PHILCO SERVICE

PHILCO RADIO, MODEL 46-1201

PRODUCTION CHANGES FROM APRIL 1, THROUGH AUGUST 31, 1946

This bulletin contains production changes made since the printing of Philco Service Bulletin PR-1100, and lists differences between codes on Model 46-1201 Radios. These bulletins should be used in conjunction with Philco Service Manual PR-1167.

The index below lists in alphabetical order the subjects covered, together with the paragraph dealing with each subject. This index will shorten servicing time by providing a means of quick reference to the changes.

To determine the "run" number of a set, examine the series of numbers stamped in ink on the back of the chassis. The last two digits of the series give the run number. For example, if the series is 8A34602, the set is "run number 2". The code number is stamped on rear of chassis.

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PRODUCTION CHANGES

CODE 122

Code 122 of the Model 46-1201 is different from all other 46-1201 codes because the voltage-doubler power-supply circuit was removed and replaced with a conventional half-wave rectifier circuit. The 4" x 6" oval electrodynamic speaker was replaced with a 5" round, permanent-magnet speaker. Because of the removal of the speaker field as a choke, considerable changes were made in the power-supply filter network. Parts changes and schematic (figure 1) appliable to Code 122 are as follows:

Paragraph

1. Tube, rectifier, 50Y6GT/G, was changed to a 35Y4.
2. Tube, audio output, 35L6GT/G, was changed to a 50A5.
3. Condenser, C101, part no. 30-2559; C102, part no. 30-2559; and C104, part no. 30-2548, were replaced by a triple section 30-25-20 mf condenser, C101A, B, C, part no. 30-2573. Part of manual affected: Replacement Parts List and figures 3 and 12.
4. Speaker, electrodynamic, oval, part no. 36-1587*, was replaced with a round 5" permanent-magnet speaker, part no. 36-1617-2. Part of manual affected: Replacement Parts List and figures 5 and 12.
5. Cable, speaker, 41-3728, was changed to 41-3759. Part of manual affected: Replacement Parts List.
6. Resistor, R100, dual, 80 ohms, 65 ohms, part no. 33-3426, was replaced by single 80-ohm resistor, part no. 33-3425.

