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MODEL 710.2 MINIMIZER III ®
MODEL 710.3 MINIMIZER III ®
Operator's Booklet

Safety-Kleen Systems, Inc. 5400 Legacy Drive, Cluster II, B3 Plano, Texas 75024

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Local Safety-Kleen Branch Office:

Address:

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INTRODUCTION

Purpose

Read this entire booklet carefully before you use the Safety-Kleen Minimizer III ®. Currently there are two versions of this product: the Model 710.2 (220V) and Model 710.3 (110V). These units operate identically. For the sake of simplicity, the term "Minimizer III ®" will be used for both units throughout this document. This booklet will provide you with important information about the Minimizer III ® and will tell you how to use this equipment safely.

Keep this booklet, along with the Material Safety Data Sheets for the solution in use, within easy reach of the operator of this unit.

Note: Users of purchased units must read and fully understand the detailed information found in the separate Support Manual for this equipment.

Complete safety in the workplace is dependent upon proper handling of the Safety-Kleen Minimizer III ®, and the solution you use in it. It is important that you follow all Safe-Use Instructions carefully, as well as all the other directions and procedures provided in this booklet, on the Material Safety Data Sheet (MSDS), and on all the labels.

Your Safety-Kleen Systems, Inc. Service Representative

In accordance with your service agreement with Safety-Kleen Systems, Inc., a Safety-Kleen service representative will:

- Install and set up the Safety-Kleen equipment;
- Be your major contact with Safety-Kleen Systems, Inc.;
- Put the name and phone number of the nearest Safety-Kleen branch on the parts washer and/or on the first page of the booklet;
- Provide information about your contract with Safety-Kleen Systems, Inc. and about the Safety-Kleen service;
- Explain to you what solvents are to be used with this recycler and answer any questions you may have about the solvents, the distillation process, or the Minimizer III ® unit.

The Safety-Kleen Minimizer III ® is to be serviced only by authorized Safety-Kleen personnel. If you have any questions, require repairs, or need early service, call your Safety-Kleen service representative at the phone number provided on the inside front cover of this booklet.

DESCRIPTION

In dealing with liquid hazardous waste, companies have paid a high cost for disposal and repurchase of new chemicals for their processes. The Safety-Kleen Minimizer III ® reduces these costs. The means of accomplishing this is through a process known as distillation. Each group of chemicals has a vapor temperature which is used in the process to separate the solvent from the contaminants. In addition, the Safety-Kleen Minimizer III ® is an explosion-proof unit. This means it can be used for flammable and nonflammable solvents within a specified autoignition and boiling temperature range in various environments.

NOTE: The Safety-Kleen Minimizer III ® is designed to distill solvent with an autoignition temperature greater than 482°F (250°C) and should never be used to distill any solvent or chemical with an autoignition temperature below 482°F. Before initiating a distillation process, always consult the appropriate chemical data sheet or the Material Safety Data Sheet (MSDS) for all materials that will be placed in the distillation chamber.

Applications

The Safety-Kleen Minimizer III ® is typically used in automotive paint and body shops. However, the Minimizer III ® can be used with other solvents. Please contact Safety-Kleen personnel for identification of other permissible solvents and contaminants.

Integrated User Features

The features described below are covered in detail in the Operating Procedures.

- Stainless steel water filled condenser. No electric cooling fan is necessary
- Integrated pump and suction tube for filling of the machine
- Integrated pump and discharge nozzle for emptying the clean recycled solvent, which can be used while machine is operating
- Electronically controlled recycling process that provides high recovery rates
- Simple single button operation. No time and temperature setting is necessary
- Stainless steel distillate container for the collection of recycled solvent
- Foot valve to operate the fill pump

SAFETY SUMMARY

The Minimizer III ® should provide years of reliable operation. However, like all equipment, this unit can be damaged if operated improperly. Improper use can also compromise operator safety. To help ensure safety, the Minimizer III ® incorporates the following safety features:

- Automated temperature and time setting. The unit will automatically set its own time and temperature in accordance with the requirements for the particular solvent introduced into the distillation chamber for recycling
- Oil immersion heater element
- Two safety probes to monitor oil temperature
- Oil maintenance indicator. The unit will automatically indicate when oil needs to be changed
- Intrinsically safe controls
- Water as the cooling media
- Condenser temperature monitored
- Automatic shut off when cycle is complete
- Monitoring of the level in the distillate container. If not empty, the recycler cannot be started, eliminating the risk of overfilling and accidental leakage.
- "STOP" button for manual shut off at any time
- Self-setting recycling data independent of the operator
- Analog electronic circuit to shut down the recycler if the unit is overheating.
- Fuse protection

GENERAL PRECAUTIONS

The following precautions are directly related to this device, the solvents used, and the operation of the Minimizer III ®.

