LOGO

INSTRUCTION MANUAL

THE SYMBOL FOR QUALITY AND VALUE

CONGRATULATIONS !!!

Your Nordic Hot Tub [™] represents an innovative and unparalleled Hot Tub design, with unmatched quality, features and value.

We appreciate your decision on choosing a Nordic Hot Tub. We trust that you will enjoy the relaxing, therapeutic benefits and recreational pleasure of your Hot Tub for many years to come.

Nordic Products, Inc.

Copyright © 1996 by Nordic Products, Inc.

Nordic Hot Tubs, Nordic, and Nordic DLX are trademarks of Nordic Products, Inc.

TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS	4
SAFETY PRECAUTIONS	6
ELECTRIC INSTALLATION	6
Circuit Breaker Requirements	7
Nordic Model Wiring and Conversion	7
OPERATING INSTRUCTIONS	8
Top-Side Controls	8
Jets	8
Temperature	8
Light	8
Safety Features	9
Whirlpool Jet	10
Hydrotherapy Jets	10
Air Control Valves	10
Heater Cool-Down	10
System Timer	10
Freeze Protection	11
STARTUP INSTRUCTIONS	11
Filling Hot Tub with Water	11
Applying Power	11
Activating Water Pump and Jets	11
Filtration Cycles	12
Adding Chemicals	12
pH Balance	12
Chlorine	12
OZONATORS	13
CLEANING OR WINTERIZING	14
Draining	14
Surface Care	14
Cover Care	14
Filter Cartridge Maintenance	15
Cedar Skirt Maintenance	15
COMMON PROBLEMS and SOLUTIONS	16
TROUBLESHOOTING NOTES	17

IMPORTANT SAFETY INSTRUCTIONS

It is the Hot Tub owner's responsibility to read and follow all the instructions and precautions described in this manual. Failure to do so, may result in personal injury. Liability rests with the Hot Tub owner. Make instructions available for reference by other users.

- 1.) READ AND FOLLOW ALL INSTRUCTIONS.
- 2.) A wire connector is provided on this unit to connect a minimum No. 8 AWG solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the Hot Tub.
- 3.) 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 Hot Tub unless they are supervised at all times.
- 4.) DANGER Risk of Injury. The suction fittings in this Hot Tub 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 the Hot Tub 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.

- 5.) DANGER Risk of Electric Shock. Install at least 5 feet (1.5 m) from all metal surfaces. As an alternative, a Hot Tub may be installed within 5 feet of metal surfaces if each metal surface is permanently connected by a minimum No. 8 AWG solid copper conductor to the wire connector on the power pack that is provided for this purpose.
- 6.) DANGER Risk of Electric Shock. Do not permit any electric appliance, such as a light, telephone, radio, or television within 15 feet of the Hot Tub.
- 7.) WARNING To reduce the risk of Injury:
- a) Before using your Hot Tub, you should measure the water temperature with an accurate thermometer since the tolerance of water temperature-regulating devices varies.

- b) The water in the Hot Tub should never exceed 104° F (40° C). Water temperatures between 100° F (38° C) and 104° F (40° C) are considered safe for a healthy adult. Lower water temperatures are recommended for young children and when Hot Tub use exceeds 10 minutes.
- c) The use of alcohol, drugs, or medication before or during Hot Tub use may lead to unconsciousness with the possibility of drowning.
- d) Individuals using medications should consult their physician before using the Hot Tub since some medications may induce drowsiness, while other medications may affect heart rate, blood pressure, and circulation.
- e) Individuals suffering from obesity or with a medical history of heart disease, high or low blood pressure, circulatory system problems, multiple sclerosis, thyroid disease, or diabetes should consult their physician before using the Hot Tub.
- f) 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 Hot Tub water temperatures to 100° F (38° C). You should also consult your physician before using the Hot Tub.
- g) Hypothermia (heat stroke) is a dangerous condition brought about by excessive heat. It especially affects the very young, elderly, individuals under the influence of alcohol or drugs, and those using certain medications. The symptoms include: sweating, dizziness, nausea, light-headed, convulsions, increased pulse rate, shallow breathing, and in the extreme, unconsciousness. If you suspect hypothermia, get medical help immediately. Lay the victim on their back, with the head slightly elevated for easier breathing, cover the body with a blanket and apply ice packs to the head.
- h) Emergency telephone numbers, such as: hospital, physician, ambulance, paramedics, and the police should be readily available and posted next to a close-by telephone.
- 8.) SAVE THESE INSTRUCTIONS.

