

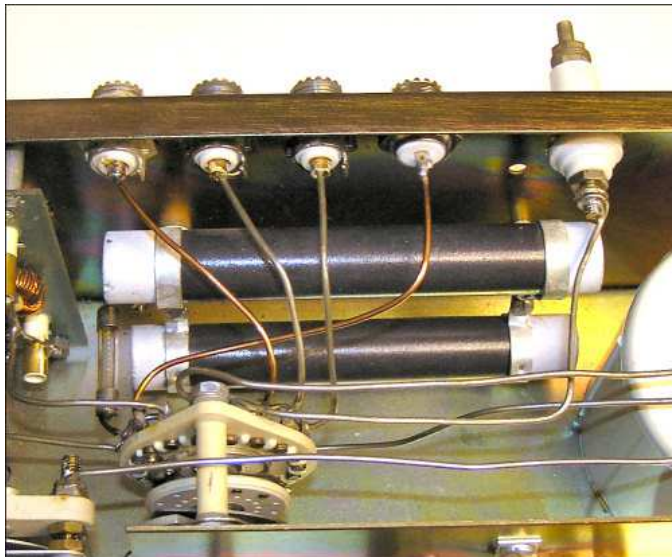
DENTRON MT-3000A TUNER MODS BY W1AN

The Dentron MT-3000A is an excellent tuner that has been around for many years. Here are some improvements I have made.



Add an additional straight through connector

The antenna selector switch will need to be modified by removing the rotation stop just clockwise of the COAX 1 DIRECT position. First make sure there is an actual spare contact in the next clockwise position! If you have an empty space you will not be able to perform this modification. If your tuner has the contact and no stop, consider yourself lucky and you can skip the most difficult part of the modification. Remove the tuner top and bottom covers. To remove the stop you will need to remove the shaft coupler and the mounting screws for the plate securing the switch and the 3/8" nut holding the switch. Once loose, remove the two 6-32 nuts and screws that hold the ceramic wafer to the detent part of the switch. You will then notice there is a very small screw and nut which acts as a stop just past the COAX 1 DIRECT position. Carefully remove. You can leave it out or relocate it one position clockwise if you like. Note there is also a stop on the counter clockwise position just past the Balanced Line position. Leave it in. Please note that variations may exist. Reinstall the switch knob and hardware. You should now be able to turn the antenna

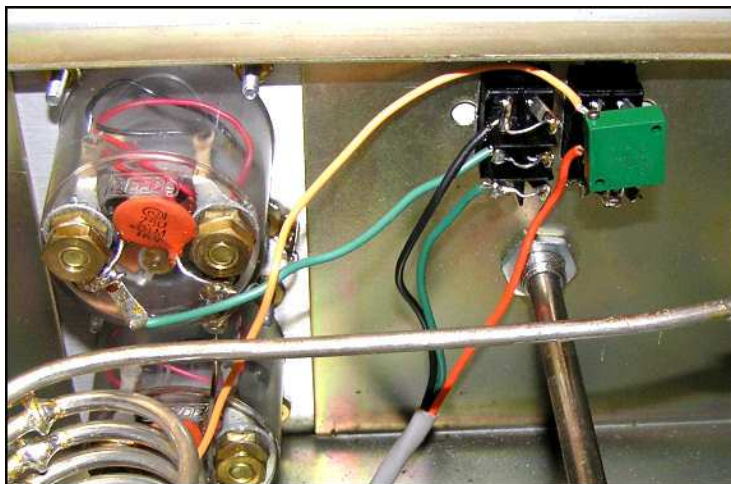


switch at least one position clockwise from the COAX 1 DIRECT position. This will be the new COAX 4 DIRECT position. You can label if you like.

