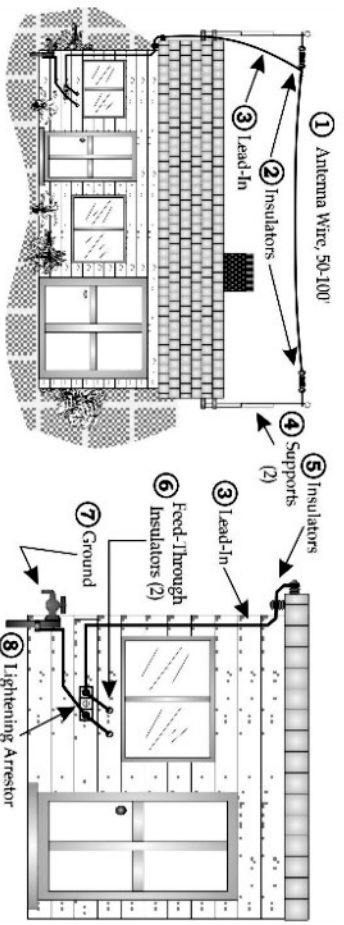


Antennas and Grounds

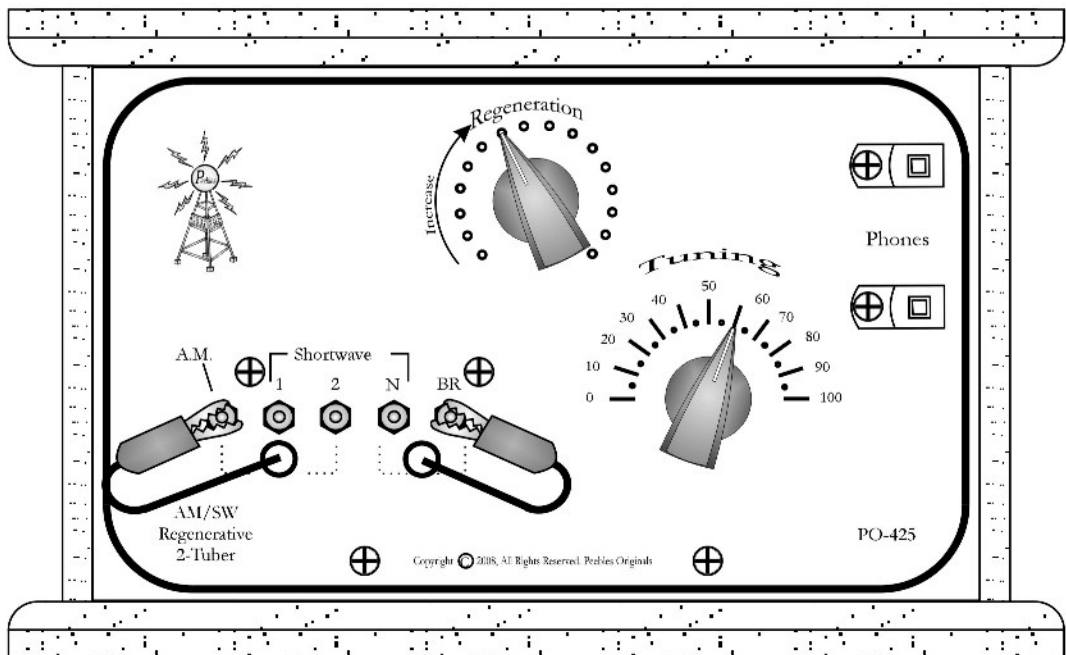
A substantial antenna and ground are an absolute must, for the ultimate pleasure of radio experimentation. See the diagrams below, for the following explanations:

- 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-ins 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) Lightning Arrester: Should be used, where lightning is common.



