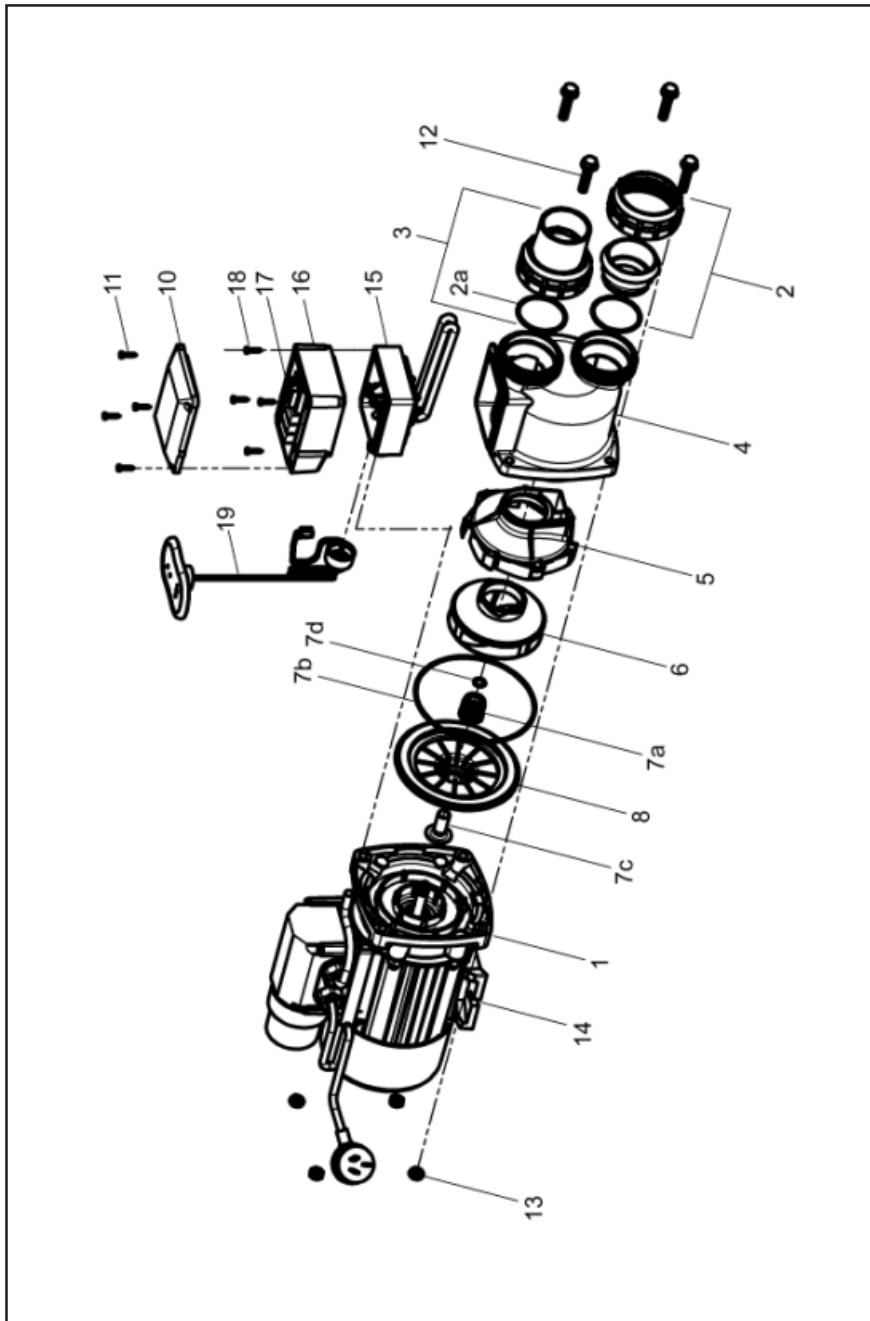


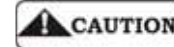
Fig. 1

PUMP INSTALLATION (Continued)

Ventilation

- Provide adequate ventilation to prevent the motor from overheating (minimum area is 50cm²). Without adequate ventilation the pump motor may overheat causing the pump to stop.
- The hydromassage pumps are suitable for exposure to the weather. For extended pump life, a protective cover is recommended.

