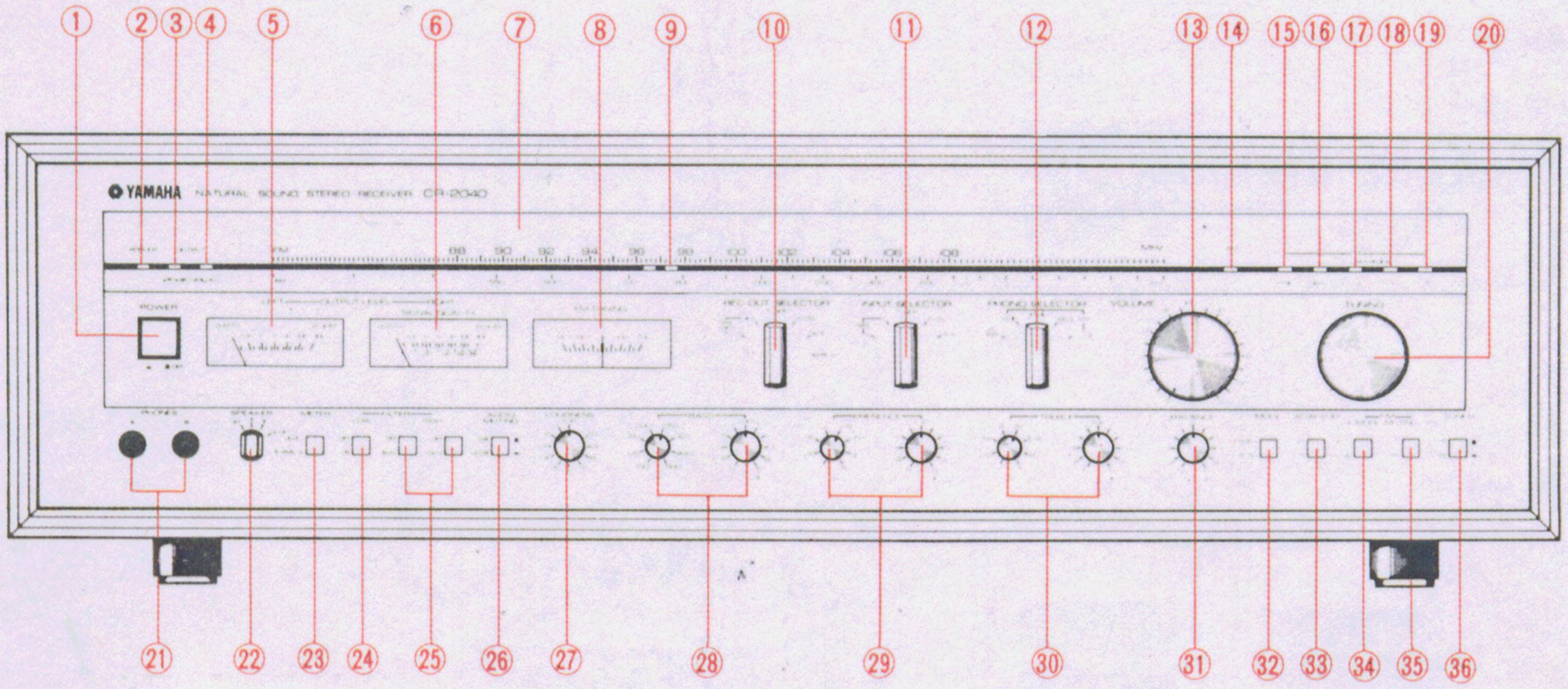
FM dead - weak see schematic, IC 101

# SERVICE MANUAL

# CR-2040

**FM/AM STEREO RECEIVER**

## ■FRONT PANEL




① POWER SWITCH
② POWER INDICATOR
③ OUTPUT (1/2 POWER) INDICATOR
④ OUTPUT (OVERLOAD) INDICATOR
⑤ OUTPUT LEVEL METER (LEFT)
⑥ OUTPUT LEVEL METER (RIGHT) /SIGNAL QUALITY METER
⑦ FM/AM DIAL SCALE
⑧ FM TUNING METER
⑨ DIAL POINTER
⑩ REC OUT SELECTOR
⑪ INPUT SELECTOR
⑫ PHONO SELECTOR
⑬ VOLUME CONTROL
⑭ AM INDICATOR
⑮ FM STEREO INDICATOR
⑯ FM BLEND INDICATOR
⑰ FM LOCAL INDICATOR
⑱ FM DX INDICATOR
⑲ FM OTS INDICATOR
⑳ TUNING KNOB
㉑ PHONES JACKS
㉒ SPEAKER SELECTOR
㉓ METER SWITCH
㉔ LOW FILTER
㉕ HIGH FILTER
㉖ AUDIO MUTING SWITCH
㉗ LOUDNESS CONTROL
㉘ BASS CONTROLS
㉙ PRESENCE CONTROLS
㉚ TREBLE CONTROLS
㉛ BALANCE CONTROL
㉜ MODE SWITCH
㉝ ADAPTOR SWITCH
㉞ FM IF MODE SWITCH
㉟ FM MUTING/OTS SWITCH
㊱ TUNER AM/FM SWITCH

004383

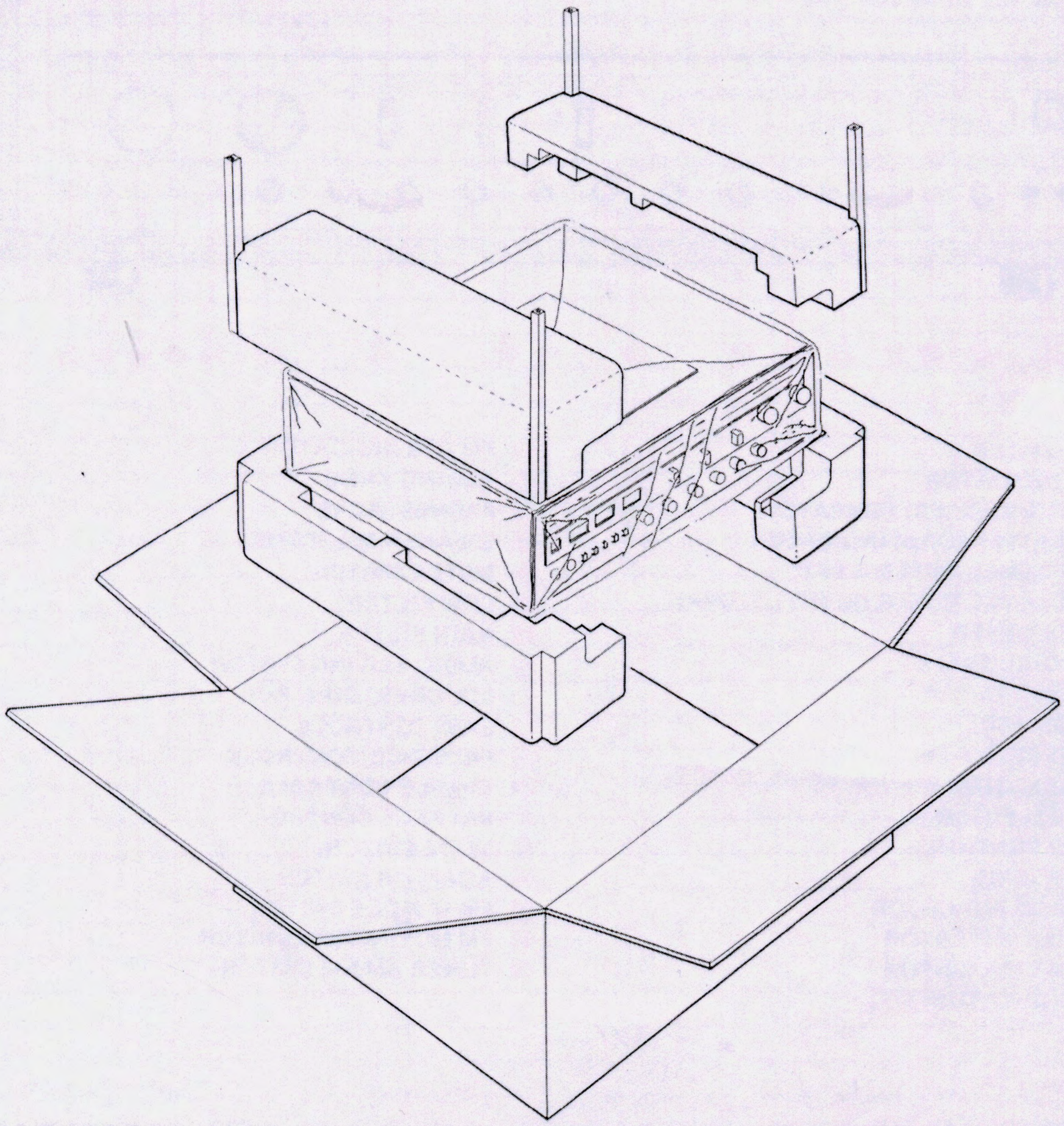
YAMAHA

Printed in Japan '79 FEB. 2.32K T.T

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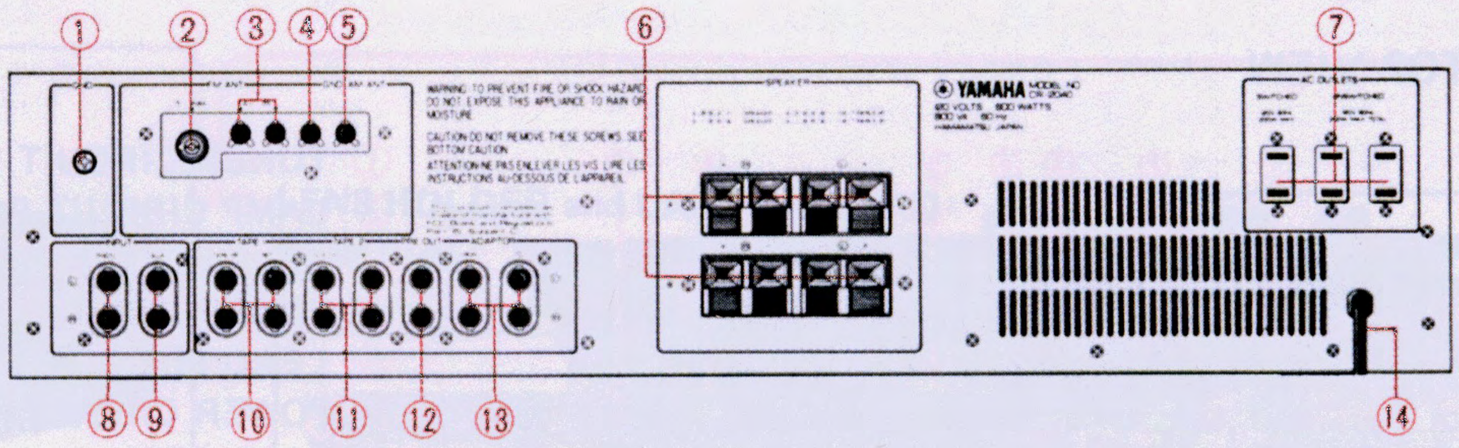