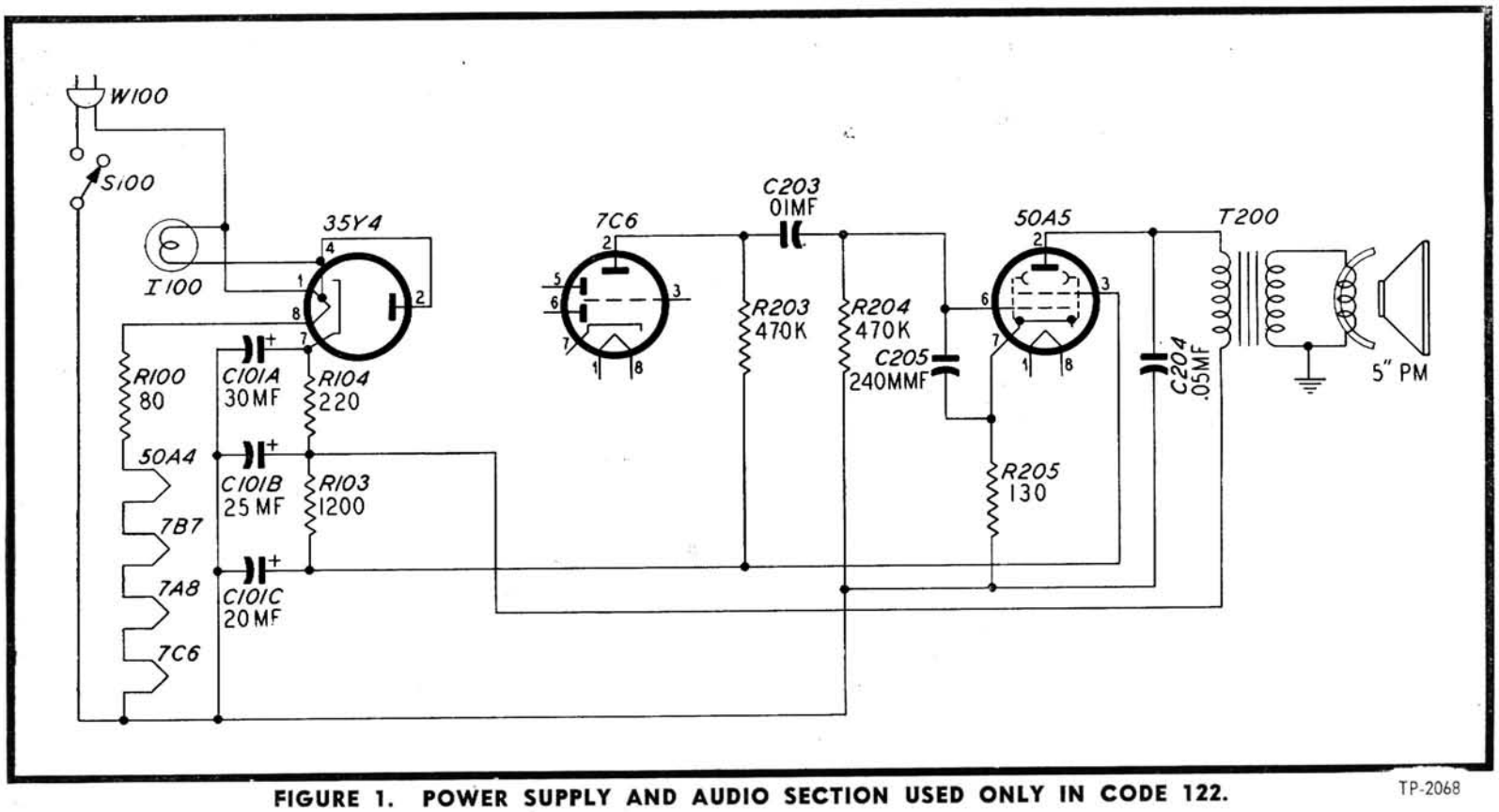

FIGURE 1. POWER SUPPLY AND AUDIO SECTION USED ONLY IN CODE 122. TP-2068

7. Resistors, R101 and R102, were removed from power-supply filter circuit. Part of manual affected: Replacement Parts List and figures 3 and 12.
8. Condenser, C103, was removed. Part of manual affected: Replacement Parts List and figures 3 and 12.
9. Condenser, C204, .03 mf, part no. 45-3500-1*, was changed to a .05 mf, part no. 61-0122*. Part of manual affected: Replacement Parts List and figures 5 and 12.
10. Resistors, R103, 220 ohms, part no. 66-1224340*, and R104, 1200 ohms, part no. 66-2123340*, were added to power-supply filter circuit. Part of manual affected: Replacement Parts List and figures 3 and 12.

PRODUCTION CHANGES (Continued)

Paragraph

11. Lamp, reflector and bracket assembly, part no. 76-2448, was changed to part no. 76-1980. Part of manual affected: Replacement Parts List.

12. Lamp, pilot, assembly, part no. 76-1643, was changed to part no. 76-2142-2. Part of manual affected: Replacement Parts List.

13. Lamp, pilot, I100, 110 volts, part no. 34-2477, was changed to 6—8 volts, part no. 34-2068. Part of manual affected: Replacement Parts List.

14. Starting with Code 122 a standard ganged tuning condenser, part no. 31-2527-1, will be used on all 46-1201 codes. All units using the standard gang will be identified with the letter "S" stamped in 1/2" characters on rear of chassis. Loop assembly, LA400, part no. 76-2127, is changed to part no. 76-2127-1 when used with standard ganged tuning condenser. Part of manual affected: Replacement Parts List.

15. Cabinet, part no. 10639, was changed to 10664B. Part of manual affected: Replacement Parts List.

CODE 125

16. Code 125 is the same as Code 121, as shown in manual, except that is uses a metal-base cabinet, part no. 10664A, for oval speakers or 10664B for round speakers. Round and oval speakers are used interchangeably in production.

    A new method of opening the cabinet to service the record player is used. Bullet catches in the upper section engage the metal base. To open the cabinet: Open record door and depress bullet catches, located at outside edges of opening, with thumbs while lifting upward on cabinet. Fold cabinet back. Hinged fasteners permit separating top and base of cabinet.

17. Code 125 will bear the same run numbers as Code 121, because both codes use the same chassis. Code 125 started with run number 4.

CODE 127

18. Code 127 is similar to Code 121 (as shown in manual) except that it uses a permanent-magnet dynamic speaker and a Loktal type 50A5 output tube in place of a 35L6GT/G. The rectifier filter circuit was changed to use a resistor in place of a filter choke. Parts changes and schematic (figure 2) appliable to Code 127 are as follows:

19. Tube, audio output, 35L6GT/G, was changed to a 50A5.

20. Resistor, R205, 130 ohms, part no. 66-123340*, was added to cathode of 50A5. Part of manual affected: Replacement Parts List and figures 5 and 12.

21. Resistors, R104, 500 ohms, part no. 33-3435-3, and R103, 8200 ohms, part no. 66-2824340*, were added to power-supply filter circuit. Part of manual affected: Replacement Parts List and figures 3 and 12.

22. Speaker, electrodynamic, oval, part no. 36-1587*, was replaced with a round 5" permanent-magnet speaker, part no. 36-1617-2. Part of manual affected: Replacement Parts List and figures 5 and 12.

23. Cabinet, part number changed to 10664B. Part of manual affected: Replacement Parts List.

24. Resistor, R100, dual, 80 ohms, 65 ohms, part no. 33-3426, was replaced by a single 80-ohm resistor, part no. 33-3425.

25. Resistors, R101 and R102, were removed from power-supply filter circuit. Part of manual affected: Replacement Parts List and figures 3 and 12.

26. Condenser, C103, was removed. Part of manual affected: Replacement Parts List and figures 3 and 12.

27. Condenser, C104, 40 mf, electrolytic, single section, was replaced by a dual section 40-10 mf, 200-volt condenser, part no. 30-2554. Part of manual affected: Replacement Parts List.

PRODUCTION CHANGES (Continued)

Paragraph

28. Condenser, C100, .04 mf, a-c line filter, part no. 45-3500-2*, was replaced with a .05 mf, part no. 61-0122*. Reason: To improve operation. Part of manual affected: Replacement Parts List.

29. Condenser, C204, .03 mf, part no. 45-3500-1* was replaced with a .05 mf, part no. 61-0122*. Reason: To improve bass-frequency response. Part of manual affected: Replacement Parts List.

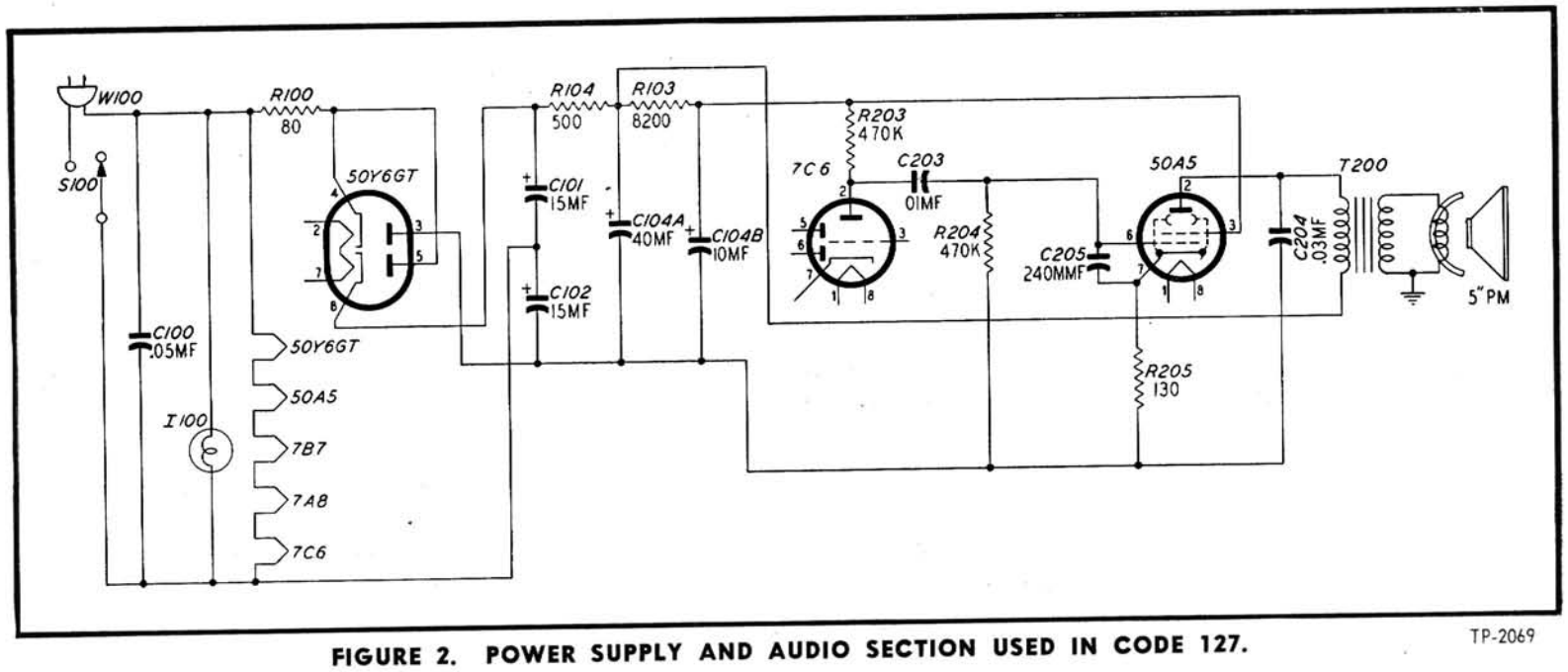

FIGURE 2. POWER SUPPLY AND AUDIO SECTION USED IN CODE 127.

TP-2069

ALL CODES

30. Output transformer, T200, was changed to part no. 45-7501*. This transformer will be used for replacement on all codes of the 46-1201. Part of manual affected: Replacement Parts List.

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CODE 128

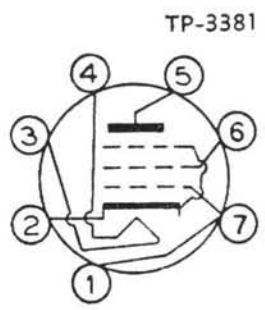
RUNS 1 and 2

a. This code has a permanent-magnet speaker, and a filter system like that of Code 127 except that a 50X6 rectifier tube is used in place of the 50Y6GT.

b. Before this code, it was possible for the tuning-condenser gang to have a high potential if the 7A8 and 50X6 tubes were accidentally interchanged. Beginning with this code, this condition was prevented by shunt-feeding the converter grid; a 100mmf. coupling condenser, Part No. 60-10105407, and a 1-megohm grid-return resistor, Part No. 66-5103340, are used.

CODE 130

This code is the same as Code 128 except that a 50B5 output tube is used in place of the 50A5.



50B5 Pin Connections

GENERAL INFORMATION ON MODEL 46-1201

It is good practice to keep the phono-compartment door open while handling Model 46-1201 in the shop; this keeps the tone arm raised, thus preventing the pickup and needle from being damaged.

Some early-production sets did not include a shield for the 7C6 tube. A shield, Part No. 56-2731, may be installed, to correct hum caused by an unshielded 7C6.

Some sets have an extra wire on the volume control; this wire is used only for production checks, and may be removed if desired.

In the later codes, both round and oval speakers are used. Cabinet Part No. 10639 is used with the oval speaker, Part No. 36-1587*; cabinet Part No. 10639A is used with the round speaker, Part No. 36-1617-1*.

HUM IN EITHER RADIO OR PHONOGRAPH OPERATION

Hum may be caused by a short circuit between the a-c line and the chassis. In some cases, there has been leakage between the mercury-switch leads and the chassis where the leads pass through the hollow shaft of the trip assembly, Part No. 76-2098.

To prevent recurrence of the short, vinylite tubing may be slipped over the leads for the length of the hollow shaft.

BURNING OF DIFFUSION PANEL

In certain codes, the diffusion panel, Part No. 54-4256, may become burned by excessive heat from the pilot lamp. To prevent the recurrence of this condition, move the lamp socket back as far as possible on the mounting strap. To prevent the socket from getting back to the original position by subsequent replacement of the pilot lamp, tack some solder on the mounting strap to form a bead so that the lamp socket cannot be pushed forward all the way.

VERY NOTICEABLE INTERMITTENT HUM, ACCOMPANIED BY AN APPRECIABLE CHANGE IN VOLUME OF BOTH RADIO AND PHONOGRAPH

In some cases, these symptoms have been traced to intermittent operation of either of the voltage-doubling condensers, C101 and C102, Part Nos. 30-2559 and 30-2546. Replace with the general-replacement type, Part No. 45-3018-8, 16 mf., 200v.

INTERMITTENT CHANGE IN VOLUME, ACCOMPANIED BY SLIGHT INCREASE IN HUM IN BOTH RADIO AND PHONOGRAPH

In a number of cases, this condition has been traced to an intermittent filter condenser, C104, Part No. 30-2548, in Codes 121, 125, and 126. Less frequently, the trouble has been caused by C104 (A or B), Part No. 30-2554, in Codes 127, 128, and 130. Replace Part No. 30-2554 with Part No. 30-2575-12, 40 and 10 mf., 250v. Replace Part No. 30-2548 with Part No. 45-3018-9, 40 mf., 250v.

INTERMITTENT OPERATION, ACCOMPANIED BY GREAT CHANGE IN VOLUME OF BOTH RADIO AND PHONOGRAPH

The end seals in the blocking condensers, C201 and C203, may melt under certain conditions, so that tension on the leads can cause an intermittent connection with the foil. Replace these condensers with the high-temperature type, Part No. 61-0120.

SLIGHT INCREASE IN HUM IN BOTH RADIO AND PHONOGRAPH

This condition may be caused by the loosening of the sealed ends of C103 under high-temperature operation, causing intermittent contact. This condenser is used as a bias filter in Codes 121 and 122. Replace it with the high-temperature type, Part No. 45-3500-3.

INTERMITTENT OPERATION AND INCREASE IN HUM LEVEL OF PHONOGRAPH ONLY

The end seals in the isolating condenser, C202, Part No. 30-4594, may melt out, resulting in an intermittent connection. Replace the condenser with the high-temperature type, Part No. 45-3500-3.

REDUCTION OF VOLUME, AND OSCILLATION, IN RADIO ONLY

The end seals in the screen by-pass condenser, C302, may melt under certain operating conditions, allowing intermittent contact. Replace the condenser with the high-temperature type, Part No. 61-0122.

The same symptoms may indicate the same condition in C402, the a-v-c by-pass. Replace this condenser with the high-temperature type, Part No. 61-0113.

UNSTABLE OPERATION, AND OSCILLATION, IN RADIO ONLY

The end seals of the condenser-and-choke assembly, C403, may become loose under certain operating conditions, causing intermittent contact. Replace this assembly with a high-temperature condenser, Part No. 45-3500-3, and wind the choke (7 turns) around it.

LOSS OF SENSITIVITY, DRIFT OF TUNING, OR INCREASE OF CODE INTERFERENCE

The majority of these cases have been traced to a change in tuning of the second i-f transformer, Z301, Part No. 32-4005. This transformer, because of its location close to the output tube, becomes overheated under certain operating conditions, causing wax to flow from the coil or coil form into the trimmer-condenser plates. Therefore, detuning of the stage and loss of sensitivity and selectivity result.

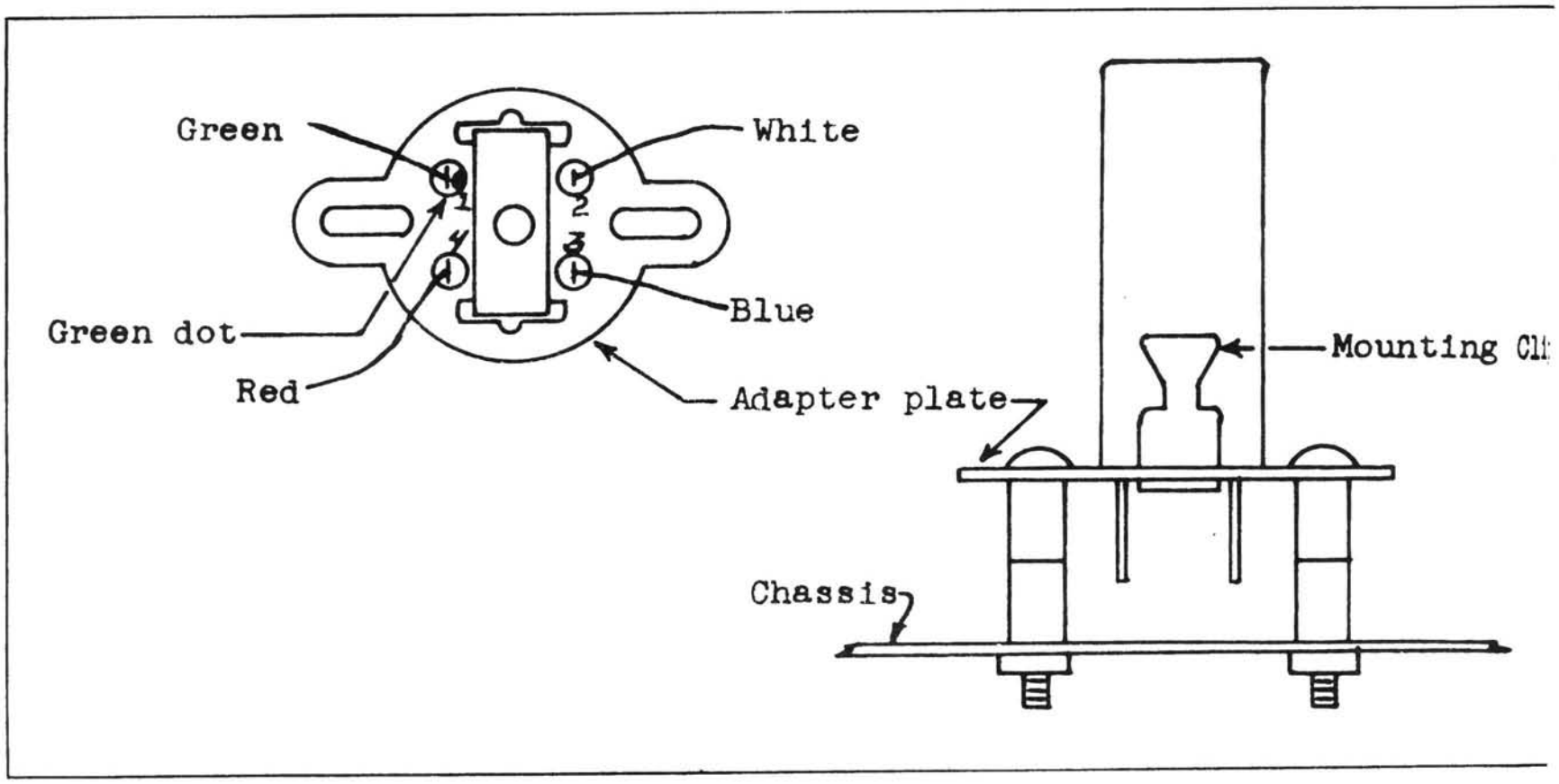
Since the trimmer plates become stuck together, retuning of the stage is often difficult, and even if accomplished, subsequent heating and cooling may again result in detuning. A permanent repair may be made by replacing the faulty transformer with one of the permeability-tuned type. A kit, Part No. AD-1024, includes this transformer and mounting hardware.

