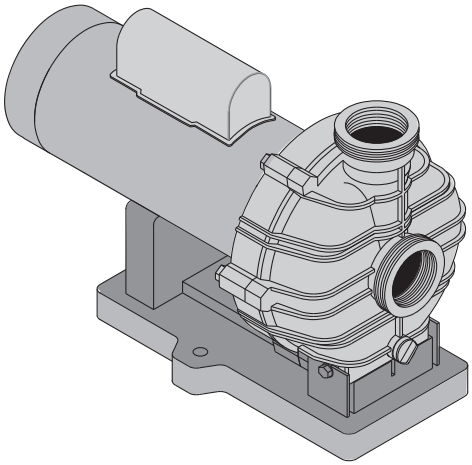
STA-RITE®

SPA PUMP

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



794 0394

INSTALLATION, OPERATION & PARTS

115/230V/60Hz/1Ph TPEA & TPRA Series MODELS

1 HP	TPEAE-165L	TPRAE3-165	
1-1/2 HP	TPEAF-166L	TPRAF-174L	
1-1/2 HP		TPRAYF-174S	
2 HP	TPEAG-167L		
2 HP		TPEAG-167LS	TPEAYG-175L
		TPEAYG-175LS	
2-1/2 HP	TPEAAG-168L	TPEAAYG-168L	

This manual should be given to the owner of the pump.

Customer Support (800) 831.7133

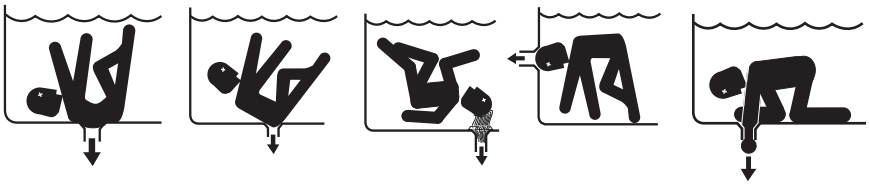
S330 Rev B 5/15/14

PUMP WARNINGS AND SAFETY INSTRUCTIONS
For Pool and Spa Pumps (Non SVRS Pumps)

⚠DANGER **FAILURE TO FOLLOW ALL INSTRUCTIONS AND WARNINGS CAN RESULT IN SERIOUS BODILY INJURY OR DEATH.** THIS PUMP SHOULD BE INSTALLED AND SERVICED ONLY BY A QUALIFIED POOL SERVICE PROFESSIONAL. INSTALLERS, POOL OPERATORS AND OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS IN THE OWNER'S MANUAL BEFORE USING THIS PUMP. THESE WARNINGS AND THE OWNER'S MANUAL MUST BE LEFT WITH THE POOL OWNER.

Warnings and safety instructions for Pentair Aquatic Systems pumps and other related products are available at: **http://www.pentairpool.com/pool-owner/safety-warnings/** Call (800) 831-7133 for additional free copies of these instructions. Please refer to **www.pentairpool.com** for more information related to Pentair Aquatic systems pumps.

⚠DANGER **SUCTION ENTRAPMENT HAZARD: STAY OFF THE MAIN DRAIN AND AWAY FROM ALL SUCTION OUTLETS!**



THIS PUMP PRODUCES HIGH LEVELS OF SUCTION AND CREATES A STRONG VACUUM AT THE MAIN DRAIN AT THE BOTTOM OF YOUR POOL AND SPA. THIS SUCTION IS SO STRONG THAT IT CAN TRAP ADULTS OR CHILDREN UNDER WATER IF THEY COME IN CLOSE PROXIMITY TO A POOL OR SPA DRAIN OR A LOOSE OR BROKEN DRAIN COVER OR GRATE.

THE USE OF UNAPPROVED COVERS OR ALLOWING USE OF THE POOL OR SPA WHEN COVERS ARE MISSING, CRACKED OR BROKEN CAN RESULT IN BODY OR LIMB ENTRAPMENT, HAIR ENTANGLEMENT, BODY ENTRAPMENT, EVISCERATION AND/OR DEATH.

The suction at a pool or spa drain or outlet can cause:

Limb Entrapment: When a limb is sucked or inserted into an opening resulting in a mechanical bind or swelling. This hazard is present when a drain cover is missing, broken, loose, cracked or not properly secured.

