OzoMatic®

Installation and Operating Instructions

Please pass these instructions on to the operator of this equipment.

DEPEND ON DAVEY WATER PRODUCTS

E-mail: sales@davey.com.au
Website: davey.com.au

P/N 401833

OZOMATIC®
OWNERS MANUAL

ALL OZOMATICS SHOULD BE MOUNTED WITHIN EASY REACH OF THEIR INJECTORS AND SO THE OPERATING LIGHT CAN READILY BE SEEN.

Model	MOG 15	MOG 60	MOG 120
Capacity Spa**	2000	3500	7000
Capacity Pool**	15000	60000	120000
Height (mm)	300	550	550
Width (mm)	150	150	150
Depth (mm)	75	75	75
Weight (kg)	2.3	5.0	5.6
Current (A)	0.16	0.36	0.72
Power (W)	36	83	166
Output* (g/hr)	0.08	0.25	0.5
Required airflow SCFH	8-10	8-10	16-20
Recommended Injector	M0404, M0413	M0404, M0413	M0404, M0413

** when used as a supplementary sanitiser.
*outputs may vary with airflow, temperature and humidity.
Commercial Applications refer Davey Water Products

OZOMATIC®

1. INTRODUCTION:

The Ozomatic unit produces ozone each time the unit is turned on. Usually, the Ozomatic will be coupled to operate at the same time as the pump. The Ozone is produced by the reaction of ultraviolet light on the oxygen content of air. This air/ozone mixture is then mixed with the water. There are three methods of introducing ozone into the spa/pool water, rated for efficiency:

1. High Efficiency Injector (with or without Bypass)
2. Mini Footwell Injection
3. Air Venturi Injection

The design and construction of your pool or spa determines which method your installer will use. If unsure, check with your pool/spa builder.

The Air Venturi system draws ozone into the water when the air intakes are screwed shut. You will see bubbles entering the water through the spa/pool jets. It is important that during normal filtration cycles the air intakes be left closed so that optimum ozone can enter the water. This is the least efficient method.

The Mini Footwell system is a dedicated jet that is usually plumbed into the lower wall of the pool or spa and when the pump runs it draws ozone into the water via a Venturi action. A fine mist of bubbles can be seen coming from this jet when the pump is running. This system does not rely on the air intakes and runs independently. This is a moderately efficient system.

The High Efficiency Injector is usually in the form of a Bypass and the Bypass Injector will be installed near your filter and consists of a ball valve which is adjusted to allow a flow of approximately 8-10 on the optional Ozomatic flow gauge for models MOG 20 and MOG 60 and 16-20 for model MOG 120. This is the optimum flow of air through the Ozomatic unit.

2. RUNNING TIME:

The amount of time that the filter runs each day is very important. The longer the filter runs, the more debris that is removed from the water. The cleaner the water, the easier it is for the ozone to sanitize. As you sit in the spa, your body gives off oils, fats, make-up, fine particles of skin, etc. Algae and bacteria are also present in the water. Ozone will oxidise the contaminants provided the system is allowed to operate for the correct amount of time. The running time will depend on the size of your spa (i.e. its volume), the temperature of the water and the number of people who use it.

As a guide, the filter should be run for a minimum of 5 to 6 hours per day. Some systems use a small circulator pump to run the spa 24 hours per day at a very low electrical cost. (Refer page 10)

NEVER RUN THE OZOMATIC VIA A THERMOSTAT CONTROL. When a spa is run under a thermostat (temperature) control it will operate for a short period each hour. This is to keep the water hot. The Ozomatic needs to operate for a minimum period of 2 hours at a time to ensure that the spa water is turned over and mixed with the ozone. Also, constant stop/start of the Ozomatic will decrease the useful life of the UV lamp inside the unit. In applications such as this, it is possible for the Ozomatic to be plugged into a separate power outlet and left running 24 hrs a day. This enables the thermostat control to stop/start the pump as often as required without damaging the Ozomatic.

3. SPA/POOL BALANCE:

It is very important to keep your water balanced. Balanced water will feel better, look better and be healthier.

MAINTENANCE OF CHEMICAL LEVELS - pH

A correct pH level must be maintained to prevent problems such as black spot, staining, cloudy water, etc. Correct levels are as follows; Fibreglass - 7.0 to 7.4. Other pools and spas - 7.2 to 7.6. Chemicals to raise or lower pH are available from your pool/spa dealer.

TOTAL ALKALINITY

Total alkalinity should not be confused with pH, although the two are closely related.

Total alkalinity determines the speed and ease of pH change. It is measured in ppm - the ideal range is 80-150ppm, or refer to your pool builder.

You should use a test kit which includes a test for Total Alkalinity.
Low Total Alkalinity can cause unstable pH levels - i.e. an inability to keep the pH constant may cause staining, etching and corrosion of metals. High Total Alkalinity will cause constantly high pH levels.