Piping



The fittings on these hydromassage pumps are constructed of ABS. Some PVC jointing compounds are incompatible with ABS possibly causing failure to the product. Check compound suitability prior to use.

For best pump efficiency use the least amount of fittings.

Onga hydromassage pumps are supplied complete with integrated multi-directional (5°) barrel unions to allow easy installation of pipework. Use as follows for leak-free connections to pump:

1. O-Ring and sealing surfaces must be clean.
2. Ensure O'Ring remains on barrel unions and tighten HAND TIGHT only! (NO WRENCHES).
3. No pipe compound or teflon tape on unions.
4. Bond pipe to unions with a compatible PVC/ABS solvent cement suitable for maximum pump pressures.
5. When appropriate fill the bath with water and check that there are no visible leaks from the plumbing joints. Start the pump and repeat this step.

PUMP INSTALLATION: (Continued)

Air Bleed Valve (where fitted)

Air bleed valves are sometimes required on installations so that automatic air venting can occur.

Certain Onga 200 series Hydromassage pumps are fitted with an air bleed valve. If the pump is installed exactly as per Fig. 1 this valve will not be required to be made functional (the air bleed valves are sealed at time of manufacture).

For automatic air venting cut the top of the valve off at the cut groove found approximately 3.5mm from top of the valve as per Fig. 2 using a pair of side cutters. DO NOT use pliers. The air bleed valve will now expel air.

As it is common for air valves to squirt water when sealing (each time the pump is turned on), Onga recommends that a 10mm drain tube to be fitted over the barbed section of the air bleed valve to allow excess water to drain to waste. (Refer Fig. 2)



Electrical Connection



Onga advises that an earth leakage or residual current protection device must be fitted to all installations, rated residual operating current not exceeding 30mA. Exactly match supply voltage to name plate voltage 220-240 Volt 50Hz (single phase only). Onga advises that a voltage surge protector be fitted as voltage spikes or incorrect voltage can cause fire or seriously damage the motor which is not covered by your Onga warranty!

Onga 200 series hydromassage pumps are suitable for connection to 220-240 Volt 50 Hz power outlets. Some models will require a 15 amp power outlet, check motor label for details.

Electrical supply must conform to local/national electrical standards. Pump and motor must not be accessible to the bath user.

Pump must be installed in the correct zone, refer technical data on Page 3. Equipotential Bonding must be carried out.

NOTE:

The power supply cord must only be replaced with an original power supply cord by the Manufacturer, an authorised Service Agent or a suitably qualified person. Warranty is void if unauthorised modifications are made to any component. The plug may be accessible for service reasons but must not be accessible to the user in the bath.

Test reference pressure measured at 6 metres Total Head.

TROUBLESHOOTING ELECTRONIC MODELS (BATHTRONIC & BATHMASTER)

SYMPTOM	CAUSE	REMEDY
Pump does not start	Low voltage conditions.	Periodically retry "jets" button as unit will start to work once voltage supply returns to an acceptable level
	Data cable not correctly inserted/damaged	Check data cable connection /replace as required.
	The electronic touch pad system is faulty	Contact service technician

TROUBLESHOOTING ELECTRONIC MODELS (BATHMASTER)

SYMPTOM	CAUSE	REMEDY
Pump does not start.	Low voltage conditions (power light is flashing on the Touchpad).	Periodically retry "jets" button as unit will start to work once voltage supply returns to an acceptable level.
	Pump in "lock-out" mode (a light on the touchpad is flashing).	Wait for all flashing lights on the touchpad to stop, then activate the "Jets" button.
Pump starts then stops.	Pump has not achieved prime.	Ensure pump and suction line are clear of any blockages
		Ensure the water level is at least 50mm above the height of the jets.
		Ensure that there are no air leaks in the suction line.
Pump stops during normal operation.	Pump has lost prime.	Ensure pump and suction line are clear of any blockages
	Pump has cut out on Low/ High voltage conditions. (power light is flashing Red/ Green on touchpad.	Periodically retry "jets" button as unit will start to work once voltage supply returns to an acceptable level.