Hair Entanglement: When the hair tangles or knots in the drain cover, trapping the swimmer underwater. This hazard is present when the flow rating of the cover is too small for the pump or pumps.

Body Entrapment: When a portion of the body is held against the drain cover trapping the swimmer underwater. This hazard is present when the drain cover is missing, broken or the cover flow rating is not high enough for the pump or pumps.

Evisceration/Disembowelment: When a person sits on an open pool (particularly a child wading pool) or spa outlet and suction is applied directly to the intestines, causing severe intestinal damage. This hazard is present when the drain cover is missing, loose, cracked, or not properly secured.

Mechanical Entrapment: When jewelry, swimsuit, hair decorations, finger, toe or knuckle is caught in an opening of an outlet or drain cover. This hazard is present when the drain cover is missing, broken, loose, cracked, or not properly secured.

NOTE: ALL SUCTION PLUMBING MUST BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL AND LOCAL CODES FOR SWIMMING POOLS, SPAS AND HOT TUBS, INCLUDING NSPI STANDARDS AND CPSC GUIDELINES.

READ AND KEEP THESE INSTRUCTIONS FOR FUTURE REFERENCE

PUMP (Non SVRS) WARNINGS AND SAFETY INSTRUCTIONS

⚠WARNING TO MINIMIZE THE RISK OF INJURY DUE TO SUCTION ENTRAPMENT HAZARD:

- Pools and spas should utilize a minimum of two drains per pump.
- A properly installed and secured ANSI/ASME A112.19.8 approved anti-entrapment suction cover must be used for each drain.
- Each suction cover must be installed at least three (3') feet apart, as measured from the nearest point to nearest point.
- Regularly inspect all covers for cracks, damage and advanced weathering.
- If a cover becomes loose, cracked, damaged, broken or is missing, close the pool or spa immediately, shut off the pump, post a notice and keep the pool or spa closed until an appropriate certified cover is properly installed.
- Replace drain covers as necessary. Drain covers deteriorate over time due to exposure to sunlight, pool chemicals and weather.
- Avoid getting hair, limbs or body in close proximity to any suction cover, pool drain or outlet.
- Use a safety vacuum release system ("SVRS"), suction limiting system or automatic pump shut-off system.
- Disable suction outlets or reconfigure into return inlets.

⚠WARNING A clearly labeled emergency shut-off switch for the pool pump and spa jet pump must be in an easily accessible, obvious place near the pool or spa. Make sure bathers know where it is and how to use it in case of emergency.

The Virginia Graeme Baker (VGB) Pool and Spa Safety Act creates new requirements for owners and operators of commercial swimming pools and spas.

Commercial pools or spas constructed on or after December 19, 2008, shall utilize:

(A) A multiple main drain system without isolation capability with suction outlet covers that meet ASME/ANSI A112.19.8a Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs and either:
(i) A safety vacuum release system (SVRS) meeting ASME/ANSI A112.19.17 Manufactured Safety Vacuum Release systems (SVRS) for Residential and Commercial Swimming Pool, Spa, Hot Tub, and Wading Pool Suction Systems and/or ASTM F2387 Standard Specification for Manufactured Safety Vacuum Release Systems (SVRS) for Swimming pools, Spas and Hot Tubs or
(ii) A properly designed and tested suction-limiting vent system or
(iii) An automatic pump shut-off system.

Commercial pools and spas constructed prior to December 19, 2008, with a single submerged suction outlet shall use a suction outlet cover that meets ASME/ANSI A112.19.8a and either:

(A) A SVRS meeting ASME/ANSI A112.19.17 and/or ASTM F2387, or
(B) A properly designed and tested suction-limiting vent system, or
(C) An automatic pump shut-off system, or
(D) Disabled submerged outlets, or
(E) Suction outlets shall be reconfigured into return inlets.

HAZARDOUS PRESSURE: STAND CLEAR OF PUMP AND FILTER DURING START-UP

Pool and spa circulation systems operate under high pressure. When any part of the circulating system (i.e. lock ring, pump, filter, valves, etc.) is serviced, air can enter the system and become pressurized. Pressurized air can cause the pump housing cover filter lid and valves to violently separate which can result in severe personal injury or death. Filter tank lid and strainer cover must be properly secured to prevent violent separation. Stand clear of all circulation system equipment when turning on or starting up pump.

