SolvTrue™

S-700 Solvent Recycler

OPERATOR'S MANUAL

Rev 100419

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CBG BIOTECH SolvTrue™ S-700 SOLVENT RECYCLER

Congratulations on your purchase of CBG Biotech SolvTrue™ Solvent Recycler! We are confident that our unit will exceed your expectations and provide an effortless experience for recycling.

The SolvTrue™ S-700 Solvent Recycler is ETL-Listed to UL 2208 and UL 61010 and CSA standard C22.2 for operation in a non-hazardous environment.

OVERVIEW:

Utilizing a simple distillation technology, CBG Biotech SolvTrue™ S-700 Solvent Recycler is capable of recycling many different solvents with boiling points up to 180°C (356°F), or higher if the machine is equipped with the optional Vacuum Assist feature.

CAUTION: DO NOT attempt to recycle acid solutions or solvents containing acidic water without contacting CBG Biotech for the proper technical information. Acids and other corrosive chemicals can attack and degrade the metals and other components of the Recycler.

WARNING: DO NOT attempt to process waste streams containing picric acid, colloidin (nitrocellulose), perchlorates, or azides as these materials can be explosive when heated and/or leave explosive residues upon evaporation.

NOTE: We suggest that you do not attempt to recycle any solvent or waste stream other than what was specified when the machine was ordered without consulting your CBG Biotech representative. Failure to do this could result in dangerous conditions and/or damage to the machine.

Warnings and Symbols:

 INSTRUCTION MANUAL SYMBOL. PLEASE REFER TO THE INSTRUCTION MANUAL FOR SPECIFIC WARNING OR CAUTION INFORMATION TO AVOID PERSONAL INJURY OR DAMAGE TO THE PRODUCT.

 INDICATES HAZARDOUS VOLTAGES MAY BE PRESENT.

 INDICATES A BURN HAZARD MAY BE PRESENT.

 INDICATES WARNING FLAMMABLE MATERIAL.

INDICATES PROTECTIVE EARTH SYMBOL.

 INDICATES SAFETY GLASSES REQUIRED

Standard Equipment and Ancillary Supplies:

Your SolvTrue™ S-700 should be shipped to you with the following items included:

One (1) SolvTrue™ S-700 Solvent Recycler
- Tubing for Recovery Line
- Tubing for Input and Output of Fill Pump (if ordered with Recycler)
- 11 ½" Tank Seal (INDTNK66)
- Heat Transfer Fluid (Thermal Oil) (CHEM040)
- Four (4) Stability Wings

One (1) Operator's Manual
One (1) Pack of 25 Bags (PP7)
One (1) Bag Holder (BAG6)
Two (2) Ground Straps (SHP3001A)

OTHER SELECTED SUPPLY OPTIONS – to be ordered separately:

- Insulated Lid Cover (TD60018)
- Mist Deflector (MIS0093)
- Recovery Container – 8 Gallon (CN10037)
- Acetone-Resistant Tubing for Recovery and Fill Pump lines
- Service Manual (SM06)
- Gray Tote (CN10021)

Shipping Dimensions:

S-700 Recycler:
- Palletized Shipment – 40 inches x 48 inches x 50 inches weighing 390 pounds
- PLUS: One (1) extra box of supplies – 12 inches x 12 inches x 16 inches weighing 19 pounds

SPECIFICATIONS for SolvTrue™ S-700

Operating Capacity	6 Gallons / 23 Liters
Length	39 in / 99 cm (51 in/129 cm w/vacuum option fittings)
Width *(without stability legs)*	22¼ in / 57 cm
Width *(with stability legs)*	38 in / 96.5 cm
Height *(with wheels)*	44 in / 112 cm
Weight – Standard Model	290 lbs / 132 kg
Weight w/ Vacuum Option	356 lbs / 162 kg
Thermal Transfer Oil Volume	3.5 Gallons / 13 Liters

	240 V models	**120 V models**
Voltage	240 V, 1Ø, 60 Hz	120 V, 1Ø, 60 Hz
Apparent Power	3 kVA	3 kVA
Maximum Rated Load	16.3 A	26.6 A
Supply Fuse / Circuit Breaker	20 A	30 A
Immersion Heater – Qty.	1	1
Wattage	2.25 kW	2.25 kW
Amperage	9.5 A	18.75 A
Resistance per Element	N/A	N/A
Resistance in series	N/A	N/A
Resistance in parallel	N/A	N/A
Cooling Fan: Horsepower	1/2 HP	1/2 HP
Speed	1140 RPM	1140 RPM
F.L. A	4.6-4.7 A	9.4 A

FACILITY REQUIREMENTS

ELECTRIC SUPPLY

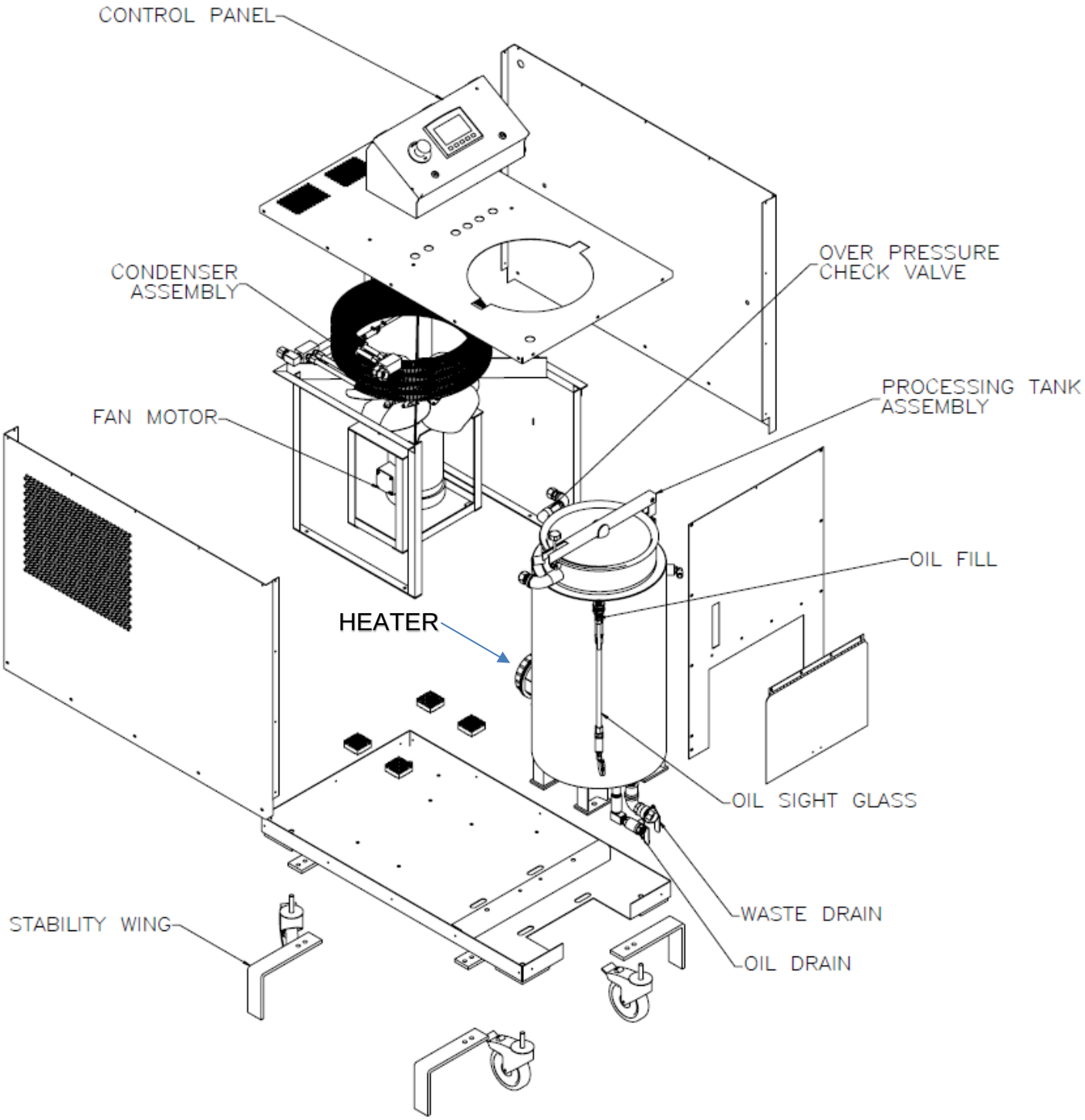
240 V Model: 240 VAC, 1Ø, 60 Hz with 20-amp breaker/fuse outlet.
120 V Model: 120 VAC, 1Ø, 60 Hz with 30-amp breaker/fuse outlet.

