



Stereophonic

THE FISHER 400

SERVICE

MANUAL



MODEL 400

CHASSIS SERIAL NUMBERS
FROM 10001 TO 19999 INCLUSIVE

PRICE: \$1.00

FISHER RADIO CORPORATION • NEW YORK



CHASSIS SERIAL NUMBERS
FROM 10001 TO 19999 INCLUSIVE

THE FISHER 400



PARTS DESCRIPTION LIST

CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value). All capacitors not marked uf are pF (uuf).

| Symbol | Description | Part No. |
|-----------------|--|-------------|
| C1, 2 | Ceramic, 100, GMV, N1500, 1000V | C50070-5 |
| C3 | Ceramic, 21, 5%, N750, 1000V | C50070-32 |
| C4 | Ceramic, 8, 5%, NPO, 1000V | C50070-45 |
| C5 | Ceramic Trimmer | C662-123 |
| C6 | Ceramic, 1000, GMV, 500V | C50089-2 |
| C7 | FM Variable | C966-109-1 |
| C8 | Ceramic, 1000, GMV, 500V | C50089-2 |
| C9 | Ceramic, 39, N1500, 1000V | C50072-17 |
| C10, 11 | Ceramic, .01uf, 20%, 500V | C50089-3 |
| C12 | Ceramic, 24, 5%, N150, 1000V | C50070-8 |
| C13 | Ceramic, 12, 5%, N080, 500V | CC20LJ120J5 |
| C14 | Ceramic, 13, 5%, NPO, 500V | CC20CJ130J5 |
| C15, 16 | Ceramic Trimmer | C662-123 |
| C17 | Ceramic, 8, 5%, NPO, 1000V | C50070-45 |
| C19, 20 | Mylar, .022uf, 250V | C50197-49 |
| C21 | Ceramic, 120, 5%, N1500, 1000V | C50070-44 |
| C22 | Ceramic, 1000, 1000V | C50072-3 |
| C23, 24 | Ceramic, Feedthru, 1000, GMV | C592-187 |
| C25 | Ceramic, 5000, +80 -20%, 500V | C50089-6 |
| C26 | Ceramic, 2700, 1000V | C50072-17 |
| C27 | Ceramic, 560, 1000V | C50072-14 |
| C28 | Ceramic, 5000, +80 -20%, 500V | C50089-6 |
| C29, 30 | Ceramic, 120, N1500, 1000V | C50070-9 |
| C31, 32 | Ceramic, 24, 5%, N150, 1000V | C50070-8 |
| C33, 34 | Ceramic, 1000, 1000V | C50072-3 |
| C35, 36 | Ceramic, .02uf, 20%, 500V | C50089-5 |
| C37 | Ceramic, 5000, +80 -20%, 500V | C50089-6 |
| C38 | Ceramic, 2700, 1000V | C50072-17 |
| C39, 40 | Ceramic, 5000, +80 -20%, 500V | C50089-6 |
| C41 | Ceramic, 2700, 1000V | C50072-17 |
| C42 | Ceramic, .02uf, GMV, 1000V | C50071-6 |
| C43 | Ceramic, 5000, +80 -20%, 500V | C50089-6 |
| C44 | Ceramic, 330, 1000V | C50072-1 |
| C45, 46 | Ceramic, 100, 5%, N1500, 1000V | C50070-19 |
| C47 | Mylar, .1uf, 125V | C50435-7 |
| C48, 49 | Mylar, .047uf, 400V | C50197-30 |
| C50, 51 | Ceramic, 330, 1000V | C50072-1 |
| C52 | Ceramic, 1800, 1000V | C50072-8 |
| C53, 54 | Ceramic, 560, 1000V | C50072-14 |
| C55 | Electrolytic, 8uf, 50V | C629-138 |
| C56, 57 | Ceramic, 68, N2200, 1000V | C50070-12 |
| C58, 59 | Ceramic, .02uf, 20%, 500V | C50089-5 |
| C60, 61 | Ceramic, 330, 1000V | C50072-1 |
| C62 | Mylar, .047uf, 400V | C50197-30 |
| C63 | Mylar, .047uf, 250V | C50197-52 |
| C64 | Mylar, .047uf, 400V | C50197-30 |
| C65 | Mylar, .047uf, 250V | C50197-52 |
| C66, 67 | Ceramic, 18, N470, 1000V | C50070-13 |
| C68, 69 | Ceramic, .02uf, +80 -20%, 500V | C50089-4 |
| C70, 71, 72, 73 | Ceramic, 5000, +80 -20%, 500V | C50089-6 |
| C74 | Electrolytic, 100uf, 25V | C643-145 |
| C75 | Electrolytic, 4 Section: A — 20uf, 300V B — 40uf, 400V C — 40uf, 450V D — 40uf, 500V | C50180-49 |
| C76 | Electrolytic, 100uf, 300V | C50180-43 |

