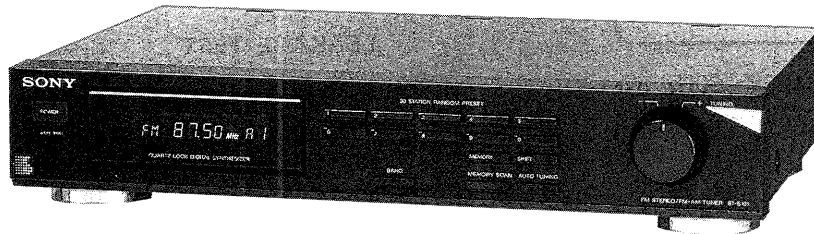


# ST-S101

## SERVICE MANUAL

Canadian Model  
AEP Model



Canadian model: This set is  
the tuner section in STU-51.

### SPECIFICATIONS

#### Tuner

Circuit system FM stereo, FM/AM superheterodyne tuner  
Quartz-locked PLL digital synthesizer system

#### FM tuner

Frequency range 87.5 – 108 MHz  
Antenna terminals 75 ohms unbalanced  
300 ohms balanced  
Intermediate frequency 10.7 MHz  
Sensitivity 22.1 dBf, 7  $\mu$ V (mono)  
42.1 dBf, 70  $\mu$ V (stereo)  
(at 50 dB quieting)  
AEP model :  
18.0 dBf, 2.2  $\mu$ V (mono)  
40.0 dBf, 24.5  $\mu$ V (stereo)  
(at 46 dB quieting)  
Signal-to-noise ratio 80 dB (mono)  
75 dB (stereo)  
(at 75 kHz deviation)  
AEP model :  
74 dB (mono)  
69 dB (stereo)  
(at 40 kHz deviation)  
Harmonic distortion 0.3% (mono), 0.5% (stereo) (at 1 kHz)  
Separation 40 dB (at 1 kHz)  
Frequency response 30 Hz – 15 kHz  $\pm 0.5$  dB  
AEP model :  
40 Hz - 12.5 kHz  $\pm 0.5$  dB  
Selectivity 55 dB (at 400 kHz)  
Capture ratio 1.0 dB  
AM suppression ratio 54 dB  
Image response ratio 50 dB  
IF response ratio 90 dB  
Spurious response ratio 70 dB  
Automatic tuning threshold 17.8  $\mu$ V (30 dBf)  
Output 775 mV, 4.7 kohms (at 75 kHz deviation)  
AEP model : 410 mV, 4.7 kohms (at 40 kHz deviation)

#### AM tuner

Frequency range AEP model :  
MW: 531 – 1,602 kHz  
LW: 153 – 279 kHz  
Canadian model:  
AM: 530 – 1,710 kHz at 10 kHz step  
(531 – 1,710 kHz at 9 kHz step)  
Antenna AM loop antenna  
External antenna terminal  
Intermediate frequency 450 kHz  
Usable sensitivity (with AM loop antenna)  
300  $\mu$ V/m (999 kHz)  
1 mV/m (216 kHz)  
Signal-to-noise ratio 54 dB (50 mV/m) (999 kHz)  
50 dB (50 mV/m) (216 kHz)  
Harmonic distortion 0.5% (50 mV/m, 400 Hz)  
Selectivity 32 dB

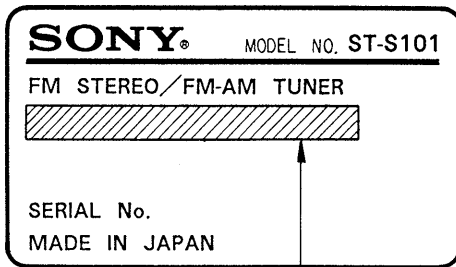
#### General

Power requirements AEP model : 220 V AC (or 240V AC  
adjustable by authorized Sony personnel),  
50/60 Hz  
Canadian Model: 120 V AC, 60 Hz  
Power consumption 8 W  
Dimensions Approx. 430  $\times$  85  $\times$  295 mm (w/h/d)  
(17  $\times$  3  $\frac{3}{8}$   $\times$  11  $\frac{5}{8}$  inches)  
Weight Approx. 2.8 kg (6 lb 3 oz)  
Accessories supplied Remote control cord (1)  
Connecting cord (1)  
FM antenna (1)  
AM loop antenna (1)

FM STEREO/FM-AM TUNER  
**SONY**<sup>®</sup>

## MODEL IDENTIFICATION

-BACK PANEL (TOP LEFT CORNER) -



Canadian model : AC120V~60Hz 8W  
AEP model : AC220V~50/60Hz

## To change the AM tuning interval (Canadian model)

The AM tuning interval is preset at the factory to 10 kHz or to 9 kHz to match the frequency allocation system of your country. To change the interval, proceed as follows.

- 1 Depress the POWER switch to turn on the system.
- 2 Set the BAND selector to AM.
- 3 Press the POWER switch again to turn off the unit.
- 4 Hold the TUNING knob in the "+" position, and depress the POWER switch to turn on the unit.



To reset the interval, follow the same procedure.

**Note**


When the interval is changed, all stored stations will be erased.

After changing the interval, be sure to store the stations again.

## SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH 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.

## ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

## LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

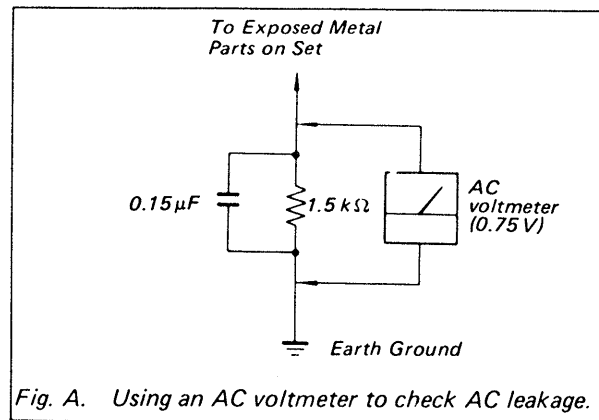


Fig. A. Using an AC voltmeter to check AC leakage.

# SECTION 1 ELECTRICAL ADJUSTMENTS

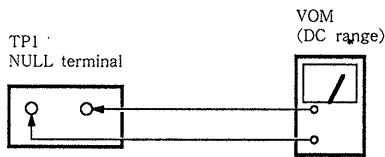
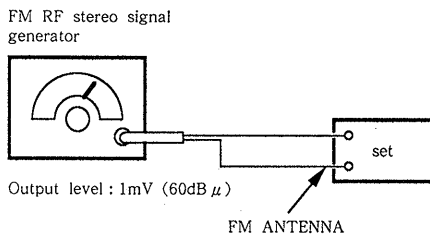
## FM SECTION

SSG	Carrier frequency	98MHz
	Modulation	MONO : 1kHz, 75kHz [40kHz] deviation
		STEREO : Audio 1kHz, 33.75 [16.25] kHz deviation Pilot 19kHz, 7.5kHz deviation Sub-carrier 38kHz, 33.75 [16.25] kHz deviation

[ ] : AEP model

### • FM Discriminator Alignment (NULL check)

Setting :



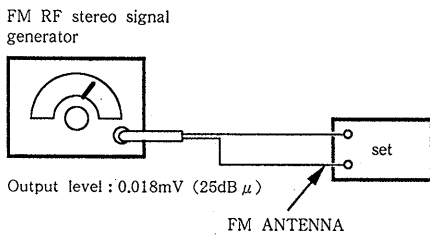
Procedure :

1. Tune the set to 98MHz.
2. Adjust T21 for 0V reading on the VOM.

**Note :** FM tuning level adjustment should be made after FM discriminator alignment.

### • FM Tuning Level Adjustment

Setting :

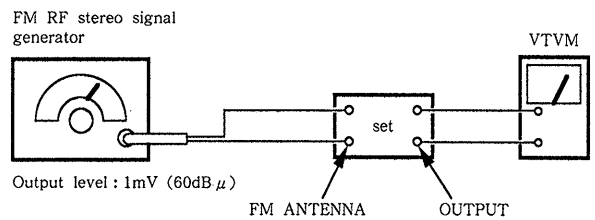


Procedure :

1. Tune the set to 98MHz.
2. Adjust RV24 so that the TUNED LED goes on.

### • FM Stereo Separation Adjustment

Setting :



Procedure :

Tune the set to 98MHz

FM stereo Signal generator Output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV21 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV21 for minimum reading.

L-CH Stereo separation : Ⓐ - Ⓑ

R-CH Stereo separation : Ⓒ - Ⓓ

The separations of both channels should be equal.

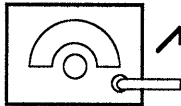
## AM SECTION

### • AM Tuning Level Adjustment

#### Setting :

BAND selector : AM (Canadian model)  
LW (AEP model)

AM RF signal generator



Put the lead-wire antenna close to the set.