CAUTION!: Electrical controls such as on/off switches, timers, and control systems, etc. should be properly installed to allow the operation (start-up, shut-down, or servicing) of any pump or filter without requiring the user to place any portion of his/her body over or near the pump strainer lid or filter lid. Such installation should allow the user to stand clear of the filter and pump during system start-up, shut down or servicing of the system.

Before servicing pool and spa equipment, make note of the filter pressure. Be sure that all controls are set to ensure the system cannot inadvertently start during service. Turn off all power to the pump. **IMPORTANT: Place filter manual air relief valve in the open position and wait for all pressure in the system to be relieved.**

Before starting the system, fully open the manual air relief valve and place all system valves in the "open" position to allow water to flow freely from the pool and spa back to the pool or spa. Stand clear of all pool and spa equipment and start the pump. **IMPORTANT: Do not close filter manual air relief valve until all pressure has been discharged from the valve and a steady stream of water appears.** Observe filter pressure gauge and be sure it is not higher than the pre-service condition.

STA-RITE SPA PUMP

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

The Sta-Rite 'TPEA' Series pump:

- Is designed for use with spas.
- Is an excellent performer; durable, reliable.

Table of Contents

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 SAFETY 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.

⚠ CAUTION 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 permanent equipement danage. 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/cm^2).
- Water Temperature for test must be less than 100^{o} F. (38^{o} 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.

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.)

Install pump with suction port below water level (flooded suction) only. Pump does not lift water.

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.

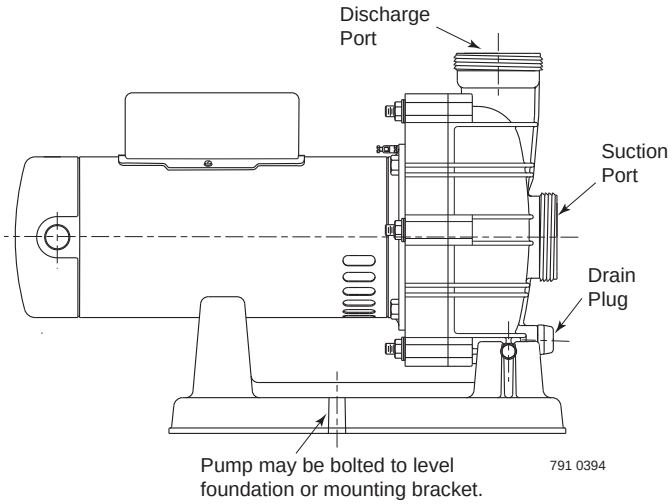


Figure 1

Port threads:

Internal - 2" NPT for direct connection to pipe. External - 3" Buttress. Fits Sta-Rite 38405 - 4094 Union Collar for quick disconnect pipe connection.

Order: Union Kit #77703-0105 (1-1/2" and 2" Union Halves).

Allow adequate access for servicing pump and piping.

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

When connecting threaded pipe to pump with union half, use thread seal tape between pipe and union adapter. Union collar to pump should be assembled dry and hand-tight. Make sure O-ring is seated in groove.

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

Taping Instructions:

Use only new or clean PVC pipe fittings.

Wrap male pipe threads with one to two layers of thread seal 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!

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 in suction piping.

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

Use only non-entrapping suction fittings and dual suction outlets.

