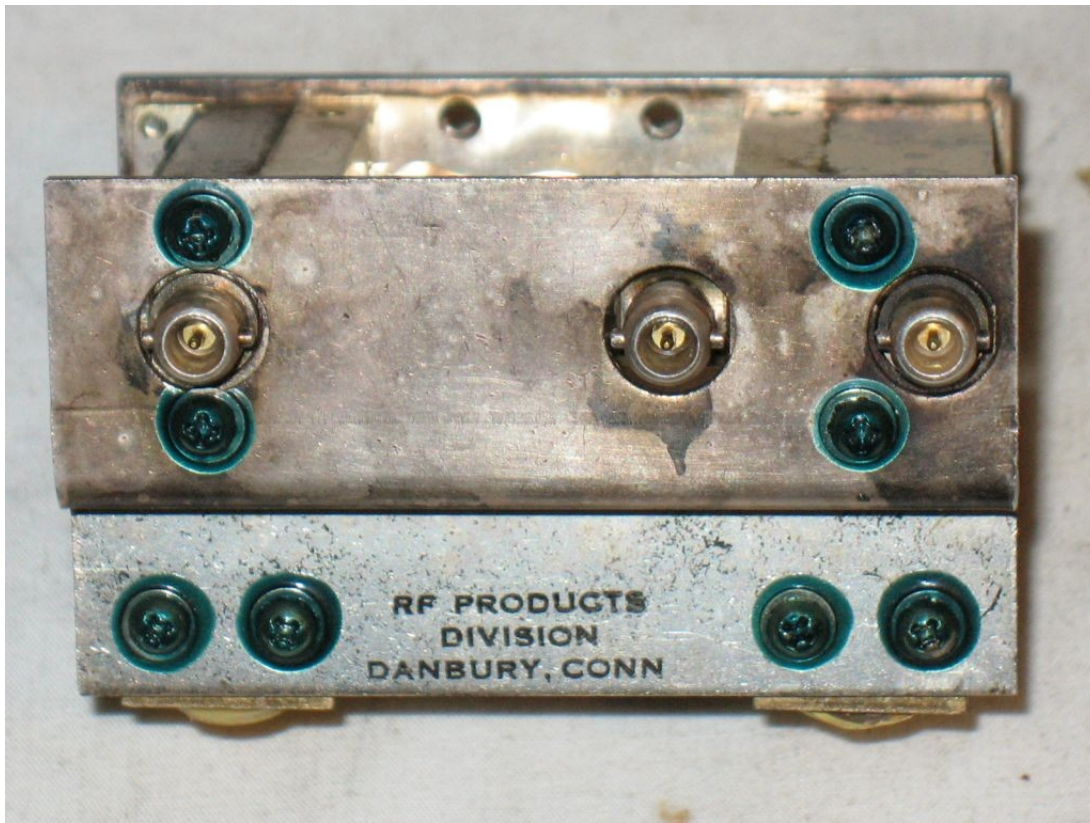
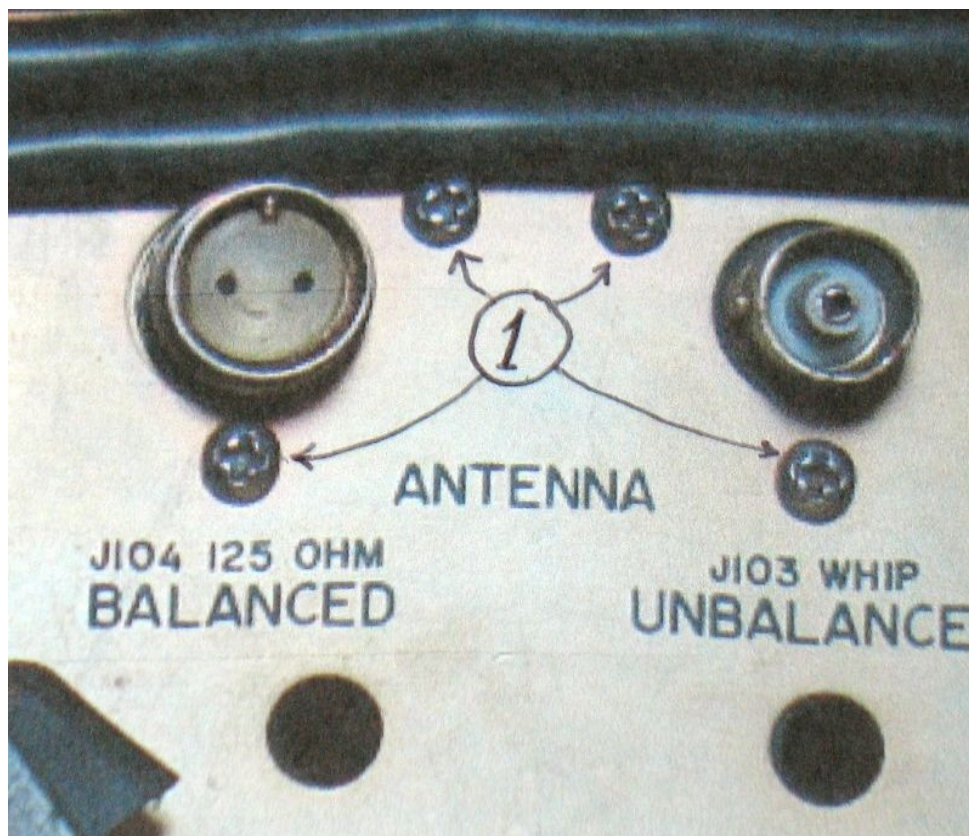


