

# STA-RITE®

## DURA-JET TUB PUMP

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

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INSTALLATION, OPERATION & PARTS

### MODELS

<b>1/2 HP</b>	<b>3/4 HP</b>	<b>1 HP</b>	<b>1-1/2 HP</b>
JTACL	JTADL	JTAEL	JTAFL

**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.**

#### **Sta-Rite Pool/Spa Group**

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**S197** (Rev. 1/17/03)

# DURA-JET TUB PUMP

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

The Sta-Rite 'JT' Series Tub Pump:

- Is designed to circulate hot water in jetted tubs.
- Is an excellent performer; durable, reliable.
- Drains completely to assure sanitation, meet IAPMO standards.

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# 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.

**▲ 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-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 Sta-Rite equipment only. For non-Sta-Rite equipment, consult manufacturer.

# INSTALLATION

**Installation and wiring of pump should only be done by qualified, licensed personnel.**

## **Pump mount must:**

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

Be installed with pump suction inlet higher than tub suction fitting. (This allows pump to drain completely when tub is drained.)

Have pump suction below tub water level when pump is running.

Be protected from excess moisture.

Allow adequate access for servicing pump and piping.

## **Ventilation:**

Provide adequate ventilation to prevent motor overheating.

For continuous running, motor hot air exhaust must be able to escape tub motor compartment.

## **Piping:**

Use flexible or rigid PVC pipe for connections to pump.

Use at least 1-1/2" IPS pipe.

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

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

1. 'O' Ring and sealing surfaces must be clean.
2. Assemble handtight only! (NO WRENCHES!)
3. NO pipe compound or Teflon tape on unions.
4. Bond pipe to unions with PVC cement.



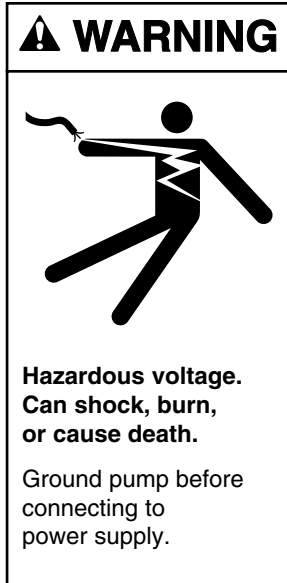
**⚠ Use PVC cement only in a well ventilated area away from flame; FOLLOW MANUFACTURER'S INSTRUCTIONS!**

## **Fittings:**

Size and number of jets will have a major effect on jet action.

Typical installations use up to four 7/8" or 3/4" diameter jets or up to seven 1/2" diameter jets.

Tub fittings must meet International Association of Plumbing and Mechanical Officials (IAPMO) standards for jetted bathtubs. Use only non-entrapping suction fitting or double suction.



## ELECTRICAL

- ⚠ Ground motor before connecting to electrical power supply. Failure to ground pump motor can cause serious 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.
- ⚠ 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.

### Grounding:

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

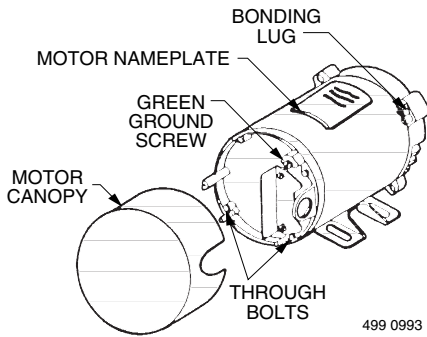
Permanently ground motor; use size and type wire required by code.

Ground connection must be made to green grounding terminal under motor canopy or access plate (see Figure 1).

Connect motor ground terminal to electrical service ground.

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.

Install and bond pump according to local codes and ordinances; use copper bonding lug on motor (see Figure 1).



