

DENON

Hi-Fi Component

SERVICE MANUAL

MODEL TU-680NAB

2-BAND (AM-FM STEREO) TUNER



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NIPPON COLUMBIA CO., LTD.



CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

SAFETY INSTRUCTIONS

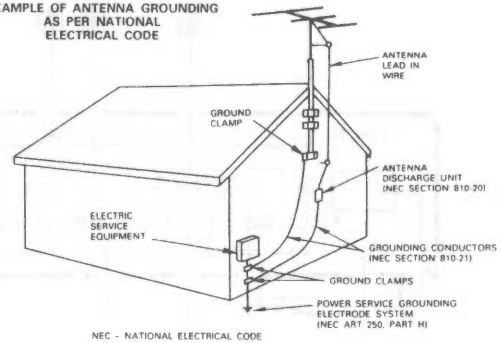
1. Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and use instructions should be followed.
5. Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
7. Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
14. Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
15. Power Lines – An outdoor antenna should be located away from power lines.

- 16. Outdoor Antenna Grounding – If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna-discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
- 17. Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 18. Object and Liquid Entry – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- 19. Damage Requiring Service – The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or

- B. Objects have fallen, or liquid has been spilled into the appliance; or
- C. The appliance has been exposed to rain; or
- D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
- E. The appliance has been dropped, or the enclosure damaged.

- 20. Servicing – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FIGURE A
EXAMPLE OF ANTENNA GROUNDING
AS PER NATIONAL
ELECTRICAL CODE



NOTE ON USE

| | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Avoid high temperatures Allow for sufficient heat dispersion when installed on a rack. | <ul style="list-style-type: none"> • Keep the set free from moisture, water, and dust. | <ul style="list-style-type: none"> • Do not let foreign objects in the set. |
| <ul style="list-style-type: none"> • Handle the power cord carefully. Hold the plug when unplugging the cord. | <ul style="list-style-type: none"> • Unplug the power cord when not using the set for long periods of time. | <ul style="list-style-type: none"> • Do not let insecticides, benzene, and thinner come in contact with the set. |
| <ul style="list-style-type: none"> • Handle the power cord carefully. Hold the plug when unplugging the cord. | <p>*(For sets with ventilation holes)</p> <ul style="list-style-type: none"> • Do not obstruct the ventilation holes. | <ul style="list-style-type: none"> • Never disassemble or modify the set in any way. |

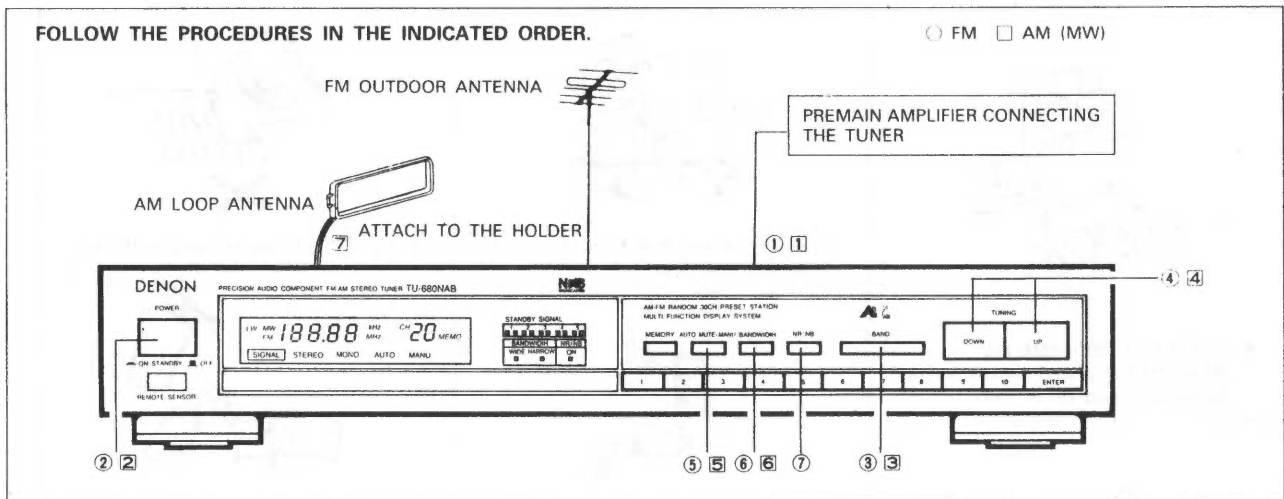
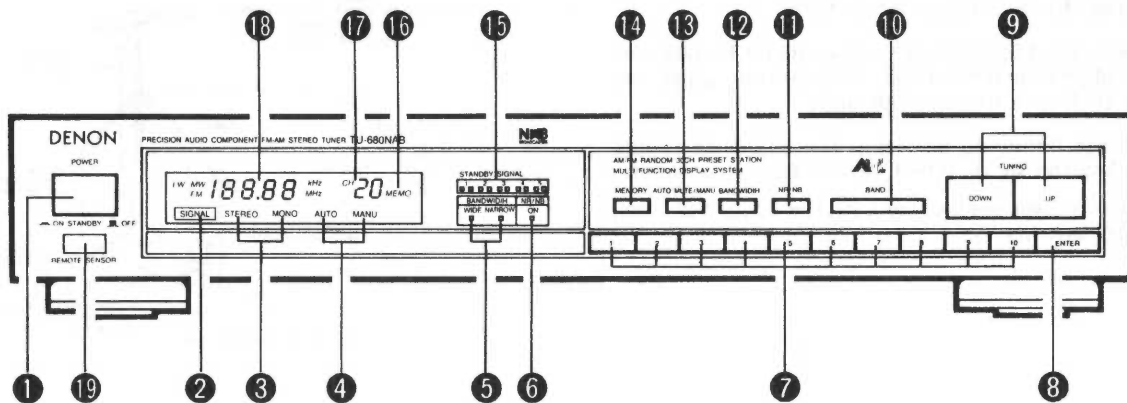
CAUTION

TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

Please check to make sure the following items are included with the main unit in the carton:

- ① Operating Instructions 1
- ② Audio 2-Pin plug cord 1
- ③ FM Indoor Antenna 1
- ④ AM Loop Antenna 1
- ⑤ Remote Control unit RC-126 1
- ⑥ R03 ("AAA") Dry cell batteries 2

FRONT PANEL



CAUTION

1. Noise may be generated if a near-by television set is on during AM broadcasting reception. The tuner should be used as far away from a television as possible.
2. Effective period of memory back-up is about a month under normal temperature. If the memorized stations cannot be called back, preset the stations again.

DESIGNATIONS AND FUNCTIONS OF PANEL CONTROLS

- 1 POWER (Power ON-STANDBY/OFF Switch)**
The unit works 2 to 3 seconds after this switch is turned on.
- 2 SIGNAL (Signal Indicator)**
This lights when a station can be received.
- 3 STEREO/MONO (Stereo/Mono Indicator)**
"STEREO" lights automatically when receiving a stereo broadcast.
"MONO" lights when receiving a monaural broadcast or no broadcast at all.
- 4 TUNING MODE (AUTO/MANUAL)**
Pressing MODE **13** causes "AUTO" and "MANUAL" to light up alternately.
- 5 WIDE/NARROW (Bandwidth LED Indicator)**
Pressing "BANDWIDTH" **12** causes WIDE or NARROW to light up alternately.
- 6 NR/NB (MPX NR/NB Indicator)**
This LED lights up when the NR/NB button **11** is pressed, and indicates that MPX NR in FM, NB (Noise Blanking) in AM is operating.
- 7 TEN KEYS (Ten Key Buttons)**
Used to specify numbers for Memory and Preset Call. Channels 1-30 can be specified using these buttons. Preset Call Setting Method
A station that has already been preset can be fetched by the following method.
Pressing **1**, **2**, **ENTER** in order fetches the station present in memory for channel 12.
- 8 ENTER (Enter Button)**
Used for setting Memory, and Preset Call.
- 9 TUNING (Tuning Buttons)**
Used to change the received frequency to a higher frequency (UP) or a lower frequency (DOWN).
- 10 BAND (Band Button)**
Selects between FM or AM.
- 11 NR/NB (MPX NR/NB Button)**
Switches NR/NB "ON" or "OFF". Lights "ON" LED **6**.
ON: In FM, Suppresses noise when a stereo broadcast with weak signal is being received.
In AM, Suppresses impulse noise from cars, power lines and so on.
OFF: Does not carry out the above operation.
- 12 BANDWIDTH (Bandwidth Selector Button)**
Selects the IF bandwidth in FM, "WIDE" or "NARROW", and the audio bandwidth in AM. In AM "NARROW", Audiobandwidth is automatically controlled according to the strength of input signal. Weak signal makes the audiobandwidth narrow.
Bandwidth indicator **5** shows either state.
- 13 AUTO MUTE/MANU (Tuning Mode Button)**
This switches between auto and manual tuning.
Auto tuning: When the UP button is pressed, the radio is tuned automatically to a higher frequency. Press the DOWN button to tune to a lower frequency. Use this position to eliminate noise when no signals or weak signals are being received.
Manual tuning: In this position, the radio can be tuned manually.

- 14 MEMORY (Memory Button)**
Used to store the frequency of the station currently received.
Pressing **MEMORY**, **1**, **2**, **ENTER** in order stores the station on channel 12 in memory. Up to 30 channels of either FM or AM can be stored in memory.
- 15 SIGNAL (Signal-Strength Indicators)**
The number of LEDs that light increases in correspondence with the strength of the signal being picked up by the antenna.
- 16 MEMORY (Memory Indicator)**
This indicator lights when the MEMORY button **14** is pressed.
- 17 CHANNEL (Channel Indicator)**
This displays the number of the channel at which the station is stored.
- 18 DIGITAL FREQUENCY INDICATOR**
Reception frequencies are digitally indicated with numbers. The FM frequency unit is MHz; the AM (MW) frequency unit is kHz.
- 19 REMOTE SENSOR (Remote Control Photosensitive Window)**
This sensor receives the infrared light transmitted from the wireless remote control unit.
When operating the wireless remote control unit, point it towards this sensor.

OPERATION INSTRUCTIONS

PREPARATION

CHECKING CONNECTIONS

- Check all the connections by referring to connection diagram (Fig. 1).
- Check that the right (R) and left (L) channels of the speakers are connected to the corresponding right (R) and left (L) plugs, and check that polarities (positive and negative) are correctly matched.
- Check that the right (R) and left (L) pins are correctly inserted to the corresponding jacks.
- Check that all the cords are firmly connected.
* Turn on the power with the POWER switch after checking all the connections.

