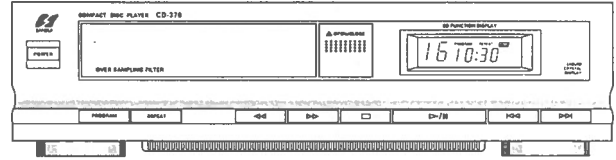




SERVICE MANUAL

CD-370 COMPACT DISC PLAYER



CAUTION

- Parts identified by the \triangle symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
- Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

NOTICE

- The symbols UL, EU, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

UL Manufactured for U.S.A. market.
(Underwriters Laboratories approved model.)
EU Manufactured for European market.
SS Manufactured for Saudi Arabian market.
XX Standard Version.
<EXPORT>
NON MARK . . . Common Parts.

- Some printed circuit boards are not supplied assembled. To separate these in this service manual, the part numbers are not indicated for these boards. However, part numbers for individual parts are indicated.

- Since some capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.

- Abbreviations in this service manual are as follows:

Abbreviations List

C.R. : Carbon Resistor	E.B.L. : Low Leak Bi-Polar Electrolytic Capacitor
S.R. : Solid Resistor	
Ce.R. : Cement Resistor	
M.R. : Metal Film Resistor	Ta.C. : Tantalum Capacitor
F.R. : Fusing Resistor	F.C. : Film Capacitor
N.I.R. : Non-Inflammable Resistor	M.P. : Metalized Paper Capacitor
A.R. : Array Resistor	P.C. : Polystyrene Capacitor
C.C. : Ceramic Capacitor	M.M.C.: Metalized Mylar Capacitor
C.T. : Ceramic Capacitor, Temperature Compensation	A.C. : Array Capacitor
E.C. : Electrolytic Capacitor	V.R. : Variable Resistor
E.L. : Low Leak Electrolytic Capacitor	S.V.R.: Semi-Variable Resistor
E.B. : Bi-Polar Electrolytic Capacitor	SW. : Switch
	Chip R.: Chip Resistor
	Chip C.: Chip Capacitor
	S.C. : Styrol Capacitor

Specifications

Format Compact disc, digital audio system
Pickup 3-beam, semiconductor laser
Frequency response 5 Hz to 20 kHz, ± 0.5 dB
Total harmonic distortion Less than 0.05% (1 kHz)
Signal-to-Noise ratio Better than 100 dB
Dynamic range Better than 95 dB
Wow & flutter Below measurable limit
Output voltages/load impedances 2V/47 kohms or more
Power consumption AC 120, 220-240V (50/60 Hz)
For U.S.A. & Canada AC 120V, 60 Hz

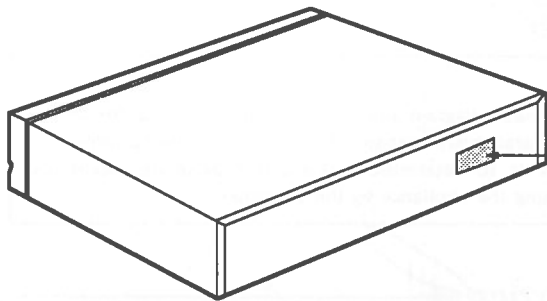
Rated power consumption 15W
Dimensions 360 mm (14-3/16") W
95 mm (3-3/4") H
306 mm (12-1/16") D
Weight 3.5 kgs (7.7 lbs) net

- Design and specifications subject to changes without notice for improvements.
- Due to local laws and regulations, this unit sold in some areas are not equipped with variable voltage selectors.

1. SAFETY PRECAUTIONS FOR CD PLAYER

CAUTION: USE OF CONTROLS FOR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE. THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

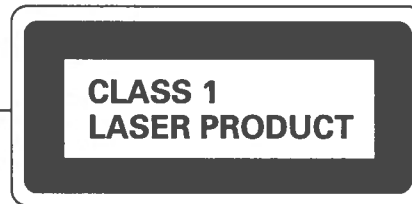
* The following label has been affixed to the unit, listing the proper procedure for working with the laser beam.



(UL and XX model only)

PRODUCT COMPLIES WITH DHHS
RULES 21 CFR, SUBCHAPTER J,
PART 1040. 10.
MANUFACTURED:

(EU model only)

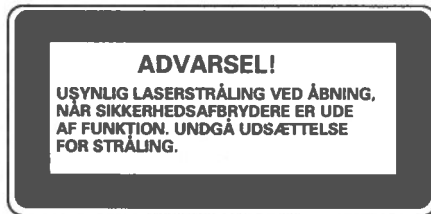


1

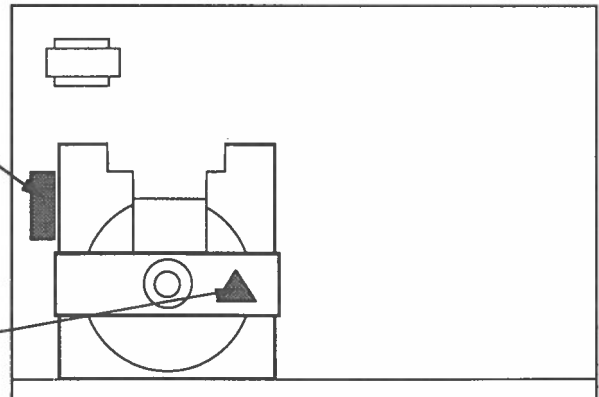
1. THIS LABEL IS ATTACHED TO THE PLACE AS ILLUSTRATED TO INFORM THAT THE APPARATUS CONTAINS A LASER COMPONENT.
2. THIS LABEL IS ATTACHED TO THE INSIDE OF THE TOP COVER AS ILLUSTRATED, SO THAT ANY FURTHER PROCEDURE WILL BRINGING THE USER INTO EXPOSURE WITH THE LASER BEAM.
3. THE WARNING LABEL INFORMING OF RADIATION IS PLACED INSIDE THE UNIT. AS SHOWN IN THE ILLUSTRATION, TO WARN AGAINST FURTHER MEASURES ON THE UNIT. THE EQUIPMENT CONTAINS A LASER COMPONENT RADIATING LASER RAYS EXCEEDING THE LIMIT OF LASER PRODUCTS OF CLASS 1.

(EU model only)

