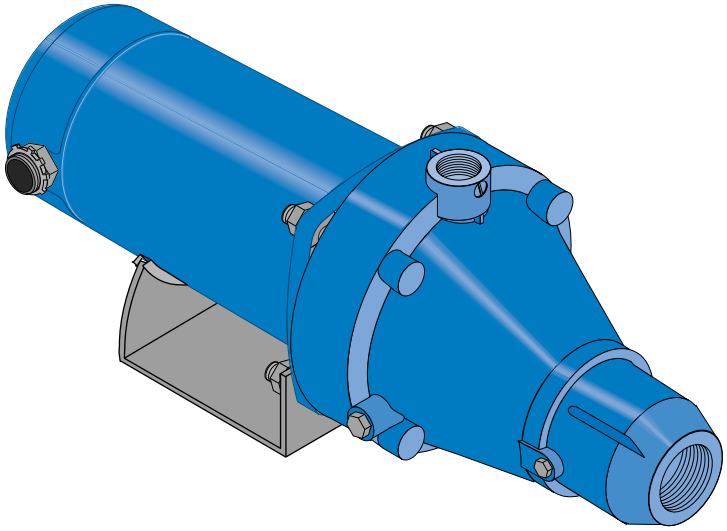
STA-RITE®

OWNER'S MANUAL

INSTALLATION AND OPERATING INSTRUCTIONS

REPAIR PARTS LIST

PWP-01 PRESSURE WATER SYSTEM PUMP



STA-RITE INDUSTRIES, DELAVAN, WISCONSIN 53115

S374 (Rev. 9/26/05)

READ AND FOLLOW SAFETY INSTRUCTIONS!

⚠ **This is the safety alert symbol.** When you see this symbol on your pump 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 pump.

Keep safety labels in good condition.

Replace missing or damaged safety labels.

Electrical Safety

⚠ WARNING

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

Ground pump before connecting to power supply. Disconnect power before working on pump, motor or tank.

⚠ **Wire motor for correct voltage. See "Electrical" section of this manual and motor nameplate.**

⚠ **Ground motor before connecting to power supply.**

⚠ **Meet American Boat and Yacht Council standards and USCG requirements for all wiring.**

⚠ **Follow wiring instructions in this manual when connecting motor to power lines.**

⚠WARNING **Capacitor voltage may be hazardous**. To discharge motor capacitor, hold insulated handle screwdriver **BY THE HANDLE** and short capacitor terminals together. Do not touch metal screwdriver blade or capacitor terminals. If in doubt, consult a qualified electrician.

General Safety

⚠WARNING **Pump body may explode if used as a booster pump unless relief valve capable of passing full pump flow at 75 psi is installed.**

⚠ CAUTION **Do not touch an operating motor.** Modern motors are designed to operate at high temperatures. To avoid burns when servicing pump, allow it to cool for 20 minutes after shut-down before handling.

Do not allow pump or any system component to freeze. To do so will void warranty.

Pump water only with this pump.

Motor is not explosion proof. Ventilate bilges and motor enclosure to prevent gasoline or propane fumes from collecting.

Periodically inspect pump and system components.

General Information

If this pump is used without a pressure tank, install a level indicator on the tank supplying the pump.

Install a 30-50 PSI pressure switch on the pump for automatic operation.

Set pre-charge in pressure tank to 2 PSI lower than pump pressure switch cut in pressure.

Do not use pump as a washdown pump.

Do not connect pump to a seacock.

Install all components of your pressure water system in compliance with applicable marine standards, especially American Boat and Yacht Council (ABYC) Standard H-23, "Installation of Potable Water Systems".

Suction Piping

⚠WARNING Risk of explosion. Never run pump against closed discharge. To do so can boil water inside pump, causing hazardous pressure in unit, risk of explosion, and possibility of scalding anyone close to unit.

Install a no-flow/no-load protection device to stop pump in the event of loss of prime.

Install the pump so that it draws from a water storage tank. Install a strainer in the tank at least two inches above the bottom of the tank. The vertical distance from the storage tank bottom to the pump should be not more than 20 feet.

