

STA-RITE

DYNA-GLAS™ CENTRIFUGAL PUMPS WITH INTEGRAL TRAP

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



INSTALLATION, OPERATION & PARTS

5MPRA Series MODELS

5MPRA6C-146

5MPRA6C3-146

5MPRA6D-147

5MPRA6D3-147

5MPRA6E-148

5MPRA6E3-148

5MPRA6F-156

5MPRA6F3-156



Professional

STA-RITE FOREIGN SALES CORP.
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This manual should be furnished to the end user of this pump; its use will reduce service calls and chance of injury and will lengthen pump life.

‘5MPRA’ SERIES PUMP WITH TRAP

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

The Sta-Rite ‘5MPRA’ Series Self-priming Centrifugal pump:

- Is designed for use with swimming pools or as a centrifugal pump.
- Is an excellent performer; durable, reliable.

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LIMITED WARRANTY

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

HRPB, DEPB and System 3 are warranted against defects in material and workmanship for a period of ten (10) years from date of installation. Internal filter components and valves are warranted for a period of one (1) year from date of installation.

The foregoing warranties relate to the original consumer purchaser (“Purchaser”) only. Sta-Rite 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 Sta-Rite’s direct control.

This warranty sets forth Sta-Rite’s sole obligation and Purchaser’s exclusive remedy for defective products.

STA-RITE 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.

Sta-Rite Industries, Inc., 600 S. Jefferson St., Waterford, WI 53185

IMPORTANT SAFETY INSTRUCTIONS

Always follow basic safety precautions with this equipment, including the following.

▲ WARNING To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

▲ 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.

SAVE THESE INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS!

▲ This is the safety alert symbol. When you see this symbol on your system 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 death, serious personal injury, or major property damage if ignored.

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

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

NOTICE indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

▲ WARNING **Incorrectly installed or tested equipment may fail, causing severe injury or property damage.**
Hazardous pressure 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.
- Release all air in system before testing.
- Tighten Sta-Rite trap lids to 30 ft. lbs. (4.1 kg-m) torque for testing.
- Water pressure for test must be less than 25 PSI (7.5 kg/cm²).
- 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 Sta-Rite equipment only. For non-Sta-Rite equipment, consult manufacturer.

NOTICE: Port threads are: Internal - 2" NPT for direct connection to pipe. External - 3-1/4" Buttress. Fits Sta-Rite U11-200P Union Half for quick disconnect pipe connection.

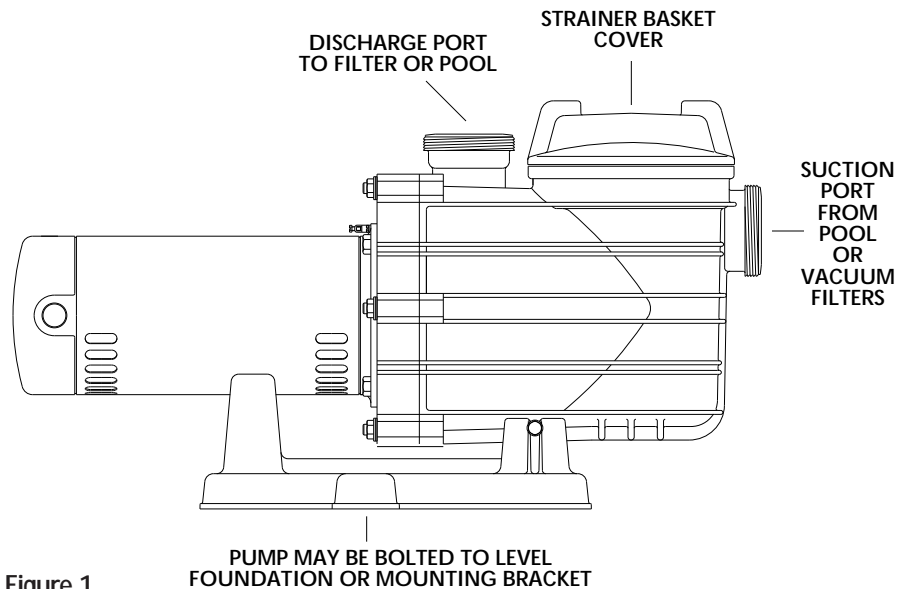


Figure 1

INSTALLATION

Only qualified, licensed personnel should install pump and wiring.

