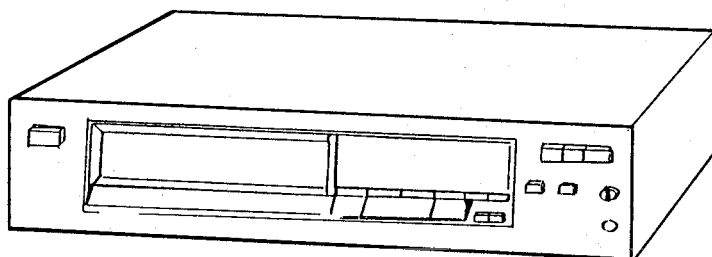


# CDP-670

## SERVICE MANUAL

US Model  
Canadian Model  
AEP Model



### SPECIFICATIONS

Frequency response	2Hz—20kHz ( $\pm 0.5$ dB)
Signal-to-noise ratio	More than 100dB
Dynamic range	More than 93dB
Harmonic distortion (1kHz)	Less than 0.008%
Channel separation	More than 95dB (1kHz)
Outputs	LINE OUT (phono jacks) Output level 2V (at 50kilohms) Load impedance over 10kilohms DIGITAL OUT (OPTICAL) (optical output connector) Wave length 660nm Output level -18dBm
<b>General</b>	
Power requirements	AEP Model: 220V AC, 50/60Hz US, Canadian Model: 120V AC, 60Hz
Power consumption	AEP Model: 10W US, Canadian Model: 12W
Dimensions (approx. including projections)	AEP Model: 430x100x275 mm (17x4x10 inches) US, Canadian Model: 430x95x275 mm (17x3 $\frac{3}{4}$ x10 inches)
Weight (approx.)	3.5kg (7 lbs 12oz)
<b>Supplied accessories</b>	
Audio signal connecting cord (2 phono plugs—2 phono plugs) (1)	
Remote commander (1), Sony SUM-3 (NS) batteries (2)	
AC power cord (1)	

Design and specifications subject to change without notice.

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COMPACT DISC PLAYER  
**SONY**®


## FEATURES

- Three CUSTOM EDIT functions, convenient for tape editing
  - PROGRAM EDIT function for confirming the total playing time while choosing the selection to be programmed.
  - TIME EDIT function for programming selections automatically to fit in a desired duration.
  - TIME FADE function for stopping the play, fading out at the desired time.
- FADE-IN/FADE-OUT function for fading in or out the play when starting or stopping.
- SHUFFLE play for playing the selections in a random order.
- REPEAT function for a single selection, the whole disc, PROGRAM play, or SHUFFLE play.
- Easy-to-read display window shows the selection number being played, all the numbers of the selections on the disc (up to 16), the elapsed playing time, and the remaining time.

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

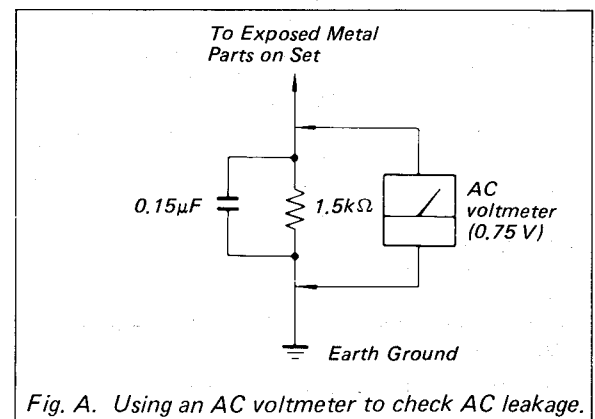


Fig. A. Using an AC voltmeter to check AC leakage.

## SERVICING NOTE

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

**CAUTION**

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT**

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.

During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

## 1. Laser Diode Properties

- Material: GaAlAs
- Wavelength: 780 nm
- Emission Duration: continuous
- Laser Output: max. 44.6  $\mu$ W\*

\* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a breakdown in the APC circuit (including laser diode), replace the entire Optical Pick-up Block (including APC board).

## BESKYTTELSE AF ØJNE MOD LASERSTRÅLING UNDER SERVICE

I dette apparat anvendes laserlys. Derfor skal nedenstående instruktioner nøje følges under service.

Følg iøvrigt instruktionerne i servicemanualen.

**ADVARSEL!!**

Under service må øjnene ikke komme nær objektiv-linsen på den optiske pick-up enhed. I tilfælde af at det er nødvendigt at kontrollere udsendelsen af laserlys, skal det ske i en afstand af mere end 25 cm fra den optiske pick-up.

## LASER ADVARSEL MÆRKNING

Følgende mærkning findes indvendig i apparatet:

## 1. Advarsel Mærkning

CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.  
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING.

4 BBS 843 02

## 1. Laser-didoe data

- Materiale: GaAlAs
- Bølgelængde: 780 nm
- Udstråling: Kontinuerlig
- Laseroutput: Max. 0,4 mW\*

\* Målt i 1,6 mm afstand fra overfladen af objektiv-linsen på den optiske pick-up enhed.

- Klassifikation: Klasse IIIb.

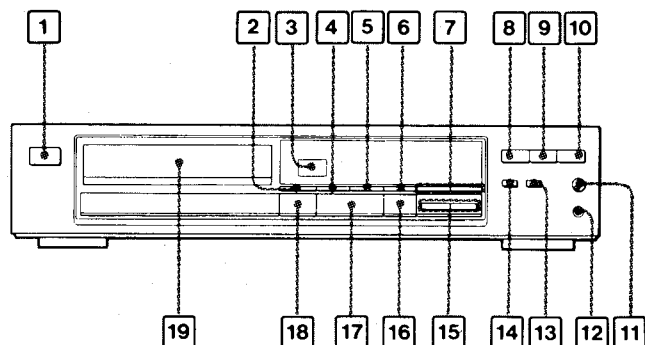
2. Adskil aldrig den optiske pick-up enhed under service, og juster ikke APC kredsløbet (Automatic Power Control). Hvis APC kredsløbet (incl. laserdioden) bryder ned, skal hele den optiske pick-up enhed (incl. APC printkortet) udskiftes.

**VAROITUS:** Laite sisältää, laserdiodin, joka lähettää (näkyvätöntä) silmille vaarallista lasersäteilyä.

## SECTION 1 GENERAL

### 1-1. LOCATION AND FUNCTION OF CONTROLS

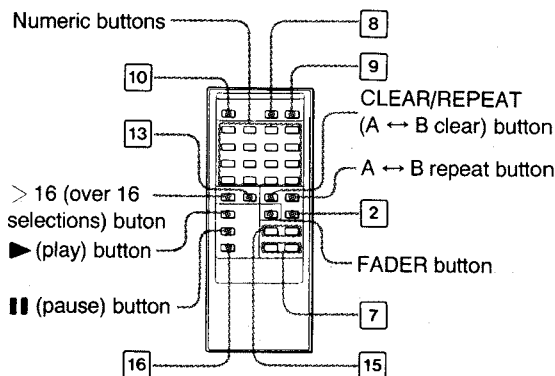
#### Front Panel



- 1 POWER switch
- 2 TIME button
- 3 Remote control sensor
- 4 AUTO SPACE button
- 5 REPEAT button
- 6 EDIT/TIME FADE button
- 7 ◀▶ (manual search) buttons
- 8 PROGRAM (or PGM) button
- 9 SHUFFLE button
- 10 CONTINUE button
- 11 PHONE LEVEL (headphones level) control
- 12 PHONES jack

\*AMS is the abbreviation of Automatic Music Sensor.  
\*\*RMS is the abbreviation of Random Music Sensor.

#### Remote Commander



- 13 CLEAR (program clear) button
- 14 PGM CHECK (program check) button
- 15 ◀▶▶▶ (AMS\*/RMS\*\*) buttons
- 16 ■ (stop) button
- 17 ▶|| (play/pause) button
- 18 ▲ (OPEN/CLOSE) button
- 19 Disc compartment

#### Remote Control Operation

Once the POWER switch is turned on, you can remotely control various functions of the player with the remote commander.

##### Operations which performed only with the remote commander

- Direct music selection.
- A ↔ B repeat.
- Fading in/Fading out the play.

##### Operations which cannot be performed with the remote commander

- Turning the power on and off.
- Opening and closing the disc compartment.
- Setting and releasing auto space function.
- Checking the programmed selections.
- Time edit function.
- Time fade function.

##### Notes on the remote commander and remote control operation

- Keep the commander away from extremely hot or humid places.
- Avoid dropping any foreign objects into the commander casing, particularly when replacing the batteries.
- To avoid a malfunction, do not simultaneously depress two or more buttons.
- Avoid exposure of the remote sensor to direct sunlight or lighting apparatus. Such exposure can cause a malfunction.

## 1-2. DESCRIPTION ON IC6 (MSC6458) SYSTEM CONTROL MICROCOMPUTER

IC6 has the following functions:

- . Digital signal output to operation key
- . Sub Q signal loading and processing
- . Fluorescent display (FLD) control
- . Servo circuit control

## 1 Pin Functions

Pin no.	Pin name	I/O	Description
1	PLL SW	O	"L" in play mode and "H" in search mode.
2	CLK	O	Command transfer of clock to SSP (IC3) and DSP (IC7).
3	DATA	O	Command transfer of data to SSP (IC3) and DSP (IC7).
4	XLK	O	Command transfer of latch to SSP (IC3) and DSP (IC7).
5	PRGL	O	Command transfer of latch to DFIL (IC9).
6	SYNC OUT	O	No connector (NC).
7	SENSE	I	SSP (IC2) and DSP (IC3) sense information.
8	SYNC ON	I	Sync REC ("L" in REC mode).
9	SIRCS	I	Remote control signal input.
10	SCOR	I	Q code read timing.
11	AF ADJ	I	No connection (NC).
12	ADJ	I	"L" in adjustment mode.
13	AMUTE	O	ALL muting. Output to DSP (IC3) MUTG.
14	EMPS	O	No connection (NC)
15	SUBQ	I	Subcode data.
16	SQCLK	O	Subcode data read clock.
17	GFS	I	"H" when CLV is locked.
18	FOK	I	"H" when focus is on.
19	KEY0	I	Key matrix input. "H" active.
20	KEY1	I	Key matrix input. "H" active.
21	KEY2	I	Key matrix input. "H" active.
22	KEY3	I	Key matrix input. "H" active.
23	KEY4	I	Key matrix input. "H" active.
24	KEY5	I	Key matrix input. "H" active.
25	IN SW	I	Loading IN SW.
26	LDON	O	Laser on / off.
27	OUTSW	I/O	Loading OUT SW.
28	LODOUT	O	Loading motor control.
29	LODIN	O	Loading motor control.
30	OSC1	I	Oscillator input terminal (4 MHz).
31	OSCO	I	Oscillator input terminal (4 MHz).