Carrier frequency : 1,050kHz (Canadian model)  
216kHz (AEP model)

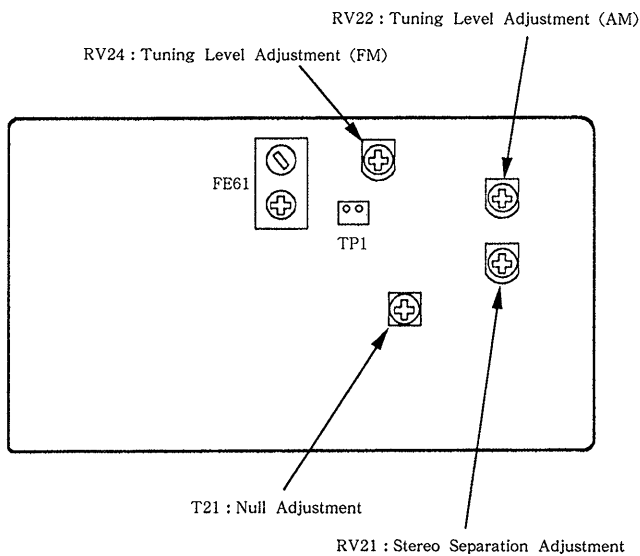
30% amplitude modulation by 400Hz signal  
Output level : 58dB  $\mu$  (Canadian model)  
68dB  $\mu$  (AEP model)

#### Procedure :

1. Tune the set to 1,050kHz (Canadian model), 216kHz (AEP model).
2. Adjust the RV22 so that the TUNED LED goes on.

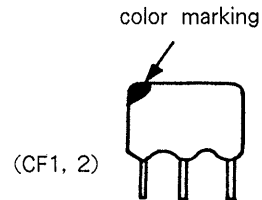
### Parts Arrangement Diagram for Adjustments

—tuner board—



### Note on Ceramic Filter (CF1, 2) Replacement.

This set employs three ceramic filters (CF1, 2) which should have the same color marking to identify their center frequency. Therefore FM IF offset adjustment by D708, D709 mounted is necessary to match the center frequency of the ceramic filters used with FM intermediate frequency.



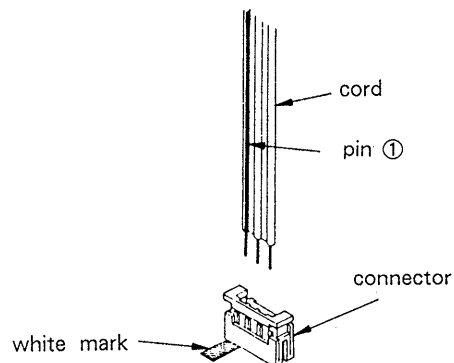
○ : Mounted  
× : not Mounted

Ceramic filter		Mount		FM intermediate frequency (MHz)
Color mark	Center frequency (MHz)	* A D708	* B D709	
White	10.750	×	○	10.750
Red	10.700	○	○	10.700
Black	10.650	○	×	10.650

FM intermediate frequency is determined by the three types as shown above. Ceramic filters of same center frequency, i. e., of same color coding should be used for CF1 and CF2. When replacing the ceramic filters, perform the FM Discriminator Adjustment.

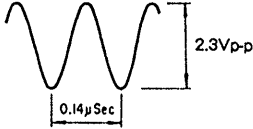
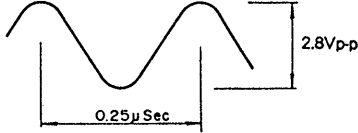

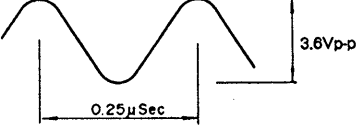
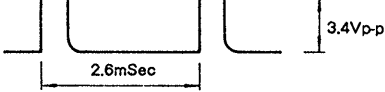
### [Note on Inserting the Cord to the Connector on Tuner Board]

- Insert the cord to the connector fitting Pin ① of the cord in accordance with the white mark on the board at the connector as shown in the figure.

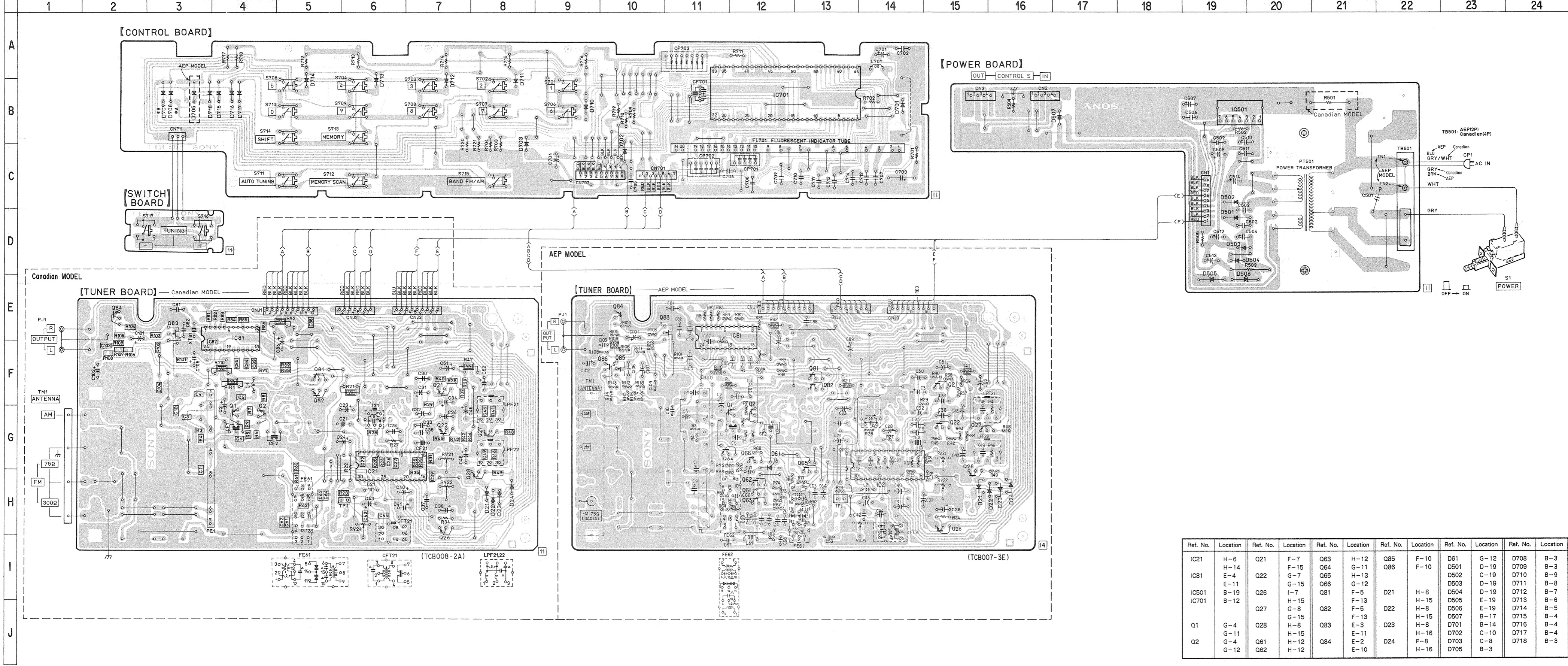


## SECTION 2 DIAGRAMS

### 2-1. WAVEFORMS

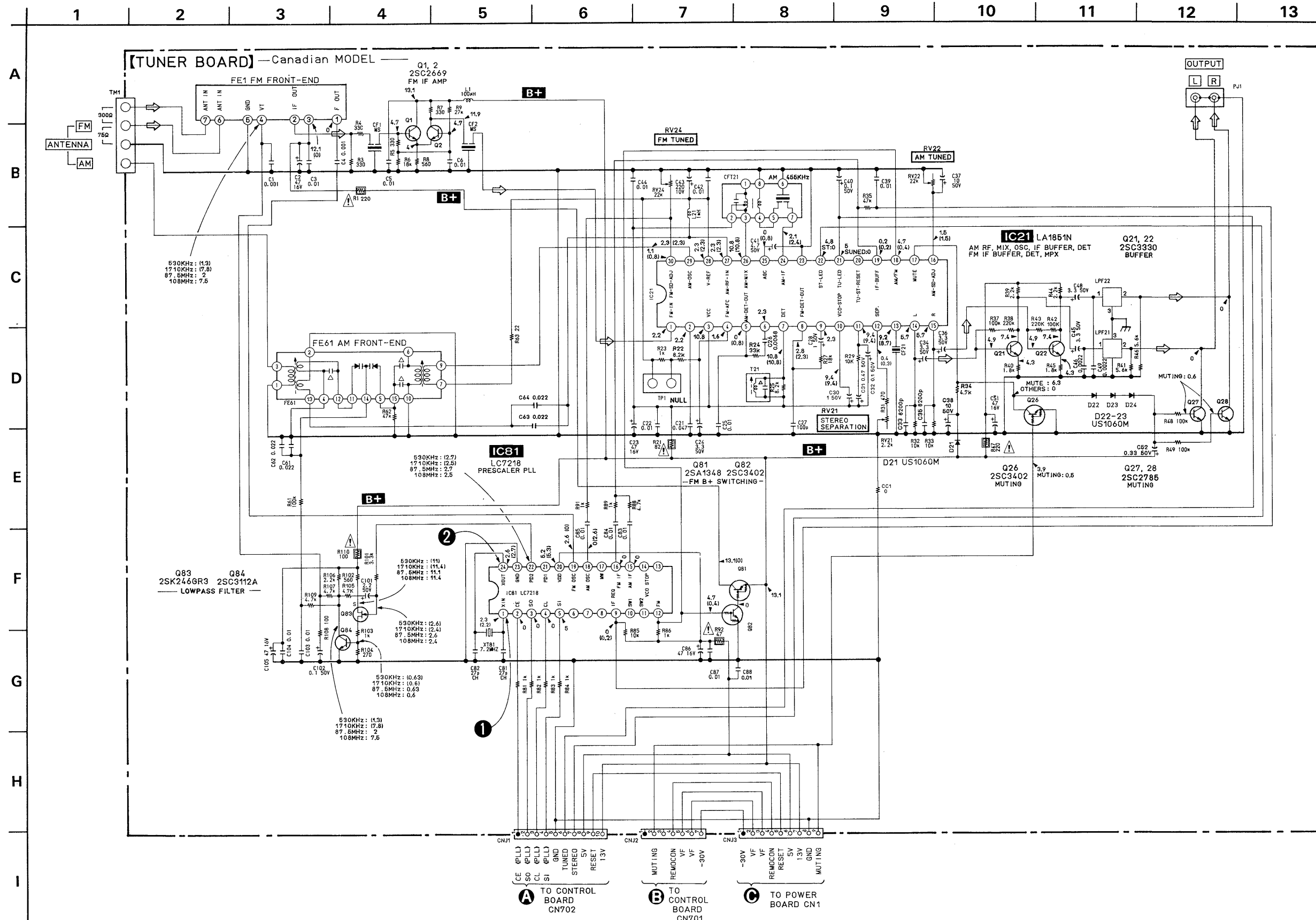
No.	Waveforms	No.	Waveforms
①	 <p>A sine wave with a peak-to-peak voltage of 2.3Vp-p and a period of 0.14μSec.</p>	③	 <p>A sine wave with a peak-to-peak voltage of 2.8Vp-p and a period of 0.25μSec.</p>
②	 <p>A sine wave with a peak-to-peak voltage of 2.4Vp-p and a period of 0.14μSec.</p>	④	 <p>A sine wave with a peak-to-peak voltage of 3.6Vp-p and a period of 0.25μSec.</p>
		⑤	 <p>A square wave with a peak-to-peak voltage of 3.4Vp-p and a period of 2.6mSec.</p>

