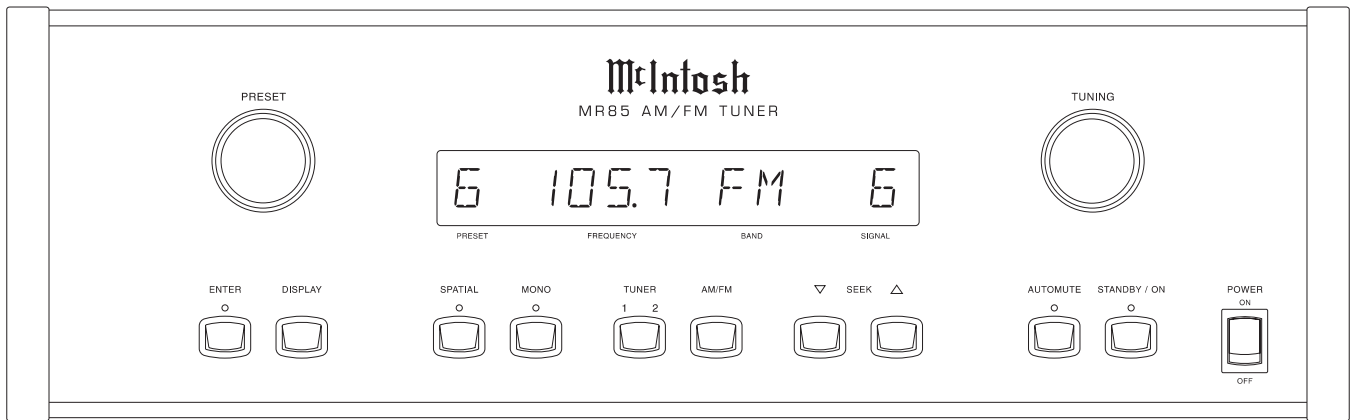


MR85

AM/FM TUNER

INCLUDING TM1 TUNER MODULE OPTION



CONTENTS

| | | | |
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McIntosh

SERVICE MANUAL

PERFORMANCE SPECIFICATIONS

FM Tuner Specifications

Useable Sensitivity

14dBm which is 1.4uV across 75 ohms

50dB Quieting Sensitivity

Mono: 19dBm which is 2.4uV across 75 ohms

Stereo: 35dBm which is 15uV across 75 ohms

Signal To Noise Ratio

Mono: 75dB

Stereo: 70dB

Frequency Response

Mono: + 0, - 1dB from 20 to 15,000Hz

Stereo: + 0, - 1dB from 20 to 15,000Hz

Harmonic Distortion

Mono: 0.3% at 100Hz

0.3% at 1,000Hz

0.3% at 10,000Hz

Stereo: 0.45% at 100Hz

0.45% at 1,000Hz

0.65% at 10,000Hz

Intermodulation Distortion

Mono 0.25%

Stereo 0.45%

Capture Ratio

1.2dB

Alternate Channel Selectivity

75dB

Spurious Response

100dB

Image Response

75dB

RF Intermodulation

65dB

Stereo Separation

45dB at 100Hz

45dB at 1,000Hz

35dB at 10,000Hz

SCA Rejection

65dB

AM Tuner Specifications

Sensitivity

20uV External Antenna Input

Signal To Noise Ratio

48dB at 30% modulation

58dB at 100% modulation

Harmonic Distortion

0.5% maximum at 50% modulation

Frequency Response

50Hz to 6kHz NRSC

Adjacent Channel Selectivity

45dB minimum IHF

Image Rejection

65dB minimum from 540 to 1600kHz

IF Rejection

80dB minimum

General Specifications

Rated Output

Fixed output: 1.2 Volts

Variable output: 0 - 1.2 Volts

Output Impedance

Less than 100 ohms

Power Requirements

100 Volts, 50/60Hz at 20 watts

110 Volts, 50/60Hz at 20 watts

120 Volts, 50/60Hz at 20 watts

220 Volts, 50/60Hz at 20 watts

230 Volts, 50/60Hz at 20 watts

240 Volts, 50/60Hz at 20 watts

Note: Refer to the rear panel of the MR85 for the correct voltage.


Dimensions

17-1/2" (44.5cm) W, 5-3/8" (13.7cm) H, 17-1/2" (44.5cm) D,
(including clearance for connectors)

