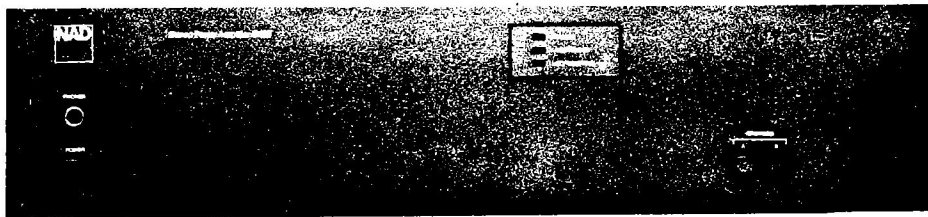
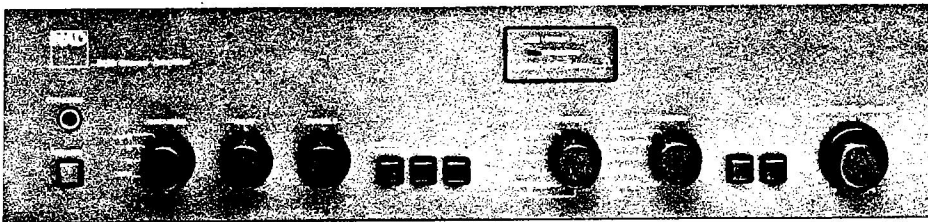


# NAD SERVICE MANUAL

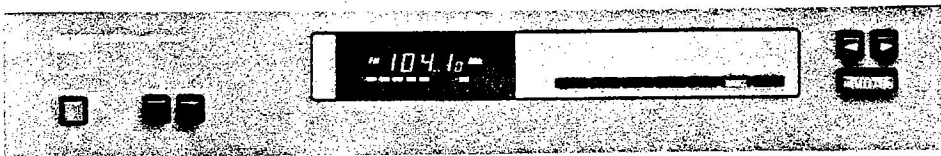


MODELS

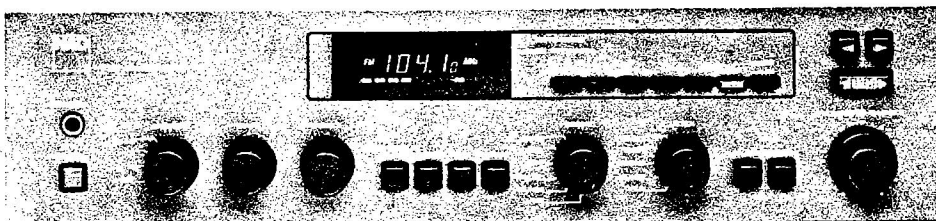
**2150**



**3150**



**4150**



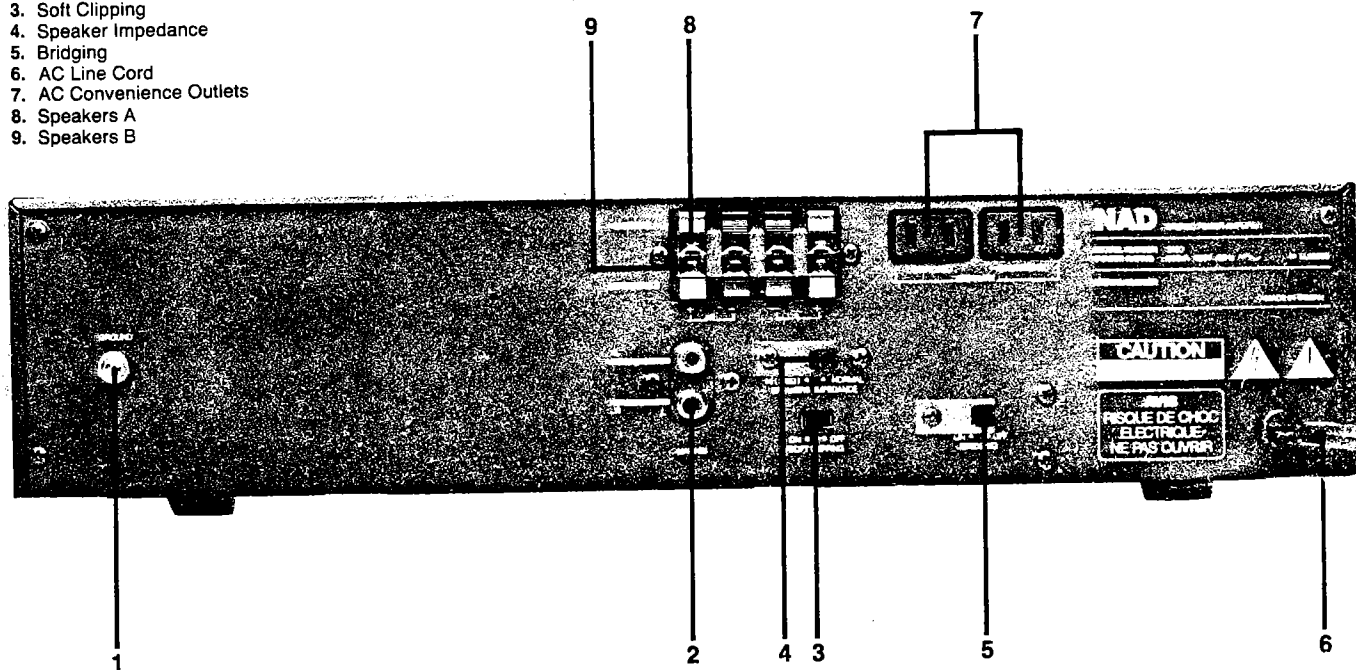
**7150**

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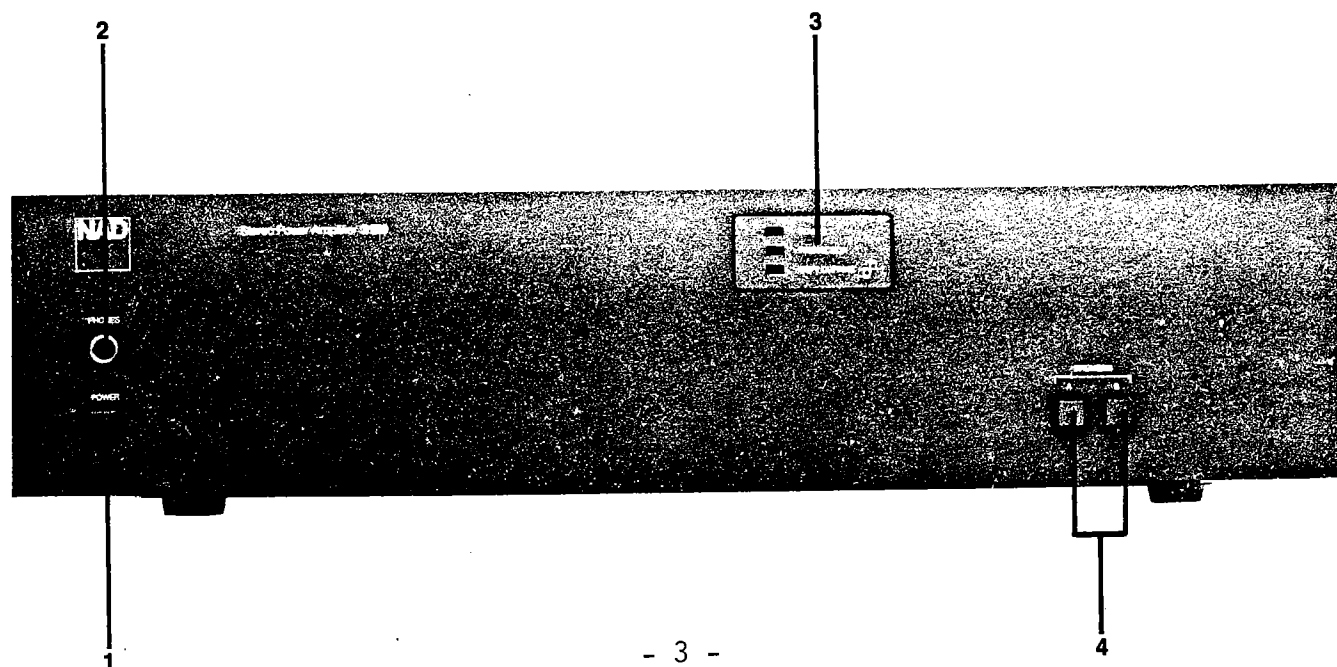
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## 2150 FRONT/REAR VIEW

1. Ground
2. Main in
3. Soft Clipping
4. Speaker Impedance
5. Bridging
6. AC Line Cord
7. AC Convenience Outlets
8. Speakers A
9. Speakers B

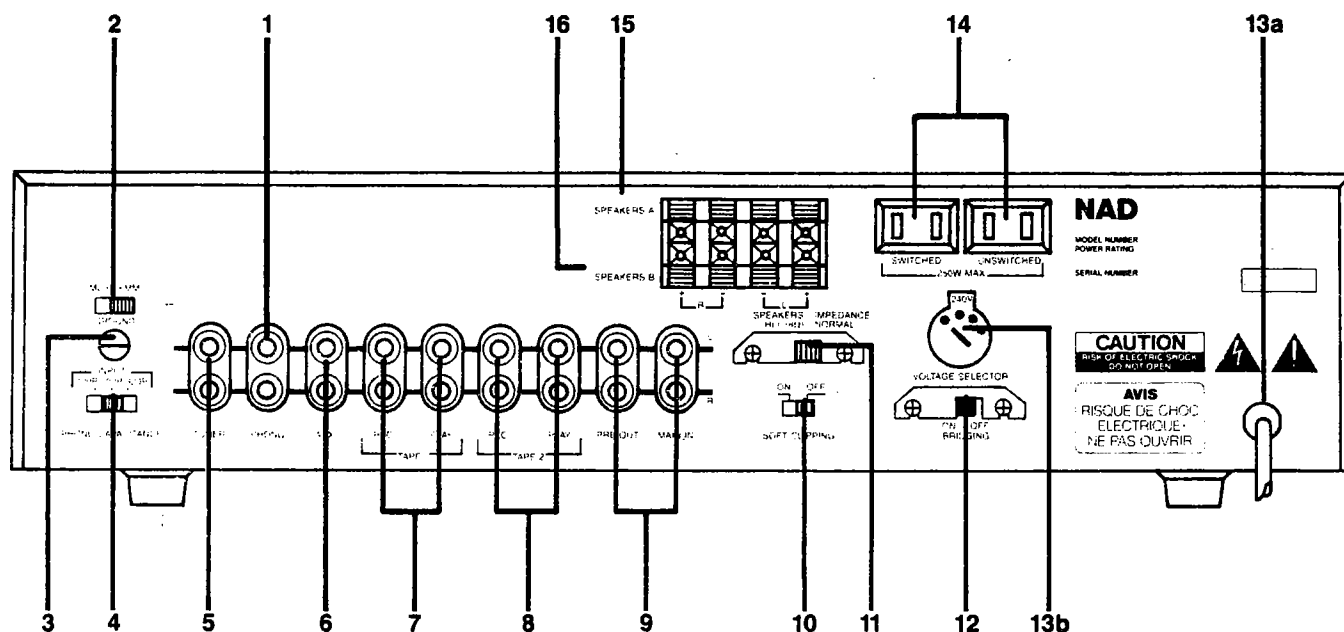


1. Power
2. Phones
3. Status Indicators
4. Speaker Selector

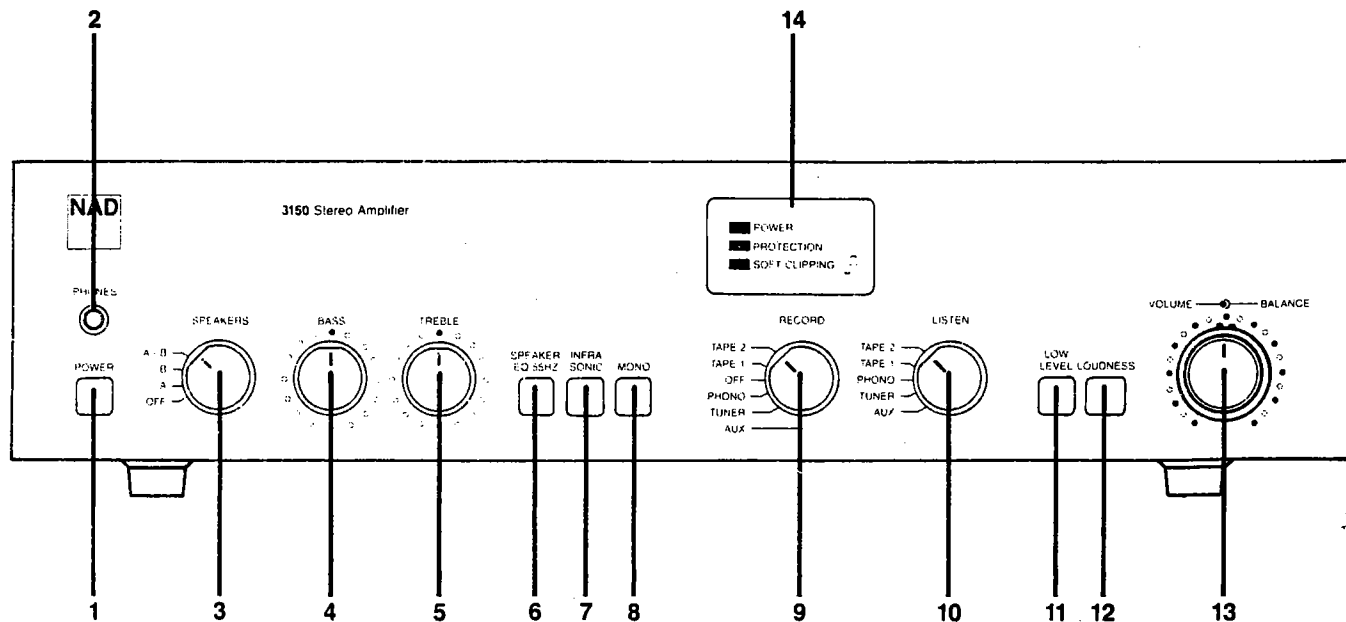


## 3150 FRONT/REAR VIEW

- |                         |                            |
|-------------------------|----------------------------|
| 1. Phono Input          | 10. Soft Clipping          |
| 2. MM MC Selector       | 11. Speaker Impedance      |
| 3. Ground               | 12. Bridging               |
| 4. Capacitance Selector | 13a. AC Line Cord          |
| 5. Tuner Input          | 13b. Voltage Selector      |
| 6. Aux Input            | (Not in U.K. model)        |
| 7. Tape 1 Rec/Play      | 14. AC Convenience Outlets |
| 8. Tape 2 Rec/Play      | 15. Speakers A             |
| 9. Preamp Out, Main in  | 16. Speakers B             |

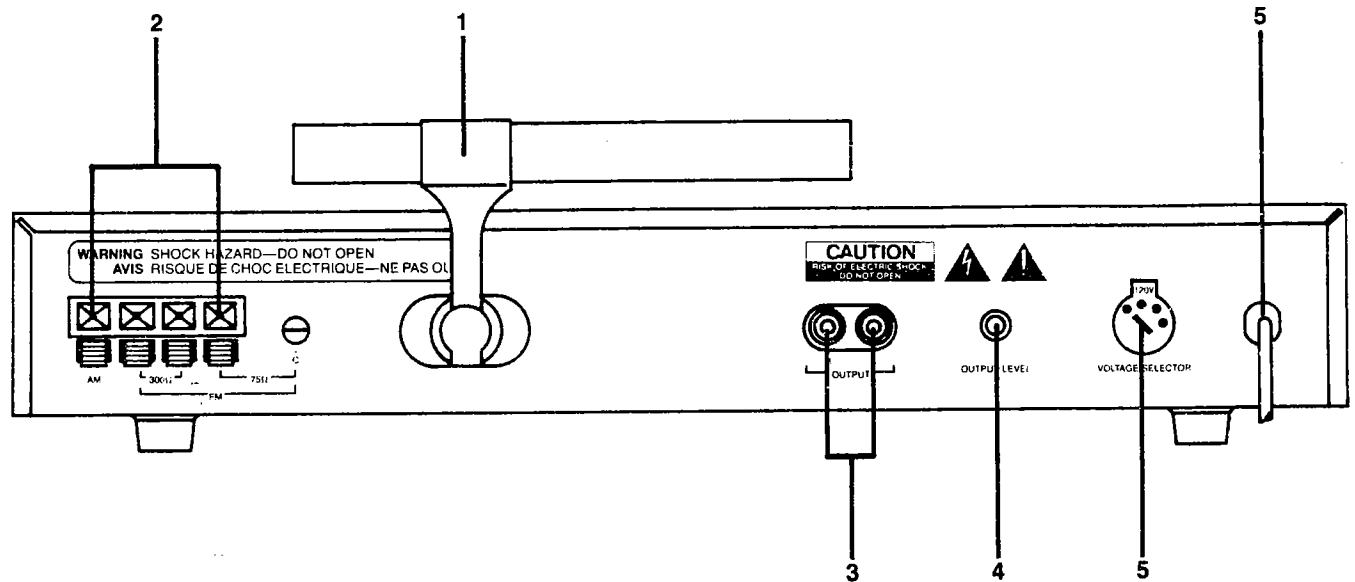


- |                      |                           |
|----------------------|---------------------------|
| 1. Power             | 8. Mono                   |
| 2. Phones            | 9. Recording Selector     |
| 3. Speaker Selector  | 10. Listen Selector       |
| 4. Bass              | 11. Low Level             |
| 5. Treble            | 12. Loudness Compensation |
| 6. Speaker EQ        | 13. Volume/Balance        |
| 7. Infrasonic Filter | 14. Status Indicators     |

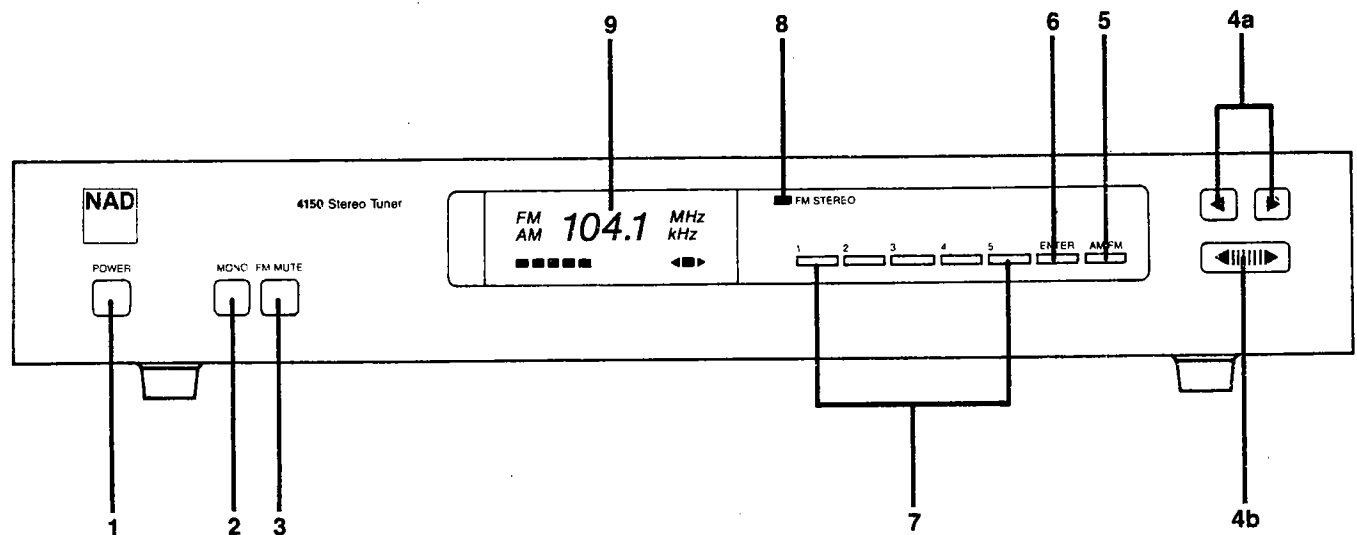


# 4150 FRONT/REAR VIEW

1. AM Bar Antenna
2. Antenna Terminals
3. Audio Output
4. Output Level
5. AC Line Cord and Voltage Selector

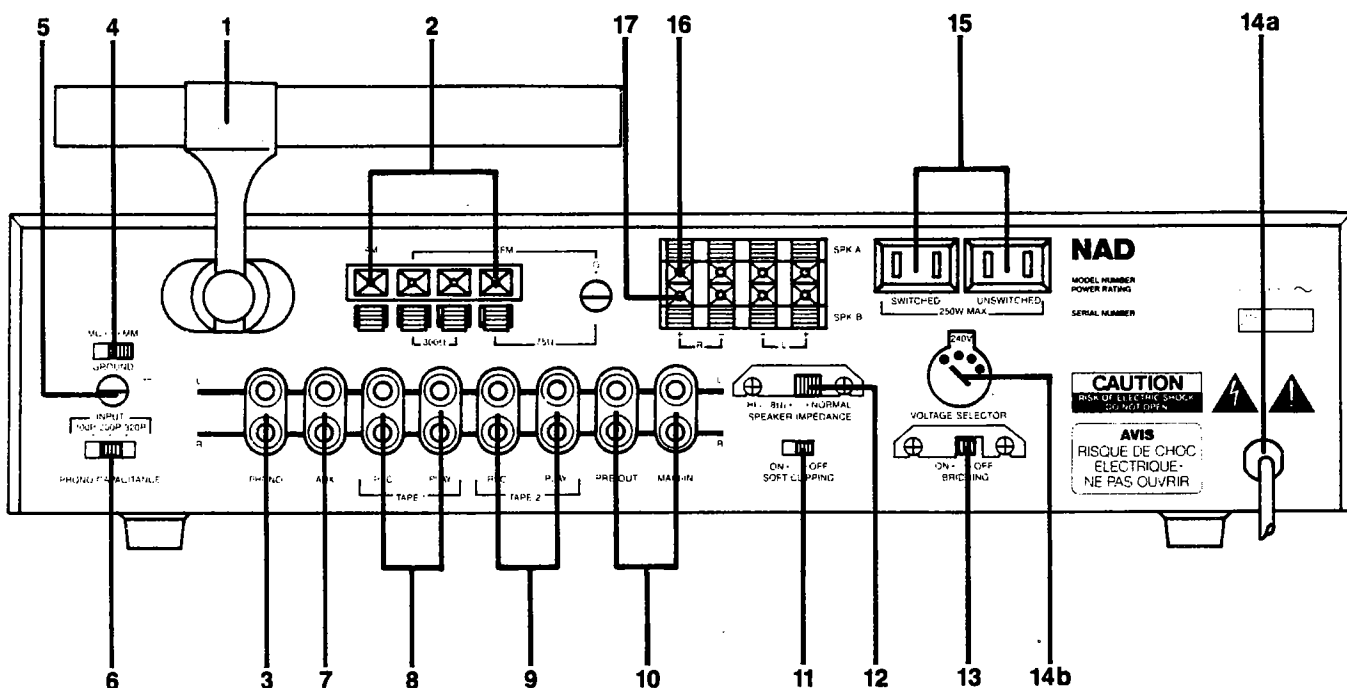


1. Power
2. Mono
3. FM Mute
4. (a.) Up/Down Scan
4. (b.) Search
5. FM/AM
6. Enter
7. Pre-Sets
8. FM Stereo Indicator
9. Tuning Display

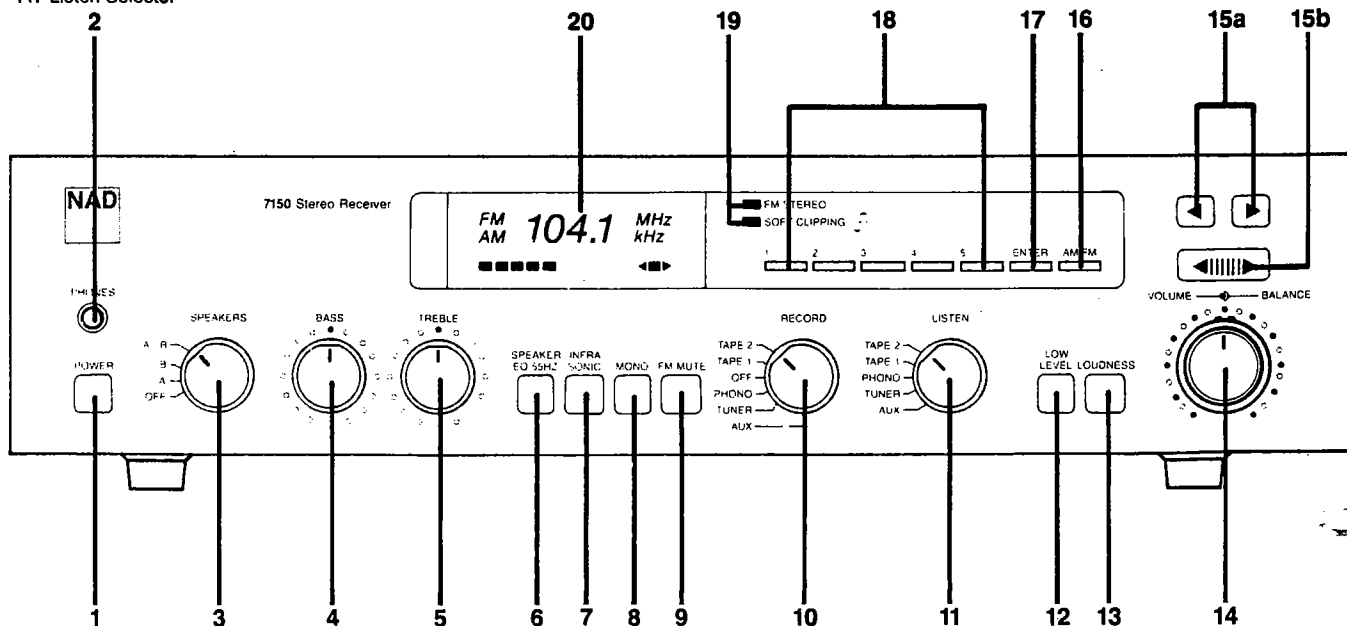


# 7150 FRONT/REAR VIEW

- |                         |                         |                             |
|-------------------------|-------------------------|-----------------------------|
| 1. AM Bar Antenna       | 8. Tape 1 Rec/Play      | 14b. Voltage Selector       |
| 2. Antenna Terminals    | 9. Tape 2 Rec/Play      | (Not in U.S./Canada models) |
| 3. Phono Input          | 10. Preamp Out, Main In | 15. AC Convenience Outlets  |
| 4. MM/MC Phono Selector | 11. Soft Clipping       | (Not in U.K. model)         |
| 5. Ground               | 12. Speaker Impedance   | 16. Speakers A              |
| 6. Capacitance Selector | 13. Bridging            | 17. Speakers B              |
| 7. Aux Input            | 14a. AC Line Cord       |                             |



- |                        |                           |
|------------------------|---------------------------|
| 1. Power               | 12. Low Level             |
| 2. Phones              | 13. Loudness Compensation |
| 3. Speaker Selector    | 14. Volume/Balance        |
| 4. Bass                | 15a. Up/Down              |
| 5. Treble              | 15b. Search               |
| 6. Speaker Eq.         | 16. FM/AM                 |
| 7. Infrasonic Filter   | 17. Enter                 |
| 8. Mono                | 18. Pre-sets              |
| 9. FM Mute             | 19. Status Indicators     |
| 10. Recording Selector | 20. Tuning Display        |
| 11. Listen Selector    |                           |



## 2150 SPECIFICATIONS

All specifications are measured in accordance with IHF standard A-202

| Speakers Impedance Switch Set:                                          | Normal          | Hi ( $\geq 8\Omega$ ) |
|-------------------------------------------------------------------------|-----------------|-----------------------|
| Continuous Average Power Output at 8 ohm 20-20K Hz both Channels Driven | 50 W            | 60 W                  |
| Rated Distortion 20-20K Hz                                              | <0.03%          | <0.03%                |
| Clipping Headroom at 8 ohm                                              | +0.5 dB         | +0.5 dB               |
| Clipping Power at 8 ohm                                                 | 57 W            | 68 W                  |
| at 4 ohm                                                                | 80 W            | -                     |
| at 2 ohm                                                                | 90 W            | -                     |
| Dynamic Headroom at 8 ohm                                               | +1.8 dB         | +1.6 dB               |
| Dynamic Power at 8 ohm                                                  | 90 W            | 100 W                 |
| at 4 ohm                                                                | 150 W           | -                     |
| at 2 ohm                                                                | 180 W           | -                     |
| Transient Overload Recovery Time                                        | <1 usec         |                       |
| Slew Factor                                                             | >50             |                       |
| Slew Rate                                                               | 20 V/usec       |                       |
| Damping Factor at 50 Hz (Ref. 8 ohm)                                    | >100            |                       |
| THD 20-20K Hz from 250 mW to 60 W                                       | <0.03%          |                       |
| SMPTTE IMD (60K Hz +7K Hz, 4:1) from 250 mW to 50 W                     | <0.03%          |                       |
| IHF IMD (19K Hz + 20K Hz) at 50 W                                       | <0.03%          |                       |
| TIM (15K Hz Sinewave +3.18K Hz Square Wave) at 50 W                     | <0.03%          |                       |
| Frequency Response, 20-20K Hz                                           | +-0.5 dB        |                       |
| Frequency Response Range -3 dB                                          | 10-35K Hz       |                       |
| Physical Specifications                                                 |                 |                       |
| Dimensions WxHxD (inch)                                                 | 16.5x3.8x12.2   |                       |
| (mm)                                                                    | 420x96x310      |                       |
| Net Weight                                                              | 8.8Kg/19.4 Lbs. |                       |

## 7150 AUDIO/3150 SPECIFICATIONS

\* Measurements identified by an asterisk are taken in accordance with the new IHF A-202 amplifier measurement standard.