TROUBLESHOOTING AIR SWITCH MODELS

SYMPTOM	CAUSE	REMEDY
Pump does not start.	Faulty air button on side of bath.	Ensure air button is able to give a "pulse of air".
	Airtube is dislodged or kinked.	Check that the air tube is connected to pump and the air button and is not kinked so that it allows a free flow of air.
	Airtube is blocked.	Ensure that the airtube is clear and can pass air freely.
	Faulty Air switch in pump.	Contact service technician.
Pump will not turn off.	Faulty air button on side of bath.	Ensure air button is able to give a "pulse of air".
	Airtube is dislodged or kinked.	Check that the air tube is connected to pump and the air button and is not kinked so that it allows a free flow of air.
	Airtube is blocked.	Ensure that the airtube is clear and can pass air freely.
	Faulty Air switch in pump.	Contact service technician.

PUMP INSTALLATION (Continued)

Pump without heater

Plug the hydromassage pump power cord into a dedicated 10 Amp power socket and switch the power on

Hot Pump (Models 237, 238, 239 and 240)

Plug the hydromassage pump power cord into a dedicated and correctly rated (refer motor nameplate Amps) power socket and switch the power on.

All hot pump heaters have an in-built pressure sensor that will only allow the heater to activate when there is sufficient water flowing through the system.

All hydromassage pumps must be installed in accordance with relevant electrical standards.

AIR SWITCH MODELS (2371,2378, 2381, 2388, 2391, 2398, 2401 and 2408)

Air Tube Connection

Included with the hydromassage pump is a special non-kink air tube.

Connect air tube to one end to the air button on the spa bath (not supplied). Uncoil the air tube to the required length. Cut off and discard excess. Attach the remaining end of air tube to the air switch nipple (refer Fig 2) located at the front of the pump motor capacitor cover.

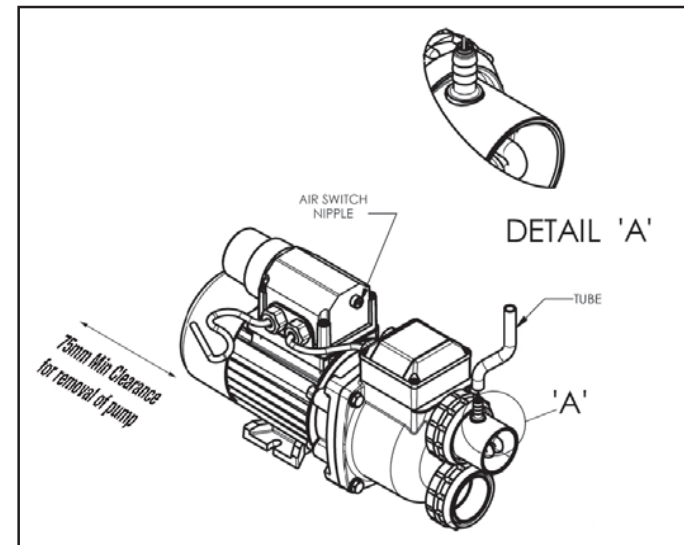


Fig. 2

ELECTRONIC MODELS (2372, 2373, 2382, 2383, 2392, 2393, 2402 and 2403)

Touch Pad Assembly & Installation

These models are supplied with a low voltage electronic touch pad and a signal cable to control the pump and heater functions.

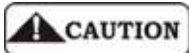
Assembly

Click the escutcheon onto the touchpad. Then apply the decal label to the face of the touch pad (ensuring that it is correct way up).

Installation

To mount the touch pad to the bath, a 26mm diameter hole is required to be able to mount the touch pad flush on the bath surface (usually pre-drilled by the bath manufacturer). If a hole is required to be drilled, drill the hole in the required location on the rim of the bath ensuring that there is enough clearance for the outer rim of the touch pad to sit flush to the spa bath surface. Prior to mounting the touch pad, thread the signal cable through the hole in the bath surround and plug the signal cable into the back of the touch pad ensuring the signal cable end with the rubber boot is free to plug into the pump. Clean all rough edges from around the hole, apply a bead of silicone to the underside rim of the touch pad box only to secure it to the bath surface and prevent water leaking under the bath. Do not silicone the clip on escutcheon to the bath surface. Position touch pad into the hole and allow to dry. Insert the loose end of the signal cable (with the rubber boot) into the signal cable socket located at the rear of the Heater Element control box on the pump. Push the rubber boot onto the Heater Element Control Box to prevent any ingress of water into the heater module.

