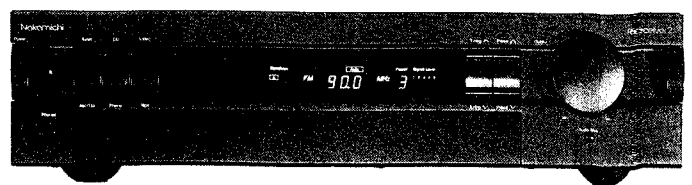


# Service Manual

# Nakamichi Receiver 2



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## 1. GENERAL

### 1.1. Production No.

Production No.: D113

### 1.2. Destinations

USA, CAN, EP, UK, AUS, OTR, JPN

#### Abbreviation

USA — U.S.A.	AUS — Australia
CAN — Canada	OTR — Other
EP — Europe	JPN — Japan
UK — United Kingdom	

### 1.3. Parts Supply

#### (1) Unstocked Parts


Parts marked with “★” at the head of part No. are not stocked. So, it takes time to supply the parts after we receive your order.

#### (2) Unsupplied Parts

Parts without part Nos. (indicated as “—” in the parts list) are not supplied.

#### 1.4. CAUTIONS/WARNINGS

##### (1) Product Safety Notice

Parts marked with the symbol  in the schematic diagram have critical characteristics.

Use **ONLY** replacement parts recommended by the manufacturer.

It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

##### (2) Leakage Current Check/Resistance Check

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

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

##### (3) Lithium Battery Caution

Use **ONLY** replacement parts recommended by the manufacturer. Replacement must be done only by qualified service personnel because of risk for explosion.

#### WARNING

Litiumbatteri. Explosionsfara vid felaktig hantering. Byte får endast ske av sakkunnig personal enligt servicedokumentationens anvisningar.

#### ADVARSEL!

Lithiumbatterier. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen.

batterierne kun må udskiftes med batterier af samme fabrikat og type.

##### (4) Resetting the MPU After Repair

When the Receiver 2 does not work properly with the button operation after repair or after replacing the battery (the display shows abnormal indication), reset the Micro-processing Unit (MPU) U001 ( $\mu$ PD75208CW-A77) on the Display & Control P.C.B. Ass'y as follows:

1. With the power turned ON, ground the Reset Point on the Display & Control P.C.B. Ass'y.  
(See Fig. 6.10 Reset Point: Positive side of C002.)
2. Since the memory contents are cleared, reset them again.

#### VOLTAGE SELECTOR

Voltage selector is installed on the Rear Panel. The voltage selector can select 110, 120, 220, or 240V at customer's disposal.

#### 1.5. Package Ass'y

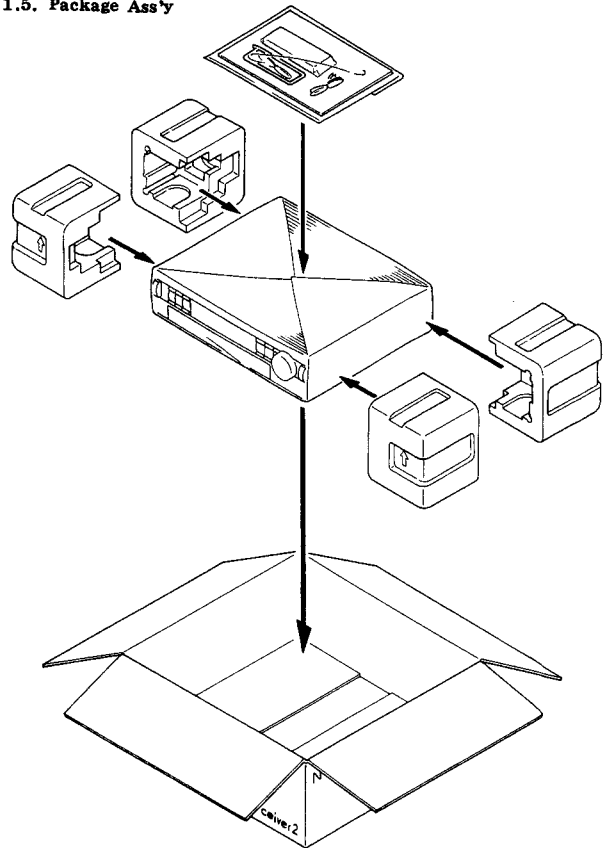


Fig. 1.1

Note: When shipping, the side packings as shown in Fig. 1.1 are used. However, front packing and rear packing listed are supplied as spare parts.

Schematic Ref. No.	Part No.	Description	Qty
	—	Package Ass'y	
	0F04498A	Front Packing	1
	0F04499A	Rear Packing	1
	0F04493A	Carton	1

1.6. Accessory Ass'y

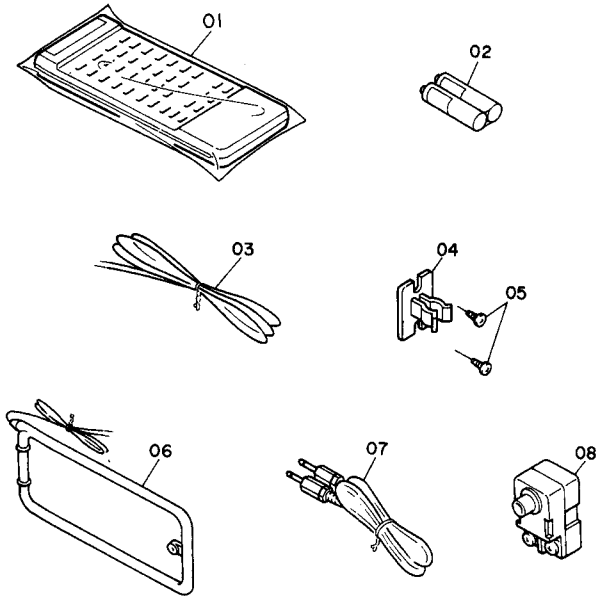


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Qty
	CA81707A	Accessory Ass'y (USA, CAN, OTR)	1
	CA81801A	Accessory Ass'y (EP, UK, AUS)	1
	DA04446A	Accessory Ass'y (JPN)	1
01	CA81723A	Remote Control Unit	1
02	0B90341A	Battery AA Typex2	1
03	0C85437A	Feeder Antenna (USA, CAN, AUS, OTR)	1
04	0B90320A	Feeder Antenna (EP, UK, JPN)	1
05	0B90319A	Loop Antenna Holder	1
	0E03659A	3x12 $\Phi$ Tapping (Black Chromate)	2
06	0C85374A	AM Loop Antenna	1
07	0C85415A	Remote Control Cable	1
08	0B90208A	Antenna Adapter (EP, UK)	1
	0B90194A	Antenna Adapter F (JPN)	1
	0C85308A	Owner's Manual (English/German/French)	1
	0D06154A	Owner's Manual (Japanese)	1

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y

Refer to Fig. 2.1.

- (1) Loosen screws F01 (5 pcs.) and remove F02 (Top Cover Ass'y).

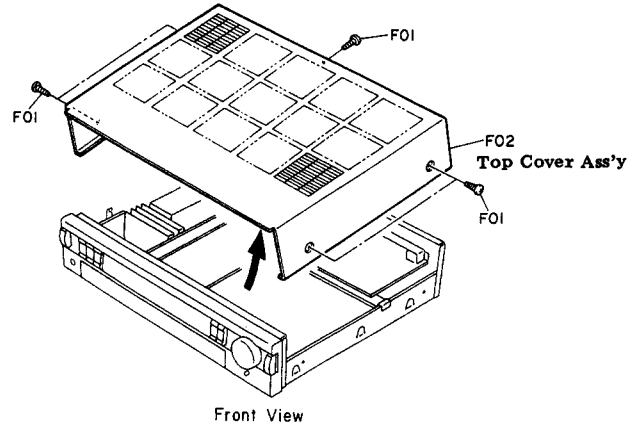


Fig. 2.1

2.2. Bottom Cover Ass'y

Refer to Fig. 2.2.

- (1) Loosen screws F01 (9 pcs.) and F02 (1 pce.) and remove F03 (Bottom Cover Ass'y).

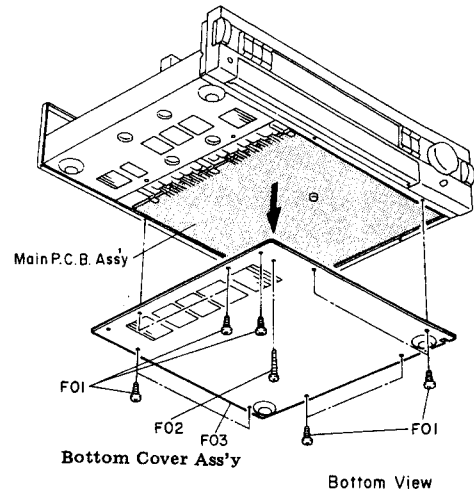


Fig. 2.2

2.3. Sealing Panel

Refer to Fig. 2.3.

- (1) Loosen screws F01 (2 pcs.) and remove F02 (Sealing Panel).

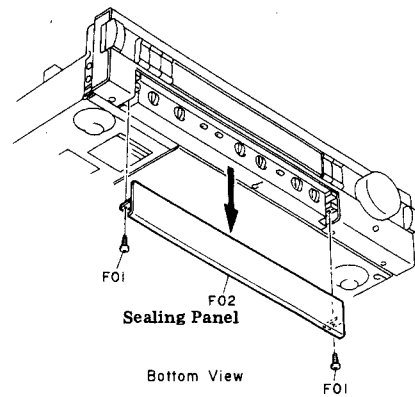


Fig. 2.3

#### 2.4. Front Panel Ass'y

Refer to Fig. 2.4.

- (1) Remove the Top Cover Ass'y referring to item 2.1.
- (2) Loosen screws F01 (3 pcs.) and F02 (3 pcs.) and remove F03 (Front Panel Ass'y).

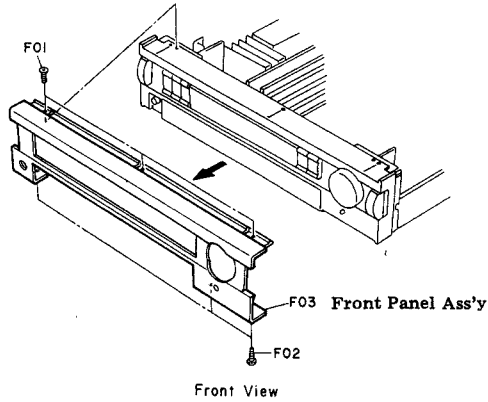


Fig. 2.4

#### 2.5. Front Chassis Ass'y

Refer to Fig. 2.5.

- (1) Remove the Front Panel Ass'y referring to item 2.4.
- (2) Disconnect the connector CN-5 from the Main P.C.B. Ass'y and pull out F01 (Volume Knob Ass'y).
- (3) Loosen screws F02 (4 pcs.), F03 (3 pcs.) and F04 (1 pce.).
- (4) Disconnect all connectors (11 pcs.) and remove F05 (Front Chassis Ass'y).

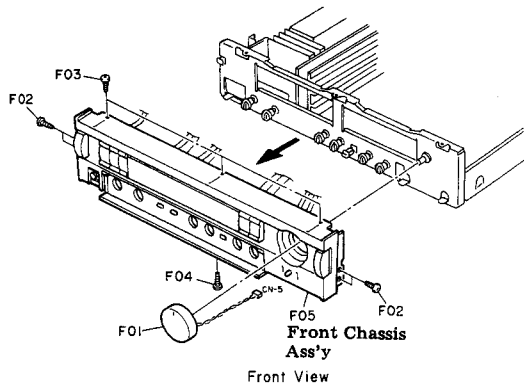


Fig. 2.5

#### 2.6. Display & Control P.C.B. Ass'y and Audio Mute P.C.B. Ass'y

Refer to Fig. 2.6.

- (1) Remove the Front Chassis Ass'y referring to item 2.5.
- (2) Loosen screws F01 (8 pcs.) and F02 (1 pce.), and remove F03 (Display & Control P.C.B. Ass'y) and F04 (Audio Mute P.C.B. Ass'y).

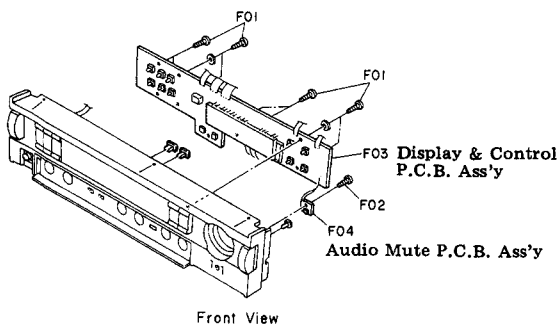


Fig. 2.6

#### 2.7. System Remote P.C.B. Ass'y

Refer to Fig. 2.7.

- (1) Remove the Top Cover Ass'y referring to item 2.1.
- (2) Loosen screws F01 (2 pcs.) and F02 (3 pcs.), and remove F03 (System Remote P.C.B. Ass'y) in the direction of the arrow.

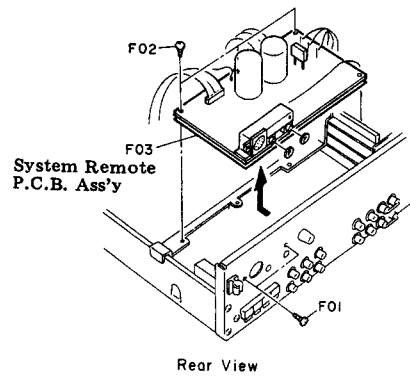


Fig. 2.7

#### 2.8. Power Supply P.C.B. Ass'y

Refer to Fig. 2.8.

- (1) Remove the Top Cover Ass'y referring to item 2.1.
- (2) Loosen a screw F01 and remove F02 (Power Supply P.C.B. Ass'y).

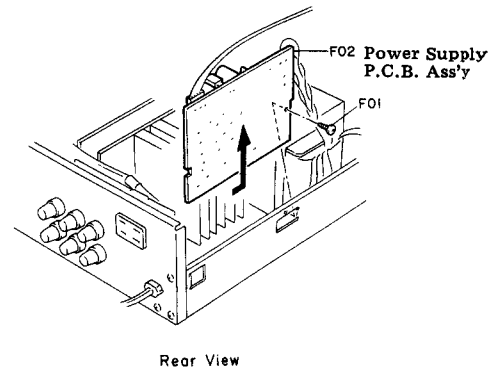


Fig. 2.8

### 3. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

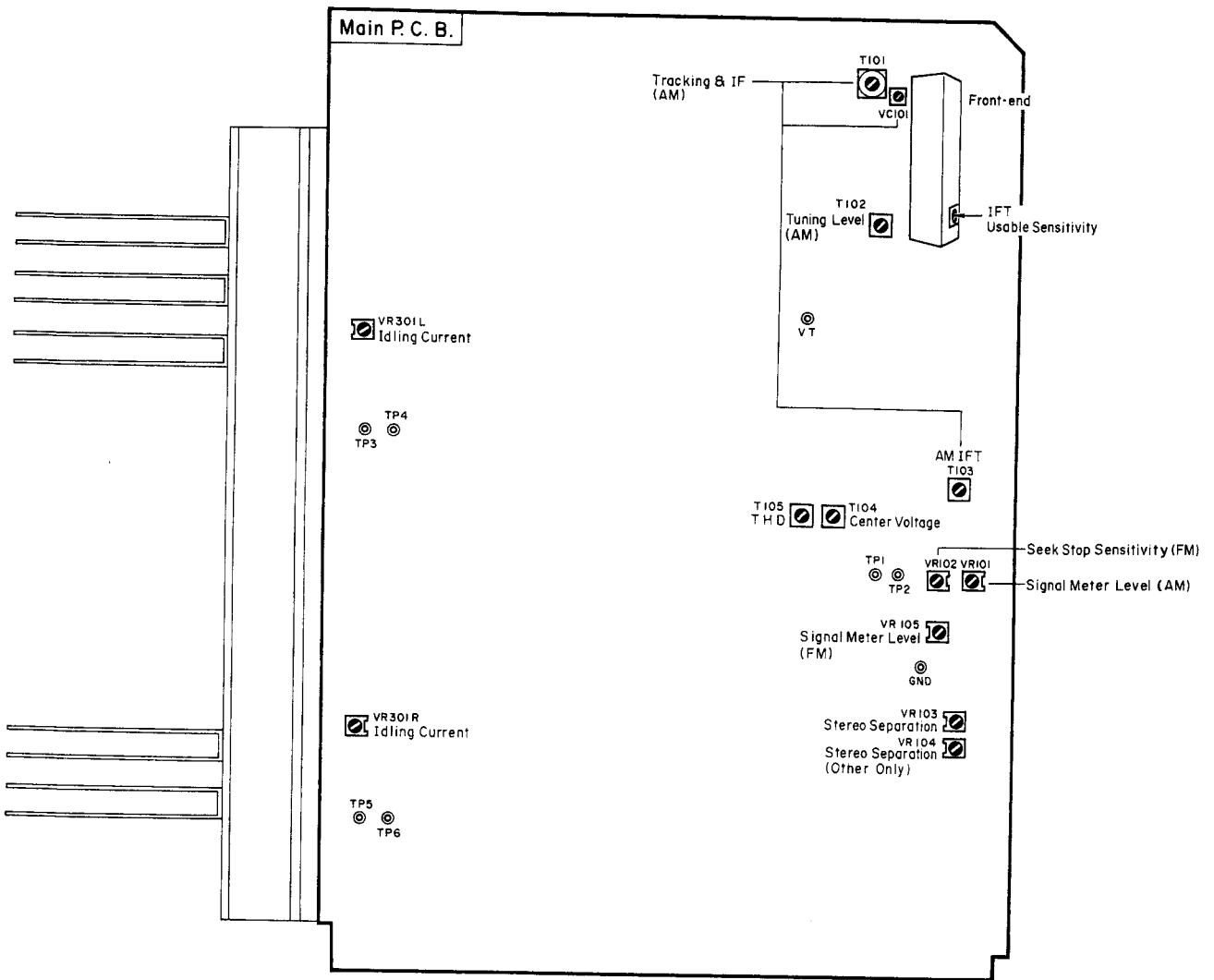


Fig. 3

### 4. ELECTRICAL ADJUSTMENTS

#### 4.1. Power Amplifier Section

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Idling Current	None	DC Voltmeter between TP3,4 (L) and TP5,6 (R) on Main P.C.B.	Listen Monitor Selector - CD Volume - Min. Speaker Selector - OFF	Main P.C.B. VR301L VR301R	<ol style="list-style-type: none"> <li>1. Insert shorting plugs into the CD Player Input Jacks.</li> <li>2. Turn ON the power and allow 3 minutes before adjustment. (Top Cover must be installed in this period of time.)</li> <li>3. Adjust VR301L (VR301R) to obtain 4 mV <math>\pm</math>1 mV on the DC voltmeter.</li> </ol>

#### 4.2. Tuner Section

Note: Adjustment should be made in a shielded room in principle.

