



# USER MANUAL

## 23NL SERIES PARTS WASHER WITH RECYCLER



**UNI-RAM CORPORATION • ONTARIO • CANADA**

NOTE: APPEARANCE MAY NOT BE EXACTLY AS SHOWN

2020-03-20

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## A. REGULATORY INFORMATION

This model is tested and certified by Electric Testing Laboratory (ETL) under all applicable UL and CSA standards for use in non-hazardous locations. However, to ensure safe and effective operation, this unit must be installed, used and maintained according to the instruction, cautions and warning provided in this manual as well as in the labels affixed to the unit.



### CAUTION

**IMPORTANT INFORMATION:** Install, operate, and maintain this equipment in accordance with the instructions in this manual to prevent the risk of fire or explosion. This unit is for use in atmospheric temperature between **41°F (5°C)** and **95°F (35°C)** environment with proper ventilation. Under these conditions, the unit shall be spaced from receptacles, switches, pilot lights, fixtures, contacts, and other equipment that can produce sparks or high temperature. If the equipment is used in higher ambient temperatures, an increase in spacing to sources of ignition shall be considered. This unit has only been investigated for use with non-flammable solvent with its flash point between **100°F to 143°F (37.8°C to 61.6°C)** and Autoignition Temperature **392°F (200°C)**.

### CAUTION

NON-FLAMMABLE SOLVENT, PARTICULARLY MINERAL SPIRITS (Aliphatic Hydrocarbon) MAY BE HARMFUL IF SWALLOWED OR INHALED, AND CAUSE IRRITATION. Keep away from heat, sparks, and flame. Avoid contact with eyes, skin and clothing. Avoid breathing vapor. Use with adequate ventilation. Wash thoroughly after handling.  
EFFECTS OF OVEREXPOSURE: Contact may be irritating to skin, eyes, nose and throat. Ingestion may cause nausea, vomiting, diarrhea, dizziness or unconsciousness.  
FIRST AID PROCEDURES: Get medical attention immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, gently flush eyes while holding eyelids apart. Wash exposed skin with soap and water. If swallowed do not induce vomiting, place person on left side with head down. In all cases contact a physician.

### CAUTION

To reduce risk of electrical shock, connect only to a properly grounded, grounding-type receptacle. **Unit should be installed on a dedicated 20 ampere circuit breaker.**

### WARNING

**WARNING:** To avoid burning, do not touch Clean-out Cap which is hot during recycling process.

**WARNING:** Do not open Drain Valve during recycling process, or the vacuum may leak or the hot solvent may flow out from the Drain.



## B. INTRODUCTION

Thank you for purchasing Uni-ram 23NL Series Recycling Part Washer. Every machine has been fully tested for compliance with Quality Assurance Standards. This model is certified by Electric Testing Laboratory (ETL) under UL and CSA standards for use in non-hazardous locations.



Follow the instructions on preparation, operation and maintenance to operate this machine safely and effectively. Ensure that this manual is readily available to the operator at all times. Uni-ram holds patents on designs used in its innovative products. If you have any questions about the operation of this machine, contact:

**North America:**  
**Uni-ram Technical Service**  
**1-800-417- 9133**

**Other Continents:**  
**Contact Your Supplier**

### THE ADVANTAGES OF 23NL

- Clean solvent is available “on demand” every day. The parts washing operation becomes much more pleasant and effective.
- With the press of a button (shown on page 11.), the contaminated solvent is drained out and 5 gallons (18.9 Liters) of clean solvent are supplied in about 3 to 4 minutes, during which time the parts washing operation is disabled.
- The unit produces about 6 gallons (22.7 Liters) of clean solvent in about 4 hours without interrupting parts washing operation.
- Waste sludge is discharged into a waste container by operating the drain valve.
- Dramatic savings in solvent purchase and disposal cost are achieved while improving quality of cleaning operation.
- Minimizes potential liability for inappropriate storage, handling and transportation of hazardous waste.
- Enhances compliance with environmental laws and regulations as well as improving waste management status.
- Considerable reduction of need for waste recovery services and prevention of classification as a waste generator.

### PURE SOLVENT AT ALL TIMES

Uni-ram model 23NL provides users with clean solvent every day, by removing all contaminants from the waste solvent. The 23NL is designed to work using the vacuum distillation technology thereby lowering the boiling point of contaminated solvent. Clean solvent is readily available at all times by just pressing a button. This totally eliminates the need of waiting for weeks for the Waste Hauler to deliver new solvent and disposal of old solvent. The great advantages provided by 23NL are expected to help improving the environment of our world.

## C. CAUTIONS AND WARNINGS

**Your safety and the safety of others are very important.**

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.

 This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

 **DANGER**

You can be killed or seriously injured if you don't immediately follow instructions.

 **WARNING**

You can be killed or seriously injured if you don't follow instructions.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

- **IMPORTANT INFORMATION:** Install, operate, and maintain this equipment in accordance with the instruction manual to reduce the risk of fire or explosion. This unit is for use between **41°F (5°C) to 95°F (35°C)** environment with proper ventilation. Under these conditions, the unit shall be spaced a minimum 6 feet (1.8 meter) from potential sources of ignition such as electrical receptacles, switches, pilot lights, fixtures, contacts, and other similar equipment that can produce sparks. If the equipment is used in higher ambient temperatures, an increase in spacing to sources of ignition shall be considered. This unit has only been investigated for use with mineral spirits (aliphatic hydrocarbon).
- Do not install, operate or maintain this equipment where the autoignition temperature of the hazardous atmosphere(s) is lower than **452°F (252°C)**.
- The operator should wear protective clothing in accordance with local safety and environmental regulations, with a minimum of face goggles and gloves along with an apron and respirator if required.
- Always turn off or disconnect the power supply before performing service work.
- To enhance the safety, make sure that the electric receptacles are located at least 50cm (18 inches) above floor level and as far from the unit as the length of power cord allows.
- Make sure that extremely volatile chemical such as **NITROCELLULOSE** which automatically ignites at **275°F to 330°F (135°C to 166°C)** is not accidentally introduced into the cleaning solvent being used.
- This equipment is designed to be used only with non-flammable solvent (combustible solvent) with flash point between **100°F to 143°F (37.8°C to 61.6°C)** and autoignition temperature higher than **392°F (200°C)**. Do not use flammable or explosive solvents in this equipment. (Refer to the section SOLVENT REQUIREMENTS AND SOLVENT SELECTION: Page 11)
- This equipment is designed to work with a 110/120V AC (50/60Hz) electric supply. To avoid interference from an unstable power source, **Unit should be installed on a dedicated 20 ampere branch circuit.** To reduce risk of electrical shock, the receptacles should have a built-in GFI.

- MINERAL SPIRITS (Aliphatic Hydrocarbon) is HARMFUL IF SWALLOWED OR INHALED, CAUSES IRRITATION. Keep away from heat, sparks, and flame. Avoid contact with eyes, skin and clothing. Avoid breathing vapor. Use with adequate ventilation. Wash thoroughly after handling.
- EFFECTS OF OVEREXPOSURE: Contact may be irritating to skin, eyes, nose and throat. Ingestion may cause nausea, vomiting, diarrhea, dizziness or unconsciousness.
- FIRST AID PROCEDURES: Get medical attention immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, gently flush eyes while holding eyelids apart. Wash exposed skin with soap and water. If swallowed do not induce vomiting, place person on left side with head down. In all cases contact a physician.

### **WARNING**

- **WARNING.** Never open drain valve of Distillation Tank during recycling process. Before opening Drain Valve, make sure LCD of computer panel shows on the first Line “**READY TO RECYCLE + PRESS START 3SEC**” and on the second line “**READY TO CLEAN + PUSH PUMP BUTTON**”



**Make sure that the Drain Valve is firmly closed with the handle in horizontal position, after draining of oily residue.**

**Do not start distillation operation without closing Drain Valve or the vacuum shall not be built up and the distillation operation will be halted with error message “VACUUM TIME-OUT” shown on the first line of LCD of computer panel. At**

**this error message, the process may be stopped by pressing STOP key for 3 seconds.**

## **D. FEATURES AND BASIC INFORMATION**

The 23 series recycling parts washer combines two separate functions of parts washing operation and recycling of contaminated solvent into one single unit.

