

# JED 203 INSTALLATION AND OPERATION MANUAL

## REPLACEMENT OF AIR PUMP

1. Turn off power to unit.
2. Remove two wire nuts (power in connection) and two holding nuts.
3. replace old air pump and reverse step 2.
4. Insert clear tubing into air intake side of CD cylindrical component.

When replacing the air compressor on the JED 203, specify a JED Engineering part number 90-65-10010.

## SERVICE

### JED 203 INSTALLATION AND SERVICE PART NUMBERS

Installation and Service Parts	Part Number	Power Cords and Power Accessories	Part Number
Over the Side Kit	90-65-10091	Nema Wall Plug	50-50-55001
Check Valve	90-65-10050	Amp 4 pin	50-50-55002
Tubing	35-25-40041	J + J plug	50-50-55004
Multihose Adapter	35-39-65160	Mini J + J plug	50-50-65008
CD Sub Assembly	80-39-70000	Hot Springs J + J	50-50-55011
Hose Bib Adapter	90-65-10090	Pacific Marquis J + J	50-50-55030
Thru Hull (1 5/8")	90-65-10070	Molex Sundance Plug	50-50-55000
Thru Hull (1 3/16")	90-65-10065	Transformer 120V	30-38-00100
Replacement Pump Kit	90-65-10010	Timer	80-39-65030

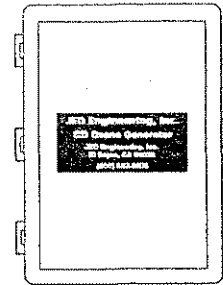
In the event that the JED 203 fails to operate, please contact the factory for repair or replacement. The JED 203 is covered by a one-year full warranty. It is also designed to be field serviceable.

## OZONE INFORMATION AND HELPFUL HINTS

1. It costs less than one cent per hour to operate the JED 203.
2. The water should be changed a minimum of twice per year. The Canadian Standards Association, CSA, recommends changing the water once per month.
3. The ozone-laden air kills algae and bacteria upon contact as the bubbles rise in the water. The ozone does not readily combine with the water and consequently the surface area of the bubble is the point of contact between ozone and the contaminants.
4. The ozone is produced in the JED 203 when air passes through a high voltage electrical discharge or "corona."
5. The ozone residual in the water is so slight that inexpensive test kits are not accurate enough to readily test for the existence of ozone.
6. Verification that the unit is working is demonstrated by the smell of ozone and by bubbles coming to the water surface from the ozone discharge tube.
7. The JED 203 is more effective when a spa cover is utilized.
8. In the event of a power outage or other event that causes the JED 203 to be off for a duration of time, it is necessary to "shock" the water with chlorine or bromine. Use 1/4 cup of chlorine for every 100 gallons and do not use the spa for several days.
9. Even though the unit is performing effectively, there can still be discoloration at the water line caused by human body excretion. To remove, use any good chemical preparation for this purpose such as monosodium per sulfate or liquid chlorine.
10. Cleaning the filter more often is frequently required with ozone purification.

March 1, 2001

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## DESCRIPTION

The JED 203 is designed for water purification in residential and commercial hot tubs, small pools, fountains, cisterns and water tanks up to 5000 gallons. The JED 203 is supplied in a plastic rainproof enclosure that can be wall mounted outdoors. The JED 203 has its own air compressor which can pump ozone into a pool, tub or tank up to 24 hours a day independently of water circulation. The JED 203 is typically installed in conjunction with an over the side kit or thru-hull fitting.

## IMPORTANT SAFETY INSTRUCTIONS

When installing and using the JED 203 basic safety precautions should always be followed.

1. READ AND FOLLOW ALL INSTRUCTIONS
2. DO NOT use the JED 203 for any purpose other than water purification and only according to the instructions.
3. DO NOT directly breathe the ozone from the discharge tube.
4. DO NOT operate the JED 203 before it has been permanently mounted.
5. DO NOT touch the JED 203 when wet or with wet hands. Fatal electrical shock could result.
6. DANGER - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised.
7. Connect to a grounded grounding type receptacle of a 20 ampere or less branch circuit.
8. Do not bury the electrical cord.
9. WARNING - To reduce the risk of electrical shock, replace damaged cord immediately.
10. If the unit is connected to a ground fault circuit interrupter (GFI): Before each use of your spa (hot tub) test the GFI. If the interrupter fails to operate in this manner, there is a ground current flowing, indicating the possibility of electrical shock. Disconnect the plug from the receptacle until the source of the breakdown has been identified and corrected.
11. SAVE THESE INSTRUCTIONS.

## SPECIFICATIONS

Ozone output -- 0.1 grams per hour  
 Input voltage -- 120 VAC, 60 Hz  
 Operating current -- 0.42 Amperes  
 Power consumption -- 50 Watts  
 Dimensions -- 9 1/2" x 8 1/2" x 4 1/2"  
 Air Compressor -- 0.67 gallons per minute air

## MOUNTING

The JED 203 is housed in a rainproof enclosure that can be wall mounted either indoors or outdoors. It should be placed in close proximity to where the ozone will be introduced to the water.

