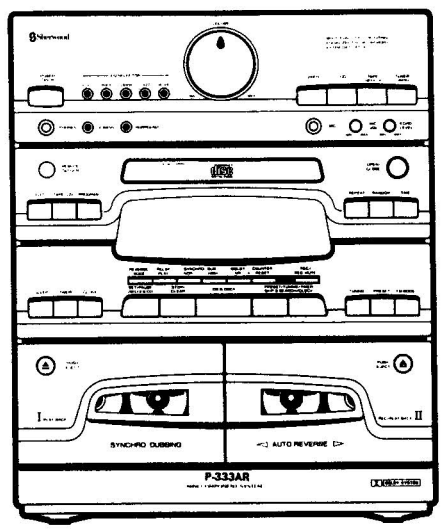
SERVICE MANUAL

P-333AR
MINI COMPONENT SYSTEM



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Sherwood

LASER BEAM SAFETY PRECAUTIONS

CLASS 1 LASER PRODUCT

DANGER:
INVISIBLE LASER RADIATION.
AVOID DIRECT EXPOSURE TO BEAM.

Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

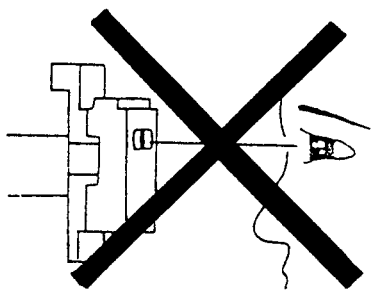


Figure 1

This compact disc player uses a pickup that emits a laser beam. The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 1 feet away from the pickup lens when the diode is turned on. Do not look directly at the laser beam

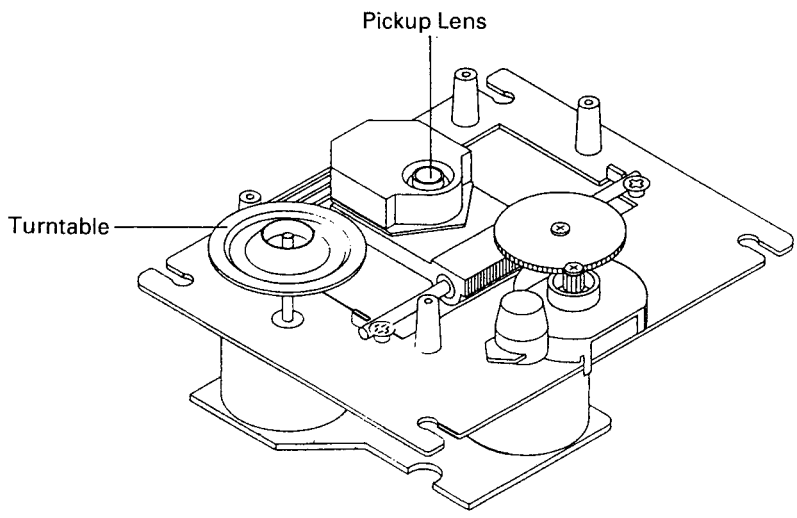


Figure 2

CAUTION:
Using controls and adjustment, or doing procedures other than those specified herein, may result in hazardous radiation exposure.

HANDLING LASER PICKUP

The laser diode in the optical system of this player can be damaged by electrostatic discharge from your clothes or your body. Proper electrostatic grounding for service personal is required during servicing.

BEFORE REPAIRING THE COMPACT DISC PLAYER

Preparation

- Human Body Grounding:
  Many of the components used in this compact disc player, including the laser pickup, are sensitive to electrostatic discharge. Service personal should be grounded with an electrostatic armband(1 Mohm).

- Caution:
  Static charge on clothing does not escape through a body grounding wrist band.
  Be careful not to contact the pickup or electrical components with your clothing.

- Workbench and Tool Grounding:
  A properly-grounded electroconductive plate (1 Mohm) or metal sheet should be fitted to the workbench surface. Tools and instruments (such as soldering irons and scopes) should be grounded to prevent AC leakage.

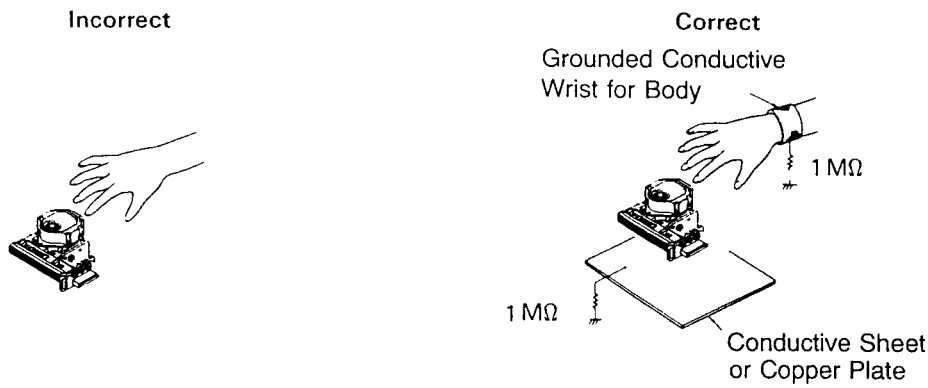


Figure 3

Note: Laser diodes are so susceptible to damage from static electricity that, even if a static discharge does not ruin a diode, it can shorten its life or cause it to work improperly.

SAFETY PRECAUTIONS

WARNING

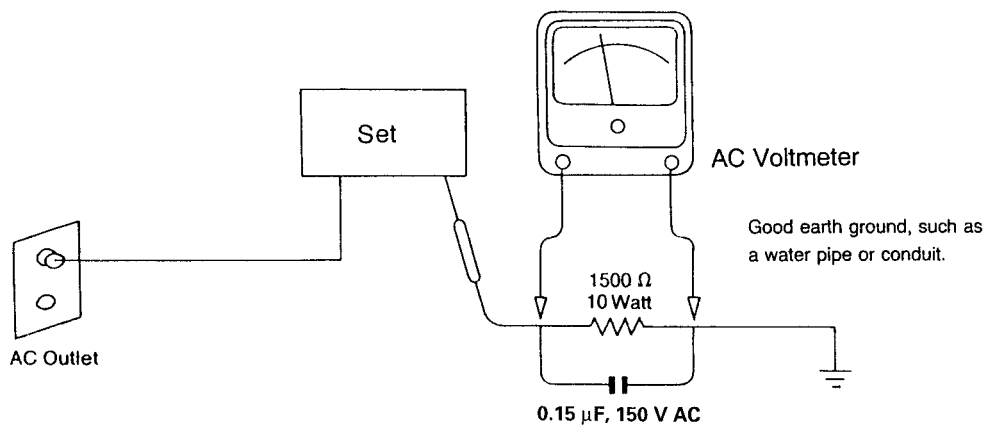
Before servicing this unit, familiarize yourself with the following precautions:

1. Many electrical and mechanical parts in this chassis have special safety characteristics that often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltge, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements: electrical components having such features are identified by ⚠ in the schematic diagram and the parts list.

   Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

2. Before returning the set to the customer, always do an AC leakage current check on the exposed metal parts of the cabinet, such as terminals, screw heads, and metal overlays, to be sure the set is safe to operate danger of electrical shock. Plug the AC line cord directly into a 120 V AC outlet (120 V AC version only). (Do not use a line isolation transformer during this check.) Be sure your AC voltmeter has a sensitivity of 5000 Ω per volt or greater. Then connect a 1500 Ω 10 watt resistor, paralleled by a 0.15 μF 150 V AC capacitor, between a known good earth ground (such as a water pipe, or conduit) and the exposed metalic is parts, one at a time. Measure the AC voltage across the combination of a 1500 Ω resistor and a 0.15 μF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metalic part. Voltage measured must not exceed 0.75 V RMS. This corresponds to 0.2 mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

At 5000 Ω per volt or greater sensitivity,
the reading should not exceed 0.75 V.



Place the probe on each exposed metalic part.

SPECIFICATIONS

Amplifier Section

Description		Unit	Norminal	Limit
RMS sine wave output power at distortion below 0.8% THD 1 kHz both channels driven at 6 Ω load. (Mode: STEREO)		W	32	30
Total Harmonic Distortion at 30 W output, 1 kHz (Mode: STEREO)		%	≥0.1%	0.80%
Inter Modulation Distortion at 30 W output, 60 Hz : 7 kHz=4 : 1 SMPTE (Mode: STEREO)		%	≥0.1%	0.80%
Input Sensitivity at 30 W output, 1 kHz (Mode: STEREO)	VIDEO	mV	250±15	250±30
Condition: MIC vol. max., ECHO vol. min.	MIC	mV	1.8±0.3	1.8±0.5
Signal to Noise Ratio(IHF UNWTD) Condition: input 4.7 kΩ shorted.	VIDEO	dB	≥73	≥70
	MIC	dB	≥42	≥38
Channel Separation at 30 W=0 dB Condition : Vol. max., input 4.7 kΩ shorted	1 kHz	dB	≥50	≥45
	10 kHz	dB	≥40	≥35
Frequency Response at -3 dB Condition: VIDEO input, 6 Ω load, 1 W output		Hz	50 - 38000	55 - 35000
Channel Balance at 1 W output		dB	0	±1
X-Bass compensation at 0.1 W output	80 Hz	dB	8	3
Minimum noise at speaker output Condition: Vol. min.		mV	≥0.7	1

Equalizer Section

Condition : 1 W output

EQ	Pops	Rock	Classic	Jazz	Movie	Unit	Limit
60 Hz	-4	2.5	-0.5	1.5	2	dB	±1
250 Hz	1	-1	-2	1.5	-1	dB	±1
1 kHz	2	-2	-2.5	0.5	-1	dB	±1
4 kHz	10	1	-2	-1	-0.5	dB	±1
12 kHz	-2	2	-0.5	0	-0.5	dB	±1

FM Section

FM performance test standard.

(Tuning range: 87.5 MHz - 107.9 MHz area)	(Tuning range: 87.5 MHz - 108 MHz area)
. RF signal: 98.1 MHz	98.0 MHz
. Modulation: Mono ±75 kHz deviation for 1 kHz	Mono ±40 kHz deviation for 1 kHz
Stereo ±75 kHz, L= -R	Stereo ±40 kHz, L= -R
Pilot carrier 10% deviation, 19 kHz	

. Antenna input impedance: 75 ohms unbalanced

at Dolby tape (TCC-130) speaker output 2 V.

. Test condition: 75 kHz Dev. at 1 kHz

Description		Unit	Norminal	Limit
Tuning Frequency Range				
Step: 200 kHz	USA/Canada	MHz	87.5 - 107.9	
Step: 50 kHz	Europe	MHz	87.5 -108.0	
Usable Sensitivity at S/N=(30 dB/26 dB), Mono				
(90.1 MHz, 98.1 MHz, 106.1 MHz/(90.0 MHz, 98.0 MHz, 106.0 MHz)		μV	2.5/3	3/3.5
Image Rejection at 106.1 MHz		dB	40	30
IF Rejection at 90.1MHz		dB	65	55
Full Limiting at -3 dB		μV	2	3
50 dB Quieting sensitivity (IHF BPF)	Mono: 75 dB	μV	5	8
	Stereo: 75 dB	μV	70	80
Total Harmonic Distortion (IHF BPF)	Mono	%	≥1	1.5
	Stereo	%	≥1.5	2
Signal to Noise Ratio (IHF BPF) at 1 mV input	Mono	dB	≥60	55
	Stereo	dB	≥58	54
De-emphasis	100 Hz	dB	±1.5	±2
	10 kHz	dB	±1.5	±2
AM Rejection Ratio at 100 μV, -20 mV input		dB	45	35
Search Level		μV	10	10±6
Automatic Stereo Threshold		μV	10	10±6
Muting Threshold		μV	10	10±6
Overload THD at 100 mV RF input		%	0.4	1
Spurious Response at Ant. input 2 μV 1/2IF, 1F		dB	60	50
Capture Ratio at 40/60 dB		dB	3	4
Stereo Separation(IHF BPF) at 1 mV input	100 Hz	dB	30	25
	1 kHz	dB	35	30
	10 kHz	dB	25	20
Output voltage at 1 kHz		mV	3800	±500
Audio Response at -3 dB, 1 mV input, 100% mod.		Hz	55 - 15000	60 - 14000

AM Section

AM performance test standard

. RF signal: 999 kHz, 5 mV/m

. Modulation: 400 Hz, 30%

at dolby tape(TCC-130) speaker output 2 V

. Test condition: 30% Dev. at 400 Hz

Description		Unit	Norminal	Limit
Tuning Frequency Range				
Step: 9 kHz	MW	Hz	520 - 1710	
	LW	Hz	522 - 1611	
Usable sensitivity at S/N=20				
(MW: 603 kHz, 999 kHz, 1404 kHz)	MW	μV/m	1000	1500
(LW: 162 kHz, 207 kHz, 252 kHz)	LW	μV/m	2000	3000
Image rejection at 1404 kHz		dB	≥30	20
IF Rejection at 603 kHz		dB	≥45	40
AGC figure of merit 999 kHz		dB	≥45	40
Audio Response at 999 kHz, -6 dB		Hz	120 -2200	140 - 2000
Selectivity at 999 kHz ± 10 kHz		dB	≥25	20
Signal to Noise Ratio at 999 kHz		dB	≥40	35
Output voltage at 400 Hz, 5 mV 30% Mod.	USA/Canada	mV	1400 - 160	1000 - 2000
	Europe	mV	2600 - 300	2500 - 3400

CD Section

General

Transmission bit rate	4.3218 Mbit/sec
Transmission on clock	33.8688 MHz
Error correction	CIRC C1, C2 double correction

Pickup

System	Object lens drive type optical pickup
Object lens drive system	2 dimensional parallel drive type
Optical source	Semiconductor laser
Wave length	780 nm
Tracking system	3 beam tracking servo type

Others

Digital filter	8 time oversampling type
Analog filter	Analog 2 pole RC type
D/A converter	∑DECO type

Electrical

Condition: At Dolby tape (TCC-130), speaker output 2 V.

Description		Freq.	Unit	Norminal	Limit
Signal to Noise Ratio (UNWTD)		1 kHz	dB	65	60
Total Harmonic Distortion		1 kHz	%	0.25	0.3
Frequancy Response at 1 kHz, 0 dB output		100 Hz	dB	-1	±1
		10 kHz	dB	-0.5	±1
		20 kHz	dB	-1.5	±1
De-emphasis		5 kHz	dB	-4.5	±0.6
		16 kHz	dB	-10	±1.5
Channel Separation		1 kHz	dB	50	45
		10 kHz	dB	48	40
Output Voltage at 10 dB		1 kHz	V	2	±0.3
Disc Defects	Black dot	PH/444A	μm	600	500
	Interrupt	PH/444A	μm	700	600
	Finger print	PH/444A	μm	ALL	ALL

Environmental

Test to specification

Temperature between 59°F (15°C) and 95°F (35°C) and relative humidity between 45% and 75%, with power supply voltage of 10% the normal supply voltage.

Test disc: SONY YEDS-7 or ABEX TCD784, TCD725

Operation

Unit must work properly and correctly at the temperature range from 32°F (0°C) to 113°F (45°C) and the relative humidity from 40% to 80%, and with the supply voltage.

Storage

Temperature test: 48 hours each at -40°F (-40°C) and 149°F (65°C).

Humidity test: 40°C 95% relative humidity.

Deck Section

Type	Double cassette deck with Dolby B NR system.
Track System	4 track, 2 channel stereo playback (Deck A) and Recording/Playback (Deck B)
Recording System	AC bias (bias frequency: 105 kHz)
Erasing System	AC
Tape Speed	1-7/8 inch/sec (4.76 cm/sec)
Heads	Magnetic recording/playback rotary (reverse head × 1) Magnetic playback one way (one way headx1)
Motor	Electronic controlled DC motor
Wow and Flutter	Less than 0.25% (WRMS)
Winding Time (FF/REW)	Approximately 130 seconds with C-60 cassette tape
Frequency Response (at -20 dB) within 5	Normal tape: 40 Hz -16 kHz
Signal to Noise Ratio	
Unweighted:	Dolby NR off: 45 dB Dolby NR B: 47 dB
Weighted:	Dolby NR off: 47 dB Dolby NR B: 56 dB
3rd Harmonic Distortion	Less than 2% at 333 Hz 0 dB, recording/playback
Built in Features	Dolby B NR system Relay playback High/normal speed dubbing Auto tape selector (both deck A, deck B) Auto music search Reverse mode selector CD synchronous dubbing REC NOR mode only

General

Power consumption ..... 200 W
Dimensions (HxWxD) ..... 270 × 327 × 300 mm
(10-5/8 × 12-7/8 × 11-13/16 inches)
Weight (Net) ..... 7 kg(15.4 lbs)

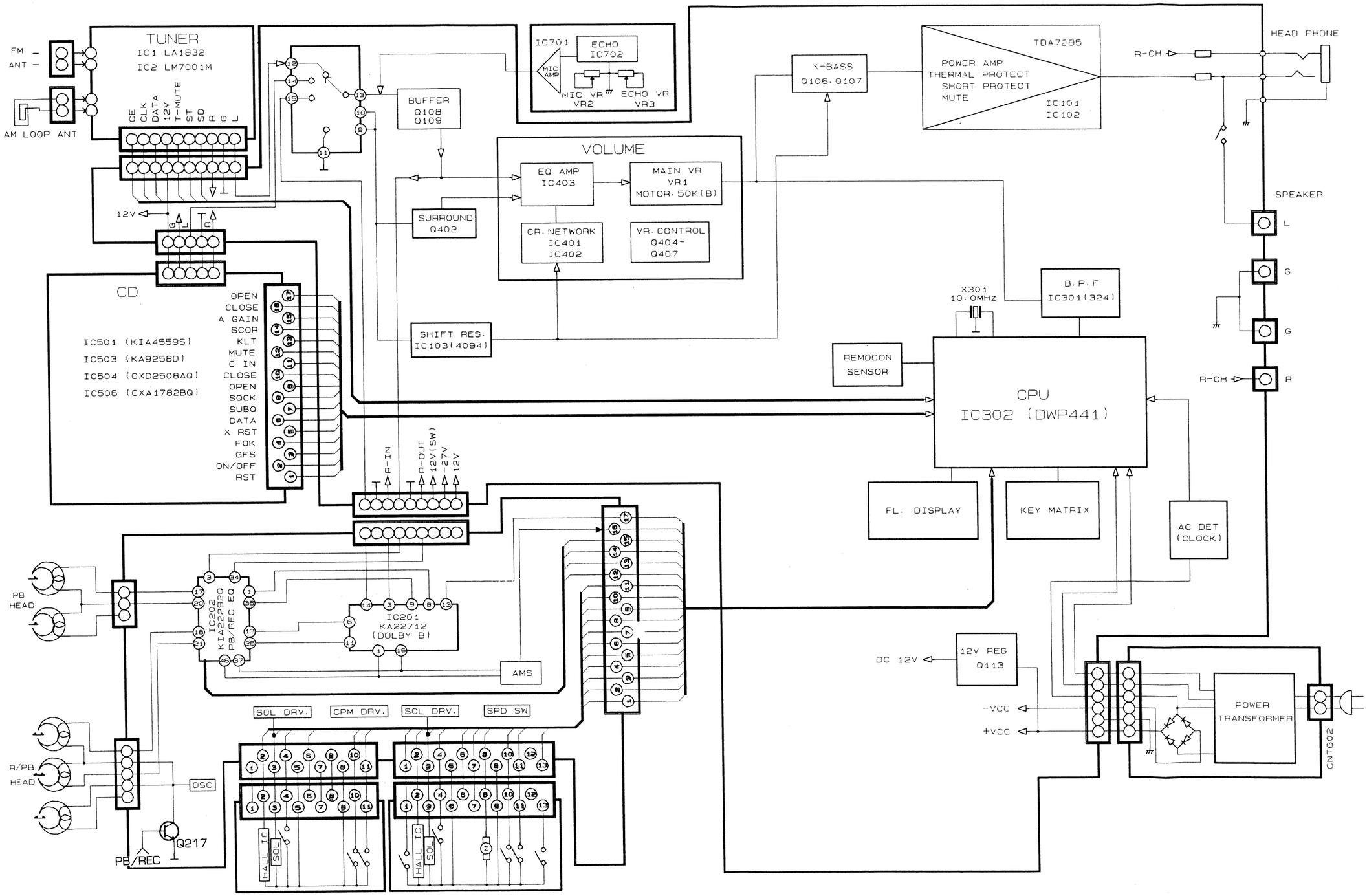
Power requirements :
A : 120 V 60 Hz for American/Canadian version
B : 120/220 V 60/50 Hz multi voltage version (switchable)
D : 230 V 50 Hz German/General European version
E : 240 V 50 Hz for UK/Austalian version
G : 220 V 50 Hz for Other Area

Notes:

1. Nominal specs represent the design specs; All units should be able to approximate these···some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit fail to meet limit specs.
2. This manual is based on the European (D) standard, and provides information on regional circuit modification through the use of altemate schematic diagrams or wiring diragram, and information on regional component variations through the use of parts lists. Design and specifications subject to change without notice.

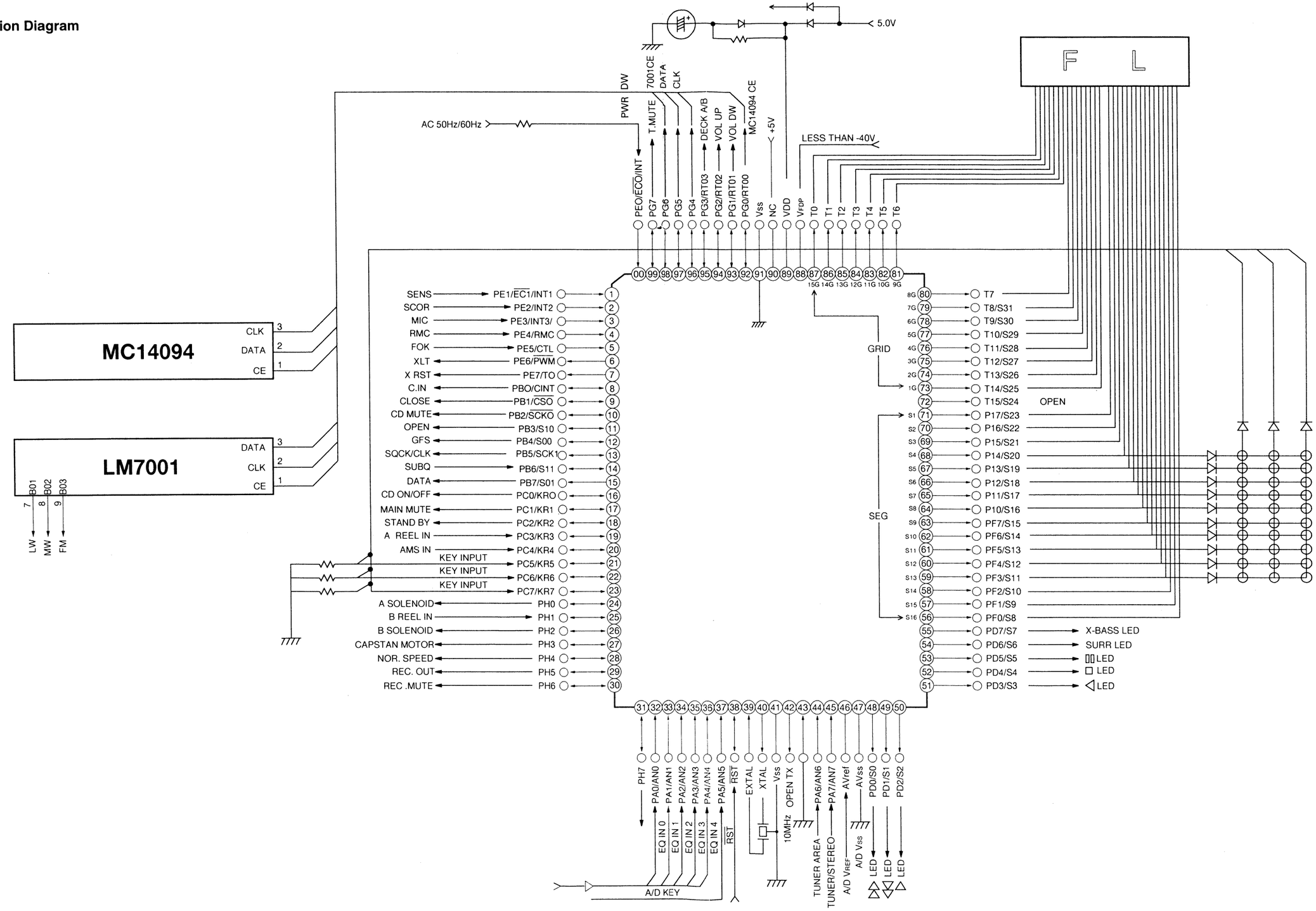
BLOCK DIAGRAM

Model No. : P-333AR

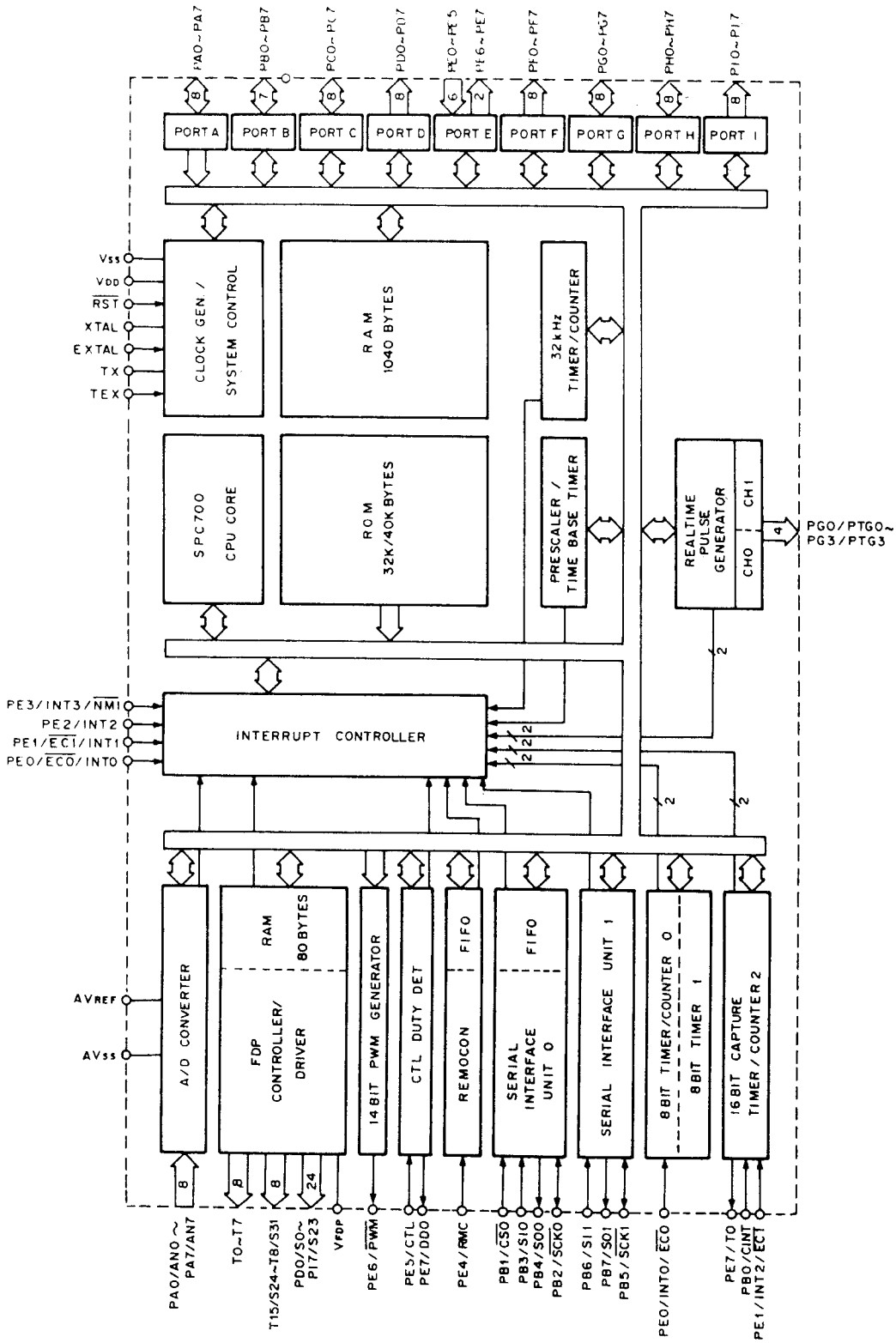


IC701 : CXP82432(CMOS 8 bit-CHIP MICROCOMPUTER)

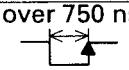
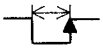
1.Pin Connection Diagram



2. Block Diagram



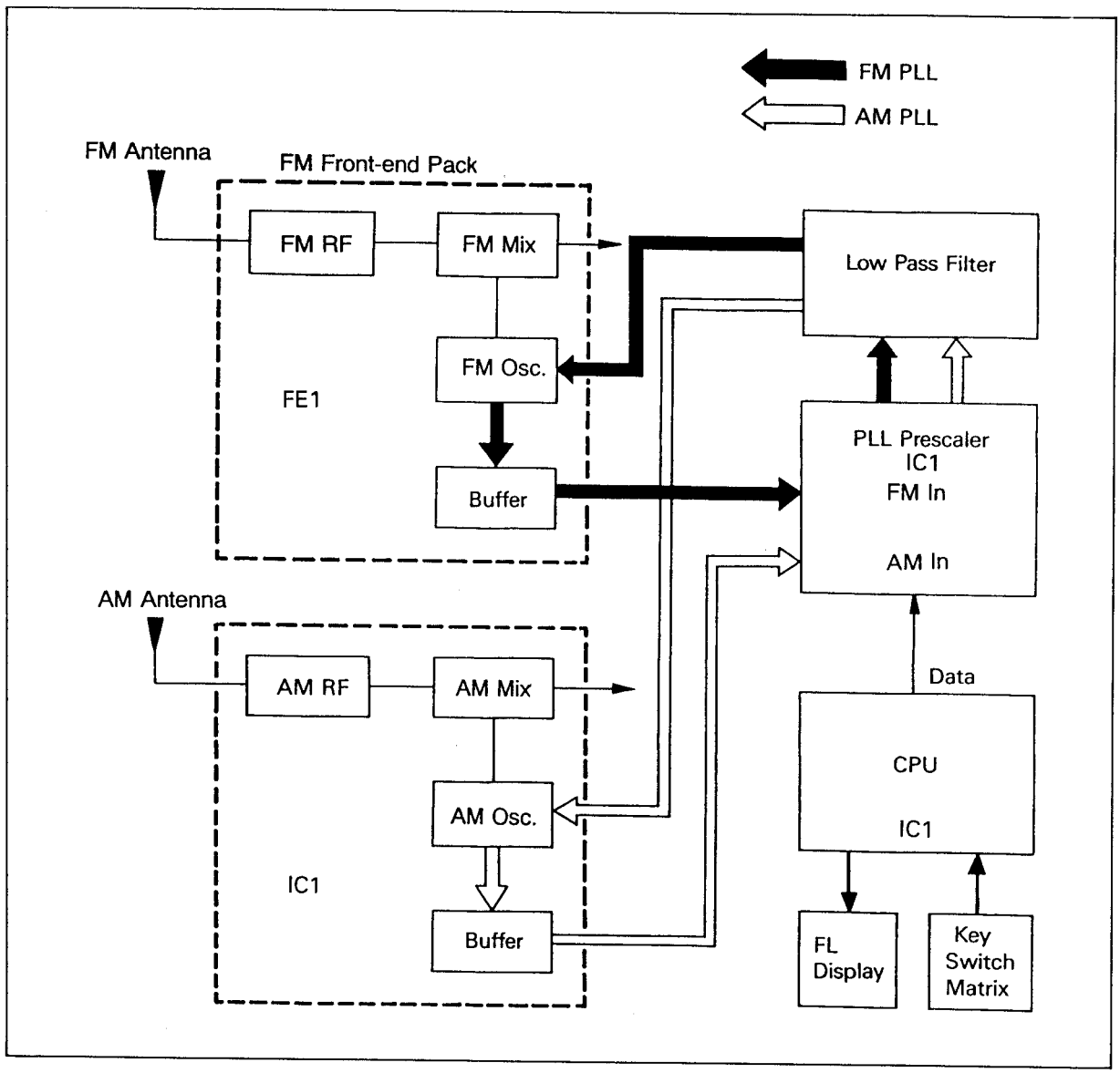
3. Pin Functions

Pin No.	Symbol	Description
1	SENS	Input from SENS of CXD2518.
2	SCOR	Input from SCOR of CXD2518.
3	MIC	Input for detecting the mic being plugged or not.
4	RMC	Input for remocon data. (At "L", it is active.)
5	FOK	Input from FOK of CXA1782. (At "H", it is active.)
6	XLT	XLT output for CDP. over 750 nsec 
7	XRST	Output for resetting CXD2518 and CXA1782. over 100 msec 
8	C.IN	Input from C.OUT of CXA1782.
9	CLOSE	Output for driving motor CD tray.
10	CD MUTE	Input for muting from CXD2518. (At "H", it is active.)
11	OPEN	Output for driving motor to open CD tray.
12	GFS	Input from GFS of CXD2518. (At "H", it is active.)
13	SQCK/CLK	Output to SQCK and CLK of CXD2518.
14	SUB Q	Input from SQSO of CXD2518.
15	DATA	Output to DATA of CXD2518 and CXA1782.
16	CD ON,OFF	Output for switching on or off CD. (At "L", CD is on.)
17	MAIN MUTE	Output for main mute. (At "L", it is active.)
18	STAND BY	When the power is on, control data output is "H". When the power is off, control data output is "L".
19	A.REEL IN	Input for detecting the reel pulse of DECK A.
20	AMS IN	Input for detecting the blank space during AMS(Automatic Music Searching).
21~23	KEY INPUT	Data input of k_0 - k_6 for key scan.
24	A.SOLENOID	Output for driving the solenoid of DECK A.
25	B.REEL IN	Input for detecting the reel pulse of DECK B.
26	B.SOLENOID	Output for driving the solenoid of DEAK B.
27	CAPSTAN MOTOR	Output for driving the capstan motor.
28	NOR. SPEED	Output for controlling the tape speed.
29	REC OUT	Output for controlling the record.
30	REC MUTE	Output for muting the recording output.
31	DOLBY B	Output for controlling the noise reduction.
32	EQ. IN0	Input for controlling the level at 12 kHz.
33	EQ. IN1	Input for controlling the level at 4 kHz.
34	EQ. IN2	Input for controlling the level at 1 kHz.
35	EQ. IN3	Input for controlling the level at 250 Hz.

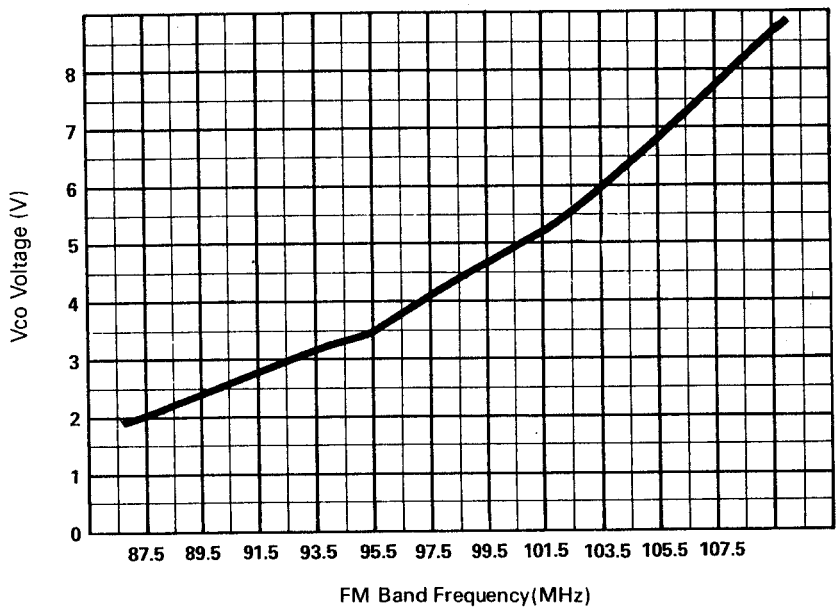
<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Description</th></tr>
<tr><td>36</td><td>EQ. IN4</td><td>Input for controlling the level at 60 Hz.</td></tr>
<tr><td>37</td><td>A/D KEY</td><td>Input for A/D key data.</td></tr>
<tr><td>38</td><td>$\overline{RST}$</td><td>Input for resetting the CPU. (At "L", it is active.)</td></tr>
<tr><td>39</td><td>EXTAL</td><td>Input for crystal oscillator.</td></tr>
<tr><td>40</td><td>XTAL</td><td>Output for crystal oscillator.</td></tr>
<tr><td>41</td><td>Vss</td><td>This pin provides the ground potential.</td></tr>
<tr><td>42</td><td>NC</td><td>Not used! (This pin is left open.)</td></tr>
<tr><td>43</td><td>NC</td><td>Not used! (This pin is connected to ground.)</td></tr>
<tr><td>44</td><td>TUNER AREA</td><td>According to region, input for selecting the frequency ranges steps of FM and AM.
<table>
<tr><th>INPUT VOLTAGE</th><th>FREQUENCY RANGES</th><th>STEPS</th></tr>
<tr><td>0 V</td><td>FM: 87.5 ~ 108 MHz
AM: 522 ~ 1611 kHz</td><td>100 kHz
9 kHz</td></tr>
<tr><td>1 V</td><td>FM: 87.5 ~ 108 MHz
AM: 520 ~ 1710 kHz</td><td>100 kHz
10 kHz</td></tr>
<tr><td>2 V</td><td>FM: 87.5 ~ 108 MHz
MW: 522 ~ 1611 kHz
LW: 153 ~ 279 kHz</td><td>50 kHz
9 kHz
9 kHz</td></tr>
<tr><td>3 V</td><td>FM: 87.5 ~ 108 kHz
AM: 522 ~ 1611 kHz</td><td>50 kHz
9 kHz</td></tr>
<tr><td>4 V</td><td>FM: 87.5 ~ 107.9 MHz
AM: 522 ~ 1611 kHz</td><td>200 kHz
9 kHz</td></tr>
<tr><td>5 V</td><td>FM: 87.5 ~ 107.9 MHz
AM: 520 ~ 1710 kHz</td><td>200 kHz
10 kHz</td></tr>
</table></td></tr>
<tr><td>45</td><td>TUNED/STEREO</td><td>Input for detecting TUNED and/or STEREO.
(When the voltage is below 3V, "TUNED" is active.
When it is below 2V, "STEREO" is active.)</td></tr>
<tr><td>46</td><td>A/D V_{REF}</td><td>A/D reference voltage.</td></tr>
<tr><td>47</td><td>A/D V_{SS}</td><td>A/D ground.</td></tr>
<tr><td>48</td><td>▶▶ LED</td><td>Output for driving ▶▶ LED. (At "H", it is active.)</td></tr>
<tr><td>49</td><td>◀◀ LED</td><td>Output for driving ◀◀ LED. (At "H", it is active.)</td></tr>
<tr><td>50</td><td>▶ LED</td><td>Output for driving ▶ LED. (At "H", it is active.)</td></tr>
<tr><td>51</td><td>◀ LED</td><td>Output for driving ◀ LED. (At "H", it is active.)</td></tr>
<tr><td>52</td><td>■ LED</td><td>Output for driving ■ LED. (At "H", it is active.)</td></tr>
<tr><td>53</td><td>▮▮ LED</td><td>Output for driving ▮▮ LED. (At "H", it is active.)</td></tr>
<tr><td>54</td><td>SURR. LED</td><td>Output for driving the surround LED.(At "H", it is active.)</td></tr>
<tr><td>55</td><td>X-BASS LED</td><td>Output for driving the X-BASS LED. (At "H", it is active.)</td></tr>
</table>

Pin No.	Symbol	Description
56~58	S8~S10	Segment signal output for FIP.
59~71	S11~S23	Segment signal output for FIP and data output for key scan.
72	NC	Not used! (It is left open.)
73~87	T14~T0	Grid signal output for FIP.
88	V_{FDP}	-30V power supply for FIP.
89	V_{DD}	+5V power supply.
90	NC	Not used! (It is connected to +5V.)
91	V_{SS}	This pin provides the ground potential.
92	4094 CE	Chip enable output for MC14094.
93	VOL. DOWN	Output to drive volume motor for decreasing volume level.(At "H", it is active.)
94	VOL. UP	Output to drive volume motor for increasing volume level. (At "H", it is active.)
95	DECK A/B	Output for selecting DEAK A or B. (If DECK B, then "H").
96	CLK	Output to CLK of LM7001 and MC14094.
97	DATA	Output to DATA of LM7001 and MC14094.
98	7001 CE	Chip enable output for LM7001.
99	T. MUTE	Output for tuner mute.(At "H", it is active.)
100	PWR. DW	Input for detecting power down. (At "L", it is active.)

