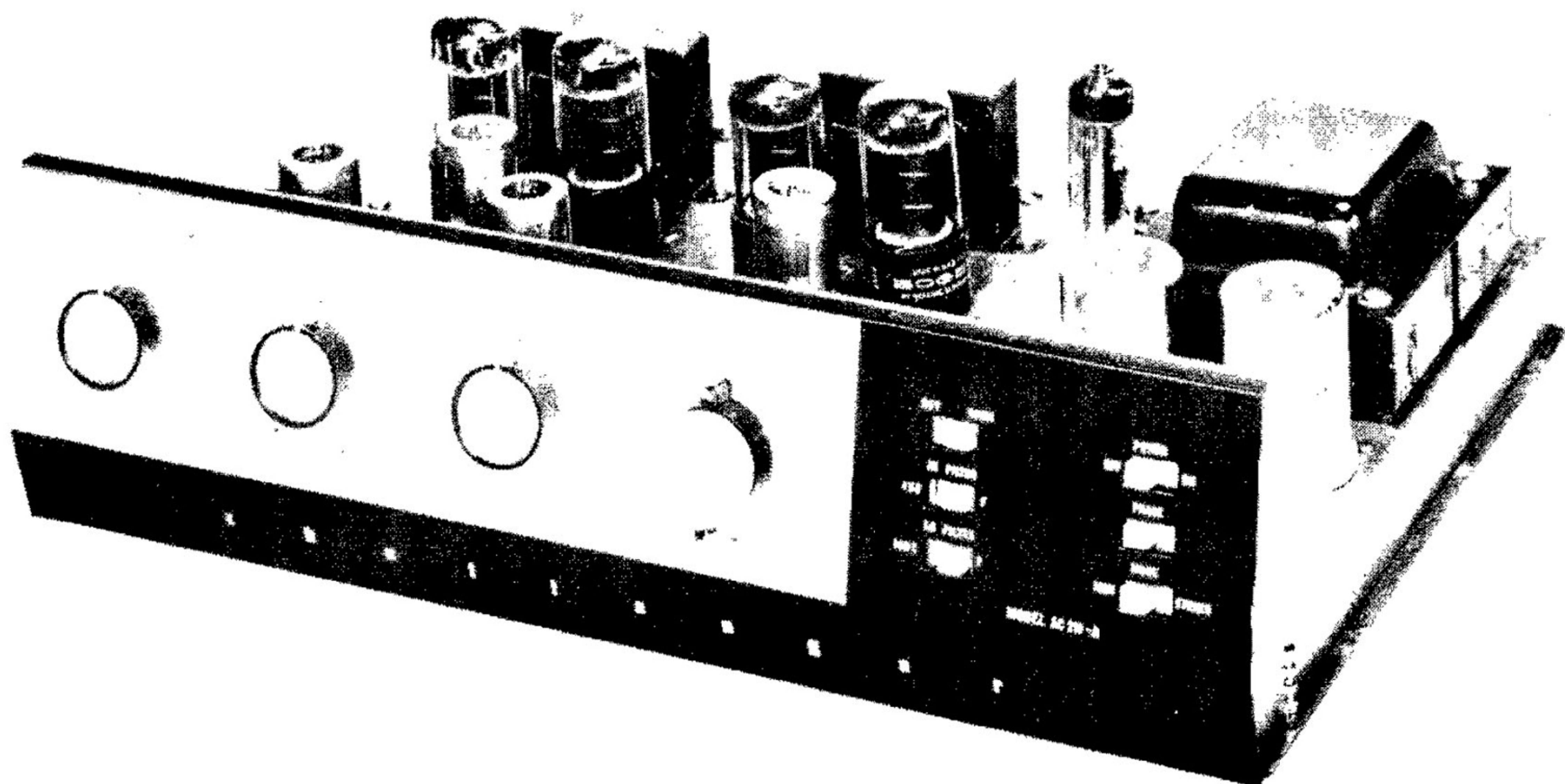
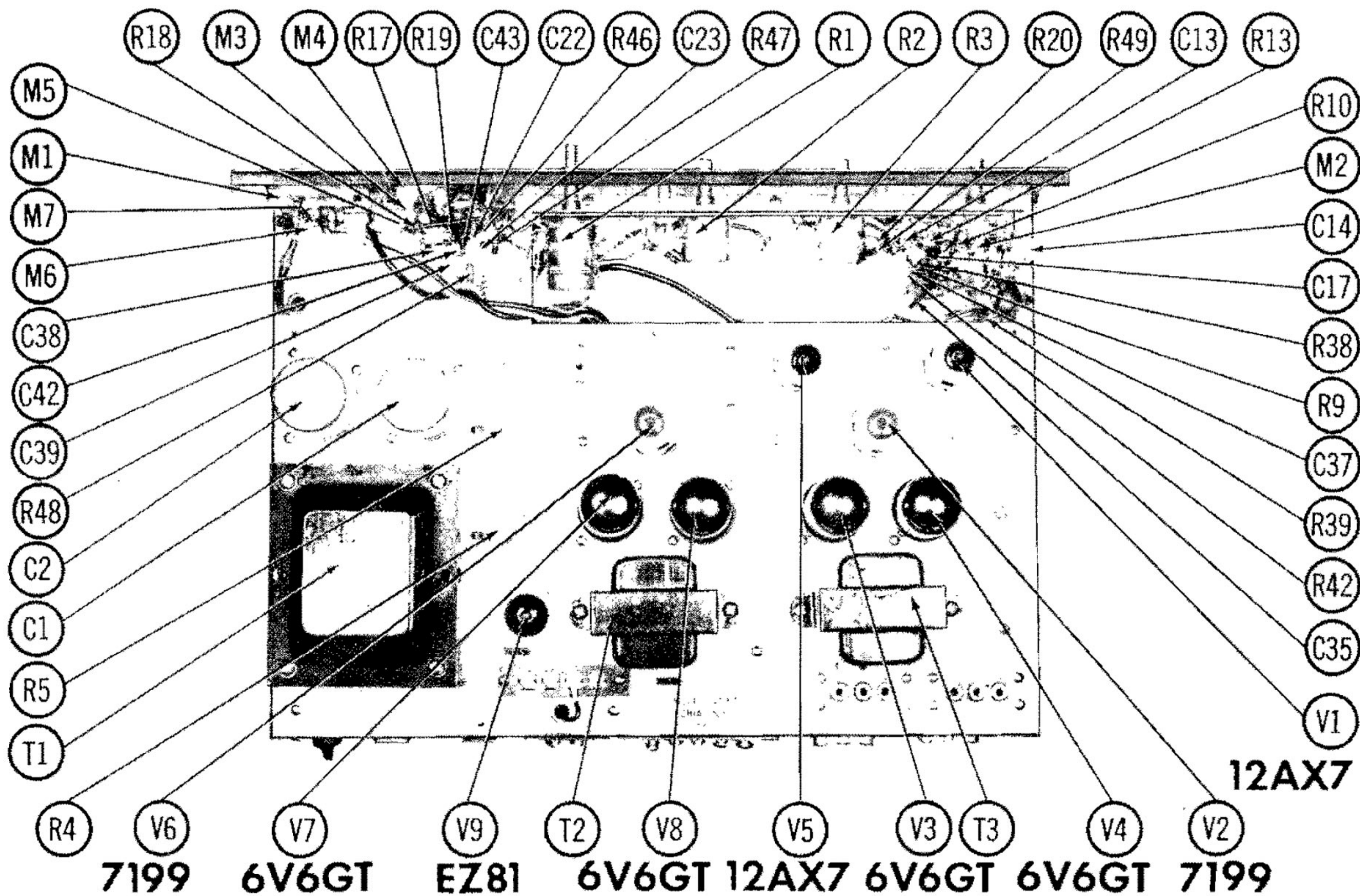


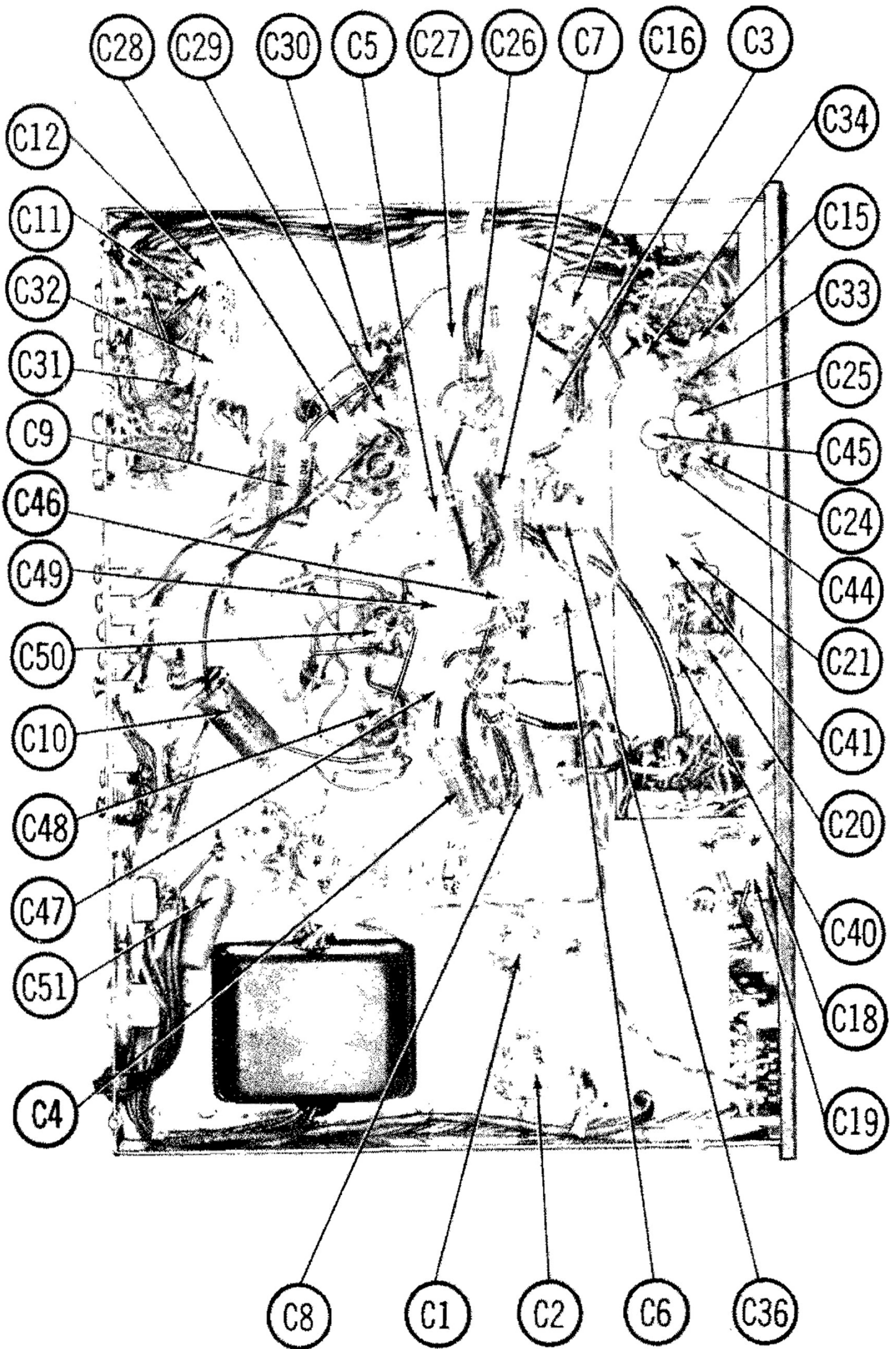
# CHALLENGER MODEL AC210A



|              |  |        |                                 |
|--------------|--|--------|---------------------------------|
| TRADE NAME   | Challenger Model AC210A  |        |                                 |
| MANUFACTURER | Bogen-Presto Co., A Div. of the Siegler Corp., P. O. Box 500, Paramus, N. J. |        |                                 |
| TYPE SET     | AC Operated 9 Tube Stereo Amplifier  |        |                                 |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles  | RATING | 92 Watts, .9 Amp. @117 Volts AC |

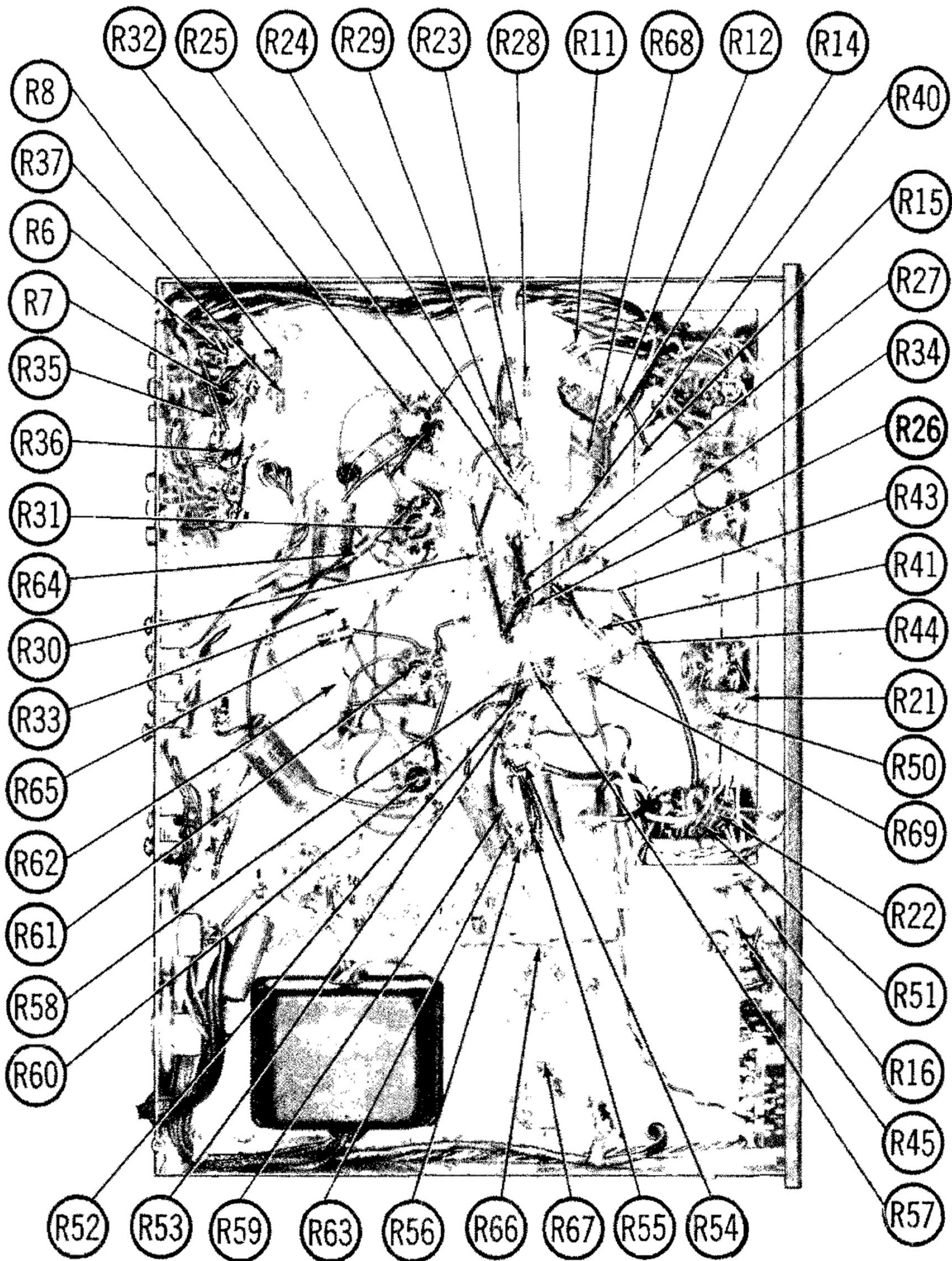






**CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION**





**CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION**



# PARTS LIST AND DESCRIPTIONS

## TUBES

| CBS      |  |                      | GENERAL ELECTRIC |  |                      | RAYTHEON |  |  | SYLVANIA |  |  |
|----------|--|----------------------|------------------|--|----------------------|----------|--|--|----------|--|--|
| ITEM No. | USE                                      | TYPE                 | ITEM No.         | USE                                      | TYPE                 |          |  |  |          |  |  |
| V1       | Channel 1 Tape & Phono. Preamp.          | ECC83/12AX7 (7025) * | V5               | Channel 2 Tape & Phono. Preamp.          | ECC83/12AX7 (7025) * |          |  |  |          |  |  |
| V2       | Channel 1 AF Amp. - Channel 1 Phase Inv. | 7199                 | V6               | Channel 2 AF Amp. - Channel 2 Phase Inv. | 7199                 |          |  |  |          |  |  |
| V3       | Channel 1 Output                         | 6V6GT                | V7               | Channel 2 Output                         | 6V6GT                |          |  |  |          |  |  |
| V4       | Channel 1 Output                         | 6V6GT                | V8               | Channel 2 Output                         | 6V6GT                |          |  |  |          |  |  |
|          |  |                      | V9               | Rectifier                                | EZ81/6CA4            |          |  |  |          |  |  |

\* Alternate

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING |       | REPLACEMENT DATA    |                  |                           |                  |                  |                  | NOTES |
|----------|--------|-------|---------------------|------------------|---------------------------|------------------|------------------|------------------|-------|
|          | CAP.   | VOLT. | CHALLENGER PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |       |
| C1A      | ▲30    | 350   | 79-010-003          | AFH3-28-30       | C0225                     | FP343.6          | TMT-124          | TVL-3639.8       |       |
| B        | ■20    | 350   |                     |                  |                           |                  |                  |                  |       |
| C        | ▲10    | 350   |                     |                  |                           |                  |                  |                  |       |
| C2A      | ▲30    | 350   | 79-010-003          | AFH3-28-30①      | C0225                     | FP343.6          | TMT-124          | TVL-3639.8       |       |
| B        | ■20    | 350   |                     |                  |                           |                  |                  |                  |       |
| C        | ▲10    | 350   |                     |                  |                           |                  |                  |                  |       |
| C3       | 5      | 200   | 79-001-086          | PRS1550          | BBR4-250                  | TC50X            | TD-4-450         | TVA-1501         |       |
| C4       | 5      | 200   | 79-001-086          | PRS1550          | BBR4-250                  | TC50X            | TD-4-450         | TVA-1501         |       |
| C5       | 5      | 200   | 79-001-086          | PRS1550          | BBR4-250                  | TC50X            | TD-4-450         | TVA-1501         |       |
| C6       | 5      | 200   | 79-001-086          | PRS1550          | BBR4-250                  | TC50X            | TD-4-450         | TVA-1501         |       |
| C7       | 100    | 6     | 79-001-026          | PRS1100          | BBR100-6                  | TC2501           | TD-100-6         | TVA-1101         |       |
| C8       | 100    | 6     | 79-001-026          | PRS1100          | BBR100-6                  | TC2501           | TD-100-6         | TVA-1101         |       |
| C9       | 10     | 25    | 79-001-046          | PRS1250          | BBR10-25                  | TC22             | TD-10-25         | TVA-1204         |       |
| C10      | 10     | 25    | 79-001-046          | PRS1250          | BBR10-25                  | TC22             | TD-10-25         | TVA-1204         |       |

① Use MW-4 washer.

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING    | REMARKS | REPLACEMENT DATA |                    |                           |                  |                  |                  |
|----------|-----------|---------|------------------|--------------------|---------------------------|------------------|------------------|------------------|
|          |           |         | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C11      | 22 10%    | ①       | DI-22            | DD-220             | L10Q22                    | CCD-220          | CNO-422          | 10TS-Q22         |
| C12      | 2200 10%  |         | DI-2200          |                    | PM6D22                    | CCS-222          | JL-222           | 10TS-D22         |
| C13      | 270 10%   |         | DI-270           | DD-271             | L10T27                    | CCD-271          |                  | 10TS-T27         |
| C14      | .022 200V |         | P288N-022        |                    | CUB4S22                   | 4DP-2-223        | GEM-4122         | 2TM-S22          |
| C15      | .022 200V |         | P288N-022        |                    | CUB4S22                   | 4DP-2-223        | GEM-4122         | 2TM-S22          |
| C16      | .022 200V |         | P288N-022        |                    | CUB4S22                   | 4DP-2-223        | GEM-4122         | 2TM-S22          |
| C17      | 1000 10%  |         | DI-1000          | DD-102             | PM6D1                     | CCS-102          | JL-210           | 10TS-D10         |
| C18      | 4700 10%  |         | DI-4700          |                    | PM6D47                    | CCS-472          | JL-247           | 10TS-D47         |
| C19      | 4700 10%  |         | DI-4700          |                    | PM6D47                    | CCS-472          | JL-247           | 10TS-D47         |
| C20      | 470 10%   |         | DI-470           | DD-471             | 22R5T47                   | CCD-471          | JL-347           | 10TS-T47         |
| C21      | 1800 10%  |         | DI-1800          | DD-182             | PM6D2                     | CCS-182          | JL-218           | 10TS-D18         |
| C22      | 330 10%   |         | DI-330           | DD-331             | L10T33                    | CCD-331          | JL-333           | 10TS-T33         |
| C23      | 150 10%   |         | DI-150           | DD-151             | L10T15                    | CCD-151          | JL-315           | 10TS-T15         |
| C24      | 680 10%   |         | DI-680           | DD-681             | IR5T68                    | CCS-681          | JL-368           | 10TS-T68         |
| C25      | 3300 10%  |         | DI-3300          |                    | PM6D33                    | CCS-332          | JL-233           | 10TS-D33         |
| C26      | 22 10%    |         | DI-22            | DD-220             | L10Q22                    | CCD-220          | CNO-422          | 10TS-Q22         |
| C27      | .1 400V   |         | P488N-1          | DF-104             | CUB4P1                    | 4DP-3-104        | GEM-401          | 4TM-P1           |
| C28      | 820 10%   |         |                  | DD-821             | IR5T82                    | CCS-821          | JL-382           | 10TS-T82         |
| C29      | .1 400V   |         | P488N-1          | DF-104             | CUB4P1                    | 4DP-3-104        | GEM-401          | 4TM-P1           |
| C30      | 820 10%   |         |                  | DD-821             | IR5T82                    | CCS-821          | JL-382           | 10TS-T82         |
| C31      | 22 10%    | ①       | DI-22            | DD-220             | L10Q22                    | CCD-220          | CNO-422          | 10TS-Q22         |
| C32      | 2200 10%  |         | DI-2200          |                    | PM6D22                    | CCS-222          | JL-222           | 10TS-D22         |
| C33      | 270 10%   |         | DI-270           | DD-271             | L10T27                    | CCD-271          |                  | 10TS-T27         |
| C34      | .022 200V |         | P288N-022        |                    | CUB4S22                   | 4DP-2-223        | GEM-4122         | 2TM-S 22         |
| C35      | .022 200V |         | P288N-022        |                    | CUB4S22                   | 4DP-2-223        | GEM-4122         | 2TM-S22          |
| C36      | .022 200V |         | P288N-022        |                    | CUB4S22                   | 4DP-2-223        | GEM-4122         | 2TM-S22          |
| C37      | 1000 10%  |         | DI-1000          | DD-102             | PM6D1                     | CCS-102          | JL-210           | 10TS-D10         |
| C38      | 4700 10%  |         | DI-4700          |                    | PM6D47                    | CCS-472          | JL-247           | 10TS-D47         |
| C39      | 4700 10%  |         | DI-4700          |                    | PM6D47                    | CCS-472          | JL-247           | 10TS-D47         |
| C40      | 470 10%   |         | DI-470           | DD-471             | 22R5T47                   | CCD-471          | JL-347           | 10TS-T47         |



## FIXED CAPACITORS (cont)

| ITEM No. | RATING    | REMARKS | REPLACEMENT DATA |                    |                           |                  |                  |                  |
|----------|-----------|---------|------------------|--------------------|---------------------------|------------------|------------------|------------------|
|          |           |         | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C41      | 1800 10%  |         | DI-1800          | DD-182             | PM6D2                     | CCS-182          | JL-218           | 10TS-D18         |
| C42      | 330 10%   |         | DI-330           | DD-331             | L10T33                    | CCD-331          | JL-333           | 10TS-T33         |
| C43      | 150 10%   |         | DI-150           | DD-151             | L10T15                    | CCD-151          | JL-315           | 10TS-T15         |
| C44      | 680 10%   |         | DI-680           | DD-681             | 1R5T68                    | CCS-681          | JL-368           | 10TS-T68         |
| C45      | 3300 10%  |         | DI-3300          |                    | PM6D33                    | CCS-332          | JL-233           | 10TS-D33         |
| C46      | 22 10%    |         | DI-22            | DD-220             | L10Q22                    | CCD-220          | CNO-422          | 10TS-Q22         |
| C47      | .1 400V   |         | P488N-1          | DF-104             | CUB4P1                    | 4DP-3-104        | GEM-401          | 4TM-P1           |
| C48      | 820 10%   |         |                  | DD-821             | 1R5T82                    | CCS-821          | JL-382           | 10TS-T82         |
| C49      | .1 400V   |         | P488N-1          | DF-104             | CUB4P1                    | 4DP-3-104        | GEM-401          | 4TM-P1           |
| C50      | 820 10%   |         |                  | DD-821             | 1R5T82                    | CCS-821          | JL-382           | 10TS-T82         |
| C51      | .047 600V |         | P688N-047        | DF-503             | CUB6S47                   | 6DP-3-473        | GEM-6147         | 6TM-S47          |

① Not used in some versions.

## CONTROLS

| ITEM No. | RATING     |       | REPLACEMENT DATA    |                    |                    |              |                  | INSTALLATION NOTES  |
|----------|------------|-------|---------------------|--------------------|--------------------|--------------|------------------|---|
|          | RESISTANCE | WATTS | CHALLENGER PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. |   |
| RIA      | 5meg *     | 1/2   | 77-001-455          |                    |                    |              |                  | Balance<br>Volume, Channel 1<br>Volume, Channel 2<br>Treble, Channel 1<br>Treble, Channel 2 |
| B        | 1meg       |       |                     |                    |                    |              |                  |   |
| C        | 1meg       |       |                     |                    |                    |              |                  |   |
| R2A      | 1meg       | 1/2   | 77-001-446          | B-70               | AD47-1meg-Z        | Q13-137      | ■ UE3913         | Bass, Channel 1<br>Bass, Channel 2  |
| B        | 1meg       |       |                     | SR-70              | Not Req.           | M13-137      |                  |   |
| C        | Shaft      |       |                     | Not Req.           | FS-3               | Not Req.     |                  |   |
| R3A      | 1meg       | 1/2   | 77-001-446          | B-70               | AD47-1meg-Z        | Q13-137      | ■ UE3913         | Hum, Channel 1  |
| B        | 1meg       |       |                     | SR-70              | Not Req.           | M13-137      |                  |   |
| C        | Shaft      |       |                     | Not Req.           | FS-3               | Not Req.     |                  |   |
| R4A      | 50Ω        | 2WW   | 77-001-113          | WN-500             | A43-50             | WPK50        | R50L             | Hum, Channel 2  |
| B        | Shaft      |       |                     | Not Req.           | FKS-1/4            | Not Req.     | Not Req.         |   |
| R5A      | 50Ω        | 2WW   | 77-001-113          | WN-500             | A43-50             | WPK50        | R50L             |   |
| B        | Shaft      |       |                     | Not Req.           | FKS-1/4            | Not Req.     | Not Req.         |   |

\* Split element, open at center of range (2.5meg each side).

■ "STA-LOC" equivalent: FA16A, RU16A, CS3500.

## RESISTORS

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

| ITEM No. | RATING  | REMARKS | ITEM No. | RATING  | REMARKS | ITEM No. | RATING   | REMARKS |        |
|----------|---------|---------|----------|---------|---------|----------|----------|---------|--------|
| R6       | 4.7meg  |         | R28      | 100K    |         | R50      | 47K      |         |        |
| R7       | 47K     |         | R29      | 75K 5%  |         | R51      | 10K      |         |        |
| R8       | 22K     |         | R30      | 100K    |         | R52      | 470K     |         |        |
| R9       | 68K     |         | R31      | 470K    |         | R53      | 330K     |         |        |
| R10      | 1meg    |         | R32      | 470K    |         | R54      | 100Ω     | Note 1  |        |
| R11      | 3.3meg  |         | R33      | 330Ω 7W |         | R55      | 1500Ω    |         |        |
| R12      | 220K    |         | R34      | 47K     |         | R56      | 240Ω 5%  |         |        |
| R13      | 270K    |         | R35      | 4.7meg  |         | R57      | 100K     |         |        |
| R14      | 3.3meg  |         | R36      | 47K     |         | R58      | 75K 5%   |         |        |
| R15      | 220K    |         | R37      | 22K     |         | R59      | 100K     |         |        |
| R16      | 750K 5% |         | R38      | 68K     |         | R60      | 470K     |         |        |
| R17      | 82K     |         | R39      | 1meg    |         | R61      | 470K     |         |        |
| R18      | 82K     |         | R40      | 3.3meg  |         | R62      | 330Ω 7W  |         |        |
| R19      | 56K     |         | R41      | 220K    |         | R63      | 47K      |         |        |
| R20      | 56K     |         | R42      | 270K    |         | R64      | 2200Ω 1W |         |        |
| R21      | 47K     |         | R43      | 3.3meg  |         | R65      | 2200Ω 1W |         |        |
| R22      | 10K     |         | R44      | 220K    |         | R66      | 22K      | Note 2  |        |
| R23      | 470K    |         | R45      | 750K 5% |         | R67      | 22K      |         | Note 2 |
| R24      | 330K    |         | R46      | 82K     |         | R68      | 220K     |         |        |
| R25      | 100Ω    | Note 1  | R47      | 82K     |         | R69      | 220K     |         |        |
| R26      | 1500Ω   |         |          | R48     | 56K     |          |          |         |        |
| R27      | 240Ω 5% |         |          | R49     | 56K     |          |          |         |        |

Note 1. Not used in some versions.

Note 2. Run 6 uses 47K.



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (POWER)

| ITEM No. | RATING        |                    |              | REPLACEMENT DATA    |                     |                |              |                  |                     |                |
|----------|---------------|--------------------|--------------|---------------------|---------------------|----------------|--------------|------------------|---------------------|----------------|
|          | PRI.          | SEC. 1             | SEC. 2       | CHALLENGER PART No. | Halldorson PART No. | Merit PART No. | Rom PART No. | Stancor PART No. | Thordarson PART No. | Triod PART No. |
| T1       | 117V<br>① .9A | 660 VCT<br>① .130A | 6.3V ①<br>3A | 83-595-000          |                     |                |              |                  |                     |                |
|          | SEC. 3        | SEC. 4             | SEC. 5       |                     |                     |                |              |                  |                     |                |
|          | 6.3V ①<br>.6A |                    |              |                     |                     |                |              |                  |                     |                |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE   |                                | REPLACEMENT DATA    |                     |                |              |                  |                     | NOTES |                           |
|----------|-------------|--------------------------------|---------------------|---------------------|----------------|--------------|------------------|---------------------|-------|---------------------------|
|          | PRI.        | SEC.                           | CHALLENGER PART No. | Halldorson PART No. | Merit PART No. | Rom PART No. | Stancor PART No. | Thordarson PART No. |       | Triad PART No.            |
| T2       | 5600Ω<br>CT | 32Ω<br>Tap ①<br>16Ω, 8Ω,<br>4Ω | 83-288-000          | 24S61               | A-2901 ①       | AU-609       | A-3870           | 24S61               | S-55X | ① Drill New Mounting Hole |
| T3       | 5600Ω<br>CT | 32Ω<br>Tap ①<br>16Ω, 8Ω,<br>4Ω | 83-288-000          | 24S61               | A-2901 ①       | AU-609       | A-3870           | 24S61               | S-55X |                           |

## MISCELLANEOUS

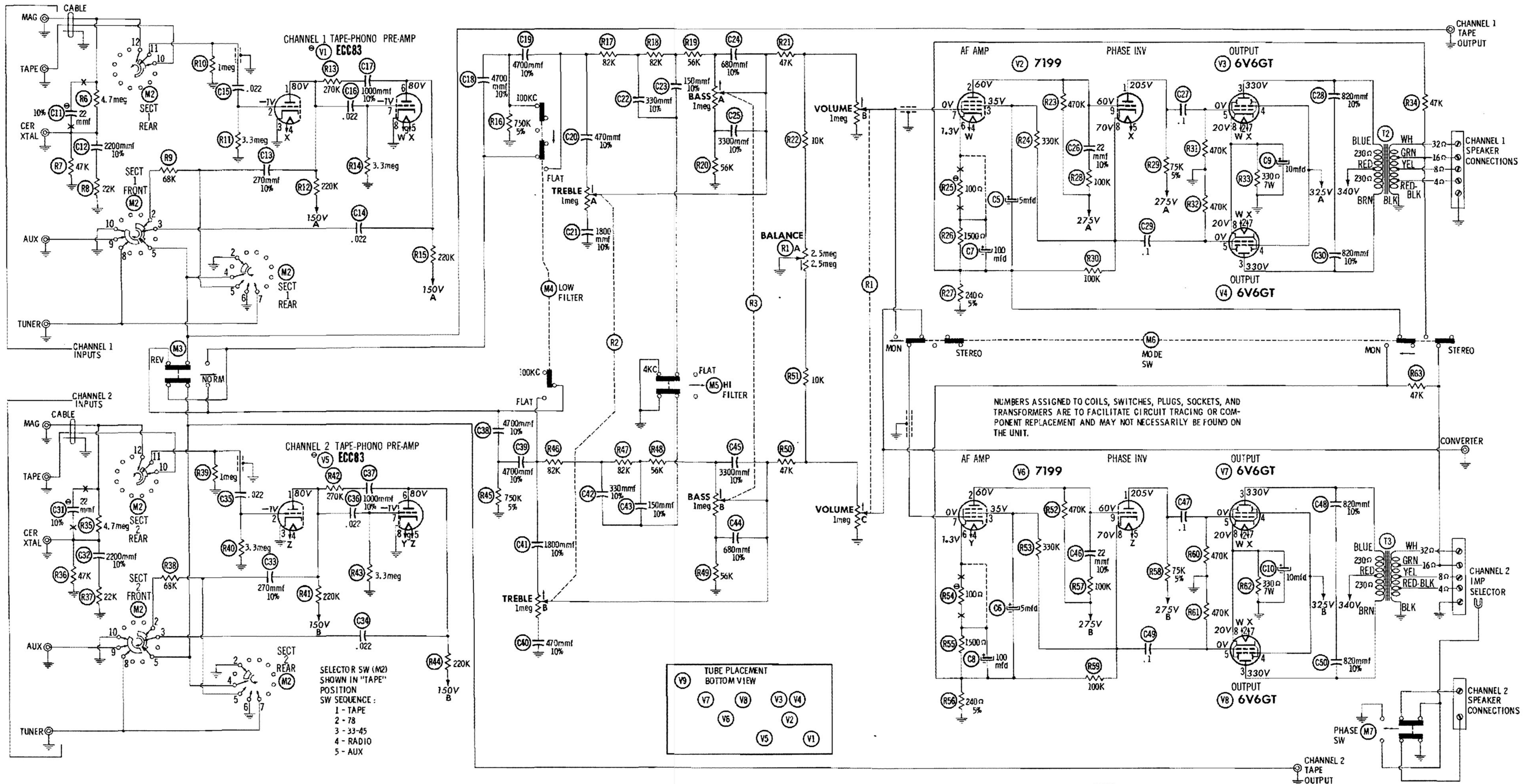
| ITEM No. | PART NAME | CHALLENGER PART No. | NOTES                                     |
|----------|-----------|---------------------|---|
| M1       | Switch    | 81-003-004          | Off-On (SPDT, Slide Type)                 |
| M2       | Switch    | 81-001-484          | Function (Rotary Type)                    |
| M3       | Switch    | 81-003-002          | Reverse-Normal (DPDT, Slide-Type)         |
| M4       | Switch    | 81-003-009          | Lo Filter (TPDT, Slide-Type)              |
| M5       | Switch    | 81-003-002          | Hi Filter (DPDT, Slide-Type)              |
| M6       | Switch    | 81-003-009          | Mode (Monaural-Stereo) (TPDT, Slide Type) |
| M7       | Switch    | 81-003-002          | Phase (DPDT, Slide Type)                  |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors  
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)  
1725-K (7½ Ft. Length)





RESISTANCE READINGS

| ITEM | TUBE           | Pin 1 | Pin 2  | Pin 3 | Pin 4  | Pin 5 | Pin 6 | Pin 7  | Pin 8 | Pin 9 |
|------|----------------|-------|--------|-------|--------|-------|-------|--------|-------|-------|
| V1   | ECC83<br>12AX7 | 1465K | 3.3meg | 0Ω    | 12Ω    | 12Ω   | 1465K | 3.3meg | 0Ω    | 12Ω   |
| V2   | 7199           | 1100K | 1490K  | 430K  | 12Ω    | 12Ω   | 1700Ω | 0Ω     | 30K   | 1490K |
| V3   | 6V6GT          | TP    | 12Ω    | 1230Ω | 12200Ω | 470K  | NC    | 12Ω    | 30Ω   |       |
| V4   | 6V6GT          | TP    | 12Ω    | 1230Ω | 12200Ω | 470K  | TP    | 12Ω    | 30Ω   |       |
| V5   | ECC83<br>12AX7 | 1465K | 3.3meg | 0Ω    | 12Ω    | 12Ω   | 1465K | 3.3meg | 0Ω    | 12Ω   |
| V6   | 7199           | 1100K | 1490K  | 430K  | 12Ω    | 12Ω   | 1700Ω | 0Ω     | 30K   | 1490K |
| V7   | 6V6GT          | TP    | 12Ω    | 1230Ω | 12200Ω | 470K  | NC    | 12Ω    | 30Ω   |       |
| V8   | 6V6GT          | TP    | 12Ω    | 1230Ω | 12200Ω | 470K  | TP    | 12Ω    | 30Ω   |       |
| V9   | EZ81<br>6CA4   | 75Ω   | NC     | 9     | 12Ω    | 12Ω   | NC    | 70Ω    | 1C    | NC    |

9 THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.  
 † MEASURED FROM PIN 3 OF V9.  
 NC NO CONNECTION  
 TP TIE POINT

- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
- Socket connections are shown as bottom views.
- Measured values are from socket pin to common negative.
- Line voltage maintained at 117 volts for voltage readings.
- Nominal tolerance of component values makes possible a variation of ±1% in voltage and resistance readings.
- All controls at minimum, proper output load connected.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

