

PARTS LIST FOR SCHEMATIC DIAGRAM

All resistors are 1/2 watt 10% unless otherwise noted.

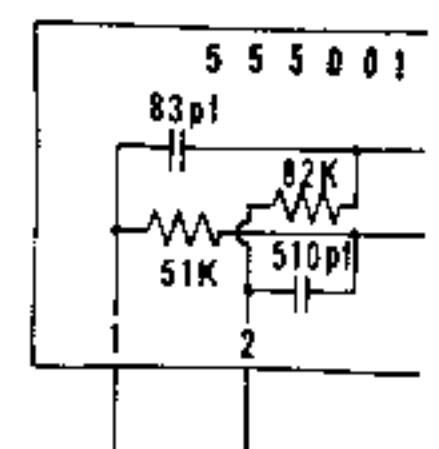
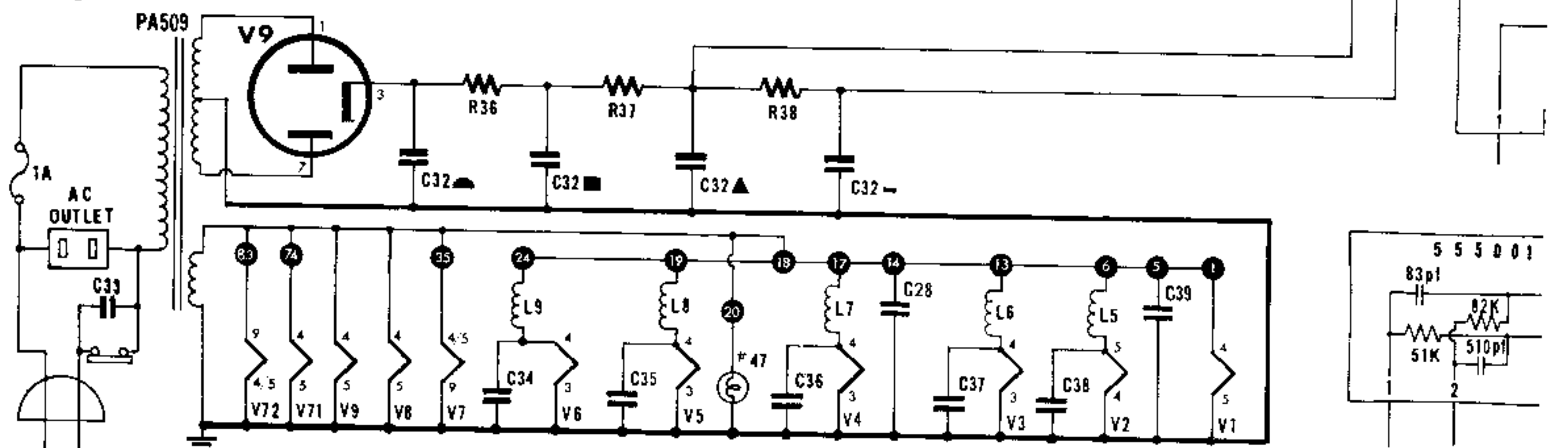
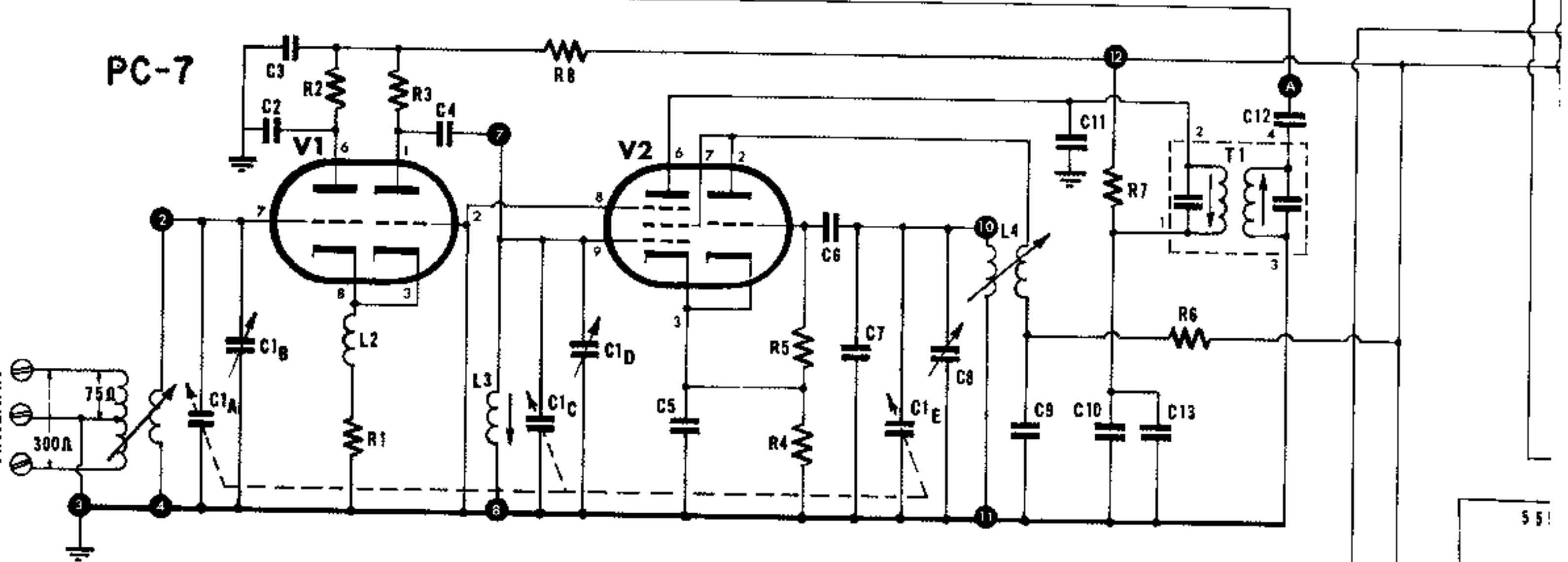
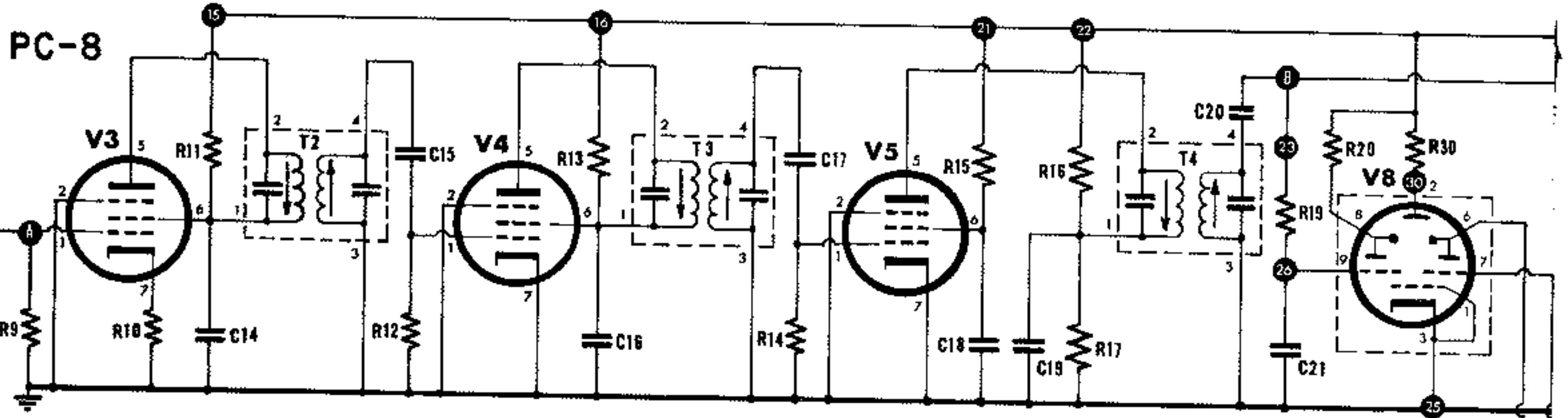
| | | | |
|-----|-------------|------|--------------|
| R 1 | 68 ohms | R 9 | 100,000 ohms |
| R 2 | 10,000 ohms | R 10 | 33 ohms |
| R 3 | 10,000 ohms | R 11 | 10,000 ohms |
| R 4 | 390 ohms | R 12 | 100,000 ohms |
| R 5 | 10,000 ohms | R 13 | 10,000 ohms |
| R 6 | 47,000 ohms | R 14 | 100,000 ohms |
| R 7 | 1,000 ohms | R 15 | 330,000 ohms |
| R 8 | 1,000 ohms | R 16 | 220,000 ohms |
| | 1 watt | R 17 | 62,000 ohms |
| | 1 watt | R 18 | 100,000 ohms |
| | 1 watt | R 19 | 3.3 megohms |

