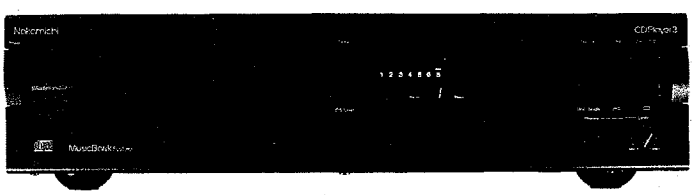
Service Manual

Nakamichi
CD Player 3



CONTENTS

1. GENERAL

1.1. Production No.

Production No.: V316

1.2. Destinations

USA, CAN, EP, UK, AUS, SAU, OTR, JPN

Abbreviation

USA — U.S.A.	AUS — Australia
CAN — Canada	SAU — Saudi Arabia
EP — Europe	OTR — Other
UK — United Kingdom	JPN — Japan

CAUTION
Adjusting the knobs, switches, and controls, etc. or taking actions not specified herein may result in a harmful emission of laser beams. This Compact Disc Player must be adjusted and repaired only by qualified service personnel.

OBSERVERA!
Sådana inställningar av rattarna, omkopplarna eller övriga kontrollknappar som inte är beskriva i bruksanvisningen kan resultera i farlig laserutstrålning. Justering eller reparation av denna kompaktskivspelare skall endast utföras av kvalifiserad servicepersonal.

OBS!
Indstilling af knapper, cmskiftere og øvrige kontrolknapper, som ikke følger den i brugsanvisningen beskrevne måde, kan resultere i farlig laserudstråling. Justering eller reparation af denno CD-afspiller må kun udføres af kvalificeret servicepersonale.

OBS!
Justering av ratt, brytere og kontroller andre enn de som er beskrevet her, kan resultere i farlig laserbestråling. Justering eller reparasjon av denne kompaktdiskspilleren ma bare utføres av kvalifiserte fagfolk.

HUOMAUTUS
Jos nuppeja, kytkimiä ja säätimiä ym. säädetään tai laitetta käytetään toisella tavalla kuin on selostettu, tuloksena saattaa olla vaarallista lasersäteiden vuotoa. CD-soittimen säätö ja korjaus on jätettävä aina asiantuntevan huoltoteknikon tehtäväksi.

ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING.
UNDGÅ UDSAETTELSE FOR STRÅLING.

VARO! AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE.
ÄLÄ KATSO SÄTEESEEN.

VARNING — OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD.
BETRAKTA EJ STRÅLEN.

• LASER DIODE PROPERTIES
GaAlAs double hetero laser diode

Maximum Radiant Power:	0.4mW Max. Measured at a distance of 1.6mm from the object lens surface on the Laser Pickup.
Wavelength:	780nm
Emission Duration:	Continuous

CLASS 1
LASER PRODUCT

THIS COMPACT DISC PLAYER IS CLASSIFIED AS A CLASS 1 LASER PRODUCT.
THE CLASS 1 LASER PRODUCT LABEL IS LOCATED ON THE REAR EXTERIOR.

1.3. Parts Supply

(1) **Unstocked Parts**

Parts marked with "★" at the head of part No. are not stocked. So, it takes time to supply the parts after we receive your order.

(2) **Unsupplied Parts**

Parts without part Nos. (indicated as "—" in the parts list) are not supplied.

1.4. CAUTIONS/WARNINGS

(1) **Product Safety Notice**

Parts marked with the symbol ⚠ in the schematic diagram have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

(2) **Leakage Current Check/Resistance Check**

Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING — DO NOT return the unit to the customer until the problem is located and corrected.

(3) **Lithium Battery Caution**

Use ONLY replacement parts recommended by the manufacturer.
Replacement must be done only by qualified service personnel because of risk for explosion.

VARNING
Litiumbatteri. Explosionsfara vid felaktig hantering. Byte får endast ske av sakkunnig personal enligt servicedokumentationens anvisningar.

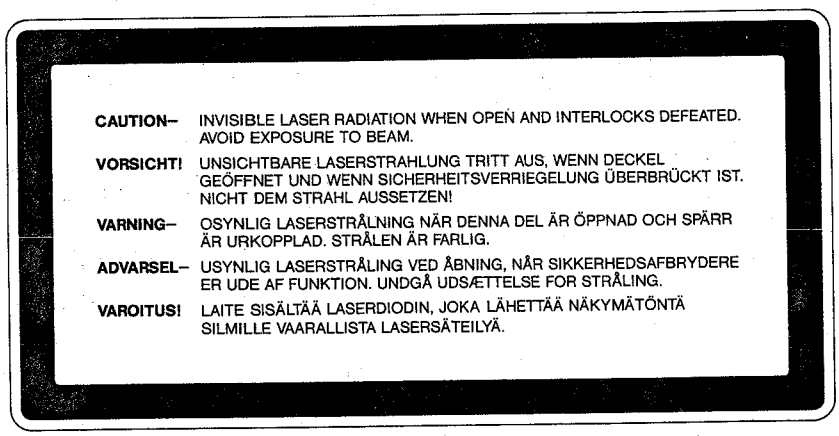
ADVARSEL!
Lithiumbatterier. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen.
batterierne kun må udsklftes med batterier af samme fabrikat og type.

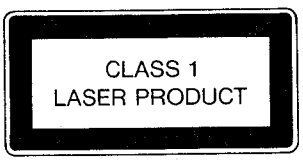
(4) **Protection of Eyes from Laser Beam**

To protect eyes from invisible laser beam during servicing, DO NOT LOOK AT THE LASER BEAM.

- Laser Diode Properties
  Laser Output: 44.6 μW Max.
  Measured at a distance of about 200 mm from the object lens surface on the Laser Pickup.
  Wavelength: 780 nm
  Emission Duration: Continuous

- Laser Caution Label and Class 1 Laser Product Label (for EP)





THIS COMPACT DISC PLAYER IS CLASSIFIED AS A CLASS 1 LASER PRODUCT.
THE CLASS 1 LASER PRODUCT LABEL IS LOCATED ON THE REAR EXTERIOR.

1.5. NOTICE

Before servicing, set the Mechanism Lock knob on the bottom of the unit to "Free" position. The Mechanism Lock knob locks the stocker mechanism. So, if it is not unlocked, multiple-disc operation using stocker is impossible even though single-disc operation is possible.

1.6. Voltage Selector

Voltage selector is installed on the Rear Panel of the CD Player 3 (Other & Saudi Arabia). The voltage selector can select 110V, 127V, 220V, or 240V at customer's disposal.

1.7. Handling the Laser Pickup

In case of repair or replacement of the Laser Pickup, pay attention to the following handling instructions since the laser diode in the Laser Pickup is not resistant to static electricity.

(1) **Grounding**

When you repair a Laser Pickup, first ground the human body, as well as the measuring instruments and other tools (with particular caution to soldering iron). What's more, your workbench and floor should desirably be grounded using conductive sheet or copper plate. See Fig 1.1.

Note: Be careful so as not to let your clothes touch the Laser Pickup, as static electricity on the clothes will not be released even if your body is grounded.

(2) **Discharge of Electricity**

Be sure to discharge electricity from objects brought into contact with the Laser Pickup (i.e., soldering iron, tweezers, probes, volt-ohm-meter probes, etc.) before starting work by contacting them with the Compact Disc Player's chassis. Besides, never touch the Laser Pickup while power is applied.

(3) **Soldering Iron to be Used**

The soldering iron for use in repair work shoud be: (1) a ceramic soldering iron, (2) a soldering iron with its metal part grounded, or (3) a soldering iron whose insulation resistance after five minutes of power application is 10 M-ohm or more at 500 VDC. Soldering should be completed promptly, at a soldering iron temperature of 320° max (39 W). A soldering iron heated above this temperature can break down the laser diode.

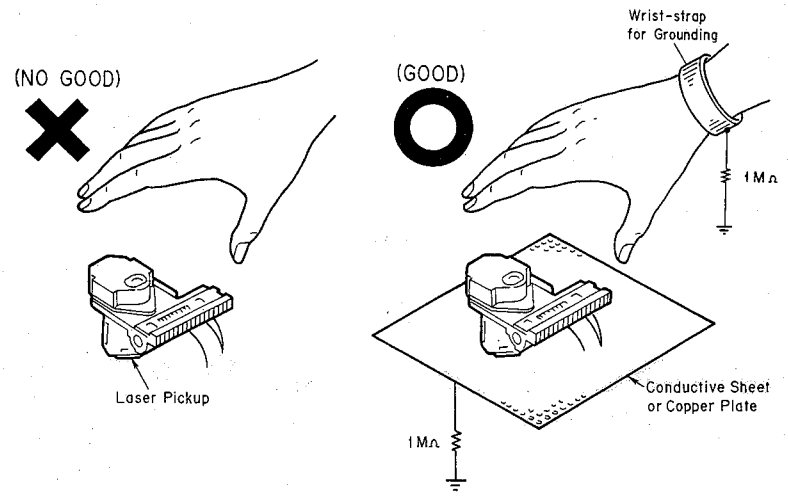


Fig. 1.1

1.8. Stocker Operation Check Function at Power ON

A series of stocker operation can be checked at power ON by means of RAM Reset jumpers. This funcion is useful to check whether any CD is left in the stocker before returning the unit to the customer.

(1) Turn OFF the power.

(2) With shorting RAM Reset jumpers on the Main P.C.B. Ass'y, turn ON the power. (See Fig. 5 for location.)

Short (Grounded by shorting)

RAM RESET

(3) The stocker raises to the uppermost position and then, starts CD unload operation as follows:

Disc No.: 6 → 5 → 4 → 3 → 2 → 1 → S

During operation, only the disc number indicators (1, 2, 3, 4, 5, 6, S) are displayed (flashes).

(4) After completion of the stocker operation, the unit returns to normal condition.

1.7. Package Ass'y and Accessory Ass'y

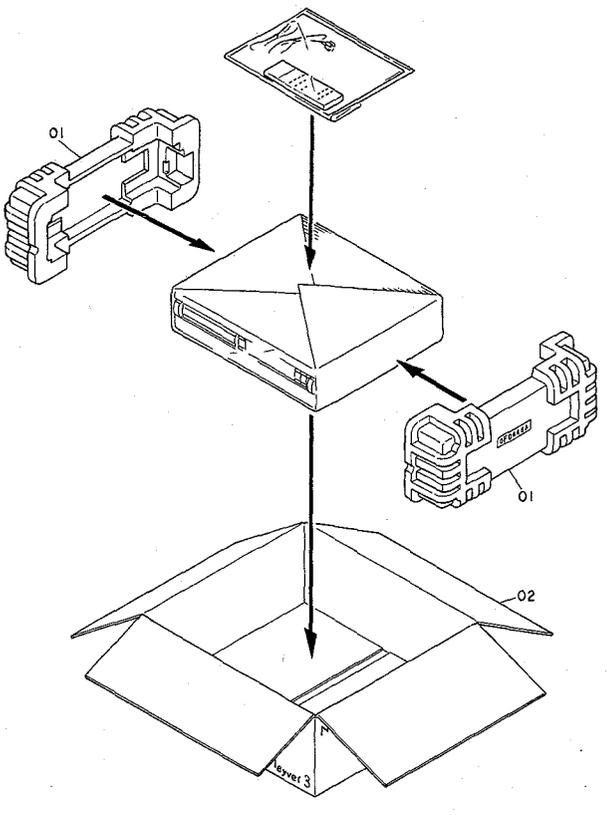


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Q'ty
	—	Package Ass'y	
01	0F04445A	Packing	2
02	0F04446A	Carton Box	1
	DA04379A	Accessory Ass'y (USA, CAN)	1
	DA04380A	Accessory Ass'y (EP)	1
	DA04381A	Accessory Ass'y (UK)	1
	DA04393A	Accessory Ass'y (AUS, SAU, OTR)	1
	DA04378A	Accessory Ass'y (JPN)	1
	0B90462A	Battery UM4	2
	0D06106A	Owner's Manual (English/German/ French)	1
	0D06107A	Owner's Manual (Japanese)	1
	DA04372A	Remote Control Unit	1
	DA04388A	Pin-Pin Cord Ass'y	1

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y

Refer to Fig. 2.1.

(1) Loosen screws F01 (2 pcs.) and F02 (4 pcs.), and remove F03 (Top Cover Ass'y) upward.

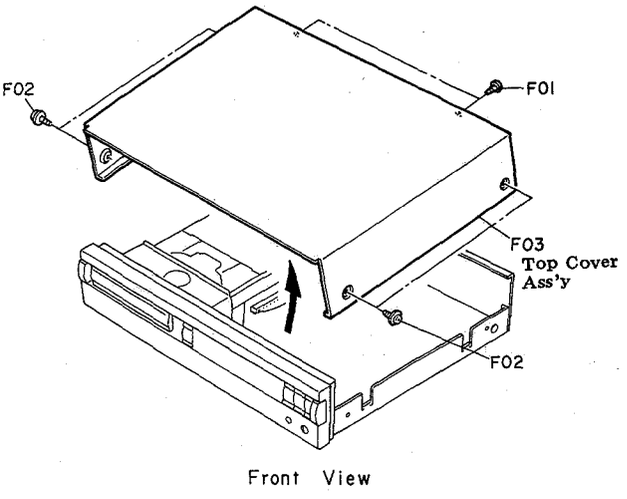


Fig. 2.1

2.2. Disc Tray Cover Ass'y

Refer to Fig. 2.2.

(1) Turn ON the Power switch.
(2) Press the Eject/Load button to eject the Disc Tray.
(3) Turn OFF the Power switch.
(4) Pull F01 (Disc Tray Cover Ass'y) upward to remove it.

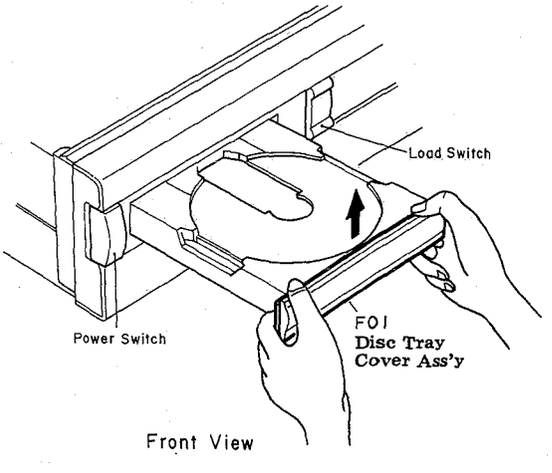


Fig. 2.2

2.3. Front Panel Ass'y
Refer to Fig. 2.3.
(1) Remove the Top Cover Ass'y referring to item 2.1.
(2) Remove the Disc Tray Cover Ass'y referring to item 2.2.
(3) Loosen screws F01 (2 pcs.), F02 (2 pcs.) and F03 (1 pce.), and remove F04 (Front Panel Ass'y).

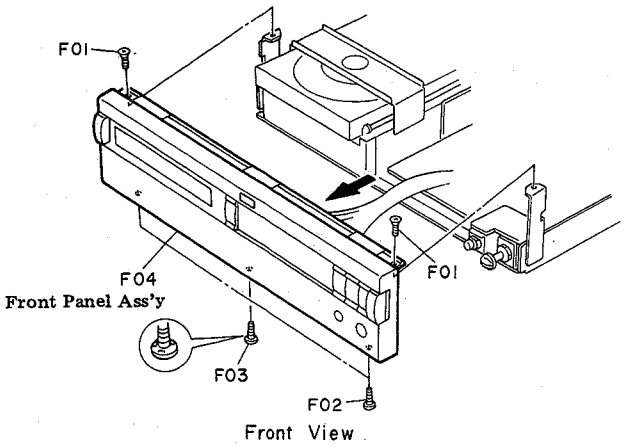


Fig. 2.3

2.4. Main P.C.B. Ass'y
Refer to Fig. 2.4.
(1) Remove the Top Cover Ass'y referring to item 2.1.
(2) Loosen screws F01 (1 pce.) and F02 (6 pcs.), and remove F03 (Main P.C.B. Ass'y).

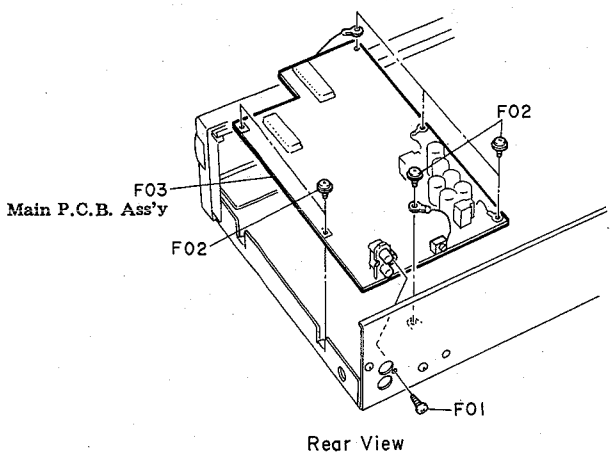


Fig. 2.4

2.5. Control Switch & Display P.C.B. Ass'y
Refer to Fig. 2.5.
(1) Remove the Front Panel Ass'y referring to item 2.3.
(2) Loosen screws F01 (4 pcs.) and remove F02 (Control Switch & Display P.C.B. Ass'y).

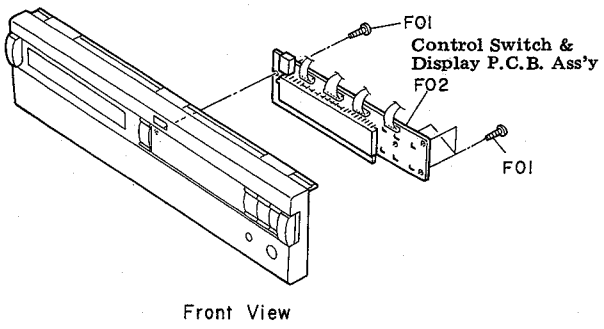


Fig. 2.5

2.6. Mechanism Ass'y
Refer to Fig. 2.6.
(1) Remove the Top Cover Ass'y referring to item 2.1.
(2) Remove the Disc Tray Cover Ass'y referring to item 2.2.
(3) Remove connectors (CN-204, CN-201, CN-205, CN-104, CN-7 and CN-6) from the Main P.C.B. Ass'y.
(4) Loosen screws F01 (3 pcs.) and F02 (2 pcs.) and remove F03 (Mechanism Ass'y).

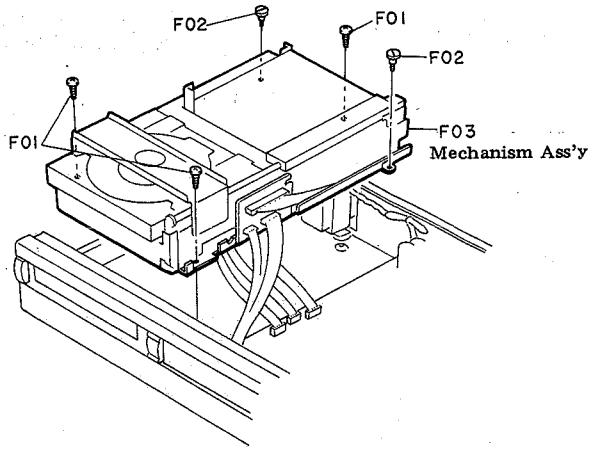


Fig. 2.6

2.7. Laser Pickup

Refer to Figs. 2.7.1 and 2.7.2.

2.7.1. Removing the Laser Pickup

(1) Remove the Mechanism Ass'y referring to item 2.6.
(2) Loosen screws F01 (4 pcs.), remove a washer F02, and separate F03 (Blind Plate Ass'y). See Fig. 2.7.1.
(3) Turn F04 fully clockwise and rotate F05 (Wire Pulley A) forward (in the direction of the arrow) until F06 (Disc Tray Ass'y) is ejected, then pull out F06 (Disc Tray Ass'y) by hand.
(4) Loosen screws F07 (2 pcs.) and remove F08 (Stabilizer Holder Ass'y). See Fig. 2.7.2.
(5) Loosen a screw F09 and remove F10 (Gear A).
(6) Loosen screws F11 (2 pcs.) and remove F12 (Shaft Clamp, 2 pcs.).
(7) Lift F13 (Laser Pickup) and shortcircuit lands "A" of the Laser Pickup with a soldering iron.
(8) Disconnect two connectors from the Laser Pickup.

Cautions: 1. Use a soldering iron whose metal part is grounded, or a ceramic soldering iron.
2. Do not forget shortcircuiting the lands "A" as the laser diode in the Laser Pickup will be damaged when the connectors are removed.

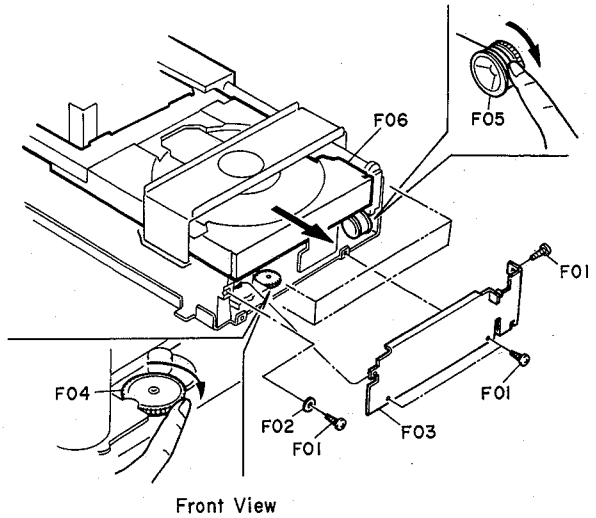


Fig. 2.7.1

2.7.2. Installing a New Laser Pickup

Note: As a Laser Pickup is packed in a conductive pack, do not take it out of the pack until you need it.

(1) Connect two connectors to the new Laser Pickup.
(2) Unsolder the soldering bridge at lands "A" with a soldering iron whose metal part is grounded or with a ceramic soldering iron. See Fig. 2.7.2.
(3) Perform the reversal procedures of item 2.7.1.

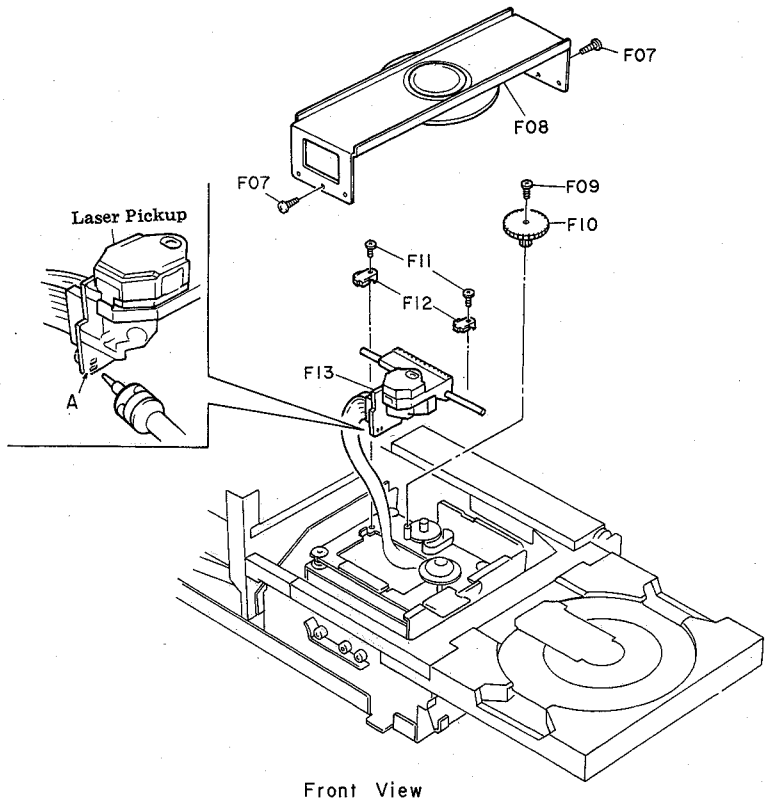


Fig. 2.7.2

3. MECHANICAL ADJUSTMENTS

3.1. Threading of Tray Wire

Refer to Fig. 3.1.

(1) Hook the Tray Wire end to "a".
(2) Wind the Tray Wire on the Wire Roller A (three turns).
(3) By way of Wire Roller B, hook the other Tray Wire end to "b" via the Wire Spring.

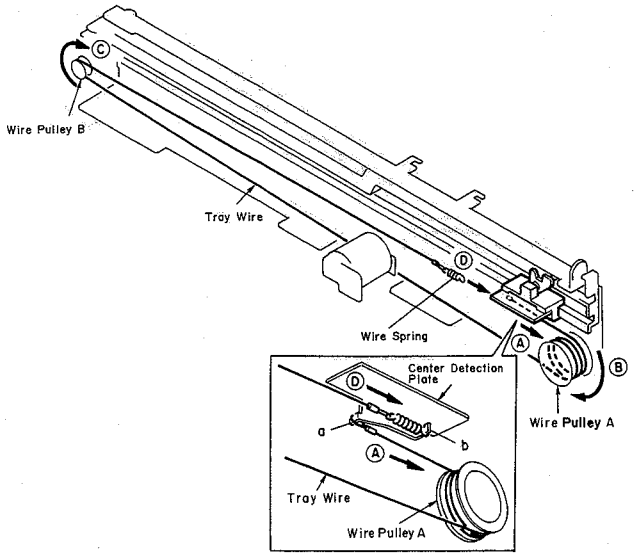


Fig. 3.1

3.2. Lubrication

Apply the specified lubricant (grease) to the following places when parts are replaced.

