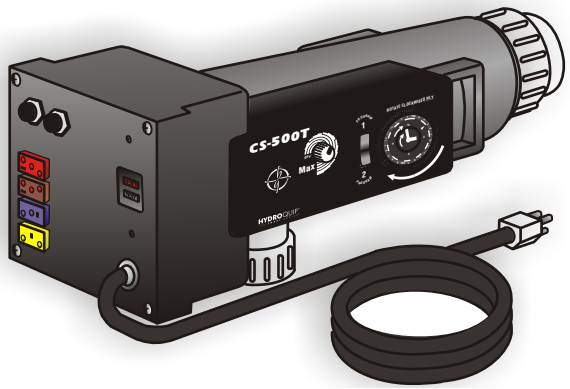
HYDROQUIP™

AIR SERIES

SYSTEM OPERATION MANUAL

THE SMART CHOICE™



MODELS: CS300, CS500 & CS800

CONTENTS

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS

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

WARNING - RISK OF CHILD DROWNING. Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use a spa or hot tub unless they are supervised at all times.

DANGER To reduce the risk of injury to persons, do not remove suction fittings.

- Spa location must accommodate sufficient drainage of water around the base of the structure, as well as the power source compartment.
- Prolonged immersion in water that is warmer than normal body temperature can result in a dangerous condition known as HYPERTHERMIA. The causes, symptoms, and effects of hyperthermia may be described as follows: Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6°F. The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include (1) unawareness of impending hazard, (2) failure to perceive heat, (3) failure to recognize the need to exit spa, (4) physical inability to exit spa, (5) fetal damage in pregnant women, (6) unconsciousness resulting in danger of drowning. WARNING The use of alcohol, drugs or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.

DANGER - RISK OF ELECTRICAL SHOCK. Install at least 5 feet (1.5m) from all metal surfaces. (A spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a solid copper conductor attached to the wire connector on the terminal box that is provided for this purpose. Refer to NEC and local codes in effect at the time of installation.)

- A pressure wire connector is provided on the control box to permit connection of a solid copper bonding conductor between this point and any equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit as needed to comply with local requirements.
- Bond accessible metal to the dedicated connector on the equipment grounding bus, bond the equipment ground bus to the local common bonding grid as part of the installation in the form of (1) a reinforced concrete slab for support, (2) a ground plate provided beneath the hot tub or spa, or (3) a permanent ground connection that is acceptable to the local inspection authority.

DANGER RISK OF ELECTRICAL SHOCK. Do not permit any electrical appliance, such as a light, telephone, radio, or television, within 5 feet (1.5m) of a spa or hot tub.

To reduce the risk of injury:

- The water in a spa or hot tub should never exceed 104°F (40°C). Water temperatures between 100°F (38°C) and 104°F (40°C) are considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding 10-15 minutes) and for young children.
- Excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit spa or hot tub water temperatures to 100°F(38°C).

Before entering the spa or hot tub, the user should measure the water temperature with an accurate thermometer.

The use of alcohol, drugs, or medication before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.

Persons suffering from obesity or with a medical history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a spa or hot tub.

Persons using medication should consult a physician before using a spa or hot tub since some medication may affect heart rate, blood pressure, and circulation.

For Units with a GFCI (Ground Fault Circuit Interrupter)

This appliance is provided with a ground-fault-circuit-interrupter located on the control box. Before each use and with the unit operating, push the test button. The unit should stop operating and the reset button should appear. Push the reset button. The unit should now operate normally. If the interrupter does not perform in this manner, a ground current is flowing indicating the possibility of electrical shock. Disconnect the power, or unplug from receptacle, until the fault has been identified and corrected.

For Cord and Plug Connected Units

Connected to a grounded, grounding type receptacle only. NEVER connect the spa to an extension cord.

Do not bury the cord.

WARNING To reduce the risk of electrical shock, replace damaged cord immediately.

