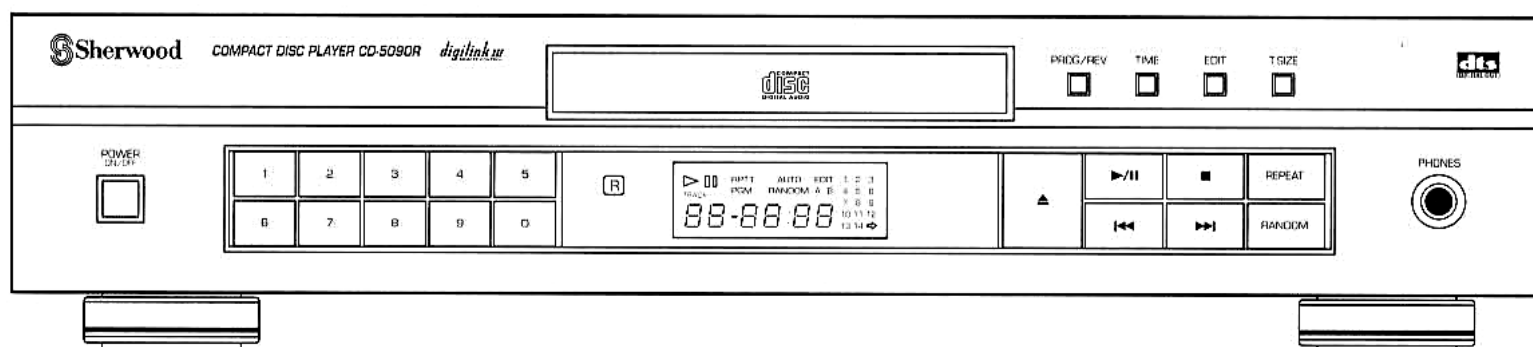


SERVICE MANUAL

CD-5090R/C/G COMPACT DISC PLAYER



■ CONTENTS ■

LASER BEAM SAFETY PRECAUTIONS	2	TROUBLESHOOTING.....	15
SAFETY PRECAUTIONS	3	MECHANICAL PARTS LIST	22
LEAKAGE TEST	4	EXPLODED VIEW	23
SPECIFICATIONS	5	ELECTRICAL PARTS LIST	25
WIRING DIAGRAM.....	6	PRINTED CIRCUIT BOARDS.....	29
BLOCK DIAGRAM	8	IC'S FUNCTIONAL BLOCK DIAGRAM	31
CIRCUIT DESCRIPTION.....	10	SCHEMATIC DIAGRAMS.....	33
PICKUP REPLACEMENT	13	TRANSISTORS LEAD IDENTIFICATION	35

 **Sherwood**®

LASER BEAM SAFETY PRECAUTIONS

CLASS 1 LASER PRODUCT

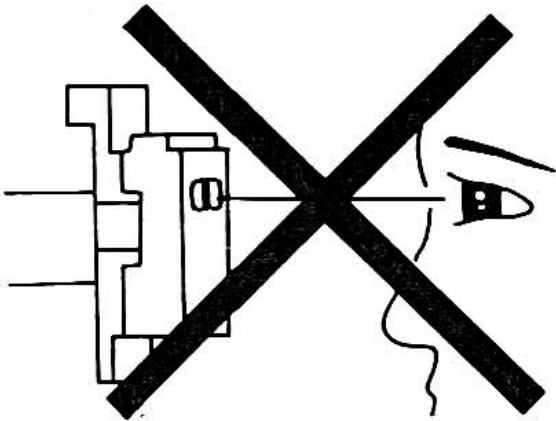
**CLASS 1
LASER PRODUCT**

CAUTION

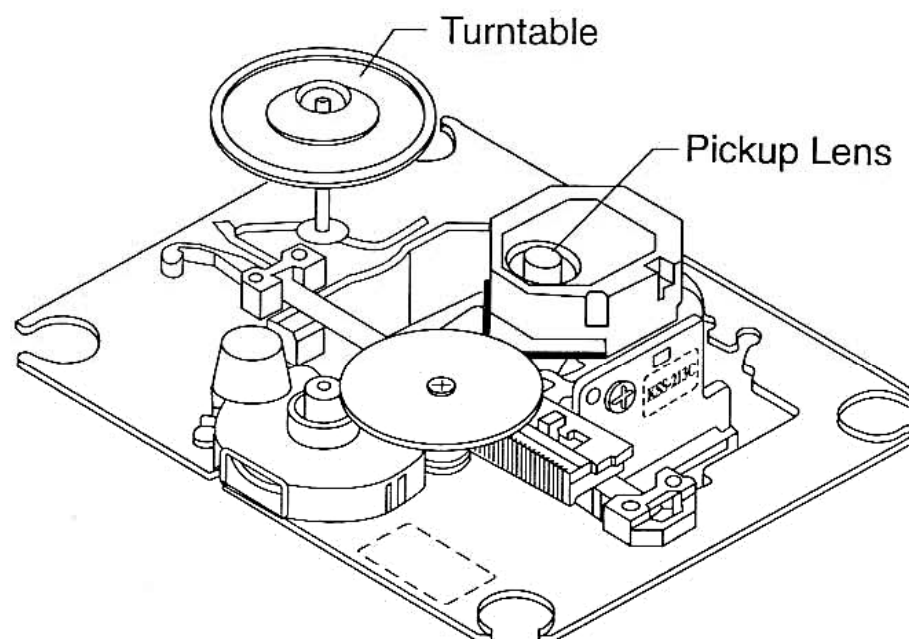
Invisible laser radiation when the unit is open. Do not stare into beam.

CAUTION: USE OF ANY CONTROLS, ADJUSTMENT, OR PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

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



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



CAUTION:

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

SAFETY PRECAUTIONS



CAUTION

RISK OF ELECTRIC SHOCK.
DO NOT OPEN.



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attention: Pour prévenir les chocs électriques ne pas utiliser cette fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans en laisser aucune partie à découvert.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

HANDLING LASER PICKUP

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

BEFORE REPAIRING THE COMPACT DISC PLAYER

Preparation

- Human Body Grounding:** Many of the components used in this compact disc player, including the laser pickup, are sensitive to electrostatic discharge. Service personal should be grounded with an electrostatic armband (1 Mohm).
- Caution:** Static charge on clothing does not escape through a body grounding wrist band. Be careful not to contact the pickup or electrical components with your clothing.
- Workbench and Tool Grounding:** A properly-grounded electroconductive plate (1 Mohm) or metal sheet should be fitted to the workbench surface. Tools and instruments (such as soldering irons and scopes) should be grounded to prevent AC leakage.

Incorrect

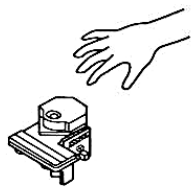


Fig. 1

Correct

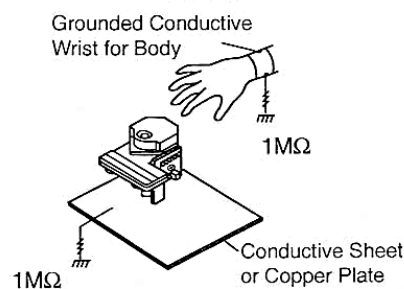


Fig. 2

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

LEAKAGE TEST

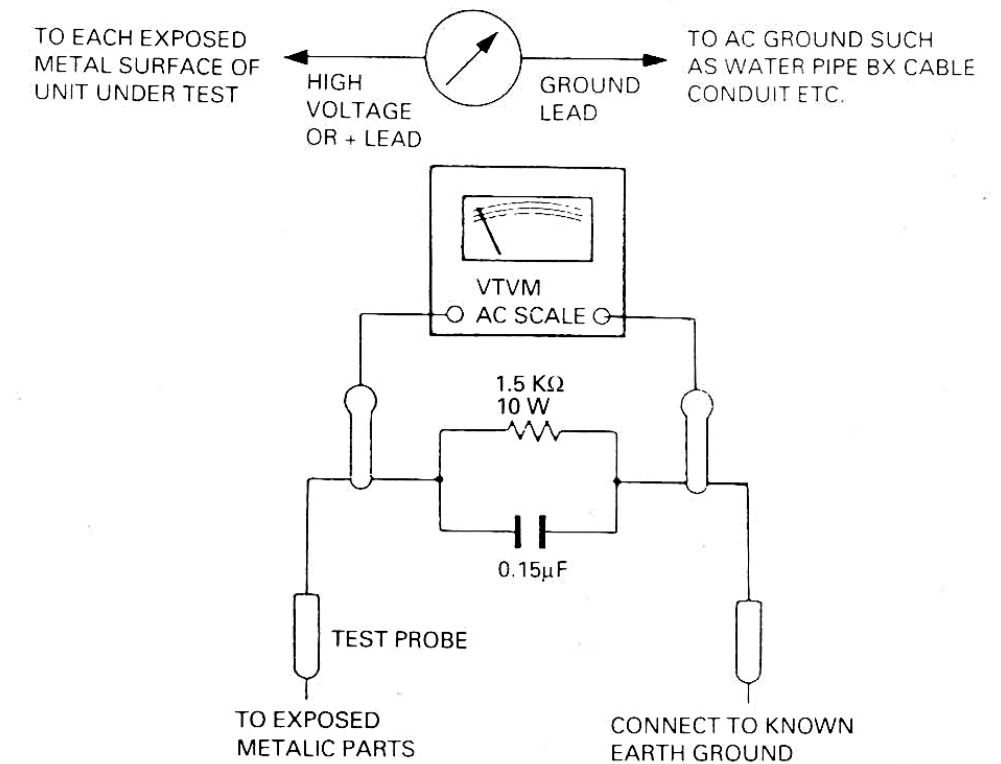
Before returning the unit to the user, perform the following safety checks:

- Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metallic parts in the unit.
- Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. which were removed for servicing are properly reinstalled.
- 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 power cord directly into a 220-volt AC receptacle (do not use an isolation transformer for this test).

Using two clip leads, connects a 1500 ohm, 10-watt resistor paralleled by a 0.15μF 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.

SIMPSON MODEL 229 ETC. FOR LEAKAGE TEST



SPECIFICATIONS

Measuring methods in conformity with EIAJ CP-307, CCIR 468-3

Measurements conditions, unless otherwise noted : Reference level

Reference frequency : 1kHz

Filter : A / 20 kHz / oct L.P.F

0dB = Sony CD3 YEDS 7 (Track NO 7)

Test disc : SONY CD3 YEDS 7, TEAC MCD-151A, TEAC MCD-111

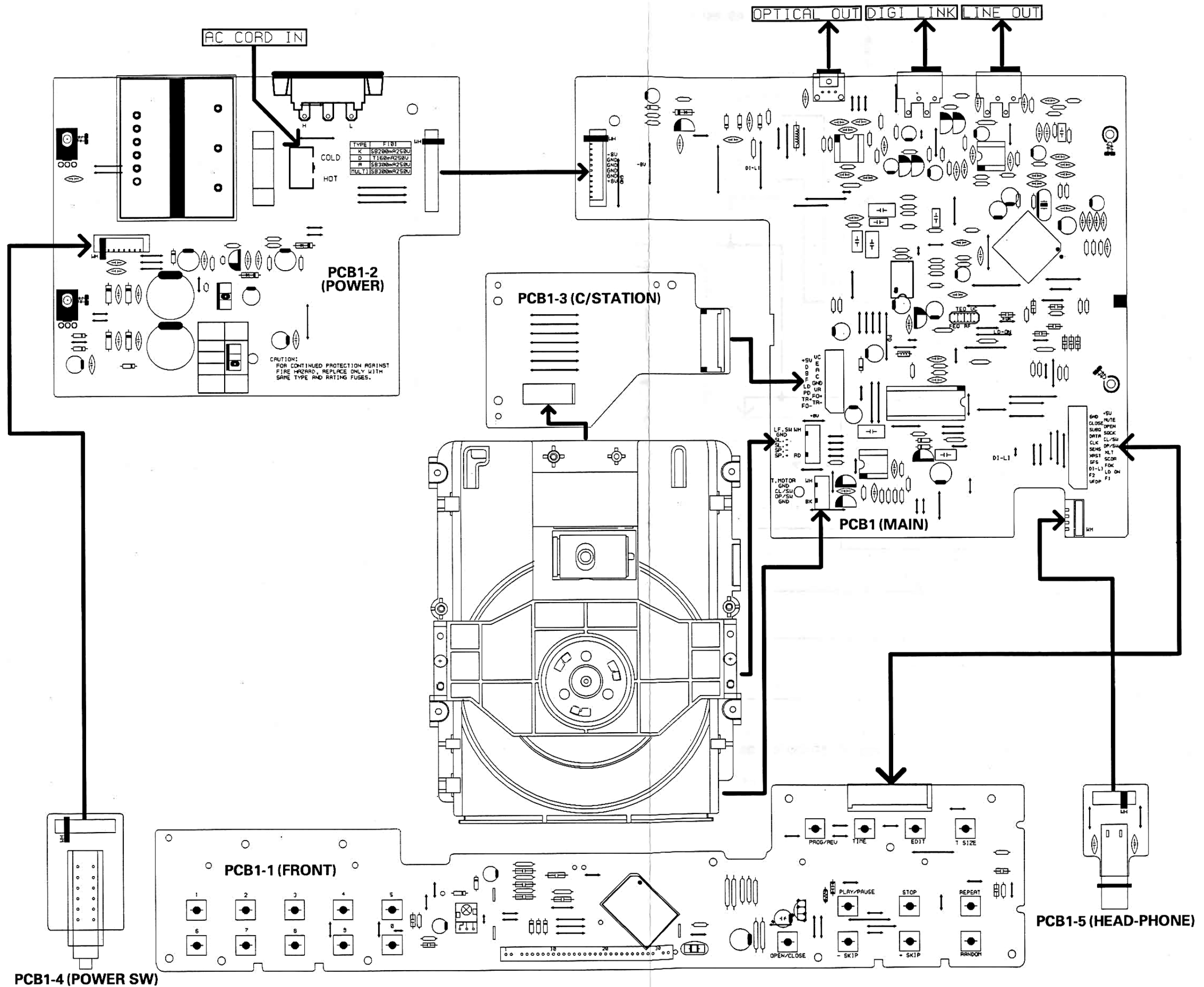
TEAC MCD-193, A-BEX TCD-721R, TEAC MCD-131

