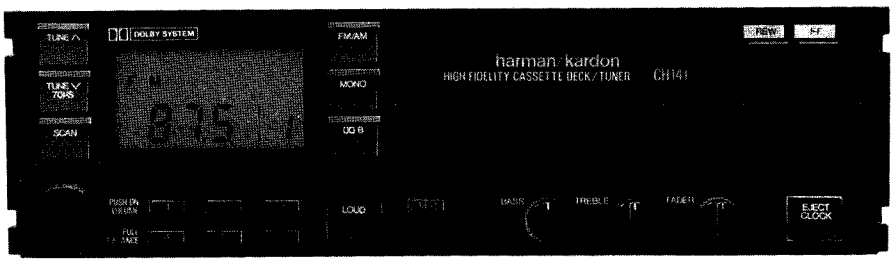
The Harman Kardon Model CH141

Manual 107A

HIGH FIDELITY CASSETTE DECK/TUNER

Technical Manual



harman/kardon
240 Crossways Park West, Woodbury, N.Y. 11797
1112-3152107A1 P-088607 1850 Printed in Japan

CH141

SPECIFICATIONS

	Nominal	Limit
● FM SECTION		
Tuning Range	87.5MHz	~ 107.9MHz
Usable Sensitivity	14.8dBf	≤ 18dBf
Quieting Sensitivity		
Mono	18dBf	≤ 23dBf
Stereo	40dBf	≤ 45dBf
Signal to Noise Ratio		
Mono	72dB	≥ 66dB
Stereo	68dB	≥ 60dB
IF Rejection (88.1MHz)	80dB	≥ 75dB
Image Rejection (98.1MHz)	50dB	≥ 40dB
AM Suppression	50dB	≥ 44dB
Capture Ratio	1.5dB	≤ 3dB
Selectivity (±400kHz)	60dB	≥ 55dB
Distortion (Stereo) (65dBf, 100%)	0.22%	≤ 0.4%
Frequency Response (±3dB)	30Hz	~ 15kHz
MPX Separation at 1kHz	40dB	≥ 35dB
Output Level (75kHz dev.)	550mV	±3dB
● AM SECTION		
Tuning Range	530kHz	~ 1620kHz
Signal to Noise Ratio	50dB	≥ 45dB
IF Rejection (600kHz)	60dB	≥ 50dB
Image Rejection (1400kHz)	55dB	≥ 50dB
Selectivity (±9kHz)	50dB	≥ 45dB
● AUDIO SECTION		
Tone Control Action		
Bass (50Hz)	11dB	±1.5dB
Treble (10kHz)	11dB	±1.5dB
Loudness Action (80Hz/10kHz)	10dB ± 3dB/3dB ± 2dB	
Output Impedance	500Ω	

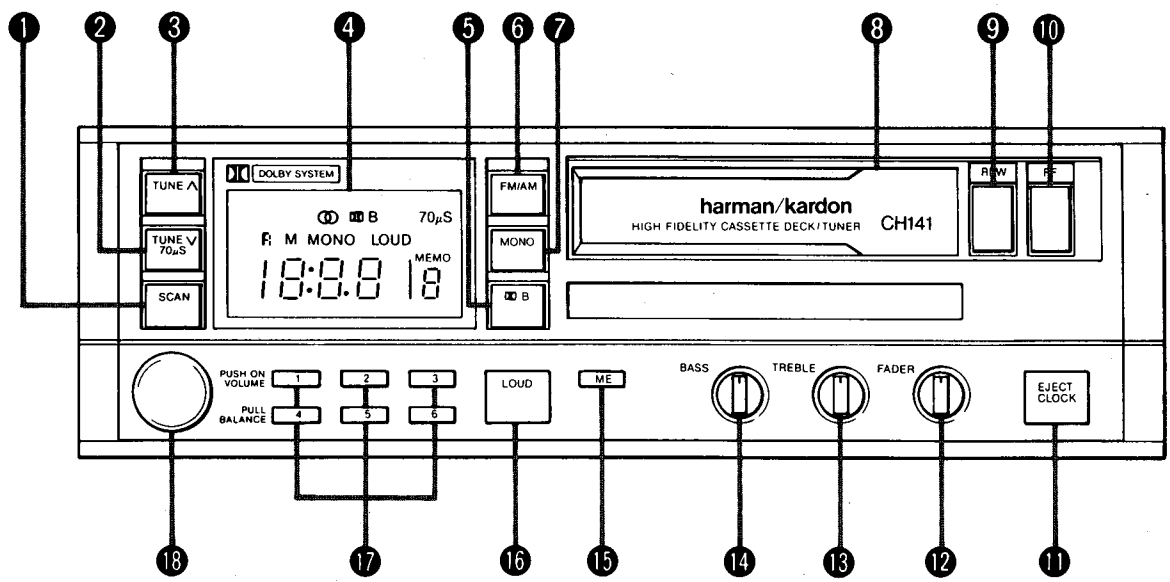
	Nominal	Limit
● CASSETTE TAPE DECK SECTION		
Wow and Flutter (WRMS)	0.09%	≤ 0.2%
Tape Speed (4.75cm/sec.)	+1%	≤ +3% −1%
FF and REW Time (for C-60 tape)	125sec.	≤ 150sec.
Signal to Noise Ratio (CrO_2)		
Dolby NR Off	54dB	≥ 50dB
Dolby NR	64dB	≥ 58dB
Distortion	1%	≤ 2%
Frequency Response	20Hz	~ 20kHz
Separation	40dB	≥ 35dB
Crosstalk	70dB	≥ 60dB
Output Level (Volume Max.)	775mV	±3dB

● GENERAL	
Chassis Dimensions (W × H × D)	7" × 2" × 5-7/8" (180 × 50 × 150 mm)
Weight	3lbs. (1.4kg)
Power Supply	DC 13.8V (11—16V Usable), Negative Ground
Current Consumption	0.6A
Accessories	Connector Assembly, Spare Fuse (1 pc.), Mounting Kits

This specification is the target of servicing. But, there is a case that the specification is not applicable to the measurement condition and instrument.

Specifications and components subject to change without notice. Overall performance will be maintained or improved.

CONTROLS & INDICATORS



❶ SCAN BUTTON
Push this button to operate scan function.

❷ TUNING DOWN / CLOCK MINUTES / 70μSEC (TAPE SELECTOR) BUTTON
Use this button for manual tuning. When this is pressed, the tuner frequency decreases. In FM mode, frequency display moves in 200kHz steps (50kHz steps for General model). In AM, the display moves in 10kHz steps (9kHz steps for the General model). If this button is pressed for more than a second, the display moves quickly and continuously until released. This button also controls the minutes displayed on the clock. To set the clock (minutes) time, push the memory button first. Then push this button. Tape selection can also be made when using metal or CrO_2 tape.

❸ TUNING UP / CLOCK HOURS BUTTON
Use this button for manual tuning. When this is pressed, the tuner frequency increases. If this button is pressed for more than a second, the display moves quickly and continuously until released. This button also controls the hours displayed on the clock. To set the clock (hours) time, push the memory button first. Then push this button.

❹ DISPLAY
This includes tuner frequency, clock, memory channel display, LOUD (loudness), MONO, ⊙⊙ (stereo), 70μS (metal / CrO_2), Dolby NR indicator.

❺ DOLBY* NR SWITCH
Press the button for playback using the Dolby NR system. The Dolby NR indicator illuminates. Press the switch again to turn off the Dolby NR system.

❻ FM / AM BAND SELECT SWITCH

❼ MONO SWITCH
Mono mode: All FM broadcasts will be received as monaural broadcasts, regardless of whether or not they are in stereo. This mode may provide quieter, more listenable sound quality under poor reception conditions.

Auto-stereo mode: FM stereo reception is automatically selected when received at medium or high signal strength. When an FM monaural signal or a weak FM stereo signal is received, it automatically switches to the FM monaural mode.

❽ CASSETTE LOADING SLOT

❾ REW (REWIND) BUTTON
Press this button to rewind the tape.

❿ F.F (FAST FORWARD) BUTTON
Press this button to advance the tape at fast speed.

⓫ EJECT BUTTON / DISPLAY MODE SELECTOR
Push this button to eject the cassette. This also changes the display mode to clock (during tuner operation). When the unit is first turned on, it will automatically display the tuner frequency. Pushing the eject button changes the display from tuner frequency to clock for 5 seconds.

⓬ FADER CONTROL
This control adjusts the balance of front and rear level. Turn this control clockwise to decrease the front level or counterclockwise to decrease the rear level. It has center click to indicate the balance of the front and rear channels.

⓭ TREBLE CONTROL
This controls the high frequency sounds. Turn it clockwise to boost or counterclockwise to cut them. It has center click to indicate flat frequency response.

⓮ BASS CONTROL
This knob controls the low frequency sounds. Turn it clockwise to boost or counterclockwise to cut them. It has center click to indicate flat frequency response.

⓯ MEMORY BUTTON
This button is used to enter or change the preset stations or the clock setting. When this button is pressed, the MEMO indicator illuminates for 5 seconds. This indicates that the memory standby state is activated.

⓰ LOUDNESS BUTTON
When listening at a low level, the loudness button will create a more natural sound by emphasizing the low and high frequency ranges.

⓱ PRESET MEMORY BUTTONS
Press any one of the six Preset Memory buttons while the MEMO indicator is illuminating, and the frequency displayed is memorized at that Preset Memory button. Each button can memorize one frequency in both FM and AM bands. Once a station frequency is memorized, it can be recalled any time the same button is pressed.

⓲ VOLUME CONTROL / ON-OFF SWITCH (PUSH) / BALANCE CONTROL (PULL)
Push this knob to turn on the tuner. Push again to turn it off. This knob controls the sound level. Turning clockwise increases the sound volume and turning counterclockwise decreases it. This also controls the balance of the left and right channels. Turn it to clockwise or counterclockwise to balance the sound. It has center click to indicate the balance of the left and right channels.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

DISASSEMBLY PROCEDURES (REFER TO PAGES 5 AND 19)

[1] CASSETTE TAPE PLAYER MECHANICAL ASSEMBLY (102) REMOVAL

1. Remove the Cabinet Top (144) and Cabinet Bottom (145).
   The Cabinet Top (144) and Cabinet Bottom (145) are fixed with projections, 3 at the front and rear each and 1 at the right and left each.
2. Pull out the Volume Knob (149) and Bass, Treble and Fader Knobs (151).
3. Remove screw Ⓐ and then with the right and left catches released, remove the Front Panel Assembly (101).
4. Remove 4 screws Ⓑ and then remove the Bracket (182).
5. Remove 5 screws Ⓒ and then remove the Cassette Tape Player Mechanical Assembly (102) with the Mecha Control and Dolby NR P. C. Board (PCB-2). Also, disconnect the connectors (PCB-7, LCN202 and LCN203) from CN201, CN202 and CN203 on the PCB-2.
6. Remove screw Ⓓ and unsolder the Cassette Power Switch and then remove the Mecha Control and Dolby NR P. C. Board (PCB-2).
7. Remove 4 screws Ⓔ and then remove the Bracket (183) from the Cassette Tape Player Mechanical Assembly (102).

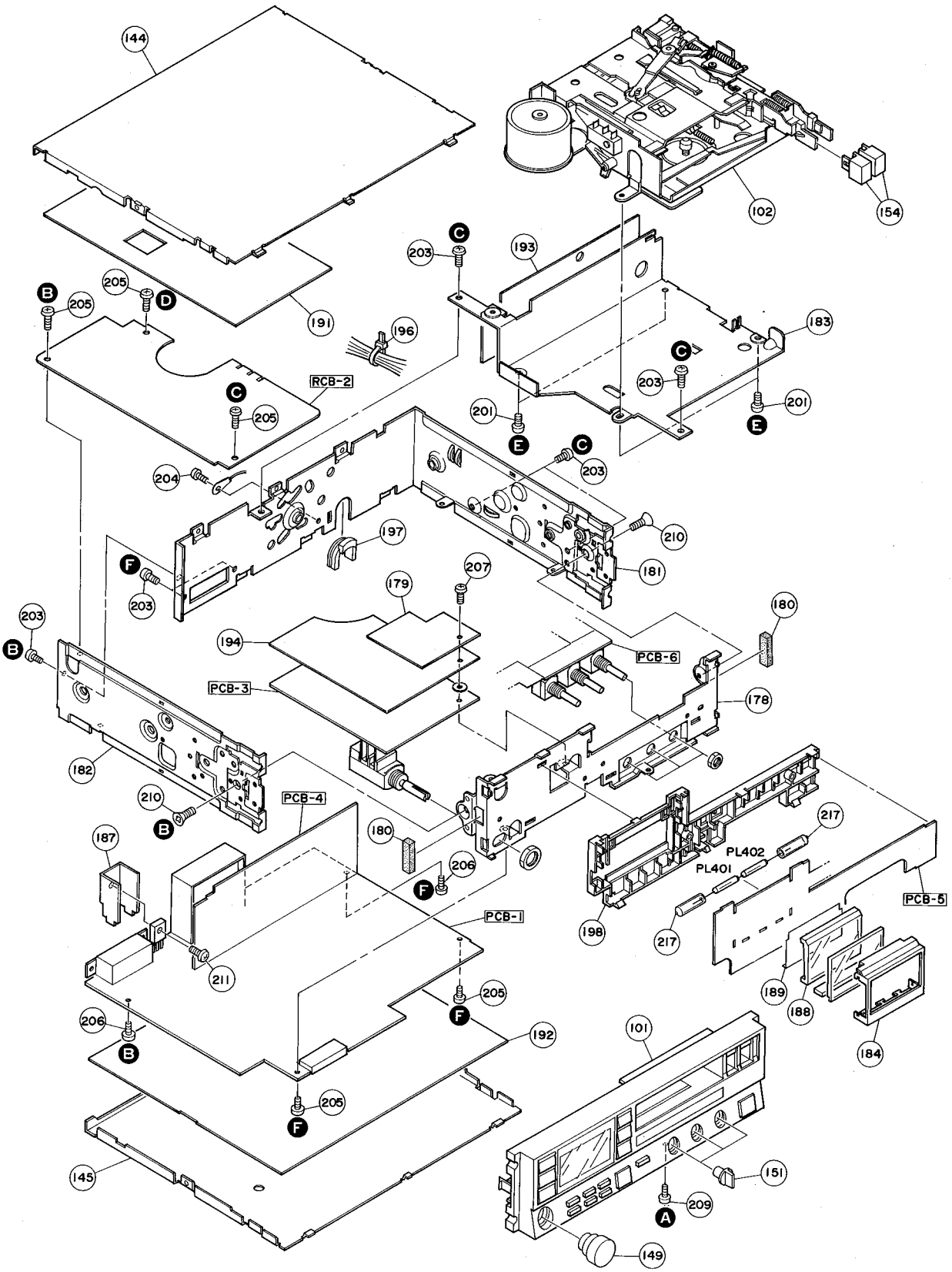
[2] MAIN P. C. BOARD (PCB-1) REMOVAL

1. Remove the Cassette Tape Player Mechanical Assembly (102), referring to the previous step [1].
2. Remove 5 screws Ⓕ and then remove the Main P. C. Board (PCB-1) with the SIG Switching P. C. Board (PCB-4). Also, disconnect the connectors (LCN501, LCN502, LCN503 and LCN506) from the CN501, CN502, CN503 and CN506 on the Volume P. C. Board (PCB-3).

GENERAL UNIT PARTS LIST

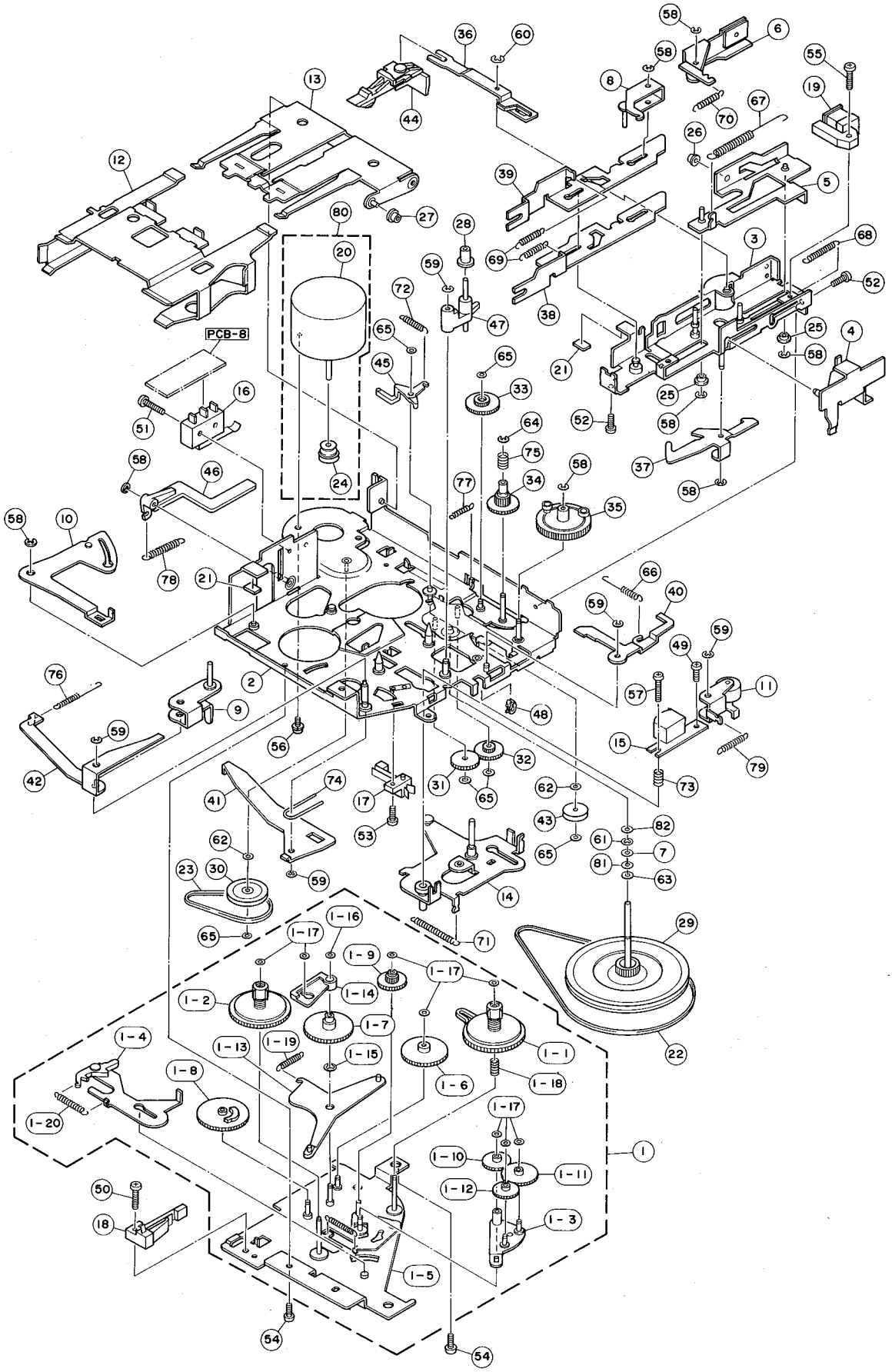
Ref. No.	Part No.	Description
101	A442-CH141A	Front Panel Ass'y
102	C112-CH141A	Cassette Tape Player Mechanical Ass'y
144	1414-06201	Cabinet Top
145	1414-06201	Cabinet Bottom
149	1630-03301	Rotary Knob, Volume
151	1632-14101	Rotary Knob, Bass, Treble, Fader
154	1662-17601	Push Button, F.F., Rew.
178	2211-7276	Chassis
179	2216-7164	Shield Plate
180	2112-11780	Sponge
181	2219-8112	Bracket
182	2219-8067	Bracket
183	2219-8068	Bracket
184	2219-8069	Bracket
187	2222-7194	Heat Sink
188	2223-7054	Reflector
189	2223-7055	Reflector
191	2224-7112	Insulator
192	2224-7113	Insulator
193	2224-7108	Insulator
194	2224-7114	Insulator
196	2240-7120	Holder
197	2240-7255	Holder
198	2240-7256	Holder
201	2327-300429	Screw (3×4mm)
203	2342-300527	Screw (3×5mm)
204	2342-3005D7	Screw (3×5mm)
205	2342-260527	Screw (2.6×5mm)
206	2342-2605D7	Screw (2.6×5mm)
207	2347-260827	Screw (2.6×8mm)
209	2347-200541	Screw (2×5mm)
210	2323-300629	Screw (3×6mm)
211	2557-300829	Screw (3×8mm)
217	2603-7009	Sleeve

