OPERATING AND SERVICE MANUAL FOR

SOLVENT RECYCLER AND GUN CLEANER COMBO SYSTEM

MODEL

COMBO455

EXPLOSION PROOF, AND INTRINSICALLY SAFE

U.S. PATENT No. 4,785,836 & 5,876,567

MANUFACTURED BY
UNI-RAM CORPORATION
ONTARIO, CANADA

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WARNING

DO NOT SMOKE, OR USE NEAR AN OPEN FLAME OR SPARKS.
DISCONNECT ALL POWER SOURCES (AIR OR ELECTRIC) BEFORE PERFORMING MAINTENANCE SERVICE.
DO NOT RECYCLE NITROCELLULOSE! IT IS EXTREMELY VOLATILE AND MAY IGNITE AT A LOW TEMPERATURE (135 TO 166°C, 275 TO 330°F).

SOLVENT RECYCLER AND GUN CLEANER COMBO SYSTEM

1. GENERAL

1.1 INTRODUCTION

All UNI-RAM products are engineered and manufactured to the highest performance standards and have been subjected to detailed testing before shipment from the factory. However, operator error such as use of inappropriate solvents, incorrect air pressure, improper service or maintenance etc, could result in malfunction or damage. Please pay attention to the cautions and warnings provided on labels attached to this equipment and to those in this manual. Before operating this equipment, please read the manual. It will help you to operate this equipment safely and efficiently. Keep it readily available to the operator at all times. If you have any questions about the operation of this equipment, call your distributor or the Uni-Ram Product Hot Line:

USA: 1-800-735-4331 Canada: 1-800-417-9133

WARNING

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1.2 WARRANTY REGISTRATION

1. The standard warranty for this equipment is 12 months from date of purchase by the end user. An additional extended warranty of 6 months is available free if the Warranty Registration Card (supplied with this Manual) is properly filled out and returned within 30 days of purchase.

2. Please fill in the space below as a permanent record for warranty purpose.

Supplier			
Purchase Date		**Invoice No.**	
Serial No.		**Model No.**	

1.3 SYSTEM SPECIFICATIONS

A. SPRAY GUN CLEANER

1. Timer controlled, automatic, washing of spray guns and paint utensils in less than 60 seconds. Compatible types: siphon, pressure feed, gravity feed.
2. Pushbutton activated, automatic, air flush cycle for removing dirty solvent from internal cavities and passages.
3. Pushbutton activated, automatic, clean rinse cycle for rinsing both inside and outside of spray guns and cups with clean solvent. The solvent is followed by a final air flush.
4. Powerful, heavy-duty wash pump specially designed for gun cleaner for long, trouble-free service.
5. Stainless Steel Rinse pump with metering capability (100 cc) to minimize consumption of clean solvent and to provide final air purging.
6. All stainless steel cleaning tank and lid for ease of maintenance and durability.
7. Automatic washing, air purging and rinsing of paint feeder hoses.
8. Automatic fume extraction system which is actuated upon opening of the cleaning tank.
9. Wash solvent pail and rinse solvent pail stored safely inside an all-stainless-steel base cabinet.

B. SOLVENT RECYCLER

10. Fully explosion proof construction and intrinsically safe electric circuitry.
11. Certified by ETL for Class 1, Division 1, Group D, 230°, Under UL2208 CSA 22.2-30, 88
12. A powerful 1,500 Watt heater (100/120V AC, 15/13 Amp.).
13. Efficient direct heating system to eliminate cumbersome changing and disposal of diathermic oil.
14. Large 5-US gallon (20 liter) distillation tank.
15. Durable, all-stainless-steel, enclosed cabinet safely stores the clean rinse and wash solvent pails.
16. Fully computer-controlled, automatic distillation with many built-in safety programs.
17. Six Set Point Temperatures are listed below.

RANGE	READY LIGHTS		
	L	M	H
90°C (194°F)	ON		
115°C (239°F)	ON	ON	
140°C (284°F)		ON	
165°C (329°F)		ON	ON
190°C (374°F)			ON
200°C (392°F)	ON	ON	ON

18. The factory Set Point is 200°C (392° F).
19. Ambient temperature requirement: 5 to 35°C (41 to 95°F).
20. Safety heater thermostat - cuts off heater power if operating temperatures exceeds 220°C (428°F).
21. Safety timer - cuts off heater power after 6 hours of operation.
22. Empty tank safety timer - turns Heater off if boiling does not occur within 60 minutes.
23. Safety thermostat - monitors temperature at the Fan Motor and cuts off motor and heater power if the temperature exceeds 125°C (257°F).
24. Safety pressure relief system of Tank Lid - prevents pressure higher than 0.5 to 1.0 p.s.i. (0.03 to 0.06 Bar).
25. Self-Diagnostic System for constant monitoring of all functions. Problems and error conditions are displayed by means of Error Codes. See page 25 for "Error Codes".
26. Self-test mode enables the operator to test key functions.

C. SOLVENT TRANSFER SYSTEM

27. Automatic transfer of dirty solvent from gun cleaner unit to solvent recycler unit.
28. Heavy-duty transfer pump for transferring dirty solvent from the gun cleaner to the solvent recycler and clean solvent back to the gun cleaner.
29. Safety interlock system to prevent accidental transfer when the tank lid is closed.

1.4 ACCESSORIES KIT

1. Check the Accessories you have received. Refer to the list of accessories below. If any parts are missing, contact the supplier you purchased the equipment from.

Item	NAME AND PART NUMBERS	PART NO.	GUN CLEANER	RECYCLER
1.	OPERATING MANUAL	MNL-COMBO455S	1 set	
2.	TRIGGER LOCK SPRING	120-342	3 pieces	
3.	AIR FILTER ASSY	10-220	1 piece	
4.	AIR INLET CAP (100-611)	100-611	3 pieces	
5.	ADAPTER NOZZLE, UNIVERSAL	110-430	1 piece	
6.	ADAPTER NOZZLE, SATA	110-430SA	1 piece	
7.	TAPERED PLUG, SIPHON PIPE	120-572F	1 piece	
8.	TANK LINER BAG	LB900C-1		3 pieces
9.	RETAINER FRAME, LINER BAG	770-9110		1 piece
10.	LID SEAL GASKET	770-2150N		1 piece
11.	SOLVENT OUTLET TUBE (SPARE)	770-8131		1 piece
12.	SOLVENT PAIL SET, 2 x 5 GALLONS	750-700		1 set
13.	HOSE CLAMP, TRANSFER HOSE	100-261		1 piece
14.	FUSE KIT	KIT-FUSE5N		1 set

2. All Items listed above except item 9 and 12 are packaged in a sealed clear plastic bag. The Retainer Frame and one Liner Bag are installed in the Recycler's distillation Tank. The pails are packed inside the base cabinet.

3. This manual is a very important tool for the safe and effective operation of this equipment. Please read it carefully before operating the machine and keep it handy for reference.

1.5 OPTIONAL PARTS AND ACCESSORIES

1. Optional parts and accessories include:

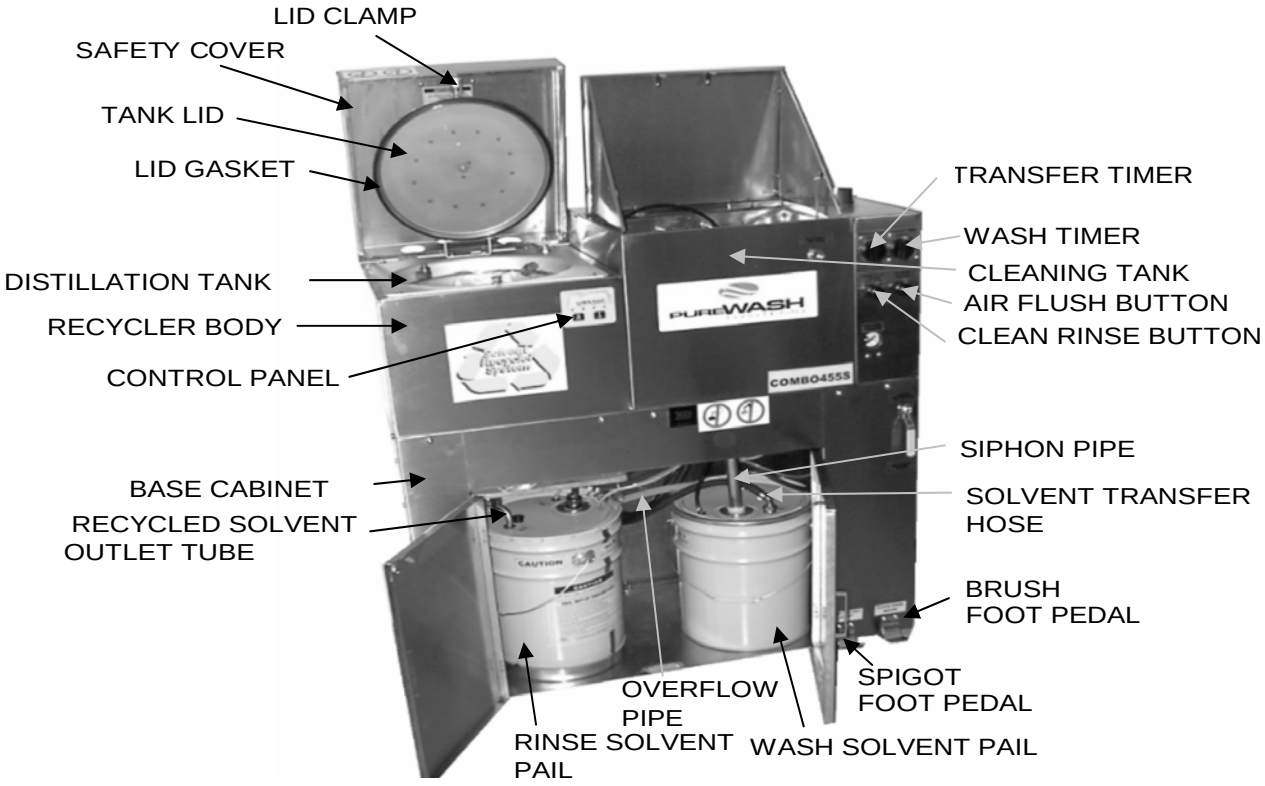
FLOW-THROUGH BRUSH	**Part No. 144-399B**
THREE PAIL SET (ON THREE PAIL MODEL ONLY)	**Part No. 760-7300**
FILTER PAD (Pack of 3).....	**Part No. 100-381/3**
TRIGGER LOCK SPRING (Pack of 3).....	**Part No. 120-350**
LID SEAL GASKET.....	**Part No. 770-2150N**
TANK LINER BAG	**SEE BELOW**

2. The Filter Pad must be cleaned or replaced regularly to protect the pump and ensure satisfactory operation.

3. It is a good idea to keep spare pads in stock at all times.
   - *The unit is supplied with a Liner Bag (Part No. LB900C-1) and Retainer Frame (Part No. 770-9110) already installed inside Distillation Tank.*

Liner Bag, 475˚ F, Pack of 10	**LB900C-10**
Liner Bag, 475˚ F, Pack of 100	**LB900C-100**
Liner Bag, 475˚ F, Pack of 250	**LB900C-250**

1.6 STRUCTURE AND KEY COMPONENTS



1.7 BEFORE USING

1. Carefully inspect the shipping carton for any sign of transport damage. Damage to the carton often indicates transport damage to the equipment inside.
2. Carefully remove the equipment from the shipping carton.
3. Check the equipment, particularly the adjustable legs at the bottom of the unit, immediately and carefully to ensure that it is not damaged. Report any transport damage to the carrier without delay to initiate claim procedures. UNI-RAM Corporation is not responsible for damage to equipment after it leaves our warehouse.
4. Serial Number Labels complying with applicable Marking and Labeling Standards for are permanently fixed to the inside back of the Base cabinet door. Important information including Serial Number, Model Number and Air Supply Specification is clearly marked on the label.
5. Make sure that all markings and labels are not damaged or soiled and are clearly legible.

CAUTION AND REMARKS:

1. **The operator of this equipment should wear protective clothing according to local safety and environmental regulations, with a minimum of: face goggles, gloves, apron and respirator.**
2. **Avoid inhaling fumes when working with the tank lids open.**
3. **Check the Material Safety Data Sheets from your solvent supplier for flammability, toxicity and boiling points of the solvents you are using.**
4. **In case of malfunction during operation of the solvent recycler, the Self Diagnostic system identifies the problem and the display screen displays error messages as listed in page 25, Error Condition Codes.**

IMPORTANT NOTICE

Always disconnect all power sources (air and electrical) before performing maintenance service.

1.8 SET UP AND PREPARATION

THIS RECYCLER GUN CLEANER COMBO UNIT MUST BE CORRECTLY PLACED IN THE WORKSHOP FOR PROPER OPERATION.

Positioning the unit:

• Position unit in a well-ventilated area away from sparks, heat and open flames.

• Make sure that there are at least 6 inches (15 cm) of space all around the unit.

• Set Adjustable Legs to suit floor level and solvent container height.

• Make sure that there is enough space in front of unit for opening the door, positioning containers and opening the Safety Lid.

• Attach a vent hose (not supplied) to the vent outlet on top of the machine. The duct system must not be under continuous vacuum. To stop or vary the rate of solvent venting from the tank upon opening, use the Vent Control Valve on the side of the unit.

