Singer Athena 2000
Very Basic Electronics Guide

Tool Requirements:

1. Flat Blade Screw Driver (normal length, and somewhat like a tension screw driver)
2. Phillips Screw Driver #2 (standard Phillips)
3. Allen Wrench 1/16th

If you have an Athena 2000, 2005, or 1200 that is buzzing, or if the needle or feed dogs, seem to be buzzing. Sometimes, not always, a simple fix is to remove the wiring harnesses, and plug them back in. Adjusting the electronics on these machines does require a highly accurate digital meter. The one shown in the pictures is the one I was provided by when with the Singer Company. It was then considered to be the best meter for the job.

Note: The early models 2000's require different voltages than the later models. I do forget the year break when the voltages changed, but a rule of thumb is that the machine should actually never be to far off from the factory setting.
The voltage settings are: (Note: Voltages were different on different year models. The Bight changed on the later series

- Early Model 2000
  - ✓ Width, or Bight Control - .640
  - ✓ Feed Control - .920
- Later Model 2000
  - ✓ Width, or Bight Control - .920
  - ✓ Feed Control - .920
- Serial Number to confirm year:
  - ✓ Example Serial Number: A6224014 (A=Anderson Plant; 6 = 1976; 224=day of the year; 014=machine off the line that day. So this machine was built in 1976, it was on the 224 day of year, and it was number 14 off the line that day. Hope it wasn't a Monday, or Thursday…LOL. If I have it right, the machine was built on Thursday, could be even worse, all hung over from Wednesday night hump day…grinning, being the 14 machine off the line that day. My machine has this date, but **NOTE**; it is marked with an X instead of an A. X means it is a factory refurbish also. It was sent back to the factory for whatever reason, electronic, or other.

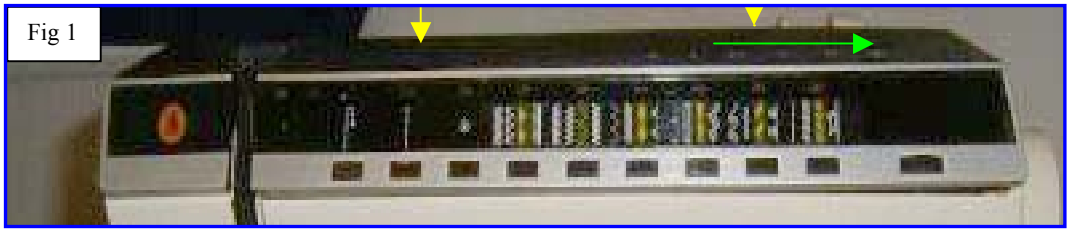
For a machine that has buzzing sounds, or you can actually see, or feel the needle, or feeds jumping around. Or if the Override's are not controlling as they did. Sometimes, not always, but sometimes, a simple fix is to remove the wiring harnesses from the circuit boards, and simply plug them back in. The connections, as explained to me by Singer Technicians, way back when, was that the harness connections will get what was referred to as an air-gap, or a dirty connection. A dirty connection is where the harness and the pins have been connected so long, that they actually build up a resistance to each other, thus causing the connection to start to fail. By simply unplugging the connection, and plugging it back in will cause a little scrubbing action, and clean the connection pins up. This will create a cleaner connection, and proper voltage may start to flow again. In this case, the buzzing stops, and the machine starts to perform like it use to. Other times, this does not work, and an actual electronic adjustment is required. This is where one needs the highly accurate digital meter to perform these very sensitive adjustments. A few voltages too much, or too less, may cause further damage to the linear motors in the machine.

