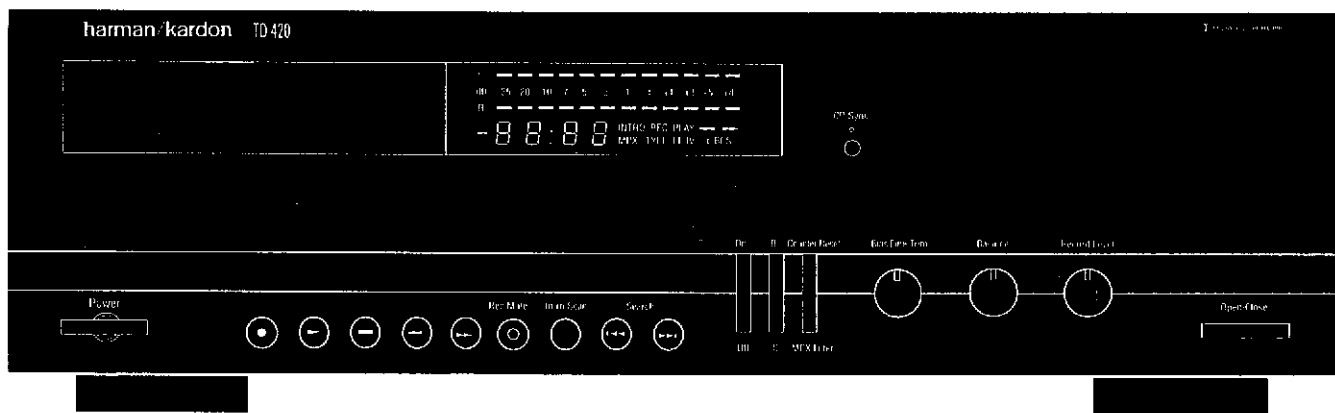


# The Harman Kardon Model TD420

Manual

## 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-TD420 P-0595 800 Printed In KOREA

**SPECIFICATIONS**

Track Configuration	Nominal 4-track 2 Channel Stereo Cassette Deck	limit	Channel Separation	Nominal 45dB	Limit ≥ 35dB
<b>• MECHANICAL SECTION</b>			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 <sub>2</sub>	1.5%	≤ 2.5%
	0.07%(CCIF)		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
			Metal	61dB	≥ 56dB
<b>• AMPLIFIER SECTION</b>			input Sensitivity (input 1kHz)at Line input	45mV	40(min)~100(max)mV
Bias Frequency	105kHz ± 5kHz		input impedance (input 1kHz)at Line input	22kΩ	19(min)~30(max)kΩ
Playback Output(10K Ω)	640mV ± 1.5dB		<b>• DIMENSIONS(W × H × D)</b>	17-3/8" × 5" × 12-5/8"	(442 × 126 × 320mm)
Signal-to-Noise Ratio at Line input (input 1kHz, 100mV)			<b>• WEIGHT</b>	5.4kg	
IHF-A WTD at Dolby Level			<b>• POWER SUPPLY</b>		
Dolby NR off			U.S.A. and Canada models	AC120V, 60Hz	<b>BK</b>
LN	51dB		International	AC230V, 50/60Hz	<b>I IB</b>
CrO <sub>2</sub>	54dB				
Metal	54dB				
Dolby NR			<b>• POWER CONSUMPTION</b>		
LN	61dB		U.S.A. and Canada models	16W	<b>BK</b>
CrO <sub>2</sub>	64dB	≤ 60dB	International and Australia models	16W	<b>I IB</b>
Metal	64dB	≤ 60dB			
Dolby C NR					
LN	66dB				
CrO <sub>2</sub>	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.

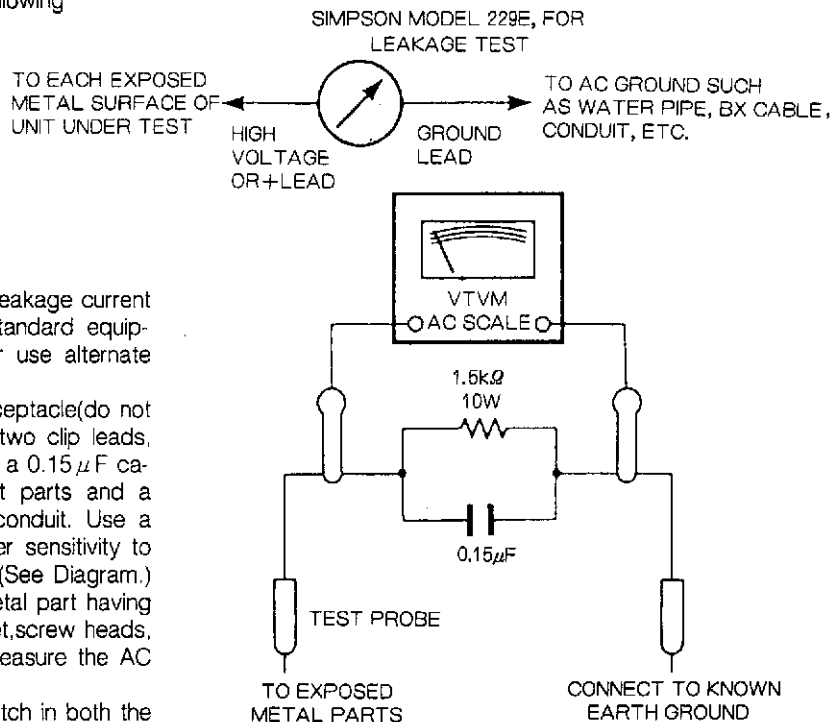
**LEAKAGE TEST(FOR SERVICE ENGINEERS IN THE U.S.A.)**

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

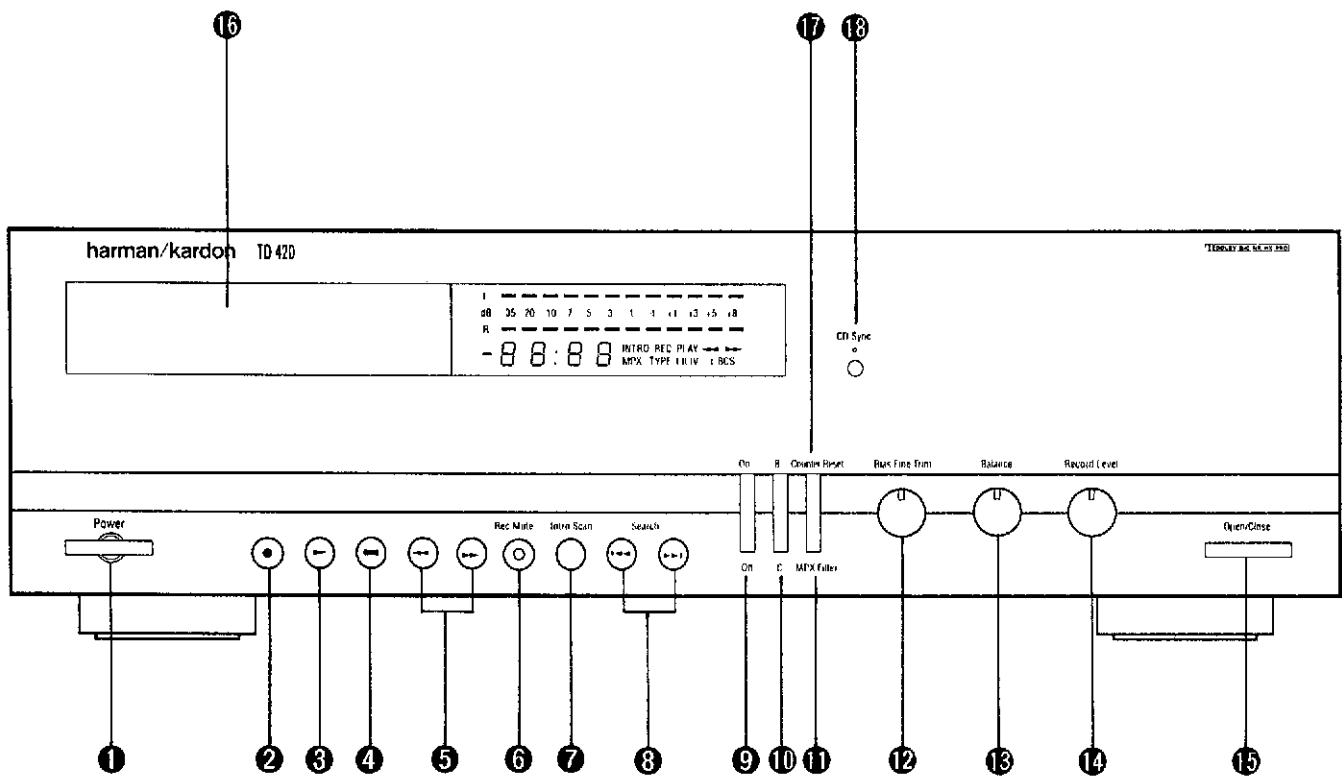
- inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
- Replace all protective devices such as non-metallic control knobs, insulating fishpapers, cabinet backs, or shields, isolation resistor-capacitor networks, mechanical insulators, ect.
- 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 Kardon CD Player.

**19 Dolby B C**

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

**20 Counter**

Indicates tape position in minutes and seconds.

**21 Level**

Shows signal level.

**22 Intro**

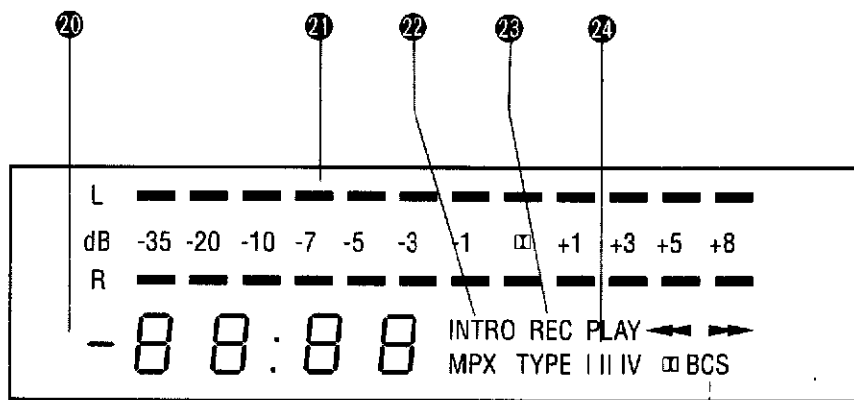
Indicates Intro Scan is engaged.

**23 REC, PLAY**

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


**24 TYPE I II IV**

Automatically indicates type of tape in use.



**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, 14 AND 16)****[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 and 23).
3. Disconnect CN 501, CN 102 and CN 301 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(1).

**[3] CASSETTE TAPE RECORDER MECHANISM ASSEMBLY REMOVAL**

1. Remove the Front Panel Assembly(1). (Refer to step 2).
2. Disconnect CN 401, CN 407 and CN 302, CN 101 connected to the Cassette Tape Recorder Mechanism Assembly.
3. Disconnect CN 302 and CN 301 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**

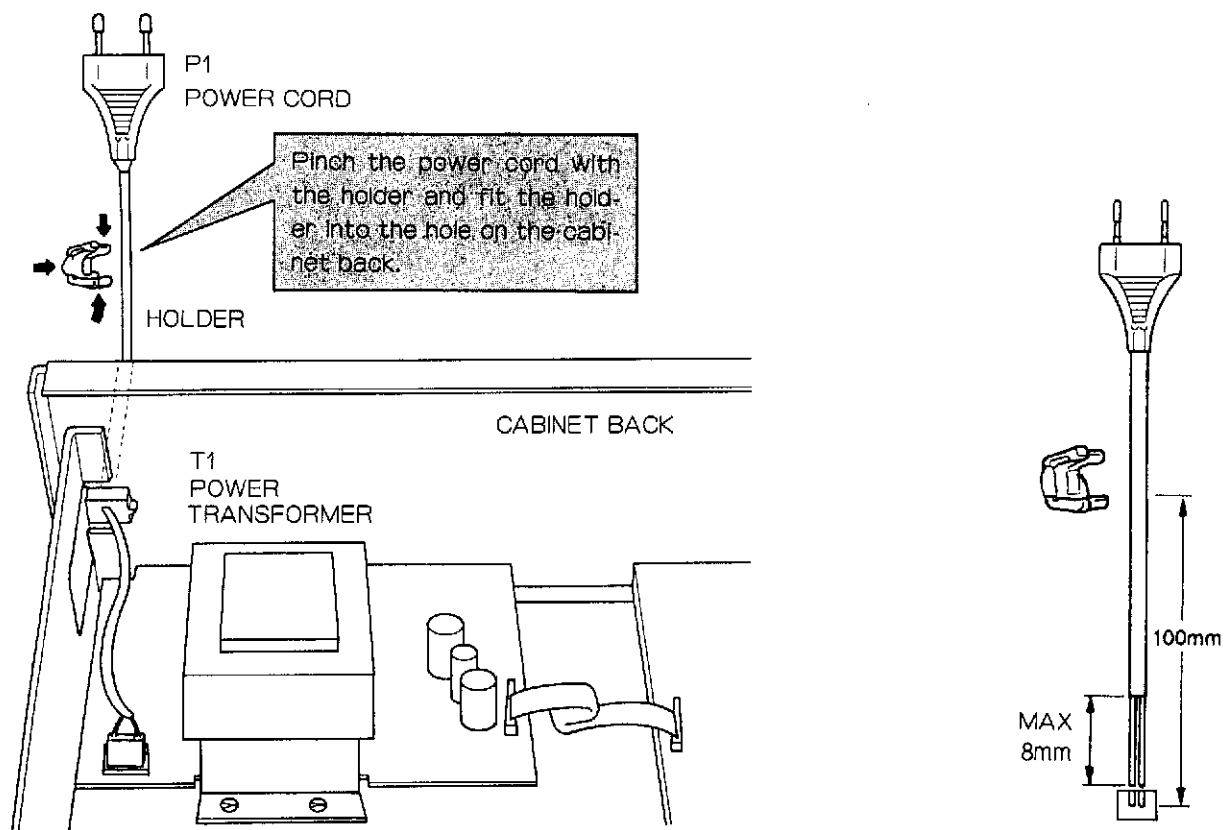
1. Remove the Cabinet Top(25). (Refer to step 1.)
2. Disconnect CN 302 and CN 101 connected to the Cassette Tape Recorder Mechanism Assembly.
3. Disconnect CN 101~CN 102 and CN 301 connected to the Front P.C. Board(PCB 2).
4. Disconnect CN 501 connected to the Power P. C. Board(21).
5. Remove 4 screws(B), 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.

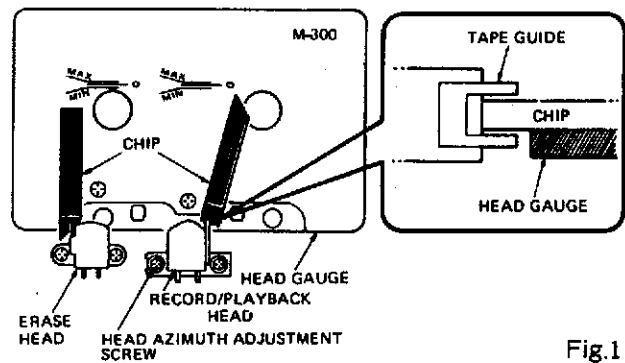


Fig.1

- 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.

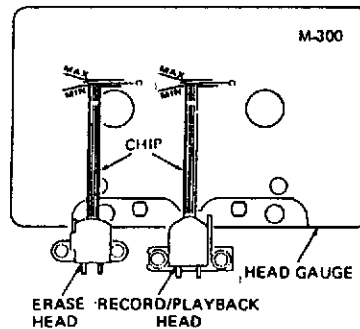


Fig.2

**ELECTRICAL ADJUSTMENT AND CONFIRMATION**

**1. Before adjustment**

- Before electrical adjustment, make sure that confirm- tions of the cassette mechanism are all completed.
- After the power switch is pushed on, wait for 10 min- utes before measuring to be sure of the most stable operation
- Since haed magnetization, dust accumulations, etc. are likely to introduce errors in the various characteristics, it is very important that the heads are properly demagne- tized 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 adjustment .....MTT-114 or TCC-153
- Tape speed adjustment.....MTT-111DN OR TCC-112
- Playback output level adjustment .....TCC-130 or MTT-150
- Playback frequency characteristic confirmation .....TCC-1216 or TCC-162C and TCC-262C
- Music search adjustment .....SCC-740
- Reference tapes  
LN.....AC224  
CrO<sub>2</sub>.....AC513  
METAL.....AC712

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 mazimum and the measurement of "b" becomes minimum against the 45 degree line.

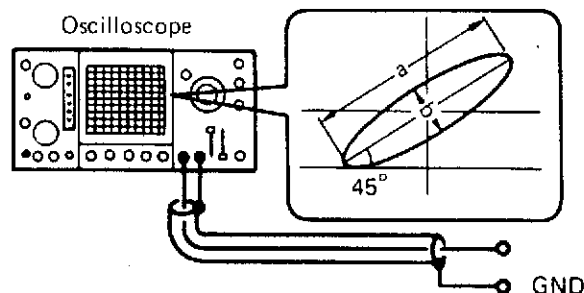
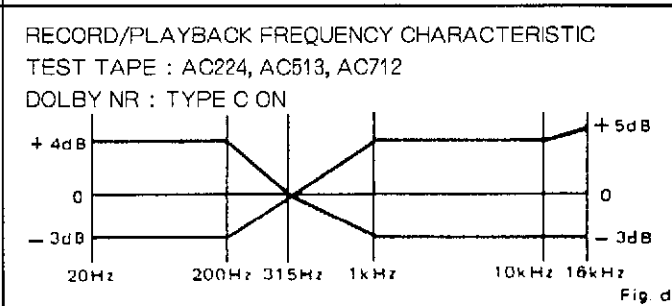
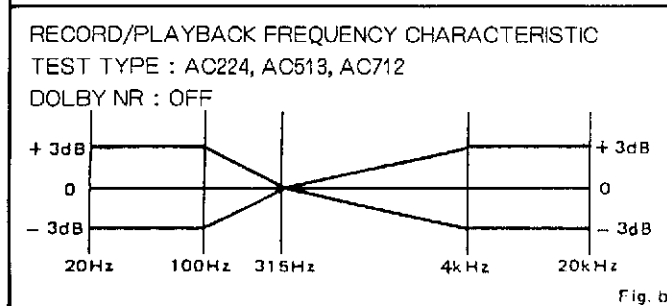
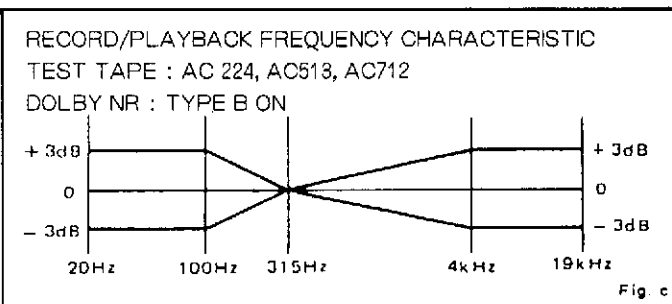
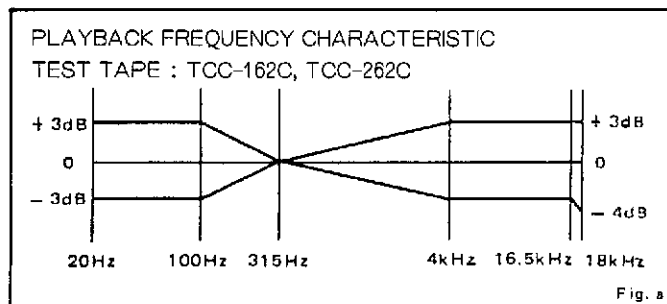


Fig.3

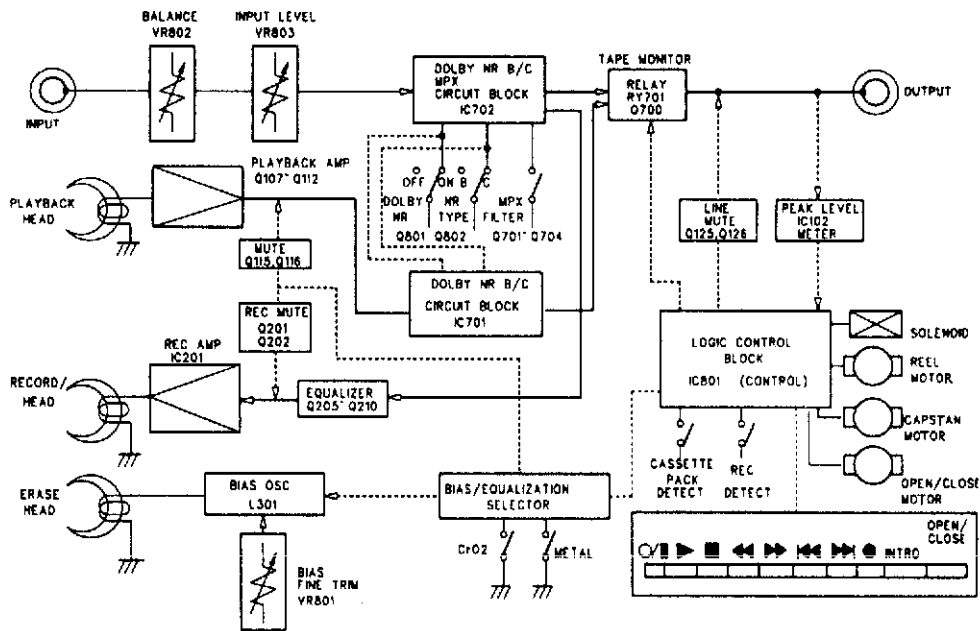


Step	Alignment	Instrument Required	Input Signal	Mode	
1	Azimuth	VTVM Oscilloscope Test tape(MTT-114 or TCC-153)		PB	
2	Tape speed	Frequency counter Test tape(MTT-111 DN or TCC-112)		PB	
3	Playback output level	VTVM Test tape(TCC-130)		PB	
4	Playback frequency characteristic confirmation	VTVM Test tape(TCC-1216 or TCC- 162C and TCC-262C)		PB	
5	Bias frequency confirmation	Frequency counter		REC/PE	
6	Bias level(preadjustment)	VTVM		REC/PE	
					1
					2
3					
7	Bias trap	VTVM		REC/PE	
8	Record level (preadjustment)	VTVM Blank tapes CrO <sub>2</sub> AC 513 METAL AC 712 LN AC 224	Apply 1KHz signal to INPUT jack. Set INPUT LEVEL knob so that CN701 to GND voltage is 388mV in REC-PAUSE mode.	REC/PE	
9	Record/playback equalizer frequency characteristic	VTVM Blank tapes CrO <sub>2</sub> AC 513 METAL AC 712 LN AC 224	Apply 1KHz signal to INPUT jack Set INPUT LEVEL knob so that CN701 to GND voltage is 25dB below 740mV in REC PAUSE mode. Then adjust with a 20Hz to 30KHz sweep signal.	REC/PI	
					1
					2
3					
10	Record level	VTVM Blank tapes CrO <sub>2</sub> AC 513 METAL AC 712 LN AC 224	Set INPUT LEVEL knob so that CN 701 to GND voltage is 388mV in REC-PAUSE mode.	REC/PI	
11	Meter level confirmation	VTVM	Apply 1KHz signal to INPUT jack. Set INPUT LEVEL knob so that CN701 to GND voltage is 1.5dB below 388mV.	REC- PAUSE	
12	MPX filter characteristic confirmation	VTVM	Apply 19kHz, 15kHz and 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that CN701 to GND voltage is 388mV in REC-PAUSE mode.	REC- PAUSE MPX fil ON	
13	Record/playback equalizer frequency characteris- tic confirmation	VTVM Blank tapes CrO <sub>2</sub> AC 513 METAL AC 712 LN AC 224	Apply 1kHz signal to INPUT jack. Set INPUT LEVEL knob so that TP501 and TP502 to GND voltage is 25dB below 740mV in REC-PAUSE mode. Then adjust with 20Hz to 30kHz sweep signal.	REC/PI	



Mode	Test Point	Adjustment	For
PB	CN 701 or OUTPUT jack	Azimuth screw	Maximum output Refer to "Azimuth Adjustment" on page 7
PB	CN 701 or OUTPUT jack	VR(built in motor)	3000Hz $\pm$ 20Hz Adjst at the center of test tape.
PB	CN 701	VR191(Lch) VR102(Rch)	388mV Tape selector is LN position.
PB	CN 701 or OUTPUT jack	R135, R136 R137, R138 R139, R140	Unsolder resistors of R135 and R137, R139 and R136 or R138 and R140 so that frequency response is within the range as shown in Fig. a.
REC/PB	CN303	T301	105kHz $\pm$ 3kHz Tape selector is METAL position.
REC/PB	CN 303	VR 305 VR 306	110mV Tape selector is METAL position
		VR 301 VR 302	85mV Tape selector is CrO <sub>2</sub> position.
		VR 303 VR 304	45mV Tape seletor is LN position.
REC/PB	J408 (Rch), GND J407 (Lch), GND	L301 L302	Minimum output Tape selector is METAL position.
REC/PB	CN 701	VR201, VR202 VR305, Vr306	388mV Tape selector is METAL position. Adjust VR305 and VR306 so that the distortion becomes 1.5%~1.7%
		VR302 VR303	388mV Adjust VR301 and VR302 so that the distortion becomes 1.3%(CrO <sub>2</sub> ). Adjust VR303 and VR304 so that the distortion becomes 1.0%(LN). This confirmation should be each tape selector position.
REC/PB	OUTPUT jack	VR303 L301, L302 (VR305, VR306)	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is CrO <sub>2</sub> 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.
		VR302 L301, L302 (VR305, VR306)	So that the record/playback frequency response is flat(at least within the range in Fig. b). Tape selector is LN position.
REC/PB	CN 701	VR201 VR202	388mV Perform adjustmnet using CrO <sub>2</sub> Perform checking only for LN and Metal tapes.
REC- PAUSE	PEAK LEVEL METER	VR111 VR112	Confirm peak level meter reads:-1 dB.
REC- PAUSE MPX filter ON	CN 701 or OUTPUT jack	L701 L702	Adjust for-0.3dB at 15kHz and>30dB at 19kHz.
REC/PB	OUTPUT jack		Perform checking with Dolby B NR 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(L ch.) and 29 (R ch.) of the Dolby NR IC101 (B/C type). Switching of the playback signal from the record mode(external input signal) to the playback mode is performed inside IC101.

