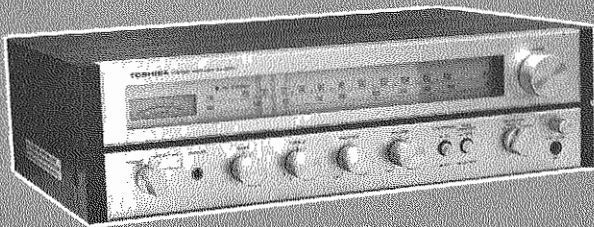


TOSHIBA

AM/FM STEREO RECEIVER

SA-220C



SPECIFICATIONS

■ FM TUNER SECTION

| | |
|------------------------|-----------------------------|
| Receiving Frequency: | 88~108 MHz |
| Sensitivity (IHF): | 2.3 μ V |
| Harmonic Distortion | |
| MONO: | Less than 0.6% (400Hz 100%) |
| STEREO: | Less than 0.8% (400Hz 100%) |
| Signal-to-Noise Ratio: | 65dB |
| Frequency Response: | 20 Hz~15 kHz \pm 3dB |
| Image Rejection: | 55dB (94 MHz) |
| IF Rejection: | 70dB (94 MHz) |
| Capture Ratio (IHF): | 3.5dB |
| AM Suppression: | 45dB |
| Stereo Separation: | More than 35dB (400 Hz) |

■ AM TUNER SECTION

| | |
|------------------------|--|
| Receiving Frequency: | 525~1605 kHz |
| Sensitivity: | 300 μ V/m (IHF, Ferrite Antenna), 15 μ V (IHF, ext. antenna) |
| Image Rejection: | 50dB |
| IF Rejection: | 35dB |
| Signal-to-Noise Ratio: | 50dB |

Power Output

8 watts per channel, min. RMS, at 4 ohms from 40 Hz to 20 kHz
 7 watts per channel, min. RMS, at 8 ohms from 40 Hz to 20 kHz
 6 watts per channel, min. RMS, at 16 ohms from 40 Hz to 20 kHz
 with no more than 0.8% total harmonic distortion.
 Continuous Power Output

| | |
|------------------------------|--------------------------------------|
| Each Channel Driven (1 kHz): | 13W/13W (8 ohms) 10W/10W (4 ohms) |
|------------------------------|--------------------------------------|

| | |
|------------------------------|--|
| Both Channel Driven (1 kHz): | 11W + 11W (8 ohms) 11W + 11W (4 ohms) |
|------------------------------|--|

High Frequency Distortion

| | |
|----------------------|---------------|
| at Effective Output: | 0.8% or less |
| at 1W Output: | 0.08% or less |

Intermodulation Distortion Ratio

| | |
|------------------------|--------------|
| (at Effective Output): | 0.8% or less |
|------------------------|--------------|

Frequency Response: 30 Hz ~ 25 kHz \pm 3dB

Input Sensitivity (Impedance)

| | |
|------------|-------------------|
| PHONO: | 3mV (50 K ohms) |
| MIC: | 8mV (10 K ohms) |
| AUX: | 200mV (50 K ohms) |
| TAPE PLAY: | 200mV (50 K ohms) |

Recording Output

| | |
|------------|-------|
| TAPE REC.: | 200mV |
| DIN: | 30mV |

Signal-to-Noise Ratio (IHF, Short-circuit, A Network)

| | |
|--------|--------------|
| PHONO: | 70dB or more |
| AUX: | 80dB or more |

Residual Noise:

Less than 1mV

Speaker Impedance:

4 ~ 16 ohms (A, B, A+B)

BASS (100 Hz):

+11dB, -10dB

TREBLE (10 kHz):

\pm 10dB

Damping Factor:

More than 30 (1kHz, 8 ohms)

■ MISCELLANEOUS

| | |
|--------------------|-----------------------------|
| Power Voltage: | AC 120V, 60 Hz |
| Power Consumption: | 47W |
| Dimensions (net): | 445(W) x 130(H) x 270(D) mm |
| Weight (net): | 14.3 lb (6.5kg) |

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FEATURES

1. High sensitivity FET FM Front-end
2. High reliability PLL MPX IC
3. Frequency linear type (FM) wide scale dial
4. PCT low noise transistor
5. Distortion-free, pure complementary OTL Main Amplifier of all stages direct-coupling type
6. Pure electron power transistor protection circuit
7. New mic-mixing circuit system
8. Vertical plug-in type input terminal
9. Wireless shielding

1. OPERATING CONTROLS

1-1 FRONT VIEW

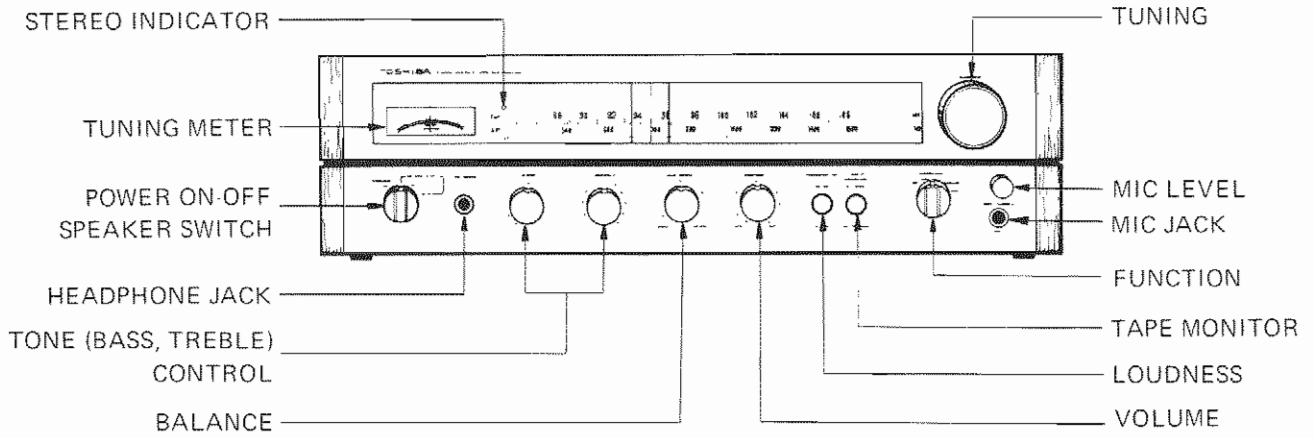


Figure 1.

1-2 REAR VIEW

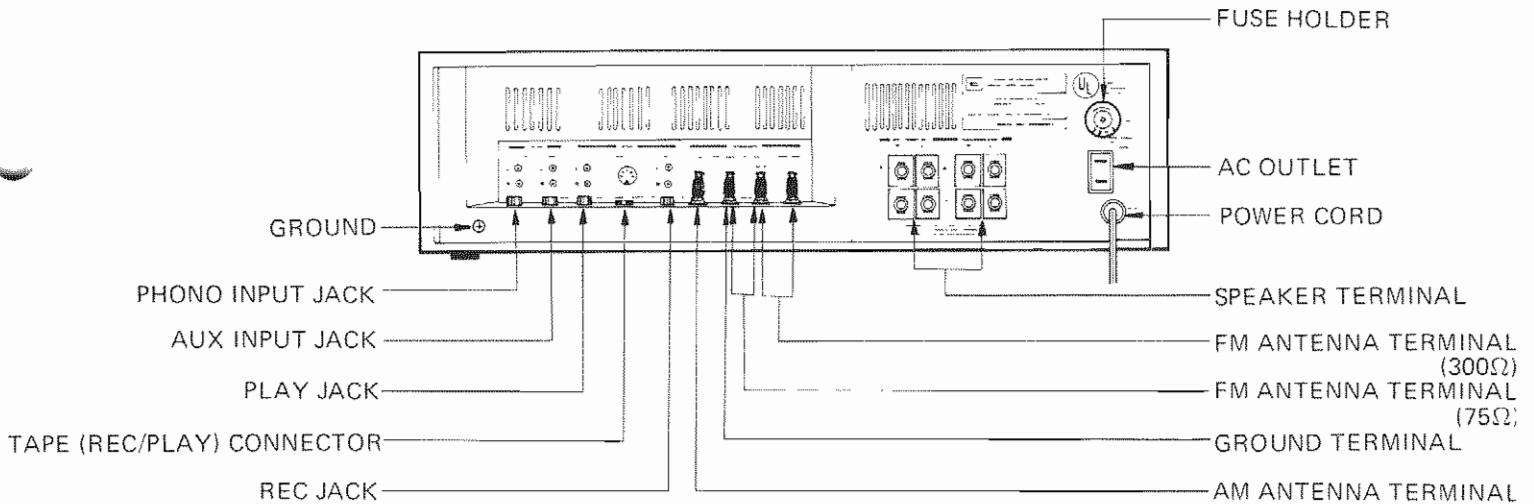


Figure 2.

2. PARTS LOCATIONS

2-1 CHASSIS TOP VIEW

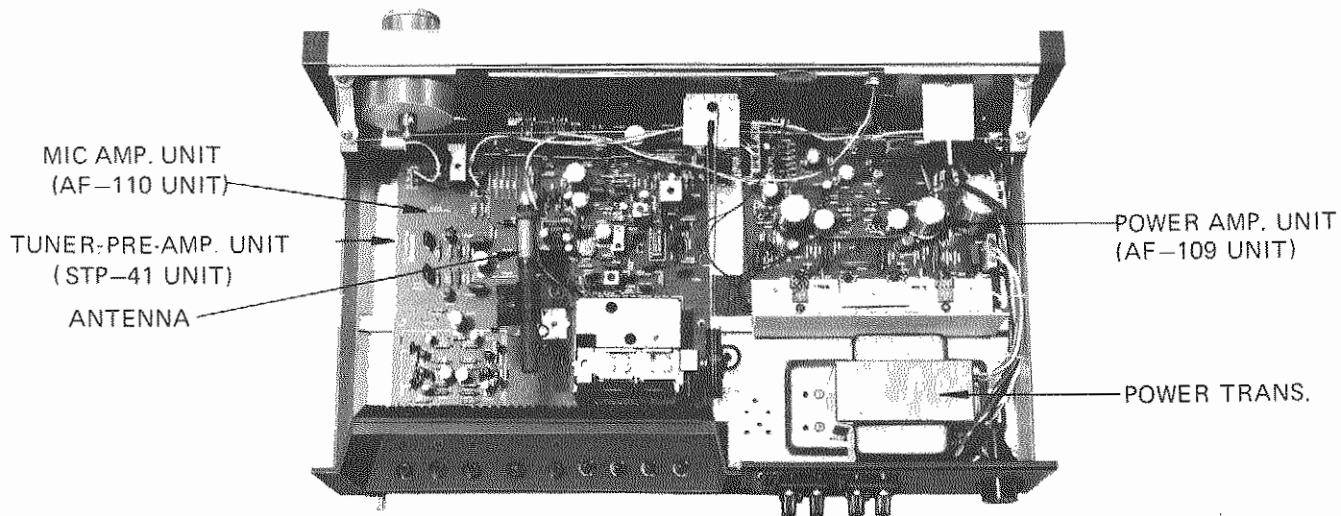


Figure 3.