Never install a suction pipe that is smaller than the 1-1/4" suction tapping of the pump. If the pump is located more than 25' from the water storage tank, increase the suction pipe size in order to reduce the friction losses. For a suction run of 25' to 50', use 1-1/2" pipe; for 50' to 200', use 2" pipe.

Discharge Pipe Size

Up to 25': Use the same size pipe as the pump discharge tapping.

25' to 100': Increase one pipe size.

100' to 600': Increase two pipe sizes.

Pump Installation

Use Teflon tape or a plastic compatible, teflon-based pipe compound for making all threaded connections to the pump itself. Do not use more than 1-1/2 turns of tape and do not overtighten the pipe in the pump. If a leak occurs, remove the pipe; clean and remake the joint. Install a 0-60 PSI pressure gauge in the priming plug (in the pump discharge).

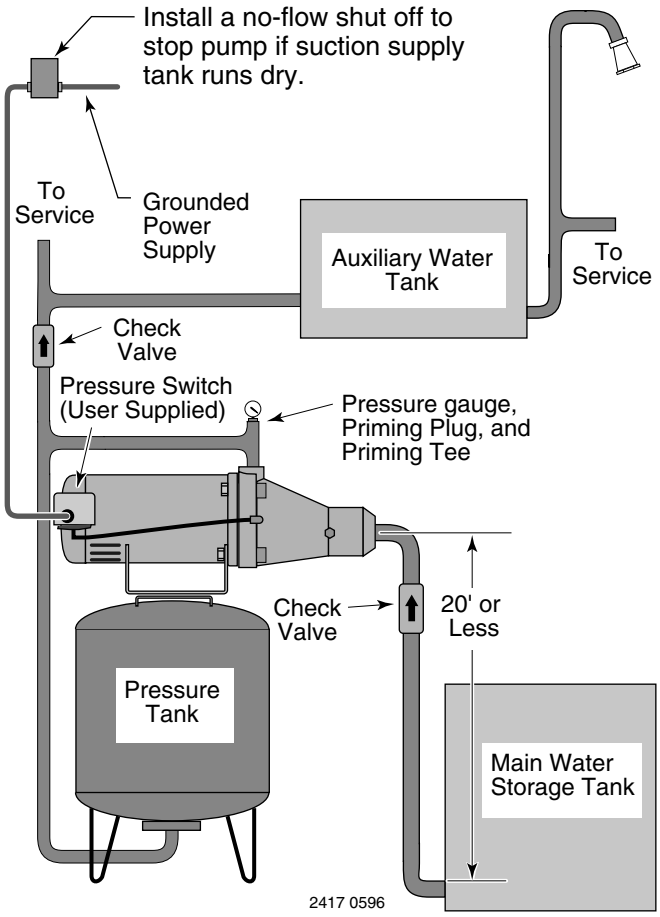


Figure 1: Piping schematic for typical installation.

Electrical

⚠ Disconnect power before working on pump, motor, pressure switch, or wiring.

MOTOR SWITCH SETTINGS

Your motor terminal board (located under the motor end cover) should look like one of those below.
If the motor can operate at either 115 or 230 volts, it is set at the factory to 230 volts. Do not change motor wiring if line voltage is 230 volts, or if you have a single voltage motor.

⚠ CAUTION Never wire a 115 volt motor to a 230 volt line.

Plug Type Voltage Selector

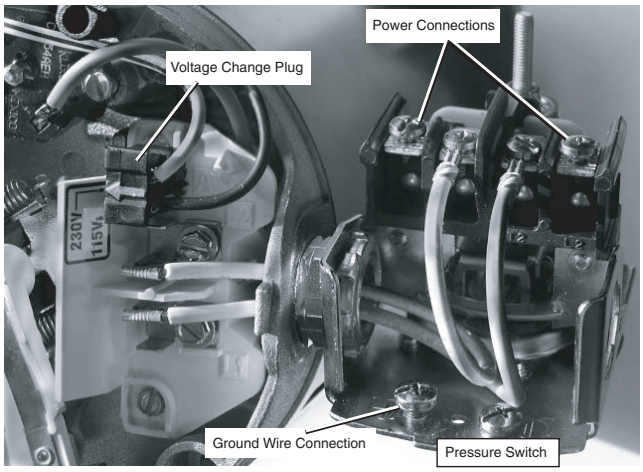


Figure 2: Voltage set to 230 volts, Plug Type

Voltage is factory set to 230 volts. To change to 115 volts:

1. Make sure power is off.
2. Pull the voltage change plug off of the tabs.
3. Move the voltage change plug to the 115 volt position. The plug will now cover 2 metal tabs and the arrow on the plug will line up with the 115V arrow on the label (see Figure 3).