AMBIENT AIR TEMPERATURE

The Recycler is air-cooled, unless a liquid-cooled condenser option was chosen. For an air-cooled Recycler, operating efficiency is reduced as the surrounding air temperature increases. The optimal ambient air temperature for a Recycler is 10°C to 24°C (50°F to 75°F), with a maximum rating of 30°C (86°F).

MAJOR COMPONENTS IDENTIFICATION

S-700 Recycler
Base Configuration



SETTING UP YOUR SolvTrue™ S-700 RECYCLER

TOOLS REQUIRED

- Assorted screwdrivers
- Combination wrenches
- Adjustable ("Crescent") wrenches
- Small pipe wrench
- Socket set
- Pliers, including adjustable ("Channel Lock") pliers
- Hex ("Allen") wrenches

PRE-SETUP INSPECTION

Before unpacking the Recycler from the shipping pallet, check any Tip-n-Tell / Drop-n-Tell indicators that may have been attached to the packaging. Confirm that the unit was not excessively tipped or dropped during shipment. If any indicators have been triggered, be extremely thorough in your inspection as damage to some components may not be immediately noticeable.

After the Recycler has been unpacked from the shipping pallet, it should be thoroughly checked for any shipping damage or problems, including:

1. Packing List - Confirm that all items on the Packing List were actually received. (In some cases, additional supplies/parts are shipped with the recycler, in other cases they may be shipped separately via FedEx.).

2. Exterior Panels/Shrouds – No shipping damage; no loose/missing screws, bolts, nuts or other fasteners.

3. Casters – No shipping damage; proper rolling and swiveling; proper operation of locking mechanisms; no loose or missing bolts/nuts.

4. Power Cord/Plug – No shipping damage to cord or plug; correct plug for application (240 V 20A vs. 120 V 30A).

5. Tank Drain Valve – Tank drain handle bent or damaged; drain valve operates smoothly.

6. Oil Drain - Oil drain valve closed and plugged; no evidence of oil leakage.

7. Oil Level Sight Glass – Oil at proper level; no evidence of oil leakage; sight glass not damaged.

8. Tank, Lid, Hinge, Clamp, Seal – No damage to seal and sealing surfaces; clamp operates smoothly and is properly adjusted; hinge operates smoothly through full range of motion.

9. Controls – No damage to touchscreen, E-Stop or power switch.

10. Product Output – No damage to fittings or tubing.

11. Tighten as Needed: All bolts, nuts, compression fittings, sheet metal screws, clamps and fasteners should be checked and tightened as needed.

SITE PREPARATION

Before setting up and operating the Recycler, the installation site must be fully prepared, including the following:

- Electric Supply – Any necessary supply lines, outlets, breaker boxes and fuse panels should be in place and operational.

See Facility Requirements (p. 2) for details on electric specifications

BASIC SETUP

Once the Pre-Setup Inspection and Site Preparation are complete, the Recycler can be set up for operation.

1. **DO NOT** plug in power cord or turn on power until all other preliminary setup items are complete.

2. Locate the Recycler and provide convenient access to the recovery containers, as well as for repairs and maintenance.

    - A minimum of 1 foot (30 cm) is required between the Recycler and the closest wall to provide adequate ventilation.
    - A minimum of 10 feet (3 m) is recommended between the Recycler and potential sparking sources.

3. For a standard Recycler configuration with wheels, attach four (4) Stability Wings to bottom of Recycler to ensure optimal stability.

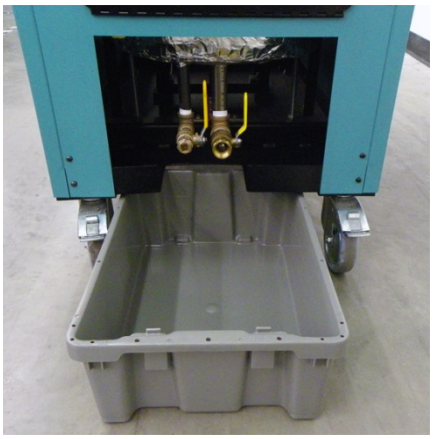
4. If your Recycler has a leg option instead of wheels – either 5.5”, 11”, 15” or 30” – the Legs will need to be attached.

    - With the Recycler safely supported and lifted, attach each Leg by lining up the holes with those in the frame tubes on the bottom of the Recycler.
        - Each hole should have a ½” bolt with a washer, lock washer and nut.
    - Do not firmly tighten all the bolts against the Legs until the Recycler is placed on the ground and allowed to settle.
    - Once safely on the ground, tighten all Leg bolts first, then tighten the nut on the bolt against each Leg firmly.

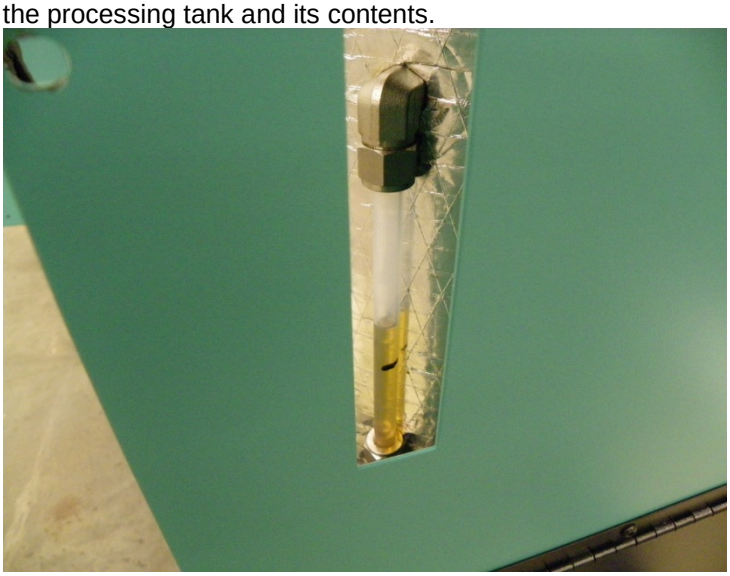
5. Attach recovery output tubing to recovery output fitting using the included clamps. This fitting is labeled “Product Output”.

6. Place the recovery container in proper position.

7. Consider placing a waste collection container under waste drain. As the waste drain is manually operated, this is not necessary until the waste drain is to be opened.



8. Check thermal oil level in sight glass. Correct level is minimum 2" – maximum 2.5" above bottom of the glass. ***Note:*** *Check level with oil at normal room temperature, 65°F–75°F. When heated the oil expands and if too cold the oil will contract below the sight glass. Either extreme will give a false reading in the sight glass*. Proper thermal oil level is necessary to ensure effective heat transfer to the processing tank and its contents.