After determining that the antenna relay needed fixing in my R-390A, I looked for documentation on how to remove it and what it looked like inside. I couldn't find anything, so I decided to document what I found. I first removed the three mini BNC connectors on the back of the relay. As I removed them, I verified that they were connected to the correct jack. Sometimes they get changed.



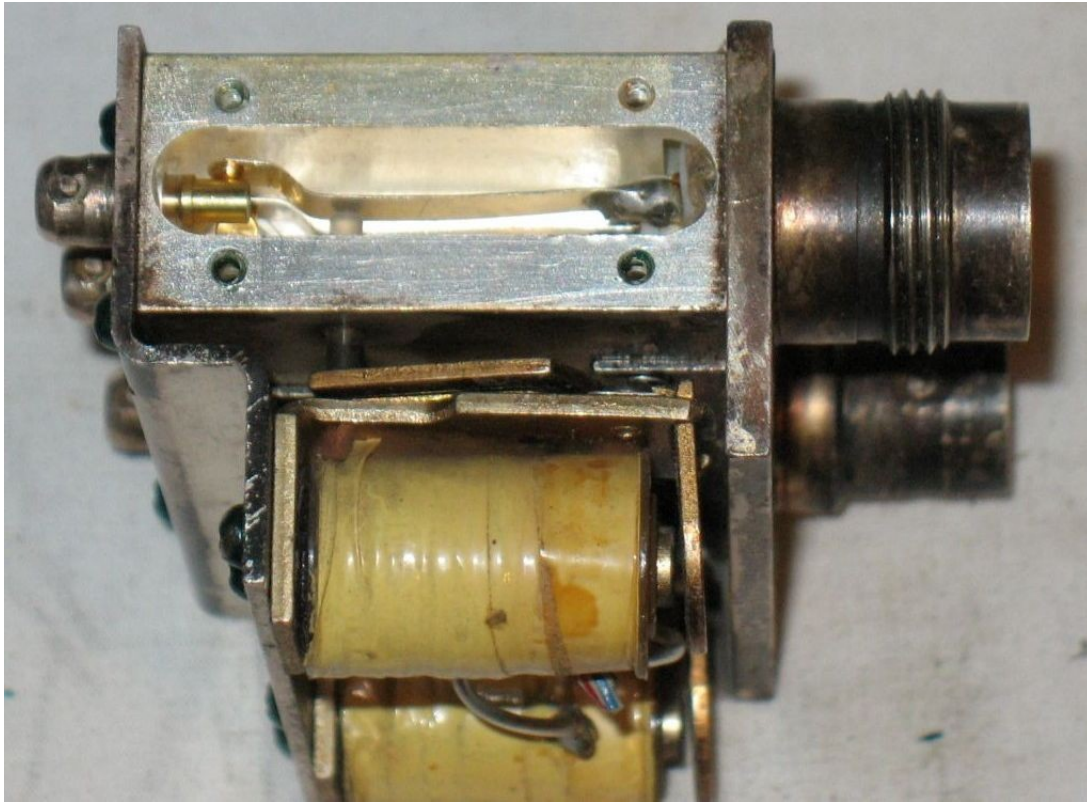
The next step is to remove the four phillips screws holding it onto the rear frame. They are pointed to in the picture below. When the last screw is being removed, the relay should be held up by one hand. The wires are still connected to it that operate the electromagnets, so be careful not to damage them. They are long enough that some repair can be done on the relay without disconnecting them.