2-2. PRINTED WIRING BOARDS

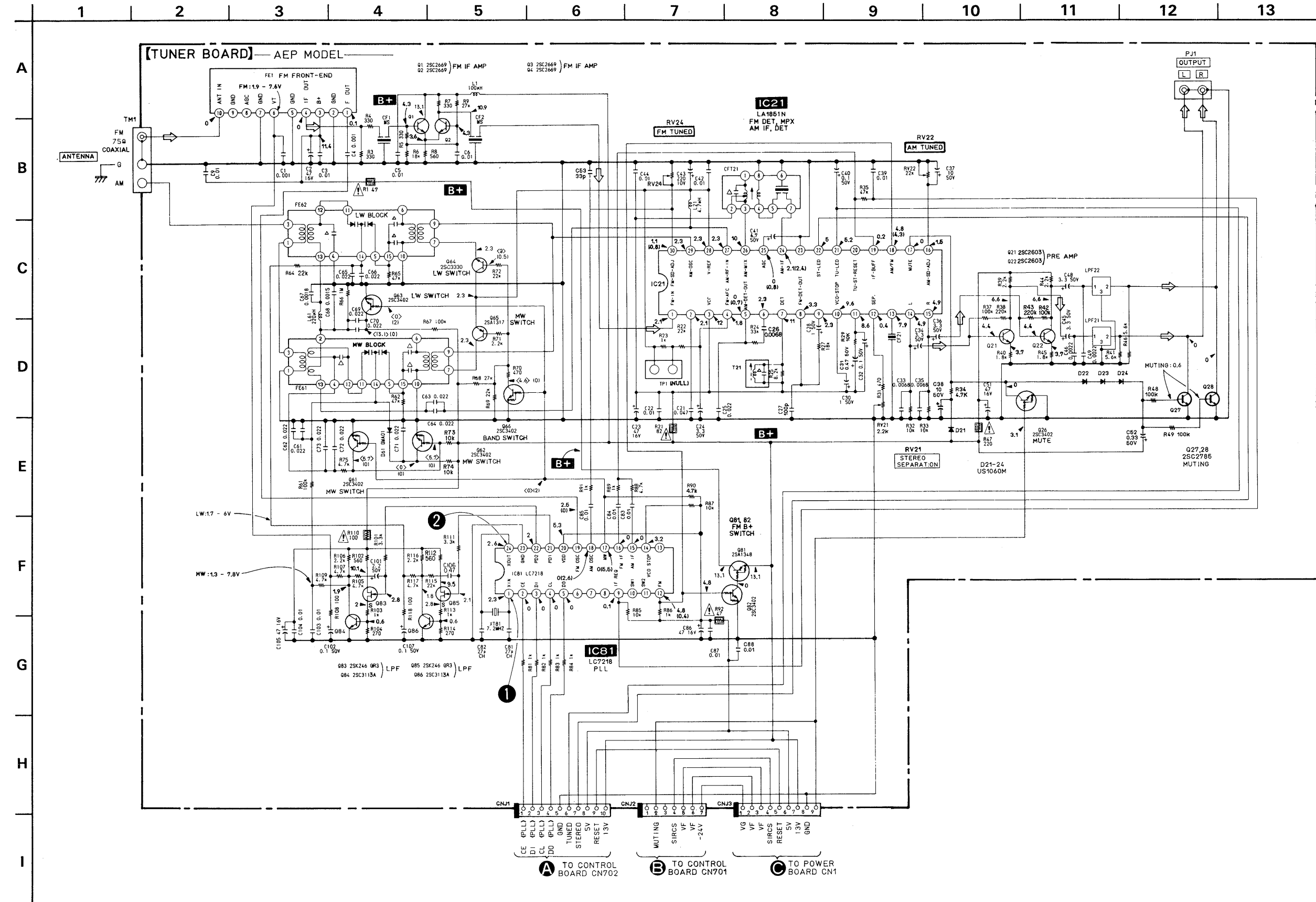


Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
IC21	H-6	Q21	F-7	Q63	H-12	Q85	F-10	D61	G-12	D708	B-3
	H-14		F-15	Q64	G-11	Q86	F-10	D501	D-19	D709	B-3
IC81	E-4	Q22	G-7	Q65	H-13			D502	C-19	D710	B-9
	E-11		G-15	Q66	G-12			D503	D-19	D711	B-8
IC501	B-19	Q26	I-7	Q81	F-5	D21	H-8	D504	D-19	D712	B-7
IC701	B-12	Q27	H-15	Q82	F-13	D22	H-15	D505	E-19	D713	B-6
			G-15	Q83	F-13			D506	E-19	D714	B-5
Q1	G-4	Q28	H-8	Q84	F-13	D23	H-15	D507	B-17	D715	B-4
	G-11		H-15		E-11			D701	B-14	D716	B-4
Q2	G-4	Q61	H-12	Q84	E-11	D24	H-16	D702	C-10	D717	B-4
	G-12	Q62	H-12		E-10			D703	C-8	D718	B-3
								D705	B-3		

2-3. SCHEMATIC DIAGRAM —Tuner Section (Canadian model) —



2-4. SCHEMATIC DIAGRAM —Tuner Section (AEP model) —



Note on Schematic Diagram :

- All capacitors are in  $\mu F$  unless otherwise noted.  $pF$  :  $\mu F$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{2}W$  or less unless otherwise specified.
- $\Delta$  : internal component.
- $\square$  : nonflammable resistor.

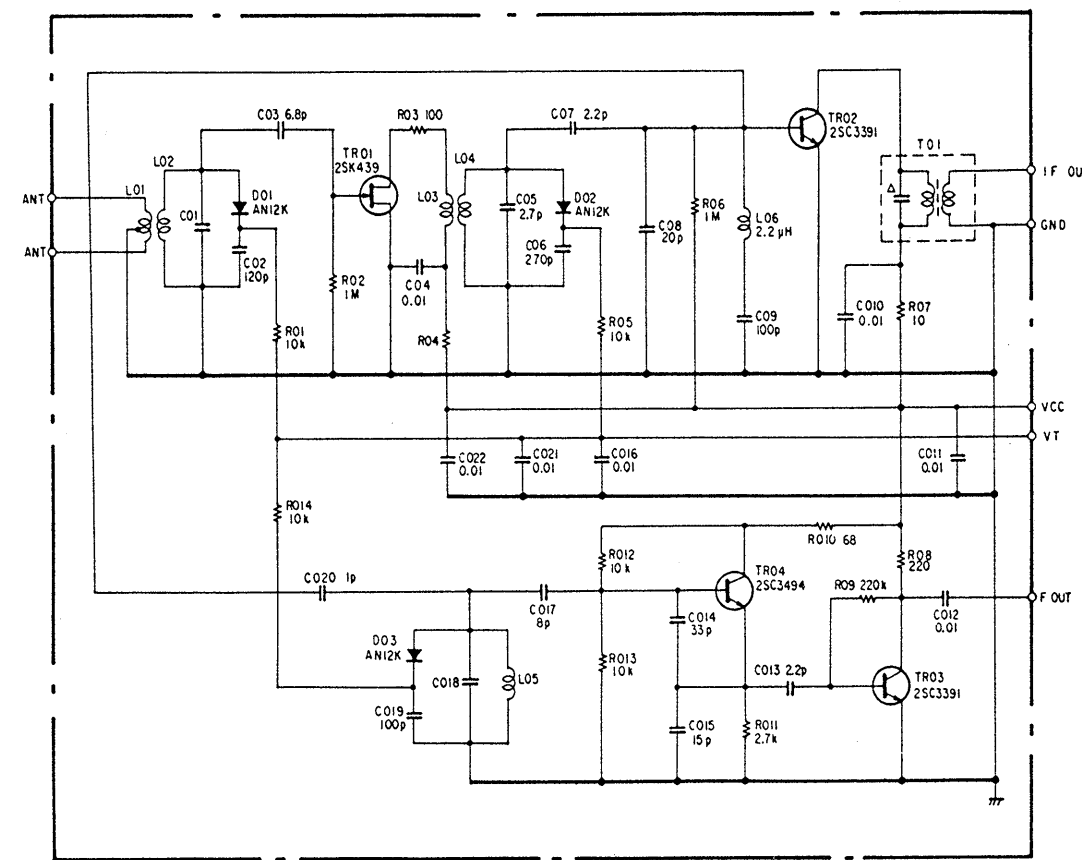
**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