Pin No.	Pin name	I/O	Description
32	GND	—	GND terminal.
33	RESET	I	Reset input terminal. Input when power is turned on.
34	TEST	—	No connection (NC).
35	VL DOWN	—	No connection (NC).
36	VL UP	O	Volume up.
37	TIMER	O	No connection (NC).
38	LED	O	Volume indicator.
39	8G	O	FLD timing output.
40	7G	O	FLD timing output.
41	6G	O	FLD timing output.
42	5G	O	FLD timing output.
43	4G	O	FLD timing output.
44	3G	O	FLD timing output.
45	2G	O	FLD timing output.
46	1G	O	FLD timing output.
47	NC	—	No connection (NC).
48	o	O	FLD segment output.
49	n	O	FLD segment output.
50	m	O	FLD segment output.
51	+ 30V	—	+ 30V
52	l	O	FLD segment output.
53	k	O	FLD segment output.
54	j	O	FLD segment output.
55	i	O	FLD segment output.
56	h	O	FLD segment output.
57	g	O	FLD segment output.
58	f	O	FLD segment output.
59	e	O	FLD segment output.
60	d	O	FLD segment output.
61	c	O	FLD segment output.
62	b	O	FLD segment output.
63	a	O	FLD segment output.
64	VDD	—	positive(+) power supply (5V)

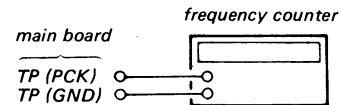
## SECTION 2 ADJUSTMENTS

### ELECTRICAL ADJUSTMENTS

1. Perform adjustments in the order given.
2. Use YEDS-18 (Part No. 3-702-101-01) disc unless otherwise indicated.
3. Use the oscilloscope with more than  $10M\Omega$  impedance.

#### RF PLL Frequency Adjustment/Lock Frequency Check

##### Procedure:

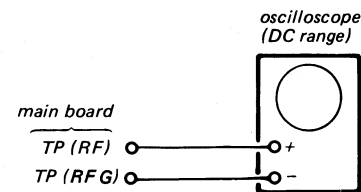


1. Ground test point TP (ASY).
2. Connect the frequency counter to the test points TP (PCK) and TP (GND).
3. Turn POWER switch on.
4. Adjust RV205 so that the reading on the frequency counter is 4.3218 MHz.  
... (RF PLL frequency adjustment)
5. Remove the grounding wire from TP (ASY).
6. Put the disc (YEDS-18) in and press  $\triangleright$  button.
7. Confirm that the reading on the frequency counter is locked at 4.3218 MHz.

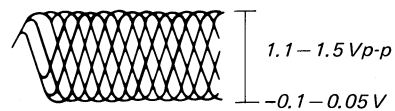
#### Focus Bias Adjustment

This adjustment should be made after replacing the Optical Pick-up Block.

##### Procedure:



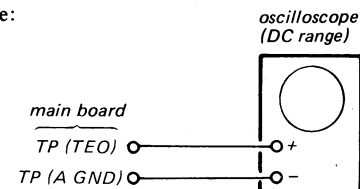
1. Connect oscilloscope to the test points TP (RF) and TP (RFG).
2. Turn POWER switch on.
3. Put the disc (YEDS-18) in and press  $\triangleright$  button.
4. Adjust RV202 for an optimum waveform eye pattern. Optimum eye pattern means that shape " $\infty$ " can be clearly distinguished at the center of the waveform.



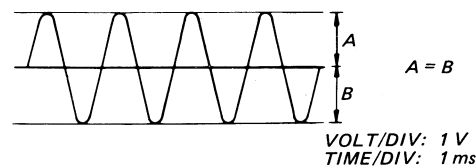
#### E-F Balance Adjustment

This adjustment should be made after replacing the Optical Pick-up Block.

##### Procedure:



1. Connect the oscilloscope to the test points TP (TEO) and TP (A GND).
2. Ground TP (ADJ) to set an adjustment mode.
3. Turn POWER switch on.
4. Put the disc (YEDS-18) in and press  $\triangleright$  button.
5. Adjust RV201 so that the traverse waveform is symmetrical above and below.
6. After adjustment, cancel the adjustment mode.



#### Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, this adjustment is not recommended generally to be performed.

Focus/tracking gains determine the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

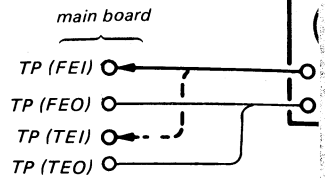
Symptoms	Gain	Focus	Tracking
• The time until music starts becomes longer for STOP $\rightarrow$ $\triangleright$ PLAY or automatic selection ( $\lll$ $\ggg$ buttons pressed. (Normally takes about 2 seconds.)		low	low or high
• Music does not start and disc continues to rotate for STOP $\rightarrow$ $\triangleright$ PLAY or automatic selection ( $\lll$ $\ggg$ buttons pressed.)		-	low
• Disc table opens shortly after STOP $\rightarrow$ $\triangleright$ PLAY.		low or high	-
• Sound is interrupted during PLAY. Or time counter display stops progressing.		-	low
• More poise during 2-axis device operation.		high	high

The following is a simple adjustment n

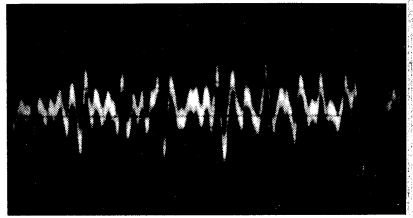
- Simple Adjustment -

**Note:** Since exact adjustment cannot be performed, be careful of the positions of the controls before adjustment. If the positions after the adjustment are only a little different, return to the original position.

##### Procedure:

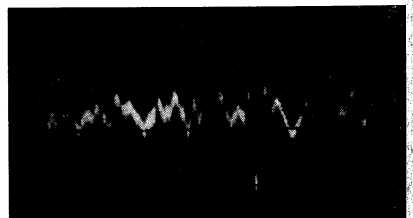


1. Keep the set flat.  
If the set is not horizontal, this cannot be performed due to the gravity of the 2 axis device.
2. Insert the disc (YEDS-18) and press  $\triangleright$  button.
3. Connect the oscilloscope to TP (FEO) and TP (FEI).
4. Adjustment RV203 so that the waveform shown in the picture below. (focus adjustment)

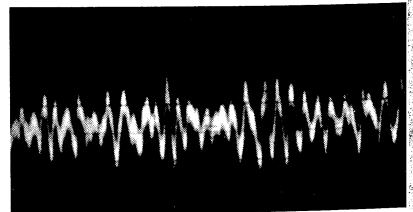


- Incorrect Examples (DC level is not correct from the adjusted waveform) (below)

low focus gain



high focus gain



**Tracking Gain Adjustment**

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is off, there is no problem. Therefore, this adjustment is not recommended generally to be performed.

Thus/tracking gains determine the pick-up follow-up (vertical and horizontal) relative to mechanical and mechanical shock when the 2-axis device operates.

However, as these reciprocate, the adjustment is at a point where both are satisfied.

When gain is raised, the noise when the 2-axis device operates increases.

When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.

When gain adjustment is off, the symptoms below occur.

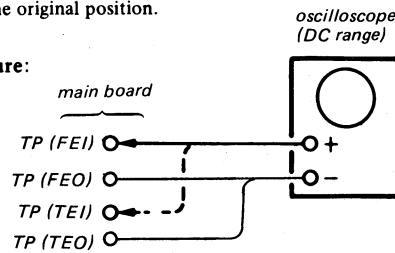
Symptoms	Gain	Focus	Tracking
Time until music starts becomes longer for STOP or automatic selection (STOP → PLAY buttons pressed). (Normally takes about 2 seconds.)		low	low or high
Disc does not start and continues to rotate STOP → PLAY or automatic selection (STOP → PLAY buttons pressed).		-	low
Table opens shortly after STOP → PLAY.		low or high	-
Disc is interrupted during PLAY. Or time count display stops progress.		-	low
Disc noise during 2-axis device operation.		high	high

The following is a simple adjustment method.

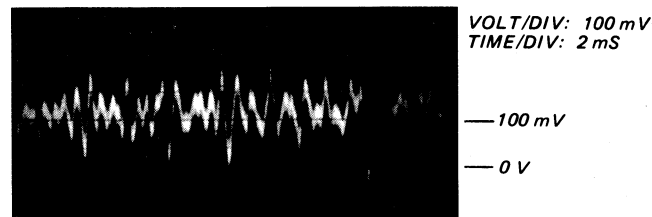
**Simple Adjustment**

**Note:** Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

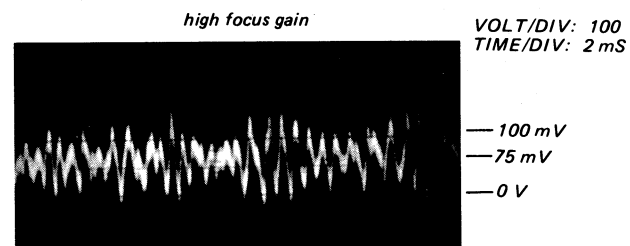
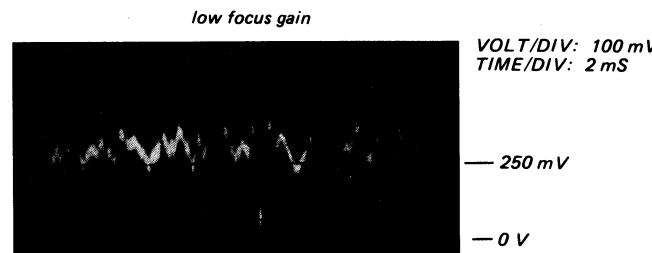
**Procedure:**



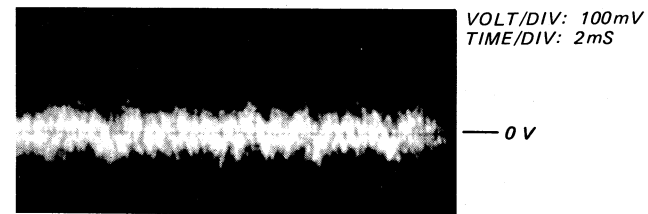
1. Keep the set flat.  
If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.
2. Insert the disc (YEDS-18) and press ▷ PLAY button.
3. Connect the oscilloscope to TP (FEI) and TP (FEO).
4. Adjustment RV203 so that the waveform is as shown in the picture below. (focus gain adjustment)



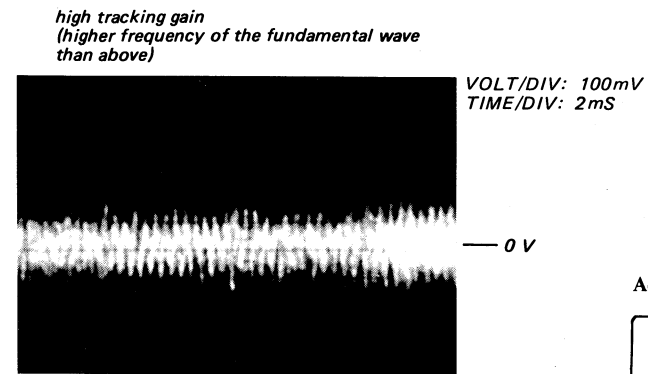
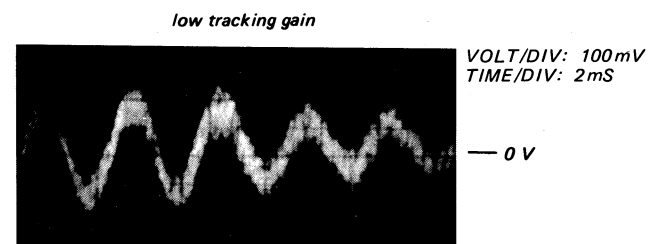
• Incorrect Examples (DC level is quite different from the adjusted waveform) (below)



