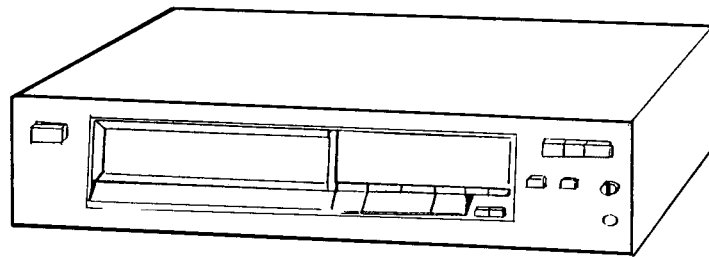


CDP-M27/M47

SERVICE MANUAL

Canadian Model
AEP Model
E Model
CDP-M27
AEP Model
UK Model
CDP-M47



CDP-M27

SPECIFICATIONS

System	Compact disc digital audio system
Laser	Semiconductor laser ($\lambda=780\text{nm}$)
Emission duration	Continuous
Frequency response	2Hz–20,000Hz ($\pm 1\text{ dB}$)
Signal-to-noise ratio	More than 90dB
Harmonic distortion	Less than 0.09%
Wow and flutter	Below measurable limit
Output	LINE OUT (phono jacks) Output level 2V (at 50 kilohms) Load impedance over 10 kilohms
Channel separation	More than 95 dB (1 kHz)
General	
Power requirement	AEP model (CDP-M27/M47) 220 V AC, 50/60Hz UK model (CDP-M27/M47) 240 V AC, 50/60Hz Canadian model (CDP-M27) 120 V AC, 60Hz E, Saudi Arabia model (CDP-M27) 110–120 V or 220–240 V, adjustable, 50/60Hz
Power consumption	10W, 12W (Canadian model)
Dimensions	approx. 355x80x275 mm (w/h/d) (14x3¼x10 inches) including projecting parts and controls
Weight	approx. 3.0kg (6 lbs 10oz) (net)

Supplied accessories

Audio signal connecting cord (2 phono plugs–2 phono plugs) (1)

For CDP-M47 only:

Remote commander (1), Sony SUM-3 (MS) batteries (2)

For CDP-M27/M47:

AC power cord (1)

Note: • CDP-M27 are not supplied with a remote commander.



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COMPACT DISC PLAYER
SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle 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 \triangle 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.

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

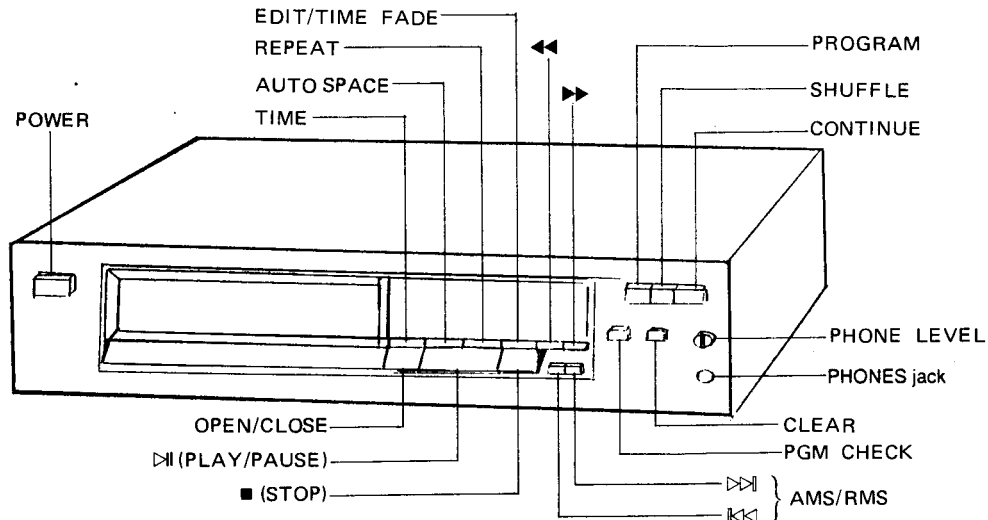
- Material: GaAlAs
- Wavelength: 780 nm
- Emission Duration: continuous
- Laser Output: max. 44.6 μ W*

* 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).

SECTION 1 GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS



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)

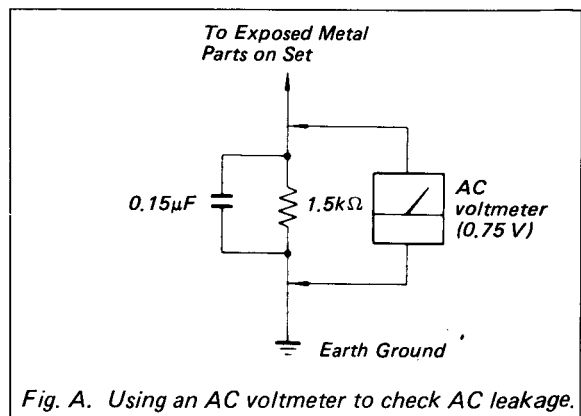


Fig. A. Using an AC voltmeter to check AC leakage.

1-2. DESCRIPTION OF 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

Pin Function of IC6

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 test 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	OSC0	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)

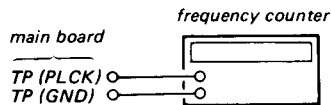
SECTION 2 ADJUSTMENTS

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:

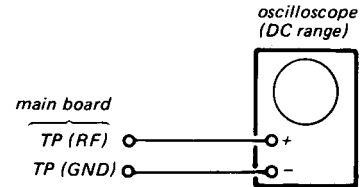


1. Ground test point TP (ASY).
2. Connect the frequency counter to the test points TP (PCK) and TP (GND).
3. Turn POWER switch on.
4. Adjust RV4 so that the reading on the frequency counter is 4.3218 MHz.
... (RF PLL frequency adjustment)
5. Remove the grounding wire from TP (ASY).
6. Put the disc (YEDS-18) in and press \triangleright button.
7. Confirm that the reading on the frequency counter is locked at 4.3218 MHz.

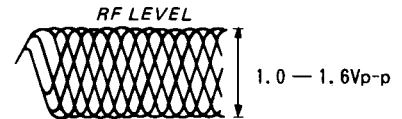
Focus Bias Adjustment

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

Procedure:



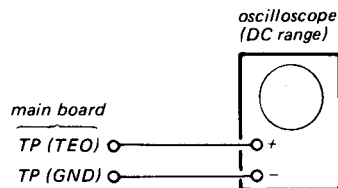
1. Connect oscilloscope to the test points TP (RF) and TP (GND).
2. Turn POWER switch on.
3. Put the disc (YEDS-18) in and press \triangleright button.
4. Adjust RV2 for an optimum waveform eye pattern. Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.



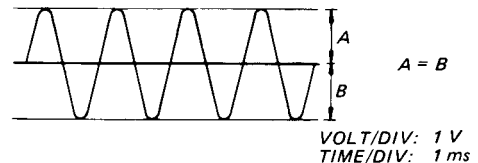
E-F Balance Adjustment

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

Procedure:

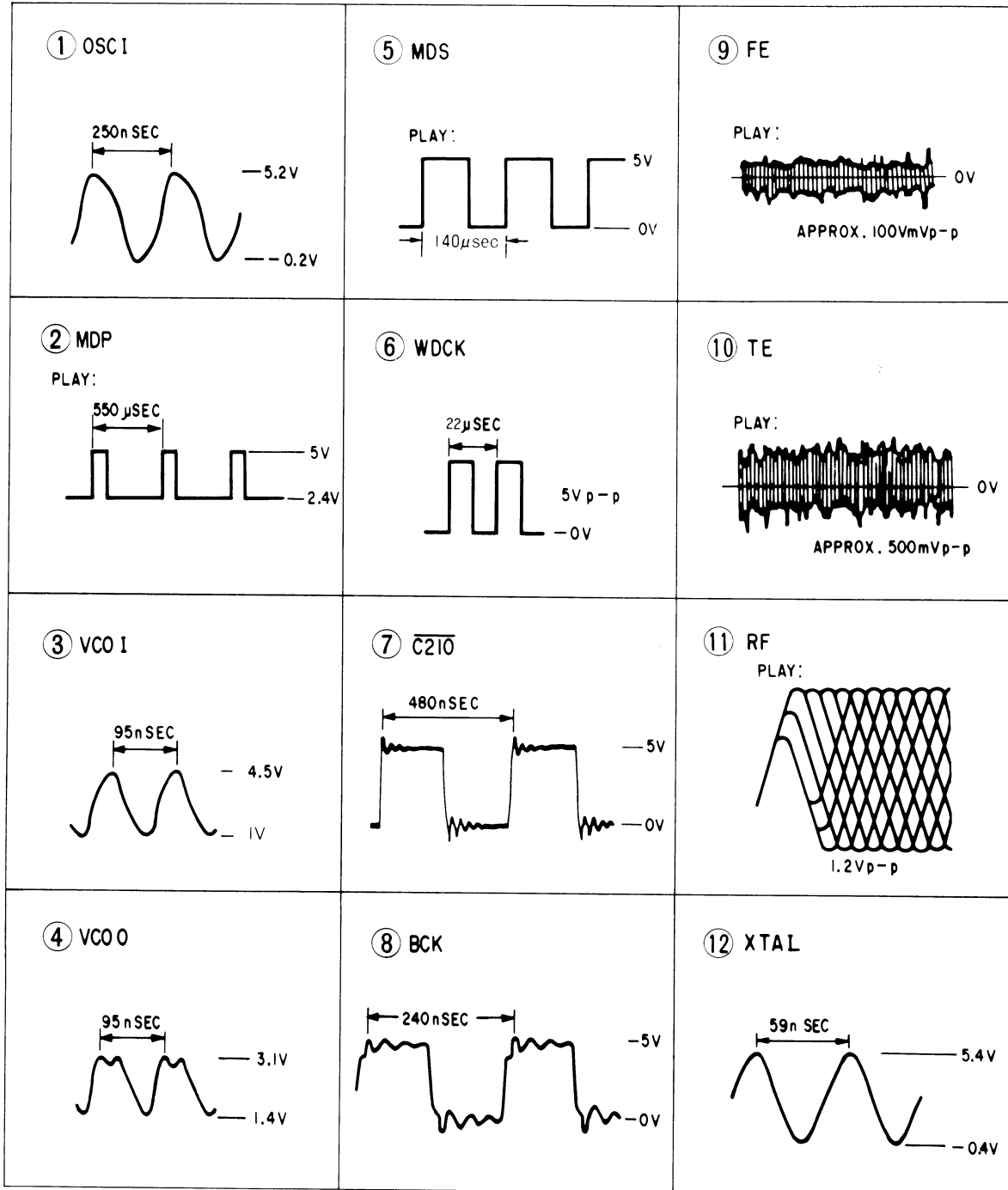


1. Connect the oscilloscope to the test points TP (TEO) and TP (GND).
2. Ground TP (ADJ) to set an adjustment mode.
3. Turn POWER switch on.
4. Put the disc (YEDS-18) in and press \triangleright button.
5. Adjust RV1 so that the traverse waveform is symmetrical above and below.
6. After adjustment, cancel the adjustment mode.