##### (1) FM Tuner Section

STEP	ITEM	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Preliminary Step	See Fig. 4.1	Receiver 2 Listen Monitor Selector - Tuner Band Selector - FM Rec.Out Selector - Tuner  Signal Generator Freq. - 98.1 MHz - 83 MHz (Japan) RF Level - 65 dbf Modulation - See REMARKS		1. Set the Receiver 2 as indicated in the MODE. 2. Adjustment and confirmation should be made after tuning in to the set carrier frequency of the Signal Generator.  Note: Contents of modulation 1. For U.S.A., Canada, Other (Wide) & Japan o Stereo Audio: 1 kHz, 91% Pilot: 19 kHz, 9% o Mono Audio: 1 kHz, 100% 2. For Australia, Europe & Other (Narrow) o Stereo Audio: 1 kHz, 51% Pilot: 19 kHz, 9% o Mono Audio: 1 kHz, 60%
2	Usable Sensitivity Adjustment	Distortion Meter to Tape Record Output Jacks	Receiver 2 Same as above  Signal Generator Freq. - 98.1 MHz - 83 MHz (Japan) RF Level - 13.5 dbf Modulation - Mono	Main P.C.B. Front-end IFT	1. Set the Receiver 2 to Manual mode by pressing the Tuning Mode button. 2. Adjust the IFT to obtain minimum distortion (total harmonic distortion (THD): 3% or less). 3. Set the frequency of the Signal Generator to 90.1 MHz/106.1 MHz and check that the THD is 3% or less.
3	Center Voltage and THD Adjustment	DC Voltmeter between TP1 & TP2 on Main P.C.B. and Distortion Meter to Tape Record Output Jacks	Receiver 2 Same as above  Signal Generator Freq. - 98.1 MHz - 83 MHz (Japan) RF Level - 65 dbf Modulation - Mono	Main P.C.B. T104 T105	1. Set the Receiver 2 to Manual mode. 2. Adjust T104 so that the reading on the DC voltmeter is 0 V $\pm$ 20 mV. 3. Adjust T105 to obtain minimum distortion (THD: 0.08% or less). Repeat 2 and 3, if necessary.
4	Seek Stop Sensitivity Adjustment	Oscilloscope to Tape Record Output Jacks	Receiver 2 Same as above  Signal Generator Freq. - 98.1 MHz - 83 MHz (Japan) RF Level - 30 dbf Modulation - Stereo	Main P.C.B. VR102	1. Set the Receiver 2 to Auto mode. 2. Rotate VR102 fully counterclockwise. Then, return it clockwise gradually until a waveform appears on the oscilloscope. 3. Decrease the RF level of the Signal Generator until the waveform on the oscilloscope disappears. Then increase the RF level gradually until a waveform appears again. At this point, check that the RF level of the Signal Generator is 30 dBf $\pm$ 6 dB.

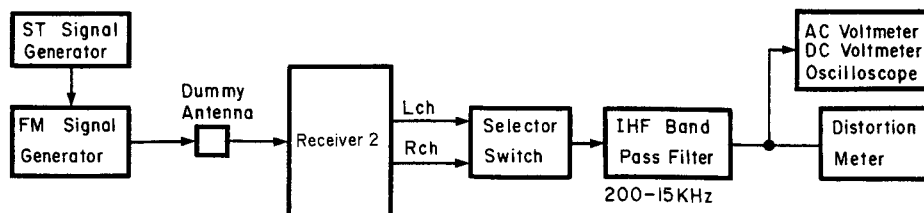


Fig. 4.1 FM Measuring Connecting Diagram

STEP	ITEM	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
5	Signal Meter Level Adjustment	None	Receiver 2 Same as above  Signal Generator Freq. - 98.1 MHz - 83 MHz (Japan) RF Level - 52 dBf Modulation - Stereo	Main P.C.B. VR105	<ol style="list-style-type: none"> <li>1. Set the Receiver 2 to Auto mode.</li> <li>2. Adjust VR105 so that all segments (1 - 5) of the signal level indicator light up.</li> <li>3. Decrease the RF level of the Signal Generator to distinguish the segment 5. Next, increase it gradually so that the segment 5 starts illuminating. At this point, check that the RF level of the Signal Generator is 52 dBf <math>\pm</math>5dB.</li> </ol>
6	Stereo Separation Adjustment	AC Voltmeter to Tape Record Output Jacks	Receiver 2 Same as above  Signal Generator Freq. - 98.1 MHz - 83 MHz (Japan) RF Level - 65 dBf Modulation - L or R only	Main P.C.B. VR103  VR104 (Other only)	<p>For U.S.A., Canada, Europe, Australia &amp; Japan versions:</p> <ol style="list-style-type: none"> <li>1. Set the Receiver 2 to Auto mode.</li> <li>2. Apply modulation to only L channel.</li> <li>3. Adjust VR103 to obtain minimum reading on the AC voltmeter at the R channel output jack.</li> <li>4. Apply modulation to only R channel.</li> <li>5. Check that the reading on the AC voltmeter at the L channel output jack is within <math>\pm</math>1 dB with respect to the reading in 3. If not, repeat 2 through 4.</li> </ol> <p>For Other version:</p> <ol style="list-style-type: none"> <li>1. Set the switches on the rear panel as follows: Freq. Step FM/AM - 100 kHz/10 kHz IF Band - Wide</li> <li>2. Apply the same procedures as above.</li> <li>3. Set the switches as follows: Freq. step FM/AM - 50 kHz/9 kHz IF Band - Narrow</li> <li>4. Apply the same procedures as mentioned above. However, adjust VR104 instead of VR103.</li> </ol>



(2) AM Tuner Section

Note: Frequencies for Australia, Europe and Other (Narrow) are indicated in parentheses.

STEP	ITEM	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tuning Level Adjustment	DC Voltmeter between TP (VT) and TP (GND) on Main P.C.B.	Receiver 2 Listen Monitor Selector - Tuner Band Selector - AM Rec.out selector - Tuner  Signal Generator Freq. - 520 (522) kHz/ 1710 (1611) kHz Modulation - 400 Hz 30%	Main P.C.B. T102	1. Set the frequency of the Signal Generator to 520 kHz (522 kHz) and make tuning. 2. Adjust T102 to obtain 2.4 V±0.1V on the DC voltmeter. 3. Change the frequency to 1710 kHz (1611 kHz) and make tuning. Check whether the DC voltmeter reads 15 V to 16 V.
2	Tracking and IF Adjustment	AC Voltmeter to Tape Record Output Jacks	Receiver 2 Same as above  Signal Generator Freq. - 600 (603) kHz/ 1400 (1404) kHz RF Level - 82 dBμ Modulation - 400 Hz 30%	Main P.C.B. T101 T103 VC101	1. Set the measurement instruments as shown in Fig. 4.2. Set the distance between the AM Loop Antenna of the Receiver 2 and a test loop to 60 cm. To obtain 56 dBμ/m at the AM Loop Antenna, set the RF level output of the AM Signal Generator to 82 dBμ as loss is 26 dB in this setting. 2. Set the frequency of the Signal Generator to 600 kHz (603 kHz) and make tuning. 3. Adjust T101 to obtain maximum reading on the AC voltmeter. 4. Adjust T103 to obtain maximum reading on the AC voltmeter. 5. Set the frequency to 1400 kHz (1404 kHz) and make tuning. 6. Adjust VC101 to obtain maximum reading on the AC voltmeter. 7. Repeat 2 through 6 once.
3	Signal Meter Level Adjustment	None	Receiver 2 Same as above  Signal Generator Freq. - 1000 (999) kHz RF Level - 100 dBμ Modulation - 400 Hz 30%	Main P.C.B. VR101	1. With the same setting as in Step 2, set the RF level output of the AM Signal Generator to 100 dBμ in order to obtain 80 dBμ/m at the AM Loop Antenna. 2. Adjust VR101 so that the segment 5 of the signal level indicator starts illuminating. Note: Before adjustment, select AM mode and wait for more than three minutes.

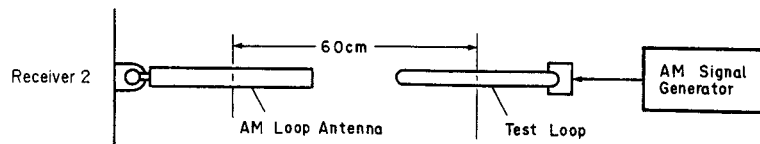


Fig. 4.2 AM Measuring Diagram

## 5. MECHANISM ASS'Y AND PARTS LIST

### 5.1. Synthesis

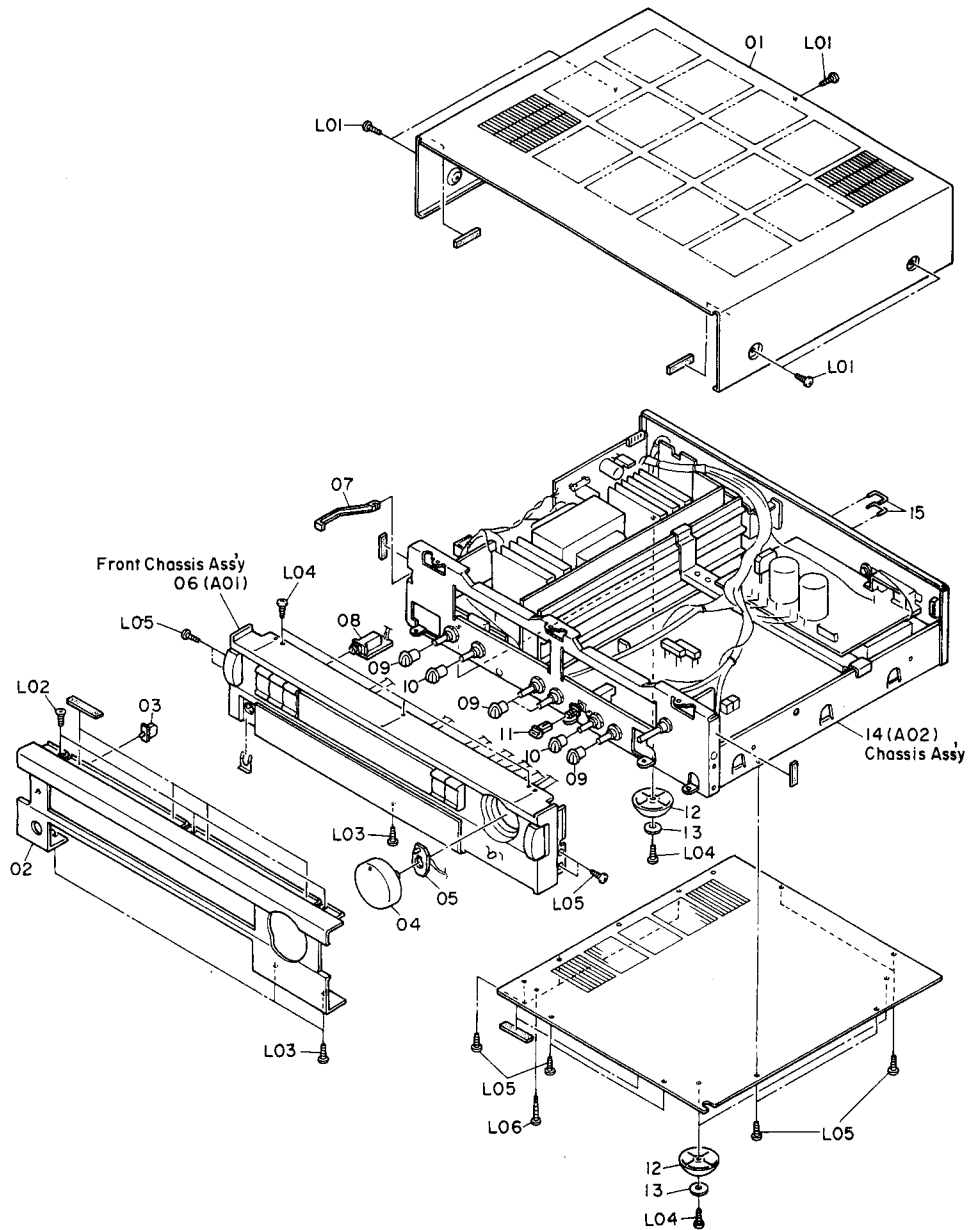


Fig. 5.1

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty
<b>5.1. Synthesis</b>				12	0C85356A	Leg	4
01	0C85459A	Top Cover	1	13	0C85358A	Leg Felt Sheet (USA, CAN, EP, UK, AUS, OTR)	4
02	0C85463A	Front Panel	1		0H05993A	Leg Felt Sheet (JPN)	4
03	0C85342A	LED Lens	1	14		Chassis Ass'y	1
04	CA81683A	Volume Knob Ass'y	1	15	0J05710A	Shorting Pin	2
05	* CA81715A	Volume LED P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)	1	L01	0E03433A	BT3x6 @ Binding Projected (Black Chromate)	
	* BA08179A	Volume LED P.C.B. Ass'y (JPN)	1	L02	0E03495A	BT3x10 @ Countersunk (Black Chromate)	
06	0C85357A	Front Chassis Ass'y	1	L03	0E00948A	BT3x10 @ Binding (Black Chromate)	
07	* CA81719A	Power Switch Joint	1	L04	0E00868A	BT3x8 @ Binding	
08	* BA08183A	Headphone P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)	1	L05	0E00857A	BT3x6 @ Binding	
	* CA81719A	Headphone P.C.B. Ass'y (JPN)	1	L06	0C85577A	BT3x16 @ Binding (Tapping)	
09	0C85460A	Tone Knob DG	4				
10	0C85461A	Tone Knob LG	2				
11	0C85465A	Push Switch Knob DG	1				

5.2. Front Chassis Ass'y (A01)

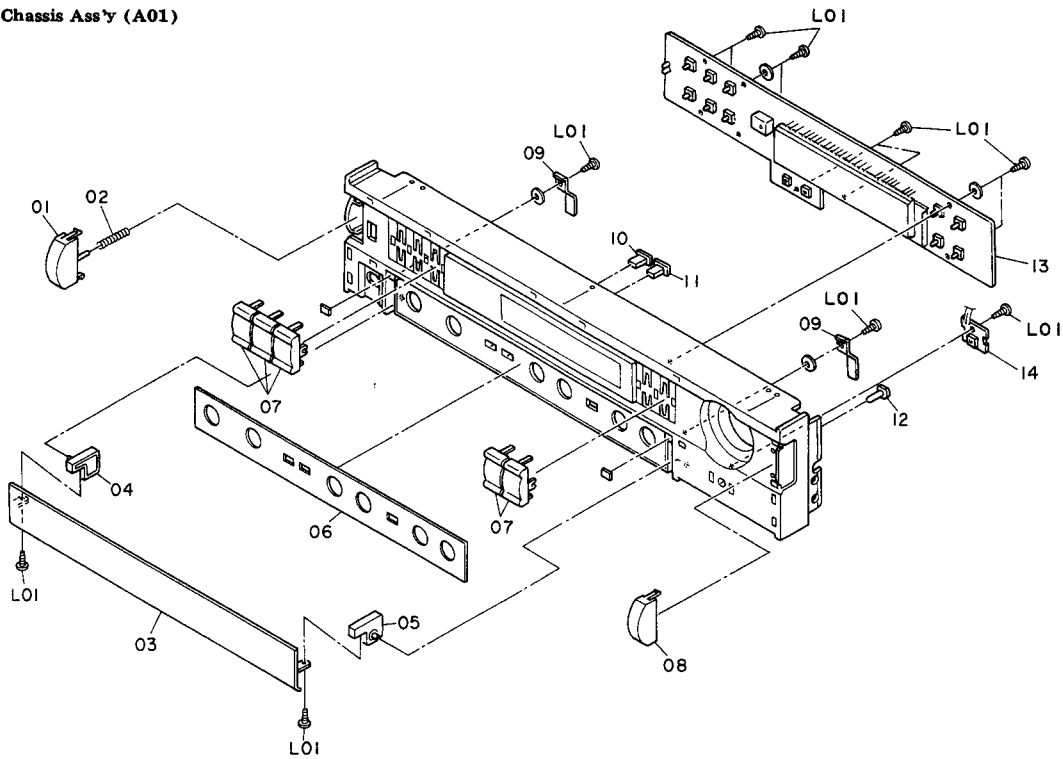


Fig. 5.2

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Qty
<b>5.2. Front Chassis Ass'y (A01)</b>			
A01	—	Front Chassis Ass'y	1
01	0C85345A	Power Switch Knob	1
02	0C85347A	Power Switch Spring	1
03	0C85489A	Sealing Panel	1
04	0C85491A	Hinge L	1
05	0C85492A	Hinge R	1
06	0C86092A	Indication Panel	1
07	0C85390A	Control Knob	5
08	0C85389A	Dummy Cap	1
09	0C85490A	Door Spring	2
10	0C85467A	Tact Switch Knob DG	1
11	0C85469A	Tact Switch Knob LG	1
12	0C85468A	Mute Knob	1
13	* CA81712A	Display & Control P.C.B. Ass'y (USA, CAN)	1
	* CA81742A	Display & Control P.C.B. Ass'y (EP, UK)	1
	* CA81805A	Display & Control P.C.B. Ass'y (AUS)	1
	* CA81806A	Display & Control P.C.B. Ass'y (OTR)	1
	* BA08176A	Display & Control P.C.B. Ass'y (JPN)	1
14	* CA81713A	Audio Mute P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)	1
	* BA08177A	Audio Mute P.C.B. Ass'y (JPN)	1
L01	0C85416A	PT3x8 ⊕ Binding	