Ground Wire connection:
Connect the Ground Wire firmly to the bare surface of a grounded metal object.

Electric Cord connection
The power cord is located at back of unit. This equipment must be properly connected to an explosion proof power outlet (100/120 Volts AC, 14 Amp) by a qualified electrician, according to proper procedures for explosion proof units as stipulated by the standard for Class I, Division 1, Group D. (UL/ETL/CSA) locations. When electric power is supplied to the unit, the "READY (L)" and/or "READY (H)" light s on the Control Panel will come on.

Air supply connection:
The Air Inlet Fitting (1/4" female threads) is located at the right side of the unit. Connect Filter assembly (included) firmly to the inlet and ensure that there is no air leakage at the connection. See Figure 2.

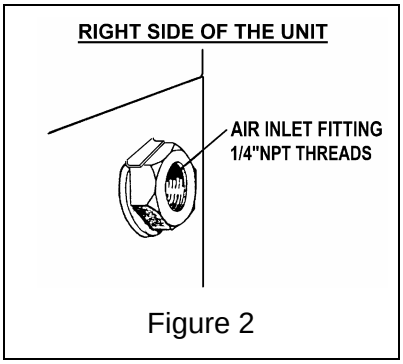


Figure 2

Connect an air supply firmly to the inlet of the Filter Assembly as shown in Figure 2.

The compressed air supply must be free of water, dust, rust, tar, grease and other foreign material and the air pressure must be higher than 85 p.s.i. (5.8 Kg/cm^2).

Before service or maintenance, disconnect the power (air and electric) at source.

Preparing Solvent Pails:
Open the Door of the Base Cabinet.

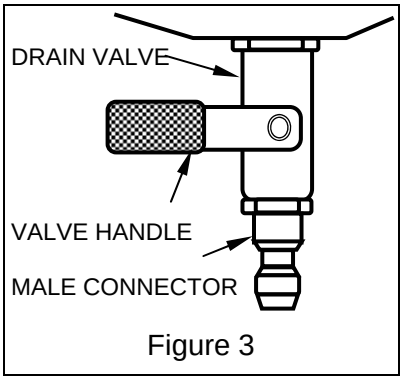


Figure 3

There should be two 5-gallon solvent pails in the base cabinet. Remove all packing material and cut the string, which ties two pails together.

Place the pails close to each other with their labels toward you.

Remove screw caps from both pails.

Using a funnel, pour 5 gallons of solvent into Rinse Solvent Pail (left hand side) and 2.5 gallons into the Wash Solvent Pail.

Disconnect the Quick Coupler of the Siphon Pipe Assembly from the Drain Valve and bring it outside of Base Cabinet. To disconnect the Quick Coupler, press the gray plastic button with the word "PUSH" while holding the black plastic portion and move downward.

Bring the Rinse Pump and the Manual Wash Suction Tube (Tag. #1) outside of the Base Cabinet.

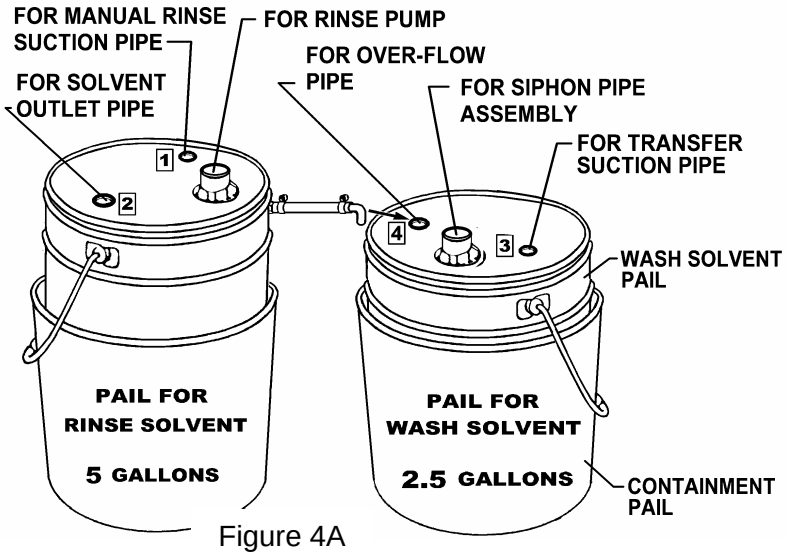


Figure 4A

Check to ensure that the Drain Valve Handle located under the Cleaning Tank is in the closed (horizontal) position. See Figure 3.

Insert the Siphon Pipe Assembly into the Wash Solvent Pail (right hand side) through the top spout.

Insert the Rinse Pump Assembly into the Rinse Solvent Pail (left hand side) through the top spout (see Figure 4A and 4B).

Insert the Manual Wash Suction Tube (Tag #1) into the hole (Label #1) of the Rinse Solvent Pail (left hand side) as shown in Figure 4A and 4B.

Place the Solvent Pails inside the base cabinet so that the Male Connector (Figure 3) is aligned with the top of the Siphon Pipe Assembly (Figure 4B) and then connect the Quick Coupler of the Siphon Pipe Assembly to the Male Connector by pushing hard upward. Turn the handle of the Drain Valve to the open position (vertical).

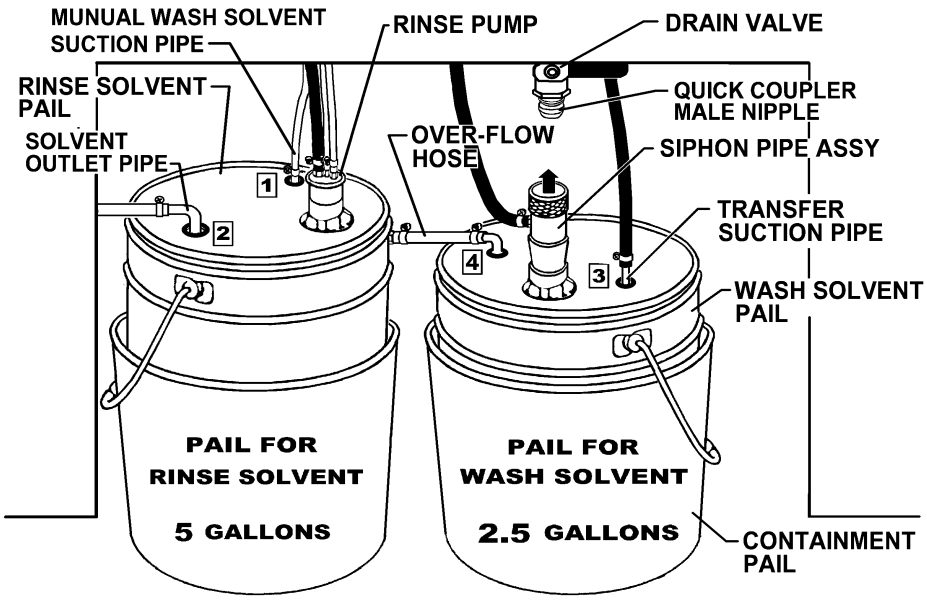


FIGURE 4B

Connect the Solvent Transfer Hose (Tag #3) to the hose barb (label #3) of the Wash Solvent Pail as shown in Figure 4 and secure with the Hose Clamp supplied.

Turn the Handle of the Drain Valve to the open (vertical) position and close the Cabinet Door.

NOTE: A SET OF DOUBLE CONTAINMENT PAILS IS AVAILABLE AND OPTIONAL (NO. 750-9030)

WARNING

DO NOT SMOKE. DO NOT USE NEAR OPEN FLAME, SPARKS OR HEAT.

For maximum safety, wear protective clothing and safety glasses.

1.9 WORKING PRINCIPLES

As explained in Set Up And Preparation (Section 1.8), the Wash Solvent Pail and the Rinse Solvent Pail are provided inside the base cabinet. The Rinse Solvent Pail should contain 5 gallons (19 liters) and the Wash Solvent Pail should contain 2.5 gallons (9.5 liters) of solvent when first set up.

During the wash cycle, the main pump will take the dirty solvent from the Wash Solvent Pail and push it under pressure through many Spray Jets and Nozzles so that the paint debris is removed from interior passages and the exterior of the spray guns, cups etc. The used

solvent and paint debris will drain into the Wash Solvent Pail.

During the air flush cycle, all used dirty solvent remaining in the interior passage of the Spray Gun and Spray Manifolds will be evacuated by air pressure and drained into the Wash Solvent Pail.

During the automatic clean rinse cycle, approximately 100cc (3.4 oz) of clean solvent is taken from the Rinse Solvent Pail and pumped to the spray jets and nozzles and drained to the Wash Solvent Pail on the right hand side. After about 95 clean rinse cycles, the Wash Solvent Pail (half full when first set up) will become full. During a manual rinse operation, clean solvent is also transferred to the Wash Solvent Pail.

To verify the solvent level in the wash pail, you must check it visually or judge it by the level in the clean rinse pail. The starting levels in the Clean Rinse and Wash pails were full and half full respectively as shown in Figures 4A and 4B. When the level in the Clean Rinse Pail is low, as indicated by the Low Level Gauge (Figure 11) on the Control Panel, the wash pail must be full as the dirty solvent would have drained into it. It is now time to transfer wash solvent for recycling.

FIGURE 5

During the transfer cycle, activated by the Transfer Timer, all dirty solvent (maximum 5 gallons) in the Wash Solvent Pail is automatically transferred to the Distillation Tank of the Solvent Recycler by the Transfer Pump in about 2 minutes.

During the distillation cycle, the recycled solvent flows into the Rinse Solvent Pail. When the Rinse Solvent Pail is full, excess solvent flows into the Wash Solvent Pail through the over-flow tube. See Figure 5.

2. SPRAY GUN CLEANER

2.1 CLEANING OPERATION

Cleaning Spray Guns and Cups:

1. Any paint left in the Gun Cup should be emptied into a waste paint container for disposal or recycling before using the machine. Please check your local waste disposal regulations.
2. Lock the trigger of the Spray Gun in the open position with a Trigger Lock Spring (supplied). See Figure 8.
3. Open the Lid of the Cleaning Tank and install an applicable Adapter Nozzle (Part No. 110-430 or 110-430SA) onto the Taper Nozzle as shown in Figure 7B.

4. Fit the Paint Inlet of the Spray Gun onto the Adapter Nozzle. See Figure 7B.
5. The Paint Cup of a Gravity or Siphon type Spray Gun may be cleaned by placing it upside down over the Spray Jets. See Figure 7A.
6. Close the Lid and turn the Timer Knob clockwise to start a wash cycle. The automatic wash cycle is complete in about 45 seconds.

Automatic Wash

7. Pressurized solvent is pumped through the spray jets and nozzles by the wash pump.

Air Flush

8. Push the Air Flush Button for about 3 seconds to send air through the inside passages of the Spray Gun and Paint Cup. This helps flush out dirty solvent.

Clean Rinse

9. Push the Clean Rinse Button for about 5 seconds to rinse the inside passages of the Spray Gun and Paint Cup with about 100cc (3.4 oz) of clean solvent

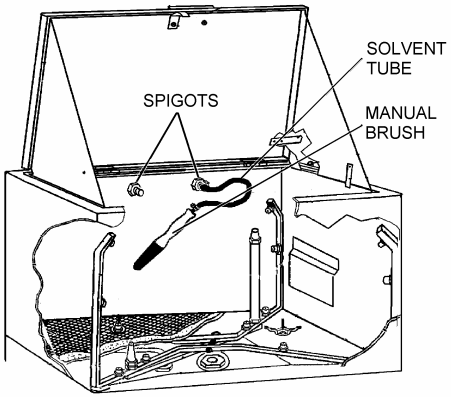


Figure 6

Manual Wash

Manual Rinse

10. When the Foot Pedal on the left side is pressed, solvent drawn by a Manual Wash Pump from the Wash Solvent Pail will start flowing out from the Wash Spigot (left side). Manual wash may be performed by placing item to be washed in the solvent flow or by using the Manual Flo-through Brush (supplied). To use the Manual Brush, first connect the end of solvent tube (black) to the spigot as shown in Figure 6. In either case, the solvent used for manual washing will be re-circulated back to the Wash Solvent Pail.
11. When the Foot Pedal on the right side is pressed, solvent drawn by a venturi from the Rinse Solvent Pail will start flowing out from the Rinse Spigot (right side). Manual clean rinse operation may be performed by placing item to be washed in the solvent flow or by using the Manual Brush connected to the Rinse Spigot as shown in Figure 6. In either case, the solvent used for manual rinse will be collected into the Wash Solvent Pail. To control the consumption of the clean solvent to the adequate level while maximizing the rinse efficiency, a flow of air is introduced with the clean solvent.

Cleaning is now complete.

INSTALLATION OF SPRAY GUN

Spray Gun of various type must be properly installed in order to achieve satisfactory cleaning results. The Adapter Nozzle (Part No. 110-430) is included in Accessory kit provided with this unit and should be used for cleaning spray guns of the Pressure Feed type and the Gravity Feed type as shown in the illustrations below. Paint Cup of the Gravity Feed Spray gun may be removed from the gun and cleaned separately.

