

Commercial Spa Control Panel

Installation Manual

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Introduction

This manual has been compiled to assist competent engineers with the installation, commissioning and operation of the Swimmer commercial spa pack equipment, for use with Swimmer overflow and skimmer spas. Prior to commencing installation please read this manual thoroughly and refer to the Swimmer Overflow or Skimmer Spa Installation Manual if necessary.

If you have any queries or are experiencing problems please contact Golden Coast on +44 (0) 1271 378100 prior to commencing work.

At the time of publication the current SPATA and BISHTA guidelines have been adopted with regard to the design and specification of equipment and performance.

Before Starting Installation

Before commencing work check the spa pack is in accordance with the original order and not damaged. If anything is incorrect, missing or damaged, identify the problem on the delivery note and before proceeding with the installation inform Golden Coast and confirm the detail in writing within three days.

Required Services

The following services must be available prior to installation of the spa equipment.

- A 30mA protected electrical supply isolated adjacent to the location of the spa pack.
- A header tank to provide a permanent water supply to top up the balance tank and a mains water supply for filling the spa.
- A trapped drain must be available adjacent to the filtration unit and balance tank.

Check the drain provided is capable of taking the pumped discharge water.

- Heat exchangers require a 60°C primary hot water supply fed via a sprung return valve.
- A gas supply is only required if a spa gas heater has been specified.

Equipment Location

The spa pack should be sited in a ventilated and dry area, as near to the spa as possible. It must also be easily accessible for regular service. Check the relevant services mentioned above have been provided and the area is ready to receive the equipment.

Equipment Description

The type of filter supplied depends upon the commercial spa pack purchased. All systems operate within a 6 minute turnover period.

Light Commercial Sand Filter (Skimmer & Overflow Spas)

A hi-rate fibreglass tank operating at $34.30\text{m}^3/\text{m}^2/\text{hr}$, filled with 16/32 grade sand. There is a multiport valve fitted to control water flow through the filter.

Sand filter media will require regular cleansing by backwashing at a rate of $30.00\text{m}^3/\text{m}^2/\text{hr}$ to $40.00\text{m}^3/\text{m}^2/\text{hr}$.

Regular chemical cleaning with an approved cleaner such as Guardex Filter Cleaner is recommended. Complete media replacement will vary depending on the amount of spa use. High Calcium levels or pH, combined with excessive filter pressure can cause the filter element to become blocked or scale up.

Heavy Commercial Sand Filter (Overflow Spas Only)

A deep bed fibreglass tank operating @ $34.30\text{m}^3/\text{m}^2/\text{hr}$ filled with 16/32 grade sand. Sometimes media beds of mixed grades of sand and pebbles are used. It is essential for the efficiency of the filter that the correct media grade and quantity is used. There is a multiport valve fitted to control water flow through the filter.

Sand filter media will require regular cleansing by backwashing at a rate of $30.00\text{m}^3/\text{m}^2/\text{hr}$ to $40.00\text{m}^3/\text{m}^2/\text{hr}$.

Regular chemical cleaning with an approved cleaner such as Guardex Filter Cleaner is also recommended. Complete media replacement will vary depending on the amount of spa use. High Calcium levels or pH, combined with excessive filter pressure can cause the filter media to become compact and fissuring will occur. This will require a media change.

Heavy Commercial DE Filter (Overflow Spas Only)

This tank contains elements made of cloth covered filter grids mounted in a spiral pattern and includes a multiport valve. The filter operates at $5.00\text{m}^3/\text{m}^2/\text{hr}$ and is charged with Diatomaceous Earth (DE) filter media, this allows water to pass through, leaving particles of dirt and debris trapped in the powder. Diatomaceous Earth filters discharge the DE powder to waste when backwashing and require refilling before restarting the filter cycle. To recharge the filter add the required amount of media to the spa balance tank at a rate of 0.49kg per m^2 of filter area. Regular chemical cleaning of the internal filter grids with an approved cleaner such as Guardex Filter Cleaner is also recommended. The following table shows the area of the filter:

Filter Tank Ø	Filter Surface Area	DE Media Required
24ft ²	2.14m ²	1.05kg
36ft ²	3.25m ²	1.59kg
48ft ²	4.37m ²	2.14kg
60ft ²	5.39m ²	2.64kg
72ft ²	6.50m ²	3.19kg

Multiport Valve

Controls the water flow of the filter, typical functions include: filter, rinse, backwash, recirculate and waste. Exact functions will depend on the filter and valve used.