5.3. Chassis Ass'y (A02)

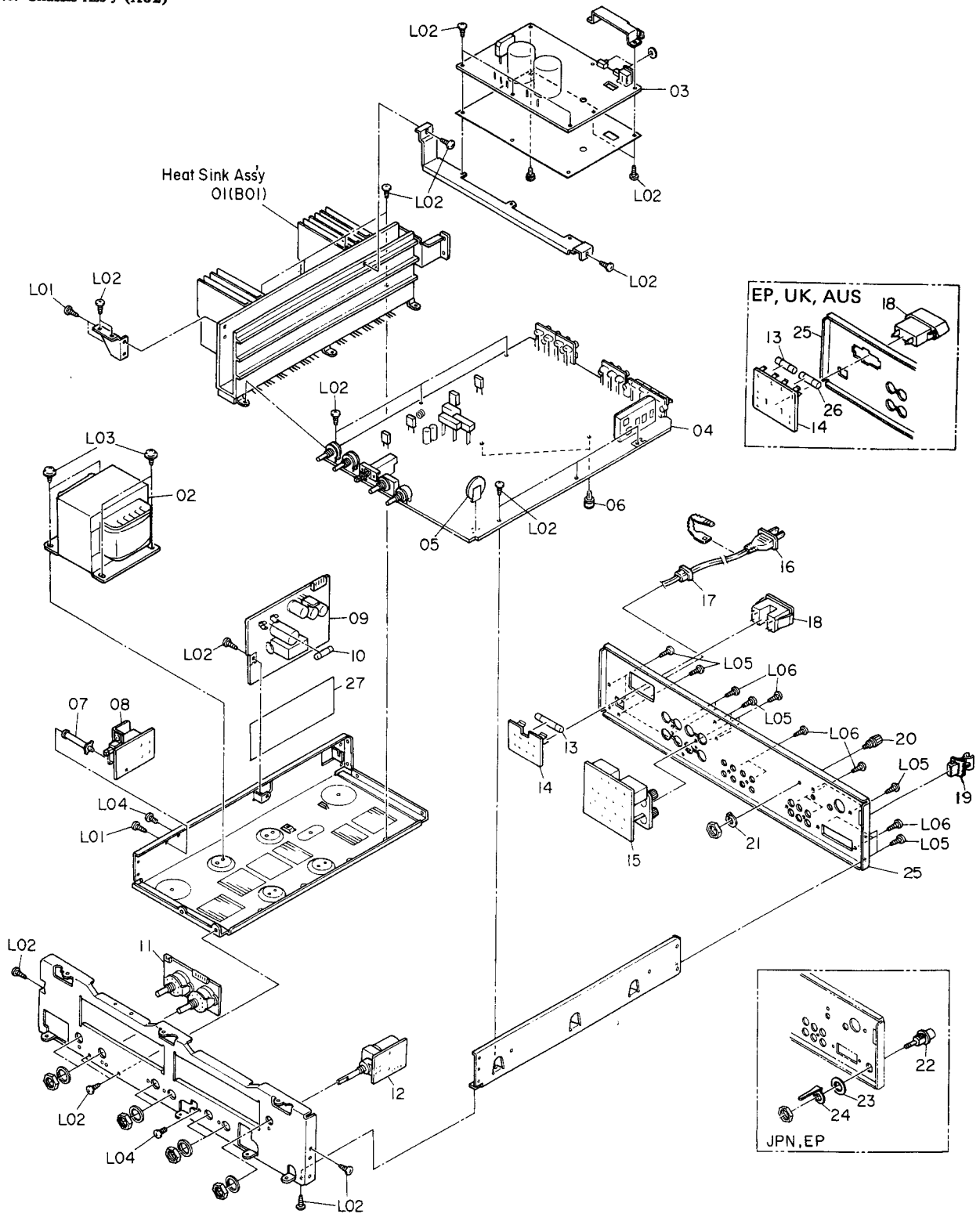


Fig. 5.3

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
<b>5.3. Chassis Ass'y (A02)</b>				<b>5.4. Heat Sink Ass'y (B01)</b>			
A02	—	Chassis Ass'y	1	B01	—	Heat Sink Ass'y	1
01	—	Heat Sink Ass'y	1	01	0B10199A	TR 2SC3421 [Q306L/R]	2
02	0C85476A	Power Transformer (USA, CAN)	1	02	0B19607A	Thermister 50KD-5 [TH301]	1
	0C85595A	Power Transformer (EP, UK, AUS)	1	03	0J05615A	TH Holder	1
	0C85596A	Power Transformer (OTR)	1	04	0B10288A	TR 2SD1407 [Q307L/R]	2
	0C85549A	Power Transformer (JPN)	1	05	0B10289A	TR 2SB1016 [Q308L/R]	2
03	CA81721A	System Remote P.C.B. Ass'y (USA, CAN, OTR)	1	06	0J05671A	Insulator TO-3P	4
	CA81810A	System Remote P.C.B. Ass'y (EP, UK, AUS)	1	07	0B10250A	TR 2SC3856 [Q309L/R]	2
	BA08185A	System Remote P.C.B. Ass'y (JPN)	1	08	0B10251A	TR 2SA1492 [Q310L/R]	2
04	CA81705A	Main P.C.B. Ass'y (USA, CAN)	1	L01	0E00868A	BT3x8 @ Binding	2
	CA81741A	Main P.C.B. Ass'y (EP)	1	L02	0E00986A	M3x10 @ Binding	2
	CA81802A	Main P.C.B. Ass'y (UK)	1	L03	0E00994A	M3x12 @ Binding	2
	CA81803A	Main P.C.B. Ass'y (AUS)	1				
	CA81804A	Main P.C.B. Ass'y (OTR)	1				
	BA08175A	Main P.C.B. Ass'y (JPN)	1				
05	0B90200B	Lithium Battery UM-34	1				
06	0C85351A	P.C.B. Support 6mm	2				
07	0C85361A	P.C.B. Support 25mm	1				
08	CA81720A	Power Switch P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)	1				
	BA08184A	Power Switch P.C.B. Ass'y (JPN)	1				
09	CA81716A	Power Supply P.C.B. Ass'y (USA, CAN)	1				
	CA81743A	Power Supply P.C.B. Ass'y (EP, UK, AUS)	1				
	CA81838A	Power Supply P.C.B. Ass'y (OTR)	1				
	BA08180A	Power Supply P.C.B. Ass'y (JPN)	1				
10	0B90329A	Fuse T1A 125V [F401] (USA, CAN, OTR)	1				
	0B90289A	Fuse T1A 250V [F401] (EP, UK, AUS)	1				
	0B90373A	Fuse 1A 250V [F401] (JPN)	1				
11	CA81714A	Selector P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)	1				
	BA08178A	Selector P.C.B. Ass'y (JPN)	1				
12	CA81722A	Motor Volume P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)	1				
	BA08186A	Motor Volume P.C.B. Ass'y (JPN)	1				
13	0B90346A	Fuse T4A 250V [F402] (USA, CAN, OTR)	1				
	0B90349A	Fuse T2A 250V [F402] (EP, UK, AUS)	1				
	0B90521A	Fuse 4A 250V [F402] (JPN)	1				
14	CA81718A	AC Outlet P.C.B. Ass'y (USA, CAN)	1				
	CA81745A	AC Outlet P.C.B. Ass'y (EP, UK)	1				
	CA81808A	AC Outlet P.C.B. Ass'y (AUS)	1				
	CA81809A	AC Outlet P.C.B. Ass'y (OTR)	1				
	BA08182A	AC Outlet P.C.B. Ass'y (JPN)	1				
15	CA81717A	Speaker Terminal P.C.B. Ass'y (USA, CAN, OTR)	1				
	CA81744A	Speaker Terminal P.C.B. Ass'y (EP)	1				
	CA81807A	Speaker Terminal P.C.B. Ass'y (UK, AUS)	1				
	BA08181A	Speaker Terminal P.C.B. Ass'y (JPN)	1				
16	0B80199A	AC Power Cord (USA, CAN)	1				
	0B08093U	AC Power Cord (EP)	1				
	0C85878A	AC Power Cord (UK)	1				
	0B80148A	AC Power Cord (AUS)	1				
	0C85877A	AC Power Cord (OTR)	1				
	0B90274A	AC Power Cord (JPN)	1				
17	0B90280A	Cord Bushing	1				
18	0B81928A	AC Outlet (USA, CAN, OTR)	1				
	0B81987A	AC Outlet (EP)	1				
	0C85876A	AC Outlet (UK)	1				
	0B81988A	AC Outlet (AUS)	1				
	0B81986A	AC Outlet (JPN)	1				
19	0B90316A	Antenna Holder	1				
20	JA04383A	Ground Terminal Ass'y	1				
21	0J05703A	Lug Terminal	1				
22	0C09584A	Antenna Terminal F (JPN)	1				
	0B81979A	Antenna Terminal (EP, UK)	1				
23	0C85445A	Ground Washer 10mm (EP, UK, JPN)	1				
24	0C85442A	Lug Terminal (EP, UK, JPN)	1				
25	0C85466A	Rear Panel (USA, CAN)	1				
	0C85597A	Rear Panel (EP)	1				
	0C85874A	Rear Panel (UK)	1				
	0C85875A	Rear Panel (AUS)	1				
	0C85598A	Rear Panel (OTR)	1				
	0H05983A	Rear Panel (JPN)	1				
26	0B90350A	Fuse T2.5A 250V [F403] (EP, UK, AUS)	1				
27	0C85599A	Insulator (EP, UK, AUS)	1				
—	CA81834A	IFS/DU Switch P.C.B. Ass'y (OTR)	1				
—	0C85600A	Voltage Selector (OTR)	1				
L01	0E00868A	BT3x8 @ Binding	2				
L02	0E00857A	BT3x6 @ Binding	2				
L03	0C85421A	ST4x6 @ Binding	1				
L04	0E00896A	M3x6 @ Binding	2				
L05	0E00860A	BT3x6 @ Binding (Black Chromate)	2				
L06	0E00948A	BT3x10 @ Binding (Black Chromate)	2				
	0E00985A	M3x6 @ Binding (Black Chromate) (OTR)	2				
	0E03072A	M2.6x6 @ Binding (Black Chromate) (OTR)	2				

5.4. Heat Sink Ass'y (B01)

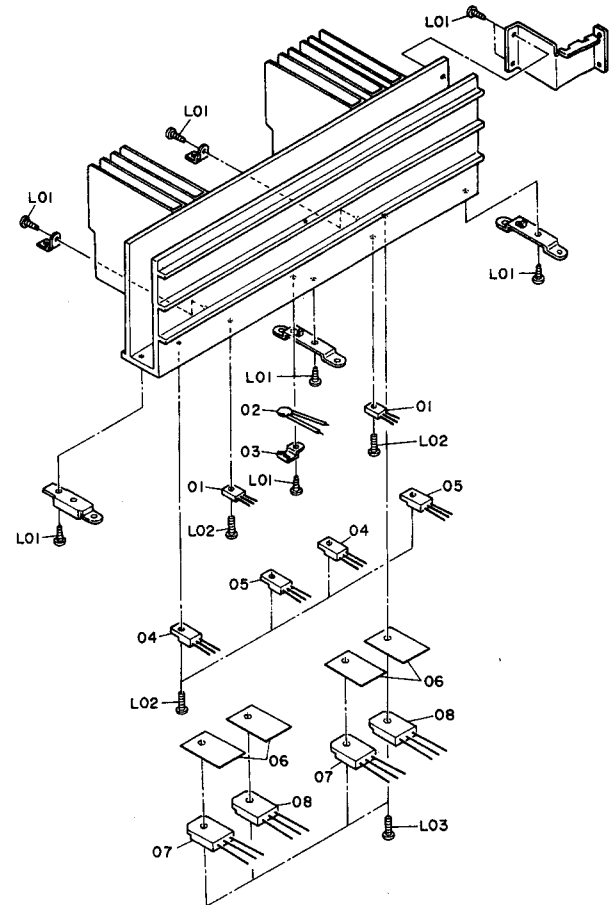


Fig. 5.4

## 6. MOUNTING DIAGRAMS AND PARTS LIST

- Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.  
 2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.  
 3. Following transistors are interchangeable with each other.  
 a. 2SA733, 2SA608SP, 2SA1048, 2SA1175  
 b. 2SC945, 2SC536SP, 2SC2458, 2SC2785  
 4. Abbreviation for part name:  
 TR - Transistor, SID - Silicon Diode, ZD - Zener Diode, Varicap - Variable Capacitance Diode  
 RK - Carbon Resistor, RM - Metal Film Resistor, RF - Fail Safe Type Resistor, RC - Cement Resistor  
 CE - Electrolytic Capacitor, CML - Mylar Capacitor, CC - Ceramic Capacitor, CPP - PP Capacitor,  
 CMM - Metalized Mylar Capacitor, CSP - Polystyrene Capacitor, C - Mica Capacitor  
 CT - Tantalum Capacitor

### 6.1. AC Outlet P.C.B. Ass'y

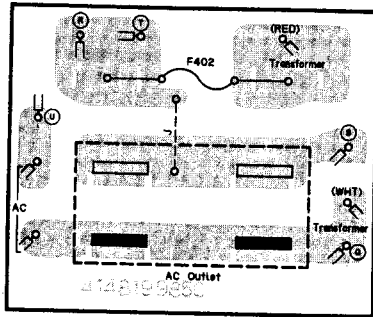


Fig. 6.1.1 USA, CAN, OTR, JPN

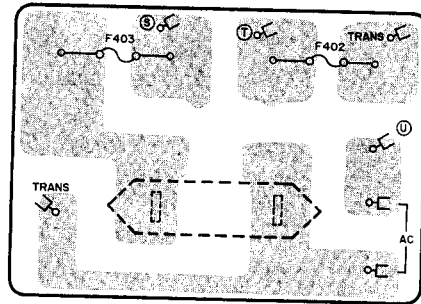


Fig. 6.1.2 EP, UK

### 6.2. Power Switch P.C.B. Ass'y

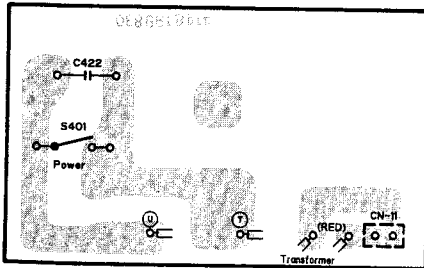


Fig. 6.2

### 6.3. Volume LED P.C.B. Ass'y

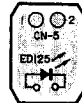


Fig. 6.3

### 6.4. Audio Mute P.C.B. Ass'y

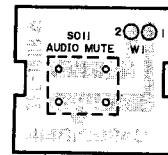


Fig. 6.4

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description		
<b>6.1. AC Outlet P.C.B. Ass'y</b>			<b>6.2. Power Switch P.C.B. Ass'y</b>			<b>6.3. Volume LED P.C.B. Ass'y</b>				
*	CA81718A	AC Outlet P.C.B. Ass'y (USA, CAN)	C422	*	CA81720A	ED125	*	CA81715A		
*	CA81809A	AC Outlet P.C.B. Ass'y (OTR)		*	BA08184A		CN5	*	BA08179A	
*	BA08182A	AC Outlet P.C.B. Ass'y (JPN)		S401	OC85496A			OB41825A	OC85494A	OB12710A
	OC85498A	AC Outlet P.C.B. Fuse Holder (2)			OC85387A				OC85495A	
	OB81930A	AC Outlet P.C.B. Fuse Holder (2)	OB41826A		OB70130A					
*	CA81745A	AC Outlet P.C.B. Ass'y (EP, UK)	CN11	OB71011A	OC85360A	OC85405A	2P Connector Ass'y 200mm			
	OC85880A	AC Outlet P.C.B. Fuse Holder (4)		OB81666A		<b>6.4. Audio Mute P.C.B. Ass'y</b>				
	OB81848A	AC Outlet P.C.B. Fuse Holder (4)		OC85360A		*	CA81713A	Audio Mute P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)		
*	CA81808A	AC Outlet P.C.B. Ass'y (AUS)				*	BA08177A	Audio Mute P.C.B. Ass'y (JPN)		
	OC85879A	AC Outlet P.C.B. Fuse Holder (4)				S011	OC85495A	Audio Mute P.C.B. Tact Switch (1)		
	OB81848A	AC Outlet P.C.B. Fuse Holder (4)					W-1		OC85497A	Ribbon Wire 2P (1)

6.5. Headphone P.C.B. Ass'y

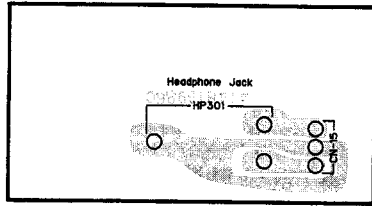


Fig. 6.5

6.6. Motor Volume P.C.B. Ass'y

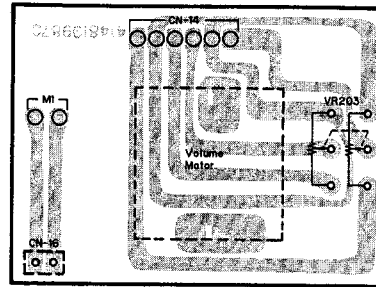


Fig. 6.6

6.7. Selector P.C.B. Ass'y

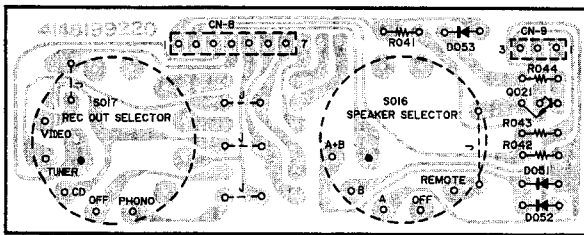


Fig. 6.7

6.8. Speaker Terminal P.C.B. Ass'y

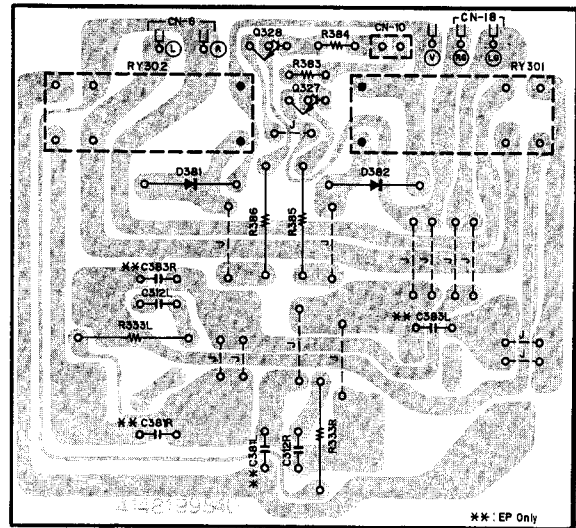


Fig. 6.8

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
6.5. Headphone P.C.B. Ass'y			6.7. Selector P.C.B. Ass'y			6.8. Speaker Terminal P.C.B. Ass'y		
	* CA81719A	Headphone P.C.B. Ass'y (USA, CAN)		* CA81714A	Selector P.C.B. Ass'y (USA, CAN, EP, UK, AUS, OTR)		* CA81717A	Speaker Terminal P.C.B. Ass'y (USA, CAN, OTR)
	* BA08183A	Headphone P.C.B. Ass'y (JPN)		* BA08178A	Selector P.C.B. Ass'y (JPN)		* CA81744A	Speaker Terminal P.C.B. Ass'y (EP)
HP301	0C85502A	Headphone P.C.B. Headphone Jack	Q021	0C85538A	Selector P.C.B. TR 2SC945		* CA81807A	Speaker Terminal P.C.B. Ass'y (UK, AUS)
CN15	0B81757A	3P Connector Ass'y	D051,052	0B06100A	TR 2SC945		* BA08181A	Speaker Terminal P.C.B. Ass'y (JPN)
	0C85503A		D053	0B06398A	SiD 1SS176			
6.6. Motor Volume P.C.B. Ass'y			R041	0B06398A	SiD 1SS176	Q327,328	0B06142A	TR 2SC2240 (BL)
	* CA81722A	Motor Volume P.C.B. Ass'y (USA, CAN)	R042,043	0B09725A	RK 100K 1/6W J	D381,382	0B12586A	SiD 1N4002L
	* BA08186A	Motor Volume P.C.B. Ass'y (JPN)	R044	0B09701A	RK 10K 1/6W J	R333L,R	0B24181A	RF 10 1W J
VR203	0C85504A	Motor Volume P.C.B. VR 50Kx2	S016,017	0B09701A	RK 10K 1/6W J	R383,384	0B09701A	RK 10K 1/6W J
CN14	0C85505A	6P Connector Ass'y	CN8	0B70141A	Rotary Switch	R385,386	0B24253A	RF 820 2W
CN16	0B81666A	2P S-Post	CN9	0B81671A	7P S-Post	C312L,R	0B05796A	CML 0.047μ 50V J
W-2	0C85507A	Ribbon Wire 2P		0B81667A	3P S-Post	C381L,R	0B05681A	CML 0.01μ 50V J (EP)
						C383L,R	0B05681A	CML 0.01μ 50V J (EP)
						RY301,302	0B90331A	Relay VB-24MBU
						CN6	0C85546A	4P Connector Ass'y 400mm
						CN10	0B81666A	2P S-Post
							0C85545A	8P Speaker Terminal (1)