**Figure 1A: Typical ground screw and bonding lug locations.**

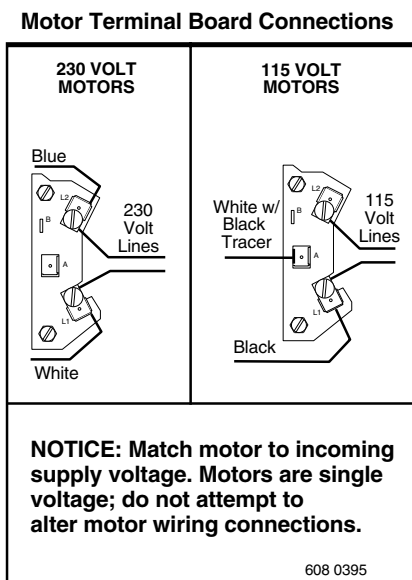
### Wiring:

Pump must be permanently connected to circuit. Tables I, II, and III, Page 6, gives correct wire and circuit breaker sizes for the pump alone. If other lights or appliances are also on the same circuit, be sure to add their amp loads to pump amp load before figuring wire and circuit breaker sizes. (If unsure how to do this or if this is confusing, consult a licensed electrician.) Use the load circuit breaker as the master on-off switch.

Install a Ground Fault Circuit Interrupter (GFCI) in circuit; it will sense a short-circuit to ground and disconnect power before it becomes dangerous to pool users. For size of GFCI required and test procedures for GFCI, see manufacturer's instruction.

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

**NOTICE:** If you do not use conduit when wiring motor, **be sure** to seal wire opening on end of motor to prevent dirt, bugs, etc., from entering.



**Figure 1B. Motor terminal block connections.**

### Voltage:

Voltage at motor must be not more than 10% above or below motor name-plate 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.

**TABLE I - RECOMMENDED WIRING DATA 60 HZ 115V MOTORS**

Model No.	Motor H.P.	Dist in Ft. (M) - Service to Motor			Temp. Rating-°C	} Wire Size AWG (mm <sup>2</sup> )
		0-100 (0-30)	101-200 (31-60)	201-300 (61-90)		
JTACL-AA	1/2	14 (2.0)	12 (3.0)	10 (5.0)	75	
JTADL-2A	3/4	14 (2.0)	12 (3.0)	10 (5.0)	75	
JTADL-AA		14 (2.0)	10 (5.0)	8 (7.0)	75	
JTAEL-AA,-2A	1	14 (2.0)	10 (5.0)	8 (7.0)	75	
JTAFL-2A	1-1/2	12 (3.0)	8 (7.0)	6 (13.0)	75	

**TABLE II - RECOMMENDED CIRCUIT BREAKER SIZES 60 Hz 115V MOTORS**

Model No.	Motor H.P.	Full Load (amps)	Branch Circuit Breaker Rating (amps)
JTACL-AA	1/2	7.0	15
JTADL-AA	3/4	9.2	15
JTADL-2A	3/4	9.0	15
JTAEL-AA	1	11.2	15
JTAEL-2A	1	12.0	15
JTAFL-2A	1-1/2	16	20

**TABLE III - RECOMMENDED CIRCUIT BREAKER SIZES 60 Hz, 220V and 230V MOTORS**

Model No.	Motor H.P.	Voltage/ Hz/Ph	Full Load (amps)	Branch Circuit Breaker Rating (amps)
JTAD-230A	3/4	230/60/1	4.8	15
JTAE-230A	1	230/60/1	6.1	15
JTADL-220AA	3/4	220/60/1	5.1	15
JTAEL-220AA	1	220/60/1	6.24	15

**NOTICE:** For distances up to 300 ft. (90m), service to motor, use #14 AWG (2mm<sup>2</sup>) wire rated at 75°C.

### Air Switch:

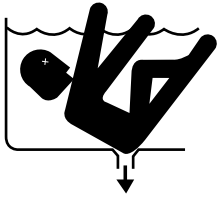
Models with -AA suffix are equipped with air switch control. Use WC17-57 Button and WC17-58 tubing or equivalent (available separately).

**NOTICE:** If motor does not respond to air switch, length of tubing may need adjustment. Maximum recommended tubing length is 15' (4.6m). Different buttons may require shorter lengths of tubing. Make sure no kinks exist in tubing.

## OPERATION

### ⚠ CAUTION

### ⚠ WARNING



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

Do not block  
suction.