| | |
|------|------------------|
| R 20 | 100,000 ohms |
| R 21 | 100,000 ohms |
| R 22 | 47,000 ohms 1 w. |
| R 23 | 47,000 ohms |
| R 24 | 3,900 ohms |
| R 25 | 62,000 ohms 5% |
| R 26 | 62,000 ohms 5% |
| R 27 | 1.2 megohms |
| R 28 | 390 ohms |
| R 29 | 8,200 ohms |
| R 30 | 18,000 ohms |
| R 31 | 100,000 ohms |
| R 32 | 100,000 ohms |
| R 33 | 330,000 ohms |
| R 34 | 1,000 ohms |
| R 36 | 500 ohm |
| | 5 watt wirewound |

| | |
|------|------------------|
| R 37 | 500 ohm |
| | 5 watt wirewound |
| R 38 | 470 ohm 1 watt |
| R 71 | 18,000 ohms |
| R 72 | 240 ohms |
| R 73 | 22,000 ohms |
| R 74 | 47,000 ohms |
| R 75 | 150,000 ohms |
| R 76 | 1.2 megohms |
| R 77 | 3.3 megohms |
| R 78 | 2,200 ohms |
| R 79 | 220,000 ohms |
| R 80 | 150,000 ohms |
| R 81 | 47,000 ohms |
| R 82 | 47,000 ohms |
| R 83 | 47,000 ohms |

