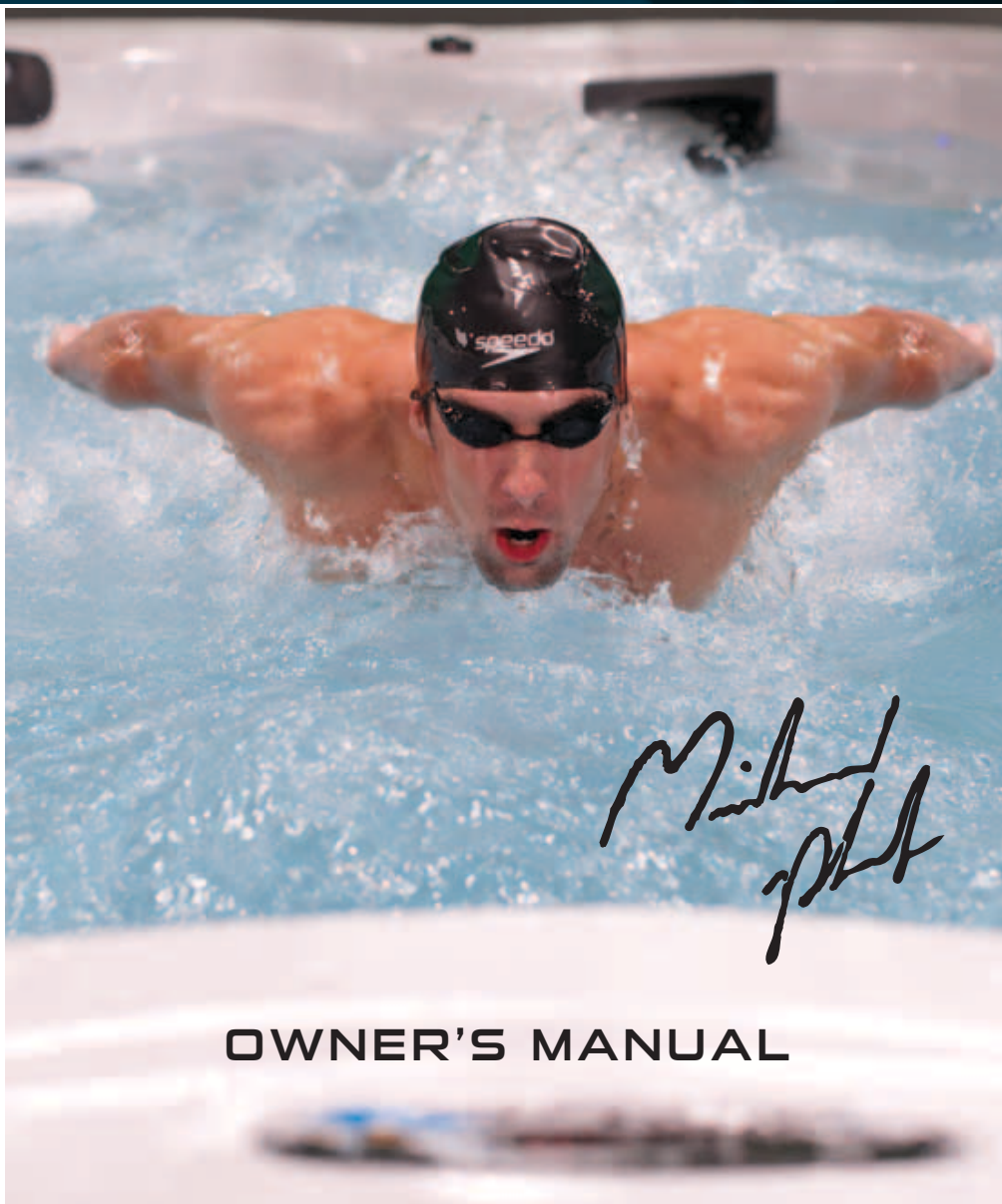


 MASTER SPAS® *presents*

MICHAEL PHELPS SIGNATURE SWIM SPAS



OWNER'S MANUAL

Welcome To Ultimate Relaxation!

Thank you for choosing your new swim spa built by Master Spas. Please read the entire Owner's Manual before installing and using your new swim spa. The goal of this manual is to provide you with safety and operational information plus some tips that will help you enjoy your swim spa to its fullest.

At the time of print, this manual is accurate in its information. Master Spas reserves the right to change or improve its product without prior notice. To check on updates or for other information, please visit www.masterspas.com and follow the links to the customer service section.

Record Of Ownership

Name _____

Address _____

City _____ State _____ Zip _____

Phone # (____) _____ - _____ Date Purchased ____ / ____ / ____

Model _____ Serial # _____

Dealer Name _____

Service Tech Rep _____

*Serial Number Location

The serial number for your swim spa is located on the listing plate on the front skirting panel, on the swim spa system control pack, and on the frame behind the right front removable corner. It will start with "H" followed by a 5-digit number. Ex. H90501



MASTER SPAS®

MasterSpaParts.com

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SAVE THESE INSTRUCTIONS

Included with your new swim spa is a safety sign. The sign is for you and your guest's protection and is suitable for outdoor use in wet locations. The sign should be placed in a location visible to all users of the swim spa.

Please take time to point out the physical location of the safety sign and the importance of the safety precautions displayed on the safety sign to all of your guests. Remember, your safety and the safety of anyone who enjoys the use of your swim spa is our utmost concern.

The sign should be mounted with screws or another type of permanent fastener. Additional or replacement signs can be obtained from your dealer or direct from the factory.

INTRODUCTION

It's time to relax! You now have your very own portable swim spa by Master Spas, Inc. By fully understanding the operation of each of the features of your new Swim Spa, you will be assured of many years of hassle-free, hot water therapy and fun.

Your safety is of paramount importance to the Master Spas family. We urge you to read and become thoroughly familiar with all safety aspects addressed in this manual.

Through reading and totally understanding the important information in your owner's manual, you will realize that you now own **THE ULTIMATE RELAXATION MACHINE!**

NO DIVING	DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.	
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IMPORTANT SAFETY INSTRUCTIONS

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

READ AND FOLLOW ALL INSTRUCTIONS

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

A wire conductor is provided on this unit to connect a minimum 6 AWG (13.302mm²) 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

(For cord-connected/convertible units)

DANGER – Risk of injury.

- a) Replace damaged cord immediately.
- b) Do not bury cord.
- c) Connect to a grounded, grounding type receptacle only.

(For units intended for indoor use only)

WARNING – For indoor use only. This unit is not intended for outdoor use.

(For units intended for outdoor use only)

WARNING – For outdoor use only. This unit is not intended for indoor use.

NO DIVING	DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.	
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IMPORTANT SAFETY INSTRUCTIONS (CONT.)

(For units with GFCI)

WARNING – This product is provided with a ground-fault circuit interrupter located on the front panel of selected swim spas and on the power cord of 120 volt convertible swim spas. The GFCI must be tested before each use. With the product operating, open the service door. When the product stops operating, this merely indicates that the door is equipped with an electrical interlock. Next, push the test button on the GFCI and close the service door. The product should not operate. Now open the service door, push the reset button on the GFCI and close the service door. The product should now operate normally. When the product fails to operate in this manner, there is a ground current flowing indicating the possibility of an electric shock. Disconnect the power until the fault has been identified and corrected.

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 swim spa unless they are supervised at all times.

DANGER – Risk of Injury. The suction fittings in this swim 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 swim 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.

DANGER – Risk of Electric Shock. Install at least 5 feet (1.5m) from all metal surfaces. As an alternative, a swim spa may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a minimum 8AWG (8.4mm²) solid copper conductor to the wire connector on the terminal box that is provided for this purpose.

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

WARNING – To reduce the risk of injury:

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

NO DIVING	DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.	
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IMPORTANT SAFETY INSTRUCTIONS (CONT.)

- b) Since excessive water temperatures have a high potential for causing fetal damage during the early months of pregnancy, pregnant or possibly pregnant women should limit swim spa water temperatures to 38°C (100°F).
- c) Before entering a swim spa, the user should measure the water temperature since the tolerance of water temperature- regulating devices varies.
- d) The use of alcohol, drugs, or medication before or during swim spa use may lead to unconsciousness with the possibility of drowning.
- e) Obese persons and persons with a history of heart disease, low or high blood pressure, circulatory system problems, or diabetes should consult a physician before using a swim spa.
- f) Persons using medication should consult a physician before using a swim spa since some medication may induce drowsiness while other medication may affect heart rate, blood pressure, and circulation.

(For swim spas with a gas heater)

WARNING – Risk of Suffocation. This swim spa is equipped with a gas heater and is intended for outdoor use only unless proper ventilation can be provided for an indoor installation.

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 OF HYPERTHERMIA INCLUDE:

- Dizziness • Fainting • Drowsiness • Lethargy
- Increase in Internal Body Temperature

THE EFFECTS OF HYPERTHERMIA INCLUDE:

Unawareness of Impending Hazard • Failure to Perceive Heat • Failure to Recognize the Need to Exit Swim Spa • Physical Inability to Exit Swim Spa • Fetal Damage in Pregnant Women • Unconsciousness Resulting in a Danger of Drowning

NO DIVING	DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.	
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IMPORTANT SAFETY INSTRUCTIONS (CONT.)

DANGER – To reduce the risk of injury to persons, do not remove the suction grate. Suction through drains and skimmers is powerful when the jets in the swim spa are in use. Damaged covers can be hazardous to small children and adults with long hair. Should any part of the body be drawn into these fittings, turn off the swim spa immediately. As a precaution, long hair should not be allowed to float in the swim spa.

WARNING – Install the swim spa so that water can be easily drained out of the compartment containing electrical components so as not to damage equipment. When installing the swim spa make sure to allow for an adequate drainage system to deal with any overflow water. Please allow for at least 2 feet of clearance around the perimeter of the swim spa to provide enough room to access for servicing. Contact your local dealer for their specific requirements.

WARNING – The swim spa should be covered with an approved locking cover when not in use, to prevent unauthorized entry and injuries.

WARNING – People with infections, sores or the like should not use the swim spa. Warm and hot water temperatures may allow the growth of infectious bacteria if not properly disinfected.

CAUTION – Safe temperatures for swimming or aquatic exercise is around 80°F.

CAUTION – Risk of Electrical Shock. Do not leave CD compartment open. CD controls are not to be operated while inside the swim spa.

CAUTION – Replace components only with identical components.

WARNING – Risk of Electric Shock. Do not connect any auxiliary components (for example, additional speakers, headphones, additional audio/ video components etc.) to the system. These units are not provided with an outdoor antenna.

Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

If the power supply cord(s) are damaged, water is entering the speaker, CD compartment, or any other component in the electrical equipment compartment area, the protective shield is showing signs of deterioration, or there are signs of other potentially hazardous damage to the unit, turn off the circuit breaker from the wall and refer servicing to qualified personnel.

NO DIVING	DANGER: DIVING MAY RESULT IN SERIOUS INJURY OR DEATH.	
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IMPORTANT SAFETY INSTRUCTIONS (CONT.)

The unit should be subjected to periodic routine maintenance once every quarter to make sure that the it is operating properly.

DANGER – Risk of Electric Shock. A green colored terminal or a terminal marked G, GR, Ground, Grounding or the symbol shown in Figure 14.1 of UL 1563 is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.

At least two lugs marked “Bonding Lugs” are provided on the external surface or on the inside of the supply terminal box or compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the swim spa to these terminals with an insulated or bare copper conductor not smaller than 6AWG.

All field installed metal components such as rails, ladders, drains, or other similar hardware within 3m of the swim spa shall be bonded to the equipment grounding bus with copper conductors not smaller than 6AWG.

SAVE THESE INSTRUCTIONS

SAFETY INSTRUCTIONS

WARNING: CHILDREN SHOULD NOT USE SWIM SPAS OR HOT TUBS WITHOUT ADULT SUPERVISION

AVERTISSEMENT: NE PAS LAISSER LES ENFANTS UTILISER UNE CUVE DE RELAXATION SANS SURVEILLANCE

WARNING: DO NOT USE SWIM SPAS OR HOT TUBS UNLESS ALL SUCTION GUARDS ARE INSTALLED TO PREVENT BODY AND HAIR ENTRAPMENT.

AVERTISSEMENT: POUR ÉVITER QUE LES CHEVEUX OU UNE PARTIE DU CORPS PUISSENT ÊTRE ASIRES, NE PAS UTILISER UNE CUVE DE RELAXATION SI LES GRILLES DI PRISE D'ASPIRATION NE SONT PAS TOUTES EN PLACE

WARNING: PEOPLE USING MEDICATIONS AND/OR HAVING AN ADVERSE MEDICAL HISTORY SHOULD CONSULT A PHYSICIAN BEFORE USING A SWIM SPA OR HOT TUB.

AVERTISSEMENT: LES PERSONNES QUI PRENNENT DES MÉDICAMENTS OU ONT DES PROBLÈMES DE SANTÉ DEVRAIENT CONSULTER UN MÉDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

WARNING: PEOPLE WITH INFECTIOUS DISEASES SHOULD NOT USE A SWIM SPA OR HOT TUB

AVERTISSEMENT: LES PERSONNES ATTEINTES DE MALADIES INFECTIEUSES NE DEVRAIENT PAS UTILISER UNE CUVE DE RELAXATION

WARNING: TO AVOID INJURY EXERCISE CARE WHEN ENTERING OR EXITING THE SWIM SPA OR HOT TUB.

AVERTISSEMENT: POUR ÉVITER DES BLESSURES, USER DE PRUDENCE EN ENTRANT DANS UNE CUVE DE RELAXATION ET EN SORTANT

WARNING: DO NOT USE DRUGS OR ALCOHOL BEFORE OR DURING THE USE OF A SWIM SPA OR HOT TUB TO AVOID UNCONSCIOUSNESS AND POSSIBLE DROWNING

AVERTISSEMENT: POUR ÉVITER L'ÉVANOUISSEMENT ET LA NOYADE ÉVENTUELLE, NE PRENDE NI DROGUE NI ALCOOL AVANT D'UTILISER UNE CUVE DE RELAXATION NI QUAND ON S'Y TROUVE

WARNING: PREGNANT OR POSSIBLY PREGNANT WOMEN SHOULD CONSULT A PHYSICIAN BEFORE USING A SWIM SPA OR HOT TUB.