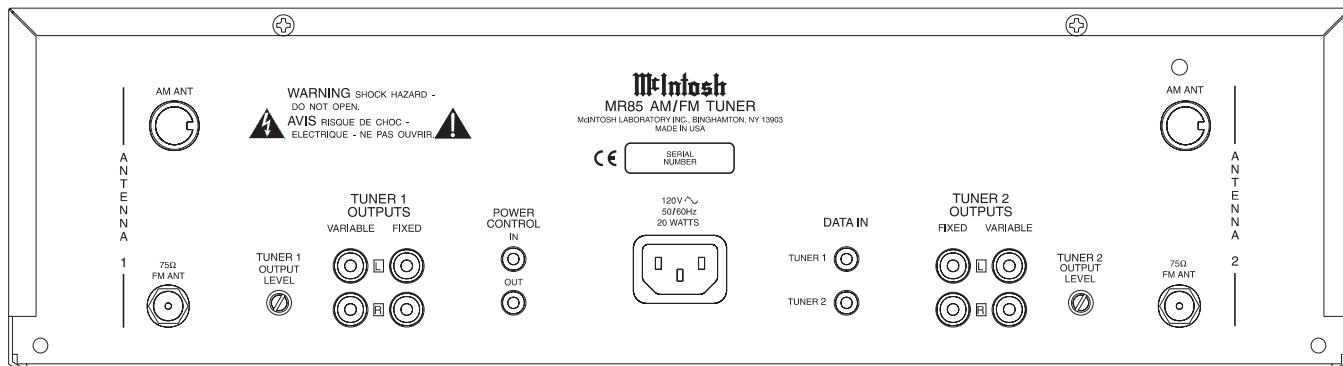
Weight

25.5 pounds (11.6 kg) net, 43 pounds (19.5 kg) in
shipping carton

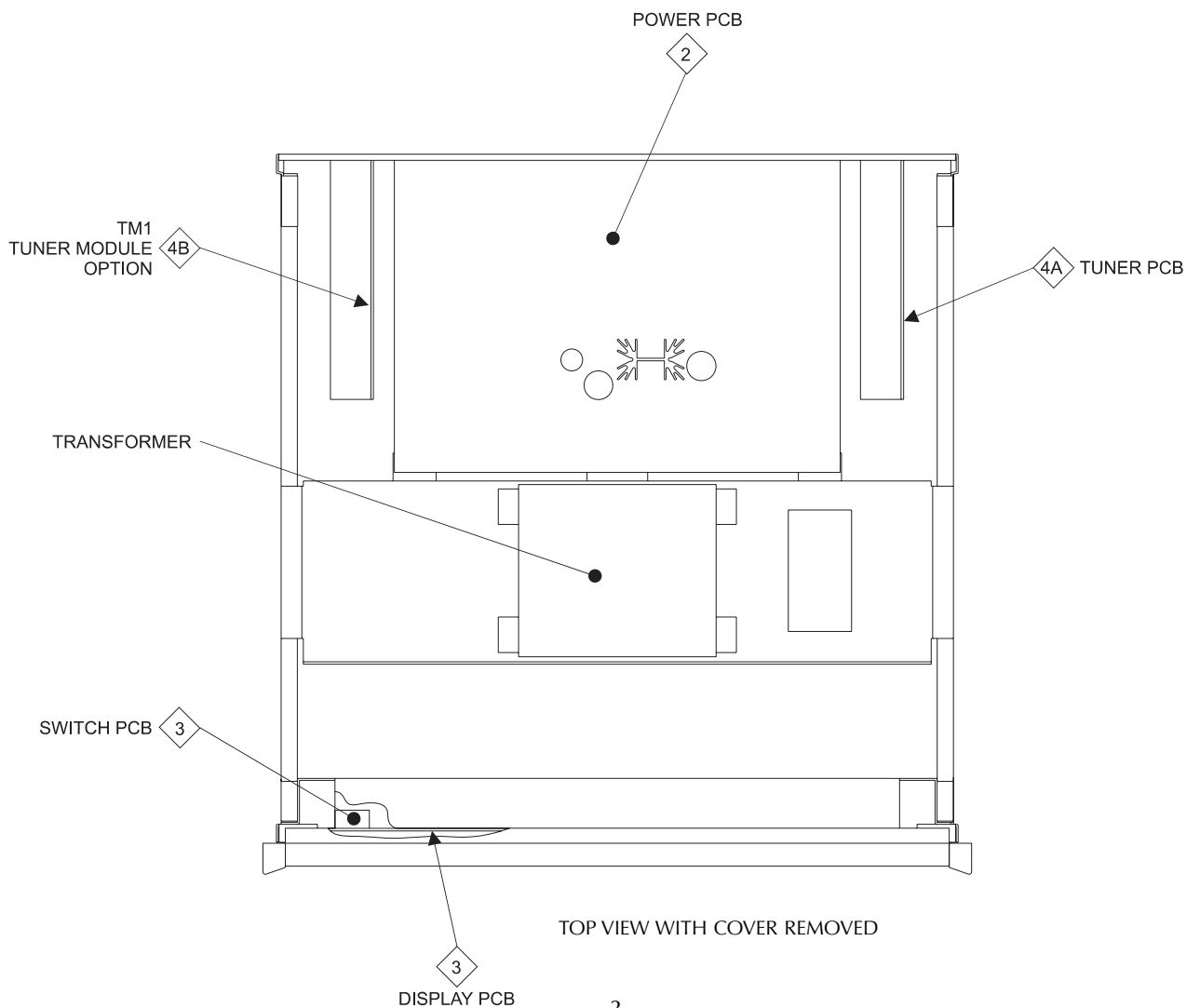
NOTES

1. The heavy notes on the schematic denote the primary signal path.
2. Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
 - a. AC input at 120 volts, 50/60Hz.
 - b. All voltages are +/-10% with respect to ground. A high impedance (10 megaohm) voltmeter must be used.
3. Unless otherwise specified:
 - a. Resistor values are in ohms.
 - b. Capacitor values are microfarads (uF).
 - c. Inductor values are in microhenries (uH).
4. On PC board drawings, Square pad indicates:
 - a. Polarized Capacitors - Positive
 - b. Diodes - Cathode
 - c. Others - Pin 1
5. **WARNING**  Parts marked with the symbol have critical characteristics. Use only replacement parts recommended by the manufacturer.