For Permanently Installed Units

A terminal marked “G” or “ground” is provided in the wiring box located inside the equipment compartment. To reduce the risk of electric shock, connect the terminal or connector to the grounding terminal of your electrical service or supply panel with a continuous green insulated copper wire in accordance with National Electric Code Table 250-95 and any other local codes in effect at the time of the installation.

For Permanently Installed Units not Provided with an Internal Disconnecting Method

The electrical supply for this product must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors to comply with Section 422-30 of the National Electric Code, ANSI/NFPA 70 1987. The disconnecting means must be readily accessible to the tub occupant but installed at least 5 feet (1.5m) from the tub water.

For Units with Gas Heaters

WARNING - Do not install indoors. This unit uses a gas heater that requires proper ventilation and is intended for outdoor use only.

For UL Listed Equipment Assemblies

Install at least 5 feet (1.5m) from tub water using nonmetallic plumbing. Install blower no less than 1 foot (305mm) above the maximum water level to prevent water from contacting electrical equipment. Install in accordance with the installation instructions.

To reduce the risk of drowning from hair and body entrapment, install a suction fitting(s) with a marked flow rate in gallons-per-minute that equals or exceeds the flow rate marked on the equipment assembly.

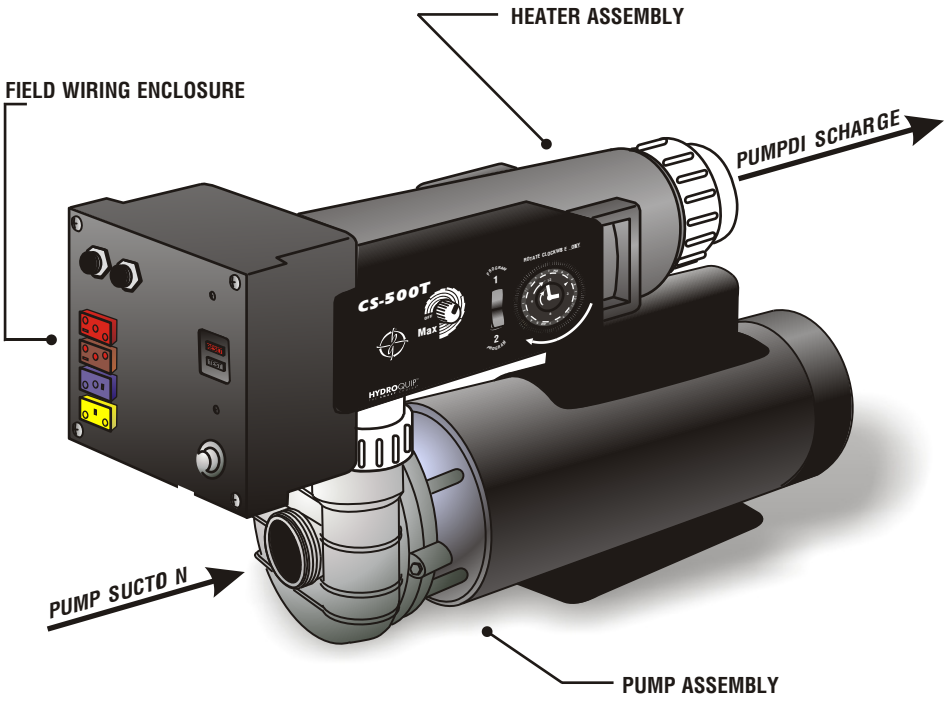
INTRODUCTION

Congratulations on your new purchase. ***Hydro-Quip*** *Equipment & Control Systems are constructed of the finest materials and assembled under the strictest quality control standards. With proper care and maintenance your system will provide you with many years of reliable performance.*

The following pages contain information concerning the operation and care of your system.

(Note: Your Control may differ from the illustration below although the basic operation and configuration will be the same.)