INSTRUCTIONS FOR INSTALLING I-F TRANSFORMER PART NO. AD-1024 AS REPLACEMENT FOR PART NO. 32-4005

1. Remove the two nuts used to mount the original coil, 32-4005.
2. Force one end of the brass coil-retaining clip upward and inward, to permit the coil shield can to be removed.
3. Cut the red, blue, white, and green leads, leaving one inch in length above the chassis, and strip one-half inch. Cut the black lead off close to its terminal under the chassis, as this lead is not used.

4. Drill a 3/16-inch hole halfway between, and in line with, the two holes in which the transformer was mounted; this provides an access hole for the transformer primary adjustment. Some codes have a hole that may be used for this purpose by mounting the replacement transformer at a suitable angle to use holes available.

5. Set the new transformer in place, with terminals 1 and 2 adjacent to the rectifier tube, and make the connections as shown in the bottom-view drawing.



6. Install the transformer in the mounting holes for the original transformer, by means of the adapter plate and hardware provided, as shown in the side-view drawing.

7. Follow the alignment instructions given in the service manual, with the exception that, for this transformer, which is inductively tuned, the secondary adjustment is made through a hole in the top of the shield can, and the primary adjustment is made through a hole in the bottom.

8. When tuning this transformer, use a fibre tuning stick, as the iron core is not at ground potential; also, the core may be damaged by using a metal screwdriver. The fibre screwdriver should be ⅛" in diameter, with the point ground down to a 1/16" wedge.

9. If any tendency toward oscillation is noticed, connect a 100 mmf. condenser, Part No. 60-10105407, between terminals 2 and 4 of the transformer, and realign.

This information supersedes all previous recommendations of transformers, such as Part No. 32-4005 (blue dot), and Part No. 32-3674, for use as replacement second i-f transformers in Model 46-1201.

Where repeated trouble has been experienced, and where sets are used continuously under high operating temperatures, it is recommended that the transformer and condensers mentioned above be replaced, in order to avoid repeated service calls.

CRITICAL LEAD DRESS AND PARTS PLACEMENT FOR MODEL 46-1201

1. Electrolytic condenser C102 should be mounted away from the volume control as far as possible. The 7C6 grid blocking condenser, C201, should be dressed downward into the corner of the chassis, toward the volume control, R200, to minimize coupling between C201 and C102.

2. The lead from C101 to pin 8 of the 50Y6GT tube should be dressed under the a-c cord, with excess length placed around the 50Y6GT socket, for mechanical support.

3. A-c cords, including motor leads, should be dressed toward the rear of the chassis, and away from the 7C6 socket and C201.

4. The rear lead of loop LA400 should be connected to the antenna section of the tuning condenser, C401; the front loop lead should be connected to the No. 3 lug of the antenna coil, T400.