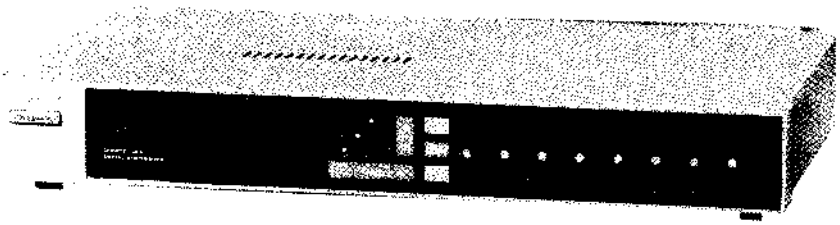
ST-V5L

AEP Model
UK Model



FM STEREO/FM-AM TUNER

SPECIFICATIONS

FM TUNER SECTION

Tuning Range: 87.5 MHz — 108 MHz

Antenna Terminals: 300 Ω, balanced
75 Ω, unbalanced
ST-V5L available in West Germany:
75 Ω, IEC connector

Intermediate Frequency: 10.7 MHz

	(at 40 kHz deviation)
Sensitivity	at 46 dB quieting 17.3 dBf, 4 μV (mono) 38.3 dBf, 45 μV (stereo)
Usable sensitivity	10.3 dBf, 1.8 μV (IHF) 1.6 μV (S/N = 26 dB)
Signal-to-noise ratio	76 dB (mono) 71 dB (stereo)
Harmonic distortion at 1 kHz	0.08% (mono) 0.15% (stereo)
IM distortion	0.08% (mono) 0.15% (stereo)
Separation at 1 kHz	50 dB
Frequency response	40 Hz - 12.5 kHz ±0.5 dB 30 Hz - 15 kHz $^{+0.5}_{-2.0}$ dB

Selectivity	at 300 kHz 80 dB
Capture ratio	1.0 dB
AM suppression ratio	60 dB
Image response ratio	50 dB
IF response ratio	90 dB
Spurious response ratio	70 dB
RF intermodulation	60 dB (IHF)
Sub-carrier product ratio	60 dB
Muting threshold	approx. 25 dBf
Output level/ impedance	at 75 kHz deviation 750 mV, 4.7 k ohms

— Continued on page 2 —

MICROFILM

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SONY®
SERVICE MANUAL

MW/LW tuner section

		MW	LW
Tuning range		522 kHz – 1,602 kHz	153 kHz – 344 kHz
Antenna	ferrite-bar antenna	provided	provided
	external antenna terminal	provided	provided
Intermediate frequency		450 kHz	450 kHz
Usable sensitivity	ferrite-bar antenna	200 μV/m (at 999 kHz)	500 μV/m (at 230 kHz)
	external antenna	30 μV (at 999 kHz)	50 μV (at 230 kHz)
Signal-to-noise ratio		55 dB	55 dB
Harmonic distortion		0.3%	0.3%
Selectivity		35 dB (9 kHz)	35 dB (9 kHz)
Image response ratio		45 dB (at 999 kHz)	45 dB (at 230 kHz)

GENERAL

System: PLL quartz-locked digital synthesizer system

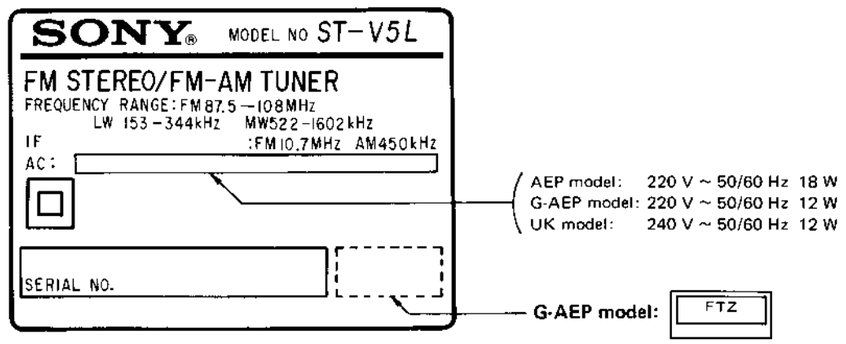
Power Requirements: AEP model: 220 V ac (or 240 V ac adjustable by authorized Sony personnel), 50/60 Hz
UK model: 240 V ac (or 220 V ac adjustable by authorized Sony personnel), 50 Hz

Power Consumption: AEP model: 18 W
G-AEP model: 12W
UK model: 12 W

AC Outlet: AEP model: 1 unswitched, 100 watts max.
UK model: 1 switched, 100 watts max.

Dimensions: Approx. 355(w) x 55(h) x 270(d) mm (14 x 2 1/8 x 10 3/8 inches) including projecting parts and controls

Weight: Approx. 2.5 kg (5 lbs 9 oz) net



FEATURES

The quartz-locked digital frequency-synthesizer system allows accurate and stable tuning that is not affected by temperature variations or long period usage.

Quick and accurate station selection is possible with an electronic digital readout on the frequency display window.
Two methods of tuning are available :
Manual tuning, in which each band can be scanned either rapidly or step-by-step.
Memory preset tuning, in which the frequency of up to eight stations can be stored in the memory. Various reception conditions can also be memorized for each station to permit one-touch reception.

The MEMORY SCAN key allows you to scan automatically the preset stations only, listening to each one for a few seconds to check if there is anything you would like to listen to.

An FM muting circuit is incorporated to eliminate any interstation noise. The setting of the STEREO /MUTING key can also be memorized for each station, and permits one-touch reception with a suitable mode/FM muting setting.

The memory contents are retained by a lithium manganese battery incorporated in the tuner when the power is turned off. This battery also allows the last station tuned in to be held in the memory.

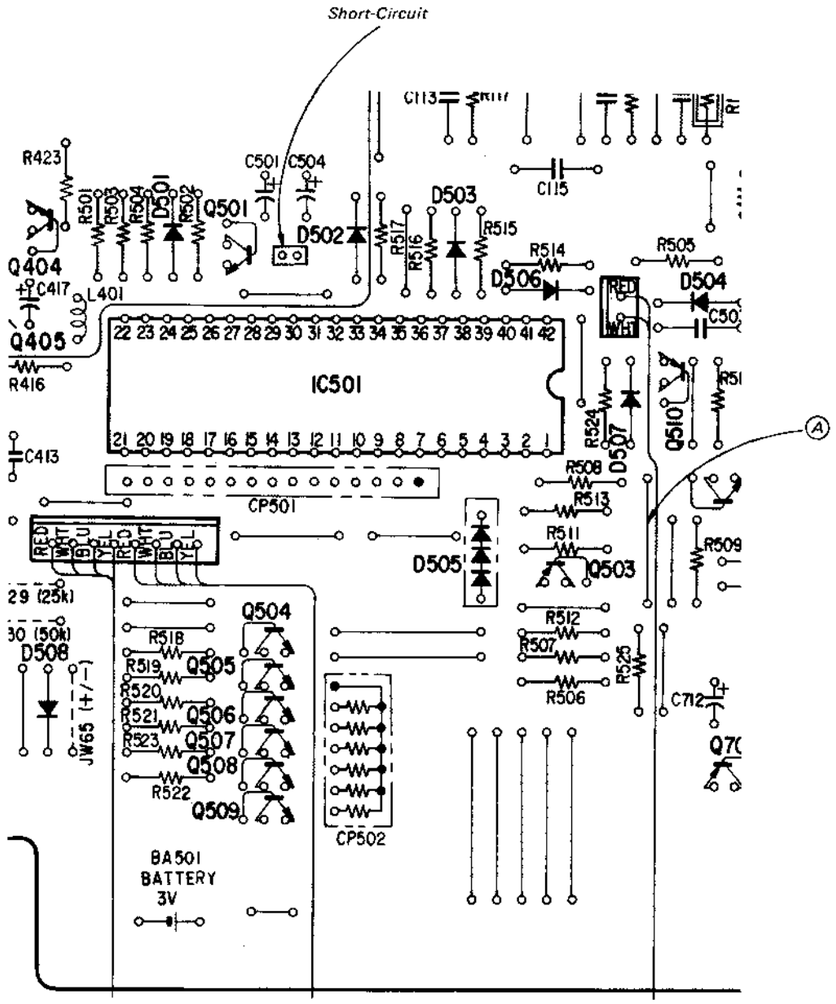
The three-step LED signal strength indicator provides an easy readout of the received signal strength.

ST-V5L

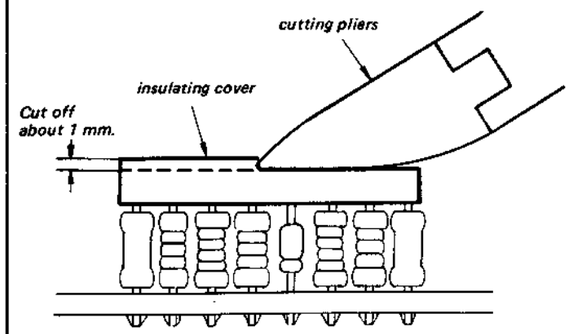
REPAIRING PRECAUTIONS

When changing IC501 or the parts surrounding IC501, perform as follows:

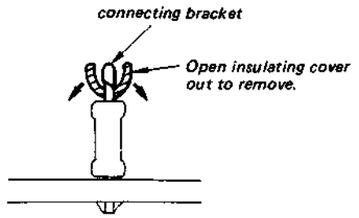
1. Remove jumper wire (A) .
2. Replace the IC, transistor, or battery.
3. Connect jumper wire (A) .
4. Turn the power ON.
5. Short-circuit terminal pin momentarily. (reset)

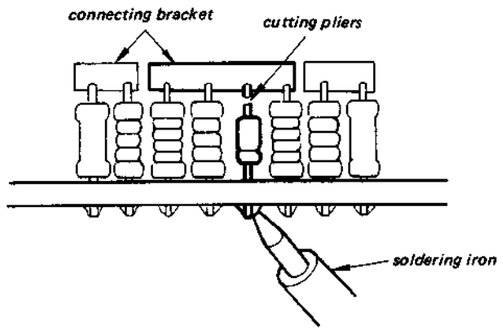


REPAIR METHOD FOR HYBRID CIRCUIT BLOCK

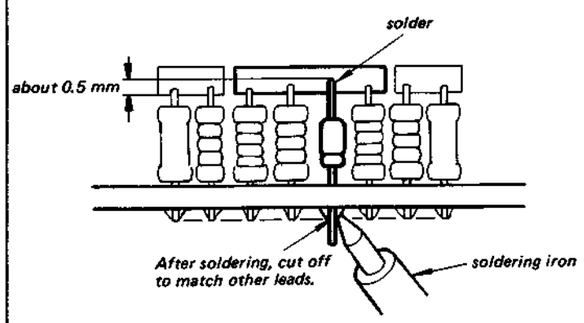


Using a cutting pliers, cut off the upper portion of the insulating cover about 1 mm, exposing the top of the connecting brackets.

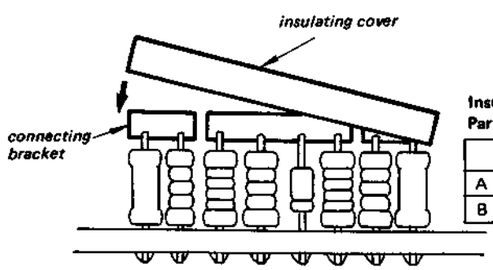




Cut off the lead of the defective part with cutting pliers. Remove solder and take out the defective part.



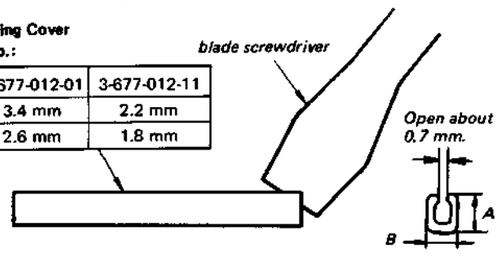
Insert the new part on the board and solder the lead to the board. Cut off the lead on the connecting bracket side so that it overlaps by about 0.5 mm, and solder to the connecting bracket.



Open the insulating cover groove about 0.7 mm and place over the connecting brackets, positioning one end first.

Insulating Cover Part No.:

	3-677-012-01	3-677-012-11
A	3.4 mm	2.2 mm
B	2.6 mm	1.8 mm

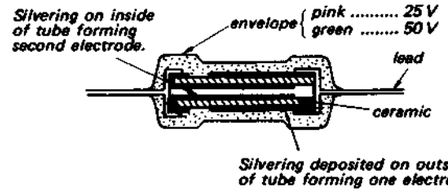


• THE CERAMIC CAPACITORS

This set uses tube-type ceramic capacitors whose shape is identical with the carbon resistors. Be careful not to use resistors instead of capacitors in repairing.

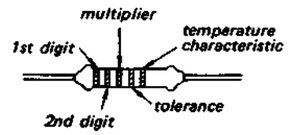
Disc-type ceramic capacitors can be used for replacing those originally used in the set.

Two kinds of drilled holes are provided in some patterns for mounting the tube-type and disc-type ceramic capacitors. Use appropriate holes where applicable.

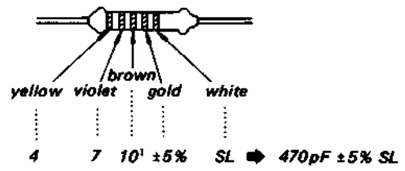


COLOR CODE (in pF)

Color	1st or 2nd Digit	Multiplier	Tolerance	Temperature characteristic
brown	1	10^1		Y
red	2	10^2		D
orange	3	10^3		
yellow	4	10^4		RH
green	5			
blue	6			
violet	7			UJ
gray	8		±30%	X
white	9			SL
black	0	10^0	±20%	CH
gold		10^{-1}	± 5%	V
silver		10^{-2}	±10%	B



Example:



• IF OFFSET ADJUSTMENT:

Circuit Connections Depending on the Ceramic Filter (CF101 – 103)

This set employs five types of ceramic filter (CF101 – 103) which have different center frequency. Therefore FM IF offset adjustment by jumper wire connection is necessary to match the center frequency of the ceramic filter used with FM intermediate frequency.

Ceramic filter		Jumper wire connection			FM intermediate frequency (MHz)
Color mark	Center frequency (MHz)	JW29 (25k)	JW30 (50k)	JW65 (+/–)	
White	10.750	X	O	X	10.750
Orange	10.725	O	X	X	10.725
Red	10.700	X	X	X	10.700
Blue	10.675	O	X	O	10.675
Black	10.650	X	O	O	10.650

O : connected
X : not connected

FM intermediate frequency is determined by five types as shown above with specifing the state at terminal 24, 25, and 26 of IC402 (PLL controller) by Jumper wire connection.

* CF101, 102 and 103 should be used the ceramic filters of same center frequency.

• Handling Precautions for MOS IC (IC402: TCP 4621BP)

Generally, the insulation resistance of the oxide layer in MOS IC structures is very high, and the oxide layer is very thin. Because of this, it is possible that the static voltages usually present on clothes and the human body will be enough to generate a potential difference across the insulator, high enough to cause a breakdown of the insulating layer.

The following precautions should be taken while handling these ICs.
(Particular care should be taken under conditions of low humidity.)

off the upper
about 1 mm,
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remove.

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and take out

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Cut off the
side so that it
solder to the

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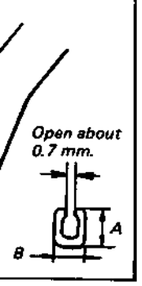
ecting brack-



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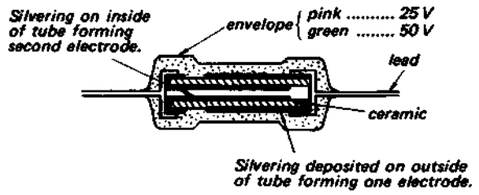

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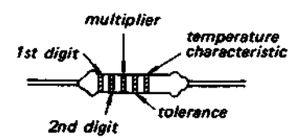
yellow	4	10^4		RH
green	5			
blue	6			
violet	7			UJ
gray	8		±30%	X
white	9			SL
black	0	10^0	±20%	CH
gold		10^{-1}	± 5%	V
silver		10^{-2}	±10%	B



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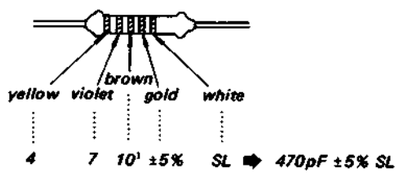

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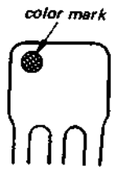

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The following precautions should be taken while handling these ICs.

