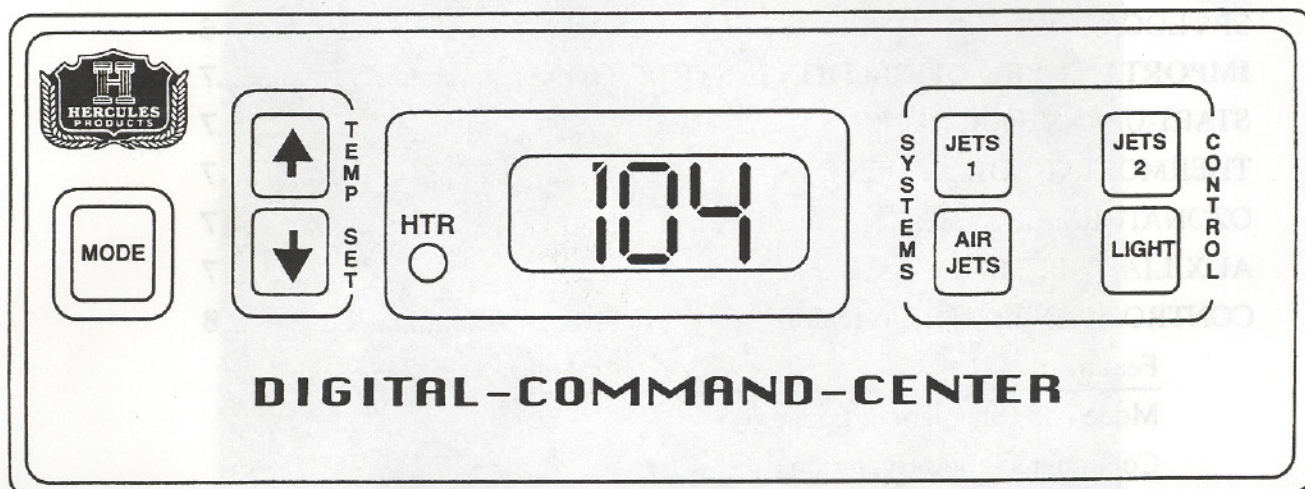




DIGITAL-COMMAND-CENTER



MODULAR SPA COMPONENT EQUIPMENT SYSTEM

OWNER'S MANUAL



TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS..... 1

BLOWER CHECK VALVE.....3

INSTALLATION INSTRUCTIONS.....3

 WIRING COMPARTMENT.....3

 ELECTRICAL SERVICE CONNECTIONS.....3

 CONTROL PANEL INSTALLATION.....3

IMPORTANT USER SAFETY INSTRUCTIONS.....5

SPA LOCATION..... 6

IMPORTANT PRE-OPERATION INSTRUCTIONS.....7

START-UP INSTRUCTIONS.....7

THERMOSTAT ADJUSTMENT.....7

OZONATORS.....7

AUXILIARY PUMP.....7

CONTROL PANEL OPERATING INSTRUCTIONS..... 8

<u>Feature</u>	<u>Page</u>
Mode Pad (Standard & Economy)	8
Continuous Pump Operation	8
Temperature Controls	9
Systems Controls	
Jets 1 and Jets 2	9
Air Jets (Blower)	9
Light	9

TO SET YOUR TIMER.....10

PIEZO ALARM and ERROR MESSAGES.....11

TROUBLESHOOTING YOUR CONTROL SYSTEM..... 13

FILTER MAINTENANCE.....14

PROTECT YOUR SPA.....14

WINTERIZING YOUR SPA.....14

TROUBLE-SHOOTING YOUR SPA.....15

SERVICE / MAINTENANCE RECORD.....16



IMPORTANT SAFETY INSTRUCTIONS

When installing and using this equipment, basic safety precautions should always be exercised, including the following:

READ AND FOLLOW ALL INSTRUCTIONS

before proceeding to install your spa.

1. This system must be installed by a licensed and qualified electrician.
2. **DANGER** - To reduce the risk of injury to persons, do not remove suction grate or cover.
3. A pressure wire connector marked "BONDING LUG" is provided on your equipment to permit connection of a minimum No. 6 AWG solid copper conductor between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the unit as needed to comply with local requirements.
- 3.1 All field-installed metal components such as rails, ladders, drains, or other similar hardware within 3m of the spa or hot tub shall be bonded to the equipment grounding bus with copper conductors not smaller than 6 awg.
4. This equipment may be provided with a ground fault circuit interrupter (GFCI) located on the side of the control box. If so, it is there to provide protection to the circuitry and the major components of your systems (ie. heater, pump(s), light, ozonator, and blower). If this equipment does not include the GFCI, the National Electrical Code requires that a properly rated (Class A) GFCI be installed in the supply circuit to this equipment. (Contact your dealer for more information.)


Before using your equipment, with the power on push the TEST button on the GFCI. The red RESET button should pop out (control box-mounted GFCI only). Push the RESET button, the RESET button should stay in. On a sub panel-mounted GFCI, the GFCI will display red in a window when tripped. Simply switch the breaker to "off" and then "on" to reset. If the interrupter does not perform in this manner, a ground current is flowing, indicating the possibility of an electric shock. Disconnect the power until the fault has been identified and corrected.

5. Position spa or hot tub to provide drainage of compartment for electrical components.
6. Install equipment at least five (5) feet (1.5m) from inside wall of spa or hot tub using nonmetallic plumbing unless a cabinet is installed with this spa such that equipment access is not possible without exiting the spa.



7. Install in accordance with diagram on page 3 to keep spa water out of the blower. A check valve and plumbing loop must be incorporated in the installation to protect the blower from backflow into it of spa water. Please refer to this diagram prior to installation.
8. 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. If not marked, install one suction fitting rated minimum 100 GPM per pump used.
- 8a. **DANGER - RISK OF INJURY.** The suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible.