GENERAL UNIT EXPLODED VIEW



A	B	C	D	E

CASSETTE MECHANISM EXPLODED VIEW



CASSETTE MECHANISM PARTS LIST

Ref. No.	Part No.	Description
1	960-3420-05	Bottom Sub Assembly
1-1	960-3421-01	Reel Base Assembly
1-2	960-3422-02	Reel Base Assembly
1-3	960-3433-03	FF Gear Plate Assembly
1-4	960-3434-01	SW Plate Assembly
1-5	960-3435-04	Bottom Plate Assembly
1-6	613-0022-01	Gear A
1-7	613-0023-01	Gear B
1-8	613-0024-01	Cam Gear
1-9	613-0025-00	Idle Gear
1-10	613-0026-01	FF Base Gear
1-11	613-0027-00	FF Gear
1-12	613-0028-00	REW Gear
1-13	631-0396-01	Sensing Link
1-14	631-0397-01	Replay Sensing
1-15	744-0006-01	Special E-stop Ring
1-16	745-0692-00	Special Washer
1-17	746-0628-01	Special Washer
1-18	750-2155-00	Spring
1-19	750-2217-00	Spring
1-20	750-2218-00	Spring
1-21	750-2219-00	Spring
2	960-3423-04	Deck Plate Assembly
3	960-3424-07	Frame Assembly
4	960-3425-03	Loading Plate Assembly
5	960-3426-07	Eject Plate Assembly
6	960-3427-02	Plunger Plate A Assembly
7	746-0732-00	Special Washer
8	960-3429-02	Lock Plate Assembly
9	960-3430-02	FF Link A Assembly
10	960-3431-01	Replay Lever A Assembly
11	960-3437-02	Pinch Roller Assembly
12	606-0075-03	Cassette Pack Guide
13	960-3439-02	Guide Arm Assembly
14	960-3440-03	Head Plate Assembly
15	011-0299-00	Playback Head
16	013-2690-03	Lever Switch, Cassette Power
17	013-3470-05	Lever Switch, FF
18	013-3558-02	Lever Switch, Tape End
19	015-0232-01	Plunger
20	020-0366-00	DC Motor
21	340-0398-00	Spacer
22	602-0074-00	Belt A
23	602-0075-00	Belt B
24	603-0083-07	Motor Pulley
25	610-0225-00	Guide Roller
26	610-0225-01	Guide Roller
27	610-0226-00	Guide Arm Roller
28	610-0227-01	Eject Roller
29	611-0065-01	Flywheel
30	613-0021-01	Pulley Gear
31	613-0029-00	Loading Gear A
32	613-0030-00	Loading Gear B
33	613-0031-00	Loading Gear C
34	613-0032-00	Loading Gear D
35	613-0033-00	Power Gear
36	630-1511-03	Loading Link
37	630-1513-01	Lock Link
38	630-1514-09	FF Lever
39	630-1515-09	REW Lever
40	630-1518-01	Lock Arm
41	630-1521-01	FF Link B
42	630-1526-00	Replay Link B
43	631-0370-00	Tension Pulley
44	631-0392-04	Casssette Pack Stopper
45	631-0394-00	Cancel Link
46	631-0395-01	SW Link
47	631-0398-01	Eject Link
48	631-0419-00	Clump
49	714-2003-81	Screw
50	714-2306-81	Screw
51	714-2308-81	Screw
52	714-2603-81	Screw
53	714-2604-11	Screw
54	714-2604-81	Screw
55	714-2606-11	Screw
56	716-0347-00	Screw
57	716-0482-01	Screw
58	743-1500-10	E-stop Ring
59	743-2000-10	E-stop Ring
60	744-0006-01	Special E-stop Ring
61	744-0024-01	Special E-stop Ring
62	745-0645-00	Special Washer
63	745-0646-00	Special Washer
64	744-0018-01	Special E-stop Ring
65	746-0628-01	Special Washer
66	750-2219-00	Spring
67	750-2220-01	Spring
68	750-2221-01	Spring
69	750-2222-00	Spring
70	750-2223-01	Spring
71	750-2224-01	Spring
72	750-2225-00	Spring
73	750-2226-00	Spring
74	750-2227-00	Spring
75	750-2228-00	Spring
76	750-2229-00	Spring
77	750-2230-01	Spring
78	750-2231-00	Spring
79	750-2232-00	Spring
80	960-3528-00	Motor Assembly
81	746-0730-00	Special Washer
82	746-0731-00	Special Washer

ALIGNMENT PROCEDURES (REFER TO PAGES 19 ~ 21)

■ ELECTRICAL ADJUSTMENT

1. Before adjustment

- Connect a 14V power supply to the Power Supply Lead (+ACC, +B and GND).
- Since head magnetization, dust accumulations, etc. are likely to introduce errors in the various characteristics, it is very important that the heads are properly demagnetized and cleaned before commencing any adjustment, particularly frequency response and head azimuth adjustment.

2. Instruments required

- Low frequency oscillator
- AC VTVM or dual channel AC VTVM
- Oscilloscope
- Wow/flutter meter
- Frequency counter

3. Test tapes

- Dolby NR level adjustment ..... MTT-150 or TCC-130
- Azimuth adjustment TCC-153
- Playback frequency characteristic adjustment SCC-800
- Music Search operation confirmation MTT-250B

4. Standard load

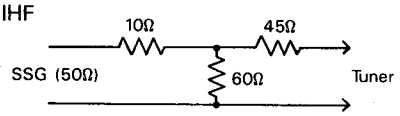
- Connect the resistor (10kΩ) and the capacitor (1000pF) to the line output.
- Standard output 200mV

5. General conditions (unless otherwise noted).

CONTROLS AND SWITCHES	SETTINGS
Balance	center
Bass	center
Treble	center
Fader	center
Dolby NR	off
70 μsec.	off
Loudness	off
Mono	Mono

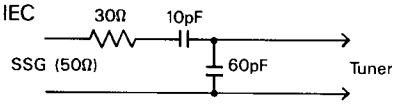
6. Dummy antenna

- FM : IHF



Measurement at receiver input level interm of available power.

- AM : IEC



Measurement at SSG terminal voltage (open).

	U. S. A. model	General model
FM Signal Generator	1kHz, 100% modulation	1kHz, 53% modulation
Stereo Modulator	L+R=45.5%, L−R=45.5%, 19kHz=9%	L+R=22.5%, L−R=22.5%, 19kHz=8%

■ TUNER SECTION

Step	Alignment	Connection Equipments	Mode	Measurement Frequency	Station display	Adjust-ment	For
1	Standard frequency	•Connect the Frequency Counter to TP3 (+) and ground (−).	AM		530kHz	VC401	980kHz ±8Hz
2	IF	•Connect the FM Signal Generator to the Antenna jack through the FM dummy antenna. •Connect Oscilloscope, Distortion Meter and AC Voltmeter to the line output.	FM	98.1MHz (17dBf)	98.1MHz	T101	Maximum output
3				98.1MHz (65dBf)	98.1MHz	T101	Adjust so that the same and maximum output is obtained on both Low Frequency side and High Frequency side when the FM Signal Generator is shifted to both sides by the same amount from 98.1MHz (65dBf).
4				98.1MHz (65dBf)	98.1MHz	VR101	Minimum distortion
5	Sub-carrier rejection	•Connect the Stereo Modulator to FM Signal Generator. Connect the FM Signal Generator to the Antenna jack through the FM dummy antenna. •Connect Oscilloscope, Distortion Meter and AC Voltmeter to the line output.	Stereo FM	98.1MHz (65dBf)	98.1MHz	VR112	Minimum output at 19kHz pilot signal only by Stereo Modulator.
6	Separation		Stereo FM	98.1MHz (65dBf)	98.1MHz	VR113	Adjust so that the right channel output becomes minimum when only the left channel of the Stereo Modulator is modulated.
						VR113	Adjust so that the left channel output becomes minimum when only the right channel of the Stereo Modulator is modulated.
7				98.1MHz (35dBf)	98.1MHz	VR111	Adjust so that the separation becomes 30dB ± 3dB.
8			Repeat step 6.				
9			Repeat step 7 for optimum sensitivity.				

■ **TAPE SECTION**

Step	Alignment	Connection Equipments	Test Tape	Mode	Adjustment	For
1	Dolby NR level	● Connect the AC VTVM or dual channel AC VTVM to TP1 (Lch), TP2 (Rch) and ground.	MTT-150 or TCC-130	PB	VR203 (L ch) VR204 (R ch)	300mV
2	Azimuth	● Connect the AC VTVM or dual channel AC VTVM to the line output.	TCC-153	PB	Azimuth screw	Maximum output (Refer to the next page for the details.)
3	Playback frequency characteristic		SCC-800	PB	VR201 (L ch) VR202 (R ch)	Check if the specification is satisfied and if not, adjust as specified.

HEAD REPLACEMENT AND ADJUSTMENT

[1] Head replacement

1. Remove the Cassette Tape Player Mechanical Assembly from the main unit according to the disassembly procedure.
2. Remove the Ⓐ portion of the Loading Link. (See Fig.1)
3. Remove the 2 screws Ⓑ in Fig.1 and remove the Frame Assembly, Cassette Pack Guide and Guide Arm Assembly, and then replace the head.

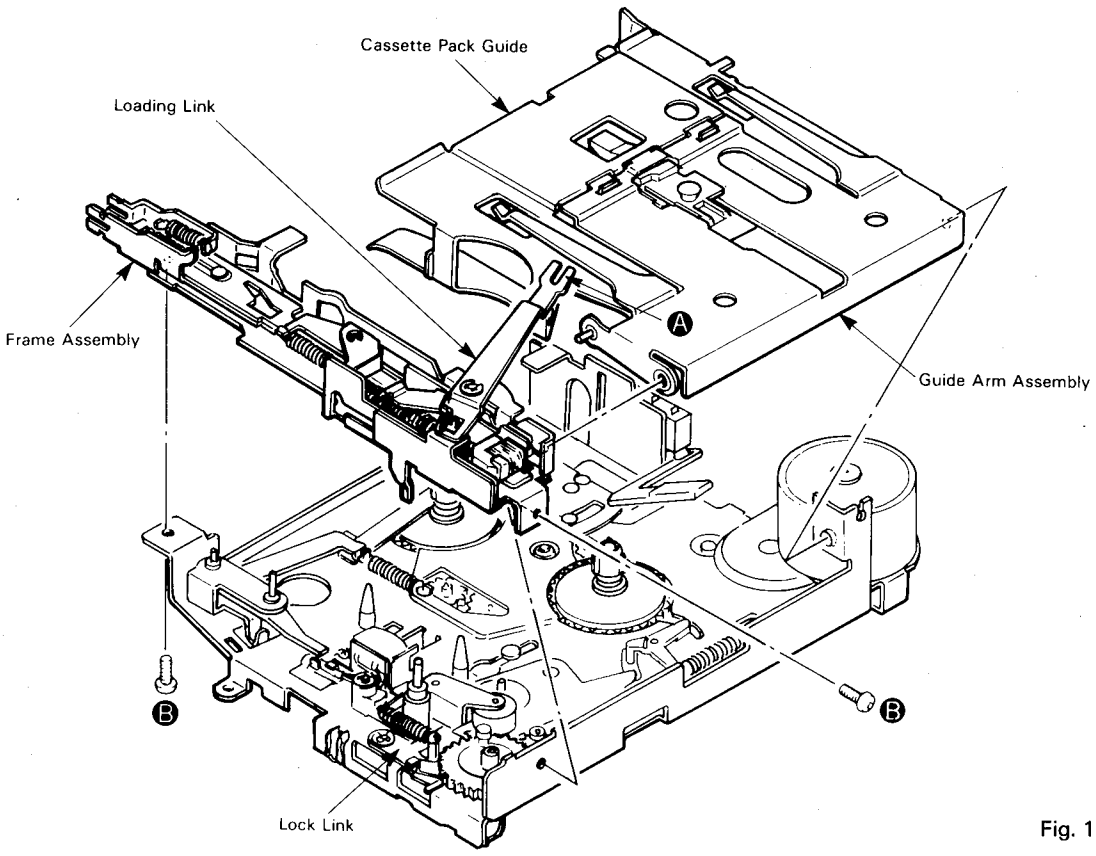


Fig. 1

2 Head height confirmation

1. Install the M-300 Head Gauge plate.
2. Release the Lock Link to allow the head and pinch roller to lift up (in the same state as when playing back).
3. Check to make sure that the adjustment chip does not contact the tape guide of the head. (See Fig.2)

● After the head replacement and height confirmation, clean the head and pinch roller where the tape runs against and then install them.

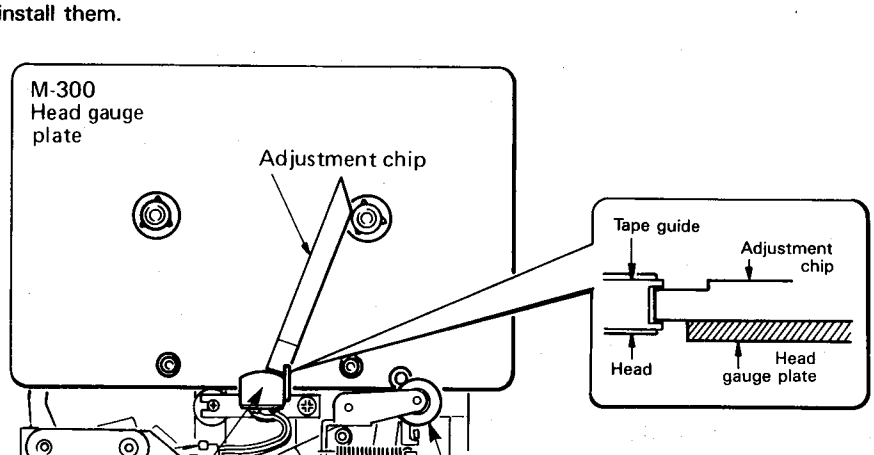


Fig. 2

3 Azimuth adjustment

● Adjust the azimuth upon completion of the main unit assembly (with both upper and lower coveres installed).

1. Connect the power source (DC14V) to the power supply lead to make the main unit ready to operate.

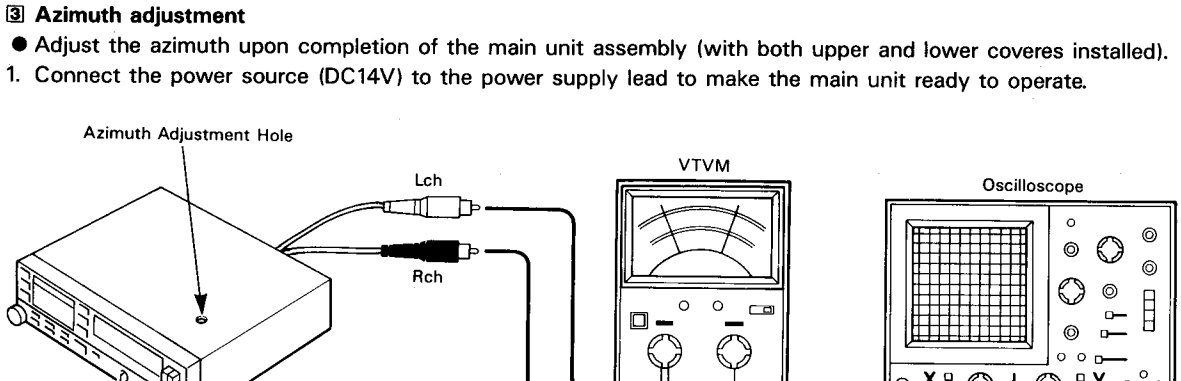


Fig. 3

2. Connect the dual channel AC VTVM and 2ch oscilloscope to the line output.
3. Play back the test tape (TCC-153) and adjust the azimuth screw with a phillips screwdriver inserted into the azimuth adjustment hole in the upper cover. Adjust so that the same maximum VTVM value is indicated on both left channel and right channel and also so that the phase is within 0° ±90° while watching the lissajous's waveform.

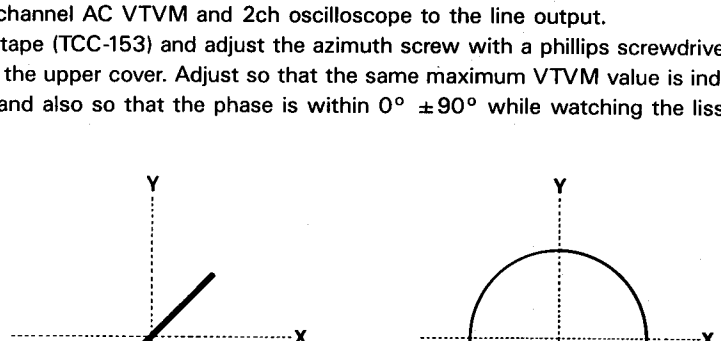


Fig. 4

CIRCUIT DESCRIPTION

- **FM Signal**

  The signal sent from the antenna is high frequency amplified in the front end (TU101), combined with the output of the local oscillator, converted into a signal of 10.7MHz intermediate frequency and output from 5 pin. The 10.7MHz signal is amplified in the intermediate frequency amplifier consisting of CF101, Q103, Q104 and CF102 and fed to 2 pin of IC101. There, it passes through the sextuple IF amplifier and is detected by differential peaks and output from 10 pin after passing through the AF amplifier. Then it is inputted to 2 pin and output from 20 pin of the noise canceller IC (IC102) and again inputted to 1 pin of IC103. IC103 detects pilot signal from the signal which has been fed and produces 38kHz signal, whereby the stereo signal is demodulated and sent out from 13 pin for the right channel and 15 pin for the left into the amplifier.

- **AM Signal**

  The signal fed from the antenna is tuned, high frequency amplified, combined, intermediate frequency amplified and detected in the AM section (TU102) and sent out from 7 pin into the amplifier.

- **Muting Circuit**

  When letting the tuner to operate, 41 pin of IC401 becomes high level and Q102 turns ON. Then the output of the AM section is muted and at the same time, a high level is supplied to 2 pin of IC8, which causes 6 pin of IC8 to become low level and Q16, Q17 (L ch) and Q18 (R ch) to turn ON. And thus the input line of the power amplifier is muted.

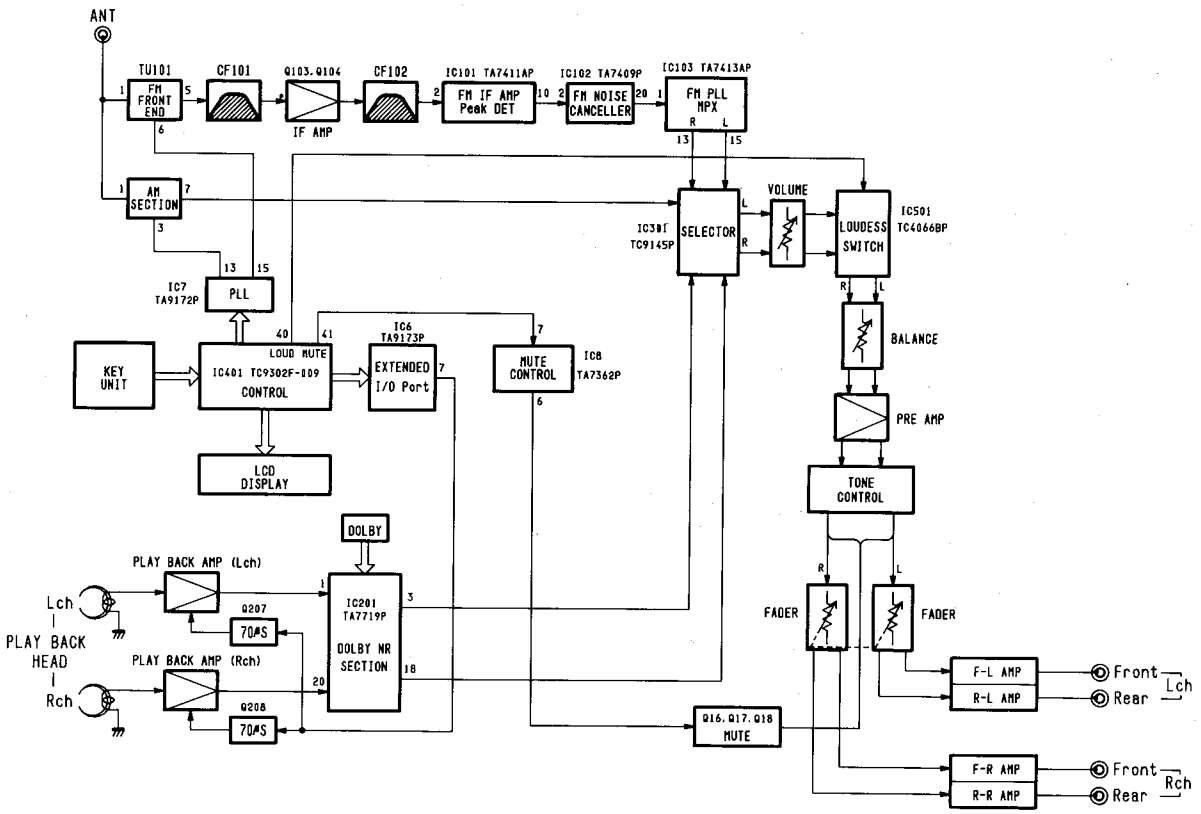
- **Muting While Operating Tape**

  When the operation is in FF or REW mode, 41 pin of IC401 becomes high level. As the high level signal is supplied to 7 pin of IC8, its 6 pin becomes low level, and Q16, Q17 (L ch) and Q18 (R ch) turn ON. As a result, the input line of the power amplifier is muted.