Antenna/Ground Details

PO-425, 2-Tube Regenerative AM/SW Radio Kit With Built-in RF Amplifier



Assembly Instruction and Operating Manual

PO-425, 2-Tube AM/SW Regenerative Radio Kit

Assembly and Operating Instructions:

Introduction

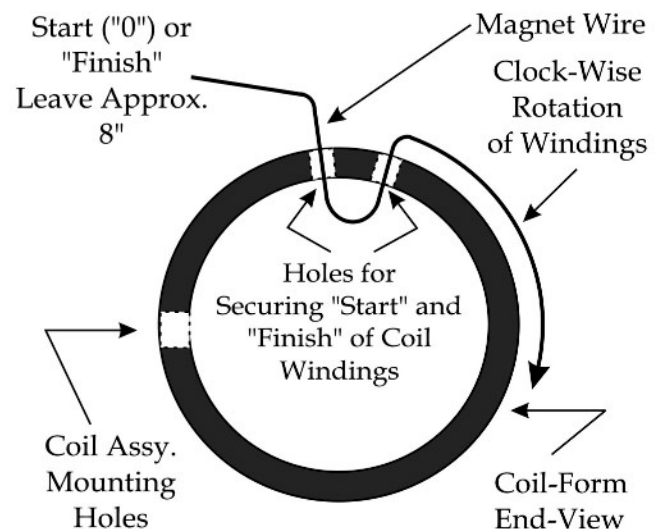
Thank you for purchasing another fine product of: "Peebles Originals". The PO-425, is quite an effective receiver from the AM Broadcast band through 8 Mhz (approx, depending on Antenna/Ground situation). The receiver employs a 2-tube circuit: 1) The first 1T4 (VT-1) is a wide-band RF (Radio Frequency) amplifier and 2) the second 1T4 (V-2) is a very conventional regenerative circuit, utilizing the "control grid" method of regeneration control. Power for this receiver is 1-1/2V DC for the "filaments" and 45V DC for the "plate circuits". A-"D" cell and 5-9V transistor batteries in-series will work quite-well for the power requirements of this receiver. Almost necessary companions to this receiver are: 1) An AM Wave-Trap, 2) an Antenna Tuner and 3) A good 2000 ohm headphone or Audio Amplifier. The previous items are available in this and other companies' catalogs. This hobby is one of the most enjoyable activities I've had for the last 52 years. Have fun and gather a few tools and supplies listed below.

Tools and Supplies:

- * Soldering Iron, Low Heat.
- * Rosin Core Solder.
- * Phillips Screwdriver, #2.
- * Small Flat-Blade Screwdriver.
- * Wire Strippers.
- * Small Needlenose Pliers.
- * Small Wire cutters (Side Cutters).
- * Nut driver, Optional-use needlenose Pliers.
- * Two 1T4 tubes
- * Paper Glue.
- * Aluminum Foil, 4-3/4" x 7-3/4" (approx.)
- * Paper Card-Stock Material, 1/2" wide.
- * Fine Sandpaper, 100 grit or, so.
- * Clear acrylic coating, Spray or Brush-on, Fast Drying.
- * Sharp Scissors.
- * Sharp Knife.
- * Batteries, Headphones, etc. See text.

Coil Winding:

1 See Figure #1 and illustration to the right of this text. Leave about 8" at the "Start" and "Finish" of each Coil (L-1 & L-2). Follow the instructions in the illustrations, winding tightly and evenly for the 15 turns on L-2 and 70 turns on L-1. The taps at "12" and "30" on L-2 are wound over a 1/2" x 2" piece of Card-stock material. The "0" and "70" turn can be wound-over the car-stock also, to secure the card-stock in place. When the Coil Assembly is complete, then the taps at "12" and "30" are scraped and tinned for later termination. Coat the Coil Assembly with a clear acrylic material, 2 or 3 coats would be sufficient. Be certain not to coat the taps with the clear-coat, as you'll need to solder to these, later. Set this assembly aside and proceed to the next step, below.



Chassis Assembly

2 See Figure #2: Attach the chassis rails to the bottom-side of the chassis, with the 5/8" side of the rails to the bottom-side of the chassis-panel. Use 7ea. #6 x 1/2" sheet-metal screws and the other associated hardware shown. Mount the C-4, variable capacitor to the chassis with 2ea. 6-32 x 1/4" machine screws. A #6 lock-washer and a #6 Solder lug are between the bottom of the variable and the top of the chassis. The screws are inserted through the chassis from the bottom-side, through the solder lug and the lock washer, into the two tapped holes in the bottom of the variable. Do-not over-tighten these screws, as you may damage the variable. Paste the dial-plate to the center of the front of the dial panel.