Pump mount must:

Be solid - Level - Rigid - Vibration free. (To reduce vibration and pipe stress, bolt pump to mount.)

Allow pump suction inlet height to be as close to water level as possible. Pump will not lift water more than 10'(3m).

Allow use of short, direct suction pipe (To reduce friction losses).

Allow for gate valves in suction and discharge piping.

Have adequate floor drainage to prevent flooding.

Be protected from excess moisture.

Allow adequate access for servicing pump and piping.

NOTICE: When connecting threaded pipe directly to pump, use Teflon tape or Plasto-Joint Stik¹ to seal connections. Do not use pipe dope; pipe dope causes cracking in some plastics and may damage components in piping system.

When connecting pipe to pump with union half, use Teflon tape or Plasto-Joint Stik between pipe and union adapter. Union collar to pump should be assembled dry and hand-tight.

NOTICE: Pump suction and discharge connections have molded in thread stops. DO NOT try to screw pipe in beyond these stops.

Teflon Taping Instructions:

Use only new or clean PVC pipe fittings.

Wrap male pipe threads with one to two layers of Teflon tape. Cover entire threaded portion of pipe.

Do not overtighten or tighten past thread stop in pump port!

If leaks occur, remove pipe, clean off old tape, rewrap with one to two additional layers of tape and remake the connection.

NOTICE: Support all piping connected with pump!

¹Lake Chemical Co., Chicago, Illinois

Piping:

Use at least 1-1/2" (38mm) pipe (use 2"(51mm) pipe if possible). Increase size if a long run is needed. When using 1-1/2" pipe, connect to pump with 1-1/2" to 2" (38 to 51mm) reducing adapter.

To avoid strains on the pump, support both suction and discharge pipes independently. Place these supports near the pump.

To avoid a strain left by a gap at the last connection, start all piping at the pump and run pipe **away** from the pump.

To avoid airlocking, slope suction pipe slightly upward toward the pump.

NOTICE: To prevent flooding when removing pump for service, all flooded suction systems **must** have gate valves in suction and discharge pipes.

Fittings:

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

Avoid fittings which could cause an air trap.

Pool fittings must conform to International Association of Plumbing and Mechanical Officials (IAPMO) standards.

Use only non-entrapping suction fitting or double suction.

TABLE I - RECOMMENDED FUSING AND WIRING DATA

Motor HP	Branch Fuse Rating Amps*	Max Load Amps	Voltage/ Hz/Phase	Serv. to Motor - Dist. in Ft. (M)			Metric Wire Size (MM ²)
				0-100' (0-30)	101-200' (30-60)	201-300' (60-90)	
1/2	15	8.5	115/50/1	2.0	2.0	2.5	}
3/4	20	11.4	115/50/1	2.5	4.0	6.0	
1	20	14.0	115/50/1	2.5	4.0	6.0	
1-1/2	30	16.6	115/50/1	4.0	6.0	10.0	
1/2	15	4.25	230/50/1	2.0	2.0	2.0	
3/4	15	5.7	230/50/1	2.0	2.0	2.0	
1	15	7.0	230/50/1	2.0	2.0	2.0	
1-1/2	15	8.3	230/50/1	2.0	2.0	2.0	
1/2	15	2.51	230/50/3	2.0	2.0	2.0	
3/4	15	3.38	230/50/3	2.0	2.0	2.0	
1	15	3.66	230/50/3	2.0	2.0	2.0	
1-1/2	15	4.8	230/50/3	2.0	2.0	2.0	
1/2	15	1.45	380/50/3	2.0	2.0	2.0	
3/4	15	2.0	380/50/3	2.0	2.0	2.0	
1	15	1.83	380/50/3	2.0	2.0	2.0	
1-1/2	15	2.8	380/50/3	2.0	2.0	2.0	

* Time delay fuses are recommended instead of standard fuses in any motor circuit.



