**ROUTINE MAINTENANCE**

The Sonozaire model 105A requires only routine maintenance for years of service. This occasional maintenance requires only minor cleaning and will take only a few minutes. Failing to routinely clean the unit will reduce the ozone output and require longer times for treatment. A complete failure to perform maintenance can cause a total failure of ozone output and a possible failure of Sonozaire components, which voids the warranty.

The amount of time between cleaning will depend upon a few variables. Below is a list of important operating factors that increase the frequency for cleaning:

- Unit operated 24 hours a day.
- Unit operated 365 days a year.
- Unit mounted outdoors.
- Unit operated in a high moisture or humidity environment.
- Unit operated in an area of excessive dust or dirt.

The harder the service, the more often the maintenance is required. Sonozaires, which are mounted outdoors, should be cleaned every 1-3 months. For fire restoration applications, check after every couple of jobs to determine if cleaning is necessary. Notice that if the unit is elevated above floor level, cleaning frequency will be less. This is because at floor level more moisture is drawn into the Sonozaire. Dry cleaners, hotels, motels, vehicles, or air purification applications should require cleaning approximately every 2-3 months. Please note the above cleaning suggestions are averages. Check your equipment more often initially to determine if your use will allow you to go longer or shorter periods between cleanings.

An easy way to determine if your machine is really dirty is to listen to it. With a clean 105A, turn the ozone level knob to zero, and then turn on the machine. The blower will come on, and it has a low volume fan sound. Next, turn up the ozone knob briefly to hear the sound of corona being formed. This corona formation is the result of a high voltage causing an air gap to ionize. The sound is a low tone hissing or buzzing. A really dirty unit will have no corona sound. If a unit has too much moisture in it, a snapping or arcing sound occurs. Please shutdown the unit and perform the necessary cleaning.

Routine maintenance consists of cleaning the air filter, cleaning the cabinet interior, cleaning of electrode and glass, and oiling the blower motor. All of these tasks can be performed by almost anyone following a few simple instructions. The Sonozaire can be cleaned in the shop or on the job site. Cleaning supplies consist of clean water, glass cleaner, abrasive cleaner, abrasive brush, cleaning cloths or pads, and twenty-weight oil.

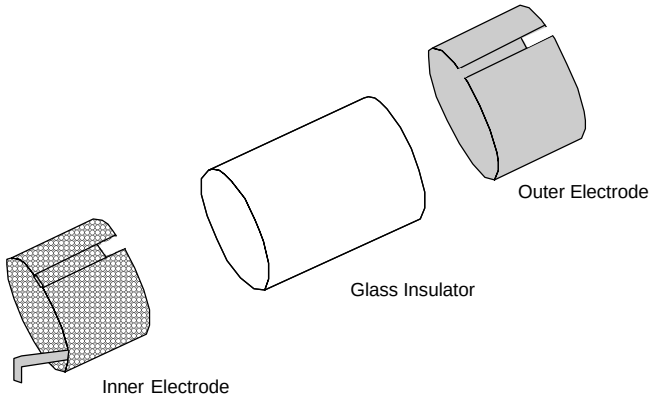
Œ Unplug the Sonozaire, remove the air filter cover and filter on the rear of the 105A and clean it. The filter is of a sponge type material that can be cleaned by washing it out with water and possibly cleansing soap. Wash it out thoroughly and remove as much moisture as possible before reinstalling in the unit.

- Remove the left side cover that is labeled “Service Side” by taking out four screws and pulling down on the cover. Look at the inside of the cabinet and compare it to the internal drawings of the 105A in this manual. Identify the following components: the high voltage transformer, the electrode assembly, and the blower motor. The electrode assembly consists of an outer electrode, a glass cylinder, and a perforated inner electrode. See if the glass appears to be broken, dirty, smudged, or has a chalky appearance.

Ž Clean the electrode assembly. Begin by removing the high voltage wire connected to the inner electrode directly. This requires removing the wing nut from this connection point. Be careful not to break the glass insulator tube. Next unscrew the generator holder's retaining clamp around the electrode. The glass can be carefully removed, as an assembly. Lay the electrode assembly on a table or counter for cleaning.

- Disassemble the electrode. Remove the outer electrode by slightly springing it open and carefully sliding it off the glass insulator tube. If the outer electrode is stuck to the glass, soak the entire assembly in hot water (soapy if necessary), or in some other solution. Next, remove the inner electrode by slightly squeezing it together and sliding it out of the glass tube.