CHECKING ANTENNA

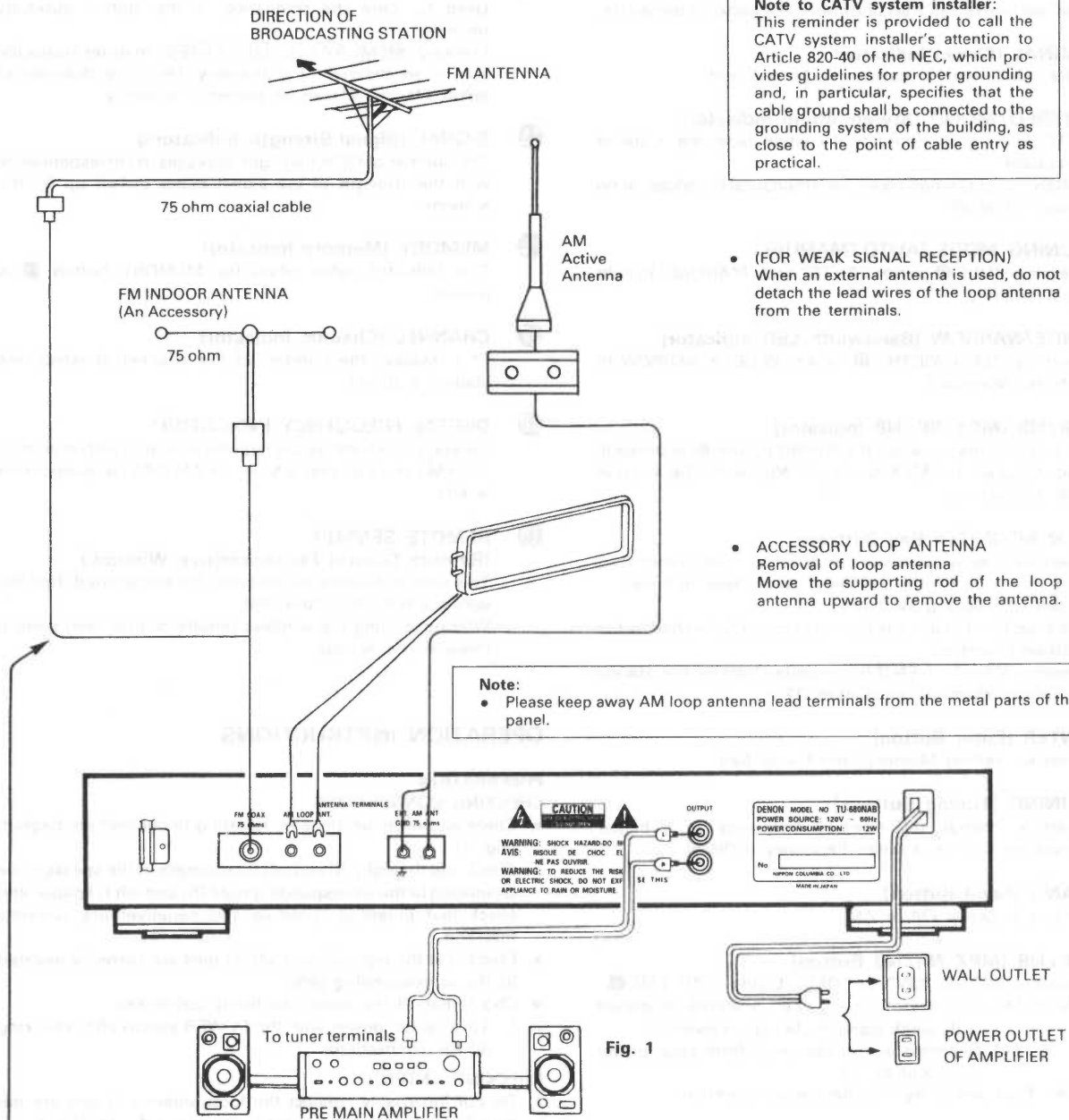
1. Do not incorrectly connect the loop antenna. If you are not sure how to connect the loop antenna, refer to Fig. 1.
2. Use of loop antenna: Keep the loop antenna away from the main body. If the antenna contacts a metal body, reception sensitivity is degraded, thus resulting in unclear reproduction.

Using the AM Noise Blanking System

The AM Noise Blanking (NB) circuit provided in this tuner uses digital technology which is very effective in eliminating the random pops and pulse noises caused by power lines, automobile ignitions, and certain weather conditions. However, under some conditions, the NB circuit may not be effective. This is not a defect.

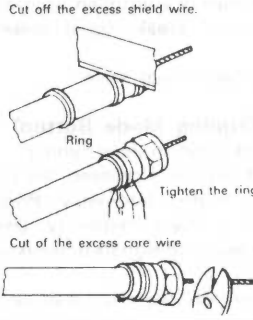
When you select an AM station, listen to the broadcast with the NB switch On then Off. Leave the NB switch in the position that offers you the best results.

CONNECTIONS



75 ohm Coaxial Terminal (F Type)

- Cut off the shield and remove the core wire insulation.
- If the core wire is stranded, solder it.
- Spread out the shield wire with the ring and install the connector.
- Core Wire Insulation Shield Wire

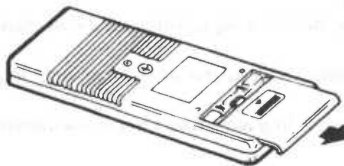


REMOTE CONTROL UNIT

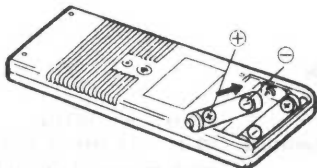
The accessory RC-126 remote control unit is used to control the tuner from a distance.

● Inserting the dry cell batteries

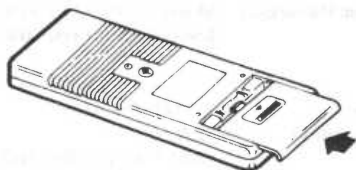
- 1 Remove the rear cover on the remote control unit.



- 2 Insert two size R03 ("AAA") dry cell batteries as shown in the diagram on the battery supply unit.



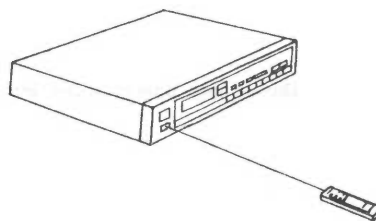
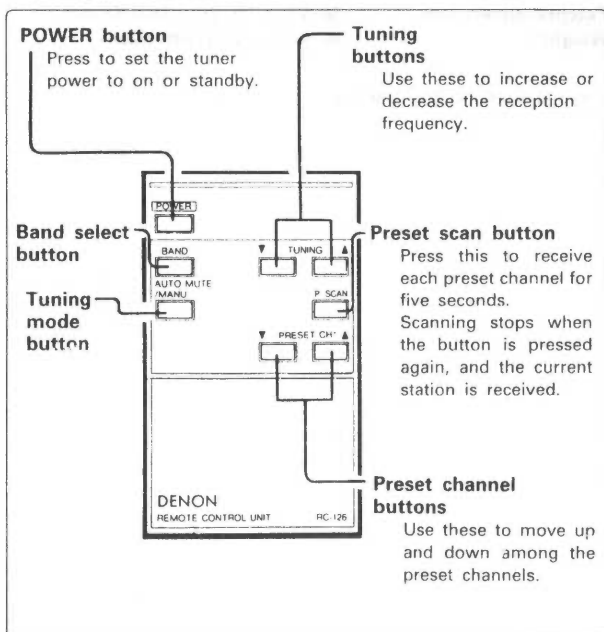
- 3 Replace the rear cover.



Notes on Use of the Batteries

- The remote control unit uses size R03 ("AAA") dry cell batteries.
- The batteries will need to be replaced approximately once a year. This will depend upon how often the remote control unit is used.
- If, in less than a year from the time new batteries were inserted, the remote control fails to operate this unit from a near-by position, it is time to replace the batteries.
- Insert the batteries properly, following the diagram on the remote control battery supply unit, and making sure to align the plus and minus sides of each battery.
- Batteries are prone to damage and leakage. Therefore:
 - Do not combine new batteries with used ones.
 - Do not combine different types of batteries.
 - Do not jumper the opposite poles of the batteries, expose them to heat or break them open, or put them into open fire.
- When the remote control unit is not to be used for a long period of time, remove the batteries from the unit.
- If the batteries have leaked, remove any battery fluid from the inside of the battery supply unit by wiping it out thoroughly, and insert new batteries.

● Using the remote control unit



- Set the POWER switch on the tuner to OFF (■) when not using for long periods of time.
- Point the remote control unit towards the remote control sensor on the tuner when pressing keys.
- The remote control unit can be used at a distance of about 8 meters directly in front of the tuner. The remote control unit uses infrared rays, so it will not work if there are obstacles between it and the tuner. Also, if used at an angle, the distance from which operation is possible will be shortened.
- Do not press keys on the tuner and the remote control unit simultaneously, as this may result in malfunction.
- The remote control unit may not function if intense light is shining on the tuner's remote control sensor.
- Do not operate two remote control units simultaneously, as this may result in malfunction.

ADVICE FOR USE

- Do not place the set in direct sunlight, in hot areas such as near heating equipment, with high humidity or dust levels. This may cause damage to the unit.
- Check that all parts are connected correctly before turning on the power source.
- When user is absent for long periods, be sure to remove plug from wall socket.
- Do not use insecticide, benzene or thinner near the unit, or the cabinet color will fade. Avoid using polish: use a soft cloth (e.g. silicon cloth).
- It is not recommended to place players, decks and other objects on the this appliance so that the ventilation openings are blocked.
This will cause internal temperature rise and equipment failure. Do not use this appliance in a closed cabinet or container. This will cause internal temperature rise abnormally.

SPECIFICATIONS

• FM SECTION

| | |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------|
| Frequency Range: | 87.5 MHz ~ 108.0 MHz |
| Antenna Terminal: | 75 ohm Unbalanced |
| Usable Sensitivity: | 1.0 μ V (11.2 dBf) |
| S/N 50 dB Sensitivity: | Monaural 1.6 μ V (15.3 dBf) Stereo 20 μ V (37.2 dBf) (μ V at 75 ohms, 0 dBf= 10^{-15} W) |
| Image Interference Ratio: | 80 dB |
| IF Interference Ratio: | 100 dB |
| AM Suppression Ratio: | 60 dB |
| Effective Selectivity: | NARROW 75 dB (\pm 400 kHz) WIDE 50 dB (\pm 400 kHz) |
| Capture Ratio: | 1.3 dB |
| Frequency Characteristics: | 20 Hz ~ 15 kHz +0.5 dB, -1.0 dB |
| Signal-to-noise Ratio: | Monaural 88 dB Stereo 82 dB |
| Total Harmonic Distortion: | Mono 1 kHz (at 75 kHz dev.) 0.06% Stereo 1 kHz (at 67.5 kHz dev.) 0.1% |
| Stereo Separation 1 kHz: | 50 dB |

• AM (MW) SECTION

MEDIUM WAVE

| | |
|-----------------------------------|--------------------------------------------------------------------|
| Frequency Range: | 520 kHz ~ 1710 kHz |
| Frequency characteristics | 50 Hz ~ 7.5 kHz +1.5 -3.0 dB (wide position, refer to NRSC) |
| Signal-to-noise Ratio: | 53 dB (Monaural) |
| Stereo Separation: | 32 dB (1 kHz, 50% modulation) |
| Total Harmonic Distortion: | Mono 0.3% 1 kHz 50% modulation Stereo 0.5% 1 kHz 50% modulation |

• OTHERS

| | |
|---------------------------|---------------------------------------------------------------------------|
| Power Supply: | AC 120 V/60 Hz |
| Power Consumption: | 12W |
| Dimensions: | 434(17-3/32")(W) \times 74(2-29/32")(H) \times 287(11-19/64")(D)mm |
| Net Weight: | 3.1 kg (6 lbs 13 oz) |

