

AquaTools™

CARTRIDGE FILTER SYSTEM FOR ABOVE-GROUND SWIMMING POOLS

O W N E R ' S M A N U A L



INSTALLATION, OPERATION & PARTS

MODELS

AT85023

AT85033

AT87023

AT87033

This manual should be furnished to the end user of this system; its use will reduce service calls and chance of injury, and will add to the enjoyment of the swimming pool.

Aquatools

293 Wright Street, Delavan, WI 53115

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International: 414-728-5551, FAX: 414-728-4461, TELEX: ITT 497024

“AQUATOOLS SYSTEMS” CARTRIDGE FILTER SYSTEM

To avoid unneeded service calls, prevent possible injuries, and get the most out of your pump and filter, READ THIS MANUAL CAREFULLY!

The Aquatools Cartridge Filter System:

- Is designed to circulate and filter water in above ground swimming pools.
- Offers quiet, efficient performance, and is durable, reliable.
- Easy to install and maintain.
- With no cord or a 3' cord are for use with permanently installed pools ONLY (see CAUTION #7, below).
- With a 25' cord are for use with storable pools ONLY (see CAUTION #8, below).

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IMPORTANT SAFETY INSTRUCTIONS

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

1. READ AND FOLLOW ALL SAFETY 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. **▲ WARNING** Risk of electrical shock. Connect only to a grounding type receptacle protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
4. Do not bury cord. Locate cord to minimize abuse from lawn mowers, hedge trimmers, and other equipment.
5. **▲ WARNING** To reduce the risk of electrical shock, replace a damaged cord immediately.
6. **▲ WARNING** To reduce the risk of electrical shock, do not use an extension cord to connect unit to electrical supply; provide a properly located outlet.

7. **▲ CAUTION** Permanent pool pumps are 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.
8. **▲ CAUTION** Storable pool pumps are for use with storable pools only. Do not use with permanently installed pools. A storable pool is constructed so that it is capable of being readily disassembled for storage and reassembled to its original integrity. A permanently installed pool is constructed in or on the ground, or in a building, such that it cannot be readily disassembled for storage.

SAVE THESE INSTRUCTIONS

READ AND FOLLOW SAFETY INSTRUCTIONS!

⚠ This is the safety-alert symbol. When you see this symbol on your valve or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

⚠ DANGER warns about hazards that **will** cause serious personal injury, death or major property damage if ignored.

⚠ WARNING warns about hazards that **can** cause serious personal injury, death or major property damage if ignored.

⚠ CAUTION warns about hazards that **will** or **can** cause minor personal injury or property damage if ignored.

The label **NOTICE** indicates special instructions which are important but not related to hazards.

Carefully read and follow all safety instructions in this manual and on system.

Keep safety labels in good condition.
Replace missing or damaged safety labels.

⚠ WARNING
Hazardous pressure
Incorrectly installed or tested equipment may fail, causing severe injury or property damage. Read and follow instructions in owner's manual when installing and operating equipment. Have a trained pool professional


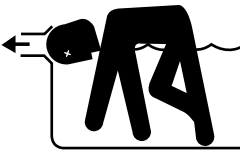

perform all pressure tests.

1. Do not connect system to a high pressure or city water system.
2. Use equipment only in a pool or spa installation.
3. Trapped air in system can cause explosion. BE SURE all air is out of system before operating or testing equipment.

Before pressure testing, make the following safety checks:

- Check all clamps, bolts, lids, and system accessories before testing.
- BE SURE all air is out of system before testing.
- Tighten Aquatools trap lids to 30 ft. lbs. (4.1 kg-cm) torque for testing.
- Water pressure for test must be less than 25 PSI (172 kPa).
- Water temperature for test must be less than 100° F. (38° C).
- Limit test to 24 hours. After test, visually check system to be sure it is ready for operation. Remove trap lid and retighten hand tight only.

NOTICE: These parameters apply to Aquatools equipment only. For non- Aquatools equipment, consult manufacturer.

	<p>⚠ DANGER</p> <p>Hazardous Pressure! Can cause tank explosion.</p>	<p>WHEN USING SYSTEM:</p> <p>Do not test with compressed air or operate above rated pressure.</p>
	<p>⚠ DANGER</p> <p>Hazardous suction. Can trap or tear hair or body parts, causing severe injury or death.</p>	<p>WHEN USING SYSTEM:</p> <p>Do not block pump suction or pool main drain.</p>
	<p>⚠ WARNING</p> <p>Hazardous voltage. Can shock, burn, or cause death.</p>	<p>BEFORE WORKING ON PUMP OR MOTOR:</p> <p>Unplug pump motor.</p>

GENERAL INFORMATION

! DANGER

Hazardous pressure. Can cause severe injury or major property damage from tank blow up.

Release all pressure and read instructions before working on filter.

! NEVER operate this filter system at more than 50 PSI (345 kPa) pressure!

! NEVER test this filter system with compressed air.

! Maximum allowable water temperature is 110°F (43°C).

! Plug system into electrically isolated, Ground Fault Circuit Interrupter protected circuit ONLY!

- Clean a new pool as well as possible before filling pool and operating filter. Excess dirt and large particles of foreign matter in the system can cause serious damage to the filter and pump.
- Keep pool water pH at recommended level (7.2 to 7.6) to avoid irritation to eyes and skin.
- The Aquatools Cartridge System is designed for use with above ground swimming pools only.

NOTICE: Some pool disinfectants may clog filter media. To maximize media life and filter cycle time, closely follow disinfectant manufacturer's instructions when cleaning pool or filter.

SYSTEM INSTALLATION

Filter System must:

Be Solid - Level - Rigid - Vibration free.

Be installed with trap suction inlet below pool water level at all times (this allows pump to prime).

Have adequate ventilation to prevent motor overheating.

Be protected from excess moisture, such as water puddles or rain runoff from roof or decking.

Provide space and lighting for easy access for routine maintenance. (See Figures 1 and 2, Page 5 and Table II, below, for space requirements.)

Be installed as close to pool as possible to reduce line loss from pipe friction.