The upper half of the cabinet consists of Wash Sink and Duty Solvent Tank which holds the solvent for daily manual parts washing. The lower half is Base Cabinet Assembly in which Clean Solvent Tank, Distillation Tank, Vacuum Pump, Condenser and other functional components are housed. 23NL is designed and structured so that all major components are easily accessed for service work simply by removing Front Access Door and Back Panel.

Clean Solvent Tank, which is the most vulnerable to corrosion by water, is made of 304 grade stainless steel for a long service life.

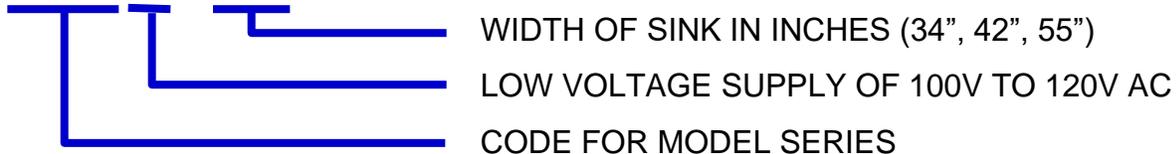
## 1) SAFETY FEATURES:

- This unit is certified by ETL (Electric Testing Laboratory) under UL standard 2208 and CSA standards C22.2 No. 88 for use in non-hazardous locations.
- **Computer Board** with CPU and 32 characters LCD is used to control all aspects of the operation including wash pump control, vacuum control, and temperature control of all critical points like the distillation tank, solvent vapor passage, and fan motor. It also has many built-in safety programs.
- **Self-Diagnostic system** constantly monitors operation status and displays status throughout the process. Status and error messages are also displayed on the Display Panel. In addition to the temperature of Distillation Tank, Vapor passage and condenser, the computer also monitors vacuum pressure and the solvent level in the Clean Solvent Tank.
- **Sink Lid is equipped with a Lid Stay with a fusible link so that the Lid will close automatically in case of fire in the sink.**

## 2) MODEL CODE STRUCTURE:

Model Codes used for designating models of Parts Washer with Automated Recycler are structured as shown below;

**2 3 N L - 3 4**

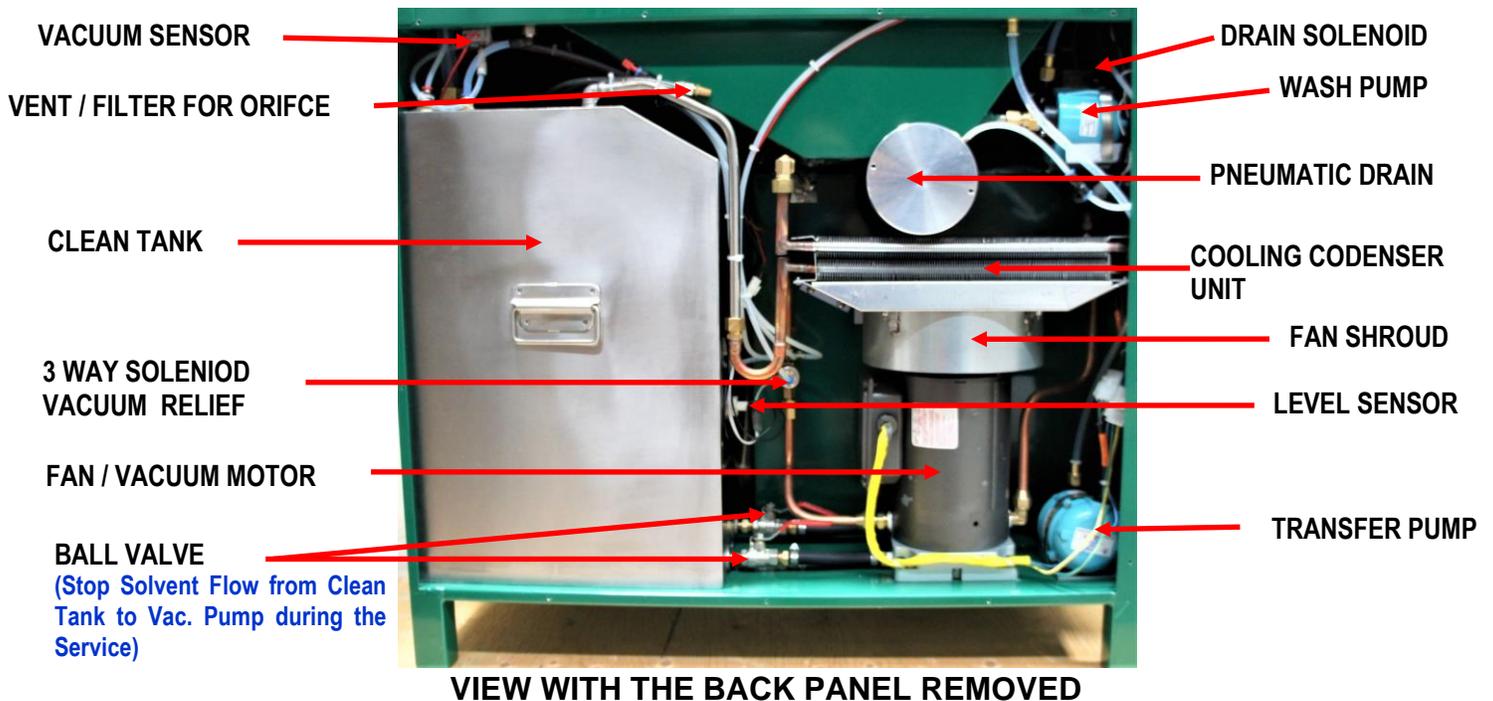
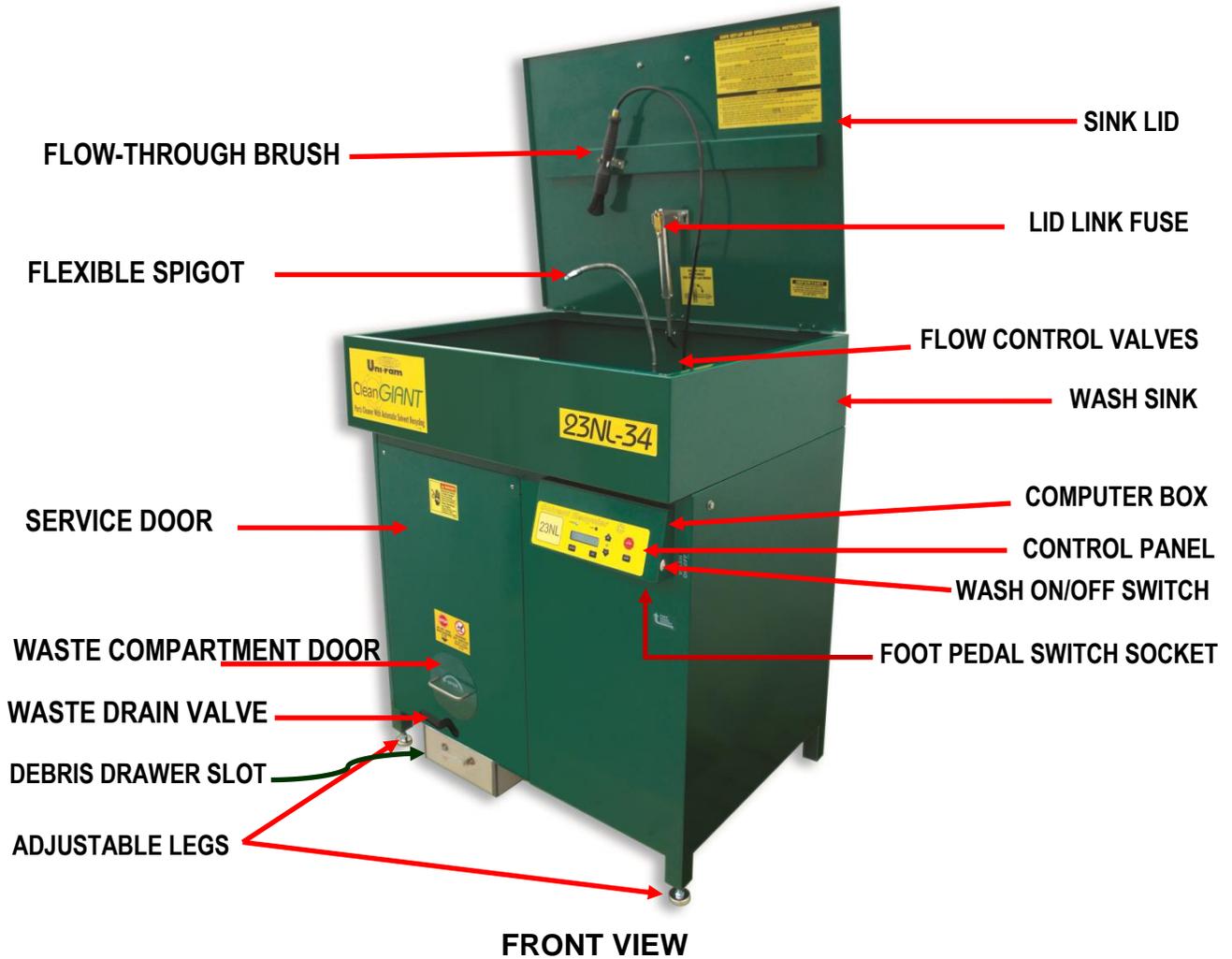