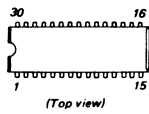
SECTION 3 DIAGRAMS

3-1. WAVEFORMS

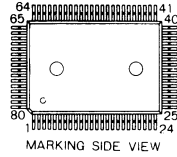


3-2. SEMICONDUCTOR LEAD LAYOUTS

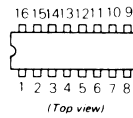
CXA1081S



CXD1125Q



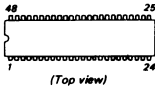
M5294P



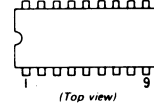
2SB1013



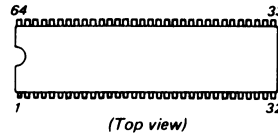
CXA1082BS



CXD2550P



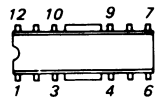
MSC6458-32SS



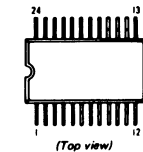
2SK381C



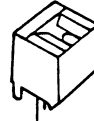
CXA-1291P



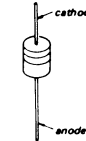
CXK5816M-12L



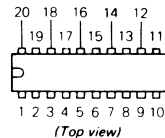
GP1U52



HZS6.8ES-B2
1SS202-1



CXD1161P-3
M5204P



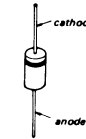
M5231TL



DTC114ES
DTC144ES



10E2



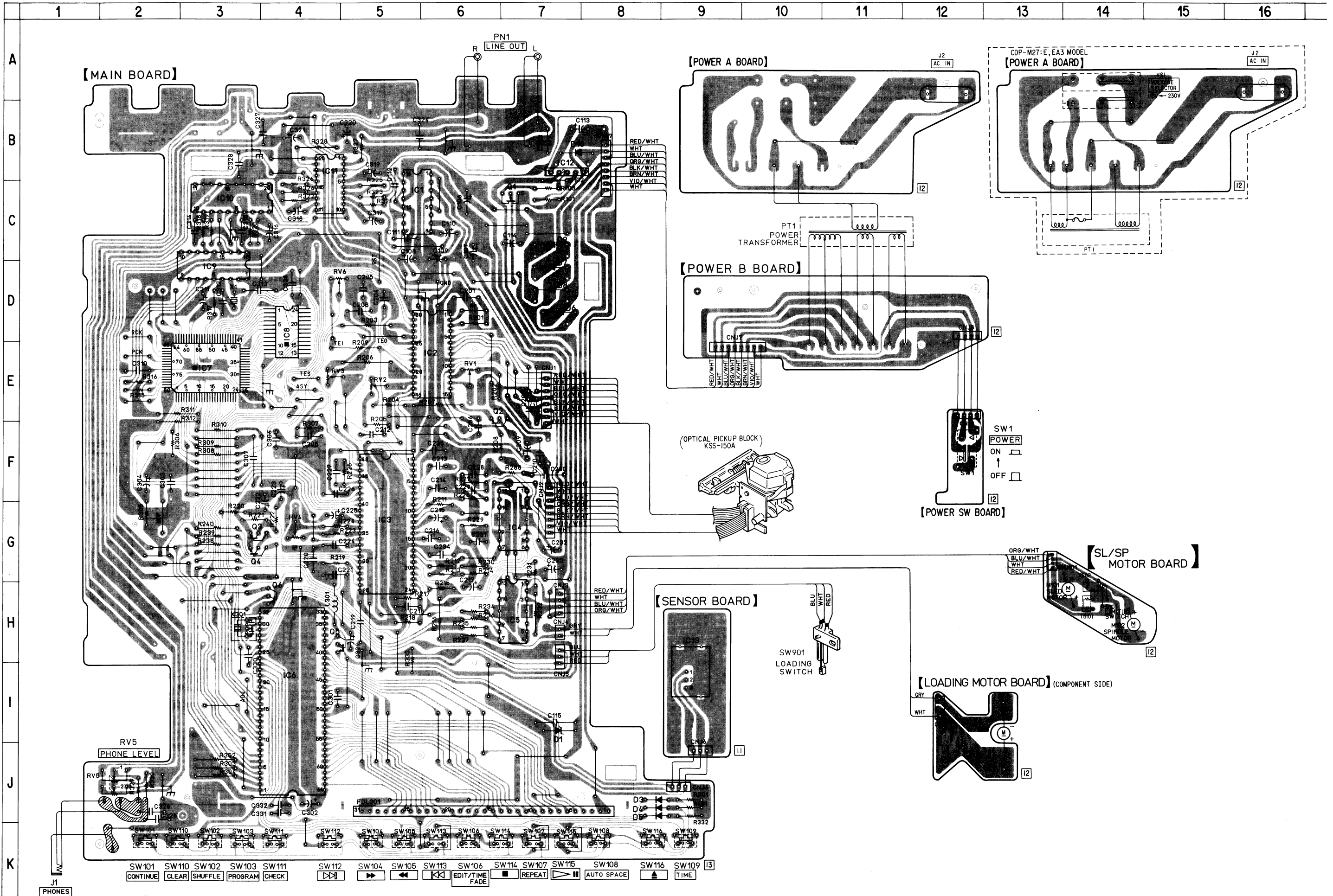
● SEMICONDUCTOR LOCATION

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

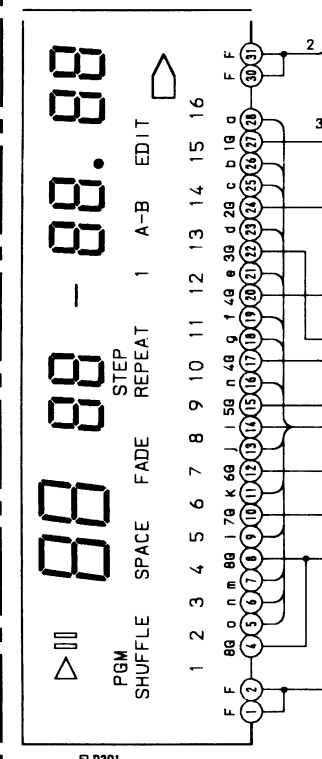
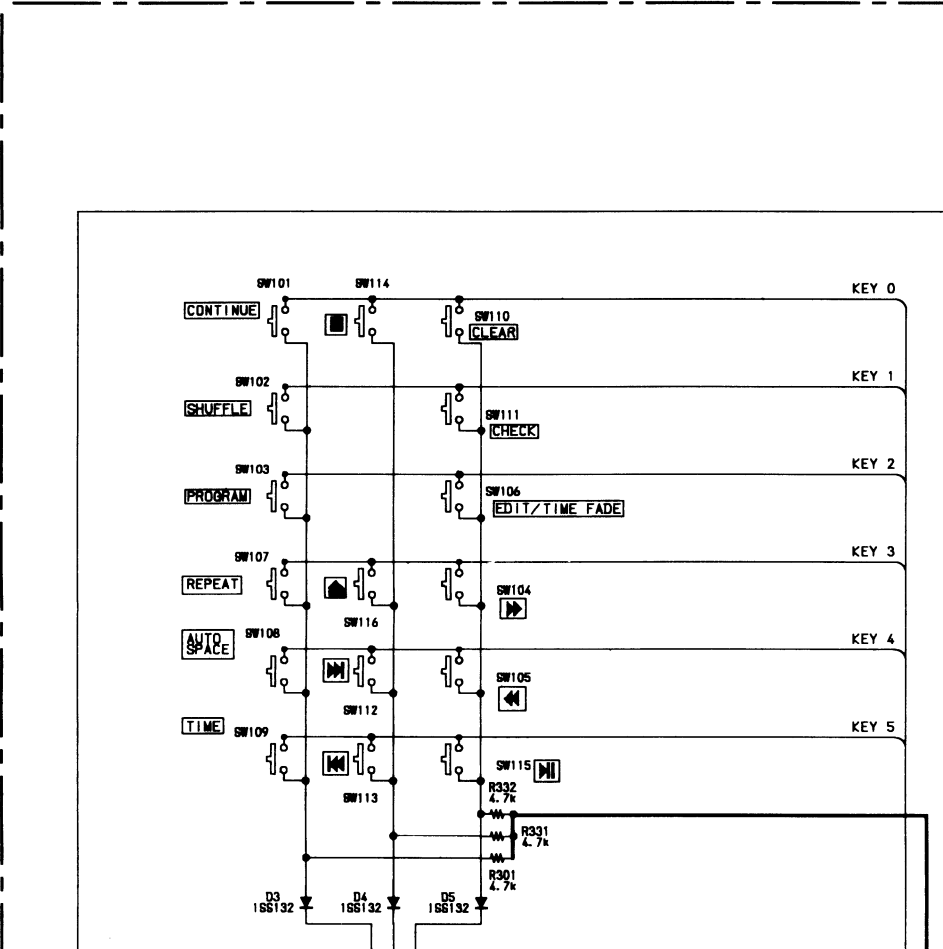
Note:

