

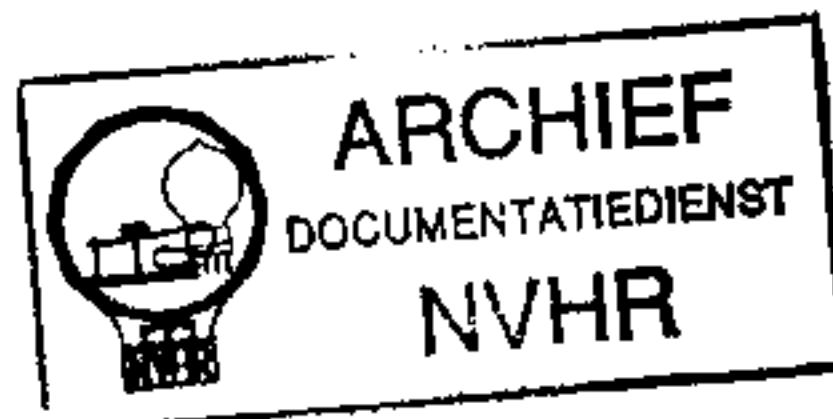
PHOTOFACT® Folder

with CIRCUITRACE®

**REALTONE
MODEL TR-2021**

Met dank aan Jef Bos

Ned. Ver. v. Historie v/d Radio



| | | | |
|--------------------------|--|------------|--|
| TRADE NAME | Realtone Model TR-2021 | | |
| SUPPLIER | Realtone Electronics, 71 Fifth Ave., New York 3, N. Y. | | |
| TYPE SET | Battery Operated 10 Transistor Portable AM-FM Receiver | | |
| POWER SUPPLY | 6 Volts DC | RATING | AM: 12MA @ 6 Volts DC (No Signal, Min. Volume) 16MA @ 6 Volts DC (Signal, Normal Volume) FM: 16MA @ 6 Volts DC (No Signal, Min. Volume) 20MA @ 6 Volts DC (Signal, Normal Volume) |
| TUNING RANGE — BROADCAST | 540 — 1620KC | FREQ. MOD. | 88 — 108MC |

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:

A1 thru A13.....GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541

AM ALIGNMENT — SELECTOR SWITCH IN AM POSITION

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | INDICATOR | ADJUST | REMARKS |
|----|---|----------------------------|------------------------------|--|------------|---|
| 1. | Fashion loop of several turns of wire and radiate signal into loop of receiver. | 455KC (Unmod.) | (AM) Tuning gang fully open. | DC probe of VTVM to point \diamond , common to ground. | A1, A2, A3 | Adjust for maximum deflection. |
| 2. | " | 1620KC | " | " | A4 | " |
| 3. | " | 600KC | 600KC | " | A5 | Adjust for maximum deflection while rocking tuning gang. Repeat step 2. |
| 4. | " | 1400KC | 1400KC | " | A6 | Adjust for maximum deflection. |

FM ALIGNMENT — SELECTOR SWITCH IN FM POSITION

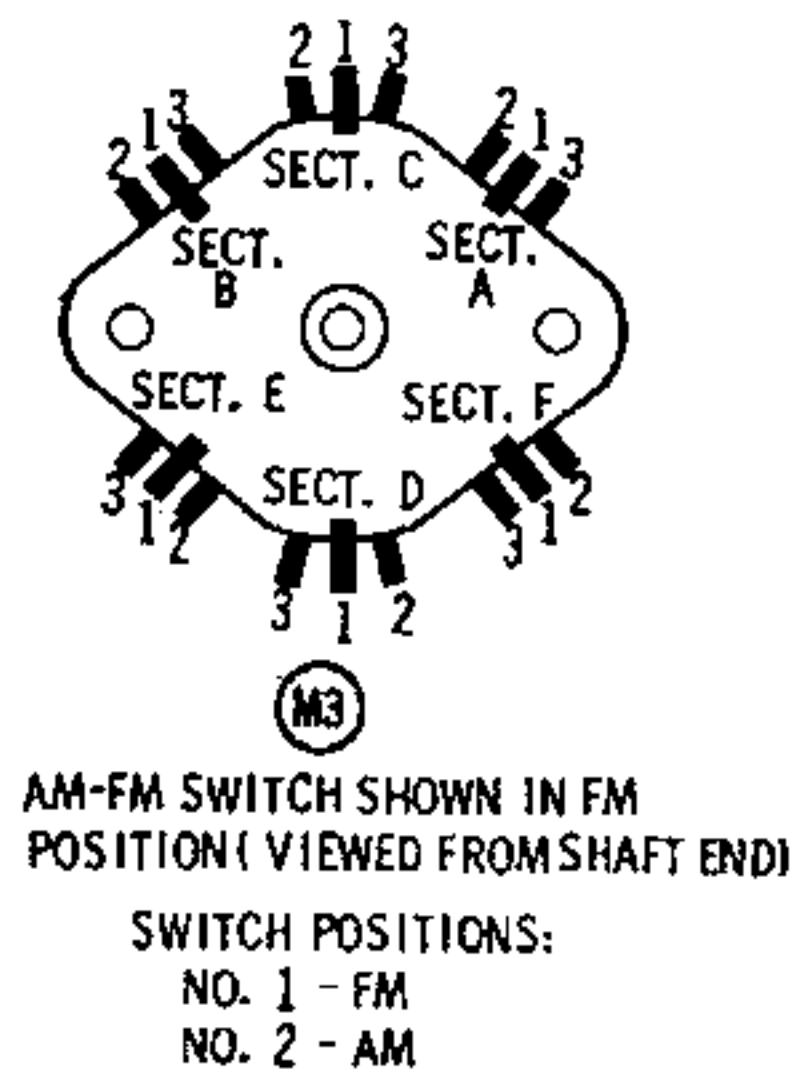
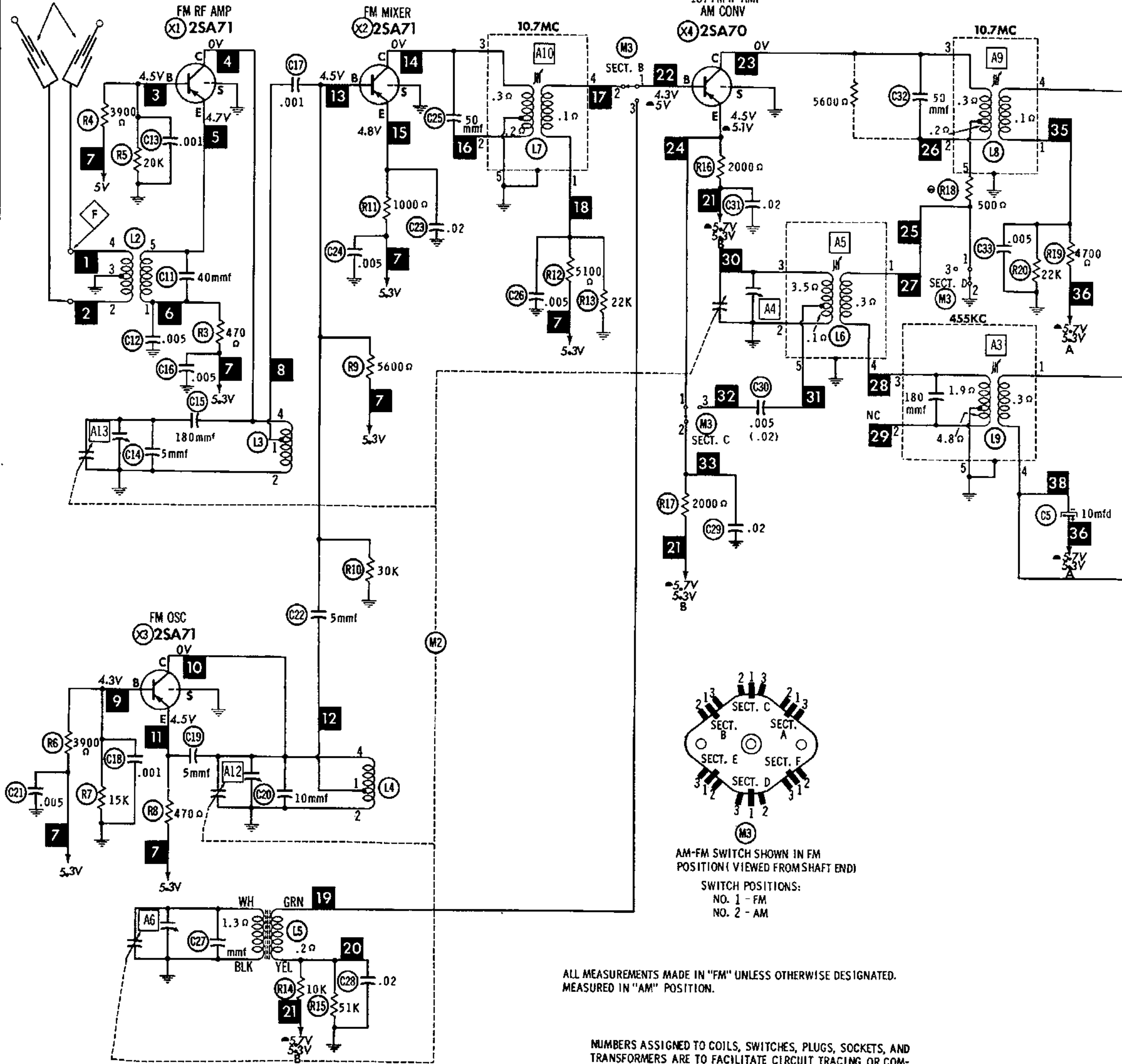
| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | INDICATOR | ADJUST | REMARKS |
|----|------------------------------|----------------------------|------------------------------|--|-----------------|--|
| 1. | Across FM antenna terminals. | 10.7MC (Unmod.) | (FM) Tuning gang fully open. | DC probe of VTVM to point \diamond , common to ground. | A7, A8, A9, A10 | Adjust for maximum deflection. |
| 2. | " | " | " | DC probe to point \diamond , common to ground. | All | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |
| 3. | " | 108MC | " | DC probe to point \diamond , common to ground. | A12 | Adjust for maximum deflection. |
| 4. | " | 106MC | 106MC | " | A13 | " |