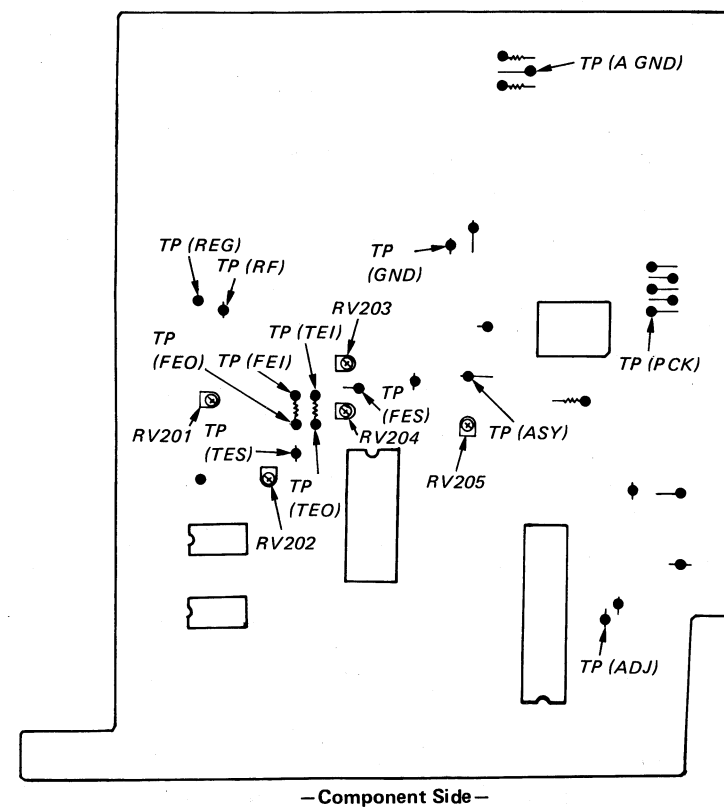
5. Connect the oscilloscope to TP (TEI), TP (TEO).
6. Adjust RV204 so that the waveform is as shown in the picture below. (tracking gain adjustment)



• Incorrect Examples (fundamental wave appears)



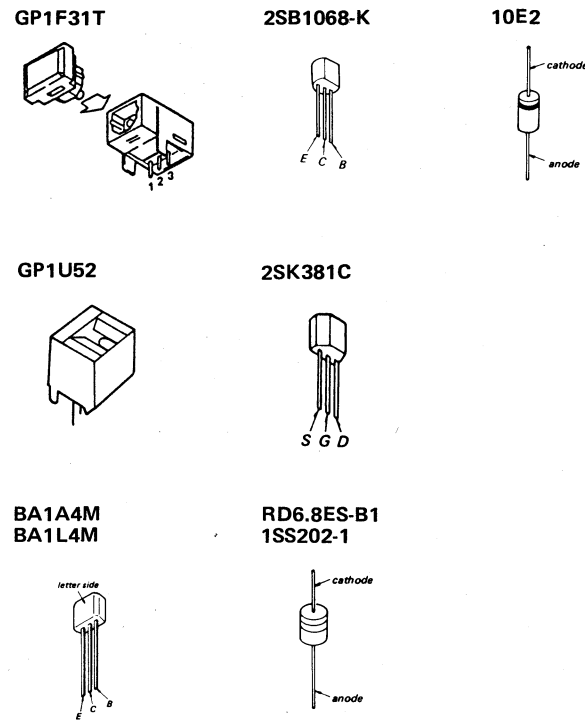
Adjustment Location: main board





SECTION 3  
DIAGRAMS

3-1. SEMICONDUCTOR LEAD LAYOUTS

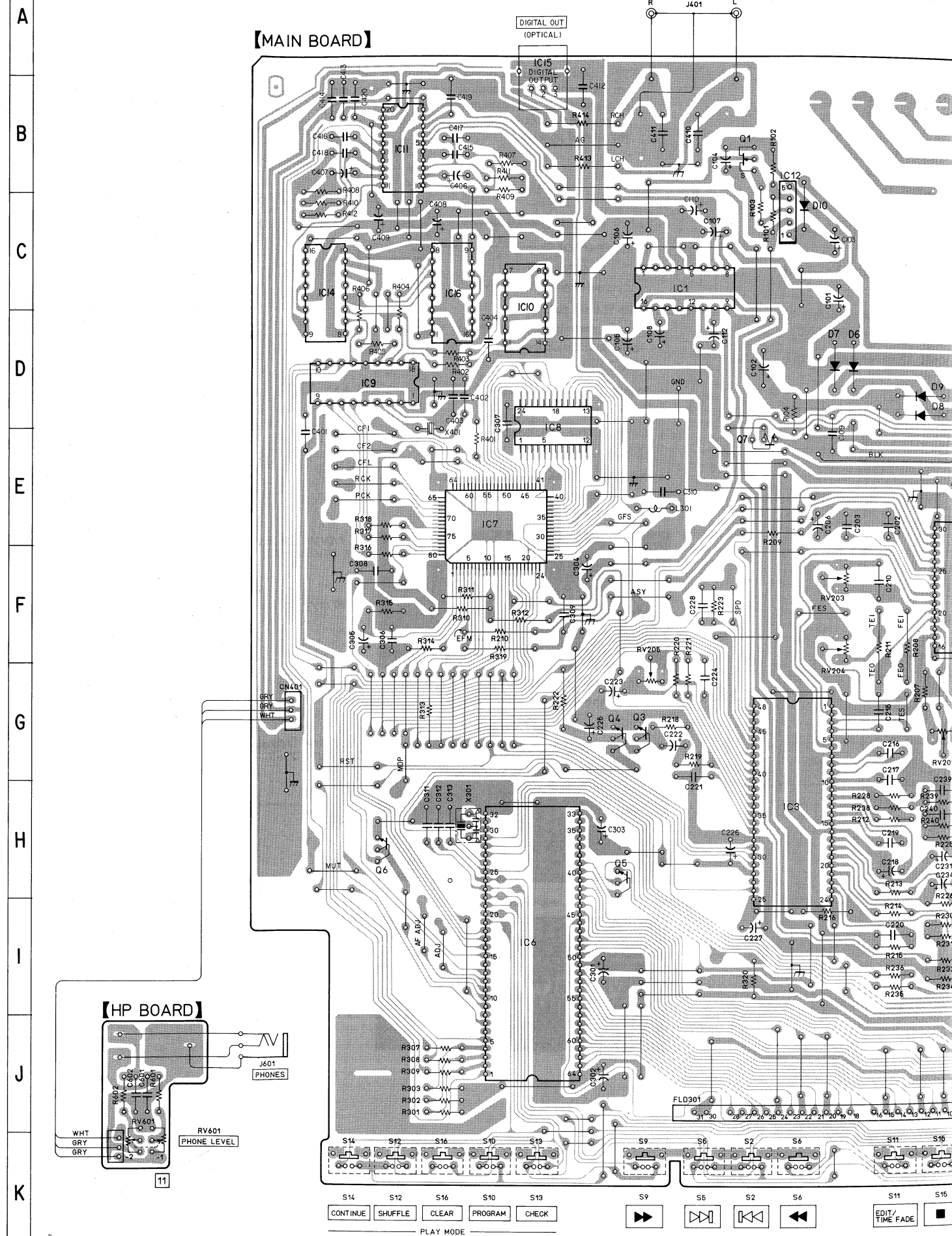


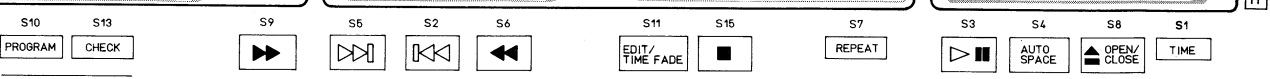
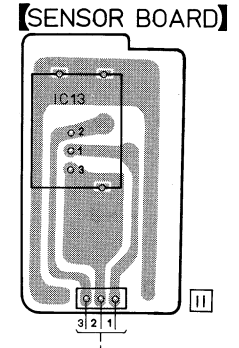
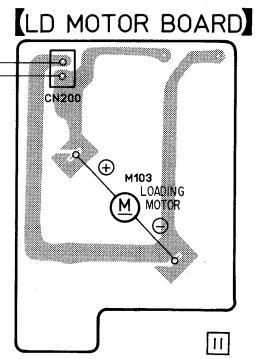
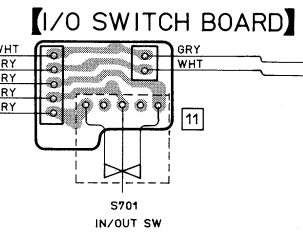
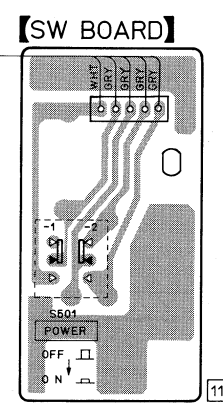
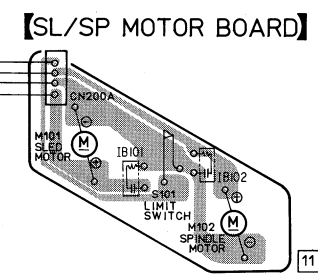
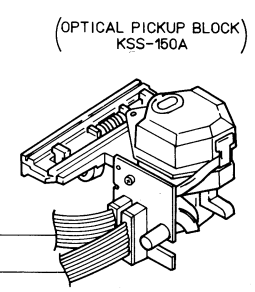
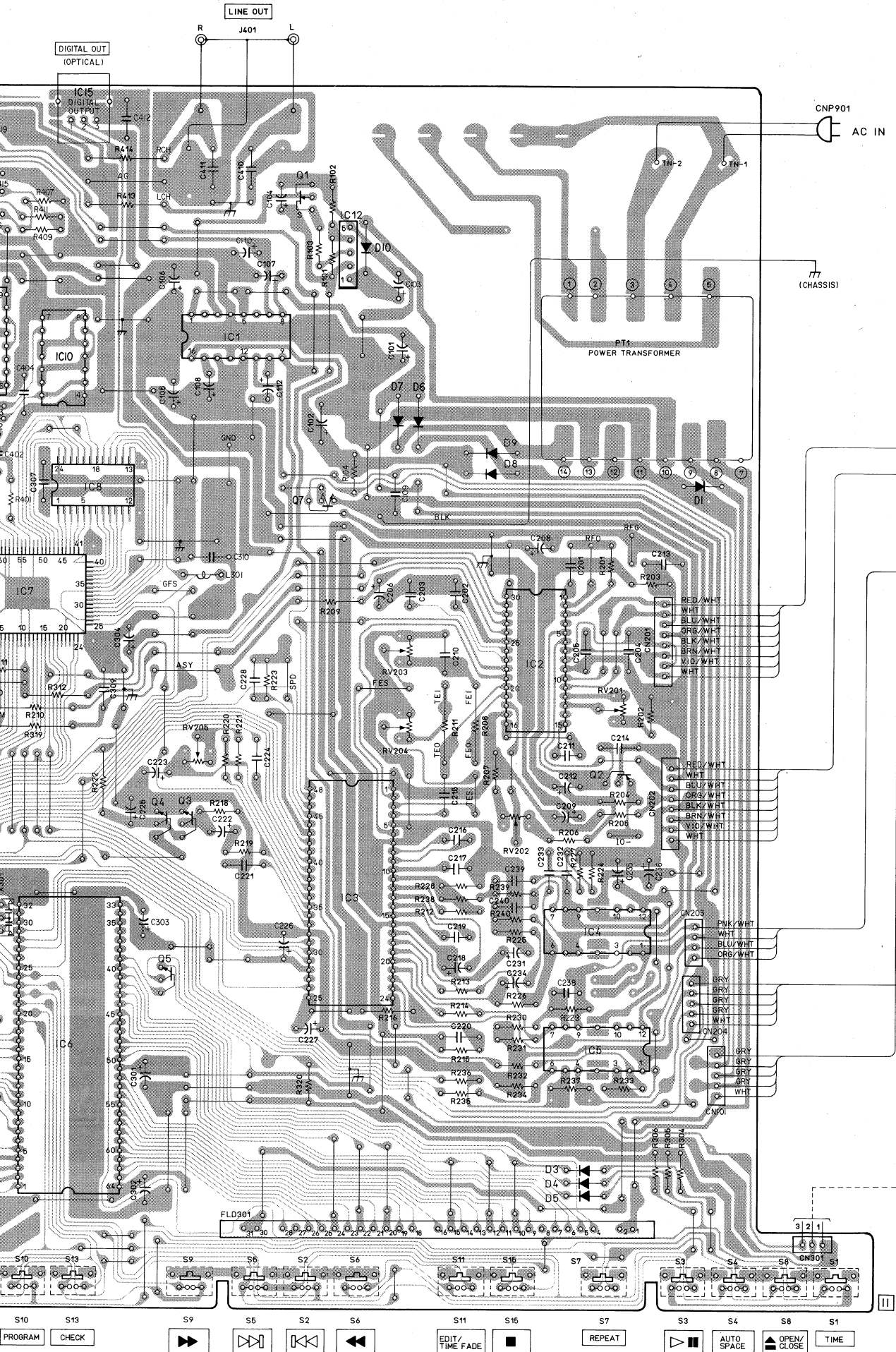
• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D1	E-10	IC8	D-5
D3	J-9	IC9	D-3
D4	J-9	IC10	C-5
D5	J-9	IC11	B-4
D6	D-7	IC12	C-7
D7	D-7	IC13	J-12
D8	D-8	IC14	C-3
D9	D-8	IC15	B-5
D10	C-7	IC16	C-4
IC1	C-6	Q1	B-7
IC2	F-8	Q2	G-9
IC3	H-7	Q3	G-6
IC4	H-9	Q4	G-5
IC5	I-9	Q5	H-5
IC6	I-5	Q6	H-3
IC7	E-4	Q7	E-7