2-2 CHASSIS BOTTOM VIEW

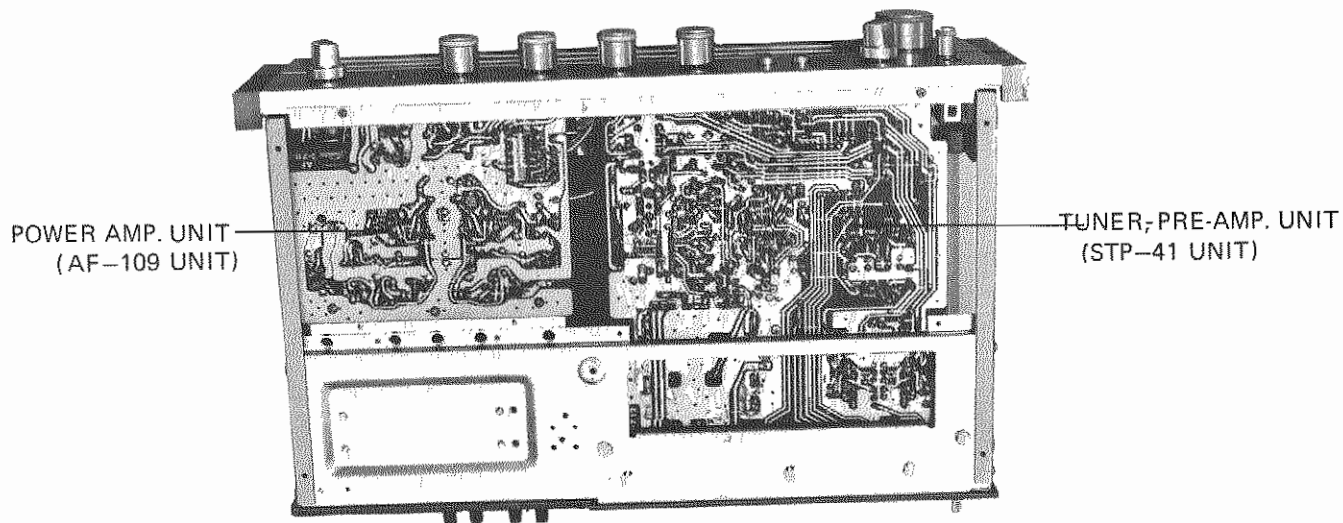


Figure 4.

3. DISASSEMBLY INSTRUCTIONS

3-1 BOTTOM BOARD REMOVAL

1. Remove the six screws ③
2. Open the bottom board to the direction ④

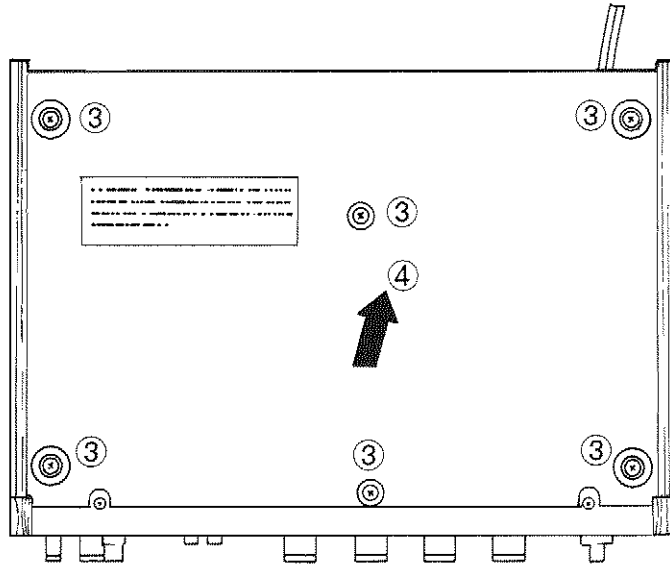


Figure 5.

3-2 CABINET REMOVAL

1. Remove the four screws ①
2. Open the cabinet to the direction ②

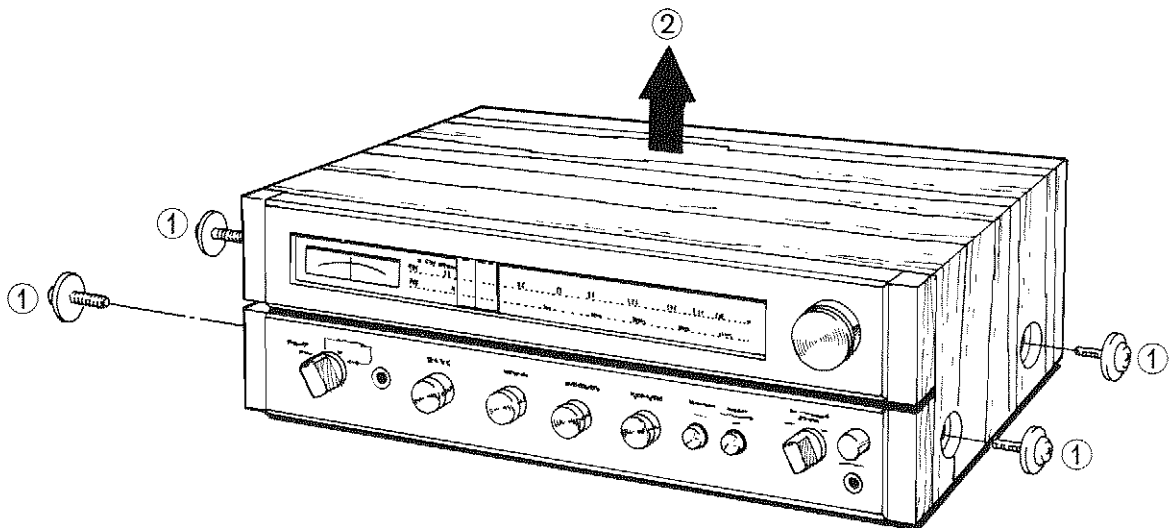


Figure 6.

4. TECHNICAL POINTS

1. New mic-mixing circuit

The feed-in or feed-out operation is possible by the use of the independent microphone volume.

The mixing position can be changed from right to left or center as desired.

Recording of mixing signal is possible (refer to "Mic-mixing" in owner's manual).

2. High Performance FM Tuner

FET FM front end has 2.3 μV IHF usable sensitivity for good reception of weak stations, plus great overload resistance for strong signal areas.

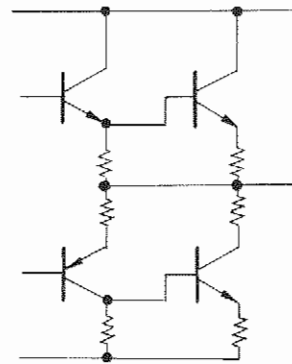
3. High reliability PLL MPX IC

Being incorporated PLL IC in FM tuner MPX circuit, there is no characteristic deterioration caused by the change of temperature or humidity or aging.

4. Pure Complementary Circuit system

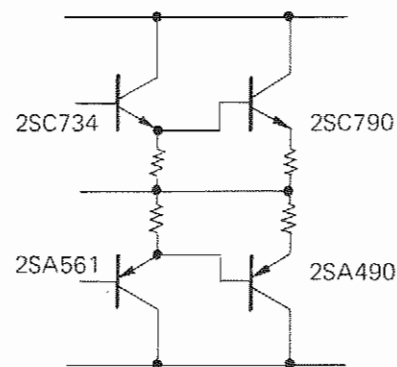
The difference between the Pure Complementary Circuit and the Quasi Complementary Circuit (Figure 7) is that the Darlington connections in the lower part are, as shown in the figure 8, connected to PNP-NPN for the Quasi Complementary Circuit and to PNP-PNP for the Pure Complementary Circuit. This difference results in the crossover distortion in the unit. Although the switching distortion is inevitable with B class P-P amplifier, the Pure Complementary Circuit, where both upper and lower transistors are symmetrical each other and the action similar to A class action is provided.

5. No shield wire is used between input terminal and Function switch, etc. Accordingly, there is no stray capacity which is caused by using shield wire, thereby preventing characteristic deterioration in high-pass field.



Quasi Complementary Circuit
(SA-20, SA-15)

Figure 7.



Pure Complementary Circuit
(SA-220C)

Figure 8.

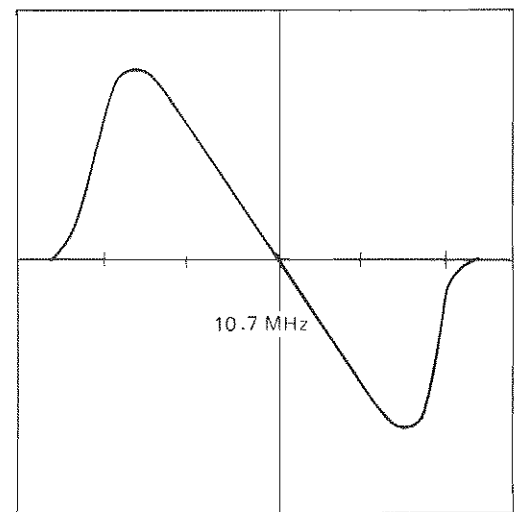
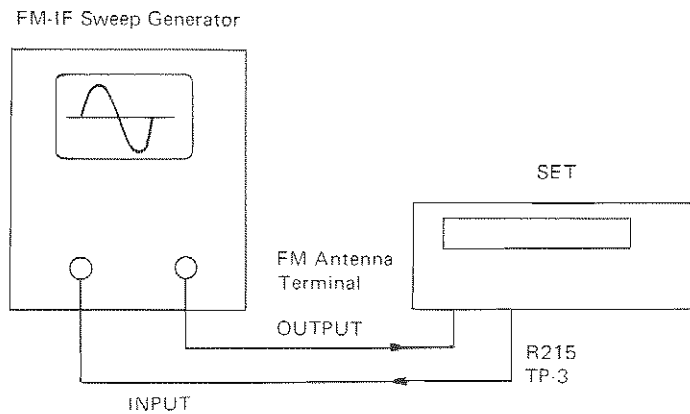
5. CIRCUIT ADJUSTMENT

5-1 FM ADJUSTMENT

Test Equipments/Tools Required.