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## PACKAGE INSTRUCTION

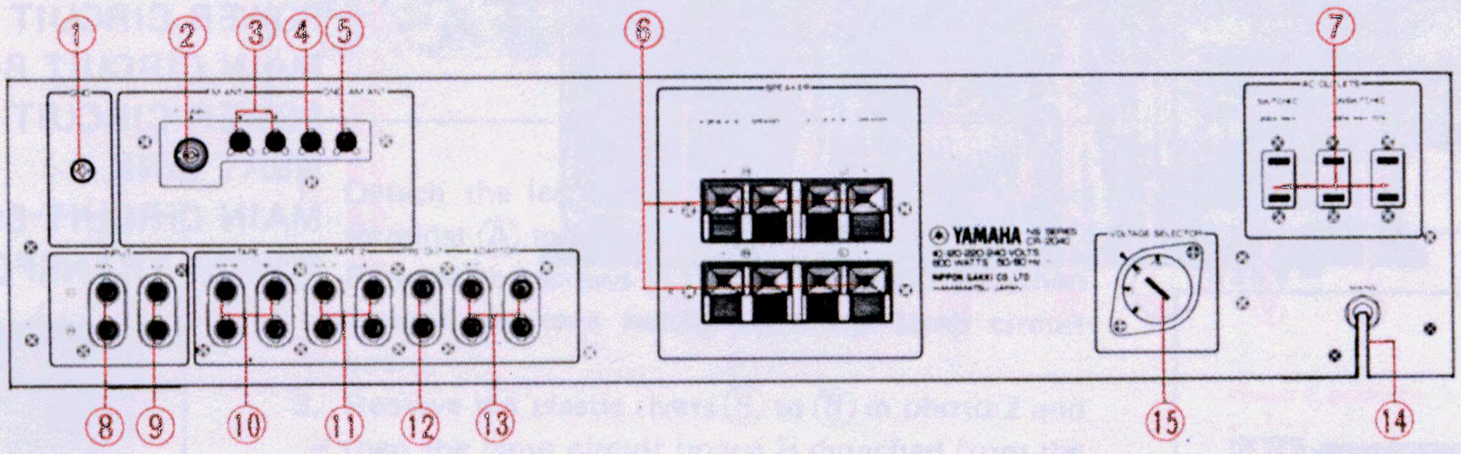


## ■REAR PANEL

- U.S. and CANADIAN MODELS

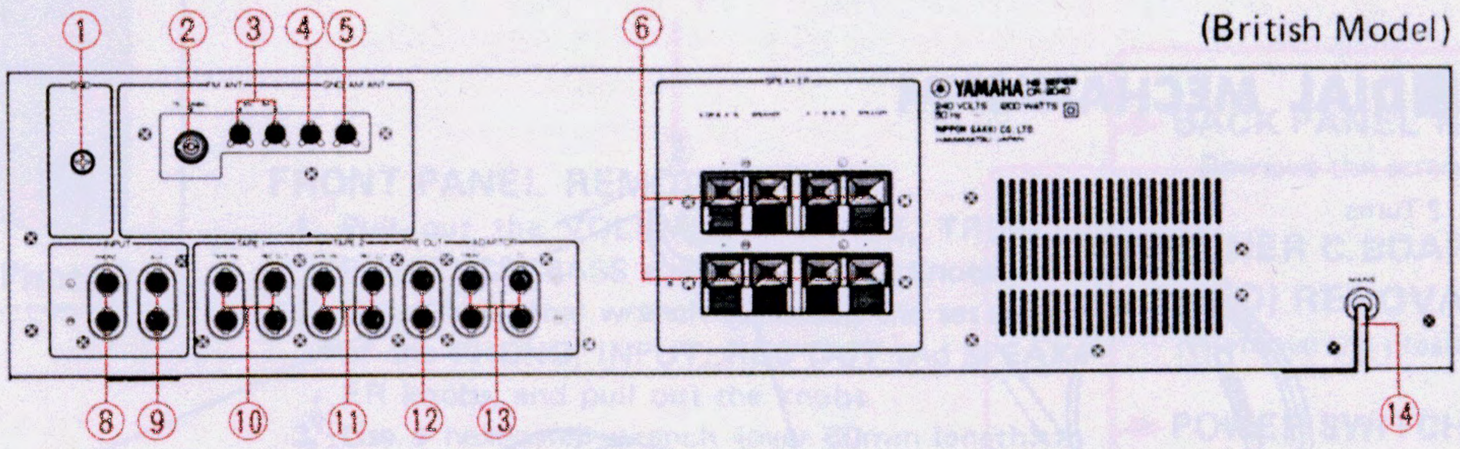



- GENERAL MODEL

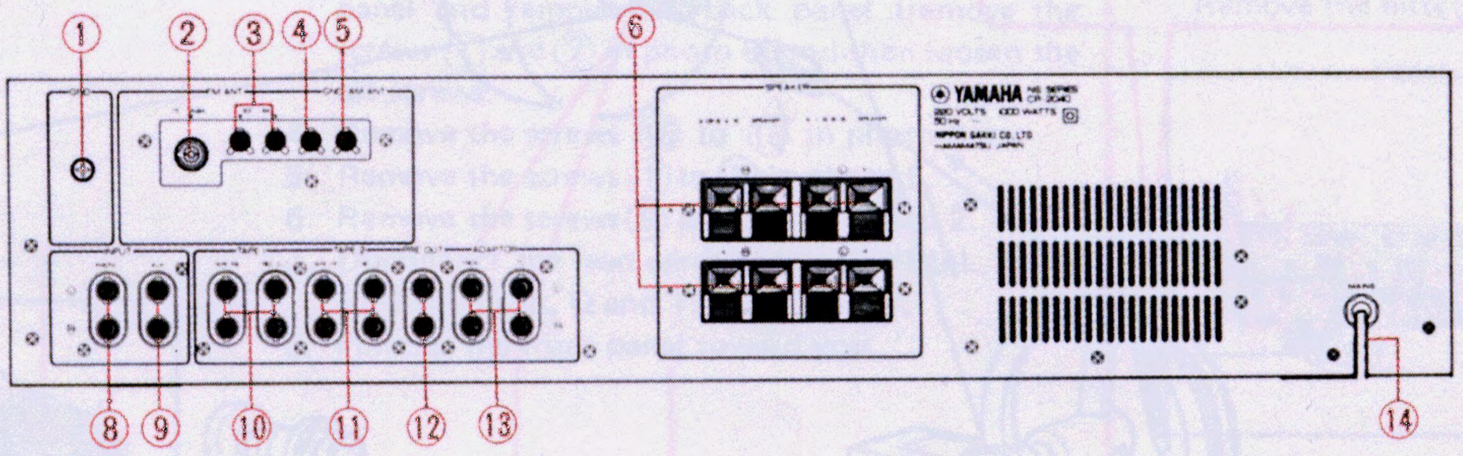



- BRITISH and AUSTRALIAN MODELS

(British Model)



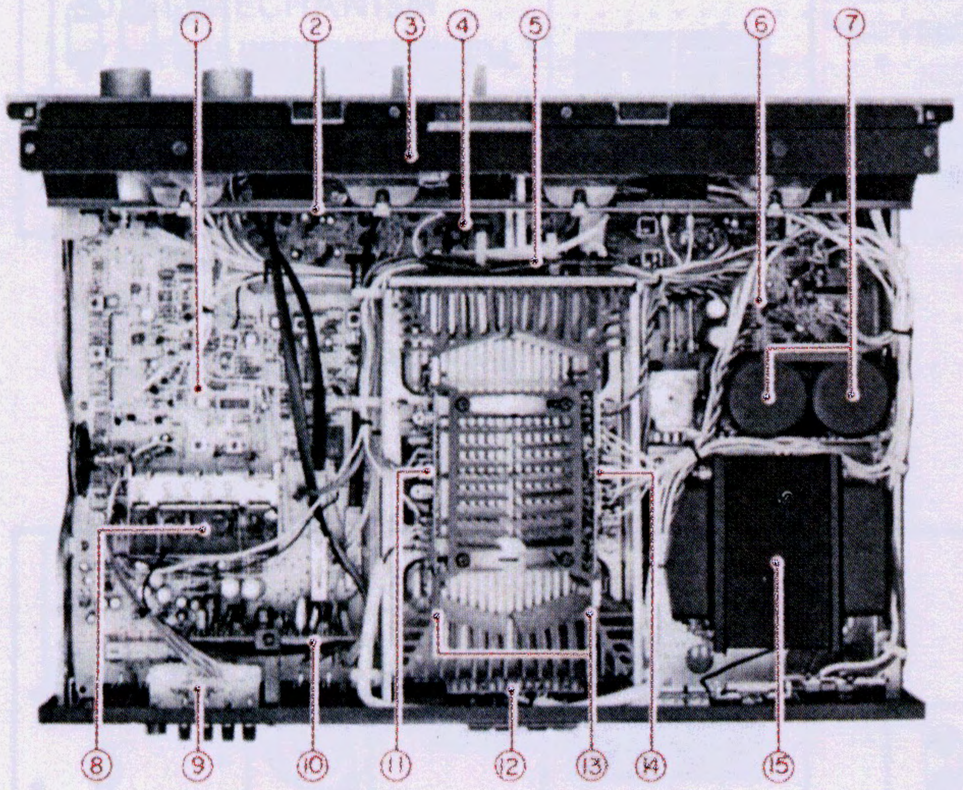

- NORTH EUROPEAN MODEL




① GROUND TERMINAL
② FM ANTENNA TERMINAL (75Ω)
③ FM ANTENNA TERMINAL (300Ω)
④ AM GROUND TERMINAL
⑤ AM ANTENNA TERMINAL
⑥ SPEAKERS TERMINALS
⑦ AC OUTLETS
⑧ PHONO INPUT JACKS
⑨ AUX INPUT JACKS
⑩ TAPE 1 PB/REC JACKS
⑪ TAPE 2 PB/REC JACKS
⑫ PRE OUT JACKS
⑬ ADAPTOR JACKS
⑭ AC POWER CORD
⑮ VOLTAGE SELECTOR