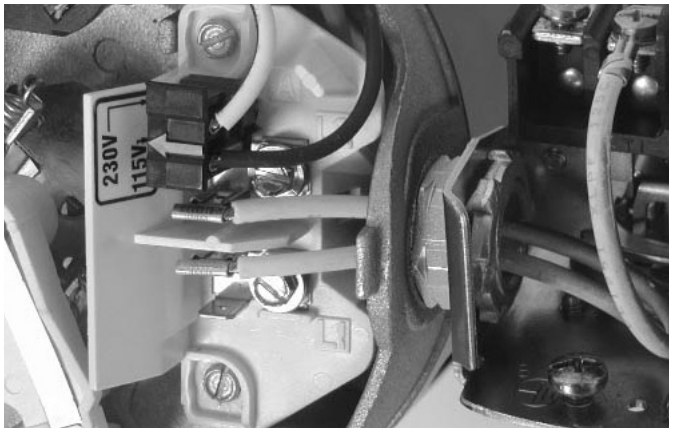


Figure 3: Voltage set to 115 volts, Plug Type

4. Attach the incoming power leads to the two outer screws on the pressure switch as shown in Figure 2.
5. Attach the ground wire to one of the grounding connections, shown in Figure 2.
6. If there are other wires, they should be capped.
7. Reinstall the Motor end cover.

Dial Type Voltage Selector

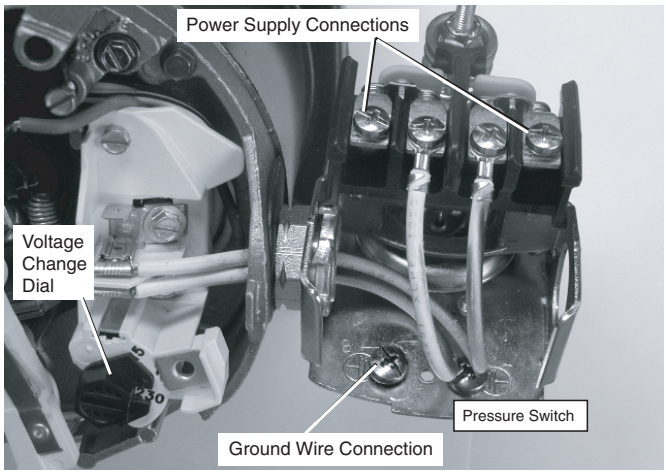


Figure 4: Voltage set to 230 volts, Dial Type

Voltage is factory set to 230 volts. To change to 115 volts:

1. Make sure power is off.
2. Turn the dial counter-clockwise until 115 shows in the dial window as shown in Figure 5.

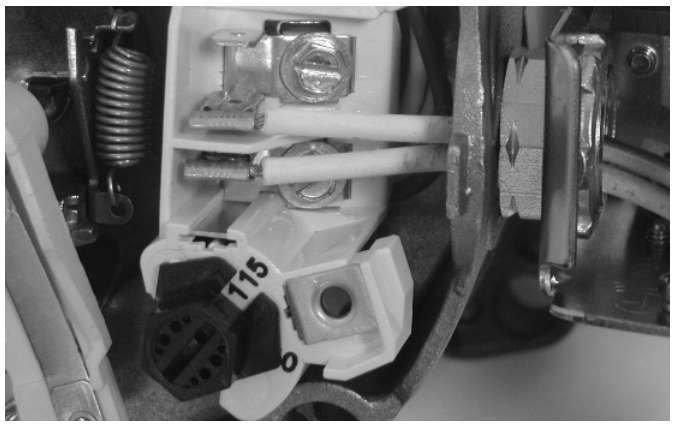


Figure 5: Voltage set to 115 volts, Dial Type

3. Attach the incoming power leads to the two outer screws on the pressure switch as shown in Figure 4.
4. Attach the ground wire to the grounding connections as shown in Figure 4.
5. If there are other wires, they should be capped.
6. Reinstall the Motor end cover.