Power supply : D/G -> (230V/50Hz), K -> (220V/60Hz), PT -> (110/220V,50/60Hz)

NO	DESCRIPTION	SIGNAL	INPUT	TRACK	UNIT	LIMIT L/R	NOMINAL L/R	
1	OUTPUT LEVEL	1KHz	0dB	7	V	2.0±0.4	2.0±0.2	
2	HEADPHONE OUTPUT LEVEL (Z=32ohm)	1KHz	0dB	3/7	Mv	360±100	360±50	
3	CHANNEL UNBALANCE	1KHz	0dB	7	dB	±0.4	±0.2	
4	FREQUENCY RESPONSE	20~20kHz	0dB	2~13	dB	±1	±0.5	
		20Hz	0dB	2	dB	±1	±0.5	
		20kHz	0dB	13	dB	±1.5	±0.5	
5	S/N RATIO UNWEIGHTED		0dB	23	dB	≥85	≥90	
	WEIGHTED (A)		0dB	23	dB	≥90	≥95	
6	TOTAL HARMONIC DISTORTION (A FILTER)	100Hz	0dB	4	%	≤0.08	≤0.025	
		1kHz	0dB	7	%	≤0.015	≤0.008	
		10KHz	0dB	10	%	≤0.08	≤0.025	
		20kHz	0dB	13	%	≤0.08	≤0.025	
7	CHANNEL SEPARATION (20KHz FILTER)	1kHz	0dB	30/34	dB	≥85	≥90	
		10KHz	0dB	31/35	dB	≥80	≥85	
8	DE-EMPHASIS ERROR	-0.37	1kHz	-0.37dB	39	dB	±0.4	±0.2
		-4.53	5kHz	-4.53dB	40	dB	±1.0	±0.5
		-9.04	16kHz	-9.04dB	41	dB	±1.5	±0.5
9	ACCESS TIME SHORT ACCESS				sec	6	2	
	LONG ACCESS				sec	12	5	
10	DISC DFECTS BLACK DOT			8~11	um	≥600	≥800	
	INTERRUPT			2~5	um	≥700	≥800	
	FINGERPRINT			17~19	um	ALL	ALL	
11	DYNAMIC RANGE (L.P.F)	1KHz	-60dB	20	dB	≥85	≥92	
12	LINEARITY (20kHz FILTER)	1KHz	-90dB	22	dB	≥80	≥85	
13	DISC DEVIATIONS VERTICAL				um	500	1000	
	RADIAL				um	140	210	
14	SCRATCH			2~4	um	600	800	

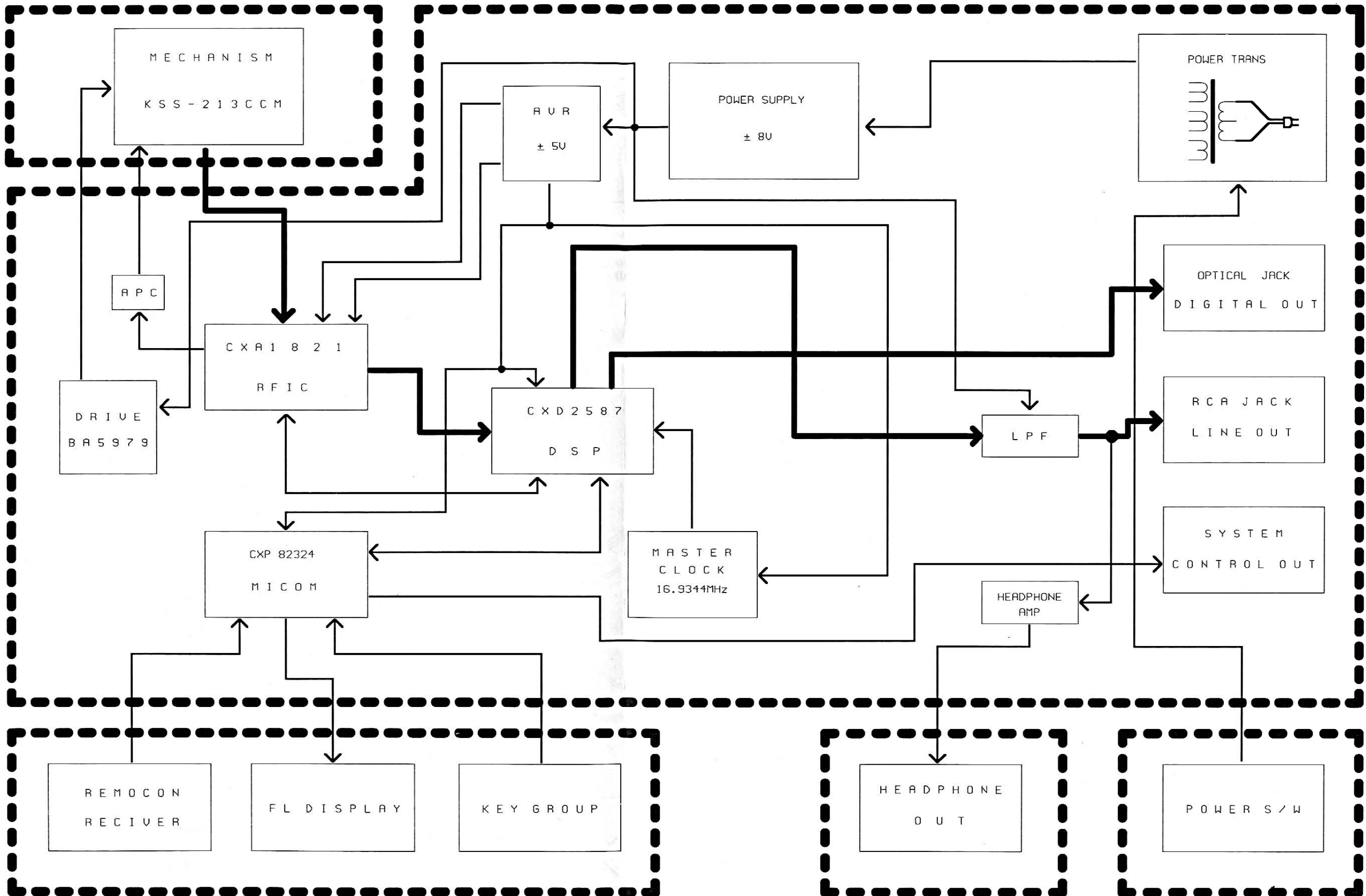
WIRING DIAGRAM

Model No. : CD-5090R/C/G



BLOCK DIAGRAM

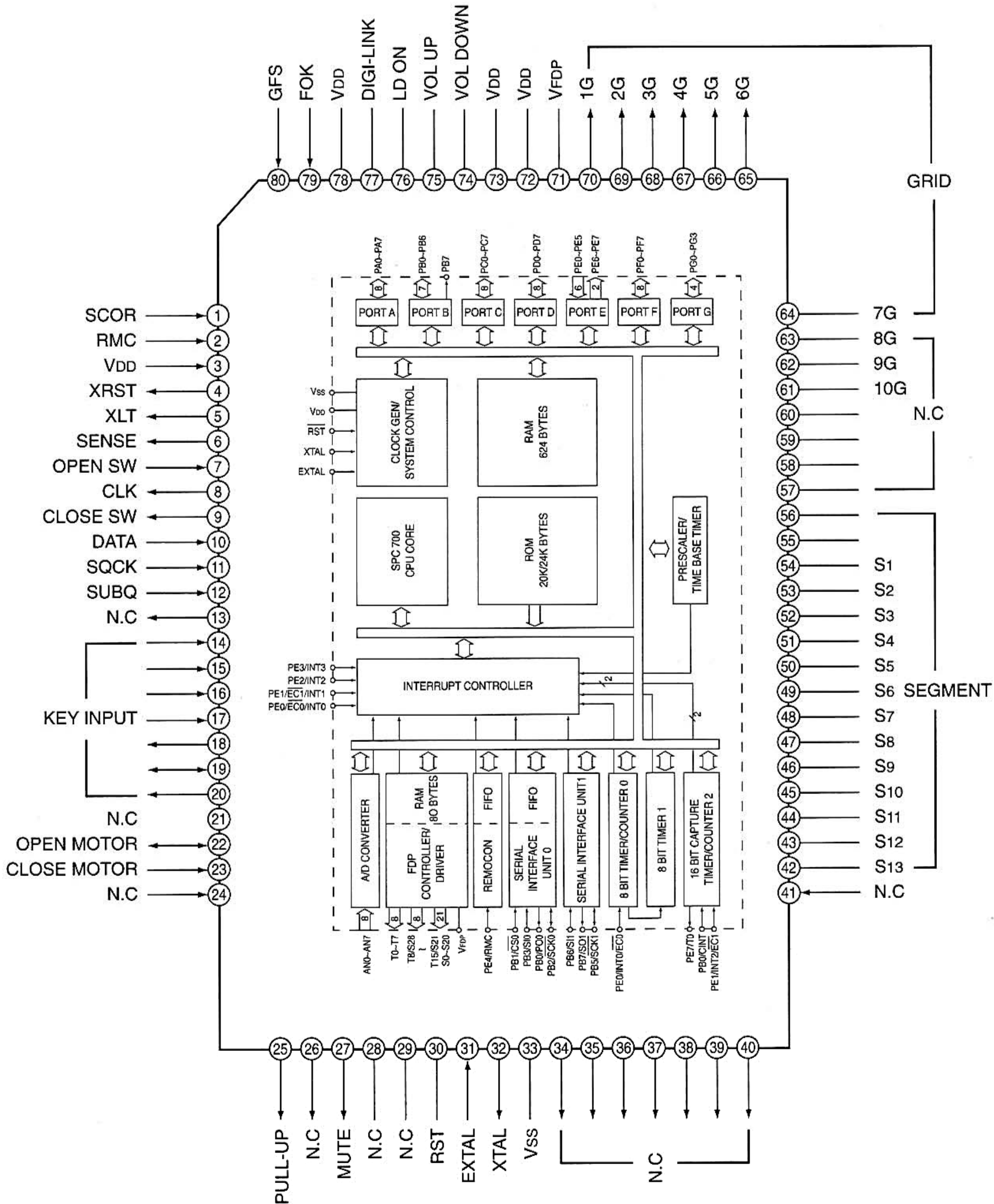
Model No. : CD-5090R/C/G



CIRCUIT DESCRIPTION

CXP82320 - 519Q : IC801

1-1. Pin Connection Diagram and Block Diagram



1-2. Input and Output Terminal Functions

PIN NO.	SYMBOL	DESCRIPTION
1	SCOR	Subcode-Q readout timing input from CXD2587Q.
2	RMC	Input for remocon data. (At "L", it is active.)
3	VDD	+5V power supply for CPU.
4	XRST	Output for resetting CXD2587Q.
5	XLT	Serial ratch data output to CXD2587Q.
6	SENSE	Sense signal output to pick-up unit.
7	OPEN SW	Input to detect that tray is open.
8	CLK	serial clock data output for CXD2587Q.
9	CLOSE SW	Input to detect that tray is closed.
10	DATA	Serial data output for CXD2587Q.
11	SQCK	Clock data output for subcode-Q readout to CXD2587Q.
12	SUBQ	Subcode-Q data input from CXD2587Q.
13	NC	Not used.
14-21	KEY INPUT	Data input for key scan.
22	OPEN MOTOR	Output for driving motor to open the tray. (At "H", it is active.)
23	CLOSE MOTOR	Output for driving motor to close the tray. (At "H", it is active.)
24	NC	Not used.
25	PULL-UP	Pull-up for CPU.
26	NC	Not used.
27	MUTE	Output for audio mute. (At "L", it is active.)
28-29	NC	Not used.
30	RST	Input for resetting for CPU (At "L", it is active.)
31	EXTAL	Input of 10.0MHz oscillator crystal.
32	XTAL	Output of 10.0MHz oscillator crystal.
33	VSS	GND.
34-41	NC	Not used.
42-54	SEGMENT	Segment signal output.
55-60	NC	Not used.
61-70	GRID	Grid signal output.
71	VFDP	-30V power supply for FL Display.
72	VDD	+5V power supply for CPU.
73	VDD	+5V power supply for CPU.
74	VOL DOWN	Volume down signal for volume motor.
75	VOL UP	Volume up signal for volume motor.
76	LD ON	LD-ON signal output for pick-up unit.
77	DIGI-LINK	Input for remocon data.
78	VDD	+5V power supply for CPU.
79	FOK	FOK data from CXD2587Q.
80	GFS	GFS signal input from CXD2587Q.

1-3. Focus error detecting operation

Fig. 3 shows the reflected laser beam from a disc is polarized 90° with the beam-splitter and sent to the cylindrical lens. The beam passed through this cylindrical lens is then sent to the four division photo diodes and focuses into an image whose shape varies with the distance between the disc and the objective lens. Such change in the beam shape causes the current flowing from the photo diodes to vary.

