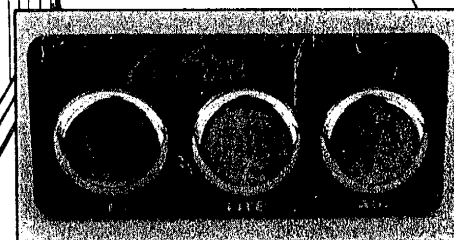
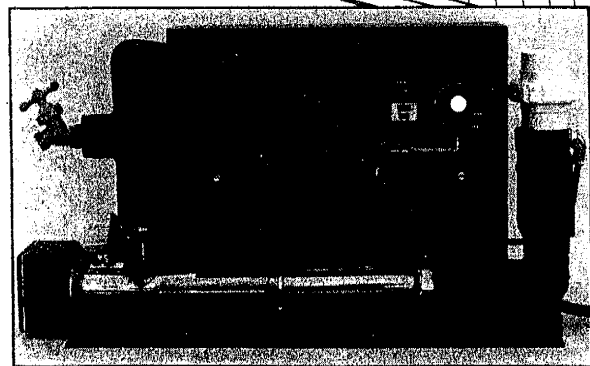
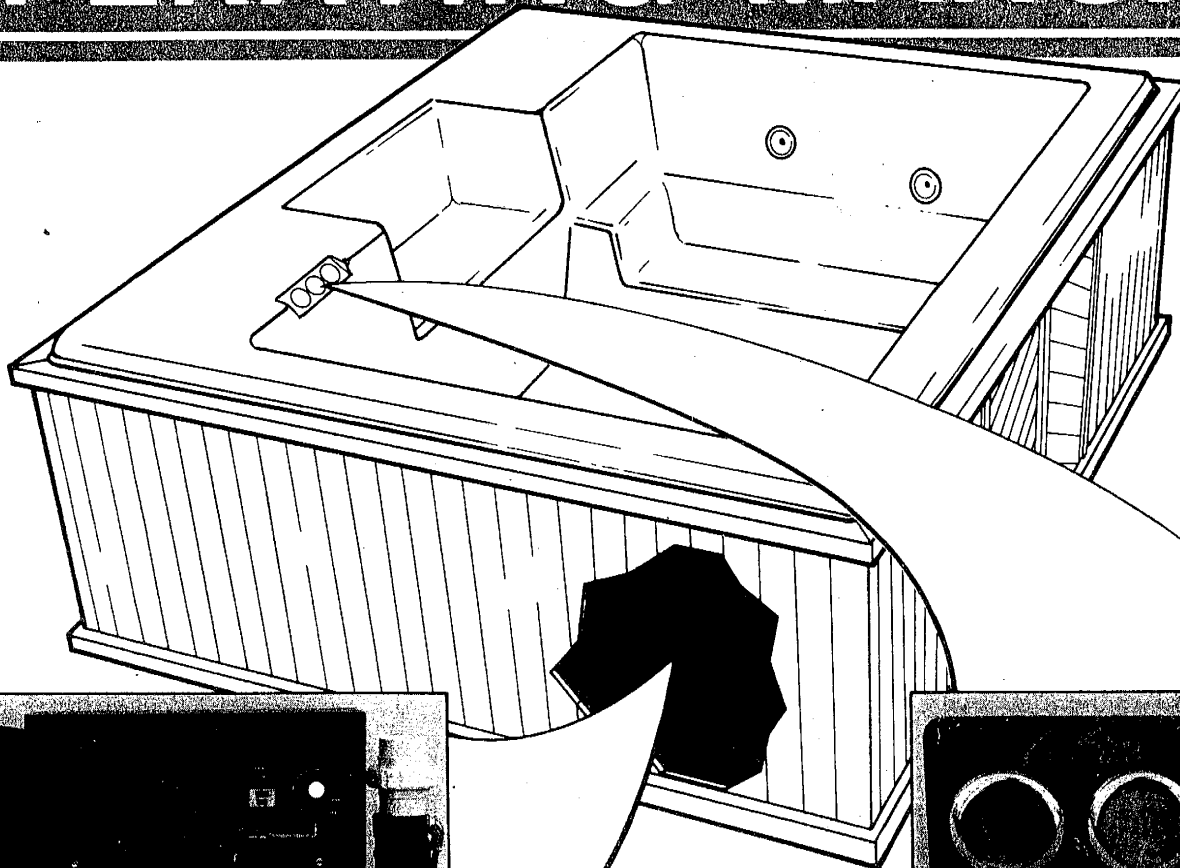


# PORTABLES

85

## INSTALLATION AND OPERATING MANUAL

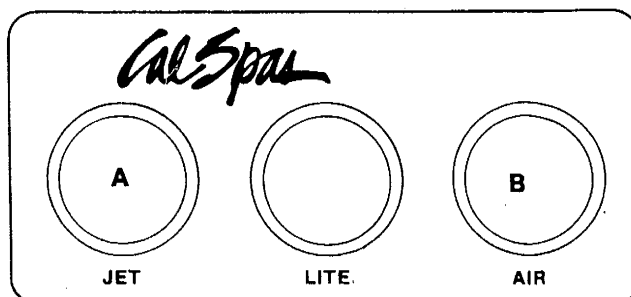


California Acrylic Industries, Inc.



## GLOSSARY OF TERMS

- MAIN DRAIN:** During the operation of the equipment the main drain works in conjunction with the skimmer to return water to the filter along with the surface and bottom debris, keeping the spa sparkling clean.
- SKIMMER:** This is the rectangular outlet at the water level. The skimmer moves surface debris to the filter. The water level in the spa should be kept at the center of the skimmer for best operation.
- RETURN INLET:  
(HYDROJETS:)** After passing through the filter line and heating equipment, the water is returned to the hydro jets. This aids in the circulation of the surface water and helps keep the spa clean.
- PUMP:** The pump draws water from the main drain and skimmer and pushes it through the filter and heater returning to the spa through the return inlet and/or the hydrojet(s).
- FILTER:** The filter cleans the spa by passing the water through a filtering system where debris and impurities are removed. Read the manufacturer's recommendations for cleaning and servicing. The filter should operate a minimum of one hour per day.
- HYDROJETS:** Works with water which causes a venturi action to suck in ambient air to provide healthful spot massage and jet action.
- HEATER:** The thermostatically controlled heater raises the temperature of the water to a desired degree. Most people prefer a 95 to 105 degree range. The rate of heating varies depending on the size of heater. For example: 2-3 degrees with 110v-system and 5-10 degrees with 220v system.
- THERMAL CYCLE:** The thermal cycle automatically turns on the pump, filter, and heater. This automatic thermal cycle is thermostatically controlled and will allow for a minimum of one hour per day of operation even if the spa is not used.
- AIR BLOWER:** The air blower supplies air to the small holes in the lower portion of the spa, creating the hydro massage action. The blower works independently of the pump, filter, and heater.
- AIR CONTROL VALVE:** Mounted generally on the top portion of the spa and regulates the amount of air going to the jets. It is recommended these be closed when spa is not operating. Open valves reduce heating efficiency.
- AIR CONTROL BUTTON:** Mounted generally on the top portion of spa. Buttons are used to select modes of operation (A) Jets (high pump) (B) Air (blowers). NOTE: low pump and low heat are automatically controlled by thermostat.



SPA CONTROL PANEL

Read all instructions carefully and completely before installation. Incorrect installation of the spa may void the warranty. If you have any questions that are not explained in this manual, consult your spa dealer. Consult your local building department for any permits you may need, i.e., plumbing, electrical, etc. Some areas may require a swimming pool or building permit.

## A. GENERAL INFORMATION

1.0 SPA PLACEMENT — Consider the following suggestions when deciding a site for your Cal-Spa:

- a. AESTHETICS — Select a location that enhances the overall aesthetics of your home and landscape.
- b. LOCAL CODES — Check local codes pertaining to fences, gates, and electric prior to locating your spa.
- c. PRIVACY AND WIND SHIELDING — Consider how your spa will be used and how wind will affect the water temperature. Also, consider view and/or non-view from the house.
- d. SPA MAINTENANCE — Locating the Spa directly under trees means physically removing leaves and debris from the tub. A cover will considerably reduce this chore.

1.1 ELECTRICAL SERVICE — Remember, your spa requires a 110 volt, 20 amp, (Model 110) or a 220 volt, 40 amps (Model 220) grounded electrical circuit to operate SAFELY AND EFFICIENTLY:

- a. To install the 110 volt system, you should plug directly into a grounded 110 volt 20 amp dedicated receptacle.
- b. To install the 220 volt 40 amp system, you must contact a licensed electrical contractor to install the SPA unit, as improper installation could cause damage to not only your property, but result in serious harm to yourself or friends.

NOTE: INSTALLATION OF YOUR SPA — Select a flat, level area for placement of your spa. The surface must be concrete. Your Cal-Spa is completely self supporting when placed on a solid foundation and does not require any type of structural support.

2 GENERAL OPERATING INSTRUCTIONS — Your Cal-Spa is designed and constructed using the finest materials and workmanship, and will provide you with years of satisfactory performance, with a minimum of effort on your part. The following operating and maintenance instructions are very important and must be carefully followed to insure that the spa provides you with the greatest satisfaction.

- a. All portable and inground spas include a filter, heater, pump, and blower. The warranty card should be promptly completed and returned to the manufacturer since this may be a requirement for warranty coverage. Regardless of specific supporting equipment, the following procedures must be followed.
- b. The pump and filter will automatically operate about two hours each day to keep the spa clean, and in areas where the wind blows excessively, you should operate the booster pump about 1/2 hour for added filtering.
- c. The pump and heater are thermostatically controlled. This will allow the spa to be ready to climb into without any further effort on your part. The length of time required to heat the spa to the desired temperature (usually about 90° F to 101° F) will vary depending on heater size, season, water temperature, wind velocity, etc. Therefore this is something each owner must determine and adjust to his personal needs. We highly recommend using a thermal blanket and/or vinyl hard cover, available from your spa dealer, to minimize heat losses when your spa is not in use.
- d. EXCEPTIONS: Time clock models must be programed for heating and prolong time.

## GENERAL INFORMATION (Continued)

- e. Operating the air blower should be limited to when the spa is being used. Continuous operation allows excessive heat loss, and dissipates chlorine.
  - f. The filter is the replaceable cartridge type. A routine cleaning of the cartridge is the best practice. Make sure pump is off, remove the cartridge, wash it off with a water hose and re-assemble. Be careful not to overtighten filter console. This should be done on a routine basis, whether you think it really needs it or not. A routine cleaning is important.
  - g. Keep the spa filled to approximately the center of the skimmer. Never allow the water to drop below the bottom of the skimmer opening. This will allow air into the main water line to the pump, causing it to lose its prime (water flo). Running without water will damage the pump seal assembly.
- 1.3 SKIRTED SPAS — Listed below are some items that a portable buyer should definitely be familiar with:

- a. Portable spas require a solid flat foundation underneath. (concrete)
- b. 110 Volt portable spas must be on a 20 amp circuit with no other items.
- c. Extension cords should not be used. If you cannot get by with the existing cord that is supplied, phone us for advice.
- d. 220V unit must be hard wired into a double 40 amp breaker, direct from your electric main.
- e. Ground fault interrupters are supplied with all 110v portables. If you have a problem with the GFI popping, there is a good chance that it is a fault of the equipment.
- f. If your spa has a redwood skirt keep it oiled with any suitable oil. We use linseed oil initially.
- g. Water chemistry is especially important for portables. Try to keep it right. It is best to add chemicals with the air blower only on for about 15 minutes, after you have used the spa, or 2 hours prior to use. Do not add chemicals when in use. "DO NOT USE ACID". This will void your warranty.
- h. Heaters require both a proper thermostat setting and sufficient flow of water through the heater element to work. If you have a dirty filter it is quite possible that the heater element will not function.
- i. Pump failure is most commonly caused by pump cavitation caused by a lack of water supply. This can be caused during the filling (trapped air pocket) or draining (water level becomes too low). See Pump Priming Section.
- j. The following steps will help lower operating costs and conserve energy: Use high speed pump mode to operate jets, only when Spa is being used. The same is true for the air blower since the bubble action and surface agitation increases heat loss. A suitable cover for your Spa will prevent excessive heat loss. NOTE: Keep the spa covered at all times with an approved cover except when it is in use.
- k. Air switch modes are as follows:

110v	220v
1st mode --- low speed pump-heater	--- Low speed pump-heater
2nd mode --- high speed pump	--- High speed pump-heater
3rd mode --- blower	--- Blower-heater
4th mode --- high speed pump-blower	--- Pump-blower-heater

### NOTES

- l. When jets and air are off/thermostat will turn low pump on and off to maintain temperature.

### EXCEPTIONS

- m. Time clock models must have running and heating time programmed on the clock. (220 only)

## 2.0 PERSONAL SAFETY AND HEALTH CONSIDERATION:

- a. Each person's body and circulation system has different tolerances and responds differently to warm/hot immersion. The amount of time that safe, health soaking and therapeutic use of Spas or Hot Tubs will vary. Most people in good health find a water temperature of about 102°F to be satisfying and limit time in water at his temperature to 20-30 minutes. Use of alcoholic beverages and certain medications may affect the way your body system reacts to warm/hot water immersion. Consult your physician for recommendations.
- b. Always check water temperature with a thermometer. Do not get into Spa if water temperature is above 104°. Prolonged immersion in water at temperature above 100°F may be detrimental to the health of the user. Before using your Spa, consider your present state of health, medical history and age. Consult your physician for recommendations.
- c. Water chemistry is very important. Consult your dealer as to the proper chemicals to use in your Spa or Hot Tub. For maximum enjoyment and longer equipment life, refer to your chemical guide. Periodic draining of your Spa is highly recommended. Do not use acid (or any based product, I.E. Tri-Chlor) to adjust pH as this will damage your spa finish and corrode your heater.

## 3.0 SAFETY INSTRUCTIONS:

- a. Always check water temperature with a thermometer. Water temperature above 104°F may be detrimental to the health of the user. Before using your Spa, consider your present state of health, medical history and age. Consult your physician for recommendations.

Spas and Hot Tubs should not be used by persons under the influence of alcohol or medication inducing drowsiness.

Never touch or come in contact with any electrical accessory when in your Spa or when your body is wet.

Prior to perform any service to the Cal-Spa Pack, turn off ALL power to the system at the main power source breaker.

- b. Never turn Equipment Pack on unless Spa is filled with water to the center of skimmer.

The following steps will help lower operating costs and conserve energy: Use high speed pump mode to operate jets, only when Spa is being used. The same is true for the air blower, since the bubble action and surface agitation increases heat loss. A suitable cover for your Spa will prevent excessive heat loss. NOTE: Keep the spa covered at all times with an approved cover except when it is in use.

If Spa is to be drained and left unattended for an extended period, turn off breakers. Replace cover and secure.

National Electrical Code requires A.G.F.C.I. on all outdoor electrical receptacles. Consult your licensed contractor to make sure your hook-up complies with these local codes.

# NO ACID

Tri-Chlor or Algecide Solution  
They ruin Acrylic SPAS

## SET-UP AND DELIVERY GUIDELINES:

### 4.0 GETTING READY FOR DELIVERY AND SET-UP OF YOUR NEW CAL-SPA:

Listed herein is a checklist of CUSTOMER REQUIREMENT AND RESPONSIBILITIES required for delivery and set-up of your new portable spa.

### 4.1 ELECTRICAL REQUIREMENTS:

- a. All 110vac portable spas require an ISOLATED (No other appliances or lights on this circuit at any time) 120 volt, 20 amp GROUNDED outlet within 10 feet of where spa is to be located.
- b. All 220vac portable spas require a dedicated (hard conduit) service directly from a branch breaker of 40 amps (minimum), GROUNDED.
- c. NO EXTENSION CORDS are to be used in conjunction with the operation of the spa. Low voltage damage could result, which is not covered by warranty.
- d. All electrical must be to NEC (National Electric Code) and any pertaining local electric codes.
- e. If you have any doubts, have your circuit checked by a qualified and licensed electrician.

### 4.2 SURFACE AND PAD REQUIREMENTS:

- a. Your new portable spa should be placed on a uniformly firm and level concrete pad. Alternate decking methods require approval.
- b. If your spa is to be located near where sprinklers may hit, adjust or cap them so as not to hit the skirt or equipment.

### 4.3 ACCESS AND CLEARANCE:

- a. All portable spas require 30 to 42 inches of clearance through gates, between house and side fences, around corners and 7-1/2 to 9/12 feet of overhead clearance, depending on size of unit.
- b. Restricted clearance, second story or balcony locations that would require a crane or other special equipment or devices is at the expense of the customer.
- c. All debris, limiting or blocking access to or on set-up location must be removed prior to delivery.
- d. Delivery crews do not trim trees or bushes, move debris or perform other general maintenance in order to set up the spa.

### 4.4 REQUIREMENTS FOR DECKING, FENCES, GATES AND BALCONIES:

- a. Decking must be constructed to support 150 pounds per square foot.
- b. Gates must be self-closing and self-locking (California requirements).
- c. Balconies must be constructed to current state and local codes (spa load requirements are 150 pounds per square foot).

## MAINTENANCE OF YOUR SPA:

### 5.0 GENERAL MAINTENANCE:

- a. ACCESS TO ELECTRICAL EQUIPMENT — The power-pak system is located under the wood skirt. The equipment can be service by simply lifting the side panel up and outward. The service panel should always be replaced and secured prior to operation.
- b. SPA WATER MAINTENANCE — You should drain your spa at least every 2 to 3 months. Between this period you should chemically treat the water for a clean, healthy spa.



## 5.0 GENERAL MAINTENANCE (continued)

c. **USE OF SOLAR BLANKET AND/OR COVER** — A solar blanket is an optional item for use with your spa, but the solar cover is essential for proper temperature control and efficient operation. In addition, it keeps the spa clean as well as holds the heat. It is highly desirable and is available from your dealer. It has been proven that a cover saves considerable energy costs.

d. **CLEANING YOUR SPA** — When spa is drained, you may want to clean it. Use a liquid cleaner that contains no abrasives. Such cleaners would be, for example: 409 Fantastic, Spa Gloss. **DO NOT** use a cleanser or hard brushes. A light detergent could be used.

e. **WINTERIZING** — In areas of the country where the temperature goes below 32 degrees, follow these steps:

Step 1. If spa is not to be used, drain completely and store in garage.

Step 2. If you are going to use the spa, set in "Heat" mode and spa will stay warm. **DO NOT TURN UNIT OFF** or frozen water may burst plumbing.

f. **DRAINING SPA** — Do not empty spa below drain fitting or loose prime to pump because these condition will damage pump and void warranty.

(a) Turn thermostat counter clockwise to "OFF" position.

(b) Attach garden hose to outdoor hose fitting located on equipment package.

(c) Plug off skimmer with 1½" plastic plug to maintain prime when water level drops below skimmer.

(d) Press sequence button to pump mode. Water will flow out of garden hose.

(e) Watch water level! When water level is just above drain fitting, turn power off or the water pump will cavitate.

(f) Siphon out balance of water.

g. **PUMP PRIMING** — The water pump is the heart of a spa and it is essential that the pump is operated correctly to prevent serious damage to your equipment. Therefore, knowing how to prime your pump and maintain the pump prime is very important.

Pump priming or cavitation are characteristic by the formation of air pocket at the inlet of the pump which in turn prevents the pump from pushing water through the power-pak. This condition can damage the pump or heater assembly. These air pockets are formed by: 1) trapped air during initial filling, 2) spa water level dropping below the skimmer and, 3) water level dropping below the suction fittings during draining (see spa maintenance section).

When the pump is not primed, the following characteristics are present:

(a) No water jet action.

(b) Jet stream "sputters" with a "crackling" noise sound.

When these conditions occur you should refer to priming instructions.

### CAL SPAS CHEMICAL GUIDE

With the purchase of your spa or hot tub, you have made an important investment. We at Cal-Spas are dedicated to helping you protect that investment. With Cal-Spas proper start up and Cal-Spas program, you can keep your spa water looking beautiful, clean and safe. Cal-Spas Start Up Kit is just what you need. Packaged in a handy suitcase design with handle, it contains a SPA CHLORINE, BROMINE CARE, SPA CARE STAIN AND SCALE INHIBITOR, SPA BRIGHT CARE CLARIFIER, FOAM-FREE.

### WARNING

Absolutely do not purchase chemicals from a local pool supply store which are anything different from what we recommend. Pool supply stores are trained to treat large volumes of pool water in non-Acrylic finishes. They will try to sell you "Acid" or "PH Down" to lower the "PH" level. This will ruin your Acrylic Spa finish. If your "PH" level gets too high, simply empty the water and refill with fresh water.

## TO START SPA WATER OFF

Add 3 level tablespoons per 250 gallons of water of SPA CARE STAIN AND SCALE INHIBITOR will extend chlorine and make clarifier work better. Stops scale and iron stain, and adds sparkle and polish to the spa. Slows metal corrosion on spa equipment, and chelates calcium, iron, and copper.

Add 3 level tablespoons per 250 gallons of water of BROMINE CARE to spa water. BROMINE CARE enhances the use of chlorine, and allows you to use less chlorine.

## SPA CHEMICALS AFTER START

To make a simple and easy spa chemical program, the following is recommended.

### CHLORINE RESIDUAL

Spa granules should be added daily, or as necessary to maintain 2 to 3 ppm free chlorine. The spa granules should be broadcast over the surface of the water. Add one-half (1/2) ounce of dry spa granules every day. Should your spa water turn yellow, you are using too much chlorine, cut the amount in half and let your spa sit for two (2) days. Your water will turn clear again.

*\*\*NOTE: Heavy bather usage, or the use of oils and lotions may increase the chlorine demand, and call for more frequent water changes.*

### SPA CARE STAIN AND SCALE INHIBITOR

Add three (3) level tablespoons per 250 gallons of water of SPA CARE. REPEAT EVERY TWO WEEKS.

Add three (3) level tablespoons per 250 gallons of water of BROMINE CARE. REPEAT EVERY TWO WEEKS.

### SPA BRIGHT CARE CLARIFIER

Use when spa water is cloudy or murky. For portable spas or spas up to 500 gallons, use two (2) ounces. Add directly to spa.

### FOAM FREE

Highly effective anti-foaming agent developed for spas and hot tubs. Shake well before using. Simply add two caps of FOAM FREE DIRECTLY TO SPA. Use as often as needed.

### GENERAL MAINTENANCE AND CLEAN UP PROBLEMS

Drain and clean your spa every three (3) months, polish, and refill.

### CAL-SPAS PORTABLE SPA MAINTENANCE KIT

Has just what you need, packaged in a handy suitcase design with handle. Your package includes:

1. CAL-SPAS SPA CLEANER (1 pint) Cleans, removes scale, lime, rust deposits, dirt, and grease from Gelcoat, Acrylic, and Rovel Spas.
2. CAL-SPAS VINYL CARE (1 pint) Cleans, shines, softens, and preserves vinyl spa and hot tub covers with a formula that will protect your cover from chlorine, algae, mildew, and the sun's harmful ultraviolet rays.
3. CAL-SPAS WOOD CARE (1 pint) Protects and enhances the natural beauty of your portable spa's wood cabinet with a formula that repels water, and helps prevent warping, decay, and fungi stains.



4. CAL-SPAS FINISH CARE (1 pint). A protectant coating containing cleaners specifically formulated to remove old wax, oxidized surface dirt, and grime from spas. An added bonus of SPA FINISH CARE is a beautiful high finish that minimizes water spotting.

5. CAL-SPAS FILTER CARE (1 pint). Concentrated 50% stronger than most cleaners and will clean up to 55 square feet of cartridge area.

6. SPA SCRUBBER WITH HANDLE.

7. RUBBER GLOVES for cleaning spa surface and cleaning filters.

#### BROMINE CARE

Chlorine was developed primarily for swimming pools. Due to elevated water temperatures, bromine served as a more effective disinfectant with chlorine or an oxidizer to activate the bromine.

#### BENEFITS OF BROMINE CARE

1. Less bromine boiling off. Ideal for enclosed areas. Controls odors.
2. pH control. The pH level does not have to be adjusted regularly like chlorine. If water is balanced with bromine, very little adjustment is needed.
3. Corrosiveness. Bromine Care is less corrosive to copper tubing, heaters, pumps and spa covers.
4. Stops irritation. Bromine Care will not dry out skin. You feel more comfortable after using your spa.
5. The cost of Bromine Care is equivalent to chlorine but has many more benefits.

#### HOW TO USE BROMINE CARE

Add six (6) level tablespoons per 250 gallons of water of Bromine Care to start spa water off.

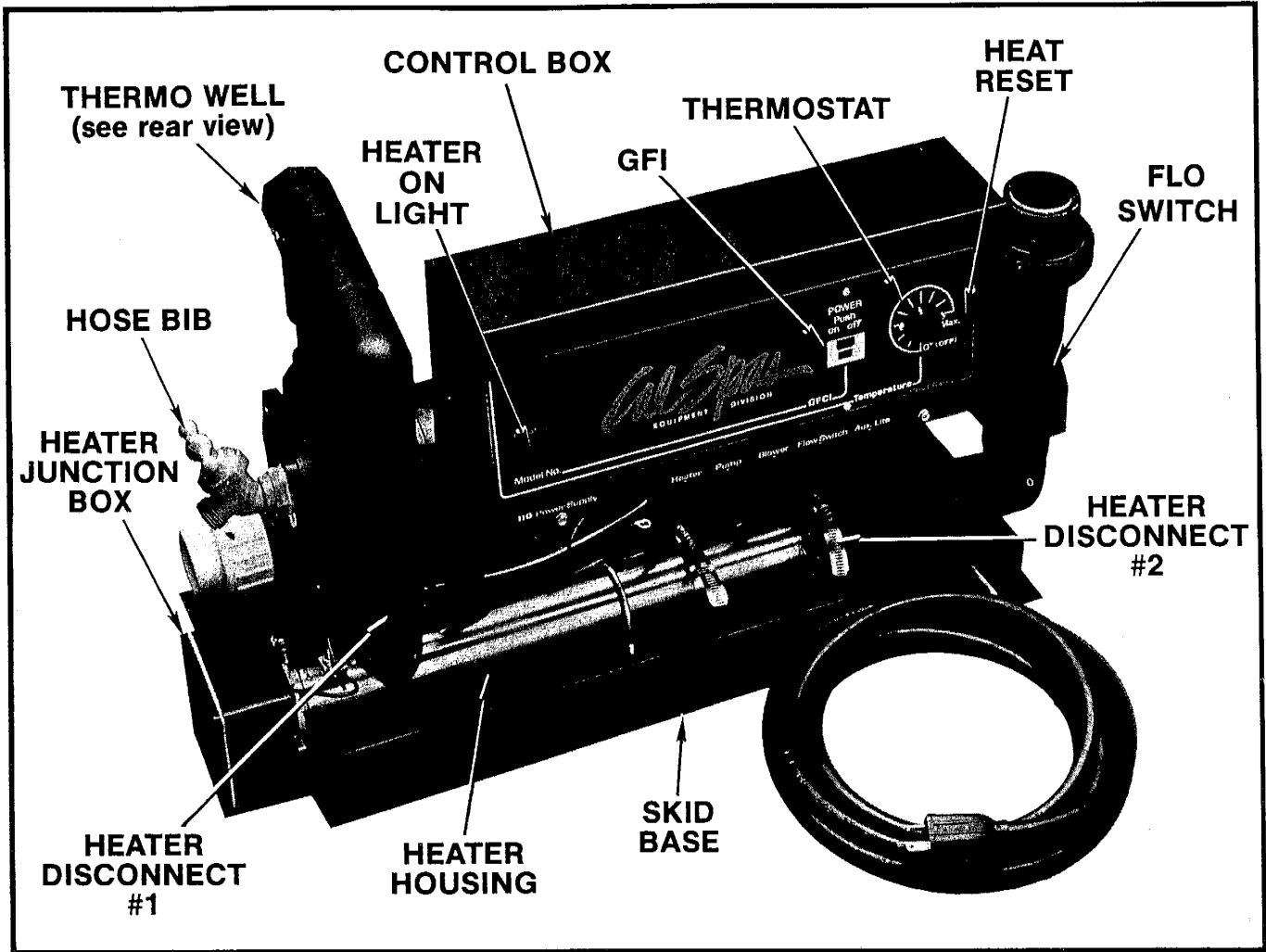
After start up of spa add three (3) level tablespoons per 250 gallons of water of Bromine Care every two (2) weeks.

Chlorine or an oxidizer will activate the Bromine Care and allow you to use less chlorine to make your spa water sparkle. When using Bromine Care much less chlorine or oxidizing agent is needed because Bromine Care actually forms a very effective disinfectant when activated, so only small amounts of chlorine or an oxidizer is needed.

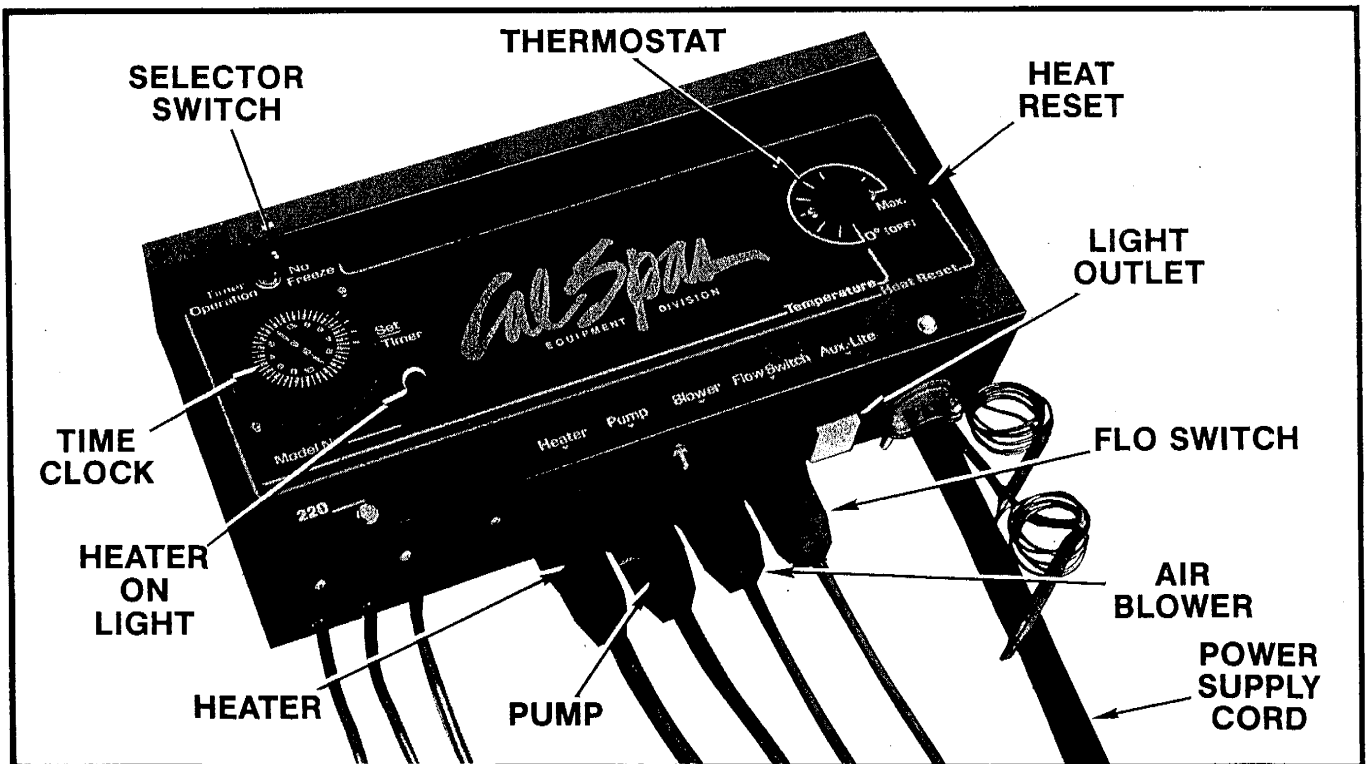
# NO ACID

Tri-Chlor or Algecide Solution  
They ruin Acrylic SPAS

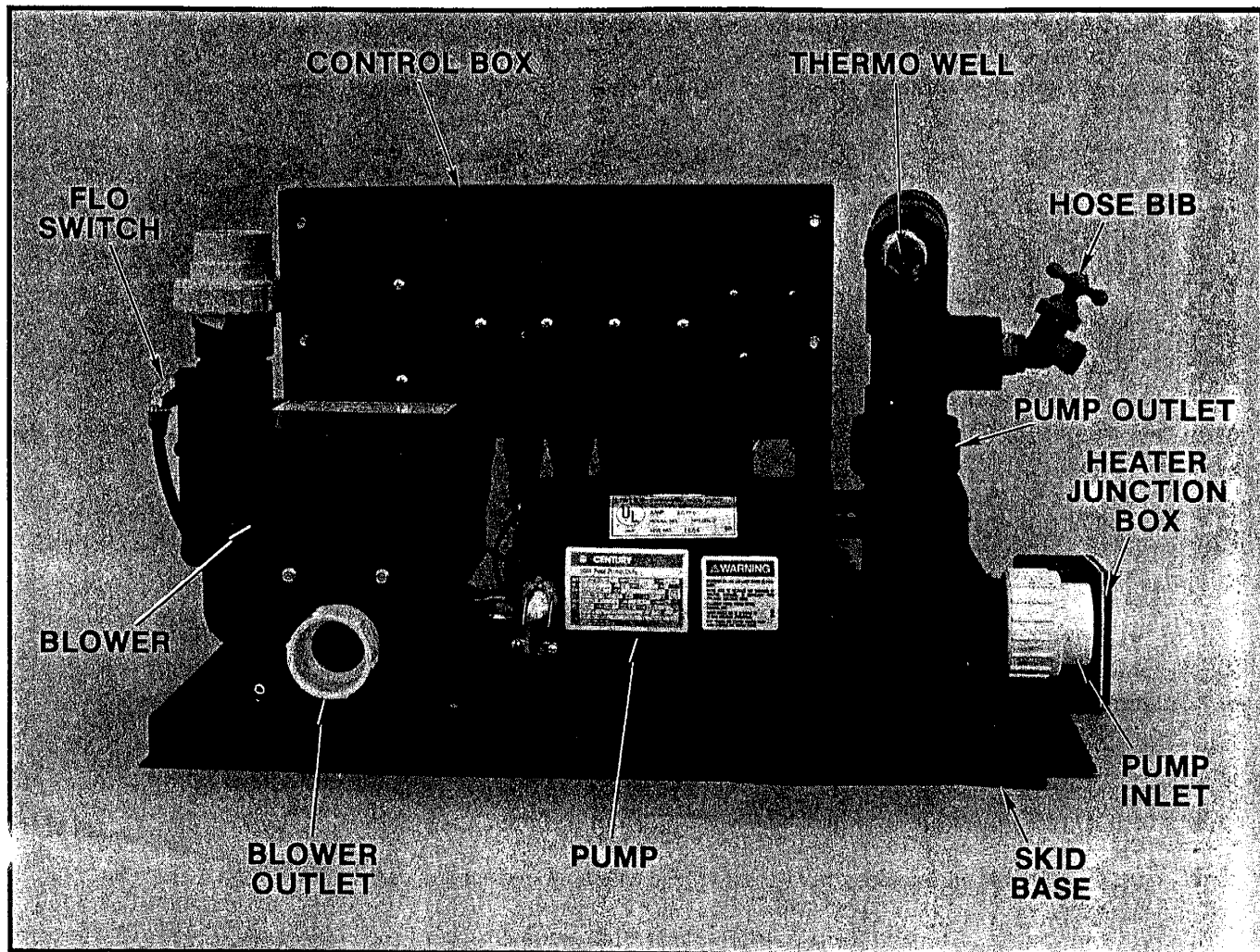
SKID PACK (w/110 volt Control Box)



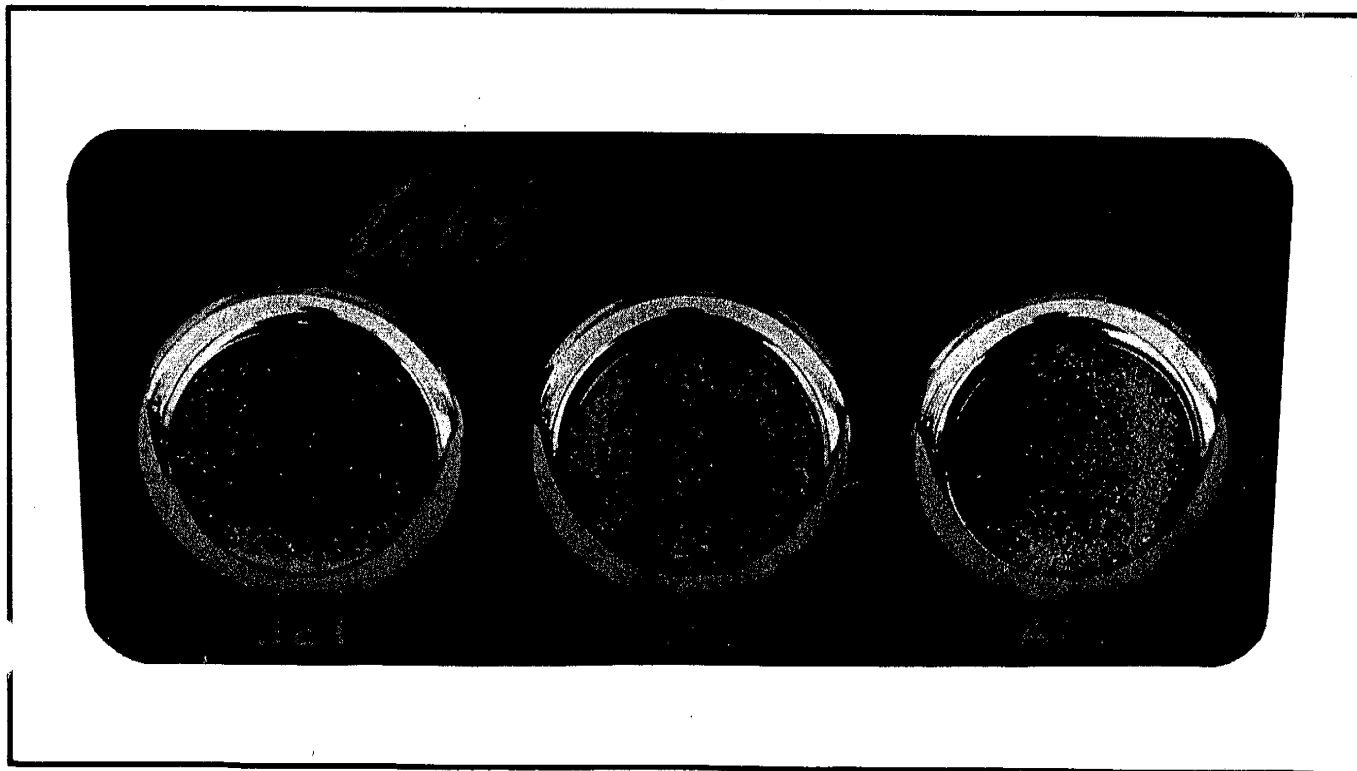
220 VOLT CONTROL BOX



BACK OF SKID PACK (110 or 220 volt)



SPA SIDE CONTROL



## FILTER MAINTENANCE:

5.2 The Micro Star-Clear cartridge filter utilizes a reusable single element, reinforced polyester filter cartridge to provide a high degree of water clarity with minimum care. It is designed for in-line piping systems and may be used with a wide range of pumps and flow rates.

**a. PLUMBING:**

Plumbing connections are 1 1/2" N.P.T. When making connections, use *plastic* adapters. Apply three turns of Teflon tape or plastic pipe sealant to the male threads. Screw the fitting into the thread and tight; then using a wrench, tighten one more full turn. Additional tightening is unnecessary and could result in a damage to the components. Be sure to properly support pipe connections.

The Micro filter features an automatic by-pass orifice for use on spa systems. The by-pass allows for greater flow rates through the filter and system.

**b. BEFORE STARTING THE FILTER:**

Superchlorinate the water by adding unstabilized granular or liquid chlorine. Stabilized forms of chlorine are recommended for normal day use *after* the initial clean up of the water. Follow the Cal-Spas chemical guide recommendations for superchlorination and normal daily use.

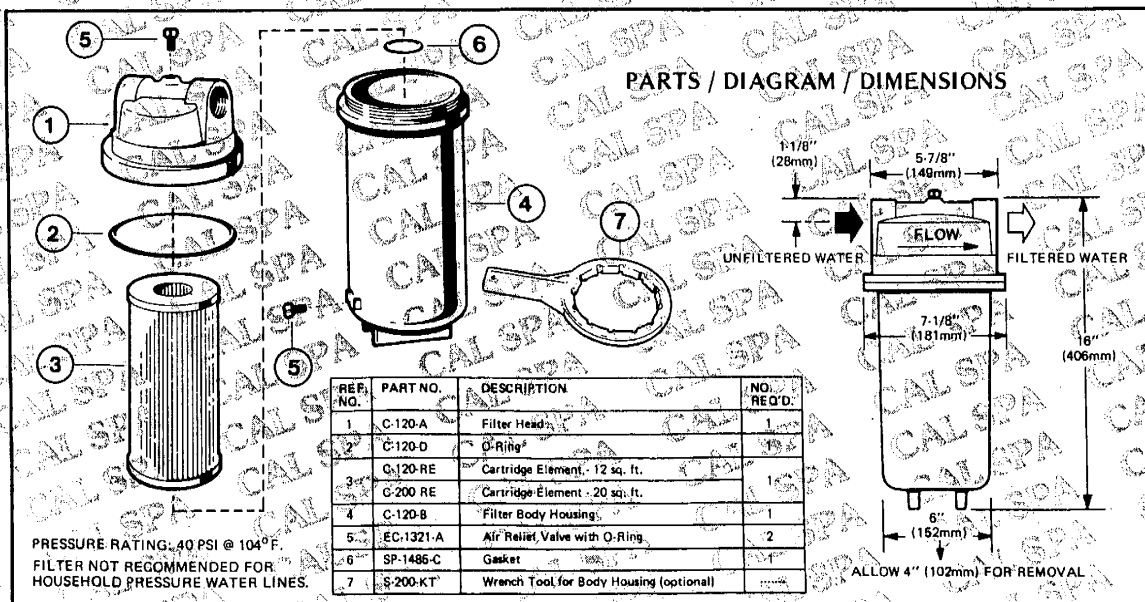
**c.** If calcium or mineral deposits are excessive, the cartridge may be restored to "like new" condition by soaking in muriatic acid. Use commercially available 20% muriatic acid added to water in 1 to 1 ratio. Use a plastic container and take extreme care when handling cleaning agents as they can be harmful to eyes, skin and clothing. After cleaning, flush with water.

**d.** A spare "standby" cartridge filter element is an excellent investment. It provides convenience and assures that your filter will always be ready to operate at peak efficiency.

**g.** Hayward cartridges are specifically designed and engineered for use in Star-Clear filters. For best results, use only genuine Hayward Star-Clear cartridges in your filter. Order *Model No. C-225-RE* from your dealer. The Hayward name is your guarantee of quality.

**f. WINTERIZING FILTER:**

In areas where sub-freezing temperatures can be expected, the filter should be drained, and/or removed from its operating location and stored indoors. Remove and clean cartridge and store with filter housing in a secure place.



## 6.0 SPA PRE-OPERATION

- Step 1. DO NOT plug in 110 volt power cord. For 220VAC system, make sure branch breakers are OFF.
- Step 2. Make sure **ALL** electrical power to equipment is in the OFF position.
- Step 3. Make sure thermostat is rotated counter-clockwise to the OFF position.
- Step 4. Make sure the two 1-1/2 gal valves (located at the inlet and outlet) are in the OPEN position, lift up on T-handle.
- Step 5. Make sure drain (hose — bib) valve is tightly closed.
- Step 6. Fill spa with water to center of skimmer — DO NOT permit water line to drop below skimmer at anytime — CAUTION...
- Step 7. Wait approximately 15 minutes and:
- Step 8. Inspect spa water connections and spa perimeter for any leaks or puddles of water. If there are any leaks, call service for repair. If the leak cannot be readily corrected, i.e.: connections, etc.
- Step 9. Open hose bib to allow air out of piping system. When water begins to flow, close hose bib. (This process may need to be repeated if there is no water flow during power operation.)

## 6.1 SPA POWER OPERATION:

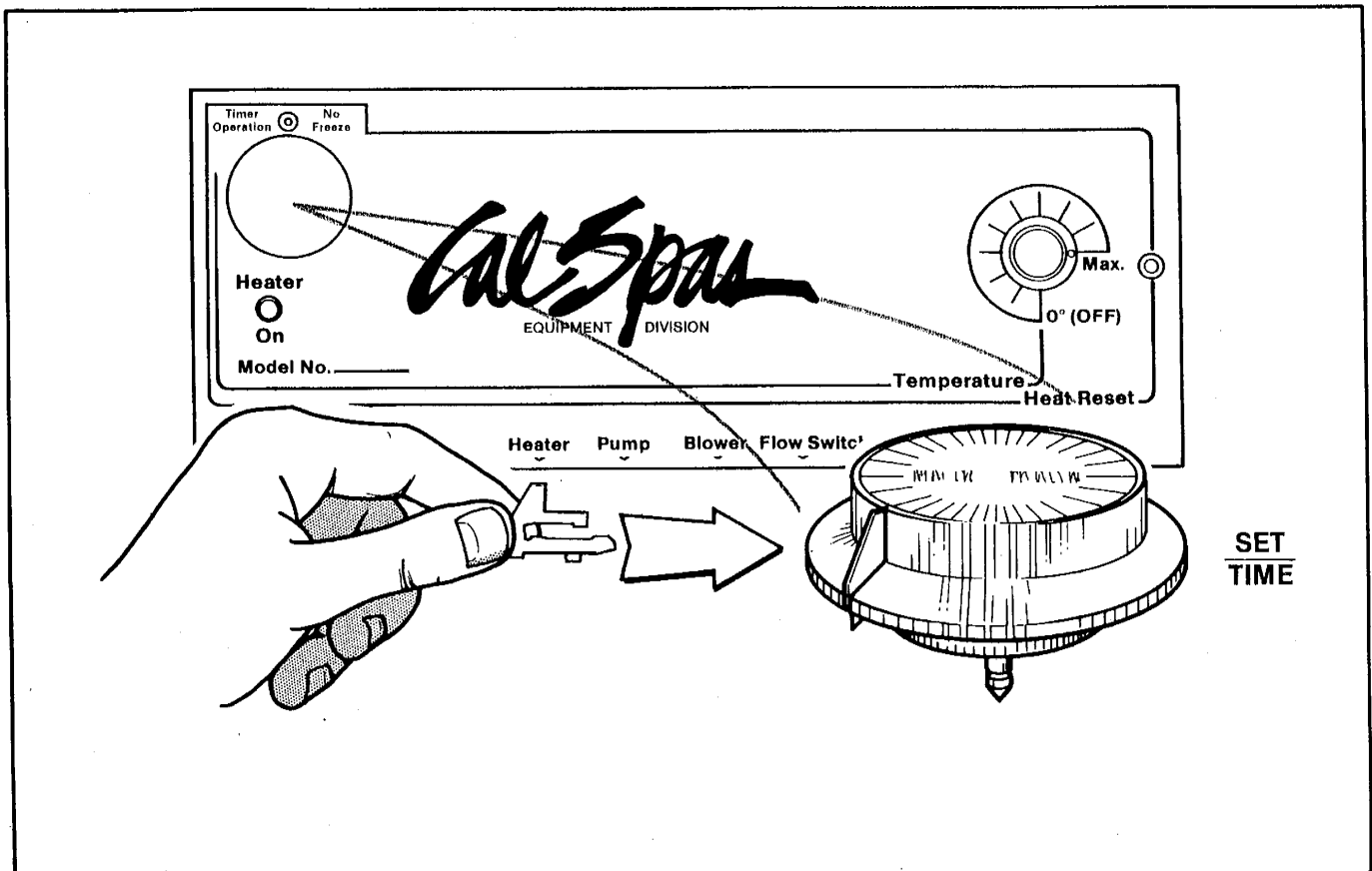
- Step 1. Plug power cord into 110VAC power receptacle. Make sure the branch main breaker is ON for 110VAC or 220VAC systems.
- Step 2. Make certain GFCI "reset" button on control panel is pushed in (110V system only)
- Step 3. Press air switch button labeled (jets) operate for 1 minute minimum. When the jets are noted to have a full steady jet stream, then the system is ready. If no jet flow after 1 minute, repeat (priming) - try again.
- Step 4. Press "test" button on control panel — this shuts off the system. Reset button to operate. (110V system only)
- Step 5. Press jet air switch button to 1st mode (**ALL-OFF**)
- Step 6. Turn thermostat clockwise to the desired setting. The pump (LO) and heater will turn on, and the spa will begin to heat. (exception time clock 220)  
  
NOTE: Heater operates when pump is on low speed only for 110V system only. 220V system heater is on demand for **all** modes. (exception time clock 220)
- Step 7. **Cover spa** and the spa will maintain the preset temperature continuously, 24 hours per day, when pump is left on low speed.

### NOTES

Portable spas must have covers to heat  
110 Volt spas heat 2° - 3° per hour with cover  
220 Volt spas heat 5° - 7° per hour with cover.

Time clock models must have heating time programmed into time clock (see page 12)

## 7.0 TIME CLOCK:



### 7.1 TO SET TIMER.

- Grasp Timer Dial firmly and pull from control panel.
- Remove both ON trippers (silver) and both OFF trippers (brass). Put one set of trippers aside.
- Determine desired turn on time and insert silver tripper.
- Determine off time and insert brass tripper.
- Reinsert dial with the time of day on SET TIME
- Your spa pump will run each day for the programmed time, filtering the spa and heating to temperature set on thermostat.

#### NOTES

Your time clock controlled units are equipped with a SELECTOR SWITCH located above timer dial.

**TIMER OPERATION:** The time clock will turn low speed pump on or off at times selected by user. This is when the spa water is filtered and heated. (Note: water will heat to temperature set on thermostat provided running time is adequate.) Units heat 5° to 7° per hour.

**NO FREEZE (automatic):** This mode is thermostatically controlled and will automatically turn on or off to maintain temperature set on thermostat.

#### NOTES

For ease of operation, use the NO FREEZE (automatic) during the initial starting and heating of your spa. NO FREEZE (freeze protection) is the same as automatic with a lower temperature setting.



8.0 SPECIFICATIONS:

8.1 Model — 110V:

Component	Voltage	(HI)	Pump	
			Amp	(LOW)
Heater 1.5 KW	115V	—		12.0
Air Blower (1½ HP)	115V	6.5		—
Pump (¾ HP — 2-speed)	115V	(HI) 8.8		(LO) 2.4
Total Amps		15.3		14.4

Spa Specifications:

Power Service	20 Amp (115V)
Power Operating	16 Amp (115V)
Power Connection	115V Flex cord-plug-in
Power Protection	GFI built-in
Temperature Range	70°F — 110°F
Temperature Operate	100°F — 103°F
Recovery Rate	2-3° per hour (approx.)
Filtration	25 sq. ft. filter
Standby Usage	5-10 KW/hr. per day (approx.)
Operate Usage	6-8 KW/hr. per day (approx.)

Wiring: 3 #10 wires

Black Wire	Hot
White Wire	Neutral
Green Wire	Ground

8.2 Model — 220V:

Component	Voltage	Pump		
		(HI) L1	L2	(LOW) Amp
Heater 5.5 KW	220V	21.0	21.0	21.0
Air Blower (1½ HP)	115V	—	6.5	—
Pump (1 HP — 2-speed)	115V	(HI) 11.0	—	(LO) 2.6
Total Amps		32.0	27.5	23.6

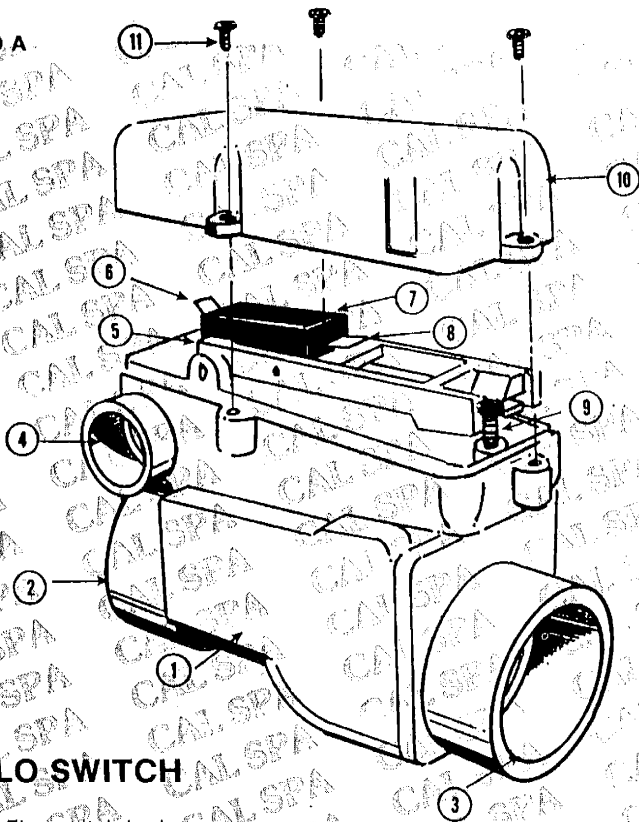
Spa Specifications:

Power Service	40 Amp (220V)
Power Operating	32 Amp (220V)
Power Connection	220V hard conduit
Power Protection	40 amp breaker
Temperature Range	70°F — 110°F
Temperature Operate	100°F — 103°F
Recovery Rate	5-10° per hour (approx.)
Filtration	25 sq. ft. filter
Standby Usage	5-10 KW/hr. per day (approx.)
Operate Usage	6-8 KW/hr. per day (approx.)

Wiring: 4 #8 wires

Red Wire	Hot
Black Wire	Hot
White Wire	Neutral
Green Wire	Ground

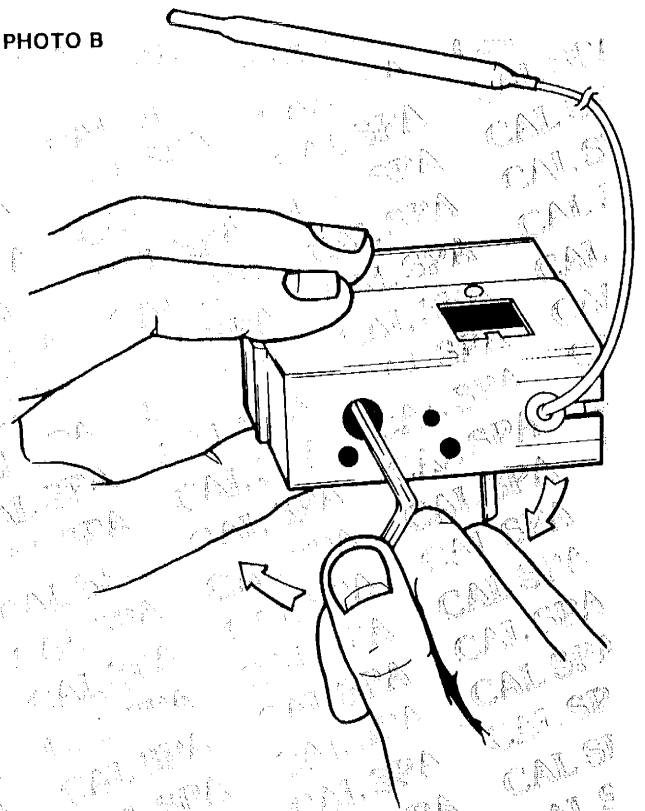
PHOTO A



**FLO SWITCH**

- 1. Flowswitch body
- 2. Outlet 1½" slip PVC
- 3. Inlet 1½" slip PVC
- 4. ½" conduit socket, (both sides)
- 5. Electrical connection N.C. (load)
- 6. Electrical connection N.O. (load)
- 7. Switch
- 8. Electrical connection (line)
- 9. Calibration screw
- 10. Cover
- 11. Cover screw (3)

PHOTO B



**THERMOSTAT**  
CLOCKWISE INCREASES  
MAX TEMP. CALIBRATION

**WARNING**  
DO NOT EXCEED 1/4 TURN

**9.3 TROUBLESHOOTING GUIDE — HEATER ASSEMBLY**

**SYMPTOMS**

**PROBABLE CAUSE**

**RECOMMENDED ACTION**

No heat or heat too low

Operation Thermostat on Control Console set too low.

Increase setting of Operating Thermostat.

High-Limit Thermostat kicked out.

Push Reset

Improper setting of air button control switches

Hi pump off/Air off

Improper line voltage.

Have an electrician check line voltage.

Inadequate water flow.

Dirty filter, blocked pump reset flo switch (photo A #9)

Thermostat defective or Max. Temp. Calibration too low.

Reset Thermostat Max. Temp. Calibration (Photo B).

If above does not correct, replace thermostat.

Heat too high

Operating thermostat on Control Console set too high.

Decrease setting of Operating Thermostat.

"Snapping" or "crackling" noises from heater

Inadequate or blocked water flow from water pump.

Turn heater OFF immediately. Check items in PUMP ASSEMBLY and FILTER ASSEMBLY sections.

Check water pump prime.

## 9.4 TROUBLESHOOTING GUIDE — AIR BLOWER ASSEMBLY

<b>SYMPTOMS</b>	<b>PROBABLE CAUSE</b>	<b>RECOMMENDED ACTION</b>
Air Blower will not operate	Improper setting of air button control switches.	Air button sequencer is on air position.
	Brushes in Air Blower motor worn or defective.	Replace brushes.
	Blower not plugged in.	Plug Blower in.
Air supply low	Improper line voltage.	Have electrician check line voltage.
	Leak in air line.	Check for air leak at coupler and fittings. Correct accordingly.

## 9.5 TROUBLESHOOTING GUIDE — PUMP ASSEMBLY

<b>SYMPTOMS</b>	<b>PROBABLE CAUSE</b>	<b>RECOMMENDED ACTION</b>
Pump will not prime	No water in pump.	Make sure water level in Spa is midway in skimmer mouth.
	Air Lock	Bleed off air in hose bib.
	Closed valves or blocked lines.	Open all valves (2) in system.
Motor does not run	No power to motor.	Check that all power switches and circuit breakers. Check motor wiring at terminals.
	Not plugged in.	Plug in pump.
	Pump jammed.	With power off, turn shaft. It should turn freely. If not, an electrician should disassemble and repair.
	Pump ran dry	Remove pump face, free impeller.
Low water flow	Dirty filter.	Remove filter cartridge and clean.
	Closed valves or blocked lines.	(See above under "Pump will not prime.")
	Low voltage or incorrect voltage.	Wiring to be corrected by licensed electrician.
Motor runs hot: These motors will feel "hot" to the touch. This is normal. Internal overload protector will turn the motor off if there is an overload or high temperature problem. Excessive heat can be caused by:	Poor ventilation.	Do not tightly cover or enclose pump motor.
	Restricted suction line.	Make sure all valves are open.
Foreign matter in pump impeller.	Have qualified technician disassemble pump to remove matter from impeller.	

**CAL - SPAS  
Equipment Warranty**

**Limited Warranty**

CAL - SPAS (the seller), warrants each of the designated pumps, filters, heaters, air blowers and air control switches against defects in materials and workmanship for a period of one year from the date of original purchase. If any component fails to perform in normal use during the warranty period, the parts that prove to be defective will be either repaired or replaced at the Seller's option. The right is reserved by the Seller to replace the whole product in lieu thereof. The Seller will warrant the replacement or repair only for the unexpired portion of the original warranty. Should repair become necessary during the warranty period, return the component, postage or freight, prepaid, to the Seller's factory.

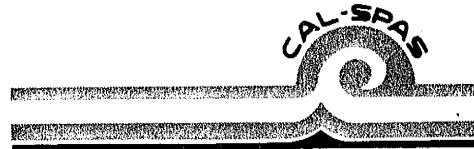
This warranty **does not** apply if the damage occurs because of accident; improper handling, installation or operation; rust and/or corrosion caused by excessive moisture; alterations to enclosure or other component parts unless approved by Seller's engineering department; shipping damage; abuse; misuse; unauthorized repairs made or attempted; or use of the components in commercial service

ALL LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, TIME CHARGES OR ANY OTHER LOSSES INCURRED IN CONNECTION WITH THE PURCHASE, INSTALLATION, REPLACEMENT OR REPAIR OF THE SELLER'S PRODUCT IS DISCLAIMED AND EXCLUDED HEREFROM.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation 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.

Warranty is void if warranty card is not returned to Seller within 10 days from original purchase date.

**California Acrylic Industries, Inc.**  
1462 E. Ninth Street, Pomona,  
California 91766 • (714) 623-8781




SERVICE AND/OR REPAIR: Should your equipment require service following the warranty period, or should it require service and/or repair for non-warranty failure, return it to the factory, freight prepaid. In writing, indicate the problem you are experiencing with your component. A reasonable charge will be made for labor and material, if any.

**HOMEOWNER COMPLETE AND RETAIN FOR YOUR RECORDS**

EQUIPMENT MODEL # \_\_\_\_\_ SERIAL # \_\_\_\_\_  
DATE OF PURCHASE \_\_\_\_\_  
BUILDER/DEALER \_\_\_\_\_  
HOMEOWNER'S NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
TELEPHONE #( ) \_\_\_\_\_  
DATE OF START UP. \_\_\_\_\_

**IMPORTANT**

CAL-SPAS warrants its products against defective materials and workmanship, not against failure due to improper installation techniques. It is the responsibility of the purchaser to assure that those installing this equipment are well trained in correct and proper installation techniques.



**California Acrylic Industries, Inc.**  
1462 E. Ninth Street, Pomona, California 91766 • (714) 623-8781



## SPA LIMITED WARRANTY

**FIVE-YEAR WARRANTY:** This spa shell and **SPA SHELL ONLY** is warranted to the ORIGINAL PURCHASER ONLY to be free from defects in material and workmanship under normal use and maintenance for a period of FIVE (5) YEARS from the date of original purchase, specifically excluding its finish and factory installed attachments or modifications the warranties for which are set forth below. In hot climates it is mandatory that a cover is kept on the spa to keep the direct **SUN** off the spa. In the event of a defect or failure in the SPA SHELL, California Acrylic Industries, Inc. will repair or replace said SPA SHELL at its sole option. Any replacement SPA SHELL, whether new or remanufactured, shall assume as its warranty period only the remaining time under this warranty.

**ONE YEAR AND THREE MONTH WARRANTIES:** The factory applied finish on the spa shell is warranted to the ORIGINAL PURCHASER ONLY to be free from defects in material and workmanship under normal use and maintenance for a period of ONE (1) YEAR from the date of original purchase. Factory installed attachments and modifications on date of original purchase, examples of the more common including without limitation air jets, skimmer, suction fittings, plumbing, lights, tile, air switch, and skirting, are warranted to the ORIGINAL PURCHASER ONLY to be free from defects in material and workmanship under normal use and maintenance for a period of THREE (3) MONTHS from the date of original purchase. Although the spa finish and attachments and modifications represent the finest available in both material and workmanship, their warranty period must be limited as set forth herein because of the proven extremes in both usage and environmental exposure to which they may be subjected after leaving the factory, over which the manufacturer can exercise no control. If these items are used in accordance with instructions furnished herewith, they should provide long and reliable service. In the event of a defect or failure in the spa finish or any factory installed attachment or modification, California Acrylic Industries, Inc. will repair or replace said finish or item at its sole option. Any spa finish repaired or replaced or any replacement parts furnished under this warranty, whether new or remanufactured, shall assume as its warranty period only the remaining time under this warranty for the original finish or replacement part, whichever is applicable.

**SERVICE-LABOR-SHIPING COSTS:** Any costs incurred for diagnosis of defects and/or failures not covered under this warranty, or for labor in the removal and/or reinstallation of the spa shell or any attachment or modifications thereto, is not provided for under the terms of this warranty and shall be the responsibility of purchaser. Transportation charges for any replacement spa or other part covered under the terms of this warranty will not be assumed by California Acrylic Industries, Inc. Any spa shell or other part judged to be defective upon inspection by California Acrylic Industries, Inc. will be repaired or replaced, during the warranty period, F.O.B. California Acrylic Industries, Inc., free of charge, providing merchandise is returned freight prepaid to California Acrylic Industries, Inc. service department, at 1462 East Ninth Street, Pomona, California 91766. All such items should be accompanied with customers written description of the claimed defect or failure, serial number of the item, if any, and the date of original purchase and dealer from whom purchased. If customer should have any questions as to the procedure to be followed for warranty claims, or the availability of other warranty service facilities, they should contact California Acrylic Industries, Inc. service facility at the above address, or telephone (714) 623-8781.

**EXCEPTIONS TO WARRANTIES:** Improper installation, operation or maintenance resulting in defects or failures in the spa shell, its finish, or any attachment or modification thereto, will void this warranty. Abuse, negligence, or accidents resulting in defects or failures in the spa shell, its finish, or any modification or attachment thereto, will also void this warranty. Any spa installed in conflict with the written instructions furnished herewith for installation, or installed in violation of any building code governing the area in which installed, or failing to conform with acceptable trade practices, or moved from the original installation site, are excluded from coverage under the provisions of this warranty, as are its finish and any factory installed attachments or modifications. **THE USE OF ACID OR ANY ACID PRODUCTS, OXIDIZERS, TRI-CHLOR, OR ALGECIDE SOLUTIONS IN SAID SPA SHALL VOID THIS WARRANTY.** Non skid may fade and this is not covered by warranty.

**LIMITATIONS OF WARRANTIES:** All implied warranties, including the implied warranty of merchantability and where present the implied warranty of fitness, are co-extensive in duration and are limited to the duration of the express warranties set forth herein. The express warranties set forth herein are exclusive and may not be altered, enlarged or changed by any distributor, dealer, or other person whatsoever. This warranty excludes liability for any and all incidental or consequential damages which may result from any use, defect, failure or malfunction of the warranted product. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

**NO ACID,  
OXIDIZERS, TRI-CHLOR, OR ALGECIDE SOLUTIONS  
RUIN ACRYLIC SPAS.**

# PORTABLES

## Owners Information

Dealer \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Installer \_\_\_\_\_

Company \_\_\_\_\_ Lic. # \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Service Center \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

**Corporate Office: California Acrylic Industries, Inc.**  
**1462 E. Ninth St., Pomona, California 91766**  
**(714) 623-8781**