• REMOTE CONTROL UNIT

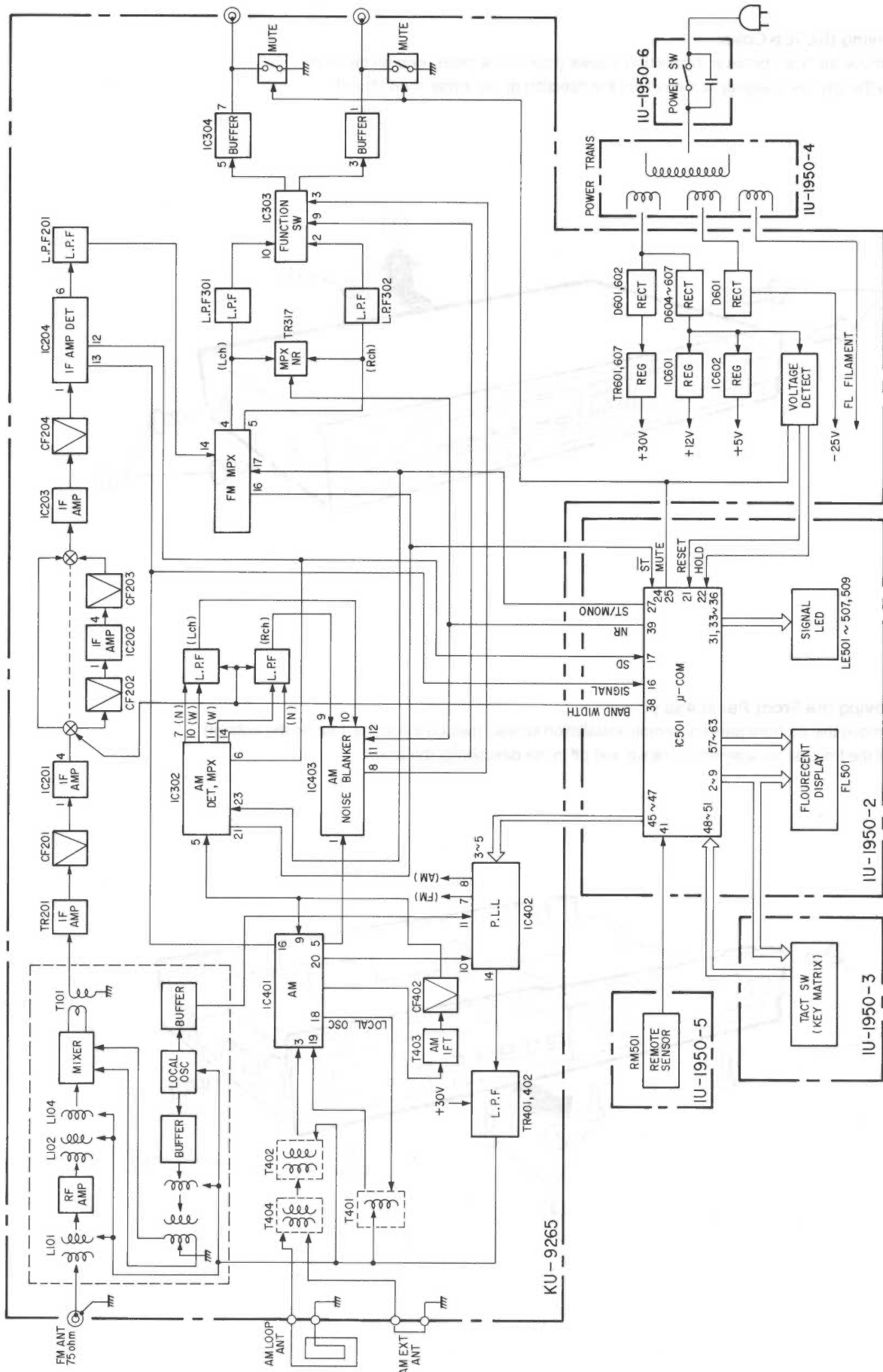
RC-126

| | |
|-------------------------------|----------------------------------------------|
| Remote control system: | Infrared pulse |
| Power Supply: | DC 3V with two R03 (AAA) batteries |
| External dimensions: | 58 (W) \times 125 (H) \times 19.5 (D) mm |
| Weight: | 80 g (including batteries) |

Design and Specifications are subject to change without prior notice.



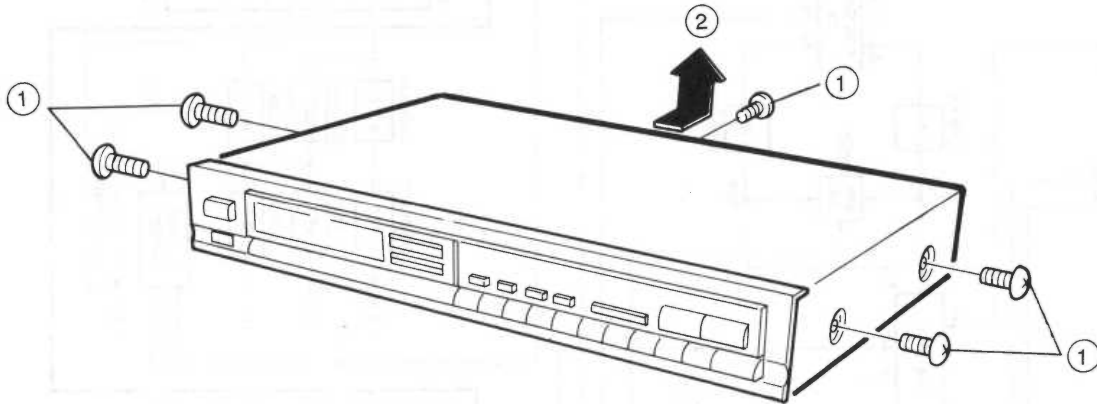
BLOCK DIAGRAM



REMOVAL OF EACH SECTION

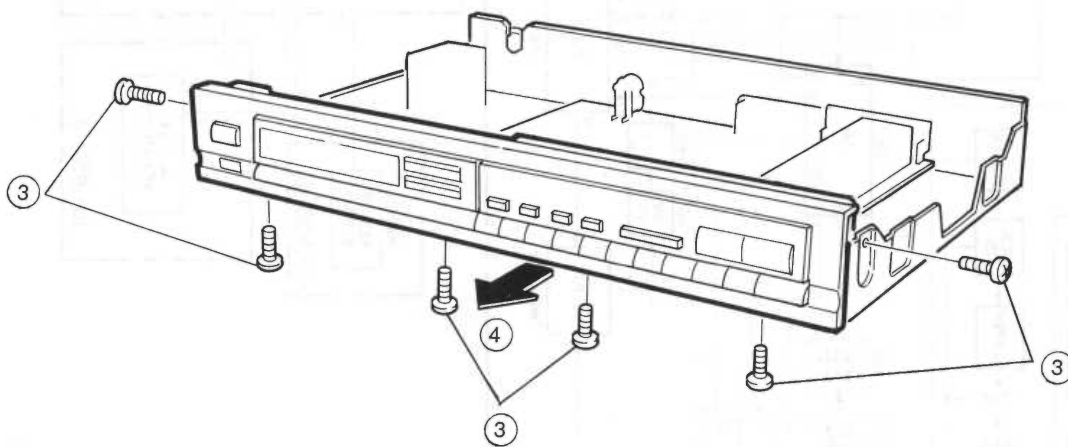
● Removing the Top Cover

1. Remove the five top cover installation screws (four on the sides, one on the rear).
2. Slip the top cover slightly to the rear in the direction of the arrow, then lift it off.



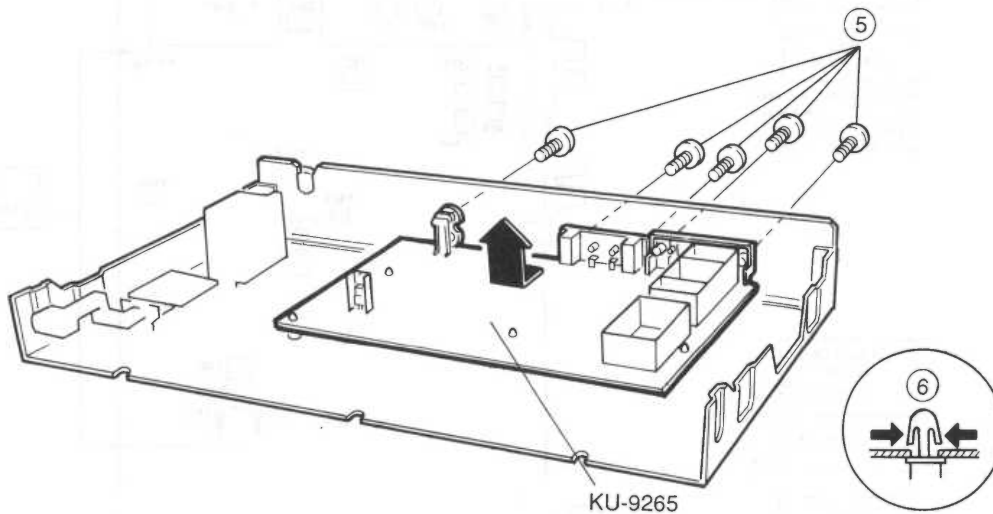
● Removing the Front Panel Ass'y

1. Remove the six front panel assembly installation screws (two on the sides, four on the bottom).
2. Pull the front panel assembly forward and off in the direction of the arrow.



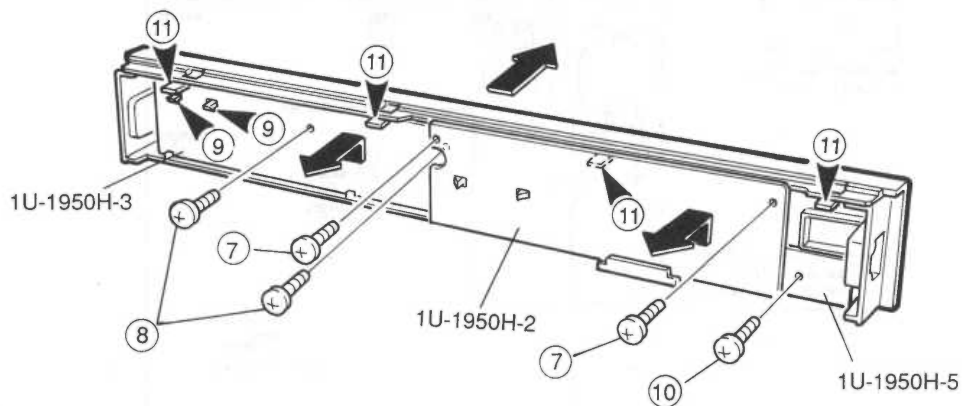
● Removing each Circuit Board

1. Remove the five installation screws securing the terminals of the KU-9265 board.
2. Use radio pliers to grasp the P.W.B. holder (shown by the arrow) securing the KU-9265 board, then remove the KU-9265 board.
3. Remove the two installation screws from the 1U-1950H-2 board, lift slightly up in the direction of the arrow, then pull forward and remove the 1U-1950H-2 board.
4. Remove the two installation screws from the 1U-1950H-3 board.
5. Unclasp the two installation hooks from the 1U-1950H-3 board, lift the 1U-1950H-3 board slightly up, then pull forward and remove.
6. Remove the installation screw from the 1U-1950H-5 board, then pull forward and remove the 1U-1950H-5 board.



● Removing the Front Panel

Use a screwdriver to press the four hooks on the front panel (shown by arrows), then pull the front panel forward and remove.