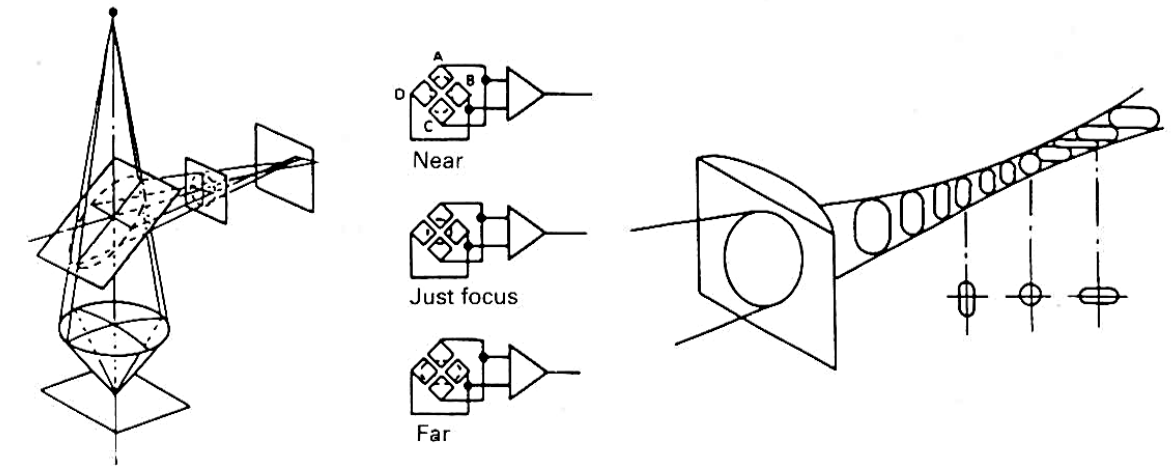


Fig. 3

1-4. Tracking error detection system

Fig. 4 shows the principle of the tracking error detection system which employs the three beam system.

The laser beam is divided into the main beam and two sub-beams by diffraction grating and they are arranged on one line. The center line connecting these three beams has a slight offset angle against the main beam. The main beam is received by photo diodes A, B, C and D and two sub-beams by E and F respectively.

Fig. 4 - A shows the on-track state. As both auxiliary beams 1 and 2 are slightly on the track in this state, the outputs of photo diodes E and F are equal and the tracking signal is 0(zero). When the track is shifted to the left (Fig. 4 - B), the auxiliary beam 1 is off the pit. This allows more light to be received by the photo diode E, resulting in positive (+) tracking signal output. On the other hand, when the track is shifted to the right (Fig. 4 - C), the amount of light received by the photo diode F increases, resulting in negative (-) tracking signal output. And these extreme signals are detected as tracking error signals.

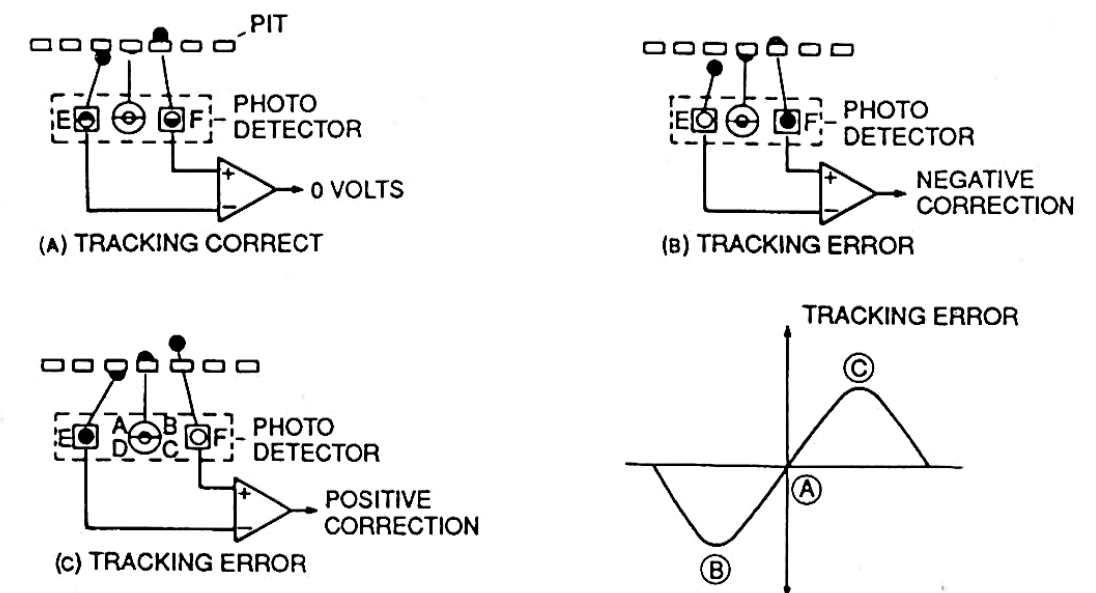


Fig. 4

PICKUP REPLACEMENT

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

1. Remove the CD mechanism assembly by referring to the "EXPLODED VIEW II" on page 24 (See Fig. 5).

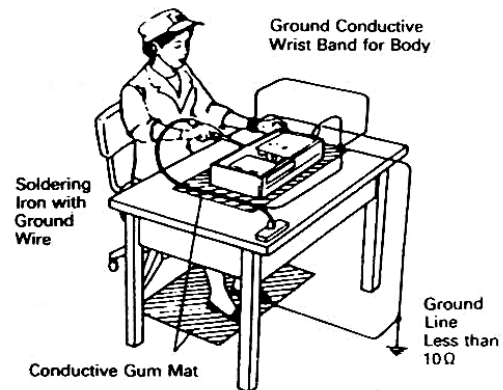


Fig. 5

2. Remove four screws S12 (See Fig. 6).

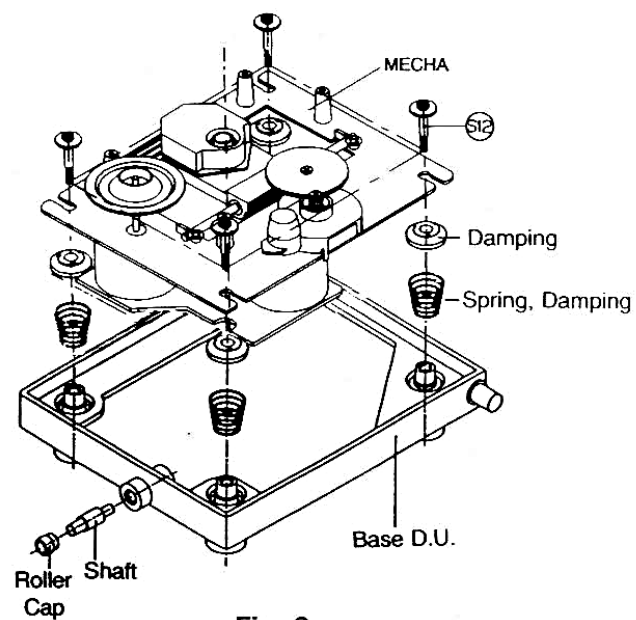


Fig. 6

3. Remove the gear A (See Fig. 7).
4. Pull out the slide shaft.

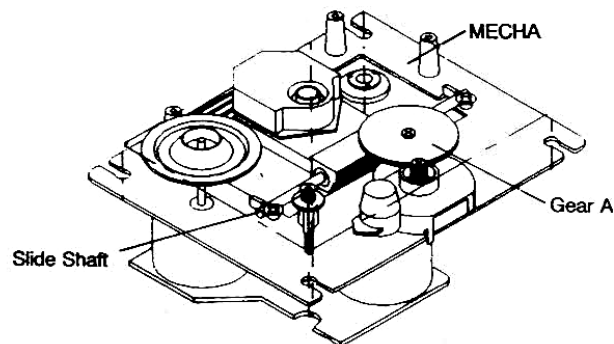


Fig. 7

5. Remove the pickup (See Fig. 8).

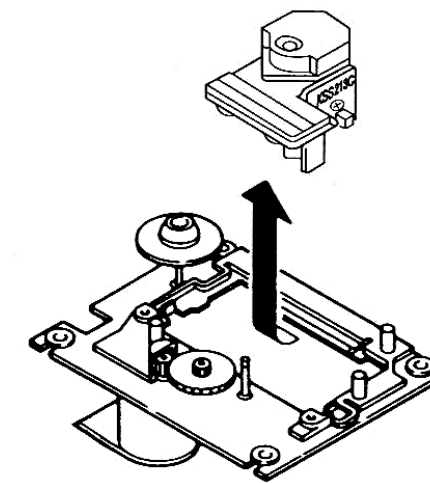


Fig. 8

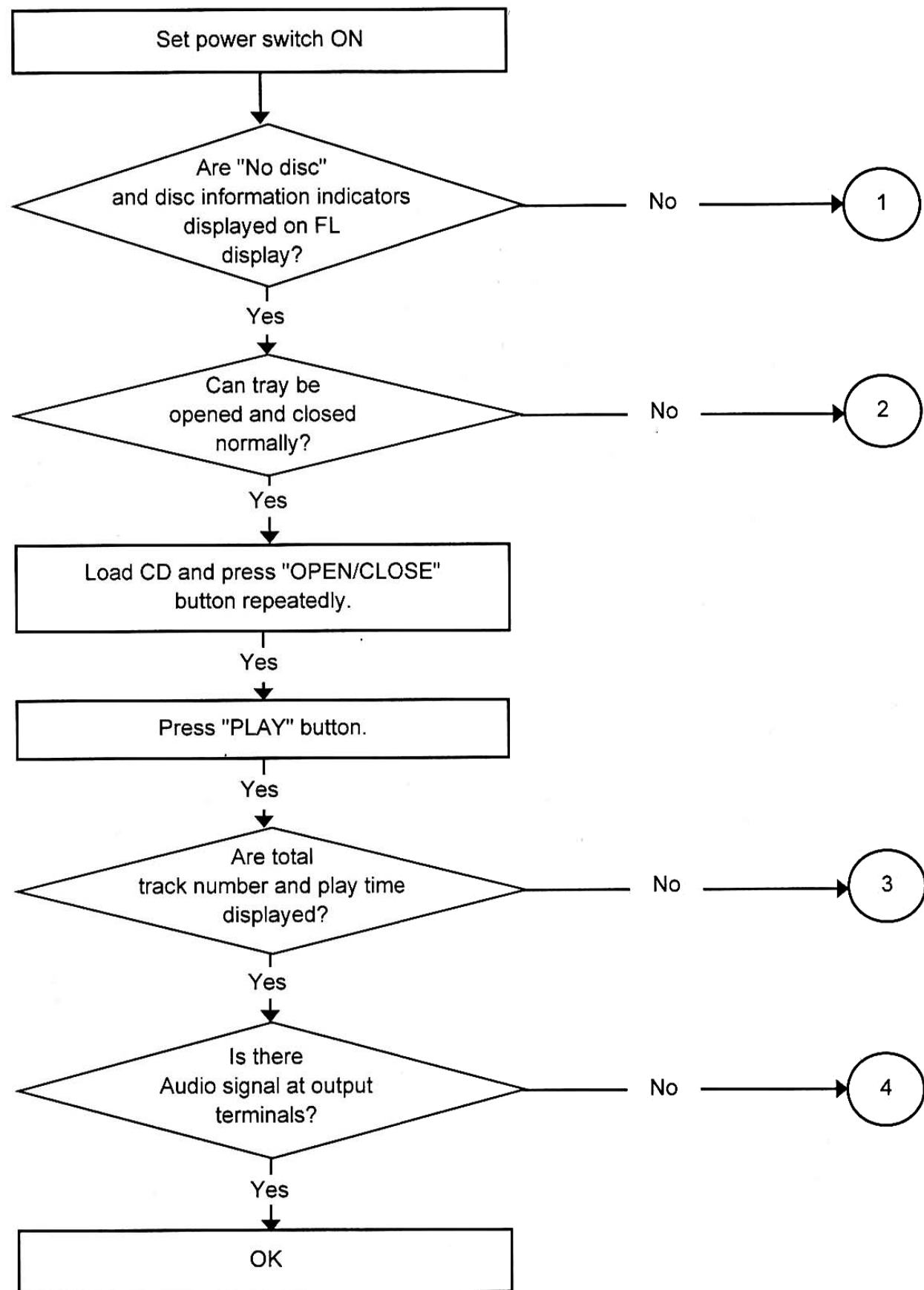
6. Refer to the "EXPLODED VIEW I" of the compact disc mechanism on page 23 for detailed illustrations.

OPERATION CHECK

When the power switch is turned on after the chucking arm is removed, observe the objective lens and check the following. (The optical system block should be at the lead-in position when it is checked.)

1. The disc table should be at the innermost position after the chucking arm is removed.
2. The diffused light of the laser beam can be seen when the power switch is turned on.
3. Vertical (up and down) movement of the objective lens take place (2 or 3 times).

TROUBLESHOOTING



[Repair item 1] At power on, "0" and some parts are not displayed.