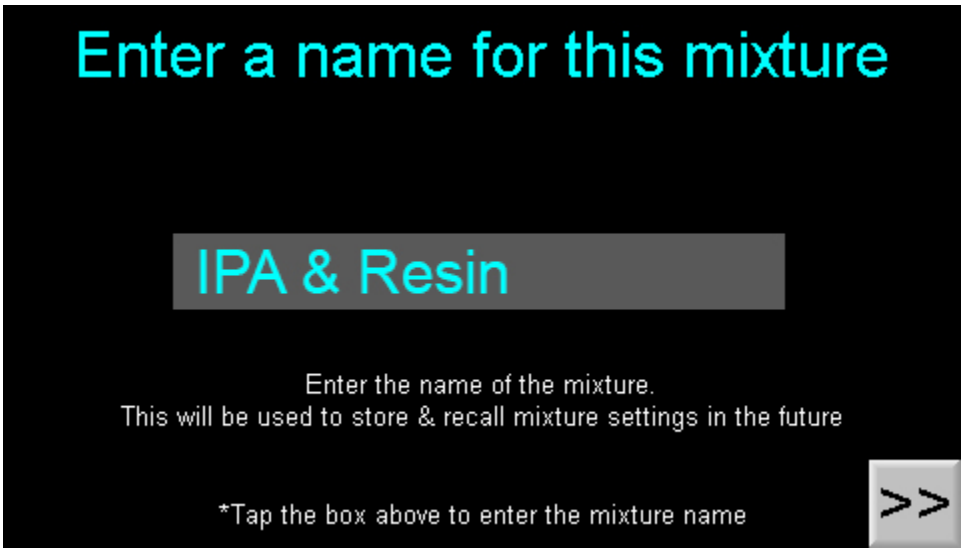


9. If the recovery container is metal or there is a metal fill container being used (e.g. as a reservoir from which the waste solvent is to be pumped), then please note that these containers may build up static electric charges from the movement of solvent through them unless properly grounded. To do so, CBG can supply a Ground Strap, which has clips on both ends. One end should be affixed to the metal container (e.g. on a protruding lip or the handle) and the other end should be attached to an earth ground.

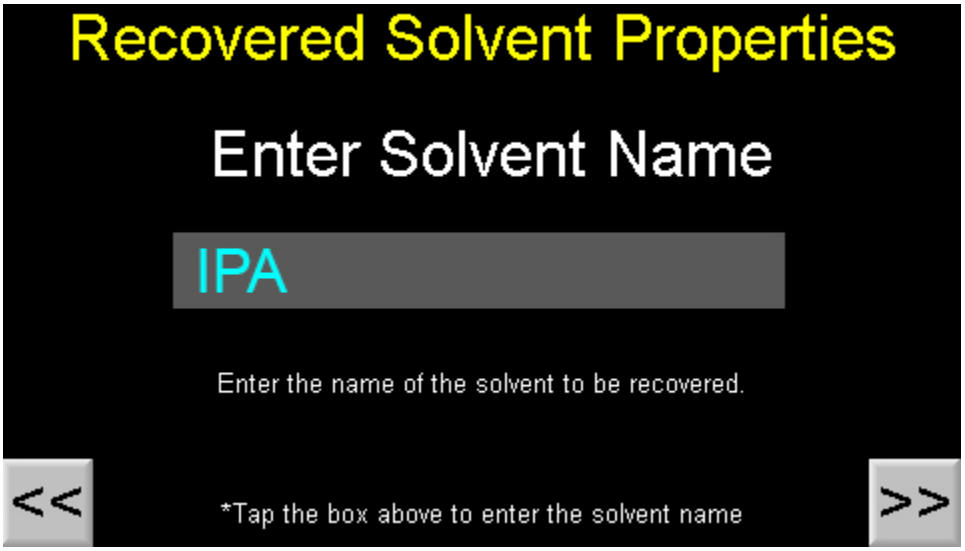
10. When all other setup is complete plug in the recycler and/or turn on the power. The touchscreen will light up and show the below screen.

11. Your recycler should arrive programmed for your mixture. Press the “Select Mixture” button and select the mixture from the list.

12. If the recycler is not programmed for a mixture the SDS for the solvent and waste will be required to configure the recycler. You will be prompted to enter a mixture if not programmed.



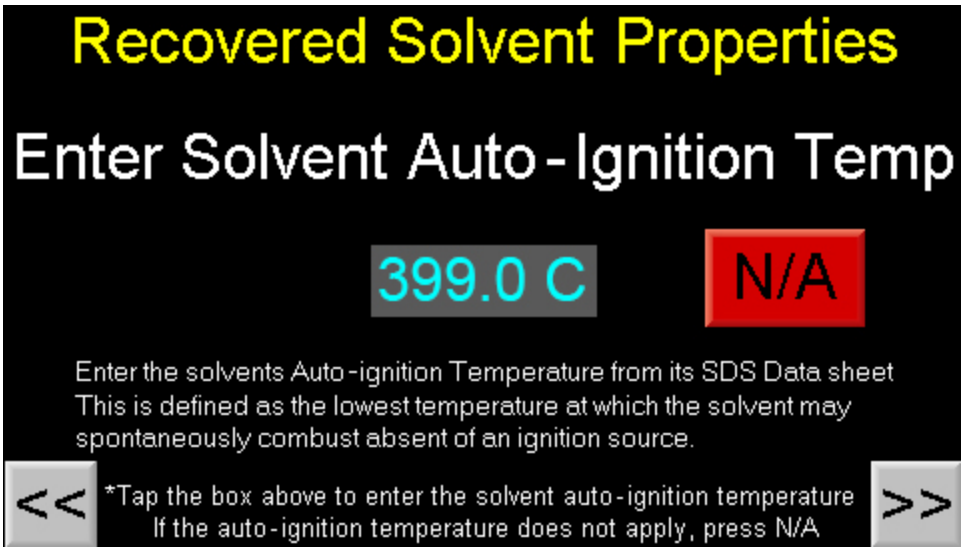
13. A name will need to be assigned to the mixture. This should be something recognizable by your operators for ease of use.



14. Enter the solvent name.

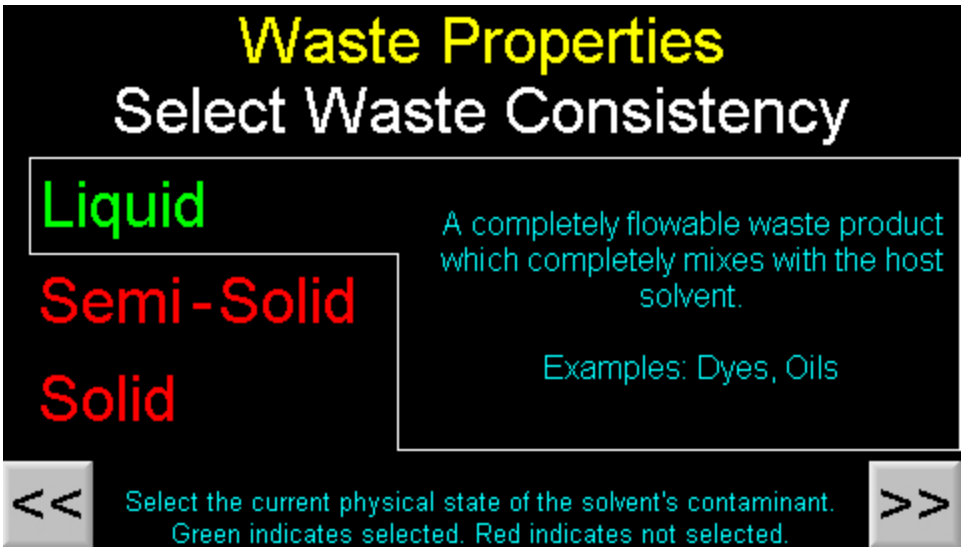
15. ****IMPORTANT**** All information entered relating to a solvent should be taken directly from the SDS, if you do NOT have an SDS, contact the vendor for the solvent and they will provide. “Guessing” is not good as the recycler makes calculations for safety based on this data.