IC101 is usually switched to the playback mode. However, the control signal transmitted to the pin 5 of IC101 from IC801(cpu) through Q705 and Q706 switches IC101 from the record mode to the playback mode. The input signal to IC101 is output from the pins 6(L ch.) and 25(R 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 IC101(B/C type). Switching of the record signal from the playback mode to the record mode is performed inside IC101. The control signal transmitted to the pin 5 of IC101 from IC801 (CPU) through Q705 and Q706 switches IC101 from the playback mode to the record mode.

The input signal to the Dolby NR IC is output from pins 3(L ch.) and 28(R ch.) of IC101 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 7(L ch.) and 24(R ch.). The signal output from IC101 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 the mutes the sound produced at switching to recording or playback is applied from IC801(CPU) of the logic control block.

When the "STOP" button is pressed, the mute signal output from the pin 43 of IC801(CPU) turns ON Q707(L ch.) and Q708(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 Q707(L ch.) and Q708(R ch.) turned ON.

## LOGIC FOR RECORD MODE

When the "REC" button is pressed the pin 47 of IC801 (CPU) becomes high level and Q115(L ch.) and Q116(R ch.) turn ON. The input to the Dolby NR IC is muted. Also Q118 and Q119 turn ON and Q117 turn OFF. Therefore Q101, Q103(L ch.) and Q102, Q104(R ch.) turn OFF to release the muting of the outputs from the record amplifiers. Also, Q705 turn ON and Q706 turn OFF to make the pin 5 of IC101 high level. Therefore the mode is switched to the record mode.

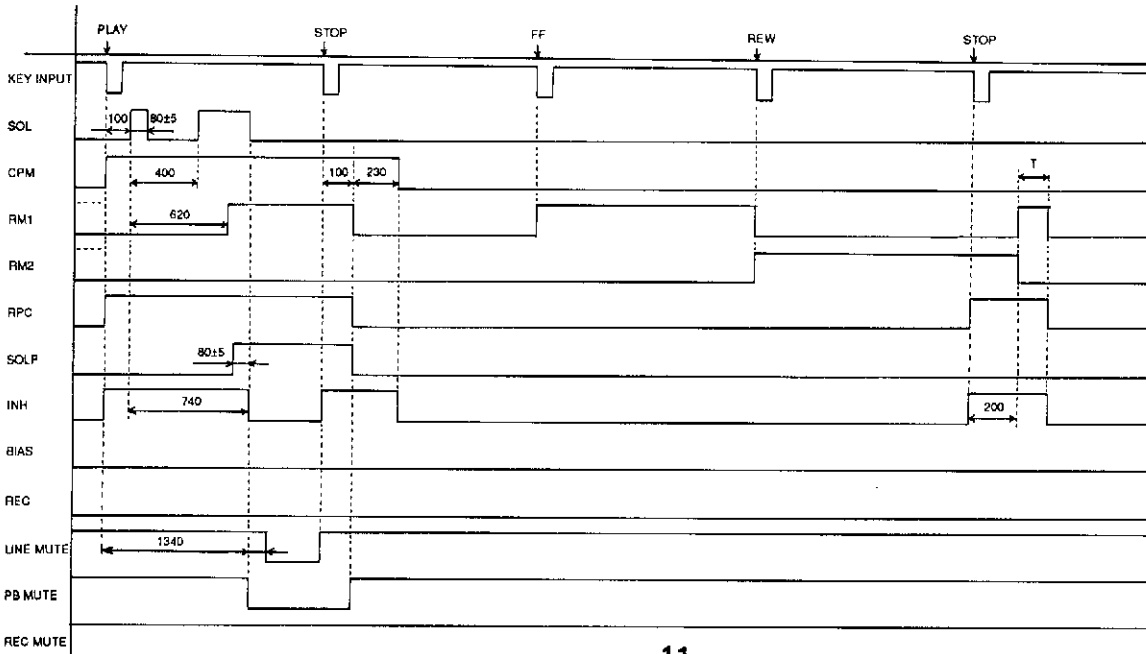
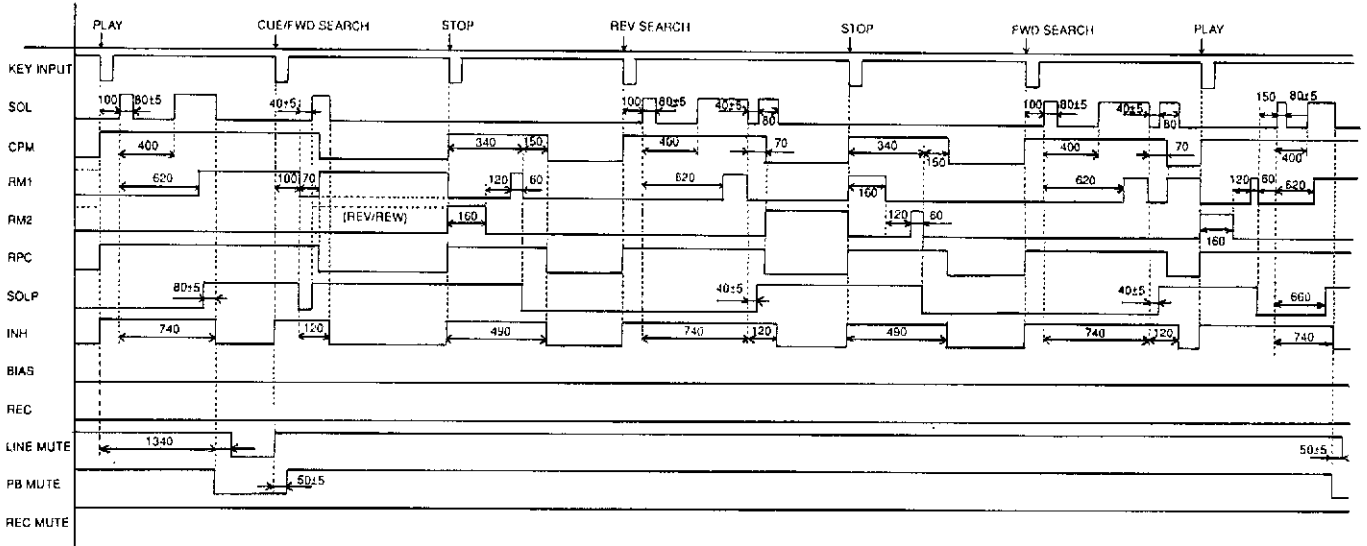
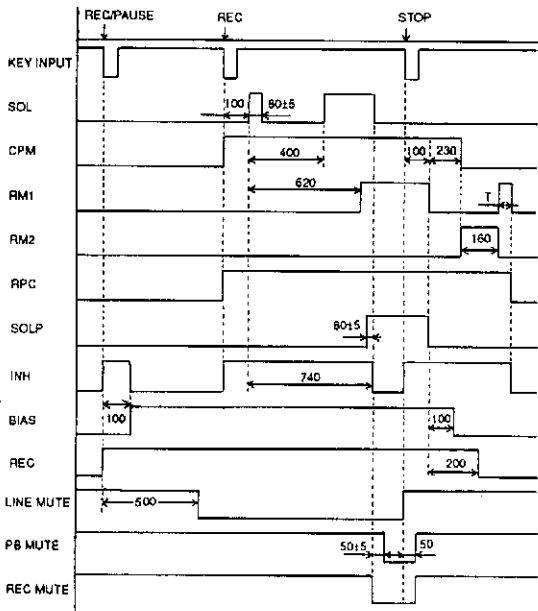
## LOGIC FOR RECORD TO PLAYBACK MODE

When the "STOP" "PAUSE" or "PLAY" button is pressed the pin 45 of IC801(CPU) becomes high level. Q201(L ch.), Q202(R ch.) turn ON to mute the inputs the record amplifiers.

Also Q119 and Q709 turn OFF and Q117 turns ON to turn ON Q101, Q103 (L ch.) and Q102, Q104(R ch.). Therefore the outputs from the record amplifiers are muted.

Also, Q705 turn OFF and Q706 turn ON to make pin 5 of IC101 low level. Therefore the mode is switched to the playback mode.

# TIMING CHART



A

B

C

D

E

# GENERAL UNIT EXPLODED VIEW

1

2

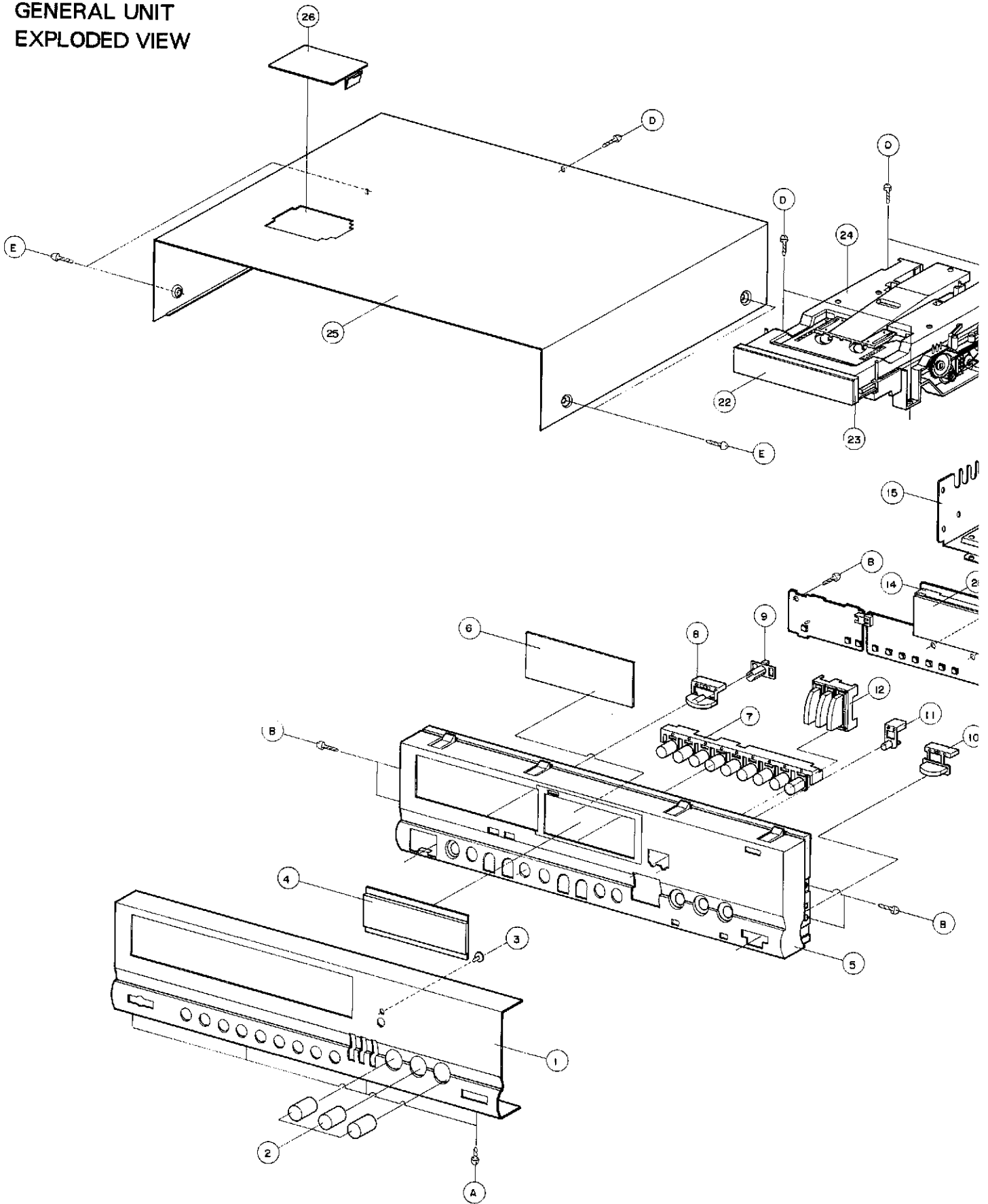
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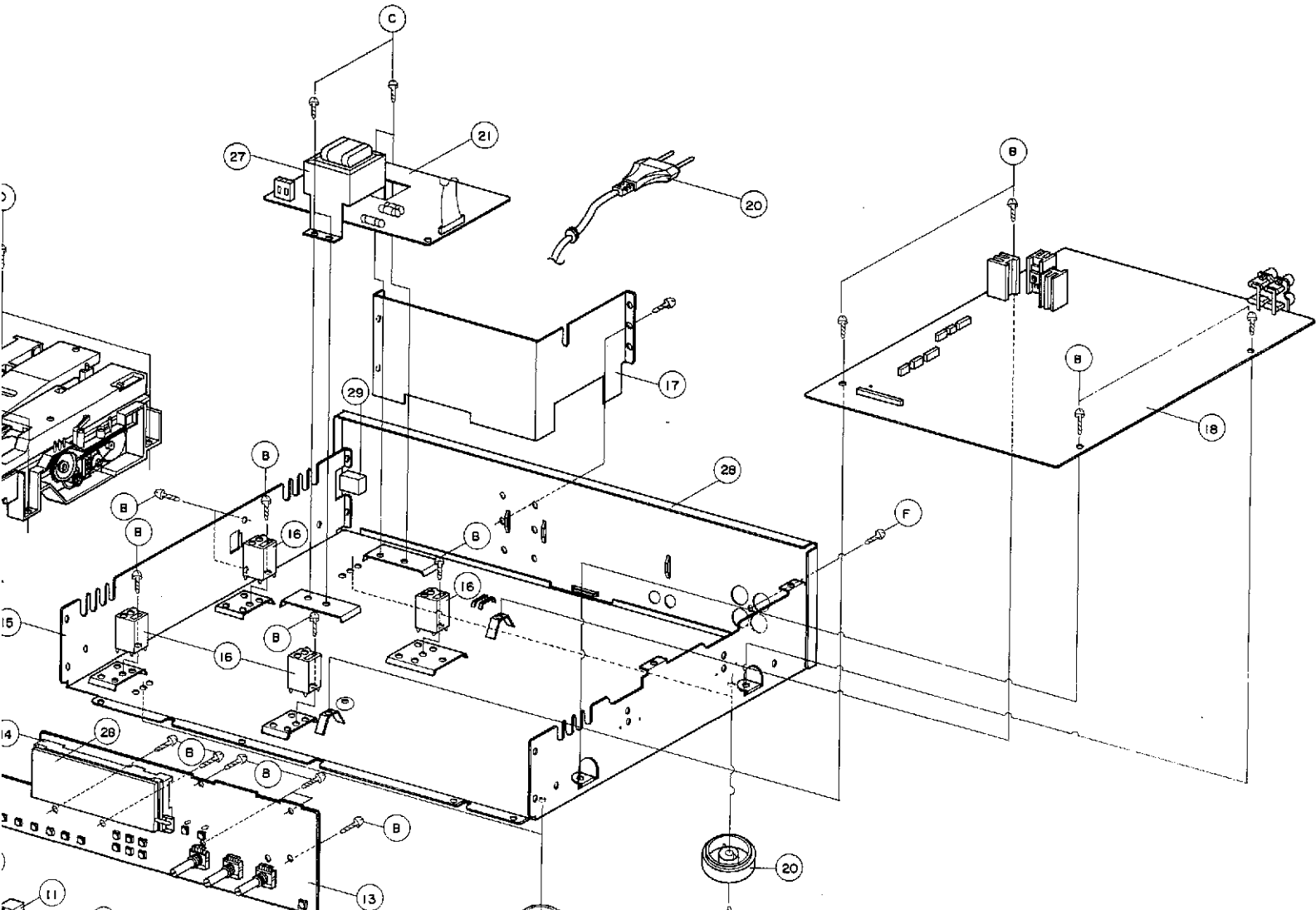
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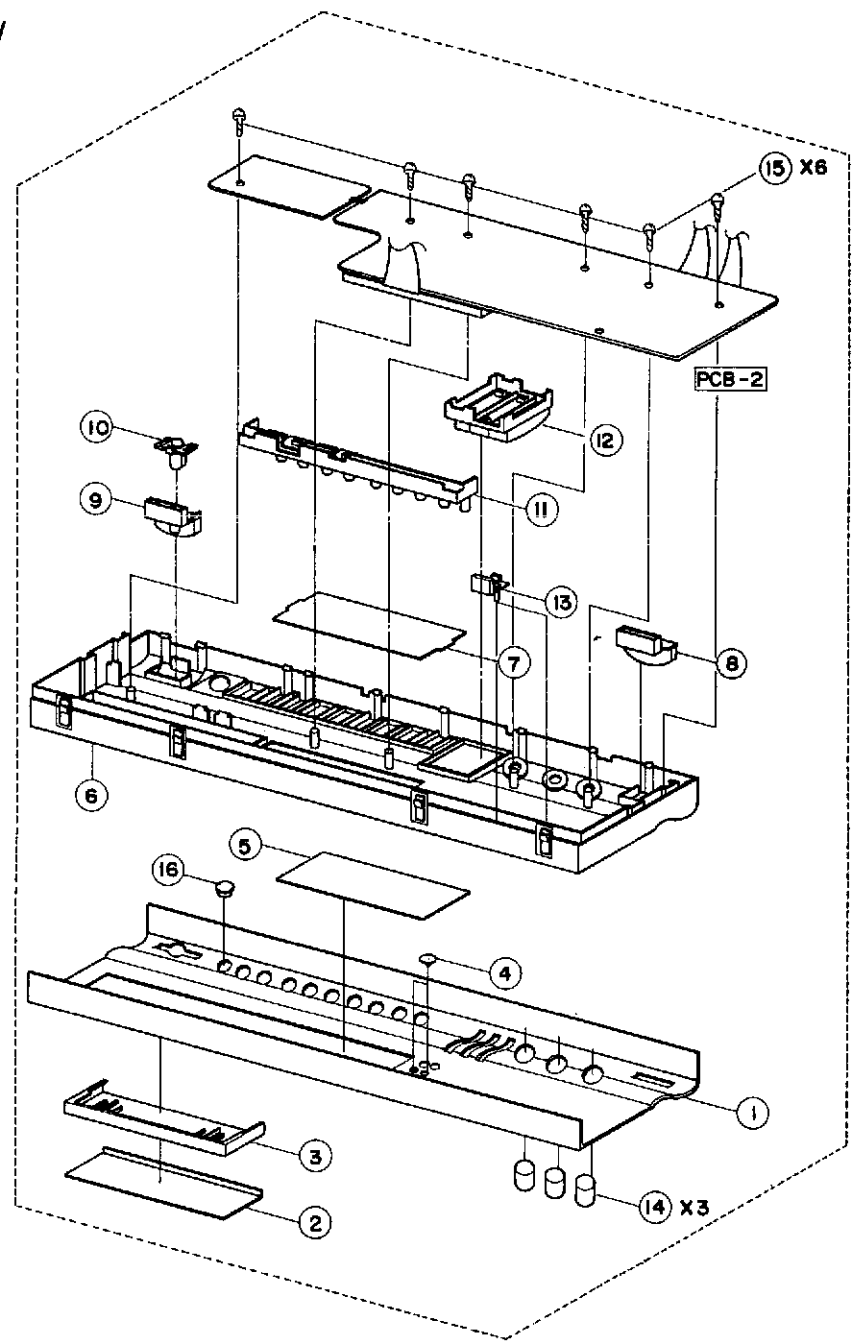
F G H I J



NOTE: A=(9K), B=(1, 1B, 1BB)