| | |
|------|-------------------------|
| R 84 | 47,000 ohms |
| R 85 | 100,000 ohms |
| R 86 | 100,000 ohms |
| R 87 | 1,000 ohms |
| R 88 | 1,000 ohms |
| R 89 | 100,000 ohms |
| R 90 | 100,000 ohms |
| R 91 | 470,000 ohms |
| R 92 | 470,000 ohms |
| R 93 | 470,000 ohms |
| R 94 | 1.2 megohms |
| C 1 | ganged tuning capacitor |
| C 2 | 180 mmfd |
| C 3 | 180 mmfd |
| C 4 | 47 mmfd NPO |

| | |
|------|-----------------|
| C 5 | .0047 mfd |
| C 6 | 10 mmfd NPO |
| C 7 | 2.55 mmfd N2200 |
| C 8 | ceramic trimmer |
| C 9 | .0047 mfd |
| C 10 | .0047 mfd |
| C 11 | 2.2 mmfd |
| C 12 | 47 mmfd |
| C 13 | 180 mmfd |
| C 14 | .0047 mfd |
| C 15 | 47 mmfd NPO |
| C 16 | .0047 mfd |
| C 17 | 47 mmfd NPO |
| C 18 | .0047 mfd |
| C 19 | .0047 mfd |
| C 20 | 47 mmfd NPO |
| C 21 | .01 mfd |



C 22 .0047 mfd
 C 23 .0047 mfd
 C 24 47 mmfd NPO
 C 25 47 mmfd NPO
 C 26 .01 mfd
 C 27 .0047 mfd
 C 28 .0047 mfd
 C 29 .47 mfd @ 100 v.
 C 30 27 mmfd
 C 31 .22 mfd @ 200 v.
 C 32 40/40/20/20 mfd @ 350 v.
 C 33 .02 mfd
 C 34 .0047 mfd
 C 35 .0047 mfd
 C 36 .0047 mfd
 C 37 .0047 mfd

C 38 180 mmfd
 C 39 180 mmfd
 C 71 500 mmfd
 C 72 220 mmfd
 C 73 .012 mfd
 C 74 .0068 mfd
 C 75 500 mmfd
 C 76 .001 mfd
 C 77 .0033 mfd
 C 78 .0015 mfd
 C 79 .01 mfd
 C 80 500 mmfd
 C 81 100 mmfd
 C 82 .1 mfd
 C 83 .1 mfd
 C 84 18 mmfd

D 71 1N541
 D 72 1N541
 D 73 1N541
 D 74 1N541
 L 1 antenna coil
 L 2 3.9 μ h choke
 L 3 mixer coil
 L 4 oscillator coil
 L 5 heater choke
 L 6 heater choke
 L 7 heater choke
 L 8 heater choke
 L 9 heater choke
 L 71 53 mh choke
 T 1 I.F. transformer 432001

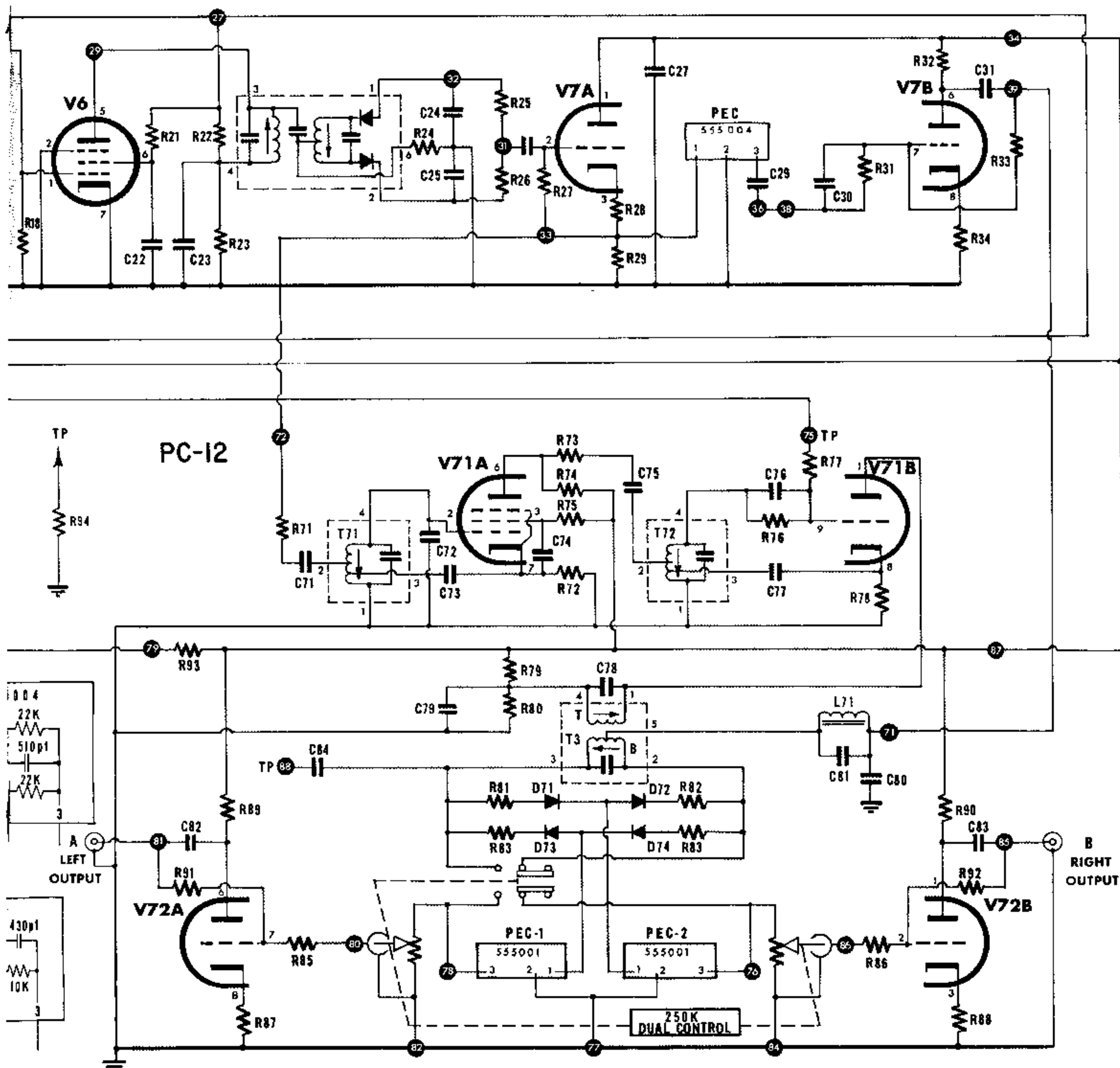
T 2 I.F. transformer 432001
 T 3 I.F. transformer 432001
 T 4 I.F. transformer 432001
 T 5 Discriminator transformer 432002
 T 71 19 K.C. transformer 432003
 T 72 19 K.C. transformer 432003
 T 73 38 K.C. transformer 432004
 V 1 6AQ8/ECC85