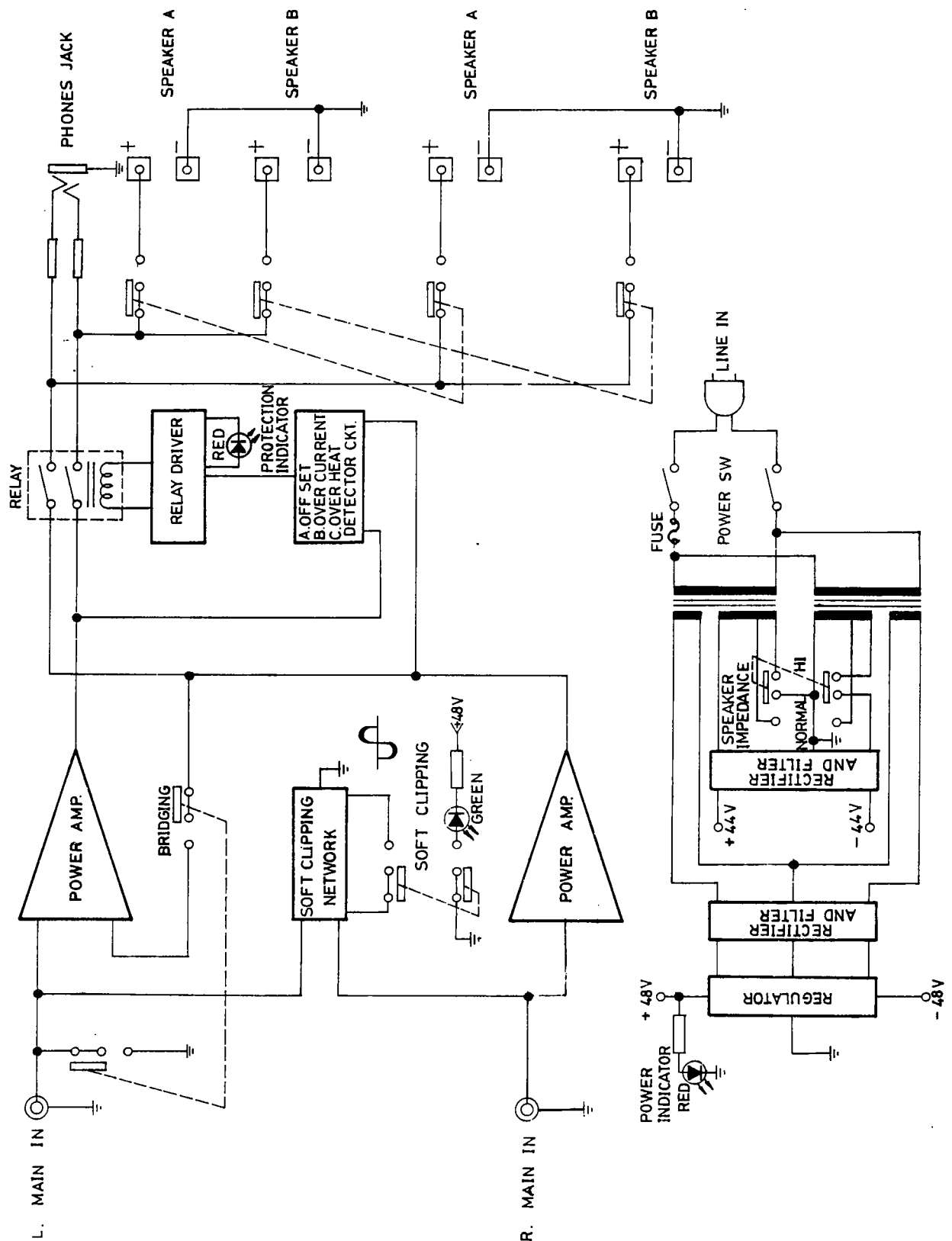
| Speaker Impedance Switch Set:                                              | Normal  | Hi ( $\geq 8\Omega$ ) |
|----------------------------------------------------------------------------|---------|-----------------------|
| Power Amplifier Section                                                    |         |                       |
| * Continuous average power output at 8 ohms 20-20K Hz both Channels Driven | 50 W    | 60 W                  |
| Rated distortion 20-20K Hz                                                 | <0.03%  | <0.03%                |
| * Clipping Headroom at 8 ohm                                               | +0.5 dB | +0.5 dB               |
| Clipping Power at 8 ohm                                                    | 57 W    | 68 W                  |
| at 4 ohm                                                                   | 80 W    | -                     |
| at 2 ohm                                                                   | 90 W    | -                     |
| Dynamic Headroom at 8 ohm                                                  | +1.8 dB | +1.6 dB               |
| Dynamic Power at 8 ohm                                                     | 90 W    | 100 W                 |
| at 4 ohm                                                                   | 150 W   | -                     |
| at 2 ohm                                                                   | 180 W   | -                     |

|                                               |                |                |
|-----------------------------------------------|----------------|----------------|
| * Transient Overload Recovery Time            | <1 usec        |                |
| * Slew Factor                                 | >50            |                |
| Slew Rate                                     | 20 V/usec      |                |
| Damping factor at 50 Hz (Ref. 8 ohm)          | >100           |                |
| THD 20-20K Hz From 250 mW to 60 W             | <0.03%         |                |
| SMPTTE IMD (60K Hz + 7K Hz, 4:1)              |                |                |
| from 250 mW to 60 W                           | <0.03%         |                |
| IHF IMD (19K Hz + 20K Hz) at 60 W             | <0.03%         |                |
| TIM (15K Hz Sine Wave +3.18K Hz Square Wave)  |                |                |
| at 60 W                                       | <0.03%         |                |
| Frequency Response, 20-20K Hz                 | +/-0.5 dB      |                |
| Frequency Response Range -3 dB                | 10-35K Hz      |                |
| Preamplifier Section                          | <u>MM</u>      | <u>MC</u>      |
| PHONO Input Resistance                        | 47K ohm        | 47K ohm        |
| PHONO Input Capacitance (Selectable)          | 100P/200P/320P | 100P/200P/320P |
| Input Sensitivity (1K Hz) * For 1 Watt out    | 0.4 mV         | 0.035 mV       |
| 50 Watt out                                   | 2.5 mV         | 0.25 mV        |
| Input Overload at 1K Hz                       | 240 mV         | 24 mV          |
| 20 Hz                                         | 24 mV          | 2.4 mV         |
| 20K Hz                                        | 2.4 V          | 180 mV         |
| THD (20-20K Hz) and IMD at +30 dB input level | <0.015%        | 0.04%          |
| RIAA Response Accuracy                        | +/-0.2 dB      | +/-0.5 dB      |
| Signal to Noise Ratio A-Weighted              |                |                |
| (a) with phono cartridge connected            |                |                |
| Ref 10 mV                                     | >82 dB         |                |
| *Ref 5 mV                                     | >76 dB         |                |
| *Ref 0.5 mV                                   |                | 68 dB          |
| (b) with short-circuit input                  |                |                |
| Ref 10 mV                                     | >90 dB         |                |
| Ref 0.5 mV                                    |                | 70 dB          |
| High Level Input                              |                |                |
| * Input Impedance Resistance/Capacitance      | 150K ohm/220pF |                |
| Input sensitivity * for 1 watt out            | 20 mV          |                |
| for 50 watt out                               | 145 mV         |                |
| Signal to Noise Ratio A-Weighted              |                |                |
| (a) with mute off Ref 1 watt out              | >80 dB         |                |
| Ref 50 watt out                               | >95 dB         |                |
| (b) with mute on Ref 1 watt out               | >93 dB         |                |
| * Maximum Input Signal                        | 15 V           |                |
| Frequency Response, 20-20K Hz                 | +/-0.5 dB      |                |
| Controls                                      |                |                |
| Bass Control, Range at 100K Hz                | +/-8 dB        |                |
| Treble Control, Range at 10K Hz               | +/-7 dB        |                |
| Infrasonic Filter Turn Over Frequency         | 20K Hz         |                |
| Slope (dB/Octave)                             | 12             |                |
| Speaker Eq Turn Over Frequency                | 55             |                |
| Slope (dB/Octave)                             | 12             |                |
| Mute                                          | -20 dB         |                |
| Physical Specifications                       |                |                |
| Dimensions WxHxD (inch)                       | 16.5x3.8x12    |                |
| (cm)                                          | 42x9.6x310     |                |
| Net Weight                                    | 9.0Kg/19.8 Lbs |                |

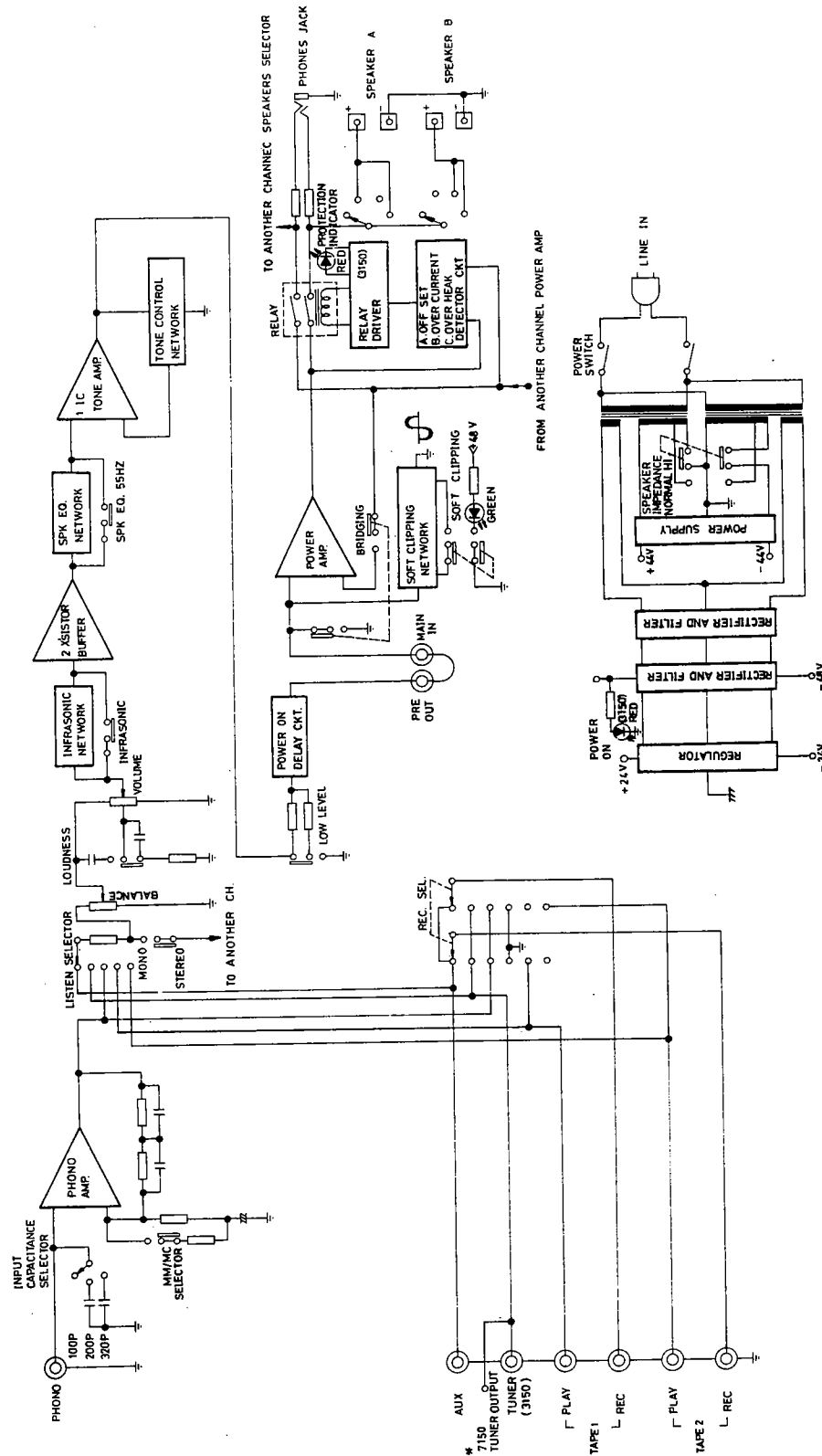
## **7150 TUNER /4150 SPECIFICATIONS**

|                                               | Normal       | Limited      |
|-----------------------------------------------|--------------|--------------|
| FM Tuner Section                              |              |              |
| Input Sensitivity IHF, 30 dB Quieting         | 1.4 uV       | 1.8 uV       |
| IHF, 50 dB S/N Mono/Stereo                    | 3.5 uV/30 uV | 4.5 uV/40 uV |
| Signal to Noise Ratio (A Weighted, at 65 dBf) |              |              |
| Mono/Stereo                                   | 83 dB/75 dB  | 78 dB/70 dB  |
| Frequency Response, 30-15K Hz                 | +0.5 dB      | +0.5 dB      |
| De-emphasis Accuracy, 75 usec                 | +0.5 dB      | +1 dB        |
| Channel Separation 1K Hz                      | 45 dB        | 40 dB        |
| 30-15K Hz                                     | 35 dB        | 30 dB        |
| Selectivity, Alternate Channel (400K Hz)      | 70 dB        | 65 dB        |
| Capture Ratio at 45 dBf and 65 dBf            | 1.0 dB       | 2.0 dB       |
| AM Suppression at 45 dBf and 65 dBf           | 58 dB        | 53 dB        |
| Image Rejection                               | 100 dB       | 95 dB        |
| IF Rejection                                  | 95 dB        | 90 dB        |
| SCA Rejection                                 | 70 dB        | 65 dB        |
| Pilot Signal Suppression                      | 60 dB        | 55 dB        |
| T.H.D. at 100% Modulation 1K Hz Mono/Stereo   | 0.08%/0.1%   | 0.15%/0.2%   |
| 100K Hz Mono/Stereo                           | 0.10%/0.2%   | 0.2%/0.3%    |
| 6K Hz Mono/Stereo                             | 0.10%/0.2%   | 0.2%/0.3%    |
| T.H.D. Stereo 1K Hz 50%/150%                  | 0.1%/0.2%    | 0.2%/0.3%    |
| AM Tuner Section                              |              |              |
| Usable Sensitivity                            | 300 uV/m     | 450 uV/m     |
| Selectivity                                   | 30 dB        | 25 dB        |
| Image Rejection                               | 50 dB        | 45 dB        |
| IF Rejection                                  | 50 dB        | 45 dB        |

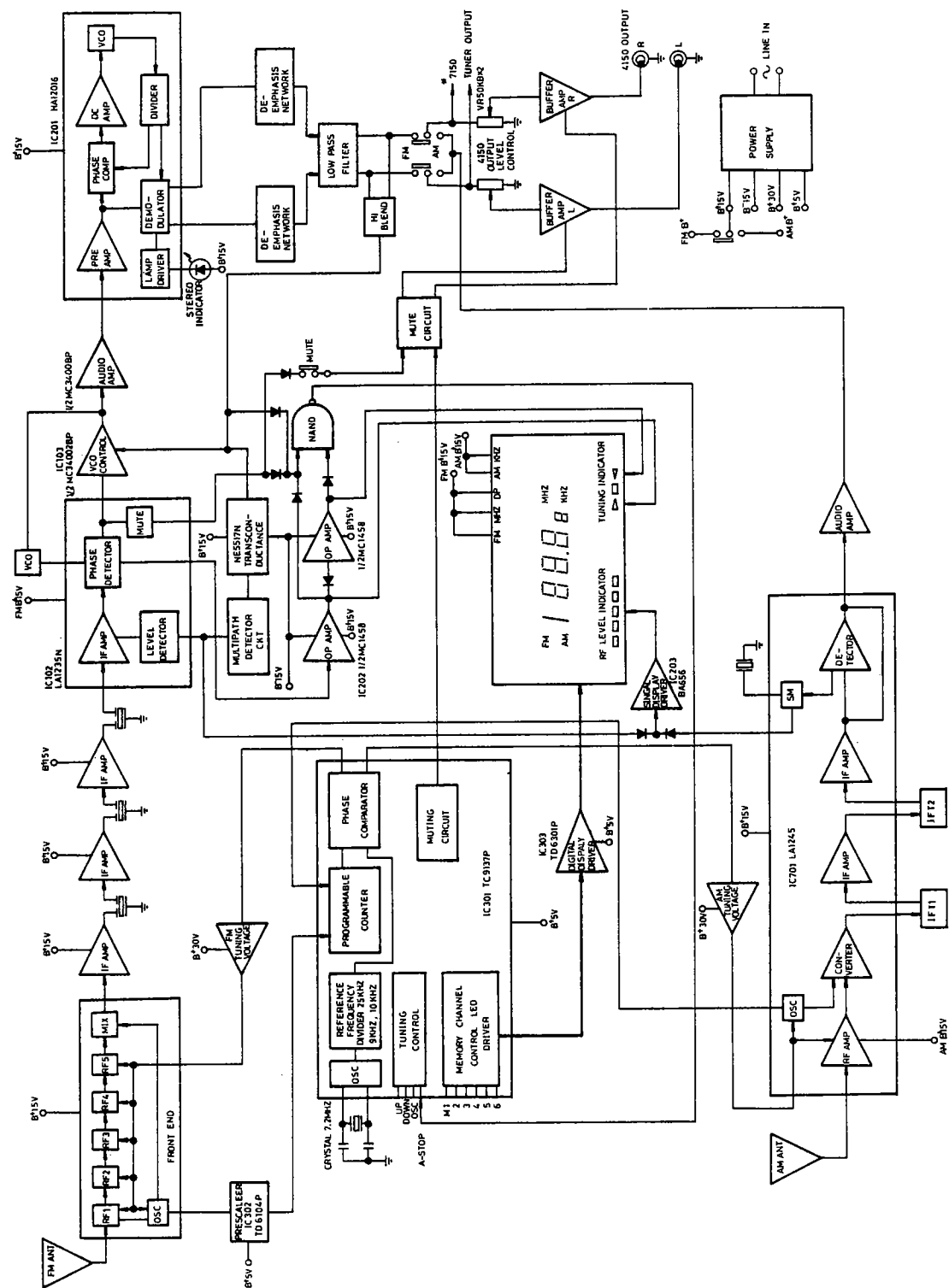
# 2150 BLOCK DIAGRAM



# 7150 AUDIO / 3150 BLOCK DIAGRAM



# 7150 TUNER/4150 BLOCK DIAGRAM



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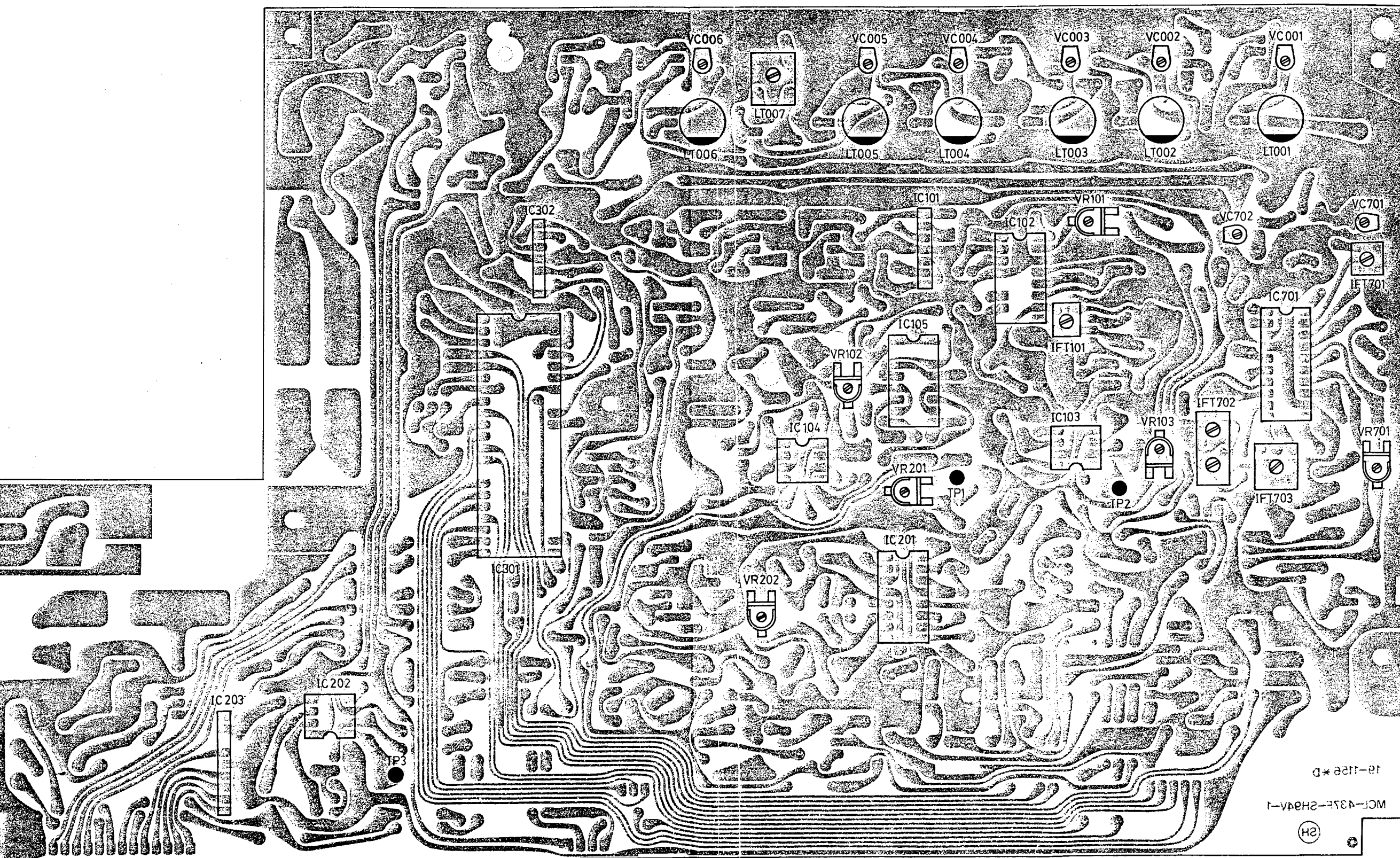
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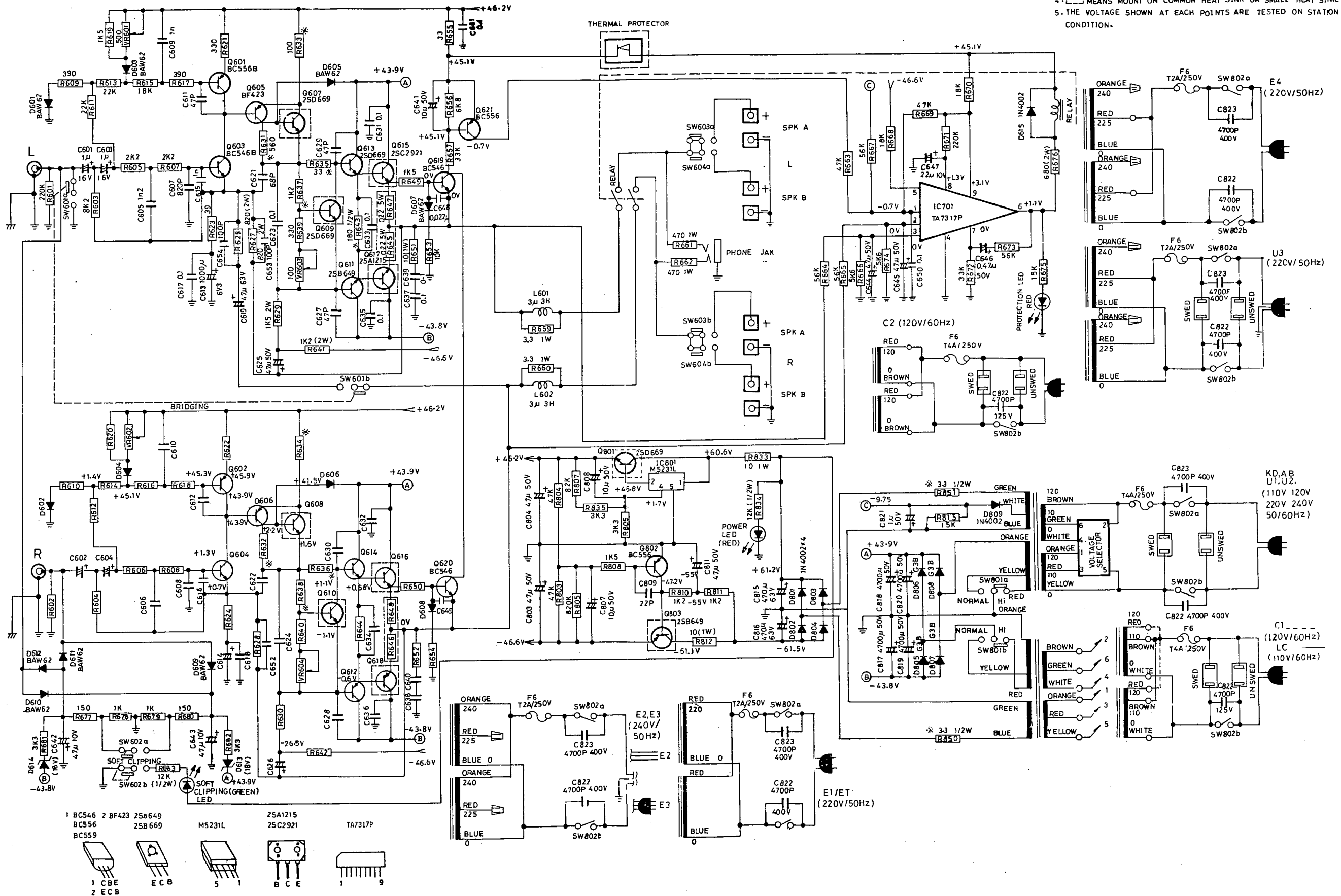


# TUNER/4150 ALIGNMENT POINT





## 2150 CIRCUIT DIAGRAM



# 0/3150/4150/7150 ALIGNMENT PROCEDURE

## MENT

### ALIGNMENT

he power for 5 minutes pre- heating.

) channel alignment: Connect probe of DC millivolt-meter to L (R) channel speaker s, then adjust VR-601 (VR-602) till the reading are closed to 0mV.

### T ALIGNMENT

603 to fully clockwise position and VR-604 to fully counter-clockwise position.

he power for 5 minutes pre-heating.

he load in speaker terminals.

one probe of DC millivolt-meter to L (R) channel speaker terminal "+", the other to TP2) on main PCB foiling side, adjust VR-603 (VR-604) till the reading is between 1 (TP2) on main PCB foiling side, adjust VR-603 (VR-604) till the reading is 4.4mv and 11mv.

### AUDIO) ALIGNMENT

### ALIGNMENT

he power for 5 minutes pre-heating.

me control to minumum position and speaker selector switch to "A+B" position.

) channel alignment: Connect probe of DC millivolt-meter to L (R) channel speaker s, then adjust VR-601(VR-602)till the reading are coised to 0mV.

### IT ALIGNMENT

603 to fully colckwise position and VR-604 to fully counter-clockwise position.

he power for 5 minutes pre-heating.

me control to minimum position and speaker selector switch to "A+B" position..

he load on speaker terminals.

one probe of DC millivolt-meter to L (R) channel speaker terminal "+", the other t TP1 (TP2) on main PCB. Foiling side, adjust VR-603 (VR-604) till the reading is 4.4mV and 11mV.