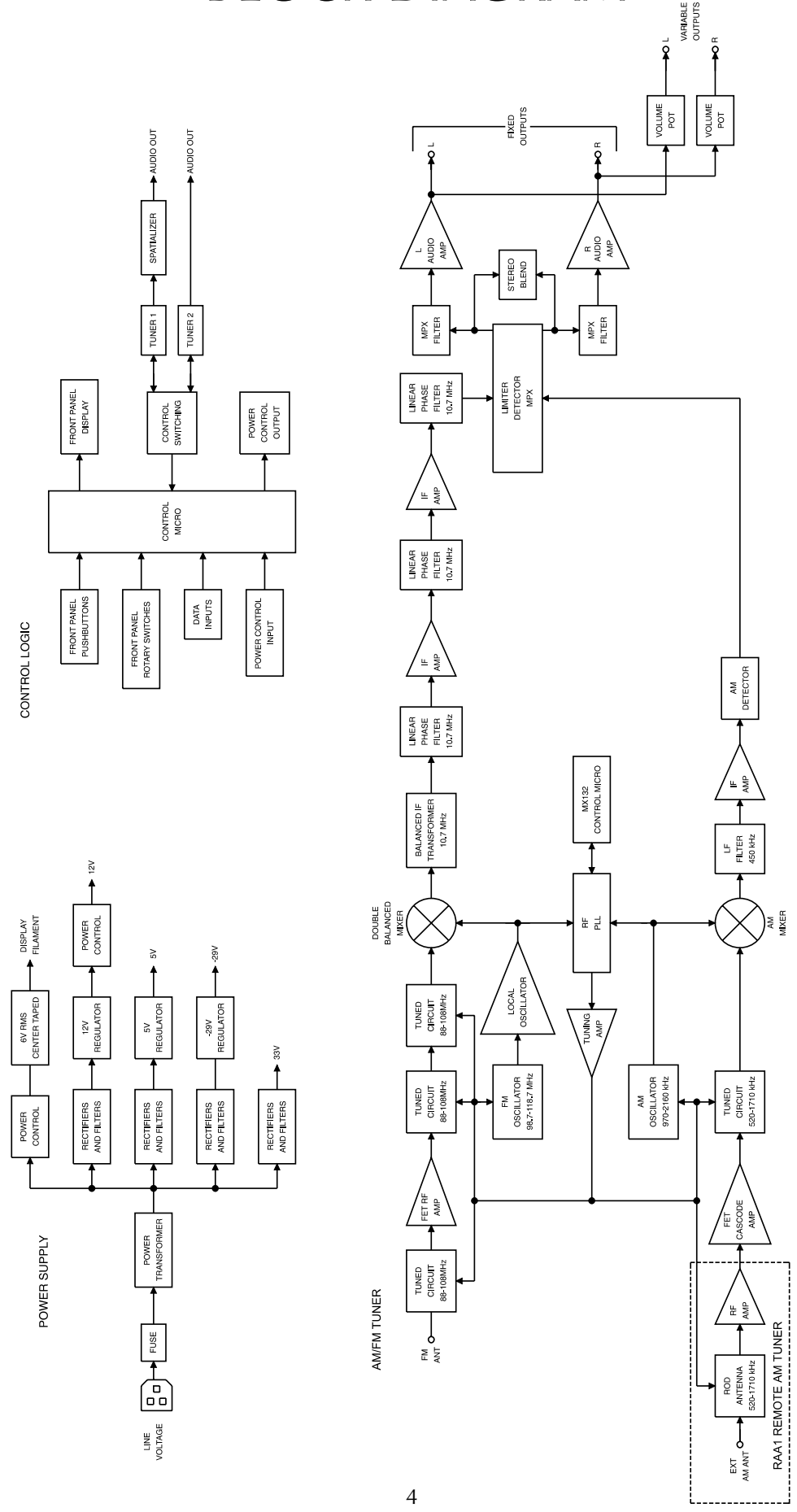
REAR PANEL



SECTION LOCATION

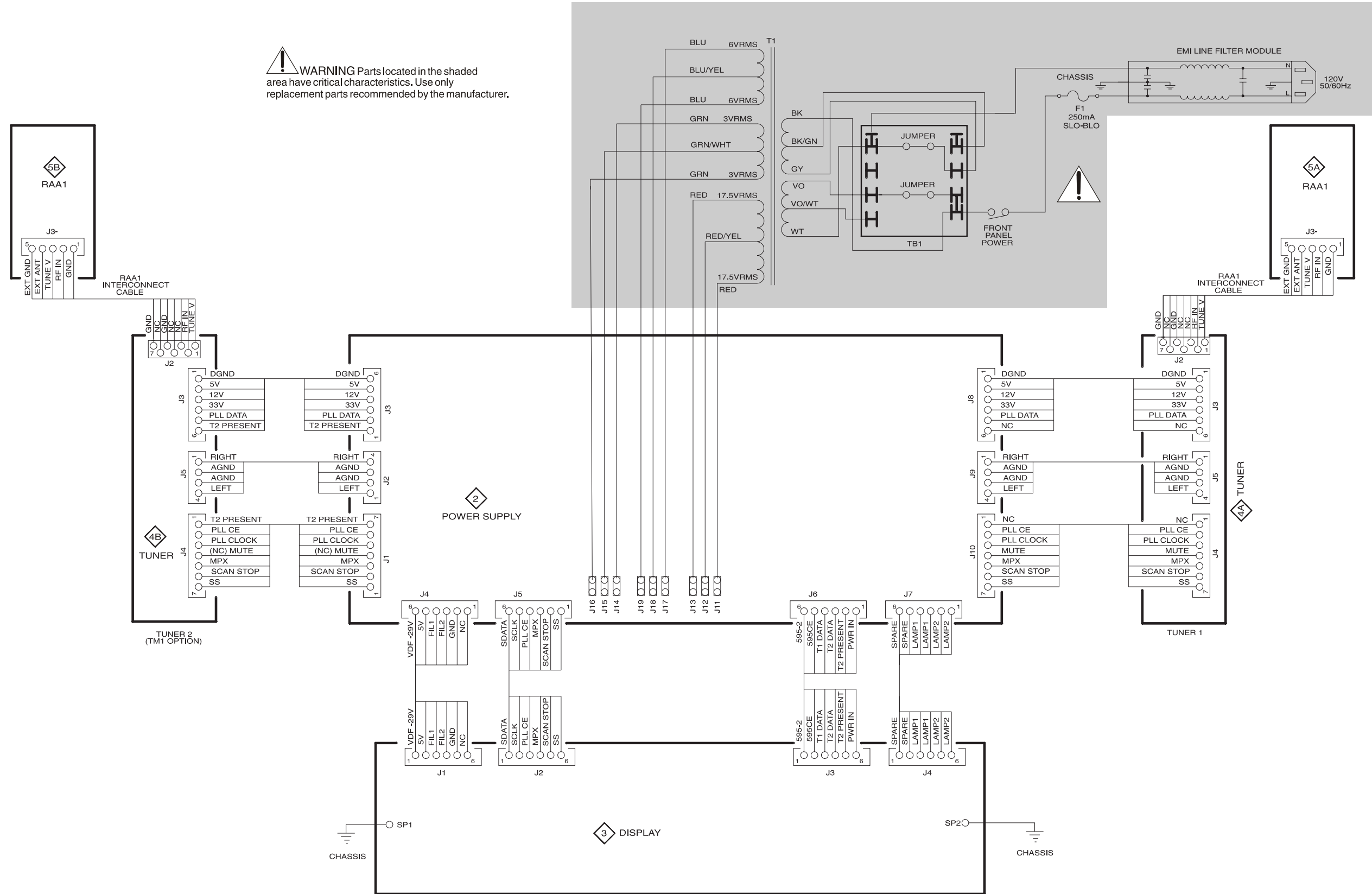


BLOCK DIAGRAM

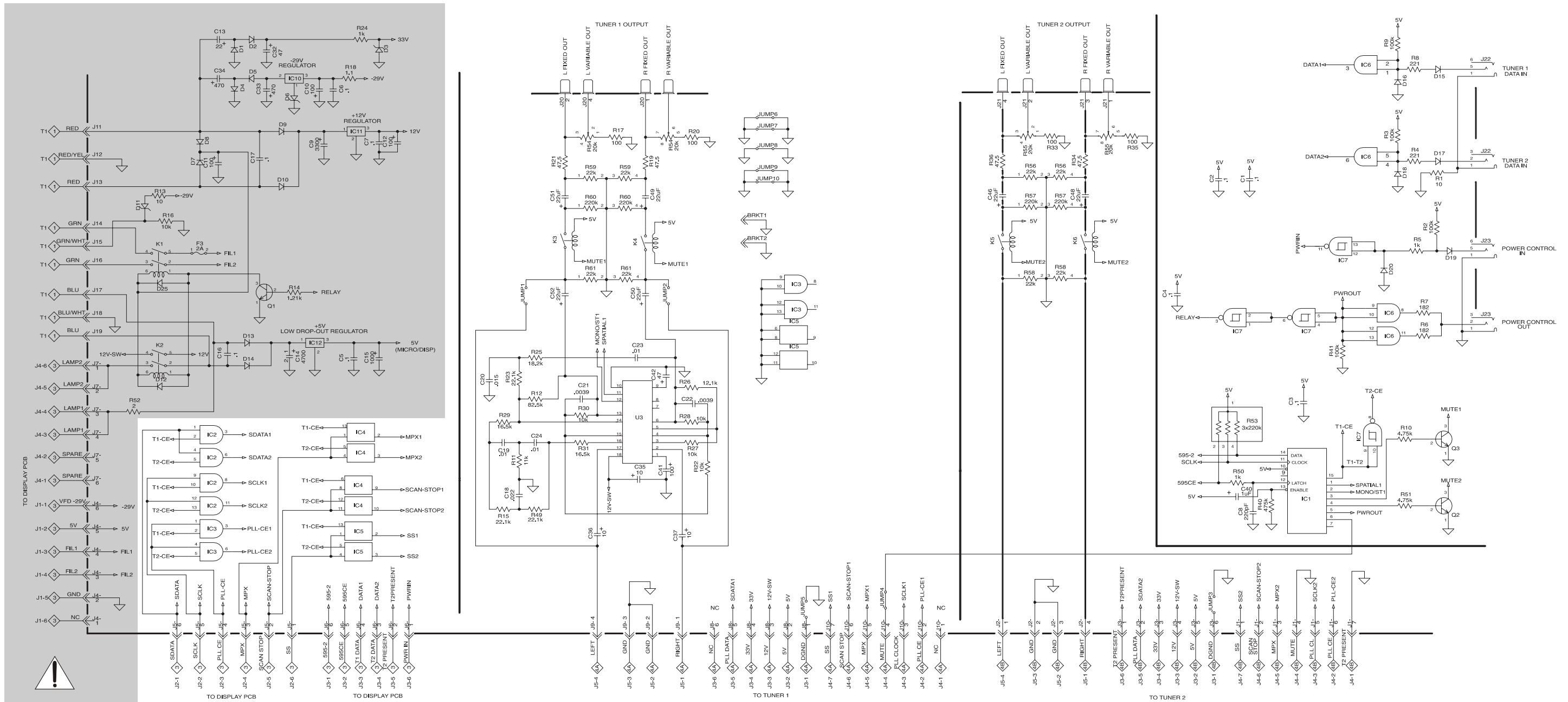


INTERCONNECT

WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.



