Antennas and Grounds

A substantial antenna and ground are an absolute must, for the ultimate pleasure of radio experimentation. See the diagrams below, for the following explanations:

1) Antenna Wire: 50' to 100', 24 to 14ga. stranded wire, insulated or un-insulated will work fine. Use what is most practical for your circumstances, though heavier gauges are best, not absolutely necessary. Keeping in mind, that it should be clear of all surrounding objects.

2) Insulators: Any style that fit your application may be used, here. Make certain that the antenna wire, and 6"-8" pieces that tie to the supports, are mechanically sound. These connections should be mechanically sound, and preferably soldered.

3) Lead-in Wire: This should be of the insulated variety, or could be 50 to 70-ohm coaxial cable. Make certain the shielding is securely grounded on one-end, only. If a single wire is used, it should be of as heavy gauge as possible, and very well insulated from surrounding objects. See #5, below.

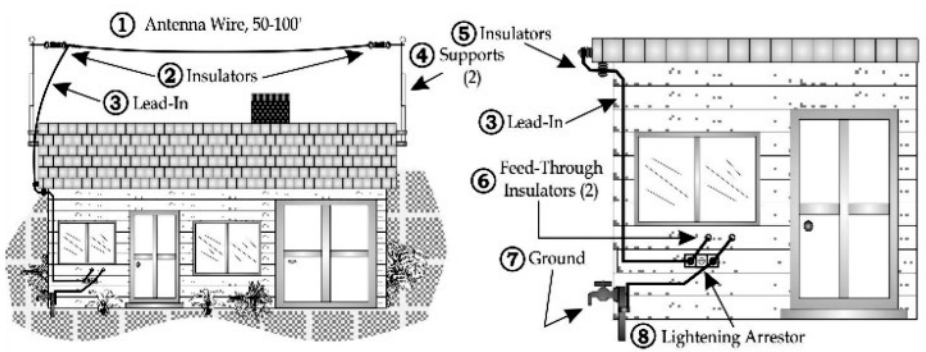
4) Supports: As shown below, or from house to tree, etc. Should be as high as possible, and clear of all surrounding objects.

5) Insulators: Your lead-in wire should be well insulated from all objects, even-though the wire itself is coated with an insulation. You will obtain best reception where the signal through the antenna/lead-in is not allowed to "short" to surrounding objects.

6) Feed-Through Insulators: Should be used to run the wires through the wall, into the radio room.

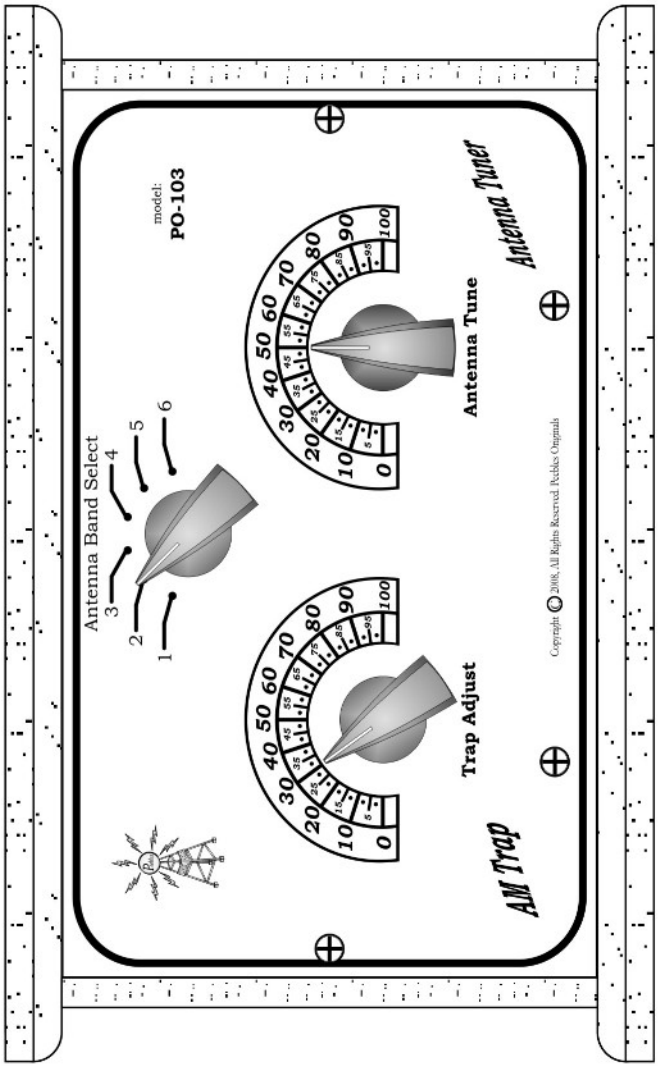
7) Ground: This should be a solid path to "earth". This can be accomplished via metal water pipes, or other direct paths to ground. Do-not use gas pipes, or house electrical grounds. May need to add a Ground Rod, from electrical supply house.