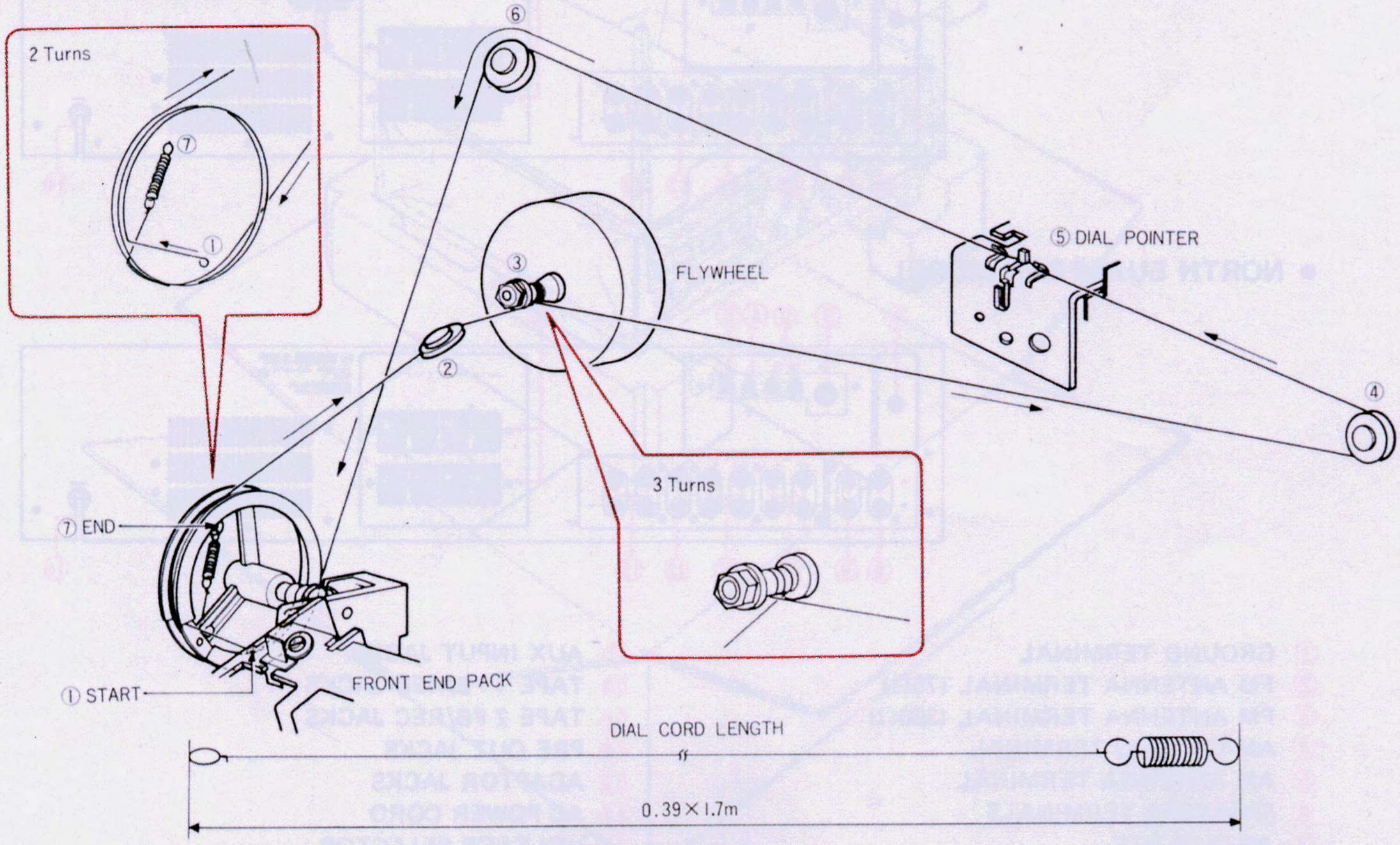
## ■INTERNAL VIEW

TOP VIEW




① TUNER CIRCUIT BOARD (1)
② LAMP CIRCUIT BOARD
③ LENS HOLDER (DIAL LAMP)
④ POWER CIRCUIT BOARD (2): TONE CONTROL
⑤ LEAD PIPE (DIAL POINTER LAMP)
⑥ POWER CIRCUIT BOARD (1)
⑦ C905, C906
⑧ FRONT END PACK
⑨ TUNER CIRCUIT BOARD (2): ANT.
⑩ POWER CIRCUIT BOARD (3): EQ
⑪ MAIN CIRCUIT BOARD (RIGHT)
⑫ POWER CIRCUIT BOARD (4): SPEAKERS
⑬ HEAT SINK
⑭ MAIN CIRCUIT BOARD (LEFT)
⑮ POWER TRANSFORMER

## ■DIAL MECHANISHM



## ■PARTIAL DISASSEMBLY

### TOP COVER REMOVAL

Remove the 4 screws.



Photo 1

### BOTTOM COVER REMOVAL

Remove the screws ① to ⑭.

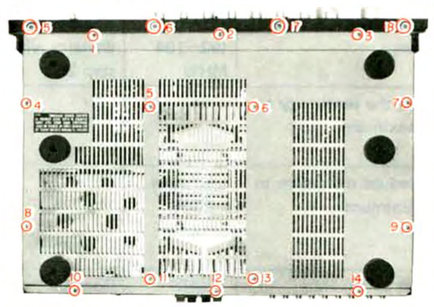


Photo 3

### LENS HOLDER and LAMP C.BOARD REMOVAL

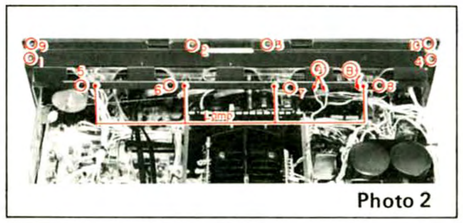


Photo 2

1. Detach the lead wires which are attached to the terminal Ⓐ in photo 2.
2. Remove the screws ① to ④ in photo 2 and then remove the lens holder with the lamp circuit board.
3. Remove the plastic rivets ⑤ to ⑧ in photo 2 and then the lamp circuit board is detached from the lens holder.
4. When exchanging the lamp, use a ⊖ driver, rotating counterclockwise ( B ).

### FRONT PANEL REMOVAL

1. Pull out the VOLUME, BALANCE, TREBLE, PRESENCE, BASS and LOUDNESS knobs.
2. Use a hexagonal wrench to loosen the set screws of the PHONO, INPUT, REC OUT and SPEAKER knobs, and pull out the knobs.
3. Use a hexagonal wrench (over 60mm length) to loosen the set screws in photo 4, and pull out the TUNING knob. When there is not the hexagonal wrench, pull out the dial scale from the front panel and remove the back panel (remove the screws ① and ② in photo 6) and then loosen the set screws.
4. Remove the screws ⑮ to ⑱ in photo 3.
5. Remove the screws ① to ③ in photo 5.
6. Remove the screws ⑨ and ⑩ in photo 2.
7. Disconnect the lead wires of the LEVEL-L, LEVEL-R/SIGNAL Q and TUNING meter.
8. Pull out the front panel toward you.

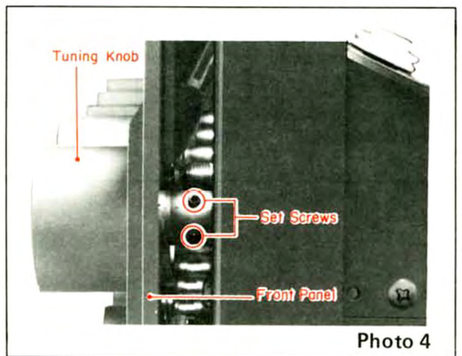



Photo 4

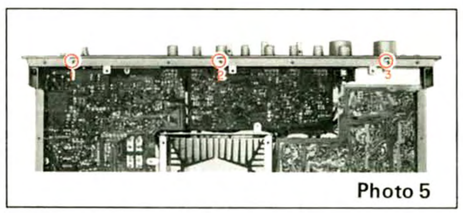


Photo 5

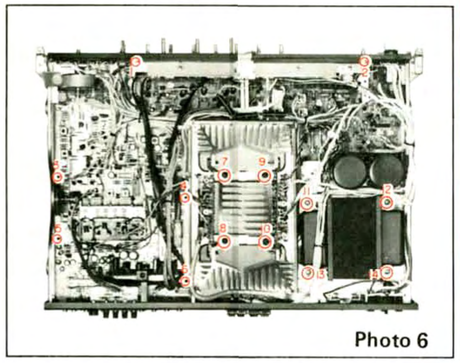


Photo 6

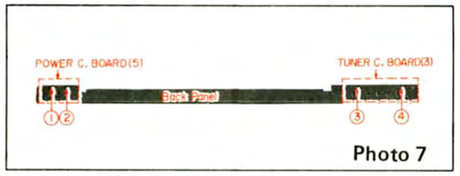



Photo 7

### BACK PANEL REMOVAL

Remove the screws ① and ② in photo 6.

### TUNER C.BOARD-3, POWER C.BOARD-5 (LED) REMOVAL

Remove the plastic rivets ① to ④ in photo 7.

### POWER SWITCH REMOVAL

Remove the screws ① and ② in photo 8.

### POWER C.BOARD-6 (VOLUME) REMOVAL

Remove the nuts Ⓐ and Ⓑ in photo 8.

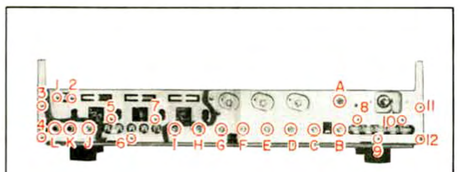


Photo 8

### SUB CHASSIS REMOVAL

1. Remove the pilot lamps from the sub chassis.
2. Disconnect the wires of REC OUT, INPUT and PHONO selector switches.
3. Remove the screws ① to ⑫ in photo 8.
4. Remove the nuts Ⓐ to Ⓛ in photo 8.

### POWER TRANSFORMER REMOVAL

Remove the screws ⑪ to ⑭ in photo 6.

### TUNER C.BOARD-2 (ANTENNA) REMOVAL

Remove the screws ① to ③ in photo 9.

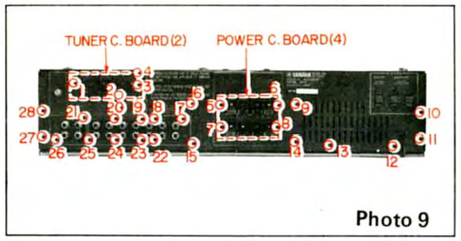


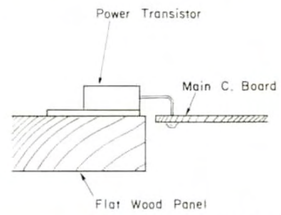

Photo 9

### REAR PANEL REMOVAL

Remove the screws ① to ㉘ in photo 9.

### TUNER C.BOARD-1 REMOVAL

1. Disconnect the wires of REC OUT, INPUT and PHONO selector switches.
2. Remove the screws ③ to ⑥ in photo 6.
3. Remove the screws ⑧ to ⑩ in photo 8.




*** Care to exercise when replacing Power Transistor**
**Be sure to keep the board and the radiator panel in parallel when making replacement of Power Transistor. Apply a flat batten as shown in the figure for convenience when installing Power Transistor.**

### POWER C.BOARD-1 REMOVAL

Remove the screws ① to ④ in photo 11.

### POWER C.BOARD-2 REMOVAL

Remove the screw ⑤ in photo 11.

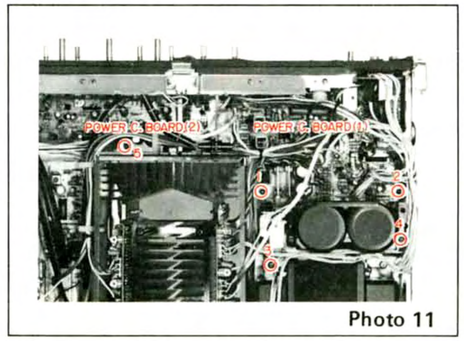



Photo 11

### MAIN C.BOARD REMOVAL

1. Remove the screws ⑦ to ⑩ in photo 6 and the main circuit board is removed with the heat sink.
2. Remove the 11 screws in photo 10 and main circuit board is detached from the heat sink.