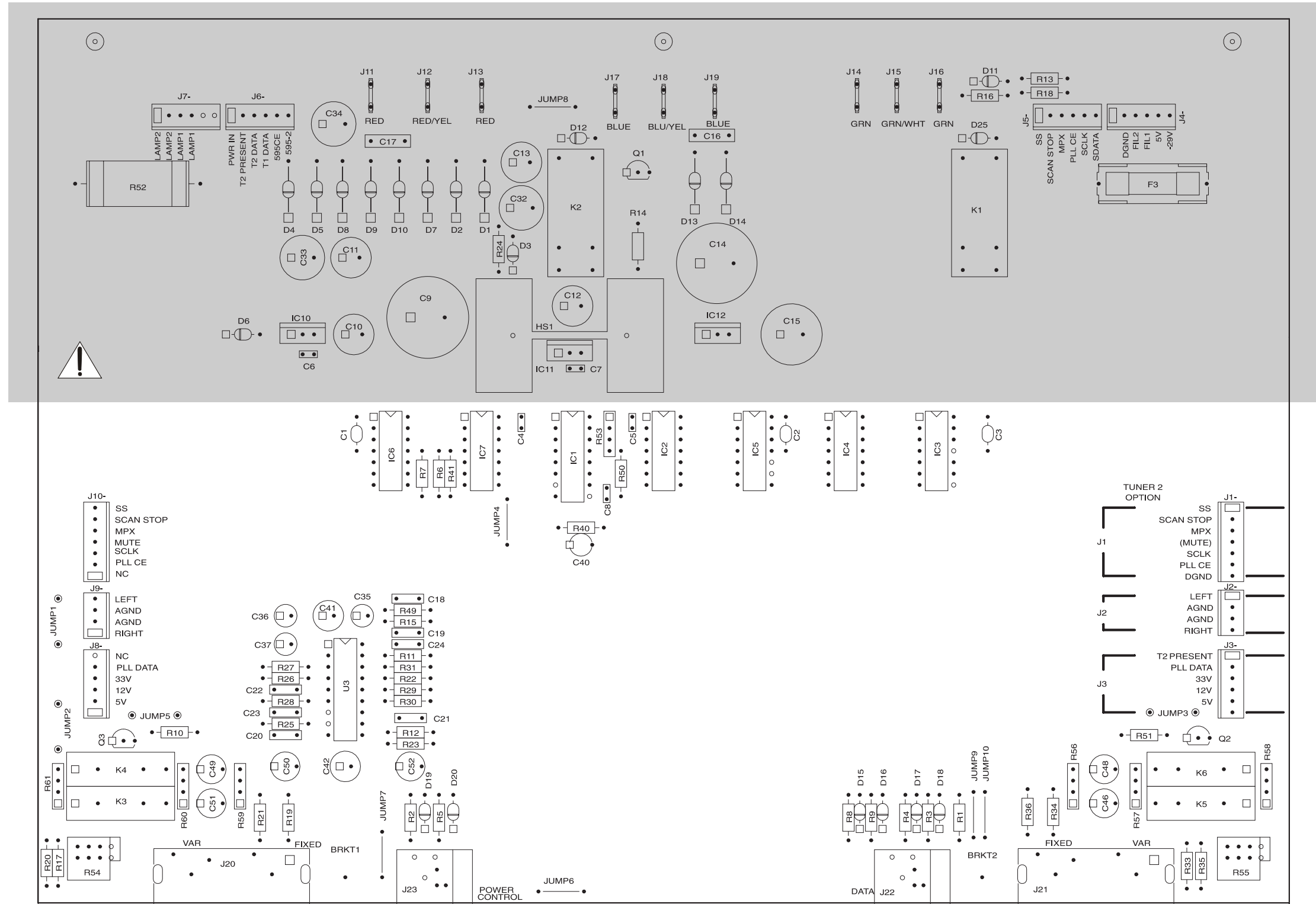
2 POWER SUPPLY 049410



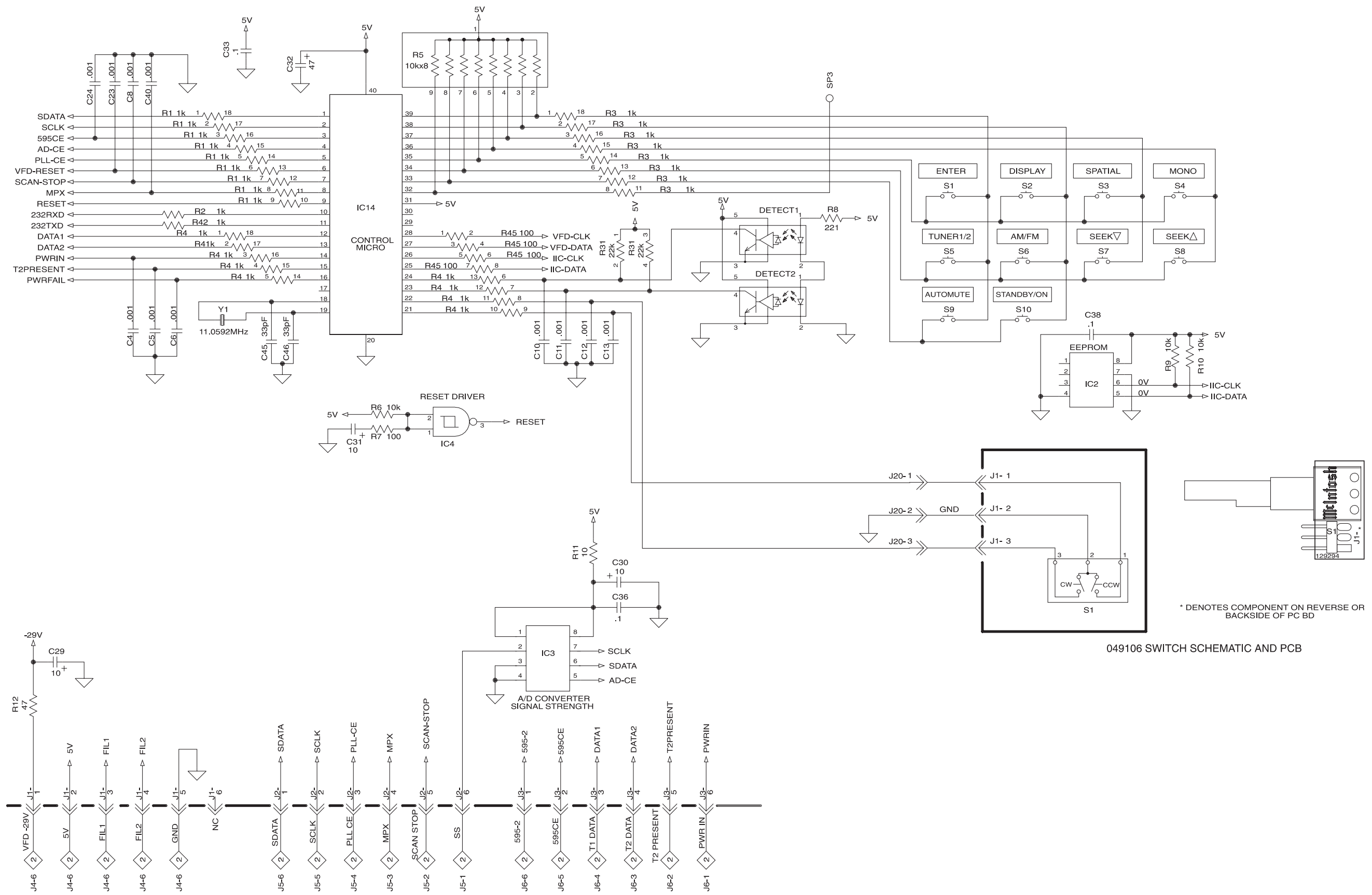
! WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.

2 POWER SUPPLY 049410

! WARNING Parts located in the shaded area have critical characteristics. Use only replacement parts recommended by the manufacturer.



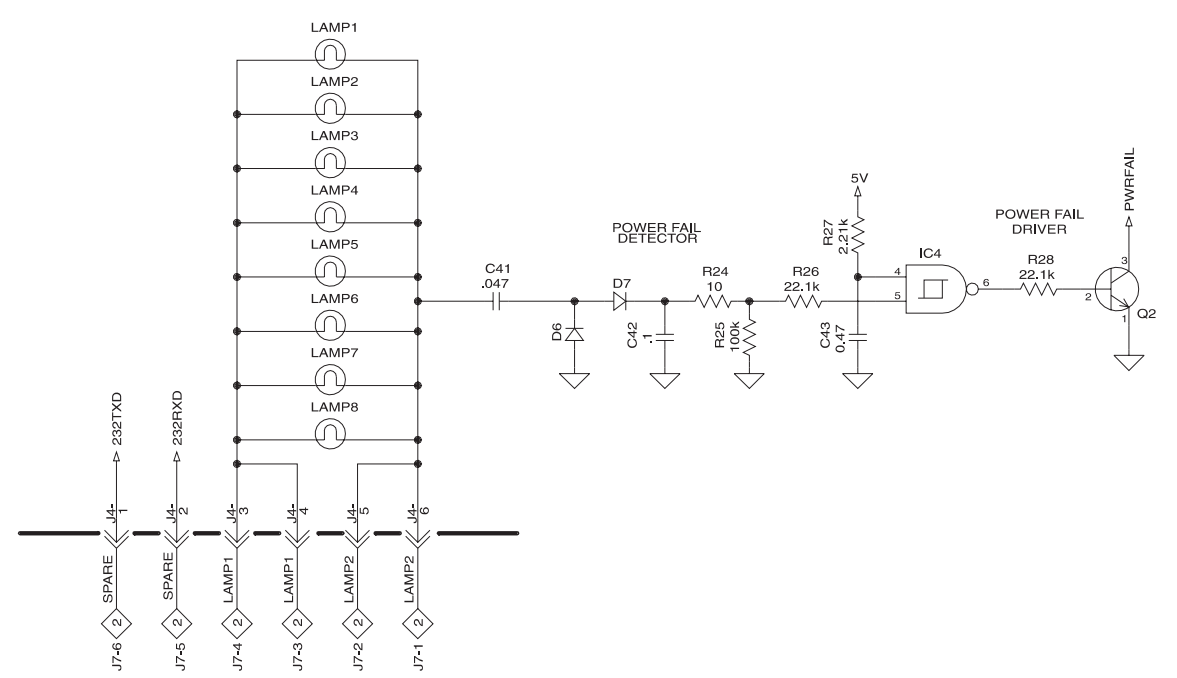
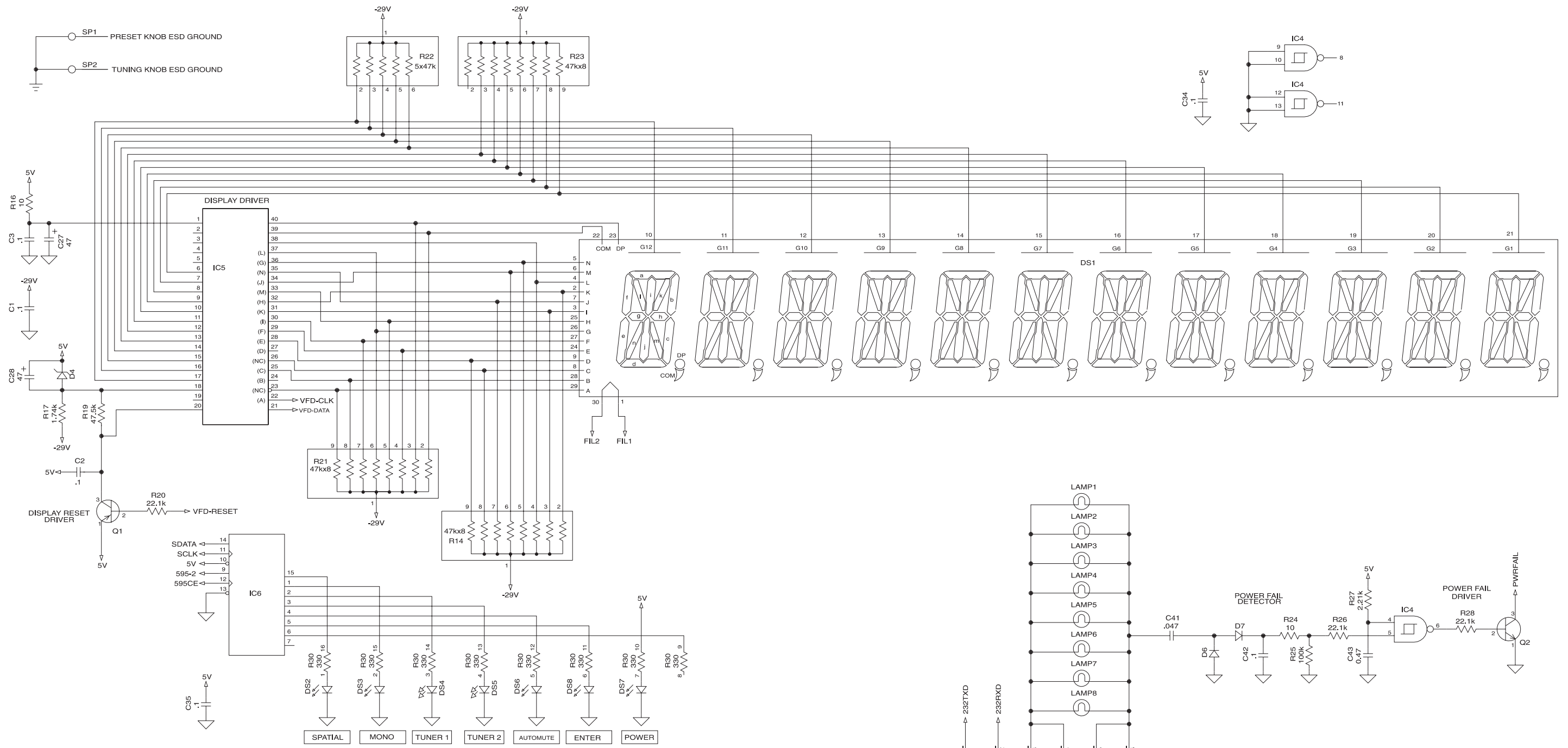
3 DISPLAY 049409 1 OF 2