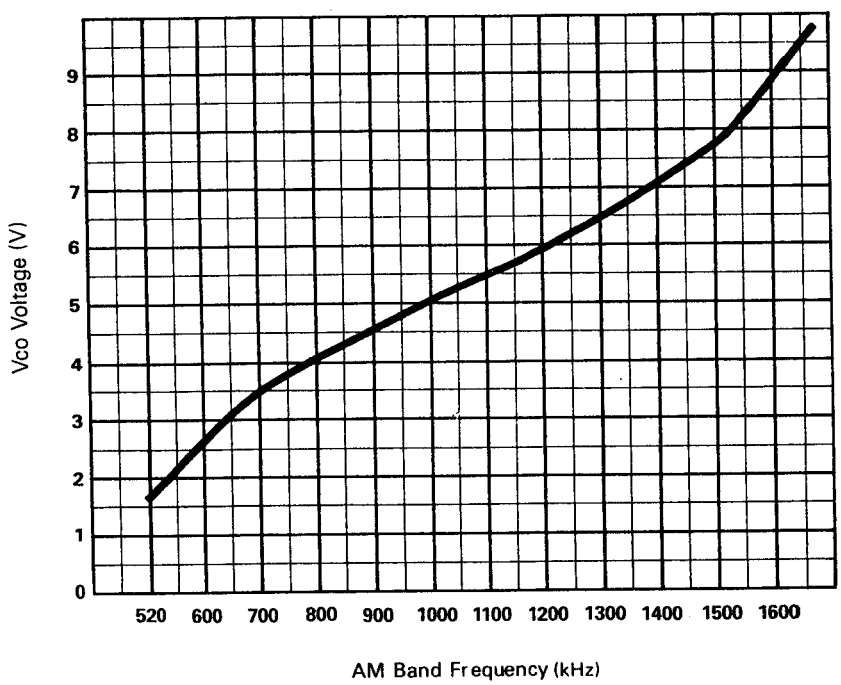
4. Digital Tuning System Description



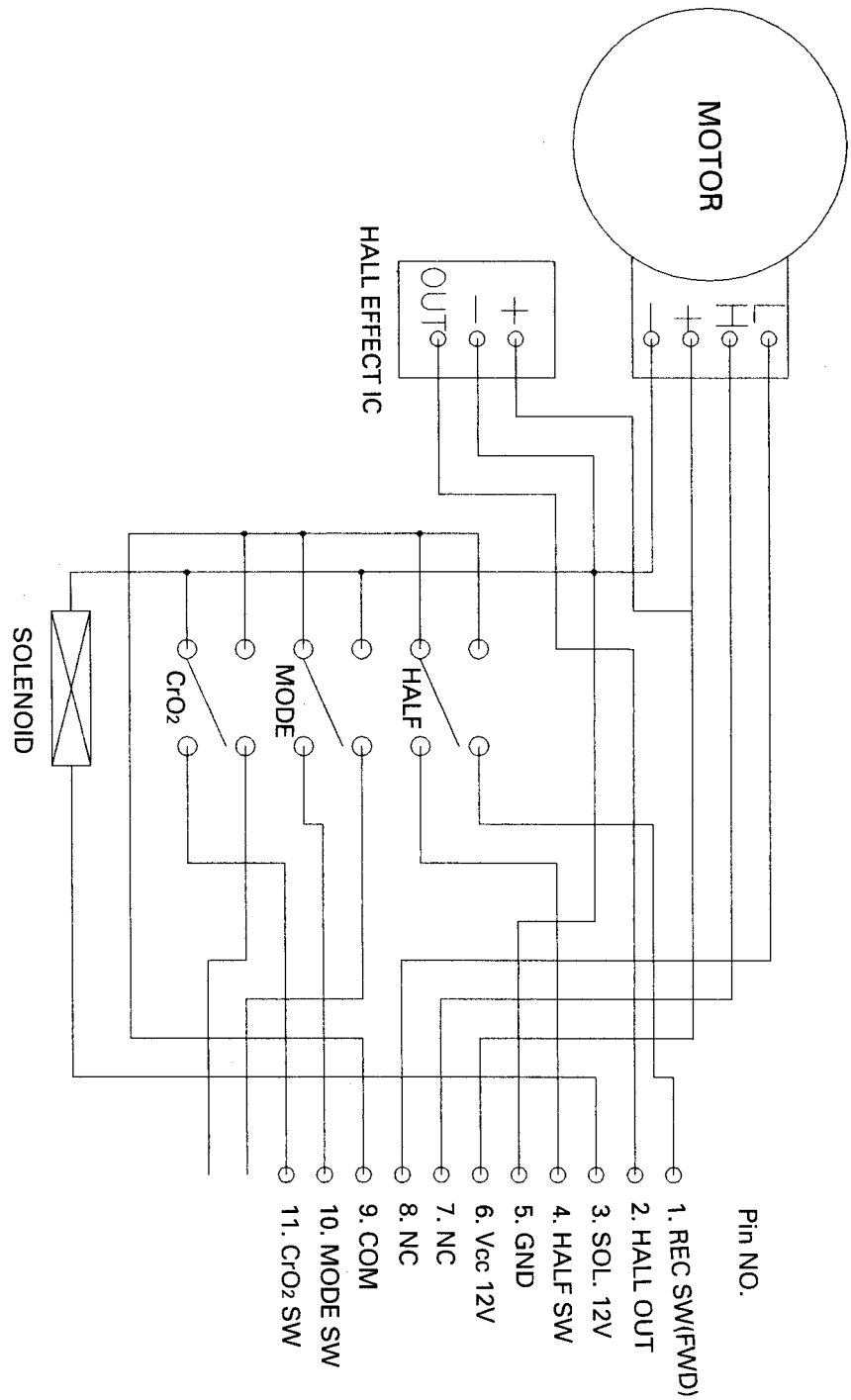
• **Vco vs. FM Band Frequency Curve**



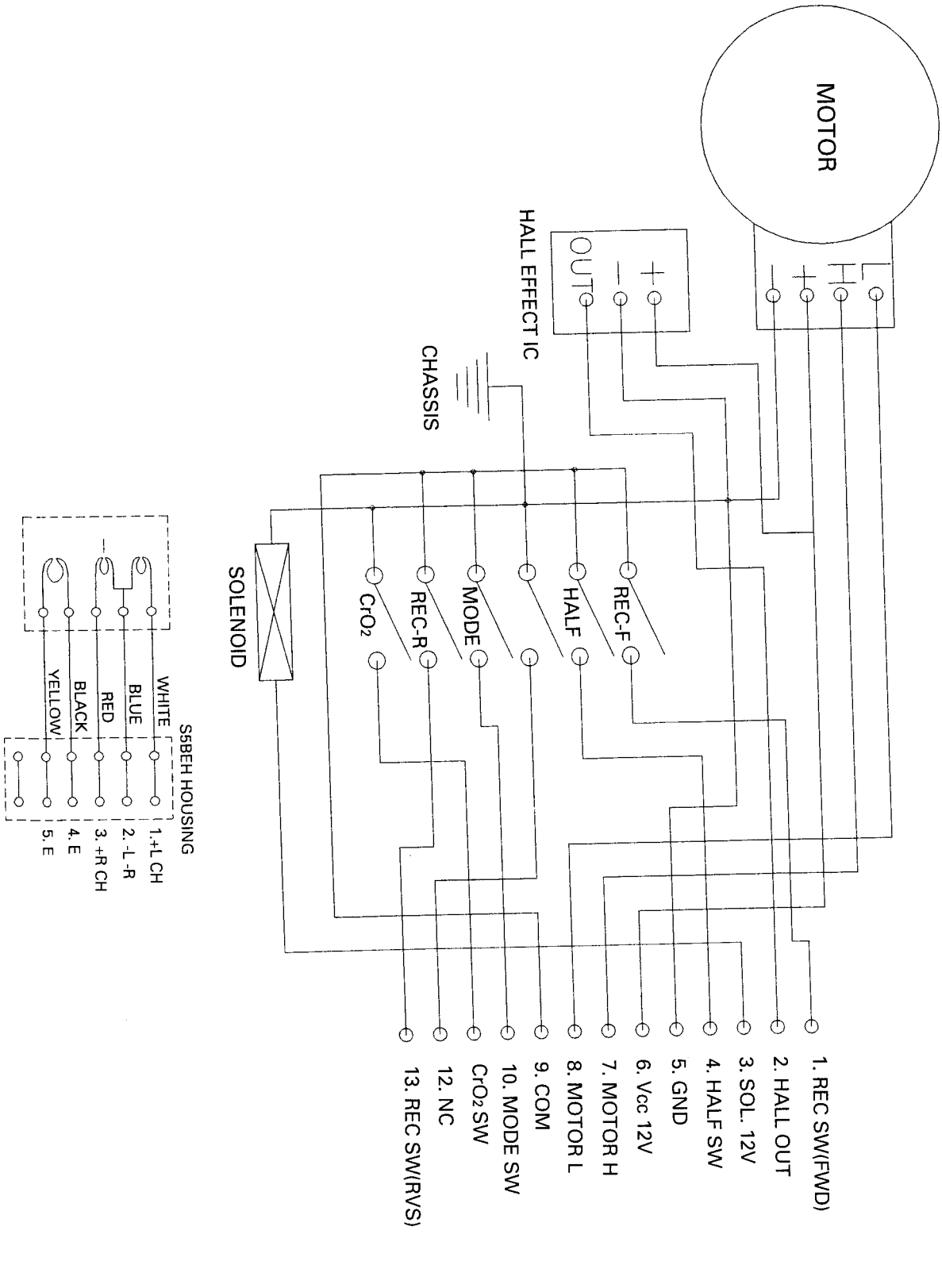
• **Vco vs. AM Band Frequency Curve**



CWA410FR-ø1 (A Deck PLAY)



CWA400 (B Deck REC/PLAY)



FLUORESCENT

FIP 15JM80

1. Features: Island grid type.

2. Operating: Multiplex drive

3. Specifications

A) Number of pins ..... 37 Pin

B) Temperature ..... -20 ~ 70 °C

C) Operating voltage

Filament voltage Ef ..... 4.7 ~ 5.7 Vac

Anode voltage Eb (Du=1/17.1) ..... 32 Vp-p

Grid voltage Ec (Du=1/17.1) ..... 32 Vp-p

4. Electrical Characteristics (Test circuit is specified by EIAJ ET-4168B)

Item	Symbol	Connection	Tolerance			Unit
			Min.	Nor.	Max.	
Filament current	I_f	E_f =5.2 Vac	168	187	208	Aac
Anode current	I_b/1, 5, 11, 8, 12, 13, 15	E_f =5.2 Vac E_b =29 Vp-p E_c =29 Vp-p D_u=1/17.1 T_p =224 uS All seg. are Lit.	-	14.5	29	Ap-p
Anode current	I_b/2, 3, 4, 6, 7, 10G		-	9	18	Ap-p
Anode current	I_b/9G		-	8	12	Ap-p
Anode current	I_b/14G		-	24	48	Ap-p
Grid Current	I_c/1, 6, 11, 8, 12, 13, 15		-	14.5	29	Ap-p
Grid Current	I_c/2, 3, 4, 6, 7, 10G		-	9	18	Ap-p
Grid Current	I_c/9G		-	6	12	Ap-p
Grid Current	I_c/14G		-	24	48	Ap-p
Anode cut off	Ebco	E_f =5.2 Vac E_c =29 Vp-p D_u=1/17.1 T_p =224 uS ALL seg. are Lit.	-3	-	-	DC
Gird cut off	Ecco	E_f =5.2 Vac E_b =29 Vp-p All seg. are Lit.	-6	-6	-	DC

* These values are specified when E_b and Ec are supplied from the center tap of the filament transformer.

5. Terminal connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Pin Name	F1	F1	F1	NP	NP	P S16	P S15	P r	P p	P n	P m	P k	P j	P h	P g	P f	P e
Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Pin Name	P d	P c	P b	P a	NP	NP	NP	NP	NP	NP	NP	NP	15G	14G	13G	12G	11G
Pin No.	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49		
Pin Name	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	F2	F2	F2		

Notes:

Ef: Filament voltage
Ec: Grid voltage
Tp: Pulse duration
F: Filament
G: Grid
P: Anode

Eb: Enode voltage
Du: Duty cycle
Tb: Blanking duration
Np: No pin
Nc: No connection

6.Lead Identification (See Figure 9)

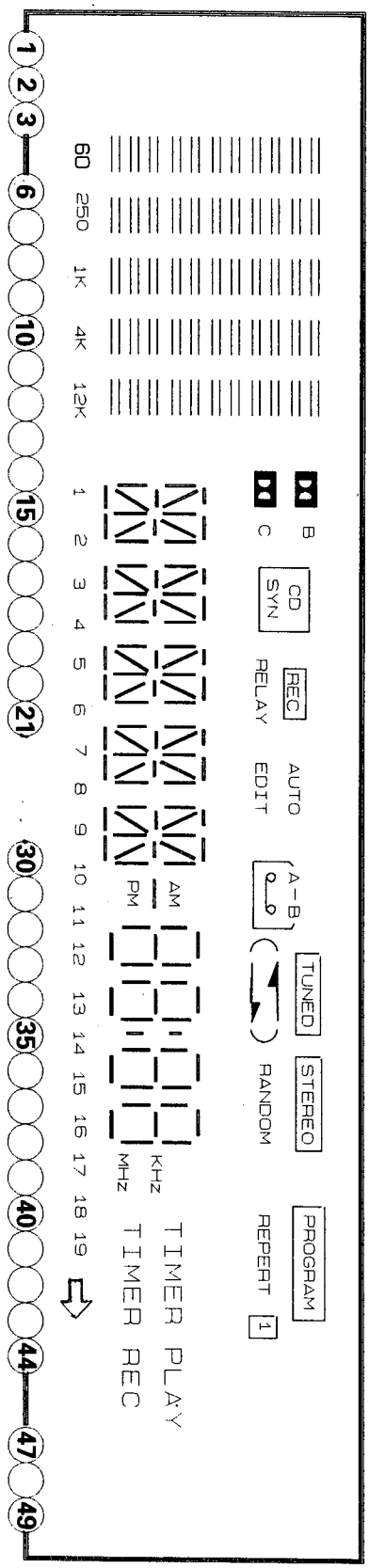


Figure 9

PICKUP REPLACEMENT

Caution:
Laser diodes are extremely susceptible to damage from static electricity. Even if a static discharge does not ruin the diode, it can shorten its life or cause it to work improperly. When replacing the pickup take appropriate measures, such as using a conductive mat and a grounded soldering iron to protect the laser diode from static damage.

1. Remove the CD mechanism assembly by refering to the "Disassembly Procedures" (See Figure 10).

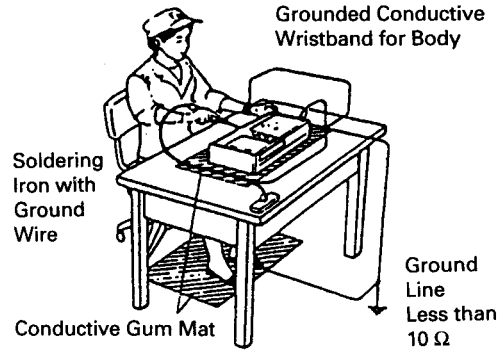


Figure 10

2. Remove 3 screws (See Figure 11).

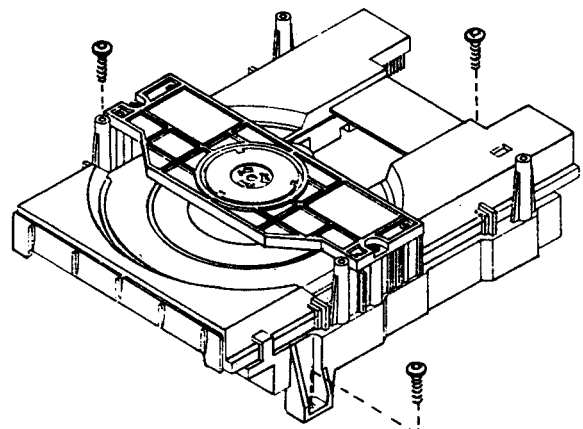


Figure 11

3. Remove 1 screws (See Figure 12).

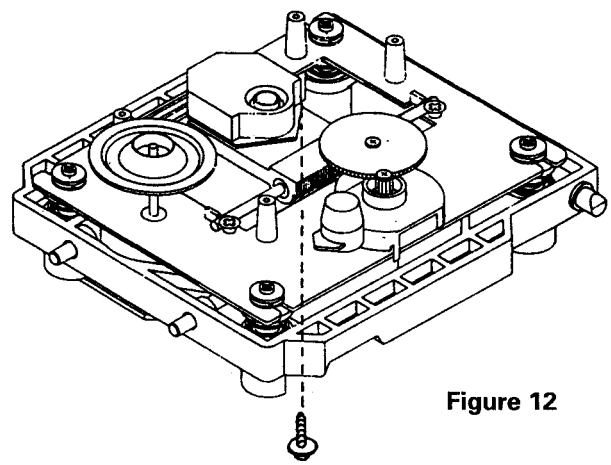


Figure 12

4. Remove 4 scrws (See Figure 13).

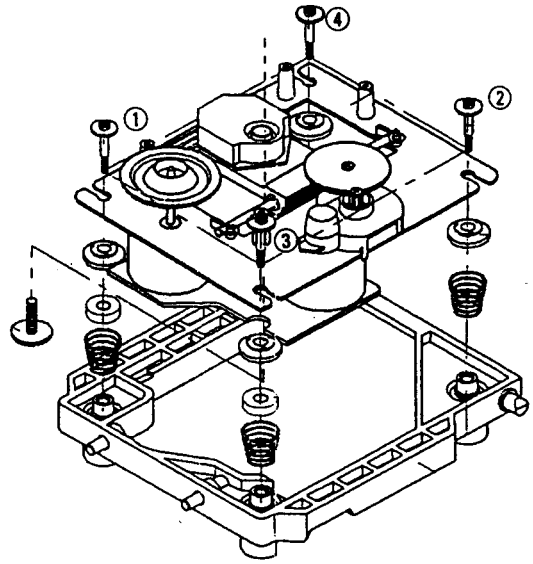


Figure 13

5. Remove the Gear A (See Figure 14).
6. Pull out the Slide Shaft.

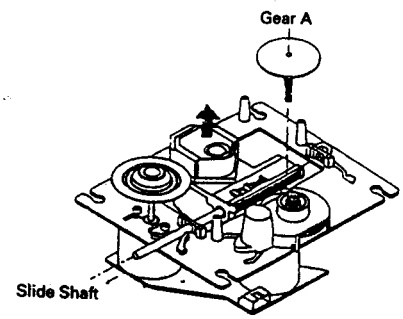


Figure 14

5. Remove the pickup (See Figure 15).

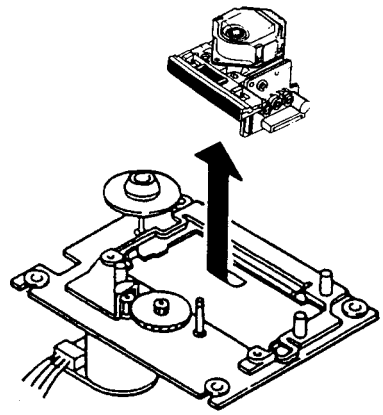


Figure 15

6. Refer to the exploded view of the compact disc mechanism on page 57 for detailed illustrations.

OPERATION CHECK

When the power switch is turned on after the chucking arm is removed, observe the following for the objective lens and chuck. (The optical system block should be at the lead-in position when it is checked.)
1. The disc table should be at the innermost position after the chucking arm is removed.
2. The diffused light of the laser beam can be seen when the power switch is turned on.
3. Vertical (up and down) movement of the objective lens takes place 2 or 3 times.

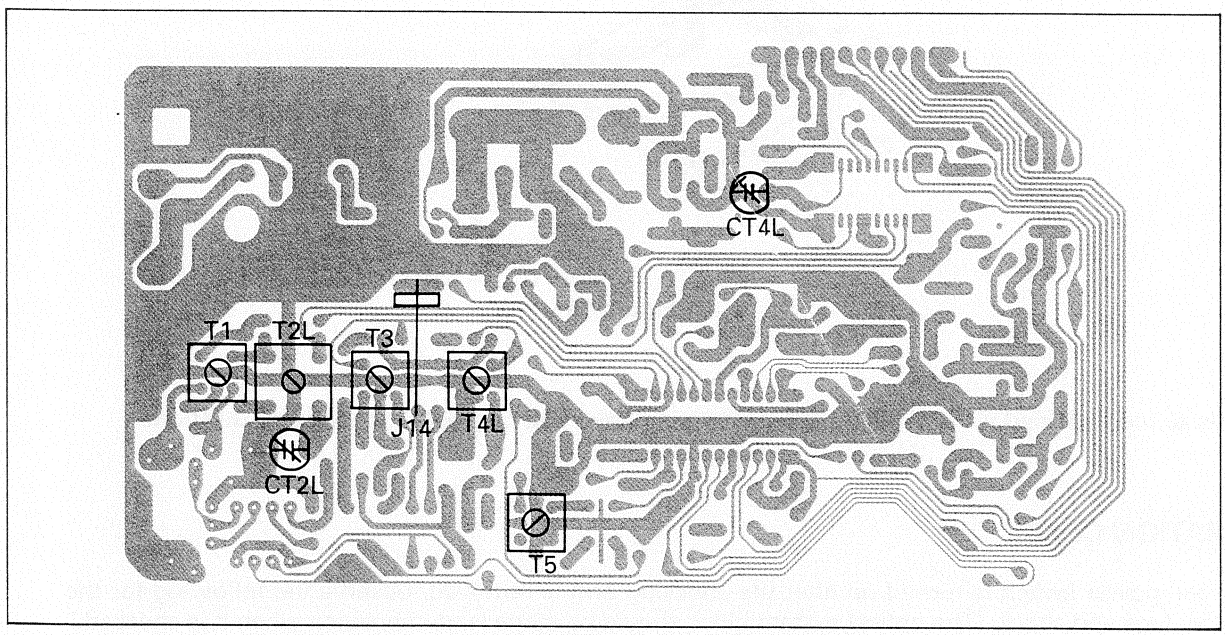
ALIGNMENT PROCEDURES

TUNER PART

Equipment Required

- AM Signal generator
- Oscilloscope
- AC Voltmeter
- Stereo modulator
- Audio generator
- Distortion meter
- DC Voltmeter
- Frequency counter

Adjustments and Test points (Tuner Board)



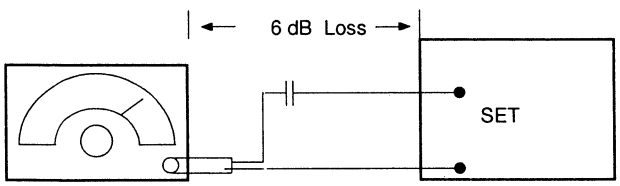
• Before adjustments, refer to "Adjustments and Test points" on page 30.
Note : As it is difficult to repair the front-end if faulty, replace it with new one.

FM SECTION

• Standard Setting of FM stereo RF Signal generator.

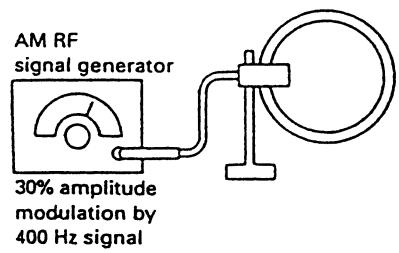
STEREO STANDARD SIGNAL	MONAURAL STANDARD SIGNAL
Carrier frequency : 98 MHz Modulation : Audio 1 kHz, 40 kHz deviation. Pilot 19 kHz, 7.5 kHz deviation	98 MHz 1 kHz, 40 kHz deviation

FM Discriminator Adjustment.
Note : Loss of connector is 6 dB.

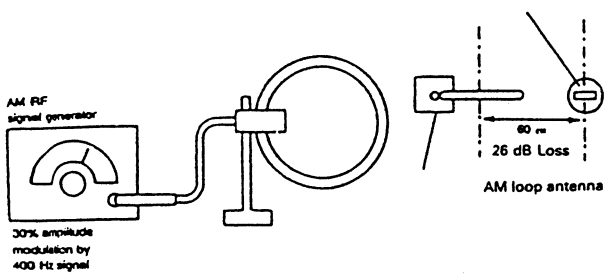


Procedure
1. Tune in 98 MHz.
2. Adjust CT4 L to the place when "TUNED" indicator lights.

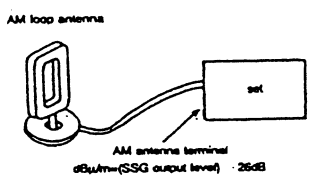
AM Tracking Adjustment



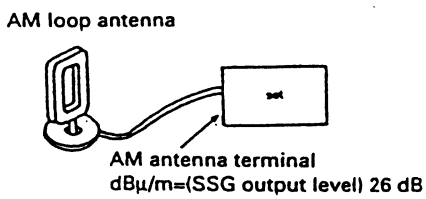
AM SECTION



Output Level : 84 dB
(603 kHz, 999 kHz, 1404ikHz)



MW/LW VT Adjustment
1. Set to MW 522 kHz and adjust T3 so that voltage of J14 becomes 1 V ± 0.05 V
2. Set to LW 153 kHz and adjust T4L 50 that voltage of J14 becomes 2.5 V ± 0.05 V.



1. Set to MW 603 kHz and adjust T1 to maximize AUDIO output level.
2. Set to MW 999 kHz and adjust T5 to maximize AUDIO output level.
3. Set to LW 162 kHz and adjust T2L to maximize AUDIO output level.
4. Set to LW 252 kHz and adjust CT2L to maximize AUDIO output level.
5. Repeat the above adjustments 3.4

DECK PART

Before Measurements and Adjustments

The following general conditions apply to the electrical measurements and adjustments unless especial stated otherwise.

- Dolby NR switch off.

1. Test Tape

- TCC -154 Azimuth (12.5 kHz, –24 dB)
- TCC -112 Tape Speed (3 kHz, –10 dB)
- TCC -130 Playback Level (Dolby Ref. Tape, 400 Hz, 0 dB)
- TCC -185C Playback frequency response
- Reference Tape TDK, AC –224

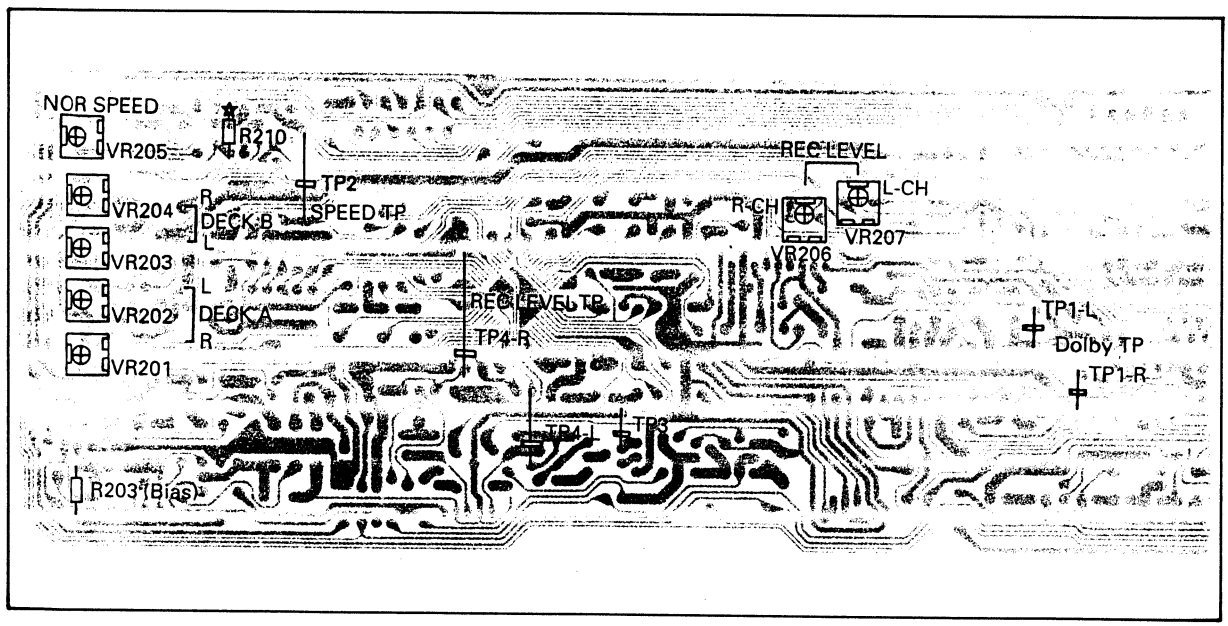
2. Instrument required

- Audio frequency oscillator
- ACVM or dual channel, mV-meter
- Wow/Flutter meter
- Oscilloscope

3. Test Reference

Point : TP1-L/R (Dolby T/P)
Level : 245 mV (TCC-130 Play)

Adjustments and Test points (Deck Board)



4. Playback section

Adjustments	Test tape	Mode	Apply Signal to	Measure on	Read on	Adjust with	Adjust to
Head Azimuth	TCC-154 12.5 kHz (A.BEX)	FWD Play (I & II Deck)			AC mV-meter Oscilloscope	Adjusting a left screw of head	Max Lissajous' figure become a straight line with an angle 45 degrees *a
		REW play (II Deck)				Adjusting a right screw of head	
Playback Speed at normal	TCC-112 3 kHz -10 dB (A.Bex)	Play (I & II Deck) TP2 : GND		Dolby TP(TP1–L/R)	Wow and Flutter Meter	VR205	3000 Hz±30 Hz *b
Playback at high-speed	TCC-112 3kHz -10dB (A. Bex)					R210	4400 Hz±45 Hz
Playback Level	TCC-130 400 Hz, 0 dB (A. Bex)				AC mV-meter	A Deck : VR201, VR202	245 mV (Dolby TP)
						B Deck : VR203, VR204	
Playback frequency response	TCC-185C 12.5 kHz, 1 kHz, 60 Hz (A.Bex)				AC mV-meter		See graph Fig.23 freq. response

5. Recording section

Adjustments	Test tape	Mode	Apply Signal to	Measure on	Read on	Adjust with	Adjust to
Bias OSC Frequency	AC-224 (TDK)	Rec/Pause	400 Hz 400 mV Video	TP3	Frequency Counter	R203	108 KHz±400 Hz
Target value Bias	AC-224 (TDK)	Rec/Pause		TP3	AC mV-meter	R203	AC 17.5 V±1 V *c
Recording Level	AC-224 (TDK)	Rec/Pause		TP4-L/R		VR206, VR207	AC 340mV

Notes:

*a. Prior to any measurement or adjustment, the tape running heads and tape guides should be degaussed and cleaned.

*b. The maximum permissible speed variation is ±1%. Moreever, the wow and flutter can be read. This value should not exceed 0.2%.

*c. When one channel is adjusted, this may slightly affect the adjustment of the other channel. If the adjustment is correct, the frequency response curve will be similar to curve b in Figure 16, with distortion below 3% (-3 dB rec/play).

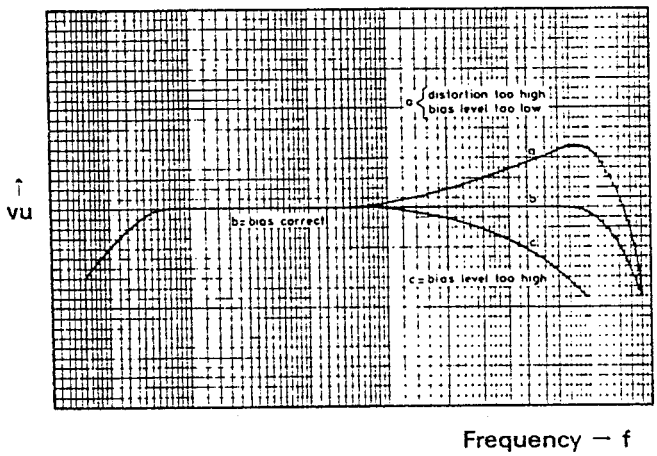
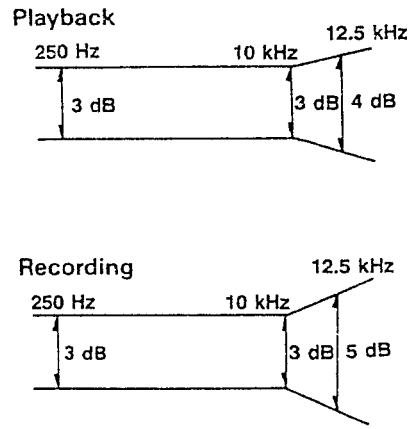


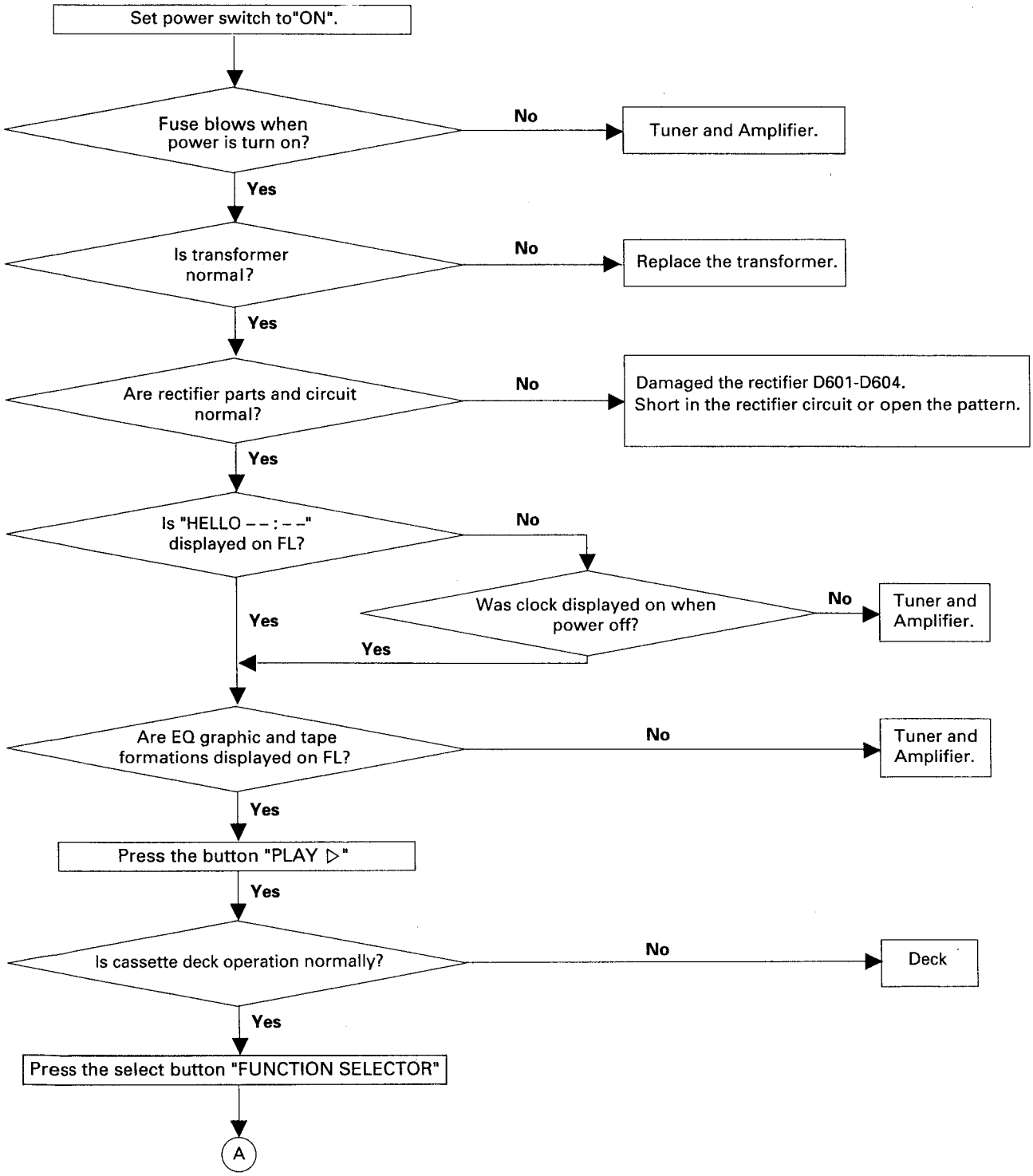
Figure 16

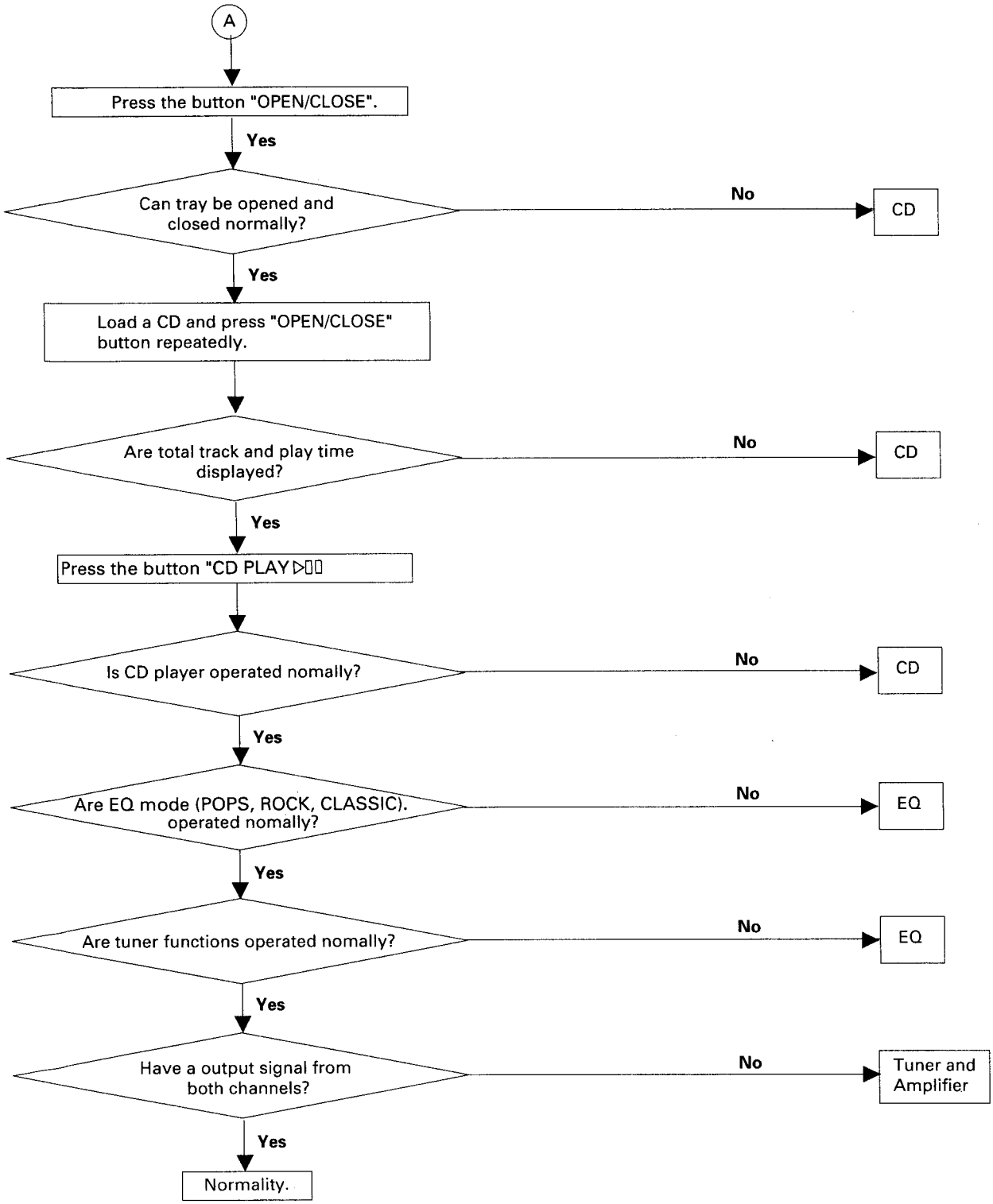


Allowable Playback/Recording Frequency Response Zone

TROUBLE SHOOTING

SYSTEM




A
Press the button "OPEN/CLOSE".
Yes
Can tray be opened and closed normally?
No
CD
Yes
Load a CD and press "OPEN/CLOSE" button repeatedly.
Are total track and play time displayed?
No
CD
Yes
Press the button "CD PLAY ▷▯▯
Is CD player operated nomally?
No
CD
Yes
Are EQ mode (POPS, ROCK, CLASSIC). operated nomally?
No
EQ
Yes
Are tuner functions operated nomally?
No
EQ
Yes
Have a output signal from both channels?
No
Tuner and Amplifier
Yes
Normality.

TUNER AND AMPLIFIER

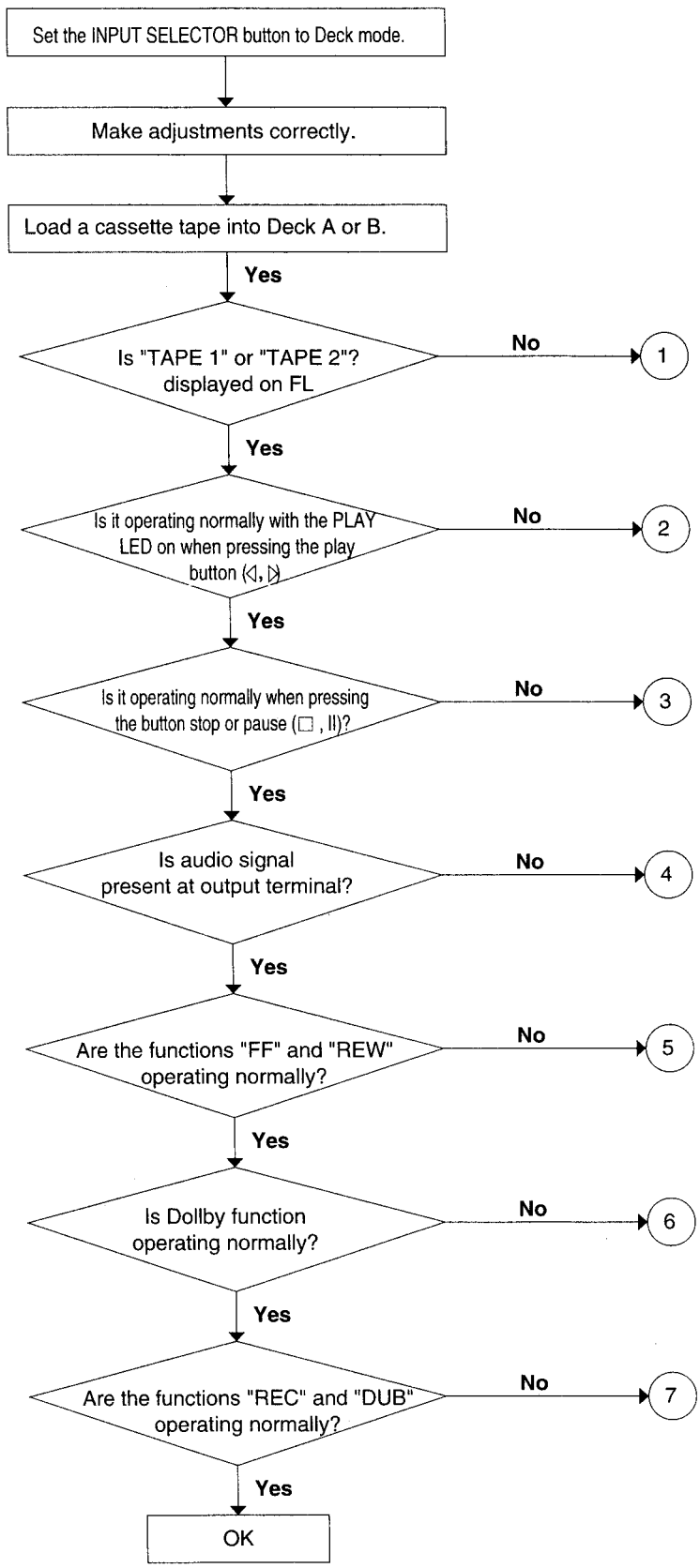
Symptom	Cause and Remedy
SYSTEM inoperative (FL indicator does not light)	● Faulty AC power cord. Replace ● Broken wire and PCB in the power transformer. Replace the power transformer. ● Blown fuse. Replace the fuse.
Fuse blows when power is turned on	● Defective power transformer. Replace. ● Short in the primary or secondary of the transformer circuitry. ● Damaged rectifier. Replace the defective component. ● Short in the rectifier circuit. Repair the short.
Display of the amplifier lights but no sound from both channels.	● Defect in power IC101, 102 on the main board. Replace the defective component(s). ● Refer to schematic diagram for signal Line.
Speaker works normally but headphones inoperative.	● Defective resistors R804~R809. Replace.
FM inoperative.	● Defective front-end. Replace. ● Defective transistor Q7, IC1. Replace the defective transistor (s) or IC. ● Defective ceramic Discriminator Replace the CF4. ● Defective lead-in. Repair or replace the lead in. ● Ceramic filter CF1, CF2 defective. Replace the defective cerami filter(s).
FM inoperative.	● Defective controller circuit component (Refer to schematic diagram for signal line) Replace.
STEREO indicator does not light.	● Defective indicator in FL. Replace. ● Defective IC302 (CPU). Replace the defective component(s).

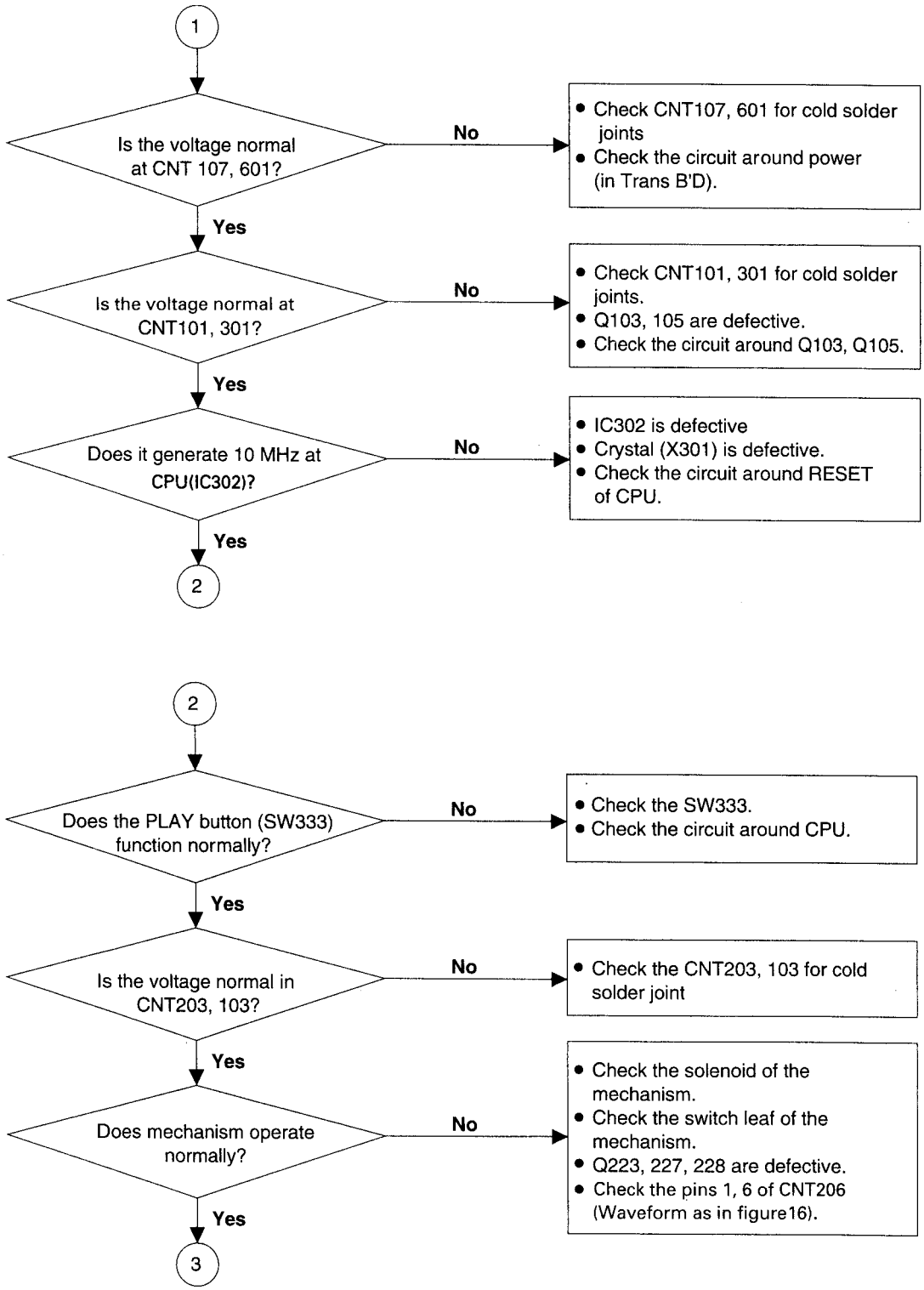
Symptom	Cause and Remedy
AM or LW inoperative.	● Damaged IC of main board. Replace. ● Defective coil T1~T4L of main board. Replace. ● Defective TUNER/BAND switch. Replace. ● Defective varicap diode VD1, VD2L Replace varicap diode. ● Damaged AM loop antenna. Repair or replace. ● Defective controller circuit component. Replace.
AUTO tune inoperative (up/down) at AM or FM.	● Poor contact in up/down buttons. Repair or replace. ● Defective IC302. Replace. ● Defective FL. Replace. ● Defective tuner circuit component. Replace. ● In FM only, improper adjustment of FM front-end. Replace.
MANUAL tune inoperative (up/down) at AM or FM.	● Poor contact in up/down key. Replace. ● Defective IC302. Replace.
MEMORY setting inoperative.	● Defective IC302. Replace.
FL inoperative	● FL defective. Replace. ● Defective IC302. Replace or short the pins of capacitor C42 for reset IC302. ● Faulty AC power Line. Repaire.
Remote control unit inoperative.	● Weak Battery. Replace. ● Defective SENSOR. Replace. ● Defective IC302. Replace.

EQUALIZER

Symptom	Cause and Remedy
EQ inoperative.	● FL defective. Replace. ● Defective IC302 (CPU). Replace or short the pins of back up capacitor C309.
Do not operate with EQ mode selector switch.	● Defective IC302. Replace or Reset the CPU.