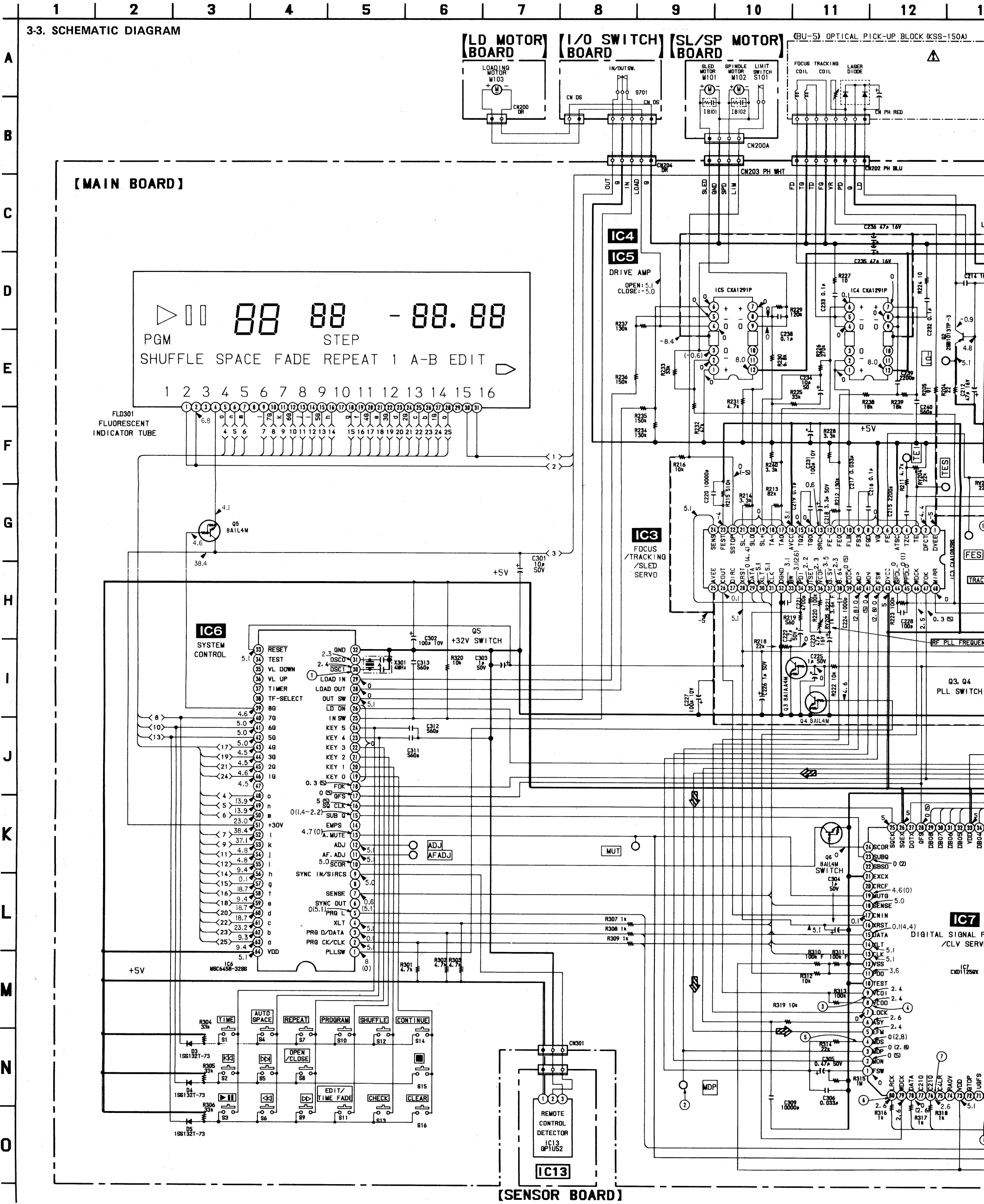
- ○ : parts extracted from the component side.
- ● : parts extracted from the conductor side.
- ○ : Jumper wire connected to the ground pattern on the component side.

3-2. PRINTED WIRING BOARDS

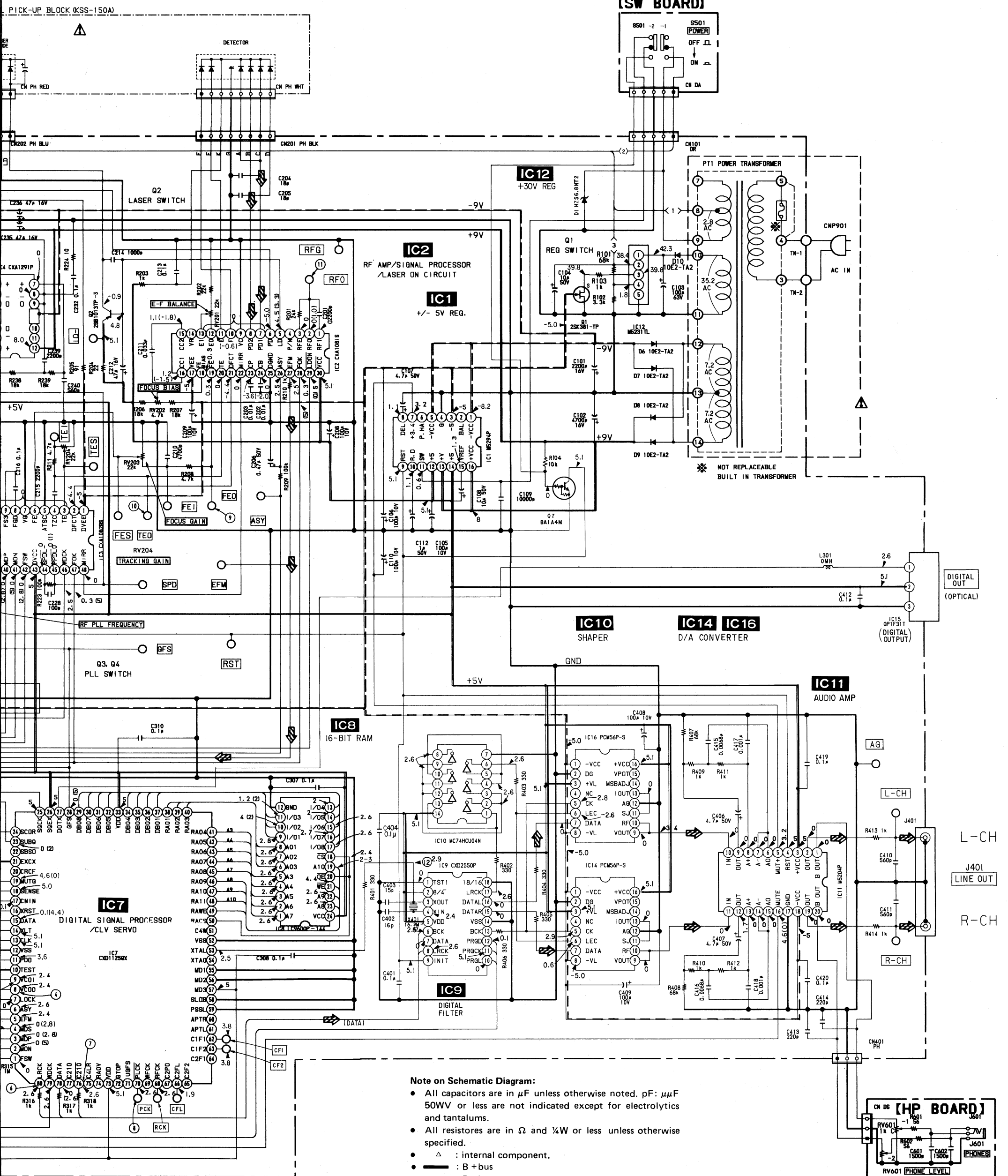




3-3. SCHEMATIC DIAGRAM



[SENSOR BOARD]



**Note on Schematic Diagram:**

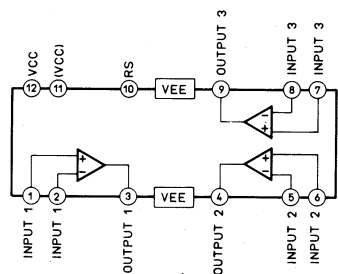
- All capacitors are in  $\mu\text{F}$  unless otherwise noted. pF:  $\mu\text{pF}$  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and  $\frac{1}{4}\text{W}$  or less unless otherwise specified.
- $\Delta$  : internal component.
- $\text{---}$  : B + bus
- $\text{---}$  : B - bus
- $\text{---}$  : adjustment for repair
- Signal path.
- $\text{---}$  : CD
- Voltage and waveforms are dc with respect to ground under no-signal conditions.  
no mark: STOP Mode  
( ): PLAY
- Voltages are taken with a VOM. (Input impedance 10M $\Omega$ ) Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.