**CONT'D - (ROUTINE MAINTENANCE)**




**SINGLE ELECTRODE ASSEMBLY**

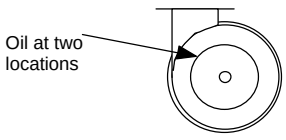
- Clean each of the electrode components. Thoroughly clean the glass by normal methods used with glassware such as window cleaner, ammonia cleaners, or detergent and water. If the glass tube is extremely dirty, then clean thoroughly using a bottlebrush. The inner and outer electrodes should then be cleaned. To remove any oxidization that might have build up on the electrodes, use a stiff plastic brush with abrasive powders (Ajax or Comet), etc and for extreme oxidization, use a more abrasive means, such as a SOS pad, emery cloth, or in worst cases a small wire brush. The chalky substance on the aluminum electrodes is aluminum oxide that is a result of moisture. Clean the electrodes until they are back to the basic metal surfaces. Make sure to wash or wipe off any residue. Dry the electrodes and the glass tube thoroughly.

‘ Reassemble the electrode assembly. Install the inner electrode into the glass tube until it is in the center of the glass (approximately 1 inches of clear glass on each end). Next, slide the outer electrode over the glass and align it with the inner electrode in the center of the glass.

’ Reinstall the electrode assembly into the cabinet. Look at the gaskets on the blower and verify it is in good shape. If it has any deterioration, please order a new one and change out at next cleaning. Next, insert the electrode assembly back into the generator holder and push the end of the glass firmly against the gasket on the blower, or plenum. Reattach the generator holder's retaining clamp around the electrode assembly. Tighten the clamp securely around the electrode assembly with the inner electrode tab directed toward the bottom of the cabinet. Connect the high voltage lead wire from the transformer back to the inner electrode tab. To prevent arcing, do not get the high voltage wire lead, bus bar, or inner electrode tab, too close to the side or rear of the cabinet. Please refer to the internal drawing of the cabinet in this manual to verify that all components look as shown.

“ Use a damp cloth to wipe out the interior of the cabinet to remove dust, dirt, etc. If a cleanser is required, use one that does not have an alcohol or hydrocarbon base that might be flammable. Excessively scrubbing the cabinet's exterior or interior might destroy the paint. Wipe the interior out with a clean, dry cloth.

” Oil the blower motor with two drops of 20W oil for each end of the blower motor. Do not over oil. Once every three months should be adequate. Wipe off the motor and verify that no oil has leaked onto the bottom of the cabinet.




**OILING OF BLOWERS**

- Replace the cover and test the unit. Test by plugging in the unit and turning it on slowly to raise the ozone level. Determine if the corona sound occurs and the smell of ozone is present. The unit should be ready to put back into operation.

After cleaning, if no ozone is detected, or corona sound is heard, unplug the unit. Remove the door and verify that the glass electrode is up against the gasket, and that the transformer is connected to the inner electrode. If all appears correct, refer to the troubleshooting section of this manual for directions.

**TROUBLE-SHOOTING**

Troubleshooting the Sonozaire models require a familiarity with the machines, as well as general electrical troubleshooting and electrical safety skills. Testing can be done with a volt-ohmmeter, and some troubleshooting can even be done without electrical meters. However, do not attempt to do any troubleshooting until you are familiar with the function and components of the equipment. Do not attempt testing if any test or procedure is not fully understood.

Refer to the appropriate model's internal layout to follow operation and troubleshooting steps. Item numbers in bold will follow the descriptors below.

The Sonozaire 105A uses a blower (**18**) to draw air in through the air filter (**20**) at the rear of the cabinet (**1**). Air is drawn into the open end of the glass tube (**6**), into the blower (**18**), and out the top of the cabinet (**1**). The glass tube (**6**) with inner and outer electrode(s) (**4**&**7**) is the location where the ozone is created. Ozone is generated in the high voltage electrical field between the inner and outer electrode(s) (**4**&**7**). The voltage level to the generator is adjusted by the level control on the side of the Sonozaire. On model 105A, a rheostat (**19**) is used to adjust the voltage to the high voltage transformer (**16**). Manual control is supplied by the timer (**22A**), which controls the blower, as well as power to the level control. The timer can be adjusted up to a maximum of 12 hours, or operated continuously by turning the knob counterclockwise from the zero position.

Begin by removing the left side-cover that is labeled "Service Side"(**2**) and looking inside the 105A. Check for things that seem abnormal such as excessive dirt or film on cabinet, or any components. If a machine is stored for an extended period of time, moisture or humidity can cause a film to develop on some of the electrical components. Examine items that appear to need cleaning, such as the generator section (glass and electrodes). Look especially for components that appear to have heated or arced. These items can often determine what the cause of the problem is, and how to prevent it in the future.