TABLE II - DIMENSIONAL DATA IN ENGLISH (METRIC)

Model No.	HP	Filter Size	Service Height Clearance
AT85023	3/4	50 Ft ² (4.65m ²)	34.4 (900mm)
AT85033	1	50 Ft ² (4.65m ²)	34.4 (900mm)
AT87023	3/4	70 Ft ² (6.5m ²)	42 (1067mm)
AT87033	1	70 Ft ² (6.5m ²)	42 (1067mm)

TABLE I - FILTER SPECIFICATIONS AND OPERATING INFORMATION Specifications in English (Metric)

	FILTER SYSTEM MODEL			
	AT85023	AT85033	AT87023	AT87033
Filter Area	50 Ft ² (46 450 cm ²)	50 Ft ² (46 450 cm ²)	70 Ft ² (65 030 cm ²)	70 Ft ² (65 030 cm ²)
Max Operating Pressure	30 PSI (207kPa)	30 PSI (207kPa)	30 PSI (207kPa)	30 PSI (207kPa)
Pool Turnover in Hours:				
6 Hours	16,200 Gal (61 317L)	18,000 Gal (68 130L)	16,200 Gal (61 317L)	18,000 Gal (68 130L)
8 Hours	21,600 Gal (81 756L)	24,000 Gal (90 840L)	21,600 Gal (81 756L)	24,000 Gal (90 840L)
10 Hours	27,600 Gal (104 466L)	30,000 Gal (113 550L)	27,600 Gal (104 466L)	30,000 Gal (113 550L)
Pump HP	3/4	1	3/4	1
Motor Voltage	115	115	115	115
Full Load Amps	9.0	12.0	9.0	12.0

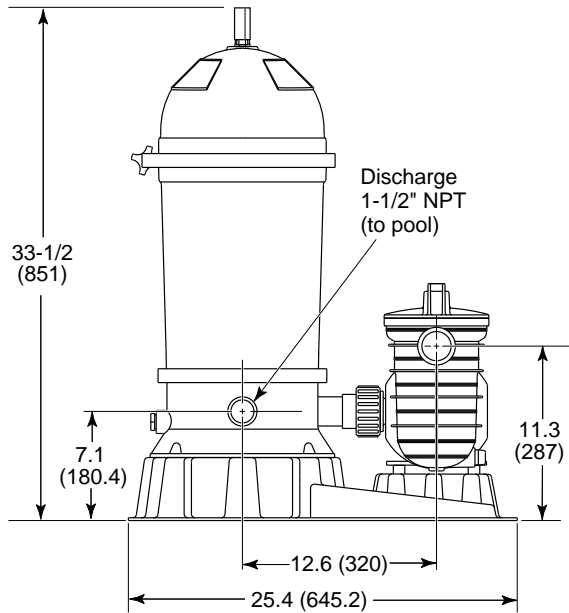


Figure 1 – Dimensions in Inches (mm)

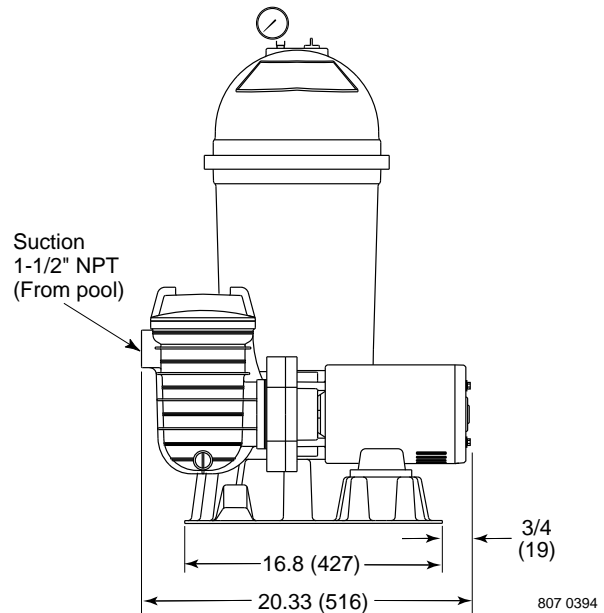


Figure 2 – Dimensions in Inches (mm)

SYSTEM SET-UP

1. Remove system from carton - **Do not lift by piping.** Place system base on level spot near pool skimmer with good drainage.
2. Install pressure gauge and air release valve (Key Nos. 1 and 2, Page 15) on filter lid assembly. Read instructions on top of lid for proper location of pressure gauge and air release valve. Thread into holes in lid hand-tight only. Apply teflon tape, Plasto-Joint Stik*, or Silastic RTV #732** to threads of pressure gauge.

NOTICE: Tighten gauge hand tight only. Tighten air release valve finger tight only.

⚠ DANGER Hazardous pressure. Risk of explosion, severe injury and major property damage. DO NOT adjust, tighten or loosen either clamp when filter is under pressure. Filter tank head and body clamps must be kept securely hand tight to prevent leaks and prevent tank blowup when filter is under pressure. If it is necessary to work on filter or do anything to clamps, do this:

1. Stop pump.
2. Close isolation valves.
3. Open air release valve and release all pressure.

4. If filter will be opened, open drain port and drain tank.
5. **WAIT** until all pressure is released before adjusting or loosening either clamp.
6. Proceed with maintenance/adjustment. Follow instructions under "Operation", Page 7, when putting system back in service.

Before startup, check the following:

1. Union assembly between pump and filter (for tightness – union may be disassembled for shipping). Use care not to lose, pinch or damage union O-ring.
2. Check entire system for correct tightness of bolts and clamps, correct piping of accessories, etc. Do not start system until you have verified correct assembly and set-up.

* Lake Chemical Co., Chicago, IL

** Dow-Corning

Piping:

Use Teflon tape, Plasto-Joint Stik* or RTV #732** on threaded connections of plastic pipe and fittings (except unions). Do not use pipe compounds on plastic pipe or fittings; it may cause stress cracking of plastic components.

Use 1-1/2" pipe to minimize flow restriction. If flex hose is used, use the type with smooth internal walls.

Fittings restrict flow; for best efficiency use fewest possible fittings.

Keep piping tight and free of leaks: pump suction line leaks may cause trapped air in filter tank or loss of prime at pump; pump discharge line leaks may show up as dampness or jets of water.

Unions are provided. Use as follows for leak-free connections:

1. "O" Ring and sealing surfaces must be clean.
2. Assemble handtight only! (NO WRENCHES!)
3. NO pipe compound or Teflon tape on unions.

When installing system with hose connections, be sure each hose end is secured with hose clamp and properly tightened to prevent air leaks (suction hose) or water leaks (return/outlet hose). Hoses connect to filter outlet (on filter base) and to suction port on trap.

Fittings and Valves

For servicing skid system and for cleaning pump trap, install ball valves

- A. between pump trap and pool skimmer, and
- B. between filter and return pipe to pool.

Install a check valve between filter and heater (if used) to prevent hot water from backing up into the filter and deforming filter components.

ELECTRICAL

⚠ WARNING



**Hazardous voltage.
Can shock, burn,
or cause death.**

Connect pump
to GFCI protected,
grounded power
supply.

⚠ To avoid dangerous or fatal electrical shock, turn OFF power to motor before working on electrical connections.

⚠ Plug the System into a Ground Fault Circuit Interrupter (GFCI) protected receptacle on a 115 Volt, 60 Hertz grounded circuit only.

⚠ GFCI tripping indicates an electrical problem. If GFCI trips and will not reset, have a qualified electrician inspect and repair electrical system.

⚠ Exactly match supply voltage to nameplate voltage (115 Volt single phase). Incorrect voltage can cause fire or damage motor and voids warranty!

Voltage:

Voltage at motor must not be more than 10% above or below motor nameplate rated voltage (115 Volts) or motor may overheat, causing overload tripping and reduced component life. If voltage is less than 104 Volts or more than 126 Volts when motor is running at full load, consult power company.

