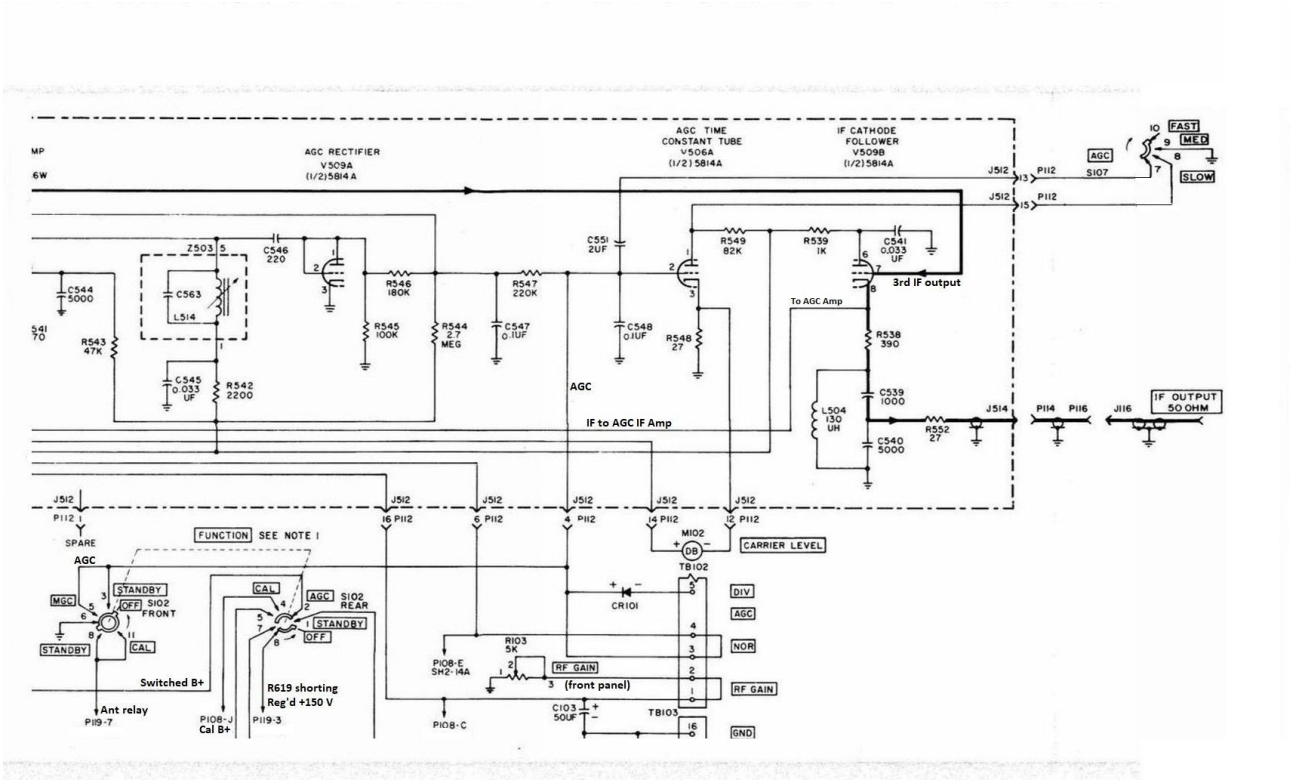
Fixing the AGC Moment of Silence
Revision 1, Add instructions for AGC1, bottom pg 4.
Larry Haney, 3-9-2025.