AVERTISSEMENT: LES FEMMES ENCEINTES, QUE LEUR GROSSESSE SOIT CONFIRMÉE OU NON, DEVRAIENT CONSULTER UN MÉDECIN AVANT D'UTILISER UNE CUVE DE RELAXATION

WARNING: WATER TEMPERATURE IN EXCESS OF 38°C MAY BE INJURIOUS TO YOUR HEALTH

AVERTISSEMENT: IL PEUT ÊTRE DANGEREUX POUR LA SANTÉ DE SE PLONGER DANS DE L'EAU A PLUS DE 38°C

WARNING: BEFORE ENTERING THE SWIM SPA OR HOT TUB MEASURE THE WATER TEMPERATURE WITH AN ACCURATE THERMOMETER

AVERTISSEMENT: AVANT D'UTILISER UNE CUVE DE RELAXATION MESURER LA TEMPÉRATURE DE L'EAU À L'AIDE D'UN THERMOMÈTRE PRÉCIS

SAFETY INSTRUCTIONS

WARNING: DO NOT USE A SWIM SPA OR HOT TUB IMMEDIATELY FOLLOWING STRENUOUS EXERCISE

AVERTISSEMENT: NE PAS UTILISER UNE CUVE DE RELAXATION IMMÉDIATEMENT APRÈS UN EXERCICE FATIGANT

WARNING: PROLONGED IMMERSION IN A SWIM SPA OR HOT TUB MAY BE INJUROUS TO YOUR HEALTH

AVERTISSEMENT: L'UTILISATION PROLONGÉE D'UNE CUVE DE RELAXATION PEUT ÊTRE DANGEREUSE POUR LA SANTÉ

WARNING: DO NOT PERMIT ELECTRIC APPLIANCES (SUCH AS LIGHT, TELEPHONE, RADIO, OR TELEVISION) WITHIN 1.5 M OF THIS SWIM SPA OR HOT TUB

AVERTISSEMENT: NE PAS PLACER D'APPAREIL ÉLECTRIQUE (LUMINAIRE, TÉLÉPHONE, RADIO, TÉLÉVISEUR, ETC) À MOINS DE 1.5 M DE CETTE CUVE DE RELAXATION

CAUTION: MAINTAIN WATER CHEMISTRY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION

ATTENTION: LA TENEUR DE L'EAU EN MATIÈRES DISSOUTES DOIT ÊTRE CONFORME AUX DIRECTIVES DU FABRICANT

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 37°C. The symptoms of hyperthermia include drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include

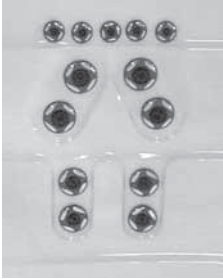
- (a) unawareness of impending hazard;
- (b) failure to perceive heat;
- (c) failure to recognize the need to exit swim spa;
- (d) physical inability to exit swim spa;
- (e) fetal damage in pregnant women; and
- (f) unconsciousness and danger of drowning.

WARNING: THE USE OF ALCOHOL OR DRUGS CAN GREATLY INCREASE THE RISK OF FATAL HYPERTHERMIA IN HOT TUBS AND SWIM SPAS

LA CONSOMMATION D'ALCOOL OU DE DROGUE AUGMENTE CONSIDÉRABLEMENT LES RISQUES D'HYPERTHERMIE MORTELLE DANS UNE CUVE DE RELAXATION.

1. THERAPY JETS

Your new swim spa features a variety of jet styles. All jets, regardless of style return the water to the swim spa. Air is mixed with the water by using the air controls creating a gentle to most vigorous massage. Water flow is adjusted by simply turning the outer face of the jet.



Extreme Seat

2. JET DIVERTER VALVE

Located on the topside of the swim spa, this valve physically diverts the flow of water from one jet zone of the swim spa to another jet zone.

Be sure that no sand or particles are brought into the swim spa as they can cause the diverter to seize up. It is best to turn the diverter valve only when the pump is turned off.



Jet Diverter

3. AIR CONTROL VALVES

These are located around the top of your swim spa. You may increase or decrease the force of your jets by opening or closing the air control valves. Typically, one dial controls the air to water ratio and mix to one group of jets. When not in use the air controls should be kept in the closed position, as air bubbles tend to cool the water.



Air Control Valve

4. TOPSIDE CONTROL PANEL

You may safely control all functions from inside or outside your swim spa using the Topside Control Panel. This Panel is used to control the water temperature, pumps, the swim spa light, automatic filtration cycles and other advanced functions. The digital display will give you a constant temperature readout and will notify you in case of certain malfunctions. Several user programmable functions are also available.

5. PROPULSION SYSTEM CONTROL PANEL

You may safely control the speed of the propulsion system from the inside of your swim spa by using the buttons on the control panel mounted at the end of the swim area. This control panel is used to turn the propulsion system on and off and to adjust the intensity of the water flow.

Your swim spa may have one of three propulsion systems depending on the equipment option: Wave, Wave XP, or Wave XP Pro. All three systems operate in the same manner using the control panel mounted on the swim end of your swim spa. This control panel may be safely used from inside or outside of the swim spa to operate the propulsion system.

6. PERSONAL REMOTE CONTROL

Your swim spa has an additional remote which allows the user to control the stand up jet therapy cove. By pressing the control one time, you will activate the pump. Press the pad again to turn the pump off.



Personal Remote Control

7. EQUIPMENT ACCESS PANEL

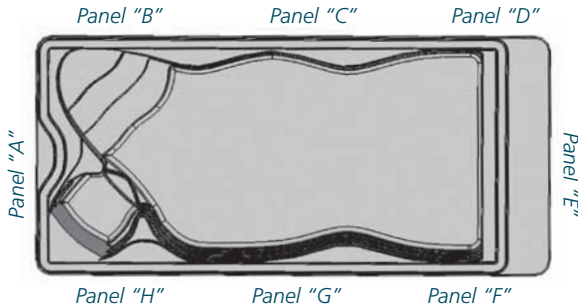
Located behind the side panel below the Topside Control Panel, this area houses the major components responsible for the swim spas operation. Those components include the pumps, heater, control panel box, Ozonator, and LED light system. Pump and equipment placement may vary by model.

8. PROPULSION SYSTEM CONTROLS ACCESS

The propulsion control system is located behind the skirt panel designated as “E” in the drawing on page 13. The propulsion motor, propulsion control pack, and pulleys for the system are located in this area. This system is used on the Momentum 80, Momentum 50, Signature, Force, and Impact. The Trainer 14 and Trainer 12 use a different style of propulsion system and have no operational components mounted in this area.

9. ACCESS PANELS

These are located on all four sides of the swim spa. All of the panels are removable should service be required.



NOTE: Note: The above drawing illustrates the panel placement on the swim spa.

WARNING: Do Not Remove Access Panels Without Turning Off Power To The Swim Spa.

10. DRAINING YOUR SWIM SPA

Due to the physical size of the swim spa, we recommend draining your swim spa with a submersible sump pump. Draining your swim spa with a conventional swim spa drain is not a reasonable option. When draining the Momentum 80 and Momentum 50 swim spas always drain the water from the swim spa side before draining the swim side. When filling the swim spa always fill the swim side before filling the swim spa side.

11. WEIR GATE

The weir gate is the horizontal door located in front of the filters that trap debris in the filter area.

12. SWIM SPA LIGHT

Your swim spa light is designed for safety and is located on the interior wall of your swim spa. The on/off switch is located on the topside control panel.

13. EQUIPMENT CONTROL SYSTEM

This houses the wiring and electrical components necessary to operate the swim spa.

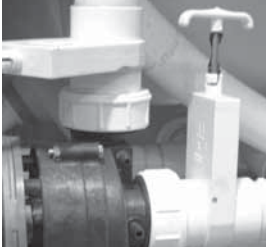
14. SWIM SPA HEATER

This element is an electric heater housed in a stainless steel tube. It is thermostatically controlled and equipped with a high-limit temperature safety shut-off sensor. The high-limit sensor cannot be reset until the temperature within the heater assembly drops several degrees below the shut-off temperature of 108° - 110° F. Should the high-limit switch trip repeatedly, contact your dealer or qualified service representative to diagnose the problem. Your swim spa will heat approximately 1° - 2° per hour, on average when the cover is closed. These times may vary and the swim spa should have a cover installed.

15. SLICE VALVES

These valves are used by service personnel to shut off water to the heater, main pump system and secondary pump system so that the water does not need to be drained should the swim spa require service.

***NOTE:** Slice valves must be completely open during normal operation.



Slice Valve and Pump Union

16. MAIN PUMP

The main pump produces water flow through the jets and has a high and low speed. Low speed will produce efficient water circulation during filtration and gentle jet action. High speed should be used for maximum jet action. The water flow may be directed to different areas of the swim spa depending on the position of the diverter controls.

17. SECONDARY PUMP

This pump produces water flow through the stand up jet system in the Force, Signature, and Impact. In the Momentum 50 it operates jetting in spa. In the Trainer 12 and 14, it also supplies water flow to the swim jets or therapy jets depending on the position of the diverter valve. The second pump can be controlled by the main topside panel and also the personal remote mounted on the surface of the swim spa.

18. PUMP UNION

These are used by service personnel to easily service the pumps.

19. HEATER UNION

These are used by service personnel to easily service the heater.

20. OZONATOR

Your ozonator will operate in conjunction with the filter system. Ozone is a powerful gas that oxidizes contaminants in the water.

21. AIR BLEED VALVE

Used to relieve trapped air in the pumps after filling the spa in the Momentum 50. This valve is located in the swim spa filter compartment.



Air Bleed Valve

ELECTRICAL INSTALLATION REQUIREMENTS

!! MOMENTUM 50, FORCE, IMPACT, AND SIGNATURE WAVE XP !!

HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION
BEFORE INSTALLATION BEGINS

Electrical connections made improperly, or the use of wire gauge sizes for incurring power which are too small, may continually blow fuses in the electrical equipment box, may damage the internal electrical controls and components, may be unsafe and in any case will void your warranty.

It is the responsibility of the swim spa owner to ensure that electrical connections are made by a qualified electrician in accordance with the National Electrical Code and any local and state electrical codes in force at the time of installation.

These connections must be made in accordance with the wiring diagrams found inside the control box. This equipment has been designed to operate on 60Hz. alternating current only, 240 volts are required. Make sure that power is not applied while performing any electrical installation. A copper bonding lug has been provided on the electrical equipment pack to allow connection to local ground points. The ground wire must be at least 6 AWG copper wire and must be connected securely to a grounded metal structure such as a cold water pipe. All Master Spas equipment packs are wired for 240 VAC only. The only electrical supply for your swim spa must include a 50 AMP switch or circuit breaker to open all non-grounded supply conductors to comply with section 422-20 of the National Electrical Code. A disconnect must be installed and be readily accessible to the swim spa occupants, but installed at least five feet from the swim spa. A Ground-Fault circuit interrupter (GFCI) must be used to comply with section 680-42 of the National Electric Code. The Momentum 50 and Force swim spas come equipped from the factory with a GFCI breaker and will not need to have one installed. The Trainer 14 and Trainer 12 do not have a GFCI breaker and will need to have a separate GFCI breaker installed (see pages 16 and 17 of this manual). A ground fault is a current leak from any one of the supply conductors to ground. A GFCI is designed to automatically shut off power to a piece of equipment when a ground fault is detected.

Power hook-up to the swim spa must be 240 volt 3 wire plus ground (6 AWG copper).

Route the cable into the equipment area for final hook-up to terminals inside the control panel. The swim spa must be hooked up to a “dedicated” 240 volt, 50 amp breaker and GFCI. The Momentum 50, Force, Impact and Signature Wave XP Pro come equipped from the factory with this GFCI breaker. The term “dedicated” means the electrical circuit for the swim spa is not being used for any other electrical items (patio lights, appliances, garage circuits, etc.). If the swim spa is connected to a non-dedicated circuit, overloading will result in “nuisance tripping” which requires resetting of the breaker switch at the house electrical panel.

Rev. 11/3/10

Permanently Connected Equipment Assembly with Pump(s), Heaters, Luminaine, Ozone, Swim Spa Side Control(s), Pump shut off device, and Audio/Video Components.

Note: Some of the above components may be optional or not available with every swim spa model.

ELECTRICAL INSTALLATION REQUIREMENTS

!! TRAINER 14 AND TRAINER 12 !!

HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION
BEFORE INSTALLATION BEGINS

Electrical connections made improperly, or the use of wire gauge sizes for incurring power which are too small, may continually blow fuses in the electrical equipment box, may damage the internal electrical controls and components, may be unsafe and in any case will void your warranty.

It is the responsibility of the swim spa owner to ensure that electrical connections are made by a qualified electrician in accordance with the National Electrical Code and any local and state electrical codes in force at the time of installation.

These connections must be made in accordance with the wiring diagrams found inside the control box. This equipment has been designed to operate on 60Hz. alternating current only, 240 volts are required. Make sure that power is not applied while performing any electrical installation. A copper bonding lug has been provided on the electrical equipment pack to allow connection to local ground points. The ground wire must be at least 6 AWG copper wire and must be connected securely to a grounded metal structure such as a cold water pipe. All Master Spas equipment packs are wired for 240 VAC only. The only electrical supply for your swim spa must include a 50 AMP switch or circuit breaker to open all non-grounded supply conductors to comply with section 422-20 of the National Electrical Code. The disconnect must be readily accessible to the swim spa occupants, but installed at least five feet from the swim spa. A Ground-Fault Circuit Interrupter (GFCI) must be used to comply with section 680-42 of the National Electrical Code. A ground fault is a current leak from any one of the supply conductors to ground. A GFCI is designed to automatically shut off power to a piece of equipment when a ground fault is detected.

Power hook-up to the swim spa must be 240 volt 3 wire plus ground (6 AWG copper).

Route the cable into the equipment area for final hook-up to terminals inside the control panel. The swim spa must be hooked up to a “dedicated” 240 volt, 50 amp breaker and GFCI. The term “dedicated” means the electrical circuit for the swim spa is not being used for any other electrical items (patio lights, appliances, garage circuits, etc.). If the swim spa is connected to a non-dedicated circuit, overloading will result in “nuisance tripping” which requires resetting of the breaker switch at the house electrical panel.