ELECTRICAL

- ⚠ Ground motor before connecting to electrical power supply. Failure to ground motor can cause severe or fatal electrical shock hazard.
- ⚠ Do not ground to a gas supply line.
- ⚠ To avoid dangerous or fatal electrical shock, turn OFF power to motor before working on electrical connections.
- ⚠ Ground Fault Circuit Interrupter (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. Incorrect voltage can cause fire or seriously damage motor and voids warranty. If in doubt consult a licensed electrician.

Voltage

Voltage at motor must be not more than 10% above or below motor nameplate rated voltage or motor may overheat, causing overload tripping and reduced component life. If voltage is less than 90% or more than 110% of rated voltage when motor is running at full load, consult power company.

Grounding/Bonding

Install, ground, bond and wire motor according to local or National Electrical Code requirements.

Permanently ground motor. Use green ground terminal provided under motor canopy or access plate (See Fig. 2); use size and type wire required by code. Connect motor ground terminal to electrical service ground.

Bond motor to pool structure. Use a solid copper conductor, size No. 8 AWG (8.4 sq.mm) or larger. Run wire from external bonding lug (see Fig. 2) to reinforcing rod or mesh.

Connect a No. 8 AWG (8.4 sq.mm) solid copper bonding wire to the pressure wire connector provided on the motor housing and to all metal parts of the swimming pool, spa, or hot tub and to all electrical equipment, metal piping or conduit within 5 feet (1.5 m) of the inside walls of swimming pool, spa, or hot tub.

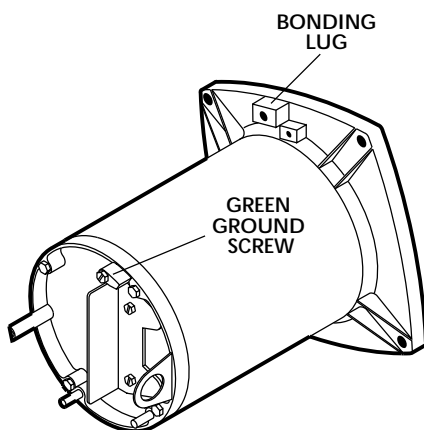


Figure 2 – Typical ground screw and bonding lug locations.

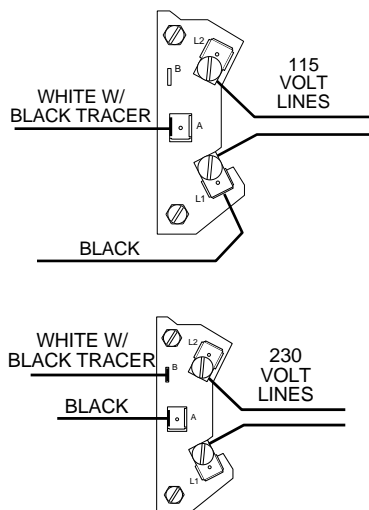


Figure 3 – Wiring hook-up diagram Single Phase

Wiring

Pump must be permanently connected to circuit; be sure no other lights or appliances are on the same circuit. Match wire sizes to Table I (Pg. 5).

NOTICE: To prevent dirt, rain, bugs, etc., from entering motor when not wiring with conduit, **be sure** to seal wire opening on end of motor.

Use Ground Fault Circuit Interrupter (GFCI) as master on-off switch; it will sense a short circuit to ground and disconnect power before it becomes dangerous to pool users. Test according to maker's instructions.

In case of power outage, check GFCI for tripping (which will prevent normal water circulation). Reset if necessary.


OPERATION


NOTICE: NEVER run pump dry. Running pump dry may damage seals, causing leakage and flooding. Fill pump with water before starting motor.