16. Enter the boiling point of the recovered solvent.

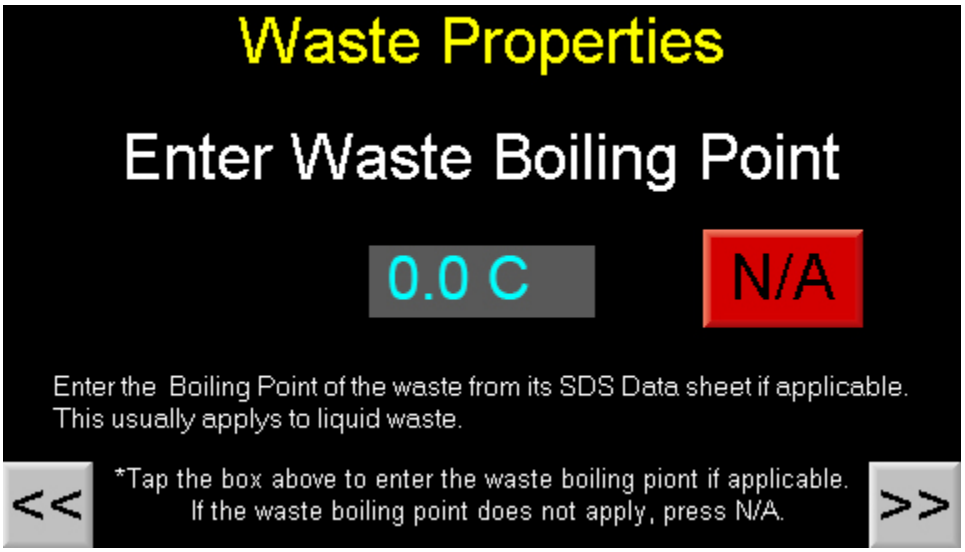


17. Enter Auto-ignition temperature specified in SDS for the solvent being recovered.

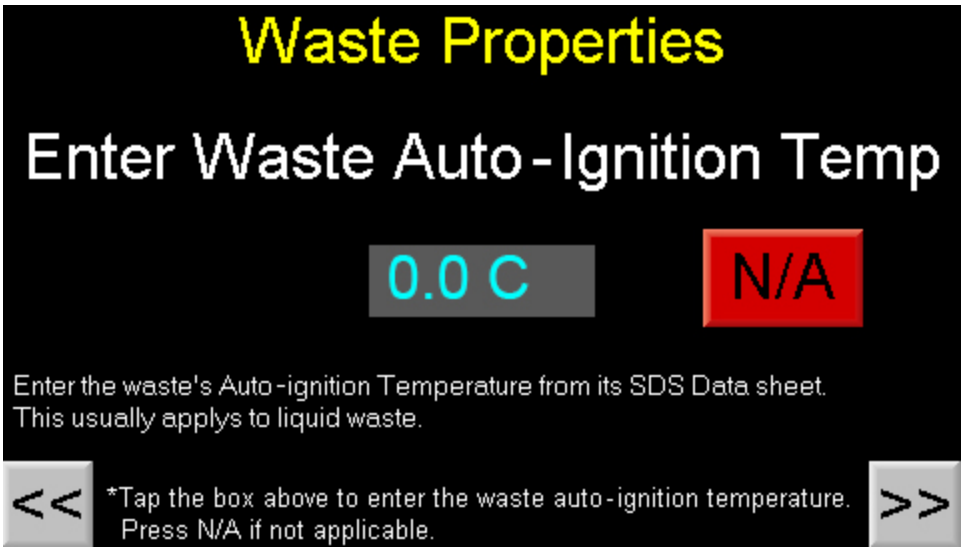
18. Enter the waste contaminant name i.e. the material left behind as waste such as machine oil, plastic resin etc.



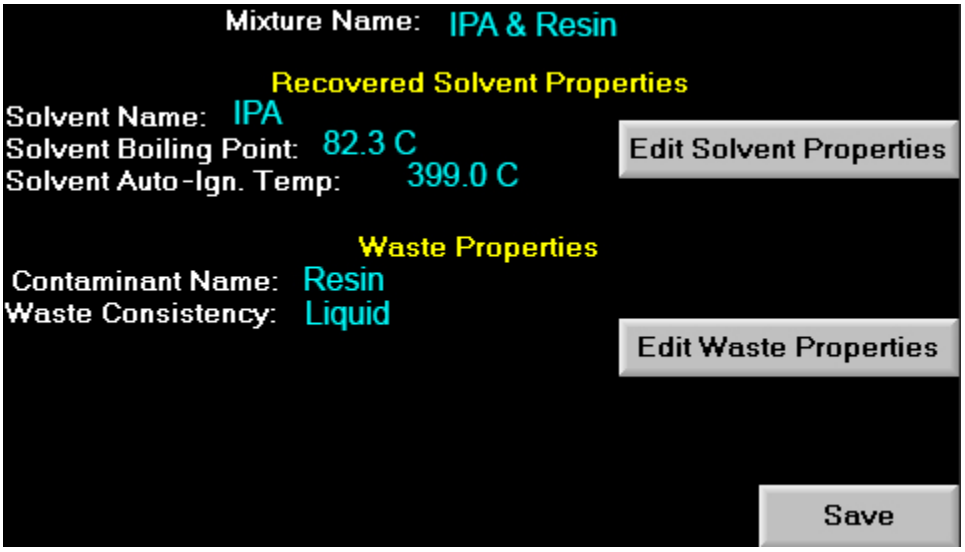
19. The consistency of the waste is important to the function of the recycler. If the waste contaminant is typically liquid, semi-solid (gel or thick paste), solid this should be indicated. The density of the waste is important so be sure to select the proper end result.



20. Enter the boiling point of the waste, some do not have boiling points so N/A is available for those cases. Consult the SDS for the waste to verify.



21. Enter the Auto-ignition temperature specified on SDS for the waste.



22. A summary screen will appear, verify all information is correct to the appropriate SDS for your products. Press save if everything is correct. Press Edit to make changes.

OPERATING YOUR SOLVTRUE™ S-700 RECYCLER

Prior to any processing the run, especially the first one, it is good practice to perform a quick inspection of the Recycler, including the following:

- All electrical connections are in good condition – no loose connections or damage that could cause an electrical short or any arcing or sparking.
- Any compressed air connections *(if required)* are in good condition – no damage or leakage. Any attached filters/driers have been drained of condensation.
- Control panel is in good condition – no damage of any kind.
- All external tubing is attached and in good condition, all clamps are tight.
- **The recovery container is empty, in good condition and in its proper position. Be sure that the recovery container is clearly labeled as to what solvent is expected to be recovered.**
    - **If you utilize a metal vessel to collect or hold solvent or any waste in the vicinity of the Recycler, you should connect such containers to ground to avoid static electricity risk by utilizing the Ground Straps sent with the Recycler.**
- The connection between the recovery container and the incoming tubing is vapor tight
- Tank lid and seal are in good condition – no nicks, cuts, or damage of any kind that could allow a leak.
- Processing tank is drained and clean. If any waste residue is baked onto the inner tank wall it can act as an insulator, reducing the efficiency of the recycling process. Any such residue should be removed prior to refilling the tank.

