IST International Surface Technologies

ISTpure
BEYOND THE SURFACE

ULTRASONIC WASHER MODEL UC-2013D

ACCESSORIES INCLUDED / OPTIONAL

- ✓ Full Length Basket
- ✓ Heavy-Duty Gloves (optional)
- ✓ Soap & Cleaning Agents (optional)
- ✓ Instruction Manual

- ❍ Warranty
- ❍ Safety
- ❍ Operation
- ❍ Service Parts
- ❍ Accessory Information
- ❍ Registration Form

INSTRUCTION MANUAL

2022-06-28

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SAFETY REQUIREMENTS

PLEASE NOTE

All personnel must read this user guide before attempting to install, operate, maintain or service the ISTpure Ultrasonic Cleaning Equipment.

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 equipment is 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 ISTpure for safe and proper procedures.

TECHNICAL SPECIFICATIONS

DESCRIPTION	DATA
Total liquid capacity	23 gal
Ultrasonic power	2 400 W peak / 1 200 W average
Heat power	1 000 W
Electrical requirements	110 V / 20 A / 1 Φ or 220 V / 20 A / 1 Φ
Cleaning tank (L x W x H)	20" x 13" x 14"
Overflow tank (L x W x H)	20" x 6" x 14"
Overall dimensions (L x W x H) (with open lid)	52" x 30" x 59"

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 IST, will invalidate warranty and may cause damage to system.
- Do not rest parts on the bottom of tank. A basket that stands off the bottom of the tank is mandatory for all parts; noncompliance will result in severe tank erosion and void the warranty.
- Do not operate the system unless the tank is full of water (minimum liquid level line on back wall of tank, 2" below top of tank wall). Operating at less than full capacity may result in damage and void the warranty.
- Do not open up machine, generator, dissemble any part(s), move or remove any components or electrical devices.
- Do not connect the tank to any other power supply than what is specified on the serial tag of the tank (110V).
- The tank/generator contains 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 requires 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 or generator, this can cause electrical shorts and corrosion of the ultrasonic transducers.

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.

Unit is equipped with a lid that opens to form a drain shelf, attach the bracket to the side of the unit using a 4mm hex wrench and screws attached. Make sure the black rubber pads are facing up and insert metal stick under the bracket to support the shelf.

If 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.

Remove lower tank panel below filter canisters to expose pump. Remove fill plug and fill pump with water to prime, replace fill plug and tank panel.

Make sure drain valves are closed and then add water and cleaning agent (typically 2 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 Pro Ultrasonics approved cleaning agents and be sure you use the proper, recommended concentrations (2 gallons = general purpose cleaning).

Check your power supply before connecting unit. The system is designed to operate with 120 V, 20 A, and 60 Hz power supply. Blue & Brown wires = 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 6).

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.

Generator has been tuned and preset at the factory, but you should double check the generator settings. When unit has reached operating temperature turn ultrasonics on and open the front, lower cabinet door using the special key provided. Use the Power Control knob 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 Control knob on the generator (less LED lights = less aggressive action).

Unit is now ready to clean parts, see NORMAL OPERATION procedures.

Fill out WARRANTY REGISTRATION form, page 11 (serial # plate located on side panel of unit) and send back to ISTsurface to ensure activation of your warranty.

SYSTEM OPERATION

TANK CONTROL PANEL (IN FRONT)

(A) **Power On:** This button controls the main power into the unit, this button must be ON to operate any other functions of the unit.

(B) **Power Off:** This button shuts OFF the power to all functions.

(1) **Ultrasonic On:** This button turns ultrasonics **On**

(2) **Ultrasonic Off:** This button turns ultrasonics **Off**

(3) **Heater:** This switch turns heat manually **Man** (pointing to the right) and automatically **Auto** (pointing to the left)

(4) **Filtration:** Switch turns **Off/On** the pump to sparge the oils from the top layer of the water and also filter the solution. ***NOTE: Filtration switch should not be ON at the same time that the Ultrasound is ON. This will hamper/reduce the cleaning action.***

(5) **Ultrasonic Timer:** To change cleaning time, press the◀ button, and then use the ▼▲ to set.to set time (e.g. 10 minutes = 00:10).

(6) **Temp Control:** Controls the temperature of the solution- operating temperature should be 140 °F - 160 °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) **7-Day Program:** This control allows operator to program the on/off of the heating cycle to correspond to the work hours.

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

(10) **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.

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. **(example: 0900 is 9 a.m.)**
- **Set Day:** Hold **CLOCK** and Press **DAY** until 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 everyday 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.

7-DAY PROGRAMMER - HEATER (CONT'D)

SETTING 7-DAY TIMER (CONT'D):

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. 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) in order 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 solution is at operating temperature.
- Arrange parts in basket & lower basket into solution.
- Select time on Ultrasonic Timer & push green Ultrasound On button.
- Close 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.

GENERATOR

(LOCATED AT THE BOTTOM) (use the special key to open the trap )

1. **Main Power ON/OFF switch**: Controls generator power on. Switch should be in "ON" position (push down) for ultrasonics to run.

2. **Power Control:** Ultrasonic output power, can be adjusted to suit cleaning objectives

3. **Power Level** (**red LED display**): Direct visual reference of ultrasonic power output

4. **Time** (-, +): Not applicable, time controlled by digital timer on control panel

5. **Mode**: Diagnostic program to check functions of the generator

6. **Overload, Amp, Scan, Time, kHz**: Call tech services for specific instructions/use, displays the value in kiloHertz (kHz).

7. **Start /Stop:** Not applicable, start/stop controlled by digital timer on control panel

MAINTENANCE

Preventive – There is a minimum of preventive maintenance required.

- The overall environment around the unit needs to be kept clean, dry and dust free.
- Heating element & Low Level Sensors (2 pc, 1 in each tank) needs to be checked quarterly to ensure no leakage:
  - Disconnect machine from power source
  - Remove side panels and check for leakage around heating element and LLS.
  - If necessary, tighten bolts to snug, do not over tighten

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 of flow. Solution should be replaced regularly to avoid a drop in cleaning performance that will result from too many contaminants in the solution.

NOTE: Consult your IST representative for recommended schedule for solution change based on your application.

EQUIPMENT CLEANING

- Push all control buttons **OFF**.
- Turn off main power switch on back of machine.
- **DISCONNECT UNIT FROM POWER SUPPLY**, all lights should be off.
- Wait a minimum of 15 minutes before draining contaminated solution from the tank (this enables heating element to cool and prevent damage).
- Drain tank using the drain valve,
  NOTE: Solution is hot and contaminated, protective clothing and equipment should be used to prevent any exposure.
- Remove and clean metal pre-filter located in rear tank.
- Rinse the inside of the tank with clean, clear water.
- Wipe down the inside of tank 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. Drain filter canisters and 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 over tighten.***
- When discarding contaminated solution 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 (70°C). 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.

- **CleaningAgent**
  Cleaning agents can enhance or decrease the performance of the ultrasonic action and speed of cleaning. Always use IST approved 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 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 parts 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.

SERVICE & WARRANTY PROCEDURES

NOTE: DO NOT OPEN EQUIPMENT OR ATTEMPT ANY SERVICE OR WARRANTY RELATED WORK BEFORE CALLING PRO ULTRASONICS

Our service tech will help troubleshoot any problem and instruct user on the safe and proper procedures for repairs.

SUPPLIES AND SPARE PARTS

For ordering supplies, accessories, or spare parts:

Visit our website, istsurface.com

Call to place your order: 1 877 629-8202 or email: info@istsurface.com

ISTPURE LIMITED WARRANTY

IST warrants all equipment led in this manual which is manufactured by IST and bearing its name, to be free from defects in material and workmanship on the date of sale by an authorized IST dristibutor to the original purchaser for use. Notwithstanding any special, extended or limited warranty published by IST will, for a period of TWELVE (12) months from the date of sale, repair or replace any part of the equipment determined by IST to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with IST 's written recommendations.

This warranty does not cover, and IST shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non- IST component parts. Nor shall IST be liable for malfunction, damage or wear caused by the incompatibility with IST equipment with structures, accessories, equipment or materials not supplied by IST , or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by IST .

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized IST dristibutor for verification of the claimed defect. If the claimed defect is verified, IST will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser, transportation prepaid. If the inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

IST 's sole obligation and the buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought forward within one (1) year of the date of sale.

IST MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY IST . These items sold, but not manufactured by IST (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. IST will provide the purchaser with reasonable assistance in making any claim for breach of these warranties.

LIMITATION OF LIABILITY

In no event will IST be liable for indirect, incidental, special or consequential damages resulting from IST supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of IST , or otherwise.

Report all accidents or "near misses" which involve IST products to :
- Technical Assistance

The following items are not covered under the IST warranty policy :
- Parts or chassis replacement due to normal wears.

Report all accidents or negligence involving IST products to our Service Department :

1 877 629-8202

ABOUT THE COMPANY

WHO WE ARE

IST is a leading manufacturer of equipment for the surface treatment industry and the solvent recycling industry. Our extensive line of equipment includes batch units and automated machines designed to achieve the highest manufacturing standards.

MISSION

IST works tightly with their customers to transform industrial processes to improve their quality, productivity, and environmental footprint.

OUR SERVICES

- Custom Design & Fabrication
- Installation & Startup
- Preventative Maintenance Program
- Private Labels
- Testing Lab
- 24/7 Technical Support

INDUSTRIES WE SERVE

- Aerospace & Aviation
- Aluminium Smelters
- Automotive
- Construction & Civil Engineering
- Flexography (labelling) & Lithography
- Foundry & Forge
- General Manufacturing
- Military
- Power & Energy
- Rail & Mass Transit
- Shipyards
- Wood finishing

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