### ⚠ DANGER



**Too much heat  
can cause nausea,  
dizziness,  
fainting, or death.**

Check temperature.  
before using tub.

### Priming Pump:

⚠ **NEVER run pump dry! Running pump dry may damage seals, causing leakage and flooding! Fill tub to 2 inches (51mm) above top of jets before starting system.**

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

**NOTICE:** Do not block jets! To do so may flood area causing damage to equipment and water damage to surrounding area.

### Water:

Keep water temperature at 104°F (40°C) or below.

Age or health conditions may require a lower temperature; consult a physician for more information.

If in doubt, start at a lower temperature and gradually increase it according to your experience.

Keep an accurate thermometer in bath; check it before getting in.

⚠ **Do not use or allow the use of the tub by anyone using alcohol or drugs. The effects of hot water, alcohol and/or drugs can cause dizziness and falling, loss of consciousness, or heart attack.**

⚠ **A long bath in hot water may cause hyperthermia (too much heat in the body) which can be fatal. Some symptoms of hyperthermia are:**

- Nausea
- Dizziness
- Fainting

If these symptoms appear while in the spa, **GET OUT AT ONCE!**

Cool the body at once with cold towels or a cool shower.

Call a doctor if symptoms do not go away.

## PUMP SERVICE

Pump should only be serviced by qualified personnel.

**⚠** To avoid dangerous or fatal electrical shock hazard, disconnect power to motor before working on pump or motor!

No lubrication or regular maintenance are needed.

If shaft seal is damaged, repair as follows:

### Removing Old Seal:

1. Disconnect power to pump motor.
2. Drain tub and pump; disconnect unions to allow access to pump.
3. Remove six bolts holding front plate to seal plate; remove front plate.
4. 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 (turn counterclockwise). Rotating half of seal will come off with impeller.

**NOTICE:** Pump may have spacing shims inside impeller sleeve (against shaft shoulder). **Do not lose or damage shims!** If impeller needs replacement or if shims are lost, see authorized service representative.

5. Carefully remove rotating part of seal from impeller sleeve by pulling and turning on sealing washer and spring (Figure 2). Do not damage impeller surface where drive ring seats and seals.
6. Carefully remove four motor throughbolts from seal plate (Figure 3); remove seal plate and use a screwdriver to tap ceramic seat out from the rear (Figure 4). Do not damage seal cavity in seal plate.
7. Clean cavity from which seal was removed and clean motor shaft.

### 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 5).
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. (29 cm-kg).
5. Impeller shim(s) (if used) go over threaded shaft end against shaft shoulder. Be sure to replace all shims for correct impeller spacing. Screw impeller onto shaft until it seats against shaft shoulder. Work slinger over end of impeller sleeve so it rides on sleeve (Figure 6).
6. Remount front plate; using a crisscross pattern, torque bolts to 30 inch-lbs. (34.6 cm-kg). Reconnect unions; tighten hand tight only.

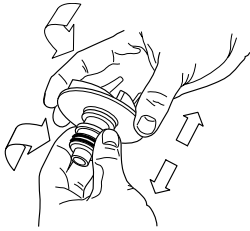


Figure 2

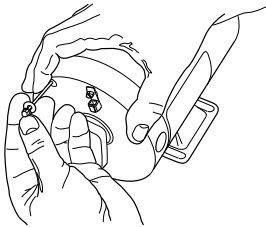


Figure 3

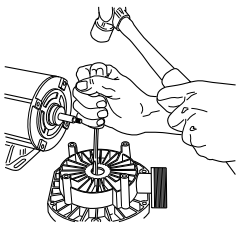


Figure 4

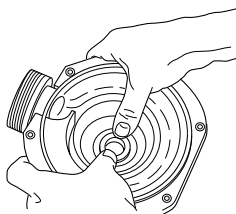


Figure 5

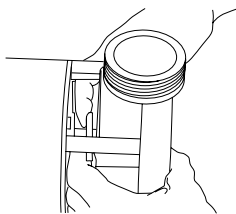



Figure 6

# TROUBLESHOOTING GUIDE

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

## **A. PUMP DOES NOT OPERATE**

1. Check GFCI for proper operation according to GFCI manufacturer's instructions.
2. Check for plugged impeller. Follow disassembly/assembly instructions under "Pump Service", Page 8.
3. Consult dealer/installer or service representative.
4. Air switch location too far from pump (See Page 6).