| | | |
|---------|---|-----------|
| C77 | Electrolytic, 3 Section: A — 50uf, 250V B — 50uf, 250V C — 200uf, 300V | C50180-51 |
| C78 | Electrolytic, 2 Section: A — 1000uf, 35V B — 1000uf, 35V | C50180-38 |
| C79 | Ceramic, Feedthru, 1000, GMV | C592-187 |
| C80 | Molded, .01uf, 20%, 600V | C2747 |
| C81, 82 | Ceramic, 330, 1000V | C50072-1 |
| C83 | Molded, .01uf, 20%, 600V | C2747 |

RESISTORS & POTENTIOMETERS

In ohms, 5% tolerance, 1/8 watt unless otherwise noted. K = Kilohms, M = Megohms.

| Symbol | Description | Part No. |
|---------|----------------------------------|--------------|
| R1 | Composition, 270, 10%, 1/2 W | RC20BF271K |
| R2 | Composition, 100K, 10%, 1/2 W | RC20BF104K |
| R3, 4 | Dep. Carbon, 220K | R12DC224J |
| R5, 6 | Dep. Carbon, 150K | R12DC154J |
| R7, 8 | Dep. Carbon, 68K | R12DC683J |
| R9, 10 | Dep. Carbon, 100K | R12DC104J |
| R11, 12 | Dep. Carbon, 10 | R12DC100J |
| R13, 14 | Dep. Carbon, 10K | R12DC103J |
| R15 | Dep. Carbon, 1.2K | R12DC122J |
| R16, 17 | Glass, 330K, 1W | R30G334J |
| R18, 19 | Dep. Carbon, 4.7M, 1/2 W | R33DC475J |
| R20 | Dep. Carbon, 220K | R12DC224J |
| R21, 22 | Dep. Carbon, 220K, 1/2 W | R33DC224J |
| R23, 24 | Dep. Carbon, 330K | R12DC154J |
| R25 | Dep. Carbon, 150K | R12DC102J |
| R26 | Dep. Carbon, 1K | R12DC102J |
| R27 | Composition, 4.7K, 10%, 1/2 W | RC20BF472K |
| R28 | Composition, 3.9K, 10%, 1W | R30BF392K |
| R29 | Composition, 150, 10%, 1/2 W | RC20BF151K |
| R30 | Composition, 27K, 10%, 1/2 W | RC20BF273K |
| R31 | Composition, 1K, 10%, 1/2 W | RC20BF102K |
| R32, 33 | Dep. Carbon, 330K | R12DC334J |
| R34, 35 | Dep. Carbon, 470K | R12DC474J |
| R36, 37 | Dep. Carbon, 1.5M, 1/2 W | R33DC155J |
| R38, 39 | Dep. Carbon, 2.7M, 1/2 W | R33DC275J |
| R40, 41 | Dep. Carbon, 1K | R12DC102J |
| R42, 43 | Dep. Carbon, 120K, 1/2 W | R33DC124J |
| R44 | Composition, 150, 10%, 1/2 W | RC20BF151K |
| R45 | Composition, 47K, 10%, 1/2 W | RC20BF473K |
| R46 | Composition, 1K, 10%, 1/2 W | RC20BF102K |
| R47, 48 | Dep. Carbon, 680K | R12DC684J |
| R49 | Composition, 10M, 10%, 1/2 W | RC20BF106K |
| R50 | Potentiometer, 500K, Dual Treble | R50160-136-1 |
| R51 | Potentiometer, 500K, Dual Bass | R50160-136-2 |
| R52 | Composition, 1K, 10%, 1/2 W | RC20BF102K |
| R53 | Composition, 56K, 10%, 1/2 W | RC20BF563K |
| R54 | Composition, 3.9M, 10%, 1/2 W | RC20BF395K |
| R55 | Composition, 470K, 10%, 1/2 W | RC20BF474K |
| R56, 57 | Dep. Carbon, 1K | R12DC102J |
| R58 | Composition, 270, 1/2 W | RC20BF271J |
| R59, 60 | Dep. Carbon, 120K, 1/2 W | R33DC124J |
| R61, 62 | Dep. Carbon, 220K | R12DC224J |
| R63 | Dep. Carbon, 47K | R12DC473J |
| R64, 65 | Dep. Carbon, 2.7M, 1/2 W | R33DC275J |
| R66 | Composition, 1.5K, 1/2 W | RC20BF152J |