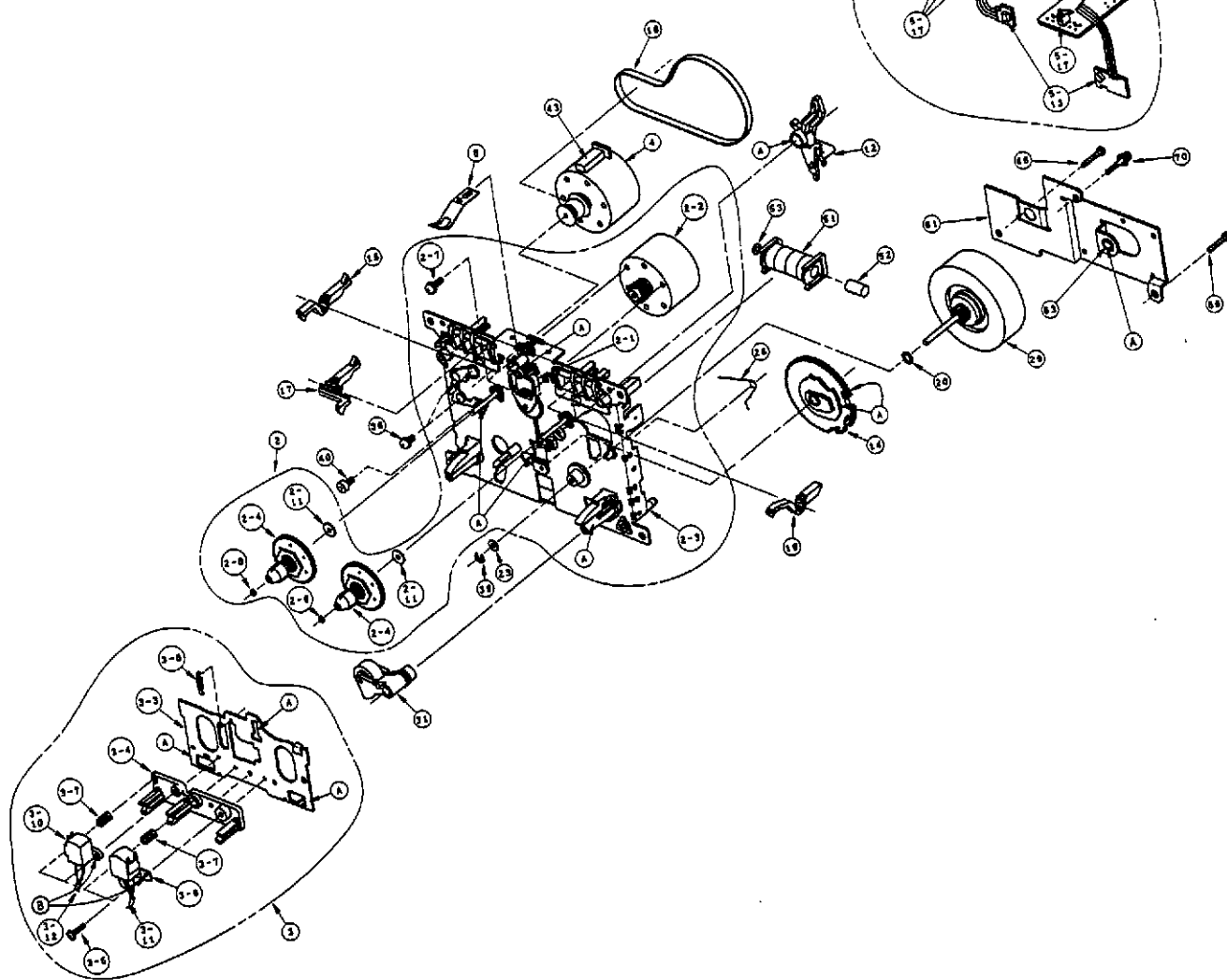
NO	PARTS NAME	PARTS NO	MATERIAL	REMARK	QTY
1	PANEL FRONT	3-327-001-01	ABS63-T5 (AL)	A, B	1
2	KNOB ROTARY (A)	3-327-010-11	ABS	A, B	3
3	LENS (B)	3-320-610-01	PMMA 60N	A, B	1
4	WINDOW FRONT	3-327-004-01	ACRYL	A, B	1
5	PANEL BASE	3-327-003-12	ABS	A, B	1
6	FILTER WINDOW	3-308-107-01	PVC 10.5	A, B	1
7	KNOB TACT STATION (A)	3-327-006-11	ABS	A, B	1
8	KNOB POWER	3-327-009-11	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	1
12	KNOB TACT STATION (B)	3-327-009-11	ABS	A, B	1
13	PCB UNIT ASSY	A-170-908-01	CONTROL	A, B	1
14	HOLDER FLT				
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 ASSY	A-170-908-01	MAIN	A, B	1
19	FOOT ASSY (A)	3-327-017-01	ABS+TPR GOLD	A, B	2
20	POWER CORD	2-211-138-01		A, B	2
21	PCB POWER				
22	DOOR COVER	3-327-013-01	ABS63-T5 (AL)	A, B	1
23	HOLDER DOOR	3-327-014-01	ABS	A, B	1
24	DECK MECHA ASSY				
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				
28	PANEL REAR	3-327-020-01	SECC10.8	A	1
29	PANEL REAR TD-4RO SECC10.8			B	
	BUSHING STRAIN R	B-201-120-01	MYLON 66	K	1
A	SCREW	7-999-171-01	PRT 30 PD 60 FZK	A, B	4
B	SCREW	7-764-408-01	VBZ 30 PD 60 FZK	A, B	10
C	SCREW	7-768-406-01	VBZ 40 PD 60 FZK	A, B	4
D	SCREW	7-768-408-01	VBZ 40 PD 60 FZK	A, B	4
E	SCREW	7-348-408-01	ATZ 40 PD 80 FZK	A, B	4
F	SCREW	7-764-410-01	VBZ 30 PD 100 FZK	A, B	1

GENERAL UNIT  
EXPLODED VIEW



NO	PARTS NO	DESCRIPTION
1	3-327-002-01	FRONT PANEL
2	3-327-013-01	DOOR COVER
3	3-327-014-01	DOOR HOLDER
4	3-320-610-01	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	3-327-008-11	KNOB TACT STATION (A)
12	3-327-009-11	KNOB TACT STATION (B)
13	3-327-007-11	TACT KNOB (B)
14	3-327-010-11	ROTARY KNOB
15	7-764-408-01	SCREW

**CASSETTE TAPE RECORDER MECHANISM  
EXPLODED VIEW**



**PARTS LIST**

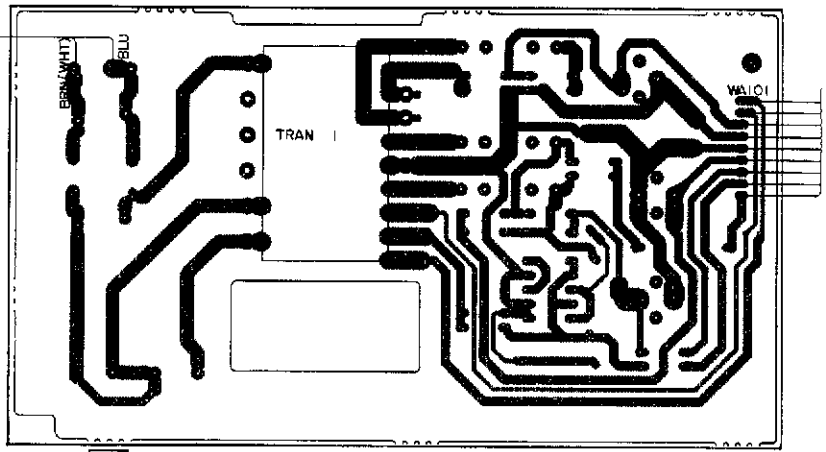
Ret No.	Part No.	Description	Ret No.	Part No.	Description
2	F511-486	CHASSIS ASS'Y	8	FC52H-12	SPRING, CASSETTE
2-1	F517-049	IDLER ASS'Y	12	FD45G-12	PLAY ARM ASS'Y
2-2	F564-280	REEL MOTOR ASS'Y	14	FD45B-14	CAM GEAR
2-4	F623-037	SCREW(2.6×6.4mm)	15	FD44T-14	SWITCH ARM, REC
2-7	FG156-11A	NON-METAL WASHER(1.7×0.25mm)	16	FD44Y-12	SWITCH ARM, PACK
2-8	FJ111-17	NON-METAL WASHER(2.1×0.25mm)	17	FD44V-12	SWITCH ARM, METAL
2-11	W12V-11	PLATE HEAD ASS'Y	18	FF17W-21	MAIN BELT
3	F513-593	HEAD BASE	20	FJ111-30	NOV-METAL WASHER(2.6×0.25mm)
3-3	FC52E-44	HEAD SPACER	23	FJ111-14	NOV-METAL WASHER(2.6×0.25mm)
3-4	FD45T-15	SCREW(2.0×9mm)	26	FK28R-11	SLIDE SPRING
3-5	FG137-18	SPRING, AZIMUTH	29	FR22H-11	FLYWHEEL ASS'Y
3-7	FK21U-11	HEAD BASE SPRING	31	FR20L-21A	PINCH ROLLER
3-8	FK26V-14	REC/PB HEAD	36	FG114-14	SCREW(2.6×5mm)
3-9	FJ15R-11	ERASE HEAD	39	UG13U-15	E.STOP RING
3-10	FU192-11	ERASE HEAD	40	UG12H-16	SCREW(3.0×8mm)
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	F525-256	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		F/W (4-990-951-01-1) BRACKET Ass'y
5-17	UE16E-11	PUSH SWITCH			

# WIRING DIAGRAM

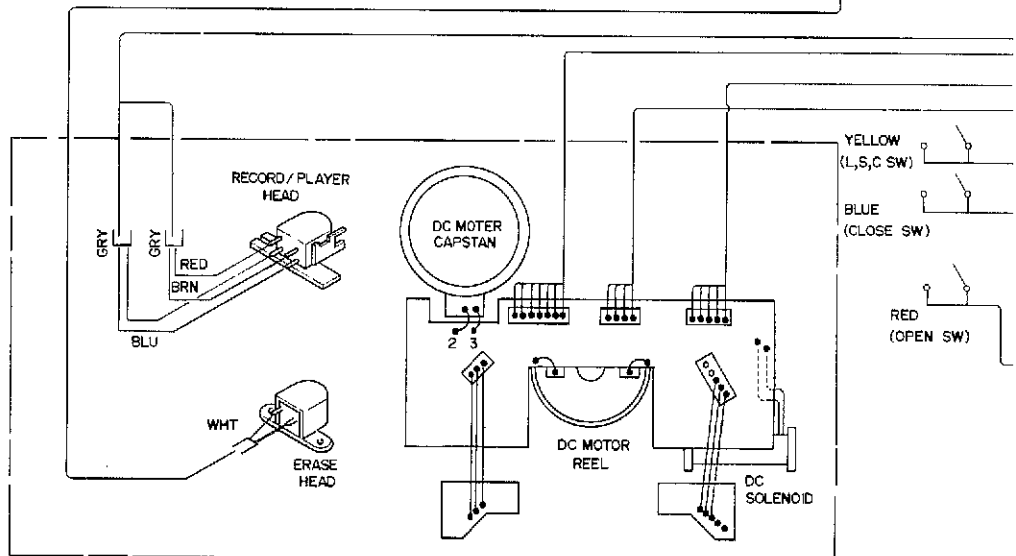
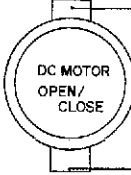
PI

FOR SEMCO  
~230V/50/60HZ

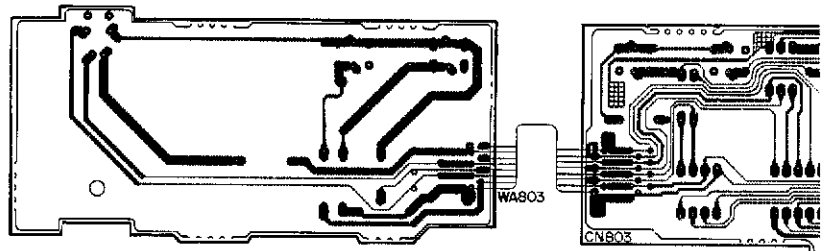
FOR UL/GSA  
~120V/60HZ



PCB-4



CASSETTE TAPE RECORDER MECHANICAL ASSEMBLY



PCB-3

WIRE COLOR	ABBREVIATIONS
RED : Red	YEL : Yellow
ORG : Orange	GRY : Gray
BLU : Blue	BRN : Brown
WHT : White	BLK : Black



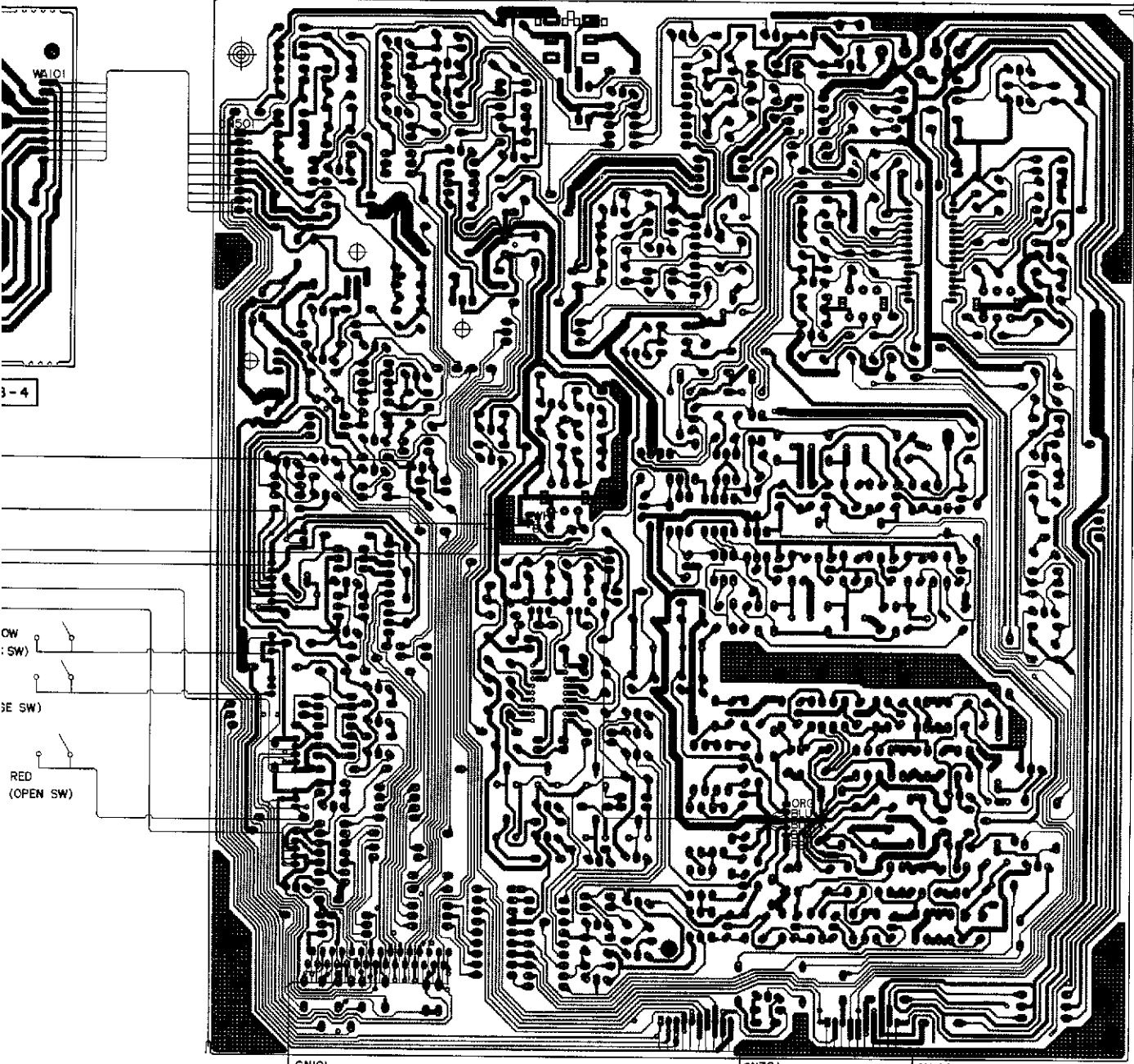
F

G

H

I

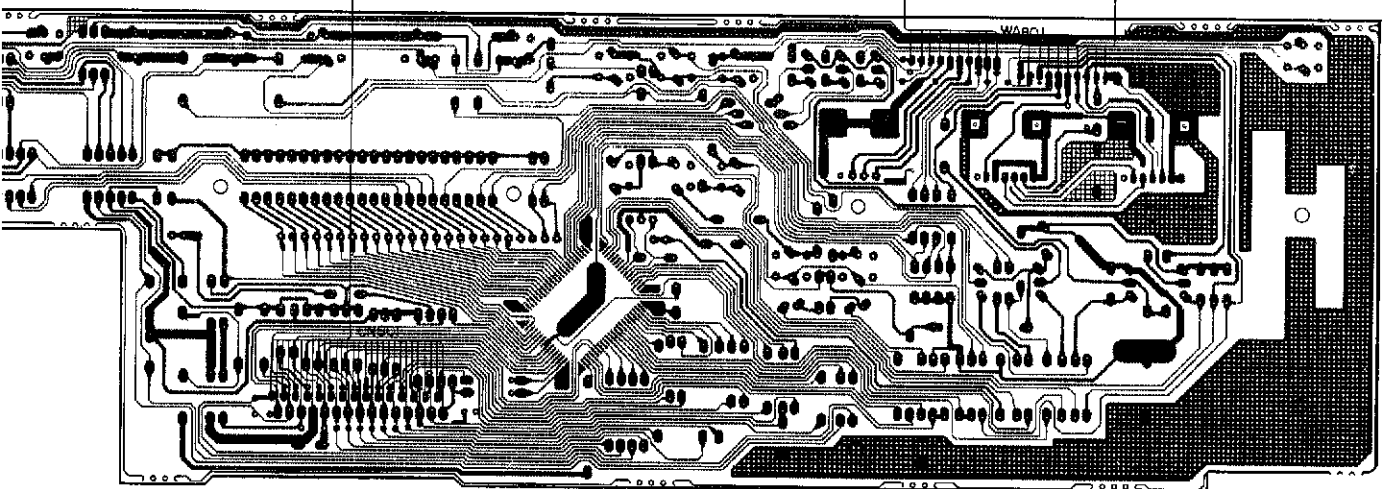
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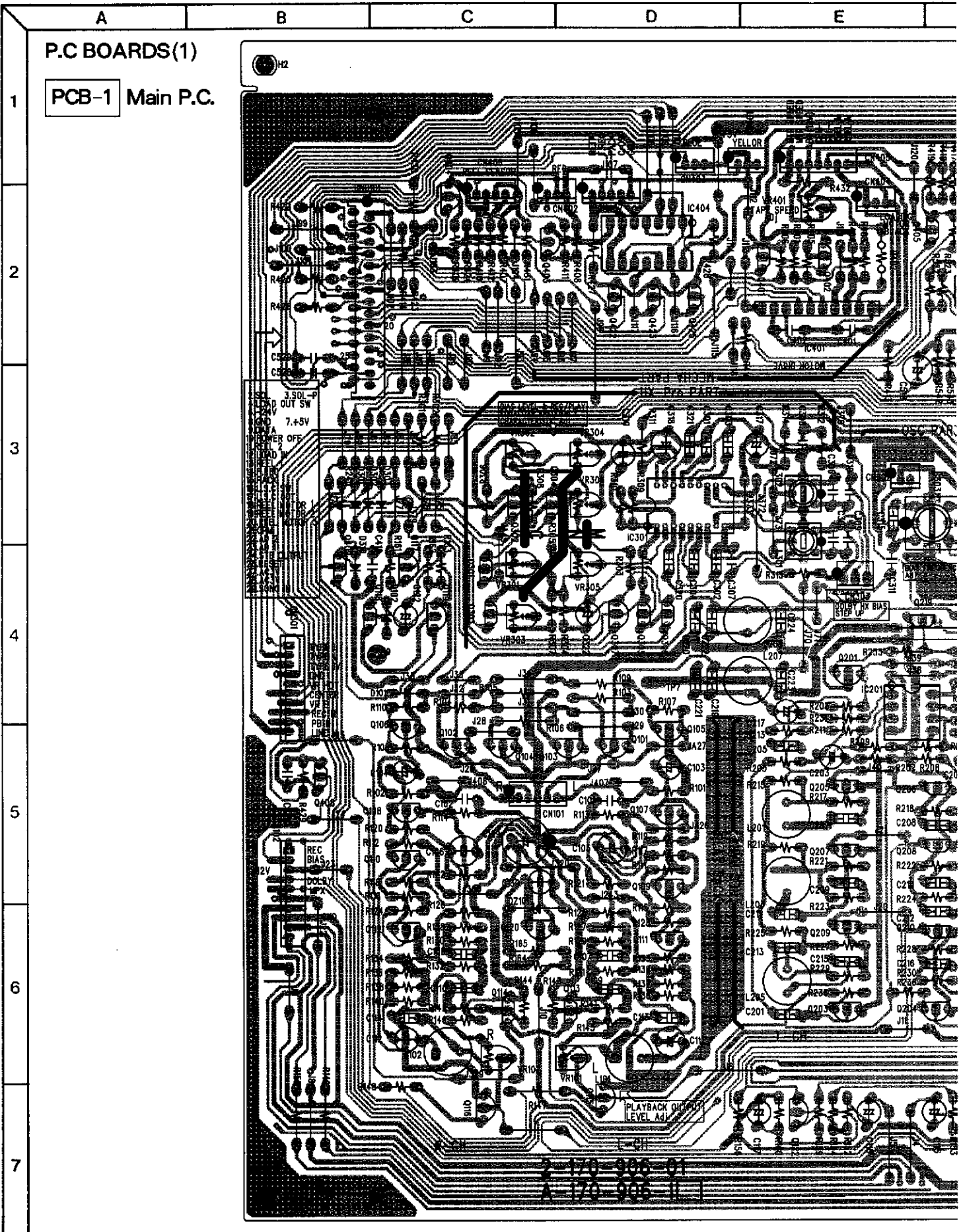