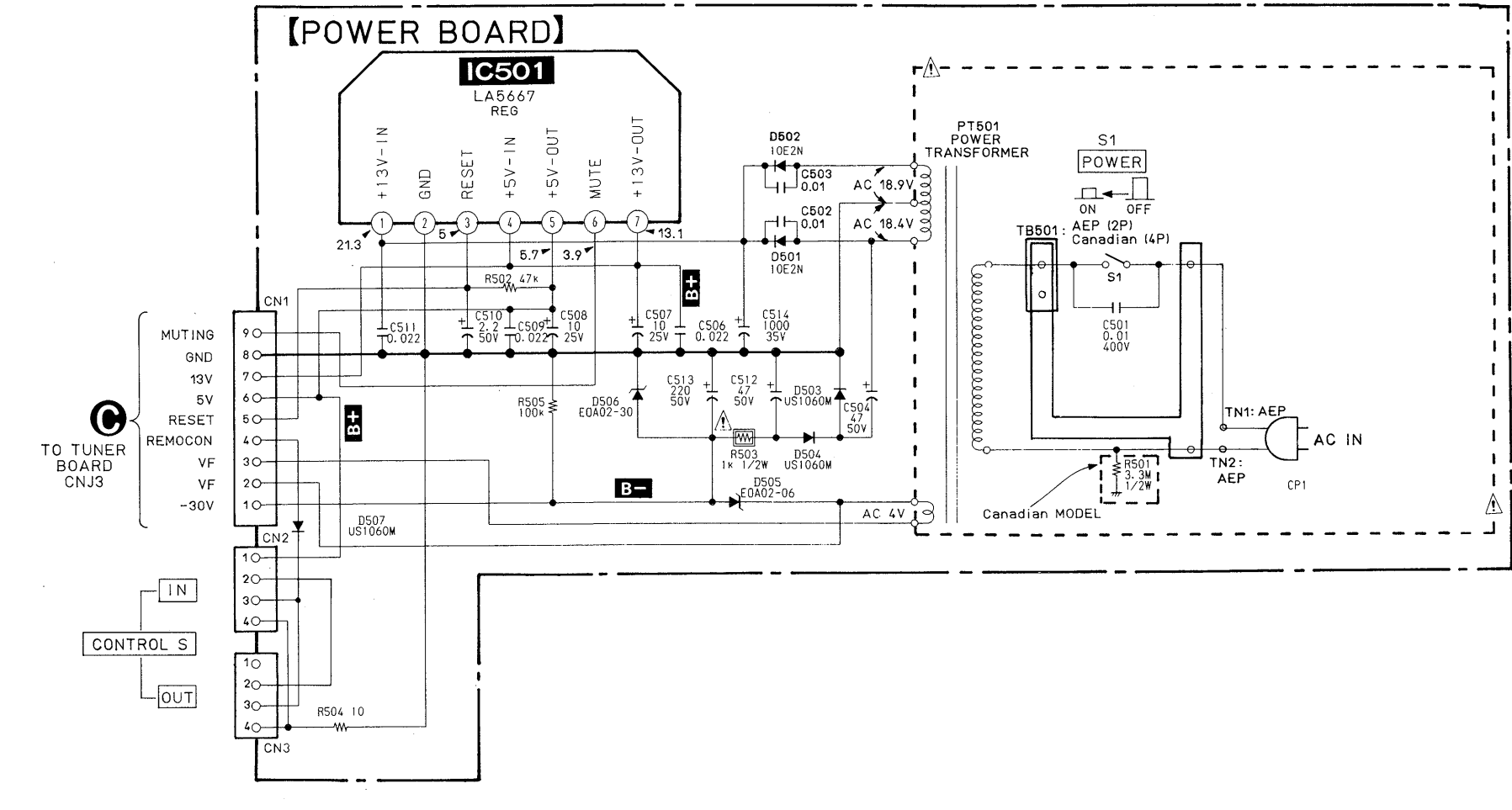
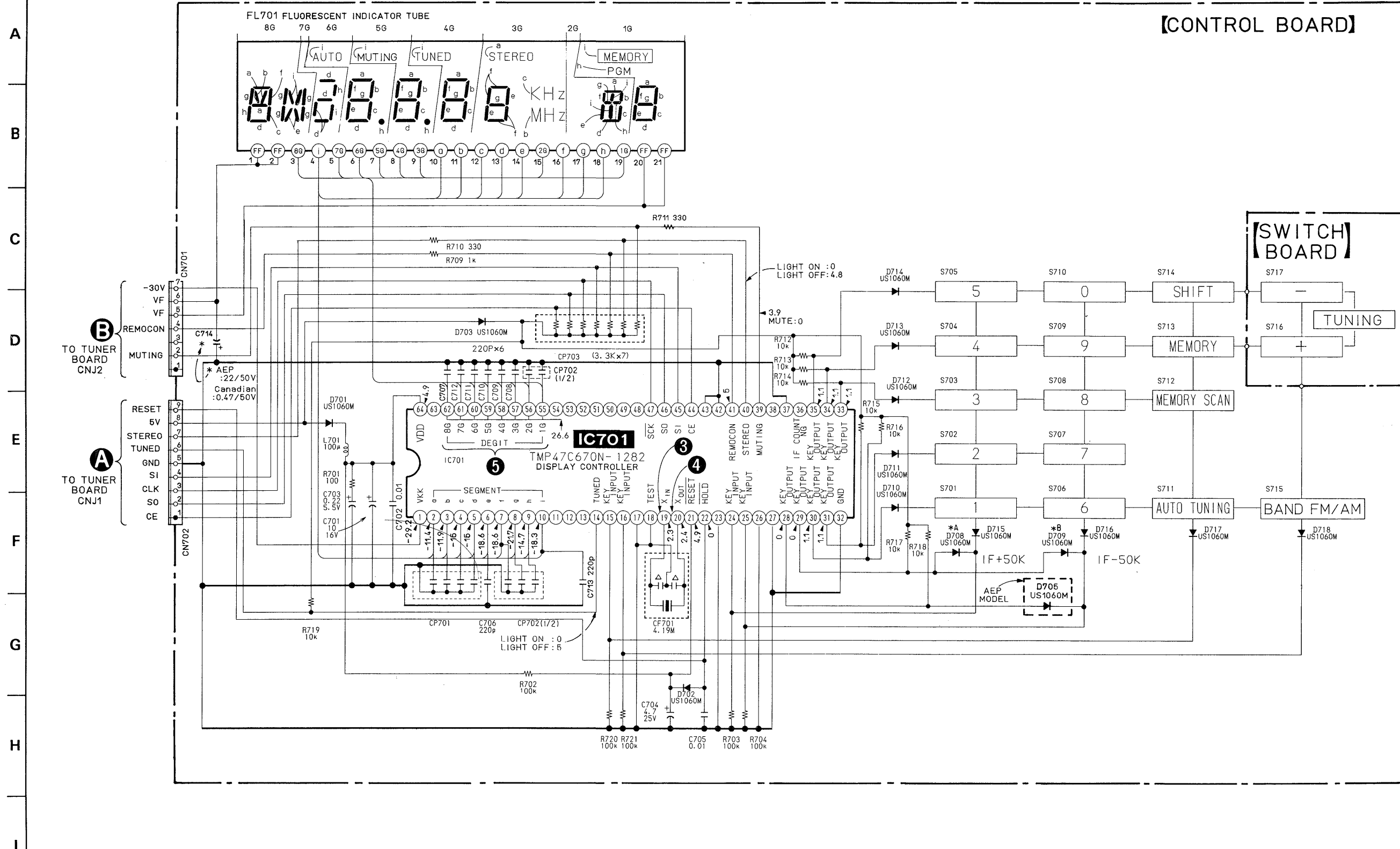
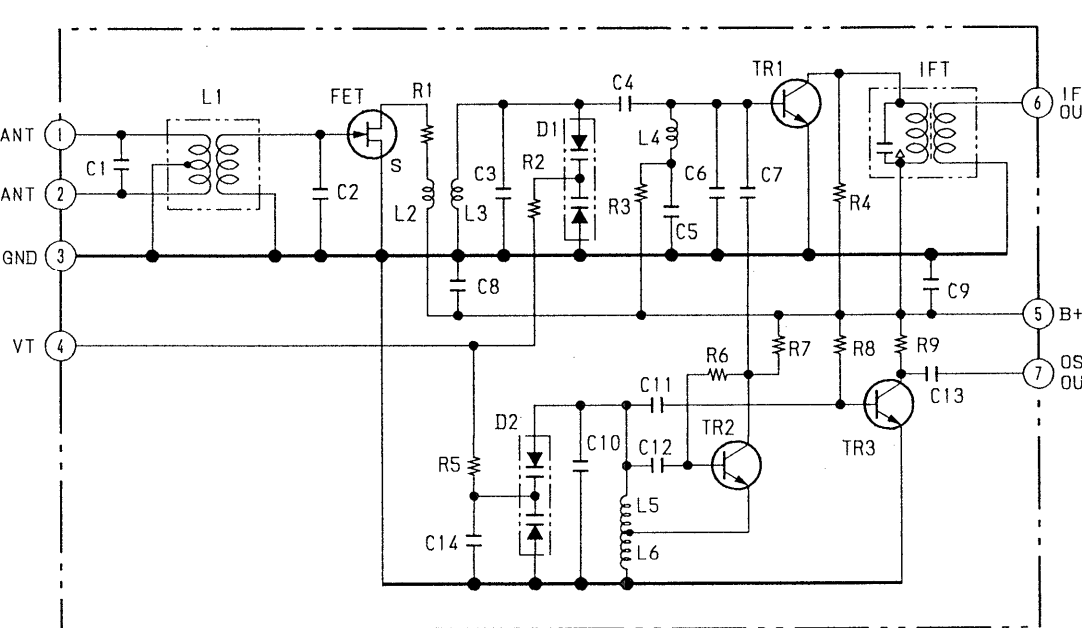
- $B+$  : B+ Line
- $B-$  : B- Line
- $\square$  : adjustment for repair.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
- no mark : FM
- ( ) : AM or MW
- < > : LW
- Voltages are taken with a VOM (Input impedance 10M  $\Omega$ ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
- $\Rightarrow$  : FM