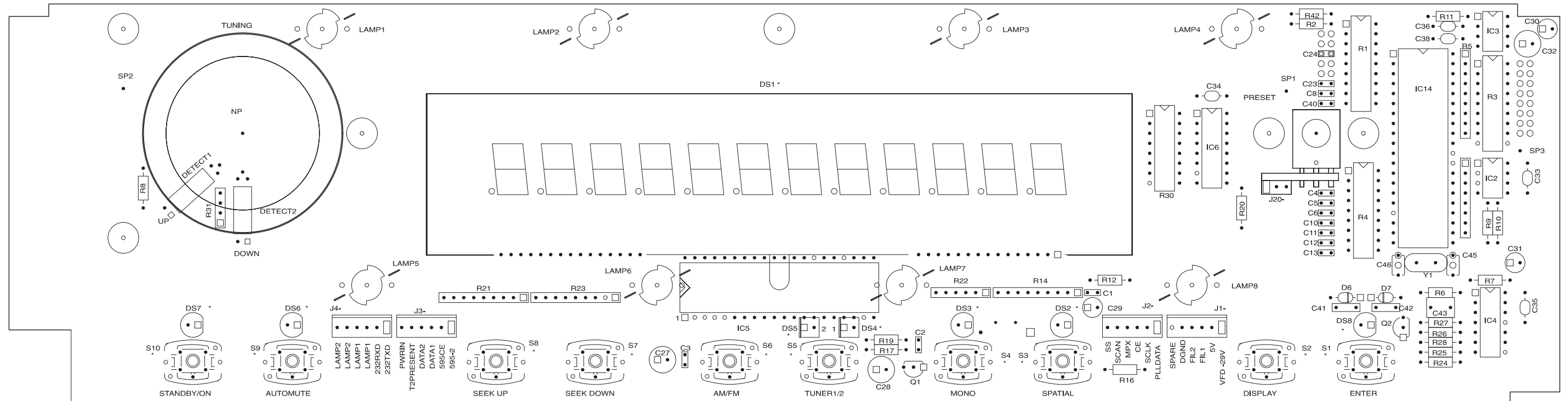
049106 SWITCH SCHEMATIC AND PCB

* DENOTES COMPONENT ON REVERSE OR BACKSIDE OF PCB

3 DISPLAY 049409 2 OF 2



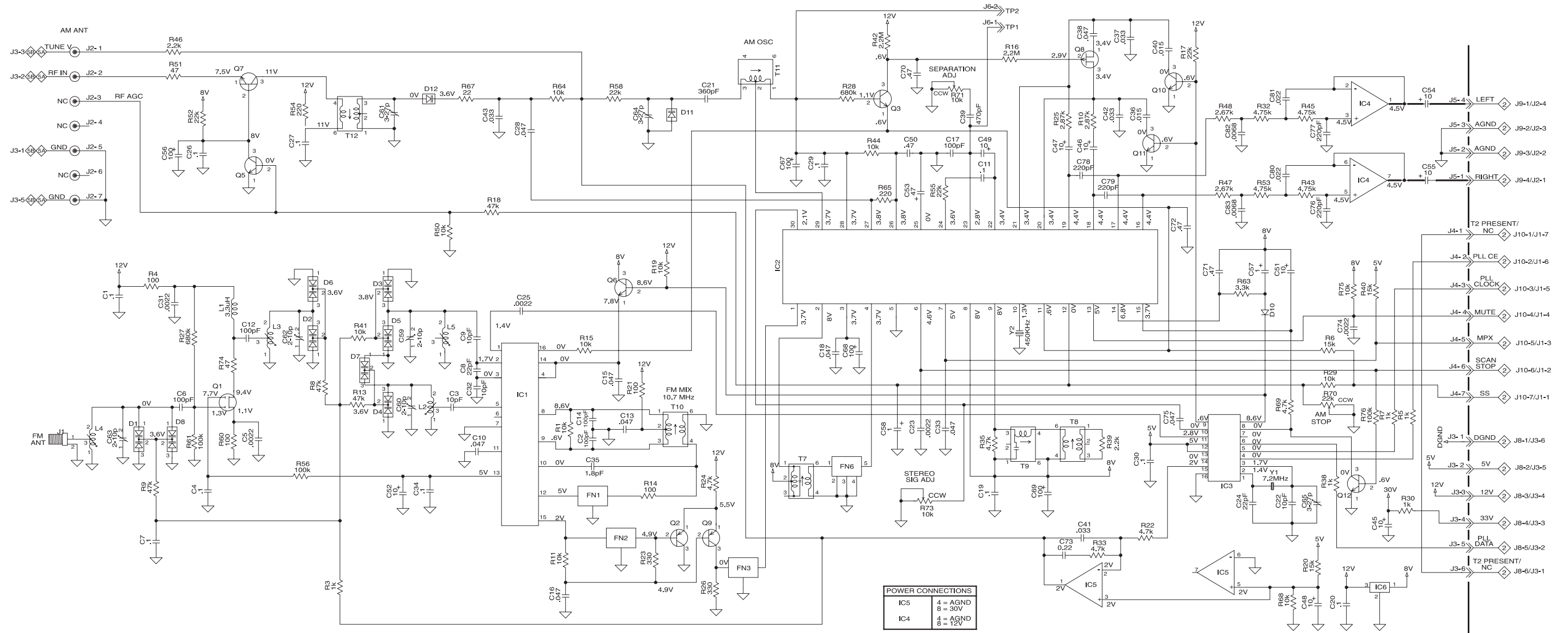
3 DISPLAY 049409



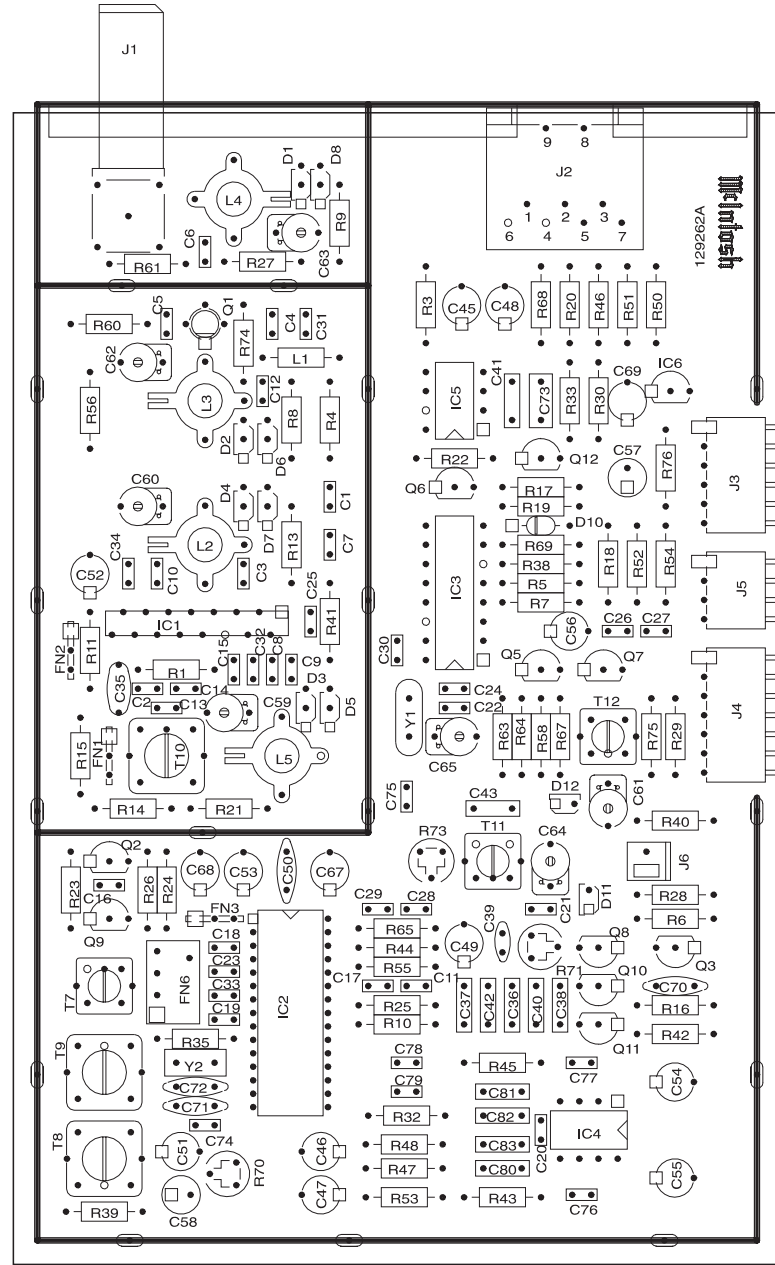
*DENOTES COMPONENTS LOCATED ON REVERSE OR BACKSIDE OF PC BD

4A 4B TUNER 049084

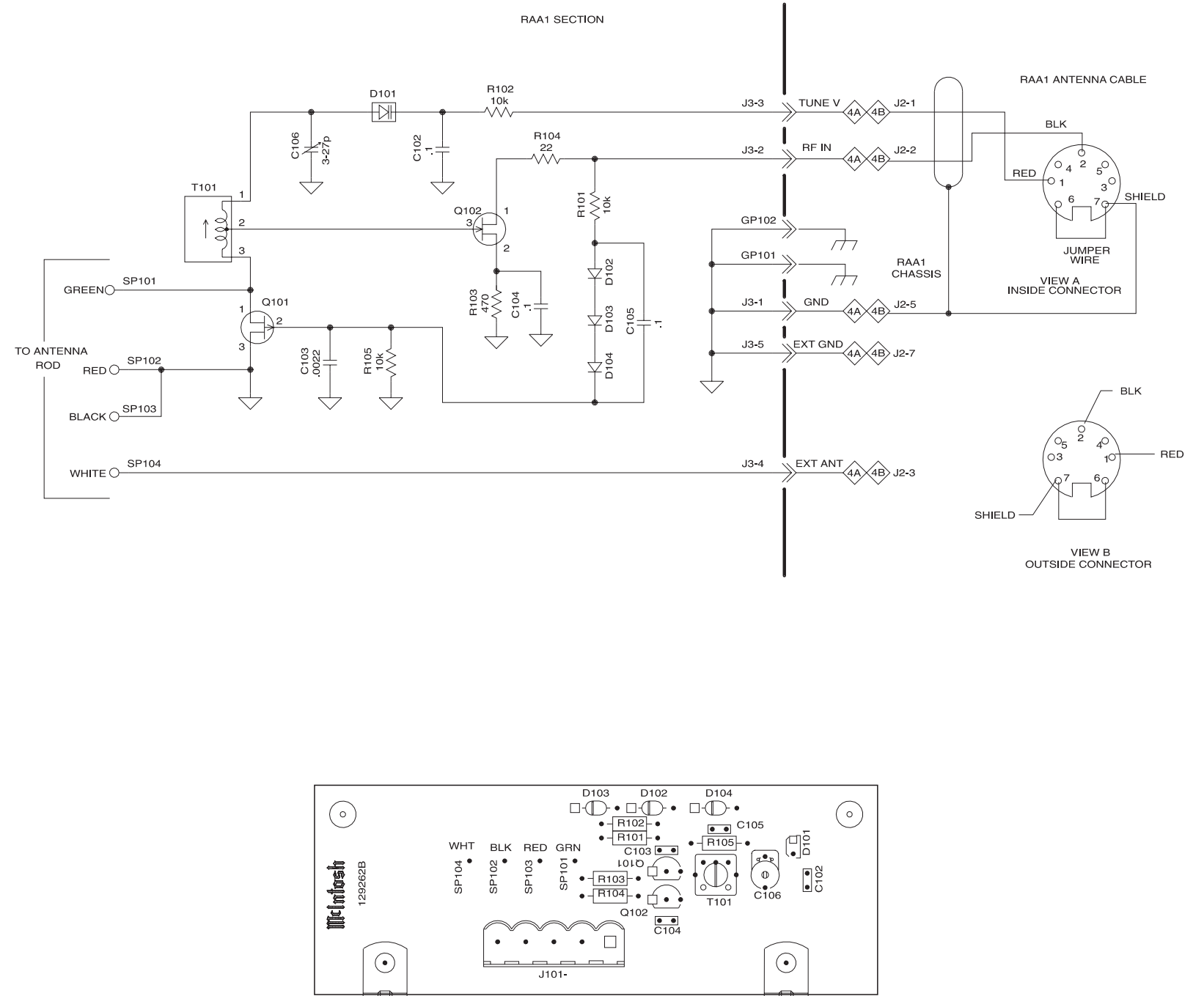
MR85



4A 4B TUNER 049084



5A 5B RAA1 049084



PARTS LIST

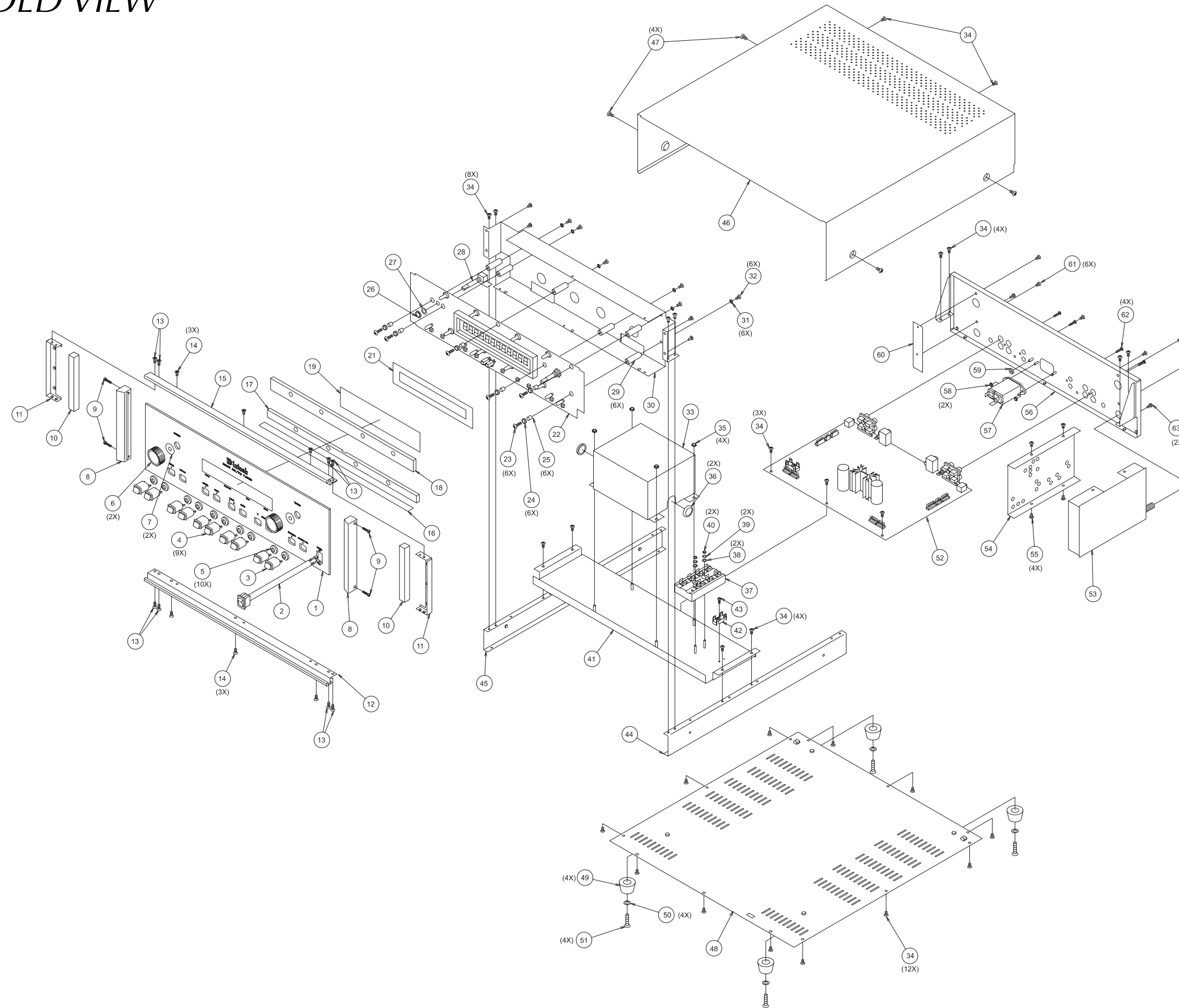
| | | | | | |
|------------------------------|--|------------------------------|--------------------------|--------------------------------|--------------|
| 144351 | 1.74K 1% 1/4W MF RES | R17 | 133189 | IC OPERATIONAL AMPLIFIER | IC4 IC5 |
| 144366 | RES NETWORK ISOLATED 2X22K | R31 | 133231 | LA1175 FM FRONT END | IC1 |
| 150058 | TACT SWITCH | S1 S2 S3 S4 | 133270 | IC DIRECT PLL FREQ SYNTHESIZER | IC3 |
| | | S5 S6 S7 S8 | 133381 | AM-FM MPX TUNER IC | IC2 |
| | | S9 S10 | 134406 | TRIMPOT 22K | R70 |
| 178133 | 40-PIN IC SOCKET | IC14 | 134414 | POTENTIOMETER: 10K OHM | R71 R73 |
| 180051 | CRYSTAL 11.0592MHZ | Y1 | | | |
| | | | 141025 | RES CF 100 5% 1/4W | R4 R14 R21 |
| | | | | | R60 |
| 049084 TUNER/RAA1 PCB | | | | | R54 R65 |
| 060027 | TRIM CAP: 2-10PF | C59 C60 C62 | 141033 | RES CF 220 5% 1/4W | R23 R26 |
| | | C63 | 141037 | RES CF 330 5% 1/4W | R103 |
| 060029 | 3-27PF TRIMMER CAPACITOR | C61 C64 C65 | 141041 | RES CF 470 5% 1/4W | R3 R5 R7 R30 |
| | | C106 | 141049 | RES CF 1.0K 5% 1/4W | R38 |
| 061002 | DISC CAP: 1.8PF+/- .25PF NPO | C35 | | | R39 R46 |
| 061249 | DISC CAP: .47UF 50V MONOLITHIC | C50 C70 C71 | 141057 | RES CF 2.2K 5% 1/4W | R63 |
| | | C72 | 141060 | RES CF 3.3K 5% 1/4W | R22 R24 R33 |
| 061256 | M.CAP: 470PF,5%,100V | C39 | 141064 | RES CF 4.7K 5% 1/4W | R35 R69 |
| 061257 | 360PF 5% 100V | C21 | | | R1 R11 R15 |
| 061273 | 220PF 5% 100V NPO | C76 C77 C78 | 141072 | RES CF 10K 5% 1/4W | R19 R29 R41 |
| | | C79 | | | R44 R50 R64 |
| 061275 | MONO CAP: 100PF,5%,100V,NPO | C2 C6 C12 | | | R68 R75 R101 |
| | | C14 C17 | | | R102 R105 |
| 061277 | MONO CAP 0.1MF 20% 50V | C1 C4 C7 C11 | | | R6 R20 R40 |
| | | C19 C20 C26 | 141076 | RES CF 15K 5% 1/4W | R17 R52 R55 |
| | | C27 C29 C30 | 141080 | RES CF 22K 5% 1/4W | R58 |
| | | C34 C102 | | | R8 R9 R13 |
| | | C104 C105 | 141088 | RES CF 47K 5% 1/4W | R18 |
| 061282 | 22PF 10% 100V CAPACITOR | C8 C24 | | | R56 R61 R76 |
| 061286 | MONO CAP .047UF 10% 50V RADIA | C10 C13 C15 | 141096 | RES CF 100K 5% 1/4W | R27 R28 |