V 2 6AT8A
 V 3 6BA6
 V 4 6BA6
 V 5 6AU6/EF94
 V 6 6AU6/EF94
 V 7 12AX7/ECC83
 V 8 EMM801
 V 9 6V4/EZ80
 V 71 6BL8/ECF80
 V 72 12AX7/ECC83

volume control dual, 250,000 ohms each section with push-pull switch

fuse 1 ampere slo-blo pilot lamp #47

SCHEMATIC DIAGRAM



This completes the assembly of your Dynatuner. You should now make one final inspection of the unit to see that all connections are soldered. One poor solder connection can upset the performance of your tuner, or prevent proper alignment. Be sure that there are no loose wire clippings or pieces of solder, and that there are no bridges of solder across insulated areas of the circuit boards.

Check to be sure that the position of the wires in your tuner agrees closely with the pictorial diagrams and with the photographs. The diagrams must sometimes be exaggerated for clarity, but any discrepancies between them and the photographs are of no consequence.

Insert the tubes into their sockets and install the dial lamp and the fuse. Install the tube shields, making sure that the ground strap of each socket slips between the tube and the shield. The larger shields go on the 9 pin tubes, and the smaller ones on the 7 pin tubes. V8 and V9 do not use shields.

There are two small brass-plated self-tapping screws which will be used to secure the aluminum front plate to the front panel. To avoid scratching the front plate, it is wise at this point to cut their threads into the holes above and below the tuning capacitor shaft by inserting these screws part of the way, and removing them. This will enable much easier insertion when the front plate is installed.

Remove the $\frac{3}{8}$ " nut holding the volume control in position. Insert the rectangular plastic insert into the front plate cutout from the rear. The top edge is narrower than the bottom. Place the front plate against the steel front panel so that the plastic insert is held between the two plates. Install the $\frac{3}{8}$ " nut on the volume control shaft and tighten it. Now install the two small brass self-tapping screws above and below the tuning shaft. Rotate the volume control shaft fully counter-clockwise and install the small knob with the pointer at the 7 o'clock position. Install the large knob on the tuning shaft, and tighten the set screws of both knobs.

Install the rubber feet in the corner holes of the bottom plate by inserting a #6 screw in the recess of each foot, and secure each with a nut on the inside of the bottom plate. Secure the bottom plate and cover with the four sheet metal screws. The flange on the front of the cover slides between the steel front panel and the aluminum front plate. Care should be exercised when handling the unit, for the gold anodized panel and knobs will not withstand undue abuse.

Now plug the Dynatuner in (to AC current sources only) and turn it on. Allow it to operate for an hour or more to allow the tubes to age and for operating conditions to stabilize before proceeding with alignment. During this time you should be able to enjoy reception from local stations.

ALIGNING YOUR DYNATUNER

The Dynatuner is unique in its simplicity of alignment. Every stage can be aligned using the dual beam tuning eye as an indicating instrument, and this alignment is as precise as can be accomplished with the most complex laboratory equipment. The ability to achieve this measure of accuracy without external test equipment is a Dynatuner exclusive, and the indicating accuracy of the tuning eye circuit surpasses that of any comparable meter system.

