Morgan Spa

Owner's Manual

Operation and Care For Your Spa

OVER 35 YEARS IN BUSINESS

Spas manufactured between:
January 1996 to December 1997

Disclaimer:

The information in this manual is accurate to the best of Morgan Buildings and Spas, Inc.'s knowledge. However, Morgan assumes no responsibility for errors or omissions. Nor is any liability assumed for damages resulting from use of the information contained herein.

Congratulations on your purchase of a Morgan Spa. Your Owner's Manual provides installation, operation and maintenance instructions. Please review it and keep it for future reference.

Owner's Record Information

Date Purchased _____

Purchased From _____

Installed By _____

Serial Number _____ Model _____

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REV. 04/97

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Installation and Safety Instructions

Introduction
Your Morgan spa incorporates the finest components available, assembled in a manner designed to provide maximum enjoyment, ease of operation and years of trouble-free service.

Please read your owner's manual very carefully and thoroughly. Keep it in an easily-accessible place, so you are able to refer to it whenever you use your spa. The following pages contain complete, detailed instructions and precautions regarding the use, care and maintenance.

IMPORTANT SAFETY INSTRUCTIONS FOR ELECTRICAL EQUIPMENT

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

1. READ AND FOLLOW INSTRUCTIONS.

2. **WARNING**-To reduce the risk of injury, do not permit children to use this product unless they are closely supervised.

3. A wire connector is provided on this unit to connect a minimum NO. 8 AWG solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5m) of the unit.

4. **DANGER**-Risk of Injury
   A. Replace damaged cord immediately.
   B. Do not bury cord.
   C. Connect to a grounded, grounding type receptacle only.

5. **WARNING**-All 120V models are provided with a ground fault circuit interrupter located on the power cord. The GFCI must be tested before each use. Connect the plug to the power supply, and with 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 fails to operate in this manner, there is a ground current flowing indicating the possibility of an electric shock. Disconnect the plug from the receptacle until the source of the breakdown has been identified and corrected. *NOTE*: This only applies to 120V operated spas.

6. **DANGER**-Risk of Accidental Drowning. Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use this spa unless they are supervised at all times.

7. **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 then the flow rate marked on the original suction fitting.

8. **DANGER**-Risk of Electric Shock. Install at least 5 feet (1.5m) from all metal surfaces. As an alternative, a spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a minimum No. 8 AWG solid copper conductor to the wire connector on the terminal box that is provided for this purpose.

9. **DANGER**-Risk of Electric Shock. Do not permit any electric appliances, such as a light, telephone, radio or television within 5 feet (1.5m) of a spa.

10. **WARNING**-To Reduce the Risk of Injury:

A. The water in a spa should never exceed 40°C (104°F). Water temperature between 38°C (100°F) and 40°C (104°F) are considered safe for a healthy adult. Lower water temperatures are recommended for young children and when spa use exceeds 10 minutes.

B. Since excessive water temperature has a high potential for causing fetal damage during the early months of pregnancy, pregnant

or possibly pregnant women should limit spa water temperature to 38°C (100°F).

C. Before entering a spa, the user should measure the water temperature with an accurate thermometer since the tolerance of water temperature regulating devices varies.

D. The use of alcohol, drugs, or medication before or during spa 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 pressue, circulatory system problems, or diabetes should consult a physician before using a spa.

F. Persons using medication should consult with a physician before using a spa since some medications may induce drowsiness while other medications may affect heart rate, blood pressure, and circulation.

G. Do not allow you spa temperature to go above 40°C (104°F). Immersion in water above this point and prolonged immersion in water even at lower temperatures can cause hyperthermia.

HYPERTHERMIA: The cause, 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 an increase in the internal temperature of the body, dizziness, lethargy, drowsiness, and fainting.

The effects of Hyperthermia include: (1) failure to perceive heat, (2) failure to recognize the need to exit spa or hot tub, (3) unawareness of impending hazard, (4) fetal damage in pregnant women, (5) physical inability to exit the spa or hot tub, and (6) unconsciousness resulting in the danger of drowning.

WARNING

The use of Alcohol, Drugs or Medication can greatly increase the risk of fatal Hyperthermia.

11. **SAVE THESE INSTRUCTIONS.**

WARNING

DO NOT EXCEED 104°F

Check Water Temperature Before Entering Spa

A WORD ABOUT SPA FUN AND SAFETY

Your *MORGAN* spa provides year round enjoyment. For fun and safety, be sure you and your family members review this safety manual completely. Keep it on hand for future reference or pass it along to new owners. MORGAN recommends that you follow these safety precautions:

1. Do not use the spa when pregnant, if you suffer from heart disease or high/low blood pressure unless you have obtained the approval of a medical doctor.

2. If you are taking medication you should consult a medical doctor before using the spa.

3. Do not use the spa when under the influence of alcohol or other drugs.

The calming effect of your spa in combination with the effects of alcohol and/or drugs are a dangerous combination which can induce unconsciousness that can lead to drowning in the spa water. It is critical that you understand the serious danger created by this combination, and do not use the spa under the influence of alcohol and/or drugs.

4. Persons with long hair should wear a bathing cap when using the spa and small children with long hair and/or loose clothing should never be allowed to use the spa. Hair or clothing could be sucked into skimmers, suction fittings or drains causing serious injury or death.

5. Using the spa alone is not recommended.

6. Always check the water temperature before using the spa. Make sure the water temperature is never higher than 104°F (40°C). Higher temperatures could result in serious bodily injury or death.

7. Do not expose acrylic shell to direct sunlight for a long period of time. Replace your spa cover immediately after use.

8. Be careful of wet and slippery surface. Use caution when entering and exiting the spa.

9. Do not allow anyone to stand on the spa cover. It is not designed to support weight.

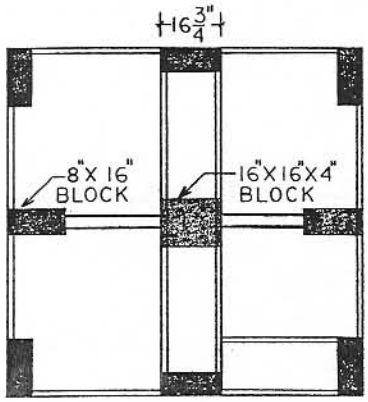
10. Do not operate the pumps in high speed or jet operation with the cover in place. Extensive operation can cause heat build-up and damage your spa.

You don't have to take fun out of spa ownership. Your knowledge of safety precautions and good sense minimizes risks. One individual must assume responsibility for supervising the spa. This person should be thoroughly familiar with the contents of this manual and be responsible for enforcing "house rules" for your spa.

SPA LOCATION

MORGANS DOES NOT ASSUME ANY RESPONSIBILITY OF DAMAGE CAUSED BY WATER LEAKAGE OR WEIGHT OF THE SPA. SELECTING THE PROPER LOCATION FOR YOUR SPA IS VERY IMPORTANT.

IF NOT INSTALLED ON CONCRETE SLABS, MAKE SURE GROUND CONDITION WILL SUPPORT BLOCKING POINTS. IF SETTLING DOES OCCUR THE SPA WILL NEED TO BE RELEVELED. FAILURE TO MAINTAIN A LEVEL SPA COULD DAMAGE YOUR SPA.



(Note: This is a typical blocking diagram.)

If your spa is to be located **outdoors**, consider the following:

- Local codes pertaining to fencing.
- Local electrical codes.
- View from house.
- Wind direction and sun exposure.
- Location relative to trees (falling leaves and shade).
- Dressing and bathroom locations.
- Storage area for maintenance equipment and chemicals.
- Landscaping and night time lighting.
- Sprinkler systems already installed in yard.
- Location to faciliate adult supervision.
- A level, hard surface capable of withstanding weight in excess of 4,000 lbs. (Larger spa models when filled with water.)
- Rain run-off from the roof.

If your spa is to be located **indoors**, consider the following:

- Indoor spas develop high humidity. Removing this humidity can be accomplished by cross ventilation fans, oversized dehumidifiers, or both.
- Chemicals will evaporate off the water surface. This may cause corrosion to certain metals found in home hardware and appliances.
- Floor drains should be provided to carry off water splashed from the spa.
- Walls, ceilings, woodwork, etc. should be made from materials capable of withstanding high humidity.
- Be sure the supporting structure is capable of withstanding the weight of the spa which is in excess of 4,000 lbs. (Larger spa models when filled with water.)
- Be sure surface on which spa is to be put is smooth and level.

ELECTRICAL REQUIREMENTS FOR 120V/240V CONVERSION POWER PACK

Prior to performing any service to the equipment, ***TURN OFF ALL*** primary electric power at the main circuit breaker or disconnect the panel. All electrical connections can be made by removing the lower front cover of the electrical control box.

All electrical connections to the equipment must be performed by a qualified electrician in accordance with the National Electrical Code and in accordance with any local electrical codes in effect.

All connections should be made with the wiring diagrams within this manual. This equipment is designed to operate on 60 Hz Alternating Current only, at a voltage of 120/240 volts as required.

Connections should be made using copper conductors only. The connecting wire, circuit breakers or fuses must all be sized to accommodate the Total Amperage load as specified on the data label.

A bonding lug has been provided on the equipment module to allow connection to local ground points. To reduce the risk of electrical shock, a NO. 8 AWG solid copper bonding wire should be run from this lug to any metal ladders, water pipes or other metal within 5 feet of the spa.

120 VOLT INSTALLATION

Units to be operated at 120 volts must be connected to a properly wired 120 volt, 20 AMP dedicated receptacle.

An equipment pack installed for 120 volt operation requires a two-wire electrical service plus ground. Refer to manual for wiring instructions. Assure that all procedures on the conversion pages have been followed to allow for 120 volt operation.

240 VOLT INSTALLATION

240V Digital Control Systems

Units to be operated at 240 volts must have all electrical connections performed by a qualified electrician in accordance with the National Electrical Code or other local electrical codes in effect at the time of installation.

Equipment installed for 240 volt operation requires a three-wire 50 AMP GFCI protected circuit plus ground. Assure that your qualified electrician must use the proper size of wire for the distance and amperage draw, and all the procedures on the conversion pages have been followed.

WARNING

FOR YOUR SAFETY
RISK OF ELECTRICAL SHOCK

MORGAN REQUIRES THAT YOUR SPA BE WIRED BY A LICENSED ELECTRICIAN.

GFCI PROTECTION IS PROVIDED ON ALL 120 VOLT OPERATED SPAS BY MEANS OF A CORD END GFCI. PLUG THIS CORD END GFCI DIRECTLY INTO A 20 AMP DEDICATED CIRCUIT.

