

L&R LE Series



Owner/Operator Manual

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WARNING: If the equipment is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired.

Specifications

MODEL Number	TANK SIZE	Voltage	Total Watts	Heat Watts	Heater Line Frequency	Heater Volts	Generator Fuse	HEATER Fuse
LE36	36"x6"x8"D	117 230	1600	1000	50/60Hz	117 230	T10.0A/250V T5.0A/250V	T20.0A/250 V T15.0A/250 V
LE236	2-Tanks 36"x6"x8"D	117 230	3200	2000	50/60Hz	N/A	T10.0A/250V T5.0A/250V	T20.0A/250 V T15.0A/250 V
LE50	52"x6.25"x7"D	117 230	1000	N/A	50/60Hz	117 230	T20.0A/250V T10.0A/230V	N/A
LE250	2-Tank 52"x6.25"x7"D	117 230	2000	N/A	50/60Hz	N/A	T20.0A/250V T10.0A/230V	N/A
LE242	42"x6"x8"D	117 230	1600	1000	50/60Hz	117 230	T10.0A/250V T5.0A/230V	T20.0A/250 V T15.0A/230 V

Note: Board section fuse is T10.0A/250V for 117 volt units and T5.0A/250V for 230 volt units

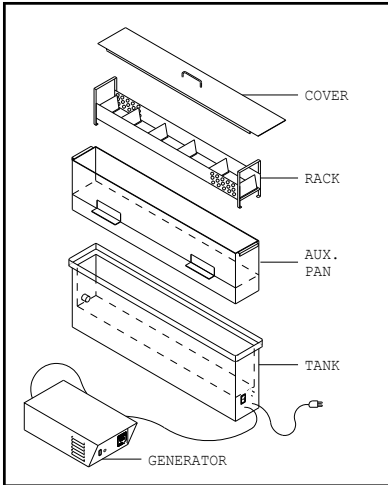
*Generator and Heater Line Frequency is 50/60 Hz

** System installed in a dry location, 0-35°C, RH 96% non-condensing, non-corrosive atmosphere below 2000M altitude.

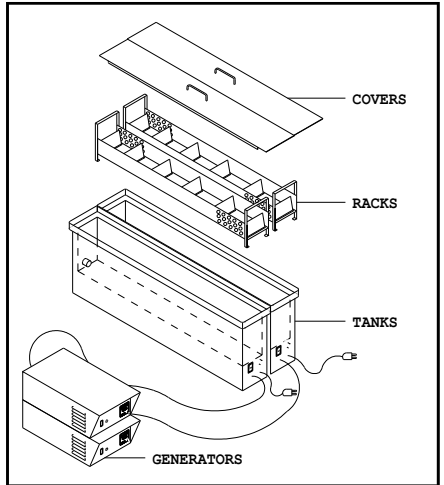
*** Do Not position the equipment so that it is difficult to operate the disconnecting device.

**** Disconnect unit from mains by unplugging the line cord.

Congratulations on your purchase of an L&R LE Series Weapons Cleaning and Lubricating System. Your machine is part of a complete cleaning process which is described in this owner/operator manual.



LE-36 Set-Up



LE-236 Set-Up

LE 36 Set-Up

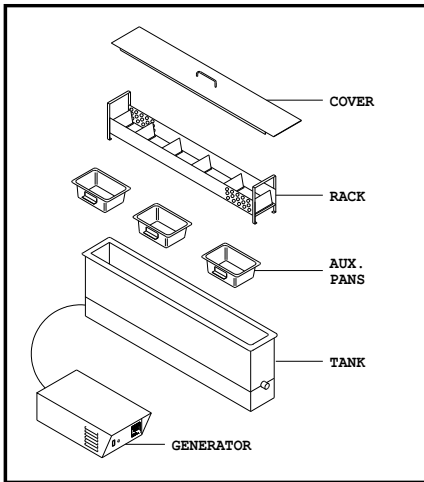
- 36" x 6" x 8" tank (91.4 x 15.2 x 20.3 cm)
- Digital timer and thermostatically controlled heater
- Weapon/Lubricating rack (adjustable compartments for accommodating various size weapons)
- Full-size lubricating pan
- Drip proof flanges on tank
- Half-size weapon pan, basket and cover
- 4 gals. (15.2L) Weapon Cleaning Concentrate (yields 44 gals. solution)
- 8 gals. (30.4L) Weapon Lubricating Solution
- Complies with FCC regulations

LE 236 Set-Up

Dual LE 36 tanks mounted on a stainless steel stand (working height is 36")