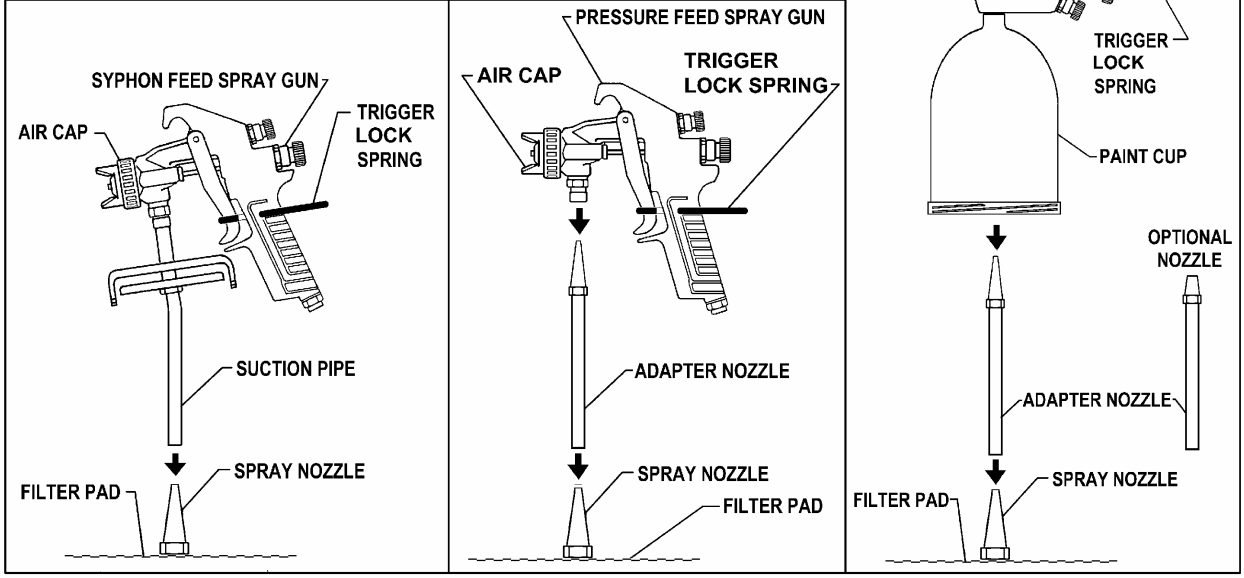


Figure 7B

2.2 OPERATING TIPS

Before cleaning, remove excess paint items to be cleaned.

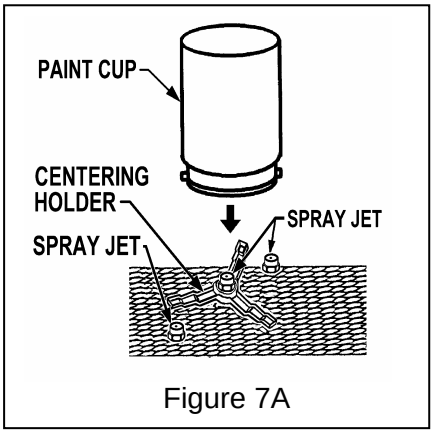


Figure 7A

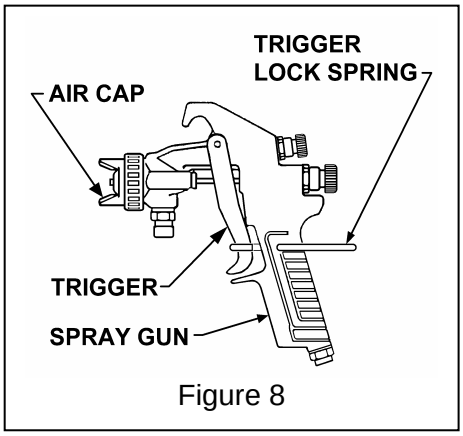


Figure 8

1. Place Paint Cups upside down over the low spray jets protruding through the screen. See Figure 7A.
2. Install the Spray Gun on to the appropriate cleaning nozzle with the gun facing the corner jets as shown in Figure 7B.
3. Release the Air Cap of the spray gun two full turns and lock the trigger in the open position with a Trigger Lock Spring. See Figure 8.
4. Guns can be washed with or without the Air Cap installed. The Air Cap can be stored inside the cleaning cabinet.
5. The Paint Cup Lid of a Gravity Feed Gun may be cleaned on the lid holder.
6. The cleaning tank is not recommended for storage of spray guns.
7. After the cleaning operation has been completed, remove guns and paint cups from the cabinet and wipe dry.

8. During recycling there is no solvent in the wash pail for two pail models. Therefore, it is advisable to recycle when the washer is not being used (e.g.: at night, for two pail models only).

Automatic air purging and rinsing for all models

Press the Air Flush Button or Clean Rinse Button for no more than 5 seconds. Excessive use of air flushing will cause loss of solvent through atomization.

Although the Rinse function may be used repeatedly, a 30 second pause is needed for the Rinse Pump to be fully recharged.

IMPORTANT
UNI-RAM RECOMMENDS THE USE OF AN IN-LINE MOISTURE SEPARATOR FILTER AND LUBRICATOR

2.3 EFFICIENT USE OF THE GUN CLEANER

Always clean spray guns and other related paint utensils immediately after use while the paint is still wet. To keep your Spray Gun Cleaner operating efficiently, replace dirty solvent and clean or replace the Filter Pad frequently. Dirty solvent will decrease the performance of your equipment.

2.4 DAILY MAINTENANCE – SOLVENT LEVELS

The Moisture Filter Assembly (included in accessory kit) installed to the air inlet has a clear glass bowl and a water drain valve at the bottom as shown in the drawing. The Filter collects moisture and water from the air supply. Check the Glass Bowl and drain water as required by pressing the drain valve upward as shown in Figure 10.

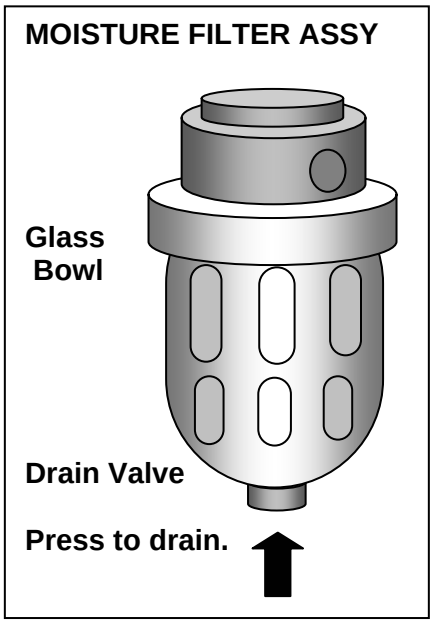


FIGURE 10

Solvent is continuously lost by evaporation as well through normal use. The level in the recycler tank may decrease if it has been sitting too long. The level in the Clean Solvent Pail should be also checked regularly.

To check the clean rinse level, carefully observe the gauge while pressing the Clean Rinse Button. If the level is full, the gauge's needle will temporarily rise to the "OK" area and then fall back to the "LOW" area. If the level is low, the needle will stay in the "LOW" area. **This level gauge only indicates the level in the clean rinse pail.**

FIGURE 11

To determine the solvent level in the wash pail, you must check it visually or judge it by the level in the clean rinse pail. The starting levels in the Clean Rinse and Wash pails were full and half full respectively. When the level in the Clean Rinse Pail is low, as indicated by the gauge, the wash pail must be full as the dirty solvent would have drained into it.

For efficient use of the recycler, make sure the recycler tank is more than 75% full before starting. If there is not enough

solvent after transferring wash solvent from the wash pail to the recycler tank, add solvent by pouring it into the recycler tank directly, making sure to stay below the maximum level indicated by the clamp ring. The recommended level, however, is 1 inch below clamp ring.

When the machine is not in use, drain solvent from the cleaning tank into the solvent container. Keep the machine and surrounding area clean at all times. Make sure there is no leakage from the solvent pails. Open the drain to the Solvent container before operating.

2.5 TROUBLE SHOOTING GUIDE (Gun Cleaner)

All air tube connections are provided with Quick Connects for easy disconnection: press and hold the Release Ring (blue plastic) of the Connector to disconnect. After removing the Service Cover (detail 3) by removing the 4 screws as shown in Figure 15, most air connections and components can be accessed easily.

The guide table below provides the possible causes and suggested solutions for most cases of problems, which may be experienced with the Gun Cleaner unit. Carefully study the contents before proceeding with the corrective actions so that the real cause of the problem can be properly dealt with.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Nothing on the gun cleaner side works.	No air is supplied to Air Inlet.	Supply at least 85psi (6 Kg/cm^2) of air to Air Inlet.
	The Safety Cover of the Recycler is not closed.	Close the Safety Cover to release the inter-lock valve..
Pump and Timer appear to be working normally but there is little or no washing action.	Low air pressure.	Check air pressure and increase to over 85psi (6 Kg/cm^2)
	Solvent level in Wash Solvent Pail is too low	Add solvent to Wash Solvent Pail by pouring into Cleaning Tank of Gun Cleaner.
	Filter screen inside Air Inlet Fitting is clogged with debris.	Disconnect air supply and clean the screen.
	Blocked Spray Jets/Nozzle	Remove and clean with air pressure.
	Filter Pad is too dirty.	Clean or replace the Filter Pad.
	Drain Valve is closed and solvent is not draining.	Turn Valve Handle to open (vertical) position.
	Solvent is too dirty.	Replace the dirty solvent.
	Suction passage is blocked.	Apply air pressure to the bottom end of the Suction Pipe Assembly.
	The pump is temporarily stalled by excessive water in air supply,	Blow the air pressure into the exhaust pipe of the Manual Wash Pump to back flush the pump.
	Pump is defective and not actually pumping solvent.	Replace or repair Pump.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump and Timer are working but Inside passage of Spray Gun is not cleaned.	Trigger Lock Spring is not properly installed or Paint valve of Spray gun is closed.	Install Trigger Lock Spring, release Air Cap 2 full turns and repeat cleaning cycle. Make sure Paint Valve is open.
	Spray Gun is not properly installed onto Cleaning Nozzle.	Make sure the Gun is firmly installed and not too loose on cleaning nozzle. Use suitable Nozzle Adapter as required.
Pump is not working, air is escaping from top exhaust pipe.	Pump is defective.	Repair or replace the pump.
	Excessive water in air supply caused the pump to stall	Blow air into the exhaust pipe to back flush the pump
Pump and Timer are working but solvent is leaking around Tank Lid.	Pump has a defective diaphragm.	Replace or repair Pump.
	Air pressure is too high.	Make sure the pressure regulator (inside) is adjusted to the correct pressure of 75 PSI.
Solvent is not draining from Tank.	Drain Valve under Tank is closed. (Handle is horizontal)	Open Drain Valve. (Handle should be in vertical position.)
Solvent is not draining from Tank.	Filter Pad is too dirty.	Clean or replace Filter Pad.
	Piece of cloth, paper, plastic, etc. is blocking drain hole at the bottom of Tank.	Remove Filter Pad and Work Screen and clean the bottom of Tank.
When Timer Knob is turned clockwise, it spins back to the original position.	Timer mechanism is defective.	Replace defective Timer.
Timer is not clicking.		
Pump does not stop, unless Timer Knob is turned back by hand or air supply is disconnected.		
Cleaning Function is working well but Clean Rinse does not work.	Rinse Pump is malfunctioning	Repair or replace the Check Valve Assembly of the Rinse Pump
	Clean Rinse Air Valve is defective.	Repair or replace the Rinse Air Valve Assembly
Excessive air leakage into clean solvent when Rinse Button is pressed.	Check Valve located at the bottom of the Rinse Pump is leaking.	Repair or replace the Check Valve Assembly of the Rinse Pump
During washing operation, dirty solvent is moving into clean solvent pail.	Combination Valve Assy is dirty with debris or defective and leaking. (A poppet valve is defective or has come out of Coil Spring).	Repair or replace the One-Way Check Valve Assembly in the Combination Valve.
During washing cycle, solvent is leaking from Air Rinse Valve. –	One-way Check Valve in the Combination Valve is defective and leaking.	Repair or replace the One-Way Check Valve Assembly in the Combination Valve.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Manual Wash Pump does not work when the Wash Foot Pedal (left side) is pressed.	The pump is temporarily stalled by excessive water in air supply,	Blow the air pressure into the exhaust pipe of the Manual Wash Pump to back flush the pump.
	The Manual Wash Suction Pipe in the Wash Solvent Pail is blocked by thick paint or debris.	Clean out the suction passage of the Suction Pipe.
	The Manual Wash Pump is defective.	Repair or replace the Manual Wash Pump.
	Wash Foot Pedal Air Valve (left side) is defective.	Repair or replace the Wash Foot Pedal Air Valve Assembly.
Manual rinse does not work when the Rinse Foot Pedal (right side) is pressed.	The Manual Rinse Suction Pipe in the Rinse Solvent Pail is blocked by debris or some object.	Clean out the suction passage of the Rinse Suction Pipe.
	The Manual Rinse Venturi is clogged or defective.	Clean the Manual Rinse Venturi. Venturi has no moving part and is not likely break-down.
	Rinse Foot Pedal Air Valve (right side) is defective.	Repair or replace the Rinse Foot Pedal Air Valve Assembly.
Fume extraction system is still working when Tank Lid is closed.	The Adjuster Screw on Lid Striker Plate is out of adjustment.	Adjust screw on Lid Switch Plate. Loosen the Lock Nut and turn Screw clockwise slowly until Fume Extraction System stops while lid is closed.
	Safety Lid Switch is defective and malfunctioning.	Repair or replace the Lid Switch Air Valve Assembly.
“Fish-eye” type damage to new paint finishes	Contamination of paint thinners by mineral spirits or other solvents containing “oily” or “wax” components. Cleaning clothes in contact with mineral spirits, wax or other “oily” solvents was used.	Replace all solvent with new. Do not mix paint thinners and incompatible solvents or use containers. Be especially careful where paint thinners are used in the same area as parts washer solvents.