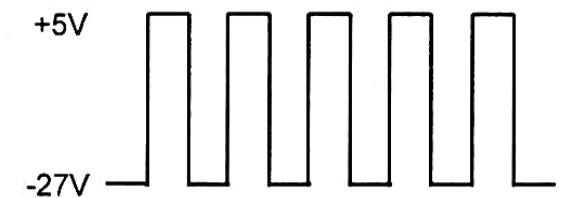
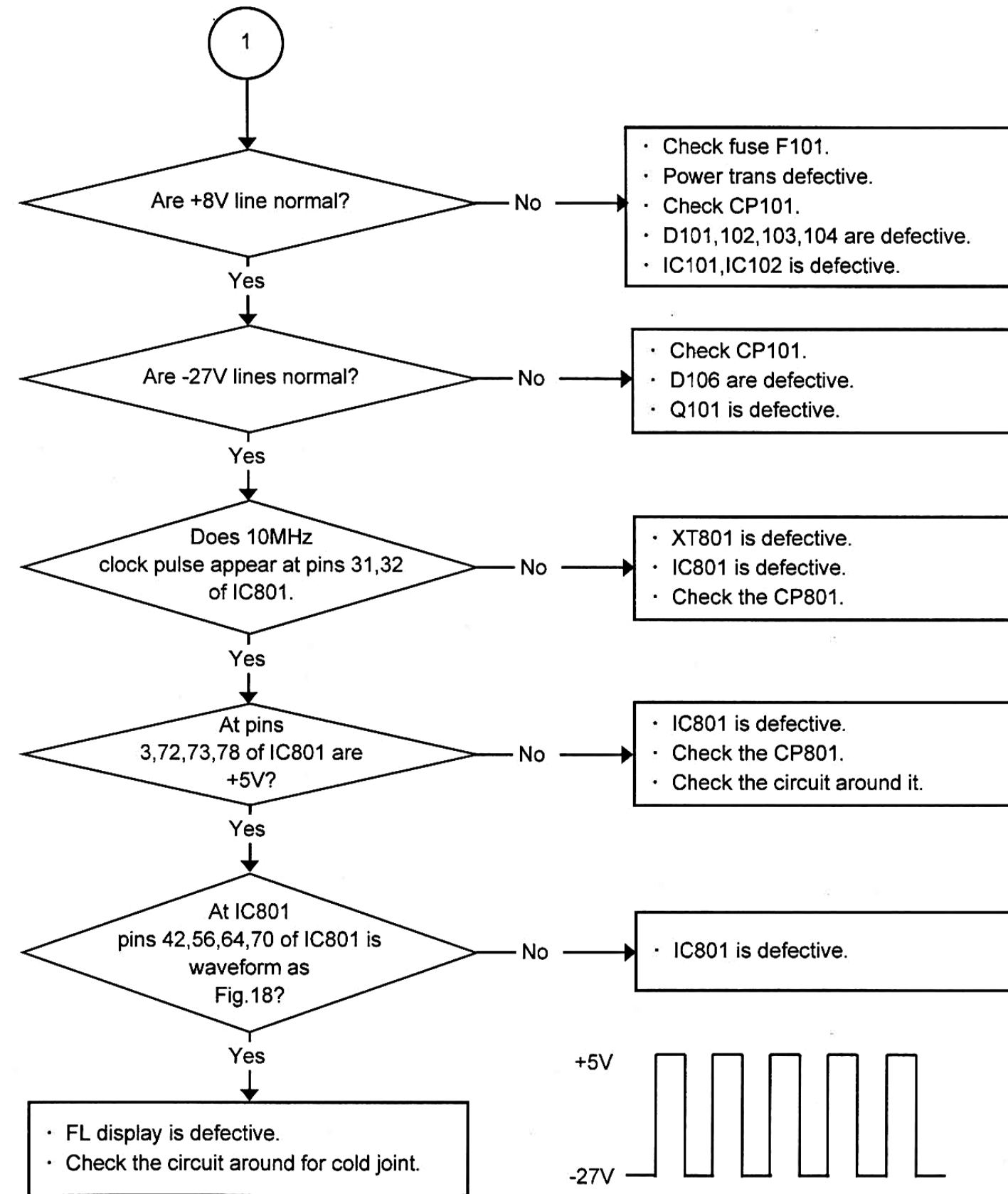
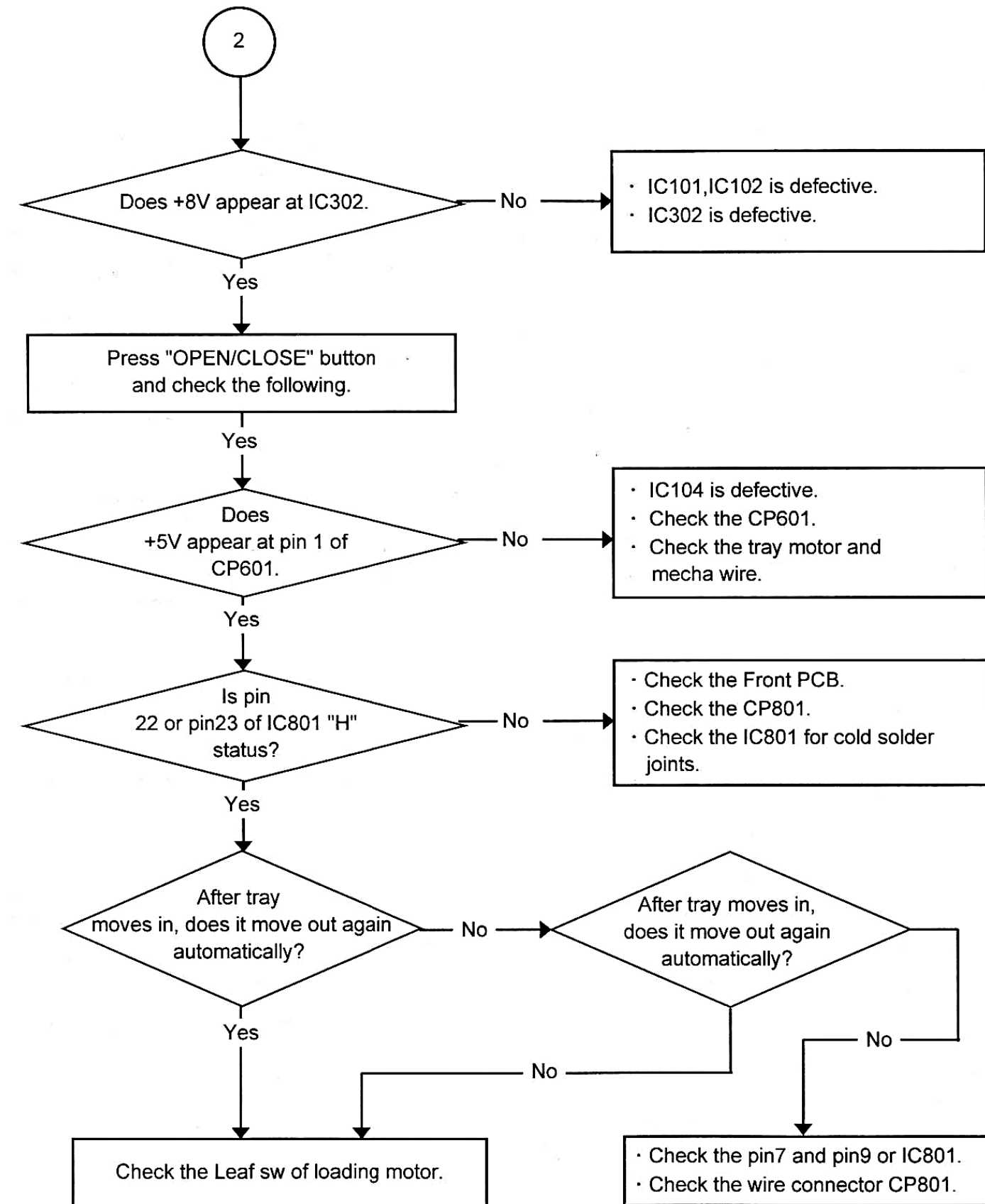
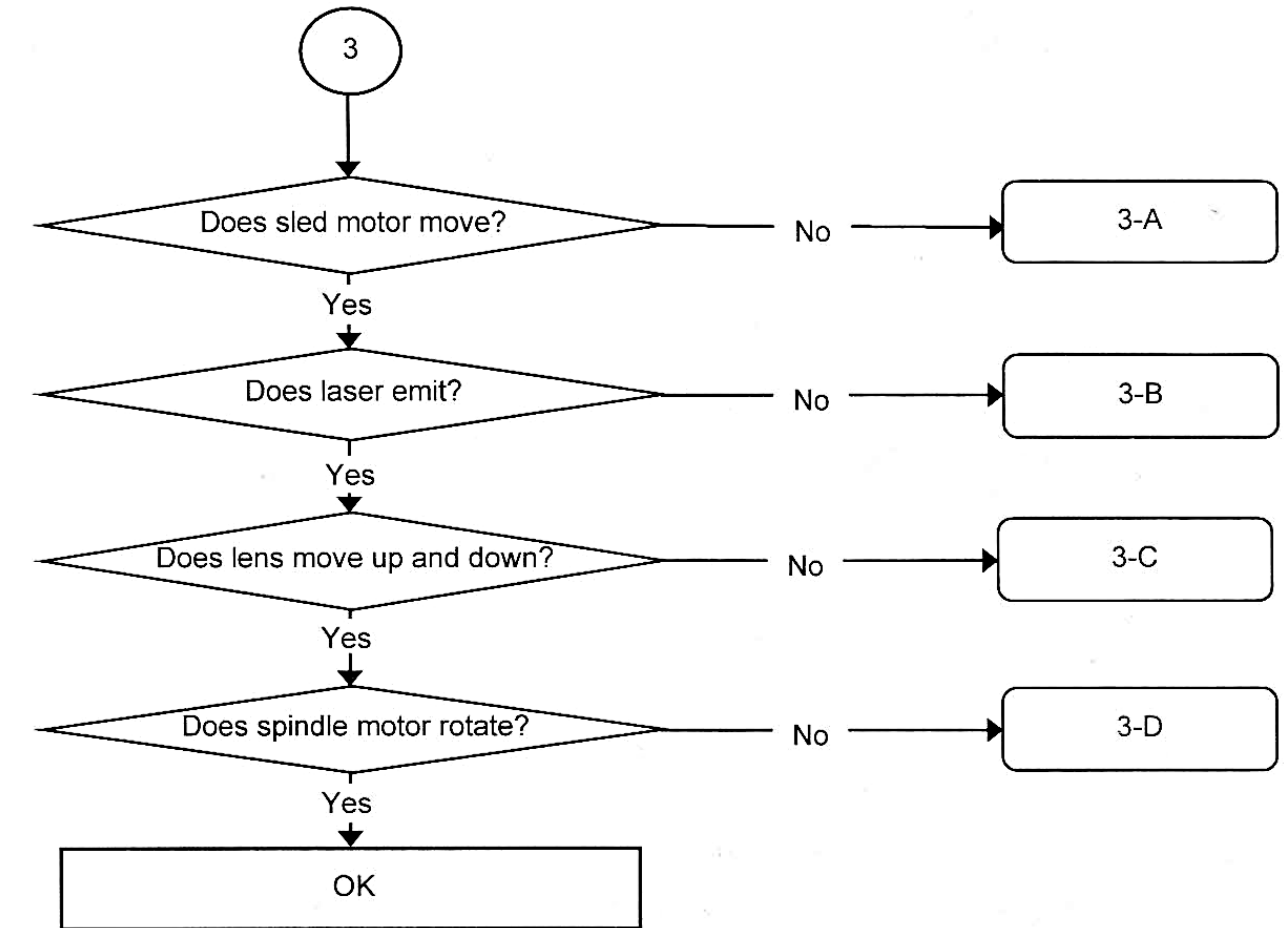


Fig. 18

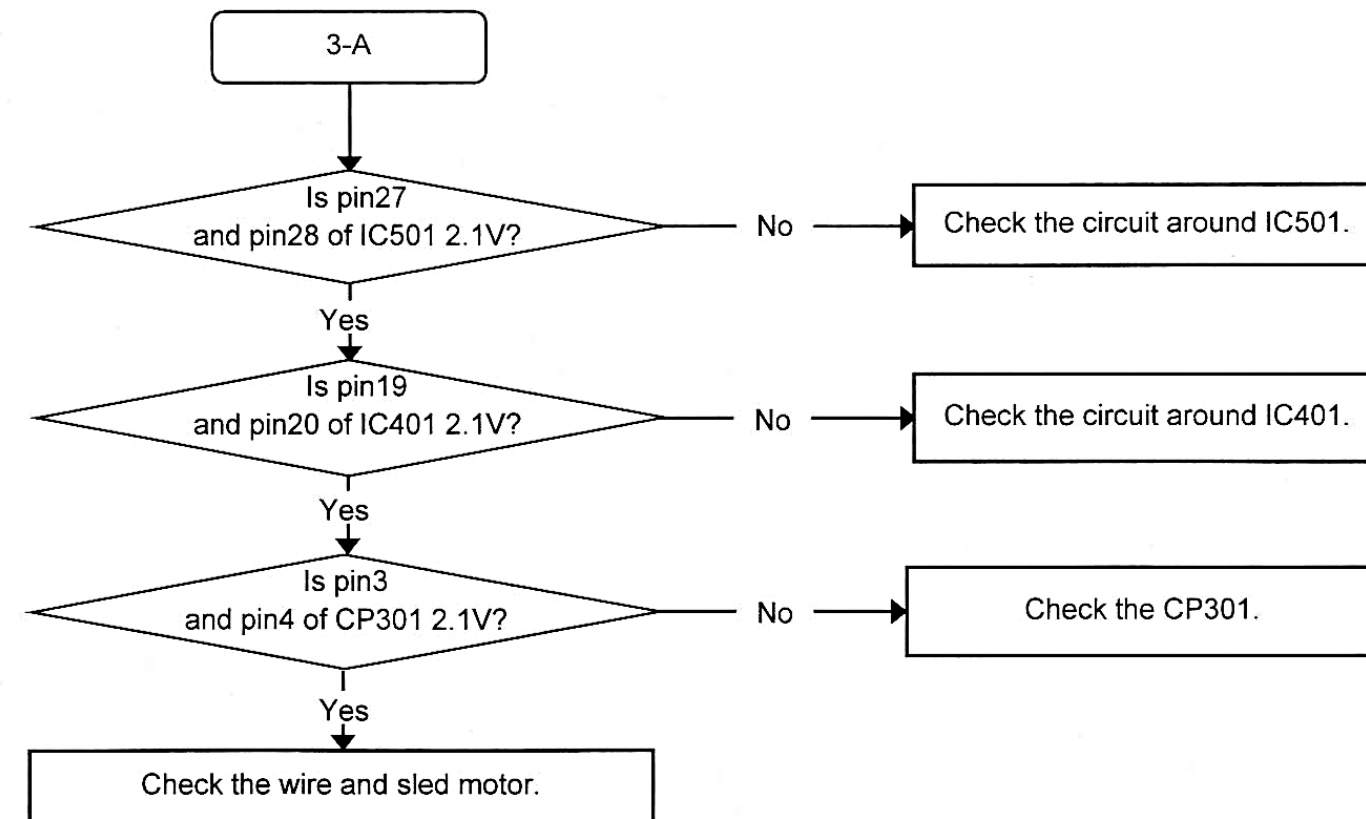
[Repair item 2] Tray cannot be opened and closed by pressing "OPEN/CLOSE" button.



