



OWNER'S MANUAL

FLO-MASTER® "HP" & "CP" 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. **CAUTION:** This pump is for use with permanently installed pools and may also be used with hot tubs and spas if so marked. Do not use with storable pools. A permanently installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it may be readily disassembled for storage and reassembled to its original integrity and has a maximum dimension of 18 ft. (5.49m) and a maximum wall height of 42 in. (1.07m).
4. Do not install within an outer enclosure or beneath the skirt of a hot tub or spa unless so marked.
5. **SAVE THESE INSTRUCTIONS .**

INSTALLATION & OPERATING INSTRUCTIONS

WARNING – RISK OF ELECTRIC SHOCK. CONNECT ONLY TO A CIRCUIT PROTECTED BY A GROUND-FAULT CIRCUIT-INTERRUPTER. THE UNIT SHOULD BE INSTALLED BY A QUALIFIED SERVICE REPRESENTATIVE. ALL ELECTRICAL WIRING OF THE MOTOR INSTALLATION MUST BE DONE BY A QUALIFIED ELECTRICIAN IN ACCORDANCE WITH APPLICABLE ELECTRICAL CODES. GROUNDING IS REQUIRED. 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 BONDED WITH (NO SMALLER THAN) 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 SWIMMING POOL, SPA, OR HOT TUB STRUCTURE AND TO ALL ELECTRICAL EQUIPMENT, METAL CONDUIT AND METAL PIPING WITHIN 5 FEET (1.5M) OF THE INSIDE WALLS OF THE SWIMMING POOL, SPA, OR HOT TUB, WHEN THE MOTOR IS INSTALLED WITHIN 5 FEET OF THE INSIDE WALLS OF THE SWIMMING POOL, SPA, OR HOT TUB.

NOTE: FOR ELECTRICAL CONNECTIONS, SEE WIRING DIAGRAM ON MOTOR RATING PLATE.

GENERAL

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

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.

MODELS LESS TRAP

This pump was designed for below water level (flooded suction) applications. Make sure the pump is installed at a level that will allow the pump casing (volute) to be completely filled with water.

Two quick disconnect compression fittings are included with your pump for ease of installation and maintenance. Make sure the fittings are correctly aligned with pump connections to allow the o-ring to make the proper seal. **Hand tighten only. Do not use a wrench to tighten fittings.**

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.

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 troubleshooting section in this manual.

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.

Keep the motor clean. Ensure that the 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.

WINTERIZATION

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

TROUBLESHOOTING

MOTOR WILL NOT START:

- 1) Check circuit breaker.
- 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 that the motor gets a fresh air supply and the vents are kept unclogged.

MOTOR MAKES HUMMING NOISE BUT WILL NOT START:

- 1) Check for low voltage supply (frequently caused by undersized wire).
- 2) Make sure that the motor shaft turns free.
- 3) Check for jammed impeller or an obstruction in the pump casing (volute).

NOISE:

- 1) Check plumbing vibration. Make sure lines are adequately supported.
- 2) Check for cavitation due to obstructed or undersized suction line.

PUMP 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 open.
- 4) Check for air leaks in the suction line.

LOW WATER FLOW:

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

WATER LEAKS:

- 1) Check contamination or damage to shaft rotary seal. Replace if necessary.
- 2) Check compression fittings (union connectors); make sure they are properly aligned and secured. **Hand tighten only. Do not use tools.**
- 3) Make sure o-rings are properly seated and not damaged.

ASSEMBLY INSTRUCTION**(Impeller & Seal Replacement)**

WARNING – RISK OF ELECTRIC SHOCK. BEFORE PERFORMING ANY WORK ON THE PUMP UNIT, BE CERTAIN THAT THE SOURCE OF ELECTRICAL POWER IS OFF AT THE MAIN JUNCTION BOX AND DISCONNECTED

TO DISASSEMBLE PUMP

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

Removing the 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 the Impeller

3. Hold the motor shaft from rotating by using a needle nose 'vise grip' or pliers to hold the shaft at the opening between the motor face and impeller sleeve.
CAUTION: DO NOT GRIP IMPELLER SLEEVE.
4. Turn the impeller counter clockwise until it is completely free from the motor shaft thread.

Removing the Volute (Casing) from the Motor

5. Unscrew the four screws securing the four legs of the volute to the motor. These bolts extend through the entire length of the motor into the 4 legs of the volute.
6. When the four legs of the volute are completely disengaged from all screws, carefully slide the volute off of the motor shaft.