⚠WARNING Hazardous voltage. Can shock, burn, or kill. Connect ground wire before connecting power supply wires. Use the wire size (including the ground wire) specified in the wiring chart. If possible, connect the pump to a separate branch circuit with no other appliances on it.

⚠WARNING Explosion hazard. Do not ground to a gas supply line.

Wiring Connections

⚠WARNING Fire hazard. Incorrect voltage can cause a fire or seriously damage the motor and voids the warranty. The supply voltage must be within ±10% of the motor nameplate voltage.

NOTICE: Dual-voltage motors are factory wired for 230 volts. If necessary, reconnect the motor for 115 volts, as shown. Do not alter the wiring in single voltage motors.

Install, ground, wire, and maintain your pump in compliance with the National Electrical Code (NEC) in the U.S., or the Canadian Electrical Code (CEC), as applicable, and with all local codes and ordinances that apply. Consult your local building inspector for code information.

Connection Procedure:

1. Connect the ground wire first as shown in Figure 2. The ground wire must be a solid copper wire at least as large as the power supply wires.

   Connect the ground wire in accordance with ABYC Standard E-3, "Wiring Identification On Boats", and ABYC E-8, "AC Electrical Systems on Boats". The only proper ground connection on the motor is located under the protective canopy at the rear of the motor. this terminal is identified as 'GRD'. Ground connection MUST be made to this terminal.

However, if the pressure switch is solidly grounded to this terminal by means of a solid copper conductor at least as large as the power carrying wires, then the ground connection may be made to the pressure switch ground terminal, labeled 'GRD' or ⏚.

See Table I, below, for fusing and wiring data.

Table I: Fusing and Wiring Data

Motor Hp	Volts/Hz/Ph	Fuse Rating (Amps)	Wire Size: 0 to 100 Ft, Motor to Panel
3/4	115/230/60/1	8.8/4.4	14 AWG

2. There must be a solid metal connection between the pressure switch and the motor for motor grounding protection. If the pressure switch is not connected to the motor, connect the green ground screw in the switch to the green ground screw under the motor end cover. Use a solid copper wire at least as large as the power supply wires.
3. Connect the ground wire to a grounded lead in a service panel, to a metal underground water pipe, to a metal well casing at least ten feet (3M) long, or to a ground electrode provided by the power company or the hydro authority.
4. Connect the power supply wires to the pressure switch as shown in Figure 2.

Priming the Pump

NOTICE: Do not start the pump dry, as this may damage the shaft seal or other internal parts. After the pump body is initially filled with water, the pump is self-priming as long as the water supply to the pump suction is continuous.

To prime the pump:

1. Remove the priming plug.
2. Fill the pump with water.
3. Install the gauge in the priming plug using teflon tape or a plastic compatible pipe compound on the threads. Do not use more than 1-1/2 turns of tape. If the joint leaks, disassemble it, clean it, and retape it. *Do not* attempt to salvage a leaky joint. Peel off the tape and start over.
4. Start the pump. Water should start to flow in two to three minutes. If not, repeat steps 1, 2, and 3. On first use of the pump this may have to be repeated two or three times depending on the suction depth to water.
5. After water flows, stop the pump, remove the priming plug, and apply teflon tape or pipe compound to the threads (as described under "Installation").