SAFETY PRECAUTIONS

DANGER - RISK OF INJURY

- 1.) Please use the Hot Tub when others are present.
- 2.) Children should be supervised at all times.
- 3.) To avoid the risk of drowning, keep the filter clean and unclogged. Do not remove the suction drain cover. Do not modify the suction or filtration systems.
- 4.) Exercise caution when entering or leaving the Hot Tub. When changing positions, be sure of your footing before applying your full weight as water refraction can be misleading.
- 5.) Do not stay in the water for extended periods of time. Set reasonable time limits. Leave the Hot Tub, cool down, take a shower, relax, then return for another stay.

ELECTRIC INSTALLATION

DANGER - RISK OF ELECTRIC SHOCK

Installations that do not conform to the following procedures and requirements may expose users to electric shock. Non-conforming installations will not be covered under warranty.

- 1.) For support, the Hot Tub should be installed on a concrete pad 4" thick or on a deck. The pad or deck must be such that water will drain away from the Hot Tub.
- 2.) Installations that are within 5 feet from any metal surfaces, must ground the metal surfaces to the Hot Tub. Use an 8 AWG solid wire and attach it to the grounding lug on the power pack, located in the equipment compartment.
- 3.) Only a licensed electrician may install power to the Hot Tub.
- 4.) Power supply installation must include a properly rated GFCI circuit breaker. The circuit breaker must be dedicated and should not be shared with any other appliances. It must be labeled and easily accessible to users.
- 5.) Power supply lines must be hard wired into the power pack. **Do not use** extension or plug-type cords of any kind. The use of a shut-off box near the Hot Tub is also recommended. This box provides a quick and convenient method to shut off power to the Hot Tub for emergencies and maintenance.
- 6.) Supply lines must be properly sized as per the NEC (National Electric Code). A ground line must be provided that is as large as the largest current carrying conductor, but no less than 8 AWG. Use copper wiring only.
- 7.) Please remove the front panel of the power pack, and follow the instructions and wiring diagram printed on the back side.

CIRCUIT BREAKER REQUIREMENTS

A new GFCI circuit breaker must be used for your Hot Tub installation. Do not use an existing breaker, as its condition is unknown.

BREAKER	240 V	120 V
Capacity	50 Amps	20 Amps
# of wires	4	3

NOTE: All Nordic Hot Tubs are configured for 240 volt operation at shipping.

On 240 volt systems, use a minimum of 8 AWG wire for runs less than 40 feet. Use 6 AWG wire for runs up to 100 feet. Always use a 4-wire system.

On 120 volt systems, the Hot Tub must be connected to a dedicated 20 amp circuit breaker that is not shared with any other equipment. **Do not use extension or plug-type cords of any kind.**

NORDIC [™] MODEL ONLY

To convert your Nordic model from 240 to 120 volt operation. Please remove the front panel of the power pack and follow the conversion instructions and wiring diagram printed on the back side.

NOTE: On the Balboa power pack, the conversion instructions refer to converting from 120 V to 240 V operation. Please reverse the instructions on number 3 and 4 when converting to 120 V operation.

OPERATING INSTRUCTIONS

TOP-SIDE CONTROLS

Nordic Hot Tubs are equipped with an electronic, low voltage, top-side control which makes it easy to operate the jets, light and temperature. If using the Balboa Digital controls as shown above, please follow the instructions below.

JETS

Touch the jet pad once to activate the low-speed pump. Touch the pad again to activate the high-speed pump. Press the pad a third time to deactivate the pump. The low-speed pump starts automatically when the heater is turned on, when a filter cycle is activated, or when a freezing condition is detected. If automatically activated, the low-speed pump cannot be disabled from the front panel; however, the high-speed pump may be started. Whenever the low- or high-speed pump is energized with this pad, it will automatically turn off after 15 minutes of operation. Press the jet pad again to activate the low- or high-speed pump for another 15 minutes of operation.