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

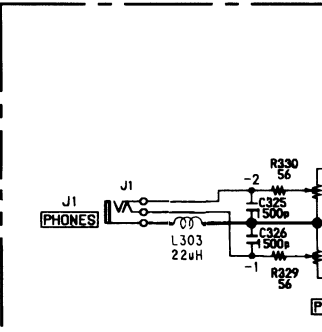
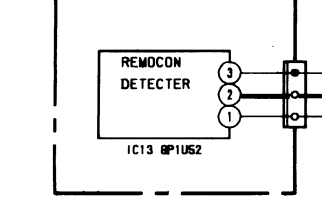
3-3. PRINTED WIRING BOARDS



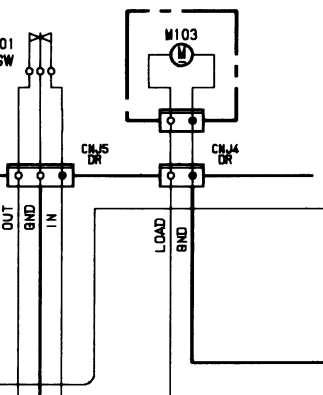
[MAIN BOARD]



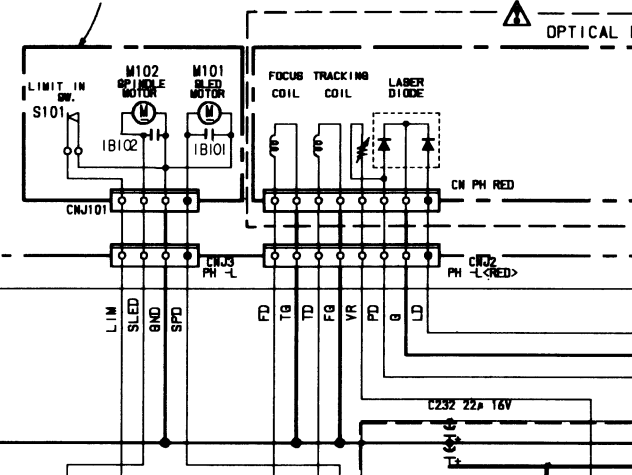
[SENSOR BOARD]



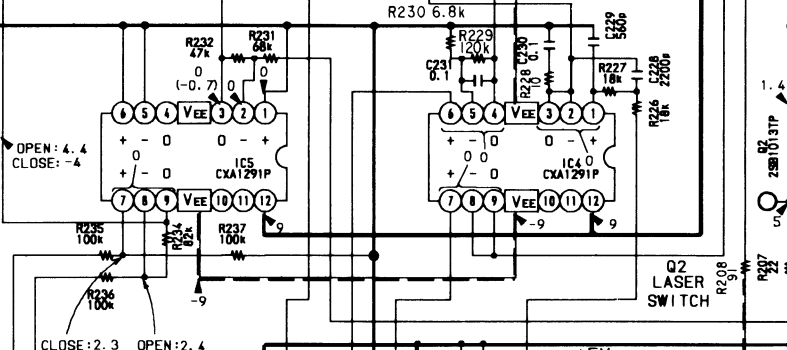
[LOADING MOTOR BOARD]



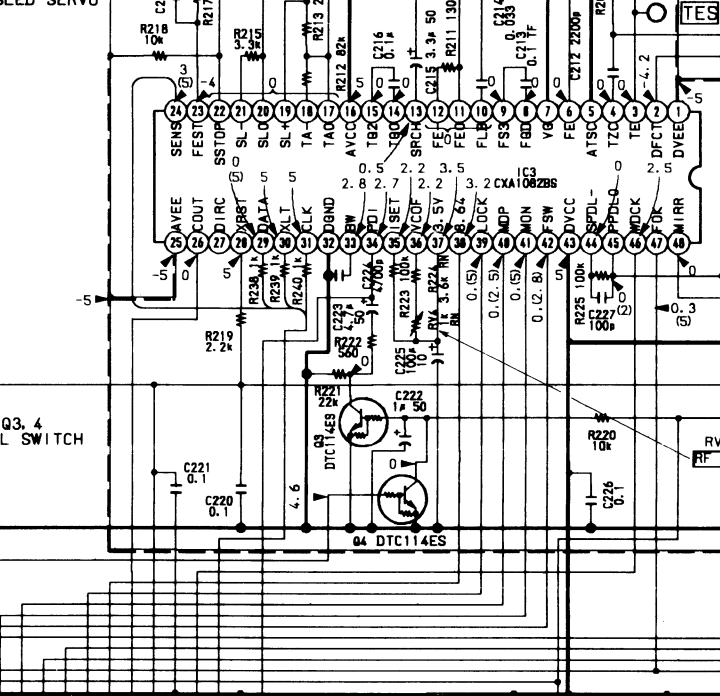
[SL/SP MOTOR BOARD]



