

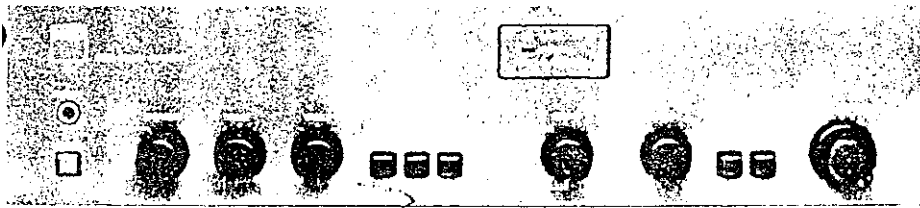


SERVICE MANUAL



MODELS

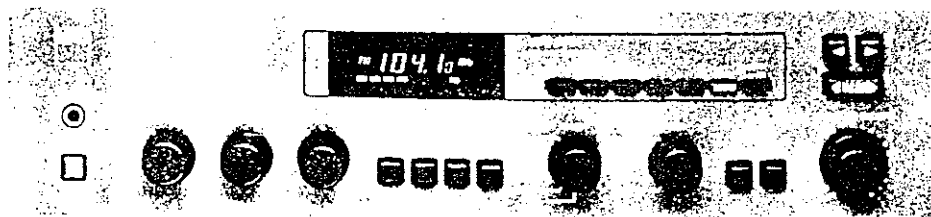
2150



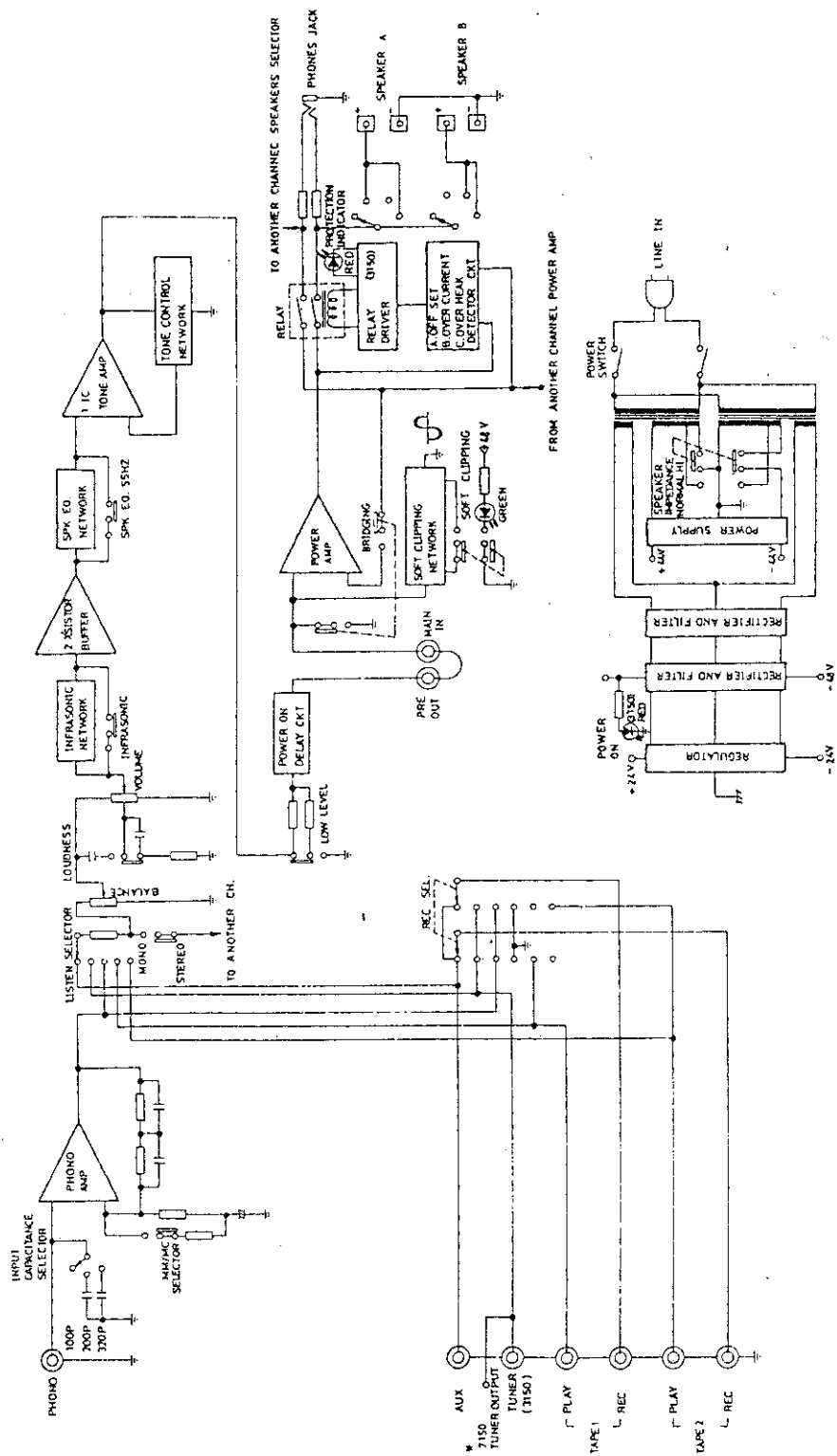
3150



4150



7150



2150/3150/4150/7150 ALIGNMENT PROCEDURE

2150 ADJUSTMENT

DC OFF-SET ALIGNMENT

1. Set on the power for 5 minutes pre-heating.
2. For L (R) channel alignment: Connect probe of DC millivolt-meter to L (R) channel speaker terminals, then adjust VR-601 (VR-602) till the reading are closed to 0mV.

IDLE CURRENT ALIGNMENT

1. Turn VR-603 to fully clockwise position and VR-604 to fully counter-clockwise position.
2. Set on the power for 5 minutes pre-heating.
3. Remove the load in speaker terminals.
4. Connect one probe of DC millivolt-meter to L (R) channel speaker terminal "+", the other to point TP1 (TP2) on main PCB foiling side, adjust VR-603 (VR-604) till the reading is between 4.4mv and 11mv.

3150/7150 (AUDIO) ALIGNMENT

DC OFF-SET ALIGNMENT

1. Set on the power for 5 minutes pre-heating.
2. Set volume control to minimum position and speaker selector switch to "A+B" position.
3. For L (R) channel alignment: Connect probe of DC millivolt-meter to L (R) channel speaker terminals, then adjust VR-601 (VR-602) till the reading are closed to 0mV.

IDLE CURRENT ALIGNMENT

1. Turn VR-603 to fully clockwise position and VR-604 to fully counter-clockwise position.
2. Set on the power for 5 minutes pre-heating.
3. Set volume control to minimum position and speaker selector switch to "A+B" position.
4. Remove the load on speaker terminals.
