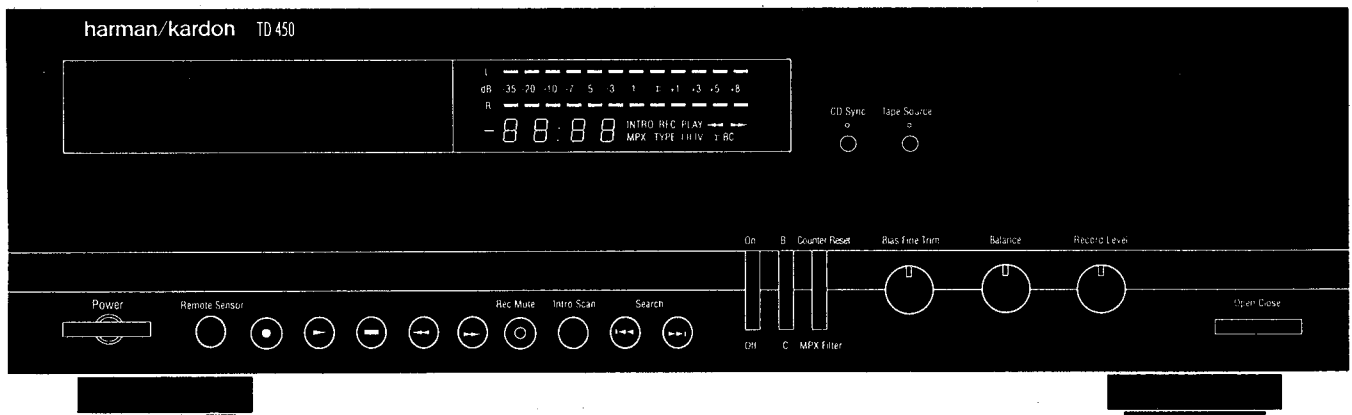


The Harman Kardon Model TD450

Manual A

CD TRANSCRIPTION QUALITY CASSETTE DECK

Technical Manual



The following marks found in the parts list of this manual identify the models as follows.

- BK** : North America area model Black version
- I** : International model
- IB** : International model Black version

harman / kardon

80 Crossways Park West, Woodbury, N. Y. 11797
1112-TD450 P-1195 1200 Printed in KOREA

SPECIFICATIONS

	Nominal	limit		Nominal	Limit
Track Configuration	4-track 2 Channel Stereo Cassette Deck		Channel Separation	45dB	≥ 35dB
· MECHANICAL SECTION			Crosstalk	70dB	≥ 50dB
Record/Playback Tape Speed			Record/Playback Distortion (input 1kHz)		
Drift 4.75cm/sec.	0.2% ± 2.0%		LN	0.9%	≤ 2.0%
Wow and Flutter(WTD)	0.05%(NAB) ≤ 0.1%		CrO ₂	1.5%	≤ 2.5%
	0.07%(CCIR)		Metal	1.3%	≤ 2.5%
Take Up Torque	50gr · cm	35~70gr · cm	MPX filter Attenuation		
Back Tension	4gr · cm	2~6gr · cm	at 15kHz	0.3dB	≤ 1dB
F.FWD Torque	100gr · cm	70~150gr · cm	at 19kHz	35dB	≤ 30dB
REW Torque	100gr · cm	70~150gr · cm	Erase Ratio(input 80Hz)		
F.FWD/REW Time (C-60 Tape)	90sec. ≤ 110sec.		LN	70dB	≥ 60dB
· AMPLIFIER SECTION			Metal	61dB	≥ 56dB
Bias Frequency	105kHz ± 5kHz		input Sensitivity (input 1kHz)at Line input	45mV	40(min)~100(max)mV
Playback Output(10K Ω)	640mV ± 1.5dB		input impedance (input 1kHz)at Line input	22kΩ 19(min)~30(max)kΩ	
Signal-to-Noise Ratio at Line input (input 1kHz, 100mV)			· DIMENSIONS(W×H×D)	17-3/8" × 5" × 12-5/8" (442 × 126 × 320mm)	
IHF-A WTD at Dolby Level			· WEIGHT	5.4 kg	
Dolby NR off			· POWER SUPPLY		
LN	51dB		U.S.A. and Canada models	AC120V, 60Hz	BK
CrO ₂	54dB		International	AC230V, 50/60Hz	I IB
Metal	54dB		· POWER CONSUMPTION		
Dolby B NR			U.S.A. and Canada models	18 W	BK
LN	61dB		International and Australia models	18 W	I IB
CrO ₂	64dB	≤ 60dB			
Metal	64dB	≤ 60dB			
Dolby C NR					
LN	66dB				
CrO ₂	70dB	≤ 66dB			
Metal	70dB	≤ 66dB			

These specifications are service target specs.
Specifications and components are subject to change
without notice.
Overall performance will be maintained or improved.

LEAKAGE TEST(FOR SERVICE ENGINEERS IN THE U.S.A.)

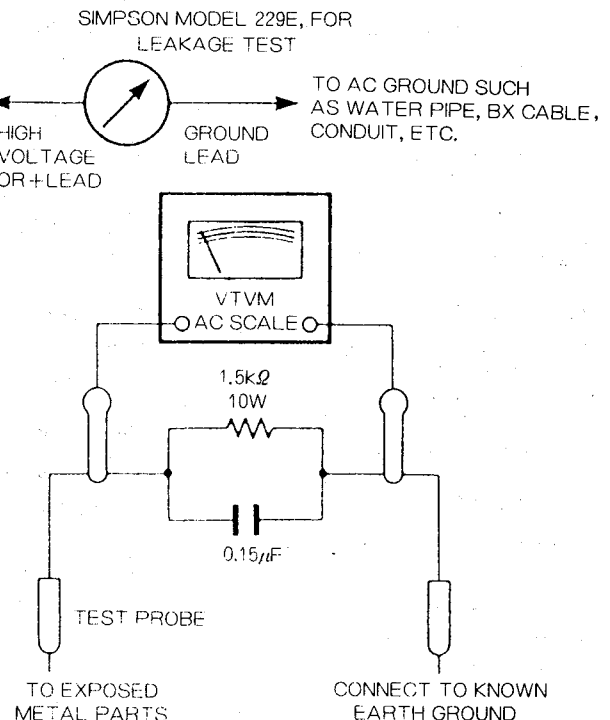
Before returning the unit to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Replace all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, or shields, isolation resistor-capacitor networks, mechanical insulators, ect.
3. Be sure that no shock hazard exists: check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No.21641, RCA Model WT540A or use alternate method as follows:

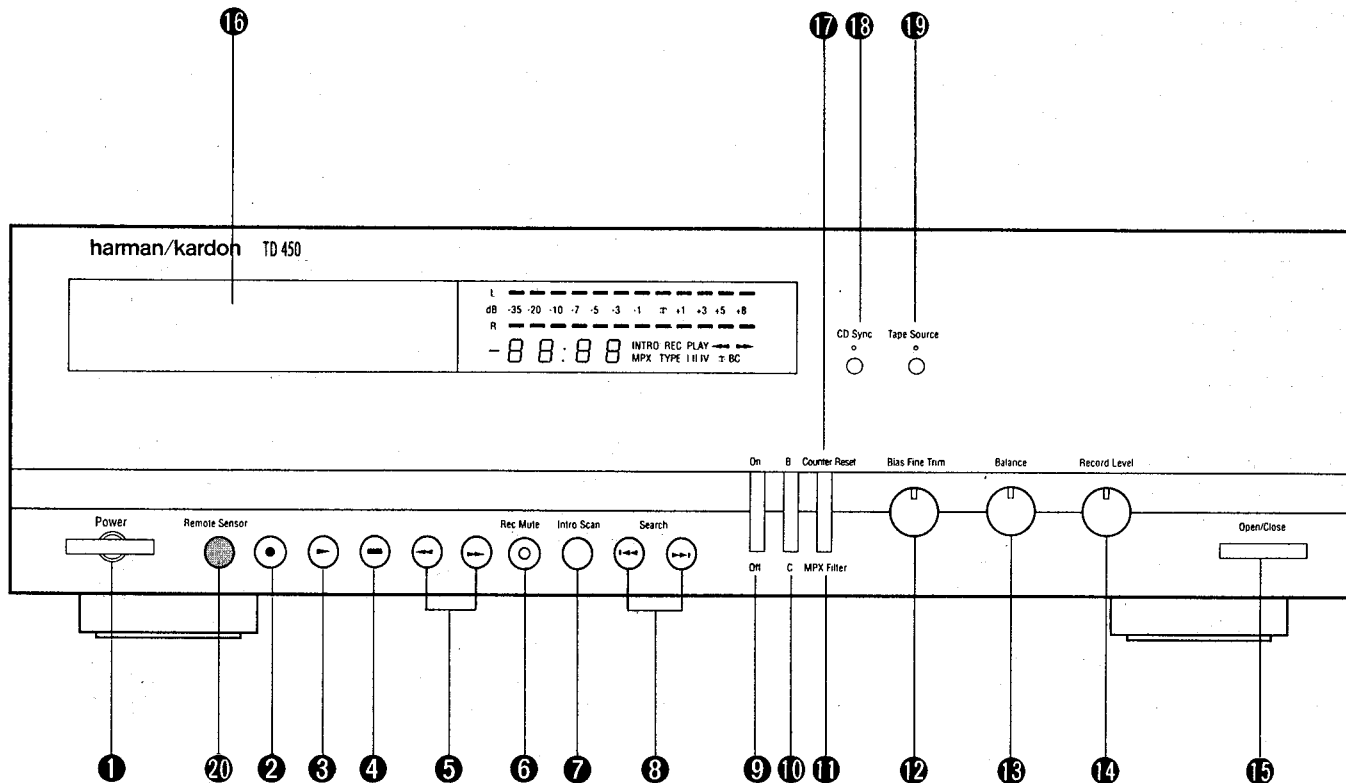
Plug the AC line cord directly into 120-volt AC receptacle(do not use an isolation Transformer for this test). Using two clip leads, connect a 1500ohm, 10-watt resistor paralleled by a 0.15 μF capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor.(See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis(antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.)and measure the AC voltage drop across the resistor.

(This test should be performed with the power switch in both the On and Off positions.)

A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.



CONTROLS AND FUNCTIONS

**1 Power Switch**

Press to turn unit on/off.

2 Record/Pause

Puts cassette deck in Record ready or pause mode.

3 Play

Begins playback or recording.

4 Stop

Stops tape transport in any mode.

5 Rewind/Fast Forward

Rapidly rewinds/advances tape.

6 Record Mute

Inserts blank space when recording.

7 Intro Scan

Previews each segment on a prerecorded tape.

8 Search Forward and Reverse

Locates the start of any desired segment on a pre-recorded tape.

9 Dolby NR

Activates Dolby Noise Reduction circuitry for playing or recording tapes.

10 B/C

Selects Dolby B NR or C NR Noise Reduction.

11 MPX Filter

Press when recording FM stereo broadcasts using Dolby noise reduction.

12 Bias Fine Trim

Adjust when recording.

13 Balance

Adjusts balance between left and right channels when recording.

14 Record Level

Adjusts recording level.

15 Open/Close

Press to load/remove tape cassette.

16 Cassette Compartment/Drawer**17 Counter Reset**

Resets Tape Counter to 00:00.

18 CD Sync

Engage when synchronizing recording with a Harman Kardón CD Player.

19 Tape Source

Selects between the signal recorded on the tape and the input source signal. When "Tape" is selected the indicator above the button will light.

20 Remote IR Sensor

21 Counter

Indicates tape position in minutes and seconds.

22 Level

Shows signal level.

23 Intro

Indicates intro Scan is engaged.

24 REC, PLAY

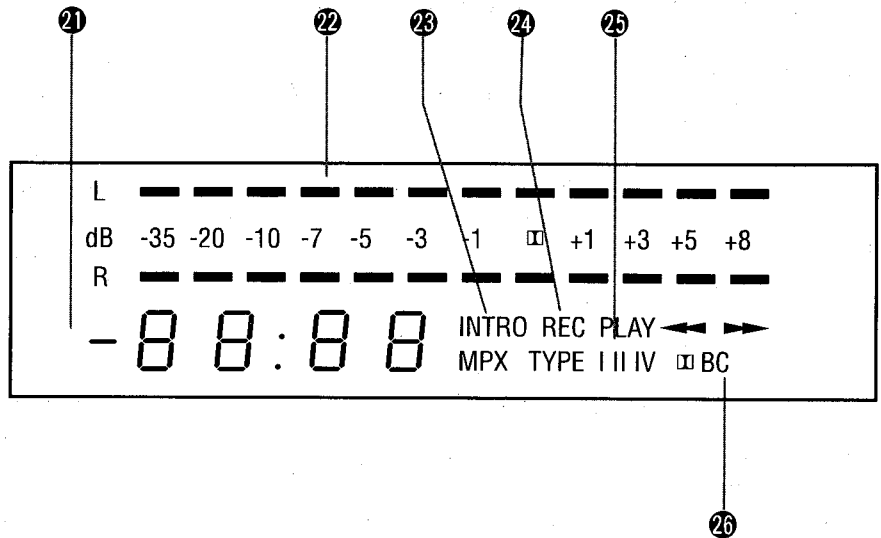
Displays operating mode : Record, Play, Rewind or Fast Forward.

25 TYPE I II IV

Automatically indicates type of tape in use.


26 Dolby B C NR

Shows if Dolby B NR or C NR circuits are on.



· NOTE

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.

"Dolby", and the double-D symbol  and "HX Pro" are trademarks of Dolby Laboratories Licensing Corporation.

DISASSEMBLY PROCEDURES(REFER TO PAGES 12, 13 AND)**[1] CABINET TOP (25) REMOVAL**

Remove 4 screws (E) and 1 screws (D), then remove the Cabinet Top(25).

[2] FRONT PANEL ASSEMBLY (13) REMOVAL

1. Remove the Cabinet Top(25). (Refer to step 1.)
2. Remove the Plate with window (22).
3. Disconnect CN 801, WA 801 and WA 802 connected to the Main P.C.Board(PCB-1).
4. Remove 3 Rotary Knobs(2).
5. Remove 4 screws (B) and 4 screws(A), and then remove the Front Panel Assembly(13).

[3] CASSETTE TAPE RECORDER MECHANISM ASSEMBLY REMOVAL

1. Remove the Front Panel Assembly. (Refer to step 2).
2. Disconnect WA 401, 402, 403, 404, 405, 406 and 407 connected to the Cassette Tape Recorder Mechanism Assembly.
3. Disconnect WA 101 and 102 connected to the Main P. C. Board(18).

4. Remove 4 screws (D) and then remove the Cassette Tape Recorder Mechanism Assembly.

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

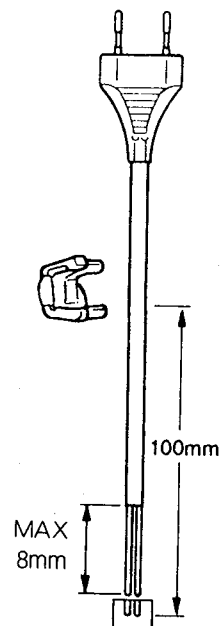
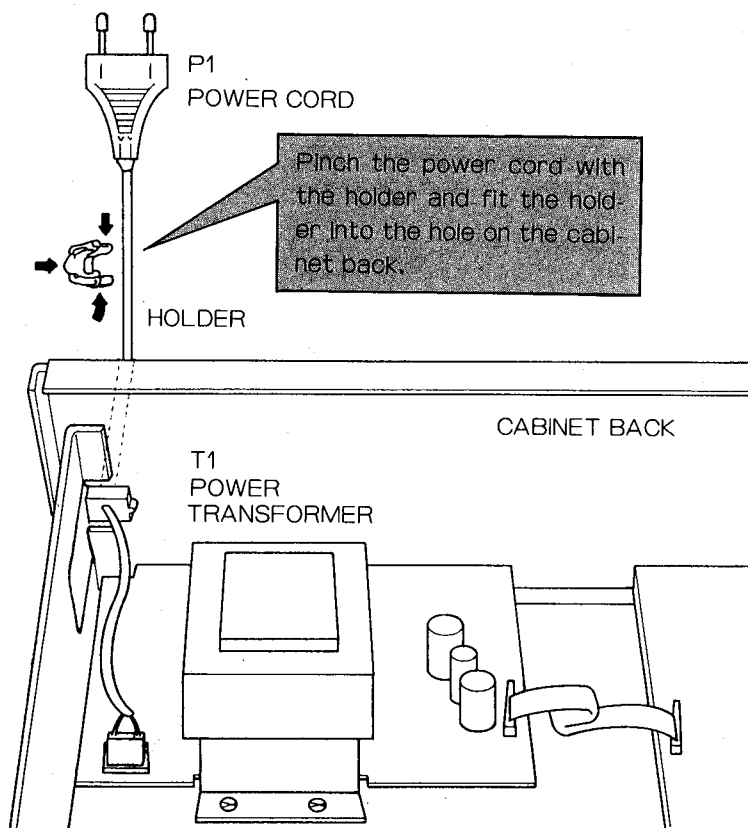
1. Remove the Cabinet Top(25). (Refer to step 1.)
2. Disconnect WA101 and WA102 connected to the Cassette Tape Recorder Mechanism Assembly.
3. Disconnect WA 801, 802 and CN 801 connected to the Front P.C. Board(PCB 2).
4. Disconnect WA501 connected to the Power P. C. Board(21).
5. Remove 4 screws(B), then remove the Main P. C. Board(18).

[5] OTHER P. C. BOARDS REMOVAL

1. Remove the Front and Assembly(1). (Refer to step 2.)
2. Remove 6 screws (B) then remove the Front P. C. Board (13).
3. Remove 2 screws (C) and then remove the Power P. C. Board(21). If necessary, disconnect the connector.

POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the Procedure below to replace the part with the standard supply parts.



ALIGNMENT PROCEDURES

■ CASSETTE MECHANISM CONFIRMATION

Make sure to confirm conditions of the cassette mechanism as follows before adjustment.

1. Confirmation of erase prevention function

- The switch should turn ON when a tape with erroneous erase preventive tab is inserted. (Use a tape which is 0.2mm smaller than the minimum size of 62.9mm or 63.9mm or a MAZ-0184-C gauge one.)

2. Confirmation of cassette pack detection function

- The switch should turn ON when a tape is inserted. (Use a tape whose minimum size is 63.5mm or a MAZ-0184-C gauge one.)
- When the switch arm is moved back gradually from the ON position, the switch should turn OFF.

3. Confirmation of eject function

- The cassette compartment opens smoothly and no abnormal noise should be heard while opening and closing.

4. Confirmation of playback, fast forward and rewind functions

- The torque used in each of the playback, fast forward and rewind modes should be within specification.

Playback	35gr.cm~70gr.cm
Fast Forward	70gr.cm~150gr.cm
Rewind	70gr.cm~150gr.cm

- No abnormal noise should be heard during operation in any mode. The solenoid switching should not be considered as a noise.

5. Confirmation of positions of record/playback head and erase head

- Head height
 - Set the M-300 head gauge.
 - Set the unit in the playback mode and place the adjustment chip on the head gauge as shown in the Fig. 1.
 - The adjustment chip should not contact the tape guide of both record/playback head and erase head.

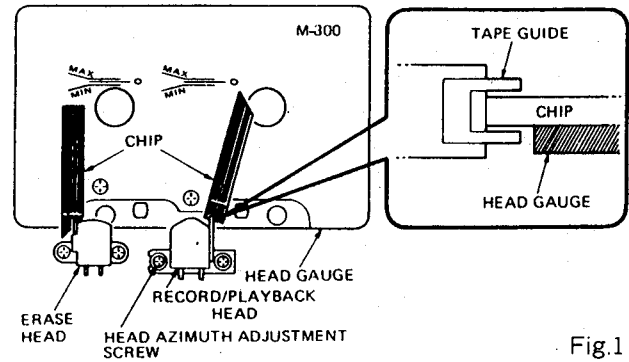


Fig.1

- Head position
 - Set the M-300 head gauge.
 - Set the unit in the playback mode and place the adjustment chip on the head gauge as show in the Fig. 2.
 - With both record/playback head and erase head, the adjustment chip should be between MIN and MAX of the M-300 head gauge.

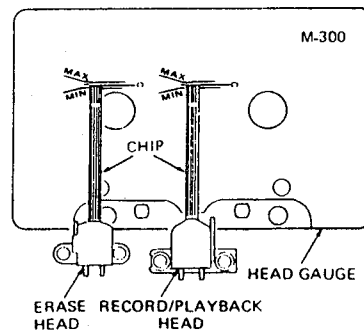


Fig.2

ELECTRICAL ADJUSTMENT AND CONFIRMATION

1. Before adjustment

- Before electrical adjustment, make sure that confirmations of the cassette mechanism are all completed.
- After the power switch is pushed on, wait for 10 minutes before measuring to be sure of the most stable operation
- Since head magnetization, dust accumulations, etc. are likely to introduce errors in the various characteristics, it is very important that the heads are properly demagnetized and cleaned before commencing any adjustment, particularly frequency response and head azimuth adjustment.

2. Instruments required

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

3. Test tapes

- Azimuth adjustmentMTT-114 or TCC-153
- Tape speed adjustment.....MTT-111DN OR TCC-112
- Playback output level adjustmentTCC-130 or MTT-150
- Playback frequency characteristic confirmationTCC-1216 or TCC-162C and TCC-262C
- Music search adjustmentSCC-740
- Reference tapes
 LNAC224
 CrO₂AC513
 METALAC712

Note :

C-90 differs with C-60 in the thickness and bias is of unequal, so adjust with tape whose bias in of specified value.

4. General conditions (unless otherwise noted)

Controls and Switches	Settings
Dolby NR	Off
Input Level	Maximum
MPX Filter	Off
Bias Fine Trim	Center
Balance	Center

Azimuth Adjustment :

When the maximum level point of R channel does not equal that L channel, connect the oscilloscope as shown in Fig. 3 and proceed with azimuth adjustment so that L and R channels are in phase.

- Connect L channel tape out to "X(or V)" and R channel to "Y(or H)". Observe the lissajous waveform.
- Set L and R channels to monaural. Adjust vertical and horizontal gain R channels to monaural. Adjust vertical and horizontal gain so that the waveform becomes 45 degree.
- Adjust azimuth so that the measurement of "a" becomes maximum and the measurement of "b" becomes minimum against the 45 degree line.

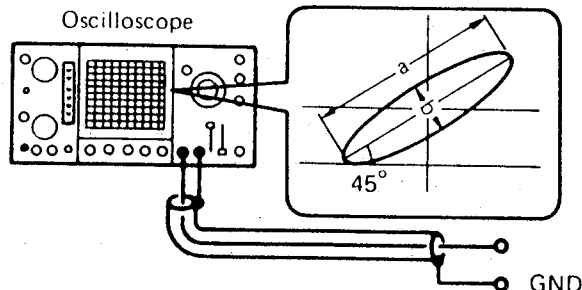
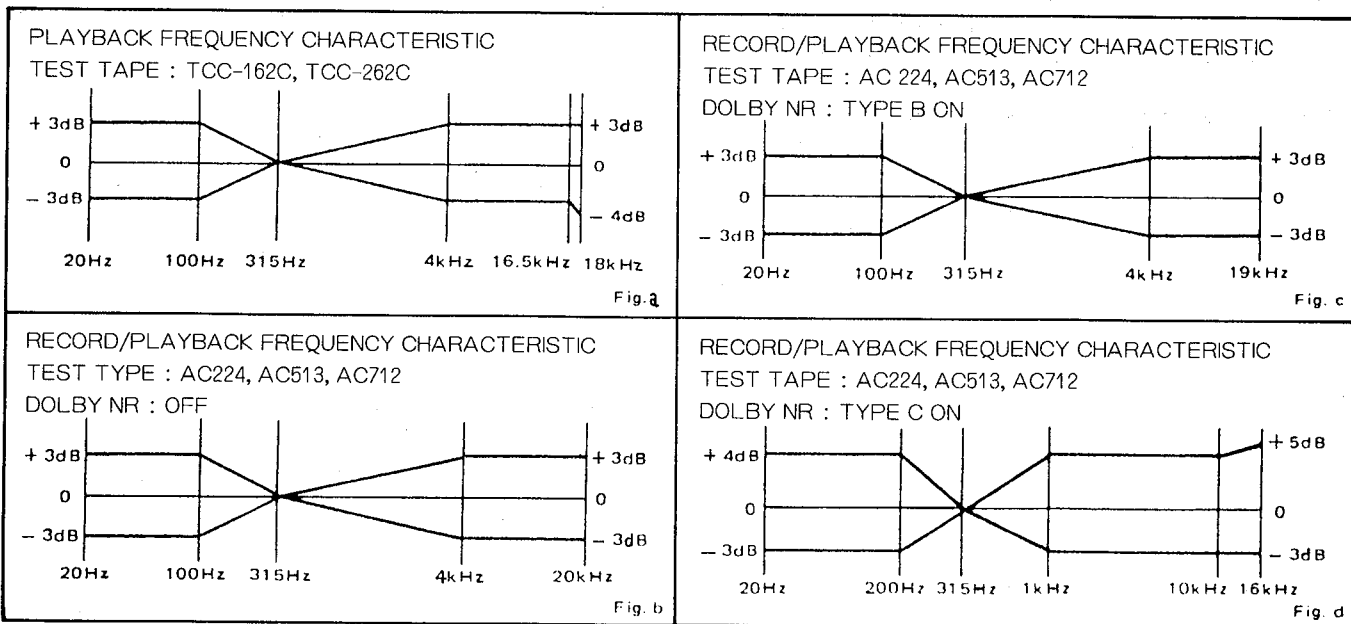


Fig.3

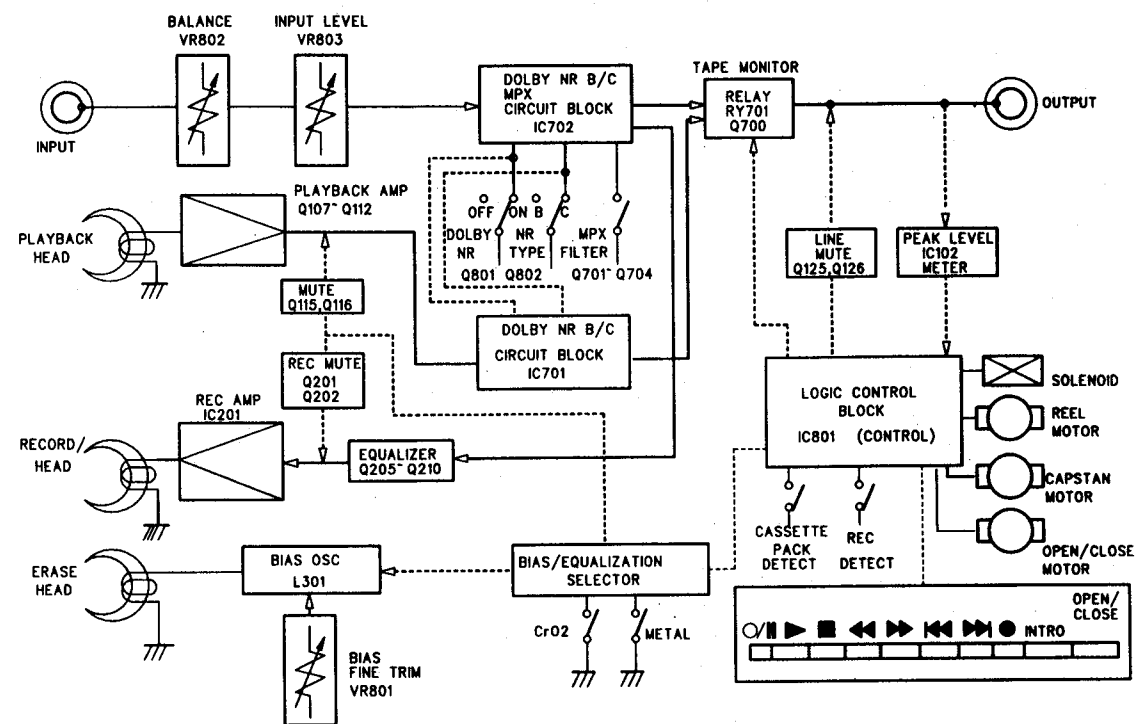


Step	Alignment	Instrument Required	Input Signal	Mode	Test Point	Adjustment	For
1	Azimuth	VTVM Oscilloscope Test tape(MTT-114 or TCC-153)		PB	WA 703 or OUTPUT jack	Azimuth screw	Maximum output Refer to "Azimuth Adjustment" on page 6
2	Tape speed	Frequency counter Test tape(MTT-111 DN or TCC-153)		PB	WA 703 or OUTPUT jack	VR401 (On PCB)	3000Hz ± 20Hz Adjust at the center of test tape.
3	Playback output level	VTVM Test tape(TCC-130)		PB	WA 703	VR101(Lch) VR102(Rch)	775mV Tape selector is LN position.
4	Playback frequency characteristic confirmation	VTVM Test tape(TCC-1216 or TCC-162C and TCC-262C)		PB	WA 703 or OUTPUT jack	R135, R136 R137, R138	Unsolder resistors of R135 and R137 and R136 or R138 so that frequency response is within the range as shown in Fig. a.
5	Bias frequency confirmation	Frequency counter		REC/PB	CN303	WA 102 (6 pin-GND)	105kHz ± 3kHz Tape selector is METAL position.
6	Bias level(preadjustment)	VTVM		REC/PB	J81(TP303, L-BIAS) J82(TP304, R-BIAS)	VR 305	170mV
						VR 306	Tape selector is METAL position
						VR 301	80mV
						VR 302	Tape selector is CrO ₂ position.
						VR 303	50mV
						VR 304	Tape selector is LN position.
7	Bias trap	VTVM		REC/PB	J87 (TP301, L-CH) J88 (TP302, R-CH)	L301 L302	Minimum output Tape selector is METAL position.
8	Record level (preadjustment)	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Apply 1KHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 775mV in REC-PAUSE mode.	REC/PB	WA 703	VR201, VR202 VR305, VR306	775mV Tape selector is METAL position. Adjust VR305 and VR306 so that the distortion becomes 1.5%~1.7%
						VR301, 302 VR303, 304	775mV Adjust VR301 and VR302 so that the distortion becomes 1.3%(CrO ₂). Adjust VR303 and VR304 so that the distortion becomes 1.0%(LN). This confirmation should be each tape selector position.
9	Record/playback equalizer frequency characteristic	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Apply 1KHz signal to INPUT jack Set INPUT LEVEL knob so that WA703 to GND voltage is 25dB below 775mV in REC PAUSE mode. Then adjust with a 20Hz to 30KHz sweep signal.	REC/PB	OUTPUT jack	VR301 VR302	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is CrO ₂ position.
						VR305 VR306	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is METAL position.
						VR303 VR304	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is LN position.
10	Record level	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Set INPUT LEVEL knob so that WA 703 to GND voltage is 775mV in REC-PAUSE mode.	REC/PB	WA 703	VR201 VR202	775mV Perform adjustment using CrO ₂ Perform checking only for LN and Metal tapes.
11	Meter level confirmation	VTVM	Apply 1KHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 1.5dB below 775mV.	REC-PAUSE	PEAK LEVEL METER	VR103 VR104	Confirm peak level meter reads:-1 dB.
12	MPX filter characteristic confirmation	VTVM	Apply 19kHz, 15kHz and 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 775mV.	REC-PAUSE MPX filter ON	WA 703 or OUTPUT jack	L701 L702	Adjust for-0.3dB at 15kHz and >30dB at 19kHz.
13	Record/playback equalizer frequency characteristic confirmation	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 25dB below 775mV in REC-PAUSE mode. Then adjust with 20Hz to 30kHz sweep signal.	REC/PB	OUTPUT jack		Perform checking with Dolby B and C NR ON at each tape selector position. Confirm the record/playback frequency characteristic is within ± 3dB at 20Hz to 20kHz.

Step	Alignment	Instrument Required	Input Signal	Mo
1	Azimuth	VTVM Oscilloscope Test tape(MTT-114 or TCC-153)		PB
2	Tape speed	Frequency counter Test tape(MTT-111 DN or TCC-153)		PB
3	Playback output level	VTVM Test tape(TCC-130)		PB
4	Playback frequency characteristic confirmation	VTVM Test tape(TCC-1216 or TCC-162C and TCC-262C)		PB
5	Bias frequency confirmation	Frequency counter		REC/
6	Bias level(preadjustment)	VTVM		REC/
				REC/
				REC/
7	Bias trap	VTVM		REC/
8	Record level (preadjustment)	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Apply 1KHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 775mV in REC-PAUSE mode.	REC/
9	Record/playback equalizer frequency characteristic	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Apply 1KHz signal to INPUT jack Set INPUT LEVEL knob so that WA703 to GND voltage is 25dB below 775mV in REC PAUSE mode. Then adjust with a 20Hz to 30KHz sweep signal.	REC/
				REC/
				REC/
10	Record level	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Set INPUT LEVEL knob so that WA 703 to GND voltage is 775mV in REC-PAUSE mode.	REC/
11	Meter level confirmation	VTVM	Apply 1KHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 1.5dB below 775mV.	REC-PAUS
12	MPX filter characteristic confirmation	VTVM	Apply 19kHz, 15kHz and 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 775mV.	REC-PAUS MPX ON
13	Record/playback equalizer frequency characteristic confirmation	VTVM Blank tapes CrO ₂ AC 513 METAL AC 712 LN AC 224	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that WA703 to GND voltage is 25dB below 775mV in REC-PAUSE mode. Then adjust with 20Hz to 30kHz sweep signal.	REC/

	Mode	Test Point	Adjustment	For
	PB	WA 703 or OUTPUT jack	Azimuth screw	Maximum output Refer to "Azimuth Adjustment" on page 6
	PB	WA 703 or OUTPUT jack	VR401 (On PCB)	3000Hz \pm 20Hz Adjust at the center of test tape.
	PB	WA 703	VR101(Lch) VR102(Rch)	775mV Tape selector is LN position.
	PB	WA 703 or OUTPUT jack	R135, R136 R137, R138	Unsolder resistors of R135 and R137 and R136 or R138 so that frequency response is within the range as shown in Fig. a.
	REC/PB	CN303	WA 102 (6 pin-GND)	105kHz \pm 3kHz Tape selector is METAL position.
	REC/PB	J81(TP303, L-BIAS) J82(TP304, R-BIAS)	VR 305	170mV
VR 306			Tape selector is METAL position	
VR 301			80mV	
VR 302			Tape selector is CrO ₂ position.	
			VR 303	50mV
			VR 304	Tape selector is LN position.
	REC/PB	J87 (TP301, L-CH) J88 (TP302, R-CH)	L301 L302	Minimum output Tape selector is METAL position.
_ knob PAUSE	REC/PB	WA 703	VR201, VR202 VR305, VR306	775mV Tape selector is METAL position. Adjust VR305 and VR306 so that the distortion becomes 1.5%~1.7%
			VR301, 302 VR303, 304	775mV Adjust VR301 and VR302 so that the distortion becomes 1.3%(CrO ₂). Adjust VR303 and VR304 so that the distortion becomes 1.0%(LN). This confirmation should be each tape selector position.
_ knob so in REC	REC/PB	OUTPUT jack	VR301 VR302	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is CrO ₂ position.
			VR305 VR306	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is METAL position.
			VR303 VR304	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is LN position.
age is	REC/PB	WA 703	VR201 VR202	775mV Perform adjustment using CrO ₂ Perform checking only for LN and Metal tapes.
_ knob V.	REC- PAUSE	PEAK LEVEL METER	VR103 VR104	Confirm peak level meter reads:-1 dB.
ck. Set age is	REC- PAUSE MPX filter ON	WA 703 or OUTPUT jack	L701 L702	Adjust for-0.3dB at 15kHz and >30dB at 19kHz.
_ knob so in REC-	REC/PB	OUTPUT jack		Perform checking with Dolby B and C NR ON at each tape selector position. Confirm the record/playback frequency characteristic is within \pm 3dB at 20Hz to 20kHz.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

PLAYBACK SIGNAL

The signal from the playback head is amplified by the playback amplifier Q107, Q109 and Q111(L ch.), and is applied to the pins 2(R ch.) and 29 (L ch.) of the Dolby NR IC701 (B/C type). IC701 is always switched to the playback mode. The input signal to IC 701 is output from the pins 6(R ch.) and 25(L ch.) and applied to the OUTPUT jack and the PEAK LEVEL METER circuit. The characteristics of the playback equalizer are defined by the BIAS/EQUALIZATION switch and are selected and specified in Q113(L ch.) and Q114(R ch.)