Drill a mounting hole for the COAX 4 DIRECT connector next to and left of the existing COAX 1 DIRECT connector on the rear of the chassis. Possibly but unlikely you can find an identical SO239 type connector. Punch or file the hole carefully for whatever connector you plan on using. Some connectors may have a flat or key on one side. Be careful to not damage the internal wiring and dummy load resistors when you do this! Mount your connector in the new hole and then using a piece of #14 solid copper wire run the center pin to the ceramic wafer switch position corresponding to the new COAX 4 DIRECT position. From the rear, this point is the third terminal clockwise from the top switch screw. Dress the wire away from the others and solder.

Replace the meter switch and get a bonus low power reflected power position

The existing meter switch button caps often becomes loose, pop out and generally annoying so I've simply replaced them with two rocker switches. The best fit switch I found was C&K part number DM61-J1-2-S2-05-Q available from Mouser, Digikey and Newark Electronics for about \$4.00 each. To remove the old switch cut the wires close to the existing switch terminals. Remove the tuner knobs and loosen the front panel to access the mounting screws. Remove the switch assembly and reinstall the panel and knobs. With a square file carefully file out the holes to match the mounting for the replacement switches. Try to keep the holes centered with the original panel markings. Check the fit often. You do not want oversized holes. Once the holes are in and deburred, mount the switches. Some hot melt adhesive or a touch of 5 minute epoxy at the edges inside should hold them if they fail to snap in place because of the excessive panel thickness.



Next wire the switches. The switches I selected are DPDT. Electrically only SPDT are required. A small loop of bare wire soldered between each terminal twin provides better reliability for the low signal levels and a more secure and easy place to solder the wires and hang the trim pot.

There is a three conductor cable from the power meter circuit board that comes up through a hole just below the meters. The color code varies tuner to tuner. Disconnect the wire that goes to the bottom meter and relocate to the common (center terminal) of the 200W switch. Install a new 6 inch small gage wire from the meter point where you just removed the wire and connect to the top terminal of the

200W switch. Install and solder a new 100K ohm pot from top terminal of the 200W switch to the bottom terminal. The new 100K trim pot becomes the high power reflected power meter adjustment.

The remaining two wires from the three conductor cable can now be connected. Connect and solder the one originating near the top potentiometer on the power meter board to the top terminal on the 2000W switch. Connect and solder the one originating near the middle potentiometer on the power meter board to the bottom terminal on the same switch. Connect and solder the loose wire originating from the top meter to the center common terminal on the same switch.

Check your work. You should now have a high/low forward power switch labeled 2000w and a high/low reflected power switch labeled 200W. Since the meter and mating switch pairs are marked the same on the panel you should have no trouble remembering which is which. The existing power adjustment potentiometers on the power board should be recalibrated. Apply a known power and a proper 50 ohm dummy load on Coax 1 Direct and adjust both your high and low power positions. Watch out for RF burns! Next to calibrate the reflected, reverse the out and in power cables so you are feeding the transmitter into Coax 1 Direct position with the dummy load on the TX connector. Now adjust the existing trim pot on the power board for your low power reflected power and then the high power reflected from the new pot on the switch. I won't go into further detail here. Just remember that these readings are somewhat relative and it's up to you how accurate you want to make them.

I've successfully modified three MT3000A tuners as indicated above. They have been very reliable under heavy use. With the new rocker switches they even look better! Enjoy you new enhanced Dentron MT-3000A!