5. Connect one probe of DC millivolt-meter to L (R) channel speaker terminal "+", the other to point TP1 (TP2) on main PCB. Foiling side, adjust VR-603 (VR-604) till the reading is between 4.4mV and 11mV.

4150/7150 (TUNER) ALIGNMENT

1. FM MPX ALIGNMENT
 - a. Selector Switch in FM position
 - b. AC Line Voltage at Rated Voltage
 - c. Monitor OUTPUT at record OUTPUT
 - d. FM SG is external modulated by stereo SG and connected to FM 300 OHM antenna terminal on the rear panel through FM dummy antenna.

| SECTION | Step | FM SG | Stereo Sg | Dial Setting | Indicator | Adjustment | Adjust For |
|-----------|------|-------------------------|-----------------------|--------------|--------------------------------------|------------|------------------|
| MPX Pilot | 1 | 98 MHz 0% Modulation | — | 98 MHz | Connect frequency Counter To Pin TP1 | VR201 | 76 kHz±50 Hz |
| | 2 | 98 MHz | 10% 19 kHz 90% L+R | 98 MHz | — | VR201 | Stereo LED Light |

| SECTION | Step | FM SG | Stereo Sg | Dial Setting | Indicator | Adjustment | Adjust For |
|-----------------------|------|---|-------------------------------------|--------------|----------------------------|------------|---------------------|
| | 3 | Repeat Step 1 and Step 2 | | | | | |
| | 4 | IF there is an excessive difference between leak-free effect of both channels, slightly adjust VR202 So that the levels of signal leakage of both channels are equal. | | | | | |
| Stereo 50 dB quieting | | 98 MHz SG OUTPUT Level 30uV | 10% 19 kHz pilot.0% L+R, L-R. | 98 MHz | V.T.V.M or Oscilloscope | VR102 | Just minimum OUTPUT |