I also wish to note, that the top circuit board, along with the Override board, is usually repairable. Not always, but usually, unless the machine has other failed circuits and the chips are not obtainable. Perhaps today some of them are, but back when I worked on them, the only chip I could find would correct the buzzing. The chip that controls the basic function to the Bight, and Feed Linear Motors, is replaceable with an NTE997 chip. The chip is called a Quad Operational Amplifier, and again, it is a NTE997 chip. Others manufactures may make a similar chip, but the number will vary depending on the manufacturer. Any good electronics shop should be able to cross reference the chip with a Sam's catalog. From what I recall, and I do not have my Sam Catalog any longer, but is in short, the bible of chip cross references. The chips, back when I purchased mine, were only a couple of dollars. It only made good sense to see if that would correct the problem, before spending hundreds of dollars on a complete new circuit board. But do note, that changing one of these chips is not for the home amateur. It does require very special equipment to remove the chip from the circuit board. Unless you have all the right equipment, perhaps you favorite electronic, Radio/TV repair shop, can do this for you. But if they are going to charge you over $100 for it, you might as well purchase a new board.
Note: When removing screws, lay them out in order, and by section. It is important to not mix them up.

Removing The Machine Covers & Accessing the Circuit Boards:

1. Very gently, lift the top cover from the backside of the machine, and work it to the right. It will snap off, fig 1. Lift yellow arrows, and work green arrow to right. Lift about 1/8th of an inch, if you lift to much, you might pull the plastic cover off the metal cover. No problem if you do, you can always glue it back on.

Fig 1



Removing The Machine Covers & Accessing the Circuit Boards: (continued)

I'm not going to a great deal of depth on screw locations with pictures, but if you need help, let me know. Am more than happy to guide you through this. I just figure you'll find the screws without a great deal of trouble. The back screw requires an Allen Wrench, 1/16th in size

2. The side cover is held on with 2 screws, see fig 2. One is an Allen setscrew, and the other a flat head straight slotted screw. Refer to fig 2, yellow arrows for locations. The back setscrew is on the back of the machine, and when looking from the front to the rear, is to the left of the take up lever unit section
3. Remove the bottom pan, fig 3, circled screws only
4. Remove the front shield cover, which is held by 3 screws. See fig 4 & 3 for locations. Fig 3 is indicated by the green arrow, when the bottom cover is removed, you should see it tucked up inside, just above and right of the motor area. Fig 4, one of the screws is by the light shield, and the other just below the override flip down panel, right yellow arrow in fig 4

