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VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

Admiral

Chassis 8K4, Models YD201GP,A, YD202GP,A

IF 455 KC.

COMPONENT CONNECTIONS TO BACK OF BOARD AND WIRING

BATTERY

TUNING CAPACITOR

OFF VOLUME CONTROL
AC CHARGER OPERATION

Plug the AC Charger into the jack on the radio and into a wall outlet and the radio operates from ordinary AC house current—little battery drain. After using radio outdoors (from battery), plug in the AC charger with radio turned "OFF" and the AC Charger will restore power to the radio battery. The AC Charger will extend the useful life of the transistor radio battery many times its normal expectancy.
NOTES:
ALL RESISTOR VALUES IN OHMS AND CAPACITOR VALUES IN MICROFARADS UNLESS OTHERWISE SHOWN. ALL VOLTAGES TAKEN WITH A VACUUM TUBE VOLTMETER WITH RESPECT TO COMMON B- = CHASSIS GROUND

NEEDLE REPLACEMENT
Turn Needle Selector handle so that desired needle number ("LP" or "78") faces up. Corresponding needle will be pointing down. Loosen screw at base of needle assembly and slide assembly forward and remove from cartridge. To install new needle assembly, slide lugs of assembly under screw and tighten securely. Needle shaft must rest in centering notch. Be sure new needles are mounted to correct sides of turn-over cartridge.

VIEW OF CHASSIS SHOWING COMPONENTS

CHASSIS REMOVAL
1. Remove the four turntable hold-down screws.
2. Raise turntable front edge for access to chassis.
3. For chassis removal: Pull off knobs.
4. Remove the nuts on the tone and loudness shafts, while supporting escutcheon.
5. Set escutcheon and control cups off.
6. Pull "plug-in" wire connectors to chassis off.
7. Remove chassis.
Chassis 22C5, A, 20C5, A
Circuit diagram on pages 8 and 9; other service material on page 10.

**Speaker Wiring Schematics**

**Speaker Wiring for G8031 & M, 45 & M, 51 & M, 61 & M, 75 & M.**

**Speaker Wiring for YG1571, YG800 & M, YG8010 & M, YG8020 & M Series.**

---

**General**

Model YG1571 is a table or wall mount unit, while the others are console models of walnut, mahogany or maple finish. An 11" turntable, 4-speed automatic phonograph with a complete system shut-off is used in each model.

The various chassis are completely transistorized and are in one unit. The chassis are basically identical except that the 20C5 and 20C5A chassis do not have FM stereo circuits. No provisions are available for adding this service to the 20C5 and 20C5A chassis. The 22C5 and 22C5A chassis include the necessary circuitry for FM stereo.

The FM and AM, RF and IF sections are all on one precision wired board. FM Stereo and stereo audio circuits are on a second precision wired board. The FM circuit consists of RF, mixer, oscillator, three IF and a ratio detector stage. The AM consists of an autodyne converter, two IF and a diode detector stage. The FM stereo section consists of a 19KC amplifier, 38KC doubler, indicator control stage, and four diodes for FM Stereo detection. Six transistors are used for each stereo audio amplifier section. Attenuator type bass and treble controls along with loudness and balance controls are part of each stereo amplifiers. The bass drive stages are direct coupled for both AC and DC current. Negative feedback is provided from the output to the base of the predriver. The output circuit is complementary symmetry type.
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

ADIMRAL Chassis 20C5, A, 22C5, A, Service Information, Continued

Top View of FM-AH, RF & IF Section

Bottom View of FM-AH, RF & IF Section

Top View of FM Stereo and Stereo Amp Section

Bottom View of FM Stereo and Stereo Amp Section
CHASSIS REMOVAL

1. Remove the four turntable hold-down screws.
2. Raise turntable front edge for access to chassis.
3. For chassis removal: Pull off knobs.
4. Remove the nuts on the tone and loudness shafts, while supporting escutcheon.
5. Set escutcheon and control cups off.
6. Pull "plug-in" wire connectors to chassis off.
7. Remove chassis.
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

MODEL CHART

<table>
<thead>
<tr>
<th>MODEL</th>
<th>NAME</th>
<th>FINISH</th>
<th>CHASSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>YG827</td>
<td>Kimberly</td>
<td>Tan</td>
<td>SY6A</td>
</tr>
<tr>
<td>YG829</td>
<td>Kimberly</td>
<td>Charcoal</td>
<td>SY6A</td>
</tr>
<tr>
<td>YG837</td>
<td>Dunbar</td>
<td>Brown</td>
<td>SY6</td>
</tr>
<tr>
<td>YG839</td>
<td>Dunbar</td>
<td>Charcoal</td>
<td>SV6A</td>
</tr>
<tr>
<td>YG841</td>
<td>Aurora</td>
<td>Walnut</td>
<td>SW6</td>
</tr>
<tr>
<td>YG851</td>
<td>Galaxy</td>
<td>Walnut</td>
<td>SY6A</td>
</tr>
<tr>
<td>YG861</td>
<td>Golden Classic</td>
<td>Walnut</td>
<td>SW6</td>
</tr>
</tbody>
</table>

(For circuit diagram see next page, directly at right)

SERVICE HINT
Severe hum on these chassis can be caused by a breakdown of the Output Transistor Q5, No. 57C6-14. Should this be encountered, replace the transistor and change R19, 24 ohm, 1/2 watt resistor to 36 ohm 1/2 watt for increased reliability.

When servicing the chassis for other reasons, R19 should be changed to 36 ohms to avoid the possibility of damaging Q5. Some chassis will already have this change.
Diagram of 12B2 Tuner across pages 18-19. See page 20 for 4F4 pre-amp and 8L3 power unit diagrams. List of models in chart at right.
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

ADMIRAL 4F4, A, Pre-Amp, and 8L3, A, Power Unit, Continued

SCHEMATIC FOR 4F4, 4F4A PRE-AMP CHASSIS

Run Changes:

1. Start of production.
2. For reduced background noise, R21 & R24 changed from E24 to 47K.
3. Capacitors C10, C14, C16, C18, C20, C22 changed from 20uf to 22uf.
4. Capacitor from R1 to R2 changed from 22uf to 47uf.
5. Capacitor from R2 to R3 changed from 22uf to 47uf.

SCHEMATIC FOR 8L3, 8L3A AMPLIFIER - POWER SUPPLY CHASSIS
Chassis 120791, 120792, 120793, 120794. Similar Chassis 120826, 120828, are also used in some of these models.

**SERVICING PRECAUTIONS**

1) Do not operate the chassis without a loudspeaker or suitable dummy load connected to the secondary of the audio output transformer, since this may result in damage to the audio output transistors.

2) Note that B — (chassis ground) is connected to one side of the power line through R-11. For this reason, an isolation transformer must be used whenever servicing procedures require that a signal be conductively (by direct connection) injected into the receiver, otherwise damage to the chassis may result.
EMERSON Chassis 120789, Models 31L07, 31L08
(See adjacent page at right for schematic diagram)

REPLACEMENT INFORMATION FM TUNING UNIT 471538

When removing the FM tuning unit for exchange or replacement, be sure to retain the dial string pulley, associated mounting parts and rubber grommets. New units are supplied by the factory complete with metal cover and vacuum tube, butless the items noted above.

DIAL STRINGING

TUBE LOCATIONS AND ALIGNMENT POINTS

ETCHED CIRCUIT CHASSIS (BOTTOM VIEW)
ETHCHED CIRCUIT BOARD (BOTTOM VIEW)

CH.120785, 796, 797, 798

ALIGNMENT INSTRUCTIONS

<table>
<thead>
<tr>
<th>STEP</th>
<th>SIGNAL GENERATOR</th>
<th>RADIO DIAL SETTING</th>
<th>OUTPUT METER</th>
<th>ADJUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Form loop of several turns and radiate signal into receiver.</td>
<td>455 KC</td>
<td>Variable condenser fully open.</td>
<td>Across voice coil.</td>
</tr>
<tr>
<td>2</td>
<td>As above</td>
<td>600 KC</td>
<td>600 KC</td>
<td>As above</td>
</tr>
<tr>
<td>3</td>
<td>As above</td>
<td>1638 KC</td>
<td>Variable condenser fully open.</td>
<td>As above</td>
</tr>
<tr>
<td>4</td>
<td>As above</td>
<td>1420 KC</td>
<td>Tune for maximum output.</td>
<td>As above</td>
</tr>
</tbody>
</table>
CONDITIONS FOR MEASUREMENT OF VOLTAGE READINGS

a) Vacuum-tube voltmeter used for all measurements indicated.
b) All measurements made between points indicated and E-minus (low side of volume control).
c) Volume control set for minimum volume (fully counter-clockwise).