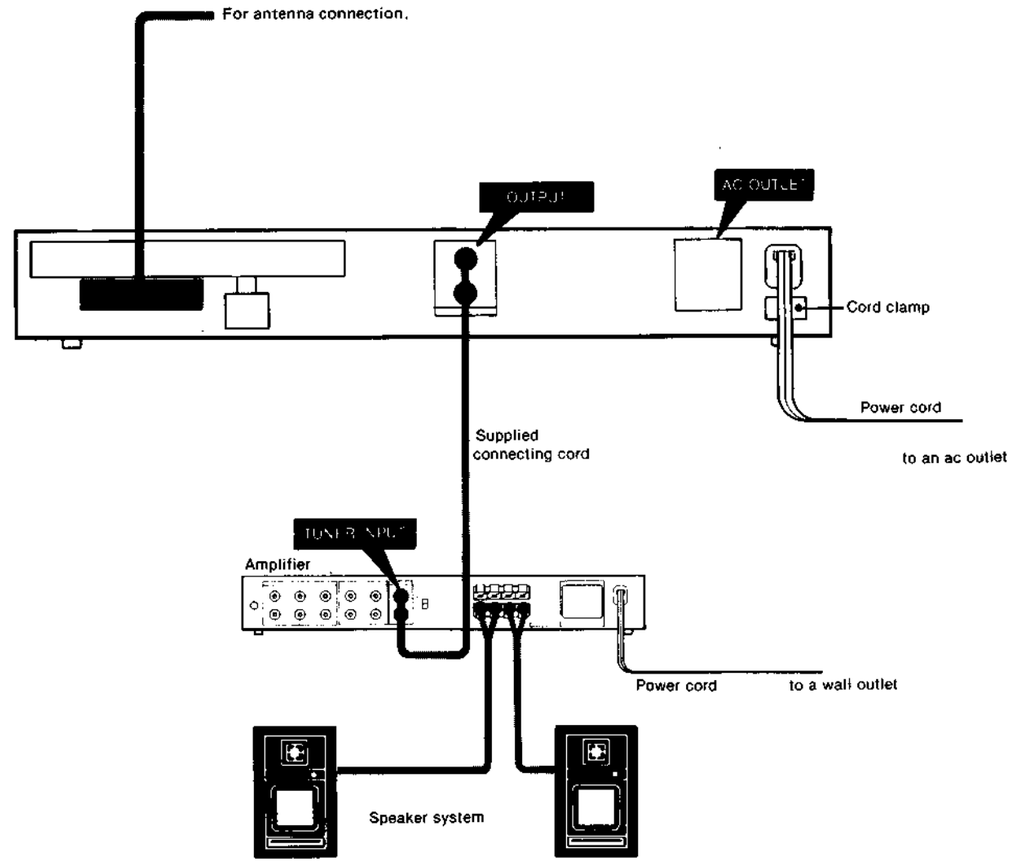
(Particular care should be taken under conditions of low humidity.)

SYSTEM CONNECTIONS

The power cord should be connected last of all, first making sure that the POWER switch is turned off.

CONNECTION DIAGRAMS

Connection to the amplifier

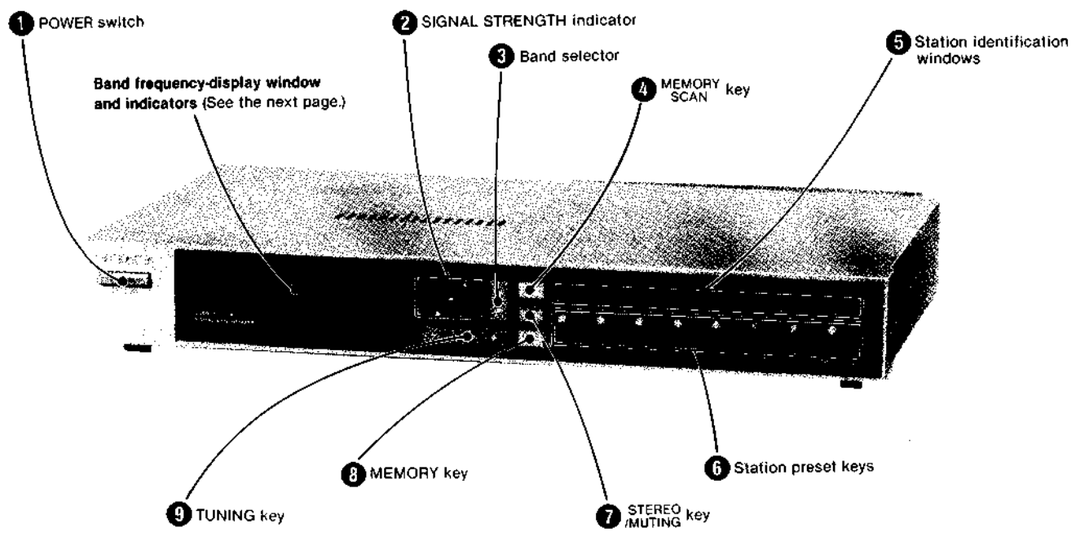


Note on the cord clamp

Run the power cord and the speaker cords through this cord clamp. Keep these cords away from the ferrite-bar antenna of the tuner to avoid possible hum pickup.

LOCATION AND FUNCTION OF CONTROLS

Before plugging in or attempting to operate this tuner, it is suggested that you familiarize yourself with all its switches and the purpose of each. Each number in the photo is keyed to the descriptive text.



❶ PQWER switch
Depress to turn on the power. To turn the power off, press the switch again.

❷ SIGNAL STRENGTH indicator
Indicates the strength of the tuned signal by the amount of indicator illumination. The fullest illumination means the antenna input signal is strong. When the indicator illuminates only at the low end, it means the antenna input signal is weak.

❸ Band selector
Selects the desired band: FM, MW or LW. Each time the selector is pressed, the band will change and the selected band will be indicated in the band/frequency-display window.

❹ MEMORY SCAN key
Press for automatic scanning of the stations memorized on the station preset keys. For details, refer to page 10.

❺ Station identification windows
Station labels (supplied) identifying memorized stations can be placed in these windows.

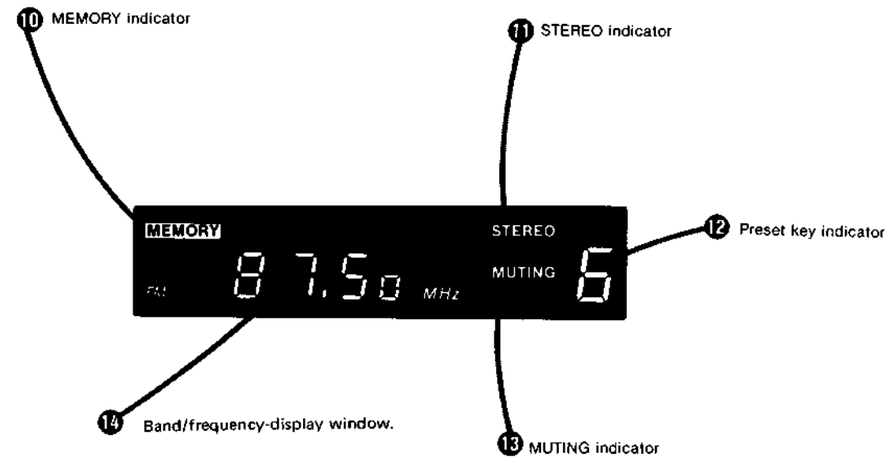
❻ Station preset keys
To call up a memorized station, press the appropriate key.

❼ STEREO /MUTING key
This key serves the dual purpose of a mode and FM muting switch. Normally keep this key engaged (the MUTING indicator illuminates) to eliminate FM interstation noise while tuning from station to station. The tuner operates in stereo mode for stereo sound sources and will be automatically switched to mono mode for monaural sound sources.
When you want to tune in a very weak station, or when an FM program is too noisy, press the key to disengage it. (The MUTING indicator illumination will go out.) This will enable the tuner to receive weak stations, although the stereo feature is sacrificed. In this case, keep the amplifier volume down to avoid speaker damage caused by the interstation noise.

❽ MEMORY key
Press to operate memory circuit. The MEMORY indicator will appear on the band/frequency-display window for a few seconds indicating that the memory circuit is standing by.

❾ TUNING key
Press either side of this key to change the received frequency.
Press the left side [−] to go to a lower frequency and the right side [+] to go to a higher.
To change the frequency continuously until the desired frequency is received, keep the key pressed.
The frequency figures will change rapidly. To change the frequency slowly to tune in a station accurately, press the key and release immediately.

BAND/FREQUENCY-DISPLAY WINDOW AND INDICATORS



❿ MEMORY indicator
When the MEMORY key is engaged, "MEMORY" will appear for a few seconds indicating that the memory circuit is standing by.

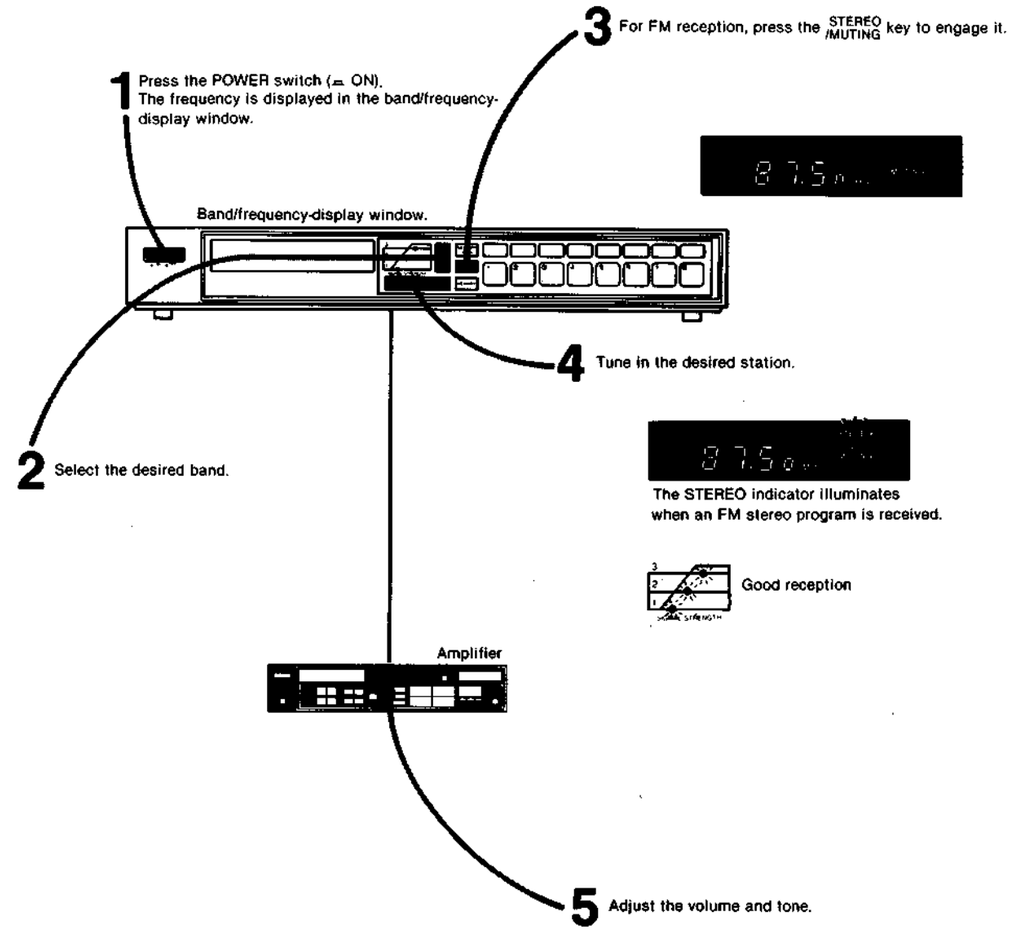
⓫ STEREO indicator
This indicator will light when an FM stereo program of sufficient signal strength is tuned in with the STEREO /MUTING key engaged.

⓬ Preset key indicator
When the station preset key is pressed, a figure from 1 to 8 corresponding to the pressed key will appear.
When the MEMORY SCAN key is pressed, the figures will change in sequence.

⓭ MUTING indicator
This indicator illuminates when the STEREO /MUTING key is engaged.

⓮ Band/frequency-display window
The frequency being received is displayed here in digits.

MANUAL TUNING



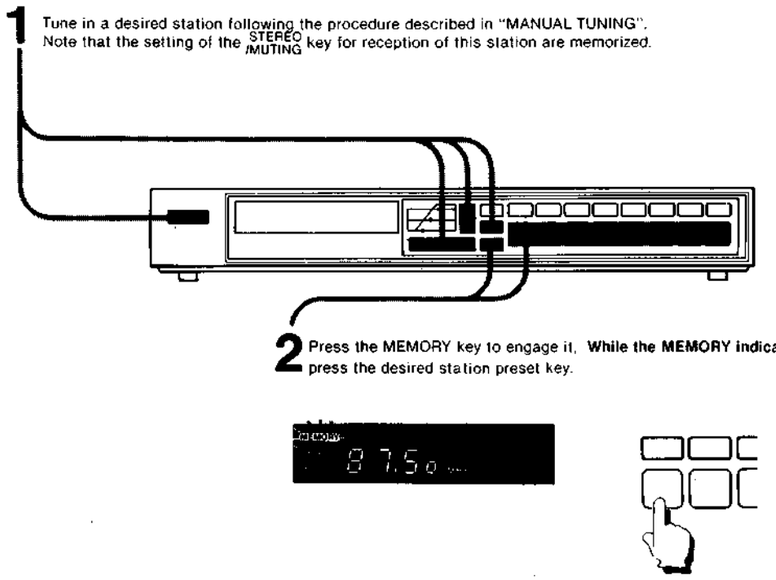
When the frequency figures reach the end of the tuning range of each band, the frequency will then be scanned from the opposite end of the tuning range.

To tune in a weak or noisy station
When FM stereo signals are noisy, or to tune in a very weak FM station, lower the volume and disengage the STEREO /MUTING key. The MUTING indicator will go out. This will result in better reception, at the sacrifice of the stereo effect.

MEMORY PRESET TUNING

This tuner's electronic tuning system (utilizing a PLL—Phase Locked Loop—synthesizer) and a memory circuit make tuning very easy. Once the frequencies of the stations you want to tune in are memorized, all you have to do is press a key.

TO MEMORIZE STATION FREQUENCIES
Preparation: A total of eight station preset keys can be preset for either FM, MW or LW in any desired sequence. Arrange the order of stations for each station preset key and note the band and the frequency of each in advance.



Repeat these steps for each station preset key.
Replace the station labels to conform to the selected memorized stations. See "STATION LABEL INSERTION" on page 11.

Notes
- The MEMORY indicator will go off automatically after a few seconds. When the indicator is out, the memory circuit does not operate to memorize the station.
- The previous memory will be erased when a new frequency is committed to the memory of the same key. An erasure cannot be made without a new input.

TO CHECK A MEMORIZED FREQUENCY
After the memory procedure is completed, confirm the memorized frequency. Press the TUNING key and change the frequency display indication. Press the station preset key to be checked. The frequency which had been memorized should then be indicated in the band/frequency-display window.

TO RECEIVE A MEMORIZED STATION
Turn the POWER switch on and press the desired station preset key.

To change temporarily the setting of the STEREO /MUTING key for memorized station
Simply press the STEREO /MUTING key. You can recall the original settings later by pressing the station preset key. See page 7 for STEREO /MUTING key.