1. FM-IF Sweep Generator
2. FM Signal Generator
3. Dummy Load Resistor
4. VTVM
5. Oscilloscope

| Step | Item | Oscillator | Input Terminal | Output Terminal | Adjustment | Remarks |
|------|-----------------------------------|--|----------------------------------|---|-----------------------------------|--------------------------------------|
| 1 | I.F.T. alignment | 10.7 MHz sweep generator | FM antenna terminal (J101, J102) | R215 FM TP-3 | IT-101 L205 | Adjust for the best waveform |
| 2 | Local oscillation alignment | FM signal generator 88 MHz (400 Hz mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | Local oscillator Coil L103 | Adjust for maximum output indication |
| 3 | Local oscillation alignment | FM signal generator 108 MHz (400 Hz Mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | Local oscillator trimmer TC103 | Adjust for maximum output indication |
| 4 | Repeat steps 2 & 3 | | | | | |
| 5 | High frequency amplifying circuit | FM signal generator 88 MHz (400 Hz Mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | RF coil L102 | Adjust for maximum output indication |
| 6 | High frequency amplifying circuit | FM signal generator 108 MHz (400 Hz Mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | Antenna trimmer TC101, TC102 | Adjust for maximum output indication |
| 7 | Repeat steps 5 & 6 | Note: Minimize the level of signal generator as possible | | | | |



FM Discriminator Curve

Figure 9.

FM MPX ADJUSTMENT

Set the function switch to FM-AUTO and connect frequency counter to TP-1, then adjust the semi-fixed resistor R302 so that the reading on frequency counter is 19 kHz.

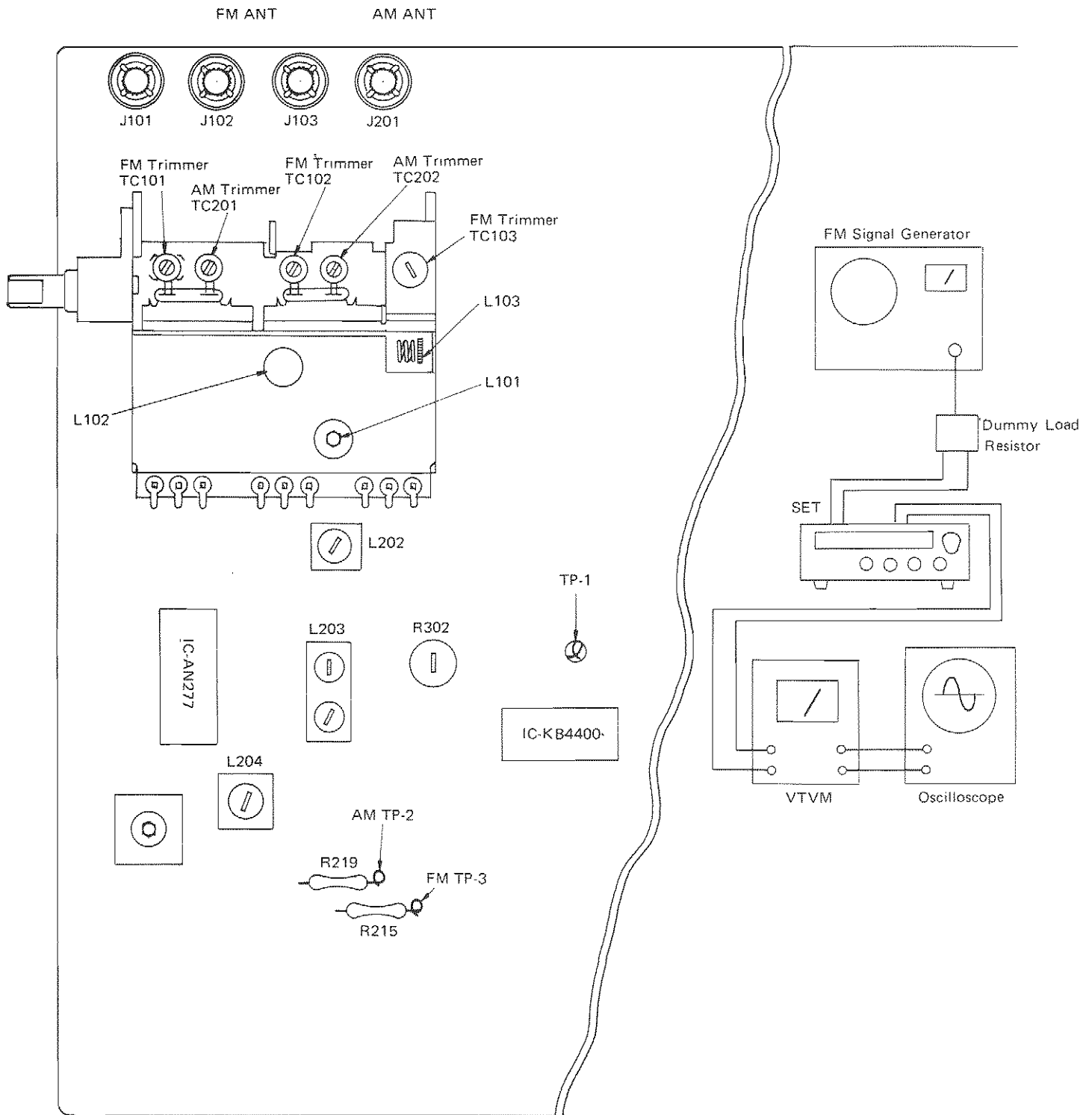


Figure 10.

5-2 AM ADJUSTMENT

Test Equipments/Tools Required

1. AM Signal Generator
2. Test Loop Antenna
3. VTVM
4. Oscilloscope
5. AM-IF Sweep Generator

| Step | Item | Oscillator | Input Terminal | Output Terminal | Adjustment | Remarks |
|------|--------------------------------------|--|----------------------------|---|---------------------------------------|--|
| 1 | I.F.T. alignment | 455 KHz sweep generator | Antenna terminal (J201) | R219 AM TP-2 | L203 & L204 | Adjust for the best waveform |
| 2 | Local oscillation alignment | AM signal generator 600 KHz (400 Hz 30% Mod.) | Antenna terminal (J201) | Connect Oscilloscope & VTVM to speaker terminal | Local oscillator Coil L202 | Adjust for maximum out- put indication |
| 3 | Local oscillation alignment | AM signal generator 1400 KHz (400 Hz 30% Mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | Local oscillator trimmer TC-202 | Adjust for maximum out- put indication |
| 4 | Repeat steps 2 & 3 | | | | | |
| 5 | High frequency Amplifying circuit | AM signal generator 600 KHz (400 Hz 30% Mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | Ferrite antenna L201 | Adjust for maximum out- put indication |
| 6 | High frequency Amplifying circuit | AM signal generator 1400 KHz (400 Hz 30% Mod.) | Antenna terminal | Connect oscilloscope & VTVM to speaker terminal | Antenna terminal TC201 | Adjust for maximum out- put indication |
| 7 | Repeat steps 5 & 6 | | | | | |

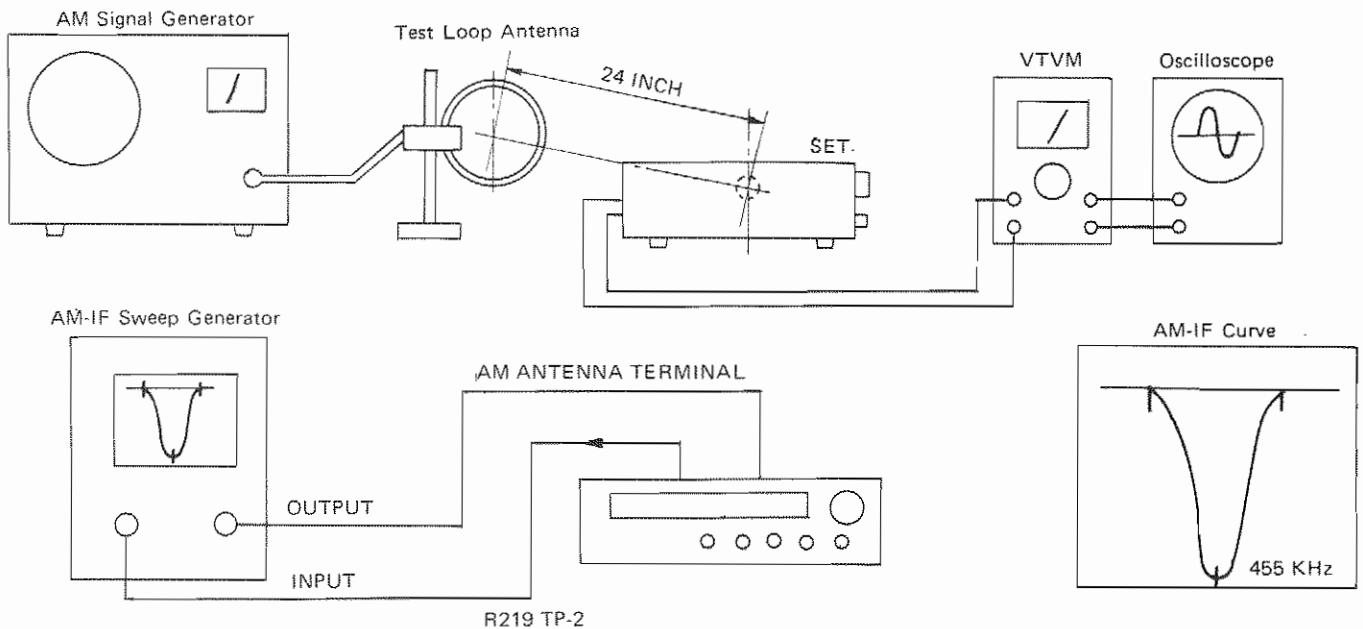


Figure 11.