TRANISTOR REPLACEMENT INFORMATION

<table>
<thead>
<tr>
<th>CHASSIS PRODUCTION</th>
<th>RESISTANCE VALUES EMPLOYED</th>
<th>USE ONLY THE FOLLOWING REPLACEMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R-4, 5</td>
<td>Q-1, 2</td>
</tr>
<tr>
<td>GROUP A</td>
<td>330 K</td>
<td>815180-3 OR -4</td>
</tr>
<tr>
<td></td>
<td>68 K</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 K</td>
<td></td>
</tr>
<tr>
<td>GROUP B</td>
<td>220 K</td>
<td>815180-7</td>
</tr>
<tr>
<td></td>
<td>82 K</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.2 K</td>
<td></td>
</tr>
</tbody>
</table>

MODEL: 32P01A
MODEL: 32P12
CHASSIS: 120833

RECORD PLAYER

RESISTORS IN OHMS (1K X 300Q) AND 1/2 WATT
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION

CHASSIS No. 120833
EMERSON Chassis 120836, Models 32P09, 32P10, 32P11

CONDITIONS FOR VOLTAGE MEASUREMENTS

Voltage readings shown on the schematic diagram are positive DC, measured using a VTM between the points indicated and chassis ground. All measurements were made with controls set fully counterclockwise, and line voltage maintained at 120 volts, 60 cps AC. Allow ± 10% variation in readings obtained to compensate for normal component tolerances.
TU50 FM-AM Tuner
(Diagram and data on next two pages)

(TU500 series type tuner is practically to TU50, but has mechanical housing and flywheel tuning.)

TU50 DIAL CORD RESTRINGING:
1. Place gang to open position.
2. Hook on end of spring on gang drum and bring dial cord around drum and under tuner chassis.
3. Remove the two screws nearest the audio amplifier that hold the tuner to the flat plate.
4. Loosen the other two tuner screws.
5. Tilt the tuner up to a vertical position. (See sketch.)
6. Follow the diagram for restringing the dial cord.
COMPLIMENTS OF www.nucow.com

NOTES:
1. CURRENT DRAIN MINIMUM VOLUME 15 MA.
2. ALL VOLTAGES NEGATIVE WITH RESPECT TO GND.
3. VOLTAGES MEASURED WITH NO SIGNAL, VOLUME SET TO MINIMUM.

Frequency Range
Broadcast Band: 535-1305KC
IP Frequency: 455KC

Power Output
Undistorted: 150MW
Maximum: 200MW

DIAL STRINGING GUIDE

Magnavox
AM-802 PORTABLE TRANSISTOR RADIO
Magnavox A505 SERIES AMPLIFIER CHASSIS

Notes:
1. Voltages measured with VTVM, no input signal.
2. Ground leads should be 14 A.W.G. or larger, connected as shown.
R4 from 82K ohm through 560K ohm.
R17, R19 560 ohm or 820 ohm.

Bottom View of PC Board.
 ALIGNMENT

Connect an output meter across the speaker. Set volume to maximum. Attenuate signal generator output so as not to exceed 50 milliwatts (.64V) on output meter at all times to prevent overloading and AGC action. Alignment should be performed with the chassis installed.

<table>
<thead>
<tr>
<th>STEP</th>
<th>GENERATOR CONNECTION</th>
<th>GENERATOR FREQUENCY (1000 cycle mod)</th>
<th>GANG SETTING</th>
<th>ADJUST</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF ALIGNMENT</td>
<td>Radiation loop*</td>
<td>455Kc</td>
<td>Fully opened (1620Kc)</td>
<td>1, 2, 3 &amp; 4</td>
<td>Adjust for maximum.</td>
</tr>
<tr>
<td>RF ALIGNMENT</td>
<td>Radiation loop*</td>
<td>1620Kc</td>
<td>Fully opened (1620Kc)</td>
<td>5</td>
<td>Adjust for maximum.</td>
</tr>
<tr>
<td>3.</td>
<td>&quot;</td>
<td>1400Kc</td>
<td>Tune for maximum at 1400Kc</td>
<td>6</td>
<td>Adjust for maximum.</td>
</tr>
<tr>
<td>4.</td>
<td>&quot;</td>
<td>1400Kc</td>
<td>Tune for maximum at 1400Kc</td>
<td>7</td>
<td>Adjust for maximum.</td>
</tr>
</tbody>
</table>

*Connect generator output across 5" diameter, 5-turn loop and couple inductively to receiver antenna. Keep radiation loop at least 15" from receiver antenna.

---

**BOTTOM VIEW**

PLATED CHASSIS REFERENCE POINTS AND PARTS LOCATION (VIEW FROM WIRING SIDE OF BOARD)
The external power supply jack, when used in conjunction with the optional accessory power supply adapter (Model HK-73), allows the radio to be operated from a 120 volt, 60 cycle, AC power supply. When the HK-73 is plugged into the radio, the batteries are automatically disconnected from the radio.
CHASSIS SERVICE AND REMOVAL

1. From front of radio, remove two (2) control knobs and nuts that mount the earphone jack and the external power supply jack.
2. Remove the two (2) cabinet mounting screws (they are located on the sides of the cabinet, under the carrying handle - lift the handle to expose them).
3. Lift the escutcheon and chassis as an assembly out of the cabinet.
4. To remove the chassis from the escutcheon, remove the battery, remove three (3) chassis mounting screws and, if necessary, unsolder leads connected to chassis.
**VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION**

**MOTOROLA**

Model X61, Chassis HS-6137

(Continued)

**ALIGNMENT**

Connect an output meter across the speaker. Set volume to maximum. Attenuate signal generator output so as not to exceed .50 volt on output meter at all times to prevent overloading and AGC action. Alignment should be performed with the chassis in the cabinet.

<table>
<thead>
<tr>
<th>STEP</th>
<th>GENERATOR CONNECTION</th>
<th>GENERATOR FREQUENCY (400 cycle mod)</th>
<th>GANG SETTING</th>
<th>ADJUST</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF ALIGNMENT</td>
<td>Radiation loop*</td>
<td>455Kc</td>
<td>Fully opened (1620Kc)</td>
<td>1, 2, 3 &amp; 4</td>
<td>Adjust for maximum. Repeat adjustments #1 and #2.</td>
</tr>
<tr>
<td>RF ALIGNMENT</td>
<td>Before performing RF alignment, check oscillator tuning range: with gang fully opened, set should tune to 1620Kc ± 15Kc; with gang fully closed, 532Kc ± 5Kc. If oscillator does not cover this range, perform Steps A, B and C at this point; otherwise, skip over them and go on to Step 2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Radiation loop*</td>
<td>532Kc</td>
<td>Fully closed (532Kc)</td>
<td>7</td>
<td>Adjust for maximum.</td>
<td></td>
</tr>
<tr>
<td>B. Radiation loop*</td>
<td>1620Kc</td>
<td>Fully opened (1620Kc)</td>
<td>5</td>
<td>Adjust for maximum.</td>
<td></td>
</tr>
<tr>
<td>C. Repeat Steps A and B until oscillator covers required range; Step B should be last adjustment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Radiation loop*</td>
<td>1620Kc</td>
<td>Fully opened (1620Kc)</td>
<td>5</td>
<td>Adjust for maximum.</td>
<td></td>
</tr>
<tr>
<td>3. Radiation loop*</td>
<td>1400Kc</td>
<td>Tune for maximum</td>
<td>6</td>
<td>Adjust for maximum.</td>
<td></td>
</tr>
</tbody>
</table>

*Connect generator output across 5" diameter, 5-turn loop and couple inductively to receiver antenna. Keep radiation loop at least 12" from receiver antenna."
CHASSIS REMOVAL (All Models)

1. Remove selector and tuning knobs only. Loudness and tone control knobs are captivated.

2. Remove clock control knobs.

3. Remove clock crystal by inserting screwdriver between cabinet and bottom edge of crystal below the letters AM on dial scale. Release catch and lift out crystal.

4. Remove dial pointer by carefully pulling straight out.

5. From rear of chassis, remove three (3) screws along front chassis apron from below chassis.

6. Remove two (2) screws on vertical chassis above loudness control.

7. Unsolder speaker leads and necessary clock leads.

8. Carefully pull chassis from cabinet front.

TOP VIEW

FM-RF PLATED BOARD (PART OF CHASSIS HS-8206 & HS-8207)
CHASSIS REMOVAL

1. From front of radio, remove two (2) control knobs and dial scale.
2. From rear of radio, open back panel by unsnapping the three (3) tabs at top of panel.
3. Remove two (2) screws holding ferrite antenna from sides of radio.
4. Remove six (6) chassis mounting screws. If necessary, unsolder leads connected to chassis before removing chassis from cabinet.
5. If it becomes necessary to remove the earphone jack or power jack, use tool Motorola Part No. 66A646211.
RADIO SERVICING INFORMATION

MOTOROLA

MODEL XP7C
CHASSIS HS-66206

(For service data on plated chassis and parts locations see preceding page at left)
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

MOTOROLA

MODELS AC4B, AC43B, AT30B, AT31B

CHASSIS HS-67201 & HS-68202

CHASSIS REMOVAL

1. Remove cabinet back & arrows hold it in place.

2. Remove chassis mounting screw at base of chassis and screw at tuning gang mounting bracket.

3. Pull off volume knob ONLY. (Do not pull captive tuning knob.)

4. Unsolder appropriate leads to slide chassis out of tuning knob and cabinet.

CHASSIS REFERENCE POINTS (BOTTOM VIEW)

* DASHED JUMPER

(Note in clock models)

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MOTOROLA  MODEL TM5A

(Diagram and other data on the next page at right)
MODEL TM295M

(Service material continued on the next page, adjacent at right)
MOTOROLA

MODEL TM296M

(Diagram and other data on the next page adjacent at right)
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

MOTOROLA MODEL TM325M

(Diagram and other data on next page adjacent at right)

ALIGNMENT LOCATION DETAIL

DIAL STRINGING DETAIL

TOP VIEW

PLATED CHASSIS REFERENCE POINTS AND PARTS LOCATION (VIEW FROM COMPONENT SIDE OF BOARD)

BOTTOM VIEW

PLATED CHASSIS REFERENCE POINTS AND PARTS LOCATION (VIEW FROM WIRING SIDE OF BOARD)
POWER TRANSISTOR CURRENT ADJUSTMENT - After replacing a power transistor, the collector current should be checked and adjusted for proper operation.