On a following page is a list of symptoms, probable causes, and solutions to the problems. Please refer to this page for a starting point in troubleshooting the Sonozaires. After extended service of the machine, any component can fail. However, the most common failures come from a lack of cleaning and maintenance.

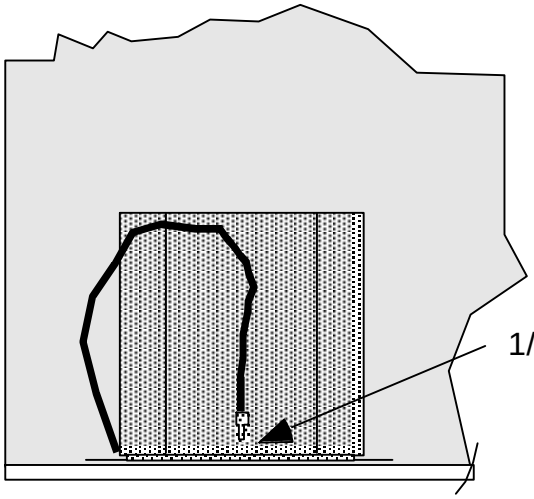
**MOST COMMON ELECTRICAL TROUBLESHOOTING PROCEDURE**

If the Sonozaire blower will operate, but no ozone is detected, the first step is to check to see if the unit needs cleaning. Unplug the unit before removing the service side cover (**2**) to inspect the electrode (**4**&**7**) and glass tube (**6**). If they appear dirty or chalky, remove and clean as instructed under Routine Maintenance section of this manual. If the glass tube is not up against the gasket (**39**) on the blower (**18**), push it up against the gasket firmly.

If everything above appears to be correct, test the unit while the door is removed. This can be accomplished by being careful to keep hands out of the inside of the cabinet. Turn down the ozone level control (**19**) to zero, plug in the unit, press in the door safety switch (**21**), and turn on the timer (**22A**). When the blower (**18**) comes on, turn up the ozone level control slowly. Listen for the distinctive "ionization" sound. It should intensify as the level increases. Verify that no arcing or sparking occurs. If an arc occurs, verify its location, then turn off the unit, and unplug the machine. Determine the reason for the arc, and correct. Typical problems can be dirty glass and electrodes, moisture in the electrode assembly, misalignment of the electrodes, a cracked glass, etc. If problem is not located, it is recommended that the high voltage transformer circuit be tested.

Proper testing of the high voltage transformer (**16**) cannot be done with most field meters. Actual voltage should be in excess of 6KV, but is of a high frequency. The best method of testing is by an "arc" or "spark" test to determine if high voltage is available. With the unit unplugged, disconnect the transformer's (**16**) high voltage wire from the inner electrode (**4**). Loop the high voltage wire down in front of the transformer and leave the wire approximately 1/8 inch from the bottom of the cabinet. Use electrical tape to hold the wire against the side of the transformer the correct spacing off of the transformer plate. Do not hold the wire or use a screwdriver to hold it in place. With the door off, verify that the ozone level knob (**19**) is turned to zero. Plug the unit in, hold down the door safety switch (**21**) and turn the timer (**22B**) on. The blower will come on. To "arc" test, raise the ozone level knob (**19**) gradually toward the maximum setting. Typically when the knob reaches some point before 50%, an arc should occur from the high voltage wire to the bottom of the cabinet. The arc should be a strong arc, but should not damage the transformer plate. If a strong arc occurs, then the high voltage and control circuits are good. The problem is in the electrode-glass assembly and can be fixed by cleaning, or replacing electrodes or glass.

**CONT'D - (TROUBLE-SHOOTING)**

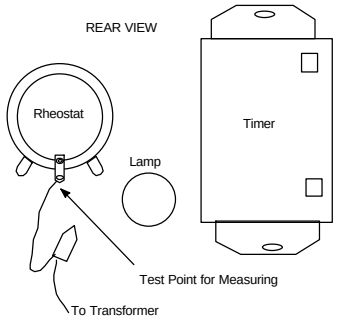



**ARC TEST FOR TRANSFORMER**

If the arc does not occur or is very weak, the transformer could be bad. Also, the voltage coming into the transformer might not be present or high enough. A 150VAC voltmeter is required to test the primary voltage coming into the high voltage transformer.