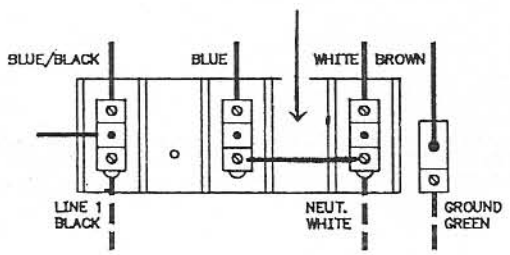
NO GFCI PROTECTION IS PROVIDED FOR 240 VOLT OPERATED SPAS. YOUR ELECTRICIAN MUST PROVIDE GFCI PROTECTION.

YOUR SPA MUST BE GROUNDED. THIS GROUNDING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.

120 VOLT WIRING DIAGRAM
For 120V of Convertible 120/240

20 AMP Circuit

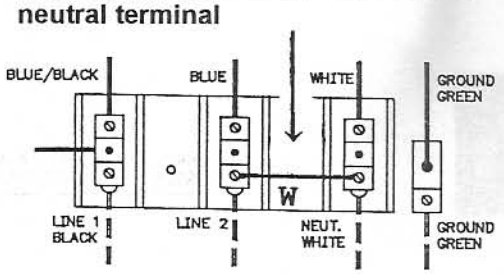
White Jumper for 120V Only



240 VOLT WIRING DIAGRAM

50 AMP Circuit

Remove and discard white jumper wire on terminal block from L-2 and neutral terminal



FIELD WIRING DIAGRAM
120/240V Convertible Digital Pack

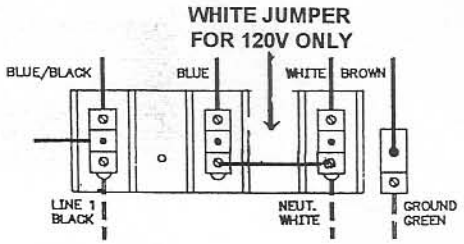
DANGER
RISK OF ELECTRIC SHOCK

120 Volt Wiring Diagram

THIS UNIT IS PRE-WIRED FOR A 120 VOLT 20 AMP 60Hz DEDICATED CIRCUIT ONLY. NO OTHER DEVICE MAY BE ON THIS CIRCUIT. PLUG INTO AN APPROVED GROUNDING TYPE RECEPTACLE ONLY.

DO NOT ATTEMPT TO ALTER THE PLUG OR USE CONVERTERS TO FIT OTHER RECEPTACLE CONFIGURATIONS.

120 Volt Wiring Diagram
For 120/240V Convertible Digital Pack
Volts 120; Amps 16, 2 Wire Plus Ground
Conductor Ampacity 20 Amps Circuit Breaker 20 Amps
1 Phase, 60 Hz



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240 Volt Wiring Diagram

CONVERSION TO 240V: CONVERSION TO 240V MUST BE DONE BY A LICENSED ELECTRICIAN ONLY. TO WIRE THE SYSTEM FOR 240V OPERATION: SUPPLY INPUT POWER AS INDICATED IN FIG. 2 AND INSTALL THE PIN AS SHOWN IN FIG 1.

THE 120V POWER CORD THAT CAME WITH THE UNIT MUST BE REMOVED AND DISCARDED WHEN THE UNIT IS CONVERTED TO 240V.

Remove black pin on control board at mode select from 20A to 50A

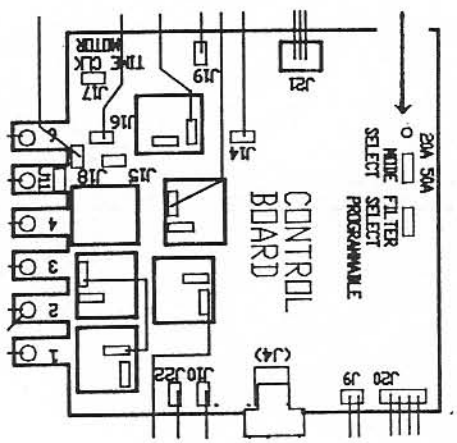


Fig 1.

240 Volt Wiring Diagram
Volts 240; Amps 39; 3 Wire Plus Ground
Conductor Ampacity 49 Amps
Ground Fault Circuit Interrupter, 50 Amps
1 Phase, 60Hz

REMOVE AND DISCARD WHITE JUMPER WIRE ON TERMINAL BLOCK FROM L-2 AND NEUTRAL TERMINAL

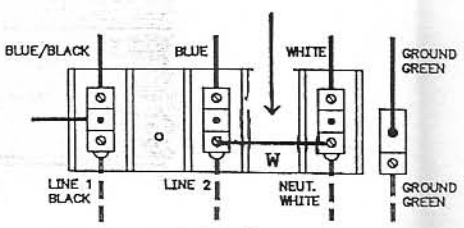


Fig. 2

NOTE: SEE DATA LABEL ON SPA CABINET OR MANUAL FOR MAXIMUM AMPERAGE DRAW REQUIREMENT.

FIELD WIRING DIAGRAM
240V Digital Control System
240 Volt Wiring

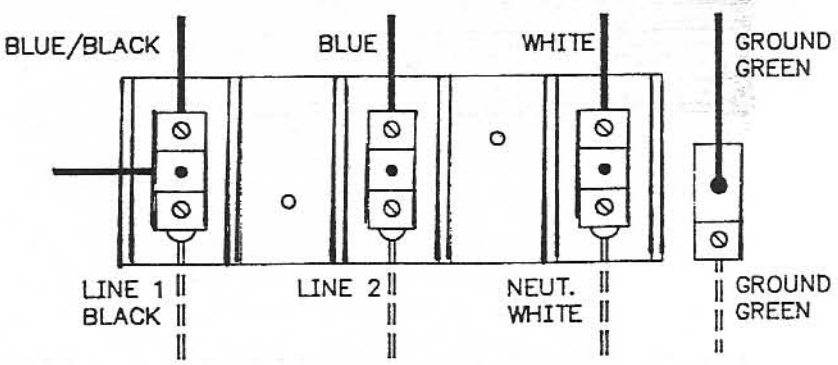
DANGER
RISK OF ELECTRIC SHOCK
UNIT MUST BE GROUNDED AND BONDED

ALL WIRING MUST BE DONE BY A LICENSED ELECTRICIAN ONLY

240V Digital Single Pump
Volts 240, Amps 35, 3 Wire Plus Ground
Digital Control System
Conductor Ampacity 44 Amps
Ground Fault Circuit Interrupter
50 Amps
1 Phase, 60 Hz

240V Dual Digital Pump
Volts 240, Amps 40, 3 Wire Plus Ground
Digital Control System
Conductor Ampacity 50 Amps
Ground Fault Circuit Interrupter
50 Amps
1 Phase, 60 Hz

240 VOLT WIRING DIAGRAM



(NOTE: SEE DATA LABEL ON SPA CABINET OR MANUAL FOR MAXIMUM AMPERAGE DRAW REQUIREMENT.)

INITIAL FILL & STARTUP

1. Turn off all electrical power to the spa.

2. The equipment pack must never be operated without water in the spa, as serious damage to the heater and/or pump could result.

3. Fill your spa with normal tap water. Do not use water from any type of water softener.

4. Fill the spa with water to the recommended level, which is approximately 5 inches from the top.

5. It is important to run the pump for several minutes to remove all the air from the system.

6. At this time, add MORGAN Metal Protector and Stain Preventor. ***All chemicals should be added with the spa in blower mode only***. Add MORGAN Shock-Out to activate your Morgan Nature 2 spa purifier which is inside the cartridge filter. Follow the recipe given in the Spa Purification section under Section 6, Chemicals.

7. At this time you will need to test your water with the Test Strips, which you will find in your chemical start-up kit. Check the water's total alkalinity and pH and adjust to proper level. Refer to Section 7 in this manual for instructions or you may refer to the Water Balance of Spa Maintenance Guide that is provided in your chemical start-up kit.

8. Allow the spa to remain ON in low speed mode or filtration cycle for 24 hours, then clean the filter thoroughly. You will need to refer to the "filteration cycle section" found in Section 5, Recommended Maintenance Schedule.

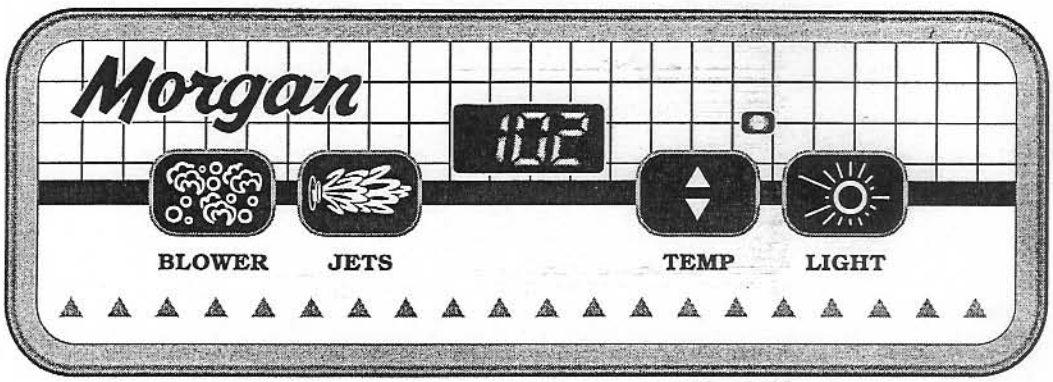
IMPORTANT NOTE: Read and follow all instructions on the chemical labels.

SECTION 2
Digital Control System

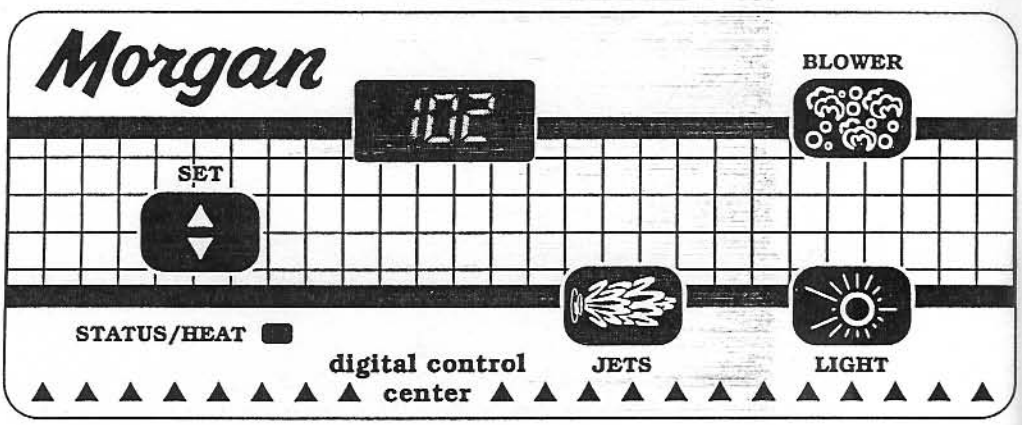
Initial Start Up

Your spa control has been specifically designed so that by simply connecting the spa to its properly grounded source, the spa will automatically heat to the set temperature. One minute after start-up, the spa will begin a three hour filter cycle to clean the water. To select a different duration, see "Preset Filter Cycles."