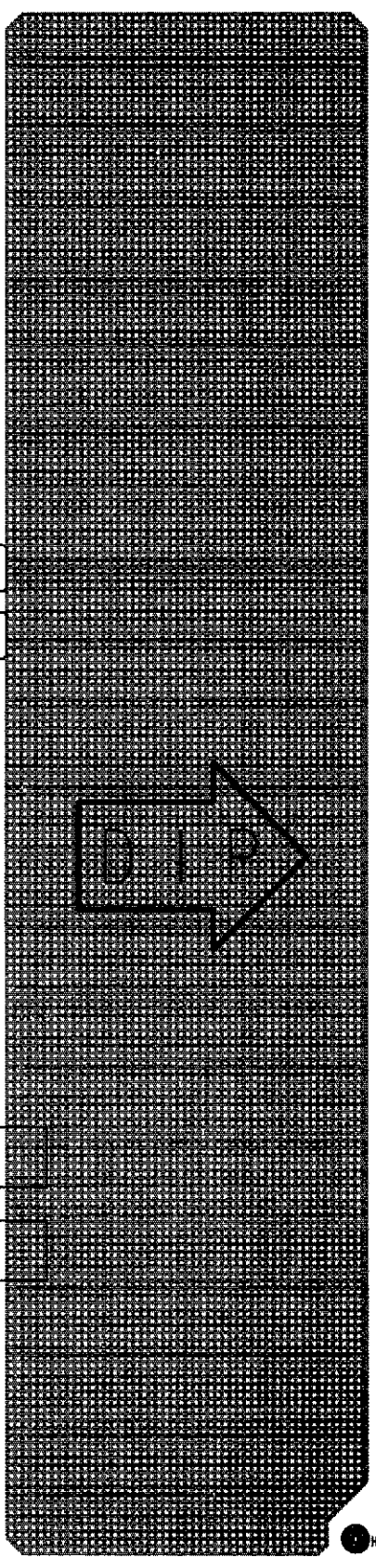
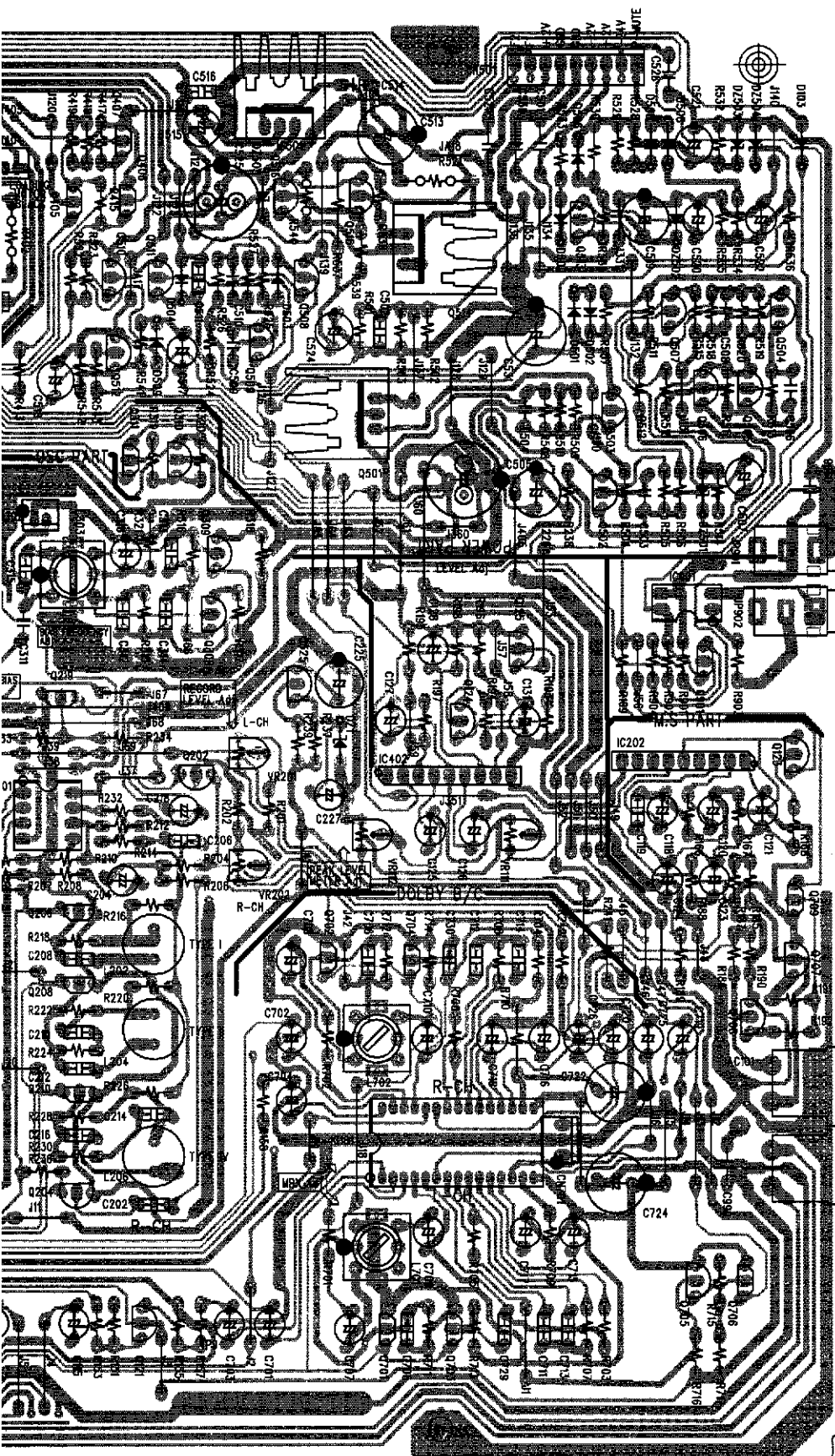
CN101

CN301

CN102







A

B

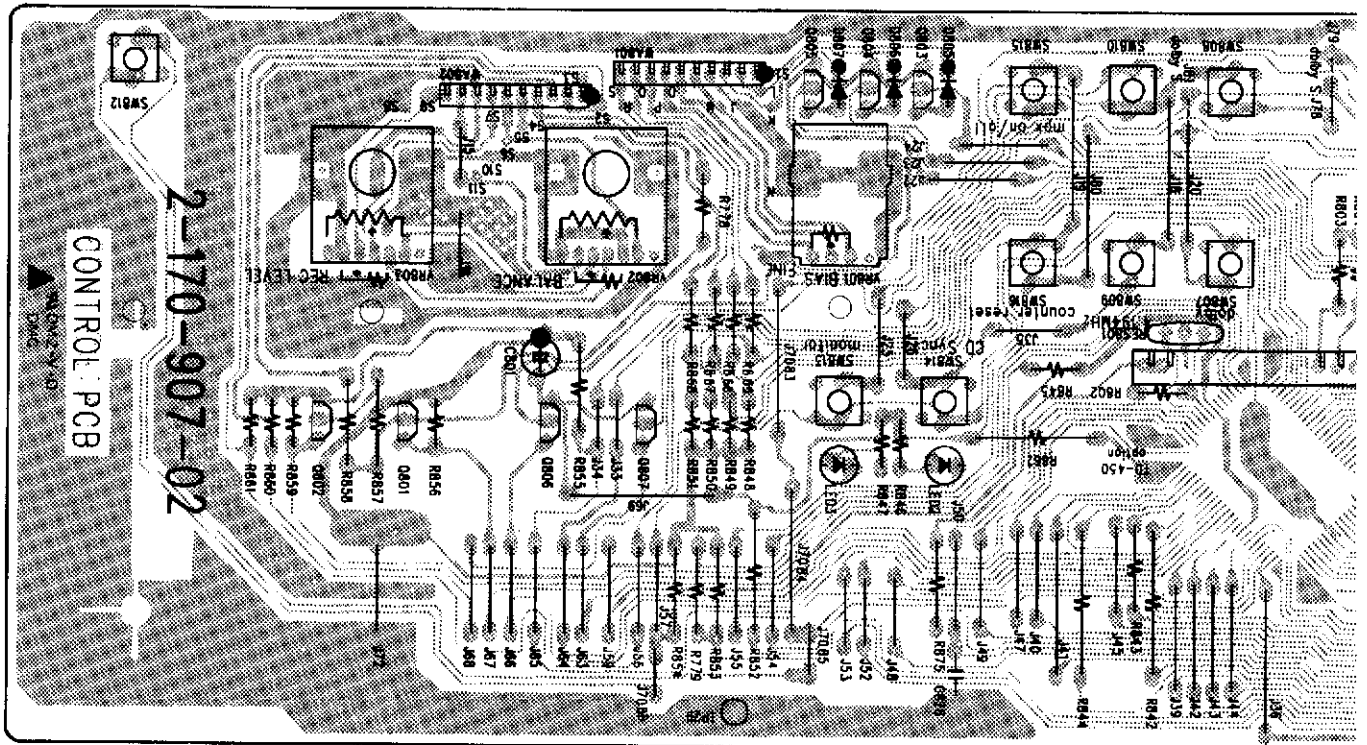
C

D

E

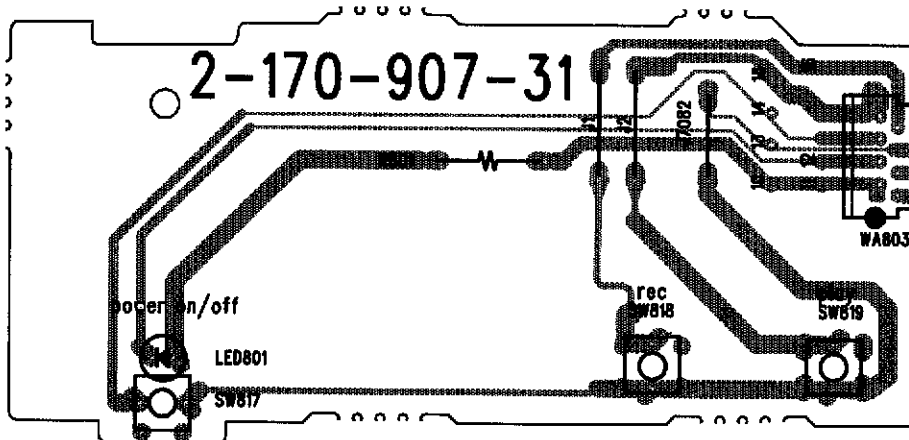
# P.C BOARDS(2)

## PCB-2 CONTROL P.C BOARD(1)



## PCB-4 CONTROL P.C BOARD(2)

(POWER LED : 2 COLOR)



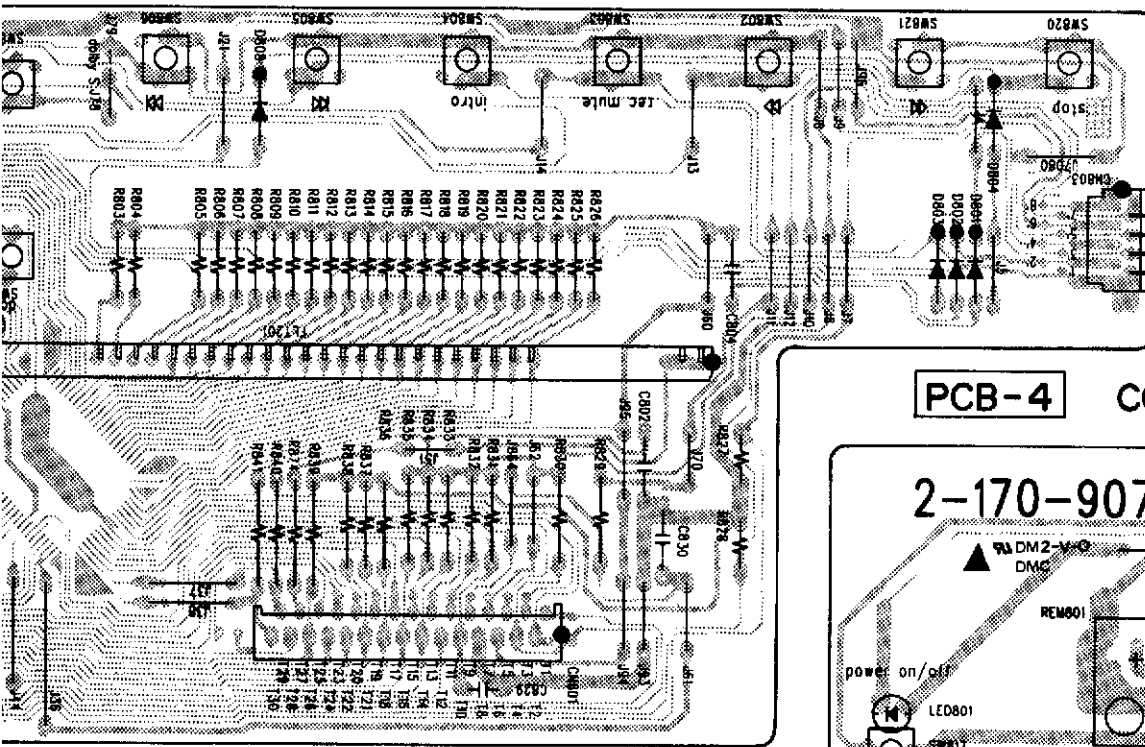
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G

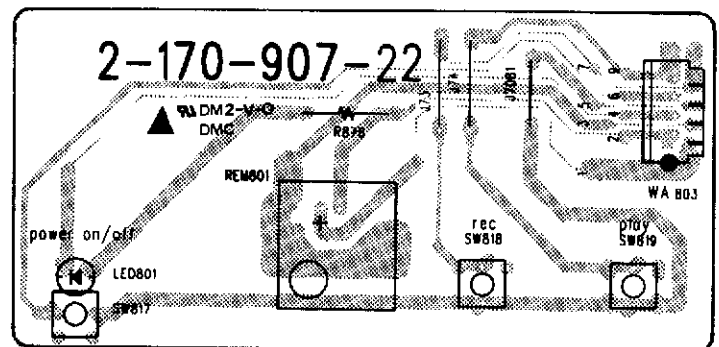
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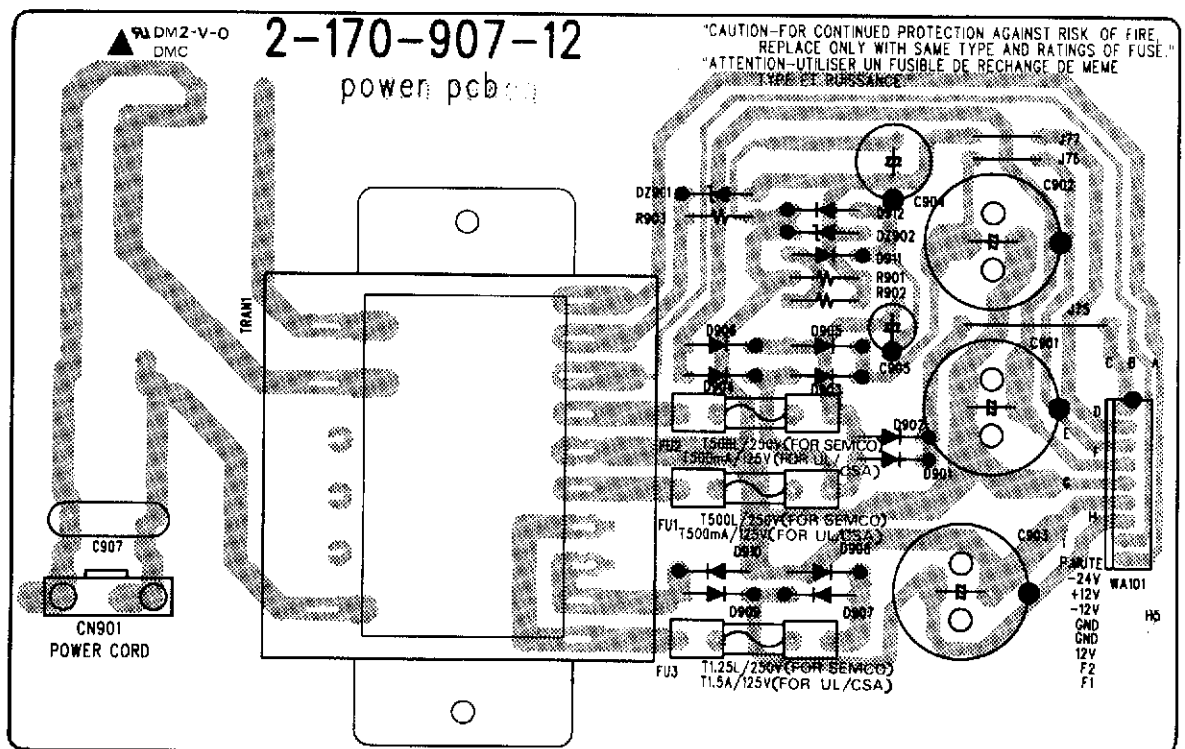
J



**PCB-4** CONTROL P.C BOARD(2)



**PCB-3** POWER P.C BOARD



## ELECTRICAL PARTS LIST

PCB-1 MAIN P.C BOARD

## CAPACITORS

Ser No.	Ref NO.	Part No.	Description
055	C111	1-413-100-65	CEA, 10 $\mu$ /16V
055	C112	1-413-100-65	CEA, 10 $\mu$ /16V
055	C115	1-413-100-65	CEA, 10 $\mu$ /16V
055	C116	1-413-100-65	CEA, 10 $\mu$ /16V
055	C122	1-413-100-65	CEA, 10 $\mu$ /16V
055	C203	1-413-100-65	CEA, 10 $\mu$ /16V
055	C204	1-413-100-65	CEA, 10 $\mu$ /16V
055	C707	1-413-100-65	CEA, 10 $\mu$ /16V
055	C708	1-413-100-65	CEA, 10 $\mu$ /16V
055	C709	1-413-100-65	CEA, 10 $\mu$ /16V
055	C710	1-413-100-65	CEA, 10 $\mu$ /16V
055	C719	1-413-100-65	CEA, 10 $\mu$ /16V
055	C720	1-413-100-65	CEA, 10 $\mu$ /16V
055	C724	1-413-100-65	CEA, 10 $\mu$ /16V
055	C725	1-413-100-65	CEA, 10 $\mu$ /16V
055	C726	1-413-100-65	CEA, 10 $\mu$ /16V
055	C777	1-413-100-65	CEA, 10 $\mu$ /16V
056	C701	1-416-010-65	CEA, 1 $\mu$ /50V
056	C702	1-416-010-65	CEA, 1 $\mu$ /50V
056	C703	1-416-010-65	CEA, 1 $\mu$ /50V
056	C704	1-416-010-65	CEA, 1 $\mu$ /50V
057	C120	1-416-108-65	CEA, 0.1 $\mu$ /50V
057	C121	1-416-108-65	CEA, 0.1 $\mu$ /50V
057	C123	1-416-108-65	CEA, 0.1 $\mu$ /50V
057	C124	1-416-108-65	CEA, 0.1 $\mu$ /50V
058	C117	1-416-101-65	CEA, 100 $\mu$ /16V
058	C519	1-416-101-65	CEA, 100 $\mu$ /16V
059	C316	1-416-100-65	CEA, 10 $\mu$ /50V
059	C317	1-416-100-65	CEA, 10 $\mu$ /50V
059	C318	1-416-100-65	CEA, 10 $\mu$ /50V
059	C319	1-416-100-65	CEA, 10 $\mu$ /50V
059	C322	1-416-100-65	CEA, 10 $\mu$ /50V
059	C522	1-416-100-65	CEA, 10 $\mu$ /50V
060	C513	1-413-102-67	CEA, 1000 $\mu$ /16V
060	C518	1-416-229-65	CEA, 2.2 $\mu$ /50V
061	C103	1-413-220-65	CEA, 22 $\mu$ /16V
062	C104	1-413-220-65	CEA, 22 $\mu$ /16V
063	C217	1-416-220-65	CEA, 22 $\mu$ /50V
063	C218	1-416-220-65	CEA, 22 $\mu$ /50V
063	C520	1-416-220-65	CEA, 22 $\mu$ /50V

Ser No.	Ref NO.	Part No.	Description
064	C105	1-413-221-65	CEA, 220 $\mu$ /16V
064	C106	1-413-221-65	CEA, 220 $\mu$ /16V
064	C722	1-413-221-65	CEA, 220 $\mu$ /16V
065	C505	1-413-222-67	CEA, 2200 $\mu$ /16V
065	C525	1-413-222-67	CEA, 2200 $\mu$ /16V
066	C717	1-416-338-65	CEA, 0.33 $\mu$ /16V
066	C718	1-416-338-65	CEA, 0.33 $\mu$ /16V
067	C227	1-413-330-65	CEA, 33 $\mu$ /16V
067	C130	1-413-330-65	CEA, 33 $\mu$ /16V
068	C118	1-413-478-65	CEA, 0.47 $\mu$ /50V
069	C125	1-416-479-65	CEA, 4.7 $\mu$ /50V
069	C126	1-416-479-65	CEA, 4.7 $\mu$ /50V
069	C127	1-416-479-65	CEA, 4.7 $\mu$ /50V
069	C128	1-416-479-65	CEA, 4.7 $\mu$ /50V
069	C517	1-416-479-65	CEA, 4.7 $\mu$ /50V
070	C131	1-413-470-65	CEA, 47 $\mu$ /16V
070	C507	1-413-470-65	CEA, 47 $\mu$ /16V
070	C515	1-413-470-65	CEA, 47 $\mu$ /16V
071	C129	1-413-471-65	CEA, 470 $\mu$ /16V
072	C521	1-414-470-65	CEA, 47 $\mu$ /25V
161	C225	1-413-331-65	CEA, 330 $\mu$ /16V
161	C226	1-413-331-65	CEA, 330 $\mu$ /16V
161	C516	1-413-331-65	CEA, 330 $\mu$ /16V
161	C524	1-413-331-65	CEA, 330 $\mu$ /16V
073	C314	1-506-103-45	CQMA, 103J/50V
074	C315	1-50C-103-45	CQMA, 103J/200V
074	C320	1-50C-103-45	CQMA, 103J/200V
074	C321	1-50C-103-45	CQMA, 103J/200V
075	C303	1-506-104-45	CQMA, 104J/50V
075	C304	1-506-104-45	CQMA, 104J/50V
075	C502	1-506-104-45	CQMA, 104J/50V
076	C201	1-506-622-45	CQMA, 622J/50V
076	C202	1-506-622-45	CQMA, 622J/50V
077	C207	1-506-153-45	CQMA, 153J/50V
077	X208	1-506-153-45	CQMA, 153J/50V
078	C113	1-506-182-45	CQMA, 182J/50V
078	C114	1-506-182-45	CQMA, 182J/50V
078	C705	1-506-182-45	CQMA, 182J/50V
078	C706	1-506-182-45	CQMA, 182J/50V
079	C211	1-506-183-45	CQMA, 183J/50V

Ser No.	Ref NO.	Part No.	Description
079	C212	1-506-183-45	CQMA, 183J/50V
080	C711	1-506-222-45	CQMA, 222J/50V
080	C712	1-506-222-45	CQMA, 222J/50V
080	C713	1-506-222-45	CQMA, 222J/50V
080	C714	1-506-222-45	CQMA, 222J/50V
080	C729	1-506-222-45	CQMA, 222J/50V
080	C730	1-506-222-45	CQMA, 222J/50V
081	C301	1-506-223-45	CQMA, 223J/50V
081	C302	1-506-223-45	CQMA, 223J/50V
081	C511	1-506-223-45	CQMA, 223J/50V
081	C516	1-506-223-45	CQMA, 223J/50V
082	C209	1-506-393-45	CQMA, 393J/50V
082	C210	1-506-393-45	CQMA, 393J/50V
082	C213	1-506-393-45	CQMA, 393J/50V
082	C214	1-506-393-45	CQMA, 393J/50V
083	C312	1-506-562-45	CQMA, 562J/50V
083	C313	1-506-562-45	CQMA, 562J/50V
084	C107	1-506-622-45	CQMA, 622J/50V
084	C108	1-506-622-45	CQMA, 622J/50V
085	C205	1-506-563-45	CQMA, 563J/50V
085	C206	1-506-563-45	CQMA, 563J/50V
150	C215	1-506-223-45	CQMA, 223J/50V
150	C216	1-506-223-45	CQMA, 223J/50V
162	C109	1-506-752-45	CQMA, 752J/50V
162	C110	1-506-752-45	CQMA, 752J/50V
086	C311	1-88F-100-45	CCDSL, 10D500V
087	C309	1-88F-101-45	CCDSL, 101K/500V
087	C310	1-88F-101-45	CCDSL, 101K/500V
088	C506	1-886-101-45	CCDSL, 101J/50V
089	C419	1-886-103-45	CCDSL, 103J/50V
090	C420	1-9A3-103-64	YS103M/16V
090	C528	1-9A3-103-64	YS103M/16V
090	C529	1-9A3-103-64	YS103M/16V
090	C509	1-9A3-103-64	YS103M/16V
090	C514	1-9A3-103-64	YS103M/16V
090	C401	1-9A3-103-64	YS103M/16V
090	C402	1-9A3-103-64	YS103M/16V
091	C510	1-9A3-101-64	YS101M/16V
092	C501	1-9A3-223-64	YS223M/16V
092	C526	1-9A3-223-64	YS223M/16V
092	C527	1-9A3-223-64	YS223M/16V
092	C530	1-9A3-223-64	YS223M/16V
092	C504	1-9A3-223-64	YS223M/16V
093	C305	1-886-471-45	CCDSL, 471J/50V