- Do not operate until you have read and fully understand the entire Operator's Booklet
- The Minimizer III ® is designed to distill solvent with a boiling temperature less than 380°F (193°C) and should never be used to distill any chemical with an autoignition temperature below 482°F (250°C). Before initiating the distillation process, always consult the appropriate chemical data sheet or MSDS
- The distilled solvent must be collected in the container provided with the unit; caution should be taken that solvent not be accidentally spilled
- NITROCELLULOSE must **never** be distilled in the Minimizer III ® as this may cause dangerous conditions
- Do not operate the unit unless the working area is properly ventilated
- Do not modify or in any way alter the unit
- Avoid contact with liquid and vapor. Refer to the solvent MSDS
- Wear chemical goggles to protect eyes. Wear chemical-resistant gloves to prevent skin contact
- Do not smoke, eat, or drink near the unit
- Residues must be disposed of in accordance with local laws

- When cleaning residues from the unit use only non-sparking tools
- Do not open lid when unit is operating and the green light is off
- Do not use the foot pedal for automatic filling when unit is operating and the green light is off
- Do not overfill
- Operating personnel must be fully knowledgeable on the safe and correct use of unit and protection devices

FAILURE TO FOLLOW ANY OF THE ABOVE COULD CAUSE PERSONAL INJURY AND PROPERTY DAMAGE.

CONTROLS AND INDICATORS

This section covers the controls and indicators located and used on the Minimizer III ®.

Control Panel (Figure 1)

The Control Panel contains all the controls and indicators for this unit.

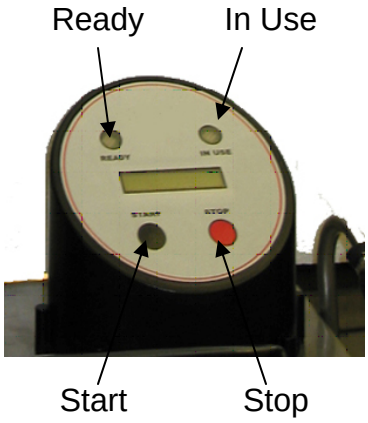

Figure 1

READY – A green indicator light, when illuminated, indicates that the unit is sufficiently cool, the lid may be opened, the distillation chamber can be filled, and a new cycle can be started.

START – A button used to begin a distillation cycle. It is also used in conjunction with the STOP button to change operation mode.

IN USE – A yellow indicator light, when illuminated, indicates that the unit is running a distillation cycle. The lid may NOT be opened while this light is illuminated.

STOP – A button use to abort the distillation cycle. It is also used in conjunction with the START button to change operation mode.

DISPLAY – Used to indicate various machine parameters, such as unit temperature, recycling time, and error codes.

Suction Tube Filling

The operator of the unit has the option of filling the unit with dirty solvent manually (by pouring solvent directly into the unit) or by using the fill pump to remove dirty solvent directly from the waste can. The fill pump is activated by using the foot pedal **(Figure 2)**. As long as the foot pedal is pressed, the fill pump will pump solvent into the recycler bag.

Figure 2

Note: The maximum fill level (5 gallons) is reached when the solvent level reaches the clamping ring. The lid must be opened while filling. DO NOT OVERFILL.

Clean Solvent Discharge

Clean solvent can be discharged through the tap handle on the right side of the unit **(Figure 3)**. The clean solvent is always cool and can be discharged at any time, even when the unit is operating in the recycling mode.

1. Connect the ground clamp on the tap handle to the receiving container.
2. Squeeze the trigger on the tap handle to discharge clean solvent through the nozzle.

Tap Handle

Figure 3

OPERATING PROCEDURES

> **NOTE:** The MSDS contains detailed information regarding the safe use, health hazards, first aid, shipping, handling, storage, emergency and environmental information.

This section covers the safe use and operating instructions for the Minimizer III ®.

Safe Use Instructions

1. Do NOT expose unit to any source of heat, spark, flame, electrical receptacles, or other similar potential sources of ignition.
2. NEVER attempt to distill any solvent or chemical with an autoignition temperature lower than 482°F (250°F).
3. Do NOT pour any paint waste into the system while performing automatic fluid transfer.
4. NEVER distill NITROCELLULOSE in this unit.
5. Do NOT open lid when the green light is OFF.
7. Ensure system is properly bonded and grounded before operating.
8. Use only non-sparking tools when cleaning residue from unit.
9. Operators should wear the proper personal protective equipment (certified respirator, chemical goggles, protective gloves, etc.) as described in the MSDS of the solvent being recycled.
10. Use good personal and industrial hygiene. Do not smoke, eat, or drink in the work area. Wash hands thoroughly after handling and before eating, drinking, or using tobacco products.
11. Where spills and splashes are likely, wear appropriate protective clothing.