Major Components

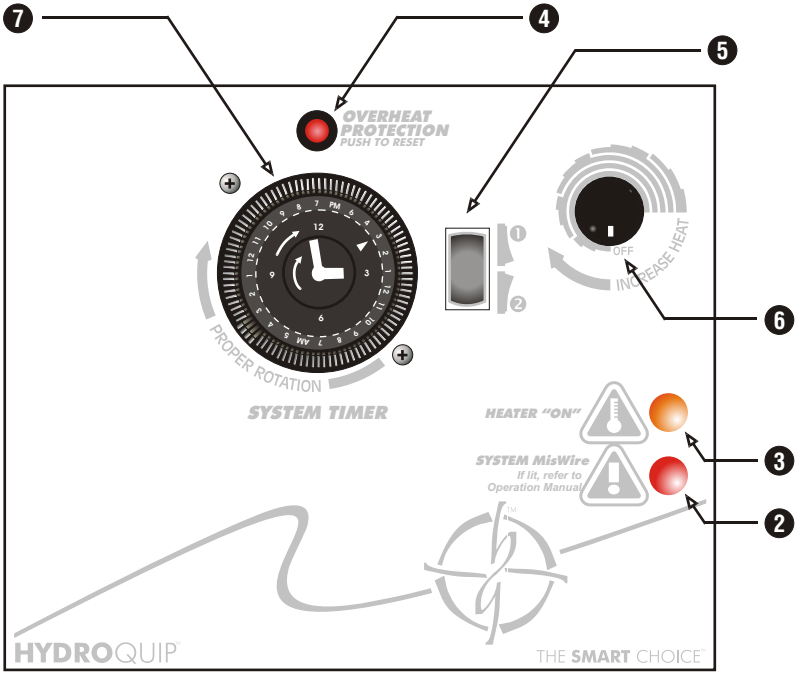


Note: Your Heater & Pump may be positioned differently than what is shown above.

SYSTEM OPERATION

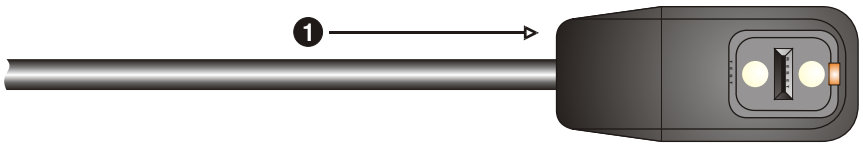
Note: Your particular control may look different than these illustrations though the operation is the same.

Refer to the following pages and the number that corresponds with the number shown in these illustrations for detailed instructions.



FRONT PANEL

Note: Your front panel and layout may differ from the illustration above. This illustration is meant to be a guide only.



1 GROUND FAULT CIRCUIT INTERRUPTER (OPTIONAL)

The GFCI is a mandatory electrical safety device required for all portable spas and hot tubs as specified in the National Electrical Code Article 680. The GFCI is designed to provide protection against potential electrical shock hazard should a ground fault occur.

The installation of a properly sized Ground Circuit and Bonding Circuit is still required as detailed in the Installation Manual. The GFCI in your particular installation may be installed at the electrical service panel, a separate sub-panel or a cord-attached GFCI built into your Hydro-Quip spa contol system.

Systems with a cord-attached GFCI meeting the code requirements will be marked on the top of the control panel with identification label.

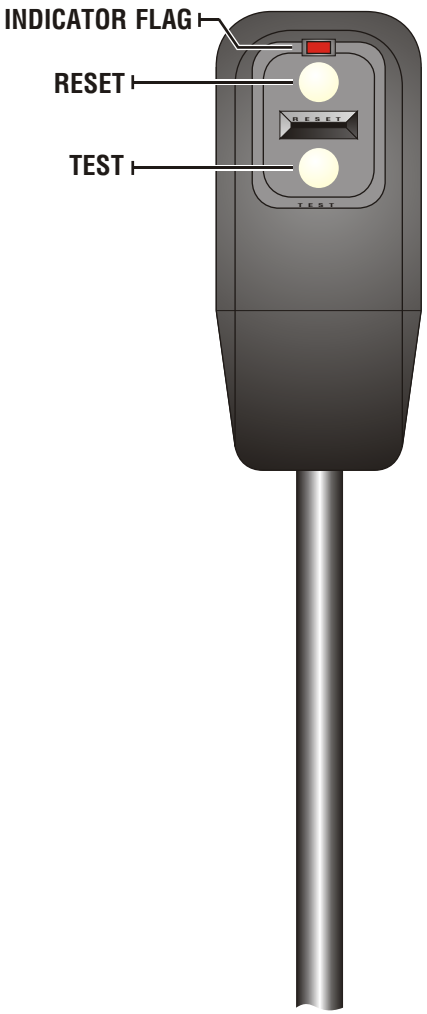
It is necessary to test the GFCI before each use and at least monthly when the spa or hot tub is not being used regularly.