Ser No.	Ref NO.	Part No.	Description
093	C306	1-886-471-45	CCDSL, 471J/50V
094	C503	1-9A3-471-64	Y5P471K/50V
095	C305	1-9A3-473-64	YS473M/16V
096	C307	1-886-561-45	CCDSL, 561J/50V
096	C308	1-886-561-45	CCDSL, 561J/50V

RESISTORS

Ser No.	Ref NO.	Part No.	Description
097	R540	1-304-109-25	1,1/4W,PSF,FUSEBLE
098	R238	1-118-109-25	1,1/8W, 5%
098	R239	1-118-109-25	1,1/8W,5%
099	R402	1-141-100-23	1,1/8W,5%
100	R311	1-181-100-25	10,1W, 5%
100	R314	1-114-479-25	10,1/8W, 5%
101	R101	1-118-101-25	4,7,1/4W, 5%
101	R102	1-118-101-25	100,1/8W, 5%
101	R225	1-118-101-25	100,1/8W, 5%
101	R226	1-118-101-25	100,1/8W, 5%
101	R302	1-118-101-25	100,1/8W, 5%
101	R531	1-118-101-25	100,1/8W, 5%
101	R539	1-118-101-25	100,1/8W, 5%
102	R521	1-141-101-23	100, 1W, 5%, LMF
103	R125	1-118-102-25	1K, 1/8W, 5%
103	R126	1-118-102-25	1K, 1/8W, 5%
103	R149	1-118-102-25	1K, 1/8W, 5%
103	R150	1-118-102-25	1K, 1/8W, 5%
103	R151	1-118-102-25	1K, 1/8W, 5%
103	R152	1-118-102-25	1K, 1/8W, 5%
103	R155	1-118-102-25	1K, 1/8W, 5%
103	R156	1-118-102-25	1K, 1/8W, 5%
103	R157	1-118-102-25	1K, 1/8W, 5%
103	R158	1-118-102-25	1K, 1/8W, 5%
103	R165	1-118-102-25	1K, 1/8W, 5%
103	R237	1-118-102-25	1K, 1/8W, 5%
103	R240	1-118-102-25	1K, 1/8W, 5%
103	R303	1-118-121-25	1K, 1/8W, 5%
103	R304	1-118-121-25	1K, 1/8W, 5%
103	R420	1-118-102-25	1K, 1/8W, 5%
103	R421	1-118-102-25	1K, 1/8W, 5%
103	R422	1-118-102-25	1K, 1/8W, 5%
103	R429	1-118-102-25	1K, 1/8W, 5%
103	R506	1-118-102-25	1K, 1/8W, 5%
103	R515	1-118-102-25	1K, 1/8W, 5%
103	R525	1-118-102-25	1K, 1/8W, 5%

Ser No	Ref NO	Part No.	Description
103	R534	1-118-102-25	1K, 1/8W, 5%
103	R535	1-118-102-25	1K, 1/8W, 5%
103	R710	1-118-102-25	1K, 1/8W, 5%
103	R777	1-118-102-25	1K, 1/8W, 5%
104	R432	1-114-102-25	1K, 1/4W, 5%
105	R103	1-118-103-25	10K, 1/8W, 5%
105	R104	1-118-103-25	10K, 1/8W, 5%
105	R145	1-118-103-25	10K, 1/8W, 5%
105	R146	1-118-103-25	10K, 1/8W, 5%
105	R147	1-118-103-25	10K, 1/8W, 5%
105	R148	1-118-103-25	10K, 1/8W, 5%
105	R109	1-118-103-25	10K, 1/8W, 5%
105	R110	1-118-103-25	10K, 1/8W, 5%
105	R162	1-118-103-25	10K, 1/8W, 5%
105	R163	1-118-103-25	10K, 1/8W, 5%
105	R195	1-118-103-25	10K, 1/8W, 5%
105	R196	1-118-103-25	10K, 1/8W, 5%
105	R241	1-118-103-25	10K, 1/8W, 5%
105	R242	1-118-103-25	10K, 1/8W, 5%
105	R319	1-118-103-25	10K, 1/8W, 5%
105	R320	1-118-103-25	10K, 1/8W, 5%
105	R231	1-118-103-25	10K, 1/8W, 5%
105	R232	1-118-103-25	10K, 1/8W, 5%
105	R509	1-118-103-25	10K, 1/8W, 5%
105	R511	1-118-103-25	10K, 1/8W, 5%
105	R522	1-118-103-25	10K, 1/8W, 5%
105	R523	1-118-103-25	10K, 1/8W, 5%
105	R541	1-118-103-25	10K, 1/8W, 5%
105	R542	1-118-103-25	10K, 1/8W, 5%
105	R543	1-118-103-25	10K, 1/8W, 5%
105	R536	1-118-103-25	10K, 1/8W, 5%
105	R715	1-118-103-25	10K, 1/8W, 5%
106	R153	1-118-104-25	100K, 1/8W, 5%
106	R154	1-118-104-25	100K, 1/8W, 5%
106	R187	1-118-104-25	100K, 1/8W, 5%
106	R190	1-118-104-25	100K, 1/8W, 5%
106	R406	1-118-104-25	100K, 1/8W, 5%
106	R415	1-118-104-25	100K, 1/8W, 5%
106	R417	1-118-104-25	100K, 1/8W, 5%
107	R143	1-118-105-25	1M, 1/8W, 5%
107	R144	1-118-105-25	1M, 1/8W, 5%
107	R530	1-118-105-25	1M, 1/8W, 5%
107	R711	1-118-105-25	1M, 1/8W, 5%
107	R712	1-118-105-25	1M, 1/8W, 5%

Ser No	Ref NO	Part No.	Description
107	R713	1-118-105-25	1M, 1/8W, 5%
107	R714	1-118-105-25	1M, 1/8W, 5%
108	R219	1-118-121-25	120, 1/8W, 5%
108	R220	1-118-121-25	120, 1/8W, 5%
109	R508	1-118-123-25	12K, 1/8W, 5%
109	R518	1-118-123-25	12K, 1/8W, 5%
109	R717	1-118-123-25	12K, 1/8W, 5%
109	R520	1-118-123-25	12K, 1/8W, 5%
110	R215	1-118-151-25	150, 1/9W, 5%
110	R216	1-118-151-25	150, 1/9W, 5%
110	R527	1-118-151-25	150, 1/9W, 5%
111	R414	1-118-152-25	1.5K, 1/8W, 5%
111	R416	1-118-152-25	1.5K, 1/8W, 5%
111	R512	1-118-152-25	1.5K, 1/8W, 5%
111	R514	1-118-152-25	1.5K, 1/8W, 5%
111	R537	1-118-152-25	1.5K, 1/8W, 5%
112	R312	1-118-184-25	180K, 1/8W, 5%
112	R313	1-118-184-25	180K, 1/8W, 5%
113	R168	1-118-181-25	180, 1/8W, 5%
114	R401	1-118-182-25	1.8K, 1/8W, 5%
114	R405	1-118-182-25	1.8K, 1/8W, 5%
114	R413	1-118-182-25	1.8K, 1/8W, 5%
114	R533	1-118-182-25	1.8K, 1/8W, 5%
115	R519	1-118-183-25	18K, 1/8W, 5%
116	R317	1-118-220-25	22, 1/8W, 5%
116	R318	1-118-220-25	22, 1/8W, 5%
117	R307	1-118-221-25	220, 1/8W, 5%
117	R308	1-118-220-25	220, 1/8W, 5%
118	R161	1-118-222-25	2.2K, 1/8W, 5%
118	R185	1-118-222-25	2.2K, 1/8W, 5%
118	R186	1-118-222-25	2.2K, 1/8W, 5%
118	R411	1-118-222-25	2.2K, 1/8W, 5%
118	R412	1-118-222-25	2.2K, 1/8W, 5%
118	R532	1-118-222-25	2.2K, 1/8W, 5%
119	R107	1-118-223-25	22K, 1/8W, 5%
119	R108	1-118-223-25	22K, 1/8W, 5%
119	R111	1-118-223-25	22K, 1/8W, 5%
119	R112	1-118-223-25	22K, 1/8W, 5%
119	R193	1-118-223-25	22K, 1/8W, 5%
119	R194	1-118-223-25	22K, 1/8W, 5%
119	R408	1-118-223-25	22K, 1/8W, 5%
119	R410	1-118-223-25	22K, 1/8W, 5%
119	R427	1-118-223-25	22K, 1/8W, 5%
119	R428	1-118-223-25	22K, 1/8W, 5%



Ser No.	Ref NO.	Part No.	Description
119	R716	1-118-223-25	22K, 1/8W, 5%
120	R119	1-118-224-25	220K, 1/8W, 5%
120	R120	1-118-224-25	220K, 1/8W, 5%
121	R903	1-118-271-25	270, 1/8W, 5%
122	R191	1-118-272-25	2.7K, 1/8W, 5%
122	R192	1-118-272-25	2.7K, 1/8W, 5%
122	R209	1-118-272-25	2.7K, 1/8W, 5%
122	R210	1-118-272-25	2.7K, 1/8W, 5%
122	R305	1-118-182-25	1.8K, 1/8W, 5%
122	R306	1-118-182-25	1.8K, 1/8W, 5%
123	R709	1-118-273-25	27K, 1/8W, 5%
124	R205	1-118-163-25	16K, 1/8W, 5%
124	R206	1-118-163-25	16K, 1/8W, 5%
125	R221	1-118-242-25	2.4K, 1/8W, 5%
125	R222	1-118-242-25	2.4K, 1/8W, 5%
126	R123	1-118-331-25	330, 1/8W, 5%
126	R124	1-118-331-25	330, 1/8W, 5%
126	R527	1-118-331-25	330, 1/8W, 5%
126	R529	1-118-331-25	330, 1/8W, 5%
126	R113	1-118-331-25	330, 1/8W, 5%
126	R114	1-118-331-25	330, 1/8W, 5%
126	R516	1-118-331-25	330, 1/8W, 5%
126	R517	1-118-331-25	330, 1/8W, 5%
127	R127	1-118-332-25	3.3K, 1/8W, 5%
127	R128	1-118-332-25	3.3K, 1/8W, 5%
127	R135	1-118-332-25	3.3K, 1/8W, 5%
127	R137	1-118-332-25	3.3K, 1/8W, 5%
127	R138	1-118-332-25	3.3K, 1/8W, 5%
127	R140	1-118-332-25	3.3K, 1/8W, 5%
127	R404	1-118-332-25	3.3K, 1/8W, 5%
127	R501	1-118-332-25	3.3K, 1/8W, 5%
127	R502	1-118-332-25	3.3K, 1/8W, 5%
127	R503	1-118-332-25	3.3K, 1/8W, 5%
127	R701	1-118-332-25	3.3K, 1/8W, 5%
127	R702	1-118-332-25	3.3K, 1/8W, 5%
128	R197	1-118-334-25	330K, 1/8W, 5%
128	R198	1-118-334-25	330K, 1/8W, 5%
129	R105	1-118-392-25	3.9K, 1/8W, 5%
129	R106	1-118-392-25	3.9K, 1/8W, 5%
129	R141	1-118-392-25	3.9K, 1/8W, 5%
129	R142	1-118-392-25	3.9K, 1/8W, 5%
129	R403	1-118-392-25	3.9K, 1/8W, 5%
129	R902	1-118-392-25	3.9K, 1/8W, 5%
130	R205	1-118-243-25	24K, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
130	R206	1-118-243-25	24K, 1/8W, 5%
132	R201	1-118-479-25	4.7, 1/8W, 5%
132	R202	1-118-479-25	4.7, 1/8W, 5%
133	R418	1-118-470-25	47, 1/8W, 5%
133	R419	1-118-470-25	47, 1/8W, 5%
133	R904	1-118-470-25	47, 1/8W, 5%
133	R117	1-118-470-25	47, 1/8W, 5%
133	R118	1-118-470-25	47, 1/8W, 5%
134	R505	1-118-471-25	470, 1/8W, 5%
134	R524	1-118-471-25	470, 1/8W, 5%
134	R526	1-118-471-25	470, 1/8W, 5%
134	R538	1-118-471-25	470, 1/8W, 5%
135	R136	1-118-472-25	4.7K, 1/8W, 5%
135	R139	1-118-472-25	4.7K, 1/8W, 5%
135	R160	1-118-472-25	4.7K, 1/8W, 5%
135	R169	1-118-472-25	4.7K, 1/8W, 5%
135	R233	1-118-472-25	4.7K, 1/8W, 5%
135	R234	1-118-472-25	4.7K, 1/8W, 5%
136	R207	1-118-473-25	47K, 1/8W, 5%
136	R208	1-118-473-25	47K, 1/8W, 5%
136	R407	1-118-473-25	47K, 1/8W, 5%
136	R409	1-118-473-25	47K, 1/8W, 5%
136	R423	1-118-473-25	47K, 1/8W, 5%
136	R424	1-118-473-25	47K, 1/8W, 5%
136	R430	1-118-473-25	47K, 1/8W, 5%
136	R431	1-118-473-25	47K, 1/8W, 5%
136	R901	1-118-473-25	47K, 1/8W, 5%
136	R213	1-118-473-25	47K, 1/8W, 5%
136	R214	1-118-473-25	47K, 1/8W, 5%
136	R229	1-118-473-25	47K, 1/8W, 5%
136	R230	1-118-473-25	47K, 1/8W, 5%
137	R164	1-118-479-25	4.7, 1/8W, 5%
137	R321	1-118-479-25	4.7, 1/8W, 5%
138	R504	1-118-561-25	560, 1/8W, 5%
138	R707	1-118-561-25	560, 1/8W, 5%
138	R708	1-118-561-25	560, 1/8W, 5%
138	R513	1-118-561-25	560, 1/8W, 5%
139	R115	1-118-562-25	5.6K, 1/8W, 5%
139	R116	1-118-562-25	5.6K, 1/8W, 5%
139	R159	1-118-562-25	5.6K, 1/8W, 5%
140	R166	1-118-564-25	560K, 1/8W, 5%
141	R129	1-118-684-25	680K, 1/8W, 5%
141	R130	1-118-684-25	680K, 1/8W, 5%
142	R121	1-118-681-25	680, 1/8W, 5%

Ser No.	Ref NO.	Part No.	Description
142	R122	1-118-681-25	680, 1/8W, 5%
142	R167	1-118-681-25	680, 1/8W, 5%
143	R203	1-118-682-25	6.8K, 1/8W, 5%
143	R204	1-118-682-25	6.8K, 1/8W, 5%
143	R703	1-118-682-25	6.8K, 1/8W, 5%
143	R704	1-118-682-25	6.8K, 1/8W, 5%
143	R217	1-118-682-25	6.8K, 1/8W, 5%
143	R218	1-118-682-25	6.8K, 1/8W, 5%
144	R133	1-118-821-25	820, 1/8W, 5%
144	R134	1-118-821-25	820, 1/8W, 5%
144	R235	1-118-821-25	820, 1/8W, 5%
144	R236	1-118-821-25	820, 1/8W, 5%
144	R507	1-118-821-25	820, 1/8W, 5%
145	R131	1-118-822-25	8.2K 1/8W, 5%
145	R132	1-118-822-25	8.2K 1/8W, 5%
145	R301	1-118-822-25	8.2K 1/8W, 5%
145	R188	1-118-822-25	8.2K 1/8W, 5%
145	R189	1-118-822-25	8.2K 1/8W, 5%
146	R211	1-118-823-25	82K, 1/8W, 5%
146	R212	1-118-823-25	82K, 1/8W, 5%
148	R309	1-118-333-25	33K, 1/8W, 5%
148	R310	1-118-333-25	33K, 1/8W, 5%
148	R315	1-118-333-25	33K, 1/8W, 5%
148	R316	1-118-333-25	33K, 1/8W, 5%
148	R223	1-118-333-25	33K, 1/8W, 5%
148	R224	1-118-333-25	33K, 1/8W, 5%
149	R227	1-118-182-25	1.8K, 1/8W, 5%
149	R228	1-118-182-25	1.8K, 1/8W, 5%

## INTEGRATED CIRCUITS

Ser No.	Ref NO.	Part No.	Description
002	IC101	2-440-434-74-1	CXA1330S(DOLBY B.C)
003	IC401	2-441-267-71	KA8306 or BA6238A
004	IC202	2-441-313-72	LA2000 or BA 335
005	IC201	2-442-220-54-1	upc4570C
006	IC402	2-440-330-63-1	BA6138(ROHM)
007	IC301	2-442-241-54-1	upc1297CA(HX-PRO)
008	IC901	2-441-723-74-1	PC 817 or LTV 817
009	IC404	2-440-808-31	GD 4011B
028	IC501	2-441-218-71	KA 7805 or MC 7805

## TRANSISTORS

Ser No.	Ref NO.	Part No.	Description
160	Q401	2-406-104-15	KRC 103M
160	Q402	2-406-104-15	KRC 103M
012	Q107	2-402-179-65-1	2SC1775FTZ
012	Q108	2-402-179-65-1	2SC1775FTZ
012	Q109	2-402-179-65-1	2SC1775FTZ
012	Q110	2-402-179-65-1	2SC1775FTZ
013	Q101	2-402-118-15	KTC 3200/KTC 2240GR
013	Q102	2-402-118-15	KTC 3200/KTC 2240GR
013	Q103	2-402-118-15	KTC 3200/KTC 2240GR
014	Q103	2-402-118-15	KTC 3200/KTC 2240GR
014	Q111	2-402-111-35	KTC 3198/KTC 1815GR
014	Q112	2-402-111-35	KTC 3198/KTC 1815GR
014	Q120	2-402-111-35	KTC 3198/KTC 1815GR
014	Q121	2-402-111-35	KTC 3198/KTC 1815GR
014	Q122	2-402-111-35	KTC 3198/KTC 1815GR
014	Q123	2-402-111-35	KTC 3198/KTC 1815GR
014	Q307	2-402-111-35	KTC 3198/KTC 1815GR
014	Q308	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q309	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q403	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q204	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q404	2-402-111-35	KTC 3198/KTC 1815GR
014	Q502	2-402-111-35	KTC 3198/KTC 1815GR
014	Q502	2-402-111-35	KTC 3198/KTC 1815GR
014	Q507	2-402-111-35	KTC 3198/KTC 1815GR
014	Q509	2-402-111-35	KTC 3198/KTC 1815GR
014	Q512	2-402-111-35	KTC 3198/KTC 1815GR
014	Q515	2-402-111-35	KTC 3198/KTC 1815GR
014	Q516	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q525	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q203	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q705	2-402-111-35	KTC 3198/KTC 1815GR
Q14	Q124	2-402-111-35	KTC 3198/KTC 1815GR
015	Q117	2-400-118-25	KTA 1266/KTA 970BL
016	Q310	2-400-118-35	KTA 1266/KTA 1015GR
016	Q503	2-400-118-35	KTA 1266/KTA 1015GR
016	Q505	2-400-118-35	KTA 1266/KTA 1015GR
016	Q506	2-400-118-35	KTA 1266/KTA 1015GR
016	Q508	2-400-118-35	KTA 1266/KTA 1015GR
016	Q510	2-400-118-35	KTA 1266/KTA 1015GR
016	Q511	2-400-118-35	KTA 1266/KTA 1015GR
016	Q513	2-400-118-35	KTA 1266/KTA 1015GR
017	Q113	2-406-127-15	KRC 106M
017	Q114	2-406-127-15	KRC 106M
017	Q119	2-406-127-15	KRC 106M

Ser No.	Ref NO.	Part No.	Description
017	Q209	2-406-127-15	KRC 106M
017	Q210	2-406-127-15	KRC 106M
017	Q301	2-406-127-15	KRC 106M
017	Q302	2-406-127-15	KRC 106M
017	Q303	2-406-127-15	KRC 106M
017	Q304	2-406-127-15	KRC 106M
017	Q306	2-406-127-15	KRC 106M
017	Q311	2-406-127-15	KRC 106M
017	Q408	2-406-127-15	KRC 106M
017	Q701	2-406-127-15	KRC 106M
017	Q702	2-406-127-15	KRC 106M
017	Q703	2-406-127-15	KRC 106M
017	Q704	2-406-127-15	KRC 106M
017	Q706	2-406-127-15	KRC 106M
017	Q709	2-406-127-15	KRC 106M
017	Q125	2-406-127-15	KRC 106M
018	Q118	2-406-106-15	KRA 103M
018	Q219	2-406-106-15	KRA 103M
018	Q305	2-406-106-15	KRA 103M
018	Q409	2-406-106-15	KRA 103M
018	Q422	2-406-106-15	KRA 103M
018	Q423	2-406-106-15	KRA 103M
018	Q425	2-406-106-15	KRA 103M
018	Q901	2-406-106-15	KRA 103M
019	Q115	2-403-155-25	KTD 1302B
019	Q116	2-403-155-25	KTD 1302B
019	Q201	2-403-155-25	KTD 1302B
019	Q202	2-403-155-25	KTD 1302B
020	Q105	2-403-127-25	2SC2878B
020	Q106	2-403-127-25	2SC2878B
020	Q707	2-402-127-25	2SC2878B
020	Q708	2-402-127-25	2SC2878B
021	Q501	2-401-112-21	KTB 1366/KTB1015Y
021	Q514	2-401-112-21	KTB 1366/KTB1015Y
046	Q405	2-403-174-45	KTD 1028B hfe;1600
046	Q406	2-403-174-45	KTD 1028B hfe;1600
046	Q407	2-403-174-45	KTD 1028B hfe;1600

## DIODES

Ser No.	Ref NO.	Part No.	Description
022	DZ505	2-426-128-85	HZ12B2LTA
023	DZ101	2-462-105-85	HZ11B2LTA

Ser No.	Ref NO.	Part No.	Description
023	DZ1	2-426-105-85	HZ11B2LTA
024	DZ502	2-421-105-35	1N962B
025	DZ503	2-421-160-35	1N966B
052	DZ504	2-421-051-35	1N751A
053	DZ501	2-421-047-35	1N750A
027	D101	2-414-299-95	1SS133 or 1N 4148M
027	D102	2-414-299-95	1SS133 or 1N 4148M
027	D103	2-414-299-95	1SS133 or 1N 4148M
027	D302	2-414-299-95	1SS133 or 1N 4148M
027	D303	2-414-299-95	1SS133 or 1N 4148M
027	D501	2-414-299-95	1SS133 or 1N 4148M
027	D502	2-414-299-95	1SS133 or 1N 4148M
027	D503	2-414-299-95	1SS133 or 1N 4148M
027	D504	2-414-299-95	1SS133 or 1N 4148M
027	D505	2-414-299-95	1SS133 or 1N 4148M
027	D506	2-414-299-95	1SS133 or 1N 4148M
027	D507	2-414-299-95	1SS133 or 1N 4148M
027	D508	2-414-299-95	1SS133 or 1N 4148M
027	D509	2-414-299-95	1SS133 or 1N 4148M
027	D310	2-414-299-95	1SS133 or 1N 4148M