6.9. Power Supply P.C.B. Ass'y

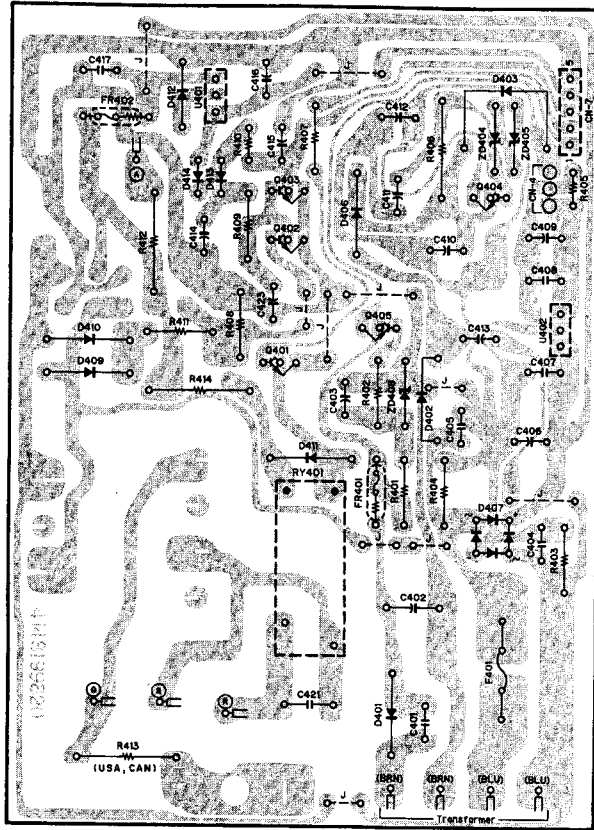


Fig. 6.9

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description
<b>6.10. Display &amp; Control P.C.B. Ass'y</b>		
	* CA81712A	Display & Control P.C.B. Ass'y (USA, CAN)
	* CA81742A	Display & Control P.C.B. Ass'y (EP, UK)
	* CA81805A	Display & Control P.C.B. Ass'y (AUS)
	* CA81806A	Display & Control P.C.B. Ass'y (OTR)
	* BA08176A	Display & Control P.C.B. Ass'y (JPN)
	OC85537A	Display & Control P.C.B.
U001	OB11872A	IC $\mu$ PD57208 CW-A77
U002	OB11530A	IC BA6208
U003	OB11244A	IC LB1413N
Q001,002	OB10328A	TR DTC114TF
Q003,004	OB10328A	TR DTC114TF
Q005,006	OB10328A	TR DTC114TF
Q007,008	OB10325A	TR DTA114TF
Q009	OB10327A	TR DTA144TF
Q010,011	OB10325A	TR DTA114TF
Q012	OB10325A	TR DTA114TF
Q013,014	OB10057A	TR DTA114TS
Q015,016	OB10057A	TR DTA114TS
Q017,018	OB10062A	TR DTC144ES
Q019	OB10062A	TR DTC144ES
Q020	OB06100A	TR 2SC945
ZD024	OB06232A	ZD 9.1V RD9.1EB2
ZD025	OB12159A	ZD 7.5V RD7.5EB2
ED027,028	OC85387A	LED SLR-34DC3F (USA, CAN, EP, UK, AUS, OTR)
	OB12710A	LED SLR-34MW3F (JPN)
ED029	OC85439A	LED SLR-34PC3F (USA, CAN, EP, UK, AUS, OTR)
	OB85387A	LED SLR-34DC3F (JPN)
D001,002	OB06398A	SID 1SS176
D003	OB06398A	SID 1SS176
D004	OB12584A	SID 1N4148
D005,006	OB06398A	SID 1SS176
D007,008	OB06398A	SID 1SS176
D010,011	OB06398A	SID 1SS176
D012,013	OB06398A	SID 1SS176
D014	OB06398A	SID 1SS176
D016,017	OB06398A	SID 1SS176
D018	OB06398A	SID 1SS176
D019	OB06398A	SID 1SS176
D020,021	OB06398A	SID 1SS176
D022,023	OB06398A	SID 1SS176
D026	OB06398A	SID 1SS176
D030,031	OB06398A	SID 1SS176
D032,033	OB06398A	SID 1SS176
D034,035	OB06398A	SID 1SS176
D036,037	OB06398A	SID 1SS176
D038	OB06398A	SID 1SS176
D039	OB06398A	SID 1SS176
D048	OB06398A	SID 1SS176 (EP, UK, JPN)
D049	OB06398A	SID 1SS176 (AUS, JPN)
D054	OB06398A	SID 1SS176
X001	OB92031A	Ceramic Resonator 419MHz
L001	OB51291A	Choke Coil 470 $\mu$ K
RA001,002	OC85397A	R Array 100Kx9
R003,004	OB09725A	RK 100K 1/6W J
R005	OB09725A	RK 100K 1/6W J
R006	OB09721A	RK 68K 1/6W J
R007	OB09709A	RK 22K 1/6W J
R008,009	OB09725A	RK 100K 1/6W J
R010	OB09725A	RK 100K 1/6W J
R011,012	OB09661A	RK 220 1/6W J
R013,014	OB09701A	RK 10K 1/6W J
R015	OB09661A	RK 220 1/6W J
R016	OB09701A	RK 10K 1/6W J
R017,018	OB09661A	RK 220 1/6W J
R019	OB09701A	RK 10K 1/6W J
R020,021	OB09701A	RK 10K 1/6W J
R022,023	OB09701A	RK 10K 1/6W J
R024,025	OB09701A	RK 10K 1/6W J
R026	OB09701A	RK 10K 1/6W J
R027	OB09677A	RK 1K 1/6W J
R028	OB09723A	RK 82K 1/6W J
R030,031	OB09701A	RK 10K 1/6W J
R032,033	OB09701A	RK 10K 1/6W J
R039	OB09711A	RK 27K 1/6W J
C001	OB09291A	CC 0.022 $\mu$ 50V Z
C002	OB1405A	CE 1 $\mu$ 50V
C003,004	OB41740A	CC 33P 50V J
C005	OB09292A	CC 0.1 $\mu$ 50V Z
C006	OB09291A	CC 0.022 $\mu$ 50V Z
C007	OB09292A	CC 0.1 $\mu$ 50V Z
C008,009	OB01412A	CE 10 $\mu$ 16V
C010	OB01403A	CE 47 $\mu$ 16V

\*: Unstocked parts.

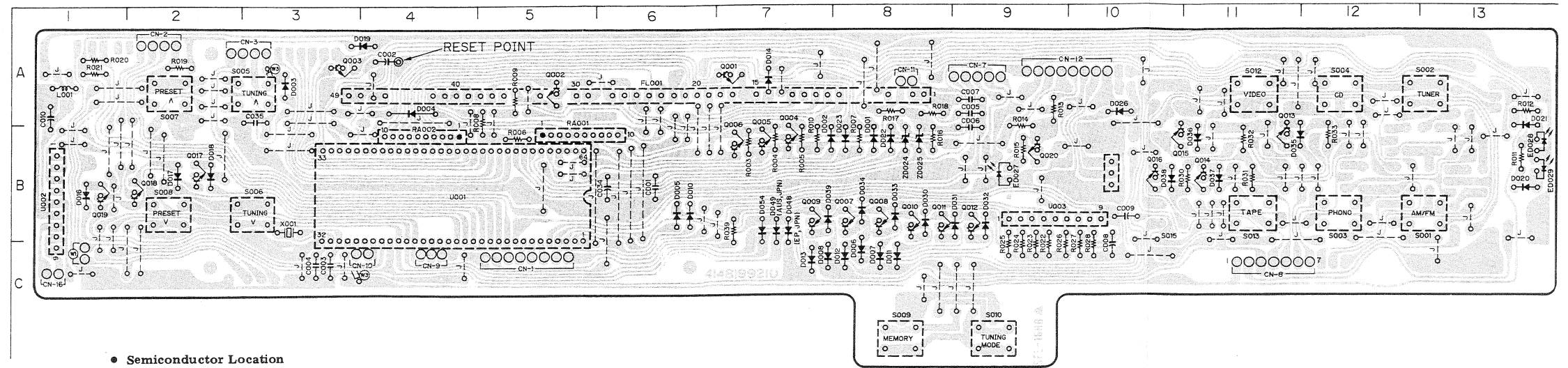
Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
<b>6.9. Power Supply P.C.B. Ass'y</b>			R413	OB05919A	RK 3.3M 1/2W (USA, CAN)
	* CA81716A	Power Supply P.C.B. Ass'y (USA, CAN)	R414	OB24359A	RF 120 1W J
	* CA81743A	Power Supply P.C.B. Ass'y (EP, UK, AUS)	RY401	OB90334A	Relay VS-12MB-VD3
	* CA81838A	Power Supply P.C.B. Ass'y (OTR)	C401	OB09387A	CC 0.047 $\mu$ 50V Z
	* BA08180A	Power Supply P.C.B. Ass'y (JPN)	C402	OB40124A	CE 1000 $\mu$ 50V
	OC85544A	Power Supply P.C.B.	C403	OB09313A	CE 100 $\mu$ 50V
U401	OB11010A	IC $\mu$ PC7805	C404,405	OB09292A	CC 0.1 $\mu$ 50V Z
U402	OB11011A	IC $\mu$ PC7812	C406	OB40095A	CC 1000 $\mu$ 25V
Q401,402	OB06100A	TR 2SC945	C407,408	OB09292A	CC 0.1 $\mu$ 50V Z
Q403	OB10399A	TR 2SC2001 (L)	C409	OB40079A	CE 220 $\mu$ 16V
Q404	OB06100A	TR 2SC945	C410	OB40123A	CE 470 $\mu$ 50V
Q405	OB10246A	TR 2SA965 (Y)	C411,412	OB09126A	CE 100 $\mu$ 35V
ZD404,405	OB12104A	ZD 15V B3	C413	OB40123A	CE 470 $\mu$ 50V
ZD408	OB12255A	ZD 33V B2	C414	OB01400A	CE 100 $\mu$ 16V
D401,402	OB12586A	SID 1N4002L	C415	OB01674A	CE 10 $\mu$ 25V
D403	OB12586A	SID 1N4002L	C416	OB40067A	CE 470 $\mu$ 10V
D406	OB12586A	SID 1N4002L	C417	OB09292A	CC 0.1 $\mu$ 50V Z
D407	OB12604A	SID W02M	C421	OB41825A	CC 4700P AC400V
D409,410	OB12586A	SID 1N4002L	C423	OB09372A	CE 2.2 $\mu$ 50V
D411,412	OB12586A	SID 1N4002L	CN4	OC85542A	3P Connector Ass'y
D413,414	OB06398A	SID 1SS176	CN7	OB81762A	5P T-Post
FR401	OB24023A	Fuse Resistor 1/4W		OB81845A	Fuse Holder (2)
R401	OB05622A	RK 2.2K 1/4W J		0J05670A	Earth Plate (1) (USA, CAN, JPN)
R402	OB05577A	RK 330 1/4W J			
R403,404	OB01681A	RK 3.3K 1/4W J			
R405	OB09685A	RK 2.2K 1/6W J			
R406	OB20511A	RK 1K 1/2W J			
R407	OB05622A	RK 2.2K 1/4W J			
R408	OB05641A	RK 47K 1/4W J			
R409	OB01888A	RK 10K 1/4W J			
R410	OB09701A	RK 10K 1/6W J			
R411	OB01889A	RK 100K 1/4W J			
R412	OB24210A	RF 56 1W J			



\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description
C034	OB05885A	CE 100μ 10V
C035	OB09292A	CC 0.1μ 50V Z
S001-008	OC85398A	Tact Switch
S009,010	OB70130A	Tact Switch
S012,013	OC85398A	Tact Switch
FL001	OB90463A	F.L. Display
CN1	OC85533A	8P Connector Ass'y 300mm
CN2	OC85531A	4P Connector Ass'y 300mm
CN3	OC85530A	4P Connector Ass'y 250mm
CN7	OC85532A	5P Connector Ass'y 500mm
CN8	OC85534A	7P Connector Ass'y 150mm
CN9	OB83494A	3P Connector Ass'y 350mm
CN10	OC85529A	2P Connector Ass'y 500mm
CN11	OC85528A	2P Connector Ass'y 200mm
CN12	OC85535A	8P Connector Ass'y 500mm
CN16	OC85536A	2P Connector Ass'y 150mm
CN17	OC85881A	3P Connector Ass'y 500mm (OTR)
	OC85399A	Remote Control Receiver
	OC85400A	SBX 1610-52 (1) Shield Plate MC (1)

6.10. Display & Control P.C.B. Ass'y



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
U001	B-4	D005	B-6
U002	B-1	D006	C-8
U003	B-9	D007	C-8
Q001	A-7	D008	C-7
Q002	A-5	D010	B-6
Q003	A-3	D011	C-8
Q004	B-7	D012	C-8
Q005	B-7	D013	C-7
Q006	B-7	D014	A-7
Q007	B-8	D016	B-1
Q008	B-8	D017	B-2
Q009	B-7	D018	B-2
Q010	B-8	D019	A-4
Q011	B-8	D020	B-13
Q012	B-9	D021	B-13
Q013	B-11	D022	B-8
Q014	B-11	D023	B-8
Q015	B-10	D026	A-10
Q016	B-10	D030	B-8
Q017	B-2	D031	B-9
Q018	B-2	D032	B-9
Q019	B-1	D033	B-8
Q020	B-9	D034	B-8
ZD024	B-8	D035	B-11
ZD025	B-8	D036	B-11
ED027	B-9	D037	B-11
ED028	B-13	D038	B-10
ED029	B-29	D039	B-7
D001	B-8	D048	B-7
D002	B-7	D049	B-7
D003	A-3	D054	B-7
D004	A-4		

Fig. 6.10

6.11. System Remote P.C.B. Ass'y

	* CA81721A	System Remote P.C.B. Ass'y (USA, CAN, OTR)
	* CA81810A	System Remote P.C.B. Ass'y (EP, UK, AUS)
	* BA08185A	System Remote P.C.B. Ass'y (JPN)
	OC85540A	System Remote P.C.B.
U701	OB06143A	IC μPD4001BC
U702	OB06219A	IC μPD4081BC
Q701	OB10113A	TR 2SC1815 (G)
Q702	OB06013A	TR 2SA733
Q703	OB10113A	TR 2SC1815 (G)
Q704, 705	OB06100A	TR 2SC945
Q706, 707	OB06100A	TR 2SC945
Q708	OB06100A	TR 2SC945
Q709	OB10104A	TR DTC114TS
D431	OB12718A	SiD KBU4D
D432	OB12586A	SiD 1N4002L
D701, 702	OB06398A	SiD 1SS176
D703, 704	OB06398A	SiD 1SS176
D705, 706	OB06398A	SiD 1SS176
D707, 708	OB06398A	SiD 1SS176
D709	OB06398A	SiD 1SS176
D711, 712	OB06398A	SiD 1SS176
D713, 714	OB06398A	SiD 1SS176
R431	OB05615A	RK 22K 1/4W J
R701	OB09693A	RK 4.7K 1/6W J
R702	OB09733A	RK 220K 1/6W J
R703	OB09701A	RK 10K 1/6W J
R704	OB09685A	RK 2.2K 1/6W J
R705	OB09731A	RK 180K 1/6W J
R706	OB20093A	RK 1.5M 1/6W J
R707	OB09739A	RK 390K 1/6W J
R708	OB09701A	RK 10K 1/6W J
R709	OB09709A	RK 22K 1/6W J
R710	OB09725A	RK 100K 1/6W J
R711	OB09701A	RK 10K 1/6W J
R712, 713	OB09693A	RK 4.7K 1/6W J
R714	OB09677A	RK 1K 1/6W J
R715	OB09717A	RK 47K 1/6W J
R716, 717	OB09701A	RK 10K 1/6W J
R718	OB09701A	RK 10K 1/6W J
R719, 720	OB09717A	RK 47K 1/6W J
R721, 722	OB09701A	RK 10K 1/6W J
R726	OB09637A	RK 22 1/6W J
R728	OB09661A	RK 220 1/6W J
R729	OB09717A	RK 47K 1/6W J
R730	OB09701A	RK 10K 1/6W J
R731	OB09677A	RK 1K 1/6W J
R732	OB09717A	RK 47K 1/6W J
C431, 432	OB41901A	CC 0.022μ 500V Z
C433, 434	OB40516A	CE 6800μ 63V
C435, 436	OB41176A	CML 0.22μ 63V J
C437	OB40029A	CE 4.7μ 50V
C701	OB09290A	CC 0.01μ 50Z
C702	OB01405A	CE 1μ 50V
C703	OB40029A	CE 4.7μ 50V
CN12	OB81765A	8P T-Post
CN18	OB81975A	2P T-Post
	OB81952A	Stereo Mini Jack HTJ-035-11 (2)
	OB81953A	6P DIN Socket LN-0507-06 (1)
	OJ05670A	Earth Plate (1)