Rev. 11/3/10

Permanently Connected Equipment Assembly with Pump(s), Heaters, Luminaine, Ozone, Swim Spa Side Control(s), Pump shut off device, and Audio/Video Components.

Note: Some of the above components may be optional or not available with every swim spa model.

ELECTRICAL INSTALLATION REQUIREMENTS

!! FOR MOMENTUM 80 AND SIGNATURE WAVE XP PRO !!
HAVE YOUR ELECTRICIAN READ THE FOLLOWING INFORMATION
BEFORE INSTALLATION BEGINS

The Momentum 80 swim spa requires two separate electrical power supplies.

A 50 amp dedicated electrical service using #6 AWG copper wire should be ran to the junction box in the swim spa. This line should NOT have an external GFCI installed since the spa has an internal GFCI installed. (See electrical hook-up requirements on page 15).

A 30 amp dedicated electrical service using #8 AWG copper wire should be ran to the Swim Spa control pack. This is the control pack that is NOT hooked to the main junction box in the spa. This electrical supply must be protected by an external GFCI (see wiring diagram on page 18).

The Signature swim spa requires two separate electrical power supplies.

A 50 amp dedicated electrical service using #6 AWG copper wire should be ran to the junction box in the swim spa. This line should NOT have an external GFCI installed since the spa has an internal GFCI installed. (See electrical hook-up requirements on page 15).





A 50 amp dedicated electrical service using #6 AWG copper wire should be ran to the Swim Spa control pack. This is the control pack that is NOT hooked to the main junction box in the spa. This electrical supply must be protected by an external GFCI (see wiring diagram on page 18).

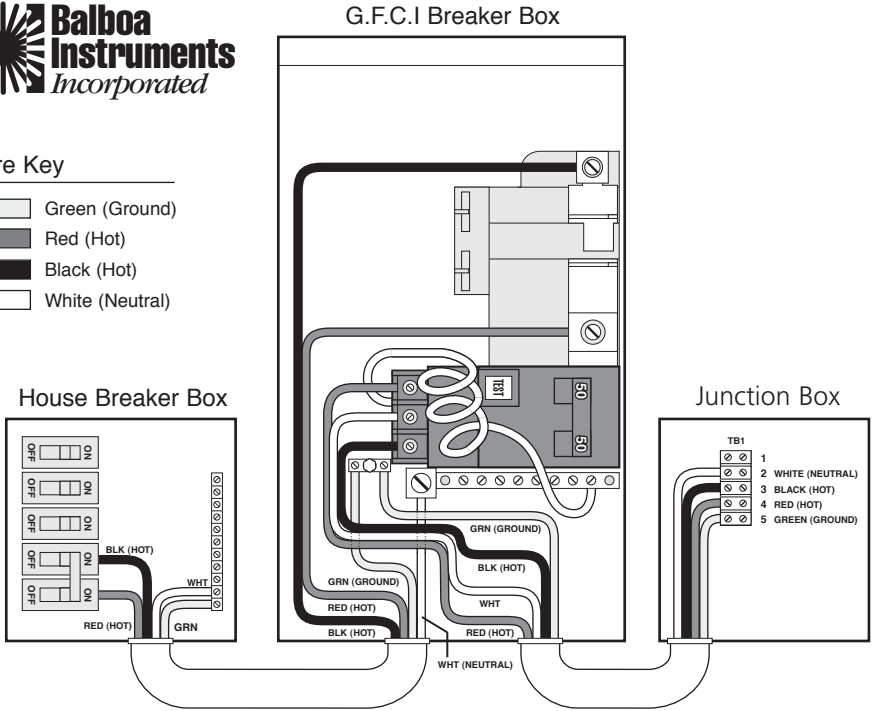
WIRING SCHEMATIC

WIRING FOR MODELS THAT REQUIRE A SEPARATE GFCI BREAKER



Wire Key

-  Green (Ground)
-  Red (Hot)
-  Black (Hot)
-  White (Neutral)



IDF00007.mac 6/17/97

* Actual wiring of GFCI will vary by manufacturer of GFCI. The GFCI shown is a Square D. Improper wiring of GFCI may result in permanent damage to swim spa system box. Repair / replacement of swim spa system box is not covered under warranty when damage results from improper wiring.

Swim spa installation is simple when properly planned. To that end, it is important that you read the following information carefully and consult with your Master Spas dealer.

- 1. Access** - The actual dimensions of your new swim spa will determine the amount of space that is needed in moving the swim spa from curbside to its final installation area. Be sure to measure side yard dimensions, gates or doors and vertical obstructions such as roof overhangs and overhead cables. Any other space limiting obstacles such as trees or shrubs must be evaluated.
- 2. Surface/Pad Requirements** - When your new swim spa is filled with water and bathers, it may weigh as much as several tons. It is imperative that the base beneath the swim spa can support the entire weight. The swim spa must be on a uniformly firm, continuous, and level surface. The recommended foundation is a concrete pad with a minimum thickness of four (4) inches with steel reinforcement bars crossed throughout the pad.

IMPORTANT

Be sure to locate your swim spa so that the equipment remains above grade and is not subject to flooding.

The equipment side(s) of the swim spa must be accessible in the event that future service is needed. In the event that service is required, your dealer will need at least 2 feet of clearance around the perimeter of the swim spa. Periodical maintenance checks require entry into the equipment bay. When possible, it is wise planning for the future to leave access, to all sides of the swim spa in the event your swim spas plumbing requires maintenance. Your swim spa warranty does not cover the cost of providing access for service.

GENERAL CONSIDERATIONS FOR OUTDOOR INSTALLATION


Again, proper planning will increase your total enjoyment factor with your new swim spa. Listed below are some additional items to consider when planning your installation.

- How swim spa will complement landscaping and vice versa
- View from inside swim spa and view of swim spa from inside of home
- Exposure to sunlight and shading from trees
- Privacy
- Getting to swim spa from house and return
- Proximity to dressing rooms and bathrooms
- Storage for swim spa chemicals
- Local building codes (if applicable)
- Power cable

NOTE: The Swim Spa is to be used in private, residential use only. Operating an Swim Spa for commercial use will void the warranty.

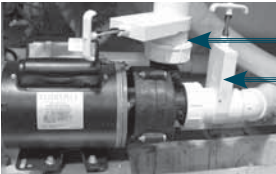
INSTALLATION INSTRUCTIONS

1. Put swim spa in final position that allows for access to equipment and swim spa components.
2. Remove skirt panels to access the electrical connections. For the Momentum 80 and Signature Wave XP Pro remove panels A, B, and C. For the Force, Impact, and Momentum 50 remove panel B. For the Trainer 12 and Trainer 14 remove panel A.

3.  Be sure all pump and heater unions are secure. Each pump has 2 unions and the heater has 2 unions. A newly delivered swim spa may have loose unions caused in transporting the swim spa. Check that all slice valves are open, in the up position. Again, the slice valves may become closed during transportation of the swim spa.

Slice Valve and Pump Union

4. Fill the swim spa to the "minimum safe water level" sticker. On the Momentum models it is recommended that the swim side be filled first and then the spa side. When draining the swim spa always drain the spa side before draining the swim side.

5.  Turn on power to the swim spa. If your spa is equipped with two electrical supplies, make sure that they are both turned on. The swim spa will go through its priming mode. This lasts approximately 5 minutes. The purpose of the priming mode is to help insure that the jet pumps have been primed with water and are ready to operate. It may be necessary in some instances to bleed air from the jet pumps


in your swim spa, if after the priming mode the swim spa pumps run but do not move water the pump may have an air lock.

Due to the nature of water flow and hydro-therapy pumps, please be advised that air locking of pumps may occur. Master Spas, Inc. has taken measures to reduce the possibility of this, but it still may occur, especially after filling the swim spa. This is not a service covered by the warranty and service charges may apply.

To relieve an airlock situation, loosen the pump union on the discharge of the pump. This pump union is indicated by an arrow in the picture below. Water should leak out of the union once the air has been removed. Tighten the union and test the pump for proper operation. Repeat this process if needed.

- *NOTE:** Upon power up, the propulsion system may mix water with air for up to several minutes until all of the air is pulled from the propulsion chamber. The propulsion system may be noisy during this time. This is normal.

6. Be sure the jets in your Swim spa are open. See 63 page for removal instructions.

7.  The Momentum 80 and Momentum 50 have an additional air bleed system that helps aid in relieving air locks. There is an air bleed valve located in the filter area of the swim spa portion of the swim spa. When filling the swim spa this should be opened to facilitate relieving any air that may be trapped in the pumps.

Air Bleed Valve

8. Adjust water chemistry according to the instructions provided in the Swim Spa "Water Quality Maintenance" Section. (page 25).
9. Your swim spa water will heat approximately 1° - 2° per hour, on average. Times may vary.

WATER CHEMISTRY TERMS

YOU SHOULD KNOW

Before jumping into the Swim Spa Water Maintenance, here are some terms to help you.

- 1. Parts per million, or ppm:** This is a form of measurement used in most pool or swim spa chemical readings. Best described as any one million like items of equal size and make up, next to one unlike item, but of equal size. This would be one part per million.
- 2. Total Alkalinity:** This is a measurement of the ability of the water to resist changes in pH. Put another way, it is the water's ability to maintain proper pH. Total alkalinity is measured in parts per million from 0 to 400 plus, with 80 to 120 ppm being the best range for swim spas. With low alkalinity, the pH will flip, or change back and forth, and be hard to control. With high alkalinity it becomes extremely difficult to change the pH.
- 3. pH or potential hydrogen:** This is a measurement of the active acidity in the water, or it is the measurement of the concentration of active hydrogen ions in the water. The greater the concentration of active hydrogen ions, the lower the pH. pH is not measured in parts per million, but on a scale from 0 to 14, with 7 being the neutral. In swim spas when ever possible, a measurement between 7.2 and 7.8 is best. Whenever possible, it should be between 7.4 and 7.6. With low pH, the results can be corroded metals, etched and stained plaster, stained fiberglass or acrylic, eye / skin irritation, rapid chlorine or bromine loss, and total alkalinity destruction. With high pH, the results can be cloudy water, eye / skin irritation, scale formation and poor chlorine or bromine efficiency.
- 4. Shocking:** This is when you add either extra chlorine (superchlorinate) by raising the chlorine level above 8 ppm, or add a non-chlorine shock (potassium monoperoxysulfate or potassium monopersulfate) to burn off the chloramines or bromamines. A non-chlorine shock acts by releasing oxygen in the water, which serves the same function as chlorine. The advantage to using non-chlorine shock, is you can enter the water within 15 minutes after shocking. Using chlorine, you must wait until the total chlorine reading is below 5 ppm. One thing to remember, a non-chlorine shock will not kill bacteria or disinfect.
- 5. Sequestering:** This can be defined as the ability to form a chemical complex which remains in solution, despite the presence of a precipitating agent (i.e. calcium and metals). Common names for sequestering chemicals are; minquest, stain and scale control, metal-x, swim spa defender, swim spa metal gone, (etc.).
- 6. Filtration:** Filters are necessary to remove particles of dust, dirt, algae, etc. that are continuously entering the water. If the swim spa is not operated long enough each day for the filter to do a proper job, this puts a burden on the chemicals, causing extra expense. A spare cartridge should be kept on hand to make it easy to frequently clean the cartridge without the need for a long shut down. This will also allow the cartridge to dry out between usages, which will increase the cartridge life span as much as twice. Replace the cartridge when the pleats begin to deteriorate. Cartridge cleaning should be done a minimum of once a month. More often with a heavy bather load.
- 7. Sanitizers:** This is what kills the germs and bacteria that enter the water from the environment and the human body.
 - A. Chlorine**
 1. Only one type of chlorine is approved for swim spa use: Sodium dichlor which is granular, fast dissolving, and PH neutral chlorine.
 2. Chlorine is an immediate sanitizer.
 - B. Bromine (Note: Bromine use is not recommended with Eco Pur filters.)**
 1. Two types of tablets.
 - a. Hydrotech
 - b. Lonza
 2. Bromine is a slow dissolve chemical and may take a few days to develop a reserve or reading in the water.

WATER CHEMISTRY TERMS

YOU SHOULD KNOW

8. **Total dissolved solids (TDS):** Materials that have been dissolved by the water. i.e. Like what happens when you put sugar in coffee or tea.
 9. **Useful life of water (in days):** Water should be drained at least once every 180 days. Useful life may vary by usage and bather load.
 10. **Defoamer:** Foaming may be caused by body oils, cosmetics, lotions, surface cleaners, high pH or algeacides as well as other organic materials. Low levels of calcium or sanitizer can also cause foaming. Also, double rinse your bathing suits as they will hold residual soap after being washed.
 11. **Calcium hardness:** Water that is too hard (over 250 ppm) can promote scale formation in components and on swim spa surface. Water that is too low (below 180 ppm) may also shorten the life of metal components on the swim spa.
- NOTE:** Always leave swim spa cover open for 15 min. after adding chemicals to prevent off gas from damaging your cover, pillows and other critical parts.

SWIM SPA WATER MAINTENANCE

* All swim spas are equipped with an Eco Pur filter. This section pertains specifically to maintaining water chemistry when Eco Pur filters are installed.



SPECIAL NOTE

ECO PUR™ water filter system is designed to reduce the use of chemicals in your swim spa. You will still be required, periodically, based on usage to add a small amount of chlorine to oxidize organic compounds in the water. The ECO PUR™ filter system will not eliminate the need to maintain proper water chemistry but can make the maintenance a more natural experience.

Note: Eco-Pur filters are not recommended for use with Bromine. This manual references bromine as well as chlorine in case you decide to remove the Eco-Pur filters and sanitize your swim spa with bromine. Consult your dealer for additional information.

Master Spas, Inc. products are not designed to be used with Biquanides. These chemicals are found in SoftSwim® and Baqua Spa® products. Due to adverse effects from these types of sanitizers, the use of these products may void the swim spa warranty.