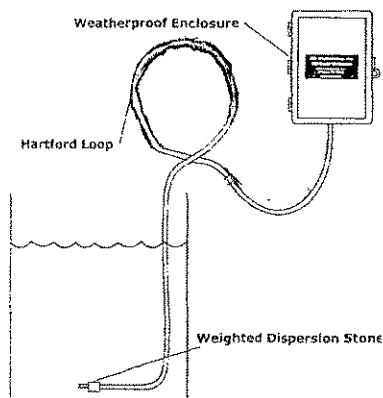
## ELECTRICAL CONNECTION

1. Turn off power to the spa before attempting to install. The JED 203 should be wired to an appropriate 120 VAC source which will be energized 24 hours a day.
2. The electrical installation must be made in accordance with local regulations. The standard NEMA line cord simply plugs into a grounded 120 VAC wall outlet. Other plug configurations are also available. (See service parts list.) Overcurrent protection must be provided by connection to a branch circuit rated at 20 amperes or less. If you are hard wiring the unit, follow the spa manufacturer's installation instructions. The color codes of the wires from the ozonator to the spa are as follows: GREEN IS GROUND, BLACK IS HOT AND WHITE IS NEUTRAL.
3. An Intermatic® heavy duty multi-setting timer is recommended for setting JED 203 operation times.

### OZONE HOSE TO SPA

1. Connect the long clear hose to the clear check valve, which is protruding from the bottom of the JED 203.
2. Drill a small hole (3/8") as close to the top of the skirt as possible.
3. Bring the clear hose from the ozonator up through the hole and attach it to the optional weighted airstone. Drop the weighted stone into the spa so it rests on the bottom. A Hartford Loop above the water line will help prevent water from back flowing into the ozonator in the event of a check valve failure.
4. Ozone can also be introduced from the JED 203 via an ozone resistant thru-hull fitting or a hose-bib adapter connected to the drain valve.

Water Tank Installation with "over the side kit"



### INITIAL WATER PURIFICATION

1. Shock the spa water with liquid chlorine using 1/4 cup of chlorine for each 100 gallons of spa capacity. Other oxidizing agents, such as bromine, hydrogen peroxide, or monosodium persulfate can be substituted and their instructions should be followed.
2. Because metal compounds can be precipitated out of solution with the use of ozone, it is recommended to use a commercially available metal remover such as "Protect All" or "Metal Magnet."
3. Allow filtration pump to run continuously for 2 days without turning on the JED 203 ozone generator.
4. After following step 3, set the filtration pump timer to run according to the spa manufacturer's recommendations, or a minimum of 60 minutes per day.
5. Activate the JED 203 by plugging it in and adjusting the timer on the spa to run at the appropriate times (see customer adjustments section.)
6. Clean the spa filter after the first week of operation and again in one week.

### CUSTOMER ADJUSTMENTS

Recommended operation times for the JED 203 are as follows:

Spa or Tank Size in Gallons	Hours Per Day
250-500	4
500-1000	8
1000-2500	12
2500-5000	16

JED Engineering has heavy duty, multi-setting Intermatic® timers available for purchase.

### MAINTENANCE AND DAILY USE

1. Use of an ozonator requires water filtration to remove dead bacteria and algae particles. In order to derive the maximum benefits from the JED 203 ozone generator, the filtration pump should be run a minimum of 60 minutes per day.
2. Clean the filter monthly and check more often if it seems necessary.
3. If during use of spa it is felt undesirable to have the ozone entering the water, turn the unit off.
4. The ozone generating CD subassembly has a defined life and degrades in its ability to generate ozone over time.
5. To replace the CD subassembly, see "CD Subassembly" section of these instructions.
6. A residual ring ("bathtub ring") is experienced in all spas and is best removed with a product specifically designed for this purpose. The best non-chlorine chemical for this process is monosodium persulfate.
7. Although ozone is a more powerful killer of bacteria and algae than any chemical, such as chlorine, there is one advantage to chemical purification. The killing effect of ozone in the spa is generally limited to contact of the outside sphere of the bubbles with the water, and the killing effect of the chemicals is affected by mixing into the water. Because of this difference when ozone is employed, surfaces (such as spa walls and bottom) are not disinfected, for only the water is disinfected. During spa use bacteria may cling to the surfaces which result in a slippery feel. This bacteria can be eliminated by using a towel or rag and wiping down these surfaces followed by using the filtration pump for approximately one hour. A shock of any liquid or powdered dissolvable disinfectant will also eliminate the slippery surface. The human body will usually excrete about 1/4 cup of perspiration during spa use, so it is easy to understand how bacteria are introduced into the water.