**Note:**  
The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

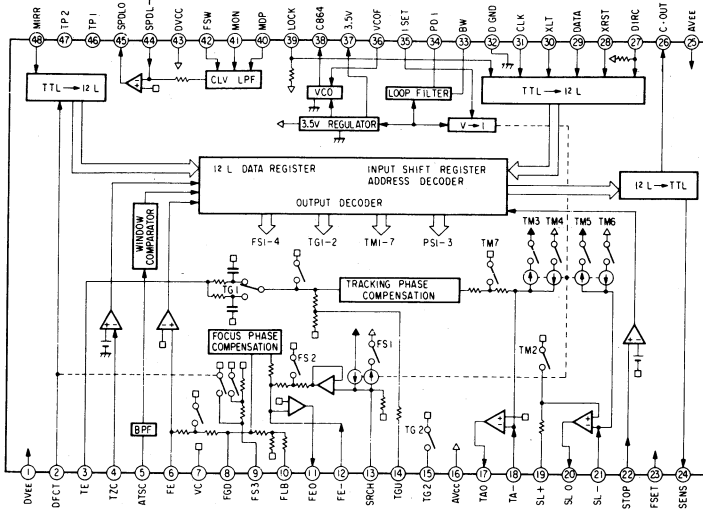
**Note:**  
Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