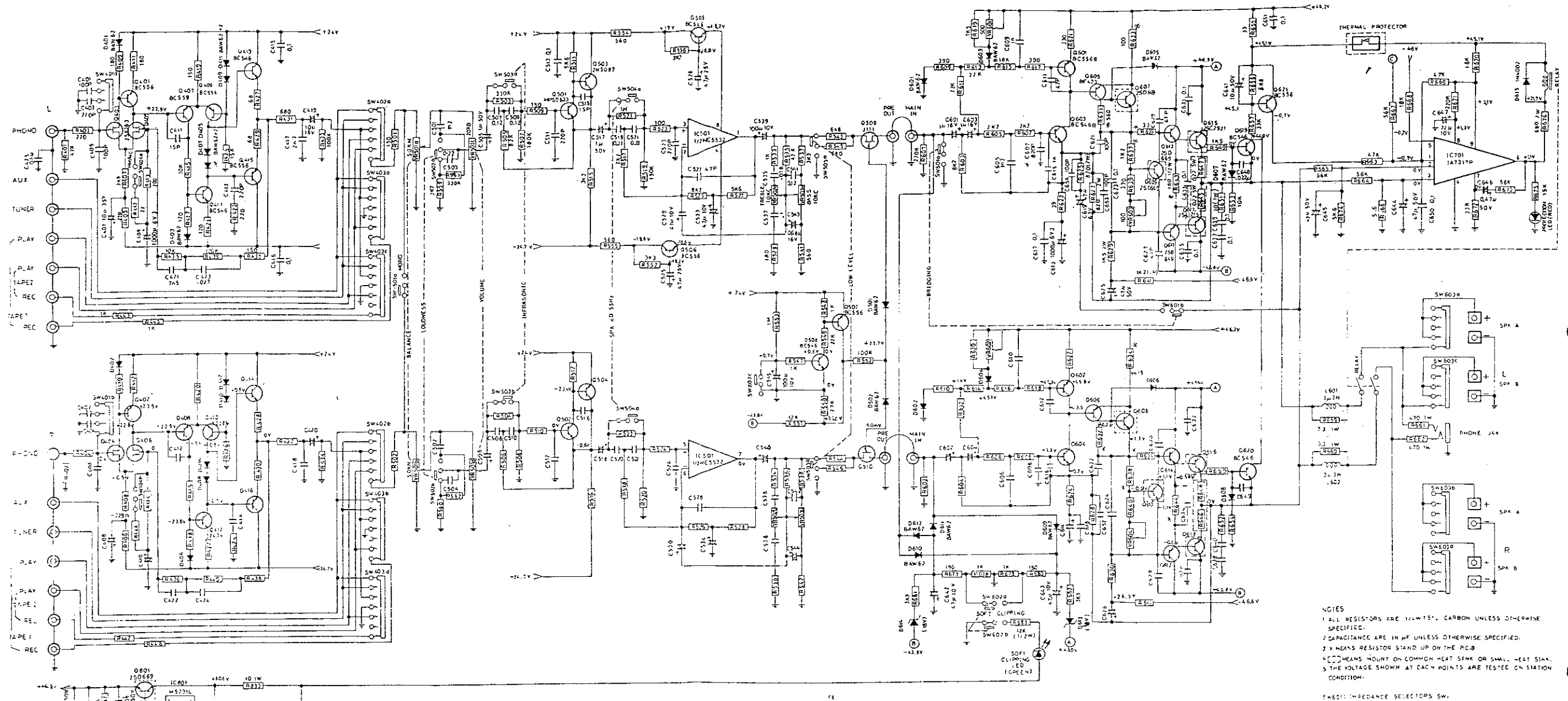
2. FM ALIGNMENT
 - a. Selector Switch in FM position
 - b. AC Line Voltage at Rated Voltage
 - c. Monitor OUTPUT at record OUTPUT

| SECTION | FM SG | | | Dial Setting | Indicator | Adjustment | Adjust for |
|----------------------------|---|---|--------------------|---------------------------|-------------------------|-------------------|------------------------------|
| | Connection | Carrier | Mod. | | | | |
| FM IF | — | — | — | point of non-interference | Digital Voltage Meter | IFT 101 | to pin TP3 Voltage 0V |
| FM RF | Connect to FM 300 OHM antenna on the rear panel through FM Dummy Antenna. | 90 MHz | 100% Mod 400 Hz | 90 MHz | Digital Voltage Meter | LT 606 | Tuning Voltage 4.3v ±0.1v |
| | | 106MHz | | 106MHz | | VC006 | Tuning Voltage 18.7v±0.2v |
| | | Repeat Step 1 and Step 2 | | | | | |
| FM Sens | | 90 MHz | 100% Mod | 90 MHz | V.T.V.M Oscilloscope | LT001 to LT005 | Maximum OUTPUT |
| | | 106MHz | 400 Hz | 106 MHz | | VC001 to VT005 | |
| | | 98 MHz | | 98 MHz | | LT007 | |
| Repeat Step 1.2 and Step 3 | | | | | | | |
| FM Mute | | Muting Push Switch "ON" Adjust attenuator of FM SG for Antenna Input 14dB | | | | | |
| | | 98 MHz | 100% Mod 400 Hz | 98 MHz | V.T.V.M Oscilloscope | VR 101 | OUTPUT just disappear |
| | | Increase FM SG OUTPUT 4dB more to get fully audio OUTPUT IF fully audio OUTPUT cannot get, repeat Step 1.2.3 | | | | | |
| | | | | | | | |

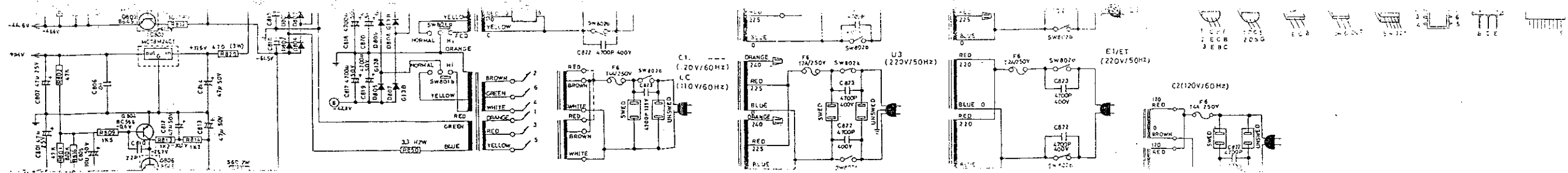
3. AM ALIGNMENT

| SECTION | AM SG | | | Dial Setting | Indicator | Adjustment | Adjust for |
|---------|---|--------------------------|------------------|--------------|-------------------------------|------------|---------------------------|
| | Connection | Carrier | Mod. | | | | |
| AM | Hot side of SG OUTPUT through | 600kHz | 30% Mod | 600kHz | V.T.V.M. | IFT 703 | Maximum |
| AM Sens | Hot side of SG OUTPUT through a loop ANT radiate to AM ANT BAR vertically and keep 60cm distance. | 600kHz | 30% Mod 400Hz | 600kHz | V.T.V.M or Oscilloscope | VC 701 | Tuning Voltage 20.5V±0.2V |
| | | 1400kHz | 30% Mod 400Hz | 1400kHz | | ANT BAR | Maximum OUTPUT |
| | | Repeat Step 1 and Step 2 | | | | | |

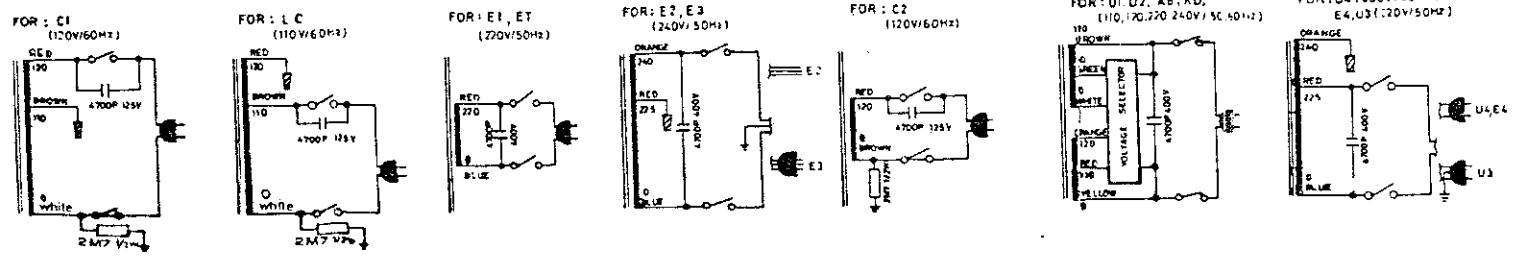
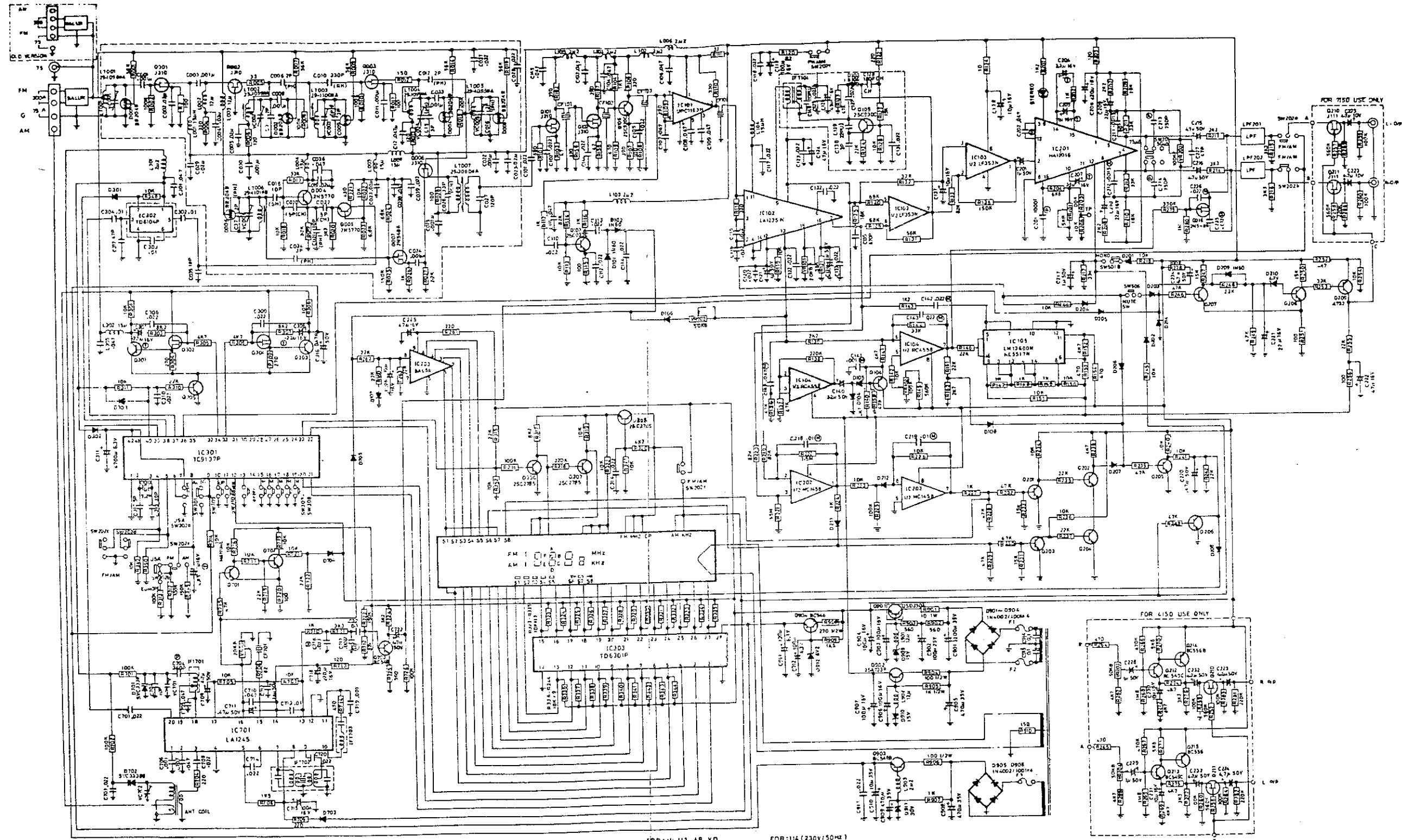
3150 CIRCUIT DIAGRAM



- NOTES
1. ALL RESISTORS ARE 1/4-WATT, CARBON UNLESS OTHERWISE SPECIFIED.
 2. CAPACITANCE ARE IN μ F UNLESS OTHERWISE SPECIFIED.
 3. X MEANS RESISTOR STAND UP ON THE P.C.B.
 4. [Symbol] MEANS MOUNT ON COMMON HEAT SINK OR SMALL HEAT SINK.
 5. THE VOLTAGE SHOWN AT EACH POINTS ARE TESTED ON STATION CONDITION.
- SW: IMPEDANCE SELECTORS SW.

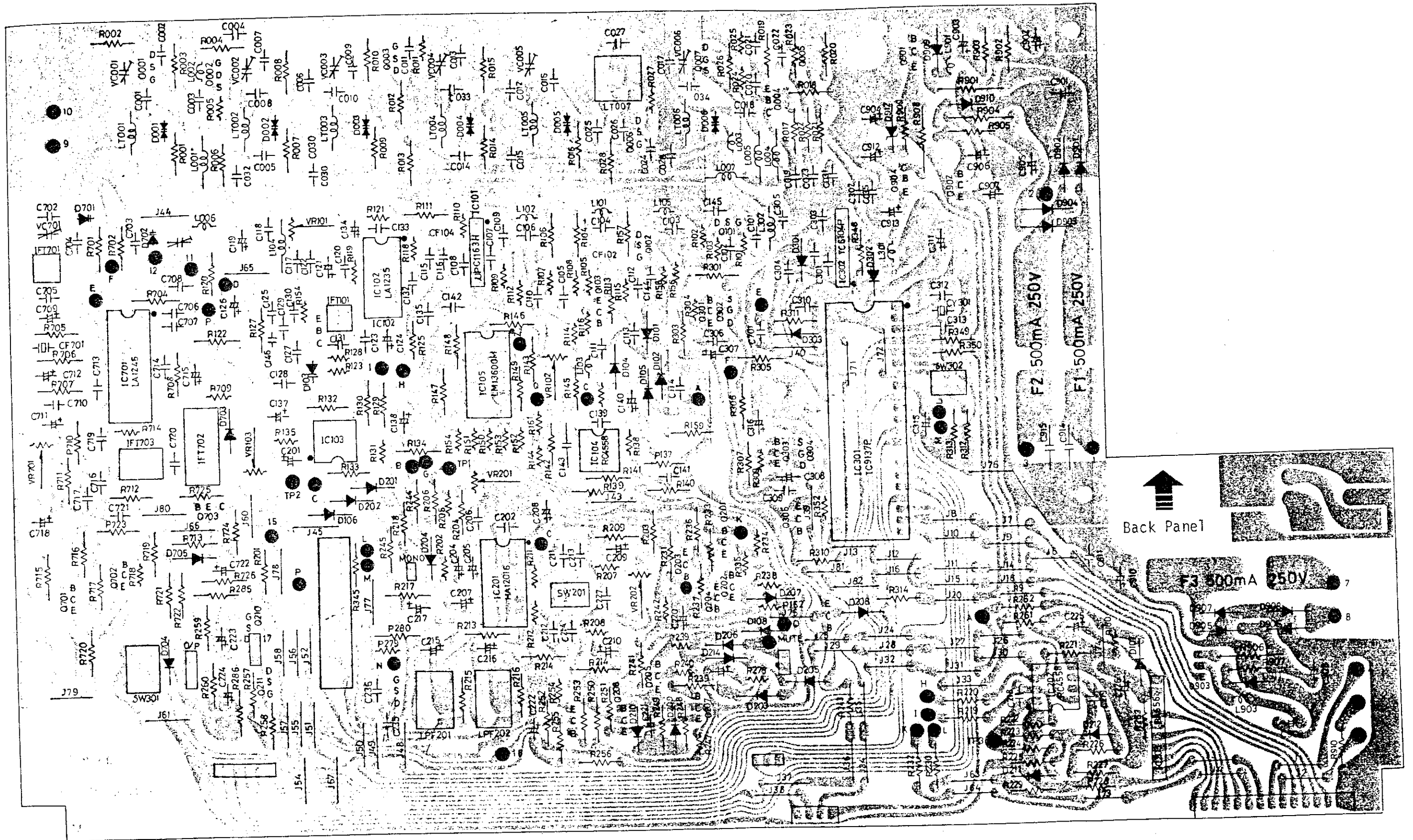


7150 TUNER / 4150 CIRCUIT DIAGRAM



NOTE: ALL THE RESISTORS ARE 1/4 W CANON F.W. RESISTOR UNLESS OTHERWISE SPECIFIED.
 2 ALL THE NPN TRANSISTORS ARE 2N4301 UNLESS OTHERWISE SPECIFIED.
 3 ALL THE DIODES ARE 1N4148 UNLESS OTHERWISE SPECIFIED.
 PIPES: MARKING:
 1 1500MA/35V FOR E1, E2, E3, E2, U2, XD
 2 300MA/20V FOR C1, C2, AB, U1

7150 TUNER/4150 PCB PARTS LOCATION (BOTTOM VIEW)



3150 WIRING DIAGRAM

PRIMARY SECTION