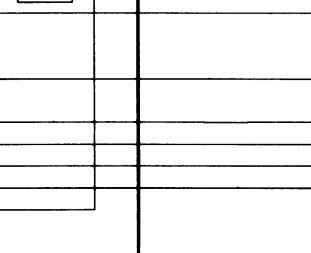
IC4
IC5
DRIVE AMP



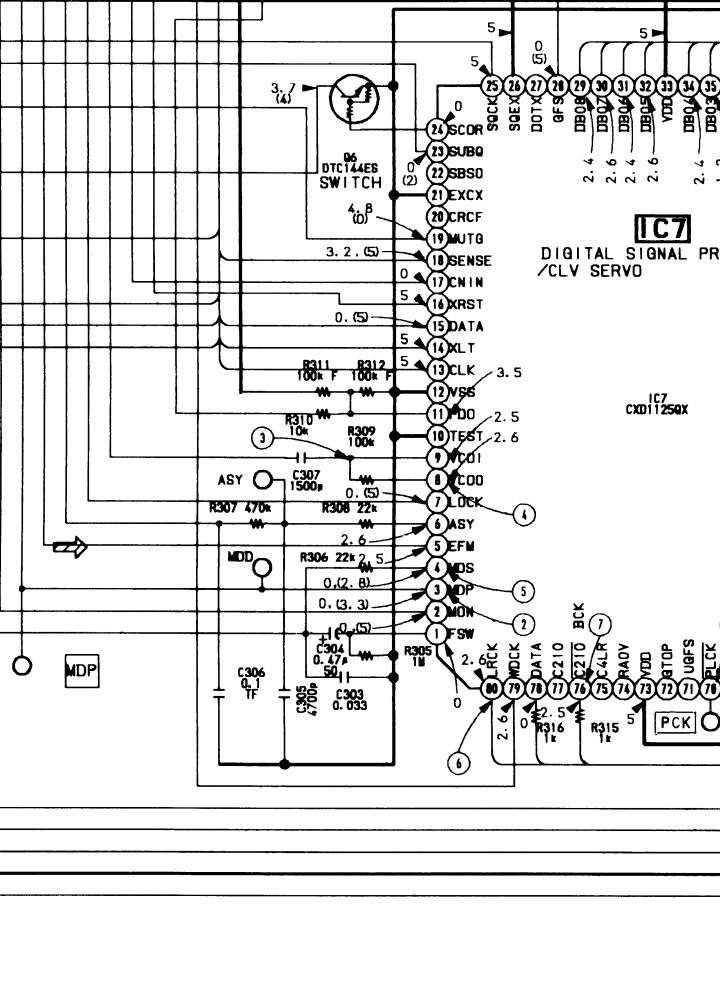
IC3
FOCUS
/TRACKING
/SLED SERVO



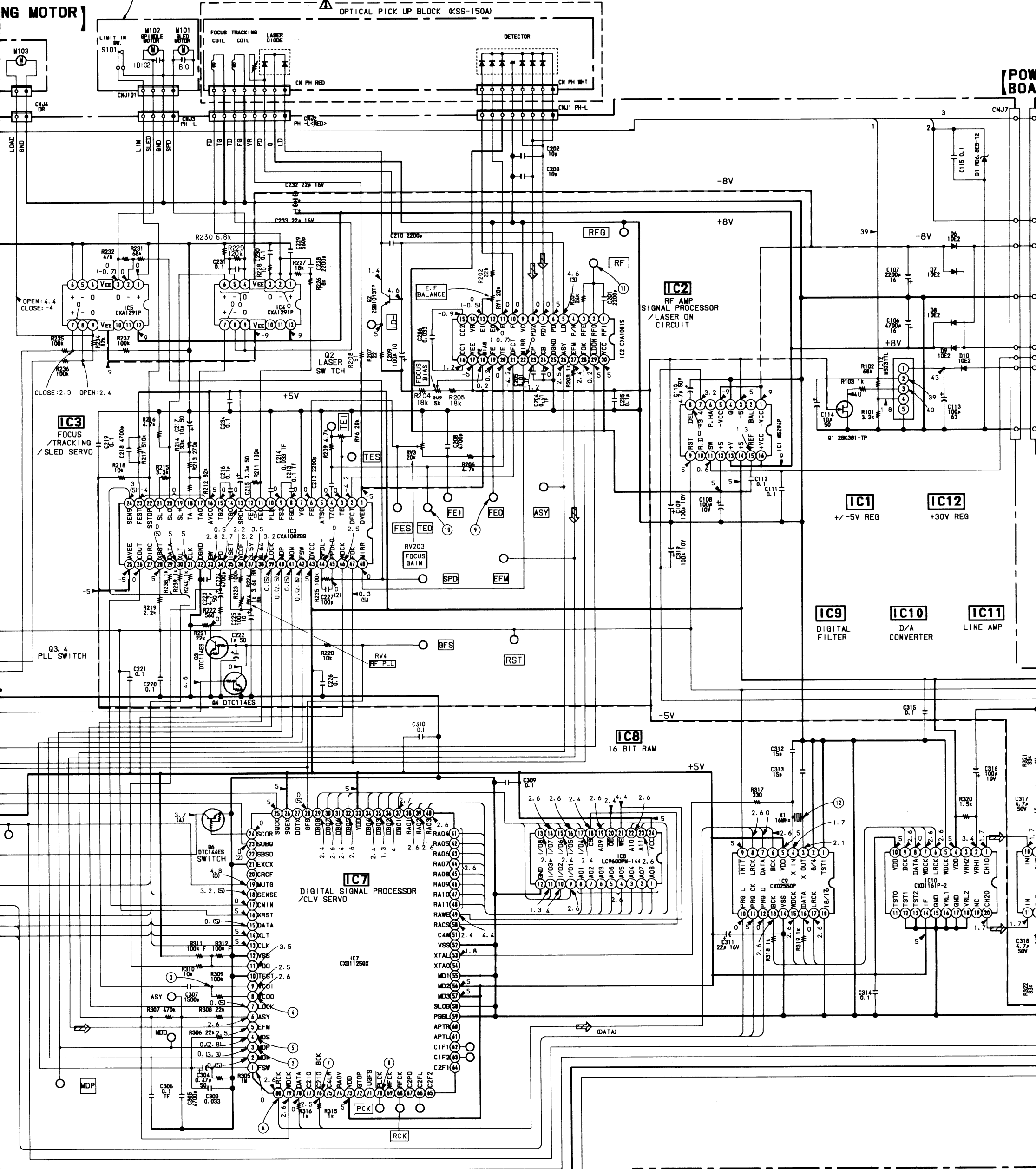
ADJ
AFADJ

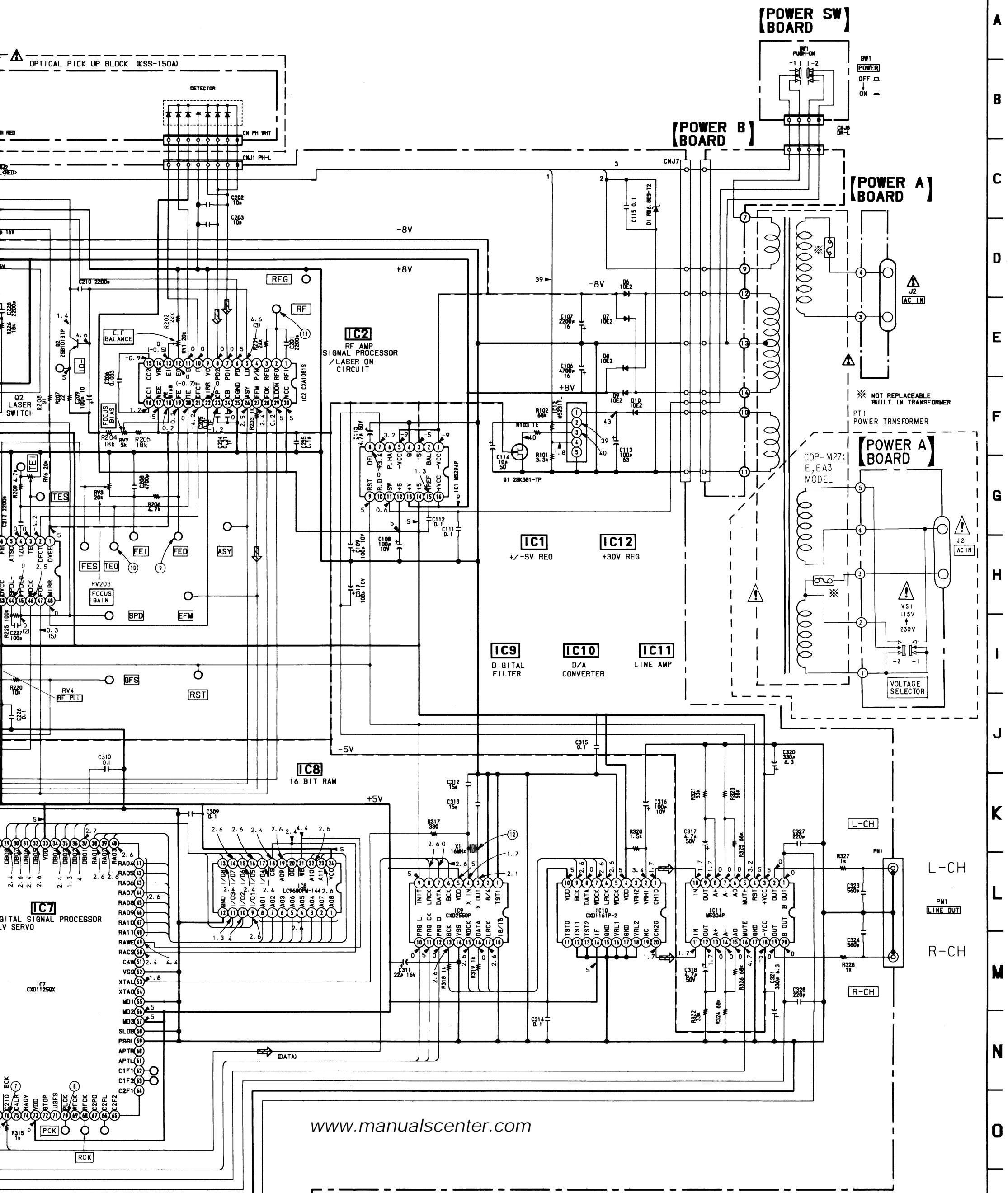


IC7
DIGITAL SIGNAL PRO
/CLV SERVO



[SL/SP MOTOR BOARD]





A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q

3-5. IC BLOCK DIAGRAMS

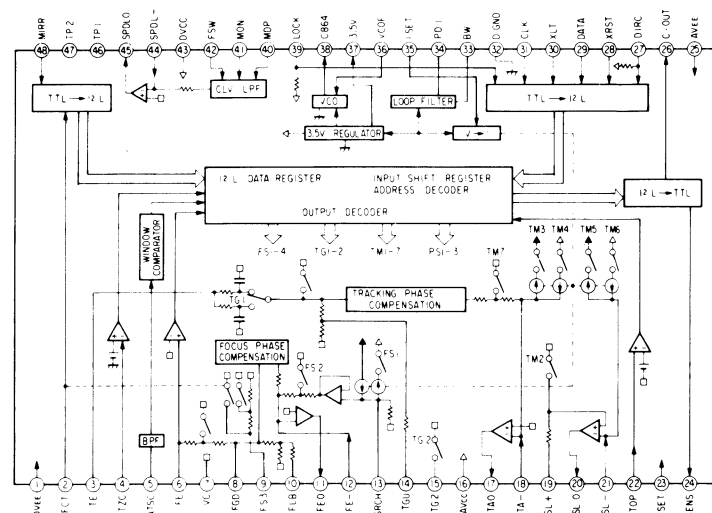
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- --- : B +line
- --- : B -line
- \square : adjustment for repair
- Signal path.
- --- : 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 (50k Ω /V). 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.

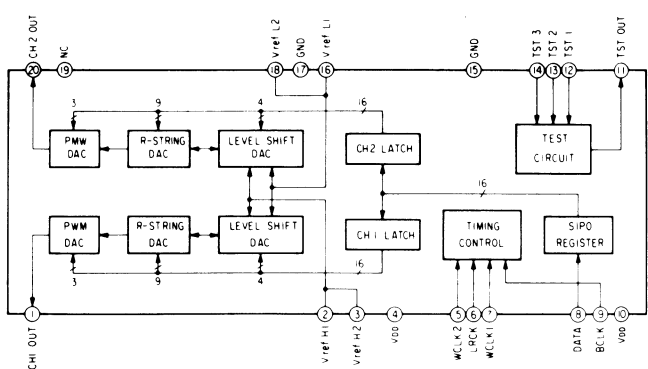
Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

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

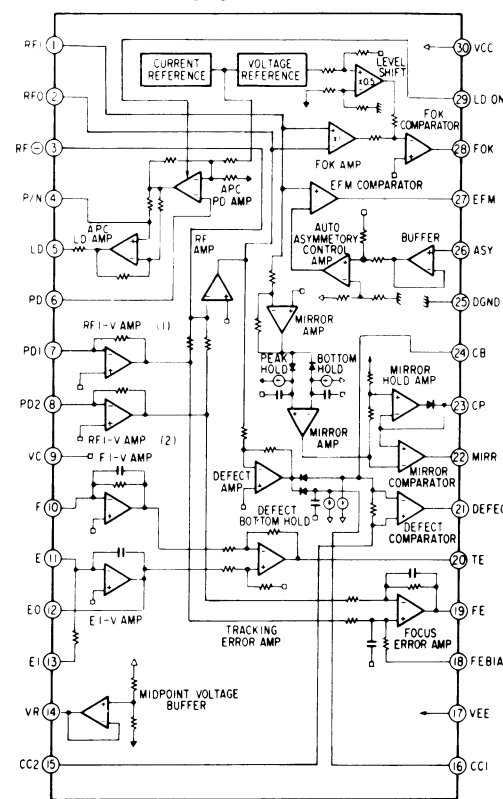
IC3 CXA1082BS



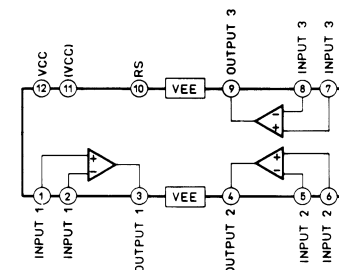
IC10 CXD1161P-2



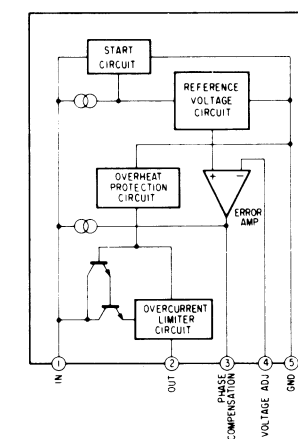
IC2 CXA1081S



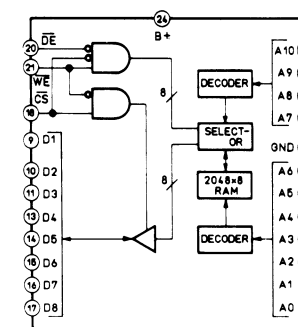
IC4, 5 CXA1291P



IC12 M5231TL



IC8 CXK5816M-10L



NOTE:

- The mech number is supplied.
- The cons part are i ber in the
- Items ma they are service. pated whe

(1). CABIN

"EA3" in Saudi Ara



No.	Part No.
1	4-923-5 4-923-5
2	X-4917- X-4917- X-4917- X-4917-
3	7-685-6
4	4-922-6 4-922-6 4-922-6 4-922-6
5	4-922-6 4-922-6


SECTION 4 EXPLODED VIEWS

NOTE:

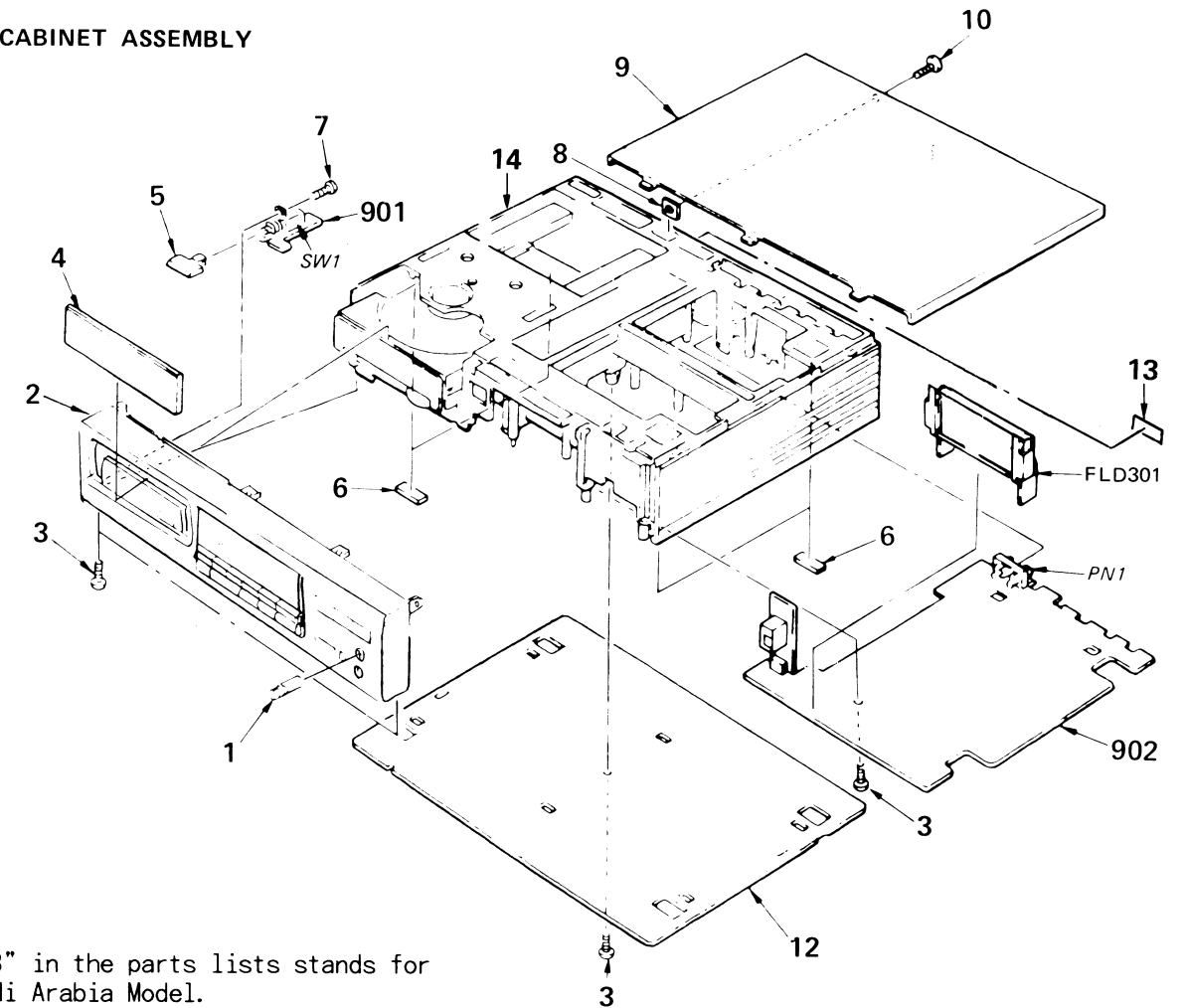
- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be 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.

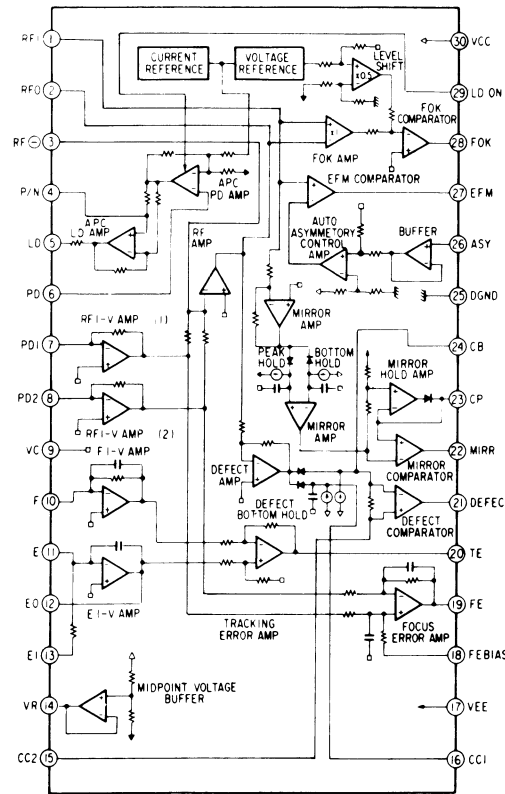
(1). CABINET ASSEMBLY



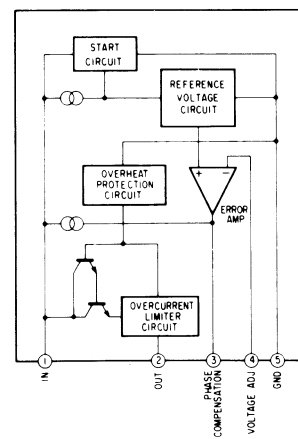
• "EA3" in the parts lists stands for Saudi Arabia Model.

No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	4-923-522-12	(M27:AEP,E/M47:AEP,UK)...KNOB (B.TYPE), LOV (PHONE LEVEL)(BLACK)		6	4-917-524-01	FELT, FOOT	
	4-923-522-21	(M27:E,EA3).....KNOB (B.TYPE), LOV (PHONE LEVEL)(GRAY)		7	7-685-533-11	SCREW +BTP 2.6X6 TYPE2 N-S	
2	X-4917-559-1	(M27:AEP,E)...PANEL ASSY, FRONT (BLACK)		8	*4-918-670-01	SUPPORT, GROUND	
	X-4917-560-1	(M27:EA3,E)...PANEL ASSY, FRONT (GRAY)		9	4-917-536-01	(M27:AEP,E/M47:AEP,UK)...CASE (BLACK)	
	X-4917-561-1	(M47:AEP,UK)...PANEL ASSY, FRONT (BLACK)			4-917-536-31	(M27:EA3,E).....CASE (GLAY)	
	X-4917-563-1	(M27:Canadian) ...PANEL ASSY, FRONT (BLACK)		10	3-703-685-21	SCREW (+BV 3X8)	
3	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S		12	*4-917-535-01	PLATE, BOTTOM	
4	4-922-665-11	(M47:AEP,UK)...PANEL, LOADING (BLACK)		13	*4-885-838-00	LABEL, CLASS 1	
	4-922-665-21	(M27:AEP,Canadian) ...PANEL, LOADING (BLACK)		14	X-4917-534-3	FRAME ASSY	
	4-922-665-41	(M27:E).....PANEL, LOADING (BLACK)		901	*1-628-128-11	PC BOARD, POWER SW	
	4-922-665-51	(M27:EA3,E)...PANEL, LOADING (GRAY)		902	*A-4651-234-A	MOUNTED PCB, MAIN	
5	4-922-660-01	(M27:AEP,E/M47:AEP,UK) ...BUTTON (POWER)(BLACK)		FLD301	1-519-479-21	INDICATOR TUBE, FLUORESCENT	
	4-922-660-11	(M27:EA3,E).....BUTTON (POWER)(GRAY)		PN1	*1-562-999-21	JACK, PIN 2P (LINE OUT)	
				SW1	1-552-928-00	SWITCH (POWER)	

