

OWNER'S MANUAL

EVOLUTION 3500, 4500, 5500, & 8500 SERIES PUMPS

IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

1. **READ AND FOLLOW ALL INSTRUCTIONS**
2. **WARNING** – To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
3. **Do not install within an outer enclosure unless so marked.**
4. **SAVE THESE INSTRUCTIONS.**

WARNING – All electrical wiring of the motor installation must be done by a qualified electrician in accordance with applicable electrical codes. Before working on any motor, be certain that the source of electrical power is off at the main junction box.

BONDING WIRE – Upon installation of the pump, the motor must be used with a No. 8 AWG (8.4mm²) solid copper conductor per National Electric Code. The connection should be from the accessible wire connector on the motor to all metal parts of the water garden and to all electrical equipment, metal conduit and metal piping within 5 feet (1.5m) of the inside walls of the water garden, when the motor is installed within 5 feet of the inside walls of the water garden.

NOTE: For electrical connection, see wiring diagram on motor rating plate.

CAUTION: This Pump Has Been Evaluated for Use With Water Only.

WARNING Risk of Electric Shock – This pump is supplied with a grounding conductor and grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected to a properly grounded, grounding-type receptacle. (56.1 b)

INSTALLATION & OPERATING INSTRUCTIONS

GENERAL

Your Evolution pump has been quality built and engineered to give maximum efficiency under normal water pumping conditions. Consult the manufacturer for any other applications.

INSTALLATION

I. LOCATION OF PUMP

For best pump performance, locate the system as close to the water source as possible. Provide adequate access around the pump for inspection and maintenance. Place pump on a firm level surface. Pump need not be bolted down unless required by local code.

II. MODELS WITH TRAP

Avoid excessive tightening of pipe or fittings in any areas where threaded connections are used. For NPT threaded connections, use Quick-Seal Teflon Thread Sealing Compound, Plasto-Joint Stick or any other sealants formulated specifically for plastics.

OPERATION

I. STARTING & PRIMING PUMP

Do not run unit dry. Always be certain that the pump casing and/or trap is filled with water before starting the unit. Allow a reasonable amount of time for priming. If pump will not start, or will not prime, see trouble shooting section of this manual.

II. MAINTENANCE

The trap basket should be inspected frequently and kept clean. To avoid damage to the basket, do not strike when cleaning. Inspect trap cover O-ring regularly and replace as necessary.

CAUTION: Do not remove hair and lint strainer lid while pump is running or under pressure! Lid is held in place by lock handles, which can be removed or tightened by hand. Basket must be kept clear of leaves and debris at all times. Keep motor clean. Insure that louvered openings are free from debris and obstructions. Over a period of time, the shaft seals may become damaged or worn and must be replaced.

III. WINTERIZATION

To prevent damage during freezing conditions, turn off all electrical power. Drain thoroughly and clean out any debris. Protect pump and motor from elements by covering or if possible, store in dry well ventilated room.

MOTOR

Your pump is equipped with a permanently lubricated, maintenance-free, heavy-duty industrial quality motor especially designed to withstand the heavy-duty requirements of water garden application. Wiring connection must agree with incoming line voltage. Improper wiring can cause serious injuries and damage to the motor, voiding warranty. (For wiring instructions, see diagram on motor rating plate.)

NOTE: Motor is designed to withstand the effects of normal rainfall. To increase the life of your motor observe the following:

- 1.) Do not flood the motor or submerge in water. To do so voids warranty.
- 2.) Provide ample cross ventilation, minimum of 6" at all points.
- 3.) Keep motor and surrounding area clean.
- 4.) Avoid sweeping or stirring dust near motor while it is running.
- 5.) Avoid storing or spilling dry chemicals, powders, etc. near motor.
- 6.) Provide protection against the elements.
- 7.) Locate motor on a slight elevation so water will drain away from motor.
- 8.) Avoid spilling or dripping liquid chemicals on or near motor.
- 9.) Avoid splashing water or hosing area near motor. Water damage voids warranty. For replacements contact your local supplier or authorized serviceman.

TROUBLESHOOTING

MOTOR WILL NOT START:

1. Check Circuit Breakers
2. Check for incorrect or loose wire connections.
3. Make sure the correct power supply is being used.
4. Any on/off switch or pneumatic switch should be in the "on" mode.