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement LF614

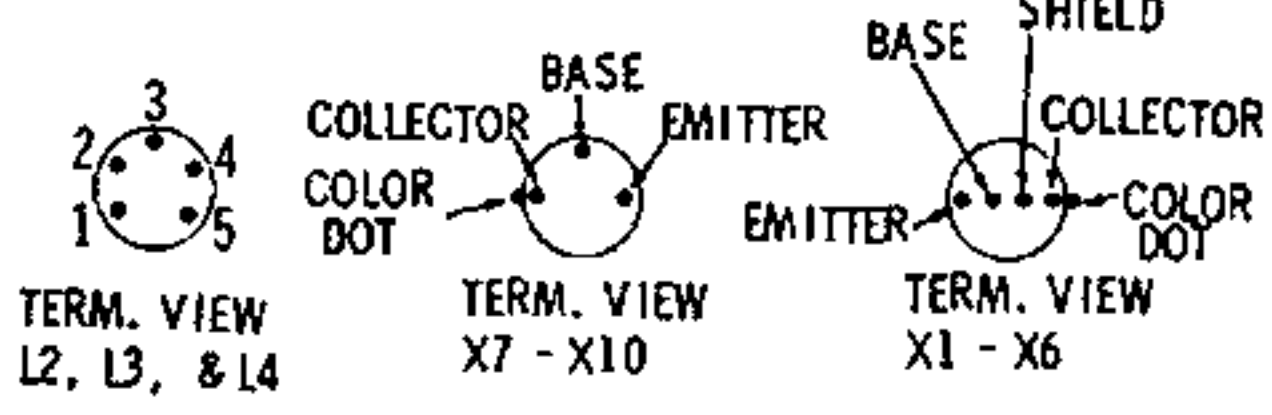
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