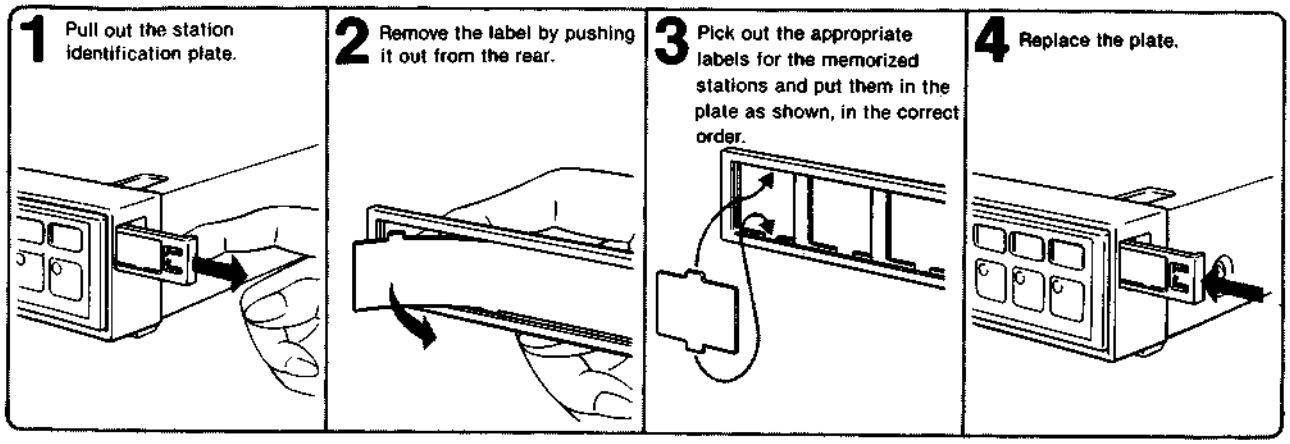
Memory of the last received station
This tuner includes a memory circuit to remember the station which had been received for more than one second just before the power was turned off. This station will be automatically tuned in when the power is turned on again.
This memory system enables you to make a timer-activated recording from the tuner.

MEMORY SCANNING
The MEMORY SCAN key allows you to quickly hear what kind of programs are being broadcast by the memorized stations.
When you press the MEMORY SCAN key, the memorized stations are automatically received in order from the memorized station to the immediate right of the station being received for about 4 seconds each.
Pressing a particular station preset key stops the scanning.

When you press the MEMORY SCAN key during manual tuning, scanning will start from the station memorized on the leftmost station preset key.

STATION LABEL INSERTION

Station labels are supplied for identification of the preset stations.
Affix the labels as follows :



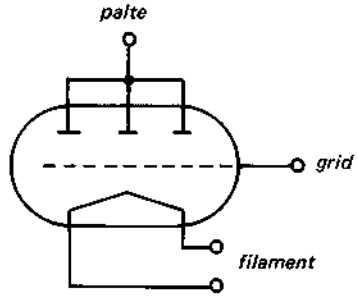
Check that the station labels match the memorized stations by tuning in to each station.

SECTION 1
OUTLINE

1-1. THE DISPLAY CIRCUIT

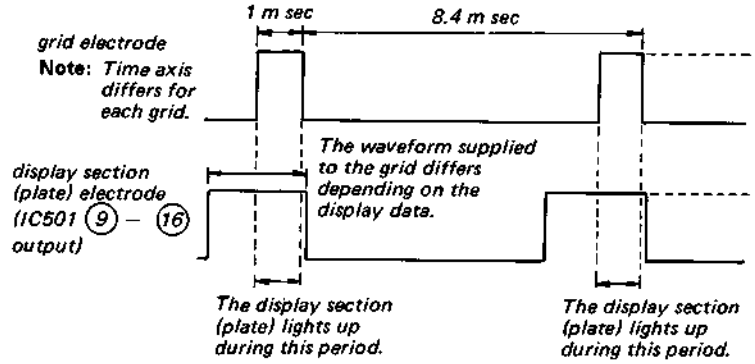
Fluorescent Display Tube

The fluorescent display structure is as shown below. The grid separates in each block. If B– voltage is supplied to the grid, the display tube will not light up. If B+ voltage is supplied to the grid and a voltage equal to that of the grid, or a larger voltage is supplied to the display section (plate), then current flows and that portion lights up.



The Waveforms Supplied to the Grid and the Plate

The drive signal of the grid electrode switches the grid drive transistor Q504 – Q509 by the digit signal from ⑧ , ⑰ , ⑱ , ⑲ , ⑳ , ㉒ pins of IC501 for control. When the grid drive transistor is OFF, the grid electrode of the fluorescent display tube becomes negative potential (–28 V) through the emitter resistor and the display section (plate) does not light up. When the grid drive transistor is ON, the grid electrode of the fluorescent display tube becomes positive potential (4 V). When both the grid electrode and the display section (plate) are positive potential, the display section lights up. The drive signal of the plate electrode is controlled by segment display data output from ⑨, ⑩ , ⑪ , ⑫ , ⑬ , ⑭ , ⑮ , ⑯ pins of the IC501 for control.



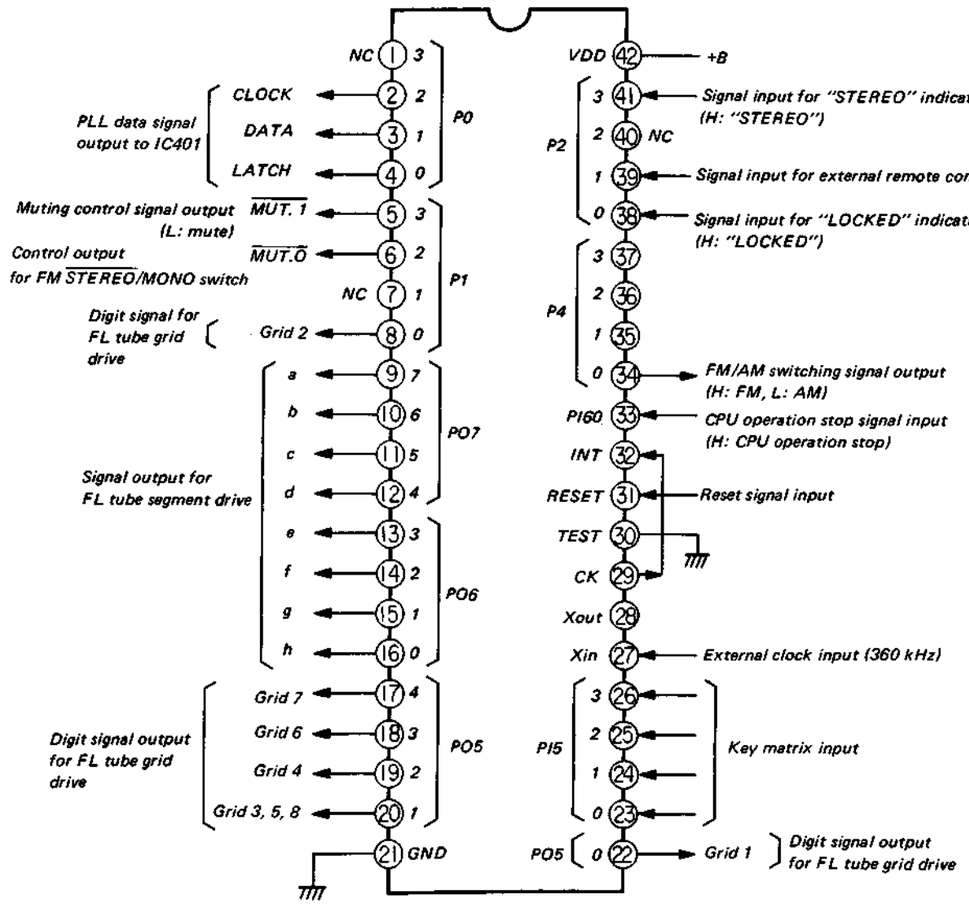
• CONTROLLER IC TCP4621BP-6505

IC402 (TCP4621BP-6505) is a microcomputer IC.
The terminal functions are as follows:
Main Functions:

- Key input detection
- Fluorescent indicator tube (FL501) indication output
- Data transmission to PLL frequency synthesizer IC (IC401: CX778A) (16 bit serial data)

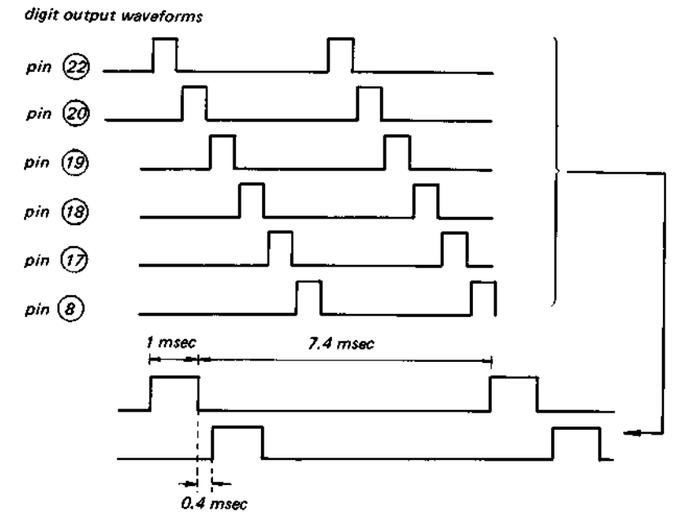
IC501 Terminal Functions

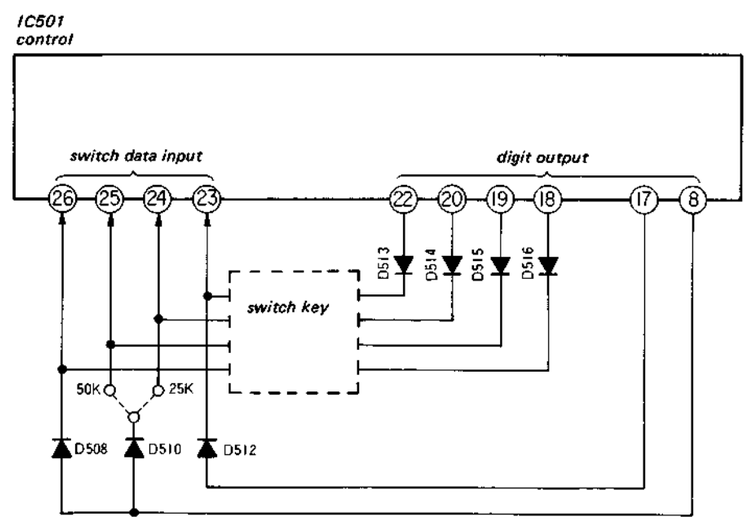
FL tube. . . . Fluorescent Display Tube



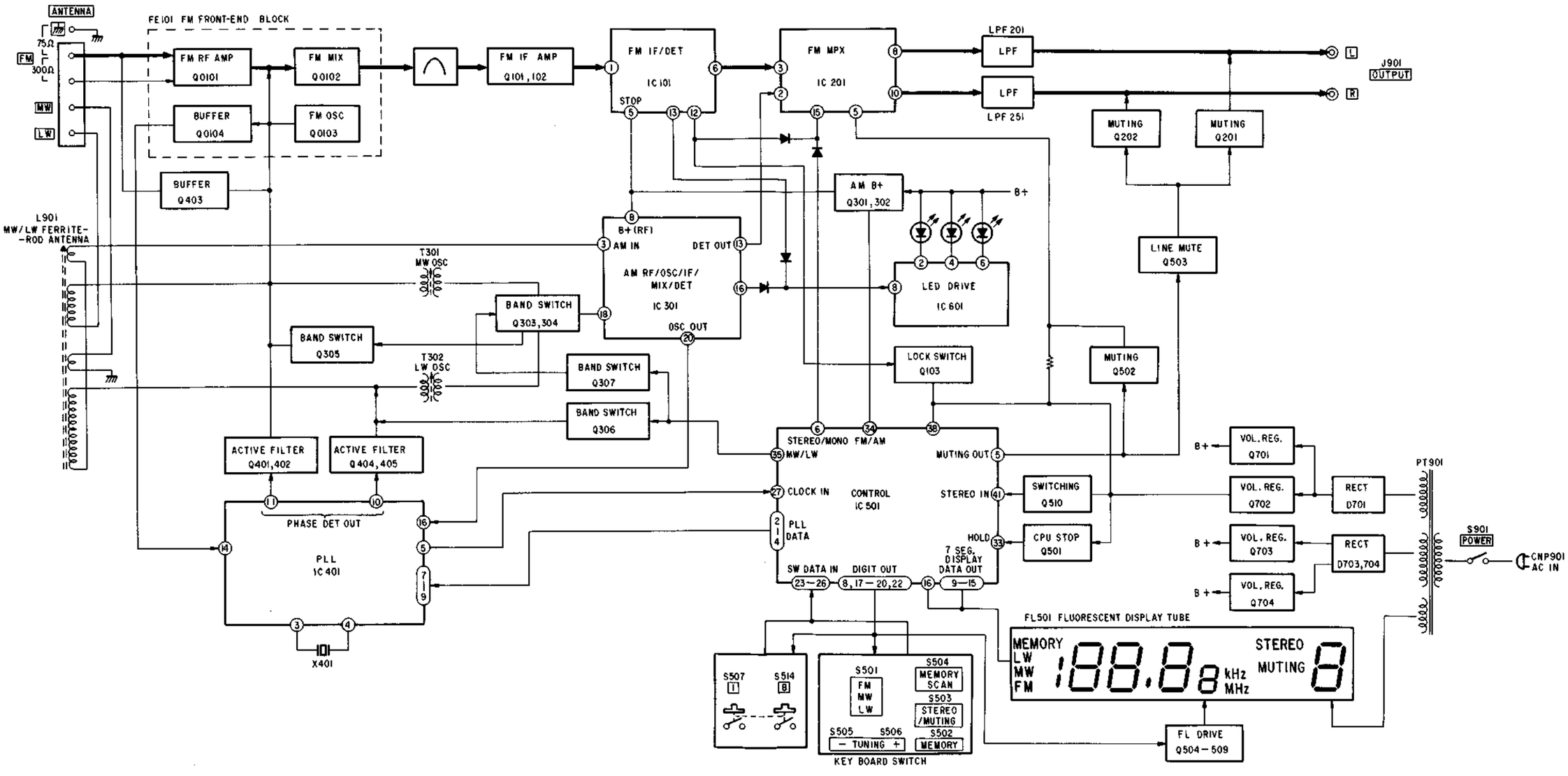
SWITCH DATA INPUT

The digit output from IC501 for tuner control is input into IC501 as each switch data by the key switch matrix, then each control output of tuner section is output.





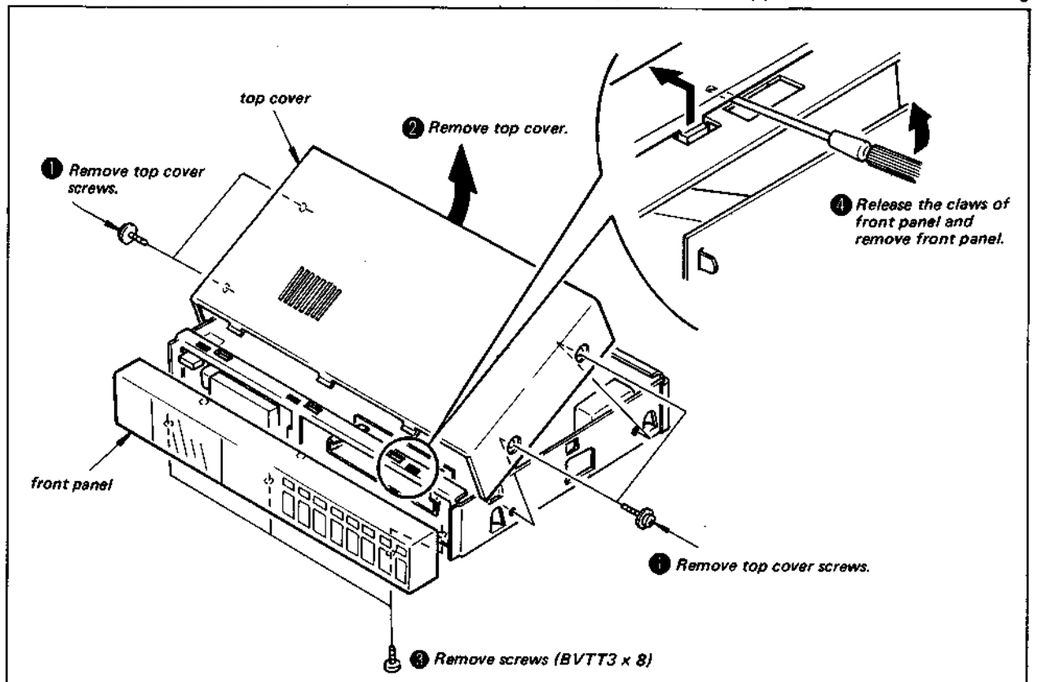
1-2. BLOCK DIAGRAM



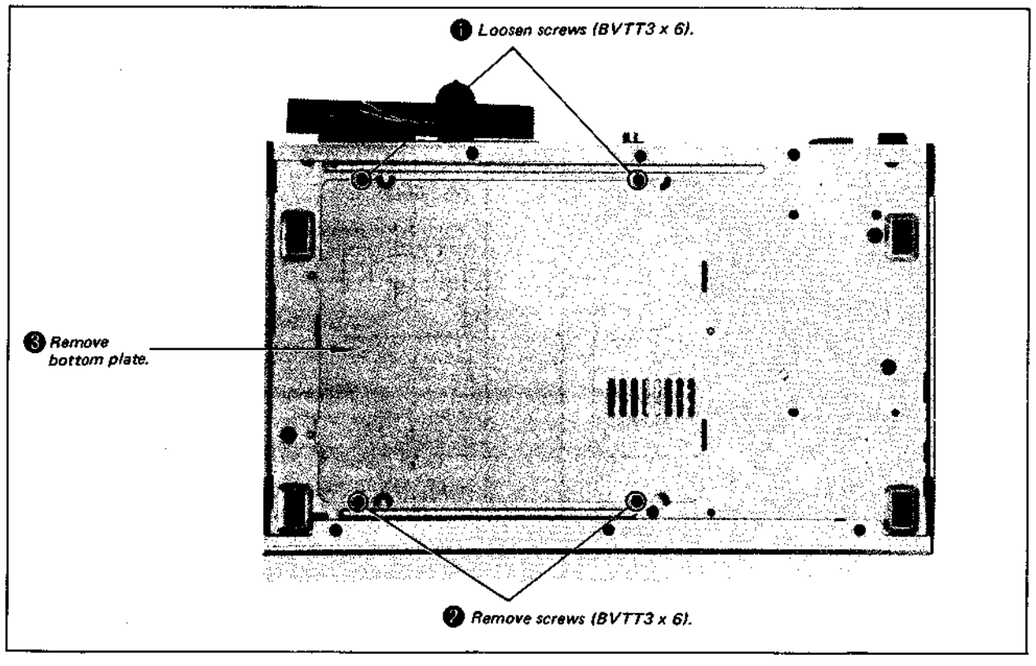
SECTION 2
DISASSEMBLY

2-1. TOP COVER AND FRONT PANEL REMOVAL

• Follow the disassembly procedure in the numerical order given.