Inspecting the Seal

7. 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 the volute) for edge chipping, surface scratches, or uneven wear. The surfaces should be smooth and free from damage.

8. The rest of the seal assembly should be free from cracks and should fit snugly with their respective mating parts.
9. Use alcohol wipes or isopropyl alcohol with clean 'lint free' soft cloth to clean the carbon ring and the ceramic ring surfaces if reusing the same assemblies.

NOTE: IT IS ADVISIBLE TO REPLACE THE COMPLETE SEAL ASSEMBLY (BOTH THE CERAMIC AND CARBON SIDES) EVERY TIME THE PUMP IS DISASSEMBLED.

Removing the Seal Assemblies

10. Remove seal rotating assembly from the impeller by carefully sliding off of the impeller sleeve.
11. 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.

TO REASSEMBLE PUMP

Installing the New Seal Assemblies

1. Seal Rotating Assembly-Carbon Ring, Spring, Steel Collar, Rubber Ring:
 - A. Before installing the seal rotating assembly, apply water to the impeller sleeve for lubrication.
 - B. Grasp the assembly with the carbon ring 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 ribbing for lubrication.
 - 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

3. Inserting four screws at the rear of the motor. Align them with the volute legs. Be sure to use proper screws.
4. Pre-tighten the four screws. Make sure that the motor shaft is accurately located in the center of (not touching) the ceramic ring.
5. When the motor shaft is properly located, tighten the four screws to secure the volute in place.

Reinstalling the Impeller

6. Hold the motor shaft from rotating by using a needle nose 'vise grip' or pliers to hold the shaft at the opening between the motor face and impeller sleeve.
7. Thread the impeller clockwise over the motor shaft thread. **Hand tighten only.** Make sure the seal carbon ring is making contact with the ceramic ring.
CAUTION: DO NOT GRIP IMPELLER SLEEVE.
8. Reinstall the wear ring over the impeller hub in the correct orientation noted earlier.

Reinstalling the Suction Cover

9. Inspect the o-ring for damage. Replace if necessary.
10. Properly install the o-ring on the cover before mounting the cover to the volute.

11. 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.
12. Secure the cover to the volute with screws. Tighten all screws alternately (crisscrossing the cover) to achieve proper o-ring compression and cover seating.
13. Rotate the impeller by hand to make sure that it is rotating freely without interference.

Reconnecting the Pump Unit

14. Clean the seals, gaskets, or o-rings for the plumbing connectors. Replace if cracked, worn, or damaged.
15. Reconnect the plumbing lines to the pump. **Hand tighten only.**
16. Be sure that the pump unit is secured properly to the platform or base, if applicable. Tighten the bolts if necessary.
17. Reconnect the power supply. Be sure that all wiring is properly and securely connected.

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 SECURED.**

FLO-MASTER® "FMHP" REPLACEMENT PARTS

To Cross Reference: Refer to Diagram A Shown on Page 9.

Ref. No.	Part No.	Description
1		Motor
2	92770501	Volute, FMHP Series
3	92500150	Seal Replacement, #200
4	91693501	Impeller, .50 HP
4	91693551	Impeller, .75 HP
4	91693601	Impeller, 1.0 HP
4	91693651	Impeller, 1.5 HP
4	91693700	Impeller, 2.0 HP
5	92200090	O-ring, Volute, #158
6	92830062	Wear Ring
7	91231301	Cover, Suction, FMHP Series, Std Drain
7A	56910010	Replacement Kit Cover, Complete
8	99730050	Screw, #8-32 x 5/8"
9	92200120	O-ring, Pipe Plug, #011
10	92290015	Pipe Plug, 1/4" NPSM
11	92200140	O-ring, #226
12	91431050	Fitting, Tail Piece, 1-1/2"
13	91431000	Fitting, Union Nut, 1-1/2"
14	52201000	Fitting, Compression, Complete, 1-1/2"
15	91040281	Assembly, Trap, Complete 5" x 1-1/2"
16	50100120	Threaded Adapter, 1-1/2" x 2"
17	92200210	O-ring, #230
18	91431200	Tail Piece, 2"
19	91431150	Union Nut, 2"
20	52202100	Compression Fitting, 2" x 2" with Threaded Adapter, 1-1/2" x 2"
Q	91040680-000	Assembly, Wet End, Complete .50 HP
Q	91040690-000	Assembly, Wet End, Complete .75 HP
Q	91040700-000	Assembly, Wet End, Complete 1.0 HP
Q	91040720-000	Assembly, Wet End, Complete 1.5 HP
Q	91040730-000	Assembly, Wet End, Complete 2.0 HP

Q Includes Reference No.'s # 2-10

Note: FMC, FMH, and FMV replacement parts (including gray impellers) are no longer available. Do not attempt to replace plastic parts with current items. Replace with corresponding wet end in the correct horsepower.