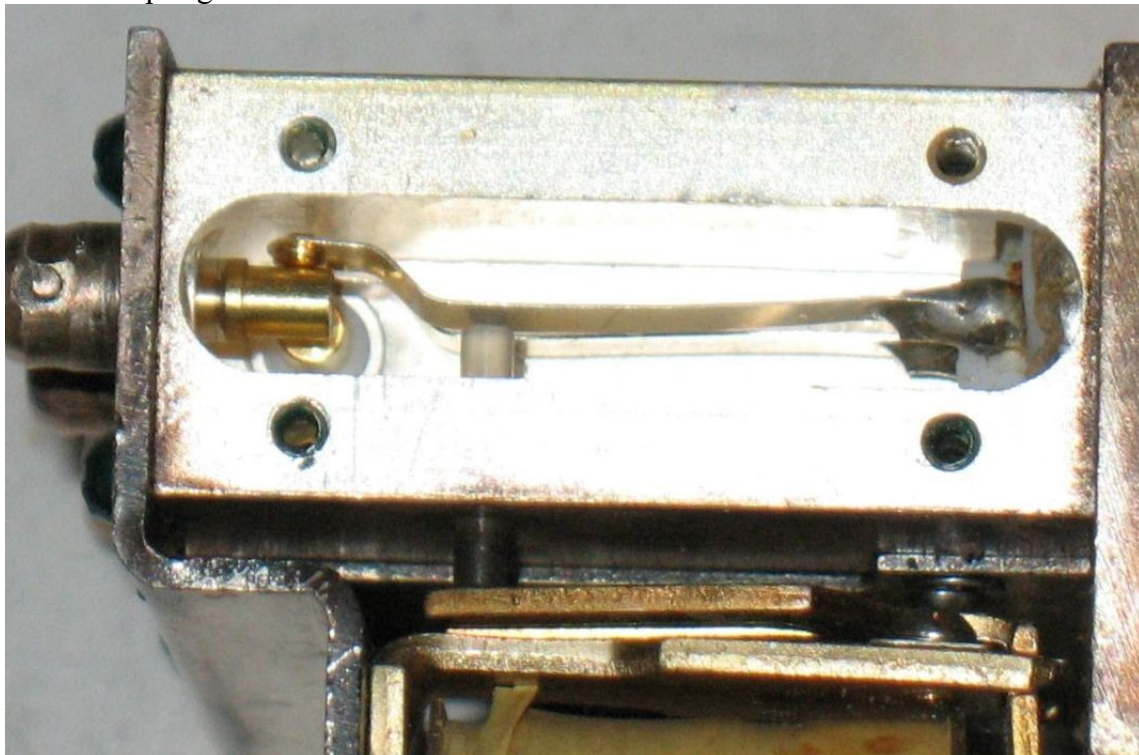
Once I removed the relay, it was easy to remove the access plate to the contacts that I needed to see (the two for the twinax connector). Just remove the four screws and the plate will come off. I think now is a good time to see if the electromagnets are working correctly. See the next picture.