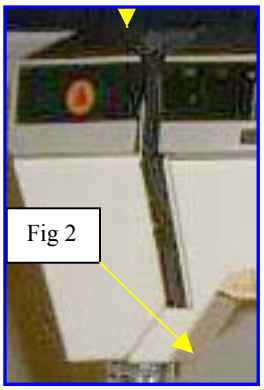


Fig 2

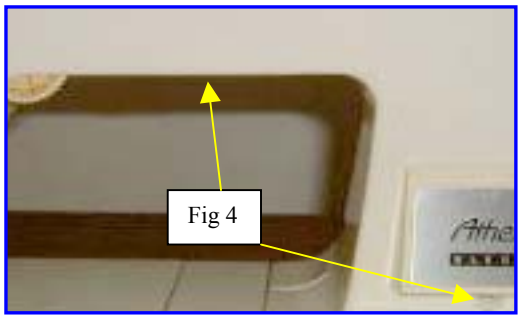


Fig 4

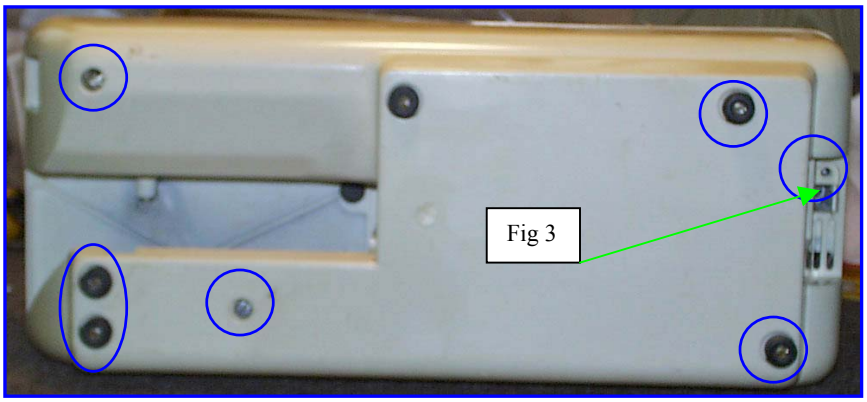


Fig 3

5. Once all the shields are remove, you machine will resemble fit 5, minus the top board lifted out (red arrow)
6. To see if we can clear up buzzing, or other electronic noise, we will remove some harnesses and plug them back in. You can plug the machine in, and run at this point. Just ensure you have removed all thread, bobbin, and needle beforehand

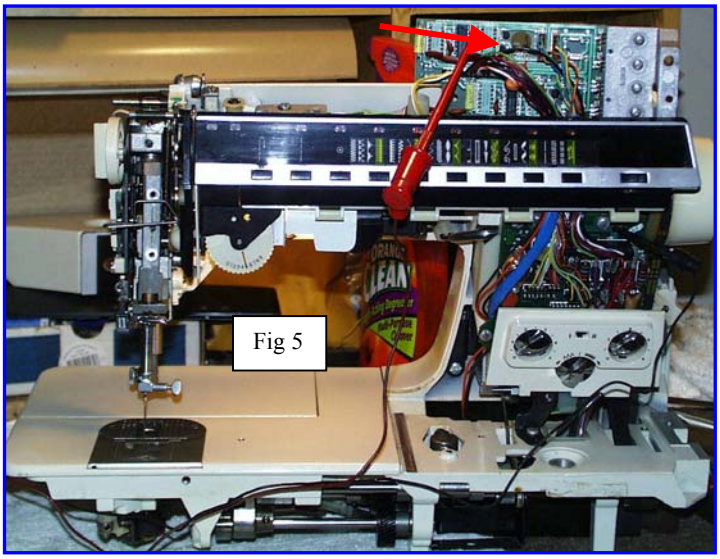
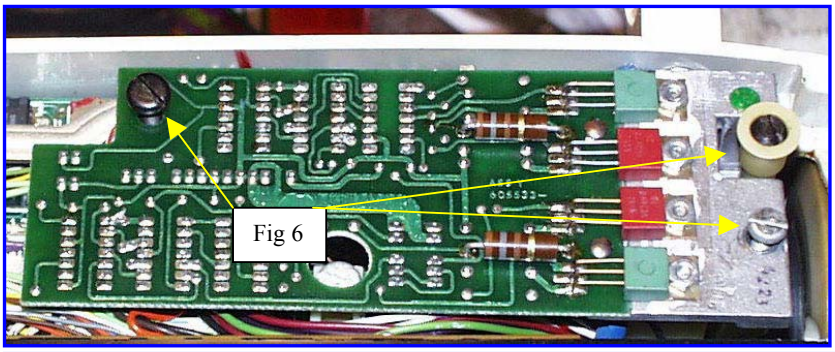


Fig 5

Removing The Machine Covers & Accessing the Circuit Boards:

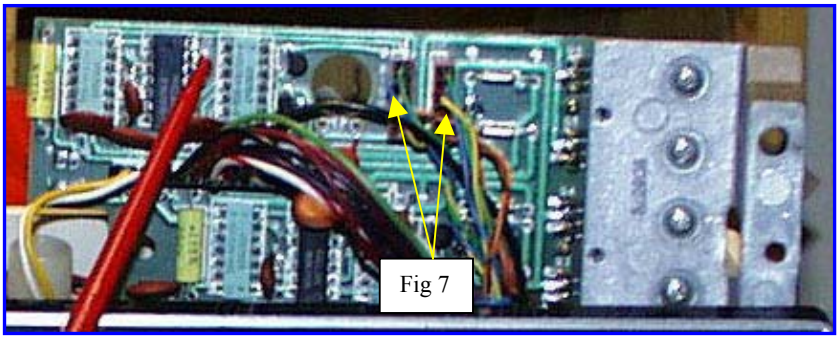
7. Remove the 3 screws as indicated in fig 6
8. Fig 7, remove these two harnesses, and plug them back in. The board is labeled, Bight & Feed, do one at a time, then test run the machine to see if the buzzing has cleared up.
9. If the buzzing continues, we need to check the voltages at test points 3 & 11. Fig 8 shows the Bight & Feed location test points. The test points are labeled, usually by 3 & 11 next to pin risers, connection points for the meter probes
10. Fig 9 indicates the ground point for our meter connection. It is labeled "G" on the board
11. Refer to the voltages at the beginning, depending on the serial number of the machine.
12. When checking voltages, utilize the stretch zigzag stitch, or rickrack as they called it back then, if I recall correctly