## **B. IMPROPER JET ACTION**

1. Check for blocked fittings. Blocked fittings will cause poor flow and poor jet action.
2. Consult dealer/installer or service representative.

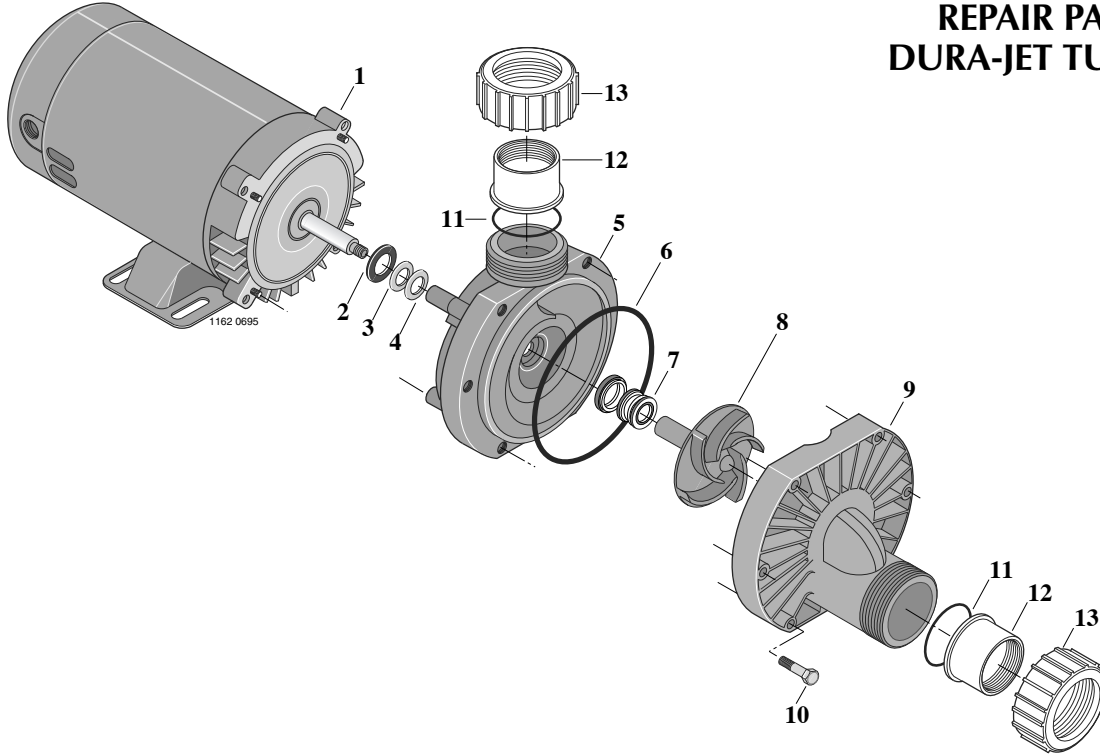
## **C. EXCESSIVE AIR IN SYSTEM – PUMP LOSES PRIME**

1. Make sure water level in spa is at least 2" (51 mm) above top of jets with system not operating.
2. Make sure there are no leaks in suction piping.
3. Make sure there is no vortex (whirlpool) at the suction.
4. Consult dealer/installer or service representative.

## **D. CIRCUIT BREAKER IN HOME PANEL TRIPS REPEATEDLY**

1. Breaker must be of adequate capacity.
2. For GFCI breaker: test according to GFCI manufacturer's instructions.
3. Make sure no other lights and appliances are on circuit.
4. Consult dealer/installer or service representative.