- **Playback Signal**

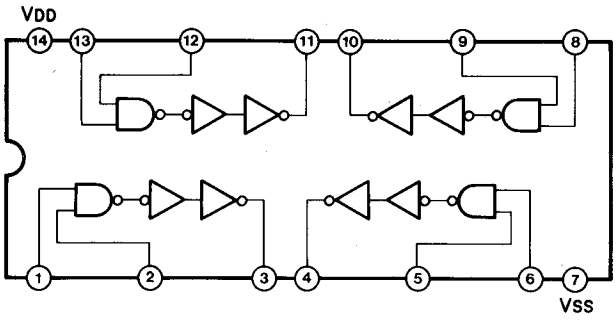
  The signal sent from the playback head is amplified by the playback amplifier consisting of Q201, Q203, Q205 (L ch), Q202, Q204 and Q206 (R ch), and fed to 1 pin (L ch) and 20 pin (R ch) of IC201. After passing through the dolby circuit in IC201, the signal is sent out from 3 pin (L ch), and 18 pin (R ch) into the amplifier.

BLOCK DIAGRAM

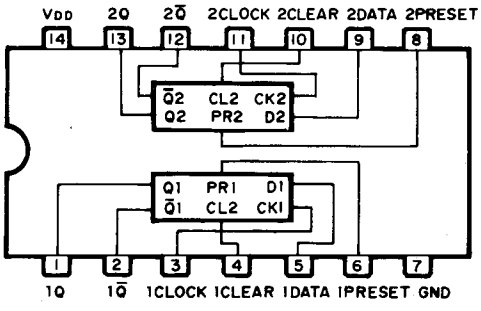


IC BLOCK DIAGRAM

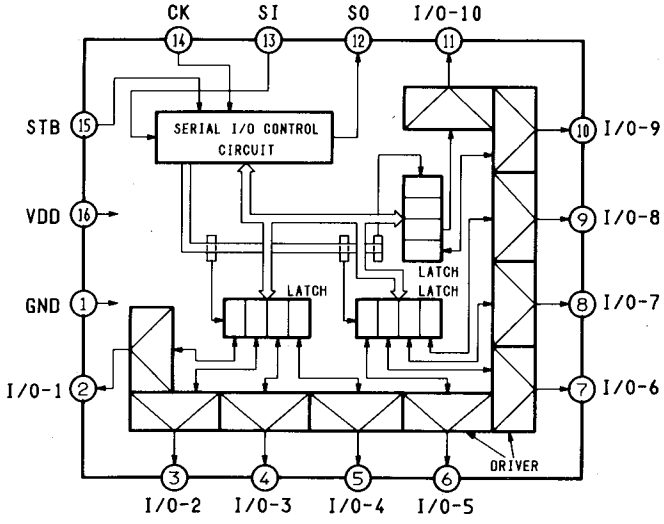
IC3 : TC4011BP



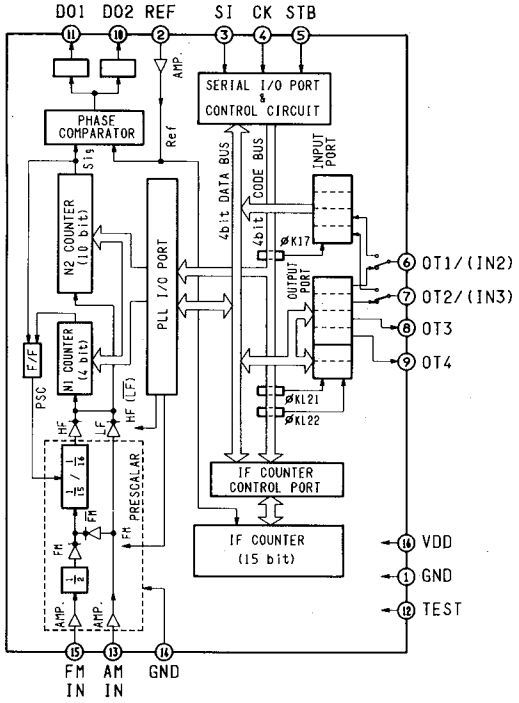
IC4 : TC4013BP



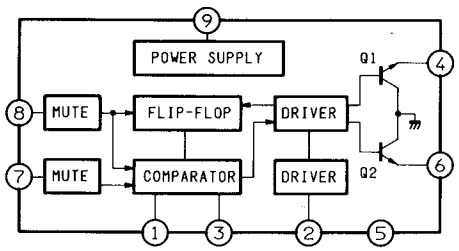
IC6 : TC9173P



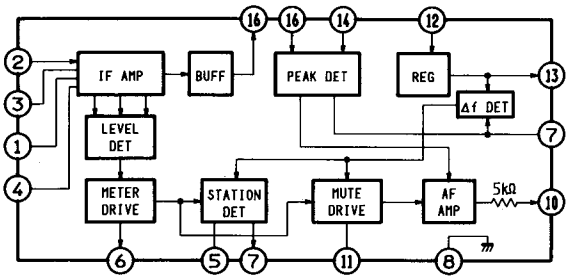
IC7 : TC9172P



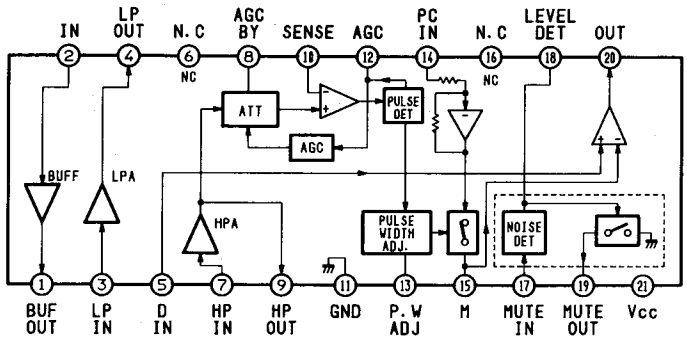
IC8 : TA7362P



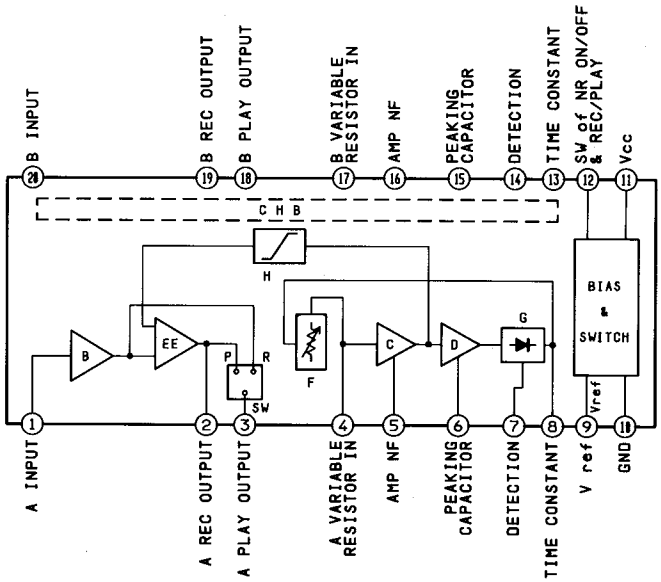
IC101 : TA7411AP



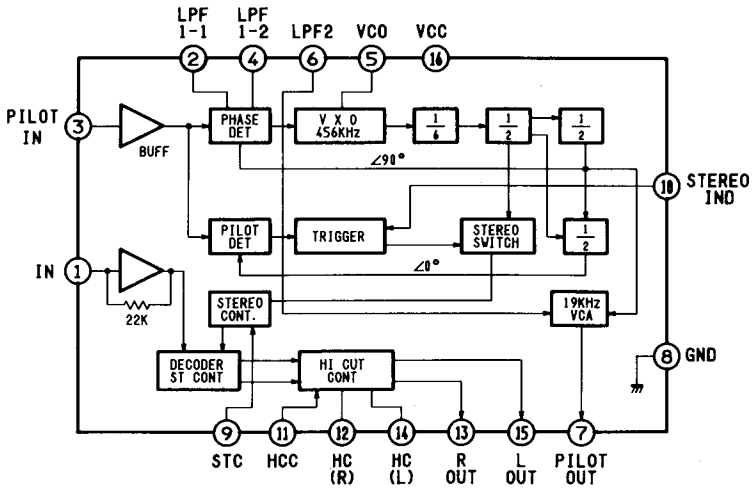
IC102 : TA7409P



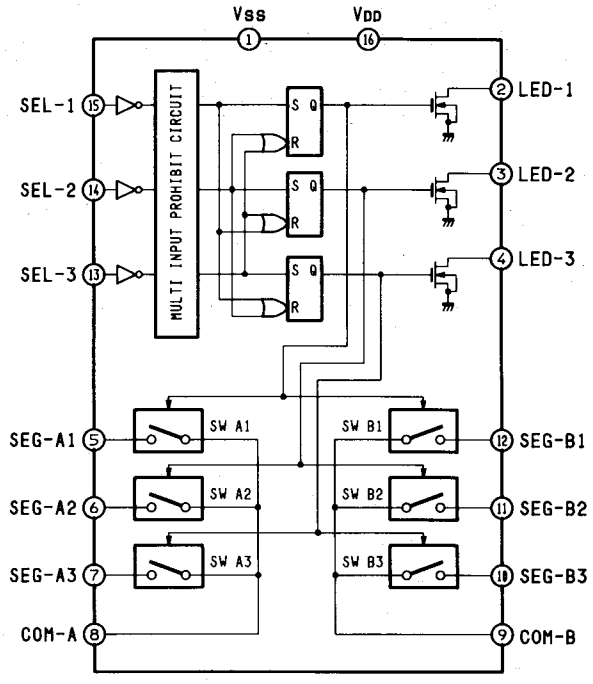
IC201 : TA7719P



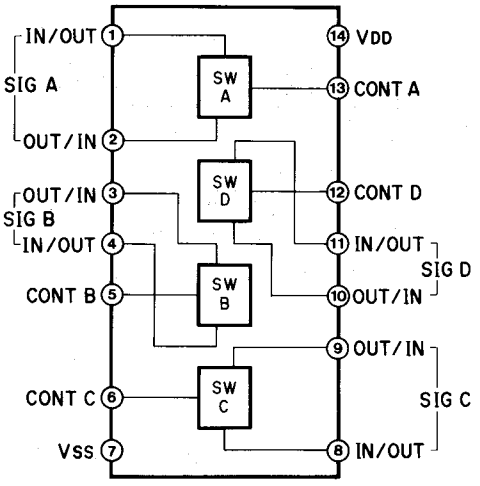
IC103 : TA7413AP



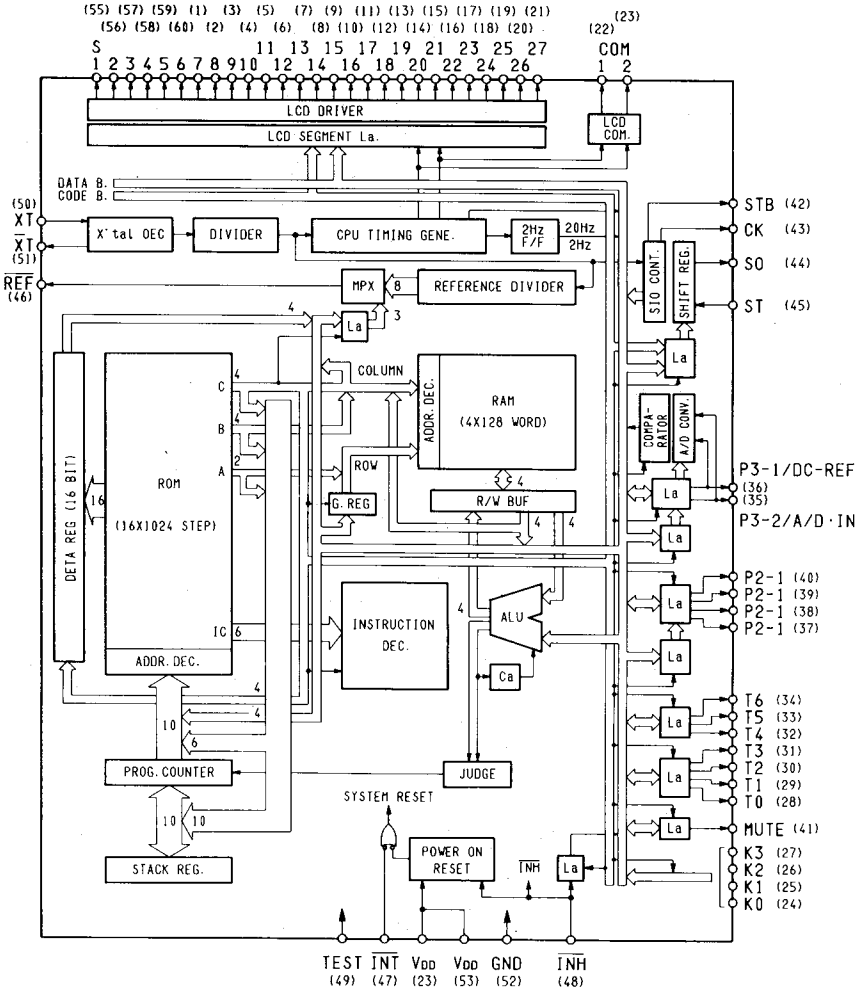
IC301 : TC9145P



IC501 : TC4066BP



IC401 : TC9302F-009



ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
	PCB-1 MAIN P. C. BOARD	
	CONTROLS	
VR101	5101-47170715	470ΩB
VR111	5101-10301927	10kΩB
VR112	5101-47370715	47kΩB
VR113	5101-10301927	10kΩB
	CAPACITORS	
C2	5345-105F0961	1μF/50V, EC
C4	5345-107A0961	100μF/6.3V, EC
C5	5345-108C046	1000μF/16V, EC
C6	5345-226C043	22μF/16V, EC
C7	5345-475F043	4.7μF/50V, EC
C8	5345-107B0962	100μF/10V, EC
C9	5345-104F0961	0.1μF/50V, EC
C10	5345-106C0961	10μF/16V, EC
C11	5345-104F0961	0.1μF/50V, EC
C14	5345-107A043	100μF/6.3V, EC
C17	5345-107A043	100μF/6.3V, EC
C18	5345-108C046	1000μF/16V, EC
C22	5345-105F043	1μF/50V, EC
C24	5345-335F043	3.3μF/50V, EC
C25	5345-106C0961	10μF/16V, EC
C26	5345-336C043	33μF/16V, EC
C101	5345-106C0961	10μF/16V, EC
C109	5345-105F0961	1μF/50V, EC
C110	5345-225F0961	2.2μF/50V, EC
C111	5359-271541	270pF/100V, PC
C112	5345-106C0961	10μF/16V, EC
C113	5345-105F0961	1μF/50V, EC
C115	5345-106C0961	10μF/16V, EC
C116	5345-106C0961	10μF/16V, EC
C117	5359-271541	270pF/100V, PC
C118	5359-271541	270pF/100V, PC
C119	5359-681541	680pF/100V, PC
C120	5359-681541	680pF/100V, PC
C123	5359-271541	270pF/100V, PC
C124	5359-271541	270pF/100V, PC
C127	5345-226C0961	22μF/16V, EC
C129	5345-104F0961	0.1μF/50V, EC
C130	5345-104F0961	0.1μF/50V, EC
C132	5345-106C0961	10μF/16V, EC
C133	5345-104F0961	0.1μF/50V, EC
C134	5345-106C0961	10μF/16V, EC
C135	5345-106C0961	10μF/16V, EC
C137	5345-477B041	470μF/10V, EC
C138	5359-101541	100pF/100V, PC
C140	5345-474F0952	0.47μF/50V, EC
C141	5345-474F0952	0.47μF/50V, EC
C142	5345-225F0952	2.2μF/50V, EC
C143	5345-105F0961	1μF/50V, EC
C144	5345-105F0961	1μF/50V, EC
C148	5345-477C046	470μF/16V, EC
C151	5345-106C0961	10μF/16V, EC
C152	5345-476C0961	47μF/16V, EC
C153	5345-335F0961	3.3μF/50V, EC
C155	5345-105F0961	1μF/50V, EC
C156	5345-107B0962	100μF/10V, EC
C161	5345-336C0961	33μF/16V, EC
	INTEGRATED CIRCUITS	
IC3	5654-TC4011BP	TC4011BP
IC5	5654-TC4013BP	TC4013BP
IC6	5654-TC9173P	TC9173P
IC7	5654-TC9172P	TC9172P
IC8	5652-TA7362P	TA7362P
IC101	5653-TA7411AP	TA7411AP
IC102	5653-TA7409P	TA7409P
IC103	5653-TA7413AP	TA7413AP
	TRANSISTORS	
Q1	5613-2878(B)	2SC2878(B)
Q2	5613-2878(B)	2SC2878(B)
Q3	5613-RN1203	RN1203
Q4	5611-RN2203	RN2203
Q5	5613-RN1203	RN1203
Q6	5613-RN1203	RN1203
Q7	5613-RN1203	RN1203
Q8	5611-RN2203	RN2203
Q9	5613-2603(E)	2SC2603(E) or (F)
Q10	5613-2603(E)	2SC2603(E) or (F)
Q11	5613-RN1203	RN1203
Q12	5613-RN1203	RN1203
Q13	5611-1359(Y)	2SA1359(Y) or (O)
Q14	5613-2603(E)	2SC2603(E) or (F)
Q16	5611-RN2203	RN2203
Q17	5613-2878(B)	2SC2878(B)
Q18	5613-2878(B)	2SC2878(B)
Q19	5611-RN2203	RN2203
Q25	5611-RN2203	RN2203
Q102	5613-2603(E)	2SC2603(E) or (F)
Q103	5613-2058(N)	2SC2058(N) or (P)
Q104	5613-2058(N)	2SC2058(N) or (P)
Q105	5613-2603(E)	2SC2603(E) or (F)
Q106	5613-1775(F)	2SC1775(F)
Q107	5613-2320L(F)	2SC2320L(F)
Q108	5613-3667(O)	2SC3667(O)
Q109	5611-1427(O)	2SA1427(O)
Q110	5613-RN1203	RN1203
Q111	5613-RN1203	RN1203
Q112	5613-2603(E)	2SC2603(E) or (F)
	DIODES	
D1	5631-1SS133	1SS133
D2	5631-1SS133	1SS133
D3	5635-RD5R1EB2	ZD, RD5.1EB2
D4	5631-1S2473	1S2473
D5	5631-1SS133	1SS133
D6	5635-HZ11B-2L	ZD, HZ11B-2L
D7	5632-S5566B	S5566B
D10	5635-RD5R1EB2	ZD, RD5.1EB2
D11	5635-RD5R1EB2	ZD, RD5.1EB2
D12	5632-S5566B	S5566B
D13	5632-S5566B	S5566B
D14	5632-S5566B	S5566B
D21	5631-1SS133	1SS133
D22	5631-1SS133	1SS133
D23	5631-1SS133	1SS133
D24	5635-RD5R1EB2	ZD, RD5.1EB2
D25	5635-RD3R3EB	ZD, RD3.3EB
D101	5631-1SS133	1SS133
	COILS	
L101	5995-1R0269	
L102	5995-221269	220μH
L103	5995-4R7269	4.7μH
	TRANSFORMERS	
T101	5572-00115	
	MISCELLANEOUS	
TU101	6114-7137	FM Tuner Ass'y (U)
TU101	6114-7136	FM Tuner Ass'y (G)
TU102	6110-3	AM Tuner Ass'y
SO101	4474-198	Antenna Socket
CF101	5671-7120A	Ceramic Filter (U)
//	5671-7142A	Ceramic Filter (G)
CF102	5671-7120A	Ceramic Filter (U)
//	5671-7142A	Ceramic Filter (G)
CF131	5693-CSB456FB	Ceramic Filter
CN1	4443-1871121	Connector, 18 Pos.
CN2	4443-1171129	Connector, 11 Pos.
LCN202	4163-1314018	CLW, 13 Pos.
LCN203	4163-0610018	CLW, 6 Pos.
LCN501	4163-0308018	CLW, 3 Pos.