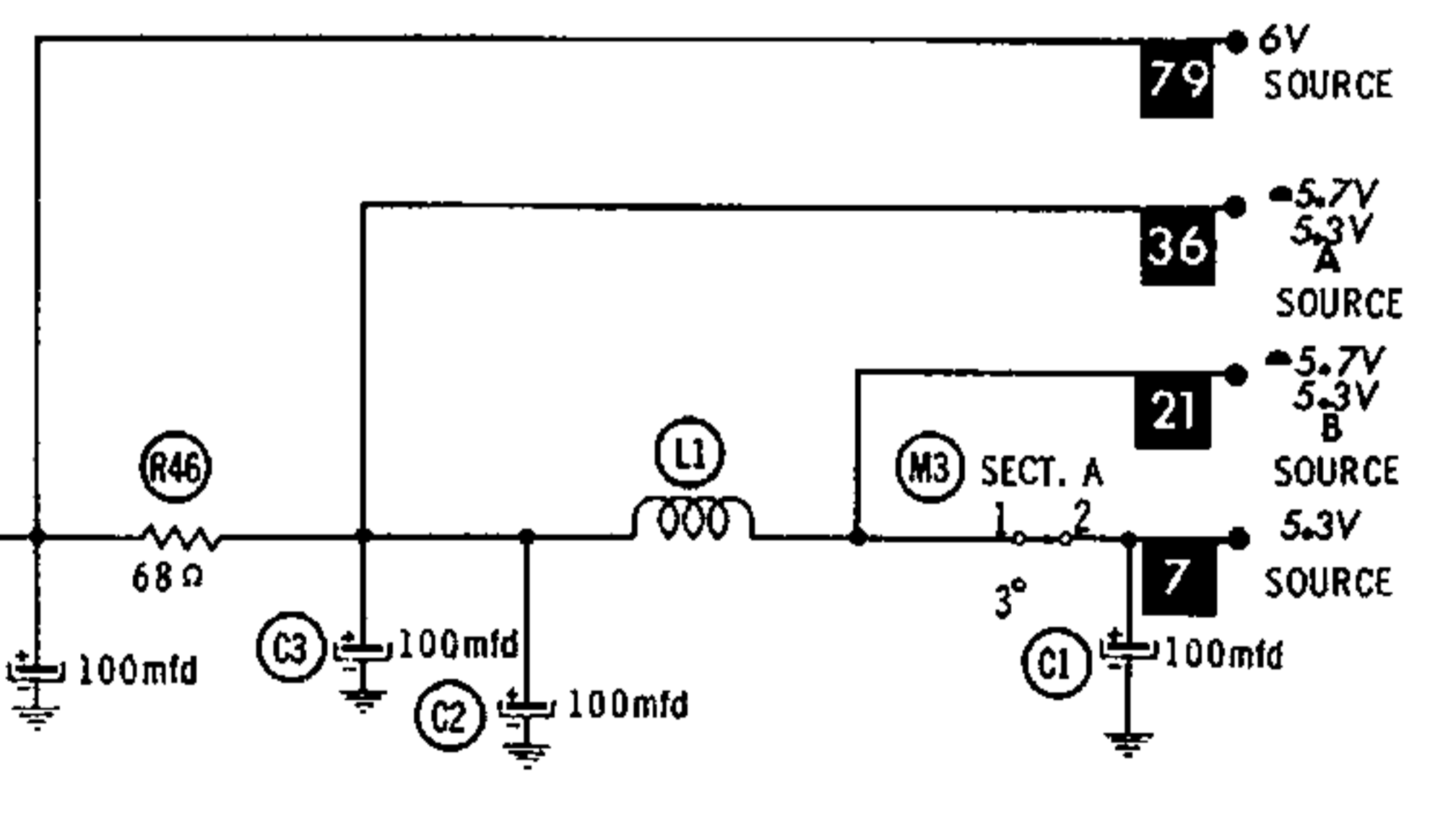
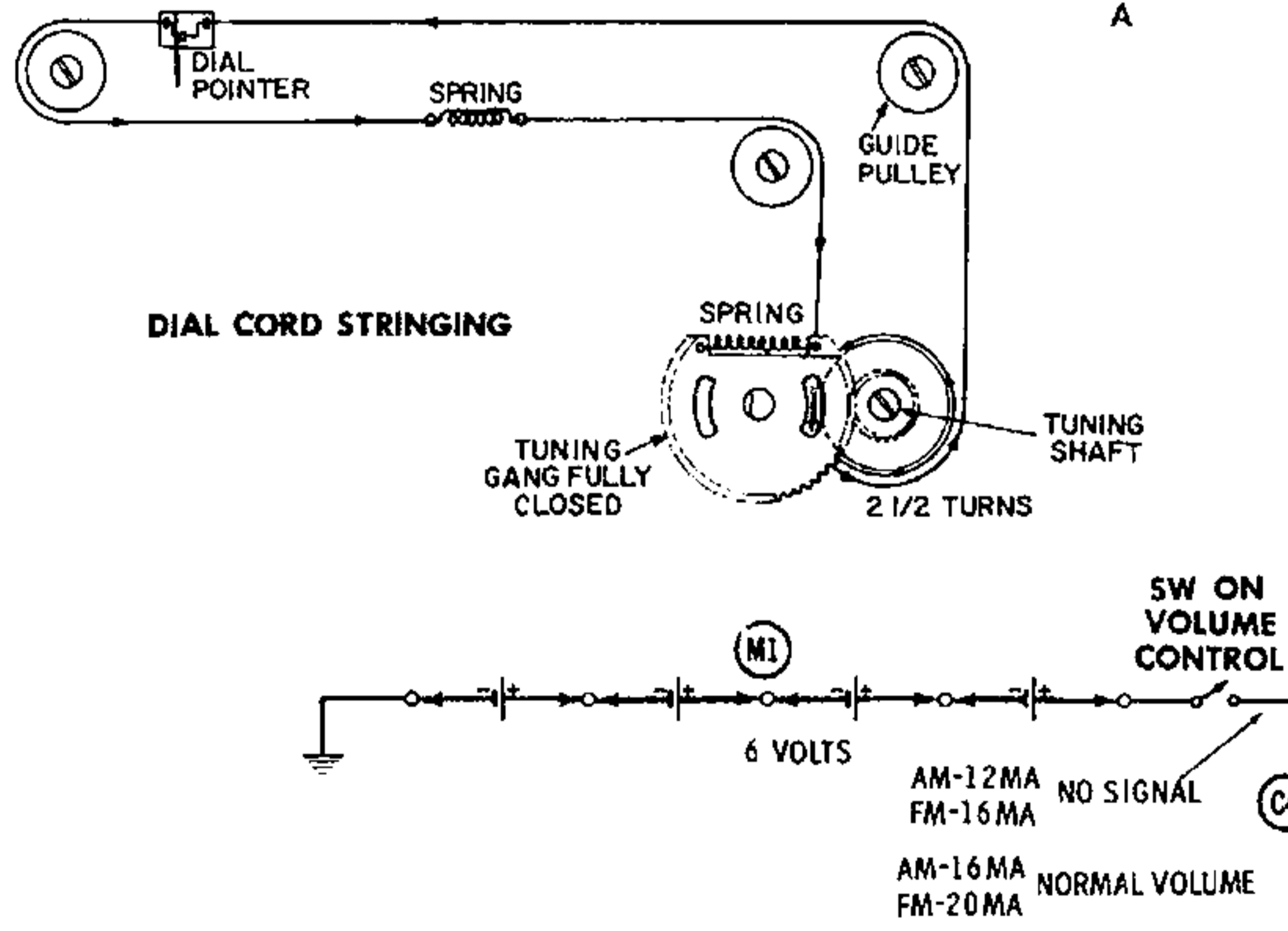
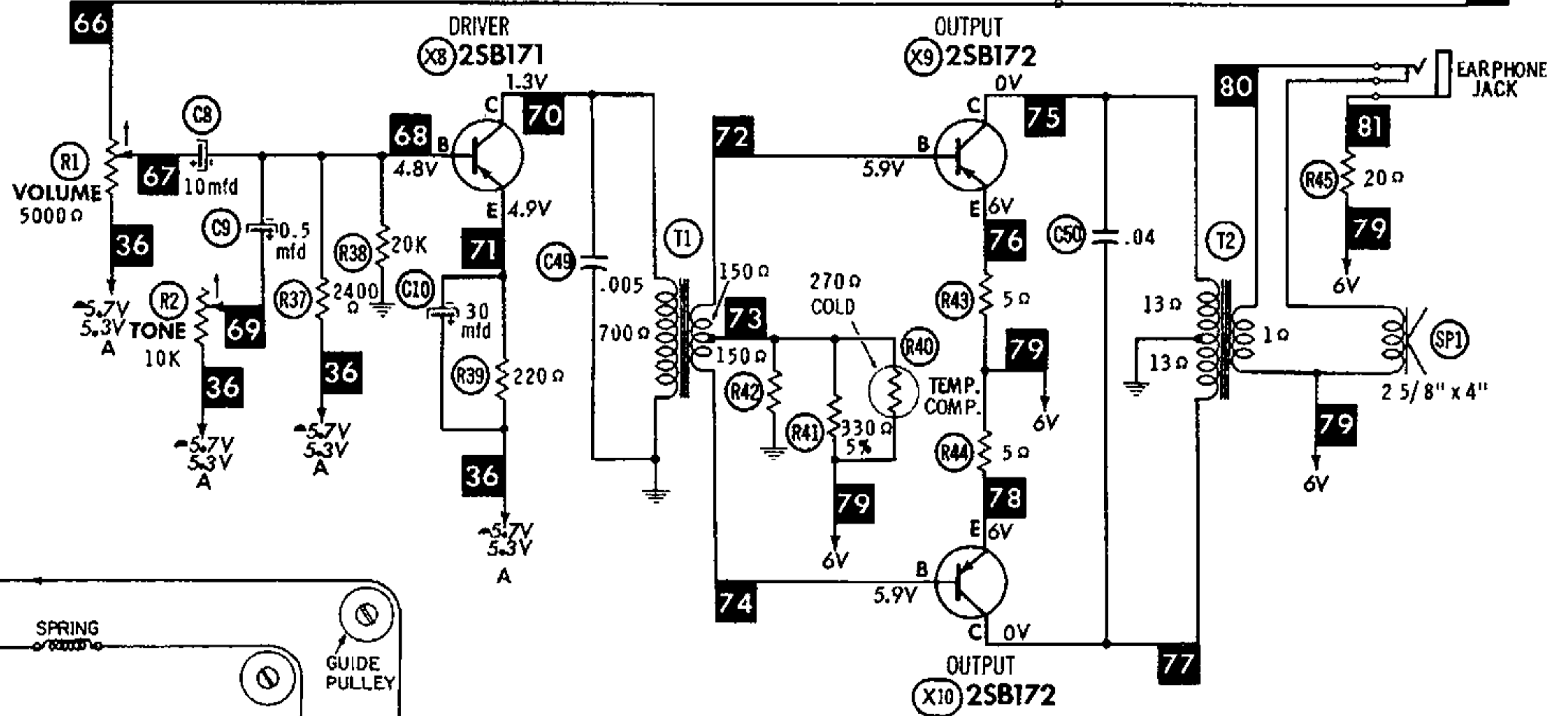
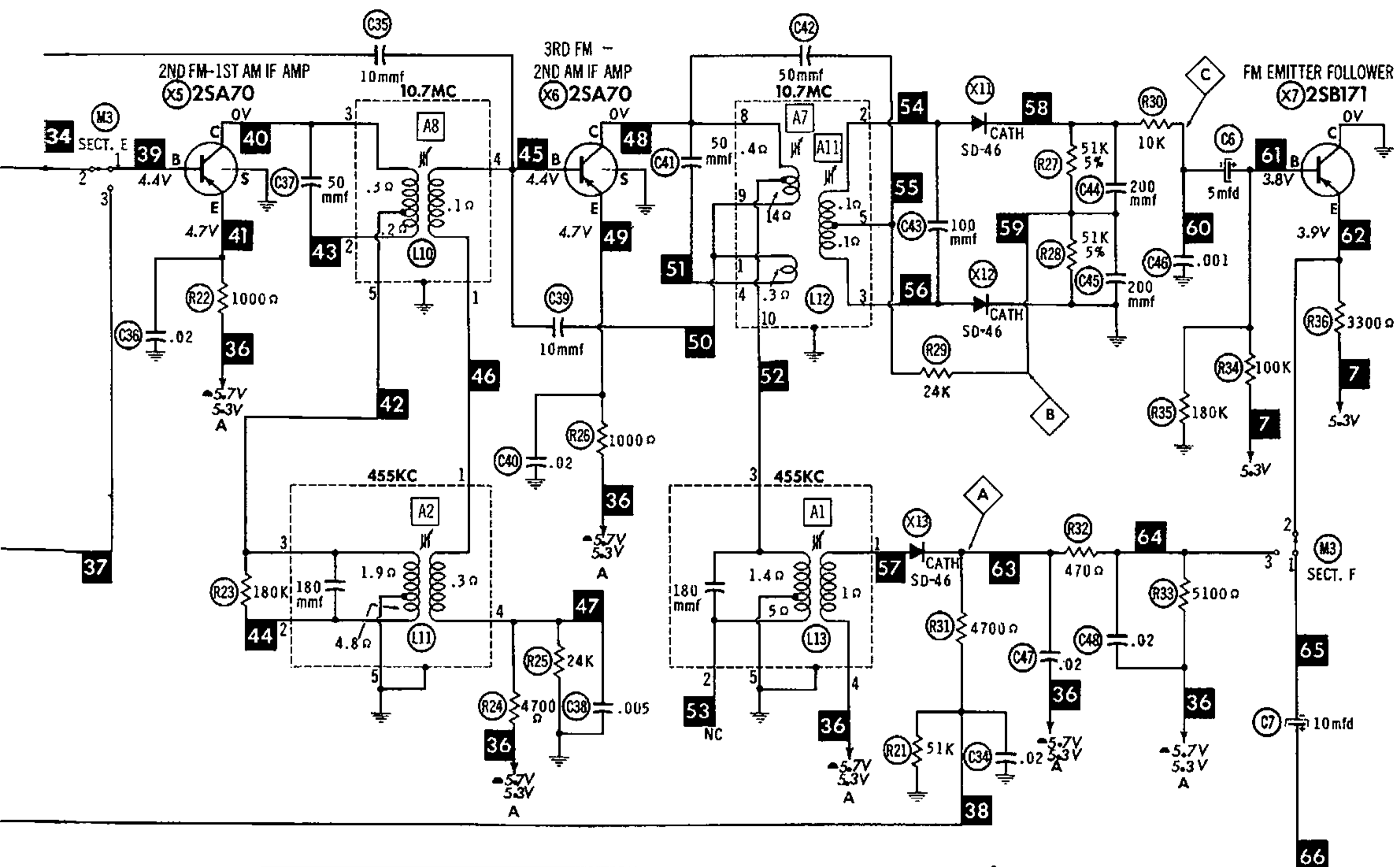