CAUTION: *When working with solvents and waste streams of any kind it is imperative that the appropriate Personal Protective Equipment (PPE) be used, such as safety glasses or face shields, gloves, lab coats and/or aprons. Failure to use the appropriate PPE could result in personal injury.*

(1) Use of Bag Liner for Processing Tank.

- Most applications with waste residue that flows easily do not require a tank liner bag. *(If in doubt, consult CBG Biotech)* The dirty solvent is poured or pumped directly into the processing tank.
- Applications with waste residue that does not flow easily will require the use of a tank liner bag. The dirty solvent is poured or pumped into the bag at the beginning of the recycling process and is processed while in the bag.
- ***NOTE:*** *While the tank liner bag can tolerate high temperatures, we do not recommend using a tank liner bag should the operating temperature exceed 185°C due to breakage and brittleness at such temperatures.*

- If a tank liner bag is required this bag must be inserted into the processing tank BEFORE filling the tank with dirty solvent.

Bag Holder Ring

(a) To properly install a bag in the processing tank, you must ensure that the bottom of the bag is pushed all the way to the bottom of the tank.

(b) You must also ensure that the sides of the bag are pushed all the way out around the inside circumference of the tank so that there is as much surface contact as possible between all parts of the bag below the Bag Holder ring and the inside of the tank.

- There should be no air gaps between the bag and the processing tank.
- If the bag is not pushed all the way down and out in this manner then it could pull away from the Bag Holder ring and possibly tear when dirty solvent is poured into the bag.
- Any air gaps between the bag and the processing tank can adversely affect heat transfer to the waste stream and thereby reduce the efficiency of the Recycler and possibly reduce recovery output.
- ***Note:*** *Be careful to not tear the bag when inserting it into the processing tank.*

(c) Once the bag is properly inserted squeeze the two ends of the Bag Holder ring together and place the Bag Holder ring inside the bag, allowing it to rest on the continuous support ring or studs welded to the inside of the processing tank.

- Let go of the ends of the Bag Holder ring to allow its spring tension to hold it in place.
- The bag should be captured between the Bag Holder ring and the tank wall and the continuous support ring.
- Fold any excess bag height over the Bag Holder ring to the inside of the processing tank.

CAUTION: *It is critical that no part of the bag covers any portion of the recovery output opening to the condenser and/or the emergency tank relief opening as this can cause, at the least, loss of recovery output, or, worse, a high-pressure situation in the processing tank. If any part of the bag blocks any part of either opening use a razor knife or scissors to cut away just enough of the bag to keep the opening clear. Cut the bag only above the Bag Holder ring - do not cut any part of the bag below the Bag Holder ring.*

(2) Filling of Processing Tank.

(a) *MODELS WITHOUT FILL PUMP*:

(i) Open the tank lid and carefully pour the dirty solvent into the processing tank, being careful to not splash the solvent onto yourself or the recycler's controls.
- Clean up any splatters before they dry and cause permanent staining or paint damage.

(ii) The correct fill level is 2" below the Bag Holder ring or, if no bag is used, 2" below the continuous support ring (or studs) in the tank wall where the Bag Holder ring would rest.
- However, please note that solvents expand in volume as they are heated. Depending upon your particular waste solvent mixture, you may need to reduce the volume of waste solvent placed into the processing tank to ensure that there is no overflow into the condenser during heating and boiling of the waste solvent mixture.

(b) *MODELS WITH FILL PUMP*:

(i) Make sure the Fill Pump input and output hoses are attached and clamped to their fittings.

(ii) Make sure the Suction Strainer is attached and clamped to the outer end of the Fill Pump Input Hose.
- Make sure the Suction Strainer is clean, not clogged with anything that could prevent the pump from pulling solvent through the strainer.

(iii) Open the tank lid and place the Fill Pump Output Hose into the processing tank, being careful to aim it away from the recovery output and emergency tank relief openings.

(iv) Hold the Fill Pump Output Hose while pumping to prevent the end of the hose from spraying dirty solvent anywhere but inside the processing tank.

(v) Press and hold the Fill Pump Switch Button on the control panel to operate the pump.
- The switch is 'momentary' so the pump will stop if you let go of the switch.
- NOTE: The pump will only work if the recycler is plugged in, power is turned on, and the timer dial is set to 0. If the timer dial is turned past 0 the fill pump switch is locked out.

(vi) Hold both the switch button and the Fill Pump Output Hose until the processing tank is filled to the proper level.
- Be careful to not splash any solvent onto yourself or the recycler's controls.
- Clean up any splatters before they dry and cause permanent staining or paint damage.

(vii) The correct fill level is 2" below the Bag Holder ring or, if no bag is used, 2" below the continuous support ring (or studs) in the tank wall where the Bag Holder ring would rest.
- However, please note that solvents expand in volume as they are heated. Depending upon your particular waste solvent mixture, you may need to reduce the volume of waste solvent placed into the processing tank to ensure that there is no overflow into the condenser during heating and boiling of the waste solvent mixture.

(3) Mist Deflector. If an optional Mist Deflector is used, insert it on top of the Bag Holder ring once the processing tank is filled.

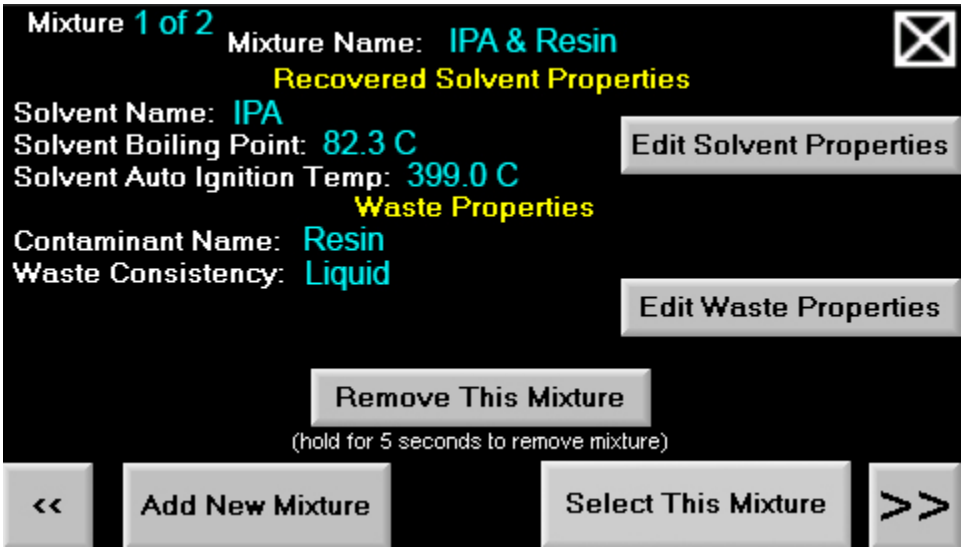
(4) Close Lid. Close the processing tank lid, making sure that the lid and/or seal are centered for proper sealing.

(a) Tighten the clamp so that the tank lid is sealed tightly enough to prevent leaks but not so tight that it is distorted. DO NOT OVERTIGHTEN the tank lid clamps, as this may damage the tank lid and/or the clamp(s).

(b) Place the insulated lid cover (if equipped) over the tank lid. While not required, we recommend using an insulated lid cover in order to conserve heat, reduce operating costs and prevent possible operator burns.