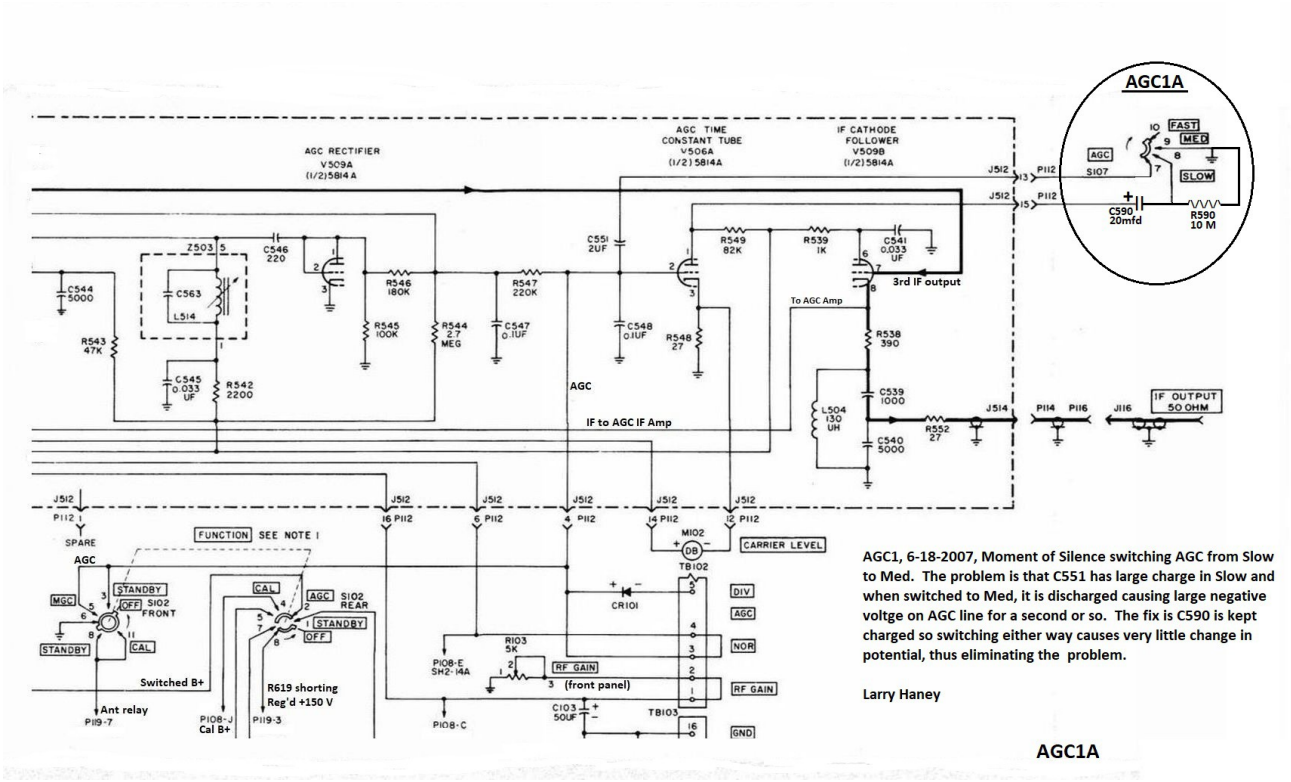
I got my first R-390A in 1987. I noticed this symptom shortly after that. My first action was to determine if the 'Moment of Silence' (MOS) was due to a bad component, other bug, or a design issue. Once you look at the original schematic below, it's pretty easy to see the problem.

The AGC Moment of Silence is a design oversight and has been with the R-390A since its inception. This happens when it is in AGC Slow and switched to Med - the rx goes silent for a second or more. There are other scenarios, also. To understand, look at the original schematic below at S107 in the upper right corner, and see what it does to the C551 charge:



In the AGC Slow position, C551 is charged to about 110V (+/- 80 V) depending on the current signal strength being received (the stronger the signal, the higher the charge). When the AGC switch (in the upper right corner of the schematic) is changed to Med, that potential is applied to the AGC line, pushing it negative for a second or so. That large negative potential cuts off numerous stages and eliminates any signal getting through the IF (thus eliminating sound) until the C551 potential decreases to almost zero. This takes a second or so.