Never operate spa if the suction fittings are broken or missing. Never replace a suction fitting with one rated less than the flow rate marked on the original suction fitting.
9. **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 minimum No. 6 AWG solid copper conductor attached to the wire connector on the control box that is provided for this purpose.)
- 9.1 **DANGER - RISK OF ELECTRICAL SHOCK.** All electrical appliances (such as light, telephone, radio, or television) must be located a least 10 feet (3m) away form the spa or hot tub.
10. **WARNING:** If the control box of your unit is labeled "FOR INDOOR USE ONLY" or "FOR ENCLOSURE USE ONLY" then it is not intended for outdoor use such that it would be exposed to any form of precipitation.
11. A wire connector marked  is provided within the control box. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply conductors supplying this equipment.
12. This equipment must be wired into a dedicated circuit for this equipment only. Refer to your wiring diagram or the label on your equipment service panel for information to determine the proper breaker protection to provide.

NOTE: The electrical supply for this product must include a suitably rated, user accessible switch or circuit breaker to open all ungrounded supply conductors to comply with Section 422-20 of the National Electrical Code, ANSI / NFPA 70-1993 and section C22.1-1994 Part 1 of the Canadian Electrical Code.

The disconnecting means must be readily accessible to the tub occupant but installed at least 5 feet (1.5m) from the tub water.

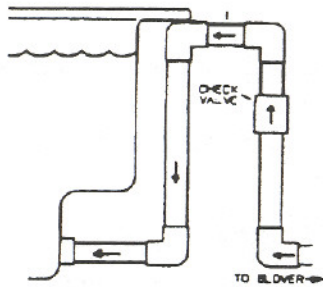
13. If this equipment includes a cord-and-plug connection, connect this plug to a grounded, grounding type receptacle only.
- 13.1 Do not bury the power cord.
- 13.2 **WARNING -** To reduce the risk of electric shock, replace the damaged cord immediately.

SAVE THESE INSTRUCTIONS



BLOWER CHECK VALVE

It is essential that a loop be constructed such that the highest point in the blower line is above the highest water level in the spa. There must also be a check valve with an inner dimension of at least 1-1/2" installed as seen at left.



Airline must be higher than water.

INSTALLATION INSTRUCTIONS

A. WIRING COMPARTMENT

To access the field wiring connections, remove the two screws in the top left and right corners on the side of the face plate, then loosen but do not remove the two screws in lower left and right corners on the side of the faceplate. The cover will pivot toward you and slide off for easy service access.

B. ELECTRICAL SERVICE CONNECTIONS

1. Be sure all wiring is done by a licensed qualified electrician.
2. Run the proper size wire in conduit from a dedicated circuit breaker (see chart below) to the equipment package. The equipment should be visible from the breaker box but no closer than five (5) feet (1.52m) from the spa, unless mounted under a fully enclosed spa cabinet.

LINE SVC MARKING	Amp load	Minimum Circuit Ampacity	Circuit Breaker
120V 2 WIRE+Gr	16	20	20
240V 3 WIRE+Gr	16*	20	20
240V 3 WIRE+Gr	40	50	50
240V 3 WIRE+Gr	48**	60	60

USE COPPER CONDUCTORS ONLY!

*Based on using a single pump with a gas water heater.

**Based on using two Jet pumps. If only one Jet pump is used, the 40 amp rating applies.

3. An illustration showing proper electrical connections for 120 volts and / or 240 volt service has been provided for you on a label affixed to the faceplate and / or on the wiring diagram provided in the clear packet attached to the faceplate. Be sure to follow them and all instructions carefully.
4. Be sure that all connections are tight before switching on the circuit breaker.

C. CONTROL PANEL INSTALLATION

1. Make sure power to your equipment is off. It should be shut off at the circuit breaker.
2. A cutout should already have been made in your spa to receive the control panel. The control panel itself may have already been installed in the shell. If not, it comes with a gasket that has adhesive tape on both sides. Peel the protective tape off one side and apply the gasket to the bottom of the control panel. Press it firmly into place. Now you can mount the panel in one of two ways, which ever is easiest for your situation.



- A. You can leave it plugged into the control box and simply pass the control panel through the opening in the spa from inside out, or
- B. You can unplug the control panel, remove the temperature sensor, run the cables through the hole from the outside, and then re-install them to the control box.

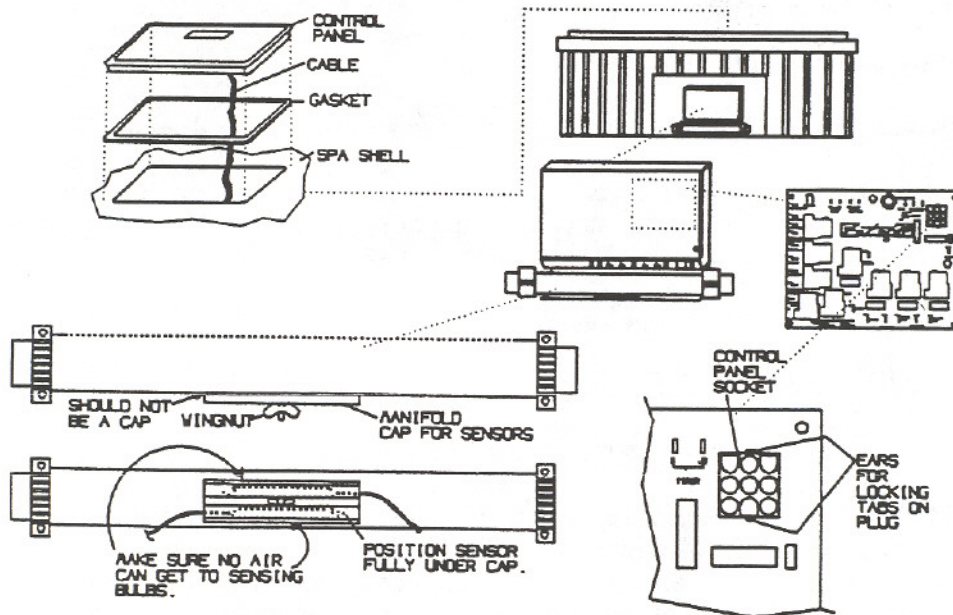
To unplug the cable, be sure to press the two ears of the plug against the plug to release the ears from the locking tabs on the circuit board socket. Once released, pull straight back on the plug. **DO NOT PULL ON THE CABLE.** You then need to loosen the restraint nut and slide out the restraint assembly. Now run the cable through the opening in the shell and back to the control panel. If you do it this way be sure to re-tighten the restraint nut securely. Also be sure to fully plug the control panel into the socket in the circuit board such that the locking tabs snap back onto the circuit board socket.