2-2. BOTTOM PLATE REMOVAL



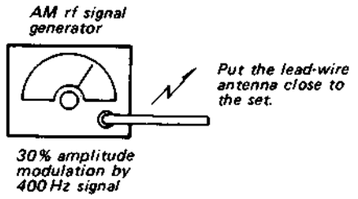
SECTION 3
ADJUSTMENTS

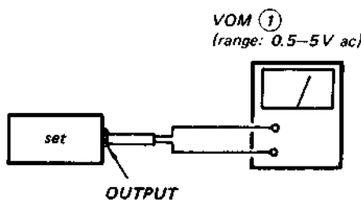
Note:
Traking adjustment of LW section should be made earlier than that of MW section.

MW/LW SECTION

Setting:

Band Selector: MW/LW

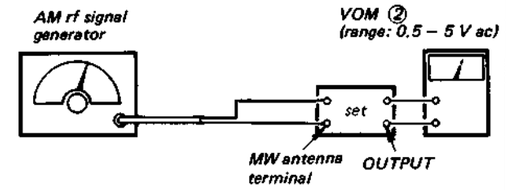




• Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF ALIGNMENT

Procedure:

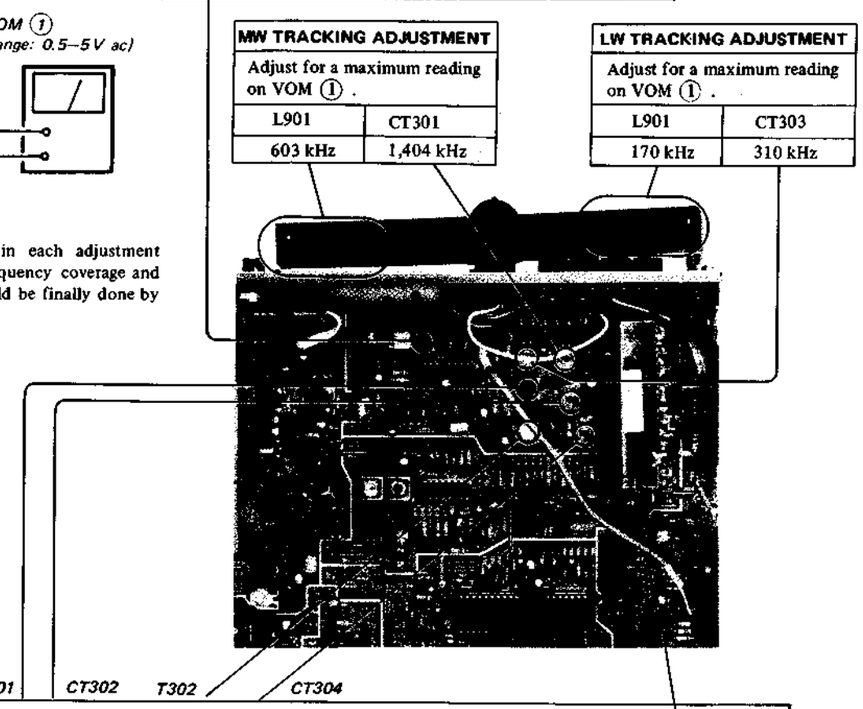


Carrier frequency: 1,404 kHz
30% amplitude modulation by 400 Hz signal
Output level: as low as possible

1. Tune the set to 1,404 kHz and adjust IFT301 for a maximum reading on VOM ② .

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ① .	
L901	CT301
603 kHz	1,404 kHz

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM ① .	
L901	CT303
170 kHz	310 kHz



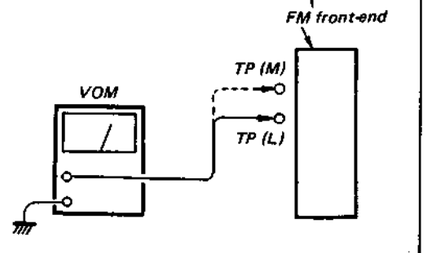
MW/LW FREQUENCY COVERAGE ADJUSTMENT

• **MW**

Frequency Display	1,602kHz	522 kHz
Voltage at TP (M)	22 V	1.6 V
Adjustment Parts	CT302	T301

• **LW**

Frequency Display	344 kHz	153 kHz
Voltage at TP (L)	18.5 V	2.2 V
Adjustment Parts	CT304	T302



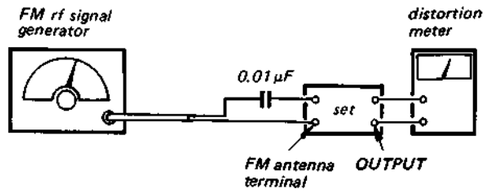
FM SECTION

FM Discriminator Alignment

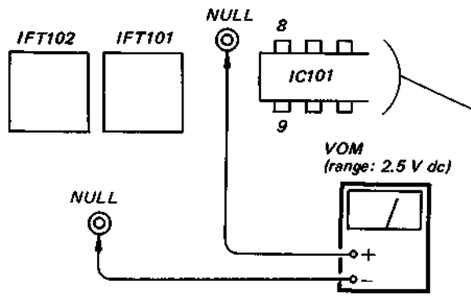
Setting:

STEREO/MUTING switch: OFF

Procedure:



Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Modulation: 400 Hz, 40 kHz deviation (100%)



1. Tune the set to 98MHz.
2. Connect a VOM to NULL test point and adjust the primary-side core (IFT101) for 0V DC reading on the VOM.
3. Adjust the secondary-side core (IFT102) for a minimum reading on the distortion meter.

Note: Repeat the secondary-side and primary-side adjustments several times.
For step 3, adjust after removing VOM.

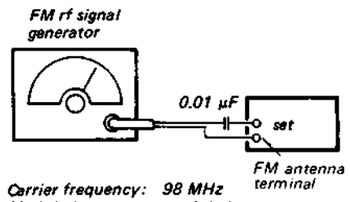
VCO Adjustment

Setting:

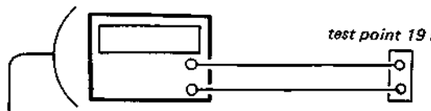
STEREO/MUTING Switch: OFF

A) Regular Method

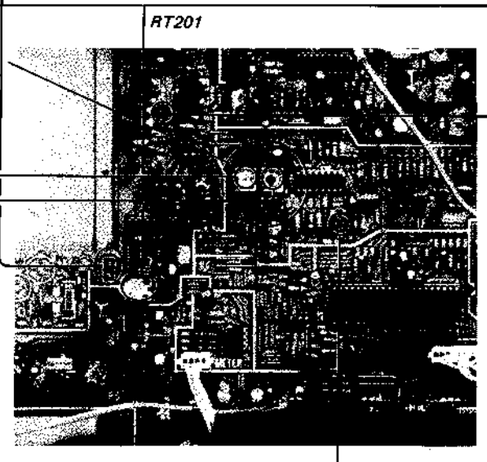
Procedure:



Carrier frequency: 98 MHz
Modulation: no modulation
Output level: 1 mV (60 dB)



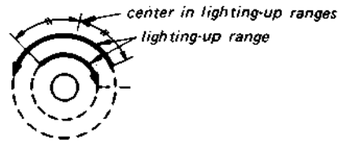
1. Tune the set to 98 MHz.
2. Adjust RT201 for 19 kHz ± 50 Hz on the counter.



B) Simple Method

Procedure:

1. Tune the set to the FM stereo broadcasting signal.
2. Turn RT201 clockwise or counterclockwise and memorize the lighting-up range of the stereo lamp.
3. Secure RT201 at the center of the lighting-up range of both turns as shown below.

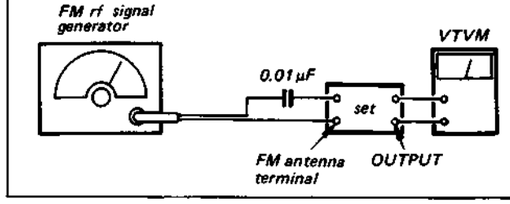


FM Muting Level Adjustment

Setting:

STEREO/MUTING switch: ON

Procedure:



Carrier frequency: 98 MHz
Modulation: 400 Hz, 40 kHz deviation (100 %)
Output level: 17.8µV (25 dB)

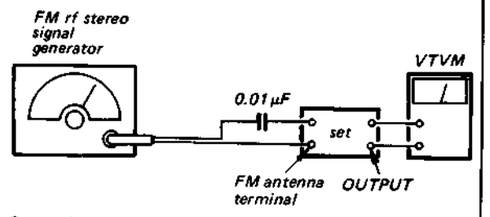
1. Tune the set to 98MHz by pressing the MANUAL TUNING switches.
2. Adjust RT101 for a 0V reading on the VTVM.

FM Stereo Separation Adjustment

Setting:

STEREO/MUTING switch: ON

Procedure:



Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Modulation:

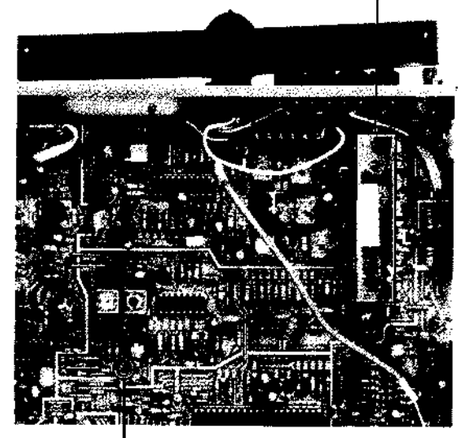
Audio (400 Hz): 16.25 kHz deviation (40%)
Pilot (19 kHz): 7.5 kHz deviation (19%)
Sub-channel: 16.25 kHz deviation (40%)

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RT202 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RT202 for minimum reading.

L-CH Stereo separation: Ⓐ – Ⓑ
R-CH Stereo separation: Ⓒ – Ⓓ

The separations of both channels should be equal.

The FM front-end is carefully adjusted at the factory and is supplied as one whole block for replacement.

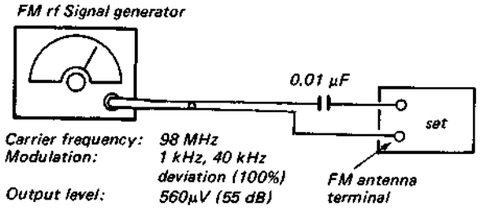


Meter Calibration

Setting:

STEREO/MUTING switch: ON

Procedure:



Carrier frequency: 98 MHz
Modulation: 1 kHz, 40 kHz deviation (100%)
Output level: 560µV (55 dB)

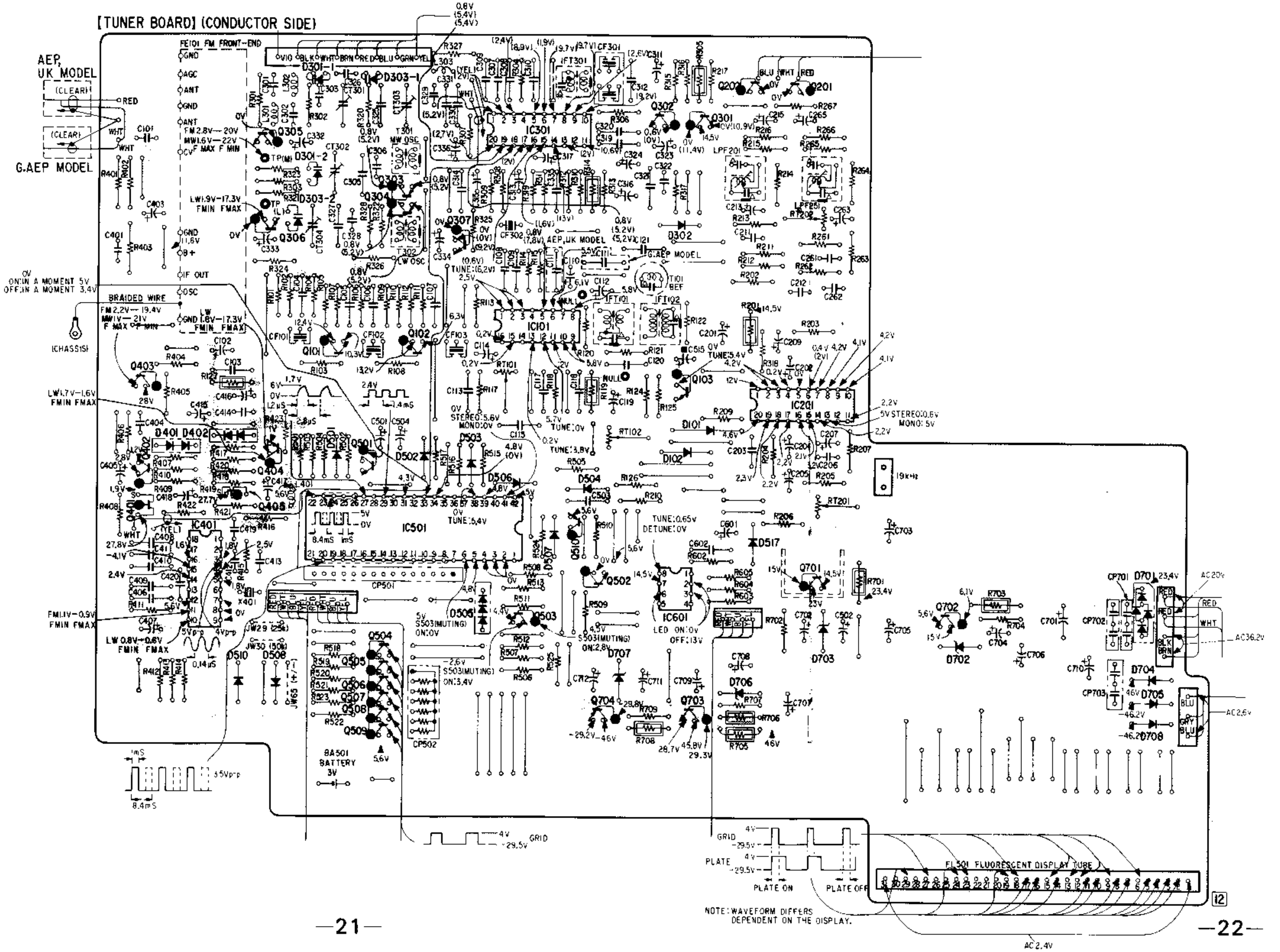
1. Tune the set to 98 MHz by pressing the TUNING (+, –) switches.
2. Adjust RT102 and fix RT102 for a location where the third LED of the SIGNAL STRENGTH display lights up.
3. Confirm that the first point lights up when the signal generator output level is 10 µV (20 dB).