PARTS DESCRIPTION LIST

| | | |
|------------|----------------------------------|------------|
| R67 | Composition, 1K, 1/2 W | RC20BF102J |
| R68, 69 | Dep. Carbon, 470K | R12DC474J |
| R70 | Dep. Carbon, 15K | R12DC153J |
| R71 | Potentiometer, 500K, Balance | R50160-135 |
| R72 | Dep. Carbon, 330K | R12DC334J |
| R73 | Dep. Carbon, 150K | R12DC154J |
| R74, 75 | Dep. Carbon, 22K | R12DC223J |
| R76 | Potentiometer, 500K, Dual Volume | R50160-104 |
| R77, 78 | Dep. Carbon, 390K, 1/2 W | R33DC394J |
| R79, 80 | Dep. Carbon, 1.2K | R12DC122J |
| R81, 82 | Dep. Carbon, 220 | R12DC221J |
| R83, 84 | Potentiometer, 500K | R50150-6 |
| R85 | Composition, 100K, 10%, 1/2 W | RC20BF104K |
| R86, 87 | Dep. Carbon, 47K, 1/2 W | R33DC473J |
| R88, 89 | Dep. Carbon, 120K, 1/2 W | R33DC124J |
| R90, 91 | Dep. Carbon, 3.9K | R12DC392J |
| R92, 93 | Composition, 220, 10%, 1/2 W | RC20BF221K |
| R94 | Composition, 10K, 1/2 W | RC20BF103J |
| R95 | Composition, 22K, 10%, 1/2 W | RC20BF223K |
| R96, 97 | Dep. Carbon, 150K, 1/2 W | R33DC154J |
| R98, 99, | | |
| 100, 101 | Dep. Carbon, 330K | R12DC334J |
| R102 | Composition, 5.6K, 1/2 W | RC20BF562J |
| R103 | Composition, 2.2K, 10%, 1W | RC30BF222K |
| R104 | Composition, 1.2K, 10%, 1W | RC30BF122K |
| R105 | Glass, 1.2K, 10%, 7W | RPG7W122K |
| R106, 107, | | |
| 108, 109 | Dep. Carbon, 1K, 1/2 W | R33DC102J |
| R110, 111 | Glass, 330, 10%, 3W | RPG3W331K |
| R112 | Wirewound, 15, 10%, 5W | R719-106 |
| R113 | Dep. Carbon, 4.7K, 1/2 W | R33DC472J |
| R114, 115 | Wirewound, 25, 10%, 5W | R688-117 |
| R116, 117 | Dep. Carbon, 2.2K, 1/2 W | R33DC222J |
| R118 | Composition, 820K, 10%, 1/2 W | RC20BF824K |
| R119, 120 | Composition, 330, 10%, 1/2 W | RC20BF331K |
| R121, 122 | Dep. Carbon, 47K | R12DC473J |
| R123, 124 | Dep. Carbon, 82K | R12DC823J |
| R125, 126 | Glass, 2.7K, 1/2 W | R20G272J |
| R127 | Dep. Carbon, 47K | R12DC473J |