6.11. System Remote P.C.B. Ass'y

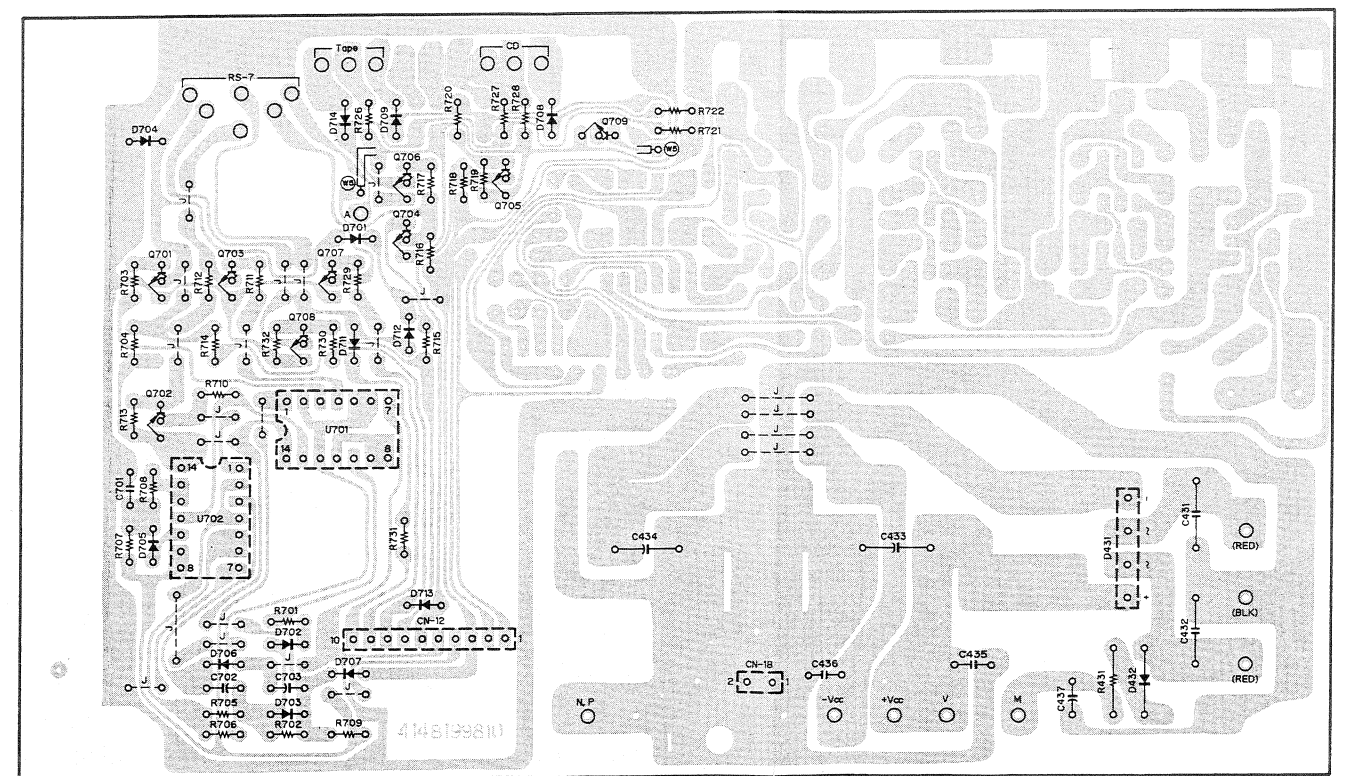
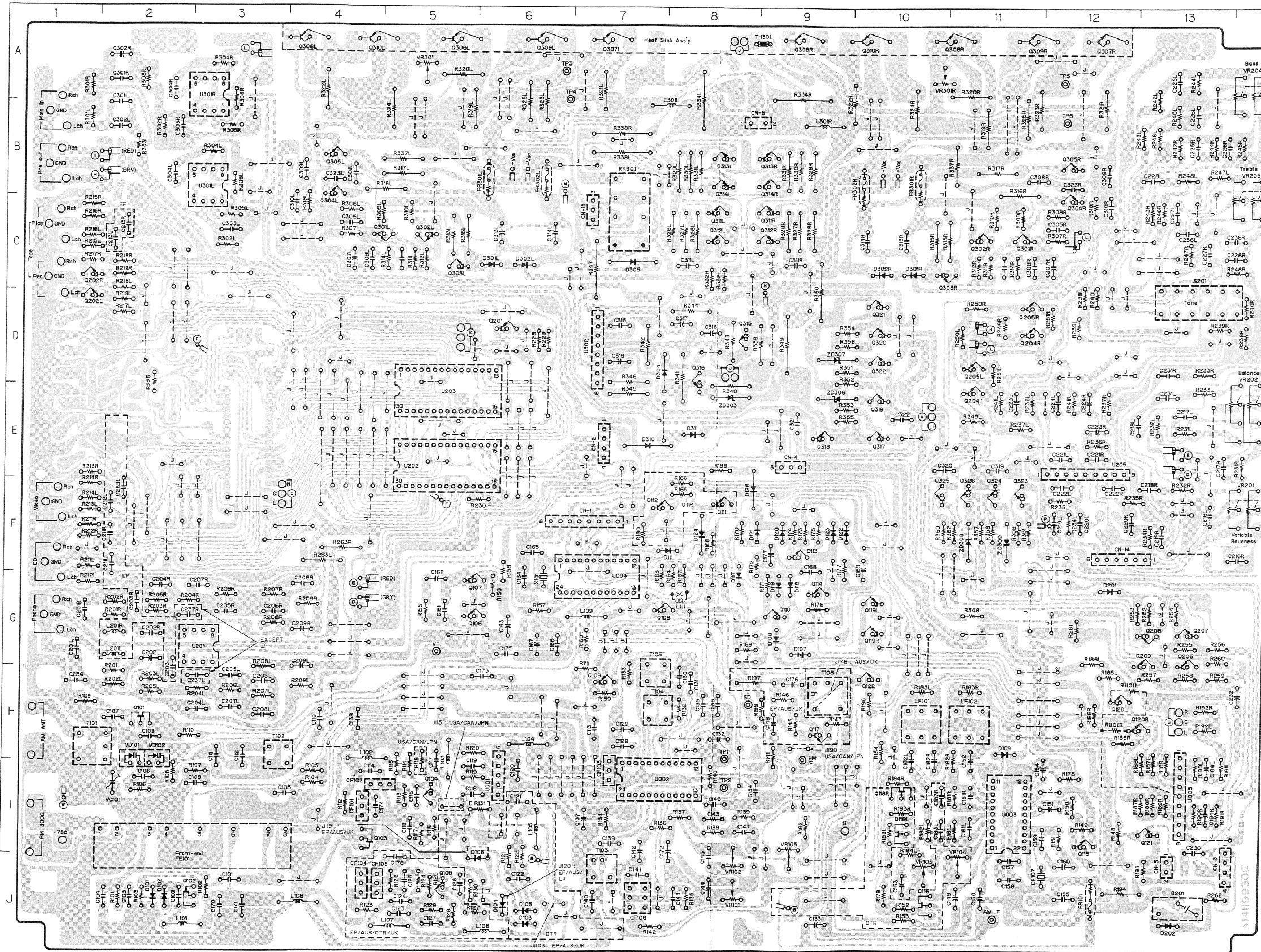


Fig. 6.11

6.12. Main P.C.B. Ass'y



• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
U001	I-6	Q311L	C-8
U002	I-7	Q311R	C-9
U003	I-11	Q312L	C-8
U004	G-7	Q312R	C-9
U005	I-13	Q313L	B-8
U201	G-3	Q313R	B-9
U202	E-5	Q314L	B-8
U203	E-5	Q314R	B-9
U205	E-12	Q315	D-8
U301L	B-3	Q316	D-8
U301R	A-3	Q317	E-10
U302	D-7	Q318	E-9
Q101	H-2	Q319	E-10
Q102	J-3	Q320	D-10
Q103	I-4	Q321	D-10
Q104	I-5	Q322	D-10
Q105	J-5	Q323	F-10
Q106	G-6	Q324	F-10
Q107	G-6	Q325	F-10
Q108	G-7	Q326	F-10
Q109	H-7	VD101	H-2
Q110	G-9	VD102	H-2
Q111	F-8	ZD303	E-8
Q112	F-7	ZD306	E-9
Q113	F-9	ZD307	D-9
Q114	G-9	ZD308	F-11
Q115	I-12	ZD309	F-11
Q116	J-10	D101	J-2
Q117	H-9	D102	J-2
Q118L	I-10	D103	J-6
Q118R	I-10	D104	J-6
Q119L	G-10	D105	J-6
Q119R	G-10	D106	J-6
Q120L	H-12	D107	G-9
Q120R	H-13	D108	G-9
Q121	I-13	D109	H-11
Q122	H-10	D111	F-8
Q201	D-6	D117	G-8
Q202L	D-1	D118	G-9
Q202R	C-1	D119	G-9
Q204L	E-11	D120	F-9
Q204R	D-11	D121	F-8
Q205L	D-11	D122	F-9
Q205R	D-11	D123	F-9
Q206	G-13	D124	F-8
Q207	G-13	D126	F-8
Q208	G-13	D201	G-12
Q209	G-13	D202	J-13
Q301L	C-5	D301L	C-6
Q301R	C-11	D301R	C-10
Q302L	C-5	D302L	C-6
Q302R	C-11	D302R	C-10
Q303L	C-5	D304	D-7
Q303R	C-10	D305	C-7
Q304L	B-4	D310	E-7
Q304R	C-12	D311	E-8
Q305L	B-4		
Q305R	B-12		
Q306L	A-5		
Q306R	A-11		
Q307L	A-7		
Q307R	A-12		
Q308L	A-4		
Q308R	A-9		
Q309L	A-5		
Q309R	A-11		
Q310L	A-4		
Q310R	A-10		

Note: Q306L/R - Q310L/R and TH301 are mounted on the Heat Sink Ass'y.

Fig. 6.12



7. SCHEMATIC DIAGRAMS

7.1. IC Block Diagrams

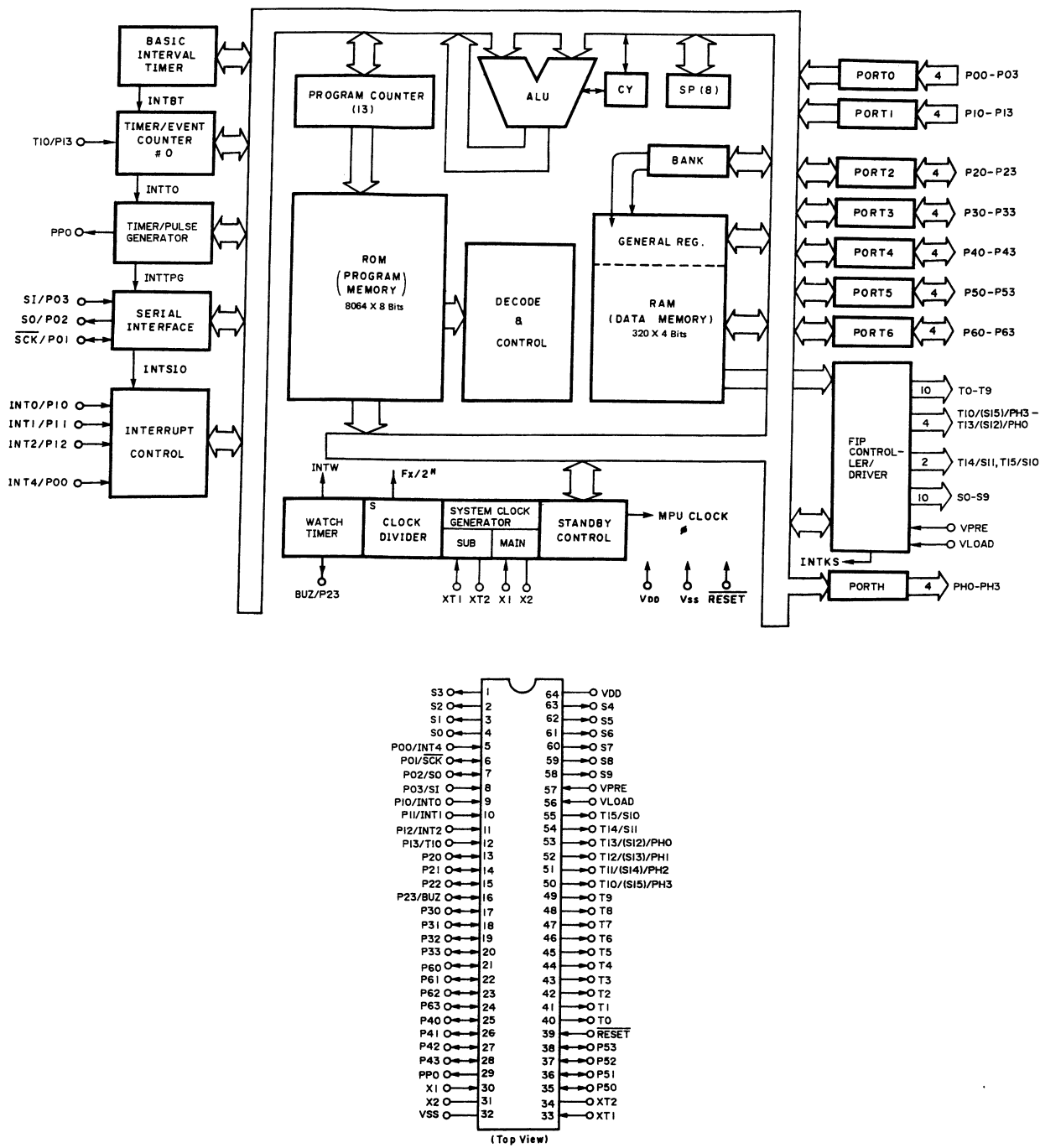


Fig. 7.1.1 MPU μPD75208CW-A77

U001 Microprocessing Unit (MPU) (μPD75208CW-A77)

Pin No.	Signal Name	I/O	Function
1	S3	O	Display segment drive signal/key matrix scan signals.
2	S2		
3	S1		
4	S0		
5	PIN	I	Power ON signal input.
6	CLK	O	Clock output for SO (pin 7) and SI (pin 8).
7	SO	O	Serial output data to U004 (PLL Frequency Synthesizer) and U202/U203 (Analog Function Switch).
8	SI	I	Serial input data from U004.
9	IRP	I	Remote control signal input.
10	PRT	I	Power amp. protect input from U302 (Protector).
11	DUS	I	Frequency Step switch input for Other version.
12	IFS	I	IF Band switch input for Other version.
13	MO+	O	Volume motor drive signal (volume up).
14	MO-	O	Volume motor drive signal (volume down).
15	LMU	O	Line mute signal. Active "L".
16	RMU	O	Record mute signal. Active "L".
17	PCE	O	Chip enable signal sent to U004.
18	RIN	I	Remote control mode select input. When set to "L", speaker can be selected by the remote control unit.
19	AIN	I	Speaker A select input. Active "L".
20	BIN	I	Speaker B select input. Active "L".
21	K-IN1	I	Input signals from key matrix circuit.
22	K-IN2		
23	K-IN3		
24	K-IN4		
25	AFR	O	U202/U203 (Analog Function Switch) reset signal. Active "L".
26	ACE	O	Chip enable signal sent to U202/U203 (Analog Function Switch).
27	SPA	O	Speaker A output enable signal. H: Speaker A output is enabled.
28	SPB	O	Speaker B output enable signal. H: Speaker A output is enabled.
29	PRO	O	Power Application signal for AC outlet. H: Power is applied to the AC outlet.
30	X1	-	4.19MHz ceramic oscillator is connected.
31	X2		
32	VSS	-	GND
33	-	-	Grounded.
34	-	-	Open.
35	POL	O	Power LED drive signal. Active "L".
36	STL	O	Standby LED drive signal. Active "L".
37	PRB	O	Open (not used).
38	PRA		

Pin No.	Signal Name	I/O	Function
39	RESET	I	System reset input. Active "L".
40 to 49	T0 to T9	O	Display digit drive signals.
50	ATT	O	Open (not used).
51	VMP		
52	VM2		
53	VM1		
54	VR2		
55	VR1		
56	VLOAD	-	-33V.
57	VPRE	-	Approx. -3V.
58	IRL	O	Remote LED drive signal. H: Indicates that the Receiver 2 is receiving a remote control signal.
59 to 63	S8 to S4	O	Display segment drive signal/key matrix scan signals.
64	VDD	-	+5V.