WARNING

 Before removing trap cover:

1. STOP PUMP before proceeding.
2. CLOSE GATE VALVES in suction and discharge pipes.
3. RELEASE ALL PRESSURE from pump and piping system.

 If pump is being pressure tested, be sure pressure has been released before removing trap cover.

 Do not block pump suction. To do so with body may cause severe or fatal injury. Small children using pool must ALWAYS have close adult supervision.



Priming Pump

Release all air from filter and piping system: see filter owner's manual.

In a flooded suction system (water source higher than pump), pump will prime itself when suction and discharge valves are opened.

If pump is not in a flooded suction system, unscrew and remove trap cover (see Figure 4); fill trap and pump with water.

NOTICE: Lubricate trap cover "O" Ring with petroleum jelly each time it is removed.

Clean and inspect "O" Ring; reinstall on trap cover.

Replace trap cover on trap; turn clockwise to tighten cover.

NOTICE: Tighten trap cover by hand only (**no wrenches**)!

Pump should prime now. Priming time will depend on vertical length of suction lift and horizontal length of suction piping.

If pump does not prime, make sure that all valves are open, suction pipe end is under water, pump is not trying to lift water more than 10'(3m), and that there are no leaks in suction pipe. See Troubleshooting Guide, Pages 10 and 11.



Figure 4 – Use a pry bar or board as shown to remove tight lid.

Storage/Winterizing:

NOTICE: Allowing pump to freeze will damage pump and void warranty!

NOTICE: Do not use anti-freeze solutions (except propylene glycol) in your pool/spa system. Propylene glycol is non-toxic and will not damage plastic system components; other anti-freezes are highly toxic and may damage plastic components in the system.

Drain all water from pump and piping when expecting freezing temperatures or when storing pump for a long time (see instructions below).

Keep motor dry and covered during storage.

To avoid condensation/corrosion problems, **do not** cover pump with plastic.

For outdoor/unprotected installations:

1. Enclose entire system in a weatherproof enclosure.
2. To avoid condensation/corrosion damage, allow ventilation; **do not** wrap system in plastic.
3. Use a 40% propylene glycol/60% water solution to protect pump to -50°F (-46°C).

Draining Pump

1. Pump down water level below all inlets to the pool.

⚠ To avoid dangerous or fatal electrical shock hazard, turn OFF power to motor before draining pump.

2. Remove trap cover and use low pressure air to blow accumulated water from the piping system. Use a pry bar or board to remove trap covers that have been overtightened or have taken a set and cannot be removed by hand. Lugs have been provided on the trap lid to use a lever or pry bar for loosening (see Figure 5).
3. Cap inlet piping after draining to keep water out of the pipes.
4. To prevent pump from freezing, remove trap cover and drain the tank body through the two drain plugs provided. Clean pump thoroughly; replace trap cover.
NOTICE: Tighten trap cover by hand only (**no wrenches**)! If pump is not anchored, use caution to not break attached piping!
5. Be sure motor is kept dry and covered.

Startup For Winterized Equipment

1. Remove any temporary weather protection placed around system for shutdown.
2. Follow filter manufacturer's instructions for reactivation of the filter.
3. Inspect all electrical wiring for damage or deterioration over the shutdown period. Have a qualified serviceman repair wiring as needed.
4. Inspect and tighten all watertight connections.
5. Open all valves in suction and return piping.
6. Remove any winterizing plugs in piping system.
7. Drain all antifreeze from system.
8. Close all drain valves and replace all drain plugs in piping system.
9. Prime pump according to instructions on Page 7.



Figure 5 – Use a pry bar or board as shown to remove tight lid.

⚠ CAUTION

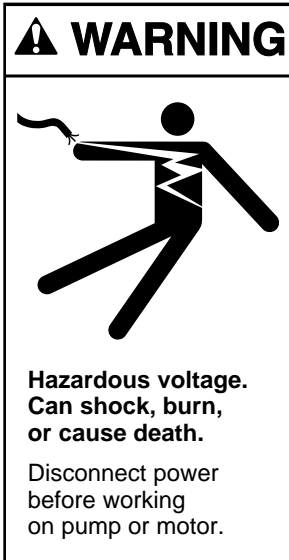


Figure 6

PUMP SERVICE

Pump should only be serviced by qualified personnel.