MOTOR OVERHEATING AND CYCLING ON AND OFF:

1. Check for incorrect or loose wire connections.
2. Check for low voltage supply (frequently caused by undersized wire).
3. Make sure the motor gets a fresh air supply and the vents are kept unclogged.

MOTOR MAKES HUMMING NOISE BUT WILL NOT START:

1. Make sure motor shaft turns free.
2. Check for jammed impeller or an obstruction in (volute) casing.
3. Check for low voltage and undersized wire.

PUMPS WILL NOT PRIME

1. Make sure pump is installed at the proper level and the plumbing lines have been correctly installed to allow the water to enter pump freely.
2. Open air control valves to release any possible air lock.
3. Make sure all suction and discharge lines are clear and unobstructed and all valves are opened.
4. Check for air leaks in the suction line.

LOW WATER FLOW:

1. Check filter pressure gauge, filter may need cleaning.
2. Check for clogged plumbing lines.
3. Check for worn or damaged impeller.
4. Check for low voltage.

WATER LEAKS:

1. Check contamination or damage to shaft rotary seal. Replace if necessary.
2. Check compression fitting (union connectors), make sure they are properly aligned and secured. Hand tighten only. Do not use tools.
3. Make sure O-ring is properly seated and not damaged.

NOISES:

1. Check plumbing vibration-make sure lines are adequately supported.
2. Check for cavitations, due to obstruction in or undersized suction line.

IF PUMP LOSES PRIME, OR TOO MANY BUBBLES COME THROUGH RETURN LINE CHECK:

1. Hair and lint pot cover is tight and O-ring is in place and free from defects.
2. Valves on suction and return lines are working properly and open.
3. Water level in water garden is too low.
4. Filter O-ring or gasket is in place and free from defects.
5. All fittings and connections are secure and air tight.

EVOLUTION ASSEMBLY INSTRUCTIONS
(Including Impeller and Seal Replacement)

WARNING: ALWAYS DISCONNECT THE ELECTRICAL POWER FROM THE PUMP MOTOR BEFORE PERFORMING ANY WORK ON THE PUMP UNIT.

To Disassemble Pump:

CAUTION: DRAIN THE WATER FROM THE PLUMBING LINES BEFORE DISCONNECTING THE PUMP, ALWAYS PROTECT THE MOTOR FROM POSSIBLE WATER DAMAGE.

Removing Suction Cover:

1. Remove the cover by removing the screws securing the cover to the volute (casing). These screws are located at the perimeter of the cover.
2. Note the orientation of the loose wear ring on the impeller hub before disassembling.

Removing Impeller:

1. Hold the motor shaft from rotating as follows: At the rear of the motor, insert a wide blade screwdriver in the shaft end slot, or use a needle nose "vise grip" or pliers to hold the shaft between the motor face and impeller sleeve opening. Caution: Do not grip impeller sleeve.
2. Turn the impeller counter clockwise until it is completely free from the motor shaft thread.

Removing the Volute (Casing) from the Motor:

1. Unscrew the four (4) bolts located at the rear of the motor. These bolts extend through the entire length of the motor into the 4 legs of the volute.
2. When the 4 legs of the volute are completely disengaged from all the bolts, slide the volute off of the motor shaft.

Inspecting the Seal:

1. Carefully examine the surfaces of the carbon disk (black rigid part of seal rotating assembly, mounted on impeller) and the white ceramic ring (at seal stationary assembly on volute) for edge chipping, surface scratches, or uneven wear. The surfaces should be smooth and free from damage.
2. The rest of the seal assembly should be free from cracks and should fit snugly with their respective mating parts.
3. Use alcohol wipes or isopropyl alcohol with clean "lint free" soft cloth to clean the carbon disk and the ceramic ring surface if reusing the same assemblies.

NOTE: IT IS ADVISABLE TO REPLACE THE COMPLETE SEAL ASSEMBLY (BOTH THE CERAMIC AND CARBON SIDES) EVERYTIME THE PUMP IS DISSASSEMBLED.

Removing the Seal Assemblies:

1. Remove the seal rotating assembly from the impeller by carefully sliding it off the impeller sleeve.
2. Remove the ceramic ring and rubber boot by knocking it out and/or prying it loose through the rear opening of the volute. Be sure not to scratch or damage the ceramic surface if you are reusing this part. Caution must be used so as not to damage the volute wall.