- 36" x 6" x 8" tank (91.4 x 15.2 x 20.3 cm)
- Digital timer and thermostatically controlled heater
- Weapon/Lubricating racks (adjustable compartments for accommodating various size weapons)
- Drip proof flanges on tank
- 4 gals. (15.2L) Weapon Cleaning Concentrate (yields 44 gals. solution)
- 8 gals. (30.4L) Weapon Lubricating Solution
- Complies with FCC regulations

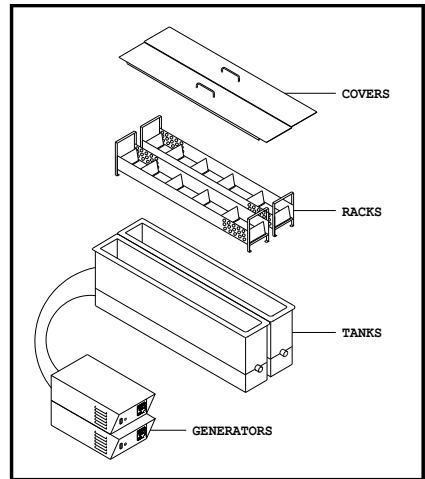
All LE Set-Ups are designed for high volume usage accommodating hand guns, tactical and long guns.



LE-50 Set-Up

LE 50 Set-Up

- 52" x 6.25" x 7" tank (132 x 15.9 x 17.8 cm)
- Digital timer
- Weapon rack
- Lubricating pan
- Lubricating rack
- 5 Small weapon pans, covers and baskets
- 8 gals. (30.4L) Weapon Cleaning Concentrate (yields 88 gals. solution)
- 16 gals. (60.8L) Weapon Lubricating Solution
- Complies with FCC regulations

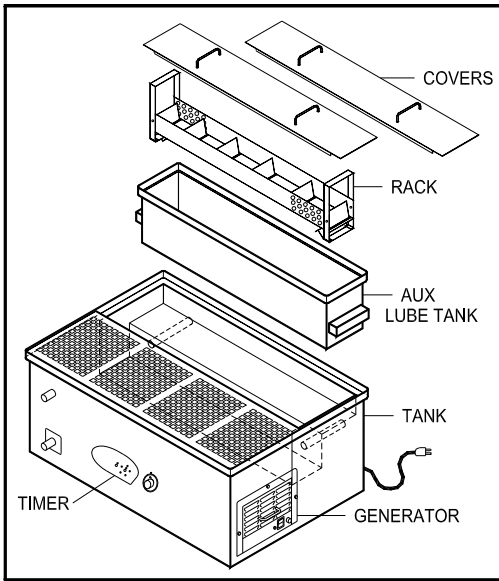


LE-250 Set-Up

LE 250 Set-Up

Dual LE 50 Tanks mounted on a stainless steel stand (working height is 36")

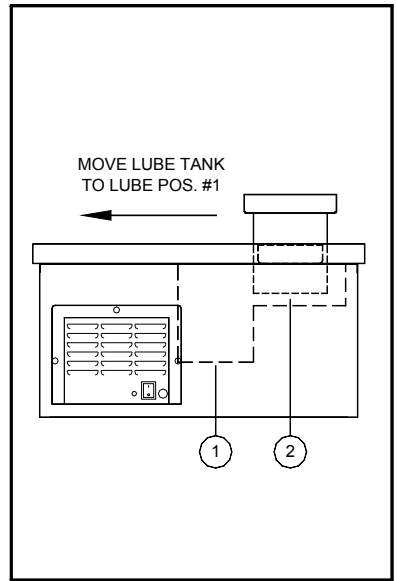
- 52" x 6.25" x 7" tank (132 x 15.9 x 17.8 cm)
- Digital timer
- 2 Weapon/Lubricating racks
- 10 Small-Weapon baskets
- 8 gals. (30.4L) Weapon Cleaning Concentrate (yields 88 gals. solution)
- 16 gals. (60.8L) Weapon Lubricating Solution
- Complies with FCC regulations



LE-242 Set-Up

LE 242 Set-Up

- 42" x 6" x 8" tank
(106.7 x 15.2 x 20.3 cm)
- Digital timer
- Lubricating pan
- Lubricating rack
- 8 gals. (30.4L) Weapon
Cleaning Concentrate
(yields 88 gals. solution)
- 16 gals. (60.8L) Weapon
Lubricating Solution
- Complies with FCC regulations