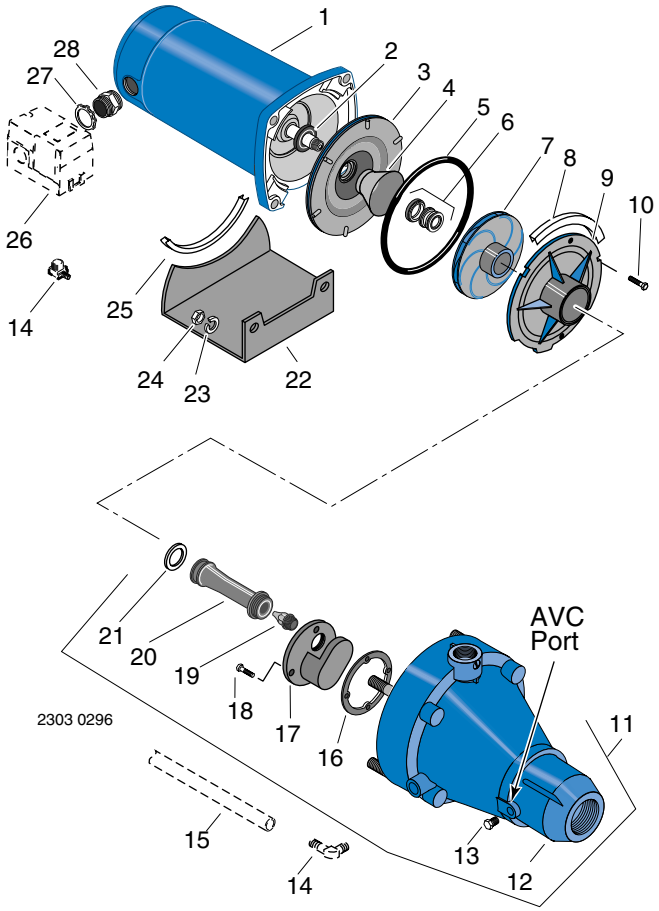
If no water is pumped after priming several times, check the following:

A. Be sure that the suction pipe is in the water.

B. Be sure that the suction pipe does not leak.

C. Be sure that the pump is not trying to lift water more than 20 feet (see "Suction Piping", Page 3).

As long as the check valve functions correctly, the tank is not allowed to run dry, and the suction piping does not develop a leak, the pump should not need repriming in normal service.



REPAIR PARTS

Key No.	Part Description	Qty.	PWP-01 3/4 HP
1	Motor, 115/230/60/1	1	A100DLL
2	Water Slinger	1	17351-0009
3	Seal Plate Assembly (Incl. #5)	1	N103-12PSS
4	Stainless Steel Insert	1	J3-2SS
5	“O” Ring	1	U9-390
6	Shaft Seal	1	U109-6A
7	Impeller	1	J105-42PTB
8	Rubber Pad	1	C35-41
9	Diffuser	1	N1-28PA
10	Capscrew #10-16 Hex Head	2	U30-738SS
11	Tank Body Assembly (incl. #12 thru #18)	1	N176-35PASS
12	Tank Body	1	~~N76-35PSS~~ N176-35PA
13	Pipe Plug 1/8” NPT Taped	1	WC78-41T
14	Comp. Elbow 1/4” NPT w/TFE	2	*
15	Switch Tube	1	*
16	Gasket - Plastic	1	J20-18
17	Tank Jet Body Insert	1	N76-29P
18	Capscrew #10-16	4	U30-742SS
19	Nozzle	1	N34P-19
20	Venturi	1	N32P-67
21	“O” Ring	1	U9-201
22	Base Assembly Painted	1	J104-9F
23	Lock Washer 3/8”	4	U43-12ZP
24	Nut 3/8-16	4	U36-38ZP
25	Rubber Pad	1	C35-5
26	Pressure Switch, 30-50 PSI	1	*
27	Locknut 1/2”	1	U36-112ZP
28	Connector 1/2”	1	L43-5C

* Supplied locally.