Grounding:

Pump is supplied with grounded 3-wire cord and plug. Do not modify cord or plug. Plug into GFCI protected, grounded outlet only.

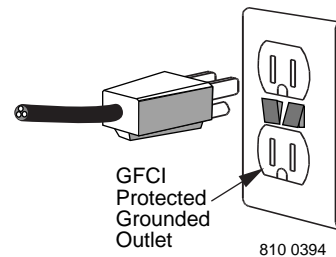


Figure 4 – Plug in to GFCI protected, grounded outlet only.

Wiring:

⚠ Protect cord from water and from physical damage to avoid serious or fatal electrical shock hazard.

- Pump is provided with a cord and 15 amp, 115 volt straight blade 3-prong plug.

Plug the System into a GFCI receptacle on a 115 Volt, 60 Hertz grounded circuit only. Electrically isolate circuit so that no other lights or appliances use it. Consult a licensed electrician if such a circuit is not available.

Do not modify cord, plug or receptacle! If an existing circuit must be used and the receptacle and factory installed plug do not match exactly, consult a licensed electrician.

Do not use an extension or drop cord with the System: It could cause a fire hazard or low voltage problems; wet cords pose shock hazards. Extension cords can easily become cut or frayed and dangerous when placed across yard areas or walkways.

Match wire sizes and circuit breakers to Table III below.

Use wire rated at 75 degrees C. for all pump models.

⚠ Values given in table are for **PUMP MOTOR ONLY**. If additional accessories are installed on pump motor circuit (heater, lights, etc.) include their amperage draw when figuring wire and circuit breaker sizes.

TABLE III - RECOMMENDED FUSING AND WIRING DATA - 60 HZ 115V MOTORS

Pump Model No.	Motor H.P.	Full Load (amps)	Branch Circuit Breaker Rating (amps)
AT2307111	3/4	9.0	15
AT2310111	1	12.0	15

OPERATION

⚠ WARNING



Hazardous Pressure!

Can cause explosion. Do not air test or operate above rated pressure.

⚠ To avoid explosion and possible severe or fatal injury, filter system pressure must not exceed 50 PSI (345 kPa) under any circumstances. **NEVER** test this filter system with compressed air.

⚠ Never operate system with water temperature above 110°F (43°C).

⚠ Do not block pump suction! To do so with body across pool skimmer or pool suction fitting may cause severe or fatal injury.

Small children using pool must **ALWAYS** have close adult supervision!

⚠ **CAUTION** NEVER run pump dry! Running pump dry may damage seals, causing leakage and flooding. Fill pump with water through the hair and lint strainer lid before starting the pump.

NOTICE: Do not add chemicals to pool directly into the pool skimmer. Adding undiluted chemicals may damage pump and void warranty.

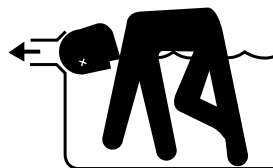
Priming Pump:

Pump will prime itself as long as pool water level remains higher than trap suction port.

Open suction and discharge valves before starting system.

Make sure that pool water level is above skimmer or other suction outlets.

⚠ DANGER



Hazardous suction. Can trap hair or body parts, causing severe injury or death.

Do not block suction.

Startup:

1. Open air release valve (Key No. 2, Page 15) located on top of filter tank head.
2. Open system valves and make sure pump is filled with water.
3. Start pump, circulating water.

NOTICE: To prevent pump from running dry, be sure water level never drops below bottom of skimmer inlet. Add water to pool if necessary to keep skimmer

flooded while back washing and rinsing.

4. When a steady stream of water comes from air release valve, close valve.
5. Record clean starting filter pressure gauge reading as a reference for when cleaning of filter is required.
6. Clean cartridge when pressure gauge shows 5 to 7 PSI (35 to 48kPa) higher than starting pressure.

Operation:

1. With pump "ON" observe pressure gauge reading. When the reading is 5 to 7 PSI (35 to 48kPa) above starting pressure recorded, filter is in need of cleaning.
2. The system is rated for continuous operation. However, except under conditions of heavy swimmer load and hot weather conditions, continuous operation is usually unnecessary. An 8 to 12 hour operation period per day, with careful monitoring of water chemical balance, should provide good water clarity. Check with recommendations of your local pool professional.

Water Maintenance:

Keep water level at least two inches above bottom of skimmer opening when system is not in use. Failure to do so can allow air to enter system, causing pump to lose prime and filter to entrap air

Maintain pH at 7.2 to 7.6 in pool.

Vacuum Pool:

1. Fill vacuum hose by submerging in water from one end to the other.
2. To vacuum, insert hose into skimmer suction manifold or into vacuum line in pool wall. See instructions provided by pool builder or manufacturer. Start pump, making sure it is primed and pumping.
3. After vacuuming, clean pump trap to remove accumulated debris; then check filter pressure gauge. If reading is 5-7 PSI (35-48kPa) above starting pressure, clean filter cartridge.

MAINTENANCE



⚠️ Hazardous voltage. Can shock, burn, or cause death. To avoid dangerous or fatal electrical shock hazard, disconnect power to motor before working on pump or motor!
System should only be serviced by qualified personnel.

GENERAL

No lubrication or regular mechanical maintenance are needed.

Wash outside of filter with a mild detergent and water. Rinse off with hose.

NOTICE: DO NOT use solvents to clean filter; solvents may damage plastic components in system.

Check filter pressure gauge regularly to determine when filter cartridge should be cleaned (5-7 PSI (35-48kPa) increase over clean filter starting pressure).

NOTICE: Some pool disinfectants may clog filter media. To maximize media life and filter cycle time, closely follow disinfectant manufacturer's instructions when cleaning pool or filter (see Pages 10 and 11).

Weekly Inspection:

1. Skimmer basket - remove debris.
2. Clean suction trap regularly.
 - A. Stop pump.
 - B. Close suction and discharge gate valves to prevent pool from draining through open trap.
 - C. Remove trap lid.
 - D. Remove and clean trap basket. Replace in trap.
3. Check pump for leaks. If found, see "Pump Service" on Pages 11 and 12 of this manual.
4. Check pump trap lid for tightness. Do not over-tighten!

FILTER DISASSEMBLY

⚠ DANGER

Hazardous pressure. Can cause severe injury or major property damage from tank blow up.

Release all pressure and read instructions before working on filter.

Risk of tank explosion. NEVER adjust, tighten or loosen either "V" band clamp when tank is under pressure!

Releasing either clamp with pressure on system will cause tank or tank head to blow off of base, causing severe injury or major property damage!

8. Remove tank head from tank body. Be careful not to damage "O" Ring. Place tank head in clean area.
- NOTICE:** If heavy dirt deposits have collected around bottom of filter element and base, wash out base before removing element.
9. Remove "O" Ring from tank body and place in clean area.
10. Pull element upward (see Figure 7) to free seal.
11. Lift element out of tank body (See Figure 8). Do not drop filter element. Place element in clean area where it can be hosed down.
12. Remove air bleed filter from tube and clean it.