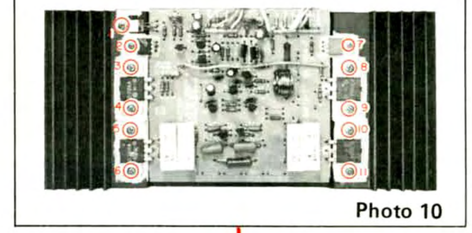


Photo 10

### POWER C.BOARD-4 (SPEAKER) REMOVAL

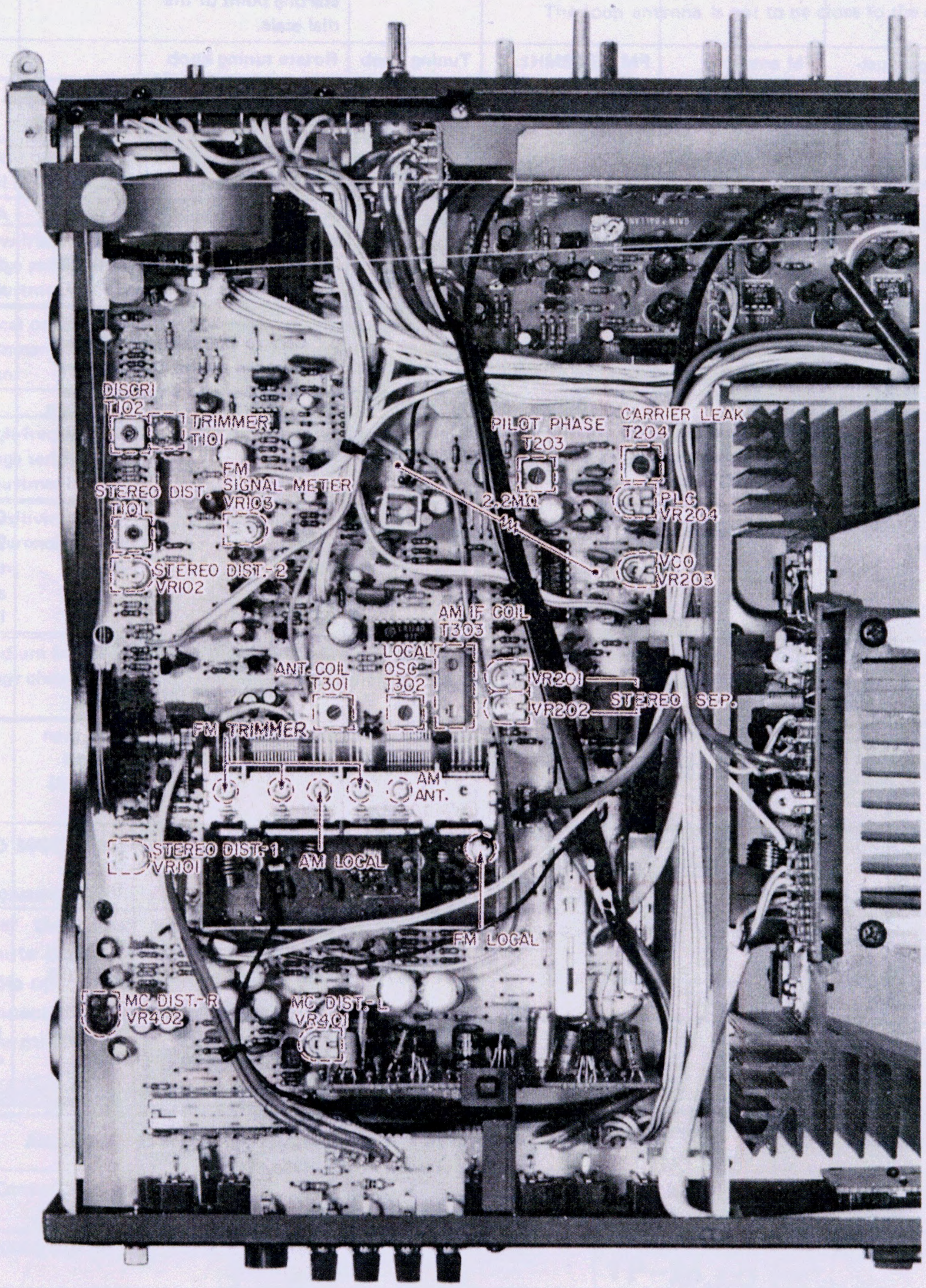
Remove the screws ⑤ to ⑧ in photo 9.

*** Care to exercise when drawing Main Circuit Board out**
**Remove a wire bundle, connected to the board, from the cable clip and draw the board out. Do not fail to place an insulator beneath the main circuit board before making adjustment or repair.**

# ■MEASUREMENT and ADJUSTMENT

## 1. FM tuner overall adjustment

1. Set the switches to the following positions.
   TUNER . . . . . FM
   IF MODE . . . . . LOCAL
   FM MUTING/OTS . . . . . OFF
2. When adjusting the steps except step 11, use a 19kHz low pass filter.
3. Adjustment is to be carried out only after 5 minutes.
4. Abbreviation of instruments
   FM SG : FM signal generator
   OSC : Oscilloscope
   D.M : Digital multimeter
   DIST.M : Distortion meter
   F.C : Frequency counter



| Step | Adjustment items | Terminals to be connected | Instrument required | Adjustment location | Adjustment method | Rating or standard | Remarks |
|---|---|---|---|---|---|---|---|
| 1 | Discriminator balance | | | T-102 discriminator coil | Move core until tuning meter pointer deflects to 0 with noise at detuned point near 98MHz. | Check that meter pointer mechanically points to 0 when power switch is set OFF. | |
| 2 | Pointer alignment | | | Tuning knob pointer | Rotate the tuning knob and align pointer with the starting point of the dial scale. | Less than ±1mm | |
| 3 | Tracking adjustment I | FM antenna terminal REC OUT terminal | FM SG 98MHz 100% MONO 1kHz 60dBμ OSC D.M. DIST.M | Tuning knob Local oscillator trimmer | Rotate tuning knob and align pointer with 98MHz on dial scale. Rotate trimmer and set to center of tuning meter. | | |
| 4 | Tracking adjustment II | —do.— | —do.— | Local oscillator trimmer | Adjust deviation all over the frequency range. | Less than ±2mm (92~104 MHz) | Adjust only when pointer deviates with step 2. |
| 5 | FRONT END sensitivity adjustment | —do.— | —do.— weak input level | FM tuning trimmer | Set the sensitivity to maximum. | | |
| 6 | Monaural distortion adjustment | —do.— | —do.— 98MHz 100% Mono 1kHz 60dBμ | TC-101 trimmer | Reduce distortion to minimum. | Less than —63dB (—66dB) | |
| 7 | VCO adjustment | —do.— | nonmodulation F.C —do.— | VCO VR | Set to 19kHz. | 19kHz ±20Hz (5Hz) | Connect 2.2MΩ between +13V and 14 pin of IC201. |
| 8 | Pilot phase adjustment | —do.— | —do.— stereo (L-R) 1kHz 100% | T203 (GE6057) | Set the output to maximum. | | |
| 9 | Stereo distortion adjustment | —do.— | —do.— stereo L 1kHz 100% | DIST.1 VR DIST.2 VR T101 (GE10026) | Reduce distortion to minimum. | Less than —61dB (—66dB) | |
| 10 | Stereo separation adjustment | —do.— | —do.— stereo L, R 1kHz 100% | SEP. VR | Set the separation to maximum. | More than 50dB (55dB) | |
| 11 | Carrier leakage adjustment | —do.— | —do.— stereo pilot 9% | PLC VR T204 (GE6057) | Observe waveforms on OSC and adjust so that level is reduced to minimum. | Less than —70dB (—75dB) | |
| 12 | Signal meter full scale adjustment | —do.— | —do.— nonmodulation 80dBμ | FM VR | Adjust so that pointer is within rated range. | 70~80 (75) | Less than 5 at detuned point |

## 2. AM tuner adjustment

1. Set the switch to the following position.
   TUNER . . . . . AM
2. Proceed with the AM section adjustments after having finished the FM section adjustment.
3. The quasi-antenna circuit for AM section adjustment.

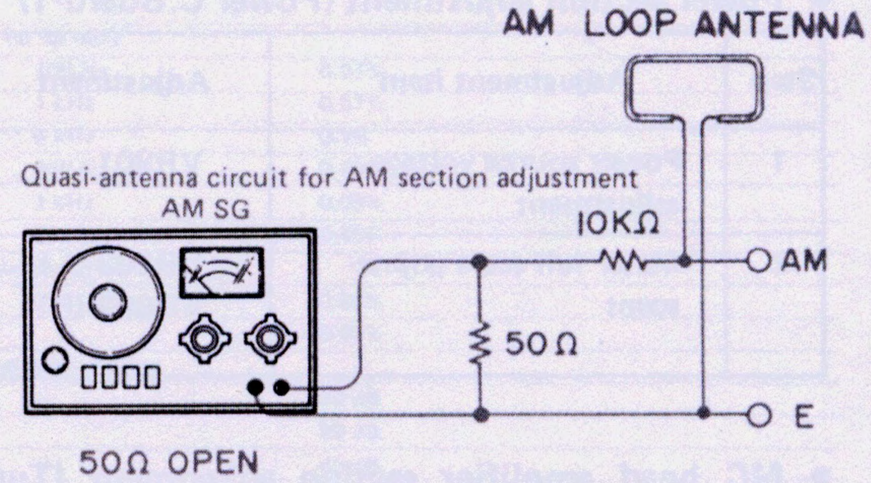



Fig. 1

Output level shows the 50Ω load terminal.
The loop antenna is not to be close to the metal parts.

| Step | Adjustment item | Terminals to be connected | Instrument required | Adjustment location | Adjustment method | Rating or standard |
|---|---|---|---|---|---|---|
| 1 | Local oscillator coil adjustment | Output L or R | AM signal generator 600kHz, 60dBμ | Tuning knob T302 (GE 6013) | Align pointer with 600kHz using tuning knob, rotate coil core and adjust for a maximum signal quality meter deflection. | |
| 2 | Low-frequency range sensitivity adjustment | Same as step 1 | Same as step 1 | T301 (GE 10023) | Adjust for a maximum signal meter pointer deflection at same tuning point as under step 1. | |
| 3 | Local oscillator trimmer adjustment | Same as step 1 | AM signal generator 1400kHz, 60dBμ | Tuning knob front end local oscillator trimmer | Align pointer with 1400kHz using tuning knob, rotate trimmer and set for a maximum signal meter pointer deflection. | |
| 4 | High-frequency range sensitivity adjustment | Same as step 1 | Same as step 3 | Front end AM ANT trimmer | Adjust for a maximum signal quality meter pointer deflection at step 3 tuning point. | |
| 5 | Sensitivity difference adjustment | Same as step 1 | AM signal generator 600kHz, 1400kHz 60dBμ | Repeat steps 1 to 4 | | Scale deviation: less than ±1.5mm for 600kHz, 1400kHz |
| 6 | Medium frequency range check | Same as step 1 | AM signal generator 1000kHz, 60dBμ | Tuning knob | Set for maximum signal quality meter pointer deflection. | Scale deviation: less than ±2mm |

## 3. Audio section adjustment

**Before measurement**

1. After the power switch is pushed ON, wait 1 minute before measuring, to be sure of the most stable operation.
2. Connect dummy load resistor (8Ω) to the speaker terminals.