COILS, CHOKES & TRANSFORMERS

| Symbol | Description | Part No. |
|--------|-----------------------------|-------------|
| L1 | FM Antenna Coil | L966-113 |
| L2 | FM RF Coil | L1034-113 |
| L3 | FM Mixer Coil | L1034-112 |
| L4 | FM Oscillator Coil Assembly | AS1034-115 |
| L5 | Choke, 1.2 Microhenries | L50066-3 |
| L6 | Choke, .68 Microhenry | L50066-1 |
| L7 | Choke, 3.3 Microhenries | L50066-8 |
| T1 | Transformer, Output | T1020-116-1 |
| T2 | Transformer, Output | T1020-116-2 |
| T3 | Transformer, Power | T1020-124 |
| Z1 | FM IF Transformer | ZZ50210-20 |
| Z2 | FM IF Transformer | ZZ50210-39 |
| Z3 | FM Limiter Coil Assembly | L50210-6 |
| Z4 | FM Ratio Detector Assembly | ZZ50210-9 |

MISCELLANEOUS

| Symbol | Description | Part No. |
|-------------|--|-------------|
| CR1, 2 | Silicon Diode | SR50411-1 |
| CR3 | Selenium Rectifier Bridge | SR50253-1 |
| F1 | Fuse, 3.2 Amp., Slo-Blo | F3319 |
| I1, 2 | Lamp, Dial | I50441-4 |
| J20 | Jack, Earphone | J846-120-1 |
| PC1, 2 | Printed Circuit, Phono Tape Equalization | PC50187-3 |
| PC3, 4 | Printed Circuit, Tone Control | PC50187-9 |
| PC5, 6 | Printed Circuit, High Filter | PC50187-2 |
| S1 | Switch, Selector | S1020-119 |
| S2, 3, 4, 5 | Switch, Slide | S50200-5 |
| S6 | Switch, Power | Part of R76 |
| — | Dress Panel | AS1020-108 |
| — | FM Dipole Assembly | AS50227-1 |
| — | Knob, Dummy Dual | E50324 |
| — | Knob, Dual Front | E50323 |
| — | Knob, Dual Rear | E50221 |
| — | Knob, Tuning | E50324-1 |
| — | Dial Glass | N1020-107 |
| — | Fuse Holder | X563-151 |

PHASE INVERTER ADJUSTMENT

- LEFT CHANNEL**
- 1 — Connect a 16-ohm load between the Left Speaker terminals. Connect the Left Impedance Selector to the "16" terminal.
 - 2 — Connect the input of the IM Distortion Analyzer across the 16-ohm load.
 - 3 — Connect the IM Distortion Analyzer output to the Left AUX input jack.
 - 4 — Set the Selector switch to AUX and adjust the Analyzer for 14 volts across the 16-ohm load.
 - 5 — Adjust the Left Phase Inverter Adjust control for minimum IM distortion.

- RIGHT CHANNEL**
- 1 — Connect a 16-ohm load between the Right Speaker terminals. Connect the Right Impedance Selector to the "16" terminal.
 - 2 — Connect the input of the IM Distortion Analyzer across the 16-ohm load.
 - 3 — Connect the IM Distortion Analyzer output to the Right AUX input jack.
 - 4 — Set the Selector switch to AUX and adjust the Analyzer for 14 volts across the 16-ohm load.
 - 5 — Adjust the Right Phase Inverter Adjust control for minimum IM distortion.