- LUBE TANK IN POS. #2
FOR CLEANING.
- LUBE TANK IN POS. #1
FOR LUBE



Safety Precautions

- Disconnect Mains prior to service
- Ensure that all protective earth grounds are connected before applying power.
- Unplug the tank and generator before moving it.
- Keep the area around the generator clean and dry. Water and high voltage can cause electrical shock.
- Ensure the tank and generator are properly grounded. Do not remove the grounding prong on the line cord(s).
- Do not disassemble the tank bottom or generator cover — hazardous voltages inside are dangerous.
- Do not immerse the generator in water or any other liquid. Keep cables Dry.
- To prevent personal and/or property damage: Do not use alcohol, gasoline or flammable solutions in the tank. Doing so could cause a fire or explosion.
- Do not ever use mineral acids. These could damage your tank. See page 13.
- Do not place your fingers into the tank while the cleaner is operating. Doing so may cause discomfort and possible skin irritation.
- Provide adequate ventilation when using your ultrasonic cleaner.
- Always turn the heater off when not in use.
- Keep the tank covered with supplied tank cover.
- Use hearing protection when required.
- Do not operate with out proper solution level.
- Unplug system & Drain solution prior to moving.

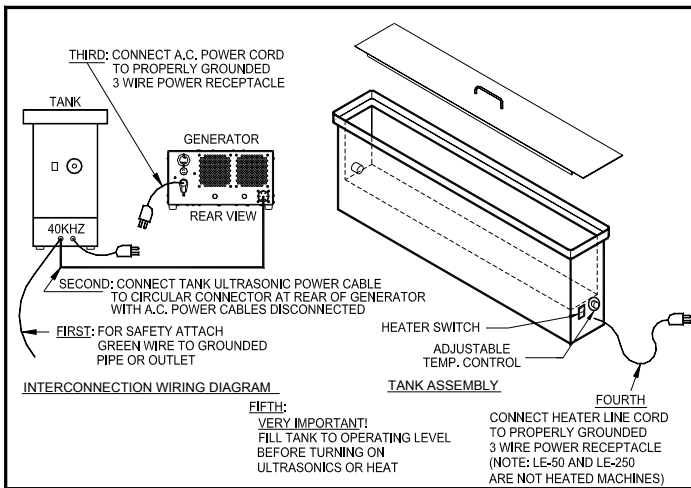
Unpack, Set-Up and Start-Up

Unpack

- Remove your ultrasonic cleaner from its shipping container and inspect it for any possible damage which may have occurred during shipping. (Claims for shipping damage should be made immediately against the carrier.)
- Check the serial number of your machine with the serial number on the shipping carton. If they are not the same, contact your dealer or the factory.
- Complete the warranty card and mail it to **L&R Manufacturing Co.**

Set-Up

Interconnecting tank and generator(s)



NOTES: A single LE-36 is pictured. The same connections apply for each tank and generator of an LE-236, an LE-50 and an LE-250.

- Allow at least 3 inches all around the generators for ventilation.
- Dry Location, 0-35°C, RH 95%, non-condensing, non-corrosive under 2000FT altitude.

Start-Up

Fill the ultrasonic cleaning tank approximately $\frac{3}{4}$ full using the proper ratio of water and Ultrasonic Weapon Cleaning Solution, following instructions on label. Next, fill the lubricating tank with L&R Ultrasonic Weapon Lubricating Solution approximately $\frac{3}{4}$ full. Note, this is a ready to use solution. Do not dilute. Turn power on and operate for 10 minutes, allowing cleaning and lube solutions to de-gas.*

See page 16 for timer operation.

If a single tank and auxiliary pan are used, fill the tank $\frac{3}{4}$ full as above and the auxiliary pan $\frac{3}{4}$ full with lubricating solution.

NOTE: If this is the first time you are running the cleaner or you have changed the cleaning solution, you must de-gas the solution. Fresh solutions contain entrapped air which reduces effective ultrasonic action. Although solutions will naturally de-gas over time, operating the machine for five to ten minutes before using it to clean will accelerate the de-gas process.



Heater Control

Heat to the tank of an LE36 is controlled by an ON/OFF switch and an adjustable thermostat located at one end of the tank assembly.

CAUTION: ENSURE TANK IS PROPERLY FILLED PRIOR TO TURNING HEAT ON. To initiate the heat cycle, turn the switch ON. The switch will light up. Then adjust the thermostat to 150°F. While you may change the thermostat setting for best cleaning efficiency, do not raise the temperature beyond 180°F. Turn both switch and thermostat off when not in use.

Weapon Cleaning Instructions

MAKE CERTAIN WEAPON IS UNLOADED.

I. PREPARING WEAPONS FOR CLEANING

For optimum cleaning and lubricating results, all guns should be partially disassembled (field stripped) prior to immersion in the ultrasonic cleaner. A “generic” description for minimum disassembly requirements follows.

ALWAYS FOLLOW YOUR MANUFACTURER’S INSTRUCTIONS FOR PARTICULAR WEAPON DETAILS

The following instructions are for qualified personnel only.