Ref. No.	Part No.	Description
LCN502	4163-0213018	CLW, 2 Pos.
LCN506	4163-0807018	CLW, 8 Pos.
LUGI	4211-4	Lug Terminal

PCB-2 MECHA CONTROL AND DOLBY NR P. C. BOARD

Ref. No.	Part No.	Description
	RESISTORS	
R212	5171-8R2572	8.2Ω, 1W, MR
R213	5171-8R2572	8.2Ω, 1W, MR
	CONTROLS	
VR201	5101-10201927	1kΩ
VR202	5101-10201927	1kΩ
VR203	5101-20301927	22kΩB
VR204	5101-20301927	22kΩB
	CAPACITORS	
C201	5345-104F043	0.1μF/50V, EC
C202	5345-477C046	470μF/16V, EC
C220	5345-476C041	47μF/16V, EC
C221	5345-477B0962	470μF/10V, EC
C231	5345-106C041	10μF/16V, EC
C232	5345-106C041	10μF/16V, EC
C233	5359-101541	100pF/100V, PC
C234	5359-101541	100pF/100V, PC
C235	5345-227B0962	220μF/10V, EC
C236	5345-227B0962	220μF/10V, EC
C239	5345-106C041	10μF/16V, EC
C240	5345-106C041	10μF/16V, EC
C245	5345-477B0962	470μF/10V, EC
C246	5345-477B0962	470μF/10V, EC
C247	5345-475E041	4.7μF/35V, EC
C248	5345-475E041	4.7μF/35V, EC
C249	5359-821541	820pF/100V, PC
C250	5359-821541	820pF/100V, PC
C251	5345-106C041	10μF/16V, EC
C252	5345-106C041	10μF/16V, EC
C259	5345-106C041	10μF/16V, EC
C260	5345-106C041	10μF/16V, EC
C267	5345-226C041	22μF/16V, EC
C268	5345-227B0962	220μF/10V, EC
C269	5345-477B0962	470μF/10V, EC
C277	5345-226C041	22μF/16V, EC
	INTEGRATED CIRCUITS	
IC201	5652-TA7719P	TA7719P
	TRANSISTORS	
Q201	5613-1775(F)	2SC1775(F)
Q202	5613-1775(F)	2SC1775(F)
Q203	5613-1775(F)	2SC1775(F)
Q204	5613-1775(F)	2SC1775(F)
Q205	5613-2603(F)	2SC2603(F) or (E)
Q206	5613-2603(F)	2SC2603(F) or (E)
Q207	5613-RN1203	RN1203
Q208	5613-RN1203	RN1203
Q209	5613-2236(Y)	2SC2236(Y) or (O)
Q210	5613-RN1203	RN1203
Q211	5613-2236(Y)	2SC2236(Y) or (O)
	DIODES	
D201	5631-1SS133	1SS133
D203	5631-1SS133	1SS133
	COILS	
L201	5995-223189	22mH
L202	5995-223189	22mH
L207	5995-150269	15mH
	MISCELLANEOUS	
CN201	4443-0871121	Connector, 8 Pos.
CN202	4443-1371119	Connector, 13 Pos.
CN203	4443-0671119	Connector, 6 Pos.
LUG2	4211-4	Lug Terminal G

Ref. No.	Part No.	Description

PCB-3 VOLUME P. C. BOARD

Ref. No.	Part No.	Description
	CONTROLS	
VR501/ VR502/ VR503	5112-1030118	10kΩB, Volume/ Tuner Power/ Balance
	CAPACITORS	
C501	5345-108C046	1000μF/16V, EC
C505	5345-474F043	0.47μF/50V, EC
C506	5345-474F043	0.47μF/50V, EC
C509	5345-106C041	10μF/16V, EC
C510	5345-106C041	10μF/16V, EC
C511	5345-227B0962	220μF/10V, EC
C512	5345-227B0962	220μF/10V, EC
C513	5345-106C041	10μF/16V, EC
C514	5345-106C041	10μF/16V, EC
C515	5345-154F0951	0.15μF/50V, EC
C516	5345-154F0951	0.15μF/50V, EC
C521	5345-476C041	47μF/16V, EC
C522	5345-476C041	47μF/16V, EC
C523	5345-106C043	10μF/16V, EC
C524	5345-106C043	10μF/16V, EC
C525	5345-106C043	10μF/16V, EC
C526	5345-106C043	10μF/16V, EC
C527	5345-335F043	3.3μF/50V, EC
C528	5345-335F043	3.3μF/50V, EC
C529	5345-335F043	3.3μF/50V, EC
C530	5345-335F043	3.3μF/50V, EC
C533	5345-108C046	1000μF/16V, EC
C534	5345-106C043	10μF/16V, EC
	INTEGRATED CIRCUITS	
IC501	5654-TC4066BP	TC4066BP
	TRANSISTORS	
Q502	5613-RN1203	RN1203
Q503	5613-RN1203	RN1203
Q505	5611-999L(F)	2SA999L(F)
Q506	5611-999L(F)	2SA999L(F)
Q507	5613-2320L(F)	2SC2320L(F)
Q508	5613-2320L(F)	2SC2320L(F)
Q509	5613-2320L(F)	2SC2320L(F)
Q510	5613-2320L(F)	2SC2320L(F)
Q511	5611-1115(F)	2SA1115(F)
Q512	5611-1115(F)	2SA1115(F)
Q513	5611-1115(F)	2SA1115(F)
Q514	5611-1115(F)	2SA1115(F)
Q515	5613-2320L(F)	2SC2320L(F)
Q516	5613-2320L(F)	2SC2320L(F)
Q517	5613-2320L(F)	2SC2320L(F)
Q518	5613-2320L(F)	2SC2320L(F)
	MISCELLANEOUS	
CN501	4443-0371119	Connector, 3 Pos.
CN502	4443-0271119	Connector, 2 Pos.
CN503	4443-0471119	Connector, 4 Pos.
CN504	4443-0971121	Connector, 9 Pos.
CN505	4443-0571133	Connector, 5 Pos.
CN506	4443-0871119	Connector, 8 Pos.

PCB-4 SIG SWITCHING P. C. BOARD

Ref. No.	Part No.	Description
	CAPACITORS	
C301	5345-104F043	0.1μF/50V, EC
C302	5345-227B0962	220μF/10V, EC
C303	5345-225F041	2.2μF/50V, EC
C304	5345-225F041	2.2μF/50V, EC
C305	5345-106C041	10μF/16V, EC
C306	5345-106C041	10μF/16V, EC
C307	5345-106C041	10μF/16V, EC
C309	5345-106C043	10μF/16V, EC
C310	5345-106C043	10μF/16V, EC
C315	5345-106C043	10μF/16V, EC

Ref. No.	Part No.	Description
C341	5345-106C043	10μF/16V, EC
C342	5345-106C043	10μF/16V, EC
	INTEGRATED CIRCUITS	
IC301	5653-TC9145P	TC9145P
	TRANSISTORS	
Q301	5613-RN1203	RN1203
Q302	5613-2320L(F)	2SC2320L(F)
Q303	5613-2320L(F)	2SC2320L(F)
	MISCELLANEOUS	
CN301	4443-047175	Connector, 4 Pos.
CN302	4443-047175	Connector, 4 Pos.
CN303	4443-077175	Connector, 7 Pos.
CN304	4443-067175	Connector, 6 Pos.
LCN503	4163-0415018	CLW, 4 Pos.

PCB-5 LCD P. C. BOARD

	INTEGRATED CIRCUITS	
IC401	5654-9302F09	TC9302F-009
	TRANSISTORS	
Q401	5613-2603(E)	2SC2603(E) or (F)
Q402	5611-RN2203	RN2203
Q403	5613-2603(E)	2SC2603(E) or (F)
	DIODES	
D402	5631-ISS133	ISS133
D403	5631-ISS133	ISS133
D404	5631-ISS133	ISS133
D405	5631-ISS133	ISS133
D406	5631-ISS133	ISS133
D407	5631-ISS133	ISS133
D408	5631-ISS133	ISS133
D409	5631-ISS133	ISS133
D410	5631-ISS133	ISS133
D411	5631-ISS133	ISS133
D412	5631-ISS133	ISS133
D413	5631-ISS133	ISS133
D416	5631-ISS133	ISS133
D417	5631-ISS133	ISS133 (G)
	MISCELLANEOUS	
LCD1	5791-CA4D1021	Liquid Crystal Display
X401	5691-00720022	Crystal Osc.
VC401	5371-610	Trimmer Capacitor
PL401	5731-0637173	Lamp
PL402	5731-0637173	Lamp
PL403	5731-1407270	Lamp
PL404	5731-1407270	Lamp
PL405	5731-1407270	Lamp
S401	4431-A017163	Push Switch, Tuning Up
S402	4431-A017163	Push Switch, Tuning Down
S403	4431-A017163	Push Switch, Scan
S404	4431-A017163	Push Switch, FM/AM
S405	4431-A017163	Push Switch, Mono
S406	4431-A017163	Push Switch, Dolby NR
S407	4431-A017163	Push Switch, Preset M1
S408	4431-A017163	Push Switch, Preset M2
S409	4431-A017163	Push Switch, Preset M3
S410	4431-A017163	Push Switch, Preset M4
S411	4431-A017163	Push Switch, Preset M5
S412	4431-A017163	Push Switch, Preset M6
S413	4431-A017163	Push Switch, Loudness
S414	4431-A017163	Push Switch, Memory
S419	4431-A017163	Push Switch, Eject/Clock
	4443-ZZ0667	Connector, Liquid Crystal Display

Ref. No.	Part No.	Description
	PCB-6 TONE CONTROL P. C. BOARD	
	CONTROLS	
VR505/ VR506	5110-104018	100kΩC, Bass
VR507/ VR508	5110-503028	50kΩC, Treble
VR509/ VR510	5110-104038	100kΩW, Fader

NOTE

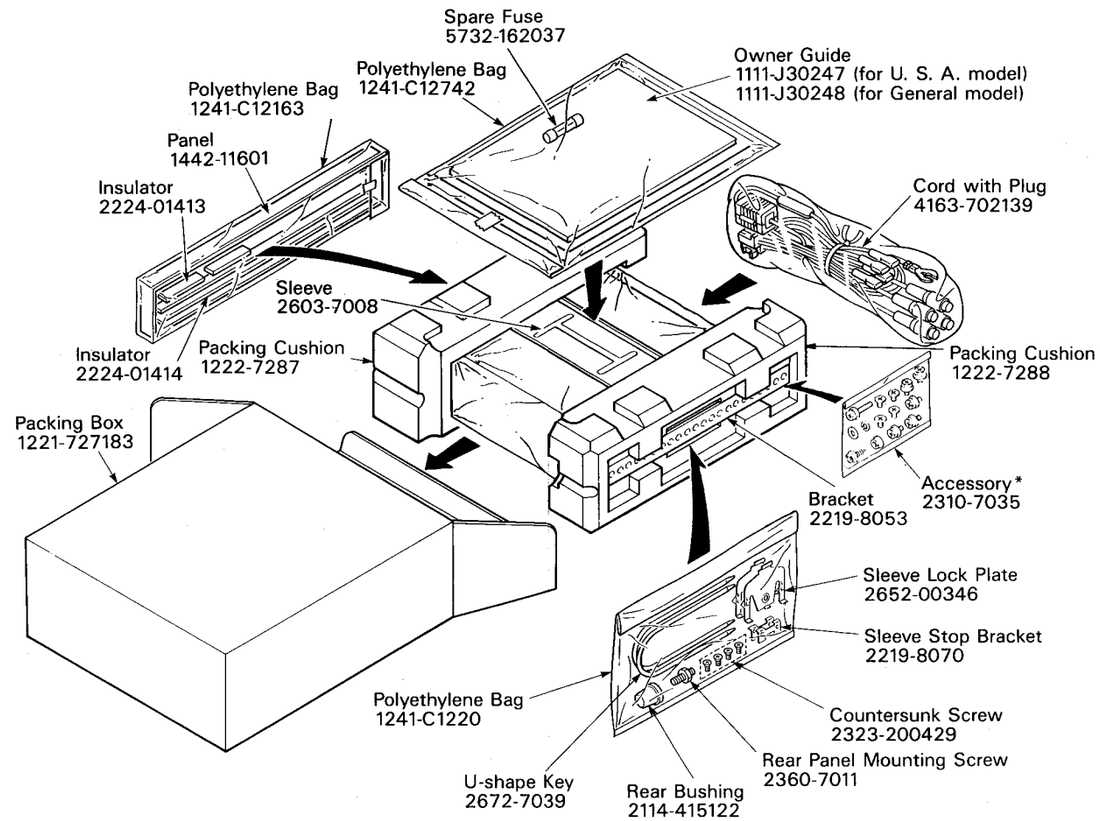
Parts with the following marks are used only in the models intended for particular markets.

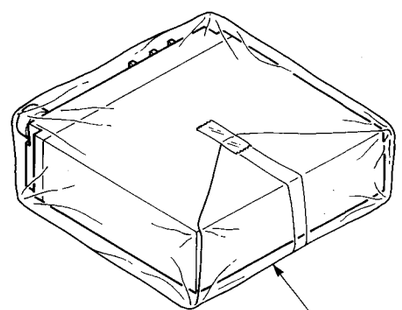
(U): U.S.A. model
(G): General model

KEY TO ABBREVIATIONS

FR : Fuse Resistor
MR : Metal Resistor
CR : Cement Resistor
CAR : Carbon Resistor
EC : Electrolytic Capacitor
PC : Polypropylene Capacitor
MC : Mica Capacitor
CC : Ceramic Capacitor
MPC : Metalized Polyester Capacitor
SPC : Special Capacitor
ZD : Zener Diode
CLW : Connector with Lead Wire

PACKAGE





*Accessory
Flat Washer (1 pc.)
Spring Washer (1 pc.)
Tapping Screw (1 pc.)
Hex. Nut (1 pc.)
Bolt (large) (1 pc.)
Bolt (small) (5 pcs.)
Countersink Bolt (4 pcs.)

Ref. No.	Part No.	Description
C341	5345-106C043	10μF/16V, EC
C342	5345-106C043	10μF/16V, EC
	INTEGRATED CIRCUITS	
IC301	5653-TC9145P	TC9145P
	TRANSISTORS	
Q301	5613-RN1203	RN1203
Q302	5613-2320L(F)	2SC2320L(F)
Q303	5613-2320L(F)	2SC2320L(F)
	MISCELLANEOUS	
CN301	4443-047175	Connector, 4 Pos.
CN302	4443-047175	Connector, 4 Pos.
CN303	4443-077175	Connector, 7 Pos.
CN304	4443-067175	Connector, 6 Pos.
LCN503	4163-0415018	CLW, 4 Pos.

PCB-5 LCD P. C. BOARD

	INTEGRATED CIRCUITS	
IC401	5654-9302F09	TC9302F-009
	TRANSISTORS	
Q401	5613-2603(E)	2SC2603(E) or (F)
Q402	5611-RN2203	RN2203
Q403	5613-2603(E)	2SC2603(E) or (F)
	DIODES	
D402	5631-ISS133	ISS133
D403	5631-ISS133	ISS133
D404	5631-ISS133	ISS133
D405	5631-ISS133	ISS133
D406	5631-ISS133	ISS133
D407	5631-ISS133	ISS133
D408	5631-ISS133	ISS133
D409	5631-ISS133	ISS133
D410	5631-ISS133	ISS133
D411	5631-ISS133	ISS133
D412	5631-ISS133	ISS133
D413	5631-ISS133	ISS133
D416	5631-ISS133	ISS133
D417	5631-ISS133	ISS133 (G)
	MISCELLANEOUS	
LCD1	5791-CA4D1021	Liquid Crystal Display
X401	5691-00720022	Crystal Osc.
VC401	5371-610	Trimmer Capacitor
PL401	5731-0637173	Lamp
PL402	5731-0637173	Lamp
PL403	5731-1407270	Lamp
PL404	5731-1407270	Lamp
PL405	5731-1407270	Lamp
S401	4431-A017163	Push Switch, Tuning Up
S402	4431-A017163	Push Switch, Tuning Down
S403	4431-A017163	Push Switch, Scan
S404	4431-A017163	Push Switch, FM/AM
S405	4431-A017163	Push Switch, Mono
S406	4431-A017163	Push Switch, Dolby NR
S407	4431-A017163	Push Switch, Preset M1
S408	4431-A017163	Push Switch, Preset M2
S409	4431-A017163	Push Switch, Preset M3
S410	4431-A017163	Push Switch, Preset M4
S411	4431-A017163	Push Switch, Preset M5
S412	4431-A017163	Push Switch, Preset M6
S413	4431-A017163	Push Switch, Loudness
S414	4431-A017163	Push Switch, Memory
S419	4431-A017163	Push Switch, Eject/Clock
	4443-ZZ0667	Connector, Liquid Crystal Display

Ref. No.	Part No.	Description

PCB-6 TONE CONTROL P. C. BOARD

	CONTROLS	
VR505/ VR506	5110-104018	100kΩC, Bass
VR507/ VR508	5110-503028	50kΩC, Treble
VR509/ VR510	5110-104038	100kΩW, Fader

NOTE

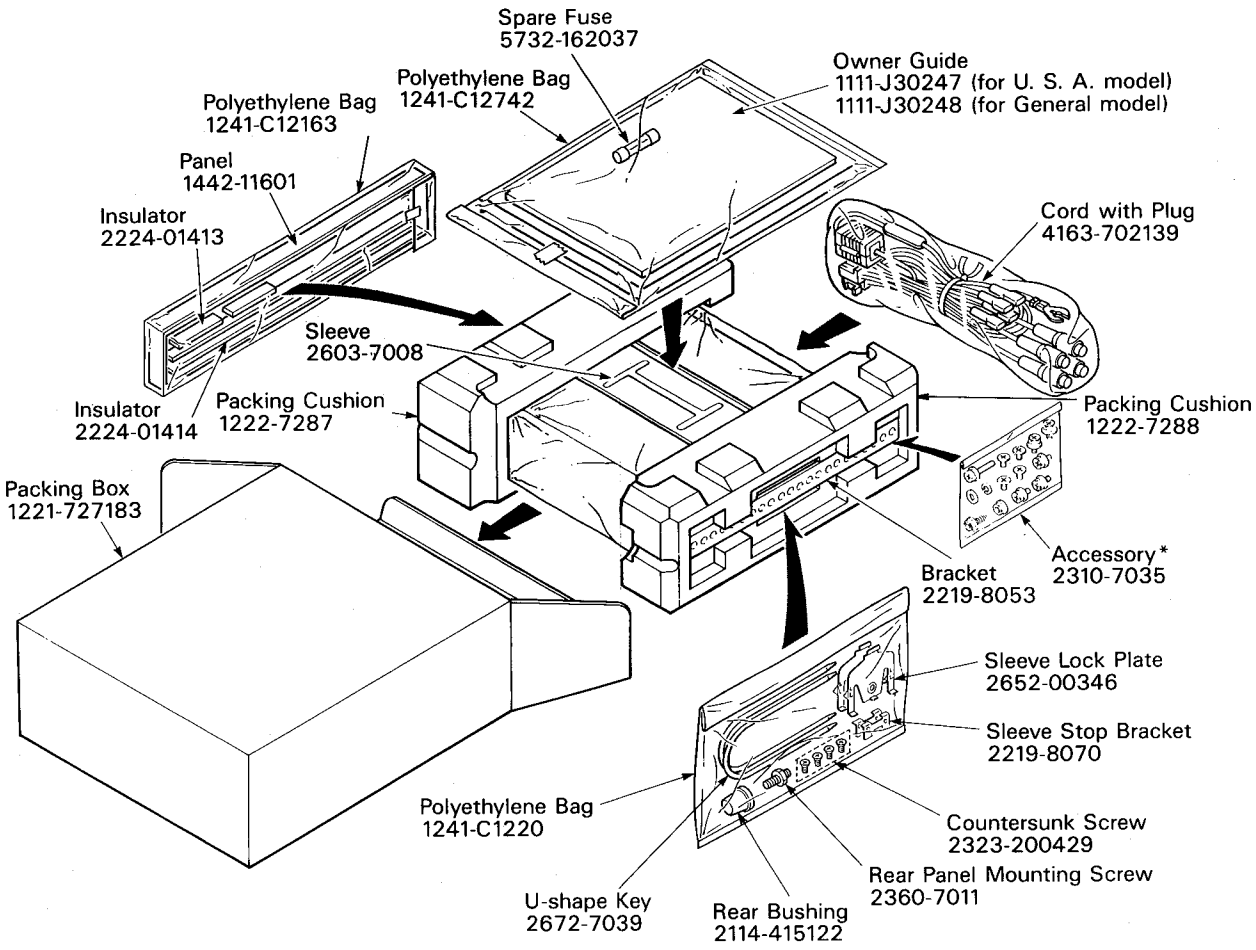
Parts with the following marks are used only in the models intended for particular markets.