Assembly and Operating Instructions, Continued:

Chassis Assembly Instructions, Continued:

2a Locate the "Front/Dial Panel, Backside Foil Pattern" sheet and follow the instructions on that sheet. See Figure # 2 and mount the five "band select" terminals with 6-32 x 1/2" machine screws and their associated hardware, as shown. Mount the two "Phones" fahnstock clips to the front panel with 6-32 x 3/8" machine screws, solder lugs on the backside and secured with 6-32 hex-nuts. Mount the R-5, "Regeneration" control to the front panel with: 1) A flat-washer between the front of the panel and the securing nut, and; 2) The solder lugs of the control, towards the chassis. The Front Panel Assembly is mounted to the front of the Chassis Assembly with two #6 x 1/2" sheet-metal screws, flush to the bottom of the chassis and centered. There is a #6 solder-lug mounted between the front panel and the chassis as shown in the illustration. Spread the solder lugs of the two tube sockets, as shown and mount to the chassis with 4-40 x 1/2" machine screws, a 4-40 hex-nut between the socket and the chassis and hex-nuts securing from the bottom-side of the chassis. Mount the two solder lugs for C-9 with 6-32 x 3/8" machine screws and secured with hex-nuts from the under-side. See Figure's #1 & #2, and mount the Coil Assembly, as shown. Install the two black, pointer-knobs and observe the proper orientation prior to securing with the set-screws. Wire the chassis as shown in Figure # 2 and Figure #3. Note that the wires crossing each-other do-not terminate, but only at termination points that are soldered. Leave the C-3 "Gimmick" capacitor, until the last, proceed carefully and methodically. J-1 and J-2 should be kept as short as possible, but easily clipping to the "Band Select" terminals. The C-3 "Gimmick" capacitor is made by tightly twisting two pieces of 22ga. magnet wire together for 2" and not letting the ends to "short" to each-other. Solder to the lugs shown and position away from other components. This completes the construction of your receiver, re-check all your work after a short rest, then proceed to the next step, below.

Note: See the back-page of the front of the Manual for "Antenna and Ground" details.

Testing, Using and Troubleshooting Instructions:

3 I would like to note here, that an Antenna Tuner and an AM Wave Trap, especially in an area where AM stations are very powerful, will greatly enhance the performance of your set. We are working here, with very primitive-type circuitry and we need all the help we can get. Install the tubes in the sockets, then connect your antenna, ground and phones to the proper terminals. A word of caution before connecting batteries: DO-NOT REVERSE THE A+ and B+ TERMINALS, AS YOU WILL DAMAGE THE TUBES. Connect all the battery terminals, except the A+ and clip J-1 to A.M. and J-2 to "BR" (broad), put-on your headphones and connect the A+. You'll hear a little "pop" in the phones, then move the Regeneration control to about mid-point, then slowly rotate the Tuning control until you hear a station and/or a squeal. If you experienced the previous, then all is OK at this point. Back-off the regeneration control and re-tune the station, then set the regeneration control to the maximum volume and just below the point of "squealing". This same method is used for the S.W. bands 1 & 2, also, but much "trickier". Use "N" (narrow) for the short-wave bands, this will help to "spread" the stations some. Short-wave reception takes a lot of practice and patience to become expertise. If you desire to listen to "Single-Side-Band", then you need to move the regeneration into the "squeal" (full regeneration) and carefully tune for clarity. The previous works with receiving "Code" (CW), also. Once again, I cannot stress enough that you must tune your antenna for full enjoyment of Short Wave reception. You may also, need an AM Wave-Trap if you have powerful AM stations, nearby. The receiver is also suited for direct output to an amplifier, which is a very desirable addition, also. Have fun!

If your unit does-not work: 1) Make certain Coil Assembly is fabricated correctly, 2) Check assembly and wiring, 3) Make certain it is connected properly to Antenna, Antenna Tuner and Receiver, and; 4) Batteries connected properly and operating at full potential.

Thank you again, for choosing one of our fine kits and have lot's of fun in the world of radio experimenting.