A. SEMI-AUTOMATIC HAND GUNS

- Make certain weapon is unloaded.
- Disassemble in conjunction with manufacturer’s instructions.
- Remove grips where convenient
- Lock back the hammer and depress the slide lever to open mechanisms when possible.

B. REVOLVERS

- Make certain weapon is unloaded.
- Remove grips.
- Place hammer in cocked position.
- Remove yoke and cylinder assembly from frame when possible.
- Separate yoke and cylinder parts.
- Remove side plates for first ultrasonic treatment.

Cylinders with ejectors: Lift star and place a small item between the star and cylinder to enhance performance.

C. RIFLES AND SHOTGUNS

- Separate the stock and forearm from the barreled action.
- Remove the magazine spring, when possible.
- Remove the barrel from the action if removal is simple.
- Shotgun trigger groups fit in smaller machines.

NOTE: QUESTIONABLE PARTS OF MODERN AND ANTIQUE GUNS INCLUDING PLASTIC PARTS, COMPOSITE PARTS AND PARTS WITH SPECIALIZED FINISHES SHOULD BE TESTED WITH THE CLEANING SOLUTION TO ENSURE COMPATIBILITY BEFORE TOTAL CLEANING IS PERFORMED. FOLLOW RECOMMENDED CLEANING TIMES.

In performing a full detailed stripping and cleaning of a weapon, please refer to the gun manufacturer's specific instructions prior to disassembly or re-assembly.

II. CLEANING PROCEDURE

After stripping the weapon, place the parts (including the frame) into the basket of the ultrasonic cleaner so that rails are facing the bottom of the tank.

NOTE: PARTS MUST NOT BE PLACED DIRECTLY ON THE BOTTOM OF THE TANK. ALWAYS USE A BASKET.

POSITION THE GUN TO AVOID ENTRAPPING ANY AIR IN THE PARTS WHEN PLACED IN THE ULTRASONIC CLEANING BASKET AND LUBRICATION PANS.

ALWAYS TAKE WOOD GRIPS AND SOFT AFTERMARKET GRIPS OFF.

First, fill machine 3/4 full with water, then add concentrated weapon cleaning solution. Turn machine on. Add balance of water to proper level. Place weapons in basket, insert basket into machine and clean for 7-10 minutes. Severely neglected firearms require longer cleaning periods.

Remove the basket with parts from the cleaner and drain in sink. Rinse the parts with warm water to remove any residual cleaner.

Where running water is not available, use two buckets filled with water. Use first bucket to remove the solution and the second bucket for a final water rinse. Wipe the excess water off the basket to minimize water carryover to the lubricant.

III. LUBRICATING PROCEDURE AND WATER REPLACEMENT PROCEDURE

Using compressed air, blow out the inner areas of the weapon where water may have accumulated. After blow-off, place the parts back into the basket and insert into the auxiliary pan filled with L&R Ultrasonic Weapon Lubricating Solution to cover all parts. Again, take care when positioning the parts to avoid any air entrapment.

Place the auxiliary pan on top of the ultrasonic tank so that the pan bottom is slightly immersed in the solution of the main tank. Turn on machine and cavitate for a period equivalent to the cleaning cycle, generally 7-10 minutes.

The ultrasonic application of L&R's Ultrasonic Weapon Lubricating Solution will displace the residual water and cleaning solution left on or inside the gun parts. The lubricant will leave the weapon with a light coating of non-oily, non-sticky lubricant.

DO NOT ATTEMPT TO USE COMPRESSED AIR TO BLOW OFF EXCESS LUBRICANT. ALLOW TO AIR DRY.

When lubrication is complete, tilt the basket and drain in several directions. Don't rush this part. The more excess that drips off, the faster the gun will dry. First, remove the frame and place it on a towel leaning up against the side of the machine in an upright position. The frame opening will still be pointed down to assist in drying. Next, remove the slide and rest it on its side, on the trigger guard, so that it is on an angle. At this point punch the barrel with a dry patch.

After a few minutes, you may towel dry. **Once the weapon has been ultrasonically conditioned with lubricant, follow the weapon manufacturers' instructions and oil for function.**

After the weapon has been properly cleaned and lubricated you may notice some lead remaining on the forcing cone or cylinder face. This is because ultrasonic cleaning can only loosen lead; not dissolve it. Products similar to lead wipes will physically assist further.

Tips

- Room temperature machines, solutions and lubricants work better than cold!
- Pour the concentrate (and lube) slowly with the spout on top to avoid splashing. Pouring with the spout towards the bottom causes splashing due to air entrapment.
- Sometimes the solution looks milky. This is caused by cold temperatures. This milky appearance does not affect the cleaning performance.
- When using full size auxiliary pans, make sure that solution level in the main tank is not too high or it will overflow when the auxiliary pan is inserted.
- With certain guns, the color of the weapon or grips will appear lighter. To bring back the original appearance, simply wipe with a silicon gun cloth.
- Do not store your solutions in soft plastic milk jugs.
- Our favorite tip comes from the White Plains Police Department in New York. In larger machines, where you have many similar weapons: Take a ready made 18" long stainless steel bluefish leader. Fish it through the barrel, slide, and trigger guard. Knot the ejector rod and spring and snap the leader closed. The same goes for revolvers.