PUMP OPERATION



Never run pump dry! Running pump dry may damage seals, causing leakage and flooding!

Fill bath to 50mm above the top of jets before starting system.

Do not block pump suction! To do so with body may cause severe or fatal injury.

Small children using spa bath must ALWAYS have close adult supervision!

If the pump stops due to power failure or over-heating, turn the pump off otherwise it will automatically restart when power supply resumes or the motor cools down.

Do not block jets! To do so may flood area causing damage to equipment and water damage to surrounding areas.

TROUBLESHOOTING ALL MODELS (CONTINUED)

SYMPTOM	CAUSE	REMEDY
Pump starts but no water coming from spa jets.	Pump not installed at correct level in relation to the spa suction (refer Fig 1.)	Confirm correct installation with the installer.
	Water level too low.	Ensure water level is at least 50mm above the level of the jets prior to operating the pump.
Pump starts then stops.	Automatic thermal overload has tripped to protect motor.	<ul style="list-style-type: none"> - Check motor cooling and ensure adequate ventilation. Allow motor to cool then restart pump. - Ensure the pump is not jammed with debris or foreign material and motor is able to spin freely. - Motor is operating with low voltage supply. <p>WARNING Continued operation with this symptom may result in permanent damage.</p>
Bath water temperature drops when pump & spa jets are operating normally.	No Heater element.	This is normal in the standard pumps, models 2378, 2388, 2398 and 2408.
	Heater module does not operate.	Contact service technician.
	Heater module is too small for the capacity of the bath.	Confirm capacity of the heater module.



TROUBLE SHOOTING

If servicing of the unit is required at anytime, a service record should be kept listing details including any leaks, faulty operation, dry run conditions and operating pressure.

Onga stands by its quality products, however if a fault occurs and cannot be rectified by following the trouble shooting guide as set out below, please contact onga on **1800 664 266** (Australia) or **0800 664 269** (New Zealand) where our locator service will direct you to your nearest sales stockist or service agent.

Please be aware that a service fee will be applicable if a fault occurs other than that as described in the product guarantee as being due to defects in materials or faulty manufacture.

Pump service should be performed by suitably qualified personnel.

Always unplug power lead prior to service to prevent personal injury.

TROUBLESHOOTING ALL MODELS

SYMPTOM	CAUSE	REMEDY
Pump does not start.	No power at power point.	Use another known good electrical appliance to check power.
	Blown fuse.	Check fuse and replace if required.
	Automatic thermal overload has tripped to protect the motor.	<ul style="list-style-type: none"> - Check motor cooling and ensure adequate ventilation. Allow motor to cool then restart pump. - Ensure the pump is not jammed with debris or foreign material and motor is able to spin freely. - Motor is operating with low voltage supply. <p>WARNING Continued operation with this symptom may result in permanent damage.</p>
	Pump is jammed (check if shaft is free to rotate).	<ul style="list-style-type: none"> - Pump is blocked with foreign material. Clear debris and foreign material from pump and ensure that the pump is able to spin freely. - Bearings seized. Contact Service Technician.

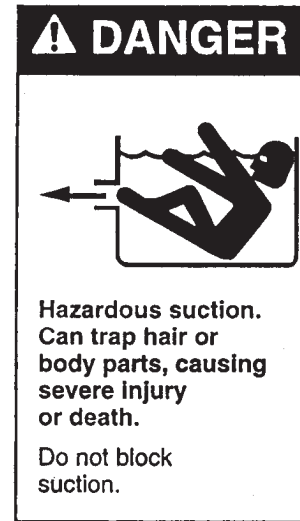


Fig. 3

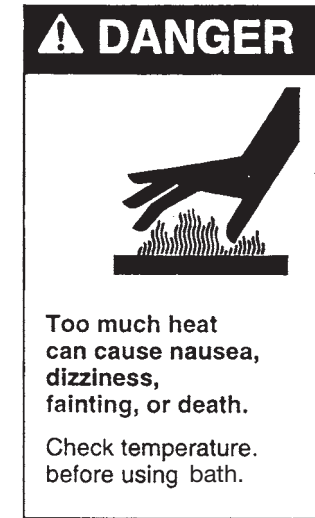


Fig. 4

PUMP OPERATION (Continued)

Before filling and starting your spa bath (Whirlpool), ensure that the spa bath (Whirlpool) is free from debris or foreign material as irregular pump conditions may occur.