In deciding on a solution, I wanted it to be simple and confined to one physical area. My first solution is as follows:



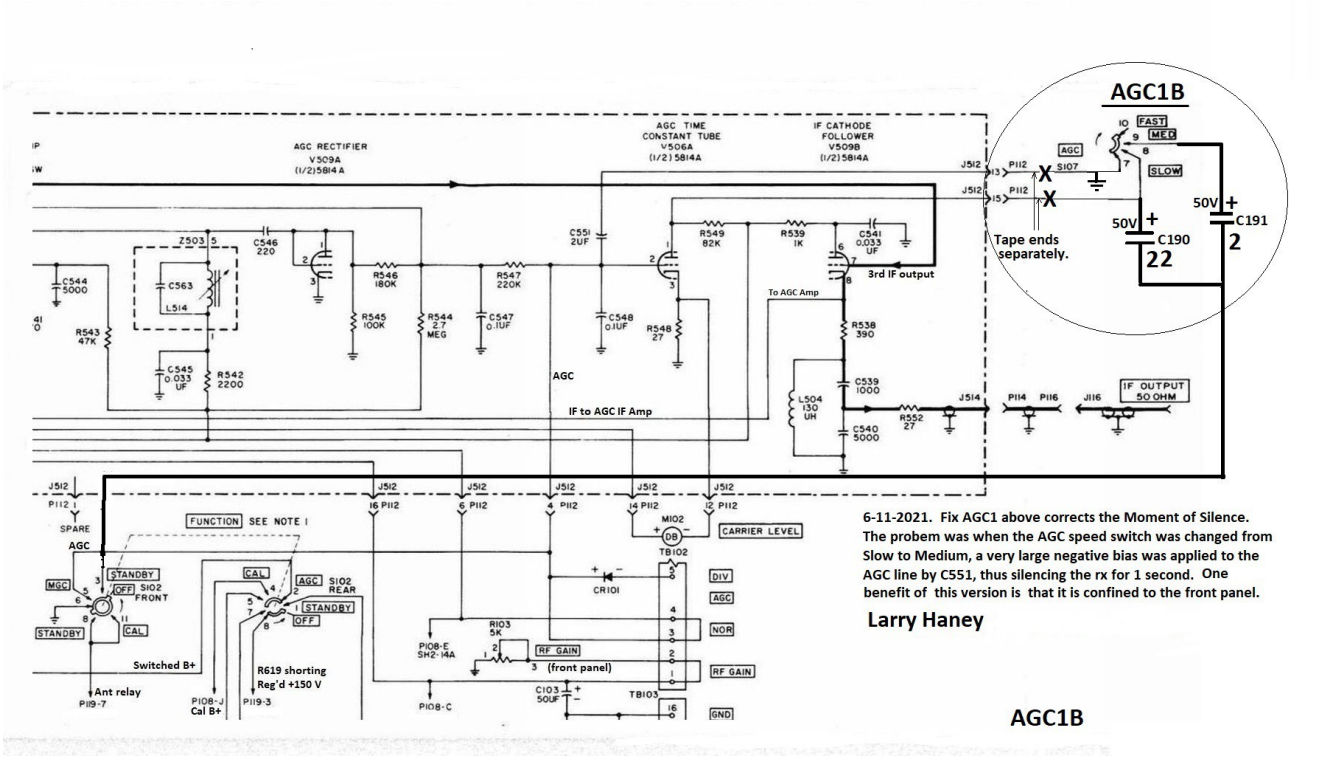
This fix resolves the major (and most common) issue by setting the voltage level at the Slow and Med switch points to approximately the same value. Since the Fast position is open, it is not affected by it. I've been using this version since 1992, and have found it to be very effective on the common issue and improves the other scenarios a little (but they do not happen very often, either).

Remember, C590 must be very low leakage. It is a 250 v cap. Since the RC time of this fix is 200 seconds (about 3.3 minutes), it should start functioning about 3 minutes after power on. This has not been a problem for me.