ELECTRICAL

⚠ WARNING

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

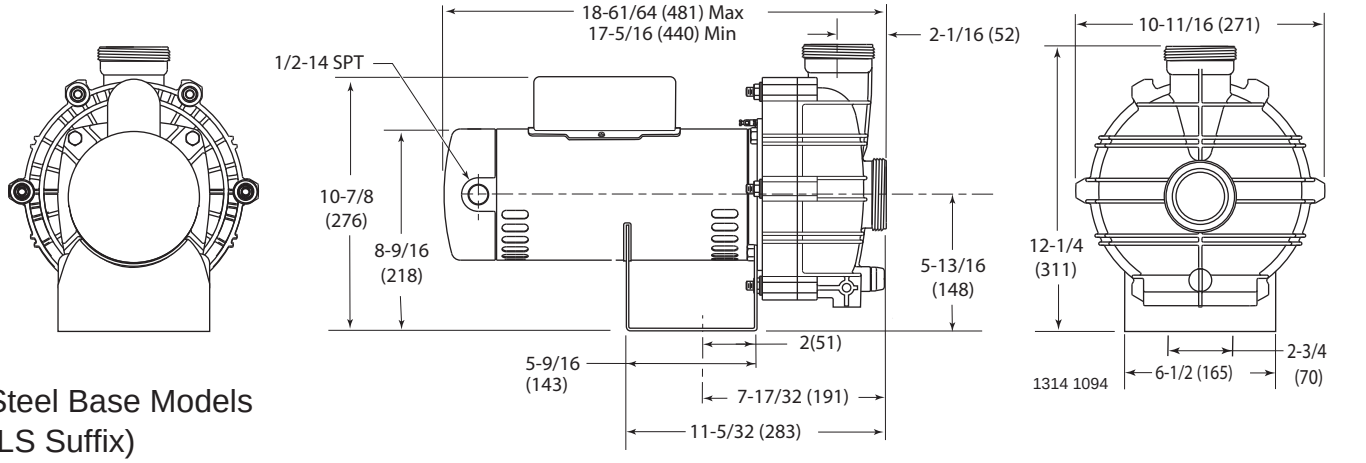
Ground pump before connecting to power supply.

⚠ Ground motor before connecting to electrical power supply. Failure to ground motor can cause severe or fatal electrical shock hazard.

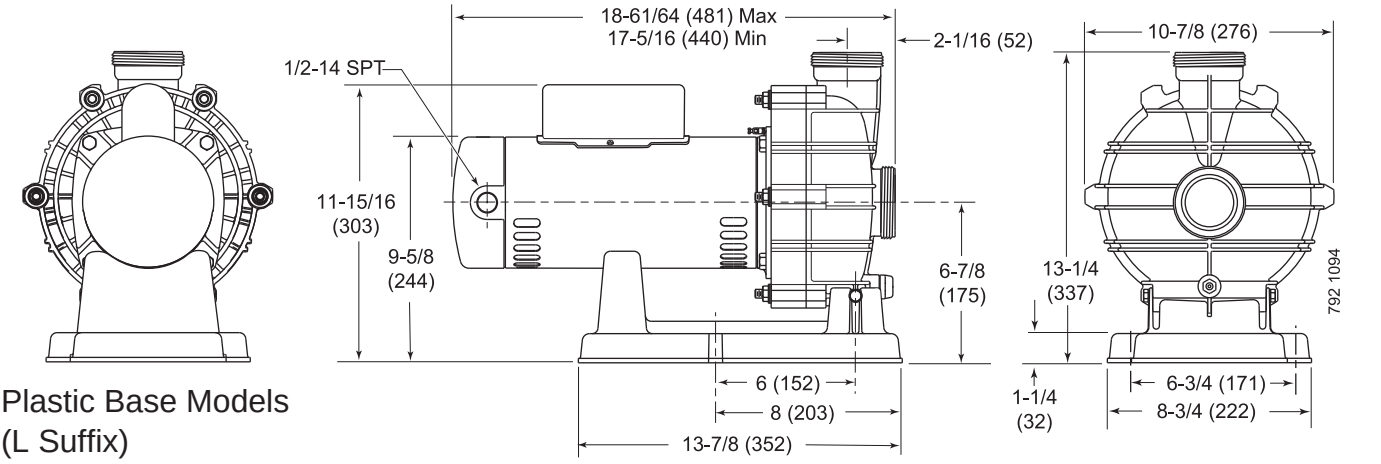
⚠ Do not ground to a gas supply line.

⚠ 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.



Steel Base Models
(LS Suffix)



Plastic Base Models
(L Suffix)

Figure 2 – Outline Dimensions in Inches (mm)

⚠ Exactly match supply voltage to motor nameplate voltage. Incorrect voltage can cause fire or seriously damage motor and voids warranty. If in doubt consult a licensed electrician. See Figure 4.

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. 3); use size and type wire required by code. Connect motor ground terminal to electrical service ground.

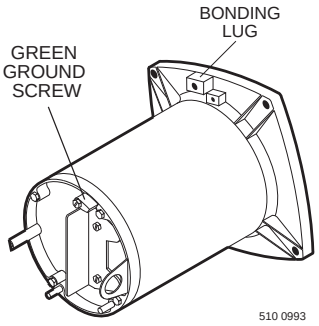


Figure 3 – Typical ground screw and bonding lug locations.

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. 3) 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.