Fitting of Bags

1. Ensure that the green light on the control panel is on. This indicates that the unit is cool and the lid of the unit may be opened.
2. Open the lid.
3. Remove the clamping ring.
4. Remove the used bag. If the bag sticks to the bottom, press “START” and let the recycler warm up for up to 5 minutes. Press “STOP” and gently pull the bag from the unit. Clean the distillation chamber of any residue.
5. Open a new bag and place inside the distillation chamber. Tuck the bag down to the bottom of the distillation chamber.
6. Squeeze the clamping ring and place it inside the bag. The ring must fit into the recess of the distillation chamber **(Figure 4)**.
7. Release the clamping ring and fit into position (inside the recess of the distillation chamber).
8. Ensure the bag is tucked behind the waste inlet **(Figure 5)**.

recess for clamping ring

Figure 4

bag behind inlet

Figure 5

Filling Unit

There are two methods of filling the distillation chamber with solvent: Pump filling and manual filling.

Pump Filling

1. Ensure that the green light on the control panel is on.
2. Open the lid. Ensure that a new bag is installed.

> **NOTE:** The bag is for "one time" use only.

3. Place the suction tube into the container to be emptied **(Figure 6)**.

> **NOTE:** Make sure the tube is not immersed into solids, as this will clog the inlet screen of the tube.

4. Press the foot pedal **(Figure 7)**. As long as the foot pedal is held down, the fill pump will pump solvent into the recycling bag. Do not fill recycling bag past the clamping ring **(Figure 8)**.

> **NOTE:** The maximum fill level (5 gallons) is reached when the solvent level reaches the clamping ring **(Figure 8)**. DO NOT OVERFILL

> **NOTE:** When pumping solvent into the distillation chamber using the fill pump, there is a risk that thick paint sludge will block the suction hoses and seize the pump. It is therefore very important that the filling system is rinsed at the end of the loading procedure. See chapter: "Maintenance"

5. Close the lid and secure.

Figure 6

Figure 7

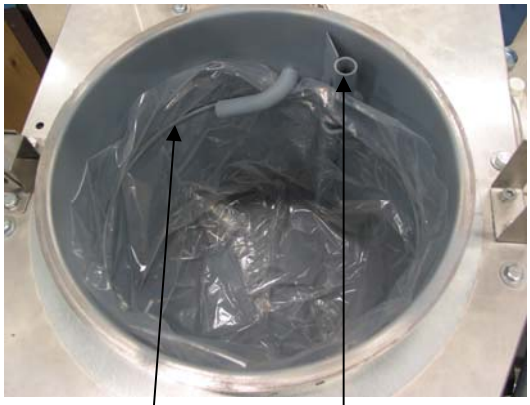

Figure 8

Manual Filling

1. Ensure that the green light on the control panel is on.
2. Open the lid. Ensure that a new bag is installed.

> **NOTE:** The bag is for "one time" use only.

3. Pour solvent into the distillation chamber. Be sure not to spill solvent into the vapor outlet or behind the recycling bag.

> **NOTE:** The maximum fill level (5 gallons) is reached when the solvent level reaches the clamping ring **(Figure 8)**. DO NOT OVERFILL.

4. Close the lid and secure.

Choosing the Recycling Mode

The Minimizer III ® can be used with three different recycling modes. Once a mode is chosen, the recycling operation can be started using a single button.

Mode 1

This mode should be used if the solvent has a high percentage of low boiling point components (e.g. acetone). Mode 1 uses a lower level of power over a longer period of time. This lengthens the recycling time but has a higher efficiency of solvent recovery. This mode also reduces the risk of foaming.

Mode 2 – DEFAULT MODE
This mode is the default setting of the unit and is recommended for normal solvents and contaminants.

Mode 3
This mode should be used when the percentage of low boiling point components (e.g. acetone) is very low. Mode 3 uses an increased level of power during the initial heating and increases the baking time. This may help to increase the consistency of the residue.

To change the operating mode:
1. Press and hold the "STOP" and "START" buttons simultaneously for 10 seconds.
2. Release the "START" button while holding the "STOP" button.
3. While still holding the "STOP" button, press the "START" button to step through the selections.
4. When the desired mode is displayed, release the "STOP" button.

Starting a Cycle
The display on the control panel will indicate machine status.

"Empty can before start! Index XX"
This message indicates that the clean solvent container must be emptied before starting a cycle. Follow the procedures listed under **Discharging of Clean Solvent**

"Ready to start Mode X"
This message indicates that the Minimizer III ® is now ready to begin a cycle.

To begin a cycle, press the "START" button.

During the cycle, various messages will be displayed on the control panel:

"Recycling. Temp XX°F" will be displayed during the distillation cycle. *"XX°F"* indicates the temperature of the diathermic oil.