Without any Moment of Silence fixes installed, there are other scenarios where the Moment of Silence can occur (thank you Dave Wise and Charles Steinmetz), one being, where you are listening to a very strong station in 'Slow' and switch to 'Fast' and scan the dial looking for a different station. Then finding a weak one, switch to Slow to eliminate the fading. At this point, the residual charge in C551 is again holding the AGC line negative and eliminating sufficient amplification to hear anything for a few seconds. There are other operating scenarios that also cause the Moment of Silence, but they can not be mostly over come by a simple fix such as this.

I chose this version of the fix in 1992 for a few reasons. I had already repaired C551, so it was in new condition. The other reasons are that it is confined to the front panel only and in one area, is simple and the installation is very easy. Another reason is, that it needs to be easy to add capacitance in the fast position for optimum SSB reception. Another plus is that I was able to install it without having to remove the front panel.

Now, if my C551 was not in good condition, I would have opted for a different version of a fix for this problem. The schematic follows:

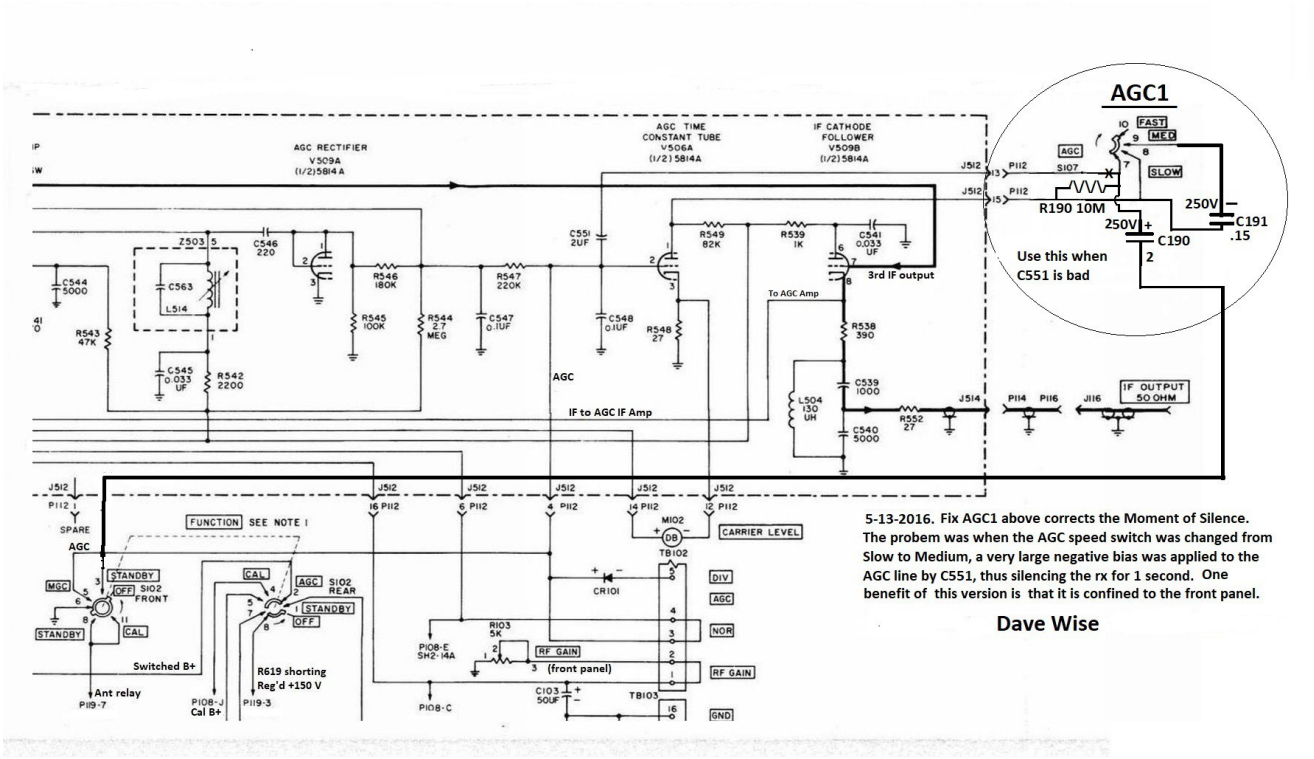


This fix resolves the major and most common issue by setting the voltage level at the Slow and Med switch points to approximately the same value (the B+ line from the plate of V506A is no longer involved). Since the Fast position is open, it is not affected by it, either. I've been using this version since June 2018, and have found it to be very effective on the common issue and improves the other scenarios a little (but they do not happen very often, either). One drawback to this fix is that the front panel needs to be dropped most of the way to install it.