Before switching on, fill the bath to a minimum 50mm above the spa jets.

NOTE: HOT PUMPS; To ensure that the over temperature sensor does not activate whilst filling the bath and thus preventing the pump heater from operating, fill the bath with cold to luke warm water until water level reaches the suction cover.

Water temperature greater than 40°C may make the heating element inactive.

Air Switch Models

To start the pump once the water level reaches at least 50mm over the spa jets, press the air button on the spa bath (Whirlpool). The pump will start and purge air from the plumbing and spa jets. After a short period of time the spa jets will start to operate normally.

To stop the spa jet operation press the air button again.

PUMP OPERATION (Continued)

Pump without heater Function::

Pump models 2378, 2388, 2398 and 2408 are controlled by an air button and will circulate the spa water.

They do not include an integrated heater element.

Hot Pump Function (Air Switch Models):

Pump models 2371, 2381, 2391 and 2401 are manufactured with integrated heating element and control devices to maintain water temperature and compensate for the natural cooling of the spa bath.

The heater function is designed to only operate with the hydromassage pump at normal operating pressure. The combined operation of the heater and pump is controlled from the bath by a single air button.

The heating function is monitored by a pre-set thermostat to maintain water temperature to a maximum 40°C, interlocked to a secondary upper limit cut out for added protection to maintain a safe water temperature.

Hot Pump Function (Electronic Models):

Pump models 2372, 2373, 2382, 2383, 2392, 2393, 2402 & 2403 are manufactured with integrated heating element and control devices to maintain water temperature and compensate for the natural cooling of the spa bath.

The heater function is designed to only operate with the hydromassage pump at normal operating pressure. The combined operation of the heater and pump is controlled from the bath by a touch pad.

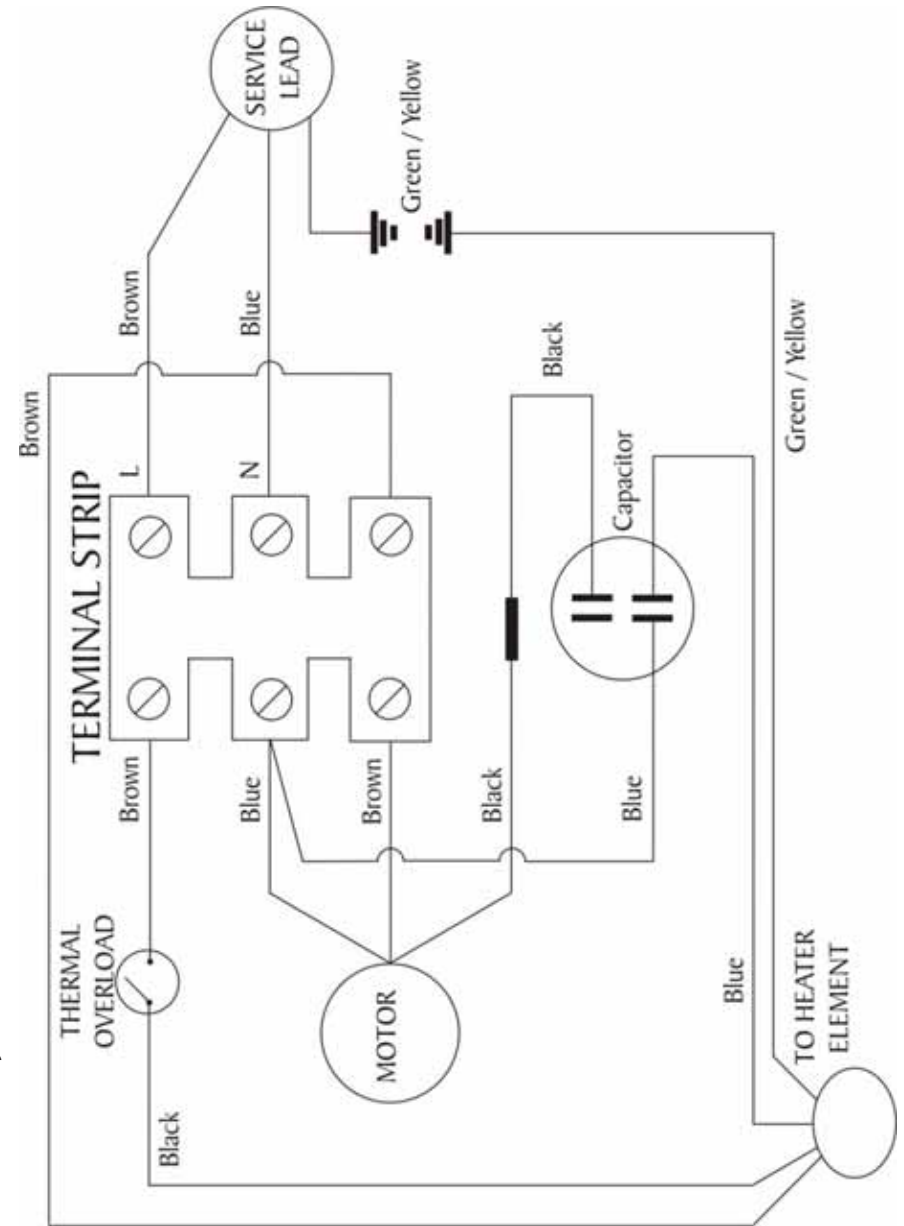
The Touch Pad has 2 buttons on it:

“JETS” button - turns on/off the pump and integrated heater.

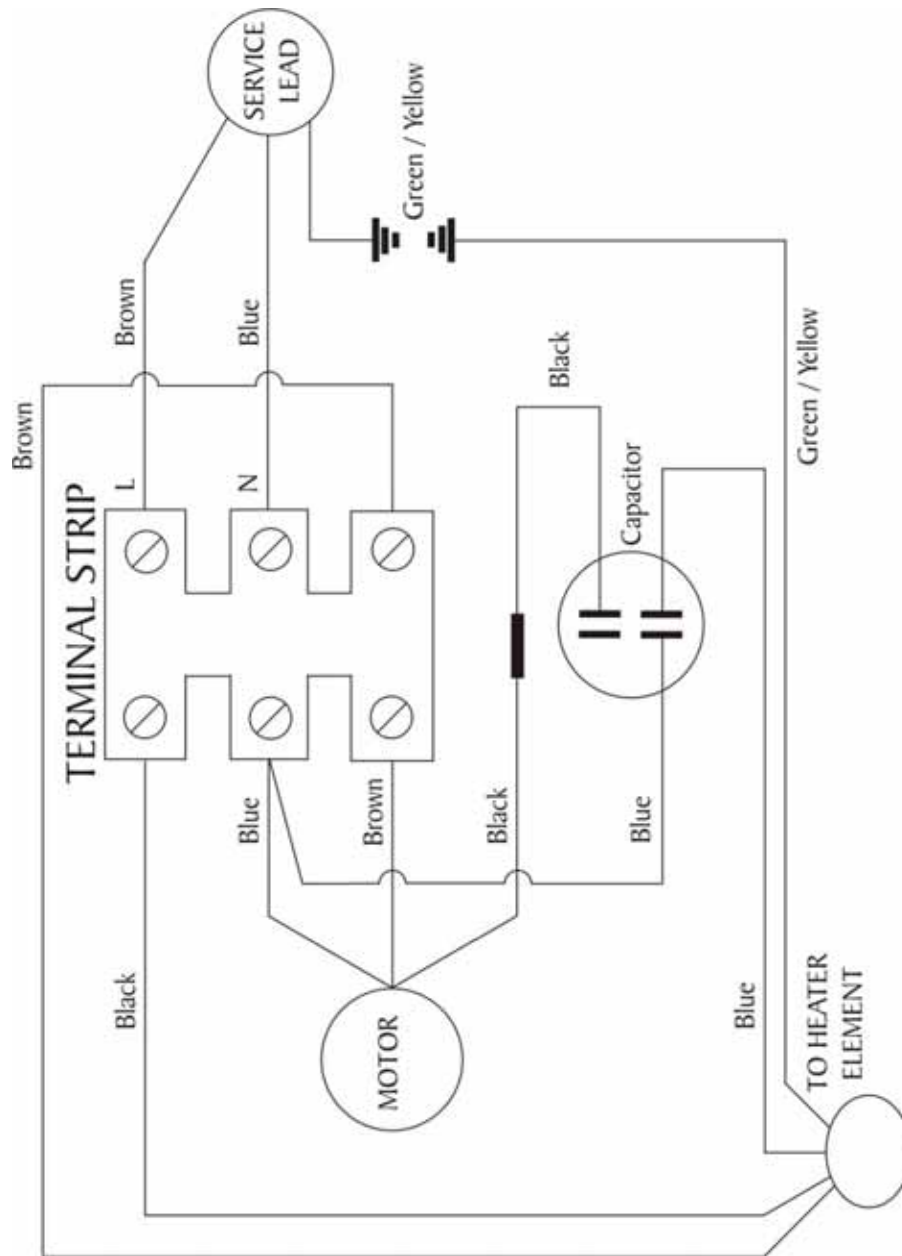
“HEAT” button - enables the heater to be turned on/off whilst the pump is running.