A. Insert a low range (0.1 or 0.2 amp) DC ammeter in the primary ground return lead of the output transformer. Connect the negative terminal of the meter to isolated negative line on polarity reversing socket.

B. Turn the radio on and allow it to heat up for about 15 minutes.

C. Adjust the bias control (R-21) for a reading of 320 mA with a 2.6 volts input to the radio "A" lead.

NOTE: Two values of radio input voltage are given as a convenience to service personnel in order to accommodate different power sources. The current value stated on the schematic diagram is for 14 volts input to the radio "A" lead.
MOTOROLA MODEL TM326M

(Diagram and other data on the next page adjacent at right)

DIAL STRINGING DETAIL

PLATED CHASSIS REFERENCE POINTS AND PARTS LOCATION (VIEW FROM COMPONENT SIDE OF BOARD)

TOP VIEW

BOTTOM VIEW

PLATED CHASSIS REFERENCE POINTS AND PARTS LOCATION (VIEW FROM WIRING SIDE OF BOARD)
MOTOROLA

MODEL TM336M

(Diagram and other data on the next page adjacent at right)
GENERAL INFORMATION

Universal automotive type all-transistor superheterodyne AM radio for standard broadcast reception; operates from 12 volt negative or positive ground system (by simply re-positioning a polarity reversing plug on the radio). This receiver contains a plated chassis board, 6 transistors and 2 diodes and uses an 8 ohm speaker system.

This radio is of the compact, under-dash type. In-dash installations, however, can be made in many cars with the use of triplate kits AK-223 or KM35T. Special knobs are designed to give all installations a custom look. The tone knob and the dummy knob are reversible. For in-dash installations, the knob is used “backwards” and provides a flush fit. For under-dash installations, the knob is used “face-up” and fills the extra space where the dash would be.
RECORD CHANGER REMOVAL
1. Open changer drawer to operating position.
2. Screw changer hold down screws fully into record changer base.
3. Raise the front of the changer enough to clear drawer edge and carefully slide record changer forward until it clears changer support.
4. Lift up changer, disconnect power plug and unplug audio leads from terminal strip on underside of the changer.

CHASSIS REMOVAL
1. From rear of cabinet, remove four (4) screws along rear of handle and four (4) screws across cabinet back.
2. Remove three (3) control knobs. Carefully pull cabinet front forward and remove three (3) screws which secure chassis to cabinet front.
3. If necessary, disconnect all cables (speakers, etc.).
CHASSIS REMOVAL

1. From rear of cabinet, remove four (4) screws along rear of handle and four (4) screws across cabinet back.

2. Remove two (2) control knobs. Carefully pull cabinet front forward and remove three (3) screws which secure chassis to cabinet front.

3. If necessary, disconnect all cables (speakers, etc.).

RECORD CHANGER REMOVAL

1. Open changer drawer to operating position.

2. Screw changer hold down screws fully into record changer base.

3. Raise the front of the changer enough to clear drawer edge and carefully slide record changer forward until it clears changer supports.

4. Lift up changer, disconnect power plug and unsolder audio leads from terminal strip on underside of the changer.

NOTE:

VOLTAGES - MEASURED FROM POINT INDICATED TO B- WITH VTVM ± 10% NO SIGNAL INPUT

= B- = CHASSIS

= CHASSIS FRAME
PHILCO Tuner-Amplifier Chassis P10ST used in Models P1002 and P1718

(Diagram continued on page at right; other material on page following)
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

PHILCO Tuner-Amplifier Chassis P10ST used in Models P1002 and P1718

(Continued; see also next page, over)

CHASSIS REMOVAL - P10ST, P25ST,

1. Disconnect line cord and remove back.

2. Disconnect speaker cables, phono power cable, phono input cable and bin light when used.

3. Remove hold-down screws at rear of chassis.

4. Remove screws inside of cabinet at corners of front bezel.

5. Remove screws holding EXT. SPKR. JACK PLATE to cabinet.

6. Remove chassis from front of cabinet; in drop-in models lift lid then lift chassis up and out of cabinet.

NOTE:
1. ALL VOLTAGES AND RESISTANCES MEASURED WITH VSTV PREAMPLIFIER MODEL 9B.
2. ALL RESISTANCES MEASURED IN CIRCUIT.
3. ALL VOLTAGES ARE TYPICAL VALUES TAKEN WITH LOUDNESS FULLY COW AND SWITCH ON 3 DB POSITION UNLESS SPECIFIED OTHERWISE WITH NO SIGNAL APPLIED.

CAUTION!!
USE ONLY RECOMMENDED PHILCO EXTERNAL SPEAKER OTHERWISE EQUIPMENT DAMAGE MAY RESULT.

Compliments of www.nucow.com
### PHILCO P25ST - CODE 124 CHASSIS ELECTRICAL PARTS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Location</th>
<th>Description</th>
<th>Service Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>G5</td>
<td>1 mF, treble cont. 100 pf, 67Kc filter</td>
<td>30-4706-13</td>
</tr>
<tr>
<td>C1A</td>
<td>G5</td>
<td>620 pf, 67Kc filter</td>
<td>30-1293-32</td>
</tr>
<tr>
<td>C2</td>
<td>G10</td>
<td>1 mF, bass cont. 250 pf, 6V, driver out</td>
<td>30-2611-10</td>
</tr>
<tr>
<td>C2A</td>
<td>G10</td>
<td>100 pf, 67Kc filter</td>
<td>30-1293-19</td>
</tr>
<tr>
<td>C3</td>
<td>G11</td>
<td>1 mF, 1st audio</td>
<td>30-4665-30</td>
</tr>
<tr>
<td>C4</td>
<td>F7</td>
<td>1 mF, 1st audio</td>
<td>30-4665-30</td>
</tr>
<tr>
<td>C5</td>
<td>F9</td>
<td>1 mF, treble cont.</td>
<td>30-4706-13</td>
</tr>
<tr>
<td>C6</td>
<td>F10</td>
<td>1 mF, treble cont.</td>
<td>30-1293-22</td>
</tr>
<tr>
<td>C7</td>
<td>G10</td>
<td>0.05 mF, 5V, 15V, AVC</td>
<td>30-2610-1</td>
</tr>
<tr>
<td>C8</td>
<td>F8</td>
<td>150 pf, driver C to B</td>
<td>30-1294-31</td>
</tr>
<tr>
<td>C9</td>
<td>F12</td>
<td>2 mF, bass cont.</td>
<td>30-2612-2</td>
</tr>
<tr>
<td>C10</td>
<td>G13</td>
<td>0.0047 mF, bass cont.</td>
<td>30-1294-28</td>
</tr>
<tr>
<td>C11</td>
<td>F13</td>
<td>0.0047 mF, bass cont.</td>
<td>30-1294-28</td>
</tr>
<tr>
<td>C12</td>
<td>F7</td>
<td>1 mF, 1st audio</td>
<td>30-6495-30</td>
</tr>
<tr>
<td>C13</td>
<td>F9</td>
<td>1 mF, 1st audio</td>
<td>30-6495-30</td>
</tr>
<tr>
<td>C14</td>
<td>E5</td>
<td>4700 pf, max. out</td>
<td>30-1294-28</td>
</tr>
<tr>
<td>C15</td>
<td>E5</td>
<td>4700 pf, max. out</td>
<td>30-1294-28</td>
</tr>
<tr>
<td>C16</td>
<td>E2</td>
<td>1 mF, AM ant.</td>
<td>30-4706-13</td>
</tr>
<tr>
<td>C17</td>
<td>E3</td>
<td>10 pf, FM osc. init.</td>
<td>30-1221-23</td>
</tr>
<tr>
<td>C17A</td>
<td>E3</td>
<td>100 pf, AM osc.</td>
<td>30-1221-23</td>
</tr>
<tr>
<td>C18</td>
<td>E3</td>
<td>4700 pf, AM osc.</td>
<td>30-1221-23</td>
</tr>
<tr>
<td>C19</td>
<td>E9</td>
<td>1800 pf, 19Kc trans.</td>
<td>30-4707-15</td>
</tr>
<tr>
<td>C21</td>
<td>E9</td>
<td>0.1 mF, FM mix.</td>
<td>30-1294-6</td>
</tr>
<tr>
<td>C21A</td>
<td>D2</td>
<td>0.1 mF, 6V</td>
<td>30-1294-6</td>
</tr>
<tr>
<td>C22</td>
<td>D2</td>
<td>0.1 mF, 6V</td>
<td>30-1294-6</td>
</tr>
<tr>
<td>C23</td>
<td>D4</td>
<td>0.001 mF, FM osc. ret.</td>
<td>30-1294-20</td>
</tr>
<tr>
<td>C24</td>
<td>D6</td>
<td>0.001 mF, FM osc. ret.</td>
<td>30-1294-20</td>
</tr>
<tr>
<td>C25</td>
<td>D6</td>
<td>0.001 mF, FM osc. ret.</td>
<td>30-1294-20</td>
</tr>
<tr>
<td>C26</td>
<td>D7</td>
<td>3900 pf, 38Kc trans.</td>
<td>30-4707-17</td>
</tr>
<tr>
<td>C27</td>
<td>D8</td>
<td>2 mF, max. amp.</td>
<td>30-4704-3</td>
</tr>
<tr>
<td>C28</td>
<td>D8</td>
<td>2 mF, max. amp.</td>
<td>30-4706-13</td>
</tr>
<tr>
<td>C29</td>
<td>D9</td>
<td>0.1 mF, 5V, 25V, 38Kc</td>
<td>30-2610-2</td>
</tr>
<tr>
<td>C30</td>
<td>D10</td>
<td>1800 pf, max. amp.</td>
<td>30-4707-15</td>
</tr>
</tbody>
</table>