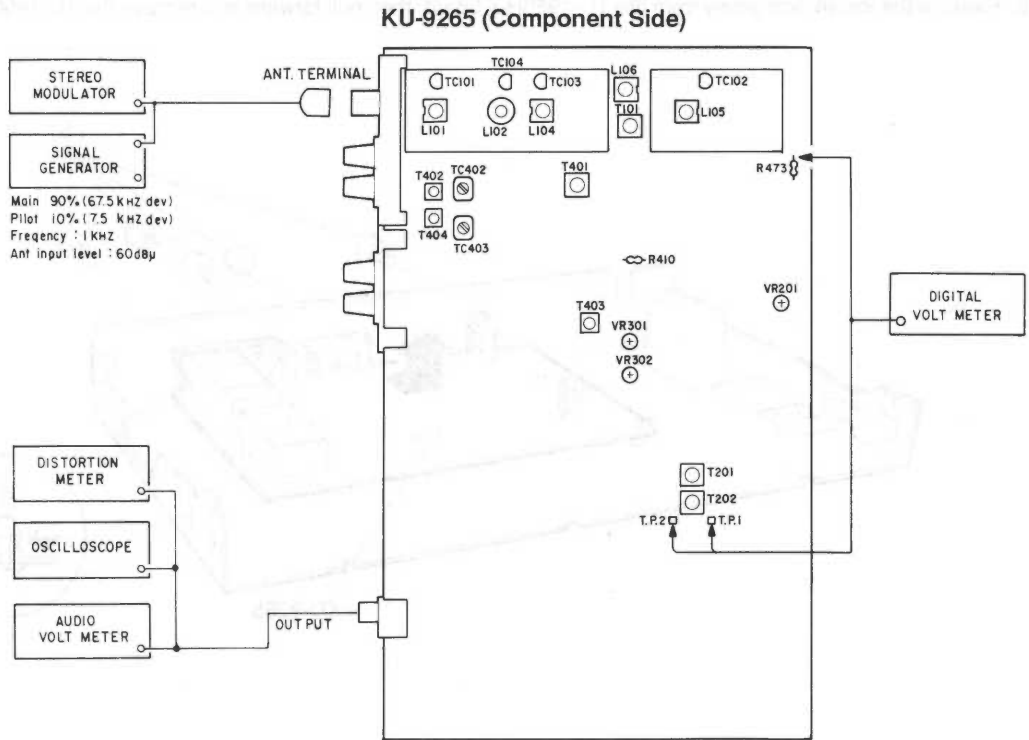


METHOD OF ADJUSTMENT

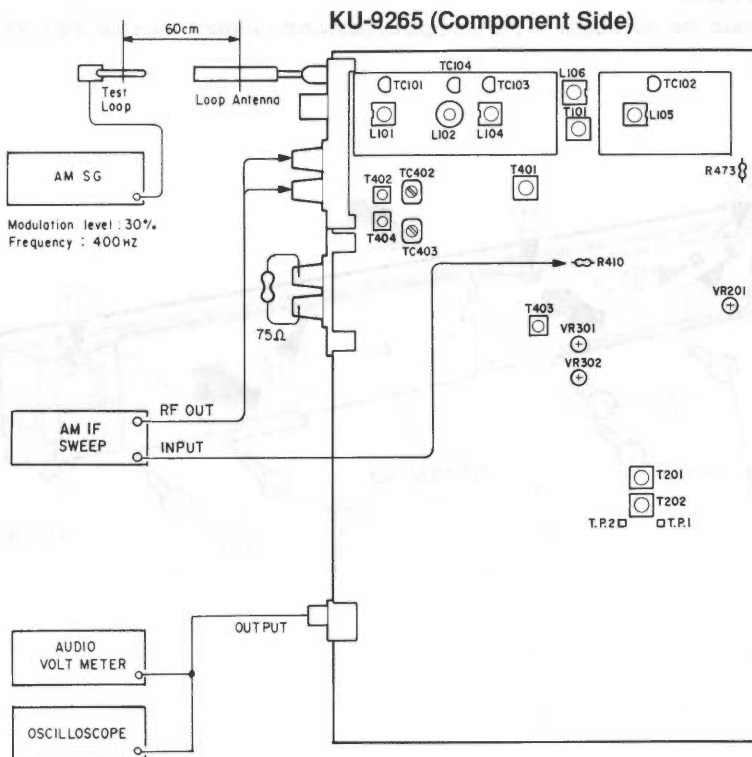
CONNECTION DIAGRAM OF MEASURING INSTRUMENTS

When making adjustments, be sure the power supply is at the rated voltage and the room air is on normal conditions with respect to temperature and humidity.

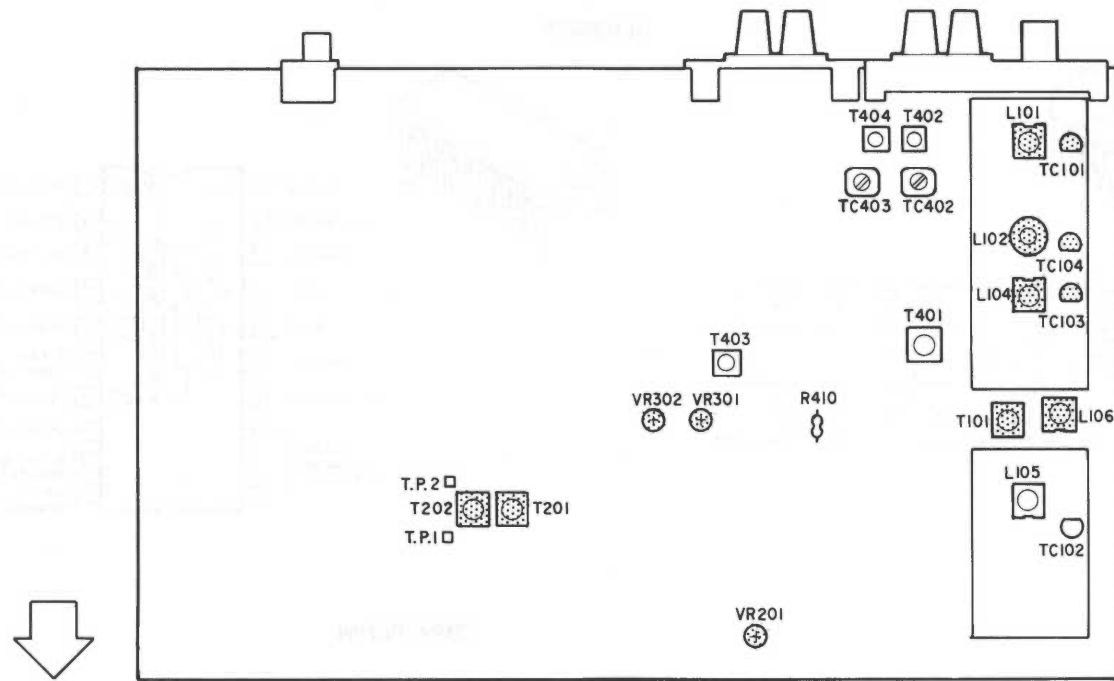
● FM



● AM

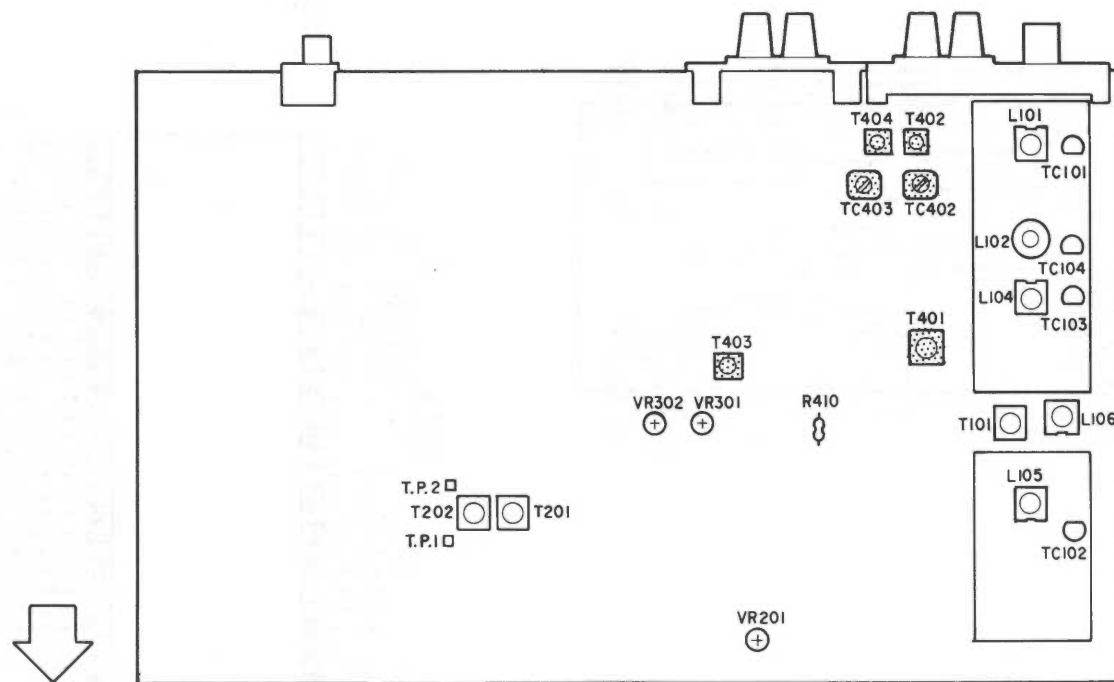


KU-9265 TUNER UNIT FM Alignment Points (Component Side)



Front Panel Side

KU-9265 TUNER UNIT AM Alignment Points (Component Side)



Front Panel Side

FRONTEND ALIGNMENT

| Item | Alignment Item | Tuning Frequency Setting | Input | | | | Output | | Adjustment | | Remarks | |
|------|---------------------------------------------------------------------|--------------------------|-------|-----------|-------------|-----------------|------------------|-----------------|---------------------|---------------------|----------------|---------------------------------------------|
| | | | Type | Frequency | Input Level | Modulation | Coupling | Type | Connect to | Points | | Adjust to |
| 1 | Tuning Voltage | 108 MHz | FMSSG | 108 MHz | 0 dBμ | Mono 1 kHz 100% | Antenna Terminal | DC Voltmeter | R473 | TC102 | 25.0V | BANDWIDTH : WIDE MUTE : off (MANUAL) |
| 2 | | 87.5 MHz | FMSSG | 87.5 MHz | 0 dBμ | Mono 1 kHz 100% | Antenna Terminal | DC Voltmeter | R473 | L105 | 5.0V | |
| 3 | Repeat several times from 1 to 2 to obtain accurate tuning voltage. | | | | | | | | | | | |
| 4 | Tracking Alignment | 108 MHz | FMSSG | 108 MHz | 60 dBμ | Mono 1 kHz 100% | Antenna Terminal | Audio Voltmeter | Output Terminal (L) | TC101, 103, 104 | Maximum Output | |
| 5 | | 87.5 MHz | FMSSG | 87.5 MHz | 60 dBμ | Mono 1 kHz 100% | Antenna Terminal | Audio Voltmeter | Output Terminal (L) | L101, 102, 104, 106 | Maximum Output | |
| 6 | Repeat several times from 4 to 5 to obtain maximum output level. | | | | | | | | | | | |

FM ALIGNMENT

| | | | | | | | | | | | | |
|---|-------------------|--------|-------|--------|--------|-----------------------|------------------|-------------------|---------------------|-------|----------------------|--------------------|
| 1 | Center Adjustment | 98 MHz | FMSSG | 98 MHz | 60 dBμ | Mono 1 kHz 100% | Antenna Terminal | Digital Voltmeter | Tp. 1,2 | T201 | ±50mV | BANDWIDTH : WIDE |
| 2 | Distortion | 98 MHz | FMSSG | 98 MHz | 60 dBμ | Mono 1 kHz 100% | Antenna Terminal | Distortion Meter | Output Terminal (L) | T202 | Minimum Distortion | BANDWIDTH : WIDE |
| 3 | Distortion | 98 MHz | FMSSG | 98 MHz | 60 dBμ | Stereo (L) 1 kHz 100% | Antenna Terminal | Distortion Meter | Output Terminal (L) | T101 | Minimum Distortion | BANDWIDTH : WIDE |
| 4 | Separation | 98 MHz | FMSSG | 98 MHz | 60 dBμ | Stereo (L) 1 kHz 100% | Antenna Terminal | AC Voltmeter | Output Terminal (R) | VR301 | Maximum Separation | BANDWIDTH : WIDE |
| 5 | Separation | 98 MHz | FMSSG | 98 MHz | 60 dBμ | Stereo (L) 1 kHz 100% | Antenna Terminal | AC Voltmeter | Output Terminal (R) | VR302 | Maximum Separation | BANDWIDTH : NARROW |
| 6 | Signal Level | 98 MHz | FMSSG | 98 MHz | 15 dBμ | off | Antenna Terminal | | | VR201 | Light 1st Signal LED | BANDWIDTH : WIDE |

AM ALIGNMENT

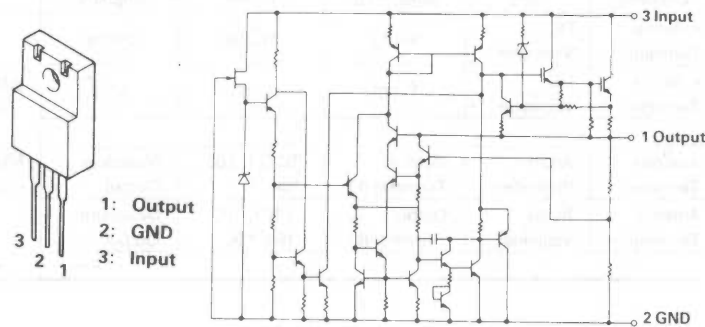
| | | | | | | | | | | | | |
|---|--------------------|----------|----------|----------|----------------------------------------|------------|------------------|---------------|---------------------|----------------|----------------------------------------|--------------------------------------------------|
| 1 | Tuning Voltage | 520 kHz | — | — | — | — | — | DC Voltmeter | R473 | T401 | 2.0V | |
| | | 1710 kHz | — | — | — | — | — | DC Voltmeter | R473 | — | 27V > | Check the Voltage |
| 2 | IF | — | IF Sweep | — | Input level is not over to work A.G.C. | — | Antenna Terminal | AM IF Sweep | R410 | T403 | Maximum Height and Best Symmetry Curve | Center of Wave Form: 450 kHz BAND WIDTH: WIDE |
| 3 | Tracking Alignment | 600 kHz | AM SSG | 600 kHz | Input level is not over to work A.G.C. | 400 Hz 30% | Loop Antenna | Audio V.T.V.M | Output Terminal (L) | T402 T404 | Maximum Distortion | |
| | | 1400 kHz | AM SSG | 1400 kHz | Input level is not over to work A.G.C. | 400 Hz 30% | Loop Antenna | Audio V.T.V.M | Output Terminal (L) | TC402 TC403 | Maximum Distortion | |

* AM adjustment must be performed by shortcircuit of external ANT terminal with 75 ohm resistor.