TEMPERATURE ADJUSTMENT

The Hot Tub temperature is controlled by pressing the UP or DOWN temperature control pad. The set temperature is indicated by a flashing display. Keep pressing the pad to raise or lower to the desired temperature. The display will automatically revert to show the actual water temperature within a few seconds. The heater and low-speed pump will automatically activate any time the actual water temperature falls below the set temperature. The maximum temperature setting is 104° F.

LIGHT

Press the light pad to activate and deactivate the Hot Tub light. The light will automatically turn off after some period of operation.

SAFETY FEATURES

Overheat Protection (Hot Tub is deactivated)

If your Hot Tub should overheat, the display on the top-side control will flash "OH". In such a condition, DO NOT ENTER THE WATER. Turn off all power to the Hot Tub and contact your dealer or service organization.

Flow Switch Detection

If a pressure switch malfunctions, the display will show "FL". Contact your dealer or service organization. This protection indicates there is not enough water running through the heater in order for it to work properly.

Open Sensor (Hot Tub is deactivated)

If the high-limit sensor or water temperature sensor malfunctions, the display will show "SN". Contact your dealer or service organization.

NOTE: Do not attempt to service these controls. There are no user serviceable parts inside the power pack. Contact your dealer or service organization for assistance.

OPERATING INSTRUCTIONS

If your Hot Tub is equipped with the Brett BL-60 Controls, as shown below, please refer to the enclosed Brett manual for operation of the top-side controls. Refer to pages 3-10, 14-19.

WHIRLPOOL JET(S)

Located below the filter cavity, in the wall, are the whirlpool jets (also known as Turbo jets). These jets are a combination valve and high capacity jet, and have a larger diameter than the hydrotherapy jets. Because there is a substantial amount of water pressure when the jets are operating, you must turn the pump off before attempting to rotate the jet faces.

The Nordic is equipped with a four-way whirlpool jet. Rotate it to one position and it will be turned off and all the hydrotherapy jets will operate. Rotate it again and only the whirlpool jet will operate. Rotate it again to operate the first and second banks of hydrotherapy jets. Rotate it one more position to operate the third and fourth banks.

The Nordic DLX is equipped with two (2) whirlpool jets, called the Twin Turbos T. The following describes the positions and functions of the jets:

The Top Turbo has two positions. One position diverts water to the Top Turbo only. Rotate it to the second position and it diverts water to the first and second banks of hydrotherapy jets.

The Bottom Turbo has four positions. The first position diverts water to the Bottom Turbo only. Rotate it to the second position and it diverts water to the third and fourth banks of hydrotherapy jets. Rotate it to the third position and it diverts water to the four (4) Nordissage Seat [™] jets (if installed) or turns the Bottom Turbo off (if Nordissage Seat jets are not installed). Rotate it one more position and it diverts water to the third and fourth banks of hydrotherapy jets and the Nordissage Seat jets.

DLX MODEL WITH NORDISSAGE SEAT ™ JETS

The optional Nordissage Seat jets are the four (4) jets located by the second bank of hydrotherapy jets. These strategically placed jets serve to relieve aches and pains from your shoulders and upper back muscles with concentrated therapy.

NOTE: For optimum performance when using all four (4) banks of hydrotherapy jets, make sure the Top Turbo jet is off and the Bottom Turbo jet is positioned so that the Bottom Turbo and Nordissage Seat jets (if installed) are turned off.

HYDROTHERAPY JETS

The Hydrotherapy jets are recessed and located in the wall above the seats. Rotate the jet face counter-clockwise to turn the jets on, clockwise to turn the jets off.