Consult your local Ozomatic® dealer for more information.

CHLORINE/BROMINE

Ozone is used as a primary oxidiser and will take care of contaminants introduced into the water whilst the unit is operating. When the unit turns off, the ozone level will drop rapidly. It is suggested that a residual dose of chlorine/bromine be introduced into the spa/pool to take care of contaminants that may enter between filtration cycles. In above ground pools a floating dispenser with slow dissolving tablets would complement the Ozomatic. The addition of chlorine or bromine is recommended for spas. On below ground pools salt water chlorination is a better alternative because of the residual factor and can be used in conjunction with an Ozomatic. In 24 hour circulation systems chemical additions will be minimised.

This information is provided as a guide to help you on the way to understanding your Ozomatic and how to obtain the best from your water. Your local Ozomatic dealer can advise you in detail.

4. TROUBLE SHOOTING:

Water keeps going cloudy

1. Check that blue light is on.
2. Check that fine bubbles are present in spa.
3. Check that running time is adequate.
4. Check water balance.
5. Check you have an appropriate chlorine/bromine residual.

If the blue light is on then the unit is working. You can confirm this by smelling for ozone near the water surface. Check items 3, 4 and 5. If the blue light is not on then check that there is power to the unit by plugging a lamp or similar appliance into the power outlet normally used for the Ozomatic. If the appliance works then the Ozomatic requires service. Return the unit to your nearest Davey authorised service agent. Do not attempt to open the bulb chamber because the UV light will damage your eyes, also never breathe in concentrated ozone.

5. GENERAL INFORMATION:

ALGAE: Microscopic forms of plant life which enter the water by rain, wind and dust. There are numerous varieties - some are free floating whilst others grow on walls and in cracks and come in different colours. Some are more resistant to chemical treatment than others.

BACTERIA: The germs that contaminate your water. Introduced by swimmers, dust, rain storms and other elements.

BALANCED WATER: The correct ratio of mineral content and pH level that prevents water from being corrosive or scale forming.

CHLORAMINES: Compounds formed when chlorine combines with nitrogen from urine, perspiration, etc. Chloramines cause eye and skin irritation, as well as unpleasant odours.

CHLORINE DEMAND: The chlorine required to destroy germs, algae and other contaminants in the water.

CHLORINE RESIDUAL: The amount of chlorine remaining after chlorine demand has been satisfied. This is the reading obtained with your test kit.

CYANURIC ACID: Also known as stabiliser or conditioner. It reduces dissipation of chlorine by direct sunlight.

LIQUID ACID: Chemical used to reduce the pH and total alkalinity in the pool/spa water.

PPM: An abbreviation for Parts Per Million the accepted measurement of chemical concentration in water. 1ppm = 1mg/L.

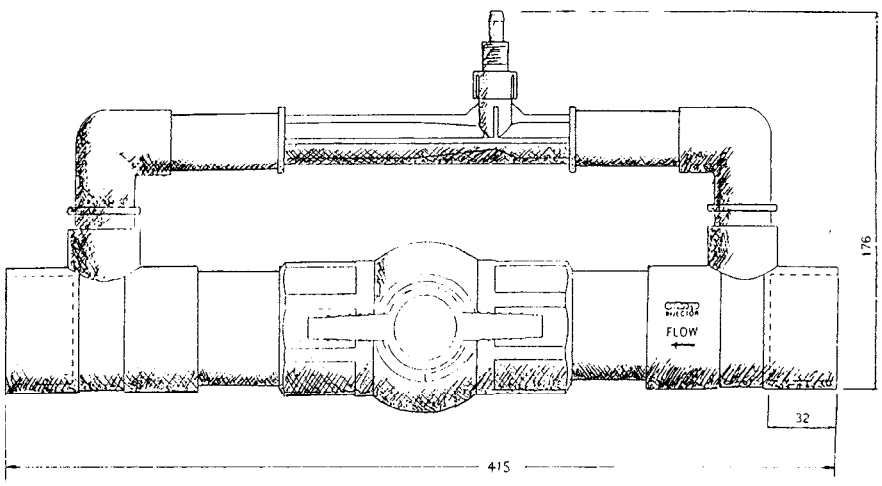
Consult your local Ozomatic® dealer for more information.

6. OZOMATIC® INJECTION SYSTEMS:

Before installing the Ozomatic®, it should be decided which type of injection system will be used:

HIGH EFFICIENCY BY-PASS INJECTOR

A high efficiency injector is plumbed around a valve to create a by-pass injector. This injector is placed in the return line of the pool/spa and is used in situations where the maximum amount of ozone mixing is required. It should be noted that systems with high back-pressure will defeat the operation of the venturi in this system unless a significant reduction in water flow can be tolerated.



