

LD45 Series Spa

Manufactured
by



DM Industries, Ltd.

This OWNER'S MANUAL has been designed to familiarize you with your Spa operations and general maintenance. We suggest that you take some time to carefully review it. Please keep this manual available for reference.

If you have any questions regarding your spa set-up, operation or maintenance, please contact **DM Technical Support** at the email below.

Owner's Record

DATE PURCHASE: _____

SERIAL NUMBER: _____

To contact our Customer Service or Technical Service Department, please email **customercare@dmindustries.com** or **techhelp@dmindustries.com** normal business hours, Monday through Friday, **8:30am to 5pm, EST**

The Serial Number is located within the equipment compartment. Please record it on your sales invoice.

IMPORTANT SAFETY INSTRUCTIONS

WHEN INSTALLING AND USING THIS ELECTRICAL EQUIPMENT, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED, INCLUDING THE FOLLOWING:

1. **WARNING :** To reduce the risk of injury do not permit children to use this product unless they are closely supervised at all times.
2. **DANGER! RISK OF ACCIDENTAL DROWNING. Extreme caution must be exercised to prevent unauthorized access by children. To avoid accidents, ensure that children cannot use a hot tub or spa unless they are supervised at all times.**
3. **DANGER:** To reduce the risk of injury to persons, Do NOT remove suction fittings. The suction fittings in this spa are sized to match the specific water flow created by the pump. Should the need arise to replace the suction fittings or the pump, be sure that the flow rates are compatible. Never operate the 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.
4. Install the spa so proper drainage is provided for the compartment containing the electrical components.
5. **DANGER - RISK OF ELECTRICAL SHOCK.**
Placement of the spa **shall be** at least 5 feet (1.5 m) from all metal surfaces.
(A spa may be installed within 5 feet of a metal surface if each metal surface is permanently connected by a minimum No. 8 AWG 8.42mm² solid copper conductor attached to the wire connector on the terminal box that is provided for this purpose). National Electrical Code ANSI /NFPA 70-1993.
6. **DANGER-RISK OF ELECTRICAL SHOCK**
Do not permit any electrical appliances, such as a light, telephone, radio, or television within 5 feet (1.5 m) of the spa.
7. **WARNING: TO REDUCE THE RISK OF INJURY:**
 - A. The water in a spa should never exceed 40 degrees Celsius (104 degrees F) .Water temperatures between 38 degrees C (100 E) and 40 degrees C 104 F) are considered safe for a healthy adult. Lower water temperatures are recommended for extended use (exceeding 10 minutes) and for young children.
 - 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 spa or hot tub temperatures to 38 degrees C (100 F)

- C. Before entering a spa, the user should measure the water temperature with an accurate thermometer, since the tolerances of water temperature regulating devices vary.
- D. The use of alcohol, drugs, or medication, before or during spa use, may lead to unconsciousness with the possibility of drowning.
- E. Persons suffering from obesity or with a medical history of heart disease, low or high blood pressure, circulation system problems, or diabetes should consult a physician before using a spa.
- F. Persons using medication should consult a physician before using a spa since some medication may induce drowsiness, while other medication may affect heart rate, blood pressure and circulation.

DO'S & DON'TS

- DO** Make sure the spa is connected to a Ground Fault Circuit Interrupter (GFCI) protected circuit. This GFCI is required by the National Electrical Code (NEC) and must be installed by a licensed electrician. Test the GFCI monthly.
- DO** Test the water with your hand before entering the spa to be sure it is comfortable.
- DO** Remember that wet surfaces can be slippery. Take care when entering and exiting the spa.
- DO** Use the thermal cover when the spa is not in use, empty or full.
- DO** Take steps to prevent the intrusion of sand and dirt into the spa.
- DO** Maintain proper water chemistry.
- DO** Clean the filter cartridge weekly.
- DON'T** Use the spa for long periods of time at temperatures over 104 F.
- DON'T** Operate spa without water. Turn circuit breaker off before emptying the spa and while it is empty.
- DON'T** Store chemicals in the spa's equipment compartment.