Morgan Digital Convertible Control System



Morgan Digital Control System



Temperature adjustment

(minimum temp. 80° F/maximum temp. 104° F.) Temperature adjustment is controlled by pushing the set temperature pad. The display shows the actual water temperature unless the pad is pressed. When the pad is pressed, the display will show the set temperature. Pressing the pad a second time will cause the set temperature to increase or decrease depending on what direction was last chosen. Each successive press will change the set temperature in the same direction.

If the opposite direction is desired, release the pad and let the display revert to the actual water temperature again. Press the pad to display the set temperature, and again to make the temperature change in the desired direction.

Jets

Press the jets pad to turn on the low-speed pump. Press the pad again to turn on the high-speed pump, and again to turn off the pump. The low-speed pump will automatically turn off after 4 hours and the high-speed pump after 30

minutes. Due to Automatic Spa Control, the low-speed pump will start automatically when the heater is turned on, when a filter cycle is activated, or when a freeze condition is detected. If the low-speed pump is on under Automatic Spa Control, it cannot be deactivated from the panel; however, the high-speed pump may be started.

Blower

The spa has a 3-speed blower. Press the blower pad to turn on the highest speed, again for the medium speed, a third time for the lowest speed, and again to turn off the blower. The blower will turn itself off after 30 minutes.

Spa Light

Press the light pad to turn on and off. The spa light will turn itself off after 4 hours of operation. Two different colored lenses are supplied. By simply snapping the lens cover over the top of the light fitting you can change the color mood of your spa.

To Change A Light Bulb: Using a #2 square head screw driver, remove access panel on side of spa closest to the light. Remove black light socket from light reflector by turning counter-clockwise one-quarter turn. Gently pull on bulb to remove from socket. *DO NOT* try to twist or move bulb from side to side for it might break off in socket. Once bulb is removed insert new bulb into socket slot and install socket back on reflector with a quarter turn clockwise.

Preset Filter Cycles

Your spa will automatically filter itself twice each day. The first filter cycle will begin one minute after the spa is energized. The second filter cycle will begin twelve hours after the start of the first filter cycle. Filtration duration is programmable at the top-side panel. Press the "Set" pad then the "Jets" pad, and "F3" will be displayed on the panel. F3 is the default filter time and indicates a 3 hour cycle. Continue pressing the "Set" pad to cycle through the rest of the filter time options; "F6" = 6 hours, "F9" = 9 hours, and "FC" = 24 hours. During filtration, the low-speed pump and ozone generator will run. The blower will activate for a 30 seconds at the start of the first filter cycle to clean out the air channel.

Safety Features

Overheat protection

If the spa should overheat, the display will flash **"OH"** (meaning the system is overheating.) In such a condition, **DO NOT ENTER THE WATER**. Turn off all the power to the spa and contact your dealer or service organization. To reset the spa, press any panel button.

Flow switch detection

If a pressure switch malfunctions, the display will show **"FL"** (meaning flow.) Contact your dealer or service organization.

Open sensor (Spa is deactivated.)

If either the high-limit or water temperature sensor malfunctions, the display will show **"Sn"** (meaning sensor.) Contact your dealer or service organization.

Standby mode (Spa is deactivated.)

The spa can be disabled when the filter needs to be replaced. Press the "Set" pad then the "Blower" pad and the display will show **"Sb."** All spa functions will be disabled except for freeze control. Press any panel button to resume spa operation.

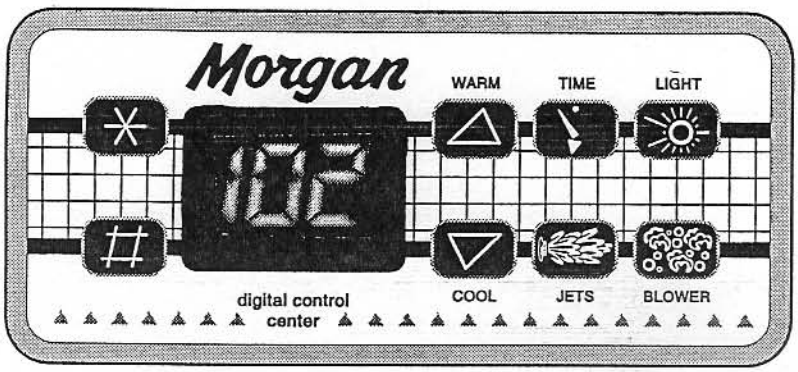
WARNING! SHOCK HAZARD!
NO USER SERVICEABLE PARTS.

DO NOT attempt service of this control. Contact your dealer or service organization for assistance. Follow all owner's manual power connection instructions. Installation must be performed by a licensed electrician, and all grounding connections must be properly installed.

Trouble Shooting Guide

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Equipment pack does not operate	Fuse	Replace fuse on front panel
	Tripped GFCI breaker, main panel.	Reset, if breaker will not reset, call for service.
	Cord end GFCI has tripped.	Push "reset." If the GFCI will not "reset," the possibility of shock exists. Call Morgan representative for repairs. Applies to 120/240V convertible models only.
	Check display panel for message for trouble shooting.	Refer to Trouble Shooting Guide under Digital Controls.
Low flow of water, reduced jet action.	Clogged filter.	Clean filter.
	Plugged or restricted discharge line or suction line.	If obstruction is not visible, contact your Morgan representative.
	Water level too low.	Add water.
	Partially closed inlet or outlet slide valve.	Make sure the handles of the slide valve are pulled out all the way.
Pump leaks at shaft.	Bad seal.	Contact your Morgan representative.
Equipment pack works, but heater does not work.	Incoming power is 240V, but pack has not been converted to 240V operation.	Check the conversion plug in lower panel of control box. Make conversion as shown by diagram on the inside of the power access box.
	Equipment pack is not receiving 240V but wired for 240V.	Have checked by a qualified electrician.
	Thermostat set too low.	Turn thermostat up.
	Hi-limit switch tripped.	Check display panel. Refer to Trouble Shooting Guide under Digital Controls.
	Spa in wrong mode (economy).	Put spa in correct mode.
Does not heat to proper temperature.	Spa cover left off.	Using spa cover when the spa is not in use will shorten the heating time.
	Did not allow adequate time for initial heating.	Allow adequate time for initial heating. Minimum 24 hours for 120V and 8 hours for 240V.
	Thermostat too low.	Turn thermostat up.
Pump runs, but won't prime. No water coming from jets.	Air in filter system.	Open bleeder valve at top of filter canister until steady stream of water begins.
	Inlet or outlet valve closed.	Open valve.
	Impeller clogged.	Contact your Morgan representative.
	Water level too low.	Add water.
Pump motor hums, but does not start.	Binding of motor shaft.	Contact your Morgan representative.
	Improperly wired.	Contact qualified electrician.
Noisy pump.	Motor loose on mounting.	Tighten.
	Foreign material in pump.	Disassemble pump and clean. Contact your Morgan representative.
	Impeller damaged.	Contact your Morgan representative.
	Worn bearing.	Contact your Morgan representative.

SECTION 3
Morgan Deluxe Digital Control System



CONTROL PANEL PADS & FUNCTIONS

(Each pad has a specific function, thus eliminating any confusion for the spa user.)

USER'S PADS:

1. TEMPERATURE: When either of the ▲ or ▽ pads is touched once, the LCD will display the set temperature, as well as the words "set heat." Each time either of these pads is pressed again, the set temperature will increase or decrease, depending upon which pad is pressed. After 3 seconds, the LCD will automatically display the current spa temperature.

2. JETS: Push the pad once and pump 1 (low speed) will turn on. Push the pad again and pump 1 (high speed) will turn on. Push the pad again and pump 2 (high speed) will turn on. Push the pad a fourth time and only pump 2 will be on. Each pump will automatically turn off after 30 minutes of operation, except the pump1 (low speed) will turn off after 4 hours.

3. BLOWER: Push the pad once and the blower will turn on in high speed. Push the pad again to get medium speed. Push the pad again to get low speed. Push the pad again to turn off. The blower automatically turns itself off after 15 minutes of operation.

4. LIGHT: Press the pad once to turn on the spa light. Press the pad again to turn it off. The light will automatically turn itself off after 4 hours of continuous operation.

To Change A Light Bulb: Using a #2 square head screw driver, remove access panel on side of spa closest to the light. Remove black light socket from light reflector by turning counter-clockwise one-quarter turn. Gently pull on bulb to remove from socket. *DO NOT* try to twist or move bulb from side to side for it might break off in socket. Once bulb is removed insert new bulb into socket slot and install socket back on reflector with a quarter turn clockwise.

5. TIME: Press the pad to view the time of day. The display will revert to the current temperature within 3 seconds.

DISPLAY SCREEN:

6. LIQUID CRYSTAL DISPLAY: Continually shows the operating status of the spa, as well as the various monitoring functions and programming information.

OWNER'S PADS:

7. PROGRAM FUNCTION : Initiates time setting and panel lock routines.

8. MODE FUNCTION : Switches spa operation to either the economy or standard mode, and resets the spa in the case of an overheat.

SYSTEM PROGRAMMING

Economy/Standard Selection:

Press the mode pad to select the economy or standard setting. When standard is selected, the spa will maintain the set temperature. When economy is selected, the spa will maintain 20°F. below the set temperature. In

either mode, the spa will maintain itself per the schedule under "Filter Cycle."

Setting the Time of Day:

1. Push the "TIME" pad to view the time of day. (The display will revert to current temperature within 3 seconds.)

2. Push the program pad to program the time of day.

3. Push the or pad to set time forward or set time backward respectively.

4. Push the mode pad to exit.

FILTER CYCLES

Once the time has been set correctly, the spa will display that it is in a filter cycle for a 2-hour period every 12 hours. During this period, the heater will be enabled when the spa is in economy mode. However, the heater may be disabled when in economy mode by following the steps in the "Changing Filter Cycle" section.