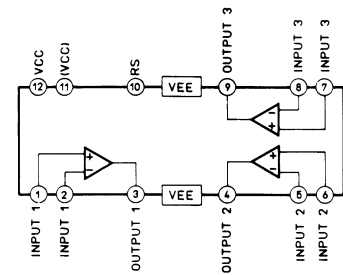
IC2 CXA1081S



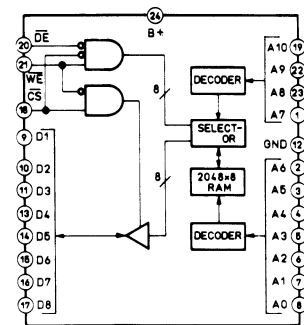
IC12 M5231TL



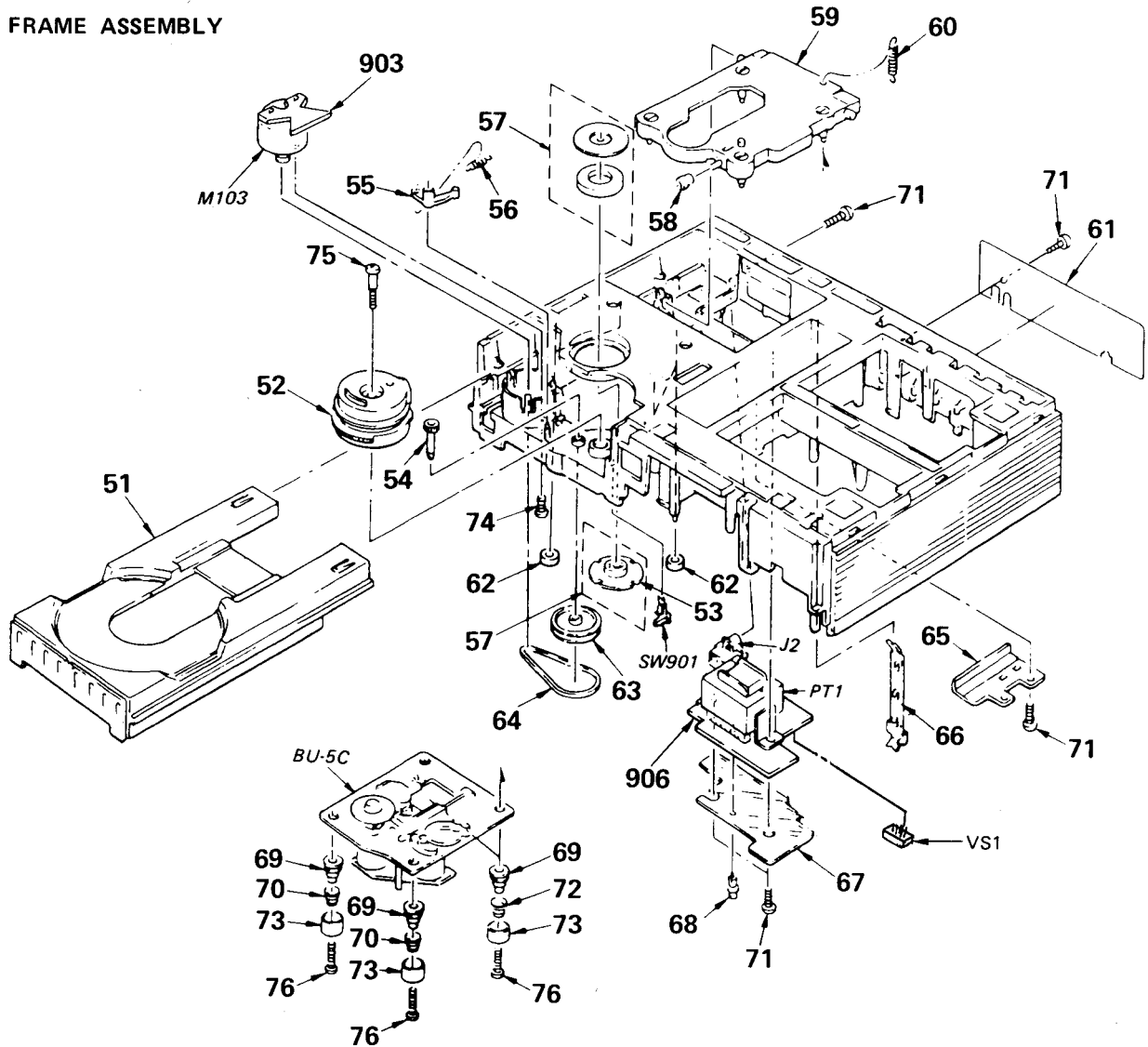
IC4,5 CXA1291P



IC8 CXK5816M-10L

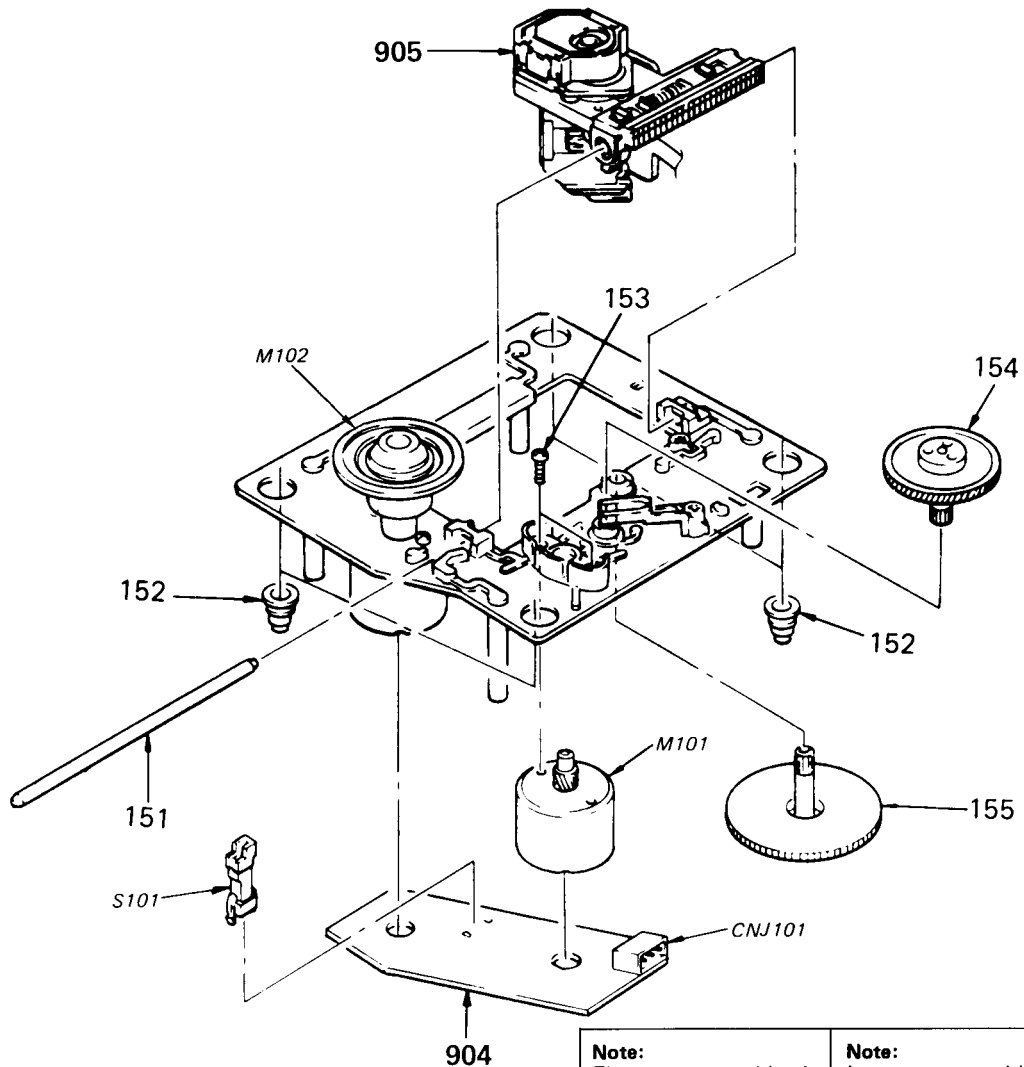





(2). FRAME ASSEMBLY




No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	*4-922-604-01	TABLE, DISK		67	4-917-510-01	SHEET, INSULATING	
52	4-917-534-01	GEAR (A), LOADING		68	3-531-576-11	RIVET	
53	*4-918-679-04	PULLEY, PRESS		69	4-917-562-01	INSULATOR	
54	4-917-516-01	GEAR (B), LOADING		70	4-917-541-01	SPRING (B)	
55	4-917-519-01	LEVER, SET		71	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
56	4-917-514-01	SPRING, TENSION		72	4-917-507-01	SPRING (H)	
57	A-4665-024-A	MAGNET ASSY		73	4-917-508-01	HOLDER, SP	
58	4-917-515-01	ROLLER		74	7-628-254-00	+PSW, 2.6X5	
59	4-917-537-01	BASE, FLOATING		75	7-685-152-19	SCREW, STEP	
60	4-917-526-01	SPRING, TENSION		76	7-685-535-11	SCREW +BTP 2.6X10 TYPE2 N-S	
61	*4-922-685-01	(M47:AEP).....PLATE, INDICATION		903	*1-628-127-11	PC BOARD, ROADING	
	*4-922-687-01	(M27:Canadian)...PLATE, INDICATION		906	*1-628-457-11	PC BOARD, POWER	
	*4-922-688-01	(M27:AEP).....PLATE, INDICATION		J2	1-526-929-11	(M27:E,EA3).....INLET, AC	
	*4-922-689-01	(M27:E,EA3).....PLATE, INDICATION		J2	1-526-930-11	(M27:Canadian).....INLET, AC	
	*4-922-696-01	(M47:UK).....PLATE, INDICATION		J2	1-526-931-11	(M27:AEP/M47:AEP,UK).....INLET, AC	
62	*3-576-990-01	CUSHION		M103	A-4608-330-A	MOTOR ASSY (LOADING)	
63	4-917-521-01	PULLEY, LOADING		SW901	1-570-203-11	SWITCH, LEAF	
64	4-917-522-02	BELT		PT1	△.1-449-024-11	(M27:Canadian)...TRANSFORMER, POWER	
65	*4-917-517-01	GUIDE, LEAD		PT1	△.1-449-025-11	(M27:AEP/M47:AEP,UK).....TRANSFORMER, POWER	
66	*4-917-511-01	PLATE, GROUND		PT1	△.1-449-026-11	(M27:E,EA3).....TRANSFORMER, POWER	
				VS1	△.1-570-046-11	(M27:E,EA3)...SWITCH, VOLTAGE CHANGE	

(3). BU-5C



<p>Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.</p>	<p>Note: 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		904	*1-626-304-11	PC BOARD, SL/SP MOTOR	
152	4-917-562-01	INSULATOR		905	 .8-848-062-01	DEVICE, OPTICAL KSS-150A(H)	
153	7-621-255-15	SCREW +P 2X3		CNJ101	*1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P	
154	4-917-567-01	GEAR (M)		M101	X-4917-504-1	ASSY, MOTOR (SLED)	
155	4-917-564-01	GEAR (P), FLATNESS		M102	X-4917-523-1	ASSY, MOTOR (SPINDLE)	
				S101	1-571-274-11	SWITCH, LEAF (LIMIT IN)	

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: μ F, PF: μ F.