Control Panel

Electronic Swimmer spa panel controlled by a two button touch pad located adjacent to the spa.

Filter Pumps & Massage Pumps

The filter pump(s) are single speed, self-priming models. The pumps vary in size from 0.5hp to 2.0hp. The strainer baskets should be regularly checked, cleaned and debris removed. The pumps have "sealed for life" bearings and durable water seals; they must **never** be run dry as this will cause the water seal to fail. This is not covered by the warranty.

Electric Heater

The heaters range up to 9kW single phase to 12kW three phase. The maximum operational water temperature should be no higher than 40°C. The control panel is also fitted with a manual re-settable hi-limit stat set at 45°C.

Heat Exchanger (Optional)

The heat exchanger option is 18kW, supplied loose and not plumbed to the pack itself. For heat exchanger packs, a primary hot water supply of 60°C will be required fed via a sprung return valve. The heat exchanger must be mounted and plumbed according to the individual instructions supplied with it. Failure to observe correct orientation and piping layouts can cause the unit to operate incorrectly and void any warranty.

Flow / Pressure Switch

A flow / pressure switch is fitted within the electric heater for heat exchanger packs. A flow switch should be plumbed into the filter line to protect the heating system and spa pack. Poor water flow will result in the heater failing to operate. If the heater fails, check there is sufficient water flow. A dirty filter is the most common cause of the heater failing to operate.

Air Blower

A single or three phase continuously rated commercial blower of 1.3kW or 1.7kW respectively is supplied with all commercial spas. The air filter should be replaced annually. Air blowers must be protected from water tracking back onto the motor by an air loop and non-return valve. A non-return valve on its own is not an acceptable means of protection.

Plumbing

Only competent engineers with previous spa installation experience should install Swimmer spa packs. It is the responsibility of the installer to ensure the work is carried out in accordance with SPATA or to local regulation requirements. Pipework must be designed with the minimum number of bends to ensure maximum flow and return to the spa.

Please refer to pump performance and permitted pipe flow rates tables below for actual pipe recommendations. We also recommend up-rating the pumps for runs of more than 10m head loss. Where the pipework involves long runs and many elbows, the pipe size may need to be further increased. It is recommended in accordance with good practice that all pump suction and returns are valved to enable ease of pump removal.

Pipe Size	Nominal Bore (mm)	Filter Suction @ 0.50m/sec (m ³ /hr)	Filter Delivery @ 2.00m/sec (m ³ /hr)	Massage Suction @ 0.90m/sec (m ³ /hr)	Massage Return @ 5.00m/sec (m ³ /hr)	Overflow Fall @ 0.90m/sec (m ³ /hr)
Metric Pipe						
50mm	45.20	2.89	11.56	5.21	28.90	5.21
63mm	57.00	4.60	18.38	8.28	45.95	8.28
75mm	67.80	6.51	26.01	11.71	28.90	11.71
90mm	45.20	2.89	3.49	5.21	28.90	5.21
Imperial Pipe						
1½"	42.55	2.57	10.25	4.61	25.61	4.61
2"	53.25	4.02	16.05	7.22	40.11	7.22
2½"	67.80	6.51	26.01	11.71	65.02	11.71
3"	80.70	9.22	36.85	16.58	92.11	16.58

The airline should be a single 63mm (2") pipe running to the spa. The lines must be protected by an air loop (recommended to extend to a minimum of 300mm (12") above the normal water level in the spa). A non-return valve should be fitted adjacent to the air connection on the spa. If the recommended height for the air loop cannot be achieved, a double air loop with a spring check valve should be used.

Balance Tank Installation (For Swimmer Overflow Spas Only)

The balance tank is supplied plumbed with linked suctions, overflow inlets and a top-up ball valve. Connection to the mains water supply should be via a double check valve or break tank. Float switches, for low level pump protection are supplied fitted to the tank. A second float switch can be fitted as an additional option for solenoid top-up.

Note: The float switches are make and break type and polarity is not critical.

The balance tank must be fully supported and should be sited with its base on the same level or below the spa floor, never above.

Note: Where the tank is lower than the spa, good quality check valves must be used to prevent backflow from the spa shell into the balance tank when the filter pump is turned off.

The overflow from the spa to the balance tank is by gravity. To prevent the spa water backing up and flooding the perimeter spa channel, the pipes leading to the balance tank should be a minimum of 63mm (2") diameter for spas with four outlets and 90mm (3") for spas with only two outlets.

These pipes should be laid to a fall in all cases with a minimal amount of bends. The use of swept bends rather than 90° or 45° elbows is strongly recommended.