VENTURI AIR SUCTION

The Venturi air suction method is accomplished by connecting the Ozomatic to the Venturi air line of the spa. This system is easy where access to the air lines is available but on existing spas might not be possible. The main drawback with this system is that the ozone is only drawn into the spa when the air controls are closed. When they are opened, the amount of ozone drawn into the spa decreases dramatically. This system is the least efficient injection method.

1. Locate the Ozomatic Unit outside or underneath the spa skirting so that it is close to the spa air line and the operating light can be seen.

2. Install the Tee and hose barb.

3. Form a double loop of ozone hose and secure it above the water level.

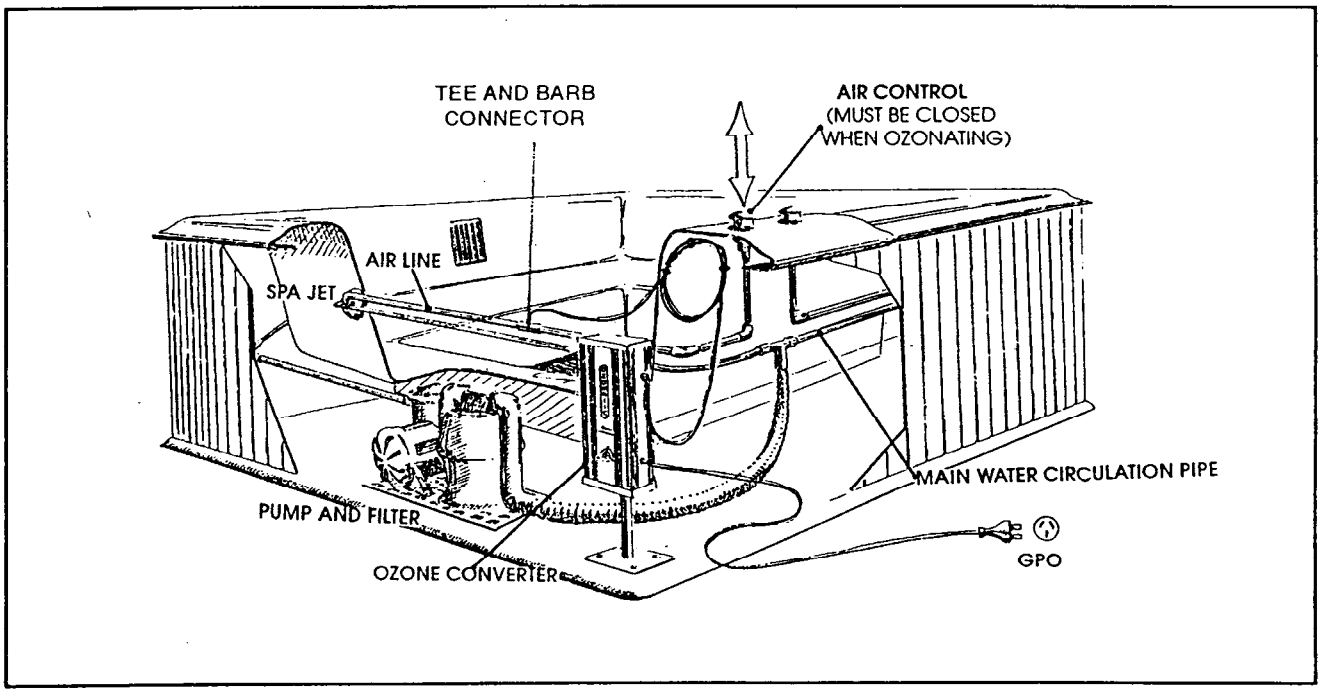
   Note: There is a non-return valve on the ozone hose. Blow into the hose to ensure ozone will be able to flow in the correct direction. The non-return valve is designed to operate under pressure and it is possible for water to seep past it when no pressure is applied; hence the loop is an extra safeguard to stop water entering the Ozomatic.

4. Close the air controls and turn the pump on. Ensure that a bubble mist is entering the spa from at least one of the jets. Place a finger over the end of the Ozone hose and ensure that the air entering the spa is being drawn through the hose. Connect the hose to the Ozomatic.

   Note: The air control must be kept closed when the spa is operating during its normal filter cycle. If it is not, air will be drawn in through the air control and you will not produce any ozone, nor will you be ozonating the spa water.