2.6 DIAGNOSTIC PROCEDURES

When the Pump does not work and there is no obvious malfunction (e.g.: excessive air leaking out of the air exhaust), try the following:

1. Disconnect the air hose to the pump air inlet or Timer Air Outlet by pressing the Release Ring. Turn the Timer "ON". If air blows out of the Timer when the Timer is turned on and stops when the Timer is turned off, the Timer is working well but the Pump may be defective. Using a Hand Blow Gun, apply air pressure to the air hose leading to the Air Inlet of the Pump. If the Pump works normally, there may be a kink or blockage in the air line.

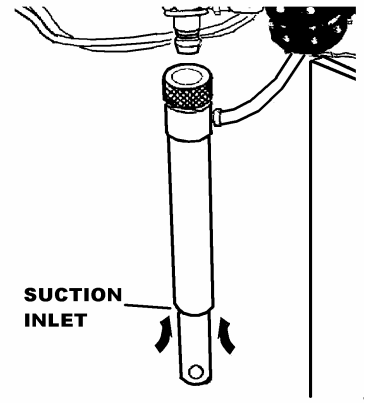


Figure 12

2. When the Pump and Timer are working normally and the Solvent Pail is full, but no solvent comes out of the Spray Jets, either the pump is defective or the suction line before the pump is blocked.

3. Disconnect the Suction Pipe Assembly from the bottom of the Tank. Check the suction vacuum of the Pump by closing the suction inlet of the Suction Pipe Assembly with your fingers as shown in Figure 12 while the Pump is working. If no vacuum is felt, the Pump is defective and must be repaired or replaced.

   If a good vacuum is felt, the Pump is normal and the problem may be due to a blockage in the solvent hose or the spray jets. Blow air into the Suction Hose as shown in Figure 13 to clear out the blockage.

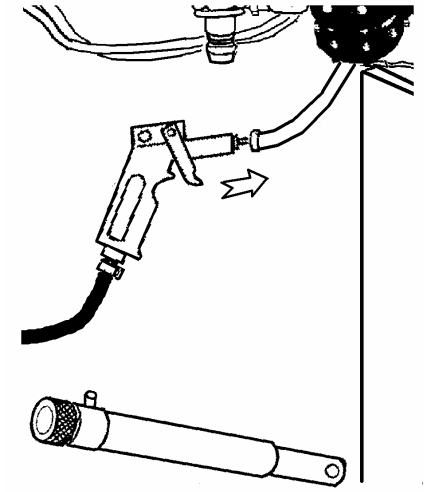


Figure 13

2.7 FLOW DIAGRAMS

The following diagrams indicate the flow of compressed air and solvent in this unit. Understanding the flow pathways will greatly assist you in diagnosing and servicing this equipment.

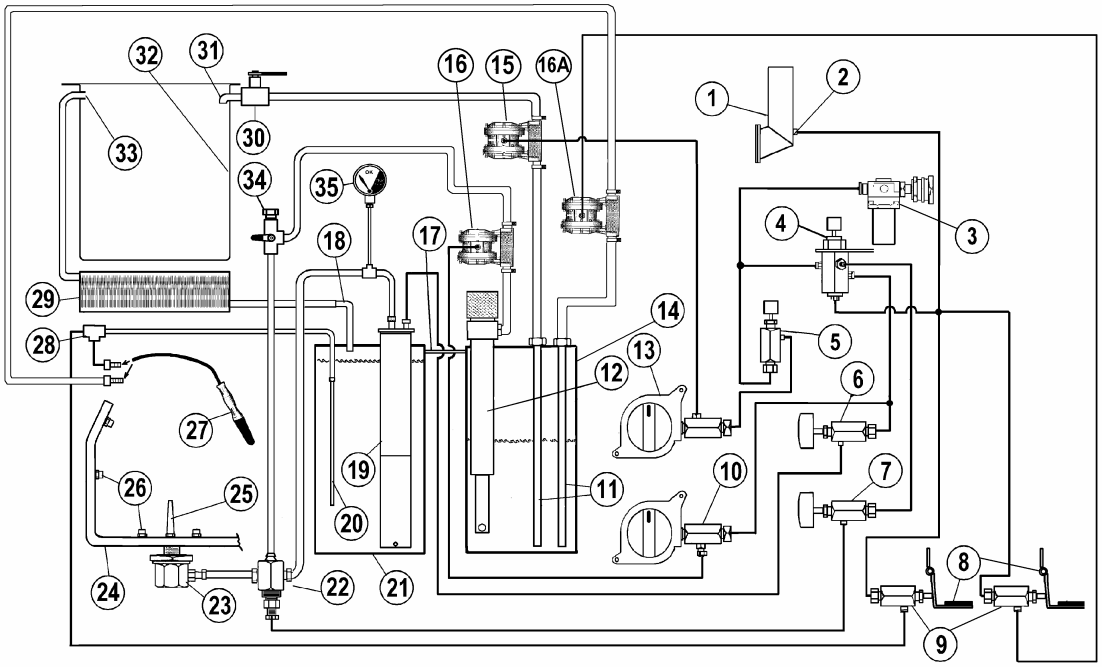


Figure 14

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	FUME EXTRACTION SYSTEM	**18**	SOLVENT OUTLET TUBE
2	FUME EXTRACTION VENTURI	**19**	RINSE PUMP ASSY
3	AIR INLET FITTING	**20**	MANUAL WASH SUCTION TUBE
4	LID SAFETY AIR VALVE	**21**	CLEAN SOLVENT PAIL
5	SAFETY COVER TRANSFER AIR VALVE	**22**	COMBINATION VALVE ASSY
6	CLEAN RINSE AIR VALVE	**23**	TANK BOTTOM CONNECTOR
7	AIR FLUSH VALVE	**24**	SPRAY MANIFOLD
8	FOOT PEDAL, MANUAL WASH	**25**	TAPERED NOZZLE
9	MANUAL WASH VALVE	**26**	WIDE ANGLE SPRAY JET
10	WASH TIMER ASSY	**27**	FLOW THROUGH BRUSH
11	SIPHON PIPE ASSY	**28**	MANUAL RINSE VENTURI
12	SUCTION PIPE	**29**	CONDENSER
13	TRANSFER TIMER	**30**	TRANSFER VALVE
14	WASH SOLVENT PAIL	**31**	TRANSFER SOLVENT OUTLET
15	DIAPHRAGM PUMP, TRANSFER	**32**	DISTILLATION TANK
16	DIAPHRAGM PUMP, GUN CLEANER	**33**	VAPOR OUTLET
16A	DIAPHRAGM PUMP, MANUAL WASH	**34**	SPIGOT
17	OVER FLOW PIPE	**35**	LOW LEVEL GAGE

2.8 PARTS LIST FOR GUN CLEANER

ITEM	NAME AND DESCRIPTION	PART NO.	ITEM	NAME AND DESCRIPTION	PART NO.
1	MECH. TIMER ASSY, MANUAL	115-200/2	30	QUICK COUPLING NIPPLE (MALE)	120-421
2	MECH. TIMER CONTROL KNOB	115-260F	31	MANUAL WASH SUCTION TUBE	140-271
3	ACCESS PANEL	760-4111	32	SOLVENT SUCTION PIPE ASSY	140-500
4	MECH. TIMER ASSY, MANUAL	115-200	33	RINSE VALVE ASSY, FOOT	112-500F
5	RINSE VALVE ASSY	115-400B	34	TRANSFER SUCTION PIPE	750-720
6	MANUAL SIPHON ASSY, UG4VFM	140-270	35	PAIL, GUN CLEANER, 5 GAL.	750-710G
7	LID SWITCH ASSEMBLY	114-800V		PAIL ONLY, W/O LID, WASH SOLV.	750-712G
8	STRIKE PLATE ASSEMBLY	100-810A	36	SPILL CONTAINMENT PAIL	100-041
9	TRIGGER LOCK SPRING (3 PACK)	120-350	37	OVERFLOW PIPE, PAILS	750-751
10	LID OR DOOR HANDLE	120-318	38	RINSE PUMP ASSY., 1 VALVE	URP100-C
11	NOZZLE ADAPTER TUBE ASSY	110-430SA	39	LID CLAMP RINSE, PAIL LID	750-713
12	AIR SUPPLY PLUG	115-450	40	PAIL, RECYCLER, 5 GAL.	750-710R
13	FLOW-THROUGH BRUSH	144-399B		PAIL ONLY W/O LID, RINSE SOLV.	750-712R
14	PAINT CUP HOLDER	100-413F	41	OUTLET TUBE, COPPER, URS500	600-8121
15	LID ASSEMBLY WITH HANDLE	140-320V	42	HOSE CLAMP, #4, INSIDE TANK	100-261S
16	LID OPENING STOP ARM	120-337S	43	OUTLET PE TUBE, URS500	600-8131
17	TANK COMPLETE, SS, CENTRE	760-3310	44	COMBINATION VALVE BLOCK	UVB400KIT
18	DELIVERY TUBE	100-360	45		
19	SPRAY JET ASSEMBLY	100-350	46	DIAPHRAGM PUMP, GUN WASH	UDP4TA
21	RINSE SOLVENT HOSE	140-855	47	DIAPHRAGM PUMP, TRANSFER	UDP4TA
22	FRAME RETARD. SCREEN	140-332S	48	LOW LEVEL GAGE	167-470U
22	FILTER PAD	100-380	49	PUSH BUTTON, RINSE, MOLDED	140-731F
23	SIPHON GUN CLEANER NOZZLE	110-356	50	RINSE VALVE ASSY	115-400B
24	CABINET	760-6200S	51	CONTROL BOX, SS	760-410S
25	DOOR	760-6300S	53		
26	PEDAL ASSY, FOOT SWITCH	100-750	54		
27	DRAIN VALVE ASSEMBLY	10-171	55		
28	HOSE, THINNER-RESIST, 3/8ID	RBH38X1116	82		
29	TANK BOTTOM CONNECTOR	100-456			