DECK


Set the INPUT SELECTOR button to Deck mode.
Make adjustments correctly.
Load a cassette tape into Deck A or B.
Yes
Is "TAPE 1" or "TAPE 2"? displayed on FL
No
1
Yes
Is it operating normally with the PLAY LED on when pressing the play button (◁, ▷)
No
2
Yes
Is it operating normally when pressing the button stop or pause (□ , II)?
No
3
Yes
Is audio signal present at output terminal?
No
4
Yes
Are the functions "FF" and "REW" operating normally?
No
5
Yes
Is Dollby function operating normally?
No
6
Yes
Are the functions "REC" and "DUB" operating normally?
No
7
Yes
OK


1
Is the voltage normal at CNT 107, 601?
No
• Check CNT107, 601 for cold solder joints
• Check the circuit around power (in Trans B'D).
Yes
Is the voltage normal at CNT101, 301?
No
• Check CNT101, 301 for cold solder joints.
• Q103, 105 are defective.
• Check the circuit around Q103, Q105.
Yes
Does it generate 10 MHz at CPU(IC302)?
No
• IC302 is defective
• Crystal (X301) is defective.
• Check the circuit around RESET of CPU.
Yes
2
2
Does the PLAY button (SW333) function normally?
No
• Check the SW333.
• Check the circuit around CPU.
Yes
Is the voltage normal in CNT203, 103?
No
• Check the CNT203, 103 for cold solder joint
Yes
Does mechanism operate normally?
No
• Check the solenoid of the mechanism.
• Check the switch leaf of the mechanism.
• Q223, 227, 228 are defective.
• Check the pins 1, 6 of CNT206 (Waveform as in figure16).
Yes
3

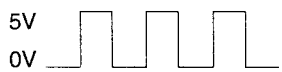
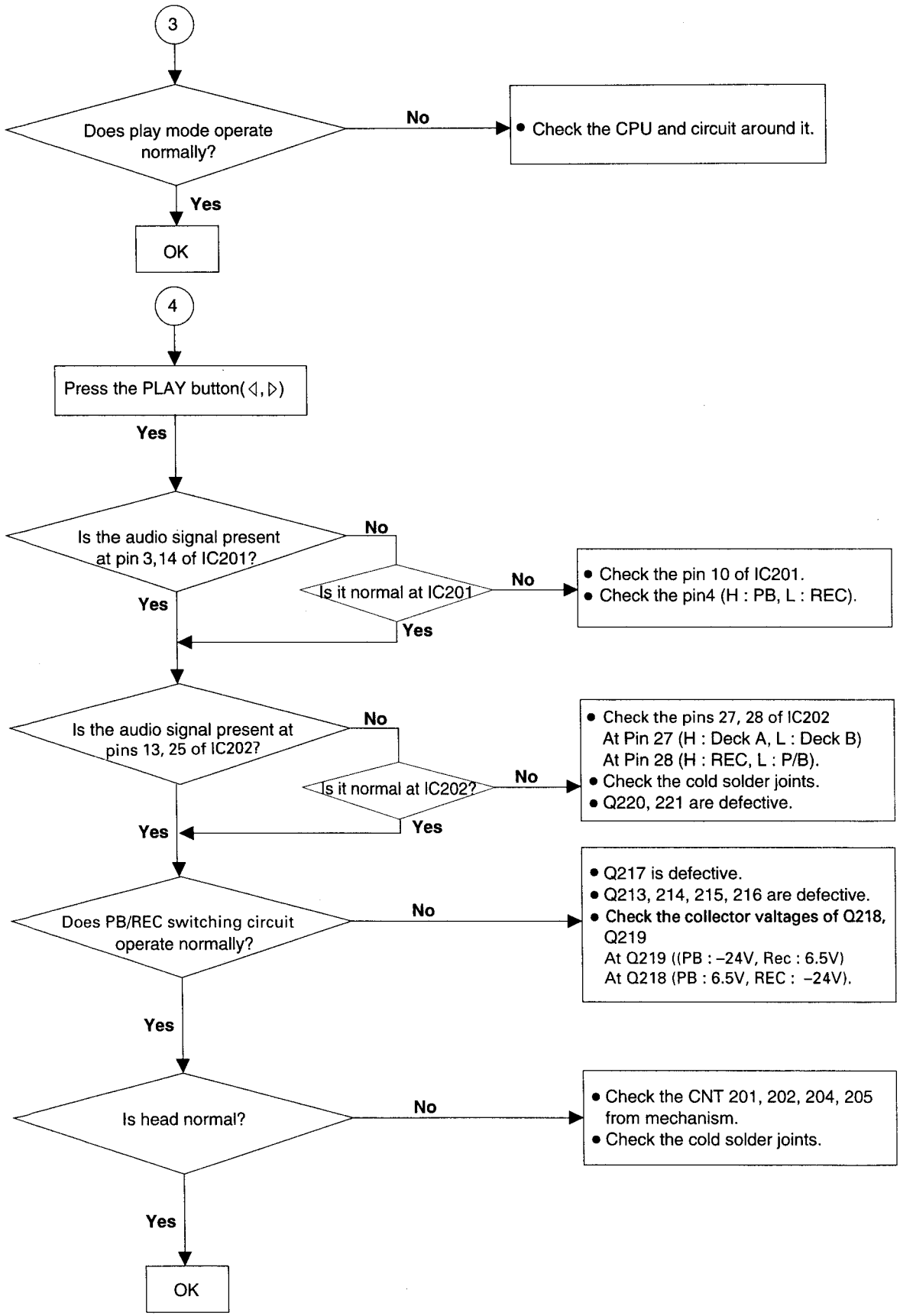
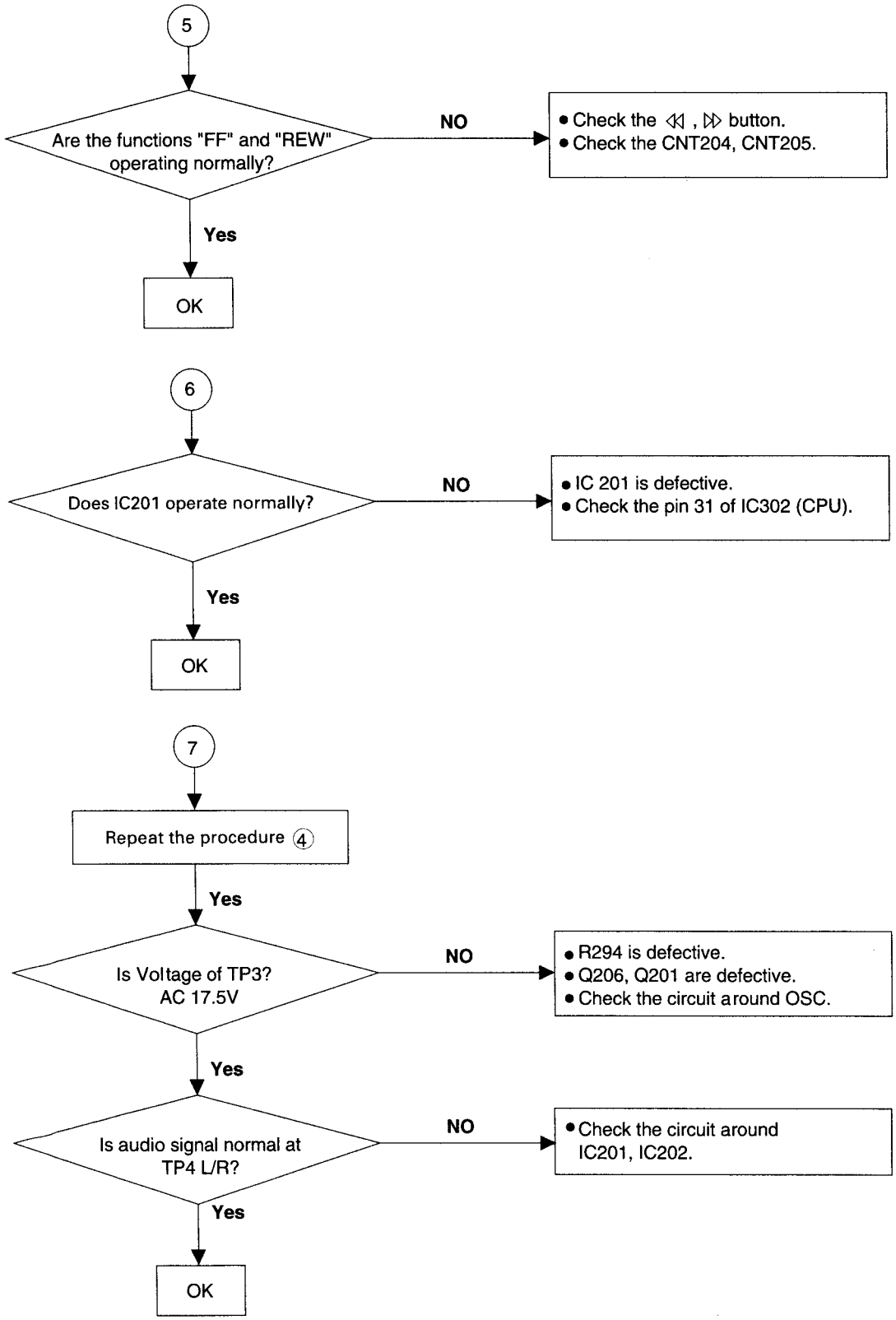
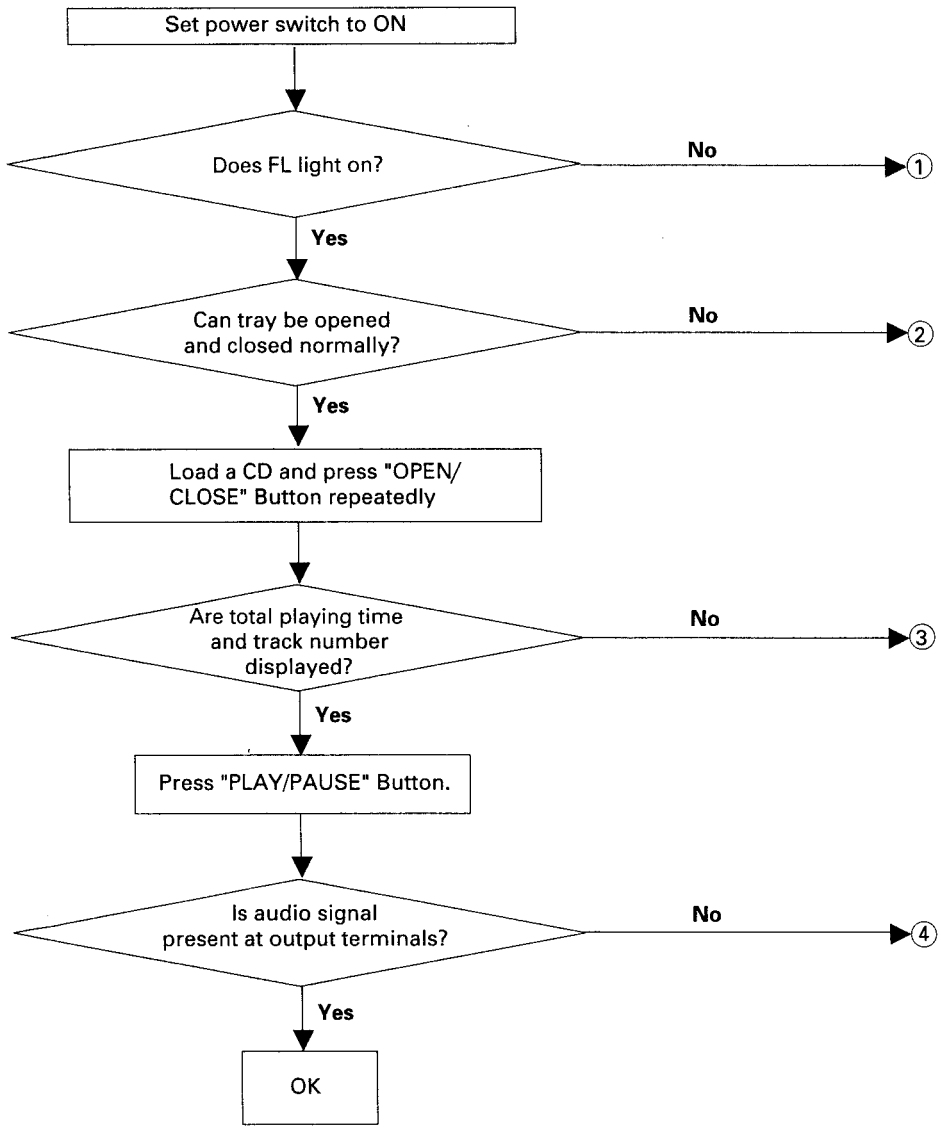

5V
0V

Figure 16

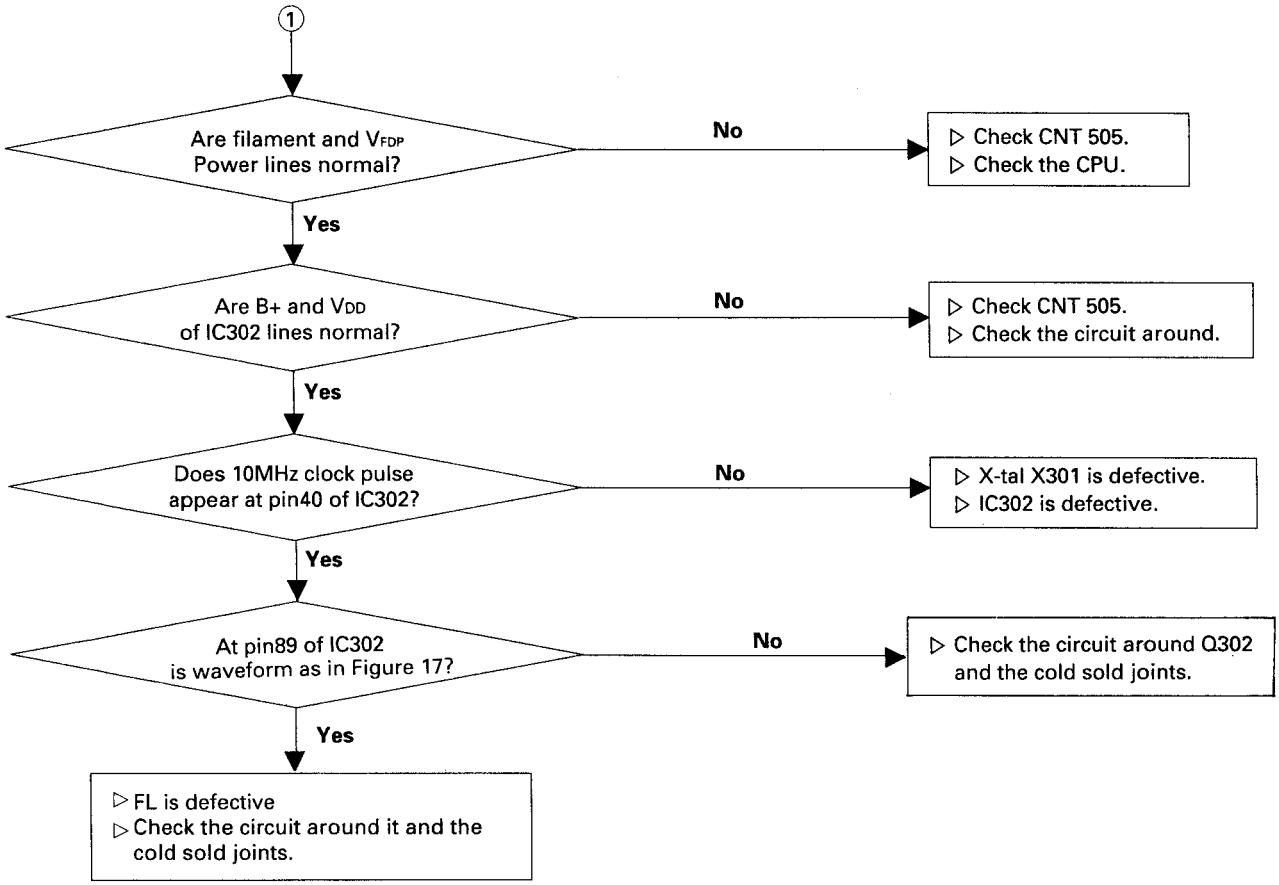

3
Does play mode operate normally?
No
• Check the CPU and circuit around it.
Yes
OK
4
Press the PLAY button(◁, ▷)
Yes
Is the audio signal present at pin 3,14 of IC201?
No
Is it normal at IC201
No
• Check the pin 10 of IC201.
• Check the pin4 (H : PB, L : REC).
Yes
Yes
Is the audio signal present at pins 13, 25 of IC202?
No
Is it normal at IC202?
No
• Check the pins 27, 28 of IC202
At Pin 27 (H : Deck A, L : Deck B)
At Pin 28 (H : REC, L : P/B).
• Check the cold solder joints.
• Q220, 221 are defective.
Yes
Yes
Does PB/REC switching circuit operate normally?
No
• Q217 is defective.
• Q213, 214, 215, 216 are defective.
• Check the collector valtages of Q218, Q219
At Q219 ((PB : -24V, Rec : 6.5V)
At Q218 (PB : 6.5V, REC : -24V).
Yes
Is head normal?
No
• Check the CNT 201, 202, 204, 205 from mechanism.
• Check the cold solder joints.
Yes
OK


5
Are the functions "FF" and "REW" operating normally?
NO
• Check the ⏮ , ⏭ button.
• Check the CNT204, CNT205.
Yes
OK
6
Does IC201 operate normally?
NO
• IC 201 is defective.
• Check the pin 31 of IC302 (CPU).
Yes
OK
7
Repeat the procedure ④
Yes
Is Voltage of TP3? AC 17.5V
NO
• R294 is defective.
• Q206, Q201 are defective.
• Check the circuit around OSC.
Yes
Is audio signal normal at TP4 L/R?
NO
• Check the circuit around IC201, IC202.
Yes
OK

COMPACT DISC



[Repair item 1] At power on, FL doesn't light on.



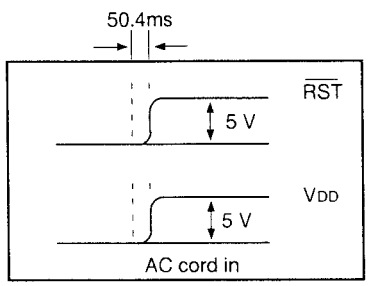
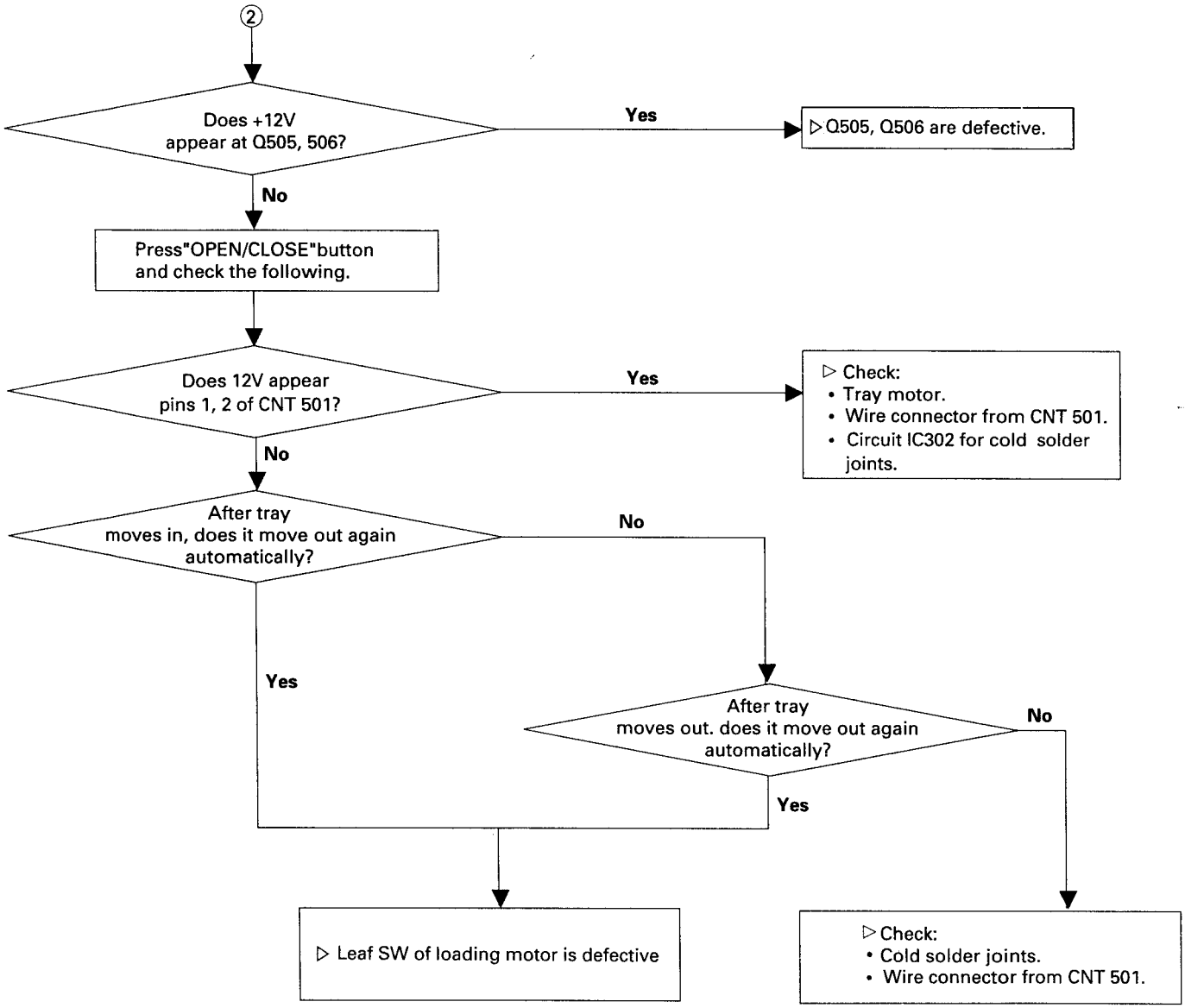
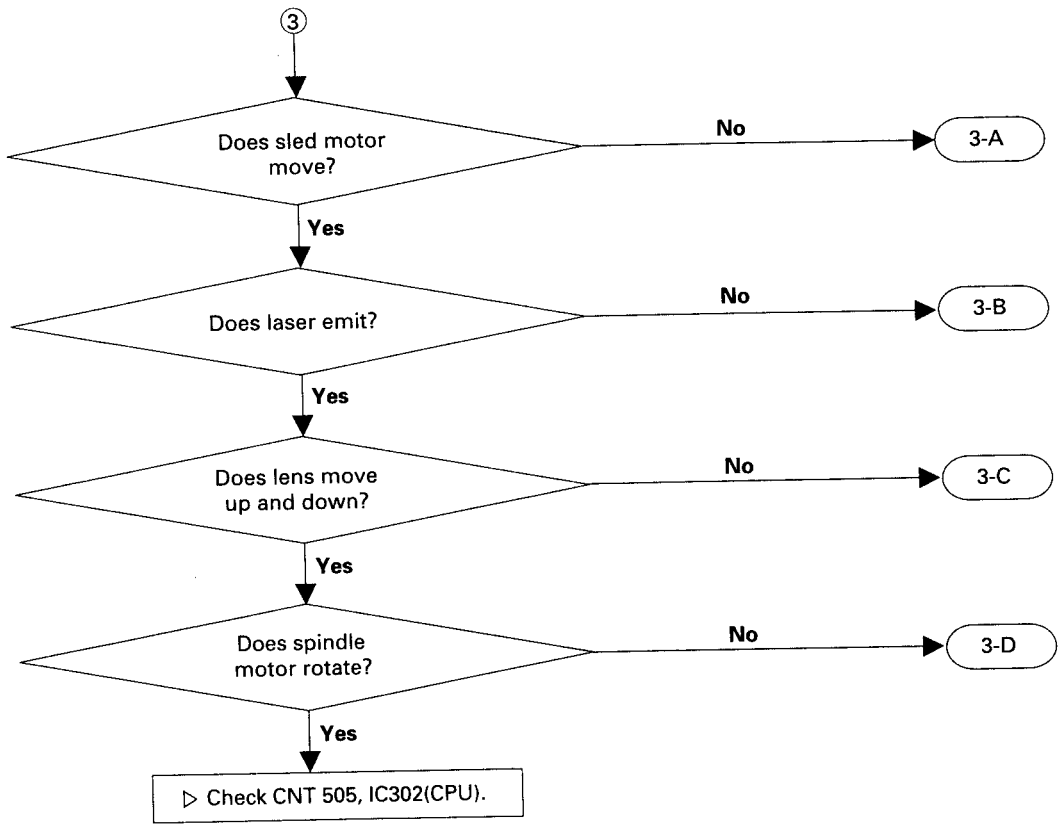


Figure 17

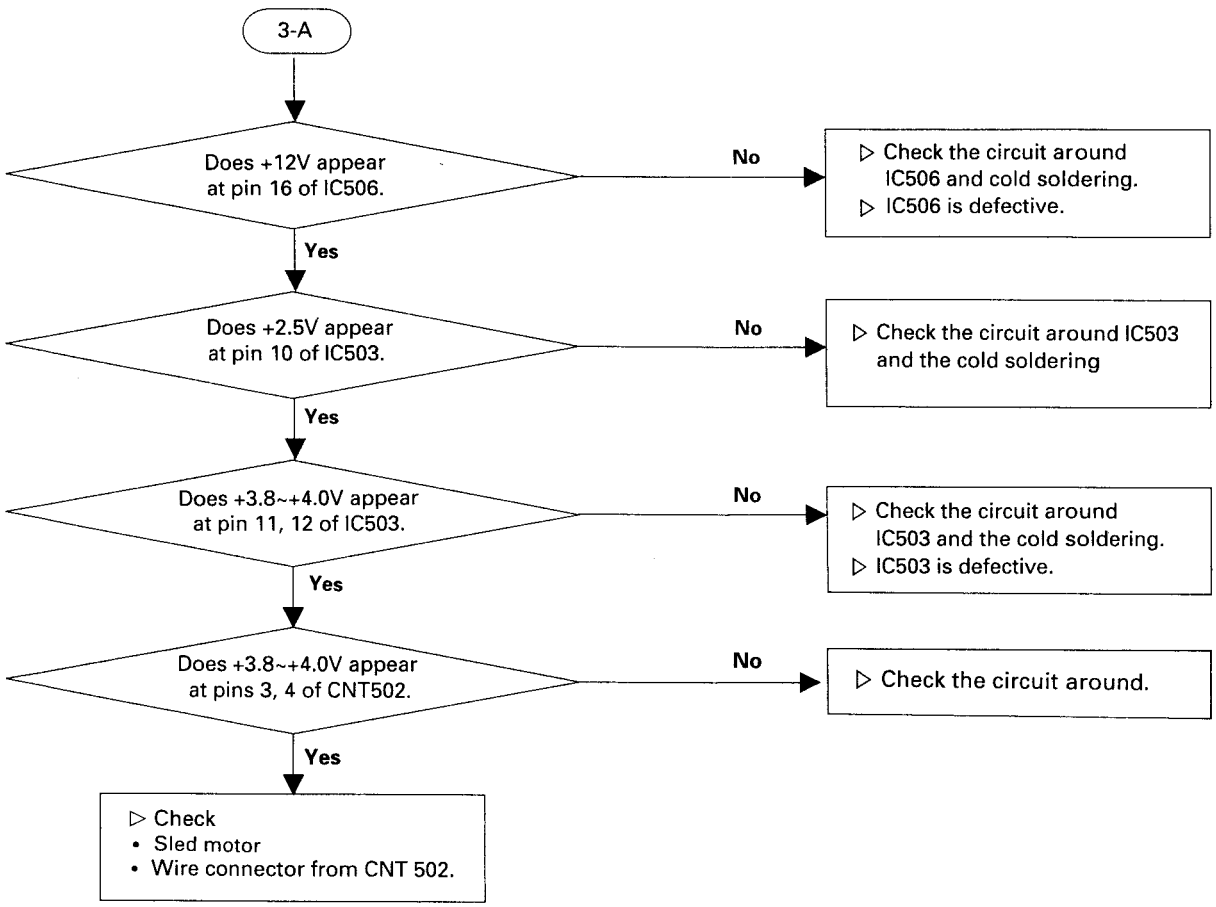
[Repair item 2] Tray cannot be opened and closed by pressing "OPEN/CLOSE" button.



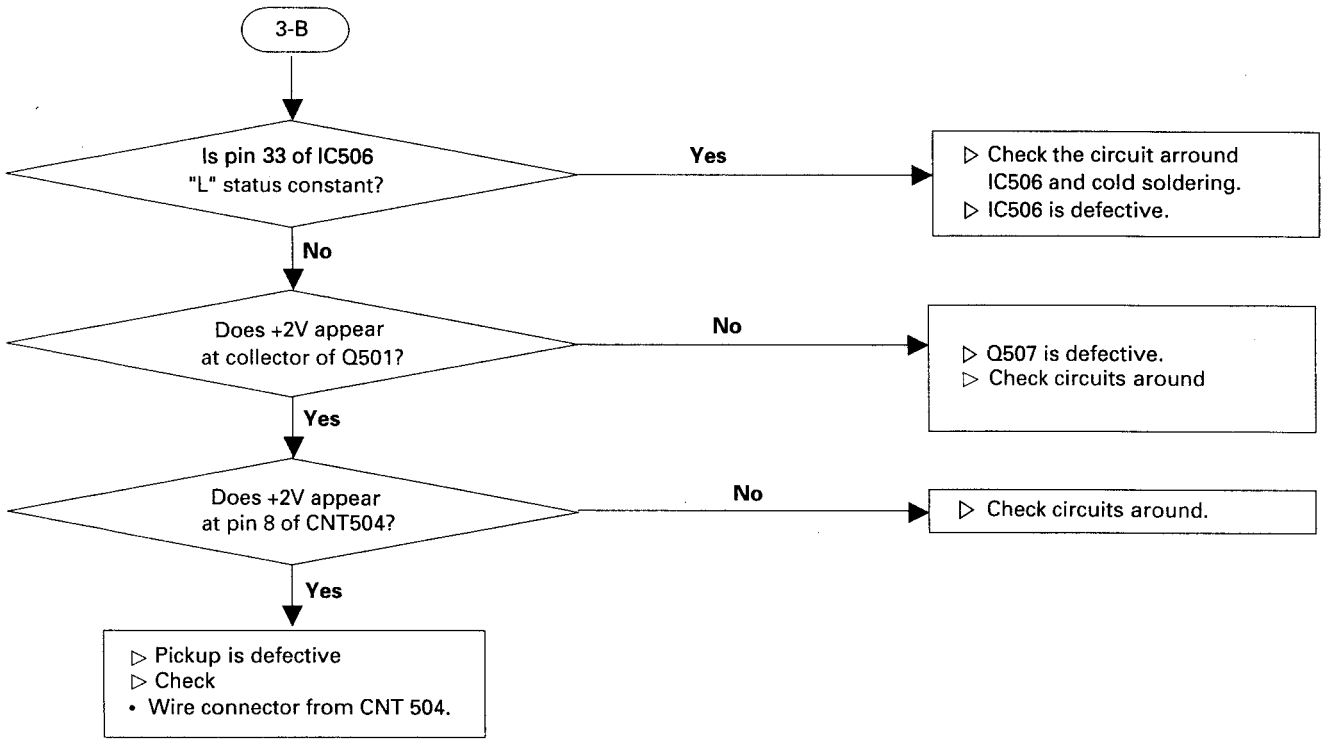
[Repair item 3] "00--- " is displayed instead of total playing time and track number.



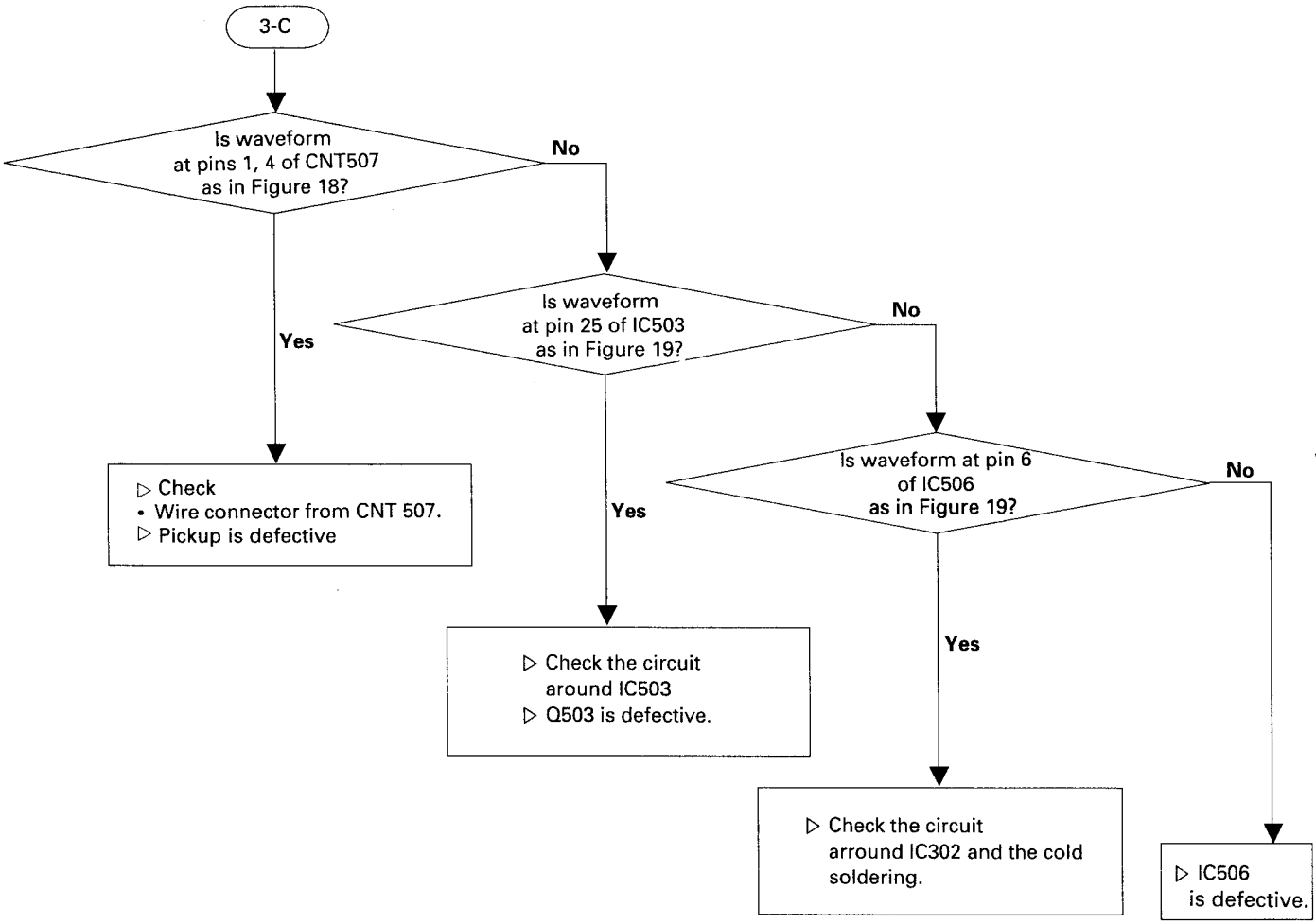
[Repair item 3-A] Sled motor does not move.



[Repair item 3-B] Laser does not emit.



[Repair item 3-C] Object lens of pickup unit does not move up and down.



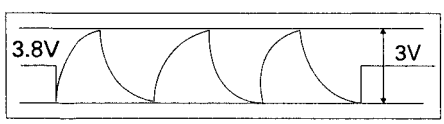


Figure 18

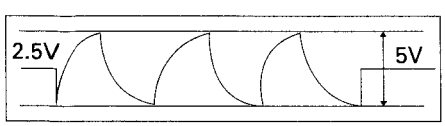
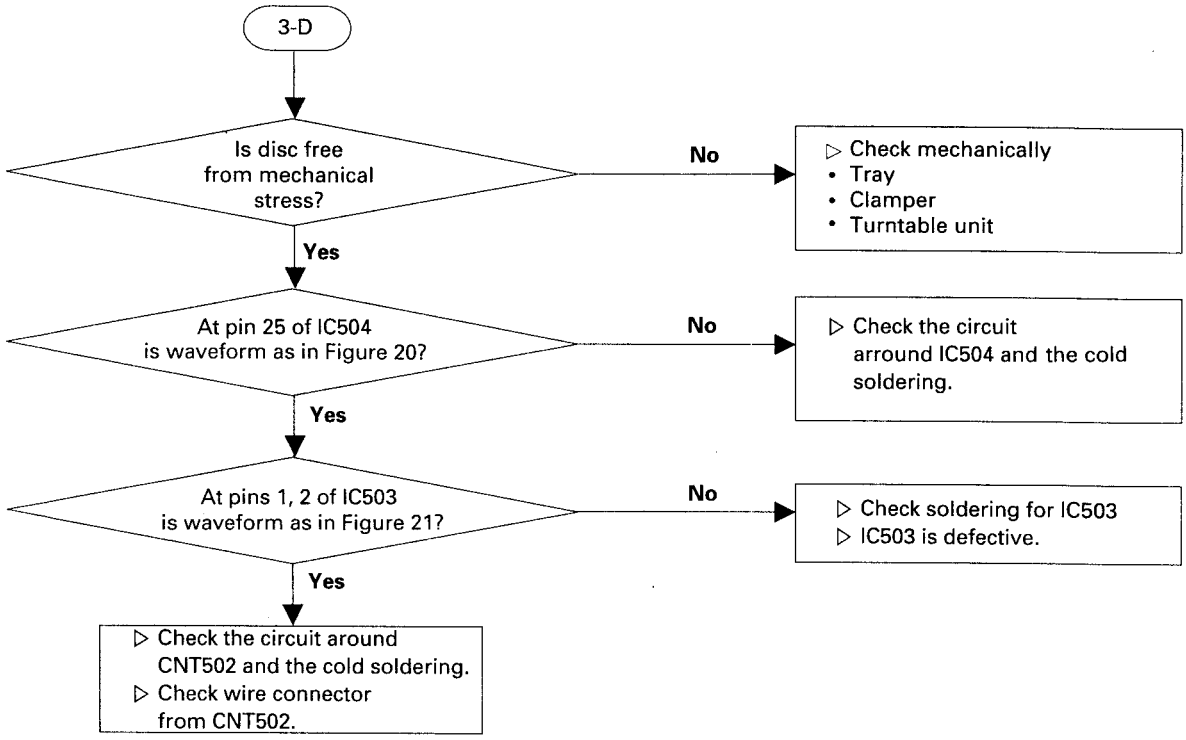


Figure 19

[Repair item 3-D] Spindle motor does not rotate.



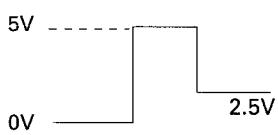


Figure 20

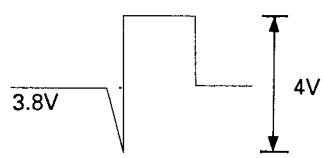
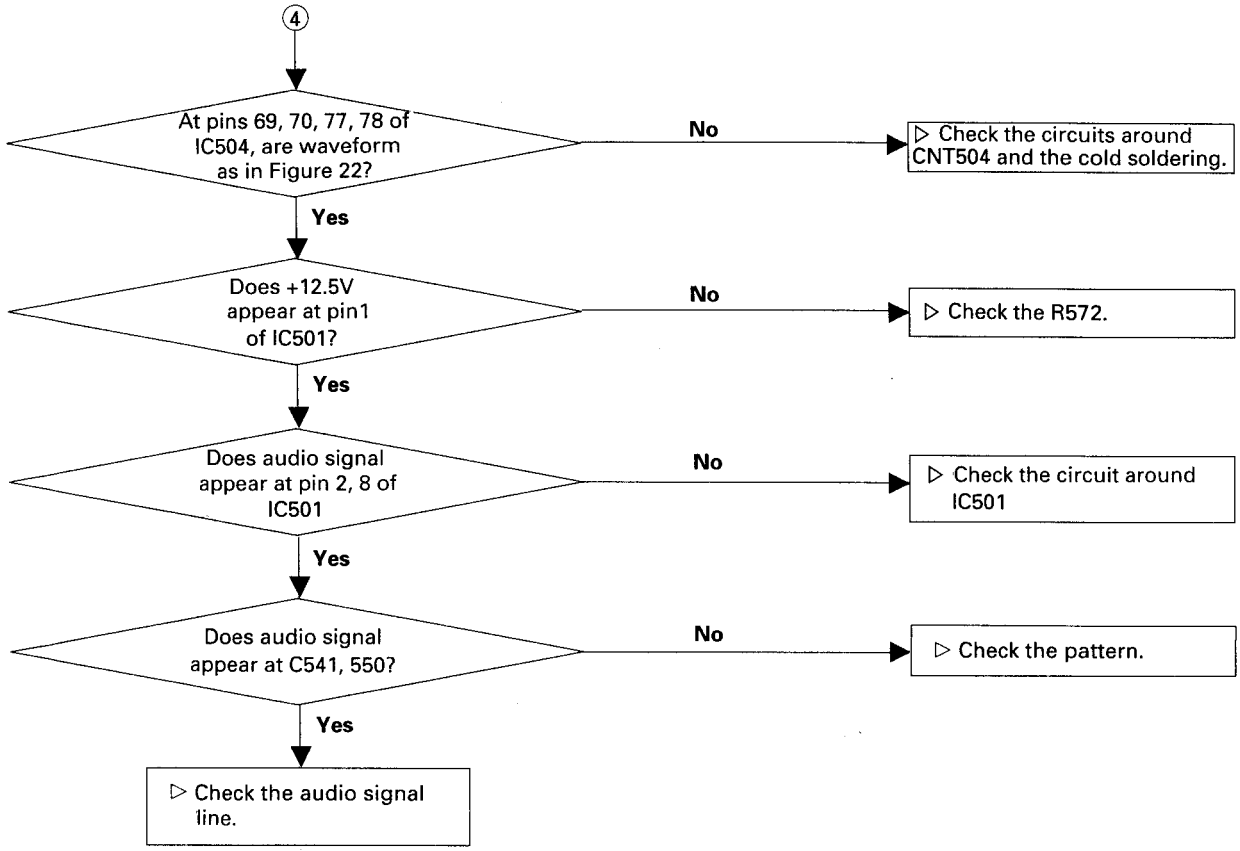


Figure 21

[Repair item 4] No sound signal.