WARNINGS

Prolonged immersion in water that is warmer than normal body temperature can result in a dangerous condition known as **HYPERTHERMIA**. The causes, symptoms, and effects of hyperthermia may be described as follows:

Hyperthermia occurs when the internal temperature of the body reaches a level several degrees above the normal body temperature of 98.6 degrees F. The symptoms of hyperthermia include dizziness, fainting, drowsiness, lethargy, and an increase in the internal temperature of the body. The effects of hyperthermia include (1) unawareness of impending hazard, (2) failure to perceive heat, (3) failure to recognize the need to exit the spa, (4) physical inability, to exit the spa, (5) fetal damage in pregnant women, and (6) unconsciousness resulting in a danger of drowning.

WARNING: The use of alcohol, drugs, or medication can greatly increase the risk of fatal hyperthermia in hot tubs and spas.

Persons taking medications which induce drowsiness such as tranquilizers antihistamines or anticoagulants should not use the spa. Pregnant women and persons with a medical history of heart disease, circulatory problems, diabetes or high blood pressure should consult their physician before using the spa.

Children are especially sensitive to hot water. At no time should children have unsupervised access to the spa. The use of elevated decking may encourage children to climb onto the thermal cover-**IT IS NOT DESIGNED AS A SAFETY OR CHILD RESISTANT COVER!** Each spa comes with a thermal cover which is provided with locking straps. Install the locks for your child's safety.

SAVE THESE INSTRUCTIONS

INSTALLATION INSTRUCTIONS

Site Selection/Preparation

The spa must be installed on a structurally strong, solid and reasonably level surface. The site should allow for drainage away from the equipment compartment in which the electrical components are housed. Take into account the following when considering prospective sites:

LOCAL CODES:

There may be certain restrictions and/or requirements that are particular to your locality.

DELIVERY PASSAGEWAY:

Doors, halls, stairs, etc. may pose obstructions to deliver the spa to its intended site.

MAINTENANCE:

Trees, lawn, placement surfaces, etc. can create extra work in keeping your spa and spa area clean and safe.

PRIVACY & WIND SHIELDING

A sheltered environment can result in lower operating and maintenance costs.

ELECTRICAL REQUIREMENTS AND INSTALLATION:

Important: Your spa is wired to meet the requirements of **UL, ETL**, and the **National Electrical Code (NEC)**. Any modifications required to meet state or local codes must be performed by a qualified, **LICENSED** electrical contractor and approved by a local building/electrical inspection authority.

1. Your spa operates on **110v** and draws approximately **8-10 amps** while operating. The spa comes equipped with a **GFCI (ground fault circuit)** built into the supplied 15 foot power cord. Therefore, your spa **must not** be plugged into a GFCI protected receptacle.
2. You can plug the spa into any standard **15 amp., 3 prong "NEMA" female receptacle**. Special 20 amp. outlets are not required. Simply feed the cord through the slot located in the equipment area and plug it in. Care should be taken not to overload the receptacle with other appliances. To do so may cause overheating, or the inconvenience of GFCI tripping.
3. The spa is equipped with a thermo-overload for the pump which shuts the pump off if it becomes too hot. The spa is also equipped with a high limit switch that will trip and shut off the pump if the temperature of the spa reaches 118 degrees.

Getting Started:

NOTE:

For best results, read each step carefully and entirely before proceeding to the next.

FILL YOUR SPA

Wipe the interior of the spa with a damp, soft cloth to remove any residue that may be on the surface. Fill with a garden hose. As the spa is filling check in the equipment access area for any leaks. On occasion, it may be necessary to hand tighten a union fitting that may have come loose during transit. Continue to fill to the water level line.

NOTE: If your water is extremely hard, it is preferable to fill the spa halfway with hard water and the rest with softened water.

NEVER FILL THE SPA ENTIRELY WITH SOFTENED WATER.