The heating function is monitored by a pre-set thermostat to maintain water temperature to a maximum 40°C, interlocked to a secondary upper limit cut out for added protection to maintain a safe water temperature.

Pump Model 2402E, 2403E



Pump Models: 2372E, 2373E, 2382E, 2383E, 2392E, 2393E



HOT PUMP FUNCTION (ELECTRONIC MODELS) Continued:

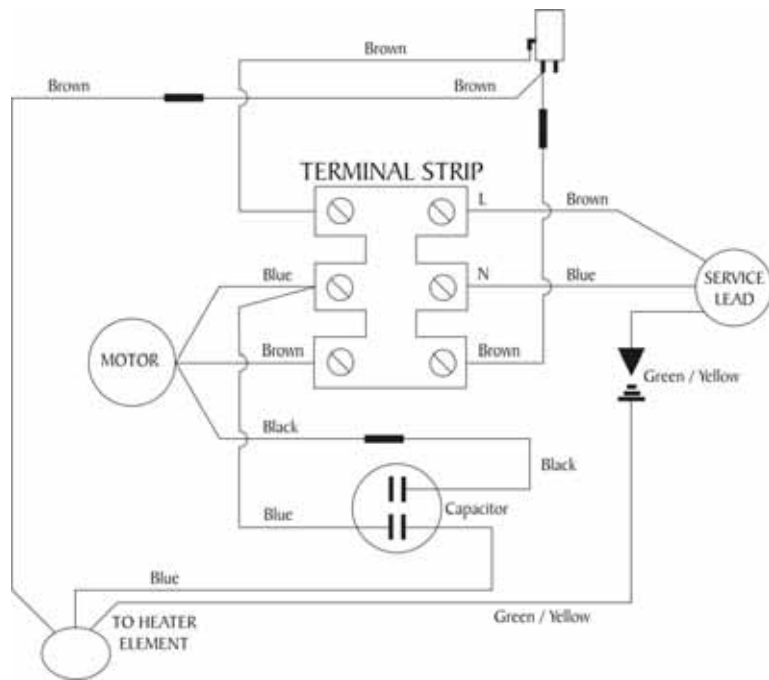
High/Low Voltage - If the pump's power supply falls outside the normal preset voltage parameters (as set by the Electrical Suppliers), the pump will shut down and remain in "lock-out" until the power supply returns to normal. "Lock-out" due to voltage fluctuations will be indicated by a green and/or red light flashing at the "Power" indicator on the touchpad. Once the power supply returns to normal the pump will revert back to standby mode.

Please note: This feature will not protect the pump in the event of extreme changes such as power surges.