## 3) SPECIFICATIONS:

- Model: 23NL-34, Parts washer with a built-in automatic vacuum solvent distillation system.
- Electric Supply: 120v. AC, Single Phase, 60Hz, 1.5Kw, 15A. (Use 20A dedicated line.)
- Washing Tools: A Flow-through Brush and a Flexible Spigot, each with flow control valve.
- Vacuum Pump: Uni-ram Vacuum Pump with a Metal Impeller, 120v, 4.6A, 1/3HP, 3,500rpm.
- Solvent Pumps: Wash Pump and Transfer Pump, 120v. AC, 70W, each
- Heaters: 2 Cartridge Immersion Heater, 120v, 475w each, Stainless steel heath.
- Control System: A computer board with 32-character LCD, Buzzer, 2 LEDs, and 6 Keys.
- Control Sensors: Two thermo-couples, two thermostats, Vacuum Sensor, Level Sensor
- Duty Solvent Tank: Powder-painted steel, 15 Gallon capacity, Standard fill of 5 Gallons (18.9Liters) with SS Cartridge Filter on Inlet port.
- Distillation Tank: Galvanised steel, 14 Gallon capacity, Standard fill of 6 gallons (22.7 Liters), Debris Drain Ball Valve, 4.25" Clean-out Cap.
- Clean Solvent Tank: Stainless Steel 304, 30 Gallon (113.5 Liters) capacity.
- Debris Drawer: Galvanised steel, 1.05 Gallon Capacity (4 Liters), Removable.
- Wash Sink: Powder-painted steel. 34"W x 27"D x 8"H (86cmW x 69cmD x 30cmH)
- Base Cabinet: Powder-painted steel, 34"W x 24.5"D x 31"H (86cmW x 62cmD x 78.7cmH)
- Facility: Connector for Optional Foot Pedal for hands free operation.

#### 4.) CONSTRUCTION AND COMPONENTS

FOLLOWING PHOTOS SHOWS CONSTRUCTION AND MAJOR COMPONENTS



#### 4) DEFINITIONS:

➤ **Flash Point or Flash Point Temperature.**

Flash Point or Flash Point Temperature is the lowest temperature at which the vapor of a solvent can be made to ignite momentarily in air by a source of ignition. Use only non-flammable solvent with a flash point between **100°F to 143°F (37.8°C to 61°C)** in this unit.

➤ **Auto-ignition Temperature (often referred to as “Ignition Temperature” or “Ignition Point”):** The temperature at which solvent ignites by itself. The lowest ignition point of the solvent to be used in this unit is **392°F (200°C)**.

➤ **Boiling Point Temperature: (often referred to as “Boiling Point” or “B.P.”)**

The temperature at which solvent starts to boil and turn into solvent vapor. The highest boiling point of the solvent to be used in this unit is no higher than **374°F (190°C)**. This unit performs distillation under strong vacuum which is known to lower the boiling point. On the other hand, contaminants like oil and grease that go into the cleaning solvent during the cleaning operation are known to raise the boiling point depending on the extent of contamination.

➤ **Set-point Temperature.**

This unit is pre-set at factory to Set Point temperature of **338°F (170°C)**, which is the highest temperature available for distillation. This, however, does not mean the temperature of Distillation Tank always goes up to the Set Point temperature. Actual temperature of Distillation Tank displayed by LCD stays at lower level during distillation and starts rising to the Set Point toward the end of distillation process. It will reach Set Point when there is no solvent in Distillation Tank.

*Note 1. Source of information for definition of non-flammable (combustible) solvent are; The National Fire Protection Association, The US Department of Transportation, The US Environmental Protection Agency, The US Occupational Safety and Health Administration*

## E. PREPARATION

#### 1) RECEIVING INSPECTION:

➤ Carefully inspect the shipping crate and carton for any sign of transportation damage.

*Note: If any sign of damage to the external surface of packaging material is found, it is likely that the damage is inflicted to the equipment inside. If the package cannot be opened and inspected until later, make sure to add a remark on the delivery bill for the later inspection.*

➤ After removing the packaging material carefully, unload the unit from the shipping pallet.

➤ Check the unit for damage. **Report any transportation damage immediately to the carrier and your supplier. Initiate a freight claim with the carrier.**

*Note: The manufacturer is not responsible for transportation damage.*

➤ Check the Accessory Kit for the parts listed on next page. If any parts are missing, contact your supplier. Additional consumables and accessories are also listed.

➤ Debris Drawer is shipped in the Wash Sink to avoid freight damage. Unpack and install the Debris Drawer into the position below Drain Valve. (See the Front View on page 7.)

➤ Refer to the list of recommended optional device available on the next page. These devices are offered for the convenience of operator

## 2) ACCESSORY KIT:

DISCRIPTION	PART NUMBER
User Manual, ENGLISH	MNL-23NL-E
Clean-out Cap Removal Tool	230-1124
Wash Tank Drain Hole Plug	230-1532
Wash Pump Inlet Port Plug	230-1531

## 3) OPTIONAL DEVICES:

**FOOT PEDAL KIT** (Part No. 230-3460) for hands free operation

*Note; This unit is equipped with a connection port for FOOT PEDAL KIT.*

**LED WORK LIGHT ASSY** (Part No. 230-910)

*Note; This light is battery operated and clamps to the top edge of Sink Lid.*

**PUMPING STATION, 2" PUMP** (Part No. UPD10DAW) for easy solvent filling and draining

*Note; This pumping stations, equipped with air operated diaphragm pump, offer easy filling and draining of solvent.*

## F. SETUP AND CONNECTIONS:

### 1) SELECTION OF LOCATION:

Select a location that meets EACH AND EVERY requirement described below.

- Comply with the instructions in the section: CAUTIONS AND WARNINGS.