ADD START UP CHEMICALS

Carefully follow the directions and add the start-up chemicals recommended to you by your dealer. Contact your dealer to clarify any questions you may have.

CONTROLS & OPERATING INSTRUCTIONS

This new electronic system control provides reliability, user settings, and simple operation at the touch of a button.

PROGRAMMING YOUR SPA

Note that this electronic system comes ready with factory defaults that will filter and heat to a preset temperature of 102° F.

To program your new spa controller, follow the simple steps below:

- 1.) Hold down the **PROG** button for **5 seconds**. Note the display will start to **flash 102 F**. Then release the button.
- 2.) Use the **UP** or **DOWN** arrow buttons to set your desired temperature.
- 3.) Press the **PROG** button once to change program mode to time set, the **12:00** will **flash**.
- 4.) Use the **UP** or **DOWN** arrows to set the hour. Note **AM** or **PM** is indicated by a lighted dot on the display next to the printed **AM** or **PM**.
- 5.) Press **PROG** once again to change program mode to minutes, now the minutes will **flash**.
- 6.) Again use the **UP** or **DOWN** arrows to set the minutes.
- 7.) Push **PROG** to complete and exit the programming mode.

OPERATING YOUR SPA

Jet/Pump: The upper left-hand button operates the pump. This spa is equipped with a single speed pump. By depressing the button, you cycle the pump on. Depressing the button again will turn the pump off.

Light: The light is turned on and off by depressing the light button. If you desire to leave the light on for ambiance, it will NOT turn itself off automatically.

If the desired temperature setting is higher than the water temperature, the jet/pump will automatically turn on and run until the desired water temperature is achieved. To turn the jet/pump off during this period, you will have to lower the set temperature below the current ambient water temperature as displayed on the topside control.

When the desired water temperature is lower than the current water temperature, the jet/pump will turn on for filtration purposes twice per day. (8:00 - 8:15 AM and 4:00 - 4:15 PM).

SPECIAL FEATURES:

AUTOMATIC FILTRATION:

This spa is set to filter your water anytime the Jet/Pump is running.

AUTO HEAT:

Heat is generated and transferred into the water by capturing the heat emitting from the motor. This economical transference of heat will continue until the desired temperature is achieved. The spa control system will monitor the water temperature twenty-four hours a day and will cycle the jet/pump on and off whenever the need for heat is called for.

SPA SIDE RESET:

This electronic system is equipped with two levels of resets. Both resets are performed on the top side control.

1st. Reset: The first reset is to clear any glitches that have corrupted the systems operation by faulty electrical systems, lightning storms, etc.

Depress the **Down** arrow for **5 seconds and release**. This will clear and reload your specified heater setting without the need to reprogram the system.

2nd. Reset : We like to call it a **Reboot**. This reset will clear current programming and reload the system with factory defaults.

Depress the **Up Arrow** button for 5 seconds and release.

Note: If the 2nd. Reset was completed correctly, the time on the display reverts to 12:00 PM. At this time you will need to reprogram the system with your settings.

DIRECTIONAL & ROTATIONAL MASSAGE JETS

The water flow direction is adjustable by rotating the directional jet nozzle. The amount of pressure can be adjusted by rotating the outer rim of the jet(s): clockwise for minimum pressure, and counter clockwise for maximum pressure. Pressure may also be varied by the use of the air control.

AIR CONTROL

The air control is used to introduce air into the water jet stream. This control allows the user to increase (open) jet pressure or decrease (close) jet pressure as desired.

SPA MAINTENANCE

Your spa is manufactured with the highest quality and most durable materials available. A spa care and maintenance program is recommended to increase your comfort, maintain the spa's reliability and protect your investment.