PARTS DESCRIPTION LIST • MULTIPLEX SECTION

CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked GMV (guaranteed minimum value). All capacitors not marked uf are pF (puf).

| Symbol | Description | Part No. |
|-----------|---------------------------------|----------|
| C200 | Ceramic, .01uf, +80 - 20%, 500V | C50089-7 |
| C201 | Ceramic, 680, 1000V | C50072-2 |
| C203 | Ceramic, 220, 1000V | C50183-3 |
| C204 | Polystyrene, 470, 5%, 500V | C50394-1 |
| C205 | Ceramic, 82, 1000V | C50070-1 |
| C206 | Ceramic, 1000, GMV, 500V | C50089-2 |
| C207 | Ceramic, 5000, +80 - 20%, 500V | C50089-6 |
| C208, 209 | Mica, 4700, 5%, 500V | C50332-5 |
| C210 | Electrolytic, 1uf, 350V | C50283-3 |
| C211 | Ceramic, 1000, GMV, 500V | C50089-2 |

| | | |
|-----------|---------------------------------|-----------|
| C212 | Ceramic, .05uf, +80 - 20%, 100V | C50073-2 |
| C214 | Mylar, 4700, 400V | C50197-25 |
| C215 | Mica, 3900, 5%, 500V | C50332-6 |
| C216, 217 | Ceramic, 1000, GMV, 500V | C50089-2 |
| C218 | Ceramic, .02uf, 20%, 500V | C50089-5 |
| C219 | Ceramic, 330, 1000V | C50183-5 |
| C220 | Ceramic, .02uf, 20%, 500V | C50089-5 |
| C221, 222 | Mylar, .047uf, 250V | C50197-52 |
| C223, 224 | Ceramic, 1000, 1000V | C50072-3 |
| C225, 226 | Ceramic, 2200, 1000V | C50072-5 |

RESISTORS

In ohms, 5% tolerance, 1/8 W unless otherwise noted. K=Kilohms, M=Megohms.

| Symbol | Description | Part No. |
|--------|------------------------------|------------|
| R200 | Composition, 22M, 10%, 1/2 W | RC20BF226K |

| | | |
|---------------------|------------------------------------|--|
| R201 | Composition, 4.7K, 1/2 W | |
| R202 | Composition, 15K, 1/2 W | |
| R203 | Composition, 10M, 10%, 1/2 W | |
| R204 | Dep. Carbon, 1M | |
| R205 | Dep. Carbon, 220K, 1/2 W | |
| R206 | Dep. Carbon, 1.8M | |
| R207 | Dep. Carbon, 1M | |
| R208 | Dep. Carbon, 22K | |
| R209, 210, 211, 212 | Dep. Carbon, 33K | |
| R213, 214 | Dep. Carbon, 100K | |
| R215 | Potentiometer, 50K, MPX Separation | |
| R216 | Composition, 22M, 10%, 1/2 W | |
| R217, 218 | Dep. Carbon, 18K, 1/2 W | |
| R219, 220 | Dep. Carbon, 15K, 1/2 W | |
| R221 | Composition, 22M, 10%, 1/2 W | |

| | |
|------------|--|
| RC20BF472J | |
| RC20BF153J | |
| RC20BF106K | |
| R12DC105J | |
| R33DC224J | |
| R12DC185J | |
| R12DC105J | |
| R12DC223J | |
| R12DC333J | |
| R12DC104J | |
| R50150-4 | |
| RC20BF226K | |
| R33DC183J | |
| R33DC153J | |
| RC20BF226K | |