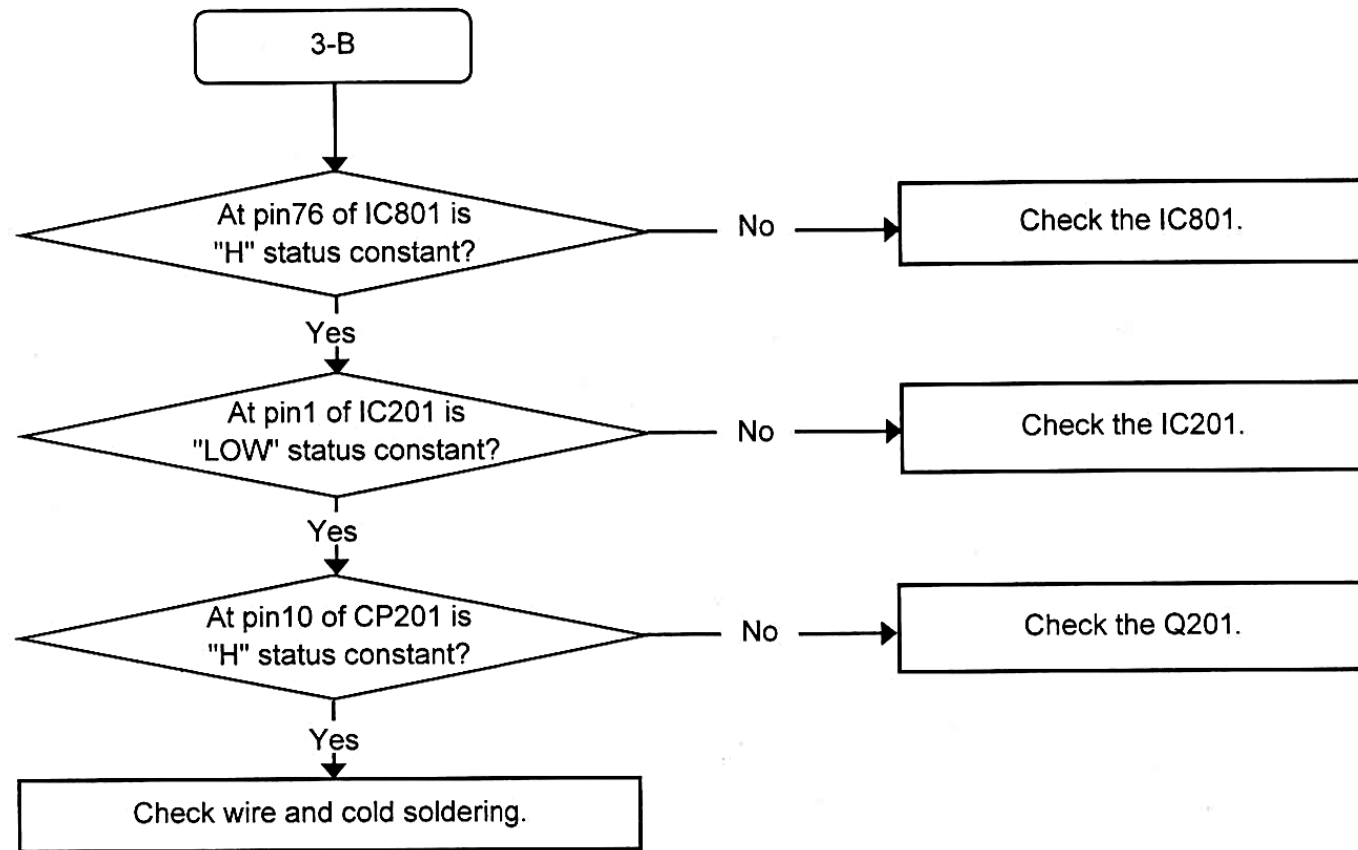
[Repair item 3] "0" is displayed of total playing time and track number.



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



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



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

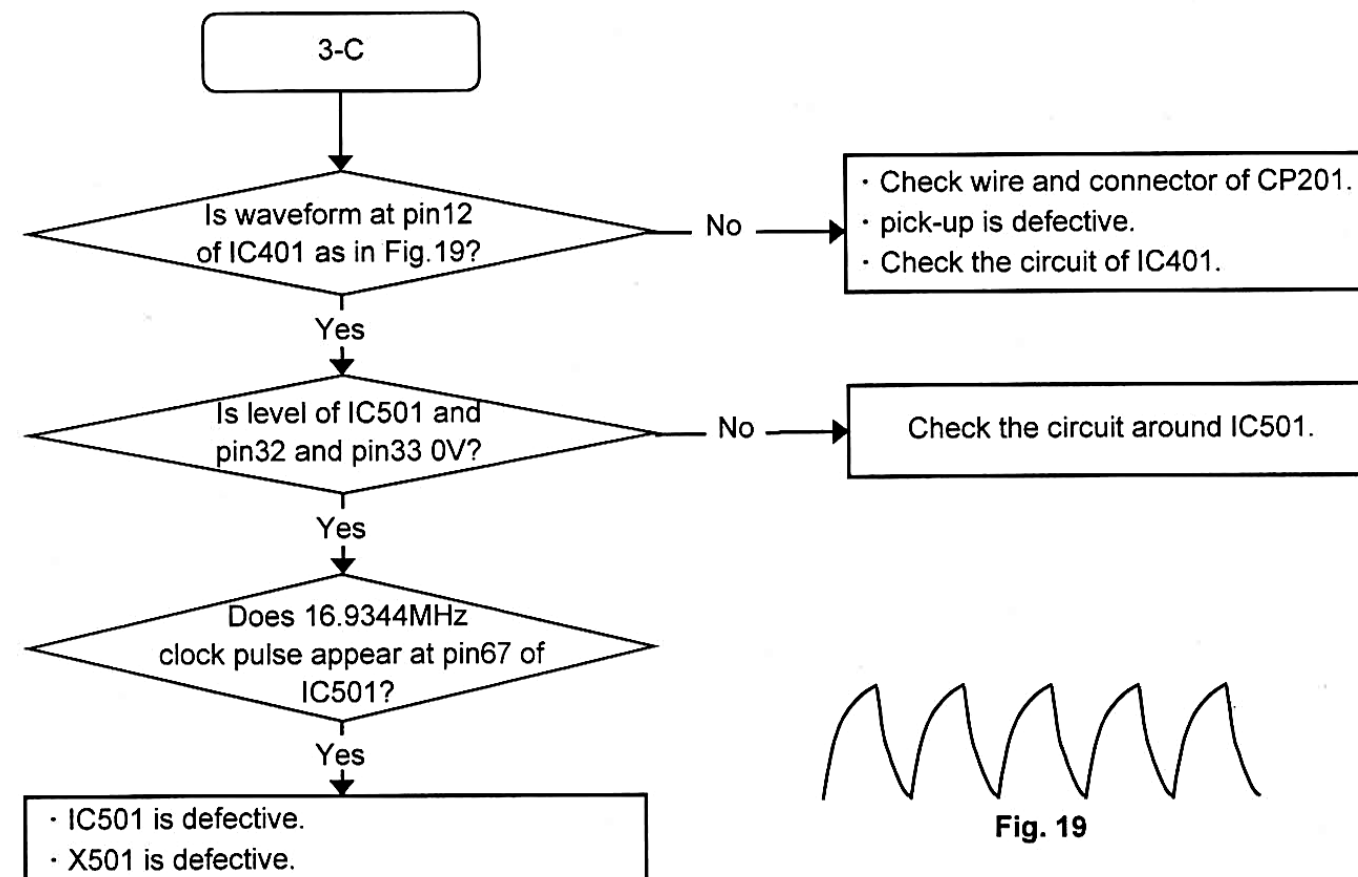


Fig. 19

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

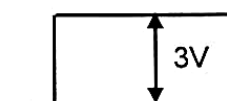
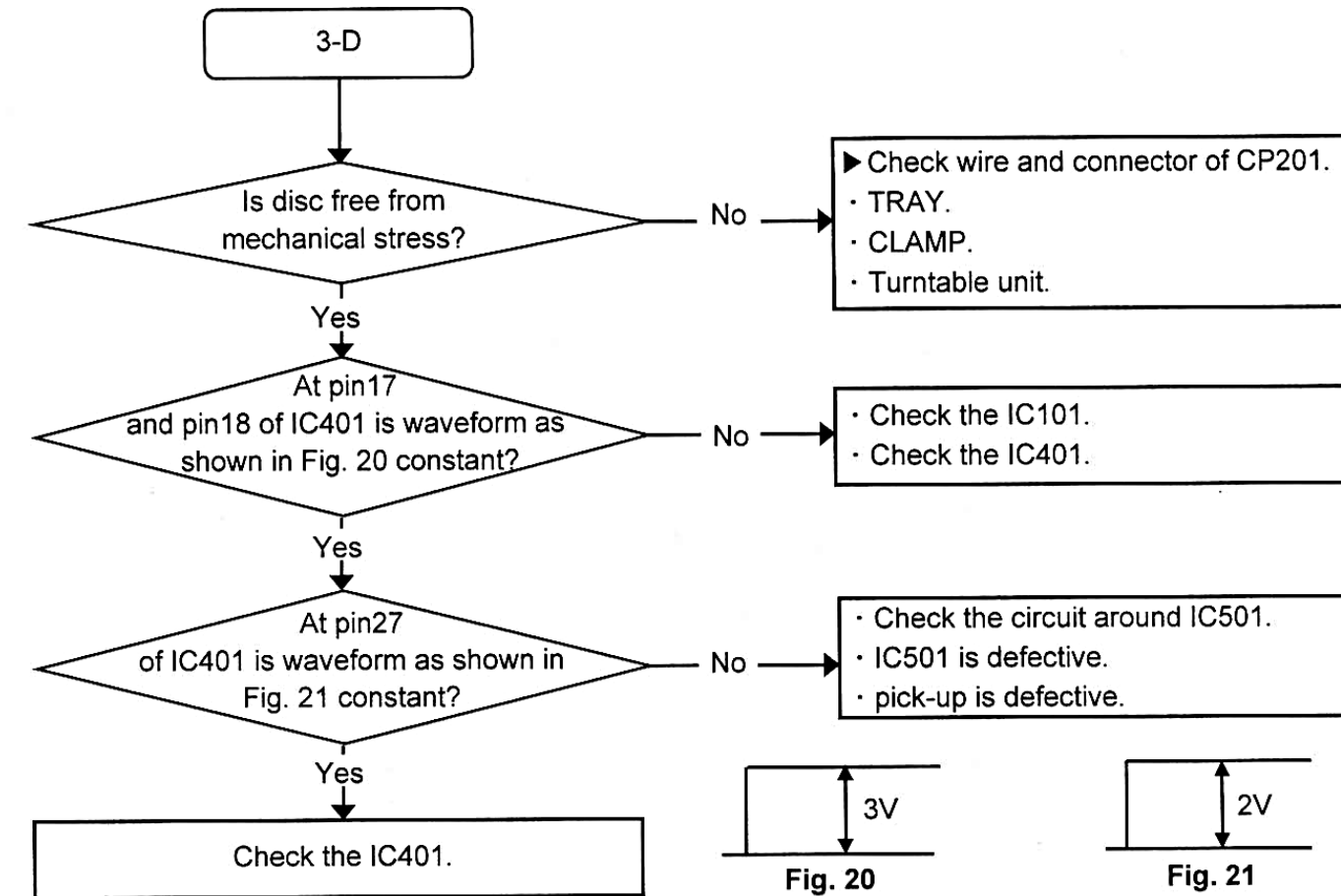