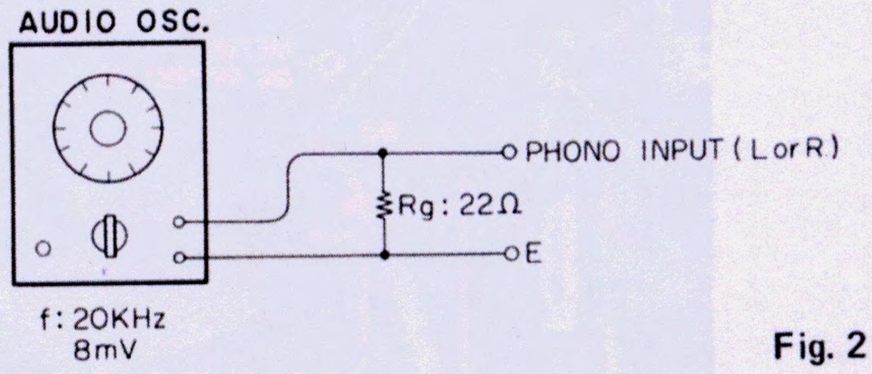



Fig. 2

- **Main amplifier section adjustment (Main C.Board)**

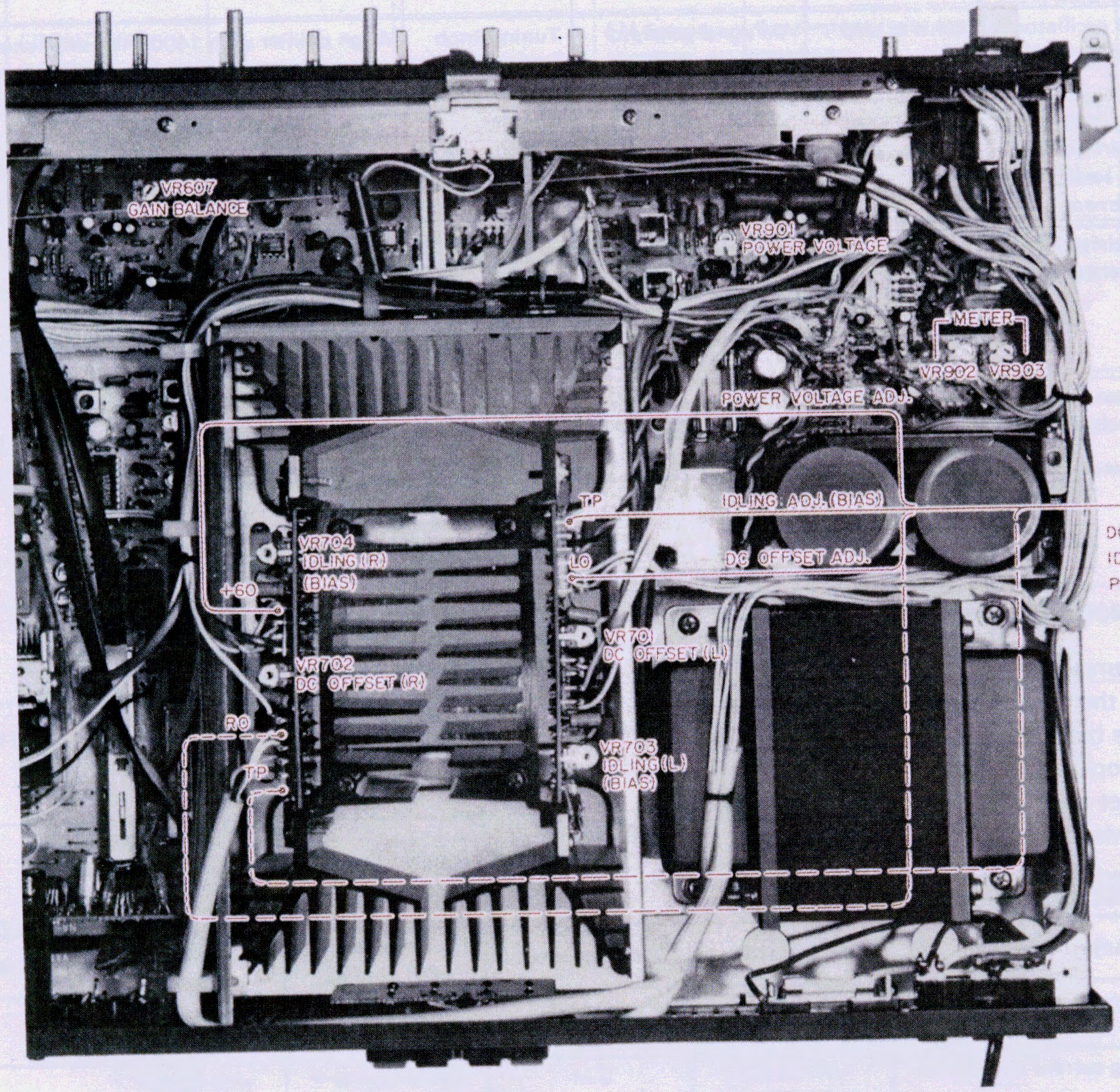
| Step | Adjustment item | Adjustment | Instruments | Terminals test points | Remarks or standard |
|---|---|---|---|---|---|
| 1 | Center DC offset voltage | VR701 (L)<br>VR702 (R) | D.M | LO, E (L)<br>RO, E (R) | 0 ±10mV |
| 2 | Idling current adjustment | VR703 (L)<br>VR704 (R) | D.M | ~~E TP (L, R)~~<br>TP-RO, LO (L, R) | −10 ±2mV |

- **Power section adjustment (Power C.Board-1)**

| Step | Adjustment item | Adjustment | Instruments | Terminals test points | Remarks or standard |
|---|---|---|---|---|---|
| 1 | Power source voltage adjustment | VR901 | D.M | E-+60 | 60 ±2V |
| 2 | Meter full scale adjustment | VR902 (L)<br>VR903 (R) | OSC | | At 8Ω load, low output power, the pointer of level meter points to 10W. |

- **MC head amplifier section adjustment (Tuner C. Board-1)**
  1. Set the switches to the following positions.
     PHONO . . . . . MC AMP
     INPUT . . . . . PHONO
     REC OUT . . . . . PHONO
  2. Connect the audio frequency oscillator to the PHONO terminals as shown in Fig. 2.
  3. Connect the distortion meter to REC OUT terminals and adjust VR401 (L) and VR402 (R) so that distortion is reduced to minimum.

- **Gain balance adjustment (Power C.Board-2)**
  1. Apply 1kHz sine wave (100mV) to the AUX terminals (L and R).
  2. Adjust VR607 so that the difference between L channel output level and R channel one is within 0.2dB at speaker terminal.