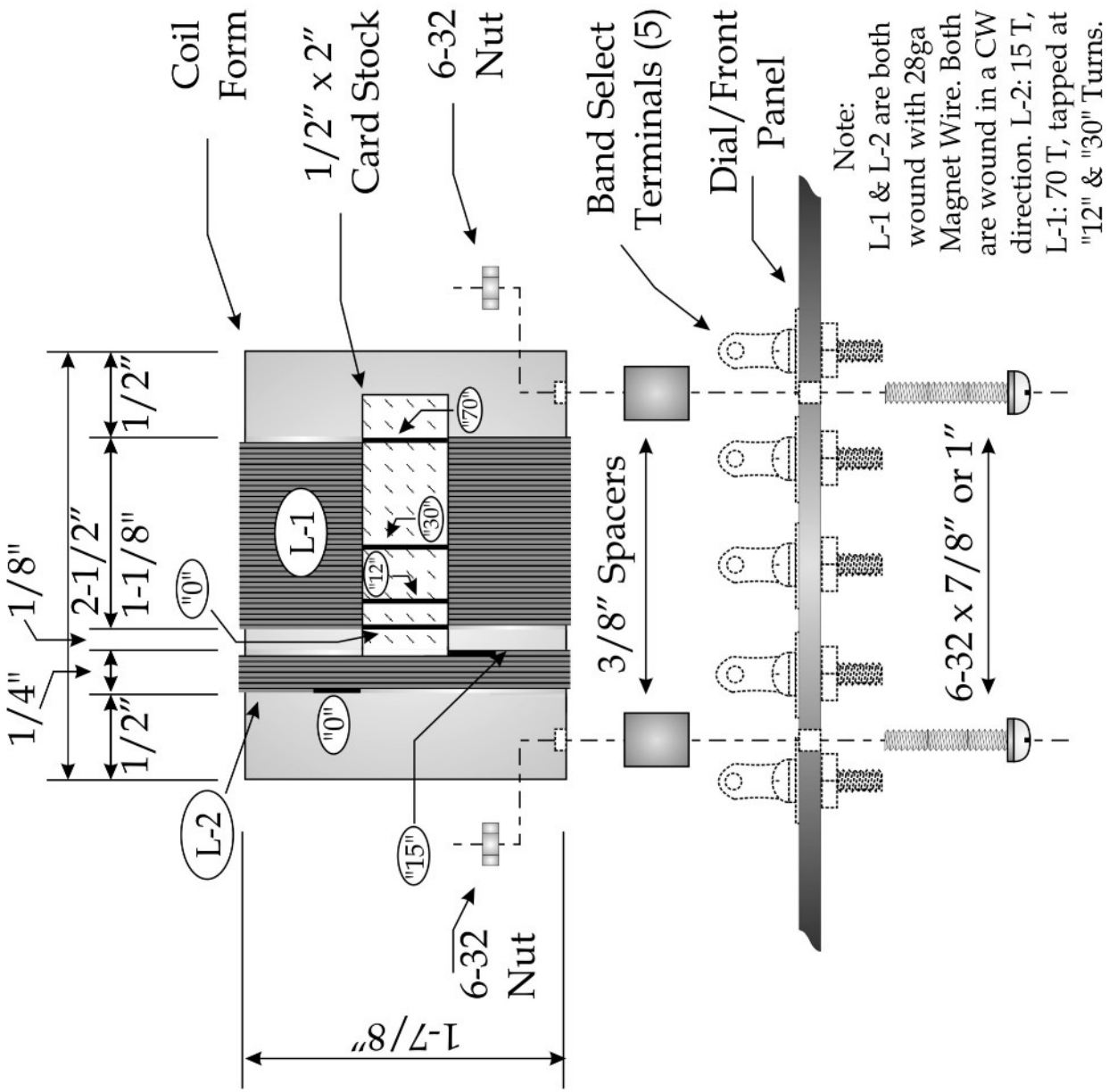


Figure #1, Coil Details.