Warnings and Cautions

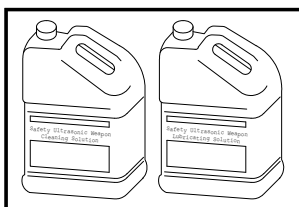


- **WARNING:** DO NOT OPERATE EQUIPMENT UNTIL ALL PROTECTIVE EARTH GROUNDS ARE CONNECTED.
- **WARNING:** Do not ever use alcohol, gasoline or flammable solutions. Doing so could cause a fire or explosion.
- **WARNING:** Unplug the machine before moving it.
- **WARNING:** Do not immerse the machine in water or any other liquid. To maintain the tank free of sediment and soap scum: unplug, rinse and wipe dry.
- Do not use acids or bleach. These will damage the tank.
- Use only proper L&R solution for compatibility. CHANGE SOLUTION REGULARLY.
- Do not allow the solution level to drop more than half the depth of the tank while the cleaner is on.
- Do not place parts or containers directly on the bottom of the cleaning tank.
- When using an auxiliary pan, enough solution must be in the tank to act as a coupling agent.
- Keep ventilating louvers clean and free of obstructions.
- Do not leave weapon parts in cleaner overnight.
- Avoid operating the machine in extremely dusty areas.
- There are no user serviceable parts inside the tank or generator. Contact your L&R Service Department.
- If the equipment is used in a manner not specified by L&R, the protection provided by the equipment may be impaired.

FAILURE TO COMPLY WITH THESE CAUTIONS WILL VOID YOUR WARRANTY.

Accessories for LE Series Machines

PCN	Description
19548	Auxiliary Pan, LE-36
19533	Cover, Auxiliary Pan, LE-36
19585	½ size Auxiliary Pan, LE-36
40229	Cover, ½ size Auxiliary Pan, LE-36
19536	Weapons Rack, LE-36
19652	Basket, Mesh, LE-36 ½ size
17792	Auxiliary Pan, LE-50
17535	Cover Auxiliary Pan, LE-50
17816	Weapons Rack, LE-50
17741	Basket, Handgun, LE-50
40961	Auxiliary Pan, LE-242
40959	Cover Auxiliary Pan, LE-242
26074	Weapons Rack, LE-242
40983	Filtration Unit Cartridge (optional)



Weapons Cleaning Solutions

L&R Ultrasonic Weapon Cleaning Solution Concentrate Non-Ammoniated

Intensifies the ultrasonic cleaning process. Non-ammoniated to preclude surface damage. Eliminates the use of harmful solvents. A powerful surfactant maximizes cleaning with virtually no odor. Concentrated, biodegradable and environmentally friendly. Economical; 1 gallon yields 11 gallons of solution (PCN 00215)

L&R Ultrasonic Weapon Lubricating Solution

Blended and ready-to-use. Conditions and lubricates firearms after cleaning. All traces of water are displaced, leaving the firearm with a uniform, dry lubrication. In a matter of minutes, your weapon looks and feels “factory new”. Economical. (PCN 00212)

Chemicals Harmful To Your Ultrasonic Cleaner

Acetophenone
Aluminum Chloride
Aluminum Fluoride
Aluminum Sulphate
Ammonium Bifluoride
Ammonium Chloride
Ammonium Hydroxide
Amyl Chloride
Antimony Trichloride
Aqua Regia
Benzethonium Chloride
Bromine
Calcium Bisulfate
Calcium Bisulfite
Calcium Hypochloride
Chloroacetic Acid
Chloric Acid
Chlorine, Anhydrous
Chromic Acid
Chlorine Bleach
Citric Acid
Copper Chloride
Copper Fluoborate
Ethyl Chloride

Ferric Chloride
Ferrous Chloride
Ferris Sulfate
Fluoboric Acid
Fluorine
Hydrobromic Acid
Hydrochloric Acid
Hydrogen Peroxide
Hydrocyanic Acid
Hydrofluoric Acid
Hydrofluosilicic Acid
Iodoform
Mercuric Chloride
Muriatic Acid
Nitric Acid
Phosphoric (crude)
Sodium Hypochlorite
Potassium Chloride
Stannic Chloride
Stannous Chloride
Sulfur Chloride
Sulfuric Acid
Zinc Chloride

The use of these chemicals will damage your machine and void the warranty.