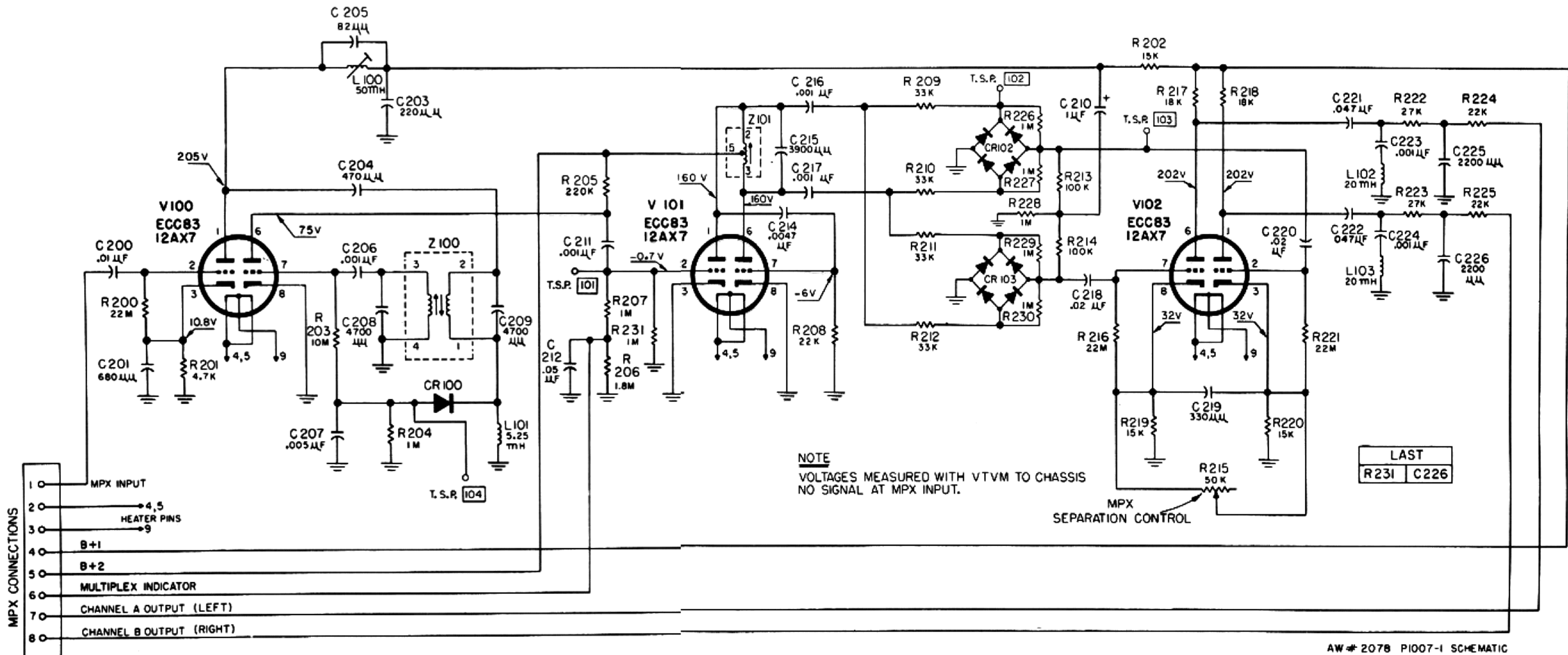
| | |
|-------------------------------|------------------|
| R222, 223 | Dep. Carbon, 27K |
| R224, 225 | Dep. Carbon, 22K |
| R226, 227, 228, 229, 230, 231 | Dep. Carbon, 1M |

| | |
|-----------|--|
| R12DC273J | |
| R12DC223J | |
| R12DC105J | |

MISCELLANEOUS

| Symbol | Description | Part No. |
|-----------------|-------------------|------------|
| CR100, 102, 103 | Diodes, Type 1112 | V-1112 |
| L100 | Coil, low pass | L50210-30 |
| L101 | Coil, 5.25MH | L50334-1 |
| L102, 103 | Coil, 20MH | L50334-2 |
| Z100 | Transformer, 19Kc | ZZ50210-34 |
| Z101 | Coil, 38Kc | ZZ50210-33 |

SCHEMATIC DIAGRAM • MULTIPLEX SECTION



ALIGNMENT INSTRUCTIONS

Read These Instructions With Extreme Care Before Attempting Alignment.