### SHOCKING WITH LIQUID CHLORINE

In the event that the spa water has become cloudy, it is necessary to shock the water with chlorine or bromine. Cloudy water is caused by excessive use of the spa, which introduces contaminants, particularly bacteria. A guide for shocking for each 100 gallons of water is as follows: Normal shock: 1/4 cup, Heavy shock, 1 cup. The JED 203 can be used in combination with bromine, chlorine, ionization or Baquacil.

### pH

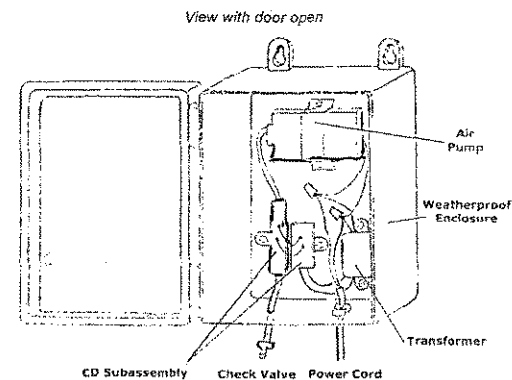
The recommended pH for spas is 5.5 or higher. Refer to your spa manufacturer's owner manual for further details. Ozone purification is very user friendly and does not require a specific pH level to be effective. A lower pH than required for chlorine is healthier for the skin and hair.

### CD SUBASSEMBLY REPLACEMENT

The anticipated life expectancy of the CD subassembly is approximately 1 year, depending on the ozonator run time. After 1 year, we recommend replacing the CD subassembly. When replacing it, specify JED Engineering part number 80-39-70000.

### INSTRUCTIONS FOR REPLACEMENT OF CD SUBASSEMBLY

1. Turn off power. Let unit cool.
2. Remove two holding nuts on CD subassembly.
3. Strip both connection wires between the CD subassembly and the transformer.
4. Wire the new CD subassembly to the transformer with the wire nuts supplied.
5. Reattach the ozone resistant tubing and tighten back down with the two holding nuts. Do not over tighten.



For CD subassembly replacement on the JED 203, call your local dealer or contact the factory.

## **\*IMPORTANT\***

Please Review Carefully Before Installing Your New  
Corona Discharge Ozone Generator.

Be sure to:

1. Mount unit under the spa skirt, as high on the wall as possible.
2. Unit must be mounted vertically.
3. Please verify that the JED CD Ozonator (120V or 240V) matches your power source voltage, V.
4. Install second check valve between the venturi injector and ozone generator.

We recommend that you:

1. Mount the venturi injector near the top of the spa skirt with the tubing sloping downward from the injector outlet.
2. Incorporate two Hartford loops above the water line if possible.

**Please Note:**

**For all models, excluding the JED 203 & 603, suction is required to get ozone into the water. The ozone generators depend on vacuum from a venturi injector. They produce no airflow themselves. The ozonator must have air drawn through it. The ozonator should only have power when suction is available or it may fail prematurely. Check suction periodically. Proper suction will increase the performance and longevity of your ozonator.**



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## JED ENGINEERING OZONE GENERATOR WARRANTY

July 1, 2002

JED Engineering, Inc. expressly warrants all Spa King Bubble Gun UV (ultraviolet) ozonators to be free from defects in material and workmanship, and malfunctions and failure to perform under normal use and service for a period of one full year from the date of installation.

JED Engineering CD (corona discharge) ozonators are covered under full warranty for one (1) year. If a defect in material or workmanship becomes evident within this period, JED Engineering will repair, or, at JED Engineering's option, replace the defective unit within reasonable time without charge for parts, transportation or labor. In such event, the duration of this warranty is extended while the unit is not functioning. This warranty applies to the first retail buyer and to any subsequent owners of the system.

If the unit contains a defect that cannot be repaired after a reasonable number of attempts to do so, you, the buyer, may elect either a refund of its purchase price, or a replacement without charge. A replacement may consist of a new or factory rebuilt unit of at least the same quality. A new warranty shall apply to any replacement.

To obtain service on the unit just notify JED Engineering, Inc., at 8614 Argent St. Suite H, Santee, CA 92071. Our toll free number is 1-800-552-8838. Should service be requested and no defect found in the unit then a reasonable charge will be made for the service. To certify that your warranty is still in effect, you must furnish evidence of the date of completion of installation. In no event shall JED Engineering, inc. be liable for the following:

- 1) Conditions resulting from a defect in a component or part that is not part of the JED Engineering unit.
- 2) Conditions resulting from a significant departure from JED Engineering, Inc.'s instructions.
- 3) Conditions resulting from any misuse, abuse, negligence, weather-damage, accident or alteration.
- 4) Consequential damages such as damage to your home, loss of time, inconvenience or loss of use of the unit or any incidental expenses resulting from any breach of the express warranty.

Conditions that may occur in the normal operation of the unit shall not be evoked by JED Engineering, Inc. to reduce or defeat the coverage of this warranty.

Unless otherwise explicitly agreed in writing, it is understood that these are the only written warranties given by JED Engineering, Inc. and JED Engineering, Inc. neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with the unit.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.