To monitor and control the operational water volume in the spa system, an optional electronic water level device is available upon request.

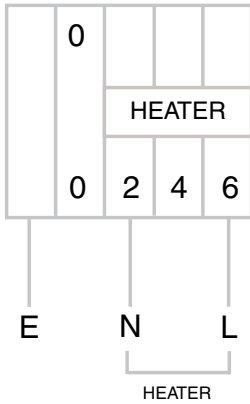
Note: Balance tanks require regular cleaning and must be sited to allow for easy access.

Electrical

A suitably qualified electrician (preferably also a member of NICEIC or local regulating authority) must carry out the electrical installation. Failure to comply with safety regulations may void any warranty supplied by Golden Coast.

All electrical supplies to the spa system must be protected by a 30mA residual current device (RCD) not supplied.

Single Phase Wiring Diagram

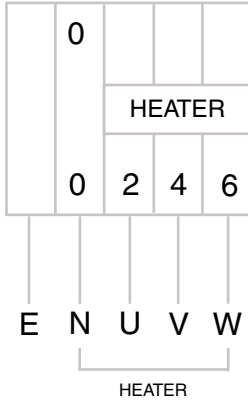


+	-	EARTH	L	N	L	SW	L	SW	1	2	1	2	L			N	E
PROBE			LIGHT		FLOW		BALANCE		HI-LIMIT		REMOTE STOP		SINGLE PHASE				

WARNING: Purge circuit may operate without warning!

Always isolate main supply for pump and blower maintenance or if the pool is dry.

Three Phase Wiring Diagram



+	-	EARTH	L	N	L	SW	L	SW	1	2	1	2	L1	L2	L3	N	E
PROBE			LIGHT	FLOW	BALANCE	HI-LIMIT	REMOTE STOP	THREE PHASE									

WARNING: Purge circuit may operate without warning!
Always isolate main supply for pump and blower maintenance or if the pool is dry.

Thermostat Programming

- To set the temperature control, ensure the heater switch is on and the display is illuminated. An operating temperature of 37°C is recommended, however, be aware that the acrylic shell warranty has a maximum limit of 40°C
- Press the button marked P until the display flashes. Using the up and down arrow button set the desired temperature.
- When the desired temperature is reached press P and the current temperature will be displayed.

Filter Operation

Commercial spas should be programmed for continuous filtration. The filter will collect debris on the surface of the media which will need to be removed to ensure satisfactory filter operation. Backwashing cleans the filter and removes any debris by reversing the flow of water inside the filter and washing it away to waste. The reading on the filter pressure gauge when the system is first started up will be the clean reading and should be approximately 7 - 10 PSI, but can be more or less depending on the pipework runs and equipment used. Use this reading and reference it against the reading after subsequent filter cleanings. Backwashing should be undertaken when the pressure reading increases by 7 PSI. After backwashing the pressure reading should return to the clean reading. Failure to return to this reading could indicate a fault is developing with your system. The filter is a pressure vessel and should not be subjected to elevated pressures. Under no circumstances should it be run at pressures exceeding 20 PSI.

Dilution of spa water in commercial spas should be at a rate of 30ltrs per bather per day, or water can be fully drained each day; the backwash cycle can be utilised to achieve this. The spa should be plumbed and valved to allow the booster pump to be used for backwashing.

Note: Never operate the filter multiport valve while the filter pump is running, otherwise serious damage to the filter and valve may result.

Backwashing

For Zeolite or sand filters:

- Switch off the filter pump.
- Turn multiport valve to backwash - this will reverse the water flow through the filter.
- Switch on the filter pump to wash any debris out of the filter to waste. Leave running for 3 to 5 minutes, or until sight glass is clear and then switch off.
- Turn the valve to rinse (sand filters only) - this returns the flow of water to the normal direction and settles the sand bed.
- Switch on the filter pump. Water continues to flow to waste. Leave running for 2 to 3 minutes and then switch off.
- Turn the multiport valve back to filter to return to normal use.
- A considerable quantity of water can be lost from your spa during the backwash cycle and it needs to be replaced. Check and adjust the chemical levels before using the spa.

The principle is the same for Diatomaceous Earth filters but the backwash mode is selected by moving a lever valve at the base of the unit. For specific instructions refer to the manufacturer's guidance in the manual supplied with the pack.

Final Filling

Clean the spa shell using spa polish to protect and seal the surface prior to filling.