In 2016 I was looking for another better alternative to my original fix I created in 1992. I collaborated with Dave Wise and Charles Steinmetz on the various fixes available. My objective was to still keep it simple and not replace S107 (that was a major consideration). And, the other was to keep it to one area so the modules could still be substituted for testing. I did not want to get into the situation where part of the fix was on the front panel and the rest was on the IF deck. This would tie them together. This is how I came up with the above fix.

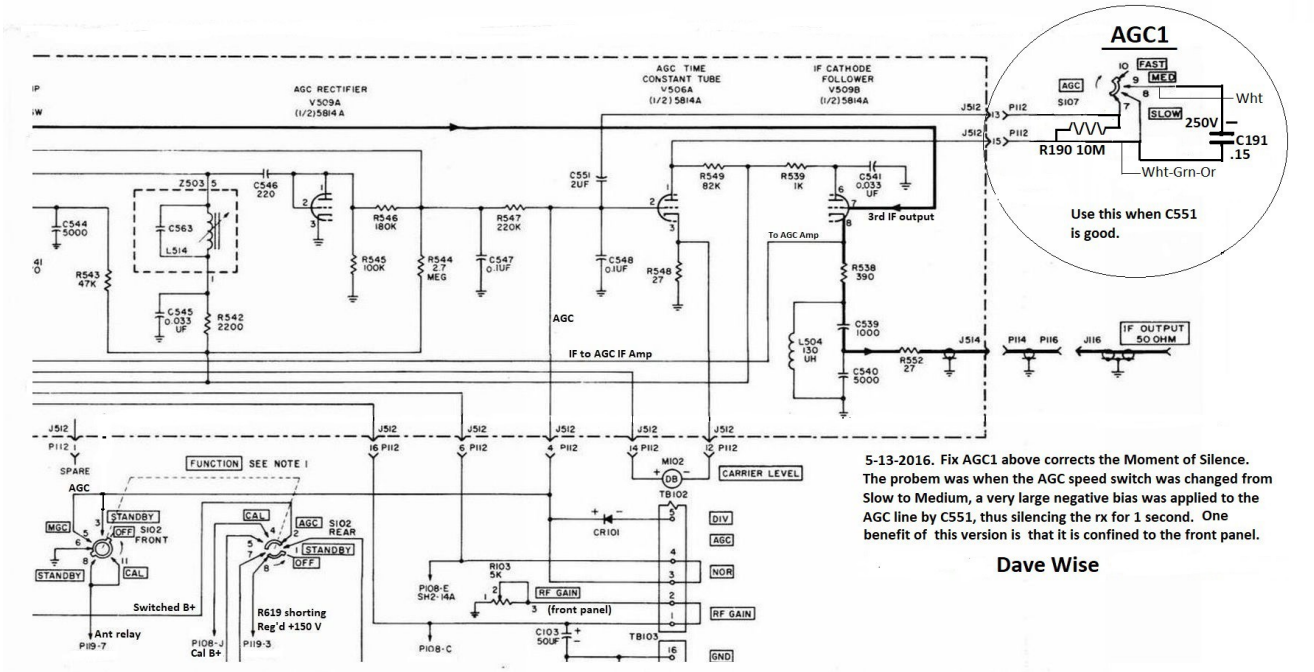
There are a few other fixes that have been documented over the years and are worthwhile reading about. They can be found in the list forum archives. One by Dave Wise (documented by Perry Sandeen) is on our website here: R-390/R-390A AGC - Ending The Moment Of Silence. This fix by Dave is the ultimate solution, but requires replacing the AGC speed switch, S107.