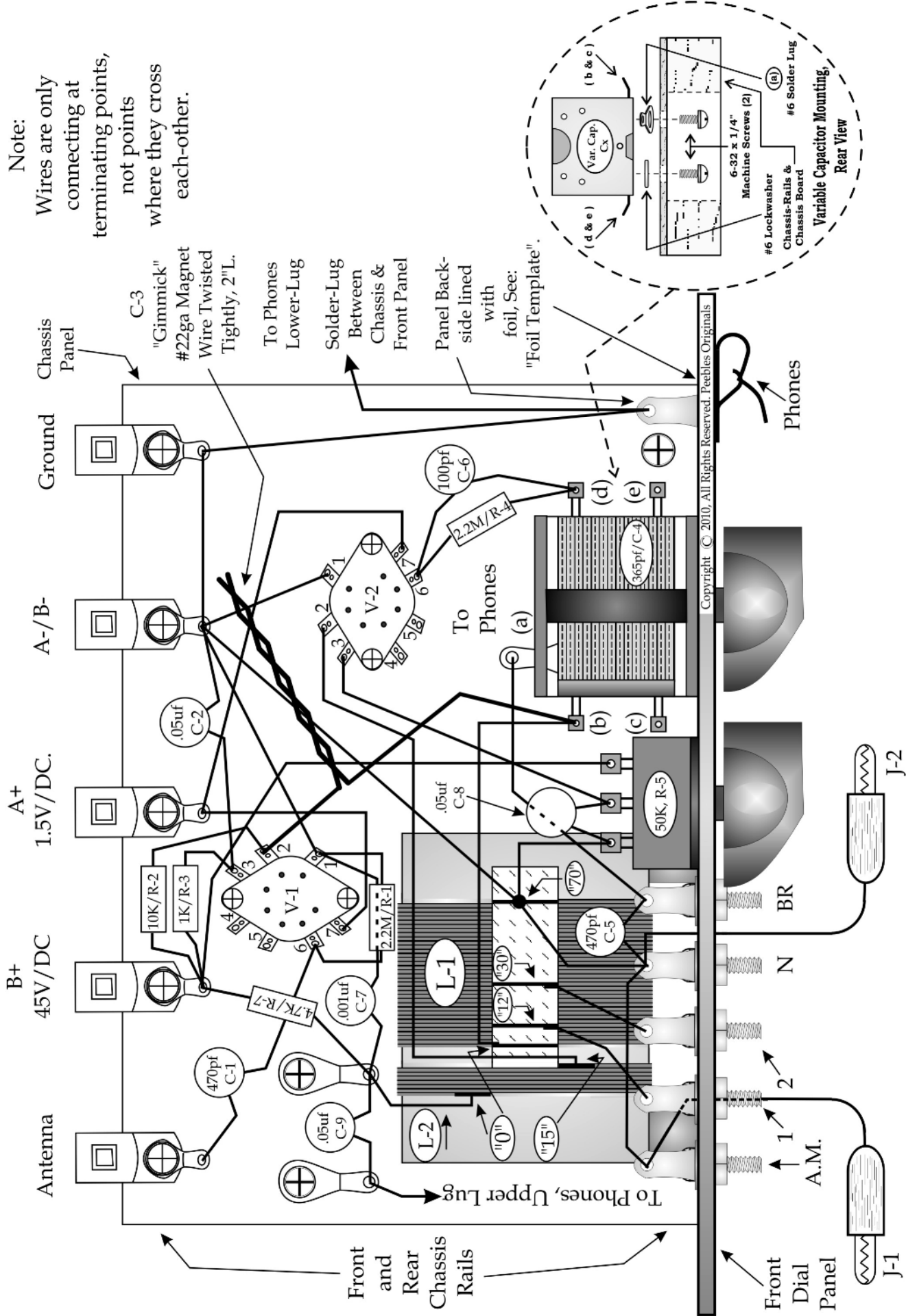


Figure #2, Chassis, Parts Layout & Wiring.