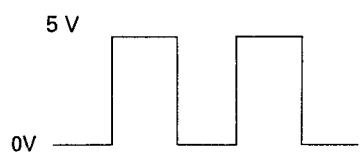


Figure 22

MECHANICAL PARTS LIST

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
	Packaging Materials			
	Poly Bag	9705001550	1	
	Film Soft PE	9715000510	1	
	Cushion Poly	9721005510	1	
	Carton Box	049605254209	1	KS
	Carton Box	049605254210	1	E,D,PT INDO
	Carton Box	049605254211	1	Elektra
	Carton Box	049605254213	1	Colel
	Carton Box	049605254206	1	Philco
	Accessories			
	Compact Disc Demon	5058000310	1	KS(Only)
	Ass'y Commander	5418000921	1	KS
	Ass'y Commander	5418000922	1	E,D,PT INDO
	Ass'y Commander	5418000924	1	Elektra
	Ass'y Commander	5418000926	1	Colel
	Ass'y Commander	5418000925	1	Philco
	Antenna wire FM	4348000810	1	
	Antenna wire FM	4348000110	1	D,E
	Battery 1.5 V AA (R6M)	5518001610	2	KS(Only)
	Antenna AM Loop Stand Strip Wire	2608207361	1	KS
	Antenna AM Loop Stand	2608207361	1	D,E
	Instuction Manual	9007018052	1	KS
	Instuction Manual	9007018054	1	E
	Instuction Manual	9007018058	1	PT INDO
	Instuction Manual	9007018053	1	D
	Instuction Manual	9007018055	1	Elektra
	Instuction Manual	9007018059	1	Colel
	Cabinet & Chassis			
1	Panel Front	048501031631	1	KS
	Panel Front	048501031632	1	E,PT INDO
	Panel Front	048501031633	1	Elektra
	Panel Front	048501031634	1	Colel
	Panel Front	048501031641	1	D
	Panel Front	048501031642	1	Philco
2	Door Deck "L"	048562004611	1	KS
	Door Deck "L"	048562004612	1	
3	Window Door "L"	048553018511	1	
4	Door Deck "R"	048562004711	1	KS
	Door Deck "R"	048562004712	1	
5	Windoe Door "R"	048553018611	1	
6	Window Display	8553018410	1	
7	Knob Volume	048543058111	1	
8	Spring Door "L"	6555608830	1	
9	Spring Door "R"	6555608920	1	
10	Foot Rubber	6715023510	2	
11	Button Power	8543056110	1	
12	Button 4 key	8543056310	1	
13	Button Light	8545120810	1	
14	Window Sensor	8555047210	1	
15	Button 3 key	8543056210	4	
16	Button Function	8542006210	1	
17	Button Open	8545120710	1	
18	Bracket Fastener	6525300210	2	
19	Guide FL	6043010310	1	
20	Guide Sensor	6045010110	1	
21	Holder LED	6043009820	1	
22	Base Damper "L"	6063005110	1	
23	Spring Locker "L"	6555609310	1	
24	Locker Eject "L"	6303002010	1	
25	Damper	6308001630	2	
26	Base Damper "R"	6063005210	1	
27	Spring Locker "R"	6555609320	1	
28	Locker Eject "R"	6303002020	1	
29	Mecha Deck	5708013920	1	
30	Bracket Front	6502004110	1	
31	Chassis Main	6121612910	1	
32	Frame CDP	6122623010	1	
33	Jack Phone	4438005520	2	
		(Mic Option Area)		
	Jack Phone	4438005520	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
34	Bracket Phone	6505098810	2	
		(Mic Option Area)		
	Bracket Phone	6505098810	1	
35	Terminal Speaker	4408106410	1	
36	Heatsink Power	7503017110	1	
37	Terminal Antenna	4408107910	1	
	Terminal Antenna	4408108210	1	D
38	Space Support H:5	6708000610	2	
39	Spring Power IC	6515014410	2	
40	Holder Regulator TR.	6515013910	1	
41	Door Tray	048563006611	1	KS
	Door Tray	048563006612	1	
42	Mecha CDP	5728000450	1	
43	Support PCB	6055003620	4	
44	Jack RCA 1P	4438113410	1	
		(Graphic Option Area Only)		
45	Chassis Back	046102043911	1	KS
	Chassis Back	046102043922	1	Elektra
	Chassis Back	046102043924	1	Colel
	Chassis Back	046102043951	1	D
	Chassis Back	046102043961	1	E
	Chassis Back	046102043955	1	Philco
	Chassis Back	046102013991	1	PT INDO
46	Stopper Cord	6518002310	1	
47	Cord AC Power	4308009310	1	KS
	Cord AC Power	4308009210	1	Elektra,Colel
	Cord AC Power	4308009510	1	D,PT INDO
	Cord AC Power	4308009910	1	E
	Cord AC Power	4308010010	1	Philco
48	Cover Top	6122026520	1	
49	Cover Insulation	4835023010	1	D,E(Only)
	Lover Insulation	4835023020	1	
50	Holder Deck PCB	6511000110	1	
SW1	Switch Tact	4658003710	38	
SW2	Switch Voltage Selector	4618001610	1	PT INDO(Only)
VR1	Volume Motor	3208067910	1	
VR2	Volume MIC/ECHO	3208069310	2	
		(Mic Option Area)		
	Hardwaer Kit			
S1~S40	Screw #2BTC 3×8B	8109230083	40	
S41~55	Screw #1P 3×10B	8119130103	15	
S56~58	Screw #WPTC 3×6Y	8159230061	3	
S59~64	Screw #2WPTC 3×8Y	8159230081	6	
S65~68	Screw #2WPTC 3×14Y	8159230141	4	
S69	Screw GND	8155000710	1	
S70/71	Screw #2FTC 3×8B	9129230083	2	
	Miscellaneous			
	Wire Slat, 6P, 300 mm (CNT107 to CNT601)	4119406305	1	
	Wire Slat, 5P, 240 mm (CNT108 to CNT801)	4119405245	1	
	Wire Slat, 5P, 120 mm (CNT102 to CNT506)	4119305125	1	
	Wire Slat, 9P, 220 mm (CNT103 to CNT203)	4119309225	1	
	Cable FPC, 15P, 240 mm (CNT105 to CNT302)	4118615245	1	
	Cable FPC, 17P, 300 mm (CNT303 to CNT505)	4118617305	1	
	Cable FPC, 17P, 180 mm (CNT304 to CNT206)	4118617185	1	
	Cable FPC, 7P, 240 mm (CNT101 to CNT301)	4118607245	1	
	Cable FPC, 15P, 200 mm (CNT106 to CNT401)	4118615205	1	
	Lead Ass'y, 8P, 180 mm (CNT503 to CD Mecha)	435208189252	1	
	Lead Ass'y, 5P, 100 mm (CNT501 to CD Mecha)	435205109236	1	
	Lead Ass'y, 8P, 180 mm (CNT504 to CD Mecha)	436208182092	1	
	Lead Ass'y, 6P, 120 mm (CNT503 to CD Mecha)	436206122092	1	
⚠	Power Transformer, 220 V, 60 Hz	2828100401	1	KS
⚠	Power Transformer, 110/220 V, 50/60 Hz	2828100421	1	B,PT INDO
⚠	Power Transformer, 127 V, 60 Hz	2828100431	1	Elektra
⚠	Power Transformer, 230 V, 50 Hz	2828100411	1	D
⚠	Power Transformer, 240 V, 50 Hz	2828100481	1	E
⚠	Power Transformer, 110 V, 60 Hz	2828100511	1	Colel
PCB1	P.C.Board, Front	4005011900	1	
PCB2	P.C.Board, CD	4001002100	1	
PCB3	P.C.Board, Deck	4005011800	1	
PCB4	P.C.Board, Tuner	4001002000	1	
PCB5	P.C.Board, Main	4004000300	1	
PCB6	P.C.Board, Volume	4004000310	1	
PCB7	P.C.Board, Trans	4004000320	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
PCB8	P.C.Board, Mic	4004000330	1	
	(Version: Elektra, KS, PT INDO, Colel)			
PCB9	P.C.Board, Phone	4004000340	1	
PCB10	P.C.Board, Front-end	4004000500	1	

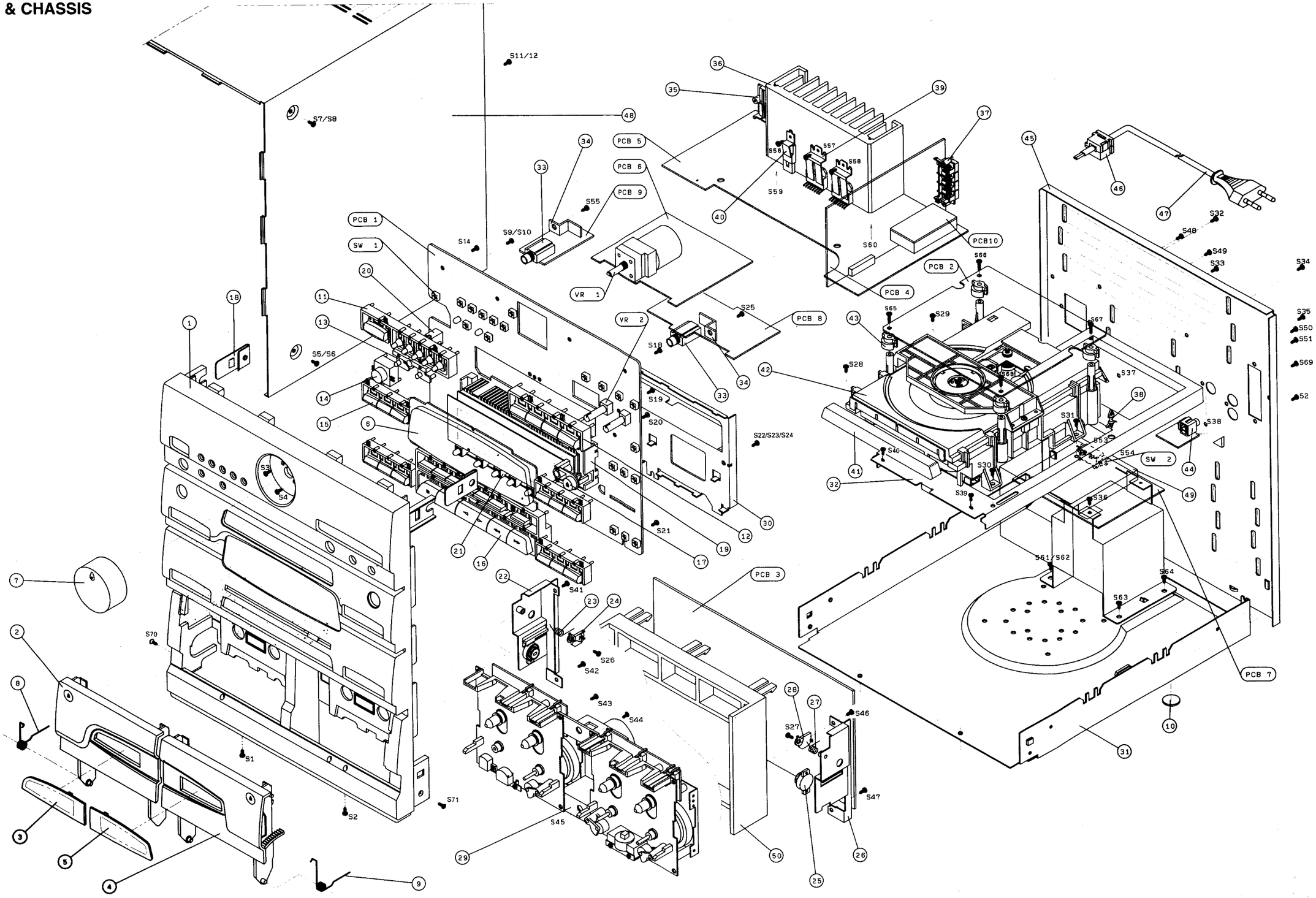
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the safety can be of special significance. When replacing a component identified with ⚠ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

EXPLODED VIEW I

Model No. : P-333AR

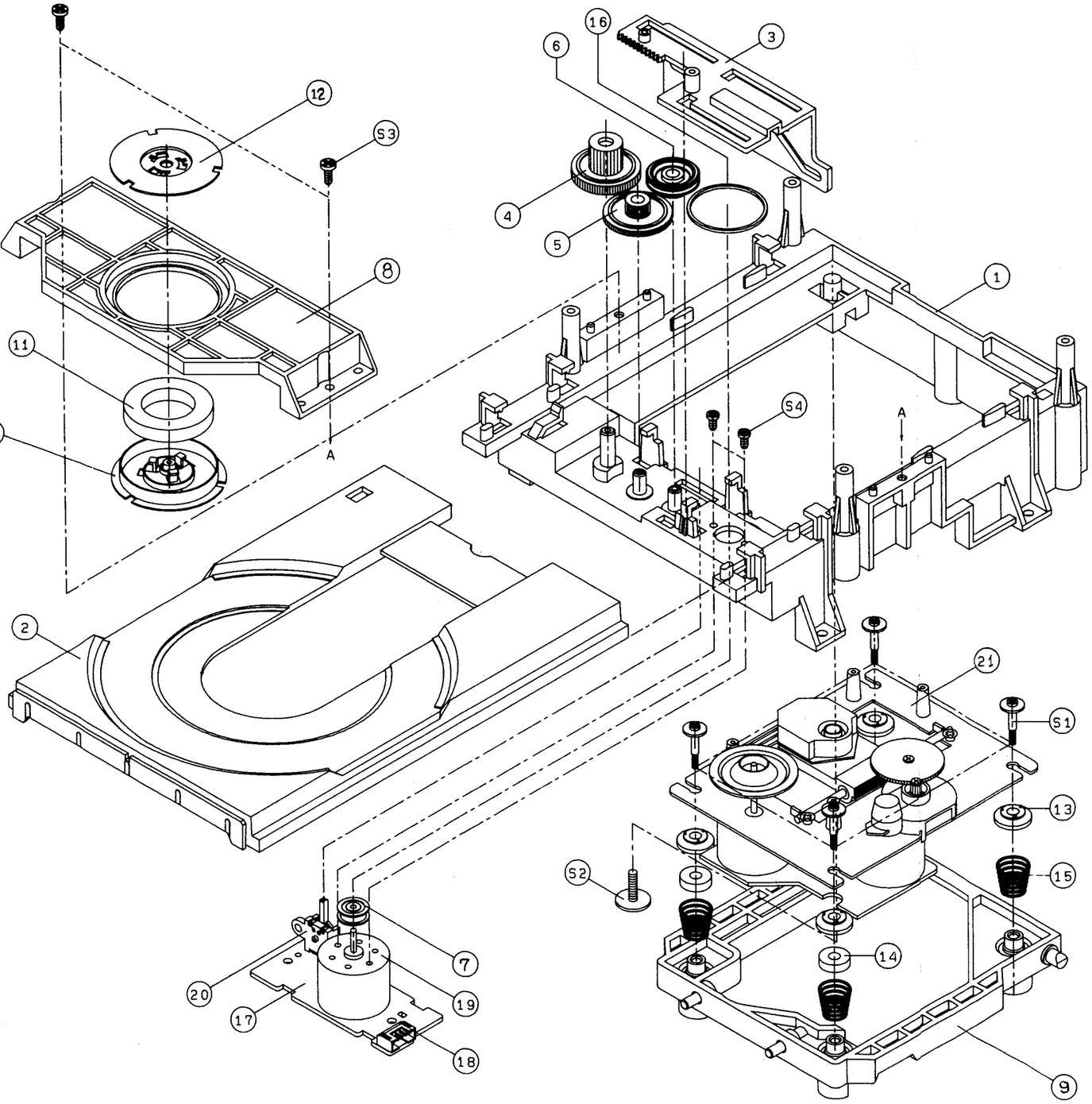
1. CABINT & CHASSIS



EXPLODED VIEW II

Model No. : P-333AR

. CD MECHANISM

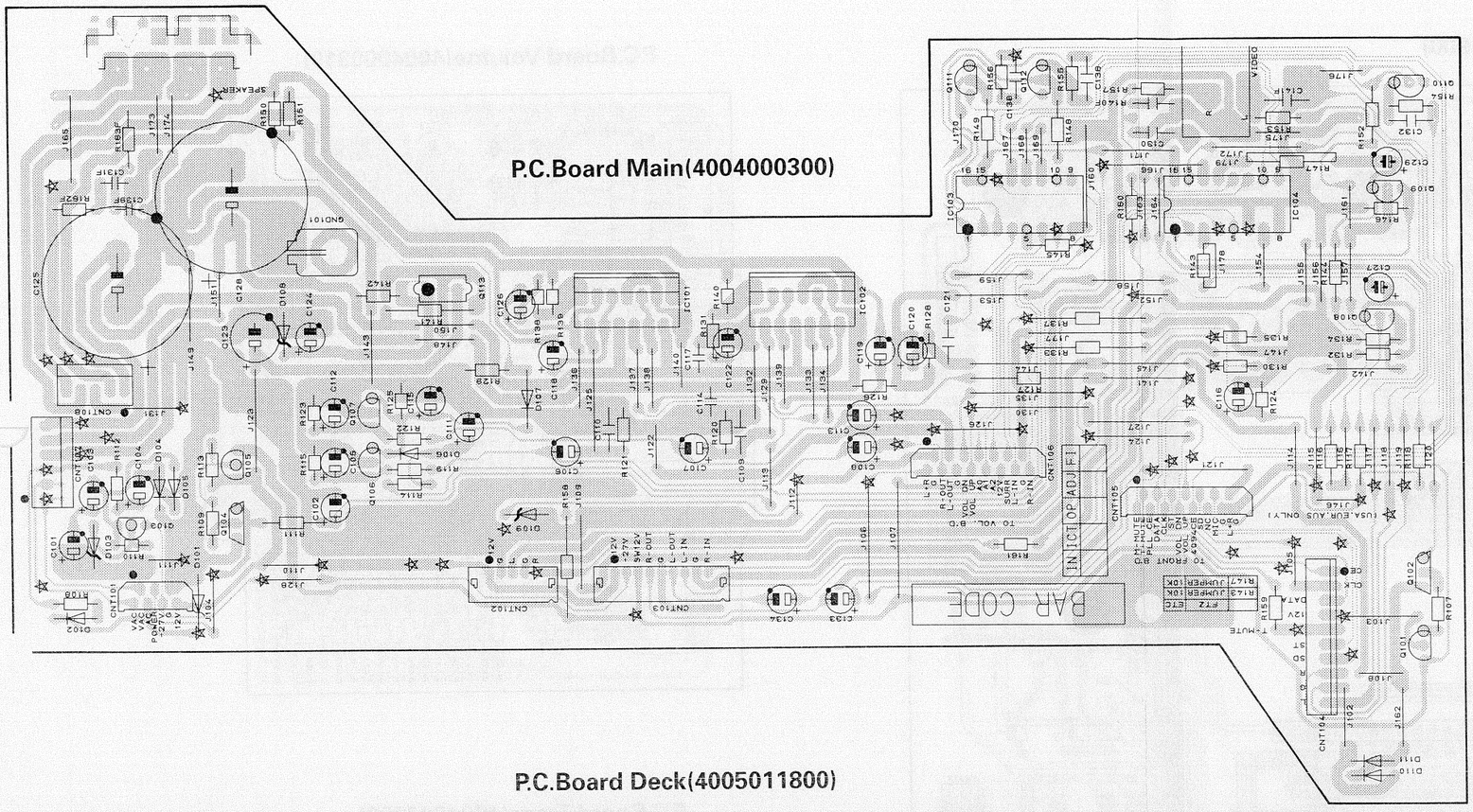


PARTS LIST					
NO.	PART No.	Rev.	DESCRIPTION	Q'ty	REMARK
1	6021601210		BODY MECHA	1	
2	6021800310		TRAY DISC	1	COLOR:BLACK
3	7142000410		CAM SLIDE	1	
4	7103001610		GEAR LOADING	1	
5	7103001710		GEAR CENTER	1	
6	7103001810		GEAR PULLEY	1	
7	7113001310		PULLEY MOTOR	1	
8	6023601210		CHUCK FRAME	1	
9	6062000320		BASE DRIVE UNIT	1	A'ssy SHAFT
10	6063103010		BASE MAGNET	1	
11	5125000910		MAGNET	1	
12	6023408610		COVER MAGNET	1	
13	6715018420		RUBBER DAMPING	4	
14	6705021910		SPONGE DAMPING	2	FRONT ONLY(2EA)
15	6555009220		SPRING DAMPING	4	
16	7165002610		BELT (ϕ 24 × 1 × 1)	1	
17			PCB MOTOR	1	
18	4428525550		CNT GIL-05P-S2L2-EF	1	
19	5558200210		MOTOR RF310T-11400	1	
20	4638003210		SWITCH LEVER (SSCF-21)	1	
21	5728001010		CD DRIVE UNIT	1	KSM-2101-ABM
SCREWS					
S1	8155001120		SCREW DAMPING	4	
S2	8155001210		SCREW MECHA	1	
S3	8009120051		SCREW BM 2×5Y	2	
S4	8159626081		SCREW #2WPT 2.6×8Y	2	

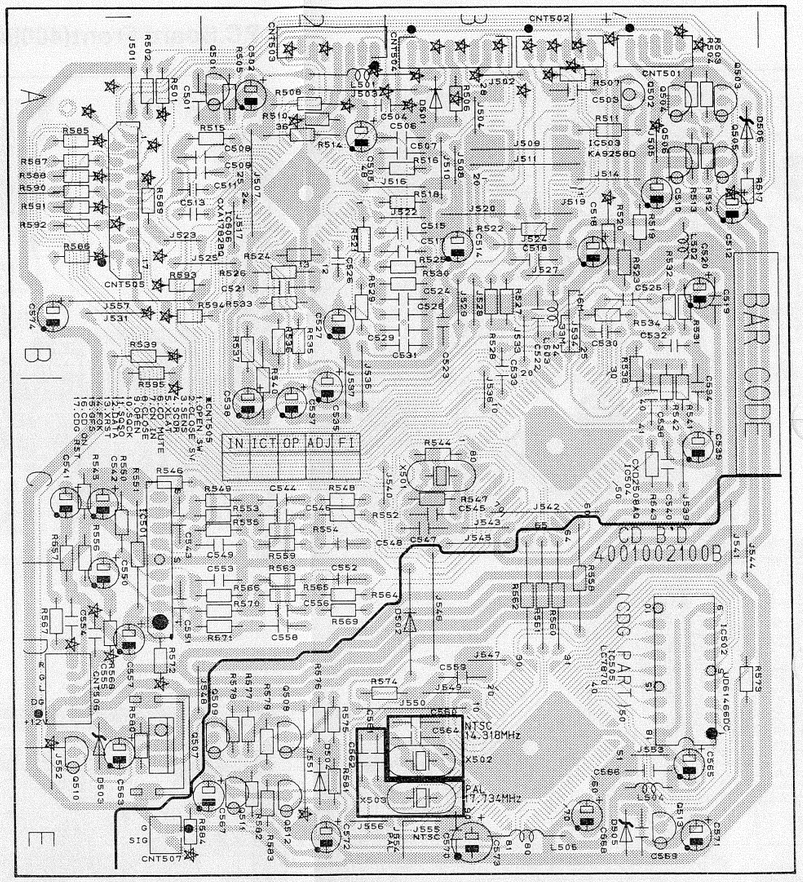
PRINTED CIRCUIT BOARDS

Model No. : P-333AR

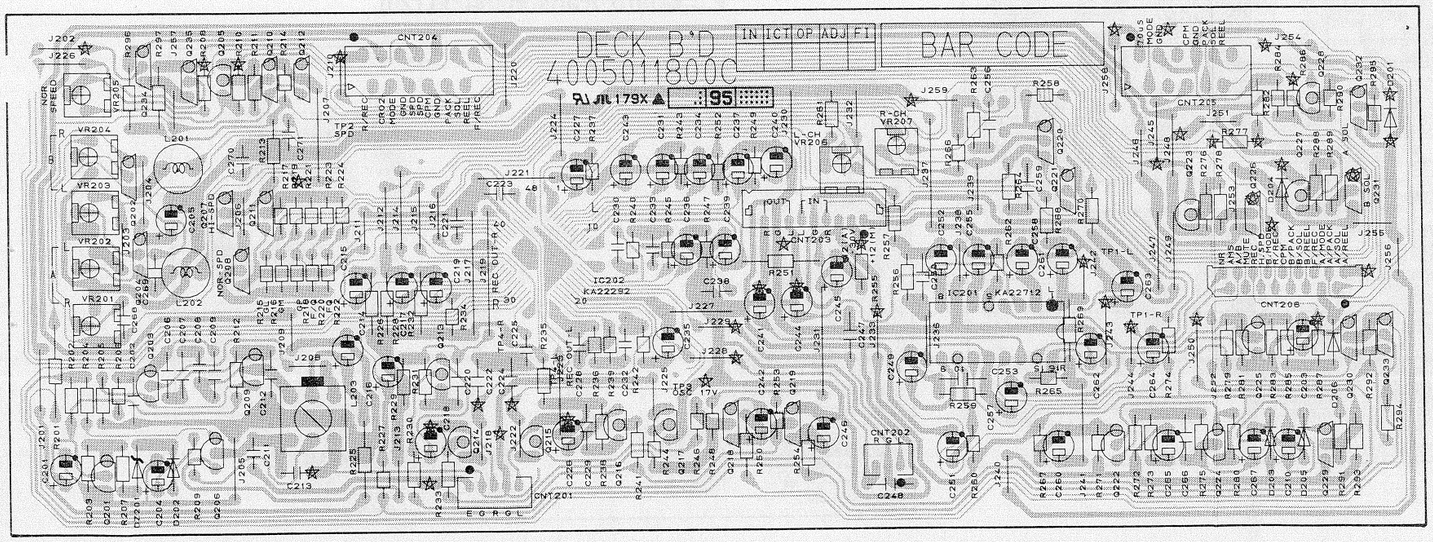
P.C.Board Main(4004000300)



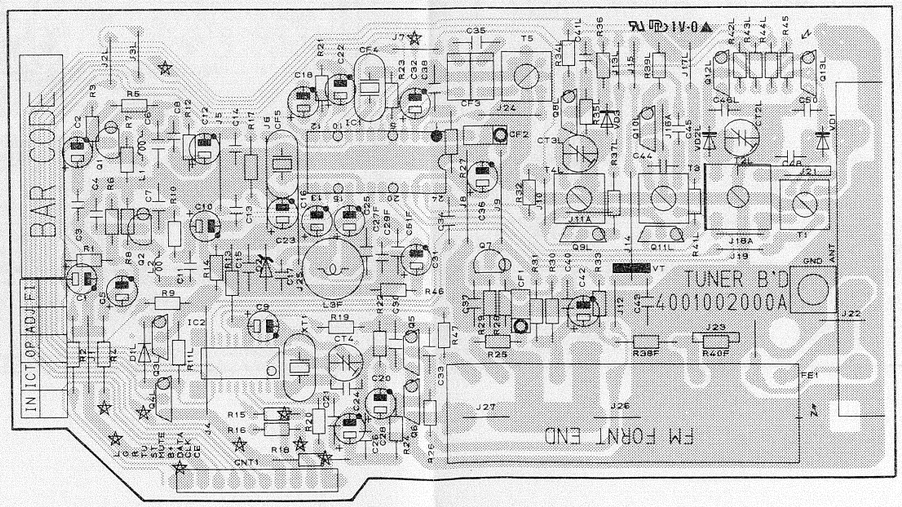
P.C.Board CD(4001002100)



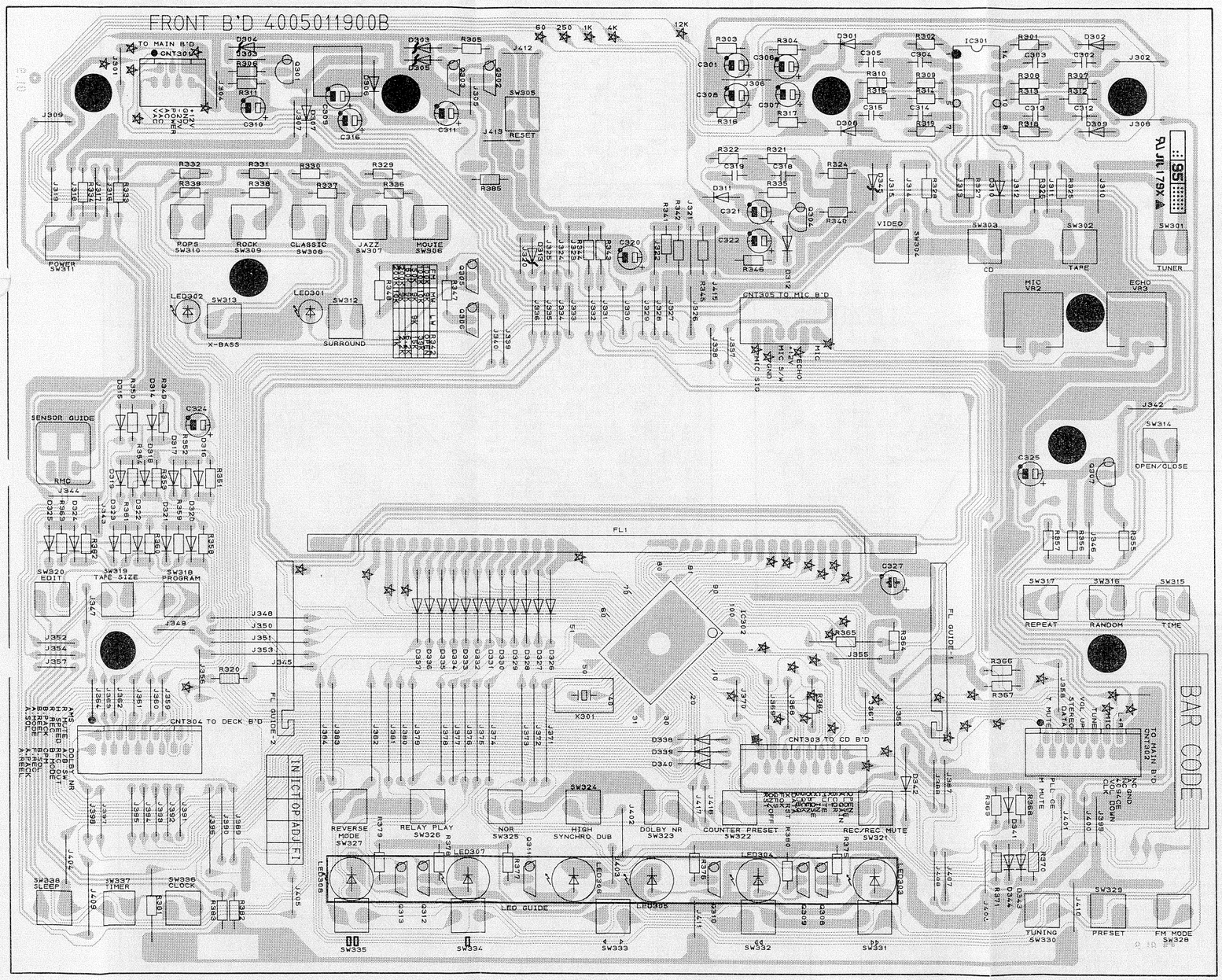
P.C.Board Deck(4005011800)



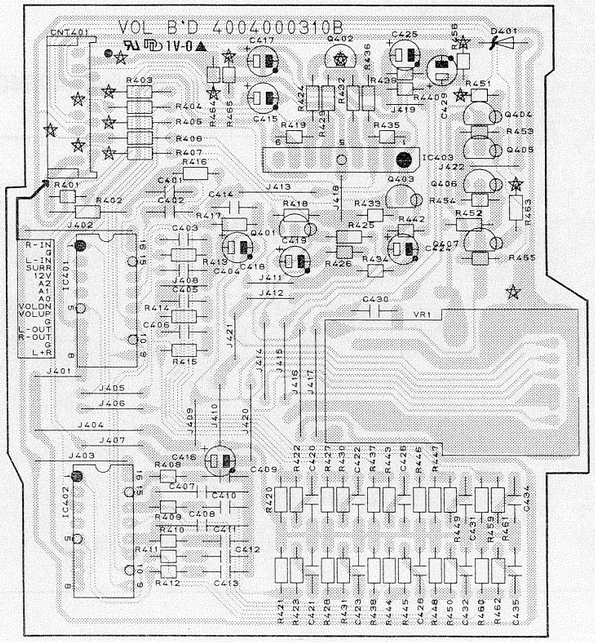
P.C.Board Tuner(4001002000)



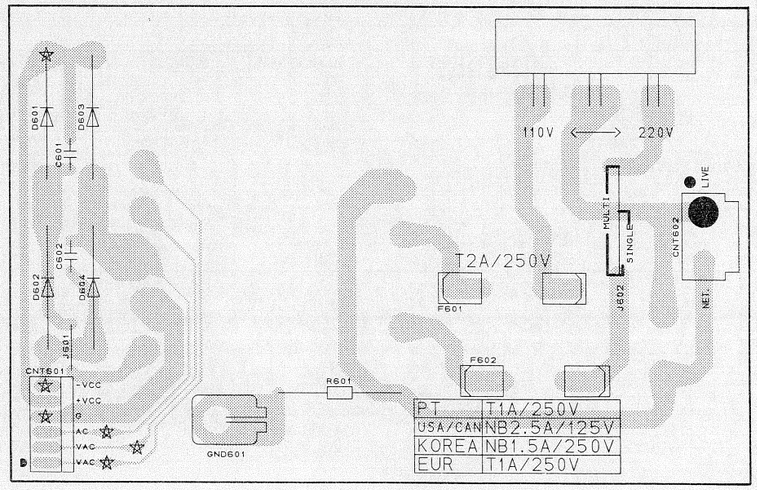
P.C.Board Front(4005011900)



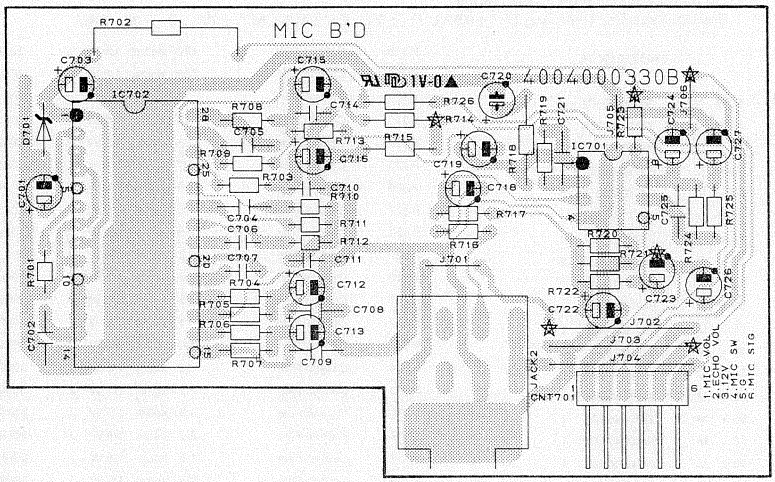
P.C.Board Volume(4004000310)



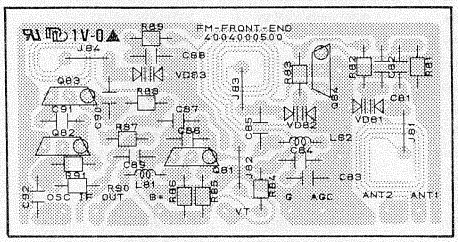
P.C.Board Trans(4004000320)



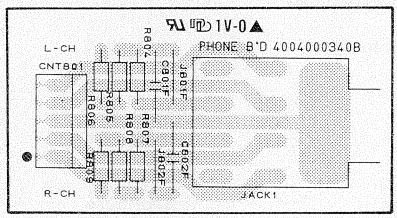
P.C.Board Mic(4004000330)



P.C.Board FM Front-end (4004000500)



P.C.Board Phone (4004000340)



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE : Products marked with ⚠ have special characteristics important to safety. If you replace these components, read carefully the product safety notice in the manual.
Resistor/Capacitor Tolerance, D : (±0.5%), J : (±5%), K : (±10%), M : (±20%), Z : (+80, -20%).

Ref. No.	Description						Mfr. Part No.	Q'ty	Version
PCB1	**Ass'y P.C.Board Front**						**054101010016**		
	Capacitors								
C301	Electrolytic SG	6.8	uF	50 V	M		3479368971	1	
C302/C303	Ceramic Tubular	680	pF	50 V	K		3519681935	2	
C304/C305	Mylar	0.0027	uF	100 V	J		3679272120	2	
C306-C308	Electrolytic SG	10	uF	50 V	M		3479310071	3	
C309	Capacitor, Back-up	0.047	uF	5.5 V			3479347314	1	
C310	Electrolytic SG	47	uF	25 V	M		3479347041	1	
C311	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C312/C313	Ceramic Tubular	180	pF	50 V	K		3519181935	2	
C314/C315	Ceramic Tubular	4700	pF	10 V	K		3519472915	2	
C316	Electrolytic SG	2.2	uF	50 V	M		3479322971	1	
C318/C319	Ceramic Tubular	0.022	uF	50 V	Z		3519223935	2	
C320	Electrolytic SG	22	uF	25 V	M		3479322041	1	
C321	Electrolytic SG	4.7	uF	50 V	M		3479347971	1	
C322	Electrolytic SG	10	uF	50 V	M		3479310071	1	
C324	Electrolytic SG	10	uF	50 V	M		3479310071	1	
C325	Electrolytic SG	4.7	uF	50 V	M		3479347971	1	
C327	Electrolytic SG	10	uF	16 V	M		3479310031	1	
	Connectors								
CNT301	Wafer, FPC, 7P						4428507826	1	
CNT302	Wafer, 15P						4428515826	1	
CNT303	Wafer, 17P						4428517826	1	
CNT304	Wafer, 17P						4428517826	1	
CNT305	Wafer, 6P						4428706725	1	
	Version: KS, Elektra, PT INDO, Colel								
(CNT305)	Not Used !								
	Version: D(2, 3 Band Area), Philco								
	Diodes								
D301/D302	1N4148M, Switching						2058322101	2	
D303/D304	Zener, UZ 6.2BSB						2258599105	2	
D305	Zener, UZ 9.1BSC						2258599107	1	
D306-D312	1N4148M, Switching						2058322101	7	
D313	Zener, UZ 8.2BSB						2258599123	1	
D314-D344	1N4148M, Switching						2058322101	11	
D345	Zener, UZ 7.5BSC						2258599130	1	
D348	1N4148M, Switching						2058322101	1	
LED301-30	LED, SLR54GGA49						2384215302	2	
LED303-30	LED, SLR54GGF29						2374165302	6	
	Integrated Circuits								
IC301	KA324						2168000113	1	
IC302	CXP82432-116Q, CPU						2138322186	1	
	Transistors								
Q301	KTC1815Y/BKTC3198, NPN						2208606104	1	
Q302/Q303	DTC114YS, NPN						2208622106	2	
Q304	KTC1815Y/BKTC3198, NPN						2208606104	1	
Q305/Q306	DTC114YS, NPN						2208622106	2	
Q307	KTC1815Y/BKTC3198, NPN						2208606104	1	
Q308-Q313	DTC114YS, NPN						2208622106	6	
	Resistors								
R301/R302	Carbon Film	390	kohm	1/5 W	J		3069394970	2	
R303/R304	Carbon Film	5.6	kohm	1/5 W	J		3069562970	2	
R305	Carbon Film	3.3	kohm	1/5 W	J		3069332970	1	
R306	Carbon Film	100	ohm	1/5 W	J		3069101970	1	
R307	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R308	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R309	Carbon Film	68	kohm	1/5 W	J		3069683970	1	
R310	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R311	Carbon Film	560	ohm	1/5 W	J		3069561970	1	
R312	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R313	Carbon Film	120	kohm	1/5 W	J		3069124970	1	
R314	Carbon Film	68	kohm	1/5 W	J		3069683970	1	
R315	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R316/R317	Carbon Film	5.6	kohm	1/5 W	J		3069562970	2	
R318	Carbon Film	470	kohm	1/5 W	J		3069474970	1	
R319	Carbon Film	680	kohm	1/5 W	J		3069684970	1	
R321	Carbon Film	120	kohm	1/5 W	J		3069124970	1	
R322	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R324	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R325	Carbon Film	27	kohm	1/5 W	J		3069273970	1	
R326	Carbon Film	15	kohm	1/5 W	J		3069153970	1	
R327	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R328	Carbon Film	7.5	kohm	1/5 W	J		3069752970	1	
R329	Carbon Film	5.6	kohm	1/5 W	J		3069562970	1	
R330	Carbon Film	2.7	kohm	1/5 W	J		3069272970	1	
R331	Carbon Film	1.8	kohm	1/5 W	J		3069182970	1	
R332	Carbon Film	1	kohm	1/5 W	J		3069102970	1	
R333	Carbon Film	100	ohm	1/5 W	J		3069101970	1	
R334	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R335	Carbon Film	2.2	Mohm	1/5 W	J		3069225970	1	
R336	Carbon Film	4.3	kohm	1/5 W	J		3069432970	1	
R337	Carbon Film	2.2	kohm	1/5 W	J		3069222970	1	
R338	Carbon Film	1.5	kohm	1/5 W	J		3069152970	1	
R339	Carbon Film	1.2	kohm	1/5 W	J		3069122970	1	
R340/R341	Carbon Film	10	kohm	1/5 W	J		3069103970	2	
R342	Carbon Film	1	kohm	1/5 W	J		3069101970	1	
	Version: Elektra, KS								
(R342)	Carbon Film	15	kohm	1/5 W	J		3069153970	1	
	Version: D(3 Band Area)								
(R342)	Carbon Film	6.2	kohm	1/5 W	J		3069622970	1	
	Version: D(2 Band Area), PT INDO, Philco, Colel								
R343/R344	Carbon Film	100	ohm	1/5 W	J		3069101970	2	
R345	Carbon Film	330	ohm	1/5 W	J		3069331970	1	
R346	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R347/R348	Carbon Film	390	ohm	1/5 W	J		3069391970	2	
R349	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R350	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R351	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R352	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R353	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R354	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R355	Carbon Film	2.7	kohm	1/5 W	J		3069272970	1	
R356	Carbon Film	680	kohm	1/5 W	J		3069684970	1	
R357	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R358	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R359	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R360	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R361	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R362	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R363	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R364	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R365	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R366/R367	Carbon Film	2.2	kohm	1/5 W	J		3069222970	2	
R368	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R369	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R370	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R371	Carbon Film	22	kohm	1/5 W	J		3069223970	1	
R375-R380	Carbon Film	1	kohm	1/5 W	J		3069102970	6	
R381-R383	Carbon Film	100	kohm	1/5 W	J		3069104970	3	
R384	Carbon Film	1	kohm	1/5 W	J		3069102970	1	
R385	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
	Miscellaneous								
VR2/VR3	Volume Rotary, 20 kB						3208069310	2	
	Version: KS, Elektra, PT INDO, Colel								
	Not Used !								
	Version: D(2, 3 Band Area), Philco								
X301	Resonator, CST10.0MTW-TF01						3938124010	1	
VR2	Volume MIC/ECHO						3208069310	2	
							(Mic Option Area)		
SW1	Switch Tact						4658003710	38	
PCB2	**Ass'y P.C.Board CDP**						**054101010017**		
	Capacitors								
C501	Ceramic Tubular	100	pF	50 V	K		3519101935	1	
C502	Electrolytic SG	22	uF	25 V	M		3479322041	1	

Ref. No.	Description					Mfr. Part No.	Q'ty	Version
C503/C504	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	2	
C505	Electrolytic SG	3.3	uF	50 V	M	3479333971	1	
C506-C509	Ceramic Tubular	0.01	uF	16 V	Z	3519103915	4	
C510	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C511	Mylar	0.033	uF	100 V	J	3679333120	1	
C512	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C513	Mylar	0.033	uF	100 V	J	3679333120	1	
C514	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C515	Ceramic Tubular	0.1	uF	16 V	Z	3519104915	1	
C516	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C517	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	1	
C518	Ceramic Tubular	0.01	uF	16 V	Z	3519103915	1	
C519	Ceramic Tubular	0.1	uF	16 V	Z	3519104915	1	
C520	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C521	Ceramic Tubular	0.047	uF	16 V	Z	3519473915	1	
C522	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	1	
C523	Ceramic Tubular	0.01	uF	16 V	Z	3519103915	1	
C524	Ceramic Tubular	2200	pF	10 V	K	3519222915	1	
C525	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	1	
C526	Mylar	0.033	uF	100 V	J	3679333120	1	
C527	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C528/C529	Ceramic Tubular	0.1	uF	16 V	Z	3519104915	1	
C530	Mylar	0.1	uF	100 V	J	3679104120	1	
C531	Ceramic Tubular	0.1	uF	16 V	Z	3519104915	1	
C532	Mylar	0.0015	uF	100 V	J	3679152120	1	
C533	Ceramic Tubular	0.01	uF	16 V	Z	3519103915	1	
C534	Ceramic Tubular	220	pF	50 V	K	3519221935	1	
C535	Electrolytic SG	3.3	uF	50 V	M	3479333971	1	
C536	Ceramic Tubular	0.01	uF	16 V	Z	3519103915	1	
C537	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C538	Electrolytic SG	22	uF	25 V	M	3479322041	1	
C539	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C540	Ceramic Tubular	100	pF	50 V	K	3519101935	1	
C541	Electrolytic SG	1	uF	50 V	M	3479310971	1	
C542	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C543/C544	Ceramic Tubular	120	pF	50 V	K	3519121935	2	
C545	Ceramic Tubular	10	pF	50 V	K	3519100935	1	
C546	Ceramic Tubular	120	pF	50 V	K	3519121935	1	
C547	Ceramic Tubular	10	pF	50 V	K	3519100935	1	
C548/C549	Ceramic Tubular	120	pF	50 V	K	3519121935	2	
C550	Electrolytic SG	1	uF	50 V	M	3479310971	1	
C551-C553	Ceramic Tubular	120	pF	50 V	K	3519121935	3	
C554/C555	Ceramic Tubular	220	pF	50 V	K	3519221935	2	
C556	Ceramic Tubular	120	pF	50 V	K	3519121935	1	
C557	Electrolytic SG	47	uF	16 V	M	3479347031	1	
C558	Ceramic Tubular	120	pF	50 V	K	3519121935	1	
C559	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	1	
C560-C562	Ceramic Tubular	33	pF	50 V	J	3519330935	3	
C563	Electrolytic SG	1	uF	50 V	M	3479310971	1	
C564	Ceramic Tubular	33	pF	50 V	J	3519330935	1	
C565	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C566	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	1	
C567	Electrolytic SG	220	uF	10 V	M	3479322121	1	
C568	Electrolytic SG	10	uF	50 V	M	3479310071	1	
C569/C570	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	2	
C571	Electrolytic SG	1	uF	50 V	M	3479310971	1	
C572	Electrolytic SG	47	uF	16 V	M	3479347031	1	
C573	Electrolytic SG	470	uF	10 V	M	3479347121	1	
C574	Electrolytic SG	1	uF	50 V	M	3479310971	1	
	Connectors							
CNT501	Wafer, 5P					4428516410	1	
CNT502	Wafer, 6P					4428516510	1	
CNT503	Wafer, 8P					4428516710	1	
CNT504	Wafer, 8P					4428516710	1	
CNT505	Wafer, FFC, 17P					4428509015	1	
CNT506	Wire Trap, 5P					4428531105	1	
CNT507	Not Used !							
	Diodes							
D501/D502	1N4148M, Switching					2058322101	2	
D503	Zener, UZ 9.1BSC					2258599107	1	
D504	1N4148M, Switching					2058322101	1	

Ref. No.	Description					Mfr. Part No.	Q'ty	Version
D505	Zener, UZ 5.6BSB					2258599104	1	
D506	Zener, UZ 3.9BSA					2258599101	1	
	Integrated Circuits							
IC501	KIA4559S/KIA75559S, OP Amp					2168206103	1	
IC502	Not Used !							
IC503	KA9258D					2168202120	1	
IC504	CXD2508Q					2138022119	1	
IC505	Not Used !							
IC506	CXA1782BQ					2138022117	1	
	Coils							
L501-L503	Inductor, 10 uH					2648610082	3	
L504/L505	Not Used !							
	Transistors							
Q501	KTA1015Y/BKTA1266, PNP					2208206105	2	
Q502	MPSA56Y, PNP					2208206113	1	
Q503/Q504	KTA1015Y/BKTA1266, PNP					2208206105	2	
Q505/Q506	KTC1815Y/BKTC3198, NPN					2208606104	2	
Q507	KTD1406Y					2028406121	1	
Q508-Q513	KTC1815Y/BKTC3198, NPN					2208606104	6	
	Resistors							
R501	Carbon Film	100	ohm	1/5 W	J	3069101970	1	
R502-R504	Carbon Film	1	kohm	1/5 W	J	3069102970	3	
R505	Carbon Film	22	ohm	1/5 W	J	3069220970	1	
R506	Carbon Film	100	ohm	1/5 W	J	3069101970	1	
R507	Carbon Film	47	ohm	1/5 W	J	3069470970	1	
R508	Carbon Film	1	kohm	1/5 W	J	3069102970	1	
R510	Carbon Film	24	kohm	1/5 W	J	3069243970	1	
R511	Carbon Film	4.7	kohm	1/5 W	J	3069472970	1	
R512/R513	Carbon Film	1	kohm	1/5 W	J	3069102970	2	
R514	Carbon Film	24	kohm	1/5 W	J	3069243970	1	
R515	Carbon Film	39	kohm	1/5 W	J	3069393970	1	
R516	Carbon Film	100	kohm	1/5 W	J	3069104970	1	
R517	Carbon Film	22	ohm	1/5 W	J	3069220970	1	
R518	Carbon Film	68	kohm	1/5 W	J	3069683970	1	
R519	Carbon Film	4.7	ohm	1/5 W	J	3069479970	1	
R520	Carbon Film	1	kohm	1/5 W	J	3069102970	1	
R521	Carbon Film	20	kohm	1/5 W	J	3069203970	1	
R522	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R523	Carbon Film	100	kohm	1/5 W	J	3069104970	1	
R524	Carbon Film	75	kohm	1/5 W	J	3069753970	1	
R525	Carbon Film	100	kohm	1/5 W	J	3069104970	1	
R526	Carbon Film	470	kohm	1/5 W	J	3069474970	1	
R527/R528	Carbon Film	10	kohm	1/5 W	J	3069103970	2	
R529	Carbon Film	680	kohm	1/5 W	J	3069684970	1	
R530	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R531/R532	Carbon Film	3.3	kohm	1/5 W	J	3069332970	2	
R533	Carbon Film	120	kohm	1/5 W	J	3069124970	1	
R534	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R535	Carbon Film	82	kohm	1/5 W	J	3069823970	1	
R536	Carbon Film	47	kohm	1/5 W	J	3069473970	1	
R537	Carbon Film	15	kohm	1/5 W	J	3069153970	1	
R538	Carbon Film	1	Mohm	1/5 W	J	3069105970	1	
R539	Carbon Film	1	kohm	1/5 W	J	3069102970	1	
R540	Carbon Film	8.2	kohm	1/5 W	J	3069822970	1	
R541	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R542	Carbon Film	100	kohm	1/5 W	J	3069104970	1	
R543/R544	Carbon Film	1	kohm	1/5 W	J	3069102970	2	
R545	Carbon Film	22	kohm	1/5 W	J	3069223970	1	
R546	Carbon Film	47	kohm	1/5 W	J	3069473970	1	
R547	Carbon Film	4.7	kohm	1/5 W	J	3069472970	1	
R548	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R549/R550	Carbon Film	47	kohm	1/5 W	J	3069473970	2	
R551	Carbon Film	22	kohm	1/5 W	J	3069223970	1	
R552	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R553-R555	Carbon Film	33	kohm	1/5 W	J	3069333970	3	
R556/R557	Carbon Film	22	kohm	1/5 W	J	3069223970	2	
R558	Carbon Film	1	kohm	1/5 W	J	3069102970	1	
R559	Carbon Film	33	kohm	1/5 W	J	3069333970	1	

Ref. No.	Description					Mfr. Part No.	Q'ty	Version
R560-R562	Carbon Film	1	kohm	1/5 W	J	3069102970	3	
R563	Carbon Film	33	kohm	1/5 W	J	3069333970	1	
R564	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R565/R566	Carbon Film	33	kohm	1/5 W	J	3069333970	2	
R567-R569	Carbon Film	10	kohm	1/5 W	J	3069103970	3	
R570	Carbon Film	33	kohm	1/5 W	J	3069333970	1	
R571	Carbon Film	47	kohm	1/5 W	J	3069473970	1	
R572	Carbon Film	470	ohm	1/5 W	J	3069471970	1	
R573	Carbon Film	220	ohm	1/5 W	J	3069221970	1	
R574	Carbon Film	47	kohm	1/5 W	J	3069473970	1	
R575	Carbon Film	3	kohm	1/5 W	J	3069302970	1	
R576	Carbon Film	2	kohm	1/5 W	J	3069202970	1	
R577	Carbon Film	1.3	kohm	1/5 W	J	3069132970	1	
R578	Carbon Film	220	ohm	1/5 W	J	3069221970	1	
R579	Carbon Film	1.2	kohm	1/5 W	J	3069122970	1	
R580	Carbon Film	1	kohm	1/5 W	J	3069102970	1	
R581	Carbon Film	3	kohm	1/5 W	J	3069302970	1	
R582	Carbon Film	1.3	kohm	1/5 W	J	3069132970	1	
R583	Carbon Film	330	ohm	1/5 W	J	3069331970	1	
R584	Carbon Film	75	ohm	1/5 W	J	3069750970	1	
R585/R586	Carbon Film	1	kohm	1/5 W	J	3069102970	2	
R587	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R588-R591	Carbon Film	1	kohm	1/5 W	J	3069102970	4	
R592/R593	Carbon Film	10	kohm	1/5 W	J	3069103970	2	
R594/R595	Carbon Film	1	kohm	1/5 W	J	3069102970	2	
	Miscellaneous							
X501	Crystal, 33.8688 MHz					3938202001	1	
X502/X503	Not Used !							