2.9 PARTS ILLUSTRATION

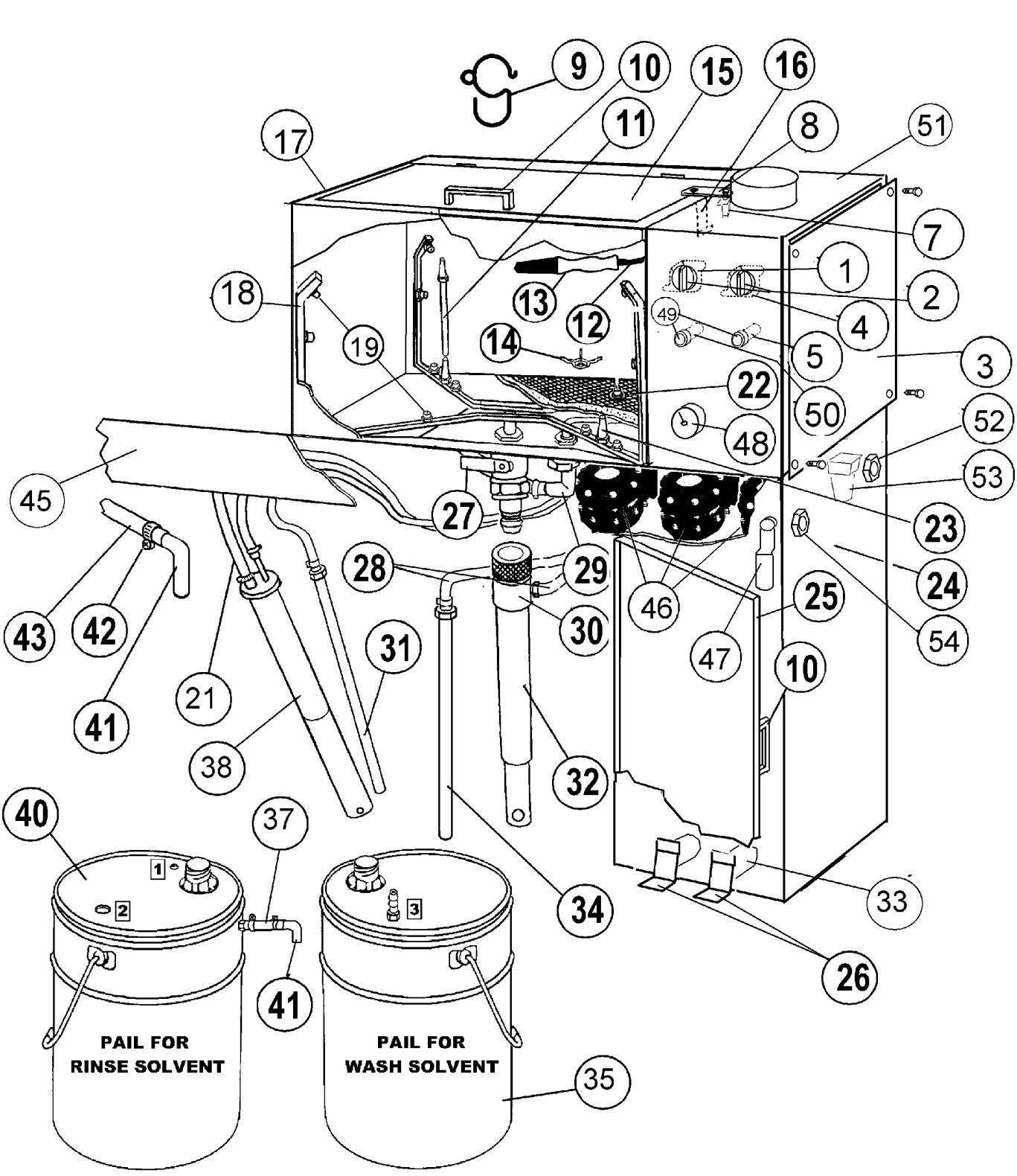
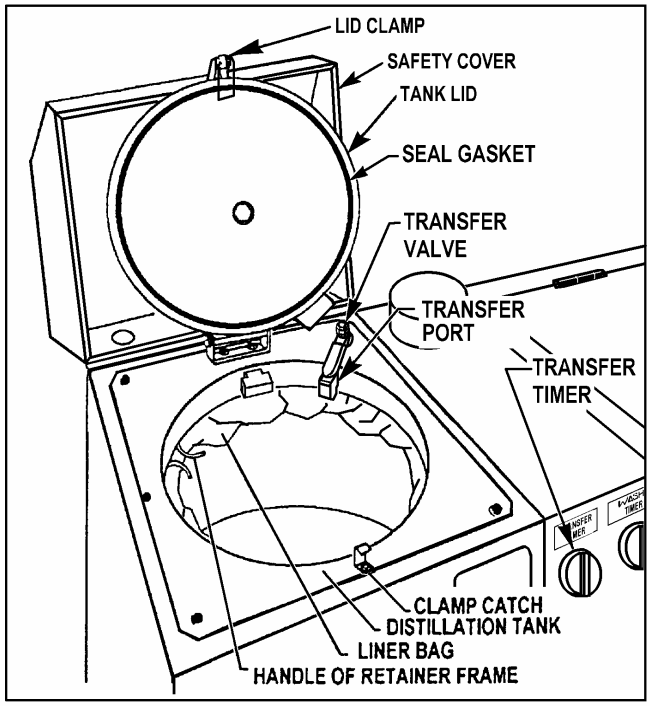


Figure 15

3. SOLVENT TRANSFER SYSTEM

3.1 GENERAL

The Solvent Transfer System automatically transfers dirty solvent from the Wash Pail to the Tank of the Solvent Recycler. This transfer system consists of a Transfer Pump, a Transfer Timer and a Transfer Shut Off Valve. The transfer system will operate only when the Safety Cover and Tank Lid are open. This feature helps to prevent overfilling and damage to the machine by allowing the operator to make sure that the Liner Bag is properly installed in the Tank and to observe the transfer process directly.



Each time the Clean Rinse button is pressed to perform a clean rinse operation, approximately 100cc (3.4 oz) of clean solvent is taken from the Rinse Solvent Pail on the left hand side and transferred to the Wash Solvent Pail on the right hand side. After about 95 clean rinse operations, the Wash Solvent Pail (half full when first set up) will become full. Manual rinsing also moves clean solvent to the Wash solvent Pail. The dirty solvent in the Wash Solvent Pail must now be transferred to the Distillation Tank of the Solvent Recycler and recycled according to the procedures provided in the next section. When the recycling operation has been completed, the recycled solvent will flow into the Rinse Solvent Pail. If the Rinse Solvent pail overfills, the excess solvent will flow into the Wash Solvent Pail through the over-flow pipe.

Note: Total volume of solvent in both pails should not exceed 7.5 to 8.0 Gal (28 to 30 liters).

3.2 OPERATING INSTRUCTIONS

The distillation operation should be performed when the Wash Solvent Pail has become full. At this point, the rinse solvent pail should be half full and efficient rinsing is no longer possible even though the washing and air flush operations will continue to function normally.

- Open the Safety Cover fully.
- Unlock the Lid Clamp and open the Lid of Recycler Tank.
- Turn the lever of the Transfer Valve counter clockwise by 90 degrees as shown below.
- Make sure that the Liner Bag is properly installed and that it is empty.
- Turn the Transfer Timer Knob fully clockwise. The dirty solvent will start flowing out from the Transfer Port into the Liner Bag. The transfer will be stopped automatically by the Timer after 2 minutes.
- Close the Transfer Valve by turning the handle counterclockwise 90 degrees.
- Add solvent to the full level if it is still low.

- Close the Tank Lid and secure with the Lid Clamp.
- Close the Safety Cover.

This completes the transfer of the dirty solvent. The recycler is now ready to start the distillation operation. See the procedures in Section 4 (SOLVENT RECYCLER).

CAUTION:
TO AVOID OVERFILLING THE RECYCLER TANK DURING THE AUTOMATIC TRANSFER CYCLE, MAKE SURE THAT THE RECYCLER TANK IS EMPTY BEFORE BEGINNING THE TRANSFER

3.3 TROUBLE SHOOTING GUIDE (Transfer System)

The guide table below provides the possible causes and suggested solutions for most cases of problems. Carefully study the contents before proceeding with the corrective actions so that the real cause of the problem can be properly dealt with.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump and Timer appear to be working normally but there is little or no dirty solvent coming out from Transfer Port.	Transfer Valve is not fully open.	Turn the Handle of Transfer Valve 90 degrees clockwise.
	Washing Solvent Pail is empty or very low.	Check Drain Valve of Cleaning Tank to make sure it is in open position. (Handle is vertical)
		Add more solvent into Distillation Tank before starting recycler operation.
	Transfer Suction Hose is disconnected at Wash Solvent pail.	Connect the Transfer Suction Hose and secure with a hose clamp.
	Transfer Suction Pipe is clogged with paint debris.	Disconnect Transfer Hose at the pail and remove the blockage by blowing air into Hose Barb of Transfer Suction Pipe.
Transfer Timer is working but Transfer Pump is not working.	Air Valve of Transfer Timer is defective.	Repair or replace Air Valve or Transfer Timer Assembly.
	Transfer Pump is temporarily stalled by excessive water in air supply,	Blow the air pressure into the exhaust pipe of the Manual Wash Pump to back flush the pump.
	Transfer Pump is defective.	Repair or replace the Transfer Pump.
When Timer Knob spins back to the original position.	Transfer Timer mechanism is defective.	Repair or replace the Transfer Timer.
Timer is not clicking.		
Pump does not stop, unless Timer Knob is turned back by hand or air supply is disconnected.		

4. SOLVENT RECYCLER

4.1 SAFETY

Solvent recycler incorporated in this combo unit is engineered and manufactured to the highest performance standards and has been subjected to detailed testing before shipment from factory. This unit is also certified by ETL (Electric Testing Laboratory) to be EXPLOSION PROOF CLASS 1, DIVISION 1, GROUP D – T2C, UNDER UL2208 STANDARDS AND CSA C22.2 No.30 and is the one of the safest equipment of this kind. However, operator error such as use of inappropriate solvents, incorrect use of Liner Bag, wrong temperature setting, improper service and maintenance etc, could result in malfunction, damage or accident. Pay serious attention to all cautions and warnings provided on labels affixed on this equipment as well as in this manual. Before operating this equipment, please carefully read this manual, which is a key to the successful and safe operation of this equipment. Keep this manual in good care and in place readily available to operator at all times. If you have any questions about the operation of this equipment, call your distributor or the UNI-RAM Product Hot Line:

USA: 1-800-735-4331 Canada: 1-800-417-9133

CAUTION

DO NOT USE THIS EQUIPMENT TO RECYCLE PARTS WASHER SOLVENTS. "FISH EYE" DEFECTS MAY BE CAUSED WHEN PAINT OR LACQUER THINNER IS CONTAMINATED WITH PARTS WASHER SOLVENTS.

4.2 BEFORE USING

- The unit is supplied with a Liner Bag (Part No.LB900C-1) and Retainer Frame (Part No. 770-9110) already installed inside Distillation Tank.
- Two more Liner Bags (Part No. LB900C-1) are also supplied with this equipment as spares, but please order before you run out, using the table below.

Liner Bag, 475° F, Pack of 10	**LB900C-10**
Liner Bag, 475° F, Pack of 100	**LB900C-100**
Liner Bag, 475° F, Pack of 250	**LB900C-250**

MAKE SURE EXCESS LINER BAG MATERIAL DOES NOT BLOCK VAPOR OUTLET OF RESERVOIR TANK.

4.3 PREPARATION

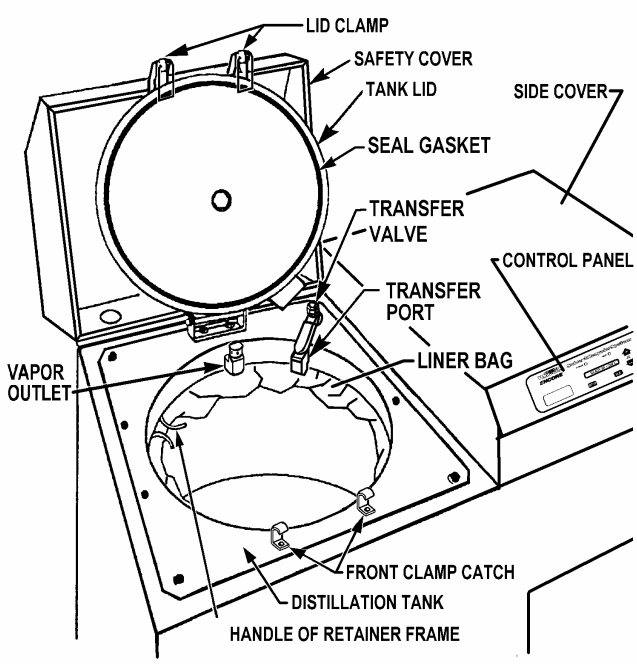
When the Wash Solvent Pail becomes full, transfer the dirty solvent from the Wash Solvent Pail to the Distillation Tank according to the procedures described in section 3.2 OPERATING INSTRUCTION (PAGE 21).

The capacity of the tank is 20 liters (5.0 US gallon). A minimum of 6 liters (1.5 US gallon) is recommended.

Do not overfill the tank or dirty solvent will flow into the Condenser and cause blockage, discoloration of distilled solvent etc.

NOTE: The Tank Lid is provided with an automatic pressure relief mechanism as a safety measure. In the event of a pressure increase inside the Tank, the Safety Pressure Relief System will start releasing pressure at 0.5 to 1.0 PSI (0.035 to 0.070 *kglcm2)*

1 The unit is supplied with a Liner Bag (Part No. LB900C-1) and Retainer Frame (Part No. 770-9110) installed in the Tank. The Liner Bag may be used several times. However, the life of the bag depends on several factors including the type of solvent, temperature settings etc. When reusing a Liner Bag, make sure that it is not damaged or leaking.



2 To install a Liner Bag and Retainer Frame, follow the procedures described below:
   (a) First, install Liner Bag so that the bottom of the Bag sits flat on the bottom of Reservoir Tank. (See Figure 1)
   (b) Insert your fingers into loop of Retainer Ring and squeeze to reduce diameter as shown in Figure 2.
   (c) Insert Retainer Ring into Liner Bag inside Reservoir Tank and release two fingers to that it will sit just above the step of Reservoir Tank as shown in Figure 3.
   (d) Fold down lip of Liner Bag all around as shown in Figure 4.

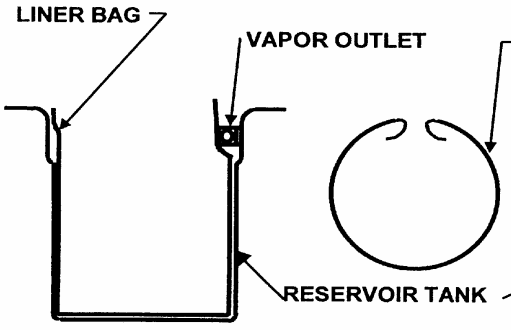


FIG. 1

FIG 2.

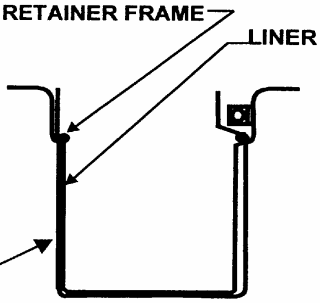


FIG. 3.