It is important to emphasize that when this procedure has been carefully followed, it is not possible to "improve" on this alignment, and the Dynatuner will meet the most rigorous performance standards. *It is essential that any serviceman who works on this tuner be informed of this procedure, and that he is also advised that conventional "sweep" alignment techniques are not considered either satisfactory or desirable.*

It should be understood that successful alignment is dependent on a properly constructed tuner. A wiring error or a poor solder connection could prevent satisfactory completion of some steps, or could cause erroneous settings to the extent that additional test equipment might then be required to reestablish the proper operating conditions for realignment. Certain parts of the Dynatuner have been preset close to the proper operating point. These include the I.F. transformers, the discriminator transformer, the multiplex transformers, and the slug-tuned coils on the PC-7 board.

The cover and bottom plate must be removed for alignment. The complete stability of the Dynatuner allows precise alignment without special shielding. Before proceeding with alignment, three approximate adjustments should be made, which will permit reception of local stations during the hour of operation while tube conditions stabilize. A similar aging period should be allowed before realignment following any tube replacement on PC-7 and PC-8.

On top of the tuning capacitor C1 there are two adjustment screws (trimmer capacitors) accessible through the two holes in the top of the shield. The center screw (C1-D) adjusts the mixer, and the rear screw C1-B adjusts the R.F. stage. *The approximate settings given in steps #1 and #2 below have already been made as the capacitor is supplied to you.*

- 1() Turn in the screw C1-D on the center (mixer) section until it is in all the way. It should be snug, but do not force it. Then back it off $\frac{1}{4}$ turn counter-clockwise.
- 2() Turn in the screw C1-B on the rear (R.F.) section until it is in fully, but do not force it. Then back it off $\frac{1}{8}$ turn counter-clockwise.
- 3() The oscillator trimmer capacitor C8 screw (accessible from below the chassis) should be turned until the head of the screw is $\frac{3}{16}$ " from the triangular nut.

With an antenna attached, and with the tuner connected to an amplifier and a speaker, turn the tuner on. The dial lamp should light, and there should be a slight glow visible in each tube, and then the tuning eye should glow. All of this should take only about 15 seconds. When turning the tuning knob, some deflection of the lower beam of the tuning eye should be apparent as the tuning passes the frequencies of local stations. At higher settings of the volume control, it should be possible to hear some hiss between stations and sound from the stronger stations. If all of these effects cannot be obtained, refer to the section "In Case of Difficulty" before attempting to use the tuner further or to align it.

Two tools are necessary for alignment: a small tipped screwdriver with an insulated handle, and a plastic tool (supplied) which has a hexagonal end for adjustment of the tuning slugs in the I.F., discriminator and multiplex transformers. *Only the plastic tool should be used to adjust*

these transformers. Any other type of instrument will damage the tuning slugs, requiring replacement of the transformer. When using the plastic tool, all adjustments are to be made using the end which has a shoulder to prevent inserting the tool too far.

BE CAREFUL IN HANDLING THE CHASSIS DURING ALIGNMENT. THERE IS SOME SHOCK HAZARD BECAUSE OF THE EXPOSED WIRING.

It is suggested that you read these instructions completely before proceeding, to familiarize yourself with the general procedure. The tuner is to be connected to an amplifier and speaker, turned on, and the antenna attached as for normal use.

The alignment of the FM-3 is carried out in two stages. First, the main tuner portion (PC-7 and PC-8) is aligned, and then the multiplex section. *Pull the volume control knob "OUT" to disable the multiplex circuit and eliminate its effects during alignment of the I.F. stages, discriminator, and the front end.* For these sections, the alignment instructions will refer to the lower (tuning eye) beam of V8, where Dyna's exclusive reference grid will simplify locating the precise peaks.

Alignment of the I.F. Stages

These adjustments require the insertion of the plastic alignment tool into the threaded slugs inside the aluminum I.F. transformers, and the rotation of these slugs until they are in a position, easily determined, which represents correct alignment. If the tuner has been built correctly, it will not be necessary to make more than a small adjustment to reach the right point. **IF A SLUG MUST BE TURNED MORE THAN ONE FULL TURN, YOU WILL PROBABLY BE COMPENSATING FOR SOME FAULT IN WIRING OR COMPONENTS, AND YOU SHOULD STOP TO CHECK BEFORE PROCEEDING FURTHER.**

The end of the alignment tool with the shoulder should always be used, with the tool inserted until the shoulder stops it. **IF THE CORE SLUG STOPS TURNING, DO NOT ATTEMPT TO FORCE IT BEYOND THIS POINT.** There are two slugs in each I.F. transformer, and it is possible, particularly if the slugs have been turned too much, for them to touch each other. If an attempt is made to turn them further, the slugs are likely to break, requiring replacement of the entire transformer.

Two points require special attention. *Never use any tool or instrument to turn the slugs except the alignment tool supplied or one exactly like it.* A conventional metal tool may break the slug. When working from the underside of the chassis with the tuner on, *you must constantly bear in mind the hazard of possible shock from exposed wiring.* If you wish, the bottom plate can be installed during alignment of the I.F. stages.

- 4() Turn the tuning knob until you find a place where no station can be heard (only hissing). Insert the end of the plastic alignment tool into the *top* of I.F. transformer T4, and slowly rotate the slug until the hissing is loudest.