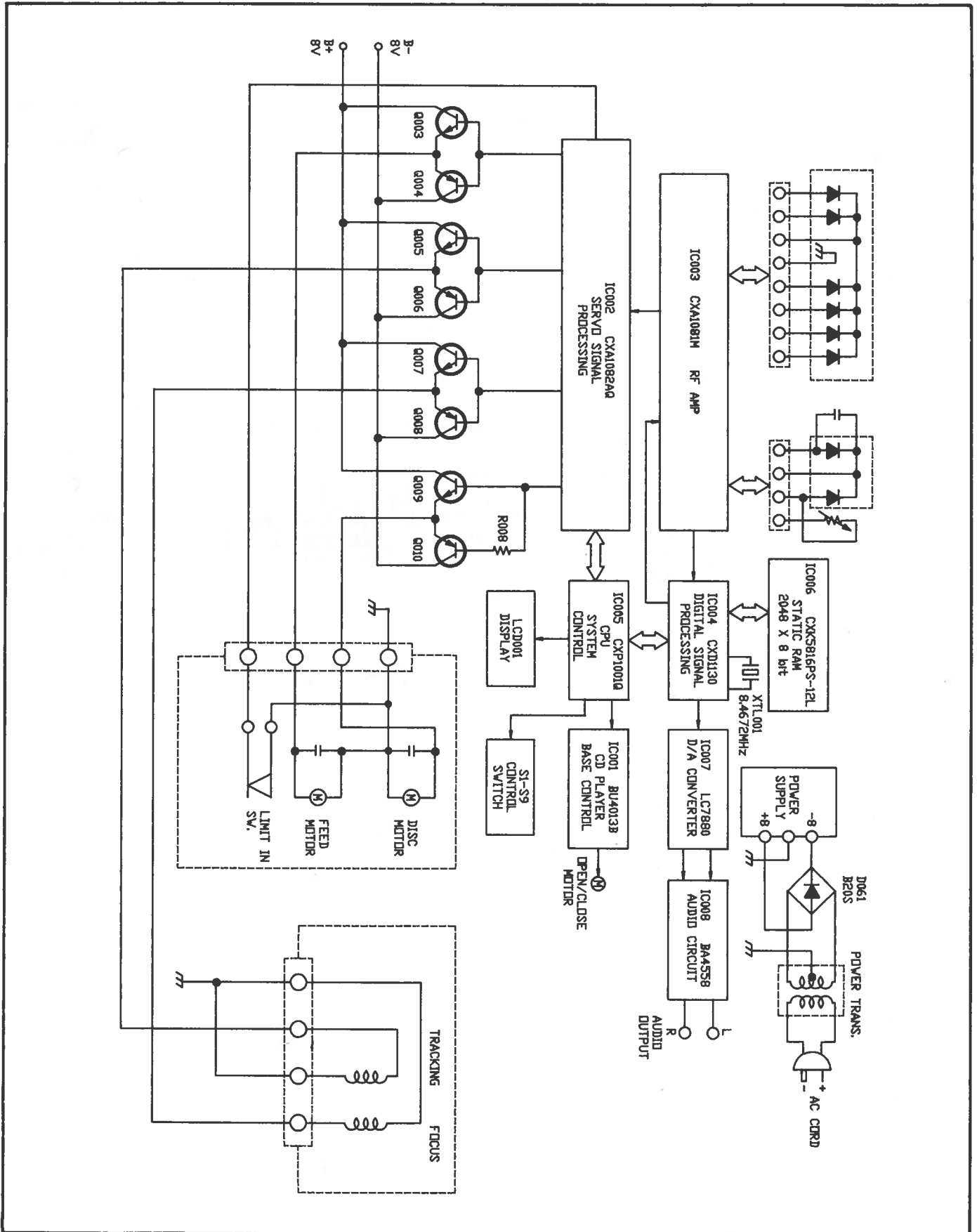
2



3



2. BLOCK DIAGRAM



3. ADJUSTMENTS (See Fig. 3-7 Adjustment points on page 5)

3-1. RF PLL VCO Adjustment

Test Points: TP5, TP6, TP7

1. Short TP5 and TP6, in stop mode.
2. Frequency counter connect to TP7, adjust SFR005, let counter reading as $4.2418 \text{ MHz} \pm 10 \text{ kHz}$ (4.2318—4.2518).
3. Open TP5 and TP6 after above procedures.

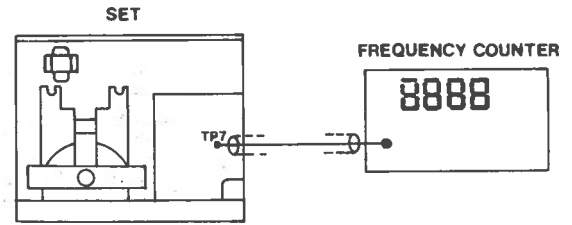


Fig. 3-1

3-2. Focus Bias Adjustment

Test Points: TP1, TP2

1. In play mode.
2. Scope connect to TP1 (RF) and TP2 (GND).
3. Adjust SFR003, let RF waveform output to maximum.

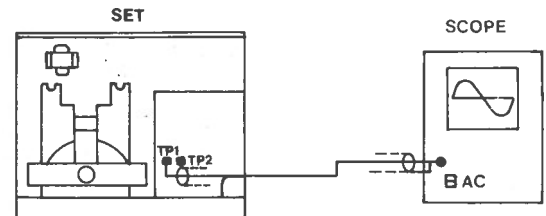


Fig. 3-2

3-3. EF Balance Adjustment

Test Points: TP2, TP3, TP4

1. In play mode, scope connect to TP4 and TP2 (GND), TP2 and TP3 short.
2. Adjust SFR004 symmetrize to DC 0V.
3. See Fig. 3-4.

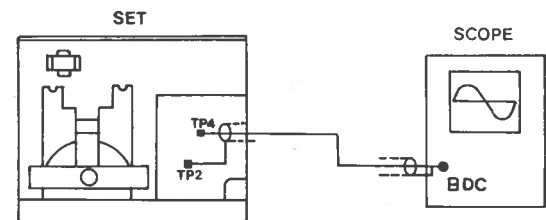


Fig. 3-3

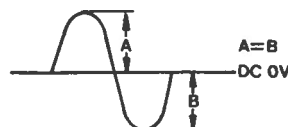


Fig. 3-4

3-4. Focus Servo Gain Adjustment

1. Power OFF.
2. Disconnect CN009, and connect sony CDP servo analyzer.
3. Power ON and play the disc (YEDS-7).
4. Set servo analyzer in focus mode, and adjust SFR002.
5. Let the pointers in the center of the red area (GND to TP6).
6. Repeat the adjustment for the first and the last programs of the disc.

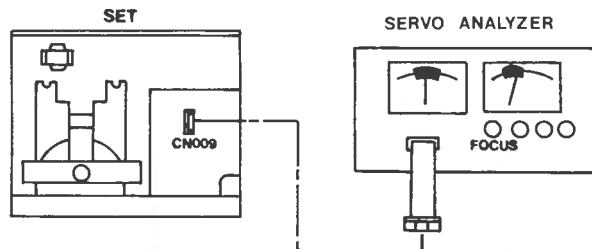


Fig. 3-5

3-5. Track Servo Gain Adjustment

1. Set servo analyzer in track mode.
2. Adjust SFR001, let the pointers in the center of the red area (GND to TP6).
3. Repeat the adjustment for the first and the last programs of the disc.
4. Power OFF, re-connect CN009.

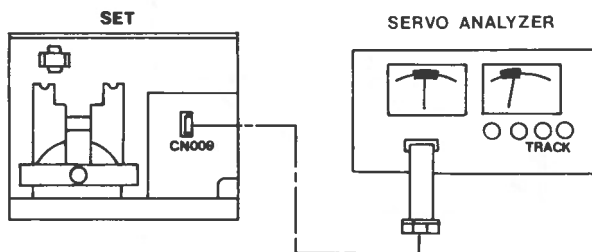
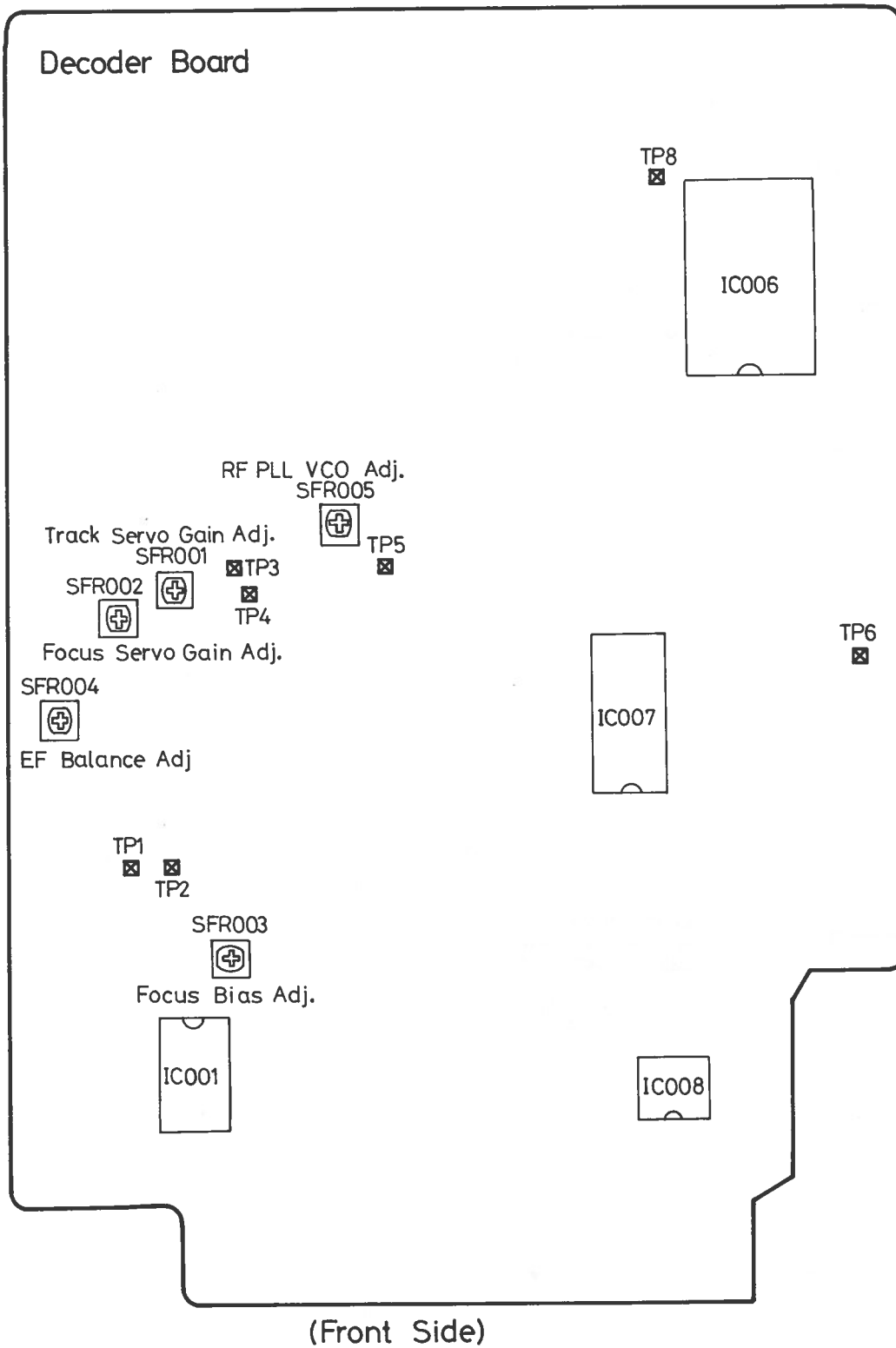


Fig. 3-6

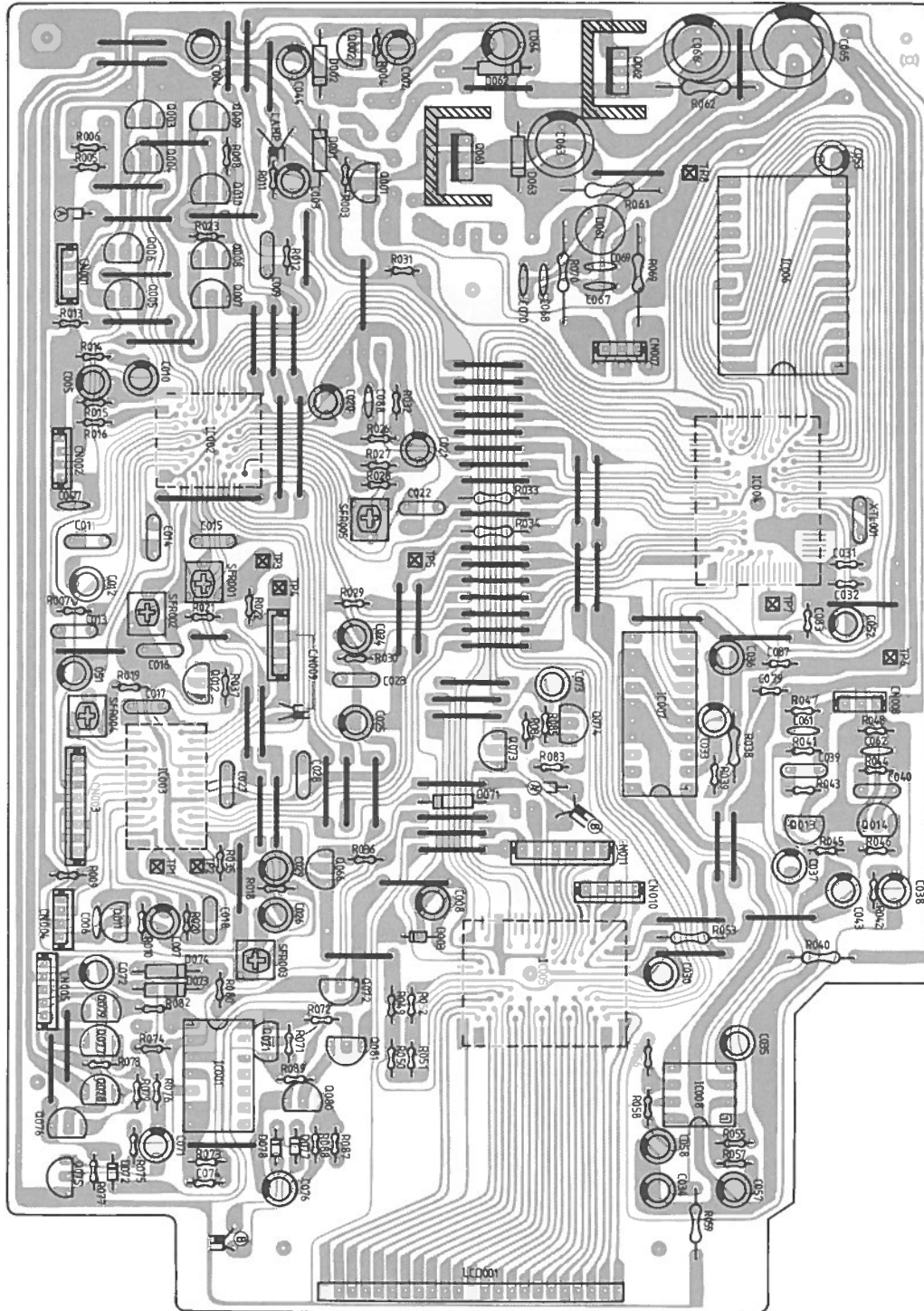
Remark: All the adjustment personnel should be equipped with anti-static wristlet.

Fig. 3-7 Adjustment points on Decoder board

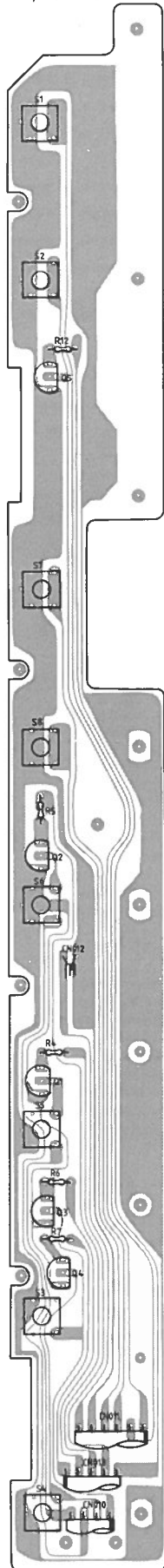


4. PARTS LOCATION ON BOARD

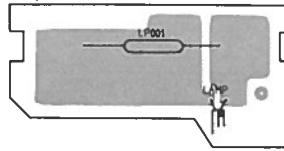
4-1. Decoder Board
Component Side



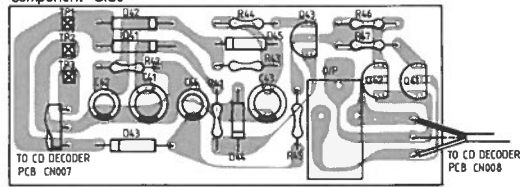
4-2. CD Control Board
Component Side



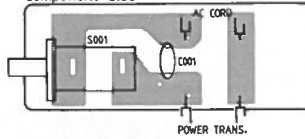
4-3. Lamp Board
Component Side



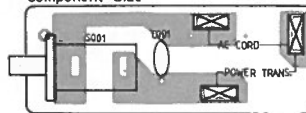
4-4. Mute Board
Component Side



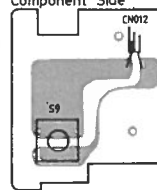
4-5. Power SW. Board (UL, XX, SS)
Component Side



Power SW. Board (EU)
Component Side



4-6. CD Control II Board
Component Side



5. PARTS LIST OF BOARD

5-1. Decoder Board (Part No. C142194310=UL, EU
C142194311=XX, SS)

Ref. No.	Part No.	Description
● Transistor		
Q001	410022001L	2SC2001L
Q002	410000952L	2SA952L
Q003	410022060R	2SC2060R
	or 4100312254	2SD1225MR
Q004	410000934R	2SA934R
	or 4100109094	2SB909MR
Q005	410022060R	2SC2060R
	or 4100312254	2SD1225MR
Q006	410000934R	2SA934R
	or 4100109094	2SB909MR
Q007	410022060R	2SC2060R
	or 4100312254	2SD1225MR
Q008	410000934R	2SA934R
	or 4100109094	2SB909MR
Q009	410022060R	2SC2060R
	or 4100312254	2SD1225MR
Q010	410000934R	2SA934R
	or 4100109094	2SB909MR
Q011	410000733P,Q	2SA733P,Q
Q012-014	410020945P,Q	2SC945P,Q
Q061	410030313D,E	2BD313D,E
Q062	410010507E,F	2SB507E,F
Q066	410000733P,Q	2SA733P,Q
Q071	410000733P,Q	2SA733P,Q
Q072	410020945P,Q	2SC945P,Q
Q073	410000733P,Q	2SA733P,Q
Q074	410020945P,Q	2SC945P,Q
Q075	410000733P,Q	2SA733P,Q
Q076,077	410000952L	2SA952L
Q078,079	410022001L	2SC2001L
Q080,081	410020945P,Q	2SC945P,Q
XTL001	410098467M	Crystal 8.4672MHz
● IC		
IC001	41594013B0	BU4013B
IC002	415C010821	CXA1082AQ
IC003	415C01081M	CXA1081M
IC004	415C011300	CXD1130
IC005	415C01001Q	CXP1001Q
IC006	415C581617	CKX5816PS-12L
	or 4159061160	UM6116
IC007	4152078800	LC7880
IC008	4159045580	BA4558
● Diode		
D001,002	4120500565	RD5.6EB23
	or 4120506B10	HZ6B1
D003	4120901760	1SS176
D061	4138150020	B20SL
D062,063	4120500825	RD8.2EB23
	or 4120509B10	HZ9B1
D071	4120141480	1N4148
D072	4120901760	1SS176
D073,074	4120141480	1N4148
D077,078	4120901760	1SS176
sFR001	5226203137	20k ohm, S.V.R., Track Servo Gain Adj.
	or 5226203157	20k ohm, S.V.R., Track Servo Gain Adj.
sFR002	5226203137	20k ohm, S.V.R., Focus Servo Gain Adj.
	or 5226203157	20k ohm, S.V.R., Focus Servo Gain Adj.
sFR003	5226204137	200k ohm, S.V.R., Focus Bias Adj.
	or 5226204157	200k ohm, S.V.R., Focus Bias Adj.
sFR004	5226203137	20k ohm, S.V.R., EF Balance Adj.
	or 5226203157	20k ohm, S.V.R., EF Balance Adj.
sFR005	5226102137	1k ohm, S.V.R., RF PLL VCO Adj.
	or 5226102157	1k ohm, S.V.R., RF PLL VCO Adj.
LCD001	4110440135	LCD Display HLC9538-01-2111

Ref. No.	Part No.	Description
C031,032	7306933055	33pF 50V C.C.
C074	7306610445	0.1uF 50V C.C.
C079	7308622345	0.022uF 25V C.C.
C083	7306522115	220pF 50V C.C.
C087	7308622345	0.022uF 25V C.C.

5-2. Power Switch Board (Part No. C044162612=UL, XX, SS
C044191810=EU)

Ref. No.	Part No.	Description
△S001	4430102450	Power Switch
△C001	5106472141	4700pF 400V C.C.

5-3. Mute Board (Part No. C042205110)

Ref. No.	Part No.	Description
● Transistor		
Q41,42	410020945P,Q	2SC945P,Q
Q43	410000733P,Q	2SA733P,Q
● Diode		
D41-43	4138104002	1N4002L
D44	4120500685	RD6.8EB23
D45	4120141480	1N4148

5-4. CD Control Board (Part No. C042197210)

Ref. No.	Part No.	Description
● Transistor		
Q1-5	410020945P,Q	2SC945P,Q
S1	4400000094	Tact Switch, Program
S2	4400000094	Tact Switch, Repeat
S3	4400000094	Tact Switch, Previous
S4	4400000094	Tact Switch, Next
S5	4400000094	Tact Switch, Play/Pause
S6	4400000094	Tact Switch, Stop
S7	4400000094	Tact Switch, Rewind
S8	4400000094	Tact Switch, Fast Forward

5-5. CD Control II Board

Ref. No.	Part No.	Description
S9	4400000094	Tact Switch, Open/Close

5-6. Lamp Board

Ref. No.	Part No.	Description
LP001	4700300005	Pilot Lamp 18V/100mA

6. MAIN PARTS REPLACEMENT (See Exploded of Cabinet on Page 10)

6-1. Mechanism Ass'y

- 1) Remove 2 screws (M5a) and 5 screws (M44a) and remove the top cabinet (M43).
- 2) Remove 2 screws (M9b) and 2 screws (M30b) and remove the CD Decoder PCB assembly (M36) & Lamp PCB assembly (M33).
- 3) Remove 1 screw (M28c) and remove the Mute PCB assembly (M22).
- 4) Remove the CD door (M2) and 2 screws (M20d) and 1 screw (M24d) and remove the CD player assembly (M19) from the bottom board.
- 5) Remove 2 screws (M9e) and remove the Power Switch PCB assembly (M16).
- 6) Remove 2 screws (M9f) and 10 screws (M9g) and remove the CD Control PCB assembly (M11).
- 7) Remove 2 screws (M5h) and remove the front panel assembly (M6) from the bottom board.
- 8) Push the plastic tabs towards outside direction from the front panel assembly (M6) and remove the CD Control II PCB assembly (M12).

7. PARTS LIST OF CABINET

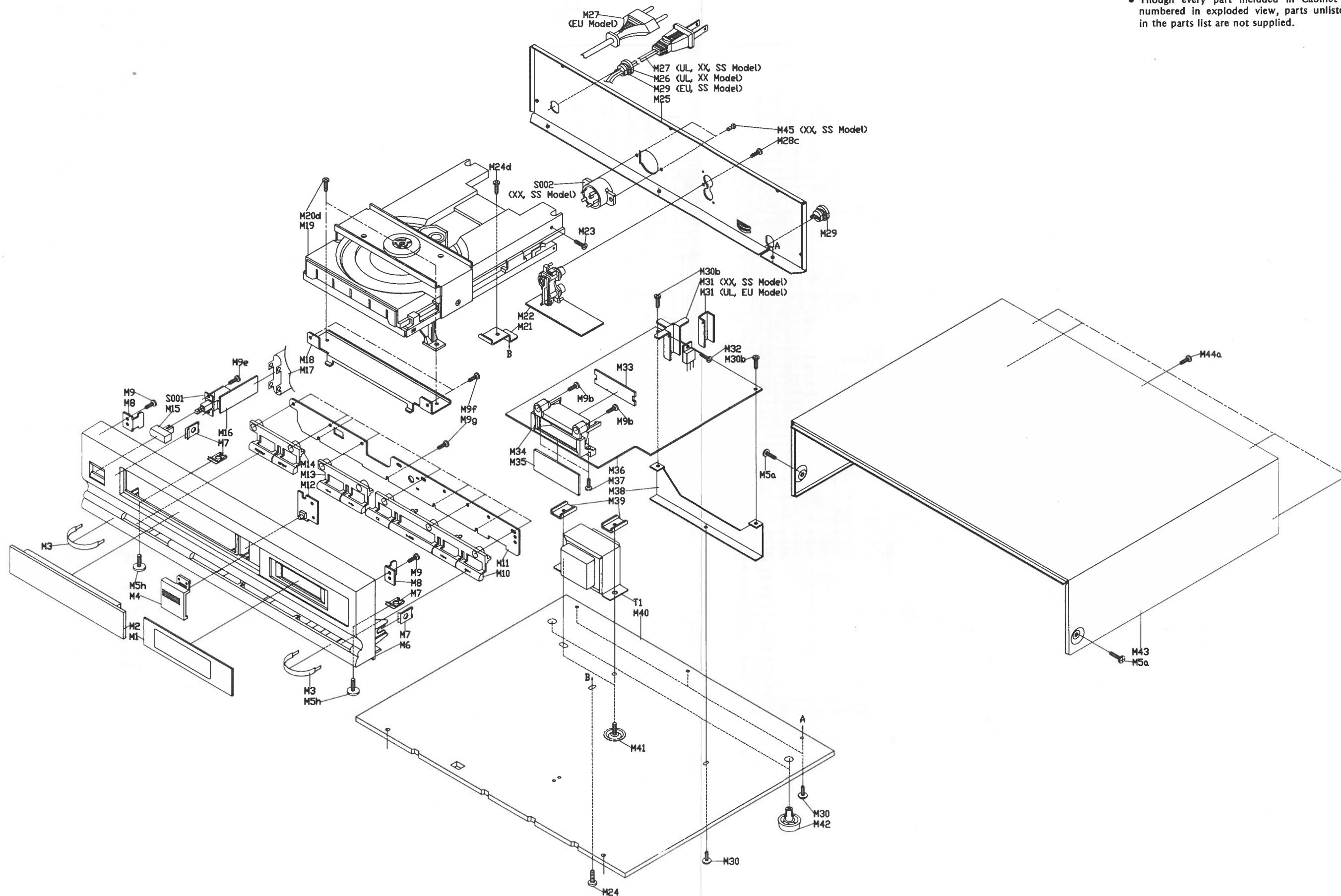
7-1. Cabinet

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
M1	1004038103	Display Window	M29	4580200006	Cord Stopper 4N-6
M2	1002038103	CD Door	M33	-----	Lamp PCB Assembly
M3	1008038103	Foot Overlay	M34	2004038401	CD Display Holder
M4	1007038103	Switch Knob	M35	1017078912	Display Plate
M6	1001038103	Front Panel	M36	C142194310	CD Decoder PCB Assembly (UL, EU)
M7	2017071880	Escutcheon Nut		C142194311	CD Decoder PCB Assembly (XX, SS)
M10	1005038103	Control Knob (A)	M41	2000000092	Cabinet Washer Assembly 4x12
M11	C042197210	CD Control PCB Assembly	M42	0002078910	Leg Assembly
M12	-----	CD Control II PCB Assembly	M43	1010038103	Top Cabinet
M13	1009038103	Control Knob (C)			
M14	1006038103	Control Knob (B)			
M15	1003038103	Power Knob			
M16	C044162612	Power Switch PCB Assembly (UL, XX, SS)			
	C044191810	Power Switch PCB Assembly (EU)	△ T1	4209481250	Power Transformer EI-48 (UL)
M19	C486040382	CD Player (KSL-210A FM)	△	4209484265	Power Transformer EI-48 (EU)
	or C486040383	CD Player (KSL-210A FM4)	△	4209484281	Power Transformer EI-48 (XX, SS)
M22	C042205110	Mute PCB Assembly			
M26	4580100001	Cord Stopper 3P-4 (UL, XX)	△ S001	4430102450	Power Switch SDDLBI017U-CP
△ M27	4631112070	AC Cord UL/CSA 7F BLK (UL, XX)	△ S002	4420131260	Change Switch HXW0131-01-960 (XX, SS)
△	4632212080	AC Cord VDE 8F BLK2 (EU)			
△	463021L065	AC Cord 6.5F BLK2 (SS)	△	or 4420141220	PRI Switch HXW0131-01-125 (XX, SS)

Note: Parts Without Part Nos, are not supplied even parts names are listed in the Parts List.

8. EXPLODED VIEW OF CABINET

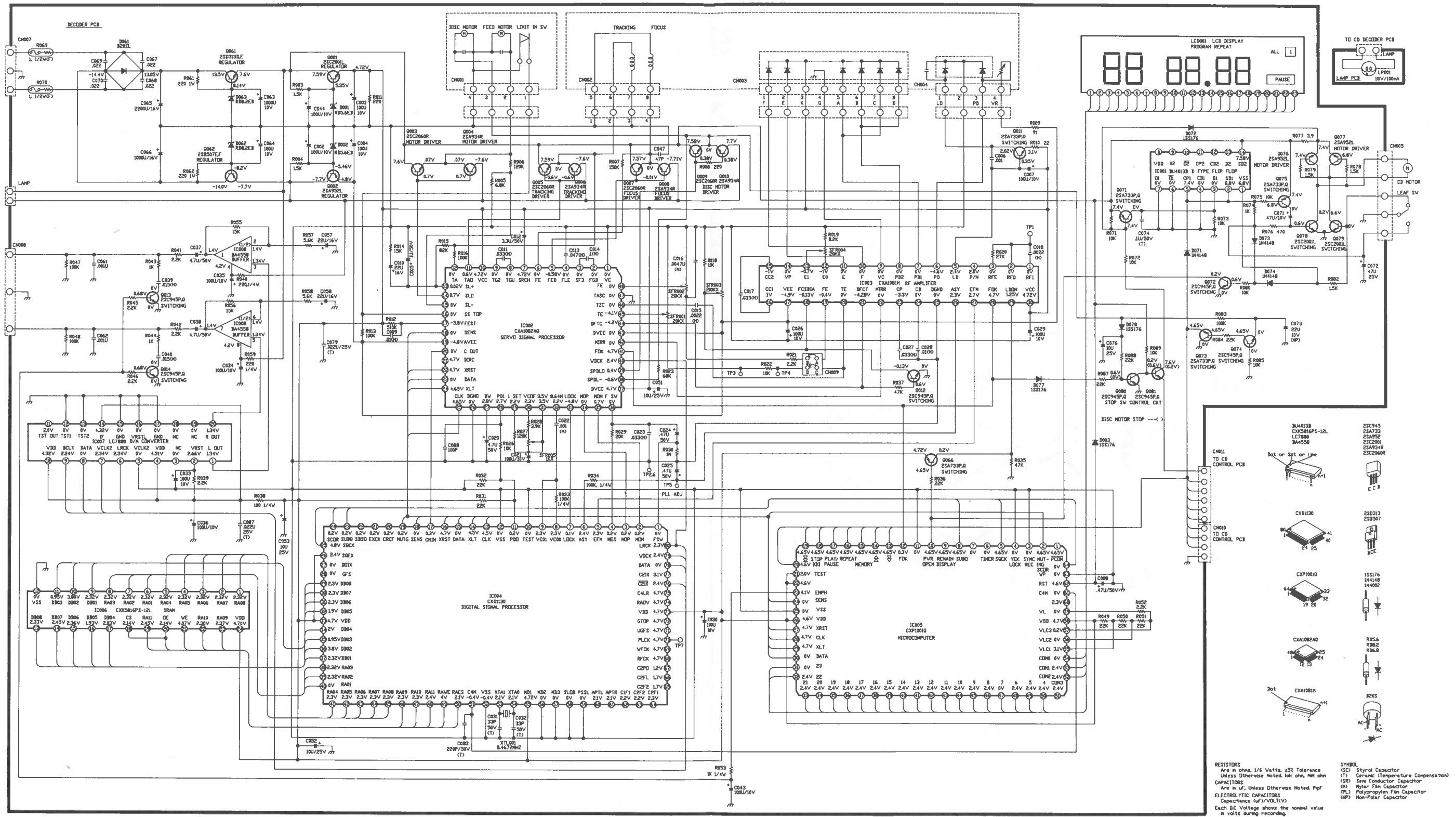
• Though every part included in Cabinet is numbered in exploded view, parts unlisted in the parts list are not supplied.



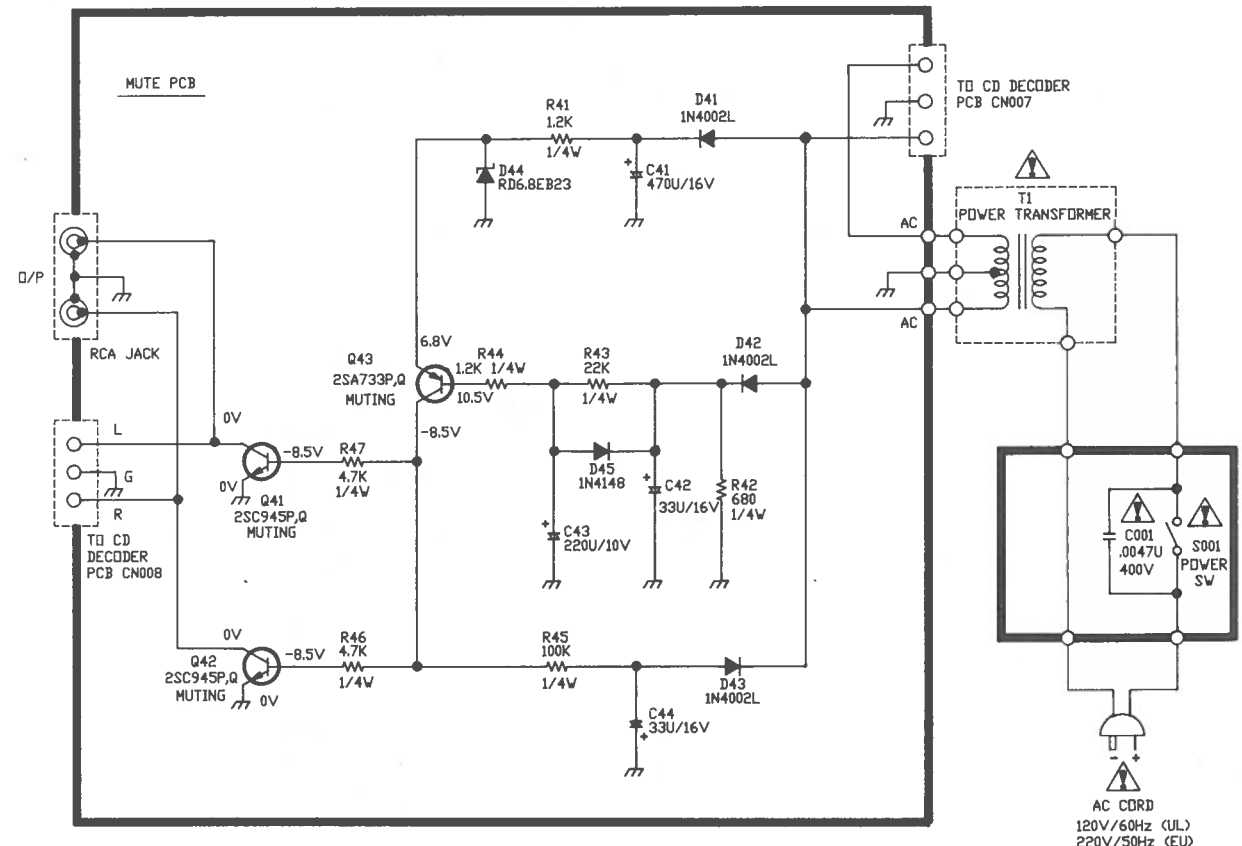
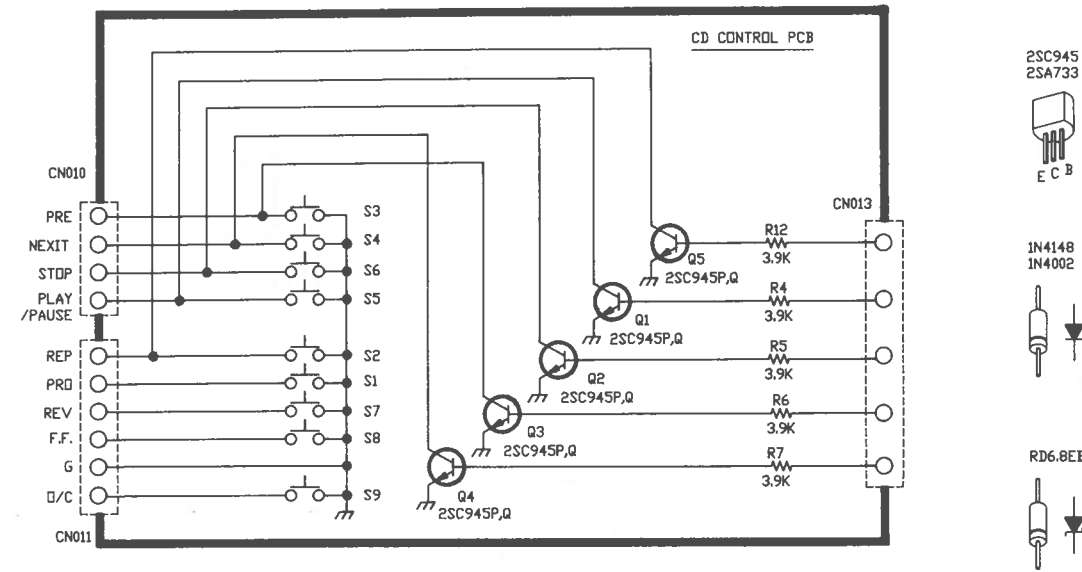
9. SCHEMATIC DIAGRAM

9-1. Decoder/Lamp

- Design and specifications subject to change without notice for improvement.
- La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
- Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



9-2. CD Control/Mute (UL, EU)



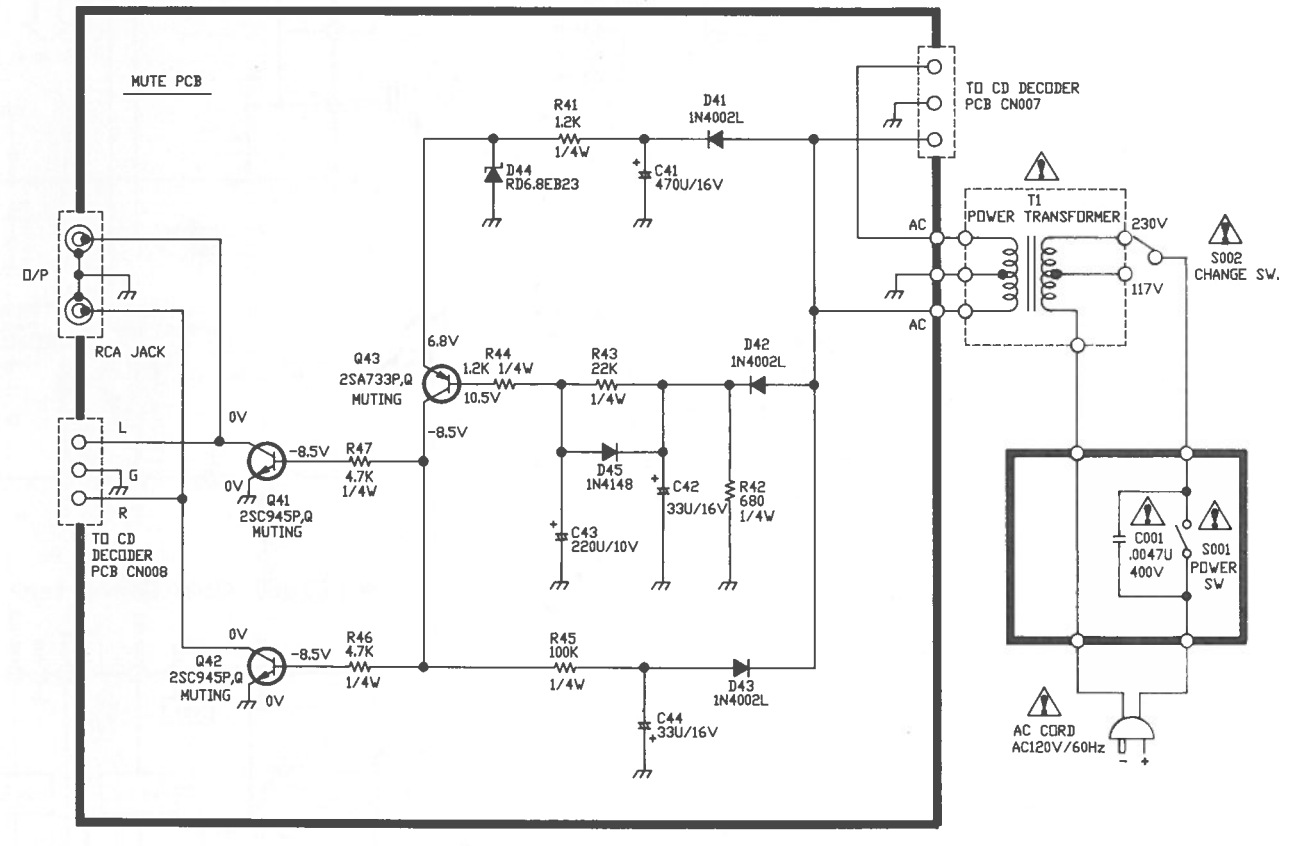
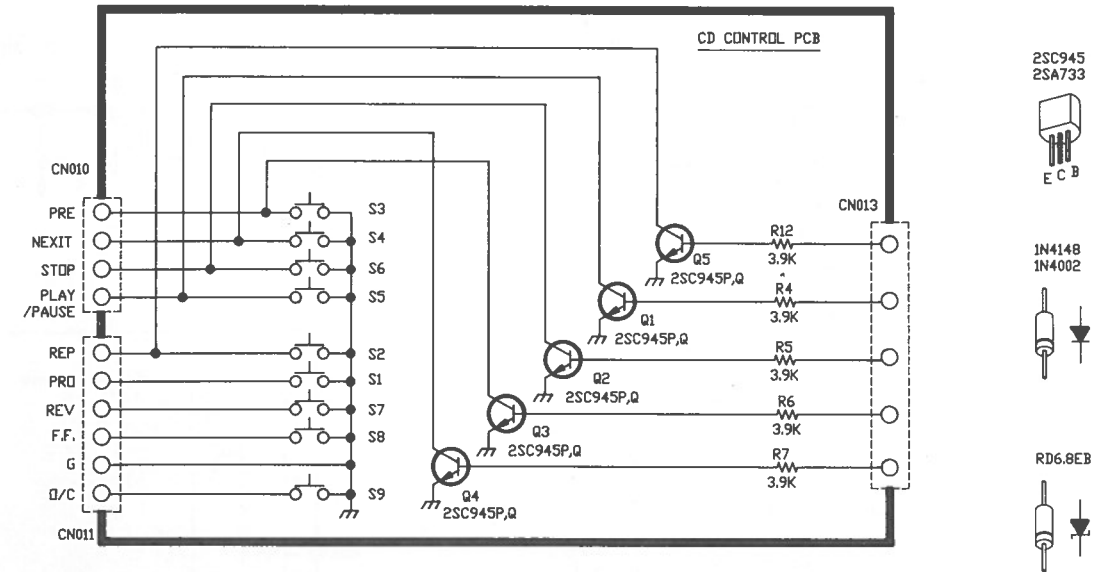
⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.

RESISTORS
Are in ohms, 1/6 Watts, ±5% Tolerance
Unless Otherwise Noted, kk ohm, MM ohm

CAPACITORS
Are in uF, Unless Otherwise Noted, PpF

ELECTROLYTIC CAPACITORS
Capacitance (uF)/VOLT(V)
Each D.C Voltage shows the nominal value
in volts during recording.

9-3. CD Control/Mute (XX, SS)



⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.

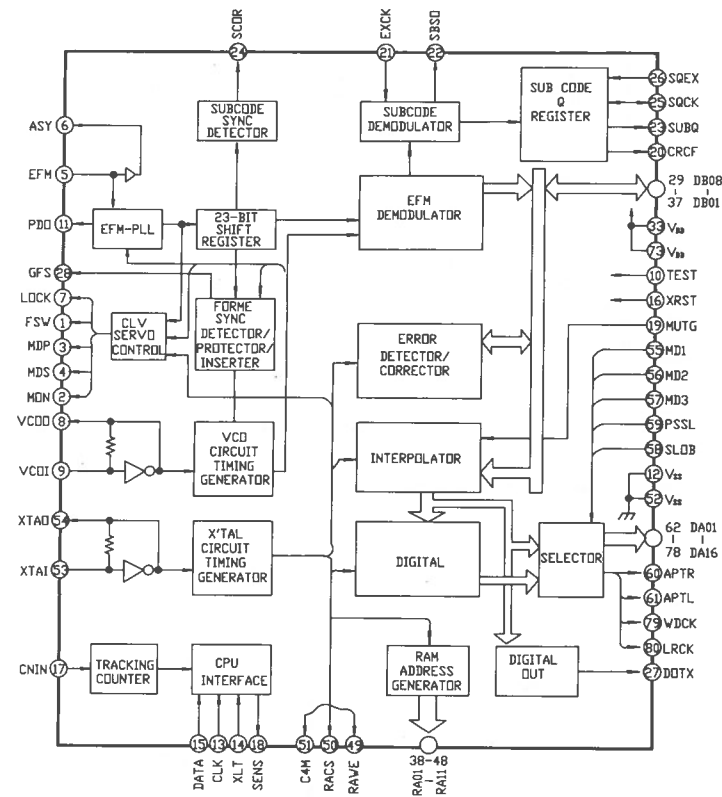
RESISTORS
Are in ohms, 1/6 Watts, ±5% Tolerance
Unless Otherwise Noted, kk ohm, MM ohm

CAPACITORS
Are in uF, Unless Otherwise Noted, PpF

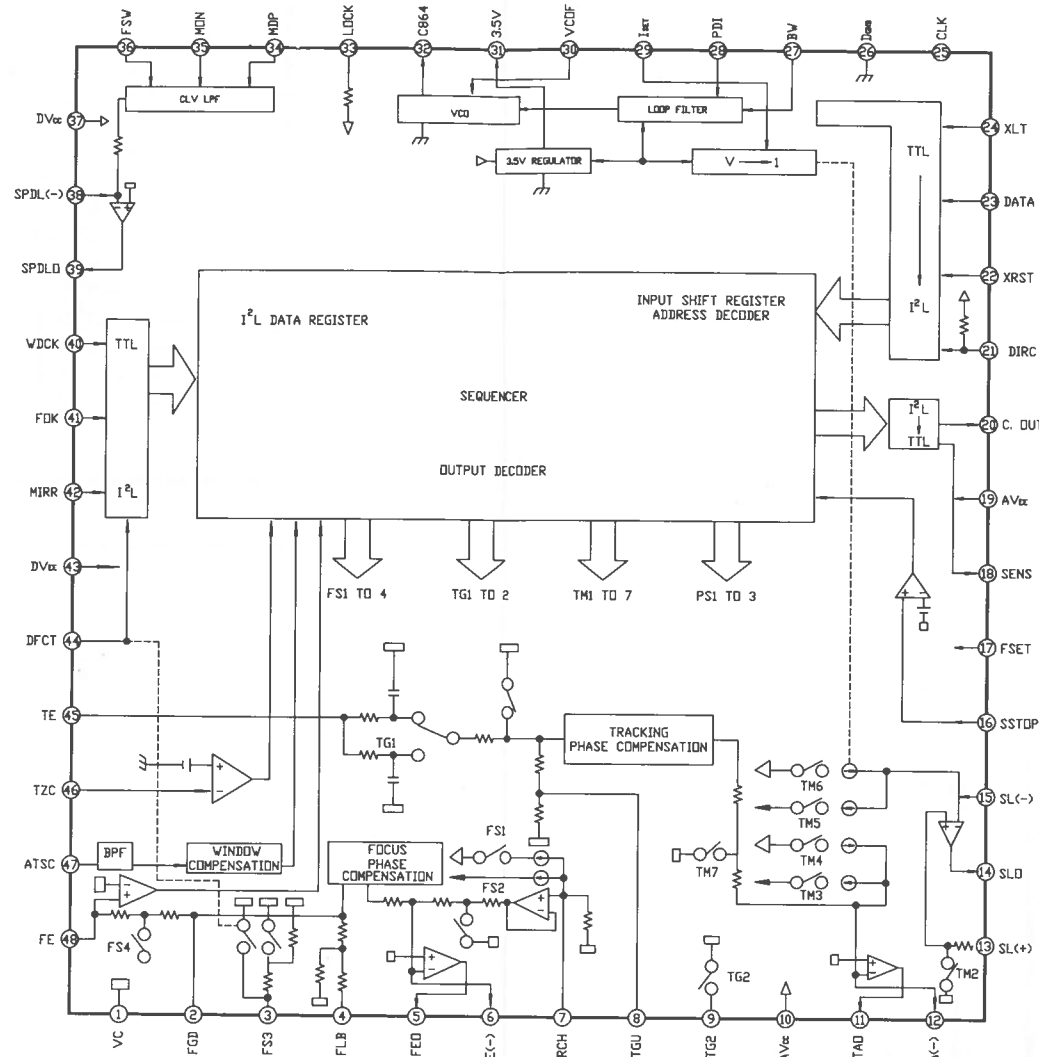
ELECTROLYTIC CAPACITORS
Capacitance (uF)/VOLT(V)
Each D.C Voltage shows the nominal value
in volts during recording.