To remove the temperature sensor, loosen (do not remove) the wingnut on the heater manifold (the stainless steel pipe beneath the control box) until you are able to slide the sensor out from under the insulating cap. To re-install, simply slide the sensor back in such that the sensing bulb is fully under the cap. Then tighten the wingnut back up against the cap securely. Once the wingnut is tight, make sure that there is not a gap between the cap and the pipe, both in front and at the rear of the cap. Your hi limit temperature sensing bulb is under this cap towards the rear of the pipe and must be sealed as well. It is recommended that you further insulate this area of your equipment to achieve the most accurate temperature readings.

Your spa may have been equipped with a thermowell which is the very best way to sense the water temperature. (Ask your dealer.) If this is the case, after running the cables through the opening in the spa, simply slide the sensing bulb into the well until it bottoms out. Make sure the bulb is secured such that it cannot slide back out on its own.

Once you have installed the control panel and are ready to secure it to the spa, remove the remaining protective tape from the gasket and press it firmly into place.

CAUTION: Never plug the control panel into the receptacle with the power on. If you do, the system may not properly communicate with the panel.





IMPORTANT USER SAFETY INSTRUCTIONS

1. **DANGER-**To reduce the risk of injury do not permit children to use this product unless they are closely supervised at all times by a responsible adult.
2. **DANGER-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.
3. **WARNING-** To Reduce Risk of Injury:
 - a. The maximum temperature of the spa water should never exceed 104°F (40°C). Water temperatures between 38°C (100°F) and 40°C (104°F) are considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding 10-15 minutes) and for young children.

WARNING- Your spa was designed and engineered to give therapeutic action during high speed operation. Under normal circumstances 30 minutes of high speed operation is to be expected at any time. Your system automatically limits the high speed operation to 30 minutes. However, if you repeatedly override the 30 minute limit by pressing the JETS 1 pad you may experience an extreme rise in water temperature due to the heat from the pump itself. This excessive temperature will result in the shut down of your pump and heating system. If this happens, follow the instructions under "Error Messages" on page 11.

- b. Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, a pregnant or possibly pregnant woman should limit spa or hot tub water temperatures to 100°F (38°C).
 - c. Always enter and exit spa slowly and cautiously as wet surfaces will be slippery. Before entering a spa or hot tub, the users should measure the water temperature with an accurate thermometer since the tolerance of water temperature-regulating devices may vary by as much as $\pm 3^{\circ}\text{C}$ (5°F).
 - d. Never use a spa while under influence of alcohol, anticoagulants, antihistamines, vasoconstrictors, vasodilators, stimulants, hypnotics, narcotics, or tranquilizers. The use of drugs or alcoholic beverages before or during spa or hot tub use may lead to unconsciousness with the possibility of drowning.
 - e. 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.
 - f. Persons using medication should consult a physician before using a spa or hot tub since some medications may induce drowsiness while other medication may effect heart rate, blood pressure, and circulation.
4. Long exposures to hot water may induce hyperthermia. 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 include 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 the spa, (4) fetal damage in pregnant women, and (5) unconsciousness and danger of drowning. **WARNING-**The use of alcohol or drugs can greatly increase the risk of hyperthermia in hot tubs and spas.
5. Do not use the spa alone.



6. It is recommended that the following emergency telephone numbers should be listed at the nearest telephone: Physician, hospital, ambulance and police.
7. Be sure the power to your equipment is turned off before servicing your equipment.
8. **WARNING** - Do not use a spa or hot tub immediately following strenuous exercise.
9. **WARNING** - People with infectious diseases should not use a spa or hot tub.
10. **CAUTION** - Maintain water chemistry in accordance with manufacturer's instruction.

SAVE THESE INSTRUCTIONS

SPA LOCATION

1. If your spa is to be located outdoors, consider the following:
 - a. Local codes pertaining to fencing.
 - b. Local electrical and plumbing codes.
 - c. View from your house.
 - d. Wind direction, (If spa is in a deck, there should be a wind break surrounding the spa and equipment.)
 - e. Exposure to sunlight.
 - f. Location relative to trees (falling leaves and shade).
 - g. Dressing and bathroom location.
 - h. Storage area for maintenance equipment and chemicals.
(Do not store chemicals under the spa)
 - i. Location to facilitate adult supervision.
 - j. Landscaping and night-time lighting.
2. If your spa is to be located indoors, consider the following:
 - a. Because indoor spas develop high humidity, a means of removing this humidity must be provided. This can be done by either cross ventilation fans or oversize dehumidifiers or both.
NOTE: Be sure to install a good quality cover when spa is not in use.
 - b. Chemicals will evaporate off the water surface. This will cause corrosion to certain metals found in home hardware and appliances.
 - c. Floor drains should be provided to carry off water splashed from the spa.
 - d. Walls, ceilings, woodwork etc. should be of materials capable of withstanding high humidity.
 - e. If spa is to be placed on a second story or elevated deck, be sure supporting structure is adequate. It would be best to avoid a second story installation, due to the risks of water damage to the finished living space below.
 - f. Be sure surface on which spa is set is smooth and level.