The blower will turn on for 30 seconds at the start of each filter cycle to clean out debris. The low-speed pump will constantly run during the filtering times unless the high-speed pump is on.

Whenever a filter cycle is active, this automatic filtering sequence is indicated by the following messages on the LCD screen:

Filter 1: The first filter cycle automatically turns on at 2:00 AM and operates until 4:00 AM. The heater will operate in the economy mode.

Filter 2: The second filter cycle is automatically activated at 2:00 PM and operates until 4:00 PM. Again, the heater will operate in the economy mode.

CHANGING FILTER CYCLES

If the preset times are inconvenient, if a different duration is preferred, or if you wish to leave the heater off during filtering, the following procedure can be used to change the automatic filter cycle settings.

1. Press the pad. (The time of day will appear.)

2. Press the program pad ("Set Time" message will appear on the LCD.)

3. Press the program pad again.

("Set Start Filter 1" message will appear. At this point, each time the program pad is pressed, the filter-start time, the heater-enable status, and the filter-stop time will be indicated on the LCD screen.)

4. When the filter-start or filter-stop times are displayed on the screen: press the or pad to reset the times.

5. When the "set heat" message is displayed: press the or pad to set the center display to "on" or "off."

In the **"on"** position, the spa will warm to the set temperature during the filter cycles. In the **"off"** position, the heater, in the economy mode, will not be activated during the filter cycles.

6. After entering the filter-set routine, you must: press the program pad to proceed through all the start and stop times for both filter cycles. Follow the same procedure to adjust "Filter 2" settings.

7. To exit the filter-set routine, press the mode pad and the LCD will display the current water temperature.

PANEL LOCK

The panel may be locked in the following ways to prevent unauthorized use. When the lock is engaged, all automatic spa functions will operate normally.

1. Panel Lock: Every pad on the panel is non-functional until the panel is unlocked.

2. Temperature Lock: Only the set temperature is non-changeable. All other pads and functions are active.

TO LOCK THE PANEL

The following pads must be pressed within 3 seconds:

1. Press the program pad . The LCD will show "LOC."

2. Press the mode pad . The LCD will show "O."

3. Press the ▲ pad, and "1" will appear on the LCD.

The center display will show the spa temperature along with the lock symbol.

TO LOCK THE SET TEMPERATURE ONLY

Press the ▲ or ▼ pad until the desired temperature is reached, then follow steps 1 through 3 in the set temperature mode for the normal panel lock sequence.

If the temperature is locked, when either the ▲ or ▼ pad is pressed, this symbol ↕ and the set temperature will appear.

TO UNLOCK THE PANEL

All three pads must be pressed in the correct sequence and within 2 seconds. When the last pad is pressed, the lock symbol will disappear and all pads will be active again.

1. Press the program pad ✳ .

2. Press the mode pad # .

3. Press the ▼ pad. The display will show "O."

STAND BY MODE

Press ☾ the ▼ to prevent the spa from operating when the filter is being replaced. Press any pad to resume spa operations.

PANEL DISPLAY MESSAGES FOR TROUBLE SHOOTING

1. **"Pd"** = Battery backup.

The power has been cut off to the spa, the battery backup will preserve its programmable settings for approximately 30 minutes. The control panel will be disabled until power is restored to the unit. If power is off for more than 30 minutes it may be necessary to reprogram your spa.

2. **"OH"** = Overheat protection. (Spa is disabled.)

Software hi-limit protection for water temperature = 112°F. Hardware hi-limit sensor protection = 118°F. Both the water temperature sensor and the hi-limit sensor have a stainless steel housing for greater reliability.

The hi-limit sensors provide protection in the following manner:

a. If the water temperature reaches 112°F., the water temperature sensor will detect the condition and the spa will be disabled. When the water cools below 110°F the spa will automatically reset.

b. If the heater element's temperature reaches 118°F the hi-limit sensor will detect the condition and the spa will be disabled. When the heater element cools to 116°F the spa may be reset by pressing the mode pad # .

3. **"FLO"** = Flow Switch.

The software has detected an error at the pressure switch. The display will show a non-flashing "FLO" on the LCD if the flow switch is closed without a pump running and disable the spa. The display will show a flashing "FLO" if the flow switch is open with pump 1 running, but the heater will not turn on.

4. **"COOL"** = Temperature Set Back.

The spa water is more than 20°F cooler than the set temperature. The heater will automatically activate to provide freeze protection. This is a normal spa function; no corrective action is necessary.

5. **"ICE"** = Freeze Protection.

The hi-limit sensor or an optional freeze sensor reads below 40°F. at the heater element. The controller automatically activates both pumps to circulate the water. This is a normal spa function; no corrective action is necessary.

6. **"Sn1"** = Open Sensor. (Spa is deactivated.)

The hi-limit temperature sensor is non-functional.

7. **"Sn3"** = Open Sensor. (Spa is deactivated.)

The water sensor is non-functional.

SECTION 4
Air Controls & Jets

Note: Jet styles shown will not be found in all models of spas.

Air Controls

The air controls are found on the control panel and, on some models, along the top edge of your spa. These control the amount of air mixed with water. The more air mixed in, the greater the therapeutic action. To add air, open the controls by turning them counter-clockwise. To reduce the amount of air, close the controls by turning them clockwise. Each controls different jets. This MORGAN feature enables you to vary the therapeutic action in different areas of the spa at the same time. These are also used to control the air in some spa models which are turbo charged.

Turbo Charged Spas

Turbo charger maximizes the therapeutic action of the jets. To use Turbo Charge:

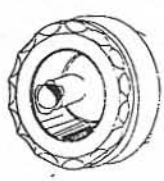
1. Switch the command center function control so that both the pump and air blower are on.

2. Switch the turbo charger on by turning the air control knobs counter-clockwise. These are located on the top edge of the spa. When air controls are closed in clock-wise position all the turbo air from the blower will go to the air channel. NOTE: It is good habit to turn air controls off after each use of the spa. This will reduce heat loss in the water.

3. By depressing the blower button you can control the turbo action to your jets.

CAUTION: IF SPA IS LEFT IN BLOWER MODE ONLY AND THE TURBO CHARGER IS LEFT ON, YOU MAY EXPERIENCE SOME WATER SPLASHING OUT OF THE SPA.

Ultramassage Luxury Jet



The luxury jet is adjustable. To adjust the luxury jets, turn the jet face clockwise to reduce the water flow, or counter-clockwise to increase the water flow. By moving the nozzle in the center, you can adjust the direction of the jets water flow.

To remove the luxury nozzle turn the two tabs on either side of the nozzle counter-clockwise a quarter of a turn then grab the inner nozzle and pull out.

To install a luxury nozzle insert the nozzle all the way in and turn clockwise until it stops, which is the locked in position.

The Ultramassage Luxury Jet is interchangeable with the Flutter Blaster Jet.

Flutter Blaster Jet

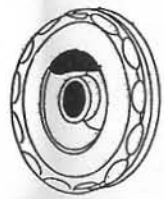
Flutter spinning motion gives a unique and pleasurable massaging sensation. Jets can be easily adjusted for water flow necessary for effective hydrotherapy by turning the jet face clockwise to reduce the water flow, or counter-clockwise to increase the water flow.

To remove nozzle grab nozzle with both index finger and thumb. While pulling out give nozzle a slight upward or downward motion.

To install nozzle push nozzle into jet body until it locks in place.

The Flutter Blaster Jet is interchangeable with the Ultramassage Luxury Jet.

Mini Luxury Jet

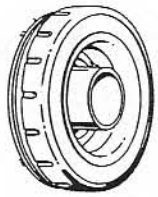


Gives massaging action similar to the full size Luxury jet but with a smaller plume of water. Range of adjustability helps you customize your hydro-therapy by turning the jet face clockwise to reduce the water flow, or counter-clockwise to increase the water flow.

Mini Flutter Blaster Jet

Unique flutter action that provides tingling sensations similar to the large Flutter Blaster. Great adjustability helps you to select the hydrotherapy that fits your needs.

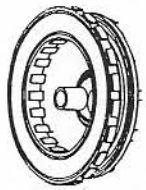
Swirlpool Jet



This jet creates a whirlpool within the spa. Point the nozzle in the direction you want the whirlpool and open the jet by turning the jet face clockwise. To reduce the whirlpool, or close the jet entirely, turn the jet face counter-clockwise.

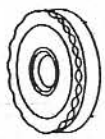
When turned on the swirlpool jet takes water flow from a series of other jets to supply it with a powerful water flow. When the swirlpool jet is turned off, the water then returns to the other jets.

Cyclone Jet



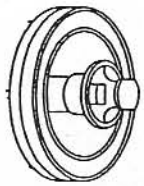
It gives a truly remarkable and powerful massage by boasting a 360° circular motion and can be adjusted for pressure and direction.

Non-Adjustable Cluster / Ozone Jet



This jet is the entry point for your ozonator output and also has strong massaging action that is ideally positioned for the feet.

Neck Jet

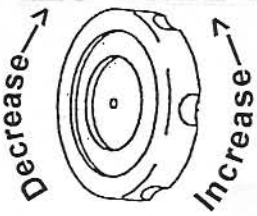


The ultimate neck massage. The jet is located out of the water. Flow goes directly onto the body for greater hydrotherapy. Nozzle is multi-directional and is easily adjusted. Flow can be adjusted by turning knob on valve located to left or right of seated location. Pushing the jet nozzle in turns the jet off. Pulling it back out returns the jet to full operation.

Adjustable Cluster Jet

This jet has strong massaging action that can be adjusted to please your aching muscle needs. Counter-clockwise rotation of the jet face increases the water pressure, clockwise rotation decreases the water pressure.

Waterflow Control Valve

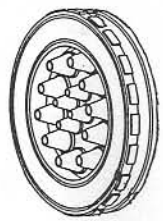


This valve is used to increase or decrease the water pressure flow to the neck jets or the mini luxury jets.

The neck jets are located above water level at the head of the lounger or in a seat location depending on your model of spa.