**Your safety and the safety of others are very important.**

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol.  
This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

**DANGER** You can be killed or seriously injured if you don't immediately follow instructions.

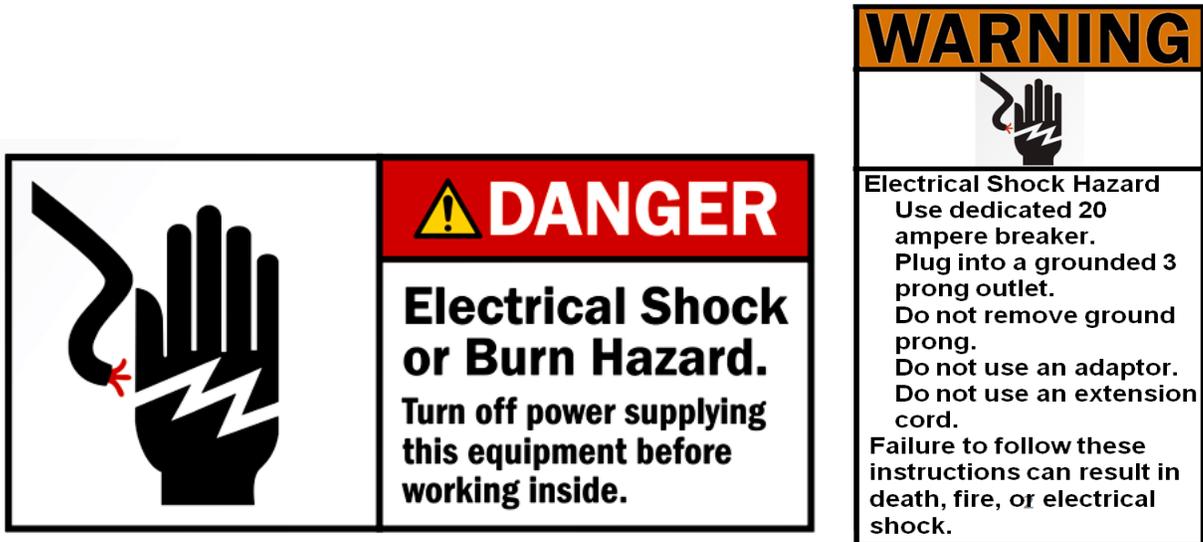
**WARNING** You can be killed or seriously injured if you don't follow instructions.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

- Position this unit in a location so that there is at least 6 inches (15 cm) of space all around the unit. Ensure that the sink lid and front access door freely open fully.

- The unit must be in a location where people traffic cannot interfere with power cord, air supply line or connection.
- It is recommended that the location is well ventilated to prevent concentration of solvent fume.
- Level the unit using two front adjustable feet.

*Note: This unit is designed with about 3" (7.6cm) of space under the floor, allowing Fork Lift or Pallet Truck to move the unit.*



*Note: the unit is designed to become inoperable if certain setup procedures are not followed.*

## 2) ELECTRIC CONNECTION:

This unit is certified by ETL for use in non-hazardous locations. Although the most installation locations are non-hazardous locations, careful attention is needed to comply with all local legal and regulatory requirements.

### ➤ **Non-hazardous Location:**

The cleaning solvent used must be non-flammable and a non-hazardous location must be chosen for installation. 23NL is supplied with a power cord with a 3-prong plug (20A rated, **NEMA 5-20**, non-explosion proof). To ensure safety, we recommend that you use a receptacle located at minimum of **6 feet (183 cm)** from the unit and a minimum of **30" (80 cm)** high from the floor. We also recommend that the unit be located at least **6 feet (183 cm)** from any potential source of ignition such as electrical receptacles, switches, pilot lights, electrical fixtures, contacts and similar equipment. To clarify the definition of an appropriate location, contact your local authority. The use of dedicated power supply is strongly recommended to avoid interference from other equipment sharing same power supply.

**Connect the unit to a dedicated branch circuit 115VAC, 60 Hz, 3-prong grounded outlet. (NEMA 5-20) The unit should be installed on a dedicated 20 amperes circuit breaker.**

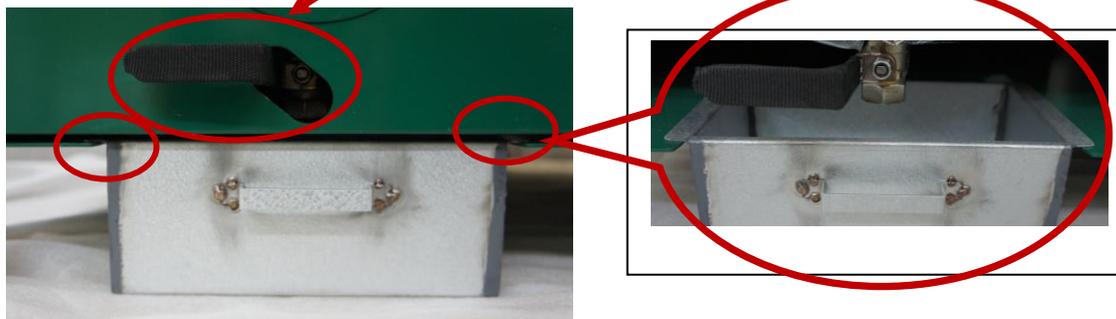
- The power cord must be connected directly to the main power supply according to the instructions in this section and elsewhere in this manual. No extension cord must be used.
- Connect the unit to a dedicated branch circuit using one of the methods described in the Location section. Make sure the correct voltage and amperage are supplied to the unit. Refer to the table on page 4.

c.) Foot Pedal (optional accessory). Please see picture below the proper wiring of the foot pedal to avoid wire pull.



d.) Install the Debris drawer. Endure to insert on the slot channels. **SHOULD NOT TOUCH THE GROUND SURPASE.**

**CLOSE THE DRAIN VALVE HANDLE (position up left)**



e.) Install the flat filter tray in the duty tank



On first power up the Display Panel shows “**FLUID LEVEL LOW**” on the first line of LCD and “**FILL CLEAN TANK**” on the second line. After filling clean tank with 30 gallons (**113.5 Liters**) of clean solvent, LCD will show on the first Line “**READY TO RECYCLE + PRESS START 3SEC**” and on the second line “**READY TO CLEAN + PUSH PUMP BUTTON**” line as shown below.

**Please note that due to safety reason the machine will not able to start distillation, if the display panel shows “MAIN-TANK IS LOW” “FILL & PUSH START”.**



### 3) SOLVENT REQUIREMENTS AND SELECTION:

To ensure safe and effective use of this equipment, it is important to choose correct cleaning solvent. This equipment is designed, constructed and certified to be used with non-flammable (combustible) solvent. Carefully check the MSDS (Material Safety Data Sheet) supplied with the solvent to ensure all three requirements listed below are met.

- Flash point between **100°F to 143°F (37.8°C to 61.6°C)**. (See Note 1. below)
- Boiling point **374°F (190°C)**
- Auto-ignition point **392 °F (200°C)**.
- Solvents have relatively high **LEL** (Lower Explosive Limit)
- Solvent and its vapor are not harmful to the health of operator.
- Solvent and its vapor do not have objectionable odor.

A total of 30 US Gallons (113.5 Liters) of the cleaning solvent is required at start up. 25 US Gallons (94.6 Liters) are required to fill Clean Solvent Tank and 5 US Gallons (18.9 Liters) must be poured into Duty Solvent Tank. (Refer to page 10, Filling solvent)

*We recommend to use the solvents with Flash Point of between **100°F to 143°F (37.8°C to 61.6°C)**, Autoignition Temperature of **392°F (200°C)**, and Boiling Point **374°F (190°C)**, for the reason of minimal evaporation loss.*



**TURN THE MACHINE OFF WHEN ADDING SOLVENT.** DO NOT add solvent during the recycling process. Regularly drain residue from drain valve.

DO NOT drain residue when drain valve is hot after recycling, wait until the knob is cool to the touch. Periodically clean the removable sink strainer. Never operate machine without the strainer.