RESISTORS

- All resistors are in ohms.
- F: nonflammable

COILS

- MMH: mH, UH: μ H

SEMICONDUCTORS

In each case, U: μ , for example:
UA...: μ A..., UPA...: μ PA...,
UPC...: μ PC, UPD...: μ PD...

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

Les composants identifiés par une marque Δ 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	*1-628-128-11	PC BOARD, POWER SW					C232	1-124-234-00	ELECT	22MF	20%	16V		
902	*A-4651-234-A	MOUNTED PCB, MAIN					C233	1-124-234-00	ELECT	22MF	20%	16V		
903	*1-628-127-11	PC BOARD, LOADING					C234	1-164-159-11	CERAMIC	0.1MF		50V		
904	*1-626-304-11	PC BOARD, SL/SP MOTOR					C235	1-164-159-11	CERAMIC	0.1MF		50V		
905	Δ 8-848-062-01	DEVICE, OPTICAL KSS-150A(H)					C301	1-136-165-00	FILM	0.1MF	5%	50V		
906	*1-628-457-11	PC BOARD, POWER					C302	1-124-443-00	ELECT	100MF	20%	10V		
C106	1-124-898-11	ELECT	4700MF	20%	16V	C303	1-136-159-00	FILM	0.033MF	5%	50V			
C107	1-124-556-11	ELECT	2200MF	20%	16V	C304	1-124-902-00	ELECT	0.47MF	20%	50V			
C108	1-124-443-00	ELECT	100MF	20%	10V	C305	1-161-377-00	CERAMIC	0.0047MF	20%	16V			
C109	1-124-443-00	ELECT	100MF	20%	10V	C306	1-136-165-00	FILM	0.1MF	5%	50V			
C110	1-124-927-11	ELECT	4.7MF	20%	50V	C307	1-161-374-11	CERAMIC	0.0015MF	20%	16V			
C111	1-164-159-11	CERAMIC	0.1MF		50V	C309	1-164-159-11	CERAMIC	0.1MF		50V			
C112	1-164-159-11	CERAMIC	0.1MF		50V	C310	1-164-159-11	CERAMIC	0.1MF		50V			
C113	1-124-572-11	ELECT	100MF	20%	63V	C311	1-124-234-00	ELECT	22MF	20%	16V			
C114	1-123-875-11	ELECT	10MF	20%	50V	C312	1-162-203-31	CERAMIC	15PF	5%	50V			
C115	1-164-159-11	CERAMIC	0.1MF		50V	C313	1-162-203-31	CERAMIC	15PF	5%	50V			
C201	1-161-375-00	CERAMIC	0.0022MF	20%	16V	C314	1-164-159-11	CERAMIC	0.1MF		50V			
C202	1-162-199-31	CERAMIC	10PF	5%	50V	C315	1-164-159-11	CERAMIC	0.1MF		50V			
C203	1-162-199-31	CERAMIC	10PF	5%	50V	C316	1-124-443-00	ELECT	100MF	20%	10V			
C204	1-136-153-00	FILM	0.01MF	5%	50V	C317	1-124-927-11	ELECT	4.7MF	20%	50V			
C205	1-136-153-00	FILM	0.01MF	5%	50V	C318	1-124-927-11	ELECT	4.7MF	20%	50V			
C206	1-136-159-00	FILM	0.033MF	5%	50V	C319	1-124-443-00	ELECT	100MF	20%	10V			
C208	1-161-377-00	CERAMIC	0.0047MF	20%	16V	C320	1-124-442-00	ELECT	330MF	20%	6.3V			
C209	1-124-443-00	ELECT	100MF	20%	10V	C321	1-124-442-00	ELECT	330MF	20%	6.3V			
C210	1-161-375-00	CERAMIC	0.0022MF	20%	16V	C323	1-162-291-31	CERAMIC	560PF	10%	50V			
C212	1-161-375-00	CERAMIC	0.0022MF	20%	16V	C324	1-162-291-31	CERAMIC	560PF	10%	50V			
C213	1-136-165-00	FILM	0.1MF	5%	50V	C325	1-161-374-11	CERAMIC	0.0015MF	20%	16V			
C214	1-136-159-00	FILM	0.033MF	5%	50V	C326	1-161-374-11	CERAMIC	0.0015MF	20%	16V			
C215	1-123-382-00	ELECT	3.3MF	20%	50V	C327	1-162-286-31	CERAMIC	220PF	10%	50V			
C216	1-136-165-00	FILM	0.1MF	5%	50V	C328	1-162-286-31	CERAMIC	220PF	10%	50V			
C217	1-123-875-11	ELECT	10MF	20%	50V	C329	1-124-499-11	ELECT	1MF	20%	50V			
C218	1-161-377-00	CERAMIC	0.0047MF	20%	16V	C330	1-162-291-31	CERAMIC	560PF	10%	50V			
C219	1-164-159-11	CERAMIC	0.1MF		50V	C331	1-162-291-31	CERAMIC	560PF	10%	50V			
C220	1-164-159-11	CERAMIC	0.1MF		50V	C332	1-162-291-31	CERAMIC	560PF	10%	50V			
C221	1-164-159-11	CERAMIC	0.1MF		50V	CNJ1	*1-564-724-11	PIN, CONNECTOR (SMALL TYPE)	8P					
C222	1-124-499-11	ELECT	1MF	20%	50V	CNJ2	*1-564-724-11	PIN, CONNECTOR (SMALL TYPE)	8P					
C223	1-124-927-11	ELECT	4.7MF	20%	50V	CNJ3	*1-564-720-11	PIN, CONNECTOR (SMALL TYPE)	4P					
C224	1-161-377-00	CERAMIC	0.0047MF	20%	16V	CNJ4	*1-564-336-00	PIN, CONNECTOR	2P					
C225	1-124-443-00	ELECT	100MF	20%	10V	CNJ5	*1-564-337-00	PIN, CONNECTOR	3P					
C226	1-164-159-11	CERAMIC	0.1MF		50V	CNJ6	*1-566-165-11	CONNECTOR, BOARD TO BOARD	3P					
C227	1-162-282-31	CERAMIC	100PF	10%	50V	CNJ7	*1-564-710-11	PIN, CONNECTOR (SMALL TYPE)	8P					
C228	1-161-375-00	CERAMIC	0.0022MF	20%	16V	CNJ8	*1-566-779-11	PIN, CONNECTOR (PC BOARD)	4P					
C229	1-162-291-31	CERAMIC	560PF	10%	50V	CNJ101	*1-564-720-11	PIN, CONNECTOR (SMALL TYPE)	4P					
C230	1-164-159-11	CERAMIC	0.1MF		50V	D1	8-719-109-97	DIODE HZS6.8ES-82						
C231	1-136-165-00	FILM	0.1MF	5%	50V	D3	8-719-107-94	DIODE 1SS202-1						
						D4	8-719-107-94	DIODE 1SS202-1						

Ref.No.	Part No.	Description
D5	8-719-107-94	DIODE 1SS202-1
D6	8-719-200-02	DIODE 10E2
D7	8-719-200-02	DIODE 10E2
D8	8-719-200-02	DIODE 10E2
D9	8-719-200-02	DIODE 10E2
D10	8-719-200-02	DIODE 10E2
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	8-759-805-36	IC CXD1161P-3
IC11	8-759-631-39	IC M5204P
IC12	8-759-605-43	IC M5231TL
IC13	8-749-920-03	IC GPTU52
IB101	1-233-171-11	COMPOSITION CIRCUIT BLOCK
IB102	1-233-171-11	COMPOSITION CIRCUIT BLOCK
J1	1-566-936-41	JACK, LARGE TYPE (PHONES)
J2	1-526-929-11	(M27:E,EA3).....INLET, AC
J2	1-526-930-11	(M27:Canadian).....INLET, AC
J2	1-526-931-11	(M27:AEP/M47:AEP,UK)...INLET, AC
L301	*1-410-858-11	INDUCTOR OUH
L303	1-410-973-11	INDUCTOR 22UH
M101	X-4917-504-1	ASSY, MOTOR (SLED)
M102	X-4917-523-1	ASSY, MOTOR (SPINDLE)
M103	A-4608-330-A	MOTOR ASSY (LOADING)
PN1	*1-562-999-21	JACK, PIN 2P (LINE OUT)
PT1	△.1-449-024-11	(M27:Canadian)...TRANSFORMER, POWER
PT1	△.1-449-025-11	(M27:AEP/M47:AEP,UK) ...TRANSFORMER, POWER
PT1	△.1-449-026-11	(M27:E,EA3).....TRANSFORMER, POWER
Q1	8-729-600-94	TRANSISTOR 2SK381
Q2	8-729-801-83	TRANSISTOR 2SB1013
Q3	8-729-900-80	TRANSISTOR DTC114ES
Q4	8-729-900-89	TRANSISTOR DTC144ES
Q5	8-729-900-89	TRANSISTOR DTC144ES
Q6	8-729-900-89	TRANSISTOR DTC144ES
R101	1-249-423-11	CARBON 3.3K 5% 1/4W
R102	1-249-439-11	CARBON 68K 5% 1/4W
R103	1-249-417-11	CARBON 1K 5% 1/4W