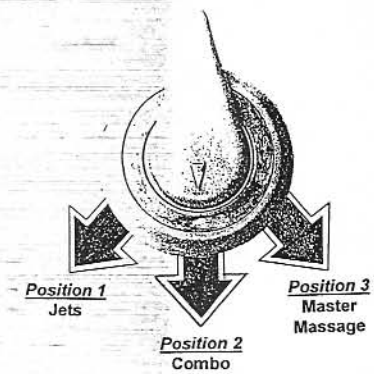
The mini luxury jets are located in a collar which your shoulders fit underneath. By adjusting the flow control valve which is located in arms reach of the seated location you are sure to get the ultimate massage.

Master Massage Jet



An 8" jet with 14 orifices that are controlled by a diverter valve to get a full flow and create a whirlpool action or to divert some water flow away from the jet to customize your own therapeutic needs.

Diverter Valve



The diverter valve allows you to direct the full flow of water to a specific series of jets to maximize intensity; or you can split the flow equally between two different series of jets for normal massage action.

Position 1: The full flow is directed to the therapy jets.

Position 2: The flow is split between the master massage jet and the therapy jets.

Position 3: The full flow is directed to the master massage jet.

SECTION 5
Maintaining Your Portable Spa

Your MORGAN spa, just like any other appliance, must be regularly maintained. MORGAN recommends that the following maintenance and operation procedures be followed:

1. The filtration system of your spa should be run at least 6 hours a day to keep the spa clean. These 6 hours required should be met at two different intervals of a 24 hour day with one interval being right after normal use of the spa.

2. The air blower should be used only when people are in the spa or adding chemicals. This will minimize heat loss and prevent unnecessary dissipation of chemicals.

3. Effective usage of your chemicals is determined by the pH of the water in your spa. Refer to your manual on testing procedure and how to use your test strips.

4. Follow the recipe for use of MORGAN Shock-Out along with your Nature 2 Purifier.

WARNING:
CHECK WATER TEMPERATURE BEFORE ENTERING SPA. WATER TEMPERATURE MUST NOT EXCEED 104°F.

Recommended Maintenance Schedule For Your Spa

The following directions are important for your reference in keeping your spa bright, clean and sanitary. Follow the MORGAN Spa Maintenance Guide included with your spa. The following schedule is recommended to maintain your spa:

Note: Before each use add 1 tablespoon of MORGAN Shock Out per every 250 gallons.

Mondays:
- Test your water for pH level.
- Adjust pH and total alkalinity. Refer to chart in the MORGAN Spa Maintenance Guide.
- Add 1 ounce of Spa Clear & Bright to your water. This will aid in the removal of both organic and inorganic suspended particles in the water.

Wednesdays:
- Test your water for pH level.
- Adjust pH and total alkalinity, if necessary.
- Add MORGAN Metal Protector to your spa to aid in the prevention and elimination of calcium precipitation and scaling, iron, copper or manganese staining. This is especially recommended in areas with water high in calcium, total alkalinity and pH.

Fridays:
- Repeat Monday's program.
- Super oxidize the spa with MORGAN Shock Out.

MAINTENANCE SCHEDULE

USAGE	CLEAN FILTER	REPLACE NATURE 2 PURIFIER
1-3 uses weekly	Every 2 months	Every 4 months
4+ uses weekly	Every month	Every 4 months

This schedule may vary depending on the use and care of your spa. Anytime the jet pressure decreases, immediately check and clean the filter. The above schedule represents an average spa with average usage. Under heavy usage you should check and make chemical additions to your spa more often than suggested.

We strongly recommend that you refer to the "MORGAN SPA MAINTENANCE GUIDE" included in your spa start-up kit for a better understanding of the spa chemicals and their use.

Cleaning and Changing Filter Cartridge

The top-load filter is located under the small decorative cover on the top lip of the spa. ***Caution:*** Do not try to remove the lock-ring or filter cap "manifold" before turning main power switch off, or placing your digital control system in a stand-by mode, open the air relief valve. Remove the lock-ring then remove the filter cap

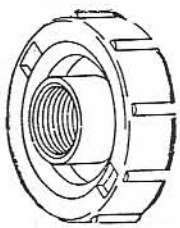
"manifold" by lifting or pulling on the handle. The cartridge filter element can now be removed and cleaned by squirting in between the pleats with a garden hose. Rotate the cartridge housing from top down. After hosing the cartridge filter, allow the cartridge to dry and carefully brush the pleated surface area to remove the particles. Once cleaned, or new filter cartridge has been replaced and the manifold reinstalled, make sure the lock-ring has been installed properly and locked in place.
Caution: Do not try to operate the spa without the filter or without replacing the lock-ring on the manifold. Trying to operate the spa with the manifold in place but without the lock-ring properly in place and locked may cause injury.
Note: You should lubricate the o-ring with silicone based lubricant (absolutely non-petroleum based), this will make installing much easier.

Algae, suntan oil and body oils form a coating on the cartridge pleats which may not be thoroughly removed by hosing. To remove such materials, spray the cartridge with MORGAN Rapid Filter Rinse which may be purchased at any MORGAN spa sales location. Follow the directions on the label for use. After cleaning, hose the filter thoroughly before re-installing. Depending on use and care, the filter cartridge should be cleaned monthly or more often with heavy use.

How To Drain and Clean Your Spa

1. Turn off the main power supply.

2. Remove plug from the drain/fill valve located in the toe kick of the cabinet, on the same side as the equipment pack. Attach the male end of a garden hose; route the hose to a safe discharge area, as chemically treated water may damage plants.



3. Turn the face of the valve counter-clockwise to the open position. You will need to allow approximately 3 hours for the spa to drain depending on its size. Any remaining water can be removed with a small plastic container.

4. After you have washed out your spa, clean with an approved acrylic cleaner. Several brands are now on the market. Dry it with a clean non-abrasive cloth.

5. Apply a layer of Morgan Quik-Gloss to the acrylic surface, available at your MORGAN sales location. This will give a shiny, silky-smooth finish to your spa for added beauty and comfort.

6. At this time you need to also clean or change the filter cartridge. Refer to section on "Cleaning and Changing Filter Cartridges."

7. You may leave hose attached to drain/fill valve to refill the spa. After spa is filled, turn the valve counter-clockwise to the close position. Replace the plug in the valve; this will keep spa from draining if valve gets accidentally turned to the "On" position.

8. Run in the high jet mode until you have good water circulation.

9. Add chemicals and recommended amount of Metal Protector. Metal protector is very important in order to prevent calcium buildup. See section on "Initial Start-up."

Care and Upkeep

The Redwood Cabinet
MORGAN only uses the finest redwood for it cabinets. If exposed to the elements without a protective finish, the wood will turn to a natural gray finish. To preserve the original beauty of the redwood color it is recommended that you retreat your spa cabinet at least once every 6 months. Morgan wood sealers are available from the location you purchased your spa.

The cabinet, on most spa models, is designed with removable panels around the exterior of the spa. By removing the four (4) screws on the upper and lower portion of the panel, they can be removed for access to the equipment and other components of the spa.

Acrylic Finish
Your spa tub is constructed of cross-linked acrylic, some of the most chemical resistant material available. However, care should be exercised not to drop objects or rub sharp objects on the surface as the material can be scratched by doing so.

If scratches do occur, a polishing compunt (the kind most used on automobile) can be used to remove them. Also, sanding with a 600-Grit wet/dry sandpaper lightly can remove these

scratches. CAUTION should be exercised when sanding the surface. MORGAN Quik Gloss will brighten the acrylic finish.

To protect your spa finish, always keep your spa covered when not in use. Keeping the spa uncovered when not in use could cause severe damage to the acrylic by heat buildup from the sun. Such damage *will not* be covered by your warranty.

Spa Cover

Your MORGAN spa is furnished with an attractive insulated vinyl cover. Two hold-down straps are manufactured into the spa cover. These buckles offer protection to secure the spa cover to the spa cabinet in windy conditions *BUT* are not intended to "child proof" the spa. Morgans does offer a locking strap for this intended purpose.

The cover is constructed of marine grade vinyl. Washing with a mild soap solution regularly will maintain the luster. Treat the spa cover with Morgan Spa Care Treat at least once every three months. This procedure can be done more frequently if needed.

Do not walk on your spa cover or allow children to play on top of it. It is not designed for use as a safety device and is not intended to hold weight.

Decks

A deck or patio around your spa can add real beauty and enjoyment. Contact your local MORGAN sales representative for decking ideas and suggestions.

IMPORTANT NOTE: Be sure your patio has a slip resistant surface with adequate drainage. Check periodically for any signs of wear which may make these surfaces hazardous.

Protecting Your Spa In Winter Months

Cold climates, where the danger of freezing exists, require special care on your part in order to prevent damage to the spa and equipment. One feature of the Digital Control System is that is has freeze protection built in. When water temperature falls below 40°F then the controller automatically activates the pumps to circulate the water. This is a normal spa function and no action on your part is necessary.

CAUTION: THE ABOVE WILL NOT WORK IF THERE IS A POWER FAILURE.

The only sure way to winterize your spa is to complete the following steps:

- Drain spa of all water.
- Run blower to clear air channels of water. Be sure pump and heater are not running.
- Remove any remaining water with a sponge.
- Remove drain plug from bottom of pump housing.
- Remove cartridge housing and cartridge filter, drain water and leave off.
- For the best protection, the power pack can be removed.
- If you cannot drain all of the water, especially from the air channels and the heater housing, a non-toxic anti-freeze, which can be purchased at any recreation vehicle supply center, should be added.

If power is to be out for a considerable length of time, it is advised that you contact your nearest sales location for instructions on how to minimize damage to your spa. We recommend that you use and enjoy your spa during the winter months. This takes the worry out of freezing temperatures and gives you twelve months of spa enjoyment.

Moving A Morgan Spa

Your MORGAN portable spa can be moved when you change your address or you simply want to change the location of the spa in your backyard. When moving a spa, care must be taken to block and level the spa at key bearing points. For this reason, MORGAN personnel must move your spa for the warranty to remain in force.

RELOCATION OF THE SPA BY PERSONS OTHER THAN MORGAN PERSONNEL VOIDS THE WARRANTY.

SECTION 6
Chemicals

The Natural Spa Purifier

Your are now using a breakthrough spa purifying product which eliminates the need to add chlorine or bromine.

What is it?

The Nature 2 Purifier is a Do-It-Yourself product (in the core of the filter cartridge) which sanitizes the water when used in conjunction with MORGAN Shock-Out, a non-chlorine oxidizer.

How It Works:

The Nature 2 Purifier works by performing three primary functions which, taken together, result in SAFE, ODOR-free, CRYSTAL clear spa water.