3-4. IC BLOCK DIAGRAMS

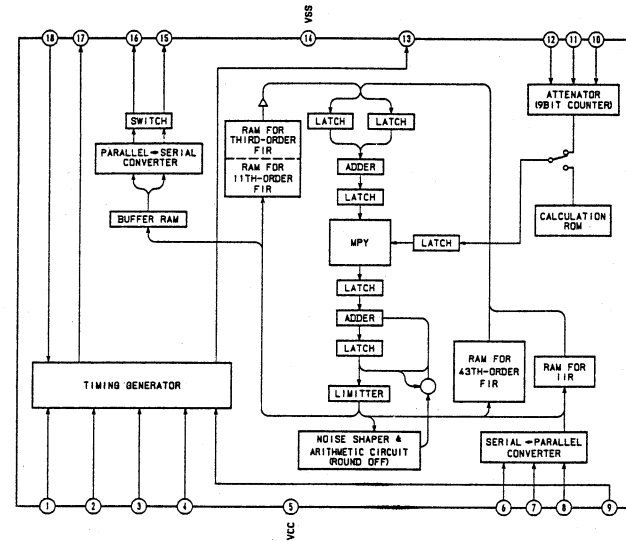
IC4,5 CXA1291P



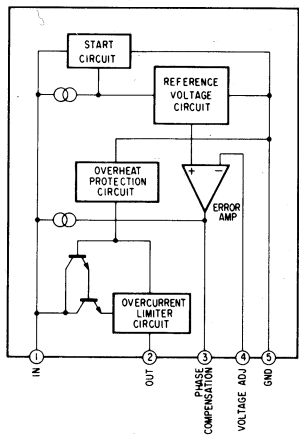
IC3 CXA1082BS



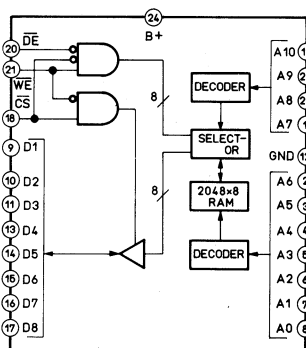
IC9 CXD2550P



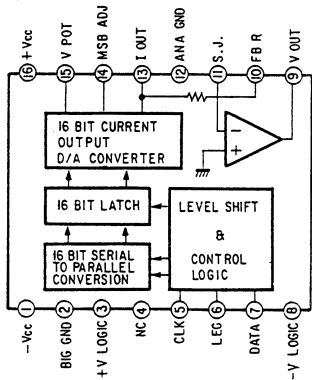
IC12 M5231TL



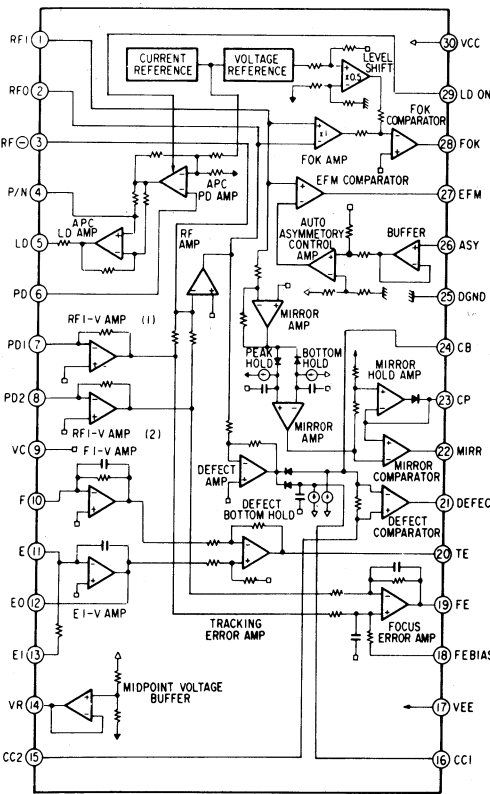
IC8 CXK5816M-12L



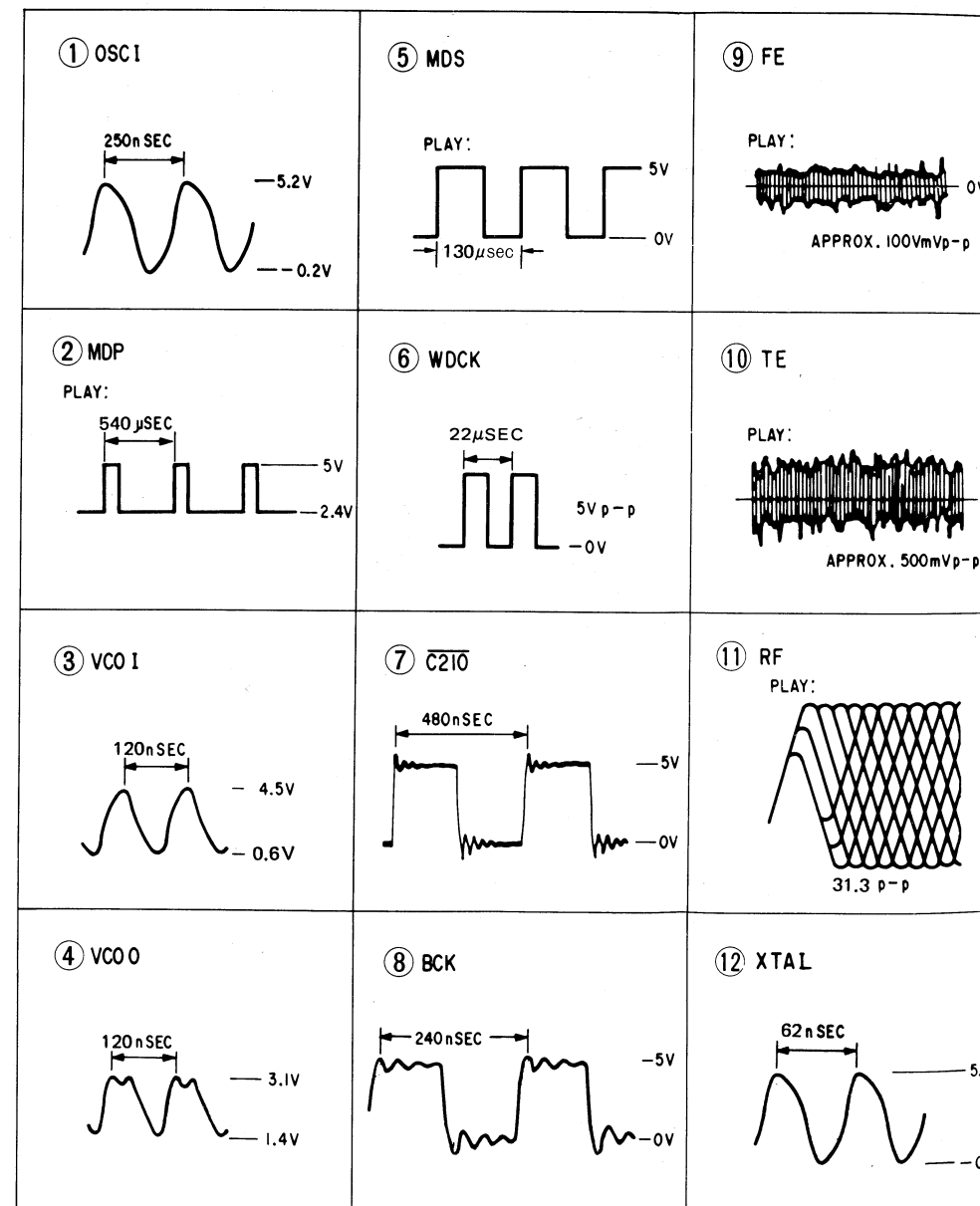
IC14,16 PCM56P-S

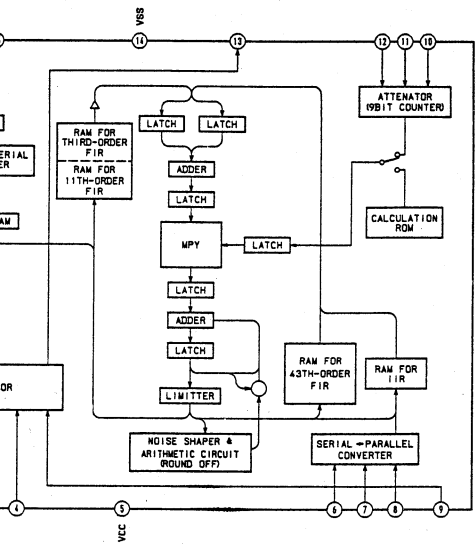


IC2 CXA1081S

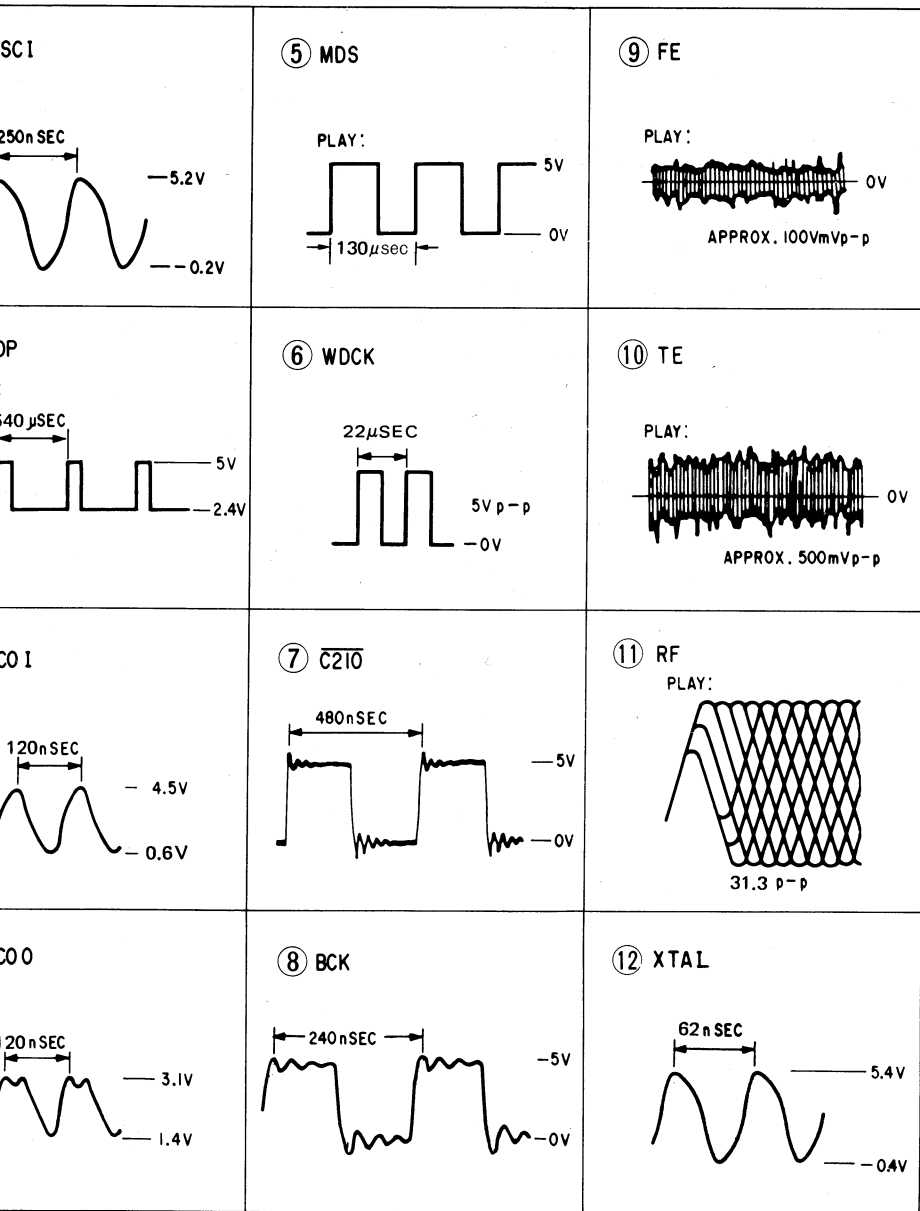


3-5. WAVEFORMS





WAVEFORMS



SECTION 4 EXPLODED VIEWS

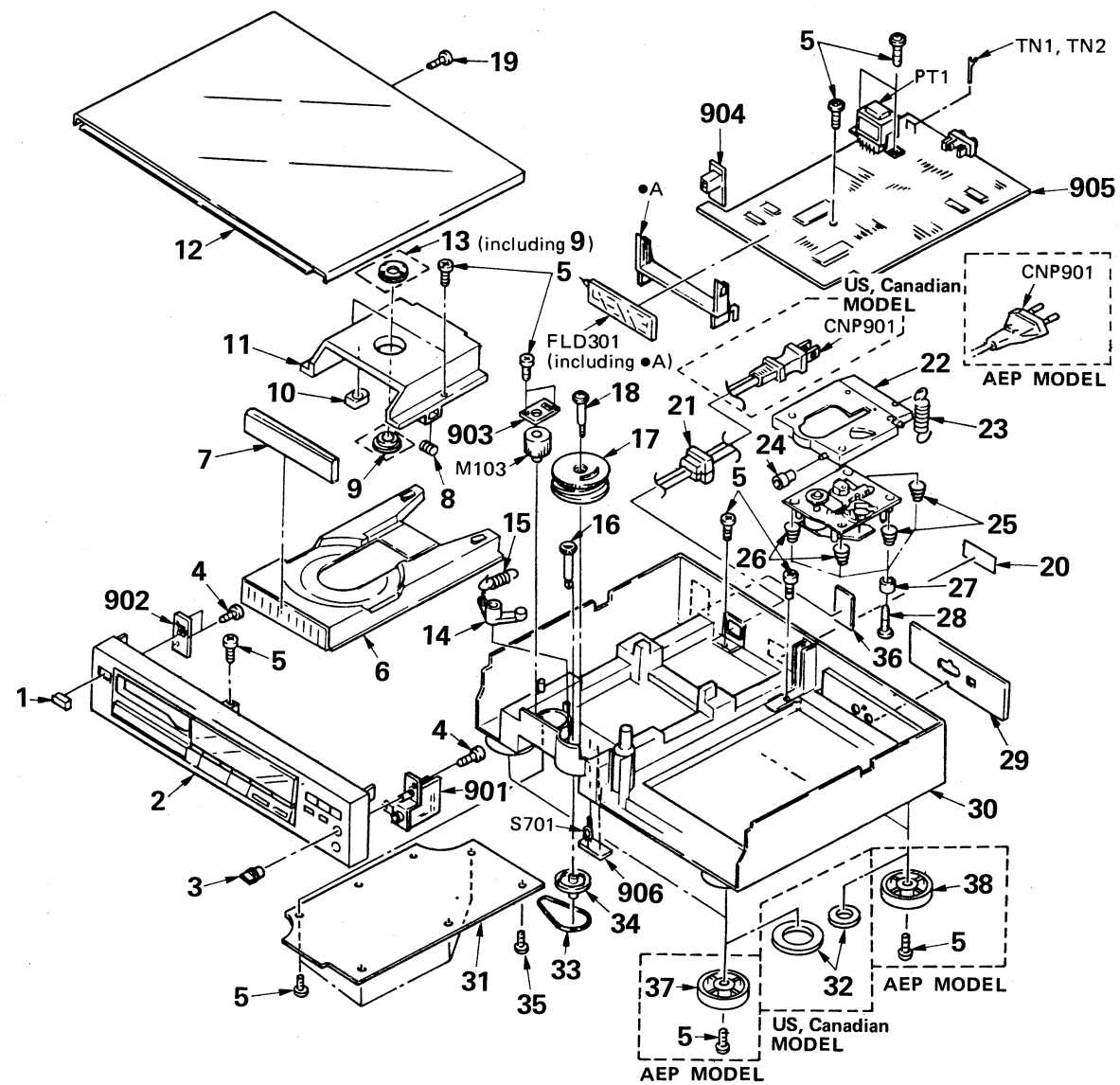
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:  
(RED) ... KNOB, BALANCE (WHITE)  
↑ Cabinet's Color          ↑ Parts' Color

The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

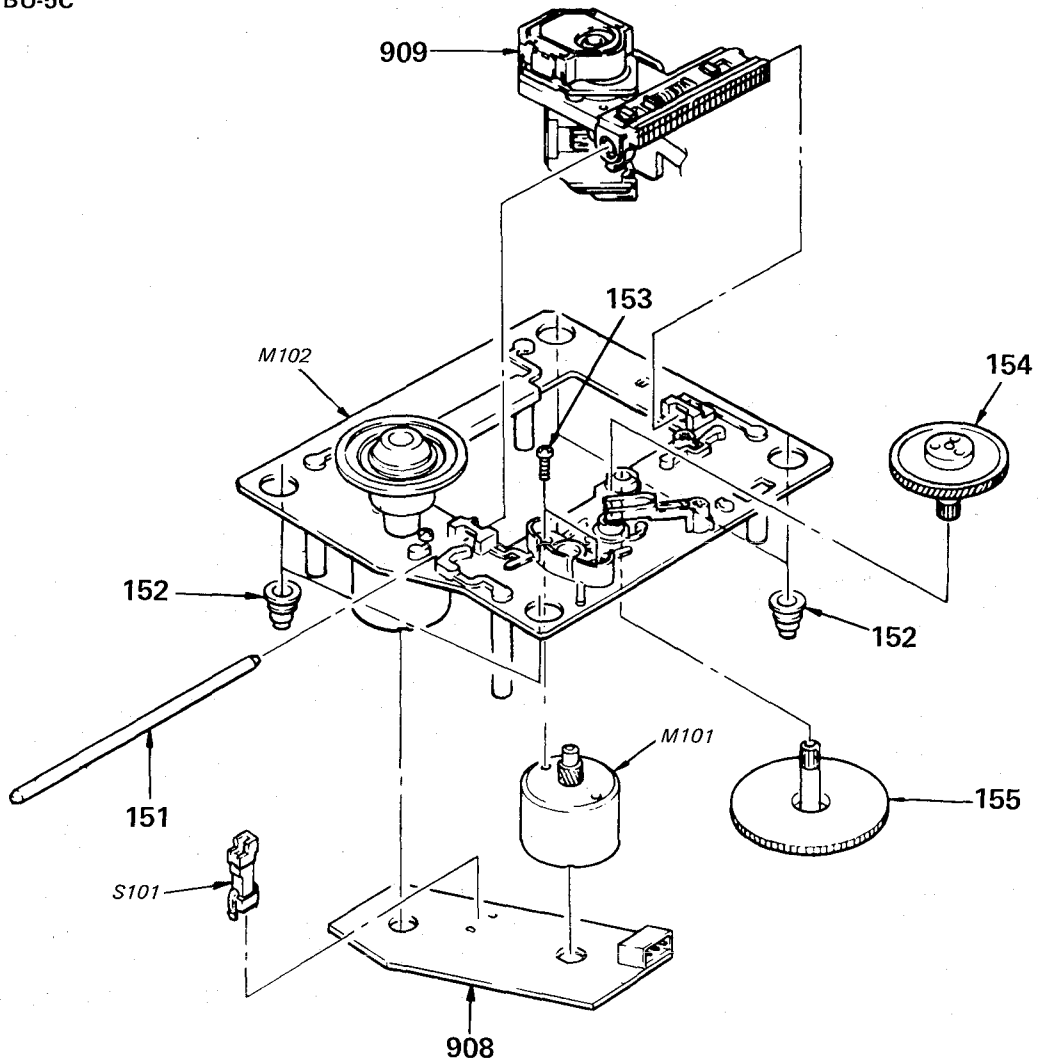
Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.