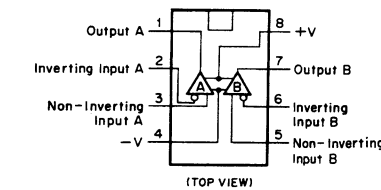


Fig. 7.1.2 Operational Amp. IC NJM2043DD, μPC4570HA

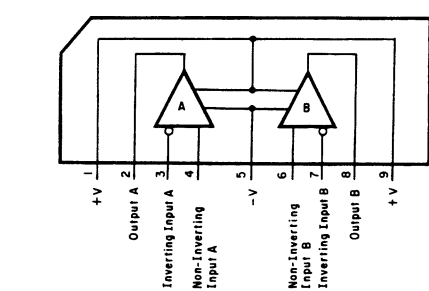


Fig. 7.1.3 Operational Amp. IC NJM4558S

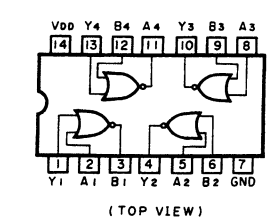


Fig. 7.1.4 NOR Gate C-MOS IC μPD4001BC

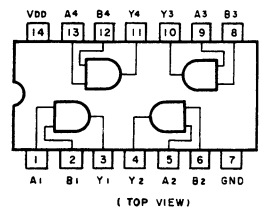


Fig. 7.1.5 AND Gate C-MOS IC μPD4081BC

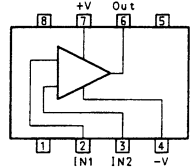


Fig. 7.1.6 Operational Amp. IC NJM5534DD

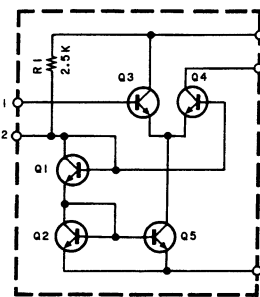


Fig. 7.1.7 FM IF Amp. IC TA7060AP

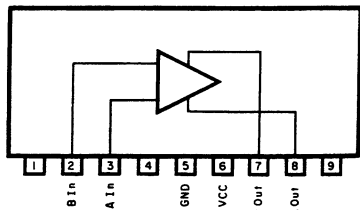


Fig. 7.1.8 Motor Driver BA6208

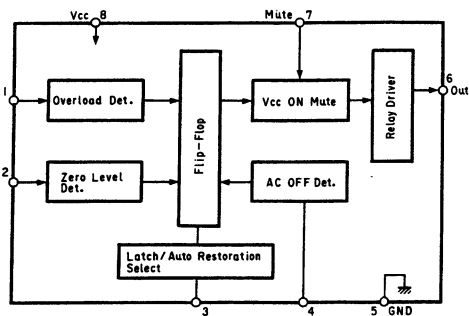


Fig. 7.1.9 Power Amp. Protector μPC1237H (U302)

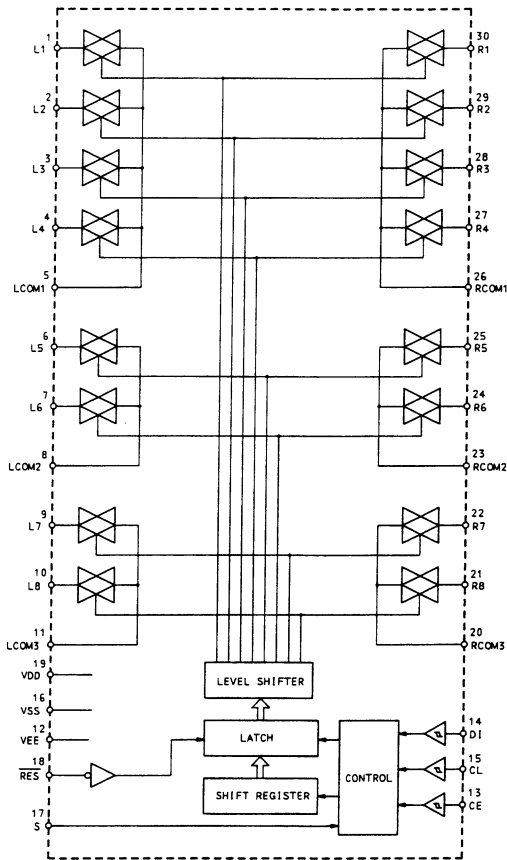


Fig. 7.1.10 Analog Function Switch LC7821 (U202)

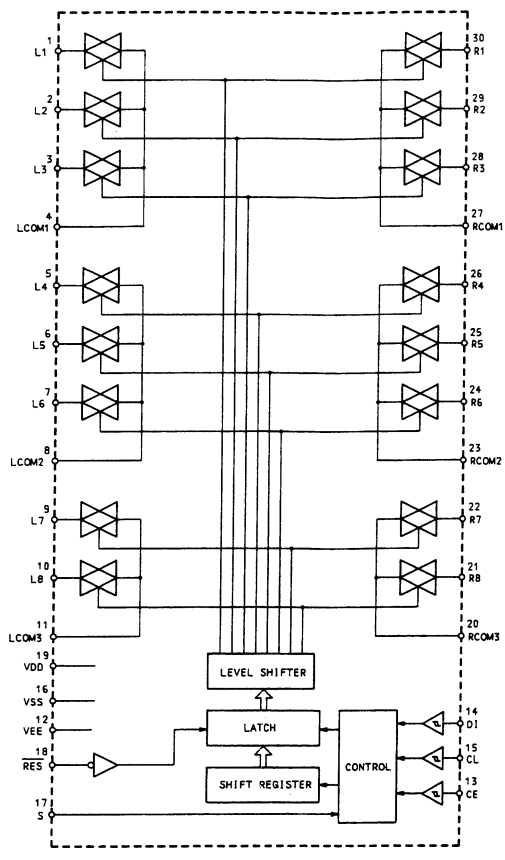


Fig. 7.1.11 Analog Function Switch LC7822 (U203)

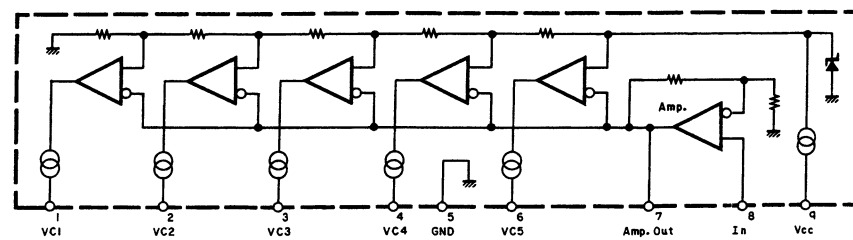


Fig. 7.1.12 Signal Meter Driver LB1413N

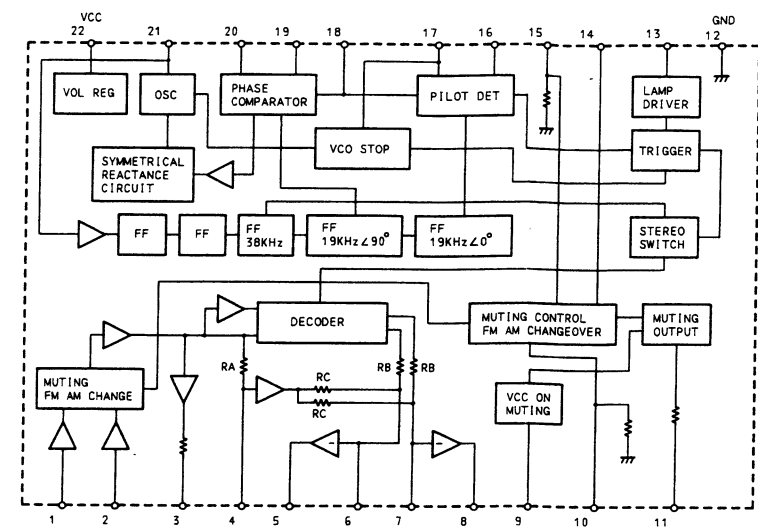


Fig. 7.1.13 Multiplexer LA3401

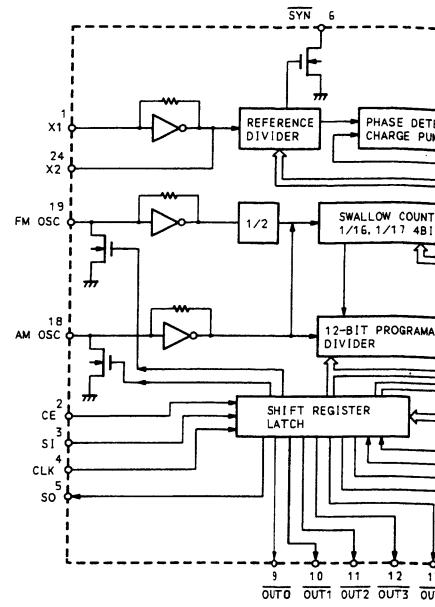


Fig. 7.1.15 PLL Frequency

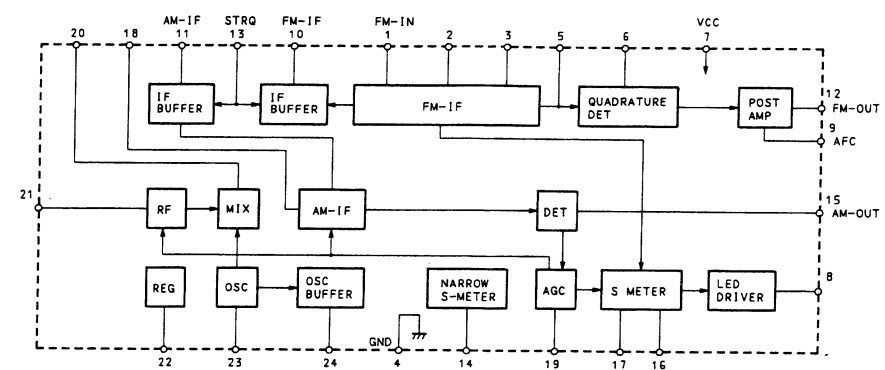
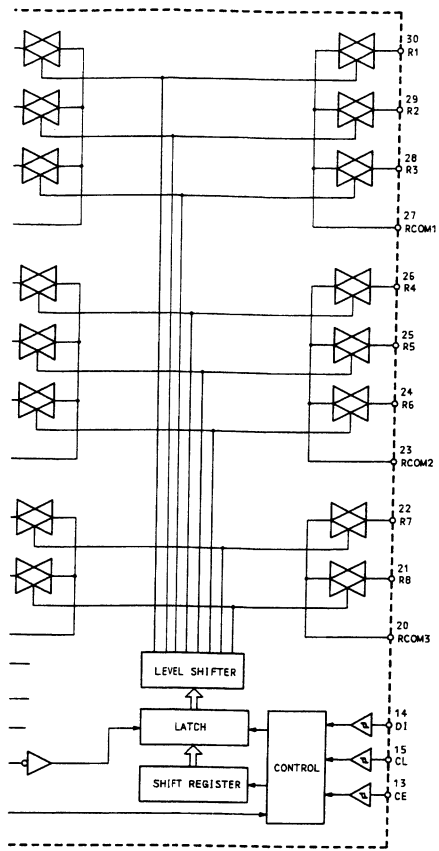
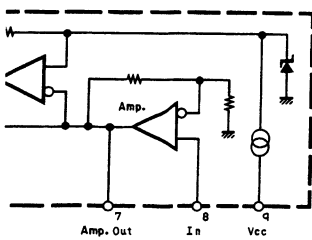


Fig. 7.1.14 FM/AM IF & Detector LA1266



1.11 Analog Function Switch LC7822 (U203)



or LB1413N

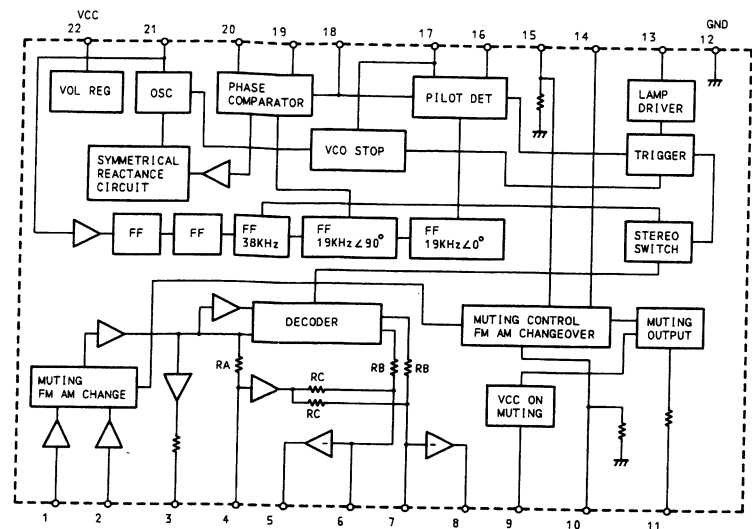


Fig. 7.1.13 Multiplexer LA3401

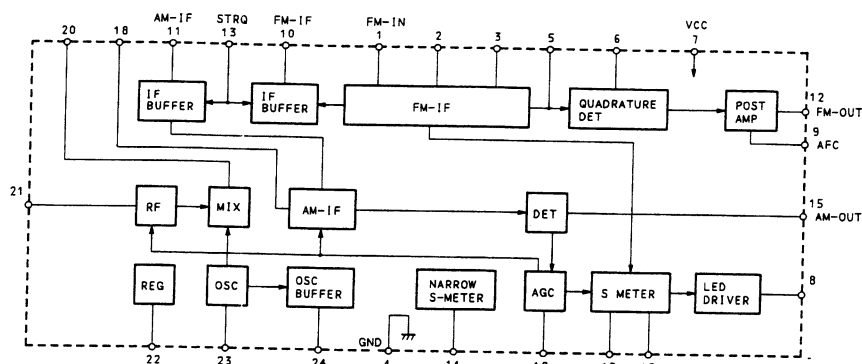


Fig. 7.1.14 FM/AM IF & Detector LA1266

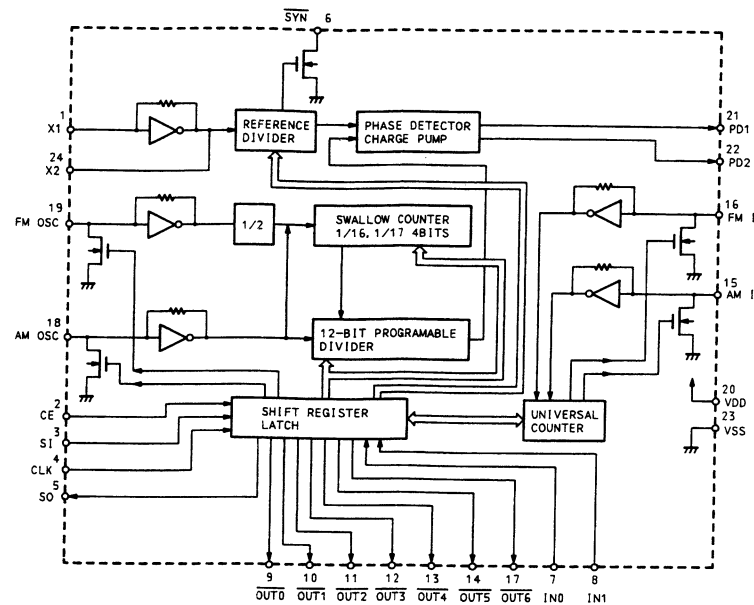


Fig. 7.1.15 PLL Frequency Synthesizer LC7218

U004 PLL Frequency Synthesizer (LC7218)

Pin No.	Signal Name	I/O	Function
1	X1	I	7.2MHz crystal is connected.
24	X2	O	
2	CE	I	Chip enable input signal. Active "H".
3	SI	I	Serial input data from U001 (MPU).
4	CLK	I	Clock input for SI (pin 3) and SO (pin 5).
5	SO	O	Serial output data to U001.
6	SYN	O	Not used.
7	Stereo	I	Stereo signal input. L: Stereo
8	SD	I	SD signal input. H: Station is detected.
9	Wide	O	Wide signal for Other version. H: Wide, L: Narrow
10	NC	O	Open.
11	Seek Mute	O	Seek Mute signal. Active "H".
12	D $\bar{U}$	O	75 $\mu$ s/50 $\mu$ s select signal for Other version. L: 50 $\mu$ s, H: 75 $\mu$ s
13	AUT	O	Controls muting. Forcedly sets to monaural.
14	AM	O	AM mode signal. Active "L".
15	AMIF	I	AM IF signal input.
16	FM IF	I	FM IF signal input.
17	FM	O	FM mode signal. Active "L".
18	AM OSC	I	AM local oscillation signal input.
19	FM OSC	I	FM local oscillation signal input.
20	VDD	-	Approx. 5V is supplied.
21	PD1	O	PLL charge pump output. Not used.
22	PD2	O	PLL charge pump output. f > fref.: H, f < fref.: L f = fref.: floating
23	GND	-	GND