| | | C16 C18 C28 | 141116 | RES CF 680K 5% 1/4W | R16 R42 |
| | | C33 C75 | 141124 | RES CF 2.2M 5% 1/4W | R67 R104 |
| 061287 | MONO CAP .0022UF 10% 50V RADI | C5 C23 C25 | 141144 | RES CF 22 5% 1/4W | R51 R74 |
| | | C31 C74 C103 | 141152 | RES CF 47 5% 1/4W | R32 R43 R45 |
| 061288 | MONO CAP 10PF 10% 100V | C3 C9 C22 | 144097 | METAL FILM RES: 4.75K 1% 1/4W | R53 |
| | | C32 | | | R47 R48 |
| 064310 | M POLY CAP:.0068MF,10%,63V DC | C82 C83 | 144121 | METAL FILM RES: 2.67K 1% 1/4W | R10 R25 |
| 064314 | M POLY CAP:.015UF,5%,63V DC | C36 C40 | 144142 | METAL FILM RES 2.87K 1% 1/4W | T9 |
| 064316 | M POLY CAP:.022UF,5%,63V DC | C80 C81 | 162102 | TRANSFORMER: QUAD DET PRIM | T8 |
| 064318 | M POLY CAP:.033UF,5%,63V DC | C37 C41 C42 | 162103 | TRANSFORMER: QUAD DET SEC | T7 |
| | | C43 | 162113 | TRANSFORMER (MATCHING) | T10 |
| 064320 | M POLY CAP:.047UF 5% 63VDC | C38 | 162114 | 10.7MHZ MIXER TRANSFORMER | T11 T101 |
| 064329 | M POLY CAP 0.22UF 5% | C73 | 162115 | AM OSC. COIL | T12 |
| 066269 | CAP ELECT 1UF 10% 50V | C57 C58 | 162117 | AM RF TRANSFORMER | Y1 |
| 066445 | ELECT CAP 10MF, 50V AMMO PACK | C45 C46 C47 | 180036 | CRYSTAL 7.2MHZ | Y2 |
| | | C48 C49 C51 | 180046 | CERAMIC RESONATOR 450KHZ | FN6 |
| | | C52 C54 C55 | 180055 | FILTER 450KHZ | FN1 FN2 FN3 |
| | | C53 | 180056 | FILTER CERAMIC 10.7MHZ | |
| | | C56 C67 C68 | | | |
| | | C69 | 049106 SWITCH PCB | | |
| 070047 | SILICON DIODE 1N4148 T&R | D10 D102 | 117670 | CONNECTOR 3-PIN RIGHT ANGLE | J1- |
| | | D103 D104 | 146249 | SWITCH PULSE ROTARY | S1 |
| 070122 | (8) DIODE TUNING ALL 8 DIODES USED ON JAPANESE VERSION | D1 D2 D3 D4 (D5 D6 D7 D8) | | | |
| | | D11 D12 D101 | | | |
| 070125 | TUNING DIODE | J6 | | | |
| 117213 | 2-PIN MALE CONNECTOR | J3 | | | |
| 117223 | MALE CONN: 6 PIN RT. ANGLE | J5 | | | |
| 117240 | 4 PIN RT. ANGLE | J4 | | | |
| 117319 | CONN, RT.ANGLE, MALE, 7 POS | J2 | | | |
| 117383 | DIN CONN 7-PIN | J1 | | | |
| 117661 | GOLD F CONNECTOR RIGHT ANGLE | J101- | | | |
| 117677 | HEADER 5 PIN | L1 | | | |
| 122229 | RF CHOKE: 3.3UH, 10% | L4 L5 | | | |
| 122249 | ANT. COIL | L2 L3 | | | |
| 122250 | MIXER COIL | Q102 | | | |
| 132178 | TRANSISTOR: RF FET, J-310 FET | Q8 Q101 | | | |
| 132220 | TRANSISTOR: 1-4V,PNC OFF 250 OH | Q3 Q5 Q6 Q7 | | | |
| 132223 | TRANSISTOR NPN MPS4124 2K/REEL | Q10 Q11 Q12 | | | |
| | | Q2 Q9 | | | |
| 132224 | TRANSISTOR PNP SI MPS4126 2K/R | Q1 | | | |
| 132256 | #3SK114Y (Q1) D MOS FET | IC6 | | | |
| 133147 | MC78L08ACP +8V REG | | | | |

NOTES