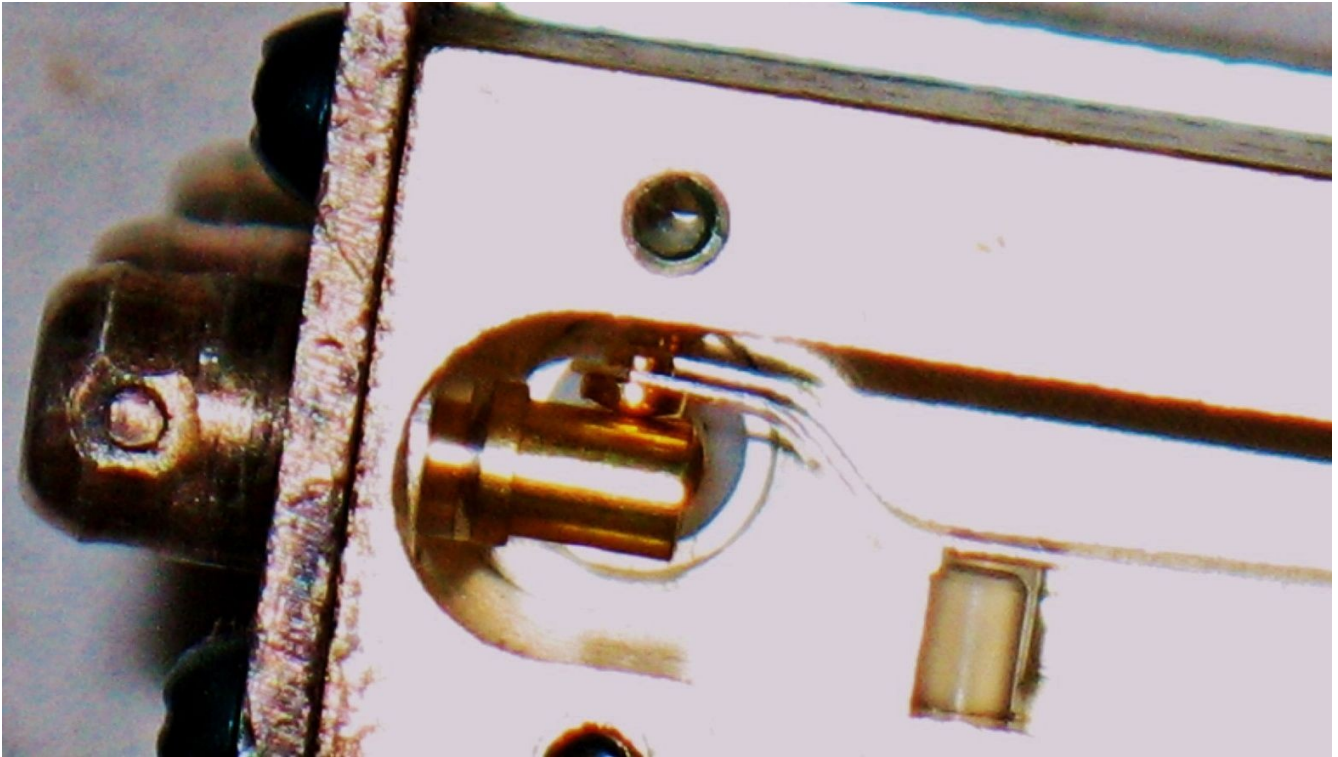
With everything in a safe position, plug your rx in and switch it to Stand By (while keeping an eye on the relay). You can switch it between Stand By and AGC to watch it operate. When you're satisfied with the armature movement, turn it off, unplug it and continue on.





In the above picture, it's easy to see how the electromagnets operate and push the insulated rods against the spring loaded contacts. There are two, but the second one is not easy to see. They are soldered directly to the ends of the twinax contacts. If the twinax connector or contacts are damaged, they will be extremely difficult to repair as it does not come apart. The next two pictures show close ups of the contacts and leaf springs.





In order to see if the contacts are operating correctly, press on the armature simulating magnetic pull on it. Watch both contacts and see if they move and touch the top of the cavity creating a good ground. The armature should push the spring leaves just a little past the point of initial contact flexing them a little. This causes a little wiping action of the contact on the side of the cavity minimizing oxidation build up. The distance the leave should move past the point of contact with the side is about 1/32" at the point of the push rods.

When the armature is released, the leaves should continue moving 1/32" after the contacts stop moving. The insulated push rods should keep moving and provide about 1/64" of clearance between them and the spring leaves. At this point you could hook up an ohm meter to the contacts to see how it's doing. Once you have them correctly adjusted it's time to see if the electromagnets are working the contacts correctly. With everything in a safe position, plug your rx in and switch it to Stand By (while keeping an eye on the relay). You can switch it between Stand By and AGC to watch it operate. When you're satisfied, you know what to do.

Regards, Larry Haney. 3-23-2018.