7.2. Schematic Diagrams  
(1) Tuner Section

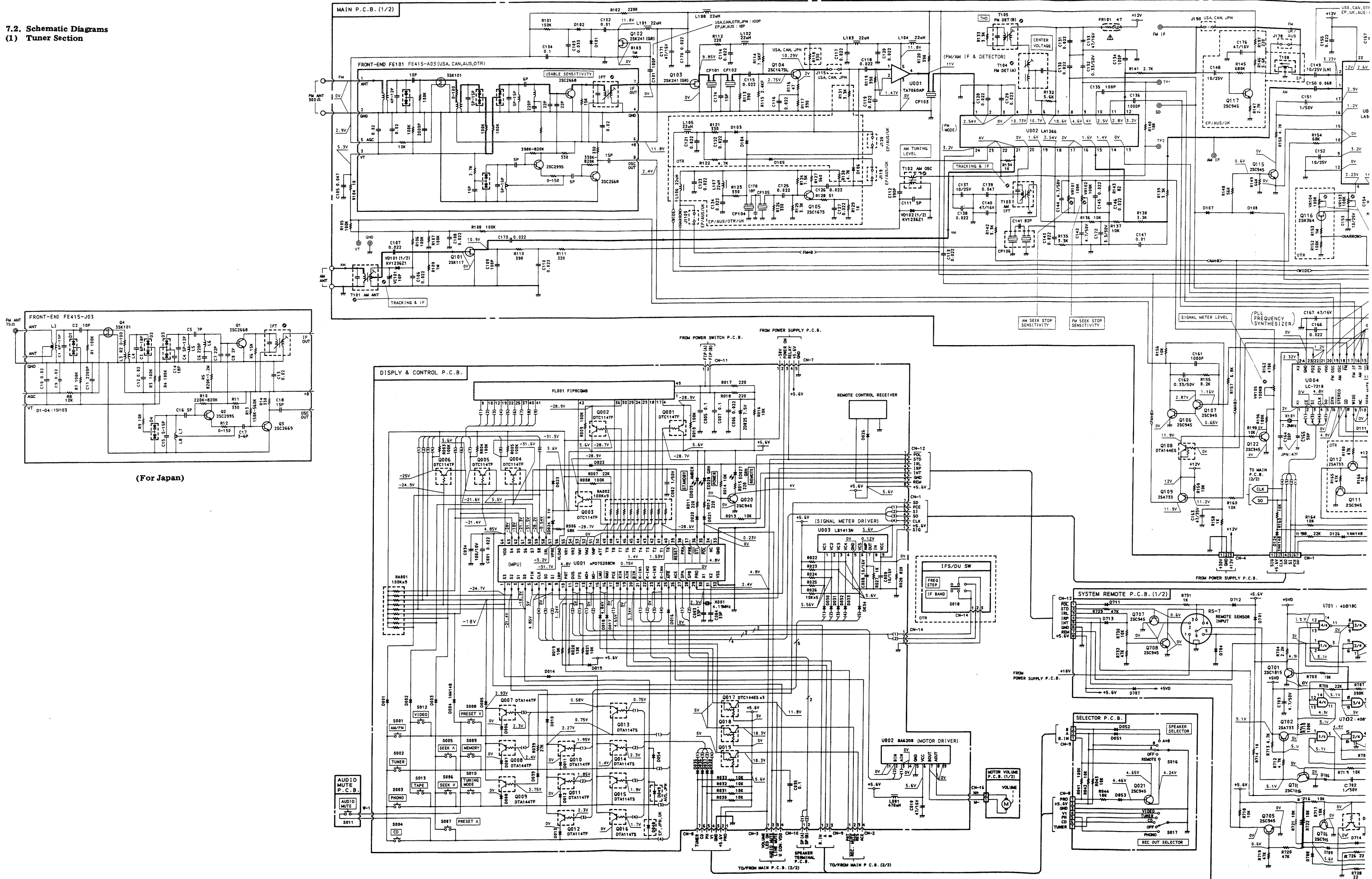


Fig. 7.2.1

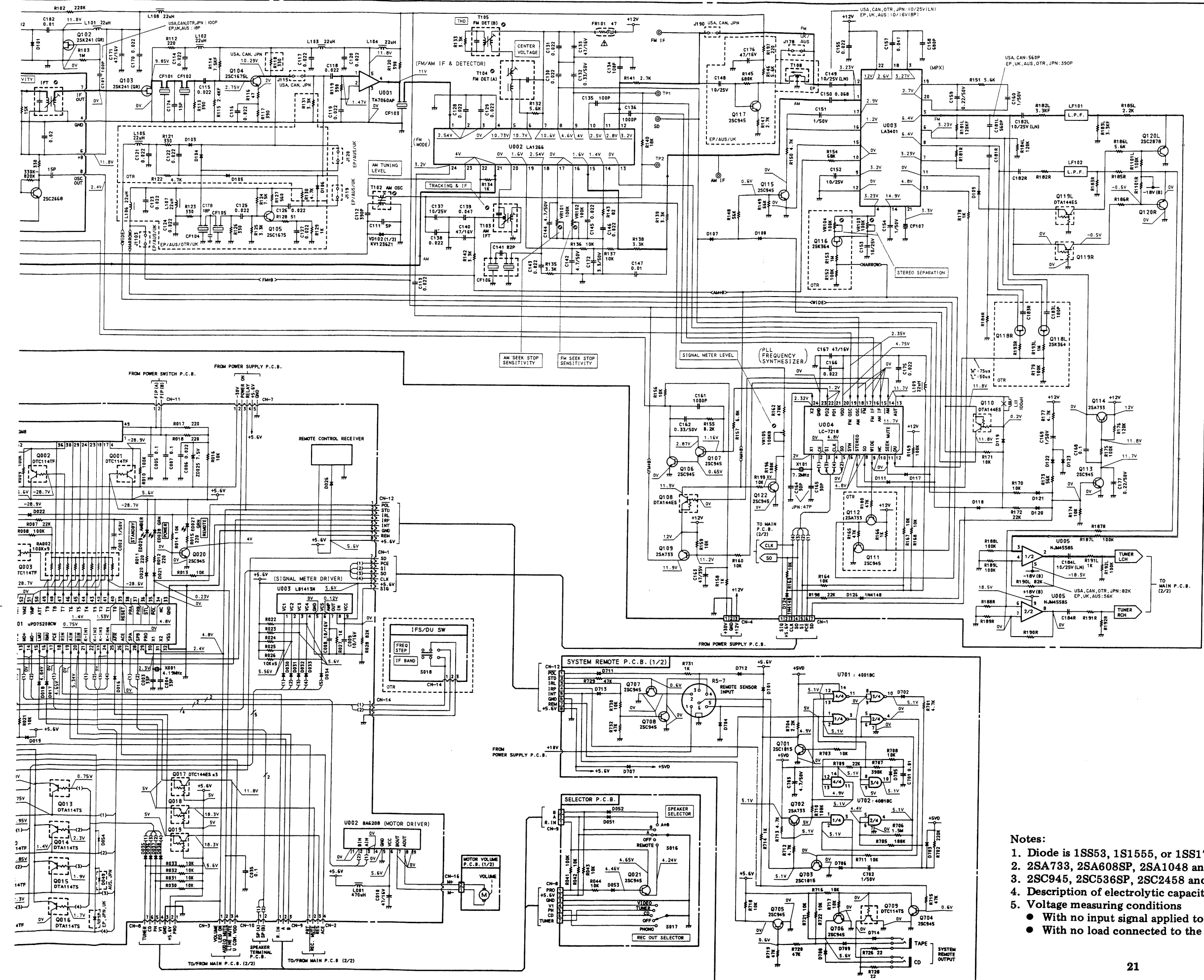


Fig. 7.2.1

- |         |          |          |
|---------|----------|----------|
|         |          |          |
| 2SA733  | DTA114TS | DTA114TF |
| 2SA953  | DTA144ES | DTA144TF |
| 2SA970  | DTC144ES | DTC114TF |
| 2SC945  |          |          |
| 2SC1675 |          |          |
| 2SC2002 |          |          |
| 2SC2240 |          |          |
| 2SC2878 |          |          |
|         |          |          |
| 2SA1145 | 2SA1492  | 2SC3421  |
| 2SC2705 | 2SC3856  |          |
|         |          |          |
| 2SB1016 | 2SA965   | 7805     |
| 2SD1407 | 2SB507   | 7812     |
|         | 2SD313   |          |
|         |          |          |
| 2SK117  | 2SK241   |          |

- Notes:**
1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
  2. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
  3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.
  4. Description of electrolytic capacitor: 100/16V = 100µ 16V
  5. Voltage measuring conditions
    - With no input signal applied to the input terminals.
    - With no load connected to the speaker terminals.



(2) Amplifier Section

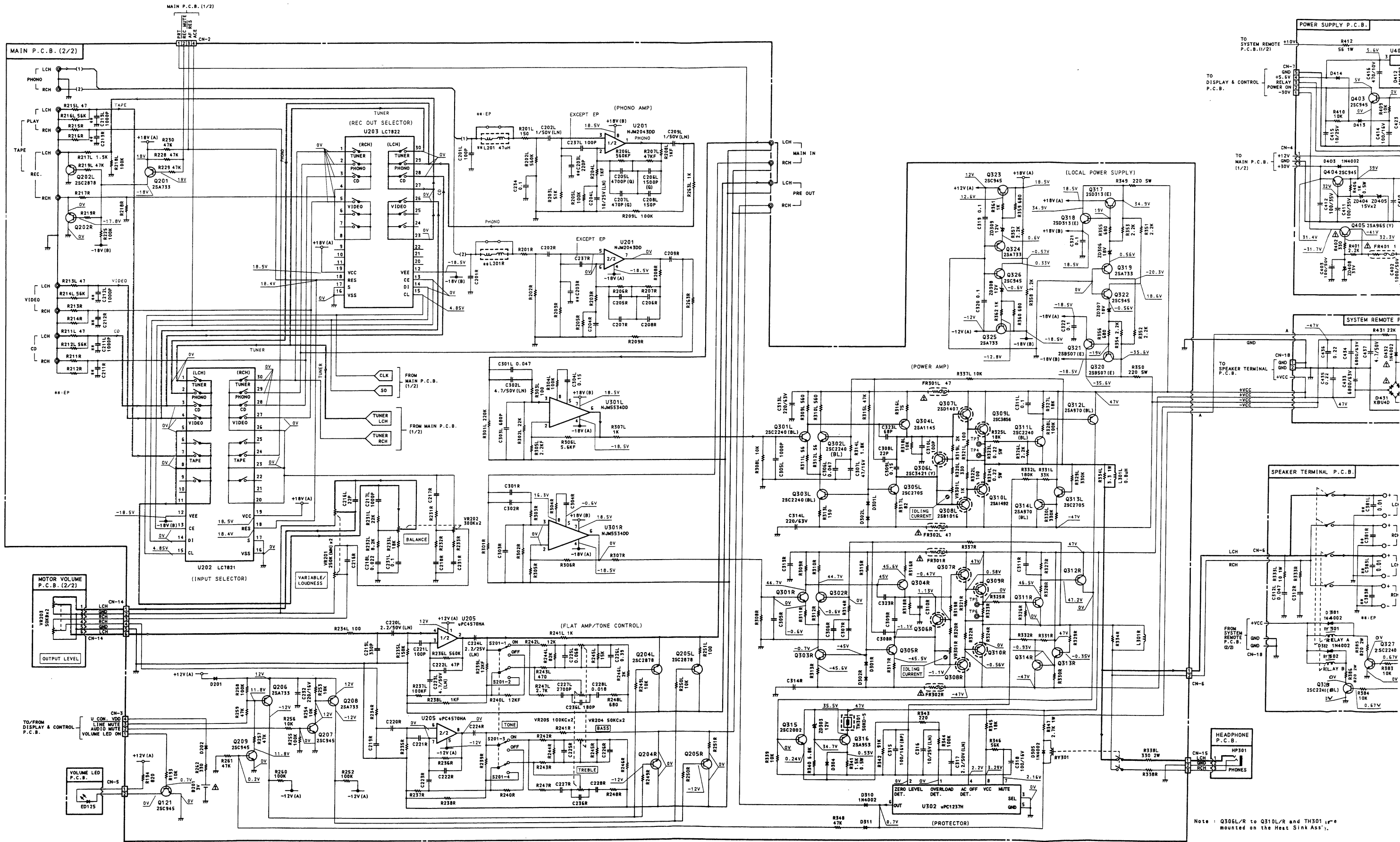


Fig. 7.2.2

Note: Q306L/R to Q310L/R and TH301 are mounted on the Heat Sink Ass'y.

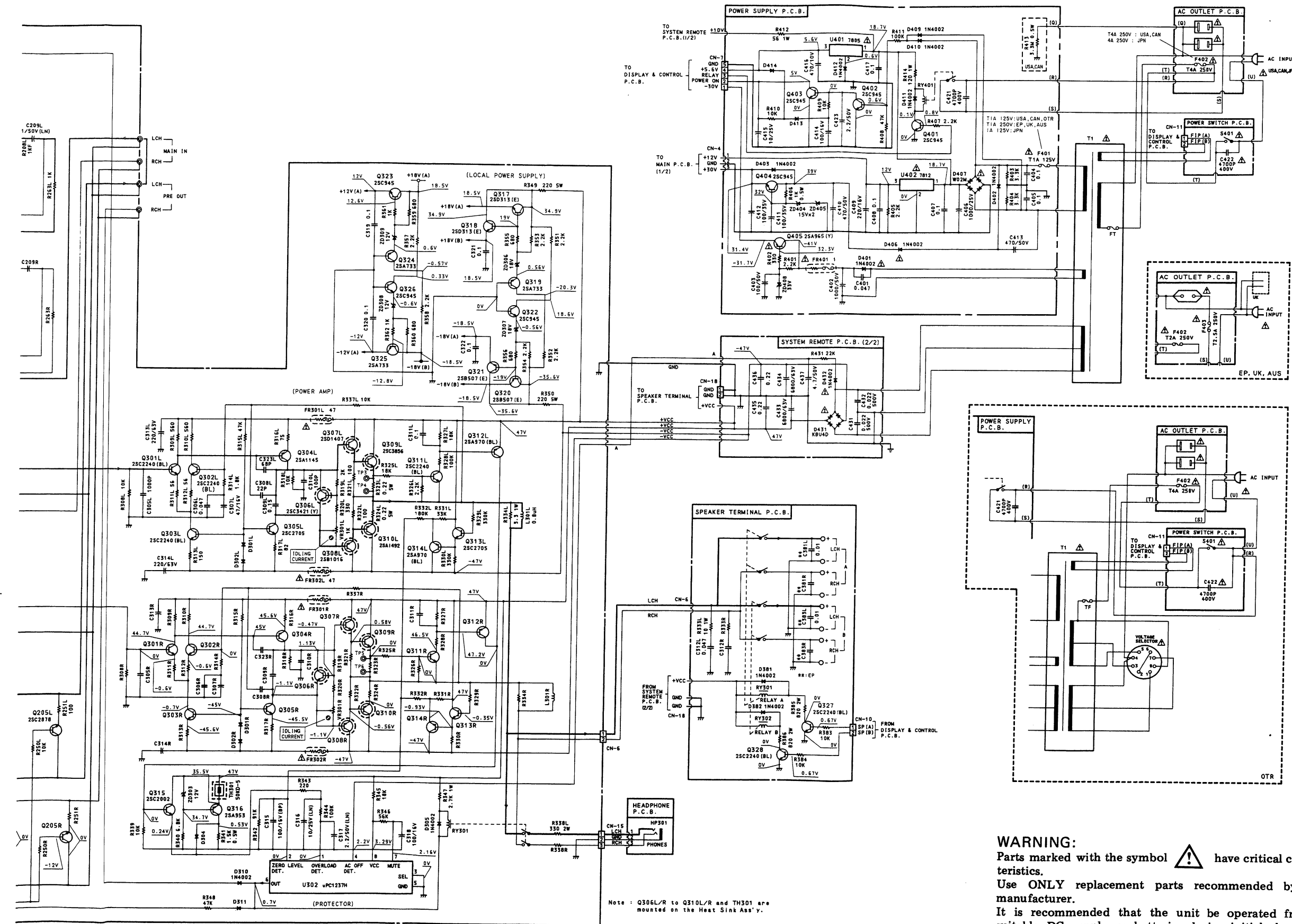



Fig. 7.2.2

Note: Q306L/R to Q310L/R and TH301 are mounted on the Heat Sink Ass'y.

**WARNING:**  
 Parts marked with the symbol  have critical characteristics.  
 Use **ONLY** replacement parts recommended by the manufacturer.  
 It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