CHASSIS: 1 — For the entire alignment procedure, set the Selector Switch to the MONO position.

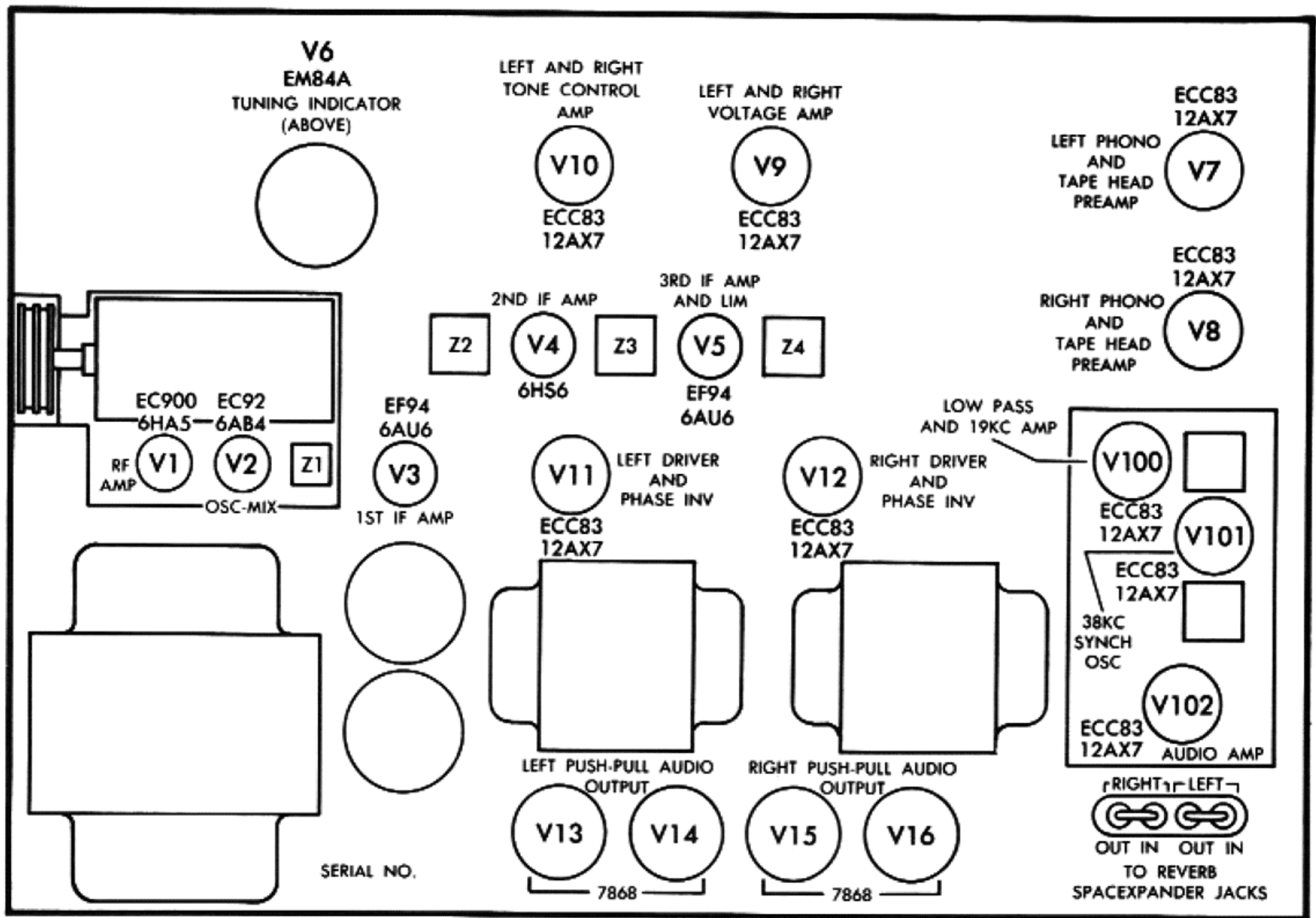
2 — Turn the Tuning knob maximum counterclockwise. (Dial pointer should line up with calibration mark at the beginning of the dial. Reset the dial pointer if necessary.)