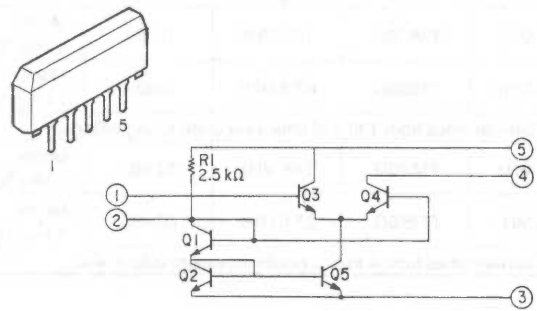
SEMICONDUCTORS

● IC's

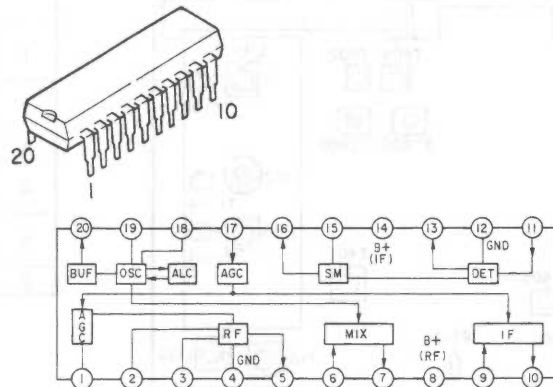
NJM78M06FA (S)
NJM78M12FA (S)



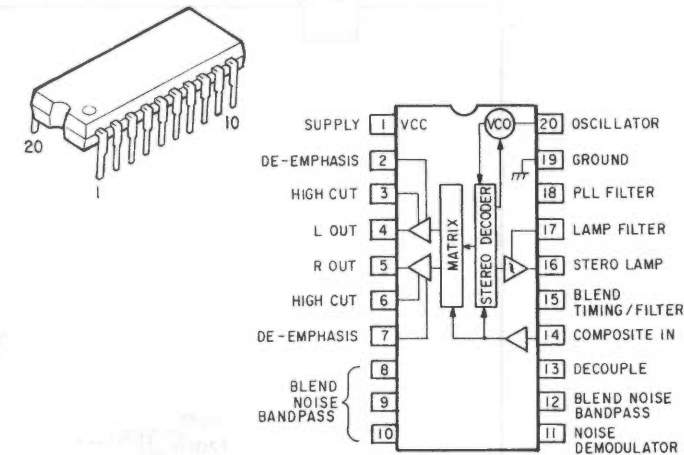
TA-7060AP



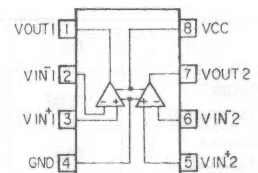
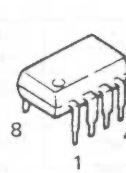
LA1247



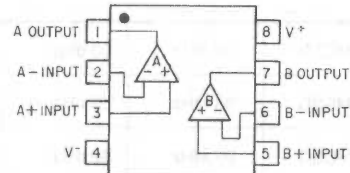
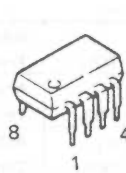
ULH3827A



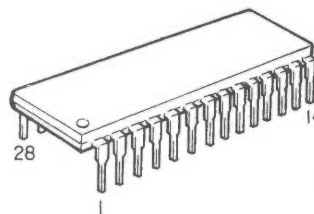
LA6358



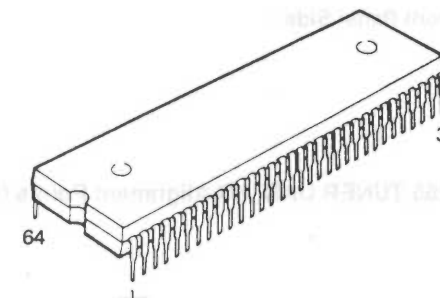
NJM4558D-D



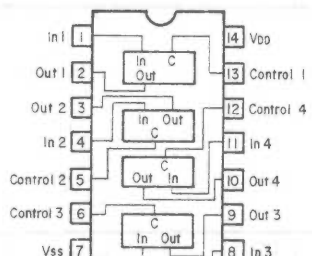
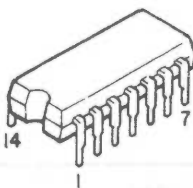
MC13022



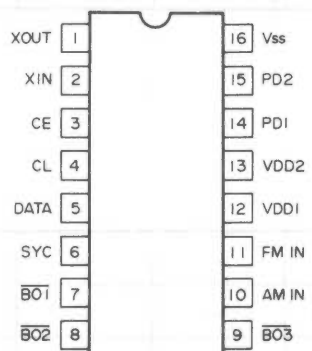
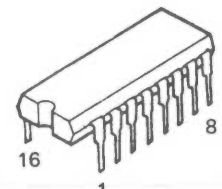
TMP47P870N



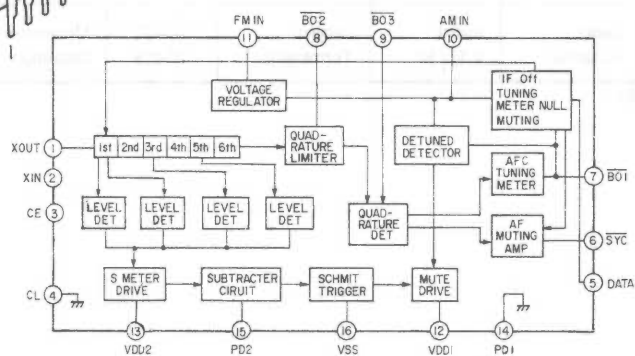
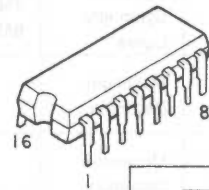
HD14066BP



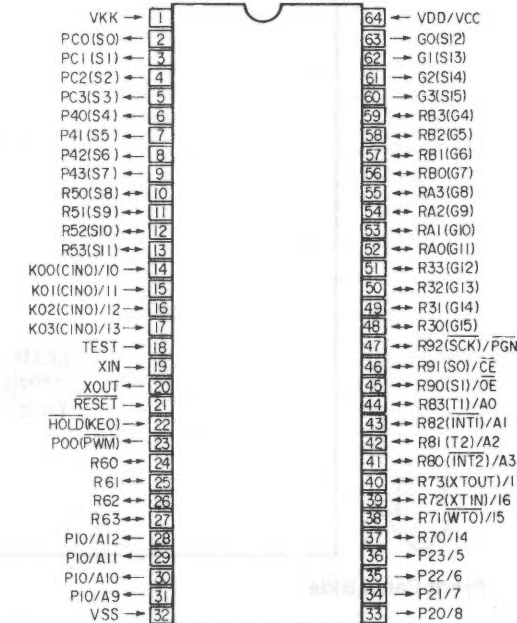
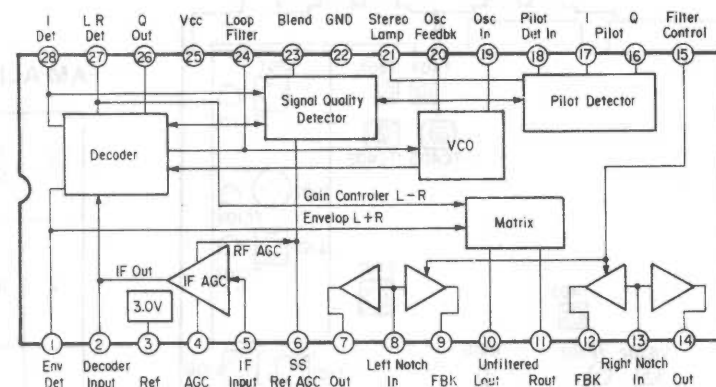
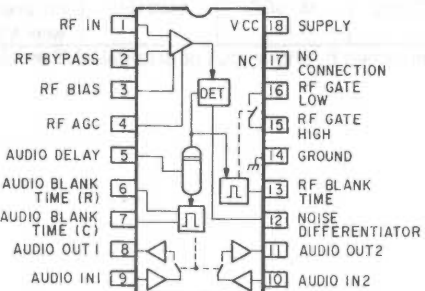
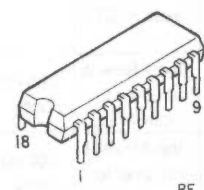
LM7001



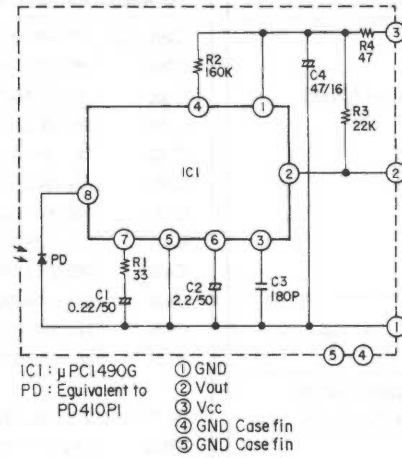
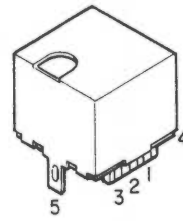
LA1235



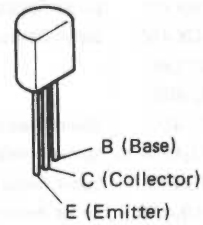
ULN3845A



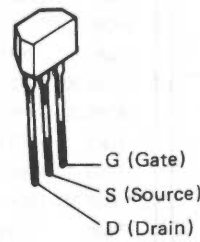
● QH3031H0
(Remote Control Receiver)



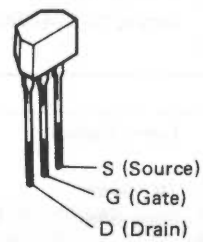
● TRANSISTORS
2SA1015 (Y/GR)
2SC2878 (A/B)
2SC1815



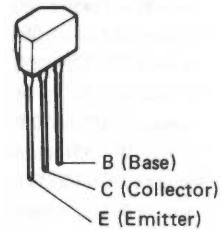
2SK161 (GR)



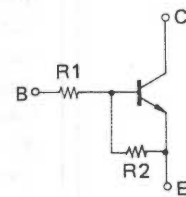
2SK365 (BL/GR)



- 2SC2839 (E)
- 2SA1048 (Y/GR)
- 2SC2458 (Y/GR)
- RN1204
- RN2202
- DTA143TS
- DTA144ES
- DTC144TS
- DTC144ES

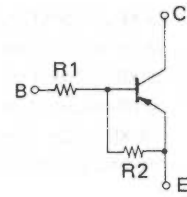


RN1204 (47k-47k)
DTC144ES (47k-47k)



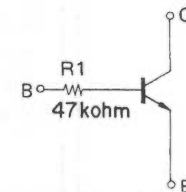
| | R1 | R2 |
|----------|--------|--------|
| RN1204 | 47kohm | 47kohm |
| DTC144ES | 47kohm | 47kohm |

RN2202 (10k-10k)
DTA144ES (47k-47k)

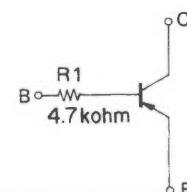


| | R1 | R2 |
|----------|--------|--------|
| RN2202 | 10Kohm | 10Kohm |
| DTA144ES | 47kohm | 47kohm |

DTC144TS (47k)