AIR CONTROL VALVES

From inside the Hot Tub, locate the three (3) round, air control valves next to the top-side controls. The left air control operates the bottom whirlpool jet. The center air control operates the hydrotherapy jets. The right air control operates the top whirlpool jet. These control valves serve to regulate the amount of air mixed with the water when the jets are operational. Rotate the air controls counter-clockwise to achieve the maximum jet pressure and therapeutic action. Rotating the air controls clockwise turns the air off and allows the jets to work with water only. Turn the air controls off when the Hot Tub is not in use. This will prevent cold air from entering the Hot Tub and will keep heating costs to a minimum.

HEATER COOL-DOWN

When the Hot Tub has reached the selected temperature, the heater is turned off. An internal timer keeps the low-speed pump running for some period of time to cool down the heater. This extends the heating elements life and helps prevent the accumulation of calcium and chlorine deposits around it.

FREEZE PROTECTION

If the system detects there is a problem with the heater element, the system will automatically activate the low-speed pump when the actual water temperature falls below 40° F. This feature keeps the Hot Tub from freezing by circulating the water. Contact your dealer or service organization if this condition should exist.

STARTUP INSTRUCTIONS

The following procedures should be followed on initial startup and whenever the Hot Tub is drained for routine maintenance.

FILLING THE HOT TUB WITH WATER

- 1.) Clear all the debris from your Hot Tub
- Use a garden hose to fill your Hot Tub with water.NOTE: Do not use home water heater or softened water.
- 3.) As the water level rises, check inside the equipment compartment for water leaks. It may be necessary to tighten unions and/or fittings that may have loosened during delivery.
- 4.) Make sure the T-handled shut-off valves at the pump and left of the power pack are completely open.
- 5.) Keep the water level at least 2" over the top of the filter at all times. All jets must be under water. Use the ridge above the hydrotherapy jets as a guideline.

APPLYING POWER

Apply power by turning on your dedicated GFCI circuit breaker. Your Hot Tub has been specifically designed so that by simply applying power, it will automatically heat to the preset temperature of 100° F and begin its first filtration cycle after completing its diagnostics check.

ACTIVATING THE WATER PUMP AND JETS

1.) Press the jet pad on the top-side control panel to activate the low- and high-speed pump. Rotate the air control valves counter-clockwise and observe the increased jet action.

NOTE: Let the high-speed pump run for 10 minutes. This helps purge the air from the water lines.

- 2.) Press the jet pad again to turn the high-speed pump off. The low-speed pump will continue to run.
- 3.) Press the light pad to activate and deactivate the light.
- 4.) While the pump is running, check again for water leaks at the unions and/or fittings in the equipment compartment.

FILTRATION CYCLES

Your Hot Tub has been factory preset to automatically filter for 4 hours, twice a day. During filtration, the low-speed pump will activate. The first cycle will begin within an hour after the Hot Tub is energized. The second filter cycle will begin twelve hours after the start of the first filtration cycle. If, for some reason, you prefer it to filter at a different time, simply turn the power off and back on at the desired time.

If your Hot Tub is equipped with the Brett BL-60 controls, you can check the filtration duration time by pushing the program button and making sure at least 2 LED's on the bargraph display are illuminated. Each LED represents 2 hours of filtration. Press the UP or DOWN button to increase or decrease the filtration duration time, then press the program button again to set the duration time.

If your Hot Tub is equipped with the Balboa Controls, press the UP or DOWN arrow. While the temperature is flashing, press the JET button. The LED will read "F4". If you would like to increase or decrease the filtration duration, press the UP or DOWN arrow to the desired time, then press the JET button again to set the duration time. The choices are: F2 (2 hours), F4 (4 hours), F6 (6 hours), and FC (continuous filtration). For example, the choice of F4 will filter for 4 hours, twice a day.

NOTE: Your Hot Tub should filter for a minimum of 4 hours, twice a day for proper filtration. If power is lost, your controls will reset back to the factory defaults.

ADD START UP CHEMICALS

On hand you should have an adequate supply of chemicals for your Hot Tub. You should familiarize yourself with the necessary types and amounts of chemicals to maintain your water at clean and healthy levels. Your dealer stocks the necessary chemicals and is a good source of information on chemicals and procedures.