PCB3	Ass'y P.C.Board Deck					054101010018		
	Capacitors							
C201	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C202	Ceramic Tubular	0.01	pF	16 V	J	3519103915	1	
C203	Electrolytic SG	47	uF	10 V	M	3479347041	1	
C204	Electrolytic SG	1	uF	50 V	M	3479310971	1	
C205	Electrolytic SG	10	uF	50 V	M	3479310071	1	
C206	Ceramic Tubular	0.01	pF	16 V	J	3519103915	1	
C207	Ceramic Tubular	1000	pF	16 V	J	3519102915	1	
C208	Mylar	0.022	uF	100 V	J	3679223120	1	
C209	Ceramic Tubular	1000	pF	16 V	J	3519102915	1	
C210	Electrolytic SG	0.1	uF	50 V	M	3479310871	1	
C211	Mylar	0.022	uF	100 V	J	3679223120	1	
C212	Ceramic Tubular	0.01	uF	50 V	Z	3519103915	1	
C213	Mylar	0.0082	uF	100 V	J	3679822120	1	
C214	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C215	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C216/C217	Electrolytic SG	4.7	uF	50 V	M	3479347971	2	
C218	Electrolytic SG	10	uF	50 V	M	3479310071	1	
C219	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C220	Ceramic Tubular	1000	pF	16 V	J	3519102915	1	
C221	Mylar	0.033	uF	100 V	J	3679333120	1	
C222	Ceramic Tubular	680	pF	16 V	K	3519681915	1	
C223	Mylar	0.033	uF	100 V	J	3679333120	1	
C224	Ceramic Tubular	680	pF	16 V	K	3519681915	1	
C225	Mylar	0.01	uF	100 V	J	3679103120	1	
C226	Electrolytic SG	10	uF	50 V	M	3479310071	1	
C227	Electrolytic SG	100	uF	10 V	M	3479310121	1	
C228	Ceramic Disc	330	pF	50 V	K	3579331935	1	
C229	Ceramic Tubular	1000	pF	16 V	J	3519102915	1	
C230	Ceramic Disc	330	pF	50 V	K	3579331935	1	
C231	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C232/C233	Mylar	0.015	uF	100 V	J	3679153120	2	
C234	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C235/C236	Electrolytic SG	22	uF	25 V	M	3479322041	2	
C237	Electrolytic SG	220	uF	10 V	M	3479322121	1	
C238	Mylar	0.01	uF	100 V	J	3679103120	1	
C239/240	Electrolytic SG	47	uF	25 V	M	3479347041	2	
C241	Electrolytic SG	2.2	uF	50 V	M	3479322971	1	
C242	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C243	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C244	Electrolytic SG	2.2	uF	50 V	M	3479322971	1	

Ref. No.	Description					Mfr. Part No.	Q'ty	Version
C245	Electrolytic SG	22	uF	50 V	M	3479322071	1	
C246	Electrolytic SG	22	uF	25 V	M	3479322041	1	
C247/C248	Ceramic Tubular	820	pF	16 V	K	3519821915	2	
C249	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C250	Ceramic Tubular	0.0022	uF	16 V	Z	3519222915	1	
C251	Electrolytic SG	47	uF	25 V	M	3479347041	1	
C252	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C253	Ceramic Tubular	0.0022	uF	16 V	Z	3519222915	1	
C255	Electrolytic SG	3.3	uF	50 V	M	3479333971	1	
C256	Ceramic Tubular	0.0022	uF	16 V	Z	3519222915	1	
C257	Electrolytic SG	0.47	uF	10 V	M	3479347021	1	
C258	Electrolytic SG	0.68	uF	50 V	M	3479368871	1	
C259	Ceramic Tubular	0.022	uF	16 V	Z	3519223915	1	
C260/C261	Electrolytic SG	4.7	uF	50 V	M	3479347971	2	
C262	Electrolytic SG	0.68	uF	50 V	M	3479368871	1	
C263	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C264	Electrolytic SG	3.3	uF	50 V	M	3479333971	1	
C265	Electrolytic SG	10	uF	50 V	M	3479310071	1	
C266	Ceramic Tubular	2200	pF	16 V	K	3519222915	1	
C267	Electrolytic SG	4.7	uF	50 V	M	3479347971	1	
C268/C269	Ceramic Tubular	680	pF	50 V	K	3519681935	2	
C270/C271	Ceramic Tubular	2200	pF	16 V	K	3519222915	2	
	Connectors							
CNT201	Wafer, 5P, from Mecha "B"					4428516410	1	
CNT202	Wafer, 3P, from Mecha "A"					4428516210	1	
CNT203	Wire Trap, 9P to Main					4428531109	1	
CNT205	Wafer, 11P, from Mecha "A"					4428525320	1	
CNT204	Wafer, 13P, from Mecha "B"					4428525340	1	
CNT206	Wafer, FFC, 17P, to Front					4428509015	1	
	Diodes							
D201-D206	1N4148M, Switching					2058322101	6	
DZ201	Zener, UZ 7.5BSC					2258599130	1	
	Integrated Circuits							
IC201	KA22712, Dolby B Type					2168002113	1	
IC202	KA22292Q, REC/PB EQ					2168202130	1	
	Coils							
L201/L202	Trap Bais, 389AC-K5049					2658501150	2	
L203	OSC Bais, CON-K5174					2638601350	1	
	Transistors							
Q201	KTC1815Y/BKTC3198, NPN					2208606104	1	
Q202	DTA114TS, PNP					2208222104	1	
Q203	KTC2236AY/KTC3205, NPN					2228407117	1	
Q204	DTA114TS, PNP					2208222104	1	
Q205	MPSA56Y, PNP					2208206113	1	
Q206	KTC2240, NPN					2208606108	1	
Q207/Q208	DTC114TS, NPN					2208622108	2	
Q209	KTC2236AY/KTC3205, NPN					2228407117	1	
Q210	DTC114YS, NPN					2208622106	1	
Q211	DTC114TS, NPN					2208622108	1	
Q212	DTC114YS, NPN					2208622106	1	
Q213-Q217	2SK117Y, FET					2218207106	5	
Q218/Q219	DTA114TS, PNP					2208222104	2	
220/Q221	DTC114TS, NPN					2208622108	2	
Q222	KTC1815Y/BKTC3198, NPN					2208606104	1	
Q223	MPSA56Y, PNP					2208206113	1	
Q224	KTA1015Y/BKTA1266, PNP					2208206105	1	
Q225	KTC1815Y/BKTC3198, NPN					2208606104	1	
Q226	DTC114YS, NPN					2208622106	1	
Q227/Q228	MPSA56Y, PNP					2208206113	2	
Q229-Q235	DTC114YS, NPN					2208622106	7	
	Resistors							
R201	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R202	Carbon Film	3.3	kohm	1/5 W	J	3069332970	1	
R203	Carbon Film	10	kohm	1/5 W	J	3069103970	1	
R204	Carbon Film	1	kohm	1/5 W	J	3069102970	1	
R205	Carbon Film	10	ohm	1/5 W	J	3069100970	1	

Ref. No.	Description						Mfr. Part No.	Q'ty	Version
R206/R207	Carbon Film	4.7	kohm	1/5 W	J		3069472970	2	
R208	Carbon Film	3.9	kohm	1/5 W	J		3069392970	1	
R209	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R210	Carbon Film	3.6	kohm	1/5 W	J		3069362970	1	
R211-R213	Carbon Film	4.7	kohm	1/5 W	J		3069472970	3	
R214	Carbon Film	3.3	kohm	1/5 W	J		3069332970	1	
R215	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R216	Carbon Film	91	kohm	1/5 W	J		3069913970	1	
R217	Carbon Film	120	kohm	1/5 W	J		3069124970	1	
R218	Carbon Film	62	kohm	1/5 W	J		3069623970	1	
R219	Carbon Film	56	kohm	1/5 W	J		3069563970	1	
R220	Carbon Film	180	kohm	1/5 W	J		3069184970	1	
R221	Carbon Film	24	kohm	1/5 W	J		3069243970	1	
R222	Carbon Film	68	kohm	1/5 W	J		3069683970	1	
R223	Carbon Film	180	kohm	1/5 W	J		3069184970	1	
R224	Carbon Film	39	kohm	1/5 W	J		3069393970	1	
R225	Carbon Film	10	ohm	1/5 W	J		3069100970	1	
R226	Carbon Film	470	ohm	1/5 W	J		3069471970	1	
R227	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R228	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R229	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R230	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R231	Carbon Film	6.2	kohm	1/5 W	J		3069622970	1	
R232	Carbon Film	1	kohm	1/5 W	J		3069102970	1	
R233	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R234	Carbon Film	18	kohm	1/5 W	J		3069183970	1	
R235	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R236	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R237	Carbon Film	470	ohm	1/5 W	J		3069471970	1	
R238	Carbon Film	6.2	kohm	1/5 W	J		3069622970	1	
R239	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R240	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R241	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R242	Carbon Film	82	ohm	1/5 W	J		3069820970	1	
R243	Carbon Film	1	kohm	1/5 W	J		3069102970	1	
R244	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R245	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R246	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R247	Carbon Film	82	ohm	1/5 W	J		3069820970	1	
R248	Carbon Film	330	kohm	1/5 W	J		3069334970	1	
R249	Carbon Film	3.3	Mohm	1/5 W	J		3069335970	1	
R250	Carbon Film	1	kohm	1/5 W	J		3069102970	1	
R251	Carbon Film	100	ohm	1/5 W	J		3069101970	1	
R252	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R253	Carbon Film	330	kohm	1/5 W	J		3069334970	1	
R254	Carbon Film	1	kohm	1/5 W	J		3069102970	1	
R255	Carbon Film	33	kohm	1/5 W	J		3069333970	1	
R256	Carbon Film	3.3	kohm	1/5 W	J		3069332970	1	
R257	Carbon Film	2.7	kohm	1/5 W	J		3069272970	1	
R258	Jumper							1	
R259	Carbon Film	3.3	kohm	1/5 W	J		3069332970	1	
R260	Carbon Film	100	ohm	1/5 W	J		3069101970	1	
R261	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R262	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R263	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R264	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R265	Carbon Film	150	kohm	1/5 W	J		3069154970	1	
R266	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R267	Carbon Film	1	Mohm	1/5 W	J		3069105970	1	
R268	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R269	Carbon Film	150	kohm	1/5 W	J		3069154970	1	
R270	Carbon Film	12	kohm	1/5 W	J		3069123970	1	
R271	Carbon Film	120	kohm	1/5 W	J		3069124970	1	
R272	Carbon Film	680	ohm	1/5 W	J		3069681970	1	
R273	Carbon Film	10	ohm	1/5 W	J		3069100970	1	
R274	Carbon Film	2.7	kohm	1/5 W	J		3069272970	1	
R275	Carbon Film	3.9	kohm	1/5 W	J		3069392970	1	
R276	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R277	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R278	Carbon Film	750	ohm	1/5 W	J		3069751970	1	
R279/R280	Carbon Film	10	kohm	1/5 W	J		3069103970	2	
R281	Carbon Film	15	kohm	1/5 W	J		3069153970	1	
R282	Carbon Film	24	kohm	1/5 W	J		3069243970	1	
R283	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R284	Carbon Film	24	kohm	1/5 W	J		3069243970	1	
R285/R287	Carbon Film	4.7	kohm	1/5 W	J		3069472970	2	
R288	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R289	Carbon Film	750	ohm	1/5 W	J		3069751970	1	
R290	Carbon Film	47	kohm	1/5 W	J		3069473970	1	
R291	Carbon Film	6.8	kohm	1/5 W	J		3069682970	1	
R292/R293	Carbon Film	4.7	kohm	1/5 W	J		3069472970	2	
R294	Carbon Film	470	ohm	1/5 W	J		3069471970	1	
R295	Carbon Film	750	ohm	1/5 W	J		3069751970	1	
R296	Carbon Film	10	kohm	1/5 W	J		3069103970	1	
R297	Carbon Film	4.7	kohm	1/5 W	J		3069472970	1	
	Semi Fixed Resistors								
VR201/204	20 k(B), Play Back Adj.						3248020353	2	
VR205	2 k(B), Normal Speed Adj.						3248020253	1	
VR206/207	10 k(B), Recording Level Adj.						3248010353	2	
	Miscellaneous								
	Wire, Shield, 180 mm, 3P,CNT202 TO "A"MECH						436203185132	1	
	Wire, Shield, 120 mm, 5P,CNT201 TO "B"MECH						436205129236	1	
	Wire, Lug, 300 mm, Mecha Ground						1542221030	1	
PCB4	**Ass'y P.C.Board Tuner**						**054101010019**		
	Capacitors								
C1	Electrolytic SG	47	uF	25 V	M		3479347041	1	
C2	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C3/C4	Mylar	0.0039	uF	100 V	J		3679382120	2	
	Version: PT INDO								
(C3/C4)	Mylar	0.0082	uF	100 V	J		3679822120	2	
	Version: Elektra, KS, Philco, Colel								
(C3/C4)	Mylar	0.0027	uF	100 V	J		3679272120	2	
	Version: D(2, 3Band Area)								
C5	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C6/C7	Ceramic Tubular	330	pF	50 V	K		3519331935	2	
	Version: D(2, 3Band Area), PT INDO								
(C6/C7)	Ceramic Tubular	220	pF	50 V	K		3519221935	2	
	Version: Elektra, KS, Philco, Colel								
C8	Mylar	0.012	uF	100 V	J		3679123120	1	
C9	Electrolytic SG	47	uF	25 V	M		3479347041	1	
C10	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C11	Mylar	0.012	uF	100 V	J		3679123120	1	
C12	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C13/C14	Mylar	0.0082	uF	100 V	J		3679822120	2	
	Version: D(2, 3Band Area), PT INDO								
(C13/C14)	Mylar	0.012	uF	100 V	J		3679123120	2	
	Version: Elektra, KS, Philco, Colel								
C15	Mylar	0.01	uF	100 V	J		3679103120	1	
C16	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C17	Poly	1000	pF	50 V	J		3619102110	1	
	Version: Elektra, KS, Philco, Colel								
(C17)	Poly	1200	pF	50 V	J		3619122110	1	
	Version: D(2, 3Band Area), PT INDO								
C18	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C19/C20	Ceramic Disc, CH	33	pF	50 V	J		3528330210	2	
C21	Ceramic Tubular	100	pF	50 V	K		3519101935	1	
C22	Electrolytic SG	2.2	uF	50 V	M		3479322971	1	
C23	Electrolytic SG	100	uF	10 V	M		3479310121	1	
C24	Mylar	0.01	uF	100 V	J		3679103120	1	
C25	Electrolytic SG	1	uF	50 V	M		3479310971	1	
C26	Electrolytic SG	47	uF	25 V	M		3479347041	1	
C27F	Ceramic Tubular	82	pF	50 V	K		3519820935	1	
	Version: D(2, 3Band Area)								
(C27F)	Jumper							1	
	Version: Elektra, KS, Philco, Colel, PT INDO								
C28	Electrolytic SG	3.3	uF	50 V	M		3479333971	1	
C29	Mylar	0.0082	uF	100 V	J		3679822120	1	
C30	Mylar	0.01	uF	100 V	J		3679103120	1	
C31	Electrolytic SG	4.7	uF	50 V	M		3479347971	1	
C32	Electrolytic SG	22	uF	50 V	M		3479322071	1	
C33	Ceramic Disc	0.01	pF	50 V	Z		3579103530	1	
C34	Mylar	0.01	uF	100 V	J		3679103120	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
C35	Ceramic Tubular 47 pF 50 V J	3519470935	1	
C36	Electrolytic SG 1 uF 50 V M	3479310971	1	
C37/C38	Mylar 0.01 uF 100 V J	3679103120	2	
C40	Mylar 0.01 uF 100 V J	3679103120	1	
C41L	Poly 150 pF 50 V J	3619151110	1	
	Version: D(3Band Area)			
(C41L)	Not Used !		1	
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
C42	Electrolytic SG 47 uF 25 V M	3479347041	1	
C43	Mylar 0.01 uF 100 V J	3679103120	1	
C44	Ceramic Disc, CH 8 pF 50 V J	3528809210	1	
C45	Poly 470 pF 50 V J	3619471110	1	
C46L	Mylar 0.01 uF 100 V J	3679103120	1	
	Version: D(3Band Area)			
(C46L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
C48	Ceramic Disc, CH 10 pF 50 V J	3528100210	1	
C50	Mylar 0.047 uF 100 V J	3679473120	1	
C51F	Ceramic Tubular 120 pF 50 V K	3519121935	1	
	Version: D(2, 3Band Area)			
(C51F)	Not Used !		1	
	Version: Elektra, KS, Philco, Colel, PT INDO			
C52	Ceramic Tubular 100 pF 50 V K	3519101935	1	
	Filters			
CF1/CF2	Ceramic, CDA10.7 MA8-A-TF21	3978011001	2	
	Version: Elektra, KS, Philco, PT INDO			
(CF1/CF2)	Ceramic, CDA10.7 MS3GH-TF21	3978011011	2	
	Version: D(2, 3Band Area), Colel			
CF3	Ceramic, SFZ450F	3908001380	1	
CF4	Ceramic, CDA10.7 MG46-A-TF21	3938014000	1	
	Resonator			
CF5	CSB456F15	3938131600	1	
	Connector			
CNT1	Wafer, 10P	4408100929	1	
	Trimmers			
CT2L	20 pF	3519200935	1	
	Version: D(3Band Area)			
(CT2L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
CT3L	Ceramic Disc, CH 47 pF 50 V J	3528470210	1	
	Version: D(3Band Area)			
(CT3L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
	Diodes			
D1L	1N4148M, Switching	2058322101	1	
	Version: D(3Band Area)			
(D1L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
D2	Zener, UZ 6.2BSB	2258599105	1	
	Integrated Circuits			
IC1	LA1832	2138417002	1	
IC2	LM7001M	2138017136	1	
	Coils			
L1/L2	Inductor, 8.2 mH	2648682275	2	
L3F	Inductor, 20.8 mH	2648601430	1	
	Version: D(2, 3Band Area)			
(L3F)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO			
T1	MW-ANT	2608201120	1	
T2L	LW-ANT	2608201130	1	
	Version: D(3Band Area)			
(T2L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
T3	AM-OSC	2638201150	1	
T4L	LW-OSC	2638401060	1	
	Version: D(3Band Area)			
(T4L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
T5	AM IFT, P-7SB	2848001250	1	
	Transistors			
Q1/Q2	KTC3198BL, NPN	2208606105	1	
Q3L	DTA114YS	2208222105	1	
	Version: D(3Band Area)			
(Q3L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
Q4L	KTC3199Y, NPN	2208610109	1	
	Version: D(3Band Area)			
(Q4L)	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
Q5/Q6	KTC3199Y, NPN	2208610109	2	
Q7	KTC3194, NPN	2008406103	1	
Q8L-Q13L	KTC3199Y, NPN	2208610109	6	
	Version: D(3Band Area)			
(Q8L-Q13L	Not Used !			
	Version: Elektra, KS, Philco, Colel, PT INDO, D(2Band Area)			
	Resistors			
R1	Carbon Film 2.7 kohm 1/5 W J	3069272970	1	
	Version: D(2,3Band Area), PT INDO			
(R1)	Carbon Film 1.8 kohm 1/5 W J	3069182970	1	
	Version: Elektra, Philco, Colel, KS			
R2	Carbon Film 1 kohm 1/5 W J	3069102970	1	
	Version: Elektra, Philco, Colel, KS, PT INDO			
(R2)	Carbon Film 4.3 kohm 1/5 W J	3069432970	1	
	Version: D(2,3Band Area)			
R3	Carbon Film 2.7 kohm 1/5 W J	3069272970	1	
	Version: D(2,3Band Area), PT INDO			
(R3)	Carbon Film 1.8 kohm 1/5 W J	3069182970	1	
	Version: Elektra, Philco, Colel, KS			
R4	Carbon Film 1 kohm 1/5 W J	3069102970		
	Version: Elektra, Philco, Colel, KS, PT INDO			
(R4)	Carbon Film 4.3 kohm 1/5 W J	3069432970	1	
	Version: D(2,3Band Area)			
R5/R6	Carbon Film 330 kohm 1/5 W J	3069334970	2	
R7/R8	Carbon Film 820 ohm 1/5 W J	3069821970	2	PT INDO
(R7/R8)	Carbon Film 680 ohm 1/5 W J	3069681970	2	
	Version: D(2,3Band Area)			
(R7/R8)	Carbon Film 1 kohm 1/5 W J	3069102970	2	
	Version: Elektra, Philco, Colel, KS			
R9	Carbon Film 2 kohm 1/5 W J	3069202970	1	
R10	Carbon Film 8.2 kohm 1/5 W J	3069822970	1	
R11L	Carbon Film 10 kohm 1/5 W J	3069103970	1	
	Version: D(3 Band Area)			
(R11L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R12	Carbon Film 8.2 kohm 1/5 W J	3069822970	1	
R13	Carbon Film .82 ohm 1/5 W J	3069820970	1	
R14	Carbon Film 150 ohm 1/5 W J	3069151970	1	
R15-R17	Carbon Film 1 kohm 1/5 W J	3069102970	3	
R18	Carbon Film 330 ohm 1/5 W J	3069331970	1	
R19/R20	Carbon Film 1 kohm 1/5 W J	3069102970	2	
R21	Carbon Film 3.3 kohm 1/5 W J	3069332970	1	
R22	Carbon Film 560 ohm 1/5 W J	3069561970	1	
R23	Carbon Film 220 ohm 1/5 W J	3069221970	1	
	Version: D(2,3Band Area), PT INDO			
(R23)	Carbon Film 270 ohm 1/5 W J	3069271970	1	
	Version: Elektra, Philco, Colel, KS			
R24	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R25	Carbon Film 100 ohm 1/5 W J	3069101970	1	
R26	Carbon Film 5.6 kohm 1/5 W J	3069562970	1	
R27	Carbon Film 33 kohm 1/5 W J	3069333970	1	
	Version: D(2,3Band Area), PT INDO, Colel			
(R27)	Carbon Film 12 kohm 1/5 W J	3069123970	1	
	Version: Elektra, Philco, KS			
R28	Carbon Film 470 ohm 1/5 W J	3069471970	1	
R29	Carbon Film 330 ohm 1/5 W J	3069331970	1	
R30	Carbon Film 3.3 kohm 1/5 W J	3069332970	1	
R31	Carbon Film 330 ohm 1/5 W J	3069331970	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
R32	Carbon Film 8.2 kohm 1/5 W J	3069822970	1	PT INDO
(R32)	Carbon Film 12 kohm 1/5 W J	3069123970	1	
	Version: D(2,3Band Area), PT INDO, Colel, Elektra, KS			
R33	Carbon Film 82 ohm 1/5 W J	3069820970	1	
R34L	Carbon Film 47 kohm 1/5 W J	3069473970	1	
	Version: D(3 Band Area)			
(R34L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R35L	Carbon Film 1.5 Mohm 1/5 W J	3069155970	1	
	Version: D(3 Band Area)			
(R35L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R36	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R37L	Carbon Film 47 kohm 1/5 W J	3069473970	1	
	Version: D(3 Band Area)			
(R37L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R38F	Carbon Film 100 kohm 1/5 W J	3069104970	1	
	Version: D(2, 3 Band Area)			
(R38F)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO			
R39L	Carbon Film 47 kohm 1/5 W J	3069473970	1	
	Version: D(3 Band Area)			
(R39L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R40F(J23)	Carbon Film 68 kohm 1/5 W J	3069683970	1	
	Version: D(3 Band Area)			
R40F(J23)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R41L	Carbon Film 47 kohm 1/5 W J	3069473970	1	
	Version: D(3 Band Area)			
(R41L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R42L	Carbon Film 100 kohm 1/5 W J	3069104970	1	
	Version: D(3 Band Area)			
(R42L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R43L/R44L	Carbon Film 47 kohm 1/5 W J	3069473970	2	
	Version: D(3 Band Area)			
(R43L/R44	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
R45	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R46	Carbon Film 47 kohm 1/5 W J	3069473970	1	
	Diode Varactor			
VD1	SVC321SPA-C	2258817104	1	
VD2L	SVC321SPA-C	2258817104	1	
	Version: D(3 Band Area)			
(VD2L)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
VD3	SVC321SPA-C	2258817104	1	
	Miscellaneous			
XT1	Crystal, 7.2 MHz	3978101031	1	
J11A/J16A	Jumper		2	
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
(J11A/J16A	Not Used !			
	Version: D(3 Band Area)			
J18A	Jumper		1	
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
(J18A)	Not Used !			
	Version: D(3 Band Area)			
J21	Jumper, 6J		1	
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
(J21)	Jumper, 3J		1	
	Version: D(3 Band Area)			
J2L/J3L	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
(J2L/J3L)	Jumper		1	
	Version: D(3 Band Area)			
J13L/J17L	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO, D(2 Band Area)			
(J13L/J17L	Jumper		2	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
	Version: D(3 Band Area)			
37	Terminal Antenna	4408107910	1	
	Terminal Antenna	4408108210	1	D
PCB5	**Ass'y P.C.Board Main**	**054101010020**		
	Capacitors			
C101	Electrolytic SG 33 uF 35 V M	3479333061	1	
C102	Electrolytic SG 2.2 uF 50 V M	3479322971	1	
C103	Electrolytic SG 33 uF 35 V M	3479333061	1	
C104	Electrolytic SG 47 uF 50 V M	3479347071	1	
C105	Electrolytic SG 0.22 uF 50 V M	3479322871	1	
C106-C108	Electrolytic SG 1 uF 50 V M	3479310971	4	
C109/C110	Ceramic Tubular 2200 pF 50 V K	3519222915	2	
C111	Electrolytic SG 33 uF 35 V M	3479333061	1	
C112	Electrolytic SG 0.22 uF 50 V M	3479322871	1	
C113	Electrolytic SG 1 uF 50 V M	3479310971	1	
C114	Mylar 0.22 uF 100 V J	3679224122	1	
c115/C116	Electrolytic SG 47 uF 25 V M	3479347041	2	
C117	Mylar 0.22 uF 100 V J	3679224122	1	
C118/C119	Electrolytic SG 22 uF 50 V M	3479322071	2	
C120	Electrolytic SG 10 uF 50 V M	3479310071	1	
C121	Ceramic Tubular 100 pF 50 V K	3519101935	1	
C122	Electrolytic SG 47 uF 25 V M	3479347041	1	
C123	Electrolytic SG 220 uF 16 V M	3479322131	1	
C124	Electrolytic SG 22 uF 25 V M	3479322041	1	
C125	Electrolytic HM 3300 uF 40 V M	3419533294	1	
C126	Electrolytic SG 47 uF 25 V M	3479347041	1	
C127	Electrolytic SG 1 uF 50 V M	3479310971	1	
C128	Electrolytic HM 3300 uF 40 V M	3419533294	1	
C129	Electrolytic SG 1 uF 50 V M	3479310971	1	
C130	Ceramic Tubular 0.1 uF 16 V Z	3519104915	1	
C131F	Mylar 0.047 uF 100 V J	3679473120	1	
	Version: D(2, 3 Band Area)			
(C131F)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO			
C132	Ceramic Tubular 1000 pF 50 V J	3519102935	1	
C133/C134	Electrolytic SG 4.7 uF 50 V M	3479347971	2	
C136	Ceramic Tubular 1000 pF 50 V J	3519102935	1	
C138	Ceramic Tubular 1000 pF 50 V J	3519102935	1	
C139F	Mylar 0.047 uF 100 V J	3679473120	1	
	Version: D(2, 3 Band Area)			
(C139F)	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO			
C140F/141	Ceramic Tubular 15 pF 50 V J	3519150935	2	
	Version: D(2, 3 Band Area)			
(C140F/14	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO			
	Connectors			
CNT101	Wafer, FFC, 7P	4428509005	1	
CNT102	Wire Trap, 5P	4428531105	1	
CNT103	Wire Trap, 9P	4428531109	1	
CNT104	Wafer, 10P	4438302960	1	
CNT105	Wafer, FFC, 15P	4428509013	1	
CNT106	Wafer, FFC, 15P	4428509013	1	
CNT107	Wafer, 6P	4428522610	1	
CNT108	Wafer, 5P	4428522510	1	
	Diodes			
D101	Zener, UZ 4.3BSB	2258599102	1	
D102	1N4148M, Switching	2058322101	1	
D103	Zener, UZ 27.0BSC	2258599115	1	
D104-D107	1N4148M, Switching	2058322101	4	
D108	Zener, UZ 13.0BSC	2258599108	1	
D109	Zener, UZ 11.0BSC	2258599122	1	
D110/D111	1N4148M, Switching	2058322101	2	
	Integrated Circuits			
IC101/102	TDA7295	2168035000	2	
IC103	MC14094BCP	2138009115	1	
IC104	GD4052B	2138001114	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
	Transistors			
Q101	KTA1015Y/BKTA1266, PNP	2208206105	1	
Q102	DTC114YS, NPN	2208622106	1	
Q103	MPSA56Y, PNP	2208206113	1	
Q104	DTC114YS, NPN	2208622106	1	
Q105	MPSA56Y, PNP	2208206113	1	
Q106-Q109	KTC1815Y/BKTC3198, NPN	2208606104	4	
Q110-Q112	KTC1923/BKTC3194Y, NPN	2208406103	3	
Q113	KTD880Y/KTD1351Y, NPN	2028406113	1	
	Resistors			
R107	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R108	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R109	Carbon Film 330 ohm 1/5 W J	3069331970	1	
R110	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R111	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R112	Carbon Film 4.7 ohm 1/5 W J	3069479970	1	
R113	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R114	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R115	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R116	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R117/R118	Carbon Film 10 kohm 1/5 W J	3069103970	2	
	Version: Elektra, Philco, Colel, KS, PT INDO			
(R117/R11	Carbon Film 4.7 kohm 1/5 W J	3069472970	2	
	Version: D(2, 3 Band Area)			
R119	Carbon Film 1.8 kohm 1/5 W J	3069182970	1	
R120/R121	Carbon Film 43 kohm 1/5 W J	3069433970	2	
R122	Carbon Film 1.8 kohm 1/5 W J	3069182970	1	
R123	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R124	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R125	Carbon Film 470 kohm 1/5 W J	3069474970	1	
R126	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R127	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R128	Carbon Film 2.7 kohm 1/5 W J	3069272970	1	
R129	Carbon Film 220 ohm 1/5 W J	3069221970	1	
R130	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R131	Carbon Film 220 ohm 1/5 W J	3069221970	1	
R132	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R133	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R134	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R135	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R137	Carbon Film 1 kohm 1/5 W J	3069102970	1	
R138	Carbon Film 220 ohm 1/5 W J	3069221970	1	
R139/R140	Carbon Film 43 kohm 1/5 W J	3069433970	2	
R141/R142	Carbon Film 1 ohm 1/4 W J	3069109270	2	
R143	Carbon Film 10 kohm 1/5 W J	3069103970	1	
	Version: Elektra, Philco, Colel, KS, PT INDO			
(R143)	Jumper		1	
	Version: D(2, 3 Band Area)			
R144	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R145	Carbon Film 3.3 Mohm 1/5 W J	3069335970	1	
R146	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R147	Carbon Film 10 kohm 1/5 W J	3069103970	1	
	Version: Elektra, Philco, Colel, KS, PT INDO			
(R147)	Jumper		1	
	Version: D(2, 3 Band Area)			
R148/R149	Carbon Film 10 kohm 1/5 W J	3069103970	2	
R150/R151	Carbon Film 6.8 kohm 1/5 W J	3069682970	2	
R152-R157	Carbon Film 10 kohm 1/5 W J	3069103970	6	
R158	Carbon Film 560 ohm 1/5 W J	3069561970	1	
R159	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R160/R161	Carbon Film 10 kohm 1/5 W J	3069103970	2	
R162F/163	Carbon Film 2.2 ohm 1/5 W J	3069229970	2	
	Version: D(2, 3 Band Area)			
(R162F/16	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO			
	Miscellaneous			
J146	Jumper		1	
	Version: D(2, 3 Band Area), Philco			
(J146)	Not Used !			
	Version: Elektra, Colel, KS, PT INDO			

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
PCB6	**Ass'y P.C.Board Volume**	**054101010021**		
	Capacitors			
C401	Ceramic Tubular 100 pF 50 V K	3519101935	1	
C402	Ceramic Tubular 0.01 uF 16 V Z	3519103915	1	
C403	Ceramic Tubular 0.0047 uF 16 V Z	3519472915	1	
C404	Ceramic Tubular 47 pF 50 V J	3519470935	1	
C405	Ceramic Tubular 0.01 uF 16 V Z	3519103915	1	
C406	Ceramic Tubular 680 pF 50 V K	3519681935	1	
C407	Ceramic Tubular 100 pF 50 V K	3519101935	1	
C408	Ceramic Tubular 47 pF 50 V J	3519470935	1	
C409	Ceramic Tubular 180 pF 50 V K	3519181935	1	
C410	Ceramic Tubular 0.01 uF 16 V Z	3519103915	1	
C411	Ceramic Tubular 0.0047 uF 16 V Z	3519472915	1	
C412	Ceramic Tubular 680 pF 50 V K	3519681935	1	
C413	Ceramic Tubular 0.01 uF 16 V Z	3519103915	1	
C414	Ceramic Tubular 180 pF 50 V K	3519181935	1	
C415-C419	Electrolytic SG 1 uF 50 V M	3479310971	5	
C420	Ceramic Tubular 680 pF 50 V K	3519681935	1	
C421	Ceramic Tubular 0.022 uF 16 V Z	3519223915	1	
C422	Ceramic Tubular 0.01 uF 16 V Z	3519103915	1	
C423	Ceramic Tubular 0.0047 uF 16 V Z	3519472915	1	
C424	Electrolytic SG 1 uF 50 V M	3479310971	1	
C425	Electrolytic SG 100 uF 10 V M	3479310121	1	
C426	Ceramic Tubular 330 pF 50 V K	3519331935	1	
C428	Ceramic Tubular 330 pF 50 V K	3519331935	1	
C429	Electrolytic SG 47 uF 25 V M	3479347041	1	
C430	Ceramic Tubular 0.022 uF 16 V Z	3519223915	1	
C431	Ceramic Tubular 0.0047 uF 16 V Z	3519472915	1	
C432	Ceramic Tubular 680 pF 50 V K	3519681935	1	
C434	Ceramic Tubular 0.022 uF 16 V Z	3519223915	1	
C435	Ceramic Tubular 0.01 uF 16 V Z	3519103915	1	
	Connector			
CNT401	Wafer, FFC, 15P	4428509053	1	
	Diode			
D401	Zener, UZ 7.5BSC	2258599130	1	
	Integrated Circuits			
IC401/402	GD4051B	2138001134	2	
IC403	KIA4559S/KIA75559S, OP Amp	2168206103	1	
	Transistors			
Q401	KTC1815Y/BKTC3198, NPN	2208606104	1	
Q402	2SK117Y, FET	2218207106	1	
Q403/Q404	KTC1815Y/BKTC3198, NPN	2208606104	2	
Q405/Q406	KTA1015Y/BKTA1266, PNP	2208206105	2	
Q407	KTC1815Y/BKTC3198, NPN	2208606104	1	
	Resistors			
R401/R402	Carbon Film 470 kohm 1/5 W J	3069474970	2	
R403-R405	Carbon Film 330 kohm 1/5 W J	3069334970	3	
R406/R407	Carbon Film 4.7 kohm 1/5 W J	3069472970	2	
R408	Carbon Film 82 kohm 1/5 W J	3069823970	1	
R409	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R410	Carbon Film 180 kohm 1/5 W J	3069184970	1	
R411	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R412	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R413	Carbon Film 180 kohm 1/5 W J	3069184970	1	
R414	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R415	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R416	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R417	Carbon Film 82 kohm 1/5 W J	3069823970	1	
R418	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R419	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R420	Carbon Film 27 kohm 1/5 W J	3069273970	1	
R421	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R422/R423	Carbon Film 33 kohm 1/5 W J	3069333970	2	
R424	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R425	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R426/R427	Carbon Film 22 kohm 1/5 W J	3069223970	2	
R428	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R429	Carbon Film 220 kohm 1/5 W J	3069224970	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
R430	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R431	Carbon Film 12 kohm 1/5 W J	3069123970	1	
R432	Carbon Film 220 kohm 1/5 W J	3069224970	1	
R433	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R434	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R435	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R436	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R437/R438	Carbon Film 33 kohm 1/5 W J	3069333970	2	
R439/R440	Carbon Film 3.3 kohm 1/5 W J	3069332970	2	
R442	Carbon Film 100 kohm 1/5 W J	3069104970	1	
R443	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R444	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R445	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R446	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R447	Carbon Film 20 kohm 1/5 W J	3069203970	1	
R448	Carbon Film 27 kohm 1/5 W J	3069273970	1	
R449	Carbon Film 12 kohm 1/5 W J	3069123970	1	
R450	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R451	Carbon Film 100 ohm 1/5 W J	3069101970	1	
R452-R455	Carbon Film 1 kohm 1/5 W J	3069102970	4	
R456	Carbon Film 100 ohm 1/5 W J	3069101970	1	
R459	Carbon Film 91 kohm 1/5 W J	3069913970	1	
R460	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R461	Carbon Film 33 kohm 1/5 W J	3069333970	1	
R462	Carbon Film 22 kohm 1/5 W J	3069223970	1	
R463	Carbon Film 100 ohm 1/5 W J	3069101970	1	
R464/R465	Carbon Film 10 kohm 1/5 W J	3069103970	2	
	Miscellaneous			
VR1	Volume Motor	3208067910	1	
PCB7	**Ass'y P.C.Board Trans**	**054101010022**		
	Capacitors			
C601/C602	Mylar 0.022 uF 100 V J	3679223120	2	
	Connectors			
CNT601	Wafer, 6P	4428523710	1	
CNT602	Wafer, LV 3P	4428100291	1	
	Version: D(2, 3 Band Area), PT INDO, Philco			
(CNT602)	Wafer, LV 2P	4428100281	1	
	Version: Elektra, KS, Colel			
	Diodes			
D601-D604	1N5402, Rectifier	2058100136	4	
	Fuses			
F601	T, 2 A, 250 V	5508302435	1	PT INDO(Only)
F602	T, 1 A, 250 V	5508302035	1	PT INDO,D,Philco
	NB, 2.5 A, 125 V	5508202521	1	A, Elektra
	NB, 1.5 A, 250 V	5508202230	1	KS
	T, 2 A, 250 V	5508302435	1	Colel
	Miscellaneous			
J602	Jumper, 4J		1	
	Version: D(2, 3 Band Area), Philco, Colel, KS			
(J602)	Jumper, 7J		1	
	Version: PT INDO			
GND101	Ground Plate	4235007310	1	A(Only)
	Clip Fuse		4	PT INDO
	Clip Fuse		2	
PCB8	**Ass'y P.C.Board Mic**	**0540101010023**		
	Version: KS, Elektra, PT INDO, Colel			
	Not Used !			
	Version: D(2, 3 Band Area), Philco			
	Capacitors			
C701	Electrolytic SG 47 uF 25 V M	3479347041	1	
C702	Ceramic Disc 0.01 uF 50 V Z	3579103530	1	
C703	Electrolytic SG 100 uF 10 V M	3479310121	1	
C704/C705	Ceramic Tubular 560 pF 50 V K	3519561935	2	
C706/C707	Ceramic Disc 0.047 uF 50 V Z	3579473530	2	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
C708/C709	Ceramic Disc 0.01 uF 50 V Z	3579103530	2	
C710	Mylar 0.033 uF 100 V J	3679333120	1	
C711	Mylar 0.0056 uF 100 V J	3679562120	1	
C712/C713	Electrolytic SG 0.33 uF 50 V M	3479333871	2	
C714	Mylar 0.0056 uF 100 V J	3679562120	1	
C715/C716	Electrolytic SG 4.7 uF 50 V M	3479347971	2	
C718	Electrolytic SG 1 uF 50 V M	3479310971	1	
C719	Electrolytic SG 4.7 uF 50 V M	3479347971	1	
C720	Electrolytic SG 10 uF 50 V M	3479310071	1	
C721	Ceramic Tubular 220 pF 50 V K	3519221935	1	
C722	Electrolytic SG 10 uF 50 V M	3479310071	1	
C723/C724	Electrolytic SG 4.7 uF 50 V M	3479347971	2	
C725	Ceramic Tubular 2200 pF 50 V K	3519222915	1	
C726	Electrolytic SG 4.7 uF 50 V M	3479347971	1	
C727	Electrolytic SG 10 uF 50 V M	3479310071	1	
	Connector			
CNT701	Wafer, 6P, Angle	4427506811	1	
	Diode			
D701	Zener, UZ 5.6BSB	2258599104	1	
	Integrated Circuits			
IC701	KIA4559P/KIA75559P, OP Amp	2168206104	1	
IC702	ES56028E, Digital Echo	2138633001	1	
	Resistors			
R701	Carbon Film 27 kohm 1/5 W J	3069273970	1	
R702	Carbon Film 82 ohm 1/5 W J	3069820970	1	
R703	Carbon Film 3.3 kohm 1/5 W J	3069332970	1	
R704	Carbon Film 7.5 kohm 1/5 W J	3069752970	1	
R705	Carbon Film 75 kohm 1/5 W J	3069753970	1	
R706	Carbon Film 7.5 kohm 1/5 W J	3069752970	1	
R707	Carbon Film 75 kohm 1/5 W J	3069753970	1	
R708	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R709/R710	Carbon Film 15 kohm 1/5 W J	3069153970	2	
R711	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R712/R713	Carbon Film 15 kohm 1/5 W J	3069153970	2	
R714	Carbon Film 10 kohm 1/5 W J	3069103970	1	
R715	Carbon Film 15 kohm 1/5 W J	3069153970	1	
R716	Carbon Film 4.7 kohm 1/5 W J	3069472970	1	
R717	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R718	Carbon Film 560 ohm 1/5 W J	3069561970	1	
R719	Carbon Film 18 kohm 1/5 W J	3069183970	1	
R720/R721	Carbon Film 3.3 kohm 1/5 W J	3069332970	2	
R722	Carbon Film 47 kohm 1/5 W J	3069473970	1	
R723	Carbon Film 33 ohm 1/5 W J	3069330970	1	
R724	Carbon Film 12 kohm 1/5 W J	3069123970	1	
R725	Carbon Film 180 ohm 1/5 W J	3069181970	1	
R726	Carbon Film 3.3 kohm 1/5 W J	3069332970	1	
	Miscellaneous			
33	Jack Phone	4438005520	1	
		(Mic Option Area)		
PCB9	**Ass'y P.C.Board Phone**	**054101010024**		
	Capacitors			
C801F/C80	Ceramic Tubular 560 pF 16 V K	3519561915	2	
	Version: D(2, 3 Band Area)			
	Not Used !			
	Version: Elektra, Philco, Colel, KS, PT INDO			
	Connector			
CNT801	Wafer, 5P	4428522510	1	
	Resistors			
R804-R809	Carbon Film 180 ohm 1/5 W J	3069181970	6	
	Mselllaneous			
33	Jack Phone	4438005520	1	