(5) Run the Recycler!

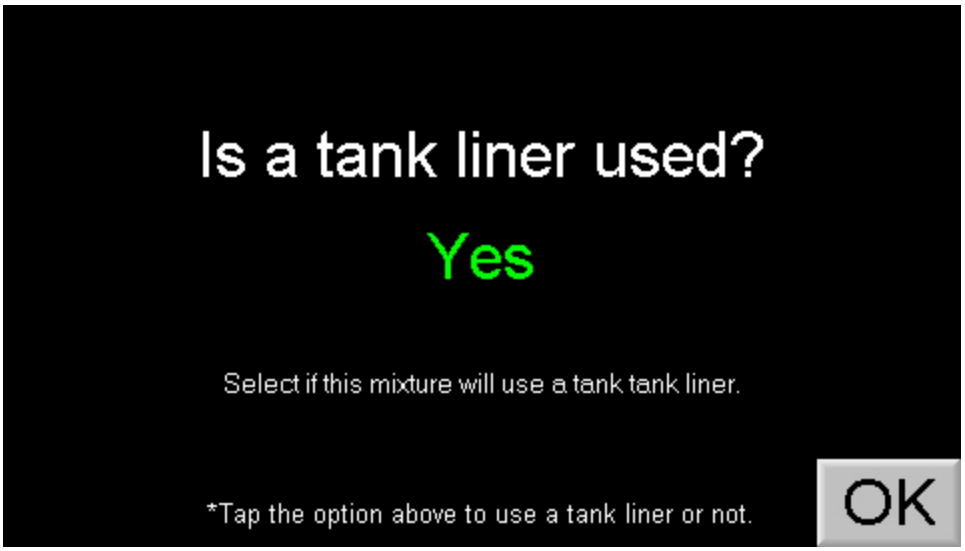
23. Your recycler should arrive with programmed for your mixture. Press the “Select Mixture” button and select the mixture from the list.



24. The arrows on the screen can be used to cycle between mixtures if the recycler is programmed with more than one mixture.

25. Once the desired mixture is selected press “Select This Mixture” button.

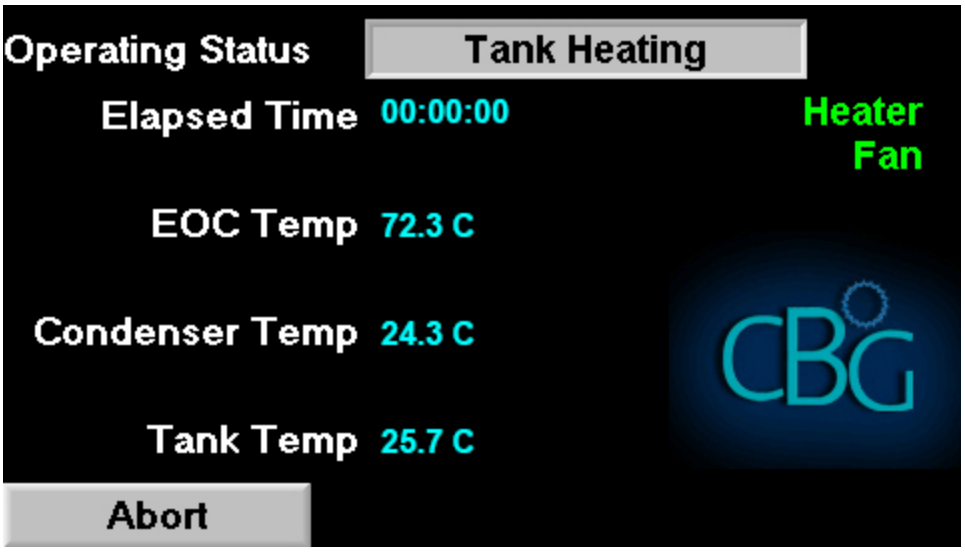
26. The recycler will now prompt to confirm if a tank liner (bag) is being utilized.



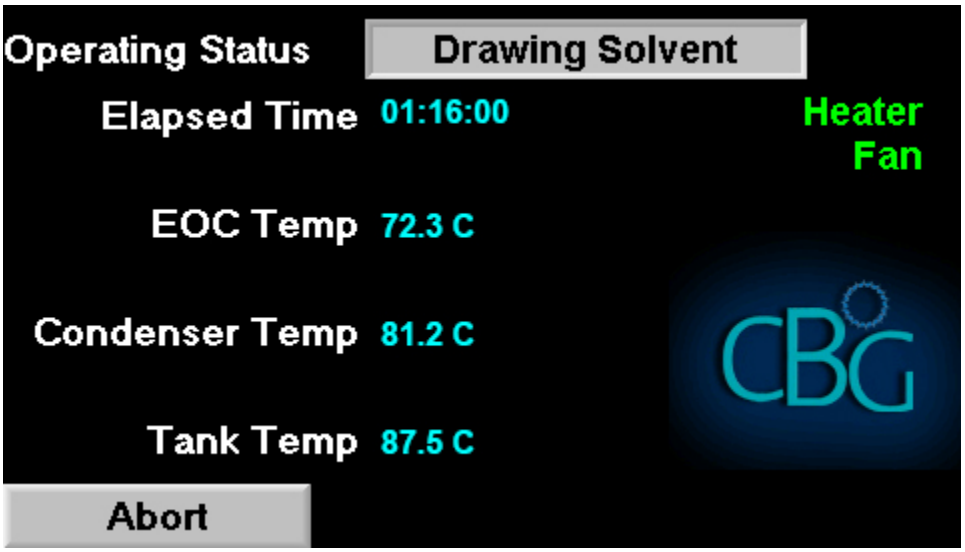
27. Press the green lettered word Yes or No to toggle between to select your operating method.

28. Once a tank liner is selected and inserted into the tank, or if it was selected not to use a tank liner. The recycler will move into the fill stage. Fill the tank to a height 2” below the tank liner ring. Then select the Recycle button.

29. The recycler will now enter the run mode and will display a screen with temperatures.

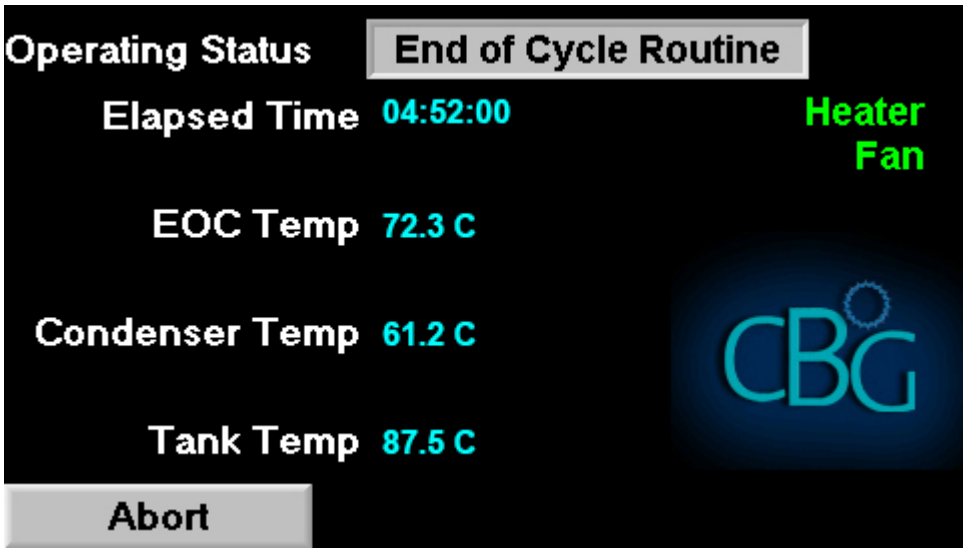


30. Once it reaches operating temperature the recycler will enter drawing mode, this is the main mode of the recycling process. This is when the tank lid is hottest.