For ECO PUR™ Water Filter System

- Step 1:** Your swim spa should be filled using a Pre-filter, which can be obtained from your local dealer. This Pre-filter will help remove many of the minerals existing in the water, which will make adjusting the water balance easier after a new fill.
- Step 2:** During the initial filling of the swim spa, add a sequestering agent to combat suspended minerals in the water. The agents are sold under many different names such as Mineral Clear, Stain and Scale, and other brands. Allow water to circulate and filter for at least 12 hours before adding any other chemicals.
- Step 3:** Test water for pH, total Alkalinity, and Calcium hardness. The pH should be 7.2 - 7.8 and the total Alkalinity 80-150 PPM. Calcium hardness levels should be maintained between 150 and 250 PPM (part per million).
- Step 4:** Adjust pH, total Alkalinity (TA) and Calcium hardness utilizing the directions on the chemical bottles provided by your dealers start up kit.
- Step 5:** It may be necessary to retest and add additional chemicals to get to the proper levels in Step 3.
- Step 6:** Add 2 oz. of concentrated chlorinating granules (sodium Dichlor-s-triazinetrone) per 500 gallons on initial start up to begin sanitizing the swim spa water. It is important not to add the chlorinating granules until the pH, alkalinity and calcium hardness have been adjusted to their proper levels.

SPECIAL NOTE:

We recommend a minimum level of 1.0 ppm residual chlorine be maintained in the swim spa water.

** It may be necessary to rinse your filters within the first few days after filling your swim spa to ensure that they are not restricting water flow due to the initial removal of heavy contaminants in source water.*

- Helps remove calcium carbonate and hydrogen sulphide from swim spa water to protect heaters and equipment from precipitation.
- Helps stabilize the pH and alkalinity of the swim spa water.
- Helps reduce chemical usage and still provide safe odor-free water.
- Helps deplete excess chlorine after chemical shock to prevent damage to skin, hair, and swim wear.
- Helps to produce ultra clean and clear water.

SPECIAL NOTES

The ECO PUR™ filter system will not oxidize organic compounds and will require periodic doses of chlorine to assist in the sanitization and oxidation processes required to maintain clear swim spa water.

- ECO PUR™ filter system will not alter the PH of swim spa water. The ECO PUR™ filter system will actually aid in stabilizing the PH. ECO PUR™ does not alter the (TDS) total dissolved solids.
- The main function of the ECO PUR™ filter system is to provide clean and clear swim spa water. Proper chemical balance and filtration are also key components in maintaining healthy swim spa water. Always ensure that the ph and total alkalinity of the swim spa water is checked and balanced at all times. To ensure proper filtration, clean the outer filter cartridge with a “filter cleaner” every 30 days and rinse the ECO PUR™ cartridge with a hose to remove any buildup of containments. (Do not soak the ECO PUR™ cartridge in filter cleaner.) If water appears to be visually cloudy, dull, or has an odor, shock the swim spa water with 2 ounces of chlorine to remove excessive containments.

WATER QUALITY MAINTENANCE SCHEDULE

BEFORE EACH USE

Check swim spa water with a test strip for proper sanitation levels and adjust accordingly to the proper levels.

ONCE A WEEK

Add 15 oz. (30 tablespoons) of a non-chlorine shock or 3 tablespoons of Dichlor to swim spa per 2,500 gallons.

3 TIMES A WEEK

Test water using chemical test strips. Adjust sanitizer, pH and Alkalinity accordingly.

ONCE A MONTH*

Soak your filter elements overnight in a bucket with Filter Cleaner and then rinse with clean water before re-inserting. DO NOT soak the ECO PUR filter element in any type of cleaners.

EVERY 180 DAYS

Drain and refill your swim spa.

AFTER EACH USE

Add 5 tablespoons of non-chlorine shock or 1-2/3 teaspoon of Dichlor to swim spa per 2,500 gallons.

AS NEEDED

If water looks hazy, shock treat with 5 teaspoons of Dichlor per 2,500 gallons.

- * These are general recommendations for water quality maintenance that may vary by usage and or bather load. Depending on bather load and frequency of use, drain and refill times may vary as well as the frequency of cleaning your filters.
- * Foam Gone may be used when excessive foaming occurs. Be sure to use only two to four drops at a time. Over use of Foam Gone will result in cloudy, milky water.

NOTE: As an alternative to non chlorine shock, Dichlor may be substituted.
1 tsp. Dichlor = 3 tablespoons of non chlorine shock

USE ONLY SWIM SPA CHEMICALS

(some pool chemicals are not suitable for swim spa use).

- * when cleaning filters, be sure to never have the pumps (including the circulation pump) running without the filters in place. Failure to do so may result in debris in the pumps causing unwarranted damage.

SWIM SPA WATER MAINTENANCE - START-UP

1. Read the swim spa owners manual first.
2. Clean the surface with a swim spa general purpose cleaner or wipe down with a clean wet towel.
3. Begin filling the swim spa with fresh water. If possible, do not use softened water.
4. When the swim spa has 2 to 4 inches of water on the bottom, add the recommended amount of a sequestering chemical for that size swim spa. See the chemical bottle for correct amounts.
5. When the swim spa is full, run the pumps on high speed for 30 minutes without air controls open. This will give the sequestering chemical time to mix well with the water. Allow sequestering chemical 12-24 hours to properly filter in the water before proceeding with any further steps.
6. Using test strips or a test kit, test for total alkalinity, and adjust if necessary to between 80 to 150 ppm using the pH / alkalinity increaser or decreaser 5 oz. at a time. Wait 30 minutes, retest, and adjust if necessary. The pump should be running on high speed during this time without air controls open.
7. Using test strips or a test kit, test for pH, and adjust if necessary to within the 7.2 and 7.8 range using the pH / alkalinity increaser or decreaser 2.5 oz. at a time. Wait 30 minutes, retest, and adjust if necessary. The pump should be running on high speed during this time, without air controls open.
8. Add the sanitizer of choice, following label directions. If chlorine is used, broadcast the recommended amount across the surface of the water, with the pump running on high speed. Wait 30 minutes, retest, and adjust if necessary to a total chlorine reading of 1 to 3 ppm. If bromine is used, add bromine tablets to the bromine feeder following label directions. With the pump running on high speed, add 10 oz. of sodium bromide, and shock the swim spa with 10 oz. of non chlorine shock. It may take several days adjusting the bromine feeder to obtain a total bromine reading of 3 to 5 ppm. A bromine reading may not be obtained on the first day.
9. If any foam develops, add a defoamer at the base of the problem area. Use only enough defoamer to get rid of the foam. This is usually two to four drops. Do not pour large amounts of defoamer into water.
10. Wait two days, and begin a three day a week maintenance program.

Day One

1. Test and adjust total alkalinity if necessary to between 80 to 120 ppm using the pH / alkalinity increaser or decreaser 5 oz. at a time. Wait 30 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
2. Test and adjust pH, if necessary, to within the range of 7.2 to 7.8 using the pH / alkalinity increaser or decreaser, 2.5 oz. at a time. Wait 30 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
3. Test and adjust sanitizer level. Add chlorine following label directions to maintain a free chlorine level of 1 to 3 ppm. If using bromine, adjust feeder to maintain a total bromine level of 3 to 5 ppm. Add bromine tablets to the dispenser if necessary, following label directions.
4. Add a water clarifier following label directions. If the swim spa is equipped with an ozone unit, we recommend adding an enzyme product in place of the clarifier, following the label directions.
5. Use a small amount of defoamer only if necessary.

Day Two Skip

Day Three

1. Test and adjust total alkalinity, if necessary, to between 80 and 120 ppm using the pH / alkalinity increaser or decreaser, 5 oz. at a time. Wait 30 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
2. Test and adjust the pH, if necessary, to within the range of 7.2 to 7.8 using the pH / alkalinity increaser or decreaser, 2.5 oz. at a time. Wait 30 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
3. Test and adjust sanitizer level. Add chlorine following label directions to maintain a free chlorine level of 1 to 3 ppm. If using bromine, adjust feeder to maintain a total bromine level of 3 to 5 ppm. Add bromine tablets to the dispenser if necessary, following label directions.
4. Add sequestering chemical, following label directions for maintenance.
5. If necessary, clean water line with a swim spa general purpose cleaner or enzyme product.
6. Use a defoamer only if necessary.

(cont. next page)

Day Four Skip

Day Five

1. Test and adjust total alkalinity, if necessary, to between 80 and 120 ppm using the pH / alkalinity increaser or decreaser, 5 oz. at a time. Wait 30 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
2. Test and adjust the pH, if necessary, to within the range of 7.2 to 7.8 using the pH / alkalinity increaser or decreaser, 2.5 oz. at a time. Wait 30 minutes, retest and adjust if necessary. The pump should be running on high speed during this time with the air controls closed.
3. Test and adjust sanitizer level. Add chlorine following label directions to maintain a free chlorine level of 1 to 3 ppm. If using bromine, adjust feeder to maintain a total bromine level of 3 to 5 ppm. Add bromine tablets to the dispenser if necessary, following label directions.
4. Shock with 10 oz. of non chlorine shock, or superchlorinate following label directions. A swim spa should be shocked at least once a week even if it is not used. If using chlorine as the sanitizer, the swim spa should be shocked whenever a free chlorine reading of 1 to 3 ppm cannot be obtained without raising the total chlorine level above 5 ppm. Always shock a swim spa after any heavy bather load.
5. Check filter cartridge and clean if necessary. Clean with cartridge filter cleaner, following label directions. It is best to have a spare cartridge on hand, to prevent long swim spa down times while the cartridge is being cleaned. Never operate your swim spa without the filters in place.
6. Use a defoamer only if necessary.

Day Six and Seven Skip

With a swim spa you are working with a small volume of hot water compared to a large volume of relatively cool water in a swimming pool. Because of this chemicals will have a shorted life span and bacteria can grow more quickly than in a swimming pool. A swim spa is less forgiving than a pool, and requires that whatever is put into it have a pH as close to neutral as possible. That is why only chemicals made for swim spas should be used.

SWIM SPA WATER MAINTENANCE

TROUBLE-SHOOTING GUIDE

Problem	Possible Causes	How To Fix It
Chlorine / Bromine Odor	<ul style="list-style-type: none">• Excessive Chlorine or bromine level• Low pH	<ul style="list-style-type: none">• Shock water with non-chlorine shock treatment• Adjust pH if necessary
Water Odor	<ul style="list-style-type: none">• Low levels of sanitizer• pH out of range• Bacteria or algae growth	<ul style="list-style-type: none">• Shock water with non-chlorine shock treatment or adjust sanitizer levels• Adjust pH level if necessary• Adjust sanitizer if necessary
Cloudy Water	<ul style="list-style-type: none">• Dirty filters or inadequate filtration• Water chemistry not balanced• Suspended particles or organic materials• Old water	<ul style="list-style-type: none">• Clean filters and adjust filtration• Adjust chemistry levels• Add swim spa clarifier (see dealer)• Change swim spa water
Scum Ring Around Swim Spa	<ul style="list-style-type: none">• Build up of oils, dirt and organic elements	<ul style="list-style-type: none">• Wipe off with a clean towel
Eye / Skin Irritation	<ul style="list-style-type: none">• Unsanitary water• Free chlorine level above 5 ppm• Poor sanitizer / pH levels	<ul style="list-style-type: none">• Shock spa with non-chlorine shock• Allow level to drop below 5 ppm• Adjust according to swim spa test strip results
Foaming	<ul style="list-style-type: none">• High levels of body oils, lotions, soap, etc.	<ul style="list-style-type: none">• Add small amount of defoamer

RECOMMENDED LEVELS OF CHEMICAL

Chlorine 1.0 - 3.0 ppm

pH 7.2 - 7.8

Total Alkalinity 80 - 150 ppm

Calcium Hardness 180 - 250 ppm

WHY CHEMICALS ARE IMPORTANT

IN A SWIM SPA

1. Evaporation:

As water evaporates, only pure water evaporates, leaving the salts, minerals, metals, and any unused chemicals behind. Adding water adds more salts, minerals, and metals. In time, the water can become saturated with these dissolved solids and can cause stains or scale to form on the walls of the swim spa or a scale build up inside the equipment. Colored or cloudy water, and possible corrosion of plumbing and fittings may also occur.

2. Heat:

Heat causes much quicker evaporation and also will cause minerals and metals to precipitate out of solution.

3. Air:

Dust and airborne dirt particles are introduced into the swim spa.

4. Environment:

The environment surrounding the swim spa can also impact the water quality. Items such as pollen, grass, sand, dirt, lawn fertilizer, airborne dust, insects, leaves, and pets can all affect the water quality of the swim spa.

Remember:

The maintenance routines set forth in this manual may need to be adjusted depending on how much the swim spa is being used.

MAINTENANCE RECOMMENDATIONS

Your swim spa requires periodic draining and cleaning to ensure a safe, healthy environment. It is recommended that you clean your swim spa at least every 180 days. Heavy bather load will require cleaning it more often.

DRAIN YOUR SWIM SPA • See page 13.

CLEAN YOUR SWIM SPA SURFACE

- With a soft cloth, wipe down the swim spa surface with a non-abrasive swim spa surface cleaner that may be purchased through your local dealer. Do not use paper towels. Be sure to rinse residue from swim spa surface.
- If your swim spa has developed an oily or chalky residue at the waterline it may require special treatment. Consult your dealer.

CLEAN THE ACRYLIC DIVIDER (Momentum 80 and Momentum 50)

- The surface should be first flushed with clean water to remove loose abrasive particles. The clear acrylic sheet should then be gently sponged with a mild detergent/water solution and finally rinsed with clean water. Care must be taken not to leave any of the soap residue in the swim spa as it could cause the swim spa water to foam during operation.
- Drying can be done with a clean soft cotton towel. Avoid hard rough cloths or paper towels since they can put fine scratches on the acrylic surface.
- Do not use any aggressive solvents (lacquer thinner, gasoline, acetone and etc.) on the clear acrylic sheet. These products can cause damage to the sheet that may not be visible until days or weeks later.
- Window glass cleaning compounds are not recommended. Cleaning products that contain any type of abrasive material should not be used.

REFILL YOUR SWIM SPA

- When filling the Momentum swim spa always fill the swim side of the unit before filling the spa side.
- Fill the swim spa with water and be sure that water level is above the skimmer opening at the minimum safe water level sticker.
- Refer to your swim spas corresponding start-up section with any questions.

CLEAN YOUR FILTER ELEMENTS (also reference page 64)

The filter in your swim spa is one of the most important components of your swim spa. It not only is essential for clean water, but also for extending the life of the swim spa equipment. Your filter elements must be cleaned regularly (once a month on average) with normal swim spa use. With heavy use, they will need to be cleaned more often.