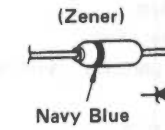
DTA143TS



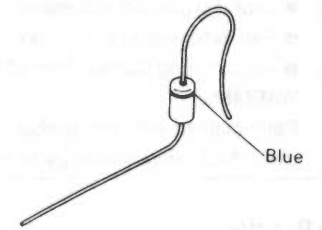
● DIODES (LED)
1SS270A



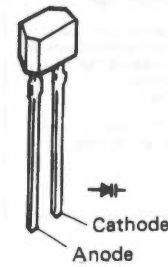
HZS6B-1
HZS9A-1



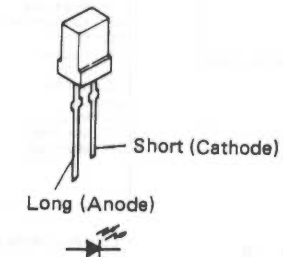
1SR35-200A



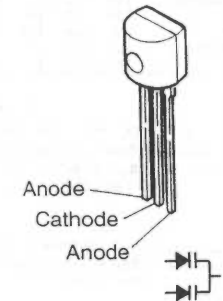
● SVC333SPA-3 (Varactor)



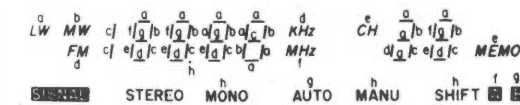
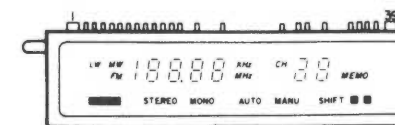
(LED)
SEL1321G (Green)



KV1320-5 (Varactor)



● FLD (FIP10TM7)



| TERMINAL No. ELECTRODE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|------------------------|---|----|----|------|------|------|------|------|-------|------|----|------|------|----|-------|----|------------|------------|----|----|
| | F | F | BG | P(h) | P(g) | P(f) | P(e) | P(d) | BG | P(c) | 7G | P(b) | P(a) | 6G | NP | 5G | NP | NP | 4G | NP |
| TERMINAL No. ELECTRODE | | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| | | NP | NP | NP | NP | NP | 4G | NP | P (Z) | 3G | NP | 2G | NP | NP | P (Z) | 1G | P (Stereo) | P (Signal) | F | F |

Notes F: Filament G: Grid P: Anode NP: No-Pin

NOTE FOR PARTS LIST

- Part indicated with the mark "◎" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.
- When ordering of part, clearly indicate "1" and "I" (i) to avoid mis-supplying.
- Ordering part without stating its part number can not be supplied.
- Part indicated with the mark "★" is not illustrated in the exploded view.
- Not including Carbon Film ±5%, 1/4W Type in the P.W.Board parts list. (Refer to the Schematic Diagram for those parts.)

WARNING:

Parts marked with this symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

● Resistors

Ex.: **RN** **14K** **2E** **182** **G** **FR**
 Type Shape and performance Power Resist-ance Allowable error Others

| | | | |
|-----------------------|-----------|----------|--------------------------|
| RD : Carbon | 2B : 1/8W | F : ±1% | P : Pulse-resistant type |
| RC : Composition | 2E : 1/4W | G : ±2% | NL : Low noise type |
| RS : Metal oxide film | 2H : 1/2W | J : ±5% | NB : Non-burning type |
| RW : Winding | 3A : 1W | K : ±10% | FR : Fuse-resistor |
| RN : Metal film | 3D : 2W | M : ±20% | F : Lead wire forming |
| RK : Metal mixture | 3F : 3W | | |
| | 3H : 5W | | |

*** Resistance**

1 8 2 ⇒ 1800 ohm = 1.8 kohm
 Indicates number of zeros after effective number.
 2-digit effective number.
 • Units: ohm

1 R 2 ⇒ 1.2 ohm
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.
 • Units: ohm

*** Capacity (electrolyte only)**

2 2 2 ⇒ 2200μF
 Indicates number of zeros after effective number.
 2-digit effective number.

• Units: μF.
2 R 2 ⇒ 2.2μF
 1-digit effective number.
 2-digit effective number, decimal point indicated by R.
 • Units: μF.

● Capacitors

Ex.: **CE** **04W** **1H** **2R2** **M** **BP**
 Type Shape and performance Dielectric strength Capacity Allowable error Others

| | | | |
|----------------------------------|-----------|-------------|----------------------------------|
| CE : Aluminum foil electrolytic | 0J : 6.3V | F : ±1% | HS : High stability type |
| CA : Aluminum solid electrolytic | 1A : 10V | G : ±2% | BP : Non-polar type |
| CS : Tantalum electrolytic | 1C : 16V | J : ±5% | HR : Ripple-resistant type |
| CQ : Film | 1E : 25V | K : ±10% | DL : For charge and discharge |
| CK : Ceramic | 1V : 35V | M : ±20% | HF : For assuring high frequency |
| CC : Ceramic | 1H : 50V | Z : +80% | U : UL part |
| CP : Oil | 2A : 100V | -20% | C : CSA part |
| CM : Mica | 2B : 125V | P : +100% | W : UL-CSA type |
| CF : Metallized | 2C : 160V | -0% | F : Lead wire forming |
| CH : Metallized | 2D : 200V | C : ±0.25pF | |
| | 2E : 250V | D : ±0.5pF | |
| | 2H : 500V | = : Others | |
| | 2J : 630V | | |

*** Capacity (except electrolyte)**

2 2 2 ⇒ 2200μF = 0.0022μF
 (More than 2) — Indicates number of zeros after effective number.
 2-digit effective number.

• Units: μF.

2 2 1 ⇒ 220PF
 (0 or 1) — Indicates number of zeros after effective number.
 2-digit effective number.

• Units: PF.
 • When the dielectric strength is indicated in AC, "AC" is included after the dielectric strength value.

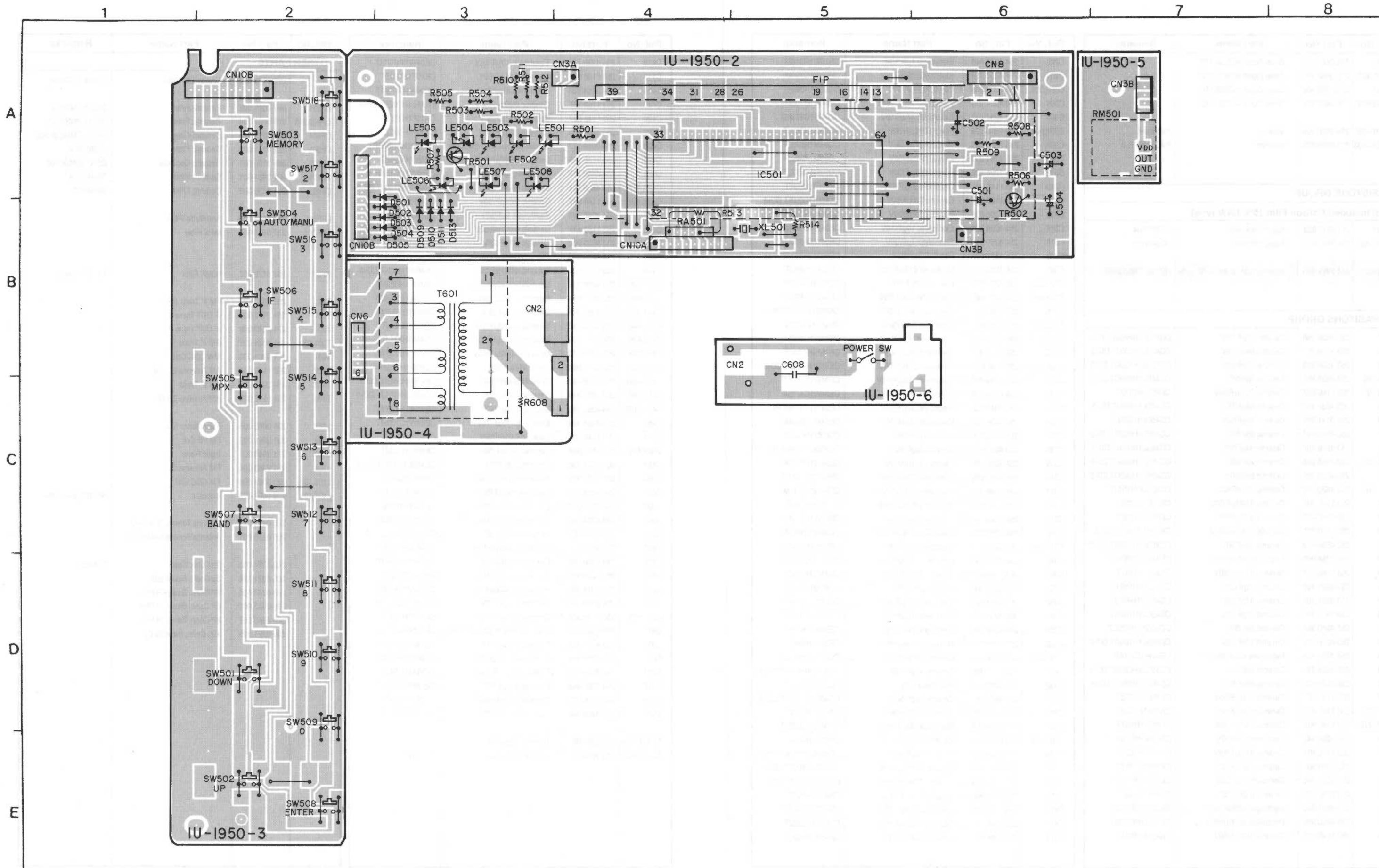
**PARTS LIST OF P.W. BOARD
1U-1950H TUNER UNIT**

| Ref. No. | Part No. | Part Name | Remarks |
|-------------------------------------------------|--------------|----------------------------|-------------------|
| SEMICONDUCTORS GROUP | | | |
| IC501 | 262 1795 103 | IC TMP47P870N | |
| TR501 | 269 0026 007 | Transistor RN2202(10K-10K) | Built-in Resistor |
| TR502 | 273 0322 001 | Transistor 2SC2458(Y/GR) | |
| D501-505 | 276 0432 903 | Diode 1SS270A | |
| LE501-508 | 393 9261 027 | LED SEL1321G(D2/3) | |
| RESISTORS GROUP | | | |
| (Not included Carbon Film ±5% 1/4W type) | | | |
| R608 | 242 0073 000 | Composition 2.2M ohm 1/2W | RC05GF2H225K |
| RA501 | 246 2053 004 | Resistor Array 10k ohm x 5 | RK99=103JP5 |
| CAPASITORS GROUP | | | |
| C501 | 254 4195 932 | Electrolytic 22μF/35V | CE04W1V220MT(SRA) |
| C502 | 254 4250 055 | Electrolytic 470μF/6.3V | CE04W0J471M |
| C503 | 254 4260 045 | Electrolytic 1μF/50V | CE04W1H010M |
| C608 | 253 8014 702 | Ceramic 0.01μF/400V AC | CK45F2GAC103MC |
| OTHER PARTS | | | |
| XL501 | 399 9018 003 | Ceramic Oscillator | CST 4.00 MGW |
| SW501-518 | 212 4388 907 | TACT Switch | |
| ▲S601 | 213 0286 003 | Power Switch | |
| ▲T601 | 233 5781 005 | Power Trans | |
| RM501 | 499 0088 002 | Remote Sensor | QH3031H0 |
| FL501 | 393 4043 004 | FL Tube | FIP10TM7 |
| | 203 4633 014 | 3P KR-DA Conn. Cord(RED) | |
| | 204 0265 078 | 6P KR-DA Conn. Cord | |
| | 203 4456 068 | 3P KR-DA Conn. Cord | |
| | 204 2244 071 | 8P KR-DA Conn. Cord | |
| | 204 2340 027 | 10P KR-DA Conn. Cord | |
| | 204 2341 000 | 10P SAN-SAN Conn. Cord | |