IMPORTANT PRE-OPERATION INSTRUCTIONS

1. Open spa equipment inlet and outlet valves if provided.
2. Fill spa with water until level is within 6-8 inches from the top of the spa or adequate to flood all skimmer devices.
3. As it comes from the factory, your equipment should have the GFCI tripped (if it has one). The system cannot come on until the RESET button is pressed in as tested on page 1, paragraph 4. Once reset, your equipment should be powered and set to operate as outlined in the sections that follow.

START UP INSTRUCTIONS

Be sure to follow the Pre- Operation instructions above before proceeding.

Press the Jets 1 pad on your control once to turn on the high speed of the main jet pump. Ordinarily, the high speed is used to achieve maximum water flow through the jets. On start-up, it will be most effective in purging your plumbing system of trapped air. Within 15-30 seconds, you should have water flowing from the hydrotherapy jets in the side of your spa. Note: If you have more than one pump, only some of the jets will be affected by this pump. If after 30 seconds you do not have water flowing freely, turn off the pump (press the Jets 1 pad once more) and open the air bleed on your filter (if provided) to clear the system of air. Then try engaging the pump again and repeat the procedure. If after 3 or 4 tries you cannot get water to flow, contact your dealer for instructions on how to purge the air from your plumbing lines.

THERMOSTAT ADJUSTMENT

Once the water is flowing freely from the jets, you may adjust your temperature setting. As it comes from the factory, the setting is too low to come on by itself. Follow the instructions under TEMPERATURE CONTROLS on page 9 to set your desired temperature. It is recommended that you initially operate the spa between 95° and 100°F, and increase the temperature setting over a few days as you become accustomed to its effect. When the desired water temperature is reached, the heater will automatically maintain that temperature as long as your programmed setting calls for it.

NOTE: Units connected to 120 volt 20 amp services will heat only when the Lo speed of the main pump (controlled by JETS 1) is on by itself.

OZONATORS

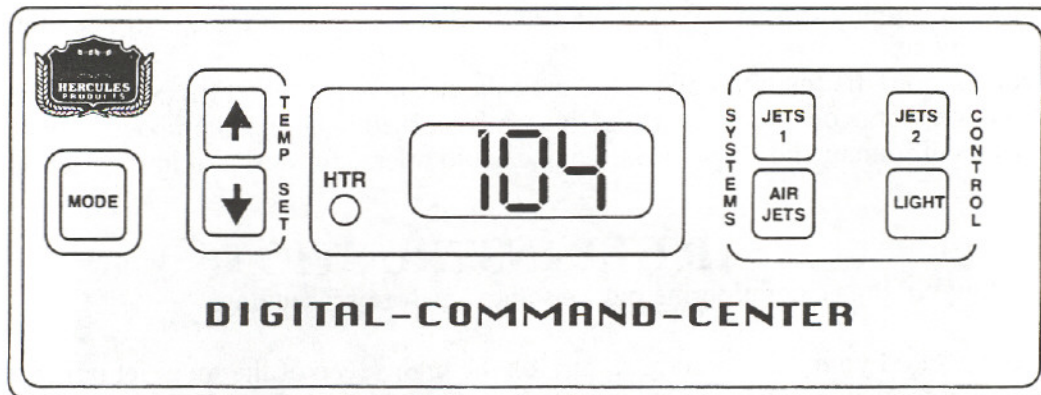
If your spa is equipped with an ozonator, it will plug into a marked receptacle on your control box: intended specifically and solely for use with an Ozonator. Depending upon how this feature was ordered, your ozonator may run 24 hours per day (the preferred method for longer operating life) or only come on with the low speed operation of the main jet pump.

AUXILIARY PUMP

Your equipment and spa may have been provided with a second jet pump for added water-moving performance. If so, this pump is engaged using the JETS 2 pad on your control. The pad will turn it on and off. If after 30 minutes of operation you have not yet shut off the pump, the system will automatically shut it off.



CONTROL PANEL OPERATING INSTRUCTIONS



MODE PAD

The Mode Pad allows you to switch between two different “modes” of operating the low speed of your main pump. This pad also silences the alarm and/or resets the controls in the event an error condition. See section on “ERROR MESSAGES” for use of the Mode pad.

“ECONOMY MODE”

As it comes from the factory, your timer is the only device that will determine when the lower speed of your two-speed main pump will come on and go off, depending on what hours you have set it to operate (see TO SET YOUR TIMER on page 10). As long as your low speed pump is running your water will be filtered, your ozonator (if you have one) will be effective, and your heater will be able to operate to maintain the temperature you have set.

“STANDARD MODE”

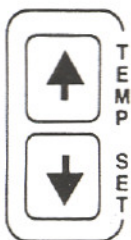
If you want the spa to maintain the water temperature (determined by your thermostat setting) during hours other than those called for in your timer setting, you can additionally have the pump come on as the thermostat calls for heat. Simply press the MODE pad once. You will see 3 dots light up in the display on your control panel. Now the low speed pump will come on when the temperature your thermostat senses drops 2° below your set temperature and then shut off when it senses that the water has returned to your set temperature. To return to timer-only control over the low speed pump (Economy Mode), simply press the MODE pad once again. The dots in the display will go off.

CONTINUOUS PUMP OPERATION

If you wish to have your low speed pump run continuously in order to constantly maintain your water quality and heat as needed, simply pull all of your timer trippers out to the “on” position (see TO SET YOUR TIMER). This setting is often used during winter operation in cold climates.