4-1. MOUNTING DIAGRAM
– TUNER BOARD –
– Conductor Side –

SECTION 4
DIAGRAMS

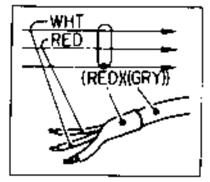
● Se

	A	B	C	D	E	F	G	H	I	J	K
Q / IC		403 402 401	IC401 405 404 305 306	101 501 303 304 504 505 506 507 508	509 102 IC501 307	IC301 IC101 503 510 502 704	302 301 103 IC601 703	202 201 IC201 701	702		
D		401	402 510 508	301-1 301-2 303-2 501 303-1	502 503 505	506 507 504 707	101 302 102 706	517 703	702		701 704 705 708



Note:

- Color code of sleeving over the end of the jacket.



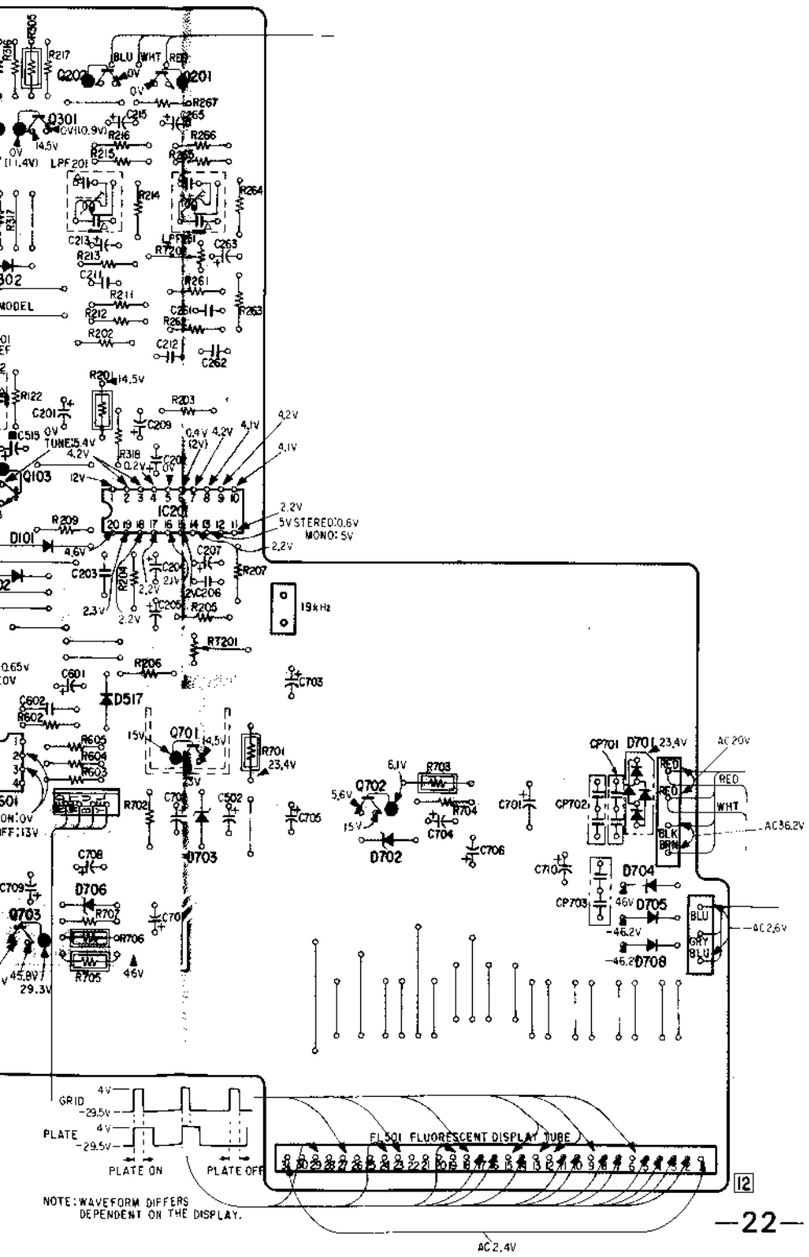
- ○— : parts extracted from the component side.
- ■ : part mounted on the conductor side.
- [ ]← : indicates side identified with part number.
- [W] : nonflammable resistor.
- : B + pattern

- ——▶—— : signal path
- ━━━━▶ : L-CH signal path
- ━━·━━▶ : R-CH signal path

12

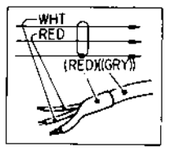
G | H | I | J | K | L | M | N | O

301	202	201						
		IC201		702				
103		701						
IC601	703							
	101							704
302	517	703					701	705
102	706			702				708



Note:

- Color code of sleeving over the end of the jacket.

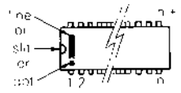


- ○— : parts extracted from the component side.
- ■ : part mounted on the conductor side.
- : indicates side identified with part number.
- : nonflammable resistor.
- : B + pattern

- : signal path
- : L-CH signal path
- : R-CH signal path

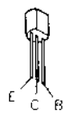
- **Semiconductor Lead Layouts**

CX778A
LA1235
LA1245
LA3390
TCP4621BP-6505
TL489CP

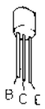


2SK30A

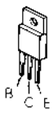
2SC1362



2SC710-14



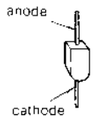
2SD880



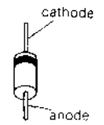
2SB734
2SD774

2SD809

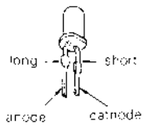
SY02
SY03



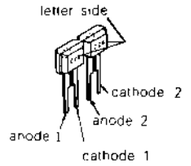
1S1555
10E2
EQA01-06
HZ6C2L
HZ16-2L
HZ30-2L



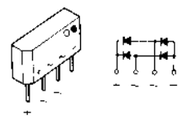
TLUG163



KV1226



S1VB20

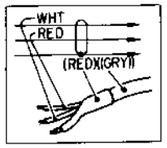


4-2. MOUNTING DIAGRAM – TUNER BOARD –

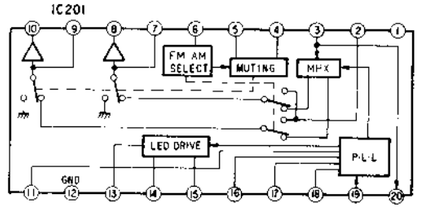
– Component Side –

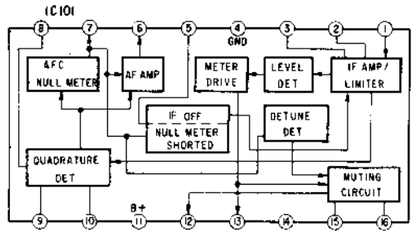
Note:

- Color code of sleeving over the end of the jacket.

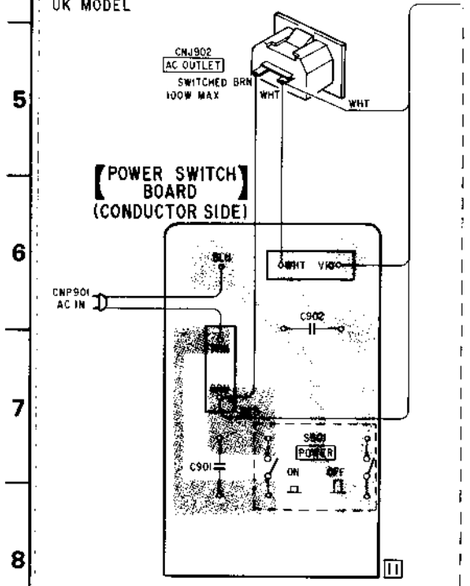


- ○— : parts extracted from the component side
- ■ : part mounted on the conductor side
- [ ]→ : indicates side identified with part number.
- ▲ : nonflammable resistor.
- Ⓕ : fusible resistor.
- : B + pattern
- ▬▶▬ : signal path
- ▬▶▬ : L-CH signal path
- ▬▶▬ : R-CH signal path