As this and the following steps proceed, the hissing will become louder, and the loudness peak will become sharper and easier to locate. If the hiss becomes annoyingly loud, adjust the level with the volume control; the lower half of the eye tube V8 will usually begin to close as the noise increases after the first step or two, and this should be used, rather than the sound, for the remainder of the adjustments.

If it is difficult to make the adjustment because of lack of hiss, use a station to make this series of adjustments. *Then repeat the procedure while tuned between stations,* using hiss as an audible signal until there is sufficient deflection of the tuning eye lower bar to use this as an indication. Always follow the sequence described.

- 5() Adjust the bottom slug of T4.
- 6() Adjust the top slug of T3.
- 7() Adjust the bottom slug of T3.
- 8() Adjust the top slug of T2.
- 9() Adjust the bottom slug of T2.
- 10() Adjust the top slug of T1.
- 11() Adjust the bottom slug of T1.

Alignment of the Discriminator

The alignment of the discriminator determines the distortion and noise rejection of the tuner, and is therefore a critical adjustment. The Dynatuner provides a positive method of adjusting the discriminator to exactly the right point.

- 12() Tune a station which gives a good clean mono signal clearly indicated by a definite tuning peak. Ideally, it should not be a very weak or a very powerful signal, and it should be separated from adjacent channel stations by normal interstation hiss as you tune through it. These precautions will insure against imperfect alignment through using an atypical signal. *The accuracy of alignment depends on the correctness of this tuning. Be sure that you do not disturb the tuned setting during the following steps.* While they are being performed the tuning eye will be used to show other effects.
- 13() Unscrew (counter-clockwise) the *top* slug of the discriminator transformer T5, using the shoulder end of the plastic alignment tool, until the top of the slug is flush with the top of the transformer. This detunes the secondary winding of the discriminator transformer, essential in order to obtain the optimum adjustment of the primary winding, done in the next few steps. The tuning eye is used as an indicator for this adjustment, by connecting it to another part of the circuit than that to which it is now connected.

If you are very careful, it is possible to do the necessary unsoldering and resoldering of connections without turning off the tuner. However, **YOU MUST BEAR IN MIND THE HAZARD OF POSSIBLE SHOCK FROM EXPOSED WIRING.** Care and deliberation can eliminate this hazard, but, if you wish to avoid all risk of shock, turn the tuner off before making the new connections, and turn it on again to make the adjustments. If you do this, it is *essential* that you allow the tuner to warm up for a few minutes each time before making an adjustment, even if it has been off for less than a minute.

NOTE: If a VTVM is available, discriminator alignment can be considerably simplified by skipping immediately to step 24 below. The VTVM should be of a type which has at least a 1 megohm resistor in the DC probe to isolate the probe and lead capacity from the measured circuit.