Fig. 20

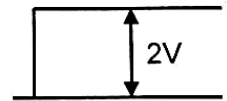
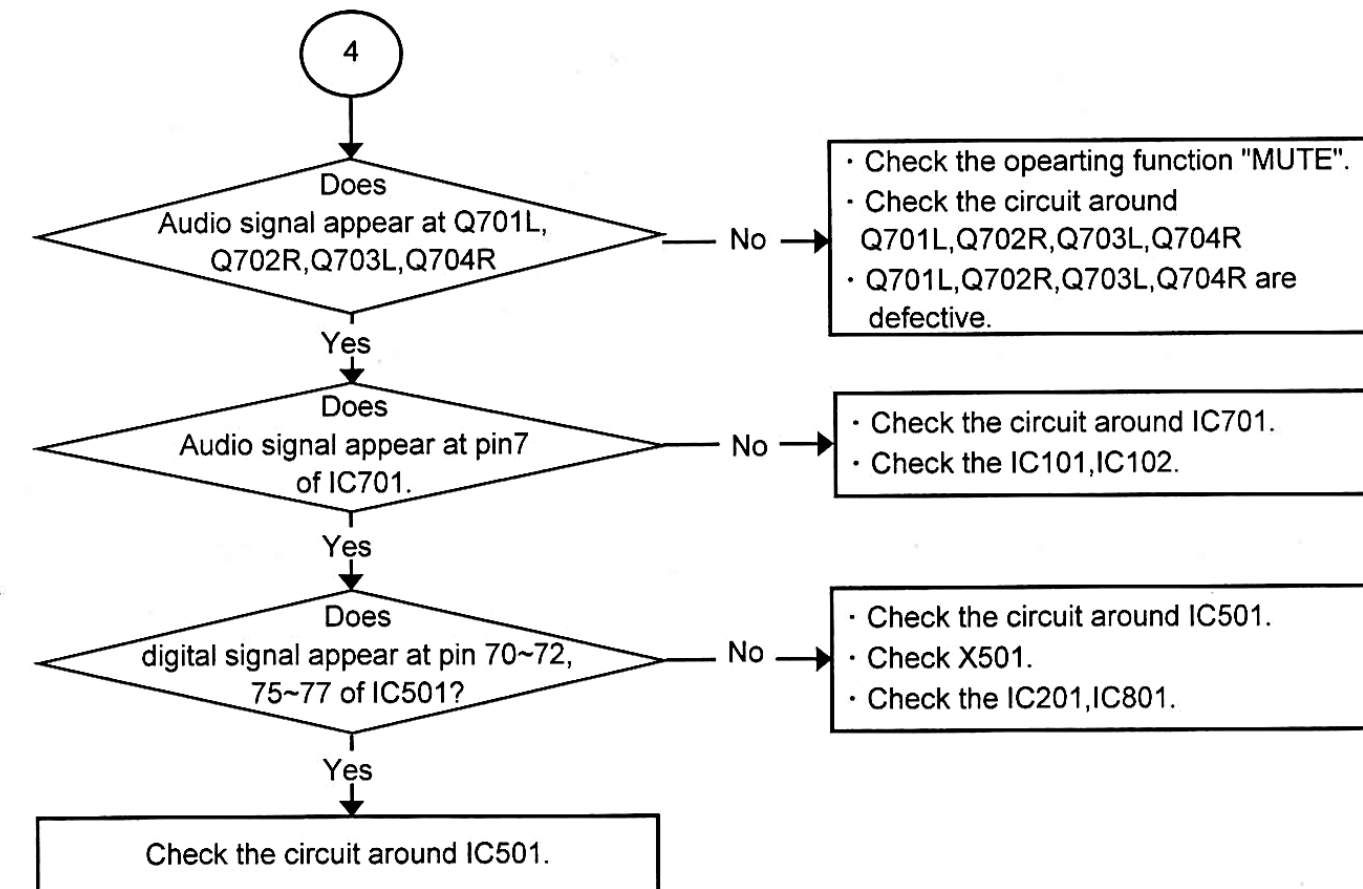


Fig. 21

[Repair item 4] No sound signal.



MECHANICAL PARTS LIST

Model No. : CD-5090R/C/G

★ Parts without Parts No are not supplied.

Parts without version mentioned are common ones.

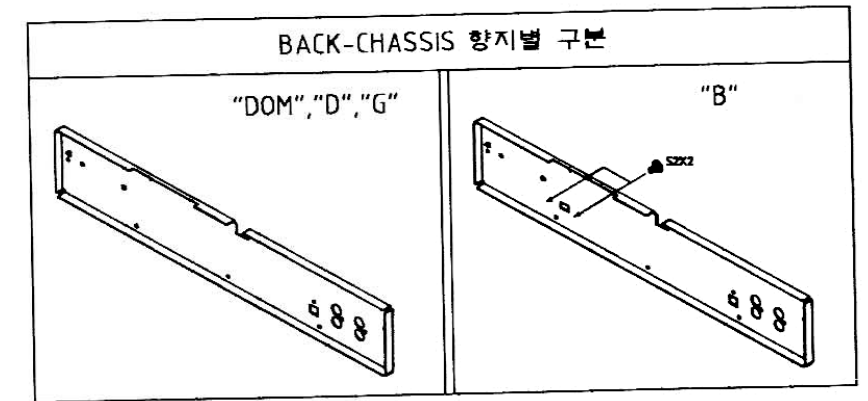
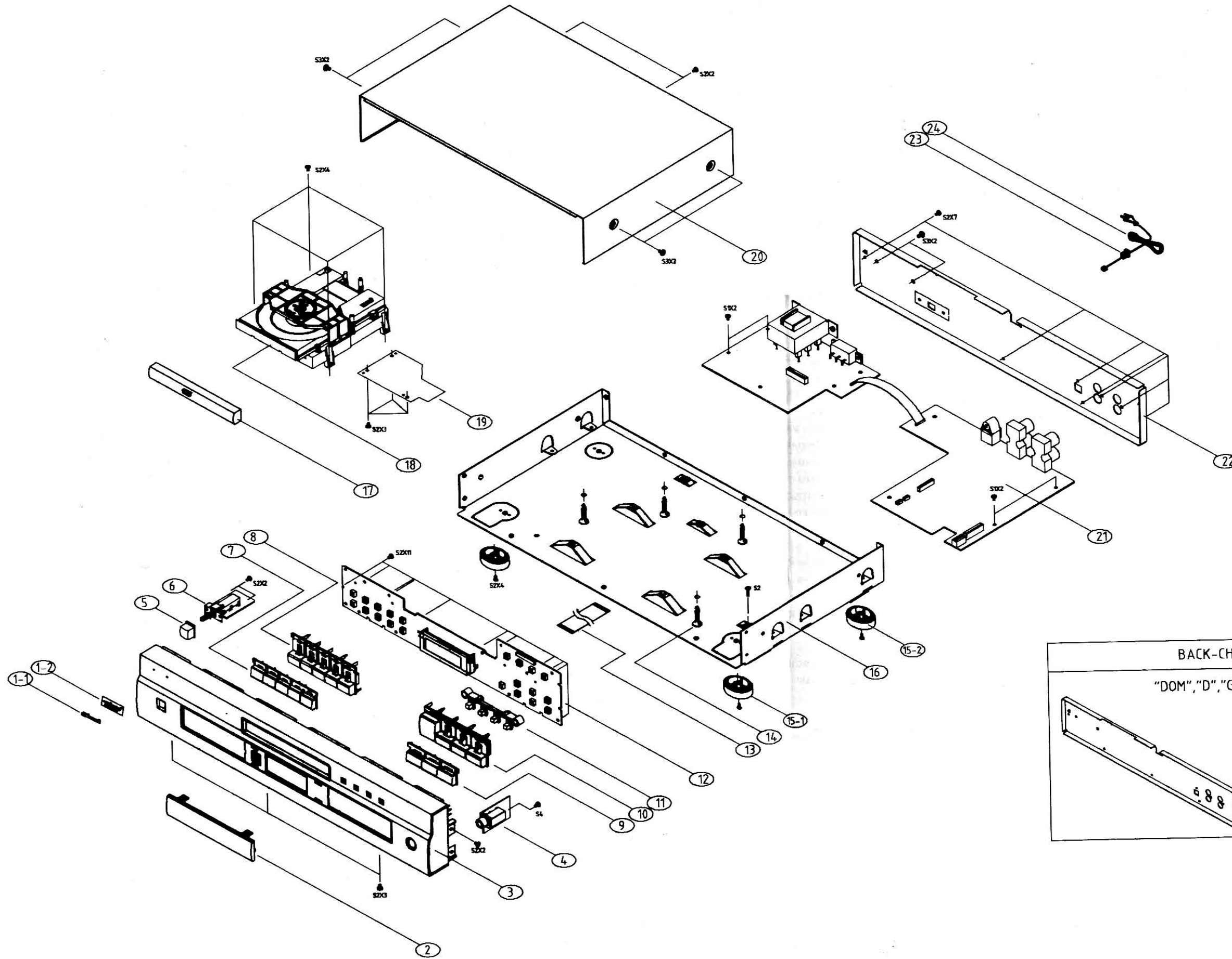
NO.	DESCRIPTION	Q'TY	PARTS NO.	VER.
PACKAGE				
	WARRANTY CARD	1	5727041570012	K
	WARRANTY CARD	1	5727041620020	D/G
	WARRANTY CARD	1	5727041650010	PT
	GIFT BOX, 525*333*160	1	6000020360010	K
	CARTON BOX	1	6017042680010	K
	CARTON BOX	1	6017042680020	D/G/PT
	CUSHION,SNOW	1	6230020574010	
	FILM SOFT PE,690*1000	1	6320040022011	
	POLY BAG,330*240*0.05	1	6330040062010	
ACCESSORIES				
	INSTRUCTION MANUAL	1	5707047100010	K
	INSTRUCTION MANUAL	1	5707047100020	G
	INSTRUCTION MANUAL	1	5707047100020	D
	INSTRUCTION MANUAL	1	5707047100030	PT
	REMOCON,INKEL	1	8300040660040	K
	REMOCON,SHERWOOD	1	8300040660050	PT
	BATTERY,DRY (1.5V)	1	G670011R50000	K/PT
	CORD RCA 2P	1	L063040400000	
	CORD RCA 1P(W:800)	1	L063040780000	
	ADAPTER, 220V->110V (15A/250V)	1	L109283004100	PT
CABINET & CHASSIS				
1-1	BADGE,SHERWOOD	1	5637040371010	D/PT
1-2	BADGE	1	5637040501010	K
	BADGE,SHERWOOD EUROPE	1	5637210031010	G
2	WINDOW DISPLAY	1	5077020633010	
3	FRONT PANEL	1	3067021221020	
4	HEAD PHONE ASS'Y	1		
5	BUTTON, POWER	1	5090200091010	
6	POWER SW ASS'Y	1		
7	BUTTON, "5" KEY	1	5097021801010	
8	BUTTON, "0" KEY	1	5097021811010	

NO.	DESCRIPTION	Q'TY	PARTS NO.	VER.
9	BUTTON, "REPEAT" KEY	1	5097021831010	
10	BUTTON, "RANDOM" KEY	1	5097021821010	
11	BUTTON, "4" KEY	1	5090021791010	
12	FRONT PCB ASS'Y	1		
13	CABLE,FLAT CARD (220MM*22P)	4	L301201220010	
14	FASTENER, BUTTON SUPPORT	2	4420010223010	
15-1	FOOT H/S	2	4007041011010	D/G/PT
15-1	FOOT AL	2	4007041031010	K
15-2	FOOT PL	2	4000040201010	
16	MAIN CHASSIS	1	3200044216020	
17	COVER TRAY	1	4317020631010	
18	MECHA ASS'Y, KSM213CCM	1	8038040000230	
19	C/STATION PCB ASS'Y	1		
20	TOP CABINET	1	3000041216040	
21	MAIN PCB ASS'Y	1		
22	CHASSIS BACK	1	3207020826010	K
	CHASSIS BACK	1	3207020826020	PT
	CHASSIS BACK	1	3207020826030	D/G
23	STOPPER CORD	1	4380040162010	
24	CORD ASS'Y	1	L061000810000	K
	CORD ASS'Y	1	L068040011010	D/G/PT
SCREWS				
S1	SCREW,+2S 3*8 YLBH	4	B020030081B10	
S2	SCREW,+2S 3*8 BK/BH	39	B020030083B10	
S3	SCREW,+2S 4*8 BK/BH	6	B020940083B10	
S4	SCREW,+2S 3*8 Pi12 BK/WRH	1	1500001456010	

☞ D/G -> EU (230V/50Hz), K -> KOREA (220V/60Hz), PT -> ASIA (110/220V,50/60Hz)