Wiring

Pump must be permanently connected to circuit (see Figure 4A and 4B); be sure no other lights or appliances are on the same circuit. Match wire sizes to Table I (Pg. 6).

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.

⚠ WARNING Risk of dangerous or fatal electrical shock. Be sure that power to the motor circuit is off before working on wiring, wiring connections, or motor. Re-install the motor end cover and all other wiring covers before turning on the power.

1. Turn off power.
2. Remove the motor end cover.

To Wire a Single Speed, Single Voltage Motor

There are two terminals labeled L1 and L2. Attach the power leads to these terminals. Either wire may attach to either terminal.

To Wire a Dual-Voltage Motor

Dual voltage motors have a plug to change from 230 volts (factory setting) to 115 volts.

1. If you have 230 volts motor supply voltage, confirm that the plug is set for 230 volts. The arrow on the plug will point to the 230 volt position. Note that plug only connects with one prong in this position.
2. If you have 115 volt supply, pull the plug straight up and place it on the two brass prongs as shown.

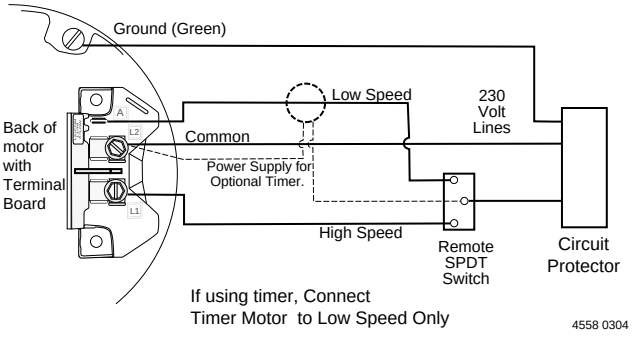
NOTE: Arrow is highlighted for clarity.

Figure 4A -Voltage Change Plug Set for 230 Volts

Figure 4B Voltage Change Plug Set for 115 Volts

To Wire a Two-Speed Motor

Wire the pump as shown in the diagram.



Minimum switch and timer amp rating must equal Branch Fuse Rating given in "Recommended Fusing and Wiring Data" table.

Figure 4C - 2-Speed Motor Wiring Diagram

OPERATION

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

⚠ DANGER

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

Do not block suction. Do not operate system with broken or missing drain covers.

⚠ 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.

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.

TABLE I - RECOMMENDED FUSING AND WIRING DATA

NOTICE: Series TPEA and TPRA pumps use 60 Cycle current only.

Serv. to Motor - Dist. in Ft. (M)

Motor HP	Branch Fuse Rating Amps*	Max Load Amps	Voltage/ Hz/Phase	0-100' (0-30)	101-200' (30-60)	201-300' (60-90)
TPEA Models:						
1	20/15	12.6/6.3	115/230/60/1	12(3)/14(2)	10(5/14(2)	8(7)/14(2)
1-1/2	25/15	16.0/8.0	115/230/60/1	12(3)/14(2)	8(7)/14(2)	6(13)/14(2)
2	15	10.4	230/60/1	14(2)	14(2)	14(2)
2-1/2	15	11.2	230/60/1	14(2)	12(3)	12(3)
TPEAY Models (2-speed):						
2	15	10.1/3.7	230/60/1	14(2)	14(2)	14(2)
2-1/2	15	11.9/3.5	230/60/1	14(2)	12(3)	12(3)
TPRA Models:						
1	15	3.6/1.8	208-230/460/60/3	14(2)	14(2)	14(2)
1-1/2	25/15	19.2/9.6	115/230/60/1	10(5)/14(2)	8(7)/14(2)	6(13)/12(3)
2	15	12.0	230/60/1	14(2)	14(2)	12(3)
TPRA Models (2-Speed):						
1-1/2	15	9.2/2.5	230/60/1	14(2)	14(2)	12(3)
5TPRAY Model (2-speed):						
1-1/2	15	8.3/3.0	230/50/1	14(2)	14(2)	12(3)

AWG Wire Size (mm^2)

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

⚠ WARNING

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

Disconnect power before working on pump or motor.

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. Cap inlet piping after draining to keep water out of the pipes.
3. To prevent pump from freezing, drain the pump body through the drain fitting provided.
4. 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 6.

PUMP SERVICE

⚠ WARNING

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

Disconnect power before working on pump or motor.

Pump should only be serviced by qualified personnel.