5. Plug the Ozomatic into the power outlet (that controls the pump) and ensure that the operating light is on.

VENTURI AIR SUCTION SYSTEM



OZONE AIR LINE
- MUST BE DOUBLE LOOPED AND CONNECTED ABOVE WATER LEVEL

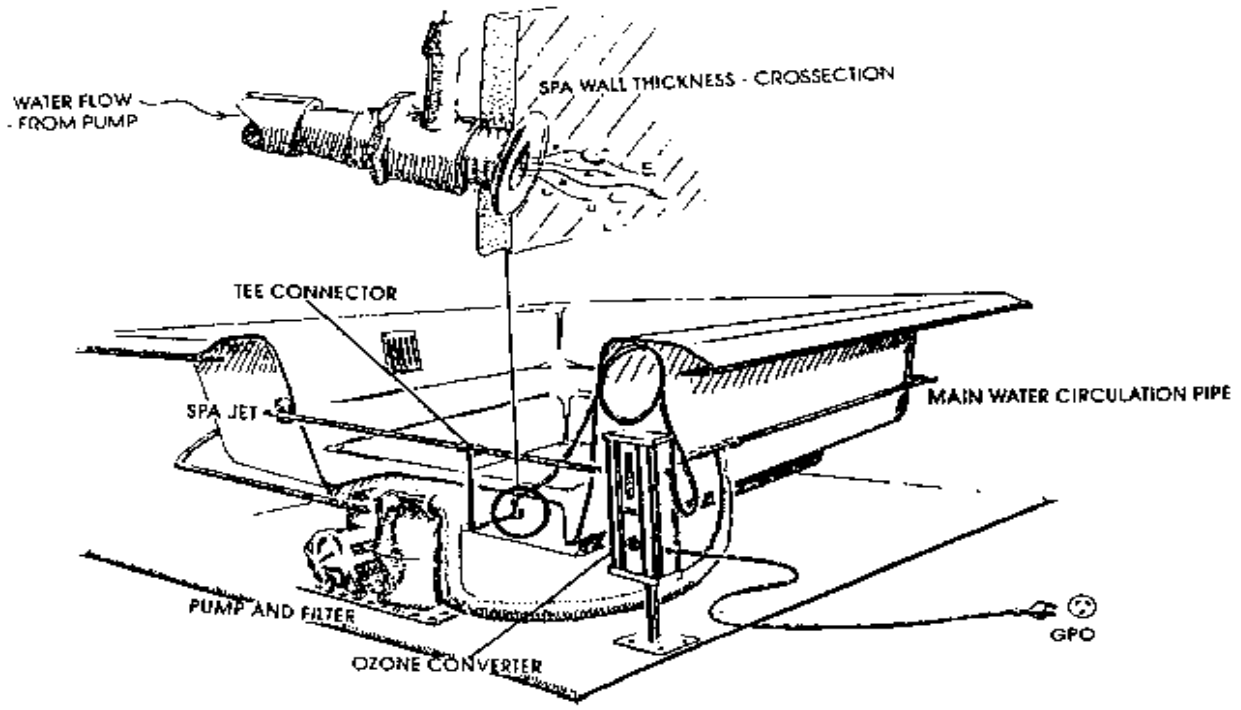
MINI FOOTWELL INJECTOR

The mini footwell injector consists of a small return jet that is installed in the lower portion of the spa. It is connected to the return line and as water passes through the footwell injector, ozone is drawn in by venturi action. This method is very cost effective and is suitable for all new spas. During both the manufacture stage and on existing spas where access to the piping and lower section of the spa is available. This system has good injection efficiency.

1. Position the mini footwell injector in the pool or spa wall as low as is practical. Bear in mind that the Ozomatic Unit must be as close to the injector and the operating light must be visible.
2. A 25mm hole must be cut into the spa wall and the mini footwell injector must be sealed into this hole. The injector outlet is tightened using a 5/16 allen key.
3. Break into the water return line with a reducing Tee piece. Using 15mm PVC pipe, plumb the mini footwell injector into the Tee.
4. Form a double loop of ozone hose and secure it above the water level.

   Note: There is a non-return valve on the ozone hose. Blow into the hose to ensure ozone will be able to flow in the correct direction. The non-return valve is designed to operate under pressure and it is possible for water to seep past it when no pressure is applied; hence the loop is an extra safeguard to stop water entering the Ozomatic.
5. Close the air inlets to spa and turn on the pump. A fine mist of bubbles should be blowing from the injector. Using a finger over the end of the ozone hose, ensure that there is suction into the hose. Connect hose to Ozomatic.
6. Plug the Ozomatic into the power outlet (that controls the pump) and ensure that the operating light is on.

MINI FOOTWELL OZONATING SYSTEM



OZONE AIR LINE – MUST BE DOUBLE LOOPED AND CONNECTED ABOVE WATER LEVEL

OZOMATIC® INSTALLATION FOR ABOVE GROUND POOLS USING THE BY-PASS INJECTOR

MODELS MOG 60 AND MOG 120

(ALSO MOG 20 FOR COURTYARD POOLS AND SPAS REQUIRING A BY- PASS INJECTOR)

On systems where the back-pressure is likely to be high, such as below ground spas or pools with high head features (e.g. high waterfalls), a different injection approach may be needed. See "Ozomatic installation for spas and pools with high back-pressure".