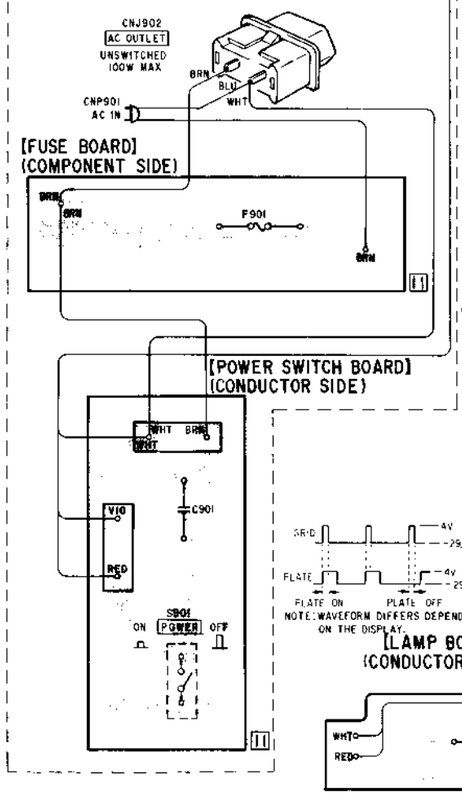


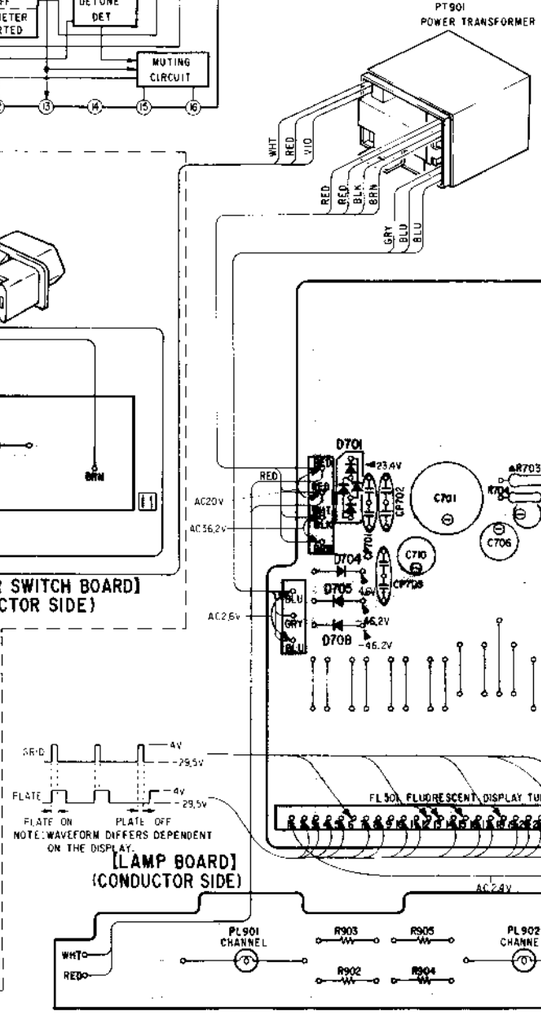


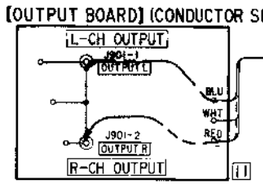
UK MODEL

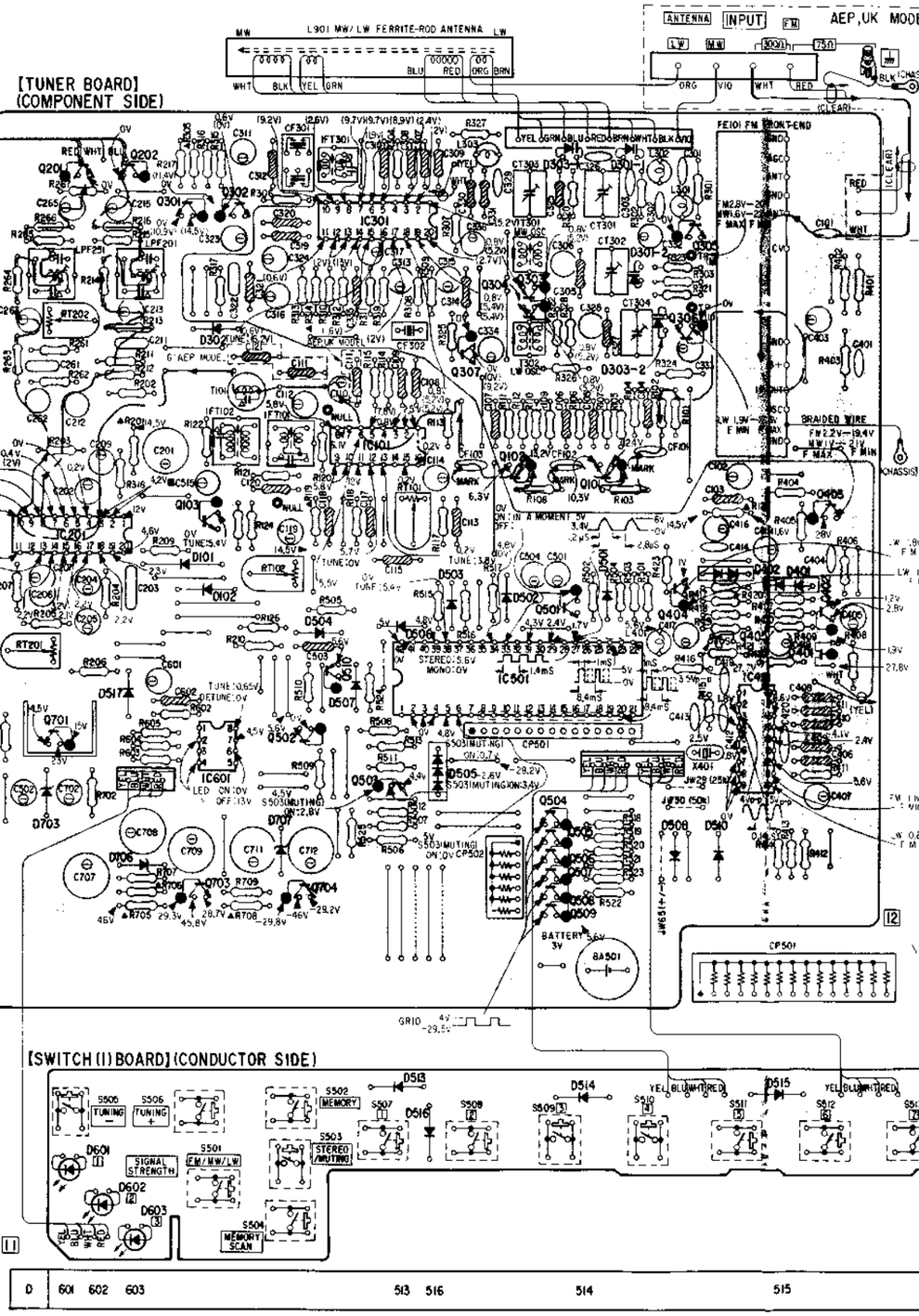


AEP, G.AEP MODEL

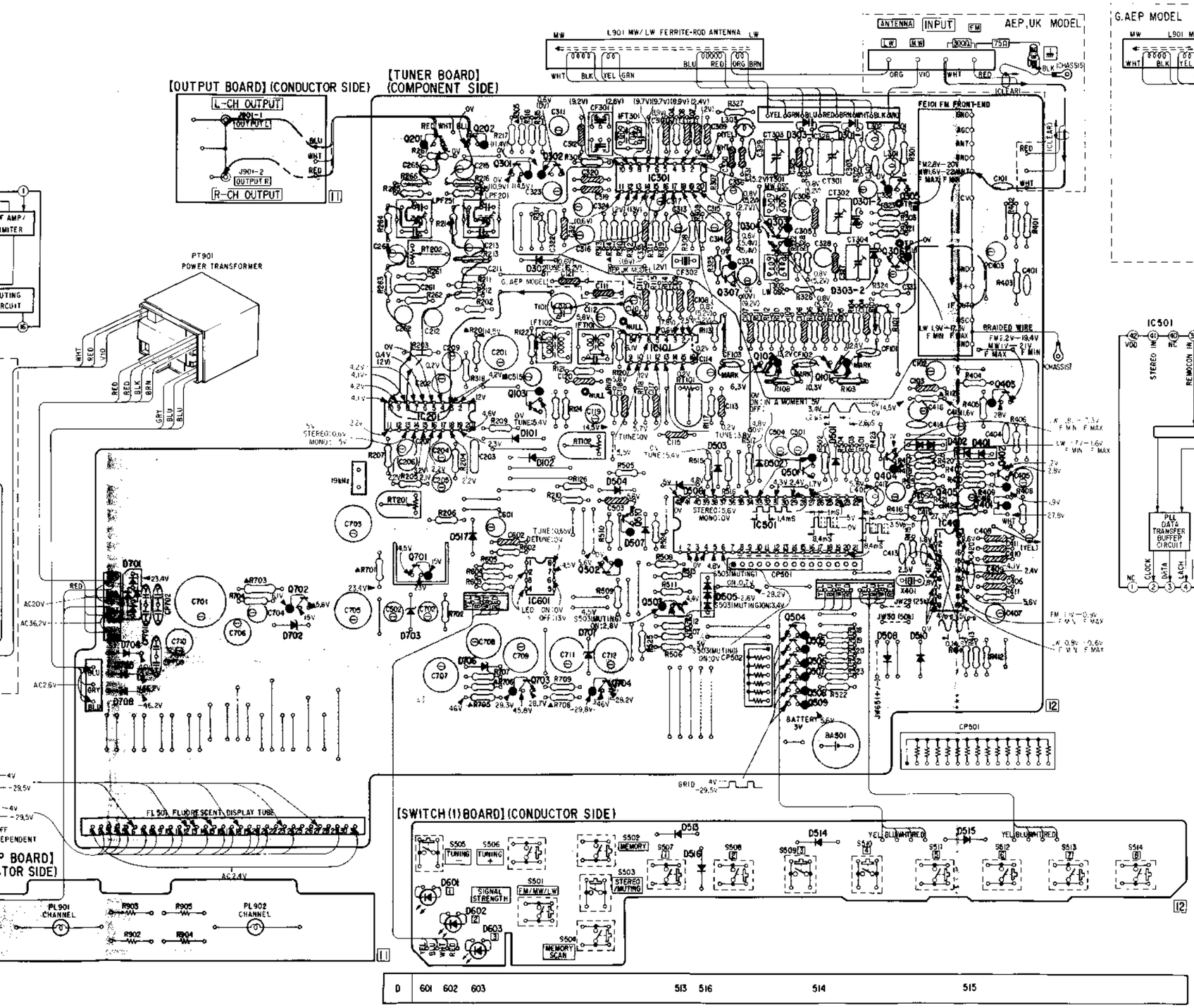








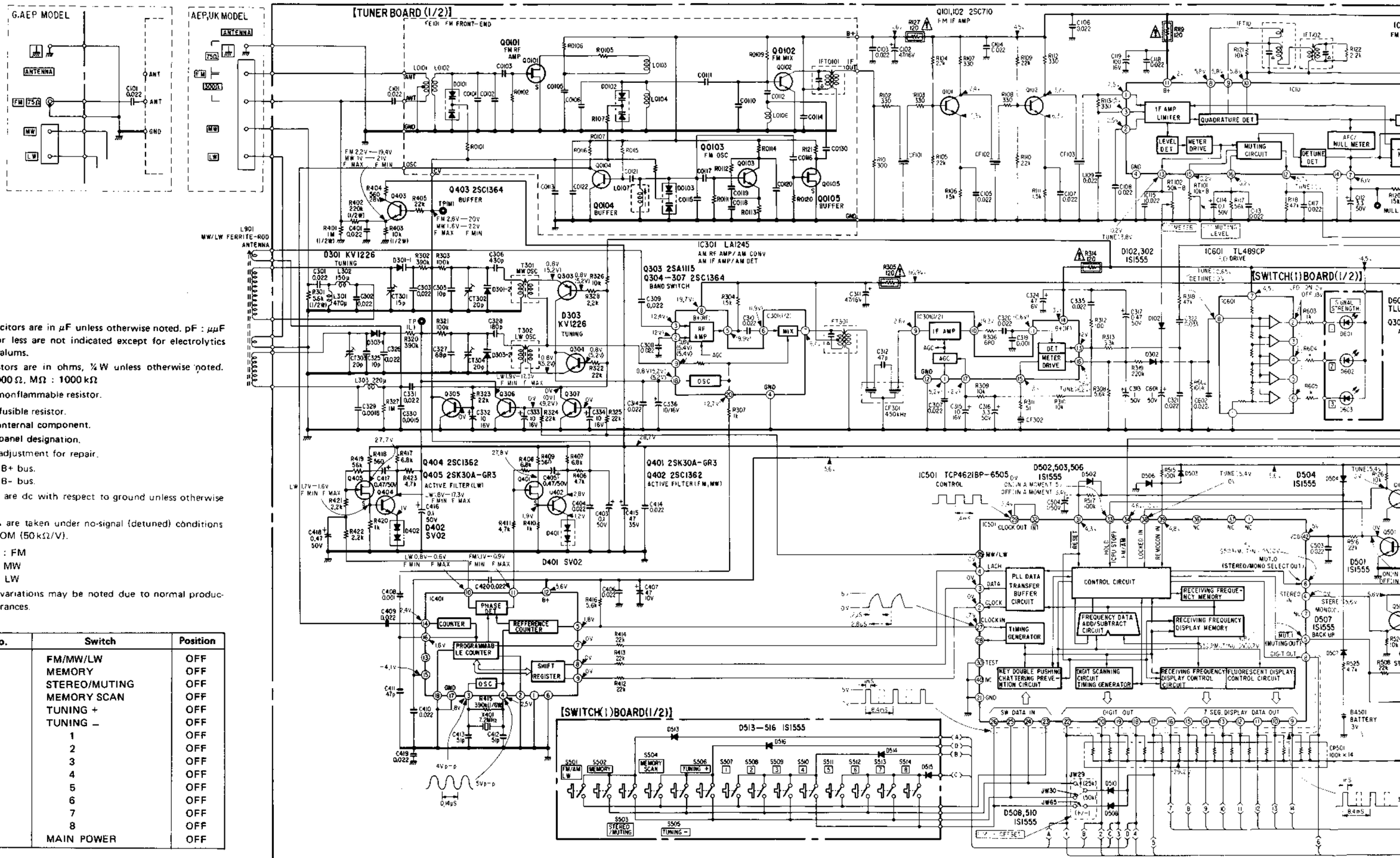
G H I J K L M N O P Q R S T U V



D	Q, IC
303-1, 301-1	201 202
	301 302
	IC301
	305
301-2	304 303
302	306
303-2	307
	IC101
	102 101
	103 403
	IC201
101 402	
102 401	
503 502	501 402
501	404
504 506	405
	401
517 507	510 IC501
	IC401
	701
701	502
505	702 IC601
	503
702 703	
	504
704	505
705 706	506
708 707	507
508 510	703 508
	704 509

D	
601 602 603	513 516 514 515

4-3. SCHEMATIC DIAGRAM – TUNER SECTION –



Note:

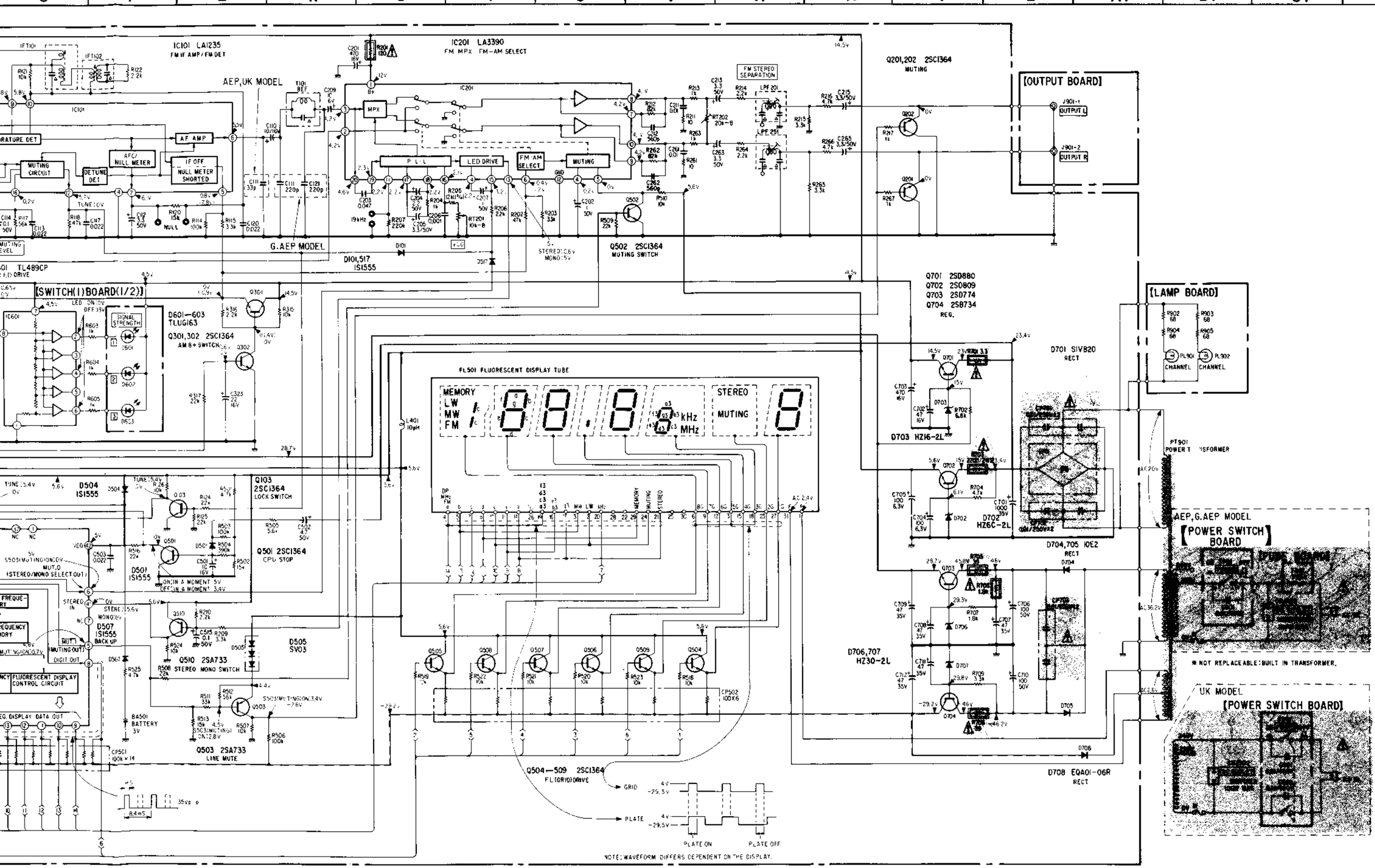
- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, ¼ W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation.
- : adjustment for repair.
- ——— : B+ bus.
- – – – : B– bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).

  No Mark : FM
  ( ) : MW
  < > : LW
- Voltage variations may be noted due to normal production tolerances.
- Switch

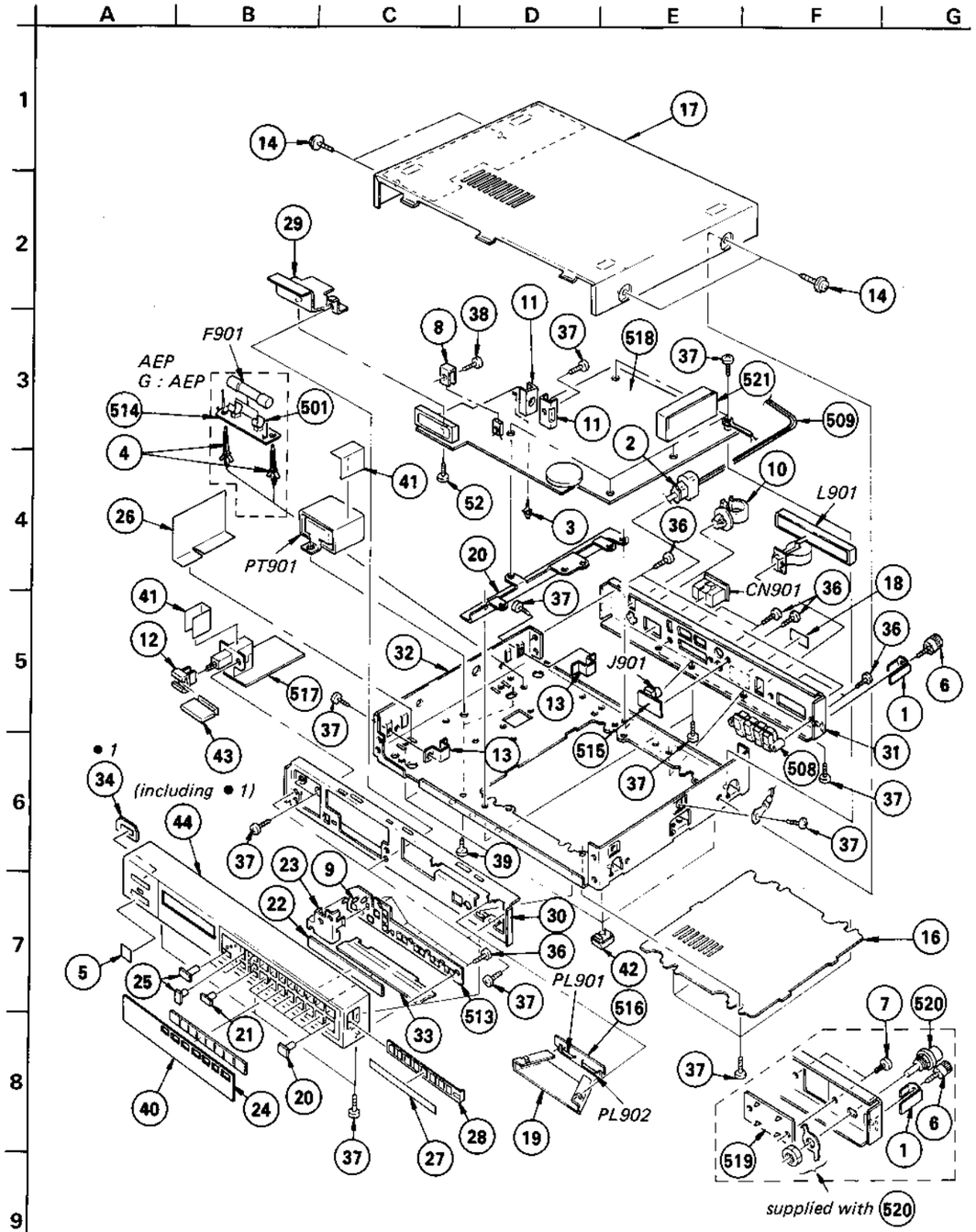
Ref. No.	Switch	Position
S501	FM/MW/LW	OFF
S502	MEMORY	OFF
S503	STEREO/MUTING	OFF
S504	MEMORY SCAN	OFF
S505	TUNING +	OFF
S506	TUNING –	OFF
S507	1	OFF
S508	2	OFF
S509	3	OFF
S510	4	OFF
S511	5	OFF
S512	6	OFF
S513	7	OFF
S514	8	OFF
S901	MAIN POWER	OFF

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Voltages are measured with a VOM (50kΩ/V).