### 4) INITIAL FILLING OF CLEAN SOLVENT:

Machine does not come with Solvent and before you operate the machine, it required filling the clean solvent and also from time to time, it becomes necessary to add solvent to the CLEAN SOLVENT TANK because of loss by evaporation, drag-off and waste removal. When the Level Sensor in the CLEAN SOLVENT TANK detects the low solvent level, the Display will read **"FILL CLEAN TANK"**; an alarm will start sounding and continue until clean solvent is added to the Clean Solvent Tank as follows:



**Note:** Adding clean solvent to Clean Tank is not necessary unless the computer urges to do so by showing “FLUID LEVEL LOW” and “FILL CLEAN TANK” on LCD and sounding alarm beeps.

**TURN THE MACHINE OFF WHEN ADDING SOLVENT. DO NOT** add solvent during the recycling process. Regularly drain residue from drain spout. **DO NOT** drain residue right after recycling process, wait until the completely cool down.



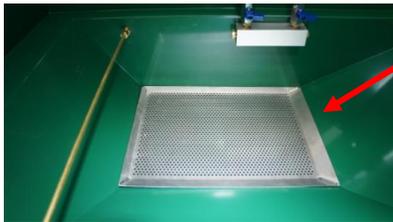
**BREATHER TUBING**

**FILLING PORT**

The filler port is located at the right rear corner of Wash Sink as shown in the photo on the left.

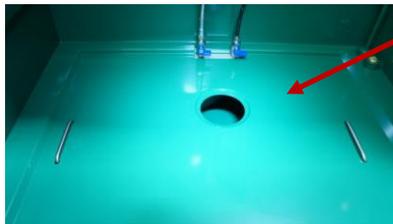
Remove the Cap. Use a funnel or pumping equipment for filling a total of 30 US Gallons (132.5 Liters) of the clean solvent through the filler port.

**DO NOT FILL MORE THAN 30 GALLONS (132.5 Liters)**



Additional 5 US Gallons (18.9 Liters) must be also poured into Duty Solvent Tank in the Sink Bottom Panel as shown.

**INSTALL WASH PLATE & SINK STRAINER SET**



Periodically check and clean the removable Sink Strainer and Filter Basket shown below. Never operate Machine without the strainer.

**Sink Strainer**



**Filter Basket**



**Flat Filter**



**G. OPERATING INSTRUCTION:**

After the INITIAL SETUP, the unit is ready for parts washer and automatic recycling.

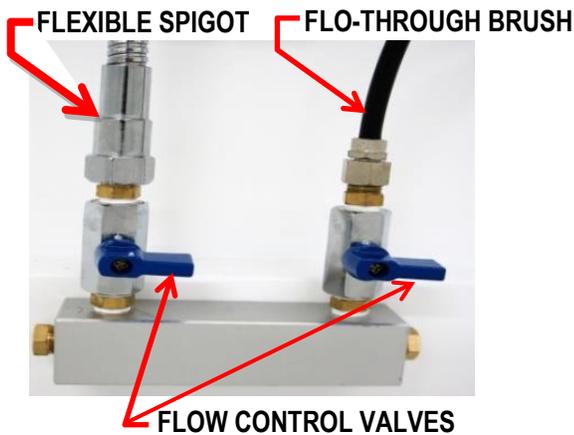
**1 - PART WASHING OPERATION**



**Push Button**

Push On/Off Button to start or stop solvent flow through the Flexible Spigot and the Flow-through Brush. Wash Pump may also be activated by stepping on the Optional Foot Pedal for hands free operation. Once started, solvent continues to flow for 15 minutes or any other desired time period pre-set by User Menu.

Press **ON/OFF** button or step on the Optional Foot Pedal to stop solvent flow.



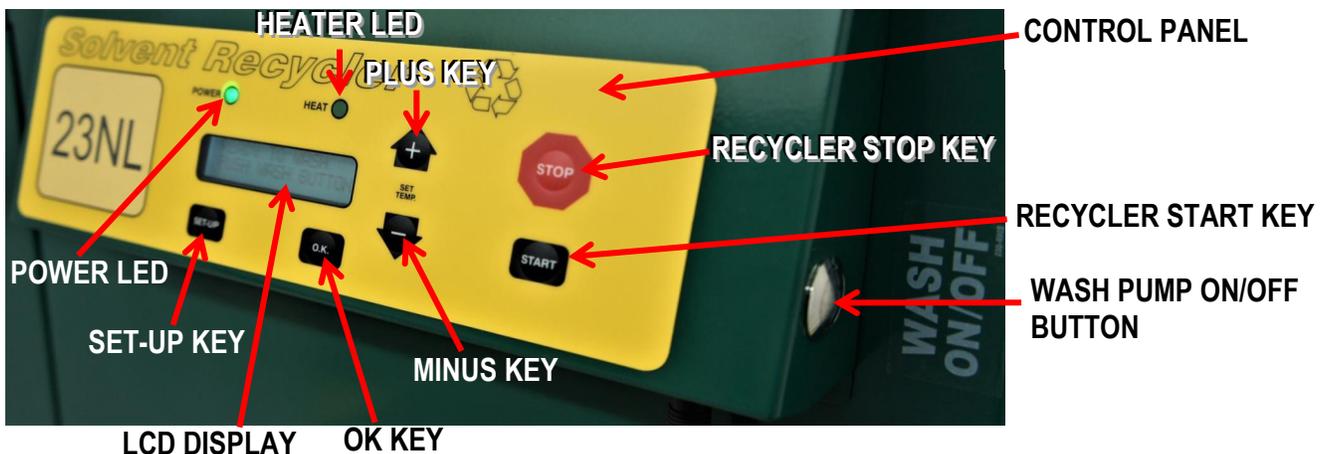
Please note that, during the distillation process, there is a short period of time of about 5 minutes that the wash pump is disabled. Beeping will sound for 1 second to draw your attention during this refilling period.

If solvent does not flow when the **On/Off** push button is pressed, refer to the troubleshooting guide on page 18 of this manual.

The amount of solvent used for parts cleaning is controlled by two Flow Control Valves shown in the left photo, one for the Flow-through Brush and the other for the Flexible Spigot.

➤ Using the handles, each valve can be independently adjusted to obtain the desired amount of solvent flow.

➤ For precise, hands free control of solvent, press the foot pedal (Optional device)



➤ A Strainer Disc and Filter Basket located at the bottom of the Wash Sink collect most of the solids in the dirty solvent; the rest goes through the sink's drain into the "BOILER TANK" which is located under the sink.



➤ A Three Stage filtering system protects the Duty Tank: 1) a Strainer Disc (perforated disk); 2) a removable, fine-mesh Filter Basket and 3) Inlet Cartridge Filter under the Sink Bottom Panel. The filters should all be checked **daily** and cleaned if necessary.

**NOTE:** Please practice good housekeeping by draining washed parts before removing them from the wash sink area. Removing solvent from the wash sink area may reduce cleaning efficiency and increase overall solvent usage. To keep solvent usage to a minimum, close lid when not in use.

## 2 - SOLVENT RECYCLING



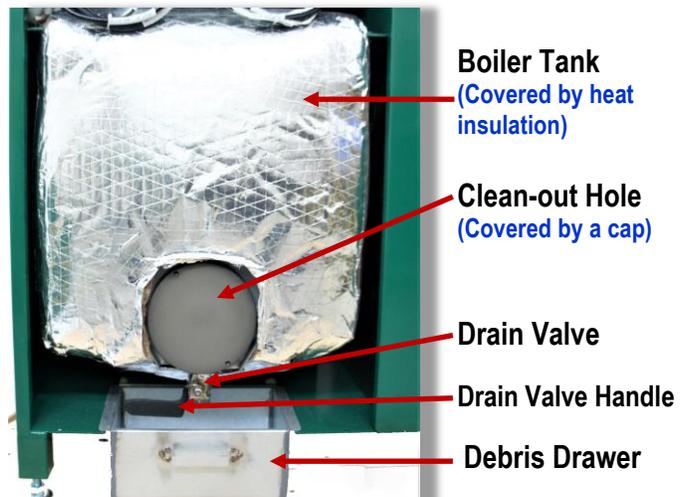
**SPECIAL INSTRUCTION! IT IS RECOMMENDED THAT THE DISTILLATION OPERATION BE PERFORMED NOT MORE THAN ONCE A DAY!**

This unit is equipped with a built-in automatic vacuum solvent recycler capable of recycling contaminated solvent during the working day or **after working hours**; Just press the "START" key and the next day you will have clean solvent available for cleaning.