Ref.No.	Part No.	Description
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	1-249-432-11	CARBON 18K 5% 1/4W
R205	1-249-432-11	CARBON 18K 5% 1/4W
R206	1-249-425-11	CARBON 4.7K 5% 1/4W
R207	1-249-397-11	CARBON 22 5% 1/4W
R208	1-247-806-11	CARBON 91 5% 1/4W
R209	1-249-425-11	CARBON 4.7K 5% 1/4W
R211	1-247-882-11	CARBON 130K 5% 1/4W
R212	1-249-440-11	CARBON 82K 5% 1/4W
R213	1-247-889-00	CARBON 270K 5% 1/4W
R214	1-249-435-11	CARBON 33K 5% 1/4W
R215	1-249-423-11	CARBON 3.3K 5% 1/4W
R216	1-249-425-11	CARBON 4.7K 5% 1/4W
R217	1-247-896-11	CARBON 510K 5% 1/4W
R218	1-249-429-11	CARBON 10K 5% 1/4W
R219	1-249-421-11	CARBON 2.2K 5% 1/4W
R220	1-249-429-11	CARBON 10K 5% 1/4W
R221	1-249-433-11	CARBON 22K 5% 1/4W
R222	1-249-414-11	CARBON 560 5% 1/4W
R223	1-249-441-11	CARBON 100K 5% 1/4W
R224	1-215-434-00	METAL 3.6K 1% 1/6W
R225	1-249-441-11	CARBON 100K 5% 1/4W
R226	1-249-432-11	CARBON 18K 5% 1/4W
R227	1-249-432-11	CARBON 18K 5% 1/4W
R228	1-249-393-11	CARBON 10 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	1-249-439-11	CARBON 68K 5% 1/4W
R232	1-249-437-11	CARBON 47K 5% 1/4W
R234	1-249-440-11	CARBON 82K 5% 1/4W
R235	1-249-441-11	CARBON 100K 5% 1/4W
R236	1-249-441-11	CARBON 100K 5% 1/4W
R237	1-249-441-11	CARBON 100K 5% 1/4W
R238	1-249-417-11	CARBON 1K 5% 1/4W
R239	1-249-417-11	CARBON 1K 5% 1/4W
R240	1-249-417-11	CARBON 1K 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	1-249-425-11	CARBON 4.7K 5% 1/4W
R305	1-247-903-00	CARBON 1M 5% 1/4W
R306	1-249-433-11	CARBON 22K 5% 1/4W
R307	1-247-895-00	CARBON 470K 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			
R308	1-249-433-11	CARBON	22K	5%	1/4W
R309	1-249-441-11	CARBON	100K	5%	1/4W
R310	1-249-429-11	CARBON	10K	5%	1/4W
R311	1-215-469-00	METAL	100K	1%	1/6W
R312	1-215-469-00	METAL	100K	1%	1/6W
R315	1-249-417-11	CARBON	1K	5%	1/4W
R316	1-249-417-11	CARBON	1K	5%	1/4W
R317	1-249-411-11	CARBON	330	5%	1/4W
R318	1-249-417-11	CARBON	1K	5%	1/4W
R319	1-249-417-11	CARBON	1K	5%	1/4W
R320	1-249-419-11	CARBON	1.5K	5%	1/4W
R321	1-249-435-11	CARBON	33K	5%	1/4W
R322	1-249-435-11	CARBON	33K	5%	1/4W
R323	1-249-439-11	CARBON	68K	5%	1/4W
R324	1-249-439-11	CARBON	68K	5%	1/4W
R325	1-249-439-11	CARBON	68K	5%	1/4W
R326	1-249-439-11	CARBON	68K	5%	1/4W
R327	1-249-417-11	CARBON	1K	5%	1/4W
R328	1-249-417-11	CARBON	1K	5%	1/4W
R329	1-249-402-11	CARBON	56	5%	1/4W
R330	1-249-402-11	CARBON	56	5%	1/4W
R331	1-249-425-11	CARBON	4.7K	5%	1/4W
R332	1-249-425-11	CARBON	4.7K	5%	1/4W
R333	1-249-425-11	CARBON	4.7K	5%	1/4W
RV1	1-228-995-00	RES, ADJ, CARBON 20K			
RV2	1-228-993-00	RES, ADJ, CARBON 5K			
RV3	1-228-995-00	RES, ADJ, CARBON 20K			
RV4	1-228-990-00	RES, ADJ, METAL GLAZE 1K			
RV5	1-238-307-11	RES, VAR, CARBON 1K/1K (PHONE LEVEL)			
RV6	1-228-995-00	RES, ADJ, CARBON 20K			
SI01	1-571-274-11	SWITCH, LEAF (LIMIT IN)			
SW1	1-552-928-00	SWITCH (POWER)			
SW101	1-571-685-11	SWITCH, KEY BOARD (CONTINUE)			
SW102	1-571-685-11	SWITCH, KEY BOARD (SHUFFLE)			
SW103	1-571-685-11	SWITCH, KEY BOARD (PROGRAM)			
SW104	1-571-685-11	SWITCH, KEY BOARD (▶▶)			
SW105	1-571-685-11	SWITCH, KEY BOARD (◀◀)			
SW106	1-571-685-11	SWITCH, KEY BOARD (EDIT/TIME FADE)			
SW107	1-571-685-11	SWITCH, KEY BOARD (REPEAT)			
SW108	1-571-685-11	SWITCH, KEY BOARD (AUTO SPACE)			
SW109	1-571-685-11	SWITCH, KEY BOARD (TIME)			
SW110	1-571-686-11	SWITCH, KEY BOARD (CLEAR)			
SW111	1-571-686-11	SWITCH, KEY BOARD (CHECK)			
SW112	1-571-686-11	SWITCH, KEY BOARD (▶▶▶)			
SW113	1-571-686-11	SWITCH, KEY BOARD (◀◀◀)			
SW114	1-571-686-11	SWITCH, KEY BOARD (■)			

Ref.No.	Part No.	Description
SW115	1-571-686-11	SWITCH, KEY BOARD (▶)
SW116	1-571-686-11	SWITCH, KEY BOARD (▲)
SW901	1-570-203-11	SWITCH, LEAF
VS1	1-570-046-11	(M27:E,EA3)...SWITCH, VOLTAGE CHANGE
X1	1-567-908-21	VIBRATOR, CRYSTAL (16.9MHz)
X2	1-577-082-11	VIBRATOR, CERAMIC (4MHz)


ACCESSORY & PACKING MATERIAL

1-465-050-11	(M47:AEP,UK)...REMOTE COMMANDER (RM-D170)
△.1-506-401-00	(M27:EA3)...ADAPTOR, CONVERSION
△.1-526-565-00	(M27:E).....AC PLUG ADAPTOR
△.1-556-280-00	(M27:E).....CORD, POWER
△.1-558-032-11	(M47:UK).....CORD, POWER
△.1-558-834-11	(M27:Canadian)...CORD, POWER
△.1-558-835-11	(M27:EA3,AEP/M47:AEP)...CORD, POWER
1-558-543-11	CORD, CONNECTION
1-559-533-11	CORD, CONNECTION
3-750-022-11	MANUAL, INSTRUCTION
3-750-022-21	(M27:Canadian)...MANUAL, INSTRUCTION
3-750-022-31	(M27:Canadian)...MANUAL, INSTRUCTION
3-750-022-41	(M27/M47:AEP)...MANUAL, INSTRUCTION
*3-795-629-11	(M27/M47:AEP)...INSTRUCTION
*4-885-838-00	LABEL, CLASS 1
*4-922-672-21	(M47)...INDIVIDUAL CARTON
*4-922-672-31	(M27)...INDIVIDUAL CARTON
*4-922-673-01	CUSHION
7-632-650-75	SHEET, PROTECTION (500MM)

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.

Troubleshooting Guide

Symptom	Cause	Remedy
The disc tray does not close.	The disc is not placed correctly.	Place the disc correctly on the disc tray.
Play does not start.	Dirty disc.	Clean the disc.
	The disc is inserted upside down.	Insert the disc with the printed side up.
	The player is in the pause mode.	Press ► () to release pause.
	Moisture condensation.	Leave the player turned on for approximately one hour.
Play does not start and "no disc" is displayed.	There is no disc in the unit.	Insert a disc.
Sound is not heard.	Loose connection.	Insert the plug firmly.
	Connection is incorrect.	Check the connection referring to "Connecting the CD Player".
	The LINE OUT/HEADPHONE LEVEL control is set to the minimum.	Turn the control clockwise.
⏸ is displayed when you press ►►	►► was continuously pressed at the end of the disc.	Press ◀◀ or ▶▶ to return to normal indication.
Play does not begin from the first selection.	The player is in the PROGRAM or SHUFFLE mode.	Press CONTINUE.
The remote commander does not operate the unit.	The batteries are run down.	Replace both batteries.
	The remote commander is not pointed at the remote sensor.	Point the remote commander at the sensor.
	There is an obstacle between the remote commander and the unit.	Remove the obstacle.
	The remote commander is too far from the unit.	Move closer.
Any operation is not possible.	The internal control program may not run.	Turn off the power and turn it on again.

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