Here's another good candidate by Dave similar to my AGC1B fix:



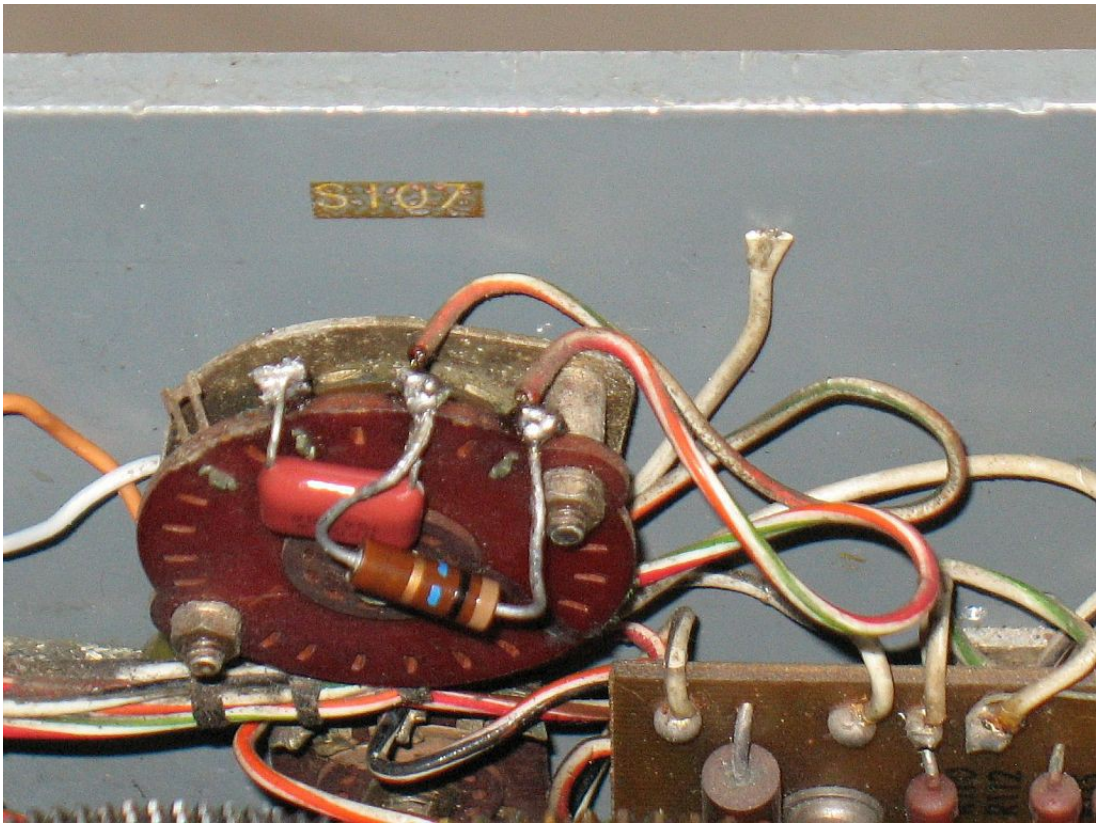
It has a big advantage in that it uses much lower value caps. You can also add capacitance in the fast position for optimum SSB reception. But, you must put the front panel most of the way down.

I like this next one by Dave as it requires less wiring changes, uses fewer parts and can be done with the front panel in place (if you're careful). And, if you want to remove it, it's easy to do. It does use the existing C551, so it must be good.