**Model 105A**

On the model 105A, begin by verifying that the unit is unplugged. With an alligator clip, connect a 150VAC voltmeter from the center terminal on the rheostat (**19**) located on the front of the cabinet. Connect the other voltmeter probe to the cabinet ground with an alligator clip also. If the probes must be held inside the cabinet, <u>be very careful</u> not to come near, or in contact with the high voltage transformer lead, or the inner electrode (**4**) on the left. This most likely will have extremely high voltage present. Plug in the model 105A, set the ozone level control (**19**) to zero, turn on the timer (**22A**) and press in the door safety switch (**21**). The voltmeter should read approximately 90 volts. Adjust the ozone level knob to 50%, and the voltmeter should read approximately 100 volts. Adjust the ozone level knob to 100%, and the voltmeter should read approximately 120 volts. If these readings are observed, then the rheostat (**19**) is good. If the rheostat appears to be bad, unplug the 105A, then place an alligator clip between the two terminals on the rheostat (**19**) that have wires. This will bypass the rheostat and the unit will be at full output. Plug in the unit, turn on the timer (**22A**), press in the door safety switch (**21**), and the unit should come on at full output. If the "arc" test is being checked, it should produce a hot arc. If a hot arc occurs, then the transformer (**16**) is good and the rheostat (**19**) is bad. If a hot arc is not seen, then the transformer (**16**) is bad and should be replaced.




Replace all components with factory approved components only. Failure to replace with factory approved components could result in damage to equipment, or injury to personnel. Do not attempt to repair the machines unless you have a complete understanding of the procedure, and the proper test equipment is used. Call your local distributor for parts and assistance. Call the factory direct if a local distributor is unavailable or unknown.

**TROUBLE-SHOOTING LIST**

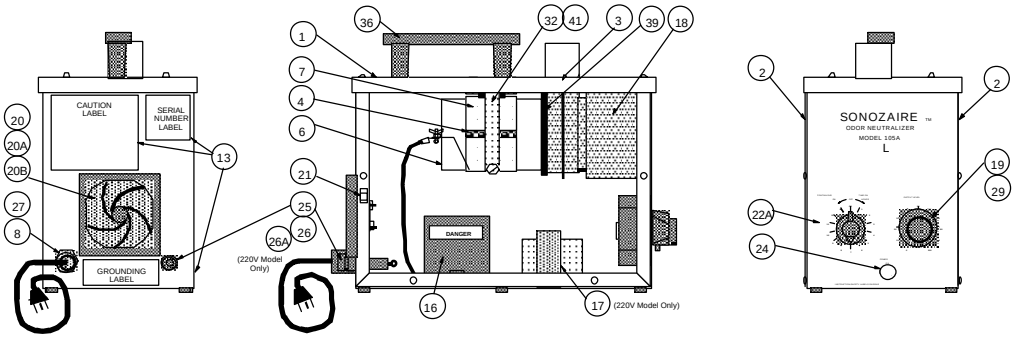
**Note: Before beginning troubleshooting problems, always refer to all diagrams and manual instructions. These units have high voltages in excess of 6KV and are high frequency.**

| Symptom | Probable Cause | Solution |
|---|---|---|
| Machine not working. | Power to the receptacle off. | Check receptacle for power. |
| | Not plugged into receptacle. | Plug in the unit. |
| | Cover not on good enough to close the door limit switch. | Tighten or adjust the cover. |
| | Main fuse blown. | Replace the main fuse on the rear of the cabinet. |
| | Failure of 12-hour timer. | Tap on timer knob in case it is stuck. Replace timer if necessary. |
| | Failure of door limit switch. | Replace the limit switch. |
| | Failure of blower motor. | Verify that blower motor will rotate and has not failed. Replace if necessary. |
| No Ozone or Low Ozone Output | Glass tube not up against the gasket on the blower. | Push the glass tube up against the gasket to prevent air from bypassing the generator. |
| | Ozone level setting too low. | Increase the setting. |
| | Dirty or oxidized glass tube and electrodes. | Clean the glass and electrodes, or replace them. |
| | Cracked glass insulator. | Replace the glass insulator tube. |
| | HV transformer failed. | Test transformer and replace if required. |
| | Rheostat failed | Test and replace components if required. |
| | Low or no air movement | Clean filter. Free the blower from obstructions and oil motor with 20W oil. Replace motor, if necessary. |
| Main Fuse Blown | Shorted rheostat. | Replace the component. |
| | Shorted blower motor. | Replace the blower motor. |
| | Transformer shorted. | Replace the transformer. |
| | Glass insulator tube is very dirty, has excessive moisture in it, or is cracked. | Clean the glass and electrodes, or replace the glass tube and electrodes. |
| | Wire insulation breakdown. | Locate the wire failure and replace. |