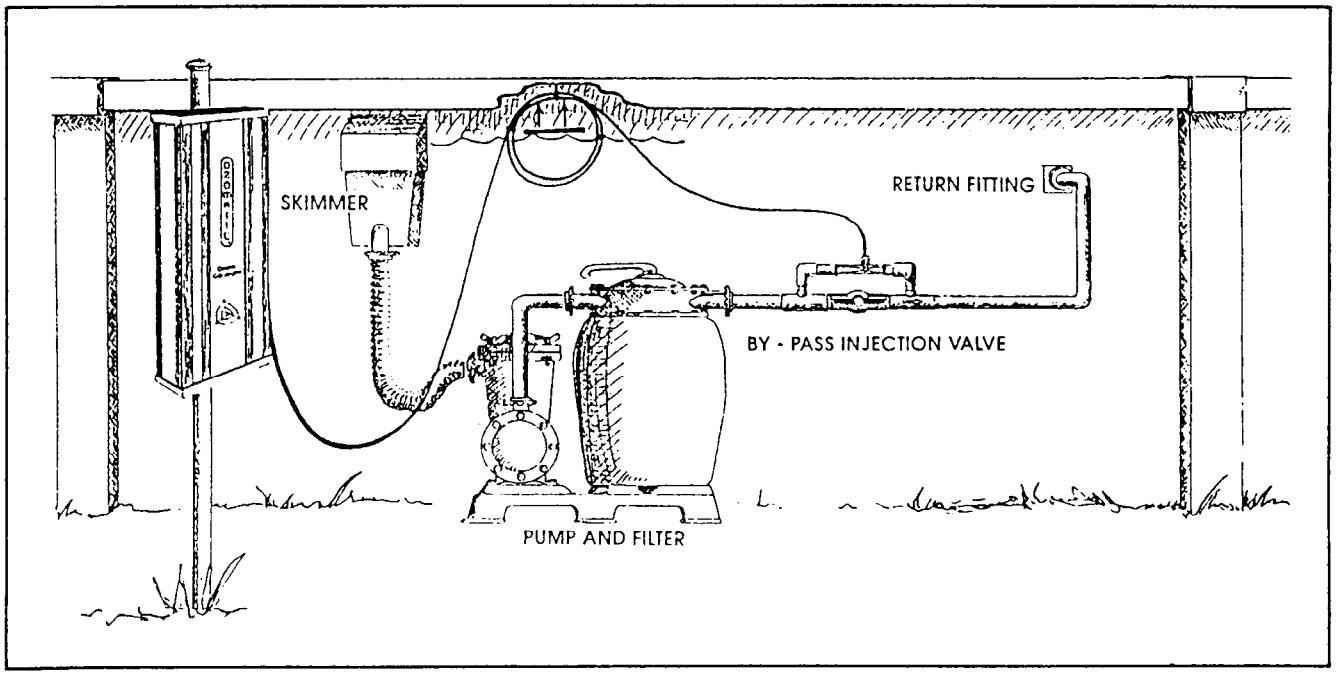
Your Ozomatic® and injector are purchased separately. Ensure that you have selected the proper injector. The high efficiency injector used is the most efficient injector available.

The by-pass injector should be plumbed into the return line after all other accessories. The clear hose should be connected to the barb on the injector (refer diagram). The amount of air flow through the Ozomatic should be adjusted by turning the ball valve on the injector. By using the optional flow gauge and attaching it to the end of the clear hose a flow of approximately 8-10 for models MOG 20 and MOG 60 and 16-20 for MOG 120 on the gauge indicates optimum ozone production.

On systems where the back-pressure from the pool is so great that a suction cannot be created no matter how much the ball valve is closed down then either the pool pump should be reduced in size or the impeller changed to reduce the water flow. This situation usually exists when the pump has been replaced with a larger one on existing pool/spas.

IMPORTANT – The clear hose comes complete with a non-return valve. Make sure that this valve is around the right way so that air can be drawn through the ozone unit. If the Ozomatic is to be installed below water level then the clear hose must be looped above the highest possible point; otherwise the water could drain out of the spa through the ozone unit causing damage. Warranty is void if water damage is apparent. Refer to warranty card for detailed conditions.

BY-PASS INJECTION FOR ABOVE GROUND



OZONE AIR LINE - MUST BE DOUBLE LOOPED AND CONNECTED ABOVE WATER LEVEL

OZOMATIC® INSTALLATION FOR SPAS AND POOLS WITH HIGH BACK-PRESSURE

For in-ground spas where installation of a mini-footwell Injector is not possible, or where back-pressure is high it is possible to install a High Efficiency Injector in a by-pass around the sand filter. This type of installation uses the pressure developed across the filter to help drive the injector.