1) DRAINING YOUR SPA

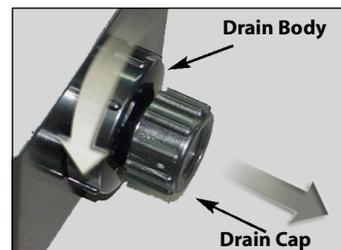
Detergent residues from bathing suits as well as soap film from your body may gradually accumulate in the water. Foam inhibitors will suppress the foam but will not remove the soap from the water. Eventually, the soap build-up in the water will concentrate enough to leave an unclean feeling on the user's skin, cause sudsing, and make the water impossible to clarify. Depending on the amount of soap input, the spa water should last between two and three months.

To Drain Your Spa:

- A. Unplug Spa.
- B. Remove cap. Attach a garden hose to the bib that is located directly behind the cap, once removed. Route the outlet of the hose to an appropriate draining area. Twist body then pull. The spa will empty by gravity. Siphon or scoop out the balance of the water.

IMPORTANT: Spa water with a **high sanitizer level** may harm plants and grass. If you are draining your spa for the winter, be sure to fully drain water from the pipes by disconnecting the two unions. Drain the water pumps by removing the pump plug. Then reinstall the valves and pump plugs.

- C. Remove the filter and clean as required.
- D. Inspect the spa shell and clean as required.
- E. Refill the spa BEFORE restoring power to it.



2) WINTERIZING YOUR SPA

Your spa has been designed and engineered for year-round use in any climate.

- A. If the spa will not be used, drain it completely following the instructions on "DRAINING THE SPA."
- B. If you intend to use the spa during the winter, keep the spa warm and set the thermostat to the temperature you wish to maintain. The spa will automatically come on and display "ICE" whenever the water temperature falls to 50° F and will continue to run until the water temperature comes up to 60° F. Note that accidental freezing could result due to prolonged power failures.

3) FILTER MAINTENANCE

Maintenance is the most critical factor in keeping your spa water clean.

To clean the filter:

NEVER RUN SPA WITHOUT FILTER

- A. Remove the cartridge and spray it with a garden hose. It will be necessary to rotate the cartridge while spraying so as to thoroughly remove the debris lodged between the filter pleats.
- B. After allowing to dry, inspect the cartridge for calcium deposit (scaling) or an oil film. Rapid mineral build-up from hard water, or oil builds up from the use of oil-based water scent or body oils that may coat the filter.
- C. Use a rag to remove any debris at the bottom of the filter housing. Replace the cartridge.
- D. We recommend the use of a spare filter. This way one can be soaking and cleaning while you continue to enjoy the use of your spa.

4) COVER MAINTENANCE

Your cover is manufactured from a durable marine grade, U.V. resistant material. Even so, monthly cleaning and periodic conditioning is recommended to maintain its beauty.

To clean and condition the vinyl cover:

- A. Lightly spray the cover with a garden hose to rinse it and remove the debris.
- B. Using a large sponge or soft cloth and a mild soap solution (1 teaspoon dish washing liquid with 2 gallons of water), scrub lightly in circular motion. Then rinse it thoroughly with plenty of water.
- C. Condition the vinyl after cleaning by applying a thin film of vinyl conditioner such as Armor-All. NOTE: To remove tree saps, use lighter fluid (not charcoal lighter, but the kind used in cigarette lighters). Use sparingly and rinse with mild soap solution afterwards. Wipe dry.

5) EXCEL-PLUS CABINET MAINTENANCE

The exterior of your spa cabinet is made from a newly formulated high strength material that is factory stained and sealed. Depending on the location and exposure of the spa to nature's elements, it is recommended that you clean the cabinet once or twice a year with warm water and a mild soap.

WATER QUALITY AND MAINTENANCE

GENERAL GUIDELINES FOR WATER QUALITY MAINTENANCE

Maintaining water quality within specific limits will enhance your enjoyment and prolong the life of the spa. Safe, comfortable and clean spa water is a fairly simple task to achieve, but it does require regular attention because of the numerous factors that can alter it. There is no one formula to be followed because of the variables, i.e. quality of the water used to fill the spa, water temperature user load, etc.

Developing a disregard for water maintenance will result in poor soaking conditions, damage your spa investment and possibly void your warranty.

Spa water maintenance consists of three separate easily developed programs :

1. Sanitizing and maintaining a safe level of sanitizer in the spa water.
2. Balancing the pH and maintaining the recommended mineral content level.
3. Achieving and maintaining water clarity.

SANITIZING

To destroy bacteria and organic compounds in the spa water, a sanitizer must be used regularly. The use of a bromine floater is recommended. By regulating the amount of tablets, the amount of time the floater is open, and the length of the filtration cycles, you can control the amount of bromine in your spa. A bromine residual of 2 to 3 PPM is generally considered desirable. A two-part bromine system or a granular chlorine (dichlor) system is also acceptable Sanitizers.

pH CONTROL

pH is a measure of acidity and alkalinity of the spa water. The recommended pH for spa water is 7.4 to 7.6 ppm. Below 7.0 (considered neutral), the spa water is acidic and can cause damage to the heating system. Above 7.8 the water is too alkaline and can result in cloudy water and scale formation on the spa shell, heater, and cover.

IMPORTANT: NEVER USE CHLORINE TABLETS OR LIQUID POOL CHLORINE (TRICHLOR) IN YOUR SPA.

This chemical can have an extremely corrosive effect on certain materials in the spa. Also, the use of liquids, chlorine or acid, are not recommended. Damage caused by use of these chemicals, or improper use of any chemical, is not covered under the spa warranty.

OPTIONAL LIGHTNING SERIES WATER PURIFICATION SYSTEM

If you have elected to equip your spa with the ozone water purification system, you will find that your water stays fresh and clean with significantly less usage of chemical sanitizer and you will also be able to go longer between spa draining.

Trouble Shooting Guide

ERROR MESSAGES

IMPORTANT: UNPLUG SPAWHENEVER ACCESSING CONTROL BOX

LS=S Large water temperature sensor may need replacement. Reboot system. If error returns open the door and remove the four screws to the metal control box cover reseal the sensor in connection. If error returns, reverse sensors and note reading if SS=S replace sensor, if LS=S stays replace board.

LS=O Large water temperature sensor may be disconnected. Reboot system. If error returns open the door and remove the four screws to the metal control box cover reseal the sensor in connection. If error returns, reverse sensors and note reading if SS=O replace sensor, if LS=O stays replace board.

SS=S Small heater temperature sensor may need replacement. Reboot system. If error returns open the door and remove the four screws to the metal control box cover reseal the sensor in connection. If error returns, reverse sensors and note reading if LS=S replace sensor, if SS=S stays replace board.

SS=O Small heater temperature sensor may need replacement. Reboot system. If error returns open the door and remove the four screws to the metal control box cover reseal the sensor in connection. If error returns, reverse sensors and note reading if LS=O replace sensor, if SS=O stays replace board.

HILI Spa sensors indicate that spa water temperature is rising above 112°F. Unplug spa and allow to cool down with cover off for one hour. Power spa back up and reboot. If error returns, remove filter cartridge and check for clogged filter line. Turn power off to spa, open access door and remove the four screws to the metal control box cover. Look for sensor connected to heater plug and switch it with sensor plugged into temp plug. Power spa back up. If topside control shows water temperatures and error message is no longer displayed, sensor is bad and should be replaced. Power spa down, place sensors back into original plug locations. After replacing defective sensor, close box and access door. Power spa up and set temperature.

Pb Miscommunication between spa side and board. Check topside connection and connections to power board. Reboot system. If error returns, call technical service.

ICE Water Temperature is below 50° F. Spa is running to bring water temperature up to 60° F to prevent freezing. No action needs to be performed. Spa is operating properly.

FLO Remove filter - if error goes away then it's possibly clogged, replace it. Open the door and remove the four screws to the metal control box cover, remove the fuse and check for continuity. No continuity replace with new fuse. Pump is not running - disconnect power to your spa , change wires on relay switch from horizontal position to vertical position, turn power back on, pump must turn on, if not then bad pump.



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