Sanitising

When filling the spa always Superchlorinate the water by adding 20g of Chlorine per 1000 litres / 220 gallons of water to raise the Chlorine content to approximately 10mg/l (wait until level is below 5mg/l before using the spa).

Water Balance

Immediately after filling / diluting and Superchlorination of the spa water, test and adjust the water balance as necessary.

Mineral Protection

To prevent staining of the spa surface and water discolouration caused by metals in the source water, use Swimmer Scale Inhibitor. This will help prevent scale accumulation, however, maintaining the water balance will prevent excess scaling.

If applicable, the automatic chemical dosing unit can now be fitted. Refer to the system manual for installation, commissioning and operation details.

Please see additional information at the end of this manual for recommended guides on water treatment.

Testing & Completing The Installation

Testing

- A 24 hour flood test is recommended prior to finishing the spa surround.
- Whilst filling the spa or balance tank (if fitted), via a break tank, ensure the water is treated as recommended (see final filling below). Ensure all valves are open; prime and bleed pumps as required prior to running.
- Check all plumbing joints from the spa to the equipment and balance tanks.
- Leave the spa to stand for several hours. Check the water level remains stable. If the level drops and it is due to a leak, locate and repair. Repeat the process until level remains stable.
- Run up the equipment, checking the operation of each component via the touch pad.

Priming The Pump

The pump must have a coarse strainer and if the equipment pack is above the water level* it may need priming as follows:

- Remove the lid and fill with water to above the basket rim.
- Re-fit the lid and ensure the rubber O ring is seated correctly, hand tighten only.

* The balance tank (if fitted) must be at the same level or below the base of the overflow channel, it cannot be above.

Checking The Filtration Operation

- Switch on power to control box.
- The filter pump should start. Check the filter pump is running then check if there is water flow in to the spa. If there is no movement, refer to the pump priming instructions above.

Note: the filter pumps will only operate if the water level in the balance tank is at the correct level.

Checking The Heater Operation

- Set the temperature above the actual water temperature, if there is sufficient water flow the spa heater will come on.
- Slowly close the suction valve to check the flow switch shuts off the heater when flow is restricted.

Checking The Jet Equipment

- Depress the jet button on the spa to activate the hydrotherapy jets.
- Check the jets for a flow of water. If there is no flow, refer to pump priming.
- Ensure jet positions can be altered by hand.
- Check any rotating jets spin freely.
- Unscrew the air controllers on the side of the spa to ensure air is induced into the jet system.
- Check air blower operation, depress button on the spa.
- Ensure air is coming up from all areas of the spa where holes have been drilled.
(i.e. seat and floor)
- Leave the spa running for approximately 1 hour.
- Allow the spa to heat up to the operation temperature and leave on filter only.

Check the plumbing joints again.

Commissioning & Handover Checklist

Demonstrate to the customer how to start up and run the spa, using this manual to explain the following:

- Set up and ensure correct operation of the thermostat.
- Ensure all functions on the control panel are operational.
- Check valve operation.
- Check and test the electrical safety / integrity of the equipment.
- Check the filter for correct operation and note gauge pressure.
- Check the general operation of the spa.
- Check the jet operation.
- Ensure the customer understands that there is a timer circuit on the massage jet and air blower system settable between 1 - 16 minutes, with an optional rest interval period of 5 minutes.
- Ensure that the spa side touch pad controls function correctly.
- Check the air blower.
- Demonstrate the testing, monitoring and treatment of the spa water including how to maintain the correct pH level of between 7.4 - 7.6 and the correct Chlorine or Bromine level - leave the auto dosing documents on site - preferably in the plant room.
- Demonstrate the balance tank electronic controls if fitted and discuss maintenance cleaning programme.
- Ensure the customer fully understands the operation of the spa and it's associated equipment.
- Ensure the customer is satisfied with the product, and accepts that installation and training have been completed.

When they are happy that this has been completed, ask them to confirm this by signing a dated statement to that effect.

Safety Tips

When using water treatment products, read the labels carefully and follow the safety and storage directions precisely. Though water treatment products protect you and your spa, they may be hazardous in concentrated form. Please observe the following for safe handling:

- Always measure and apply water treatment products according to instructions. Never overdose.
- Do not add water to water treatment products; always add them to water.
- Never mix water treatment products together, dangerous reactions can occur.
- Complete dosing of one water treatment product before commencing on the next.
- Handle all water treatment products carefully. Store in a cool, dry, secure, ventilated place.
- Always keep water treatment products in their original containers replacing caps when dosing is completed.
- Water treatment products must always be kept out of children's reach and handled by a responsible person.
- Do not inhale fumes or let water treatment products come into contact with eyes, nose or mouth. In the event of contact or swallowing, follow the emergency advice on the product label, and seek immediate medical advice.