4002 Series Ultrasonic Generator

System Description

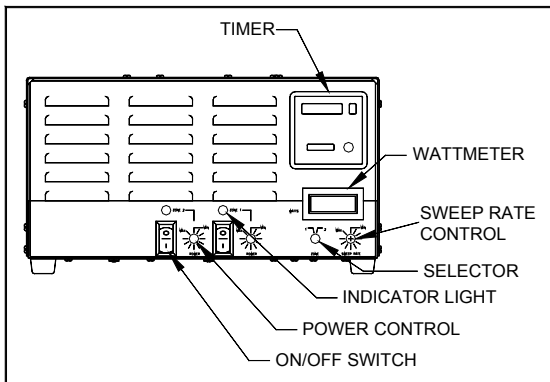
The 4002 Ultrasonic Generator is a modular design, consisting of a main controller housing and able to accept from one to three generator boards. Each board is capable of driving a separate immersible transducer module, or a group of transducers bonded to a tank. Generator modules can be individually or simultaneously operated with timer. Features include constant power output circuitry, as well as short circuit protection.

Specifications for LE Series Generators

System Control

Used On	Model Number	Input Voltage	Operating Freq. kHz	Product Code	Circuit Board Sections	Power/Section	Current Requirements
LE-36	4002-1/6	117	50/60	17677	1	600 W	5.1A
		230	50/60	17678	1	600 W	2.7A
LE-50	4002-2/5	117	50/60	17679	2	1000 W	8.6A
		230	50/60	17680	2	1000 W	4.4A
LE-242	4002-1ST	117	50/60	26079	1	600 W	5.1A
		230	50/60	26080	1	600 W	2.7A

Each individual section is controlled with an ON/OFF power switch. An indicator light located above the switch shows when the section is ON.

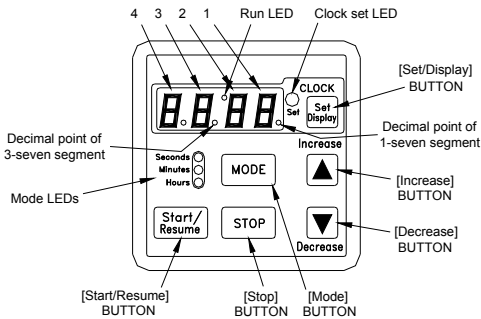


A 99 minute digital timer controls the ultrasonic cycle for all sections of the generator (that are ON). See next page.

Altering the input power allows for the safe, efficient cleaning of a wide variety of substrates. Generators with POWER CONTROL include a power adjust knob, a wattmeter and a section selector switch (on multi-section generators) To adjust the power, select the section and rotate the power adjust knob. Read the power on the wattmeter.

The ultrasonic frequency is 43kHz. Generators with the “Sweep” function operate between 41 and 45 kHz and include a sweep rate control Changes in the sweep rate alter the cleaning efficiency of the system. Experimentation will quickly show which sweep rate works best for each cleaning task.

Digital Timer Operating Instructions



Functionally Using the Timer

1. After applying an appropriate AC to the power input terminals, the display will be blank and the beeper will beep for ¼ second giving the user notification that the timer is now activated. The units' default is in Minute [Mode].
2. **Setting Time of Day** - Push and hold the button [SET/DISPLAY] for 1 second, the unit will default the time to 12:00am and enter the 'Clock Set' mode. While in this mode, buttons [MODE], [STOP] & [START/RESUME] are disabled and the clock set LED will be turned ON. The user now can set the time by pressing and holding either [INCREASE] or [DECREASE] button until the desired time is achieved. If you do not wish to set the time of day, skip step number 3.

The clock mode is a 12-hour with an am/pm display element. When the clock is being displayed and the clock is in the pm time frame, the decimal point of number 1-seven segment will be ON. Once the user has achieved the proper clock value, they need to exit the clock set mode by pressing and holding the button [SET/DISPLAY] for 1 second. After the 1 second, the beeper will beep for 1 second giving the user notification that the mode is now exited. Once the clock is set, the display will go blank and the clock set LED will turn OFF.

If the clock has been set and the user presses the button [SET/ DISPLAY] for less than 1 second, the display will show the current time for a 5 second period and revert back to what was previously on the display.

3. **Setting Interval Timer** - In modes 1 – 3, the device functions as a simple countdown timer. When you set the value, press the button [START/RESUME]. When the value reaches 0, the relay is turned OFF and the beeper beeps 6 sets of 2 (250ms) beeps.

Repeat Feature- the timer will remember the last time set. If you desire to change the setting from the original setting, press start switch to recall previous setting then input new setting.