Be sure to prime pump (Pg. 7) before starting.

⚠ Before removing trap cover:

1. STOP PUMP before proceeding.
2. CLOSE GATE VALVES in suction and discharge pipes.
3. RELEASE ALL PRESSURE from pump and piping system.

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

Aside from lubricating trap cover "O" Ring, no lubrication or regular maintenance is needed beyond reasonable care and periodic cleaning of strainer basket.

If shaft seal is worn or damaged, repair as follows:

Pump Dissassembly/Removing Old Seal

Disconnect power to pump motor.

⚠ Be sure gate valves on suction and return piping are closed before starting work.

Release all pressure by opening all vents before starting work.

1. Drain pump by removing drain plugs on bottom of pump body and trap body.
2. **Be sure** there is no pressure in trap body; remove cover (unscrew by turning counterclockwise).
3. Remove 6 nuts, lockwashers and flat washers holding seal plate to pump body. Pull seal plate and motor away from pump body. (You may have to CAREFULLY use a screwdriver to separate body from seal plate.)
4. Remove seven screws and washers holding diffuser to seal plate. Remove diffuser.
5. Remove motor canopy. Being careful not to touch capacitor terminals, loosen capacitor clamp and move capacitor to one side.
6. Hold shaft with 7/16" open-end wrench on motor shaft flats.
7. Unscrew impeller from shaft (turn counterclockwise when facing it).
NOTICE: On 3 phase models, remove impeller screw (left hand thread - turn **clockwise**) and gasket before removing impeller. Inspect gasket for damage, cracks, etc. Replace if damaged.
8. Remove four screws holding seal plate to motor.
9. Place seal plate face down on flat surface and tap out ceramic seat (Fig. 6).
10. Remove slinger from motor shaft and inspect for damage or abrasion.
11. Clean seal cavity in seal plate and clean motor shaft.



Figure 7

Pump Reassembly/Installing New Seal

1. Ceramic seat must be clean and free of dirt, grease, dust, etc. Wet outer edge with small amount of liquid detergent; press ceramic seat into seal plate cavity firmly and squarely with finger pressure (Fig. 6).
2. If ceramic seat will not locate properly, remove it, place **face up** on bench and reclean cavity. Ceramic seat should now locate.
3. If seat still will not locate properly, place a cardboard washer over the polished face and use a piece of 3/4" (19mm) standard pipe for pressing purposes. **NOTICE: Be sure** not to scratch or mar polished surface or seal will leak.
4. Replace slinger on end of motor shaft so that impeller sleeve will push it into position. If slinger shows signs of wear or damage, replace it.
5. Remount seal plate on motor. Tighten bolts to 60-80 inch-lbs. (69-92 kg/cm) torque.
6. Apply a **small** amount of liquid detergent to inside diameter of rotating half of seal.
7. Slide rotating seal member, polished carbon face out, over impeller sleeve until rubber drive ring hits back of impeller.
NOTICE: Be sure not to nick or scratch polished seal face; seal will leak if face is damaged.
8. Screw impeller onto shaft (clockwise); this will automatically locate seal in seal plate.
NOTICE: On 2 HP model; install impeller gasket and lock screw (left-hand thread - turn counterclockwise). Torque lock screw to 50-55 inch-lbs. (57.6-63 kg/cm).
9. Mount diffuser on seal plate; tighten screws to 10-14 inch-lbs. (11.2-16.1 kg/cm) torque.
10. Assemble motor and seal plate to pump body with nuts, flat washers and lock washers. Torque nuts to 120-130 in-lbs. (138-150 kg/cm).
11. Prime pump according to instructions on Page 7.