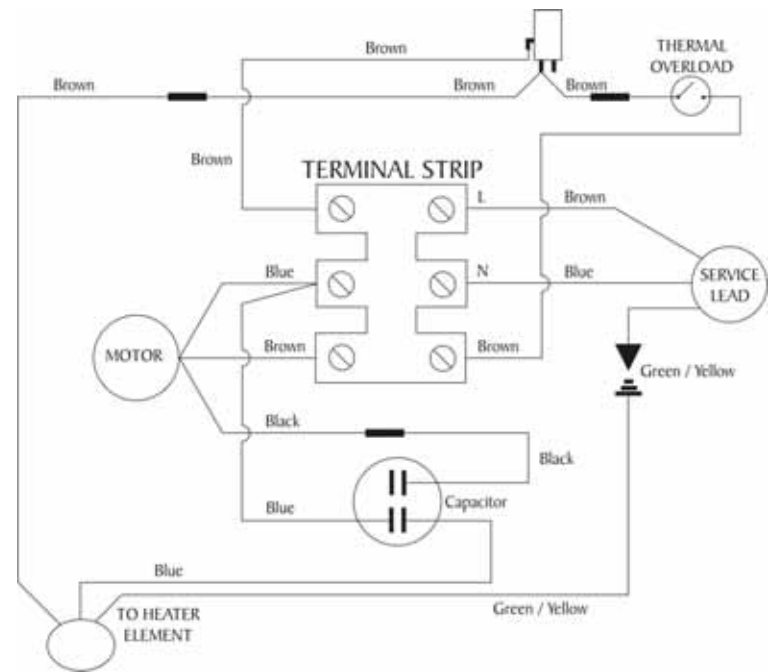
The Bathmaster Controller (Pump Models 2372, 2382, 2392 and 2402) have special built in safety features for your benefit.

1. **Non Priming Protection** - This feature prevents damage to the pump from occurring in the event of the pump being activated where there is no or insufficient water in the bath for the pump to operate satisfactorily. If the pump fails to gain prime after 30 seconds of operation the pump will shut down and will be "locked out" of operating for another 10 seconds. This will be indicated by an orange light flashing at the "Jets" indicator on the touchpad. After 10 seconds the unit will revert back to standby mode.
2. **Loss of Prime Protection** - This feature protects the bath occupant from injury resulting from a "blocked suction" scenario. It will also prevent damage to the pump from occurring as a result of the pump operating without water flowing through it. If at any stage during the normal operation of the pump, the pump loses prime (eg a blocked suction scenario) the pump will shut down if it cannot regain prime within 3 seconds. The pump will remain in "lockout" for a further 10 seconds. This will be indicated by an orange light flashing at the "Jets" indicator on the touchpad. After 10 seconds the unit will revert back to standby mode.

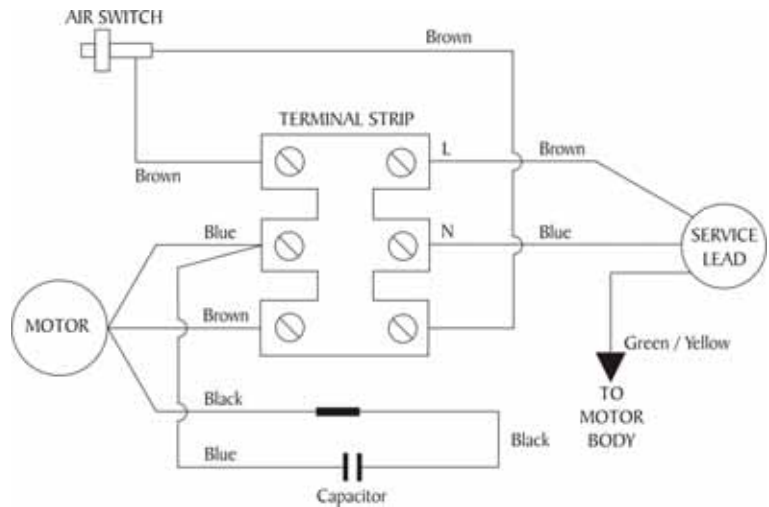
**Pump Model
2371E, 2381E, 2391E**



**Pump Model
2401E**



**Pump Model
2378E, 2388E, 2398E**



**Pump Model
2408E**