8) Lightening Arrester: Should be used, where lightening is common.



Antenna/Ground Details

PO-103, A.M. Trap/Antenna Tuner Kit...



...Assembly and Operating Manual

PO=103, AM Trap/Antenna Tuner Kit, Instructions:

Introduction:

Thank you for purchasing another fine kit, from Peebles Originals. We believe that the Antenna Tuner is a most essential tool for Crystal Radio experimentation. It will "reach" down and pull-out stations you would otherwise miss. On the other side of Crystal Radio experimentation, we have the dilemma of the all-too powerful station. The AM Trap portion of this kit helps to "null" these powerful signals that prevents us from listening to adjacent, less powerful stations. This kit was a project,that apperared in the March 1998 issue of the XSS Newsletter. We had such a response from the readers that we decided to make it a part of our fine kit-line. We hope that this unit will greatly enhance your Crystal Radio listening pleasure. The fine little unit also fits the PO-201 Cabinet Kit. This is the touch that gives it that real professional appeal. Have fun, lets get serious and build the kit.

Basic tools and supplies needed:

* #2 Phillips Screwdriver
* Awl or Ice Pick
* Sharp Knife
* Wire Stripper
* Needle Nose Pliers
* Wire Cutters
* Low Wattage Solder Iron
* 3/8" Nutdriver
* 1/4" Nutdriver
* Paper Paste
* Tape (clear or masking)
* Card-stock material (thin cardboard)
* Fine Sandpaper, 100-150grit
* Rosin Core Solder

XS-103 Assembly:

1 ☐ See Fig. #1, Ⓐ L-1/L-2. Locate: 28 & 22ga. Magnet Wire & 1-7/8" x 2-1/2" Coil Form. Start winding L-1 by inserting the end of 28ga. wire into the top, left-hand, small hole, back-through the next hole-down and leave about 4". Tightly and evenly wrap the wire, clockwise for 70-75 turns. Cut-off wire, so you'll have about 4" left. Insert the wire through the lower right-hand hole and back through the next hole-up. Make certain windings are even and tight.

2 ☐ Wrap an even layer of tape over the entire L-1 Coil. In a similar manner to the above, wind L-2 directly on-top of L-1. Use 22ga. Wire and wrap an even 20 turns, clockwise, over the middle of L-1. Leave about 4" on the start and finish of L-2, also.

3 ☐ See Fig. #1, Ⓑ L-3. Locate: Remainder 28ga. Magnet Wire & 1-7/8" x 3-1/2" Coil Form. Cut a piece of "Cardstock"(thin cardboard) material 1/2"W. x 1-3/4"L. In a similar manner to Step #1 start Coil L-3 at "0", leaving 5". Before you start windings, see Fig. #1 and note: Ⓒ Position Cardstock as shown and apply tape as shown. Gently bend Cardstock away from Coil-Form and wind 59 clockwise turns, as shown. Bend the Cardstock back-down against the Coil and wrap the 60th. turn, over the cardstock. Bend cardstock, back and resume windings to 79th. turn, then 80th. over cardstock, etc., to 100th. turn, then through hole & out other, leave 5". The four windings that are over the cardstock will be dealt with, as "Taps", later.