- 14() Unsolder and lift off the jumper wire which connects from eyelet #23 on PC-8 to eyelet B.
 - 15() Temporarily solder a wire from eyelet #23 to eyelet #32 on PC-8.
 - 16() Adjust the *bottom* slug of T5 for maximum closing of the eye.
 - 17() Unsolder the end of the temporary wire from eyelet #32 and temporarily connect it to eyelet #31.
 - 18() Solder a 2" piece of bare wire to the center ground pin of socket V7.
 - 19() Turn the *top* slug of T5 in (clockwise) 9 full turns, which brings it close to the proper adjustment point.
 - 20() Touch the free end of the wire from the center ground pin of V7 to eyelet #31. You will observe that there is a deflection of the eye (either inward or outward). Rotate the *top* slug of the discriminator transformer T5 back and forth slowly while *alternately touching and releasing* the free end of the wire from the center ground pin of V7 to eyelet #31. The actual adjustment of the slug must be made while the wire is *not* touching the eyelet. Check the eye's deflection *after* each change. You are seeking the precise point where there is *no shift in the tuning eye* as the wire is touched to, and removed from, eyelet #31. There may be slight changes in the brightness of the eye as this is done, but these are of no consequence. Turn the slug in the direction which minimizes the shift in deflection until there is no shift when the wire makes or breaks contact with eyelet #31.
 - 21() Remove the temporary wire between eyelets #23 and #31.
 - 22() Re-connect the jumper wire from eyelet #23 to eyelet B. Keep it reasonably close to the board.
 - 23() Remove the wire from the center ground pin of socket V7.
 - 24() THIS STEP REPLACES STEPS 14 THROUGH 23 WHEN A VTVM IS USED FOR DISCRIMINATOR ALIGNMENT. IF YOU ARE NOT USING A VTVM AND HAVE COMPLETED STEPS 14 THROUGH 23, PASS TO STEP 25 NOW.
Switch the VTVM to --DC and set it for a range of about 10 volts full scale. Connect the COMMON lead to the tuner chassis, and the DC probe to eyelet #32. Adjust the *bottom* slug of T5 for the maximum meter reading (about -8 volts).
Switch the VTVM to its most sensitive scale. While shorting its leads together, reset its zero adjustment to bring the meter needle to a specific point near mid-scale which can serve as a new zero, or to a center-scale zero if one has been printed on your meter scale. Connect the COMMON lead to the chassis again, but connect the DC probe to eyelet #31 this time. Turn the *top* slug of T5 in (clockwise) 9 full turns as a first approximation, and then carefully adjust it until the meter reads exactly zero. To do this correctly, it is essential that you go *through* zero first, and then back up to locate it precisely.
 - 25() Cut a piece of wire *exactly* $1\frac{5}{16}$ " in length. Strip *exactly* $\frac{1}{4}$ " of insulation from one end. The other end need not be stripped. Insert the stripped end *fully* into the bottom of eyelet #29 (S). This wire should stand up straight from the PC-8 board with the other end free, to a height of $\frac{1}{16}$ ". Position adjacent wires away to permit this wire to stand straight without touching any others.
This wire may seem to be unusual, as it is connected at one end only. However, it is what is known in electronic parlance as a "gimmick" and it is actually a small value capacitor which corrects for the effects of interaction between the adjustments of the two slugs in the discriminator transformer. *At such times as realignment is performed, this "gimmick" should be removed before aligning the discriminator.*
- Alignment of the Front End**
- If you wish, the bottom plate can be installed during alignment of the front end. In this section, dial tracking will be simplified if another FM radio is available to enable you to identify stations readily. Make sure capacitor C9 is vertical, for if it is tilted toward C8, dial tracking will be affected.
- 26() Turn the tuning knob until you have located an FM station of known frequency at the high end of the band (close to 108 megacycles), the higher the better.
 - 27() Adjust the oscillator trimmer capacitor C8 using a small screwdriver. At the same time readjust the tuning knob until the station's frequency is indicated in the plastic window by the tuning dial. In other words, you set the dial to show the correct frequency and adjust the trimmer capacitor until the eye closes to a maximum.
 - 28() Now find a station of known frequency at the lowest end of the dial (close to 88 megacycles). Using a small screwdriver, and *touching only the insulated handle*, adjust the brass slug in the oscillator coil L4 while setting the tuning dial to the station's broadcast frequency. This is the same type of adjustment as was made in the preceding step.
- It may be necessary to repeat the adjustments at the two extremes of the dial several times to have the tuner "track" properly. If the adjustments are not made accurately, the dial readings will not coincide with station frequencies across the dial. Correctly following this procedure should enable dial tracking which is accurate to within $\frac{1}{2}$ division (± 0.2 megacycles).
- 29() Tune accurately to a station near 108 megacycles and adjust the two trimmer capacitors C1-B and C1-D on the top of the tuning capacitor. *The screwdriver should not touch the capacitor shield when making these adjustments.* The adjustment should be made for maximum eye closing. If the eye is closed to its normal maximum, the effects of these adjustments will not be readily apparent, so it is *essential* that a *weak* signal be used here (where the eye is about $\frac{1}{4}$ " open) or proper alignment will not be realized.

To obtain a sufficiently weak signal, it may be necessary to remove the antenna and substitute a short piece of wire. Shorting out half the antenna is another alternative. With signals of this magnitude (a very few microvolts) it will be noticed that the eye is sensitive to flutter as a result of airplanes passing overhead, or varying signal strength as a result of atmospheric conditions. Care must be taken not to allow this sensitivity to influence the actual adjustment of C1-B and C1-D.

- 30() Tune carefully to a station near 88 megacycles and adjust the two brass slugs in the mixer coil L3 and the R.F. coil L1 for maximum eye closing.

The last two adjustments should be repeated, since there is interaction between adjustment of the trimmer capacitors and the slugs of the coils. This adjustment of L1 and L3 is not critical, and may be a broad peak, necessitating an approximate center setting, but the accuracy of adjustment of C1-B and C1-D has a very definite correlation with the tuner's effective sensitivity, so that extra care here will be well repaid in superior performance.

Alignment of the Multiplex Integrator

The basic Dynatuner alignment in the preceding sections should be carried out before aligning the multiplex integrator. In particular, *the discriminator must be accurately aligned* if maximum noise rejection is to be realized, and this becomes doubly important in stereo operation, for the effective sensitivity and noise rejection of any tuner is lower in stereo than in the mono mode.

The tuner must have an antenna connected, but it is not necessary for an amplifier and speaker to be connected for this part of the alignment. *Tune precisely to a known stereo broadcast*, for this part of the alignment involves tuning the multiplex transformers to the 19KC pilot signal which is an integral part of every stereo broadcast. You can enjoy normal monophonic reception prior to alignment of the multiplex integrator, since its adjustments affect only the separation of stereo programs.

Push the volume control "IN" so that it is in the normal STEREOOMATIC operating position. The upper beam of V8 is the STEREOCATOR. After alignment, it will be either fully open or fully closed whenever you are tuned to a station, and thus will illuminate or turn off the word STEREO printed on the plastic insert in the front panel. Between stations the ambient noise may cause it to flicker, but this is of no consequence.

You will be able to see the STEREOCATOR quite well during alignment if you look down on V8 from above, but if you wish to observe its operation more easily, remove the knobs, front plate and plastic insert.