NOTE: The importance of chemical balance in the Hot Tub can not be over-emphasized.

pH Balance

pH is a measure of water acidity. On a scale of 0 to 14, 7.6 is the ideal point of balance. A measurement below 7.6 indicates that your water is more acidic. **This water condition results in corrosion of the equipment's metal components.** A measurement above 7.6 indicates that your water is more alkaline. **This water condition causes calcium deposits and scaling in the equipment and Hot Tub. Both conditions are detrimental and can cause damage.**

NOTE: Calcium deposits can also cause a restriction of air through your jets. Using "Spa Defender" from the initial use, will greatly reduce the chances of this occurring.

Chlorine

Chlorine must be used to remove bacteria and other organic matter from the water. Little or no chlorine causes water to turn green and unhealthy. Too much chlorine causes water to smell pungent, irritates the eyes and skin, and can cause damage to the heater tube on the power pack.

NOTE: Do not use chlorine other than what is designated for Hot Tub use. Specifically, do not use chlorine designated for use with pools.

DO NOT USE BROMINE.

OZONATORS

If your Hot Tub is installed with an ozonator at the factory, your Hot Tub will automatically filter for 4 hours, twice a day for proper operation. Please note that ozonators and chemicals are complimentary. Ozonators cannot totally eliminate the need of chemicals such as chlorine. Ozone is a bactericide. The active component in an ozonator is the ultraviolet light bulb. When power is applied to the bulb, ozone is generated. A tube links the ozone compartment with the ozone jet. When the water pump is on low-speed, the water movement through the ozone jet draws the ozone out of the compartment, mixes with and purifies the water in the process.

The ultraviolet light bulb has a limited service life. Its production of ozone is degraded with use. Consult your dealer or service organization to determine when the bulb should be replaced.

NOTE: Ozone is harmful to your health when directly inhaled from the ozone tube. It is not harmful when the ozone is mixed with the water. Ultraviolet rays are harmful to your eyes; therefore, do not look directly at an ozone bulb when in operation.

CLEANING OR WINTERIZING

DRAINING

Every three or four months, depending upon the water condition, you may need to renew your water. Before draining, power must be turned off at the GFCI circuit breaker. Within the equipment compartment, locate the drain faucet by the filter. Attach a garden hose to the faucet and open it. Water will start to drain. You can use this water to water your garden.

The drain faucet will not remove all the water. You may have to remove a small amount of water by hand, using a towel or plastic container. For winterizing, you must also use a wet-vac to clean out the water lines to ensure they are free of any water. Water left in the lines might freeze and damage the lines and jets. To adequately clean out the lines, place the wet-vac over each jet face for 10-15 seconds. Remove the filter cartridge and do the same to the filter cavity. Also, let the water drain from the heater tube by loosening the black split-nuts on each side of the heater tube. Remember to re-tighten the split-nuts when completed. Use the wet-vac to vacuum up any water that may have drained on to the Hot Tub floor.

Once the Hot Tub is drained and dry, you may want to carry out some routine maintenance, such as surface cleaning or cover care.

SURFACE CARE

Do not use solvents or abrasive cleaners to clean the Hot Tub. Consult your Nordic dealer for the proper cleaners.

COVER CARE

Please keep your cover free from dirt at all times. Use a cover cleaner, or hot soap and water, to clean the surface.

NOTE: The cover must be removed when shocking your Hot Tub. Do not stand on the cover at any time.

FILTER CARTRIDGE MAINTENANCE

Nordic Hot Tubs use a drop-in filter cartridge that is easily removed. When the filter cartridge is removed, make sure that no objects fall into the filter cavity. They can cause obstruction to the water movement.

Every two weeks, the filter cartridge must be cleaned to remove the objects and particles that have lodged in the cartridge pleats. Using a garden hose with a pressurized nozzle, push water from inside to outside of the pleats, forcing all the trapped particles out. If the cartridge is far too dirty to be cleaned as described above, obtain a filter cleaner from your Nordic dealer and follow the directions.

NOTE: Filter cartridges should be replaced once a year.

CEDAR SKIRT MAINTENANCE

Cedar wood has a tendency to lose its like-new appearance over time. Before using the Hot Tub for the first time and about every six months, depending upon conditions, you should seal the cedar skirt. Lightly sand the cedar skirt to remove any dirt and to smooth any rough surfaces before sealing.