2.5. FE1 (FRONT END) SCHEMATIC DIAGRAM

AEP Model



Canadian Model



Note on Schematic Diagram :

- \*A, \*B: See page 4 Note on Ceramic Filter (CF1, 2) Replacement.
- All capacitors are in  $\mu F$  unless otherwise noted. pF :  $\mu F$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{2}W$  or less unless otherwise specified.
- $\Delta$  : internal component.
- $\square$  : nonflammable resistor.

**Note:** The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• B+ : B+ Line  
 • B- : B- Line  
 •  $\square$  : adjustment for repair.

• Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.  
 • no mark : FM  
 ( ) : AM or MW  
 < > : LW  
 • Voltages are taken with a VOM (Input impedance 10M  $\Omega$ ). Voltage variations may be noted due to normal production tolerances.  
 • Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.  
 • Circled numbers refer to waveforms.

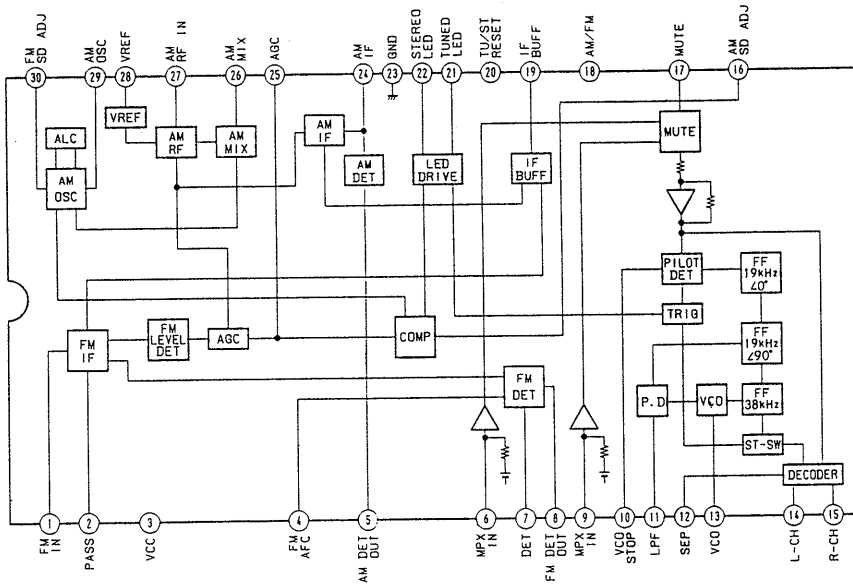
[Service Note]

INDICATOR TUBE ALL LIGHT-UP MODE  
 When turning POWER switch on while pressing PRESET 1 and AUTO TUNING KEYS simultaneously, all the segments of FL701 will light.

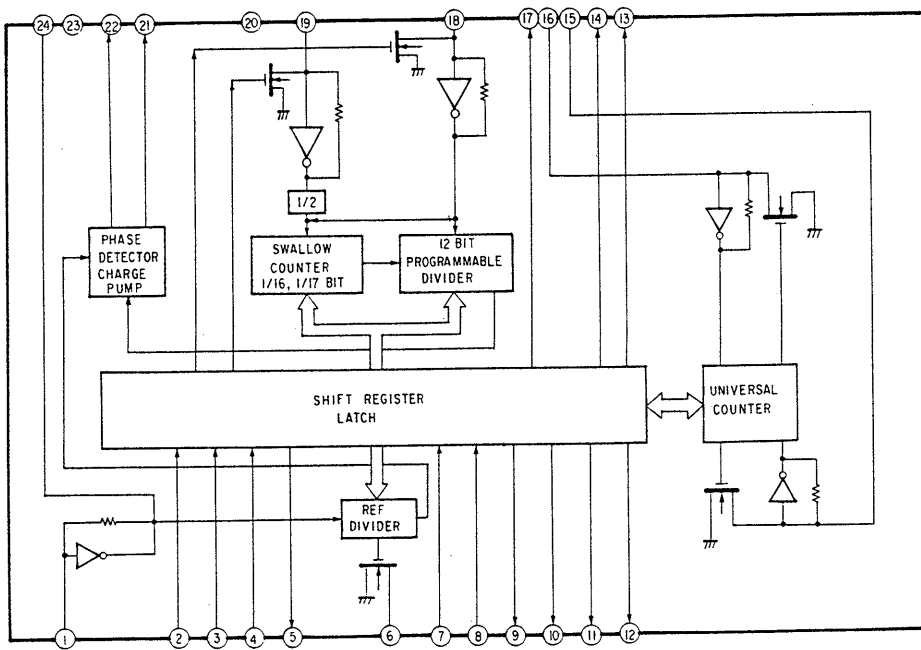


• IC BLOCK DIAGRAM

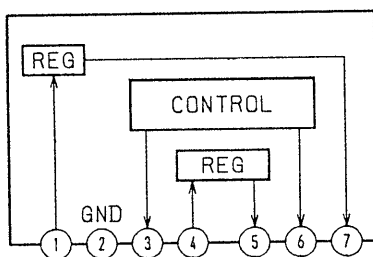
IC21 LA1851N



IC81 LC7218



IC501 LA5667



## SECTION 3 EXPLODED VIEW

### NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- 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 number suffix -XX and -X may be different from the parts specified in the components used on the set.


- Color Indication of Appearance Parts  
Example:

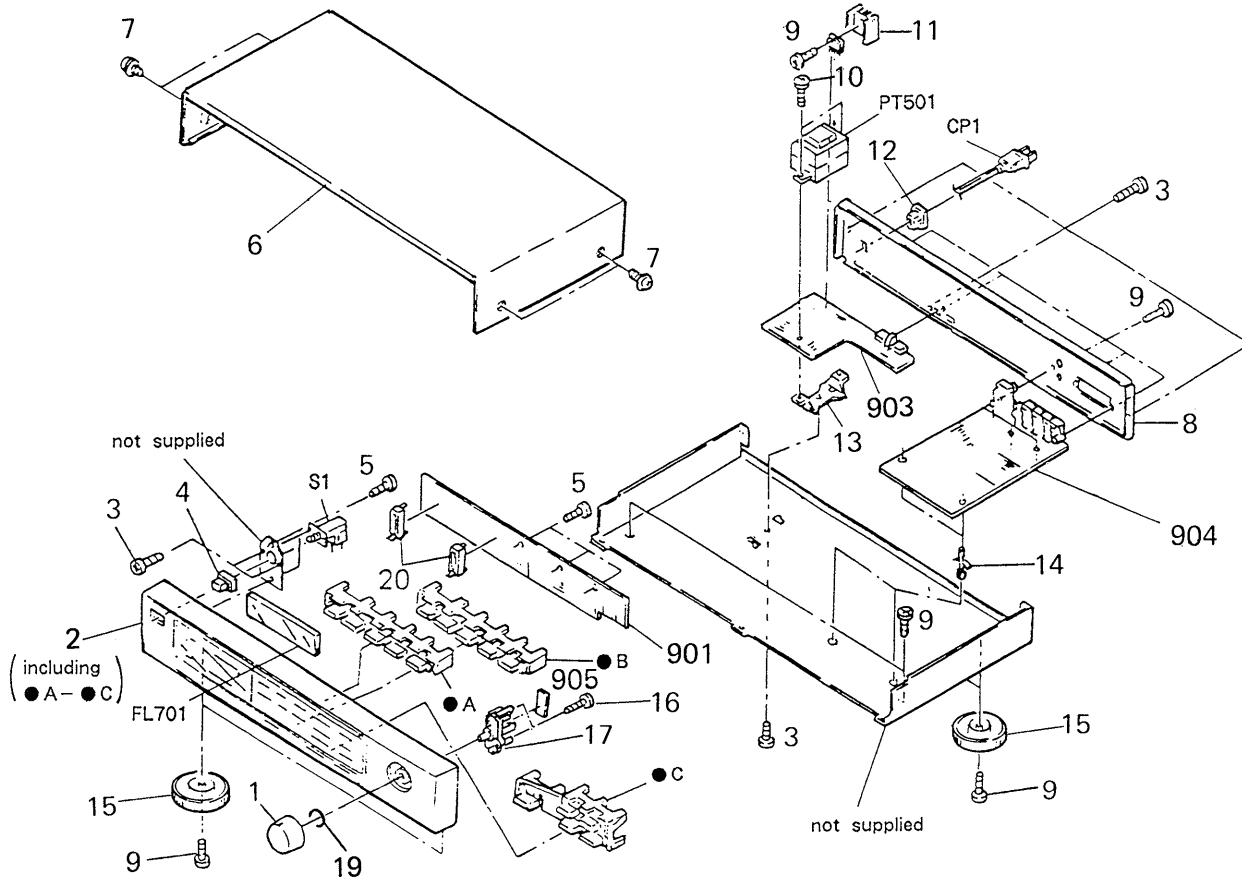
(RED) ... KNOB, BALANCE (WHITE)