Be sure to prime pump (Pg. 6) before starting.

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.

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

Pump Dissasembly/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 through drain fitting on bottom of pump body.
2. 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.)
3. Remove seven screws and washers holding diffuser to seal plate. Remove diffuser.
4. Remove motor canopy. Being careful not to touch capacitor terminals, loosen capacitor clamp and move capacitor to one side.
5. Hold shaft with 7/16" open-end wrench on motor shaft flats.
6. Unscrew impeller from shaft (turn counterclockwise when facing it).
   NOTICE: On 2 and 2-1/2 HP models, remove impeller screw (left hand thread - turn clockwise) and gasket before removing impeller. Inspect gasket for damage, cracks, etc. Replace if damaged.

7. Remove four screws holding seal plate to motor.
8. Place seal plate face down on flat surface and tap out ceramic seat (Fig. 5).

Figure 5

9. Remove slinger from motor shaft and inspect for damage or abrasion.
10. Clean seal cavity in seal plate and clean motor shaft.

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.

Figure 6

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, 2-1/2 HP and 3-Phase models; 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 6.

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. Make sure there are no leaks in suction piping.
2. Make sure suction pipe inlet is well below the water level to prevent pump from sucking air.
3. Make sure pump is not trying to lift water.
4. Make sure suction pipe is at least 2" (51mm) in diameter.

Clogged pipe/impeller, worn impeller:

1. Make sure impeller is not clogged (follow steps 1 through 7 under “Removing Old Seal”, Page 7; check impeller for clogging; follow steps 7 through 11 under “Installing New Seal”, Page 8, for reassembly).
2. Impeller and diffuser may be worn. If so, order replacement parts from Repair Parts List, Page 10.

Electrical:

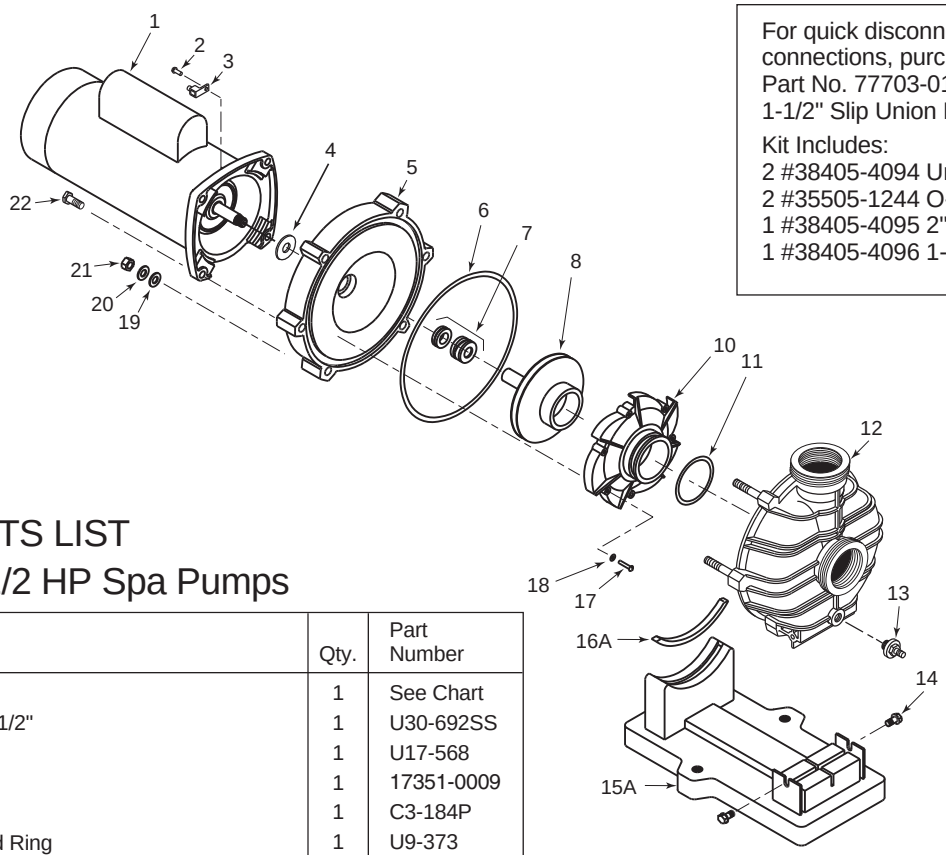
1. Pump may be running too slowly; check voltage at motor terminals and at meter while pump is running. If low, see wiring instructions or consult power company. Check for loose connections.
2. Pump may be too hot.
   A. Check line voltage; if less than 90% or more than 110% of rated voltage consult 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 3.
2. Do not mount pump on a wooden platform! Securely mount on concrete platform for quietest performance.

