

Grounding issues in Antenna Switches

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In the July / August issue of QEX, I described construction of a simplified linear scale milli-ohm meter, making it easy to reliably measure resistances less than 1 ohm. (A Linear Scale Milli-ohmmeter: Another Look)

One of the readers, Lionel Booth, N5LB, sent me feedback on how he was using a variation of the design to check out his MFJ-1701 6-position antenna switch.

(These switches and others like them, all claim to ground the non-selected inputs.)

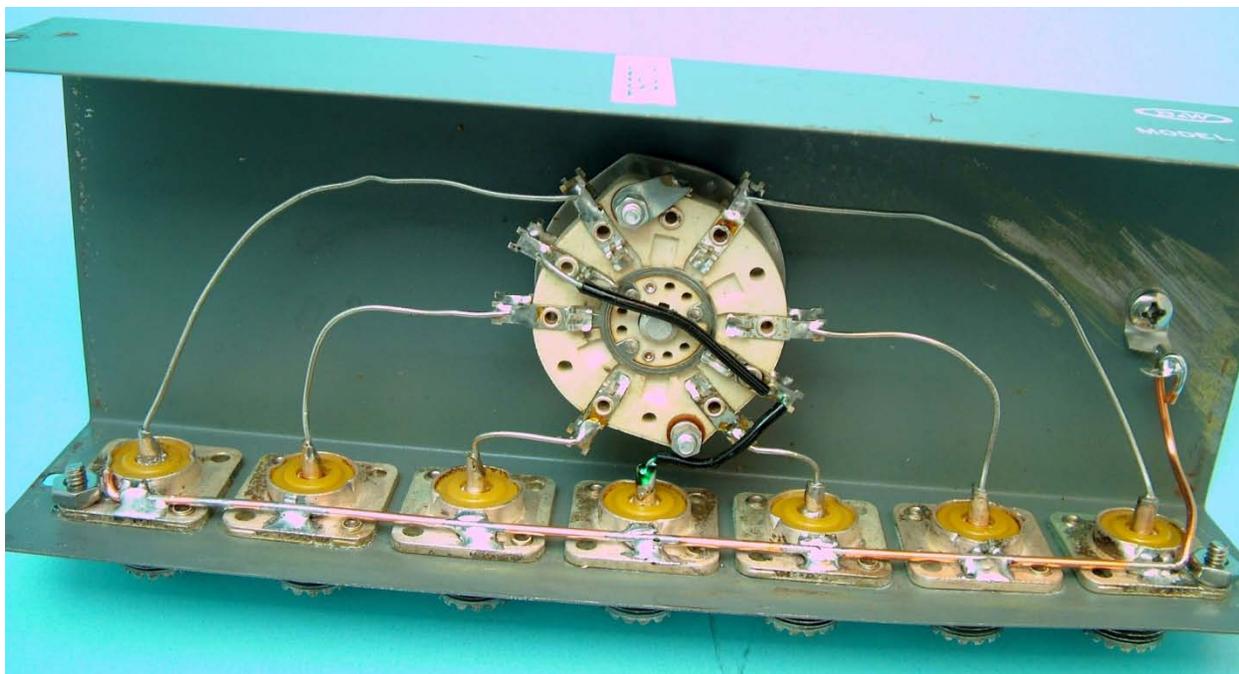
This got me thinking, as I also have a similar 6-position antenna switch, the older B&W model 595.

Using the milli-ohm meter, I verified that each of the 6 SO-239 connector positions was connected to the center pin of the common input connector, with a good low -resistance (<50 mill ohm) connection.

However, when checking for grounding of unused inputs, I found one completely open, and the other 5 in the range 100 ~ 500 milli ohms.

Some checking revealed that the SO-239 bulkhead connectors were fastened to the steel chassis with 2 rivets , and that was where the intermittent ground connection had developed.

The attached photo shows what I did to fix it.



I drilled out 2 of the bulkhead connector rivets, one at each end of the connector "strip" and replaced the rivets with a stainless steel machine screw, lockwasher and nut, making sure to scrape away the paint in the area of screw contact.

I also added a separate ground terminal to the chassis, available outside on the panel.

Finally, I sweat-soldered a bare #14 copper wire ground bus to the barrel of each connector and terminated it at the new ground terminal on the panel.

Note: Using the milli-ohm meter, I have also identified loss of ground issues in non-selected inputs in another style of antenna switch, intended for vhf/uhf.

The unit I have had problems with is an MFJ-1704, a 4-position coaxial switch. Unfortunately I have not found an easy fix for this problem.

My point is that if you are relying on your antenna switch to ground unused antennas, you need to check it out.