↑  
Cabinet's Color

↑  
Parts' Color

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	4-922-790-11	KNOB (TUNING)		16	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
2	X-4886-051-1	PANEL ASSY, FRONT		17	X-4905-269-1	SHAFT ASSY, TUNING	
3	7-682-547-04	SCREW +BVTT 3X6 (S)		19	3-350-426-01	SPRING	
4	3-354-912-01	KNOB, POWER		20	*4-924-989-11	HOLDER (FL TUBE)	
5	4-928-635-01	SCREW, +BV (2.6X8) TAPPING		901	*A-4334-200-A (Canadian)...MOUNTED PCB, CONTROL		
6	4-923-457-01	CASE			*A-4334-554-A (AEP).....MOUNTED PCB, CONTROL		
7	3-704-366-01	SCREW (CASE) (M3X8)		903	*1-634-531-11	PC BOARD, POWER	
8	*4-935-821-11	(Canadian)...PANEL, BACK		904	*A-4303-244-A (Canadian)...MOUNTED PCB, TUNER (TCB008-2AJ)		
	*4-935-821-21	(AEP).....PANEL, BACK			*A-4303-262-A (AEP).....MOUNTED PCB, TUNER (TCB007-3EJ)		
9	7-685-646-79	SCREW +BTP 3X8 TYPE2 N-S		905	*1-634-532-11	PC BOARD, SWITCH	
10	7-682-550-04	SCREW +BVTT 3X12 (S)		CP1	 1-558-945-11 (Canadian)...CORD, POWER (POLAR.SPT-1)		
11	*4-363-146-31	HEAT SINK, V.OUT		CP1	 1-555-750-00 (AEP).....CORD, POWER		
12	*3-703-244-00	(AEP).....BUSHING (2104), CORD		FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT	
	*3-703-571-11	(Canadian)...BUSHING (S) (4516), CORD		PT501	 1-450-009-11 (AEP).....TRANSFORMER, POWER		
13	*4-917-044-01	BRACKET (PT)		PT501	 1-450-010-11 (Canadian)...TRANSFORMER, POWER		
14	*3-346-265-11	HOLDER, PC BOARD		S1	 1-554-920-21	SWITCH, PUSH (AC POWER)(1 KEY)	
15	X-3304-938-2	(AEP).....FOOT ASSY					
	X-4885-950-1	(Canadian)...FOOT ASSY					

## SECTION 4

### ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**MF:  $\mu$ F, PF:  $\mu$ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**

In each case, U:  $\mu$ , for example:  
 UA...:  $\mu$ A..., UPA...:  $\mu$ PA...,  
 UPC...:  $\mu$ PC, UPD...:  $\mu$ PD...

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description							
901	*A-4334-200-A	(Canadian)...MOUNTED PCB, CONTROL							
	*A-4334-554-A	(AEP).....MOUNTED PCB, CONTROL							
903	*1-634-531-11	PC BOARD, POWER							
904	*A-4303-244-A	(Canadian)...MOUNTED PCB, TUNER							
	*A-4303-262-A	(AEP).....MOUNTED PCB, TUNER							
905	*1-634-532-11	PC BOARD, SWITCH							
C1	1-162-294-31	CERAMIC CHIP 0.001MF	20%	25V					
C2	1-126-022-11	ELECT 47MF	20%	16V					
C3	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C4	1-162-294-31	CERAMIC CHIP 0.001MF	20%	25V					
C5	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C6	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C9	1-163-059-00	(AEP)...CERAMIC MELF 0.01MF	20%	16V					
C21	1-161-021-11	CERAMIC 0.047MF	10%	25V					
C22	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C23	1-126-022-11	ELECT 47MF	20%	25V					
C24	1-126-162-11	ELECT 3.3MF	20%	50V					
C25	1-163-059-00	(Canadian) ...CERAMIC MELF 0.01MF	20%	16V					
C25	1-163-063-00	(AEP)...CERAMIC MELF 0.022MF	20%	25V					
C26	1-163-019-00	CERAMIC MELF 0.0068MF	20%	12V					
C27	1-162-516-11	CERAMIC CHIP 100PF	10%	50V					
C28	1-126-301-11	ELECT 1.0MF	20%	50V					
C30	1-126-301-11	ELECT 1.0MF	20%	50V					
C31	1-126-300-11	ELECT 0.47MF	20%	50V					
C32	1-124-463-00	ELECT 0.1MF	20%	50V					
C33	1-130-481-00	(AEP).....MYLAR 0.0068MF	5%	50V					
C33	1-130-482-00	(Canadian)...MYLAR 0.0082MF	5%	50V					
C34	1-126-162-11	ELECT 3.3MF	20%	50V					
C35	1-130-481-00	(AEP).....MYLAR 0.0068MF	5%	50V					
C35	1-130-482-00	(Canadian)...MYLAR 0.0082MF	5%	50V					
C36	1-126-162-11	ELECT 3.3MF	20%	50V					
C37	1-126-059-11	ELECT 10MF	20%	50V					
C38	1-123-875-11	ELECT 10MF	20%	50V					
C39	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C40	1-124-463-00	ELECT 0.1MF	20%	50V					
C41	1-124-045-00	ELECT 4.7MF	20%	50V					
C42	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C43	1-126-101-11	ELECT 220MF	20%	10V					
C44	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C45	1-126-162-11	ELECT 3.3MF	20%	50V					
C46	1-161-375-00	CERAMIC MELF 0.0022MF	20%	25V					
C48	1-126-162-11	ELECT 3.3MF	20%	50V					
C49	1-161-375-00	CERAMIC MELF 0.0022MF	20%	25V					
C51	1-126-022-11	ELECT 47MF	20%	25V					
C52	1-124-252-00	ELECT 0.33MF	20%	50V					
C53	1-163-467-11	(AEP)...CERAMIC CHIP 33PF	5%	50V					
C61	1-163-063-00	CERAMIC MELF 0.022MF		25V					
C62	1-163-063-00	CERAMIC MELF 0.022MF		25V					
C63	1-163-063-00	CERAMIC MELF 0.022MF		25V					
C64	1-163-063-00	CERAMIC MELF 0.022MF		25V					
C65	1-163-063-00	(AEP)...CERAMIC MELF 0.022MF		25V					
C66	1-163-063-00	(AEP)...CERAMIC MELF 0.022MF		25V					
C67	1-102-120-00	(AEP)...CERAMIC 0.0018MF	10%	50V					
C68	1-162-523-11	(AEP)...CERAMIC CHIP 0.0015MF	20%	25V					
C69	1-163-063-00	(AEP)...CERAMIC CHIP 0.022MF		25V					
C70	1-163-063-00	(AEP)...CERAMIC CHIP 0.022MF		25V					
C71	1-163-063-00	(AEP)...CERAMIC CHIP 0.022MF		25V					
C72	1-163-063-00	(AEP)...CERAMIC CHIP 0.022MF		25V					
C73	1-163-063-00	(AEP)...CERAMIC CHIP 0.022MF		25V					
C81	1-102-961-00	CERAMIC 27PF	5%	50V					
C82	1-102-961-00	CERAMIC 27PF	5%	50V					
C83	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C84	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C85	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C86	1-126-022-11	ELECT 47MF	20%	25V					
C87	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C88	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C101	1-126-161-11	ELECT 2.2MF	20%	50V					
C102	1-124-463-00	ELECT 0.1MF	20%	50V					
C103	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C104	1-163-059-00	CERAMIC MELF 0.01MF	20%	16V					
C105	1-126-022-11	ELECT 47MF	20%	25V					
C106	1-136-173-00	(AEP)...FILM 0.47MF	5%	25V					
C107	1-124-463-00	(AEP)...ELECT 0.1MF	20%	50V					
C501	$\Delta$ 1-161-744-00	CERAMIC 0.01MF		400V					
C502	1-101-004-00	CERAMIC 0.01MF		50V					
C503	1-101-004-00	CERAMIC 0.01MF		50V					
C504	1-124-910-11	ELECT 47MF	20%	50V					
C506	1-101-005-00	CERAMIC 0.022MF		50V					
C507	1-126-059-11	ELECT 10MF	20%	50V					
C508	1-126-059-11	ELECT 10MF	20%	50V					
C509	1-101-005-00	CERAMIC 0.022MF		50V					
C510	1-126-161-11	ELECT 2.2MF	20%	50V					
C511	1-101-005-00	CERAMIC 0.022MF		50V					
C512	1-124-910-11	ELECT 47MF	20%	50V					
C513	1-124-911-11	ELECT 220MF	20%	50V					
C514	1-126-105-11	ELECT 1000MF	20%	35V					