RECORD SIGNAL

The signal from the INPUT jack is controlled by the INPUT LEVEL control and BALANCE control and is applied to pins 1(L ch.) and 30(R ch.) of the Dolby NR IC702(B/C type). IC702 is always switched to the record mode. The input signal to the Dolby NR IC is output from pins 3(L ch.) and 28(R ch.) of IC702 and passes through the MPX filter. Then it is input to the pins 4(L ch.) and 27(R ch.) and is output from the pins 13(L ch.) and 18(R ch.). The signal output from IC702 passes through the record equalizer circuit and is amplified by the record amplifier of IC201. The amplified signal is then applied to the recording head after being synthesized by a bias signal.

MUTING OPERATION

The signal then mutes the sound produced at switching to recording or playback is applied from IC801(CPU) of the logic control block. The mute signal output from the pin 43 of IC 801 (CPU) turns ON Q126(L ch.) and Q125(R ch.) to short-circuit the output signals of the playback amplifiers for muting. For the purpose of preventing generation of noise at power ON/OFF, the mute signal is output from Q513. The muting is done by short circuiting the output signal with Q126(L ch.) and Q125(R ch.) turned ON.

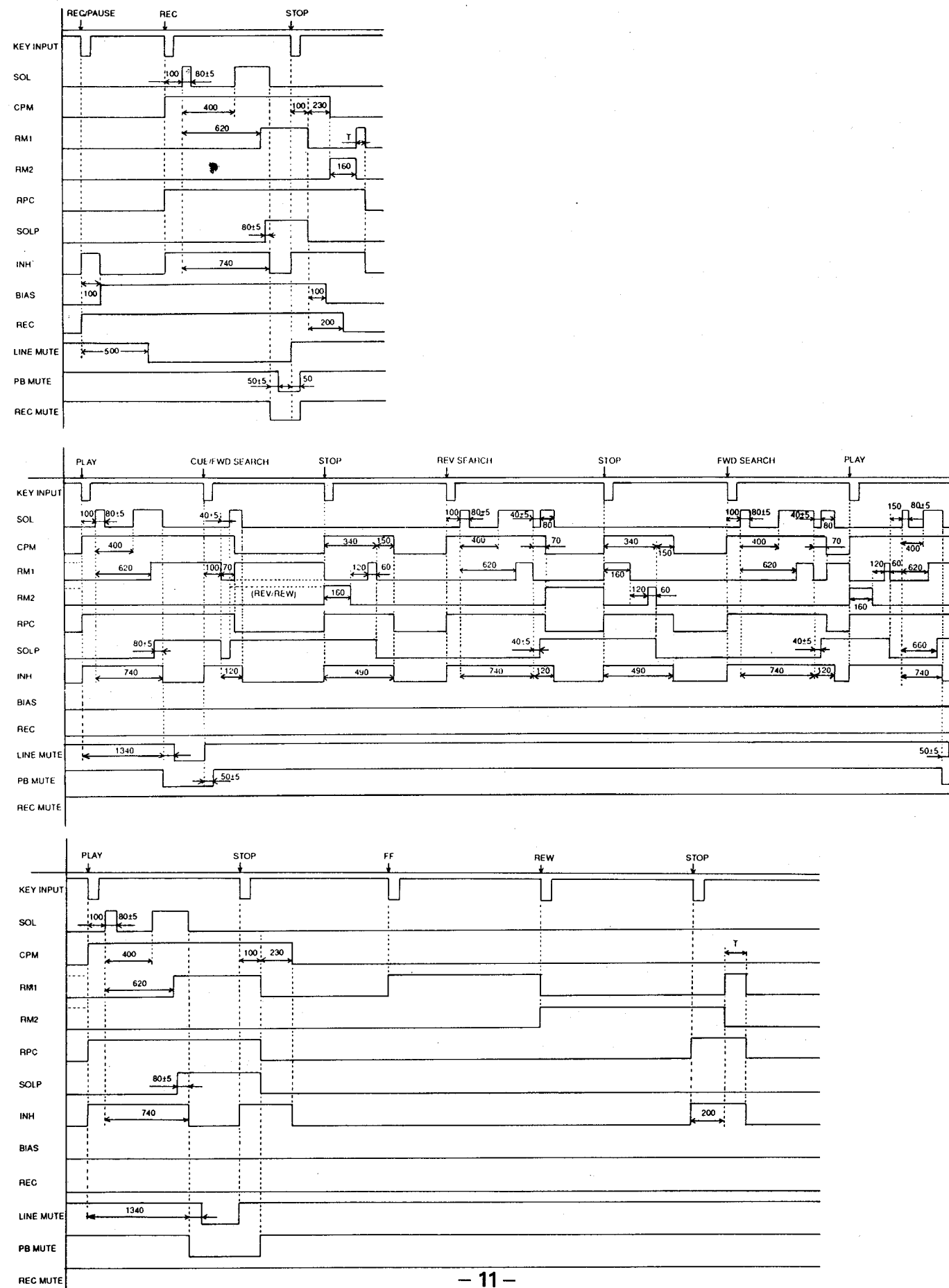
LOGIC FOR TAPE SOURCE

During stop mode, the pin 29 of IC801(Cpu) is high level and Q700 turn on. Then the relay is switched to the record mode, and the output signal of IC702, is connected to the output Line. When the "PLAY" button is pressed, pin 29 is low level and Q700 turn off. Then the relay is switched to the play back mode (IC 701) and the output signal of IC701 is connected to the output line. When the "REC" button is pressed, pin 29 is low level. To use "Tape Source" button, the output signal can be selected.

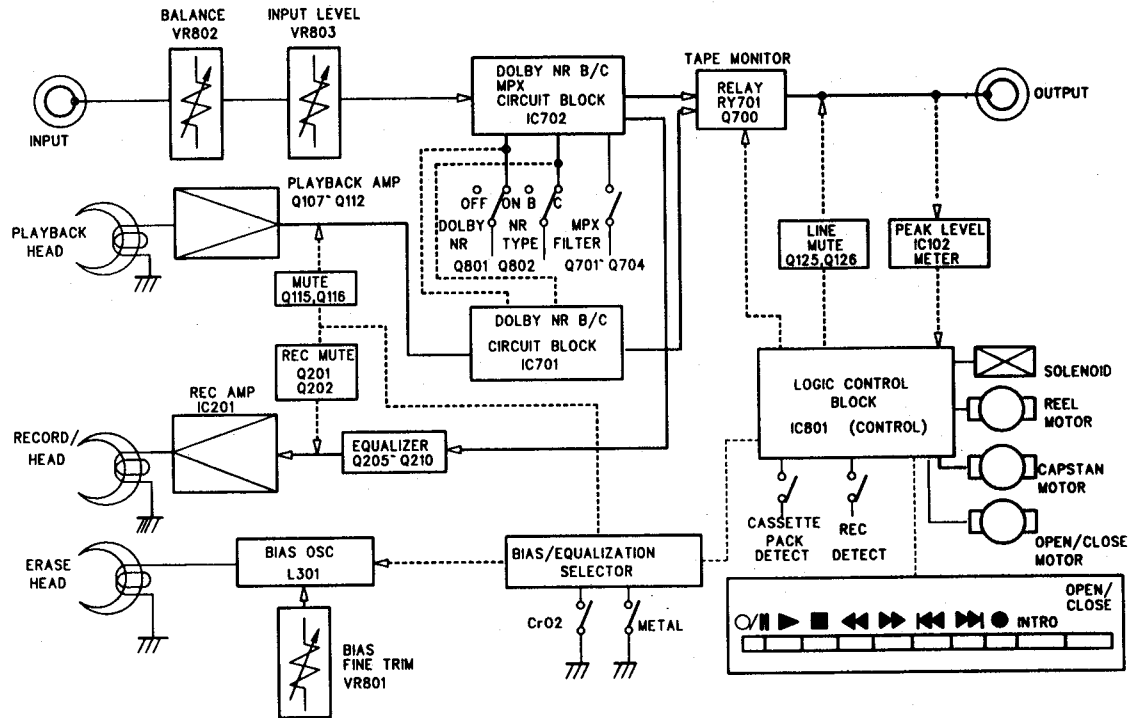
LOGIC FOR RECORD TO PLAYBACK MODE

When the "STOP" "PAUSE" or "PLAY" button is pressed the pin Q202 of IC201(CPU) becomes high level. Q201(L ch.), Q119(R ch.) turns ON and mutes to record of inputs amplifiers.

TIMING CHART



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

PLAYBACK SIGNAL

The signal from the playback head is amplified by the playback amplifier Q107, Q109 and Q111(L ch.), and is applied to the pins 2(R ch.) and 29(L ch.) of the Dolby NR IC701 (B/C type).

IC701 is always switched to the playback mode. The input signal to IC 701 is output from the pins 6(R ch.) and 25(L ch.) and applied to the OUTPUT jack and the PEAK LEVEL METER circuit. The characteristics of the playback equalizer are defined by the BIAS/EQUALIZATION switch and are selected and specified in Q113(L ch.) and Q114(R ch.)

RECORD SIGNAL

The signal from the INPUT jack is controlled by the INPUT LEVEL control and BALANCE control and is applied to pins 1(L ch.) and 30(R ch.) of the Dolby NR IC702(B/C type). IC702 is always switched to the record mode.

The input signal to the Dolby NR IC is output from pins 3(L ch.) and 28(R ch.) of IC702 and passes through the MPXfilter. Then it is input to the pins 4(L ch.) and 27(R ch.) and is output from the pins 13(L ch.) and 18(R ch.). The signal output from IC702 passes through the record equalizer circuit and is amplified by the record amplifier of IC201. The amplified signal is then applied to the recording head after being synthesized by a bias signal.

MUTING OPERATION

The signal then mutes the sound produced at switching to recording or playback is applied from IC801(CPU) of the logic control block.

The mute signal output from the pin 43 of IC 801 (CPU) turns ON Q126(L ch.) and Q125(R ch.) to short-circuit the output signals of the playback amplifiers for muting. For the purpose of preventing generation of noise at power ON/OFF, the mute signal is output from Q513. The muting is done by short circuiting the output signal with Q126(L ch.) and Q125(R ch.) turned ON.

LOGIC FOR TAPE SOURCE

During stop mode, the pin 29 of IC801(Cpu) is high level and Q700 turn on. Then the relay is switched to the record mode, and the output signal of IC702, is connected to the output Line.

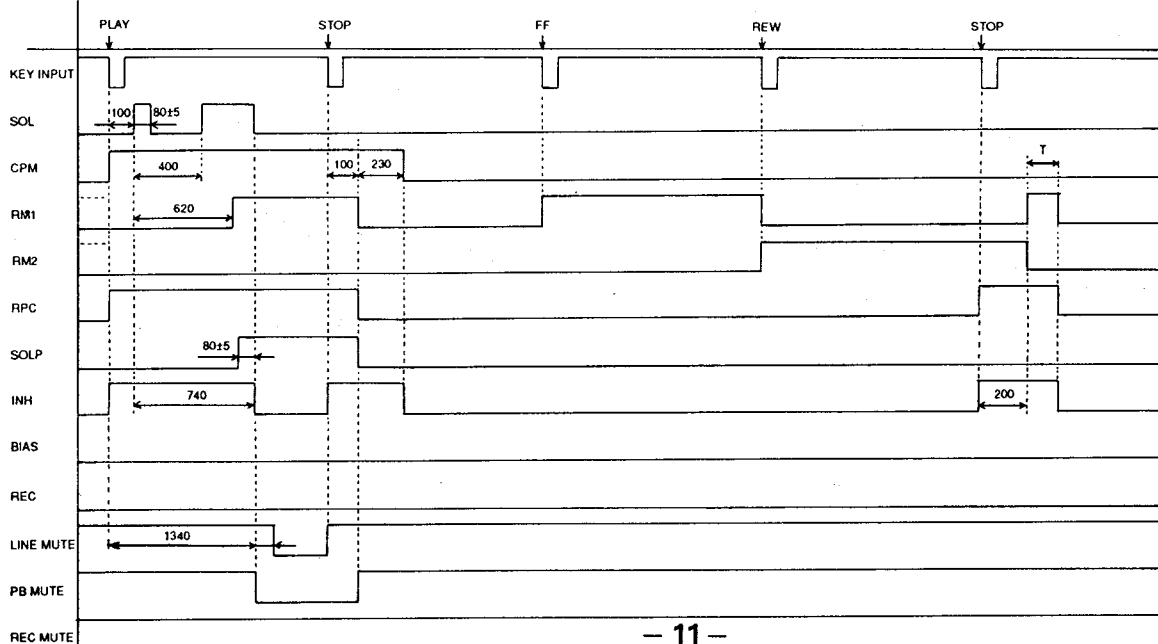
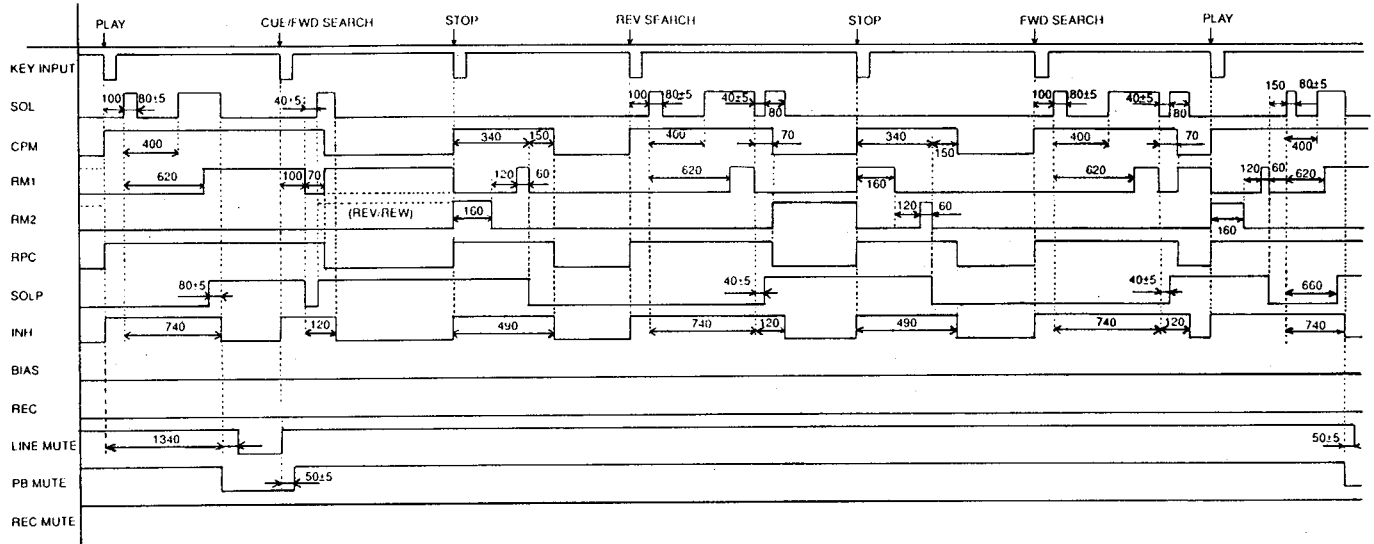
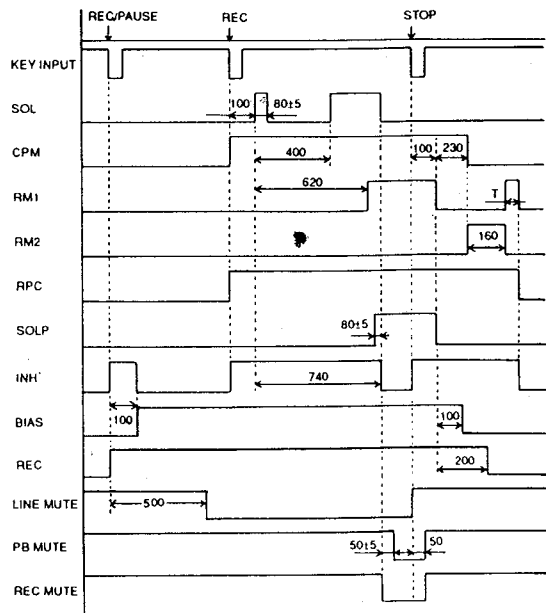
When the "PLAY" button is pressed, pin 29 is low level and Q700 turn off. Then the relay is switched to the play back mode (IC 701) and the output signal of IC701 is connected to the output line.

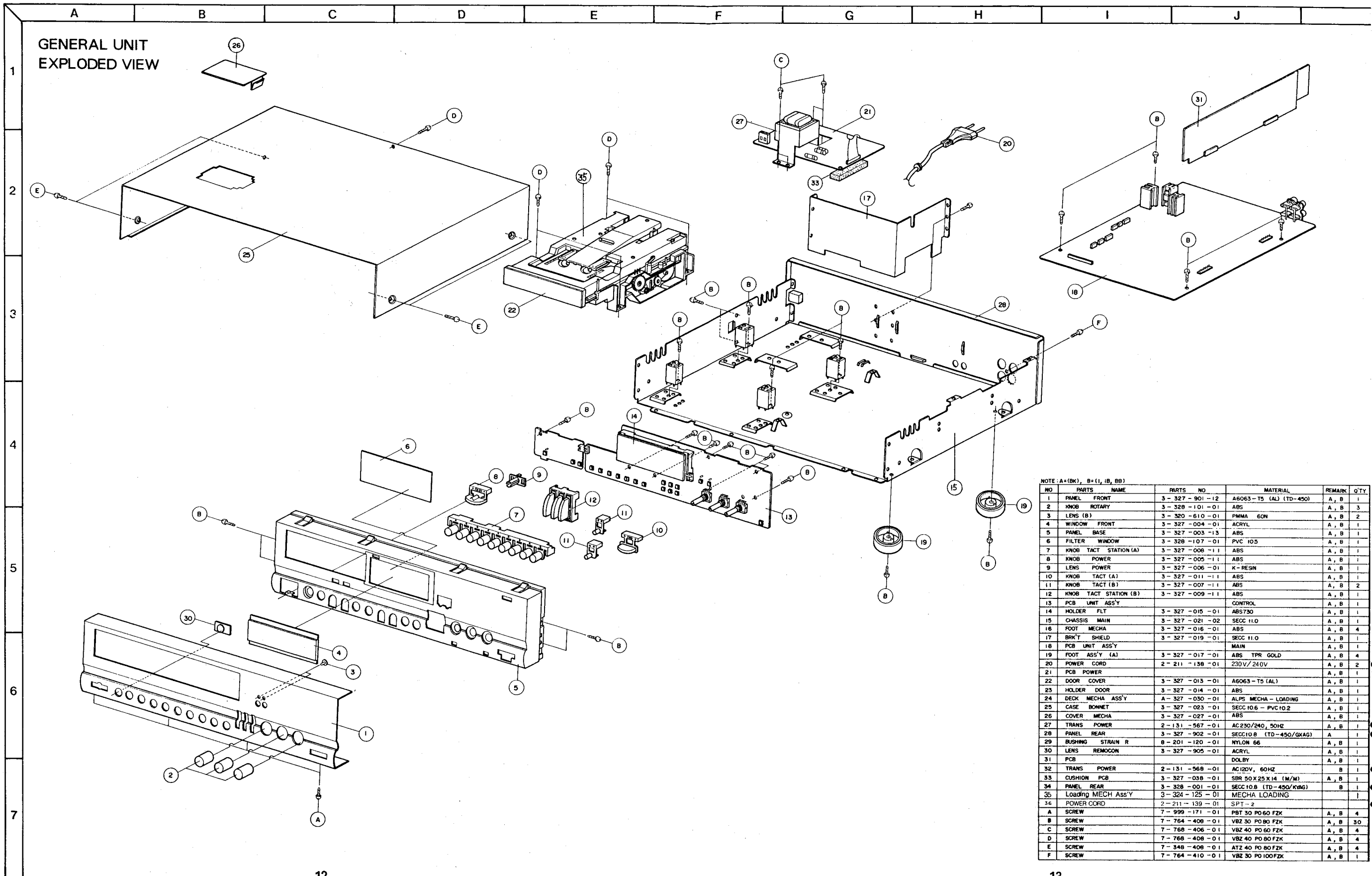
When the "REC" button is pressed, pin 29 is low level. To use "Tape Source" button, the output signal can be selected.

LOGIC FOR RECORD TO PLAYBACK MODE

When the "STOP" "PAUSE" or "PLAY" button is pressed the pin Q202 of IC201(CPU) becomes high level. Q201(L ch.), Q119(R ch.) turns ON and mutes to record of inputs amplifiers.

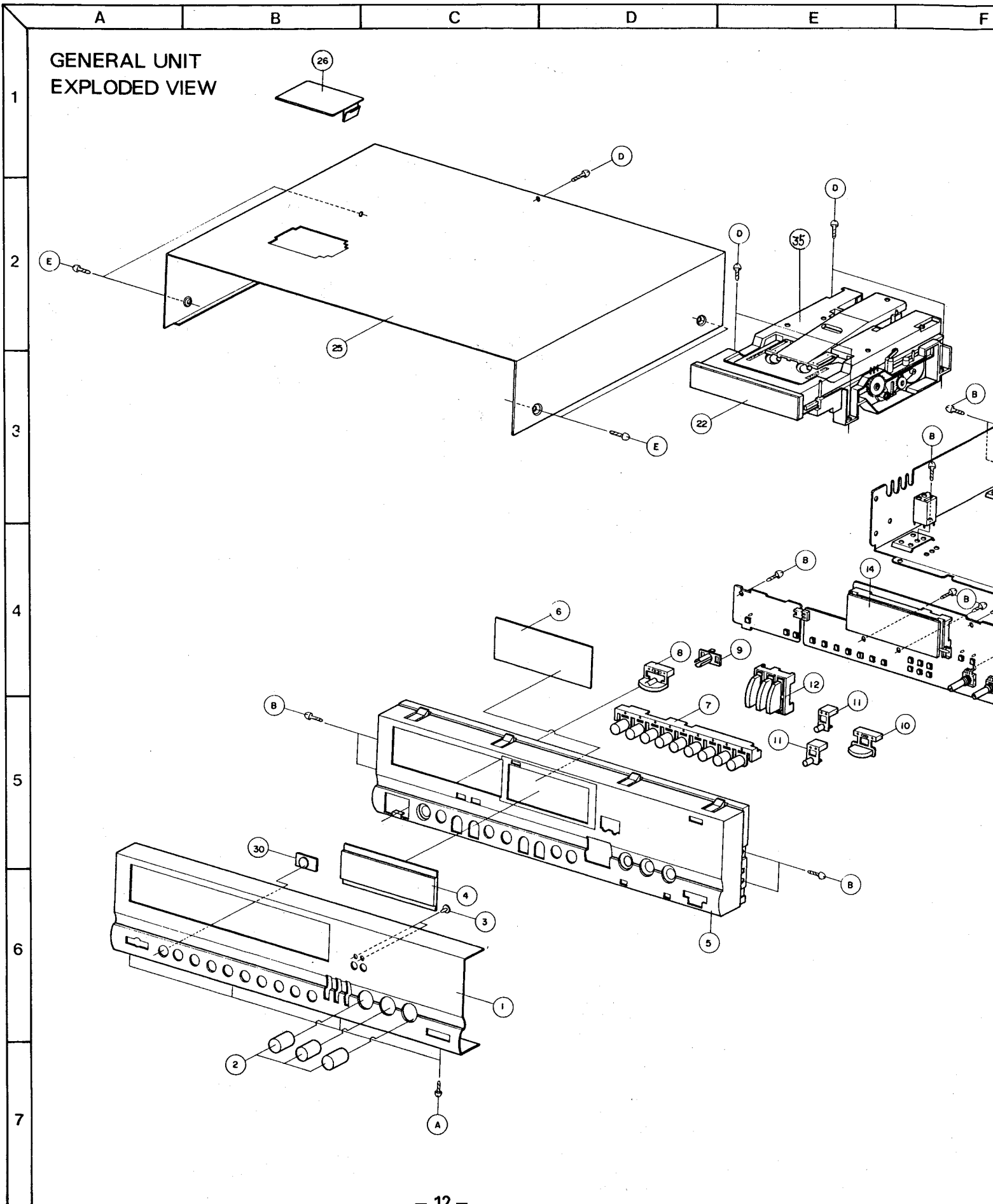
TIMING CHART



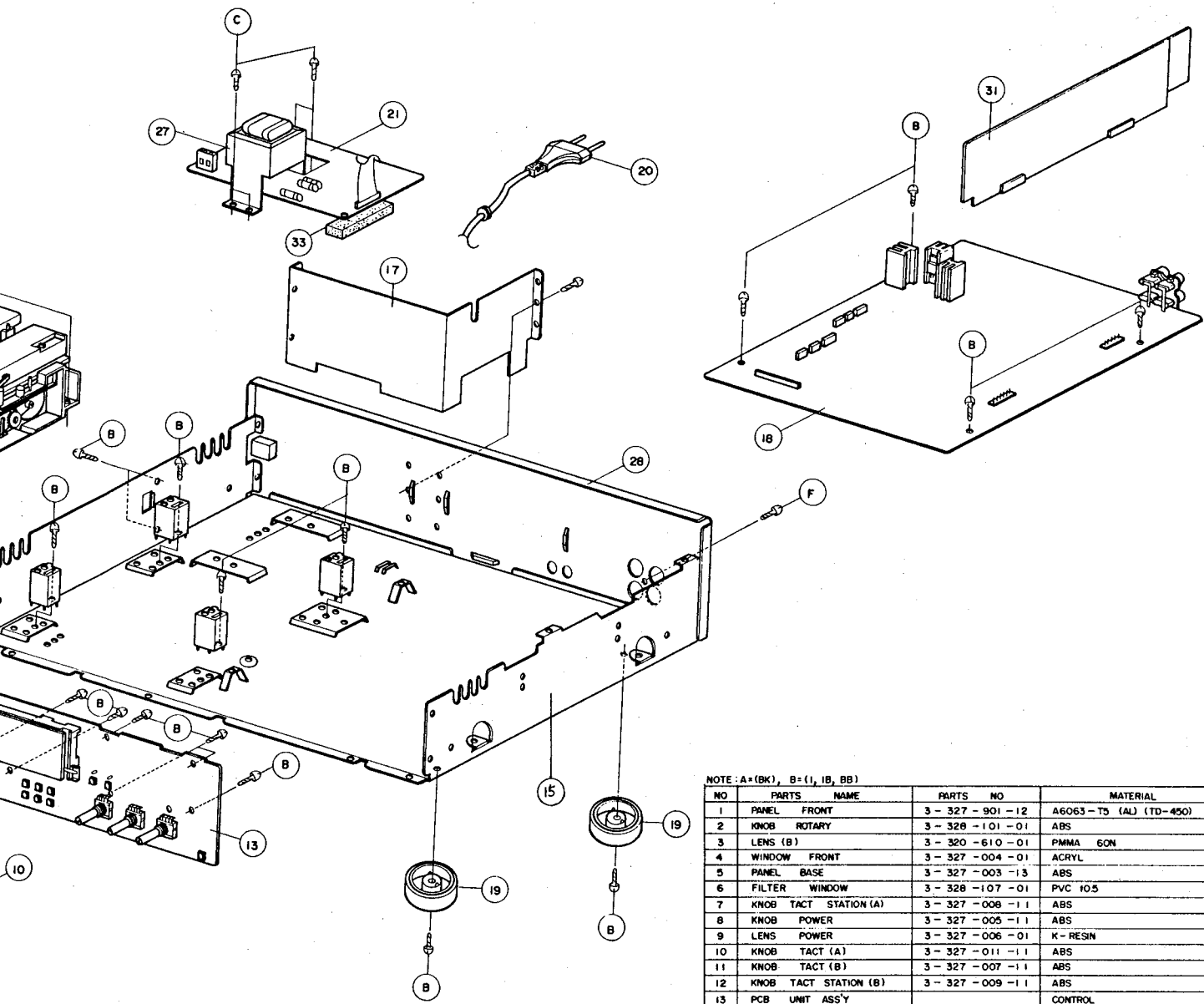


NOTE: A=(BK), B=(I, IB, BB)

NO.	PARTS NAME	PARTS NO.	MATERIAL	REMARK	Q'TY
1	PANEL FRONT	3-327-901-12	AB063-T5 (AL) (TD-450)	A, B	1
2	KNOB ROTARY	3-328-101-01	ABS	A, B	3
3	LENS (B)	3-320-610-01	PMMA 60N	A, B	2
4	WINDOW FRONT	3-327-004-01	ACRYL	A, B	1
5	PANEL BASE	3-327-003-13	ABS	A, B	1
6	FILTER WINDOW	3-328-107-01	PVC 105	A, B	1
7	KNOB TACT STATION (A)	3-327-008-11	ABS	A, B	1
8	KNOB POWER	3-327-005-11	ABS	A, B	1
9	KNOB POWER	3-327-006-01	K-RESIN	A, B	1
10	KNOB TACT (A)	3-327-011-11	ABS	A, B	1
11	KNOB TACT (B)	3-327-007-11	ABS	A, B	2
12	KNOB TACT STATION (B)	3-327-009-11	ABS	A, B	1
13	PCB UNIT ASS'Y		CONTROL	A, B	1
14	HOLDER FLT	3-327-015-01	ABS730	A, B	1
15	CHASSIS MAIN	3-327-021-02	SECC 11.0	A, B	1
16	FOOT MECHA	3-327-016-01	ABS	A, B	4
17	BRK'T SHIELD	3-327-019-01	SECC 11.0	A, B	1
18	PCB UNIT ASS'Y		MAIN	A, B	1
19	FOOT ASS'Y (A)	3-327-017-01	ABS TPR GOLD	A, B	4
20	POWER CORD	2-211-138-01	230V/240V	A, B	2
21	PCB POWER			A, B	1
22	DOOR COVER	3-327-013-01	AB063-T5 (AL)	A, B	1
23	HOLDER DOOR	3-327-014-01	ABS	A, B	1
24	DECK MECHA ASS'Y	A-327-030-01	ALPS MECHA-LOADING	A, B	1
25	CASE BONNET	3-327-023-01	SECC 10.6 - PVC 10.2	A, B	1
26	COVER MECHA	3-327-027-01	ABS	A, B	1
27	TRANS POWER	2-131-567-01	AC 230/240, 50HZ	A, B	1
28	PANEL REAR	3-327-902-01	SECC10.8 (TD-450/GXAG)	A, B	1
29	BUSHING STRAIN R	8-201-120-01	NYLON 66	A, B	1
30	LENS REMOCON	3-327-905-01	ACRYL	A, B	1
31	PCB		DOLBY	A, B	1
32	TRANS POWER	2-131-568-01	AC120V, 60HZ	B	1
33	CUSHION PCB	3-327-038-01	SBR 50X25X14 (M/M)	A, B	1
34	PANEL REAR	3-328-001-01	SECC10.8 (TD-450/KYAG)	B	1
35	Loading MECH ASS'Y	3-324-125-01	MECHA LOADING		1
36	POWER CORD	2-211-139-01	SPT-2		
A	SCREW	7-999-171-01	PBT 30 P060 FZK	A, B	4
B	SCREW	7-764-408-01	VBZ 30 P080 FZK	A, B	30
C	SCREW	7-768-406-01	VBZ 40 P060 FZK	A, B	4
D	SCREW	7-768-408-01	VBZ 40 P080 FZK	A, B	4
E	SCREW	7-348-408-01	ATZ 40 P080 FZK	A, B	4
F	SCREW	7-764-410-01	VBZ 30 P0100FZK	A, B	1