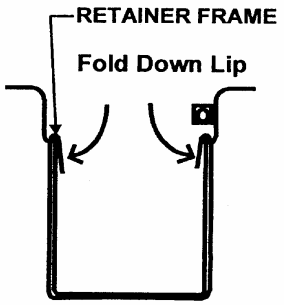
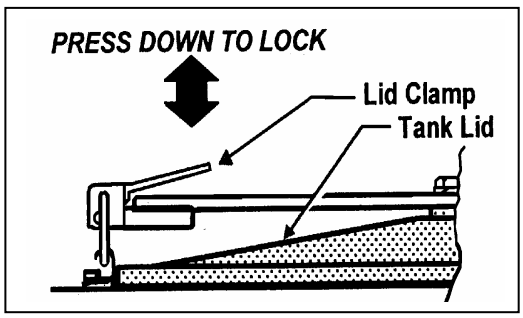


FIG. 4.

Observe safety precautions noted in item 1, 2, and 3 above, and carefully pour dirty solvent into Liner Bag inside Reservoir Tank. Keep Reservoir Tank clean by making sure that no dirty solvent is poured outside of the Liner Bag.



3. Close Reservoir Lid and secure with Lid Clamp. Make sure that the Reservoir Lid is firmly seated to avoid leakage.

4. Open Door and place an approved solvent collecting container (20 liter or 5 US gallon) in the area provided. Insert Condenser Outlet Tube into top opening of the collecting

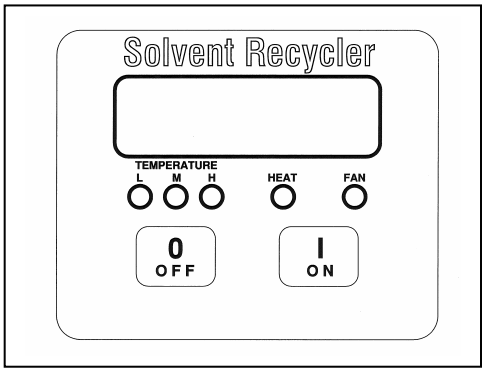
container as shown.

5. Connect the Alligator clamp provided at the end of the Ground wire to expose metal part of the solvent receiving container.

NOTE: Adjust the adjustable legs to suite the floor level and the type and size of Receiving Container. Make sure Solvent Outlet Tube is not kinked or blocked, and that it is properly inserted into the top opening of the Receiving Container by at least 1 inch (2.5 cm).

YOU ARE NOW READY TO PROGRAM THE ENCORE SOLVENT RECYCLING UNIT.

4.4 CONTROL PANEL



The Control Panel is located at the top right corner of the Solvent Recycler Body as shown in Figure 1 on page 6.

1. <u>PUSH BUTTONS:</u>
The keypad control panel consists of 2 push buttons labeled as follows:

In order to prevent the damage and ensure long service life, press buttons gently.

(1) **0** To turn off the distillation operation.

(2) **I** To turn on the distillation operation.

These buttons are also used to change the boiling point set up.

2. <u>LED LIGHTS - READY:</u>
See page 4.

3. <u>OTHER LED LIGHTS – HEAT AND FAN:</u>
HEAT light is on; the heater is on. If it is flashing, the heater is on at the reduced power. FAN light is on; the unit Cooling Fan is on.

4. If READY (H) and READY (L) lights are flashing when HEAT light is off, en error condition exists. The error conditions are described as below:

4.5 ERROR CONDITION CODES

A SELF DIAGNOSIS FEATURE IS PROVIDED WITHIN THE COMPUTER SYSTEM OF THE UNIT. When an error has been detected during the operation, READY (H) and READY (L) lights will start flushing indicating the following error conditions. Heater is turned off automatically for safety except in code “22” condition. Press “OFF” button to stop error code, and press “ON” button to resume operation after error condition has been corrected. Refer to the ERROR CONDITION CODES (Page 29) section of Trouble Shooting Guide for details.

ERROR CODE	FLUSHING OF LED LIGHTS		DESCRIPTION OF ERROR CONDITIONS
	READY (H)	READY (L)	
11	1 TIME	1 TIME	Tank Thermocouple is defective and has open circuit.
12	1 TIME	2 TIMES	Condenser Thermocouple has open circuit.
21	2 TIMES	1 TIME	Heater Circuit has open circuit due to broken fuse.
22	2 TIMES	2 TIMES	Heater Triac is defective and Heater is still “ON”
23	2 TIMES	3 TIMES	Condenser is overheating.
24	2 TIMES	4 TIMES	Code 23 condition lasts over 10 minutes.
31	3 TIMES	1 TIME	Tank is either empty or not enough solvent.
32	3 TIMES	2 TIMES	Reset occurred due to power interruption.
33	3 TIMES	3 TIMES	Recycling not finished in 6 hours.

4.6 SETTING THE BOILING TEMPERATURE

Three boiling temperature settings are available as indicated by LED lights:

“READY (L)” LED LIGHT IS ON	**>>>>>>>>>>>>>**	**150°C (302°F)**
“READY (H)” LED LIGHT IS ON	**>>>>>>>>>>>>>**	**200°C (392°F)**
“READY (L)” & “READY (H)” ARE ON	**>>>>>>>>>>>>>**	**175°C (347°F)**

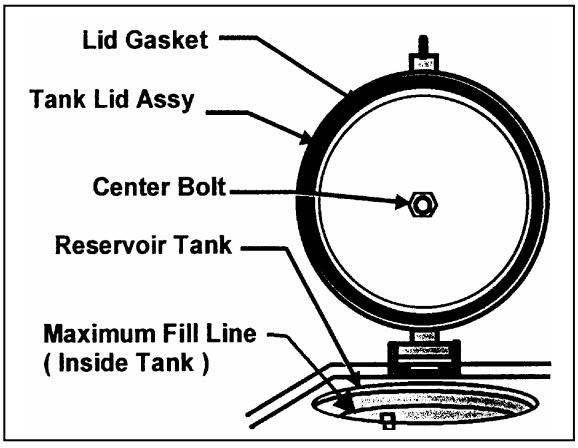
To change the temperature setting, follow the procedures as described below:

1. Make sure that "HEAT" and "FAN" lights are off.
2. Press and hold "OFF" button. Press "ON" button once or twice to obtain desired setting as indicated by LED lights.
3. Release both "OFF" and "ON" buttons together.

NOTE: All temperature settings are indications for the start point of the boiling phase and will vary according to the solvent used and the extent of contamination.
The dirty solvent often includes different types of oil, which have boiling points higher than 200°C (392°F), the highest temperature attainable in this unit.

4.7 READY & RUN MODE

1. Open Reservoir Tank Lid and Install Lining Bag and Retainer Frame.
2. Pour used solvent into Lining Bag in Reservoir Tank.
3. Close Tank Lid, secure with Lacking Clamp and close Outer Cover.
4. Open Cabinet Door and place clean, empty solvent container inside.
5. Lift and insert Solvent Outlet Tube into spout of Solvent Container and close Door



6. Make sure that the setting as indicated by LED lights is correct for the solvent to be recycled.
7. Press “ON” button. Recycling will start and “HEAT” and “FAN” lights will come on.
8. When boiling phase is completed, “HEAT” light will go off.
9. When distillation is completed and the unit is cooled to the safe temperature, “FAN” light will go off indicating unit is ready for the next operation

4.8 DISTILLATION PROCESS

1. The initial heating phase takes 10 to 15 minutes, depending on the volume and the boiling point of solvent being distilled, room temperature, etc. During this process, both "HEAT" Light and "FAN" Light are on, indicating that the Heater and the Fan Motor are turned on. "READY (L)" and/or "READY (H)" LED Light(s) also flash(es) indicating which of the six set point temperatures the unit is using.
2. The boiling phase begins when the temperature reaches typical boiling temperature of the solvent being processed. This temperature will vary with solvent type and the extent of contamination of that solvent. During this phase, most of the heat goes into vapor generation with no increase or only a small temperature increase at the thermo-sensor and the distilled solvent starts dripping from the outlet tube into the Receiving Container at a rate of 2.5 to 3.0 gallons (9.5 -11.5 liters) per hour.
3. When the components of the dirty solvent with boiling temperature lower than the set-point temperature have all evaporated, the temperature at the Thermo-Sensor starts increasing more rapidly.
4. When the temperature reaches the set point, the Heater is turned off and the "HEAT" Light goes off.
5. When the temperature goes down to 60°C (144°F), the Cooling Fan stops and "FAN" Light goes off, indicating the unit is ready for next process.

4.9 REGULAR MAINTENANCE

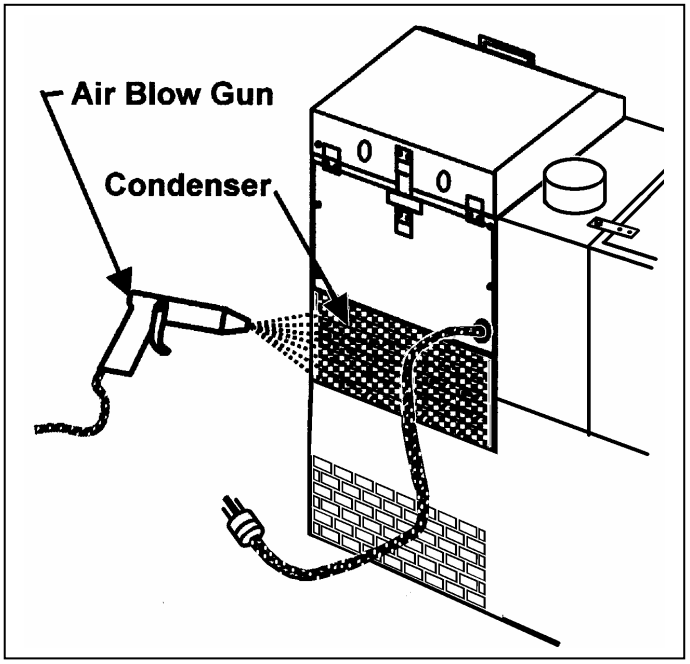
PROCEDURE FOR REPLACING LINER BAG:

1. Even when a liner bag is used to collect the residue, a small amount of clean solvent will remain in the bottom of the Reservoir because of condensation of solvent at the end of boiling phase. Clean the Reservoir Tank with a brush and clean damp cloth after each use.
2. When pouring the dirty solvent, make sure that all of it goes into the Liner Bag so that no dirty solvent gets between the Liner Bag and Reservoir Tank.
   Note: To avoid scratches and other damage to the Reservoir Tank, do not clean with abrasives or hard metal instruments. Use plastic or wooden tools to clean out residues if necessary.
3. To ensure a long service life of Lid Gasket (Part No. 770-2150N) and also to prevent vapor leakage, carefully clean the inside edge of Reservoir where the Lid Gasket seats.
4. Keep the area around the equipment clean and clear of all debris. Do not store the recycled solvent inside the equipment.

5. Always use the Bag Retainer Frame (Part No. 770-9110) supplied with the unit, when using the liner bag (Part No. LB900C-1). Remove Residue from Linger Bag, clean bottom of Solvent Reservoir; check Liner Bag to determine if can be reused without leakage.

PROCEDURES FOR CLEANING THE CONDENSOR:

Condenser must be checked regularly and cleaned as required to ensure that it is free of dust and debris. Dust and debris collected on the opposite side of the condenser are not visible through the Upper Screen in the back of the unit. If the condenser is over-heating due to the excessive dust, the operation will stop and LED Lights will show either of two error codes 23 or 24. To clean the dirty condenser, blow off the dust by air blowgun as shown in the illustration on the right or use vacuum cleaner.



PROCEDURES FOR REPLACING LID GASKET:

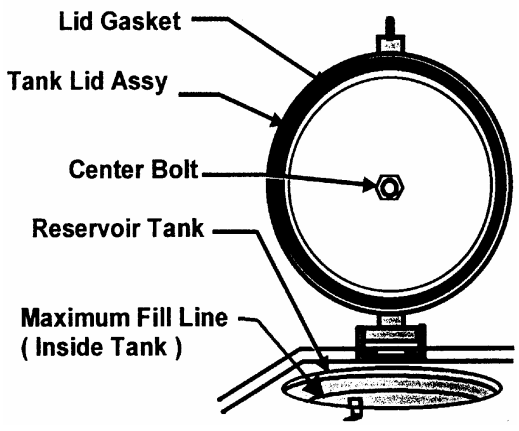
Lid Gasket (Part No. 770-2150N), which is exposed to high temperature and solvent vapor during the distilling process, is subject to normal wear.

Before the Lid is closed, make sure that the top inside edge of the of the Reservoir Tank where Lid Gasket seats is completely wiped clean to be free of any paint or dirty solvent.

This will greatly prolong the life of the Lid Gasket. When leakage of solvent vapor due to wear or damage is found, the Lid Gasket must be replaced with a new one as soon as possible.

REPLACE LID GASKET BY THE FOLLOWING PROCEDURES:

1. Open the Reservoir Tank Lid.
2. Hold the top of Lid in open position by left hand and loosen Center Screw by 3 complete turns with a Philip Screw Driver. Inner Plate and Lid Gasket will come loose from Outer Plate of Lid.
3. Remove the defective Lid Gasket. Install a new Lid Gasket (Part No. 770-2150N) into the groove between Outer Plate and Inner Plate of the Lid. Care should be taken not to scratch Lid Gasket.
4. Make sure that Lid Gasket is evenly stretched all around and tighten Center Screw completely. This completes the Lid Gasket replacement.



Note: It is recommended to keep a few Lid Gaskets (Part No. 770-2150N) in stock as spares.