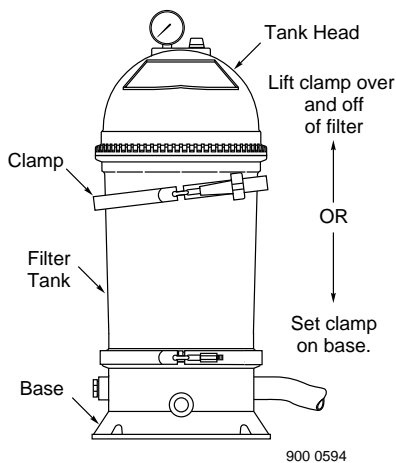
Filter Disassembly:

1. STOP PUMP.
2. CLOSE suction and return line valves (if used).
3. OPEN air release valve on top of filter.
4. WAIT until all pressure is released from filter tank and system before loosening either clamp.
5. Remove drain plug or open drain valve at 'Tank Drain Port' and drain filter.

⚠ DANGER To prevent severe or fatal injury, release all pressure from filter tank before proceeding.

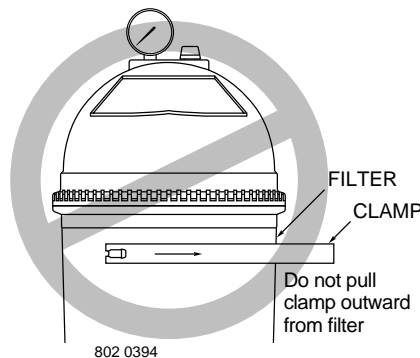
6. Remove clamp knob from top clamp.
7. Loosen top clamp; remove top clamp by lifting it straight up over tank or dropping it onto filter base. (see Figures 5 and 6).

NOTICE: Do not pull clamp sideways to remove; to do so will bend and damage clamp.



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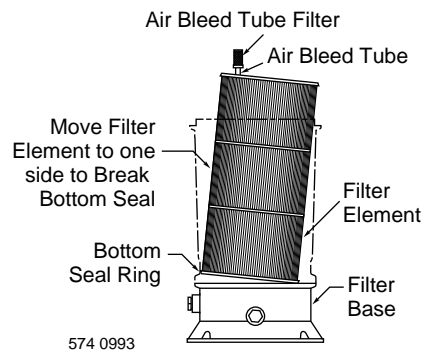
FIGURE 5



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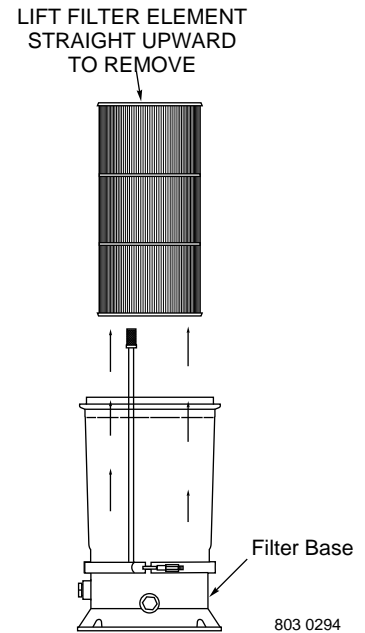
FIGURE 6

NOTE: DO NOT pull clamp off outward from filter. It will bend and damage the clamp. See Figure 6.



574 0993

FIGURE 7



803 0294

FIGURE 8

FILTER ASSEMBLY

1. Replace plugs or close valves in Tank Drain and Auxiliary Drain ports.
2. Push clean air bleed filter all the way down on tube. If tube has been removed, push it into socket seat in base until it bottoms.
3. Set filter element on base.

NOTICE: Be sure blue end marked "TOP" is on top and orange end is on bottom. Do not reverse element.

4. Push filter element into base between two circular ribs until it bottoms.
5. BE SURE "O" Ring sealing area of tank body is clean. Clean "O" Ring and check for damage. Replace if necessary.
6. Lubricate "O" Ring with approved lubricant (see chart) and place in seat.

NOTICE: Top and bottom clamps and "O" Rings are not interchangeable; DO NOT mix them up.

CAUTION Do not remove or damage safety and instruction labels during cleaning. Replace any decals which may have been damaged.

7. If bottom clamp was removed, BE SURE bottom of tank body is clean; set tank body evenly on base and "O" Ring.
8. Install clamp(s) and knob assembly(s); tighten knob(s). To assist sealing, tap clamp(s) around tank with hammer while tightening knob(s).
9. Clean pump strainer basket.
10. Open system valves as needed.
11. Proceed to "Startup", Page 8.

AQUATOOLS APPROVED O-RING LUBRICANTS

Parker Super-O-Lube*	Semi-Permanent Lubrication
Aqua-Lube by Allube**	Semi-Permanent Lubrication
5% or less Mild Soap Solution	Assembly Lubrication

* Parker Seal Group, Lexington, KY

** Allube Div. of Far Best Corp., Los Angeles, CA

FILTER CLEANING PROCEDURE

NOTICE: Keep track of filter operating pressure. When pressure reaches 5-7 PSI (35-48kPa) above initial operating pressure, clean filter element.

NOTICE: If filter is used with a spa, soak element (see Step 2, "Special Cleaning"), Page 11 at each regular cleaning.

NOTICE: When sanitizing your pool using PHMB (poly-hexamethylene biguanide based) cleaners, use *only* PHMB cleaners to clean the module. When using PHMB sanitizers, the filter module **MUST** be cleaned more thoroughly and frequently than for a pool using chlorine. Follow manufacturer's instructions carefully. Use of any other type of cleansers with PHMB pool sanitizers will void the filter's warranty.

With hose, wash foreign material from inside of base. Try to avoid washing debris into outlet port (see Figure 9).

NOTICE: Be sure inside surface of base is clean.

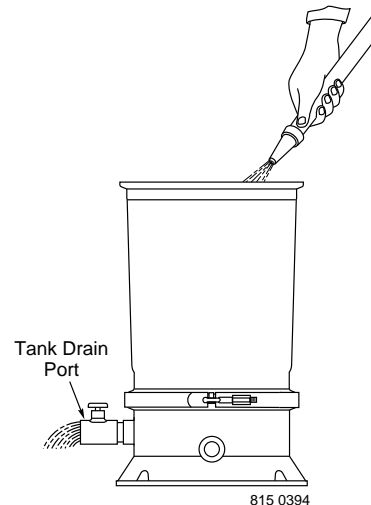


FIGURE 9

Washing Filter Element (See Figures 10 and 11):

1. Use a garden hose with straight flow nozzle to wash down filter element (Figure 10).
2. Work from the top down; wash down all pleats. Wash between all pleats.
3. Turn element while spraying to wash down entire outside of element.
4. Repeat wash down process for inside of filter element. Hold nozzle as close to inside of pleats as possible (Figure 11).