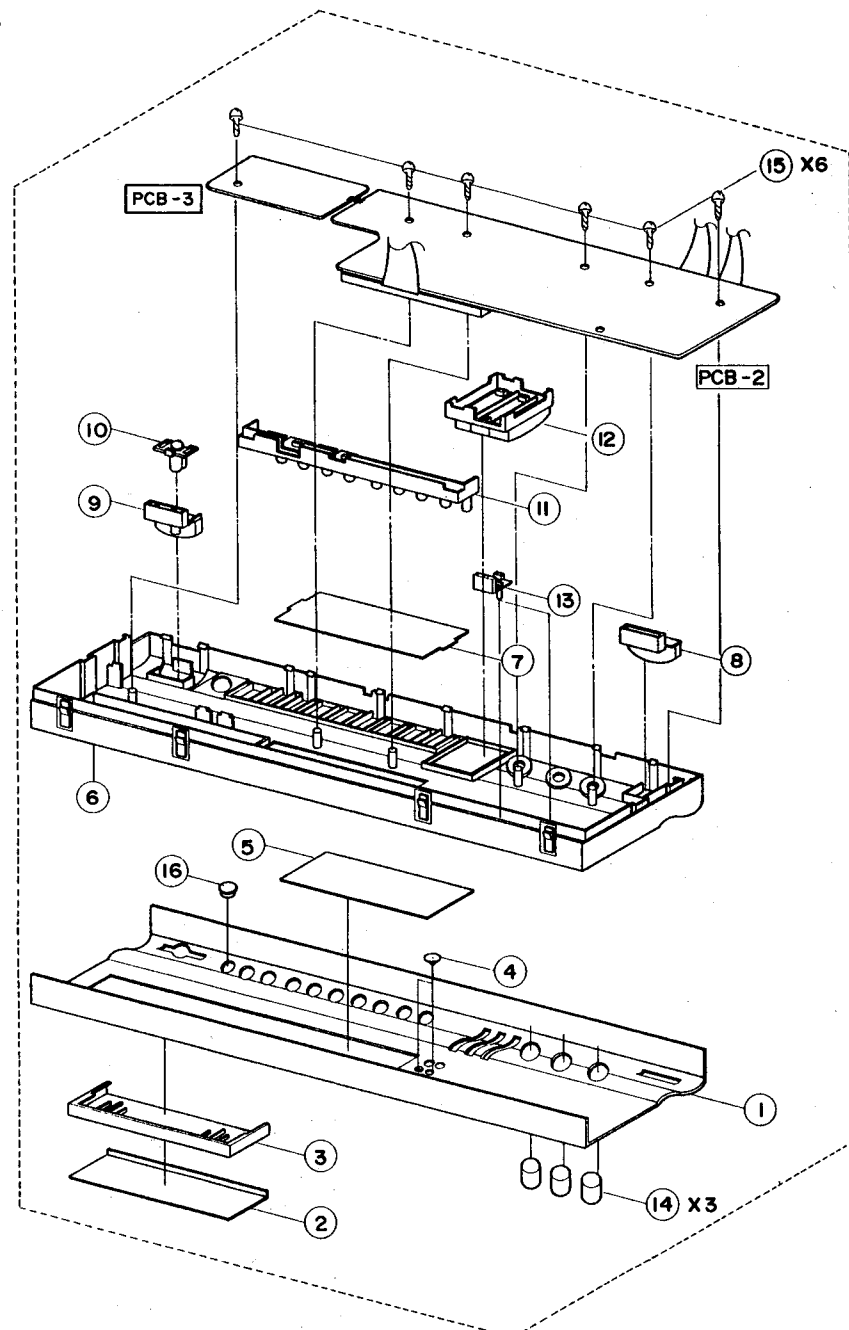
F G H I J



NOTE: A=(BK), B=(I, IB, BB)

NO	PARTS NAME	PARTS NO	MATERIAL	REMARK	Q'TY
1	PANEL FRONT	3-327-901-12	A6063-T5 (AL) (TD-450)	A, B	1
2	KNOB ROTARY	3-328-101-01	ABS	A, B	3
3	LENS (B)	3-320-610-01	PMMA 60N	A, B	2
4	WINDOW FRONT	3-327-004-01	ACRYL	A, B	1
5	PANEL BASE	3-327-003-13	ABS	A, B	1
6	FILTER WINDOW	3-328-107-01	PVC 105	A, B	1
7	KNOB TACT STATION (A)	3-327-008-11	ABS	A, B	1
8	KNOB POWER	3-327-005-11	ABS	A, B	1
9	LENS POWER	3-327-006-01	K-RESIN	A, B	1
10	KNOB TACT (A)	3-327-011-11	ABS	A, B	1
11	KNOB TACT (B)	3-327-007-11	ABS	A, B	2
12	KNOB TACT STATION (B)	3-327-009-11	ABS	A, B	1
13	PCB UNIT ASS'Y		CONTROL	A, B	1
14	HOLDER FLT	3-327-015-01	ABS730	A, B	1
15	CHASSIS MAIN	3-327-021-02	SECC 11.0	A, B	1
16	FOOT MECHA	3-327-016-01	ABS	A, B	4
17	BRK'T SHIELD	3-327-019-01	SECC 11.0	A, B	1
18	PCB UNIT ASS'Y		MAIN	A, B	1
19	FOOT ASS'Y (A)	3-327-017-01	ABS TPR GOLD	A, B	4
20	POWER CORD	2-211-138-01	230V/240V	A, B	2
21	PCB POWER			A, B	1
22	DOOR COVER	3-327-013-01	A6063-T5 (AL)	A, B	1
23	HOLDER DOOR	3-327-014-01	ABS	A, B	1
24	DECK MECHA ASS'Y	A-327-030-01	ALPS MECHA - LOADING	A, B	1
25	CASE BONNET	3-327-023-01	SECC 10.6 - PVC10.2	A, B	1
26	COVER MECHA	3-327-027-01	ABS	A, B	1
27	TRANS POWER	2-131-567-01	AC230/240, 50HZ	A, B	1
28	PANEL REAR	3-327-902-01	SECC10.8 (TD-450/GXAG)	A	1
29	BUSHING STRAIN R	8-201-120-01	NYLON 66	A, B	1
30	LENS REMOCON	3-327-905-01	ACRYL	A, B	1
31	PCB		DOLBY	A, B	1
32	TRANS POWER	2-131-568-01	AC120V, 60HZ	B	1
33	CUSHION PCB	3-327-038-01	SBR 50 X 25 X 14 (M/M)	A, B	1
34	PANEL REAR	3-328-001-01	SECC 10.8 (TD-450/KYAG)	B	1
35	Loading MECH Ass'Y	3-324-125-01	MECHA LOADING		1
36	POWER CORD	2-211-139-01	SPT-2		
A	SCREW	7-999-171-01	PBT 30 PO 60 FZK	A, B	4
B	SCREW	7-764-408-01	VBZ 30 PO 80 FZK	A, B	30
C	SCREW	7-768-408-01	VBZ 40 PO 60 FZK	A, B	4
D	SCREW	7-768-408-01	VBZ 40 PO 80 FZK	A, B	4
E	SCREW	7-348-408-01	ATZ 40 PO 80 FZK	A, B	4
F	SCREW	7-764-410-01	VBZ 30 PO 100FZK	A, B	1

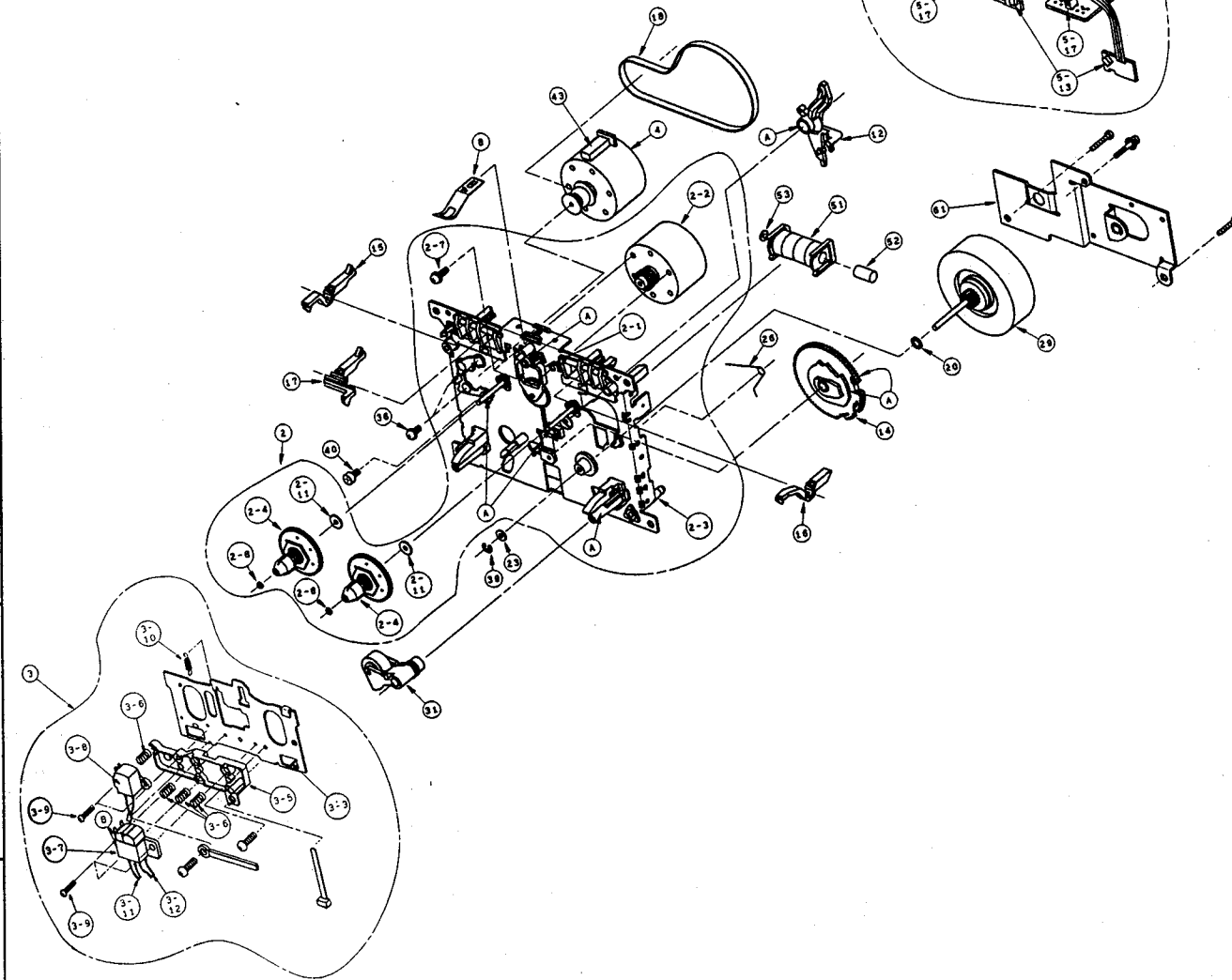
GENERAL UNIT
EXPLODED VIEW



TD-450/GXAG, KYAG

NO	PARTS NO	DESCRIPTION
1	3-327-901-01	PANEL, FRONT
2	3-327-013-01	DOOR, COVER
3	3-327-014-01	DOOR, HOLDER
4	3-320-620-01	LENS (B)
5	3-327-004-01	FRONT WINDOW
6	3-327-003-12	BASE PANEL
7	3-328-107-01	FILTER WINDOW
8	3-327-011-11	TACT KNOB (A)
9	3-327-005-11	POWER KNOB
10	3-327-006-01	POWER LENS
11	3-327-008-01	KNOB TACT STATION (A)
12	3-327-009-01	KNOB TACT STATION (B)
13	3-327-007-01	TACT KNOB (B)
14	3-327-010-01	ROTARY KNOB
15	7-764-408-01	SCREW
16	3-327-905-01	LENS, REMOCON

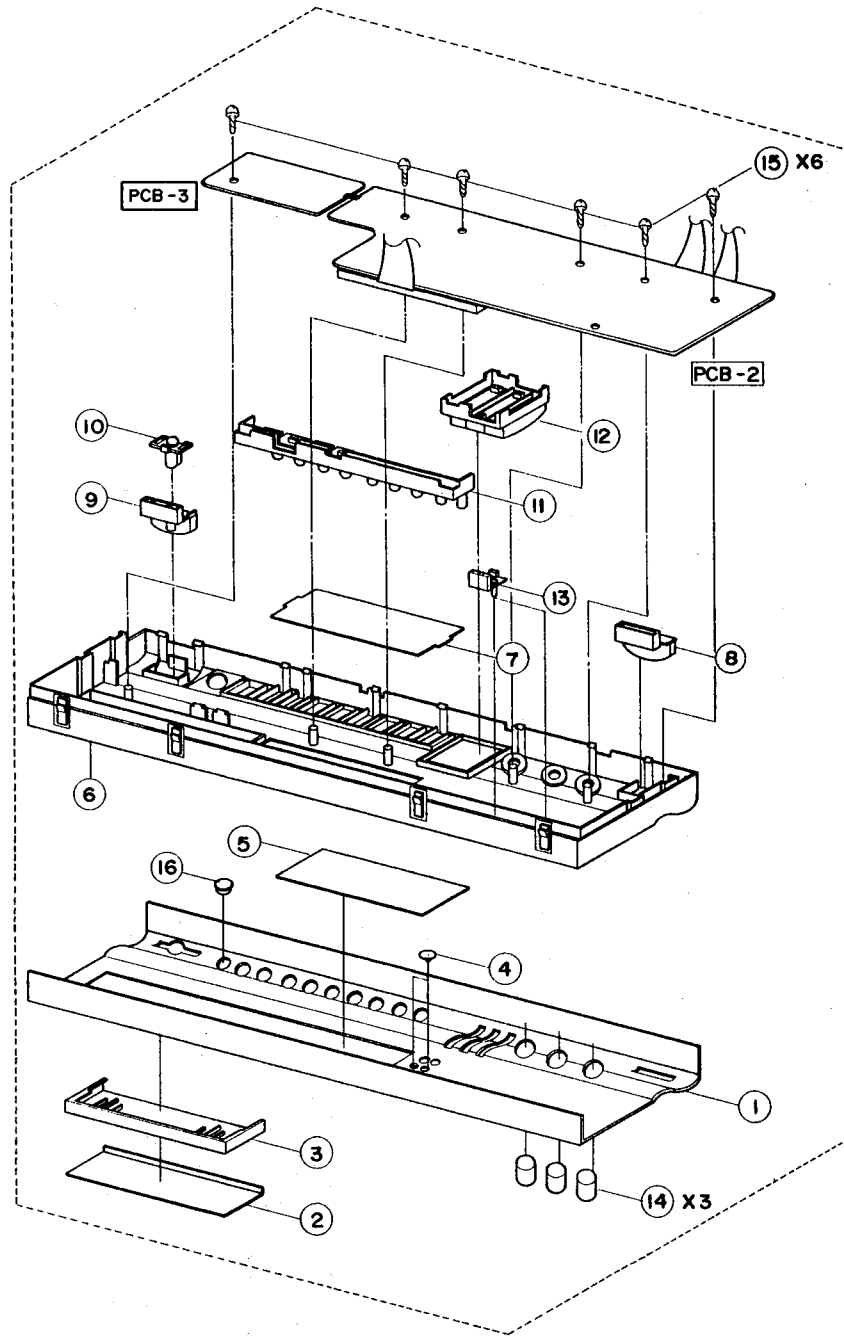
CASSETTE TAPE RECORDER MECHANISM
EXPLODED VIEW



PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
2	F511-486	CHASSIS ASS'Y	8	FC52H-12	SPRING, CASSETTE
2-1	F517-049	IDLER ASS'Y	12	FD45G-12	PLAY ARM ASS'Y
2-2	F564-280	REEL MOTOR ASS'Y	14	FD45B-14	CAM GEAR
2-4	F623-037	REEL BASE ASS'Y	15	FD44T-14	SWITCH ARM, REC
2-7	FG156-11A	SCREW(2.6x6.4mm)	16	FD44Y-12	SWITCH ARM, PACK
2-8	FJ111-17	NON-METAL WASHER(1.7x0.25mm)	17	FD44V-12	SWITCH ARM, METAL
2-11	UJ 12V-11	NON-METAL WASHER(2.1x0.25mm)	18	FF17W-21	MAIN BELT
3	F513-593	PLATE HEAD ASS'Y	20	FJ111-30	NON-METAL WASHER(2.6x0.25mm)
3-3	FC52E-44	HEAD BASE	23	FJ111-14	NON-METAL WASHER(2.6x0.25mm)
3-5	FD45T-15	HEAD SPACER	26	FK28R-11	SLIDE SPRING
3-9	FG137-18	SCREW(2.0x9mm)	29	FR22H-11	FLYWHEEL ASS'Y
3-6	FK21U-11	SPRING, AZIMUTH	31	FR20L-21A	PINCH ROLLER
3-10	FK26N-14	HEAD BASE SPRING	36	FG114-14	SCREW(2.6x5mm)
3-7	FU20E-11	REC/PB HEAD	39	UG13U-15	E.STOP RING
3-8	FU192-11	ERASE HEAD	40	UG12H-16	SCREW(3.0x8mm)
3-11	WH50S-06	WIRE CONNECTOR	43	FF17C-12	HOL DER CUSHION
3-12	WH42S-00	WIRE CONNECTOR	51	F765-263	SOLENOID ASS'Y
4	F525-269	CAPSTAN MOTOR	52	FL39H-12A	SHAFT
5	F567-362	RELAY P.C. BOARD ASS'Y	53	FL39K-12	PLUNGER
5-13	A715S-00	LEAF SWITCH	61	B/F	F/W (4-990-951-01-1) BRACKET Ass'y
5-17	UE16E-11	PUSH SWITCH			

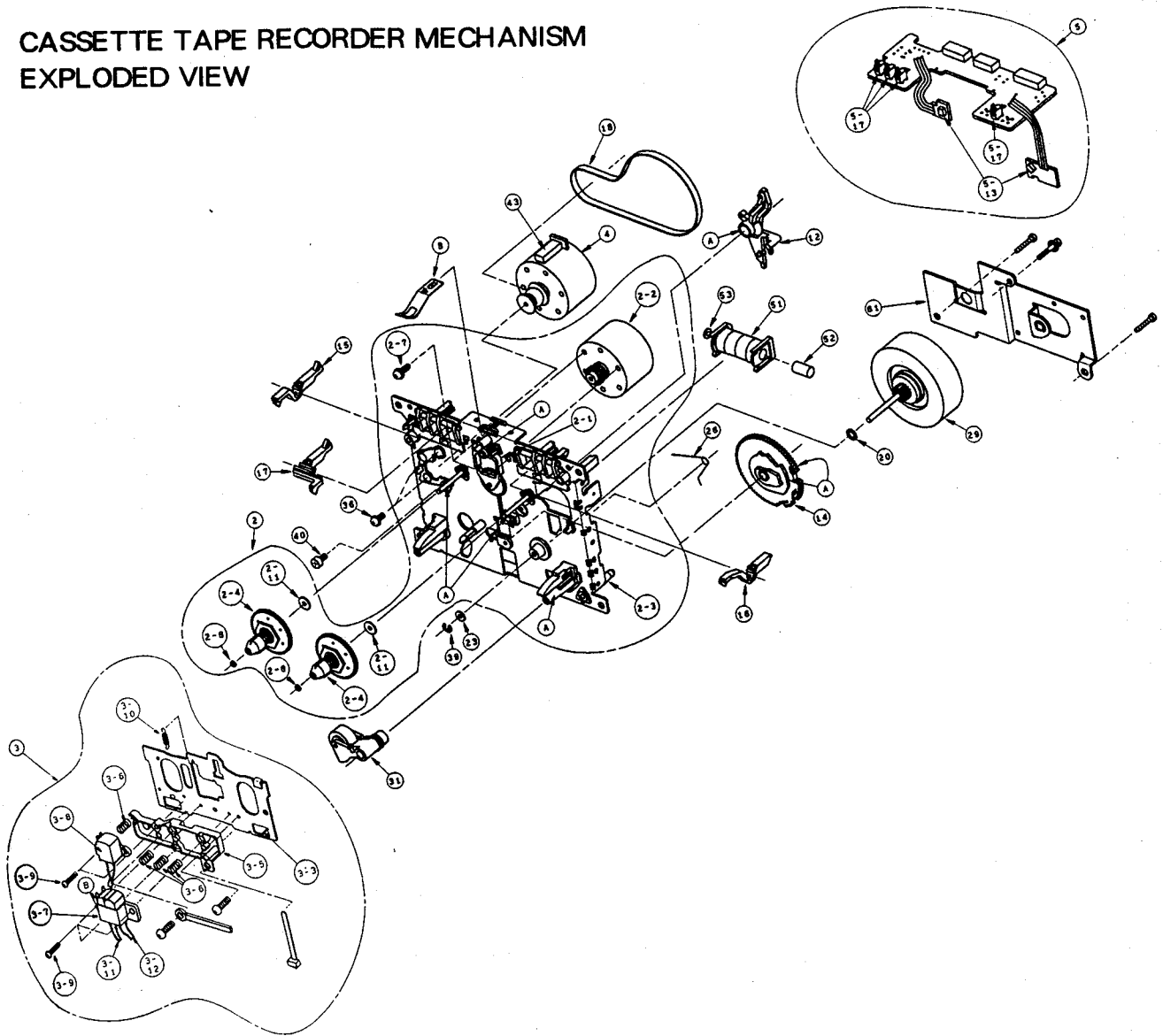
GENERAL UNIT
EXPLODED VIEW



TD - 450/GXAG, KYAG

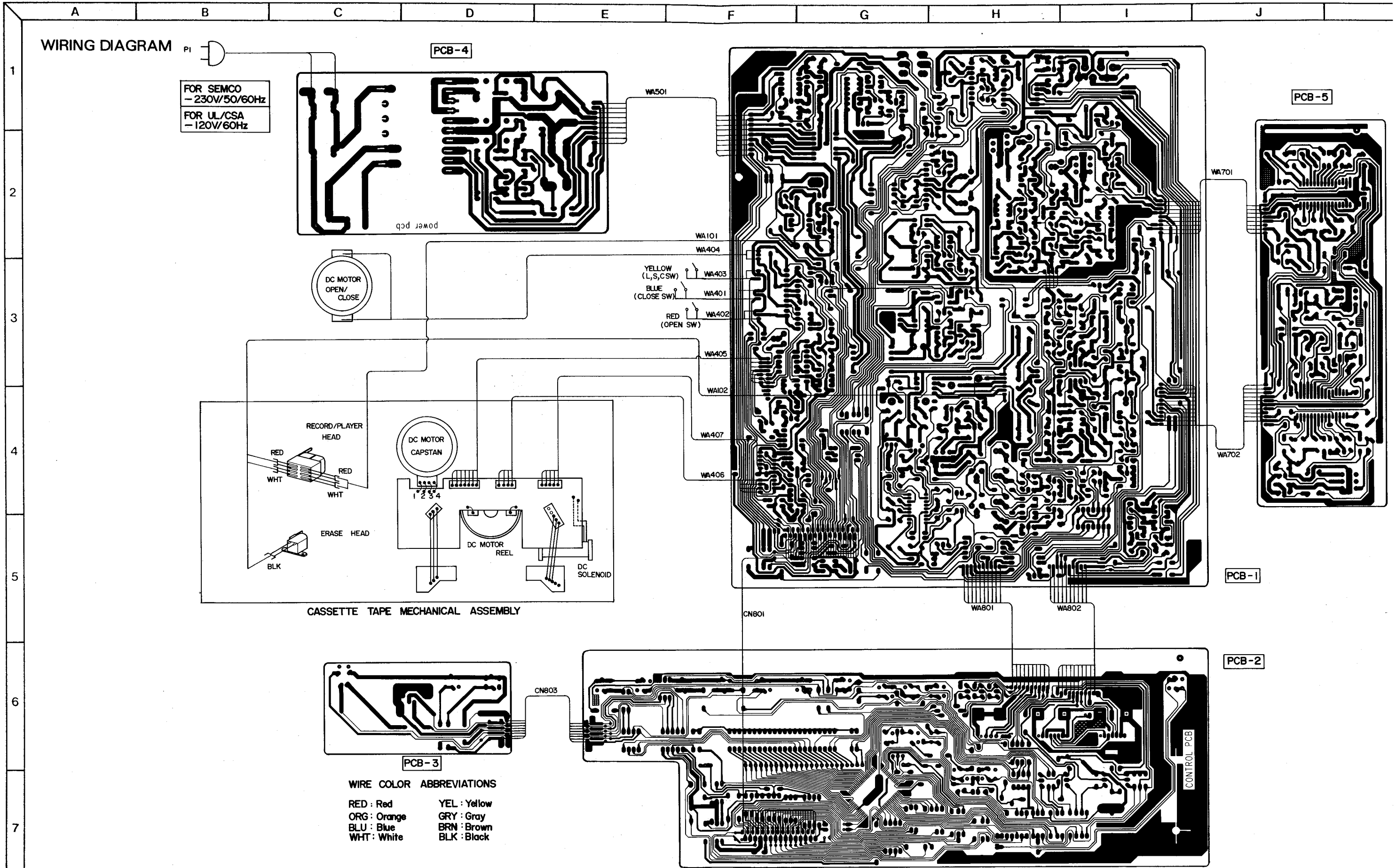
NO	PARTS NO	DESCRIPTION
1	3 - 327 - 901 - 01	PANEL FRONT
2	3 - 327 - 013 - 01	DOOR COVER
3	3 - 327 - 014 - 01	DOOR HOLDER
4	3 - 320 - 620 - 01	LENS (B)
5	3 - 327 - 004 - 01	FRONT WINDOW
6	3 - 327 - 003 - 12	BASE PANEL
7	3 - 328 - 107 - 01	FILTER WINDOW
8	3 - 327 - 011 - 11	TACT KNOB (A)
9	3 - 327 - 005 - 11	POWER KNOB
10	3 - 327 - 006 - 01	POWER LENS
11	3 - 327 - 008 - 01	KNOB TACT STATION (A)
12	3 - 327 - 009 - 01	KNOB TACT STATION (B)
13	3 - 327 - 007 - 01	TACT KNOB (B)
14	3 - 327 - 010 - 01	ROTARY KNOB
15	7 - 764 - 408 - 01	SCREW
16	3 - 327 - 905 - 01	LENS REMOCON

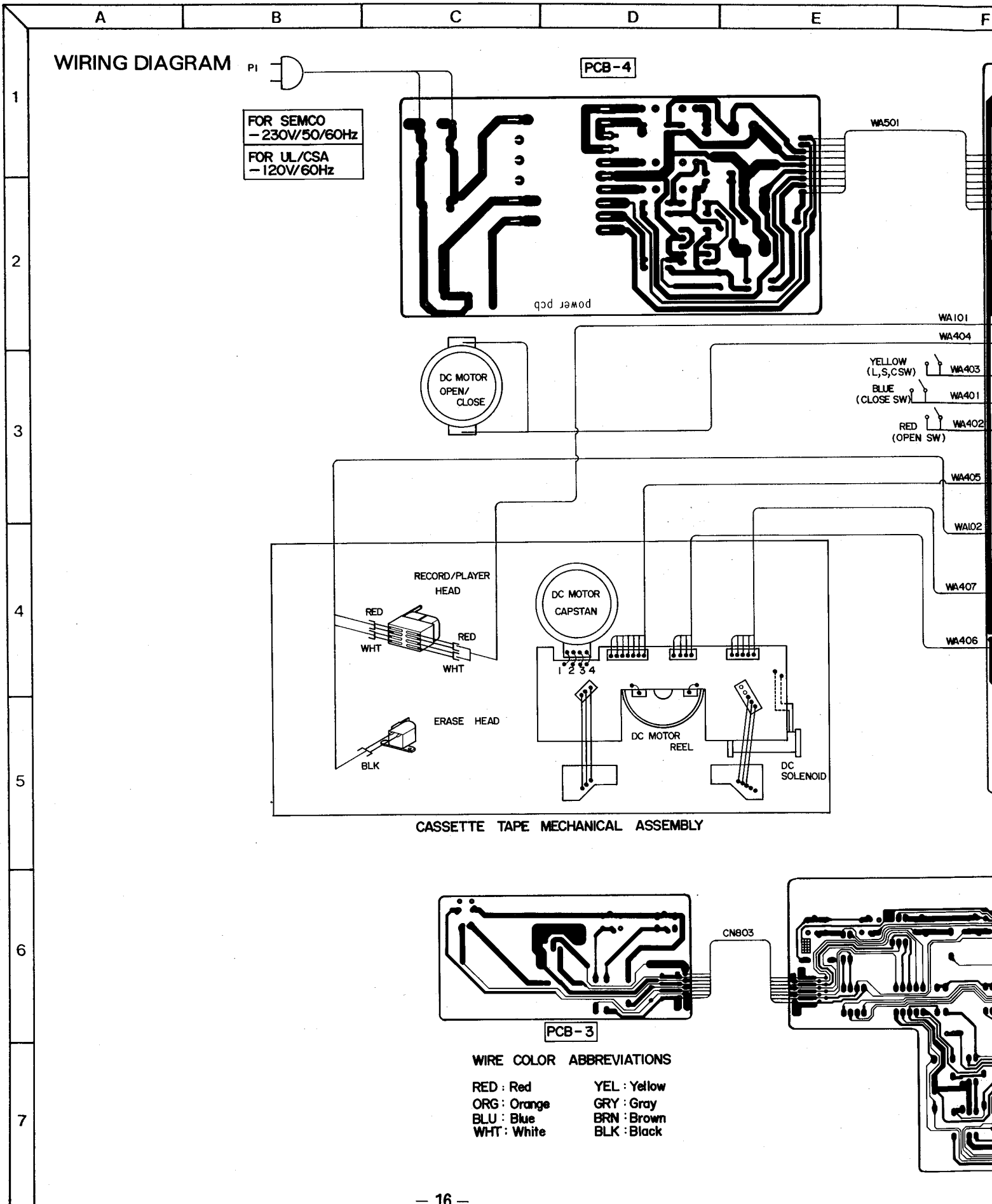
CASSETTE TAPE RECORDER MECHANISM EXPLODED VIEW



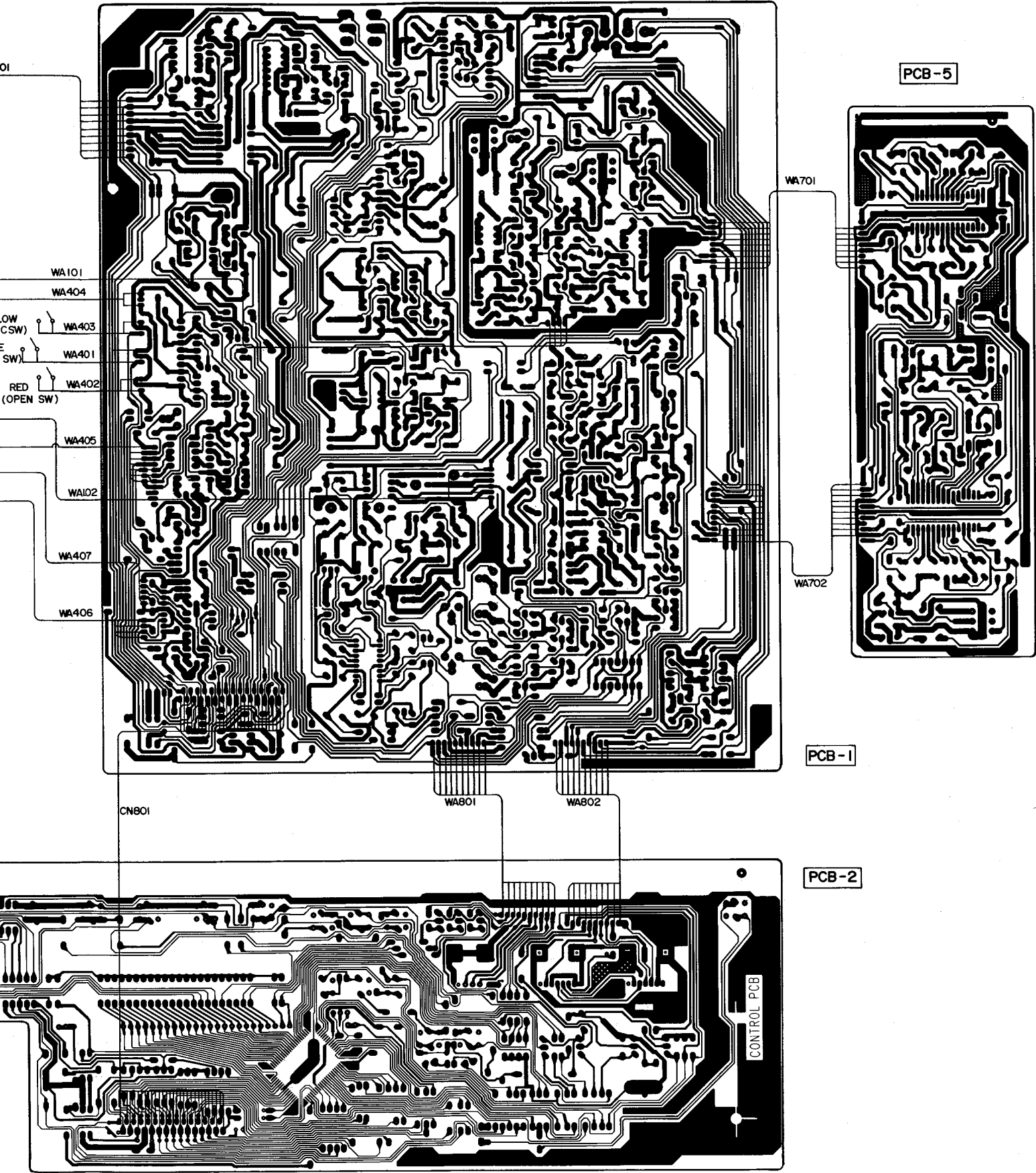
PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
2	F511-486	CHASSIS ASS'Y	8	FC52H-12	SPRING, CASSETTE
2-1	F517-049	IDLER ASS'Y	12	FD45G-12	PLAY ARM ASS'Y
2-2	F564-280	REEL MOTOR ASS'Y	14	FD45B-14	CAM GEAR
2-4	F623-037	REEL BASE ASS'Y	15	FD44T-14	SWITCH ARM, REC
2-7	FG156-11A	SCREW(2.6×6.4mm)	16	FD44Y-12	SWITCH ARM, PACK
2-8	FJ111-17	NON-METAL WASHER(1.7×0.25mm)	17	FD44V-12	SWITCH ARM, METAL
2-11	UJ 12V-11	NON-METAL WASHER(2.1×0.25mm)	18	FF17W-21	MAIN BELT
3	F513-593	PLATE HEAD ASS'Y	20	FJ111-30	NON-METAL WASHER(2.6×0.25mm)
3-3	FC52E-44	HEAD BASE	23	FJ111-14	NON-METAL WASHER(2.6×0.25mm)
3-5	FD45T-15	HEAD SPACER	26	FK28R-11	SLIDE SPRING
3-9	FG137-18	SCREW(2.0×9mm)	29	FR22H-11	FLYWHEEL ASS'Y
3-6	FK21U-11	SPRING, AZMUTH	31	FR20L-21A	PINCH ROLLER
3-10	FK26N-14	HEAD BASE SPRING	36	FG114-14	SCREW(2.6×5mm)
3-7	FU20E-11	REC/PB HEAD	39	UG13U-15	E.STOP RING
3-8	FU192-11	ERASE HEAD	40	UG12H-16	SCREW(3.0×8mm)
3-11	WH50S-06	WIRE CONNECTOR	43	FF17C-12	HOLDER CUSHION
3-12	WH42S-00	WIRE CONNECTOR	51	F765-263	SOLENOID ASS'Y
4	F525-269	CAPSTAN MOTOR	52	FL39H-12A	SHAFT
5	F567-362	RELAY P.C. BOARD ASS'Y	53	FL39K-12	PLUNGER
5-13	A715S-00	LEAF SWITCH	61	B/F	F/W (4-990-951-01-1) BRACKET Ass'y
5-17	UE16E-11	PUSH SWITCH			