## SEMI FIXE O RESISTORS

Ser No.	Ref NO.	Part No.	Description
026	VR401	2-512-103-01	6MM(RH0615C),10K
026	VR111	2-512-103-01	6MM(RH0615C),10K
026	VR112	2-512-103-01	6MM(RH0615C),10K
026	VR301	2-512-103-01	6MM(RH0615C),10K
026	VR302	2-512-103-01	6MM(RH0615C),10K
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	VR201	2-512-472-01	6MM(RH0615C),4.7K
045	VR202	2-512-472-01	6MM(RH0615C),4.7K

## MISCELLANEOUS

Ser No.	Ref NO.	Part No.	Description
029	HEA501	3-710-702-03	40MM, AL
029	HEA502	3-710-702-03	40MM, AL
029	HEA503	3-710-702-03	40MM, AL
030	CNC101	2-168-307-01	30P,CABLE CARD,WAFER
031	CN401	2-168-252-01	3P,FKN1049-A, WAFER
031	CN402	2-168-252-01	3P,FKN1039-A, WAFER

Ser No.	Ref NO.	Part No.	Description
031	CN403	2-168-252-01	3P, FKN1039-A, WAFER
031	CN404	2-168-252-01	3P, FKN1039-A, WAFER
032	CN405	2-168-500-01	7P, 53014-0710, WAFER
033	CN407	2-168-498-01	5P, 53014-0510, WAFER
034	CN406	2-168-497-01	4P, 53014-0410, WAFER
035	CN102	2-168-503-01	10P, 53014-1010, WAFER
035	CN301	2-168-503-01	10P, 53014-1010, WAFER
036	CN101	2-168-262-01	5P, FKN1041-A, WAFER
037	CN501	2-168-530-01	9P, 5267-09A, WAFER
038	CN302	2-168-251-01	2P, FKN1038-A, WAFER
051	CN701	2-168-122-01	3P, NKC-022-0 WAFER
051	CN303	2-168-122-01	3P, NKC-022-0 WAFER
052	JP901	2-155-675-01-1	HTJ-035-12
053	JP902	2-155-675-01-1	HTJ-035-12
054	JAC101	2-155-664-01	4P SILVER, RCA

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-061-0, BIAS TRAP
041	L208	2-129-261-01	NTH-061-0, BIAS TRAP
042	L101	2-129-387-01	22mH
042	L102	2-129-387-01	22mH
043	L701	2-129-498-01-1	MPX Coll
043	L702	2-129-498-01-1	MPX Coll
048	L201	2-011-472-21	4.7mH, NTH-030-0
048	L202	1-011-472-21	4.7mH, NTH-030-0
049	L203	1-011-322-21	3.3mH, NTH-028-0
049	L204	1-011-322-21	3.3mH, NTH-028-0
050	L205	1-011-222-21	2.2mH, NTH-026-0
050	L206	1-011-222-21	2.2mH, NTH-026-0

## PCB-2 CONTROL P.C BOARD

## CAPACITORS

Ser No.	Ref NO.	Part No.	Description
023	C802	1-9A3-103-64	103M, 20%, 16V
023	C803	1-9A3-103-64	103M, 20%, 16V
041	C828	1-9A3-473-64	473M, 20%, 16V
041	C829	1-9A3-473-64	473M, 20%, 16V
042	C830	1-9A3-122-64	1200PF, 20%, 16V

## RESISTORS

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

Ser No.	Ref NO.	Part No.	Description
030	R851	1-118-104-25	100K, 1/8W, 5%
030	R853	1-118-104-25	100K, 1/8W, 5%
030	R854	1-118-104-25	100K, 1/8W, 5%
030	R856	1-118-104-25	100K, 1/8W, 5%
030	R859	1-118-104-25	100K, 1/8W, 5%
030	R860	1-118-104-25	100K, 1/8W, 5%
030	R861	1-118-104-25	100K, 1/8W, 5%
031	R802	1-118-105-25	1M, 1/8W, 5%
032	R842	1-118-222-25	2.2K, 1/8W, 5%
032	R843	1-118-222-25	2.2K, 1/8W, 5%
032	R844	1-118-222-25	2.2K, 1/8W, 5%
033	R903	1-118-223-25	22K, 1/8W, 5%
034	R902	1-118-223-25	22K, 1/8W, 5%
035	R836	1-118-333-25	33K, 1/8W, 5%
035	R837	1-118-333-25	33K, 1/8W, 5%
035	R838	1-118-333-25	33K, 1/8W, 5%
036	R829	1-118-473-25	47K, 1/8W, 5%
036	R830	1-118-473-25	47K, 1/8W, 5%
036	R831	1-118-473-25	47K, 1/8W, 5%
036	R832	1-118-473-25	47K, 1/8W, 5%
036	R833	1-118-473-25	47K, 1/8W, 5%
036	R834	1-118-473-25	47K, 1/8W, 5%
036	R835	1-118-473-25	47K, 1/8W, 5%
036	R841	1-118-473-25	47K, 1/8W, 5%
036	R864	1-118-473-25	47K, 1/8W, 5%
037	R869	1-118-102-25	1K, 1/8W, 5%
037	R870	1-118-102-25	1K, 1/8W, 5%
037	R871	1-118-102-25	1K, 1/8W, 5%
037	R872	1-118-102-25	1K, 1/8W, 5%
037	R873	1-118-102-25	1K, 1/8W, 5%
039	R874	1-114-399-25	3.9, 1/4W, 5%
039	R875	1-114-399-25	3.9, 1/4W, 5%
040	R846	1-118-181-25	180, 1/8W, 5%
057	R778	1-118-102-25	1K, 1/8W, 5%
058	R845	1-118-183-25	18K, 1/8W, 5%
060	R841	1-118-151-25	150, 1/8W, 5%

## INTEGRATED CIRCUITS

Ser No.	Ref NO.	Part No.	Description
003	IC801	2-600-182-01-1	LE1064 or LE1065

Ser No.	Ref NO.	Part No.	Description
011	Q803	2-406-106-15	KRA103M
011	Q804	2-406-106-15	KRA103M
011	Q805	2-406-106-15	KRA103M
011	Q806	2-406-106-15	KRA103M
011	Q807	2-406-106-15	KRA103M
012	Q801	2-406-106-15	KRA103M
012	Q802	2-406-106-15	KRA103M
014	D801	2-414-299-95	1SS133 or 1N4148M
014	D802	2-414-299-95	1SS133 or 1N4148M
014	D803	2-414-299-95	1SS133 or 1N4148M
014	D804	2-414-299-95	1SS133 or 1N4148M
014	D805	2-414-299-95	1SS133 or 1N4148M
014	D806	2-414-299-95	1SS133 or 1N4148M
014	D807	2-414-299-95	1SS133 or 1N4148M
014	D808	2-414-299-95	1SS133 or 1N4148M
015	LED802	2-419-473-45	R34MC N49
055	LED801	2-419-014-45	SPR39MVW3

## ROUND VOLUMES

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

## CERAMIC RESONATOR

Ser No.	Ref NO.	Part No.	Description
004	RES801	2-138-186-01	FCR4, 19MCT3

## MISCELLANEOUS

Ser No.	Ref NO.	Part No.	Description
055	FLT801	2-143-262-01	CM1298D
009	CN801	2-168-289-01	30P, FPC
010	SW802	2-208-156-05	SKHV-10910
		~SW801	
018	WA801	2-159-7N0-05	10P, 2.0%
018	WA802	2-159-7N0-01	10P, 2.0%
019	CN802	2-168-572-01	8P, TRC-X08X-A2
020	CN803	2-168-573-01	8P, TRC-X08P-A2
054	Card	2-157-710-01	BNCD-P, 30P, 150%
	-CABLE		
056	FLT HOLDER	3-327-015-02	ABS 730

## PCB-3 POWER SUPPLY P.C VOARO

## CAPACITORS

Ser No.	Ref NO.	Part No.	Description
024	C901	1-414-222-67	CEA, 2200 $\mu$ /25V
025	C902	1-414-472-67	CEA, 4700 $\mu$ /25V
025	C903	1-414-472-67	CEA, 4700 $\mu$ /25V
026	C905	1-414-471-67	CEA, 470 $\mu$ /25V
027	C904	1-414-221-65	CEA, 220 $\mu$ /25V
028	C907	1-998-205-01	DA7170 103Z/250V

## DIODES

Ser No.	Ref NO.	Part No.	Description
013	D901	2-413-581-65	1N4003L
013	D902	2-413-581-65	1N4003L
013	D903	2-413-581-65	1N4003L
013	D904	2-413-581-65	1N4003L
013	D905	2-413-581-65	1N4003L
013	D906	2-413-581-65	1N4003L
013	D907	2-413-581-65	1N4003L
013	D908	2-413-581-65	1N4003L
013	D909	2-413-581-65	1N4003L
013	D910	2-413-581-65	1N4003L
014	D911	2-414-299-95	1SS133 or 1N4148M
014	D912	2-414-299-95	1SS133 or 1N4148M
021	DZ902	2-421-240-35	1N970B
021	DZ901	2-421-062-45	1N753A

## MISCELLANEOUS

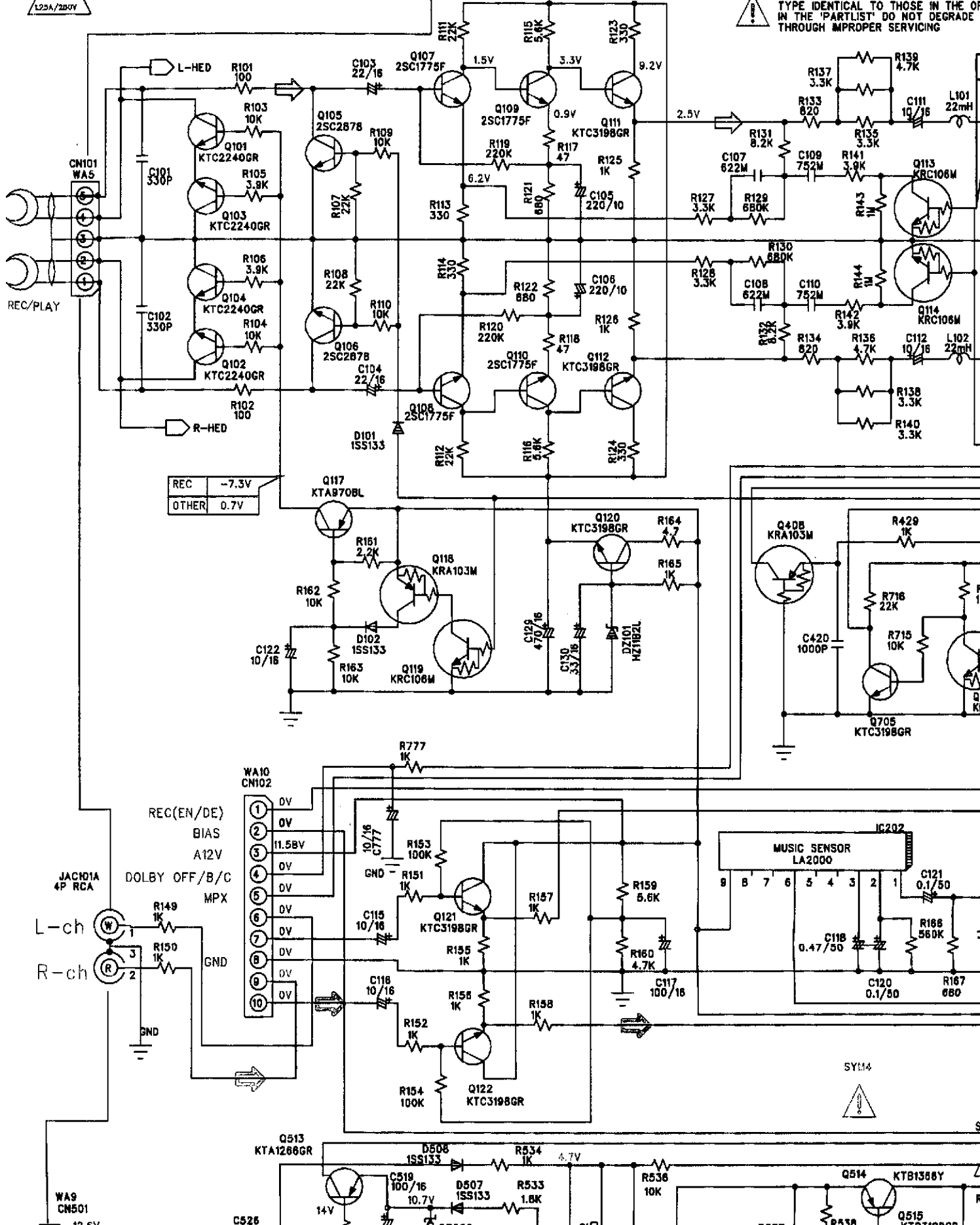
Ser No.	Ref NO.	Part No.	Description
017	WA101	2-159-7N6-01	9P, 2.5 $\mu$ m, 100 $\mu$ m
038	POWER TRANS	2-131-550-01	AC 120/60Hz
038	POWER TRANS	2-131-549-01	AC 230/240/50Hz
040	POWER CORD	2-211-139-01	AC 120/60Hz
040	POWER CORD	2-211-138-01	AC 230/240/50Hz

# SCHEMATIC DIAGRAM (1)

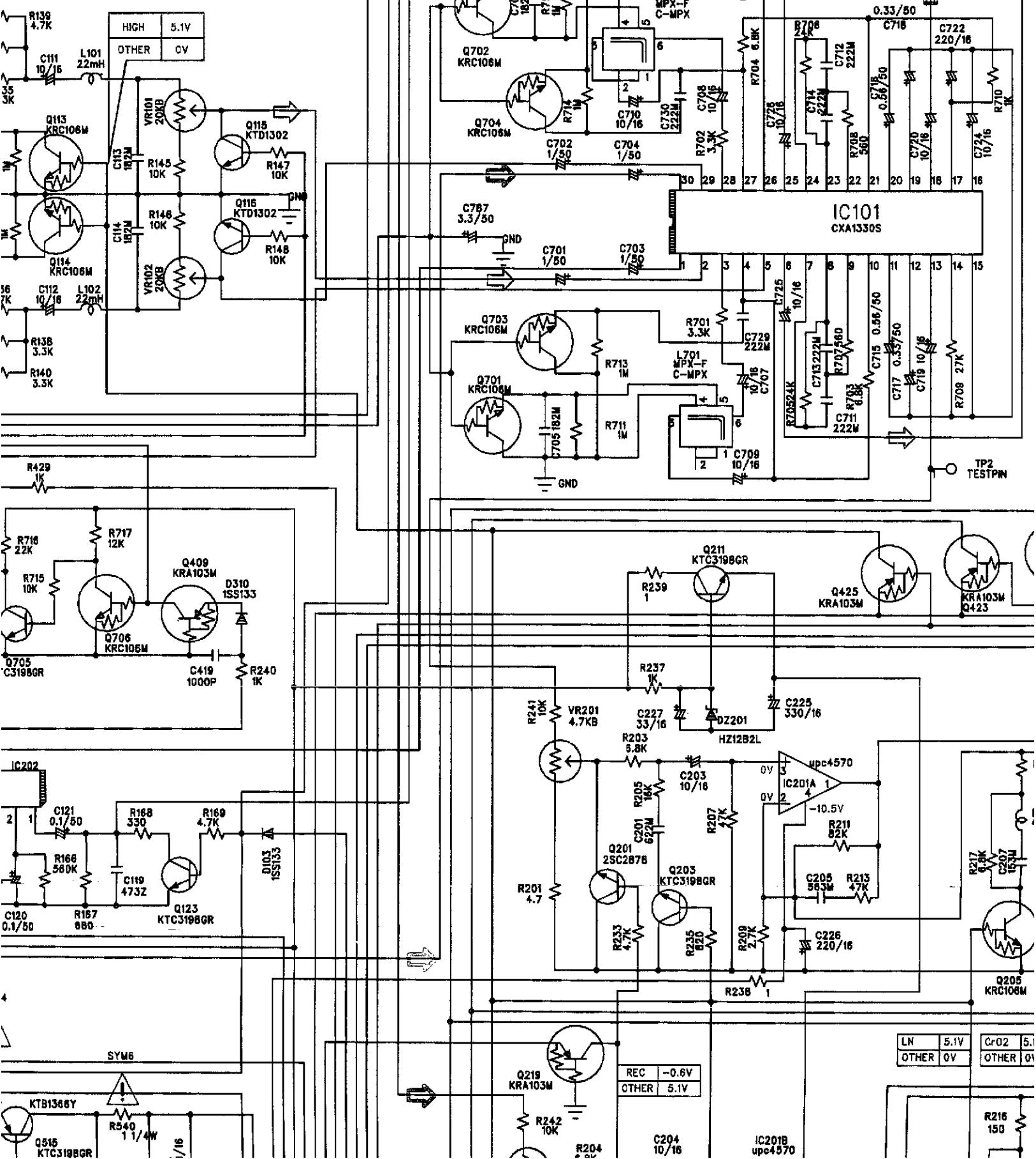
**CAUTION TO THE SERVICE TECHNICIANS**  
 BEFORE RETURNING THE RECEIVER TO THE CUSTOMER  
 LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS  
 SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS  
 ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.



**NOTE :**  
 1. ALL RESISTANCES VALUES ARE IN  $\Omega$ .  
 $K \Omega = 1000 \Omega$ ,  $M \Omega = 1000K \Omega$ .  
 2. THE WATTAGE OF RESISTORS IS 1/8W UNL.  
 3. ALL CAPACITANCES VALUES ARE IN  $\mu F$  UNL.  
 CAUTION THE PARTS IDENTIFIED BY  $\nabla$   
 MARKS ARE CRITICAL FOR SAFETY RE  
 TYPE IDENTICAL TO THOSE IN THE OF  
 IN THE 'PARTLIST' DO NOT DEGRADE  
 THROUGH IMPROPER SERVICING



RESISTORS ARE IN  $\Omega$ .  
 CAPACITORS ARE IN  $\mu$ F UNLESS OTHERWISE NOTED.  
 VALUES ARE IN  $\mu$ F UNLESS OTHERWISE NOTED. Power  
 RATINGS IDENTIFIED BY SHADING AND  
 SPECIFIC FOR SAFETY REPLACE ONLY WITH  
 EQUIVALENTS TO THOSE IN THE ORIGINAL CIRCUIT OR SPECIFIED  
 OTHERWISE. DO NOT DEGRADE THE SAFETY OF THE APPLIANCE  
 WHEN SERVICING



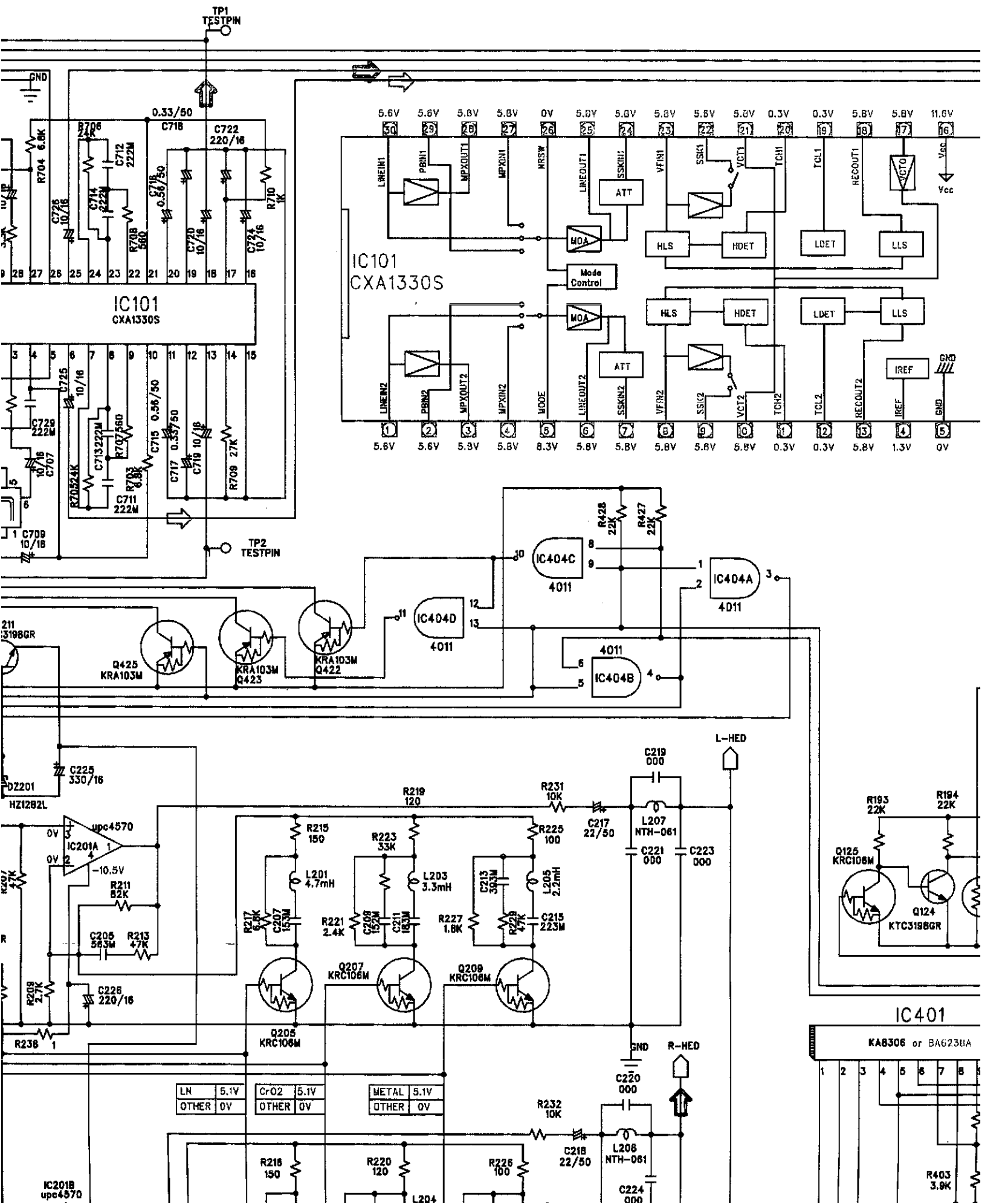
HIGH	5.1V
OTHER	0V

REC	-0.6V
OTHER	5.1V

LN	5.1V	Cr02	5.1V
OTHER	0V	OTHER	0V

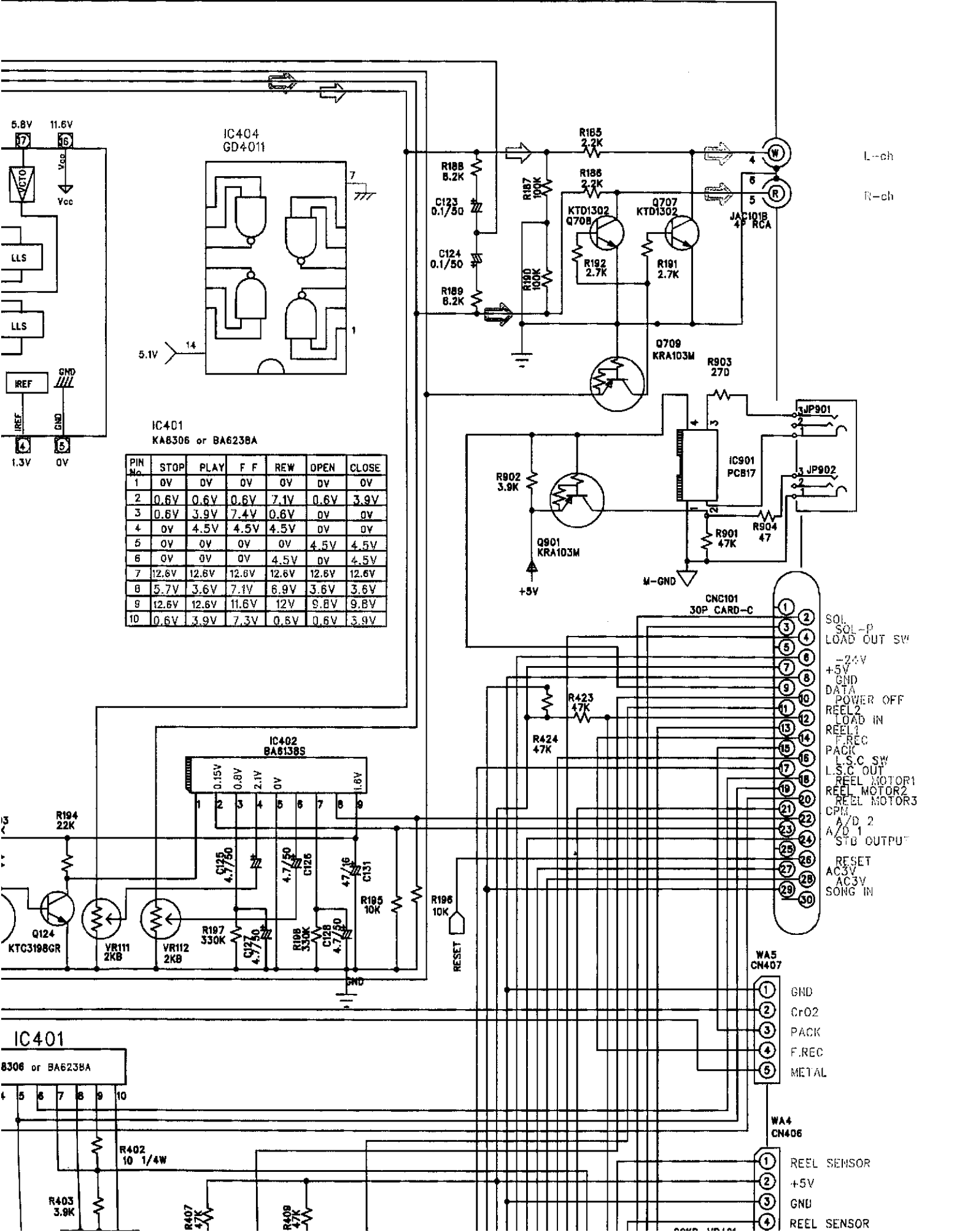
R216	150
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H