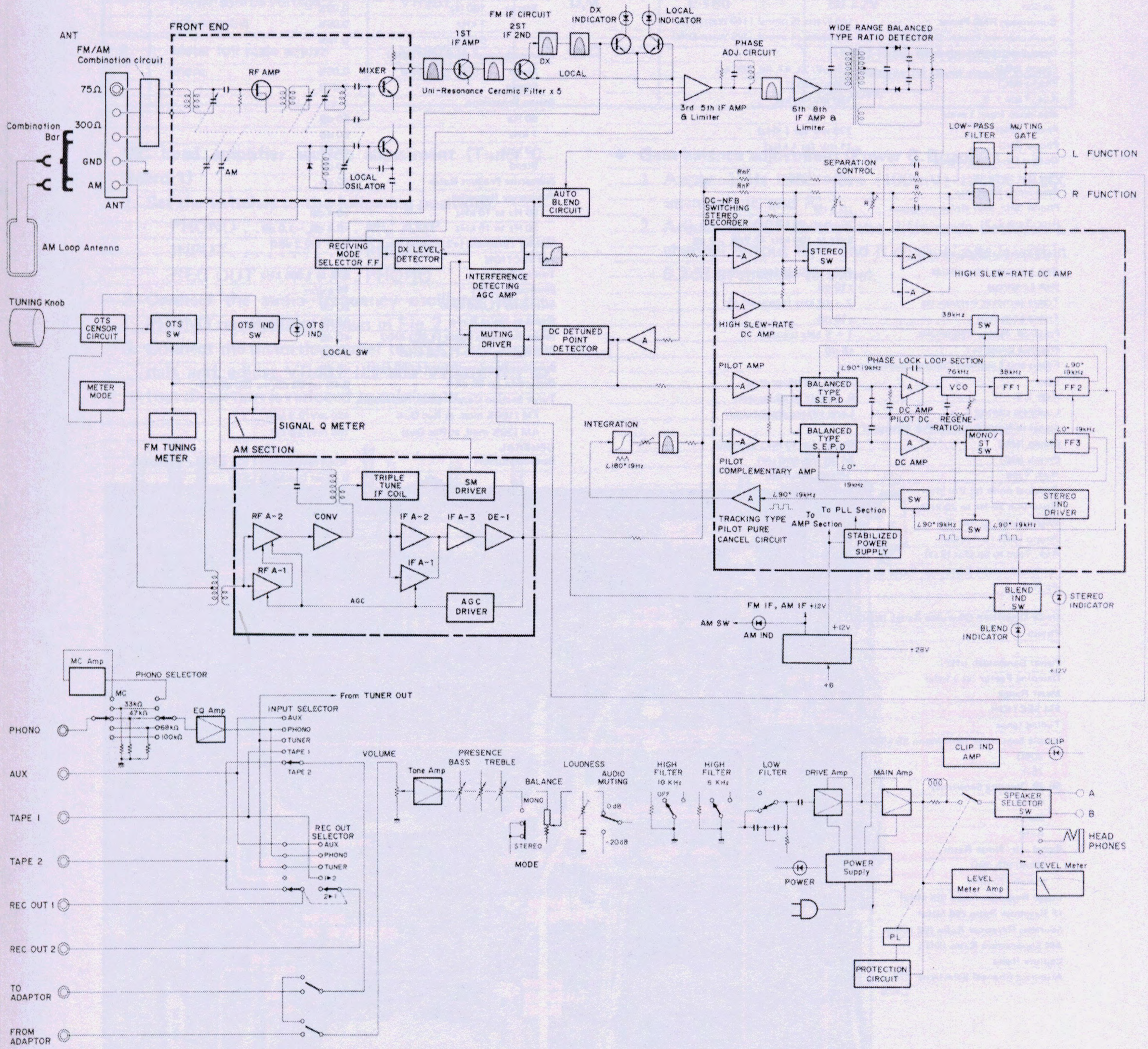


# SPECIFICATIONS

| | | |
|---|---|---|
| **AUDIO SECTION** | | |
| **Minimum RMS Output per Channel** | | |
| 120 Watts (8 ohms) from 20 to 20,000Hz at no more than 0.002% Total Harmonic Distortion. | | |
| 140 Watts (4 ohms) from 20 to 20,000Hz at no more than 0.002% Total Harmonic Distortion. | | |
| **Continuous RMS Power** | 140 Watts (8 ohms) (140 Watts DIN) | |
| (both channels driven, 1kHz) | 160 Watts (4 ohms) (180 Watts DIN) | |
| **Input Sensitivity/Impedance** | | |
| Phono (MM) | 2.5 mV/33, 47, 68, 100 kΩ | |
| Phono (MC) | 100 μV/50 Ω | |
| Aux, Tape 1, 2 | 120 mV/40 kΩ | |
| **Maximum Input Levels** | | |
| Phono (MM) | 270 mV (at 1 kHz) | |
| Phono (MC) | 11 mV (at 1 kHz) | |
| **Output Level/Impedance** | | |
| Rec Out terminals | 120 mV/220 Ω | |
| **Frequency Response** | | |
| Phono (MM, MC) RIAA deviation | ±0.2 dB | |
| Aux, Tape 1, 2 | 20 Hz to 20 kHz ±0.2 dB | |
| | 5 Hz to 100 kHz +0.2dB, −2 dB | |
| **Tone Control Characteristics** | | |
| Bass turnover frequencies | 100 ~ 500 Hz (continuous) | |
| Bass boost/cut | ±10 dB | |
| Treble turnover frequencies | 2 ~ 10 kHz (continuous) | |
| Treble boost/cut | ±10 dB | |
| Presence center frequencies | 1 ~ 5 kHz (center) | |
| Presence boost/cut | ±6 dB | |
| **Filters and Loudness Control Characteristics** | | |
| Low | 25 Hz (12 dB/octave) | |
| High 1, 2 | 6, 10 kHz (6 dB/octave) | |
| Loudness control | Level-related equalization | |
| **Signal-to-Noise Ratio (IHF-A Network)** | | |
| Phono (MM) | 95 dB (for 10 mV, shorted) | |
| Phono (MC) | 86 dB (for 500 μV) | |
| Aux, Tape | 100 dB (shorted) | |
| Residual noise (at Vol Min) | 0.22 mV | |
| **Distortion 20 Hz to 20 kHz** | | |
| Phono (MM) to Rec Out | 0.01% 3V output | |
| Phono (MC) to Rec Out | 0.05% 3V output | |
| Aux, Tape to Sp Out (8 Ω) | 0.01% 60 W/8 Ω | |
| **Intermodulation Distortion Ratio 20 Hz to 20 kHz (70 Hz : 7 kHz = 4 : 1)** | | |
| Sp Out | 0.02% 120 W/8 Ω | |
| | 0.01% 60 W/8 Ω | |
| **Noise-Distortion Clearance Range (NDCR) for 0.1% into 8 Ω at 1 kHz** | | |
| Phono | MC 100 mW to 120W | |
| | MM 20 mW to 120W | |
| **Power Bandwidth (IHF)** | 10 Hz to 50 kHz (8 Ω, 0.05%) | |
| **Damping Factor (at 1 kHz)** | 40 into 8 Ω, 1 kHz | |
| **Meter Range** | 0.01 W to 300 W | |
| **FM SECTION** | | |
| **Tuning range** | 87.6 to 108 MHz | |
| **Usable Sensitivity (IHF Mono 98 MHz)** | | |
| 300Ω | 1.6 μV/9.3 dBf (30% Dev.) | |
| 75Ω | 0.8 μV/9.3 dBf | |
| **50 dB Quieting Sensitivity** | | |
| Mono | 3.2 μV/15.3 dBf | |
| Stereo | 35 μV/36.1 dBf | |
| Auto | 25 μV/33.2 dBf | |
| **Signal - to - Noise Ratio** | | |
| Mono (65 dBf) | 90 dB | |
| Stereo (75 dBf) | 84 dB | |
| **Image Response Ratio (98 MHz)** | 80 dB | |
| **IF Response Ratio (98 MHz)** | 100 dB | |
| **Spurious Response Ratio (98 MHz)** | 100 dB | |
| **AM Suppression Ratio (IHF)** | 60 dB | |
| **Capture Ratio** | 1.5 dB | |
| **Alternate Channel Selectivity** DX | 82 dB | |
| Local | 48 dB | |
| **Distortion (at 65 dBf)** | | |
| Mono 100 Hz | 0.07% | |
| 1 kHz | 0.07% | |
| 6 kHz | 0.1% | |
| Stereo 100 Hz | 0.09% | |
| 1 kHz | 0.09% | |
| 6 kHz | 0.15% | |
| **Intermodulation Distortion (IHF)** | | |
| Mono | 0.05% | |
| Stereo | 0.07% | |
| **Stereo Separation** | | |
| 50 Hz | 50 dB | |
| 1 kHz | 50 dB | |
| 10 kHz | 45 dB | |
| Blend | 10 dB | |
| **Subcarrier Product Ratio** | 70 dB | |
| **Frequency Response** | | |
| 50 Hz to 10 kHz | ±0.4 dB | |
| 30 Hz to 15 kHz | +0.4 dB, −1.0 dB | |
| **Muting Threshold (±22.5 kHz dev.)** | 5 μV (19.2 dBf) | |
| **AM SECTION** | | |
| **Tuning Range** | 525 to 1,605 kHz | |
| **Sensitivity (IHF)** | 15 μV/m | |
| **Selectivity (1,000 kHz)** | 30 dB | |
| **Signal-to-Noise Ratio** | 50 dB (at 80 dB/m) | |
| **Image Response Ratio (1,000 kHz)** | 40 dB | |
| **IF Response Ratio (1,000 kHz)** | 35 dB | |
| **Spurious Response Ratio (1,000 kHz)** | 60 dB | |
| **Distortion (at 65 dBf)** | 0.4% (at 80 dB/m, 120 dB/m) | |
| **Tuner Section Output Level/Impedance** | | |
| FM (100% mod. at Rec Out) | 450 mV/3.9 kΩ | |
| AM (30% mod. at Rec Out) | 150 mV/3.9 kΩ | |
| **GENERAL** | | |
| **Semidonductors** | 102 Transistors, 14 ICs, 4 FETs, 31 Diodes, | |
| | 9 Zener Diodes, 9 LEDs | |
| **Power Supplies** | U.S. and Canadian Models 120V, 60Hz | |
| | General Model 110/120/220/240V, 50/60Hz | |
| | Australian and British Models 240V, 50Hz | |
| | N. European Model 220V, 50Hz | |
| **Power Consumption** | U.S.A. Model 600W | |
| | Canadian Model 800VA | |
| | General Model 600W | |
| | Australian and N. European Models 1000W | |
| | British Model 1200W | |
| **AC Outlets** | U.S., Canadian and General Models | |
| | Switched: 200W max. | |
| | Unswitched: 200W max. Total. | |
| **Dimensions (W x H x D)** | U.S. and Canadian Models | |
| | 580 x 167 x 407 mm (23" x 6-5/8" x 16-1/8") | |
| | General, N. European, British and Australian Models | |
| | 560 x 151 x 407 mm (22" x 6" x 16-1/8") | |
| **Weight** | U.S. and Canadian Models | |
| | 20.4kg (45 lbs) | |
| | General, N. European, British and Australian Models | |
| | 18.9kg (41 lb 10 oz) | |

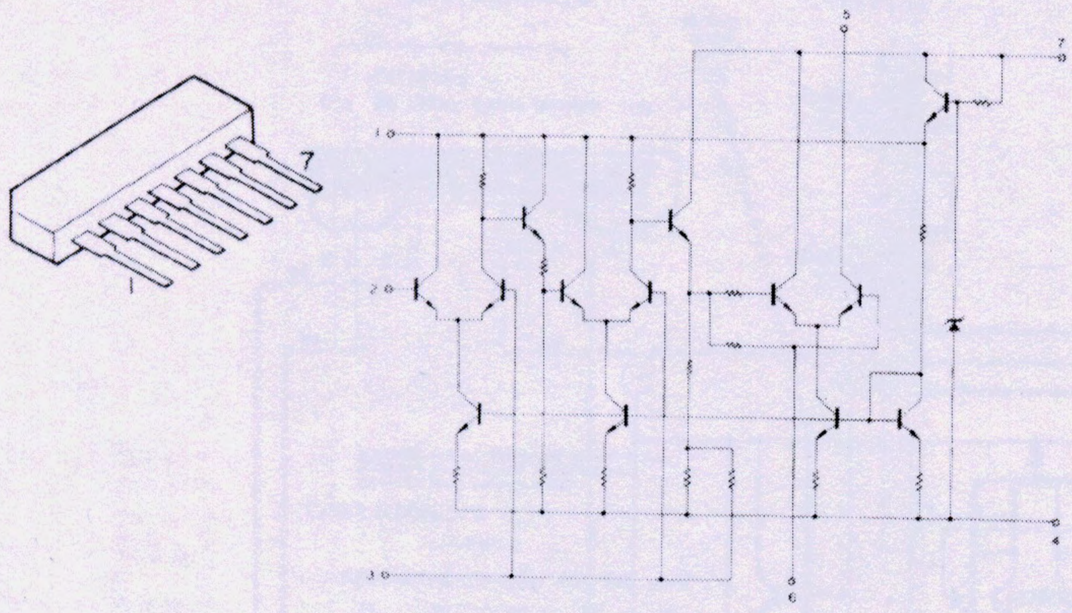
*Specifications subject to change without notice.*