4-1. CABINET SECTION




No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	4-922-921-01	BUTTON (POWER)		26	4-917-541-01	SPRING (B)	
2	X-4922-572-1	(AEP).....PANEL ASSY, FRONT		27	4-917-508-01	HOLDER, SP	
	X-4922-573-1	(US,Canadian)...PANEL ASSY, FRONT		28	7-685-535-11	SCREW +BTP 2.6X10 TYPE2 N-S	
3	4-923-522-01	KNOB (B.TYPE), LOV (PHONE LEVEL)		29	*4-927-302-21	(US).....PLATE, INDICATION	
4	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S			*4-927-302-31	(Canadian)...PLATE, INDICATION	
5	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S			*4-927-302-41	(AEP).....PLATE, INDICATION	
6	*4-925-307-01	TABLE, DISK		30	*4-925-346-01	CHASSIS	
7	4-929-062-01	PANEL, LOADING		31	*4-929-049-01	PLATE (H), BOTTOM	
8	4-925-335-01	SPRING, COMPRESSION		32	4-922-942-01	(US,Canadian)...FOOT (FELT)	
9	*4-918-679-04	PULLEY, PRESS		33	4-917-522-02	BELT	
10	*4-922-529-01	DAMPER		34	4-922-512-01	PULLEY	
11	*4-925-345-01	HOLDER (MG)		35	7-685-879-01	SCREW +BVTT 3X30	
12	4-925-348-01	CASE		36	3-704-217-01	(US,Canadian)...LABEL	
13	A-4665-024-A	MAGNET ASSY		37	X-4922-917-1	(AEP)...FOOT ASSY (F)	
14	4-917-519-01	LEVER, SET		38	X-4922-918-1	(AEP)...FOOT ASSY (R)	
15	4-917-514-01	SPRING, TENSION		901	*1-629-846-11	PC BOARD, H.P	
16	4-922-508-01	GEAR (DRIVING)		902	*1-629-847-11	PC BOARD, SW	
17	4-925-306-01	GEAR (LOADING)		903	*1-629-848-11	PC BOARD, LD MOTOR	
18	7-685-152-19	SCREW, STEP		904	*1-629-845-11	PC BOARD, SENSOR	
19	7-685-650-79	SCREW (2), TAPPING		905	*A-4651-242-A	MOUNTED PCB, MAIN	
20	*4-885-838-00	(AEP)...LABEL, CLASS 1		906	*1-629-849-11	PC BOARD, IO SWITCH	
21	*3-703-244-00	BUSHING (2104), CORD		△ CNP901.1-555-795-00	(AEP)...CORD, POWER, EULO PLUG		
22	*4-922-514-01	BRACKET (BU-5)		△ CNP901.1-557-577-11	(US,Canadian)...CORD, POWER		
23	4-917-526-01	SPRING, TENSION		FLD301 1-519-479-21	INDICATOR TUBE, FLUORESCENT		
24	4-917-515-01	ROLLER		M103 A-4608-346-A	MOTOR ASSY, LOADING		
25	4-917-507-01	SPRING (H)		PT1 △ .1-449-024-11	(US,Canadian)...TRANSFORMER, POWER		
				PT1 △ .1-449-025-11	(AEP).....TRANSFORMER, POWER		
				TN1 *1-535-771-11	TERMINAL		
				TN2 *1-535-771-11	TERMINAL		

4-2. BU-5C



<p><b>Note:</b> The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.</p>	<p><b>Note:</b> Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
151	4-917-565-01	SHAFT, SLED		908	*1-626-304-11	PC BOARD, SL/SP MOTOR	
152	4-917-562-01	INSULATOR		909	 8-848-062-01	DEVICE, OPTICAL KSS-150A (RP)	
153	7-621-255-15	SCREW +P 2X3		M101	X-4917-504-1	ASSY, MOTOR (SLED)	
154	4-917-567-01	GEAR (M)		M102	X-4917-523-1	ASSY, MOTOR (SPINDLE)	
155	4-917-564-01	GEAR (P), FLATNESS		S101	1-571-274-11	SWITCH, LEAF	



## SECTION 5

### ELECTRICAL PARTS LIST

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

**CAPACITORS:**MF:  $\mu$ F, PF:  $\mu$  $\mu$ F.**RESISTORS**

- All resistors are in ohms.
- F: nonflammable

**COILS**

- MMH: mH, UH:  $\mu$ H

**SEMICONDUCTORS**In each case, U:  $\mu$ , for example:UA....:  $\mu$ A...., UPA....:  $\mu$ PA....,UPC....:  $\mu$ PC, UPD....:  $\mu$ PD....

The components identified by mark  $\Delta$  or dotted line with mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description						
901	*1-629-846-11	PC BOARD, H.P	C227	1-124-443-00	ELECT	100MF	20%	10V			
902	*1-629-847-11	PC BOARD, SW	C228	1-162-282-31	CERAMIC	100PF	10%	50V			
903	*1-629-848-11	PC BOARD, LD MOTOR	C231	1-124-443-00	ELECT	100MF	20%	10V			
904	*1-629-845-11	PC BOARD, SENSOR	C232	1-164-159-11	CERAMIC	0.1MF		50V			
905	*A-4651-242-A	MOUNTED PCB, MAIN	C233	1-164-159-11	CERAMIC	0.1MF		50V			
906	*1-629-849-11	PC BOARD, IO SWITCH	C234	1-123-875-11	ELECT	10MF	20%	50V			
908	*1-626-304-11	PC BOARD, SL/SP MOTOR	C235	1-124-477-11	ELECT	47MF	20%	16V			
909	$\Delta$ 1-8-848-062-01	DEVICE, OPTICAL KSS-150A (RP)	C236	1-124-477-11	ELECT	47MF	20%	16V			
C101	1-124-556-11	ELECT	2200MF	20%	16V	C238	1-136-165-00	FILM	0.1MF	5%	50V
C102	1-124-898-11	ELECT	4700MF	20%	16V	C239	1-161-375-00	CERAMIC	0.0022MF	30%	16V
C103	1-124-572-11	ELECT	100MF	20%	63V	C240	1-162-291-31	CERAMIC	560PF	10%	50V
C104	1-123-875-11	ELECT	10MF	20%	50V	C301	1-123-875-11	ELECT	10MF	20%	50V
C105	1-124-443-00	ELECT	100MF	20%	10V	C302	1-124-443-00	ELECT	100MF	20%	10V
C106	1-124-443-00	ELECT	100MF	20%	10V	C303	1-124-499-11	ELECT	1MF	20%	50V
C107	1-124-927-11	ELECT	4.7MF	20%	50V	C304	1-124-499-11	ELECT	1MF	20%	50V
C108	1-123-875-11	ELECT	10MF	20%	50V	C305	1-124-902-00	ELECT	0.47MF	20%	50V
C109	1-161-379-00	CERAMIC	0.01MF	20%	16V	C306	1-136-159-00	FILM	0.033MF	5%	50V
C110	1-124-443-00	ELECT	100MF	20%	10V	C307	1-164-159-11	CERAMIC	0.1MF		50V
C112	1-124-499-11	ELECT	1MF	20%	50V	C308	1-164-159-11	CERAMIC	0.1MF		50V
C201	1-161-375-00	CERAMIC	0.0022MF	30%	16V	C309	1-161-379-00	CERAMIC	0.01MF	20%	16V
C202	1-136-153-00	FILM	0.01MF	5%	50V	C310	1-164-159-11	CERAMIC	0.1MF		50V
C203	1-136-153-00	FILM	0.01MF	5%	50V	C311	1-162-291-31	CERAMIC	560PF	10%	50V
C204	1-162-205-31	CERAMIC	18PF	5%	50V	C312	1-162-291-31	CERAMIC	560PF	10%	50V
C205	1-162-205-31	CERAMIC	18PF	5%	50V	C313	1-162-291-31	CERAMIC	560PF	10%	50V
C206	1-124-902-00	ELECT	0.47MF	20%	50V	C401	1-164-159-11	CERAMIC	0.1MF		50V
C208	1-124-443-00	ELECT	100MF	20%	10V	C402	1-162-204-31	CERAMIC	16PF	5%	50V
C209	1-124-443-00	ELECT	100MF	20%	10V	C403	1-162-203-31	CERAMIC	15PF	5%	50V
C210	1-161-377-00	CERAMIC	0.0047MF	20%	16V	C404	1-164-159-11	CERAMIC	0.1MF		50V
C211	1-136-159-00	FILM	0.033MF	5%	50V	C406	1-124-927-11	ELECT	4.7MF	20%	50V
C212	1-124-477-11	ELECT	47MF	20%	16V	C407	1-124-927-11	ELECT	4.7MF	20%	50V
C213	1-164-159-11	CERAMIC	0.1MF		50V	C408	1-124-443-00	ELECT	100MF	20%	10V
C214	1-162-294-31	CERAMIC	0.001MF	10%	50V	C409	1-124-443-00	ELECT	100MF	20%	10V
C215	1-161-375-00	CERAMIC	0.0022MF	30%	16V	C410	1-162-291-31	CERAMIC	560PF	10%	50V
C216	1-136-165-00	FILM	0.1MF	5%	50V	C411	1-162-291-31	CERAMIC	560PF	10%	50V
C217	1-136-159-00	FILM	0.033MF	5%	50V	C412	1-164-159-11	CERAMIC	0.1MF		50V
C218	1-123-382-00	ELECT	3.3MF	20%	50V	C413	1-162-286-31	CERAMIC	220PF	10%	50V
C219	1-136-165-00	FILM	0.1MF	5%	50V	C414	1-162-286-31	CERAMIC	220PF	10%	50V
C220	1-161-379-00	CERAMIC	0.01MF	20%	16V	C415	1-130-481-00	MYLAR	0.0068MF	5%	50V
C221	1-161-377-00	CERAMIC	0.0047MF	20%	16V	C416	1-130-481-00	MYLAR	0.0068MF	5%	50V
C222	1-124-927-11	ELECT	4.7MF	20%	50V	C417	1-130-471-00	MYLAR	0.001MF	5%	50V
C223	1-124-477-11	ELECT	47MF	20%	16V	C418	1-130-471-00	MYLAR	0.001MF	5%	50V
C224	1-162-294-31	CERAMIC	0.001MF	10%	50V	C419	1-164-159-11	CERAMIC	0.1MF		50V
C225	1-124-499-11	ELECT	1MF	20%	50V	C420	1-164-159-11	CERAMIC	0.1MF		50V
C226	1-124-499-11	ELECT	1MF	20%	50V	C421	1-164-159-11	CERAMIC	0.1MF		50V
						C601	1-161-374-11	CERAMIC	0.0015MF	30%	16V
						C602	1-161-374-11	CERAMIC	0.0015MF	30%	16V