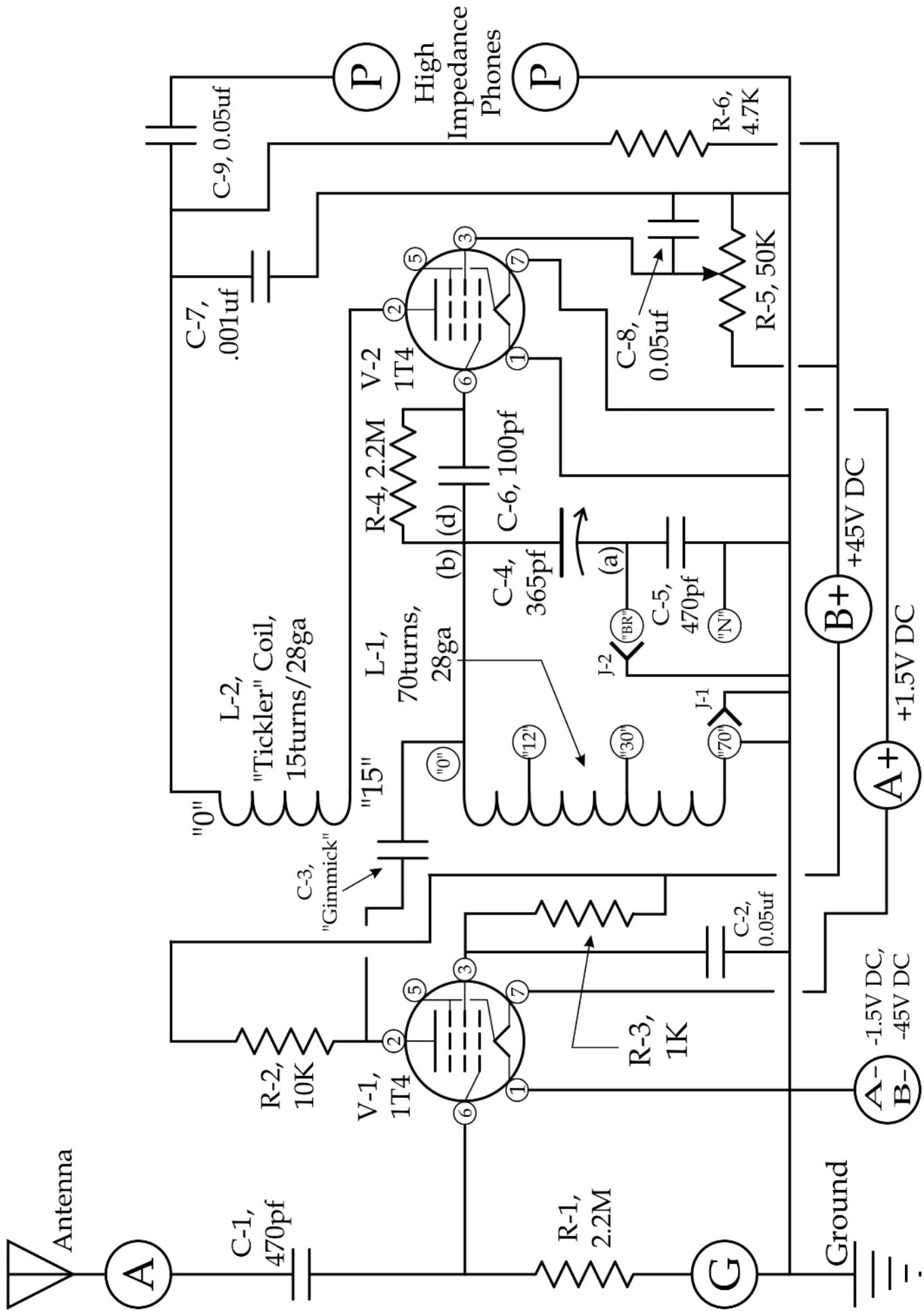


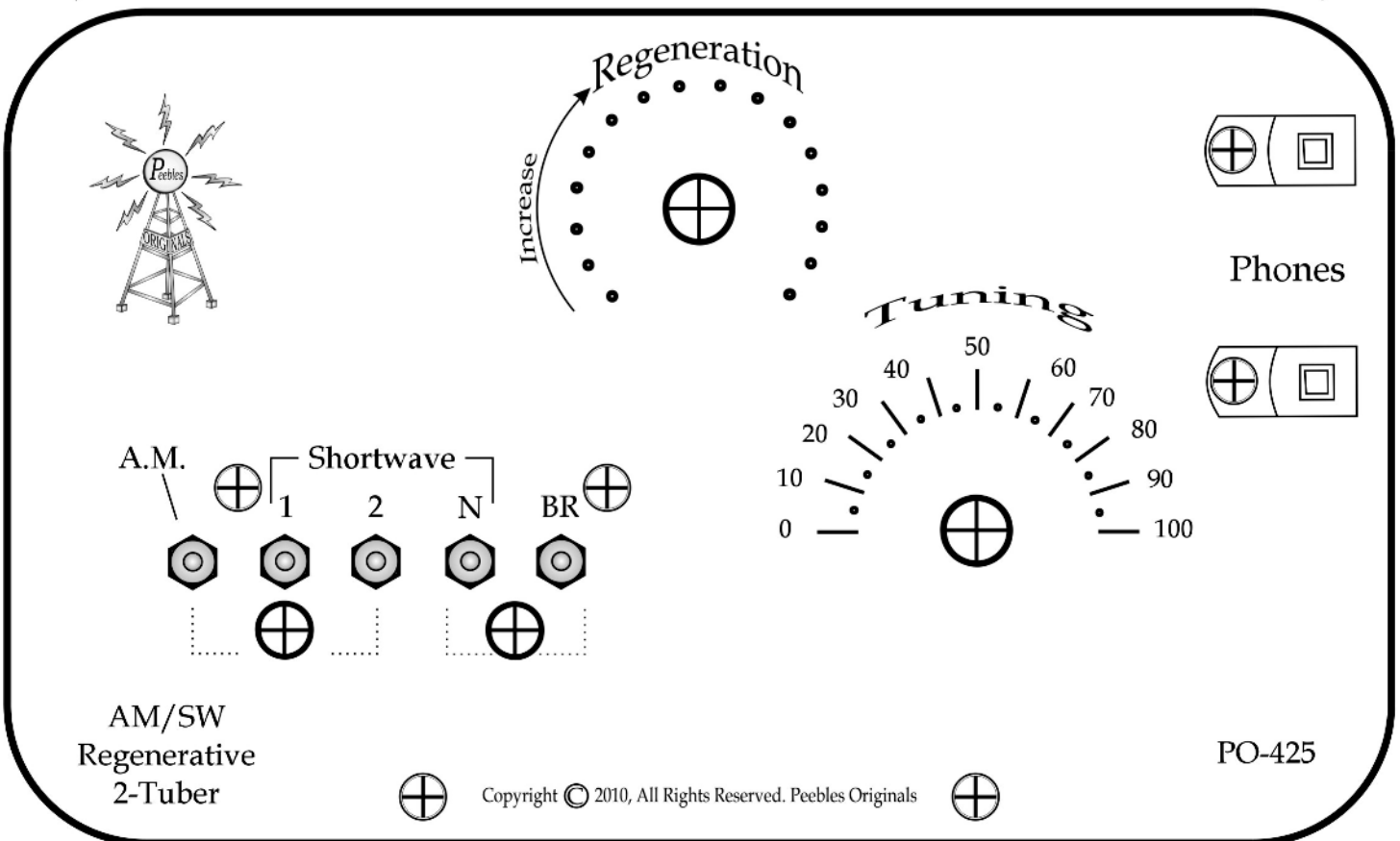
Figure #3, Schematic Diagram.