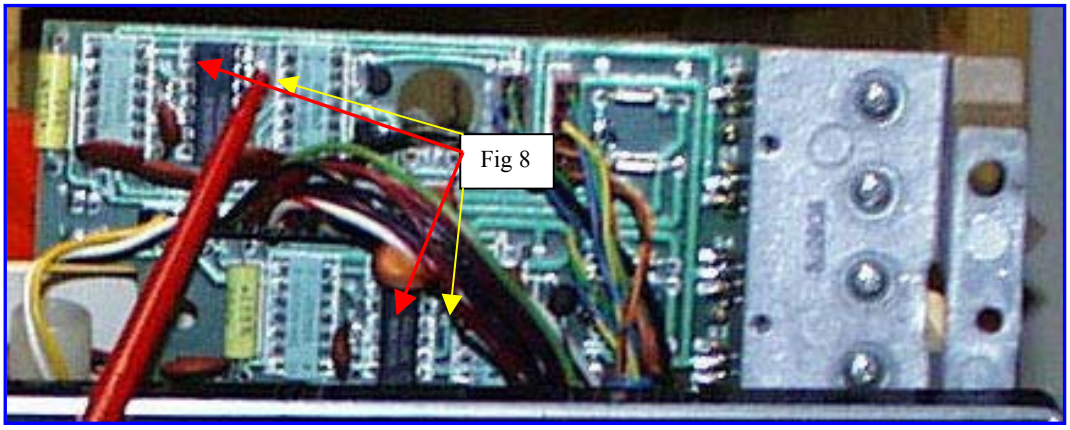


If these solutions do not work, then it is possible that you need to replace the chips mentioned on this board. See fig 8, red arrows.

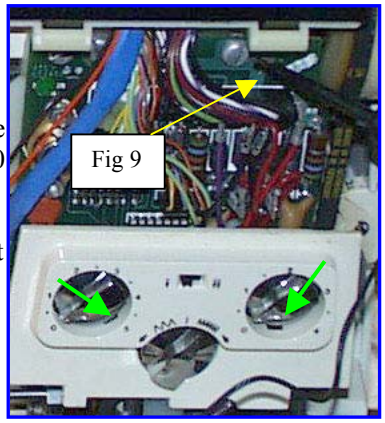
If I recall, the chip by test point 11 controls the bight, and chip by test point 3 controls the feeding.

There is also a chip on the Override board that has the same function; it is located behind the override controls, just above the twin needle switch. However, I rarely found this chip needing replaced.





13. If you have problems with the Override board not doing what it should when you touch the control dials. You might be able to correct by using very find sand paper, say around 2000 grit, worn out, and rubbing between the dial and contact points. Fig 9, green arrows indicate the locations of the plastic dial, and chrome contract points for each dial. Notice the little slot by the arrow. Slip the sandpaper between these areas, very carefully, and just pull the sandpaper back & forth. About twice should clean the point. While leaving the sandpaper in place, turn the dial from 0 to 6, to clean the dial off also.



Should you require additional information, please feel free to email me at: tf43@yahoo.com
I'll do what I can to help.