EXPLODED VIEW PARTS LIST

| <i>Ref. No.</i> | <i>Part No.</i> | <i>Description</i> |
|---------------------|---------------------|--------------------------------------|
| 1 | 016419 | FRONT GLASS |
| 2 | 171320 | C/A SWITCH |
| 3 | 017531 | PUSHBUTTON ASSY RED |
| 4 | 017517 | PUSHBUTTON ASSY |
| 5 | 078033 | O-RING |
| 6 | 049411 | KNOB ASSY |
| 7 | 104073 | BLK FELT WASHER |
| 8 | 018611 | 5" ENDCAP |
| 9 | 101042 | TS 4-40 X 1/2 SLOT FILLISTER |
| 10 | 094360 | FOAM TAPE 1/2 X1/2 |
| 11 | 004810 | EXTRUSION BRACKET 5" |
| 12 | 018609 | BOTTOM EXTRUSION |
| 13 | 101172 | TCS 6-32 X 1/4 PHIL FLAT U/C |
| 14 | 100147 | MS 6-32 X 3/16 PHIL FLAT U/C |
| 15 | 018587 | TOP EXTRUSION |
| 16 | 022314 | LED SHIELD |
| 17 | 017806 | PLEXIGLAS LOWER |
| 18 | 017805 | PLEXIGLAS UPPER |
| 19 | 017738 | FRONT PANEL FILTER |
| 21 | 017737 | VINYL LOCATOR |
| 22 | 049409 | DISPLAY PCB ASSY |
| 23 | 100275 | MS 6-32 X 1/2 PHIL BLK TRUSS HD |
| 24 | 078031 | GROMMET |
| 25 | 021030 | SPACER: 6 X 1/4 |
| 26 | 110004 | M7 X .75 HEX CONTROL NUT |
| 27 | 104013 | LK WASH: 5/16 X .435 X .002 INT STAR |
| 28 | 049106 | SWITCH PCB ASSY |
| 29 | 021063 | STANDOFF: 6-32 X 1-1/8 HEX |
| 30 | 005077 | SUBPANEL |
| 31 | 104007 | LK WASH: 6 X .288 INT STAR |
| 32 | 100157 | MS 6-32 X 1/4 PHIL PAN ZINC |
| 33 | 005072 | TRANSFORMER CAN |
| 34 | 101054 | TS 6-32 X 1/4 PHIL PAN TAPTITE BLK |
| 35 | 102045 | KEP-NUT 6-32 SPECIAL |
| 36 | 078017 | GROMMET 3/4 X 9/16 |
| 37 | 074091 | AC TERMINAL BLOCK |
| 38 | 104001 | FLAT STEEL WASH #4 X 9/32 X .025 |
| 39 | 104004 | LK WASH: 5 X .255 INT STAR |
| 40 | 102022 | MN 4-40 3/16 X 1/16 |
| 41 | 005073 | CHASSIS TRAY |
| 42 | 178160 | FUSE HOLDER |
| 43 | 100284 | SEMS 2-56 X 1/4 PHIL PAN |
| 44 | 004943 | RIGHT SIDE PANEL |
| 45 | 004942 | LEFT SIDE PANEL |
| 46 | 004940 | TOP COVER |
| 47 | 101078 | TS 8-32 X 5/16 PHIL PAN BLK |
| 48 | 004860 | BOTTOM COVER |
| 49 | 017218 | PLASTIC FEET-BLACK |
| 50 | 104080 | FLAT WASHER #10 CLEAR ZINC |
| 51 | 100159 | MS 10-32 X 3/4 PH PAN BLK ZINC |
| 52 | 049410 | POWER PCB ASSY |
| 53 | 049084 | TUNER ASSY/RAA1 |
| 54 | 004903 | TUNER COVER |
| 55 | 101097 | TS 6-32 X 3/16 PHIL PAN TAP |
| 56 | 005070 | REAR PANEL |
| 57 | 117711 | AC RECEPT WITH LINE FILTER |
| 58 | 102001 | KEP NUT 4-40 CADMIUM PLATE |
| 59 | 102020 | MACH NUT: 6-32 SELF-LOCK |
| 60 | 005078 | REAR PANEL PLUG |
| 61 | 100250 | SEMS MS 6-32 X 1/4 PHIL PAN |
| 62 | 101114 | SM 4-24 X 1/2 PHIL PAN TYPE A |
| 63 | 101109 | TS 6-32 X 5/16 PHIL PAN TAPTITE |