### (TUNER) ALIGNMENT

- 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.

| Step | FM SG                             | Stereo Sg                                                                                                                                                                   | Dial Setting | Indicator                                          | Adjustment | Adjust For             |  |
|------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------|------------|------------------------|--|
|      | 98 MHz<br>0% Modulation           | —                                                                                                                                                                           | 98 MHz       | Connect frequ-<br>ency Counter<br>To Pin TP1       | VR201      | 76 kHz±50 Hz           |  |
| 2    | 98 MHz                            | 10% 19 kHz<br>90% L+R                                                                                                                                                       | 98 MHz       | —                                                  | VR201      | Stereo LED<br>Light    |  |
|      | 98 MHz                            | 10% 19 kHz<br>pilot L only                                                                                                                                                  | 98 MHz       | Connect V.T.V.M<br>or Oscilloscope<br>to R REC out | VR202      | Minimum<br>OUTPUT      |  |
|      |                                   | 10% 19 kHz<br>pilot R only                                                                                                                                                  | 98 MHz       | Connect V.T.V.M<br>or Oscilloscope<br>to L REC out | VR202      |                        |  |
|      |                                   | Repeat Step 1 and Step 2                                                                                                                                                    |              |                                                    |            |                        |  |
|      |                                   | IF there is an excessive difference between leak-free effect<br>of both channels, slightly adjust VR202 So that the levels<br>of signal leakage of both channels are equal. |              |                                                    |            |                        |  |
| dB   | 98 MHz<br>SG OUTPUT<br>Level 30uV | 10% 19 kHz<br>pilot.0%<br>L+R, L-R.                                                                                                                                         | 98 MHz       | V.T.V.M or<br>Oscilloscope                         | VR102      | Just minimum<br>OUTPUT |  |

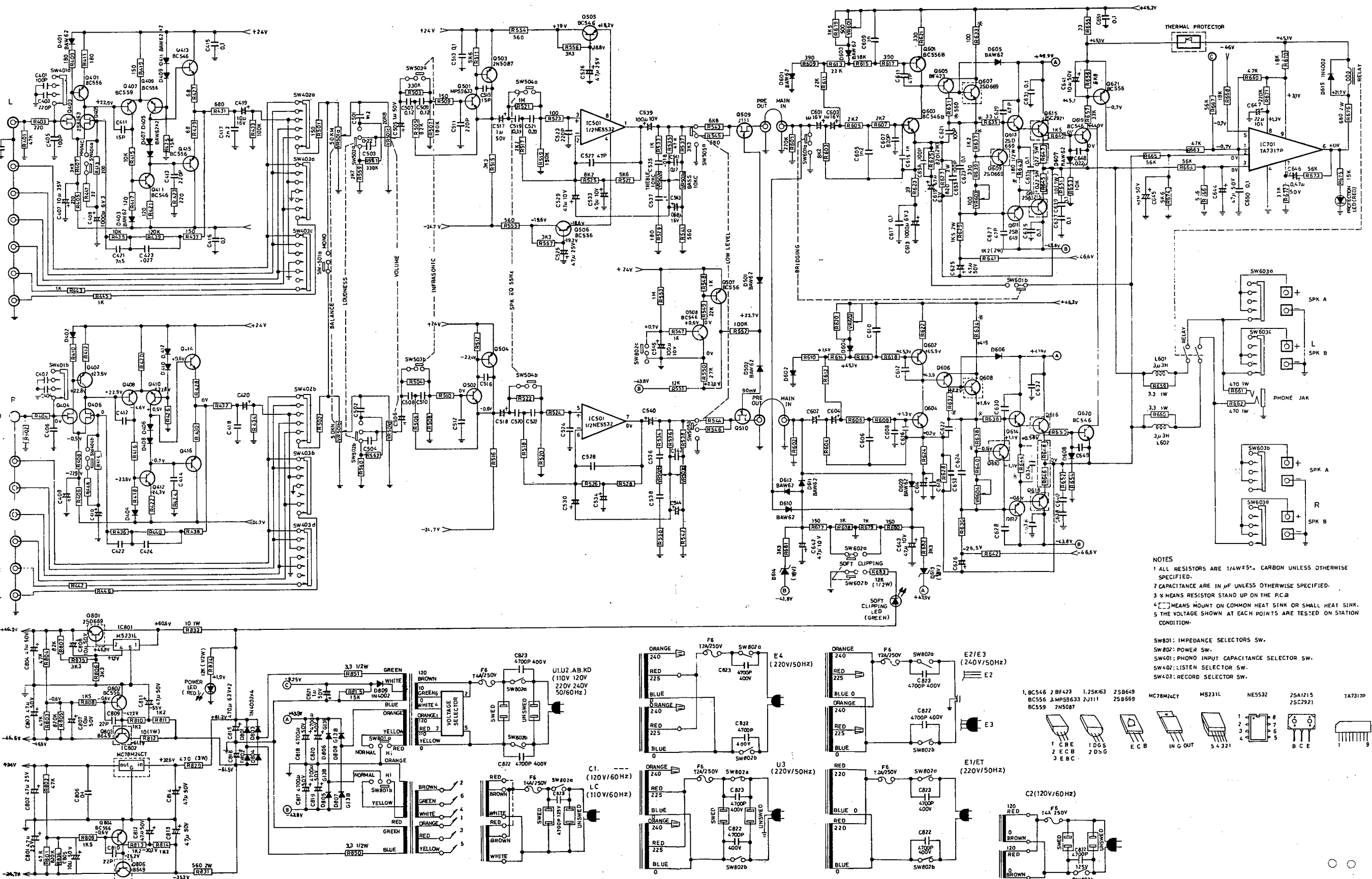
2. FM ALIGNMENT a. Selector Switch in FM position  
b. AC Line Voltage at Rated Voltage  
c. Monitor OUTPUT at record OUTPUT

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

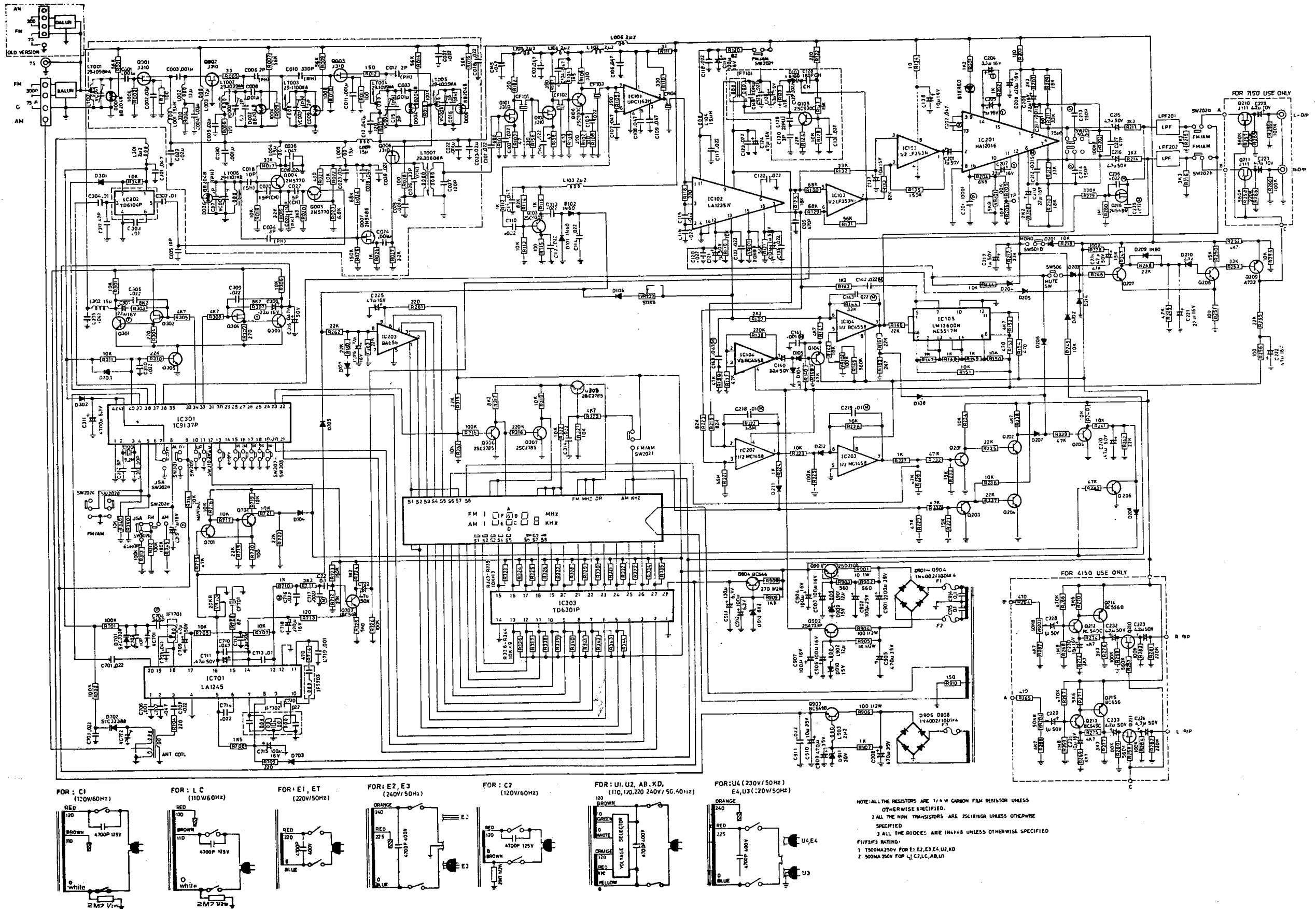
### 3. AM ALIGNMENT

| SECTION  |        | AM SG                                                                                              |  |                          | Dial Setting     | Indicator                 | Adjustment                        | Adjust for                               |                            |
|----------|--------|----------------------------------------------------------------------------------------------------|--|--------------------------|------------------|---------------------------|-----------------------------------|------------------------------------------|----------------------------|
|          |        | Connection                                                                                         |  | Carrier                  |                  |                           |                                   |                                          | Mod.                       |
| AM IF    |        | Hot side of SG OUTPUT through 200pF to AM ANT. trimmer                                             |  | 450kHz                   | 30% Mod          | point of non-interference | V.T.V.M. or Oscilloscope          | IFT 703<br>IFT 702<br><br>Maximun OUTPUT |                            |
| AM Range | STEP 1 | Hot side of SG OUTPUT through a loop ANT radiate to AM ANT BAR vertically, and keep 60cm distance. |  | 600kHz                   | 30% Mod<br>400Hz | 600kHz                    | Digital Voltage Meter             | IFT 701                                  | Tuning Voltage<br>4.5V±0.1 |
|          | 2      |                                                                                                    |  | 140QkHz                  | 30% Mod<br>400Hz | 1400kHz                   |                                   |                                          |                            |
|          | 3      |                                                                                                    |  | Repeat Step 1 and Step 2 |                  |                           |                                   |                                          | VC 701                     |
| AM Sens  | 1      | Hot side of SG OUTPUT through a loop ANT radiate to AM ANT BAR vertically and keep 60cm distance.  |  | 600kHz                   | 30% Mod<br>400Hz | 600kHz                    | V.T.V.M<br><br>or<br>Oscilloscope | ANT BAR                                  | Maximum OUTPUT             |
|          | 2      |                                                                                                    |  | 1400kHz                  | 30% Mod<br>400Hz | 1400kHz                   |                                   | VC 702                                   |                            |
|          | 3      |                                                                                                    |  | Repeat Step 1 and Step 2 |                  |                           |                                   |                                          |                            |

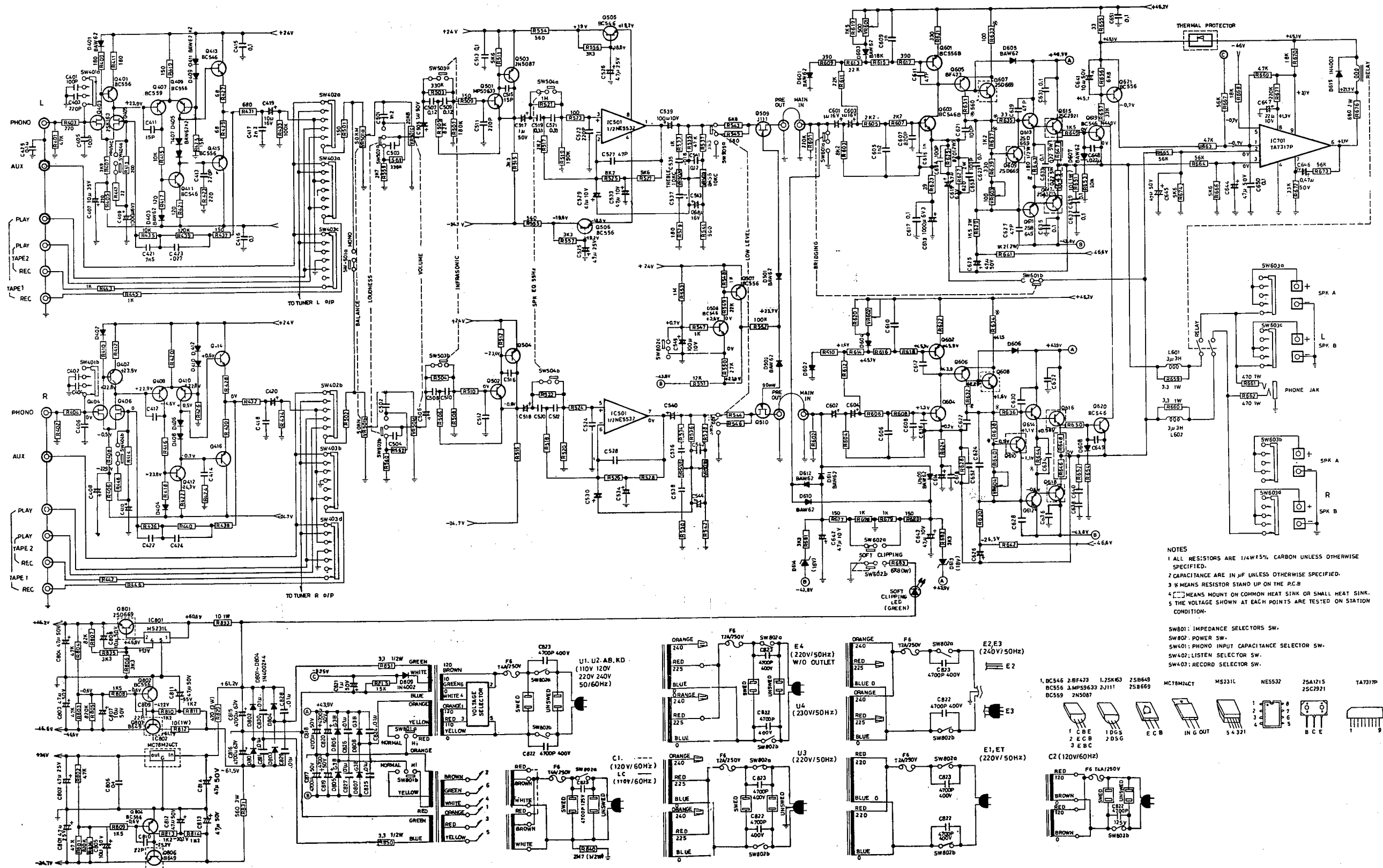
### D CIRCUIT DIAGRAM



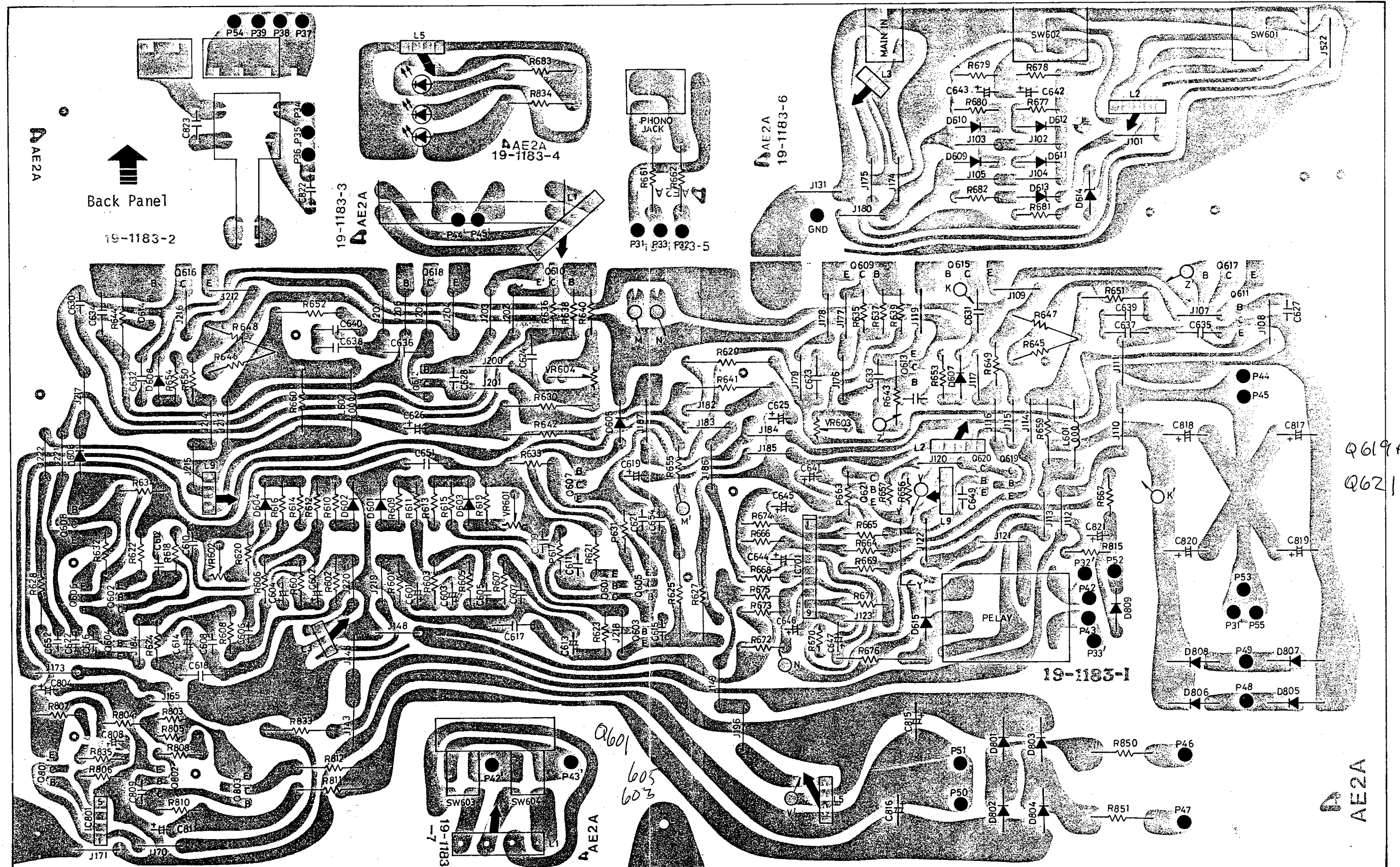
## 7150 TUNER / 4150 CIRCUIT DIAGRAM



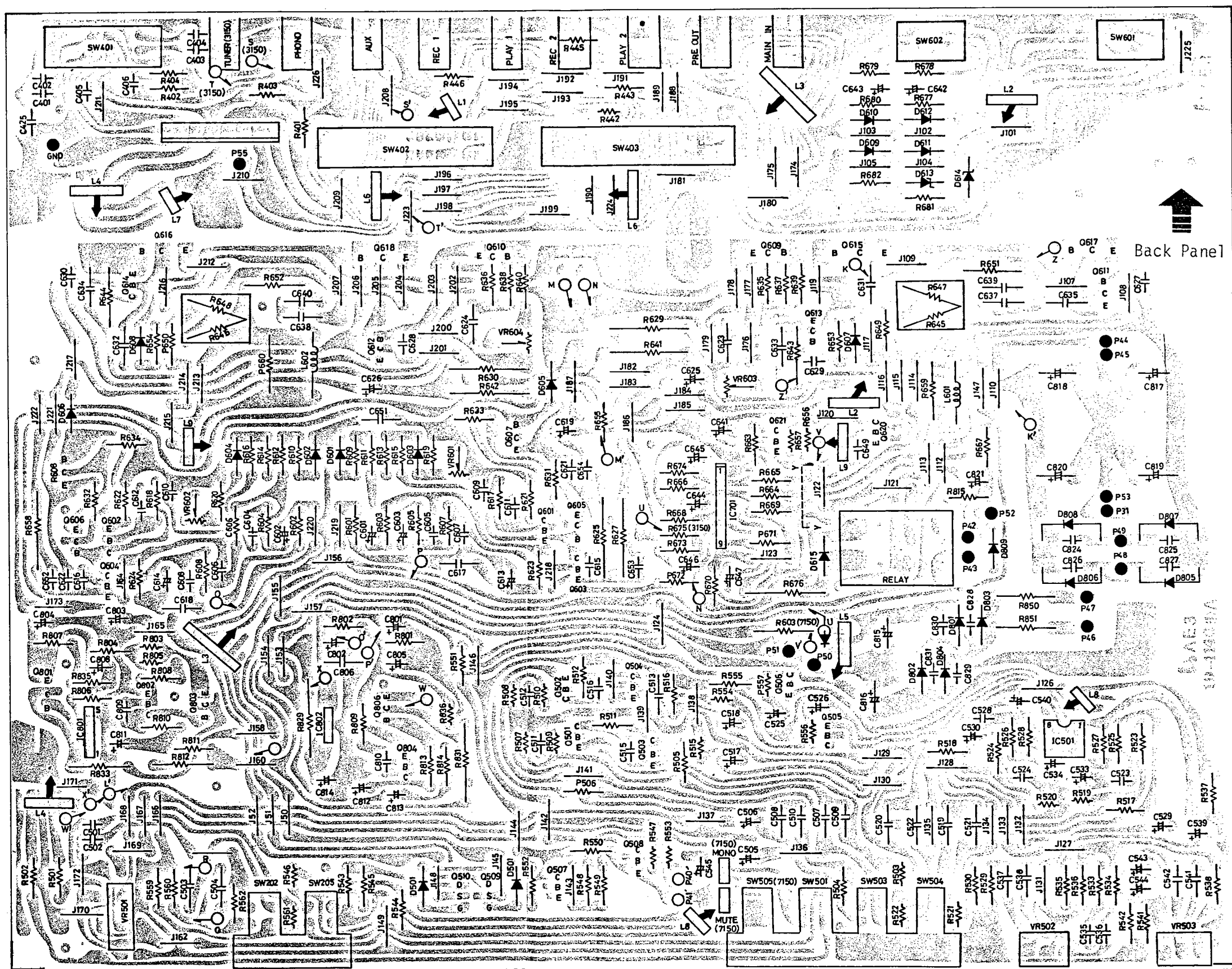
## 7150 AUDIO CIRCUIT DIAGRAM



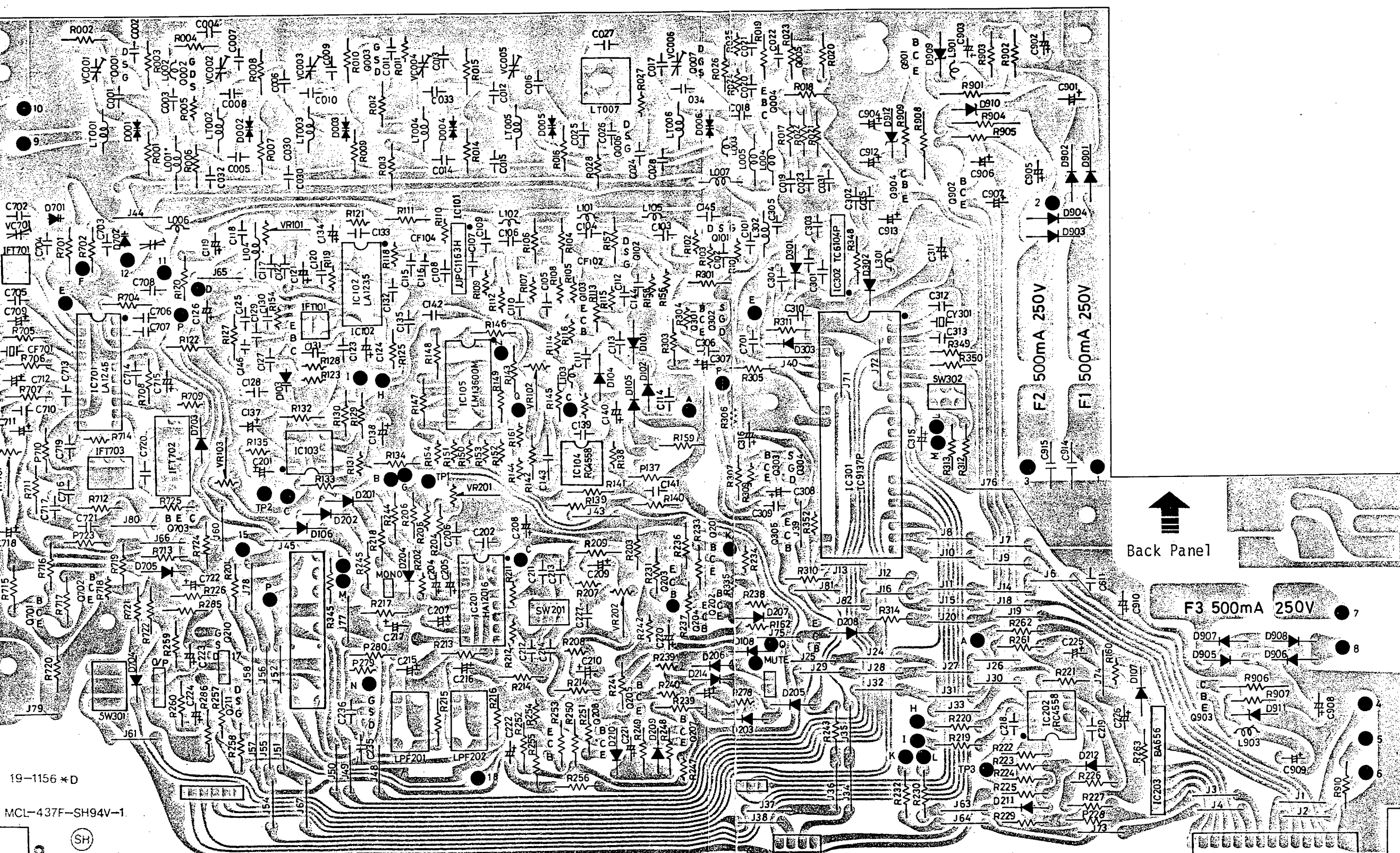
# 2150 PCB PARTS LOCATION (BOTTOM VIEW)



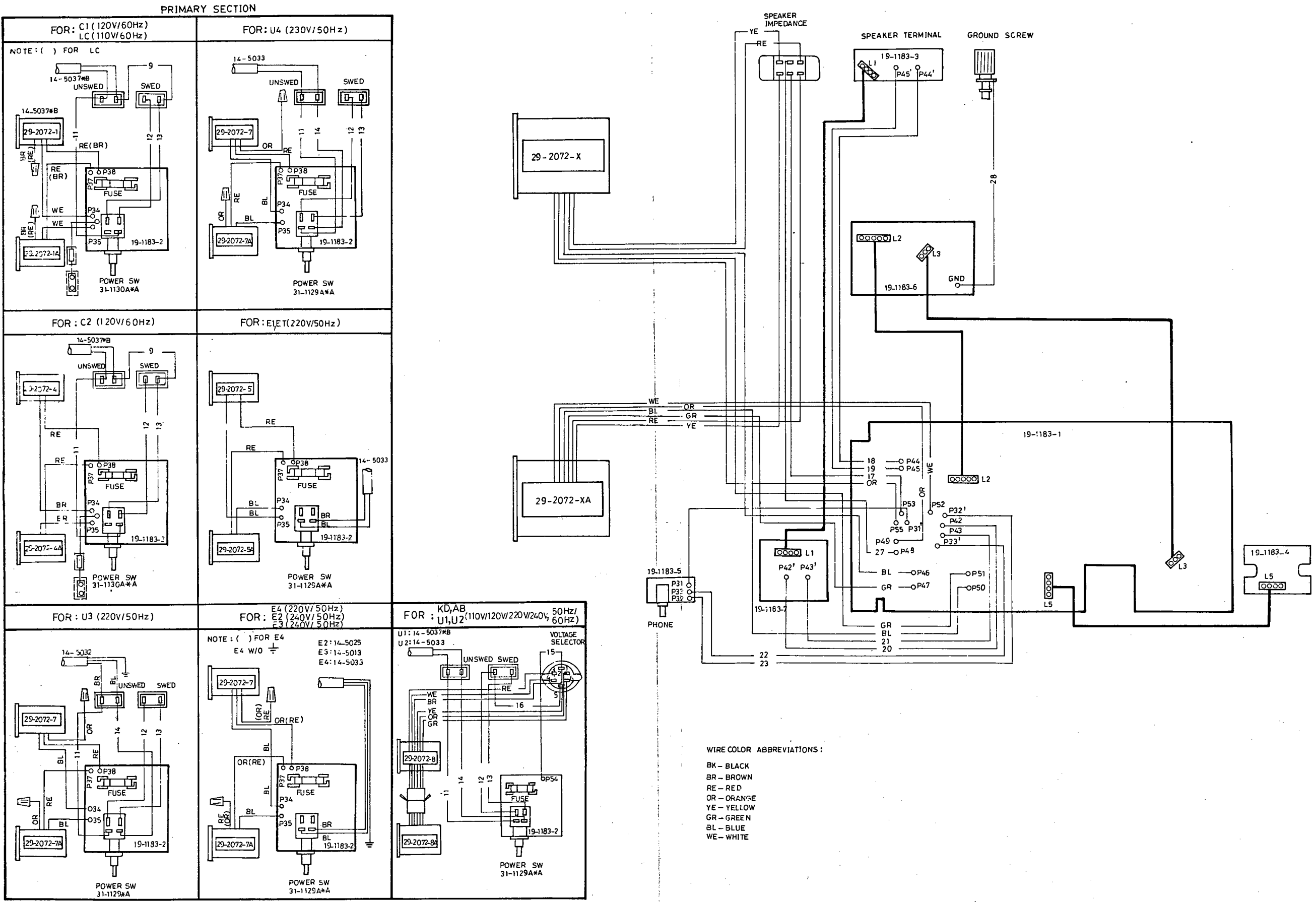
# 7150 AUDIO/3150 PCB PARTS LOCATION (BOTTOM VIEW)