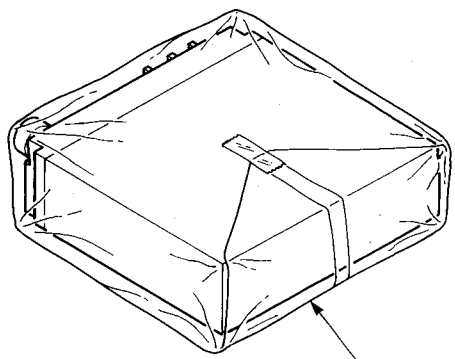
(U): U.S.A. model
(G): General model

KEY TO ABBREVIATIONS

FR : Fuse Resistor
MR : Metal Resistor
CR : Cement Resistor
CAR : Carbon Resistor
EC : Electrolytic Capacitor
PC : Polypropylene Capacitor
MC : Mica Capacitor
CC : Ceramic Capacitor
MPC : Metalized Polyester Capacitor
SPC : Special Capacitor
ZD : Zener Diode
CLW : Connector with Lead Wire

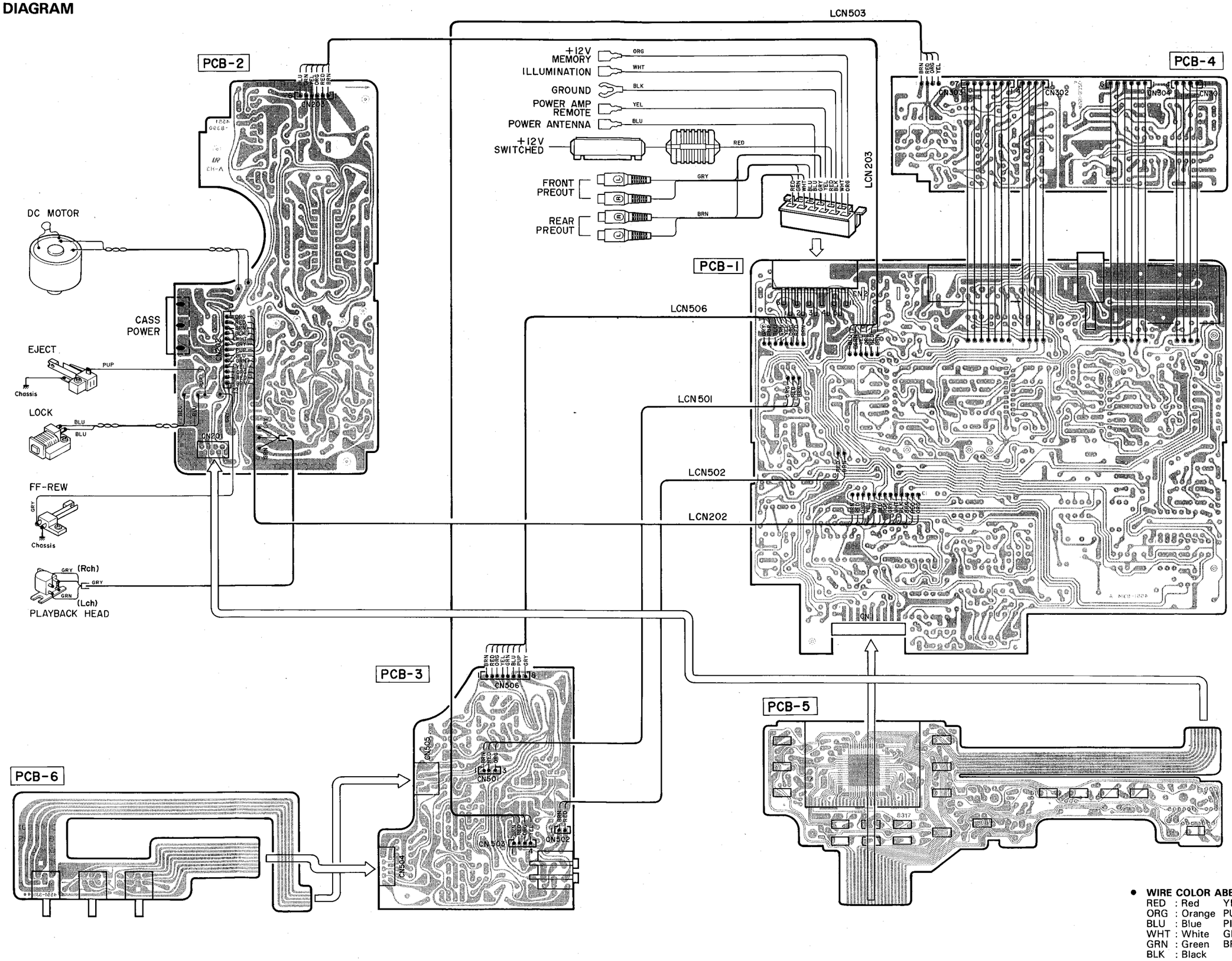
PACKAGE





*Accessory
Flat Washer (1 pc.)
Spring Washer (1 pc.)
Tapping Screw (1 pc.)
Hex. Nut (1 pc.)
Bolt (large) (1 pc.)
Bolt (small) (5 pcs.)
Countersink Bolt (4 pcs.)

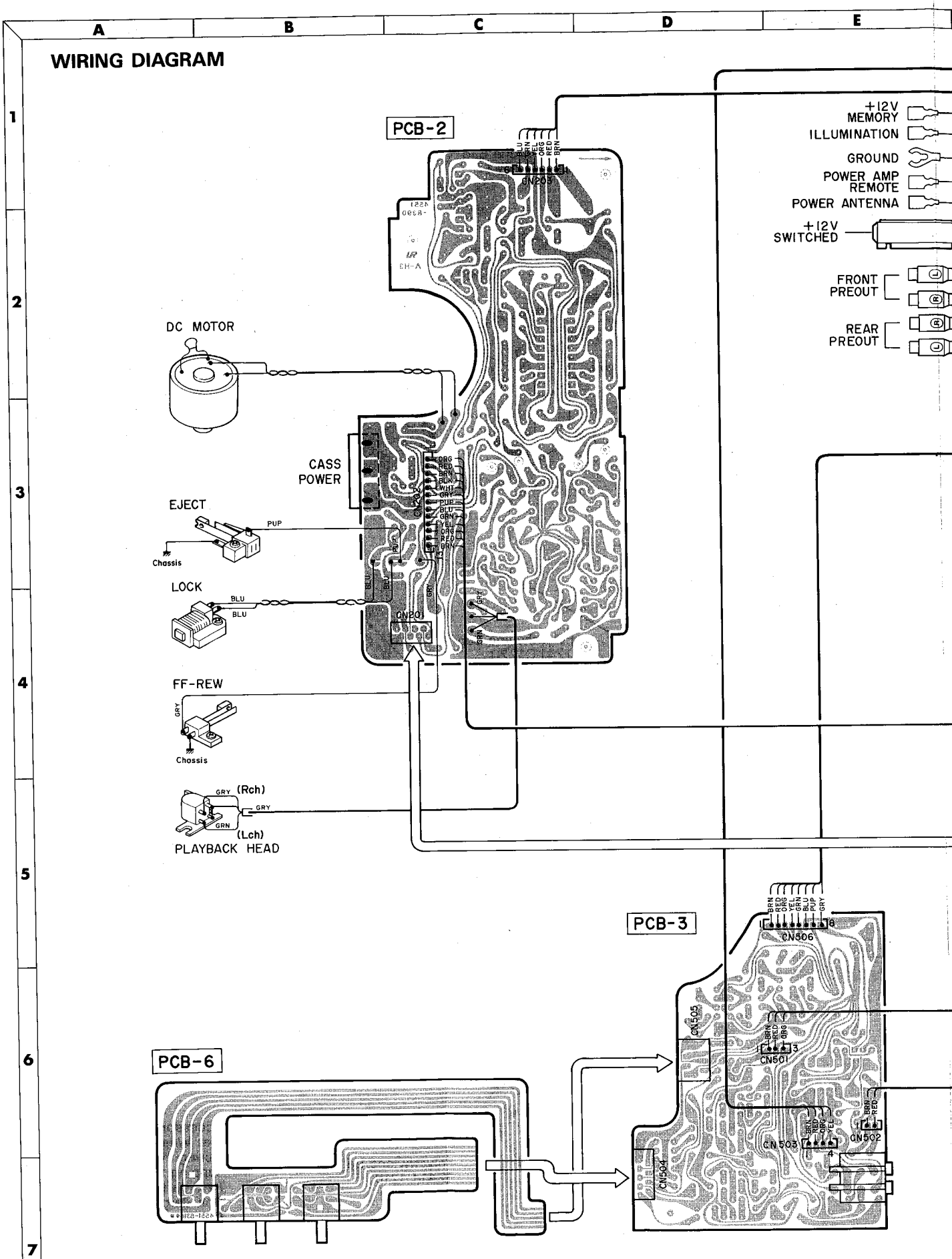
WIRING DIAGRAM

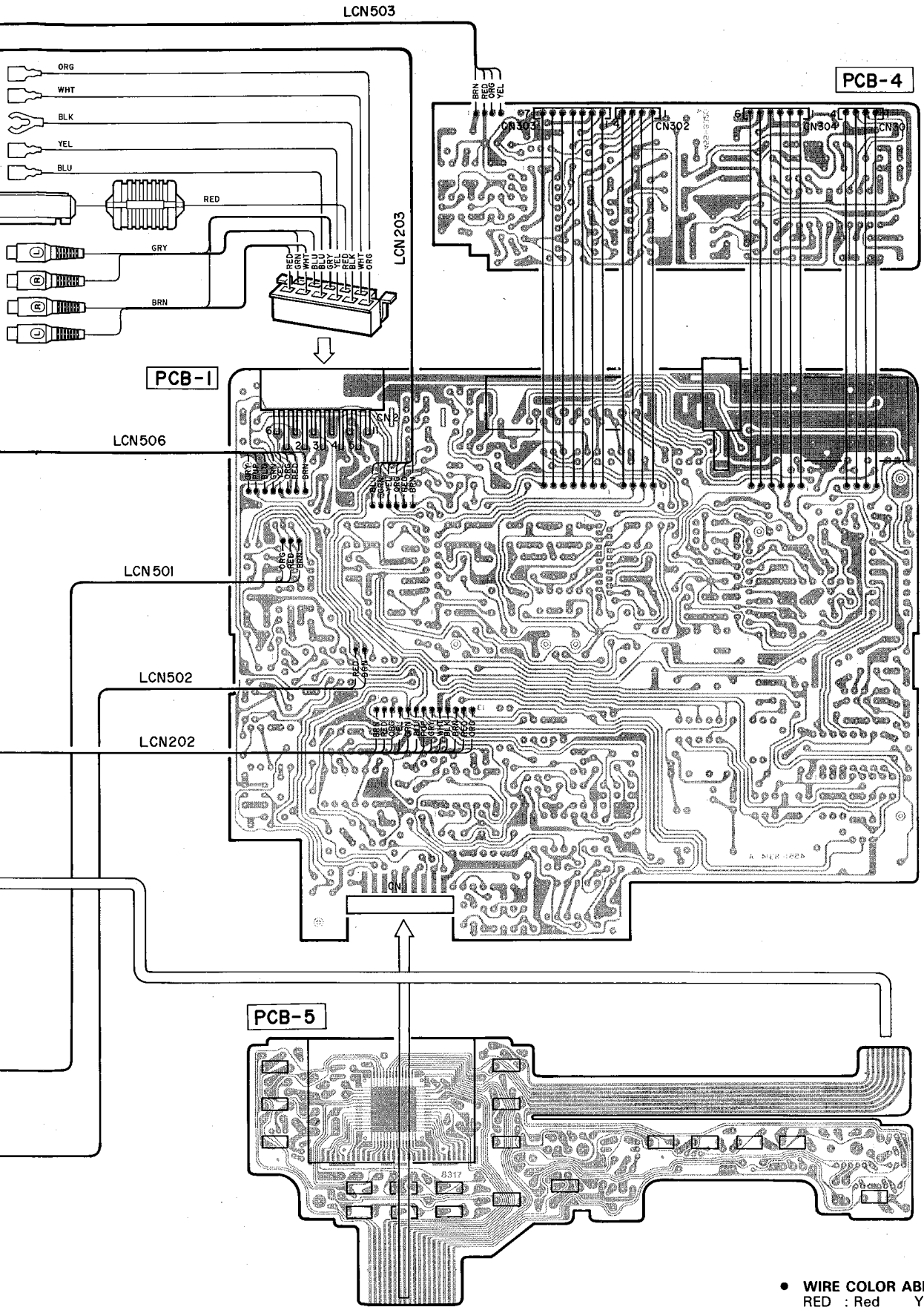


- **WIRE COLOR ABBREVIATIONS**

RED	: Red	YEL	: Yellow
ORG	: Orange	PUP	: Purple
BLU	: Blue	PIK	: Pink
WHT	: White	GRY	: Gray
GRN	: Green	BRN	: Brown
BLK	: Black		

WIRING DIAGRAM





- **WIRE COLOR ABBREVIATIONS**

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ORG	: Orange	PUP	: Purple
BLU	: Blue	PIK	: Pink
WHT	: White	GRY	: Gray
GRN	: Green	BRN	: Brown
BLK	: Black		

SCHEMATIC DIAGRAM

PCB-1
PCB-2
PCB-3
PCB-4
PCB-5
PCB-6

PLAYBACK FREQUENCY CHARACTERISTIC ADJ.
DOLBY NR LEVEL ADJ.
SEPARATION ADJ.
FM IF ADJ.
SUB-CARRIR REJECTION ADJ.
STANDARD FREQUENCY ADJ.
RADIO SWITCH
VOLUME
BALANCE
BASS
TREBLE
FADER

IC101 TA7411AP
IC102 TA7409P
IC103 TA7413AP
IC201 TA7719P
IC301 C9145P
IC401 TC9302F-009
IC501 TC4066BP
IC6 TC9173P
IC7 TC9172P
IC8 TA7362P
IC3 TC4011BP
IC5 TC4013BP

TU101 FM TUNER FE309 6114-7137
TU102 AM TUNER AE308 6110-3
LCD1 DISPLAY
X401 7.22MHz

PLULGER
EJECT
FF/REW
CASS. SWITCH
DC MOTOR
TUNE UP
SCAN
FM/AM
LOUD
M1 M2 M3 M4 M5 M6
MEMO
EJECT CLOCK
TUNE DOWN/70AS
DOLBY
MONO
ILLUMINATION

General model only
For General model 470
For General model 680
For General model 7136
For General model 0 012

S0101 ANT

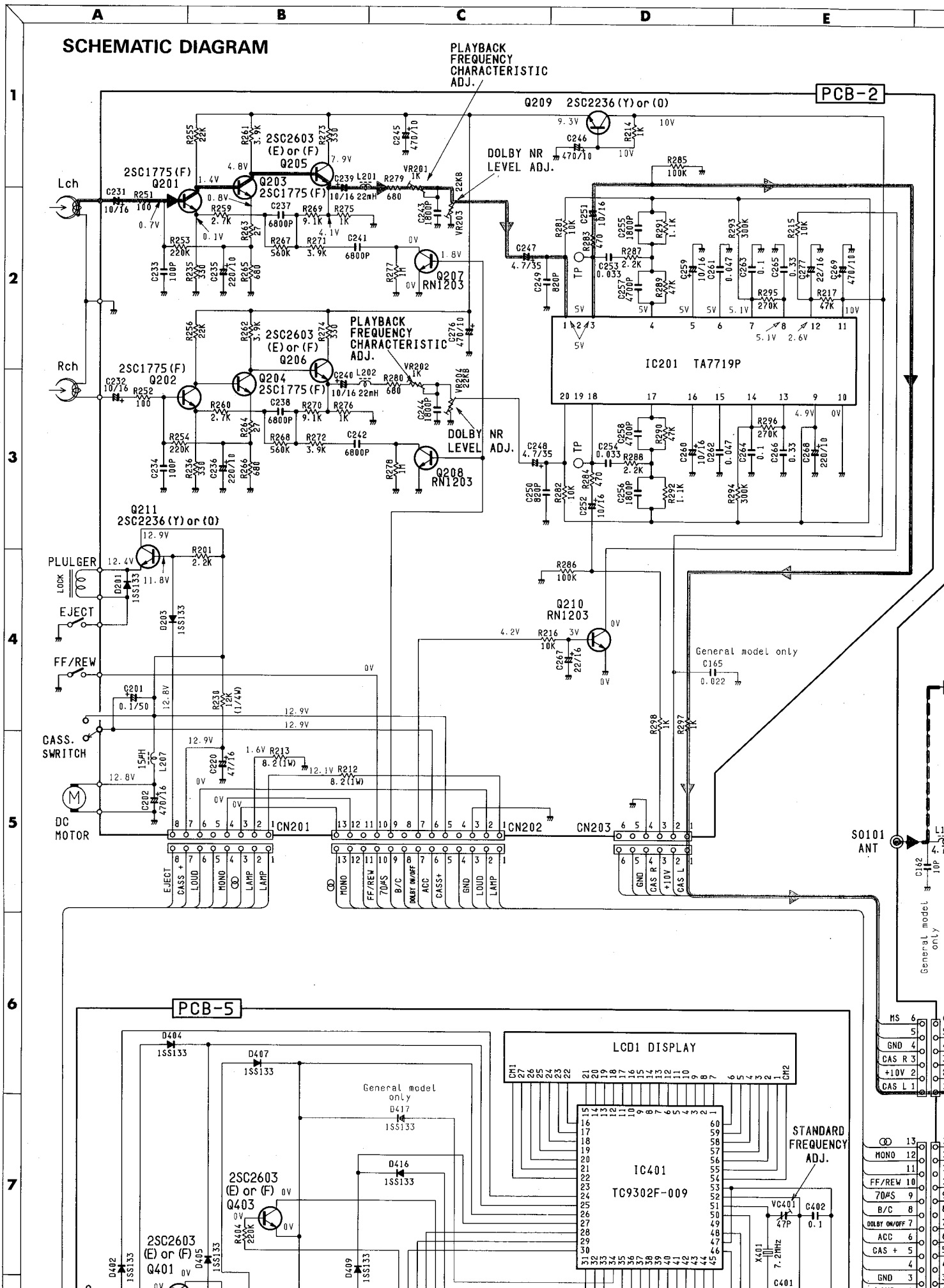
CN101 CN102 CN103 CN104 CN105 CN106 CN107 CN108 CN109 CN110 CN111 CN112 CN113 CN114 CN115 CN116 CN117 CN118 CN119 CN120 CN121 CN122 CN123 CN124 CN125 CN126 CN127 CN128 CN129 CN130 CN131 CN132 CN133 CN134 CN135 CN136 CN137 CN138 CN139 CN140 CN141 CN142 CN143 CN144 CN145 CN146 CN147 CN148 CN149 CN150 CN151 CN152 CN153 CN154 CN155 CN156 CN157 CN158 CN159 CN160 CN161 CN162 CN163 CN164 CN165 CN166 CN167 CN168 CN169 CN170 CN171 CN172 CN173 CN174 CN175 CN176 CN177 CN178 CN179 CN180 CN181 CN182 CN183 CN184 CN185 CN186 CN187 CN188 CN189 CN190 CN191 CN192 CN193 CN194 CN195 CN196 CN197 CN198 CN199 CN200 CN201 CN202 CN203 CN301 CN302 CN303 CN304 CN501 CN502 CN503

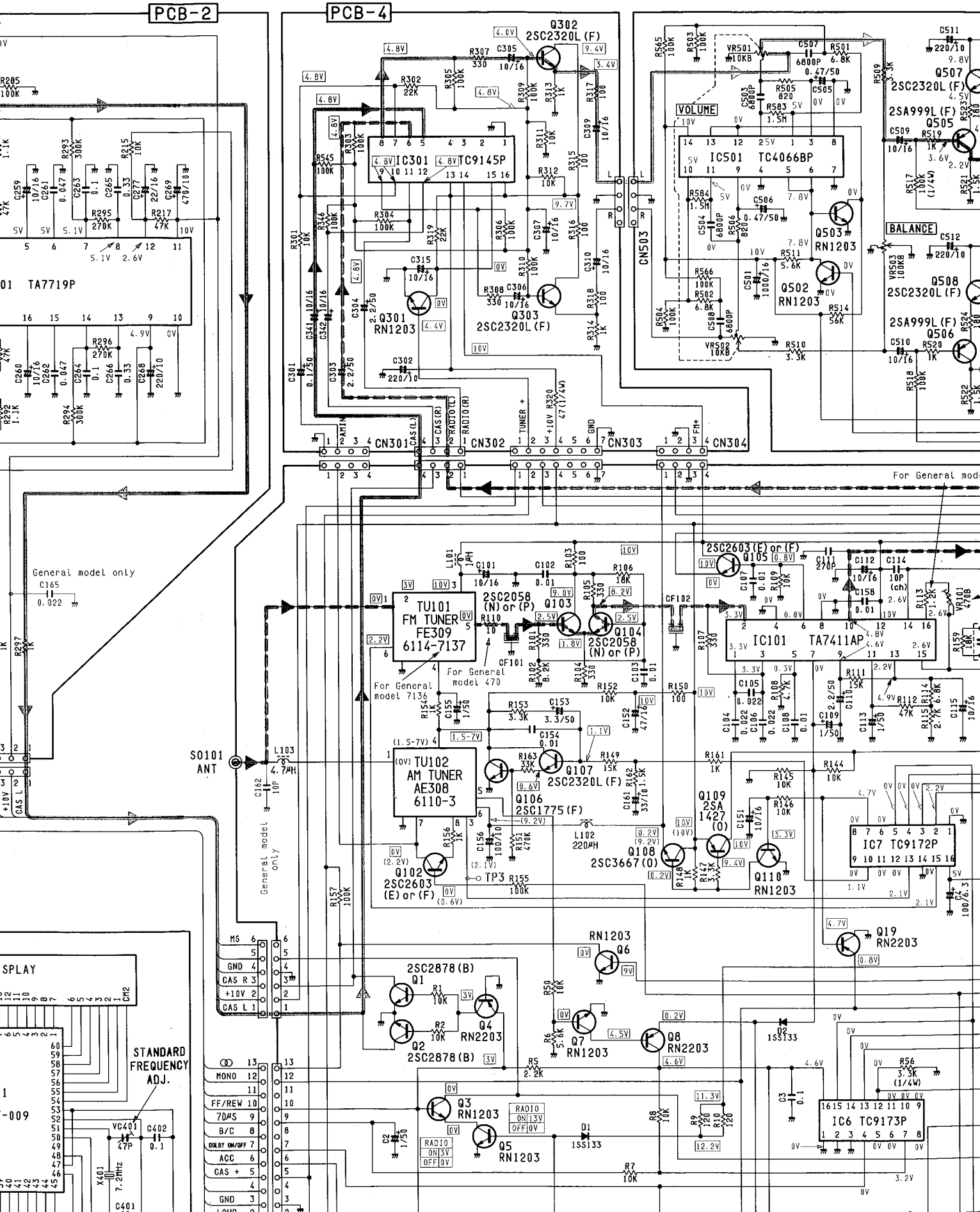
Rear PREOUT L R
Front PREOUT R L
BACK UP GND POWER AMP REMOTE POWER ANT Acc +B