IC101 LA1235
FM IF AMP/FM DET
IC201 LA3390
FM MPX FM-AM SELECT
AEP,UK MODEL
G.AEP MODEL
AF AMP
MUTING CIRCUIT
DETUNE DET
AFC/ NULL METER
IF OFF NULL METER SHORTED
MPX
PLL
LED DRIVE
FM-AM SELECT
MUTING
FM STEREO SEPARATION
Q201,202 2SC1364
MUTING
[OUTPUT BOARD]
OUTPUT L
OUTPUT R
Q502 2SC1364
MUTING SWITCH
D101,517
1S1555
IC601 TL489CP
LED DRIVE
[SWITCH(1)BOARD(1/2)]
D601-603
TLUG163
Q301,302 2SC1364
AM B+ SWITCH
FL501 FLUORESCENT DISPLAY TUBE
MEMORY
LW
MW
FM
STEREO
MUTING
kHz
MHz
Q701 2SD880
Q702 2SD809
Q703 2SD774
Q704 2SB734
REG.
D701 SIVB20
RECT
Q703 HZ16-2L
D702 HZ6C-2L
D704,705 10E2
RECT
D706,707 HZ30-2L
D708 EQA01-06R
RECT
[LAMP BOARD]
PL901 CHANNEL
PL902 CHANNEL
PT901 POWER TRANSFORMER
AEP,G.AEP MODEL
[POWER SWITCH BOARD]
* NOT REPLACEABLE: BUILT IN TRANSFORMER.
UK MODEL
[POWER SWITCH BOARD]
D504 1S1555
Q103 2SC1364
LOCK SWITCH
Q501 2SC1364
CPU STOP
D501 1S1555
Q510 2SA733
STEREO MONO SWITCH
D507 1S1555
BACK UP
D505 SV03
Q503 2SA733
LINE MUTE
B4501 BATTERY 3V
FLUORESCENT DISPLAY CONTROL CIRCUIT
Q504—509 2SC1364
FL(GR10)DRIVE
GRID
PLATE
PLATE ON
PLATE OFF
NOTE: WAVEFORM DIFFERS DEPENDENT ON THE DISPLAY.

SECTION 5
EXPLODED VIEW AND PARTS LIST



GENERAL SECTION

No.	Part No.	Description
1	3-701-993-00	SPACER, TERMINAL
2	3-703-244-00	BUSHING, CORD
3 ♣	3-703-353-02	SUPPORT, PC BOARD
4 ♣	3-703-353-06	(AEP,G-AEP)...SUPPORT, PC BOARD
5	3-703-710-01	STICKER, SONY SYMBOL (12)
6	3-706-165-00	SCREW
7	4-812-134-00	(G-AEP)...RIVET, NYLON, 3.5
8 ♣	4-866-080-00	HEAT SINK
9	4-866-397-00	CUSHION, LED
10	4-869-217-00	CLIP, CORD
11 ♣	4-875-327-01	HEAT SINK
12	4-875-466-00	JOINT (F2), KNOB
13 ♣	4-886-809-00	SUPPORT
14	4-886-821-01	SCREW, M3 CASE
15 ♣	4-886-836-00	CHANNEL
16 ♣	4-886-844-01	PLATE, BOTTOM
17	4-886-845-11	CASE
18	4-886-911-00	(G-AEP)...LABEL, MODEL NUMBER
18	4-886-912-00	(UK).....LABEL, MODEL NUMBER
18	4-886-975-00	(AEP).....LABEL, MODEL NUMBER
19 ♣	4-886-917-00	HOUSE, LAMP
20 ♣	4-886-918-00	PUSH BLOCK (A)
21 ♣	4-886-919-00	PUSH BLOCK (B)
22 ♣	4-886-920-00	ILLUMINATOR
23 ♣	4-886-922-00	HOLDER, LED
24	4-886-923-00	ESCUTCHEON, INDICATION PLATE
25 ♣	4-886-926-00	PUSH BLOCK (C)
26 ♣	4-886-927-00	INSULATOR (A)
27	4-886-932-00	LABEL (E), INDICATOR
28	4-886-938-00	HOLDER, INDICATION PLATE
29 ♣	4-886-940-00	HOLDER, TUBE, INDICATION
30 ♣	4-886-946-00	PANEL, SUB
31 ♣	4-886-949-11	(AEP).....PLATE, JACK
31 ♣	4-886-950-11	(G-AEP)....PLATE, JACK
31 ♣	4-886-951-11	(UK).....PLATE, JACK
32 ♣	4-886-953-01	CHASSIS
33 ♣	4-886-974-00	PLATE, SHIELD
34	4-886-976-00	ESCUTCHEON, POWER KNOB
35	7-685-646-01	SCREW +BVTP 3X8 TYPE1
36	7-685-646-11	SCREW +BVTP 3X8 TYPE2 N-S
37	7-685-871-01	SCREW +BVTT 3X6 (S)
38	7-685-872-01	SCREW +BVTT 3X8 (S)
39	7-685-881-01	SCREW +BVTT 4X8 (S)
40	4-886-955-00	SHEET FUNCTION

GENERAL SECTION

No.	Part No.	Description	Ref.No.
41	9-911-863-XX	INSULATOR (B)	501 ⚠
42	X-4886-405-1	FOOT ASSY	502 ♣
43	X-4886-903-0	KNOB (L.S) ASSY, POWER	503 ♣
44	X-4886-905-1	PANEL ASSY	504 ♣
			505 ♣
			506 ♣
			507 ♣
			508
			509 ⚠
			509 ⚠
			510 ♣

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description	
81	1-501-161-00	(AEP,UK)...ANTENNA,FEEDER	511 ♣
82	1-556-793-21	CORD, CONNECTION	⚠514 ♣
83	3-701-630-00	BAG, POLYETHYLENE	515 ♣
			516 ♣
84	3-773-301-11	(AEP,UK).....MANUAL, INSTRUCTION	517 ♣
85	3-773-301-41	(AEP,G-AEP)...MANUAL, INSTRUCTION	517 ♣
86	4-875-574-00	SHEET, PROTECTION	518 ♣
87	4-881-536-00	CUSHION (UPPER)	518 ♣
88	4-881-537-00	CUSHION (LOWER)	
89	4-886-972-00	LABEL (EP), INDICATOR	519
			520
90	4-886-987-00	INDIVIDUAL CARTON	521
91	4-886-997-00	CUSHIN (RIGHT-E), UPPER	
92	4-886-998-00	CUSHION (LEFT-E), UPPER	BA501
93	4-886-999-00	CUSHION (RIGHT-E), LOWER	C101
94	4-888-201-00	CUSHION (LEFT-E), LOWER	C102
95	4-888-219-00	SPACER, FERRITE-ROD ANTENNA	C103
			C104
			C105
			C106
			C107
			C108
			C109
			C110
			C111
			C111
			C112
			C113
			C114
			C115
			C117
			C118

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♣ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (△-△△△-△△△-XX or △-△△△△-△△△-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:pF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

NOTE:
- Items with
cription
are seldo
- Items mar
they are
service.
pated whe
- Due to st
numbers (
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set.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	⚠1-533-131-00	HOLDER, FUSE
502	♦1-535-115-00	TERMINAL
503	♦1-535-116-00	TERMINAL
504	♦1-535-117-00	TERMINAL
505	♦1-535-121-00	TERMINAL
506	♦1-535-135-00	BASE POST 14MM (10MM PITCH)
507	♦1-535-416-00	TERMINAL
508	1-536-705-41	(AEP,UK)...TERMINAL BOARD (SP)
509	⚠1-551-427-11	(AEP,G-AEP)...CORD, POWER, EURO PLUG
509	⚠1-556-560-00	(UK).....CORD, POWER
510	♦1-560-060-00	PIN, CONNECTOR 2P
511	♦1-560-062-00	PIN, CONNECTOR 4P
512	♦1-560-065-00	PIN, CONNECTOR 8P
513	♦1-609-561-00	(AEP,G-AEP)...PC BOARD, S-1
⚠514	♦1-609-562-00	PC BOARD, FUSE
515	♦1-609-565-00	PC BOARD, OUTPUT
516	♦1-609-567-00	PC BOARD, LAMP
517	♦1-609-568-00	(AEP,G-AEP)...PC BOARD, POWER SWITCH
517	♦1-609-569-00	(UK).....PC BOARD, POWER SWITCH
518	♦A-4351-336-A	(AEP,UK)...MOUNTED PCB, TUNER
518	♦A-4351-342-A	(G-AEP)....MOUNTED PCB, TUNER
519	1-536-743-00	(G-AEP)...TERMINAL BOARD
520	1-561-919-00	(G-AEP)...SOCKET CONNECTOR
521	A-4344-031-A	FRONTEND
BA501	1-528-120-00	BATTERY, LITHIUM (CR-2025)
C101	1-101-005-00	CERAMIC 0.022MF 50V
C102	1-123-319-00	ELECT 47MF 20% 16V
C103	1-161-494-00	CERAMIC 0.022MF 30% 25V
C104	1-161-494-00	CERAMIC 0.022MF 30% 25V
C105	1-161-494-00	CERAMIC 0.022MF 30% 25V
C106	1-161-494-00	CERAMIC 0.022MF 30% 25V
C107	1-161-494-00	CERAMIC 0.022MF 30% 25V
C108	1-161-494-00	CERAMIC 0.022MF 30% 25V
C109	1-161-494-00	CERAMIC 0.022MF 30% 25V
C110	1-123-356-00	ELECT 10MF 20% 16V
C111	1-161-265-00	(AEP,UK)....CERAMIC 33PF 5% 50V
C111	1-161-315-00	(G-AEP).....CERAMIC 220PF 10% 50V
C112	1-123-354-00	ELECT 3.3MF 20% 50V
C113	1-161-494-00	CERAMIC 0.022MF 30% 25V
C114	1-123-607-00	ELECT 0.1MF 20% 50V
C115	1-161-494-00	CERAMIC 0.022MF 30% 25V
C117	1-161-494-00	CERAMIC 0.022MF 30% 25V
C118	1-161-494-00	CERAMIC 0.022MF 30% 25V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C119	1-123-320-00	ELECT 100MF 20% 16V
C120	1-161-494-00	CERAMIC 0.022MF 30% 25V
C121	1-161-315-00	(G-AEP).....CERAMIC 220PF 10% 50V
C201	1-123-323-00	ELECT 470MF 20% 16V
C202	1-123-380-00	ELECT 1MF 20% 50V
C203	1-108-246-00	MYLAR 0.047MF 10% 50V
C204	1-123-353-00	ELECT 2.2MF 20% 50V
C205	1-123-354-00	ELECT 3.3MF 20% 50V
C206	1-104-077-00	POLYSTYRENE 0.001MF 5% 50V
C207	1-123-380-00	ELECT 1MF 20% 50V
C209	1-123-356-00	ELECT 10MF 20% 16V
C211	1-108-239-00	MYLAR 0.01MF 10% 50V
C212	1-104-071-00	POLYSTYRENE 560PF 5% 50V
C213	1-123-354-00	ELECT 3.3MF 20% 50V
C215	1-123-354-00	ELECT 3.3MF 20% 50V
C261	1-108-239-00	MYLAR 0.01MF 10% 50V
C262	1-104-071-00	POLYSTYRENE 560PF 5% 50V
C263	1-123-354-00	ELECT 3.3MF 20% 50V
C265	1-123-354-00	ELECT 3.3MF 20% 50V
C301	1-101-005-00	CERAMIC 0.022MF 50V
C302	1-101-005-00	CERAMIC 0.022MF 50V
C303	1-101-005-00	CERAMIC 0.022MF 50V
C305	1-161-259-00	CERAMIC 10PF 5% 50V
C306	1-103-716-00	POLYSTYRENE 430PF 5% 50V
C307	1-161-494-00	CERAMIC 0.022MF 30% 25V
C308	1-161-494-00	CERAMIC 0.022MF 30% 25V
C309	1-161-494-00	CERAMIC 0.022MF 30% 25V
C310	1-161-494-00	CERAMIC 0.022MF 30% 25V
C311	1-123-319-00	ELECT 47MF 20% 16V
C312	1-161-267-00	CERAMIC 47PF 5% 50V
C313	1-123-380-00	ELECT 1MF 20% 50V
C314	1-161-494-00	CERAMIC 0.022MF 30% 25V
C315	1-123-356-00	ELECT 10MF 20% 16V
C316	1-123-354-00	ELECT 3.3MF 20% 50V
C317	1-123-351-00	ELECT 0.47MF 20% 50V
C319	1-161-323-00	CERAMIC 0.001MF 10% 50V
C320	1-161-494-00	CERAMIC 0.022MF 30% 25V
C321	1-161-494-00	CERAMIC 0.022MF 30% 25V
C322	1-108-237-00	MYLAR 0.0068MF 10% 50V
C323	1-123-317-00	ELECT 22MF 20% 16V
C324	1-123-319-00	ELECT 47MF 20% 16V
C325	1-161-259-00	CERAMIC 10PF 5% 50V
C326	1-101-005-00	CERAMIC 0.022MF 50V
C327	1-161-269-00	CERAMIC 68PF 5% 50V
C328	1-103-707-00	POLYSTYRENE 180PF 5% 50V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C329	1-108-352-00	MYLAR 0.0018MF 10% 50V
C330	1-161-041-00	CERAMIC 0.0015MF 20% 50V
C331	1-161-494-00	CERAMIC 0.022MF 30% 25V
C332	1-123-356-00	ELECT 10MF 20% 16V
C333	1-123-356-00	ELECT 10MF 20% 16V
C334	1-123-356-00	ELECT 10MF 20% 16V
C335	1-161-494-00	CERAMIC 0.022MF 30% 25V
C336	1-123-356-00	ELECT 10MF 20% 16V
C401	1-101-005-00	CERAMIC 0.022MF 50V
C403	1-123-607-00	ELECT 0.1MF 20% 50V
C404	1-101-005-00	CERAMIC 0.022MF 50V
C405	1-123-351-00	ELECT 0.47MF 20% 50V
C406	1-161-494-00	CERAMIC 0.022MF 30% 25V
C407	1-123-306-00	ELECT 47MF 20% 10V
C408	1-161-323-00	CERAMIC 0.001MF 10% 50V
C409	1-161-494-00	CERAMIC 0.022MF 30% 25V
C410	1-161-494-00	CERAMIC 0.022MF 30% 25V
C411	1-161-267-00	CERAMIC 47PF 5% 50V
C412	1-102-522-00	CERAMIC 51PF 5% 50V
C413	1-102-522-00	CERAMIC 51PF 5% 50V
C414	1-101-005-00	CERAMIC 0.022MF 50V
C415	1-123-359-00	ELECT 47MF 20% 35V
C416	1-123-607-00	ELECT 0.1MF 20% 50V
C417	1-123-351-00	ELECT 0.47MF 20% 50V
C418	1-123-351-00	ELECT 0.47MF 20% 50V
C419	1-101-005-00	CERAMIC 0.022MF 50V
C420	1-101-005-00	CERAMIC 0.022MF 50V
C501	1-123-356-00	ELECT 10MF 20% 16V
C502	1-123-369-00	ELECT 4.7MF 20% 50V
C503	1-161-494-00	CERAMIC 0.022MF 30% 25V
C504	1-123-380-00	ELECT 1MF 20% 50V
C515	1-123-607-00	ELECT 0.1MF 20% 50V
C601	1-123-380-00	ELECT 1MF 20% 50V
C602	1-161-494-00	CERAMIC 0.022MF 30% 25V
C701	1-123-508-00	ELECT 1000MF 20% 35V
C702	1-123-319-00	ELECT 47MF 20% 16V
C703	1-123-323-00	ELECT 470MF 20% 16V
C704	1-123-295-00	ELECT 100MF 20% 6.3V
C705	1-123-295-00	ELECT 100MF 20% 6.3V
C706	1-123-513-00	ELECT 100MF 20% 50V
C707	1-123-359-00	ELECT 47MF 20% 35V
C708	1-123-359-00	ELECT 47MF 20% 35V
C709	1-123-359-00	ELECT 47MF 20% 35V
C710	1-123-513-00	ELECT 100MF 20% 50V
C711	1-123-359-00	ELECT 47MF 20% 35V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C712	1-123-359-00	ELECT 47MF 20% 35V
C901	⚠1-161-744-00	CERAMIC 0.01MF 400V
C902	⚠1-161-744-00	(UK)... CERAMIC 0.01MF 400V
CF101	1-527-968-00	FILTER, CERAMIC
CF102	1-527-968-00	FILTER, CERAMIC
CF103	1-527-968-00	FILTER, CERAMIC
CF301	1-527-937-00	FILTER, CERAMIC
CF302	1-527-981-00	FILTER, CERAMIC
⚠CNJ902	1-526-694-00	(AEP,G-AEP)...OUTLET, AC
⚠CNJ902	1-526-751-00	(UK).....OUTLET, AC
CP502	1-231-849-00	COMPOSITION CIRCUIT BLOCK
CP701	⚠1-102-394-00	CERAMIC 250V
CP702	⚠1-102-394-00	CERAMIC 250V
CP703	⚠1-102-394-00	CERAMIC 250V
CT301	1-141-180-00	CAP, TRIMMER 15P
CT302	1-141-171-00	CAP, TRIMMER 20P
CT303	1-141-171-00	CAP, TRIMMER 20P
CT304	1-141-171-00	CAP, TRIMMER 20P
D101	8-719-815-55	DIODE 1S1555
D102	8-719-815-55	DIODE 1S1555
D301	8-719-912-27	DIODE KV1226
D302	8-719-912-27	DIODE KV1226
D303	8-719-912-27	DIODE KV1226
D401	8-719-300-02	DIODE SV02
D402	8-719-300-02	DIODE SV02
D501	8-719-815-55	DIODE 1S1555
D502	8-719-815-55	DIODE 1S1555
D503	8-719-815-55	DIODE 1S1555
D504	8-719-815-55	DIODE 1S1555
D505	8-719-300-03	DIODE SV03
D506	8-719-815-55	DIODE 1S1555
D507	8-719-815-55	DIODE 1S1555
D508	8-719-815-55	DIODE 1S1555
D509	8-719-815-55	DIODE 1S1555
D510	8-719-815-55	DIODE 1S1555
D511	8-719-815-55	DIODE 1S1555
D512	8-719-815-55	DIODE 1S1555
D513	8-719-815-55	DIODE 1S1555
D514	8-719-815-55	DIODE 1S1555
D515	8-719-815-55	DIODE 1S1555
D516	8-719-815-55	DIODE 1S1555
D517	8-719-815-55	DIODE 1S1555
D601	8-719-800-14	DIODE TLUG163
D602	8-719-800-14	DIODE TLUG163
D603	8-719-800-14	DIODE TLUG163