### Compliments of www.nucow.com
ALL TRANSISTOR TUNED AMPLIFIERS

RF SHIELD REMOVAL: (RF Tuning Section) Top & Bottom

NOTE: Two types of RF shields were used on these chassis.

Type 1 - Top shield with a removable cover. The mounting studs are part of the top shield with mounting nuts on bottom of PW panel.

Type 2 - Top shield without a removable cover. The mounting studs are part of the bottom shield with mounting nuts on top of PW panel.

To remove type 1 top shield:
1. Remove 3 nuts holding bottom shield.
2. Unsolder ground tab and remove bottom shield.
3. Remove top cover.

To remove type 2 top shield:
1. Remove 3 nuts holding top shield.
2. Unsolder antenna lead from Gang and lift off top shield.
3. Remove 3 additional nuts on shield stud, unsolder ground tab and lift off bottom shield.
PHILCO Model P1441

CHASSIS REMOVAL - MODEL P1441
1. Remove 6 panel (motorboard) screws, lift panel then disconnect 2 speaker leads and audio cables from changer.
2. Remove knobs (Tone & Loudness).
3. Remove bushing nuts from control shafts.
4. Lift panel and remove chassis.

RECORD CHANGER REMOVAL - MODEL P1441
1. Remove 6 panel screws.
2. Lift front end of panel with changer and amplifier.
3. Disconnect power and audio leads.
4. Straighten changer mounting bolt clips then lift off record changer.

PHILCO Model P1442
PHILCO Model P1444

RECORD CHANGER REMOVAL - MODEL P1444
1. Lower changer drawer and remove 4 screws holding record changer to base.
2. Lift front of record changer and disconnect changer power plug, unsolder 3 leads to terminal strip.
3. Lift record changer from base.

CHASSIS REMOVAL - MODEL P1444
1. Remove record changer (see record changer removal instructions).
2. Remove 2 knobs (Loudness).
3. Disconnect panel plug at rear of chassis panel and unsolder speaker leads from output transformer.
4. Remove 2 chassis hold down screws (one located at each end of chassis), lift chassis from base.

Model P1444 Bottom View Perma-Circuit Panel - Component Layout
Model P1513/P1515 Schematic Diagram

<table>
<thead>
<tr>
<th>Transistor Voltages</th>
<th>C</th>
<th>B</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Amps Q1-Q2</td>
<td>1.8V</td>
<td>.59V</td>
<td>01V</td>
</tr>
<tr>
<td>Drivers Q3-Q4</td>
<td>30.8V</td>
<td>1.8V</td>
<td>12.5V</td>
</tr>
<tr>
<td>Outputs Q5-Q6</td>
<td>57.5V</td>
<td>1.25V</td>
<td>66V</td>
</tr>
</tbody>
</table>

Note: R29 shown was added in later production. R18 was 8.2k in early production.
RCA VICTOR

This is exact material for the following:
RGA-27 Series, Chassis RC-1213R;
RGD-30 Series, Chassis RC-1213M;
and this group of sets are very similar:
RHA-12G,N,Y, RHA-17A,E,J, RC-1213W;
RHD-13N,Y, RHD-17A,J,Y, using
Chassis RC-1213AB; RHD-21A,J,T, using Chassis RC-1213AA.

[Diagram of radio circuit and component layout]
**ALIGNMENT PROCEDURE**

<table>
<thead>
<tr>
<th>Step</th>
<th>Connect High Side of Signal Generator to</th>
<th>Signal Gen. Output</th>
<th>Dial Pointer Setting</th>
<th>Adjust for Max. Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>455 kc</td>
<td>T4 (2nd I-F)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>T3 (2nd I-F)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>T2 (1st I-F)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Loop or place of short wire placed near antenna for radiated signal</td>
<td>1620 kc</td>
<td>Gang fully open</td>
<td>Oscillator trimmer CI-B-T</td>
</tr>
<tr>
<td>5</td>
<td>Repeat Steps 1, 2, and 3</td>
<td>1400 kc (rock gang if necessary)</td>
<td>Antenna trimmer CI-A-T</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Repeat Steps 5, 6, and 7</td>
<td>600 kc (rock gang)</td>
<td>Osc. coil T1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CHASSIS REMOVAL**

1. Remove tuning and volume knobs.
2. Open case.
3. Remove three screws securing chassis. (Two at battery end of board and one at speaker end.)
4. Remove nut holding earphone jack (RC-1219B) or slide earphone jack out of slot (RC-1219A).
5. Un solder speaker wires if necessary (or remove clips holding speaker to case).
6. Un solder battery wires if necessary.
7. Lift board out of case.
### Chassis Accessibility and Removal

1. Unsnap the two tabs at the bottom of the back and swing the back cover out and up.

2. Insert cells, with button end (+) to the left, into the opening in the battery compartment. Slide one cell to the left and two to the right; the fourth cell is inserted by pushing the cells on the right against the spring pressure until the fourth cell slips into place in the opening.

The chassis may be made further accessible by removing the front panel from the case; remove three (1) screws through the bottom of the case and two (2) through the top (under the handle) to permit the front panel to slide out of the case. (NOTE: The three screws through the bottom of the case also secure the battery holder.)

The chassis may be removed from the front panel by removing the five (5) screws securing it to the front panel, two at each end and one at the approximate center.

---

### Table: Connections and Signal Levels

<table>
<thead>
<tr>
<th>Step</th>
<th>Connect Signal Source To</th>
<th>Sat Signal Source To</th>
<th>Sat Radio Dial To</th>
<th>Adjust—for maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stator of C1A (RF Gang)</td>
<td>455 kc</td>
<td>Gang fully open</td>
<td>(3rd IF) T5</td>
</tr>
<tr>
<td>2</td>
<td>through a 0.01 uf capacitor</td>
<td></td>
<td></td>
<td>(2nd IF) T4</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>(1st IF) T3</td>
</tr>
<tr>
<td>4</td>
<td>Repeat steps 1, 2 and 3 as necessary for maximum.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1620 kc</td>
<td>Gang fully open</td>
<td>Osc. Trimmer C1C T</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1400 kc</td>
<td>1400 kc</td>
<td>(RF Trimmer C1B-T)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Standard loop</td>
<td>600 kc</td>
<td>(Ant. Trimmer) C1A-T</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>or short piece of wire placed near antenna</td>
<td>600 kc (rock gang)</td>
<td>Osc. Coil T2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>(RF Trans.) T1</td>
<td></td>
</tr>
</tbody>
</table>

---

**Chassis Layout—View From Wiring Side**

114
BATTERY REPLACEMENT

1. Insert a coin in the slot on the top of the case and twist it to pry the front and back section apart.
2. Remove the back by swinging it open as though it were hinged at the bottom.
3. Replace the battery by snapping the connector off the old battery and onto the new one. (Note the polarized terminals.)
4. Reassemble the case by placing the bottom of the back section into the bottom of the front section and hinge the back section up into the front section and snap them together. (Small bosses on the top and bottom edges of the back section fit into small indentations inside of the edge of the front section.)
RCA VICTOR

RHH 17 Series
Chassis RC-1222A

BATTERY REPLACEMENT

1. Insert a coin in the slot on the top of the case and twist it to pry the front and back section apart.
2. Remove the back by swinging it open as though it were hinged at the bottom.
3. Replace the battery by snapping the connector off the old battery and onto the new one. (Note the polarized terminals.)
4. Reassemble the case by placing the bottom of the back section into the bottom of the front section and hinge the back section up into the front section and snap them together. (Small bosses on the top and bottom edges of the back section fit into small indentations inside of the edge of the front section.)

IF 455 KC.

CHASSIS REMOVAL

1. Open case as described under “Battery Replacement.”
2. Remove three (3) screws holding circuit board to case.
3. Unfold wires to speaker.
4. Lift up transformer side of circuit board and slide board sideways out of case. (Speaker wires are long enough to permit chassis to be laid outside of case for servicing. If necessary to separate the chassis and speaker, the speaker leads should be unsoldered from the board to avoid damaging the voice coil leads of the speaker.)
CHASSIS ACCESSIBILITY

1. Remove four Phillips head screws holding the rear cover. Remove the rear cover.
2. Remove two Phillips head screws retaining the tuning panel to the front of the cabinet.
3. Remove two Phillips head screws holding chassis retaining tabs located at rear of cabinet.
4. Slide chassis rearward to remove. If necessary, unsolder speaker leads.