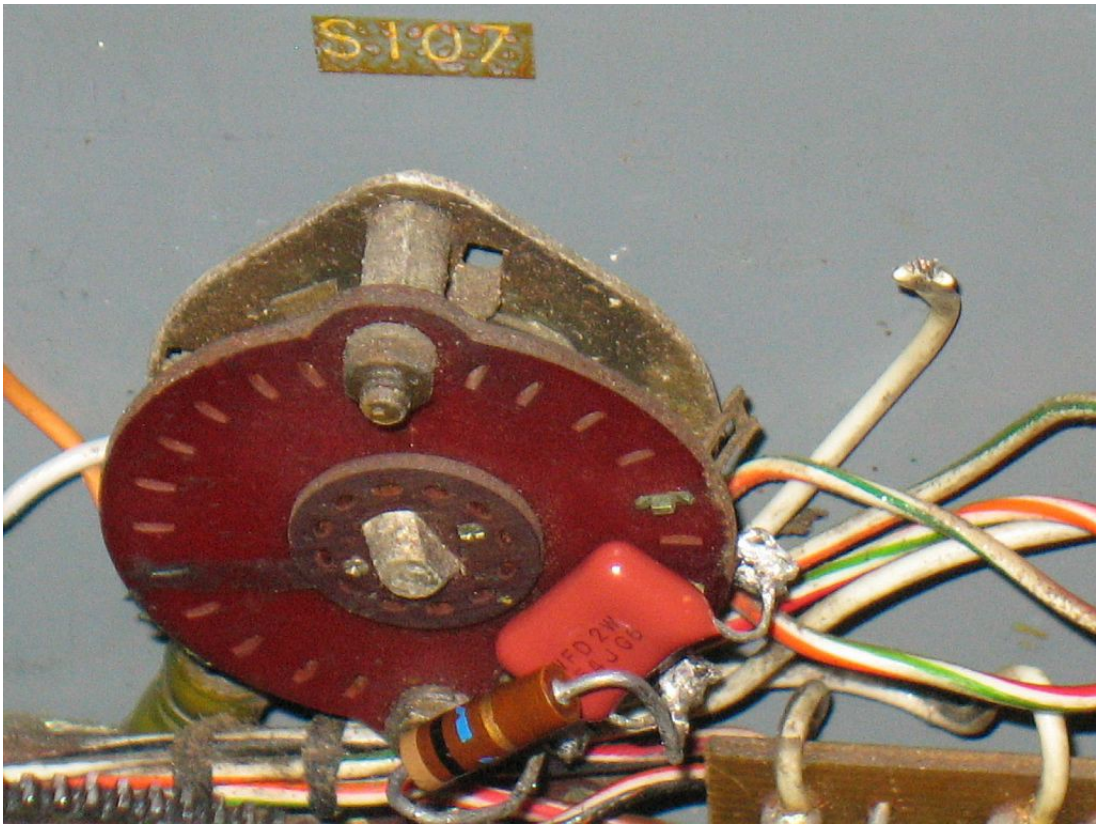


Revision 1: I like this version of the MOS fixes I've seen and am installing it on a 390A. To install the above version, remove the AGC knob and the nut and washer holding the switch in place. Push the switch in a little (about a half an inch) so it can be rotated about 180 degrees so the contacts are facing up for easy access. Be careful of the wiring, although this is easy to do. The following picture shows the white ground wire removed from contact 9 (the AGC medium position) and the 2 components added to the switch contacts. That is the extent of the change.

However, if you use this rx to receive SSB, you may want to add a small capacitance to the Fast position. I've heard that this can improve SSB reception. It should be added to contacts 8 and 10 and should be 1/13 the value of the capacitance you want to add. It should be 250 volts or better.