PO-103 Assembly, Continued:

4 See Fig. #1, Ⓓ The four wires that go-over the top of the 1/2" Cardstock are at: "60"; "80"; "90", and "95" turns. With a sharp knife, scrape-off as much insulation as possible from these four Taps that go-over the top of the cardstock. "Tin" these wires, as well. Cut four wires, from the Hookup Wire stock, about 5"L. Strip and Tin about 3/8", on both-ends. Take one-end, of each wire and lay-it parallel to each of the four taps and solder them together. Scrape and Tin both wires from "0" & "100" respectivily.

5 See Fig. #1. Locate the 1-1/2"Dia. x 3/4"thk. Coil-Mount & two #6 x 1/2" Sheet-Metal Screws. Insert the Coil-Mount, inside the the bottom of the Coil, as shown. Attach with two Screws as shown, Set-aside, for now.

6 See Fig. #4. Locate: Chassis-Board; four Fahnstock Clips; six #6 x 1/2" Sheet-Metal Screws; four #6 Solder-Lugs, and; two Chassis-Rails. The Chassis-Rails are mounted, flush, to the bottom-side of the Chassis-Board. The 5/8"-side of the Rails, are mounted to the bottom of Chassis-Board. Mount each item, as shown.

7 See Fig. #4. Locate: two "365"pf. Var. Caps; four 6-32 x 1/4" Screws; two #6 Lockwasher, and two #6 Solder-Lugs. Mount Capacitor's C-1 & C-3 as follows: 1/4" Screws are through bottom-side of Chassis in each respective hole. There is a #6 Lockwasher and a #6 Solder-Lug between the top of the Chassis and the bottom of each Capacitor. The Screws, are then twisted into two tapped holes on the bottom of each Variable. Do-not over-tighten these Screws, as you could damage the Variable Capacitor.

8 See Fig. #4. Locate: Dial-Panel; SW-1, Rotary Switch; three Knobs, and; two #6 Sheet-Metal Screws. Go to Parts List Page and locate the Dial-Plate. Cut-out and glue to the front of the Dial-Panel, as shown. Make certain all holes line-up. See Fig. #2. Position The Rotary Switch, from the back-side, of the Panel, as shown, and secure with nut, on front-side of Panel. Mount the Panel, to the front-side of the the Chassis-Assy., with two #6 Screws. Mount Knobs on Shafts and position them, according to logical rotation, of each.

9 See Fig. #1. Mount each Coil, as shown, in the diagram. Scrape and tin each lead from L-1/L-2. Wire all leads as shown, referring to Fig. #2, #3, & #4, also. This completes the assembly of this unit. Take-time to re-check all your work, at this time.

Test:

Connect your antenna to terminal "AI". "AO" is connected to receiver's antenna input. "G" is just a Ground Termination point, and has no-other purpose. Band Switch Positions: 1) 0.500 to 0.850Mhz.; 2) 0.800 to 2.0Mhz.; 3)1.9 to 4.1Mhz.; 4)3.9 to 7.5Mhz.; 5)6.0 to 9.5Mhz., and; 6) 8.75 to 30Mhz.(approx.). Your results may vary, a little, as each antenna situation is different. Set your receiver to a rather low signal, in a selected band, and slowly rotate the "Antenna" tuning knob, and listen for an enhancement, in the signal-level, at some point. Set you receiver to a rather loud station, in the broadcast band, slowly rotate "Trap" tuning knob, and listen for a lull, in the signal level. If these two things worked, O.K., then your unit works, O.K. If the results were not noticed, then: 1) Make certain you were working in the proper band, and 2) Make certain all your wiring is correct. It may take some practice and patience, before you obtain total satisfaction, but it will be worth-it. This unit helps you hear, so much-more!! Have fun and may all your experimenting be as rewarding, as my 52 years of playing with RADIO has-been, for me.