To reassemble—reverse above procedure.

Oscillation on Strong Signal

In a strong signal area an oscillation may be set up which will manifest itself by clamping of the A.C. and by causing a reverse bias to exist between the base and emitter of Q5, the first IF transistor.

This condition may be corrected by installing a ferrite bead on the emitter lead of Q4, the second IF transistor. The installation of the bead is accomplished by unsoldering the emitter lead of Q4, slipping the lead through the hole in the bead, and reinserting and resoldering the lead in the board.

The ferrite bead is available from Parts and Accessories under stock number 110761.

ALIGNMENT PROCEDURE

For all alignment operations connect low side of generator to chassis ground (junction of R24 and R25).

Connect output indicator across speaker voice coil.

Set volume control to maximum.

<table>
<thead>
<tr>
<th>Step</th>
<th>Connect high side signal gen. to</th>
<th>Set signal gen. to</th>
<th>Set radio dial to</th>
<th>Adjust—for maximum output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>455 kc (Modulated)</td>
<td>Tuning fully open</td>
<td>T5 (3rd IF)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>620 kc (Modulated)</td>
<td>620 kc (gang open)</td>
<td>T4 (2nd IF)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>T3 (1st IF)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1620 kc (Modulated)</td>
<td>1620 kc (gang open)</td>
<td>C18-T (Osc. trimmer)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1400 kc (Modulated)</td>
<td>1400 kc (gang open)</td>
<td>C1A-T (RF trimmer)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>C1C-T (Ant. trimmer)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>600 kc (Modulated)</td>
<td>600 kc (rock gang)</td>
<td>T2 (Osc. coil)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>T1 (RF coil)</td>
<td></td>
</tr>
</tbody>
</table>

9. Repeat above steps as necessary for best sensitivity.
BATTERY REPLACEMENT

1. Grasp the front section of the case with the left hand and the back section with right hand with the thumbs near the volume control on the right side.
2. Separate the back from the front as though it were hinged at the left side.
3. Replace the battery by snapping the connector off the old battery and onto the new one.
4. Reassemble the case by placing the left side of the front and back sections together and closing them with a hinging action.

ALIGNMENT PROCEDURE

<table>
<thead>
<tr>
<th>Step</th>
<th>Connect Signal Generator to</th>
<th>Signal Gen. Output</th>
<th>Dial Pointer Setting</th>
<th>Adjust for Max. Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>T3 (3rd 1-F)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>T3 (3rd 1-F)</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>T1 (1st 1-F)</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>455 kc</td>
<td>Gong fully open</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Loop of wire placed near antenna for radiated signal</td>
<td>1680 kc</td>
<td>Gong fully open</td>
<td>VC1B-T (Oscillator trimmer)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>1400 kc (rock gang)</td>
<td>VC1A-T (Antenna trimmer)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>600 kc (rock anal)</td>
<td>12 (One C-w)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Repeat Steps 5, 6, and 7
TUBE AND CHASSIS ACCESSIBILITY

1. DO NOT ATTEMPT TO REMOVE THE KNOBS. The tuning and volume control knobs are held captive to the cabinet by retainers on their shafts.

2. Remove the back cover by lifting the protrusions on the bottom of the back cover out of the slots in the base of the cabinet.

3. Unsolder speaker leads if necessary. Avoid putting a strain on the speaker leads.

4. Remove two chassis retainers (screws or clips), one at the volume control and one of the left end mounting.

5. Grasp tuning capacitor and volume control, and pull chassis out of knobs and mounting slots.

To reassemble—reverse above procedure.

The RGA 12 and RGA 15 are table model radio receivers and the RGD 20 is a table model clock radio designed for the reception of AM broadcasts. These instruments are housed in one piece plastic cabinets with "snap-in" masonite back covers to which is attached the loop antenna and power cord interlock connector. With this mode of power connection, the line cord is disconnected from the chassis thus removing all power when the back cover is removed and the chassis is exposed. The use of captive knobs, which cannot be separated from the cabinet, and line cord disconnect removes the possibility of shock hazard in these instruments.
RCA Victor

Model VGP 72
Chassis RS-216A

(Models VGE-15M, VGP-83 Chassis RS-219A, -B, are similar to this material)

CHASSIS REMOVAL

The top of the record changer compartment comprises the complete chassis. It rests on and is secured to a ledge at the front and is held by screws at the rear. The recommended procedure for its removal is as follows:

1. Remove knobs.
2. Pull record changer drawer down.
3. Remove four (4) plated screws holding front of chassis to horizontal ledge located inside of compartment at front of top.
4. Remove wires, running down each back corner of compartment, from holding clips.
5. Remove four (4) plated screws holding rear of chassis to rear of instrument. (Hold chassis—top of compartment—to prevent its falling.)
6. Chassis may then be lowered and removed.
7. Disconnect speaker cables and lift chassis out of case.

Printed Wiring Board—View from Wiring Side
CHASSIS ACCESSIBILITY

The "Solid Copper Circuit" transistorized amplifier chassis is physically mounted to the motorboard under the turntable with the large components, such as the transformers and filter capacitors, protruding downward through cutouts in the motorboard. When the turntable is removed, the wiring side of the circuit board is exposed. The output transistors and rectifiers are mounted to the motorboard.

Power connections (B+ and B-) and the output transistors collector connections are made through the four insulated bolts which mount the amplifier chassis to the motorboard. All other connections to the chassis are made by "slip-on" clips.
**STYLUS REMOVAL AND REPLACEMENT**

The stylus assembly is held to the cartridge either by a screw or by a plastic button.

To remove the stylus when held by a screw—loosen, but do not remove the screw, and slide the stylus assembly out from under it.

To replace the stylus—slide the yoke end of the stylus assembly under the head of the screw, making certain that it is fully seated, and tighten screw. Check that stylus saddle is seated on the yoke.

To remove the stylus when held by a plastic button—grasp the stylus assembly with a pair of tweezers or needle nose pliers and pull it out from under the plastic button. To replace the stylus—push the yoke end of the assembly under the plastic button making certain that it is fully seated. Check that the stylus saddle is seated on the yoke.

Chassis RC-1220A

Data on these sets presented below and on the next three pages. Alignment is on the next page at right. Circuit diagram and other service material are on the two pages following.
**RCA Victor Chassis RC-1220A, Continued**

**AM-FM ALIGNMENT PROCEDURE**

<table>
<thead>
<tr>
<th>INSTRUMENTS REQUIRED</th>
<th>GENERAL ALIGNMENT CONDITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signal Sources</strong></td>
<td>1. Connect low side of signal source and output indicator to chassis ground as close as possible to high side connection unless otherwise specified.</td>
</tr>
<tr>
<td>1. RF Signal Generator (RCA WR-90A or equivalent)</td>
<td>2. Signal input must be kept as low as possible to avoid AVC action. (Set output indicator to highest sensitivity.)</td>
</tr>
<tr>
<td>2. TV/FM Sweep Generator (RCA WR-99A or equivalent)</td>
<td>3. Markers must be accurate. (Crystal controlled or checked against a crystal calibrator.) The 10.7 mc marker used in each section of the FM alignment must be the same. (Generator dial should not be reversed.)</td>
</tr>
<tr>
<td>3. Marker Generator (RCA WR-99A or equivalent)</td>
<td>4. Marker insertion and amplitude must not distort the oscilloscope trace.</td>
</tr>
<tr>
<td><strong>Output Indicators</strong></td>
<td>5. Standard modulation is 400 cycle at 30% amplitude.</td>
</tr>
<tr>
<td>4. Vacuum-Tube Voltmeter (RCA WY-98B or equivalent)</td>
<td></td>
</tr>
<tr>
<td>5. Oscilloscope (RCA WO-91A or equivalent)</td>
<td></td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td></td>
</tr>
<tr>
<td>6. Hex head alignment tool</td>
<td></td>
</tr>
<tr>
<td>7. Thin fiber shaft alignment tool</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STEP</th>
<th>Signal Source—Connected to—</th>
<th>Set Signal to—</th>
<th>Set Radio Dial to—</th>
<th>Output Indicator—Connected to—</th>
<th>Adjust</th>
<th>Adjust for—</th>
<th>STEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>RF Generator—Q203 Base through a 0.01μF capacitor</td>
<td>455 kc (modulated)</td>
<td>Quiet point on band near 1600 kc</td>
<td>T206 (3rd AM IF)</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td>5</td>
<td>RF Generator—Q203 Base through a 0.01μF capacitor</td>
<td>1630 kc (modulated)</td>
<td>gang fully open</td>
<td>V.T.V.M.—Across speaker voice coil</td>
<td></td>
<td>Maximum</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>RF Generator—A standard radializing loop or short piece of wire placed near AM antenna</td>
<td>1400 kc (modulated)</td>
<td>1400 kc</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>8</td>
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<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Repeat steps 3 through 6 and steps 5 through 9 as necessary to obtain maximum sensitivity on stations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>11'</td>
<td>Set Radio Function Switch on &quot;FM&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11'</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>13</td>
<td>RF Generator—Q203 Base through a 0.01μF capacitor</td>
<td>10.7 kc (unmodulated)</td>
<td>Quiet point on band</td>
<td>V.T.V.M.—Across R232</td>
<td></td>
<td>T207 Bottom core (Pri.) (Rola Detector)</td>
<td>Maximum</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>15</td>
<td>TV/FM Sweep Gen.—Q204 Base through a 0.01μF capacitor</td>
<td>240 kc Sweep centered at 10.7 mc with markers at 10.6, 10.7 &amp; 10.8 mc</td>
<td>Quiet point on band</td>
<td>Oscilloscope—with signal Tracking Probe (RCA WO-303A)</td>
<td>*Delune T204 Bottom</td>
<td>Maximum</td>
<td>Symmetrical response centered at 10.7 mc with 10.6 and 10.8 mc at equal heights within 10% and approx. 40% down slope (limid-between 30% -60%)</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>17</td>
<td>TV/FM Sweep Gen.—Q203 Base through a 0.01μF capacitor</td>
<td>Q205 Base (adjust signal input to obtain 30 mv P-P reading on oscilloscope)</td>
<td>Quiet point on band</td>
<td>T205 Top &amp; Bottom</td>
<td>*Delune T102 Top</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>19</td>
<td>TV/FM Sweep Gen.—One FM antenna terminal</td>
<td>T102 Top &amp; Bottom</td>
<td>(1st FM IF—is tuner)</td>
<td>T204 Bottom</td>
<td></td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>20</td>
<td>Repeat steps 15 thru 19 as necessary to obtain specified response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>21</td>
<td>Marker Generator—across AM antenna terminals through a matching network if necessary</td>
<td>108.5 mc</td>
<td>gang fully open</td>
<td>V.T.V.M.—Across speaker voice coil</td>
<td>C118 (Oscillator Trimmer)</td>
<td></td>
<td>Maximum</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>24</td>
<td>Repeat steps 21, 22 and 23 as necessary to obtain maximum sensitivity on stations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