Test the device in the following manner:.

- Push the **"TEST"** button; there should be an audible "click", which will disconnect the power to the system. The **"RED"** indicator flag will go away.

CAUTION - if the GFCI fails to operate in this manner, do not use the spa until a qualified technician has corrected the problem.

- To restore power, press the **"RESET"** button in. The **"RED"** indicator flag will reappear and power to the spa will be restored.



2 SYSTEM MIS-WIRE (OPTIONAL)

This indicator light is a diagnostic tool for the installing electrician. If the system Mis-Wire light is illuminated, this is an indication that L1 or L2 has been connected to the Neutral input. This must be corrected before the circuit will allow operation of the equipment. Once corrected, the circuit will automatically reset and the light will go out.

3 HEATER "ON" INDICATOR

This indicator light activates when the heater is "on". It is a diagnostic tool for service technicians.

4 SYSTEM OVER TEMPERATURE

The purpose of this device is to shut off the equipment if the water temperature reaches 117°F. After the water cools sufficiently, push in to reset.

Note: If the switch trips repeatedly, do not use the spa until the problem has been identified and corrected by a qualified technician.

5 MODE SELECTION

The System Timer operates in one of two modes. Select the mode that best suites your needs.

PROGRAM MODE 1 - The system timer will activate the low speed of the jet pump, filtering the water while the pump is running. The water will be heated according to the thermostat setting only while the timer is on. ***While the timer is off heating and filtration will not occur.***

PROGRAM MODE 2 - Operation is the same as PROGRAM MODE 1 except that while the timer is off, the thermostat will maintain the water temperature by automatically cycling the pump and heater on as needed.

Mode Selector Switch

1 - Timed Heat, Timed Filtration
2 - Thermostat Heat, Timed Filtration

OR

A - 24-Hour Operation
B - Thermostat Control

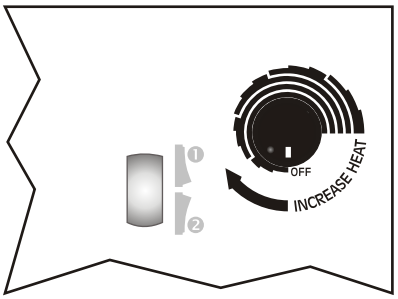
6 THERMOSTAT SETTING

The Thermostat regulates the water temperature in your spa. It is located on the front panel of the control box or on the optional deluxe Spaside Control. Some spas may have both types.

NOTE: When operating a spa that utilizes two thermostats, set the one not being utilized, fully counterclockwise.

Rotating it fully clockwise will activate the heater and allow a maximum temperature of approximately 104°F. A full counterclockwise rotation will shut off the heater.