6. DIAL CORD STRINGING

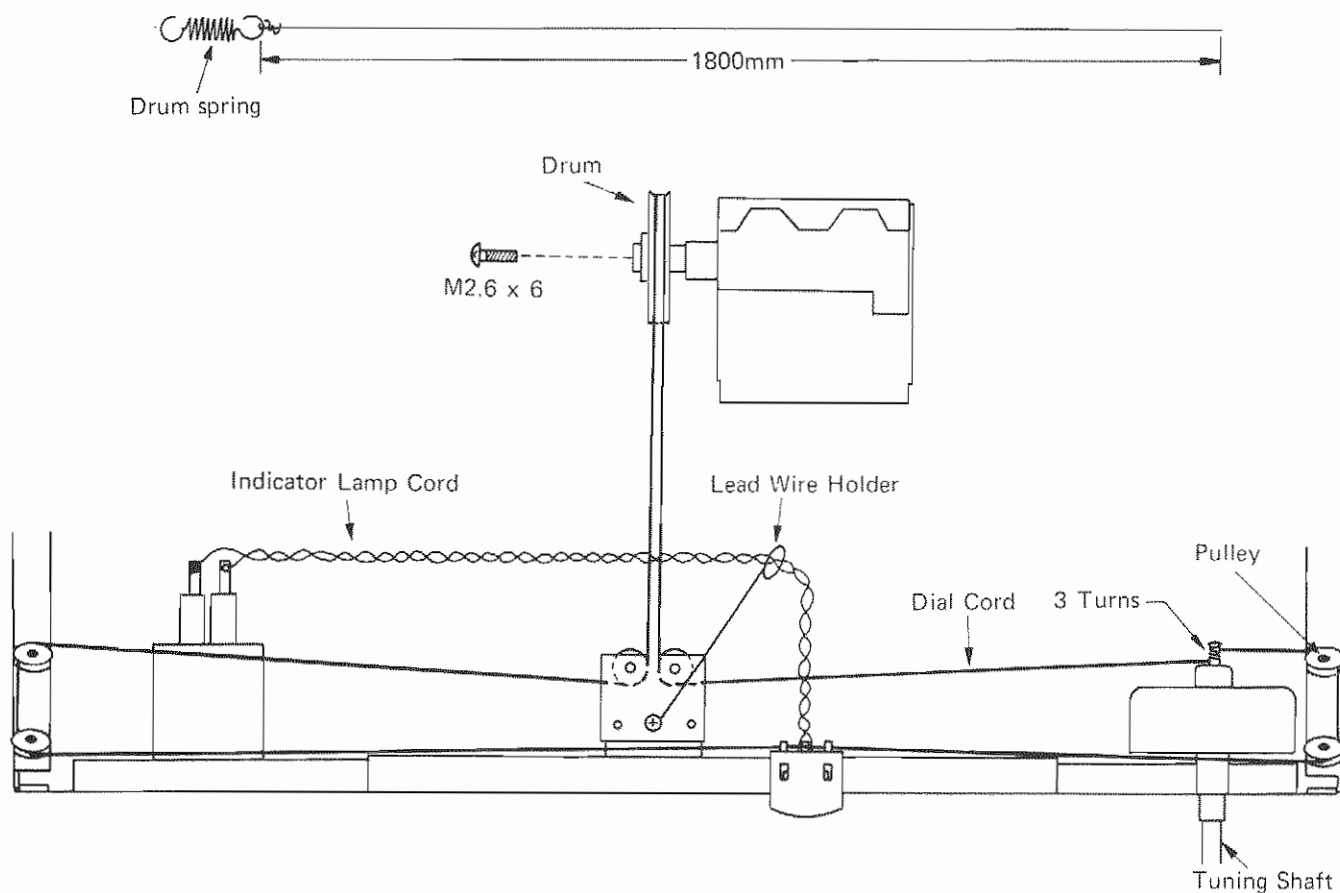
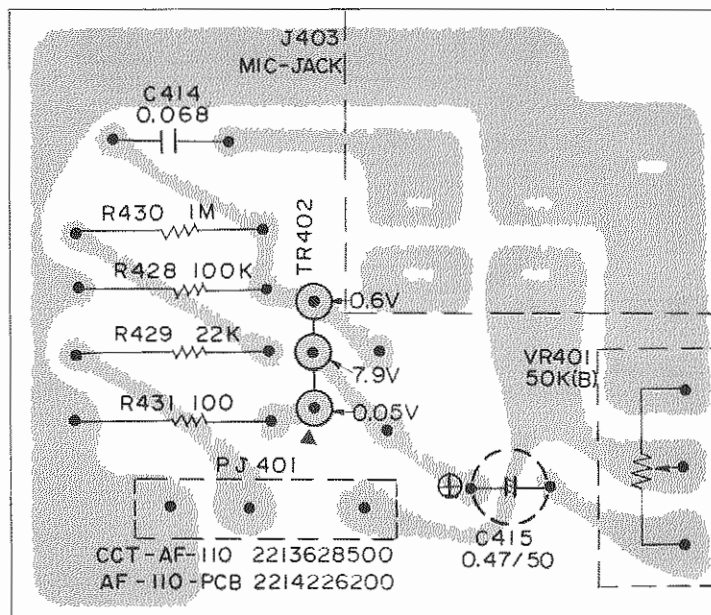


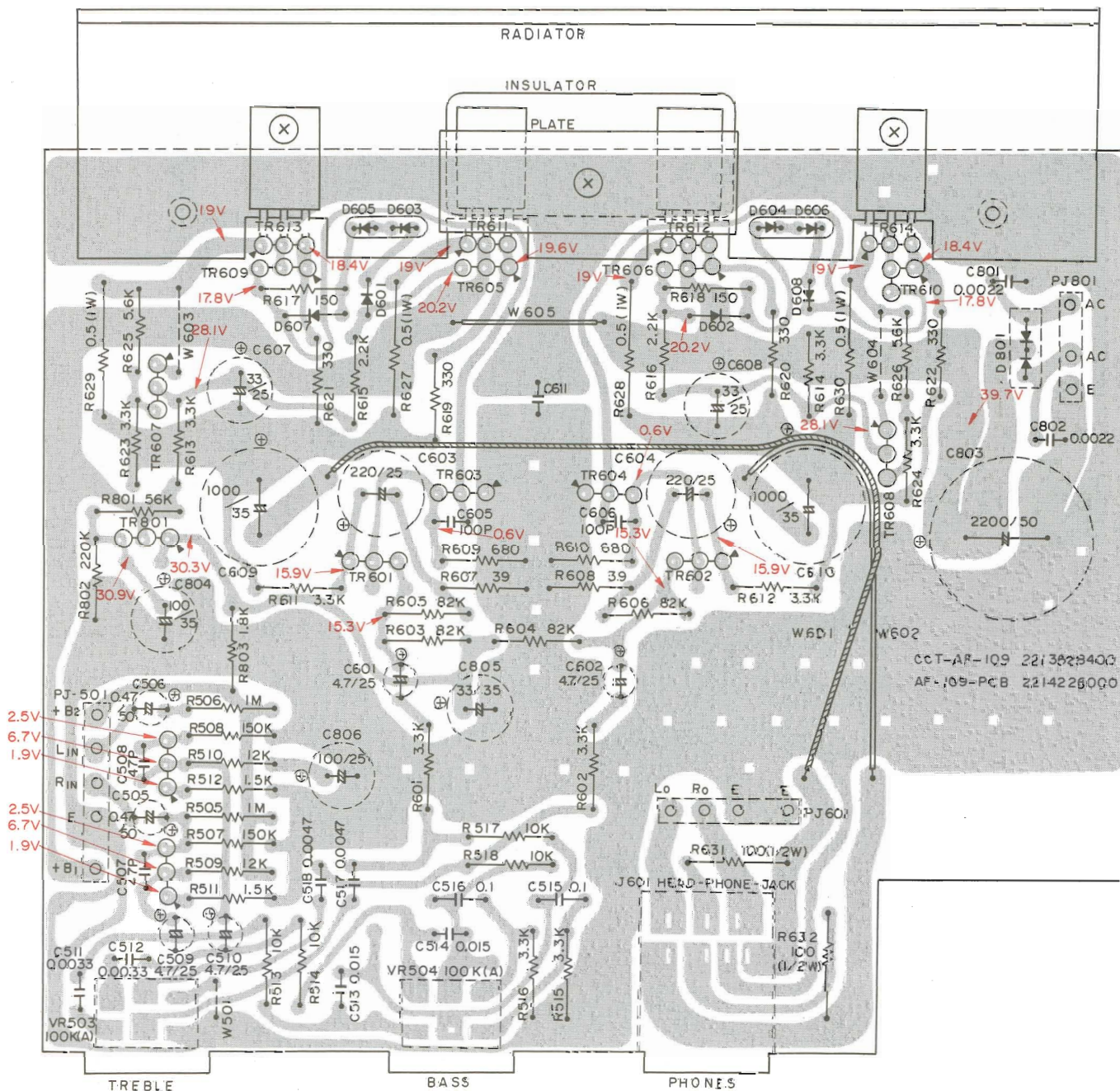
Figure 12.

7. ELECTRICAL PARTS LOCATIONS

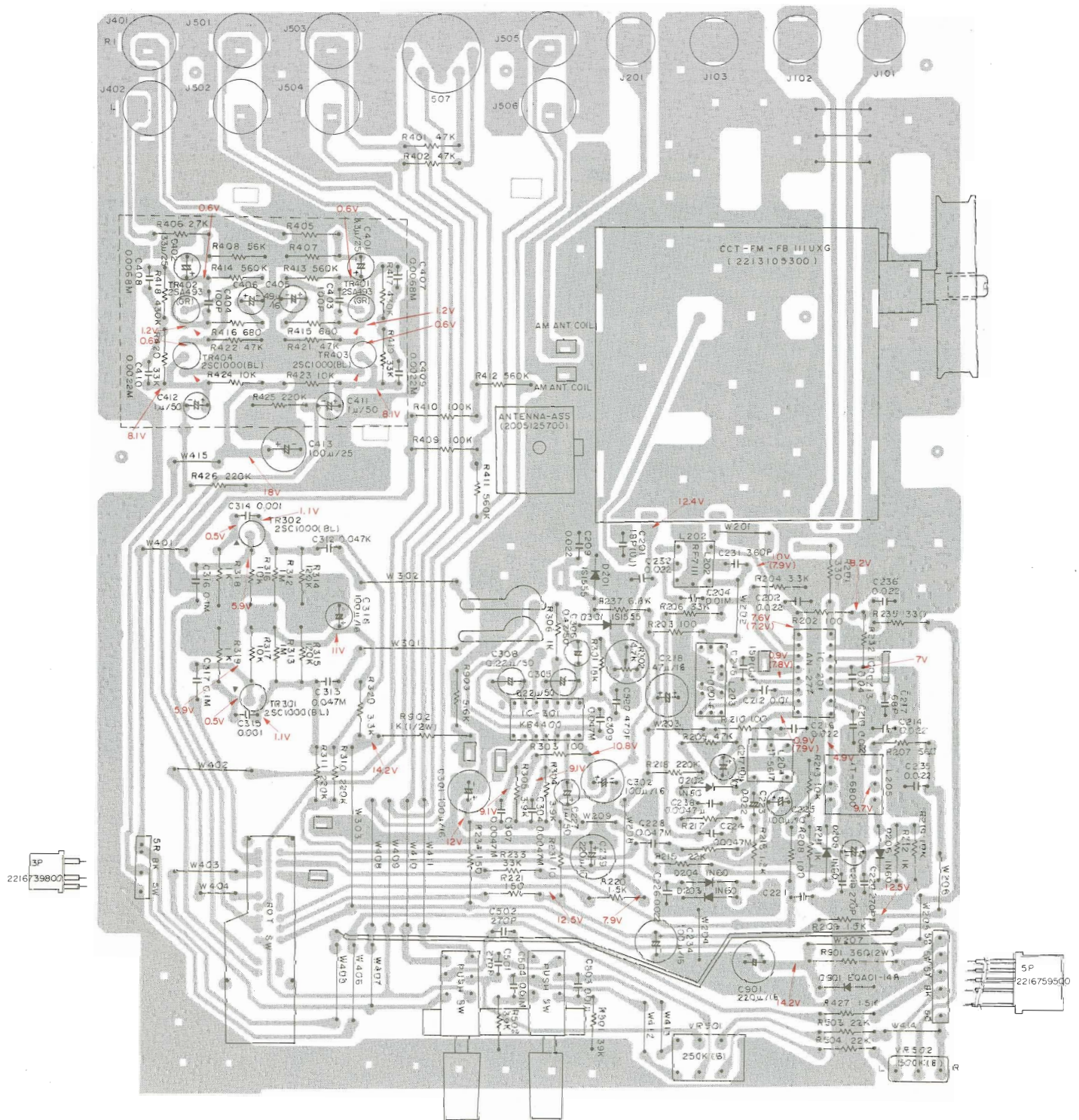
7-1 BOTTOM VIEW OF MIC AMP. P.C. BOARD (AF-110 UNIT)



7-2 BOTTOM VIEW OF POWER AMP. AND POWER SUPPLY P.C. BOARD (AF-109 UNIT)



7-3 BOTTOM VIEW OF TUNER, PRE-AMP. AND CONTROL AMP.
P.C. BOARD (STP-41 UNIT)



8. BLOCK DIAGRAM

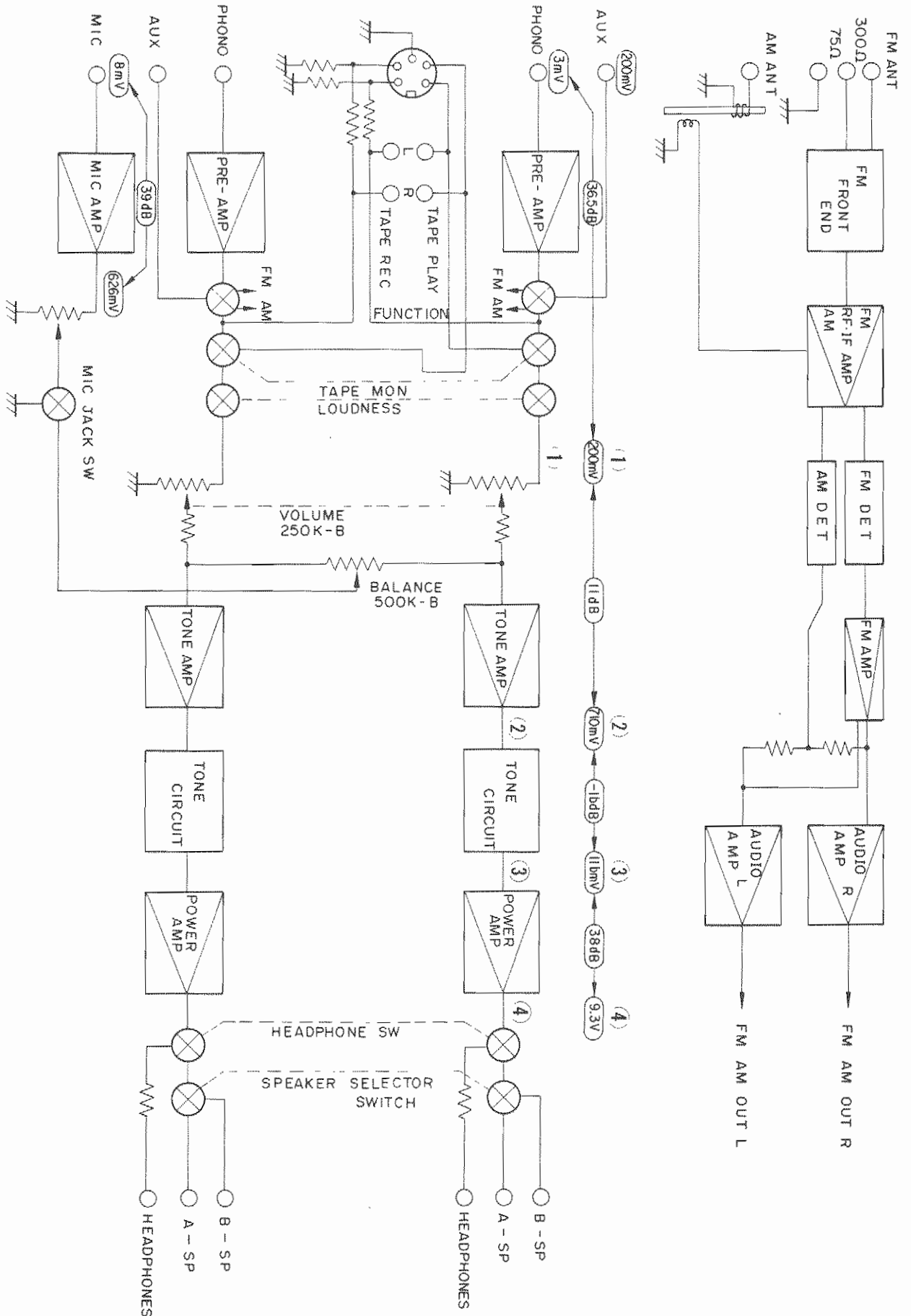
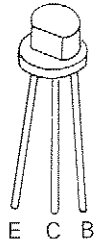


Figure 13.

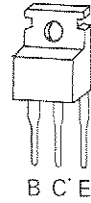
9. SEMICONDUCTOR BASE DIAGRAMS

2SC1000-BL
2SC734-Y
2SA561-Y
2SA493-GR



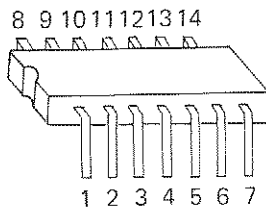
E: Emitter
C: Collector
B: Base

2SC790-Y
2SA490-Y



E: Emitter
C: Collector
B: Base

KB 4400



AN-277

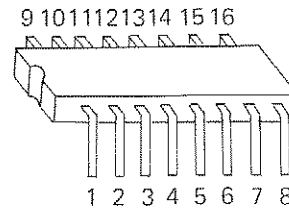
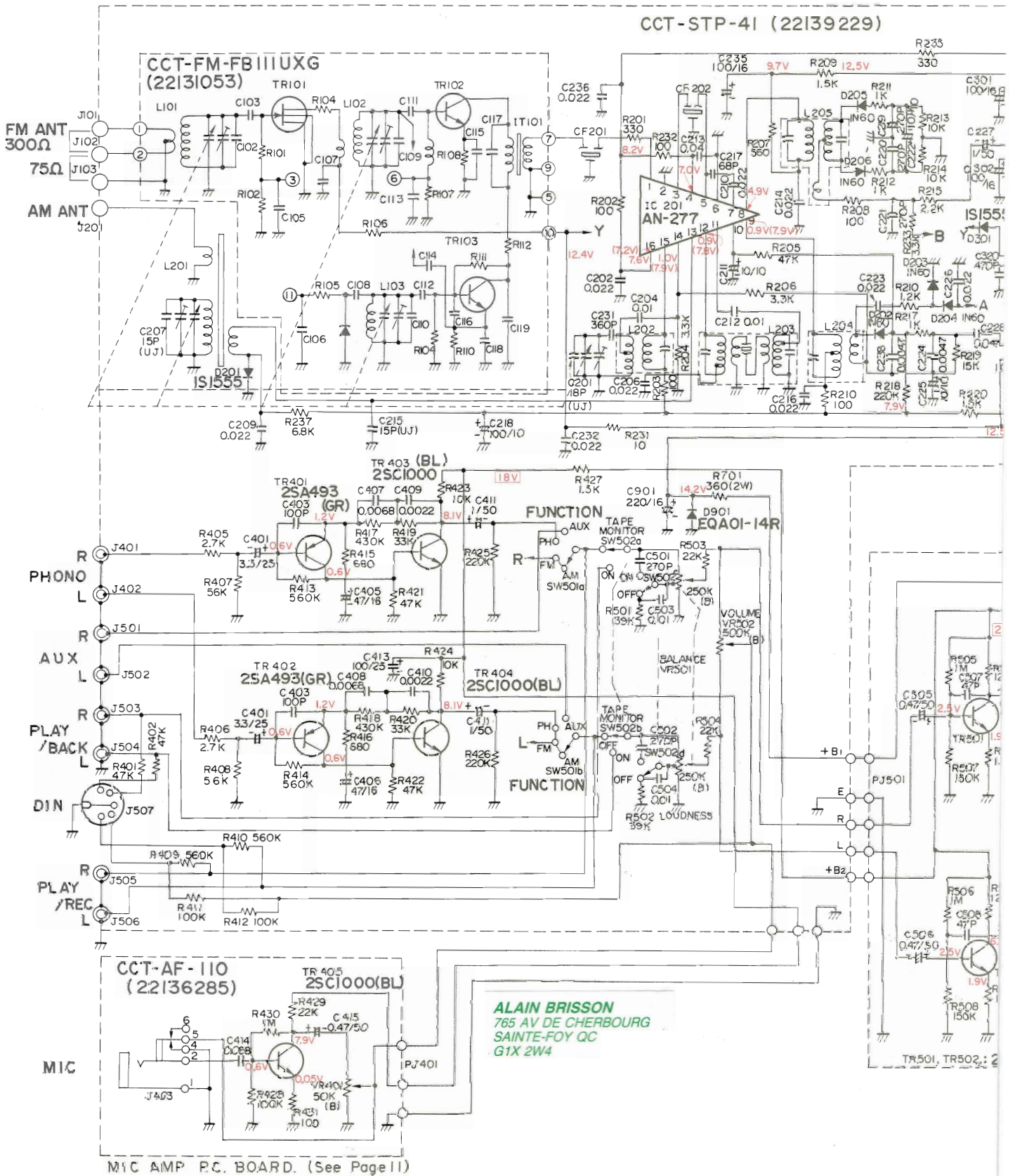


Figure 14.

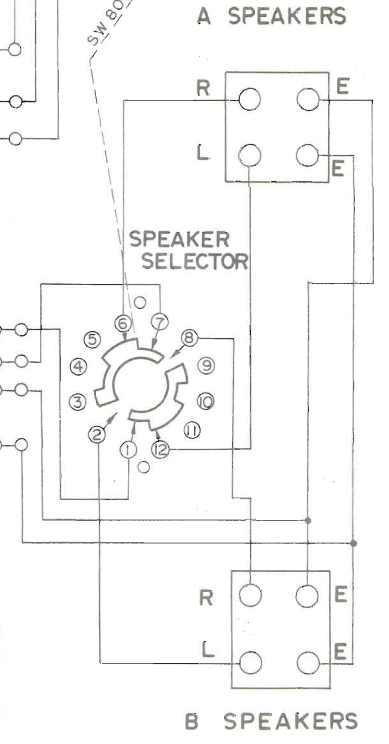
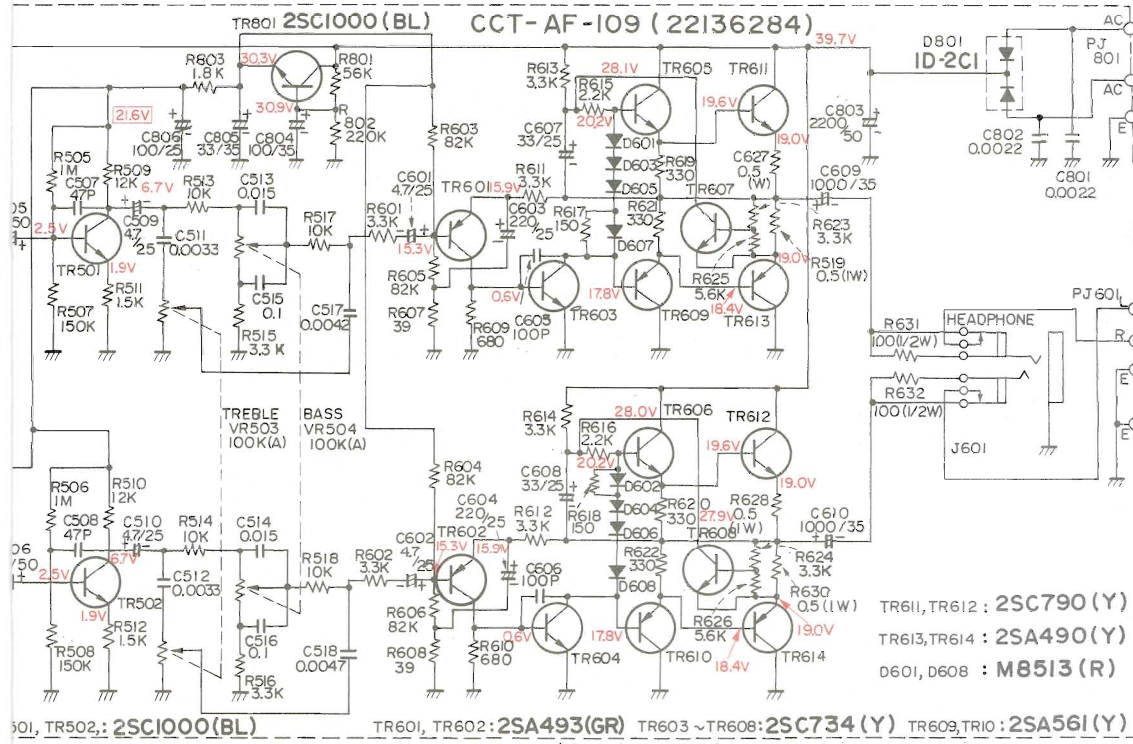
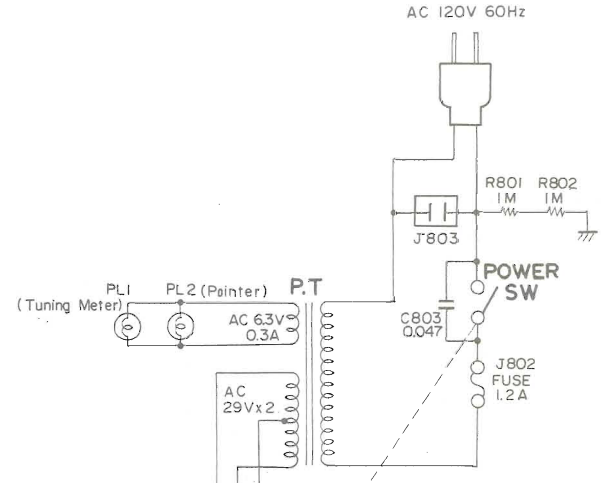
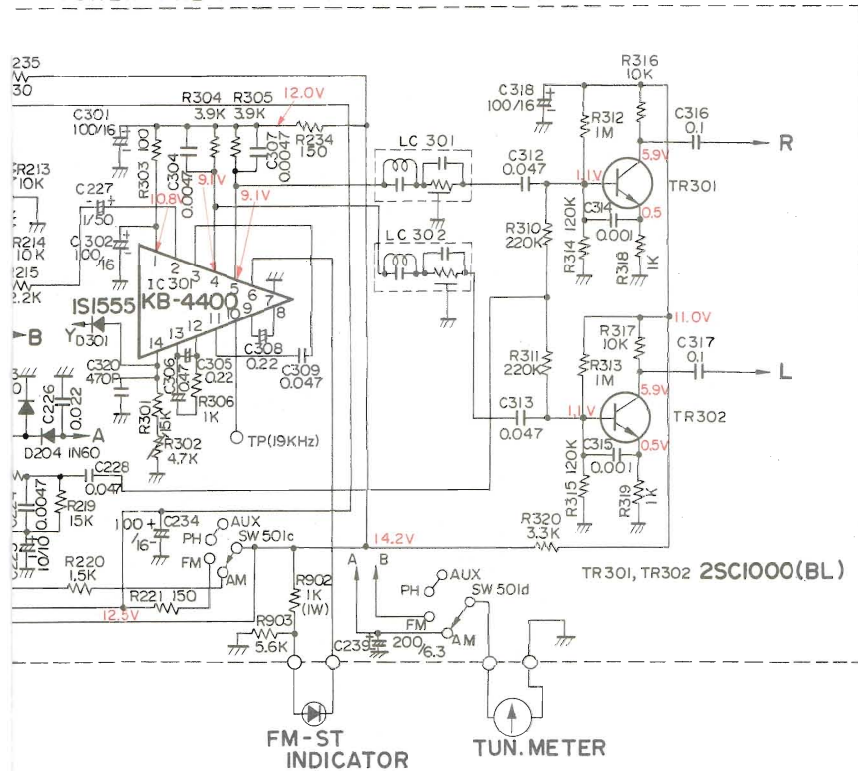
10. SCHEMATIC DIAGRAM

SCHEMATIC DIAGRAM (SA - 220C)

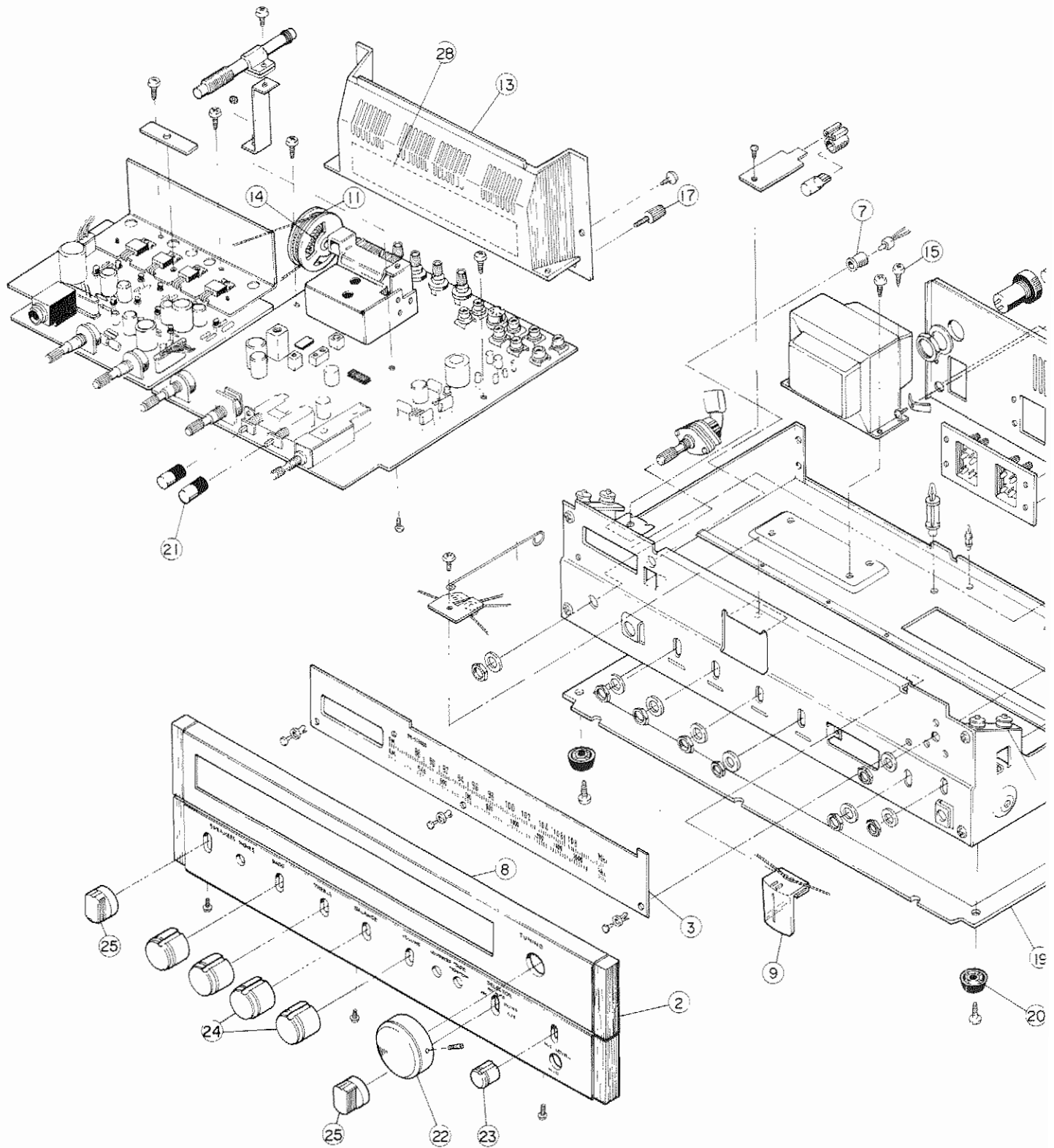
TUNE1

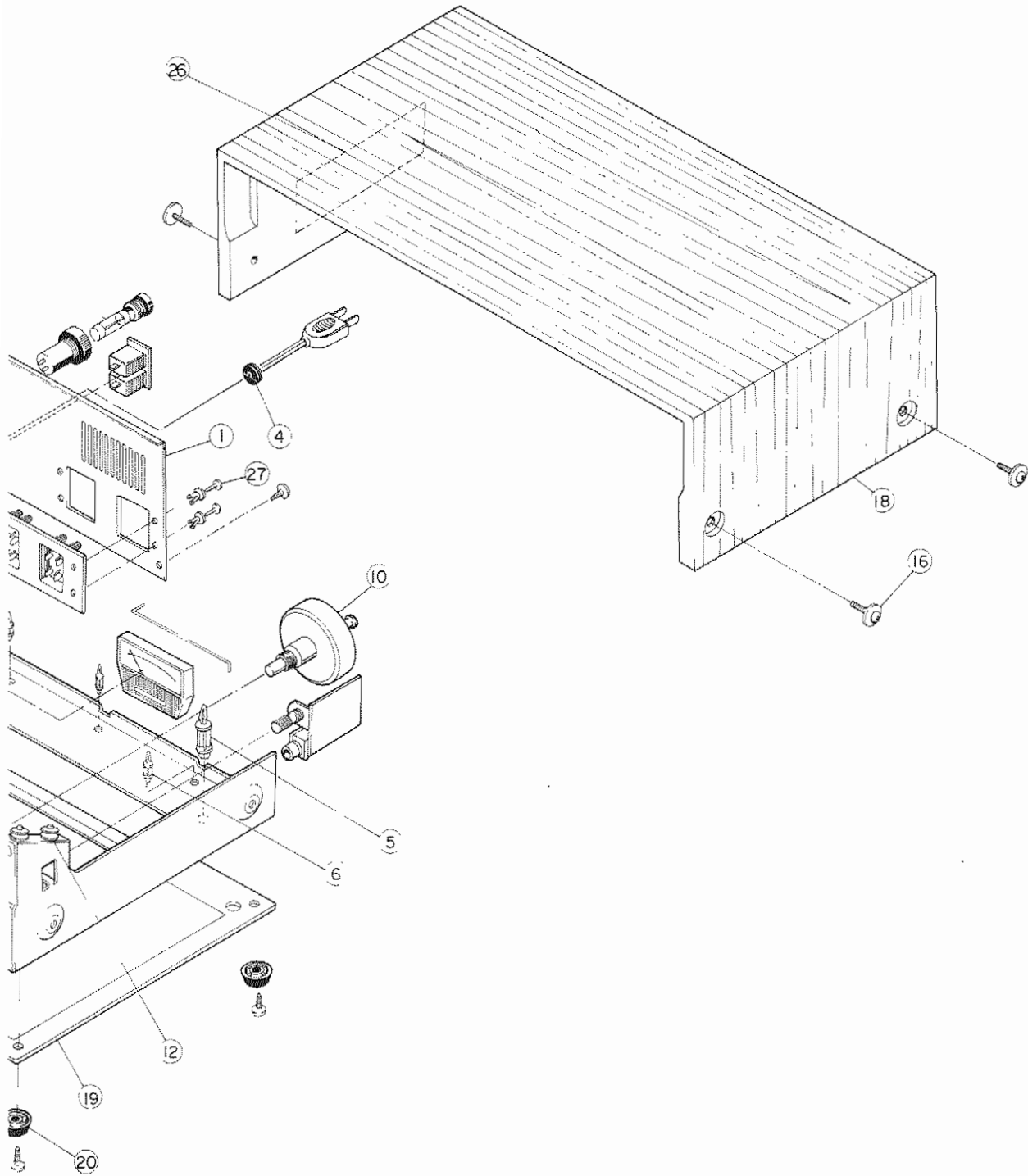


TUNER-PRE-AMP. P.C. BOARD. (See Page 12)



11. EXPLODED VIEW





12. PARTS LIST

| Key No. | Part No. | Description | Q'ty Set |
|--|-----------------|----------------------------|----------|
| IC'S, TRANSISTORS & DIODES | | | |
| IC201 | 22114418 | IC-AN277 | 1 |
| IC301 | 22114419 | IC-KB4400 | 1 |
| TR613, 614 | A6501860 | Transistor, 2SA-490-Y | 2 |
| TR401, 402, 601, 602 | A6502140 | Transistor, 2SA-493-GR | 4 |
| TR609, 610 | A6509040 | Transistor, 2SA-561-Y | 2 |
| TR603, 604, 605, 606 607, 608 | A6733460 | Transistor, 2SC-734-Y | 6 |
| TR611, 612 | A6738560 | Transistor, 2SC-790-Y | 2 |
| TR301, 302, 403, 404, 405, 501, 502, 801 | A6754150 | Transistor, 2SC-1000-BL | 8 |
| D202, 203, 204, 205, 206 | A7000900 | Diode, 1N60 | 5 |
| D201, 301 | A7246703 | Diode, 1S1555-V | 2 |
| D601, 602, 603, 604, 605, 606, 607, 608 | A7316179 | Diode, M8513A-R | 8 |
| D801 | A7682020 | Diode, 1D-2C1 | 1 |
| | A8618000 | Diode, S8302 | 1 |
| D901 | 22115218 | Diode, EQB01-14R | 1 |
| COIL & TRANSFORMERS | | | |
| | 22213462 | Power Transformer, PT-7019 | 1 |
| L202 | 22245206 | OSC Coil, RT-7111 | 1 |
| L204 | 22264617 | IF-Transformer, IT-5617 | 1 |
| L203 | 22264641 | IF-Transformer, IT-0001-F | 1 |
| L205 | 22267305 | IF-Transformer, IT-6800 | 1 |
| CAPACITORS | | | |
| | pf = pico farad | mfd = micro farad | |
| C314, 315 | 22341102 | Ceramic, 0.001 mfd, 50V | 2 |
| C212 | 22341103 | Ceramic, 0.01 mfd, 50V | 1 |
| C202, 206, 209, 210, 213, 214, 216, 223, 226, 232, 236 | 22341223 | Ceramic, 0.022 mfd, 50V | 11 |
| C611, 803, 804 | 22343222 | Ceramic, 2200 pf, 50V | 3 |
| C207, 215 | 22360177 | Ceramic, 15 pf, 50V | 2 |
| C201 | 22360264 | Ceramic, 18 pf, 50V | 1 |
| C403, 404 605, 606 | 22362101 | Ceramic, 100 pf, 50V | 4 |
| C219, 220, 221, 501, 502 | 22362271 | Ceramic, 270 pf, 50V | 5 |
| C507, 508 | 22362470 | Ceramic, 47 pf, 50V | 2 |
| C320 | 22362471 | Ceramic, 470 pf, 50V | 1 |
| C217 | 22362680 | Ceramic, 68 pf, 50V | 1 |
| C228 | 22310019 | Mylar, 0.047 mfd, 200V | 1 |
| C231 | 22321016 | Mylar, 360 pf, 50V | 1 |
| C515, 516 | 22372104 | Mylar, 0.1 mfd, 50V | 2 |
| C513, 514 | 22372153 | Mylar, 0.015 mfd, 50V | 2 |
| C409, 410 | 22372222 | Mylar, 2200 pf, 50V | 2 |
| C511, 512 | 22372332 | Mylar, 3300 pf, 50V | 2 |
| C517, 518 | 22372472 | Mylar, 4700 pf, 50V | 2 |
| C407, 408 | 22372682 | Mylar, 6800 pf, 50V | 2 |

| Key No. | Part No. | Description | Q'ty Set |
|--|----------|-----------------------------|----------|
| C204, 503, 504 | 22373103 | Mylar, 0.01 mfd, 50V | 3 |
| C316, 317 | 22373104 | Mylar, 0.1 mfd, 50V | 2 |
| C224, 238 304, 307 | 22373472 | Mylar, 4700 pf, 50V | 4 |
| C228, 309, 312, 313 | 22373473 | Mylar, 0.047 mfd, 50V | 4 |
| C414 | 22373683 | Mylar, 0.068 mfd, 50% | 1 |
| C305, 308 | 22403053 | Electrolytic, 0.22 mfd, 50V | 2 |
| C306 | 22403054 | Electrolytic, 0.47 mfd, 50V | 1 |
| C401, 402 | 22440031 | Electrolytic, 3.3 mfd, 50V | 2 |
| C609, 610 | 22440033 | Electrolytic, 1000 mfd, 35V | 2 |
| C803 | 22440105 | Electrolytic, 2200 mfd, 50V | 1 |
| C239 | 22442101 | Electrolytic, 100 mfd, 6.3V | 1 |
| C218, 235 | 22443101 | Electrolytic, 100 mfd, 10V | 2 |
| C318 | 22443221 | Electrolytic, 220 mfd, 10V | 1 |
| C211, 222, 225 | 22445100 | Electrolytic, 10 mfd, 16V | 3 |
| C234, 301, 302 | 22445101 | Electrolytic, 100 mfd, 16V | 3 |
| C901 | 22445221 | Electrolytic, 220 mfd, 16V | 1 |
| C405, 406 | 22445470 | Electrolytic, 47 mfd, 16V | 2 |
| C413, 806 | 22446101 | Electrolytic, 100 mfd, 25V | 2 |
| C603, 604 | 22446221 | Electrolytic, 220 mfd, 25V | 2 |
| C607, 608 | 22446330 | Electrolytic, 33 mfd, 25V | 2 |
| C509, 510, 601, 602 | 22446479 | Electrolytic, 4.7 mfd, 25V | 4 |
| C804 | 22447101 | Electrolytic, 100 mfd, 35V | 1 |
| C805 | 22447330 | Electrolytic, 33 mfd, 35V | 1 |
| C227, 411, 412 | 22448109 | Electrolytic, 1.0 mfd, 50V | 3 |
| C415, 505, 506 | 22448478 | Electrolytic, 0.47 mfd, 50V | 3 |
| RESISTORS | | | |
| R231 | 22545100 | Carbon film, 10 ohm, 1/4W | 1 |
| R202, 203, 208, 210, 232, 303 409, 410, 431 | 22545101 | Carbon film, 100 ohm, 1/4W | 9 |
| R211, 212, 217, 306 | 22545102 | Carbon film, 1K ohm, 1/4W | 4 |
| R213, 316, 317, 318, 319, 423, 424, 513, 514, 517, 518 | 22545103 | Carbon film, 10K ohm, 1/4W | 11 |
| R411, 412, 428 | 22545104 | Carbon film, 100K ohm, 1/4W | 3 |
| R430, 505, 506 | 22545105 | Carbon film, 1M ohm, 1/4W | 3 |
| R216 | 22545122 | Carbon film, 1.2K ohm, 1/4W | 1 |
| R509, 510 | 22545123 | Carbon film, 12K ohm, 1/4W | 2 |
| R314, 315 | 22545124 | Carbon film, 120K ohm, 1/4W | 2 |
| R221, 617, 618 | 22545151 | Carbon film, 150 ohm, 1/4W | 3 |
| R209, 220, 233, 234, 427, 511, 512 | 22545152 | Carbon film, 1.5K ohm, 1/4W | 7 |
| R219, 301 | 22545153 | Carbon film, 15K ohm, 1/4W | 2 |
| R507, 508 | 22545154 | Carbon film, 150K ohm, 1/4W | 2 |
| R803 | 22545182 | Carbon film, 1.8K ohm, 1/4W | 1 |

| Key No. | Part No. | Description | Q'ty Set |
|--|----------|---|----------|
| R215, 615, 616, 623, 624 | 22545222 | Carbon film, 2.2K ohm, 1/4W | 5 |
| R429, 503, 504 | 22545223 | Carbon film, 22K ohm, 1/4W | 3 |
| R218, 310, 311, 425, 426, 802 | 22545224 | Carbon film, 220K ohm, 1/4W | 6 |
| R405, 406 | 22545272 | Carbon film, 2.7K ohm, 1/4W | 2 |
| R201, 235, 619, 620, 621, 622 | 22545331 | Carbon film, 330 ohm, 1/4W | 6 |
| R204, 206, 320, 515, 516, 601, 602, 611, 612, 613, 614 | 22545332 | Carbon film, 3.3K ohm, 1/4W | 11 |
| R419, 420 | 22545333 | Carbon film, 33K ohm, 1/4W | 2 |
| R607, 608 | 22545390 | Carbon film, 39K ohm, 1/4W | 2 |
| R304, 305 | 22545392 | Carbon film, 3.9K ohm, 1/4W | 2 |
| R501, 502 | 22545393 | Carbon film, 39K ohm, 1/4W | 2 |
| R417, 418 | 22545434 | Carbon film, 430K ohm, 1/4W | 2 |
| R205, 401, 402, 421, 422 | 22545473 | Carbon film, 47K ohm, 1/4W | 5 |
| R207 | 22545561 | Carbon film, 560 ohm, 1/4W | 1 |
| R625, 626, 903 | 22545562 | Carbon film, 5.6K ohm, 1/4W | 3 |
| R407, 408, 801 | 22545563 | Carbon film, 56K ohm, 1/4W | 3 |
| R413, 414 | 22545564 | Carbon film, 560K ohm, 1/4W | 2 |
| R415, 416, 609, 610 | 22545681 | Carbon film, 680K ohm, 1/4W | 4 |
| R214, 237 | 22545682 | Carbon film, 6.8K ohm, 1/4W | 2 |
| R603, 604, 605, 606 | 22545683 | Carbon film, 68K ohm, 1/4W | 4 |
| R609, 610 | 22563101 | Carbon composition, 100 ohm, 1/2W | 2 |
| R902 | 22563102 | Carbon composition, 1K ohm, 1/2W | 1 |
| R627, 628, 629, 630 | 22570042 | Metal Oxide Film, 0.5 ohm, 1W | 4 |
| R901 | 22570068 | Metal Oxide Film, 360 ohm, 2W | 1 |
| VR401 | 22622016 | Variable Resistor, Mic, 50K ohm, (B) | 1 |
| VR501 | 22622017 | Variable Resistor, 250K ohm | 1 |
| VR502 | 22622018 | Variable Resistor, Balance, 500K ohm | 1 |
| VR503, 504 | 22627009 | Variable Resistor, Tone, 100K ohm, (A) | 2 |
| R302 | 22658318 | Semi-Fixed Resistor, 4.7K ohm | 1 |
| UNITS | | | |
| | 22139229 | Tuner, Pre-amp. and Control Amp. (CCT-STP-41) | 1 |
| | 22136284 | Power Amp., and Power Supply (CCT-AF-109) | 1 |
| | 22136285 | Mic Amp. (CCT-AF-110) | 1 |
| ELECTRICAL PARTS | | | |
| | 22104284 | Tuning Meter | 1 |
| | 22113150 | Wedge base lamp | 1 |
| | 22113374 | Indicator lamp (FM) | 1 |
| | 22116066 | Wedge base socket | 1 |

| Key No. | Part No. | Description | Q'ty Set |
|-------------------------|----------|--|----------|
| | 22131053 | FM Front-end (CCT-FM-FB111UGX) | 1 |
| LC301, 302 | 22134071 | RLC Module | 2 |
| | 22144276 | UL Fuse (1.2A) | 1 |
| | 22146083 | Rotary Switch (Power) | 1 |
| | 22146084 | Push Switch | 1 |
| | 22146089 | Rotary Switch (Select) | 1 |
| CF201, 202 | 22153023 | Ceramic Filter | 2 |
| | 22162339 | Speaker Terminal (8P) | 1 |
| | 22162345 | Antenna Terminal | 4 |
| J601 | 22613426 | Headphone Jack | 1 |
| J403 | 22163505 | Mic Jack | 1 |
| | 22163506 | Pin Jack (White) | 4 |
| | 22163529 | Pin Jack (Red) | 4 |
| PJ401, PJ801 | 22164377 | Plug-3P | 2 |
| PJ601 | 22164378 | Plug-4P | 1 |
| PJ501 | 22164379 | Plug-5P | 1 |
| | 22165063 | Fuse Holder | 1 |
| | 22167398 | 3P Socket | 1 |
| | 22167453 | AC Socket | 1 |
| | 22167483 | Din Socket | 1 |
| | 22167589 | 4P Socket | 1 |
| | 22167595 | 5P Socket | 1 |
| | 22176221 | UL Plug-Cord | 1 |
| | 22242528 | Ferrite Antenna, FA-1013 | 1 |
| ACCESSORIES | | | |
| | 20951237 | Owner's Manual | 1 |
| | 22957189 | Warranty Card (TA) | 1 |
| | 22100021 | Warranty Card (TC) | 1 |
| | 22124223 | FM Antenna | 1 |
| | 22164156 | US Pin Plug | 2 |
| MECHANICAL PARTS | | | |
| 1 | 20015098 | Jack plate | 1 |
| 2 | 20017091 | Panel-assembly | 1 |
| 3 | 20019076 | Dial Scale | 1 |
| 4 | 20021170 | Cord bushing | 1 |
| 5 | 20022048 | PC Board Holder 16L | 2 |
| 6 | 20022049 | PC Board Holder 8L | 3 |
| 7 | 20031039 | Lamp Cover | 1 |
| 8 | 20033069 | Dial Cover | 1 |
| 9 | 20041046 | Pointer-assembly | 1 |
| 10 | 20041048 | Tuning Shaft | 1 |
| 11 | 20042057 | Drum, 200L | 1 |
| 12 | 20042058 | Pulley | 6 |
| 13 | 20031037 | Cover, (Pin Jack, Terminal) | 1 |
| 14 | 20866009 | Dial Spring | 1 |
| 15 | 20794085 | Screw, (4x8L Power Transformer Mounting) | 4 |
| 16 | 20794119 | Screw, 4x16L | 6 |
| 17 | 20794122 | Screw, 3x10L (Ground) | 1 |
| 18 | 20816225 | Wood Cabinet | 1 |
| 19 | 20822037 | Board-assembly | 1 |
| 20 | 20842069 | Leg | 4 |
| 21 | 20871207 | Knob, Push | 2 |
| 22 | 20871241 | Knob, Tuning | 1 |
| 23 | 20871242 | Knob, Mic | 1 |
| 24 | 22826124 | Knob, Tone | 4 |
| 25 | 22826125 | Knob, Select | 2 |
| 26 | 22950592 | Caution Label | 1 |
| 27 | 22705022 | Rivet, 3x5.5 | 4 |
| 28 | 20953249 | Instruction Label, (Pin Jack, Terminal) | 1 |



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TOKYO SHIBAURA ELECTRIC CO., LTD.

2-1, GINZA 5-CHOME, CHUO-KU, TOKYO 104, JAPAN
CABLE: TOSHIBAGNZ TOKYO, TELEX NO.: J24681, J24682, J24683