When the solvent is found to be too contaminated and clean solvent is desired, check LCD to make sure **“READY”** message is displayed. Press **“START”** key for 3 seconds, and the vacuum pump is started in preparation for replacing the contaminated solvent with clean solvent and distilling the contaminated solvent.

The computer monitors all stages of refilling and distillation with LCD showing operation status including Boiler Tank temperature, Vapor passage temperature, etc.

- Within about 2 minutes, the vacuum reaches the required level and Wash Pump is disabled. Parts washing operation must be discontinued temporarily.
- Duty Solvent Tank under the Sink Bottom Panel is drained into Boiler Tanks.
- About ½ Gallon of clean solvent is sprayed to rinse Duty Solvent Tank for the first time.
- After first rinsing, the contaminated solvent is drained into Boiler Tank.
- About ½ Gallon of clean solvent is sprayed to rinse Duty Solvent Tank for the 2nd time.
- After 2nd rinsing, the contaminated solvent is drained into Boiler Tank.
- Transfer pump starts filling Duty Solvent Tank with about 5 Gallons (18.9 Liters) of clean solvent from the Clean Solvent Tank.
- The Wash Pump is enabled and the parts washing operation may be resumed at this time. (The dead time for part washing is about 3 to 4 minutes during the refilling period...
- At this starting point of distillation, there are about 6 Gallons (22.7 Liters) of contaminated solvent in the Boiler Tank. LCD shows two status messages alternatively for 5 seconds. **“TANK=xxx°F”** and **“VAPOR EX=xxx°F”**
- The temperature of Boiler Tank shown on LCD starts rising.
- The temperature of vapor passage tube starts rising indicating that the distillation has started.
- After about 3 to 4 hours later, the distillation will be completed with LCD showing **“DISTILLATION COMPLETED”** for 5 seconds and the heater is turned off...
- The LCD message changes to **“COOLING T1=xxx°F”**.
- When Boiler Tank temperature goes down to 140°F (60°C), LCD shows **““READY TO RECYCLE + PRESS START 3SEC”** and on the second line **“READY TO CLEAN + PUSH PUMP BUTTON”** indicating the unit is ready for the next refilling and recycling operation.
- Drain oily debris from Drain Valve to Debris drawer by turning the handle counterclockwise to the vertical position. (See the photo on the right.)



**VIEW WITH FRONT ACCESS DOOR REMOVED**

**CAUTION:** During the distillation process, do not interrupt power supply by turning off the Circuit Breaker or unplugging Power Cord. If power is interrupted during the recycle process, press **START** key for 3 seconds to resume distillation.

If the distillation process must be stopped due to special circumstances, press **“STOP”** key for 3 seconds and any error message will be erased from LCD. Heater and heater LED will be turned off and Vacuum Pump will stop in two minutes. To resume the operation, press **“START”** key for 3 seconds.

### 3 - RESIDUE REMOVAL

- The oily debris or residue may be drained easily by opening Drain Valve located at the bottom of Distillation Tank as shown in the photo on page 14.
  - Do not drain until the distillation has been completed. Wait until the system completes the recycling process and cools down with LCD showing “READY TO RECYCLE + PRESS START 3SEC” and on the second line “READY TO CLEAN + PUSH PUMP BUTTON”.
- Open drain valve by turning Drain Valve Handle to vertical position and debris will drain into Debris Drawer. Leave the Drain Valve open as long as necessary. However, make sure to close Drain Valve before the next recycling operation.

#### WARNING



- Check and empty Debris Drawer as required.

**Note:** The amount of debris accumulation will vary with the usage of Parts Washer. Under normal conditions, 2 to 3 quarts (about 2 to 3 Liters) of oily debris would be drained on a weekly basis. Drain debris more or less often as required.

**Note:** If the debris is too thick to drain through Drain Valve, it is recommendable to add a cup of used oil into the Sink Strainer before starting recycling process (See the photo on page 13.)

### 4 – PERIODICAL MAINTENANCE.

#### a) Blockage of Drain Valve

- Large Clean-out hole of about 4.2” ID ( 10.7 mm ID) covered by a Cap with internal threads is provided for the convenience of periodical inspection and cleaning of Boiler Tank bottom and drain passage of Valve if necessary.
- If draining debris from Drain Valve is found difficult, accumulation of solid debris at the bottom of Boiler Tank might be suspected.

#### CAUTION:

- To prevent risk of accidental electric shock, make sure to turn off power supply before starting this maintenance procedure.
- To protect your hands, always wear gloves.
- While LCD in Key Panel is showing **READY** status, remove Clean-out Cap by using Removal Tool (Part No. 230-1124) which is included in the Accessory Kit received with the unit.
- Check and remove solid debris and contaminant as required through the clean-out hole.

**Note:** *Do not use metal tool to avoid any damage to two heaters installed in the vicinity of boiler tank bottom.*
- After completion of cleaning inside of boiler tank, make sure that the threads and O-ring of the Clean-out Bushing are clean and free of any damage. Apply a drop of oil to the threads and O-ring for lubrication. Put the Cap back by turning clockwise. Just tighten softly. Do not over-tighten which is totally unnecessary.

## WARNING



The Clean-out Cap will be hot to the touch during the recycle process. Do not open or touch the cap while the recycle process is operating or until the unit shutdown after cooling and LCD on the control panel shows READY status...

## 5 – TOPPING UP CLEAN SOLVENT

During a long usage for parts 2washing operation, the cleaning solvent is lost due to natural evaporation, carried away with the parts cleaned, waste cloth, etc.

When the Level sensor installed in the Clean Solvent Tank detects the low level, LCD shows “FLUID LEVEL LOW” and “FILL CLEAN TANK” and also beeps for 1 second.



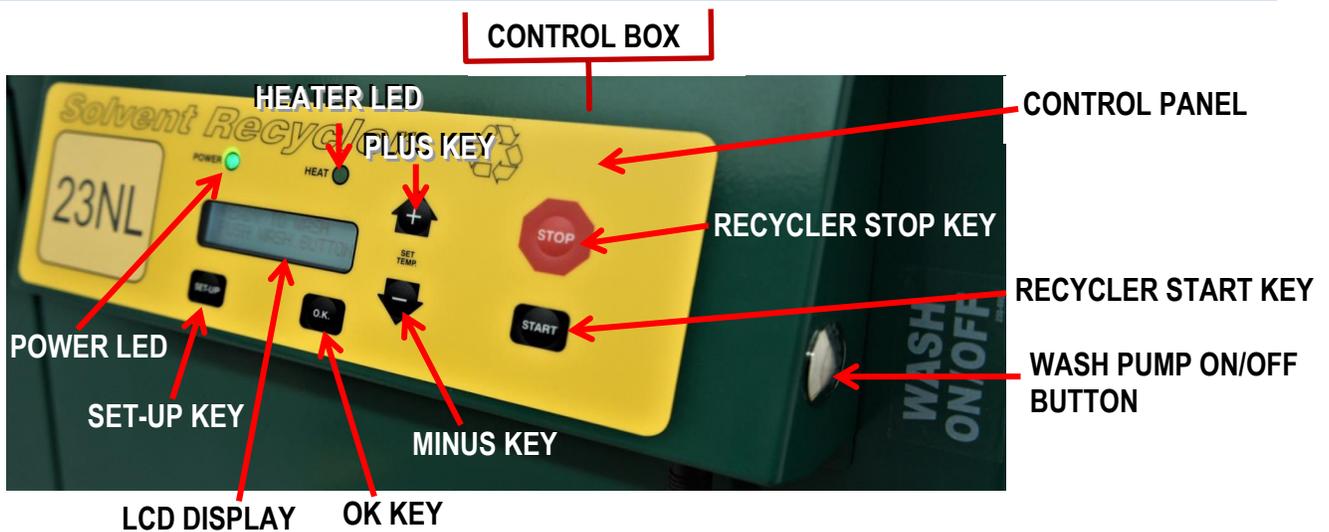
BREATHER TUBING

Add clean solvent into Filling Port located in the right rear corner of the Sink by using a Funnel or Uni-ram Pumping Station (Optional, See page 9).