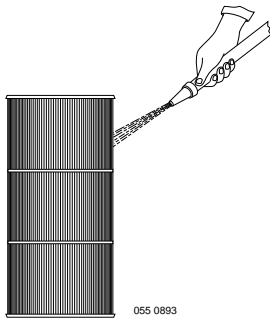
NOTICE: BE SURE all dirt and foreign materials are washed away from **INSIDE** pleats of element.

SPECIAL CLEANING INSTRUCTIONS:

⚠ DANGER Risk of fire or explosion. Isolate filter from system before chemical cleaning; rinse filter and elements completely before returning to service. If filter cannot be isolated, remove media and clean at another location. Follow chemical manufacturer's instructions for use. Do not mix chemicals except as directed by manufacturer. Do not allow cleaning chemicals to mix with or to come in contact with chlorine, bromines, other chemicals, or chemical feed devices.

For stubborn deposits, proceed as follows:

1. Follow Regular Cleaning Procedure.
2. If deposits remain, soak element at least one hour with one of the following solutions:
 - A. Commercial filter cleaner (see chart: follow manufacturer's instructions for use), or
 - B. One cup automatic dishwasher detergent to five gallons of water, or
 - C. One cup Tri Sodium Phosphate (TSP) to five gallons of water.
3. Wash off with water to remove oils, dirt and remaining cleaner solution.
4. If filter element does not come clean with this procedure, consult your pool professional. Acid washing should be done only by trained professionals who have proper safety equipment and acid disposal facilities.



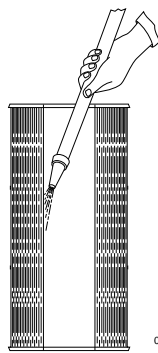
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FIGURE 10

Specialty Filter Cleaners

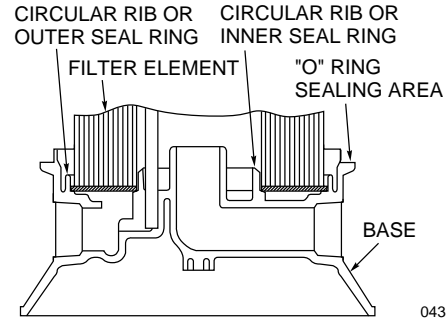
(for Degreasing and Scale Removal)

Filter Cleanse	Great Lakes Biochemical Co. 6120 West Douglas Ave., Milwaukee, WI 53218
Filter Kleen	GFC Chemical Co. P.O. Box 3827, West Palm Beach, FL 33402
Filter Kleen	Haviland Products Co. 421 Ann St. NW., Grand Rapids, MI 49504
Spa Cartridge Filter Clean	Leisure Time Chemical Corp. Los Angeles, CA
KLEEN-IT or Kwik-Strip	Biolab Inc. P.O. Box 1489, Decatur, GA 30031



056 0893

FIGURE 11



043 0893

FIGURE 12

PUMP SERVICE

Removing Old Seal:

1. **⚠ Disconnect power to pump motor.**
2. Close suction and discharge valves.
3. Drain pump; disconnect unions to allow access to pump.
4. Remove six bolts holding front plate to seal plate; remove front plate
5. Remove shaft cover or motor canopy; using screwdriver in slot on motor end of shaft or wrench on flats of shaft extension, hold pump shaft and unscrew impeller from shaft. Rotating half of seal will come off with impeller.
6. Carefully remove rotating part of seal from impeller sleeve by pulling and turning on sealing washer and spring (Figure 13). Do not damage impeller surface where drive ring seats and seals.
7. Carefully remove four motor throughbolts from seal plate (Figure 14); remove seal plate and use a screwdriver to tap ceramic seat out from the rear (Figure 15). Do not damage seal cavity in seal plate.
8. Clean cavity from which seal was removed and clean motor shaft.



Figure 13

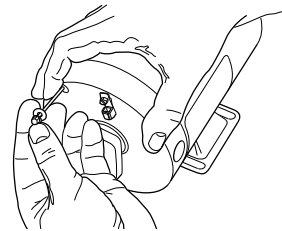


Figure 14

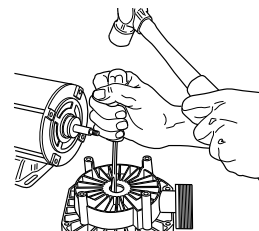


Figure 15

Installing New Seal:

1. Ceramic seat must be clean and free of dirt, grease, dust, etc. Wet rubber cup gasket of ceramic seat with **small** amount of liquid detergent; press into cavity firmly and squarely with finger pressure (Figure 16).
2. If ceramic seat will not locate properly, remove it, place **face up** on bench, and reclean cavity. Ceramic seat should now locate.
3. Seal must be free of dirt, grease, grit, scratches or chips; be sure impeller sleeve is clean. Slide seal assembly, rubber drive ring first, onto impeller sleeve until drive ring bottoms on impeller back shroud.
4. Slip slinger over shaft; remount seal plate (torque throughbolts to 25 inch-lbs. (129 kg-cm).
5. Screw impeller onto shaft until impeller hub hits shaft shoulder, automatically pulling seal into place (Figure 17). Work slinger over end of impeller sleeve so it rides on sleeve.
6. Remount front plate; using pattern shown in Figure 18, torque bolts to 30 inch-lbs. (34.5kg-cm). **BE SURE** to start with bolt in 12 o'clock position as shown.
7. Reconnect unions; tighten **hand tight only**.

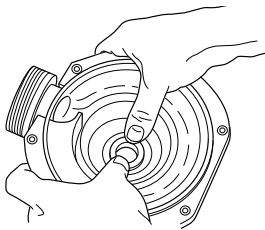


Figure 16

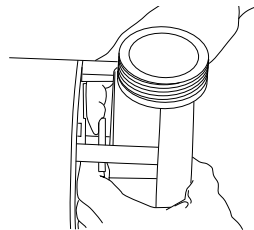


Figure 17

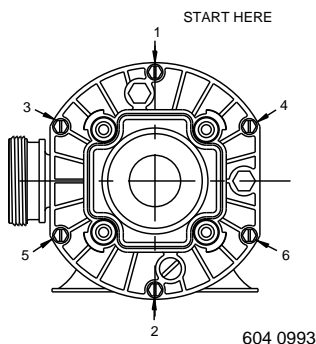


Figure 18: Torque Sequence

STORAGE/ WINTERIZING

Store pool chemicals away from system in a well-ventilated area, to prevent damage from corrosive fumes.

Do not add chemicals to pool directly in front of skimmer or pump suction. Adding undiluted chemicals may damage pump, valve or filter and will void the warranty.

NOTICE: Allowing water to freeze will damage system and void warranty! Use of ethylene glycol based anti-freeze is NOT recommended - it is toxic and may damage plastic system components. However, propylene glycol can be used; it is plastic-compatible and non-toxic. Follow manufacturers instructions.

Preparation for Winter:


▲ WARNING Explosion hazard. Purging the system with compressed air can cause components to explode, with risk of severe injury or death to anyone nearby. Use only low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.