Ref. No.	Description						Mfr. Part No.	Q'ty	Version
PCB10	**Ass'y P.C.Board FM Front-end**						**054101010025**		
	Capacitors								
C81	Ceramic Disc, CH	8.2	pF	50 V	J		3528829210	1	
C83	Ceramic Tubular	100	pF	50 V	K		3519101935	1	
C84	Mylar	0.001	uF	100 V	J		3679102120	1	
C85	Ceramic Disc, CH	3.9	pF	50 V	J		3528399210	1	
C86	Ceramic Disc, CH	5.6	pF	50 V	J		3528569210	1	
C87	Ceramic Disc, CH	2.2	pF	50 V	J		3528229210	1	
C88	Ceramic Disc, CH	18	pF	50 V	J		3528180210	1	
C89	Mylar	0.001	uF	100 V	J		3679102120	1	
C90	Ceramic Disc, CH	8.2	pF	50 V	J		3528829210	1	
C91	Ceramic Disc, CH	3.3	pF	50 V	J		3528339210	1	
C92	Ceramic Tubular	15	pF	50 V	J		3519150935	1	
CN81	Wafer, 8P, Angle						4425508812	1	
	Coils								
L81	Inductor, 0.47 uH						2648647882	1	
L82	Inductor, 2.2 uH						2648622982	1	
	Transistors								
Q81	KSC2786-R						2208406128	1	
Q82/Q83	KTC3193-0, NPN						2208406125	2	
Q84	2SK544-E/F-AC, FET						2218217000	1	
	Resistors								
R81	Carbon Film	100	kohm	1/5 W	J		3069104970	1	
R82/R83	Carbon Film	33	kohm	1/5 W	J		3069333970	2	
R84	Carbon Film	220	ohm	1/5 W	J		3069221970	1	
R85	Carbon Film	330	kohm	1/5 W	J		3069334970	1	
R86/R87	Carbon Film	390	ohm	1/5 W	J		3069391970	2	
R88	Carbon Film	560	kohm	1/5 W	J		3069564970	1	
R89	Carbon Film	33	kohm	1/5 W	J		3069333970	1	
R90	Carbon Film	390	ohm	1/5 W	J		3069391970	1	
R91	Carbon Film	680	kohm	1/5 W	J		3069684970	1	
	Diode Varactors								
VD81-VD8	SVC211SPA-C						2258817103	3	
	Miscellaneous								
FE1	Front-end, FM FTH4-560V						3928101820	1	
	Version: D(2, 3 Band Area)								
FE2	Front-end Ass'y						4004000500	1	
	Version: Elektra, Philco, Colel, KS, PT INDO								

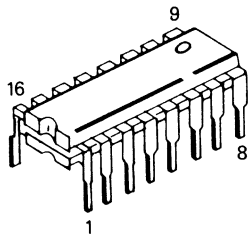
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the safety can be of special significance. When replacing a component identified with ⚠ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

SEMICONDUCTORS LEAD IDENTIFICATION & INTERNAL DIAGRAMS

GD4052B : IC104 (Dual 4-Channel analog multiplexer/demultiple key)

Package Outline

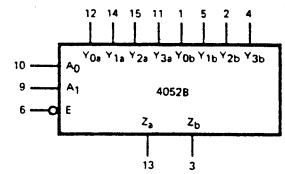


TRUTH TABLE

INPUTS			CHANNELS			
E	A_1	A_0	Y_0-Z	Y_1-Z	Y_2-Z	Y_3-Z
L	L	L	ON	OFF	OFF	OFF
L	L	H	OFF	ON	OFF	OFF
L	H	L	OFF	OFF	ON	OFF
L	H	H	OFF	OFF	OFF	ON
H	X	X	OFF	OFF	OFF	OFF

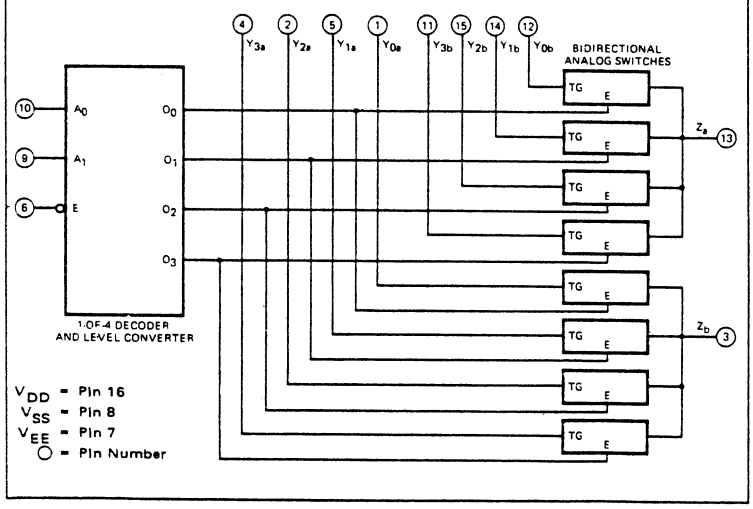
L=Low Level, H=HIGH Level, X=Don't care

LOGIC SYMBOL

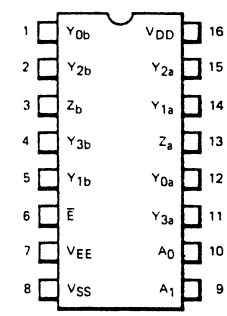


V_{DD} = PIN 16
V_{SS} = PIN 8
V_{EE} = PIN 7

4052B FUNCTIONAL LOGIC DIAGRAM



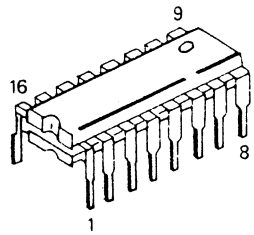
CONNECTION DIAGRAM
DIP (TOP VIEW)



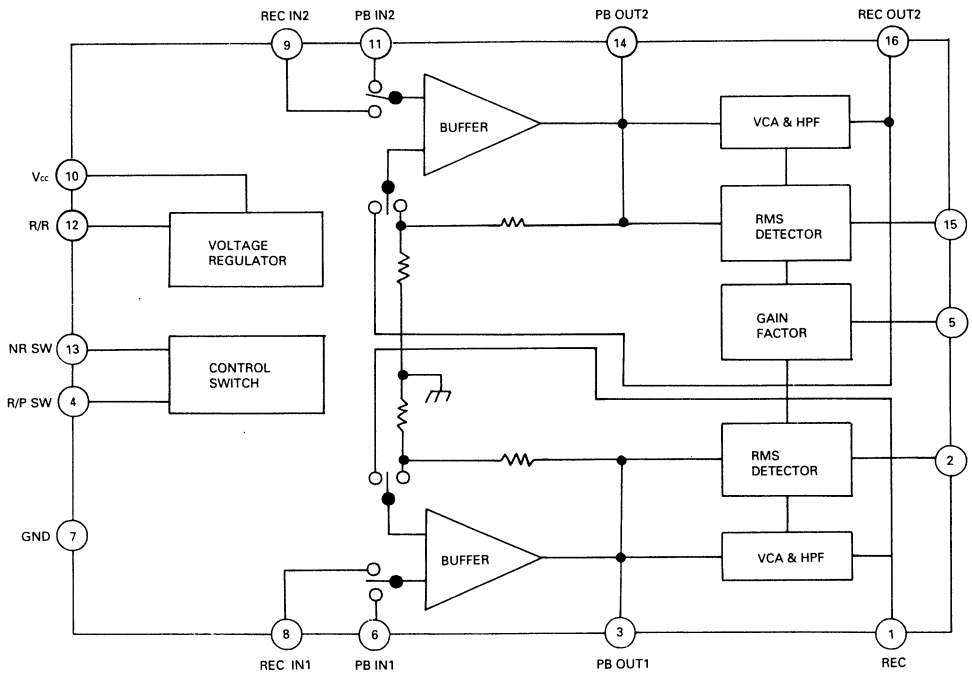
NOTE:
The SO Package has the same pinouts (Connection Diagram) as the Dual in-line Package.

KA22712 : IC201 (Dolby B-type noise reduction processor)

Package Outline

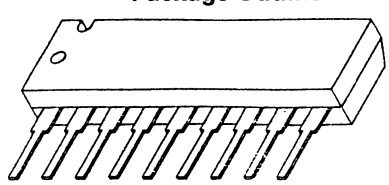


Block Diagram

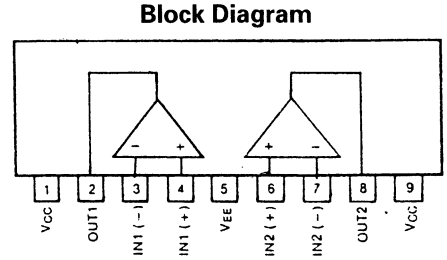


KIA4559S/KIA75559S : (Dual Operational Amplifier) IC403, IC701

Package Outline

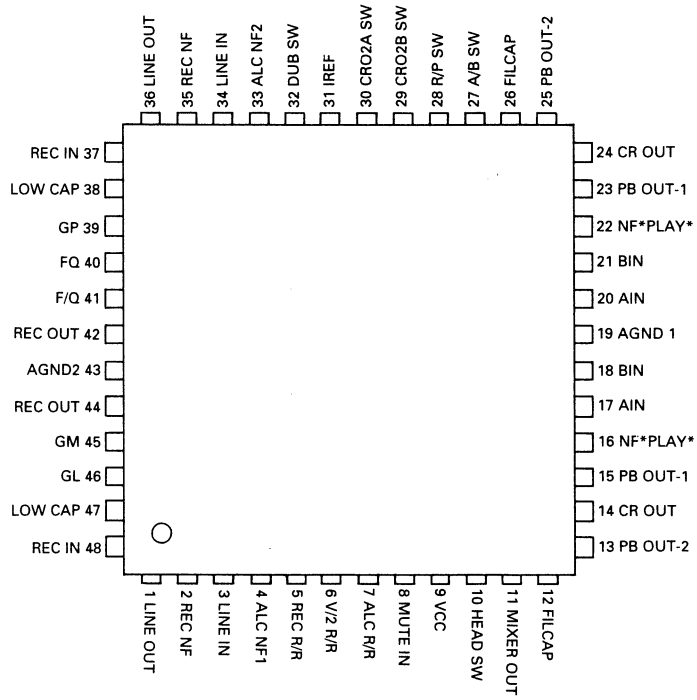


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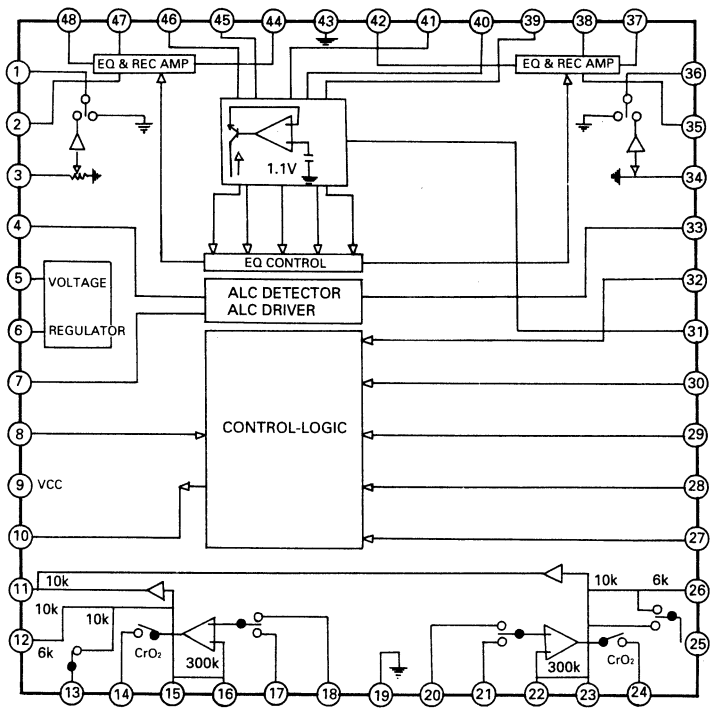


KA22292Q : IC202 (Playback & Record Equalizer Stereo Preamp)

1. Pin Diagram



2. Block Diagram

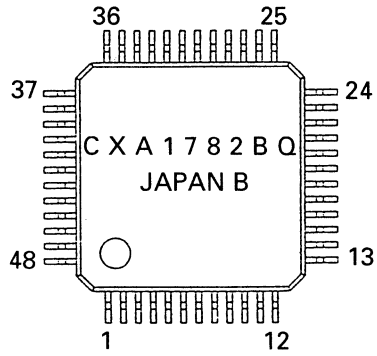


3. Pin Description

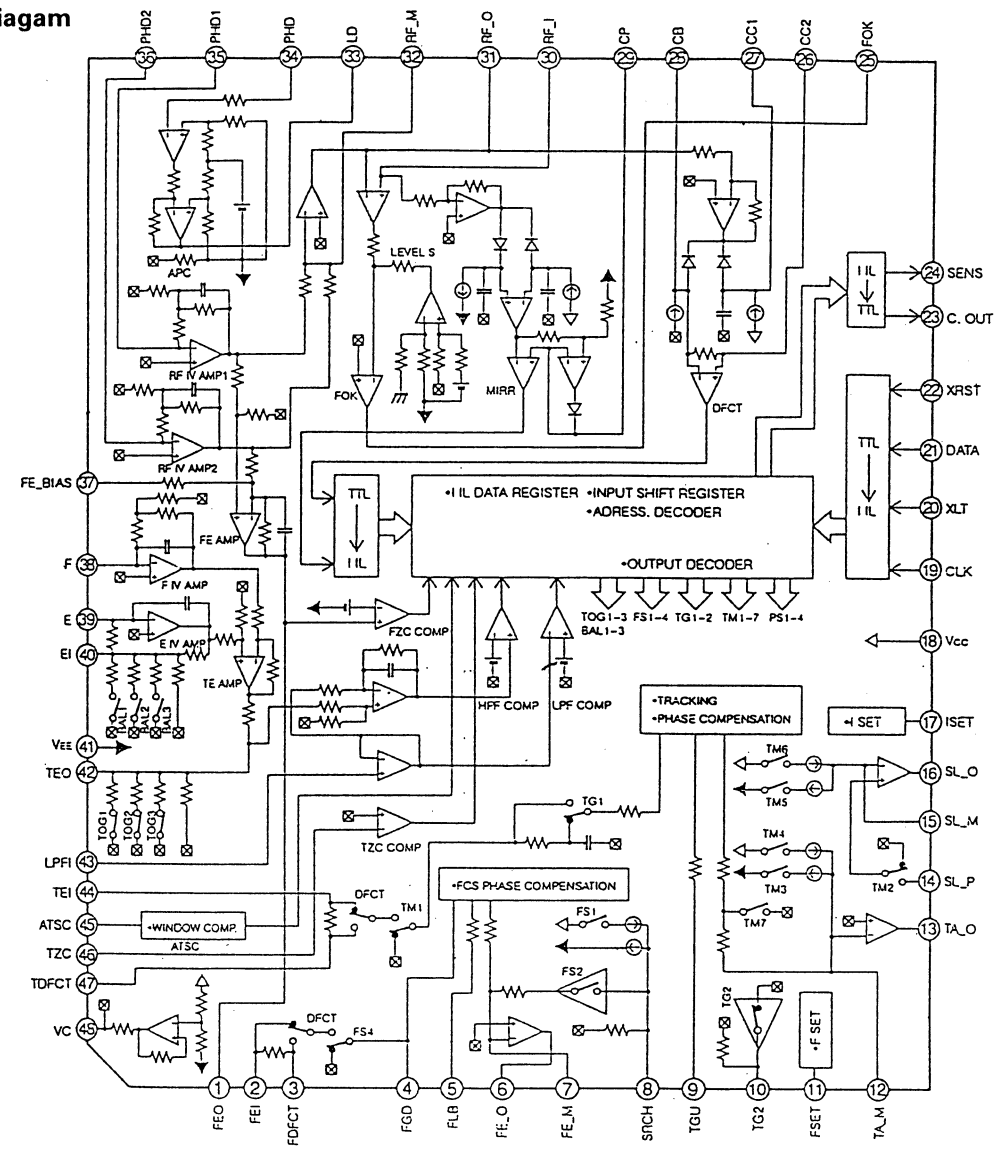
Number	Pin Name	I/O	Description	Remark
1	LINE OUT(R)	OUTPUT	CCA (ALC OUTPUT) PIN	
2	NF☆REC☆	INPUT	RECORD AMP FEEDBACK PIN	
3	LINE IN(R)	INPUT	LINE INPUT PIN	
4	ALC NF1	INPUT	ALC AMP FEEDBACK PIN	
5	REC R/R	–	RECORD RIPPLE REJECT PIN	
6	VCC/2 R/R	–	VOLTAGE REFERENCE RIPPLE FILTER	
7	ALC R/R	–	ALC TIME CONSTANT	
8	MUTE IN	INPUT	MUTE SIGNAL (HIGH ACTIVE) INPUT	
9	VCC	VCC	VCC	
10	HEAD SW	OUTPUT	HEAD SWITCHING DC OUTPUT PIN	
11	MIXER OUT	OUTPUT	PLAY BACK MIXER OUT	
12	FILCAP (R)	–	HI-SPEED FILTER CAPACITOR	
13	PB OUT-2 (R)	OUTPUT	PLAY BACK OUTPUT (FOR COPY)	
14	CROUT(R)	OUTPUT	PLAY BACK CrO2 FEEDBACK OUTPUT	
15	PB OUT-1 (R)	OUTPUT	PLAY BACK TAPE OUT	
16	NF☆PLAY☆	INPUT	PLAY BACK FEEDBACK INPUT PIN	
17	A-IN(R)	INPUT	PLAY BACK A-DECK INPUT PIN	
18	B-IN(R)	INPUT	PLAY BACK B-DECK INPUT PIN	
19	AGND 1	GND	PLAY GND	
20	A-IN(L)	INPUT	PLAY BACK A-DECK INPUT PIN	
21	B-IN(L)	INPUT	PLAY BACK B-DECK INPUT PIN	
22	NF☆PLAY (L)	INPUT	PLAY BACK FEEDBACK INPUT PIN	
23	PB OUT-1(L)	OUTPUT	PLAY BACK TAPE OUT	
24	CROUT(L)	OUTPUT	PLAY BACK CrO2 FEEDBACK OUTPUT	
25	PB OUT-2(L)	OUTPUT	PLAY BACK OUTPUT (FOR COPY)	
26	FILCAP(L)	–	HI-SPEED FILTER CAPACITOR	
27	A/B-SW	INPUT	A-DECK (HIGH ACTIVE) SWITCH	
28	R/P-SW	INPUT	RECORD (HIGH ACTIVE) SWITCH	
29	CrO2B-SW	INPUT	CrO2-B-DECK (LOW ACTIVE) SWITCH	
30	CrO2A-SW	INPUT	CrO2-A-DECK (LOW ACTIVE) SWITCH	
31	IREF	–	EQ-BPF-IREF ADJUST	
32	DUB-SW	INPUT	NORMAL (LOW) HI-SPEED (OPEN)	
33	ALC NF2	INPUT	ALC AMP FEEDBACK PIN	
34	LINE IN(L)	INPUT	LINE INPUT PIN	
35	NF☆REC☆	INPUT	RECORD AMP FEED BACK PIN	
36	LINE OUT (L)	OUTPUT	CCA OUT	
37	REC IN (L)	INPUT	RECORD INPUT PIN	
38	LOWCAP(L)	–	REC EQUALIZER LOW POINT CAPACITOR	
39	GP	–	REC EQUALIZER GAIN CONTROL PIN	
40	FQ	–	REC EQUALIZER Q POINT CONTROL PIN	
41	F/Q	–	REC EQUALIZER Q & BW CONTROL PIN	
42	REC OUT(L)	OUTPUT	RECORD OUTPUT PIN	
43	AGND2	–	REC GND	
44	REC OUT(L)	OUTPUT	RECORD OUTPUT PIN	
45	GM	–	REC EQUALIZER MID-GAIN CONTROL PIN	
46	GL	–	REC EQUALIZER LOW-GAIN CONTROL PIN	
47	LOWCAP(R)	–	REC EQUALIZER LOW POINT CAPACITOR	
48	REC IN (R)	INPUT	RECORD INPUT PIN	

CXA1782Q : IC506 (RF Signal processing servo amplifier for CD players)

1. Package Outline

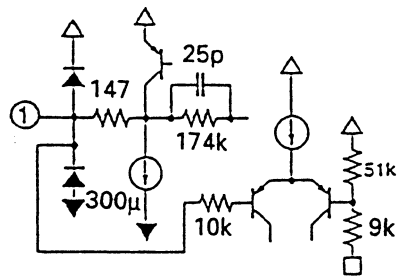
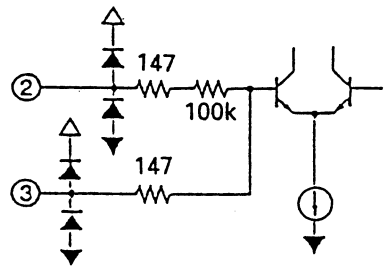
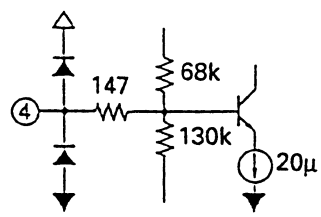
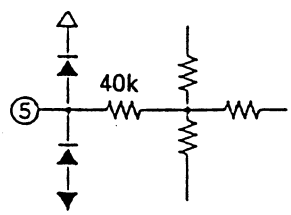
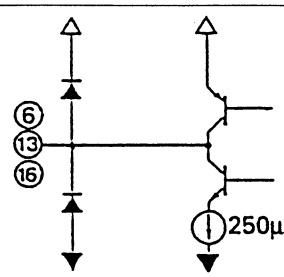


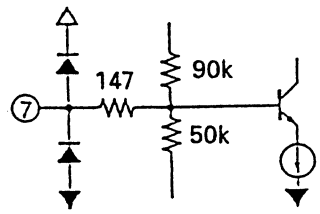
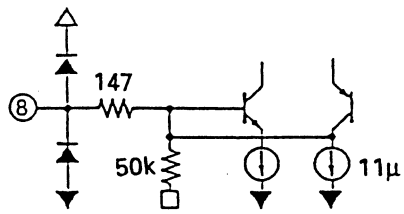
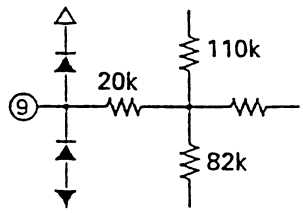
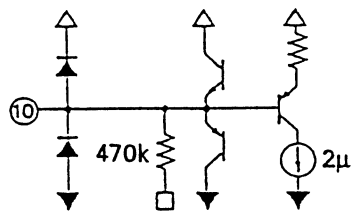
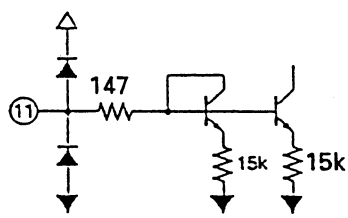
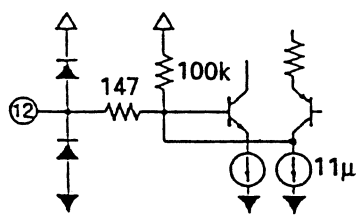
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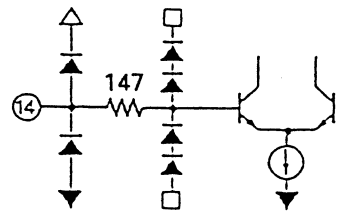
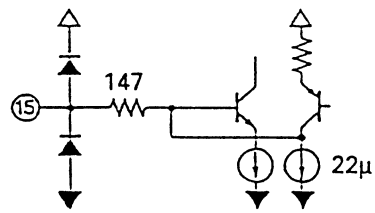
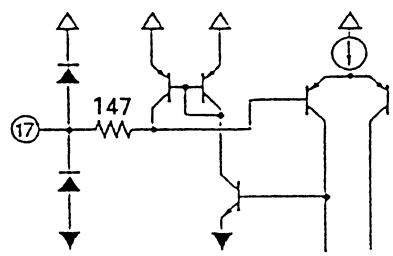
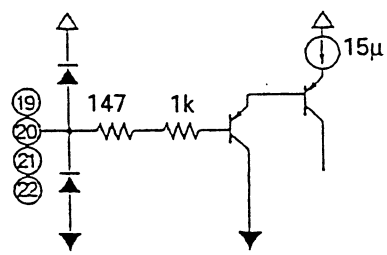
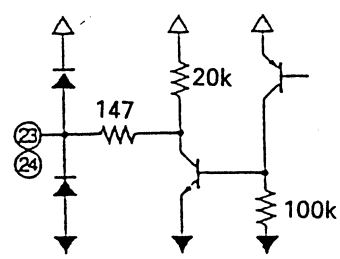


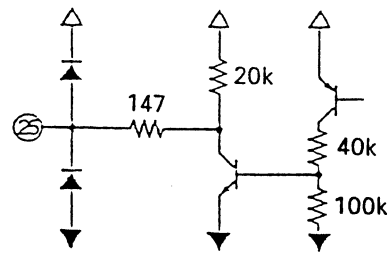
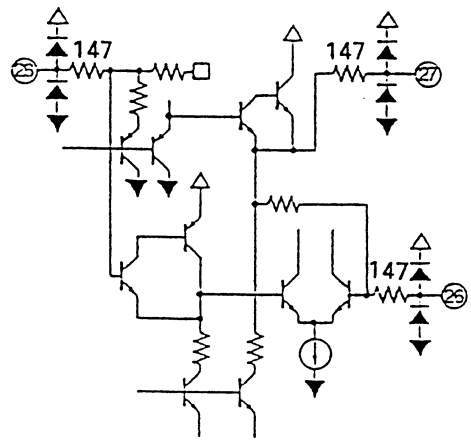
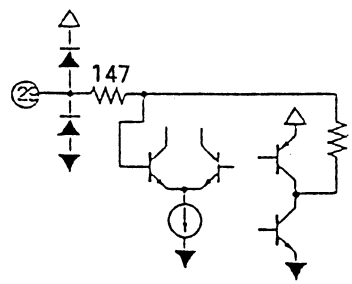
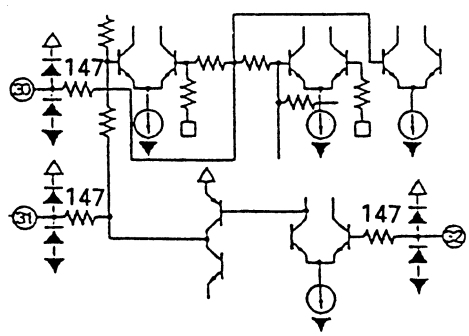
* The switch state in Block Diagram is for initial resetting.
* Switch turns to ○ side for 1 and to ● side for 0 in Serial Data Truth Table on pages 30 and 31.
* DFCT switch turns to ○ side when defect signal generates for DEFECT=E in Serial Data Truth Table.
* TG1 switch turns to ○ side and TG2 switch is left open when TG1 and TG2 (address 1 : D3) is 1.

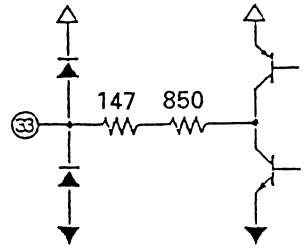
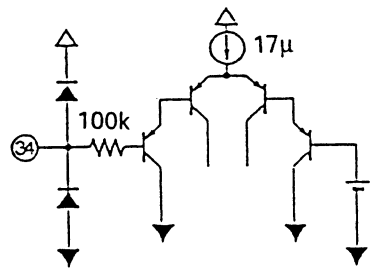
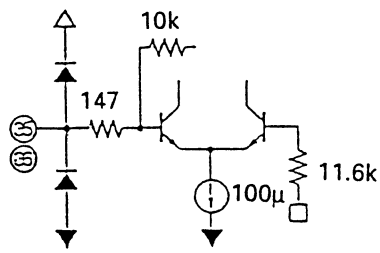
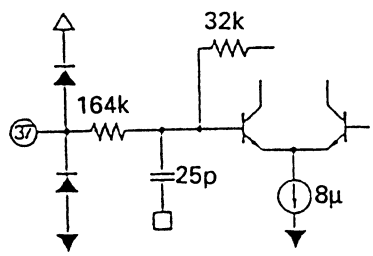
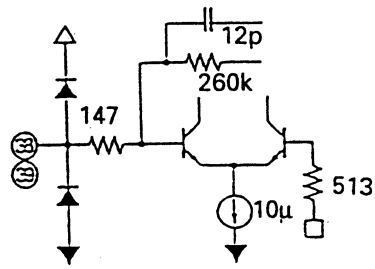
3. Pin Description

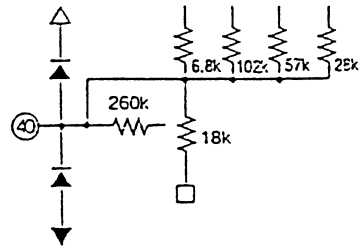
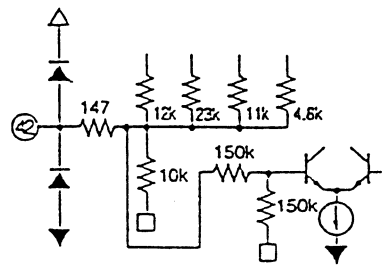
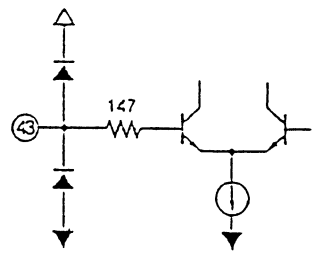
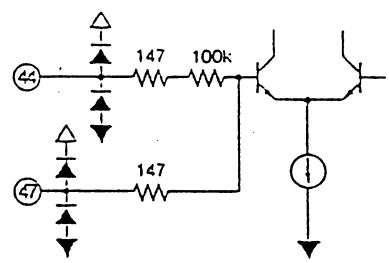
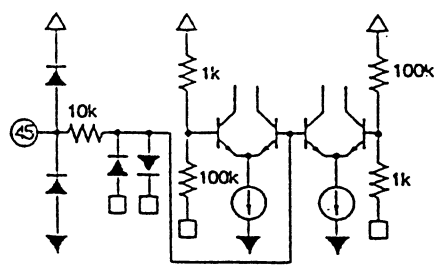
Pin No.	Symbol	I/O	Equivalent circuit	Description
1	FEO	I		Focus error amplifier output. Connected internally to the FZC comparator input.
2	FEI	I		Focus error input.
3	FDFCT	I		Capacitor connection pin for defect time constant.
4	FGD	I		Ground this pin through a capacitor when decreasing the focus servo high-frequency gain.
5	FLB	I		External time constant setting pin for increasing the focus servo low frequency.
6	FE_O	O		Focus drive output.
13	TA_O	O		Tracking drive output.
16	SL_O	O		Sled drive output.

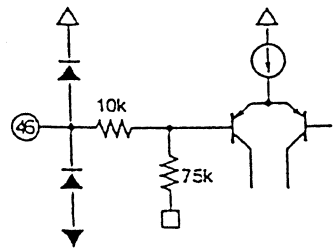
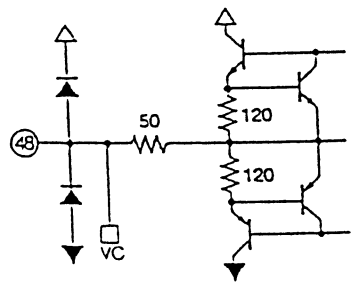
Pin No.	Symbol	I/O	Equivalent circuit	Description
7	FE_M	I		Focus amplifier negative input pin.
8	SRCH	I		External time constant setting pin for generating focus servo waveform.
9	TGU	I		External time constant setting pin for switching tracking high-frequency gain.
10	TG2	I		External time constant setting pin for switching tracking high-frequency gain.
11	FSET	I		High cut off frequency setting pin for focus and tracking phase compensation amplifier.
12	TA_M	I		Tracking amplifier negative input pin.

Pin No.	Symbol	I/O	Equivalent circuit	Description
14	SL_P	I		Sled amplifier non-inversed input.
15	SL_M	I		Sled amplifier negative input pin.
17	ISET	I		Setting pin for Focus search, Track jump, and Sled kick current.
19	CLK	I		Serial data transfer clock input from CPU. (no pull up resistance).
20	XLT	I		Latch input from CPU (no pull up resistance)
21	DATA	I		Serial data input from CPU. (no pull up resistance)
22	XRST	I		Reset input; resets at Low. (no pull up resistance)
23	C.OUT	O		Track number count signal output.
24	SENS	O		Outputs FZC, DFCT, TZC, gain, balance, and others according to the command from CPU.

Pin No.	Symbol	I/O	Equivalent circuit	Description
25	FOK	O		Focus OK comparator output. (DC voltage: 10kΩ load resistance is connected.)
26	CC2	O		Input pin for the DEFECT bottom hold output capacitance-coupled.
27	CC1	I		DEFECT bottom hold output.
28	CB	I		Connection pin for DEFECT bottom hold capacitor.
29	CP	I		Connection pin for MIRR hold capacitor. MIRR comparator non-inversed input.
30	RF_I	I		Input pin for the RF summing amplifier output capacitancecoupled.
31	RF_O	O		RF summing amplifier output. Eye pattern check point.
32	RF_M	I		RF summing amplifier inversed input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin.

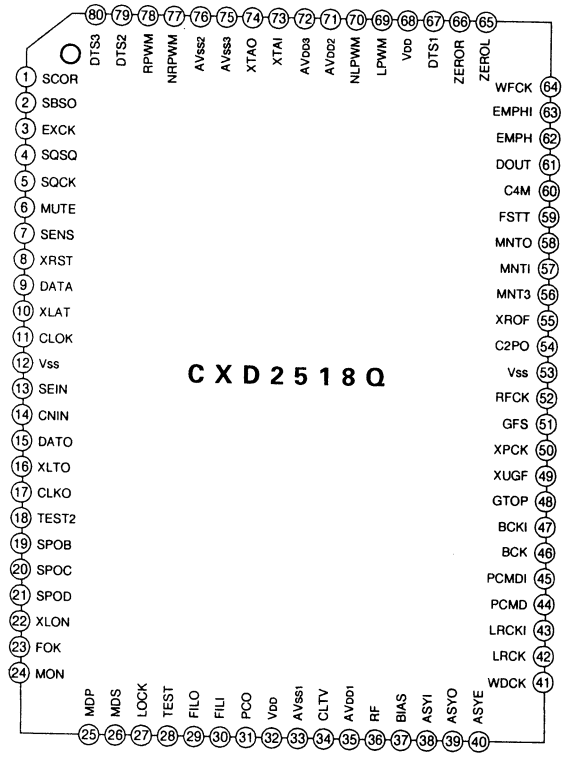
Pin No.	Symbol	I/O	Equivalent circuit	Description
33	LD	O		APC amplifier output.
34	PHD	I		APC amplifier input.
35 36	PHD1 PHD2	I I		RF I-V amplifier inversed input. Connect these pins to the photo diode A+C and B+D pins.
37	FE_BIAS	I		Bias adjustment of focus error amplifier.
38 39	F E	I I		F I-V and E I-V amplifier inversed input. Connect these pins to photo diodes F and E.

Pin No.	Symbol	I/O	Equivalent circuit	Description
40	EI	–		I-V amplifier E gain adjustment. (When not using automatic balance adjustment)
42	TEO	O		Tracking error amplifier output. E-F signal is output is input.
43	LPFI	I		Comparator input for balance adjustment. (Input from TEO through LPF.)
44	TEI	I		Tracking error input.
47	TDFCT	I		Capacitor connection pin for defect time constant.
45	ATSC	I		Window comparator input for ATSC detection.

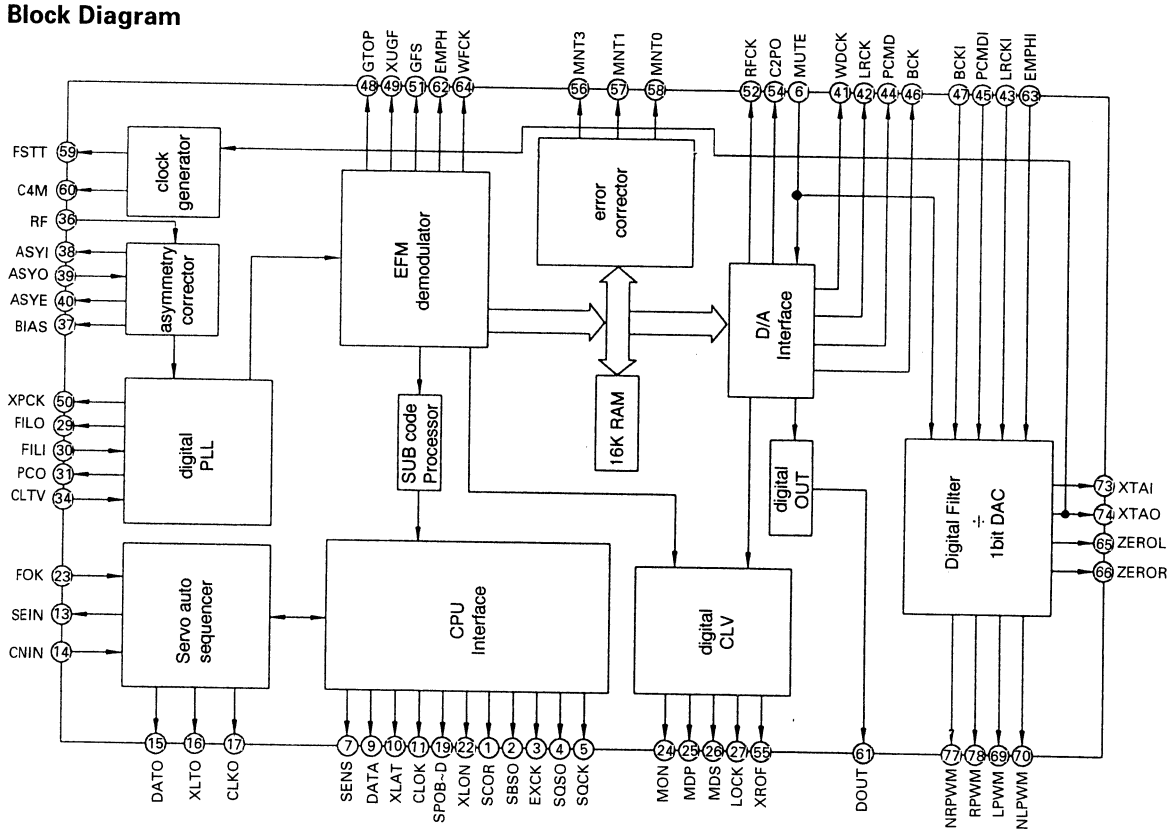
Pin No.	Symbol	I/O	Equivalent circuit	Description
46	TZC	I		Tracking zero-cross comparator input.
48	VC	O		$(V_{CC}+V_{EE})/2$ DC voltage output.

CXD2518Q : IC504 (DSP)

1. Pin Diagram



2. Block Diagram



3. Pin Description

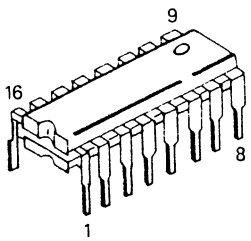
Pin No.	Symbol	I/O	Description
1	SCOR	O	Subcode sync output (High for subcode sync S0 or S1detected).
2	SBSO	O	Sub P to W serial output.
3	EXCK	I	SBSO readout clock input.
4	SQSO	O	Sub Q 80-bit output : PCM peak data and level data 16-bit output.
5	SQCK	I	SQSO readout clock input.
6	MUTE	I	Mute switching input (High for mute).
7	SENS	O	SENS output (output to CPU).
8	XRST	I	System reset (Low for reset).
9	DATA	I	Serial data input from CPU.
10	XLAT	I	Latch input from CPU.
11	CLOK	I	Serial data transfer clock input from CPU.
12	V_{SS}		Digital GND.
13	SEIN	I	Sense input from SSP.
14	CNIN	I	Signal input counter number.
15	DATO	O	Serial data output from SSP.
16	XLTO	O	Serial data latch output from SSP.
17	CLKO	O	Serial data transfer clock output from SSP.
18	TEST2	I	Test pin, normally digital power supply.
19	SPOB	I	Extended μ-com interface input B.
20	SPOC	I	Extended μ-com interface input C.
21	SPOD	I	Extended μ-com interface input D.
22	XLON	O	Extended μ-com interface output.
23	FOK	I	Focus OK output.
24	MON	O	ON/OFF control output for spindle motor.
25	MDP	O	Spindle motor servo control.
26	MDS	O	Spindle motor servo control.
27	LOCK	O	High output GFS is sampled at 460Hz and that is High ; Low output when GFS is sampleed 8 times and that is LOW.
28	TEST	I	Test Pin, normally GND.
29	FILO	O	Master PLL filter output.
30	FILI	I	Master PLL filter input.
31	PCO	O	Master PLL charge pump output.
32	V_{DD}		Digital power supply.
33	AV_{SS1}		Analog GND.
34	CLTV	I	Master VCO control voltage input.

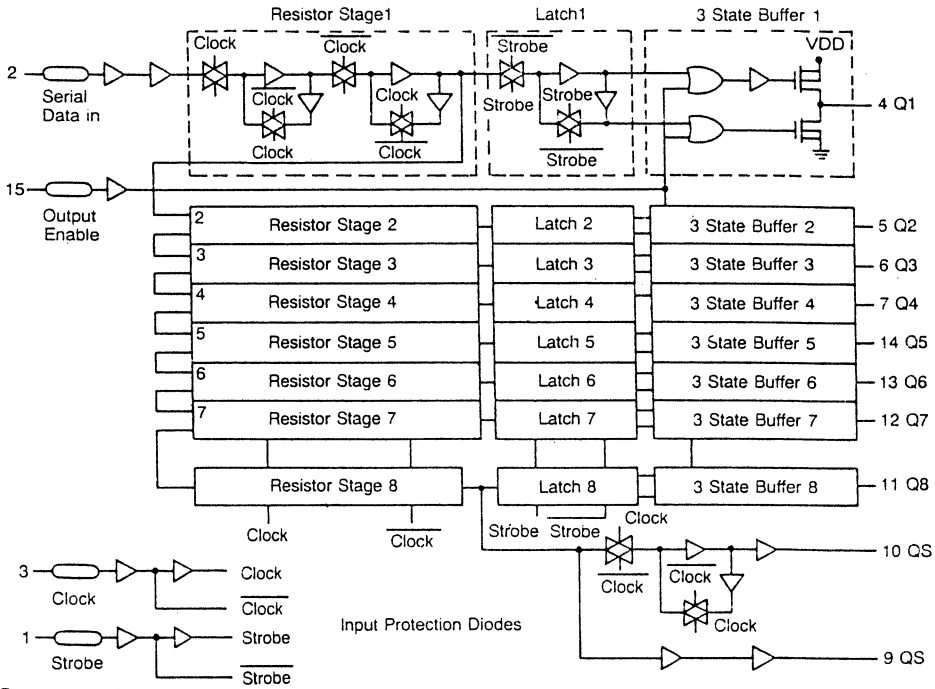
Pin No.	Symbol	I/O	Description
35	AV_{DD1}		Anlog power supply.
36	RF	I	EFM signal input.
37	BIAS	I	Asymmetry circuit constant current input.
38	ASYI	I	Asymmetry comparator voltage input.
39	ASYO	O	EFM full-swing output (LOW=V_{SS}, High=V_{DD})
40	ASYE	I	Asymmetry circuit ON/OFF (Low=OFF ; High=ON)
41	WDCK	O	48-bit slot D/A interface, word clock f=2FS
42	LRCK	O	48-bit slot D/A interface, LR clock f=FS
43	LRCKI	I	DAC LR clock input (48 bit slot)
44	PCMD	I	D/A interface, serial data (2' SCOMP, MSB)
45	PCMDI	I	Audio data input of DAC (48-bit slot)
46	BCK	O	D/A interface, bit clock
47	BCKI	I	bit clock input of DAC (48-bit slot)
48	GTOP	O	GTOP output
49	XUGF	O	XUGF output
50	XPCK	O	XPLCK output
51	GFS	O	GFS output
52	RFCK	O	RFCK output
53	V_{SS}		GND
54	C2PO	O	output C2PO
55	XROF	O	output XRAOF
56	MNT3	O	output MNT3
57	MINT1	O	output MNT1
58	MINT0	O	output MNT0
59	FSTT	O	2/3 frequency divider output, pin 73 and 74.
60	C4M	O	4-2336MHz ou;ut, changes simultaneously when variable pitched.
61	DOUT	O	Digital out, output.
62	EMPH	O	Playback disc emphasis mode, output (Low for no emphasis applied ; High for emphasis applied).
63	EMPHI	I	DAC D-emphasis ON/OFF ; High=ON, Low=OFF
64	WFCK	O	WFCK (Write frame clock) output.
65	ZEROL	O	No Sound data detected output ; No Sound data : H (Lch)
66	ZEROR	O	No Sound data detected output ; No Sound data : H (Rch)
67	DTSI	I	Test pin 1 of DAC, normally "L".
68	V_{DD}		DAC Digital power supply.

Pin No.	Symbol	I/O	Description
69	LPWM	O	Lch PWM output (positive).
70	NLPWM	O	Lch PWM output (negative).
71	AV_{DD2}		Lch PWM drive power supply.
72	AV_{DD3}		Crystal power supply.
73	XTAI	I	Crystal oscillator circuit input, 33.8688 MHz
74	XTAO	O	Crystal oscillator circuit output, 33.8688 MHz
75	AV_{SS3}		Crystal GND.
76	AV_{SS2}		PWM drive GND.
77	NRPWM	O	Rch PWM output (negrtive).
78	RPWM	O	Rch PWM output (positive)
79	DTS2	I	Test pin 2 of DAC, normally "L".
80	DTS3	I	Test pin 3 of DAC, normally "L".