ALL MEASUREMENTS MADE IN "FM" UNLESS OTHERWISE DESIGNATED. MEASURED IN "AM" POSITION.

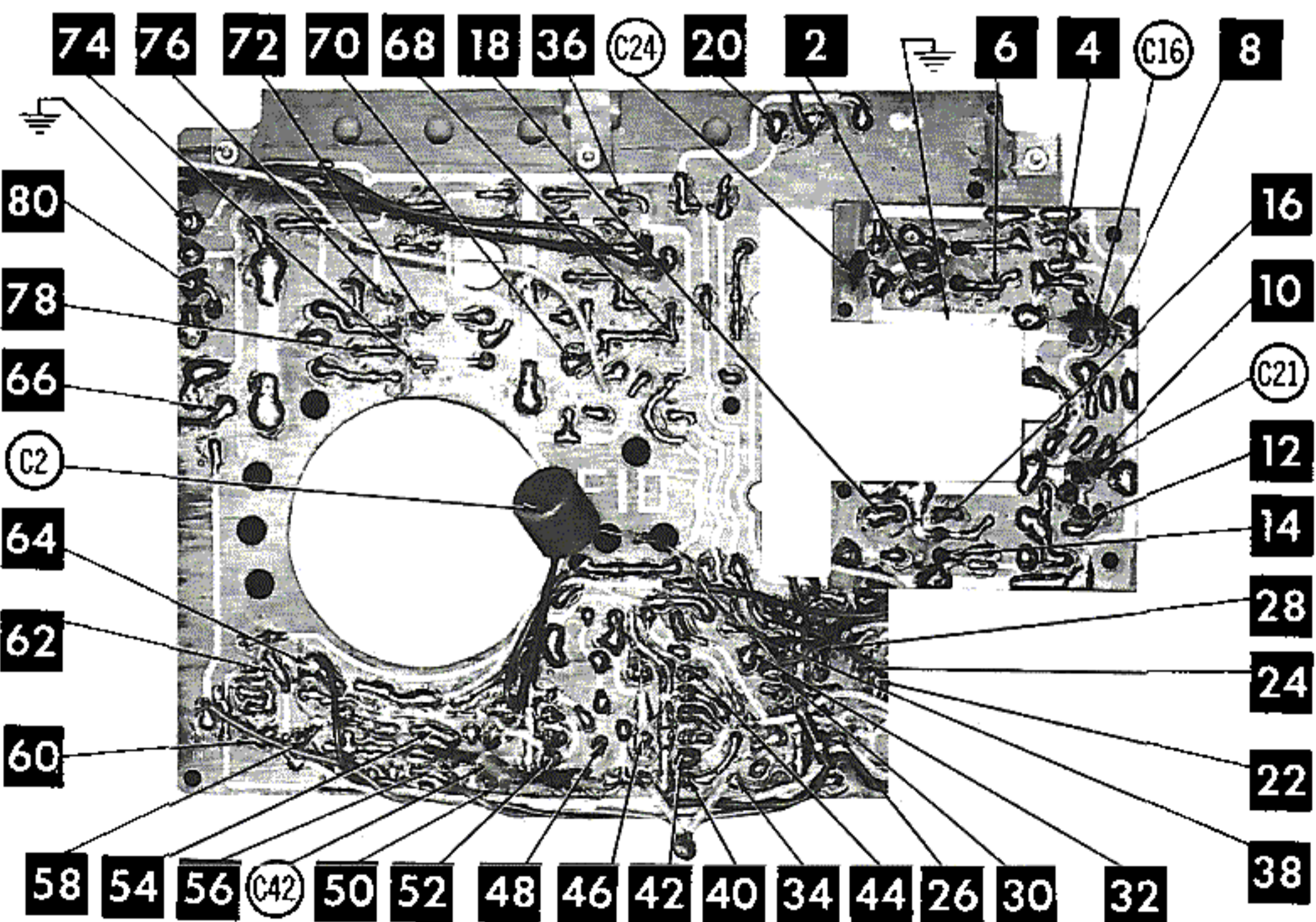
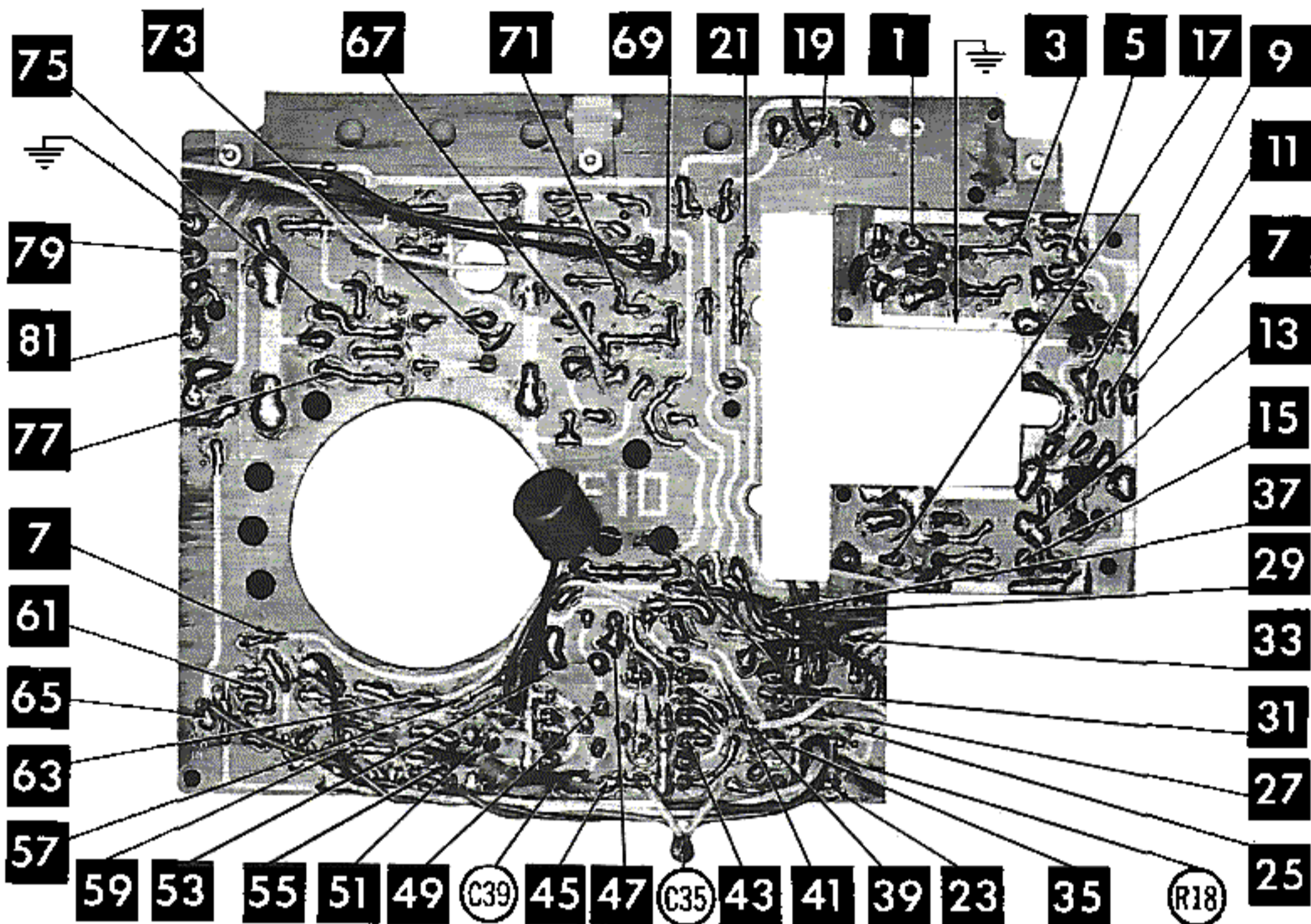
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