.....FM SIGNAL
.....PLAYBACK SIGNAL

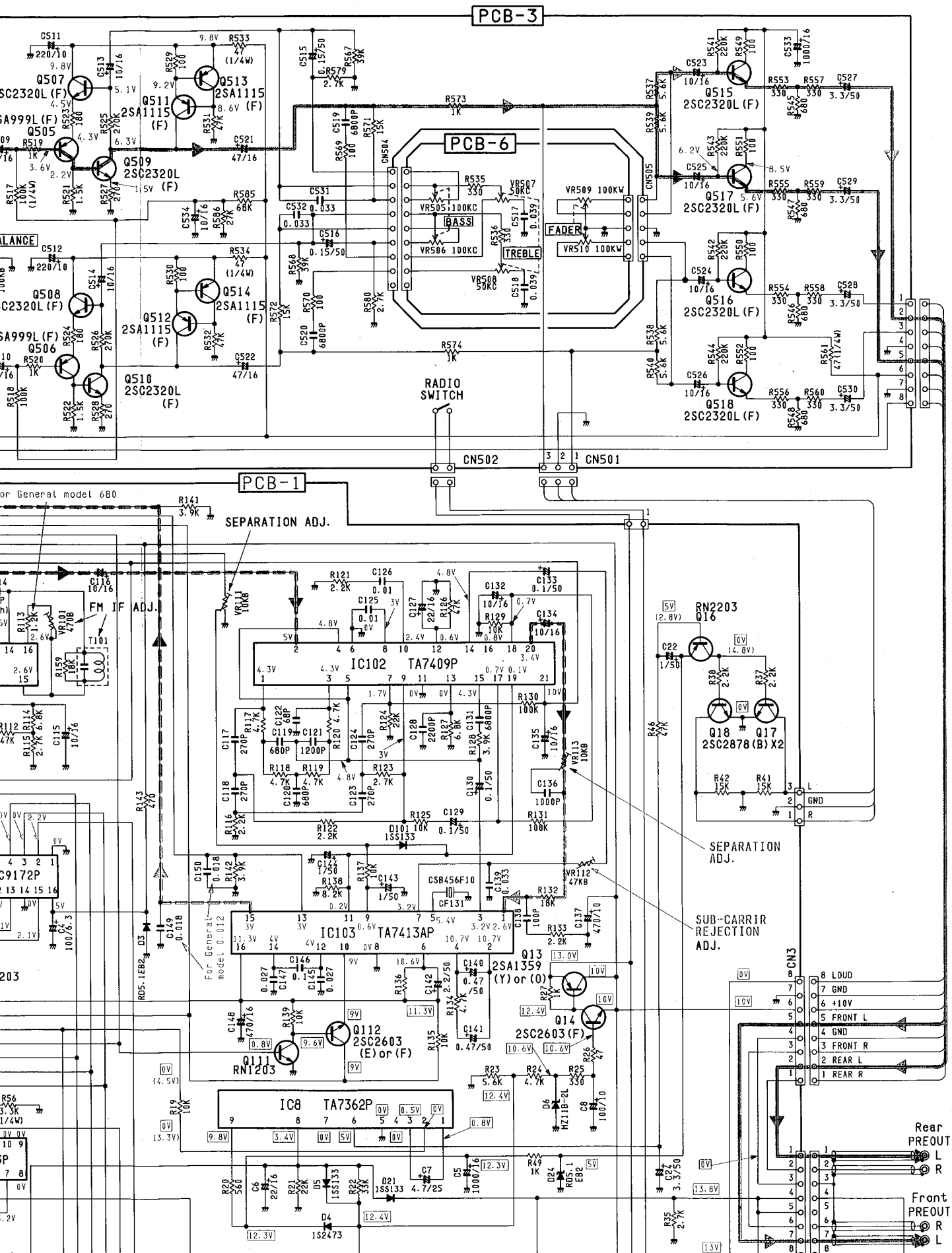
NOTE:
1. ALL RESISTANCES VALUES ARE IN Ω. KΩ=1000Ω. MΩ=1000KΩ.
2. THE WATTAGE OF RESISTORS IS 1/6W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. P=μμF.
4. V:DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
5. ⚠ SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGNAL PARTS.

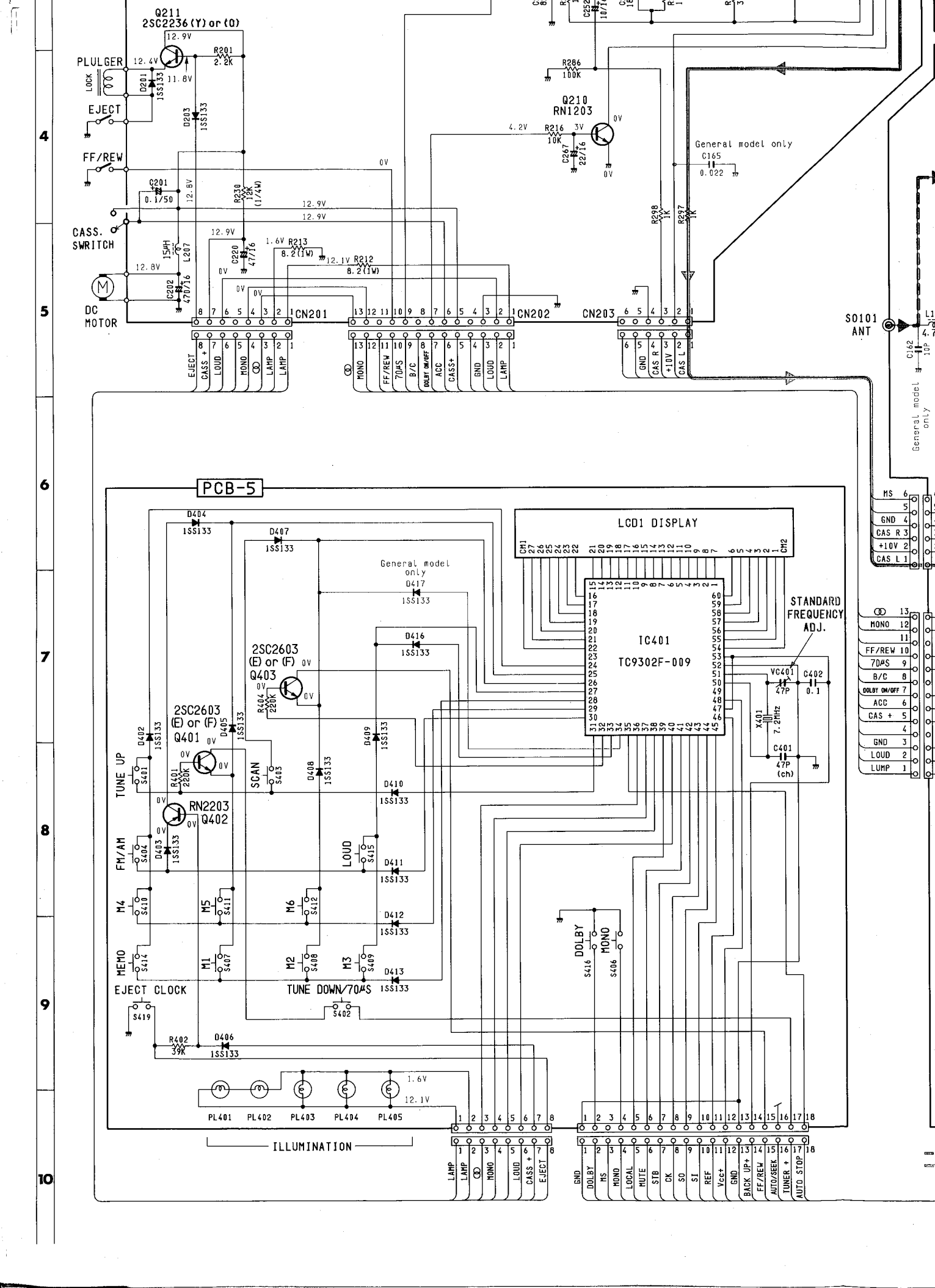
SCHEMATIC DIAGRAM

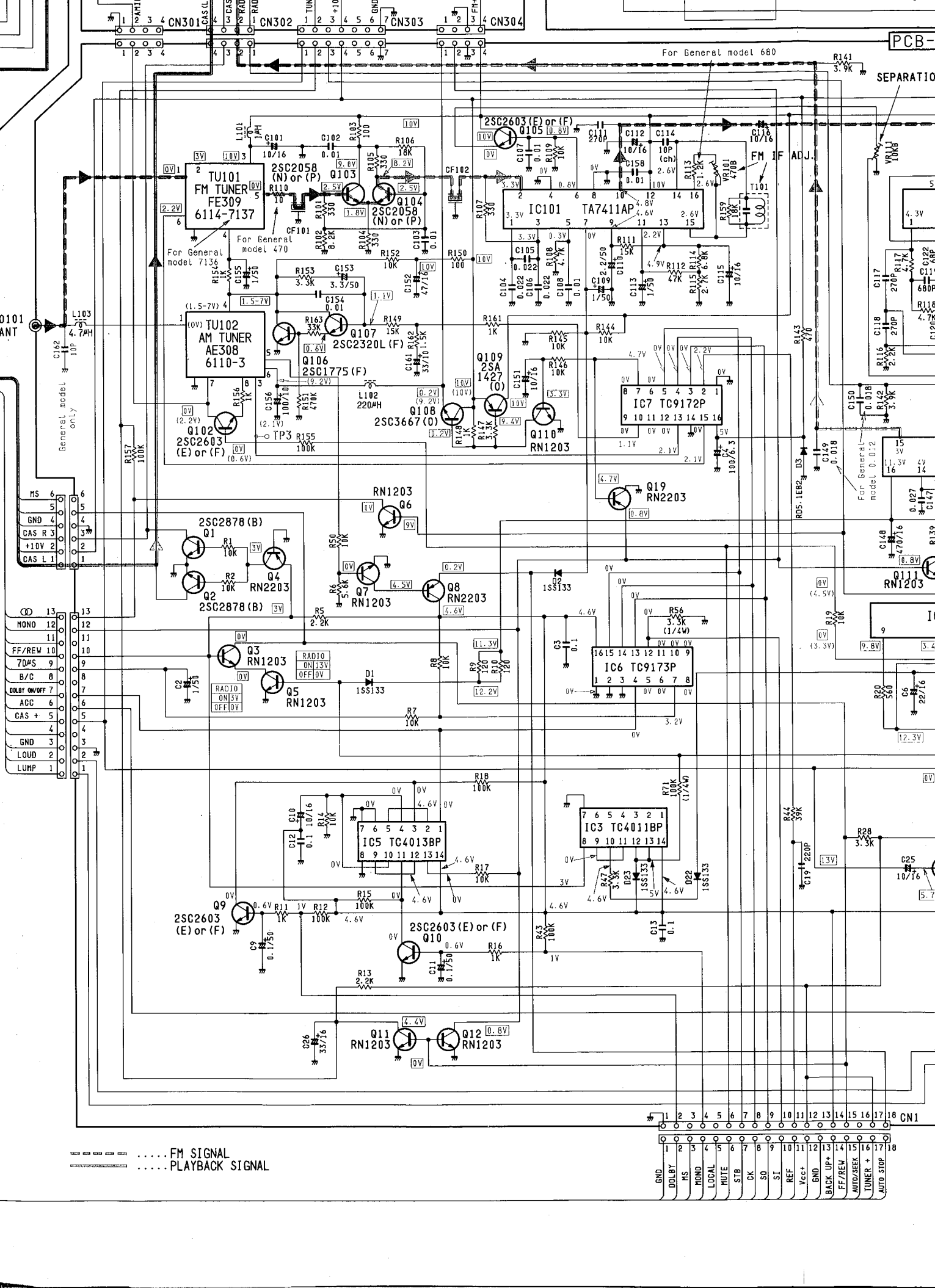


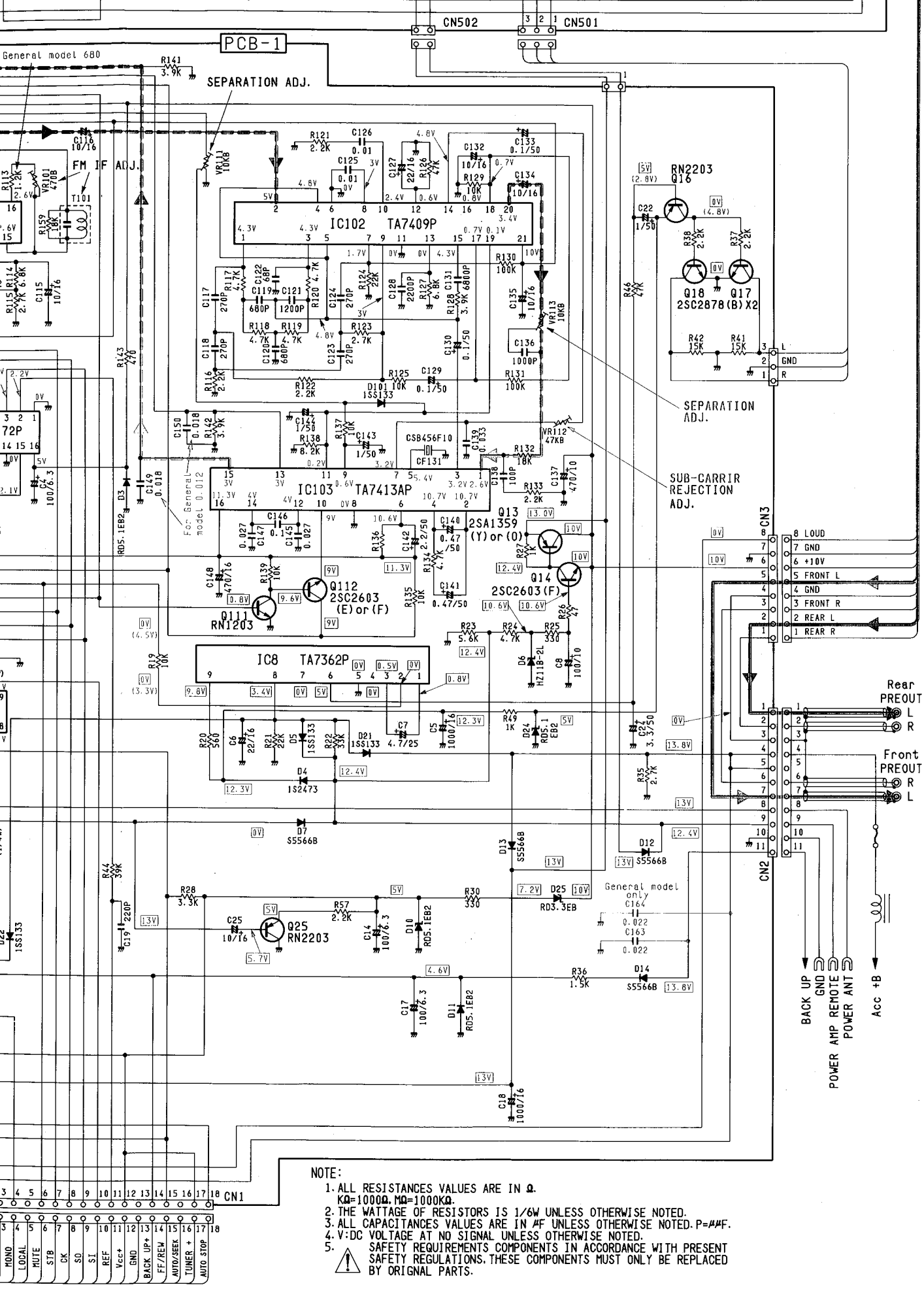

PCB-2
PCB-4
Q302 2SC2320L (F)
IC301 TC9145P
IC501 TC4066BP
VOLUME
BALANCE
Q503 RN1203
Q502 RN1203
Q507 2SC2320L (F)
Q505 2SA999L (F)
Q508 2SC2320L (F)
Q506 2SA999L (F)
Q301 RN1203
Q303 2SC2320L (F)
CN301
CN302
CN303
CN304
CN503
TU101 FM TUNER FE309 6114-7137
TU102 AM TUNER AE308 6110-3
IC101 TA7411AP
IC7 TC9172P
IC6 TC9173P
2SC2603 (E) or (F) Q105
2SC2058 (N) or (P) Q103
2SC2058 (N) or (P) Q104
Q106 2SC1775 (F)
Q107 2SC2320L (F)
Q108 2SC3667 (O)
Q109 2SA 1427 (O)
Q110 RN1203
Q102 2SC2603 (E) or (F)
Q19 RN2203
Q1 2SC2878 (B)
Q2 2SC2878 (B)
Q4 RN2203
Q6 RN1203
Q7 RN1203
Q8 RN2203
Q3 RN1203
Q5 RN1203
D1 1SS133
D2 1SS133
IC7 TC7719P
SO101 ANT
L101 1μH
L102 220μH
L103 4.7μH
CF101
CF102
TP3
X401 7.2MHz
VC401 47P
C402 0.1
STANDARD FREQUENCY ADJ.
General model only
For General model 7136
For General model 470
For General mod
SPLAY
MS
GND
CAS R
+10V
CAS L
MONO
FF/REW
7DAS
B/C
DOLBY ON/OFF
ACC
CAS +
GND
RADIO ON 3V OFF 0V
RADIO ON 13V OFF 0V

J K L M N


PCB-3
PCB-6
PCB-1
Q507 2SC2320L (F)
Q505 2SA999L (F)
Q509 2SC2320L (F)
Q511 2SA1115 (F)
Q513 2SA1115 (F)
Q508 2SC2320L (F)
Q506 2SA999L (F)
Q510 2SC2320L (F)
Q512 2SA1115 (F)
Q514 2SA1115 (F)
Q515 2SC2320L (F)
Q517 2SC2320L (F)
Q516 2SC2320L (F)
Q518 2SC2320L (F)
BASS
TREBLE
FADER
RADIO SWITCH
CN502
CN501
CN504
CN505
SEPARATION ADJ.
FM IF ADJ.
IC102 TA7409P
IC103 TA7413AP
IC8 TA7362P
Q13 2SA1359 (Y) or (O)
Q14 2SC2603 (F)
Q112 2SC2603 (E) or (F)
Q111 RN1203
RN2203 Q16
Q18 Q17 2SC2878 (B) X2
CSB456F10 CF131
SUB-CARRIR REJECTION ADJ.
CN3
8 LOUD
7 GND
6 +10V
5 FRONT L
4 GND
3 FRONT R
2 REAR L
1 REAR R
Rear PREOUT L R
Front PREOUT R L
L
GND
R


Q211
2SC2236 (Y) or (O)
PLULGER
LOCK
EJECT
FF/REW
CASS.
SWRITCH
DC
MOTOR
D201 1SS133
D203 1SS133
R201 2.2K
C201 0.1/50
R230 12K (1/4W)
C220 47/16
C202 47/16
L207 15μH
R213 8.2Ω(1W)
R212 8.2Ω(1W)
Q210
RN1203
R216 10K
C267 22/16
R286 100K
R298 1K
R297 1K
C165 0.022
General model only
CN201
CN202
CN203
EJECT
CASS +
LOUD
MONO
LAMP
LAMP
MONO
FF/REW
70μS
B/C
DOLBY ON/OFF
ACC
CASS+
GND
LOUD
LAMP
GND
CAS R
+10V
CAS L
S0101
ANT
C162 10P
PCB-5
LCD1 DISPLAY
IC401
TC9302F-009
STANDARD
FREQUENCY
ADJ.
VC401 47P
C402 0.1
X401 7.2MHz
C401 47P (ch)
MS
GND
CAS R
+10V
CAS L
MONO
FF/REW
70μS
B/C
DOLBY ON/OFF
ACC
CAS +
GND
LOUD
LUMP
D404 1SS133
D407 1SS133
D417 1SS133
D416 1SS133
2SC2603
(E) or (F)
Q403
R404 220K
2SC2603
(E) or (F)
Q401
R401 220K
RN2203
Q402
TUNE UP
SCAN
FM/AM
LOUD
M4
M5
M6
MEMO
M1
M2
M3
EJECT CLOCK
TUNE DOWN/70μS
DOLBY
MONO
R402 39K
D406 1SS133
PL401
PL402
PL403
PL404
PL405
1.6V
12.1V
ILLUMINATION
LAMP
LAMP
MONO
MONO
LOUD
CASS +
EJECT
GND
DOLBY
MS
MONO
LOCAL
MUTE
STB
CK
SO
SI
REF
Vcc+
GND
BACK UP+
FF/REW
AUTO/SEEK
TUNER +
AUTO STOP