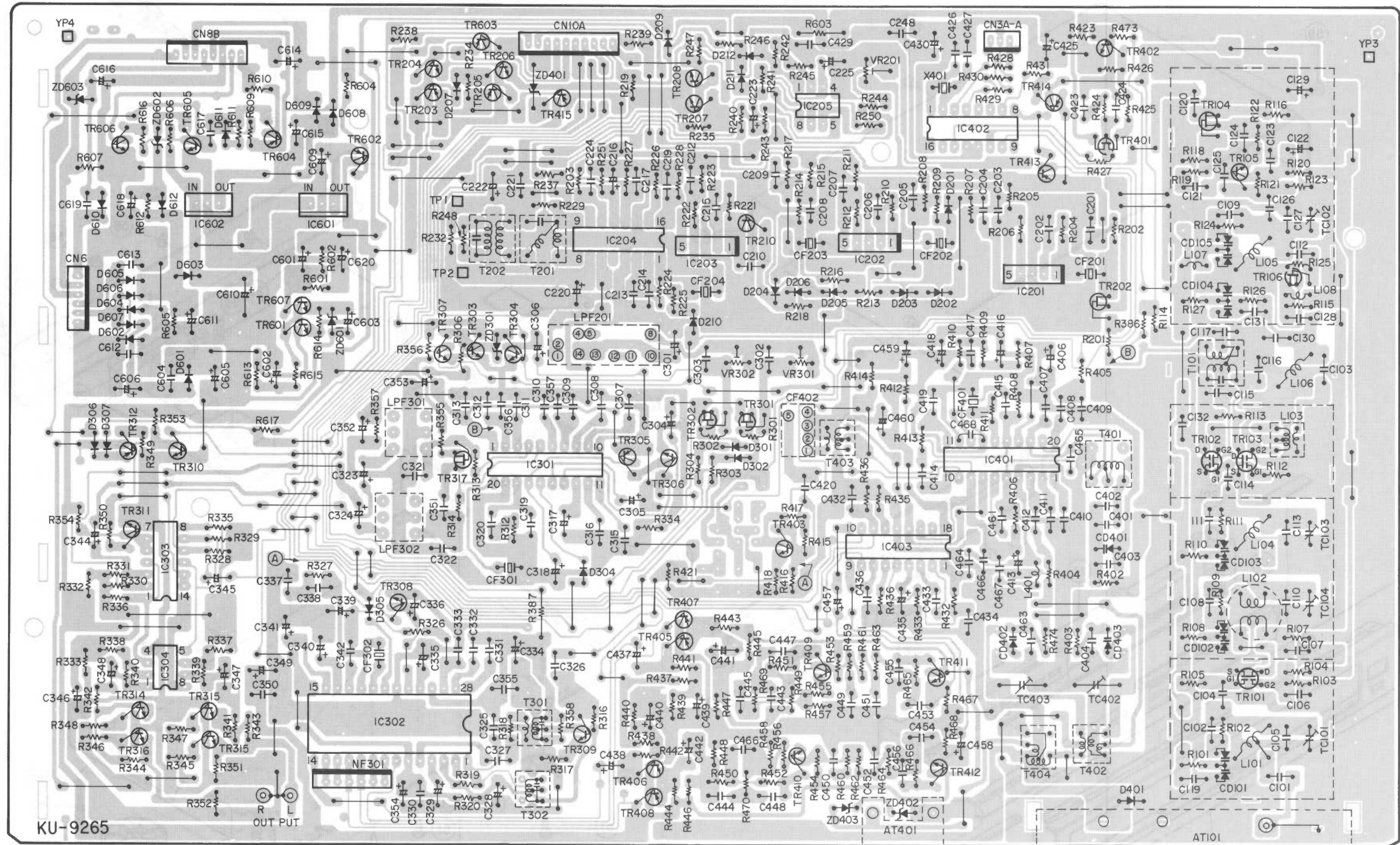
KU-9265 TUNER UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|-----------------------------|--------------|------------------------------|-------------------|
| SEMICONDUCTORS GROUP | | | |
| IC201-203 | 263 0099 007 | IC TA-7060AP | |
| IC204 | 263 0520 000 | IC LA1235 | |
| IC205 | 263 0237 005 | IC LA6358 | |
| IC301 | 263 0853 007 | IC ULN3827A | |
| IC302 | 263 0852 008 | IC MC13022 | |
| IC303 | 262 0276 005 | IC HD14066BP | |
| IC304 | 263 0081 002 | IC NJM4558D | |
| IC401 | 263 0356 009 | IC LA1247 | |
| IC402 | 262 0719 009 | IC LM7001 | |
| IC403 | 263 0854 006 | IC ULN3845A | |
| IC601 | 263 0794 001 | IC NJM78M12FA(S) | |
| IC602 | 263 0792 003 | IC NJM78M06FA(S) | |
| TR101-103 | 275 0063 007 | Transistor 3SK73 GR | |
| TR104 | 275 0051 909 | Transistor 2SK161(GR) | |
| TR105 | 273 0357 908 | Transistor 2SC2839(E) | |
| TR106 | 275 0051 909 | Transistor 2SK161(GR) | |
| TR201 | 275 0051 909 | Transistor 2SK161(GR) | |
| TR203 | 269 0100 907 | Transistor DTA143TS(4.7K) | Built-in Resistor |
| TR204 | 269 0029 907 | Transistor RN1204(47K-47K) | Built-in Resistor |
| TR205 | 269 0100 907 | Transistor DTA143TS(4.7K) | Built-in Resistor |
| TR206 | 269 0029 907 | Transistor RN1204(47K-47K) | Built-in Resistor |
| TR207,208 | 273 0222 907 | Transistor 2SC2458(Y/GR) | |
| TR301,302 | 275 0053 907 | Transistor 2SK365(BL/GR) | |
| TR303 | 269 0079 902 | Transistor DTC144TS(47K) | Built-in Resistor |
| TR305 | 269 0093 904 | Transistor DTA144ES(47K-47K) | Built-in Resistor |
| TR306,307 | 269 0079 902 | Transistor DTC144TS(47K) | Built-in Resistor |
| TR308 | 269 0029 907 | Transistor RN1204(47K-47K) | Built-in Resistor |
| TR309 | 273 0222 907 | Transistor 2SC2458(Y/GR) | |
| TR310 | 269 0040 902 | Transistor DTC144ES(47K-47K) | Built-in Resistor |
| TR311 | 273 0222 907 | Transistor 2SC2458(Y/GR) | |
| TR312 | 271 0102 937 | Transistor 2SA1015(Y/GR) | |
| TR313-316 | 273 0253 918 | Transistor 2SC2878(A/B) | |
| TR317 | 275 0053 907 | Transistor 2SK365(BL/GR) | |
| TR401 | 275 0053 907 | Transistor 2SK365(BL/GR) | |
| TR402,403 | 273 0222 907 | Transistor 2SC2458(Y/GR) | |
| TR405-408 | 271 0102 937 | Transistor 2SA1015(Y/GR) | |
| TR409-412 | 273 0222 907 | Transistor 2SC2458(Y/GR) | |
| TR413 | 269 0100 907 | Transistor DTA143TS(4.7K) | Built-in Resistor |
| TR414 | 271 0194 903 | Transistor 2SA1048(Y/GR) | |
| TR415 | 269 0100 907 | Transistor DTA143TS(4.7K) | Built-in Resistor |
| TR601 | 273 0198 947 | Transistor 2SC1815(Y/GR) | |
| TR602 | 271 0102 937 | Transistor 2SA1015(Y/GR) | |
| TR603 | 269 0029 907 | Transistor RN1204(47K-47K) | Built-in Resistor |
| TR604 | 271 0194 903 | Transistor 2SA1048(Y/GR) | |
| TR605-607 | 273 0222 907 | Transistor 2SC2458(Y/GR) | |
| D201-207 | 276 0432 903 | Diode 1SS270A | |
| D209-212 | 276 0432 903 | Diode 1SS270A | |
| D301,302 | 276 0432 903 | Diode 1SS270A | |
| D304-307 | 276 0432 903 | Diode 1SS270A | |
| D401 | 276 0432 903 | Diode 1SS270A | |
| D601-607 | 276 0553 905 | Diode 1SR35-200A(T93X) | |
| D608 | 276 0432 903 | Diode 1SS270A | |
| D609,610 | 276 0553 905 | Diode 1SR35-200A(T93X) | |
| D61,612 | 276 0432 903 | Diode 1SS270A | |