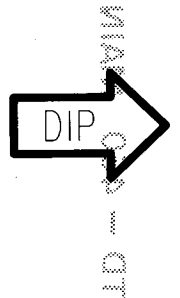
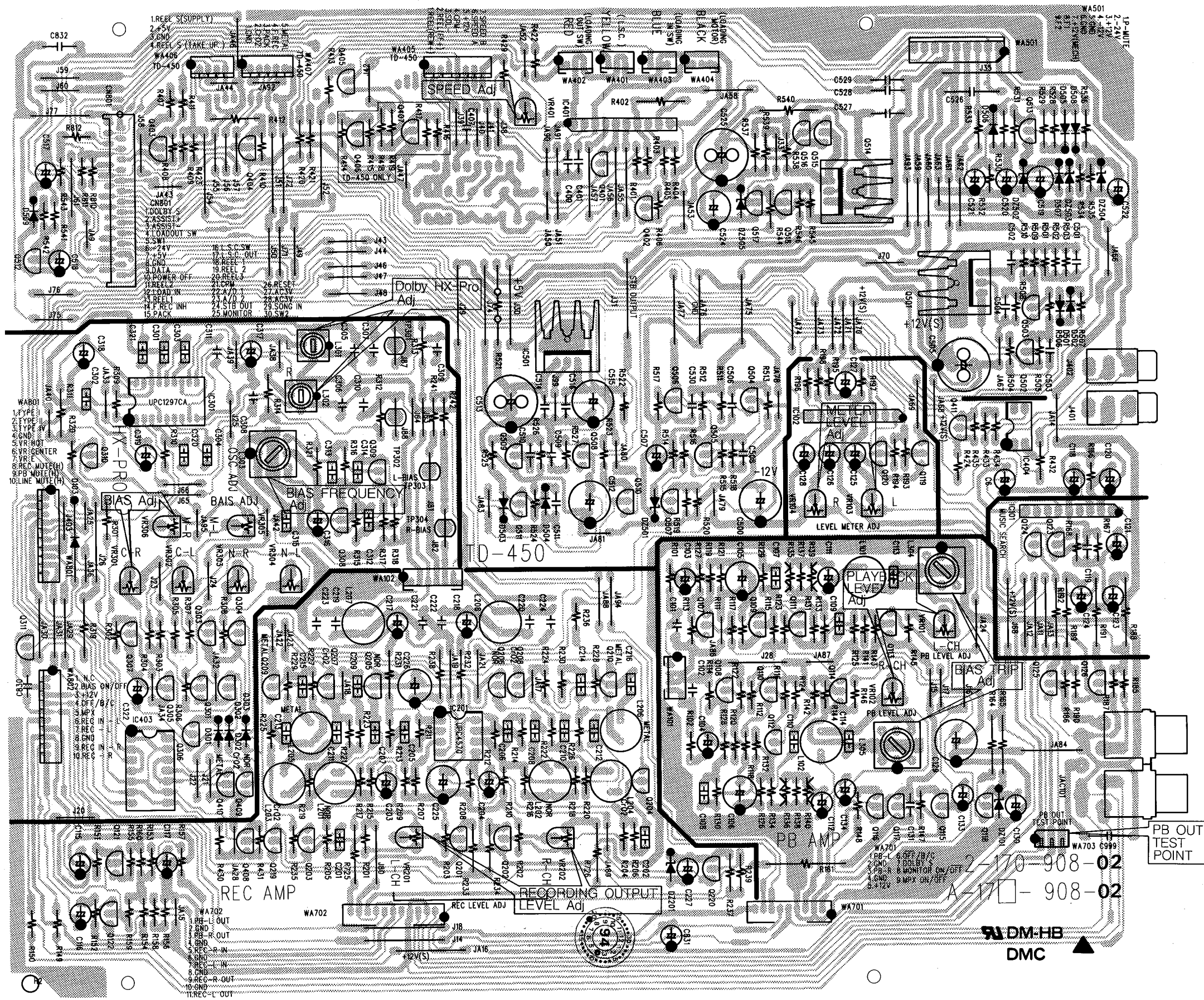


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P.C BOARDS(1)

PCB-1 Main P.C.B



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2

3

4

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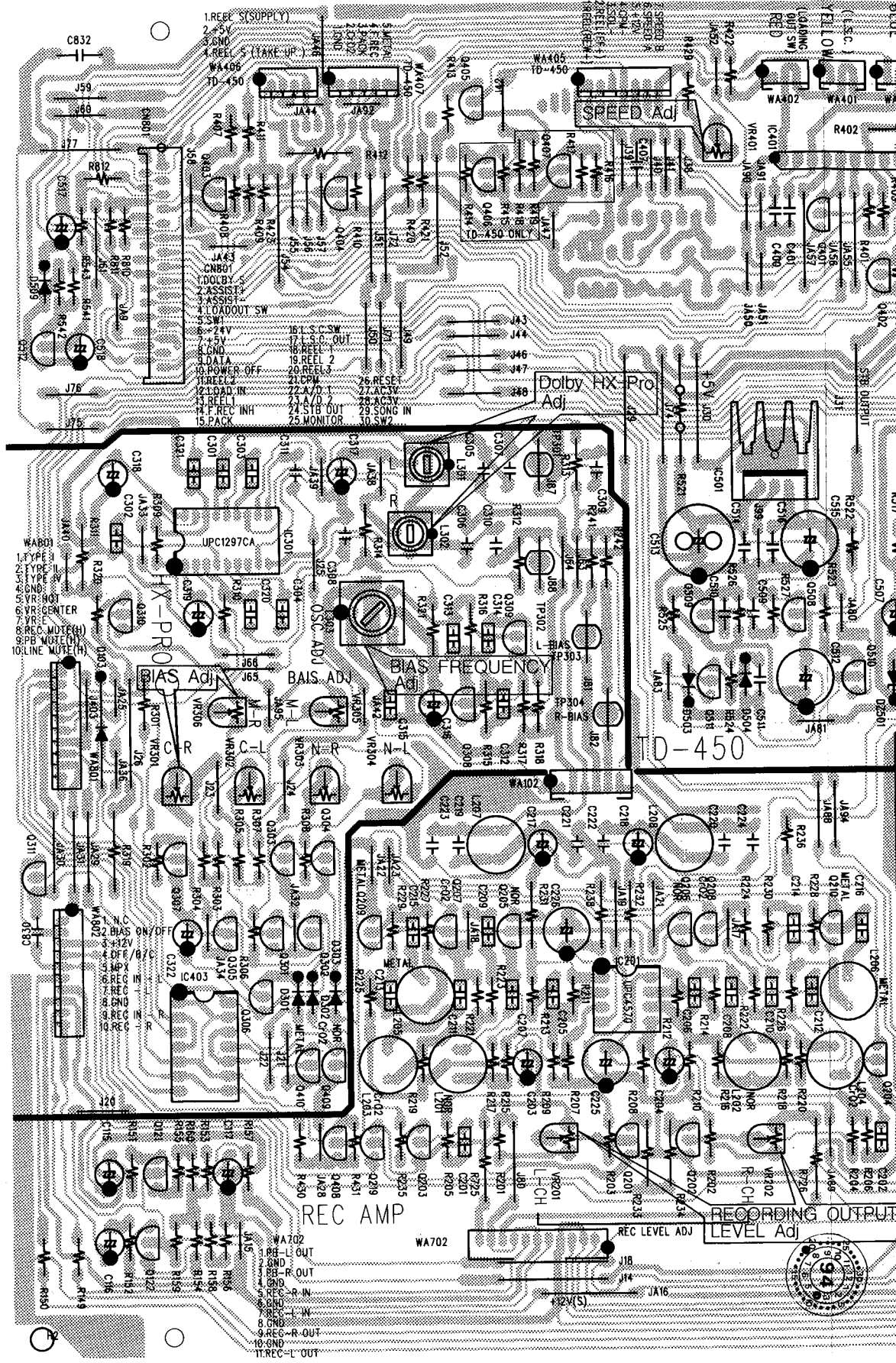
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P.C BOARDS(1)

PCB-1 Main P.C.B

1
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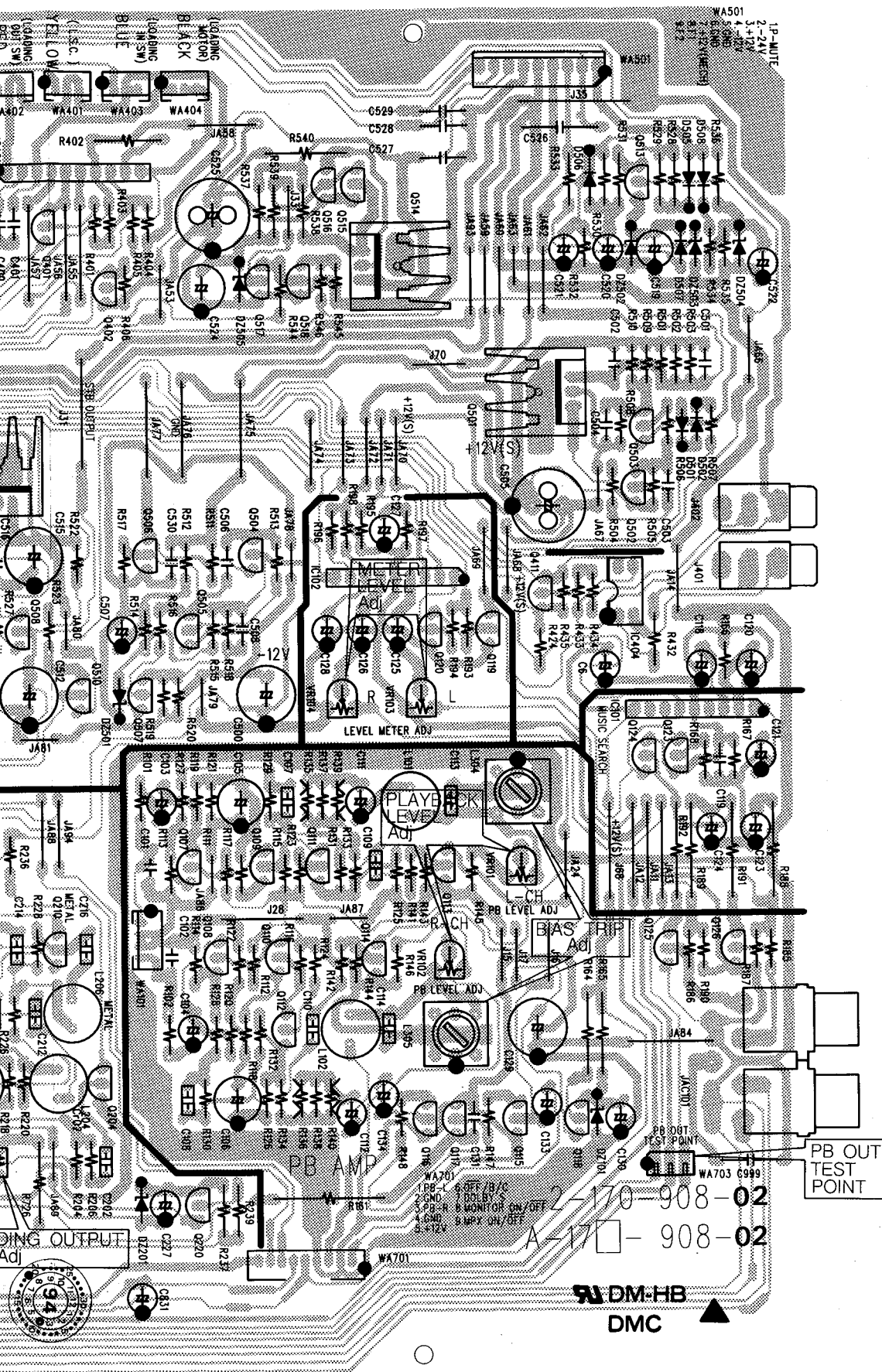
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G

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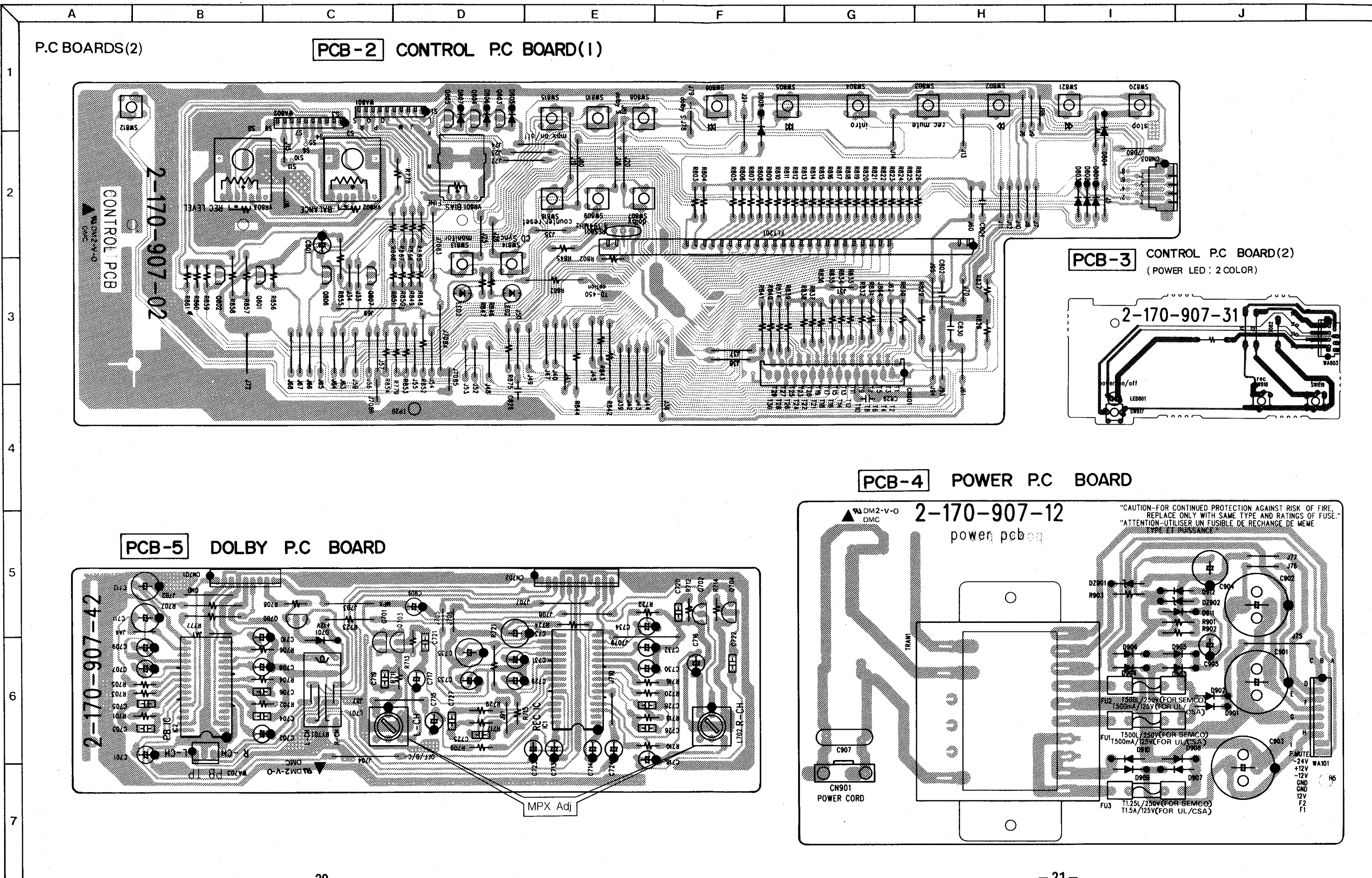
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MARK C-3 - QT
 DIP →

WA701 1PB - 1.5V
 WA702 1PB - 1.5V
 WA703 6999
 2-70-908-02
 A-17-908-02

DM-HB
DMC



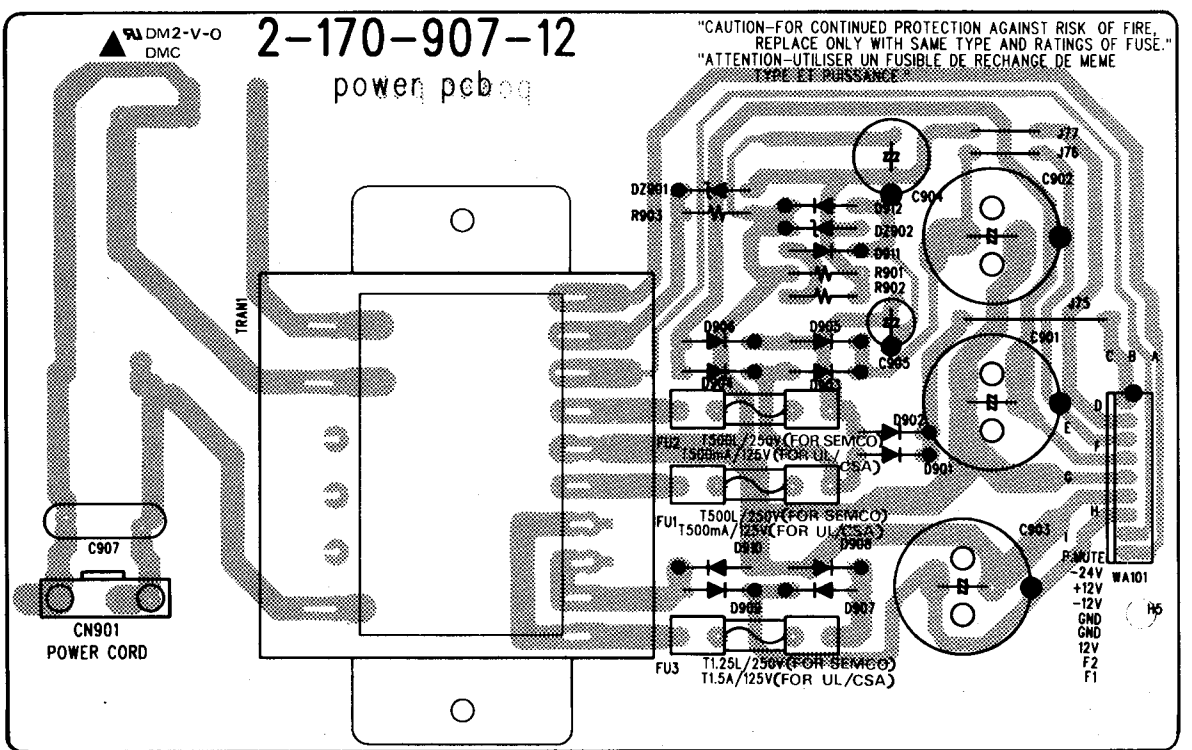
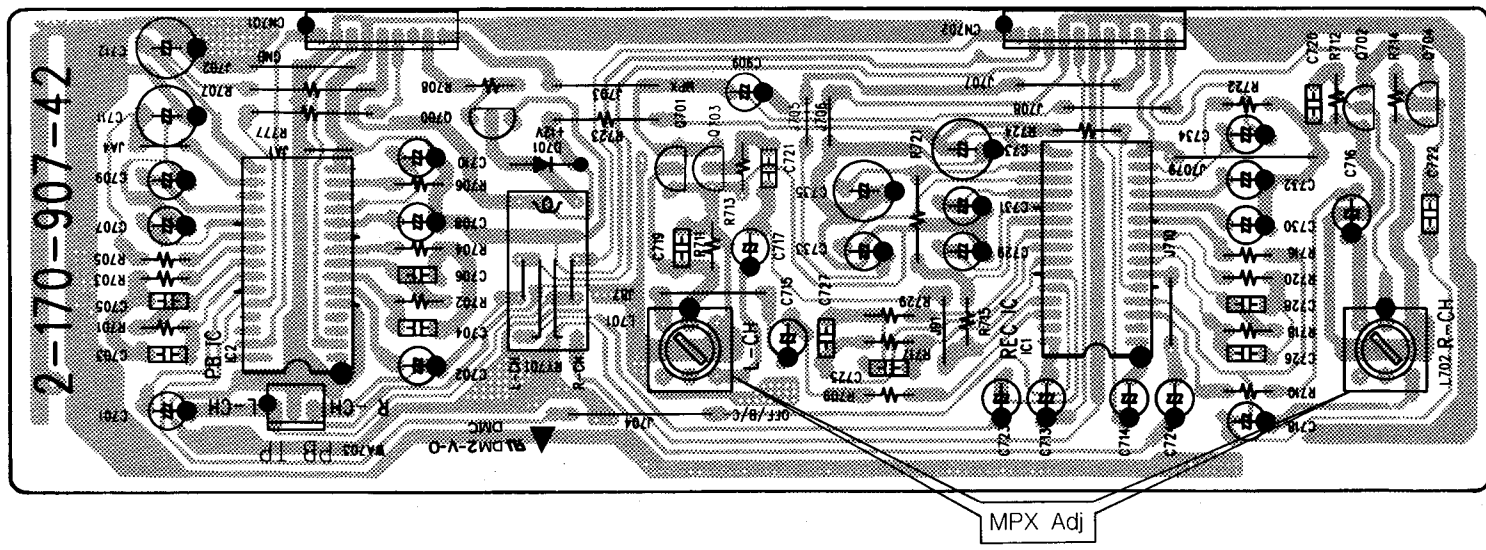
P.C BOARDS(2)

PCB-2 CONTROL P.C BOARD(1)

PCB-3 CONTROL P.C BOARD(2)
(POWER LED : 2 COLOR)

PCB-4 POWER P.C BOARD

PCB-5 DOLBY P.C BOARD



A

B

C

D

E

F

P.C BOARDS(2)

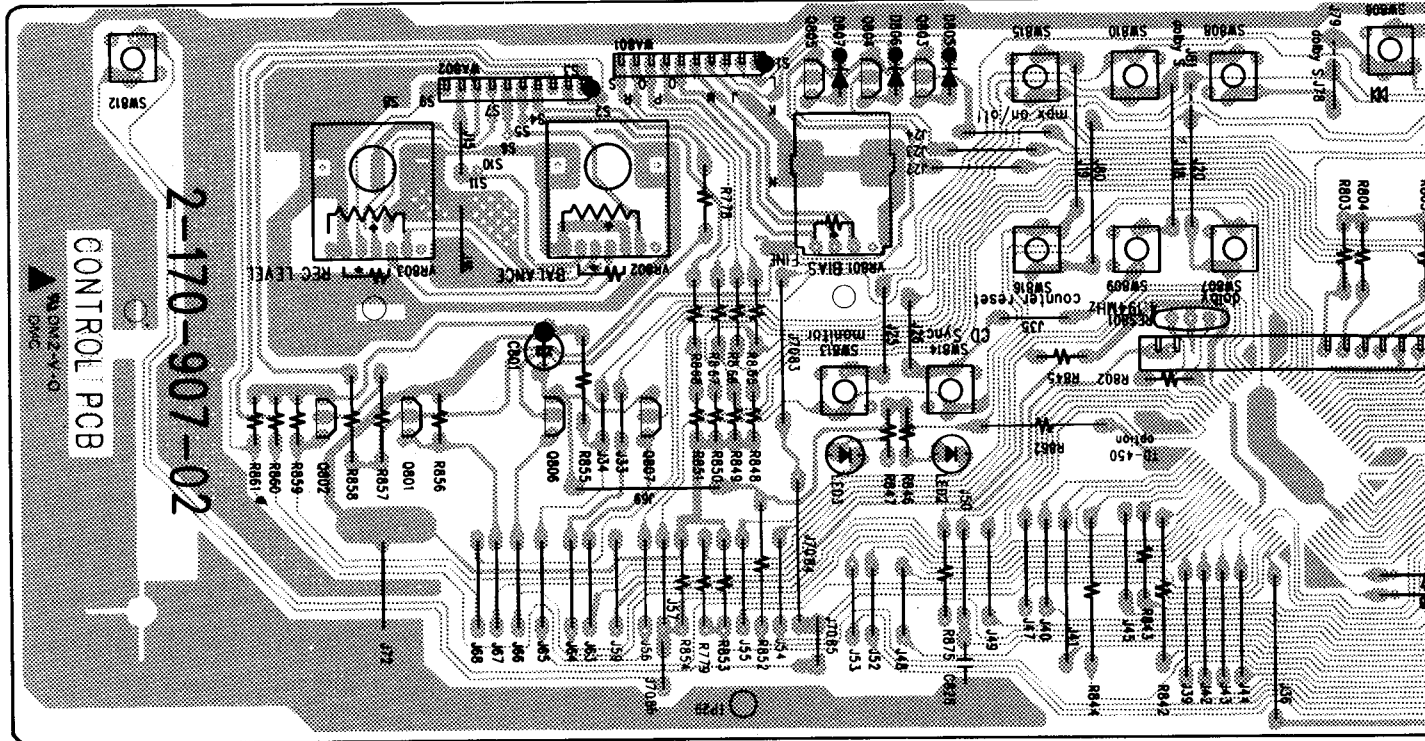
PCB-2 CONTROL P.C BOARD(1)

1

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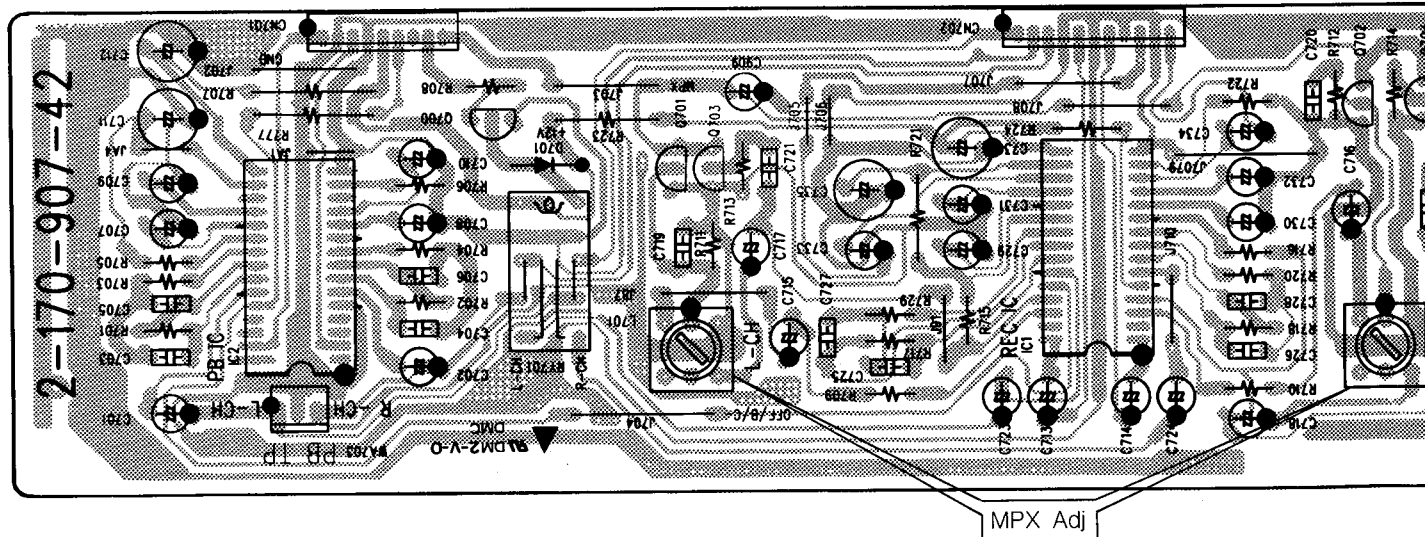


PCB-5 DOLBY P.C BOARD

5

6

7



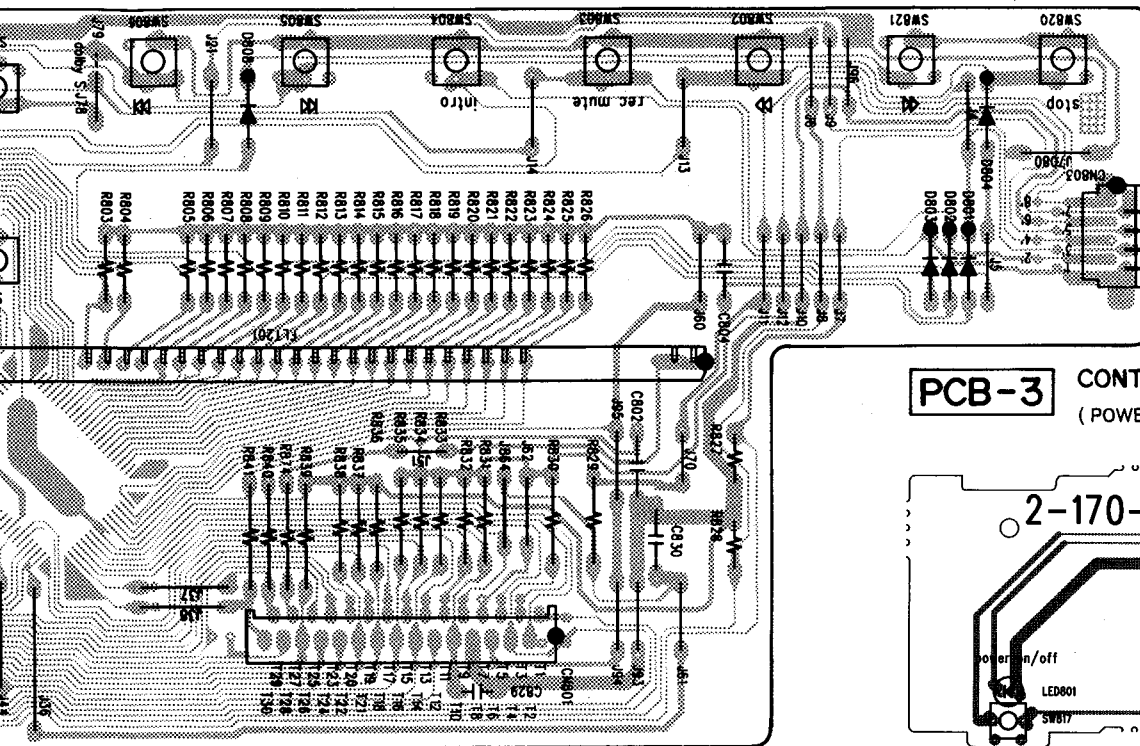
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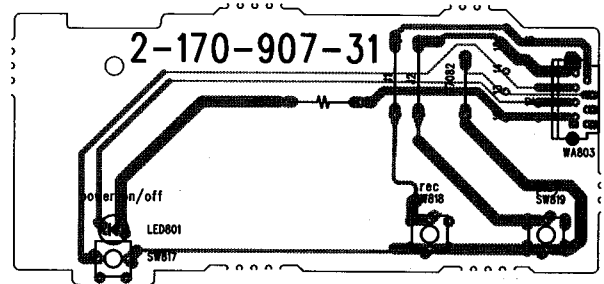
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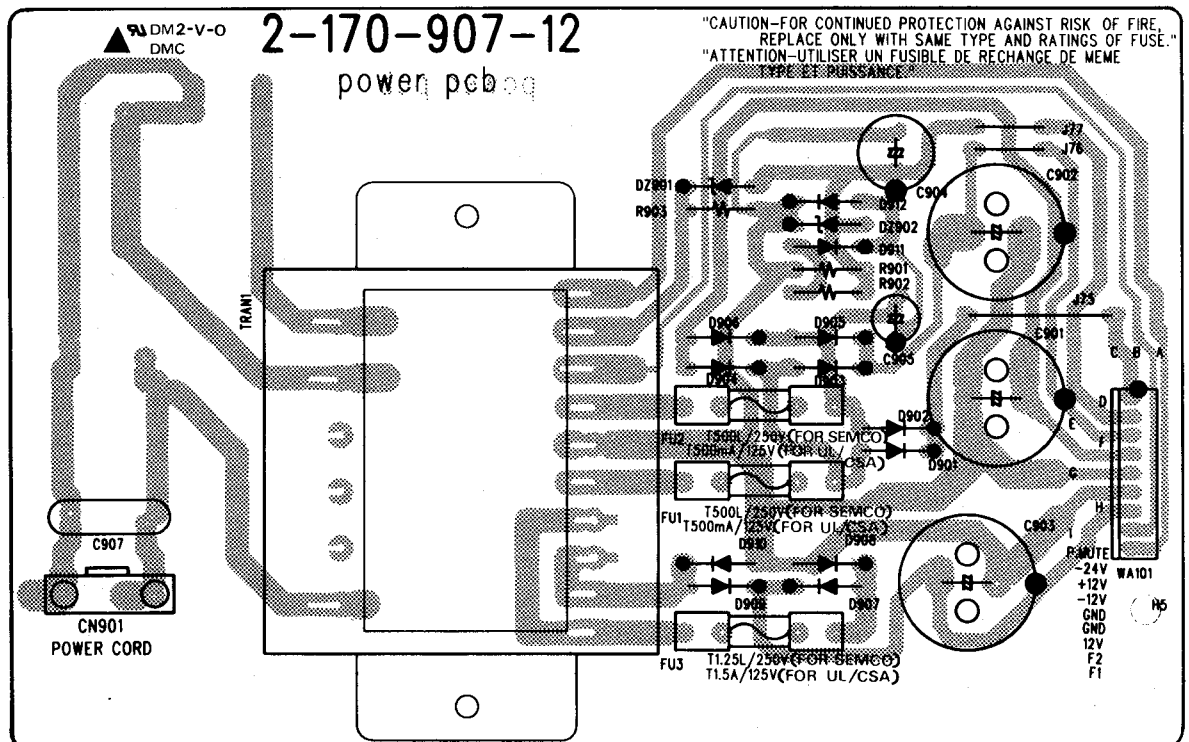
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PCB-3 CONTROL P.C BOARD(2)
(POWER LED : 2 COLOR)