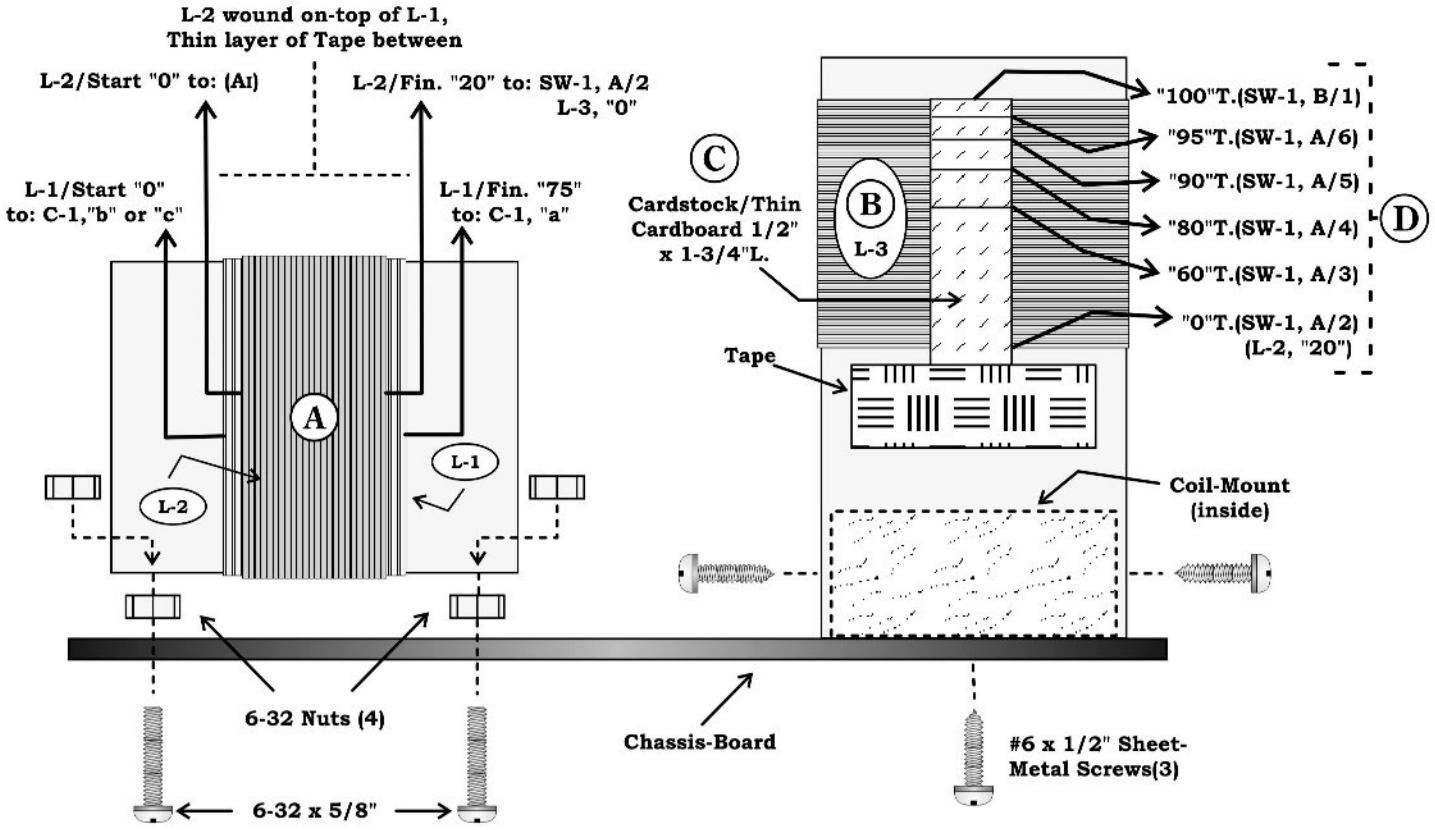


Fig. #1, Coil Assembly/Mounting/Wiring Details

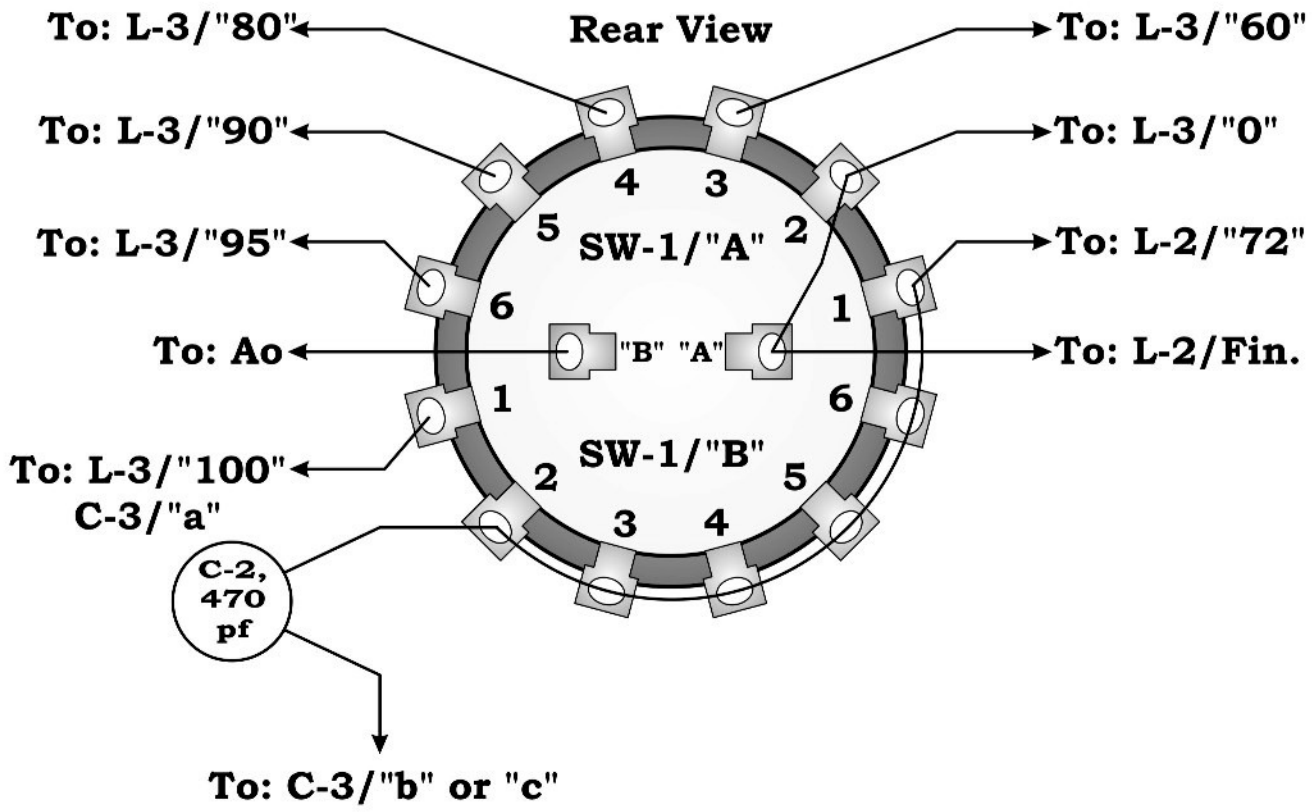


Fig. #2, Band Switch Wiring

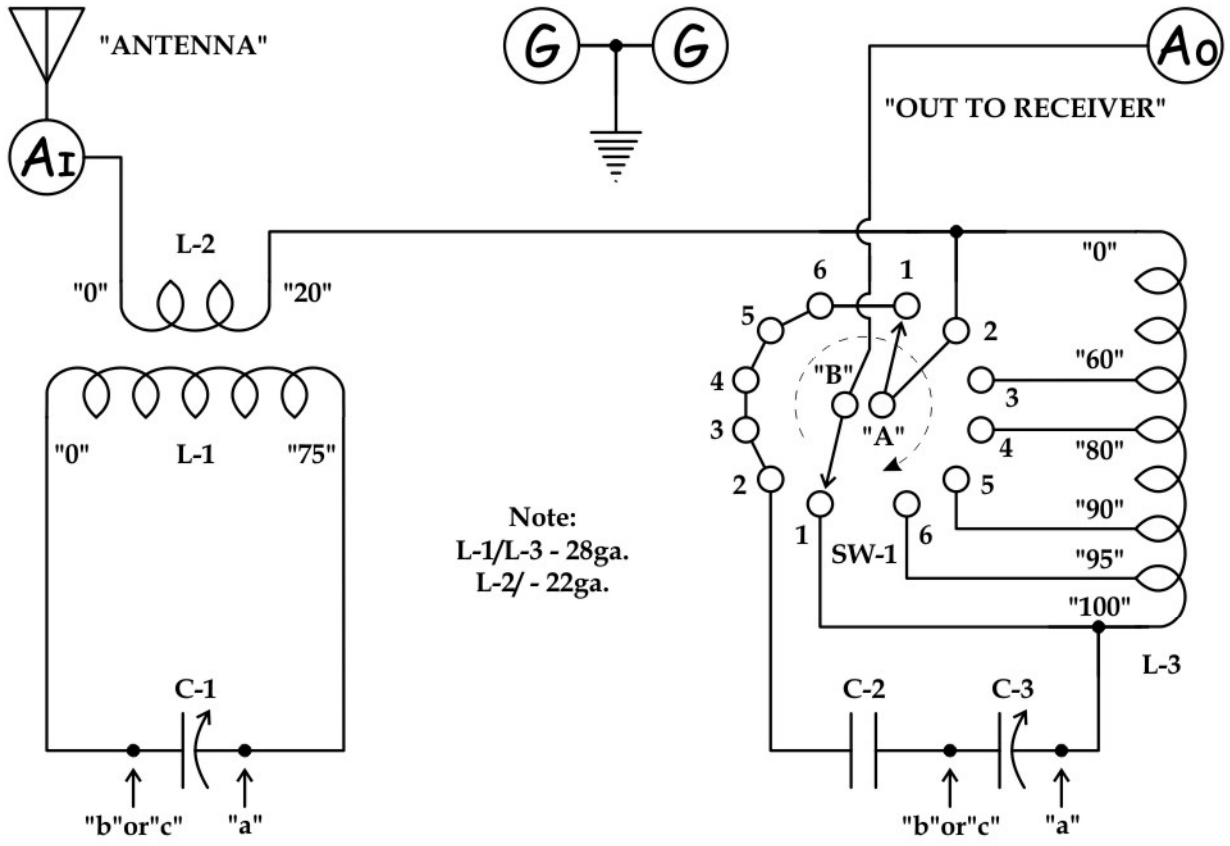


Fig. #3, Schematic Diagram