**PARTS LIST**

| ITEM # | SONOZAIRE PARTS DESCRIPTION | MODEL105A PARTS # |
|---|---|---|
| 1 | Enclosure Assembly | CAB10 |
| 2 | Side Cover Assembly | CAB10SC |
| 3 | Gasket-Blower to Cabinet | GAS11 |
| 4 | Inner Electrode | IE10 |
| 5 | | |
| 6 | Glass Insulator Tube | GL10 |
| 7 | Outer Electrode | OE10 |
| 8 | Line Cord | W1 |
| 9 | Term Lug No. 10 | R4161GSF |
| 10 | Term Lug No. 8 | S4166S |
| 11 | | |
| 12 | Wire Nut 16-18AWG | NP5115 |
| 13 | Instruction Decals, Set of 3 | LBCAU10, LBGND10, LBSS10 |
| 14 | Cable Ties | ELAM |
| 15 | Cable Anchor | AAABMM |
| 16 | Transformer (HV) Step-up | T10 |
| 17 | Transformer Step-down | T11 |
| 18 | Blower Motor | BL10 |
| 19 | Rheostat | RH10 |
| 20 | Air Filter | AF10 |
| 21 | Micro Switch (Door Safety) | S10 |
| 22A | Timer, 12 Hour | TR1 |
| 23 | | |
| 24 | Lamp, White | DS2 |
| 25 | Fuseholder, Main | XF1 |
| 26 | Fuses, Main | F10 (MDL 1/2) |
| 27 | Bushing, Strain Relief | 8103-375 |
| 28 | | |
| 29 | Knob, Ozone Level | 5151 |
| 30 | | |
| 31 | | |
| 32 | Electrode Strap Assembly | EH10 |
| 33 | | |
| 34 | | |
| 35 | | |
| 36 | Handle | HDL10 |
| 37 | | |
| 38 | | |
| 39 | Gasket-Glass to Blower | GAS10 |
| 40 | | |
| 41 | Electrode Holder Support Gasket | GAS12 |
| 42 | | |
| 43 | | |
| 44 | | |
| 45 | | |
| 20A | Air Filter Cover | AF10C |
| 20B | Air Filter Base | AF10B |

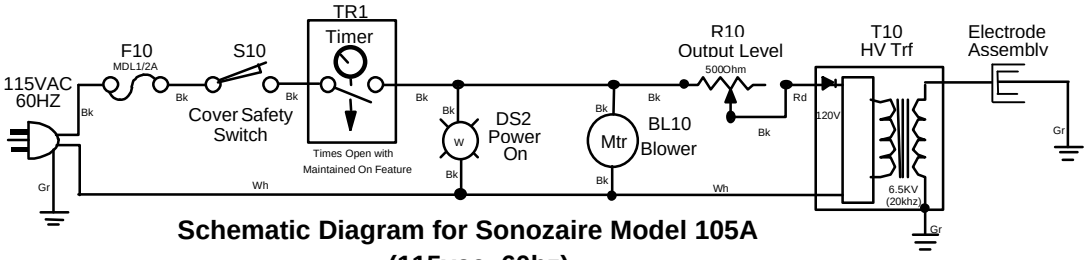
**Model 105A**
**Drawing and Parts**



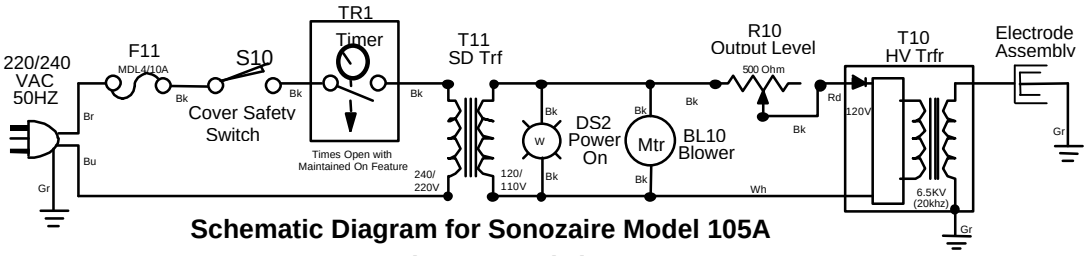

REAR VIEW — SERVICE SIDE (LEFT) VIEW — FRONT VIEW

SONOZAIRE MODEL 105A

**Model 105A**
**Schematic**




**Schematic Diagram for Sonozaire Model 105A**
**(115vac, 60hz)**




**Schematic Diagram for Sonozaire Model 105A**
**(230vac, 50hz)**