- The filter elements are one of the most important components of your swim spa. Not only are they essential for clean water, but they also extend the life of the swim spa equipment. Your filter elements should be cleaned on a regular basis, once a month on average with normal usage. With heavy use the filters may need to be cleaned more often.
- Turn off the swim spa before servicing filters. Never leave the swim spa running when removing the filters. Debris can be pulled into the plumbing system and cause unwarranted damage.
- With a garden hose, spray each element under pressure. Periodically, the elements need to be soaked in a filter cleaner compound. Check with your dealer for details on cleaning and/or filter replacement recommendations. Do not soak the Eco Pur filter cartridge in any cleaners.
- Replace filter elements.
- Be sure water level is adequate.
- Turn swim spa on.

CARE OF YOUR SWIM SPA PILLOWS

- Your swim spa pillows need to be rinsed periodically to remove any chemical residue. This should help to eliminate pillows becoming stiff and discolored.
- If the swim spa will not be used for a period of time, the pillows should be removed to extend their useful life.

WINTERIZING YOUR SWIM SPA

Your swim spa is designed to be used year round in any type of climate.

* However, if you decide you don't want to use your swim spa in the winter, you must drain it and follow the winterizing steps listed below:

1. Due to the physical size of the swim spa, we recommend draining your swim spa with a submersible sump pump. Draining your swim spa with a conventional swim spa drain is not a reasonable option.
2. Use a shop vac to get all standing water out of your unit.
3. Remove access panels from equipment area.
4. Loosen all pump unions
5. Remove winterizing plug from face of the pump(s) where applicable.
6. Using your shop vac in a blowing mode, insert the hose into the nozzle of each jet and blow the trapped water from the lines into the interior of the swim spa.
7. After this is completed, use the shop vac to remove any standing water in the swim spa and in the equipment area.
8. Clean the swim spa with a soft cloth and a non-abrasive swim spa surface cleaner.
9. Replace access panels.
10. Cover swim spa to prevent water from entering the swim spa.

* If you decide to winterize your swim spa, we recommend that you periodically check the swim spa throughout the winter to assure water is not entering the swim spa through or around the swim spa cover.

* *Disclaimer: Master Spas does not recommend winterizing your swim spa. If you choose to do so, any damage that may result is not covered under the swim spa warranty.*

SPECIFICATIONS

Swim Spa Model	Swim Spa Dimensions	Electrical Required	Water Capacity	Weight Dry/Full	Number of Pumps	Jet Count
Momentum 80	231" x 94" x 51"	240V 80A	2,040 gallons	3,040lbs/ 20,000lbs	3 pumps 1 propulsion system	45
Momentum 50	231" x 94" x 51"	240V 50A	2,040 gallons	3,040lbs/ 20,000lbs	2 pumps 1 propulsion system	45
Force	201" x 94" x 51"	240V 50A	1,925 gallons	2,700lbs/ 18,735lbs	2 pumps 1 propulsion system	41
Impact	174" x 94" x 51"	240V 50A	1,525 gallons	2,460lbs/ 15,117lbs	2 pumps 1 propulsion system	51
Trainer 12	144" x 94" x 51"	240V 50A	1,300 gallons	1,620lbs/ 12,410lbs	2 pumps	55
Trainer 14	174" x 94" x 51"	240V 50A	1,425 gallons	2,260lbs/ 14,130lbs	2 pumps	55
Signature	215" x 94" x 60"	240V 50A	2,500 gallons	3,240lbs/ 24,000lbs	2 pumps 1 propulsion system	39



ELECTRONIC CONTROLS

Momentum 80, Signature, Force, Impact, Trainer 12, and Trainer 14

NOTE: The Momentum 80 has dual controls. These controls operate the swim portion and spa portion of the swim spa separately. (see note at end of electronic controls section for details) The Momentum 50 has a different style control that is discussed in the Momentum 50 system overview. (see page 41 for operation)

Initial Start-up

When your swim spa is first actuated, it will go into Priming mode, indicated by "Pr." The Priming mode will last for less than 5 minutes (press "Warm" or "Cool" to skip Priming Mode) and then the swim spa will begin to heat and maintain the water temperature in the Standard mode.



Warm/Cool (80°F - 104°F / 26°C - 40°C)

The start-up temperature is set at 100°F/37°C. The last measured temperature is constantly displayed on the LCD.

Note that the last measured swim spa temperature displayed is current only when the low speed pump has been running for at least 2 minutes.

To display the set temperature, press the "Warm" or "Cool" pad once.

To change the set temperature, press the pad a second time before the LCD stops flashing. Each press of the "Warm" or "Cool" pad will continue to either raise or lower the set temperature.

After three seconds, the LCD will stop flashing and display the current swim spa temperature.

NOTE: As a general rule, your swim spa will heat 1-2° F per hour.

Jets 1

Touch the "Jets 1" button once to activate the low speed of the pump. Press it again to activate the high speed of the pump. Press the "Jets 1" button again to turn off the pump. If left running on high speed, the pump will automatically turn off after 15 minutes.

Jets 2

Touch the "Jets 2" button once to activate the pump. Press the "Jets 2" button again to turn off the pump. If left running, the pump will automatically turn off after 15 minutes.

Light and Optional LED Lighting

Press the "Light" button to turn the light on and off. If left on, the light automatically turns off after 4 hours.

Your swim spa's L.E.D. lighting functions in the following manner: Press the "Light" button to turn the light on and off. If you wish to change the "function" of the lights, turn the lights off, then on within 5 seconds. If you wish to leave the lights in the same "function" setting for the next use, turn the lights off and do not turn back on for at least 5 seconds.

ELECTRONIC CONTROLS

Momentum 80, Signature, Force, Impact, Trainer 12, and Trainer 14

Mode

Mode is changed by pressing the “Warm” or “Cool” button, then pressing the “Program/Mode” button.

Standard mode is programmed to maintain the desired temperature. Note that the last measured swim spa temperature displayed is current only when the pump has been running for at least 2 minutes. “STD” will be displayed momentarily when you switch into Standard mode.

Economy mode heats the swim spa to the set temperature only during filter cycles. “ECN” will display solid when the temperature is not current, and will alternate with the temperature when the temperature is current.

Sleep mode heats the swim spa to within 20°F /10°C) of the set temperature only during filter cycles. “SLP” will display solid when the temperature is not current, and will alternate with temperature when temperature is current.

Preset Filter Cycles

The first filter cycle begins 6 minutes after the swim spa is energized. The second filter cycle begins 12 hours later. Filter duration is programmable for 2, 4, 6, 8 hours or for continuous filtration (indicated by “FILC”). The default filter time is 2 hours. To program, press “Warm” or “Cool”, then “Jets.” Press “Warm” or “Cool” to adjust. Press “Jets” to exit programming.

The low speed of the pump runs during filtration and the ozone generator will be enabled.

Momentum 80

The Momentum 80 utilizes two separate control systems. One control panel operates the spa portion of the swim spa and the other control panel operates the swim portion. The operation of each one of these controls is the same as that described for the single control systems. With this system the jet operation, heat settings, and filtration can be adjusted independently for the spa and swim portions of the swim spa.

Freeze Protection

If the temperature sensors detect a drop to below 44°F /6.7°C within the heater, the pump automatically activates to provide freeze protection. The equipment stays on until 4 minutes after the sensors detect that the swim spa temperature has risen to 45°F /7.2°C or higher. In colder climates, an optional additional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Aux freeze sensor protection acts similarly except with the temperature thresholds determined by the switch and without a 4-minute delay in turnoff. See your dealer for details.

ELECTRONIC CONTROLS

Momentum 80, Signature, Force, Impact, Trainer 12, and Trainer 14

Message	Meaning	Action Required
	No message on display. Power has been cut off to the swim spa.	The control panel will be disabled until power returns. Time of day will be preserved for 30 days on your system. Swim spa settings are preserved on all systems.
HH	“Overheat” - The swim spa has shut down. On some systems, an alarm may sound. One of the sensors has detected 118°F (approx. 47.8°C) at the heater.	DO NOT ENTER THE WATER. Remove the swim spa cover and allow water to cool. Once the heater has cooled, reset by pushing any button. If swim spa does not reset, shut off the power to the swim spa and call your dealer or service organization.
OH	“Overheat” - The swim spa has shut down. One of the sensors has detected that the swim spa water is 110°F (approximately 43.3°C).	DO NOT ENTER THE WATER. Remove the swim spa cover and allow water to cool. At 107°F (approx. 41.7°C), the swim spa should automatically reset. If spa does not reset, shut off the power to the spa and call your dealer or service organization.
IC	“Ice” - Potential freeze condition detected.	No action required. The pumps will automatically activate regardless of swim spa status.
SA	Swim Spa is shut down. The sensor that is plugged into the Sensor “A” jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
Sb	Swim spa is shut down. The sensor that is plugged into the Sensor “B” jack is not working.	If the problem persists, contact your dealer or service organization. (May appear temporarily in an overheat situation and disappear when the heater cools.)
Sn	Sensors are out of balance. If this is alternating with the temperature, it may just be a temporary condition. If the display shows only this message (periodically blinking), the swim spa is shut down.	If the problem persists, contact your dealer or service organization.
HL	A significant difference between the temperature sensors was detected. This could indicate a flow problem.	Check water level in swim spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. If problem persists, contact your dealer or service organization.
LF	Persistent low flow problems. (Displays on the fifth occurrence of the “HFL” message within 24 hours.) Heater is shut down, but other swim spa functions continue to run normally.	Follow action required for “HFL” message. Heating capacity of the swim spa will not reset automatically; you may press any button to reset.

ELECTRONIC CONTROLS

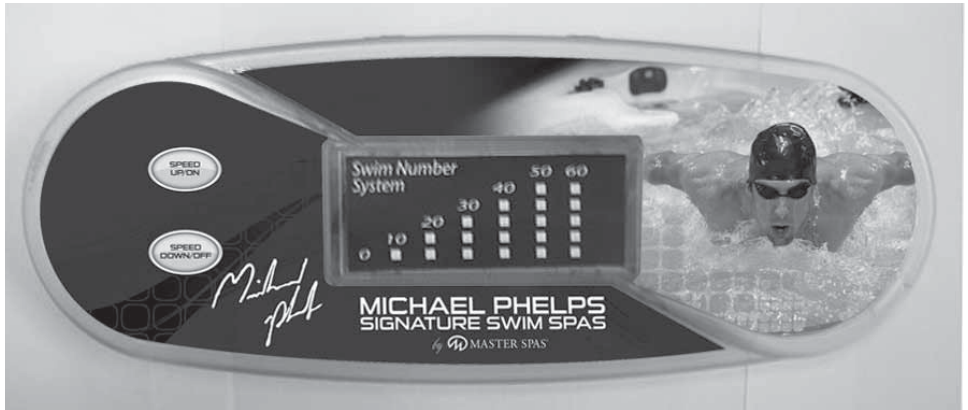
Momentum 80, Signature, Force, Impact, Trainer 12, and Trainer 14

Message	Meaning	Action Required
dr	Possible inadequate water, poor flow, or air bubbles are detected in the heater. Swim spa is shut down for 15 minutes.	Check water level in swim spa. Refill if necessary. If the water level is okay, make sure the pumps have been primed. Press any button to reset, or this message will automatically reset within 15 minutes. If problem persists, contact your dealer or service provider.
dy	Inadequate water detected in heater. (Displays on third occurrence of "dr" message.) Swim spa is shut down.	Follow action required for "dr" message. Swim Spa will not automatically reset; you may press any button to reset.

Warning! Shock Hazard! No User Serviceable Parts. Do not attempt service of this control system. 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.

PROPULSION SYSTEM

Momentum 80 Momentum 50, Signature, Force, Impact



The Propulsion System (Momentum 80 Momentum 50, Signature, Force, Impact)

The unique belt-driven propulsion system provides the most consistent flow of water to swim and exercise against. Used in conjunction with the convenient, LED backlit control panel, this system is the most user friendly on the market today.

The control panel also introduces the revolutionary Swim Number System. The Swim Number System allows the user to easily identify what setting they are using during training. These numbers range from 0-60 so that a favorite setting can always be repeated easily. The Swim Number System allows the user to easily increase or decrease the speed of the water flow by either gradually pressing the on/up button or by holding it down to achieve the desired Swim Number. The system has an automatic shut-off feature that will turn off the propulsion system off after 30 minutes of continuous use. To decrease the speed of the water flow press the off/down button until the desired speed is reached. To completely turn the system off, press and hold the off/down button for 7 seconds before releasing it.

Optional Exercise Equipment All

The optional exercise equipment package makes it easy to exercise in your own back yard. There are shell mounted clips that are used to fasten the rowing equipment to the swim spa. These clips are located along the sides of your spa next to the grab rails that are placed around the perimeter of the swim area. An optional exercise book is available through your dealer that will show you how to get the most out of the exercise equipment features.

NOTE: DO NOT LEAVE EXERCISE EQUIPMENT INSIDE THE SWIM SPA WHEN NOT IN USE. DO NOT LEAVE EXERCISE EQUIPMENT OUTSIDE EXPOSED TO ULTRA VIOLET RAYS. FAILURE TO FOLLOW THE ABOVE GUIDELINES COULD RESULT IN INJURY.

MOMENTUM 50 SYSTEM OVERVIEW

NAVIGATION

The control system in your Momentum 50 spa differs from conventional spas in that it is able to operate therapy jets and heat in two separate areas through one simple system. This spa has two separate water areas and they can be controlled using the one topside control panel. For reference the large open area that contains the propulsion drive is the Swim area and the smaller area with seating is the Spa area. This single control panel is located on top of the filter niche in the Spa area. The following pages explain the operation details for this dual system.



Navigation

Navigating the entire menu structure is done with 2 or 3 buttons on the control panel.

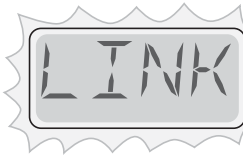
The **WARM** and **COOL** buttons are indicated by a single **Temperature** icon throughout this User Guide.

The **LIGHT** Button is also used to choose the various menus and navigate each section.

Typical use of the Temperature buttons allow changing the Set Temperature while the numbers are flashing in the LCD. Pressing the **LIGHT** button while the numbers are flashing will enter the menus.