### TUNER/4150 PCB PARTS LOCATION (BOTTOM VIEW)

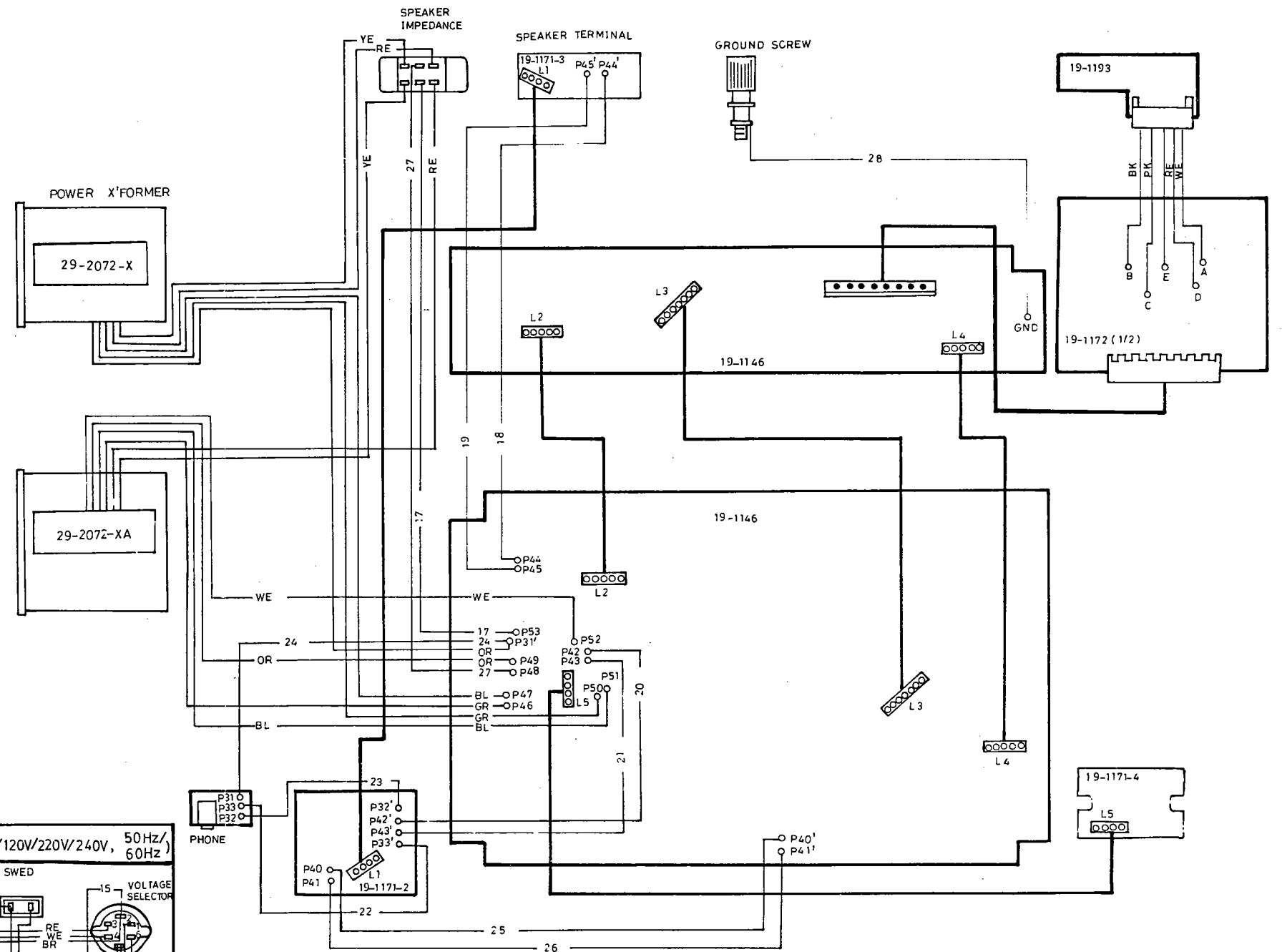
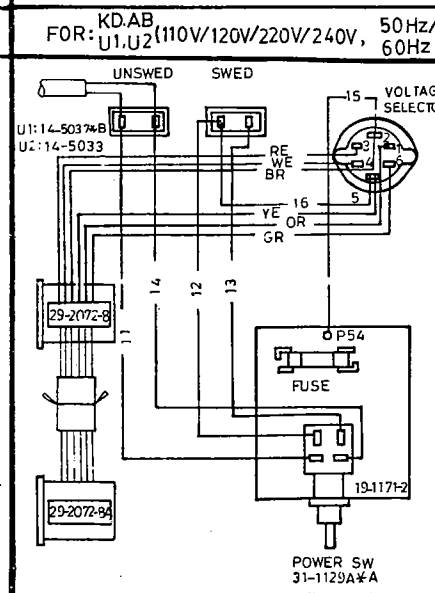
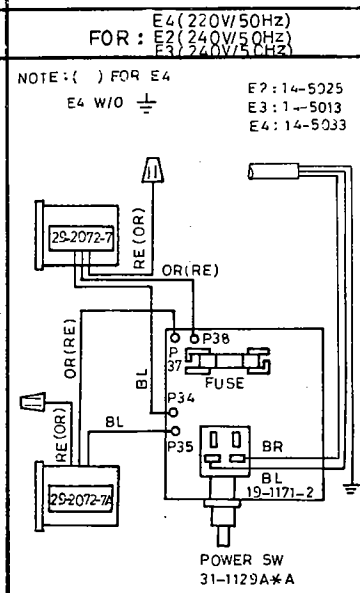
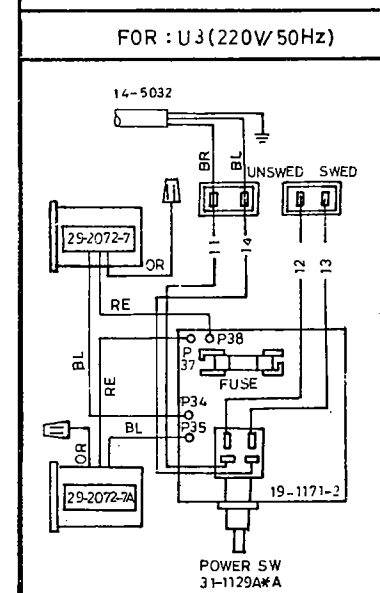
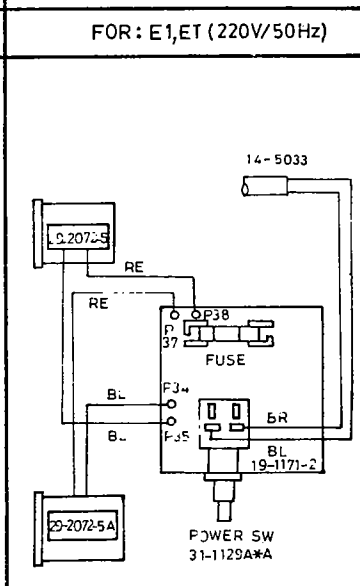
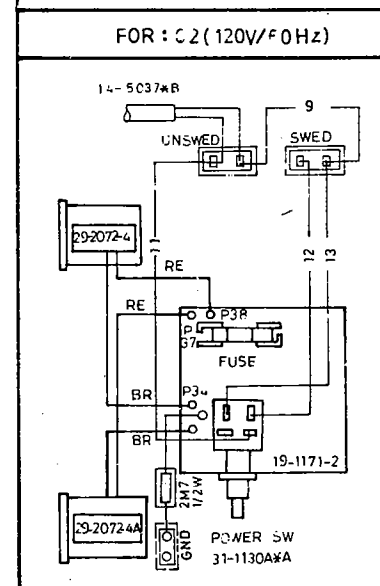
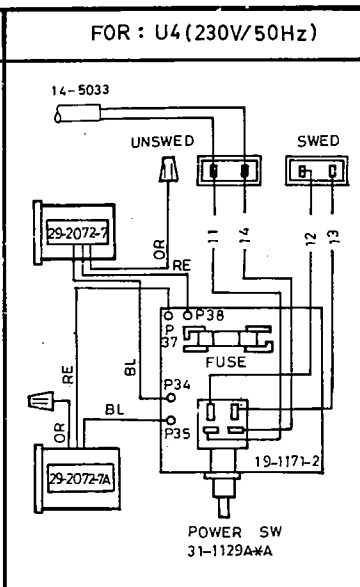
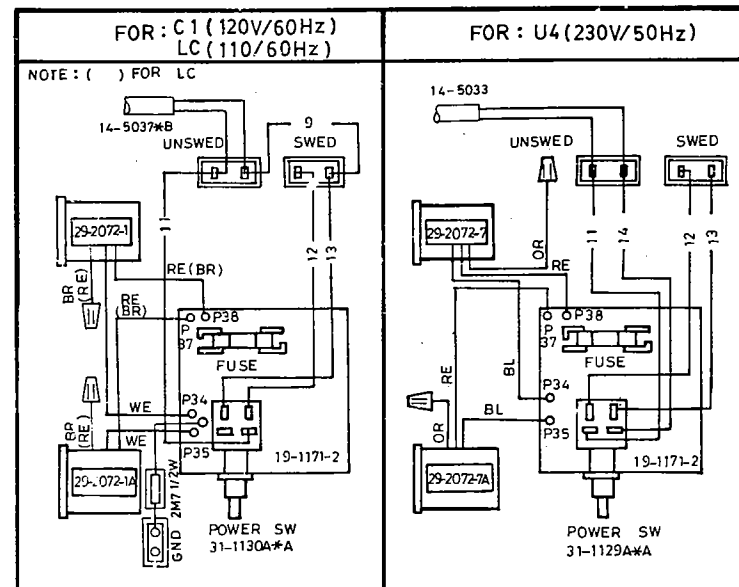


# 2150 WIRING DIAGRAM



# 3150 WIRING DIAGRAM

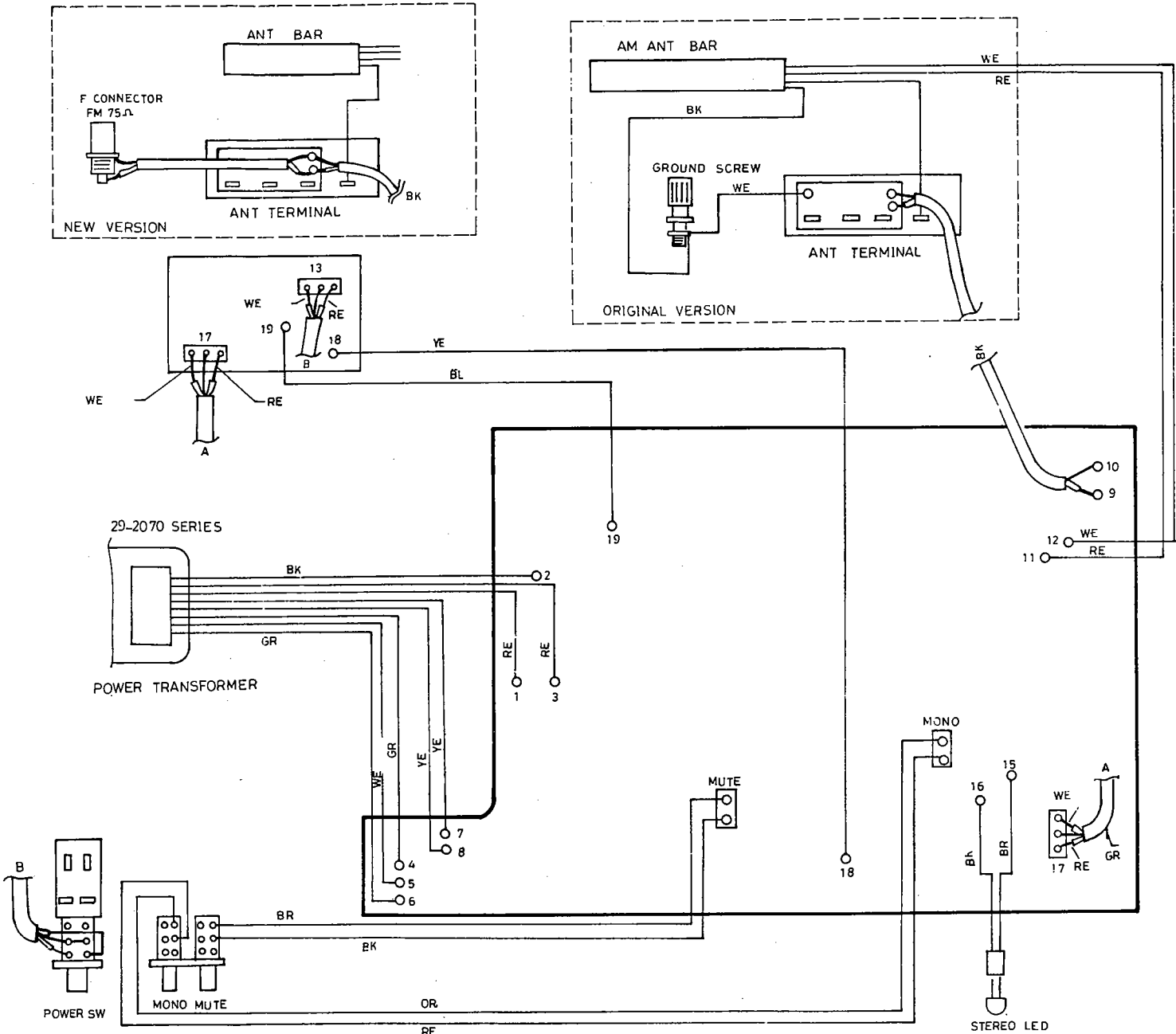
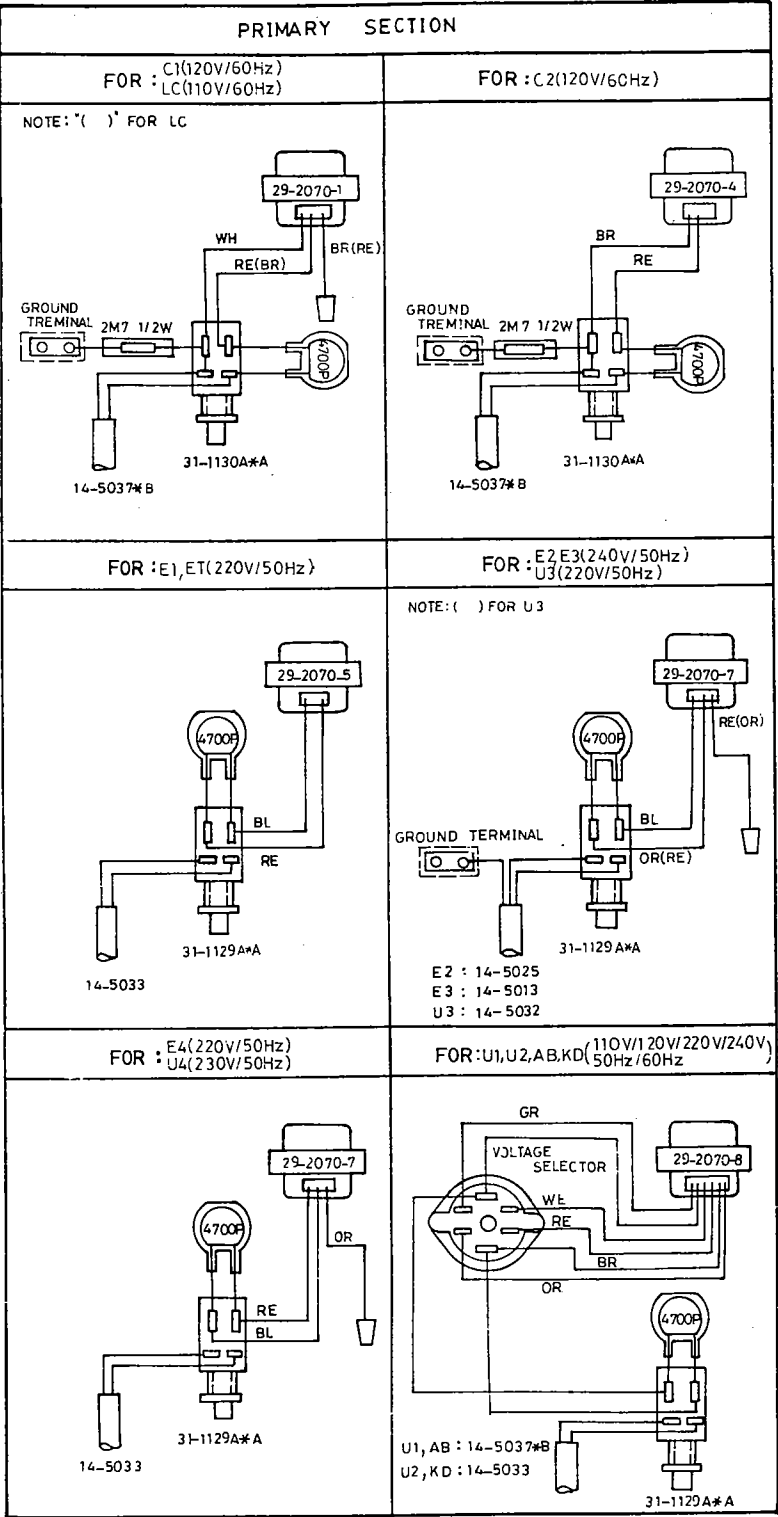
## PRIMARY SECTION



WIRE COLOR ABBREVIATIONS:

- BK - BLACK
- BR - BROWN
- RE - RED
- OR - ORANGE
- YE - YELLOW
- GR - GREEN
- BL - BLUE
- WE - WHITE
- PK - PINK

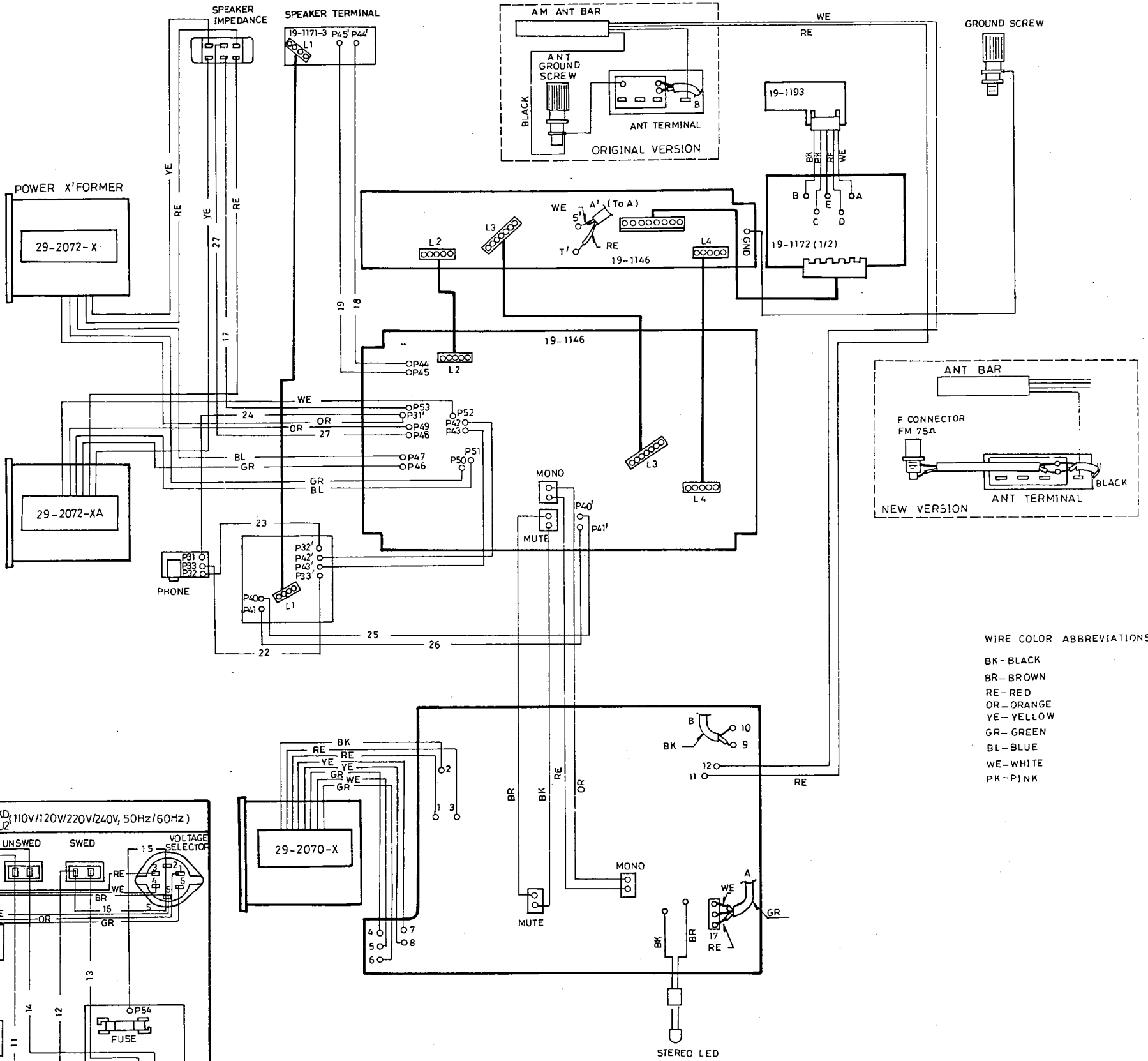
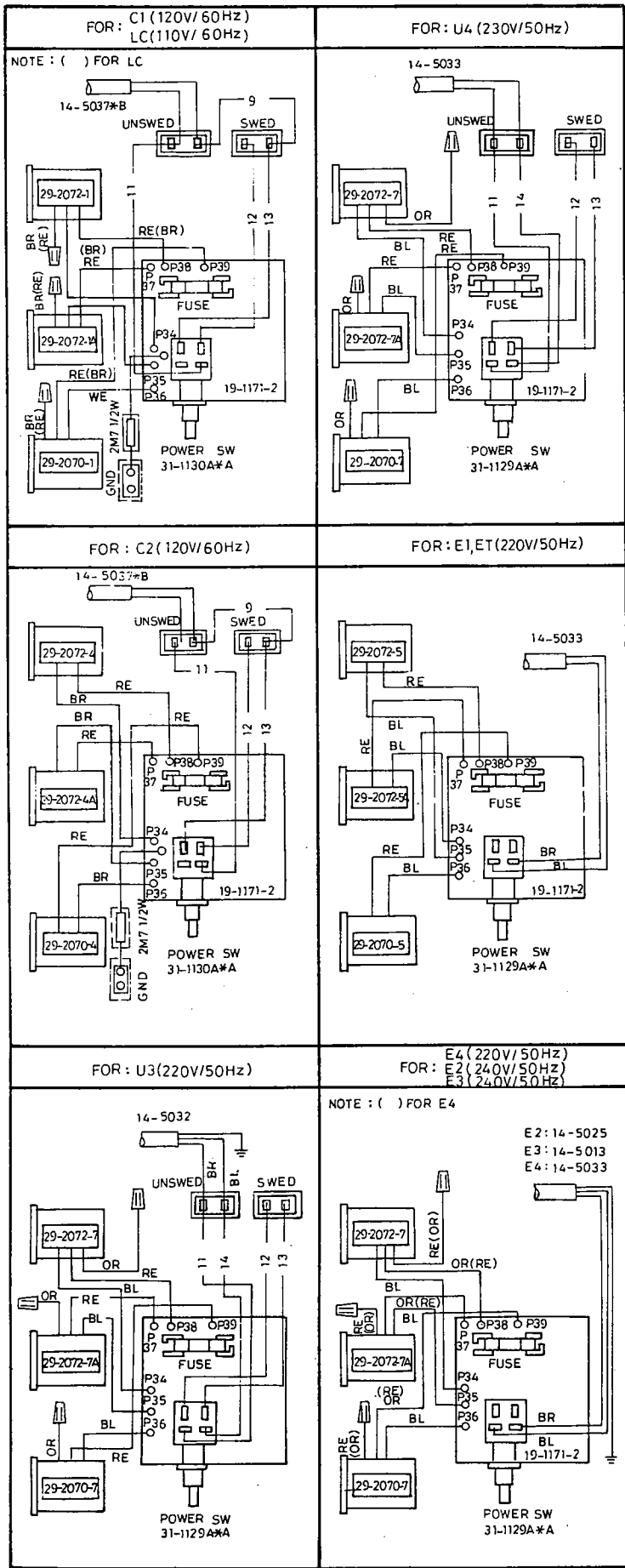
4150 WIRING DIAGRAM



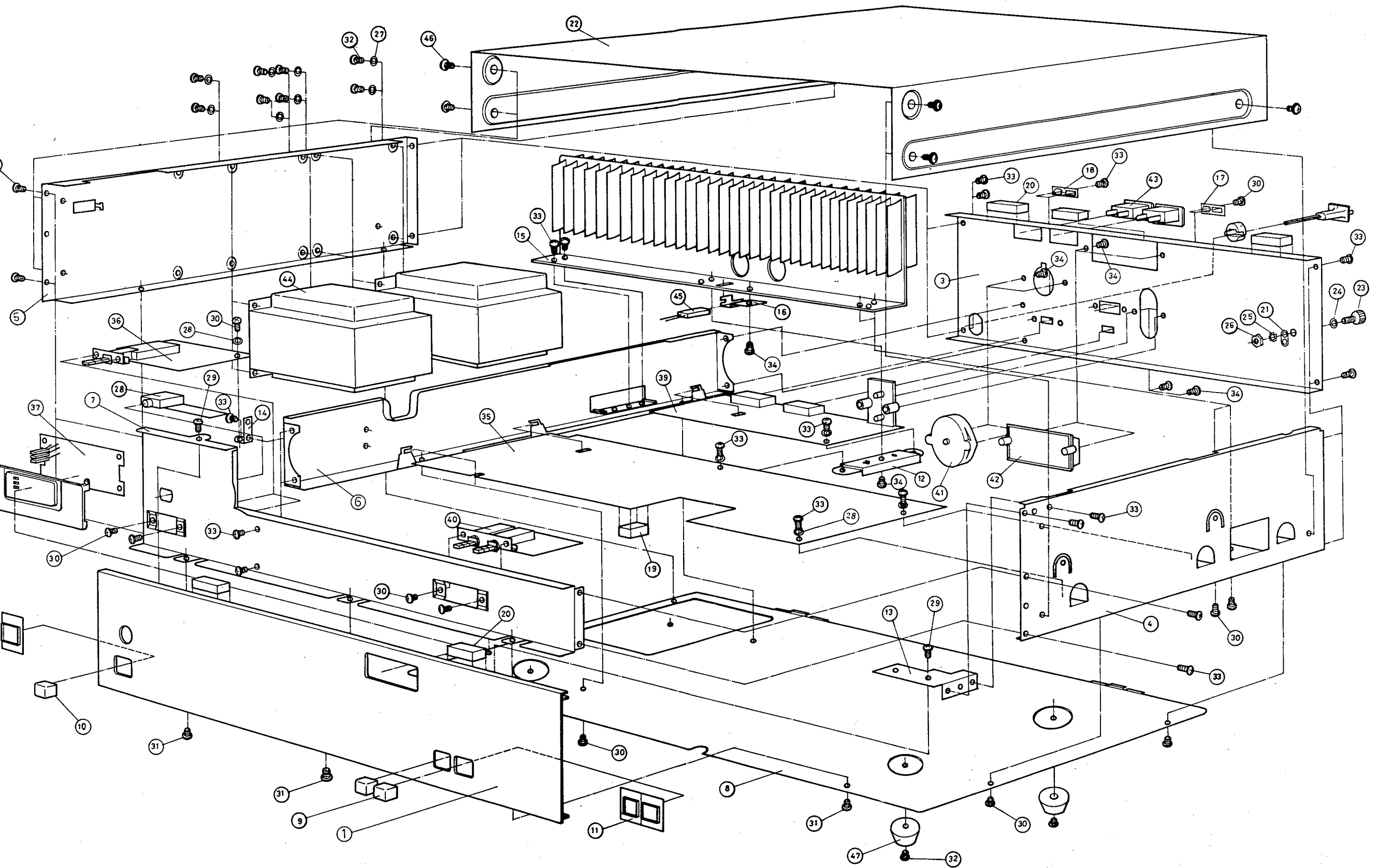
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BK-BLACK  
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# 7150 WIRING DIAGRAM