## REPAIR PARTS LIST DURA-JET TUB PUMP



Key No.	Description	Qty.	Model No.			
			JTACL-AA 1/2 HP	JTADL-AA JTADL-2A JTADL-220AA JTAD-230A 3/4 HP	JTAE-AA JTAE-2A JTAE-220AA JTAE-230A 1 HP	JTAF-2A 1-1/2 HP
1	Motor - 115/60Hz/1Ph(-AA)	1	AS900CLL-A	AS900DLL-A	AS900ELL-A	—
1	Motor - 115/60Hz/1Ph(-2A)	1	—	AS920DLL	AS920ELL	AS920FLL
1	Motor - 230/60Hz/1Ph(-230A)	1	—	AS923DL	AS923EL	—
1	Motor - 220/60Hz/1Ph(-220AA)	1	—	62003-2006	62003-2007	—
2	Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009
3	Impeller Shim (.010)*	1	C43-21D	C43-21D	C43-21D	C43-21D
4	Impeller Shim (.0299)*	1	C43-22D	C43-22D	C43-22D	C43-22D
5	Volute Seal Plate	1	C1-260P	C1-260P	C1-260P	C1-260P
6	"O" Ring	1	U9-357	U9-357	U9-357	U9-357
7	Seal	1	37400-0027S	37400-0027S	37400-0027S	37400-0027S
8	Impeller	1	C5-228PC	C5-228PB	C5-229P	17301-0001
9	Front Plate	1	C1-261P	C1-261P	C1-261P	C1-261P
10	Screw, 1/4-20x1-3/4	6	30787-0005	30787-0005	30787-0005	30787-0005
11	"O" Ring, Union	2	U9-226	U9-226	U9-226	U9-226
12	Adapter, Union	2	U11-183P1	U11-183P1	U11-183P1	U11-183P1
13	Collar, Union	2	U11-182P1	U11-182P1	U11-182P1	U11-182P1
**	Button #	1	WC17-57	WC17-57	WC17-57	WC17-57
**	Tubing 1/8" IDx25" #	1	WC17-58	WC17-58	WC17-58	WC17-58
**	Nameplate	1	U33-155	U33-155	U33-155	U33-155
**	Voltage Label - 115V	1	U27-67	U27-67	U27-67	U27-67
**	Voltage Label - 230V(-230AA only)	1	—	U27-68	U27-68	—
**	Decal	1	U27-635	U27-635	U27-635	U27-635
**	Warning Tag	1	C63-12	C63-12	C63-12	C63-12

\* As needed for proper impeller spacing.    \*\* Not illustrated.

# Models ending in "-AA" only. Not included with pump.

## STA-RITE LIMITED WARRANTY

Pumps, filters, 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.

Product specific warranties:	Year from date of installation
<i>HRPB, DEPB, System 3, and PL</i> - Tanks	10 years
Internal filter components and valves	1 year
<i>Max-E-Therm</i> - Pool/Spa Heaters	2 years
Heater Enclosure only (Upper RH & LH; lower enclosure; and control board enclosure)...	10 years
<i>Automatic Pool Cleaners including Hose</i>	2 years
<i>Cristal-Flo filters</i> - Tanks	10 years pro-rated*
Valve and internal components.	1 year
<i>Posi-Flo II</i> - Tanks	10 years
Elements	1 year
<i>PRC Cartridge</i> -	
Filter Tanks	5 years pro-rated (1st 2 years full)
Elements	1 year
<i>System 3 Above Ground Systems</i> - Tanks	10 years
Pumps / 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
<i>Traps / In-Line Strainers</i>	1 year
<i>Vertical Commercial Filter</i> - Tanks	10 years
Internals	1 year
<i>Horizontal Commercial Filter</i>	
Tanks	5 years
(Years 6-9, Prorated declining 20%/year, Yr. 10 - 10%)	
Internals	1 year

\* 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.).

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 discre-

tion. 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.,**  
**293 Wright St., 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:

▼ Sta-Rite, 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 Sta-Rite.

Type of Pool  Inground  Vinyl  Fiberglass  Gunite \_\_\_\_\_

Pumps  Filters  Automatic Pool Cleaners  
 Maintenance Equipment  Test Strips  
 Heaters

Size of Pool \_\_\_\_\_