PCB-4 POWER P.C BOARD



ELECTRICAL PARTS LIST

PCB-1 MAIN P.C BOARD

CAPACITORS

Ser No.	Ref NO.	Part No.	Description
054	C120	1-416-108-65	CEA, 0.1/50V
054	C121	1-416-108-65	CEA, 0.1/50V
054	C123	1-416-108-65	CEA, 0.1/50V
054	C124	1-416-108-65	CEA, 0.1/50V
055	C 6	1-416-100-65	CEA, 10/50V
055	C111	1-416-100-65	CEA, 10/50V
055	C112	1-416-100-65	CEA, 10/50V
055	C115	1-416-100-65	CEA, 10/50V
055	C116	1-416-100-65	CEA, 10/50V
055	C133	1-416-100-65	CEA, 10/50V
055	C134	1-416-100-65	CEA, 10/50V
055	C203	1-416-100-65	CEA, 10/50V
055	C204	1-416-100-65	CEA, 10/50V
055	C316	1-416-100-65	CEA, 10/50V
055	C317	1-416-100-65	CEA, 10/50V
055	C318	1-416-100-65	CEA, 10/50V
055	C322	1-416-100-65	CEA, 10/50V
055	C522	1-416-100-65	CEA, 10/50V
055	C831	1-416-100-65	CEA, 10/50V
056	C319	1-416-100-65	CEA, 10/50V
057	C117	1-413-101-65	CEA, 100/16V
057	C225	1-413-101-65	CEA, 100/16V
057	C226	1-413-101-65	CEA, 100/16V
058	C519	1-414-101-65	CEA, 100/25V
△059	C505	1-413-102-67	CEA, 1000/16V
△059	C513	1-413-102-67	CEA, 1000/16V
△059	C525	1-413-102-67	CEA, 1000/16V
060	C518	1-413-229-65	CEA, 2.2/50V
061	C103	1-413-220-65	CEA, 22/16V
061	C104	1-413-220-65	CEA, 22/16V
061	C130	1-413-220-65	CEA, 22/16V
061	C227	1-413-220-65	CEA, 22/16V
061	C515	1-413-220-65	CEA, 22/16V
062	C217	1-416-220-65	CEA, 22/50V
062	C218	1-416-220-65	CEA, 22/50V
062	C520	1-416-220-65	CEA, 22/50V
063	C105	1-413-221-65	CEA, 220/16V
063	C106	1-413-221-65	CEA, 220/16V

Ser No.	Ref NO.	Part No.	Description
064	C500	1-413-331-65	CEA, 330/16V
064	C512	1-413-331-65	CEA, 330/16V
065	C118	1-416-478-65	CEA, 0.47/50V
066	C517	1-416-479-65	CEA, 4.7/50V
067	C507	1-413-470-65	CEA, 47/16V
068	C521	1-414-470-65	CEA, 47/25V
069	C524	1-413-471-67	CEA, 470/16V
070	C213	1-506-103-45	CQMA, 103J/50V
070	C214	1-506-103-45	CQMA, 103J/50V
070	C314	1-506-103-45	CQMA, 103J/50V
071	C315	1-50C-103-45	CQMA, 103J/200V
071	C320	1-50C-103-45	CQMA, 103J/200V
071	C321	1-50C-103-45	CQMA, 103J/200V
072	C303	1-506-473-45	CQMA, 473J/50V
072	C304	1-506-473-45	CQMA, 473J/50V
073	C207	1-506-123-45	CQMA, 123J/50V
073	C208	1-506-123-45	CQMA, 123J/50V
074	C113	1-506-182-45	CQMA, 182J/50V
074	C114	1-506-182-45	CQMA, 182J/50V
076	C215	1-506-223-45	CQMA, 223J/50V
076	C216	1-506-223-45	CQMA, 223J/50V
076	C301	1-506-223-45	CQMA, 223J/50V
076	C302	1-506-223-45	CQMA, 223J/50V
078	C201	1-506-472-45	CQMA, 472J/50V
078	C202	1-506-472-45	CQMA, 472J/50V
079	C312	1-506-562-45	CQMA, 562J/50V
079	C313	1-506-562-45	CQMA, 562J/50V
080	C209	1-506-622-45	CQMA, 622J/50V
080	C210	1-506-622-45	CQMA, 622J/50V
081	C107	1-506-682-45	CQMA, 682J/50V
081	C108	1-506-682-45	CQMA, 682J/50V
082	C205	1-506-823-45	CQMA, 823J/50V
082	C206	1-506-823-45	CQMA, 823J/50V
083	C311	1-88F-100-45	CCDSL, 10D/500V
084	C309	1-88F-101-45	CCDSL, 101K/500V
084	C310	1-88F-101-45	CCDSL, 101K/500V
085	C101	1-886-271-45	CCDSL, 271J/50V
085	C102	1-886-271-45	CCDSL, 271J/50V

Ser No.	Ref NO.	Part No.	Description
086	C305	1-886-471-45	CCDSL, 471J/50V
086	C306	1-886-471-45	CCDSL, 471J/50V
087	C307	1-886-561-45	CCDSL, 561J/50V
087	C308	1-886-561-45	CCDSL, 561J/50V
088	C119	1-9A3-473-64	YS473M/16V
088	C131	1-9A3-473-64	YS473M/16V
088	C400	1-9A3-473-64	YS473M/16V
088	C401	1-9A3-473-64	YS473M/16V
088	C501	1-9A3-473-64	YS473M/16V
088	C502	1-9A3-473-64	YS473M/16V
088	C504	1-9A3-473-64	YS473M/16V
088	C508	1-9A3-473-64	YS473M/16V
088	C509	1-9A3-473-64	YS473M/16V
088	C511	1-9A3-473-64	YS473M/16V
088	C514	1-9A3-473-64	YS473M/16V
088	C516	1-9A3-473-64	YS473M/16V
088	C526	1-9A3-473-64	YS473M/16V
088	C527	1-9A3-473-64	YS473M/16V
088	C528	1-9A3-473-64	YS473M/16V
088	C529	1-9A3-473-64	YS473M/16V
088	C530	1-9A3-473-64	YS473M/16V
089	C503	1-9A3-471-64	Y5P471K/50V
090	C506	1-9A3-101-64	Y5P101K/50V
090	C510	1-9A3-101-64	Y5P101K/50V
156	C211	1-506-153-45	CQMA, 153J/50V
156	C212	1-506-153-45	CQMA, 153J/50V
161	C125	1-416-010-65	CEA, 1/50V
161	C126	1-416-010-65	CEA, 1/50V
161	C127	1-416-010-65	CEA, 1/50V
161	C128	1-416-010-65	CEA, 1/50V

RESISTOR

Ser No.	Ref NO.	Part No.	Description
091	R540	1-304-109-25	1, 1/4W, FUSIBLE
△092	R402	1-141-100-23	10, 1W, 5%, LMF
△093	R521	1-142-101-23	100, 2W, 5%, LMF
094	R311	1-114-100-25	10, 1/4W, 5%
094	R314	1-114-100-25	10, 1/4W, 5%

Ser No.	Ref NO.	Part No.	Description
095	R241	1-114-101-25	100, 1/4W, 5%
095	R242	1-114-101-25	100, 1/4W, 5%
095	R531	1-114-101-25	100, 1/4W, 5%
095	R539	1-114-101-25	100, 1/4W, 5%
096	R165	1-114-102-25	1K, 1/4W, 5%
096	R237	1-114-102-25	1K, 1/4W, 5%
097	R312	1-114-154-25	150K, 1/4W, 5%
097	R313	1-114-154-25	150K, 1/4W, 5%
098	R317	1-114-220-25	22, 1/4W, 5%
098	R318	1-114-220-25	22, 1/4W, 5%
099	R164	1-114-279-25	2.7, 1/4W, 5%
099	R239	1-114-279-25	2.7, 1/4W, 5%
100	R528	1-114-331-25	330, 1/4W, 5%
100	R529	1-114-331-25	330, 1/4W, 5%
101	R315	1-114-333-25	33K, 1/4W, 5%
101	R316	1-114-333-25	33K, 1/4W, 5%
102	R321	1-114-479-25	4.7, 1/4W, 5%
103	R418	1-114-470-25	47, 1/4W, 5%
103	R419	1-114-470-25	47, 1/4W, 5%
104	R538	1-114-471-25	470, 1/4W, 5%
105	R101	1-118-101-25	100, 1/4W, 5%
105	R102	1-118-101-25	100, 1/4W, 5%
105	R302	1-118-102-25	1K, 1/8W, 5%
106	R125	1-118-102-25	1K, 1/8W, 5%
106	R126	1-118-102-25	1K, 1/8W, 5%
106	R149	1-118-102-25	1K, 1/8W, 5%
106	R150	1-118-102-25	1K, 1/8W, 5%
106	R151	1-118-102-25	1K, 1/8W, 5%
106	R152	1-118-102-25	1K, 1/8W, 5%
106	R155	1-118-102-25	1K, 1/8W, 5%
106	R156	1-118-102-25	1K, 1/8W, 5%
106	R157	1-118-102-25	1K, 1/8W, 5%
106	R158	1-118-102-25	1K, 1/8W, 5%
106	R161	1-118-102-25	1K, 1/8W, 5%
106	R303	1-118-102-25	1K, 1/8W, 5%
106	R304	1-118-102-25	1K, 1/8W, 5%
106	R420	1-118-102-25	1K, 1/8W, 5%
106	R421	1-118-102-25	1K, 1/8W, 5%

ELECTRICAL PARTS LIST

PCB-1 MAIN P.C BOARD

CAPACITORS

Ser No.	Ref NO.	Part No.	Description
054	C120	1-416-108-65	CEA, 0.1/50V
054	C121	1-416-108-65	CEA, 0.1/50V
054	C123	1-416-108-65	CEA, 0.1/50V
054	C124	1-416-108-65	CEA, 0.1/50V
055	C 6	1-416-100-65	CEA, 10/50V
055	C111	1-416-100-65	CEA, 10/50V
055	C112	1-416-100-65	CEA, 10/50V
055	C115	1-416-100-65	CEA, 10/50V
055	C116	1-416-100-65	CEA, 10/50V
055	C133	1-416-100-65	CEA, 10/50V
055	C134	1-416-100-65	CEA, 10/50V
055	C203	1-416-100-65	CEA, 10/50V
055	C204	1-416-100-65	CEA, 10/50V
055	C316	1-416-100-65	CEA, 10/50V
055	C317	1-416-100-65	CEA, 10/50V
055	C318	1-416-100-65	CEA, 10/50V
055	C322	1-416-100-65	CEA, 10/50V
055	C522	1-416-100-65	CEA, 10/50V
055	C831	1-416-100-65	CEA, 10/50V
056	C319	1-416-100-65	CEA, 10/50V
057	C117	1-413-101-65	CEA, 100/16V
057	C225	1-413-101-65	CEA, 100/16V
057	C226	1-413-101-65	CEA, 100/16V
058	C519	1-414-101-65	CEA, 100/25V
△059	C505	1-413-102-67	CEA, 1000/16V
△059	C513	1-413-102-67	CEA, 1000/16V
△059	C525	1-413-102-67	CEA, 1000/16V
060	C518	1-413-229-65	CEA, 2.2/50V
061	C103	1-413-220-65	CEA, 22/16V
061	C104	1-413-220-65	CEA, 22/16V
061	C130	1-413-220-65	CEA, 22/16V
061	C227	1-413-220-65	CEA, 22/16V
061	C515	1-413-220-65	CEA, 22/16V
062	C217	1-416-220-65	CEA, 22/50V
062	C218	1-416-220-65	CEA, 22/50V
062	C520	1-416-220-65	CEA, 22/50V
063	C105	1-413-221-65	CEA, 220/16V
063	C106	1-413-221-65	CEA, 220/16V

Ser No.	Ref NO.	Part No.	Description
064	C500	1-413-331-65	CEA, 330/16V
064	C512	1-413-331-65	CEA, 330/16V
065	C118	1-416-478-65	CEA, 0.47/50V
066	C517	1-416-479-65	CEA, 4.7/50V
067	C507	1-413-470-65	CEA, 47/16V
068	C521	1-414-470-65	CEA, 47/25V
069	C524	1-413-471-67	CEA, 470/16V
070	C213	1-506-103-45	CQMA, 103J/50V
070	C214	1-506-103-45	CQMA, 103J/50V
070	C314	1-506-103-45	CQMA, 103J/50V
071	C315	1-50C-103-45	CQMA, 103J/200V
071	C320	1-50C-103-45	CQMA, 103J/200V
071	C321	1-50C-103-45	CQMA, 103J/200V
072	C303	1-506-473-45	CQMA, 473J/50V
072	C304	1-506-473-45	CQMA, 473J/50V
073	C207	1-506-123-45	CQMA, 123J/50V
073	C208	1-506-123-45	CQMA, 123J/50V
074	C113	1-506-182-45	CQMA, 182J/50V
074	C114	1-506-182-45	CQMA, 182J/50V
076	C215	1-506-223-45	CQMA, 223J/50V
076	C216	1-506-223-45	CQMA, 223J/50V
076	C301	1-506-223-45	CQMA, 223J/50V
076	C302	1-506-223-45	CQMA, 223J/50V
078	C201	1-506-472-45	CQMA, 472J/50V
078	C202	1-506-472-45	CQMA, 472J/50V
079	C312	1-506-562-45	CQMA, 562J/50V
079	C313	1-506-562-45	CQMA, 562J/50V
080	C209	1-506-622-45	CQMA, 622J/50V
080	C210	1-506-622-45	CQMA, 622J/50V
081	C107	1-506-682-45	CQMA, 682J/50V
081	C108	1-506-682-45	CQMA, 682J/50V
082	C205	1-506-823-45	CQMA, 823J/50V
082	C206	1-506-823-45	CQMA, 823J/50V
083	C311	1-88F-100-45	CCDSL, 10D/500V
084	C309	1-88F-101-45	CCDSL, 101K/500V
084	C310	1-88F-101-45	CCDSL, 101K/500V
085	C101	1-886-271-45	CCDSL, 271J/50V
085	C102	1-886-271-45	CCDSL, 271J/50V

Ser No.	Ref NO.	Part No.	Description
086	C305	1-886-471-45	CCDSL, 471J/50V
086	C306	1-886-471-45	CCDSL, 471J/50V
087	C307	1-886-561-45	CCDSL, 561J/50V
087	C308	1-886-561-45	CCDSL, 561J/50V
088	C119	1-9A3-473-64	YS473M/16V
088	C131	1-9A3-473-64	YS473M/16V
088	C400	1-9A3-473-64	YS473M/16V
088	C401	1-9A3-473-64	YS473M/16V
088	C501	1-9A3-473-64	YS473M/16V
088	C502	1-9A3-473-64	YS473M/16V
088	C504	1-9A3-473-64	YS473M/16V
088	C508	1-9A3-473-64	YS473M/16V
088	C509	1-9A3-473-64	YS473M/16V
088	C511	1-9A3-473-64	YS473M/16V
088	C514	1-9A3-473-64	YS473M/16V
088	C516	1-9A3-473-64	YS473M/16V
088	C526	1-9A3-473-64	YS473M/16V
088	C527	1-9A3-473-64	YS473M/16V
088	C528	1-9A3-473-64	YS473M/16V
088	C529	1-9A3-473-64	YS473M/16V
088	C530	1-9A3-473-64	YS473M/16V
089	C503	1-9A3-471-64	Y5P471K/50V
090	C506	1-9A3-101-64	Y5P101K/50V
090	C510	1-9A3-101-64	Y5P101K/50V
156	C211	1-506-153-45	CQMA, 153J/50V
156	C212	1-506-153-45	CQMA, 153J/50V
161	C125	1-416-010-65	CEA, 1/50V
161	C126	1-416-010-65	CEA, 1/50V
161	C127	1-416-010-65	CEA, 1/50V
161	C128	1-416-010-65	CEA, 1/50V

RESISTOR

Ser No.	Ref NO.	Part No.	Description
091	R540	1-304-109-25	1, 1/4W, FUSIBLE
△092	R402	1-141-100-23	10, 1W, 5%, LMF
△093	R521	1-142-101-23	100, 2W, 5%, LMF
094	R311	1-114-100-25	10, 1/4W, 5%
094	R314	1-114-100-25	10, 1/4W, 5%

Ser No.	Ref NO.	Part No.	Description
095	R241	1-114-101-25	100, 1/4W, 5%
095	R242	1-114-101-25	100, 1/4W, 5%
095	R531	1-114-101-25	100, 1/4W, 5%
095	R539	1-114-101-25	100, 1/4W, 5%
096	R165	1-114-102-25	1K, 1/4W, 5%
096	R237	1-114-102-25	1K, 1/4W, 5%
097	R312	1-114-154-25	150K, 1/4W, 5%
097	R313	1-114-154-25	150K, 1/4W, 5%
098	R317	1-114-220-25	22, 1/4W, 5%
098	R318	1-114-220-25	22, 1/4W, 5%
099	R164	1-114-279-25	2.7, 1/4W, 5%
099	R239	1-114-279-25	2.7, 1/4W, 5%
100	R528	1-114-331-25	330, 1/4W, 5%
100	R529	1-114-331-25	330, 1/4W, 5%
101	R315	1-114-333-25	33K, 1/4W, 5%
101	R316	1-114-333-25	33K, 1/4W, 5%
102	R321	1-114-479-25	4.7, 1/4W, 5%
103	R418	1-114-470-25	47, 1/4W, 5%
103	R419	1-114-470-25	47, 1/4W, 5%
104	R538	1-114-471-25	470, 1/4W, 5%
105	R101	1-118-101-25	100, 1/4W, 5%
105	R102	1-118-101-25	100, 1/4W, 5%
105	R302	1-118-102-25	1K, 1/8W, 5%
106	R125	1-118-102-25	1K, 1/8W, 5%
106	R126	1-118-102-25	1K, 1/8W, 5%
106	R149	1-118-102-25	1K, 1/8W, 5%
106	R150	1-118-102-25	1K, 1/8W, 5%
106	R151	1-118-102-25	1K, 1/8W, 5%
106	R152	1-118-102-25	1K, 1/8W, 5%
106	R155	1-118-102-25	1K, 1/8W, 5%
106	R156	1-118-102-25	1K, 1/8W, 5%
106	R157	1-118-102-25	1K, 1/8W, 5%
106	R158	1-118-102-25	1K, 1/8W, 5%
106	R161	1-118-102-25	1K, 1/8W, 5%
106	R303	1-118-102-25	1K, 1/8W, 5%
106	R304	1-118-102-25	1K, 1/8W, 5%
106	R420	1-118-102-25	1K, 1/8W, 5%
106	R421	1-118-102-25	1K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
106	R422	1-118-102-25	1K, 1/8W, 5%
106	R506	1-118-102-25	1K, 1/8W, 5%
106	R515	1-118-102-25	1K, 1/8W, 5%
106	R525	1-118-102-25	1K, 1/8W, 5%
106	R534	1-118-102-25	1K, 1/8W, 5%
106	R535	1-118-102-25	1K, 1/8W, 5%
107	R145	1-118-103-25	10K, 1/8W, 5%
107	R146	1-118-103-25	10K, 1/8W, 5%
107	R147	1-118-103-25	10K, 1/8W, 5%
107	R148	1-118-103-25	10K, 1/8W, 5%
107	R195	1-118-103-25	10K, 1/8W, 5%
107	R196	1-118-103-25	10K, 1/8W, 5%
107	R319	1-118-103-25	10K, 1/8W, 5%
107	R320	1-118-103-25	10K, 1/8W, 5%
107	R429	1-118-103-25	10K, 1/8W, 5%
107	R509	1-118-103-25	10K, 1/8W, 5%
107	R511	1-118-103-25	10K, 1/8W, 5%
107	R522	1-118-103-25	10K, 1/8W, 5%
107	R523	1-118-103-25	10K, 1/8W, 5%
107	R536	1-118-103-25	10K, 1/8W, 5%
107	R541	1-118-103-25	10K, 1/8W, 5%
107	R542	1-118-103-25	10K, 1/8W, 5%
107	R543	1-118-103-25	10K, 1/8W, 5%
107	R544	1-118-103-25	10K, 1/8W, 5%
108	R153	1-118-104-25	100K, 1/8W, 5%
108	R154	1-118-104-25	100K, 1/8W, 5%
108	R187	1-118-104-25	100K, 1/8W, 5%
108	R190	1-118-104-25	100K, 1/8W, 5%
108	R406	1-118-104-25	100K, 1/8W, 5%
108	R415	1-118-104-25	100K, 1/8W, 5%
108	R417	1-118-104-25	100K, 1/8W, 5%
108	R546	1-118-104-25	100K, 1/8W, 5%
109	R143	1-118-105-25	1M, 1/8W, 5%
109	R144	1-118-105-25	1M, 1/8W, 5%
109	R530	1-118-105-25	1M, 1/8W, 5%
110	R508	1-118-123-25	12K, 1/8W, 5%
110	R518	1-118-123-25	12K, 1/8W, 5%
110	R520	1-118-123-25	12K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
111	R238	1-118-151-25	150, 1/8W, 5%
111	R527	1-118-151-25	150, 1/8W, 5%
112	R512	1-118-152-25	1.5K, 1/8W, 5%
112	R514	1-118-152-25	1.5K, 1/8W, 5%
112	R537	1-118-152-25	1.5K, 1/8W, 5%
113	R135	1-118-153-25	15K, 1/8W, 5%
113	R136	1-118-153-25	15K, 1/8W, 5%
117	R209	1-118-182-25	1.8K, 1/8W, 5%
117	R210	1-118-182-25	1.8K, 1/8W, 5%
117	R401	1-118-182-25	1.8K, 1/8W, 5%
117	R405	1-118-182-25	1.8K, 1/8W, 5%
117	R533	1-118-182-25	1.8K, 1/8W, 5%
118	R510	1-118-183-25	18K, 1/8W, 5%
118	R519	1-118-183-25	18K, 1/8W, 5%
119	R215	1-118-221-25	220, 1/8W, 5%
119	R216	1-118-221-25	220, 1/8W, 5%
119	R307	1-118-221-25	220, 1/8W, 5%
119	R308	1-118-221-25	220, 1/8W, 5%
120	R185	1-118-222-25	2.2K, 1/8W, 5%
120	R186	1-118-222-25	2.2K, 1/8W, 5%
120	R411	1-118-222-25	2.2K, 1/8W, 5%
120	R412	1-118-222-25	2.2K, 1/8W, 5%
120	R413	1-118-222-25	2.2K, 1/8W, 5%
120	R414	1-118-222-25	2.2K, 1/8W, 5%
120	R416	1-118-222-25	2.2K, 1/8W, 5%
120	R532	1-118-222-25	2.2K, 1/8W, 5%
121	R111	1-118-223-25	22K, 1/8W, 5%
121	R112	1-118-223-25	22K, 1/8W, 5%
121	R193	1-118-223-25	22K, 1/8W, 5%
121	R194	1-118-223-25	22K, 1/8W, 5%
121	R430	1-118-223-25	22K, 1/8W, 5%
121	R431	1-118-223-25	22K, 1/8W, 5%
121	R517	1-118-223-25	22K, 1/8W, 5%
121	R725	1-118-223-25	22K, 1/8W, 5%
121	R726	1-118-223-25	22K, 1/8W, 5%
122	R119	1-118-224-25	220K, 1/8W, 5%
122	R120	1-118-224-25	220K, 1/8W, 5%
124	R432	1-118-271-25	270, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
125	R191	1-118-272-25	2.7K, 1/8W, 5%
125	R192	1-118-272-25	2.7K, 1/8W, 5%
126	R205	1-118-273-25	27K, 1/8W, 5%
126	R206	1-118-273-25	27K, 1/8W, 5%
127	R113	1-118-331-25	330, 1/8W, 5%
127	R114	1-118-331-25	330, 1/8W, 5%
127	R123	1-118-331-25	330, 1/8W, 5%
127	R124	1-118-331-25	330, 1/8W, 5%
127	R168	1-118-331-25	330, 1/8W, 5%
127	R516	1-118-331-25	330, 1/8W, 5%
128	R127	1-118-332-25	3.3K, 1/8W, 5%
128	R128	1-118-332-25	3.3K, 1/8W, 5%
128	R201	1-118-332-25	3.3K, 1/8W, 5%
128	R202	1-118-332-25	3.3K, 1/8W, 5%
128	R404	1-118-332-25	3.3K, 1/8W, 5%
128	R501	1-118-332-25	3.3K, 1/8W, 5%
128	R502	1-118-332-25	3.3K, 1/8W, 5%
128	R503	1-118-332-25	3.3K, 1/8W, 5%
129	R309	1-118-333-25	33K, 1/8W, 5%
129	R310	1-118-333-25	33K, 1/8W, 5%
130	R197	1-118-334-25	330K, 1/8W, 5%
130	R198	1-118-334-25	330K, 1/8W, 5%
131	R141	1-118-392-25	3.9K, 1/8W, 5%
131	R142	1-118-392-25	3.9K, 1/8W, 5%
131	R221	1-118-392-25	3.9K, 1/8W, 5%
131	R222	1-118-392-25	3.9K, 1/8W, 5%
131	R403	1-118-392-25	3.9K, 1/8W, 5%
131	R435	1-118-392-25	3.9K, 1/8W, 5%
132	R117	1-118-470-25	47, 1/8W, 5%
132	R118	1-118-470-25	47, 1/8W, 5%
132	R434	1-118-470-25	47, 1/8W, 5%
133	R505	1-118-471-25	470, 1/8W, 5%
133	R524	1-118-471-25	470, 1/8W, 5%
133	R526	1-118-471-25	470, 1/8W, 5%
134	R137	1-118-472-25	4.7K, 1/8W, 5%
134	R138	1-118-472-25	4.7K, 1/8W, 5%
134	R159	1-118-472-25	4.7K, 1/8W, 5%
134	R160	1-118-472-25	4.7K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
134	R233	1-118-472-25	4.7K, 1/8W, 5%
134	R234	1-118-472-25	4.7K, 1/8W, 5%
134	R235	1-118-472-25	4.7K, 1/8W, 5%
134	R236	1-118-472-25	4.7K, 1/8W, 5%
135	R207	1-118-473-25	47K, 1/8W, 5%
135	R208	1-118-473-25	47K, 1/8W, 5%
135	R407	1-118-473-25	47K, 1/8W, 5%
135	R408	1-118-473-25	47K, 1/8W, 5%
135	R409	1-118-473-25	47K, 1/8W, 5%
135	R410	1-118-473-25	47K, 1/8W, 5%
135	R423	1-118-473-25	47K, 1/8W, 5%
135	R424	1-118-473-25	47K, 1/8W, 5%
135	R433	1-118-473-25	47K, 1/8W, 5%
135	R454	1-118-473-25	47K, 1/8W, 5%
135	R810	1-118-473-25	47K, 1/8W, 5%
135	R811	1-118-473-25	47K, 1/8W, 5%
135	R812	1-118-473-25	47K, 1/8W, 5%
136	R305	1-118-561-25	560, 1/8W, 5%
136	R306	1-118-561-25	560, 1/8W, 5%
136	R504	1-118-561-25	560, 1/8W, 5%
136	R513	1-118-561-25	560, 1/8W, 5%
137	R115	1-118-562-25	5.6K, 1/8W, 5%
137	R116	1-118-562-25	5.6K, 1/8W, 5%
138	R129	1-118-564-25	560K, 1/8W, 5%
138	R130	1-118-564-25	560K, 1/8W, 5%
138	R166	1-118-564-25	560K, 1/8W, 5%
139	R121	1-118-681-25	680, 1/8W, 5%
139	R122	1-118-681-25	680, 1/8W, 5%
139	R167	1-118-681-25	680, 1/8W, 5%
139	R223	1-118-681-25	680, 1/8W, 5%
139	R224	1-118-681-25	680, 1/8W, 5%
140	R203	1-118-682-25	6.8K, 1/8W, 5%
140	R204	1-118-682-25	6.8K, 1/8W, 5%
142	R231	1-118-752-25	7.5K, 1/8W, 5%
142	R232	1-118-752-25	7.5K, 1/8W, 5%
143	R133	1-118-821-25	820, 1/8W, 5%
143	R134	1-118-821-25	820, 1/8W, 5%
143	R507	1-118-821-25	820, 1/8W, 5%
144	R131	1-118-822-25	8.2K, 1/8W, 5%
144	R132	1-118-822-25	8.2K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
144	R188	1-118-822-25	8.2K, 1/8W, 5%
144	R189	1-118-822-25	8.2K, 1/8W, 5%
144	R301	1-118-822-25	8.2K, 1/8W, 5%
145	R211	1-118-823-25	82K, 1/8W, 5%
145	R212	1-118-823-25	82K, 1/8W, 5%
157	R213	1-118-303-25	30K, 1/8W, 5%
157	R214	1-118-303-25	30K, 1/8W, 5%
158	R227	1-118-202-25	2K, 1/8W, 5%
158	R228	1-118-202-25	2K, 1/8W, 5%
162	R219	1-118-121-25	120, 1/8W, 5%
162	R220	1-118-121-25	120, 1/8W, 5%
162	R225	1-118-121-25	120, 1/8W, 5%
162	R226	1-118-121-25	120, 1/8W, 5%
163	R229	1-118-122-25	1.2K, 1/8W, 5%
163	R230	1-118-122-25	1.2K, 1/8W, 5%

INTEGRATED CIRCUITS

Ser No.	Ref NO.	Part No.	Description
002	IC401	2-441-267-71	KA 8306 OR BA6238
003	IC101	2-441-313-72	LA2000 OR BA 335
004	IC201	2-442-220-54-1	UPC4570C
005	IC102	2-440-330-63-1	BA6138
006	IC301	2-442-241-54-1	UPC1297CA
007	IC404	2-441-723-74-1	PC817 OR LTV817
008	IC403	2-440-808-31	GD4011B
026	IC501	2-441-218-71	KA7805 OR MC7805
011	Q107	2-402-179-65-1	2SC1665 FTZ
011	Q108	2-402-179-65-1	2SC1665 FTZ
011	Q109	2-402-179-65-1	2SC1665 FTZ
011	Q110	2-402-179-65-1	2SC1665 FTZ
012	Q111	2-402-111-35	KTC3198 / KTC1815GR
012	Q112	2-402-111-35	KTC3198 / KTC1815GR
012	Q118	2-402-111-35	KTC3198 / KTC1815GR
012	Q120	2-402-111-35	KTC3198 / KTC1815GR
012	Q121	2-402-111-35	KTC3198 / KTC1815GR
012	Q122	2-402-111-35	KTC3198 / KTC1815GR
012	Q220	2-402-111-35	KTC3198 / KTC1815GR
012	Q307	2-402-111-35	KTC3198 / KTC1815GR

Ser No.	Ref NO.	Part No.	Description
012	Q308	2-402-111-35	KTC3198 / KTC1815GR
012	Q309	2-402-111-35	KTC3198 / KTC1815GR
012	Q403	2-402-111-35	KTC3198 / KTC1815GR
012	Q404	2-402-111-35	KTC3198 / KTC1815GR
012	Q502	2-402-111-35	KTC3198 / KTC1815GR
012	Q504	2-402-111-35	KTC3198 / KTC1815GR
012	Q507	2-402-111-35	KTC3198 / KTC1815GR
012	Q509	2-402-111-35	KTC3198 / KTC1815GR
012	Q512	2-402-111-35	KTC3198 / KTC1815GR
012	Q515	2-402-111-35	KTC3198 / KTC1815GR
012	Q516	2-402-111-35	KTC3198 / KTC1815GR
012	Q518	2-402-111-35	KTC3198 / KTC1815GR
013	Q503	2-400-118-35	KTA1266 / KAT1015GR
013	Q505	2-400-118-35	KTA1266 / KAT1015GR
013	Q506	2-400-118-35	KTA1266 / KAT1015GR
013	Q508	2-400-118-35	KTA1266 / KAT1015GR
013	Q510	2-400-118-35	KTA1266 / KAT1015GR
013	Q511	2-400-118-35	KTA1266 / KAT1015GR
013	Q513	2-400-118-35	KTA1266 / KAT1015GR
014	Q401	2-400-104-15	KRC103M / KRA2203
014	Q402	2-406-104-15	KRC103M / KRA2203
015	Q117	2-406-106-15	KRA103M / KRA2203
015	Q124	2-406-106-15	KRA103M / KRA2203
015	Q219	2-406-106-15	KRA103M / KRA2203
015	Q305	2-406-106-15	KRA103M / KRA2203
015	Q408	2-406-106-15	KRA103M / KRA2203
015	Q409	2-406-106-15	KRA103M / KRA2203
015	Q410	2-406-106-15	KRA103M / KRA2203
015	Q411	2-406-106-15	KRA103M / KRA2203
016	Q115	2-403-155-25	KTD1302B
016	Q116	2-403-155-25	KTD1302B
017	Q125	2-402-127-25-1	2SC2878B
017	Q126	2-402-127-25-1	2SC2878B
017	Q201	2-402-127-25-1	2SC2878B
017	Q202	2-402-127-25-1	2SC2878B
017	Q203	2-402-127-25-1	2SC2878B
017	Q204	2-402-127-25-1	2SC2878B
△018	Q501	2-401-112-21	KTB1366 / KTB1015Y
△018	Q514	2-401-112-21	KTB1366 / KTB1015Y
043	Q405	2-403-174-45	KTD1028B

Ser No.	Ref NO.	Part No.	Description
043	Q406	2-403-174-45	KTD1028B
043	Q407	2-403-174-45	KTD1028B
051	Q310	2-400-140-25	KTA1273 / KTA966A
052	Q113	1-406-127-15	KRC106M
052	Q114	1-406-127-15	KRC106M
052	Q119	1-406-127-15	KRC106M
052	Q123	1-406-127-15	KRC106M
052	Q205	1-406-127-15	KRC106M
052	Q206	1-406-127-15	KRC106M
052	Q207	1-406-127-15	KRC106M
052	Q208	1-406-127-15	KRC106M
052	Q209	1-406-127-15	KRC106M
052	Q210	1-406-127-15	KRC106M
052	Q301	1-406-127-15	KRC106M
052	Q302	1-406-127-15	KRC106M
052	Q303	1-406-127-15	KRC106M
052	Q304	1-406-127-15	KRC106M
052	Q306	1-406-127-15	KRC106M
052	Q311	1-406-127-15	KRC106M
052	Q517	1-406-127-15	KRC106M