TROUBLESHOOTING GUIDE

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

⚠ Only qualified personnel should electrically test pump motor!

FAILURE TO PUMP; REDUCED CAPACITY OR DISCHARGE PRESSURE

Suction leaks/lost prime:

1. Pump must be primed; make sure that pump volute and trap are full of water. See priming instructions, Page 7.
2. Make sure there are no leaks in suction piping.
3. Make sure suction pipe inlet is well below the water level to prevent pump from sucking air.
4. If suction trap gasket is defective, replace it.
5. Make sure pump is not trying to lift water more than 10'(3m).
6. Make sure suction pipe is at least 1-1/2" (38mm) in diameter.



Clogged pipe/trap/impeller, worn impeller:

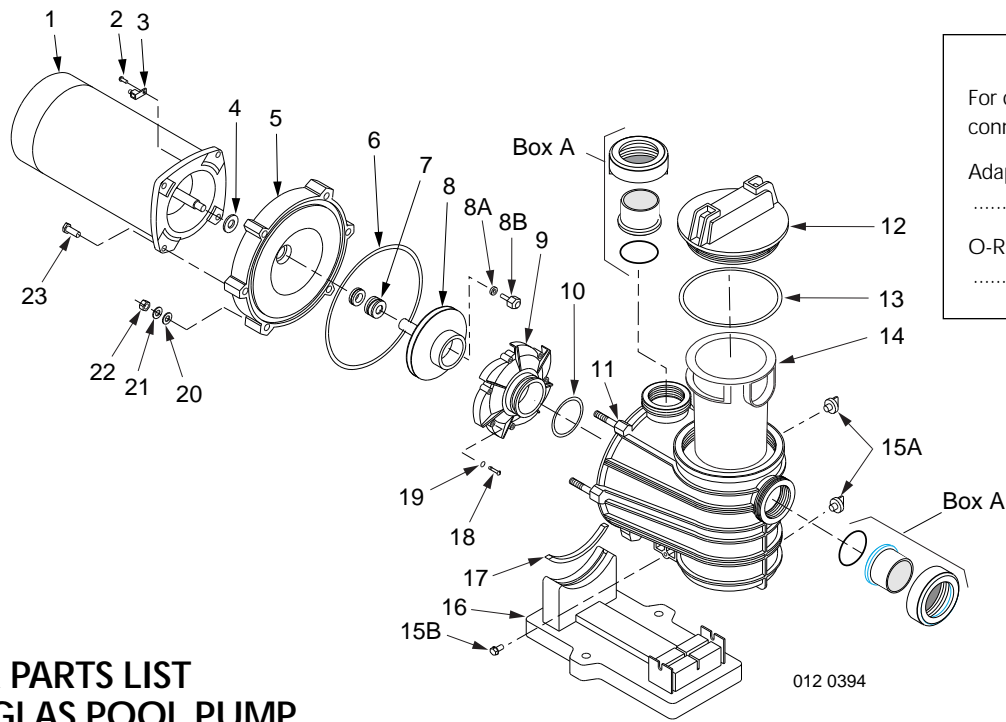
7. Make sure suction trap is not clogged; if it is, clean trap and strainer.
8. Make sure impeller is not clogged (follow steps 1 through 7 under "Removing Old Seal", Page 9; check impeller for clogging; follow steps 7 through 11 under "Installing New Seal", Page 10, for reassembly).
9. Impeller and diffuser may be worn. If so, order replacement parts from Repair Parts List, Page 12.

Electrical:

10. Pump may be running too slowly; check voltage at motor terminals and at meter while pump is running. If low, see wiring instructions or consult power company. Check for loose connections.
11. Pump may be too hot.
 - A. Check line voltage; if less than 90% or more than 110% of rated voltage consult a licensed electrician.
 - B. Increase ventilation.
 - C. Reduce ambient temperature.
 - D. Tighten any loose connections.

