Crystal Clean®

OPERATIONAL & INSTRUCTION MANUAL

Model 2734-65
(208V–240V, 1Ø, 3 wires)

Crystal Clean

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SAFETY REQUIREMENTS

PLEASE NOTE

All personnel must read this user guide before attempting to install, operate, maintain, or service this parts cleaner unit

HAZARDS

- High voltages are present, ALWAYS disconnect unit from power source before attempting any maintenance or service procedure.
- Hot water; do not place unprotected hands in tank. Use baskets with tongs or proper rubber gloves to insert or remove parts from tank.
- Read MSDS sheet for cleaning agents recommended for the system. Note the requirements for personal protection listed on the MSDS.
- Make sure the equipment is properly installed in accordance with all electrical codes.
- Never operate this equipment in an ungrounded condition.
- Never attempt to perform maintenance when cleaning solution is hot.
- Never open equipment or attempt service/warranty related repairs without first contacting Crystal Clean for safe and proper procedures.

SAFE OPERATION

- Do not immerse hands or other body parts in the ultrasonic tank. Cleaning agents and contaminants can cause skin irritation and exposure to high intensity ultrasonic energy should be avoided.

- Do not operate system using volatile, explosive, combustible, or acidic liquids (pH less than 7). Unauthorized cleaning agents, not approved by Crystal Clean, will invalidate warranty, and may cause damage to the system.

- Do not rest parts on the bottom of the tank. A basket that stands off the bottom of the tank is mandatory for all parts; non-compliance will result in severe tank erosion and void the warranty.

- Do not operate the system unless the tank is full. Operating at less than full capacity may result in damage and void the warranty.

- Do not open machine, dissemble any part(s), move, or remove any components or electrical devices.

- Do not connect the equipment to any other power supply than what is specified on the serial tag of the tank, (208V-240V, 1Ø, 3 wires).

- The generators contain high voltages and should be maintained in a clean, dry environment at all times.

- Do not move the cleaning system without draining the tank and disconnecting the unit from the power supply.

- Operating temperatures of the solution require protective clothing and equipment to protect against the possibility of scalds following accidental spills.

- Make sure that the sound levels experienced in your environment are known, and wear hearing protection if necessary. Ultrasonic energy produced by the system is measurable by sound meters and OSHA sound restrictions may apply.

- Do not leave the ultrasound on or leave parts in the tank longer than necessary. This can result in erosion of the part surface and/or the bottom of the tank.

- Do not allow moisture to build up inside the unit, this can cause electrical shorts and corrosion of the ultrasonic transducers.

- Do not run the “filtration” cycle while the ultrasonic cleaning cycle is running (except if using the cooler flush system). Both should not run at the same time. Filter periodically after the cleaning cycle or when oils/debris are visible on the surface.

INSTALLATION & INITIAL SETUP

- Receiving- Inspect packaging and unit carefully to ensure there has been no damage in shipping. If there is damage, contact the carrier immediately to process a claim.

- Place the unit in a well-ventilated area on a flat level surface.

- Lock the casters in place and use the leveling devices located on each side of the unit if surface is not level.

- If the unit is equipped with optional oil skimmer, insert stainless steel belt over both pulleys and attach assembly to rear tank using the two screws attached. Push drain tube over collection trough and run into collection bucket.

- Remove filter canisters located on the side of the unit using the special tool to loosen the collar and remove canisters. Insert filter elements (size is stamped on side of filter, typically 125 & 50) into the correct canister (larger filter in rear canister, smaller filter in front canister). Carefully reattach canisters to housings (be careful not to damage O-rings), hand tighten the collar while holding the canister in place to ensure a tight fit, use tool to snug canister, do not over tighten.

- An optional drain shelf can be fitted to the tank side without filtration.

- Make sure drain valves are closed and then add water and cleaning agent (typically 6 gallons approved soap for general purpose cleaning) to the main tank. When the main tank is full the water will cascade over the weir into the rear overflow tank; continue adding solution until the level in the overflow tank is ~3" below the top of the weir.

- Use only Crystal Clean approved cleaning agents and be sure you use the proper, recommended concentrations (6 gallons = general purpose cleaning).

- **CHECK YOUR POWER SUPPLY BEFORE CONNECTING TO THE UNIT (record readings on Warranty Registration - page 15).** The system is designed to operate with 208V – 240V, 1 phase, 3 wires, 40 amp, and 60 Hz power supply. Colored wires (2) = hot wires & Yellow/Green wire = ground.

- Push green **POWER ON** button, **MAIN POWER** & **CONTROL POWER** lights will display green.

- Operating temperature is pre-set @ 160°F (70°C) on the **TEMP CONTROL**. To manually turn on heat turn the **HEATER** switch to MAN position (pointing right). Initial heat-up time using cold water is approximately two hours. For automatic heating see **7-Day Programmer – Heat** (page 7).

- When operating temperature of 160°F is reached, set **Ultrasonic Timer** to 15 minutes, and push green **Ultrasound ON** button. This process, known as degassing, will remove air from the bath, which is required for effective cleaning. During this degassing phase, some squeaking sounds may occur, this is normal.