A 3-way valve is plumbed between the pump and filter. Reducing bushed/barbed connectors are fitted to the valve port that will feed the High Efficiency Injector, 20mm (3/4") flexible tubing can be used to connect into the High Efficiency Injector inlet. A Tee - piece is plumbed after the filter with one of its ports reduced/barbed to allow fitting of the 20mm (3/4") flexible tubing from the High Efficiency Injector outlet. Ensure that water flow is in the direction of the arrow on the High Efficiency Injector.

The clear ozone hose should be connected to the injector as shown in the diagram. Ensure that the non-return valve is fitted in the right direction.

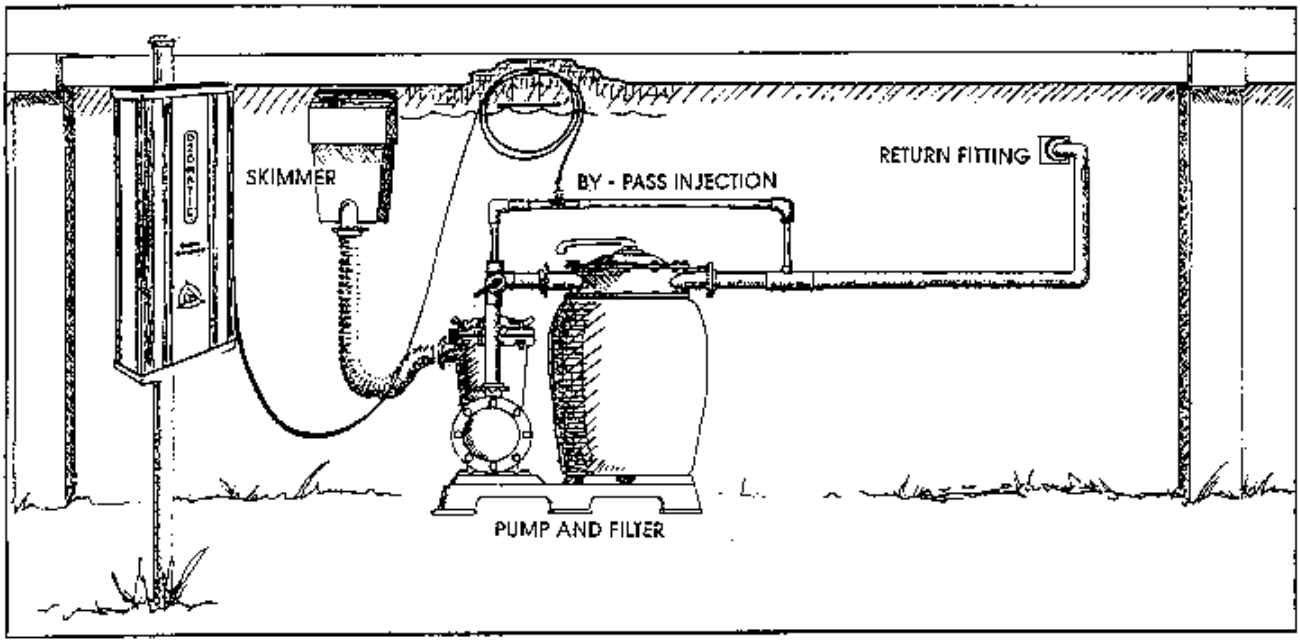
Before starting the pump, close the 3-way valve port to the injector. This means that the port to the filter will be open.

Start the pump and begin to open the valve port to the injector. Keep opening valve until suction is achieved. Using the optional gas flow meter, adjust the suction until the correct flow is achieved (8-10 for MOG 20 and MOG 60, 16-20 for MOG 120).

IMPORTANT - The clear hose comes complete with a non-return valve. Make sure that this valve is around the right way so that air can be drawn through the ozone unit. If the Ozomatic is to be installed below water level then the clear hose must be looped above the highest possible point; otherwise the water could drain out of the spa through the ozone unit causing damage. Warranty is void if water damage is apparent. Refer to warranty card for detailed conditions.