Ref.No.	Part No.	Description
CN101	*1-564-339-21	PIN, CONNECTOR 5P
CN200	*1-564-495-11	PIN, CONNECTOR 2P
CN200A	*1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P
CN202	*1-564-710-11	PIN, CONNECTOR (SMALL TYPE) 8P
CN203	*1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P
CN204	*1-564-339-00	PIN, CONNECTOR 5P
CN301	*1-566-165-11	CONNECTOR, BOARD TO BOARD 3P
CN401	*1-564-337-00	PIN, CONNECTOR 3P
△ CNP901	.1-555-795-00	(AEP)...CORD, POWER, EULO PLUG
△ CNP901	.1-557-577-11	(US,Canadian)...CORD, POWER
D1	8-719-109-96	DIODE RD6.8ES-B1
D3	8-719-107-94	DIODE 1SS202-1
D4	8-719-107-94	DIODE 1SS202-1
D5	8-719-107-94	DIODE 1SS202-1
D6	8-719-200-02	DIODE 1OE2
D7	8-719-200-02	DIODE 1OE2
D8	8-719-200-02	DIODE 1OE2
D9	8-719-200-02	DIODE 1OE2
D10	8-719-200-02	DIODE 1OE2
FLD301	1-519-479-21	INDICATOR TUBE, FLUORESCENT
IC1	8-759-631-40	IC M5294P
IC2	8-752-034-00	IC CXA1081S
IC3	8-752-032-30	IC CXA1082BS
IC4	8-752-035-28	IC CXA-1291P
IC5	8-752-035-28	IC CXA-1291P
IC6	8-759-978-34	IC MSC6458-32SS
IC7	8-752-328-62	IC CXD1125Q
IC8	8-752-323-64	IC CXK5816M-12L
IC9	8-752-328-72	IC CXD2550P
IC10	8-759-202-13	IC TC74HCU04P
IC11	8-759-631-39	IC M5204P
IC12	8-759-605-43	IC M5231TL
IC13	8-749-920-03	IC GP1U52 (DIGITAL OUT)
IC14	8-759-937-95	IC PCM56P-S
IC15	8-759-977-71	IC GP1F31T
IC16	8-759-937-95	IC PCM56P-S
IB101	1-233-171-11	COMPOSITION CIRCUIT BLOCK
IB102	1-233-171-11	COMPOSITION CIRCUIT BLOCK
J401	*1-562-999-21	JACK, PIN 2P (LINE OUT)
J601	*1-568-151-11	JACK, LARGE TYPE (PHONES)
L301	*1-410-858-11	INDUCTOR OUH
M101	X-4917-504-1	ASSY, MOTOR (SLED)
M102	X-4917-523-1	ASSY, MOTOR (SPINDLE)
M103	A-4608-346-A	MOTOR ASSY, LOADING

Ref.No.	Part No.	Description
PT1	△ .1-449-024-11	(US,Canadian)...TRANSFORMER, POWER
PT1	△ .1-449-025-11	(AEP).....TRANSFORMER, POWER
Q1	8-729-600-94	TRANSISTOR 2SK381C
Q2	8-729-116-57	TRANSISTOR 2SB1068-K
Q3	8-729-115-79	TRANSISTOR BA1A4M
Q4	8-729-115-77	TRANSISTOR BA1L4M
Q5	8-729-115-77	TRANSISTOR BA1L4M
Q6	8-729-115-77	TRANSISTOR BA1L4M
Q7	8-729-115-79	TRANSISTOR BA1A4M
R101	1-249-439-11	CARBON 68K 5% 1/4W
R102	1-249-423-11	CARBON 3.3K 5% 1/4W
R103	1-249-417-11	CARBON 1K 5% 1/4W
R104	1-249-429-11	CARBON 10K 5% 1/4W
R201	1-247-864-11	CARBON 24K 5% 1/4W
R202	1-249-433-11	CARBON 22K 5% 1/4W
R203	1-249-417-11	CARBON 1K 5% 1/4W
R204	1-249-397-11	CARBON 22 5% 1/4W
R205	1-247-806-11	CARBON 91 5% 1/4W
R206	1-249-432-11	CARBON 18K 5% 1/4W
R207	1-249-432-11	CARBON 18K 5% 1/4W
R208	1-249-425-11	CARBON 4.7K 5% 1/4W
R209	1-249-441-11	CARBON 100K 5% 1/4W
R210	1-249-417-11	CARBON 1K 5% 1/4W
R211	1-249-425-11	CARBON 4.7K 5% 1/4W
R212	1-247-882-11	CARBON 130K 5% 1/4W
R213	1-249-440-11	CARBON 82K 5% 1/4W
R214	1-249-423-11	CARBON 3.3K 5% 1/4W
R215	1-247-896-11	CARBON 510K 5% 1/4W
R216	1-249-429-11	CARBON 10K 5% 1/4W
R218	1-249-433-11	CARBON 22K 5% 1/4W
R219	1-249-414-11	CARBON 560 5% 1/4W
R220	1-249-441-11	CARBON 100K 5% 1/4W
R221	1-215-434-00	METAL 3.6K 1% 1/6W
R222	1-249-429-11	CARBON 10K 5% 1/4W
R223	1-249-441-11	CARBON 100K 5% 1/4W
R224	1-249-393-11	CARBON 10 5% 1/4W
R225	1-249-435-11	CARBON 33K 5% 1/4W
R226	1-247-889-00	CARBON 270K 5% 1/4W
R227	1-249-393-11	CARBON 10 5% 1/4W
R228	1-249-423-11	CARBON 3.3K 5% 1/4W
R229	1-247-881-00	CARBON 120K 5% 1/4W
R230	1-249-427-11	CARBON 6.8K 5% 1/4W
R231	1-249-425-11	CARBON 4.7K 5% 1/4W
R232	1-249-437-11	CARBON 47K 5% 1/4W
R233	1-249-435-11	CARBON 33K 5% 1/4W

**Note:**  
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

**Note:**  
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description			
R234	1-247-882-11	CARBON	130K	5%	1/4W
R235	1-247-883-00	CARBON	150K	5%	1/4W
R236	1-247-883-00	CARBON	150K	5%	1/4W
R237	1-247-882-11	CARBON	130K	5%	1/4W
R238	1-249-432-11	CARBON	18K	5%	1/4W
R239	1-249-432-11	CARBON	18K	5%	1/4W
R240	1-249-423-11	CARBON	3.3K	5%	1/4W
R301	1-249-425-11	CARBON	4.7K	5%	1/4W
R302	1-249-425-11	CARBON	4.7K	5%	1/4W
R303	1-249-425-11	CARBON	4.7K	5%	1/4W
R304	1-249-435-11	CARBON	33K	5%	1/4W
R305	1-249-435-11	CARBON	33K	5%	1/4W
R306	1-249-435-11	CARBON	33K	5%	1/4W
R307	1-249-417-11	CARBON	1K	5%	1/4W
R308	1-249-417-11	CARBON	1K	5%	1/4W
R309	1-249-417-11	CARBON	1K	5%	1/4W
R310	1-215-469-00	METAL	100K	1%	1/6W
R311	1-215-469-00	METAL	100K	1%	1/6W
R312	1-249-429-11	CARBON	10K	5%	1/4W
R313	1-249-441-11	CARBON	100K	5%	1/4W
R314	1-249-433-11	CARBON	22K	5%	1/4W
R315	1-247-903-00	CARBON	1M	5%	1/4W
R316	1-249-417-11	CARBON	1K	5%	1/4W
R317	1-249-417-11	CARBON	1K	5%	1/4W
R318	1-249-417-11	CARBON	1K	5%	1/4W
R319	1-249-429-11	CARBON	10K	5%	1/4W
R320	1-249-429-11	CARBON	10K	5%	1/4W
R401	1-249-411-11	CARBON	330	5%	1/4W
R402	1-249-411-11	CARBON	330	5%	1/4W
R403	1-249-411-11	CARBON	330	5%	1/4W
R404	1-249-411-11	CARBON	330	5%	1/4W
R405	1-249-411-11	CARBON	330	5%	1/4W
R406	1-249-411-11	CARBON	330	5%	1/4W
R407	1-249-439-11	CARBON	68K	5%	1/4W
R408	1-249-439-11	CARBON	68K	5%	1/4W
R409	1-249-417-11	CARBON	1K	5%	1/4W
R410	1-249-417-11	CARBON	1K	5%	1/4W
R411	1-249-417-11	CARBON	1K	5%	1/4W
R412	1-249-417-11	CARBON	1K	5%	1/4W
R413	1-249-417-11	CARBON	1K	5%	1/4W
R414	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-249-402-11	CARBON	56	5%	1/4W
R602	1-249-402-11	CARBON	56	5%	1/4W
RV201	1-228-995-00	RES, ADJ, CARBON 22K			
RV202	1-228-993-00	RES, ADJ, CARBON 4.7K			
RV203	1-228-995-00	RES, ADJ, CARBON 22K			

Ref.No.	Part No.	Description
RV204	1-228-995-00	RES, ADJ, CARBON 22K
RV205	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV601	1-238-302-11	RES, VAR, CARBON 1K/1K (PHONE LEVEL)
S1	1-571-685-11	SWITCH, KEY BOARD (TIME)
S2	1-571-686-11	SWITCH, KEY BOARD (⏪)
S3	1-571-686-11	SWITCH, KEY BOARD (⏩)
S4	1-571-685-11	SWITCH, KEY BOARD (AUTO SPACE)
S5	1-571-686-11	SWITCH, KEY BOARD (▶▶)
S6	1-571-685-11	SWITCH, KEY BOARD (◀◀)
S7	1-571-685-11	SWITCH, KEY BOARD (REPEAT)
S8	1-571-686-11	SWITCH, KEY BOARD (OPNE/CLOSE)
S9	1-571-685-11	SWITCH, KEY BOARD (▶▶)
S10	1-571-685-11	SWITCH, KEY BOARD (PROGRAM)
S11	1-571-685-11	SWITCH, KEY BOARD (EDIT/TIME FADE)
S12	1-571-685-11	SWITCH, KEY BOARD (SHUFFLE)
S13	1-571-685-11	SWITCH, KEY BOARD (CHECK)
S14	1-571-685-11	SWITCH, KEY BOARD (CONTINUE)
S15	1-571-686-11	SWITCH, KEY BOARD (■)
S16	1-571-685-11	SWITCH, KEY BOARD (CLEAR)
S101	1-571-274-11	SWITCH, LEAF
S501	1-571-305-11	SWITCH, PUSH (1 KEY)(POWER)
S701	1-571-300-11	SWITCH, ROTARY (IN/OUT)
TN1	*1-535-771-11	TERMINAL
TN2	*1-535-771-11	TERMINAL
X301	1-577-082-11	VIBRATOR, CERAMIC (4MHz)
X401	1-567-926-11	VIBRATOR, CRYSTAL (16.9MHz)

ACCESSORY & PACKING MATERIAL

1-465-050-11	REMOTE COMMANDER (RM-D170)
1-558-543-11	CORD, CONNECTION (○)
1-559-533-11	CORD, CONNECTION (○)
3-750-022-11	(AEP).....MANUAL, INSTRUCTION
3-750-022-21	(US,Canadian)...MANUAL, INSTRUCTION
3-750-022-31	(Canadian).....MANUAL, INSTRUCTION
3-750-022-41	(AEP).....MANUAL, INSTRUCTION
*3-795-629-11	(AEP).....INSTRUCTION
*3-704-339-01	SHEET (STANDARD), PROTECTION
*4-885-838-00	LABEL, CLASS 1
*4-929-061-01	INDIVIDUAL CARTON