MECHANICAL TROUBLES AND NOISE

1. If suction and discharge piping are not adequately supported, pump assembly will be strained. See "Installation", Page 4.
2. Do not mount pump on a wooden platform! Securely mount on concrete platform for quietest performance.



BOX A

For quick disconnect pipe connection parts:

Adapter Union Pkg
 11201-0153

O-Rings (2)
 35505-1318

REPAIR PARTS LIST DYNAGLAS POOL PUMP 1/2 through 1-1/2 HP Models

012 0394

Key No.	Part Description	Qty.	
1	Motor 115/230 Volt/1 Phase	1	Chart at right
2	Screw #10-32x1/2"	1	U30-692SS
3	Bonding Lug	1	U17-568
4	Slinger	1	C69-24
5	Seal Plate	1	C3-184P
6	Seal Plate Cord Ring	1	U9-373
7	Shaft Seal	1	U109-358SS
8	Impeller	1	Chart at right
8A	Gasket	1	33455-1047
8B	Impeller Lock Screw*§	1	37337-6080
9	Diffuser	1	Chart at right
10	Diffuser "O" Ring	1	U9-374
11	Tank and Trap Body (Only)	1	C76-58P
•	Drain Plug	2	U178-920P
12	Trap Cover	1	C3-185P
13	Trap Cover "O" Ring	1	U9-375
14	Trap Basket	1	C8-58P
15	Hi-Lo Screw 5/16-14x5/8"	2	U30-919SS
16	Base	1	C4-77P
17	Motor Pad	1	C35-45
18	Screw #8-32x7/8" Rd. Hd.	7	U30-542SS
19	Lock Washer #8 Ext. Tooth	7	U43-21SS
20	Flat Washer 3/8"	6	U43-62SS
21	Lock Washer 3/8"	6	U43-12SS
22	Nut 3/8-16 Hex	6	U36-38SS
23	Cap Screws 3/8-16x1" Hex.	4	U30-74SS
•	Tag, "CAUTION Connect...bonding lug..."	1	C63-9
•	Nameplate	1	U33-174
•	Tag, "CAUTION This pump equipped with mechanical shaft seal..."	1	U63-13
•	Tag, "CAUTION Securely tighten and center trap cover prior to pressure testing..."	1	C63-10
•	Decal, "For use with pools and spas..."	1	U27-425
•	Decal "Suitable for outdoor use..."	1	U27-255
•	Decal "Use Copper Conductors Only"	1	U27-317
•	Voltage Sticker 230 Volts	1	U27-153
•	Decal, "...use...75°C wire..."	1	U27-309
•	Decal "Overtight trap lid..."	1	U27-644
•	Tag, "For use on permanent pools..."	1	U27-599

Parts are common to all models listed except as noted: Key Nos. 1, Motor; 8, Impeller; and 9, Diffuser are listed below.

Model No.	HP	Motor No. (Key No. 1)
115/230/50/1		
5MPRA6C-146	1/2	J218-573A
5MPRA6D-147	3/4	J218-574A
5MPRA6E-148	1	J218-575A
5MPRA6F-156	1-1/2	J218-864A
230/380/50/3		
5MPRA6C3-146	1/2	J218-814A
5MPRA6D3-147	3/4	J218-815A
5MPRA6E3-148	1	J218-816A
5MPRA6F3-156	1-1/2	J218-817A

Model No.	Impeller No. (Key No. 8)	Diffuser No. (Key No. 9)
115/230/50/1		
5MPRA6C-146	C105-236P	C1-270PB
5MPRA6D-147	C105-236PB	C1-270PC
5MPRA6E-148	C105-236PC	C1-270P
5MPRA6F-156	C105-236PE	C1-270P
230/380/50/3		
5MPRA6C3-146	C105-236PA	C1-270PB
5MPRA6D3-147	C105-236PBA	C1-270PC
5MPRA6E3-148	C105-236PCA	C1-270P
5MPRA6F3-156	C105-236PEA	C1-270P

* 3 Phase only § Model 5MPRA6F3-156 uses part no. 37337-6081.

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