Power-up Screens

Each time the System powers up, a series of numbers is displayed, and after that the letters INIT. This generally takes about 30 seconds.



After the startup sequence, LINK will appear if no button has been pressed. Press any button to Link the Panel with the System.

Key



Indicates Flashing or Changing Segment



A temperature button, used for "Action"



Light or dedicated "Choose" button, depending on control panel configuration



Waiting time - varies depending on function

MOMENTUM 50 SYSTEM OVERVIEW

FILLING – PRIMING MODE

Preparation and Filling

Fill the spa to its correct operating level. Be sure to open all valves and jets in the plumbing system before filling to allow as much air as possible to escape from the plumbing and the control system during the filling process.

After turning the power on at the main power panel, the top-side panel display will go through specific sequences. These sequences are normal and display a variety of information regarding the configuration of the hot tub control.

Priming Mode

The swim spa will go through its priming mode. This lasts approximately 5 minutes. The purpose of the priming mode is to help insure that the jet pumps have been primed with water and are ready to operate. It may be necessary in some instances to bleed air from the jet pumps in your swim spa, if after the priming mode the swim spa pumps run but do not move water the pump may have an air lock.

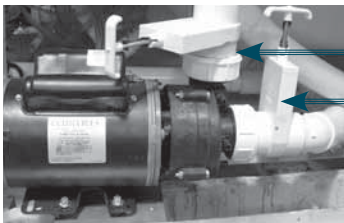


Regardless of whether the priming mode ends automatically or you manually exit the priming mode, the system will automatically return to normal heating and filtering at the end of the priming mode. During the priming mode, the heater is disabled to allow the priming process to be completed without the possibility of energizing the heater under low-flow or no-flow conditions. Nothing comes on automatically, but the pump(s) can be energized by pushing the “Jet” buttons.

Priming the Pumps

Due to the nature of water flow and hydro-therapy pumps, please be advised that air locking of pumps may occur. Master Spas, Inc. has taken measures to reduce the possibility of this, but it still may occur, especially after filling the swim spa. This is not a service covered by the warranty and service charges may apply.

To relieve an airlock situation, loosen the pump union on the discharge of the pump. This pump union is indicated by an arrow in the picture below. Water should leak out of the union once the air has been removed. Tighten the union and test the pump for proper operation. Repeat this process if needed.



Pump Union

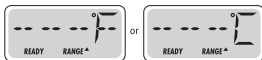
Slice Valve

Airlock

Exiting Priming Mode

You can manually exit Priming Mode by pressing one of the “Temp” buttons. (Warm or Cool) Note that if you do not manually exit the priming mode as described above, the priming mode will be automatically terminated after 4-5 minutes. Be sure that the pumps have been primed by this time.

Once the system has exited Priming Mode, the top-side panel will momentarily display the set temperature but the display will not show the temperature yet, as shown below. This is because the system requires approximately 1 minute of water flowing through the heater to determine the water temperature and display it.



MOMENTUM 50 SYSTEM OVERVIEW

DIVERT INDICATORS AND TEMPERATURE



Divert Function

The Divert button on the panel switches the system between Spa and Swim modes.

The Jets LED is on whenever either of Jets 1 or 2 is on.

When the system is changing between Spa/Swim modes the LEDs will always indicate the mode the system is changing to, by flashing that LED, before heater cool-down and valve movement has taken place. (See Heater and Pump Behavior section for additional information)

It is normal operation to see the mode LED(s) flash and the heater LED flash while the system is changing modes. Once the divert function has been completed the LED lights will stop flashing and be on constantly. This indicates that that function is operating.

Adjusting the Set Temperature

When using the Up and Down buttons (Temperature buttons), pressing Up or Down will cause the temperature to flash. Pressing a temperature button again will adjust the set temperature in the direction indicated on the button. When the LCD stops flashing, the spa will heat to the new set temperature when required.

The temperature in the swim zone or spa zone is set independently. Before adjusting the temperature, check the current temperature setting in that zone by first pressing the warm or cool button. The set temperature will appear and flash. The temperature in the zone indicated by the LEDs: Spa or Swim will be set depending on which of these LEDs are lit. (See divert function on for additional information)

NOTE: THE TEMPERATURE ADJUSTMENTS CAN ONLY BE MADE WHEN THE DIVERT HAS BEEN SET TO THE SIDE THE YOU WISH ADJUST. FOR EXAMPLE: IF THE "SPA" LED IS LIT TEMPERATURE ADJUSTMENTS MADE WILL ONLY EFFECT THE SPA AREA. IF YOU WISH TO MAKE ADJUSTMENTS TO THE SWIM AREA THE DIVERT BUTTON MUST BE PUSHED AND THE "SWIM" LED MUST BE LIT TO MAKE ADJUSTMENTS TO THE SWIM AREA.

Press-and-Hold

If a Temperature button is pressed and held when the temperature is flashing, the temperature will continue to change until the button is released.

Dual Temperature Ranges

This system incorporates two temperature range settings with independent set temperatures. Use the Divert Buttons to change between Spa and Swim Modes.


"Spa" or High Range can be set between 80°F and 104°F.

"Swim" or Low Range can be set between 60°F and 99°F.

Freeze Protection is active in either range.

See Ready and Rest on Page 47 for additional heating control information.

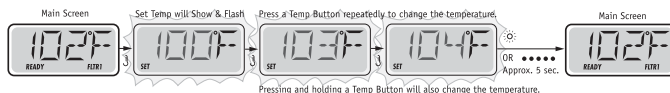
Key

 Indicates Flashing or Changing Segment

 A temperature button, used for "Action"

 Light or dedicated "Choose" button, depending on control panel configuration

●●●●● Waiting time - varies depending on function



MOMENTUM 50 SYSTEM OVERVIEW

SPA BEHAVIOR

Pumps

Press the “Jets 1” button once to turn pump 1 on or off, and to shift between low- and high-speeds. If left running, the pump will turn off after a time-out period. The pump 1 low-speed will time out after 120 minutes. The high-speed will time out after 15 minutes.

If the spa is in Ready Mode (See page 47), Pump 1 low may also activate for at least 1 minute every 30 minutes to detect the spa temperature (polling) and then heat to the set temperature if needed. When the low-speed turns on automatically, it cannot be deactivated from the panel, however the high speed may be started.

Filtration and Ozone

Pump 1 low and the ozone generator will run during filtration.

The system is factory-programmed with two filter cycles. The filter time and duration are programmable. (See page 48)

At the start of each filter cycle, Pump 2 will run briefly to purge its plumbing to maintain good water quality.

NOTE: THE SYSTEM CONTROL WILL MAKE EVERY ATTEMPT TO INSURE THAT THE FILTRATION CYCLE IS COMPLETED AS PROGRAMMED. IT IS POSSIBLE UNDER CERTAIN CIRCUMSTANCES FOR A FILTER CYCLE TO BE BYPASSED. IF THE DIVERT BUTTON IS PUSHED DURING THE FILTER CYCLE OPERATION, THE CONTROL SYSTEM WILL ASSUME THAT THE SPA IS BEING USED AND STOP THAT CYCLE. TO KEEP THIS FROM OCCURRING, THE FILTER CYCLE SHOULD BE SET FOR A TIME WHEN THE SPA IS NOT IN USE. IN MOST CASES THE HOURS BETWEEN 1AM AND 2AM ARE GOOD TIMES TO START THIS CYCLE.

Freeze Protection

If the temperature sensors within the heater detect a low enough temperature, then the pumps activate to provide freeze protection. The pumps will run either continuously or periodically depending on conditions.

In colder climates, an optional additional freeze sensor may be added to protect against freeze conditions that may not be sensed by the standard sensors. Auxiliary freeze sensor protection acts similarly except with the temperature thresholds are determined by the switch. See your dealer for details.

MOMENTUM 50 SYSTEM OVERVIEW

HEATING INFORMATION

Heater and Pump Behaviors

The electric heater will not run when the Swim Propulsion system is running.

An electric heater shall be cooled down by leaving Pump 1 on for 1 minute after turning off the heater.

The Heat LED will flash during cool-down.

Normal heat cycles (i.e. when the system is polling in Ready Mode) can be interrupted by a manual divert command.

Normal polling will resume when the system has been idle (no button pressed) for 30 minutes and the temperature of the selected body of water has reached its set point.

The temperature sensors for the water are located in the heater. Periodically your spa will operate the #1 jet pump to move water through the heater. When this occurs it is referred to as polling.

NOTE:

The cool-down behavior may cause an associated delay in diverting the valves from Spa to Swim or vice-versa, if the heater is running when the divert is requested. The pump must be able to stop when the valves are turned, so the heater will be shut off, and allowed to cool for the specified time. After that period the pump will stop and the valves will turn.

NOTE:

The Momentum 50 control system is equipped with power sensing circuitry that limits the total amount of power consumed to prevent over current situations. For this reason, the unit will only allow 1 high speed pump to run with the Propulsion System. The heater is also disabled when the Propulsion system is running.

Example: If the spa side is running with both Jets on high speed and propulsion system is activated, pump 2 will continue to run, and pump 1 will automatically switch from high speed to low speed. As long as the propulsion system is on, you will not be able to run more than one high speed pump at a time.

MOMENTUM 50 SYSTEM OVERVIEW

MAIN MENU

The menu can be exited with certain button presses. Waiting for more than 10 seconds without pushing any buttons will return the panel to normal operation and a display of spa status.

Below are examples of the display and the operation of the individual buttons as they are pushed. A flashing display indicates a change can be made. The temperature icon indicates an action and the light icon indicates a choice.

Power-up Screens

Each time the System powers up, a series of numbers is displayed, and after that the letters INIT. This generally takes about 30 seconds.



After the startup sequence, LINK will appear if no button has been pressed. Press any button to Link the Panel with the System.

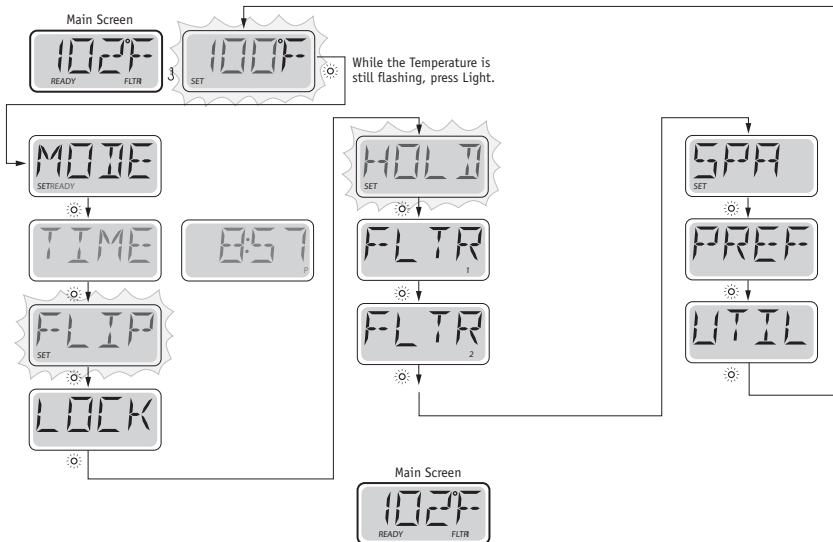
Key

Indicates Flashing or Changing Segment

A temperature button, used for "Action"

Light or dedicated "Choose" button, depending on control panel configuration

••••• Waiting time - varies depending on function



Waiting Approx. 10 Seconds in the Main Menu will allow the display to revert to the Main Screen
•••••

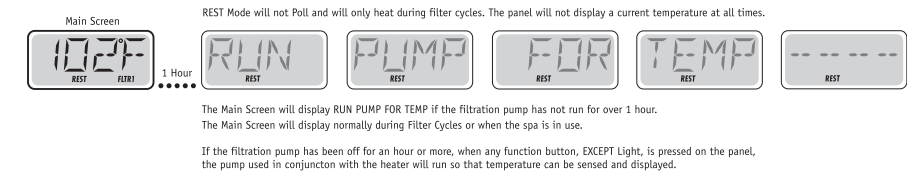
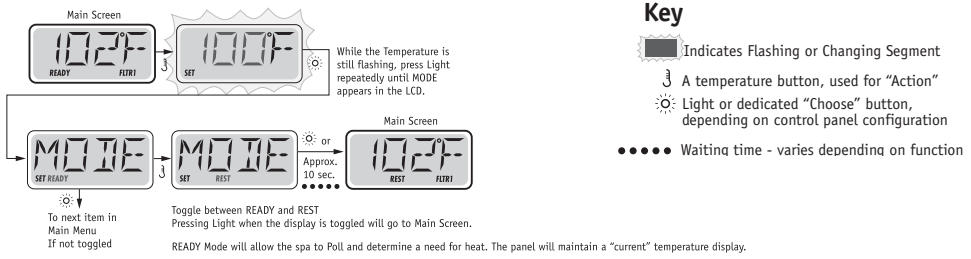
MOMENTUM 50 SYSTEM OVERVIEW

MODE – READY AND REST AND INVERT DISPLAY

READY Mode will circulate water every 1/2 hour, using Pump 1 Low, in order to maintain a constant water temperature, heat as needed, and refresh the temperature display. This is known as “polling.” The system will poll the Spa area first, heat if needed, then poll the Swim area.

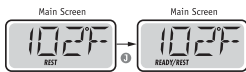
REST Mode will only allow heating during programmed filter cycles. Since polling does not occur, the temperature display may not show a current temperature until Pump 1 has been running for a minute or two.

When the system is changed from Rest Mode to Ready Mode, the system will initiate a poll automatically. Some fault conditions may cause the system to remain in the Spa mode until the fault is cleared.

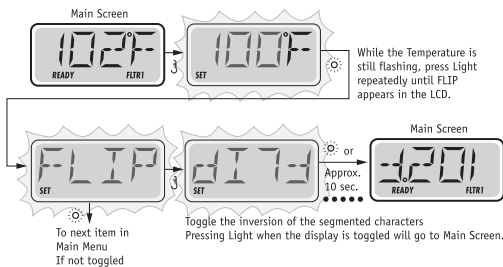


Ready-in-Rest Mode

READY/REST appears in the display if the spa is in Rest Mode and Jet 1 is pressed. It is assumed that the spa is being used and will heat to set temperature. While Pump 1 High can be turned on and off, Pump 1 Low will run until set temperature is reached, or 30 minutes after the last button press – just like manual Divert (pg. 43) – the System will revert to Rest Mode. This mode can also be reset by entering the Mode Menu and changing the Mode.