4.10 MAINTENANCE AND SERVICE

1. Check the reservoir lid gasket for any damage before each process. A damaged Lid Gasket can result in an improper seal and Vapor leakage, which is hazardous and wasteful.
2. Inspect cooling air outlet to ensure that there is adequate space for undisturbed ventilation. Vacuum clean if necessary.
3. Inspect Power Cord periodically for wear or damage. Use only proper cord (16/3 AWG Type SOW) when replacement is necessary.
4. Keep condenser coils and fins free of dust and dirt. To clean the Condenser, remove the Upper Screen and use a vacuum cleaner to clean between fins and coils.
5. To clean out condenser tube, close two threaded side inlet holes with fingers or 1/4"NPT male plugs and place air nozzle into bottom outlet hole and flush with air at about 30 p.s.i. (2 kg/cm^2). Make sure to remove two 1/4"NPT male plugs used.

Note: Before all maintenance and service work, disconnect power supply or turn off at main switch to prevent the risk of electrocution. All electrical services and repairs must be performed by a certified electrician. Use only genuine UNI-RAM parts for maintenance and repairs.

4.11 TROUBLE SHOOTING GUIDE

Refer to the Parts List (Page 34) and Parts Sketch (Page 35) for name and location of the various component mentioned in this section.

ERROR CONDITION CODES:

A SELF-DIAGNOSIS FEATURE IS PROVIDED WITHIN THE COMPUTER SYSTEM.
When an error has been detected during the operation, READY (H) and READY (L) lights will start flashing indicating the following error conditions. Heater is turned off automatically for safety except in code “22” condition. Press “OFF” button to stop error code, and press “ON” button to resume operation after error condition has been corrected.

ERROR CODE	FLUSHING OF LED LIGHTS		DESCRIPTION OF ERROR CONDITIONS	ACTION REQUIRED
	READY (H)	READY (L)		
11	1 TIME	1 TIME	Tank Thermo is defective and has open circuit.	Repair or replace Tank Thermocouple Assembly.
12	1 TIME	2 TIMES	Condenser Thermo has open circuit.	Repair or replace Condenser Thermocouple Assembly
21	2 TIMES	1 TIME	Heater Circuit has open circuit due to broken fuse.	A short circuit has occurred in the Heater or the Heater Wiring. Check the condition with a circuit tester. Check Heater Fuse, Heater Thermostat and/or heater wiring. Repair the defect and replace Fuse.

22	**2 TIMES**	**2 TIMES**	Heater Triac is defective and Heater is still "ON"	Disconnect the power supply as soon as possible. Replace Power Control Board inside the Motor Housing.
23	**2 TIMES**	**3 TIMES**	Condenser is overheating.	Clean dirty Condenser. (See page 28) Check Cooling Fan or Fan Motor. If the Condenser is overheating due to lack of space around the unit, position the unit to provide 4 to 6 inches (10 to 15cm) around the unit.
24	**2 TIMES**	**4 TIMES**	If code 23 condition last over 10 minutes, this code will show and operation is terminated.	
31	**3 TIMES**	**1 TIME**	Tank is either empty or not enough solvent and boiling did not occur within 45 minutes.	Check Tank to make sure that there is at least 1 gallon (4 liters) of solvent in the Tank.
32	**3 TIMES**	**2 TIMES**	Micro Controller has been reset due to power interruption, or drop in voltage of power supply during the recycling operation.	Press "OFF" and then "ON" buttons to resume operation. Turn off the Electricity at the source for about 30 seconds if possible. Usually nothing is wrong with the unit.
33	**3 TIMES**	**3 TIMES**	Recycling not finished in 6 hours due to power interruption or because the set point was too low for the solvent. Usually nothing is wrong with the unit.	Raise Set Point and try again. If "READY (H)" setting did not work, the solvent has boiling point higher than 200°C(392°F) and cannot be recycled.

SYMPTOMS AND SOLUTIONS:

Some of the possible trouble symptoms and recommended solutions are described in the following section.

The unit is plugged in but "Power On" lamp is not lit indicating no electricity supplied

1. There is no power is supplied to the electrical receptacle to which the unit is plugged. Check main fuses and/or circuit breaker and make sure 100/120V AC single-phase power is supplied.
2. The Computer Fuse (F3) located on Power Supply Board as shown on page 32 is defective. Replace the defective fuse.
3. The connector located on Computer Board (Item #5) is loose or disconnected at the Computer Board. Make sure the Terminal is connected firmly.
4. The connector located on Power Supply as shown on page 32, which supplies power to the Computer Board is loose or disconnected. Open the Front Cover to pull out Power Board Assembly and make sure the Connector is inserted firmly.

Recycling is completed but still a lot of solvent remaining in Reservoir Tank

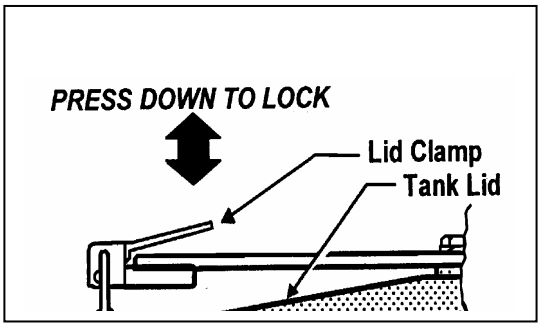
1. Boiling temperature setting is too low. Raise the set temperature as required for the solvent according to the procedures described on page 26 under "Setting Boiling Temperature".

2. The solvent to be recycled contains too much oil or other contamination, which make the boiling temperature higher. Raise the set point if possible. Some solvent has boiling point higher than 200°C(392°F) and cannot be recycled by this unit.

Thinner vapor leaking from Lid Gasket

1. Lid Gasket (Item 10) has excessive wear, crack or other defect. Replace the defective Lid Gasket. Follow the procedures on page 28 of the Operation Manual.

2. Reservoir Tank (Item #21), around top edge where Lid Gasket is seated, is scratched, dented or otherwise damaged causing leakage. Repair the defect or replace Reservoir Tank Assy as required.



4. Reservoir Lid (Item #9) is not positioned correctly in relation to the Reservoir Tank. Adjust the Lid by loosening the two hex bolts on the Tank Lower Hinge (Item #13). Close the Lid in the correct position and tighten two bolts firmly.

Liner Bag is burnt or melting

Liner bag of lower quality does not withstand the high temperature. Make sure that genuine Uni-ram Liner Bags are used. See page 23 for the correct part numbers of liner bags.

Computer seems to malfunction

If the Computer should appear to malfunction, causing strange symptoms, it could be due to power interruption, or drop in voltage of power supply during the recycling operation.
Discontinue the power supply by unplugging or by turning off main power switch or Breaker for one minute, reinstate the power supply and operate the unit again.
If this has not solved the problem, contact us for further advice.

"Fish Eye" Problem

If mineral sprit such as the Parts Washer Solvents, Varsol, etc. has been introduced into the equipment, the distilled solvent may be dirty with such mineral spirit, causing "Fish Eye" problems in the paint finish. It may be necessary to distill 5 to 10 gallons of paint or lacquer thinner to remove contamination.

FUNCTION CHECK AND CALIBRATION:

The functions and performance of the unit may be checked easily by following the procedures. This test is useful if some malfunction is suspected.
Note: Water absorbs heat energy much more than the solvents and takes much longer to recycle. If the unit works we// with water, it means it will work faster with solvent.

1. Remove the Liner Bag and the Retainer Frame from the Reservoir tank.

2. Fill the Reservoir Tank with 1 to 2 gallons (7.6 to 15 liters) of clean water.

3. Set the Set-Point temperature to READY (L) range which will provide the highest boiling temperature of 150°C (302°F).
   Note: READY (L) light is on before the unit is turned on and flashing during the operation.

4. Run the unit until the water has been almost completely distilled.

5. If however, the water is still remaining in the tank when the unit has automatically turned itself off, it could indicate that a temperature off-set has occurred and calibration may be

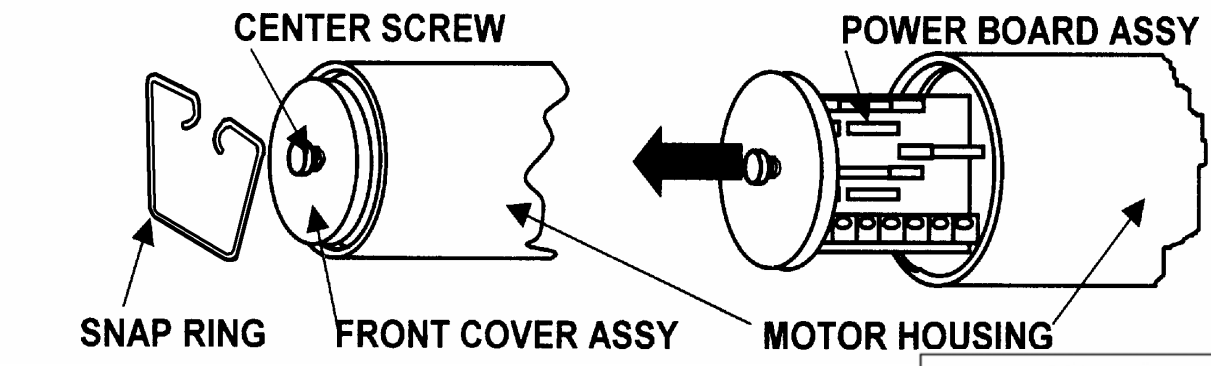
required to correct the off-set or that some technical defect has occurred. Contact UNI-RAM Service Department for the service instructions.

4.12 FUSE REPLACEMENT PROCEDURES

A Snap ring Pliers is not required to remove the Front Cover of Motor Housing as shown below. Fuse may blow due to power surge, lightning, and shock during transportation, etc.
To prevent shock, disconnect power supply before starting these procedures.

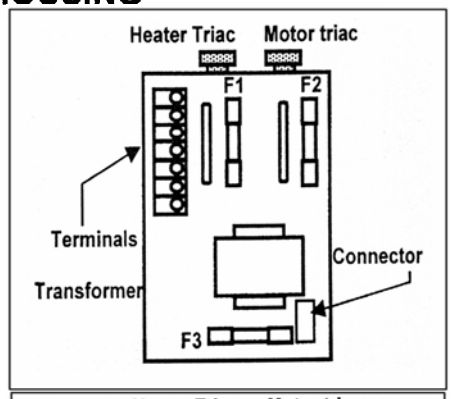
Replace the fuse according to the following procedure

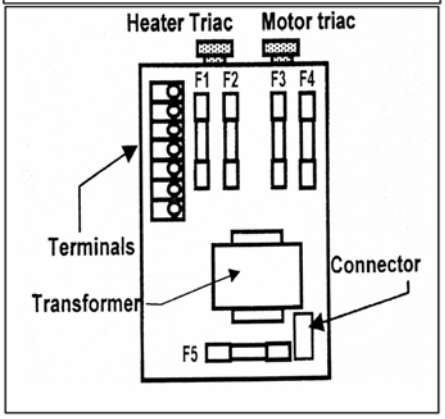
1. Three Fuses are located on the Power Control Board mounted inside the Motor Housing as shown on the right.
2. Open Front Doors, and remove screen covering the motor housing. The front end of Motor Housing is now exposed for service work.



3. Remove the Snap Ring from the front end of Motor Housing by pulling two curved ends of Snap Ring closer with your fingers.
4. Using pliers, grab the Head of Center Screw located on the Front Cover Assy as shown below and pull out gently.
6. Check each fuse to locate the fuse that has been burnt out and replace it.
7. Carefully push the Power Supply Board back into the Motor Housing.
8. Install the Snap Ring and make sure that it is securely locked into the groove.
9. Close the Door and connect the power supply.

This completes the replacement of the defective fuses.