Installing the New Seal Assemblies:

1. Seal Rotating Assembly: Carbon Disk, Spring, Steel Collar, Rubber ring
 - a. Before installing the seal rotating assembly, apply water to the shaft sleeve.
 - b. Grasp the assembly with the carbon disk facing outward. Insert the impeller sleeve through the steel collar side. Using a twisting motion, push until the steel collar touches the base of the sleeve.
2. Seal Stationary Assembly: Ceramic Ring, Rubber Boot
 - a. Before installing the stationary assembly, apply water to the rubber boot's ribbings.
 - b. Being careful not to damage the ceramic ring surface, press the seal assembly squarely into the seal cavity of the volute.

Reinstalling the Volute (Casing) to the Motor:

1. Align the four bolts located at the rear of the motor, with the 4 volute legs. These bolts extend through the entire length of the motor, into the legs of the volute.
2. Pre-tighten the four bolts. Make sure that the motor shaft is accurately located in the center of (not touching) the ceramic ring.
3. When the motor shaft is properly located, tighten the four bolts to secure the volute in place.

Reinstalling the Impeller:

1. Hold the motor shaft from rotating as follows: At the rear of the motor, insert a wide blade screwdriver in the shaft end slot, or use a needle nose "vise grip" or pliers to hold the shaft between the motor face and impeller sleeve opening.
2. Thread the impeller clockwise over the motor shaft. Hand tighten only. Make sure the seal carbon disk is in contact with ceramic ring. Caution: Do not grip impeller sleeve.
3. Reinstall the wear ring over the impeller hub in correct orientation.

Reinstalling the Suction Cover:

1. Inspect the o-ring for damage. Replace if necessary.
2. Properly install the o-ring on the cover before mounting the cover to the volute.
3. Cover can be mounted to the volute in one orientation only. An "aligning" feature is built-in with each part, to ensure proper mounting. When properly aligned, the cover should slide in easily.
4. Secure the cover to the volute with screws. Tighten all screws alternately (crisscrossing the cover) to achieve proper o-ring compression and cover seating.
5. Rotate the impeller by hand to make sure that it is rotating freely, without any interference.

Reconnecting the Pump Unit:

1. Clean the seals, gaskets, or o-rings of the plumbing connectors. Replace if cracked, worn, or damaged.
2. Reconnect the plumbing lines to the pump. Hand tighten only.
3. Be sure that the pump unit is secured properly to the platform or base, if applicable. Tighten the bolts if necessary.
4. Reconnect the power supply. Be sure that all wires are properly and securely connected.

To order replacement parts please contact your local authorized dealer.

CAUTION: BEFORE TURNING THE POWER ON, BE SURE THAT: 1) THERE IS AN ADEQUATE AMOUNT OF WATER IN THE SYSTEM; 2) ALL VALVES ARE OPEN TO ALLOW WATER CIRCULATION; 3) ALL CONNECTORS AND FITTINGS ARE PROPERLY ALIGNED AND SECURE.

**EVOLUTION SERIES PUMP LIMITED WARRANTY
Advantage Manufacturing, Inc.**

WARRANTS TO:

The original retail purchaser only, that the products they manufacture are free from defects in material and/or workmanship for a period of two years (pump seals warranty for 30 days) from date of purchase. If within the first two years, any such products shall prove defective, it shall be repaired or replaced at Advantage Manufacturing Inc.'s option as follows:

The original retail purchaser shall first contact the installing dealer, as soon as possible after discovery of the defect, but in no event later than the expiration date of this warranty. Or upon notification,

Advantage Manufacturing, Inc.
Customer Service Department
624B South B Street, Tustin, CA 92780

Will advise the consumer of the address to which the defective item may be shipped, together with the model number, serial number and date of purchase of item claimed to be defective. The consumer must pay for all shipping charges.

EXCLUSIONS:

1. This warranty shall not apply to any failures resulting from negligence, abuse, misuse, misapplication, improper installation, alteration or modification, chemical corrosion, or improper maintenance.
2. Any items manufactured by other companies and used by Advantage Manufacturing, Inc. in its products may carry warranties by the original manufacturers.
3. Advantage Manufacturing, Inc. is not liable for incidental or consequential damages, loss of time, inconvenience, incidental expenses, labor or material charges in connection with removal or replacement of the equipment.
4. Advantage Manufacturing, Inc. is not responsible for any implied warranties or representations by others and the foregoing warranty is exclusive and in lieu of all warranties provided herein.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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

Advantage Manufacturing, Inc.
624B South B Street
Tustin, CA 92780
TEL: 714-505-1166 / FAX: 714-505-1160