* When deluning T204 & T102, the specified core should be adjusted until no action appears in the trace with further adjustment of the core (9 or more turns). Opposite core will have little or no affect after specified core is fully deluned.

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Dial Cord Stringing

<table>
<thead>
<tr>
<th>C1</th>
<th>C16</th>
<th>5C</th>
<th>CR1</th>
<th>5C</th>
<th>R1</th>
<th>1A</th>
<th>R17</th>
<th>4B</th>
<th>R33</th>
<th>7B</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>C17</td>
<td>6C</td>
<td>CR2</td>
<td>6A</td>
<td>R2</td>
<td>1A</td>
<td>R18</td>
<td>5B</td>
<td>R34</td>
<td>7B</td>
</tr>
<tr>
<td>C3</td>
<td>C18</td>
<td>5C</td>
<td>CR3</td>
<td>4C</td>
<td>R3</td>
<td>4C</td>
<td>R19</td>
<td>4C</td>
<td>R36</td>
<td>5A</td>
</tr>
<tr>
<td>C4</td>
<td>C19</td>
<td>6B</td>
<td>FB1</td>
<td>4C</td>
<td>R4</td>
<td>2A</td>
<td>R21</td>
<td>4C</td>
<td>R37</td>
<td>8B</td>
</tr>
<tr>
<td>C5</td>
<td>C22</td>
<td>6B</td>
<td>R6</td>
<td>3A</td>
<td>R22</td>
<td>6C</td>
<td>R38</td>
<td>8C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>C23</td>
<td>6A</td>
<td>Q1</td>
<td>1A</td>
<td>R7</td>
<td>2B</td>
<td>R24</td>
<td>5B</td>
<td>RV1</td>
<td>6A</td>
</tr>
<tr>
<td>C8</td>
<td>C24</td>
<td>6B</td>
<td>Q2</td>
<td>3A</td>
<td>R8</td>
<td>3A</td>
<td>R26</td>
<td>6B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C9</td>
<td>C25</td>
<td>7C</td>
<td>Q3</td>
<td>3C</td>
<td>R9</td>
<td>3A</td>
<td>R27</td>
<td>5A</td>
<td>T1</td>
<td>2A</td>
</tr>
<tr>
<td>C11</td>
<td>C27</td>
<td>4B</td>
<td>Q4</td>
<td>4C</td>
<td>R12</td>
<td>2C</td>
<td>R28</td>
<td>5B</td>
<td>T2</td>
<td>3B</td>
</tr>
<tr>
<td>C12</td>
<td>C28</td>
<td>4A</td>
<td>Q5</td>
<td>6B</td>
<td>R13</td>
<td>4B</td>
<td>R29</td>
<td>5B</td>
<td>T3</td>
<td>3B</td>
</tr>
<tr>
<td>C13</td>
<td>C29</td>
<td>8B</td>
<td>Q6</td>
<td>7B</td>
<td>R14</td>
<td>4A</td>
<td>R31</td>
<td>5B</td>
<td>T4</td>
<td>4B</td>
</tr>
<tr>
<td>C14</td>
<td>C31</td>
<td>8A</td>
<td></td>
<td></td>
<td>R16</td>
<td>4C</td>
<td>R32</td>
<td>8B</td>
<td>T5</td>
<td>5B</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chassis Layout (Component Side)
Compliments of www.nucow.com
SEARS, ROEBUCK and CO.

RADIO NOS. 528, 63470, 63471

Used in Models 6055, 6056

(See page at right for schematic diagram)
Schematic Diagram

If 455 Kc.

**Symbol** | **Description** | **Symbol** | **Description**
--- | --- | --- | ---
X1 | 2SC73 | R4 | 470Ω 1/2W Carbon
X2 | 2SC76 | R6 | 10KΩ
| 2SC76 | R8 | 39KΩ
| 2SC76 | R10 | 3.3KΩ
| 25D65 | R11 | 47KΩ
X4 | 2SD65 | R12 | 1.8KΩ
X5 | 2SD65 | R13 | 5KΩ Volume Control
X6 | 2SD66 | R14 | 3.6KΩ 1/2W Carbon
D | 1Z23G | R15 | 5.6KΩ
Th | 123G | R16 | 1KΩ
Resistor: | | | |
R1 | 10KΩ 1/2W Carbon | R18 | 10KΩ
R2 | 20KΩ | R19 | 1KΩ
R3 | 39KΩ | R20 | 10Ω
R4 | 54KΩ | R21 | 220Ω
R5 | 22Ω | R22 | 9.5KΩ
R6 | 120KΩ | R23 | 10Ω
R7 | 5.6KΩ | R24 | 680Ω

* To be adjusted

Capacitor:
- **C1-1-1**: 0.02µF Ceramic
- **C2**: 0.002µF Mylar
- **C3**: 0.05µF
- **C4**: 0.01µF Ceramic
- **C5**: 130µF Syrot
- **C6**: 150µF (built-in IF)
- **C7**: 10µF 3V Electrolytic
- **C8**: 0.02µF Ceramic
- **C9**: 1µF
- **C10**: 1.0µF (built-in IF)
- **C11**: 0.1µF Ceramic
- **C12**: 0.01µF
- **C13**: 0.02µF Ceramic
- **C14**: 0.01µF
- **C15**: 0.02µF 15V Electrolytic
- **C16**: 10µF 3V
- **C17**: 0.005µF Mylar
- **C18**: 10µF 3V Electrolytic
- **C19**: 10µF 6V
- **C20**: 30µF 3V
- **C21**: 30µF 10V
- **C22**: 0.04µF Ceramic
- **C23**: 50µF 10V Electrolytic
- **C24**: 0.03µF Ceramic

Mounting Diagram
- Printed Side

C29 is mounted on the printed side.
SYLVANIA

Model AK45, AK46, AT40

VOLME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

CHASSIS U50-1, -2

SCHEMATIC NOTES

Line voltage set at 120 volt, 60 cycle.
Voltages shown are average readings measured to chassis ground with no signal, minimum volume setting and variable capacitor fully open.

Figure A

All capacitors are in microfarads unless otherwise specified.
All resistors are 10%, 1/2 watt unless otherwise specified.
Intermediate frequency (IF), 455 KC.
\( \uparrow \) designates chassis ground.
Arrow on volume control indicates clockwise direction.

Figure B

Figure C

NOTE:
The cabinet sections are held together with snap tabs shown by arrows. See Figures A and C.

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SCHEMATIC NOTES

1. Voltage measured to positive (red) battery connector, with receiver tuned to off station.
2. Operating voltage must be 9 volts DC. (Employ battery eliminator).
3. Voltages shown are average readings. Variations may be noted due to normal production tolerance (+10%).
4. All voltage readings taken with RCA Volt-Ohmyst (MV-97A).
5. All capacitors in microfarads unless otherwise specified.
6. Intermediate frequency (IF) 455 KC.
7. Resistance readings taken with components in circuit.

