

Thomson Tec – SPA-150 / SPA-250 MPC Ionizer System

Installation & Operating Instructions



ThomsonTec™
WATER CONDITIONING SYSTEMS TECHNOLOGY

1. Safety Information

Read this entire guide before installing or operating the system.

Keep children away from the equipment unless closely supervised.

Only connect to a **115V or 230V grounded outlet protected by a GFCI**.

Do not use any extension cords.

Do not bury the power cord—keep it protected from damage.

Replace a damaged cord immediately.

The **transformer and flow cell must be installed inside the spa cabinet**.

The controller may be inside or outside the cabinet.

For permanent installations, wire the transformer to run **with the filtration pump cycle**.

No user-serviceable parts. Opening or modifying the controller voids the warranty.

2. What's Included

Controller

Transformer

Flow cell (2" PVC tee)

Copper Silver anode assembly

Wiring harness & connectors

Copper test kit

3. How the System Works

The SPA-150/250 MPC generates **copper and silver ions** that help control algae and bacteria.

It does this by sending low-voltage power to two anodes. The system alternates polarity:

FWD = forward ionization

REV = reverse ionization

This back-and-forth cycle helps keep the anodes clean and releases copper evenly into the water.

The **duty cycle** (1–99) controls how long the anodes are energized.
Higher numbers = more copper produced.
Lower numbers = less copper.

Recommended copper level: **0.25–0.40 ppm**

4. Installation

4.1 Flow Cell Installation (Plumbing)

Install the 2" PVC tee **in the spa's recirculation line**, not the booster line.

Ensure the spa is drained before cutting plumbing lines.

1. Choose a spot with room to cut out **2¼" of pipe** that has easy access to the electrodes later.
2. Cut the pipe leaving enough room to glue in the flow cell and smooth edges.
3. Apply PVC primer to the pipe ends and the flow cell where connection is to be made.
4. Apply PVC glue and insert the flow cell fully on both sides. Hold ~30 seconds.
5. Screw the anodes into the flow cell (do NOT use Teflon tape or glue on the anode assembly).
6. Let the glue cure before filling and check for leaks.

Best location: return line immediately after the filter.

4.2 Controller & Transformer Installation

WARNING: Risk of electrical shock. Always ensure there is no power going to the spa while connecting this unit.

1. Mount the controller where it can be easily seen and reached.
2. Install the transformer **inside the spa cabinet** Transformer enclosure is not weatherproof and must be mounted under the spa skirt.
3. Use the quick-connect plugs to connect:
Controller ↔ Transformer
Connect eyelets from controller outlet to anodes
4. Wire the transformer into the spa controller so the ionizer runs **only when the filtration pump is running**. If your pump has two speeds, run it with the low speed pump.

5. For 230V Transformers Blue wire connects to 230V accessory power, Brown Wire connects to neutral. If unsure, contact a qualified electrician.
 6. For 115V Transformer Connect one Black wire to 115V accessory power and the other black wire to neutral. If unsure, contact a qualified electrician.
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5. Electrical Requirements

115V or 230V AC GFCI-protected circuit

No extension cords

All wiring must comply with local electrical codes

If unsure, contact a qualified electrician

6. System Operation

6.1 Understanding the Display & Buttons

FWD light – forward ionization cycle active

REV light – reverse ionization cycle active

ANODE light – current is flowing between anodes

SET/RESET – starts system or locks in chosen setting

SET DUTY CYCLE – adjusts the duty-cycle number (1–99)

Digital Display – shows the current duty-cycle setting

6.2 Setting the Duty Cycle

1. Press **SET/RESET** → display flashes.
 2. Press **SET DUTY CYCLE** to choose your number (1–99).
 3. Press **SET/RESET** again to confirm.
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6.3 How Duty Cycle Affects Copper Levels

Raising the number increases copper output.

Lowering the number decreases output.

Start-up recommendation:

Begin with your duty cycle high (between 60-75) This will cause your copper level to rise quickly. Test copper level every 30 – 60 minutes until the desired copper level is reached (between .25 and .40ppm). If copper level is too high, there may be turquoise particles visible, or even bluish staining on white surfaces. To lower copper level, drain some water from spa and replace with freshwater.

Once the correct copper level is reached, lower duty cycle to 7

Test copper **daily** and make small adjustments to duty cycle setting until stable at **0.25–0.40 ppm**.

It is recommended to continue to test your copper level weekly and continue to make small adjustments to the duty cycle to maintain the correct amount of copper in your spa.

Once you know the correct number for your spa, you can reuse that setting after every water change.

Repeat start up process after every water change.

7. Water Balance Requirements

This system does NOT replace normal water chemistry. You must still maintain:

Parameter	Ideal Range
pH	7.2 – 7.4
Total Alkalinity	80 – 120 ppm
Calcium Hardness	200 – 300 ppm
Copper	0.25 – 0.40 ppm

8. Oxidizer Requirement

The ionizer sanitizes but does **not** oxidize organics.

Add an oxidizer **once per week or small amounts after each use**, such as:

Non-chlorine shock, **or**

Diluted chlorine added slowly to the spa, **or**

An ozone system (if installed)

9. Maintenance

9.1 Anode Cleaning

If the system output drops or the ANODE light is no longer on, the anodes may be coated with calcium. This depends on the quality of the water in the tub and may not occur in all application

1. Unplug the system.
2. Disconnect the anode leads.
3. Remove the anodes from the flow cell.
4. Stand them in ~1" of **muriatic acid** *for a few minutes*.
5. When fizzing stops and the coating is gone, remove.
6. Rinse in a **baking soda solution** to neutralize acid.
7. Rinse in clean water, reinstall, reconnect wires, and restart system.

Wear gloves, eye protection, and protective clothing when handling acid.

Alternatively you may use a wire brush to remove build up, or thin pick to remove build up from between the anodes.

10. Troubleshooting (Simple Guide)

Problem	Likely Cause	Fix
Copper too high	Duty cycle too high	Lower setting
Copper too low	Duty cycle too low	Raise setting
No lights on controller	No power / bad outlet	Check GFCI, outlet, transformer plug
ANODE light off	Anodes dirty	Clean electrodes
FWD/REV lights don't alternate	Controller not running cycle	Press SET/RESET

11. Warranty & Support

Do not open the controller — no internal serviceable parts.

Warranty is void if the unit is tampered with or modified.

For service or support contact:

Thomson Tec LLC

1-800-646-2224

Email: sales@thomsontec.com