J



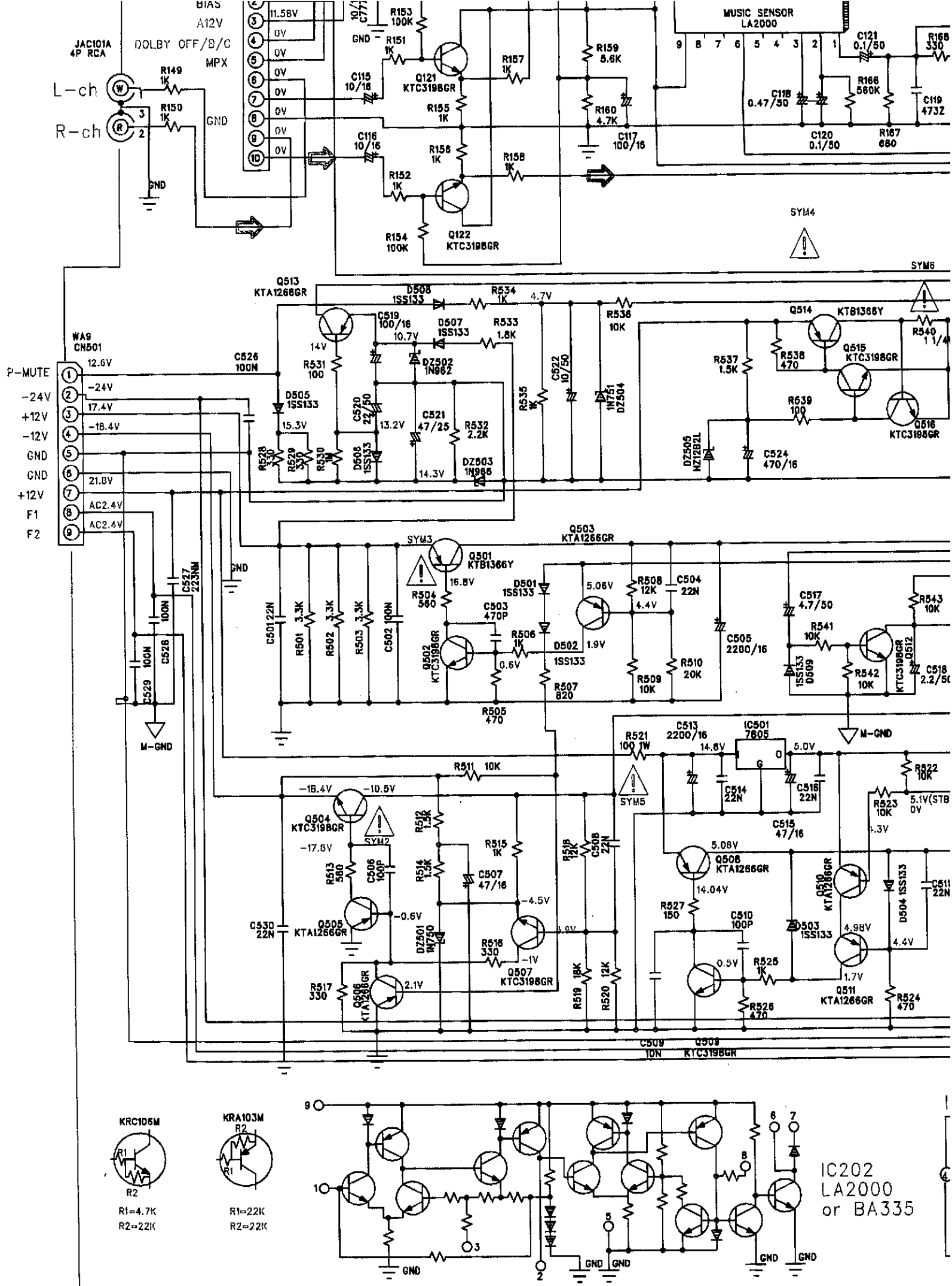
IC401  
KA8306 or BA6238A

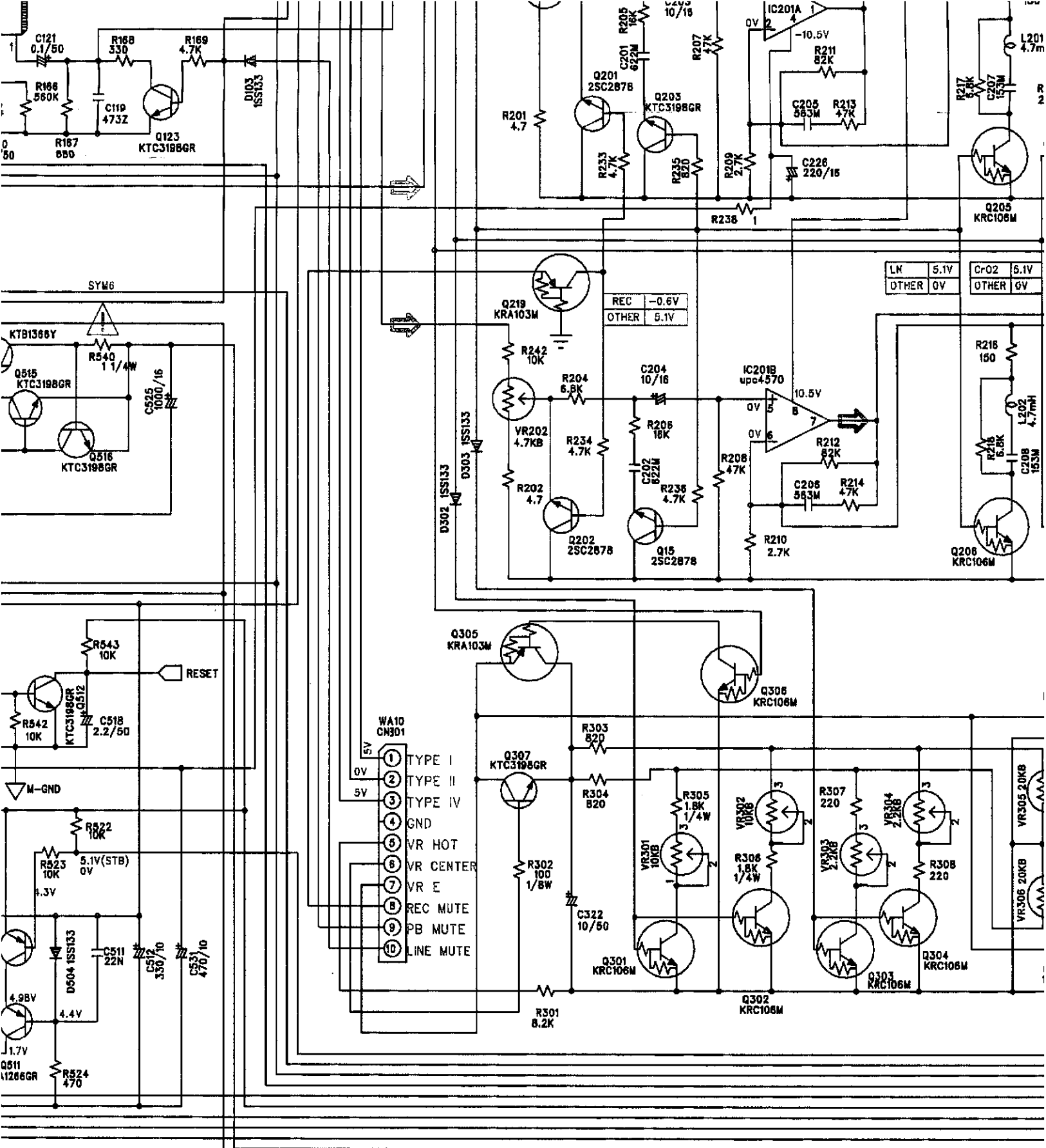
PIN No	STOP	PLAY	FF	REW	OPEN	CLOSE
1	0V	0V	0V	0V	0V	0V
2	0.6V	0.6V	0.6V	7.1V	0.6V	3.9V
3	0.8V	3.9V	7.4V	0.6V	0V	0V
4	0V	4.5V	4.5V	4.5V	0V	0V
5	0V	0V	0V	0V	4.5V	4.5V
6	0V	0V	0V	4.5V	0V	4.5V
7	12.6V	12.6V	12.6V	12.6V	12.6V	12.6V
8	5.7V	3.6V	7.1V	6.9V	3.6V	3.6V
9	12.6V	12.6V	11.6V	12V	9.8V	9.8V
10	0.6V	3.9V	7.3V	0.6V	0.6V	3.9V

- 1 SOL
- 2 SOL-P
- 3 LOAD OUT SW
- 4
- 5
- 6 -2.4V
- 7 +5V
- 8 GND
- 9 DATA
- 10 POWER OFF
- 11 REEL 2
- 12 LOAD IN
- 13 REEL 1
- 14 F.REC
- 15 PACK
- 16 L.S.C SW
- 17 L.S.C OUT
- 18 REEL MOTOR1
- 19 REEL MOTOR2
- 20 REEL MOTOR3
- 21 CPM
- 22 A/D 2
- 23 A/D 1
- 24 STB OUTPUT
- 25
- 26
- 27 RESET
- 28 AC3V
- 29 AC3V
- 30 SONG IN

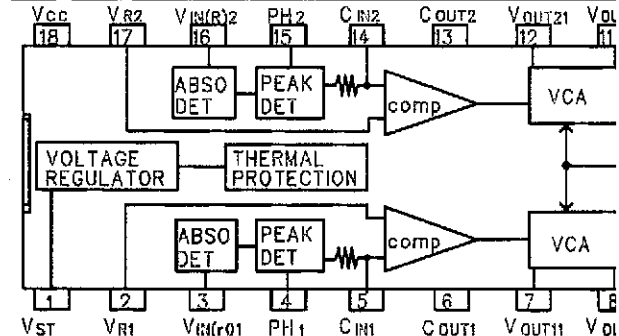
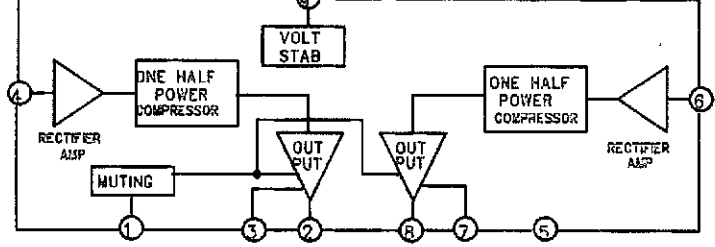
- WA5  
CN407
- 1 GND
  - 2 Cr02
  - 3 PACK
  - 4 F.REC
  - 5 METAL

- WA4  
CN406
- 1 REEL SENSOR
  - 2 +5V
  - 3 GND
  - 4 REEL SENSOR

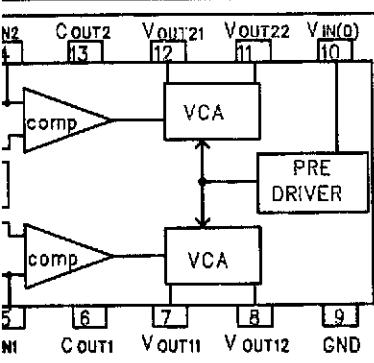
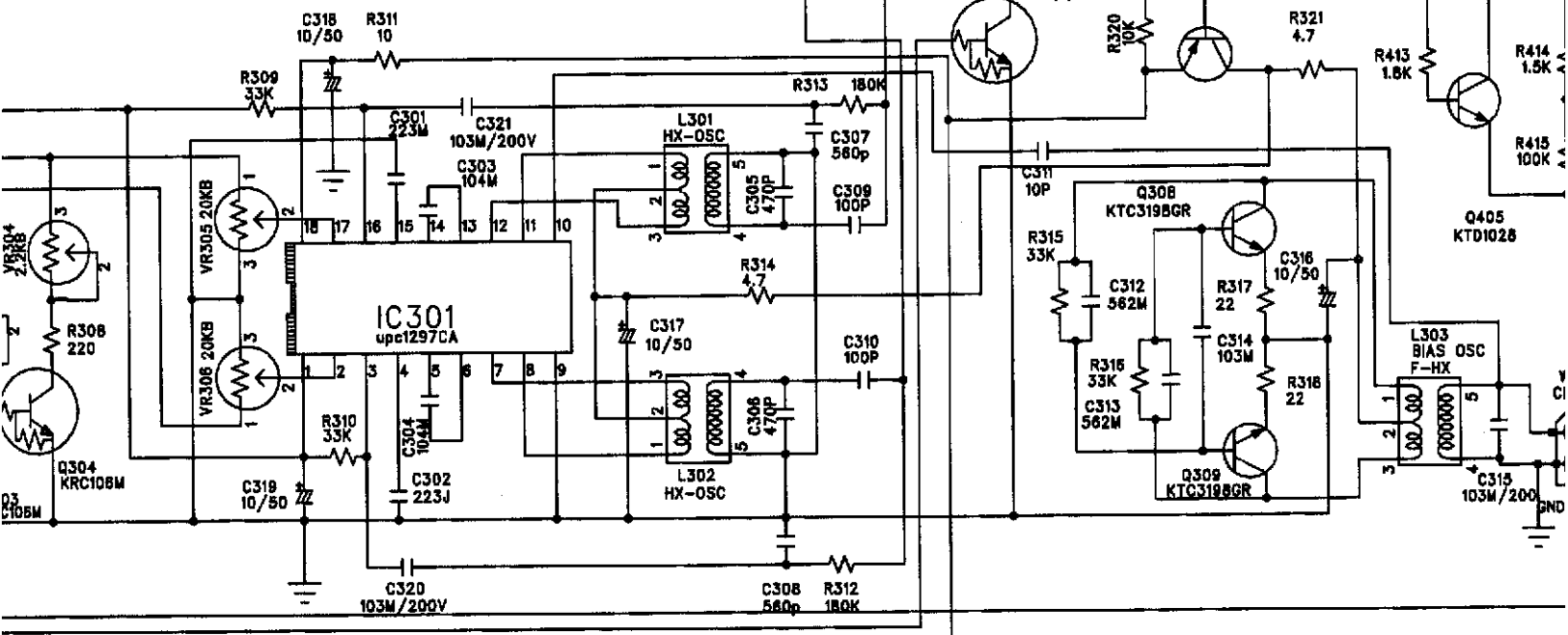
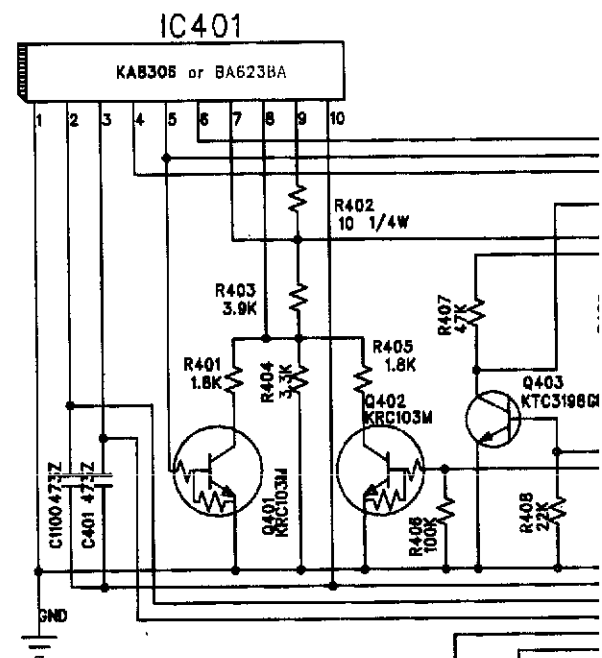
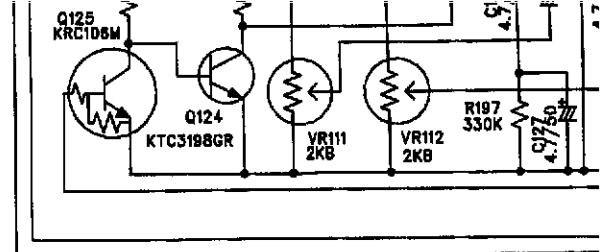
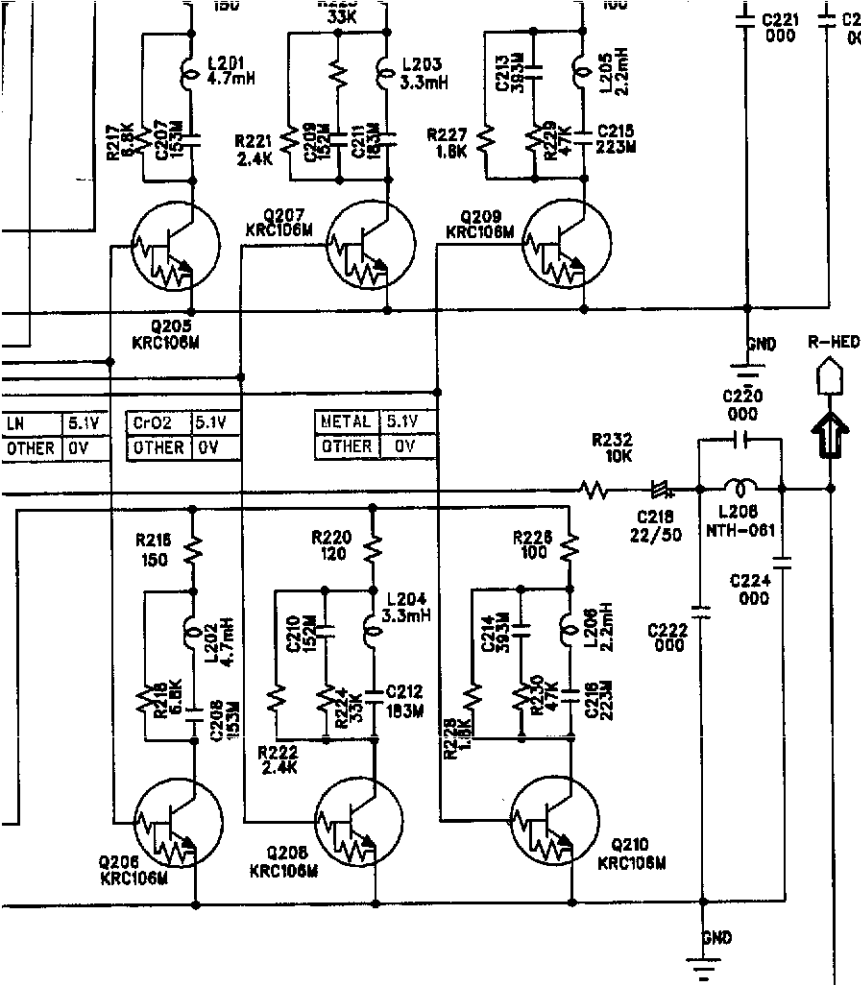




IC402 BA6138A or KA8306



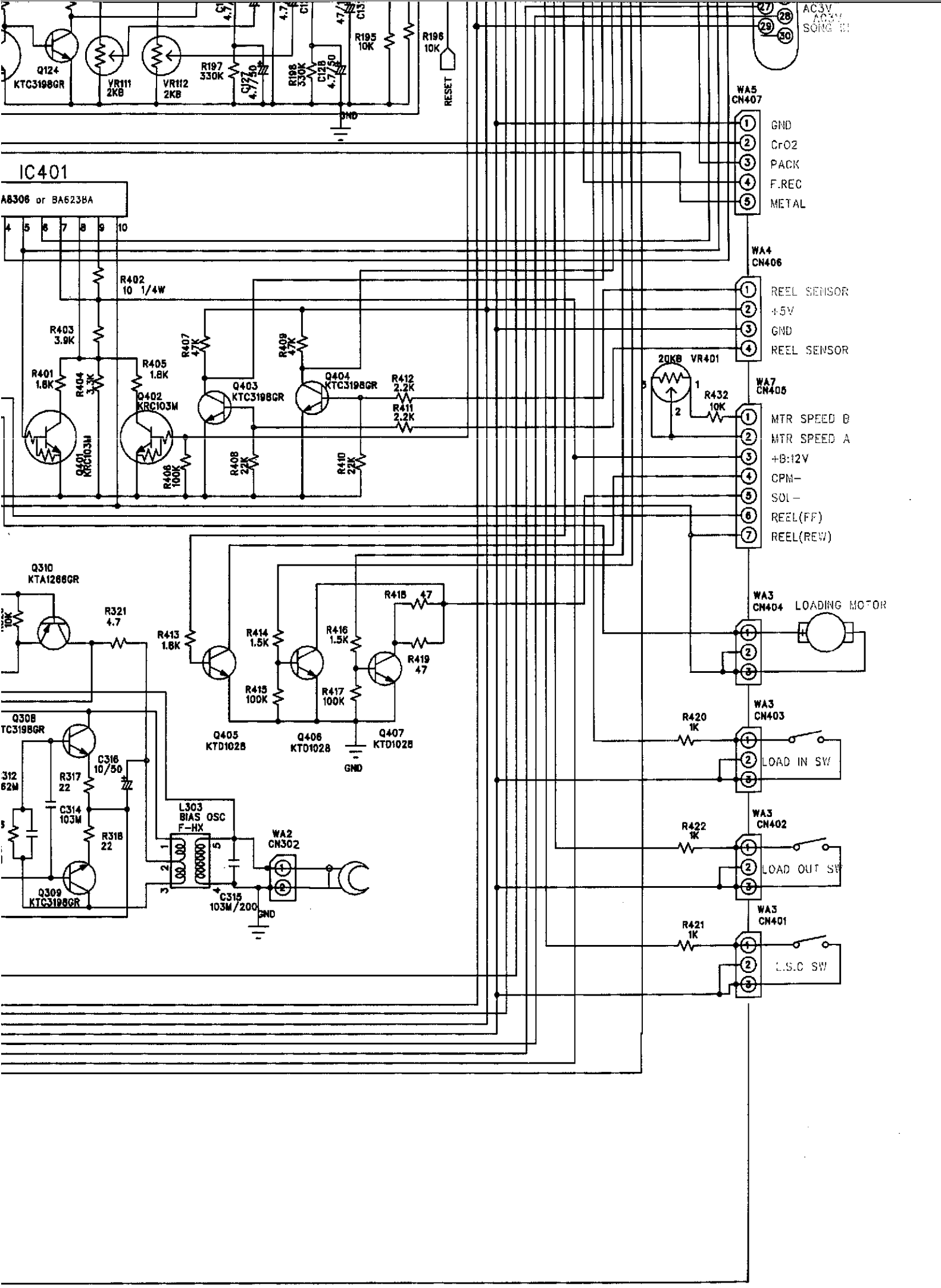
202  
A2000  
BA335



IC301  
upc1297CA

IC301  
upc1297CA

PIN No.	2, 17	4, 15	6, 14	6, 13	7, D, 11, 12
REC	METAL	3.6V	3.97	3.47	3.07
	GrO2	2.2	2.74	2.2	2.2
	LN	1.6	2.16	1.50	2.0
OTHER	0V	0V	0V	10.2V	0V



SCHMATIC DIAGRAM (2)

- \* NOTE :
1. ALL RESISTANCES VALUES ARE IN  $\Omega$ .  
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  $\mu$ F UNLESS OTHERWISE NOTED. P=muF
- 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.