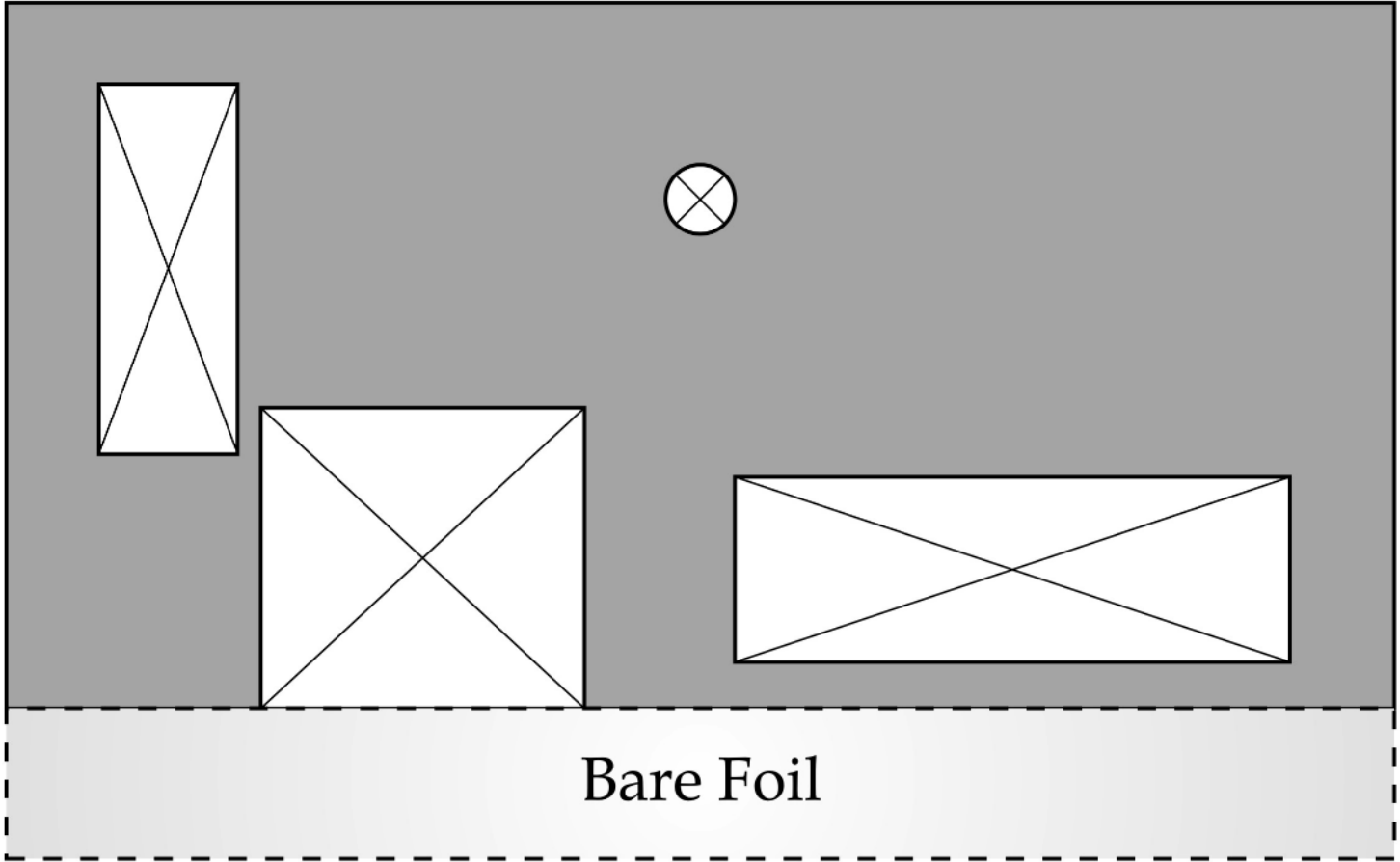
PO-425, 2-Tube Regenerative AM/SW Receiver, Parts List:

Qty	Description	Qty	Description
2	Capacitor, Disc, 470pf (471), C-1,5	2	Pointer Knobs, Black
3	Capacitor, Disc, 0.05uf (503), C-2,8,9	7	Fahnstock Clips, #6
1	Capacitor, "Gimmick", See Text/Notes	16	Solder Lugs, #6
1	Capacitor, Variable, 365pf, C-4	9	Screws, Sheet-Metal, #6 x 1/2"
1	Capacitor, Disc, 100pf (101), C-6	2	Screws, Machine, 6-32 x 7/8" or 1"
1	Capacitor, Disc, 0.001uf (102), C-7	5	Screws, Machine, 6-32 x 1/2"
2	Resistor, 1/2W, 2.2M (Rd/Rd/Grn/Gld), R-1,4	4	Screws, Machine, 6-32 x 3/8"
1	Resistor, 1/2W, 10K (Brn/Blk/Or/Gld), R-2	2	Screws, Machine, 6-32 x 1/4"
1	Resistor, 1/2W, 1K (Brn/Blk/Rd/Gld), R-3	11	Hex-Nuts, 6-32
1	Potentiometer, 1/2W, 50K, R-5	1	Lock-washer, #6
1	Resistor, 1/2W, 4.7K (Yel/Vio/Rd/Gld), R-6	4	Screws, Machine, 4-40 x 1/2"
2	Tube, 1T4, V-1,2	8	Hex-Nuts, 4-40
2	Sockets, 7-pin/Min. Tube, V-1,2	2	Spacers, #6 x 3/8"
48'	Magnet Wire, 28ga, L-1,2	1	Front/Dial Panel, 4-3/4" x 7-3/4" x 1/8"
2'	Hook-up Wire	1	Chassis Panel, 4-3/8" x 6-3/8" x 1/8"
2	Alligator Clip-Lead, 6" (approx.), J-1,2	2	Chassis Rails, 5/8" x 3/4" x 6-3/8"
1	Instruction/Operating Manual	1	Ceramic, Crystal Earplug

Cut-out around heavy border, center and paste to the front of the "Front/Dial Panel"

Cut-out with a sharp knife, 4ea:





NOTE:

Cut-out a piece of foil: $4\frac{5}{8}$ " x $7\frac{5}{8}$ "; Cut-out this pattern, heavy gray area only; Glue the paper pattern to the foil, even with the top as shown, leaving the bottom $\frac{13}{16}$ "-bare foil as shown; Cut-out the X'd areas and glue the whole piece to the backside of the Front/Dial Panel, centered.

Front/Dial Panel, Backside Foil Pattern