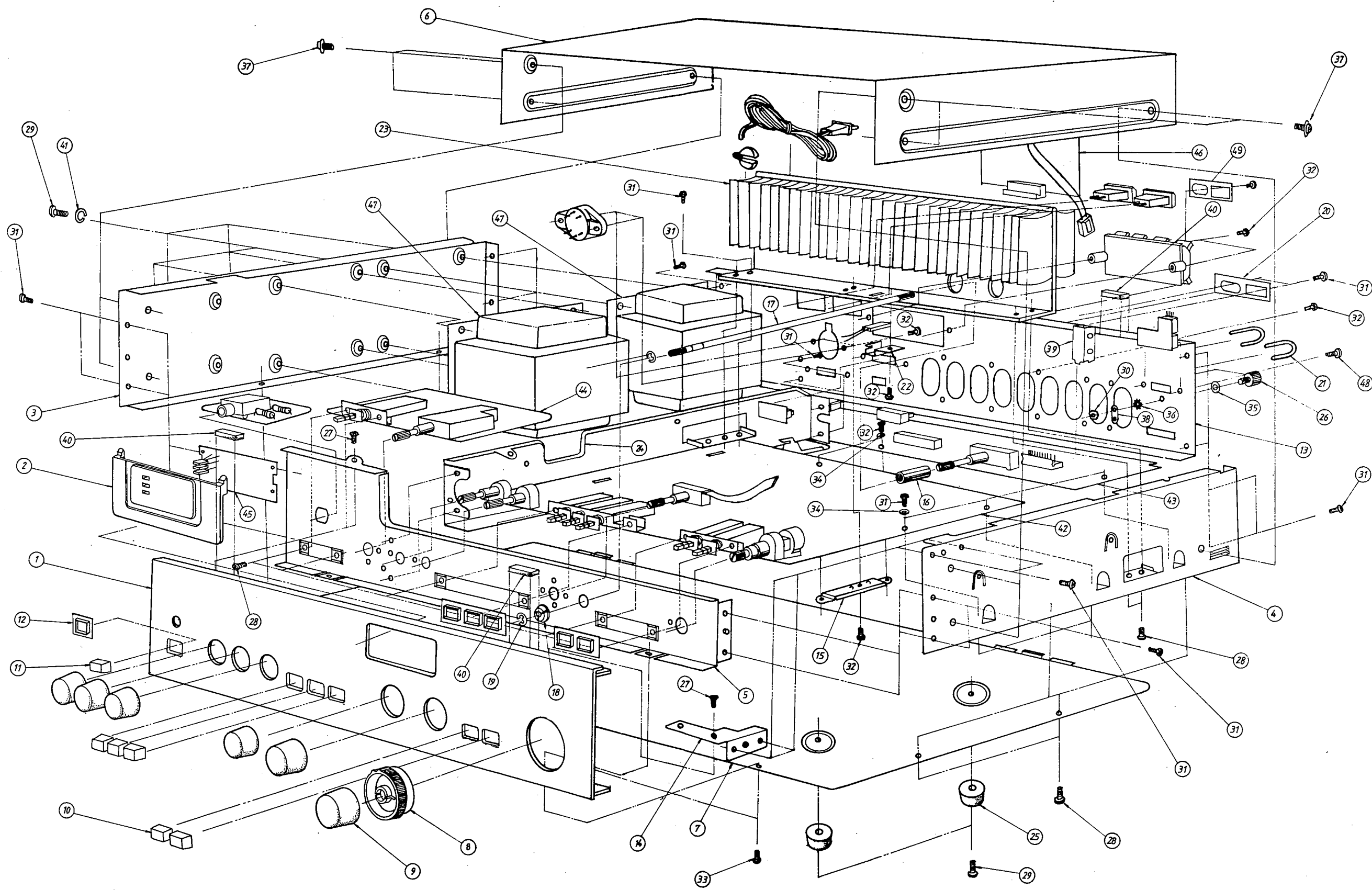
## PRIMARY SECTION



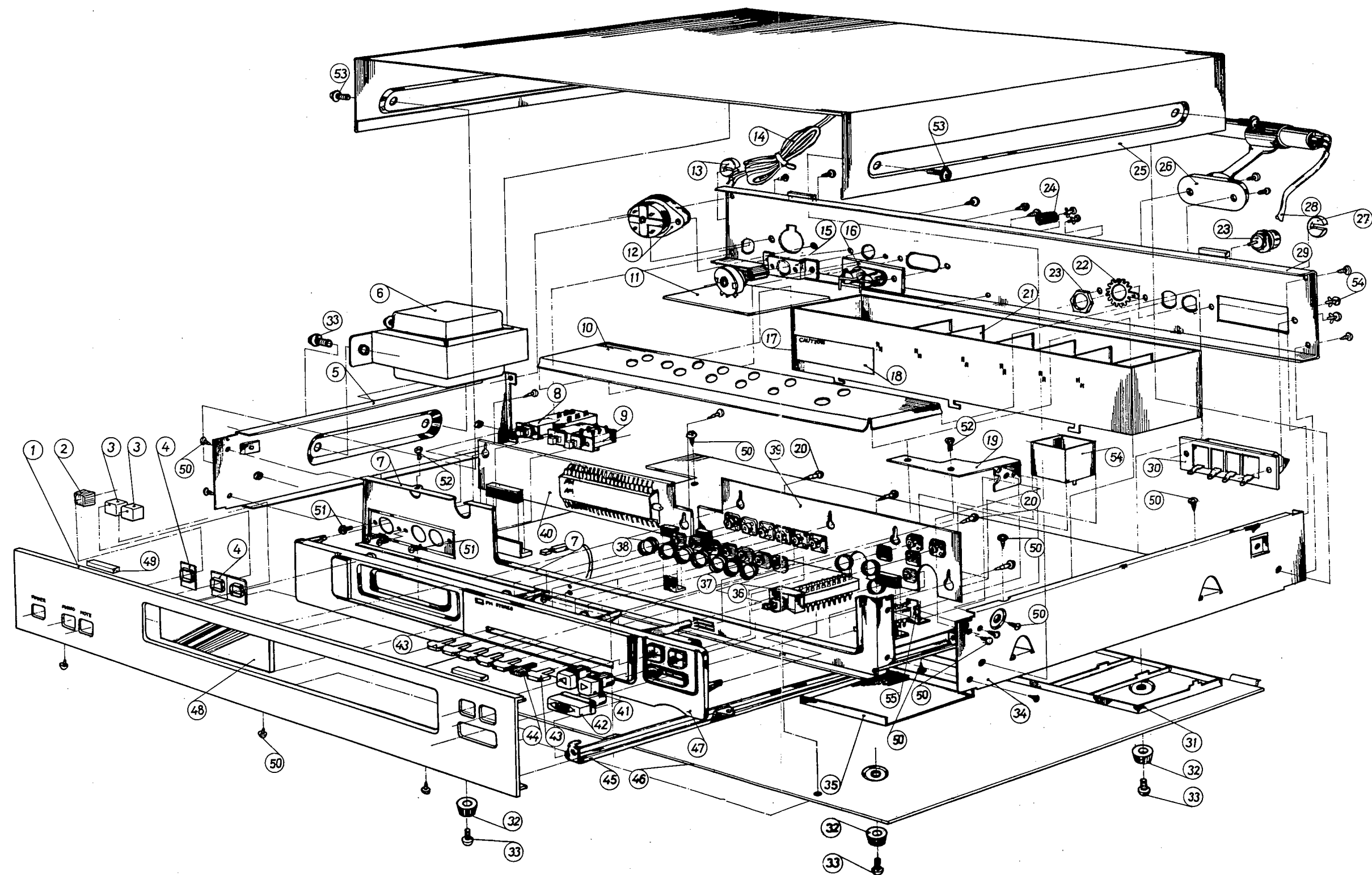
# ASSEMBLY DIAGRAM



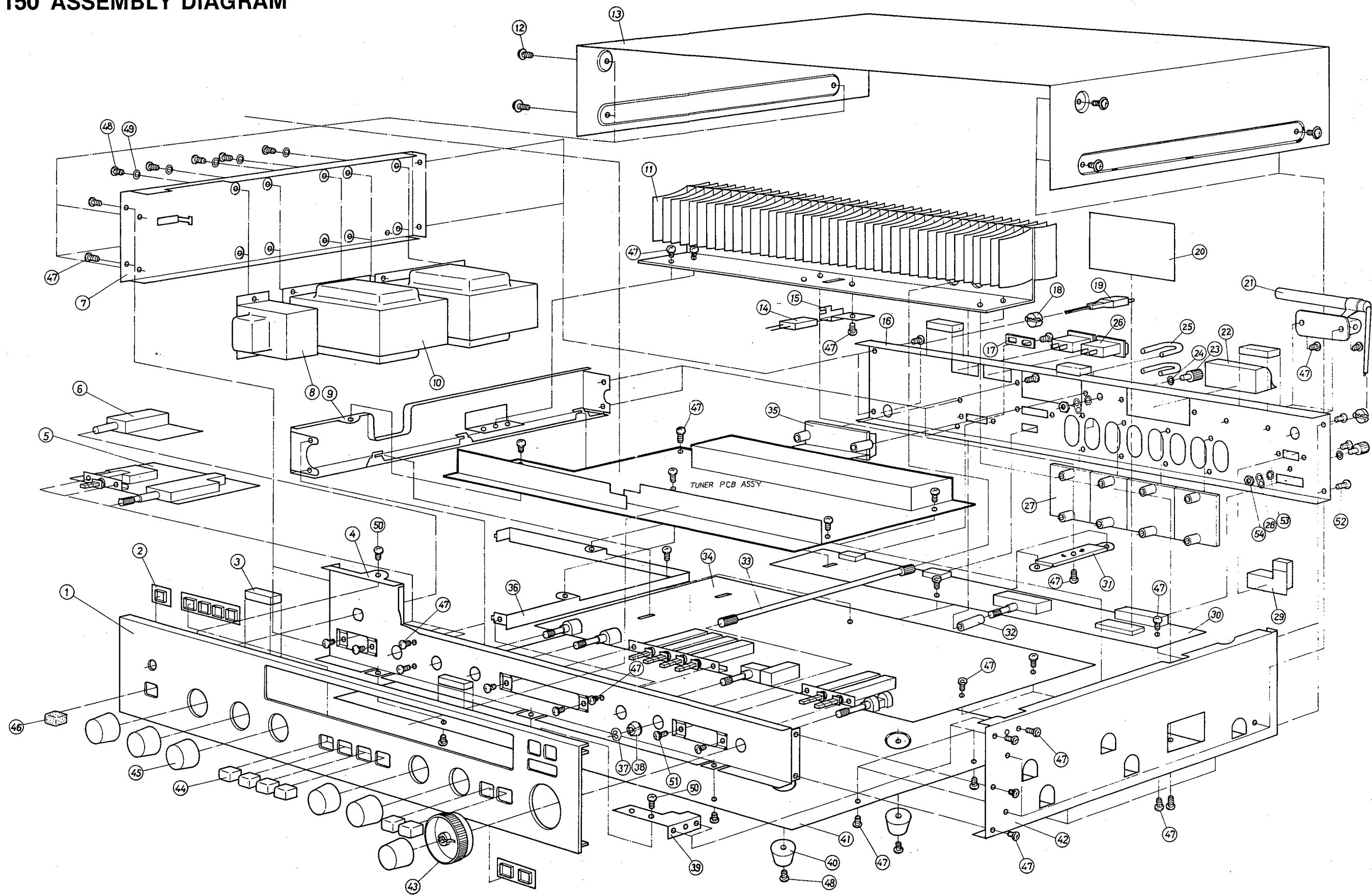
3150 ASSEMBLY DIAGRAM



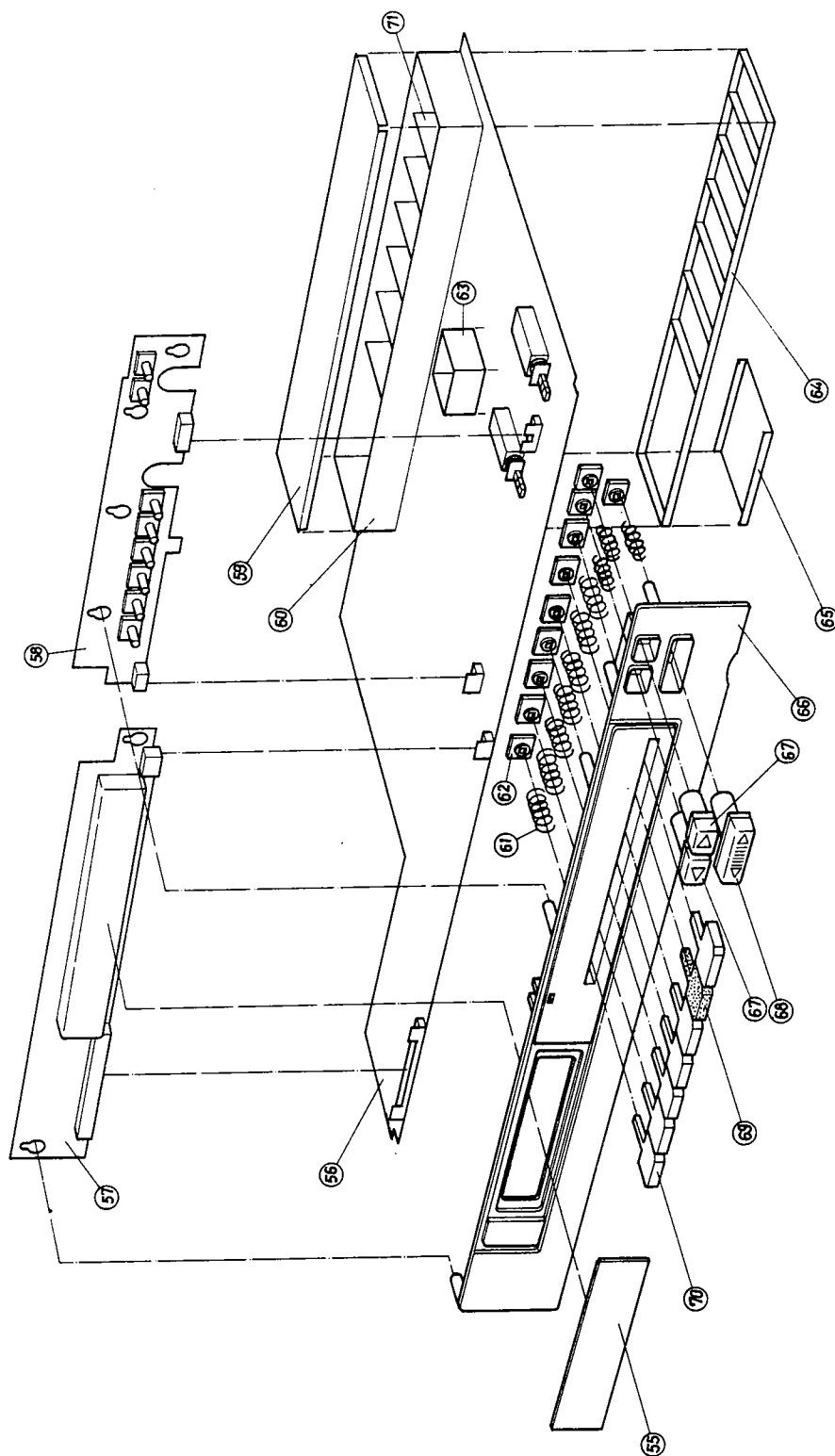
# ASSEMBLY DIAGRAM



7150 ASSEMBLY DIAGRAM



# 7150 SUB-ASSEMBLY DIAGRAM (TUNER PCB)



## 2150 MECHANICAL PARTS LIST

| REF. NO. | DESCRIPTION          | RS PART NO.   | Q'ty |
|----------|----------------------|---------------|------|
| 1        | PANEL FRONT          | 11-8232       | 1    |
| 2        | PANEL AUX            | 11-8233       | 1    |
| 3        | PANEL BACK           | 11-8236       | 1    |
| 4        | CHASSIS AUX. R.      | 11-6112-1     | 1    |
| 5        | CHASSIS AUX. L.      | 11-6119       | 1    |
| 6        | CHASSIS CENTER       | 11-6113       | 1    |
| 7        | CHASSIS FRONT        | 11-6130       | 1    |
| 8        | CHASSIS BOTTOM       | 11-6111       | 1    |
| 9        | KNOB PUSH            | 12-3090       | 2    |
| 10       | KNOB PUSH GREEN      | 12-3090-2     | 1    |
| 11       | BUSHING              | 28-1067       | 3    |
| 12       | BKT. FOR PCB         | 11-2208       | 1    |
| 13       | BKT. FOR PNL. FRONT  | 11-2293       | 1    |
| 14       | BRACKET              | 11-2100       | 1    |
| 15       | HEAT SINK            | 11-5064       | 1    |
| 16       | HOLDER RELAY         | 11-3064       | 1    |
| 17       | STOPPER SW. (A)      | 11-9106       | 1    |
| 18       | STOPPER SW. (B)      | 11-9107       | 1    |
| 19       | RETAINER             | 28-2050       | 1    |
| 20       | RETAINER             | 28-2025       | 5    |
| 21       | LUG                  | 11-3026       | 1    |
| 22       | CABINET              | 50-1033       | 1    |
| 23       | GROUND SCREW         | 15-2037       | 1    |
| 24       | GROUND WASHER        | A3.5A09SN01   | 1    |
| 25       | GEAR WASHER          | A3.51075Z01   | 1    |
| 26       | NUT                  | N3.5B0612.8SZ | 1    |
| 27       | SPRING WASHER        | A04G07SL01    | 8    |
| 28       | FIBER WASHER         | A03A08F0.5    | 5    |
| 29       | MACHINE SCREW F. 3x6 | S1E03+I06SL-2 | 2    |
| 30       | MACHINE SCREW 3x6    | S1B03+I06SL-2 | 15   |
| 31       | MACHINE SCREW 3x10   | S1B03+I10SL-2 | 13   |
| 32       | MACHINE SCREW 4x10   | S1B04+I10SL-2 | 12   |
| 33       | TAPPING SCREW 3x6    | S2B03+I06SL-2 | 22   |
| 34       | TAPPING SCREW 3x8    | S2B03+I08SL-2 | 8    |
| 35       | PCB MAIN             | 19-1183-1     | 1    |
| 36       | PCB POWER            | 19-1183-2     | 1    |
| 37       | PCB LED              | 19-1183-4     | 1    |
| 38       | PCB PHONE            | 19-1183-5     | 1    |
| 39       | PCB SUB              | 19-1183-6     | 1    |
| 40       | PCB SPK. SW.         | 19-1183-7     | 1    |
| 41       | VOLT. SELECTOR       | 31-1121       | 1    |
| 42       | SPK. TERMINAL        | 12-2109       | 1    |
| 43       | AC OUTLET            | 12-2121       | 2    |
| 44       | TRANSFORMER          | 29-2072       | 1    |
| 45       | THERMAL RELAY        | 16-2002       | 1    |
| 46       | SPECIAL SCREW        | 15-2062       | 6    |
| 47       | RUBBER FOOT          | 28-1029       | 4    |

## 3150 MECHANICAL PARTS LIST

| REF. NO. | DESCRIPTION          | RS PART NO.    | Q'ty |
|----------|----------------------|----------------|------|
| 1        | PANEL FRONT          | 11-8235        | 1    |
| 2        | PANEL AUX.           | 11-8233        | 1    |
| 3        | CHASSIS AUX. L.      | 11-6119        | 1    |
| 4        | CHASSIS AUX. R.      | 11-6112-1      | 1    |
| 5        | CHASSIS FRONT        | 11-6110        | 1    |
| 6        | CABINET              | 50-1033        | 1    |
| 7        | CHASSIS BOTTOM       | 11-6111        | 1    |
| 8        | KNOB BALANCE         | 12-3071        | 1    |
| 9        | KNOB CONTROL         | 12-3038        | 6    |
| 10       | KNOB PUSH            | 12-3090        | 5    |
| 11       | KNOB PUSH GREEN      | 12-3090-2      | 1    |
| 12       | BUSHING              | 28-1067        | 6    |
| 13       | PANEL BACK           | 11-8234        | 1    |
| 14       | BKT. FOR PNL. FRONT  | 11-2293        | 1    |
| 15       | BKT. FOR PCB         | 11-2208        | 1    |
| 16       | TUBE FOR SHAFT       | 13-7003        | 1    |
| 17       | SHAFT                | 11-7047        | 1    |
| 18       | TUBE                 | 12-4027        | 1    |
| 19       | E-RING               | 15-5014        | 2    |
| 20       | STOPPER SW.          | 11-9106        | 1    |
| 21       | JUMPER               | 11-4011        | 2    |
| 22       | HOLDER RELAY         | 11-3064        | 1    |
| 23       | HEAT SINK            | 11-5064        | 1    |
| 24       | CHASSIS CENTER       | 11-6113        | 1    |
| 25       | RUBBER FOOT          | 28-1029        | 4    |
| 26       | GROUND SCREW         | 15-2037        | 1    |
| 27       | MACHINE SCREW F. 3x6 | S1E03+I06SL-2  | 2    |
| 28       | MACHINE SCREW 3x6    | S1B03+I06SL-2  | 16   |
| 29       | MACHINE SCREW 4x10   | S1B04+I10SL-2  | 12   |
| 30       | NUT                  | N3.5B0612.8SZ  | 1    |
| 31       | TAPPING SCREW 3x6    | S2B03+I06SL-2  | 22   |
| 32       | TAPPING SCREW 3x8    | S2B03+I08SL-2  | 16   |
| 33       | MACHINE SCREW 3x10   | S1B03+I10SL-2  | 13   |
| 34       | FIBER WASHER         | A03A08F0.5     | 5    |
| 35       | GROUND WASHER        | A3.5A09SN01    | 1    |
| 36       | GEAR WASHER          | A3.51075Z01    | 1    |
| 37       | SPECIAL SCREW        | 15-2062        | 6    |
| 38       | LUG                  | 11-3026        | 1    |
| 39       | WHEEL PLATE          | 11-9104        | 1    |
| 40       | RETAINER             | 28-2025        | 5    |
| 41       | SPRING WASHER        | A04G07SL01     | 8    |
| 42       | PCB MAIN             | 19-1146        | 1    |
| 43       | PCB SUB              | 19-1146        | 1    |
| 44       | PCB POWER            | 19-1171        | 1    |
| 45       | PCB LED              | 19-1171        | 1    |
| 46       | PCB PHONO            | 19-1172        | 1    |
| 47       | TRANSFORMER          | 29-2072        | 2    |
| 48       | MACHINE SCREW 2.6x4  | S1B2.6+I04SL-2 | 2    |
| 49       | STOPPER SW.          | 11-9107        | 1    |

## 4150 MECHANICAL PARTS LIST

| REF. NO. | DESCRIPTION             | RS PART NO.   | Q'ty |
|----------|-------------------------|---------------|------|
| 1        | FRONT PANEL             | 11-8230       | 1    |
| 2        | POWER KNOB GREEN        | 11-3090-2     | 1    |
| 3        | PUSH KNOB BLACK         | 12-3090       | 2    |
| 4        | BUSHING FOR PUSH KNOB   | 28-1067       | 3    |
| 5        | LEFT CHASSIS            | 11-6182       | 1    |
| 6        | TRANSFORMER             | 29-2070       | 1    |
| 7        | FRONT CHASSIS           | 11-6125       | 1    |
| 8        | POWER SWITCH            | 31-1129A      | 1    |
| 9        | PUSH SWITCH 2P          | 31-1236       | 1    |
| 10       | METAL COVER             | 11-1011       | 1    |
| 11       | BUFFER PCB ASS'Y        | 90-1192       | 1    |
| 12       | VOLTAGE SELECTOR SWITCH | 31-1121       | 1    |
| 13       | BUSHING 4N4             | 14-5003       | 1    |
| 14       | POWER CORD              | 14-5037       | 1    |
| 15       | BRACKET FOR O/P         | 11-2295       | 1    |
| 16       | RCA JACK 2P             | 12-2110       | 1    |
| 17       | SHIELD CASE             | 11-9101       | 1    |
| 18       | CAUTION LABEL           | 21-2295       | 1    |
| 19       | BRACKET FOR FRONT PANEL | 11-2287       | 1    |
| 20       | RIVET 2.5x14L           | 15-2061       | 6    |
| 21       | INNER SHIELD PLATE      | 11-9100       | 6    |
| 22       | LUG                     | 11-3033       | 1    |
| 23       | CONNECTOR & NUT         | 12-1032       | 1    |
| 24       | KNOB FOR O/P            | 12-3147       | 1    |
| 25       | CABINET                 | 50-1035       | 1    |
| 26       | AM ANT                  | 29-5010       | 1    |
| 27       | BUSHING 5N4             | 14-5005       | 1    |
| 28       | TUBING 6.5x PVC         | W8-0A65       | 1    |
| 29       | BACK PANEL              | 11-8237       | 1    |
| 30       | ANT TERMINAL            | 12-2012       | 1    |
| 31       | BOTTOM SHIELD           | 11-9102       | 1    |
| 32       | RUBBER FOOT             | 28-1029       | 4    |
| 33       | MACHINE SCREW M4x8      | S1B04+I08SL-2 | 6    |
| 34       | RIGHT CHASSIS           | 11-6126       | 1    |
| 35       | SHIELD FOR OSC          | 11-9105       | 1    |
| 36       | BAND SWITCH             | 31-1237       | 1    |
| 37       | BUSHING FOR KNOB        | 28-1065       | 10   |
| 38       | SPRING FOR KNOB         | 12-5036       | 10   |
| 39       | SWITCH PCB ASS'Y        | 90-1157       | 1    |
| 40       | DISPLAY PCB ASS'Y       | 90-1155       | 1    |
| 41       | UP/DOWN KNOB            | 12-3124       | 2    |
| 42       | SEARCH KNOB             | 12-3126       | 1    |
| 43       | PUSH KNOB BLACK         | 12-3127       | 6    |
| 44       | PUSH KNOB BROWN         | 12-3127-1     | 1    |
| 45       | CENTER CHASSIS          | 11-6129       | 1    |
| 46       | BOTTOM CHASSIS          | 11-6127       | 1    |
| 47       | AUXILIARY PANEL         | 11-8204-2     | 1    |
| 48       | ACRY WINDOW             | 11-8203       | 1    |
| 49       | RETAINER                | 28-2090       | 4    |
| 50       | TAPPING SCREW T3x9      | S2B03+I08SL-2 | 29   |
| 51       | MACHINE SCREW M3x6      | S1B03+I06SL-2 | 6    |

| REF. NO. | DESCRIPTION            | RS PART NO.   | Q'ty |
|----------|------------------------|---------------|------|
| 52       | FLAT SCREW M3x6        | S1E03+I06SZ-2 | 2    |
| 53       | SPECIAL SCREW M4x8     | 15-2051       | 4    |
| 54       | SHIELD PLATE FOR IF    | 11-9098       | 1    |
| 55       | BRACKET FOR SEARCH SW. | 11-2290       | 1    |

# 7150 MECHANICAL PARTS LIST

| REF. NO. | DESCRIPTION               | RS PART NO.   | Q'ty |
|----------|---------------------------|---------------|------|
| 1        | FRONT PANEL               | 11-8205       | 1    |
| 2        | BUSHING                   | 28-1067       | 7    |
| 3        | RETAINER                  | 28-2090       | 4    |
| 4        | FRONT CHASSIS             | 11-6110       | 1    |
| 5        | POWER SW. PCB ASS'Y       | 90-1171       | 2/3  |
| 6        | HEADPHONE JACK PCB ASS'Y  | 90-1171       | 1/3  |
| 7        | LEFT CHASSIS              | 11-6119       | 1    |
| 8        | TUNER'S POWER TRANSFORMER | 29-6070       | 1    |
| 9        | CENTER CHASSIS            | 11-6113       | 1    |
| 10       | POWER TRANSFORMER         | 29-2072       | 2    |
| 11       | HEAT SINK                 | 11-5064       | 1    |
| 12       | SPECIAL SCREW             | 15-2062       | 6    |
| 13       | CABINET                   | 50-1033       | 1    |
| 14       | THERMAL PROTECTOR RELAY   | 16-2002       | 1    |
| 15       | HOLDER FOR THERMAL RELAY  | 11-3064       | 1    |
| 16       | BACK PANEL                | 11-8206       | 1    |
| 17       | STOPPER FOR SW.           | 11-9107       | 1    |
| 18       | BUSHING 4N-4              | 14-5003       | 1    |
| 19       | POWER CORD                | 14-5037       | 1    |
| 20       | PHONO PCB ASS'Y           | 90-1172       | 1    |
| 21       | AM. ANT                   | 29-5010       | 1    |
| 22       | ANT. TERMINAL             | 12-2012       | 1    |
| 23       | GROUND SCREW              | 15-2037       | 1    |
| 24       | WASHER #3.5x9x1T          | A3.5A09SN01   | 6    |
| 25       | JUMPER                    | 11-4011       | 2    |
| 26       | RECEPTACLE UL/CSA IR19-1  | 12-2121       | 4    |
| 27       | RCA JACK (4P)             | 12-2092       | 2    |
| 28       | LUG                       | 11-3026       | 1    |
| 29       | MC/MM PCB ASS'Y           | 90-1193       | 1/3  |
| 30       | MAIN PCB ASS'Y            | 90-1146       | 1    |
| 31       | HOLD FOR PCB              | 11-2208       | 1    |
| 32       | TUBE                      | 12-7003       | 1    |
| 33       | SHAFT                     | 11-4047       | 1    |
| 34       | MAON PCB ASS'Y            | 90-1146       | 2/3  |
| 35       | SPEAKERS TERMINAL (BP)    | 12-2109       | 1    |
| 36       | BRACKET FOR PCB           | 11-2234       | 1    |
| 37       | E-RING 5/8                | 15-5014       | 1    |
| 38       | TUBE FOR SHAFT            | 13-4027       | 1    |
| 39       | BRACKET FOR FRONT PANEL   | 11-2293       | 1    |
| 40       | RUBBER FOOT               | 28-1029       | 4    |
| 41       | BOTTOM CHASSIS            | 11-6111       | 1    |
| 42       | RIGHT CHASSIS             | 11-6112       | 1    |
| 43       | BALANCE KNOB              | 12-3071-1     | 1    |
| 44       | PUSH KNOB BLACK           | 12-3090       | 6    |
| 45       | CONTROL KNOB              | 12-3038       | 6    |
| 46       | PUSH KNOB GREEN           | 12-3090-2     | 1    |
| 47       | TAPPING SCREW T3x6        | S2803+106SL-2 | 28   |
| 48       | MACHINE SCREW M4x8        | S1804+108SL-2 | 14   |
| 49       | S./WASHER #4x8x1          | A04G07SL01    | 10   |
| 50       | FLAT SCREW M3x6           | S1E03+106S2-2 | 2    |
| 51       | MACHINE SCREW M3x6        | S1803+106SL-2 | 28   |

| REF. NO. | DESCRIPTION          | RS PART NO.   | Q'ty |
|----------|----------------------|---------------|------|
| 52       | TAPPING SCREW T3xb   | S2803+108SL-2 | 10   |
| 53       | GEAR WASHER          | A3.5107SZ01   | 2    |
| 54       | NUT #3.5x7           | N3.580612.8SZ | 2    |
| 55       | ACRT SCALE           | 11-8203       | 1    |
| 56       | TUNER PCB ASS'Y      | 90-1156       | 1    |
| 57       | DISPLAT PCB ASS'Y    | 90-1155       | 1    |
| 58       | TOUCH SW. PCB ASS'Y  | 90-1157       | 1    |
| 59       | METAL COVER          | 11-1101       | 1    |
| 60       | SHIELD CASE          | 11-9011       | 1    |
| 61       | SPRING FOR KNOB      | 19-5036       | 10   |
| 62       | BUSHING FOR KNOB     | 28-1065       | 3    |
| 63       | SHIELD PLATE FOR IF. | 11-9098       | 1    |
| 64       | BOTTOM SHIELD        | 11-9102       | 1    |
| 65       | SHIELD FOR OSC       | 11-9105       | 1    |
| 66       | AUXILIARY PANEL      | 11-8204       | 1    |
| 67       | UP/DOVE KNOB         | 12-3124       | 2    |
| 68       | SEARCH KNOB          | 12-3126       | 1    |
| 69       | PUSH KNOB BROWN      | 12-3127-1     | 1    |
| 70       | PUSH KNOB BLACK      | 12-3127       | 1    |
| 71       | INNER SHIELD PLATE   | 11-9100       | 6    |

## 2150 ELECTRICAL PARTS LIST

| REF. NO.                                                                               | PART NO.   | DESCRIPTION                              | NOTE |
|----------------------------------------------------------------------------------------|------------|------------------------------------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |            |                                          |      |
| R601 R602                                                                              | 16-4CA224J | 220K OHM                                 |      |
| R603 R604                                                                              | 16-4CA822J | 8K2 OHM                                  |      |
| R605 R608                                                                              | 16-4CA222J | 2K2 OHM                                  |      |
| R609 R610                                                                              | 16-4CA391J | 390 OHM                                  |      |
| R611 R614                                                                              | 16-4CA223J | 22K OHM                                  |      |
| R615 R616                                                                              | 16-4CA183J | 18K OHM                                  |      |
| R617 R618                                                                              | 16-4CA391J | 390 OHM                                  |      |
| R619 R620                                                                              | 16-4CA152J | 1K5 OHM                                  |      |
| R621 R622                                                                              | 16-4CA331J | 330 OHM                                  |      |
| R623 R624                                                                              | 16-4CA390J | 39 OHM                                   |      |
| R625 R628                                                                              | 16-2AS821J | Metal oxide 2W 820 OHM $\pm 5\%$         |      |
| R629 R630                                                                              | 16-2AS152J | Metal oxide 2W 1K5 OHM $\pm 5\%$         |      |
| R631 R632                                                                              | 16-4CN561J | 560 OHM                                  |      |
| R633 R634                                                                              | 16-4CN101J | 100 OHM                                  |      |
| R635 R636                                                                              | 16-4CN330J | 33 OHM                                   |      |
| R637 R638                                                                              | 16-4CN122J | 1K2 OHM                                  |      |
| R639 R640                                                                              | 16-4CA331J | 330 OHM                                  |      |
| R641 R642                                                                              | 16-2AS122J | Metal oxide 2W 1K2 OHM $\pm 5\%$         |      |
| R643 R644                                                                              | 16-4CN181J | $\frac{1}{4}W$ 180 OHM                   |      |
| R645 R648                                                                              | 16-1033    | Wirewound 5W $\pm 5W$ 0.22 OHM $\pm 5\%$ |      |
| R649 R650                                                                              | 16-4CA152J | 1K5 OHM                                  |      |
| R651 R652                                                                              | 16-1AS100J | Metal oxide 1W 10 OHM $\pm 5\%$          |      |
| R653 R654                                                                              | 16-4CA183J | 18K OHM                                  |      |
| R655                                                                                   | 16-4CA330J | 33 OHM                                   |      |
| R656                                                                                   | 16-4CR682J | 6K8 OHM                                  |      |
| R657                                                                                   | 16-4CR333J | 33K OHM                                  |      |
| R659 R660                                                                              | 16-1AS383J | Metal oxide 1W 3.3 OHM $\pm 5\%$         |      |
| R661 R662                                                                              | 16-1AS471J | Metal oxide 1W 470 OHM $\pm 5\%$         |      |
| R663                                                                                   | 16-4CA473J | 47K OHM                                  |      |
| R664 R665                                                                              | 16-4CA563J | 56K OHM                                  |      |
| R666                                                                                   | 16-4CA562J | 5K6 OHM                                  |      |
| R667                                                                                   | 16-4CA563J | 56K OHM                                  |      |
| R668                                                                                   | 16-4CA183J | 18K OHM                                  |      |
| R669                                                                                   | 16-4CA473J | 47K OHM                                  |      |
| R670                                                                                   | 16-4CA183J | 18K OHM                                  |      |
| R671                                                                                   | 16-4CA224J | 220K OHM                                 |      |
| R672                                                                                   | 16-4CA333J | 33K OHM                                  |      |
| R673                                                                                   | 16-4CA563J | 56K OHM                                  |      |
| R674                                                                                   | 16-4CA562J | 5K6 OHM                                  |      |
| R675                                                                                   | 16-4CA153J | 15K OHM                                  |      |
| R676                                                                                   | 16-2AS681J | Metal oxide 2W 680 OHM $\pm 5\%$         |      |
| R677                                                                                   | 16-4CA151J | 150 OHM                                  |      |
| R678 R679                                                                              | 16-4CA102J | 1K OHM                                   |      |
| R680                                                                                   | 16-4CA151J | 150 OHM                                  |      |
| R681 R682                                                                              | 16-4CA332J | 3K3 OHM                                  |      |
| R683                                                                                   | 16-4CS123J | $\frac{1}{4}W$ 12K OHM                   |      |
| R803                                                                                   | 16-4CR473J | 47K OHM                                  |      |
| R804                                                                                   | 16-4CA473J | 47K OHM                                  |      |
| R805                                                                                   | 16-4CR824J | 820K OHM                                 |      |
| R806                                                                                   | 16-4CA332J | 3K3 OHM                                  |      |

| REF. NO.                                                                               | PART NO.      | DESCRIPTION                                  | NOTE |
|----------------------------------------------------------------------------------------|---------------|----------------------------------------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |               |                                              |      |
| R807                                                                                   | 16-4CA823J    | 82K OHM                                      |      |
| R808                                                                                   | 16-4CA152J    | 1K5 OHM                                      |      |
| R810 R811                                                                              | 16-4CA122J    | 1K2 OHM                                      |      |
| R812                                                                                   | 16-1AS100J    | Metal oxide 1W 10 OHM $\pm 5\%$              |      |
| R833                                                                                   | 16-1AS100J    | Metal oxide 1W 10 OHM $\pm 5\%$              |      |
| R834                                                                                   | 16-4CS123J    | $\frac{1}{4}W$ 12K OHM                       |      |
| R835                                                                                   | 16-4CA332J    | 3K3 OHM                                      |      |
| R850 R851                                                                              | 16-4AN3R3J    | Metal oxide $\frac{1}{4}W$ 3.3 OHM $\pm 5\%$ |      |
| <b>CAPACITORS</b>                                                                      |               |                                              |      |
| C601-C604                                                                              | 17-1.6R105K   | Electrolytic solid 1uF 16V $\pm 10\%$        |      |
| C605 C606                                                                              | 17-5FF122J    | Mylar 0.0012uF 50V $\pm 5\%$                 |      |
| C607 C608                                                                              | 17-5DR821K    | Ceramic 820pF 50V $\pm 10\%$                 |      |
| C609 C610                                                                              | 17-5FF102J    | Mylar 0.001uF 50V $\pm 5\%$                  |      |
| C611 C612                                                                              | 17-5DR470M    | Ceramic 47pF 50V $\pm 20\%$                  |      |
| C613 C614                                                                              | 17-0.63EF108Y | Electrolytic 1000uF 6.3V $\pm 50-10\%$       |      |
| C615 C616                                                                              | 17-5FF102J    | Mylar 0.001uF 50V $\pm 5\%$                  |      |
| C617 C618                                                                              | 17-5DH104Z    | Ceramic 0.1uF 50V $\pm 80-20\%$              |      |
| C619                                                                                   | 17-6.3EF476Y  | Electrolytic 47uF 63V $\pm 50-10\%$          |      |
| C621 C622                                                                              | 17-5DR101M    | Ceramic 100pF 50V $\pm 20\%$                 |      |
| C623 C624                                                                              | 17-5DH104Z    | Ceramic 0.1uF 50V $\pm 80-20\%$              |      |
| C625 C626                                                                              | 17-5ER476Y    | Electrolytic 47uF 50V $\pm 50-10\%$          |      |
| C627-C630                                                                              | 17-5DR470M    | Ceramic 47pF 50V $\pm 20\%$                  |      |
| C631-C640                                                                              | 17-5DH104Z    | Ceramic 0.1uF 50V $\pm 80-20\%$              |      |
| C641                                                                                   | 17-5ER106Y    | Electrolytic 10uF 50V $\pm 50-10\%$          |      |
| C642 C643                                                                              | 17-1ER476Y    | Electrolytic 47uF 10V $\pm 50-10\%$          |      |
| C644 C645                                                                              | 17-5ER476Y    | Electrolytic 47uF 50V $\pm 50-10\%$          |      |
| C646                                                                                   | 17-5ER474Y    | Electrolytic 0.47uF 50V $\pm 50-10\%$        |      |
| C647                                                                                   | 17-1ER226Y    | Electrolytic 22uF 10V $\pm 50-10\%$          |      |
| C648 C649                                                                              | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 80-20\%$            |      |
| C650 C651                                                                              | 17-5DH104Z    | Ceramic 0.1uF 50V $\pm 80-20\%$              |      |
| C652-C654                                                                              | 17-5DR101M    | Ceramic 100pF 50V $\pm 20\%$                 |      |
| C803 C804                                                                              | 17-5ER476Y    | Electrolytic 47uF 50V $\pm 50-10\%$          |      |
| C807 C808                                                                              | 17-5ER106Y    | Electrolytic 10uF 50V $\pm 50-10\%$          |      |
| C809                                                                                   | 17-5DR220M    | Ceramic 22pF 50V $\pm 20\%$                  |      |
| C811                                                                                   | 17-5ER476Y    | Electrolytic 47uF 50V $\pm 50-10\%$          |      |
| C815 C816                                                                              | 17-6.3EG477Y  | Electrolytic 470uF 63V $\pm 50-10\%$         |      |
| C817 C820                                                                              | 17-5P478Y     | Electrolytic 4700uF 50V $\pm 50-10\%$        |      |
| C821                                                                                   | 17-5ER105Y    | Electrolytic 1uF 50V $\pm 50-10\%$           |      |
| C822 C823                                                                              | 17-2014       | Ceramic 4700pF 400VAC KC                     |      |
| C832                                                                                   | 17-2011       | Ceramic 4700pF 125VAC MY                     |      |
|                                                                                        | 17-5DH104Z    | Ceramic 0.1uF 50V $\pm 80-20\%$              |      |
| <b>INTEGRATED CIRCUITS</b>                                                             |               |                                              |      |
| IC701                                                                                  | 30-3187       | Protector TA7317P                            |      |
| IC801                                                                                  | 30-3178       | Regulator M5231L                             |      |
| IC802                                                                                  | 30-3213       | Regulator MC78M24CT/AN7824                   |      |

## 7150 AUDIO / 3150 ELECTRICAL PARTS LIST

| REF. NO.                                                                               | PART NO.   | DESCRIPTION | NOTE |
|----------------------------------------------------------------------------------------|------------|-------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |            |             |      |
| R401 R402                                                                              | 16-4CA473J | 47K OHM     |      |
| R403 R404                                                                              | 16-4CA220J | 22 OHM      |      |
| R405 R406                                                                              | 16-4CR271J | 270 OHM     |      |
| R407 R408                                                                              | 16-4CR392J | 3K9 OHM     |      |
| R409                                                                                   | 16-4CA181J | 180 OHM     |      |
| R410                                                                                   | 16-4CR181J | 180 OHM     |      |
| R411                                                                                   | 16-4CR181J | 180 OHM     |      |
| R412                                                                                   | 16-4CU181J | 180 OHM     |      |
| R413 R414                                                                              | 16-4CR201J | 200 OHM     |      |
| R415 R416                                                                              | 16-4CR103J | 10K OHM     |      |
| R417                                                                                   | 16-4CA121J | 120 OHM     |      |
| R418                                                                                   | 16-4CR121J | 120 OHM     |      |
| R419                                                                                   | 16-4CA151J | 150 OHM     |      |
| R420                                                                                   | 16-4CU151J | 150 OHM     |      |
| R421 R422                                                                              | 16-4CA121J | 120 OHM     |      |
| R423 R424                                                                              | 16-4CA221J | 220 OHM     |      |
| R425                                                                                   | 16-4CA153J | 15K OHM     |      |
| R426                                                                                   | 16-4CR153J | 15K OHM     |      |
| R427                                                                                   | 16-4CN680J | 68 OHM      |      |
| R428-R430                                                                              | 16-4CR680J | 68 OHM      |      |
| R431 R432                                                                              | 16-4CR681J | 680 OHM     |      |
| R433 R434                                                                              | 16-4CA104J | 100K OHM    |      |
| R435                                                                                   | 16-4CA103J | 10K OHM     |      |
| R436                                                                                   | 16-4CR103J | 10K OHM     |      |
| R437 R438                                                                              | 16-4CR151J | 150 OHM     |      |
| R439 R440                                                                              | 16-4CR124J | 120K OHM    |      |
| R442                                                                                   | 16-4CR102J | 1K OHM      |      |
| R443-R446                                                                              | 16-4CA102J | 1K OHM      |      |
| R501 R502                                                                              | 16-4CA151J | 150 OHM     |      |
| R503 R504                                                                              | 16-4CA334J | 330K OHM    |      |
| R505 R506                                                                              | 16-4CA823J | 82K OHM     |      |
| R507 R508                                                                              | 16-4CR184J | 180K OHM    |      |
| R509 R510                                                                              | 16-4CR151J | 150 OHM     |      |
| R511 R512                                                                              | 16-4CA562J | 5K6 OHM     |      |
| R515                                                                                   | 16-4CR332J | 3K3 OHM     |      |
| R516                                                                                   | 16-4CA332J | 3K3 OHM     |      |
| R517 R518                                                                              | 16-4CA222J | 2K2 OHM     |      |
| R519 R520                                                                              | 16-4CR154J | 150K OHM    |      |
| R521 R522                                                                              | 16-4CR105J | 1M OHM      |      |
| R523 R524                                                                              | 16-4CA101J | 100 OHM     |      |
| R525 R526                                                                              | 16-4CA822J | 8K2 OHM     |      |
| R527 R528                                                                              | 16-4CA562J | 5K6 OHM     |      |
| R529 R530                                                                              | 16-4CA181J | 180 OHM     |      |
| R533 R534                                                                              | 16-4CA102J | 1K OHM      |      |
| R535 R536                                                                              | 16-4CA473J | 47K OHM     |      |
| R537 R538                                                                              | 16-4CA332J | 3K3 OHM     |      |
| R541 R542                                                                              | 16-4CA561J | 560 OHM     |      |
| R543 R544                                                                              | 16-4CA682J | 6K8 OHM     |      |
| R545                                                                                   | 16-4CA681J | 680 OHM     |      |
| R546                                                                                   | 16-4CR681J | 680 OHM     |      |

| REF. NO.                  | PART NO.  | DESCRIPTION                      | NOTE |
|---------------------------|-----------|----------------------------------|------|
| <b>COILS</b>              |           |                                  |      |
| L601 L602                 | 29-1147   | Air 1.2x6.9(12.6)Dx30T           |      |
| <b>VARIABLE RESISTORS</b> |           |                                  |      |
| VR601 VR602               | 29-4168   | Semi 8 $\pm$ 500B Flat           |      |
| VR603 VR604               | 29-4170   | Semi 8 $\pm$ 100B Flat           |      |
| <b>DIODES</b>             |           |                                  |      |
| D601-D612                 | 30-1019-1 | BAW62/BAW76                      |      |
| D613 D614                 | 30-1038   | Zener 18V $\frac{1}{4}W$ R018EB3 |      |
| D615                      | 30-1002   | Rectifier 100V 1A 1N4002/10D1    |      |
| D801-D804                 | 30-1002   | Rectifier 100V 1A 1N4002/10D1    |      |
| D805-D808                 | 30-1017-1 | Rectifier 100V 3A G38            |      |
| D809                      | 30-1002   | Rectifier 100V 1A 1N4002/10D1    |      |
| <b>LEDs</b>               |           |                                  |      |
| LD601                     | 30-1085   | Green LT3231G/X-253FG            |      |
| LD602                     | 30-1075   | Red LT3211R/X-253FPR             |      |
| LD801                     | 30-1075   | Red LT3211R/X-253FPR             |      |
| <b>TRANSISTORS</b>        |           |                                  |      |
| Q601 Q602                 | 30-2096   | BC556B                           |      |
| Q603 Q604                 | 30-2090-2 | BC546B                           |      |
| Q605 Q606                 | 30-2238   | BF423                            |      |
| Q607-Q610                 | 30-2260   | 2SD669C/2SD669D                  |      |
| Q611 Q612                 | 30-2259   | 2SB649C/2SB649D                  |      |
| Q613 Q614                 | 30-2260   | 2SD669C/2SD669D                  |      |
| Q615 Q616                 | 30-2305   | 2SC2921                          |      |
| Q617 Q618                 | 30-2304   | 2SA1215                          |      |
| Q619 Q620                 | 30-2090-2 | BC546B                           |      |
| Q621                      | 30-2096   | BC556B                           |      |
| Q801                      | 30-2260   | 2SD669C/2SD669D                  |      |
| Q802                      | 30-2096   | BC556B                           |      |
| Q803                      | 30-2259   | 2SB649C/2SB649D                  |      |
| <b>SWITCHES</b>           |           |                                  |      |
| SW601 SW602               | 31-1226   | Slide SSP22FL080                 |      |
| SW603 SW604               | 31-1263   | Push SUF22CA003-FL               |      |

# 7150 AUDIO / 3150 ELECTRICAL PARTS LIST

| REF. NO.                                                                | PART NO.   | DESCRIPTION              | NOTE |
|-------------------------------------------------------------------------|------------|--------------------------|------|
| <b>RESISTORS</b> (All are carbon film $\pm 5\%$ unless noted otherwise) |            |                          |      |
| R547                                                                    | 16-4CR102J | 1K OHM                   |      |
| R548                                                                    | 16-4CA102J | 1K OHM                   |      |
| R549                                                                    | 16-4CA223J | 22K OHM                  |      |
| R550                                                                    | 16-4CA273J | 27K OHM                  |      |
| R551                                                                    | 16-4CA123J | 12K OHM                  |      |
| R552                                                                    | 16-4CA104J | 100K OHM                 |      |
| R554                                                                    | 16-4CR561J | 560 OHM                  |      |
| R555                                                                    | 16-4CA561J | 560 OHM                  |      |
| R556                                                                    | 16-4CA332J | 33K OHM                  |      |
| R559 R560                                                               | 16-4CA272J | 27K OHM                  |      |
| R561                                                                    | 16-4CR334J | 330K OHM                 |      |
| R562                                                                    | 16-4CA334J | 330K OHM                 |      |
| R601 R602                                                               | 16-4CA224J | 220K OHM                 |      |
| R603 R604                                                               | 16-4CA822J | 8K2 OHM                  |      |
| R605 R608                                                               | 16-4CA222J | 2K2 OHM                  |      |
| R609 R610                                                               | 16-4CA391J | 390 OHM                  |      |
| R611 R614                                                               | 16-4CA223J | 22K OHM                  |      |
| R615 R616                                                               | 16-4CA183J | 18K OHM                  |      |
| R617 R618                                                               | 16-4CA391J | 390 OHM                  |      |
| R619 R620                                                               | 16-4CA152J | 1K5 OHM                  |      |
| R621 R622                                                               | 16-4CA331J | 330 OHM                  |      |
| R623 R624                                                               | 16-4CA390J | 39 OHM                   |      |
| R625 R628                                                               | 16-2AS821J | 820 OHM                  | +5%  |
| R629 R630                                                               | 16-2AS152J | 1K5 OHM                  | +5%  |
| R631 R632                                                               | 16-4CN561J | 560 OHM                  |      |
| R633 R634                                                               | 16-4CN101J | 100 OHM                  |      |
| R635 R636                                                               | 16-4CN330J | 33 OHM                   |      |
| R637 R638                                                               | 16-4CN122J | 1K2 OHM                  |      |
| R639 R640                                                               | 16-4CA331J | 330 OHM                  |      |
| R641 R642                                                               | 16-2AS122J | 1K2 OHM                  | +5%  |
| R643 R644                                                               | 16-4CN181J | 180 OHM                  |      |
| R645 R648                                                               | 16-1033    | WIREWOUND 5W+5W 0.22 OHM |      |
| R649 R650                                                               | 16-4CA152J | 1K5 OHM                  |      |
| R651 R652                                                               | 16-1AS100J | 10 OHM                   | +5%  |
| R653 R654                                                               | 16-4CA103J | 10K OHM                  |      |
| R655                                                                    | 16-4CA330J | 33 OHM                   |      |
| R656                                                                    | 16-4CR682J | 68K OHM                  |      |
| R657                                                                    | 16-4CR333J | 33K OHM                  |      |
| R659 R660                                                               | 16-1AS3R3J | 3.3 OHM                  | +5%  |
| R661 R662                                                               | 16-1AS471J | 470 OHM                  | +5%  |
| R663                                                                    | 16-4CA473J | 47K OHM                  |      |
| R664 R665                                                               | 16-4CA563J | 56K OHM                  |      |
| R666                                                                    | 16-4CA562J | 56K OHM                  |      |
| R667                                                                    | 16-4CA563J | 56K OHM                  |      |
| R668                                                                    | 16-4CA183J | 18K OHM                  |      |
| R669                                                                    | 16-4CA473J | 47K OHM                  |      |
| R670                                                                    | 16-4CA183J | 18K OHM                  |      |
| R671                                                                    | 16-4CA224J | 220K OHM                 |      |
| R672                                                                    | 16-4CA333J | 33K OHM                  |      |
| R673                                                                    | 16-4CA563J | 56K OHM                  |      |
| R674                                                                    | 16-4CA562J | 56K OHM                  |      |

| REF. NO.                                                                | PART NO.      | DESCRIPTION                        | NOTE    |
|-------------------------------------------------------------------------|---------------|------------------------------------|---------|
| <b>RESISTORS</b> (All are carbon film $\pm 5\%$ unless noted otherwise) |               |                                    |         |
| *R675                                                                   | 16-4CA153J    | 15K OHM                            |         |
| R676                                                                    | 16-2AS681J    | Metal oxide 2W 680 OHM             | +5%     |
| R677                                                                    | 16-4CA151J    | 150 OHM                            |         |
| R678 R679                                                               | 16-4CA102J    | 1K OHM                             |         |
| R680                                                                    | 16-4CA151J    | 150 OHM                            |         |
| R681 R682                                                               | 16-4CA332J    | 3K3 OHM                            |         |
| *R683                                                                   | 16-4CS123J    | Metal oxide $\frac{1}{2}W$ 12K OHM | +5%     |
| R683                                                                    | 16-1AS682J    | Metal oxide 1W 6K8 OHM             |         |
| R801 R802                                                               | 16-4CA473J    | 47K OHM                            |         |
| R803                                                                    | 16-4CR473J    | 47K OHM                            |         |
| R804                                                                    | 16-4CA473J    | 47K OHM                            |         |
| R805                                                                    | 16-4CR824J    | 820K OHM                           |         |
| R806                                                                    | 16-4CA332J    | 3K3 OHM                            |         |
| R807                                                                    | 16-4CA823J    | 82K OHM                            |         |
| R808 R809                                                               | 16-4CA152J    | 1K5 OHM                            |         |
| R810 R811                                                               | 16-4CA122J    | 1K2 OHM                            |         |
| R812                                                                    | 16-1AS100J    | Metal oxide 1W 10 OHM              | +5%     |
| R813 R814                                                               | 16-4CA122J    | 1K2 OHM                            |         |
| R815                                                                    | 16-4CA153J    | 15K OHM                            |         |
| R829                                                                    | 16-3AN471J    | Metal oxide 3W 470 OHM             | +5%     |
| R831                                                                    | 16-3AN561J    | Metal oxide 3W 560 OHM             | +5%     |
| R833                                                                    | 16-1AS100J    | Metal oxide 1W 10 OHM              | +5%     |
| *R834                                                                   | 16-4CS123J    | Metal oxide $\frac{1}{2}W$ 12K OHM |         |
| R835                                                                    | 16-4CA332J    | 3K3 OHM                            |         |
| R836                                                                    | 16-4CR824J    | 820K OHM                           |         |
| *R840                                                                   | 16-4CP275J    | Metal oxide $\frac{1}{2}W$ 2M7 OHM |         |
| R850 R851                                                               | 16-4AN3R3J    | Metal oxide $\frac{1}{2}W$ 3.3 OHM | +5%     |
| <b>CAPACITORS</b>                                                       |               |                                    |         |
| C401 C402                                                               | 17-5DR101M    | Ceramic 100pF 50V                  | +20%    |
| C403 C404                                                               | 17-5DR221M    | Ceramic 220pF 50V                  | +20%    |
| C405 C406                                                               | 17-5DR101M    | Ceramic 100pF 50V                  | +20%    |
| C407 C408                                                               | 17-3.5ER106Y  | Electrolytic 10uF 35V              | +50-10% |
| C409 C410                                                               | 17-0.76EF108Y | Electrolytic 1000uF 6.3V           | +50-10% |
| C411 C412                                                               | 17-5DR150M    | Ceramic 15pF 50V                   | +20%    |
| C413 C414                                                               | 17-5DR221M    | Ceramic 220pF 50V                  | +20%    |
| C415 C416                                                               | 17-5DH104Z    | Ceramic 0.1uF 50V                  | +80-20% |
| C417 C418                                                               | 17-5FF222J    | Mylar 0.0022uF 50V                 | +5%     |
| C419 C420                                                               | 17-1.6ER106Y  | Electrolytic 10uF 16V              | +50-10% |
| C421 C422                                                               | 17-5FF752J    | Mylar 0.0075uF 50V                 | +5%     |
| C423 C424                                                               | 17-5FF273J    | Mylar 0.027uF 50V                  | +5%     |
| C425                                                                    | 17-5DH104Z    | Ceramic 0.1uF 50V                  | +80-20% |
| C501 C502                                                               | 17-5FF122J    | Mylar 0.0012uF 50V                 | +5%     |
| C503 C504                                                               | 17-5FH224J    | Mylar 0.22uF 50V                   | +5%     |
| C505 C506                                                               | 17-5ER105Y    | Electrolytic 1uF 50V               | +50-10% |
| C507 C510                                                               | 17-5FF124J    | Mylar 0.12uF 50V                   | +5%     |
| C511 C512                                                               | 17-5DR221M    | Ceramic 220pF 50V                  | +20%    |
| C513                                                                    | 17-5DH104Z    | Ceramic 0.1uF 50V                  | +80-20% |
| C515 C516                                                               | 17-5DR150M    | Ceramic 15pF 50V                   | +20%    |

Note: 1. Asterisk \* denotes for 3150 only 2. Delta  $\Delta$  denotes for 7150 only

| REF. NO.          | PART NO.      | DESCRIPTION                   | NOTE    |
|-------------------|---------------|-------------------------------|---------|
| <b>CAPACITORS</b> |               |                               |         |
| C517 C518         | 17-5ER105Y    | Electrolytic 1uF 50V          | +50-10% |
| C519 C522         | 17-5FH334J    | Mylar 0.33uF 50V              | +5%     |
| C523 C524         | 17-5DR221M    | Ceramic 220pF 50V             | +20%    |
| C525 C526         | 17-2.5ER476Y  | Electrolytic 47uF 25V         | +50-10% |
| C527 C528         | 17-5DR470M    | Ceramic 47pF 50V              | +50-10% |
| C529 C534         | 17-1ER476Y    | Electrolytic 47uF 10V         | +5%     |
| C535 C536         | 17-5FF183J    | Mylar 0.018uF 50V             | +5%     |
| C537 C538         | 17-5FF104J    | Mylar 0.1uF 50V               | +5%     |
| C539 C540         | 17-1ER107Y    | Mylar 100uF 10V               | +50-10% |
| C541 C542         | 17-5FF124J    | Mylar 0.12uF 50V              | +5%     |
| C543 C544         | 17-1.6R684K   | Electrolytic solid 0.68uF 16V | +10%    |
| C545              | 17-1ER107Y    | Electrolytic 100uF 10V        | +50-10% |
| C601 C604         | 17-1.6R105K   | Electrolytic solid 1uF 16V    | +10%    |
| C605 C606         | 17-5FF122J    | Mylar 0.0012uF 50V            | +5%     |
| C607 C608         | 17-5DF821K    | Ceramic 820pF 50V             | +10%    |
| C609 C610         | 17-5FF102J    | Mylar 0.001uF 50V             | +5%     |
| C611 C612         | 17-5DR470M    | Ceramic 47pF 50V              | +20%    |
| C613 C614         | 17-0.63EF108Y | Electrolytic 1000uF 6.3V      | +50-10% |
| C615 C616         | 17-5FF102J    | Mylar 0.001uF 50V             | +5%     |
| C617 C618         | 17-5DH104Z    | Ceramic 0.1uF 50V             | +80-20% |
| C619              | 17-6.3EF476Y  | Electrolytic 47uF 63V         | +50-10% |
| C621 C622         | 17-5DR101M    | Ceramic 100pF 50V             | +20%    |
| C623 C624         | 17-5DH104Z    | Ceramic 0.1uF 50V             | +80-20% |
| C625 C626         | 17-5ER476Y    | Electrolytic 47uF 50V         | +50-10% |
| C627 C630         | 17-5DR470M    | Ceramic 47pF 50V              | +20%    |
| C631 C640         | 17-5DH104Z    | Ceramic 0.1uF 50V             | +80-20% |
| C641              | 17-5ER106Y    | Electrolytic 10uF 50V         | +50-10% |
| C642 C643         | 17-1ER476Y    | Electrolytic 47uF 10V         | +50-10% |
| C644 C645         | 17-5ER476Y    | Electrolytic 47uF 50V         | +50-10% |
| C646              | 17-5ER474Y    | Electrolytic 0.47uF 50V       | +50-10% |
| C647              | 17-1ER226Y    | Electrolytic 22uF 10V         | +50-10% |
| C648 C649         | 17-5DR223J    | Ceramic 0.022uF 50V           | +80-20% |
| C650 C651         | 17-5DH104Z    | Ceramic 0.1uF 50V             | +80-20% |
| C652 C654         | 17-5DR101M    | Ceramic 100pF 50V             | +20%    |
| C801 C802         | 17-2.5ER476Y  | Electrolytic 47uF 25V         | +50-10% |
| *C803 C804        | 17-5ER476Y    | Electrolytic 47uF 50V         | +50-10% |
| C805              | 17-5ER106Y    | Electrolytic 10uF 50V         | +50-10% |
| C806              | 17-5DH104Z    | Ceramic 0.1uF 50V             | +80-20% |
| C807 C808         | 17-5ER106Y    | Electrolytic 10uF 50V         | +50-10% |
| C809 C810         | 17-5DR220M    | Ceramic 22pF 50V              | +20%    |
| C811 C814         | 17-5ER476Y    | Electrolytic 47uF 50V         | +50-10% |
| C815 C816         | 17-6.3EG477Y  | Electrolytic 470uF 63V        | +50-10% |
| C817 C820         | 17-5P478Y     | Electrolytic 4700uF 50V       | +50-10% |
| C821              | 17-5ER105Y    | Electrolytic 1uF 50V          | +50-10% |
| C822              | 17-2014       | Ceramic 4700pF 400V AC KC     |         |
| C823              | 17-2011       | Ceramic 4700pF 125V AC MY     |         |
| *C824 C831        | 17-5FF103K    | Mylar 0.01uF 50V              | +10%    |
| C832              | 17-5DH104Z    | Ceramic 0.1uF 50V             | +80-20% |
| <b>COILS</b>      |               |                               |         |
| L601 L602         | 29-1147       | Air 1.2x6.9(12.6)Dx30T        |         |

Note: Delta  $\Delta$  denotes for 7150 only

| REF. NO.                  | PART NO.  | DESCRIPTION                      | NOTE |
|---------------------------|-----------|----------------------------------|------|
| <b>VARIABLE RESISTORS</b> |           |                                  |      |
| VR501                     | 29-4103A  | 16 $\Delta$ 20Kx2/50KNMx2 P2KF25 |      |
| VR502 VR503               | 29-4075F  | 16 $\Delta$ 10Kx2 P1K25          |      |
| VR601 VR602               | 29-4168   | Semi 8 $\Delta$ 500B Flat        |      |
| VR603 VR604               | 29-4170   | Semi 8 $\Delta$ 100B Flat        |      |
| <b>DIODES</b>             |           |                                  |      |
| D401 D412                 | 30-1019-1 | BAW62/BAW76                      |      |
| D501 D502                 | 30-1019-1 | BAW62/BAW76                      |      |
| D601 D612                 | 30-1019-1 | BAW62/BAW76                      |      |
| D613 D614                 | 30-1038   | Zener 18V $\frac{1}{2}W$ RD18E3  |      |
| D615                      | 30-1002   | Rectifier 100V 1A IN4002/10D1    |      |
| D801 D804                 | 30-1002   | Rectifier 100V 1A IN4002/10D1    |      |
| D805 D808                 | 30-1017-1 | Rectifier 100V 3A G38            |      |
| D809                      | 30-1002   | Rectifier 100V 1A IN4002/10D1    |      |
| <b>LEDS</b>               |           |                                  |      |
| LD601                     | 30-1085   | Green LT3231G/X-253FG            |      |
| *LD602                    | 30-1075   | Red LT3211R/X-253FPR             |      |
| *LD801                    | 30-1075   | Red LT3211R/X-253FPR             |      |
| <b>TRANSISTORS</b>        |           |                                  |      |
| Q401 Q402                 | 30-2096   | 8C556B                           |      |
| Q403 Q406                 | 30-2264   | FET 2SK163L                      |      |
| Q407 Q408                 | 30-2085-2 | 8C559B                           |      |
| Q409 Q410                 | 30-2096   | 8C556B                           |      |
| Q411 Q414                 | 30-2090-2 | 8C546B                           |      |
| Q415 Q416                 | 30-2096   | 8C556B                           |      |
| Q501 Q502                 | 30-2090-2 | 8C546B                           |      |
| Q503 Q504                 | 30-2096   | 8C556B                           |      |
| Q505                      | 30-2090-2 | 8C546B                           |      |
| Q506 Q507                 | 30-2096   | 8C556B                           |      |
| Q508                      | 30-2090-2 | 8C546B                           |      |
| Q509 Q510                 | 30-2265   | FET J111                         |      |
| Q601 Q602                 | 30-2096   | 8C556B                           |      |
| Q603 Q604                 | 30-2090-2 | 8C546B                           |      |
| Q605 Q606                 | 30-2238   | BF423                            |      |
| Q607 Q610                 | 30-2260   | 2SD669C/2SD669D                  |      |
| Q611 Q612                 | 30-2259   | 2SB649C/2SB649D                  |      |
| Q613 Q614                 | 30-2305   | 2SD669C/2SD669D                  |      |
| Q615 Q616                 | 30-2305   | 2SC2921                          |      |
| Q617 Q618                 | 30-2304   | 2SA1215                          |      |
| Q619 Q620                 | 30-2090-2 | 8C546B                           |      |
| Q621                      | 30-2096   | 8C556B                           |      |
| Q801                      | 30-2260   | 2SD669C/2SD669D                  |      |
| Q802                      | 30-2096   | 8C556B                           |      |
| Q803                      | 30-2259   | 2SB649C/2SB649D                  |      |
| Q804                      | 30-2096   | 8C556B                           |      |
| Q806                      | 30-2259   | 2SB649C/2SB649D                  |      |

Note: Asterisk \* denotes for 3150 only

# 7150 AUDIO/ 3150 ELECTRICAL PARTS LIST

| REF. NO.                   | PART NO. | DESCRIPTION                | NOTE |
|----------------------------|----------|----------------------------|------|
| <b>INTEGRATED CIRCUITS</b> |          |                            |      |
| IC501                      | 30-3179  | Dual OP RC5532/NE5532      |      |
| IC701                      | 30-3187  | Protector TA7317P          |      |
| IC801                      | 30-3178  | Regulator M5231L           |      |
| IC802                      | 30-3213  | Regulator MC78M24CT/AN7824 |      |
| <b>SWITCHES</b>            |          |                            |      |
| SW401                      | 31-1228  | Slide SS823FL313           |      |
| SW402                      | 31-1204  | Rotary RZL45FL504          |      |
| SW403                      | 31-1253  | Switching Part ESA-26132   |      |
|                            | 31-1261  | Operating Part ESA-334468  |      |
| SW404                      | 31-1260  | Slide SS8022NA01-FL        |      |
| SW501                      | 31-1247  | Push SUF32AE023-FL         |      |
| SW503 SW504                | 31-1247  | Push SUF32AE023-FL         |      |
| SW502 SW505                | 31-1235  | Push SUF22AA012-FL         |      |
| SW601 SW602                | 31-1226  | Slide SSP22FL080           |      |
| SW603                      | 31-1024F | Rotary SRZV044N37-FL       |      |

# 7150 TUNER/4150 ELECTRICAL PARTS LIST

| REF. NO.                                                                               | PART NO.   | DESCRIPTION | NOTE |
|----------------------------------------------------------------------------------------|------------|-------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |            |             |      |
| R001                                                                                   | 16-kCA563J | 56K OHM     |      |
| R002                                                                                   | 16-kCA104J | 100K OHM    |      |
| R003                                                                                   | 16-kCA101J | 100 OHM     |      |
| R004                                                                                   | 16-kCA331J | 330 OHM     |      |
| R005                                                                                   | 16-kCR330J | 33 OHM      |      |
| R006                                                                                   | 16-kCA121J | 120 OHM     |      |
| R007                                                                                   | 16-kCA563J | 56K OHM     |      |
| R008                                                                                   | 16-kCA104J | 100K OHM    |      |
| R009                                                                                   | 16-kCA563J | 56K OHM     |      |
| R010                                                                                   | 16-kCA104J | 100K OHM    |      |
| R011                                                                                   | 16-kCL101J | 100 OHM     |      |
| R012                                                                                   | 16-kCA151J | 150 OHM     |      |
| R013                                                                                   | 16-kCA121J | 120 OHM     |      |
| R014                                                                                   | 16-kCA563J | 56K OHM     |      |
| R015                                                                                   | 16-kCA104J | 100K OHM    |      |
| R016                                                                                   | 16-kCA563J | 56K OHM     |      |
| R017                                                                                   | 16-kCA333J | 33K OHM     |      |
| R018                                                                                   | 16-kCA103J | 10K OHM     |      |
| R019                                                                                   | 16-kCA222J | 2K2 OHM     |      |
| R020                                                                                   | 16-kCA332J | 3K3 OHM     |      |
| R021                                                                                   | 16-kCA431J | 430 OHM     |      |
| R022                                                                                   | 16-kCA103J | 10K OHM     |      |
| R023                                                                                   | 16-kCA682J | 6K8 OHM     |      |
| R024                                                                                   | 16-kCR683J | 68K OHM     |      |
| R025                                                                                   | 16-kCL154J | 150K OHM    |      |
| R026                                                                                   | 16-kCA102J | 1K OHM      |      |
| R027                                                                                   | 16-kCR222J | 2K2 OHM     |      |
| R028                                                                                   | 16-kCA101J | 100 OHM     |      |
| R101                                                                                   | 16-kCR681J | 680 OHM     |      |
| R102                                                                                   | 16-kCR391J | 390 OHM     |      |
| R103                                                                                   | 16-kCR470J | 47 OHM      |      |
| R104                                                                                   | 16-kCA152J | 1K5 OHM     |      |
| R105                                                                                   | 16-kCR471J | 470 OHM     |      |
| R106                                                                                   | 16-kCA331J | 330 OHM     |      |
| R107                                                                                   | 16-kCR391J | 390 OHM     |      |
| R108                                                                                   | 16-kCR101J | 100 OHM     |      |
| R109                                                                                   | 16-kCR391J | 390 OHM     |      |
| R110                                                                                   | 16-kCR331J | 330 OHM     |      |
| R111                                                                                   | 16-kCA330J | 33 OHM      |      |
| R112                                                                                   | 16-kCR102J | 1K OHM      |      |
| R113                                                                                   | 16-kCA103J | 10K OHM     |      |
| R114                                                                                   | 16-kCR823J | 82K OHM     |      |
| R115                                                                                   | 16-kCR101J | 100 OHM     |      |
| R116                                                                                   | 16-kCR102J | 1K OHM      |      |
| R118                                                                                   | 16-kCR331J | 330 OHM     |      |
| R119                                                                                   | 16-kCR103J | 10K OHM     |      |
| R120                                                                                   | 16-kCA820J | 82 OHM      |      |
| R121                                                                                   | 16-kCL563J | 56K OHM     |      |
| R122                                                                                   | 16-kCA221J | 220 OHM     |      |

| REF. NO.                                                                               | PART NO.   | DESCRIPTION | NOTE |
|----------------------------------------------------------------------------------------|------------|-------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |            |             |      |
| R123                                                                                   | 16-kCR473J | 47K OHM     |      |
| R124                                                                                   | 16-kCR223J | 22K OHM     |      |
| R125                                                                                   | 16-kCA183J | 18K OHM     |      |
| R127                                                                                   | 16-kCA153J | 15K OHM     |      |
| R128                                                                                   | 16-kCR103J | 10K OHM     |      |
| R129 R130                                                                              | 16-kCA683J | 68K OHM     |      |
| R131                                                                                   | 16-kCR563J | 56K OHM     |      |
| R132                                                                                   | 16-kCA333J | 33K OHM     |      |
| R133                                                                                   | 16-kCA823J | 82K OHM     |      |
| R134                                                                                   | 16-kCA100J | 10 OHM      |      |
| R135                                                                                   | 16-kCR154J | 150K OHM    |      |
| R136                                                                                   | 16-kCR473J | 47K OHM     |      |
| R137                                                                                   | 16-kCA473J | 47K OHM     |      |
| R138                                                                                   | 16-kCR224J | 220K OHM    |      |
| R139                                                                                   | 16-kCA222J | 2K2 OHM     |      |
| R140 R141                                                                              | 16-kCA472J | 4K7 OHM     |      |
| R142                                                                                   | 16-kCA103J | 10K OHM     |      |
| R143                                                                                   | 16-kCA122J | 1K2 OHM     |      |
| R144                                                                                   | 16-kCR333J | 33K OHM     |      |
| R145                                                                                   | 16-kCA564J | 560K OHM    |      |
| R146                                                                                   | 16-kCA223J | 22K OHM     |      |
| R147-R149                                                                              | 16-kCA102J | 1K OHM      |      |
| R150 R151                                                                              | 16-kCR103J | 10K OHM     |      |
| R152                                                                                   | 16-kCR472J | 4K7 OHM     |      |
| R153 R154                                                                              | 16-kCR471J | 470 OHM     |      |
| R156                                                                                   | 16-kCR331J | 330 OHM     |      |
| R157                                                                                   | 16-kCA391J | 390 OHM     |      |
| R158                                                                                   | 16-kCR470J | 47 OHM      |      |
| R159                                                                                   | 16-kCA473J | 47K OHM     |      |
| R160 R161                                                                              | 16-kCR223J | 22K OHM     |      |
| R162                                                                                   | 16-kCR272J | 2K7 OHM     |      |
| R201                                                                                   | 16-kCA122J | 1K2 OHM     |      |
| R202                                                                                   | 16-kCR102J | 1K OHM      |      |
| R203                                                                                   | 16-kCA121J | 120 OHM     |      |
| R204                                                                                   | 16-kCA682J | 6K8 OHM     |      |
| R205                                                                                   | 16-kCR104J | 100K OHM    |      |
| R206                                                                                   | 16-kCA103J | 10K OHM     |      |
| R207 R208                                                                              | 16-kCR222J | 2K2 OHM     |      |
| R209 R210                                                                              | 16-kCA183J | 18K OHM     |      |
| R211 R212                                                                              | 16-kCR333J | 33K OHM     |      |
| R213-R216                                                                              | 16-kCA332J | 3K3 OHM     |      |
| R217                                                                                   | 16-kCA333J | 33K OHM     |      |
| R218                                                                                   | 16-kCA103J | 10K OHM     |      |
| R219 R220                                                                              | 16-kCA823J | 82K OHM     |      |
| R221 R222                                                                              | 16-kCA155J | 1M5 OHM     |      |
| R223                                                                                   | 16-kCA103J | 10K OHM     |      |
| R224                                                                                   | 16-kCA102J | 1K OHM      |      |
| R225                                                                                   | 16-kCA104J | 100K OHM    |      |

| REF. NO.                                                                               | PART NO.   | DESCRIPTION | NOTE |
|----------------------------------------------------------------------------------------|------------|-------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |            |             |      |
| R226                                                                                   | 16-kCA103J | 10K OHM     |      |
| R227                                                                                   | 16-kCA102J | 1K OHM      |      |
| R228-R230                                                                              | 16-kCA473J | 47K OHM     |      |
| R231                                                                                   | 16-kCA135J | 15K OHM     |      |
| R232                                                                                   | 16-kCA473J | 47K OHM     |      |
| R233                                                                                   | 16-kCA153J | 15K OHM     |      |
| R234                                                                                   | 16-kCR103J | 10K OHM     |      |
| R235                                                                                   | 16-kCR223J | 22K OHM     |      |
| R236                                                                                   | 16-kCA103J | 10K OHM     |      |
| R237                                                                                   | 16-kCA223J | 22K OHM     |      |
| R238                                                                                   | 16-kCR472J | 4K7 OHM     |      |
| R239                                                                                   | 16-kCR473J | 47K OHM     |      |
| R240 R241                                                                              | 16-kCA103J | 10K OHM     |      |
| R242                                                                                   | 16-kCR223J | 22K OHM     |      |
| R243                                                                                   | 16-kCA473J | 47K OHM     |      |
| R244 R245                                                                              | 16-kCA103J | 10K OHM     |      |
| R246                                                                                   | 16-kCA473J | 47K OHM     |      |
| R247                                                                                   | 16-kCR153J | 15K OHM     |      |
| R248                                                                                   | 16-kCA223J | 22K OHM     |      |
| R249                                                                                   | 16-kCA473J | 47K OHM     |      |
| R250                                                                                   | 16-kCA153J | 15K OHM     |      |
| R251                                                                                   | 16-kCA101J | 100 OHM     |      |
| R252                                                                                   | 16-kCA472J | 4K7 OHM     |      |
| R253                                                                                   | 16-kCA333J | 33K OHM     |      |
| R254                                                                                   | 16-kCR103J | 10K OHM     |      |
| R255                                                                                   | 16-kCA223J | 22K OHM     |      |
| R256                                                                                   | 16-kCA101J | 100 OHM     |      |
| R257 R258                                                                              | 16-kCA564J | 560K OHM    |      |
| R259 R260                                                                              | 16-kCA104J | 100K OHM    |      |
| R261                                                                                   | 16-kCA221J | 220 OHM     |      |
| R262 R263                                                                              | 16-kCA223J | 22K OHM     |      |
| *R264 R265                                                                             | 16-kCA471J | 470 OHM     |      |
| *R266 R267                                                                             | 16-kCR474J | 470K OHM    |      |
| *R268 R269                                                                             | 16-kCA185J | 1M8 OHM     |      |
| *R270 R271                                                                             | 16-kCR562J | 5K6 OHM     |      |
| *R272-R275                                                                             | 16-kCA472J | 4K7 OHM     |      |
| *R276 R277                                                                             | 16-kCA332J | 3K3 OHM     |      |
| R278                                                                                   | 16-kCR104J | 100K OHM    |      |
| R279                                                                                   | 16-kCR334J | 330K OHM    |      |
| R280                                                                                   | 16-kCA105J | 1M OHM      |      |
| *R281 R282                                                                             | 16-kCA224J | 220K OHM    |      |
| *R283 R284                                                                             | 16-kCA104J | 100K OHM    |      |
| *R285 R286                                                                             | 16-kCA224J | 220K OHM    |      |
| *R287 R288                                                                             | 16-kCA472J | 4K7 OHM     |      |
| R301                                                                                   | 16-kCA103J | 10K OHM     |      |
| R303                                                                                   | 16-kCA822J | 8K2 OHM     |      |
| R304                                                                                   | 16-kCR271J | 270 OHM     |      |
| R305                                                                                   | 16-kCA472J | 4K7 OHM     |      |
| R306                                                                                   | 16-kCA103J | 10K OHM     |      |

Note: 1. Asterisk \* denotes for 4150 only 2. Delta  $\Delta$  denotes for 7150 only

# 7150 TUNER /4150 ELECTRICAL PARTS LIST

| REF. NO.                                                                               | PART NO.                 | DESCRIPTION | NOTE |
|----------------------------------------------------------------------------------------|--------------------------|-------------|------|
| <b>RESISTORS</b> (All are carbon film $\frac{1}{4}W$ $\pm 5\%$ unless noted otherwise) |                          |             |      |
| R307                                                                                   | 16- $\frac{1}{4}$ CA822J | 8K2 OHM     |      |
| R308                                                                                   | 16- $\frac{1}{4}$ CA472J | 4K7 OHM     |      |
| R309                                                                                   | 16- $\frac{1}{4}$ CR271J | 270 OHM     |      |
| R310                                                                                   | 16- $\frac{1}{4}$ CA223J | 22K OHM     |      |
| R311                                                                                   | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R312 R313                                                                              | 16- $\frac{1}{4}$ CA104J | 100K OHM    |      |
| R314                                                                                   | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R315                                                                                   | 16- $\frac{1}{4}$ CS223J | 22K OHM     |      |
| R316                                                                                   | 16- $\frac{1}{4}$ CS104J | 100K OHM    |      |
| R317                                                                                   | 16- $\frac{1}{4}$ CS822J | 8K2 OHM     |      |
| R318                                                                                   | 16- $\frac{1}{4}$ CS224J | 220K OHM    |      |
| R319                                                                                   | 16- $\frac{1}{4}$ CS103J | 10K OHM     |      |
| R320                                                                                   | 16- $\frac{1}{4}$ CS472J | 4K7 OHM     |      |
| R321-R344                                                                              | 16- $\frac{1}{4}$ CS105J | 10K OHM     |      |
| R345                                                                                   | 16- $\frac{1}{4}$ CA154J | 150K OHM    |      |
| R348-R350                                                                              | 16- $\frac{1}{4}$ CS103J | 10K OHM     |      |
| R352                                                                                   | 16- $\frac{1}{4}$ CS103J | 10K OHM     |      |
| R701 R702                                                                              | 16- $\frac{1}{4}$ CA104J | 100K OHM    |      |
| R704                                                                                   | 16- $\frac{1}{4}$ CA221J | 220 OHM     |      |
| R705                                                                                   | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R706                                                                                   | 16- $\frac{1}{4}$ CA823J | 82K OHM     |      |
| R707                                                                                   | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R708                                                                                   | 16- $\frac{1}{4}$ CA152J | 1K5 OHM     |      |
| R709                                                                                   | 16- $\frac{1}{4}$ CR221J | 220 OHM     |      |
| R710                                                                                   | 16- $\frac{1}{4}$ CA102J | 1K OHM      |      |
| R711                                                                                   | 16- $\frac{1}{4}$ CA332J | 3K3 OHM     |      |
| R712                                                                                   | 16- $\frac{1}{4}$ CA273J | 27K OHM     |      |
| R713                                                                                   | 16- $\frac{1}{4}$ CA121J | 120 OHM     |      |
| R714                                                                                   | 16- $\frac{1}{4}$ CR471J | 470 OHM     |      |
| R715                                                                                   | 16- $\frac{1}{4}$ CA473J | 47K OHM     |      |
| R716 R717                                                                              | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R718                                                                                   | 16- $\frac{1}{4}$ CR223J | 22K OHM     |      |
| R719                                                                                   | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R720                                                                                   | 16- $\frac{1}{4}$ CA101J | 100 OHM     |      |
| R721                                                                                   | 16- $\frac{1}{4}$ CA103J | 10K OHM     |      |
| R722                                                                                   | 16- $\frac{1}{4}$ CA223J | 22K OHM     |      |
| R723                                                                                   | 16- $\frac{1}{4}$ CA154J | 150K OHM    |      |
| R724                                                                                   | 16- $\frac{1}{4}$ CA122J | 1K2 OHM     |      |
| R752                                                                                   | 16- $\frac{1}{4}$ CA561J | 560 OHM     |      |
| R726                                                                                   | 16- $\frac{1}{4}$ CA104J | 100K OHM    |      |
| R901                                                                                   | 16- $\frac{1}{4}$ JA100J | 10 OHM      |      |
| R902 R903                                                                              | 16- $\frac{1}{4}$ CA561J | 560 OHM     |      |
| R904                                                                                   | 16- $\frac{1}{4}$ CM101J | 100 OHM     |      |
| R905                                                                                   | 16- $\frac{1}{4}$ CA102J | 1K OHM      |      |
| R906                                                                                   | 16- $\frac{1}{4}$ CM101J | 100 OHM     |      |
| R907                                                                                   | 16- $\frac{1}{4}$ CA102J | 1K OHM      |      |
| R908                                                                                   | 16- $\frac{1}{4}$ CM271J | 270 OHM     |      |
| R909                                                                                   | 16- $\frac{1}{4}$ CA152J | 1K5 OHM     |      |
| R910                                                                                   | 16- $\frac{1}{4}$ CA151J | 150 OHM     |      |