NOTE: Use a high quality, cedar wood sealer for the best performance and appearance. If possible, use "Duck's Back" wood sealer, which can be found at most paint stores.

COMMON PROBLEMS AND SOLUTIONS

Problem	Cause	Solution
Calcium deposits on shell surface	 Hard Water pH, total alkalinity not in balance 	 Clean with a non-abrasive Hot Tub surface cleaner Test water, adjust pH as needed Add a stain & scale control
Cloudy water	 pH, total alkalinity not in balance Damaged filter cartridge Addition of incompatible chemicals Low chlorine level Buildup of oils, soap, foreign matter 	 Add a water clarifier. Circulate for a minimum of 30 minutes. After water has cleared, clean filter cartridge with a filter cleaner or replace if necessary. Test chlorine and pH levels, adjust if necessary.
Colored water	 Copper or iron metals in Hot Tub due to water supply or corrosion of heater. Total alkalinity, pH are low 	 Add a stain & scale control Test pH, adjust if necessary. If alkalinity is too high or too much chlorine or bromine is added, it will cause heater tube to corrode.
Eye and skin irritation	 pH, total alkalinity not in balance. Inadequate chlorine or shock levels Addition of incompatible chemicals. 	- Test pH and chlorine levels, adjust if necessary.
Excessive foam	 pH, total alkalinity not in balance Low calcium hardness Inadequate oxidation Addition of incompatible chemicals Buildup of body oils and/or contaminants 	 Add an anti-foam agent. If not reduced, add shock. Adjust chlorine level Test pH, adjust if necessary Take water sample to dealer to check total alkalinity and calcium hardness.

Problem	Cause	Solution	
Odor	 Inadequate ventilation Addition of incompatible chemicals Insufficient oxidation Inadequate cleaning of cover Chemical overdose 	 Clean with non-abrasive Hot Tub surface cleaner Clean the underside of the cover with a cover cleaner or hot soap and water. 	
Waterline deposits	- Buildup of body oils,- Test impurities	 Buildup of body oils, - Test pH and chlorine levels, impurities Clean with a non-abrasive Hot Tub surface cleaner Take water sample to your dealer 	

TROUBLE SHOOTING NOTES

AIR LOCK

In a new installation, or when the Hot Tub is drained and refilled, a small amount of air might be trapped in the plumbing and pump. To purge the air from the lines, turn the water pump off and loosen both pump fittings to allow the air to escape. Retighten the fittings before attempting to operate the pump.

Using the ridge above the hydrotherapy jets as a guideline, always make sure that the water level is at least 2" above the filter area. If any part of the filter is above the water level, it introduces air into the pump causing air lock, low water pressure, pump surging, damaged heaters, and overheating.

CIRCUIT BREAKERS

Hot Tub equipment is often suspected of causing GFCI circuit breakers to trip. The problem is usually caused by under-rated or old breakers. Before inspecting the equipment, it is important to verify the breaker's rating. If a new and properly rated breaker has been installed and it continues to trip, turn the power off to the Hot Tub and have your electrician check the following:

- 1.) Make sure the 3- or 4-wire connection is correct to the power pack.
- 2.) Check for any loose connections inside the power pack.
- 3.) Make sure the GFCI is wired according to local codes and the installation instructions enclosed with the GFCI.

TEMPERATURE CONTROL

Always make sure you use a new thermometer. On occasions, your Hot Tub temperature may read one or two degrees hotter or colder than your thermometer. This is normal and is due to the tolerances of thermometers and the temperature probe in the Hot Tub.

Whenever the motor runs, ambient heat is generated. This ambient heat in the equipment area helps maintain the Hot Tub temperature; therefore, keeping the cost of operation to a minimum. On occasions, ambient heat may cause the Hot Tub temperature to rise a few degrees above the set temperature. If you would like to lower the temperature, remove the cover to allow the Hot Tub to cool to the desired temperature. Also, lower the set temperature a few degrees to offset the ambient heat.

NOTES