FILLING PORT

Carefully observe the Over-Flow Jet as the clean solvent starts flowing out from the Over-Flow Jet when Clean Tank is full.

## H. CONTROL PANEL PROCEDURES



Control panel (Keypad) is provided on the Computer Box located at the right top of Base Cabinet. Control panel is made of durable and wear and solvent resistant material.

A back-lit LCD with 32 character display (16 characters in two lines.) is provided to display variety of messages including operation status messages, warning or error messages, etc. and functions as important communication media between the equipment and operator. (Refer to page 17 for List of messages)

The computer board inside the computer box is also provided with a buzzer to sound warning beeps to draw attention of operator as required.

An independent **ON/OFF** push button is provided to turn on and off Wash Pump for parts washing operation. The unit is also equipped with a connector (Female Jack) to which an optional Foot Pedal may be connected for the convenience of hands free operation.

### CAUTION:

Keep Keypad clean and free of paint, or other contamination at all times.

To prevent damage to the Keypad, do not use sharp tools or other hard objects for cleaning or pushing the keys.

To change the temperature units (°C vs °F), press and hold the “+” and “-” buttons until the display switches to the other units (about 2 seconds).

## I. LIST OF ALL MESSAGES

LCD MESSAGES		DESCRIPTION	ACTION REQUIRED
FIRST LINE	SECOND LINE		
READY TO RECYCLE	READY TO CLEAN	Ready for washing and recycling operations.	N/A
FLUID LEVEL LOW	FILL CLEAN TANK	When the unit is new or level went down after use.	Fill Clean Tank.
WASH PUMP ON		Wash Pump is turned ON.	N/A
WASH PUMP OFF		Wash Pump is turned OFF.	N/A
WASH PUMP	DISABLED	Wash Pump is disabled for 3.5 min in refilling cycle.	N/A
WASH PUMP NOW	AVAILABLE	Wash Pump is abled.	N/A
RECYCLING ON		Distillation process is in session.	N/A
HEATER ON		Heater is turned on.	N/A
TANK=XXX°F		Temperature of Distillation Tank is XXX°F	N/A
VAPOR EX=XXX°F		Temperature of Vapor passage is XXX°F	N/A
COOLING T=XXX°F		Distillation Tank Temp is xxx°F in cooling cycle.	N/A
DISTILLATION	COMPLETED	Show for 5 seconds when distillation is completed.	N/A
VACUUM LOSS		Heater was shut off as Vacuum is lower than 17”Hg	Check Vacuum system
CHK COND. SENSOR		Condenser Thermo-couple is open.	Check Thermo-couple
CHK TANK SENSOR		Tank Thermo-couple is open.	Check Thermo-couple
CHK SWITCH/PEDAL		Short lasted over 30 seconds in Wash Pump circuit.	Chk wash pump wires
CHK HEAT CIRCUIT		Heater is not working due to open heater circuit.	Check heater circuit.
CONDENSER	OVER-HEAT	Condenser exceeded 75°C and Thermo-stat is open.	N/A
CHK FAN		Condenser over-heat lasted more than 10 minutes.	Check cooling system
BOILING TIME-OUT		Distillation did not occur in pre-set time period.	N/A
READY TIME-OUT		Heater was turned off by Safety Time-out timer.	Call Factory.
SET-UP MODE		User set-up mode is activated.	Set-up parameters.

## J. REPLACEMENT PARTS:

PART NAME	PART NUMBER
FLOW-THROUGH BRUSH ASSEMBLY	144-399A
FLEXIBLE SPIGOT ASSEMBLY	975-2701F
WIRE FILTER BASKET ASSY	974-3610F
INLET FILTER, 1/2” NPT SS	104-4310S
SINK BOTTOM STRANER	230-3170
CARTRIDGE HEATER ASSEMBLY. 475W	230-1310
WASH PUMP ASSEMBLY. 115v AC. 70W	230-1540

<b>TRANSFER PUMP ASSEMBLY, 115v AC, 70W</b>	<b>230-1581</b>
<b>PNEUMATIC DRAIN VALVE ASSEMBLY</b>	<b>230-3310</b>
<b>HEATER THERMOSTAT ASSEMBLY, 180°C</b>	<b>230-1815</b>
<b>CONDENSER THERMOSTAT ASSEMBLY, 75°C</b>	<b>900-5152</b>
<b>SOLENOID VALVE ASSEMBLY, 2-WAY, DRAIN</b>	<b>230-5320</b>
<b>SOLENOID VALVE ASSEMBLY, 3-WAY, VAC-RELIEF</b>	<b>230-5310</b>
<b>VACUUM SENSOR ASSEMBLY, 17"Hg</b>	<b>230-5311</b>
<b>LEVEL SENSOR, CLEAN TANK</b>	<b>230-6531</b>
<b>DEBRIS SCRAPER TOOL</b>	<b>230-6415</b>
<b>WASH PUMP INLET PORT PLUG</b>	<b>230-1531</b>
<b>WASH TANK DRAIN HOLE PLUG</b>	<b>230-1532</b>

## K. TROUBLE SHOOTING GUIDE:

Upon experiencing some difficulty with the operation of this unit, refer to the following trouble shooting guide first. If the problem could not be resolved, contact in North America: Uni-ram Technical Service **1-800-417- 9133**

### Parts Washing Operation

#### **A. Wash Pump button is pressed but no solvent comes out from Flexible Spigot or Flo-through brush.**

- Check if power is supplied to unit.
- Solvent level may be too low in Duty Solvent Tank. Remove Sink Bottom Panel to check solvent level. Make sure the Duty Solvent Tank is filled with 5 Gallons (18.9 Liters) of clean solvent.
- Check Inlet Cartridge Filter. If it is found to be dirty or blocked with debris, remove by unscrewing and clean as required.

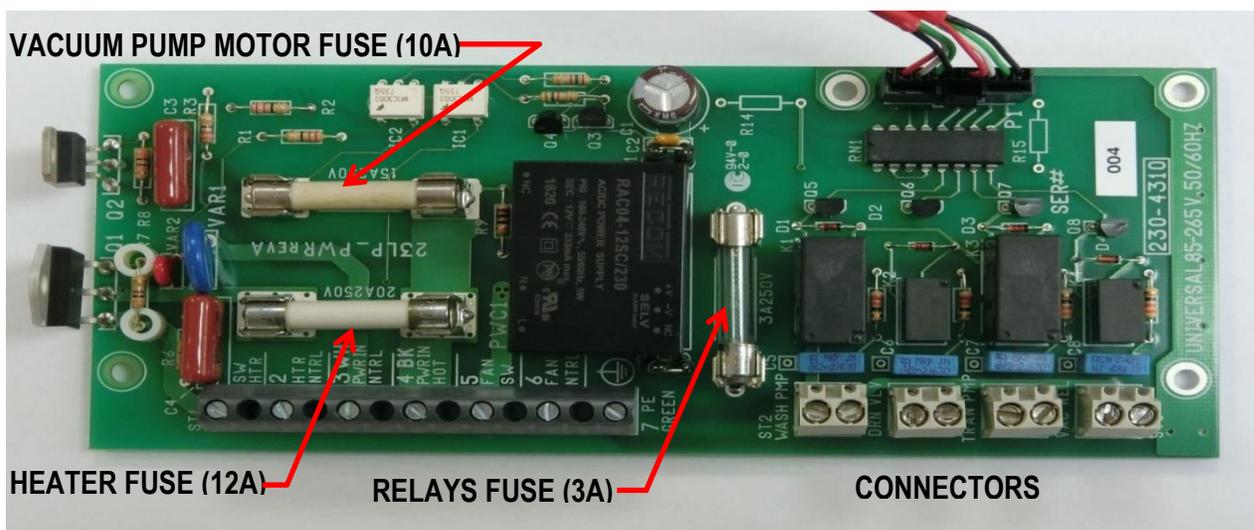
#### **B. Wash Pump cannot be started during refilling cycle.**

- There is about 4 minutes of time period during refilling cycle in which Wash Pump is disabled for about 4 minutes.
- Make sure the flow control valves are open in full.
- If Wash Pump is disabled longer than 4 minutes, Solvent level may be too low in Duty Solvent Tank. Remove Sink Bottom Panel to check solvent level. Make sure the Duty Solvent Tank is filled with 5 Gallons (18.9 Liters) of clean solvent.
- Wash Pump (See 2<sup>nd</sup> photo on page 7.) or its control system may not be working.