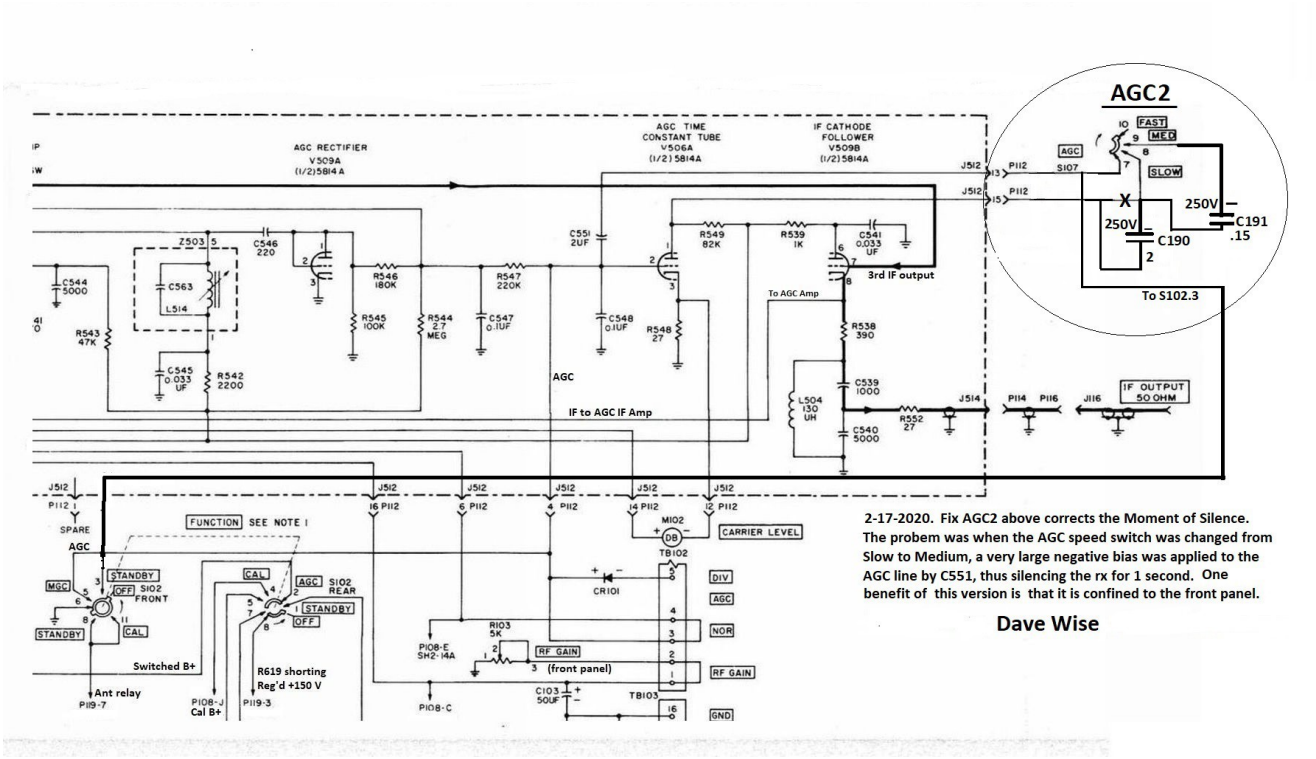


Now, all that is left to do is put the switch back and reinstall the knob. The following picture shows the switch rotated back the way it originally was and with the washer and nut installed to hold it in its original place. It's probably easiest to rotate it in the opposite direction from the way you did it when you made the contacts easy to get at.



Once the installation is complete, a good test to do is set the rx to receive a strong non-fading AM station (register more than 30 db on the Carrier Level meter), wait for a couple minutes and then switch the AGC speed from Med to Slow and back a couple times. The Carrier Level meter should not move at all. If it does, it means that C551 is leaking too much.
End Revision 1.

This next version, also by Dave Wise, requires some wiring changes at the switch, uses fewer and smaller parts but can not be done with the front panel in place because access to the Function switch contacts is required. It does not use the existing C551, but it still must not be leaking to ground.



So you can see that there are numerous similar approaches to fixing the problem. To net it out, if your C551 is good and you want to use it, I like the one on the bottom of page 4 by Dave dated 5-13-2016. If your C551 is bad and you don't want to repair it and use it, I like the one on page 7 by Dave dated 2-17-2020 labeled AGC2. In any case, make sure C551 is not leaking to ground. I think you will be very satisfied with either. These two fixes use the existing S107, but if you don't mind changing it and you want the best solution, use Dave's ultimate fix mentioned above. It's on our website here: R-390/R-390A AGC - Ending The Moment Of Silence.