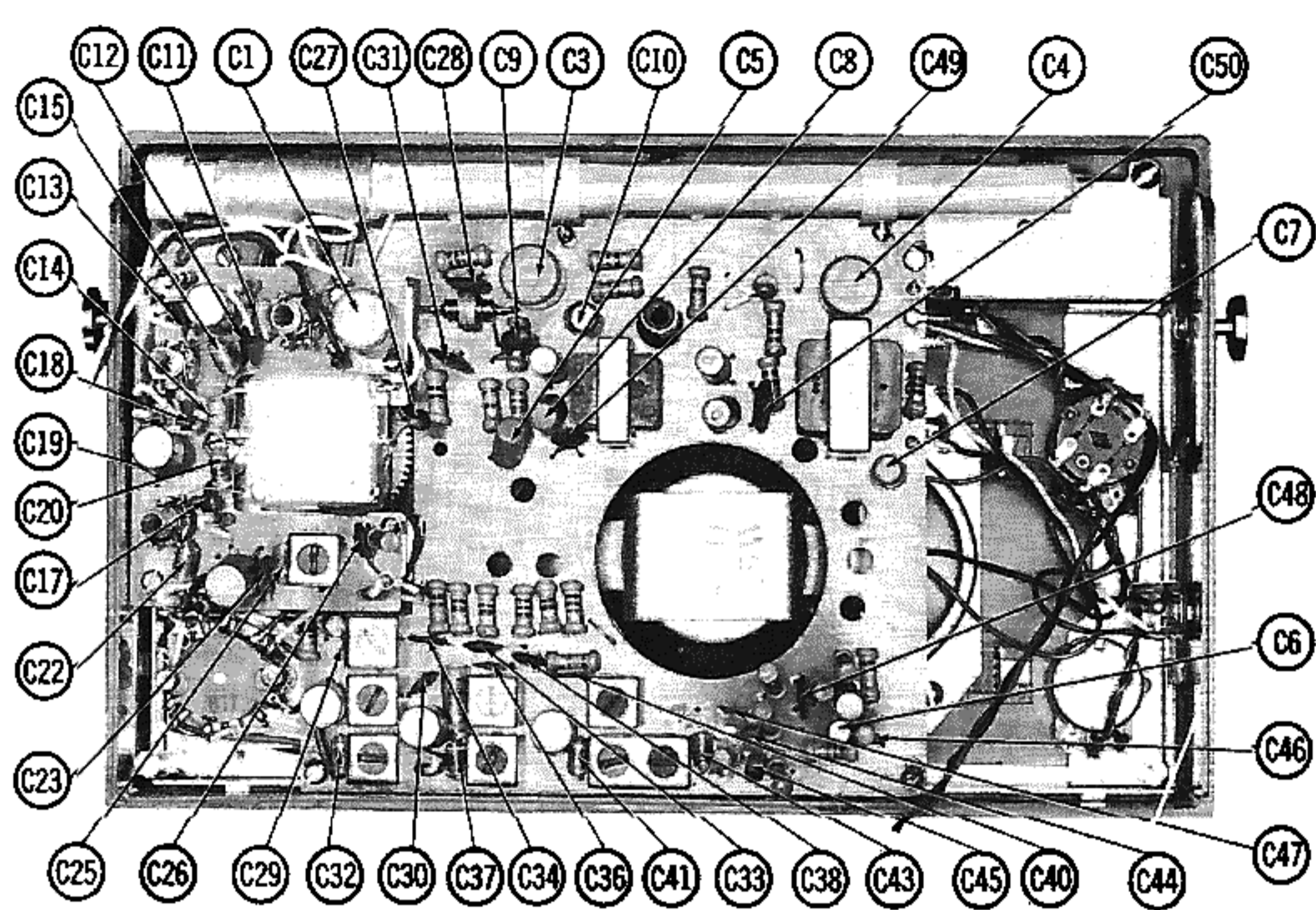


- SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
- RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
- DC voltage measurements taken with vacuum tube voltmeter.
 - Socket connections or transistor terminals are shown as bottom views.
 - Measured values are from socket pin or terminal to common ground.
 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
 - Volume control at maximum, no signal applied for voltage measurements.
- A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