Ref.No.	Part No.	Description
C701	1-126-157-11	ELECT 10MF 20% 16V
C702	1-161-379-00	CERAMIC 0.01MF 30% 16V
C703	1-125-486-11	DOUBLELAYERS 0.22F 5.5V
C704	1-126-094-11	ELECT 4.7MF 20% 25V
C705	1-161-379-00	CERAMIC 0.01MF 30% 16V
C706	1-162-286-31	CERAMIC 220PF 10% 50V
C707	1-162-286-31	CERAMIC 220PF 10% 50V
C708	1-162-286-31	CERAMIC 220PF 10% 50V
C709	1-162-286-31	CERAMIC 220PF 10% 50V
C710	1-162-286-31	CERAMIC 220PF 10% 50V
C711	1-162-286-31	CERAMIC 220PF 10% 50V
C712	1-162-286-31	CERAMIC 220PF 10% 50V
C713	1-162-286-31	CERAMIC 220PF 10% 50V
C714	1-123-357-00	(AEP).....ELECT 22MF 20% 50V
C714	1-124-465-00	(Canadian)...ELECT 0.47MF 20% 50V
CF1	1-567-389-11	FILTER, CERAMIC
CF2	1-567-389-11	FILTER, CERAMIC
CF21	1-577-075-11	OSCILLATOR, CERAMIC 19kHz
CF701	1-577-101-11	VIBRATOR, CERAMIC 4.19MHZ
CFT21	1-404-853-11	TRANSFORMER, IF (CERAMIC FILTER)
CN1	*1-568-284-11	SOCKET, CONNECTOR 9P
CN2	1-564-980-11	PIN, CONNECTOR 4P
CN3	1-564-980-11	PIN, CONNECTOR 4P
CN701	1-568-282-11	SOCKET, CONNECTOR 7P
CN702	*1-568-284-11	SOCKET, CONNECTOR 9P
CNJ1	*1-568-276-11	SOCKET, CONNECTOR 10P
CNJ2	*1-568-311-21	SOCKET, CONNECTOR 7P
CNJ3	*1-568-313-11	SOCKET, CONNECTOR 9P
CNP1	*1-564-337-00	PIN, CONNECTOR 3P
CP1	▲1-555-750-00	(AEP).....CORD, POWER
CP1	▲1-558-945-11	(Canadian)...CORD, POWER
CP701	1-233-148-11	COMPOSITION CIRCUIT BLOCK
CP702	1-233-187-11	COMPOSITION CIRCUIT BLOCK
CP702	1-233-185-11	COMPOSITION CIRCUIT BLOCK
D21	8-719-912-20	DIODE 1SS120
D22	8-719-912-20	DIODE 1SS120
D23	8-719-912-20	DIODE 1SS120
D24	8-719-912-20	DIODE 1SS120
D61	8-719-912-20	(AEP)...DIODE 1SS120
D501	8-719-200-77	DIODE 10E2N
D502	8-719-200-77	DIODE 10E2N
D503	8-719-912-20	DIODE 1SS120
D504	8-719-912-20	DIODE 1SS120
D505	8-719-912-81	DIODE EQA02-06C
D506	8-719-904-93	DIODE EQA02-30B
D507	8-719-912-20	DIODE 1SS120
D701	8-719-912-20	DIODE 1SS120
D702	8-719-912-20	DIODE 1SS120
D703	8-719-912-20	DIODE 1SS120
D705	8-719-912-20	(AEP)...DIODE 1SS120
D708	8-719-912-20	DIODE 1SS120
D709	8-719-912-20	DIODE 1SS120
D710	8-719-912-20	DIODE 1SS120
D711	8-719-912-20	DIODE 1SS120
D712	8-719-912-20	DIODE 1SS120

Ref.No.	Part No.	Description
D713	8-719-912-20	DIODE 1SS120
D714	8-719-912-20	DIODE 1SS120
D715	8-719-912-20	DIODE 1SS120
D716	8-719-912-20	DIODE 1SS120
D717	8-719-912-20	DIODE 1SS120
D718	8-719-912-20	DIODE 1SS120
FE1	1-463-862-21	(AEP).....FRONT END, FM
FE1	1-463-962-11	(Canadian)...FRONT END, FM
FE61	1-236-461-11	(Canadian)...ENCAPSULATED COMPONENT
FE61	1-236-462-11	(AEP).....ENCAPSULATED COMPONENT
FE62	1-236-463-11	(AEP).....ENCAPSULATED COMPONENT
FL701	1-519-512-11	INDICATOR TUBE, FLUORESCENT
IC21	8-759-821-45	IC LA1851N
IC81	8-759-820-91	IC LC7218
IC501	8-759-820-09	IC LA5667
IC701	8-759-234-35	IC TMP47C670N-1283
L1	1-408-421-00	MICRO INDUCTOR (100UH)
L21	1-410-494-11	(Canadian)...MICRO INDUCTOR (1MMH)
L21	1-407-500-00	(AEP).....MICRO INDUCTOR (4.7MMH)
L61	1-410-525-11	(AEP)...MICRO INDUCTOR (100UH)
L701	1-410-521-11	INDUCTOR 100UH
LPF21	1-235-164-00	FILTER, LOW PASS
LPF22	1-235-164-00	FILTER, LOW PASS
PJ1	1-565-352-21	JACK, PIN 2P (OUTPUT)
PT501▲	1-450-009-11	(AEP).....TRANSFORMER, POWER
PT501▲	1-450-010-11	(Canadian)...TRANSFORMER, POWER
Q1	8-729-230-XX	TRANSISTOR 2SC2669
Q2	8-729-230-XX	TRANSISTOR 2SC2669
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q26	8-729-900-80	TRANSISTOR DTC114ES
Q27	8-729-620-05	TRANSISTOR 2SC2603-EF
Q28	8-729-620-05	TRANSISTOR 2SC2603-EF
Q61	8-729-900-80	(AEP)...TRANSISTOR DTC114ES
Q62	8-729-900-80	(AEP)...TRANSISTOR DTC114ES
Q63	8-729-900-80	(AEP)...TRANSISTOR DTC114ES
Q64	8-729-620-05	(AEP)...TRANSISTOR 2SC2603-EF
Q65	8-729-119-76	(AEP)...TRANSISTOR 2SA1175-HFE
Q66	8-729-900-80	(AEP)...TRANSISTOR DTC114ES
Q81	8-729-900-61	TRANSISTOR DTA114ES
Q82	8-729-900-80	TRANSISTOR DTC114ES
Q83	8-729-202-67	TRANSISTOR 2SK246GR3
Q84	8-729-230-93	TRANSISTOR 2SC3113-AB
Q85	8-729-202-67	(AEP)...TRANSISTOR 2SK246-GR3
Q86	8-729-230-93	(AEP)...TRANSISTOR 2SC3113-AB
R1	▲1-249-401-11	(AEP)...CARBON (SMALL) 47 5% 1/4W F
R1	▲1-249-409-11	(Canadian) ...CARBON (SMALL) 220 5% 1/4W F
R3	1-249-329-11	CARBON MELF 330 5% 1/8W
R4	1-249-329-11	CARBON MELF 330 5% 1/8W
R5	1-249-329-11	CARBON MELF 330 5% 1/8W
R6	1-249-350-11	CARBON MELF 18K 5% 1/8W
R7	1-249-329-11	CARBON MELF 330 5% 1/8W
R8	1-249-332-11	CARBON MELF 560 5% 1/8W
R9	1-249-352-11	CARBON MELF 27K 5% 1/8W
R21	▲1-249-404-00	CARBON (SMALL) 82 5% 1/4W F