To enter one of the 3 countdown modes, press and hold the button [MODE] for 1 second. Holding down this button the mode will switch every 2 seconds. Each time the mode switches, the appropriate LED of mode LEDs will be turned ON and the value displayed will change to the modes default value. An audible $\frac{1}{4}$ beep will also be heard.

Mode 1 0 – 99 second: DEFAULT DISPLAY = 01

Mode 2 0 – 99 minute: DEFAULT DISPLAY = 00.00

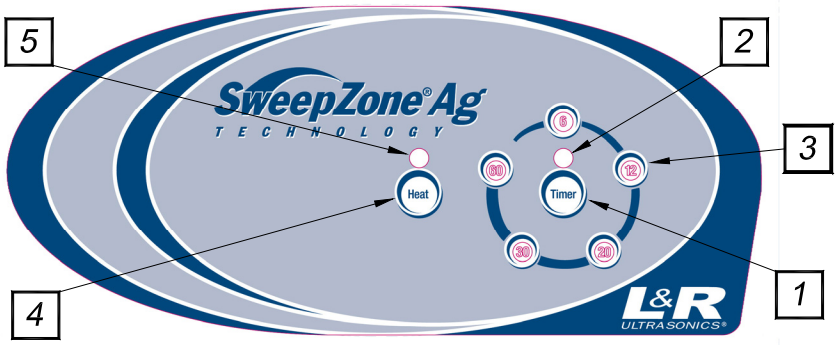
Mode 3 0 – 99 hour: DEFAULT DISPLAY = 00.00

Once the countdown value has been set, you can now start the timer by pressing the button [START/RESUME]. The relay is turned ON. While the timer is counting down the user can stop the event by pressing the button [STOP]. The current countdown value will remain on the display. If you want to resume the session you just need to press the start button again.

Counting will proceed from the point where stopped. During this operation, the run LED is blinked at once a second.

Once the timer has counted down to 0 and stopped, you can execute the same session (time value) by pressing the [START/RESUME] button again. This will recall the timer value and display it. At this point, you have two options. The first being the ability to change the value by using the [INCREASE] or [DECREASE] buttons and the second being the ability to use the same value and starting the event again by pressing the [START/RESUME] button.

LE 242 Digital Timer



The L&R Digital timer controls the operation of the Ultrasonic cleaning machine and its options. There are three sections of control; Main Power, Timer, Heat.

The Main power on / off switch: Located on the rear panel of the machine near the line cord and fuse holder. This switch controls the main power to the unit. When this switch is in the on position it is illuminated and the yellow standby light, on the front panel, is lit (item 2).

Timer Section: The timer section controls the Ultrasonic operation of the machine. There are five different selectable predefined timer settings (6, 12, 20, 30, 60 minutes). The timer set button (Item 1) is in the center of the time selection indicator lights (Item 3) just below the yellow standby indicator light (Item 2).

Pressing the timer button once, when the unit is in standby mode will start the ultrasonic cleaner and select an operating time of 6 minutes. If the Timer button is pressed again a second time then the 12 minute indicator will light and the unit will then run for 12 minutes and turn off when done. If the timer button is pressed while the machine is operating the next time interval is selected and the machine will continue to operate until the end of this preset time. Pressing the timer button will increment the time interval from 6 to 12 to 30 to 60 and then to Standby (off). The time indicator light remains lit until the end of the cycle.

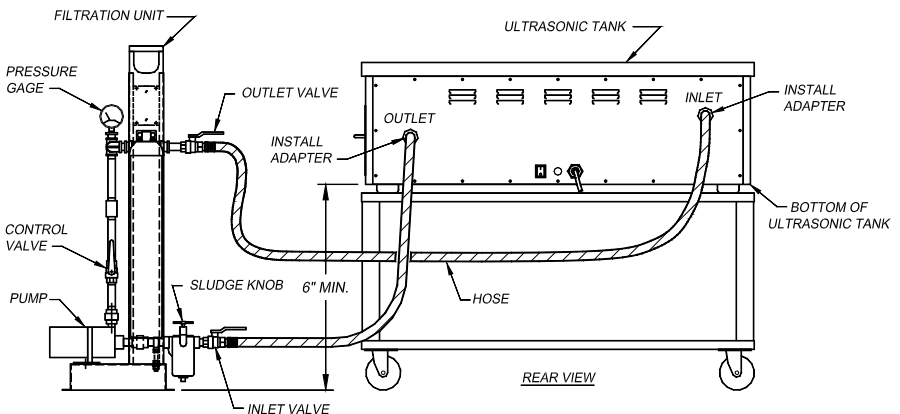
Heater Section: The heater section has the Heater Push Button (Item 4) and a Red indicator light (Item 5). The light is active when the heater circuit is energized. The Heat remains on until the button is pressed again and the indicator light goes off. If the unit has not had any buttons pressed for 2 hours the heat turns off as a safety precaution. **Heat should not be left on unattended.** The operator should not rely on this automatic feature to turn the heat function off automatically - this feature is for safety only.