1. Open all system valves.
2. Remove drain plugs from trap, pump, sand filter.
3. Drain system piping.
4. Drain all water from pump and piping when expecting freezing temperatures or when storing pump for a long time (see instructions Page 13).
 - A. Gravity drain system as far as possible.
 - B. Protect areas which retain water with non-toxic propylene glycol antifreeze ("RV antifreeze").
5. Keep motor dry and ventilated during storage. To avoid condensation/corrosion problems, do not wrap pump with plastic.
6. For outdoor/unprotected installations, place entire system in a weatherproof enclosure with ventilation; do not wrap system in plastic.
7. If possible disconnect entire system from the pool and relocate in a dry enclosure.

Startup for Winterized Equipment:

1. Remove any temporary weather protection placed around system for shutdown.
2. See "Startup", Page 8, for reactivation of the filter.
3. Inspect all electrical wiring for damage or deterioration over the shutdown period. Have a qualified serviceman repair/replace wiring as needed. Inspect and tighten all watertight connections.
4. Open all valves in suction and return piping.
5. Remove any winterizing plugs in system.
6. Drain all winterizing chemicals (if used) from system; flush system.
7. Close all drain valves and replace all drain plugs in system.
8. Fill pool with water to proper level (see pool manufacturer's instructions).

TROUBLESHOOTING GUIDE – PUMP

 **Read and understand safety and operating instructions in this manual before doing any work on pump!**

A. PUMP DOES NOT OPERATE

1. Check GFCI (Ground Fault Circuit Interrupter) for proper operation according to GFCI manufacturer's instructions.
2. Check for blown fuses, circuit breakers, or disconnected electrical wiring.
3. Consult dealer/installer or service representative.

B. MOTOR RUNS, BUT DOES NOT PUMP WATER OR PRESSURIZE SYSTEM.

1. Check to make sure all valves are open.
2. Check skimmer, trap baskets and piping for debris or obstructions.
3. Check pump impeller for obstructions such as hair, leaves, grass or stones. Follow pump disassembly instructions under "Pump Service" on Page 11.
4. Consult with dealer/installer or service representative.

C. EXCESSIVE AIR IN SYSTEM – PUMP LOSES PRIME

1. Make sure water level in pool is at least 2" (51mm) above bottom of skimmer throat with system not operating.
2. Make sure there are no leaks in suction piping.
3. Make sure there is no vortex (whirlpool) at the skimmer; add water to pool if necessary.
4. Consult dealer/installer or service representative.

D. CIRCUIT BREAKER IN HOME PANEL TRIPS REPEATEDLY

1. Breaker capacity must be adequate for load.
2. If breaker is a GFCI breaker, test according to GFCI manufacturer's instructions.
3. Be sure no other lights and appliances are on circuit.
4. Check wiring size leading to pump. (See Table III, "Recommended Wiring Data" on Page 7). Inadequate size wiring will cause overheating of pump and excessive amp draw leading to circuit breaker tripping.
5. Consult dealer/installer or service representative.

TROUBLESHOOTING GUIDE

A. SHORT CYCLE:

NOTICE: Time between cleanings will vary with each installation and between different areas of the country. The following causes and remedies are for cycle times shorter than normal for your area.

1. Chlorine residual too low; maintain proper residual (consult pool professional for recommendation).
2. Flow rate too high; restrict flow to rated capacity of filter (see instruction decal on filter).
3. Filter too small; install larger filter or additional filter.
4. Unstable water; consult pool professional.
5. Filter element not cleaned properly or plugged with algae, iron, calcium, etc. - see "Special Cleaning Instructions", Page 11.
6. Heavy or improper application of powdered chlorine or chlorine pills using a binder; see "Special Cleaning Instructions", Page 11.
7. Algae in pool - Apply heavy dose of chlorine or algicide as recommended by pool manufacturer. Continue until algae is controlled.

B. LOW FLOW:

1. Element is plugged; see "Special Cleaning Instructions", Page 11.
2. Pipe blocked downstream from filter; remove obstruction.
3. Piping too small; replace with larger pipe (consult dealer for recommendation).
4. Pump hair and lint trap is plugged - empty and clean.
5. Pump impeller worn - replace with new parts. Consult pump owner's manual for information.

C. POOL WATER NOT CLEAR:

1. Chlorine dosage too low; maintain adequate chlorine residual (consult pool professional for recommendation).
2. Element cloth torn or punctured; replace element.

3. Filter too small, flow too low, or daily operating time too short, giving inadequate turnover rate; consult dealer to verify that equipment is properly sized for your pool.
4. Pump too large - overpumping - reduce flow rate.
5. Filter installed backward - replumb.

D. LONG RECOVERY TIME AFTER HEAVY USAGE:

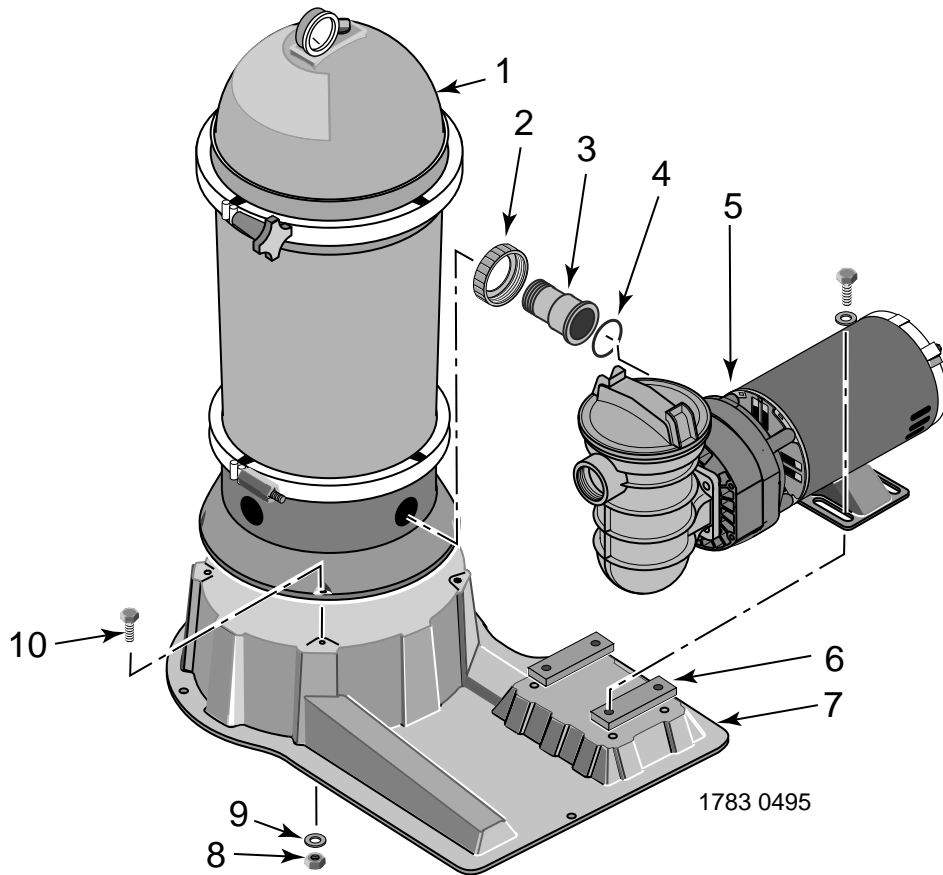
1. Residual Chlorine level is too low - add chlorine.
2. Filter too small - replace with larger unit.
3. Pump too large - reduce flow rate.