FLIP (INVERT DISPLAY)



MOMENTUM 50 SYSTEM OVERVIEW

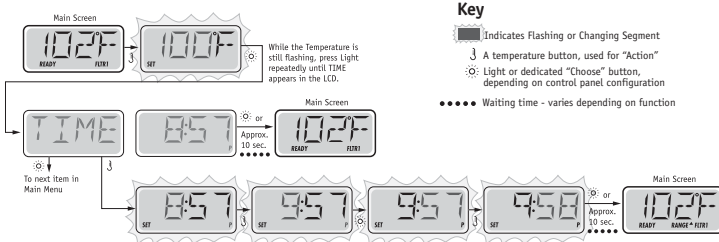
SET TIME OF DAY – MAIN FILTRATION

Be sure to set the Time-of-Day

Setting the time-of-day is important for determining filtration times and other background features.

SET TIME will flash on the display if no time-of-day is set in the memory.

24-hour time display can be set under the PREF menu. (See Page 51)

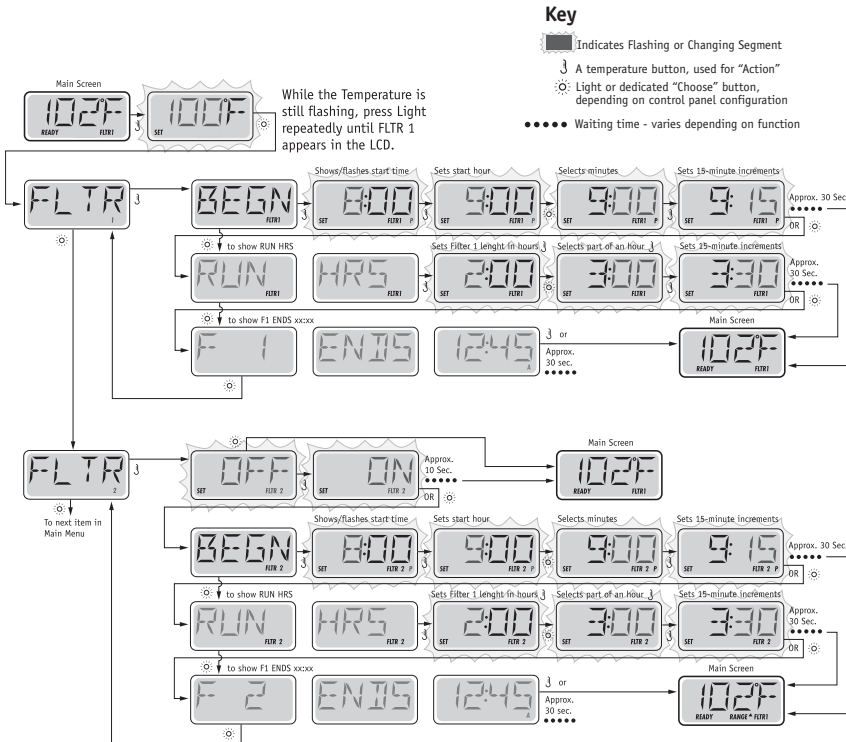


Note: If power is interrupted to the system, Time-of-Day will need to be reset.

Main Filtration

Filter cycles are set using a start time and a duration. Start time is indicated by an "A" or "P" in the bottom right corner of the display. Duration has no "A" or "P" indication. Start time can be adjusted in 15-minute increments. Duration is adjusted in 2-hour increments. The panel calculates the end time and displays it automatically.

The Spa is filtered for the first 33% of the filter cycle duration. After the spa has been filtered, the Swim area is filtered for the remainder of the filter cycle duration.



MOMENTUM 50 SYSTEM OVERVIEW

ADDITIONAL FILTRATION INFORMATION

Purge Cycles

In order to maintain sanitary conditions, secondary Pumps and/or a Blower will purge water from their respective plumbing by running briefly at the beginning of each filter cycle.

Filter Duration

Filter Cycle 1 must be programmed and has a minimum duration of 3 hours. The factory default setting is 3 hours. The filtration time can be increased by 2 hour increments up to 24 hours (continuous).

Other Filter Behavior

Due to the split nature of the filter cycles, a cycle does not start partway into the cycle. For example, if a cycle is set to start at 8:00 AM, and the system time is changed from 6:00 AM to 8:15 AM, the filter cycle will run at 8:00 AM the next day.

If the propulsion system is turned on during a filter cycle the filter cycle will continue to run.

If the manual divert button is pressed during a filter cycle, the remainder of the filter cycle will be canceled.

NOTE: Set filter cycles to run during typical non-use hours.

MOMENTUM 50 SYSTEM OVERVIEW

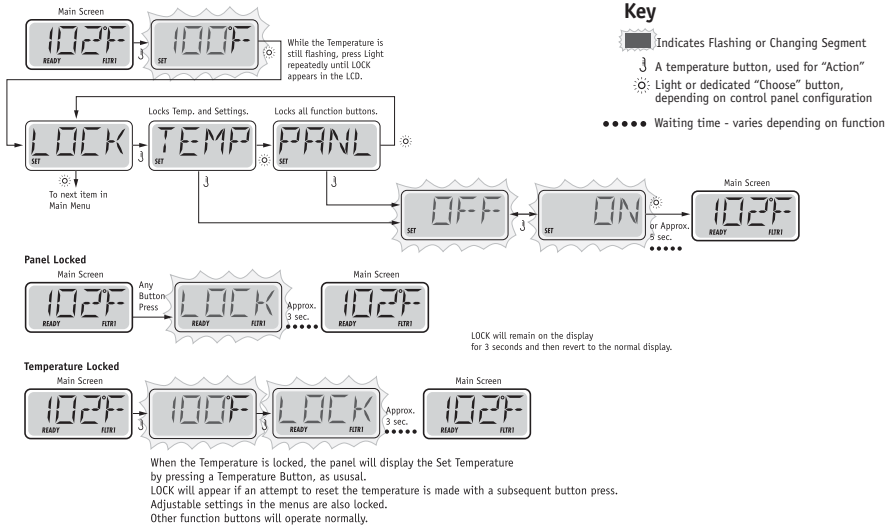
RESTRICTING OPERATION – HOLD

The control can be restricted to prevent unwanted use or temperature adjustments.

Locking the panel prevents the controller from being used, but all automatic functions are still active.

Locking the Temperature allows Jets and other features to be used, but the Set Temperature and other programmed settings cannot be adjusted.

Temperature Lock allows access to a reduced selection of menu items. These include Set Temperature, FLIP, LOCK, UTIL, INFO and FALT LOG.



UNLOCKING

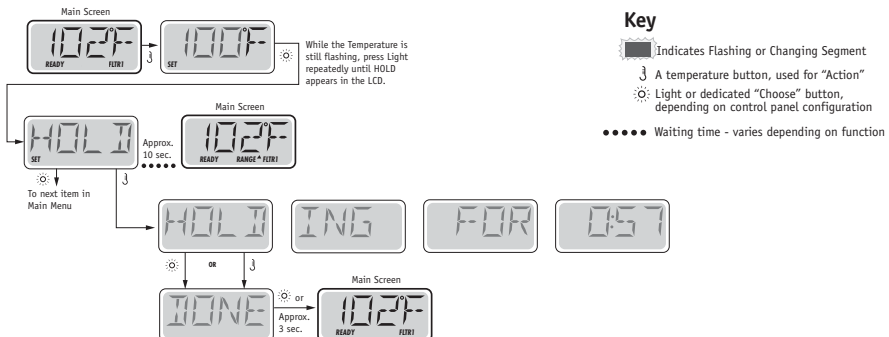
This Unlock sequence may be used from any screen that may be displayed on a restricted panel.



HOLD (STANDBY)

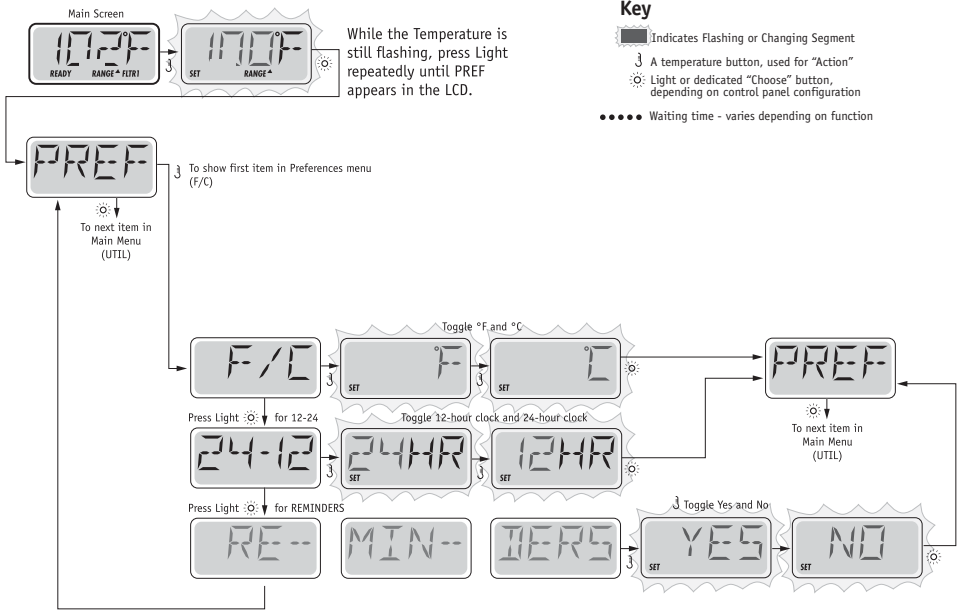
Hold Mode

Hold Mode is used to disable the pumps during service functions like cleaning or replacing the filter. Hold Mode will last for 1 hour unless the mode is exited manually.



MOMENTUM 50 SYSTEM OVERVIEW

PREFERENCES



Utility Menu

The Utility menu is available for trouble shooting purposes only and should not be accessed. Testing modes that are used in this menu can affect the operation of the system and cause it not to function correctly.

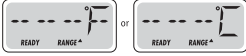
MOMENTUM 50 SYSTEM OVERVIEW

GENERAL MESSAGES



Priming Mode

Each time the spa is powered up, it will enter Priming Mode. The purpose of Priming Mode is to allow the user to run each pump and manually verify that the pumps are primed (air is purged) and water is flowing. This typically requires observing the output of each pump separately, and is generally not possible in normal operation. Priming Mode lasts 4 minutes, but you can exit it earlier by pressing any Temp button. The heater is not allowed to run during Priming Mode.



Water Temperature is Unknown

After the pump has been running for 1 minute, the temperature will be displayed.



Too Cold - Freeze Protection

A potential freeze condition has been detected, or the Aux Freeze Switch has closed, and all pumps and blower are activated. All pumps and blower are ON for at least 4 minutes after the potential freeze condition has ended, or when the aux freeze switch opens.

In Freeze Protect mode the system cycles between Spa and Swim modes every 15 minutes. This is an operational message, not an error indication.



Water is too Hot - (OHS)

One of the water temp sensors has detected spa water temp 110°F (43.3°C) and spa functions are disabled. System will auto reset when the spa water temp is below 108°F (42.2°C). Check for extended pump operation or high ambient temp.

** This message can be reset from the topside panel with any button press.*

MOMENTUM 50 SYSTEM OVERVIEW

HEATER-RELATED MESSAGES



Heater Flow is Reduced (HFL)

There may not be enough water flow through the heater to carry the heat away from the heating element. Heater start up will begin again after about 1 min. See "Flow Related Checks" below.



Heater Flow is Reduced (LF)*

There is not enough water flow through the heater to carry the heat away from the heating element and the heater has been disabled. See "Flow Related Checks" below. After the problem has been resolved, you must press any button to reset and begin heater start up.



Heater may be Dry (dr)*

Possible dry heater, or not enough water in the heater to start it. The spa is shut down for 15 min. Press any button to reset the heater start-up. See "Flow Related Checks" below.



Heater is Dry*

There is not enough water in the heater to start it. The spa is shut down. After the problem has been resolved, you must press any button to reset and restart heater start up. See "Flow Related Checks" below.



Heater is too Hot (OHH)*

One of the water temp sensors has detected 118°F (47.8°C) in the heater and the spa is shut down. You must press any button to reset when water is below 108°F (42.2°C). See "Flow Related Checks" below.



A Reset Message may Appear with other Messages.

Some errors may require power to be removed and restored.

Flow-Related Checks

Check for low water level, suction flow restrictions, closed valves, trapped air, too many closed jets and pump prime.

Even when spa is shut down, some equipment may occasionally turn on to continue monitoring temperature or if freeze protection is needed.

** This message can be reset from the topside panel with any button press.*

MOMENTUM 50 SYSTEM OVERVIEW

SENSOR-RELATED MESSAGES



Sensor Balance is Poor

The temperature sensors MAY be out of sync by 2°F or 3°F. Call for Service.



Sensor Balance is Poor*

The temperature sensors ARE out of sync. The sensors have been out of balance for at least 1 hour. Call for Service.



Sensor Failure

A temperature sensor or sensor circuit has failed. Call for Service.

MISCELLANEOUS MESSAGES



No Communications

The control panel is not receiving communication from the System. Call for Service.

** This message can be reset from the topside panel with any button press.*

MOMENTUM 50 SYSTEM OVERVIEW

SYSTEM-RELATED MESSAGES



Memory Failure - Checksum Error*

At Power-Up, the system has failed the Program Checksum Test. This indicates a problem with the firmware (operation program) and requires a service call.



Memory Failure - Persistent Memory Error*

Contact your dealer or service organization if this message appears on more than one power-up.



Configuration Error – Spa will not Start Up

Contact your dealer or service organization.



A Pump Appears to be Stuck ON

Water may be overheated. POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.



A Pump Appears to have been Stuck ON when spa was last powered

POWER DOWN THE SPA. DO NOT ENTER THE WATER. Contact your dealer or service organization.

* This message can be reset from the topside panel with any button press.

MOMENTUM 50 SYSTEM OVERVIEW

REMINDER MESSAGES

General maintenance helps.