3 — Allow the Receiver and test equipment at least 15 minutes warm-up time. Adjust the line voltage for 117 volts AC 50-60 cps. Use fully insulated tools: a small screw-driver for trimmer capacitors C16, C15 and C5, a K-Tran tool for Z1, Z2 and a hex tool for all Z3, Z4, L4, L3, L2 and L1.

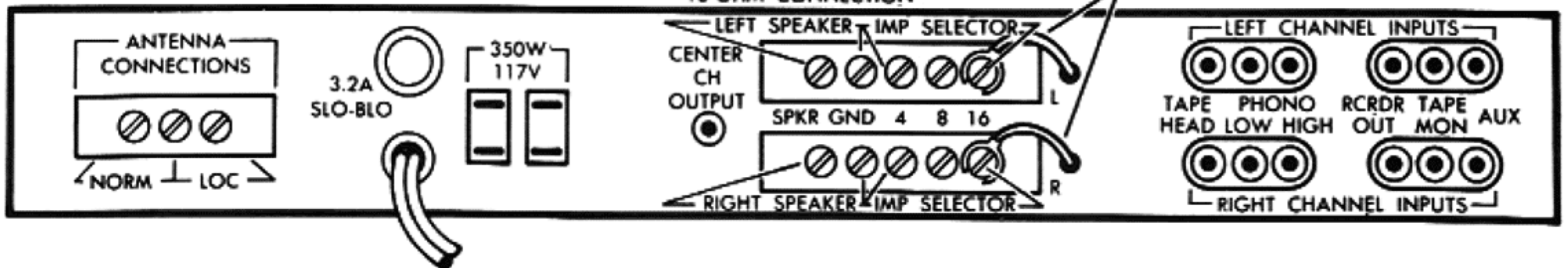
| STEP | DIAL | SIGNAL GENERATOR | | | DC VTVM | ADJUST | INDICATION |
|------|---|------------------------------|--|--------------|---|-------------------------------|---|
| | | GENERATOR COUPLING | FREQ. | MOD. | | | |
| 1 | Set dial pointer for extreme C.C.W. position. | Ungrounded tube shield of V2 | 10.7 MC | None | Test Point 2 | Z1, Z2, Z3, Z4 top and bottom | Maximum negative voltage (below 20 volts) |
| 2 | | Ungrounded tube shield of V2 | 10.7 MC | None | Hot lead of DC VTVM to Test point 4. Ground lead of DC VTVM to junction of two series connected resistors [47K], wired between Test point 3 and ground. | Z4 top | Zero indication on zero center dial. |
| 3 | | 90 MC | Two 120 ohm carbon resistors in series with generator leads to the Normal antenna terminals. | 90 MC | ± 22.5 KC deviation at 400 cps. | Test Point 2 | L4, L3 and L2 |
| 4 | 106 MC | 106 MC | ± 22.5 KC deviation at 400 cps. | Test Point 2 | C16, C15 and C5 | | |
| 5 | 98 MC | 98 MC | ± 22.5 KC deviation at 400 cps. | Test Point 2 | L1 | | |

NOTE: (Steps 1 and 2): Decrease signal generator output while aligning IF transformers so that the VTVM indicates not more than specified voltages. Repeat steps 4 and 5 to obtain proper dial calibration and maximum sensitivity.

TUBE LAYOUT



NOTE: IMPEDANCE SELECTOR SHOWN IN 16-OHM CONNECTION



SERVICE NOTES



FISHER RADIO CORPORATION • NEW YORK



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