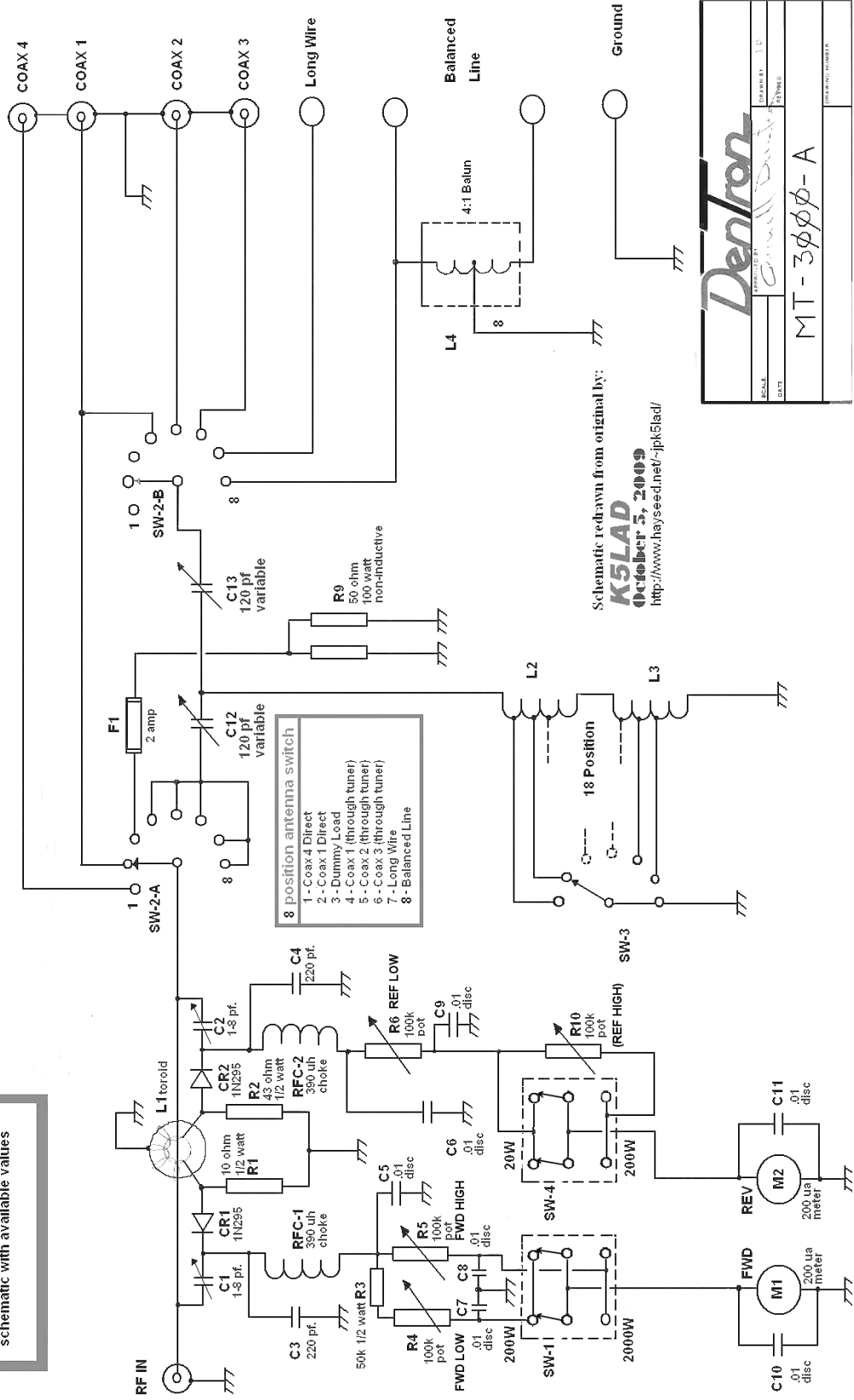
John W1AN
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Other Modifications

Install a fuse holder on the back panel for easy dummy load fuse replacement.
Replace the internal dummy load and add an SO239 for an external dummy load.
Add a switch to add additional loading capacitance for 160M.

Dentron MT-3000A Antenna Tuner schematic with available values

Modifications for HI/LOW FWD/REV Switches and additional Coax 4 by W1AN added



Schematic redrawn from original by:
K5LAD
 October 5, 2009
<http://www.hayseed.net/~jpk5lad/>

Dentron
 MANUFACTURED BY
 SCALE
 DATE
 MT-3000-A
 PART NO. 100001P