# ■BLOCK DIAGAM

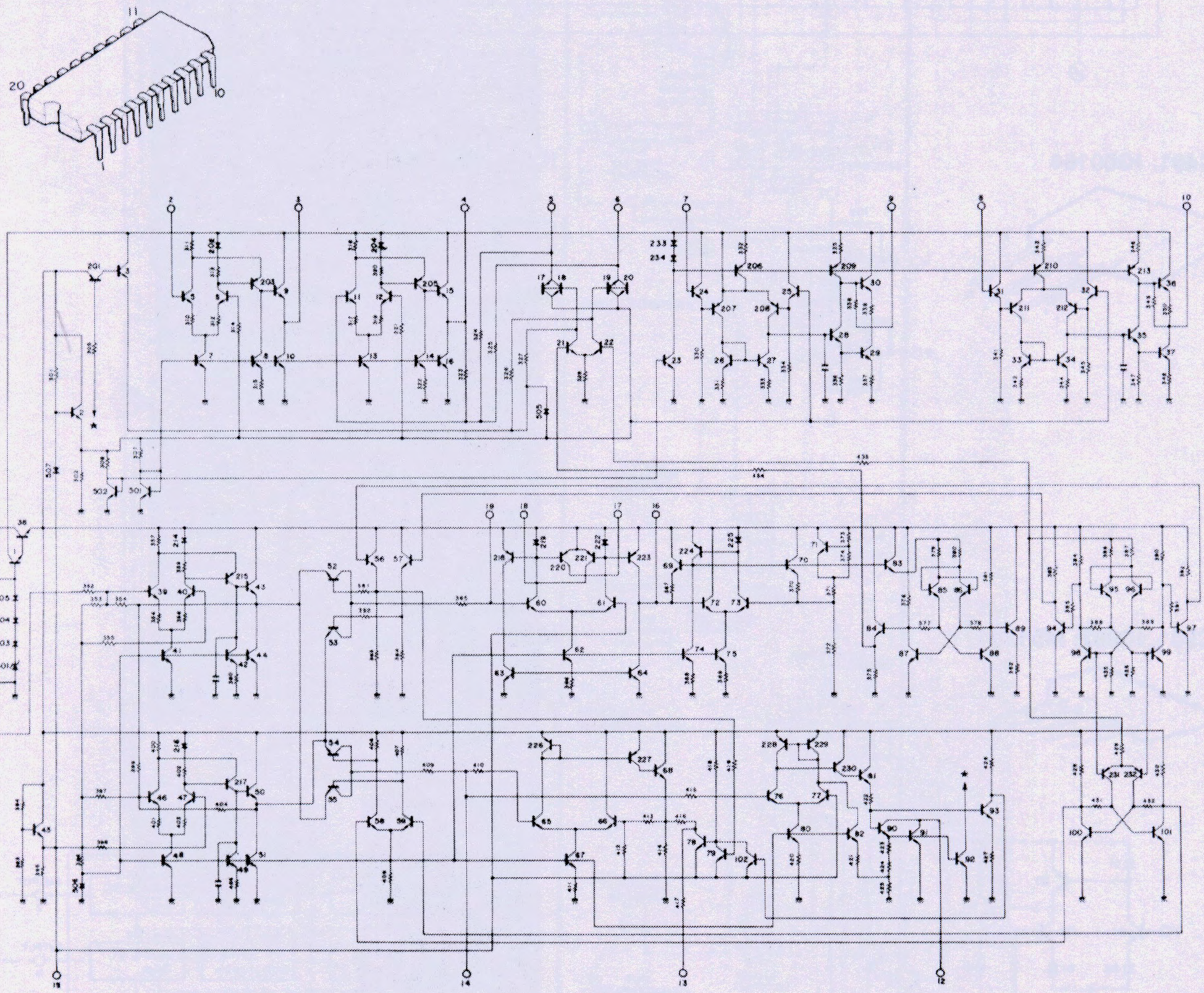


# ■INTEGRATED CIRCUITS

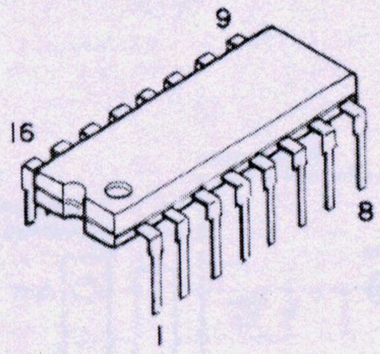
IC101, IC102: μPC577H

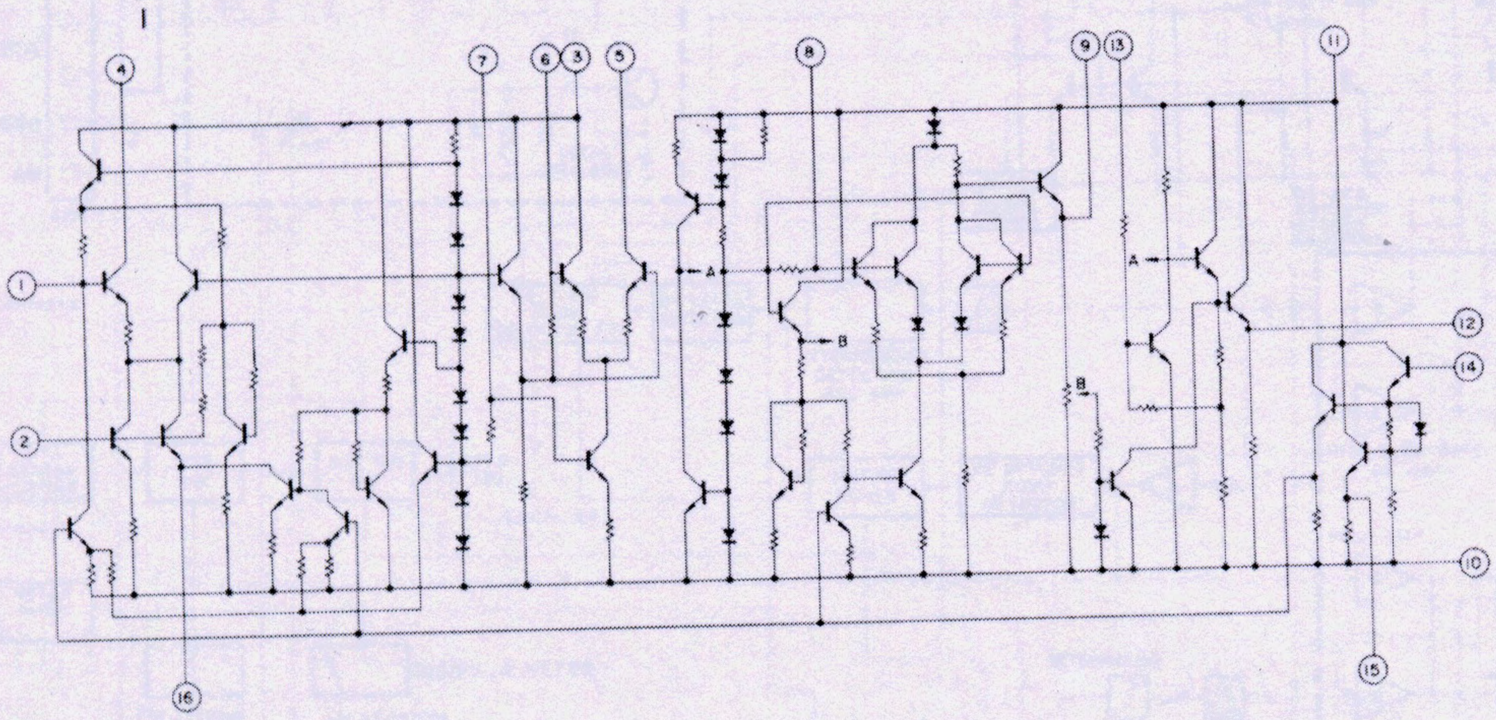


IC201: IG02920

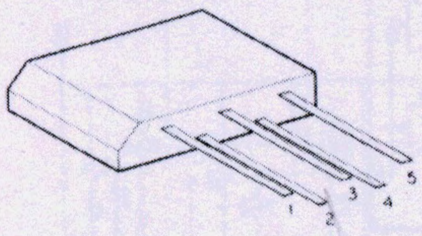


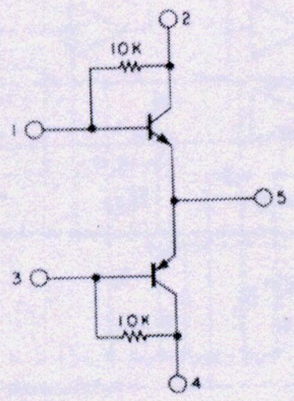
## IC301: LA1240



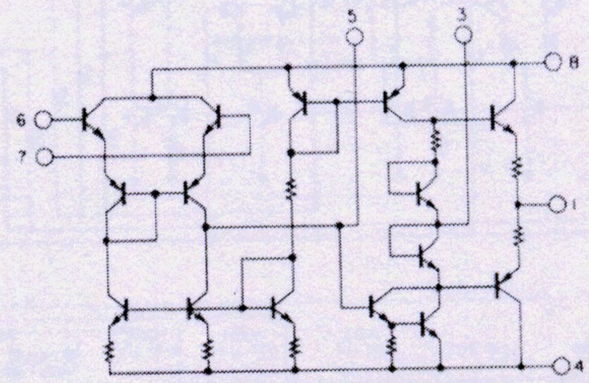

## IC401: IG00164



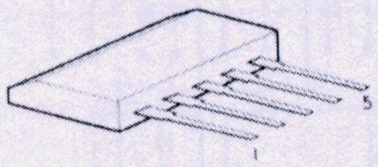



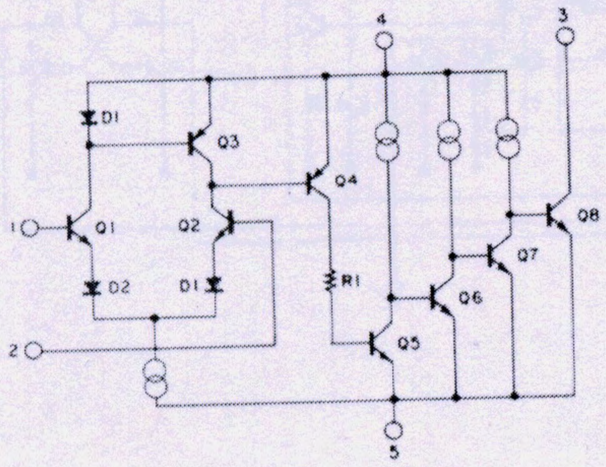

## IC601, IC602: HA1457



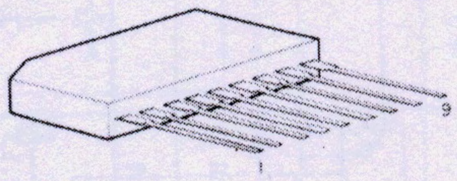



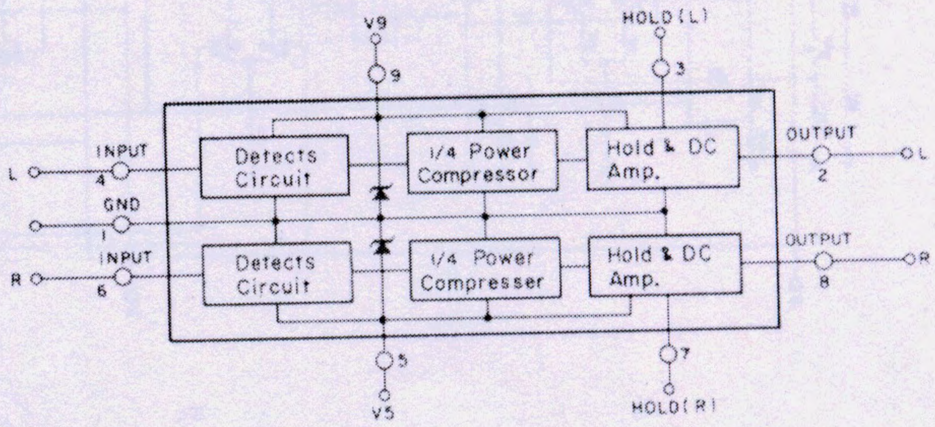

## IC901, IC902: M51204




## IC903: TA7318



# ■WIRING DIAGRAM

POWER SUPPLY
SIGNAL PATH
GROUND
THE OTHER PATTERNS

TUNER C.BOARD (3)

FM
IF MODE
OTS DX LOCAL BLEND STEREO AM

TUNING KNOB

POWER C.BOARD (6)

VOLUME
BALANCE

DIAL POINTER LAMP
LAMP C.BOARD NA07245
DIAL LAMP

POWER C.BOARD(2)

TREBLE PRESENCE BASS

TONE CONTROL

OUTPUT LEVEL

METER LAMP
FM TUNING
METER LAMP
RIGHT SIGNAL QUALITY
METER LAMP
LEFT
METER LAMP

POWER C.BOARD(5)

OVERLOAD I/2 POWER POWER

POWER C.BOARD(1)

NA07279: U.S. and Canadian Models
NA07280: North European and British Models
NA07281: General and Australian Models

LOUDNESS
AUDIO MUTING
FILTER HIGH LOW
METER
SPEAKER
PHONES B A

LOUDNESS, FILTERS
PROTECTOR
POWER SUPPLY

POWER SWITCH (KA80107)

NA07283: U.S.A, Canadian and General Models
NA07284: Australian and British Models
NA07285: North European Model

TUNER C.BOARD(1)

FM
TUNER MUTING/OTS I.F MODE ADAPTOR MODE

CONTROL
DISCRIMINATOR
PILOT CANCEL
MPX
STEREO SEP. ADJ.
FM TRIMMER
AM LOCAL
AM ANT.
FM LOCAL
FRONT END
MC DIST.-L VR401
MC HEAD AMP.

PHONO AUX
INPUT
TAPE PB REC OUT TAPE PB REC OUT FROM TO
TAPE 1 TAPE 2 PRE OUT ADAPTOR

POWER C.BOARD(1) VOLTAGE TABLE

| | IC901 | IC902 | IC903 |
|---|---|---|---|
| 1 | 0 | 0 | 8.5 |
| 2 | 0 | 0 | 0 |
| 3 | 12.6 | 12.6 | 2.1 |
| 4 | 12.7 | 12.7 | 8.4 |
| 5 | -7.3 | -7.3 | 0 |
| 6 | | | 8.4 |
| 7 | | | 2.1 |
| 8 | | | 0 |
| 9 | | | 17.1 |

| | TR901 | TR902 | TR903 | TR904 | TR905 | TR906 | TR907 | TR908 | TR909 | TR910 | TR911 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B | 53.4 | 77.7 | -78.9 | 60.4 | -60.9 | 0.6 | +6.5 | 0 | 0 | 1.4 | 0.8 |
| C | 54.0 | 60.4 | -60.9 | 79.0 | -79.9 | 43.8 | -45.5 | 1.4 | -60.4 | 0.9 | 0.9 |
| E | 54.1 | 78.4 | -79.5 | 59.8 | -60.4 | 0 | +6.0 | 0 | 0.5 | 0.8 | 0 |

| | TR915 | TR916 | TR917 | TR918 | TR919 | TR920 | TR921 |
|---|---|---|---|---|---|---|---|
| B | 21.3 | 20.8 | 13.2 | 0 | 12.6 | -3.8 | 12.1 |
| C | 30.2 | 30.2 | 0 | 11.2 | 0 | -4.2 | 12.6 |
| E | 20.8 | 21.3 | 12.7 | 0.2 | 12.7 | -4.2 | 12.7 |

| | TR912 | TR913 | TR914 |
|---|---|---|---|
| D | 0 | 0 | 0 |
| G | 0.7 | 0.7 | -3.8 |
| S | 0 | 0 | 0 |

MAIN C.BOARD-R

POWER DRIVE
PRE DRIVE
VR704 IDLING (Bias)
VR702 DC OFFSET

MAIN C.BOARD-L

VR701 DC OFFSET
VR703 IDLING (Bias)
PRE DRIVE
POWER DRIVE

POWER TRANSFORMER

GA62620: U.S.A Model
GA62630: North European Model
GA62640: General Model
GA62650: Australian and British Models

GENERAL MODEL

POWER SWITCH (KA80069)
To POWER TRANSFORMER (GA62640)
VOLTAGE SELECTOR (LB20148)
FUSE 5AT 250V (KB00040)
AC OUTLETS (LB60298)
AC Cord (MG00078)
FUSE 10AT 125 V (KB00018)
FUSE HOLDER (LB20130)

NORTH EUROPEAN MODEL

POWER SWITCH (KA80069)
To POWER TRANSFORMER (GA62630)
AC Cord (MG00091)
Terminal (LA00295)
FUSE 4AT 250V (KB00079)
FUSE HOLDER (LB20147)

AUSTRALIAN and BRITISH MODEL

POWER SWITCH (KA80069)
To POWER TRANSFORMER (GA62650)
AC Cord
Terminal (LA00295)
FUSE
A: 5AT 250V (KB00040)
B: 4AT 250V (KB00079)
FUSE HOLDER
A: (LB20130)
B: (LB20147)
AC CORD
A: (MG00092)
B: (MZ07289)

U.S. and CANADIAN MODELS

EARTH I/2P 2.2M
FUSE HOLDER (LB00139)
FUSE 10A 250V (KB00139)
SWITCHED UNSWITCHED
AC OUTLETS (LB60298)
AC CORD (MG00084)

TUNER C.BOARD(2)

75Ω UNBAL. 300Ω BAL. GND AM ANT.
FM ANT.