For quick disconnect pipe connections, purchase separately Part No. 77703-0105 (2" Slip and 1-1/2" Slip Union Kit) .

Kit Includes:
2 #38405-4094 Union Collars
2 #35505-1244 O-Ring
1 #38405-4095 2" Slip Adapter
1 #38405-4096 1-1/2" Slip Adapter



REPAIR PARTS LIST
1 through 2-1/2 HP Spa Pumps

Key No.	Part Description	Qty.	Part Number
1	Motor	1	See Chart
2	Screw #10-32x1/2"	1	U30-692SS
3	Bonding Lug	1	U17-568
4	Slinger	1	17351-0009
5	Seal Plate	1	C3-184P
6	Seal Plate Cord Ring	1	U9-373
7	Shaft Seal	1	17351-0101A
8	Impeller	1	See Chart
9A	Impeller Lock Screw Gasket*	1	33455-1047
9B	Impeller Lock Screw*	1	37337-6080
10	Diffuser**	1	C1-270P
11	Diffuser "O" Ring	1	U9-374
12	Pump Body (Only)	1	17303-0001
13	Drain Plug	1	U178-920P
14	Hi-Lo Screw 5/16-14x5/8"	2	U30-919SS
15A	Base - Corrosion Resistant	1	C4-77P
15B	Base - Steel***	1	17303-0113
16A	Motor Pad - for Corrosion Resistant Base	1	C35-45
16B	Motor Pad - for Steel Base***	1	C35-5
17	Screw #8-32x7/8" Rd. Hd.	7	U30-542SS
18	Lock Washer #8 Ext. Tooth	7	U43-21SS
19	Flat Washer 3/8"	6	U43-62SS
20	Lock Washer 3/8"	6	U43-12SS
21	Nut 3/8-16 Hex	6	071403
22	Cap Screws 3/8-16x1" Hex.	4	U30-74SS
•	Nameplate	1	U33-174
•	Tag, "Warning/Caution/Instruction"	1	C63-12
•	Decal, "Tested for use with spas…"	1	U27-635
•	Voltage Sticker 115/230 Volts (1-1/2 HP only)	1	U27-153
•	Voltage Sticker 230 Volts (2, 2-1/2 HP and 3 Ph. only)	1	U27-68

• Not illustrated.
* Models TPEAG-167L, TPEAAG-168L, and TPRAG-167L only.
** Model TPEAE-165L and TPRAE3-165 use Part No. C1-270PC.
*** Models with LS suffix only.

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

Motor No. Model No.	Impeller HP	(Key No. 1)	(Key No. 8)
115/230/60/1			
TPEAE-165L	1	62003-2025	C105-236PB
TPEAF-166L	1-1/2	AE100FLL	C105-236PC
TPRAF-174L	1-1/2	A100FLL	C105-236PF
230/60/1			
TPEAG-167LS	2	AE100GLL	C105-236PDA
TPRAG-175L	2	A100GLL	C105-236PGA
TPEAAG-168LS	2-1/2	AE100G5LL	C105-236PEA
230/60/1 (2 Speed)			
TPRAYF-174S	1-1/2	A100FLL-Y	C105-236PF
TPEAYG-175L	2	AE100GLL-Y	C105-236PGAB
TPEAYG-175LS	2	AE100GLL-Y	C105-236PGAB
TPEAYG-167LS	2	AE100GLL-Y	C105-236PDA
TPEAAYG-168L	2-1/2	AE100G5LL-Y	C105-236PHA
TPEAAYG-168LS	2-1/2	AE100G5LL-Y	C105-236PHA
230/50/1 (2 Speed)			
5TPRAYF-156	1-1/2	J218-887A	C105-236PE
208-230/460/60 3-Phase			
TPRAE3-165	1	J218-562A	C105-236PBA

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For customer support or technical information about this product, contact the installer or call:

Phone: (800) 831-7133 Fax: (800) 284-4151

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S330 Rev B 5/15/14