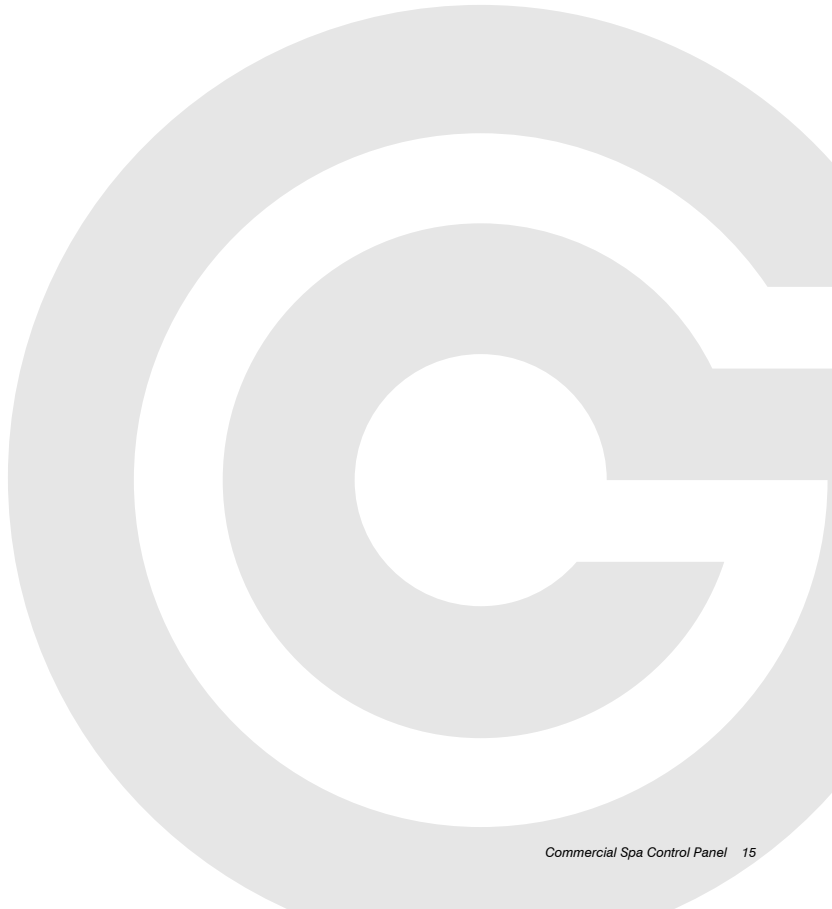
- Avoid water treatment products spilling onto surrounding surfaces. Clean up any spillages carefully and dispose of in a safe manner. Do not use vacuum cleaners to clean spills.
- Never smoke whilst handling water treatment products as some may be inflammable.
- Wash hands immediately after handling water treatment products.

Additional Information

For water treatment please refer to one of the following reference books:

- ISBN 0 - 7176 - 1772 - 6. Legionnaires' disease, the control of Legionella bacteria in water systems. Approved Code of Practice and Guidance - available from HMSO.
- ISBN 0 - 9011 - 4437 - 1. Hygiene for Spa Pools. Available from the Public Health Laboratory Service, 61 Colindale Avenue, London, NW9 5DF.
- ISBN 0 - 9011 - 4446 - 0. Hygiene for Hydrotherapy Pools. Available from the Public Health Laboratory Service, 61 Colindale Avenue, London, NW9 5DF.
- Swimming Pool Water - Treatment & Standards. P.W.T.A.G
- Domestic & Commercial Spas. I.S.P.E.
- SPATA Standards Volumes 3 on Spas & Volume 4 on Water & Chemical treatment. Available from the SPATA Office 01264 356210.
- Autodos Manuals 300, 1000 & 3000.
- Swimmer Water Treatment Guide.
- Guardex Spa Care Manual.
- Swimmer Domestic Spa and Hot Tub Maintenance Manual.

If you would like to receive further information on any of our products, please contact us on +44 (0) 1271 378100, email to swimmer@goldenc.com or visit our website - www.goldenc.com
We will be pleased to send you the information requested.





Golden Coast Ltd | Fishleigh Road | Roundswell Commercial Park West | Barnstaple | Devon | EX31 3UA

Tel: +44 (0) 1271 378100 | Fax: +44 (0) 1271 371699 | www.goldenc.com | e-mail: swimmer@goldenc.com

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