TROUBLESHOOTING GUIDE

Trouble	Possible Causes	Remedies
Motor will not run	1. Circuit breaker is off. 2. Fuse or circuit breaker has blown. 3. Starting switch is defective. 4. Wires at motor are loose, disconnected, or wired incorrectly. 5. Pressure switch contacts dirty.	1. Turn circuit breaker to ON. 2. Reset circuit breaker or replace fuse. 3. Replace starting switch. 4. See wiring instructions, Page 4. 5. Clean by sliding a piece of plain paper between the contacts.
Motor runs hot and overload kicks off.	1. Motor is wired incorrectly. 2. Voltage is too low. 3. Pump cycling too frequently.	1. See wiring instructions, Page 4. 2. Install heavier wiring if wire size is too small. See wiring instructions, Page 4. 3. See “Pump Cycles Too Frequently”, below.
Motor runs but delivers no water. (**NOTICE:** Remove priming plug and check prime first.)	1. Pump *in a new installation* did not pick up prime through: a: Improper priming. b: Air leaks. 2. Pump *in an existing installation* has lost its prime through: a: Air leaks. b: Water level below pump suction 3. Jet or impeller is plugged. 4. In line check valve is improperly installed or is stuck closed. 5. Water is frozen in the pipes.	1. For a new installation: a: Reprime according to instructions b: check all coneections on suction pipe. 2. For existing installation: a: Check all connections on suction pipe, jet, and shaft seal. b: Refill water tank; lower suction and reprime. 3. Have jet or impeller cleaned. 4. Check installation; replace valve. 5. Thaw pipes, repair any damage; insulate. **NOTICE:** Allowing pump to freeze voids the warranty.
Pump does not deliver water to full capacity	1. Depth of storage tank is lower than 20’ below pump. 2. Jet or impeller is plugged. 3. Piping is too small.	1. Lower pump; install more powerful pump (to 25’). 2. Have jet or impeller cleaned. 3. Use larger pipe (see Page 3).
Pump does not shut off.	1. Pressure switch is out of adjustment or contacts are inoperable. 2. Faucets have been left open. 3. Jet or impeller is clogged.	1. Adjust or replace pressure switch. 2. Close faucets or valves. 3. Have jet or impeller cleaned.
Pump cycles too frequently	1. Pipe leaks. 2. Faucets or valves are open. 3. Pressure switch is out of adjustment. 4. Air charge is too low on pre-charged pressure tank.	1. Check all piping or connections. 2. Close faucets or valves. 3. Adjust or replace pressur switch. 4. Disconnect power to pump and open faucets until pressure is relieved. Check tank pressure with tire gauge at the tank valve stem. Adjust air pressure to 2 PSI below pressure switch cut-in point. Check air valve for leak; replace valve core.
Air spurts from faucets	1. Pump is priming 2. Leak in suction piping.	1. Pump will deliver a solid stream when it has primed. 2. Check suction piping and repair.

LIMITED WARRANTY

Sta-Rite Industries warrants to the original consumer of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period from the date of original installation or manufacture as noted.

Product	Warranty Period
Water Systems Products – jet pumps, small centrifugal pumps, submersible pumps and related accessories	*whichever occurs first:* 1 year from date of original installation, or 2 years from date of manufacture
Hydro-Flow Filters	1 year from date of purchase
Signature 2000® Fibrewound Tanks	5 years from date of original installation
Pro-Source™ Steel Pressure Tanks	5 years from date of original installation
Pro-Source™ Epoxy-Lined Tanks	3 years from date of original installation
Sump/Sewage/Effluent Products	1 year from date of original installation, or 2 years from date of manufacture

Our warranty will not apply to any product that has been subject to negligence, misapplication, improper installation or maintenance. In the event a three phase submersible motor is operated with single phase power through a phase converter, or if three-leg ambient compensated, extra-quick trip overload relays of recommended size are not used, our warranty is void.

Buyer's only remedy and Sta-Rite Industries' only duty is to repair or replace defective products (at Sta-Rite Industries' choice). Buyer agrees to pay all labor and shipping charges associated with this warranty and to request warranty service through the installing dealer as soon as a problem is discovered. If warranty service is requested more than 30 days after the Warranty Period has ended, it will not be honored.

STA-RITE INDUSTRIES 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 WARRANTY PERIOD PROVIDED HEREIN.

Certain states do not permit the exclusion or limitation of incidental or consequential damages or the placing of limitations on the duration of an implied warranty, therefore, the limitations or exclusions herein may not apply. This warranty sets forth specific legal rights and obligations, however, additional rights may exist, which may vary from state to state.

Supersedes all previous publications.

Sta-Rite Industries, 293 Wright St., Delavan, WI 53115