- **A One-Two Punch Within The Cartridge**.
  Nature 2's bactericidal media captures and destroys bacteria that approach its surface. MORGAN Shock-Out, a potent oxidizer, assists in cremating (i.e., oxidizing) the dead bacteria within the cartridge. Optimum performance is achieved when MORGAN Shock-Out is used as recommended in the Nature 2 recipe and the spa is operated on filtration cycles recommended by MORGAN Spas.

- **A One-Two Punch In The Spa Water**.
  Nature 2 media releases a very low level of silver ions into the water which assist in killing bacteria 24 hours per day. MORGAN Shock-Out residuals team up with the silver ions to rapidly kill and them cremate the dead bacteria.

- **Keeping The Water Clear.**
  The Nature 2 media, with its large available surface area (about two acres of surface) and highly adsorbent properties, removes unwanted organics and metals from the spa to make it look crystal clear. MORGAN Shock-Out, Nature 2's teamwork, also oxidizes away bather's wastes (sweat, urine, body oils, etc.) 24 hours per day.

Nature 2 Spa Recipe:

Ingredients:
Nature 2 Purifier
MORGAN Metal Protector and Stain Preventor
MORGAN Shock-Out *
Test kits (pH, total alkalinity)
pH and total alkalinity adjusting chemicals
Ozonator **

IMPORTANT: The Nature 2 is not to be used with products containing bromine, sodium bromide or biguanides. If these products are being used BE SURE TO DRAIN AND REFILL SPA WITH FRESH WATER, then proceed with the purifier start up.

When:	What to do:
Purifier start-up	**Drain and fill your spa**. Add Morgan Metal Protector and Stain Preventor. Balance the water. Add 3 tablespoons of Morgan Shock Out to spa per 250 gallons
Every day	Run spa according to recommendation supplied in the owner's manual.
Before each use	Add 1 tablespoon of Morgan Shock Out to spa per 250 gallons.
Once a week	Add 3 tablespoons of Morgan Shock Out to spa per 250 gallons. Check and adjust pH and total alkalinity.
Every 4 months	**Drain and refill your spa. Replace Nature 2 Purifier, repeat purifier start-up.**
As needed	If water looks hazy, shock treat with 3 tablespoons of Morgan Shock Out to spa per 250 gallons.

* Morgan Shock Out may cause a lowering of the pH and total alkalinity of your spa water. Please monitor pH and total alkalinity at least once per week and adjust accordingly.

** The use of an efficient ozonator with Nature 2 may substantially reduce the need for supplemental chemical treatments.

Your MORGAN spa is not like a swimming pool. On a much smaller scale the temperatue and bather load are different. The water in the spa must be treated with chemicals to prevent the growth of bacteria and fungi and the transmission of diseases.

NEVER USE SWIMMING POOL CHEMICALS IN YOUR SPA.

***IMPORTANT NOTE*: DO NOT USE THE BAQUASPA CLEANING SYSTEM IN YOUR SPA. The Baquaspa Cleaning System can cause severe damage to your spa's plastic pvc plumbing.**

WARNING-Do not store spa chemicals underneath spa cabinet. It is advised that they be stored in a locked cabinet away from the spa itself.

You should conscientiously follow the instructions provided concerning the chemical balance of the water in your spa. The following is a list of general tips on the use and storage of chemicals.

1. Before using chemicals, READ the labels and directions carefully. Follow use instructions found on the labels.
2. Keep all chemicals out of the reach of small children.
3. Store your spa chemicals in a clean, cool, dry, well ventilated area preferably off the floor to prevent contamination from other materials.
4. Always add the chemicals directly to the spa water. Chemicals should be broadcast across the surface of the water or diluted and poured into the water with the spa operating on "BLOWER ONLY."
5. NEVER add chemicals to the spa while people are using it.
6. Carefully clean up any spilled chemicals with large amounts of water to dilute and wash away the chemicals.
7. Since the chemistry of spa tub water changes very quickly, test the water in your spa with a test kit on a daily basis. Add the necessary chemicals according to the test results and chemical manufacturer's instructions.

THE IMPORTANCE OF CHEMICAL BALANCE

Spa chemicals serve a variety of functions in your spa. They purify and disinfect the spa water and they also help to prevent mineral build-up and damage to your spa's equipment. **FAILURE TO MAINTAIN PROPER DISINFECTANT LEVEL AND pH BALANCE IN YOUR SPA AT ALL TIMES CAN CAUSE SEVERE PERMANENT DAMAGE TO YOUR SPA'S EQUIPMENT.** Please read the following paragraphs about spa chemical balance, and also read the MORGAN SPA MAINTENANCE GUIDE and be thoroughly familiar with it.

A SIMPLE OVERVIEW OF SPA CHEMISTRY AND DISINFECTING

The filtering action of your spa's equipment can effectively remove soil particles and other debris, but the addition of spa chemicals is required to disinfect your spa. Disinfection can be accomplished by adding a germ-killing chemical, silver, which is contained in your MORGAN Nature 2 Purifier, to the spa water in sufficient strength to provide nearly instantaneous destruction of bacteria.

The disinfecting agents plus strong oxidizers like MORGAN Shock-Out have properties which cause them to react with and destroy many foreign materials other than bacteria. Many of these materials, if not destroyed by oxidation, would impart undesirable characteristics to the water.

THE IMPORTANCE OF pH CONTROL

pH is one of the most important aspects of spa water chemistry, yet it is also the most misunderstood. Maintaining pH balance is important to the long life of your spa and to your personal comfort when using your spa. The relative acidity or alkalinity of water (pH) is measured on a scale of numbers ranging from 0 to 14. The mid-point of seven (7) is said to be precisely neutral, above which alkalinity becomes progressively greater.

Your spa water pH should always be maintained at a slightly alkaline condition of 7.2 or 7.6 on this scale. This level may be checked using chemical test strips which are available at your MORGAN store. Refer to the MORGAN SPA MAINTENANCE GUIDE for information on using these test strips.

From the viewpoint of health and sanitation, the most serious effect of improper pH control is reduced efficiency of the disinfecting process. As pH rises above 8.0, the sanitation residual progressively weakens to the point at which it may be virtually useless for disinfecting and oxidation purposes.

It can surprise the new spa owner to discover that serious water problems can develop despite the fact that the filters are functioning properly and disinfectant levels are testing at normal. In such cases, the problem can often be traced to the fact that the pH has been permitted to drift well into the undesirable zone above 7.6 or below 7.2.

NATURE 2 IN LIEU OF BROMINE OR CHLORINE

You are now using a breakthrough spa purifier product which eliminates the need to add bromine or chlorine. It works in conjunction with MORGAN Shock-Out (a non-chlorine oxidizer). Refer to Nature 2 Spa Purification in this section for more information.

If you have purchased an ozonator as original equipment to your spa or have added it at a later date, please refer to section on "Ozonators."

Normally, your spa should be "shocked" once a week using MORGAN Shock Out. In addition, you should "shock" your spa following heavy use and before each use add 1 tablespoon of MORGAN Shock Out.

NOTE

Read through the Morgan Spa Maintenance Guide thoroughly and follow the instructions given prior to using your spa.

Trouble Shooting Guide

PROBLEM	CAUSE	SOLUTION
Cloudy water	Inadequate filtration/dirty filter	Check to make sure the filter is running properly; clean filter with Morgan Rapid Filter Rinse.
	Excessive oils/organic matter	Shock the spa with Morgan Shock Out.
	Improper sanitation	Shock with Morgan Shock Out. Replace Nature 2 Purifier if older than 4 months.
	High pH and/or high alkalinity	Adjust pH using Morgan pH Down.
	Suspended particles/organic matter	Use Morgan Shock Out.
	High total dissolved solids (TDS)	Depending on the severity--drain the spa to half and refill; or drain the spa completely, clean and refill.
	Over used or old water	Drain the spa, clean and refill.
	Precipitated calcium	Use Morgan Metal Protector.
Water odor	Excessive organics	Shock the spa with Morgan Shock Out.
	Improper sanitation	Shock with Morgan Shock Out. Replace Nature 2 Purifier if older than 4 months.
	Inadequate filtration	Check to make sure the filter is operating properly, clean filter with Morgan Rapid Filter Rinse.
	Low pH	Raise pH with Morgan pH Up.
Musty odor	Bacterial or algae growth	Shock the spa with Morgan Shock Out. If problem visible, also drain, clean, refill and balance spa.
Eye irritation	Low pH	Raise pH with Morgan pH Up.
Foaming	Build up of body oils, lotion and chemicals resulting in soap or detergent	Add Morgan Foam Gone; or drain and refill.
	Over-used or old water	Drain and refill.
	Excessive organics	Shock with Morgan Shock Out.
	Improper sanitation	Shock with Morgan Shock Out. Replace Natue 2 Purifier if older than 4 months.
Organic buildup	Body oils and dirt	Depending on severity--drain spa, use Morgan All Surface Cleaner to remove the scum, refill spa and adjust water.
	Inadequate filtration	Check to make sure the filter is operating properly. Clean filter with Morgan Rapid Filter Rinse. To clean the scum--drain spa, use Morgan All Surface Cleaner to remove scum, refill and adjust water.
Algae	High pH	Shock spa with Morgan Shock Out. Add Morgan pH Down.
	Insufficient sanitizing	Shock with Morgan Shock Out. Be sure Nature 2 Purifier is less than 4 months old. Replace if necessary.
Skin irritation	Unsanitary/polluted water	Shock with Morgan Shock Out. Replace Nature 2 Purifier if older than 4 months.
	Soaking too long	Soak for smaller intervals, such as 15 minutes.
	Water temperature too high	Reduce water temperature.
Stains	pH or total alkalinity too low	Adjust pH with Morgan pH Up and adjust alkalinity using Morgan Alkalinity Increaser; use Morgan Metal Protector; drain and clean spa.
	High iron or copper in water source	Use Morgan Metal Protector; adjust water.
Scale	Too much calcium dissolved in water--pH and total alkalinity too high	Use Morgan Metal Protector; adjust alkalinity using Morgan pH Down. With concentrated scale deposits--drain the spa, scrub the scale off, refill the spa and balance the water.

SECTION 7
Ozonators

Sanitizing With Ozone

Your spa has an option of having an ozone generator installed. The use of ozone in addition to normal spa sanitizing will significantly reduce the amount of chemicals used.

SOME OF THE BENEFITS OF USING OZONE

- It kills all known bacteria and viruses found in spas, hot tubs, and pools quickly and effectively.
- It is inexpensive and automatic.
- It does not discolor hair, fade swimsuits, or cause dry skin.
- It does not irritate eyes or skin.
- It is safe for your spa and equipment.
- It eliminates cloudy water.
- It will not adversely affect the pH.
- It eliminates chlorine and bromine by-products.
- It is environmentally safe.
- It makes your water sparkle.