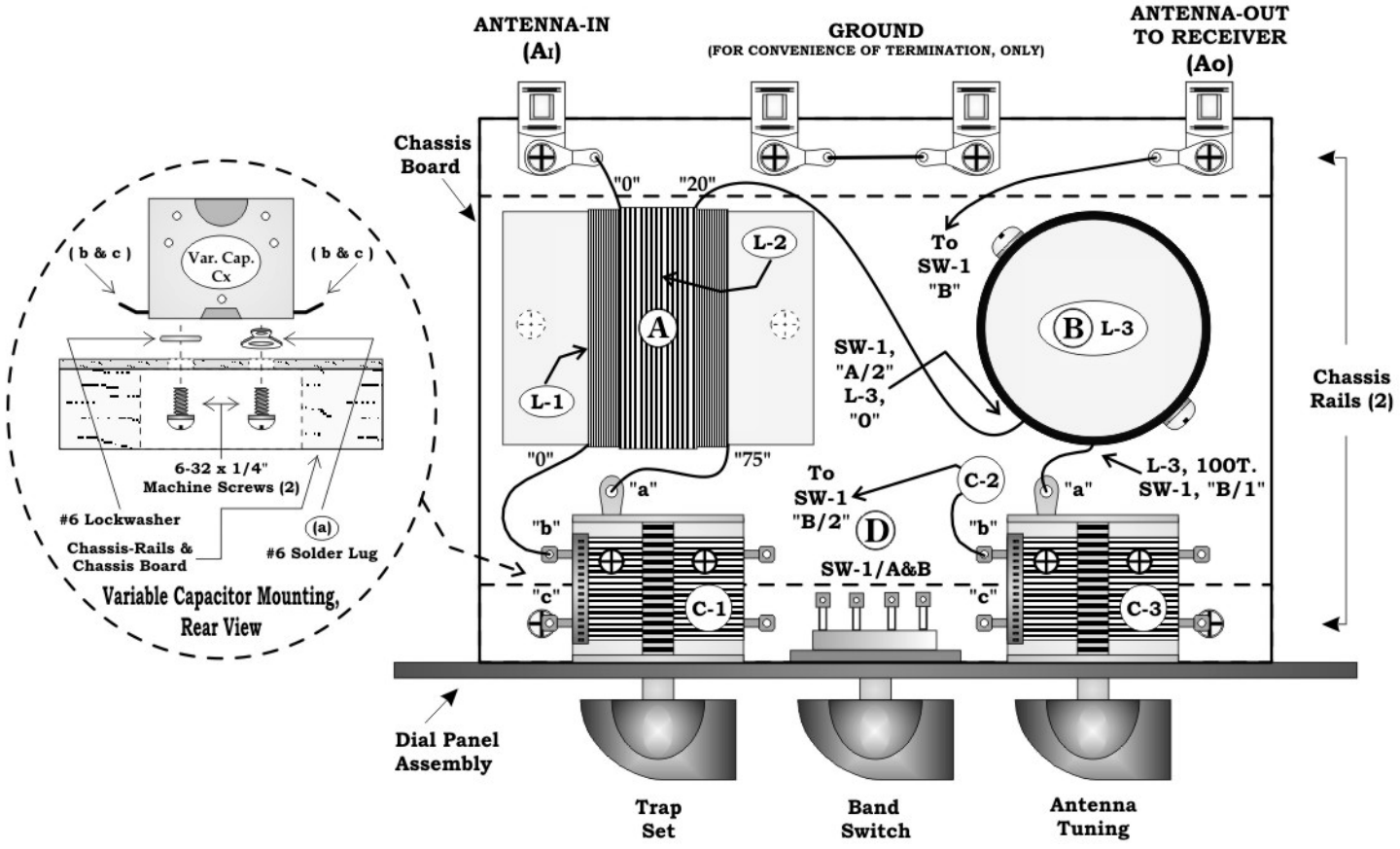


Fig. #4, Chassis Layout

PO-103, A.M. Trap/Antenna Tuner Kit, Parts List:

2	Cap., Variable, 365pf., C-1/C-3
1	Cap., Ceramic, 470pf., C-2
1	Switch, 2-Pol/6-Pos Rotary, SW-1/A&B
4	Fahnstock Clips, #6
3	Knob, Black-Pointer
90'	Wire, Magnet, 28ga., L-1/L-3
12'	Wire, Magnet, 22ga., L-2
11	Screw, Sheet Metal, #6 x 1/2"
4	Screw, Machine, 6-32 x 1/4"
2	Screw, Machine, 6-32 x 5/8"
4	Hex-Nut, 6-32
6	Solder Lug, #6
2	Lockwasher, #6
1	Coil Form, 1-7/8" x 3-1/2"L.
1	Coil Form, 1-7/8" x 2-1/2"L.
1	Coil Mount, 1-1/2" Dia. x 3/4"thk.
1	Chassis Board, 4-3/8" x 6-3/8" x 1/8"thk.
1	Dial Panel, 4-3/4" x 7-3/4" x 1/8"thk.
2	Chassis Rail, 5/8" x 3/4" x 6-3/8"L.
1	Instruction Manual

Dial Plate, Cut-Out, Outside Border & Glue to Front of Dial Panel