*SELECTED TO MATCH TRANSISTOR CHARACTERISTICS.*

DIAL STRINGING

1 1/2 TURNS

TUNING PULLEY

TUNING KNOB
CHASSIS REMOVAL

1. Remove three (3) knobs; two (2) front knobs and the one (1) side knob by pulling straight out.
2. Open back cover flap by unsnapping the fasteners at bottom rest of case.
3. Unsnap battery holder and remove from case.
4. Remove two (2) screws securing battery compartment. Remove compartment from case.
5. Remove earphone and ext. pwr. jack assembly from case.
6. Remove six (6) screws (indicated by X on top parts layout securing chassis to case. Remove one (1) screw (located on bottom of case) securing telescopic antenna to case.
7. Remove chassis and set to one side of case. If necessary unsolder leads to speaker.
8. To replace chassis reverse the above procedure.

SCHEMATIC NOTES

1. Voltages measured to chassis ground, test point (X), with receiver tuned to off station and minimum volume.
2. Operating voltage must be 6 volts DC. (Employ battery eliminator).
3. Voltages shown are average readings. Voltages in brackets measured with switch in FM position.
4. Switch SW2 is shown in the AM position.
5. All capacitors in microfarads unless otherwise specified.
6. All resistors are 1/4W - 1% unless otherwise specified.
7. Resistance readings taken with components in circuit.
8. Arrow or volume control indicates clockwise rotation.

SYLVANIA
Chassis 335-1, Model TR86
CHASSIS REMOVAL

1. Disconnect AC plug from power outlet.
2. Remove two (2) screws securing amplifier compartment cover to cabinet. Remove cover from cabinet.
3. Remove two (2) knobs from front of cabinet by pulling straight outward.
4. Remove two (2) screws securing chassis to cabinet located at bottom of cabinet.
5. Remove four (4) screws securing record changer shelf to cabinet.
6. Lift record changer and shelf upward and place in vertical position.
7. Identify and disconnect the phono cable, power supply and speaker leads.
8. Remove chassis from cabinet.
9. To replace chassis reverse the above procedure making certain all leads unsoldered or disconnected are replaced in their original electrical connections.
Westinghouse

CHASSIS V-2463-1, -2

H-954P6
H-955P6
H-956L6
H-957L6
H-958L6

V-2463-1 Schematic

CHASSIS REMOVAL H-954P6, H-955P6

The cabinet front and back are held together by 4 tabs molded on the top and bottom rim of the cabinet back.

1. Pry the bottom of the cabinet apart to release the two bottom tabs and carefully separate the two sections. CAUTION: the battery housing is mounted to the cabinet back.

2. The volume and tuning knobs are mounted to the PC board which comes out with the cabinet front.

3. Unsocket the two leads to the speaker.

4. Remove the hex head screw and mounting stud (located under the PC board) from the cabinet front and slide the chassis to the rear.

V-2463-2 Schematic

V-2463-1 PC Board showing top components in solid outline.

Dial Stringing

1 1/2 TURNS FROM START TO FINISH
TUNING GANG FULLY CLOSED

2 1/2 TURNS TUNING KNOB
DIAL STRING LENGTH 11 1/8", FORM LOOP 5 3/8"
Westinghouse


IF 455 Kc.

Bottom View of PC Board Showing Top Components In Solid Outline.
Westinghouse

Chassis V-2466-7 used in Models CR-515, CR-520, CR-521, is identical except for clock circuit.

CHASSIS REMOVAL
1. Remove the back cover.
2. Remove the volume knob.
3. Release the tuning knob from the tuning capacitor.
   CAUTION: The tuning knob is captivated to the cabinet front.
4. Lift the PC board at the rear, to clear the square bar on the cabinet bottom, and slide the chassis to the rear.
5. It may be necessary to unsolder the leads from the clock and speaker before the chassis can be completely removed from the chassis.
6. To reassemble the chassis to the cabinet, reverse the above procedure. It may be necessary to force the front edge of the PC board down into the mounting slots provided in the cabinet front. This can be accomplished by applying pressure to the electrolytic.

Bottom View of PC Board showing top components in solid outline.

H-215L5 - H-216L5

Compliments of www.nucow.com
Westinghouse

MODEL
CR-566

MODEL
H-953XP8

CHASSIS V-2580-1

SPECIFICATIONS
AM Frequency Range: 540KC to 1600KC
AM Intermediate Frequency: 455KC
Power Output, Maximum: 300mw
Speaker: 4" PM, 4-ohm voice coil
No-Signal Current Drain: 15ma

Compliments of www.nucow.com
Westinghouse

CHASSIS V-2585-1

Transistor complement

1 690V066H89 .................................. RF Amp
1 690V066H89 .................................. Osc
1 690V066H89 .................................. Mixer
1 690V034H29 .................................. 1st IF Amp
1 690V034H29 .................................. 2nd IF Amp
1 690V043H03 .................................. Audio Driver
2 690V043H02 (matched pair) .............. Audio Output

Bottom View of Chossis.
Bottom View of
PC Board Showing Top
Components in Solid Outline.

IF 455 kc.

Bottom View of
TOP VIEW OF TRANSISTOR

NOTES:
1. VOLTAGE MEASUREMENTS MADE WITH VOM VOM FROM POINTS Indicated
TO GROUND VOLUME CONTROL AT MAXIMUM.
2. UNLESS OTHERWISE INDICATED, ALL CAPACITANCE VALUES LESS THAN
100 mFD, AND RESISTANCE VALUES ARE 600 OHM, 1/2 WATT.
3. DURING SERVICING, TOTAL BATTERY CURRENT SHOULD BE MONITORED
WITH NO SIGNAL, AND VOLUME CONTROL AT MINIMUM, TOTAL BATTERY
DRAIN SHOULD BE 6.5 MA APPROX

TRANSISTOR COMPLEMENT

<table>
<thead>
<tr>
<th>TRANSISTOR</th>
<th>FUNCTION</th>
<th>TYPE</th>
<th>P/N</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>CONVERTER</td>
<td>PNP</td>
<td>2N9161</td>
<td>2N9161</td>
</tr>
<tr>
<td>Q2</td>
<td>1ST IF AMP</td>
<td>PNP</td>
<td>2N9161</td>
<td>2N9161</td>
</tr>
<tr>
<td>Q3</td>
<td>2ND IF AMP</td>
<td>PNP</td>
<td>2N9161</td>
<td>2N9161</td>
</tr>
<tr>
<td>Q4</td>
<td>DRIVER</td>
<td>PNP</td>
<td>2N9161</td>
<td>2N9161</td>
</tr>
<tr>
<td>Q5</td>
<td>AUDIO OUTPUT</td>
<td>NPN</td>
<td>2N9161</td>
<td>2N9161</td>
</tr>
</tbody>
</table>

Westinghouse
H-707P6GPA
CHASSIS V-2461-2
I.F. TRANSFORMERS:
The I.F. transformers incorporated in this receiver are of the new permeability tuned type. The advantage of this type is its extreme stability under various humidity and temperature conditions. In the upper coil is the secondary and in the lower the primary. When adjusting these I.F. transformers, the tuning wrench 68-26 can be inserted into the top plug, rotated until maximum output is obtained and then dropped down to the lower plug and the same operation repeated. The tuning wrench is so designed that turning one plug does not affect the adjustment of the other.

ALIGNMENT PROCEDURE

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>O SCILLATOR TO</th>
<th>DUMMY ANTENNA</th>
<th>INPUT SIG. FREQUENCY</th>
<th>SET DIAL AT</th>
<th>TRIMMERS</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Converter Grid</td>
<td>0.5 Mfd.</td>
<td>455 Kc.</td>
<td>600 Kc.</td>
<td>L3, L4, L5, L6</td>
<td>Align I.F. for max. output.</td>
</tr>
<tr>
<td>2</td>
<td>One Turn Loop</td>
<td>–</td>
<td>1000 Kc.</td>
<td>1000 Kc.</td>
<td>C1D</td>
<td>Set Osc. to Dial Scale.</td>
</tr>
<tr>
<td>3</td>
<td>Coupled Loosely to Wave magnet</td>
<td>–</td>
<td>1400 Kc.</td>
<td>1400 Kc.</td>
<td>C1B</td>
<td>Align Antenna Stage.</td>
</tr>
</tbody>
</table>
ZENITH RADIO CORPORATION

MODELS T315B, W & P CHASSIS 5MO6

Alignment Procedure

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>CONNECT OSCILLATOR TO</th>
<th>BANDY ANTENNA</th>
<th>INPUT SIG. FREQUENCY</th>
<th>SET DIAL AT</th>
<th>TRIMMERS</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Converter Grid</td>
<td>.5 MHZ</td>
<td>455 Kc.</td>
<td>600 Kc.</td>
<td>L3, 4, 5, 6</td>
<td>For I.F. Alignment</td>
</tr>
<tr>
<td>2</td>
<td>One Turn Loop Coupled</td>
<td>—</td>
<td>1600 Kc.</td>
<td>1600 Kc.</td>
<td>CID</td>
<td>Set Oscillator to Dial Scale</td>
</tr>
<tr>
<td>3</td>
<td>Low Pass to Wave Magnet</td>
<td>—</td>
<td>1400 Kc.</td>
<td>1400 Kc.</td>
<td>C1/B</td>
<td>Align Antenna Stage</td>
</tr>
</tbody>
</table>
VOLUME R-26, MOST-OFTEN-NEEDED 1966 RADIO SERVICING INFORMATION

ZENITH RADIO MODELS M504C, L & W USING CHASSIS 5M04, MODELS M506C, P & W USING CHASSIS 5M02 AND MODELS M508B, C, L & W USING CHASSIS 5M05

TUBE & TRIMMER LAYOUT CHASSIS 5M04

NOTES:
ALL VOLTAGES MEASURED FROM CHASSIS TO POINTS INDICATED WITH A VACUUM TUBE VOLTMETER HAVING 1000 OHM INPUT RESISTANCE.
USE ONLY 2N344 WITH NON-INDUCTIVE ELECTROLYTIC CAPACITORS FOR REPLACEMENT.
IF ANY OTHER TYPE OF CAPACITOR IS USED IT WILL BE NECESSARY TO ADJUST TUNING IN BATTERIES.
I.F. TRANSFORMER NUMBERING STARTS WITH T1 TERMINAL AS FIRST TERMINAL CLOCKWISE FROM MARKER CODE TERMINAL AS VIEWED FROM BOTTOM OF CASE.
I.F. FREQUENCY 455 KC.
TUNING RANGE 535 - 1620 KC.
ALL RESISTORS 1/2 WATT, CARBON UNLESS OTHERWISE SPECIFIED.