MC14094 : IC103

Package Outline



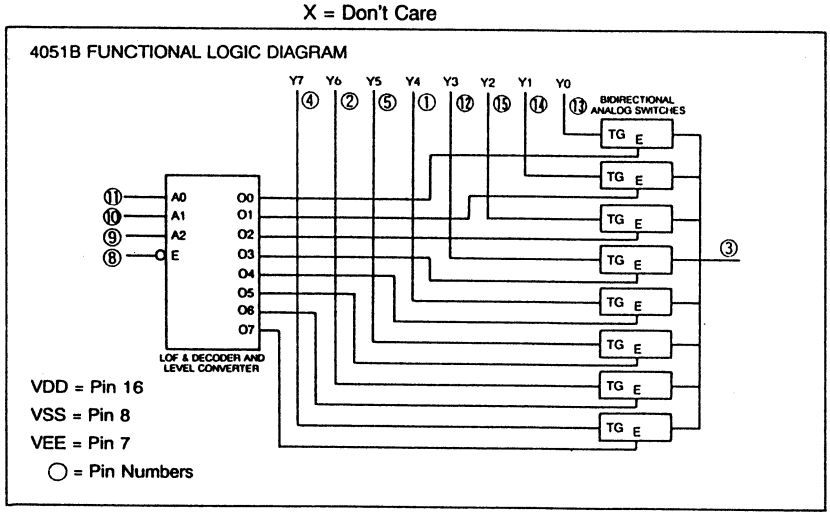


MC1405B : IC401, IC402 (8-Channel analog multiplexer)

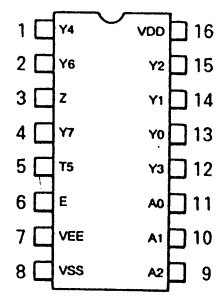
TRUTH TABLE

INPUTS				CHANNELS							
E	A_2	A_1	A_0	Y_0-Z	Y_1-Z	Y_2-Z	Y_3-Z	Y_4-Z	Y_5-Z	Y_6-Z	Y_7-Z
L	L	L	L	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
L	L	L	H	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
L	L	H	L	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
L	L	H	H	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
L	H	L	L	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
L	H	L	H	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
L	H	H	L	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
L	H	H	H	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
H	X	X	X	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

L = LOW Level
H = HIGH Level
X = Don't Care



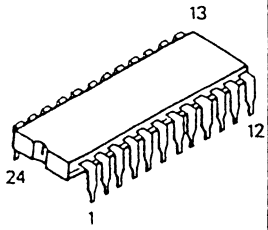
Top View

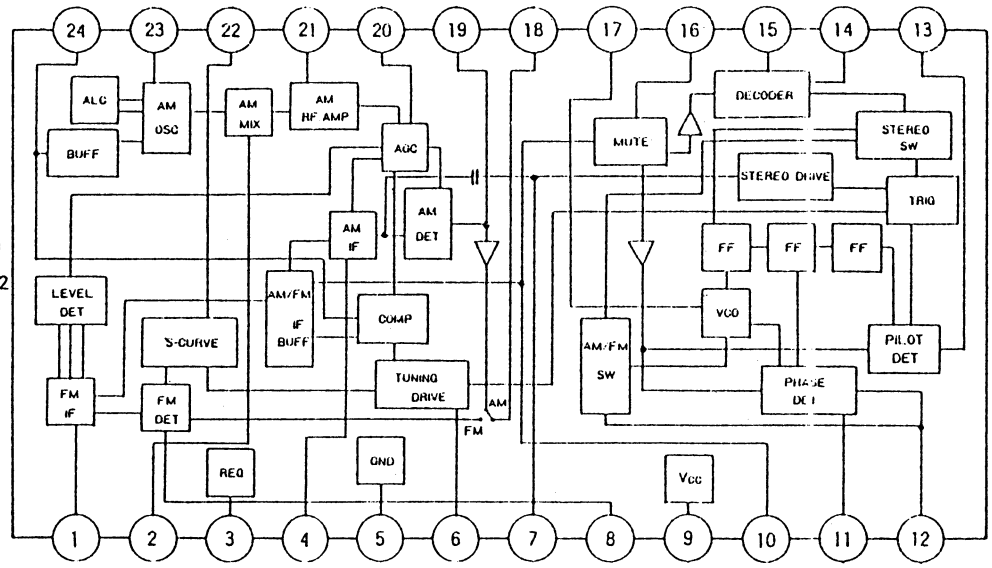


LA1832 : IC1 (AM/MF IF, MPX Tuner System)

Block Diagram

Package Outline

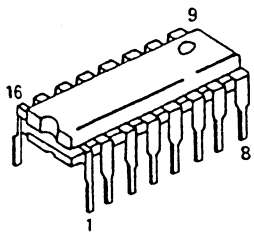


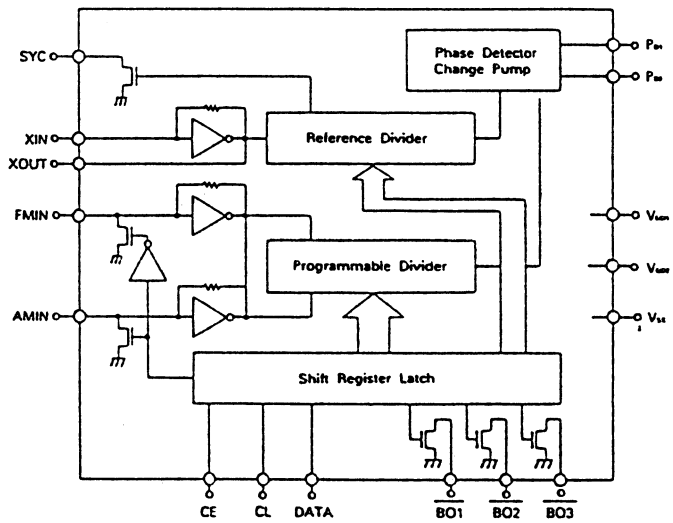


LM7001 : IC2(PLL)

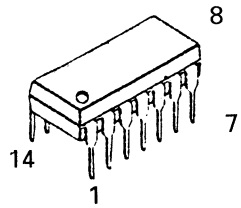
Block Diagram

Package Outline

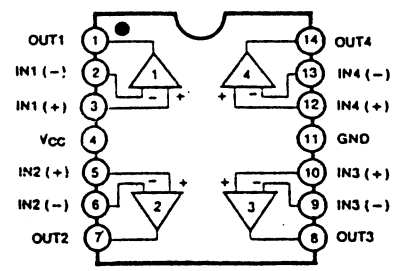




Package Outline

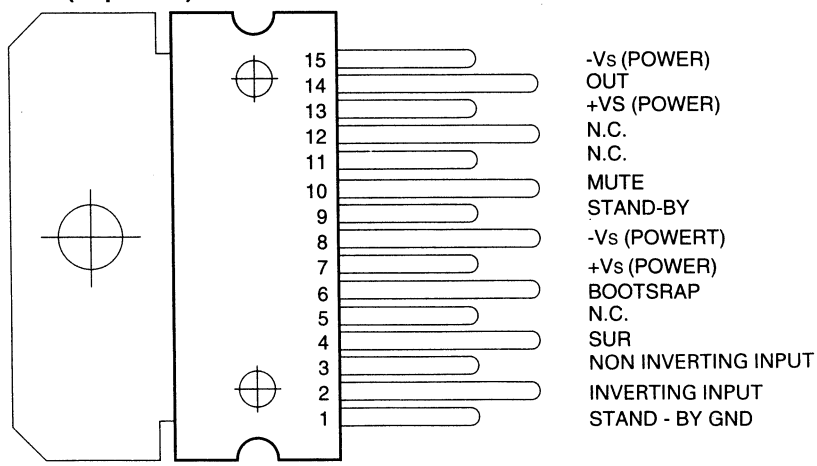


Internal Diagram

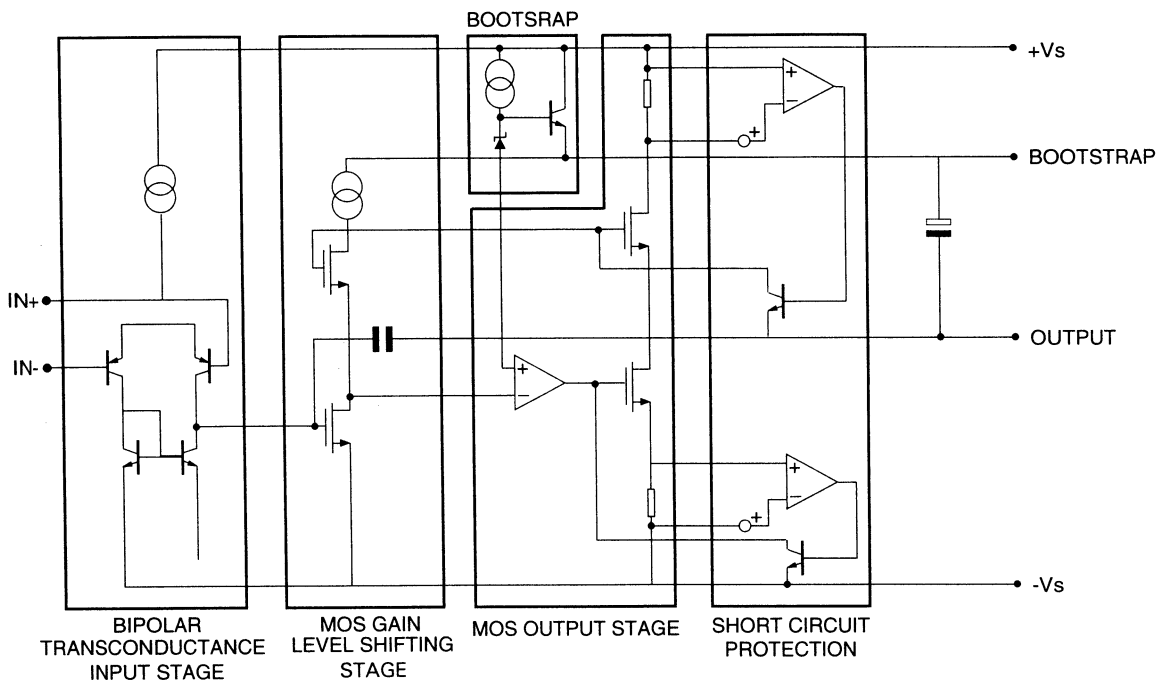


TDA7295 : IC101/IC102(80W DMOS Amplifier with mute/ST-BY)

(Top View)

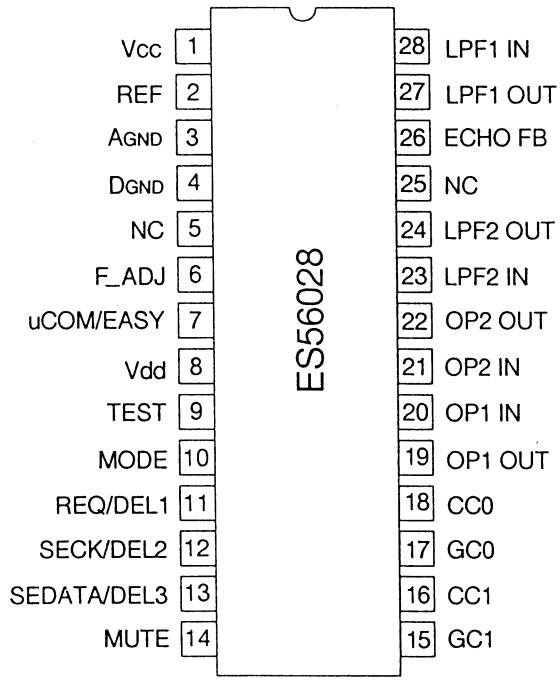


Block Diagram

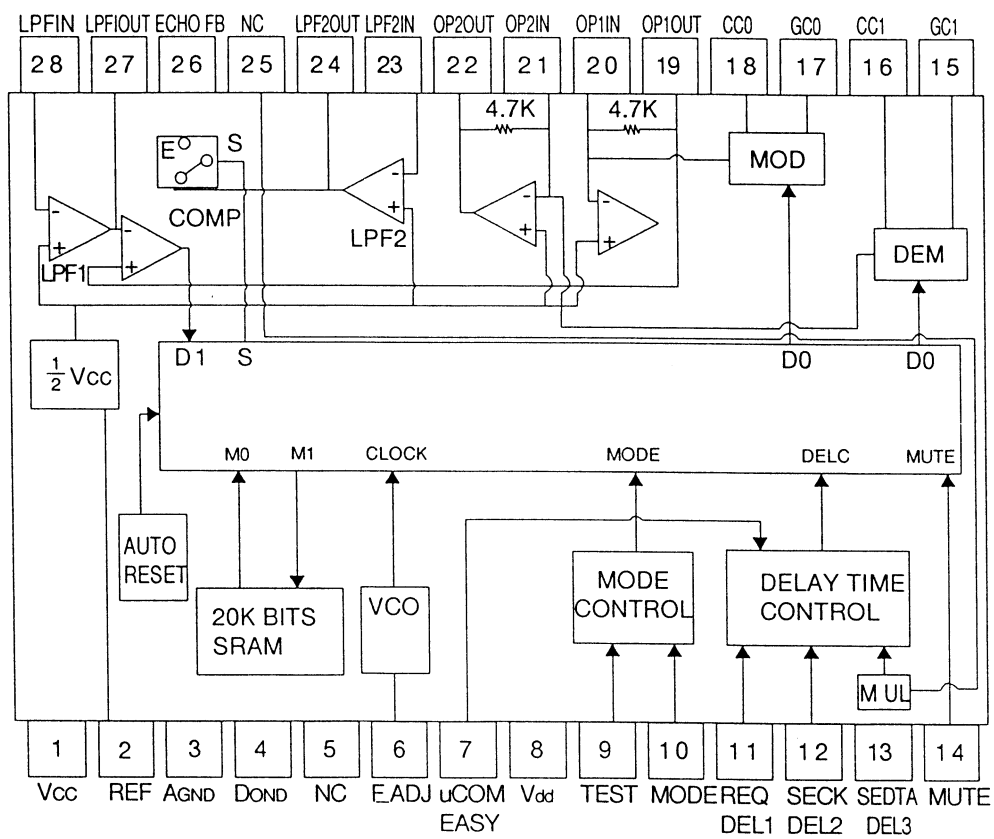


ES56028 : IC702 (Echo Sound Processor)

Pin Diagram



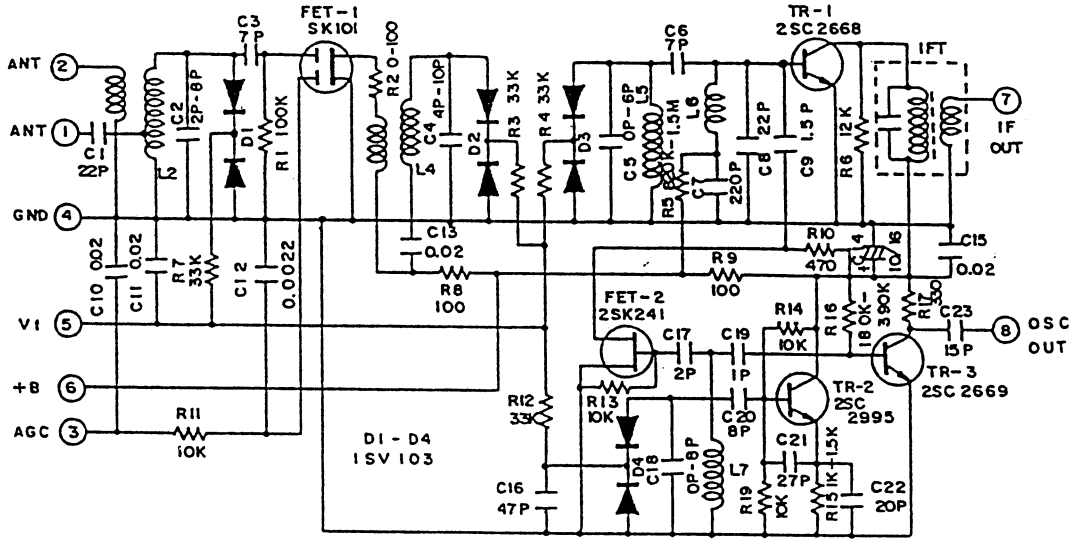
Block Diagram



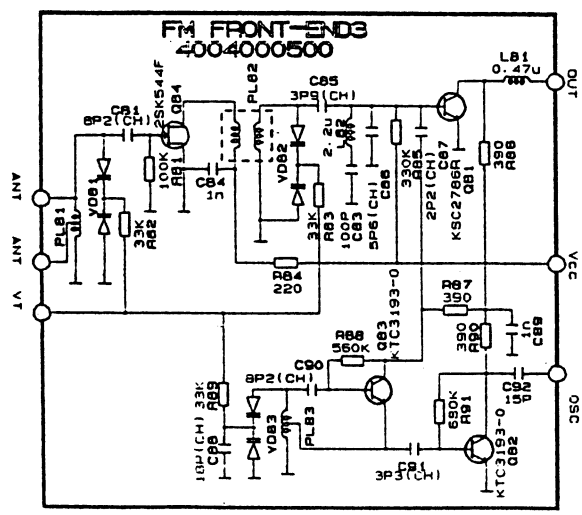
Pin Description

Pin	Name	I/O	Function
1	V_{CC}		Analog supply voltage input.
2	Ref		Analog reference voltage(=1/2 V_{CC})
3	A GND		Analog ground.
4	D GND		Digital ground.
5	NC		No connect.
6	F_adj	I	Frequency adjust
7	uCOM/EASY	I	A "high" on this input indicates μ-com mode--serial data control; a "low" on this input indicates EASY mode-- parallel data control.
8	V_{dd}		Disital supply voltage input.
9	Test	I	A "high" on this input indicates test mode; a "low" on this input indicates surround mode.
10	Mode	I	A "high" on this input indicates echo mode; a "low" on this input indicates surround mode.
11	Req/Del 1	I	In μ-com mode, this input indicates data request signal; in easy mode, this input indicates delay time 1 setting.
12	Seck/Del 2	I	In μ-com mode, this input indicates serial clock input; in easy mode, this input indicates delay time 3 setting.
13	Sedata/Del 3	I	In μ-com mode, this input indicates serial data input; in easy mode, this input indicates delay time 3 setting.
14	Mute	I	A "high" on this input indicates mute control.
15	GC1		Gain control 1.
16	CC1		Current control 1.
17	GC0		Gain control 0.
18	CC0		Current control 0.
19	OP1 OUT	O	It can be used as modulated integrator by connecting capacitor.
20	OP1 IN	I	It can be used as modulated integrator by connecting capacitor.
21	OP2 IN	I	It can be used as demodulated integrator by connecting capacitor.
22	OP2 OUT	O	It can be used as demodulated integrator by connecting capacitor.
23	LPF2 IN	I	Low pass filter 2 input.
24	LPF2 OUT	O	Low pass filter 2 output.
25	NC		No connect.
26	Echo FB	O	Echo feedback pin. In echo mode, it can be adjusted the needed echo feedback.
27	LPF1 OUT	O	Low pass filter 1 output.
28	LPF1 IN	I	Low pass filter 1 input.

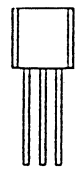
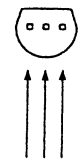
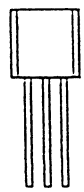
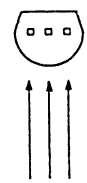
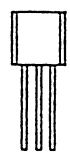
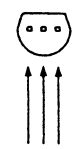
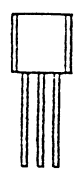
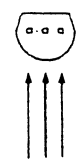
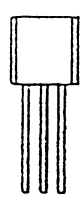
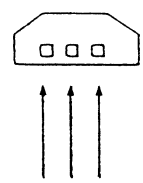
FE1 : FE407-G60 (FM FRONT-END), "D" ONLY

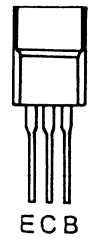


FE1 : FM FRONT-END



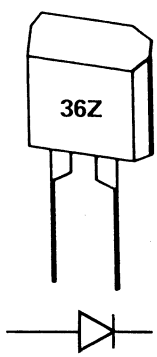
TRANSISTORS LEAD IDENTIFICATION

DESCRIPTION	FRONT VIEW	BOTTOM VIEW
KTC 2240B/KTC3200 KTC 1923Y KTC 1815Y/KTC 3198 KTA 1015Y/KTA1266 KTA 1302B KTC 2235AY/KTC1027 KTC 2236AY KTA965Y/KTA1023	 E C B	 E C B
MPSA 06 MPSA56	 E B C	 E B C
2SK 168D	 D S G	 D S G
2SK 117Y	 D S G	 D S G
DTA 114TS DTA 114YS DTC 114YS	 E C B	 B C E

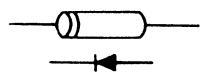
DESCRITPION	FRONT VIEW	BOTTOM VIEW
2SB 1367Y		
TERMINAL NAME		
B→ BASE C→ COUECTOR E→ ENITTER		G→ GATE S→ SOURCE D→ DRAIN

DIODES

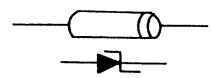
SVC321



IN 4148
IN 4002

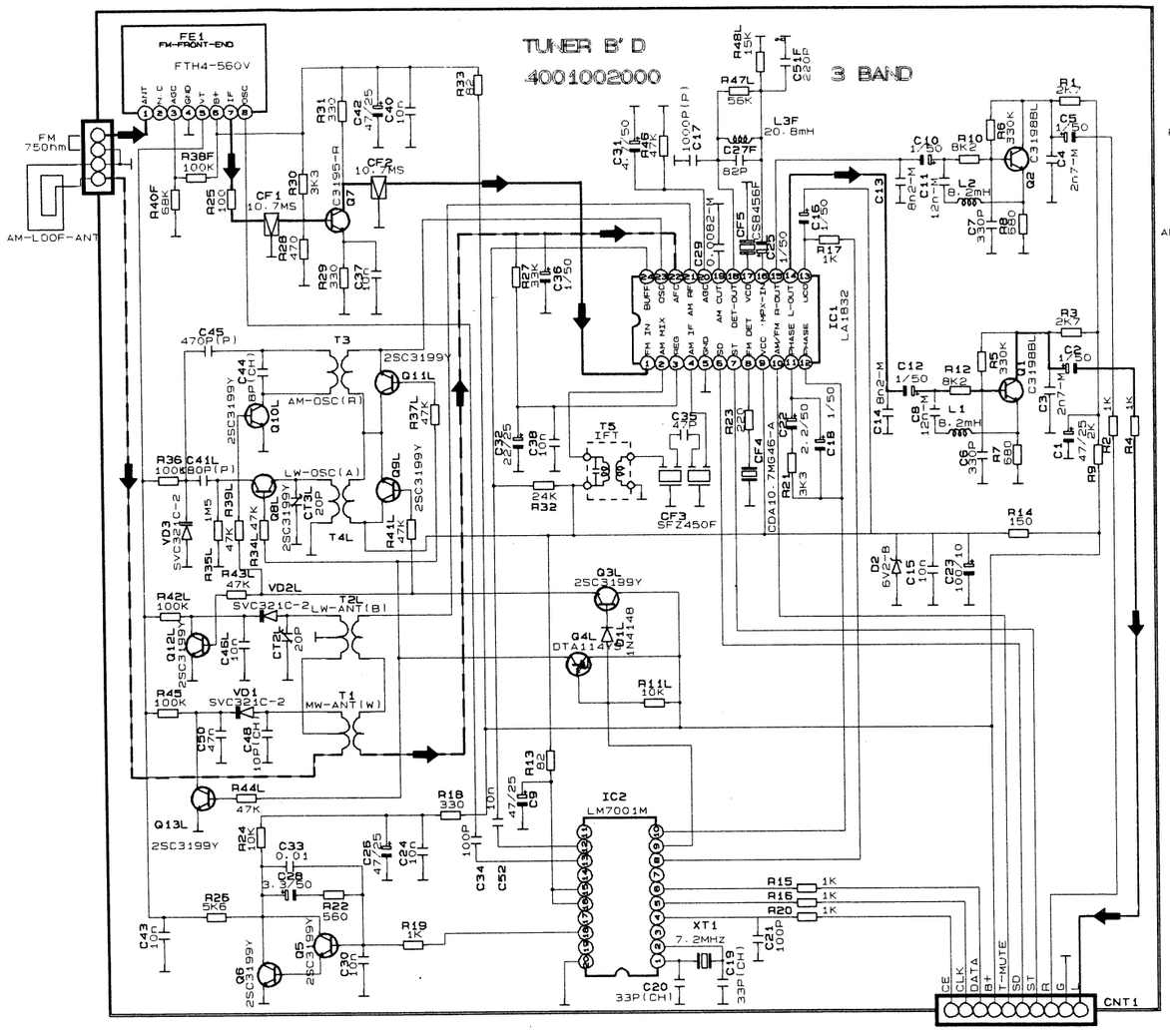


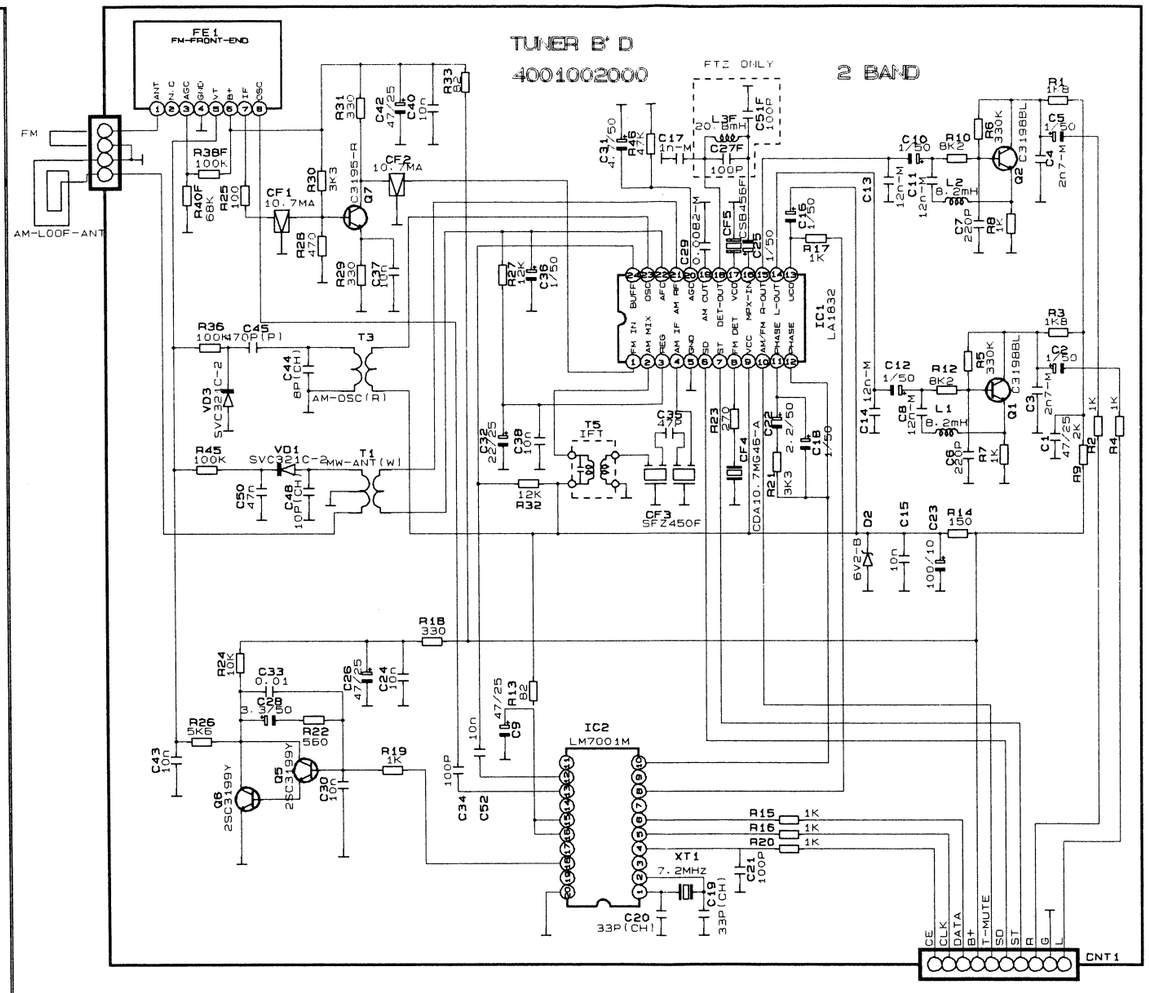
Zerner Diode

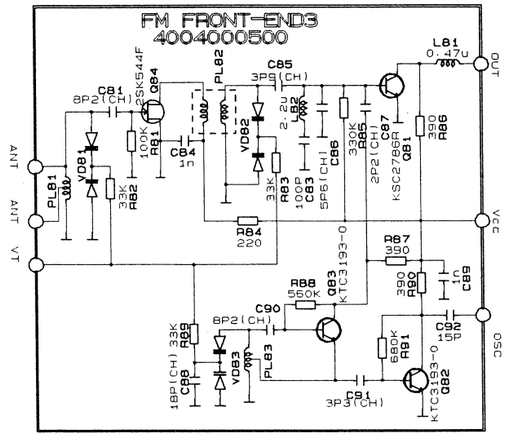


SCHEMATIC DIAGRAM I

Model No. : P-333AR







NOTES

1. Resistor values are indicated in ohms unless otherwise specified [K=1.000 M=1.000.000]
2. Capacitor values are indicated in microfarades unless otherwise specified. [p=micro-microfarades]

CAUTION

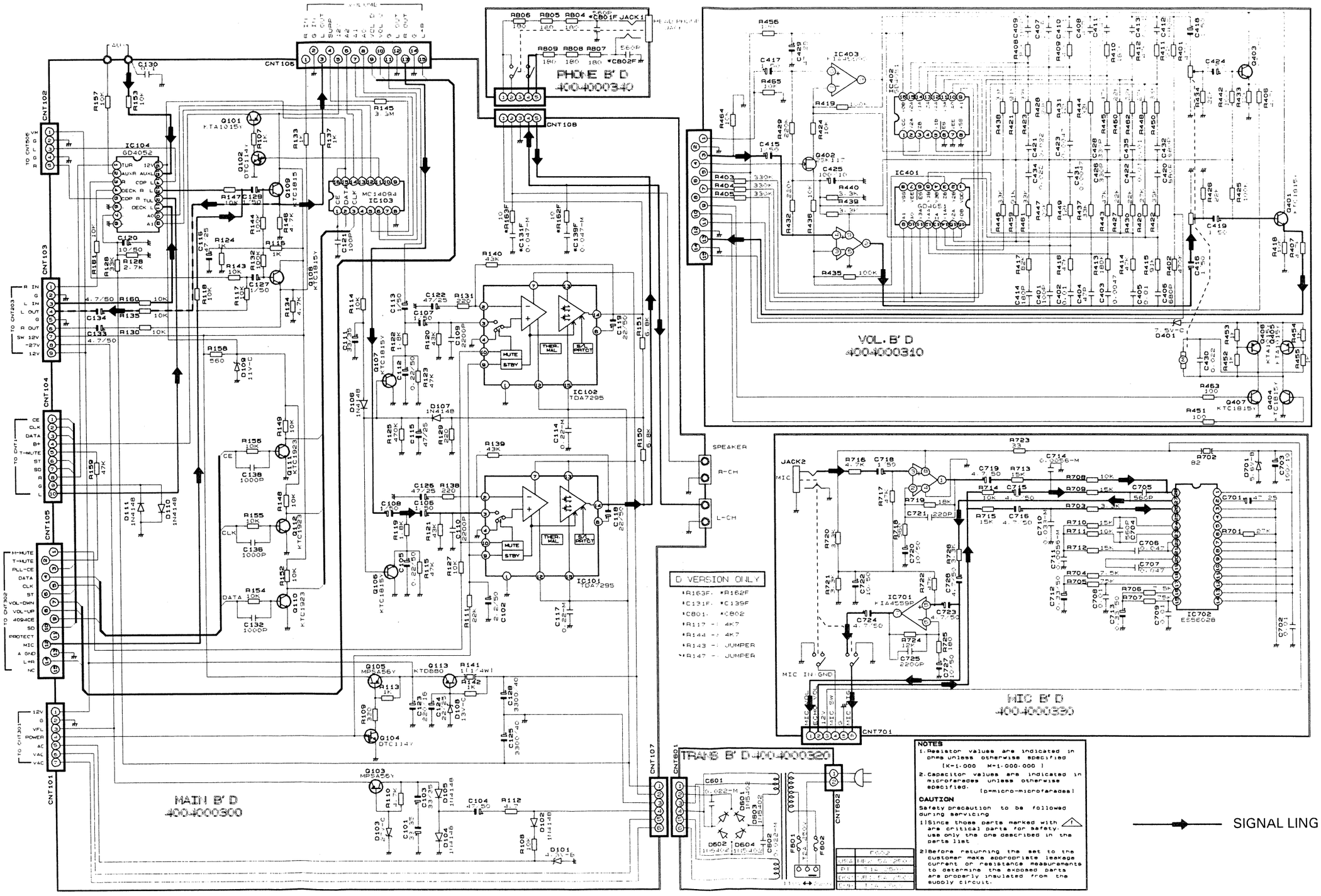
Safety precaution to be followed during servicing

1) Since those parts marked with ⚠ are critical parts for safety. use only the one described in the parts list

2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

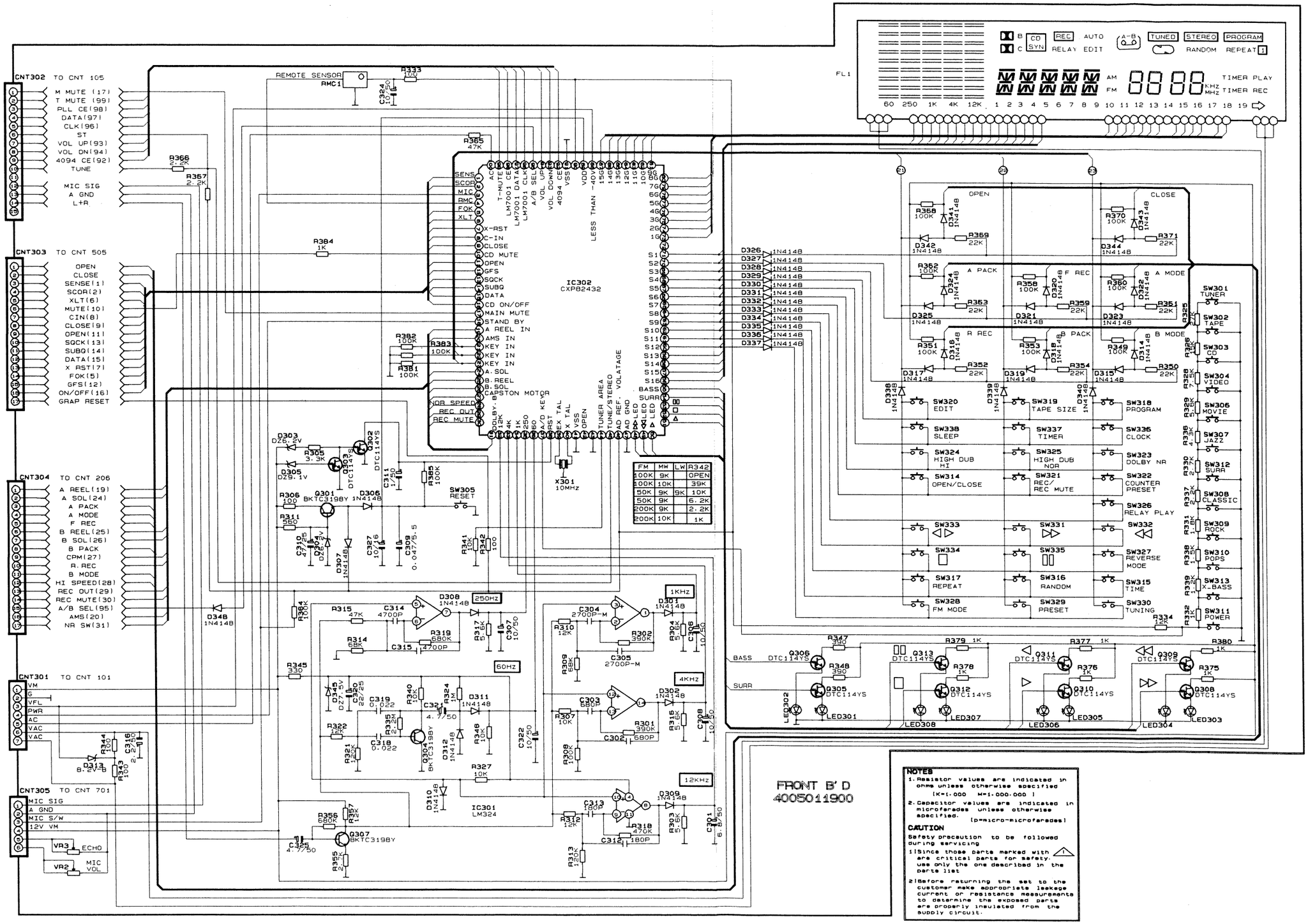
SCHEMATIC DIAGRAM II

Model No. : P-333AR



SCHEMATIC DIAGRAM III

Model No. : P-333AR



FM	MW	LW	R342
100K	9K		OPEN
100K	10K		39K
50K	9K	9K	10K
50K	9K		6.2K
200K	9K		2.2K
200K	10K		1K

NOTES

1. Resistor values are indicated in ohms unless otherwise specified (K=1,000 M=1,000,000)
2. Capacitor values are indicated in microfarades unless otherwise specified. (p=micro-microfarades)

CAUTION

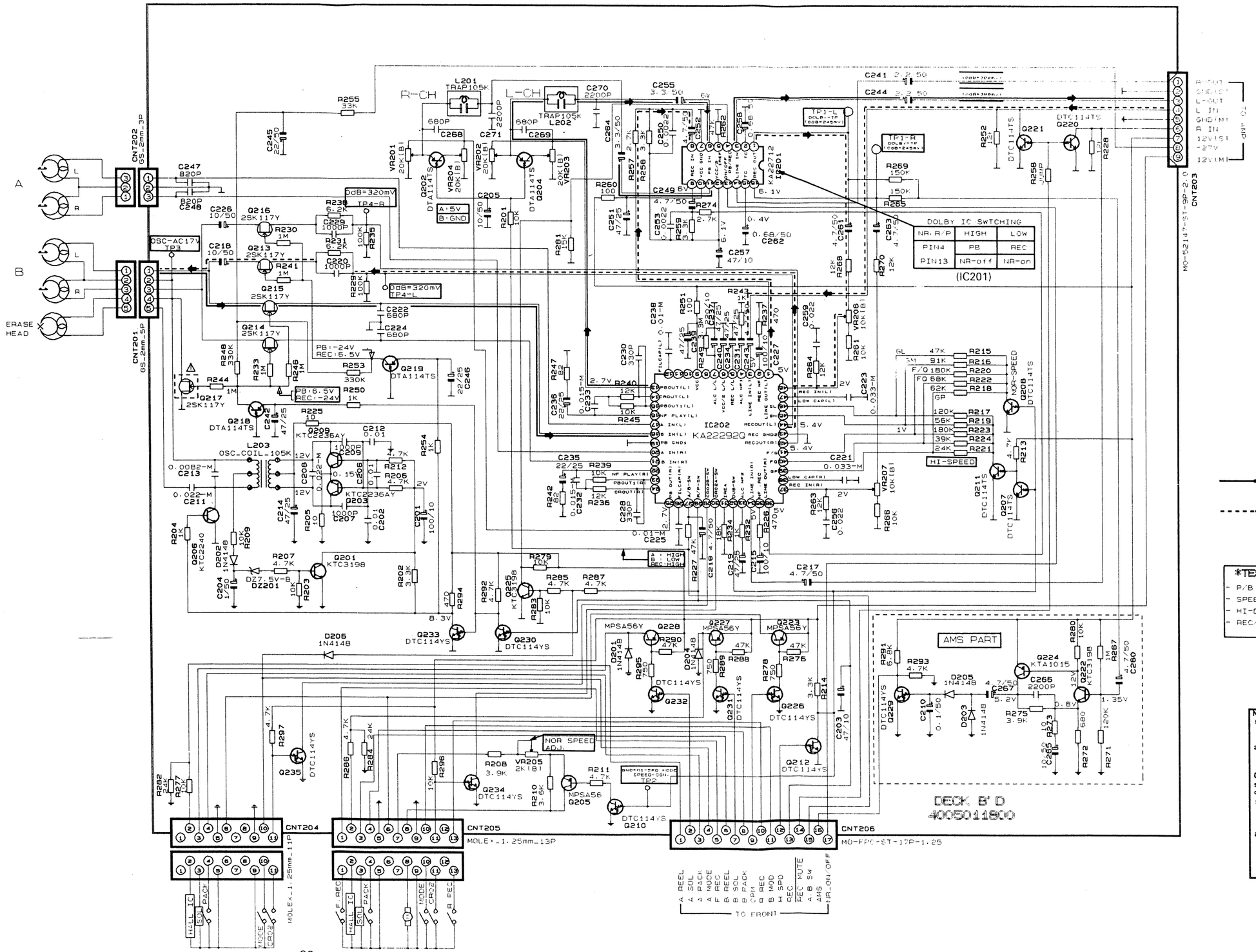
Safety precaution to be followed during servicing

1) Since those parts marked with ⚠ are critical parts for safety, use only the one described in the parts list

2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

SCHEMTIC DIAGRAM IV

Model No. : P-333AR



***TEST TAPE**

- P/B LEVEL(0dB) : TCC-130(A.BEX)
- SPEED(3KHZ) : TCC-112(A.BEX) .
- HI-DUB LEVEL CAL. : TCC-142 .
- REC/PB TEST : AC-224(TDK) .
  NOR MODE ONLY

NOTES

1. Resistor values are indicated in ohms unless otherwise specified [K=1.000 M=1.000.000]
2. Capacitor values are indicated in microfarades unless otherwise specified. [p=micro-microfarades]

CAUTION

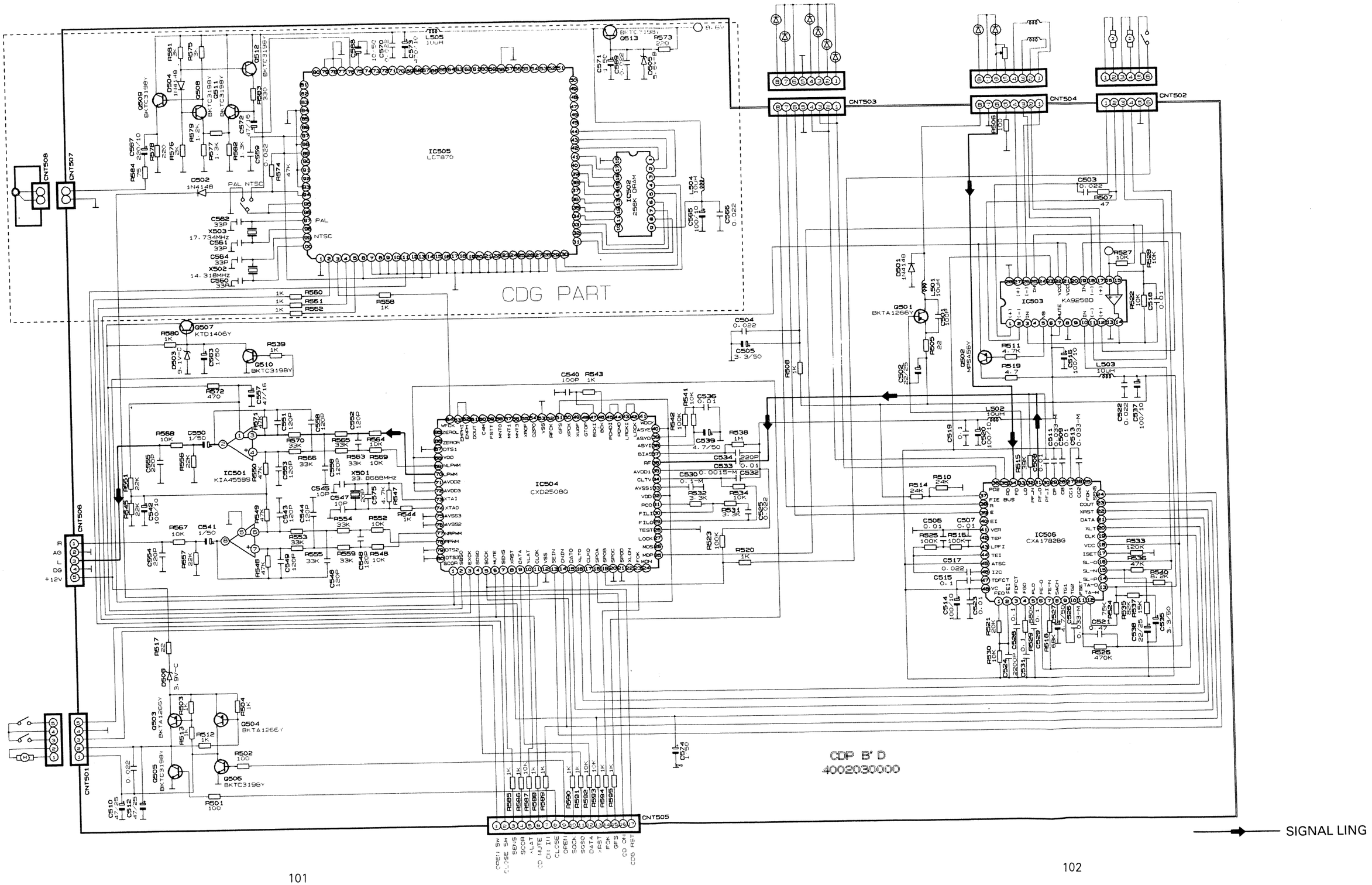
Safety precaution to be followed during servicing

1) Since those parts marked with ⚠ are critical parts for safety, use only the one described in the parts list

2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.