**Note:**



The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

**Note:**


Les composants identifiés par une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
R22	1-249-428-11	(Canadian)	R105	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
		...CARBON (SMALL) 8.2K 5% 1/4W	R106	1-249-339-11	CARBON MELF 2.2K 5% 1/8W
R22	1-249-433-11	(AEP)...CARBON (SMALL) 22K 5% 1/4W	R107	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R23	1-249-335-11	CARBON MELF 1K 5% 1/8W	R108	1-249-323-11	CARBON MELF 100 5% 1/8W
R24	1-249-353-11	CARBON MELF 33K 5% 1/8W	R109	1-249-343-11	CARBON MELF 4.7K 5% 1/8W
R25	1-249-346-11	CARBON MELF 8.2K 5% 1/8W	R110	△ 1-249-405-11	CARBON(SMALL) 100 5% 1/4W F
R27	1-249-432-11	CARBON(SMALL) 18K 5% 1/4W	R111	1-249-341-11	(AEP)...CARBON MELF 3.3K 5% 1/8W
R29	1-249-347-11	CARBON MELF 10K 5% 1/8W	R112	1-249-332-11	(AEP)...CARBON MELF 560 5% 1/8W
R31	1-249-331-11	CARBON MELF 470 5% 1/8W	R113	1-249-335-11	(AEP)...CARBON MELF 1K 5% 1/8W
R32	1-249-347-11	CARBON MELF 10K 5% 1/8W	R114	1-249-238-11	(AEP)...CARBON MELF 270 5% 1/8W
R33	1-249-347-11	CARBON MELF 10K 5% 1/8W	R115	1-249-351-11	(AEP)...CARBON MELF 22K 5% 1/8W
R34	1-249-425-11	CARBON(SMALL) 4.7K 5% 1/4W	R116	1-249-339-11	(AEP)...CARBON MELF 2.2K 5% 1/8W
R35	1-249-355-11	CARBON MELF 47K 5% 1/8W	R117	1-249-343-11	(AEP)...CARBON MELF 4.7K 5% 1/8W
R37	1-249-359-11	CARBON MELF 100K 5% 1/8W	R118	1-249-232-11	(AEP)...CARBON MELF 100 5% 1/8W
R38	1-249-363-11	CARBON MELF 220K 5% 1/8W	R501	1-202-725-00	(Canadian)...SOLID 3.3M 10% 1/2W
R39	1-249-339-11	CARBON MELF 2.2K 5% 1/8W	R502	1-249-437-11	CARBON 47K 5% 1/4W
R40	1-249-338-11	CARBON MELF 1.8K 5% 1/8W	R503	△ 1-247-752-11	CARBON 1K 5% 1/2W F
R41	1-249-344-11	CARBON MELF 5.6K 5% 1/8W	R504	1-249-393-11	CARBON 10 5% 1/4W
R42	1-249-359-11	CARBON MELF 100K 5% 1/8W	R505	1-249-441-11	CARBON 100K 5% 1/4W
R43	1-249-363-11	CARBON MELF 220K 5% 1/8W	R701	1-249-405-11	CARBON 100 5% 1/4W
R44	1-249-339-11	CARBON MELF 2.2K 5% 1/8W	R702	1-249-441-11	CARBON 100K 5% 1/4W
R45	1-249-338-11	CARBON MELF 1.8K 5% 1/8W	R703	1-249-441-11	CARBON 100K 5% 1/4W
R46	1-249-344-11	CARBON MELF 5.6K 5% 1/8W	R704	1-249-441-11	CARBON 100K 5% 1/4W
R47	△ 1-249-409-11	CARBON(SMALL) 220 5% 1/4W F	R709	1-249-417-11	CARBON 1K 5% 1/4W
R48	1-249-359-11	CARBON MELF 100K 5% 1/8W	R710	1-249-411-11	CARBON 330 5% 1/4W
R49	1-249-359-11	CARBON MELF 100K 5% 1/8W	R711	1-249-411-11	CARBON 330 5% 1/4W
R61	1-249-359-11	CARBON MELF 100K 5% 1/8W	R712	1-249-429-11	CARBON 10K 5% 1/4W
R62	1-249-355-11	CARBON MELF 47K 5% 1/8W	R713	1-249-429-11	CARBON 10K 5% 1/4W
R63	1-249-315-11	CARBON MELF 22 5% 1/8W	R714	1-249-429-11	CARBON 10K 5% 1/4W
R64	1-249-351-11	(AEP)...CARBON MELF 22K 5% 1/8W	R715	1-249-429-11	CARBON 10K 5% 1/4W
R65	1-249-355-11	(AEP)...CARBON MELF 47K 5% 1/8W	R716	1-249-429-11	CARBON 10K 5% 1/4W
R66	1-249-073-11	(AEP)...CARBON MELF 1M 5% 1/5W	R717	1-249-429-11	CARBON 10K 5% 1/4W
R67	1-249-359-11	(AEP)...CARBON MELF 100K 5% 1/8W	R718	1-249-429-11	CARBON 10K 5% 1/4W
R68	1-249-352-11	(AEP)...CARBON MELF 27K 5% 1/8W	R719	1-249-429-11	CARBON 10K 5% 1/4W
R69	1-249-351-11	(AEP)...CARBON MELF 22K 5% 1/8W	R720	1-249-441-11	CARBON 100K 5% 1/4W
R70	1-249-331-11	(AEP)...CARBON MELF 470 5% 1/8W	R721	1-249-441-11	CARBON 100K 5% 1/4W
R71	1-249-339-11	(AEP)...CARBON MELF 2.2K 5% 1/8W	RV21	1-238-013-11	RES, ADJ, CARBON 2.2K
R72	1-249-351-11	(AEP)...CARBON MELF 2.2K 5% 1/8W	RV22	1-238-017-11	RES, ADJ, CARBON 22K
R73	1-249-347-11	(AEP)...CARBON MELF 10K 5% 1/8W	RV24	1-238-017-11	RES, ADJ, CARBON 22K
R74	1-249-347-11	(AEP)...CARBON MELF 10K 5% 1/8W	S1	△ 1-554-920-21	SWITCH, PUSH (AC POWER)(1 KEY)
R75	1-249-343-11	(AEP)...CARBON MELF 4.7K 5% 1/8W	S701	1-554-303-21	SWITCH, KEY BOARD (1)
R81	1-249-335-11	CARBON MELF 1K 5% 1/8W	S702	1-554-303-21	SWITCH, KEY BOARD (2)
R82	1-249-335-11	CARBON MELF 1K 5% 1/8W	S703	1-554-303-21	SWITCH, KEY BOARD (3)
R83	1-249-335-11	CARBON MELF 1K 5% 1/8W	S704	1-554-303-21	SWITCH, KEY BOARD (4)
R84	1-249-335-11	CARBON MELF 1K 5% 1/8W	S705	1-554-303-21	SWITCH, KEY BOARD (5)
R85	1-249-347-11	CARBON MELF 10K 5% 1/8W	S706	1-554-303-21	SWITCH, KEY BOARD (6)
R86	1-249-335-11	CARBON MELF 1K 5% 1/8W	S707	1-554-303-21	SWITCH, KEY BOARD (7)
R87	1-249-347-11	(AEP)...CARBON MELF 10K 5% 1/8W	S708	1-554-303-21	SWITCH, KEY BOARD (8)
R88	1-249-343-11	CARBON MELF 4.7K 5% 1/8W	S709	1-554-303-21	SWITCH, KEY BOARD (9)
R89	1-249-335-11	CARBON MELF 1K 5% 1/8W	S710	1-554-303-21	SWITCH, KEY BOARD (0)
R90	1-249-343-11	(AEP)...CARBON MELF 4.7K 5% 1/8W	S711	1-554-303-21	SWITCH, KEY BOARD (AUTO TUNING)
R91	1-249-335-11	CARBON MELF 1K 5% 1/8W	S712	1-554-303-21	SWITCH, KEY BOARD (MEMORY SCAN)
R92	△ 1-249-401-11	CARBON(SMALL) 47 5% 1/4W F	S713	1-554-303-21	SWITCH, KEY BOARD (MEMORY)
R101	1-249-341-11	CARBON MELF 3.3K 5% 1/8W	S714	1-554-303-21	SWITCH, KEY BOARD (SHIFT)
R102	1-249-332-11	CARBON MELF 560 5% 1/8W	S715	1-554-303-21	SWITCH, KEY BOARD (BAND FM/AM)
R103	1-249-335-11	CARBON MELF 1K 5% 1/8W	S716	1-554-303-21	SWITCH, KEY BOARD (TUNING +)
R104	1-249-328-11	CARBON MELF 270 5% 1/8W	S717	1-554-303-21	SWITCH, KEY BOARD (TUNING -)

**Note:**

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

**Note:**

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description
T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR
TB501	*1-535-139-00	(AEP).....BASE POST 22MM(10MM PITCH)2P
TB501	*1-535-141-00	(Canadian)..BASE POST 22MM(10MM PITCH)4P
TM1	*1-537-138-31	(AEP).....TERMINAL BOARD (ANT)
TM1	1-537-238-21	(Canadian)...TERMINAL BOARD, PUSH 4P
TN1	1-535-416-00	(AEP)...TERMINAL
TN2	1-535-416-00	(AEP)...TERMINAL
TP1	*1-560-060-00	PIN, CONNECTOR 2P
XT81	1-577-126-11	VIBRATOR, CRYSTAL 7.2MHz

ACCESSORY & PACKING MATERIAL

1-501-374-11	(AEP)...ANTENNA, LOOP
1-558-232-11	(AEP)...CORD(WITH CONNECTOR)(SIRCS)4P
1-559-533-11	(AEP)...CORD, CONNECTION
*3-704-343-01	SHEET (STANDARD), PROTECTION
3-751-776-11	(AEP)...MANUAL, INSTRUCTION
3-751-776-41	(AEP)...MANUAL, INSTRUCTION
*4-917-074-01	CUSHION
*4-917-056-31	(AEP)...INDIVIDUAL CARTON