AN EXAMPLE OF THIS SITUATION IS RETRO-FITTING OF IN-GROUND SPAS AND POOLS WITH FOUNTAINS OR WATERFALLS

BY-PASS INJECTION FOR SYSTEM WITH BACK-PRESSURE IN RETURN LINES



7. OZOMATIC® 24 HOUR CIRCULATION SYSTEMS;

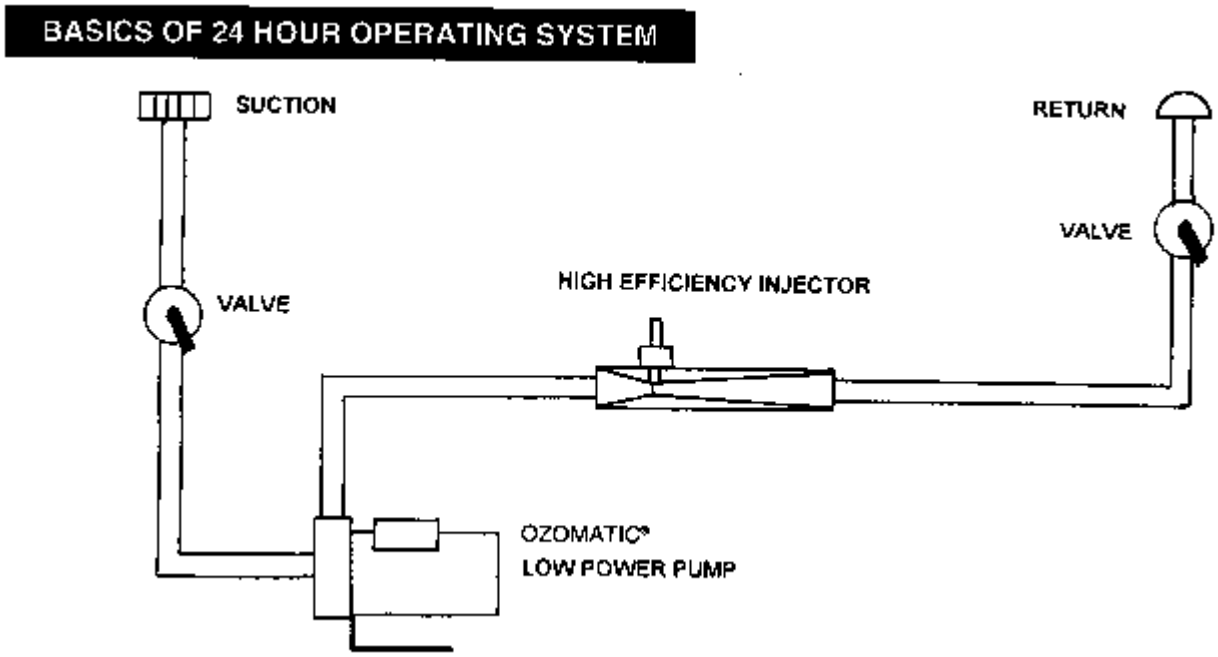
It is possible to use an Ozomatic in a 24 hour per day circulation system.

The systems are used mostly on spa's and require a dedicated spa suction and outlet. That is, the system is independent of the main pumps and blower.

In order to fit a 24 hour Circulation System you will need to have access to the spa under-side. A spa suction must be fitted low in a footwell, and a spa return fitted just above the level of the suction. Make sure that the return does not direct water into the suction.

The spa suction must be plumbed to the inlet of the Low Power Pump (Circ Pump), which drives the High Efficiency Injector and then returns to the spa. The High Efficiency Injectors are available from Davey Water Products. Other fittings will need to be purchased from a Spa/Pool Shop Dealer. Please note that isolation valves should be fitted at the spa suction and return to allow service of the pump/injector without draining the spa.

A slightly less efficient method is to use a Footwell Injector in place of the Spa Return. In this case a High Efficiency Injector is not needed. Isolation valves remain in place.

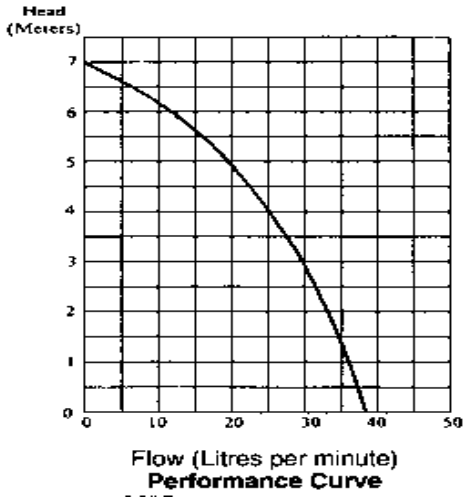


The Low Power Pump, High Efficiency Injector and Mini Footwell Injector all use 20mm (3/4") connections. Flexible 20mm (3/4") tubing should be used for all equipment - the Spa Suction/Return will need to be reduced down to this size.

Consult your local OZOMATIC® dealer for more information.