PRINTED WIRING BOARD (Pattern Side) 1U-1950H TUNER UNIT

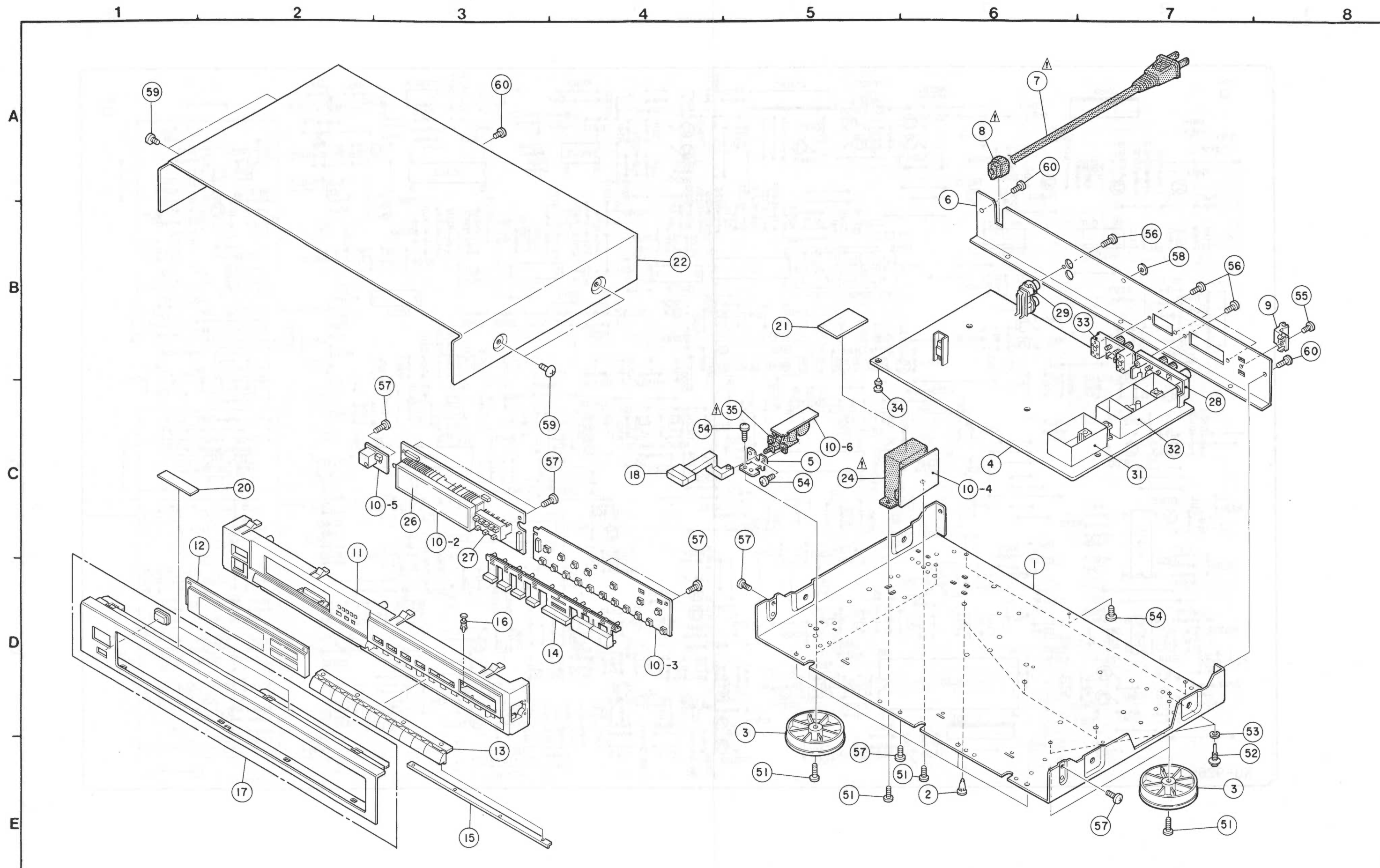


1 2 3 4 5 6 7 8



A
B
C
D
E

EXPLODED VIEW



PARTS LIST OF EXPLODED VIEW

| Ref. No. | Part No. | Part Name | Remarks |
|----------------------------|--------------|----------------------|-------------------|
| ● 1 | 411 0752 600 | Main Chassis | |
| ● 2 | 412 1979 003 | P.W.B. Holder | |
| 3 | 104 0208 201 | Foot Ass'y | |
| ● 4 | KU-9265 | Tuner Unit | Main |
| ● 5 | 441 0658 116 | Switch Bracket | |
| ● 6 | 105 1069 002 | Rear Panel | |
| ▲ 7 | 206 2060 002 | AC Cord (Polarized) | |
| ▲ 8 | 445 0056 008 | Cord Bush | |
| ● 9 | 146 0925 009 | Antenna Holder | |
| ● 10 | 1U-1950 H | Tuner Unit | Display Unit etc. |
| 10-2 | — | Display Unit | |
| 10-3 | — | Tact Switch Unit | |
| 10-4 | — | Power Trans Unit | |
| 10-5 | — | Remote Sensor Unit | |
| 10-6 | — | Power Switch Unit | |
| ● 11 | 146 1440 004 | Inner Panel | |
| ● 12 | 143 0835 006 | Window | |
| 13 | 113 1164 209 | Push Button (Preset) | |
| 14 | 113 1277 002 | Push Button (Tuning) | |
| ● 15 | 412 2880 104 | Push Button Bracket | |
| 16 | 477 0096 007 | Push Rivet | |
| ● 17 | 144,2270 002 | Front Panel Ass'y | |
| 18 | 113 1278 001 | Power Button Ass'y | |
| 19 | 445 8004 007 | Wire Clamper | |
| ● 20 | 122 0146 028 | Himeron Sheet | |
| ● 21 | 461 0551 000 | Rubber Sheet | |
| ● 22 | 102 0122 378 | Top Cover | |
| 23 | — | — | |
| ▲ 24 | 233 5781 005 | Power Trans | |
| 26 | 393 4043 004 | FL Tube (FIP10TM7) | |
| ● 27 | 146,1087 001 | LED Holder | |
| 28 | 205 0433 010 | Antenna Terminal | For FM/AM |
| 29 | 205 0274 004 | 2P Connector Base | |
| ● 31 | 414 0429 000 | Shield Case(A) | |
| ● 32 | 414 0543 009 | Shield Case(B) | |
| ● 33 | 205 0510 001 | 2P Antenna Terminal | For AM EXIT |
| ● 34 | 412 2814 002 | Card Spacer(L=8) | |
| ▲ 35 | 212 0286 003 | Power Switch | |
| SCREWS & WASHER | | | |
| 51 | 473 7002 021 | Screw 3x8 CBTS(S)-B | |
| 52 | 477 0276 018 | Earth Screw | |
| 53 | 475 2003 005 | 3φ Spring Washer | |
| 54 | 473 7002 034 | Screw 3x6 CBTS(S)-B | |
| 55 | 473 7006 027 | Screw 3x10 CBTS(S)-B | |
| 56 | 477 0064 107 | Fixing Screw | |
| 57 | 473 7508 017 | Screw 3x10 CBTS(P)-B | |
| 58 | 415 0501 002 | Washer | |
| 59 | 477 0263 005 | 3P. Swelling Screw | |
| 60 | 473 7015 018 | Screw 3x8 CBTS(S)-B | |

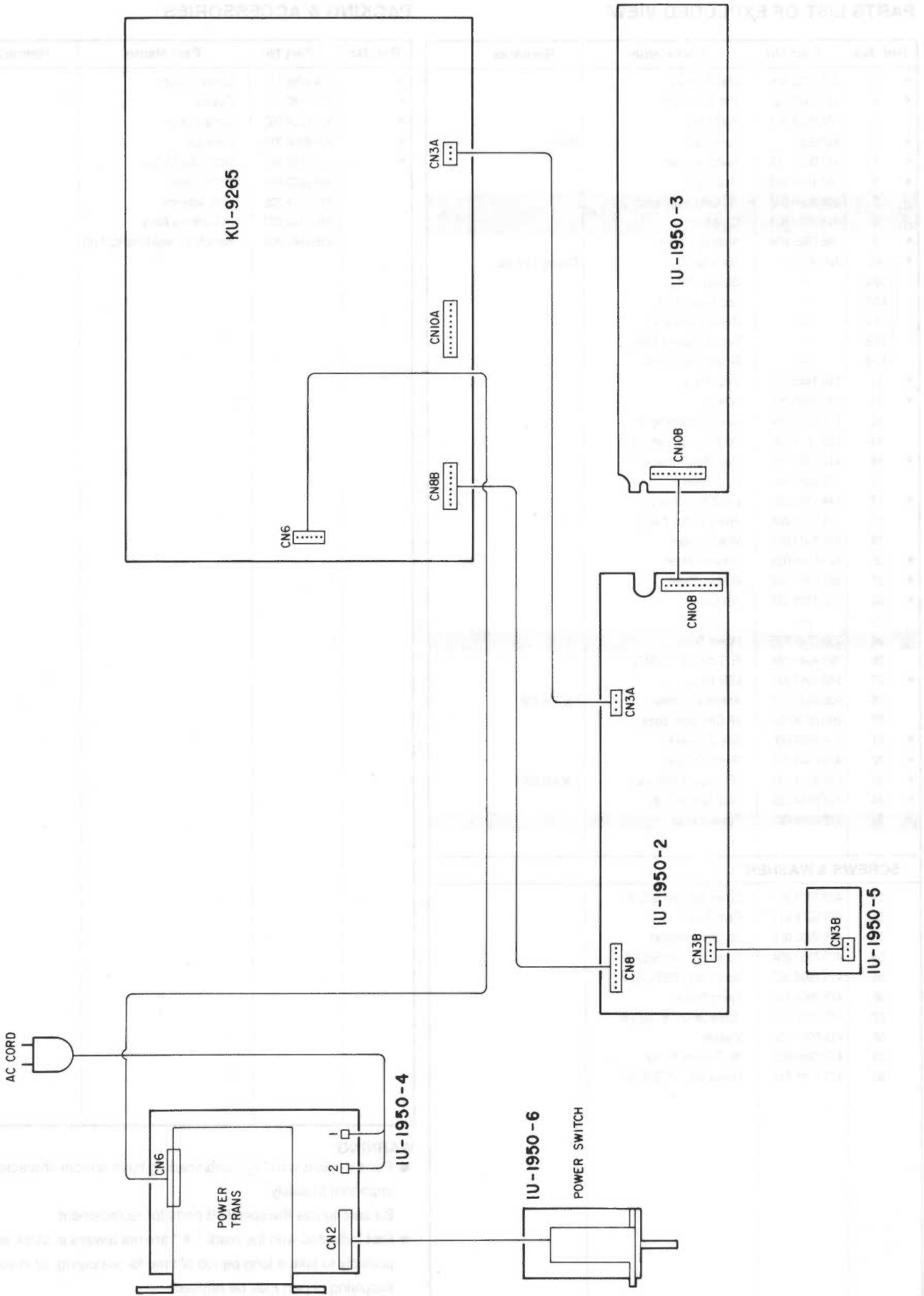
PACKING & ACCESSORIES

| Ref. No. | Part No. | Part Name | Remarks | Q'ty |
|----------|--------------|-----------------------------|---------|------|
| ● | 504 0090 017 | Cabinet Cover | | 1 |
| ● | 503 0762 106 | Cushion | | 2 |
| ● | 501 1664 003 | Carton Case | | 1 |
| ● | 505 8006 019 | Envelope | | 1 |
| ● | 511 2436 101 | Instruction Manual | | 1 |
| | 203 2223 002 | 2P Pin Cord | | 1 |
| | 231 1129 005 | Loop Antenna | | 1 |
| | 395 0020 027 | FM Antenna Ass'y | | 1 |
| | 499 0147 008 | Remote Control Unit(RC-126) | | 1 |

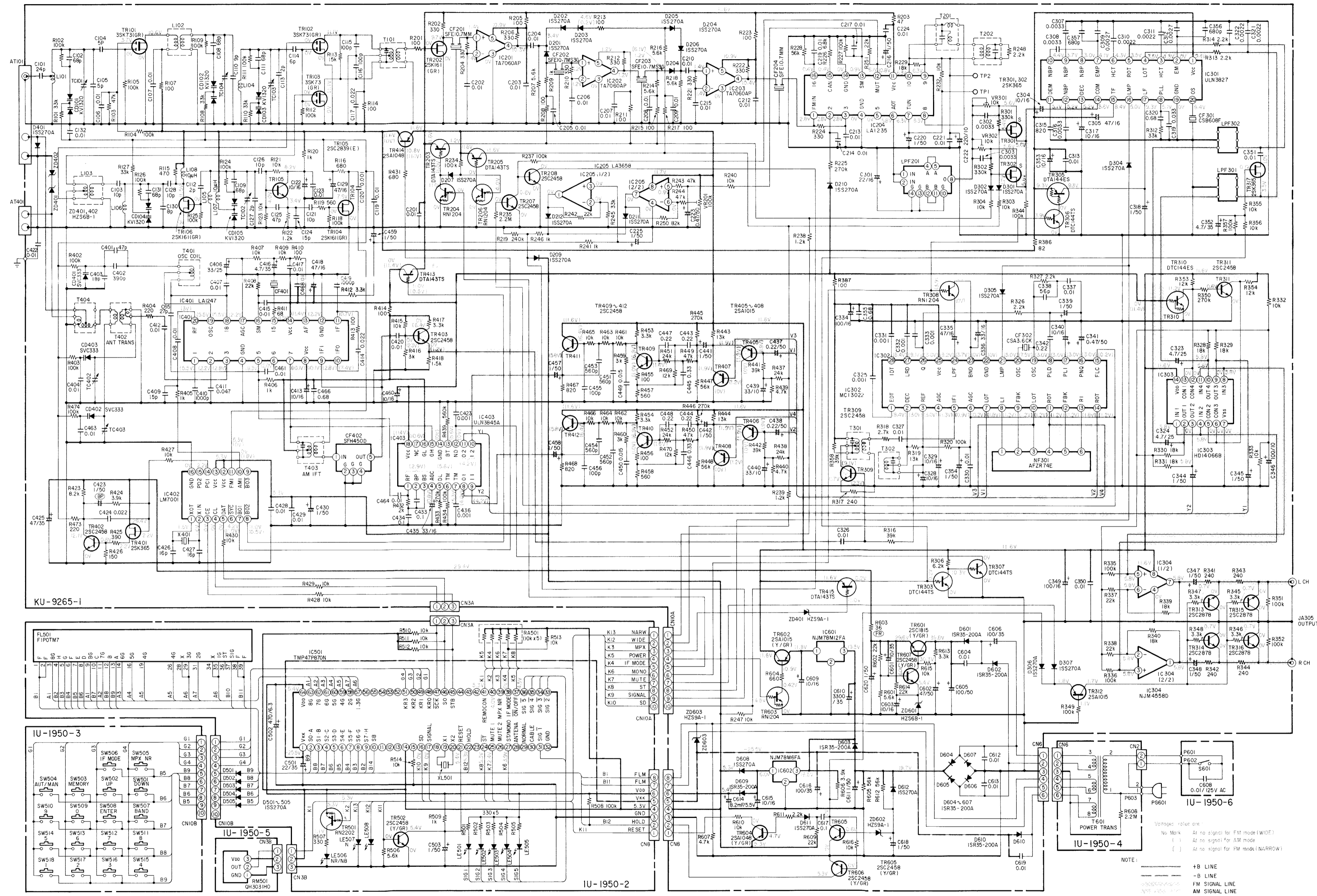
WARNING:

- Parts marked with "▲" and/shading have special characteristics important to safety.
Be sure to use the specified parts for replacement.
- Part indicated with the mark "●" are not always in stock and possibly to take a long period of time for supplying, or in some case supplying of part may be refused.

WIRING DIAGRAM



1 2 3 4 5 6 7 8 9 10 11



KU-9265-1

IU-1950-3

IU-1950-2

IU-1950-4

IU-1950-5

IU-1950-6

NOTE:

— +B LINE
 - - - -B LINE
 --- FM SIGNAL LINE
 --- AM SIGNAL LINE

WARNING:
 Parts marked with this symbol have critical characteristics.
 Use ONLY replacement parts recommended by the manufacturer.

CAUTION:
 Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 millamps, or if the resistance from chassis to either side of the power cord is less than 240 kohms, the unit is defective.

WARNING:
 DO NOT return the unit to the customer until the problem is located and corrected.

NOTES
 ALL RESISTANCE VALUES IN OHM, k=1,000 OHM, M=1,000,000 OHM
 ALL CAPACITANCE VALUES IN MICRO-FARAD, P=MICRO-MICRO-FARAD
 EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
 CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

DENON

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