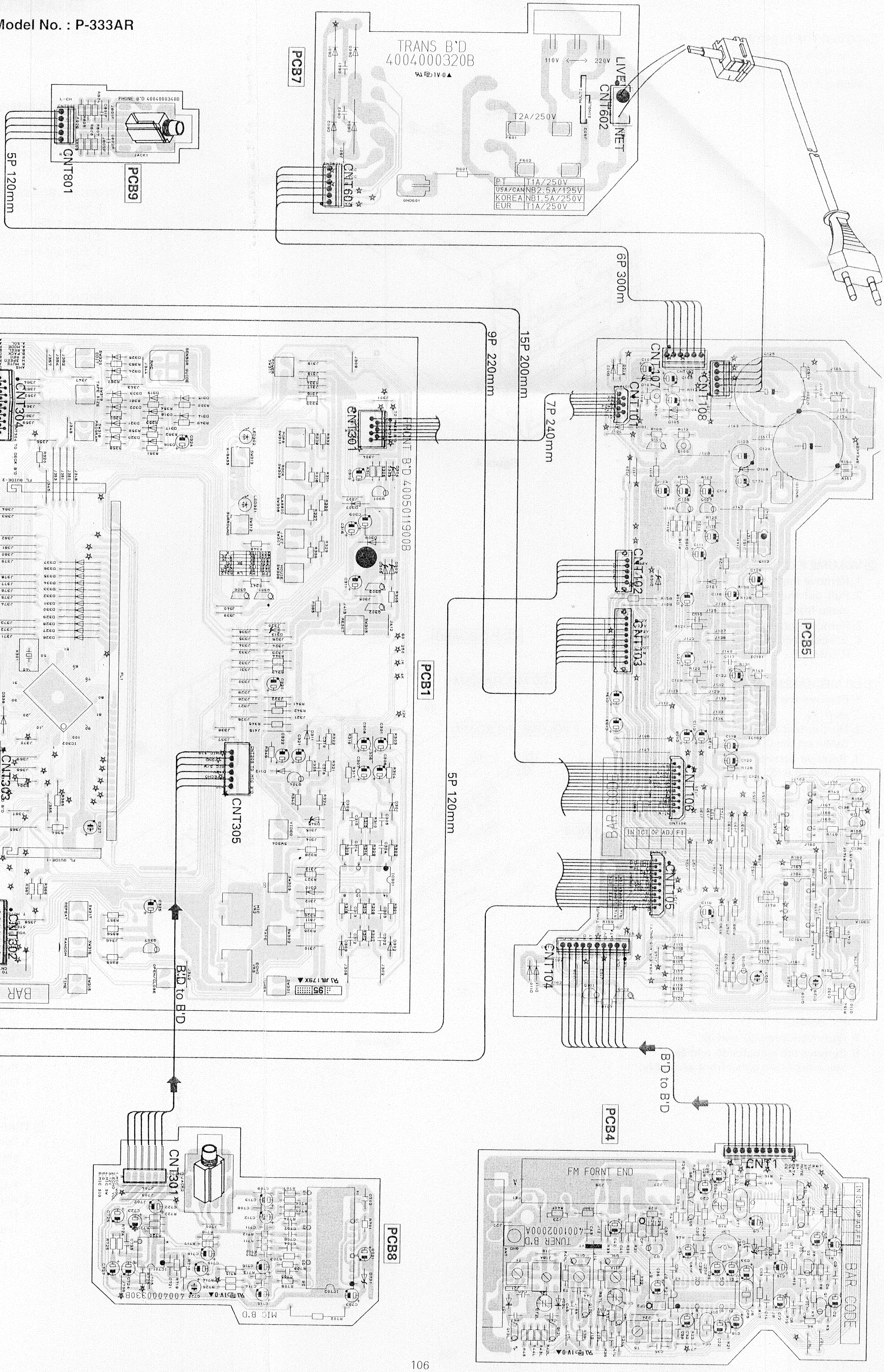
SCHEMTIC DIAGRAM V

Model No. : P-333AR



WIRING DIAGRAM

Model No. : P-333AR



WIRING DIAGRAM

Model No. : P-333AR

PCB9

CNT801

5P 120mm

PCB6

CNT401

13p

PCB3

CNT204

CNT205

CNT203

CNT206

CNT202

CNT201

CNT304

CNT305

CNT303

CNT307

17P 180mm

15P 240mm

B'D to B'D

CNT301

8P 180mm

17P 300mm

PCB2

CNT506

CNT505

CNT503

CNT502

CNT504

CNT501

8P 180mm

6P 120mm

8P 180mm

CD MECHANISM

CNT401

17P 180mm

15P 240mm

17P 300mm

PCB2

CNT506

CNT505

CNT503

CNT504

CNT502

CNT501

8P 180mm

CD MECHANISM

8P 180mm

6P 120mm

8P 180mm

13p

PCB3

CNT204

CNT205

CNT203

CNT206

CNT202

CNT201

5P 120mm

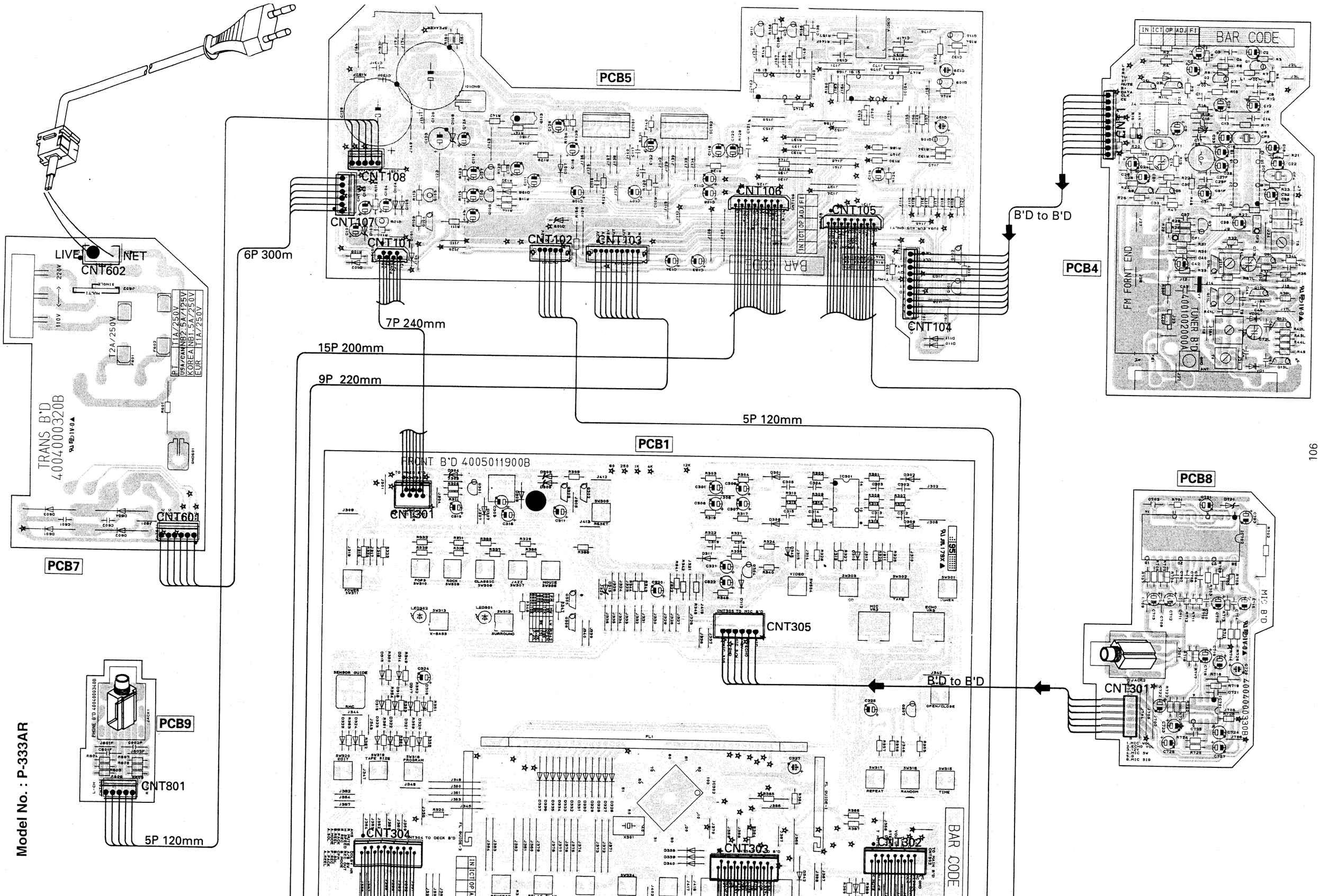
3P 180mm

11p

DECK MECHANISM

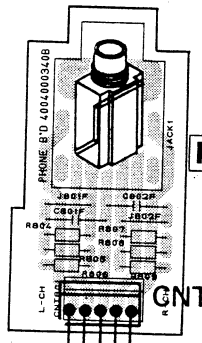
WIRING DIAGRAM

Model No. : P-333AR

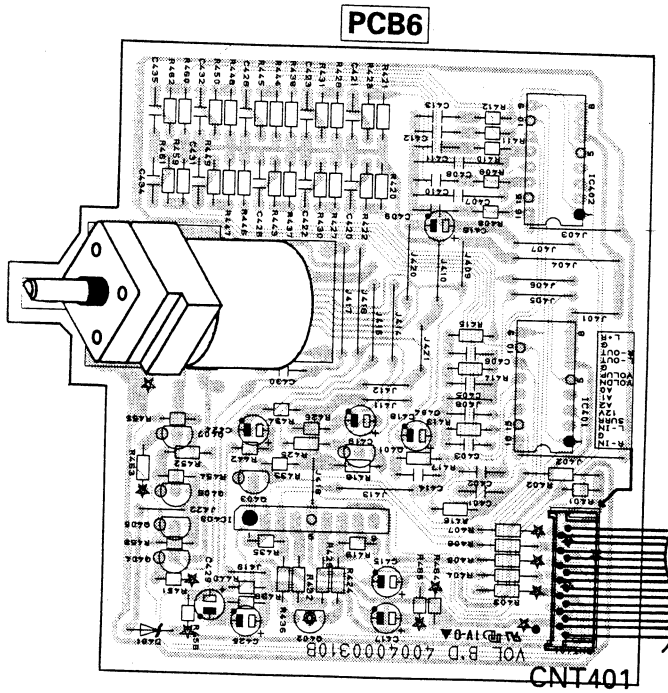


WIRING DIAGRAM

Model No. : P-333AR

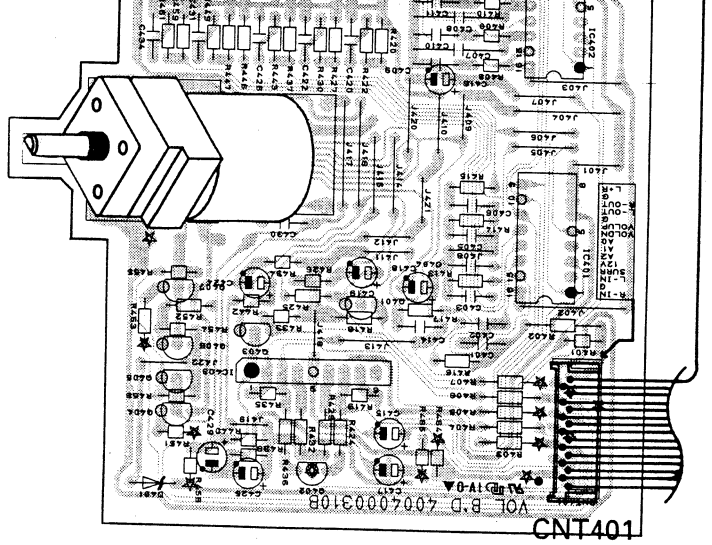


5P 120mm



13p

CD MECHANISM

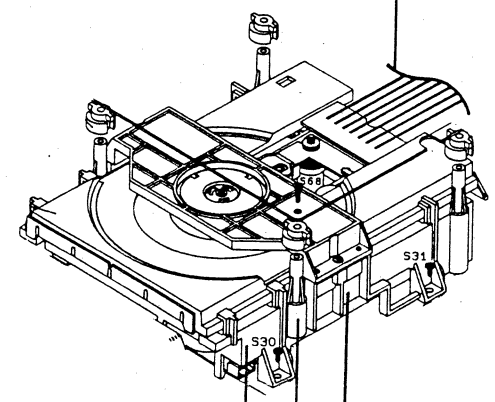


17P 180mm

15P 240mm

17P 300mm

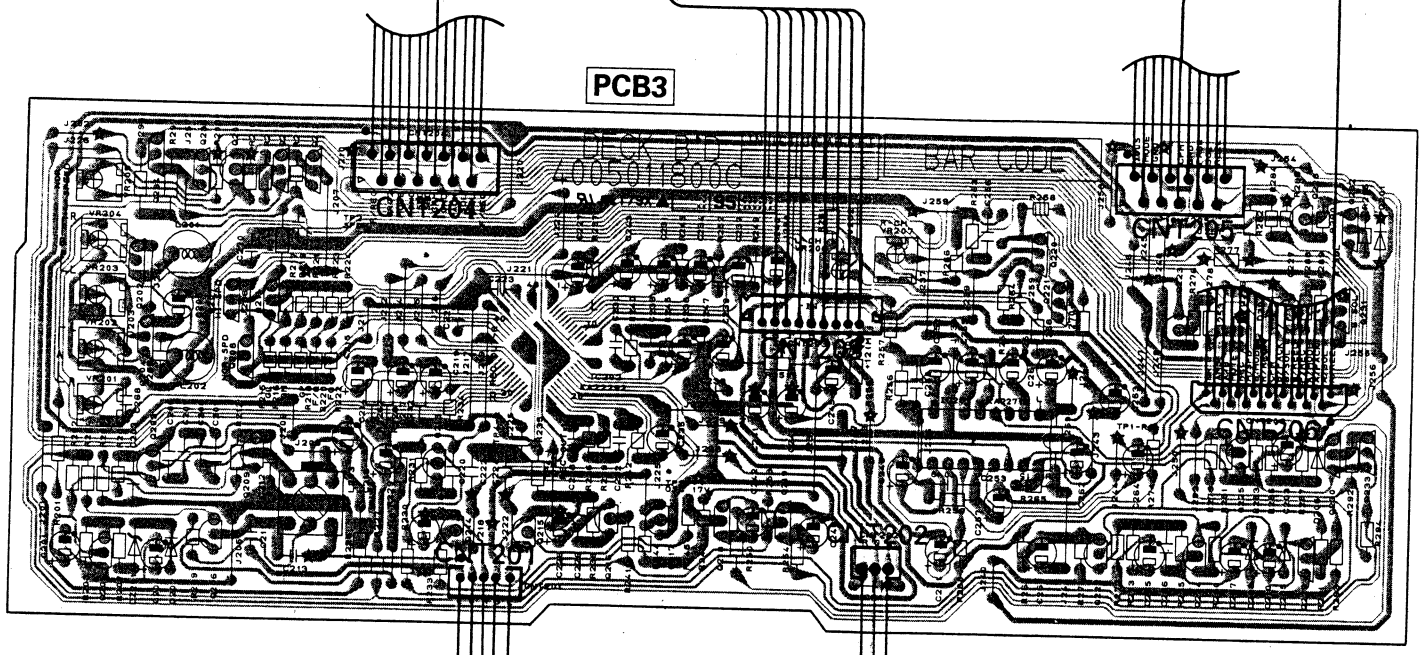
8P 180mm



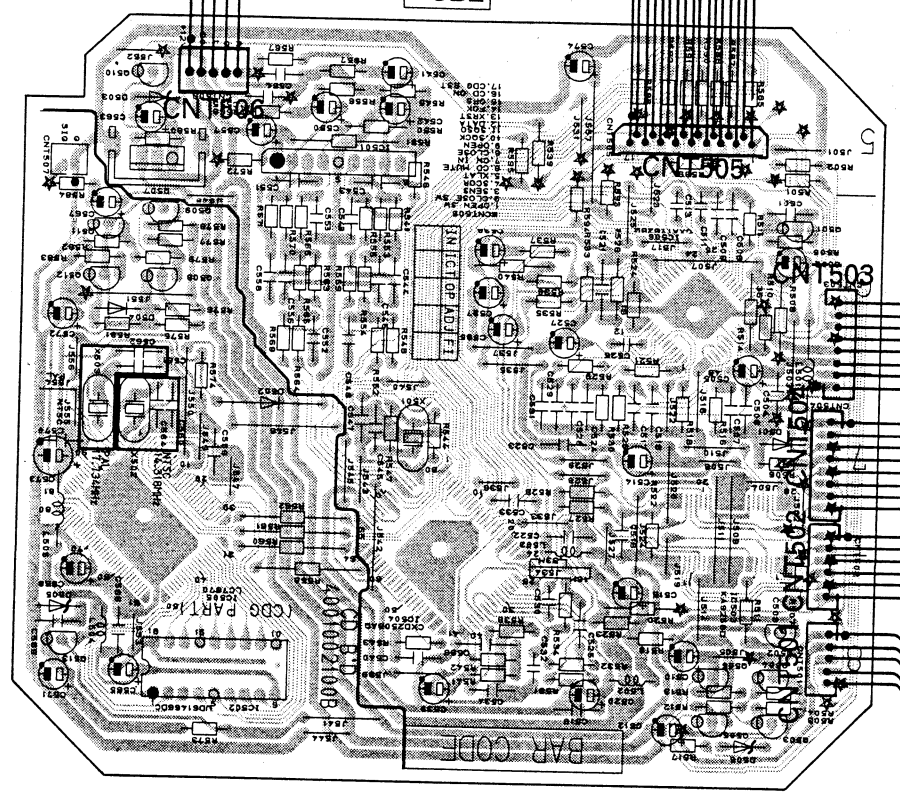
CD MECHANISM

13p

PCB3



PCB2



8P 180mm

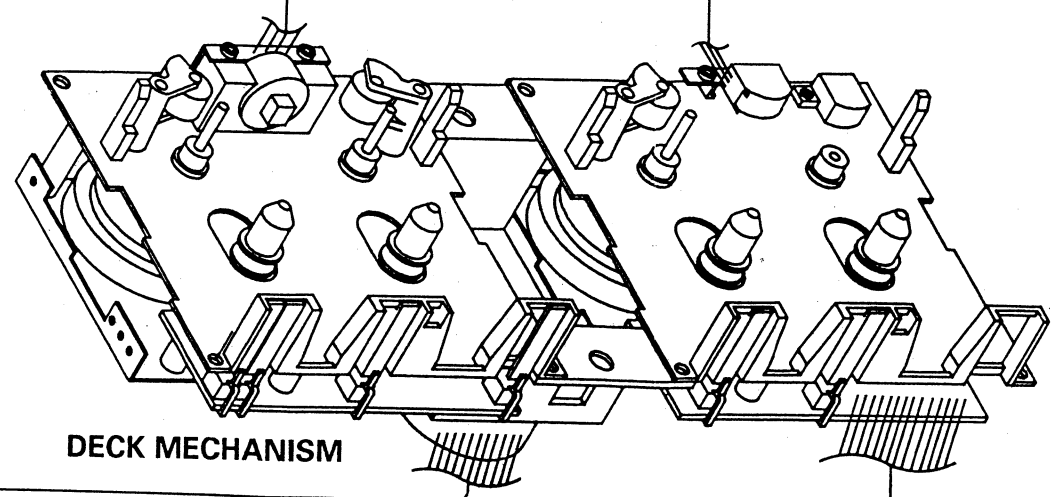
6P 120mm

8P 180mm

5P 120mm

3P 180mm

11p



DECK MECHANISM

[1] COVER TOP REMOVAL

1. Remove screws ① to ⑨ and then remove the cover by sliding it to its rear a little.

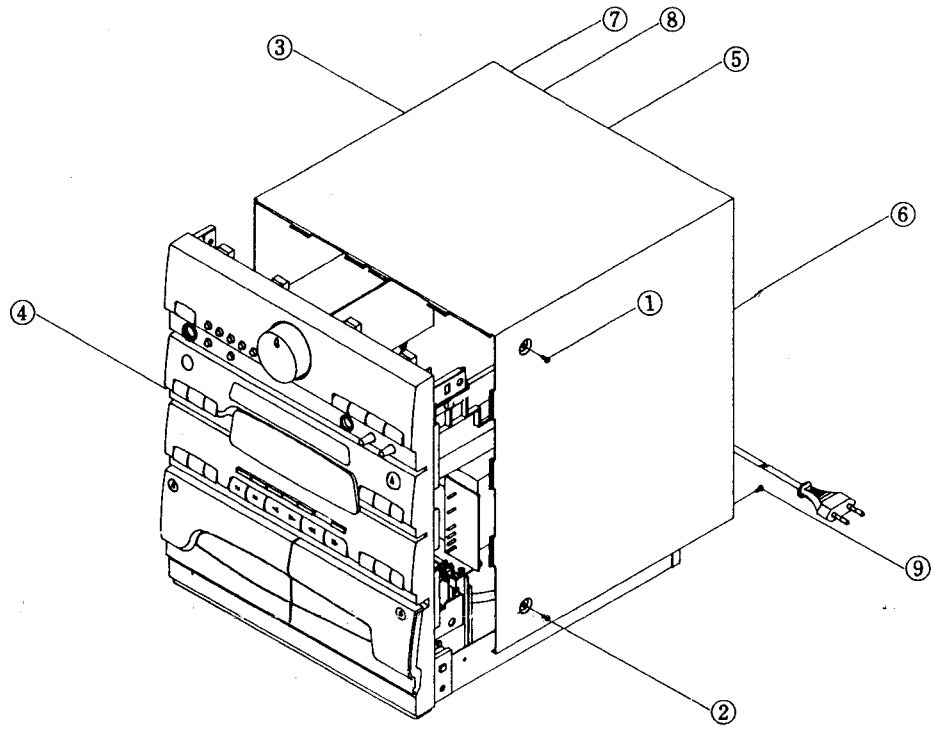


Figure 4

[2] VOLUME P.C.BOARD REMOVAL (Figure 5)

1. Remove the cover top. (Refer to step [1])
2. Pull out the main volume knob on the panel front.
3. Remove screws ① and ②
4. Disconnect card cable on the volume P.C.Board.

[3] CD MECHANISM REMOVAL (Figure 5)

1. Remove the volume P.C.Board (Refer to step [2])
2. Disconnect CNT505 and CNT506(card cable) on the CD P.C.Board.
3. Remove screws ⑪ to ⑭ in Fig. 2 and release the CD mechanism.

[4] CD P.C.BOARD REMOVAL (Figure 5)

1. Remove the CD mechanism. (Refer to step [3])
2. Disconnect CNT501, CNT502, CNT503, CNT504 on the CD P.C.Board
3. Remove screws ⑦ to ⑩ and release the CD P.C.Board

[5] PANEL FRONT ASSEMBLY REMOVAL (Figure 5)

1. Remove the CD mechanism. (Refer to step [3])
2. Remove screws ③ to ⑥
3. Disconnect card cables on the front P.C.Board.
4. Disconnect CNT801 on the phone P.C.Board.
5. Remove screws ⑮ and ⑯
6. Remove the actuator ⑰ and ⑱ and release the panel front assembly.

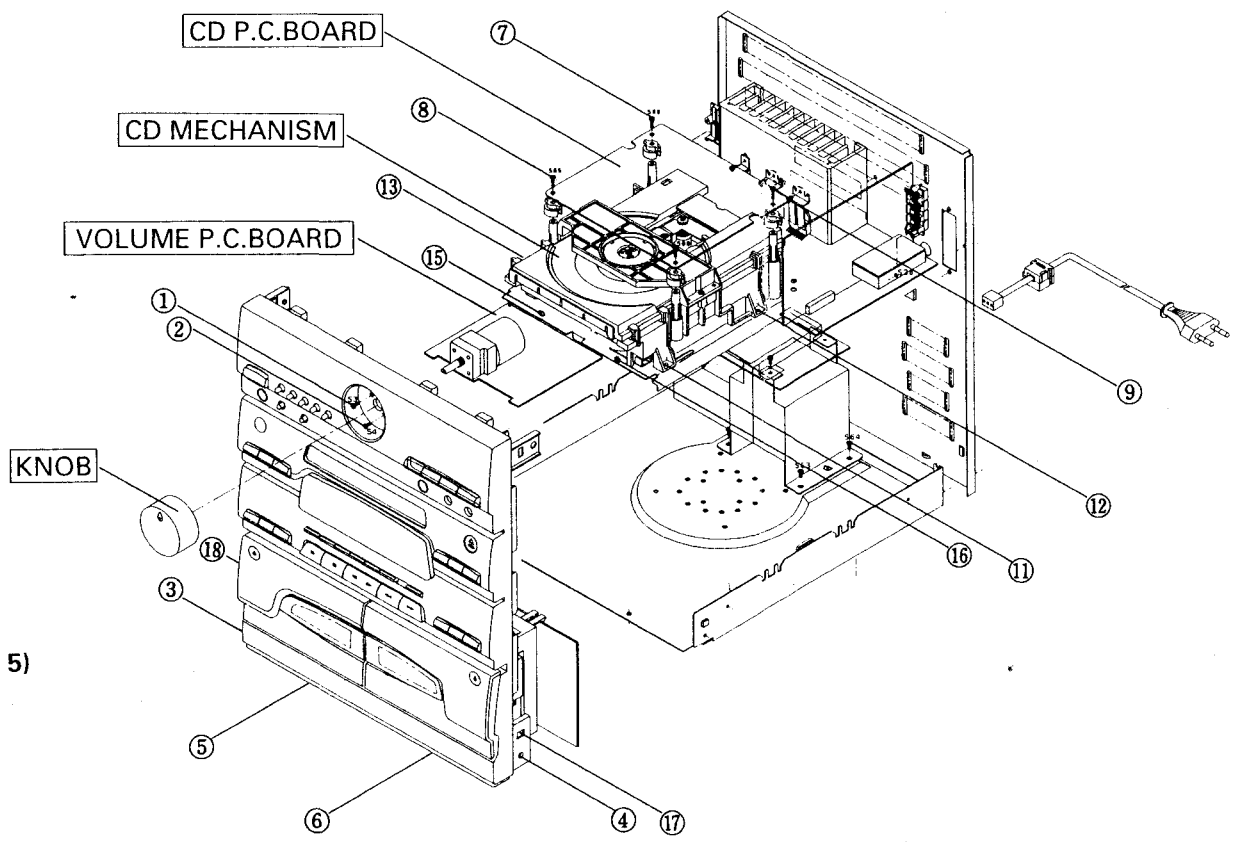


Figure 5

[6] PHONE P.C.BOARD REMO

1. Remove the panel front
   to step [5])
2. Remove screw ① and r
   P.C.Board.

[7] MIC P.C.BOARD REMOVAL

1. Remove the panel front
   to step [5])
2. Remove screw ②
3. Pull out the mic P.C.Boa
   front.

[8] FRONT P.C.BOARD REMOV

1. Remove the panel front
2. Remove the mic P.C.Boa
   [7])
3. Remove screws ③ to
   release the bracket front
4. Remove screws ⑥ to
   release the front P.C.Boa

[11] TUNER P.C.B

1. Remove the
2. Remove sc
3. Disconnect
   P.C.Board.

[12] MAIN P.C.BO

1. Remove th
   to step [5])
2. Remove th
   step [10])
3. Remove sc
4. Disconnect
   P.C.Board.

[13] TRANS P.C.B

1. Remove th
   step [12])
2. Disconnect
   P.C.Board.
3. Remove sc
4. Unsolder t
   release the

DISASSEMBLY PROCEDURES

6 PHONE P.C.BOARD REMOVAL (Figure 6)

1. Remove the panel front assembly. (Refer to step 5)
2. Remove screw ① and release the phone P.C.Board.

7 MIC P.C.BOARD REMOVAL (Figure 6)

1. Remove the panel front assembly. (Refer to step 5)
2. Remove screw ②
3. Pull out the mic P.C.Board on the panel front.

8 FRONT P.C.BOARD REMOVAL (Figure 6)

1. Remove the panel front assembly
2. Remove the mic P.C.Board. (Refer to step 7)
3. Remove screws ③ to ⑤ in Flg. 3 and release the bracket front.
4. Remove screws ⑥ to ⑯ in Fig. 3 and release the front P.C.Board.

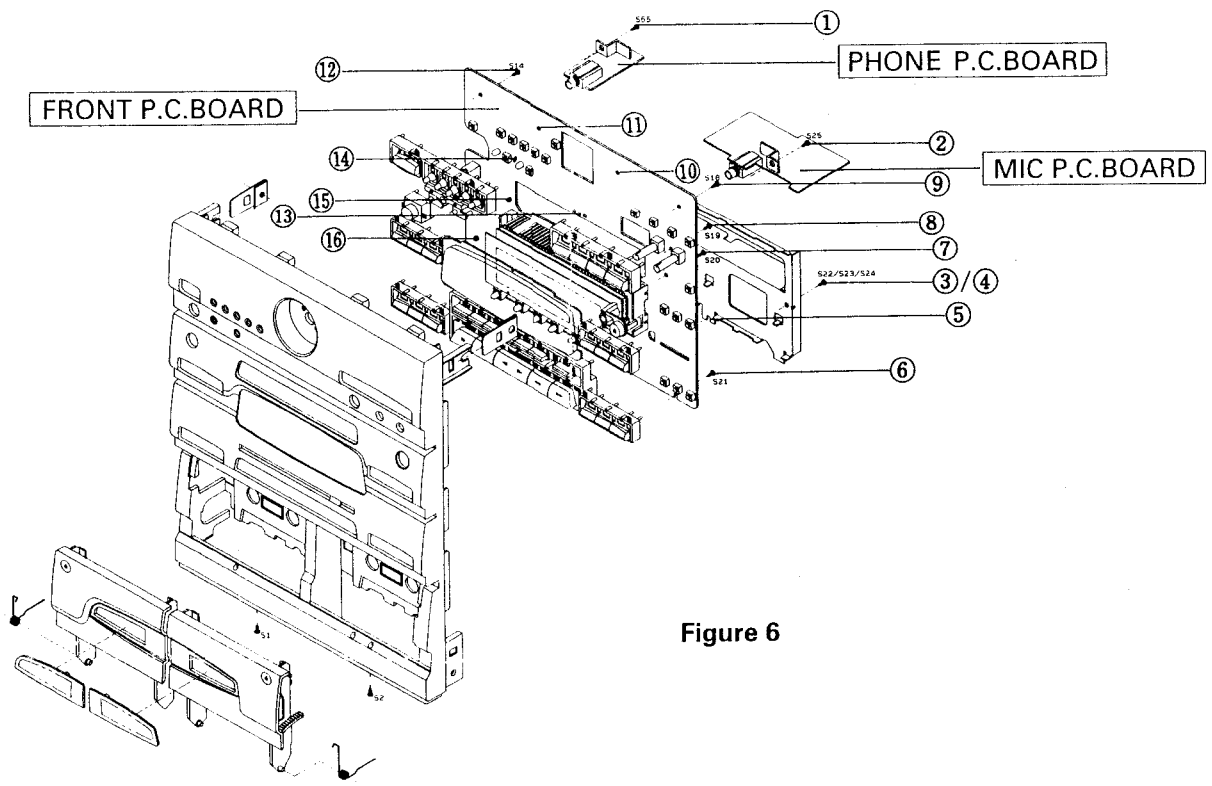
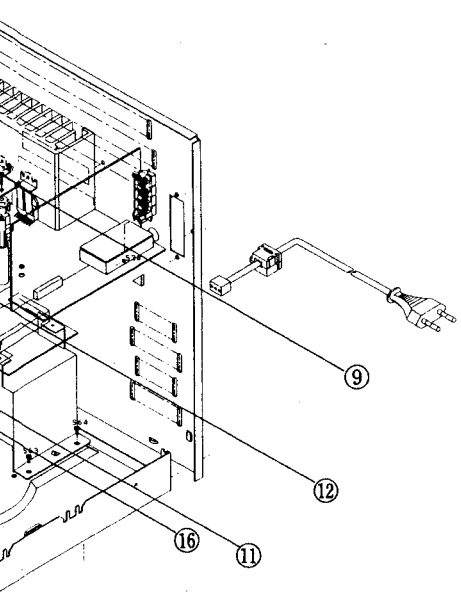


Figure 6



9 DECK MECHANISM ASSEMBLY REMOVAL (Figure 7)

1. Remove the panel front assembly (Refer to step 5)
2. Remove screws ① to ④ in Fig. 4 and put out the base dampers left/right.
3. Remove screws ⑤ to ⑦ in Flg. 4 and release the deck mechanism assembly.

10 DECK P.C.BOARD REMOVAL (Figure 7)

1. Remove the deck mechanism assembly. (Refer to step 9)
2. Disconnect CNT201, CNT202, CNT204, - CNT205 on the deck P.C.Board.
3. Remove the actuators ⑧ to ⑩ in Flg. 4 and release the deck P.C.Board.

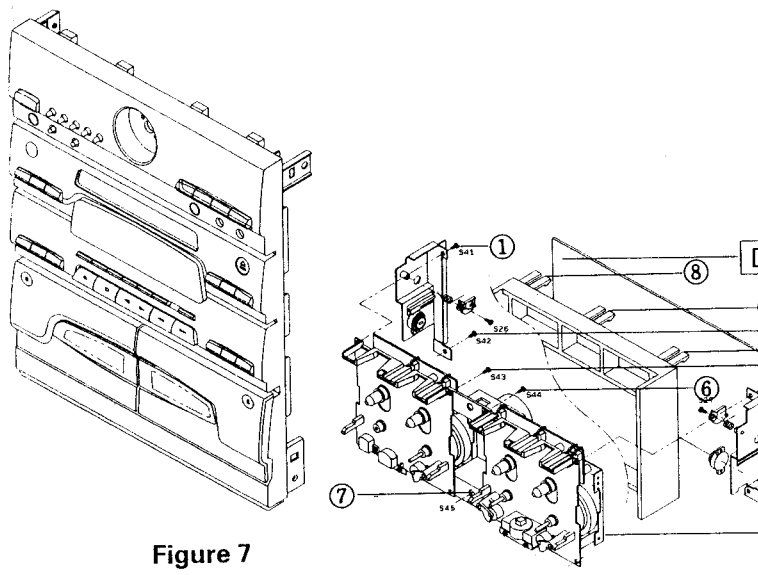


Figure 7

11 TUNER P.C.BOARD REMOVAL (Figure 8)

1. Remove the cover top. (Refer to step 1)
2. Remove screws ① and ②
3. Disconnect CNT104 on the main P.C.Board.

12 MAIN P.C.BOARD REMOVAL (Figure 8)

1. Remove the panel front assembly. (Refer to step 5)
2. Remove the tuner P.C.Board. (Refer to step 10)
3. Remove screws ① and ②
4. Disconnect CNT104 on the main P.C.Board.

13 TRANS P.C.BOARD REMOVAL (Figure 8)

1. Remove the main P.C.Board. (Refer to step step 12)
2. Disconnect CNT601 on the trans P.C.Board.
3. Remove screw ⑫
4. Unsolder the lead transformer and release the trans P.C..Board.

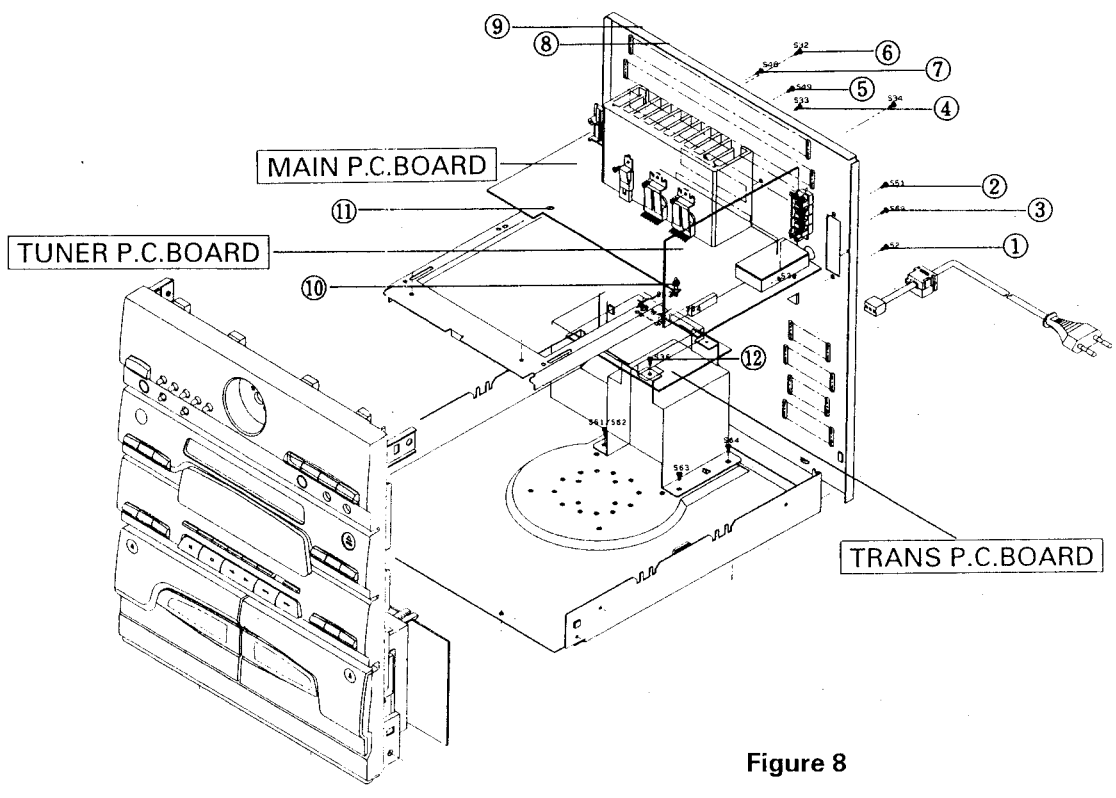


Figure 8

CEDURES

Figure 6)
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Fig. 3 and

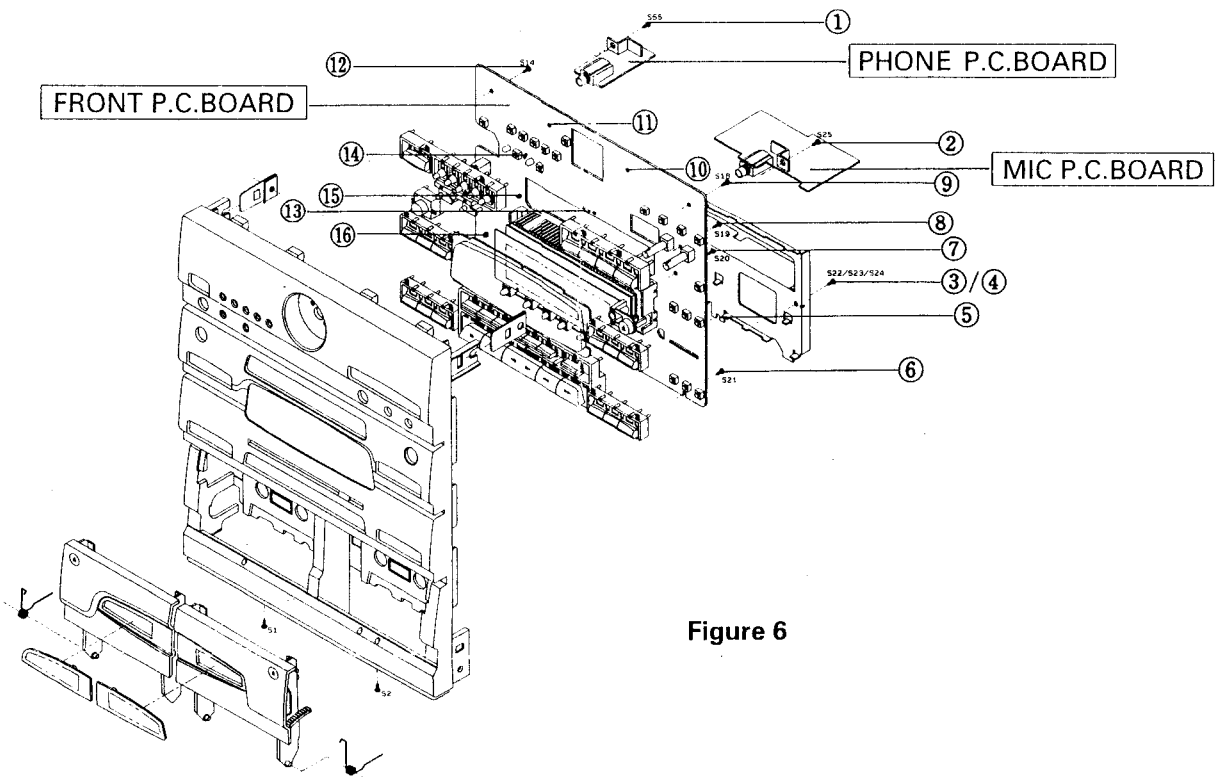


Figure 6

[9] DECK MECHANISM ASSEMBLY REMOVAL (Figure 7)

1. Remove the panel front assembly (Refer to step [5])
2. Remove screws ① to ④ in Fig. 4 and put out the base dampers left/right.
3. Remove screws ⑤ to ⑦ in Flg. 4 and release the deck mechanism assembly.

[10] DECK P.C.BOARD REMOVAL (Figure 7)

1. Remove the deck mechanism assembly. (Refer to step [9])
2. Disconnect CNT201, CNT202, CNT204, CNT205 on the deck P.C.Board.
3. Remove the actuators ⑧ to ⑩ in Flg. 4 and release the deck P.C.Board.

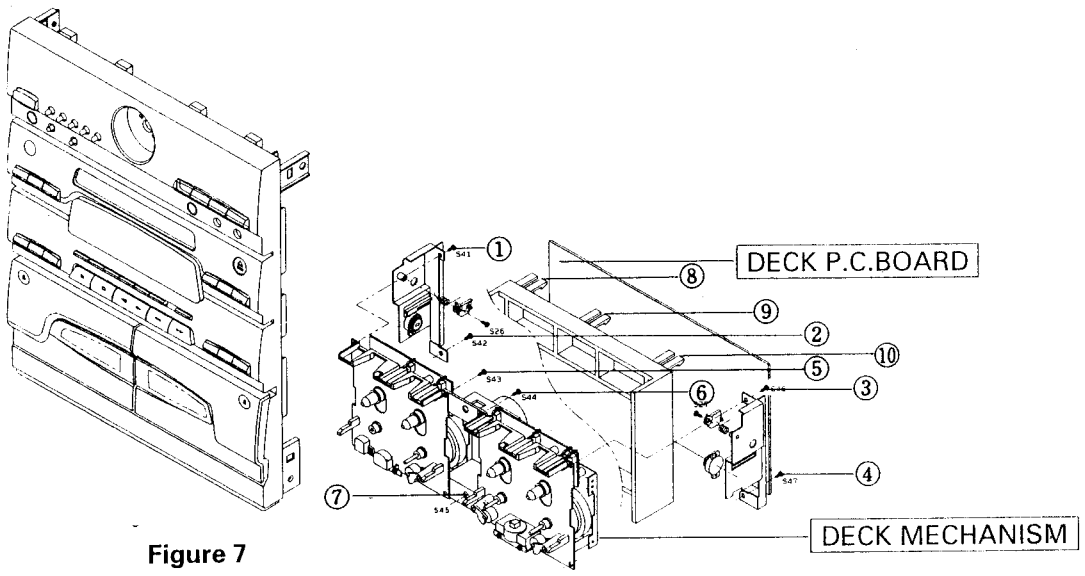


Figure 7

REMOVAL (Figure 8)
top. (Refer to step [1])
) and ②
04 on the main

EMOVAL (Figure 8)
l front assembly. (Refer

P.C.Board. (Refer to

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REMOVAL (Figure 8)
P.C.Board. (Refer to step

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transformer and
P.C..Board.

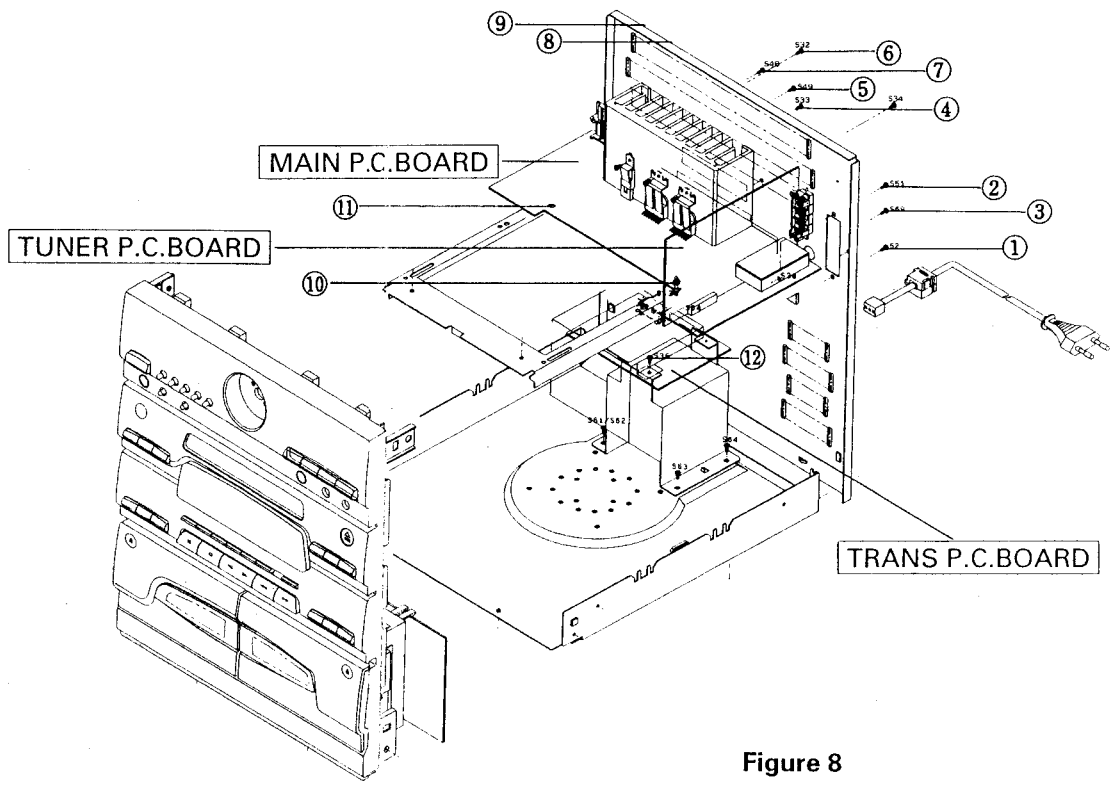


Figure 8