NO TIMER

If your system did not come with a timer, then you may have a toggle switch that will allow the system to run continuously, or just under thermostat control. If set to run continuously, then switching to Standard Mode will have no effect. If set to run in Standard Mode only, then you must switch to Standard Mode (as described above) in order to get the low speed pump to operate. If you live where the winters are cold, then we recommend setting the unit to run continuously during those times of the year to maintain a more stable water temperature.



Temperature Controls

When either of these pads are touched once, the window will display the current temperature setting. If the pad is held down, the set temperature will increase or decrease, depending on which pad is pressed. Release the pad and after 3 seconds the window will automatically display the current spa temperature. Note: The maximum temperature setting is 104° F. When power is first introduced, the temperature setting will be 50° to prevent the heater from coming on (unless you fill the spa with water colder than 50°). Simply adjust the temperature setting to one above your current water temperature and the heater will come on. **Also note, if the power is interrupted for any reason, you will have to reset your thermostat.**

Heater operation is indicated on the control panel by the lighting of the red indicator just to the left of your temperature display.

WARNING: Be sure to follow the start-up procedure in your installation instructions before setting the thermostat.

NOTE: If your system is running on a 120V, 20A service, or was ordered by your dealer to run with a lower amperage than usual 240V service, your heater will only operate when the pump's low speed is on by itself. Under these circumstances, turning on the blower or high speed jets will turn off the heater.

SYSTEMS CONTROLS

JETS
1

JETS 1:

The Jets 1 pad will turn the high speed of your main jet pump on. If you exit the spa without pressing the pad again, after 30 minutes it will either shut off (with the timer off) or go to low speed operation (with the timer on).

Note: in STANDARD MODE the low speed and heater would come on if there is a heat demand and remain on until the thermostat is satisfied.

JETS
2

JETS 2: (Second Jet pump optional)

If your system includes a second Jet pump for additional performance, your JETS 2-pad will turn this pump on and off. If left on, the second jet pump will automatically shut off after 30 minutes.

AIR
JETS

AIR JETS (Blower)

This pad will simply turn your blower on and off. As an option, you may have a two speed blower. If so, pressing the pad once will engage high speed, pressing it again will slow it to low speed, and pressing a third time will turn it off. If you do not have the option installed, instead of going to low speed the blower will shut off, giving you two "off" positions in the button sequence. If left on, the blower will shut off automatically after 30 minutes of operation.

LIGHT

LIGHT

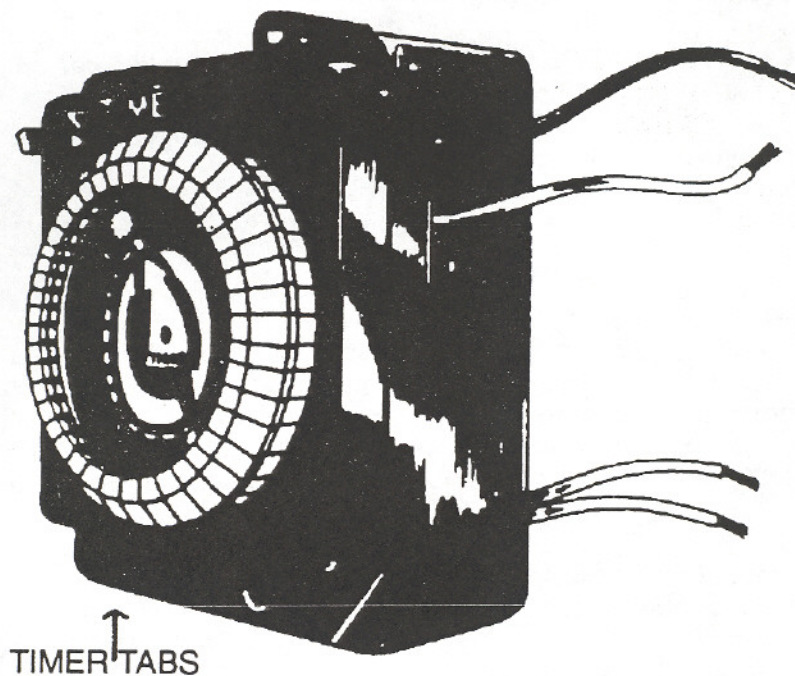
Touch this pad to turn on the spa light. Touch again to turn off. If left on the light will turn off automatically after 30 minutes of operation.



TO SET YOUR TIMER

The timer on your control box (optional feature) is provided to control when the low speed of your two speed main pump will come on and go off to maintain your water quality at a minimal energy cost. As it comes from the factory it is set such that your low speed will not come on. This is done to prevent the system from coming on when power is first introduced in the event you have not yet followed the Pre-Operation instructions on page 7. If you have not yet done this, please do so now. Then follow the instructions below for setting your timer.

Each one of the 48 timer trippers will control your pump for 30 minutes. To initially set your timer, you must align the present time with the point of the arrow in the center of the face. You must then select the time(s) at which you would like the pump to turn on. Example: If the desired "TIME ON" is 9:00 a.m. simply slide the tripper most closely aligned with 9:00 a.m. toward you. The pump will now turn on at 9:00 a.m. and continue to operate for 30 minutes and then shut off. If an hour is desired simply slide two tabs out, etc.





PIEZO ALARM (OPTIONAL)

Your system may include a piezo alarm. If so, it will alert you when each of the following error messages appear on your control panel. If you do not respond to the error message, it will automatically silence itself after 10 minutes.

Error Messages

The following explains the error messages that may be displayed in the control pad window and how to react to each of them.

O H Overheat - Means thermostat circuit failure. There are two temperature pickup sensors on the system to detect overheating: a thermostat sensor and a hi-limit sensor. The thermostat sensor causes the heater to shut down when the water temperature reaches the set temperature. If this should fail and the temperature reaches 112°F, the system will automatically revert to low speed operation and the window will display: "OH". This circuit will automatically reset itself when the spa cools to 2 degrees below the set temperature.

How to react: This may be due to excessive hi speed pump operation, i.e. resetting the hi speed pump continuously after each 30 minute shut down cycle until the spa reaches this temperature. If this is the case, don't do that. If you are sure this is not the case, contact your dealer for service as this is an indication of a failure in the temperature control circuit.

F L O Indicating the water flow has been interrupted. This circuit is controlled by the flow/pressure switch. Opening this circuit will disable the heater and pump circuits.

How to react: To quiet the alarm press the MODE pad on your control. Now make sure you have the proper amount of water in your spa. If you do, check your filter cartridge. It may need cleaning. Remove the cartridge, press the MODE pad on your control again to reset the FLO circuit. If the system senses that the water flow has not been restored, the error message will reoccur and the alarm will sound. The pump may have lost prime. Follow your spa start up instructions and try again. If this doesn't work and the error happens again, shut your system off at the circuit breaker and contact your dealer for service.

I C E Freeze Protection

The spa software will automatically activate the low speed pump and blower to circulate the water when a freeze condition is detected (temperature of the sensor is below 40°F) and automatically shut them back off when the temperature rises to 50°F. The alarm will also go off while this is occurring.

How to react: You don't have to do anything here. The spa is protecting itself. However, you are probably set in Economy Mode operation with the timer trippers set for limited filtration hours.

Having the blower and alarm come on periodically may be annoying. To avoid it, first make sure your blower line is well insulated to protect from freezing, then either set your pump for continuous operation (see CONTINUOUS PUMP OPERATION on page 8) or press the MODE pad to set it for Standard Mode operation. Then set your thermostat to a desired temperature setting. Warning: if your blower line is not properly insulated, and it freezes, the line will break and the spa will drain.



S N 1 **Open Sensor Detection**

The hi-limit sensor is tripped and the spa will be running on low speed only.

How to react: For the hi-limit sensor to trip the temperature at its sensing point must exceed 118°F. The Red reset button on the equipment control face labeled "HI LIMIT" will reset this once the temperature drops below 100°F. If you reset this and the error message goes away, contact your dealer to investigate the cause of the error. This sensor will not trip unless other component failure has occurred.

WARNING: Failure to investigate may result in damage to your spa.

S N 2 **Open Sensor Detection**

The thermostat sensor or heating circuit is nonfunctional or not able to keep up with current heat demand. The spa will be running on low speed only.

How to react: If the program does not sense at least a one degree rise in the water temperature every 1 hour while the heater is engaged, it considers this a sensor failure and gives you this error message. Make sure the cover is in place, especially if the spa is outside during cold weather and you are running it with a 120 volt power supply. If this is not the case, contact your dealer for service.



TROUBLESHOOTING YOUR CONTROL SYSTEM

PROBLEM	CAUSE	SOLUTION
I CAN'T SILENCE THE ALARM	ERROR HAS OCCURRED (CHECK DISPLAY IN WINDOW)	IF ERROR- SEE "ERROR MESSAGES "AND HOW TO REACT"
<p>NOTE: Pressing the MODE button once should silence the alarm while you are responding to the cause. However, it is critical that all error messages be dealt with as described above. If no one is around to silence the alarm, it will automatically silence itself after 10 minutes.</p>		
SPA IS NOT HEATING	TEMPERATURE SET TOO LOW	CHECK TEMPERATURE SETTING
	HI LIMIT IS TRIPPED	RESET SWITCH AND CONTACT YOUR DEALER FOR SERVICE (SEE "SNI" IN "ERROR MESSAGES")
	DRY-FIRE SWITCH IS TRIPPED	CHECK WATER VALVES IF CLOSED , OPEN THEM. SWITCH WILL AUTOMATICALLY RESET WHEN THE TEMPERATURE IN THE HEATER MANIFOLD DROPS TO BELOW 85 DEGREES. IF VALVES ARE NOT CLOSED CONTACT YOUR DEALER
SYSTEM HUNG - CONTROL PAD WON'T RESPOND	ELECTRICAL NOISE , SPIKES	SHUT POWER OFF FOR 30 SECONDS, THEN RESTORE. IF STILL HUNG , CONTACT YOUR DEALER
CONTROL PANEL APPEARS DEAD	REPEATED BRIEF POWER INTERRUPTION	SHUT POWER OFF, WAIT 30 SECONDS, AND RESTORE. IF THIS DOESN'T CORRECT IT, CONTACT YOUR DEALER

If your system repeatedly " hangs up", you could be experiencing some electronic failure. Contact your dealer for service.



FILTER MAINTENANCE

Cartridge filtration because of its simplicity, ease of maintenance, efficiency, and absence of backwash effluent is very desirable. Filtration is accomplished by causing water to flow through fine mesh polyester elements. As water flows through the elements, suspended particles are entrapped on the element surfaces. When the element surfaces become clogged, the filter is disassembled and the elements are removed for cleaning. This is accomplished by spraying with a garden hose until all entrapped dirt is removed. Then it must be soaked in a cleaning agent for at least 10-12 hours before returning to service. (Consult your spa salesperson to acquire proper cleaning agent.) After installing the clean elements, the filter is ready for another cleaning cycle. For further instruction, refer to the Owner's Manual for your filter.

NOTE: Be sure to turn the power to your equipment off before cleaning your filter, and to follow instructions on page 7 before restoring power to your equipment.

PROTECT YOUR SPA

Cold climates, where danger of freezing exists, require special care on your part in order to prevent damage to the spa shell and equipment. If you plan to use your spa during the cold months, be sure your pump is running frequently enough to keep water moving so that the heater will operate. It may be best to set your controls to keep the pump on low speed at all times (See Page 8 "Continuous Pump Operation"). This will keep the water from freezing and the heater will come on as the temperature drops.