DIODES

Ser No.	Ref NO.	Part No.	Description
019	DZ505	2-426-128-85-1	HZ12B2LTA
020	DZ101	2-426-105-85-1	HZ11B2LTA
020	DZ201	2-426-105-85-1	HZ12B2LTA
021	DZ502	2-421-110-35	1N962B
022	DZ503	2-421-160-35	1N966B
023	DZ504	2-421-051-35	1N751A
024	DZ501	2-421-047-35	1N750B
025	D103	2-410-179-95	1N4148M(1SS133)
025	D301	2-421-299-95	1N4148M(1SS133)
025	D302	2-421-299-95	1N4148M(1SS133)
025	D303	2-421-299-95	1N4148M(1SS133)
025	D501	2-421-299-95	1N4148M(1SS133)
025	D502	2-421-299-95	1N4148M(1SS133)
025	D503	2-421-299-95	1N4148M(1SS133)
025	D504	2-421-299-95	1N4148M(1SS133)
025	D505	2-421-299-95	1N4148M(1SS133)

Ser No.	Ref NO.	Part No.	Description
025	D506	2-414-299-95	1N4148M(1SS133)
025	D507	2-414-299-95	1N4148M(1SS133)
025	D508	2-414-299-95	1N4148M(1SS133)
025	D509	2-414-299-95	1N4148M(1SS133)

SEMI FIXED RESISTORS

Ser No.	Ref NO.	Part No.	Description
044	VR101	2-512-223-01	6MM(RH0615C),22K
044	VR102	2-512-223-01	6MM(RH0615C),22K
044	VR305	2-512-223-01	6MM(RH0615C),22K
044	VR306	2-512-223-01	6MM(RH0615C),22K
045	VR103	2-512-103-01	6MM(RH0615C),10K
045	VR104	2-512-103-01	6MM(RH0615C),10K
045	VR301	2-512-103-01	6MM(RH0615C),10K
045	VR302	2-512-103-01	6MM(RH0615C),10K
045	VR401	2-512-103-01	6MM(RH0615C),10K
046	VR201	2-512-472-01	6MM(RH0615C),4.7K
046	VR202	2-512-472-01	6MM(RH0615C),4.7K
047	VR303	2-512-222-01	6MM(RH0615C),2.2K
047	VR304	2-512-222-01	6MM(RH0615C),2.2K

COILS

Ser No.	Ref NO.	Part No.	Description
039	L303	2-129-496-01	105KHz, BIAS OSC
040	L301	2-129-497-01	HX-PRO, BIAS OSC
040	L302	2-129-497-01	HX-PRO, BIAS OSC
041	L207	2-129-261-01	NTH-016-0, BIAS TRAP
041	L208	2-129-261-01	NTH-016-0, BIAS TRAP
042	L101	2-129-387-01	22MH
042	L102	2-129-387-01	22MH
048	L203	1-011-332-21	3.3MH, NTH-028-0
048	L204	1-011-332-21	3.3MH, NTH-028-0
049	L205	1-011-332-21	2.2MH, NTH-026-0
049	L206	1-011-332-21	2.2MH, NTH-026-0
050	L304	2-129-303-01	M-10L, TRAP
050	L305	2-129-303-01	M-10L, TRAP
053	L201	1-011-472-21	4.7MH, NTH-030-0
053	L202	1-011-472-21	4.7MH, NTH-030-0

MISCELLANEOUS

Ser No.	Ref NO.	Part No.	Description
009	JAC101	2-155-664-01	RCA4P, JW-414R
010	J401	2-155-675-01	HTJ-035-12
010	J402	2-155-675-01	HTJ-035-12
△027	IC501	2-790-512-01	HEATSINK, AL 6060
△027	Q501	2-790-512-01	HEATSINK, AL 6060
△027	Q514	2-790-512-01	HEATSINK, AL 6060
028	CN801	2-168-307-01	WAFER, 30P
029	WA702	2-168-385-01	WAFER, P=2MM,11P
030	WA701	2-168-384-01	WAFER, P=2MM,9P
031	WA401	2-168-252-01	WAFER, FKN1039-A, 3P
031	WA402	2-168-252-01	WAFER, FKN1039-A, 3P
031	WA403	2-168-252-01	WAFER, FKN1039-A, 3P
031	WA404	2-168-252-01	WAFER, FKN1039-A, 3P
032	WA405	2-168-500-01	WAFER, P=2,7PIN
033	WA407	2-168-498-01	WAFER, P=2,5PIN
034	WA406	2-168-497-01	WAFER, P=2,4PIN
035	WA801	2-168-503-01	WAFER, P=2,10PIN
035	WA802	2-168-503-01	WAFER, P=2,10PIN
036	WA501	2-168-530-01	WAFER, P=2.5,9PIN
037	WA102	2-168-263-01	WAFER, FKN1042-A,6P
038	WA101	2-168-253-01	WAFER, 2MM, 4P, LOCK
159	WA801	2-168-122-01	WAFER, NKC-022-0.3P

PCB-2 CONTROL P.C BOARD(1)

CAPACITORS

Ser No.	Ref NO.	Part No.	Description
036	C802	1-9A3-103-64	YS103M/16V
036	C803	1-9A3-103-64	YS103M/16V
053	C828	1-9A3-473-64	YS473M/16V
053	C829	1-9A3-473-64	YS473M/16V
054	C830	1-9A3-122-64	YS1200P/16V

RESISTOR

Ser No.	Ref NO.	Part No.	Description
042	R42	1-118-103-25	10K, 1/8W, 5%
042	R43	1-118-103-25	10K, 1/8W, 5%
042	R44	1-118-103-25	10K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
042	R59	1-118-103-25	10K, 1/8W, 5%
042	R855	1-118-103-25	10K, 1/8W, 5%
042	R857	1-118-103-25	10K, 1/8W, 5%
042	R858	1-118-103-25	10K, 1/8W, 5%
043	R803	1-118-104-25	100K, 1/8W, 5%
043	R804	1-118-104-25	100K, 1/8W, 5%
043	R805	1-118-104-25	100K, 1/8W, 5%
043	R806	1-118-104-25	100K, 1/8W, 5%
043	R807	1-118-104-25	100K, 1/8W, 5%
043	R808	1-118-104-25	100K, 1/8W, 5%
043	R809	1-118-104-25	100K, 1/8W, 5%
043	R810	1-118-104-25	100K, 1/8W, 5%
043	R811	1-118-104-25	100K, 1/8W, 5%
043	R812	1-118-104-25	100K, 1/8W, 5%
043	R813	1-118-104-25	100K, 1/8W, 5%
043	R814	1-118-104-25	100K, 1/8W, 5%
043	R815	1-118-104-25	100K, 1/8W, 5%
043	R816	1-118-104-25	100K, 1/8W, 5%
043	R817	1-118-104-25	100K, 1/8W, 5%
043	R818	1-118-104-25	100K, 1/8W, 5%
043	R819	1-118-104-25	100K, 1/8W, 5%
043	R820	1-118-104-25	100K, 1/8W, 5%
043	R821	1-118-104-25	100K, 1/8W, 5%
043	R822	1-118-104-25	100K, 1/8W, 5%
043	R823	1-118-104-25	100K, 1/8W, 5%
043	R824	1-118-104-25	100K, 1/8W, 5%
043	R825	1-118-104-25	100K, 1/8W, 5%
043	R826	1-118-104-25	100K, 1/8W, 5%
043	R827	1-118-104-25	100K, 1/8W, 5%
043	R828	1-118-104-25	100K, 1/8W, 5%
043	R839	1-118-104-25	100K, 1/8W, 5%
043	R840	1-118-104-25	100K, 1/8W, 5%
043	R848	1-118-104-25	100K, 1/8W, 5%
043	R849	1-118-104-25	100K, 1/8W, 5%
043	R850	1-118-104-25	100K, 1/8W, 5%
043	R851	1-118-104-25	100K, 1/8W, 5%
043	R853	1-118-104-25	100K, 1/8W, 5%
043	R854	1-118-104-25	100K, 1/8W, 5%
043	R856	1-118-104-25	100K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
043	R859	1-118-104-25	100K, 1/8W, 5%
043	R860	1-118-104-25	100K, 1/8W, 5%
043	R861	1-118-104-25	100K, 1/8W, 5%
044	R802	1-118-105-25	1M, 1/8W, 5%
045	R842	1-118-222-25	2.2K, 1/8W, 5%
045	R843	1-118-222-25	2.2K, 1/8W, 5%
045	R844	1-118-222-25	2.2K, 1/8W, 5%
048	R836	1-118-333-25	33K, 1/8W, 5%
048	R837	1-118-333-25	33K, 1/8W, 5%
048	R838	1-118-333-25	33K, 1/8W, 5%
049	R829	1-118-473-25	47K, 1/8W, 5%
049	R830	1-118-473-25	47K, 1/8W, 5%
049	R831	1-118-473-25	47K, 1/8W, 5%
049	R832	1-118-473-25	47K, 1/8W, 5%
049	R833	1-118-473-25	47K, 1/8W, 5%
049	R834	1-118-473-25	47K, 1/8W, 5%
049	R835	1-118-473-25	47K, 1/8W, 5%
049	R841	1-118-473-25	47K, 1/8W, 5%
049	R862	1-118-473-25	47K, 1/8W, 5%
050	R869	1-118-102-25	1K, 1/8W, 5%
050	R870	1-118-102-25	1K, 1/8W, 5%
050	R871	1-118-102-25	1K, 1/8W, 5%
050	R872	1-118-102-25	1K, 1/8W, 5%
050	R873	1-118-102-25	1K, 1/8W, 5%
050	R868	1-118-102-25	1K, 1/8W, 5%
050	R829	1-118-102-25	1K, 1/8W, 5%
051	R874	1-114-399-25	3.9, 1/4W, 5%
051	R875	1-114-399-25	3.9, 1/4W, 5%
052	R846	1-118-181-25	180, 1/8W, 5%
052	R847	1-118-181-25	180, 1/8W, 5%
081	R845	1-118-183-25	18K, 1/8W, 5%
082	R801	1-114-101-25	100, 1/8W, 5%

INTEGRATED CIRCUITS

Ser No.	Ref NO.	Part No.	Description
003	IC801	2-600-182-01-1	LE1064 or LE1065
011	Q803	2-406-106-15	KRA103M
011	Q804	2-406-106-15	KRA103M

Ser No.	Ref NO.	Part No.	Description
011	Q805	2-406-106-15	KRA103M
011	Q806	2-406-106-15	KRA103M
011	Q807	2-406-106-15	KRA103M
012	Q801	2-406-104-15	KRC103M
012	Q802	2-406-104-15	KRC103M
014	Q801	2-414-299-95	1N4148M(1SS133)
014	Q802	2-414-299-95	1N4148M(1SS133)
014	D803	2-414-299-95	1N4148M(1SS133)
014	D804	2-414-299-95	1N4148M(1SS133)
014	D805	2-414-299-95	1N4148M(1SS133)
014	D806	2-414-299-95	1N4148M(1SS133)
014	D807	2-414-299-95	1N4148M(1SS133)
014	D808	2-414-299-95	1N4148M(1SS133)
015	LED802	2-419-473-45	R34MC
015	LED803	2-419-473-45	R34MC

VOLUME CONTROLS

Ser No.	Ref NO.	Part No.	Description
006	VR801	2-501-387-01	RK11K, 5KB
007	VR802	2-501-377-01	RK14K, 100KMN
008	VR803	2-501-3A8-01	RK 14K, 50KAX2

CERAMIC RESONATOR

Ser No.	Ref NO.	Part No.	Description
004	RES801	2-138-186-01-1	FCR 4,19MCT3

MISCELLANEOUS

Ser No.	Ref NO.	Part No.	Description
△005	FLT801	2-143-262-01-1	CM1298D
009	CN801	2-168-289-01	30P, FPC
010	SW802	2-208-156-05	SKHV-10910
		-824	
017	WA101	2-159-7M6-01	9P,L=100MM
018	WA801	2-159-7N0-01	10P,L=100MM
018	WA802	2-159-7ND-01	10P,L=100MM
019	CN803	2-168-572-01-1	8P, TRC-X08X-42
034	CN801	2-159-710-01	BNCD-P, 30P,150MM
080		3-327-015-02	FLT HOLDER,ABS730

RCB-3 POWER P.C BOARD

CAPACITORS

Ser No.	Ref NO.	Part No.	Description
△037	C901	1-414-222-67	CEA, 2200/25V
△038	C902	1-414-472-67	CEA, 4700/25V
△038	C903	1-414-472-67	CEA, 4700/25V
△039	C905	1-414-471-67	CEA, 470/25V
△040	C904	1-414-221-65	CEA, 220/25V
△041	C907	1-998-205-01	DA7170 103Z/250V

RESISTORS

Ser No.	Ref NO.	Part No.	Description
046	R903	1-114-223-25	22K, 1/4W, 5%
047	R902	1-114-220-25	220, 1/4W, 5%
084	R901	1-114-823-25	82K, 1/4W, 5%

DIODES

Ser No.	Ref NO.	Part No.	Description
△013	D901	2-413-581-65-1	1N4003L
△013	D902	2-413-581-65-1	1N4003L
△013	D903	2-413-581-65-1	1N4003L
△013	D904	2-413-581-65-1	1N4003L
△013	D905	2-413-581-65-1	1N4003L
△013	D906	2-413-581-65-1	1N4003L
△013	D907	2-413-581-65-1	1N4003L
△013	D908	2-413-581-65-1	1N4003L
△013	D909	2-413-581-65-1	1N4003L
△013	D910	2-413-581-65-1	1N4003L
014	D911	2-414-299-95	1N4148M(1SS133)
014	D912	2-414-299-95	1N4148M(1SS133)
△021	DZ902	2-421-240-35	IN970B
022	DZ901	2-421-062-45	IN753A

POWER TRANSFORMER

Ser No.	Ref NO.	Part No.	Description
△029		2-131-567-01	AC230V, 50Hz I
△029		2-131-568-01	AC120V, 60Hz BK

MISCELLANEOUS

Ser No.	Ref NO.	Part No.	Description
△016	FU1	2-999-114-01	HOLDER, FUSE

Ser No.	Ref NO.	Part No.	Description
△016	FU1	2-999-114-01	HOLDER, FUSE
△016	FU2	2-999-114-01	HOLDER, FUSE
△016	FU2	2-999-114-01	HOLDER, FUSE
△016	FU3	2-999-114-01	HOLDER, FUSE
△016	FU3	2-999-114-01	HOLDER, FUSE
017	WA101	2-159-7N6-01	9P, 2.5MM, L = 100
030	CN901	2-168-574-01	WAFER, 2P, 7.96MM
△	FU 1		FUSE 500mA I BK
△	FU 2		FUSE 500mA I BK
△	FU 3		FUSE 1.25L I
△	FU 3		FUSE 1.5 A BK

PCB-4 CONTROL P.C BOARD(2)

Ser No.	Ref NO.	Part No.	Description
010	SW822	2-208-156-05	SKHV-10910
010	SW823	2-208-156-05	SKHV-10910
010	SW824	2-208-156-05	SKHV-10910
020	WA803	2-168-573-01-1	WAFER, TRC-X08P-A2
028	WA802	2-125-817-01	SBX 1610-02
035	LED801	2-419-963-31	SPR39MVW3

PCB-5 DOLBY P.C BOARD

CAPACITORS

Ser No.	Ref NO.	Part No.	Description
055	C703	1-506-222-45	CQMA, 222J/50V
055	C704	1-506-222-45	CQMA, 222J/50V
055	C705	1-506-222-45	CQMA, 222J/50V
055	C706	1-506-222-45	CQMA, 222J/50V
055	C719	1-506-222-45	CQMA, 222J/50V
055	C720	1-506-222-45	CQMA, 222J/50V
055	C725	1-506-222-45	CQMA, 222J/50V
055	C726	1-506-222-45	CQMA, 222J/50V
055	C727	1-506-222-45	CQMA, 222J/50V
055	C728	1-506-222-45	CQMA, 222J/50V
057	C701	1-413-100-65	CEA, 10/16V
057	C702	1-413-100-65	CEA, 10/16V
057	C711	1-413-100-65	CEA, 10/16V
057	C713	1-413-100-65	CEA, 10/16V
057	C714	1-413-100-65	CEA, 10/16V
057	C715	1-413-100-65	CEA, 10/16V

Ser No.	Ref NO.	Part No.	Description
057	C716	1-413-100-65	CEA, 10/16V
057	C717	1-413-100-65	CEA, 10/16V
057	C718	1-413-100-65	CEA, 10/16V
057	C723	1-413-100-65	CEA, 10/16V
057	C724	1-413-100-65	CEA, 10/16V
057	C733	1-413-100-65	CEA, 10/16V
057	C734	1-413-100-65	CEA, 10/16V
057	C735	1-413-100-65	CEA, 10/16V
058	C712	1-413-101-65	CEA, 100/16V
058	C736	1-413-101-65	CEA, 100/16V
059	C709	1-416-338-65	CEA, 0.33/50V
059	C710	1-416-338-65	CEA, 0.33/50V
059	C731	1-416-338-65	CEA, 0.33/50V
059	C732	1-416-338-65	CEA, 0.33/50V
060	C707	1-416-568-65	CEA, 0.56/50V
060	C708	1-416-568-65	CEA, 0.56/50V
060	C729	1-416-568-65	CEA, 0.56/50V
060	C730	1-416-568-65	CEA, 0.56/50V
083	C721	1-506-242-45	CMQA, 242J/50V
083	C722	1-506-242-45	CMQA, 242J/50V

RESISTOR

Ser No.	Ref NO.	Part No.	Description
044	R711	1-118-105-25	1M, 1/8W, 5%
044	R712	1-118-105-25	1M, 1/8W, 5%
044	R713	1-118-105-25	1M, 1/8W, 5%
044	R714	1-118-105-25	1M, 1/8W, 5%
050	R705	1-118-102-25	1K, 1/8W, 5%
050	R721	1-118-102-25	1K, 1/8W, 5%
050	R777	1-118-102-25	1K, 1/8W, 5%
061	R707	1-118-220-25	22, 1/8W, 5%
061	R723	1-118-220-25	22, 1/8W, 5%
062	R724	1-118-223-25	22K, 1/8W, 5%
063	R701	1-118-243-25	24K, 1/8W, 5%
063	R702	1-118-243-25	24K, 1/8W, 5%
063	R717	1-118-243-25	24K, 1/8W, 5%
063	R718	1-118-243-25	24K, 1/8W, 5%
064	R709	1-118-332-25	3.3K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
064	R710	1-118-332-25	3.3K, 1/8W, 5%
065	R706	1-118-273-25	27K, 1/8W, 5%
065	R722	1-118-273-25	27K, 1/8W, 5%
066	R703	1-118-561-25	560, 1/8W, 5%
066	R704	1-118-561-25	560, 1/8W, 5%
066	R720	1-118-561-25	560, 1/8W, 5%
066	R729	1-118-561-25	560, 1/8W, 5%
067	R708	1-118-462-25	4.7K, 1/8W, 5%
068	R715	1-118-682-25	6.8K, 1/8W, 5%
068	R716	1-118-682-25	6.8K, 1/8W, 5%

INTEGRATED CIRCUITS

Ser No.	Ref NO.	Part No.	Description
023	IC1	2-440-434-74-1	CXA1330S, DOLBY
023	IC2	2-440-434-74-1	CXA1330S, DOLBY

TRANSISTORS

Ser No.	Ref NO.	Part No.	Description
031	Q700	2-402-111-35	KTC3198 / KTC1815GR
032	Q701	2-406-127-15	KRC106M
032	Q702	2-406-127-15	KRC106M
032	Q703	2-406-127-15	KRC106M
032	Q704	2-406-127-15	KRC106M

DIODE

Ser No.	Ref NO.	Part No.	Description
014	D701	2-410-179-95	1SS133

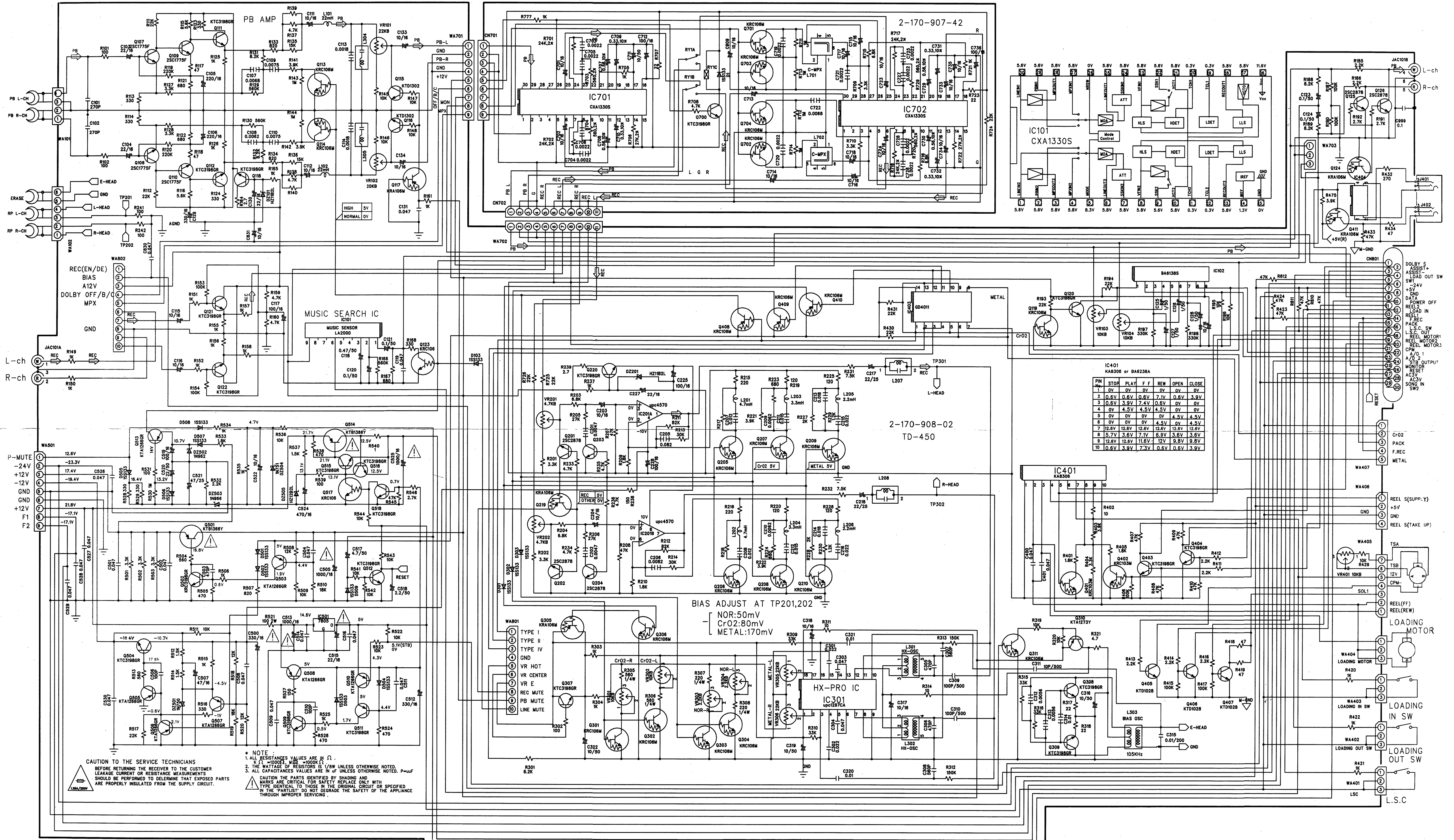
RELAY

Ser No.	Ref NO.	Part No.	Description
024	RY701	2-140-245-01-1	AGY2323, 12V

MISCELLANEOUS

Ser No.	Ref NO.	Part No.	Description
025	L701	2-129-498-01-1	MPX COIL
025	L702	2-129-498-01-1	MPX COIL
026	CN702	2-168-392-01	52257-1110
027	CN701	2-168-391-01	52257-0910
△044		2-211-138-01	POWER CORD I
△044		2-211-139-01	POWER CORD BK

SCHEMATIC DIAGRAM (1)



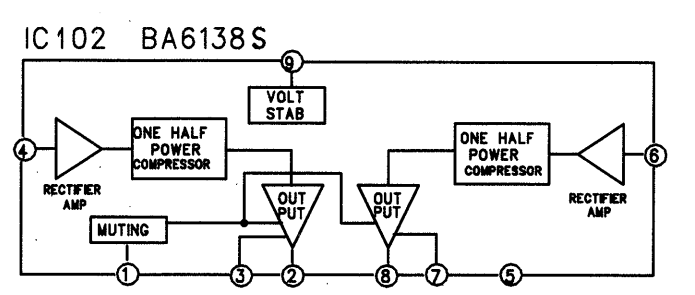
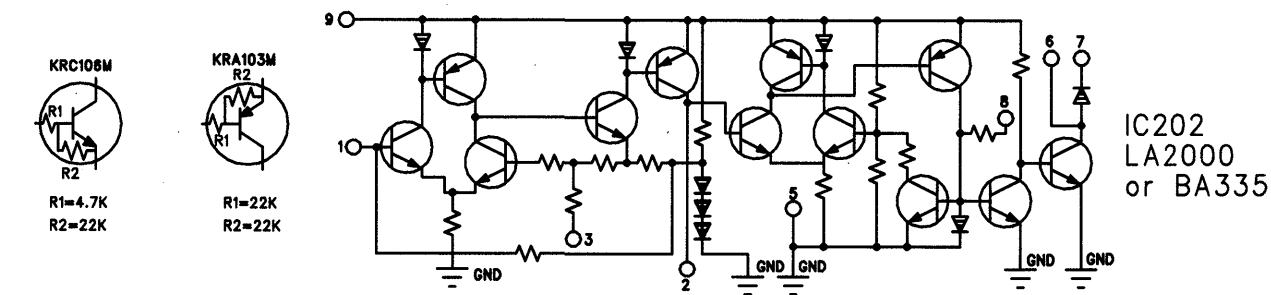
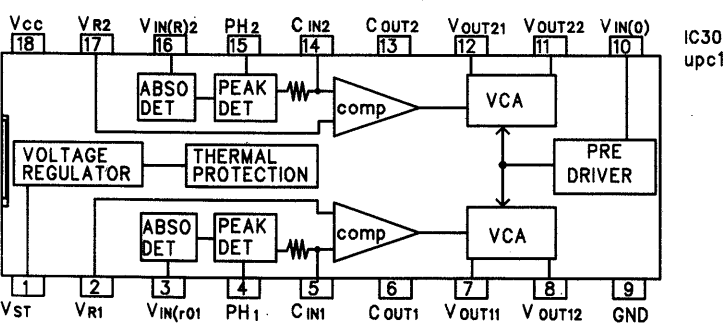
IC401 KA8308 or BA6238A

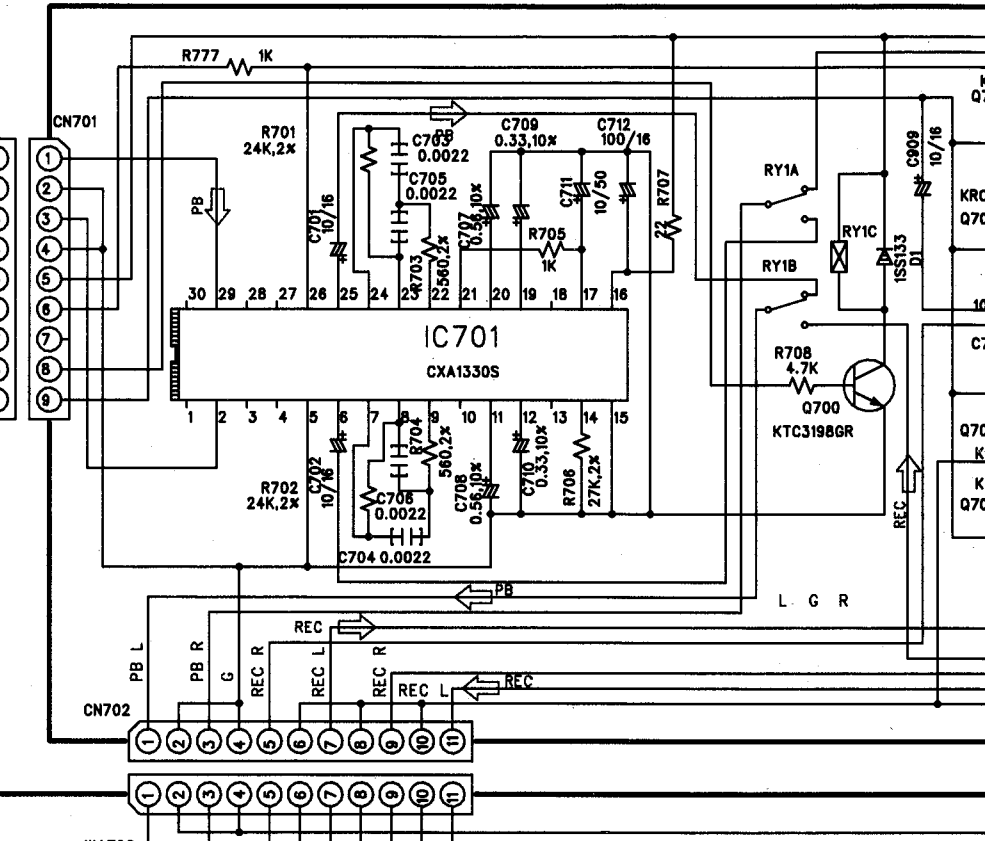
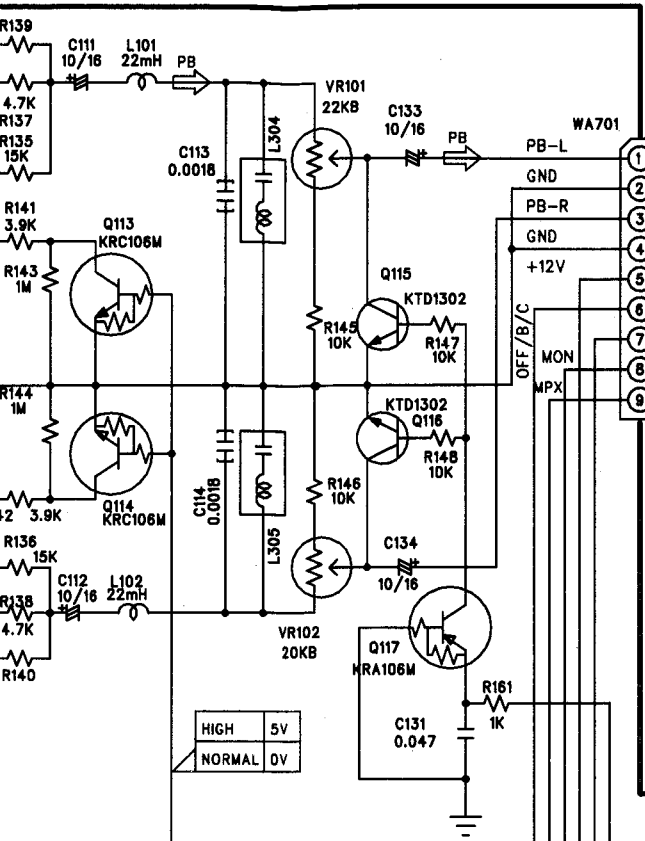
PN	STOP	PLAY	F.F	REW	OPEN	CLOSE
1	0V	0V	0.8V	0.8V	0V	0V
2	0.8V	0.8V	0.8V	0.8V	0.8V	3.3V
3	0.8V	3.3V	7.4V	0.8V	0V	0V
4	0V	4.5V	4.5V	4.5V	0V	0V
5	0V	0V	0V	0V	4.5V	4.5V
6	0V	0V	0V	4.5V	0V	4.5V
7	12.6V	12.6V	12.6V	12.6V	12.6V	12.6V
8	5.7V	3.6V	7.1V	6.9V	3.6V	3.6V
9	12.6V	12.6V	11.6V	12V	9.8V	9.8V
10	0.6V	3.9V	7.3V	0.6V	0.6V	3.9V

CAUTION TO THE SERVICE TECHNICIANS
BEFORE RETURNING THE RECEIVER TO THE CUSTOMER
LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS
SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS
ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.