- Generators have been tuned and preset at the factory, but you should double check the generator settings. When the unit has reached operating temperature turn ultrasonics on and open the front, lower cabinet door using the special key provided. Use the Power P+ P- buttons to fine tune the intensity to fit your application. For less intensity, for more sensitive materials, you can adjust the intensity down using the Power P- button on the generators (less LED lights = less aggressive action).

- The unit is now ready to clean parts, see NORMAL OPERATION procedures.

SYSTEM OPERATION - CONTROL PANEL

- **Power ON**: This button controls the main power into the unit; this button must be ON to operate any other functions of the unit.

- **Power OFF**: This button shuts OFF the power to all functions.

- **Ultrasound On**: This button turns ultrasonics ON.

- **Ultrasound Off:** This button manually turns ultrasonics OFF.

- **Heater**: This switch turns heat manually ON (pointing to the right) and automatically ON (pointing to the left).

- **Filtration**: Switch turns ON/OFF the pump to sparge the oils from the top layer of the water and filter the solution. **NOTE: Filtration** switch should not be ON while the **Ultrasound** is ON. This will hamper the cleaning action.

- **Ultrasonic Timer:** To change cleaning time, press the ← button, and then use the ↑↓ to set time (e.g., 10 minutes = 00:10).

- **Temp Control**: Controls the temperature of the solution- operating temperature should be 140°F - 1605°F. Factory set @ 160°F, this setting is thermostatically maintained and should only need to be re-set if process or materials being cleaned change. To change temperature, press the ← button, and then use the ↑↓ to set.

- **7-Day Program**: This control allows operator to program the on/off of the heating cycle to correspond to the work hours.

- **Main Power/Control Power**: These lights illuminate green when the **Power ON** button is pushed indicating power to the other functions.

- **Low Water:** This light illuminates red when the liquid level in the main tank or overflow tank is low and water needs to be added to the tank. When the **Low Water** light is illuminated it shuts off power to the heater, filtration, and ultrasonics until water is added to the proper level.

GENERATORS (located behind lower cabinet doors)

- **Main Power ON/OFF switch (black): Controls** generator power ON/OFF. Switch should be in "ON" position for ultrasonics to run.
- **Power, P+ P-:** Ultrasonic output power, can be adjusted to suit cleaning objectives.
- **Power Level (red LED display):** Direct visual reference of ultrasonic power output
- **Time, T+ T-: Not** applicable, time controlled by digital timer on control panel.
- **On/Off Ultrasonic: Turns** ultrasonic generator on/off.
- **On/Off Sweep: Sweep** Mode provides a slight ± variation in ultrasonic frequency.

7-DAY PROGRAMMER - HEATER

Setting Current Time (military) & Day:

- Set Military Time: Hold CLOCK and Press HOUR until correct hour appears, Hold CLOCK and Press MIN until the correct minute appears.
- Set Day: Hold CLOCK and Press DAY until the correct day appears.

Setting 7-day timer:

Heater ON

- Press SET, "1" appears with "ON" above (function 1 when heat will turn on).
- Press DAY until the correct day(s) that you want the heat on appears.

  Example: If you want the heat to come on at the same time Monday through Friday, Press DAY until the 5 days appear on the top of the screen, MO TU WE TH FR.

  Example: If you want the heat to come on every day at the same time Press DAY until the 7 days appear on the top of the screen, MO TU WE TH FR SA SU

  Example: If you want the heat to come on Monday Press DAY until only MO appears at the top of the screen.

- Press HOUR to set the hour that the heater will start for the days displayed.
- Press MIN to set the minute that the heater will start for the days displayed.

Heater OFF

- Press SET, “OFF” appears above the “1”.
- Press DAY until the correct days that you want the heat off appears.
- Press HOUR to set the hour that the heater will shut off for the days displayed.
- Press MIN to set the minute that the heater will shut off for the days displayed.

Note: You have 8 functions that you can use to customize your heat schedule. Each function is programmed the same as above, select the day, select the heat ON time, and select the heat OFF time.

Once you have completed your programming.
- Press CLOCK which returns you to the main screen.

Activate Automatic Heat Control:

Move the AUTO switch to the ON position and back to the AUTO position. **The heater** switch should illuminate green in the AUTO position (pointed to the left).

Resetting the unit:

If the timer is not responding to your programming, it may need to be RESET. Use an open paper clip and insert, push gently and release. This will fill the screen with numbers and your programming can proceed as normal.

Manual Heat Control:

At any time, you can turn on heat manually by turning the green **Heater** switch to the MAN position (pointing to the right). Remember, the **Heater** switch needs to be in the AUTO position (pointing to the left) for the automatic heat to operate.

Note: The controller has a battery backup to ensure that your programming is unaffected by power outages or unplugging the unit. Pull out the plastic tape to activate battery backup.