SPA MAINTENANCE WITH OZONE

Ozone is a very effective natural water purifier that is lethal to bacteria, viruses, and contaminants without harming people and equipment. There are just a few "Rules of Thumb" that you should follow. Take the time to learn these simple rules and you will have no trouble maintaining a clear, clean spa that will provide you with years of enjoyment.

Always maintain the following spa water operating parameters:

Total Alkalinity:	80 to 120 ppm
pH:	7.2 to 7.6

1. Operate your spa Filtration Cycle for the minimum time according to the following chart. *Note*: Ozone is only produced in filtration mode. Also, spa conditions can vary due to location and bathing load - adjust accordingly.

Gallons	*Operating Time Per Day*
Up to 250	4 to 6 Hours
251 - 500	8 to 10 Hours
Over 500	12 to 18 Hours

2. Total alkalinity is very important. If the spa water's total alkalinity is too low, the pH can change rapidly and maintaining the proper pH level will be difficult. Equipment will become corroded if the total alkalinity is too low. If the total alkalinity is too high, it will be very difficult to adjust the pH. In addition, scale will form on the walls of the spa and in the equipment if the total alkalinity is too high. The water's total alkalinity should be adjusted to the proper level BEFORE adjusting the pH. Check total alkalinity once a week and adjust to proper levels as necessary.

3. Ozone does not have an effect on the spa water's pH. Bathers will have the most effect on the pH. It is therefore necessary to check the pH of your spa water twice a week and adjust it to the proper level.

4. Follow the recipe for your Nature 2 Spa Purifier. Refer to Section 6 for information about the Nature 2 Purifier.

5. Filtration is critical to proper ozone operation and water purity. Because ozone purifies the water so completely, the filter gets dirty fast. Clean the filter properly and often. It is a good idea to have an extra filter cartridge handy so you can take the time to clean the filter properly and thoroughly. Algae, suntan oil, body oils, and other personal care products can form a coating on the cartridge surface that may not be removed thoroughly by rinsing with a hose. We recommend spraying the filter with MORGAN Rapid Filter Rinse. Carefully replace the cartridge element over the rod making sure it seats properly. It is important that all the filter seals and gaskets are in their proper positions. If the filter is not sealed properly, it cannot do its job. Inspect the filter cartaridge and housing regularly. Bad gaskets or loose or cracked filter housing can result in cloudy and unpleasant smelling water.

6. After heavy use (more than 2 people in the spa for longer than half an hour), the spa should be "shocked" with Morgan Shock Out treatment to rid the water of the extra contamination.

7. If the pH is too high (over 7.6) or too low (under 7.2), the water may look cloudy or green. The water may also be irritating to the eyes. High or low pH can also cause damage to the spa's equipment or scale build-up on the spa walls and plumbing.

8. Drain your spa completely, at least every 4 months.

Trouble Shooting Guide

SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
Indicator light on the control panel is not on.	No power to ozone generator	Check power source.
	Broken or defective generator cartridge	Replace generator cartridge
Cloudy water condition even though the ozone generator appears to be operating properly	Recent startup with new water	Operate in filtration mode for a minimum of 24 hours.
	Total alkalinity out of balance	Balance total alkalinity to 80-120 ppm.
	pH out of balance	Balance pH to 7.2 - 7.6
	Lack of filtration	Clean filter, check for cracks in filter, increase filtration time.
	Trace metals in water	Add Metal Remover.
	Organic micro-debris in the water	Operate ozone generator longer or add Morgan Shock Out as per Nature 2 recipe.
	Too much clarifer added	Don't add anymore, operate filter and skim excess clarifer off surface of water.

If water is still cloudy after addressing all of the above, go back and recheck--you probably missed something.

My water looks clear but smells bad	Trace metals in water	Add Metal Remover.
	pH out of control	Balance pH to 7.2 - 7.6
	Not enough oxidizer	Operate ozonator longer or add Morgan Shock Out.
My pH bounces up and down like a yo-yo	Total alkalinity out of balance	Balance total alkalinity to 80-120 ppm.
	Trace metals in water	Add Metal Remover.

SECTION 8
Accessory Items

These accessory items are available through your ***MORGAN*** representative:

Complete line of chemicals

Spa fragrances

Stainless steel handicap rails

Ozonators

Replacement filter cartridges

Pillows

Thermometers

Complete line of redwood products to include

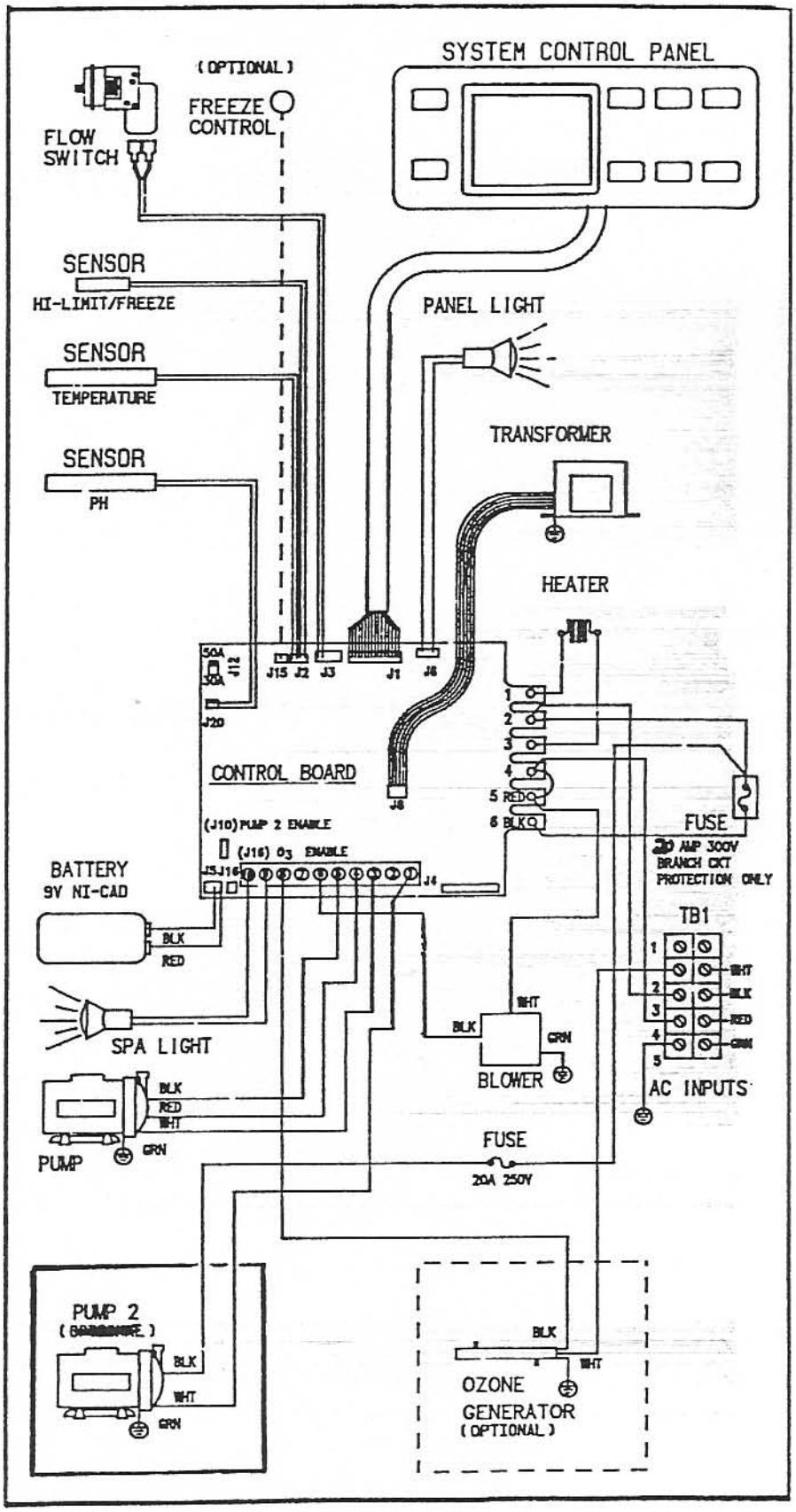
spazebos * mood rooms * cabanas

stools * towel bars * planters

SECTION 9
Glossary of Terms

2-SPEED PUMP	The engine of the spa which draws water from the main drain and skimmer, pushes it through the filter and heater, and returns it through the spa jets.
ADJUSTABLE AIR BLOWER	Allows for adjusting different levels of blower performance.
AIR CONTROLS	Located on the top lip of your spa, allows air to be mixed with water flowing from the jets.
CLUSTER JET	This jet has strong massaging action that can be adjusted to please your aching muscle needs.
CYCLONE JETS	It gives a truly remarkable and powerful massage by boasting a 360° circular motion and can be adjusted for pressure and direction.
DIGITAL CONTROL CENTER	Serves same function as a Command Center but also displays the temperature and is used to program the spa.
FILTER	The filter cleans the spa by removing debris and impurities from the water.
FLUTTER BLASTER JETS	Flutter spinning motion gives a unique and pleasurable massaging sensation. Jets can be easily adjusted for water flow necessary for effective hydrotherapy.
GFCI	A safety device that protects against electrical shock should a malfunction in the equipment pack occur.
HEATER	A heater element in a stainless steel housing used to heat the water to a desired setting.
LIGHT	A safe 12 volt light.
MAIN DRAIN / SUCTION	The lower suction fitting on the bottom of the spa that returns water to the pump and filter.
MASTER MASSAGE JET	An 18" jet with 14 orifices that are controlled by a diverter valve to get a full flow and create a whirlpool action or to divert some water flow away from the jet to customize your own therapeutic needs.
MINI FLUTTER BLASTER JETS	Unique flutter action that provides tingling sensations similar to the large Flutter Blaster. Great adjustability helps you select the hydrotherapy that fits.
MINI LUXURY JETS	Gives massaging action similar to the full size Luxury Jet but with a smaller plume of water. Range of adjustability helps you customize your hydrotherapy.