E. FILTER BYPASSES DIRT:

⚠ DANGER To avoid severe injury or major property damage, exactly follow instructions under "Disassembly" and "Assembly" (Pages 9 and 10)!

1. Air bleed tube and/or tube filter not in position. Exactly follow instructions in "Filter Disassembly/Assembly Procedure", Pages 9 and 10, and reinstall correctly.
2. Element cloth torn or punctured; replace element.
3. Filter element is not seated properly in filter base; follow instructions under "Filter Disassembly/Reassembly", Pages 9 and 10, and reposition properly.
4. Filter is plumbed backwards and element cloth is ruptured - replumb properly and replace element.
5. Colloidal fines (very small suspended dirt particles) are present and passing through element covering. Floc with alum, or if fines have already settled, vacuum to waste.

REPAIR PARTS



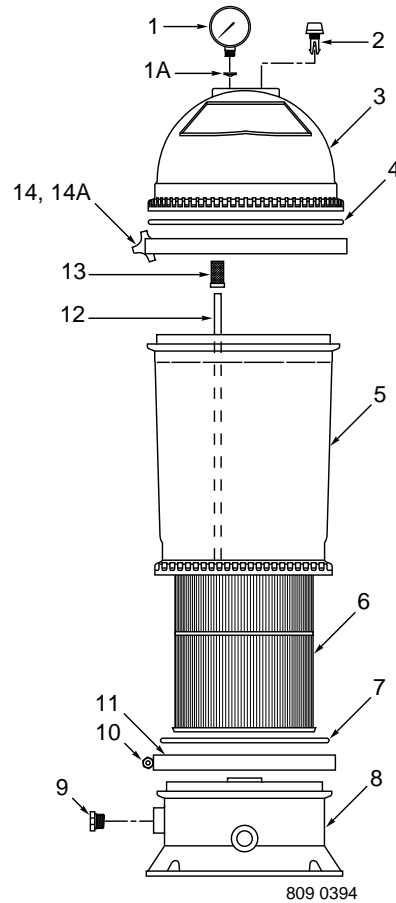
SYSTEMS

Key No.	Part Description	Qty	SYSTEMS	
			AT85023 AT85033	AT87023 AT87033
1	Cartridge Filter Assembly*	1	AT8350	AT8370
2	Union Collar	1	U11-182P	U11-182P
3	Union Half & Nipple Ass'y	1	25010-0202	25010-0202
4	O-ring, Union Coupling	1	U9-226	U9-226
5	Pump** (3/4 HP)	1	AT2307111	AT2307111
5	Pump** (1 HP)	1	AT2310111	AT2310111
6	Pump Spacer	2	25010-0006	25010-0006
7	Platform Base	1	WC4-126P	WC4-126P
8	Nut, 10 - 24	2	U30-105SS	U30-105SS
9	Lockwasher	4	U43-20SS	U43-20SS
10	Screw, 10 - 24 x 3/4"	2	U30-871SS	U30-871SS

* See Page 16 for repair parts of cartridge filter assembly.

** See Page 17 for repair parts of pump assembly.

EXPLODED VIEW

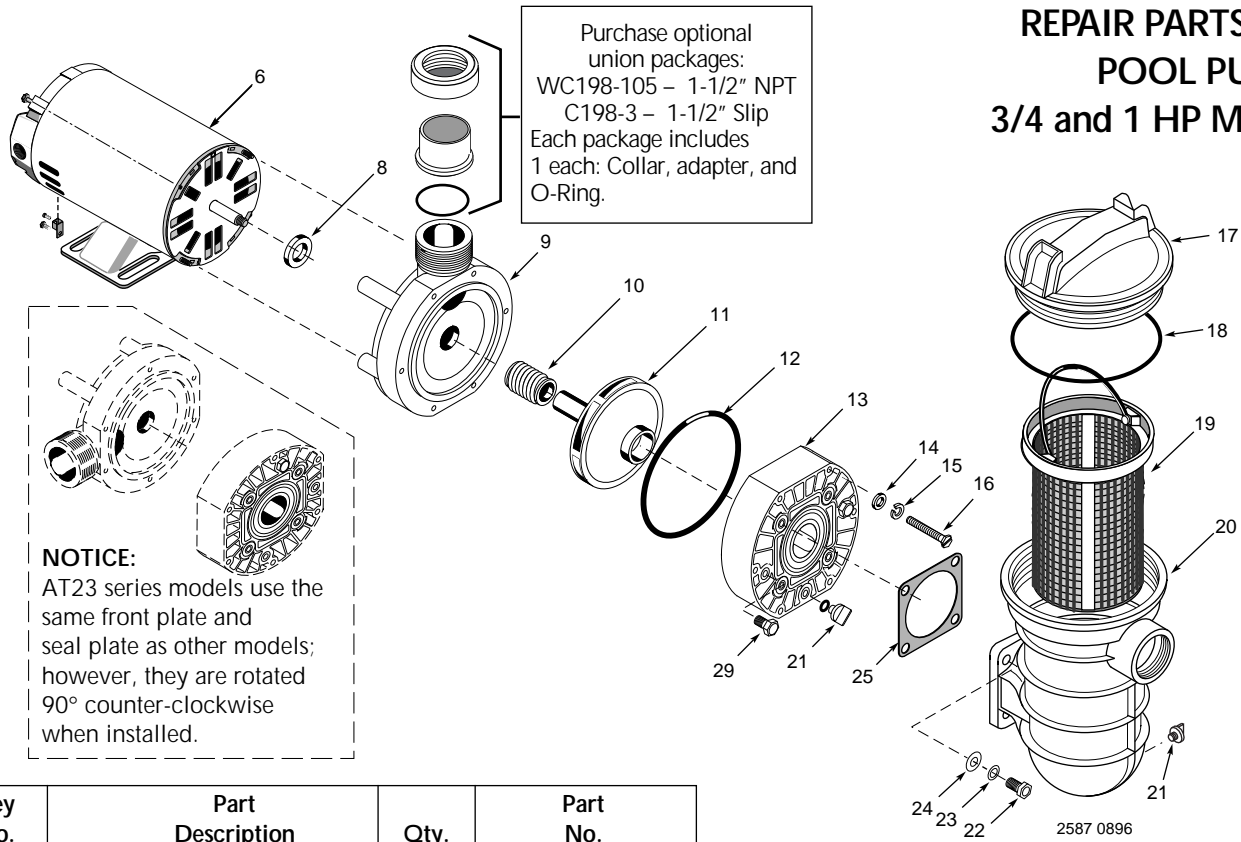


NOTE: O-Rings, key numbers 4 and 7, are not interchangeable.