| REF. NO.          | PART NO.     | DESCRIPTION                        | NOET |
|-------------------|--------------|------------------------------------|------|
| <b>CAPACITORS</b> |              |                                    |      |
| C001              | 17-5DR102M   | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C002              | 17-5DF223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C003              | 17-5DR102M   | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C004 C005         | 17-5DF223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C006 C007         | 17-5DR2R0DPH | Ceramic 2pF 50V $\pm 0.5pF$ PH     |      |
| C008              | 17-5DR102M   | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C009              | 17-5DR2R0DPH | Ceramic 2pF 50V $\pm 0.5pF$ PH     |      |
| C010              | 17-5DF331JRH | Ceramic 330pF 50V $\pm 5\%$ RH     |      |
| C011              | 17-5DF102M   | Ceramic 0.001uF 50V $\pm 0.5pF$ PH |      |
| C012              | 17-5DR2R0DPH | Ceramic 2pF 50V $\pm 0.5pF$ PH     |      |
| C013              | 17-5DR3R0DPH | Ceramic 3pF 50V $\pm 0.5pF$ PH     |      |
| C014              | 17-5DR473Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C015              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C016              | 17-5DR3R0DPH | Ceramic 3pF 50V $\pm 0.5pF$ PH     |      |
| C017              | 17-5DR2R0DPH | Ceramic 2pF 50V $\pm 0.5pF$ PH     |      |
| C018              | 17-5DF100F5H | Ceramic 10pF 50V $\pm 1pF$ SH      |      |
| C019              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C020              | 17-5DF150KCH | Ceramic 15pF 50V $\pm 10\%$ CH     |      |
| C021              | 17-5DR100F5H | Ceramic 10pF 50V $\pm 1pF$ PH      |      |
| C022              | 17-5DR5R0DPH | Ceramic 5pF 50V $\pm 0.5pF$ PH     |      |
| C023              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C024 C025         | 17-5DR102Z   | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C026              | 17-5DF330KCH | Ceramic 33pF 50V $\pm 10\%$ CH     |      |
| C027              | 17-5DF121M   | Ceramic 120pF 50V $\pm 20\%$       |      |
| C028 C029         | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C030-C033         | 17-5DR102M   | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C034              | 17-5DR3R0DPH | Ceramic 3pF 50V $\pm 0.5pF$ PH     |      |
| C035              | 17-5DR100F   | Ceramic 10pF 50V $\pm 1pF$         |      |
| C036              | 17-5DR473Z   | Ceramic 0.047uF 50V $\pm 20\%$     |      |
| C037              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C038              | 17-5DR473Z   | Ceramic 0.047uF 50V $\pm 20\%$     |      |
| C039              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C101              | 17-5DF223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C102              | 17-5DR223Z   | Ceramic 0.002uF 50V $\pm 20\%$     |      |
| C103 C104         | 17-5DR473Z   | Ceramic 0.047uF 50V $\pm 20\%$     |      |
| C105              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C106-C109         | 17-5DR473Z   | Ceramic 0.047uF 50V $\pm 20\%$     |      |
| C110              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C111              | 17-5DR473Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C112-C118         | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C119              | 17-1.6DR107Y | Ceramic 100uF 16V $\pm 50\%$       |      |
| C120              | 17-5DR223Z   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C121              | 17-5DR223Z   | Ceramic 1uF 50V $\pm 50\%$         |      |
| C122 C123         | 17-5DR105Y   | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C124              | 17-5DR223Z   | Ceramic 47uF 16V $\pm 50\%$        |      |
| C125              | 17-1.6ER476Y | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C126              | 17-5DR223Z   | Ceramic 47uF 16V $\pm 50\%$        |      |
| C127              | 17-1.6DR476Y | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C128              | 17-5DR223Z   | Ceramic 180pF 50V $\pm 10\%$ CH    |      |

| REF. NO.          | PART NO.      | DESCRIPTION                         | NOTE |
|-------------------|---------------|-------------------------------------|------|
| <b>CAPACITORS</b> |               |                                     |      |
| C129              | 17-5DR220KJ   | Ceramic 22pF 50V $\pm 10\%$ UJ      |      |
| C130              | 17-5DR3R0DSL  | Ceramic 3pF 50V $\pm 0.5pF$ SL      |      |
| C131-C133         | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 20\%$      |      |
| C134              | 17-5DR105Y    | Ceramic 1uF 50V $\pm 20\%$          |      |
| C135              | 17-5DR471M    | Ceramic 470pF 16V $\pm 50\%$        |      |
| C137 C138         | 17-1.6DR106Y  | Electrolytic 10uF 50V $\pm 5\%$     |      |
| C139              | 17-5FR473J    | Mylar 0.047uF 50V $\pm 5\%$         |      |
| C140              | 17-5DR225Y    | Electrolytic 2.2uF 50V $\pm 50\%$   |      |
| C141              | 17-5FR102J    | Mylar 1000pF 50V $\pm 5\%$          |      |
| C142              | 17-5FR223J    | Mylar 0.022uF 50V $\pm 5\%$         |      |
| C143              | 17-5FH224J    | Mylar 0.022uF 50V $\pm 20\%$        |      |
| C144              | 17-5DR223Z    | Ceramic 0.047uF 50V $\pm 20\%$      |      |
| C145              | 17-5DR473Z    | Ceramic 10pF 50V $\pm 1pF$ UJ       |      |
| C146              | 17-5DF100FJ   | Ceramic 1uF 50V $\pm 50\%$          |      |
| C201              | 17-5ER105Y    | Electrolytic 0.047uF 50V $\pm 5\%$  |      |
| C202              | 17-5FR473J    | Mylar 3.3uF 16V $\pm 20\%$          |      |
| C204              | 17-1.60335M   | Tantalum 1uF 16V $\pm 20\%$         |      |
| C205              | 17-1.60105M   | Tantalum 3.3uF 16V $\pm 20\%$       |      |
| C207              | 17-1.60335M   | Tantalum 220uF 16V $\pm 50\%$       |      |
| C208              | 17-1.60F227Y  | Electrolytic 22uF 16V $\pm 50\%$    |      |
| C209 C210         | 17-1.6ER226Y  | Electrolytic 0.0015uF 50V $\pm 5\%$ |      |
| C211 C212         | 17-5FR152J    | Mylar 4.7uF 50V $\pm 50\%$          |      |
| C215 C216         | 17-5ER475Y    | Electrolytic 1uF 50V $\pm 50\%$     |      |
| C217              | 17-5ER105Y    | Electrolytic 0.01uF 50V $\pm 5\%$   |      |
| C218 C219         | 17-5FR103J    | Mylar 0.047uF 50V $\pm 50\%$        |      |
| C220              | 17-5ER474Y    | Electrolytic 22uF 16V $\pm 50\%$    |      |
| C221              | 17-1.6ER226Y  | Electrolytic 47uF 16V $\pm 50\%$    |      |
| C222              | 17-1.6ER476Y  | Electrolytic 4.7uF 50V $\pm 50\%$   |      |
| C223 C224         | 17-5ER475Y    | Electrolytic 47uF 16V $\pm 50\%$    |      |
| C225              | 17-1.6ER476Y  | Electrolytic 10uF 16V $\pm 50\%$    |      |
| C226              | 17-1.5ER106Y  | Electrolytic 10pF 50V $\pm 20\%$    |      |
| C227              | 17-5DR470M    | Ceramic 1uF 50V $\pm 50\%$          |      |
| *C228 C229        | 17-5ER105Y    | Electrolytic 10uF 16V $\pm 50\%$    |      |
| *C230 C231        | 17-1.6ER106Y  | Electrolytic 10uF 16V $\pm 50\%$    |      |
| *C232 C233        | 17-5ER475Y    | Electrolytic 4.7uF 50V $\pm 50\%$   |      |
| C234              | 17-5ER475Y    | Electrolytic 0.012uF 50V $\pm 5\%$  |      |
| C235              | 17-5FR123J    | Mylar 0.022uF 50V $\pm 5\%$         |      |
| C236              | 17-5FR223J    | Mylar 0.047uF 50V $\pm 20\%$        |      |
| C301              | 17-5DR473Z    | Ceramic 0.01uF 50V $\pm 20\%$       |      |
| C302-C304         | 17-5DR103M    | Ceramic 0.047uF 50V $\pm 20\%$      |      |
| C305              | 17-5DR473Z    | Ceramic 0.022uF 50V $\pm 20\%$      |      |
| C306              | 17-5DR223Z    | Tantalum 0.022uF 16V $\pm 20\%$     |      |
| C307 C308         | 17-1.60224M   | Ceramic 0.022uF 50V $\pm 20\%$      |      |
| C309 C310         | 17-5DR223Z    | Electrolytic 4700uF 6.3V $\pm 50\%$ |      |
| C311              | 17-0.63EG478Y | Ceramic 5pF 50V $\pm 0.5pF$         |      |
| C312              | 17-5DR5R0D    | Ceramic 39pF 50V $\pm 20\%$         |      |
| C313              | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 20\%$      |      |
| C314              | 17-5DR223Z    | Tantalum 1uF 16V $\pm 20\%$         |      |
| C315              | 17-1.60105M   |                                     |      |

Note: Asterisk \* denotes for 4150 only

| REF. NO.                  | PART NO.      | DESCRIPTION                        | NOTE |
|---------------------------|---------------|------------------------------------|------|
| <b>CAPACITORS</b>         |               |                                    |      |
| C316                      | 17-5DR473Z    | Electrolytic 0.47uF 50V $\pm 20\%$ |      |
| C317                      | 17-5DR470M    | Ceramic 47pF 50V $\pm 20\%$        |      |
| C701                      | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 1pF$      |      |
| C702                      | 17-5DR100F    | Ceramic 10pF 50V $\pm 1pF$         |      |
| C703                      | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C705                      | 17-5DR473Z    | Ceramic 0.047uF 50V $\pm 20\%$     |      |
| C706                      | 17-5DR102M    | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C707                      | 17-5DR473Z    | Ceramic 0.047uF 50V $\pm 20\%$     |      |
| C708                      | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C709                      | 17-5ER475Y    | Electrolytic 4.7uF 50V $\pm 50\%$  |      |
| C710                      | 17-5DR473Z    | Ceramic 0.047uF 50V $\pm 50\%$     |      |
| C711                      | 17-5ER474Y    | Electrolytic 3.3uF 50V $\pm 50\%$  |      |
| C712                      | 17-5ER335Y    | Electrolytic 0.01uF 50V $\pm 20\%$ |      |
| C713                      | 17-5DR103M    | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C714                      | 17-5DR223Z    | Ceramic 100uF 16V $\pm 50\%$       |      |
| C715                      | 17-1.6ER107Y  | Electrolytic 0.033uF 50V $\pm 5\%$ |      |
| C716                      | 17-5FR333J    | Mylar 0.0022uF 50V $\pm 5\%$       |      |
| C717                      | 17-5FR222J    | Mylar 0.0022uF 50V $\pm 5\%$       |      |
| C718                      | 17-1.6EF227Y  | Electrolytic 220uF 16V $\pm 50\%$  |      |
| C719                      | 17-5DR102M    | Ceramic 0.001uF 50V $\pm 20\%$     |      |
| C720                      | 17-5DR223Z    | Ceramic 0.022uF 50V $\pm 20\%$     |      |
| C721                      | 17-5FF104J    | Mylar 0.1uF 50V $\pm 5\%$          |      |
| C722                      | 17-5ER475Y    | Electrolytic 4.7uF 50V $\pm 50\%$  |      |
| C901                      | 17-3.5EG228Y  | Electrolytic 2200uF 35V $\pm 50\%$ |      |
| C902                      | 17-2.5EF107Y  | Electrolytic 100uF 25V $\pm 50\%$  |      |
| C903 C904                 | 17-1.6DF107Y  | Electrolytic 100uF 16V $\pm 50\%$  |      |
| C905                      | 17-3.5DF477Y  | Electrolytic 470uF 35V $\pm 50\%$  |      |
| C906 C907                 | 17-1.6DR107Y  | Electrolytic 100uF 16V $\pm 50\%$  |      |
| C908 C909                 | 17-3.5DF477Y  | Electrolytic 470uF 35V $\pm 50\%$  |      |
| C910                      | 17-3.5DR106Y  | Electrolytic 10uF 35V $\pm 50\%$   |      |
| C912 C913                 | 17-0.63DR107Y | Electrolytic 100uF 6.3V $\pm 50\%$ |      |
| <b>VARIABLE RESISTORS</b> |               |                                    |      |
| VR101                     | 29-4184       | SEMI 84 20KB FLAT                  |      |
| VR102                     | 29-4156       | SEMI 84 100KB FLAT                 |      |
| VR103                     | 29-4163       | SEMI 84 50KB FLAT                  |      |
| VR201                     | 29-4166       | SEMI 84 5KB FLAT                   |      |
| VR202                     | 29-4156       | SEMI 84 100KB FLAT                 |      |
| VR701                     | 29-4184       | SEMI 84 20KB FLAT                  |      |
| *VR203                    | 29-4181       | GM80R0434-FL(50KBX2)               |      |
| <b>DIODES</b>             |               |                                    |      |
| D001-C006                 | 30-1082*A     | BB2046                             |      |
| D101 D102                 | 30-1010       | 1N60                               |      |
| D103                      | 30-1127       | VARI CAP BB1096                    |      |
| D104 D105                 | 30-1152TA     | 1N4148                             |      |

Note: Asterisk \* denotes for 4150 only

# 7150 TUNER/4150 ELECTRICAL PARTS LIST

| REF. NO.                   | PART NO.  | DESCRIPTION                  | NOTE |
|----------------------------|-----------|------------------------------|------|
| <b>DIODES</b>              |           |                              |      |
| D106                       | 30-1010   | IN60                         |      |
| D107 D108                  | 30-1152TA | IN4148                       |      |
| D201-D208                  | 30-1152TA | IN4148                       |      |
| D209                       | 30-1010   | IN60                         |      |
| D201                       | 30-1077-1 | ZENER HZ5A-3                 |      |
| D211 D212                  | 30-1152TA | IN4148                       |      |
| D214                       | 30-1152TA | IN4148                       |      |
| D301-D303                  | 30-1152TA | IN4148                       |      |
| D701 D702                  | 30-1146   | Variable capacitor. SVC333B  |      |
| D703-D705                  | 30-1152TA | IN4148                       |      |
| D901-D908                  | 30-1002   | Rectifier 100V1A IN4002/10D1 |      |
| D909 D910                  | 30-1044-1 | ZENER HZ15-2                 |      |
| D911                       | 30-1147-1 | ZENER HZ30-2                 |      |
| D912                       | 30-1136-1 | ZENER HZ7A-2                 |      |
| <b>INTEGRATED CIRCUITS</b> |           |                              |      |
| IC101                      | 30-3155   | FM IF UPC1163H               |      |
| IC102                      | 30-3206   | FM IF LA1235N                |      |
| IC103                      | 30-3118   | DUAL OP MC34002P             |      |
| IC104                      | 30-3069   | DUAL OP RC4558/UPC4558N      |      |
| IC105                      | 30-3205   | DUAL OP NE5517N/LM13600N     |      |
| IC201                      | 30-3079   | MPX HA12016                  |      |
| IC202                      | 30-3069   | DUAL OP RC4558/UPC4558N      |      |
| IC203                      | 30-3051   | METER DRIVER 8A656           |      |
| IC301                      | 30-3148   | PULL-CONTROLLER TC9137P      |      |
| IC302                      | 30-3149   | PRECALLER TD6104P            |      |
| IC303                      | 30-3050   | DISPLAY DRIVER TD6301P       |      |
| <b>TRANSISTORS</b>         |           |                              |      |
| Q001-Q003                  | 30-2201*A | FET J310                     |      |
| Q004 Q005                  | 30-2197*B | 2N5770                       |      |
| Q006                       | 30-2201*A | FET J310                     |      |
| Q007                       | 30-2267*A | FET 2N5486                   |      |
| Q101 Q102                  | 30-2201*A | FET J310                     |      |
| Q103                       | 30-2019   | 2SC930                       |      |
| Q104                       | 30-2156   | 2SC1815GR                    |      |
| Q105 Q106                  | 30-2019   | 2SC930                       |      |
| Q201-Q208                  | 30-2156   | 2SC1815GR                    |      |
| Q209                       | 30-2171   | 2SA733A                      |      |
| Q210 Q211                  | 30-2265   | FET J111                     |      |
| *Q212 Q213                 | 30-2084-3 | BC549C                       |      |
| *Q214 Q215                 | 30-2096   | BC556B                       |      |
| Q216                       | 30-2267*A | FET 2N5486                   |      |
| Q301                       | 30-2156   | 2SC1815GR                    |      |
| Q302                       | 30-2161   | FET K40                      |      |
| Q303                       | 30-2156   | 2SC1115GR                    |      |
| Q304                       | 30-2161   | FET K40                      |      |
| Q305                       | 30-2156   | 2SC1815GR                    |      |

Note: Asterisk \* denotes for 4150 only

| REF. NO.           | PART NO.  | DESCRIPTION | NOTE |
|--------------------|-----------|-------------|------|
| <b>TRANSISTORS</b> |           |             |      |
| Q306-Q308          | 30-2255   | 2SC2785     |      |
| Q701 Q702          | 30-2156   | 2SC1815GR   |      |
| Q703               | 30-2084-3 | BC549C      |      |
| Q901               | 30-2078   | 2SD330E     |      |
| Q902               | 30-2171   | 2SA733A     |      |
| Q903 Q904          | 30-2090-2 | BC546B      |      |

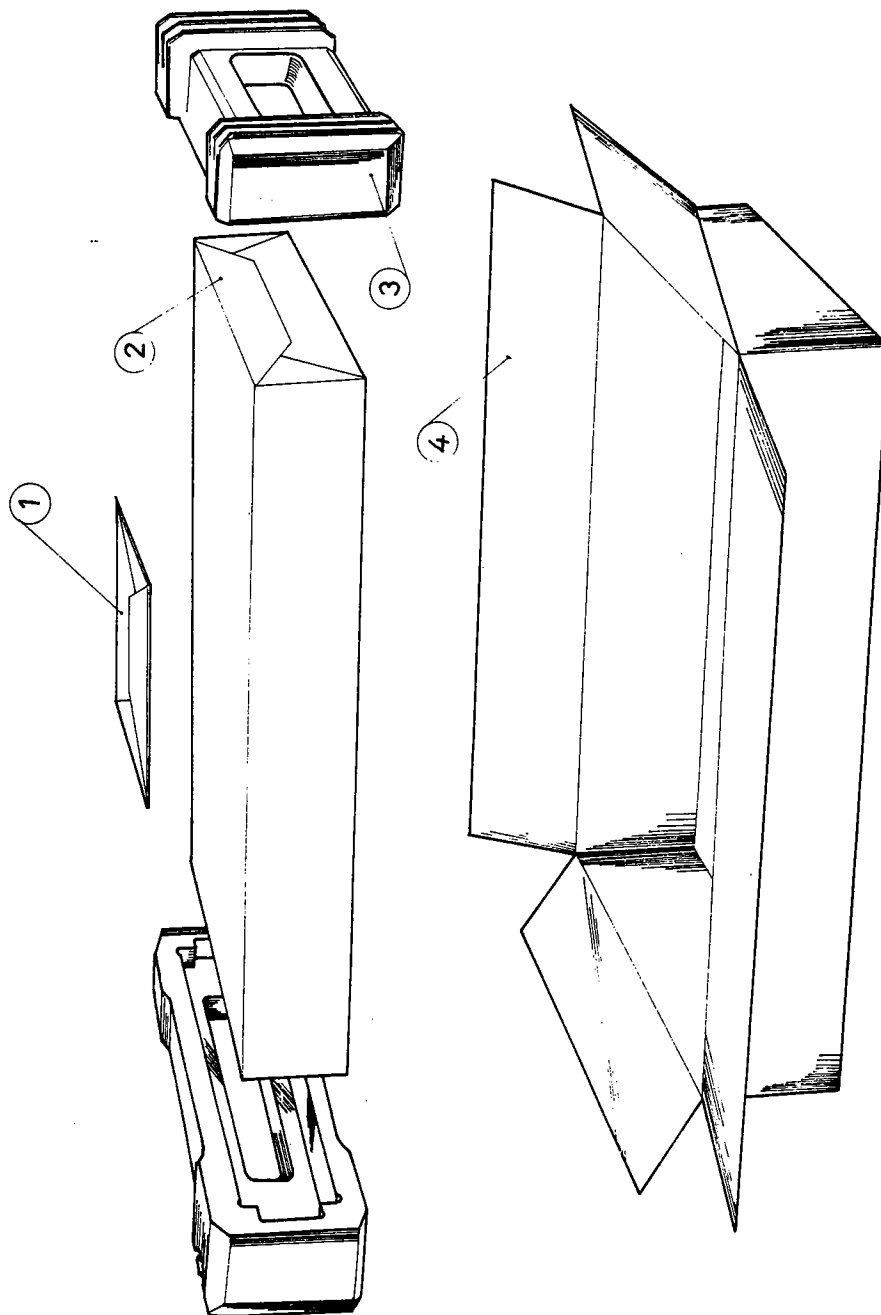
# 7150 AUDIO/2150/3150 CRITICAL COMPONENT PARTS LIST

| REF. NO.               | PART NO.      | DESCRIPTION                          | NOTE    |
|------------------------|---------------|--------------------------------------|---------|
| Switched<br>Unswitched | 12-2121       | AC Outlet AB/C1/C2/LC/U1-U4          | Version |
|                        | 14-5013       | Power Cord E3                        | Version |
|                        | 14-5025       | Power Cord E2                        | Version |
|                        | 14-5032       | Power Cord U3                        | Version |
|                        | 14-5033       | Power Cord E1/ET/E4/U2/U4            | Version |
|                        | 14-5037*B     | Power Cord C1/C2/LC/U1/AB            | Version |
|                        | 17-2011       | Capacitor AB/E1-E4/ET/U1-U4          | Version |
|                        | 17-2014       | Capacitor C1/C2/LC                   | Version |
| C822 C823<br>C823      | 29-2072-1     | Transformer C1/LC                    | Version |
|                        | 29-2072-1A    | Transformer C1/LC                    | Version |
|                        | 29-2072-4     | Transformer C2                       | Version |
|                        | 29-2072-4A    | Transformer C2                       | Version |
|                        | 29-2072-5     | Transformer E1/ET                    | Version |
|                        | 29-2072-5A    | Transformer E1/ET                    | Version |
|                        | 29-2072-7     | Transformer E2/E3/E4/U3/U4           | Version |
|                        | 29-2072-7A    | Transformer E2/E3/E4/U3/U4           | Version |
|                        | 29-2072-8     | Transformer AB/U1/U2                 | Version |
|                        | 29-2072-8A    | Transformer AB/U1/U2                 | Version |
|                        | SW802a SW802b | Switch AB/E1-E4/ET/U1-U4             | Version |
|                        | SW802a        | Switch C1/C2/LC                      | Version |
| F6<br>F6               | 32-14001W     | Fuse 4A 250V Normal AB/C1/C2/LC/U1   | Version |
|                        | 32-12001S     | Fuse 2A 250V Time-lag E1-E4/ET/U2-U4 | Version |

# 4150/7150 TUNER CRITICAL COMPONENT PARTS LIST

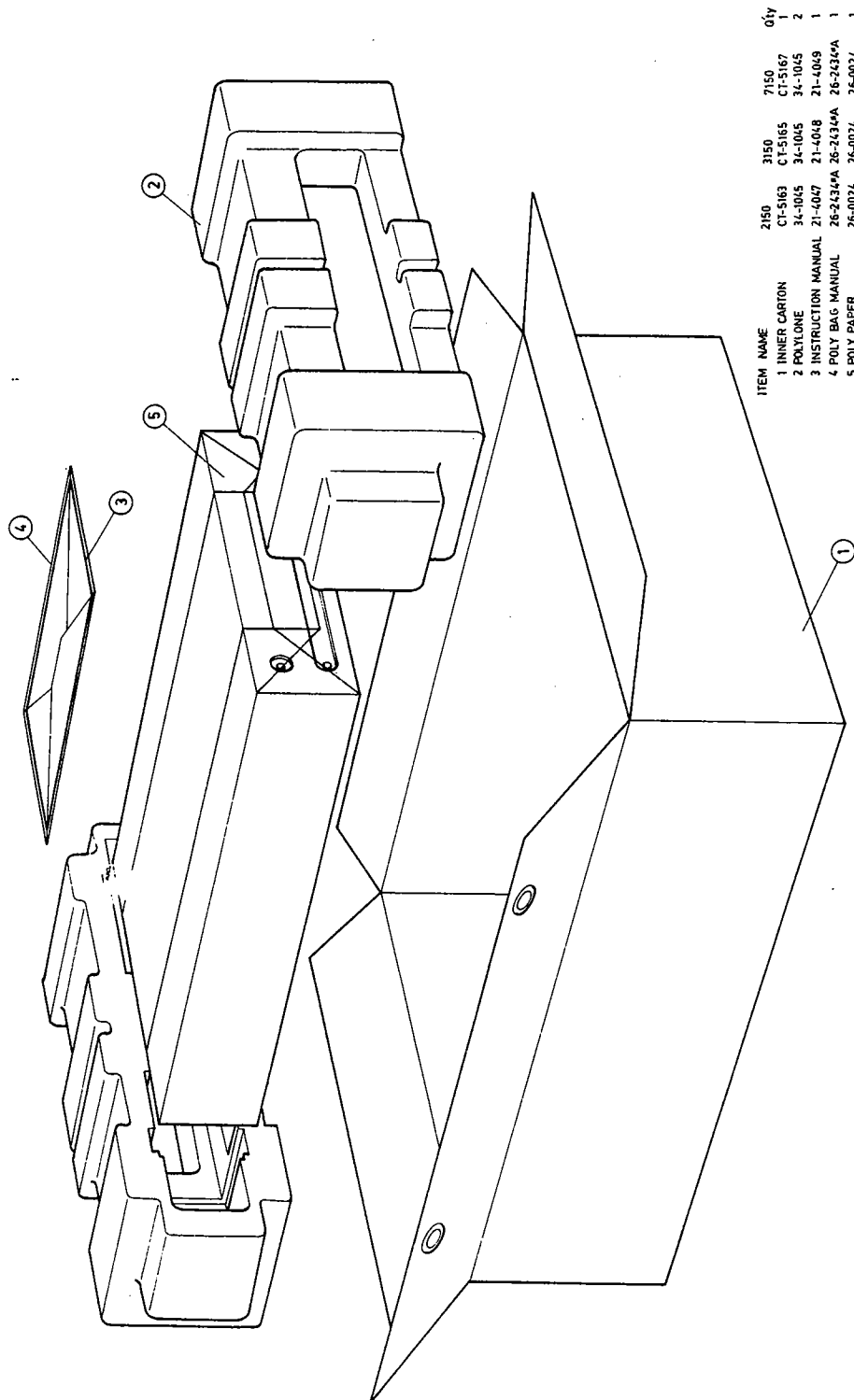
| REF. NO.             | PART NO.   | DESCRIPTION                             | NOTE    |
|----------------------|------------|-----------------------------------------|---------|
| F1 F2 F3<br>F1 F2 F3 | 14-5013    | Power Cord E3                           | Version |
|                      | 14-5025    | Power Cord E2                           | Version |
|                      | 14-5032    | Power Cord U3                           | Version |
|                      | 14-5033    | Power Cord E1/ET/E4/U2/U4               | Version |
|                      | 14-5037*B  | Power Cord C1/C2/LC/U1/AB               | Version |
|                      | 17-2011    | Capacitor AB/E1-E4/ET/U1-U4             | Version |
|                      | 17-2014    | Capacitor C1/C2/LC                      | Version |
|                      | 29-2070-1  | Transformer C1/LC                       | Version |
|                      | 29-2070-4  | Transformer C2                          | Version |
|                      | 29-2070-5  | Transformer E1/ET                       | Version |
|                      | 29-2070-7  | Transformer E2/E3/E4/U3/U4              | Version |
|                      | 29-2070-8  | Transformer AB/U1/U2                    | Version |
|                      | 31-1129A*A | Switch AB/E1-E4/ET/U1-U4                | Version |
|                      | 31-1130A*A | Switch C1/C2/LC                         | Version |
|                      | 32-15000U  | Fuse 500mA 250V Normal AB/C1/C2/LC/U1   | Version |
|                      | 32-15000S  | Fuse 500mA 250V Time-lag E1-E4/ET/U2-U4 | Version |

# 2150/3150/7150 PACKING DIAGRAM



| ITEM NUMBER | MANE              | Q'ty |
|-------------|-------------------|------|
| 1. 26-2434  | MANUAL'S POLY BAG | 1    |
| 2. 26-0005  | POLY PAPER        | 1    |
| 3. 34-1044  | POLYLONE          | 2    |
| 4. CT-5161  | INNER CARTON      | 1    |

# 4150 PACKING DIAGRAM



| ITEM NAME            | 2150     | 3150     | 7150     | Qty |
|----------------------|----------|----------|----------|-----|
| 1 INNER CARTON       | CT-5163  | CT-5165  | CT-5167  | 1   |
| 2 POLYSTYRENE        | 34-1045  | 34-1045  | 34-1045  | 2   |
| 3 INSTRUCTION MANUAL | 21-4047  | 21-4048  | 21-4049  | 1   |
| 4 POLY BAG MANUAL    | 26-2434A | 26-2434A | 26-2434A | 1   |
| 5 POLY PAPER         | 26-0024  | 26-0024  | 26-0024  | 1   |



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