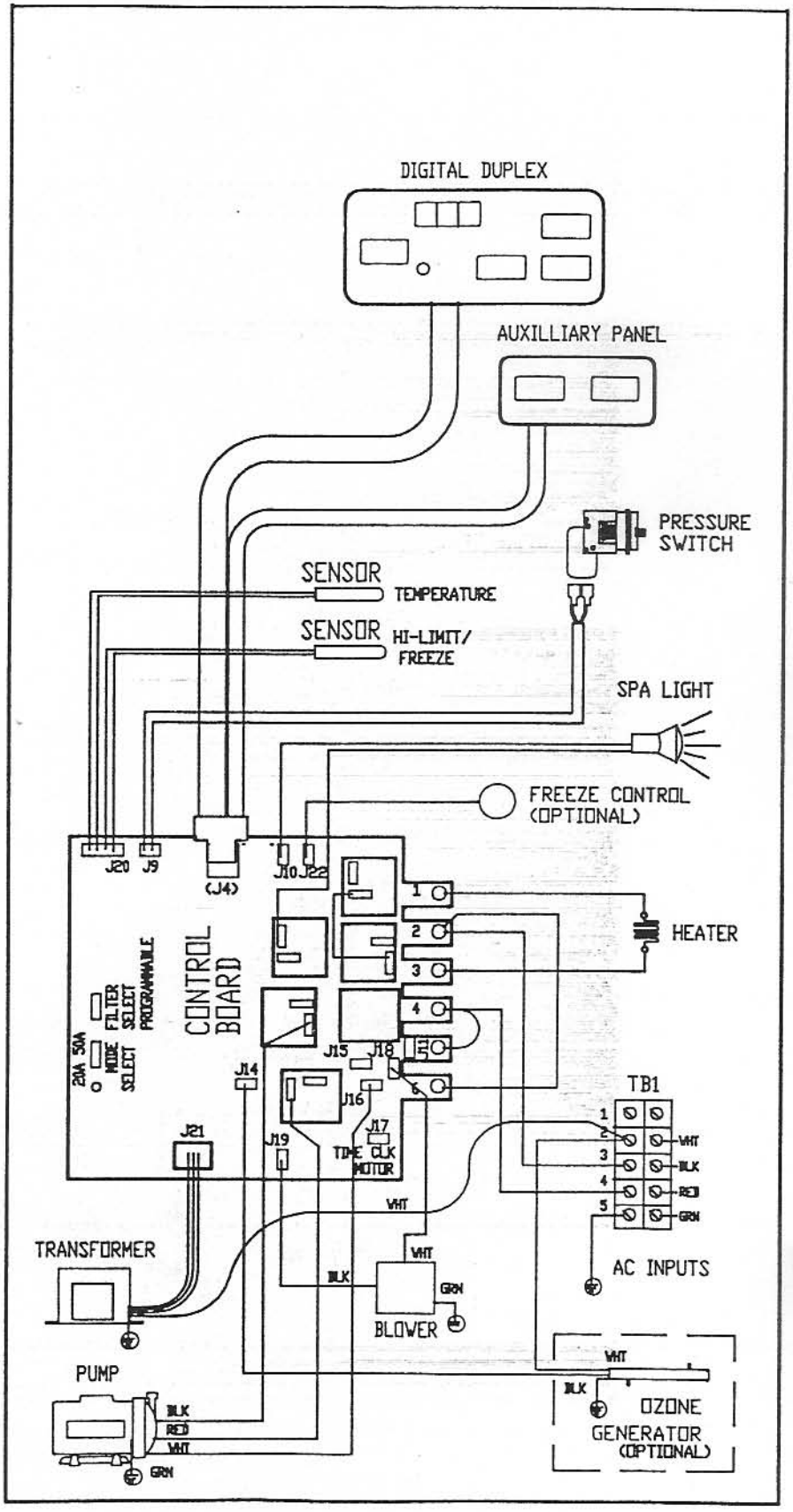
NECK JETS	The ultimate neck massage. The jet is located out of the water, flow goes directly onto the body for greater hydrotherapy. Nozzle is multi-directional and is easily adjusted.
OZONE (FOOT) JETS	This jet is the entry point for your ozonator output and also has strong massaging action that is ideally positioned for the feet.
REMOTE SWITCH	Allows operation of the spa function from the opposite side of the spa.
SKIMMER / BOX SKIMMER	Rectangular outlet at water level. The skimmer removes surface water to filter out body oils and floating debris from the top of the water.
SWIRLPOOL JETS	Diverts most of the water flow to create a whirlpool effect.
TURBO CHARGE	Air from blower is used to maximum air mix to increase the therapeutic action of the water jets.
ULTRAMASSAGE LUXURY JETS	Therapeutic jets that allow you to adjust water flow and direction.
WATER FLOW CONTROL VALVE	This valve is used to increase or decrease the water pressure flow to the neck jets or the mini luxury jets.



Morgan

DELUXE DIGITAL CONTROL SYSTEM POWER PACK

DIGITAL CONTROL SYSTEM POWER PACK



FIELD WIRING DIAGRAM
120/240V Convertible Digital Pack

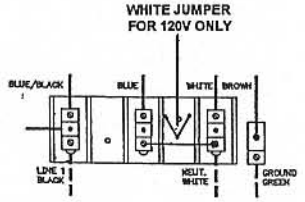
DANGER
RISK OF ELECTRIC SHOCK

120 Volt Wiring Diagram

THIS UNIT IS PRE-WIRED FOR A 120 VOLT 20 AMP 60Hz DEDICATED CIRCUIT ONLY. NO OTHER DEVICE MAY BE ON THIS CIRCUIT. PLUG INTO AN APPROVED GROUNDING TYPE RECEPTACLE ONLY.

DO NOT ATTEMPT TO ALTER THE PLUG OR USE CONVERTERS TO FIT OTHER RECEPTACLE CONFIGURATIONS.

120 Volt Wiring Diagram
For 120/240V Convertible Digital Pack
Volts 120; Amps 16, 2 Wire Plus Ground
Conductor Ampacity 20 Amps Circuit Breaker 20 Amps
1 Phase, 60 Hz



240 Volt Wiring Diagram

CONVERSION TO 240V: CONVERSION TO 240V MUST BE DONE BY A LICENSED ELECTRICIAN ONLY. TO WIRE THE SYSTEM FOR 240V OPERATION: SUPPLY INPUT POWER AS INDICATED IN FIG. 2 AND INSTALL THE PIN AS SHOWN IN FIG 1.

THE 120V POWER CORD THAT CAME WITH THE UNIT MUST BE REMOVED AND DISCARDED WHEN THE UNIT IS CONVERTED TO 240V.

Remove black pin on control board at mode select from 20A to 50A

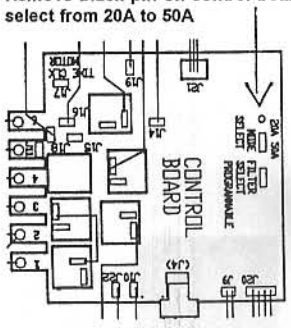


Fig 1.

240 Volt Wiring Diagram
Volts 240; Amps 39; 3 Wire Plus Ground
Conductor Ampacity 49 Amps
Ground Fault Circuit Interrupter, 50 Amps
1 Phase, 60Hz

REMOVE AND DISCARD WHITE JUMPER WIRE ON TERMINAL BLOCK FROM L-2 AND NEUTRAL TERMINAL

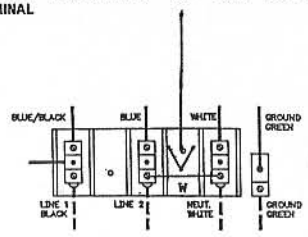
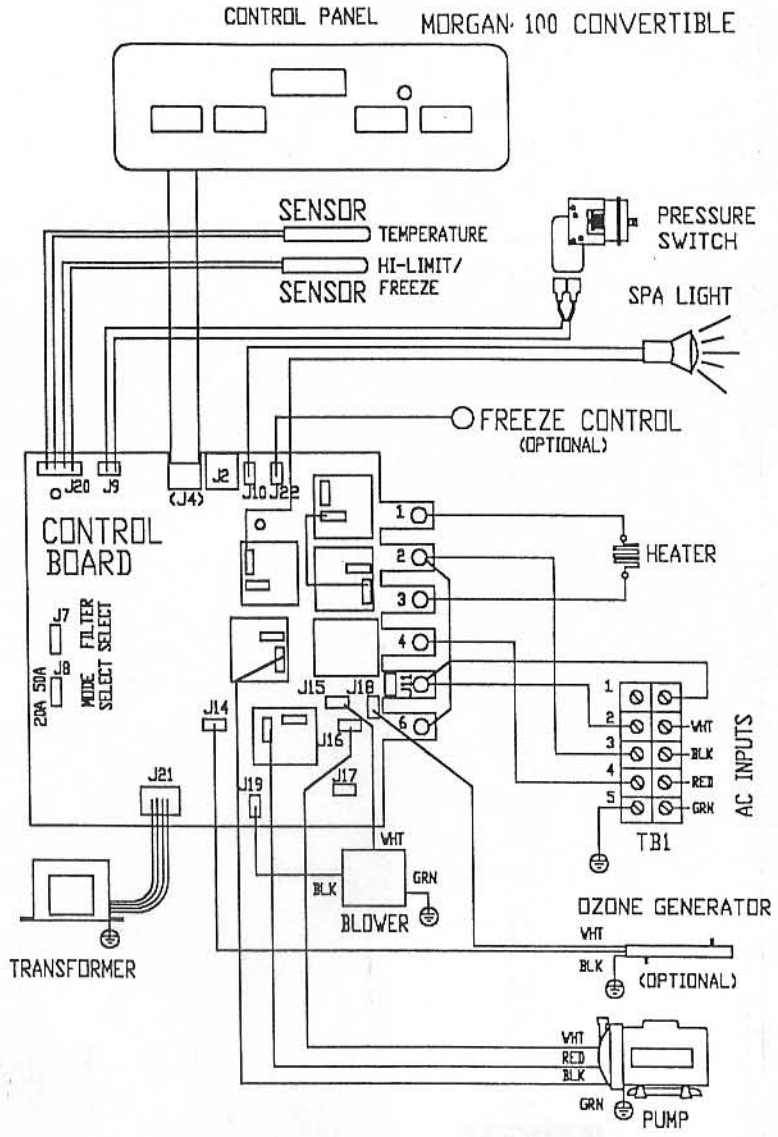


Fig. 2

NOTE: SEE DATA LABEL ON SPA CABINET OR MANUAL FOR MAXIMUM AMPERAGE DRAW REQUIREMENT.

MOR100 SYSTEM WIRING DIAGRAM

SMOR100



MORGAN 110/220 VOLT CONVERTIBLE POWER PACK

Morgan