REPAIR PARTS LIST

Key No.	Part Description	No. Used	Model AT8350	Model AT8370
1	Pressure Gauge	1	15060-0000T	15060-0000T
1A	Screen	1	WC8-72D	WC8-72D
2	Air Release Valve Ass'y	1	25010-0200	25010-0200
3	Lid Ass'y (Includes Nos. 1, 1A, 2, and decals)	1	25011-9201	25011-9201
4	"O" Ring	1	31935-0001	31935-0001
5	Tank Body	1	25011-0001	25011-0001
6	Filter Element	1	AT6150	AT6170
7	"O" Ring	1	WC9-3	WC9-3
8	Base w/Pipe Plugs	1	WC104-78P	WC104-78P
9	Pipe Plug	2	WC78-38T	WC78-38T
10	Nut - Clamp	1	WC36-1	WC36-1
11	Clamp	1	25010-0100	25010-0100
12	Air Bleed Tube	1	25010-0007	25010-0007
13	Filter - Air Bleed Tube	1	WC8-35	WC8-35
14	Clamp	1	25010-0101	25010-0101
14A	Clamp Knob	1	WC36-22	WC36-22
•	Model Decal	1	32155-4074	32155-4084
•	Warning Decal	1	32165-4034	32165-4034
•	Instruction Decal	1	32155-4075	32155-4075
•	Clamp Hazard Decal	1	32165-4030	32165-4030
•	Air Release Warning Decal	1	32165-4035	32165-4035
•	Decal: "DO NOT USE PIPE DOPE"	1	WC27-27	WC27-27
•	Decal: "Top Clamp"	1	32165-4036	32165-4036
•	Not Illustrated			

REPAIR PARTS LIST POOL PUMPS 3/4 and 1 HP Models



Key No.	Part Description	Qty.	Part No.
6	Motor 60Hz/1Ph	1	Chart at Right
8	Slinger	1	C69-2
9	Seal Plate	1	17301-0150
10	Seal	1	U109-358SS
11	Impeller	1	Chart at Right
12	"O" Ring	1	U9-357
13	Front Plate	1	C101-272P
14	Washer, 1/4 Flat	6	U43-117SS
15	Washer, 1/4 Lock	6	U43-10SS
16	Screw, 1/4-20x1-3/4	6	30727-0058
17	Trap Cover	1	C3-139P1
18	Trap Cover "O" Ring	1	U9-229
19	Trap Basket	1	C108-33P
20	Trap Body	1	C153-53P1
21	Drain Plug 1/4" NPT	2	U178-920P
22	Capscrew, 5/16"-18x1-1/4"	4	U30-64SS
23	Lock Washer, 5/16"	4	U43-11SS
24	Flat Washer, 5/16"	8	U43-41SS
25	Gasket	1	C20-123
29	Pipe Plug	2	WC78-40T
•	Flat Washer, 1/4"	4	U43-117SS
•	Capscrew, 1/4 - 20 x 3/4"	4	U30-52SS
•	Cord & Plug Assembly	1	U117-1117
•	Nameplate	1	U33-155
•	Instruction & Warning Tag	1	61002-0002
•	Instruction & Warning Tag	1	61002-0003
•	Instruction, Caution & Warranty Tag	1	61002-0004
•	Tag – Warning, suction	1	61002-0012
•	Decal - "GFCI Required. . ."	1	U27-558

Parts are common to all models listed except as noted:
 Key Nos. 6, Motor; and 11, Impeller are listed below.

Model No.	HP	Motor No. (Key No. 6)	Impeller No. (Key No. 11)
115 Volt			
AT2307111	3/4	AS920DLL	C105-228PH
AT2310111	1	AS920ELL	C105-228PG

For complete suction trap, order Pkg. 115.

•Not illustrated

AquaTools™ LIMITED WARRANTY

Pumps, filters, skimmers, underwater lights (except bulbs), accessories and fittings manufactured by AquaTools are warranted to be free of defects in material and workmanship for one (1) year from date of installation.

Product specific warranties:	Year from date of installation
<i>Module Filters – Tanks</i>	10 years
Internal filter components and valves	1 year
<i>Automatic Pool Cleaners including Hose</i>	2 years
<i>Sand Filters – Tanks</i>	10 years pro-rated*
Valve and Internal components.	1 year
<i>Cartridge Filters – Tanks</i>	10 years
Elements	1 year
<i>Sand Systems – Tanks</i>	10 years pro-rated*
Pumps.	1 year
Valve and Internals	1 year
<i>Cartridge Systems – Filter Tank</i>	10 years
Pumps.	1 year
<i>Module Filter Systems – Tanks</i>	10 years
Pumps.	1 year
Platform and Internals.	1 year
<i>Pumps</i>	1 year
When equipped with A.O. Smith 2-compartment motors (Does not include pumps sold as part of a systems package)	2 years

The foregoing warranties relate to the original consumer purchaser ("Purchaser") only. AquaTools shall have the option to repair or replace the defective product, at its sole

discretion. Purchasers must pay all labor and shipping charges necessary to replace the product covered by this warranty. Requests for warranty service must be made through the installing dealer. This warranty shall not apply to any product that has been subject to negligence, misapplication, improper installation or maintenance, or other circumstances which are not in AquaTools' direct control.

* Full warranty coverage is in effect for one year after installation. The pro-rated warranty covers the *tank only* during the 2nd through 10th year after installation. The amount covered decreases by 10% each year. (ie., 2nd year 90% covered, 3rd year 80% covered, etc.).

This warranty sets forth AquaTools' sole obligation and Purchaser's exclusive remedy for defective products.

AquaTools SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR CONTINGENT DAMAGES WHATSOEVER.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES. IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE DURATION OF THE APPLICABLE EXPRESS WARRANTIES PROVIDED HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above limitations 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.

Supersedes all previous publications.

AquaTools
293 Wright Street
Delavan, WI 53115

▲ Retain Warranty Certificate (upper portion) in a safe and convenient location for your records.

DETACH HERE: Fill out bottom portion completely and mail within 10 days of purchase/installation to:

▼ AquaTools, Attn: Warranty Dept., 293 Wright St., Delavan, WI 53115



Warranty Registration Card

Name _____

Years pool has been in service less than 1 1-3 3-5 5-10 _____

Address _____

Purchased from:
 Company name _____

City _____ State _____ Zip _____

Address _____

Purchase Date _____

City _____ State _____ Zip _____

Product Purchased _____

New installation Replacement _____

Please send me more information on these other products from AquaTools.

Type of Pool Inground Vinyl Fiberglass Gunite _____

- Pumps Filters Automatic Pool Cleaners
 Maintenance Equipment Test Strips

Size of Pool _____