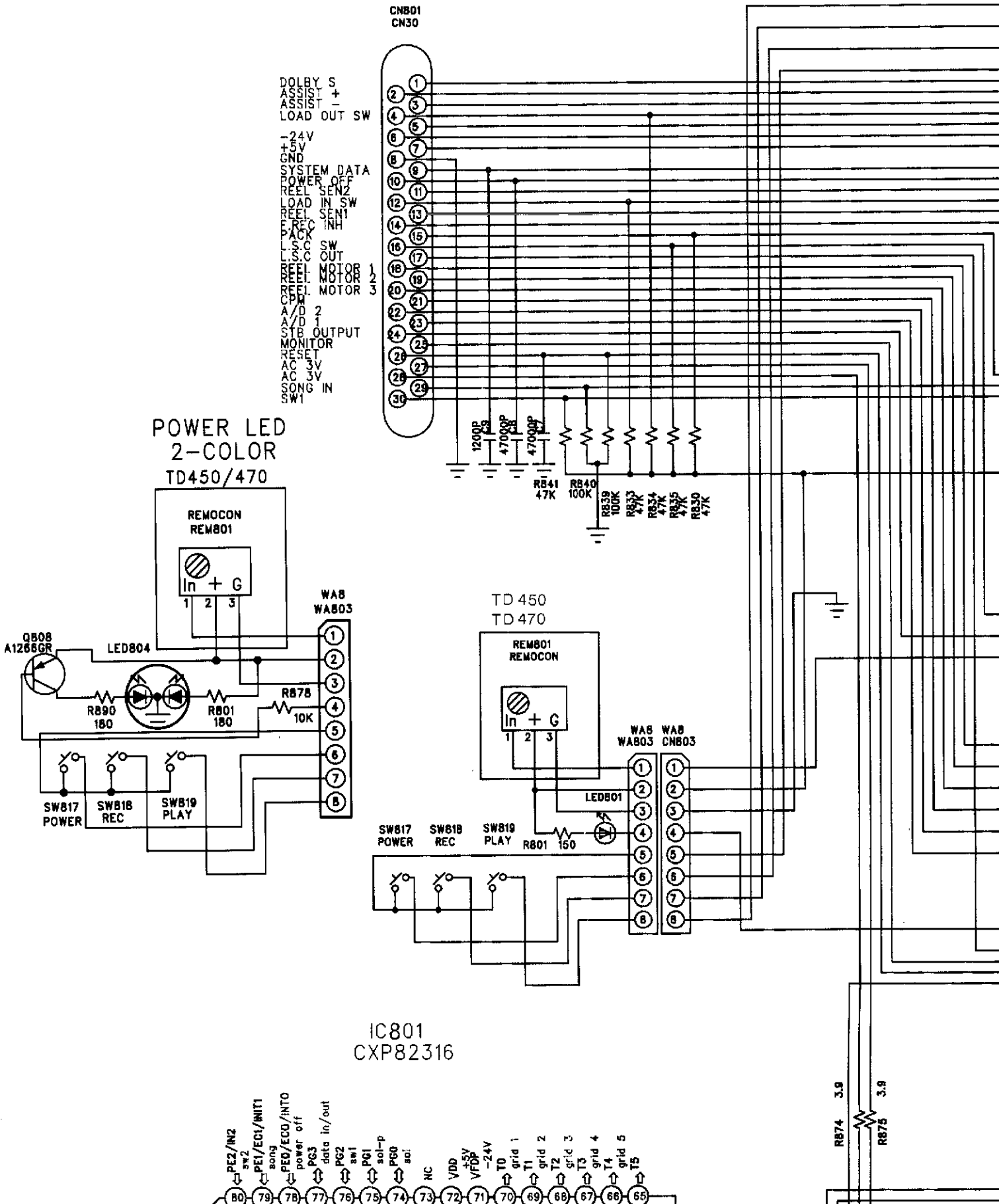


1

2

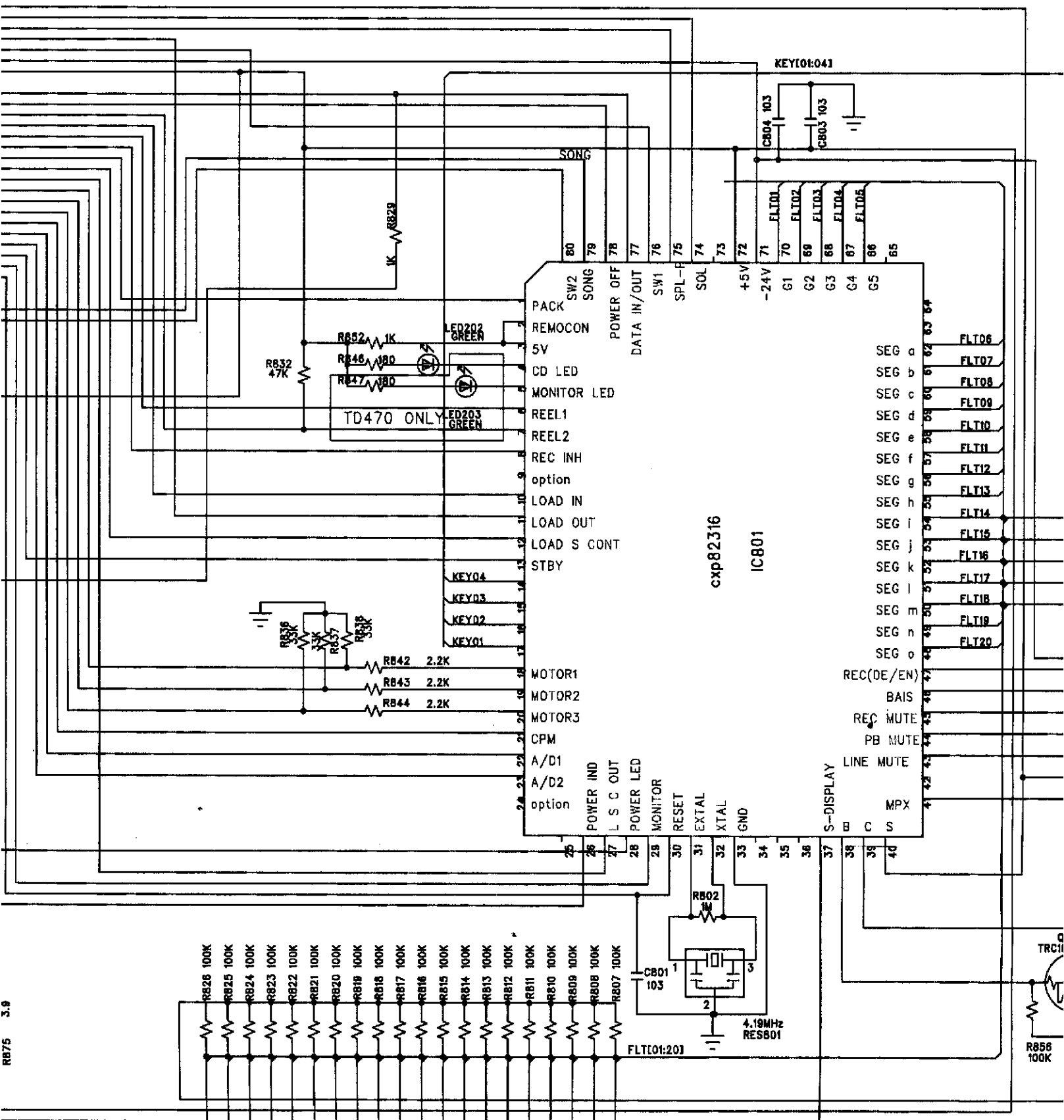
3

4



CAUTION TO THE SERVICE TECHNICIANS

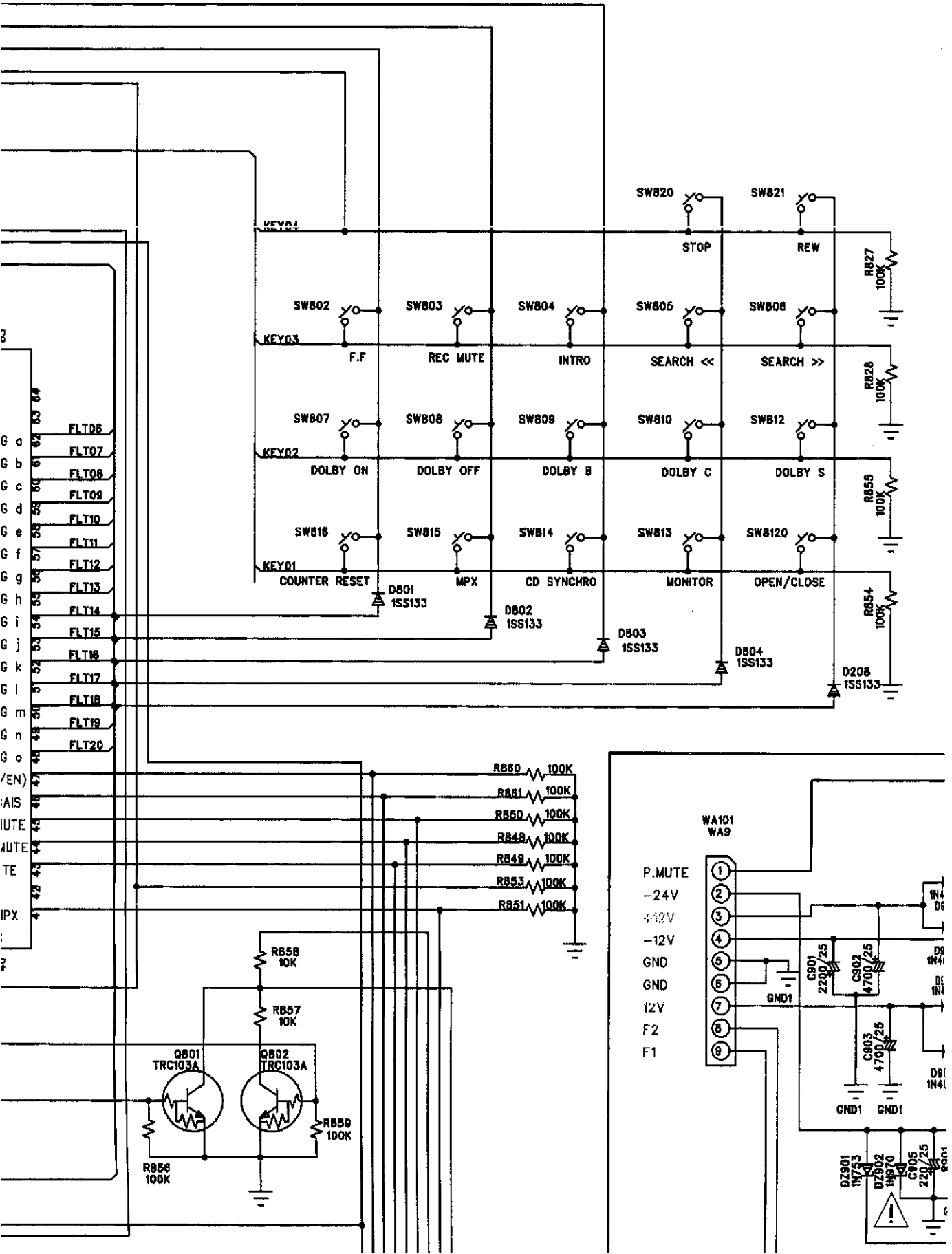
BEFORE RETURNING THE RECEIVER TO THE CUSTOMER LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHOULD BE PERFORMED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY INSULATED FROM THE SUPPLY CIRCUIT.






RB75 3.9

TRCH  
R856 100K





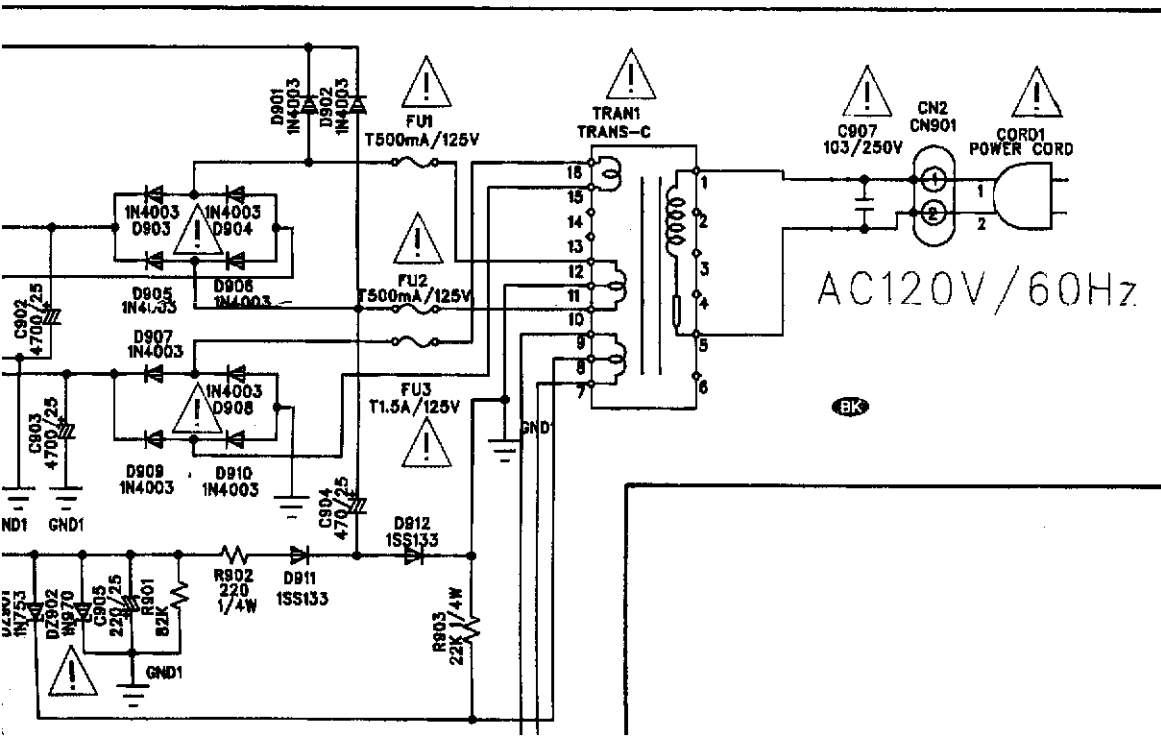
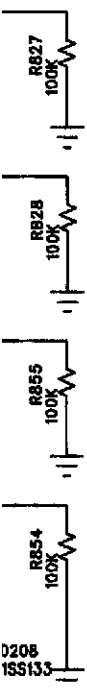
TERMINAL FUNCTIONS

Pin No.	Port name	Function name	I/O	Outline functions
1	PE3	PACK	I	Pack detection terminal
6	PE0	RELL1	I	REEL sense 
7	PB1	RELL2	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		GND 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 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		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.

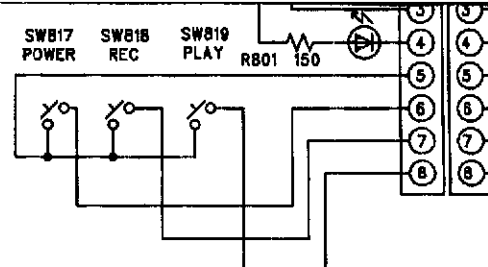
NOTE : Low level=0V  
High level=5.1V

**BK** : North America area model

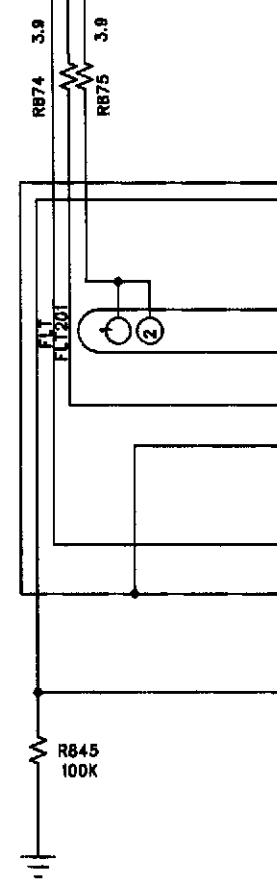
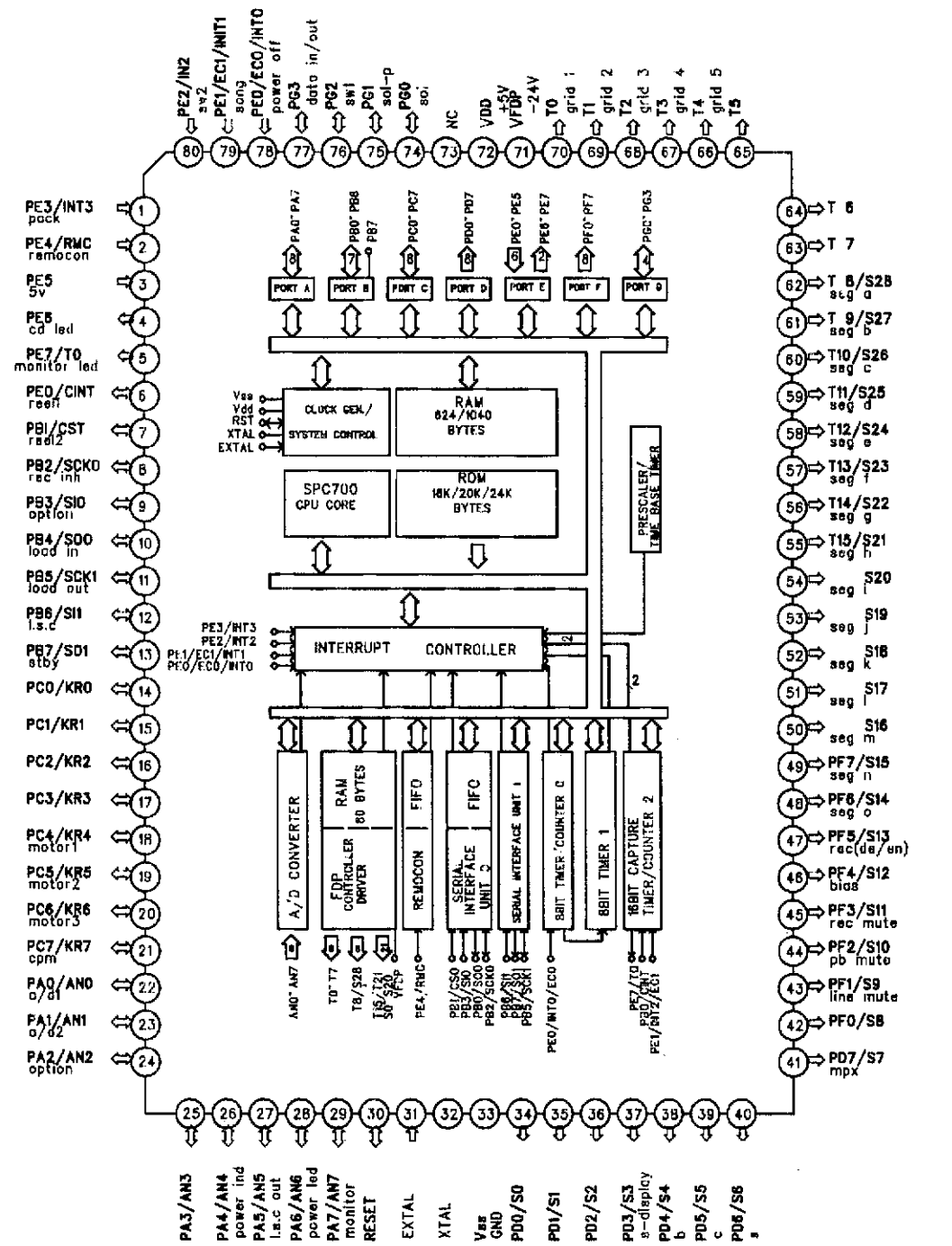
**I** **B** : International model Black version



POWER REC PLAY



IC801  
CXP82316



4

5

6

7