EXPLODED VIEW



REPACKING INSTRUCTION

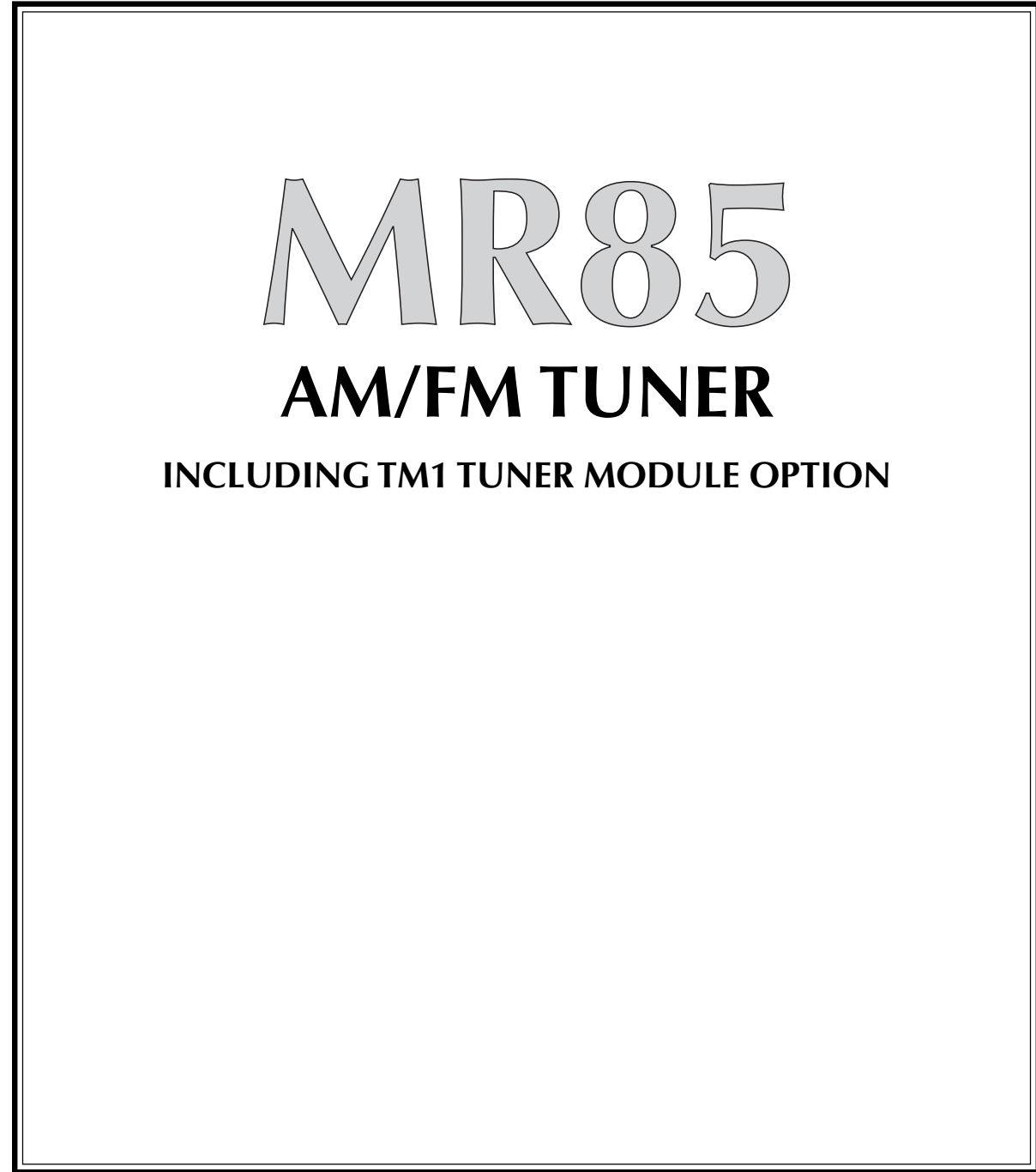
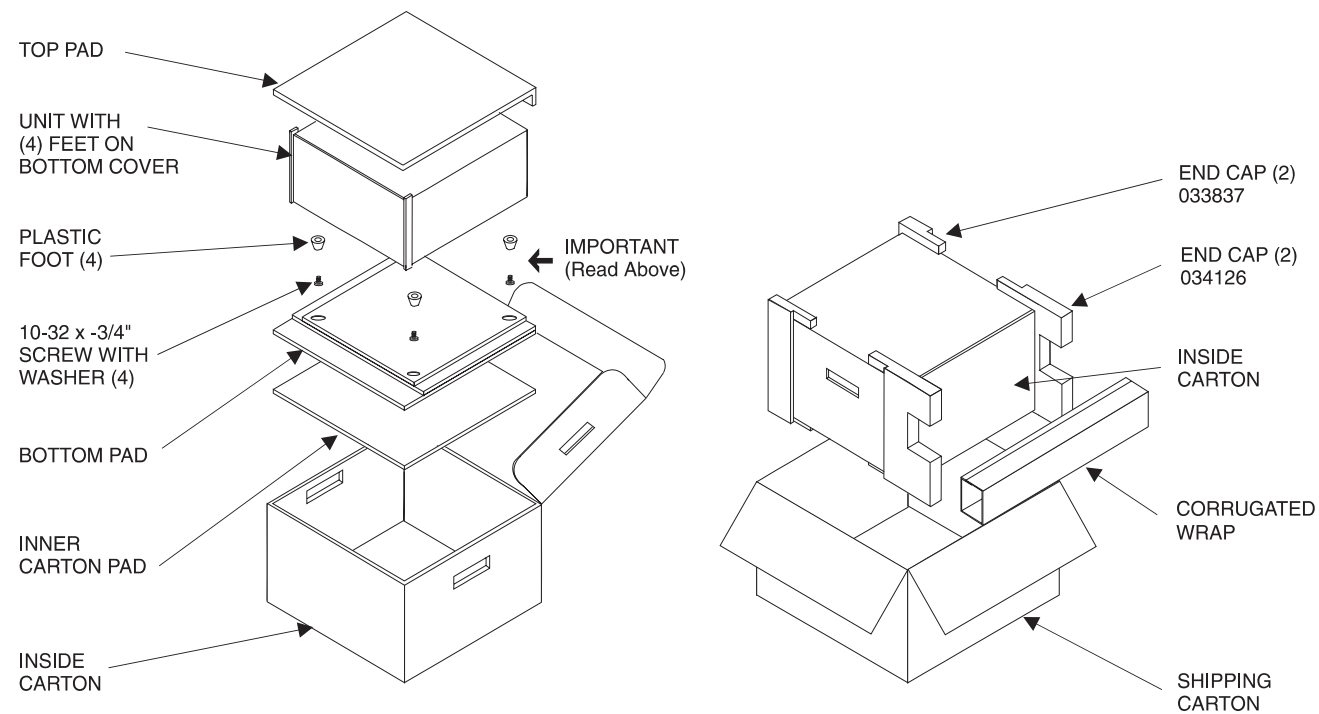
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

IMPORTANT - The four plastic feet must be attached to the bottom of the unit so they will locate in the four holes of the bottom pad. Failure to do this will result in shipping damage.

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are in good serviceable condition.

| Qty. | Part No. | Description |
|------|----------|-----------------------------|
| 1 | 034125 | Shipping carton only |
| 2 | 033837 | End cap (Foam pad) |
| 2 | 034126 | End cap (Foam Pad) |
| 1 | 034044 | Corrugated wrap |
| 1 | 033836 | Inside carton only |
| 1 | 033725 | Top pad |
| 1 | 034008 | Bottom pad |
| 1 | 034037 | Inner Carton Pad |
| 4 | 017218 | Plastic foot |
| 4 | 100159 | #10-32 x 3/4" Machine screw |
| 4 | 104083 | #10 x 7/16" Flat washer |



SERVICE MANUAL

The continuous improvement of its products is the policy of McIntosh Laboratory Incorporated, who reserve the right to improve design without notice. Because of the constant upgrading of McIntosh products' circuitry and components, the Company cannot insure, and does not warrant, the accuracy of the within schematic material, which is intended for information only.

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