### Recycling Operation

- A. After starting recycling operation by pressing **START** key for 3 seconds, the vacuum pump motor should start.
- If the Vacuum Pump motor is not working at this point, FUSE on Power and Relay Control Board shown below is suspected to have a defective FUSE.
  - If the Vacuum Motor starts but the contaminated solvent is not drained from Duty Solvent Tank below the Sink Bottom Panel, Pneumatic Drain Valve (See 2<sup>nd</sup> photo on page 7.) or its control system may not be working.

- If the Vacuum Motor was started and the contaminated solvent was drained, but Duty Solvent Tank was not filled with clean solvent, the Transfer Pump (See 2<sup>nd</sup> photo on page 7.) or its control system may not be working.



- Disconnect power supply before checking Power and Relay Control Board. Remove Front Service Access Door by removing two screws located at the top. (Refer to the Photo on page 14)

## L. HEALTH AND SAFETY PRECAUTIONS

- KEEP OUT OF REACH OF CHILDREN AND ANY UNAUTHORISED PERSON AT ALL TIMES.**
- COMBUSTIBLE LIQUID.**
  - Keep a minimum six foot (1.8M) distance from heat, sparks, flame or other sources of ignition.
  - DO NOT place hot parts in the wash sink.
  - DO NOT use spray aerosols into or around the unit.
  - DO NOT use in enclosed areas.
  - Use only with adequate ventilation to prevent vapor buildup.
- SMOKING.** DO NOT smoke within a minimum six foot (1.8M) distance from the unit.
- SOLVENT HARMFUL OR FATAL IF INGESTED (SWALLOWED).** DO NOT eat or drink while operating the machine. Ingestion, intentional misuse or prolonged overexposure to solvents can cause neurological and other physiological damage and possible fatality. If ingested, follow first aid instructions below and seek immediate medical attention.
- VAPOR INHALATION (BREATHING) HARMFUL.**
  - Inhalation of solvent vapor can cause nausea, vomiting, breathing difficulty, headaches, dizziness, cardiac, pulmonary or other central nervous system damage.
  - Avoid prolonged breathing of vapors.
  - Use only in well ventilated areas or with approved respirator.

- If strong odor is noticed or dizziness, headache, nausea or eye watering is experienced, the ventilation is inadequate. Turn off the unit and leave the work area. Intentional misuse can be fatal.

#### 6. **AVOID CONTACT WITH EYES.**

- Eye contact with solvent or exposure to vapor may cause eye irritation, watering, stinging, or redness.
- Where there is likelihood of eye contact, wear chemical goggles or face shield.
- DO NOT wear contact lenses without proper eye protection.

#### 7. **AVOID CONTACT WITH SKIN.**

- Prolonged skin contact with solvent may cause irritation, redness, burning, drying, cracking or dermatitis.
- If prolonged skin contact is likely, wear protective gloves, clothing and shoes.
- If clothing is inadvertently sprayed with solvent, remove immediately to prevent skin rash or fire hazard.

**UNI-RAM emergency North America telephone number: 1-800-417-9133  
Or Contact Your Supplier.**

## **M. EMERGENCY AND FIRST AID INSTRUCTIONS**

**IN CASE OF INHALATION:** Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. If breathing has ceased, apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. Get medical attention.

**IN CASE OF SKIN CONTACT:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Gently wash with plenty of soap and water. Wash contaminated clothing separately before reuse. Get medical aid if irritation develops or persists.

**IN CASE OF EYE CONTACT:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses, if present and easy to do after 5 minutes and continue rinsing for an additional 15 minutes. Get medical attention if irritation persists.

**IN CASE OF INGESTION:** Do not induce vomiting. If victim is conscious and alert, give 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical advice/attention.

**NOTE TO PHYSICIAN:** Treat symptomatically and supportively. Show this safety data sheet to the doctor in attendance.

## N. Full Product Warranty



These Uni-ram products have been engineered and manufactured to high performance standards. Each unit has been subjected to detailed factory testing before shipment.

This product comes with a One (1) year warranty, excluding in case, consumable parts such as the flow-through brush, flexible spigot, and the filters. Uni-ram Corporation reserves the right to repair or replace the unit, free of charge, to the original purchaser if a part is found to be defective in material or workmanship as determined by factory service personnel. The items listed below under “Conditions of Warranty” as consumables are not covered.

Uni-ram reserves the right to direct the customer to ship the unit collects to the Uni-ram factory or to an approved Service Center for repair using the Uni-ram Return Goods Procedure or to repair the unit on-site. To prevent damage in transport, the purchaser must ship the unit in the original packaging or use alternative adequate packaging. All units must be shipped clean and free of solvent.

### **Conditions of Warranty:**

As Uni-ram Corporation has no control over the working conditions or circumstances under which the purchaser stores, handles or uses the product, Uni-ram makes no warranty or claim, either expressed or implied with respect to this product's fitness for any purpose or the result to be obtained from its use. This condition applies to the sale of all products and no representative or distributor of Uni-ram Corporation has the authority to waive or change these conditions.

This warranty applies only to the original purchaser and does not apply if the unit has been misused, overloaded, neglected, altered or used for any purpose other than those specified in the operating and installation instructions. Deterioration due to normal wear is not covered by this warranty. Damage due to accident, transportation, fire, floods or acts of God is also not covered. Units whose serial numbers have been altered or removed are not covered. The warranty is invalid if unauthorized abrasives are used in this unit. Unauthorized attempts at self-repair or alterations by the owner also invalidate this warranty.

Interior or exterior fishes are not covered by this warranty. Consumable Items are not covered by this warranty.

This warranty replaces all other warranties expressed or implied by statute or otherwise.

To make a claim, call Uni-ram Service at 1-800-417-9133 in North America or contact your supplier in other countries and quote the serial number of the unit and the date of purchase.

**SERIAL NUMBER:** \_\_\_\_\_

**PURCHASE DATE:** \_\_\_\_\_

**PURCHASED FROM:** \_\_\_\_\_

## O.CUSTOMER / WARRANTY INFORMATION SHEET



This Information Sheet is provided as a tool to provide the Uni-ram Service Center, and Uni-ram Corporation with the necessary information about the customer to ensure utmost customer services and warranty services, if needed.

Please fill out this Information Sheet completely and retain for future reference.

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### CUSTOMER COPY

Customer: \_\_\_\_\_

Location of Unit: City: \_\_\_ St: \_\_\_ Zip: \_\_\_

Purchased from: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ St: \_\_\_\_\_ Zip: \_\_\_\_\_

Model Number of Unit: \_\_\_\_\_ (23NL-34, 23NL-42, etc.)

Serial Number of 23NL: \_\_\_\_\_ Serial Number of: \_\_\_\_\_

Date Purchased: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

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*(Fill out completely for your records.)*