WARNING: If you have a power outage, and cold temperatures are a possibility, your spa and equipment will quickly freeze, especially if it is mounted in a deck without a cabinet. Ice in the spa and equipment will cause damage. You should consider the need to winterize your spa if it is to be dormant for a period. This is especially true if you are taking a winter vacation.

WINTERIZING YOUR SPA

Follow the procedure below to help prevent damage to your spa and related equipment.

1. Drain the spa of all water.
2. Run the AIR JETS to clear the air channels of water. 10-20 seconds should be sufficient.
3. Remove any remaining water with a sponge. If you have a shop-vac, try vacuuming as much water as possible out of the jets and the spa shell. If you cannot remove all of the water (especially from the air channels) anti-freeze should be added to the remaining water. If anti-freeze is used, it should be inhibited Propylene Glycol.
4. Shut off all electrical power at the breaker.
5. The filter should be drained and cartridge removed and cleaned. If the filter is top-loading, remove the filter cartridge and pour anti-freeze as mentioned earlier into the filter canister. Store the filter element in a room with above-freezing temperatures. If the filter is under the cabinet, remove the canister with the cartridge and store both inside.



TROUBLE-SHOOTING YOUR SPA

PROBLEM	THINGS TO CHECK
Spa Equipment will not run	<ol style="list-style-type: none">1. GFCI in supply circuit tripped2. Insufficient voltage in supply circuit3. Breaker tripped in fuse box
Pump does not prime	<ol style="list-style-type: none">1. Inlet-Outlet valves closed2. Not enough water in spa3. Air-locked--open air bleed valve at top of filter.
Hydrotherapy jets don't operate or are intermittent	<ol style="list-style-type: none">1. Low flow because of dirty filter-clean filter2. Air valves closed-open valves3. Water level too low4. Adjustable jets set too low5. Pump not primed
Spa doesn't heat	<ol style="list-style-type: none">1. Heater element not energized-turn up thermostat2. Heater element burned out3. Spa not covered4. Ambient temperature too low
Heater Failure	<ol style="list-style-type: none">1. Are the ball valves open?2. Is the water level correct?3. Is the filter cartridge dirty? (remove if in doubt)4. Are the jets wide open?5. Is the system primed?6. Are the fittings tight?7. Are the O-rings in place?8. Is the thermostat set properly?9. Is the Hi Limit switch tripped?(If so, call service person to determine why)10. Is there power to the heater?11. Is the pack in the proper mode for heater operation?12. Does the heater work on high speed?

ELECTRONIC SECTION

COMPONENT

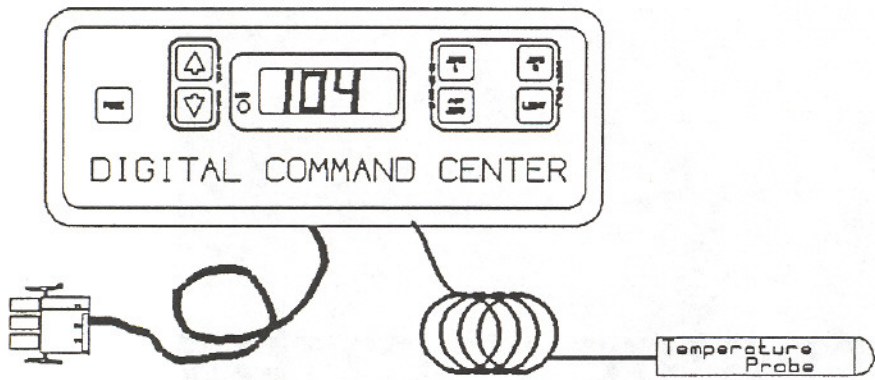
BREAKDOWN

DCC

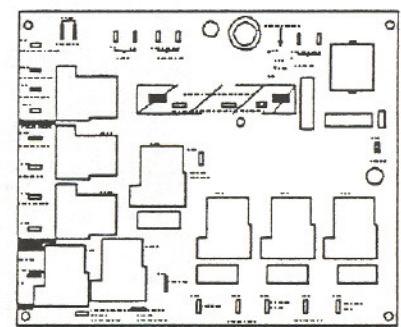
PARTS USED IN DIGITAL COMMAND CENTER CONTROL HEADS

DCCSYC_GCD

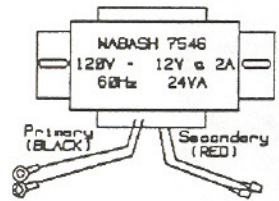
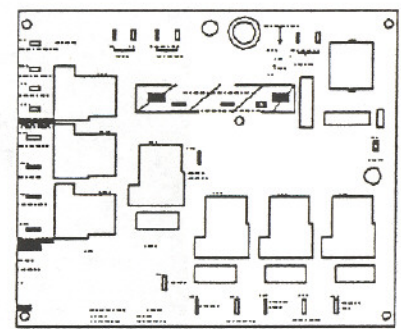
Control Panel Assembly
(With one temp. probe) 7CN8005
Assembly with two probes-7CN8005AFP



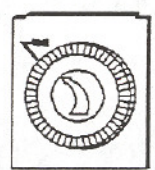
DCC Slave for units
with GFCI
7CB8006



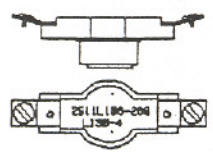
DCC Slave for units
without GFCI
7CB8007