CN301
CN302
CN303
CN304
PCB-
For General model 680
SEPARATIO
FM IF ADJ.
TU101
FM TUNER
FE309
6114-7137
TU102
AM TUNER
AE308
6110-3
IC101 TA7411AP
IC7 TC9172P
IC6 TC9173P
IC5 TC4013BP
IC3 TC4011BP
2SC2058 (N) or (P) Q103
Q104 2SC2058 (N) or (P)
2SC2603 (E) or (F) Q105
Q106 2SC1775 (F)
Q107 2SC2320L (F)
Q108 2SC3667 (O)
Q109 2SA 1427 (O)
Q110 RN1203
Q111 RN1203
Q102 2SC2603 (E) or (F)
Q1 2SC2878 (B)
Q2 2SC2878 (B)
Q3 RN1203
Q4 RN2203
Q5 RN1203
Q6 RN1203
Q7 RN1203
Q8 RN2203
Q9 2SC2603 (E) or (F)
Q10 2SC2603 (E) or (F)
Q11 RN1203
Q12 RN1203
Q19 RN2203
For General model 7136
For General model 470
For General model 0.012
General model only
CF101
CF102
TP3
L101 1μH
L102 220μH
L103 4.7μH
D1 1SS133
D2 1SS133
D3 RD5.1EB2
D22 1SS133
D23 1SS133
MS
GND
CAS R
+10V
CAS L
MONO
FF/REW
70μS
B/C
DOLBY ON/OFF
ACC
CAS +
GND
LOUD
LUMP
RADIO ON 3V OFF 0V
CN1
GND
DOLBY
MS
MONO
LOCAL
MUTE
STB
CK
SO
SI
REF
Vcc+
GND
BACK UP+
FF/REW
AUTO/SEEK
TUNER +
AUTO STOP
..... FM SIGNAL
..... PLAYBACK SIGNAL

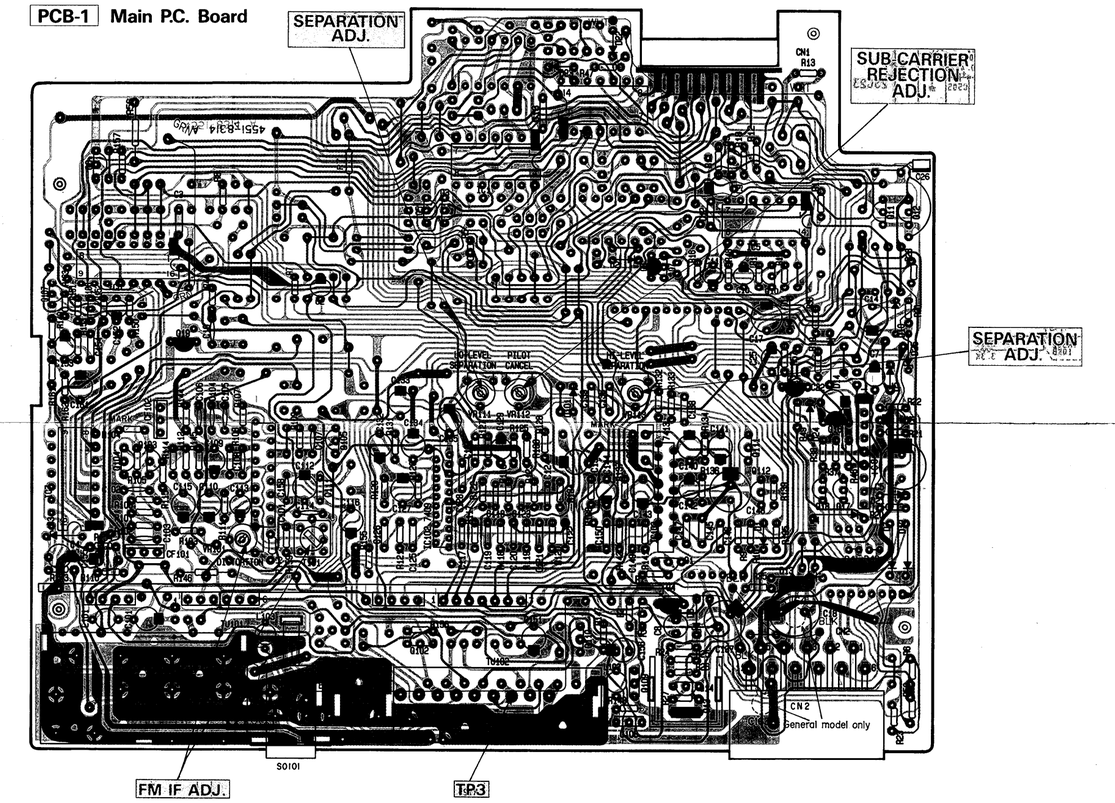


NOTE:

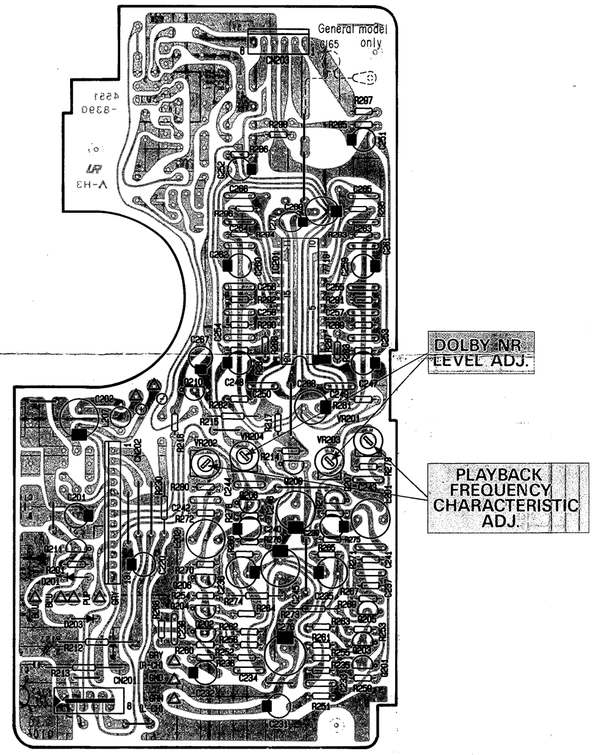
1. ALL RESISTANCES VALUES ARE IN Ω.
   KΩ=1000Ω. MΩ=1000KΩ.
2. THE WATTAGE OF RESISTORS IS 1/6W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. P=μμF.
4. V:DC VOLTAGE AT NO SIGNAL UNLESS OTHERWISE NOTED.
5. ⚠ SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGNAL PARTS.

P. C. BOARDS

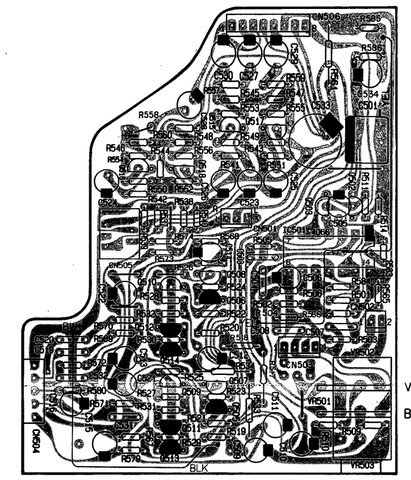
PCB-1 Main P.C. Board



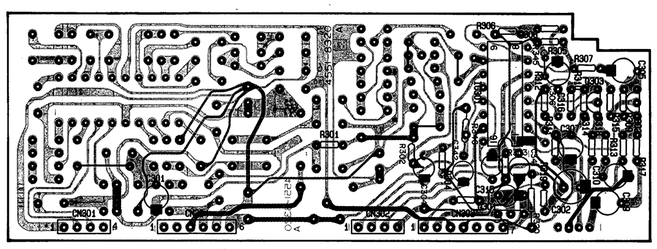
PCB-2 Mecha Control and Dolby NR P.C. Board



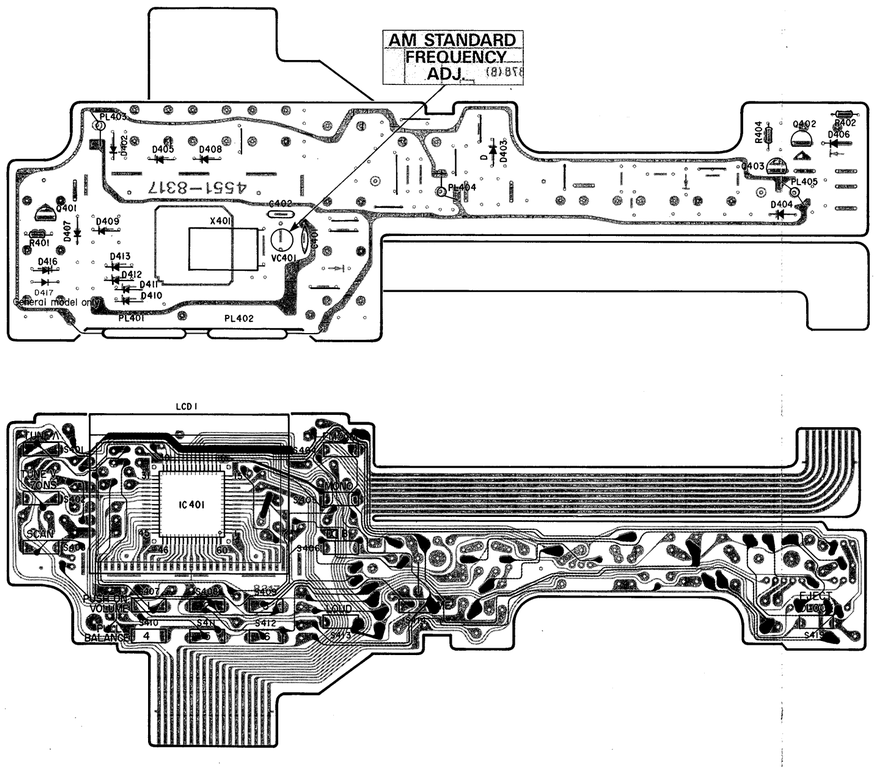
PCB-3 Volume P.C. Board



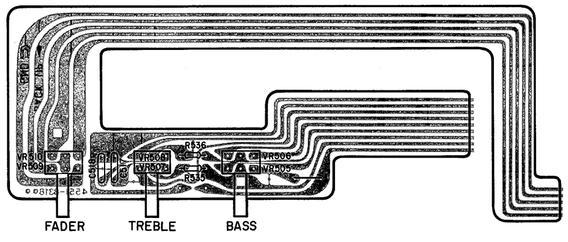
PCB-4 SIG Switching P.C. Board



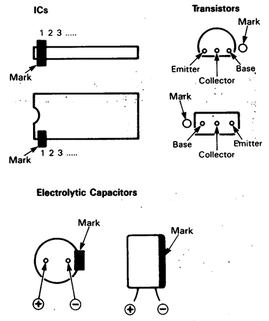
PCB-5 LCD P.C. Board



PCB-6 Tone Control P.C. Board



NOTE:
In the figures of the P. C. Boards, a mark is provided on the base side of the transistor.

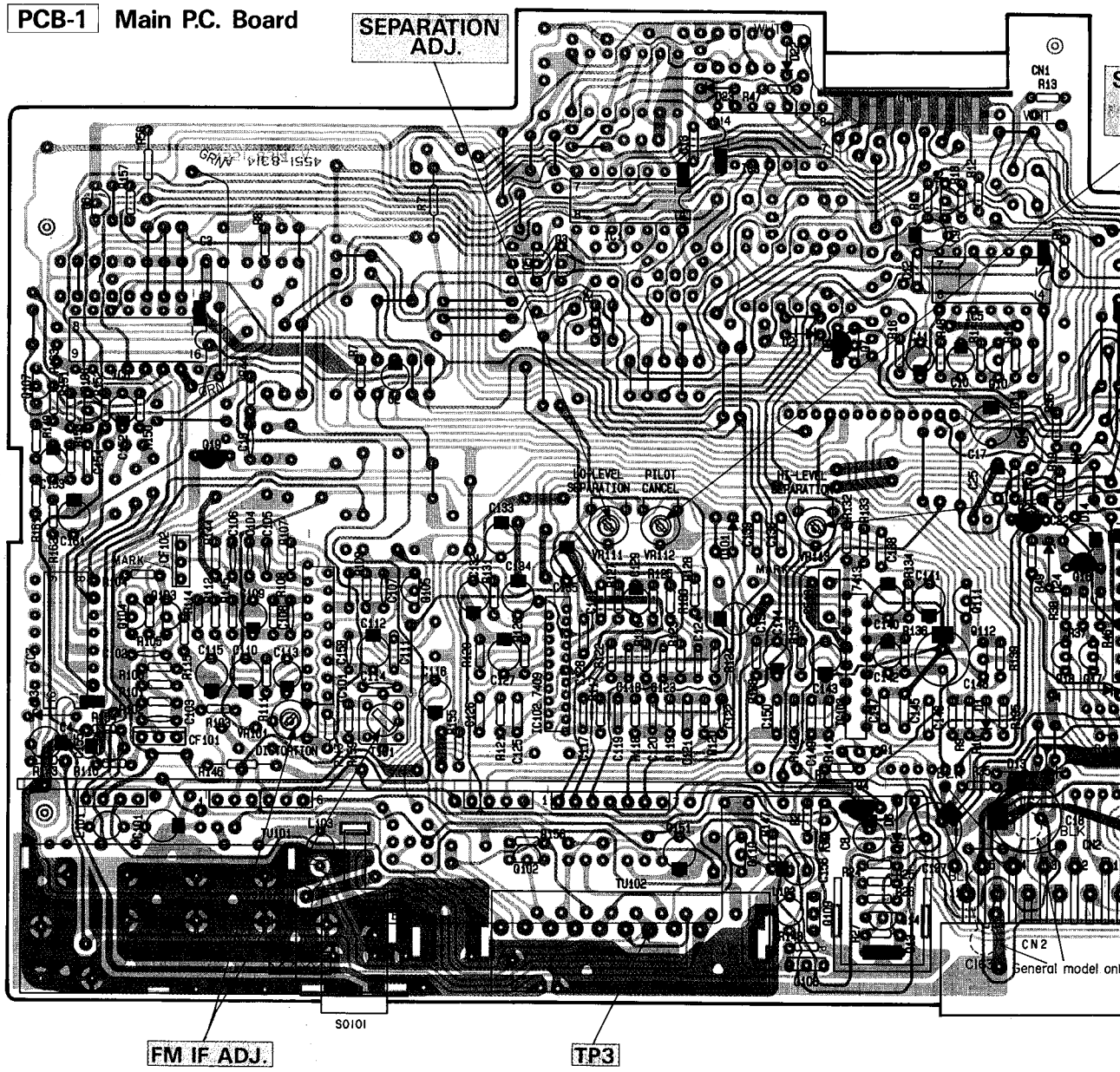


PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS..

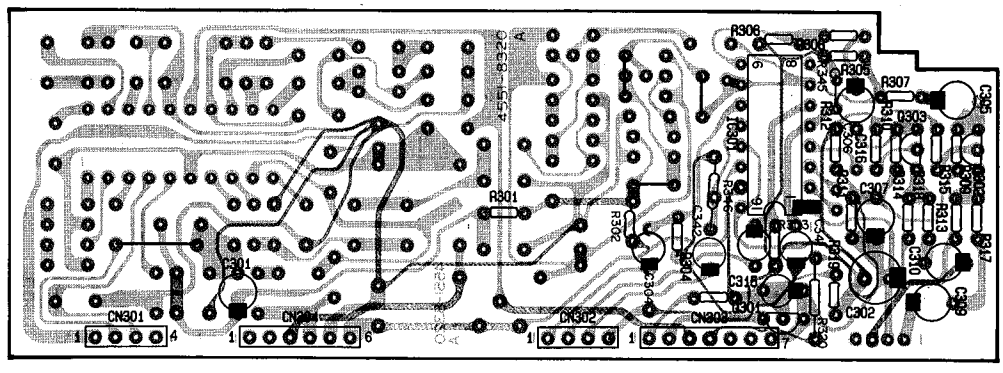
2SC1775 2SC2058 2SC2320L 2SC2236 2SA999L 2SC2878	2SC2603 2SA1115 RN1203 RN2203
2SA1359	2SC3667 2SA1427
HZ11B-2L RD3.3EB S5566B 1S2473 1SS133 RD5.1EB2	TA7362P
TA7411AP TA7413AP	TA7409P
TC4013BP	TC4066BP TC4011BP
TC9145P TC9172P TC9173P	TA7719P
TC9302F-009	