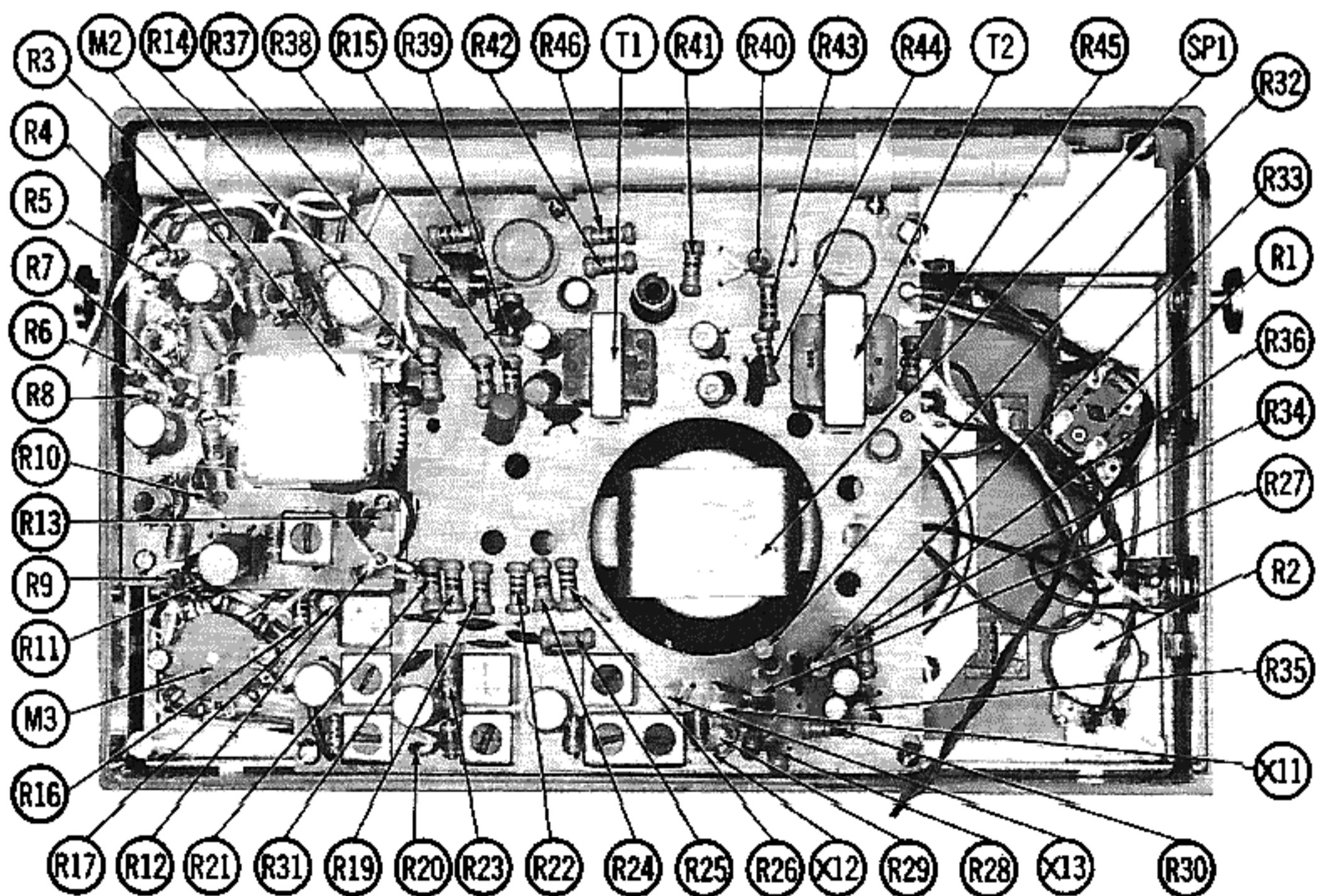


REALTONE MODEL TR-2021

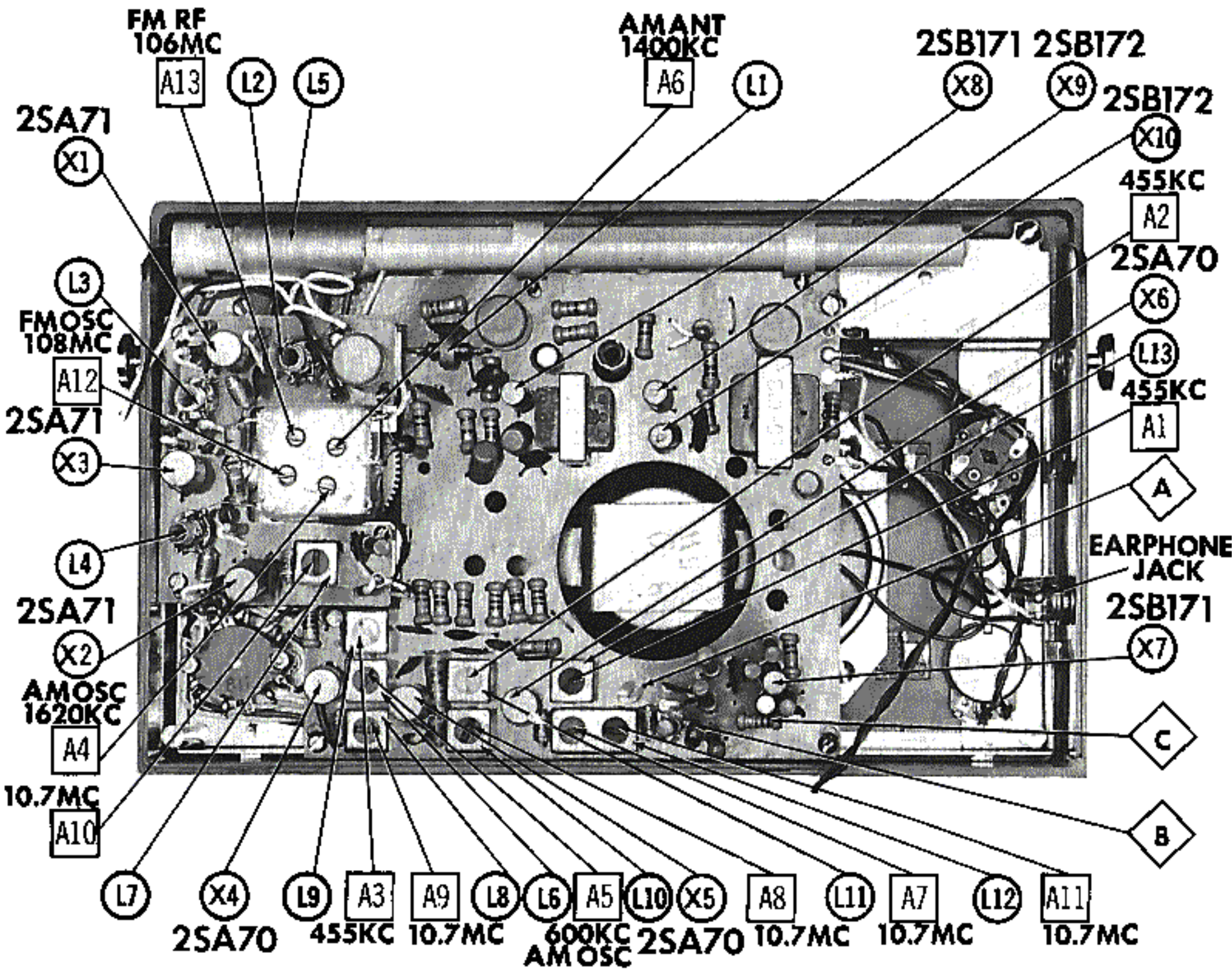




CHASSIS TOP VIEW - CAPACITOR IDENT.



CHASSIS TOP VIEW - RESISTOR, DIODE & MISC. IDENT.



CHASSIS TOP VIEW - ALIGNMENT, TRANSISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTION

TRANSISTORS

| ITEM No. | ORIG. TYPE | USE | REPLACEMENT DATA | | | NOTES |
|----------|------------|--------------------------|------------------|---------------------------|--------------|-------|
| | | | DELCO PART No. | GENERAL ELECTRIC PART No. | RCA PART No. | |
| X1 | 2SA71 | FM RF Amplifier | DS25 | GE-1 | | PNP |
| X2 | 2SA71 | FM Mixer | DS25 | GE-1 | | PNP |
| X3 | 2SA71 | FM Oscillator | DS25 | GE-1 | | PNP |
| X4 | 2SA70 | 1st FM IF Amp. -AM Conv. | DS25 | GE-1 | | PNP |
| X5 | 2SA70 | 2nd FM-1st AM IF Amp. | DS25 | GE-1 | | PNP |
| X6 | 2SA70 | 3rd FM-2nd AM IF Amp. | DS25 | GE-1 | | PNP |
| X7 | 2SB171 | FM Emitter Follower | DS26 | GE-2 | 2N406 | PNP |
| X8 | 2SB171 | Driver | DS26 | GE-2 | 2N406 | PNP |
| X9 | 2SB172 | Output | DS26 | GE-2 | 2N408 | PNP |
| X10 | 2SB172 | Output | DS26 | GE-2 | 2N408 | PNP |

POWER RECTIFIERS & SIGNAL DIODES

| ITEM No. | CURRENT RATING (Measured) | ORIGINAL Part or Type No. | RECTIFIERS | | DIODES | NOTES |
|----------|---------------------------|---------------------------|--------------|-------------------------|--------|---------------|
| | | | RCA PART No. | SARKES TARZIAN PART No. | | |
| X11 | | SD46 | | | | Discriminator |
| X12 | | SD46 | | | | AM Detector |
| X13 | | SD46 | | | | |

ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REALTONE PART No. | REPLACEMENT DATA | | | | | |
|----------|--------|-------|-------------------|------------------|---------------------------|---------------------------|------------------|------------------|------------------|
| | CAP. | VOLT. | | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
| C1 | 100 | 6 | | PTT30 | NLW100-12 | MT1-18 | TT6X100 | MLV100-6 | TE-1102 |
| C2 | 100 | 6 | | BCD6100 | ECPB117 | MT1-18 | PET1400 | MLV100-6 | VL-1100 |
| C3 | 100 | 6 | | BCD6100 | ECPB117 | MT1-18 | PET1400 | MLV100-6 | VL-1100 |
| C4 | 100 | 6 | | BCD6100 | ECPB117 | MT1-18 | PET1400 | MLV100-6 | VL-1100 |
| C5 | 10 | 6 | | BCD6010 | ECPB408 | MT1-5 | PET1340 | MLV10-6 | VL-1087 |
| C6 | 5 | 6 | | BCD6005 | ECPB405 | MT1-3 | TT6X5 | MLV5-6 | VL-1084 |
| C7 | 10 | 6 | | BCD6010 | ECPB408 | MT1-5 | PET1340 | MLV10-6 | VL-1087 |
| C8 | 10 | 6 | | BCD6010 | ECPB408 | MT1-5 | PET1340 | MLV10-6 | VL-1087 |
| C9 | .5 | 6 | | BCD6001 | ECPB401 | MT1-1 | TT12X1 | MLV2-6 | VL-1080 |
| C10 | 30 | 6 | | BCD6025 | ECPB412 | MT1-10 | TT6X30 | MLV30-6 | VL-1090 |

FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|----------|--------|---------|------------------|--------------------|---------------------------|-------------------|------------------|------------------|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCOR PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C11 | 40 | | CI-39 | TCZ-39 | C10Q39C | CCTO-390 | CNO-439 | 10TCC-Q39 |
| C12 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C13 | .001 | | DI-1000 | DM-102 | H05D1 | CCD-102 | GP210 | 10TS-D10 |
| C14 | 5 | | CI-5 | TCZ-4R7 | C10V5C | CCTO-050 | CNO-550 | 10TCC-V50 |
| C15 | 180 | | CI-180 | TCZ-180 | C10T18U | CCD-181 | CNO-318 | 10TCU-T18 |
| C16 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C17 | .001 | | DI-1000 | DM-102 | H05D1 | CCD-102 | GP210 | 10TS-D10 |
| C18 | .001 | | DI-1000 | DM-102 | H05D1 | CCD-102 | GP210 | 10TS-D10 |
| C19 | 5 | | CI-5 | TCZ-4R7 | C10V5C | CCTO-050 | CNO-550 | 10TCC-V50 |
| C20 | 10 | | CI-10 | TCZ-10 | C10Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C21 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C22 | 5 | | CI-5 | TCZ-4R7 | C10V5C | CCTO-050 | CNO-550 | 10TCC-V50 |
| C23 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C24 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C25 | 50 | | C80V47LAM | TCZ-50 | C10Q5C | CCTO-510 | CNO-450 | 10TCC-Q50 |
| C26 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C27 | 5 | | CI-5 | TCZ-4R7 | C10V5C | CCTC-050 | CNO-550 | 10TCC-V50 |
| C28 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C29 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C30 | .005 | (.02) † | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C31 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C32 | 50 | | C80V47LAM | TCZ-50 | C10Q5C | CCTO-510 | CNO-450 | 10TCC-Q50 |
| C33 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C34 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C35 | 10 | | DI-10 | TCZ-10 | C10Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C36 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C37 | 50 | | C80V47LAM | TCZ-50 | C10Q5C | CCTO-510 | CNO-450 | 10TCC-Q50 |
| C38 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C39 | 10 | | DI-10 | TCZ-10 | C10Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C40 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C41 | 50 | | C80V47LAM | TCZ-50 | C10Q5C | CCTO-510 | CNO-450 | 10TCC-Q50 |
| C42 | 50 | | C80V47LAM | TCZ-50 | C10Q5C | CCTO-510 | CNO-450 | 10TCC-Q50 |
| C43 | 100 | | C80V101AM | TCZ-100 | C10T1C | CCTO-101 | CNO-310 | 10TCC-T10 |
| C44 | 200 | | C80V221AM | TCZ-200 | C10T2U | CCD-201 | GP320 | 10TS-T20 |
| C45 | 200 | | C80V221AM | TCZ-200 | C10T2U | CCD-201 | GP320 | 10TS-T20 |
| C46 | .001 | | DI-1000 | DM-102 | H05D1 | CCD-102 | GP210 | 10TS-D10 |
| C47 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C48 | .02 | | TTD-02 | CK-203 | H05S2 | | TA-120 | TG-S20 |
| C49 | .005 | | TTD-005 | CK-502 | H05D5 | CCD-502 | TA-250 | TG-D50 |
| C50 | .04 | | TTD-05 | CK-503 | H05S5 | | | TG-S50 |

† Alternate.

CONTROLS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | USE | RESISTANCE | REPLACEMENT DATA | | | | |
|----------|----------------------|------------|-------------------|--------------------|--------------------|------------------|------------------|
| | | | REALTONE PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. |
| R1 | Volume & Switch Tone | 5000Ω | RV-040 | | | | |
| R2 | | 10K | RV-077 | | | | |

PARTS LIST AND DESCRIPTION (CONTINUED)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|----------|--------|------------------|------------------|---------|----------|-------------|------------------|------------------|---------|
| | | IRC PART No. | WORKMAN PART No. | REMARKS | | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R3 | 470Ω | | | | R25 | 24K | | | |
| R4 | 3900Ω | | | | R26 | 1000Ω | | | |
| R5 | 20K | | | | R27 | 51K 5% | | | |
| R6 | 3900Ω | | | | R28 | 51K 5% | | | |
| R7 | 15K | | | | R29 | 24K | | | |
| R8 | 470Ω | | | | R30 | 10K | | | |
| R9 | 5600Ω | | | | R31 | 4700Ω | | | |
| R10 | 30K | | | | R32 | 470Ω | | | |
| R11 | 1000Ω | | | | R33 | 5100Ω | | | |
| R12 | 5100Ω | | | | R34 | 100K | | | |
| R13 | 22K | | | | R35 | 180K | | | |
| R14 | 10K | | | | R36 | 3300Ω | | | |
| R15 | 51K | | | | R37 | 2400Ω | | | |
| R16 | 2000Ω | | | | R38 | 20K | | | |
| R17 | 2000Ω | | | | R39 | 220Ω | | | |
| R18 | 500Ω | | | Note 1 | R40 | 270Ω (Cold) | | | #D-32S |
| R19 | 4700Ω | | | | R41 | 330Ω 5% | | | |
| R20 | 22K | | | | R42 | 4300Ω | | | |
| R21 | 51K | | | | R43 | 5.1Ω 5% | | | |
| R22 | 1000Ω | | | | R44 | 5.1Ω 5% | | | |
| R23 | 180K | | | | R45 | 20Ω | | | |
| R24 | 4700Ω | | | | R46 | 68Ω | | | |

Note 1. Not used in some versions.
Realtone Part Number.

COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|----------|---------------|-------------------|----------------|-----------------|------------------|------------------|-------|
| | | REALTONE PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman PART No. | |
| L1 | Choke (100uh) | | | | | | |
| L2 | FM Ant. | HB-015 | | | | | |
| L3 | FM RF | HK-015 | | | | | |
| L4 | FM Osc. | HQ-015 | | | | | |
| L5 | AM Ant. | HA-011 | | | | | |
| L6 | AM Osc. | HO-035 | | | | | |
| L7 | 1st FM IF | HF-021 | | | | | |
| L8 | 2nd FM IF | HF-021 | | | | | |
| L9 | 1st AM IF | HI-025 | BC-574 | | | | |
| L10 | 3rd FM IF | HF-021 | | | | | |
| L11 | 2nd AM IF | HI-025 | BC-575 | | | | |
| L12 | Discriminator | HF-041 | | | | | |
| L13 | 3rd AM IF | HI-035 | BC-576 | | | | |

TRANSFORMER (DRIVER)

| ITEM No. | TURNS RATIO | | REPLACEMENT DATA | | | | | NOTES |
|----------|-------------|------|-------------------|----------------|------------------|---------------------|----------------|-------|
| | PRI. | SEC. | REALTONE PART No. | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. | |
| T1 | 1 | 1 | LI-012 | | | | | |

TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | NOTES |
|----------|-----------|------|-------------------|----------------|------------------|---------------------|----------------|-------|
| | PRI. | SEC. | REALTONE PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 200Ω CT | 6-8Ω | LO-013 | | | | | |

SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|----------|-------------|-------|------------|-------------------|---------------|-------|
| | SIZE | FIELD | V. C. IMP. | REALTONE PART No. | QUAM PART No. | |
| SP1 | 2 5/8" x 4" | PM | 6-8Ω | AS-100 | | |

BATTERIES

| ITEM No. | VOLTAGE | REALTONE PART No. | REPLACEMENT DATA | | | NOTES |
|----------|---------|-------------------|------------------|----------|---------|------------|
| | | | BURGESS | EVEREADY | MALLORY | |
| M1 | 1 1/2V | 1704 | 130 | 635 | M-14R | 4 Required |

MISCELLANEOUS

| ITEM No. | PART NAME | REALTONE PART No. | NOTES |
|----------|-------------|-------------------|---|
| M2 | Tuning Cap. | CV-045 | 4 Gang (AM Ant. 10-199mmf, AM Osc. 8-87mmf, FM RF 5-19mmf, FM Osc. 6-23mmf) FM-AM Selector |
| M3 | Switch | SH-040 | |

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|--|---|
| Dial Pointer Knob Cabinet Cabinet Front Cabinet Rear Battery Cover | F10-1018 F10-0005 C-2021 F10-0001 F10-0002 F10-0003 | Volume, Tuning, Tone, Selector Complete, with all Metal Trim |

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid 22AWG) Available in 12 Colors
8524 (Stranded 22AWG)
8570 (Stranded 26AWG)