EXPLODED VIEW

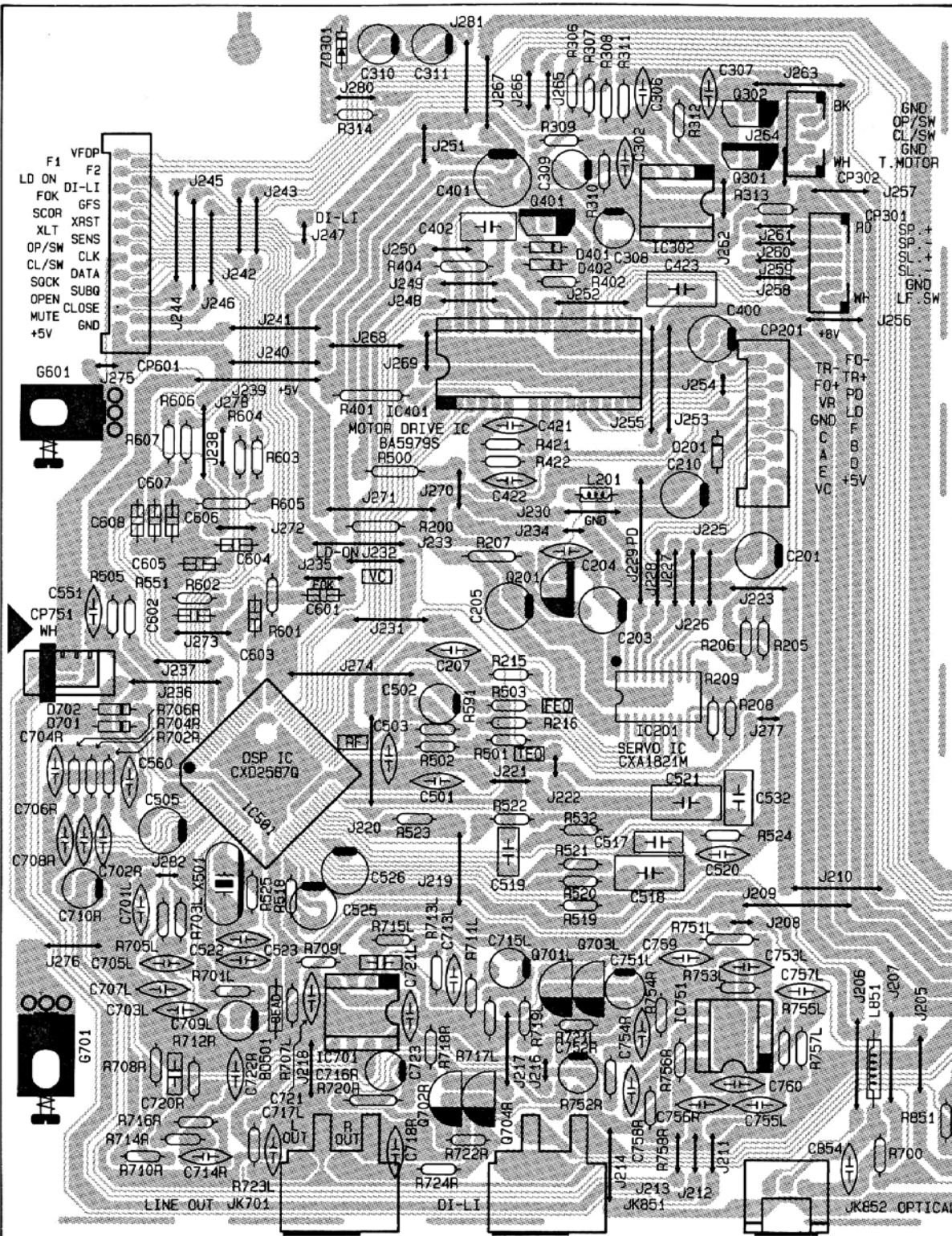
Model No. : CD-5090R/C/G



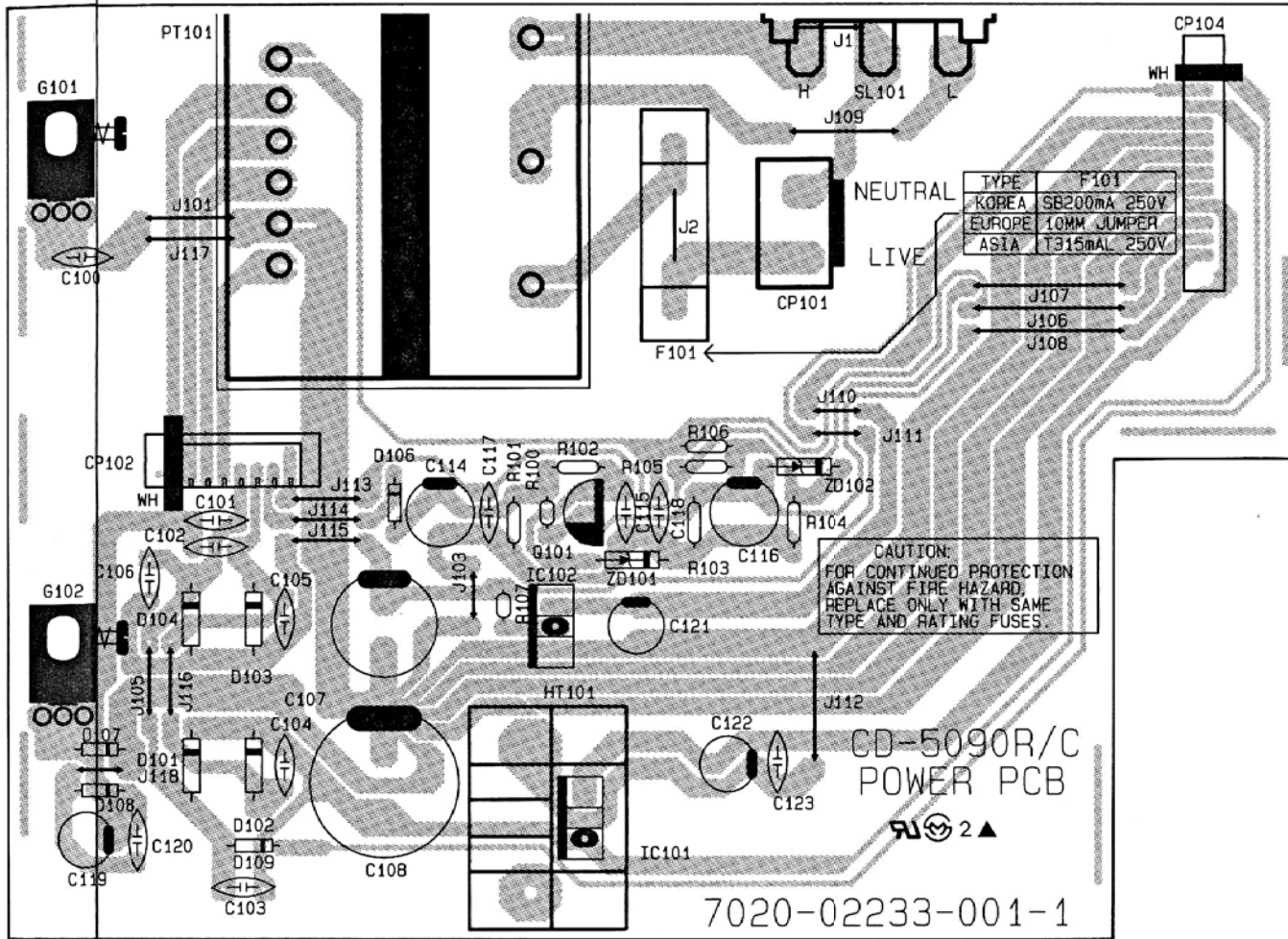
PRINTED CIRCUIT BOARDS

Model No. : CD-5090R/C/G

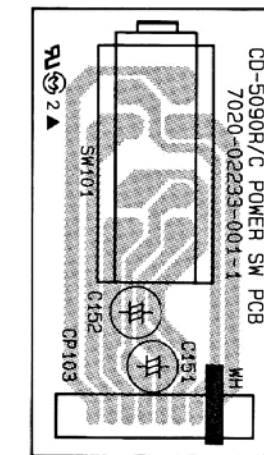
PCB1 (MAIN)



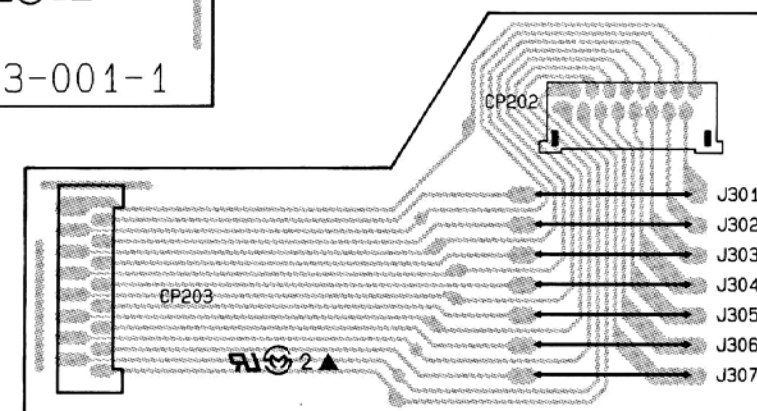
PCB1-2 (POWER)



PCB1-4 (POWER SW)

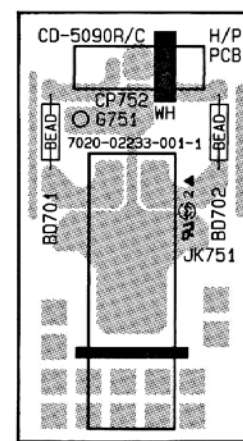


PCB1-3 (C/STATION)

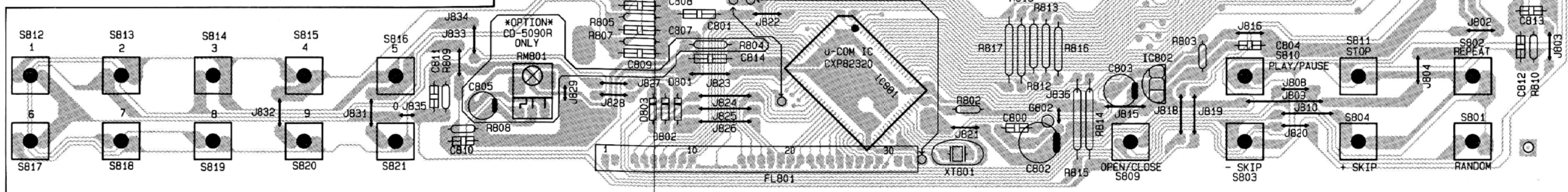


CD-5090R/C MAIN PCB 7020-02233-001-1

PCB1-5 (HEAD-PHONE)

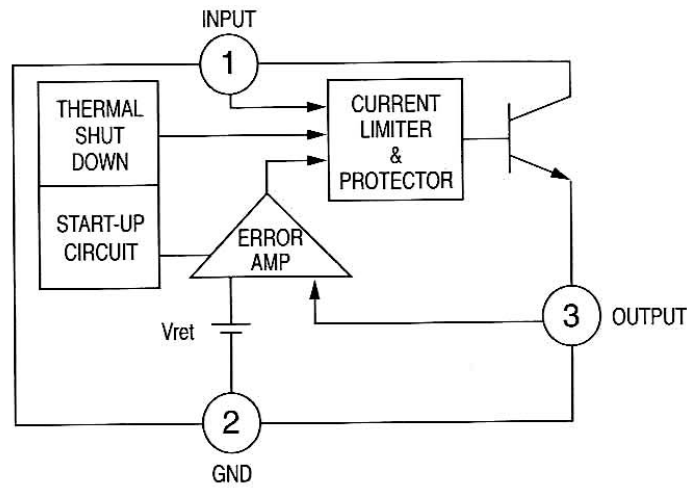


PCB1-1 (FRONT)

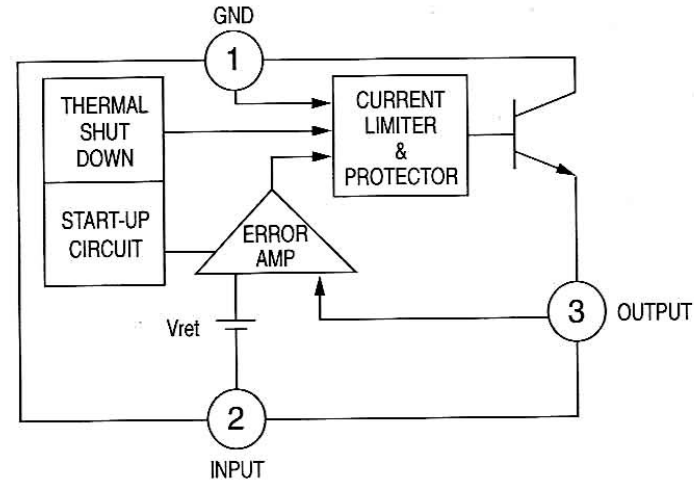


IC'S FUNCTIONAL BLOCK DIAGRAM

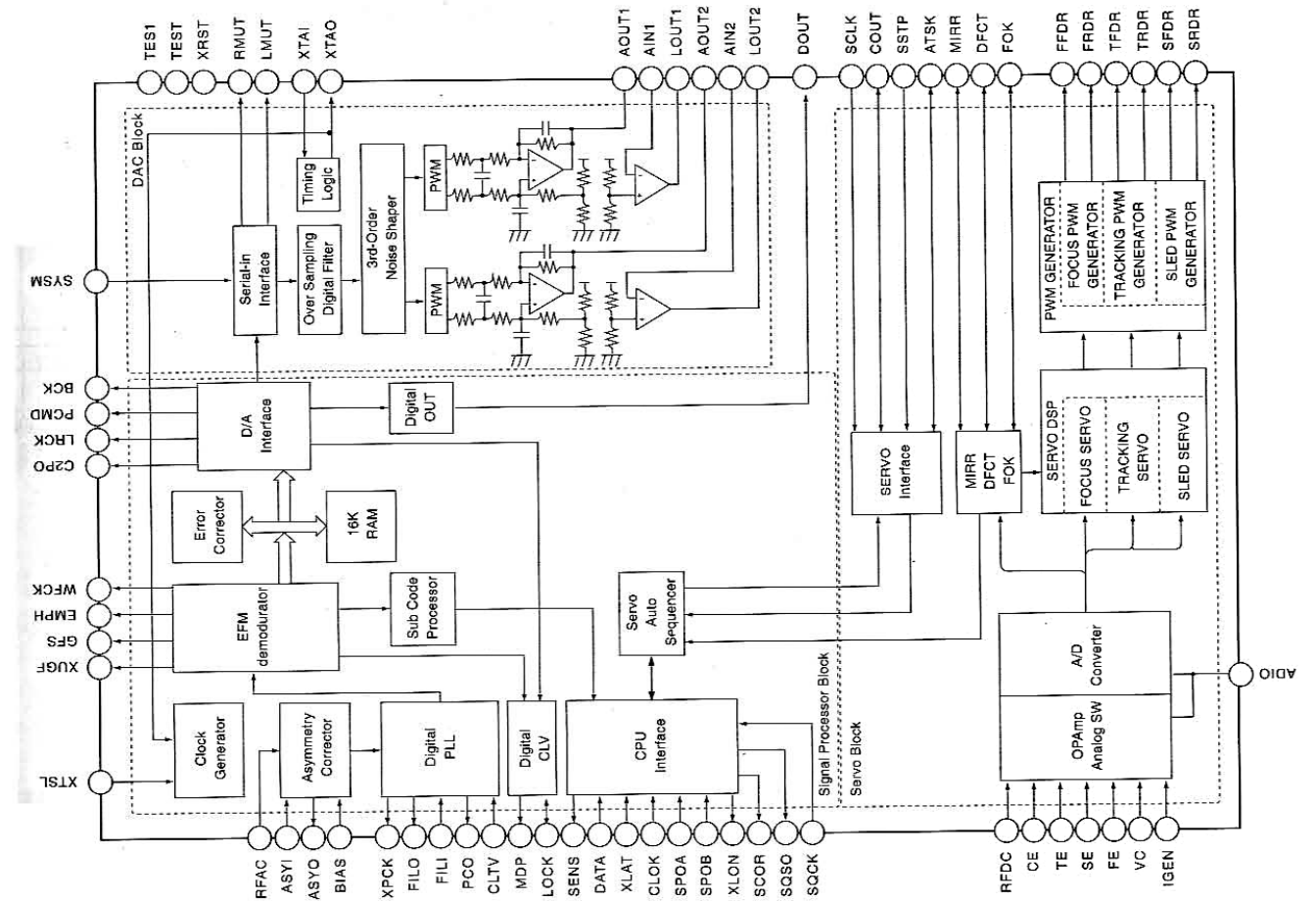
KIA7808P : IC101



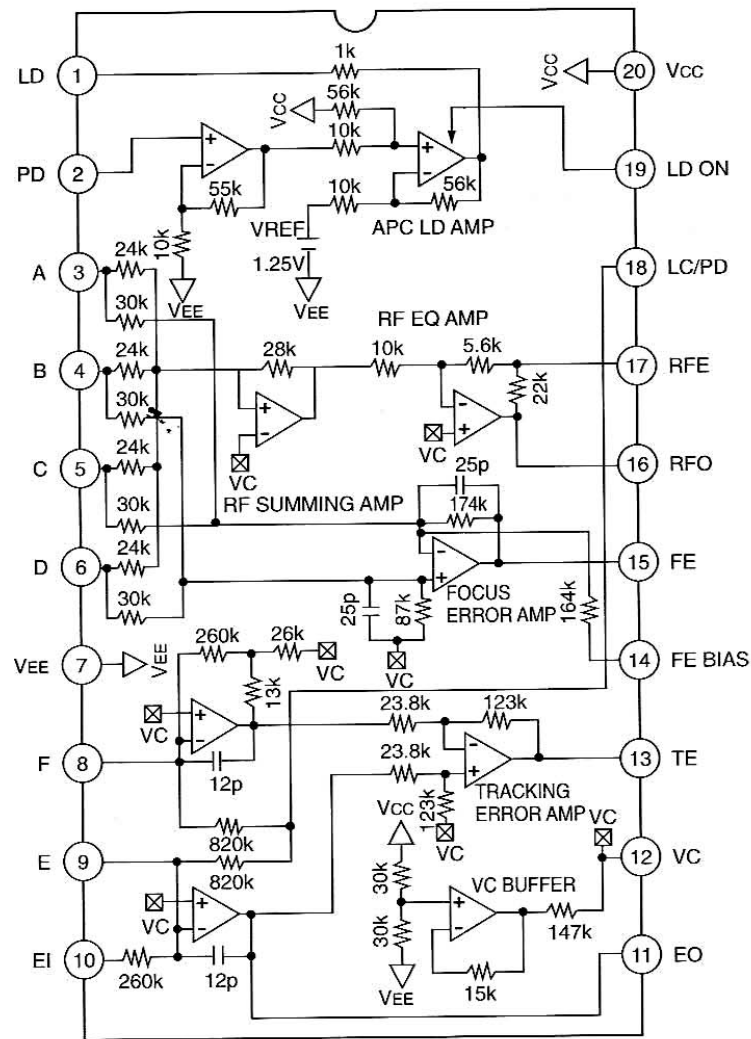
NJM7908 : IC102



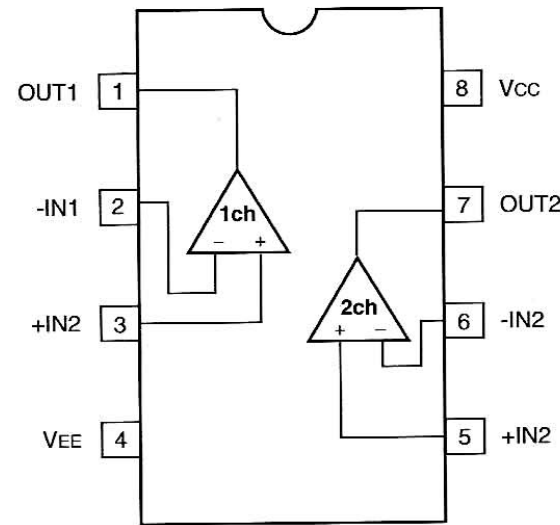
CXD2587Q : IC501



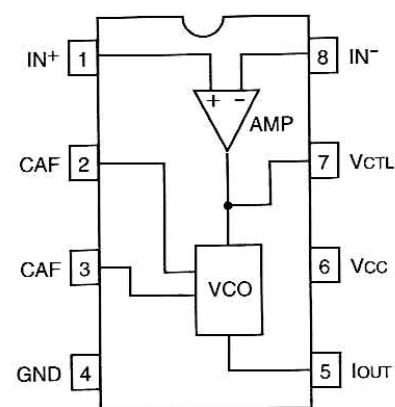
CXA1821M : IC201



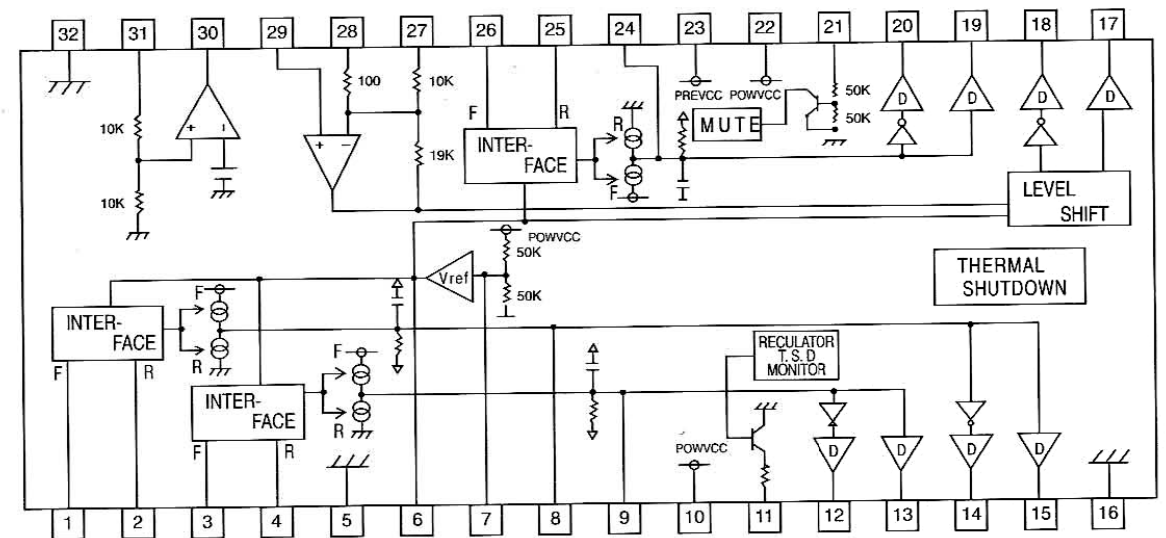
NJM4558DD : IC302, IC701, IC751

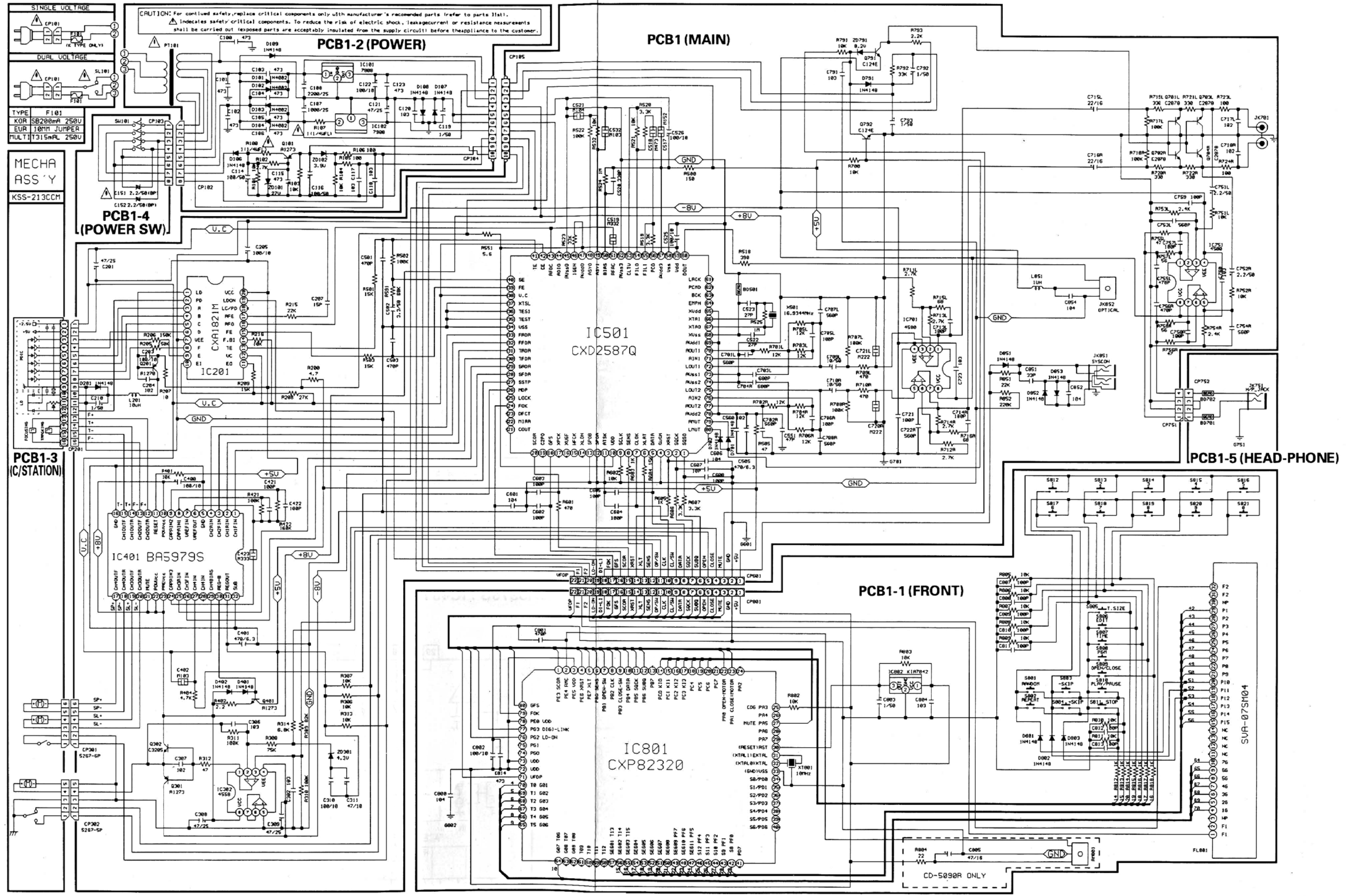


KIA7042 : IC802

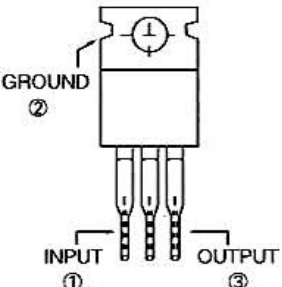
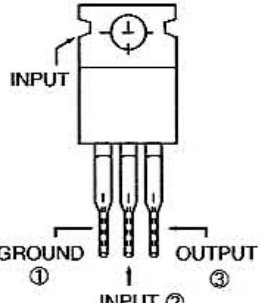
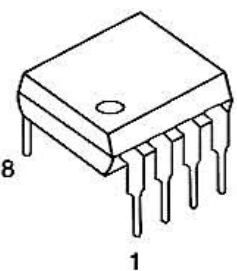
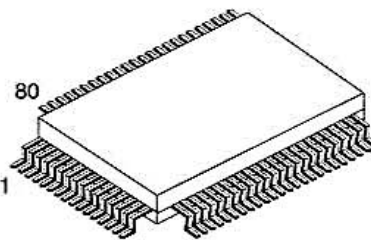
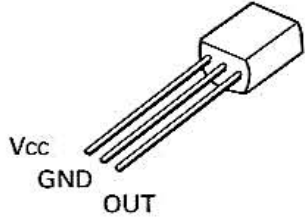
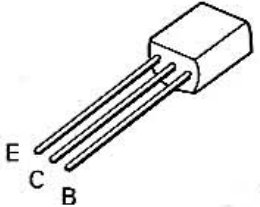
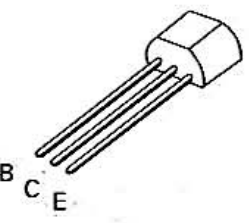
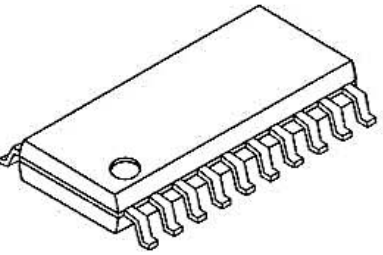
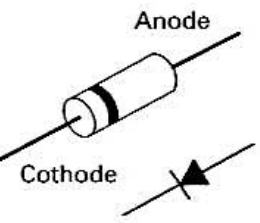
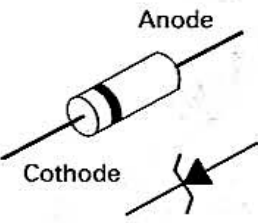


BA5979S : IC401





TRANSISTORS LEAD IDENTIFICATION

<p>KIA78XX</p> 	<p>NJM79XX</p> 	<p>NJM4558DD</p> 	<p>CXP82320 CXD2587</p> 
<p>KIA7042</p> 	<p>KTA1270 2SC2878</p> 	<p>DTC124E</p> 	<p>CXA1821M</p> 
<p>1SS133T IN4004</p> 	<p>ZENER</p> 	<p>A1273 C3205</p> 