DENOTES CHASSIS

ALIGNMENT PROCEDURE

<table>
<thead>
<tr>
<th>OPER.</th>
<th>CONNECT OSCILLATOR TO</th>
<th>DUMMY ANT.</th>
<th>INPUT SIG. FREQUENCY</th>
<th>SET DIAL AT</th>
<th>TRIMMERS</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Converter Grid</td>
<td>.5 Mfd.</td>
<td>455 Kc.</td>
<td>600 Kc.</td>
<td>L3, L4, L5, L6</td>
<td>Align I.F. for max. output.</td>
</tr>
<tr>
<td>2</td>
<td>One Turn Loop</td>
<td>--</td>
<td>1600 Kc.</td>
<td>1600 Kc.</td>
<td>C1D</td>
<td>Set Osc. to Dial Scale.</td>
</tr>
<tr>
<td>3</td>
<td>Coupled Loosely</td>
<td>--</td>
<td>1400 Kc.</td>
<td>1400 Kc.</td>
<td>C1B</td>
<td>Align Antenna Stage</td>
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</table>
ZENITH RADIO CORPORATION

MODELS N506C, L & W – N508B, L & W USING CHASSIS 5N03

ALIGNMENT PROCEDURE

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<thead>
<tr>
<th>OPERATION</th>
<th>CONNECT OSCILLATOR TO</th>
<th>DUMMY ANTENNA</th>
<th>INPUT SIG. FREQUENCY</th>
<th>SET DIAL AT</th>
<th>TRIMMERS</th>
<th>PURPOSE</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Converter Grid</td>
<td>.5 Mfd.</td>
<td>455 Kc.</td>
<td>600 Kc.</td>
<td>L3,4,5,6</td>
<td>For I.F. Alignment</td>
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<tr>
<td>2</td>
<td>One Turn Loop Coupled</td>
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<td>1500 Kc.</td>
<td>1500 Kc.</td>
<td>CID</td>
<td>Set Oscillator to Diel Scale</td>
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<td>3</td>
<td>One Turn Loop Coupled</td>
<td></td>
<td>1400 Kc.</td>
<td>1400 Kc.</td>
<td>CIB</td>
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ZENITH RADIO CORPORATION

MODELS N516J, L & W USING CHASSIS 5N09
AND MODELS N519C, J, L, & W USING CHASSIS 5N07

ALIGNMENT PROCEDURE

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<thead>
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<th>OPERATION</th>
<th>CONNECT OSCILLATOR TO</th>
<th>DUMMY ANTENNA</th>
<th>INPUT SIG. FREQUENCY</th>
<th>SET DIAL AT</th>
<th>TRIMMERS</th>
<th>PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Converter Grid</td>
<td>.5 Mfd.</td>
<td>455 Kc.</td>
<td>600 Kc.</td>
<td>L3, L4, L5, L6</td>
<td>Align I.F. for max. output.</td>
</tr>
<tr>
<td>2</td>
<td>One Turn Loop</td>
<td>-</td>
<td>1600 Kc.</td>
<td>1600 Kc.</td>
<td>CID</td>
<td>Set Osc. to Dial Scale.</td>
</tr>
<tr>
<td>3</td>
<td>Coupled Loosely to Wave magnet</td>
<td>-</td>
<td>1400 Kc.</td>
<td>1400 Kc.</td>
<td>CIB</td>
<td>Align Antenna Stage.</td>
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</table>
ZENITH RADIO CORPORATION MODELS N615C, L & W CHASSIS 6N05

ALERT: All frequencies indicated are on the positive half cycle of the acetate record.

1. L2 DET. COIL
2. L3 OSC. COIL
3. L5 OSC. COIL

COLOR CODE:
- Red = Positive
- Black = Negative
- Brown = 0
- Red = Positive
- Black = Negative
- Brown = 0

LAMP SOCKET and WIRE ASSEMBLY

FILTER MAGNET

ANTENNA

TUBE POSITIONING GUIDE

ALIGNMENT PROCEDURE

<table>
<thead>
<tr>
<th>Operation</th>
<th>Connect Component(s)</th>
<th>Dummy Antenna</th>
<th>Input Sgm. Frequency</th>
<th>Set Volt Age</th>
<th>Trimmer(s)</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 1         | Converter Grid       | .5 Mfd.       | 455 Kc.             | 600 Kc.     | L4, L5, L6, L7 | For I.F. Alignment
| 2         | One Turn Loop Coupled | —             | 1600 Kc.            | 1600 Kc.    | C1F        | Set Oscillator for Dial Scale |
| 3         | Loosely to Wave Magnet| —             | 1400 Kc.            | 1400 Kc.    | C1D, C1B   | Align Detector and Antenna Stage |
MODEL ROYAL 710M ALL TRANSISTOR
PORTABLE RADIO CHASSIS 7MT44Z2

CHASSIS INFORMATION CHART

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<thead>
<tr>
<th>Chassis</th>
<th>Part No.</th>
<th>OSC.</th>
<th>Mixer</th>
<th>1st I.F.</th>
<th>2nd I.F.</th>
<th>Crystal</th>
<th>Driver</th>
<th>Output</th>
<th>Supplier</th>
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<td>7MT44Z2</td>
<td>Zenith E.A.</td>
<td>Type</td>
<td>121-258</td>
<td>2N1826</td>
<td>PNP</td>
<td>121-259</td>
<td>2N1824</td>
<td>PNP</td>
<td>121-260</td>
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<td></td>
<td>121-257</td>
<td>2N1824</td>
<td>PNP</td>
<td>121-259</td>
<td>2N1824</td>
<td>PNP</td>
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ALIGNMENT PROCEDURE

<table>
<thead>
<tr>
<th>Operation</th>
<th>Input Signal Frequency</th>
<th>Connect Inner Conductor From Oscillator To</th>
<th>Connect Outer Shield Conductor From Oscillator To</th>
<th>Set Dial At</th>
<th>Trimmers</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>1</td>
<td>655 KC</td>
<td>ONE TURN LOOSELY COUPLED TO WAVE MAGNET</td>
<td>Chassis</td>
<td>600 KC</td>
<td>Adj. T1, T2, T3 for maximum output.</td>
<td>For I.F. Alignment</td>
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<tr>
<td>2</td>
<td>1620 KC</td>
<td></td>
<td></td>
<td></td>
<td>CTC</td>
<td>Set trimmer to dialed scale.</td>
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<tr>
<td>3</td>
<td>600 KC</td>
<td></td>
<td></td>
<td></td>
<td>T6</td>
<td>Adjust T6 for maximum output while rocking gang.</td>
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<tr>
<td>4</td>
<td>REPEAT STEPS 2 &amp; 3</td>
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<td></td>
<td></td>
<td></td>
<td>Adjust for maximum output regardless of dial accuracy.</td>
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<tr>
<td>5</td>
<td>1260 KC</td>
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<td></td>
<td>C1A</td>
<td>Align loop ont.</td>
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NOTES:
1. RESISTORS ARE 1/2 WATT ±10% TOLERANCE UNLESS OTHERWISE SPECIFIED.
2. OBSERVE POLARITIES OF CAPACITORS.
3. * INDICATES RED DOT ON SPEAKERS.

SPECIFICATIONS
Power Supply..........................120V AC 60 Cycles
Current Consumption.....................27 Watts
Peak Power Output......................4 Watts per channel
Speakers...........................Two 4" PM, 16 ohm V.C.
...................................Two 5½" PM, 16 ohm V.C.
<table>
<thead>
<tr>
<th>Admiral Corp.</th>
<th>Admiral Cont.</th>
<th>Emerson Cont.</th>
<th>Magnavox</th>
<th>Motorola</th>
<th>General Electric</th>
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<td>6</td>
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<td>R252</td>
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<td>4M4</td>
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<td>5V6,A</td>
<td>12</td>
<td>SRC2201 7</td>
<td>32P11 28</td>
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<td>5G6</td>
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<td>SMG2605 7</td>
<td>32P12 27</td>
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<td>8A4</td>
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<td>8F3</td>
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(Index continued on page 176)