8. WIRING DIAGRAM

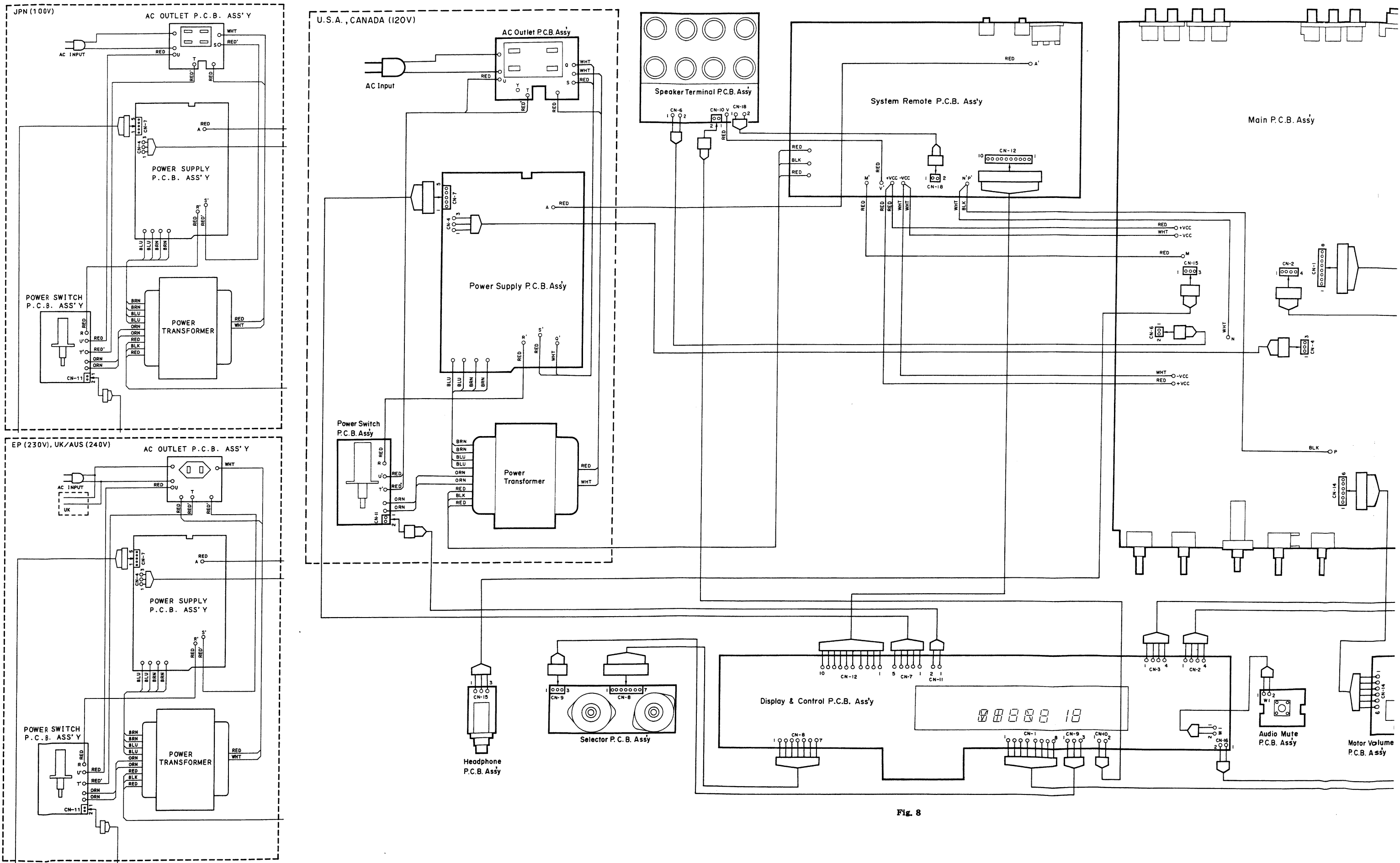


Fig. 8

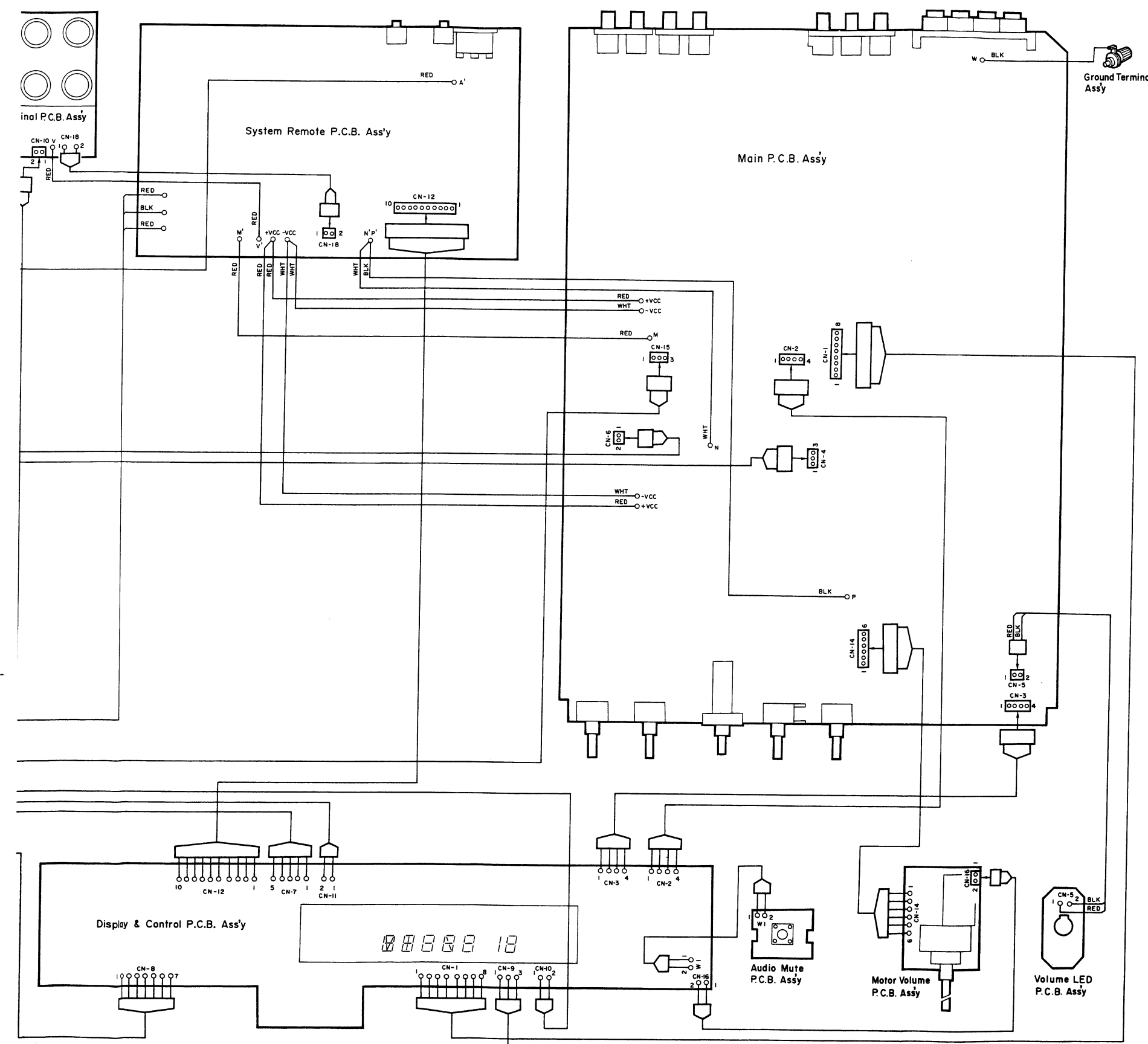
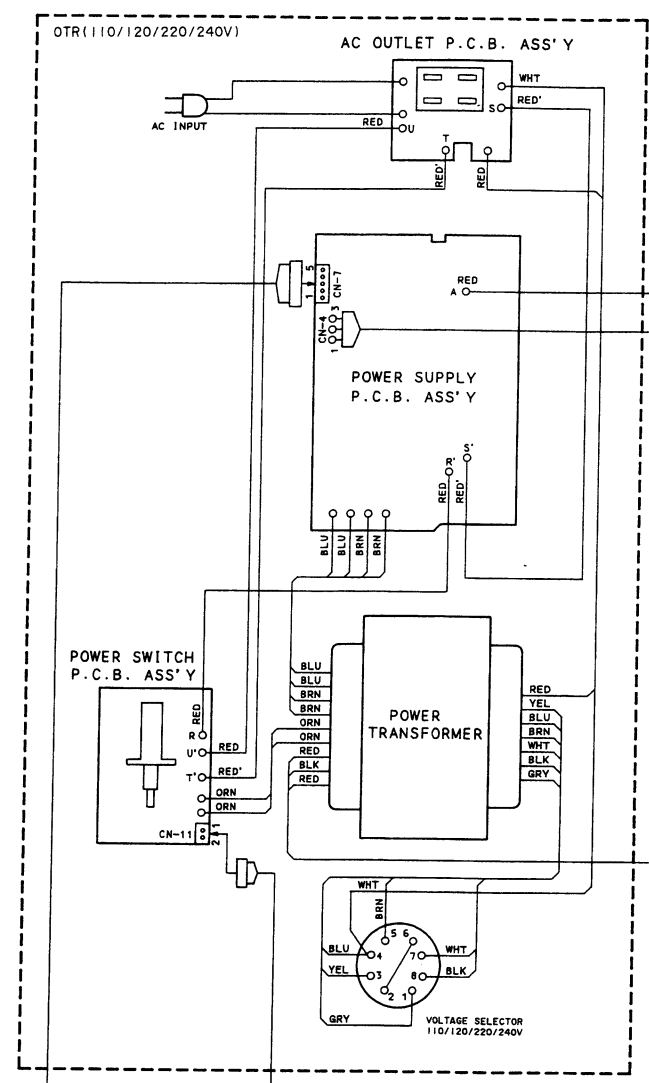


Fig. 8



- Notes: 1. Table of wire colors
- |              |              |
|--------------|--------------|
| BRN - Brown  | BLU - Blue   |
| RED - Red    | VIO - Violet |
| ORN - Orange | GRY - Gray   |
| YEL - Yellow | WHT - White  |
| GRN - Green  | BLK - Black  |

2. Component side view of the P.C.B. is illustrated unless otherwise specified.  
 3. Wire tube color is shown in ( ).

9. BLOCK DIAGRAMS

9.1. Tuner & Display Control Section

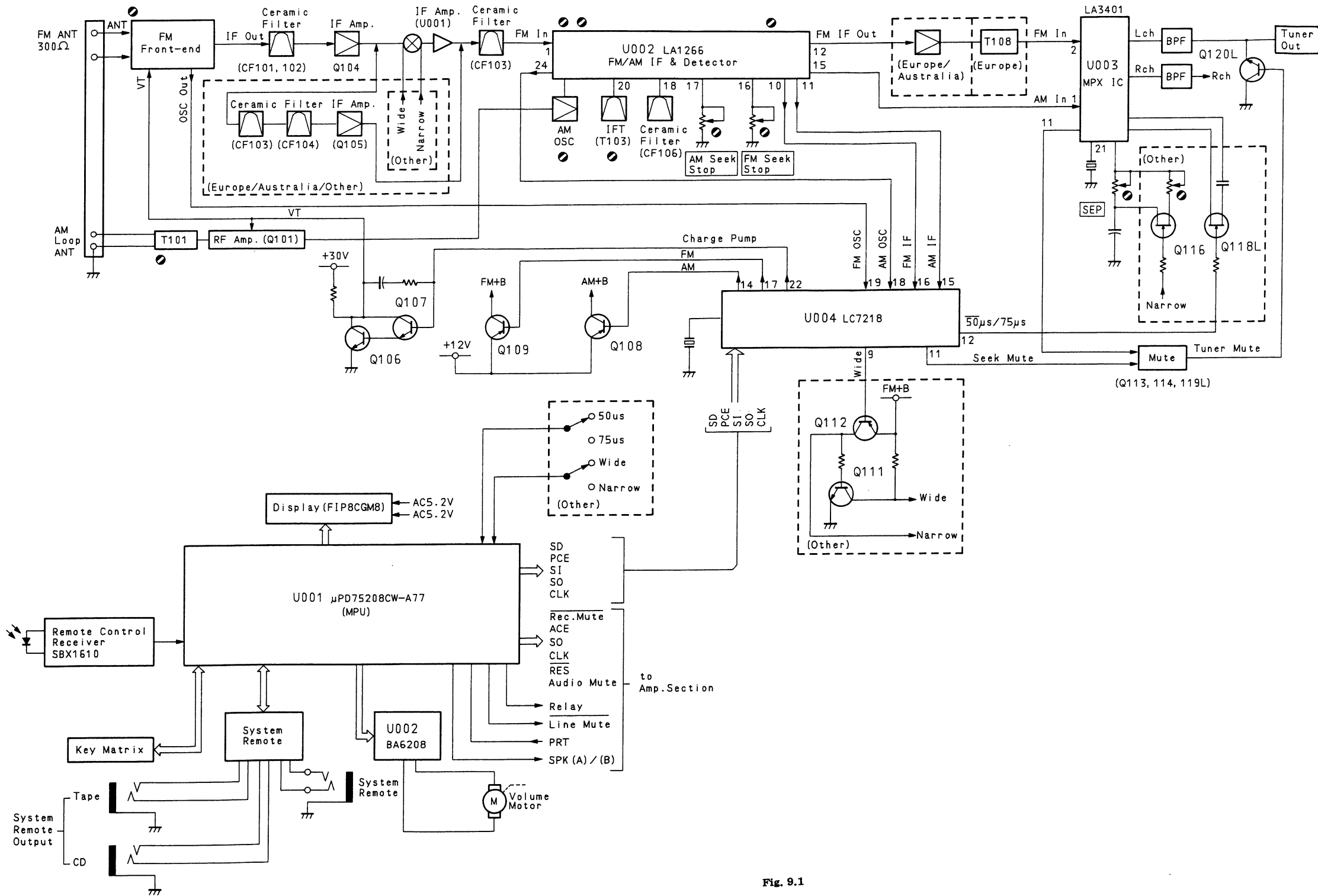


Fig. 9.1

9.2. Amplifier Section

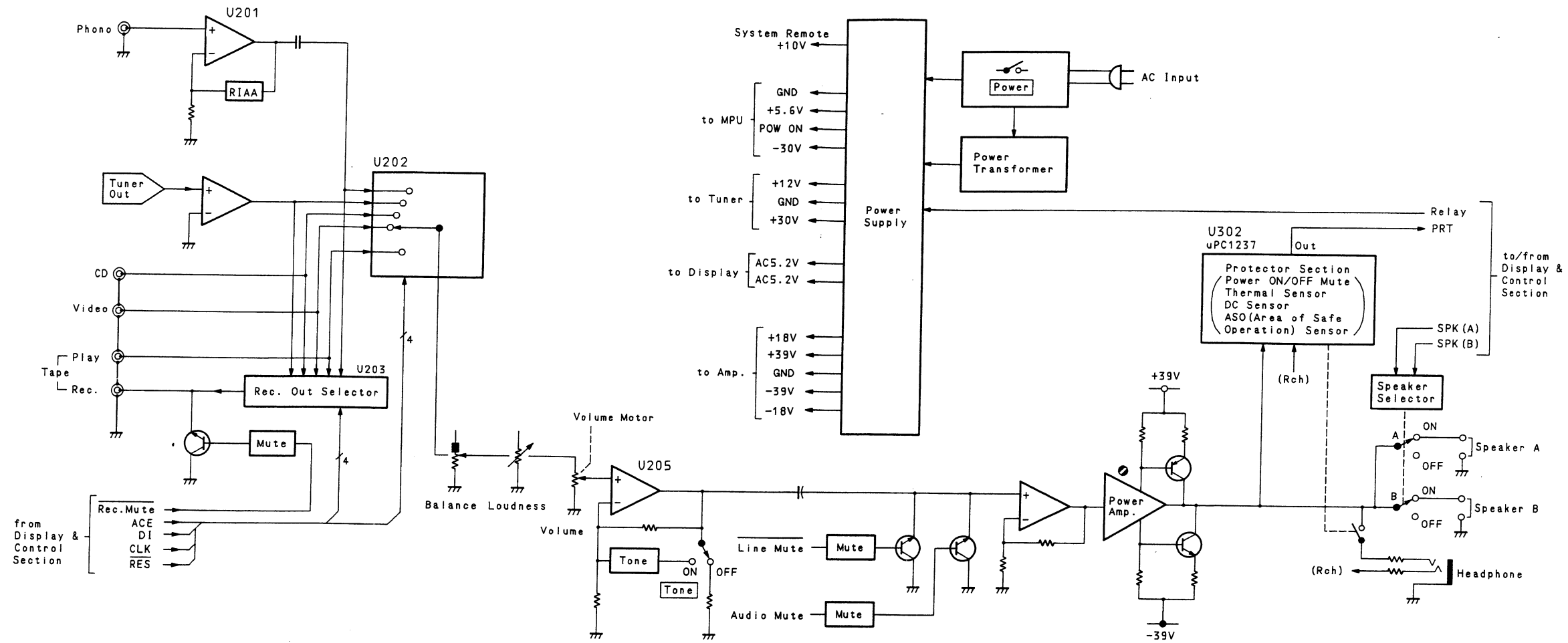


Fig. 9.2

## 10. SPECIFICATIONS

### Power Amplifier Section

Note: Unless noted otherwise, specifications are in accordance with IHF-A-202 measured from any high-level input (CD/VIDEO/TAPE) to the speaker output.

Continuous Average Output Power	55 watts per channel into 8 ohm, both channels driven, 20—20,000 Hz, at no greater than 0.1% THD
Dynamic Output Power	75 watts per channel into 8 ohms 95 watts per channel into 4 ohms
Power Bandwidth	5—40,000 Hz
Frequency Response	20—20,000 Hz; +0, -0.5 dB 5—75,000 Hz; +0, -3 dB
Signal to Noise Ratio (A-WTD, input shorted)	Better than 100 dB re rated power Better than 83 dB (IHF-A-202)
Total Harmonic Distortion (8 ohms, rated power, 20 Hz—20 kHz)	Less than 0.1%
Headphone Rated Output (40 ohms)	129 mW
Output Current Capability	14A peak per channel

### Preamplifier Section

Note: Unless noted otherwise, specifications are in accordance with IHF-A-202. Except for sensitivity, S/N, tone control and loudness characteristics (which are measured to the speaker outputs), measurements are made from the specified input to Rec. Out.

#### Sensitivity (for rated output)

Phono MM	2.5 mV
CD/Tape/Video	150 mV
Main in	1.0 V

#### Sensitivity (for 1-watt output, IHF-A-202)

Phono MM	0.34 mV
CD/Tape/Video	20 mV
Main in	135 mV

#### Input Impedance

Phono MM	47 kohms
CD/Tape/Video	20 kohms
Main in	20 kohms

#### Maximum Input Level (1 kHz)

Phono MM	180 mV
----------	--------

Pre Output Level/Impedance . . . 1.0 V/1 kohms

Record Output Level/ . . . . . 150 mV/1.5 kohms

#### Impedance

Total Harmonic Distortion (1 kHz, to Rec Out, at 1 V)

Phono MM	Less than 0.008%
----------	------------------

#### RIAA Deviation

Phono MM	30—20,000 Hz ±0.5 dB
----------	----------------------

Signal-to-Noise Ratio (to speaker output, IHF-A-202)

Phono MM	Better than 78 dB
----------	-------------------

#### Tone Controls

Bass	20 Hz, ±10 dB
Treble	20 kHz, ±10 dB

Variable Loudness . . . . . 20 Hz, +20 dB; 20 kHz, +6 dB

(re maximum attenuation:

-40 dB at 1 kHz)

Subsonic Filter (Phono only) . . . Cutoff Frequency 20 Hz, -6 dB/octave

### Tuner Section

#### [FM]

Note: All RF levels in microvolts given re 300-ohm antenna input.

Modulation: Mono 100%, Stereo Pilot 9%, Stereo Audio Signal 91%.

(European Model; Mono 60%, Stereo Pilot 9%, Stereo Audio Signal 51%)

All measurements made at Rec Out jack.

Frequency Range . . . . . 87.5—107.9 MHz in 200 kHz steps

IHF Usable Sensitivity (Mono) . . . 12 dBf/2.2 μV

#### 50-dB Quieting Sensitivity

Mono . . . . . 15.7 dBf/3.3 μV

Stereo . . . . . 38.5 dBf/46.1 μV

Signal-to-Noise Ratio at 65 dBf

Mono . . . . . Better than 79 dB

Stereo . . . . . Better than 72 dB

Muting Threshold . . . . . 30 dBf/17.3 μV

Frequency Response . . . . . 20—15,000 Hz ±1 dB

#### Total Harmonic Distortion (1 kHz)

Mono . . . . . Less than 0.10%

Stereo . . . . . Less than 0.10%

Capture Ratio . . . . . 2.0 dB

Alternate Channel Selectivity . . . 55 dB (±400 kHz)

Stereo Separation at 1 kHz . . . . . Better than 50 dB

Spurious Response Rejection . . . . . Better than 90 dB

Image Rejection . . . . . Better than 75 dB

IF Rejection . . . . . Better than 80 dB

AM Suppression . . . . . Better than 60 dB

#### [AM]

Note: Modulation — 400 Hz, 30%

Frequency Range . . . . . 520—1,710 kHz in 10 kHz steps

Sensitivity . . . . . 53 dBμ/m

Signal to Noise Ratio at . . . . . Better than 52 dB

90 dBμ/m

Total Harmonic Distortion at . . . . . Less than 0.5%

90 dBμ/m

Selectivity . . . . . Better than 20 dB (±10 kHz)

### General

Power Source . . . . . 120, 230 or 240 VAC, 50/60 Hz (According to country of sale)

Power Consumption . . . . . 295 W max.

Convenience Outlets . . . . . Switched: 2 (General Model)

Switched: 1 (European and Oceanian Model)

Dimensions\* . . . . . 430 (W) x 100 (H) x 370 (D) mm

16-15/16 (W) x 3-15/16 (H) x 14-9/16 (D) inches

Approximate Weight . . . . . 9.0 kg 19 lbs. 13 oz.

#### <Remote Control Unit>

Principle . . . . . Infrared pulse system

Power Supply . . . . . 3 VDC (1.5 Vx2)

Dimensions\* . . . . . 64 (W) x 18 (H) x 176 (D) mm

2-1/2 (W) x 11/16 (H) x 6-15/16 (D) inches

Approximate Weight . . . . . 130 g, 5 oz. (including batteries)

\*: Dimensions do not include protruding parts. Height is the panel height without feet.

● Specifications and design are subject to change for further improvement without notice.

# Service Manual

## Receiver 2

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