31. When the recycler has determined it has removed all solvent from the tank it will enter into the End of Cycle Routine.

End of Cycle



32. Once the cycle is completed there will be a final screen summarizing the run.

(6) Emptying the Waste Residue.

(a) Upon opening the lid inspect the waste that is left in the tank or bag.

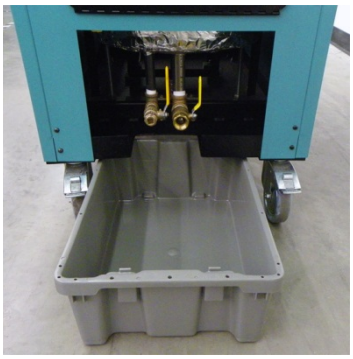
- This waste may range from being liquid to gel-like to a hard “cake” to a dried powder, depending on the type of solvent and waste that was processed.
- If the leftover waste appears to contain too much solvent then adjustments may have to be made to the operating temperature and/or running time to obtain a more efficient recovery.
    i. Keep in mind, though, that some wastes are liquid and will remain so after the recycling process.
- As every application has its own variables it can often take several trial runs to determine the best settings for processing your particular solvent/waste mix.

(b) *MODELS WITHOUT BAG*:

(i) Waste residue left in the processing tank is removed from the processing tank via the drain valve.

(ii) Make sure the waste collection container is an appropriate size, empty and in position, then simply rotate the waste drain valve handle to open the waste drain valve and allow the processing tank to drain.

(iii) Be sure to close the valve again when the processing tank has completely drained.



(c) *MODELS WITH BAG:* Depending on the condition of the bag, the type and the amount of waste residue, it may or may not be possible to use a bag more than once.

(i) Check the amount of waste left in the bag and the condition of the bag.

(ii) If the amount of waste material in the bag exceeds 20% of the volume of the bag it should be removed and disposed of.

(iii) If the bag itself has been torn or shows any sign of damage it must be replaced.

- If the bag has become brittle or has noticeably darkened as if slightly charred, it should be replaced.

(iv) <u>Remove the Bag.</u>

a. Squeeze the ends of the Bag Holder ring together and remove the Bag Holder ring from the processing tank.

b. Carefully lift the bag out of the processing tank, being careful to not tear the bag.
    - The Bag Holder ring is not a completely airtight so often there will be small amount of solvent that seeps between the bag and the processing tank wall during the boiling process.
    - This can sometimes cause the bag to stick to the processing tank wall so care must be taken when removing the bag so that it is not torn during removal, especially if the waste is still somewhat liquid or gel-like.

(7) <u>Cleaning the Processing Tank</u>.

(a) Inspect the processing tank's inner wall to make sure there is no residue built up or baked onto the wall.

- Excessive build-up of such residue can act as an insulator which will inhibit heat transfer to the solvent and reduce the recycler's efficiency.

(b) If the processing tank needs to be cleaned of such residue, often all that is necessary is a small amount of clean solvent and a scrubbing pad (Scotch-Brite or similar).

- In some cases, a wire brush or putty knife may be necessary if a scrubbing pad will not remove the residue.
- In some extreme cases soaking the tank with acetone can help soften the residue enough to be able to scrub or scrape it out.
    - If this is done be sure to flush the system before recycling again so that your next batch of recycled solvent is not contaminated with acetone.

Keeping the processing tank clean on a regular basis will allow the Recycler to be more efficient in reclaiming your solvent. It is always easier to do a small amount of cleaning regularly than to have to do a major cleaning for the whole build up.

(8) Flushing.

(a) When switching from one waste-solvent mixture to another, a flush is often recommended to remove all remaining material from the last solvent mixture that was run.

- Run one to two liters of the new waste solvent mixture or virgin solvent.
- Set aside the recovered solvent, which is now contaminated (may be used for future flushing).
- Change recovery containers and proceed with recycling the new waste solvent mixture.

MAINTAINING YOUR SolvTrue™ S-700 RECYCLER

We are confident that your SolvTrue™ S-700 Recycler will continue to meet your expectations of providing convenient and economic recycling of your solvents, and therefore we have a continuing interest in the success of your investment in our equipment.

It is critical to recognize that there is normal wear and tear on this equipment which should be monitored and addressed on a regular basis. Listed below are our recommendations for regular maintenance:

Daily Monitoring (e.g. each time the Recycler is used):

1. **Damage**: Visually inspect the recycler for any damage, especially that which could cause problems with the operation of the unit. Repair as necessary.

2. **Thermal Oil Level**: Check thermal oil level in sight glass. Correct level is minimum 2" – maximum 2.5" above bottom of the glass. ***Note:*** *Check level with oil at normal room temperature, 65°F–75°F. When heated the oil expands and if too cold the oil will contract below the sight glass. Either extreme will give a false reading in the sight glass.*

3. **Leaks**: Visually inspect the Recycler for evidence of any leakage – solvent or thermal oil.

4. **Tank Lid Seal**: Inspect the tank lid seal and its corresponding mating surfaces on the processing tank and lid for any nicks, cuts, or damage of any kind that could allow leakage past the seal. Clean the seal as necessary but do not use sharp objects or abrasive cleaners as this will damage the seal and it will need to be replaced. If necessary, replace the seal.

5. **Tank Lid Clamp**: Confirm that the tank lid clamp, as well as the hinge and pins, are mechanically sound and function correctly. Adjust clamps as necessary, especially if tank lid seal has been replaced.

6. **Clean Tank**: Clean any waste material or residue that may be building up on the inside of the processing tank and waste drain. Inspect and clean any openings or fittings inside the processing tank as well.

7. **Bag Holder**: If applicable, inspect the Bag Holder ring for any damage and for proper tension. If the Bag Holder ring is bent out of shape and/or will no longer hold the bag firmly in position inside the processing tank, it should be replaced.

8. **Protective Shields/Guards**: Confirm that all protective panels/shields/guards are in place and not damaged.

9. **All Tubing - Recovery, Vent, Fill *(if equipped)*, Vacuum Exhaust *(if equipped)*:** Inspect all tubing for any damage that could cause a leak. Repair or replace tubing as necessary. Confirm that all clamps are tight and that all tubing is routed correctly.

10. **Containers**: Confirm that all containers - collection, waste, vacuum dribble-back *(if equipped)* - are in good condition and in their proper positions.

11. **Power Cable / Plug**: Check power cable and plug (if applicable) for any damage that could cause an electrical short or arcing. Repair or replace as necessary.

12. **Grounding Cables *(if equipped)*:** Inspect any grounding cables used with metal containers for any damage or loose connections that could cause in interruption in the ground circuit. Repair or replace as necessary.

13. **Insulated Lid Cover *(if equipped)*:** Inspect Insulated Lid Cover for any damage, Repair or replace as necessary.

Quarterly Maintenance: To include all daily and monthly items PLUS:

1. **Oil Leakage at Heater**: Check for any oil leakage at heater mounting threads. There should be no oil leakage at all, but if a leak is found contact the Service Department at CBG Biotech for assistance.

2. **Heater Current**: Check heater for proper amperage when the machine is operating. *(see Specifications, page (v)* If the amperage is more than 10% outside of specifications contact the Service Department at CBG Biotech for assistance.