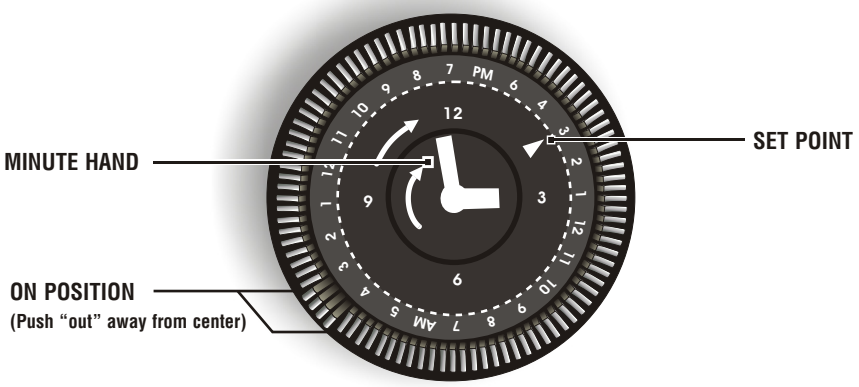
Do not expect to feel hot water coming out of the jets while the heater is operating. Refer to "Heater Operation" for information on heat rise.



System Mounted Thermostat

Spaside Control Thermostat

7 SYSTEM TIMER (SETTING FILTRATION)



The system timer provides the most efficient and reliable method to filter and heat your spa by activating the low speed of the jet pump during user selectable time periods. Each tripper represents 15 minutes.

Setting the Time

Carefully rotate the minute hand clockwise until the appropriate time setting is achieved. Be sure the set point is correctly indexed to reflect AM/PM.

WARNING - Do not set time by rotating outer dial. Do not rotate minute hand counterclockwise.

Set the operating times to provide filtration and/or heating for the number of hours per day recommended by your spa manufacturer. We recommend at least two daily operating periods of not less than 1 hour each and spaced no more than 12 hours apart.

Heavy usage of your spa may require longer periods to maintain water clarity and/or heat. Be sure to set your system timer accordingly.

If you happen to live in an area subject to extreme cold weather conditions, your dealer may recommend that you operate your spa on low speed continuously. This can be accomplished simply by setting all of the trippers to the "On" position.

We recommend leaving your spa set to PROGRAM MODE 1 for the most energy conservative operation. This mode will allow you to set operating periods during non-sleeping hours or during low cost energy periods.

We recommend PROGRAM MODE 2 for initial heating of your spa and if you wish the spa to be ready for your enjoyment at any time of the day.

You do not need to change or override the timers to utilize the jet or blower modes. Timers control only the low speed heat mode.

HEATER OPERATION

Your control system may have a convertible heater (120 volts; or 240 volts). Refer to the system data label to determine which, if any, convertible options are available to you. The heater configuration was set at the factory and may have been changed by your installer.

A covered, 300-gallon spa will experience a heat rise approximately as detailed below.

Your system will operate with one of the following configurations:

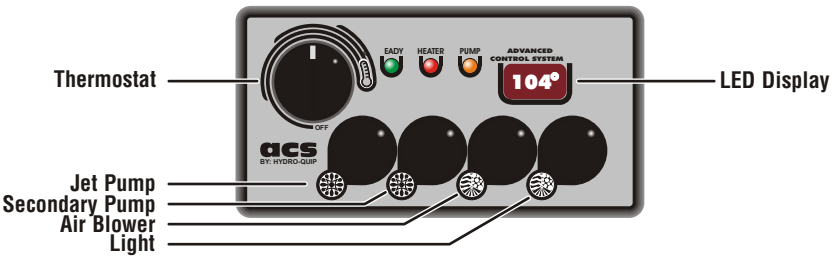
120 Volts - The heater will operate on demand at 1500 Watts during low speed pump operation. It will automatically shut off when the high-speed pump or blower is activated. You can expect a heat rise of 1°F to 2°F per hour.

240 Volt - The heater will operate on demand at 5500 Watts during high and low speed pump operation. It will continue to operate when the blower is activated. You can expect a heat rise of 6°F to 8°F per hour.

SPASIDE CONTROL (OPTIONAL)

The optional Spaside Control consists of control buttons for activating the equipment, a thermostat and indicator lights (Deluxe models will include an LED temperature readout).

Depending on how your spa is optioned, it will normally have 2 to 4 control buttons. They usually control the Jet Pump, Secondary Jet Pump, Air Blower and Light.



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