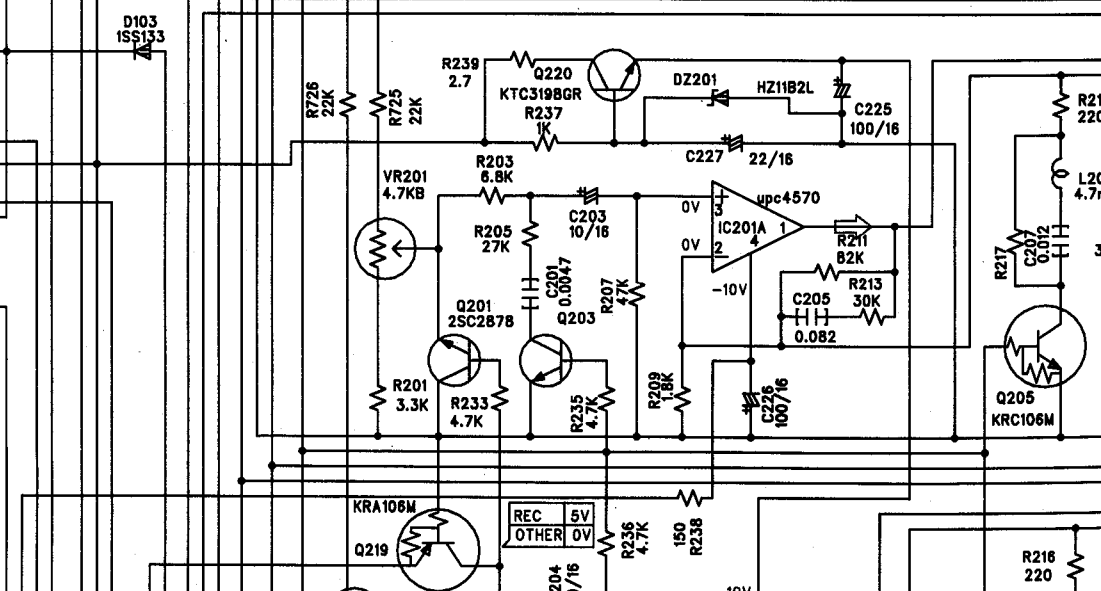
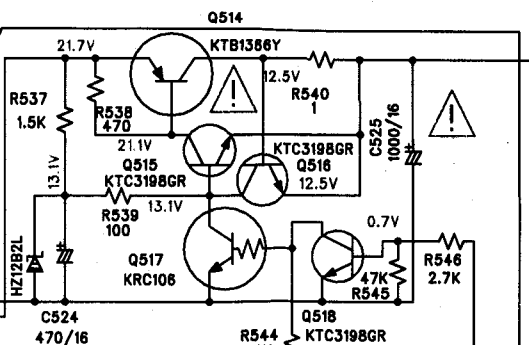
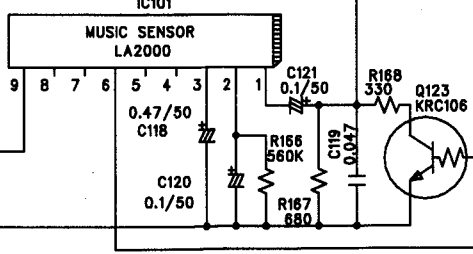
NOTE:
1. ALL RESISTANCE VALUES ARE IN Ω.
2. THE WATTAGE OF RESISTORS IS 1/8W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN P.F. UNLESS OTHERWISE NOTED.
P=POWER

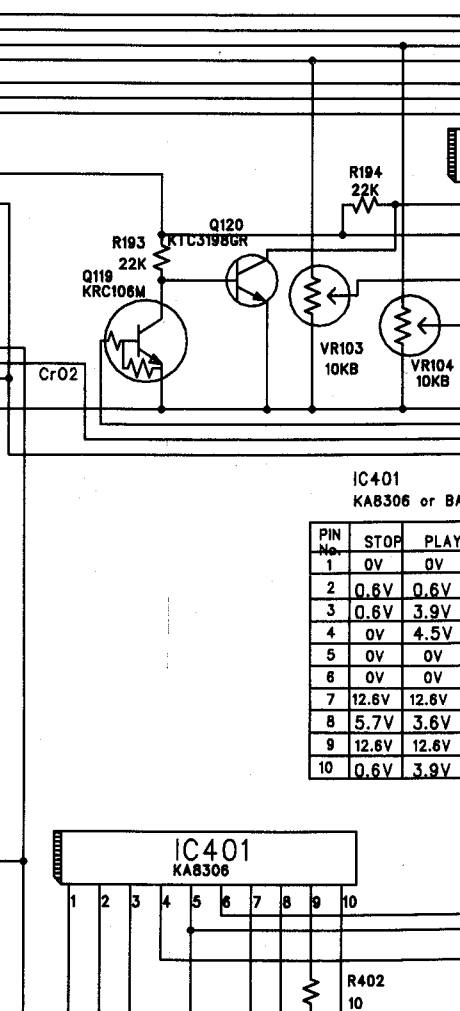
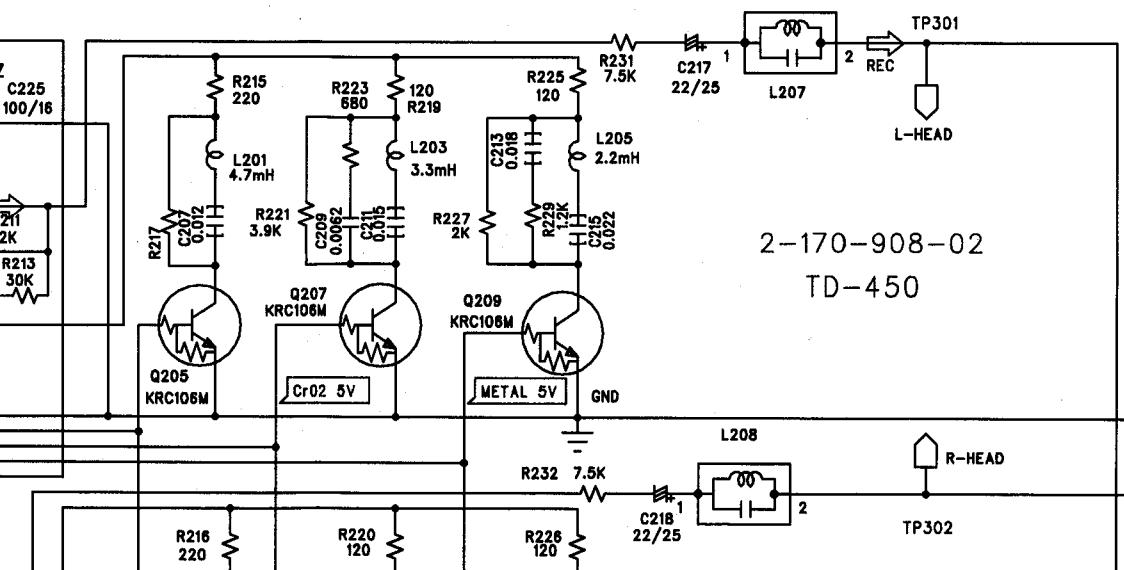
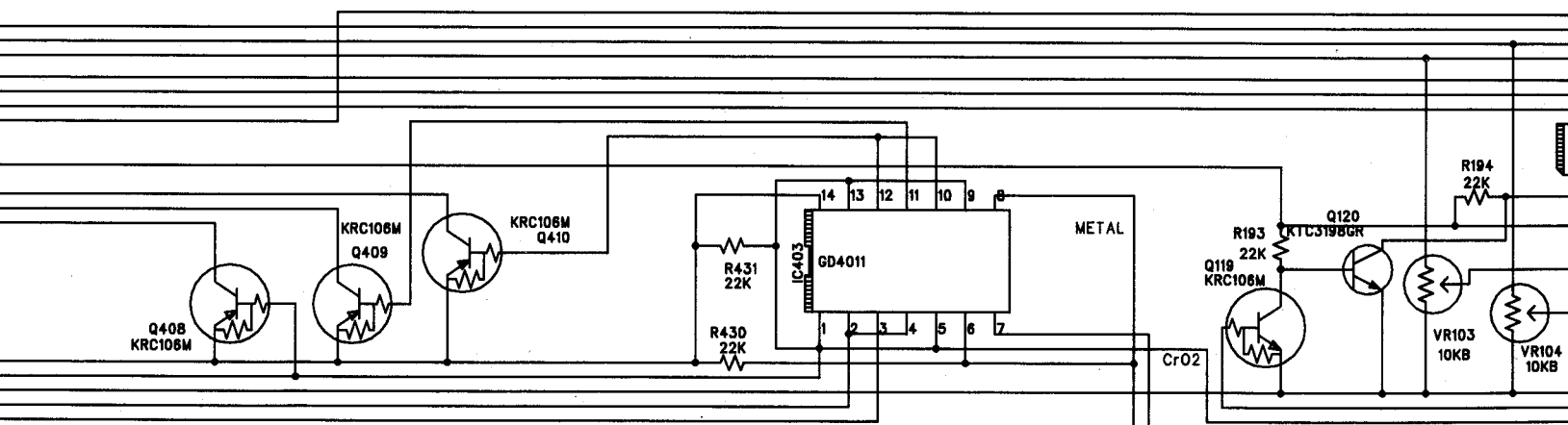
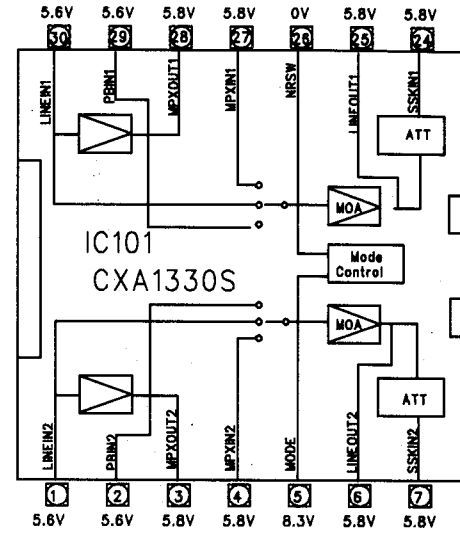
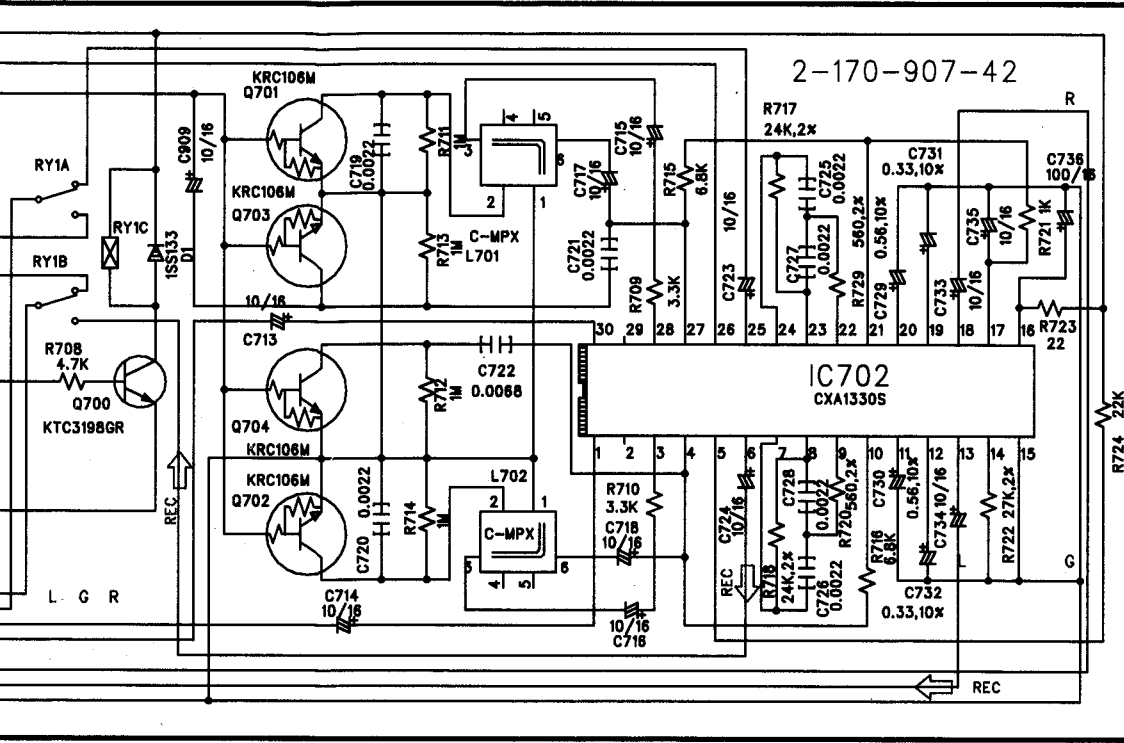
CAUTION THE PARTS IDENTIFIED BY SHADING AND
MARKS ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH
TYPE IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED
IN THE PART LIST. DO NOT DEGRADE THE SAFETY OF THE APPLIANCE
THROUGH IMPROPER SERVICING.





MUSIC SEARCH IC

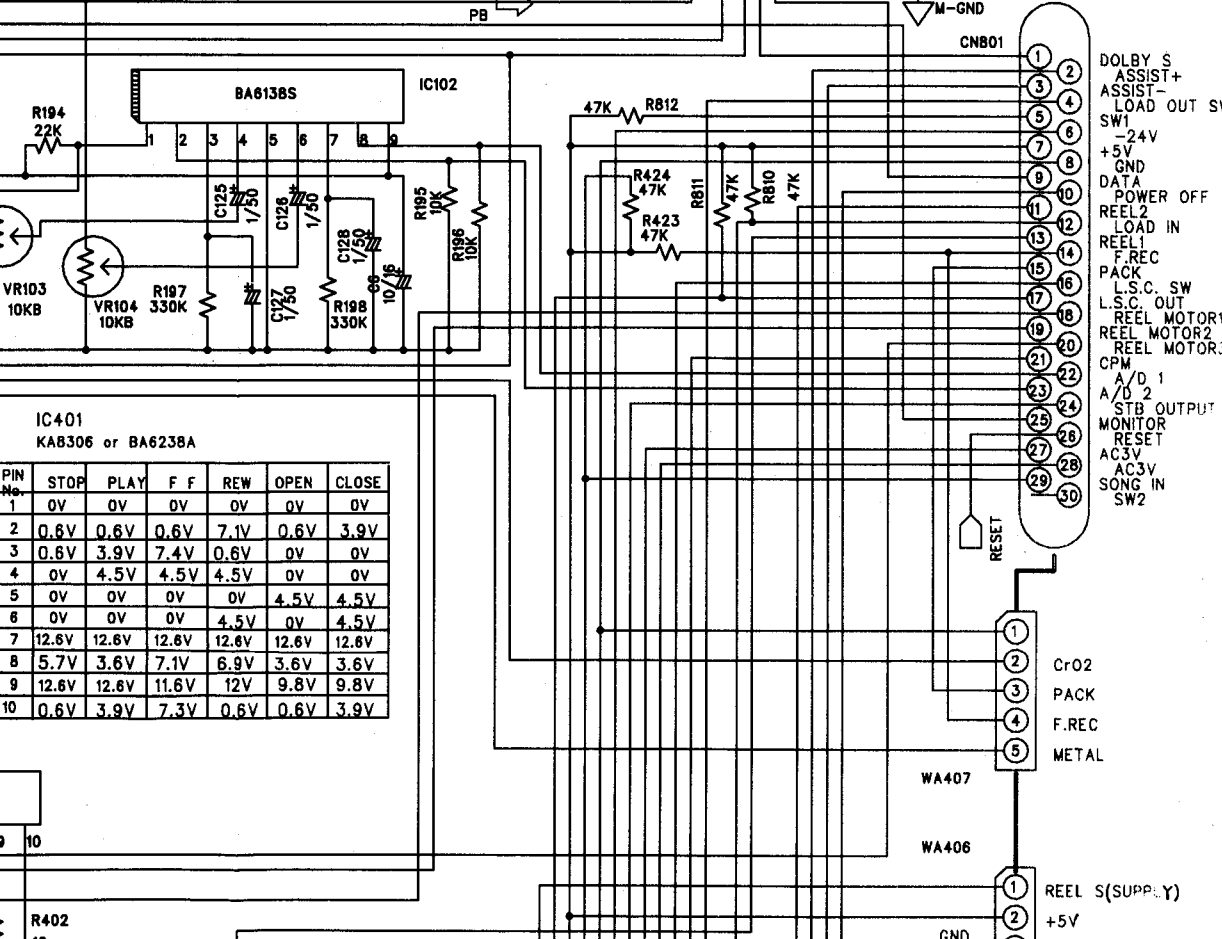
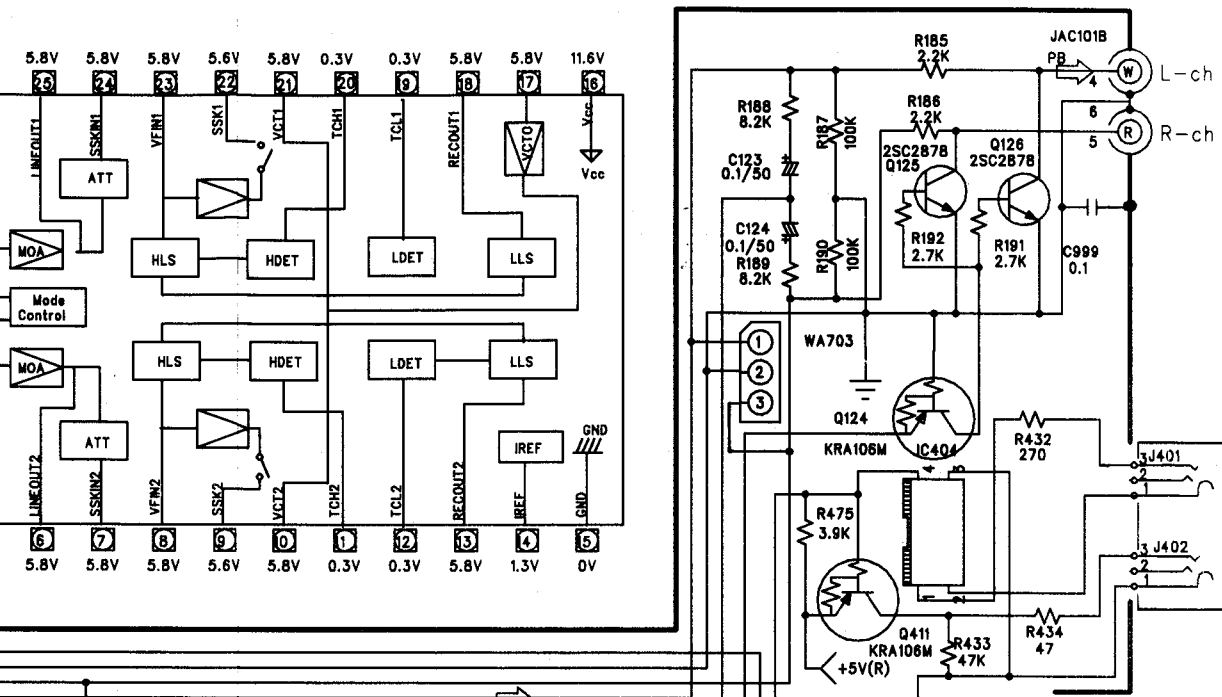


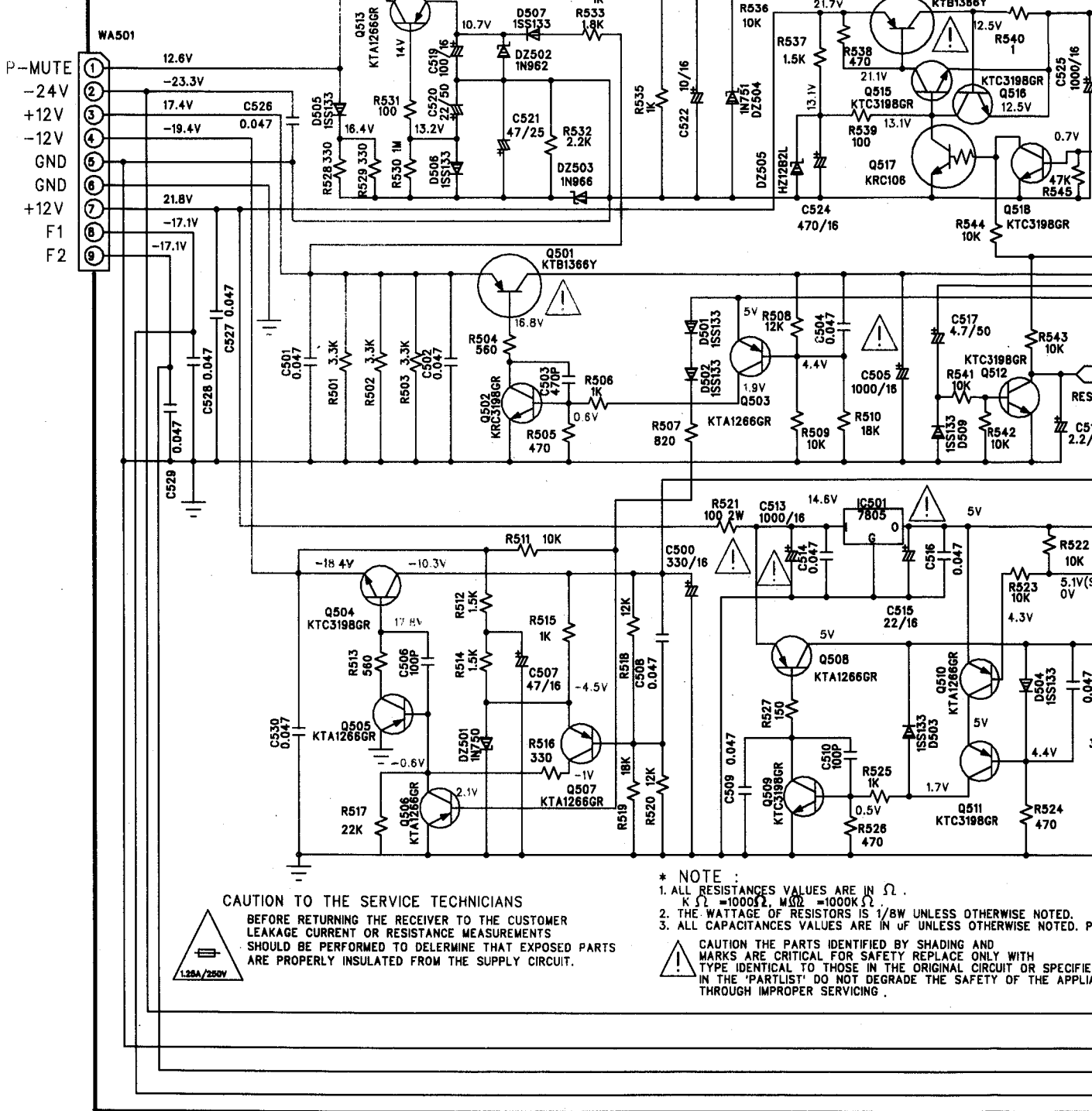


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CAUTION TO THE SERVICE TECHNICIANS

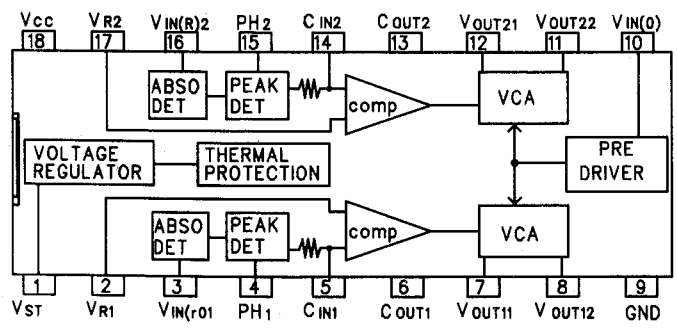
BEFORE RETURNING THE RECEIVER TO THE CUSTOMER LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.



*** NOTE :**

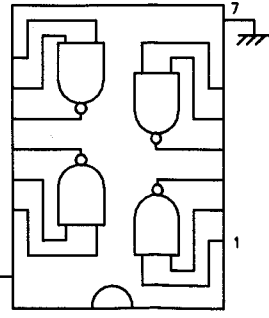
1. ALL RESISTANCE VALUES ARE IN Ω .
K Ω = 1000 Ω , M Ω = 1000K Ω .
2. THE WATTAGE OF RESISTORS IS 1/8W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN μ F UNLESS OTHERWISE NOTED.

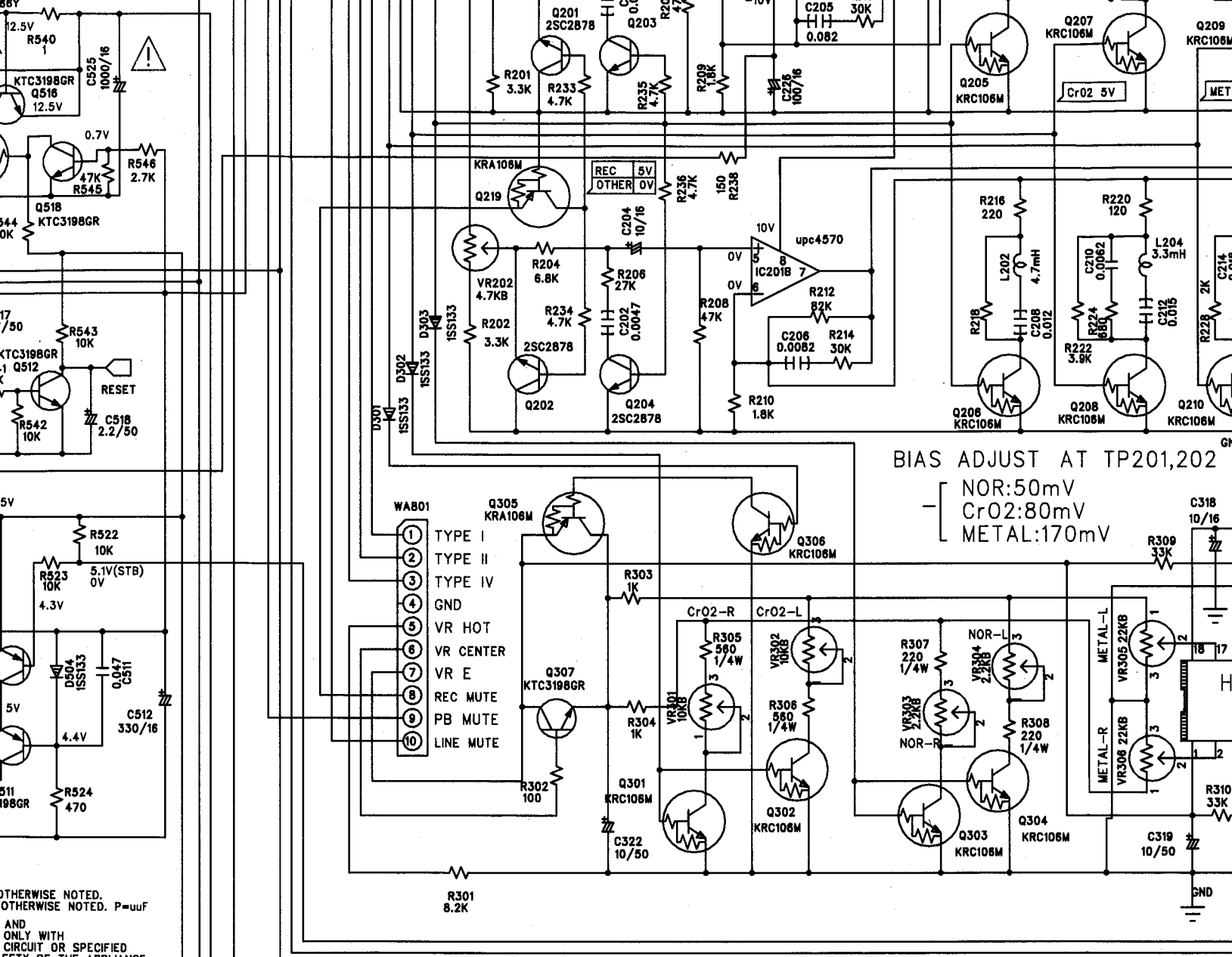
CAUTION THE PARTS IDENTIFIED BY SHADING AND MARKS ARE CRITICAL FOR SAFETY REPLACE ONLY WITH TYPE IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED IN THE 'PARTLIST' DO NOT DEGRADE THE SAFETY OF THE APPLI THROUGH IMPROPER SERVICING.



IC301
upc1297CA

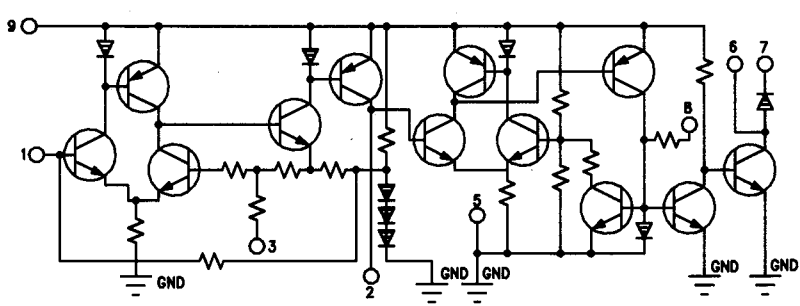
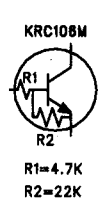
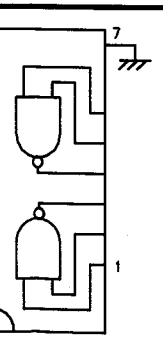
IC404
GD4011





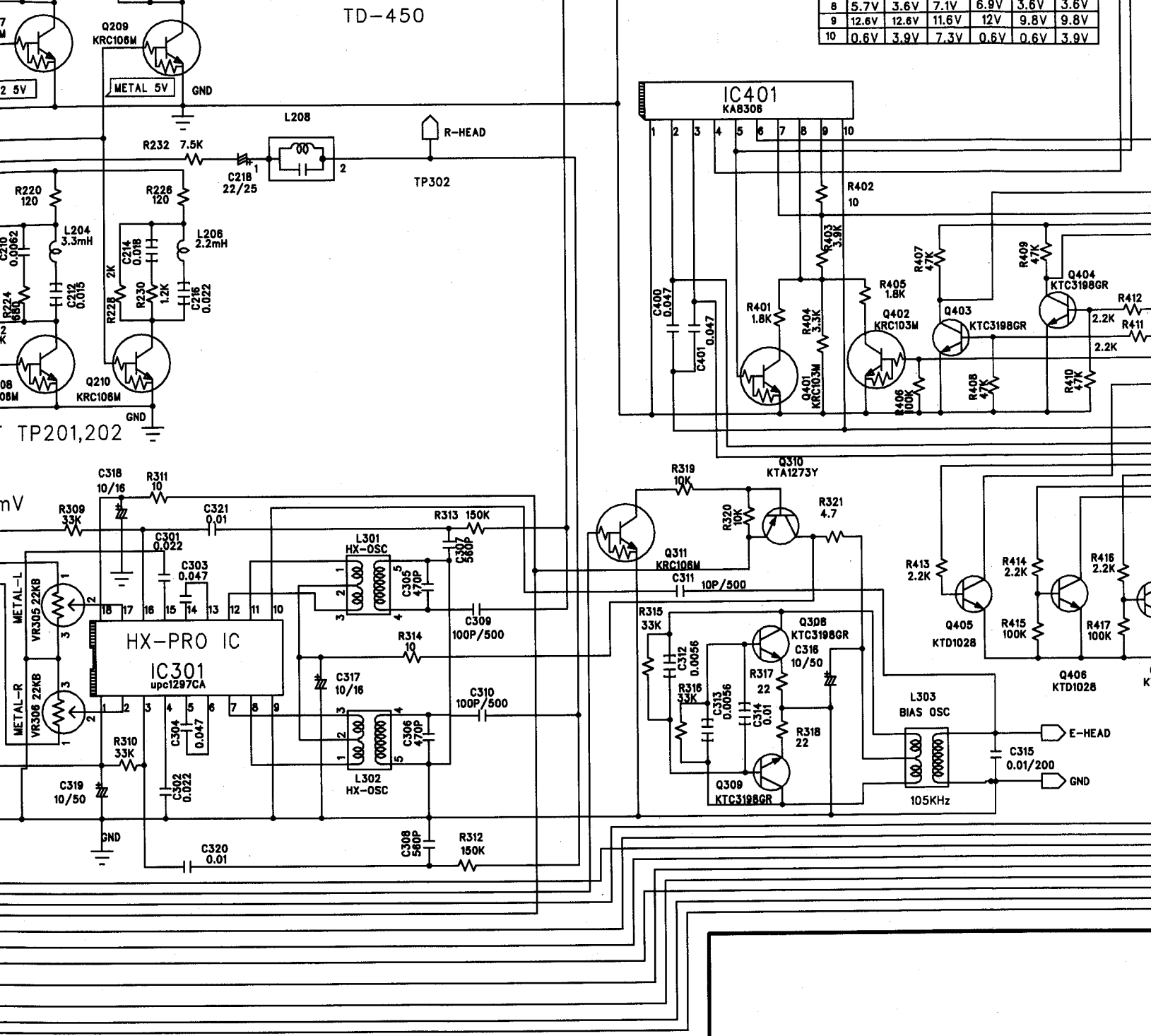
BIAS ADJUST AT TP201,202
 - NOR:50mV
 - CrO2:80mV
 - METAL:170mV

OTHERWISE NOTED.
 OTHERWISE NOTED. P=μuF
 AND ONLY WITH CIRCUIT OR SPECIFIED SAFETY OF THE APPLIANCE

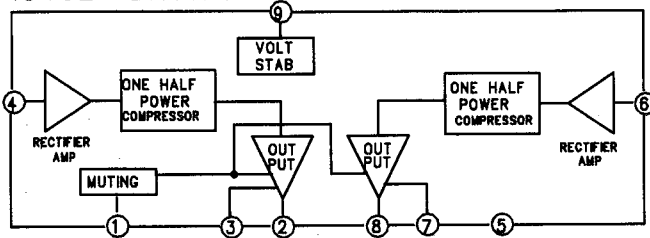


TD-450

8	5.7V	3.6V	7.1V	6.9V	3.6V	3.6V
9	12.6V	12.6V	11.6V	12V	9.8V	9.8V
10	0.6V	3.9V	7.3V	0.6V	0.6V	3.9V

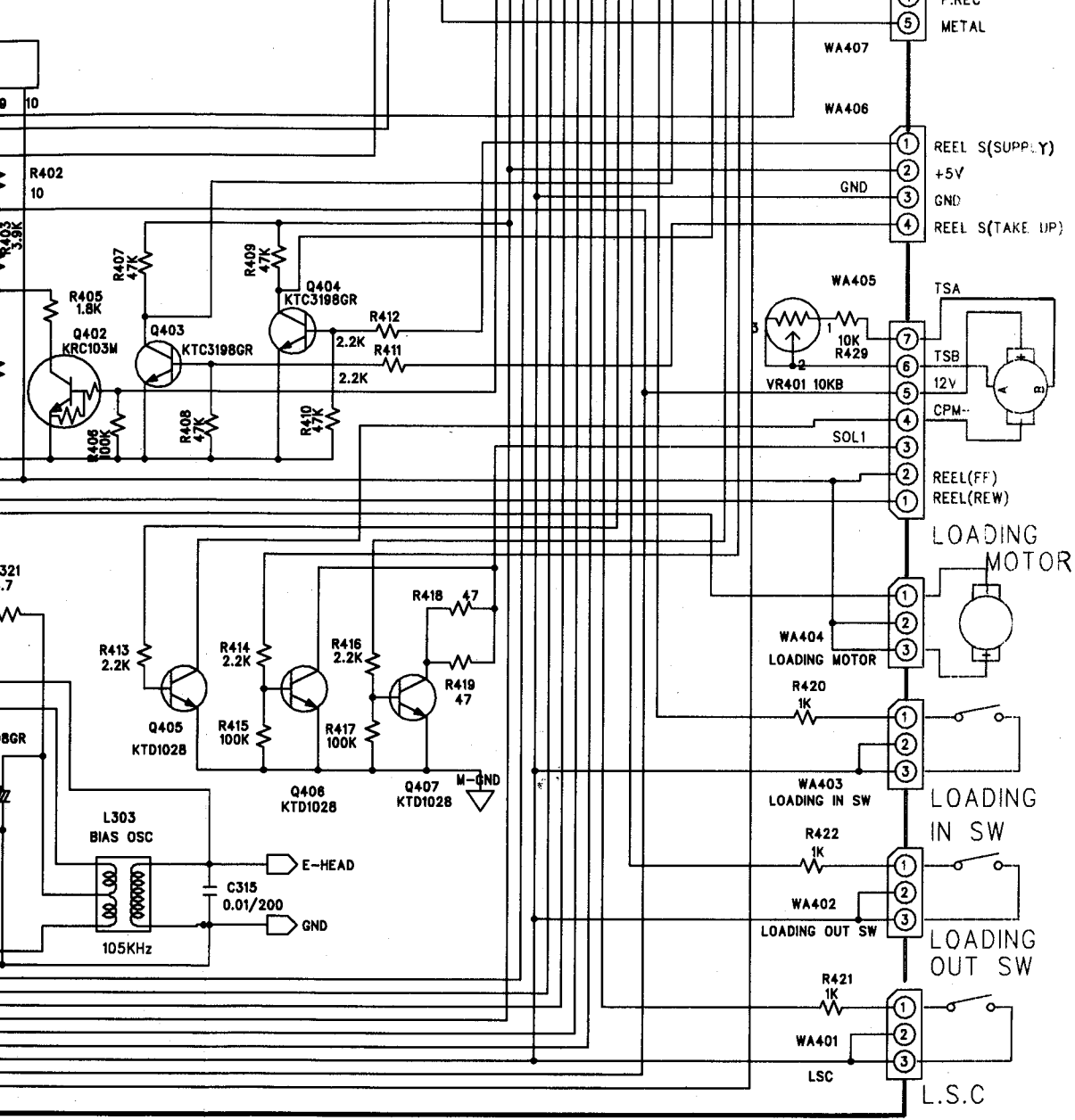


IC102 BA6138S



202
2000
BA335

9	3.7V	3.6V	7.1V	0.8V	3.6V	3.6V
10	12.6V	12.6V	11.6V	12V	9.8V	9.8V
	0.6V	3.9V	7.3V	0.6V	0.6V	3.9V



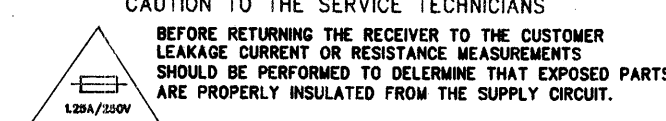
SCHEMATIC DIAGRAM (2)

* NOTE :

1. ALL RESISTANCE VALUES ARE IN Ω.
2. THE WATTAGE OF RESISTORS IS 1/8W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCE VALUES ARE IN μF UNLESS OTHERWISE NOTED.