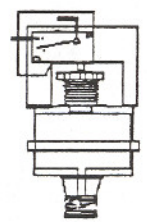
Transformer Assy
7LT8801



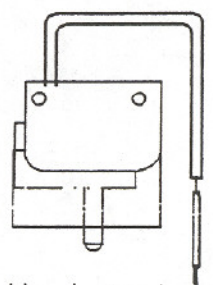
Timer
760092
PB815MZ52
Blue Trippers



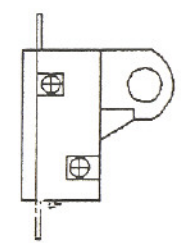
Dryfire Override
Switch
760155



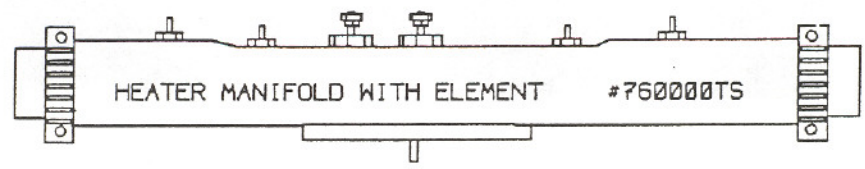
Pressure
Switch
760073TS



Hi Limit
760078

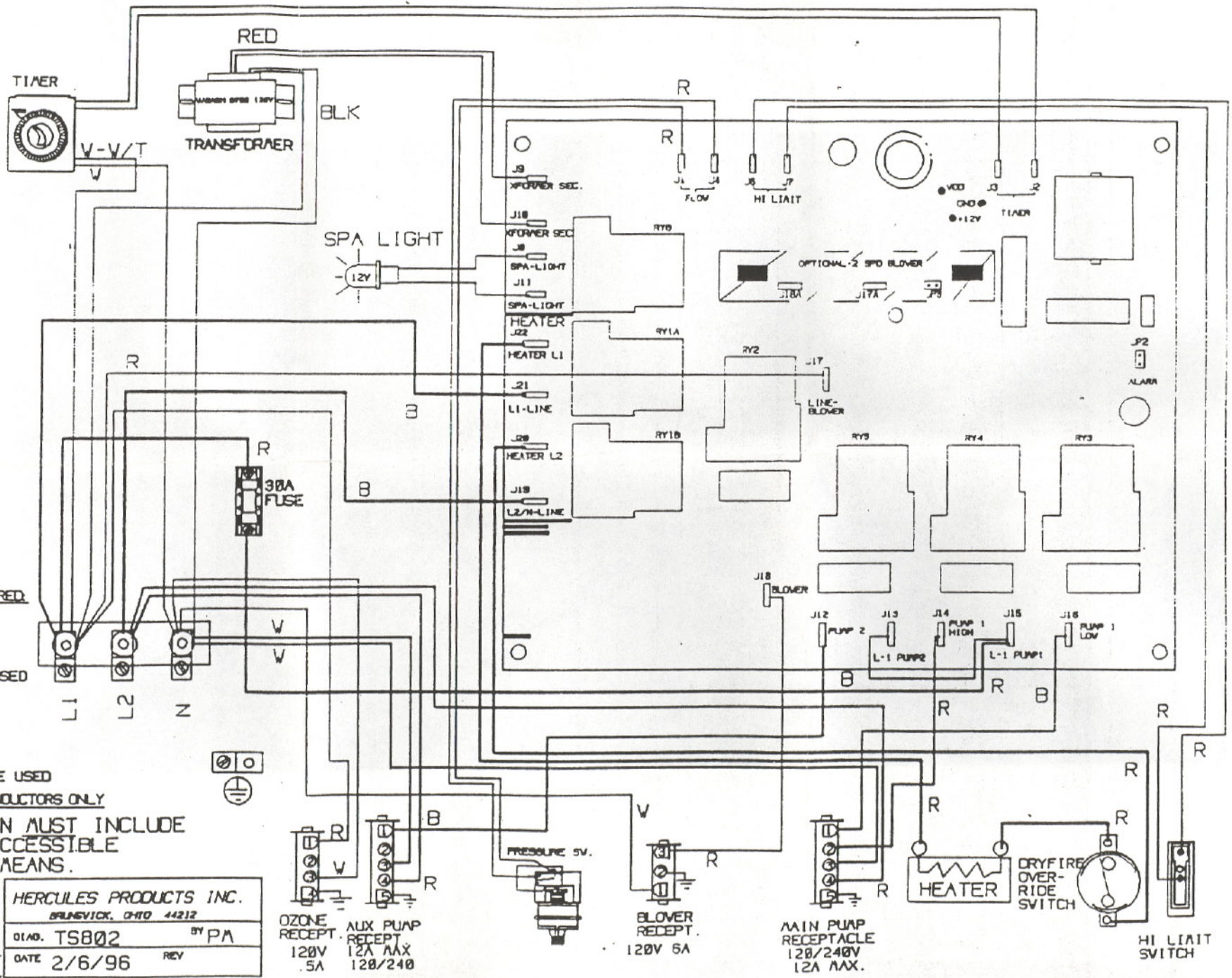


GFCI
760094



HEATER MANIFOLD WITH ELEMENT #760000TS

DCC



LINE SERVICE REQUIRED.

240V AC 60HZ
 40A 3WIRE
 50A CRCT BRKR
 NCA 50A
 IF ONE PUMP IS USED

-OR-
 240V AC 60HZ
 40A 3WIRE
 60A CRCT BRKR
 NCA 60A
 IF TWO PUMPS ARE USED

USE COPPER CONDUCTORS ONLY

INSTALLATION MUST INCLUDE
 A READILY ACCESSIBLE
 DISCONNECT MEANS.

HERCULES PRODUCTS INC.		
BRUNSVICK, OHIO 44212		
DIAD. TS802	BY PA	
DATE 2/6/96	REV	

OZONE RECEPT. 120V 5A
 AUX PUMP RECEPT. 12A MAX 120/240

BLOWER RECEPT. 120V 6A

MAIN PUMP RECEPTACLE 120/240V 12A MAX.

HI LIAT SWITCH