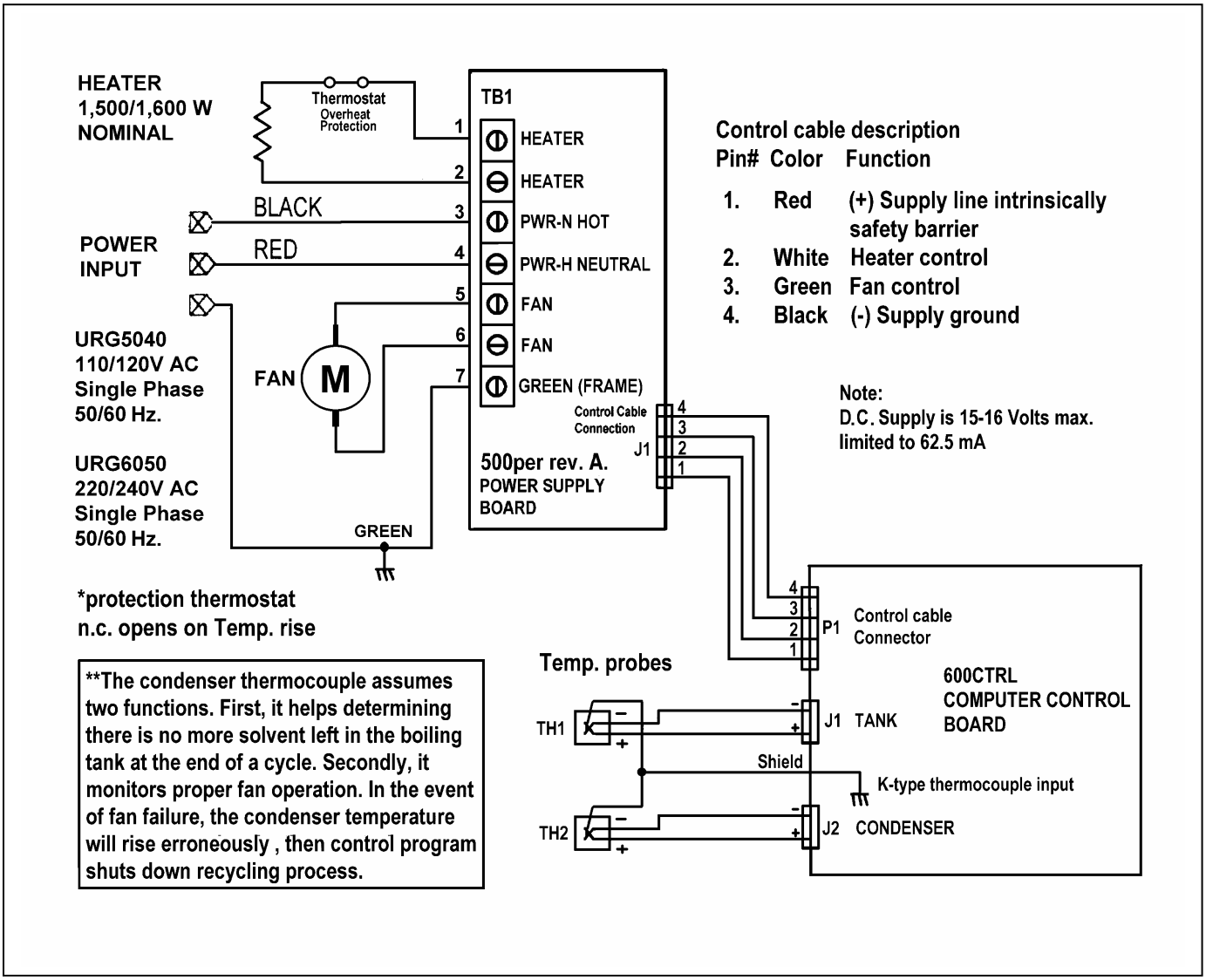
COMBO455S

100/120V AC, 50/60 Cycles, 13/15 Amps
1,500 Watts Heater Element

Fuses F1: 20.0 Amp. for Heater Element
Fuses F2: 1.0 Amp. for Fan Motor
Fuses F3: 0.0625 Amp. for Computer Board

Note: Fuses F1 and F3 are 250 VAC 3AG type fast action fuses and F3 is 25 VDC 3AG type fast action fuse.

4.13 ELECTRIC WIRING DIAGRAM



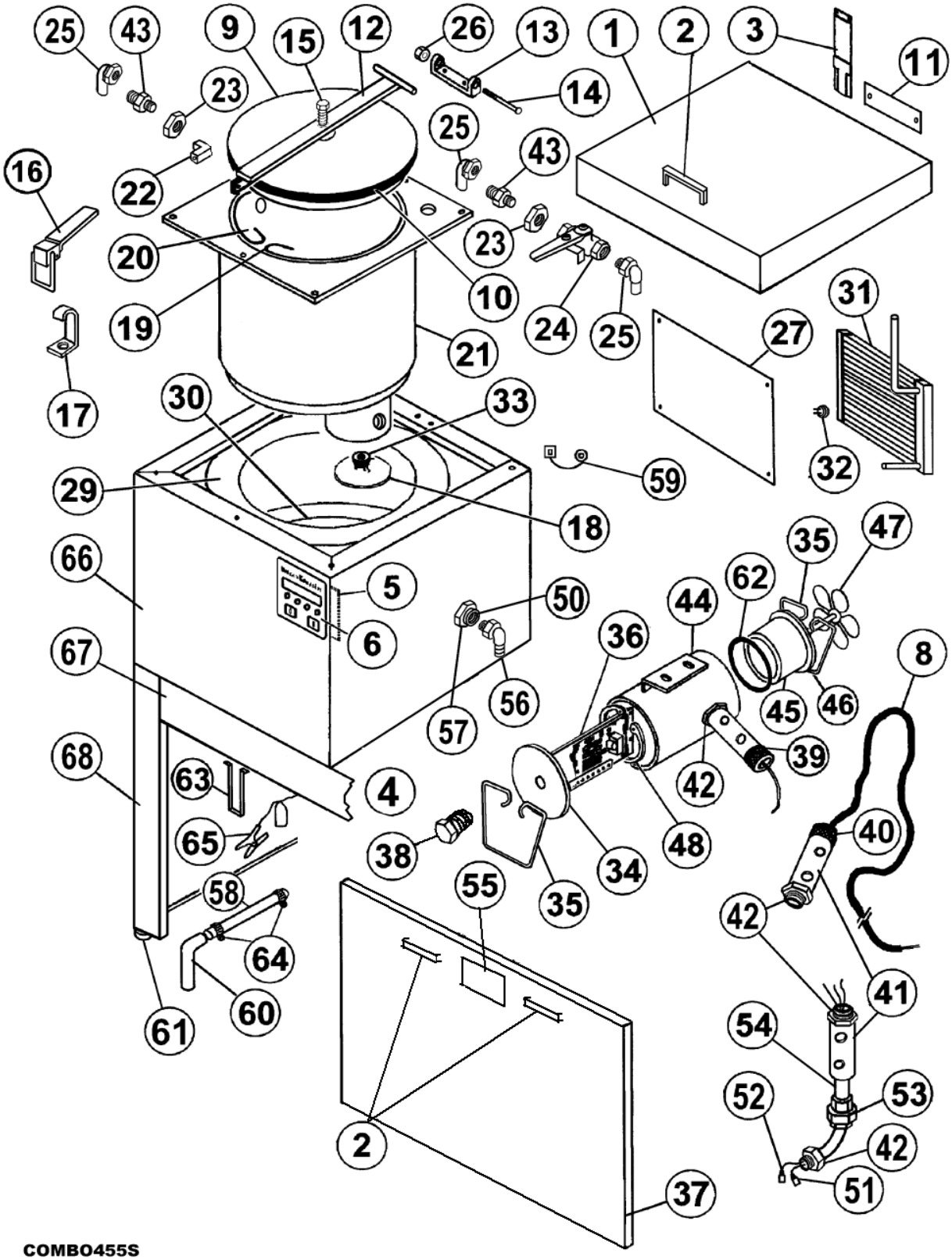
CALL THE TOLL FREE NUMBERS LISTED BELOW FOR FURTHER INFORMATION

USA: 1-800-735-4331 CANADA: 1-800-417-9133

4.14 PARTS LIST FOR SOLVENT RECYCLER

ITEM NO.	NAME AND DESCRIPTION	PART NO.	ITEM NO.	NAME AND DESCRIPTION	PART NO.
1	OUTER SAFETY COVER ASSY	770-3310	36	POWER BOARD, URS500, 100V	500-4310
2	PULL HANDLE, DOOR & LID	120-318		POWER BOARD, URS600, 120V	600-4310
3	STAY, SAFETY COVER	770-3370	37	DOOR ASSY	760-6300S
4	FRONT SCREEN (NOT SHOWN)	760-6278	38	SCREW ¼”-20X5/8”L	99-404SR
5	COMPUTER ASSY, URS5/600	600-3450	39	CONNECTOR, COMPUTER CORD	770-4283
6	SWITCH PANEL	600-3461	40	CONNECTOR, POWER CORD	770-4284
8	POWER CORD	500-4700	41	SEALING FITTING, 1/2"NPT	770-4286
9	TANK LID ASSY	770-2100	42	CLOSE NIPPLE, ½”NPTX1”L	10-179
10	LID GASKET, BLACK, 70DU	770-2150N	43	REDUCER ADAPTER	Z123-CB
11	FRICTION PLATE, LID STAY	770-3730	44	MOTOR HOUSING TUBE	600-4110
12	LID HOLDER BAR ASSY	700-2230	45	FAN MOTOR ASSY, 120V	500-4210
13	U-BRACKET LOWER HINGE	770-2251		FAN MOTOR ASSY, 240V	600-4210
14	HINGE PIN BOLT, 1/4"-20X4.5”L	99-436HH	46	REAR COVER, MOTOR HOUSING	600-4115
15	HEX BOLT	99-406SS	47	FAN, 5-BLADE, 8"OD, CCW	600-4230
16	LID CLAMP ASSY	900-2220	48	SNAP RING, MOTOR SUPPORT	600-4133
17	FRONT CLAMP CATCH, SS	770-2261	49	½” ELBOW 90°,GAL(NOT SHWN)	770-4282
18	COVER, HEATER TERMINAL	960-1365	50	HEX NUT	100-463
19	RETAINER RING, SS	770-9110S	51	WIRE, HEATER - PWR BOARD	770-4810
20	LINER BAG, PACK OF 10	LB900C-10	52	WIRE, THERMOSTAT - PWR BRD	770-4820
	LINER BAG, PACK OF 100	LB900C-100	53	UNION ASSY, 1/2"NPTx2	700-4283
21	TANK & HEATER ASSY, 120V	500-1100	54	LONG NIPPLE, 1/2"NPTX 6"L	10-421
	TANK & HEATER ASSY, 240V	600-1100	55	DOOR LOCK	960-3230
22	VAPOR OUTLET FITTING	770-1151L	56	ELBOW, 90D, BRASS	Z9139-6B
23	HEX NUT	100-463	57	UNION NIPPLE, HEX	110-473
24	TRANSFER VALVE ASSY	750-3300	58	PE OUTLET TUBE, CONDENSER	600-8131
25	FLARE ELBOW, 3/8"NPT-1/2"T	Z50-8B	59	WIRE, THERMOSTAT - HEATER	770-4850
26	HEX LOCK NUT, HINGE PIN, 3/8"	99-543DH	60	OUTLET TUBE, COPPER	600-8121
27	BACK PANEL	600-3131	61	ADJUSTABLE FOOT	110-531L
28	REAR SCREEN ASSY(NOT SHWN)	600-3140	62	O-RING, MOTOR SUPPORT	600-4137
29	SIDE INSULATOR PAD	600-1210	63	OUTLET TUBE GUIDE	600-3129
30	BOTTOM INSULATOR PAD	770-1230	64	HOSE CLAMP, 1/2"ID.SS, #4	100-261S
31	CONDENSER & TUBE ASSY	600-5100	65	GROUND WIRE WITH CLIP	148-8830
32	CONDENSER THERMOSTAT	900-5152	66	RECYCLER BODY	760-3112
33	HEATER THERMOSTAT	960-1830	67	CROSS MEMBER	760-6230S
34	FRONT COVER, MOTOR HOUSING	600-4320	68	BASE CABINET ASSEMBLY	760-6210S
35	SNAP RING, HOUSING COVER	600-4131			

4.15 PARTS ILLUSTRATION



5. SERVICE AND WARRANTY

5.1 WARRANTY REGISTRATION

Please refer to Page 3, General, and 1.2 Warranty Registration.

5.2 SERVICE HOT LINE

Call the toll free numbers listed below for further information.
USA: 1-800-735-4331 CANADA: 1-800-417-9133

5.3 WARRANTY TERMS

WARRANTY

This UNI-RAM product has been manufactured and engineered to high performance standards, and has been subject to detailed factory test before shipment.

12 Month Warranty Complete Unit

It is warranted by UNI-RAM for twelve (12) months from established purchase date. UNI-RAM Manufacturing will repair or replace, free of charge, to the original purchaser any parts found to be defective in material of workmanship as determined by factory service personnel, with the exception of the replaceable items listed below under “Condition of Warranty”.

Service labour to install such parts will be supplied without charge for this twelve-month period, at our factory. The complete unit must be returned to the UNI-RAM Factory or approved Service Centre, transportation pre-paid, together with a letter of explanation.

Service and Parts:
In connection with Service Labour required to repair or replace parts after this twelve-month period will be based on the service labour rate and the parts prices effective at the time of repair.

Conditions of Warranty:
Since UNI-RAM have no control over the working conditions, materials involved and the circumstances under which the purchaser stores, handles, or uses the product, we make no warranty or condition, either expressed or implied with respect to this product, or its fitness for any purpose; or the result to be obtained from its use; other than instructions provided. No representative of Uni-Ram Corporation or their Distributors has the authority to waive or change this provision, which applies to all sales.

These warranties apply only to the original purchaser and do not apply if the unit has been misused, subjected to overloading, neglect, wear or accident, altered or used for any purpose other than according to the operating and installation instructions provided, or subjected to fire, floods, or other acts of God.

These warranties do not cover transportation, interior or exterior finishes, pump packing, O-rings and seals, screens, filters, nozzles, or air jets or unit with serial number altered or removed.

The use of unauthorized chemicals or solvents with acid content in this unit shall render this warranty null and void.

Use only **UNI-RAM RECYCLING BAGS**. These high temperature and chemical resistant bags are tested to Uni-ram specifications and approved by Uni-ram Corporation to contain recycling solvents in the distillation tank. Use of bags not approved by Uni-ram Corporation can void the warranty of the Uni-ram solvent recycler.

Attempts at self-repair or alterations by the owner shall also constitute a violation of these warranty.