CAUTION TO THE SERVICE TECHNICIANS

BEFORE RETURNING THE RECEIVER TO THE CUSTOMER LEAVE CURRENT OR RESISTANCE MEASUREMENTS SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.

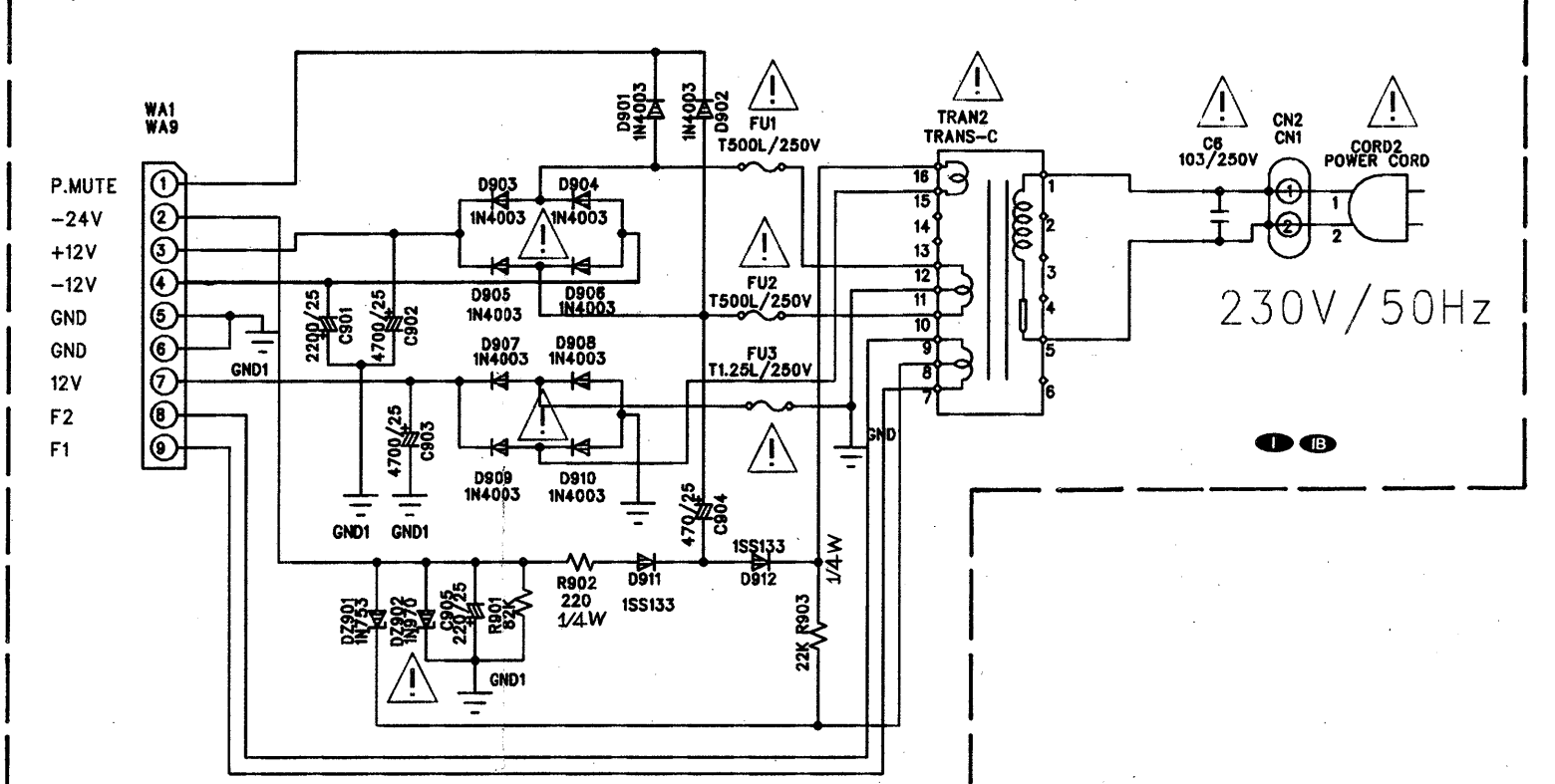
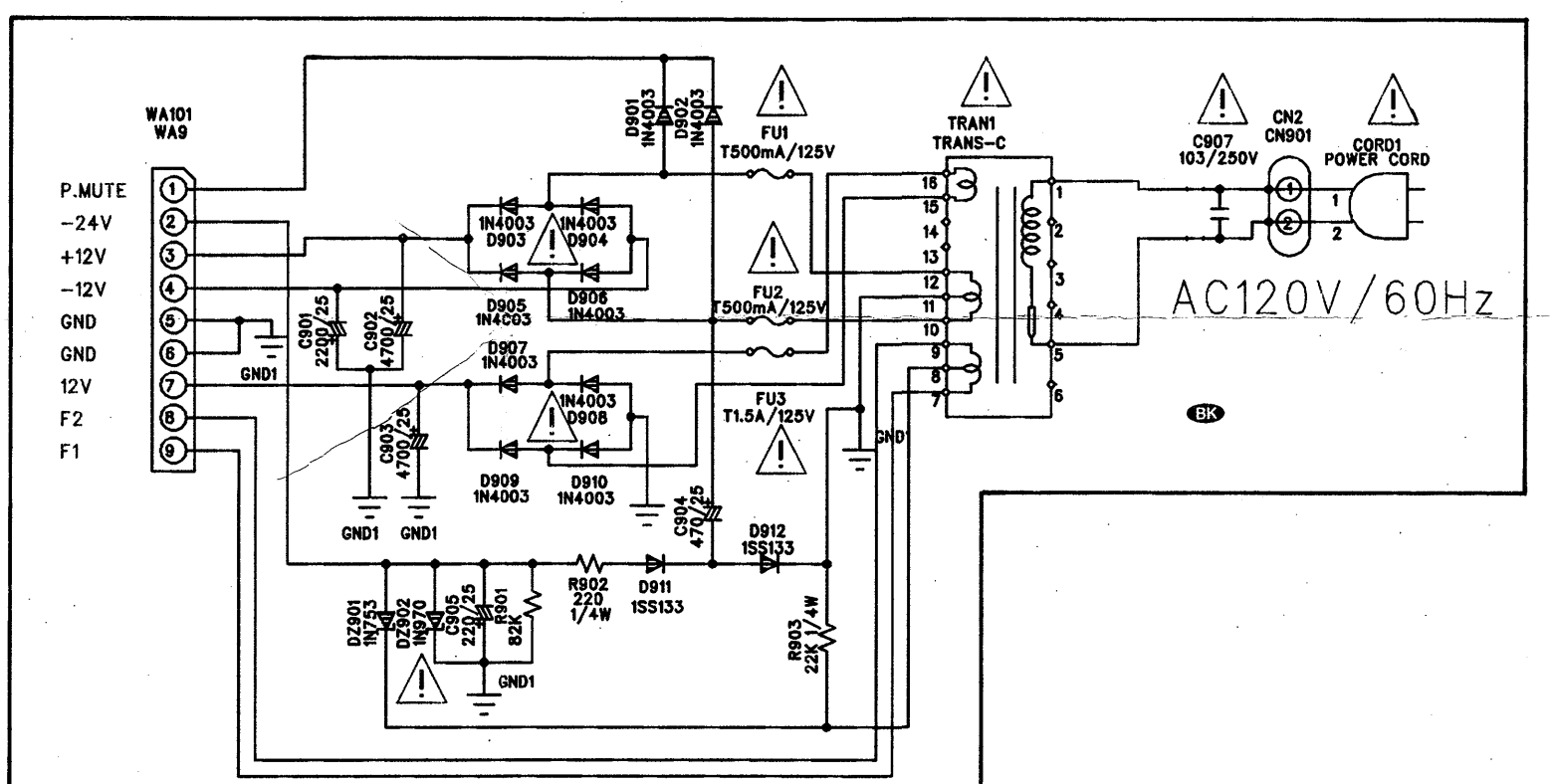
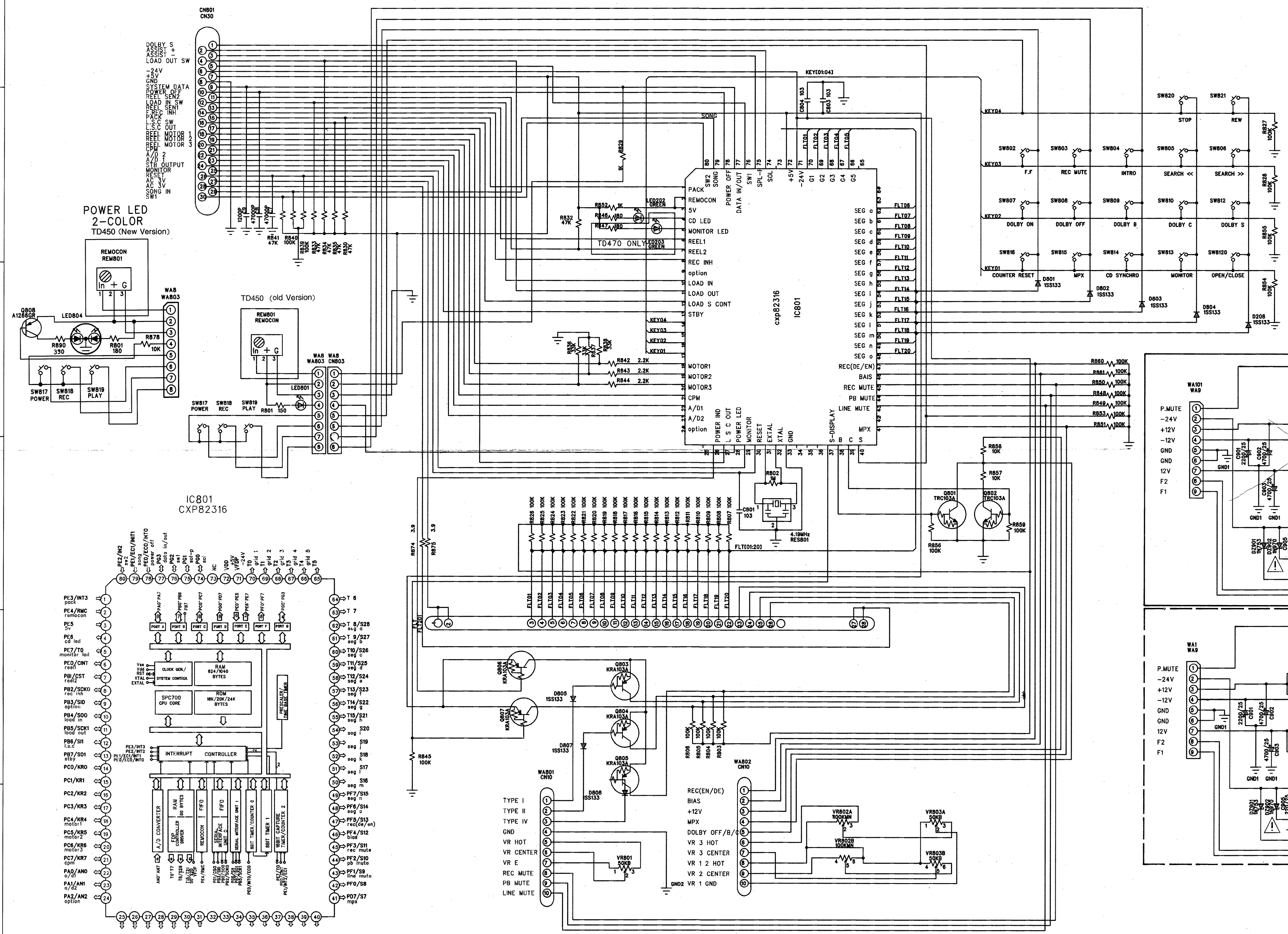


TERMINAL FUNCTIONS

Pin No.	Port name	Function name	I/O	Outline functions
1	PE3	PACK	I	Pack detection terminal
6	PE0	REEL1	I	REEL sense
7	PB1	REEL2	I	REEL sense
14	PC0	AD7	I	Key Input terminal.
15	PC1	AD6	I	Key Input terminal.
16	PC2	AD5	I	Key Input terminal.
17	PC3	AD4	I	Key Input terminal.
33	Vss			Reset terminal.
10	PB4	LOAD IN	I	Load IN switch detection (Loading Mecha)
11	PB5	LOAD OUT	I	Load out switch detection (Loading Mecha)
12	PB6	L.S.Control	I	Reel motor speed control
13	PB7	STBY	I	POWER ON/OFF (POWER ON = L)
30		Reset	I	Reset input.
18~20	PC4~6	Motor 1~3	I	Reel, open/close Motor control output.
22	PA0	A/D1	I	A/D Input Port for LEVEL METER Indication
23	PA1	A/D2	O	A/D Input Port for LEVEL METER Indication
26	PA4	POWER IND	O	High level on stand-by or display off and after power off.
29	PA7	MONITOR	O	High level on MONITOR mode. Low level on SOURCE mode (TD450, TD470)
47	PF5	REC	O	REC/PLAY switching terminal. High level on REC.
46	PF4	BIAS	O	BIAS control terminal. High level=BIAS ON
45	PF3	REC MUTE	O	Recording amp. muting terminal. High level=MUTING ON
44	PF2	PB MUTE	O	Playback amp. muting terminal. High level=MUTING ON
43	PF1	LINE MUTE	O	Line muting terminal. High level=MUTING ON
41	PD7	MPX ON, OFF	O	MPX ON, OFF
74	P00	SOL	O	Solenoid control.
12	PB6	L.S.Control	O	Reel motor power control. High level=power down
21	PC7	CFM	O	Capstan motor control.

NOTE : Low level=0V
High level=5.1V

⊕ : North America area model
⊖ : International model Black version



A

B

C

SCHEMATIC DIAGRAM (2)

- * NOTE :**
 1. ALL RESISTANCES VALUES ARE IN Ω .
 $K \Omega = 1000 \Omega$, $M \Omega = 1000K \Omega$.
 2. THE WATTAGE OF RESISTORS IS 1/8W UNLESS OTHERWISE NOTED.
 3. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. P=uf



CAUTION THE PARTS IDENTIFIED BY SHADING AND MARKS ARE CRITICAL FOR SAFETY REPLACE ONLY WITH TYPE IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED IN THE 'PARTLIST' DO NOT DEGRADE THE SAFETY OF THE APPLIANCE THROUGH IMPROPER SERVICING.

1

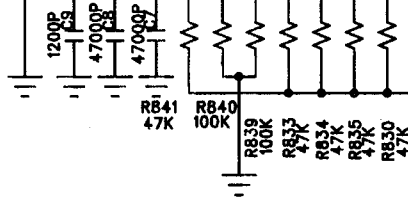
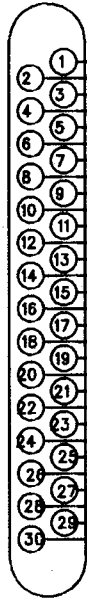
2

3

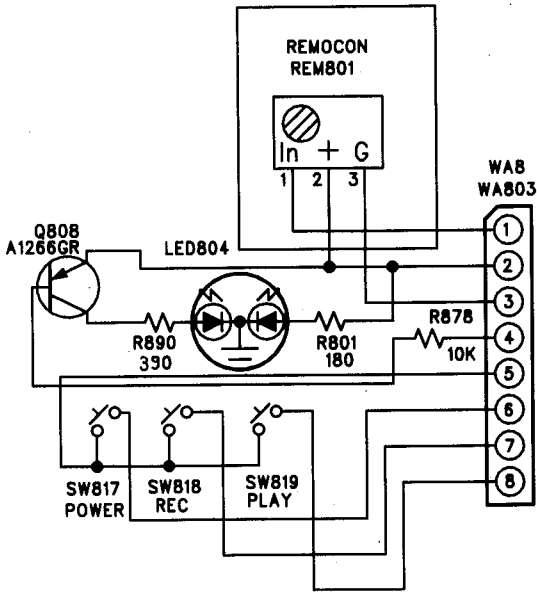
4

- DOLBY S
- ASSIST +
- ASSIST -
- LOAD OUT SW
- 24V
- +5V
- GND
- SYSTEM DATA
- POWER OFF
- REEL SEN2
- LOAD IN SW
- REEL SEN1
- FREC INH
- PACK
- L.S.C SW
- L.S.C OUT
- REEL MOTOR 1
- REEL MOTOR 2
- REEL MOTOR 3
- CPM
- A/D 2
- A/D 1
- STB OUTPUT
- MONITOR
- RESET
- AC 3V
- AC 3V
- SONG IN
- SW1

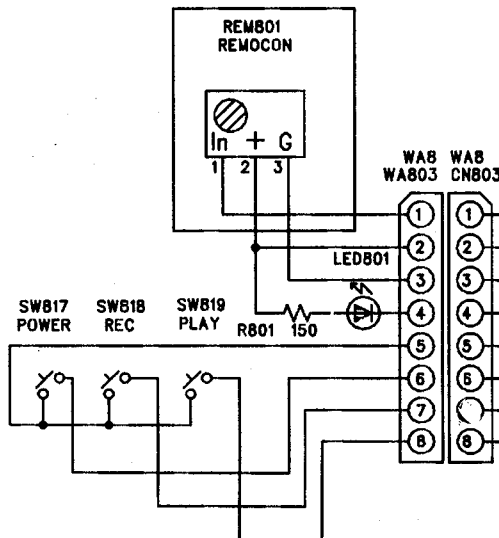
CN801
CN30



**POWER LED
2-COLOR
TD450 (New Version)**



TD450 (old Version)



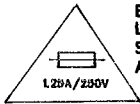
IC801
CXP82316

/INIT
D/INTO
off
/out

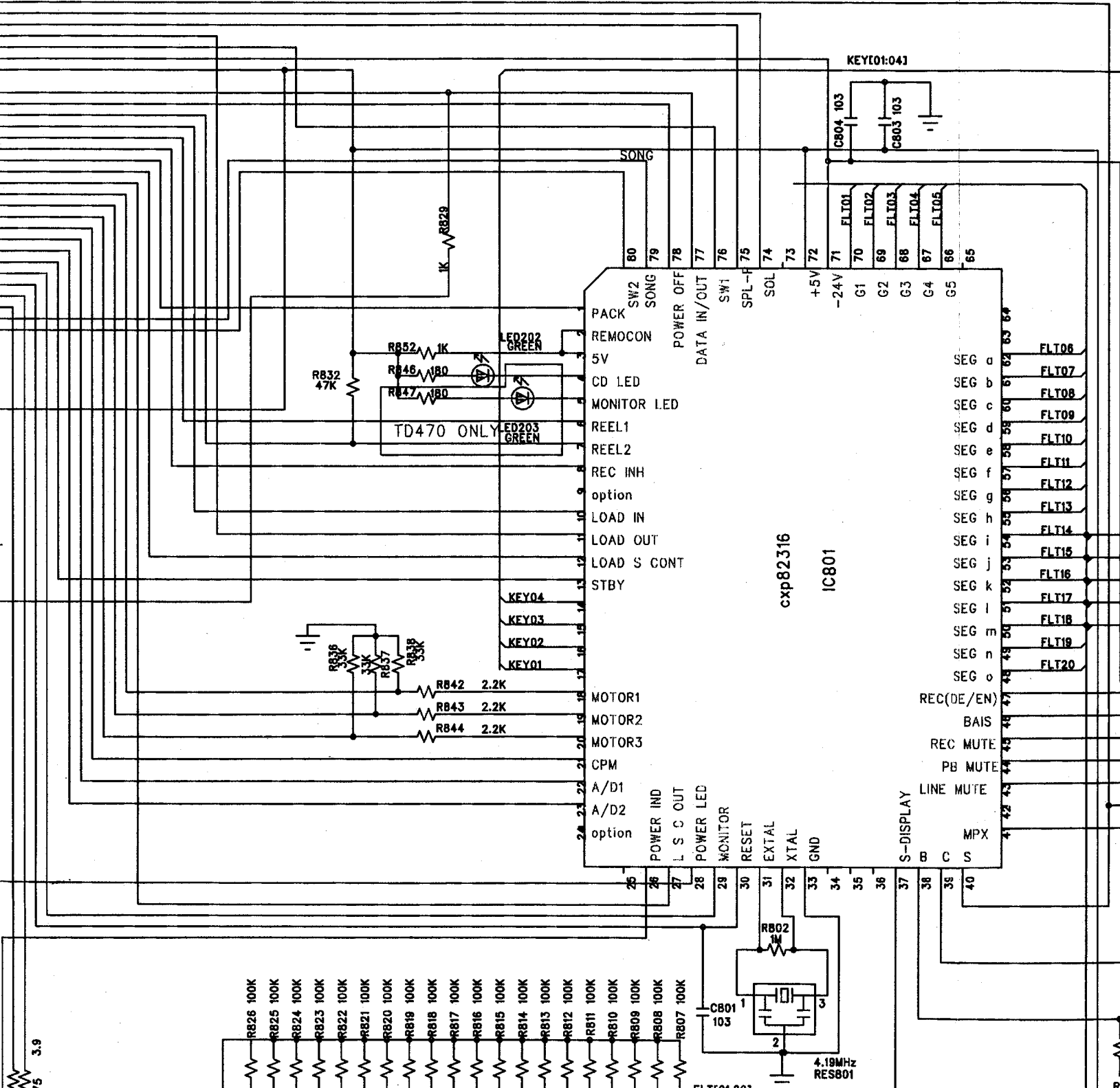
4 3.9
5 3.9

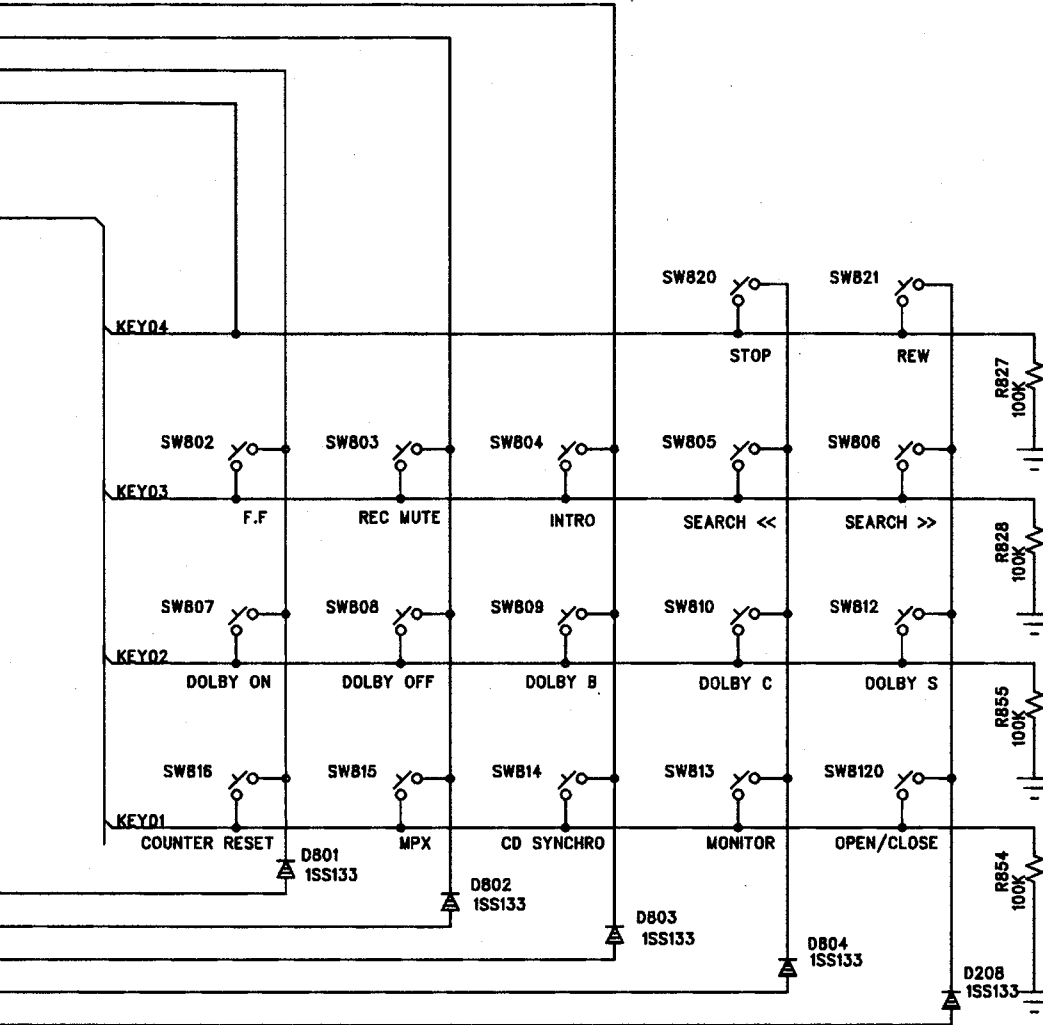
CAUTION TO THE SERVICE TECHNICIANS

BEFORE RETURNING THE RECEIVER TO THE CUSTOMER
LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS
SHOULD BE PERFORMED TO DELERMINATE THAT EXPOSED PARTS
ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.



CE





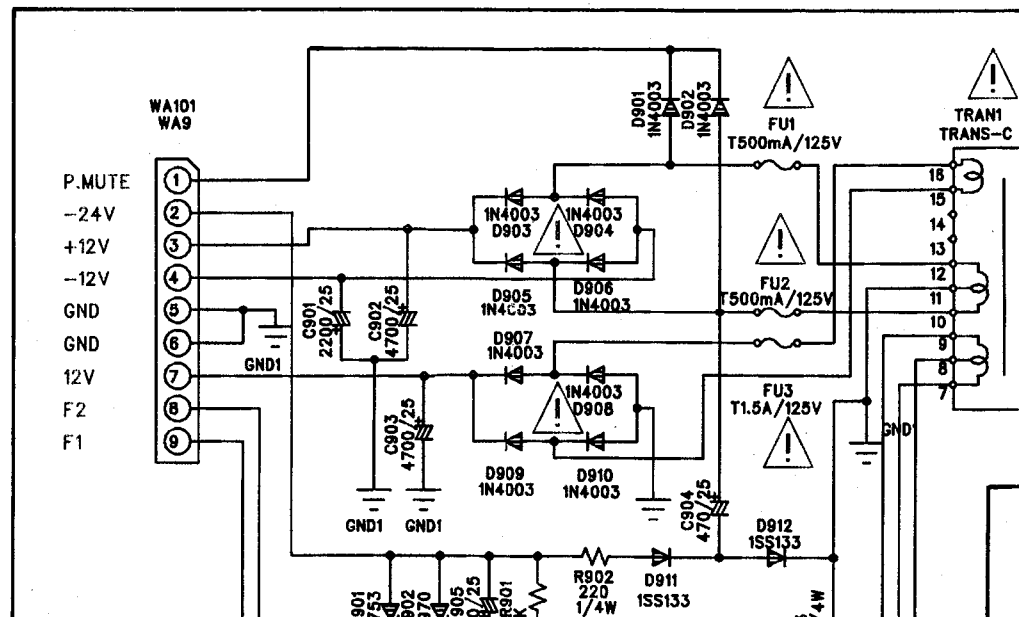
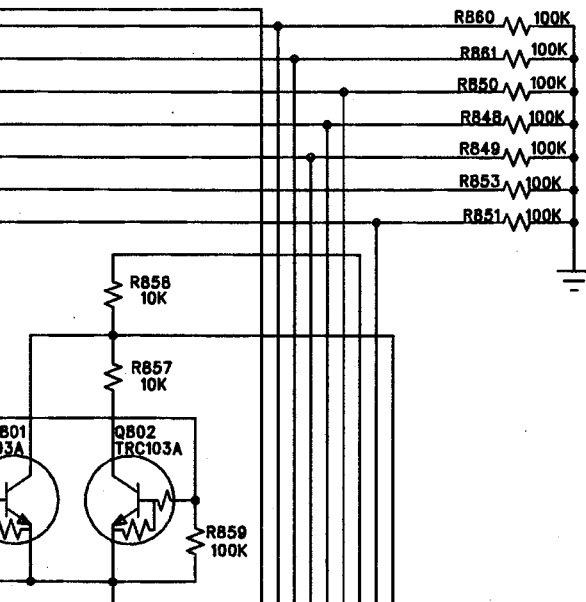
TERMINAL FUNCTIONS

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6	PE0	REEL1
7	PB1	REEL2
14	PC0	AD7
15	PC1	AD6
16	PC2	AD5
17	PC3	AD4
33		Vss
10	PB4	LOAD IN
11	PB5	LOAD OUT
12	PB6	L.S.Control
13	PB7	STBY
30		Reset
18~20	PC4~6	Motor 1~3
22	PA0	A/D1
23	PA1	A/D2
26	PA4	POWER IND
29	PA7	MONITOR
47	PF5	REC
46	PF4	BIAS
45	PF3	REC MUTE
44	PF2	PB MUTE
43	PF1	LINE MUTE
41	PD7	
74	PG0	SOL
12	PB6	L.S.Control
21	PC7	CPM




NOTE : Low level=0V
High level=5.1V

Ⓚ : North America area model

Ⓛ : International model Black ver



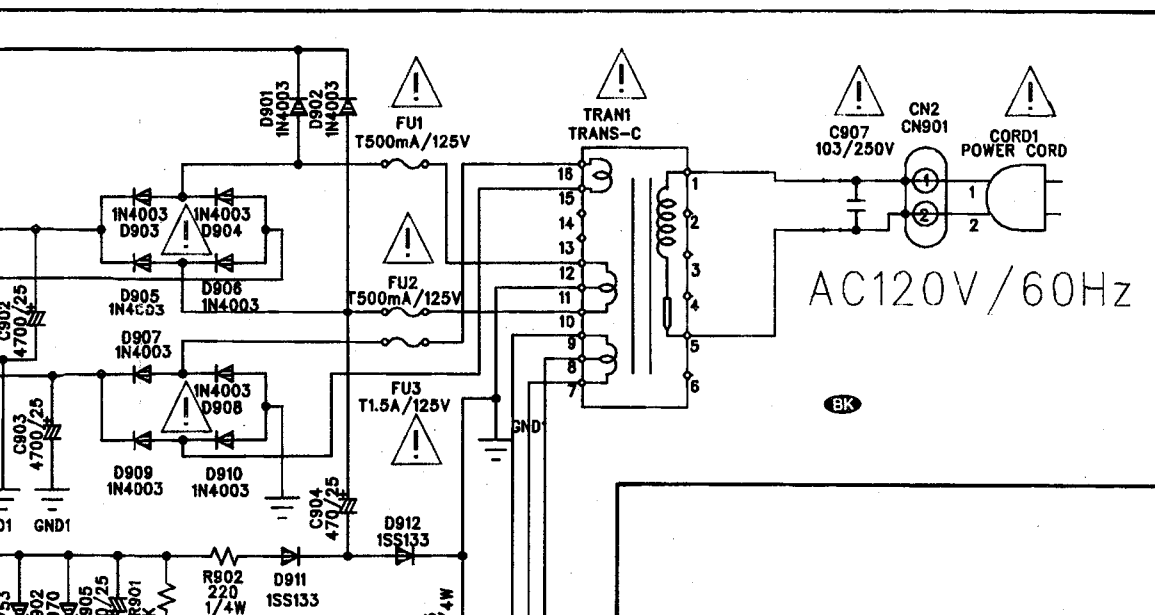
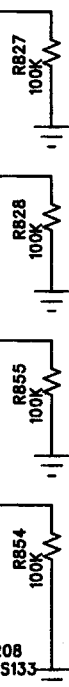
TERMINAL FUNCTIONS

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44	PF2	PB MUTE	O	Playback amp. muting terminal. High level=MUTING ON
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41	PD7		O	MPX ON, OFF
74	PG0	SOL	O	Solenoid control.
12	PB6	L.S.Control	O	Reel motor power control. High level=power down
21	PC7	CPM	O	Capstan motor control.

NOTE : Low level=0V
High level=5.1V

 : North America area model

  : International model Black version



IC801 CXP82316