POWER C.BOARD(3)

EQUALIZER

TUNER C.BOARD(1) IC VOLTAGE TABLE
( ): Detuning
[ ]: AM

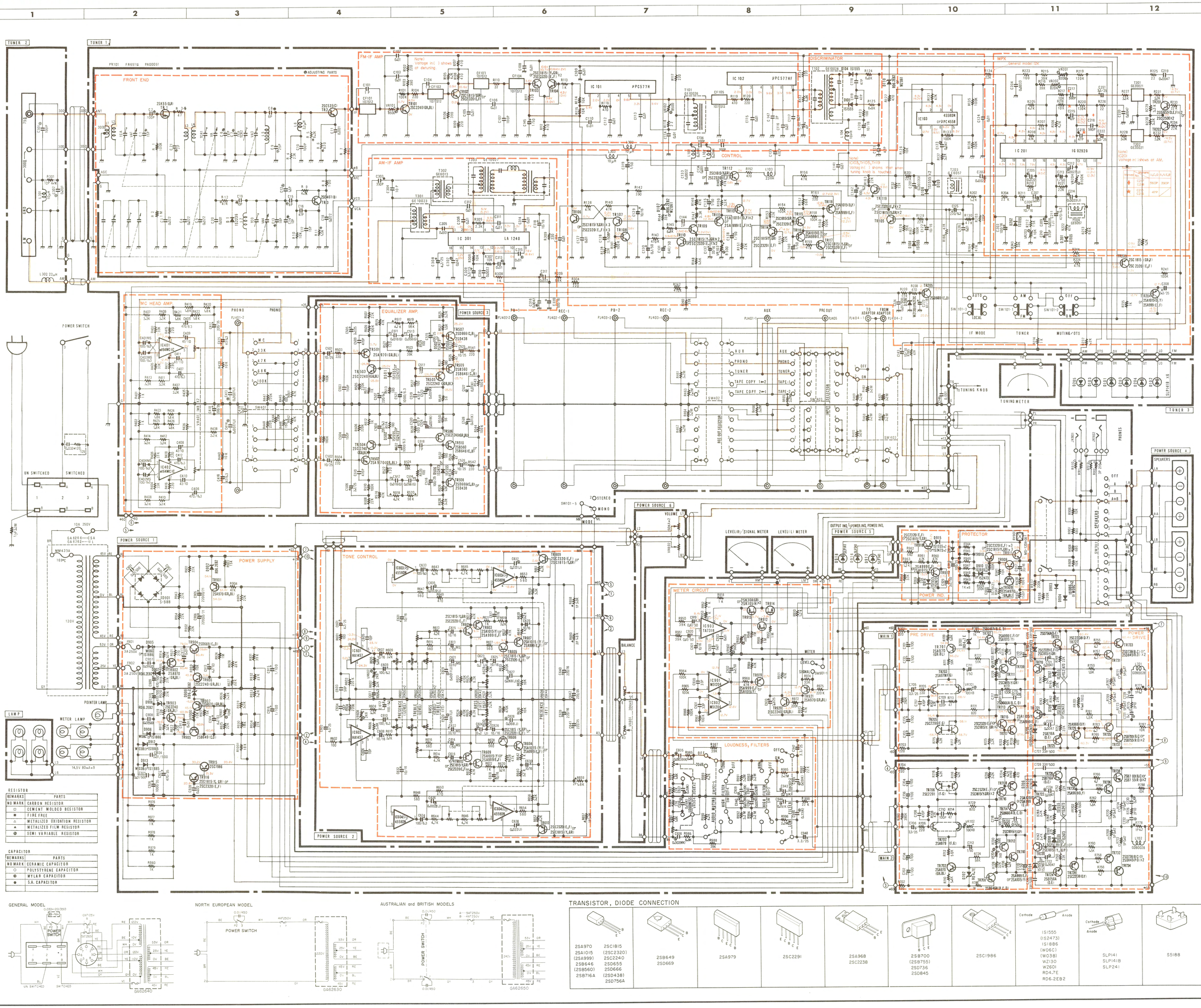
| | IC103 | IC201 | IC301 |
|---|---|---|---|
| 1 | 4.3(4.0) | 12.7 | (4.6) |
| 2 | 4.3 | 4.3 | (1.8) |
| 3 | 4.3 | 4.3 | (0)(8.6) |
| 4 | 0 | 4.3 | (5.1)(5.2) |
| 5 | 6.3 | 4.3 | (8.5)(8.6) |
| 6 | 6.2 | 4.3 | (3.3) |
| 7 | 1.5(6.1) | 4.3 | (1.3) |
| 8 | 12.7 | 4.3 | (2.7) |
| 9 | | 4.1 (3.9) (4.0) | (7.6)(6.6) |
| 10 | | 4.1 (3.9) (4.0) | (0) |
| 11 | | 0 | (9.9) |
| 12 | | 10.9(11.2) | (2.2)(1.6) |
| 13 | | 4.7 | (0.7) |
| 14 | | 4.3 | (2.1)(1.5) |
| 15 | | 4.3 | (0.2)(0) |
| 16 | | 4.1(4.5) | (1.1) |
| 17 | | 7.9 | |
| 18 | | 7.9 | |
| 19 | | 4.3 | |
| 20 | | 4.3 | |

POWER C.BOARD(4)

SPEAKER

# SCHEMATIC DIAGRAM

IC101 contains 8V regulator stage that can go bad and screw up voltages in TR103, 104, IC101 } FM dead or weak




RESISTOR

| REMARKS | PARTS |
|---|---|
| NO MARK | CARBON RESISTOR |
| □ | CEMENT MOLDED RESISTOR |
| ■ | FIRE FREE |
| △ | METALIZED OXIDATION RESISTOR |
| ▲ | METALIZED FILM RESISTOR |
| ◎ | SEMI VARIABLE RESISTOR |

CAPACITOR

| BEMARKS | PARTS |
|---|---|
| NO MARK | CERAMIC CAPACITOR |
| ○ | POLYSTYRENE CAPACITOR |
| ⊕ | MYLAR CAPACITOR |
| ● | S.A. CAPACITOR |
| | |

GENERAL MODEL




NORTH EUROPEAN MODEL

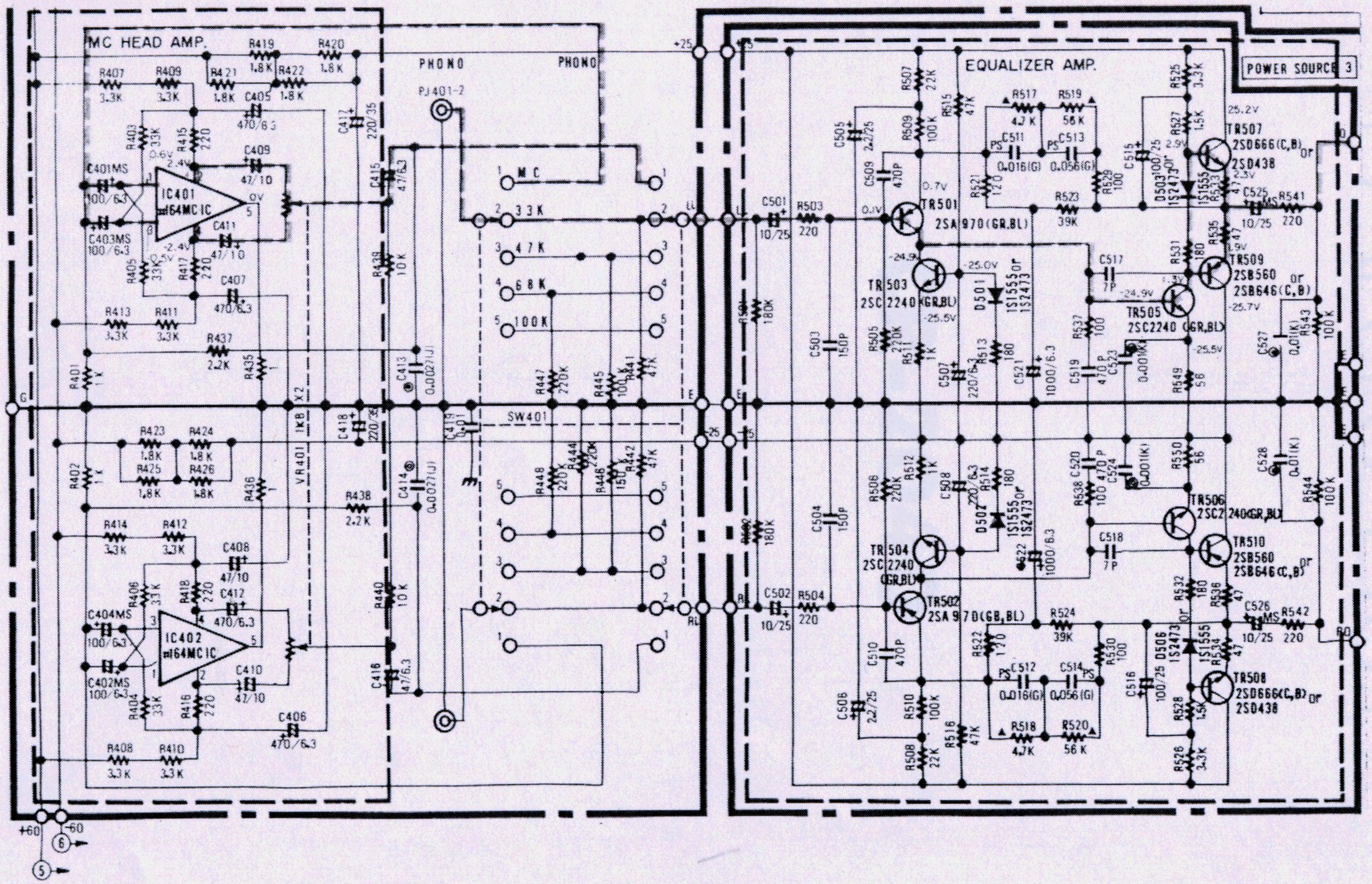



AUSTRALIAN and BRITISH MODELS




TRANSISTOR, DIODE CONNECTION

# CR2040 PHONO AMP CIRCUITRY




Common opp amp problem
Excessive DC offset.