"Baking. Temp XX°F" will be displayed during the final 20, 60 or 120 minutes of the cycle (mode 1,2 or 3).

"Cooling down. Temp XX°F" will be displayed when the recycling has been completed (the yellow light will flash during this cycle).

"Empty can before start! Index:XX" will be displayed when the entire process has been completed. The Minimizer III ® is now ready to be refilled for the next batch.

Aborting a Cycle
The process can be aborted at any time by pressing the “STOP” button. The recycler will go into cool down mode and the display will read *“Cycle aborted. Temp XX°F”.*

Discharging of Clean Solvent
Clean solvent can be discharged through the tap handle on the right side of the unit.

1. Connect the grounding clamp on the tap handle to the receiving container.
2. Squeeze the trigger on the tap handle to discharge solvent.

Note: The collecting container must be emptied before starting a recycling cycle.

In Case of Power Failure
If the main power fails and restarts during a cycle, the Minimizer III ® will perform one of the following:

- If the oil temperature is above 135°F (57°C) and has not dropped more than 41°F (5°C) during the power failure, the recycling process will automatically continue
- If the oil temperature is below 135°F (57°C) or has dropped more than 41°F (5°C) during the power failure, the recycling process will be interrupted, the yellow light will flash, and the display will read *“Power failure Please Restart”*. Pressing the “START” button will restart the recycling process. Pressing the “STOP” button will abort the process and the recycler will go into cool down mode
- If the recycler is in cool down mode during the power failure, the yellow light will flash and the recycler will continue the cool down mode

MAINTENANCE

Fill Pump
To prevent blockage of the hoses and pump seizure, the fill pump inlet screen and tubing should be rinsed at the end of every filling procedure.

1. Ensure that the green light on the control panel is on.
2. Open the lid. Ensure that a new bag has been installed.
3. Place the suction tube into a clean solvent container.
4. Press the foot pedal to pump clean solvent through the load pump and hose.

NOTE: It is best to perform this procedure just after filling the unit with solvent to be recycled. Care must be taken to leave enough room inside the recycling bag for the clean solvent rinse. DO NOT OVERFILL!

If clean solvent is not available, the suction tube can be placed at the surface of the solvent in the recycling bag (the surface is where the solvent is least contaminated) **(Figure 9)**.

Figure 9

Condenser Water Level
The water level in the condenser must be 2-3” from the top of the condenser.

NOTE: If the water is not heated from a distillation cycle for a long period of time, mold may develop. If mold develops or the water develops an odor, the water must be changed.

To Fill / Drain the Condenser:

1. Disconnect power.
2. Place a collecting drum with a minimum capacity of 10 gallons (38 L) under the water outlet on the left side of the unit. Or, attach a pipe or hose to the water outlet leading to a drain or collecting drum.
3. Remove the condenser lid.
4. Remove the water plug and allow the water to completely drain.
5. Apply Teflon tape to the water plug and thread into the condenser drain.
6. Refill the condenser with water to a level 2-3" from the top (approx. 10 gallons).
7. Place the lid on the condenser.
8. Reconnect power.

TROUBLESHOOTING

Foam Formation
During a distillation cycle, it is normal for foam to form inside the distillation chamber. However, heavy forming of foam during the recycling process may lead to fouling of the condenser and collection drum. The recycled solvent will then become slightly colored. In this case the condenser and collection drum must be cleaned.

The following processes must be performed on subsequent distillations:

- Fill the recycling bag with less dirty solvent
- Change operating mode to Mode 1

Error Messages
The Minimizer III ® is monitored for hardware and software malfunctions as well as recycling conditions. In case of malfunction, the recycling process will be interrupted, the red light will flash, and an error message will be displayed on the control panel.

When an error message appears, simultaneously push the "STOP" and "START" buttons. The display will then read *"Turn off power and repair error"*. Turn the power off and on again. If the error message does not reappear, perform the procedures described under **In Case of Power Failure**.

In most cases, the malfunctions that trigger error codes require qualified technical personnel to diagnose and repair. However, there are three errors which can be addressed by the operator:

"Error Level indicator"
This error code indicates that the level indicator has an abnormal reading. Ensure that the level indicator is not grounded and does not have any metal contact. If error reappears, contact qualified technical personnel.

"Error code: 15 H2O temp high"
This error code indicates that the condenser and the water are too hot. Check the water level in the condenser and top off if necessary.

"Error code: 14 Oil temp too high"
This error code indicates that the analog temperature control system has monitored an abnormally high oil temperature. Allow the recycler to cool down and restart machine. If this error reappears, contact qualified technical personnel.

If any other error code appears, contact qualified technical personnel.

SERVICE AND REPAIR

The Minimizer III ® is to be serviced by authorized Safety-Kleen personnel. If you have any questions, require repairs, or need early service, call the local Safety-Kleen Branch.

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