NORMAL OPERATION

- Make sure the solution is at operating temperature.
- Arrange parts in basket & lower basket into solution.
- Select time on **Ultrasonic Timer** & push green **Ultrasound On** button.
- Close the lid when not loading/unloading parts.
- When ultrasound turns OFF, turn ON **Filtration** switch to skim off any surface oils & contaminants into the overflow tank.
- Turn OFF **Filtration** switch & remove basket.
    - **NOTE: Parts** are hot, use proper protective equipment to prevent exposure.
- **OPTIONAL COOL FLUSH SYSTEM**
    - Attached hose to end of cooler flush valve (3/4”) and attach other end of hose to cooler.
    - Submerge cooler in main tank.
    - Close spray bar valve and open cooler flush valve
    - Turn on ultrasonics and filtration at the same time (there may be some squeaky noises, this is normal)

MAINTENANCE

- Preventative - There is a minimum of preventive maintenance required.
    - The overall environment around the unit needs to be kept clean, dry and dust free.
    - Heating elements (2) and Low-Level Sensors (2) need to be checked quarterly to ensure no leakage:
        - Disconnect machine from power source.
        - Remove upper side panels and check for leakage around heating elements (one of each side) and LLS (one in each tank).
        - If necessary, tighten bolts to snug, do not overtighten.
- Daily - Water level in overflow tank should be checked and added to in order to maintain proper level (~3" below weir).
- Routine - Both *Filter Elements* should be replaced when the pressure gauge indicates an increase in pressure or the flow from the spray bar located in the front of the main tank is slowed. Most users regularly replace their filters each month to avoid any decrease in flow. The solution should be replaced regularly to avoid a drop in cleaning performance that will result from too many contaminants in the solution. Crystal Clean will replace filters and cleaning solution during service.
- **NOTE: Consult** your Pro Ultrasonics representative for recommended schedule for filter and solution changes based on your application.

EQUIPMENT CLEANING

- Push **Power OFF** button (all control lights should be OFF).
- **DISCONNECT UNIT FROM POWER SUPPLY.**
- Wait a minimum of 15 minutes before draining contaminated solution from the tanks (this enables heating element to cool and prevent damage)
- Drain both tanks, **NOTE:** Solution is hot and may be contaminated; protective clothing and equipment should be used to prevent any exposure.
- Remove and clean metal pre-filter located in rear, overflow tank.
- Rinse the inside of the tanks with clean, clear water.
- Clean Low-Level Sensors (one in each tank) and ensure proper operation (donut slides up and down easily on shaft)
- Wipe off heating elements to ensure that contamination and corrosion do not build up on surface, decreasing effectiveness and life expectancy.
- Wipe down the inside of tanks with a clean, soft cloth. Do not use any abrasive pads or cleaners. These kinds of cleaners can scratch the tank surface and void warranty.
- Wipe work and outside surfaces with a dry, clean, soft cloth.
- When changing filters, remove solution from front/cleaning tank until water level is below spray bar. Use the special tool to loosen collar on top of canister. **NOTE: Canisters** and solution are hot and may be contaminated; protective clothing and equipment should be used to prevent any exposure. Replace filters with the correct micron filter and carefully hold canister in place while tightening the holding collar, do not overtighten.
- When discarding contaminated solution and filters follow all local, state, and federal environmental and regulatory requirements.
- Follow installation instructions listed earlier for refilling and start up procedures.

MAXIMIZING ULTRASONIC PERFORMANCE

- Temperature - Temperature has a dramatic effect on the cleaning performance and time needed to clean a part. The recommended temperature range is 140°F to 160°F. Temperatures below or above can decrease the ultrasonic action. Consideration needs to be given to the cleaning agent used when determining the proper temperature. **NOTE: Always** check the MSDS for the cleaning agent and note its boiling point or flash point. Operation near or above the boiling point/flash point is hazardous and can cause noxious fumes.

- Cleaning Agent - Cleaning agents can enhance or decrease the performance of the ultrasonic action and speed of cleaning. Always use Crystal Clean recommended cleaning agents at their proper concentrations.

- Degassing - Liquids containing air and dissolved gases can interfere with the formation of cavitation bubbles necessary for ultrasonic cleaning. Follow the procedure in the installation section to ensure liquid is ready for cleaning.

- Part Exposure - In order for a surface to be cleaned, it must be exposed to the liquid. This requires proper placement of the parts in the basket. Do not overload baskets with small parts that prevent the middle layers from getting proper exposure to the liquid. Also, improper placement of parts with blind holes or cavities can result in air pockets, where no cleaning action occurs. In general, clean large numbers of parts a few at a time using shorter cleaning cycles.

- Contaminated Solution - As contaminants build up in the solution the ultrasonic performance drops. The cavitation bubbles waste their energy imploding on the contaminants and not on the part surface. It is important that you change the solution on a regular basis.

- Parts Materials and Contamination - Certain materials absorb ultrasonic energy, generally these are soft materials like rubber, fabric, gaskets, and heavy grease. Ultrasonics is extremely effective with a hard surface to impact against. Therefore, parts contaminated with heavy amounts of grease or soft materials should be pre-cleaned prior to exposure to the ultrasonic tank.