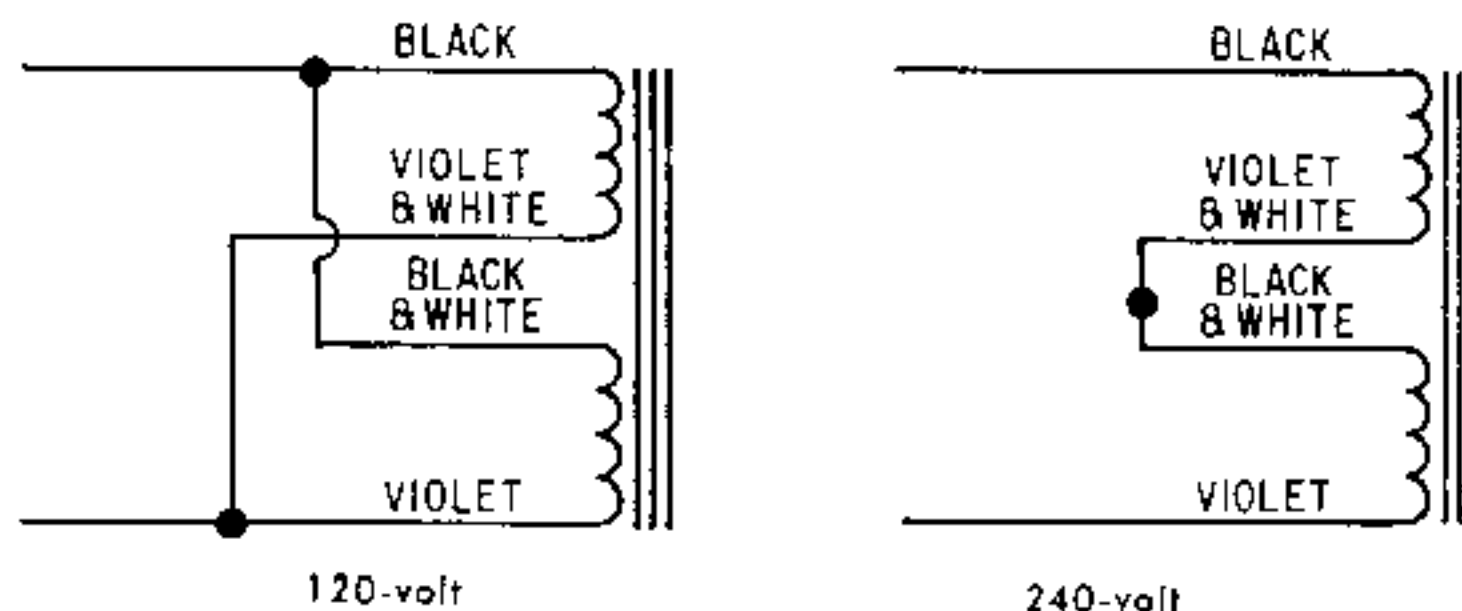
- 31() Temporarily connect one end of the 1.2 megohm (brown-red-green) resistor R94 to the center ground pin of V71 (S). Temporarily connect the other end to eyelet #75 (S). Eyelet #75 is one test point, and is marked with the letters TP on the bottom of the board. Using the shoulder end of the alignment tool, adjust transformer T71 for maximum closing of the STEREOCATOR. Then adjust transformer T72 for maximum closing of the STEREOCATOR. Repeat these adjustments, first with T71 and then with T72, until the beam closes no further. Usually only a small adjustment will be necessary.

- 32() Unsolder the end of the 1.2 megohm resistor soldered to eyelet #75, and temporarily solder it to eyelet #88. This is the other test point TP.
- 33() Unsolder the green wire connected to eyelet #75 and temporarily connect it to eyelet #88 (S).
- 34() Adjust the *top* slug of transformer T73 for maximum closing of the STEREOCATOR. Then adjust the *bottom* slug of T73 for maximum closing of the STEREOCATOR. Repeat these adjustments, first with the top, and then the bottom slug, until the beam closes no further.
- 35() Unsolder the 1.2 megohm resistor from the V71 ground pin and eyelet #88. It can be saved for future use when realignment is desired.
- 36() Unsolder the green wire from eyelet #88 and reconnect it to eyelet #75 (S).

This completes the alignment of your Dynatuner. No further alignment should be required unless there is a change in tubes or components. When necessary, you have the means of realigning it so that your Dynatuner will always be at the very peak of its performance capabilities. However, one word of caution is in order—do not make these adjustments unnecessarily, as the various slugs will eventually loosen and cause tuning shifts to the detriment of performance. Alignment adjustments should be considered as a semi-permanent type of adjustment.

Reassemble the tuner, making sure the cover front flange slips between the aluminum front plate and the steel panel. Your STEREOOMATIC Dynatuner is now ready for long pleasurable use.

SPECIAL INSTRUCTIONS FOR OPTIONAL 120-240 VOLT POWER TRANSFORMERS



Dynatuners supplied with optional power transformer PB-012 can be wired for use with either 120 or 240 volt, 50 or 60 cycle AC power sources, as follows:

For 120 Volt Operation

- 1() Twist together the black and black-white power transformer leads. Connect both leads to lug #2 of the AC outlet.
- 2() Twist together the violet and violet-white power transformer leads. Connect both leads to lug #2 of the fuse holder (S-2).

For 240 Volt Operation

- 1() Twist together the black and the violet power transformer leads. Connect the black lead to lug #2 of