3. **Clean Condenser Fins and Fan Blades:** ***Caution: Be certain that electric power cord is unplugged or otherwise disconnected before servicing fan.*** Inspect condenser fins and fan blades for any dust/dirt build-up that can impede air flow and cooling capabilities. Clean as necessary. Confirm that fan blade mounting screws are tight. ***Note:*** *If the recycler is operated in a very dusty environment this service should be performed more often, at least monthly.*

4. **Waste Drain**. Clean the waste drain and check for proper operation.

Annual Maintenance: To include all daily, monthly and quarterly items PLUS:

1. **Control Panel / Wiring**: ***Caution: Be certain that electric power cord is unplugged or otherwise disconnected before opening the control panel.*** Inspect all components, wiring and connections in control panel for dust, debris, loose connections, or evidence of arcing and/or overheating. Clean as necessary, tighten any loose connections and replace any damaged components.

2. **Over-Temperature Switches**: Located on the control panel below the red over-temperature LED. Remove plastic caps and make sure switches are not tripped – the center push rod should be nearly flush with the switch body. Check underside of switches for any loose connections, damage or evidence of arcing and/or overheating. Remove wires and test continuity across the terminals at room temperature. Replace if necessary.

3. **Resistive Thermal Devices (RTD):** Inspect the RTDs, white wires ending at a probe, on the Recycler for any damage – these are the temperature probes that measure the temperature of the thermal oil and the condenser. The RTDs should not be bent or kinking could occur which will cause false readings for the computer. Confirm that all RTDs and wiring are tied as far away from the fan blade and any exposed hot surfaces as possible. Confirm that both the condenser RTD mounted in the condenser junction block and the processing tank RTD mounted on the in the oil level sight glass are held in place by Permatex sealant.

4. **Replace Tank Lid Seal**: To maintain a good seal between the processing tank and the lid, CBG recommends replacing the seal annually. When removing the old seal care must be taken so that no damage occurs to any of the sealing surfaces on the processing tank or lid. When installing a new seal do not use sharp or pointed tools or anything that could damage the seal and cause it to leak.

5. **Change Thermal Transfer Oil**: The thermal transfer oil will begin to break down when heated and cooled numerous times - this is normal. CBG strongly recommends that the oil be changed every 1000 hrs. to maintain proper operation of the tank heating system. See Specifications, page iv, for oil capacity. If the Recycler is used extensively or if it is operated regularly at temperatures in the

upper range of the Recycler's capabilities, the thermal oil may need to be changed more frequently. There is an hour's log located in the system parameters that should be checked and noted when changing the thermal oil. Please consult with your CBG service technician for hours log instructions.

6. **Oil Vent**: Inspect the oil chamber vent fittings on the processing tank and ensure that there is a clean clear path for air into the oil reservoir.

7. **Pressure Relief Valve**: Check the pressure relief valve for proper operation and to ensure that it seats cleanly.

8. **Labels**: Inspect all labels on the Recycler for damage and legibility. Confirm that all labels are adhering to the Recycler and have not begun to peel or fall off. Replace any damaged or missing labels.

9. **Training**: Over time you may have introduced new personnel to the responsibilities of operating and/or maintaining your SolvTrue™ S-700 Recycler. It is important to ensure that all current personnel have been properly trained for your unit. Without the proper training, there is an increased risk of incorrect operation of the Recycler which could result in less than satisfactory recovery results or potentially dangerous situations. We would expect that any existing trained personnel, using this Operator's Manual, would be able to train any new personnel in correct use of the Recycler. If, however, you have a need for a refresher course or additional training, please contact your CBG Sales Representative for details.

Preventative Maintenance DIY Kits

CBG Biotech offers Preventative Maintenance kits to perform maintenance on the recyclers. These come in various levels depending on the amount and frequency of maintenance. A CBG representative can provide current pricing and contents of packages.

Contact supplies@cbgbiotech.com for more information on consumables and kits.

WARRANTY

The Equipment is warranted to be free of defects in materials and workmanship for twelve (12) months from the date of shipment. Should any such defects arise during the warranty period that cannot be readily addressed through remote technical support (telephone and/or e-mail), CBG Biotech will warrant the defective parts and, upon request, send the replacement part or parts to the Customer at no charge to the Customer. If service is required to address the warranted issue, the Customer should return the Equipment, freight prepaid, to CBG Biotech. If CBG Biotech determines that the problem is due to defective workmanship and/or materials, CBG Biotech will repair the Equipment (or, at our option, replace the Equipment) without charge and ship it back to the Customer at Customer's cost.

Should any on-site service be required in connection with the replacement of such parts, it would be an additional cost to be agreed upon separately between the Customer and CBG Biotech.

This warranty does not cover mechanical issues arising due to abuse, misuse or improper maintenance of the Equipment; arising due to alterations or repairs having been made or attempted by parties other than CBG Biotech; arising due to shipping damage subsequent to the initial shipment of the Equipment by CBG Biotech to Customer; arising due to the use of acidic or explosive chemicals with the Equipment; or normal wear and tear. Consumable parts and supplies are not covered by this warranty. Damage to the interior or exterior finish of the Equipment is not covered by this warranty. Further, this coverage will not apply to the Equipment if such equipment has been repaired or altered by the Customer in any way unless such repair or alteration first has been expressly approved in writing by CBG Biotech. In addition, this coverage will not be extended to a subsequent purchaser of the Equipment; however, this exclusion does not apply to a party that purchases or otherwise acquires the overall business of the Customer and continues to operate the Equipment in its facilities.

If a Customer has purchased an Extended Warranty option, such Extended Warranty will cover defective parts only during the Extended Warranty period (e.g. after the initial manufacturer's warranty period), subject to the same qualifications as set forth in the initial manufacturer's warranty.

This warranty does not cover a guarantee of performance of the Equipment with regard to any specific waste solvent mixture, as distillation processes will have varying degrees of separation of such mixtures, especially if any contaminants are volatile, regardless of whether the Equipment utilizes simple or fractional distillation.

THIS EXPRESS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THE EQUIPMENT AND IS IN LIEU OF AND EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CERTAIN CRITICAL LABELS ON S-700 RECYCLER:

WASTE DRAIN
Turn handle counterclockwise to open, clockwise to close. Do not open unless tank temperature is significantly below the boiling point of the contents. Wear appropriate safety equipment. Place an empty container below the drain of sufficient size to contain the tank contents safely.

CAUTION: To minimize vapors escaping into the immediate environment, any product output ports must be connected to collection vessels via a vapor tight connection. The product collection containers must be able to withstand the chemical properties and the normal operating temperatures of the waste stream being processed. If metal containers are used, they must be connected to an earth ground.

CAUTION: To minimize vapors escaping into the immediate environment, if the waste drain valve is being operated, it must be connected to a waste container via a vapor tight connection. The waste container must be able to withstand the chemical properties and the normal operating temperatures of the waste stream being processed. If a metal container is used, it must be connected to an earth ground.

Not for use with Picric acid or Nitrocellulose.

Caution: Disconnect Power Before Servicing.

Caution – To reduce the risk of fire or explosion, install, operate and maintain this equipment in accordance with the Operator's Manual. This unit is for use in an environment not to exceed 30°C (86°F). Under these conditions, the unit shall be spaced a minimum of 10 feet (3 meters) from potential sources of ignition such as 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 should be considered. This unit has been investigated for use with the solvents indicated in the Operator's Manual.

AND, AS ALWAYS, SHOULD YOU HAVE ANY QUESTIONS OR CONCERNS ABOUT THE OPERATION AND/OR MAINTENANCE OF YOUR CBG BIOTECH SOLVENT RECYCLER, PLEASE DO NOT HESITATE TO CONTACT US.

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