10. INTERIOR BLOCK DIAGRAM OF IC

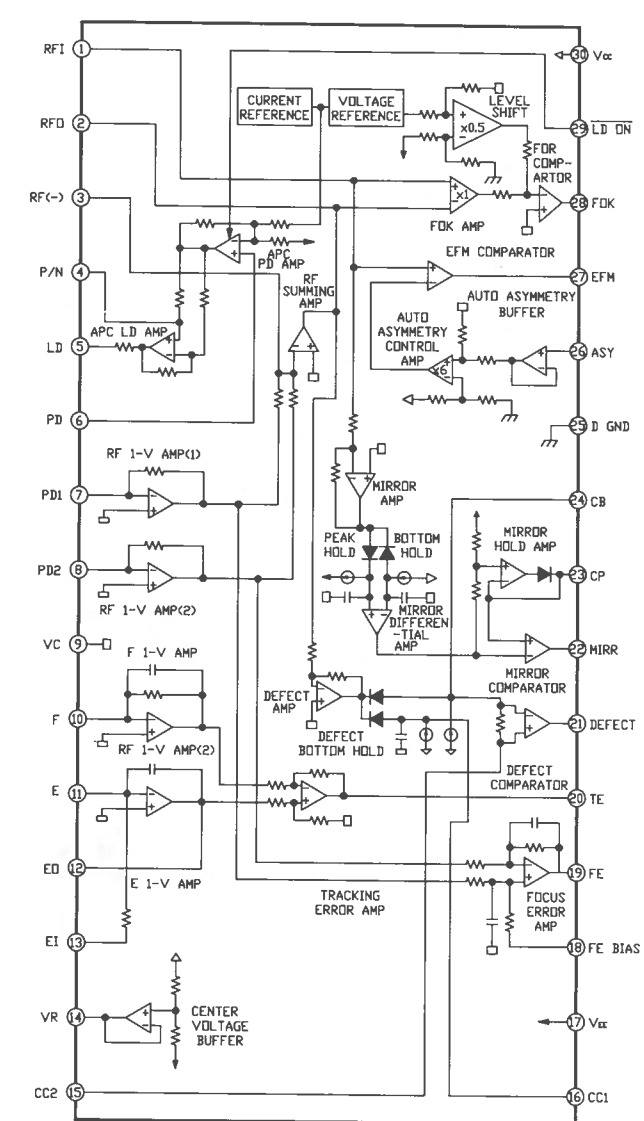
● CXD1130 <Digital Signal Processor>



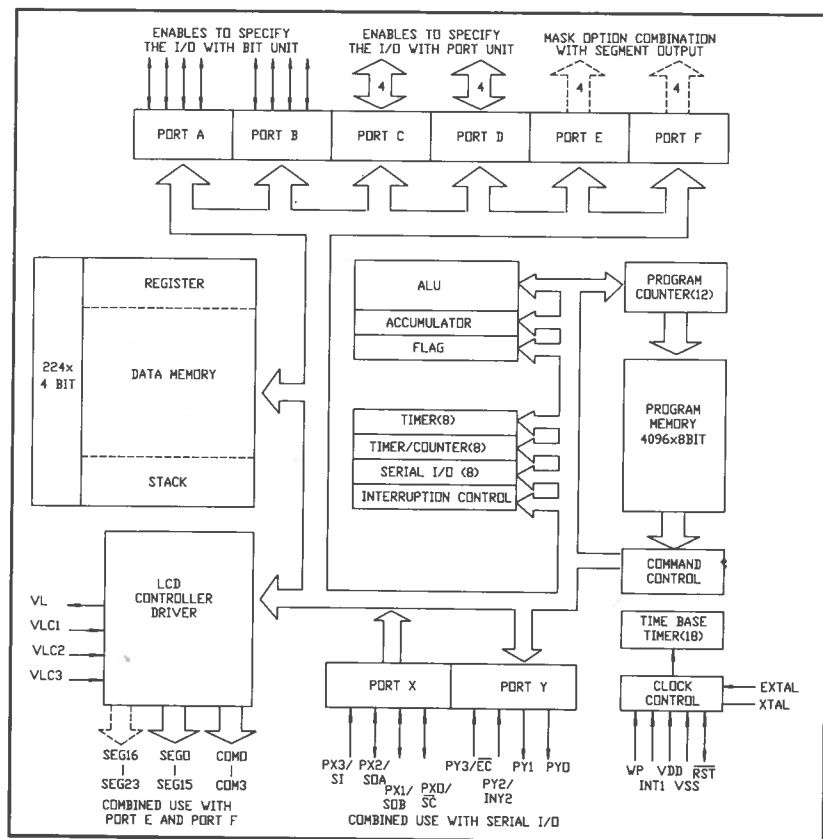
● CXA1082AQ <Servo Signal Processor>



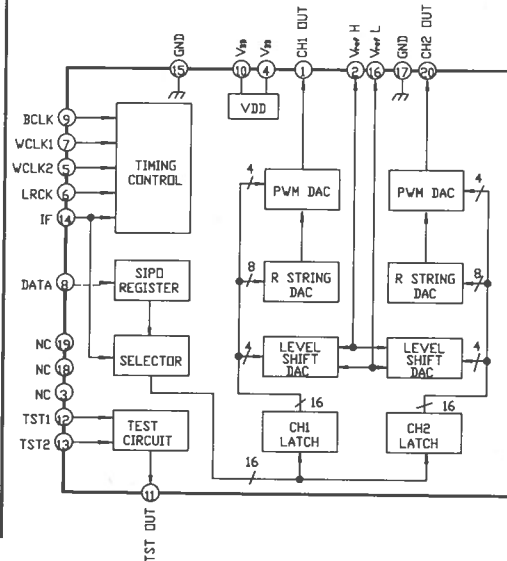
● CXA1081M <RF AMP>



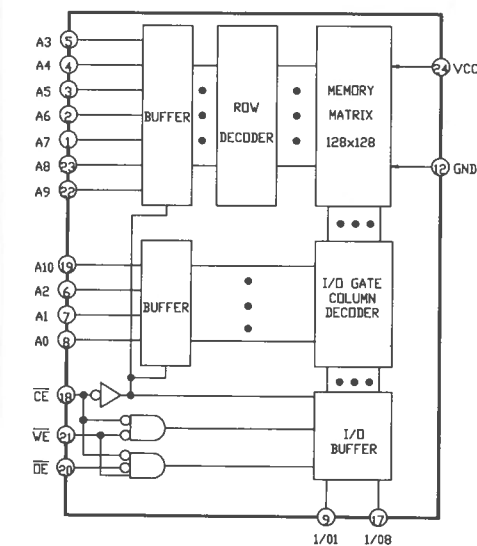
● CXP1001Q <Microcomputer>



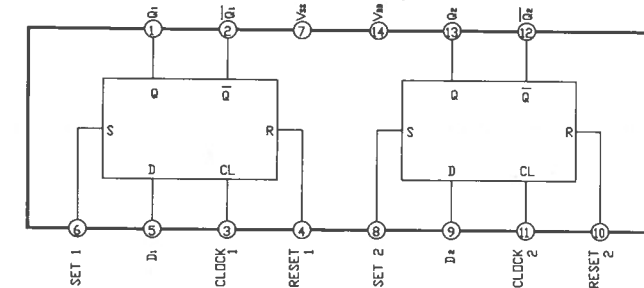
● LC7880 <D/A Converter>



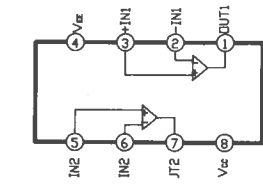
● CXK5816PS-12L <Sram>



● BU4013B <D Type Flip Flop>

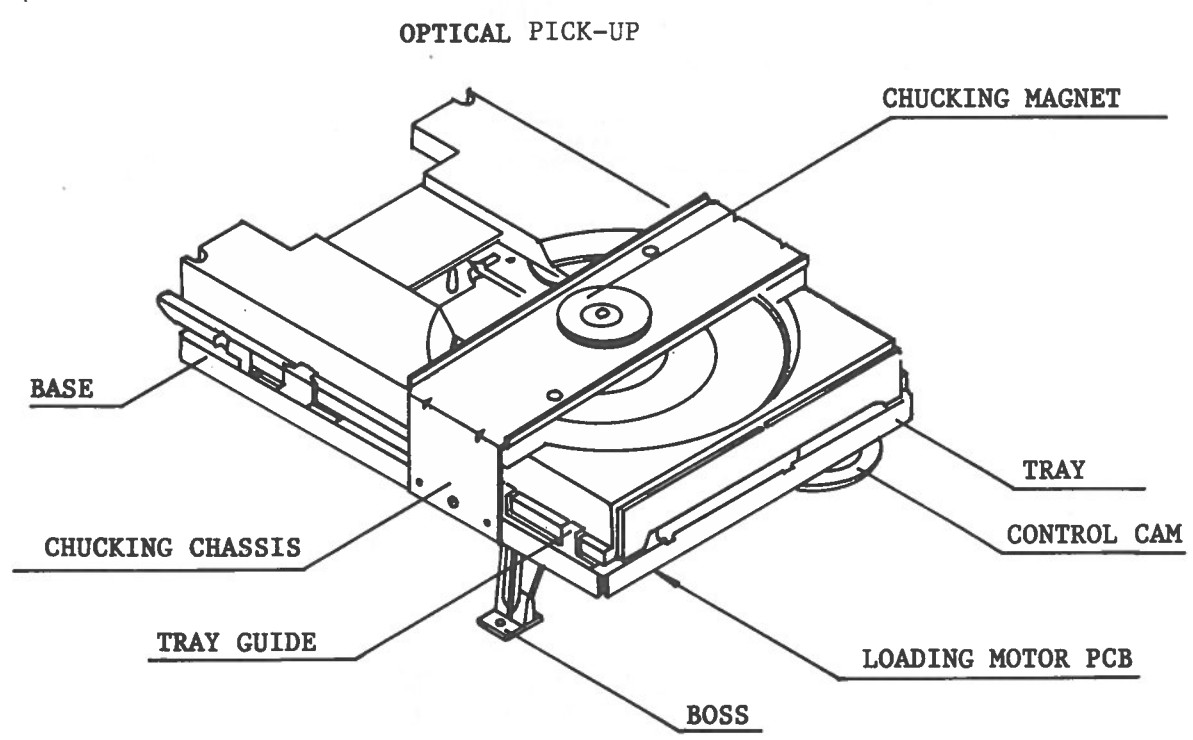
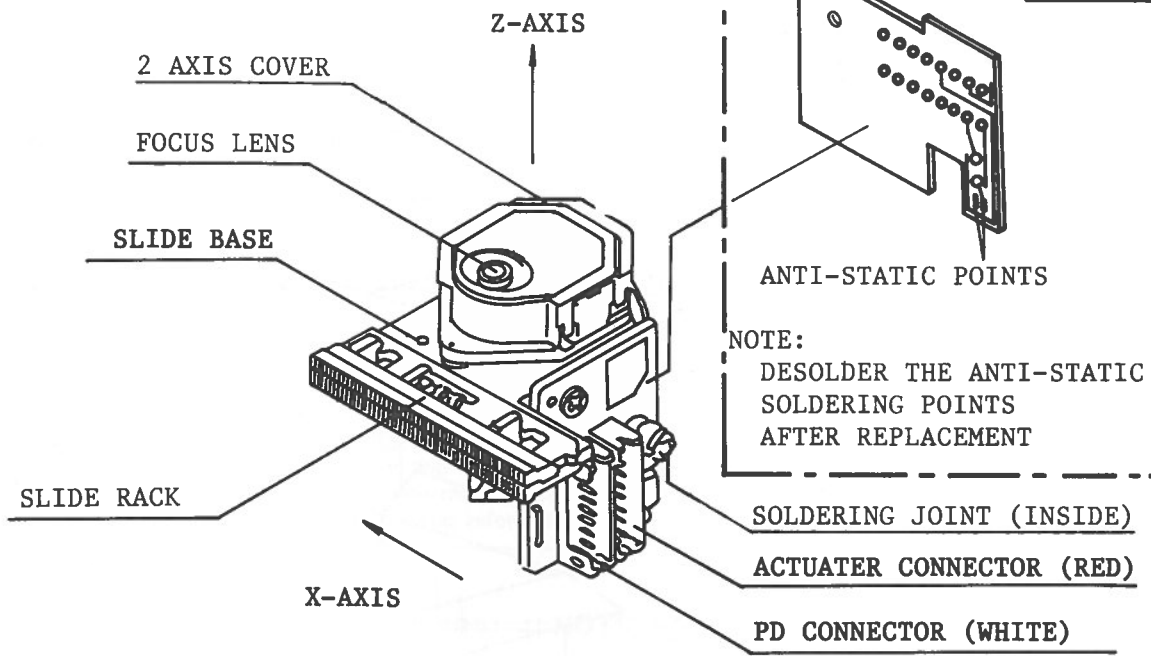


● BA4558 <Buffer>



11. EXPLODED VIEW OF CD PLAYER

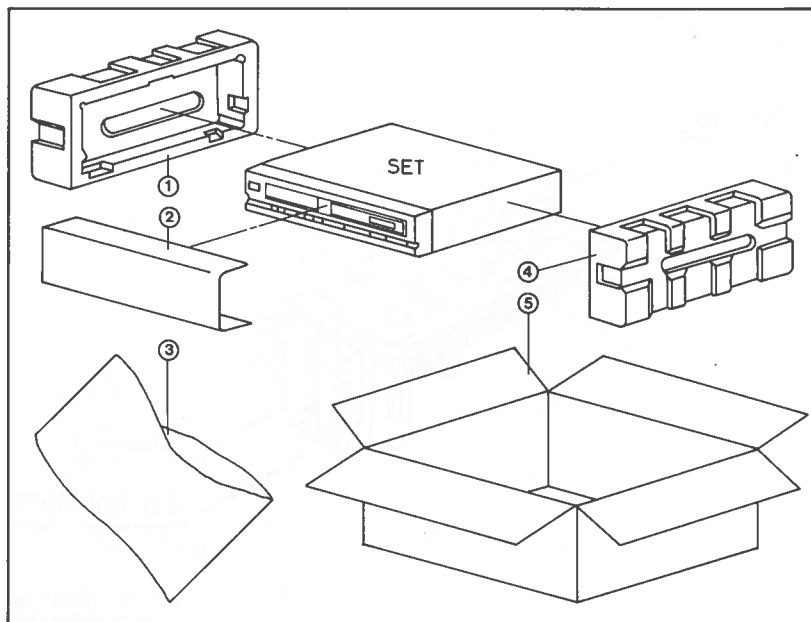
M19



NOTE:
USE THIS DIAGRAM FOR REFERENCE ONLY. PARTS NOT AVAILABLE SEPARATELY.

12. PACKING LIST

Ref. No.	Part No.	Description
1	9002038103	Snow Box (L)
2	9003038101	Soft Sheet
3	9904806046	Poly Bag
4	9001038103	Snow Box (R)
5	9005038103	Gift Box



13. ACCESSORY LIST

Ref. No.	Part No.	Description
	9080017220	Instruction Book
	9902204046	Poly Bag (I/B)
	5620709501	Patch Cord GRY-950



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