The main power switch is intended to be turned off when the machine is not in use. None of the Digital timer functions will work if the main power switch is in the off position.

OPTIONAL FILTRATION UNIT

INSTALLATION INSTRUCTIONS

1. Ultrasonic tank should be empty prior to Filtration Unit Installation.
2. Position the filtration unit on a level surface at the back or side of the Ultrasonic unit. It is imperative that the pump location be at least 6" (min) lower than the bottom of the Ultrasonic tank.
3. Install hose adapters on tank Inlet and Outlet. Remove pipe caps. Put Teflon tape on pipe threads and Install hose adapters (Qty = 2)
4. Install the hose (supplied) from the bottom outlet marked "Outlet" of the ultrasonic tank to the inlet valve (lower section) of the filtration assembly.
5. Install the other hose (supplied) from the upper inlet marked "Inlet" of the ultrasonic tank to the outlet valve (upper section) of the filtration assembly.
6. Check the main filter (see cartridge change section).
7. Check to make sure the sludge knob is tight and does not leak. Turn knob clockwise to tighten.
8. Slowly open the 3 valves on the filter assembly . Handles should be "in-line" with the pipes.
9. Plug the line cord to a suitable outlet .
10. Allow the pump 5 to 10 min to prime. A continuous solution flow should be visible inside the tank. Adjust control valve to eliminate excessive air bubbles in the solution.
11. Check pressure gage. With new filter, the pressure should be from 3.5 to 4 psi. Dirty or clog filter register at 6 to 7 psi (with 3 valves open).

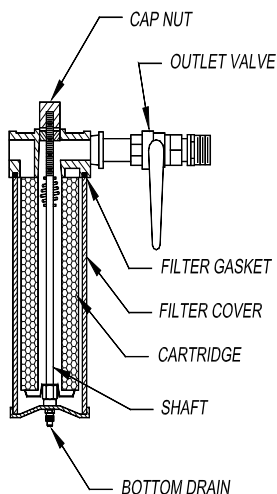


Warning: Disconnect power cord before servicing equipment

OPTIONAL FILTRATION UNIT

CARTRIDGE CHANGE

1. Close "outlet" valve. Drain pressure by opening bottom drain. Turn clockwise to open drain.
2. Loosen cap nut (turn counter clockwise) slightly to admit atmospheric air to aid drainage. Do not remove cap nut until housing is fully drained.
3. Remove cap nut. Separate filter cover from filter head. If filter cover sticks to underside of the filter head, tap gently to "break" it loose.
4. Discard the used cartridge and install a new one.
5. Examine filter gasket for deterioration and positioning. If gasket is worn or twisted, replace it. Install the new gasket into the filter groove gently (Do not stretch the gasket) .
6. Lubricate the threaded section of the shaft.
7. Reassemble the filter cover to the filter head .The top edge of the filter cover should fits properly in the groove of filter head.
8. Tighten cap nut (turn clockwise) until it does not leak (approx 15-20 foot pounds of torque). Close bottom drain (turn counter clockwise).
9. Open outlet valve slowly. Check for leaks. If a leak appears, close the outlet valve, open the bottom drain (turn clockwise) to relieve the pressure then repeat steps 5-9.



Warranty Information

Please record:

Serial # _____

Purchase Date _____

Model _____

Dealer _____

Your LE Series Ultrasonic Cleaner has been carefully manufactured and has met strict quality assurance requirements. L&R Manufacturing Co. warrants this product for a period of one year from the date of purchase to be free of defects in material and workmanship. Machines will be repaired free of charge to the customer during the warranty period.

This extensive warranty does not include damage or product failure resulting from tampering with any of the components, misuse, negligence, alteration, or water damage. Any claim for damage or breakage in transit should be made at once against the carrier.

THE FOREGOING IS IN LIEU OF ANY EXPRESSED OR IMPLIED WARRANTIES. INCLUDING WITHOUT LIMITATION ANY WARRANTIES OR MERCHANTABILITY OR FITNESS FOR USE.

C/N 85010 REV. G



REVISION HISTORY

C/N 85010

REVISION	ECN#	DESCRIPTION	APPROVED	DATE
D	8294	SEE ECN	J.P.M.	01/22/2007
E	8316	REVISED SHEET 4, SEE ECN 8316.	J.P.M.	01/24/2007
F	8725	REVISED SHEET 3 2000M WAS 2000Ft	J.P.M.	11/17/10
G	8839	SHEET 4 ADDED CHEMICALS	J.P.M.	5/17/12