example:
A···, UPC···: μPC,

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (A-△△△-△△△-XX or A-△△△△-△△△-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
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- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D701 ⚠	8-719-511-20	DIODE S1WB20
D702	8-719-910-68	DIODE HZ6C2L
D703	8-719-901-62	DIODE HZ16-2L
D704	8-719-200-02	DIODE 10E2
D705	8-719-200-02	DIODE 10E2
D706	8-719-913-02	DIODE HZ30-2L
D707	8-719-913-02	DIODE HZ30-2L
D708	8-719-931-06	DIODE EQA01-06
F901 ⚠	1-532-286-00	(AEP,E-AEP)...FUSE, TIME-LAG
FL501	1-519-264-00	INDICATOR TUBE, FLUORESCENT
IC101	8-759-812-35	IC LA1235
IC201	8-759-833-90	IC LA3390
IC301	8-759-812-45	IC LA1245
IC401	8-759-617-78	IC CX778A
IC501	8-759-201-26	IC TC4621BP-6505
IC601	8-759-904-89	IC TL489CP
IFT101	1-404-327-00	TRANSFORMER, DISCRIMINATOR
IFT102	1-404-328-00	TRANSFORMER, DISCRIMINATOR
IFT301	1-404-413-00	TRANSFORMER, IF
J901	1-507-843-00	JACK, PIN 2P
L301	1-407-177-XX	MICRO INDUCTOR 470UH
L302	1-407-171-XX	MICRO INDUCTOR 150UH
L303	1-407-173-XX	MICRO INDUCTOR 220UH
L401	1-407-157-XX	MICRO INDUCTOR 10UH
L901	1-402-011-00	ANTENNA, FERRITE-ROD (LW/MW)
LPF201	1-235-164-00	FILTER, LOW PASS
LPF251	1-235-164-00	FILTER, LOW PASS
PL901	1-518-466-00	LAMP, PILOT
PL902	1-518-466-00	LAMP, PILOT
⚠PT901	1-447-501-00	TRANSFORMER, POWER
Q101	8-729-671-14	TRANSISTOR 2SC710-14
Q102	8-729-671-14	TRANSISTOR 2SC710-14
Q201	8-729-663-47	TRANSISTOR 2SC1364
Q202	8-729-663-47	TRANSISTOR 2SC1364
Q301	8-729-663-47	TRANSISTOR 2SC1364
Q302	8-729-663-47	TRANSISTOR 2SC1364
Q303	8-729-612-77	TRANSISTOR 2SA1027R
Q304	8-729-663-47	TRANSISTOR 2SC1364
Q305	8-729-663-47	TRANSISTOR 2SC1364
Q306	8-729-663-47	TRANSISTOR 2SC1364
Q307	8-729-663-47	TRANSISTOR 2SC1364
Q401	8-729-203-04	TRANSISTOR 2SK30A

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q402	8-729-665-47	TRANSISTOR 2SC1362			
Q404	8-729-665-47	TRANSISTOR 2SC1362			
Q405	8-729-203-04	TRANSISTOR 2SK30A			
Q501	8-729-663-47	TRANSISTOR 2SC1364			
Q503	8-729-663-47	TRANSISTOR 2SC1364			
Q504	8-729-663-47	TRANSISTOR 2SC1364			
Q505	8-729-663-47	TRANSISTOR 2SC1364			
Q506	8-729-663-47	TRANSISTOR 2SC1364			
Q507	8-729-663-47	TRANSISTOR 2SC1364			
Q508	8-729-663-47	TRANSISTOR 2SC1364			
Q509	8-729-663-47	TRANSISTOR 2SC1364			
Q510	8-729-612-77	TRANSISTOR 2SA1027R			
Q701	8-729-288-02	TRANSISTOR 2SD880			
Q702	8-729-180-93	TRANSISTOR 2SD809			
Q703	8-729-177-43	TRANSISTOR 2SD774			
Q704	8-729-103-43	TRANSISTOR 2SB734			
R101	1-246-460-00	CARBON	300	5%	1/4W
R102	1-246-461-00	CARBON	330	5%	1/4W
R103	1-246-461-00	CARBON	330	5%	1/4W
R104	1-246-505-00	CARBON	22K	5%	1/4W
R105	1-246-505-00	CARBON	22K	5%	1/4W
R106	1-246-477-00	CARBON	1.5K	5%	1/4W
R107	1-246-461-00	CARBON	330	5%	1/4W
R108	1-246-461-00	CARBON	330	5%	1/4W
R109	1-246-505-00	CARBON	22K	5%	1/4W
R110	1-246-505-00	CARBON	22K	5%	1/4W
R111	1-246-477-00	CARBON	1.5K	5%	1/4W
R112	1-246-461-00	CARBON	330	5%	1/4W
R113	1-246-461-00	CARBON	330	5%	1/4W
R114	1-246-521-00	CARBON	100K	5%	1/4W
R115	1-246-485-00	CARBON	3.3K	5%	1/4W
R117	1-246-515-00	CARBON	56K	5%	1/4W
R118	1-246-513-00	CARBON	47K	5%	1/4W
R119 ⚠	1-247-109-00	CARBON	120	5%	1/4W F
R120	1-246-501-00	CARBON	15K	5%	1/4W
R121	1-246-497-00	CARBON	10K	5%	1/4W
R122	1-246-481-00	CARBON	2.2K	5%	1/4W
R124	1-246-505-00	CARBON	22K	5%	1/4W
R125	1-246-505-00	CARBON	22K	5%	1/4W
R126	1-246-497-00	CARBON	10K	5%	1/4W
R127 ⚠	1-247-109-00	CARBON	120	5%	1/4W F
R201 ⚠	1-247-109-00	CARBON	120	5%	1/4W F
R202	1-246-513-00	CARBON	47K	5%	1/4W
R203	1-246-509-00	CARBON	33K	5%	1/4W
R204	1-246-473-00	CARBON	1K	5%	1/4W
R205	1-214-755-00	METAL	12K	1%	1/4W

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CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R206	1-246-505-00	CARBON	22K	5%	1/4W
R207	1-246-529-00	CARBON	220K	5%	1/4W
R209	1-246-485-00	CARBON	3.3K	5%	1/4W
R210	1-246-481-00	CARBON	2.2K	5%	1/4W
R211	1-246-425-00	CARBON	10	5%	1/4W
R212	1-246-519-00	CARBON	82K	5%	1/4W
R213	1-246-473-00	CARBON	1K	5%	1/4W
R214	1-246-481-00	CARBON	2.2K	5%	1/4W
R215	1-246-485-00	CARBON	3.3K	5%	1/4W
R216	1-246-489-00	CARBON	4.7K	5%	1/4W
R217	1-246-473-00	CARBON	1K	5%	1/4W
R261	1-246-425-00	CARBON	10	5%	1/4W
R262	1-246-519-00	CARBON	82K	5%	1/4W
R263	1-246-473-00	CARBON	1K	5%	1/4W
R264	1-246-481-00	CARBON	2.2K	5%	1/4W
R265	1-246-485-00	CARBON	3.3K	5%	1/4W
R266	1-246-489-00	CARBON	4.7K	5%	1/4W
R267	1-246-473-00	CARBON	1K	5%	1/4W
R301	1-244-891-00	CARBON	5.6K	5%	1/2W
R302	1-246-535-00	CARBON	390K	5%	1/4W
R303	1-246-521-00	CARBON	100K	5%	1/4W
R304	1-246-477-00	CARBON	1.5K	5%	1/4W
R305 ⚠	1-247-109-00	CARBON	120	5%	1/4W F
R306	1-246-469-00	CARBON	680	5%	1/4W
R307	1-246-473-00	CARBON	1K	5%	1/4W
R308	1-246-491-00	CARBON	5.6K	5%	1/4W
R309	1-246-497-00	CARBON	10K	5%	1/4W
R310	1-246-497-00	CARBON	10K	5%	1/4W
R311	1-246-442-00	CARBON	51	5%	1/4W
R312	1-246-449-00	CARBON	100	5%	1/4W
R313	1-246-485-00	CARBON	3.3K	5%	1/4W
R314 ⚠	1-247-109-00	CARBON	120	5%	1/4W F
R315	1-246-497-00	CARBON	10K	5%	1/4W
R316	1-246-481-00	CARBON	2.2K	5%	1/4W
R317	1-246-505-00	CARBON	22K	5%	1/4W
R318	1-246-507-00	CARBON	27K	5%	1/4W
R319	1-246-529-00	CARBON	220K	5%	1/4W
R320	1-246-535-00	CARBON	390K	5%	1/4W
R321	1-246-521-00	CARBON	100K	5%	1/4W
R322	1-246-505-00	CARBON	22K	5%	1/4W
R323	1-246-505-00	CARBON	22K	5%	1/4W
R324	1-246-505-00	CARBON	22K	5%	1/4W
R325	1-246-505-00	CARBON	22K	5%	1/4W
R326	1-246-497-00	CARBON	10K	5%	1/4W
R327	1-246-545-00	CARBON	1M	5%	1/4W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R328	1-246-481-00	CARBON	2.2K	5%	1/4W
R401	1-244-945-00	CARBON	1M	5%	1/2W
R402	1-244-929-00	CARBON	220K	5%	1/2W
R403	1-244-897-00	CARBON	10K	5%	1/2W
R404	1-246-467-00	CARBON	560	5%	1/4W
R405	1-246-505-00	CARBON	22K	5%	1/4W
R406	1-246-489-00	CARBON	4.7K	5%	1/4W
R407	1-246-493-00	CARBON	6.8K	5%	1/4W
R408	1-246-493-00	CARBON	6.8K	5%	1/4W
R409	1-246-467-00	CARBON	560	5%	1/4W
R410	1-246-473-00	CARBON	1K	5%	1/4W
R411	1-246-489-00	CARBON	4.7K	5%	1/4W
R412	1-246-505-00	CARBON	22K	5%	1/4W
R413	1-246-505-00	CARBON	22K	5%	1/4W
R414	1-246-505-00	CARBON	22K	5%	1/4W
R415	1-247-893-00	CARBON	390K	5%	1/6W
R416	1-246-491-00	CARBON	5.6K	5%	1/4W
R417	1-246-493-00	CARBON	6.8K	5%	1/4W
R418	1-246-467-00	CARBON	560	5%	1/4W
R419	1-246-515-00	CARBON	56K	5%	1/4W
R420	1-246-473-00	CARBON	1K	5%	1/4W
R421	1-246-481-00	CARBON	2.2K	5%	1/4W
R422	1-246-481-00	CARBON	2.2K	5%	1/4W
R423	1-246-489-00	CARBON	4.7K	5%	1/4W
R501	1-246-489-00	CARBON	4.7K	5%	1/4W
R502	1-246-501-00	CARBON	15K	5%	1/4W
R503	1-246-521-00	CARBON	100K	5%	1/4W
R504	1-246-535-00	CARBON	390K	5%	1/4W
R505	1-246-491-00	CARBON	5.6K	5%	1/4W
R506	1-246-521-00	CARBON	100K	5%	1/4W
R507	1-246-497-00	CARBON	10K	5%	1/4W
R508	1-246-505-00	CARBON	22K	5%	1/4W
R509	1-246-505-00	CARBON	22K	5%	1/4W
R510	1-246-497-00	CARBON	10K	5%	1/4W
R511	1-246-509-00	CARBON	33K	5%	1/4W
R512	1-246-515-00	CARBON	56K	5%	1/4W
R513	1-246-501-00	CARBON	15K	5%	1/4W
R514	1-246-497-00	CARBON	10K	5%	1/4W
R515	1-246-521-00	CARBON	100K	5%	1/4W
R516	1-246-505-00	CARBON	22K	5%	1/4W
R517	1-246-521-00	CARBON	100K	5%	1/4W
R518	1-246-497-00	CARBON	10K	5%	1/4W
R519	1-246-497-00	CARBON	10K	5%	1/4W
R520	1-246-497-00	CARBON	10K	5%	1/4W
R521	1-246-497-00	CARBON	10K	5%	1/4W

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CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
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- MMH : mH, UH : μH

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SEMICONDUCTORS
In each case, U : μ, for example:
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UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R522	1-246-497-00	CARBON	10K	5%	1/4W
R523	1-246-497-00	CARBON	10K	5%	1/4W
R524	1-246-497-00	CARBON	10K	5%	1/4W
R525	1-246-489-00	CARBON	4.7K	5%	1/4W
R602	1-246-521-00	CARBON	100K	5%	1/4W
R603	1-246-473-00	CARBON	1K	5%	1/4W
R604	1-246-473-00	CARBON	1K	5%	1/4W
R605	1-246-473-00	CARBON	1K	5%	1/4W
[illegible]					
R702	1-246-493-00	CARBON	6.8K	5%	1/4W
[illegible]					
R704	1-246-489-00	CARBON	4.7K	5%	1/4W
[illegible]					
[illegible]					
R707	1-246-479-00	CARBON	1.8K	5%	1/4W
[illegible]					
R709	1-246-485-00	CARBON	3.3K	5%	1/4W
R902	1-246-445-00	CARBON	68	5%	1/4W
R903	1-246-445-00	CARBON	68	5%	1/4W
R904	1-246-445-00	CARBON	68	5%	1/4W
R905	1-246-445-00	CARBON	68	5%	1/4W
RT101	1-226-237-00	RES, ADJ, CARBON 20K			
RT102	1-226-238-00	RES, ADJ, CARBON 50K			
RT201	1-228-505-00	RES, ADJ, METAL GLAZE 10K			
RT202	1-226-237-00	RES, ADJ, CARBON 20K			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S501	1-554-303-00	SWITCH, KEY BOARD
S502	1-554-303-00	SWITCH, KEY BOARD
S503	1-554-303-00	SWITCH, KEY BOARD
S504	1-554-303-00	SWITCH, KEY BOARD
S505	1-554-303-00	SWITCH, KEY BOARD
S506	1-554-303-00	SWITCH, KEY BOARD
S507	1-554-303-00	SWITCH, KEY BOARD
S508	1-554-303-00	SWITCH, KEY BOARD
S509	1-554-303-00	SWITCH, KEY BOARD
S510	1-554-303-00	SWITCH, KEY BOARD
S511	1-554-303-00	SWITCH, KEY BOARD
S512	1-554-303-00	SWITCH, KEY BOARD
S513	1-554-303-00	SWITCH, KEY BOARD
S514	1-554-303-00	SWITCH, KEY BOARD
[illegible]		
T101	1-235-046-00	(AEP,UK)..ENCAPSULATED COMPONENT (B.E.F)
T101	1-235-126-00	(G-AEP)...ENCAPSULATED COMPONENT (B.E.F)
T301	1-405-927-00	COIL, MW OSC
T302	1-405-914-00	COIL, LW OSC
X401	1-527-731-00	OSCILLATOR, CRYSTAL

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