FLO-MASTER® "FMCP" REPLACEMENT PARTS

To Cross Reference: Refer to Diagram B Shown on Page 9.

Ref. No.	Part No.	Description
1		Motor
2	92770603	Volute, FMCP Series
3	92500150	Seal Replacement, #200
4	91693501	Impeller, .50 HP
4	91693551	Impeller, .75 HP
4	91693601	Impeller, 1.0 HP
4	91693651	Impeller, 1.5 HP
4	91693700	Impeller, 2.0 HP
5	92200270	O-ring, Volute, #251
6	92830062	Wear Ring
7	91231402	Cover, Suction, FMCP Series, Std Drain
7A	56910040	Replacement Kit Cover, Complete
8	99730050	Screw, #8-32 x 5/8"
9	92200120	O-ring, Pipe Plug, #011
10	92290015	Pipe Plug, 1/4" NPSM
11	92200140	O-ring, #226
12	91431050	Fitting, Tail Piece, 1-1/2"
13	91431000	Fitting, Union Nut, 1-1/2"
14	52201000	Fitting, Compression, Complete, 1-1/2"
15	91040281	Assembly, Trap, Complete 5" x 1-1/2"
16	50100120	Threaded Adapter, 1-1/2" x 2"
17	92200210	O-ring, #230
18	91431200	Tail Piece, 2"
19	91431150	Union Nut, 2"
20	52202100	Compression Fitting, 2" x 2" with Threaded Adapter, 1-1/2" x 2"
Q	91040830-000	Assembly, Wet End Complete, .50 HP
Q	91040800-000	Assembly, Wet End Complete, .75 HP
Q	91040810-000	Assembly, Wet End Complete, 1.0 HP
Q	91040820-000	Assembly, Wet End Complete, 1.5 HP
Q	91040840-000	Assembly, Wet End Complete, 2.0 HP
Q Includes Reference No.'s # 2-10		

Note: FMC, FMH, and FMV replacement parts (including gray impellers) are no longer available. Do not attempt to replace plastic parts with current items. Replace with corresponding wet end in the correct horsepower.

DIAGRAM A: FMHP: Refer to Reference Table Shown on Page 7

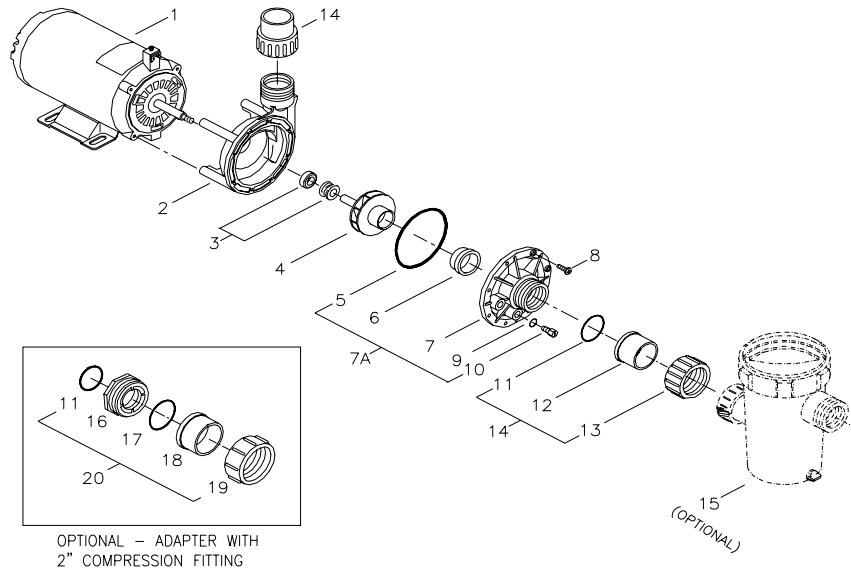


DIAGRAM B: FMCP: Refer to Reference Table Shown on Page 8