Reminder Messages can be suppressed by using the PREF Menu. See Page 51.

Reminder Messages can be chosen individually by the Manufacturer. They may be disabled entirely, or there may be a limited number of reminders on a specific model.

Press a Temperature button to reset a displayed reminder message.

CHEK

PH

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 7 days.

Check pH with a test kit and adjust pH with the appropriate chemicals.

CHEK

CHEM

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 7 days.

Check sanitizer level and other water chemistry with a test kit and adjust with the appropriate chemicals.

CLN

FLTR

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 30 days.

Clean the filter media as instructed by the manufacturer. See HOLD on page 50.

TEST

GFCI

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 30 days.

The GFCI is an important safety device and must be tested on a regular basis to verify its reliability. Every user should be trained to safely test the GFCI associated with the hot tub installation. A GFCI will have a TEST and RESET button on it that allows a user to verify proper GFCI function.

CHNG

WATR

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 90 days.

Change the water in the spa on regular basis to maintain proper chemical balance and sanitary conditions.

CLN

COVR

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 180 days.

Vinyl covers should be cleaned and conditioned for maximum life.

TRT

WOOD

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 180 days.

Wood skirting and furniture should be cleaned and conditioned per the manufacturers instructions for maximum life.

CHNG

FLTR

Alternates with temperature or normal display.

Appears on a regular schedule, i.e. every 365 days.

Filters should be replaced occasionally to maintain proper spa function and sanitary conditions.

CHNG

CART

Alternates with temperature or normal display.

As needed.

Install new mineral cartridge

WARNING:

Never remain in your swim spa longer than 15 minutes per session when the water temperature is above 98° F. If you wish to spend more time in your swim spa, whether enjoying music, watching tv, or just lounging, be sure to keep the swim spa water at or below body temperature (98.6° F).

* Please refer to the Stereo Owner's Manual for specific operations.

The MP Audio Extreme stereo system includes a CD/Stereo with subwoofer, two spa mounted pop-up speakers, two tweeters and an underwater transducer.



STEP 1

To use the pop-up speaker, press down on the top of the speaker and then release. The speaker will gently rise to the proper operational height.



STEP 2

When you have finished using the stereo speakers press down on the top of the speaker until it locks into position. Always put the speakers in the down position before closing the swim spa cover.



STEP 3

You can control many of the stereo functions via the remote keypad mounted on the surface of the acrylic swim spa shell.

Stereo Remote

As mentioned in step 3 your MP Audio Extreme stereo system is also equipped with an auxiliary remote that is mounted conveniently on the acrylic swim spa shell.

NOTE: Speakers should be in the down position before covering your swim spa. Failure to do so could result in damage not covered under the warranty.

NOTE: Do not place wet CD's into the stereo at anytime.

NOTE: AM channels will be very limited in reception and in most cases be unavailable.

CAUTION — Risk of Electric Shock. Do not leave compartment door open.

CAUTION — Risk of Electric Shock. Replace components only with identical components; and Do not operate the Audio / Video controls while inside the swim spa.

WARNING — Prevent Electrocutation. Do not connect any auxiliary components (for example cable, additional speakers, headphones, additional Audio / Video components, etc.) to the system.

NOTE: These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with article 810 of the National Electrical Code, ANSI / NFPA 70.

NOTE: Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel.

Warning: Never remain in your spa longer than 15 minutes per session when the water temperature is above 98°F. If you wish to spend more time in your spa, whether enjoying music, or just lounging, be sure to keep the spa water at or below body temperature (98.6°F).

*Please refer to your stereo Owner's Manual for specific operations.

Optional Stereo Docking Station

Your spa is equipped with an iPod™ docking station that will allow you to listen to personal selections through the audio system of the spa. This audio system also has an FM only radio receiver that can be used to listen to local FM broadcasts. Due to varying signal conditions the FM radio reception may be limited.













The docking station is compatible with the following iPod™ products Nano™ 3G 4G 8G, iPod Touch™ 8G 16G, iPod Classic™ 80G 160G, and iPod™ 5G 30G 60G 80G. Master Spas, Inc. does not guarantee compatibility with all iPod™ products due to software changes and upgrades.

The wireless remote provided with the spa is water resistant, but should never be left in the spa when not in use.

RF Remote Control Synchronizing

Each docking station comes with a matching wireless remote control. From time to time it may be necessary to synchronize the remote to the docking station.

- Press and hold the (play/pause) button on the remote control and then press the power button simultaneously for 2 seconds. The LCD will display "PAIR".
- Turn on the docking station by pressing the power button on the station within 10 seconds after the remote displays "PAIR". A red light will turn on under the power button to indicate the unit is turned on.
- Once the synchronizing is complete, the LCD will return to the original screen setting.

Buttons		Music Mode	FM Radio Mode
Power		Press once: Change from Operation mode to Standby mode. Press and hold: Change from Standby mode to Operation mode.	
12V trigger		Press once: Toggle external power Press and hold: No change	Press once: Toggle external power Press and hold: No change
Volume up		Press once: Volume UP 3 decibels Press and hold: Fast volume up	Press once: Volume UP 3 decibels Press and hold: Fast volume up
Volume down		Press once: Volume DOWN 3 decibels Press and hold: Fast volume down	Press once: Volume DOWN 3 decibels Press and hold: Fast volume down
FM Radio		Press once: Change to FM Radio Mode Press and hold: No change	Press once: No change Press and hold: No change
Memory +		Press once: No change to memory Press and hold: No change to memory	Press once: Increase Memory Location Press and hold: No change
Memory		Press once: No change to memory Press and hold: No change to memory	Press once: Toggle to Memory Mode Press and hold: No change
Memory -		Press once: No change to memory Press and hold: No change to memory	Press once: Decrease Memory Location Press and hold: No change
Music		Press once: No change to Ipod/ MP3 Press and hold: No change to Ipod/ MP3	Press once: Toggle to ipod/ Music Mode Press and hold: No change
i Fast Rewind		Press once: Last track Press and hold: Fast Rewind	Press once: -50kHz Press and hold: Scan backward
Pause/ Play		Press once: Toggle Play/Pause Press and hold: Turn iPod™ OFF	Press once: Mute Press and hold: No change
i Fast Forward		Press once: Next track Press and hold: Fast Forward	Press once: +50kHz Press and hold: Scan forward

i If your music player is not an iPod,™, you will only be able to use the volume and power control on the remote control.

i In order to prolong remote battery life the LCD will shut off in 10 seconds if no other button is pressed. To turn remote back on press power once and then press the command desired.

FUSION DOCKING STATION

CAUTION — Risk of Electric Shock. Do not leave compartment door open.

CAUTION — Risk of Electric Shock. Replace components only with identical components; and

Do not operate the Audio / Video controls while inside the spa.

WARNING — Prevent Electrocutation. Do not connect any auxiliary components (for example cable, additional speakers, headphones, additional Audio / Video components, etc.) to the system.

NOTE: These units are not provided with an outdoor antennae; when provided, it should be installed in accordance with article 810 of the National Electrical Code, ANSI / NFPA 70.

NOTE: Do not service this product yourself as opening or removing covers may expose you to dangerous voltage or other risk of injury. Refer all servicing to qualified service personnel.

NOTHING ON THE SWIM SPA OPERATES-

1. Check the control panel display for any messages. If there is a message, refer to the diagnostic section on that model swim spa. There you will find the meaning of the message and what action is to be taken.
2. If there is no message on the control panel, check and reset the GFCI breaker. On some models this is located on the front of the swim spa in the lower left hand corner, behind the double plastic doors. On other models the GFCI breaker will be located external to the swim spa.



**The swim spa GFCI breaker or disconnect should be located in a weather proof box close to the spa, but no closer then 5 feet.*

If the swim spa does not respond, contact your local service company.

PUMP(S) DO NOT OPERATE -

1. Press the "Jets" button on your control panel.

If you hear the pumps trying to operate:

- A. Check that all the slice valves are open. See photo on page 14.
- B. Pump may need to be primed. See page 21.
- C. Check that the air controls are open. See photo on page 11.

If you do not hear anything from the pump, contact your local service company.

POOR JET PERFORMANCE

1. Make sure pump is operating
2. Check that the water level is adequate (up to minimum safe water level side)
3. Make sure the jets are open and the air controls are open. See page 11.
4. Check for dirty filters. Clean if necessary.

SWIM SPA NOT HEATING

* If the swim spas heater has failed, the majority of the time it will trip the GFCI breaker. If the swim spa is not heating and has not tripped the breaker, please follow these steps:

1. Check the control panel for diagnostic messages. Refer to your swim spa models diagnostic message area in previous sections. Follow steps to alleviate message.
2. Check water set temperature at control panel.
3. Check for dirty filters. Clean if necessary.
4. Check the "heat mode" that the swim spa is set in. The swim spa should be set in the standard mode or ready mode depending on the model.
5. Check the control panel for heat light indicator. If the light is on and not blinking the swim spa should be heating. Wait a reasonable amount of time (approximately 1 hour) to see if the water temperature is rising.
6. Check to make sure that the pump is primed and all slice valves are open.
7. Reset power to the swim spa at GFCI breaker.
8. If swim spa is still not heating, contact your dealer for service.

GFCI IS TRIPPING

A ground fault circuit interrupter (GFCI) is required by the National Electrical Code for your protection. The tripping of the GFCI may be caused by a component on the swim spa or by an electrical problem. Electrical problems include but are not limited to, a faulty GFCI breaker, swim spa component, power fluctuations, or improper wiring. It may be necessary to contact an electrician if your dealer recommends doing so.

REGULAR MAINTENANCE PROCEDURES

Note: These are maintenance procedures are the responsibility of the swim spa owner to perform. These procedures are not covered by the swim spa warranty.

CLEANING JETS

The majority of jets in your swim spa can individually be turned on/off. If any of these jets become hard to turn, it will be necessary to remove the jet to clean it as grit/sand and mineral deposit may be present.

The jets in your swim spa can be removed for cleaning by unscrewing them (counter clockwise) and then pulling out the jet.



To Clean Jets

Place the jet(s) in a bucket, fully immerse in white vinegar. Let the jet(s) soak overnight and then rinse with water. It may be necessary to clean grit and deposits from the white jet body (mounted in the spa shell) by using a small bristled brush.

CLEANING DIVERTER VALVES

Mineral deposits, grit and sand may get into the internal parts of the diverter valves over time. The diverter valves may become difficult to turn or not turn at all.

Remove the handle from the top of diverter valve by gently prying up on both sides of the handle assembly at the same time.

Turn the cap piece counter clockwise. It may be necessary to put a clean rag over the cap and turn it with a wrench.

Once loose, the cap and handle can be pulled up out of the white plumbing fitting.

Wipe down the internal piece that attaches to the cap and handle.

Soak the cap and handle in white vinegar.

The white plumbing fitting should also be wiped down. If the surface of the white plumbing has become too abrasive, you can take wet, fine sandpaper and smooth it out. It is also helpful to use a lubricant (use silicone based, not petroleum based) to allow for an easier turn of the diverter handle.

Rinse the diverter internals and reassemble.

In the future, it is helpful to turn the diverter valve only when the pump is not on. Cleaning your diverter valve should occur every time you drain your swim spa.

DRAINING YOUR SWIM SPA

Due to the physical size of the swim spa, we recommend draining your swim spa with a submersable sump pump. Draining your swim spa with a conventional swim spa drain is not a reasonable option. When draining the Momentum 80 and Momentum 50 swim spa always drain the water from the swim spa side before draining the swim side.

REGULAR MAINTENANCE PROCEDURES

CARE OF YOUR SWIM SPA COVER

Always cover your swim spa when not in use. This will greatly reduce energy consumption and will cause swim spa water to heat more rapidly. Water loss and chemical usage will also be reduced.

- Be sure to lock down all straps on cover after each use to prevent wind damage.
- Do not allow swim spa to sit uncovered in direct sunlight. This may cause damage to exposed surfaces of swim spa and possible discoloration of swim spa fittings.
- Periodically hose off both sides of swim spa cover for maximum life of cover. Once a month use a vinyl cleaner and conditioner on the vinyl portion of your cover. Rinse residue off.
- Keep cover open for 15 min. after adding chemicals to prevent off gas damage.

NOTE: IF YOUR SWIM SPA IS GOING TO BE LEFT EMPTY FOR PROLONGED PERIODS, DO NOT REPLACE COVER DIRECTLY ON SURFACE OF SWIM SPA. PLACE 2"-3" BLOCKS BETWEEN COVER AND SWIM SPA. THIS ALLOWS FOR ADEQUATE VENTILATION OF COVER AND SWIM SPA.

CARE OF YOUR SWIM SPA CABINET

The swim spa cabinet is made from a UV resistant Polymer material. The cabinet requires only periodic cleaning with a stream of water from a garden hose.

FILTER CLEANING

NOTE: Never operate the swim spa without the filters installed. Damage to the pumps and other components could result from operation without filters installed.

1. Turn power off to the swim spa.
2. Remove any large or floating debris from the filter area.
3. Allow the weir door to fall back towards the filters in order to remove the filter housing.

4. Lift up on the plastic housing and the entire housing will pop out.

***NOTE:** When lifting the housing, be careful not to lift too far, as you could break the floating weir door. Damage to weir door is not warranted.

5. Pull the plastic skimmer plate out from the filter basket in order to gain access to the filters.
6. Unscrew the two filter cartridges located inside the filter basket and remove for cleaning.
7. Both filters should be rinsed off and the non-Eco-Pur filter (blue filter) should be soaked in a cartridge cleaner. Follow applicable cartridge cleaner instructions.
8. Re-install filters and replace weir housing.



NOTE: Do not soak the Eco-Pur filter (darker filter) in a filter cartridge cleaner. Rinse off only.

NOTE: Eco-Pur filters should be replaced every 6 months. Non Eco-Pur filters should be replaced every 12 months.

SWIM SPA CARE AND MAINTENANCE RECORD

DATE DATE DATE DATE DATE DATE DATE DATE

Drain & Clean Swim Spa								
Clean Filter Cartridges								
Change ECO PUR™ Element Every 180 Days								
Soak Filter Cartridges in Solution								
Test GFCI								
Clean and Condition Swim Spa Cover								
Miscellaneous Service								

SWIM SPA CARE AND MAINTENANCE RECORD

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