OZOMATIC® 24 Hour Circulation Specifications

Power Consumption: Less than 100 Watts
Less than AUD 0.29
Maximum Flow Rate: 37 litres per minute (2,270 litres/hour)
Maximum Head: 7 metres

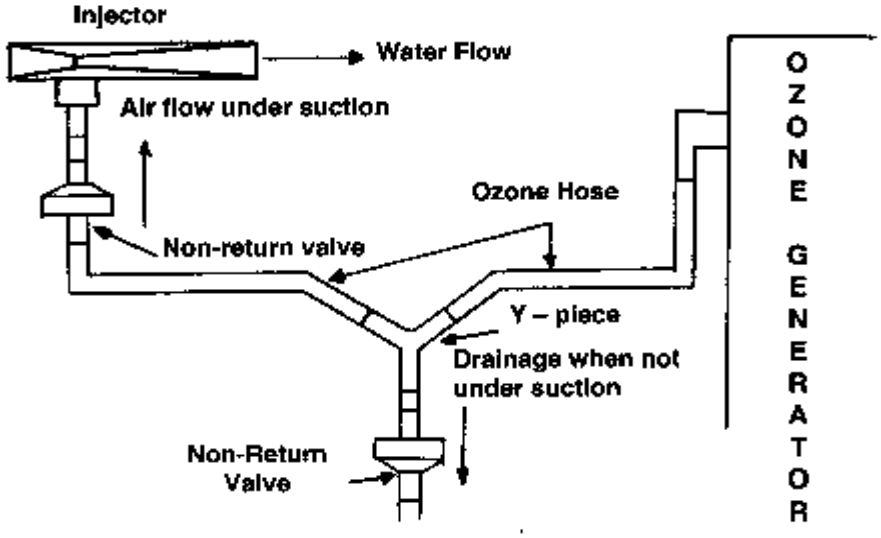


Maximum Water Temperature: 60˚C
Maximum Pressure: 200 kPa (30psi)

This pump is especially suitable for use with a Mazzei or Mini Footwell Injector. When used with a Mazzei Injector, the flow rate is approximately 1000 litres/hour dependant on outlet back pressure. Suction from the Mazzei Injector is ideal for the MOG20 and MOG60 Generators.

8. OZOMATIC® INSTALLATIONS BELOW WATER LEVEL:

The Ozomatic® must be run in conjunction with a 24 hour pump. One non-return valve must be fitted close to the Injection System and a second non-return valve and "Y" barb connector fitted at the lowest point of the clear tube to enable any water seepage to drain should a power failure occur. Please make sure non-return valves are fitted in the correct direction in the line and the Ozomatic® has the correct air flow rate to maximise the life of the ultra violet bulb chambers – refer to diagram below:



IMPORTANT: Water entering the Ozomatic® is solely due to incorrect installation. Please follow installation procedures for all applications very carefully.
Warranty is void if water damage is apparent. Refer to warranty card for detailed conditions.

Davey® Repair or Replacement Guarantee

In the unlikely event in Australia or New Zealand that this Davey product develops any malfunction within two years of the date of original purchase due to faulty materials or manufacture, Davey will at our option repair or replace it for you free of charge, subject to the conditions below.

Should you experience any difficulties with your Davey product, we suggest in the first instance that you contact the Davey Dealer from which you purchased the Davey product. Alternatively you can phone our Customer Service line on 1300 367 866 in Australia, or 0800 654 333 in New Zealand, or send a written letter to Davey at the address listed below. On receipt of your claim, Davey will seek to resolve your difficulties or, if the product is faulty or defective, advise you on how to have your Davey product repaired, obtain a replacement or a refund.

Your Davey Two Year Guarantee naturally does not cover normal wear or tear, replacement of product consumables (i.e. mechanical seals, bearings or capacitors), loss or damage resulting from misuse or negligent handling, improper use for which the product was not designed or advertised, failure to properly follow the provided installation and operating instructions, failure to carry out maintenance, corrosive or abrasive water or other liquid, lightning or high voltage spikes, or unauthorized persons attempting repairs. Where applicable, your Davey product must only be connected to the voltage shown on the nameplate.

Your Davey Two Year Guarantee does not cover freight or any other costs incurred in making a claim. Please retain your receipt as proof of purchase; you **MUST** provide evidence of the date of original purchase when claiming under the Davey Two Year Guarantee.

Davey shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Davey products. This limitation does not apply to any liability of Davey for failure to comply with a consumer guarantee applicable to your Davey product under the Australian or New Zealand legislation and does not affect any rights or remedies that may be available to you under the Australian or New Zealand Consumer Legislation.

In Australia, 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.

Should your Davey product require repair or service after the guarantee period; contact your nearest Davey Dealer or phone the Davey Customer Service Centre on the number listed below.

For a complete list of Davey Dealers visit our website (davey.com.au) or call:

Rainbow Pool Products
PO Box 2388, Mansfield Qld 4122
Telephone STD 61-7-3849 5385
Facsimile STD 61-7-3849 5384
Email: info@rainbowpoolproducts.com.au
Web: www.rainbowpoolproducts.com.au

*** Installation and operating instructions are included with the product when purchased new. They may also be found on our website.**