Fig.	Ref. No.	Location	Lubricant
(Mechanism Ass'y)			
7.4.	08	Tray Guide Shaft	FLOIL G902
	26	Shaft For Roller	FLOIL G902
(Disc Tray Ass'y)			
7.5.	05	Bottom Surface	FLOIL G902
	06	Shaft for Roller	FLOIL G902
	09	Inner Surface	FLOIL G902
(Guide Chassis R Ass'y)			
7.6.	02	Shafts for Gears (3 places)	FLOIL G902
	09	Shaft for Roller	FLOIL G902
	10	Shaft	FLOIL G902M
(Stocker Ass'y)			
7.7.	02	Hole for Shaft	FLOIL G902M
	04	Holes (4 places)	FLOIL G902M
	05	Shaft	FLOIL G902M
	10	Shaft	FLOIL G902M
	18	Holes (4 places) and Shafts (2 places)	FLOIL G902M
(Main Chassis Ass'y)			
7.9.	07	Shaft	FLOIL G902
	08	Shafts (4 places)	FLOIL G902
	13	Shaft for Gear	FLOIL G902
	16	Shafts (2 places)	FLOIL G902
	—	Chassis Shafts (3 places)	FLOIL G902

Note: We suggest that you use the above specified lubricant or equivalent type.
The company dealing in the above lubricant is as follows:
FLOIL G902/FLOIL G902M
Kanto Chemicals Co., Ltd., 2-7 Kanda Sakuma-cho, Chiyoda-ku, Tokyo, Japan

4. MEASUREMENT INSTRUMENTS AND JIGS

(1) Oscilloscope (15 MHz or more)
(2) DC Voltmeter
(3) Oscillator
(4) Frequency Counter
(5) Distortion Meter
(6) Philips Test Disc 5/5A
(7) SONY Test Disc YEDS-7 (Type 3)
(8) CD Player Test Unit Set (DA09157A)
Consisting of the following items:
- CD Player Test Unit (DA09155A)
- CD Player 2/3 Test Unit Cable (DA09158A)
- CD Player 4 Test Unit Cable (DA09156A)

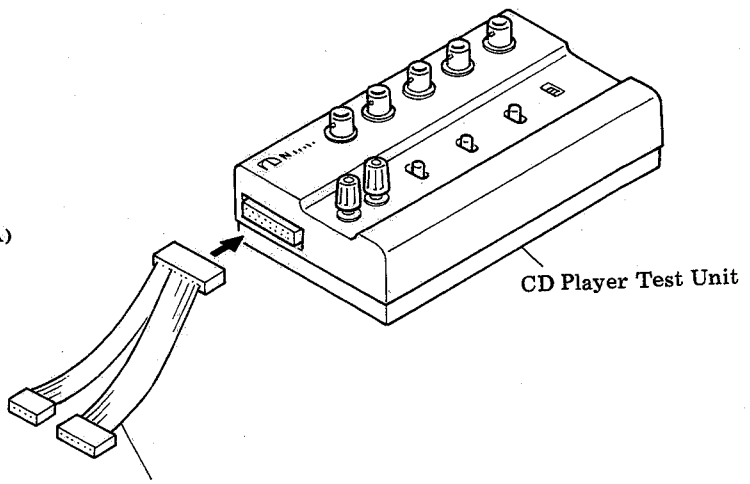


Fig. 4.1 Test Unit

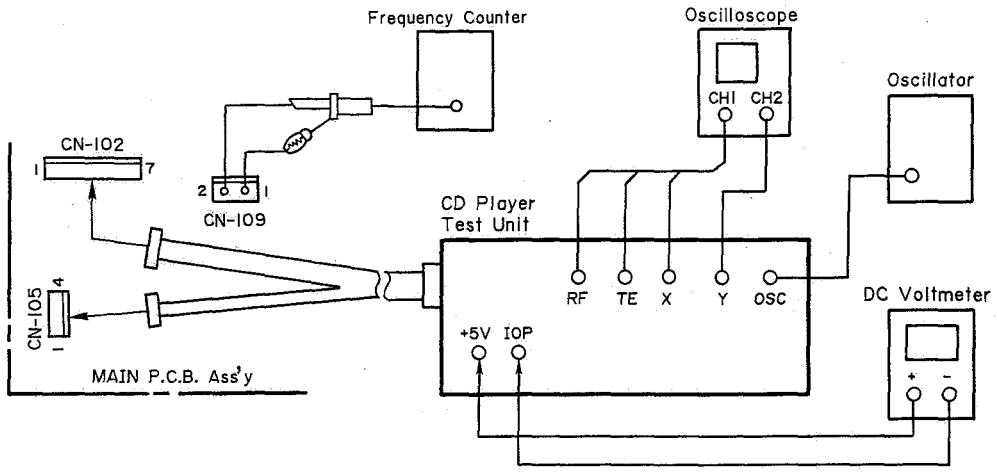


Fig. 4 2 Test Unit Connecting Diagram

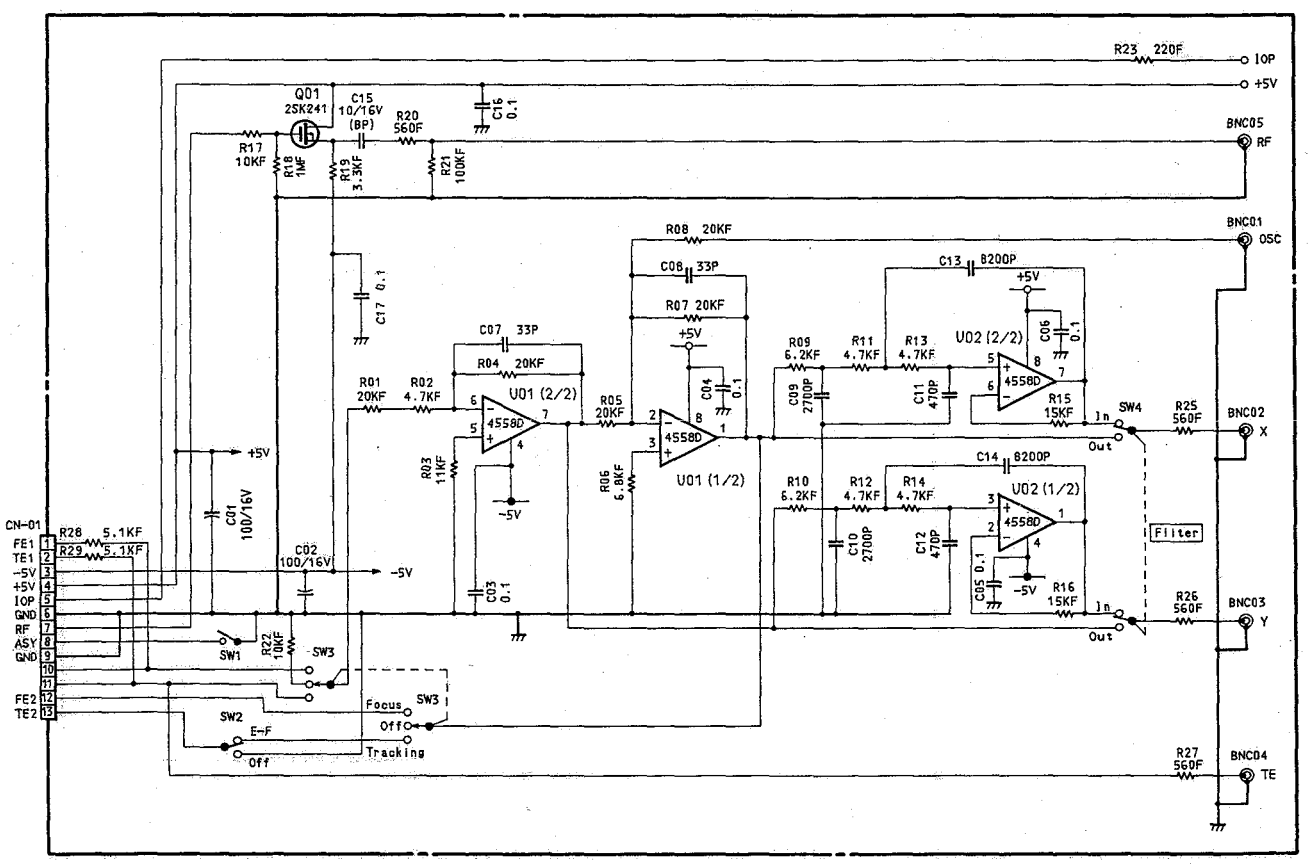


Fig. 4.3 Test Unit Circuit Diagram

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

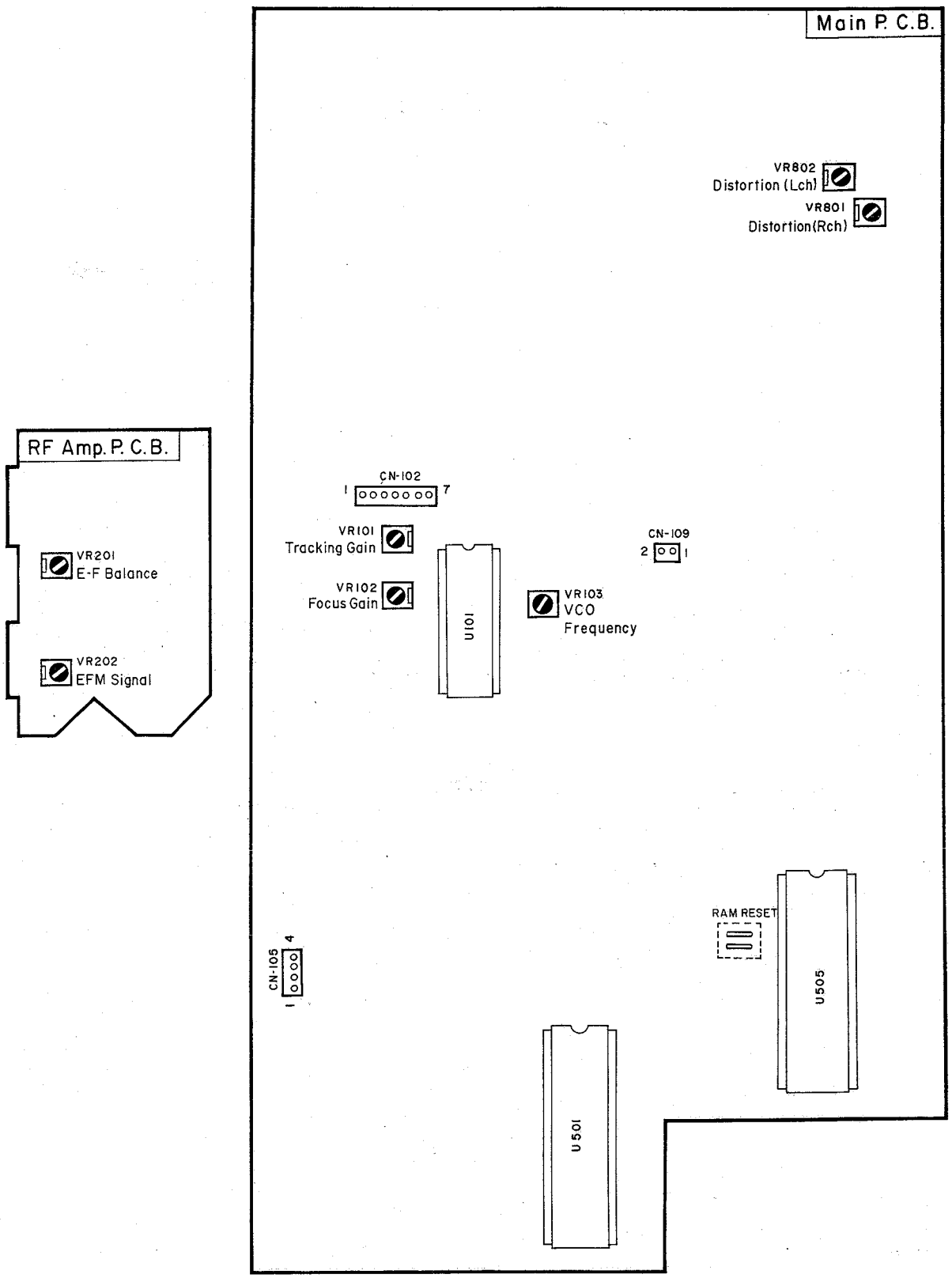
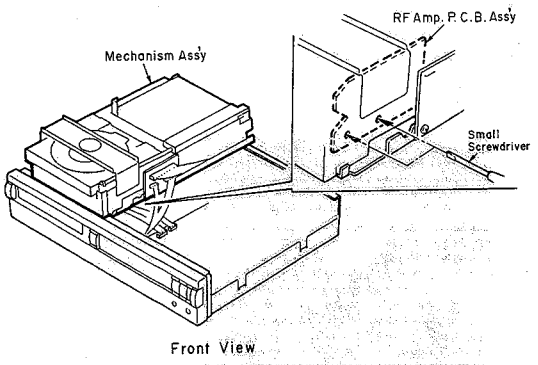
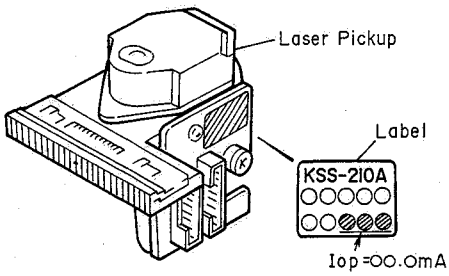
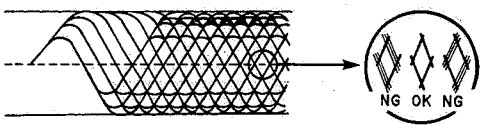
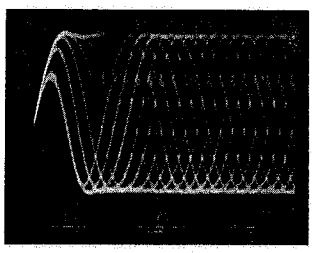


Fig. 5

6. ELECTRICAL ADJUSTMENTS

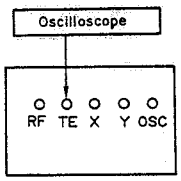
<table>
<tr><th>STEP</th><th>ITEM</th><th>SIGNAL SOURCE</th><th>OUTPUT CONNECTION</th><th>ADJUST-MENT</th><th>REMARKS</th></tr>
<tr><td>1</td><td>Preliminary Step</td><td></td><td></td><td></td><td>1. Connect the Test Unit to CN-102 and CN-105 on the Main P.C.B. Ass'y via the Test Unit Cable. (See Fig. 4.2.)
2. For adjusting VRs on the RF Amp. P.C.B. Ass'y, remove the Mechanism Ass'y referring to item 2.6 and place it on the unit as shown left.
Note: In the following cases, preset the following semi-fixed volumes to their mechanical center positions before starting adjustment.
VR101, VR102 --- Main P.C.B. Ass'y
VR201, VR202 --- RF Amp. P.C.B. Ass'y
o When Main P.C.B. Ass'y or RF Amp. P.C.B. Ass'y is replaced with new one.
o When VR101, VR102, VR201, or VR202 is replaced with new one.</td></tr>
<tr><td colspan="6"> 

Front View</td></tr>
<tr><td>2</td><td>Laser Current Check</td><td>Philips Test Sample 5</td><td>DC Voltmeter between Iop and +5V Terminals of Test Unit</td><td></td><td>1. Turn the power ON and load the test disc.
2. Play back the test disc and calculate the current flowing into R201 from the following formula.
$I = \frac{\text{Voltmeter Value}}{\text{R201 (22 Ohms)}}$ = oo.o mA (Measured Value)
Note: The voltmeter value should be read to 3 digits after the decimal point.
3. Press the Eject/Load button to open the Disc Tray and check that the difference between the measured value and the current value (Iop) indicated on the label on the Laser Pickup is within ±10%.
Iop - (Measured Value) = Iop ±10%.</td></tr>
<tr><td colspan="6"> 
</td></tr>
<tr><td>3</td><td>VCO Frequency Adjustment</td><td>None</td><td>Frequency Counter (10/1 probe) between Pins 2 (PLCK) and 1 (GND) of CN-109 on Main P.C.B.</td><td>Main P.C.B. VR103</td><td>1. Set SW1 of the Test Unit to VCO.
2. Adjust VR103 to obtain 4.32 ±0.005 MHz on the frequency counter.
3. Set SW1 to OFF position.</td></tr>
<tr><td>4</td><td>EFM Signal Adjustment</td><td>Philips Test Sample 5</td><td>Oscilloscope to RF Connector of Test Unit</td><td>RF Amp. P.C.B. VR202</td><td>1. Play back the first track of the test disc.
2. Adjust VR202 until waveform amplitude becomes maximum and the waveform becomes clear (not thick) as shown below:</td></tr>
<tr><td colspan="6"> 

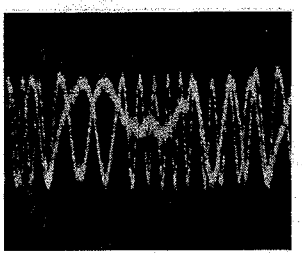

Oscilloscope Setting:
AC Mode, 0.2 V/div, 0.5 μs/div</td></tr>
</table>

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUST-MENT	REMARKS
5	E-F Balance Adjustment (Supple-mentary Beam Balance Adjustment)	Philips Test Sample 5	Oscilloscope to TE Connector of Test Unit	RF Amp. P.C.B. VR201	1. Play back the first track of the test disc. 2. Set SW2 of the Test Unit to E-F position. 3. Adjust VR201 so that the center level of the waveform is within the range of 0 V ±0.1 V DC as shown below:

SW1: OFF SW3: OFF
SW2: E-F Filter: OUT



Connecting Diagram



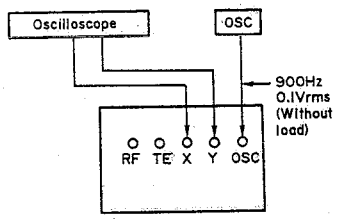
Center Level

Oscilloscope Setting:
DC Mode, 1 V/div, 1 ms/div

4. Set SW2 to OFF position.

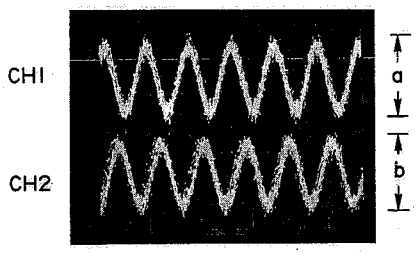
6	Tracking Gain Adjustment	Philips Test Sample 5	Oscillator to OSC Connector of Test Unit Oscilloscope to Test Unit o CH1 to X o CH2 to Y	Main P.C.B. VR101	1. Set the output of oscillator to 900 Hz, 0.1Vrms without connecting any load. 2. Connect the oscillator output to OSC connector of the Test Unit. 3. Set the Filter switch of the Test Unit to IN position. 4. Play back the first track of the test disc. 5. Set SW3 of the Test Unit to TRACKING position. 6. Adjust VR101 so that the amplitude of both waveforms on the oscilloscope are equal. (a=b) 7. Set SW3 to OFF position.

SW1: OFF SW3: TRACKING
SW2: OFF Filter: IN



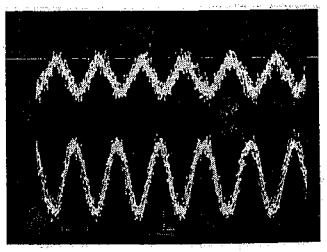
Connecting Diagram

Good waveforms

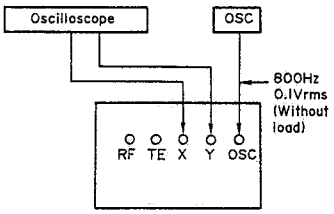
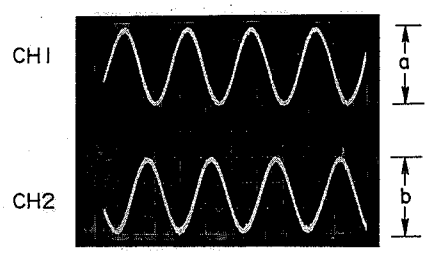
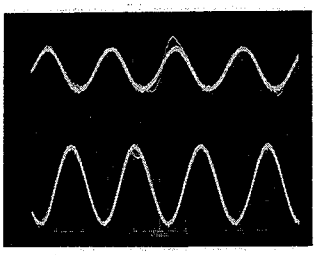


a=b

NG waveforms



Oscilloscope Setting:
CH1, CH2: 0.2 V/div, DC Mode
Time: 0.5 ms/div
Mode: Auto, ALT
Trigger: CH1

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUST-MENT	REMARKS
7	Focus Gain Adjustment	Philips Test Sample 5	Oscillator to OSC connector of Test Unit Oscilloscope to Test Unit o CH1 to X o CH2 to Y	Main P.C.B. VR102	1. Set the output of oscillator to 800Hz, 0.1Vrms without connecting any load. 2. Connect the oscillator output to OSC connector of the Test Unit. 3. Set the Filter switch of the Test Unit to IN position. 4. Play back the first track of the test disc. 5. Set SW3 of the Test Unit to FOCUS position. 6. Adjust VR102 so that the amplitude of both waveforms on the oscilloscope are equal. (a=b) 7. Set SW3 to OFF position. 8. Set the Filter switch to OUT position. 9. After adjustment, perform "EFM Signal Adjustment" in Step 4.
	SW1: OFF SW3: FOCUS SW2: OFF Filter: IN  Connecting Diagram				Good waveforms  a=b Oscilloscope Setting: CH1, CH2: 0.2 V/div, DC Mode Time: 0.5 ms/div Mode: Auto, ALT Trigger: CH1 NG waveforms 
8	Distortion Adjustment	Sony YEDS-7 (Type 3)	Distortion Meter to Output Jack	Main P.C.B. VR802(L) VR801(R)	1. Play back the 20th program (1kHz, -60dB) of the test disc. 2. Adjust VR802 (Lch) and VR801 (Rch) to obtain minimum distortion.
9	Operation Check	Philips Test Sample 5A			Play back the following test programs on the test disc (Philips Test Sample 5A) and make sure that there is no noise and track-jumping. o Interruption 500 µm 6th program o Black Dot 500 µm 13th program o Simulated fingerprint 19th program

7. MECHANISM ASS'Y AND PARTS LIST

7.1. Synthesis

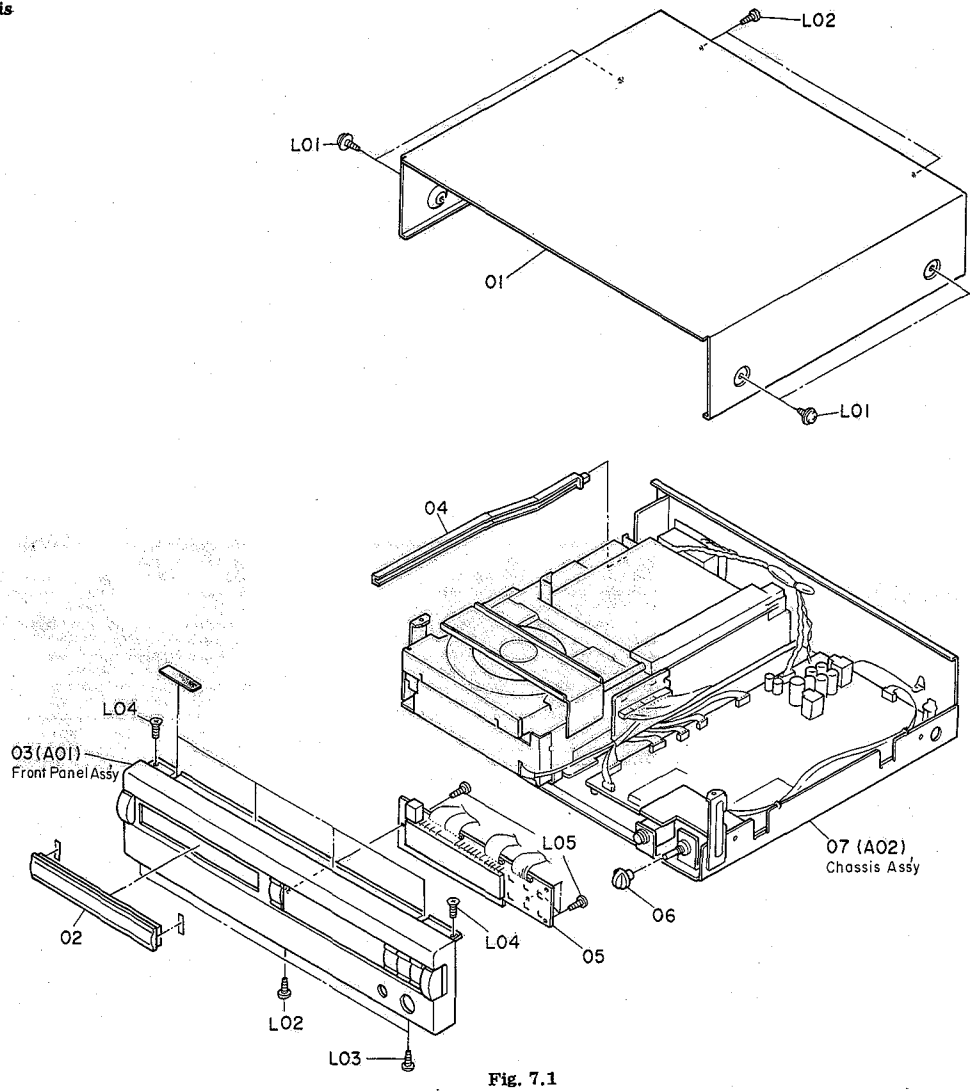


Fig. 7.1

★: Unstock parts.

7.2. Front Panel Ass'y (A01)

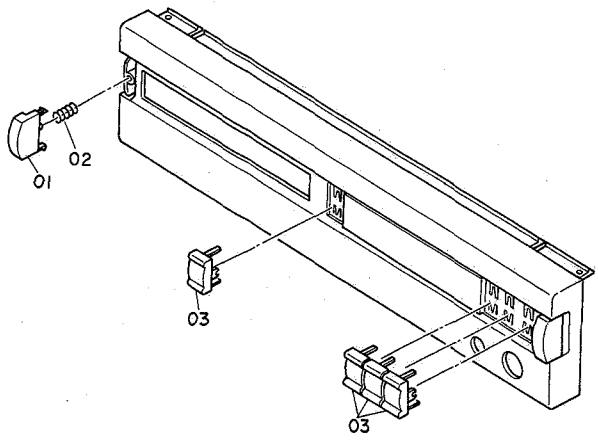


Fig. 7.2

Schematic Ref. No.		Part No.	Description	Q'ty
7.1. Synthesis				
		—	Synthesis	
01		0H05801A	Top Cover	1
02		HA05905A	Disc Tray Cover Ass'y	1
03	★	HA05903A	Front Panel Ass'y	1
04		0J06230B	Power Switch Joint	1
05	★	BA07916A	Control Switch & Display P.C.B. Ass'y	1
06		0H05711A	Headphone Volume Knob	1
07		—	Chassis Ass'y	1
L01		0E03592A	BT4x6 ⊕ Binding Washer-Faced (Black Chromate)	
L02		0E03366A	BT3x8 ⊕ Binding Projected (Black Chromate)	
L03		0E00875A	ST3x8 ⊕ Binding (Black Chromate)	
L04		0E03025A	BT3x6 ⊕ Countersunk	
L05		0E00921A	BT3x8 ⊕ Binding (Black Chromate)	
7.2. Front Panel Ass'y (A01)				
A01	★	HA05903A	Front Panel Ass'y	1
01		0H05723A	Power Switch Button	1
02		0C09392A	Power Switch Spring	1
03		0H05716A	Control Knob A	4

7.3. Chassis Ass'y (A02)

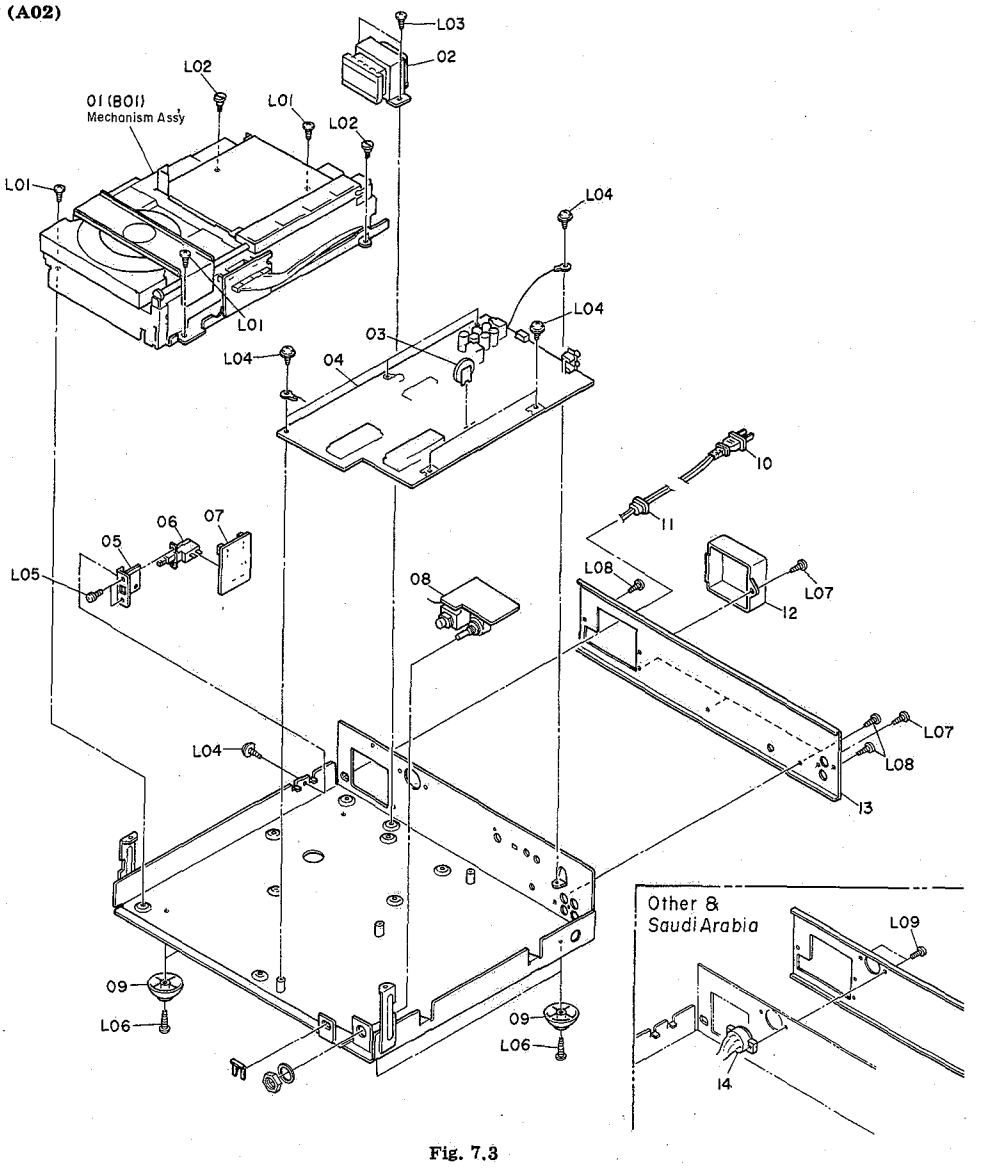


Fig. 7.3

★: Unstock parts.

Schematic Ref. No.		Part No.	Description	Q'ty
7.3. Chassis Ass'y (A02)				
A02		—	Chassis Ass'y	1
01	★	CA09004A	Mechanism Ass'y	1
02		0B50170B	Power Transformer 120V (USA, CAN)	1
		0B50173B	Power Transformer 230V/240V (EP UK, AUS)	1
		0B50172B	Power Transformer 110V—240V (SAU, OTR)	1
		0B50171B	Power Transformer 100V (JPN)	1
03		0B92048A	Lithium Battery [B501]	1
04	★	BA07915A	Main P.C.B. Ass'y	1
05		0J06231A	Power Switch Holder	1
06		0B71013A	Power Switch	1
07	★	BA07918A	Power Switch P.C.B. Ass'y (USA, CAN, SAU, OTR)	1
	★	BA08017A	Power Switch P.C.B. Ass'y (EP UK, AUS)	1
	★	BA07919A	Power Switch P.C.B. Ass'y (JPN)	1
08	★	BA07917A	Headphone Amp. P.C.B. Ass'y	1
09		HA05833A	Leg Ass'y	4
10		0B08504A	Power Cord (USA, CAN)	1
		0B08093U	Power Cord (EP)	1
		0B08348A	Power Cord (UK)	1
		0B05241A	Power Cord (AUS)	1
		0B08219B	Power Cord (SAU, OTR, JPN)	1
11		0B90280A	Cord Bushing (USA, CAN, EP, UK, AUS)	1
		0B90283A	Cord Bushing (SAU, OTR, JPN)	1
12		0H05810B	Transformer Cover	1
13		0H05802C	Rear Plate (USA, CAN, EP, UK, AUS, JPN)	1
		0H05803C	Rear Plate (SAU, OTR)	1
14		0B81771A	Voltage Selector (SAU, OTR)	1
L01		0E00857A	BT3x6 ⊕ Binding	
L02		0E03635A	BT3x6 ⊕ Binding	
L03		0E03434A	BT4x6 ⊕ Binding	
L04		0E03157A	BT3x8 ⊕ Binding with Washer	
L05		0E00612A	M3x6 ⊕ Pan (2A)	
L06		0E00948A	BT3x10 ⊕ Binding (Black Chromate)	
L07		0E00921A	BT3x8 ⊕ Binding (Black Chromate)	
L08		0E00860A	BT3x6 ⊕ Binding (Black Chromate)	
L09		0E00985A	M3x6 ⊕ Binding (Black Chromate) (SAU, OTR)	

7.4. Mechanism Ass'y (B01)

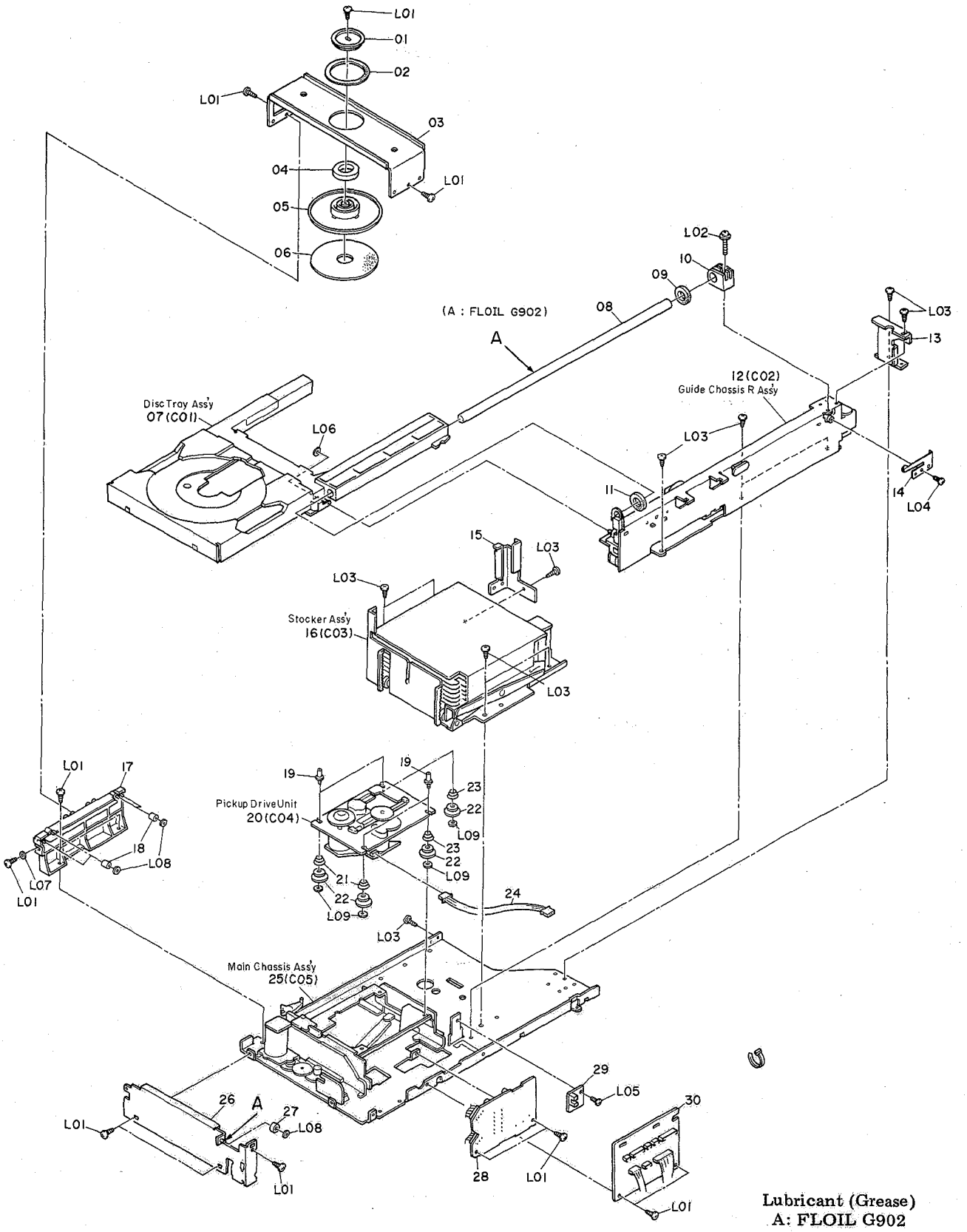
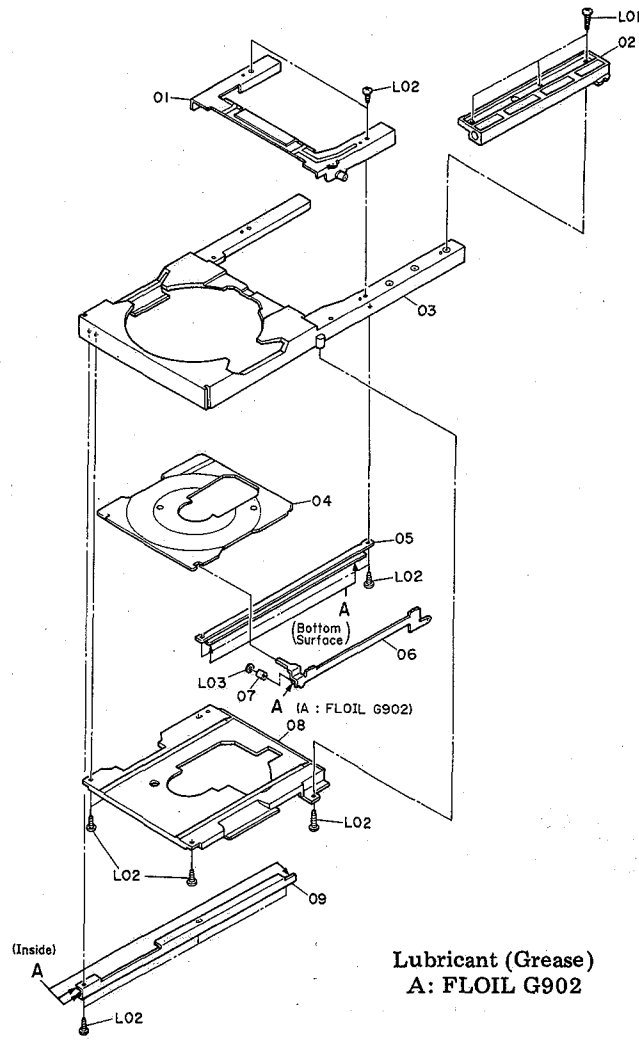


Fig. 7.4

★: Unstock parts.

Schematic Ref. No.		Part No.	Description	Q'ty
7.4. Mechanism Ass'y (B01)				
B01	★	CA09004A	Mechanism Ass'y	1
01		CA09059B	Yoke Ass'y	1
02		0C09487A	Stabilizer Yoke Felt	1
03		0C09482B	Stabilizer Holder	1
04		0C09527A	Stabilizer Magnet	1
05		0C09485D	Stabilizer Base	1
06		0C09490F	Stabilizer Base Felt	1
07		—	Disc Tray Ass'y	1
08		0C09445A	Tray Guide Shaft	1
09		0C09475A	Stopping Washer (Rear)	1
10		0C09447A	Tray Shaft Holder	1
11		0C09562A	Stopping Washer (Front)	1
12		—	Guide Chassis R Ass'y	1
13		0C09415A	Support Plate	1
14		CA09045A	Tray Lock Plate Ass'y	1
15		0C09563B	Stocker Guide 2	1
16		—	Stocker Ass'y	1
17		CA09040A	Guide Chassis L Sub Ass'y	1
18		0C09466B	Tray Roller B	4
19		0C09489B	Damper Stud	4
20		—	Pickup Drive Unit	1
21		0C09484A	Damper Spring 0.55	2
22		0C09488A	Damper	4
23		0C09483A	Damper Spring 0.45	2
24		0B84262A	4P Connector Ass'y	1
25		—	Main Chassis Ass'y	1
26		CA09055A	Blind Plate Sub Ass'y	1
27		0C09571A	Tray Roller C	1
28	★	BA07898A	RF Amp. P.C.B. Ass'y	1
29	★	BA07901A	Center Detector P.C.B. Ass'y	1
30	★	BA07899A	Relay A P.C.B. Ass'y	1
L01		0E03610A	BT2.6x6 ⊕ Binding (Black Chromate)	
L02		0E03618A	BT2.6x18 ⊕ Pan (3A) (Black Chromate)	
L03		0E00869A	BT2.6x4 ⊕ Binding	
L04		0E03638A	PT2x6 ⊕ Binding	
L05		0E00945A	M2.6x4 ⊕ Binding (Black Chromate)	
L06		0E03609A	Washer 2.1x4x0.25	
L07		0E03636A	Washer 2.6mm (Black Chromate)	
L08		0E03608A	Washer 1.2x3x0.25	
L09		0E03619A	Washer 7.3x6.5x0.3	
7.5. Disc Tray Ass'y (C01)				
C01		—	Disc Tray Ass'y	1
01		CA09061A	Tray Holder Ass'y	1
02		0C09443E	Tray Guide R	1
03		CA09034A	Tray Sub Ass'y	1
04		0C09422G	Carriage S	1
05		0C09446A	Carriage Guide	1
06		CA09036A	Carriage Plate Sub Ass'y	1
07		0C09466B	Tray Roller B	1
08		0C09439D	Tray Chassis	1
09		0C09442C	Tray Guide L	1
L01		0E03657A	PT2.6x10 ⊕ Binding (Black Chromate)	
L02		0E03656A	PT2.6x8 ⊕ Binding (Black Chromate)	
L03		0E03608A	Washer 1.2x3x0.25	

7.5. Disc Tray Ass'y (C01)



Lubricant (Grease)
A: FLOIL G902

Fig. 7.5

7.6. Guide Chassis R Ass'y (C02)

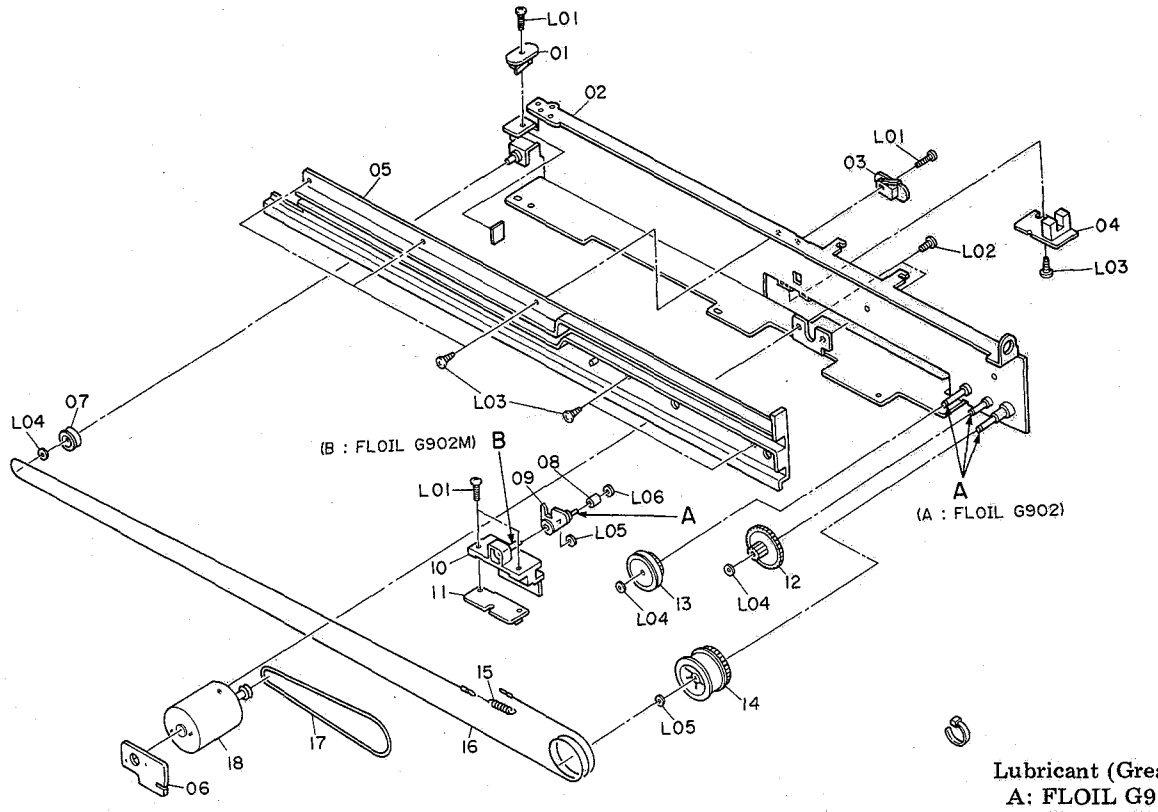


Fig. 7.6

★: Unstock parts.

Schematic Ref. No.		Part No.	Description	Q'ty
7.6. Guide Chassis R Ass'y (C02)				
C02		—	**Guide Chasssis R Ass'y**	**1**
01	★	BA07907A	Store Switch P.C.B. Ass'y	1
02		CA09027B	Guide Chassis R Sub Ass'y	1
03	★	BA07905A	Eject Switch P.C.B. Ass'y	1
04	★	BA08006A	Center Area Detector P.C.B. Ass'y	1
05		0C09454B	Shuttle Guide	1
06	★	BA07909A	Loading Motor P.C.B. Ass'y	1
07		0C09465A	Wire Pulley B	1
08		0C09478A	Tray Roller	1
09		CA09030A	Shuttle Arm Ass'y	1
10		CA08996B	Shuttle Sub Ass'y	1
11		0C09469B	Center Detection Plate	1
12		0C09470A	Tray Idler Gear	1
13		0C09461A	Tray Pulley Gear	1
14		0C09463A	Wire Pulley A	1
15		0C09468B	Wire Spring	1
16		0C09467A	Tray Wire	1
17		0C09460A	Tray Belt	1
18		CA09032A	Loading Motor Ass'y	1
L01		0E03614A	M2x7 ⊕ Binding	
L02		0E03419A	M3x3 ⊕ Binding	
L03		0E03610A	BT2.6x6 ⊕ Binding	
L04		0E03181A	Washer 1.6x3.5x25	
L05		0E03609A	Washer 2.1x4x0.25	
L06		0E03608A	Washer 1.2x3x0.25	

7.7. Stocker Ass'y (C03)

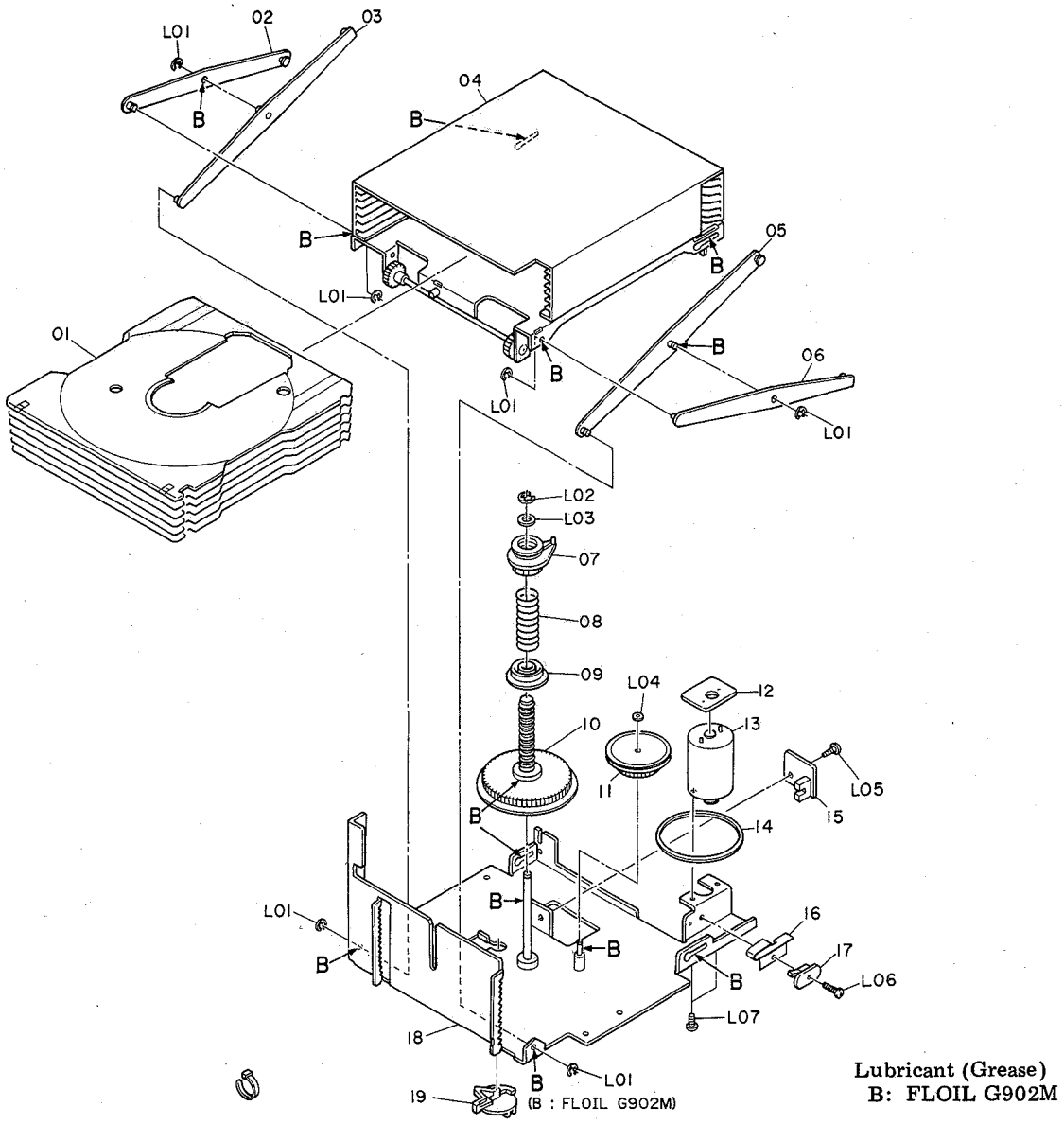


Fig. 7.7

★: Unstock parts.

Schematic Ref. No.		Part No.	Description	Q'ty
7.7. Stocker Ass'y (C03)				
C03		—	Stocker Ass'y	1
01		0C09481F	Carriage	6
02		CA08993B	Link Out-L Ass'y	1
03		CA09023B	Link In-L Ass'y	1
04		CA09020A	Stocker Box Ass'y	1
05		CA09022B	Link In-R Ass'y	1
06		CA08994B	Link Out-R Ass'y	1
07		0C09431B	Elevator Nut	1
08		0C09501C	Elevator Spring	1
09		0C09430B	Elevator Washer	1
10		CA09024A	Elevator Screw Ass'y	1
11		0C09434A	Elevator Pulley	1
12	★	BA07910A	Stocker Motor P.C.B. Ass'y	1
13		CA09018A	Stocker Motor Ass'y	1
14		0C09499A	Stocker Belt	1
15	★	BA07902A	Disc Count P.C.B. Ass'y	1
16		0C09564A	Home Position Switch Spring	1
17	★	BA07904A	Home Position Switch P.C.B. Ass'y	1
18		CA09025A	Stocker Chassis Ass'y	1
19		0C09432D	Elevator Lock Pin	1
L01		0E00698A	E-Ring 2.5mm	
L02		0E00181A	E-Ring 3mm	
L03		0C09435B	Washer 4x10.5x0.5	
L04		0E03181A	Washer 1.6x3.5x25	
L05		0E00866A	BT2.6x4 ⊕ Binding	
L06		0E03614A	M2x7 ⊕ Binding	
L07		0E03419A	M3x3 ⊕ Binding	

7.8. Pickup Drive Unit (C04)

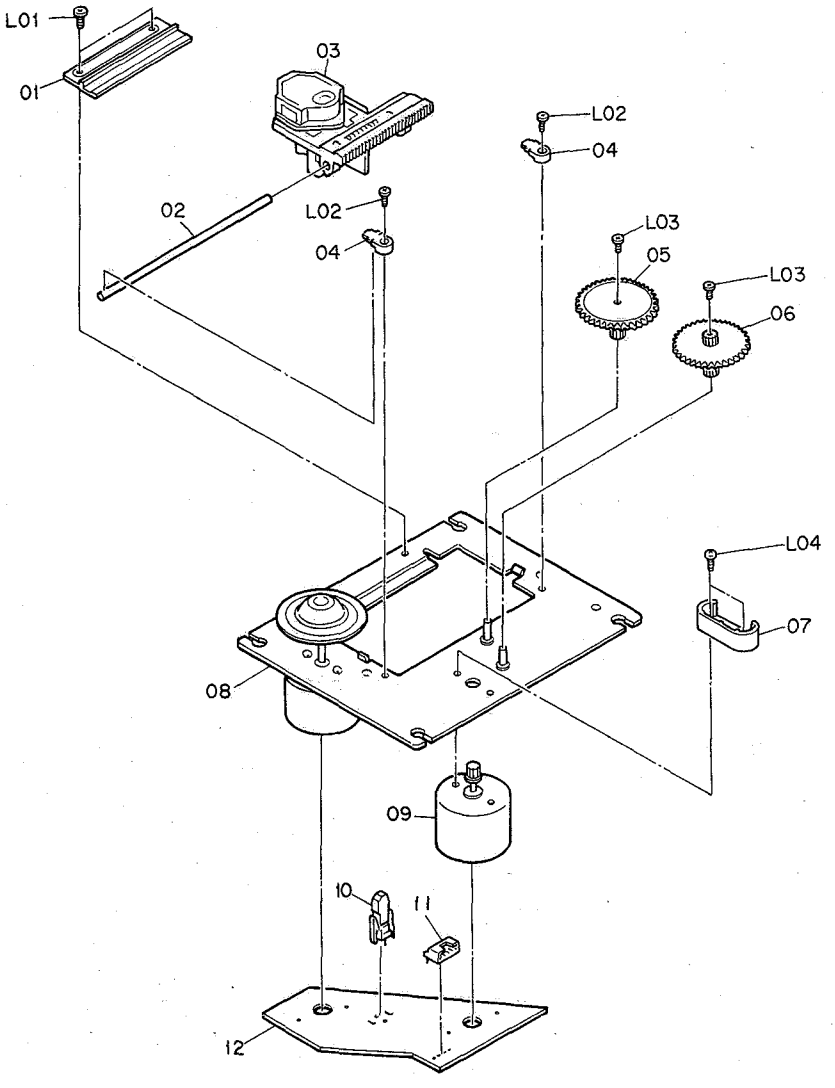


Fig. 7.8

Schematic Ref. No.	Part No.	Description	Q'ty
7.8. Pickup Drive Unit (C04)			
C04	—	Pickup Drive Unit	1
01	0C85253A	Slide Holder	1
02	0C85251A	Slide Shaft	1
03	0C85321A	Laser Pick-up KSS-210A	1
04	0C85258A	Shaft Clamp	2
05	0C85256A	Gear A	1
06	0C85257A	Gear B	1
07	0C85254A	Gear Cover	1
08	0C85324A	Disc Motor Ass'y	1
09	0C85322A	Feed Motor Ass'y	1
10	0C85326A	Leaf Switch	1
11	0C85262A	4P Connector	1
12	0C85327A	Motor P.C.B.	1
L01	0E03633A	ST2x6 ⊕Pan	
L02	0C85267A	Screw 2.6x8	
L03	0C85266A	Screw M1.7x3	
L04	0E00124A	M2x4 ⊕Pan	

7.9. Main Chassis Ass'y (C05)

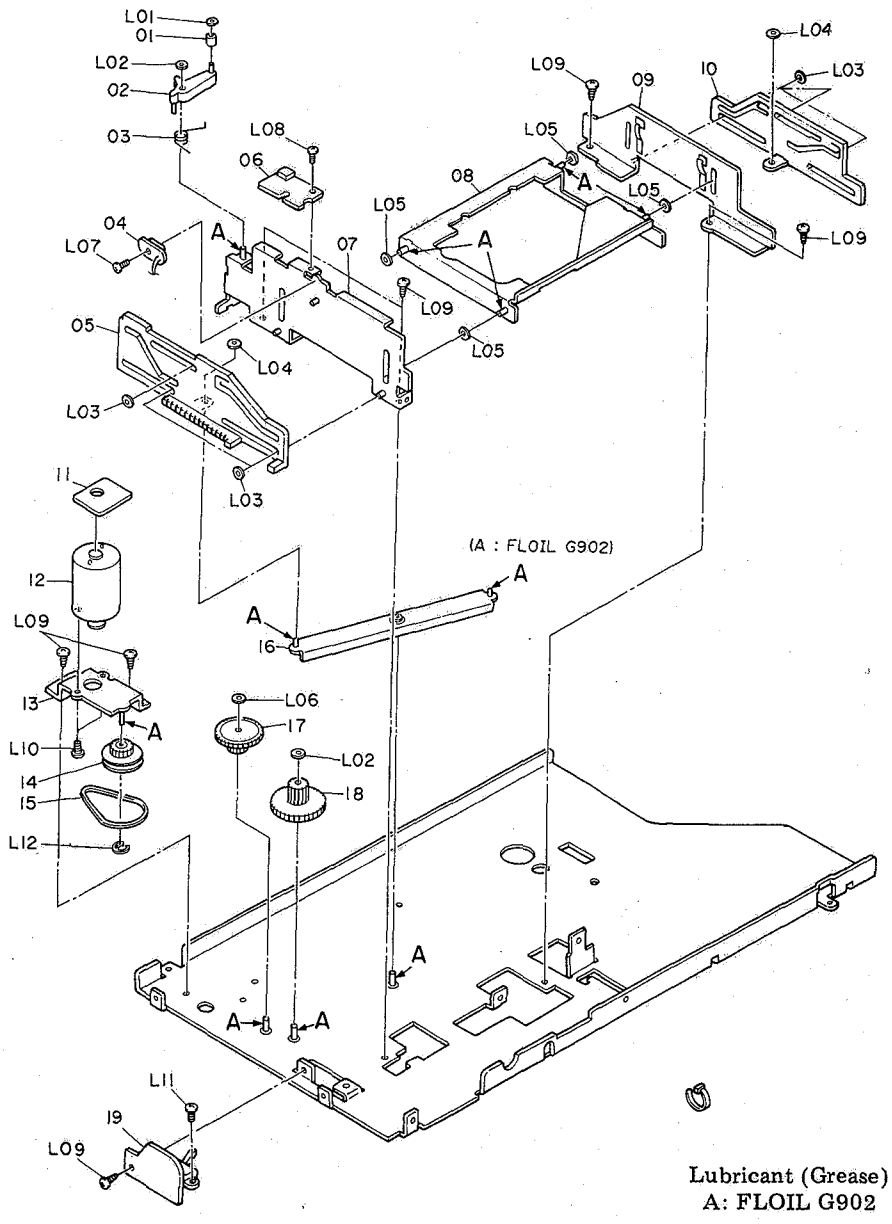


Fig. 7.9

★: Unstock parts.

Schematic Ref. No.		Part No.	Description	Q'ty
7.9. Main Chassis Ass'y (C05)				
C05		—	Main Chassis Ass'y	1
01		0C09466B	Tray Roller B	1
02		CA09011B	Lock Arm Sub Ass'y	1
03		0C09396B	Tortion Spring	1
04	★	BA07906A	Pickup Down Switch P.C.B. Ass'y	1
05		0C09398B	Slide Cam A	1
06	★	BA07911A	Disc Sensor P.C.B. Ass'y	1
07		CA09009B	Holder A Sub Ass'y	1
08		CA09014C	Base Ass'y	1
09		CA09013B	Holder B Sub Ass'y	1
10		0C09399A	Slide Cam B	1
11	★	BA07908A	Clamp Motor P.C.B. Ass'y	1
12		CA09018A	Clamp Motor Ass'y	1
13		CA09016A	Bracket Ass'y	1
14		0C09406B	Pulley Gear	1
15		0C09476A	Clamp Motor Belt	1
16		CA09007A	Link Lever Ass'y	1
17		0C09407A	Idler Gear	1
18		0C09408A	Slide Cam Gear	1
19	★	BA07900A	Relay B P.C.B. Ass'y	1
L01		0E03608A	Washer 1.2x3x0.25	
L02		0E03609A	Washer 2.1x4x0.25	
L03		0E03613A	Washer 2.1x5x0.25	
L04		0E03616A	Washer 2.6x5x0.25	
L05		0E03207A	Washer 3.1x6x0.25	
L06		0E03181A	Washer 1.6x3.5x25	
L07		0E03614A	M2x7 ⊕ Binding	
L08		0E03529A	M2x4 ⊕ Binding	
L09		0E00869A	BT2.6x4 ⊕ Binding	
L10		0E03419A	M3x3 ⊕ Binding	
L11		0E00866A	M2.6x4 ⊕ Binding	
L12		0E00042A	E-Ring 1.5mm	

8. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
3. Following transistors are interchangeable with each other.
   a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
   b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
4. Abbreviation for part name:
   TR — Transistor, SiD — Silicon Diode, ZD — Zener Diode, Varicap — Variable Capacitance Diode
   RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor, RC — Cement Resistor
   CE — Electrolytic Capacitor, CML — Mylar Capacitor, CC — Ceramic Capacitor, CPP — PP Capacitor,
   CMM — Metalized Mylar Capacitor, CSP — Polystyrene Capacitor, C — Mica Capacitor
   CT — Tantalum Capacitor

8.1. Power Switch P.C.B. Ass'y

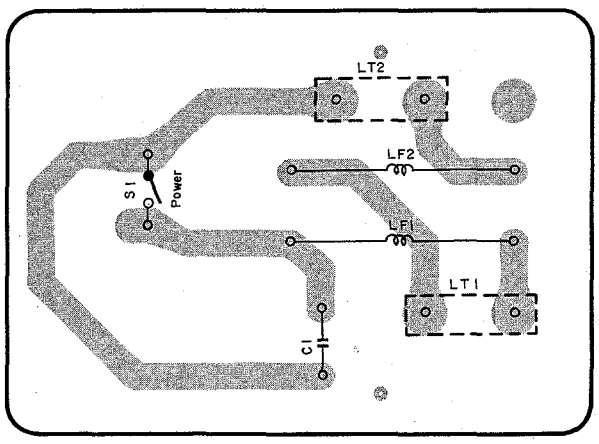


Fig. 8.1

8.2. Relay A P.C.B. Ass'y

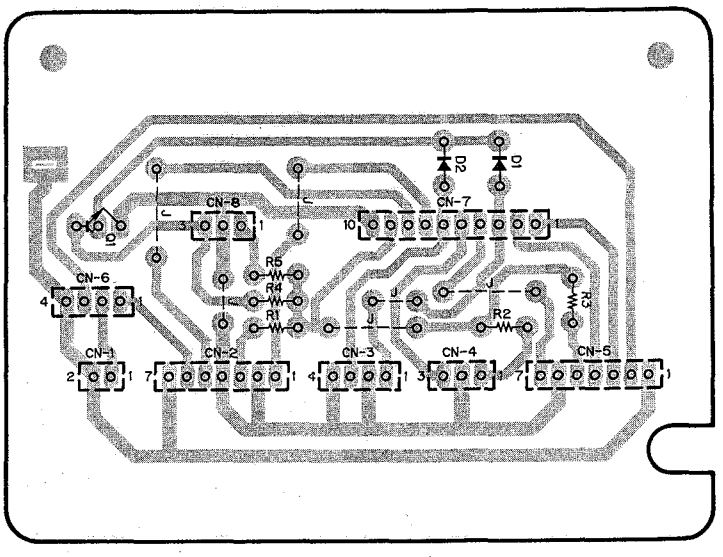


Fig. 8.2

8.3. Relay B P.C.B. Ass'y

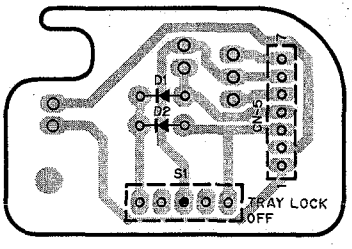


Fig. 8.3

8.4. Disc Sensor P.C.B. Ass'y

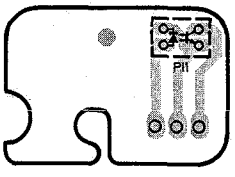


Fig. 8.4

★: Unstock parts.

Schematic Ref. No.	Part No.	Description
8.1. Power Switch P.C.B. Ass'y		
	★ BA07918A	Power Switch P.C.B. Ass'y (USA, CAN, OTR, SAU)
	★ BA08017A	Power Switch P.C.B. Ass'y (EP, UK, AUS)
	★ BA07919A	Power Switch P.C.B. Ass'y (JPN)
	0B60824B	Power Switch P.C.B.
LF1,2	0B51352A	Inductor 15μH
C1	0B41825A	CC 4700P 400V (USA, CAN, EP, UK, AUS, OTR, SAU)
	0B41826A	CC 4700P 250V (JPN)
LT1	0B84275A	Wrapping Terminal 2P
LT2	0B84275A	Wrapping Terminal 2P (USA, CAN, OTR, SAU, JPN)
	0B84380A	Wrapping Terminal 3P (EP, UK AUS)

Schematic Ref. No.	Part No.	Description
8.2. Relay A P.C.B. Ass'y		
★	BA07899A	Relay A P.C.B. Ass'y
	0B60814C	Relay A P.C.B.
Q1	0B10068A	TR DTC114ES
D1,2	0B06398A	SiD 1SS176
R1,2	0B09665A	RK 330 1/6W J
R3	0B09663A	RK 270 1/6W J
R4	0B09709A	RK 22K 1/6W J
R5	0B09665A	RK 330 1/6W J
CN1	0B84278A	2P-T Post
CN2	0B84293A	7P-T Post
CN3	0B84284A	4P-T Post
CN4	0B84279A	3P-T Post
CN5	0B84291A	7P-T Post
CN6	0B84266A	4P Connector Ass'y
CN7	0B84267A	10P Connector Ass'y
CN8	0B84281A	3P-T Post

Schematic Ref. No.	Part No.	Description
8.3. Relay B P.C.B. Ass'y		
★	BA07900A	Relay B P.C.B. Ass'y
	0B60815B	Relay B P.C.B.
D1,2	0B06398A	SiD 1SS176
S1	0B70171A	Position Sensor Switch
CN5	0B84272A	7P Connector Ass'y
8.4. Disc Sensor P.C.B. Ass'y		
★	BA07911A	Disc Sensor P.C.B. Ass'y
	0B60817A	Disc Sensor P.C.B.
PI1	0B10363A	Photo Reflector
	0B84339A	Ribbon Cable 3P (1)

8.5. Center Detector P.C.B. Ass'y

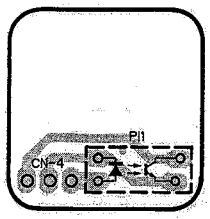


Fig. 8.5

8.6. Disc Count P.C.B. Ass'y

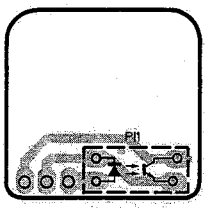


Fig. 8.6

8.7. Center Area Detector P.C.B. Ass'y

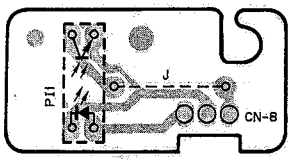


Fig. 8.7

8.8. Home Position Switch P.C.B. Ass'y

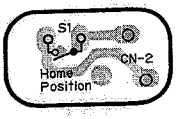


Fig. 8.8

8.9. Eject Switch P.C.B. Ass'y

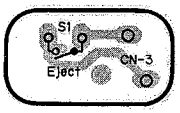


Fig. 8.9

8.10. Pickup Down Switch P.C.B. Ass'y

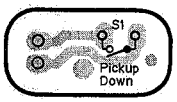


Fig. 8.10

8.11. Store Switch P.C.B. Ass'y

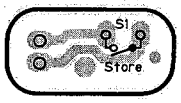


Fig. 8.11

8.12. Clamp Motor P.C.B. Ass'y

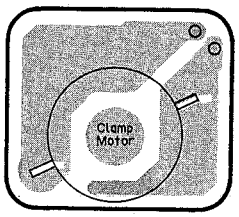


Fig. 8.12

8.13. Loading Motor P.C.B. Ass'y

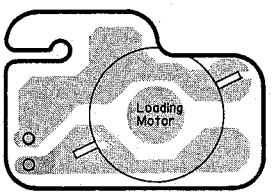


Fig. 8.13

8.14. Stocker Motor P.C.B. Ass'y

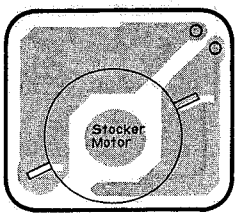


Fig. 8.14

★: Unstock parts.

Schematic Ref. No.	Part No.	Description
8.5. Center Detector P.C.B. Ass'y		
★	BA07901A	Center Detector P.C.B. Ass'y
	0B60816B	Center Detector P.C.B.
PI1	0B10364A	Photo Reflector
CN4	0B84273A	3P Connector Ass'y
8.6. Disc Count P.C.B. Ass'y		
★	BA07902A	Disc Count P.C.B. Ass'y
	0B60816B	Disc Count P.C.B.
PI1	0B10364A	Photo Reflector
8.7. Center Area Detector P.C.B. Ass'y		
★	BA08006A	Center Area Detector P.C.B. Ass'y
	0B60857A	Center Area Detector P.C.B.
PI1	0B10167A	Photo Interrupter
CN8	0B84355A	3P Connector Ass'y (1)

Schematic Ref. No.	Part No.	Description
8.8. Home Position Switch P.C.B. Ass'y		
★	BA07904A	Home Position Switch P.C.B. Ass'y
	0B60818A	Home Position Switch P.C.B.
S1	0B70172A	Push Switch
CN2	0B84271A	7P Connector Ass'y
8.9. Eject Switch P.C.B. Ass'y		
★	BA07905A	Eject Switch P.C.B. Ass'y
	0B60818A	Eject Switch P.C.B.
S1	0B70172A	Push Switch
CN3	0B84270A	4P Connector Ass'y
8.10. Pickup Down Switch P.C.B. Ass'y		
★	BA07906A	Pickup Down Switch P.C.B. Ass'y
	0B60819A	Pickup Down Switch P.C.B.
S1	0B70173A	Push Switch
	0B80304A	Lead Wire 26 YEL
	0B80305A	Lead Wire 26 ORN

Schematic Ref. No.	Part No.	Description
8.11. Store Switch P.C.B. Ass'y		
★	BA07907A	Store Switch P.C.B. Ass'y
	0B60819A	Store Switch P.C.B.
S1	0B70173A	Push Switch
8.12. Clamp Motor P.C.B. Ass'y		
★	BA07908A	Clamp Motor P.C.B. Ass'y
	0B60820A	Clamp Motor P.C.B.
	0B80309A	Lead Wire 26 S1 RED
	0B80308A	Lead Wire 26 S1 BRN
8.13. Loading Motor P.C.B. Ass'y		
★	BA07909A	Loading Motor P.C.B. Ass'y
	0B60845A	Loading Motor P.C.B.
CN1	0B84269A	2P Connector Ass'y
8.14. Stocker Motor P.C.B. Ass'y		
★	BA07910A	Stocker Motor P.C.B. Ass'y
	0B60820A	Stocker Motor P.C.B.

8.15. RF Amp. P.C.B. Ass'y

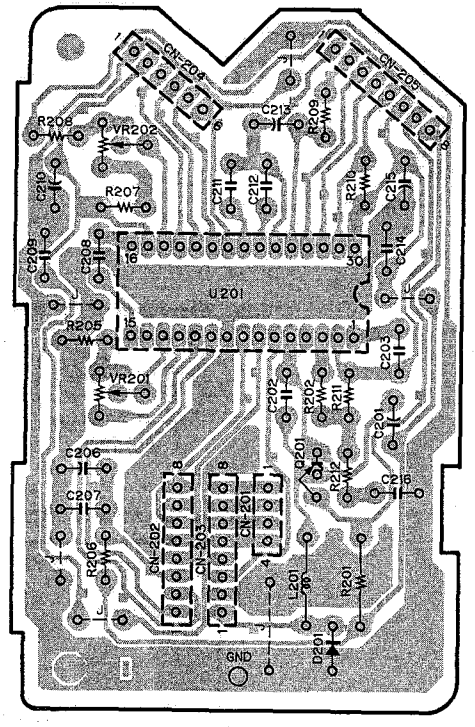


Fig. 8.15

8.16. Headphone P.C.B. Ass'y

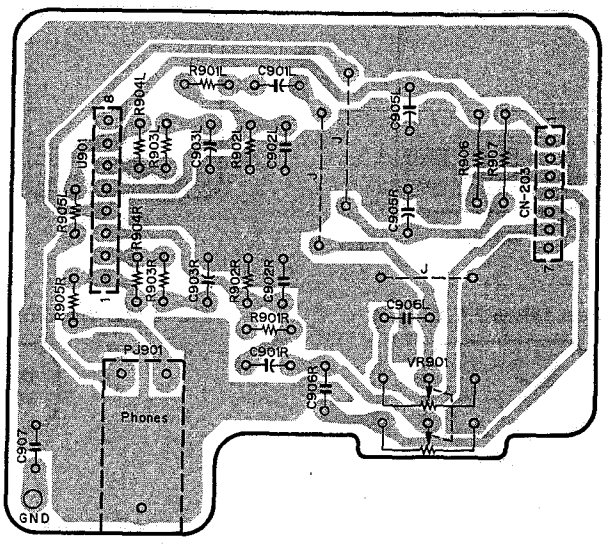


Fig. 8.16

★: Unstock parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
8.15. RF Amp. P.C.B. Ass'y			8.16. Headphone Amp. P.C.B. Ass'y		
★	BA07898A	RF Amp. P.C.B. Ass'y		BA07917A	Headphone Amp. P.C.B. Ass'y
	0B60813C	RF Amp. P.C.B.		0B60823B	Headphone Amp. P.C.B.
U201	0B11818A	IC CXA1081S	U901	0B11857A	IC NJM4556S
Q201	0B10097A	TR 2SA952	VR901	0B30124A	Volume 50KAx2
D201	0B06398A	SiD 1SS176	R901L,R	0B09677A	RK 1K 1/6W J
L201	0B51114A	Micro Coil 10μH	R902L,R	0B09717A	RK 47K 1/6W J
VR201	0B32194A	Semi VR 20K	R903L,R	0B09677A	RK 1K 1/6W J
VR202	0B32193A	Semi VR 10K	R904L,R	0B09695A	RK 5.6K 1/6W J
R201	0B05579A	RK 22 1/4W J	R905L,R	0B20526A	RK 75 1/6W J
R202	0B09707A	RK 18K 1/6W J	R906,907	0B24270A	Fuse Resistor 27
R205	0B09709A	RK 22K 1/6W J	C901L,R	0B40087A	CE 10μ 25V
R206	0B09677A	RK 1K 1/6W J	C902L,R	0B41209A	CPP 220P 100V J
R207,208	0B09705A	RK 15K 1/6W J	C903L,R	0B40087A	CE 10μ 25V
R209	0B09725A	RK 100K 1/6W J	C905L,R	0B40079A	CE 220μ 16V
R210	0B09701A	RK 10K 1/6W J	C906L,R	0B41201A	CPP 100P 100V J
R211	0B09693A	RK 4.7K 1/6W J	C907	0B47117A	CC 0.1μ 50V Z
R212	0B09686A	RK 2.4K 1/6W J	PJ901	0B84327A	Headphone Jack
C201	0B40698A	CE 100μ 16V	CN203	0B84261A	7P Connector Ass'y
C202	0B41944A	CC 1000P 50V K			
C203	0B41521A	CML 3300P 50V J			
C206	0B40175A	CE 3.3μ 50V			
C207	0B47137A	CC 0.047μ 25V Z			
C208	0B41294A	CML 0.047μ 50V J			
C209	0B47137A	CC 0.047μ 25V Z			
C210	0B40160A	CE 33μ 10V			
C211	0B41522A	CML 4700P 50V J			
C212	0B41525A	CML 0.015μ 50V J			
C213	0B40268A	CE 0.47μ 50V			
C214	0B47137A	CC 0.047μ 25V Z			
C215	0B40160A	CE 33μ 10V			
C216	0B41708A	CC 22P 50V J			
CN201	0B84263B	4P Connector Ass'y			
CN202	0B84255A	8P Connector Ass'y			
CN203	0B84254A	8P Connector Ass'y			
CN204	0B84264B	6P Connector Ass'y			
CN205	0B84265A	8P Connector Ass'y			
	0J05898B	Earth Plate (1)			

8.17. Control Switch & Display P.C.B. Ass'y

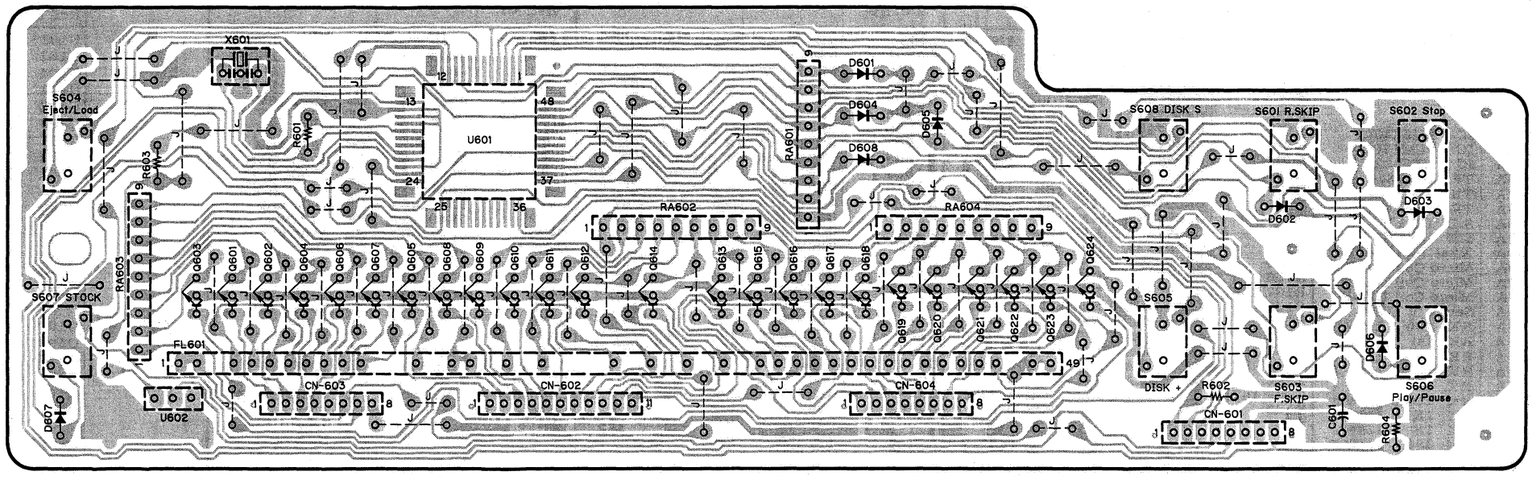


Fig. 8.17

★: Unstock parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
8.17. Control Switch & Display P.C.B. Ass'y			D607,608	0B06398A	SiD 1SS176
			X601	0B92033A	X'tal 4.0MHz
★	BA07916A	Control Switch & Display P.C.B. Ass'y	RA601	0B21090A	R Network 4.7Kx8
			RA602,603	0B21091A	R Network 47Kx8
			RA604	0B21091A	R Network 47Kx8
	0B60822B	Control Switch & Display P.C.B.	R601	0B09749A	RK 1M 1/6W J
			R602,603	0B09717A	RK 47K 1/6W J
U601	0B11810A	IC LC6522H-4377	R604	0B09717A	RK 47K 1/6W J
U602	0B19017A	Remote Control Receiver Unit	J109	0B20528A	RK 0 1/6W
			J209-231	0B20528A	RK 0 1/6W
Q601,602	0B10030A	TR 2SC1740S	J58	0B20528A	RK 0 1/6W
Q603,604	0B10030A	TR 2SC1740S	C601	0B40052A	CE 470μ 6.3V
Q605,606	0B10030A	TR 2SC1740S	S601,602	0B70161A	Tact Switch
Q607,608	0B10030A	TR 2SC1740S	S603,604	0B70161A	Tact Switch
Q609,610	0B10030A	TR 2SC1740S	S605,606	0B70161A	Tact Switch
Q611,612	0B10030A	TR 2SC1740S	S607,608	0B70161A	Tact Switch
Q613,614	0B10030A	TR 2SC1740S	CN601	0B84256B	8P Connector
Q615,616	0B10030A	TR 2SC1740S	CN602	0B84259B	11P Connector
Q617,618	0B10030A	TR 2SC1740S	CN603	0B84258B	8P Connector
Q619,620	0B10030A	TR 2SC1740S	CN604	0B84257B	8P Connector
Q621,622	0B10030A	TR 2SC1740S	FL601	0B90444A	FL Display FIP11HM8
Q623,624	0B10030A	TR 2SC1740S		0J06259A	Shield Plate (1)
D601,602	0B06398A	SiD 1SS176			
D603,604	0B06398A	SiD 1SS176			
D605,606	0B06398A	SiD 1SS176			

★: Unstock parts.

Schematic Ref. No.	Part No.	Description
8.18. Main P.C.B. Ass'y		
★	**BA07915A**	**Main P.C.B. Ass'y**
	— D/A Converter —	
U801	0B11835A	IC SM5840CP
U802	0B11850A	IC PCM1700P
U803	0B11873A	IC NE5532N
Q801L,R	0B06299A	TR 2SC2878
Q802L,R	0B06299A	TR 2SC2878
Q803	0B06180A	TR 2SA970
D801L,R	0B06398A	SiD 1SS176
D802L,R	0B06398A	SiD 1SS176
X801	0B92039A	X'tal 16.9344MHz
L801,802	0B51369A	Micro Coil 10μH
L803	0B51369A	Micro Coil 10μH
L804,805	0B51311A	Micro Coil 100μH
VR801,802	0B32196A	Semi VR 100k
R801	0B09653A	RK 100 1/6W J
R802	0B09749A	RK 1M 1/6W J
R803	0B09725A	RK 100K 1/6W J
R804	0B09731A	RK 180K 1/6W J
R805	0B09677A	RK 1K 1/6W J
R806	0B09731A	RK 180K 1/6W J
R807,808	0B09677A	RK 1K 1/6W J
R809	0B09677A	RK 1K 1/6W J
R810L,R	0B25149A	RM 332 1/4W F
R819L,R	0B25149A	RM 332 1/4W F
R820L,R	0B09725A	RK 100K 1/6W J
R821L,R	0B09709A	RK 22K 1/6W J
R830	0B09701A	RK 10K 1/6W J
R831L,R	0B25231A	RM 2.37K 1/4W F
R832L,R	0B25231A	RM 2.37K 1/4W F
R833L,R	0B09709A	RK 22K 1/6W J
R834	0B09701A	RK 10K 1/6W J
R835	0B09637A	RK 22 1/6W J
C801,802	0B41878A	CC 56P 50V J
C803	0B47117A	CC 0.1μ 50V Z
C804	0B40087A	CE 10μ 25V
C805,806	0B40115A	CE 4.7μ 50V
C810,811	0B40115A	CE 4.7μ 50V
C812,813	0B40115A	CE 4.7μ 50V
C814,815	0B40115A	CE 4.7μ 50V
C819L,R	0B40566A	CE 10μ 25V (LN)
C820L,R	0B41225A	CPP 1000P 100V J
C830,831	0B41215A	CPP 3900P 100V J
C832L,R	0B41129A	CPP 1500P 100V G
C833L,R	0B41221A	CPP 680P 100V J
C834L,R	0B41298A	CML 0.1μ 50V J
C836	0B40087A	CE 10μ 25V
C837	0B47117A	CC 0.1μ 50V Z
C838	0B47113A	CC 330P 50V K
C839	0B47117A	CC 0.1μ 50V Z
C840	0B47113A	CC 330P 50V K
PJ801	0B84226A	Pin Jack 2P
PJ802	0B84028A	Stereo Mini Jack
CN801	0B81464A	7P-T Post
	0B80324A	GND Jumper Wire Earth Lug 50mm (1)
	0B80325A	GND Jumper Wire Earth Lug 130mm (1)
	0J05898B	Earth Plate (1)
	— Servo —	
U101	0B11819A	IC CXA1082BS
U102	0B11820A	IC CXD1167QZ
U104	0B11854A	IC LA6520
L101	0B51369A	Micro Coil 10μH
Q102	0B10107A	TR 2SD1585
Q103	0B10106A	TR 2SB1094
Q104	0B06066A	TR 2SD471
Q105	0B06069A	TR 2SB564
Q106	0B06066A	TR 2SD471
Q107	0B06069A	TR 2SB564
Q108	0B06066A	TR 2SD471
Q109	0B06069A	TR 2SB564
VR101,102	0B32194A	Semi VR 20K
VR103	0B32179A	Semi VR 1KB
R101	0B09729A	RK 150K 1/6W J
R102,103	0B09661A	RK 220 1/6W J
R104,105	0B09661A	RK 220 1/6W J
R106	0B09717A	RK 47K 1/6W J
R107,108	0B09661A	RK 220 1/6W J
R109	0B09725A	RK 100K 1/6W J
R110,111	0B09701A	RK 10K 1/6W J
R113	0B09689A	RK 3.3K 1/6W J
R114	0B09725A	RK 100K 1/6W J
R115	0B09742A	RK 510K 1/6W J
R116	0B25387A	RM 100K 1/4W F
R118	0B09725A	RK 100K 1/6W J
R119	0B09735A	RK 270K 1/6W J
R120	0B09713A	RK 33K 1/6W J
R128	0B09677A	RK 1K 1/6W J
R129	0B25387A	RM 100K 1/4W F
R130	0B09701A	RK 10K 1/6W J
R131	0B09708A	RK 20K 1/6W J
R132	0B09749A	RK 1M 1/6W J
R133	0B09725A	RK 100K 1/6W J
R134	0B09727A	RK 120K 1/6W J
R135	0B25666A	RM 3.6K 1/4W F
R136	0B09701A	RK 10K 1/6W J
R137,138	0B09653A	RK 100 1/6W J
R139	0B09653A	RK 100 1/6W J
R140	0B09729A	RK 150K 1/6W J
R141	0B09621A	RK 4.7 1/6W J
R142,143	0B09725A	RK 100K 1/6W J
R144	0B09731A	RK 180K 1/6W J
R145	0B09621A	RK 4.7 1/6W J
R146,147	0B09725A	RK 100K 1/6W J
R149	0B09731A	RK 180K 1/6W J
R150	0B09729A	RK 150K 1/6W J
R151	0B09621A	RK 4.7 1/6W J
R152,153	0B09725A	RK 100K 1/6W J
R155,156	0B09729A	RK 150K 1/6W J
R157	0B09737A	RK 330K 1/6W J
R170	0B09653A	RK 100 1/6W J
R171,172	0B09677A	RK 1K 1/6W J
C101	0B41885A	CC 220P 50V J
C102	0B41823A	CML 0.01μ 50V J
C103,104	0B41278A	CML 2200P 50V J
C105	0B40074A	CE 10μ 16V
C106	0B41283A	CML 5600P 50V J
C107	0B41298A	CML 0.1μ 50V
C108	0B41294A	CML 0.047μ 50V J
C109	0B41298A	CML 0.1μ 50V J
C110	0B47117A	CC 0.1μ 50V Z
C111	0B40115A	CE 4.7μ 50V
C112	0B40076A	CE 33μ 16V
C113	0B41823A	CML 0.01μ 50V J
C115	0B40076A	CE 33μ 16V
C116	0B47117A	CC 0.1μ 50V Z
C118	0B09163A	CE 10μ 16V (BP)
C119	0B41298A	CML 0.1μ 50V J
C122	0B47117A	CC 0.1μ 50V Z
C123	0B41974A	CC 100P 50V J
C124	0B41944A	CC 1000P 50V K
C125	0B40112A	CE 1μ 50V
C126	0B40078A	CE 100μ 16V
C127	0B41274A	CML 1000P 50V J
C128	0B40074A	CE 10 V
C130	0B41292A	CML 0.033μ 50V J
C131	0B40111A	CE 0.47μ 50V
C132	0B41823A	CML 0.01μ 50V J
C133	0B40078A	CE 100μ 16V
C134,135	0B47117A	CC 0.1μ 50V Z
C137	0B47117A	CC 0.1μ 50V Z
C139	0B47117A	CC 0.1μ 50V Z
C141,142	0B47117A	CC 0.1μ 50V Z
C145,146	0B47117A	CC 0.1μ 50V Z
CN102	0B02244A	7P-T Post
CN104	0B84282A	4P-T Post
CN105	0B02242A	4P-T Post
CN109	0B02233A	2P-T Post
CN201	0B81461A	4P-T Post
CN204	0B81463A	6P-T Post
CN205	0B81465A	8P-T Post
CN6	0B84283A	4P-T Post
	— MPU Control —	
U501	0B11855A	IC μPD75116CW
U503	0B11852A	IC LC3517BSL-15
U505	0B11856A	IC μPD75216ACW
Q502,503	0B10068A	TR DTC114ES
Q504	0B10062A	TR DTC144ES
Q505	0B10058A	TR DTA114ES
D501,502	0B06398A	SiD 1SS176
D504	0B06398A	SiD 1SS176
D512	0B06398A	SiD 1SS176
X501,502	0B92033A	X'tal 4.0MHz
L501,502	0B51369A	Micro Coil 10μH
L503	0B51369A	Micro Coil 10μH
RA501	0B21083A	R Network 4.7Kx6
RA502	0B21086A	R Network 10Kx8
RA503	0B21084A	R Network 10Kx4
RA504	0B21086A	R Network 10Kx8
RA505	0B21086A	R Network 10Kx8
RA506	0B21084A	R Network 10Kx4
RA507	0B21085A	R Network 10Kx6
RA508	0B21088A	R Network 47Kx10
RA509	0B21089A	R Network 47Kx13
RA510	0B21084A	R Network 10Kx4
R501	0B09717A	RK 47K 1/6W J
R502	0B09717A	RK 47K 1/6W J
R504	0B09713A	RK 33K 1/6W J
R506	0B09717A	RK 47K 1/6W J
R507	0B09697A	RK 6.8K 1/6W J
R509	0B09701A	RK 10K 1/6W J
R516	0B09677A	RK 1K 1/6W J
R517	0B09701A	RK 10K 1/6W J
R520,521	0B09701A	RK 10K 1/6W J
R522	0B09701A	RK 10K 1/6W J
R523	0B09669A	RK 470 1/6W J
C501	0B40078A	CE 100μ 16V
C504,505	0B40074A	CE 10μ 16V
C506	0B40078A	CE 100μ 16V
C507,508	0B47117A	CC 0.1μ 50V Z
JW501	0B82085B	Ribbon Cable 4P 250
JW502	0B82330A	Ribbon Cable 4P 320
CN502	0B81465A	8P-T Post
CN503	0B84086A	11P-T Post
CN504	0B84294A	8P-T Post
CN505	0B84296A	8P-T Post
CN7	0B84085A	10P-T Post
	— Power Supply —	
U401	0B11753A	IC NJM7805FA
U402	0B11754A	IC NJM7905FA
U403	0B11611A	IC TC4584BP
IP401,402	0B11371A	IC Protector ICP-N5
IP403,404	0B11371A	IC Protector ICP-N5
IP405	0B11371A	IC Protector ICP-N5
Q401	0B10371A	TR 2SD1785
Q402	0B10370A	TR 2SB1258
Q405	0B10371A	TR 2SD1785
Q406	0B10370A	TR 2SB1258
Q409	0B10370A	TR 2SB1258
Q410,411	0B06100A	TR 2SC945
Q420	0B06142A	TR 2SC2240 (BL)
ZD401,402	0B12153A	ZD 6.2V B2
ZD404	0B12171A	ZD 11V B2
ZD405	0B12201A	ZD 30V B2
ZD406	0B12165A	ZD 9.1V B2
D407,408	0B06398A	SiD 1SS176
D410	0B12362A	SiD S5566B
D411,412	0B06398A	SiD 1SS176
D413	0B06398A	SiD 1SS176
D420,421	0B12362A	SiD S5566B
D422,423	0B12362A	SiD S5566B
D424,425	0B12362A	SiD S5566B
D426,427	0B12362A	SiD S5566B
D428,429	0B12362A	SiD S5566B
D430,431	0B12362A	SiD S5566B
D432	0B06398A	SiD 1SS176
R407	0B09689A	RK 3.3K 1/6W J
R408	0B09701A	RK 10K 1/6W J
R409	0B09709A	RK 22K 1/6W J
R410,411	0B09653A	RK 100 1/6W J
R413,414	0B24274A	Fuse Resistor 2.2
R415	0B09749A	RK 1M 1/6W J
R416	0B09701A	RK 10K 1/6W J
R417	0B09749A	RK 1M 1/6W J
R418	0B09701A	RK 10K 1/6W J
R419	0B09717A	RK 47K 1/6W J
R420	0B09693A	RK 4.7K 1/6W J
R421	0B09701A	RK 10K 1/6W J
R422	0B09701A	RK 10K 1/6W J
R423	0B09749A	RK 1M 1/6W J
R424	0B09701A	RK 10K 1/6W J
R425	0B09717A	RK 47K 1/6W J
R426	0B09693A	RK 4.7K 1/6W J
R427,428	0B20525A	RK 510 1/6W J
R429,430	0B20525A	RK 510 1/6W J
R440	0B09703A	RK 12K 1/6W J
R441	0B09702A	RK 11K 1/6W J
R442	0B09677A	RK 1K 1/6W J
C401,402	0B40079A	CE 220μ 16V
C403,404	0B40064A	CE 220μ 10V
C405,406	0B40064A	CE 220μ 10V
C408	0B40079A	CE 220μ 16V
C409,410	0B40096A	CE 2200μ 25V
C411,412	0B40096A	CE 2200μ 25V
C417	0B41553A	CC 0.01μ 25V Z
C418	0B40120A	CE 100μ 50V
C419	0B40112A	CE 1μ 50V
C420	0B40133A	CE 330μ 63V
C426,427	0B40082A	CE 1000μ 16V
C428	0B47117A	CC 0.1μ 50V Z
C429	0B40112A	CE 1μ 50V
C430	0B40085A	CE 4700μ 16V
C431	0B40082A	CE 1000μ 16V
C436	0B40082A	CE 1000μ 16V
C437	0B41300A	CML 0.15μ 50V J
C438	0B41823A	CML 0.01μ 50V J
C439,440	0B41944A	CC 1000P 50V K
C441,442	0B41944A	CC 1000P 50V K
C443,444	0B41944A	CC 1000P 50V K
CN402	0B84315A	4P-T Post
CN403	0B84317A	6P-T Post
	0B90448A	Heat Sink (2)
	— Miscellaneous —	
	0B60821B	Main P.C.B.

● Semiconductor Location

Ref. No.	Location
U101	C-7
U102	E-7
U104	B-13
U401	C-5
U402	C-4
U403	E-4
U501	D-12
U503	F-9
U505	G-11
U801	G-6
U802	G-4
U803	G-2
IP401	C-3
IP402	C-3
IP403	C-2
IP404	C-2
IP405	B-1
Q102	B-8
Q103	B-8
Q104	B-8
Q105	B-8
Q106	B-9
Q107	B-9
Q108	B-10
Q109	B-9
Q401	D-3
Q402	D-3
Q405	D-2
Q406	D-2
Q409	B-2
Q410	E-4
Q411	D-4
Q420	D-2
Q502	F-9
Q503	G-7
Q504	D-4
Q505	F-9
Q801L	G-1
Q801R	F-1
Q802L	G-1
Q802R	F-1
Q803	E-2
ZD401	D-3
ZD402	D-3
ZD404	D-1
ZD405	B-2
ZD406	B-1
D407	B-4
D408	B-3
D410	B-4
D411	E-4
D412	E-4
D413	D-4
D420	B-4
D421	B-4
D422	A-4
D423	A-4
D424	B-3
D425	B-3
D426	A-3
D427	A-3
D428	B-2
D429	B-2
D430	A-2
D431	A-2
D432	E-2
D501	F-8
D502	G-8
D504	F-8
D512	C-13
D801L	G-1
D801R	F-2
D802L	G-1
D802R	F-1

8.18. Main P.C.B. Ass'y

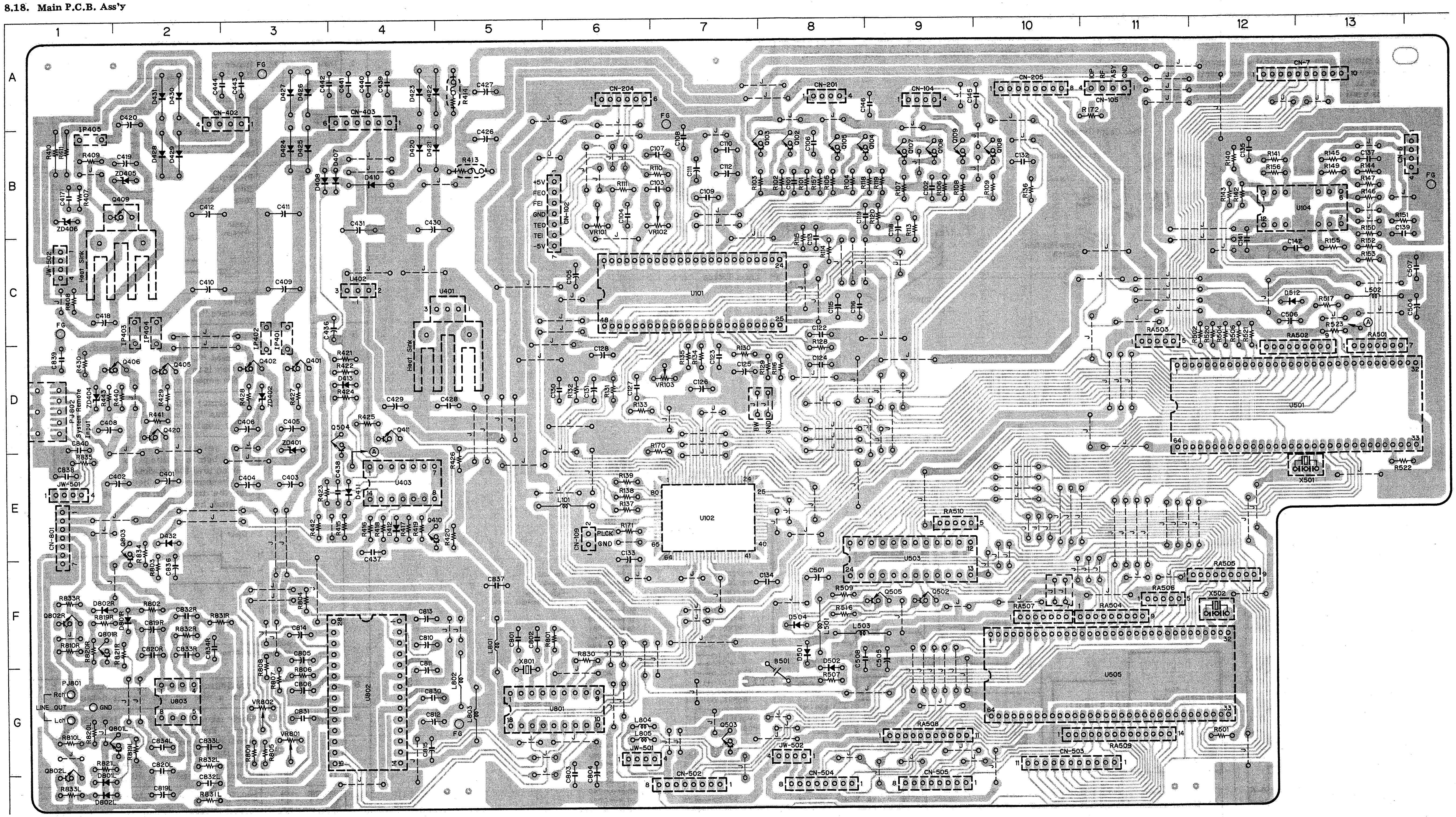


Fig. 8.18

9. SCHEMATIC DIAGRAMS

9.1. IC Block Diagrams

For better understanding of IC function in the following tables, three illustrations are prepared, Fig. 9.1.1 shows electrical parts location in the Mechanism Ass'y (Tray Lock Arm is a mechanical part).
Fig. 9.1.2 shows main mechanical sections of the Mechanism Ass'y (Laser Pickup Drive section, Stocker section, and Tray). The Carriage S is used for single-disc operation and the 6 pcs. of Carriage is used for multiple-disc operation. A 3-inch dia. disc can be placed on the Carriage S.

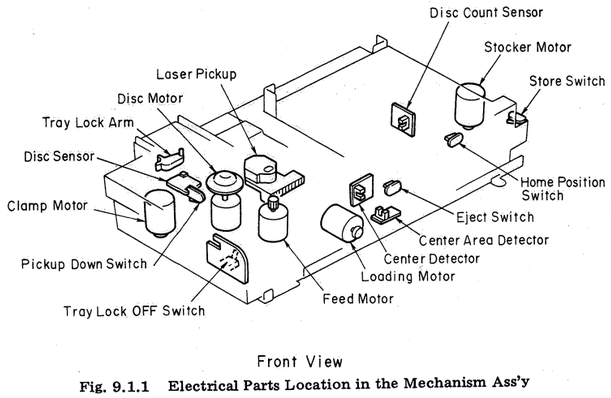


Fig. 9.1.1 Electrical Parts Location in the Mechanism Ass'y

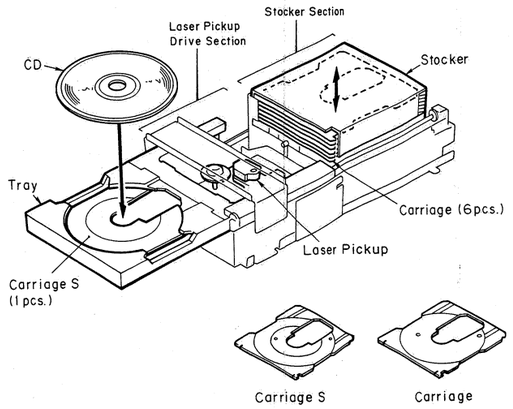


Fig. 9.1.2

Fig. 9.1.3 shows operational positions of disc.
(A): Eject position.
(B): Center position. Inthis position, the disc can be played back.
(C): Store position. Carriage is stored into the Stocker.

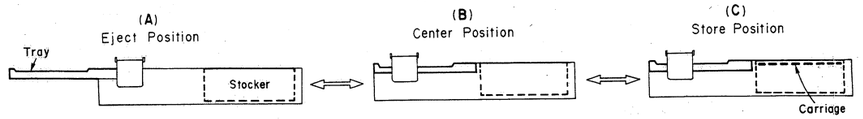


Fig. 9.1.3 Operational Positions

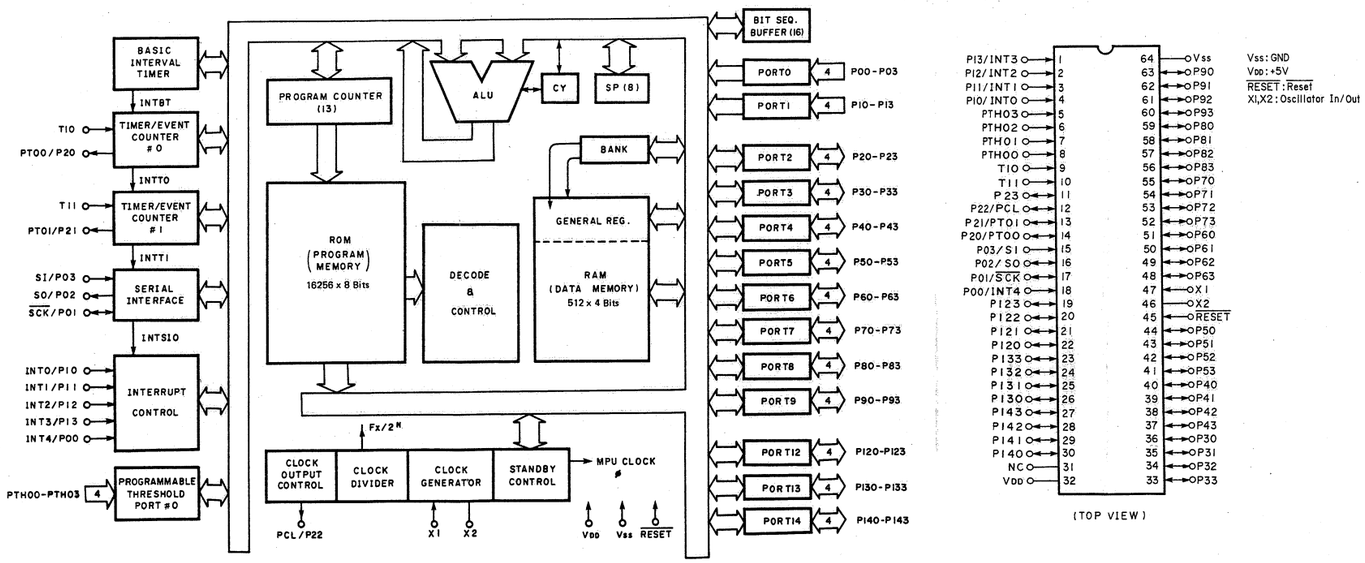
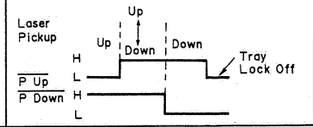
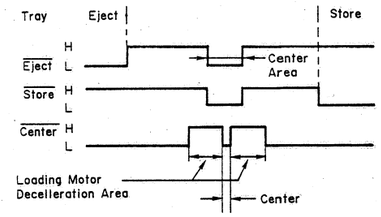
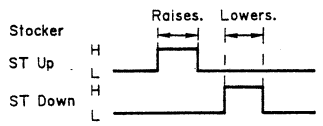
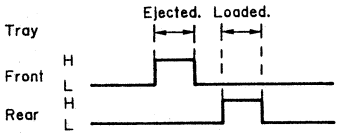
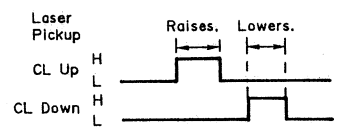
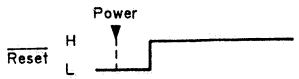


Fig. 9.1.4 Mechanism Controller μPD75116CW (U501)

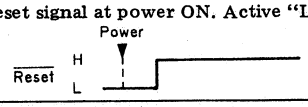
U501 μPD75116CW (Mechanism Controller)

Pin No.	Signal Name	I/O	Function	Initial Setting
1	$\overline{\text{Inner}}$	I	Inner switch is connected. Becomes "L" when Inner switch is ON, i.e., when the laser pickup reaches the innermost position.	—
2	$\overline{\text{P Up}}$	I	Tray Lock Off switch is connected. Set to "L" while the laser pickup is in the Up position. Also becomes "L" when the Tray Lock Off switch is pressed.	—
3	$\overline{\text{P Down}}$	I	Pickup Down switch is connected. Becomes "L" when the laser pickup reaches the Down position. 	—
4	$\overline{\text{P OFF}}$	I	Power OFF signal. Immediately becomes "L" at power OFF.	—
5	$\overline{\text{Eject}}$	I	Eject switch is connected and becomes "L" when the tray is ejected. Also becomes "L" when the condition that the tray is in the center area is detected by the center area detector.	—
6	$\overline{\text{Center}}$	I	Tray center detection signal. Becomes "L" when the tray is in the center position.	—
7	$\overline{\text{Store}}$	I	Store switch is connected. Becomes "L" when a carriage is completely inserted into the stocker. Also becomes "L" when the condition that the tray is in the center area is detected by the center area detector.	—
				
8	$\overline{\text{D DET}}$	I	Disc Sensor is connected. Becomes "L" when a disc on the tray is detected.	—
9	$\overline{\text{Sense}}$	I	Sense signal input from U101 (Servo Signal Processor) or U102 (Digital Signal Processor). Signal meaning varies with the command sent from this IC. However, it is the answer to the command issued from this IC.	—
10	$\overline{\text{D CNT}}$	I	Disc Count Sensor is connected. Used to detect the stocker position (1, 2, 3, 4, 5, 6, or S).	—
11	$\overline{\text{Home Pos.}}$	I	Home Position switch is connected. Becomes "L" when the stocker is set to the home position (lowermost position).	—
12	FOK	I	Focus OK signal input from U201 (RF Amp.). Active "H".	—
13	GFS	I	Frame sync lock condition indicating signal. Active "H".	—

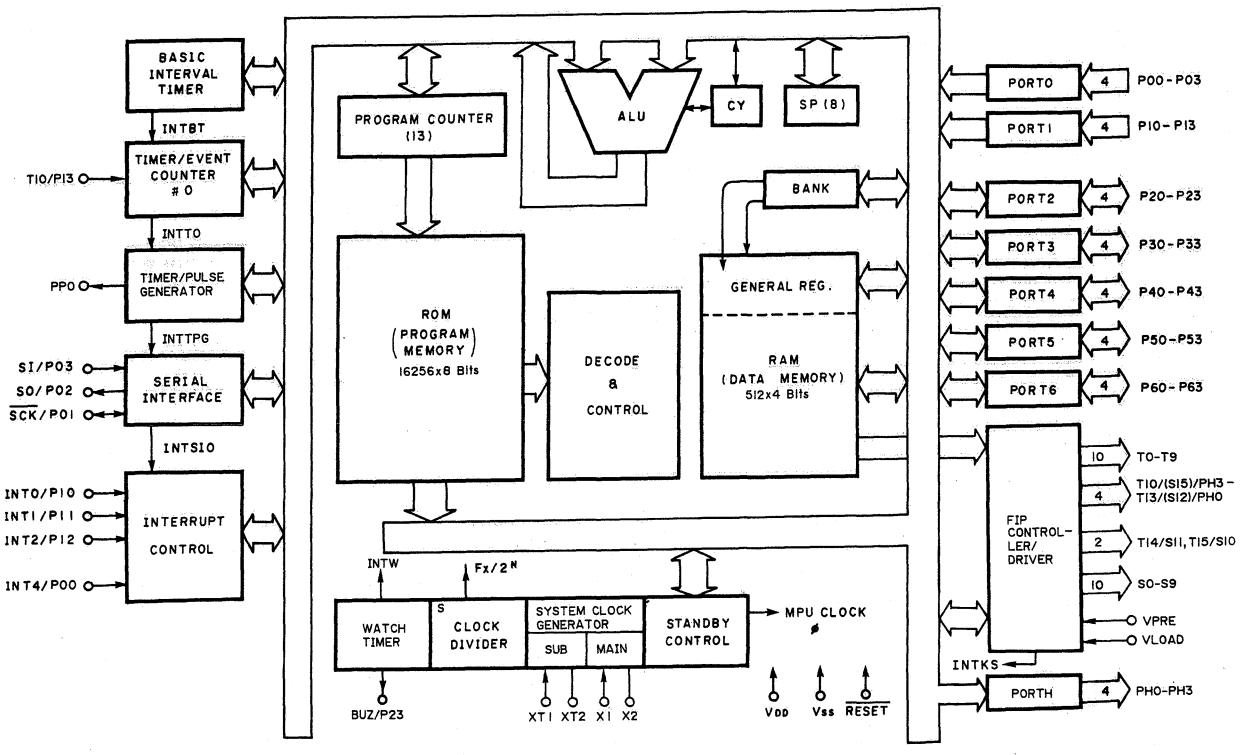
Pin No.	Signal Name	I/O	Function	Initial Setting
14	CRCF	I	Input from U102 (Digital Signal Processor). CRC (cyclic redundancy code) check result of subcode Q. "H" when check result is OK.	—
15	SUBQ	I	Subcode Q data input from U102.	—
16	—	I	Not used.	—
17	SQCK	O	Clock for reading the subcode Q data.	H
18	SCOR	I	Subcode sync (S0 +S1) signal. This IC starts to read subcode Q information (Subcode Q + CRCF) synchronizing with SQCK.	—
19	Data	O	An 8-bit signal output to U101 (Servo Signal Processor) and U102 (Digital Signal Processor). Command is output from this pin.	H
20	CLK	O	Clock for pin 19 (Data).	H
21	XLT	O	Data latch pulse. "L" pulse is output when an 8-bit data has been sent from pin 19 (Data).	H
22	$\overline{\text{LDON}}$	O	Laser diode ON signal. Becomes "L" in the following modes. — Play or Pause mode — When read-in area of the compact disc is read.	H
23	EMP	O	De-emphasis control signal. Becomes "H" if the CD being played back has emphasis characteristics. "H": Commands de-emphasis operation.	L
24	MUTG	O	Mute control signal. Active "H".	H
25	ST Up	O	Stocker motor drive signal. Stocker raises when "H".	L
26	ST Down	O	Stocker motor drive signal. Stocker lowers when "H". 	L
27	Front	O	Loading motor drive signal. Tray is ejected when "H".	L
28	Rear	O	Loading motor drive signal. Tray is loaded when "H". 	L
29	CL Up	O	Clamp motor drive signal. Pickup drive unit raises when "H".	L
30	CL Down	O	Clamp motor drive signal. Pickup drive unit lowers when "H". 	L
31	NC	—	Connected to +5 V.	—
32	VDD	—	Supplied with +5 V.	—

Pin No.	Signal Name	I/O	Function	Initial Setting
33 34	—	O	Not used.	—
35	—	I	—	—
36	—	I	Not used.	—
37 to 40	—	O	Not used.	—
41 to 44	D3 to D0	I/O	Data bus between U503 (RAM).	IN
45	$\overline{\text{Reset}}$	I	Reset signal at power ON. Active "L". 	—
46 47	X2 X1	—	4MHz crystal is connected.	—
48	$\overline{\text{SCS}}$	I	Set to "L" while U502 (System Controller) is selecting RAM (U503).	—
49	$\overline{\text{MCS}}$	O	Outputs "L" when this IC (Mechanism Controller) selects RAM (U503).	H
50	$\overline{\text{CE}}$	O	RAM (U503) enable signal. Active "L".	H
51	R/$\overline{\text{W}}$	O	Read/write control signal for RAM (U503). "L": Write, "H": Read	H
52	—	—	—	—
53 54 55 56 57 58 59 60 61 62 63	A10 A9 A8 A3 A2 A1 A0 A7 A6 A5 A4	I/O	Address bus for RAM (U503).	IN
64	VSS	—	GND	—

U502 μPD75216 (System Controller)

Pin No.	Signal Name	I/O	Function	Initial Setting
1 to 4	S3 to S0	O	FL display segment drive signals.	—
5	—	I	Grounded.	—
6	Key CLK	I	Clock for Key Data at pin 8.	—
7	—	I	—	—
8	Key Data	I	Key data from U601 (Key Matrix Controller).	—
9	$\overline{\text{P OFF}}$	I	Power OFF signal. Immediately becomes "L" at power OFF.	—
10	—	I	Connected to +5 V.	—
11	$\overline{\text{RAM Reset}}$	I	RAM reset signal. Active "L".	—
12	$\overline{\text{REM IN}}$	I	Remote control key operation detecting signal. "L": Key on the Remote control unit is pushed. "H": For front panel key operation.	—
13 to 16	D0 to D3	I/O	Data bus between U503 (RAM).	IN
17	R/$\overline{\text{W}}$	O	Read/write control signal for RAM (U503). "L": Write, "H": Read	H
18	$\overline{\text{CE}}$	O	RAM (U503) enable signal. Active "L".	H
19	$\overline{\text{SCS}}$	O	Outputs "L" when this IC (System Controller) selects RAM (U503).	H
20	$\overline{\text{MCS}}$	I	Set to "L" while U501 (Mechanism Controller) is selecting RAM (U503).	—
21 22 23	A8 A9 A10	I/O	Address bus for RAM (U503).	IN
24	M.SEL	I	Fixed to "H".	IN
25 to 28	A0 to A3	I/O	Address bus for RAM (U503).	IN
29	REM ACK	O	Remote control signal acknowledge signal.	L
30 31	X1 X2	—	4MHz crystal is connected.	—
32	VSS	—	GND	—
33 34	—	—	—	—
35 to 38	A4 to A7	I/O	Address bus for RAM (U503).	IN
39	$\overline{\text{Reset}}$	I	Reset signal at power ON. Active "L". 	—
40 to 50	T0 to T10	O	FL display digit drive signals. Active "H".	—
51 52 53	S14 S13 S12	O	FL display segment drive signals.	—

Pin No.	Signal Name	I/O	Function	Initial Setting
54 55	—	O	—	—
56	VLOAD	I	Supplied with —30V.	—
57	VPRE	I	Grounded.	—
58 to 63	S9 to S4	O	FL display segment drive signals.	—
64	VDD	—	Supplied with +5V.	—



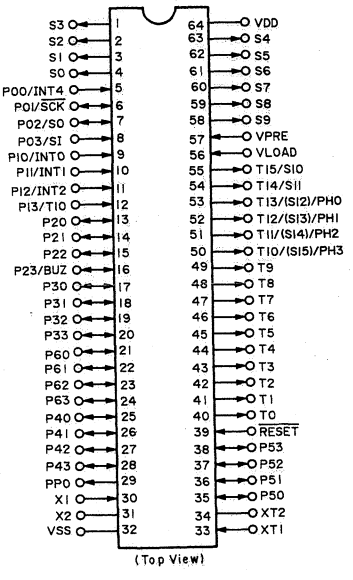


Fig. 9.1.5 System Controller μPD75216ACW (U502)

U601 LC6522H (Key Matrix Controller)

Pin No.	Signal Name	I/O	Function
2 3 4 5 7 9	SC0 SC1 SC2 SC3 SC4 SC6	O	Output signals to the key matrix circuit.
11	SG RET	I	Remote control receiver output is returned when System Remote Input jack is not used.
17 20	OSC1 OSC2	—	4.00MHz X'tal is connected.
21	$\overline{\text{Reset}}$	I	Reset signal at power ON. Active "L".
23	SO	O	Outputs key data from the remote control unit or front panel switch.
24	SCK	O	Clock for SO (key data).
25	INT	I	Same as SG RET (pin 11).
36	$\overline{\text{REM}}$	O	Remote control key operation detecting signal. "L": Key on the Remote control unit is pushed.
37 38	CCL CCH	O	Pulses are output at power ON for reading the custom code of 16 bits through bus B0 to B7.
40 41 44 45 46 47 48 1	B0 B1 B2 B3 B4 B5 B6 B7	I	Input bus for reading front panel key data from the key matrix circuit, or for reading custom code at power ON.
16	VSS	—	GND
39	VDD	—	Supplied with +5V.

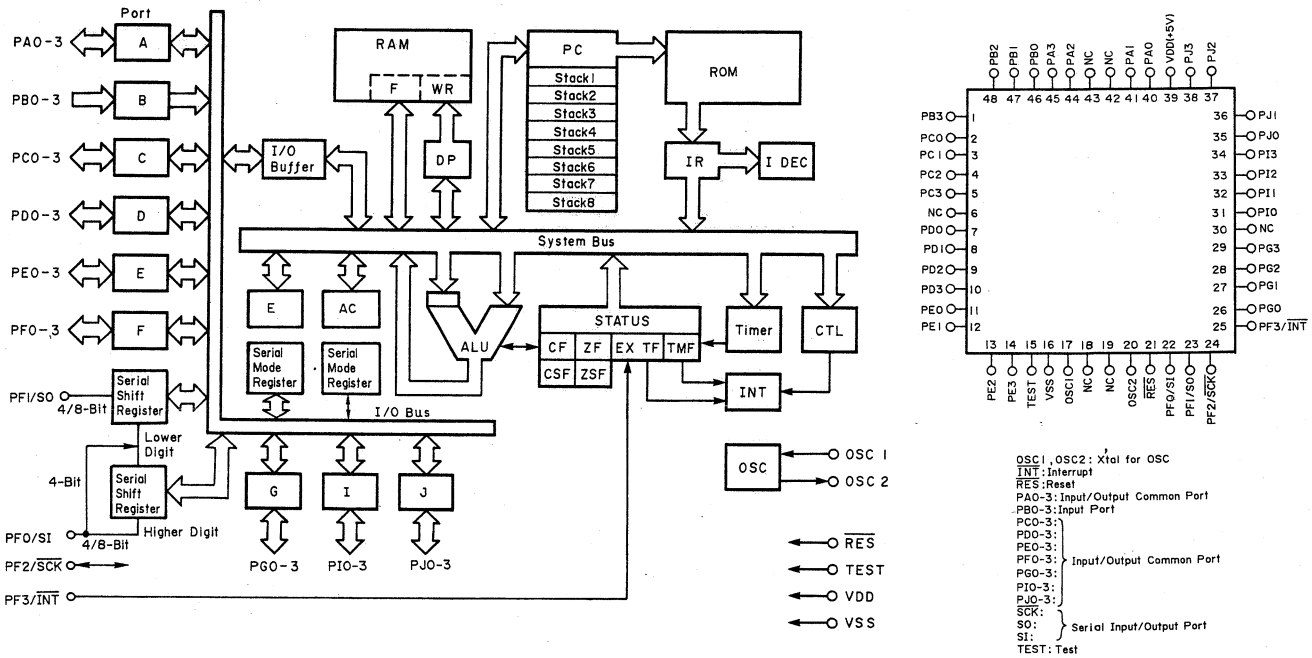


Fig. 9.1.6 Key Matrix Controller LC6522H (U601)

U201 CXA1081S (RF Amp.)

Pin No.	Signal Name	I/O	Function
1	RFI	I	EFM signal is input from the RF summing amp. through a capacitor.
2	RFO	O	EFM signal (eye pattern) output. It is output from the RF summing amp.
3	RF−	I	Feedback input to the RF summing amp.
4	P/N	I	Open. Input condition depends on the kind of laser diode to be used.
5	LD	O	Output from the APC LD (Auto Power Control for Laser Diode) amp.
6	PD	I	Input to the APC PD (Photodiode) amp.
7	PD1	I	Current input (A + C) from the photodiodes A and C of the laser pickup.
8	PD2	I	Current input (B + D) from the photodiodes B and D of the laser pickup.
9	VC	—	Grounded.
10	F	I	Current input (F) from the photodiode F of the laser pickup.
11	E	I	Current input (E) from the photodiode E of the laser pickup.
12	EO	O	E I-V amp. output.
13	EI	I	Feedback input to E I-V amp.
14	VR	O	Output voltage = (VCC + VEE)/2 (Not used.)
15	CC2	I	Defect bottom hold signal input through a capacitor.
16	CC1	O	Defect bottom hold signal output.
17	VEE	I	−5 V is supplied.
18	FE Bias	I	Offset adjusting input of the focus error amp.
19	FE	O	Focus error amp. output.
20	TE	O	Tracking error amp. output.
21	DEFECT	O	Defect comparator output.
22	MIRR	O	Mirror comparator output.
23	CP	I	Mirror hold capacitor connecting pin.
24	CB	I	Defect bottom hold capacitor connecting pin.
25	DGND	—	Grounded.
26	ASY	I	EFM signal slice level control input from U102 (Digital Signal Processor).
27	EFM	O	Binary-coded EFM signal output.
28	FOK	O	Focus OK signal output.
29	$\overline{\text{LD ON}}$	I	Laser diode ON/OFF input. Active "L".
30	VCC	I	+5 V is supplied.

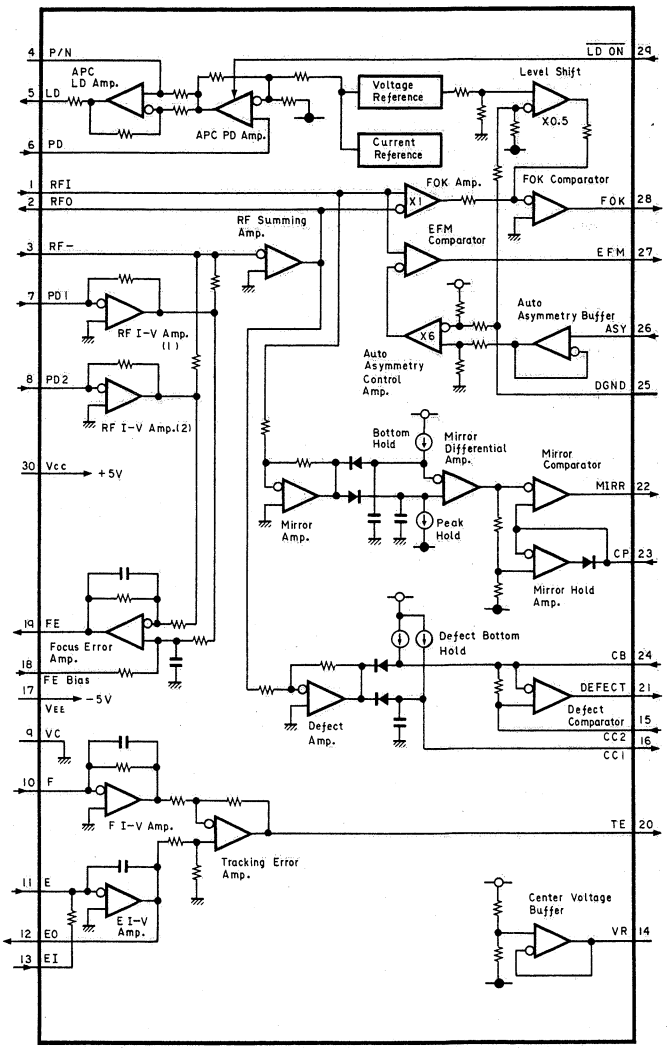


Fig. 9.1.7 RF Amp. CXA1081S (U201)

U101 CXA1082BS (Servo Signal Processor)

Pin No.	Signal Name	I/O	Function
1	DVEE	I	—5 V is supplied.
2	DFCT	I	Input from defect comparator in U201 (RF amp.).
3	TE	I	Tracking error signal input.
4	TZC	I	Input to the tracking zero cross comparator.
5	ATSC	—	Grounded. (Not used.)
6	FE	I	Focus error signal input.
7	VC	—	Grounded.
8	FGD	I	Reduces focus servo gain at high frequency. Capacitor is connected between this pin and pin 9.
9	FS3	O	Selects focus servo gain at high frequency by turning ON or OFF this pin.
10	FLB	I	Capacitor connecting pin for increasing the focus servo gain at low frequency.
11	FEO	O	Focus amp. output.
12	FE—	I	Feedback input to the focus amp.
13	SRCH	I	Capacitor connecting pin for producing focus search waveform.
14 15	TGU TG2	I O	Capacitor connecting pins for changing over the tracking gain at high frequency.
16	AVCC	I	+5 V is supplied.
17	TAO	O	Tracking amp. output.
18	TA—	I	Feedback input to the tracking amp.
19	SL+	I	Non-inverting input of the feed motor amp.
20	SLO	O	Feed motor amp. output.
21	SL—	I	Inverting input of the feed motor amp.
22	SSTOP	I	(Not used.)
23	FSET	I	Input to determine the peak value for tracking/focus phase compensation, and fc of CLV LPF (Constant Linear Velocity Low Pass Filter).
24	Sense	O	Sense output to U501 (Mechanism Controller). Signal meaning varies with the command sent from U501. However, it is the answer to the command received. Example: Outputs FZC (Focus Zero Cross: in focus condition) for focus search command.
25	AVEE	I	—5 V is supplied.
26	C.OUT	O	Tracking pulse output.
27	DIRC	I	One-track jump direct control input. (Not used.)
28	$\overline{\text{XRST}}$	I	Reset input. Active "L".
29	Data	I	8-bit serial data is input from U501.
30	XLT	I	"L" pulse is input from U501. This pulse is used to latch the 8-bit data at pin 29 (Data).
31	CLK	I	Clocks for reading Data (pin 29).
32	DGND	—	Grounded.
33	BW	I	Input to determine the time-constant of the loop filter.
34	PDI	I	Phase difference compensation signal is input in order to match the VCO frequency with the EFM signal frequency.
35	ISET	I	Input to determine the amount of current on focus search, track jump and feed kick.
36	VCOF	I	VCO frequency adjusting input.
37	3.5V	O	Regulated +3.5 V is output.
38	C864	O	VCO frequency (8.64 MHz) is output.
39	LOCK	I	Input to prevent reckless run of the feed motor.
40	MDP	I	Disc motor drive input. Speed control pulse is input while in rough servo or PLL servo mode.
41	MON	I	Disc motor ON/OFF control input.
42	FSW	I	Input to determine the time-constant of the CLV LPF.
43	DVCC	I	+5 V is supplied.
44	SPDL—	I	Non-inverting input to the disc motor amp.
45	SPDLO	O	Disc motor amp. output.
46	WDCK	I	Strobe signal input from U102 (Digital Signal Processor). (88.2 kHz)
47	FOK	I	Focus OK signal input.
48	MIRR	I	Input from the mirror comparator in U201 (RF amp.)

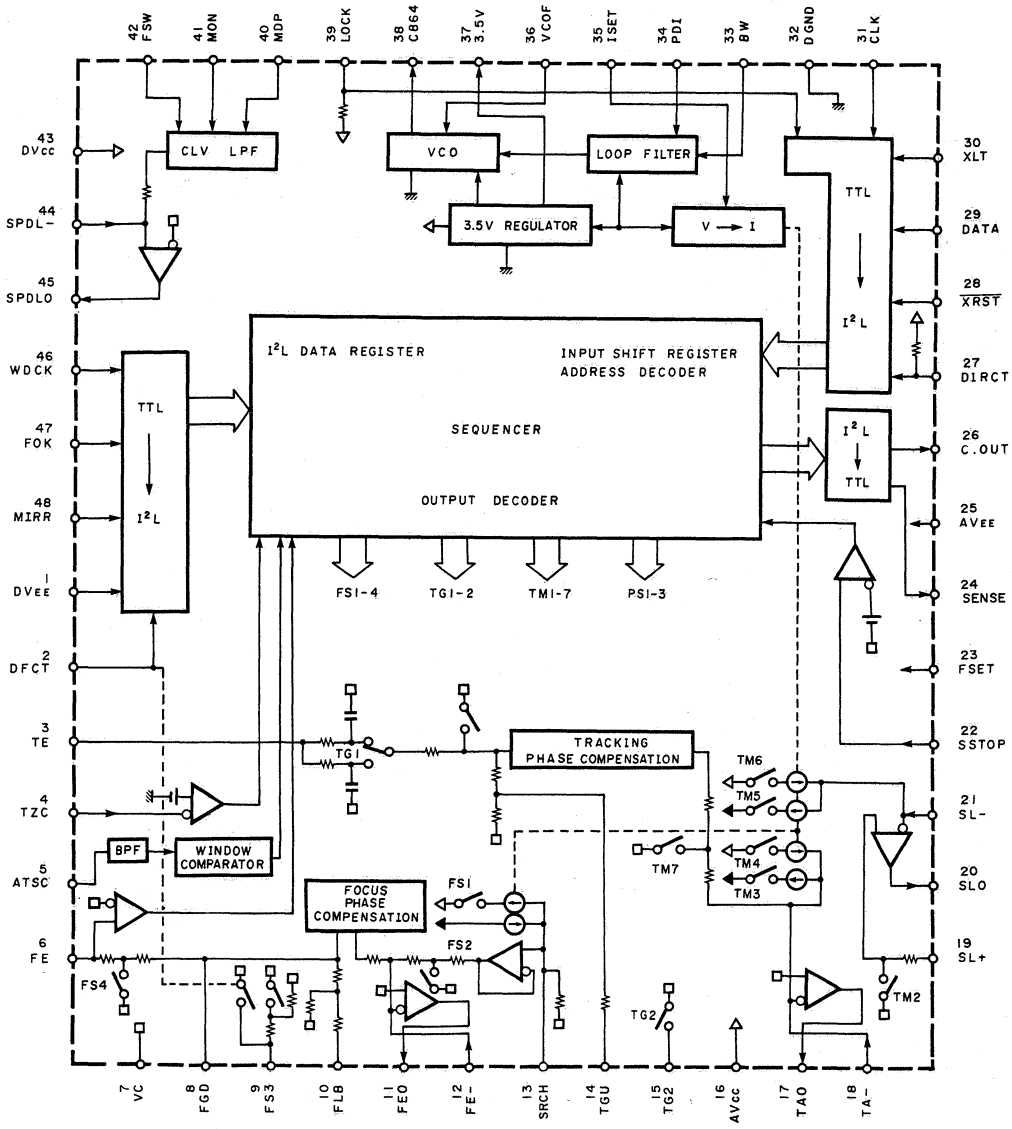


Fig. 9.1.8 Servo Signal Processor CXA1082BS (U102)

U102 CXD1167QZ (Digital Signal Processor)

Pin No.	Signal Name	I/O	Function
1	FSW	O	Output to change over the time-constant of the CLV LPF in U101 (Servo Signal Processor.
2	MON	O	Disc motor ON/OFF control output.
3	MDP	O	Disc motor drive output. Outputs a speed control pulse while in rough servo or PLL servo mode.
4	MDS	O	Disc motor drive output. Outputs a speed control pulse while in PLL servo mode.
5	EFM	I	Binary-coded EFM signal input from U201 (RF Amp.).
6	ASY	O	Output to control the slice level of the EFM signal.
7	LOCK	O	Output to prevent reckless run of the feed motor.
8	VCOO	O	VCO output. Frequency is 8.6436 MHz when locked to the clock extracted from the EFM signal.
9	VCOI	I	VCO input.
10	Test	I	Grounded. (Not used.)
11	PDO	O	Phase difference compensation signal between the clock extracted from the EFM signal and VCO/2.
12	VSS1	—	Grounded.
13	CLK	I	Clocks for reading Data (pin 15).
14	XLT	I	"L" pulse is input from U501 (Mechanism Controller). This pulse is used to latch the 8-bit data at pin 15 (Data).
15	Data1	I	8-bit serial data is input from U501.
16	$\overline{\text{XRST}}$	I	Reset input. Active "L".
17	CNIN	I	Tracking pulse is input from U101 (Servo Signal Processor).
18	Sense	O	Sense output to U501. Signal meaning varies with the command sent from U501. However, it is the answer to the command received. Example: Informs of track-jump completion by the specified amount.
19	MUTG	I	Muting input. By combining MUTG signal with the attenuation command sent from U501, muting is performed.
20	CRCF	O	Output of CRC check result of subcode Q data.
21	EXCK	I	Clock input to read SBSO. (Not used.)
22	SBSO	O	Subcode data serial output. (Not used.)
23	SUBQ	O	Subcode Q data output.
24	SCOR	O	Subcode sync (S0 + S1) output.
25	SQCK	O	Clock for subcode Q data.
26	SQEX	I	Fixed to "H".
27	DOTX	O	Digital output. (Not used.)
28	GFS	O	Indicates frame sync lock condition.
29 to 32	Test01 to Test04	I	Not used. Fixed to "L".
33	VDD	I	+5 V is supplied.
34 to 50	Test05 to Test21	I	Not used. Fixed to "L".
51	C4M	O	Frequency (4.2336 MHz) output. Produced by dividing X'tal frequency. (Not used.)
52	VSS2	—	Grounded.
53	XTAI	I	X'tal oscillating frequency input. f=16.9344 MHz
54	XTAO	O	X'tal oscillating frequency output. (Not used.)
55 56 57	MD1 MD2 MD3	I	Mode select input. (MD1="L", MD2="H", MD3="H") • Digital output OFF. • Internal digital filter is not used.
58	SLOB	I	Audio data code change-over input. Fixed to "L". 2's complement is selected.
59	PSSL	I	Audio data format change-over input. Fixed to "L". Serial output is selected.
60	APTR	O	Aparture compensation control output. "H" for R channel. (Not used.)
61	APTL	O	Aparture compensation control output. "H" for L channel. (Not used.)
62 to 66	DA01 to DA05	O	(Not used.)
67	C2PO	O	(Not used.)
68 69	DA07 DA08	O	(Not used.)
70	$\overline{\text{PLCK}}$	O	One-half frequency of VCO is output.
71 72	DA10 DA11	O	(Not used.)
73	VDD2	I	+5 V is supplied.
74 75	DA12 DAB	O	(Not used.)
76	$\overline{\text{C21O}}$	O	Inversed output of the internal system clock (2.1168 MHz).
77	DA15	O	(Not used.)
78	Data2	O	Demodulated serial audio data output.
79	WDCK	O	Strobe signal output to U101 (Servo Signal Processor). (88.2 kHz)
80	LRCK	O	Signal to distinguish L channel and R channel is output to U801 (Digital Filter). (44.1 kHz)

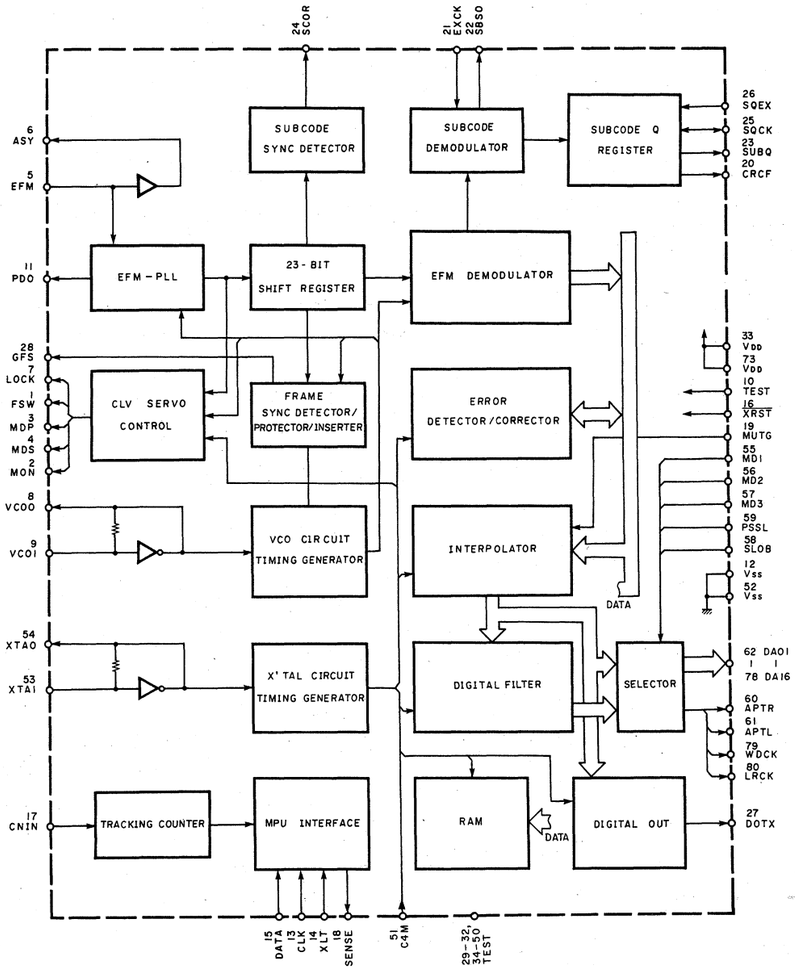


Fig. 9.1.9 Digital Signal Processor CXD1167QZ (U102)

U801 SM5840CP (Digital Filter)

Pin No.	Signal Name	I/O	Function
1	$\overline{OW16}$	I	Frequency select input. Fixed to "H" for selecting 384 fs.
2 3	XTI XTO	I	X'tal (16.9344 MHz) is connected.
4	CKO	O	System clock output. (16.9344 MHz)
5	VSS	—	Grounded.
6	$\overline{OW20}$	I	Not used.
7	DEEM	I	De-emphasis information signal input.
8	MUTE	I	Not used.
9	$\overline{RST}$	I	System reset input. Active "L".
10	DG	O	Deglitch output. Not used.
11	DOR	O	Rch audio data output.
12	DOL	O	Lch audio data output.
13	WCKO	O	Word clock for digitally-filtered output data.
14	VDD	I	+5V is supplied.
15	BCKO	O	Bit clock for digitally-filtered output data.
16	LRCI	I	Sampling rate clock (fs) for input data.
17	BCKI	I	Bit clock for input data.
18	DIN	I	Serial audio data input.

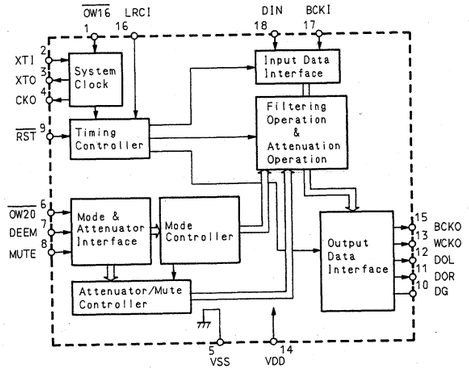


Fig. 9.1.10 Digital Filter SM5840CP (U801)

U802 PCM1700P (18-Bit Dual D/A Converter)

Pin No.	Signal Name	I/O	Function
1	VAA	—	Supplied with —5V.
2	S.DC L		Servo filter (Lch).
3	MSB.AL		MSB adjusting terminal (Lch). (Not used.)
4	NC	—	—
5	BPO DC L		BPO filter (Lch).
6	I.OUT L	O	I out (Lch).
7	ANA.GL	—	Analog common (Lch).
8	S.JL		Summing junction (Lch).
9	VOUT L	O	V out (Lch).
10	NC	—	—
11	+VDD	—	Supplied with +5V.
12	DATA L	I	Data input (Lch).
13	CLK	I	Clock input.
14	—VDD	—	Supplied with —5V.

Pin No.	Signal Name	I/O	Funciton
15	L.E	I	L.E input.
16	DATA R	I	Data input (Rch).
17	DGND	—	Digital common.
18	NC	—	—
19	VOUT R	O	Vout (Rch).
20	S.JR		Summing junciton (Rch).
21	ANA.GR	—	Analog common (Rch).
22	I.OUT R		Iout (Rch).
23	BPO DC R		BPO filter (Rch).
24	MSB.AR		MSB adjusting terminal (Rch). (Not used.)
25	S.DC R		Servo filter (Rch).
26	VPOT		(Not used.)
27	+VAA	—	Supplied with +5V.
28	DGND	—	Digital common.

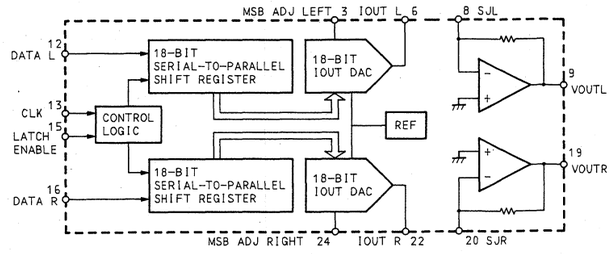


Fig. 9.1.11 18-Bit Dual D/A Converter PCM1700P (U802)

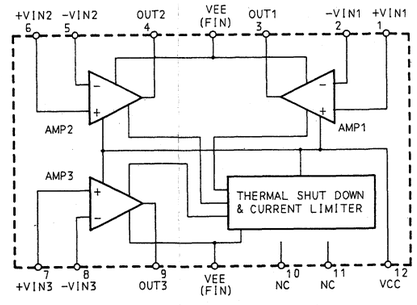
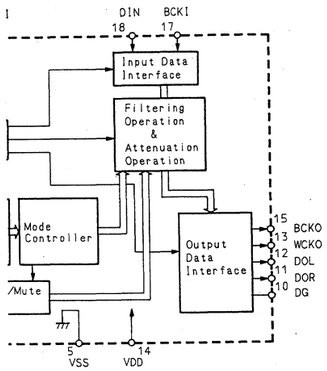


Fig. 9.1.12 Power Amp. LA6520

Digital Filter)

Function
Frequency select input. Fixed to "H" for selecting 384 fs.
X'tal (16.9344 MHz) is connected.
System clock output. (16.9344 MHz)
Grounded.
Not used.
De-emphasis information signal input.
Not used.
System reset input. Active "L".
Deglitch output. Not used.
Rch audio data output.
Lch audio data output.
Word clock for digitally-filtered output data.
+5V is supplied.
Bit clock for digitally-filtered output data.
Sampling rate clock (fs) for input data.
Bit clock for input data.
Serial audio data input.



Digital Filter SM5840CP (U801)

U802 PCM1700P (18-Bit Dual D/A Converter)

Pin No.	Signal Name	I/O	Function
1	VAA	—	Supplied with —5V.
2	S.DC L		Servo filter (Lch).
3	MSB.AL		MSB adjusting terminal (Lch). (Not used.)
4	NC	—	—
5	BPO DC L		BPO filter (Lch).
6	I.OUT L	O	I out (Lch).
7	ANA.GL	—	Analog common (Lch).
8	S.JL		Summing junction (Lch).
9	VOUT L	O	V out (Lch).
10	NC	—	—
11	+VDD	—	Supplied with +5V.
12	DATA L	I	Data input (Lch).
13	CLK	I	Clock input.
14	—VDD	—	Supplied with —5V.

Pin No.	Signal Name	I/O	Funciton
15	L.E	I	L.E input.
16	DATA R	I	Data input (Rch).
17	DGND	—	Digital common.
18	NC	—	—
19	VOUT R	O	Vout (Rch).
20	S.JR		Summing junciton (Rch).
21	ANA.GR	—	Analog common (Rch).
22	I.OUT R		Iout (Rch).
23	BPO DC R		BPO filter (Rch).
24	MSB.AR		MSB adjusting terminal (Rch). (Not used.)
25	S.DC R		Servo filter (Rch).
26	VPOT		(Not used.)
27	+VAA	—	Supplied with +5V.
28	DGND	—	Digital common.

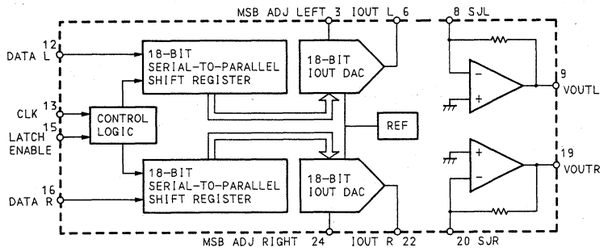


Fig. 9.1.11 18-Bit Dual D/A Converter PCM1700P (U802)

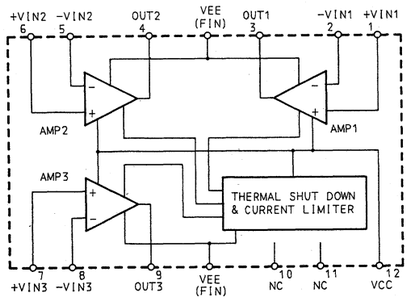


Fig. 9.1.12 Power Amp. LA6520

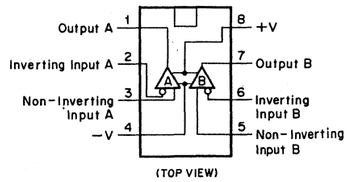


Fig. 9.1.3 Operational Amp. NE5532

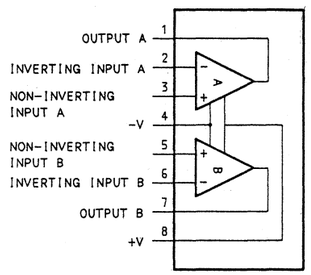


Fig. 9.1.14 Operational Amp. NJM4556S

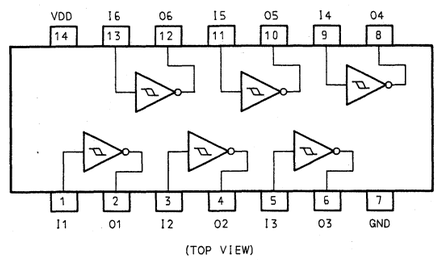
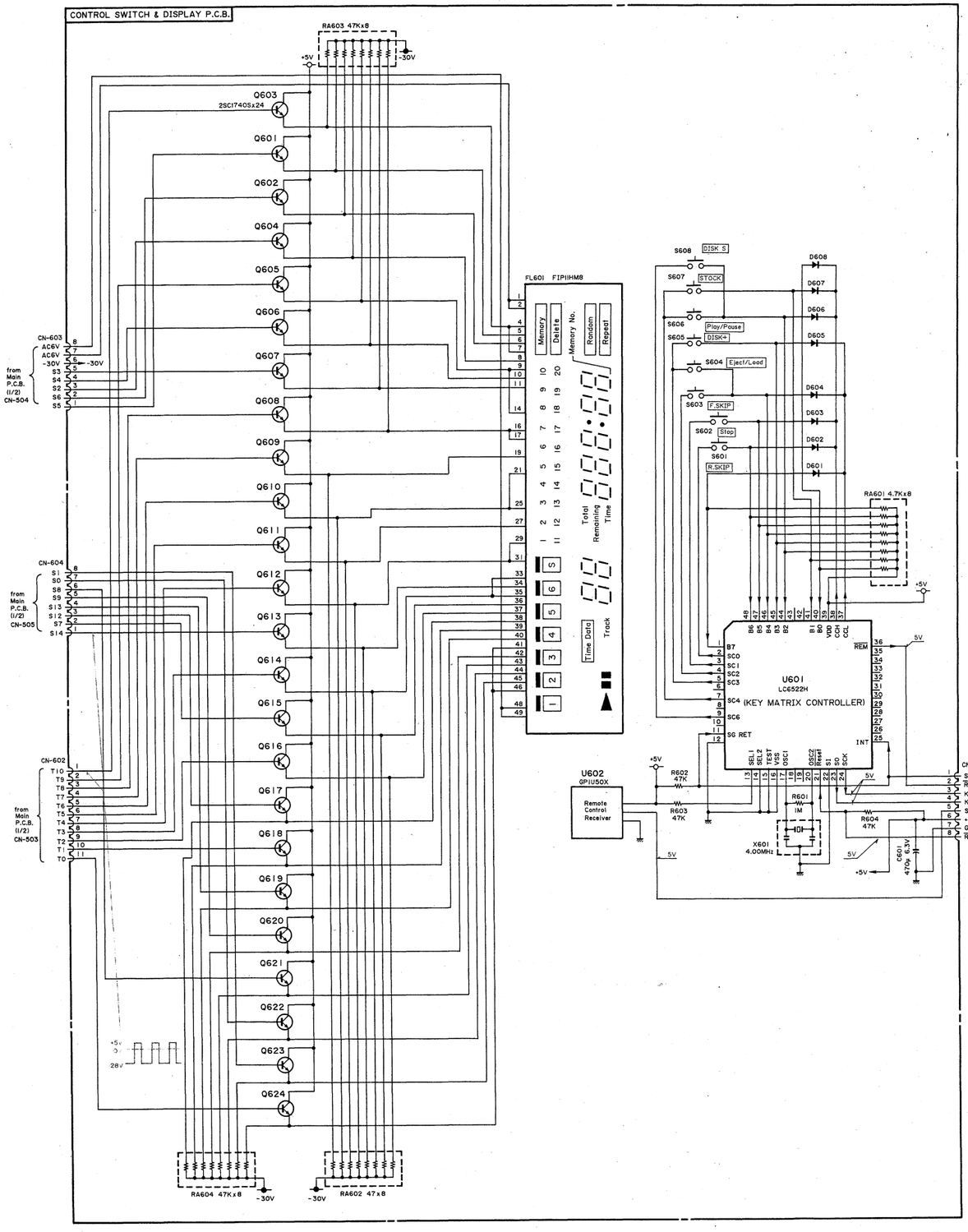


Fig. 9.1.15 Schmitt Trigger TC4584BP

9.2. Schematic Diagrams



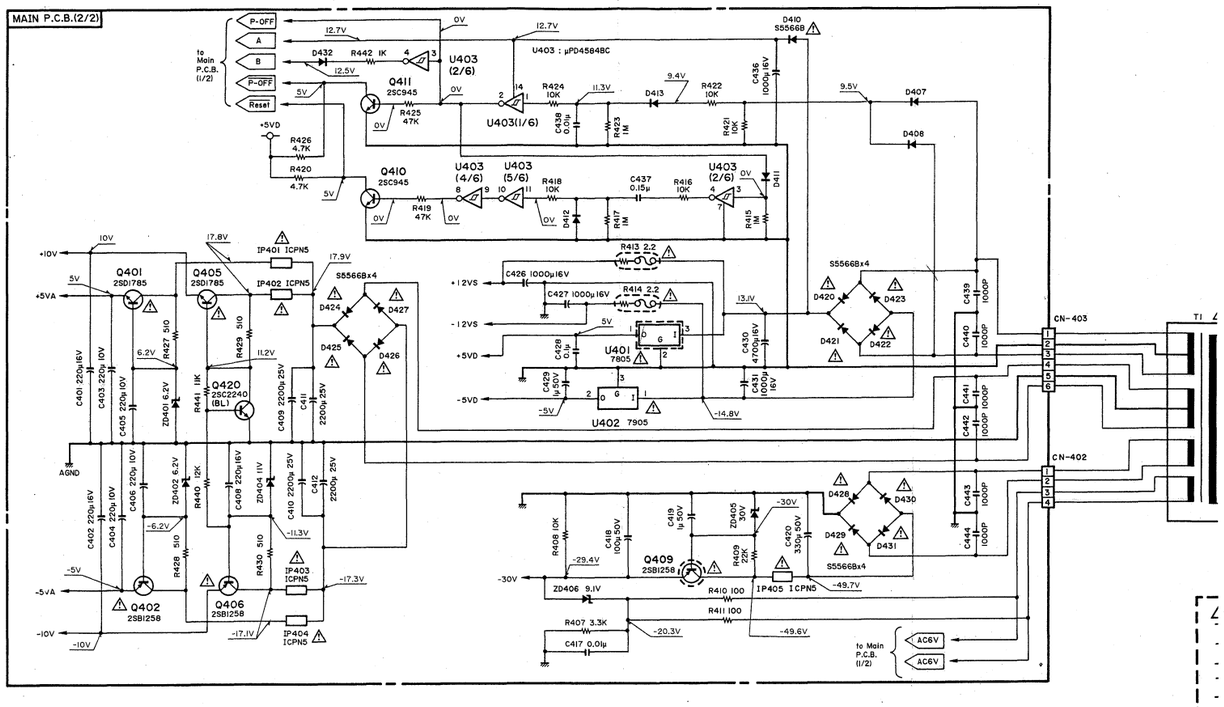


Fig. 9.2.1

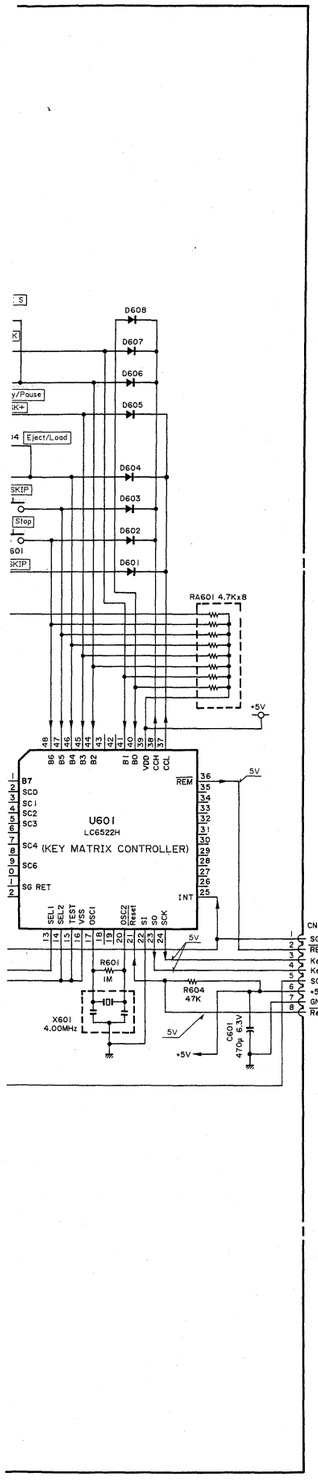
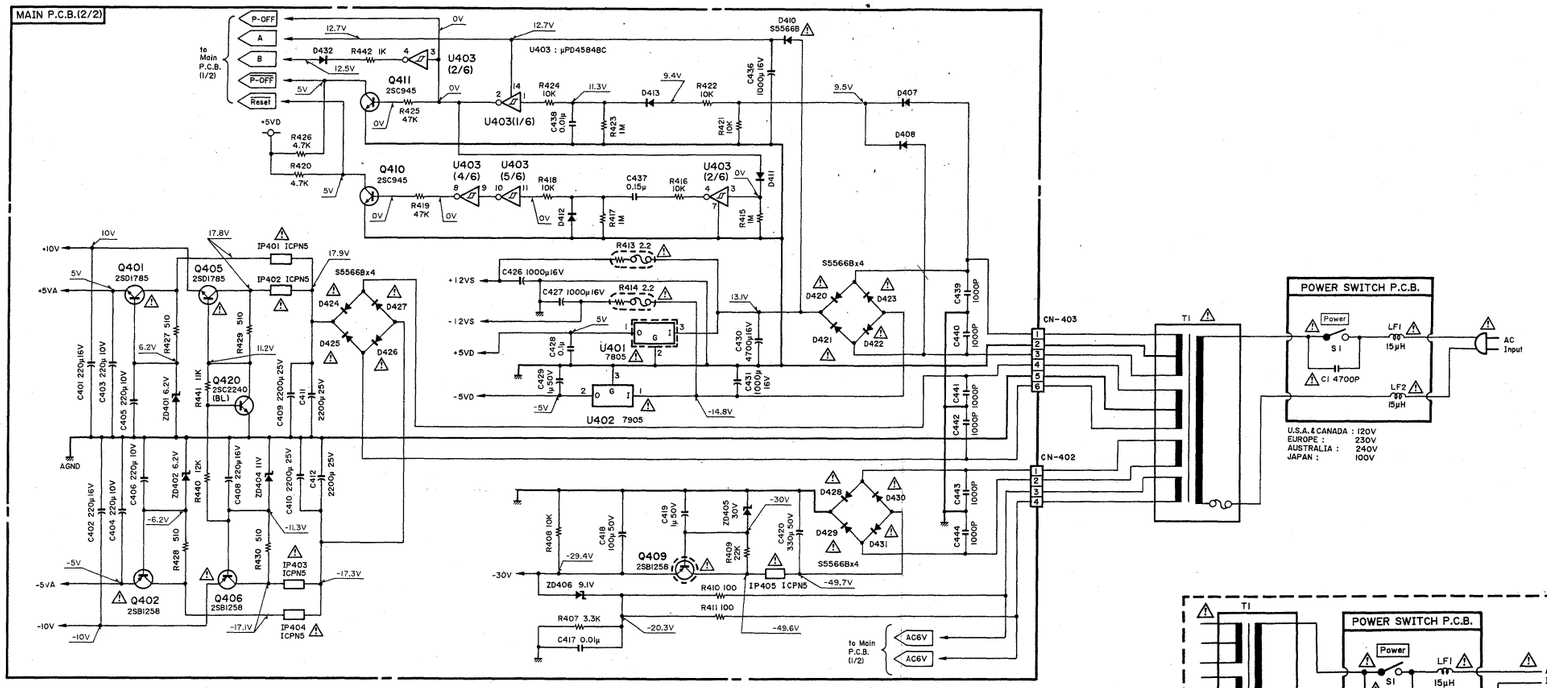
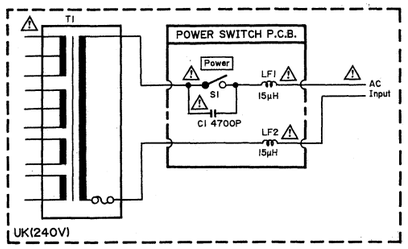
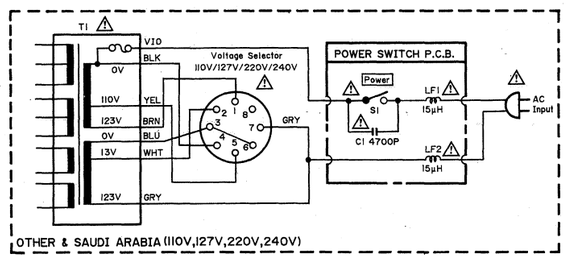
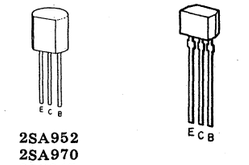


Fig. 9.2.1









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2SC2240
2SC2878

2SC1740S
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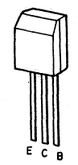
DTC114ES
DTC144ES



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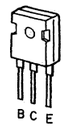
2SD471



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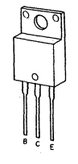

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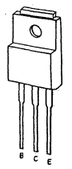

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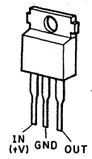
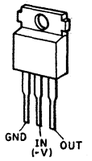


NJM7805FA



NJM7905FA

WARNING:

Parts marked with the symbol ⚠ have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

Notes: 1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
2. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.

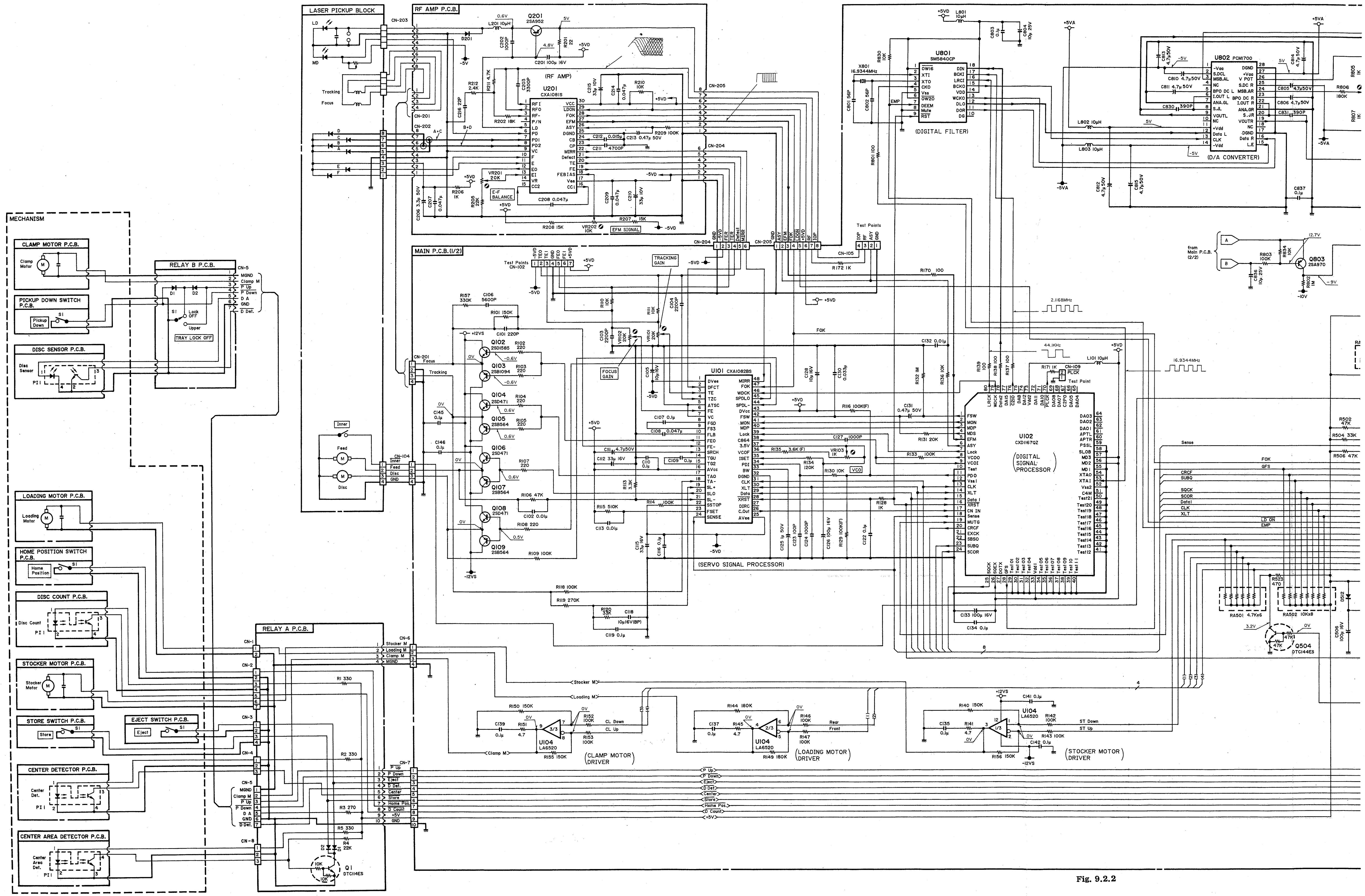


Fig. 9.2.2

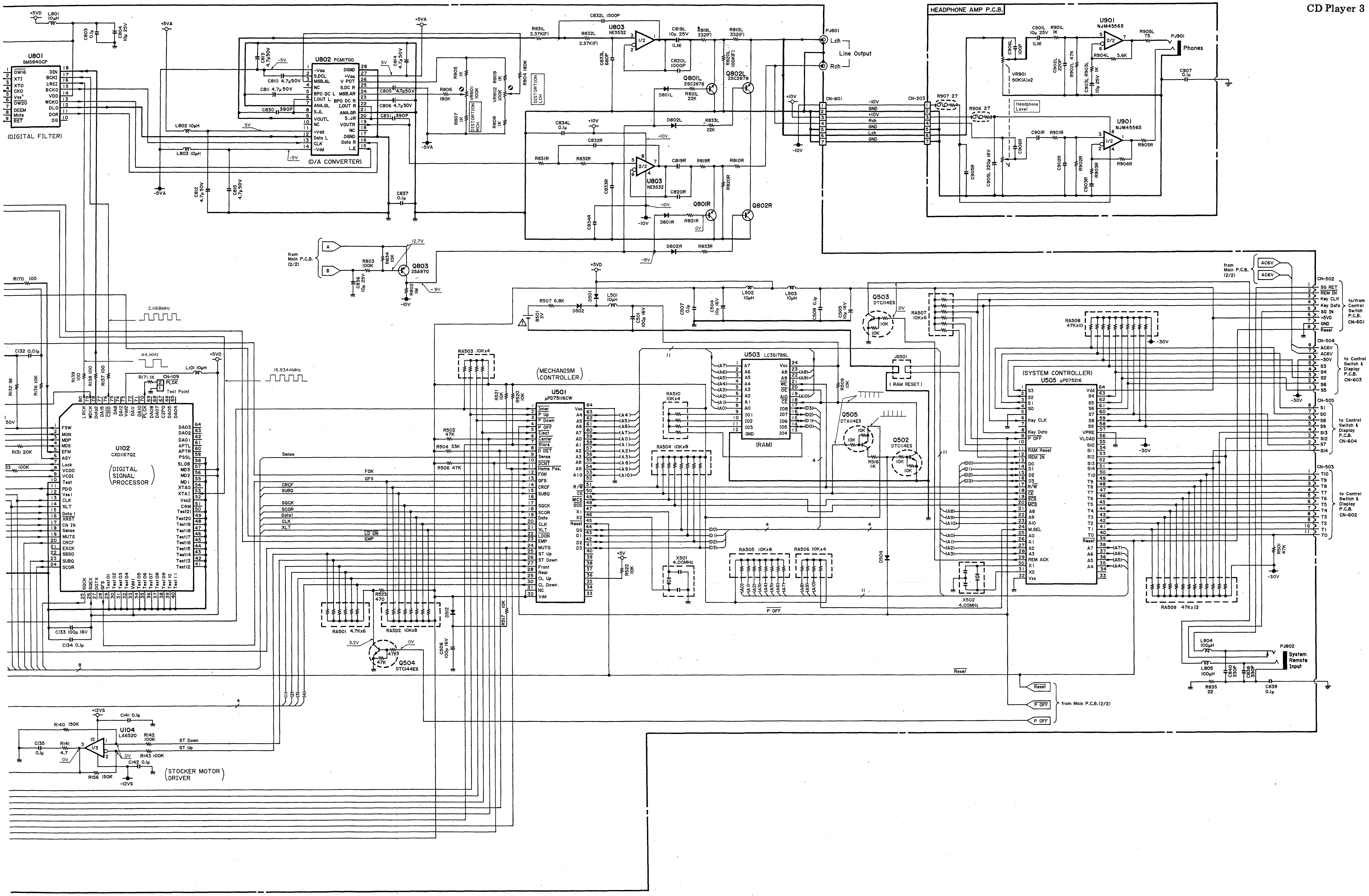
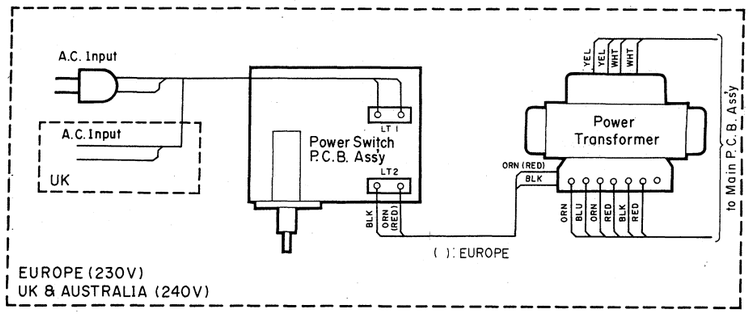
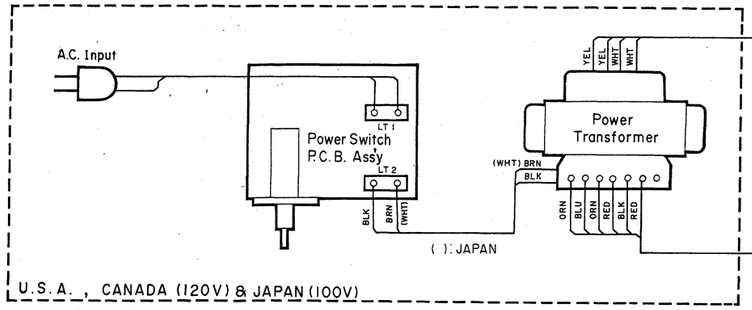
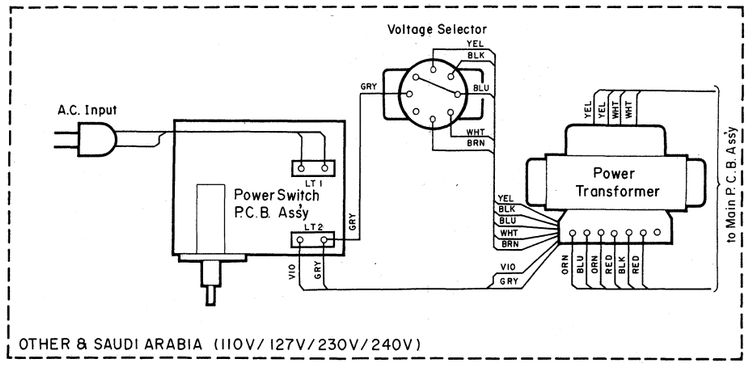

U801
SM5840CP
(DIGITAL FILTER)
U802 PCM1700
(D/A CONVERTER)
U803
NE5532
PJ801
Lch
Rch
Line Output
DISTORTION LCH
DISTORTION RCH
Q801L
2SC2878
Q802L
2SC2878
Q801R
Q802R
CN-801
CN-203
-10V
GND
+10V
Rch
GND
Lch
GND
HEADPHONE AMP P.C.B.
U901
NJM4556S
VR901
50K(A)x2
Headphone Level
PJ901
Phones
from Main P.C.B. (2/2)
Q803
2SA970
U102
CXD1167QZ
(DIGITAL SIGNAL PROCESSOR)
2.1168MHz
44.1KHz
16.9344MHz
CN-109
PLCK
Test Point
(MECHANISM CONTROLLER)
U501
μPD75116CW
U503 LC3517BSL
(RAM)
JS501
(RAM RESET)
Q503
DTC114ES
Q505
DTA114ES
Q502
DTC114ES
Q504
DTC144ES
X501
4.00MHz
X502
4.00MHz
(SYSTEM CONTROLLER)
U505 μPD75216
CN-502
to/from Control Switch P.C.B. CN-601
CN-504
to Control Switch & Display P.C.B. CN-603
CN-505
to Control Switch & Display P.C.B. CN-604
CN-503
to Control Switch & Display P.C.B. CN-602
PJ802
System Remote Input
from Main P.C.B.(2/2)
U104
LA6520
ST Down
ST Up
(STOCKER MOTOR DRIVER)

Fig. 9.2.2

10. WIRING DIAGRAM







Notes: 1. Table of wire colors

BRN	— Brown	BLU	— Blue
RED	— Red	VIO	— Violet
ORN	— Orange	GRY	— Gray
YEL	— Yellow	WHT	— White
GRN	— Green	BLK	— Black

2. Component side view of the P.C.B. is illustrated unless otherwise specified.
3. Wire tube color is shown in ( ).

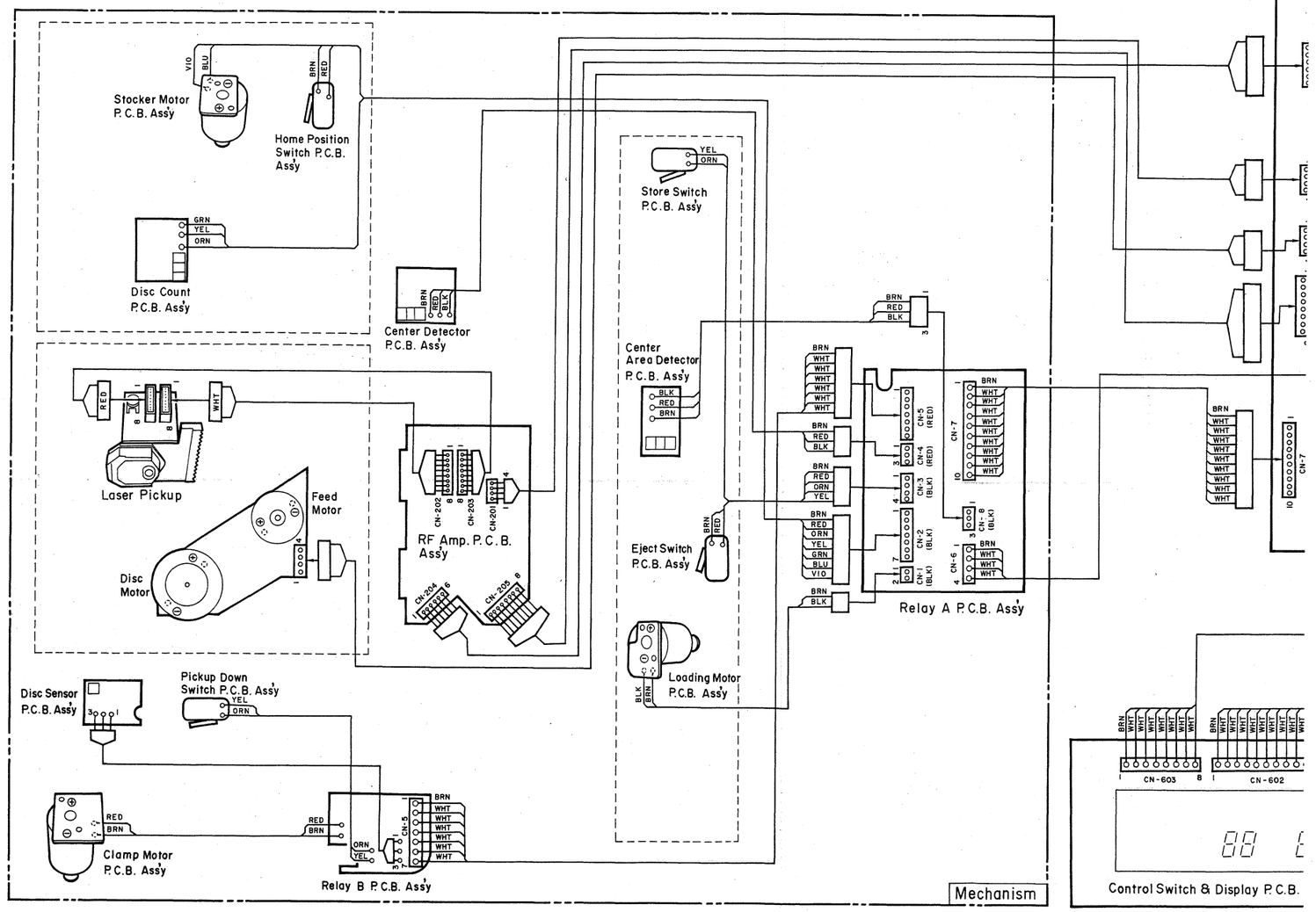


Fig. 10

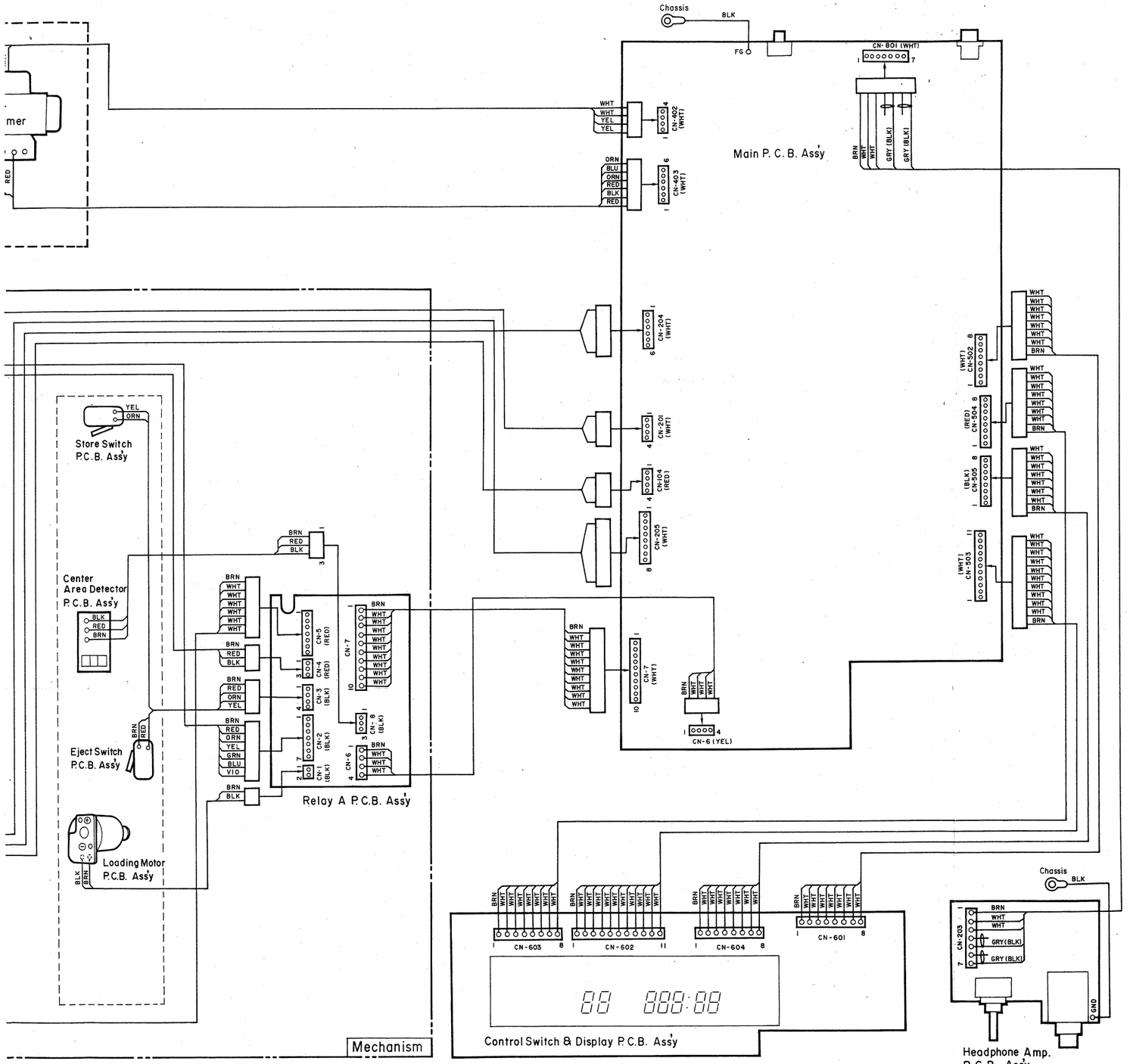


Fig. 10

11. TIMING CHART

(1) Operational Flow Chart (Single-Disc Operation)

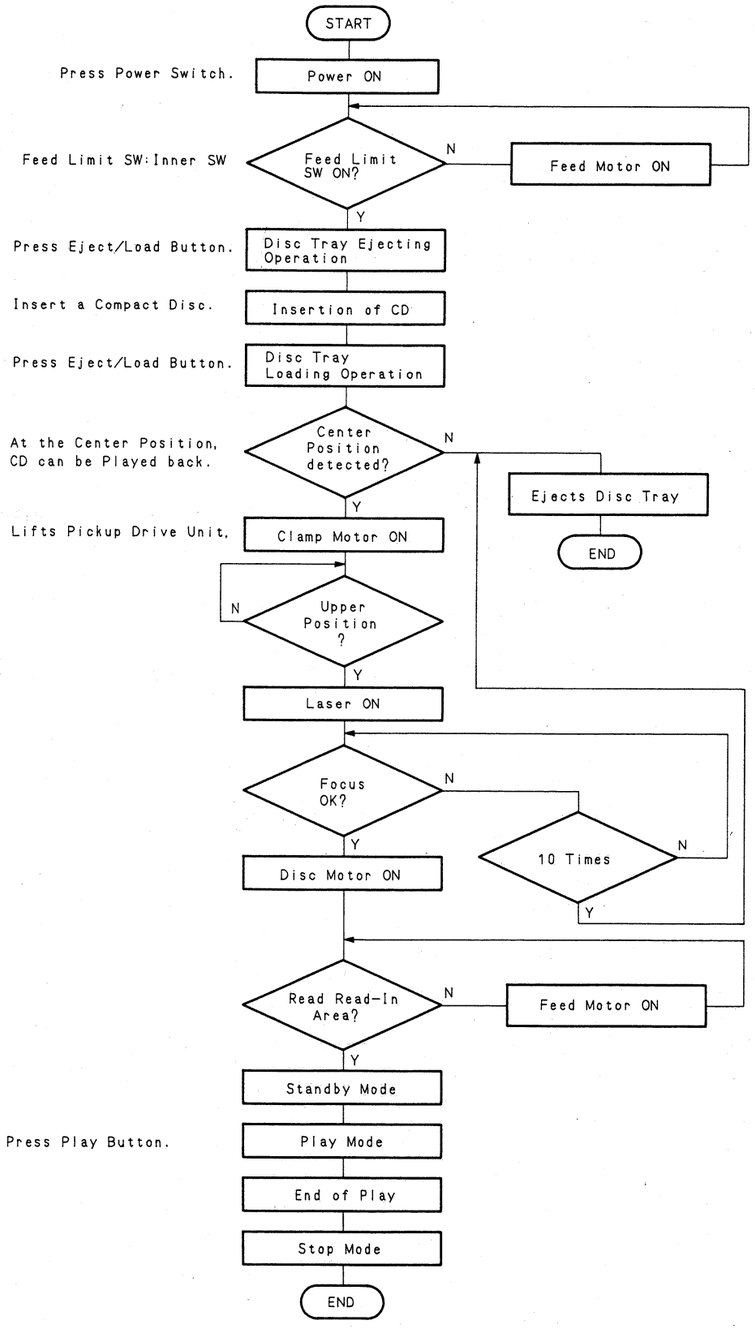
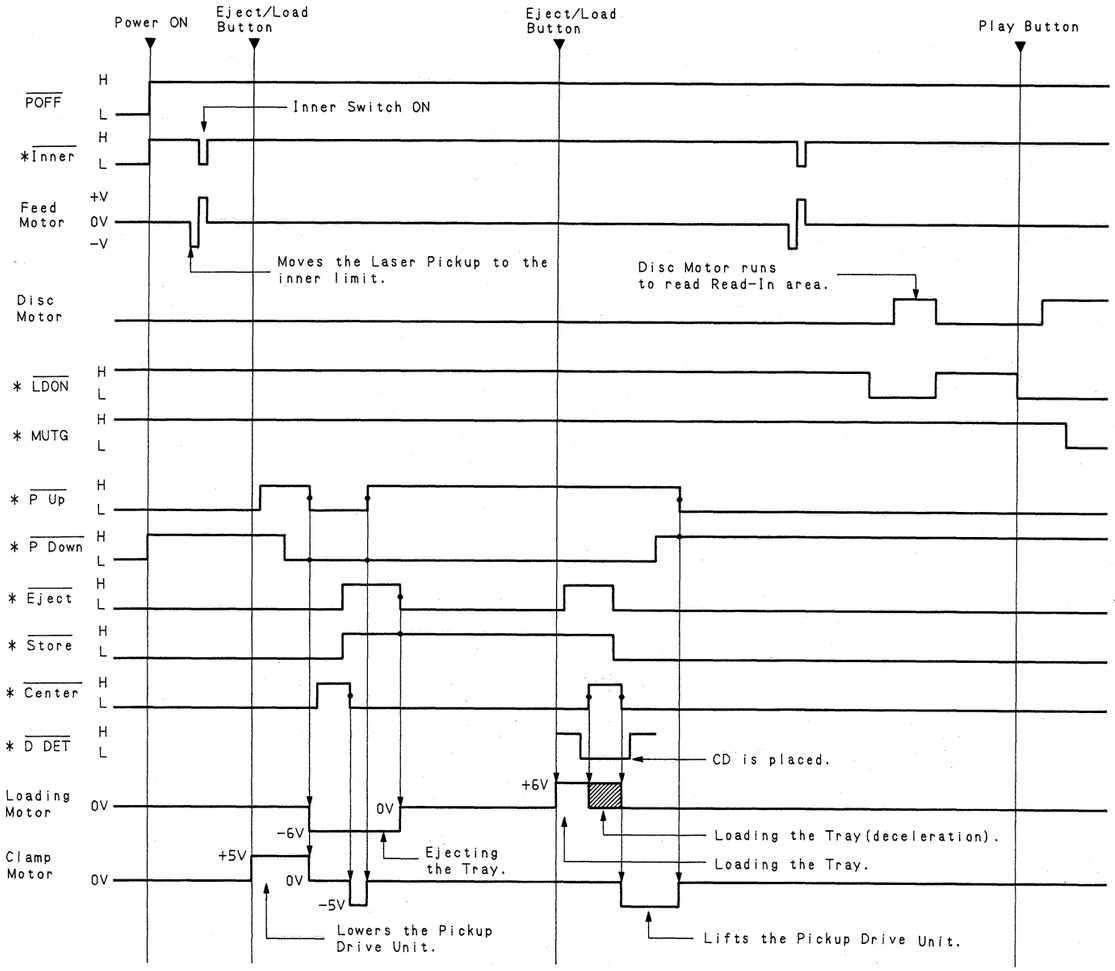


Fig. 11.1

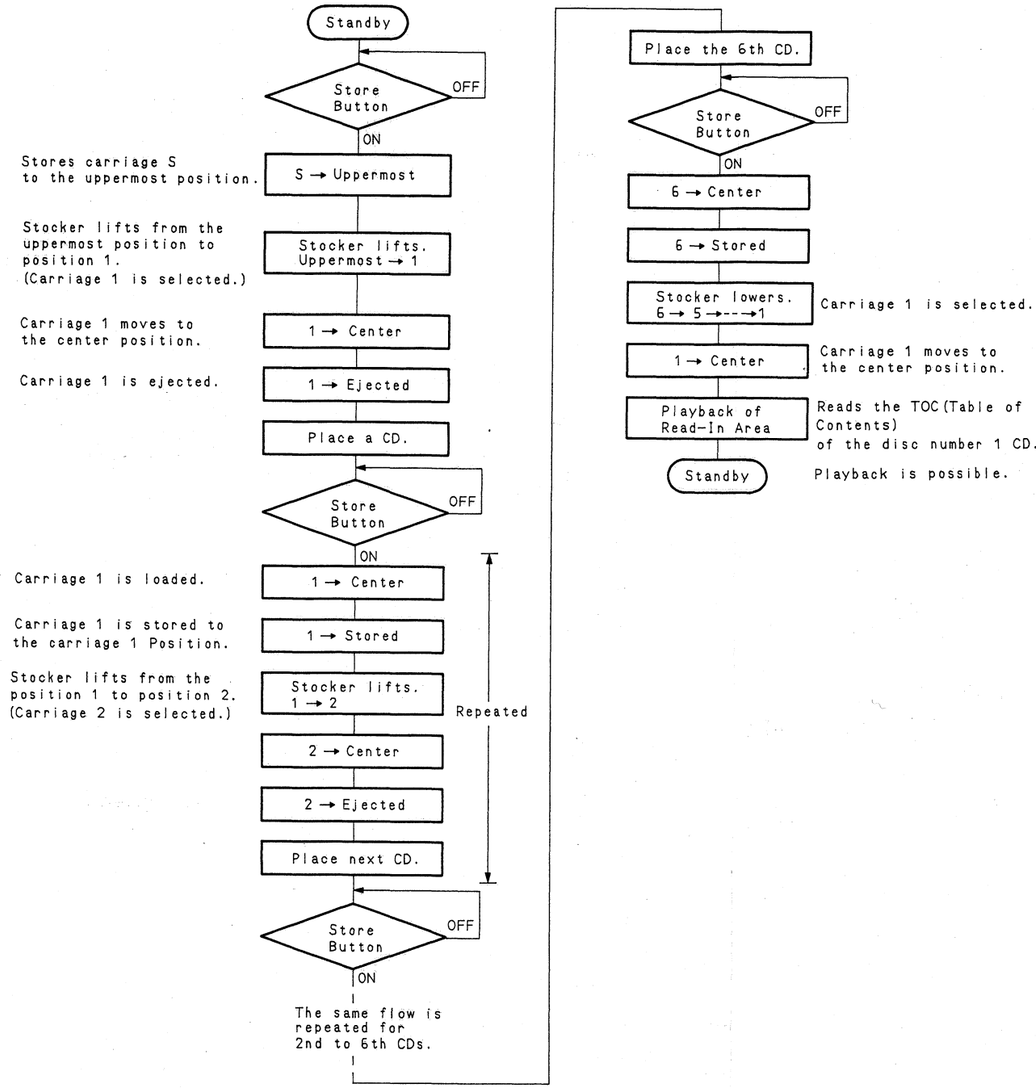
(2) Operational Timing Chart



* : Signals of U501 (uPD75116CW , Mechanism Controller).

Fig. 11.2

(3) Multiple-Disc Operation (Loading Discs)



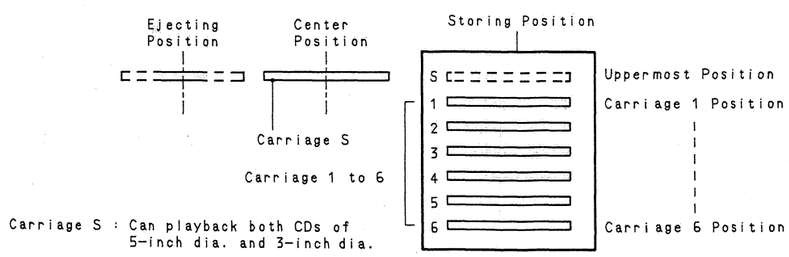


Fig. 11.3

12. BLOCK DIAGRAM

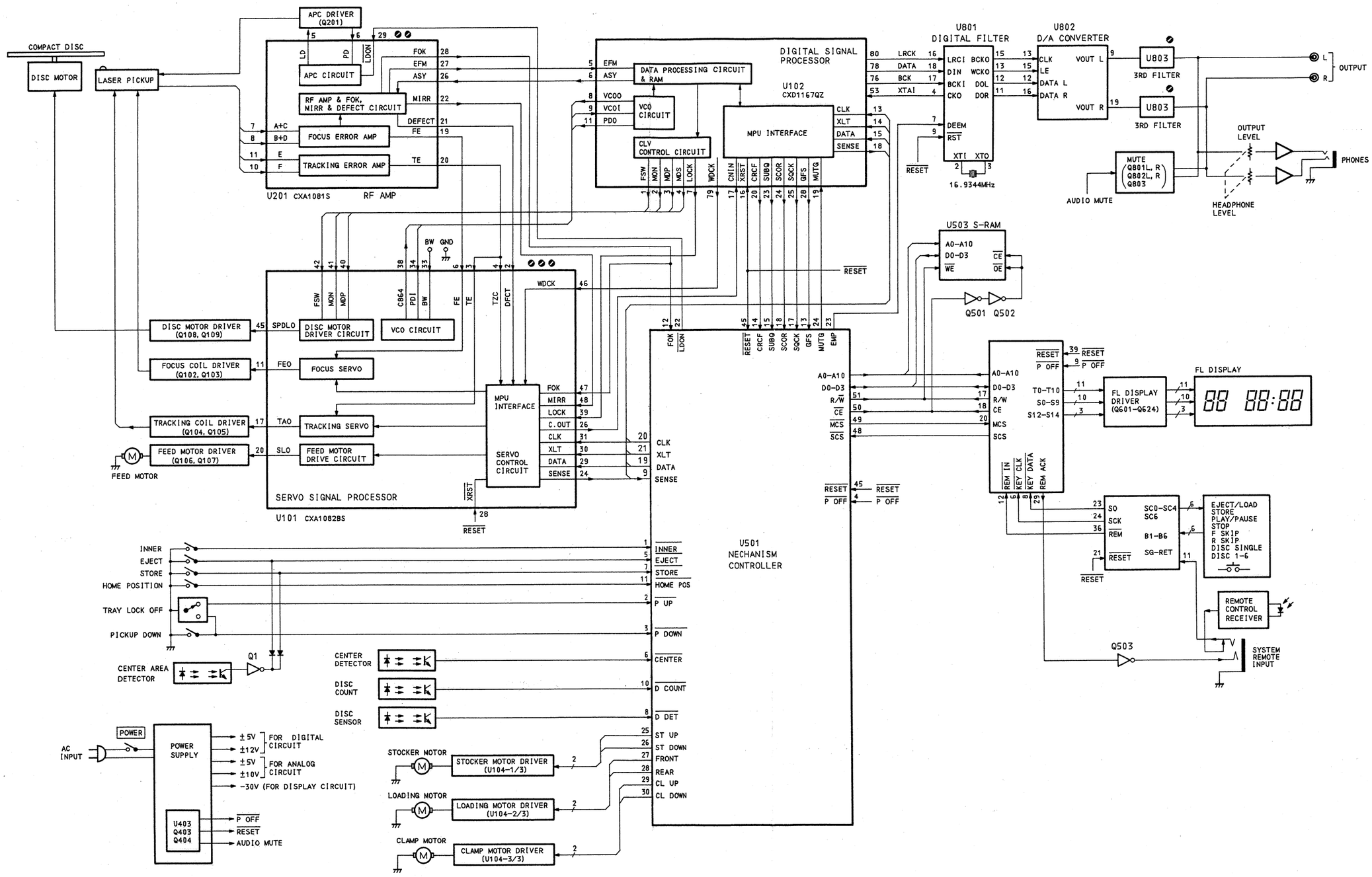


Fig. 12

13. SPECIFICATIONS

- **Main Unit**

System	Compact Disc digital audio
Signal Readout	Optical (semiconductor laser)
Error Correction	CIRC principle
Number of Channels	2 channels, stereo
D/A Converter Type	18-bit Dual D/A Converters with 8-times oversampling digital filter
Sampling Frequency	44.1 kHz
Quantization	16-bit linear
Disc Rotational Velocity	Approx. 200 to 500 rpm (constant linear velocity)
Wow and Flutter	Below measurement limit
Frequency Response	5—20,000 Hz ±0.5 dB
Signal to Noise Ratio (IHF A-WTD)	Better than 105 dB
Dynamic Range	Better than 98 dB
Total Harmonic Distortion (1 kHz)	0.0035%
Total Harmonic Distortion + Noise (1 kHz)	0.004%
Channel Separation	Better than 95 dB
Output (1 kHz, 0 dB)	
Line	2.0 V/600 ohms
Headphones	60 mW into 40 ohms (Phones Level Max.)
Power Source	120, 230, 240 or 110/127/220/240 VAC, 50/60 Hz (According to country of sale)
Power Consumption	27 W max.
Dimensions*	430 (W) x 100 (H) x 375 (D) mm 16-15/16 (W) x 3-15/16 (H) x 14-3/4 (D) inches
Approximate Weight	7.8 kg/17 lbs. 3 oz.

- **Remote Control Unit**

Principle	Infrared pulse system
Power Supply	3 VDC (1.5 V x 2)
Dimensions*	60 (W) x 18 (H) x 165 (D) mm 2-3/8 (W) x 11/16 (H) x 6-1/2 (D) inches
Approximate Weight (including batteries)	120 g/4 oz.

*: Dimensions do not include protruding parts. Height is the panel height.

- Specifications and design are subject to change for further improvement without notice.