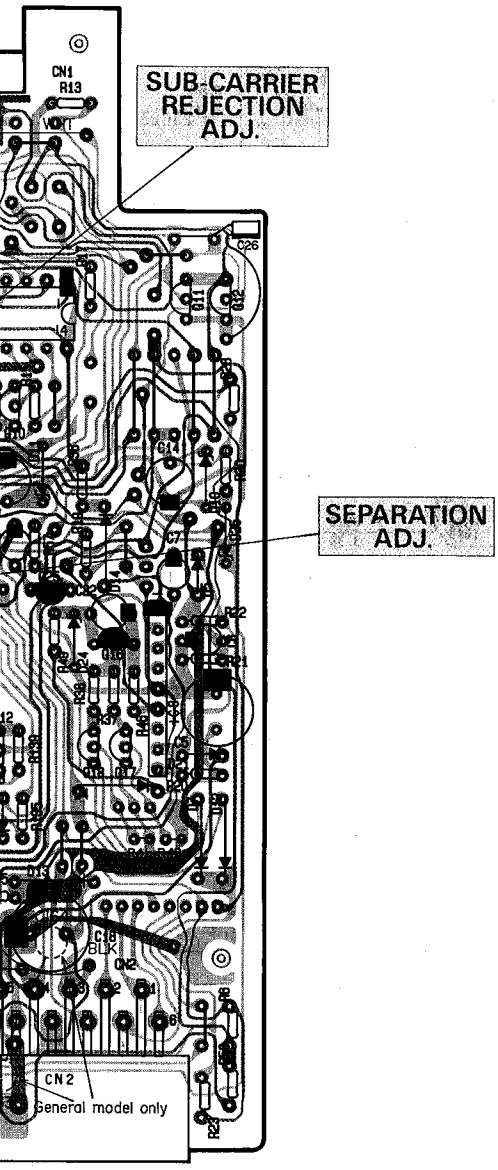
P. C. BOARDS

PCB-1 Main P.C. Board

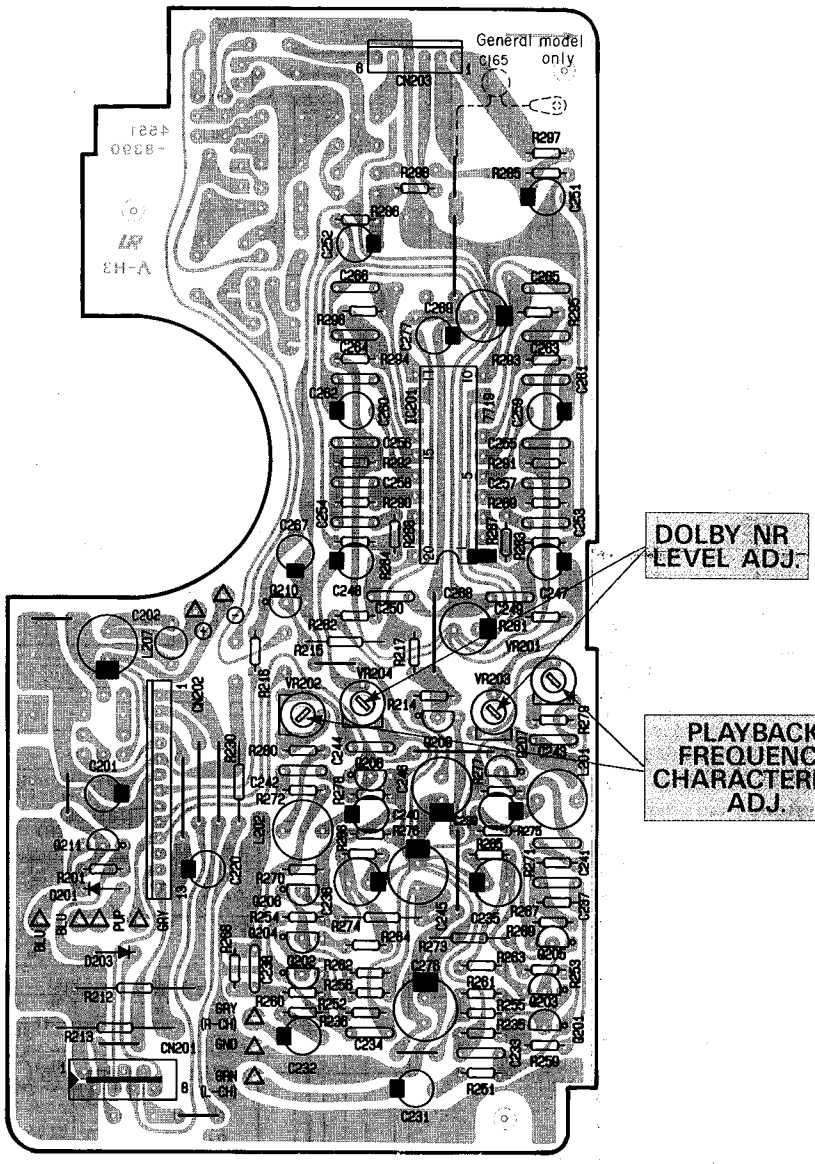


PCB-4 SIG Switching P.C. Board

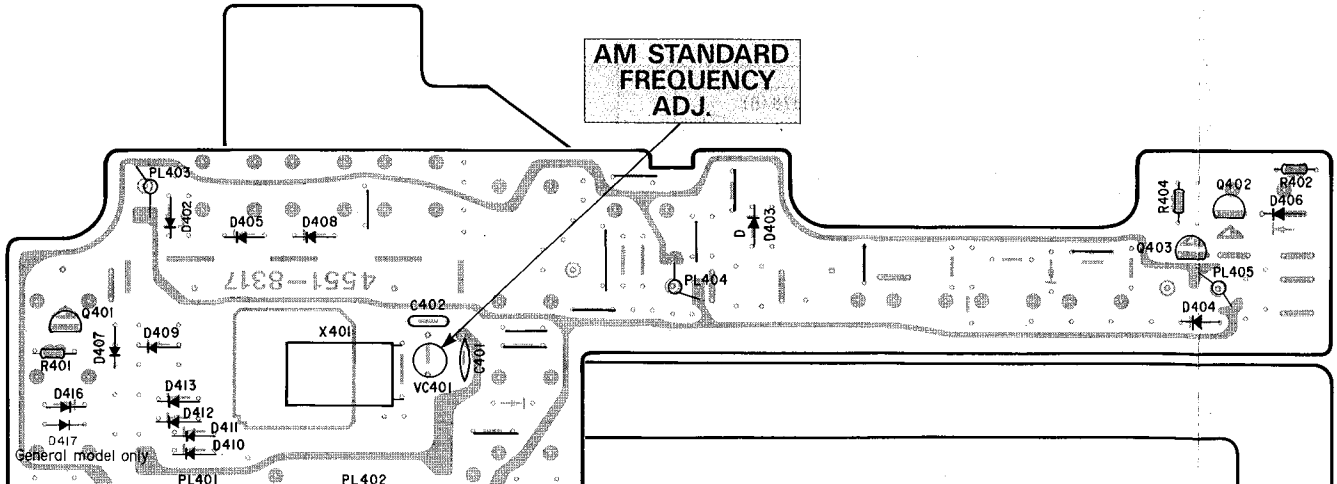




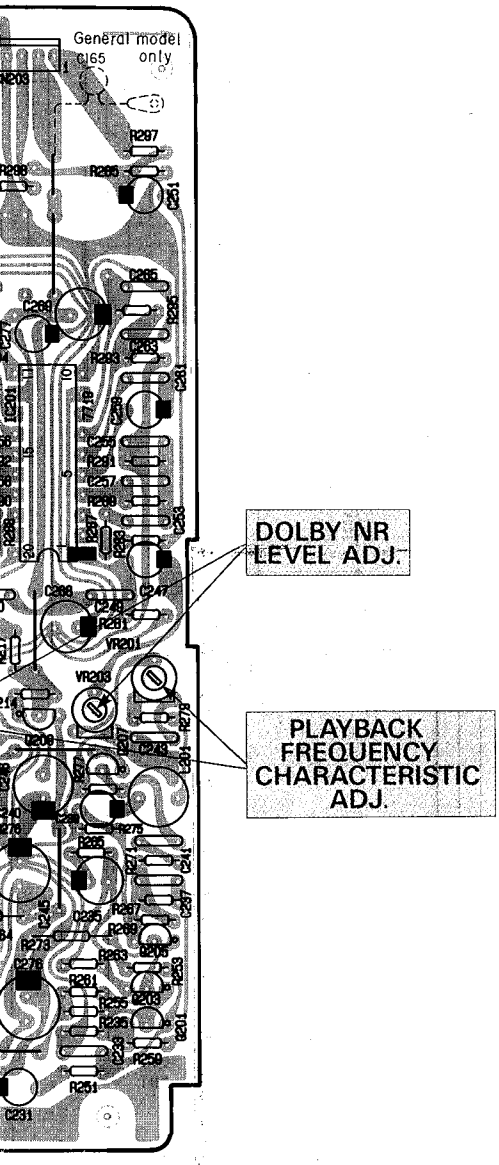
PCB-2 Mecha Control and Dolby NR P.C. Board

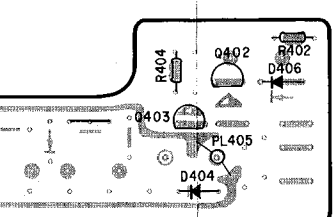


PCB-5 LCD P.C. Board

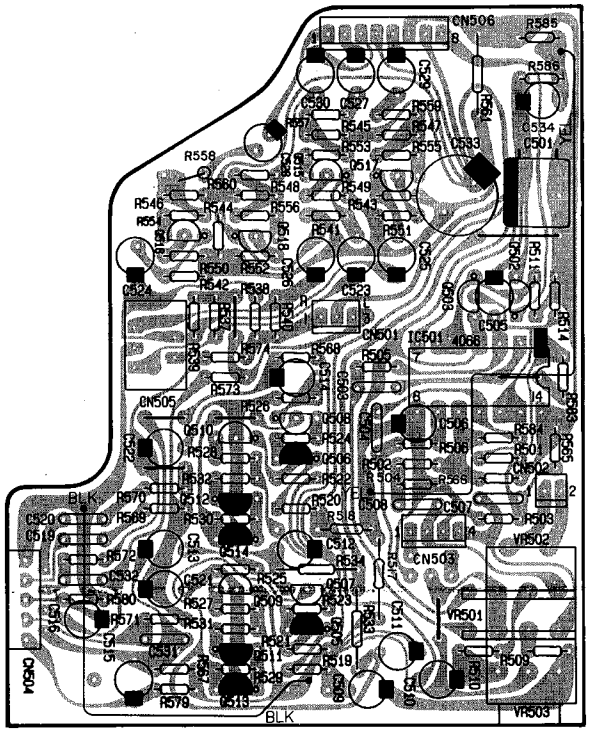


and Dolby

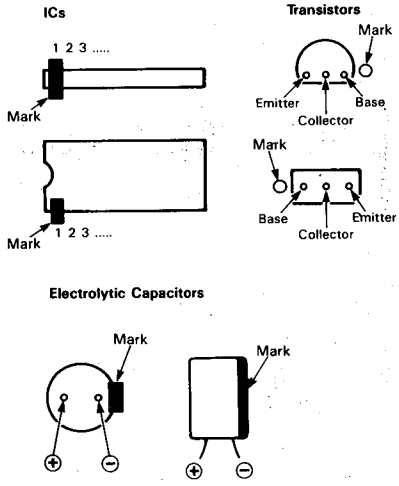




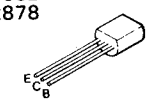
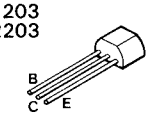
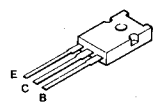
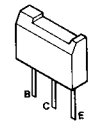
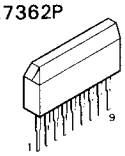
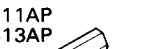
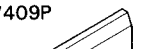
PCB-3 Volume P.C. Board

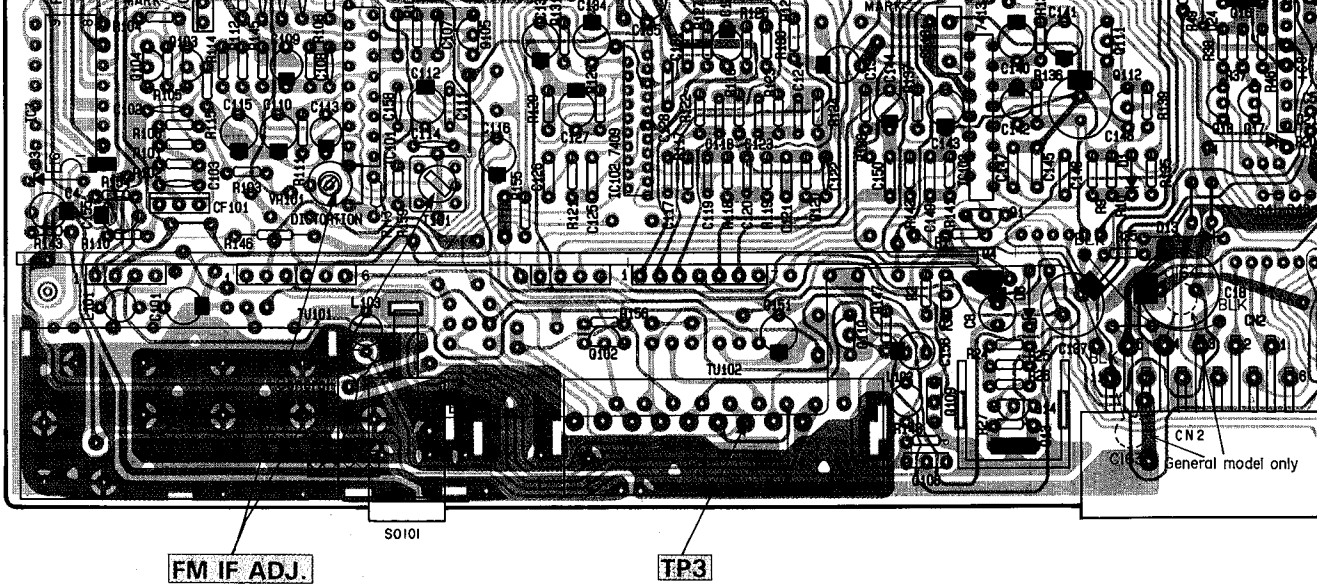


NOTE:
In the figures of the P. C. Boards, a mark is provided on the base side of the transistor.



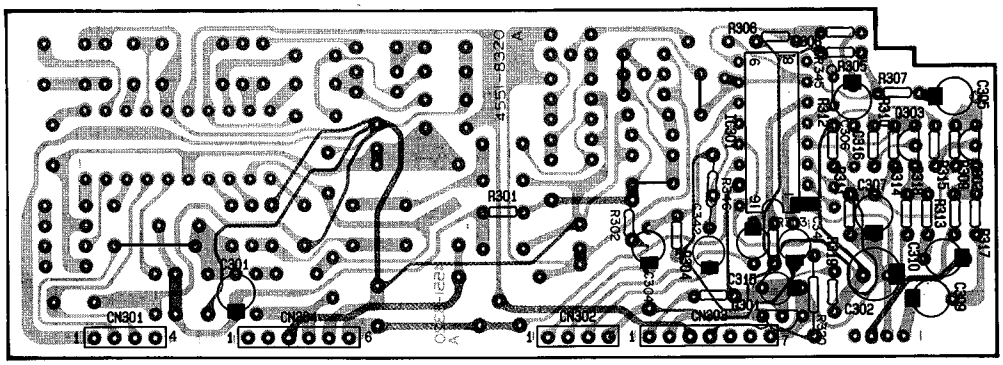
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS..

2SC1775 2SC2058 2SC2320L 2SC2236 2SA999L 2SC2878 	2SC2603 2SA1115 RN1203 RN2203 
2SA1359 	2SC3667 2SA1427 
HZ11B-2L RD3.3EB S5566B 1S2473 1SS133 RD5.1EB2 Anode Cathode	TA7362P 
TA7411AP TA7413AP 	TA7409P 

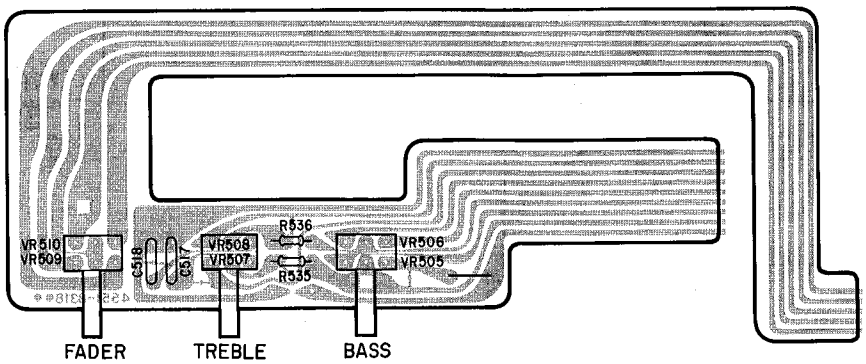


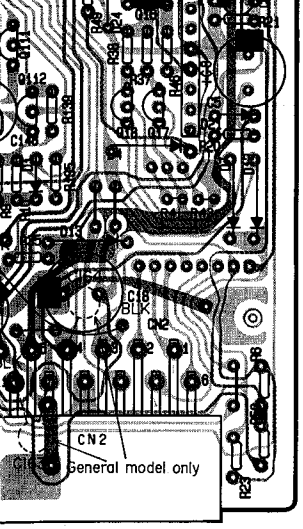
PCB-

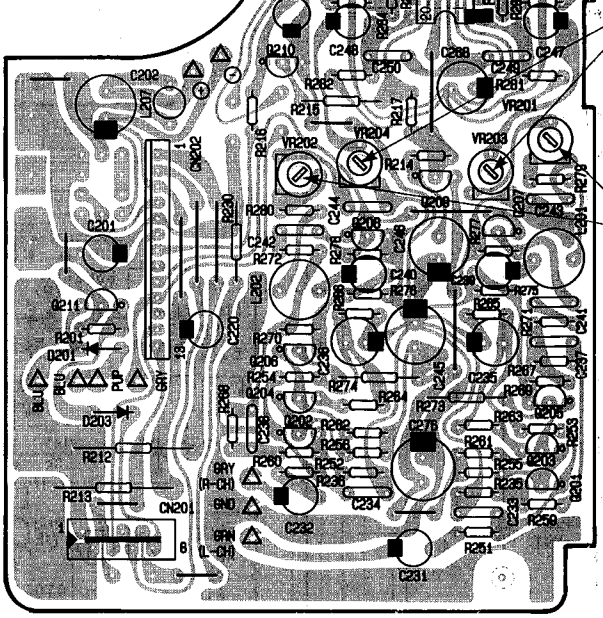
PCB-4 SIG Switching P.C. Board



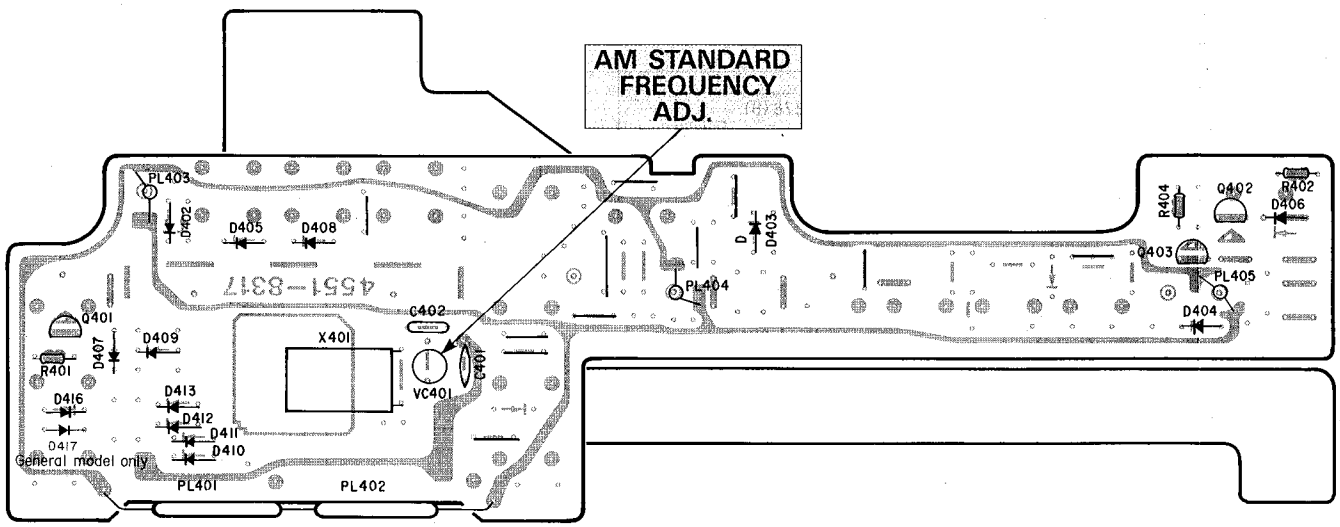
PCB-6 Tone Control P.C. Board

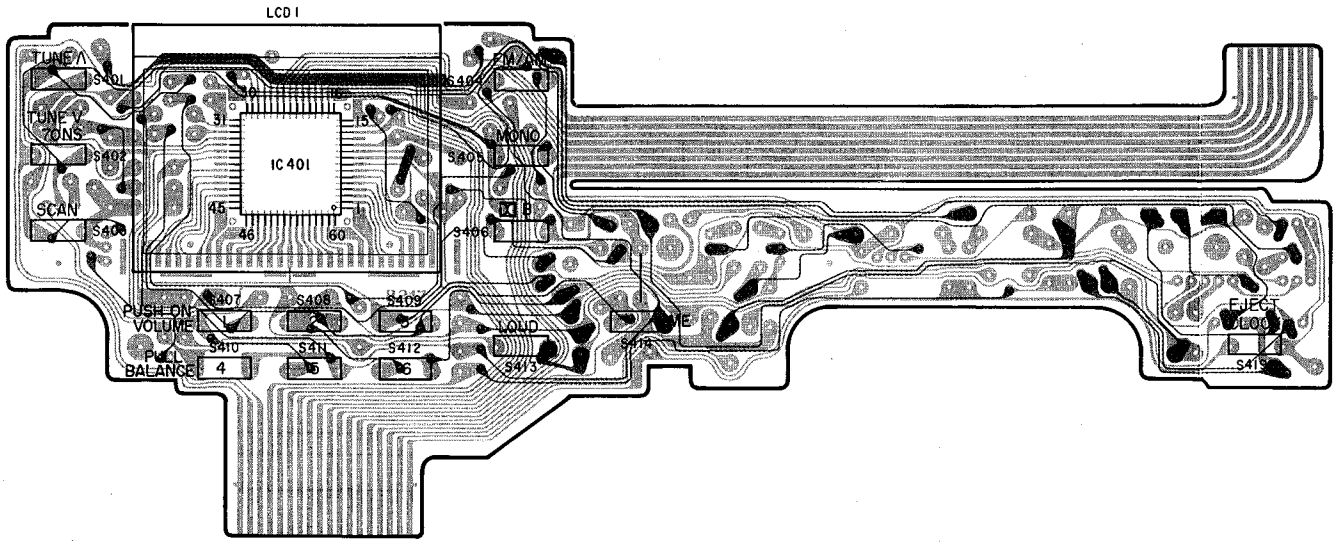


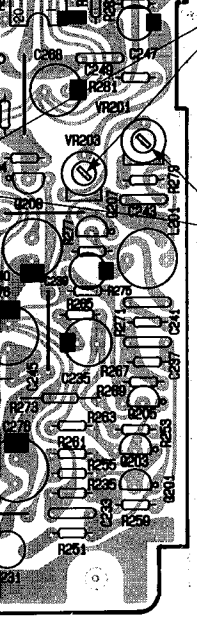




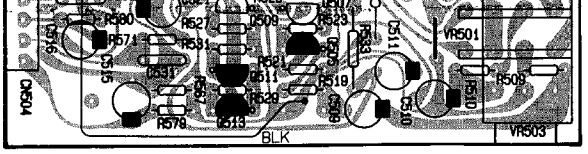
PCB-5 LCD P.C. Board





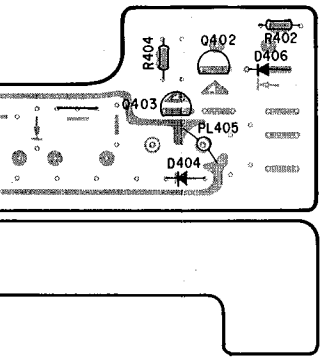


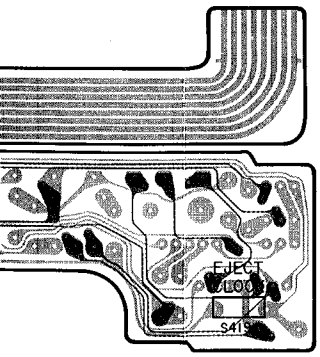
PLAYBACK FREQUENCY CHARACTERISTIC ADJ.



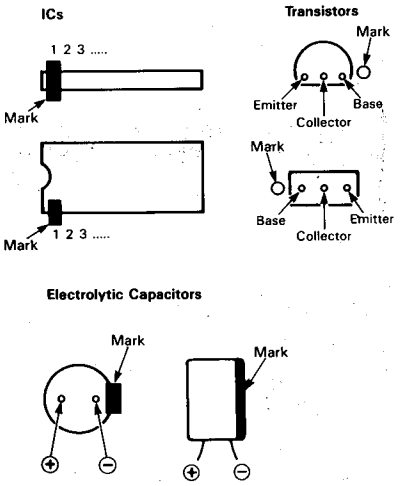
VOLUME

BALANCE





NOTE:
In the figures of the P. C. Boards, a mark is provided on the base side of the transistor.



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS..