

Service Manual

Nakamichi CD Player 3



CONTENTS

1.	General	1
2.	Removal Procedures	4
2. 1.	Top Cover Ass'y	4
2. 2.	Disc Tray Cover Ass'y	4
2. 3.	Front Panel Ass'y	5
2. 4.	Main P.C.B. Ass'y	5
2. 5.	Control Switch & Display P.C.B. Ass'y	5
2. 6.	Mechanism Ass'y	5
2. 7.	Laser Pickup	6
3.	Mechanical Adjustments	7
3. 1.	Threading of Tray Wire	7
3. 2.	Lubrication	7
4.	Measurement Instruments and Jigs	7
5.	Parts Location for Electrical Adjustment	9
6.	Electrical Adjustments	10
7.	Mechanism Ass'y and Parts List	13
7. 1.	Synthesis	13
7. 2.	Front Panel Ass'y (A01)	13
7. 3.	Chassis Ass'y (A02)	14
7. 4.	Mechanism Ass'y (B01)	15
7. 5.	Disc Tray Ass'y (C01)	16
7. 6.	Guide Chassis R Ass'y (C02)	17
7. 7.	Stocker Ass'y (C03)	18
7. 8.	Pickup Drive Unit (C04)	19
7. 9.	Main Chassis Ass'y (C05)	20
8.	Mounting Diagrams and Parts List	21
8. 1.	Power Switch P.C.B. Ass'y	21
8. 2.	Relay A P.C.B. Ass'y	21
8. 3.	Relay B P.C.B. Ass'y	21
8. 4.	Disc Sensor P.C.B. Ass'y	21
8. 5.	Center Detector P.C.B. Ass'y	22
8. 6.	Disc Count P.C.B. Ass'y	22
8. 7.	Center Area Detector P.C.B. Ass'y	22
8. 8.	Home Position Switch P.C.B. Ass'y	22
8. 9.	Eject Switch P.C.B. Ass'y	22
8. 10.	Pickup Down Switch P.C.B. Ass'y	22
8. 11.	Store Switch P.C.B. Ass'y	22
8. 12.	Clamp Motor P.C.B. Ass'y	22
8. 13.	Loading Motor P.C.B. Ass'y	22
8. 14.	Stocker Motor P.C.B. Ass'y	22
8. 15.	RF Amp. P.C.B. Ass'y	23
8. 16.	Headphone Amp. P.C.B. Ass'y	23
8. 17.	Control Switch & Display P.C.B. Ass'y	24
8. 18.	Main P.C.B. Ass'y	26
9.	Schematic Diagrams	27
9. 1.	IC Block Diagrams	27
9. 2.	Schematic Diagrams	37
10.	Wiring Diagram	39
11.	Timing Chart	39
12.	Block Diagram	41
13.	Specifications	42

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 beskrivna i bruksanvisningen kan resultera i farlig laserutstrålning. Justering eller reparation av denna kompaktskivspelare skall endast utföras av kvalificerad servicepersonal.

OBS!

Indstilling af knapper, omskiftere og øvrige kontrollknapper, som ikke følger den i brugsanvisningen beskrevne måde, kan resultere i farlig laserudstråling. Justering eller reparation af denne 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 må 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.

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

● LASER DIODE PROPERTIES

GaAlAs double hetero laser diode

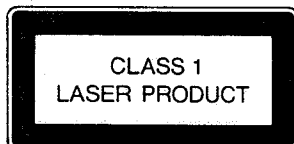
Maximum Radiant Power: 0.4mW Max.

Measured at a distance of 1.6mm from the object lens surface on the

Laser Pickup.

Wavelength: 780nm

Emission Duration: Continuous



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.

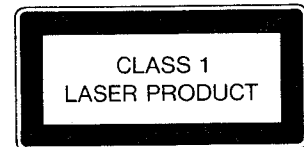
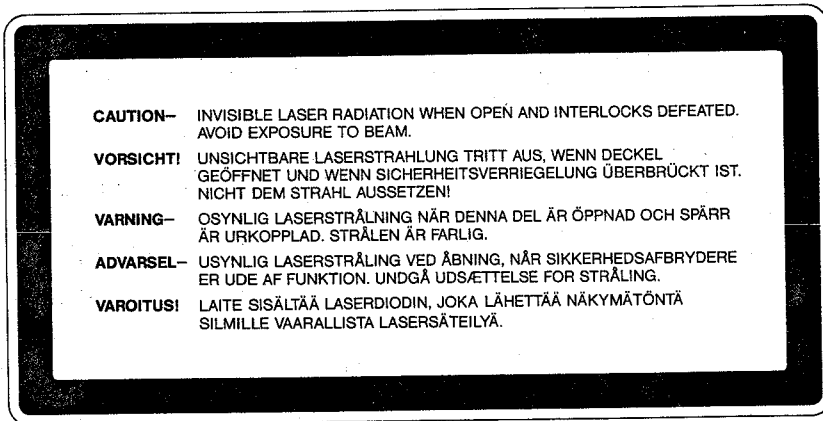
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

(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.

• 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.

(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!

Litiumbatterier. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig og som beskrevet i servicemanualen.

batterierne kun må udskiftes 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 μ W Max.

Measured at a distance of about 200 mm from the object lens surface on the Laser Pickup.

Wavelength: 780 nm

Emission Duration: Continuous

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 should 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.

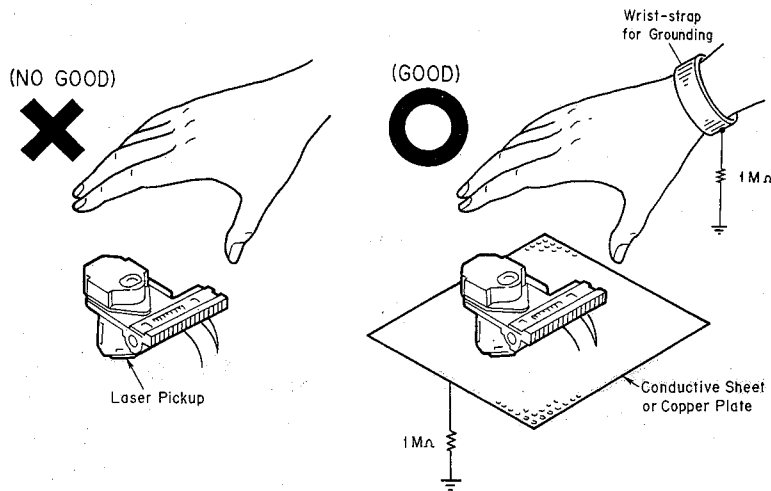
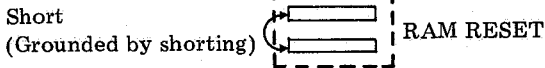


Fig. 1.1

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 function 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.)



- (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

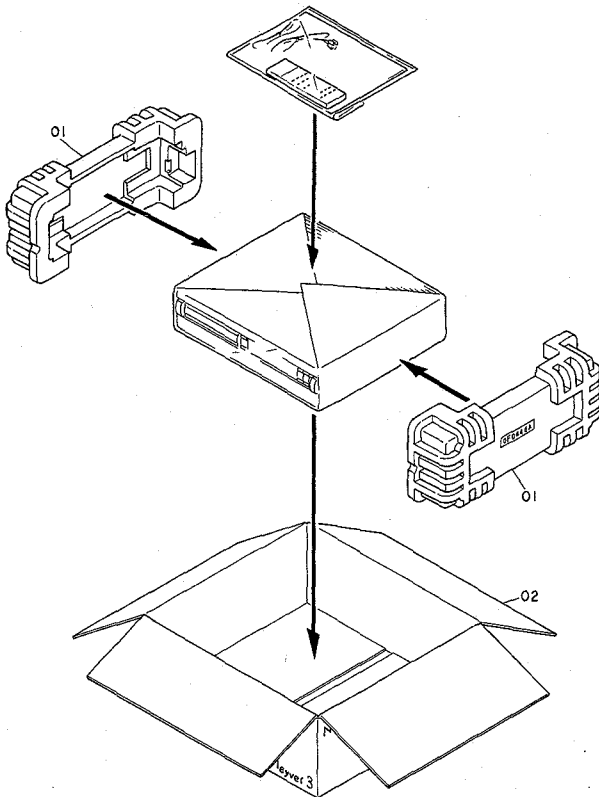


Fig. 1.2

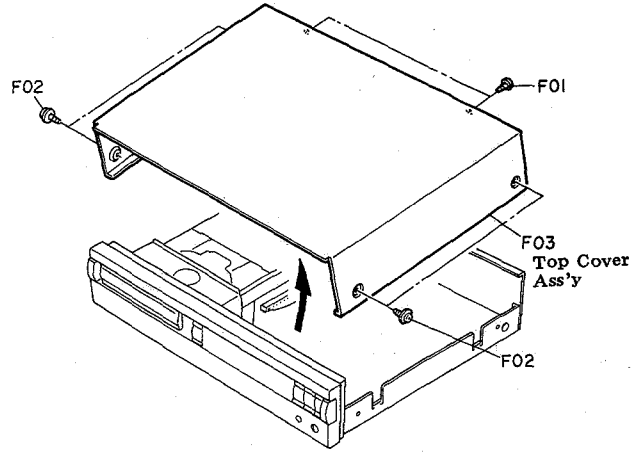
Schematic Ref. No.	Part No.	Description	Qty
	-	Package Ass'y	
01	0F04445A	Packing	2
02	0F04446A	Carton Box	1
	DA04379A	Accessory Ass'y (USA, CAN)	1
	DA04380A	Accessory Ass'y (EP)	1
	DA04381A	Accessory Ass'y (UK)	1
	DA04393A	Accessory Ass'y (AUS, SAU, OTR)	1
	DA04378A	Accessory Ass'y (JPN)	1
	0B90462A	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.



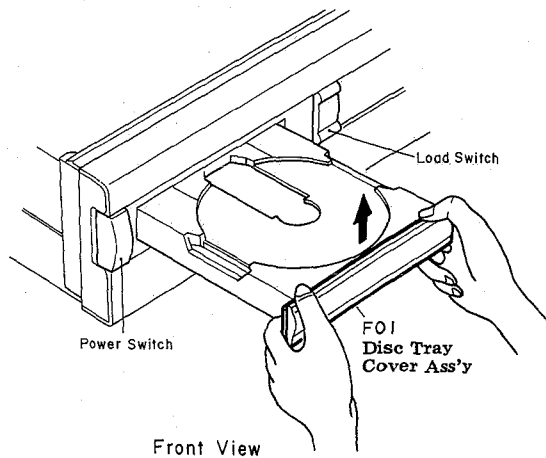
Front View

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.



Front View

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).

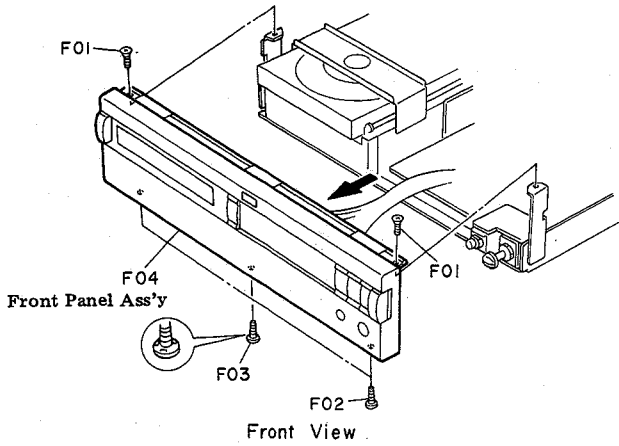
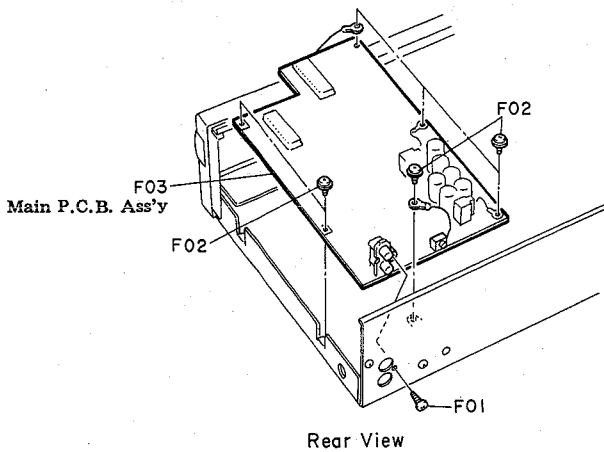


Fig. 2.3

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).



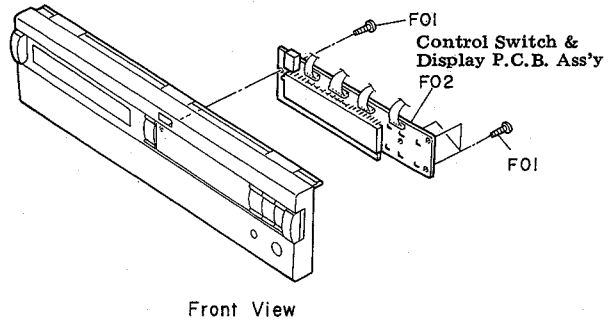
Rear View

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).



Front View

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).

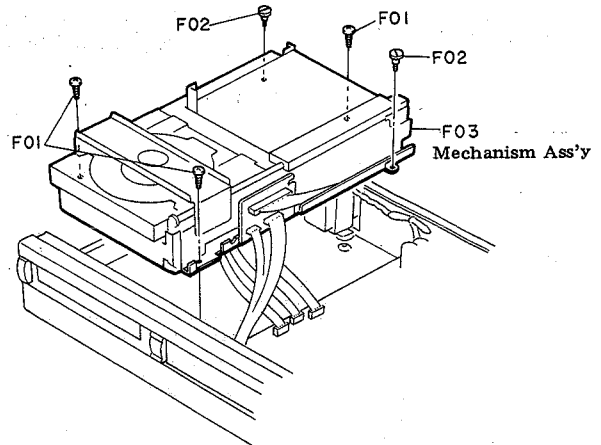


Fig. 2.6

2.7. Laser Pickup

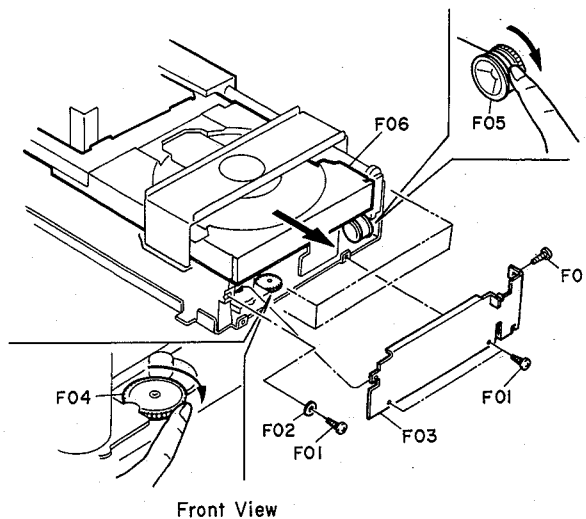
Refer to Figs. 2.7.1 and 2.7.2.

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.



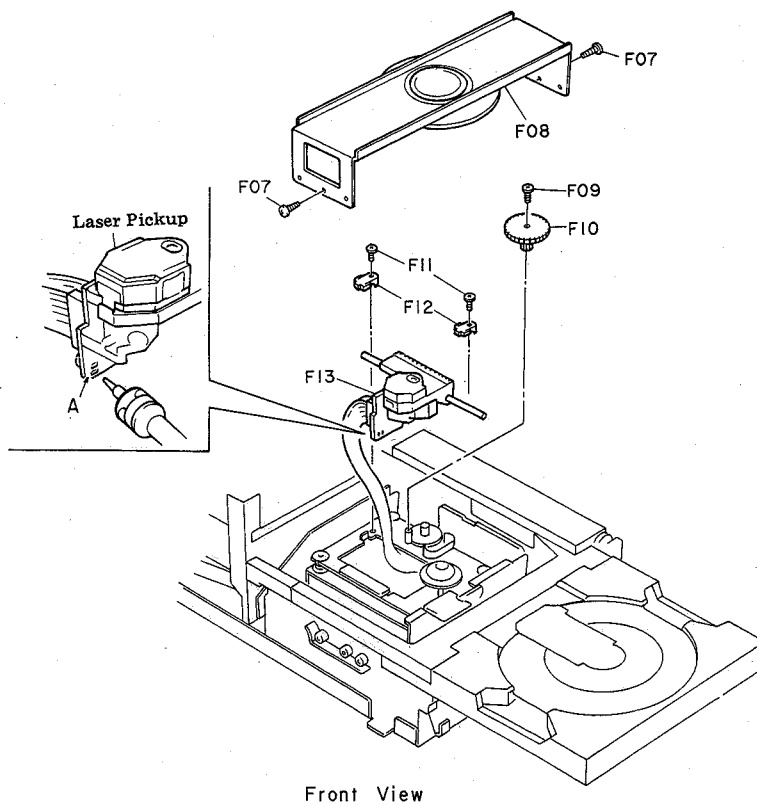
Front View

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.



Front View

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.

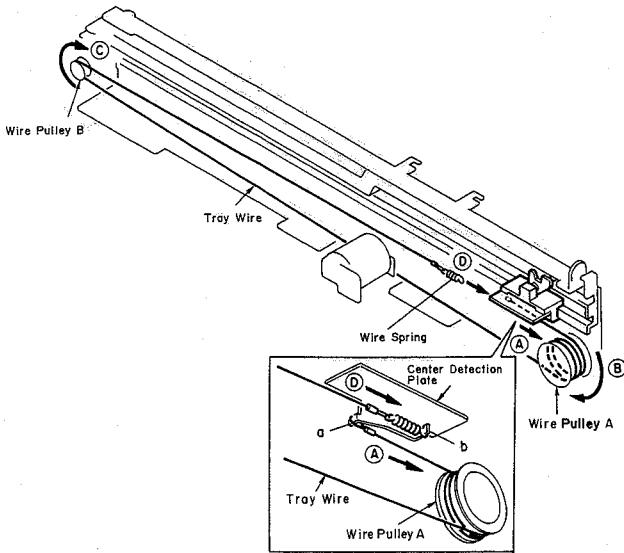


Fig. 3.1

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)

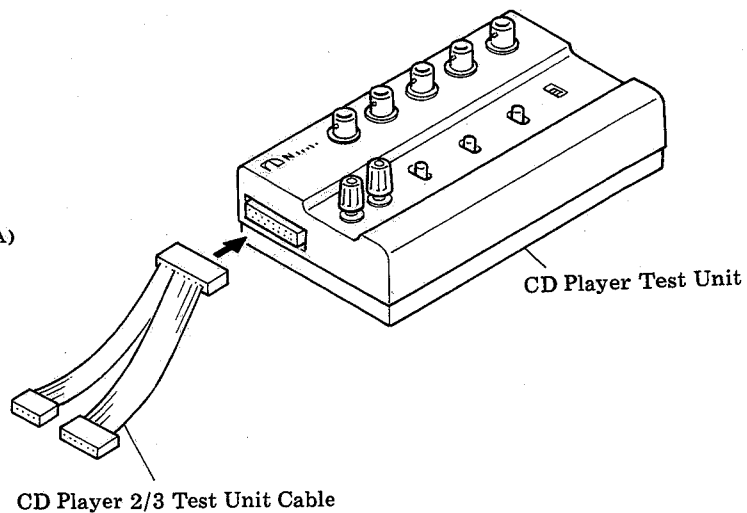


Fig. 4.1 Test Unit

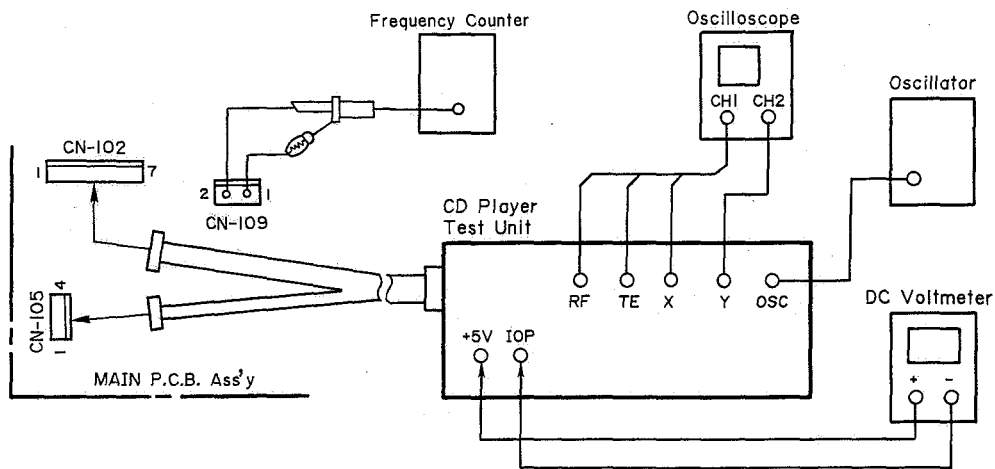


Fig. 4.2 Test Unit Connecting Diagram

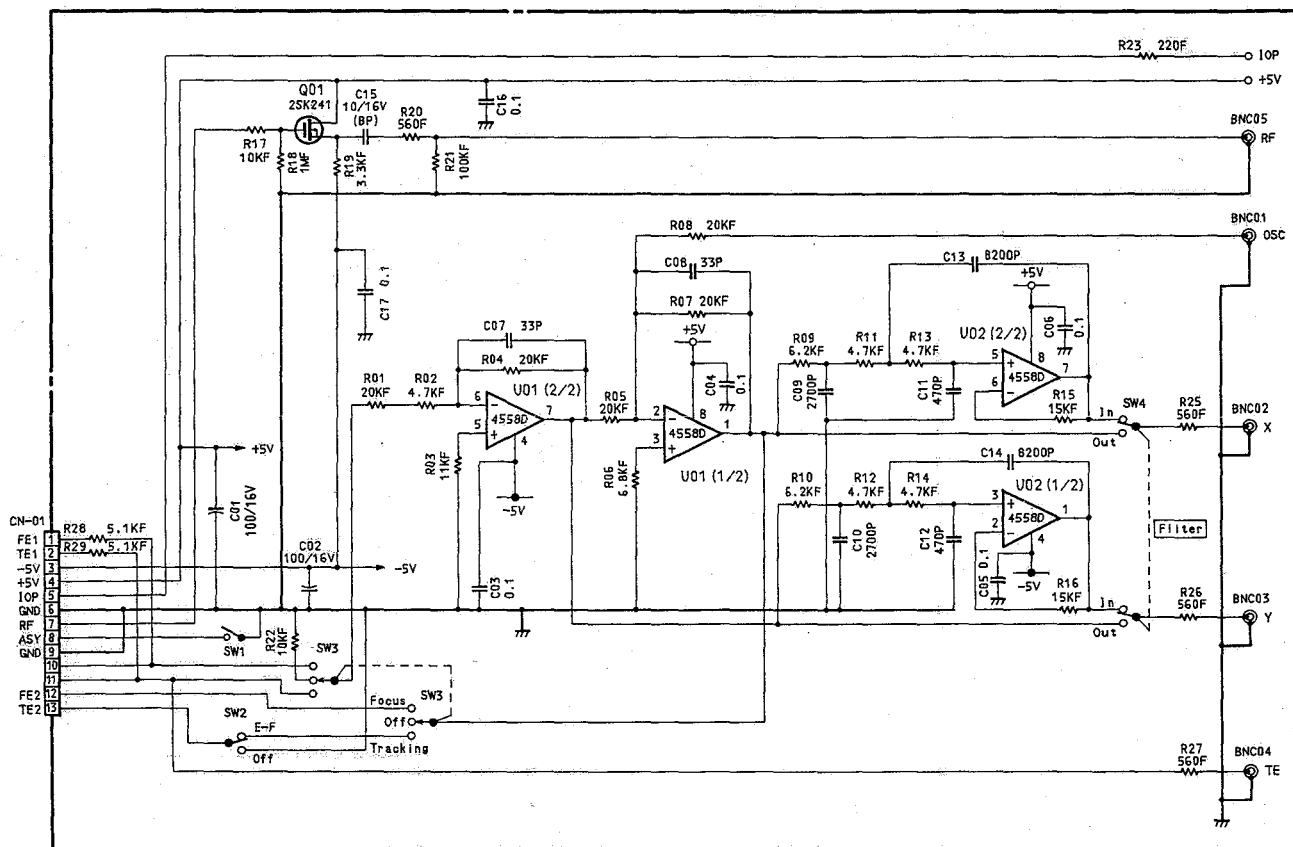


Fig. 4.3 Test Unit Circuit Diagram

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

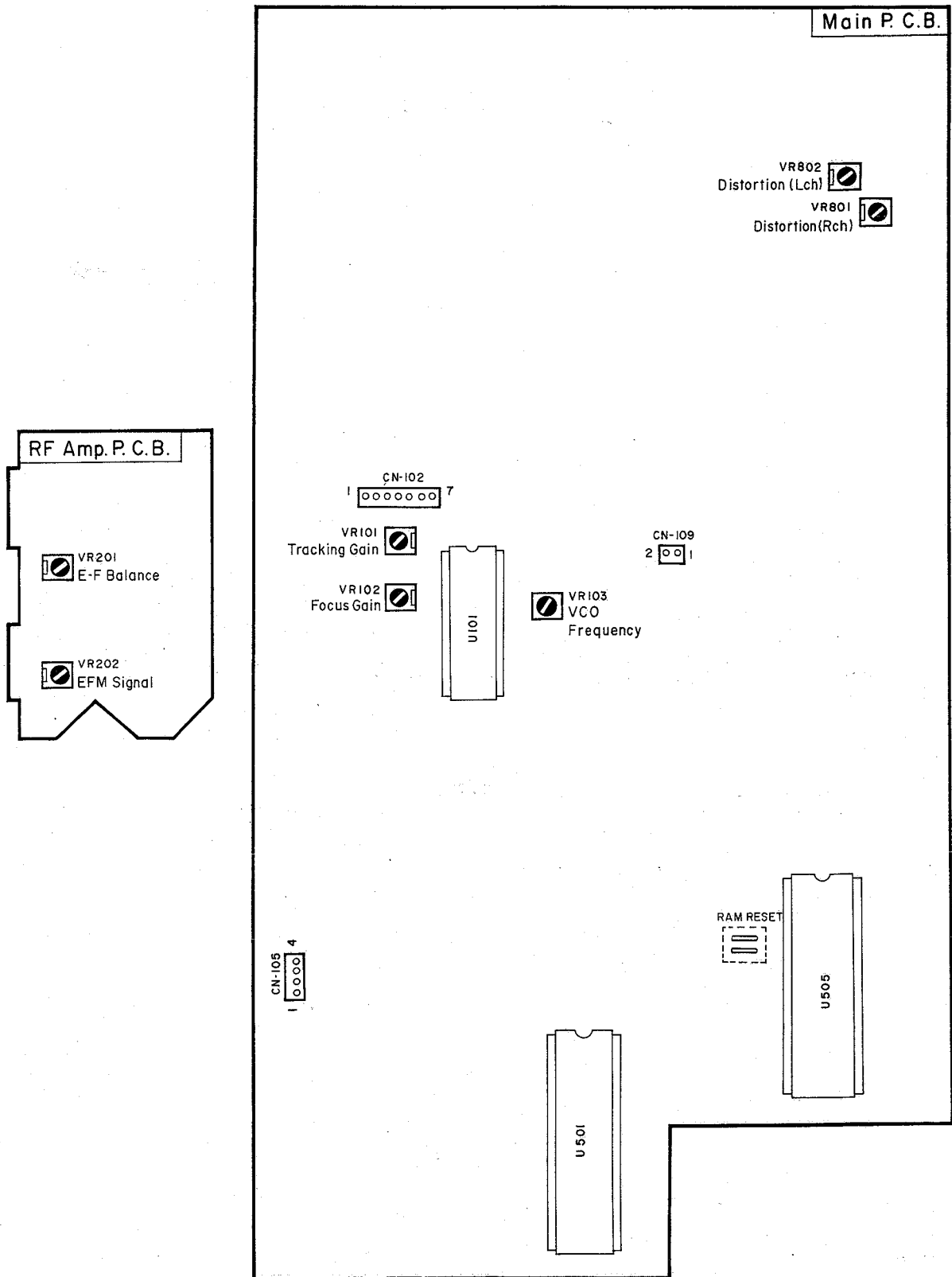
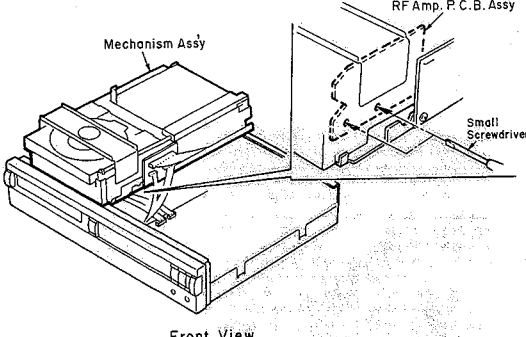
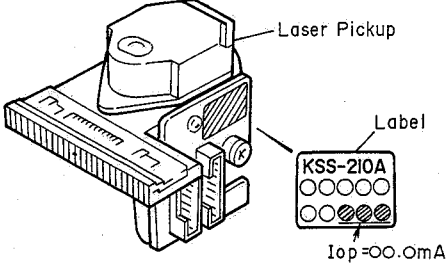
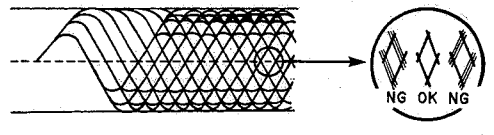
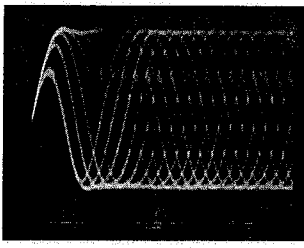
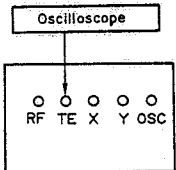
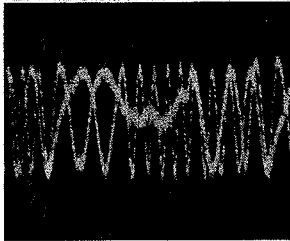
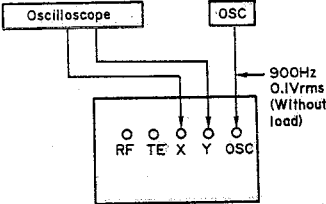
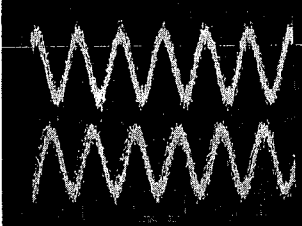
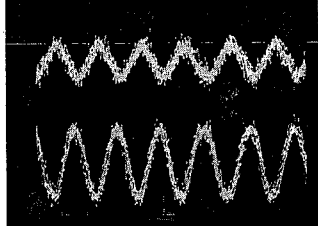
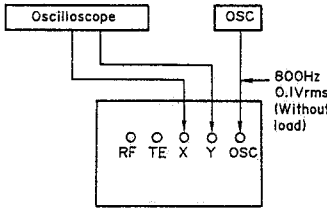
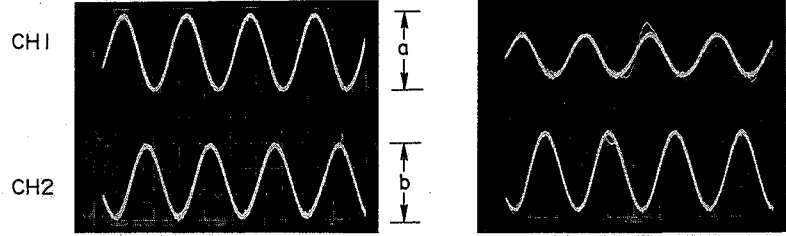


Fig. 5

6. ELECTRICAL ADJUSTMENTS

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
1	Preliminary Step				<p>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.)</p> <p>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.</p> <p>Note: In the following cases, preset the following semi-fixed volumes to their mechanical center positions before starting adjustment.</p> <ul style="list-style-type: none"> VR101, VR102 --- Main P.C.B. Ass'y VR201, VR202 --- RF Amp. P.C.B. Ass'y <ul style="list-style-type: none"> 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.
					
2	Laser Current Check	Philips Test Sample 5	DC Voltmeter between Iop and +5V Terminals of Test Unit		<p>1. Turn the power ON and load the test disc.</p> <p>2. Play back the test disc and calculate the current flowing into R201 from the following formula.</p> $I = \frac{\text{Voltmeter Value}}{R201 (22 \text{ Ohms})} = \text{oo.o mA (Measured Value)}$ <p>Note: The voltmeter value should be read to 3 digits after the decimal point.</p> <p>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%.</p> $I_{op} - (\text{Measured Value}) = I_{op} \pm 10\%$
					
3	VCO Frequency Adjustment	None	Frequency Counter (10/1 probe) between Pins 2 (PLCK) and 1 (GND) of CN-109 on Main P.C.B.	Main P.C.B. VR103	<p>1. Set SW1 of the Test Unit to VCO.</p> <p>2. Adjust VR103 to obtain 4.32 ±0.005 MHz on the frequency counter.</p> <p>3. Set SW1 to OFF position.</p>
4	EFM Signal Adjustment	Philips Test Sample 5	Oscilloscope to RF Connector of Test Unit	RF Amp. P.C.B. VR202	<p>1. Play back the first track of the test disc.</p> <p>2. Adjust VR202 until waveform amplitude becomes maximum and the waveform becomes clear (not thick) as shown below:</p>
					
					
<p>Oscilloscope Setting: AC Mode, 0.2 V/div, 0.5 μs/div</p>					

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
5	E-F Balance Adjustment (Supplementary Beam Balance Adjustment)	Philips Test Sample 5	Oscilloscope to TE Connector of Test Unit	RF Amp. P.C.B. VR201	<ol style="list-style-type: none"> 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 $0\text{ V} \pm 0.1\text{ V DC}$ as shown below:
<p>SW1: OFF SW3: OFF SW2: E-F Filter: OUT</p>  <p>Connecting Diagram</p>					 <p>Center Level</p> <p>Oscilloscope Setting: DC Mode, 1 V/div, 1 ms/div</p>
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	<ol style="list-style-type: none"> 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.
<p>SW1: OFF SW3: TRACKING SW2: OFF Filter: IN</p>  <p>Connecting Diagram</p>					<p>Good waveforms</p>  <p>CH1 CH2</p> <p>a b</p> <p>$a=b$</p> <p>NG waveforms</p> 
<p>Oscilloscope Setting: CH1, CH2: 0.2 V/div, DC Mode Time: 0.5 ms/div Mode: Auto, ALT Trigger: CH1</p>					

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	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	<ol style="list-style-type: none"> 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.
<p>SW1: OFF SW3: FOCUS SW2: OFF Filter: IN</p> <p style="text-align: center;">Good waveforms NG waveforms</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Connecting Diagram</p> </div> <div style="text-align: center;">  <p>a=b</p> </div> </div> <p style="text-align: center;">Oscilloscope Setting: CH1, CH2: 0.2 V/div, DC Mode Time: 0.5 ms/div Mode: Auto, ALT Trigger: CH1</p>					
8	Distortion Adjustment	Sony YEDS-7 (Type 3)	Distortion Meter to Output Jack	Main P.C.B. VR802(L) VR801(R)	<ol style="list-style-type: none"> 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			<p>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.</p> <ul style="list-style-type: none"> 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

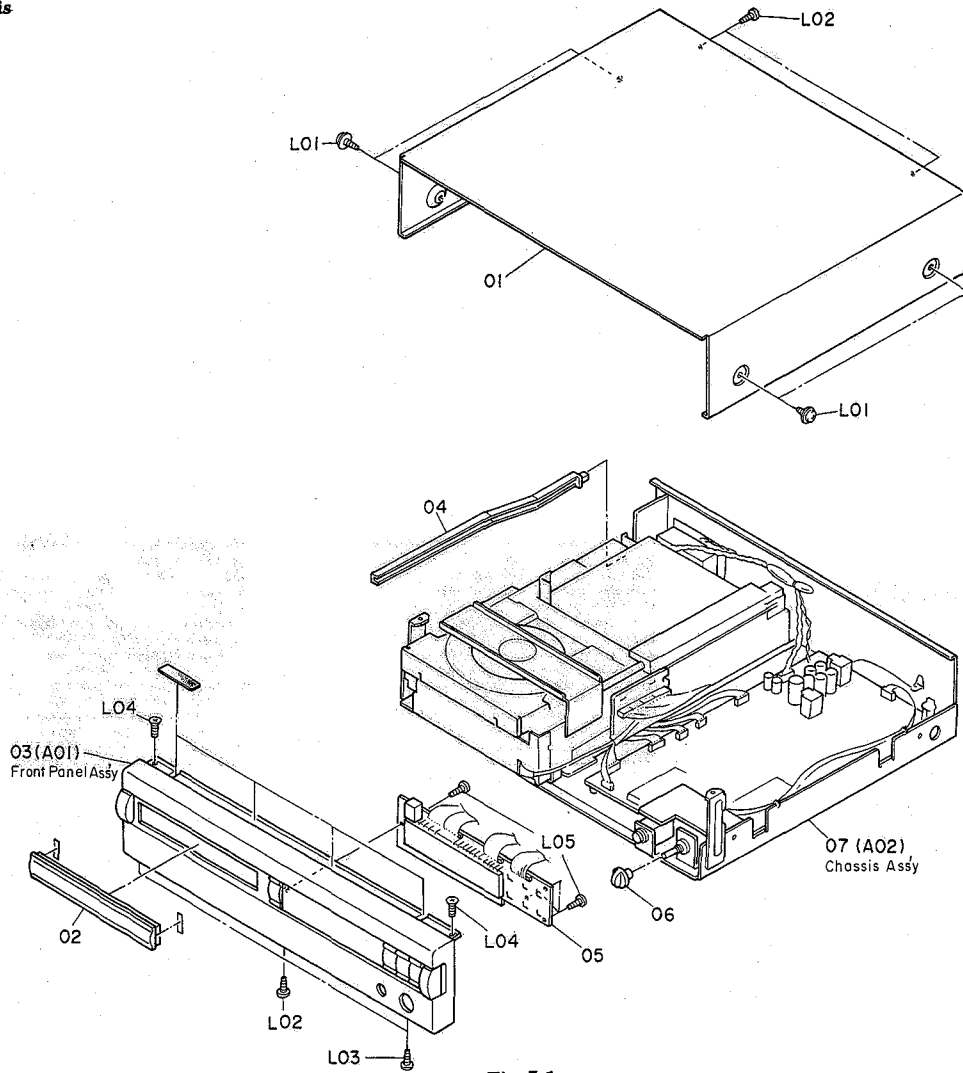


Fig. 7.1

7.2. Front Panel Ass'y (A01)

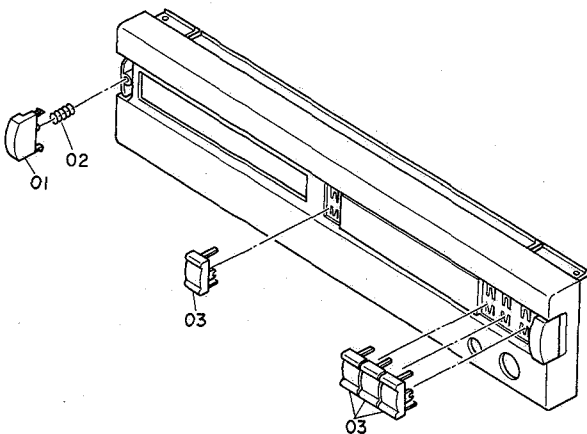


Fig. 7.2

★: Unstock parts.

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 (Black Chromate)	
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)

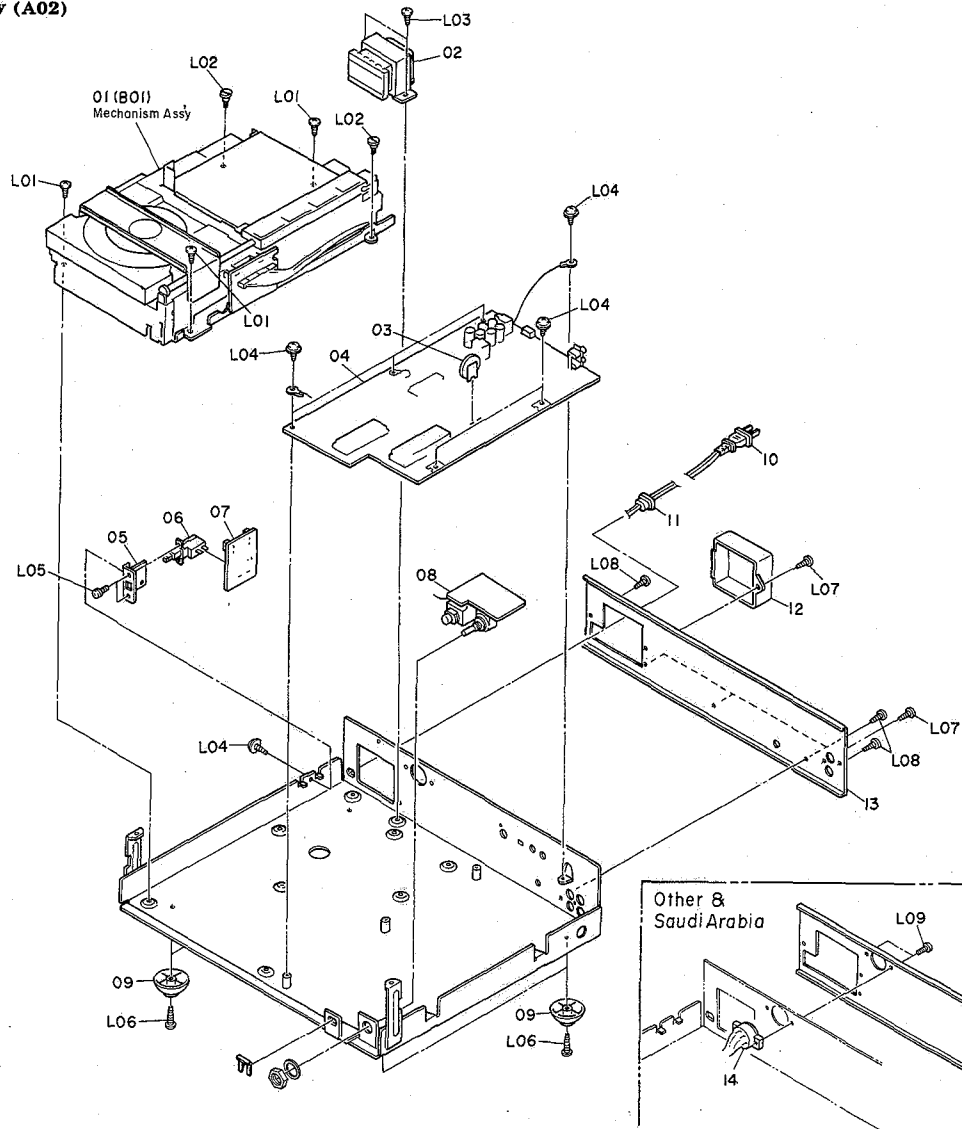
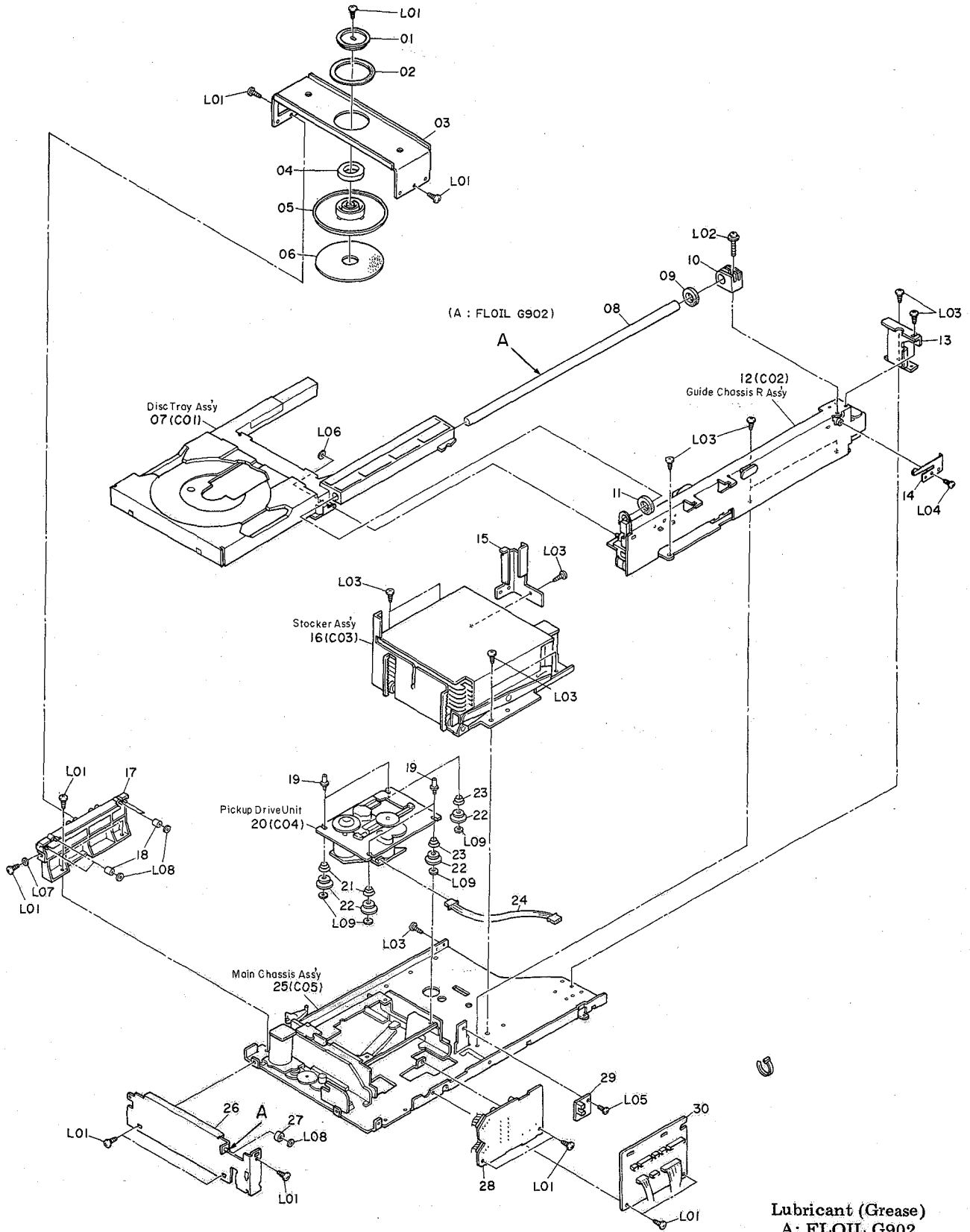


Fig. 7.3

*: Unstock parts.

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

7.4. Mechanism Ass'y (B01)



Lubricant (Grease)
A: FLOIL G902

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	OC09487A	Stabilizer Yoke Felt	1
03	OC09482B	Stabilizer Holder	1
04	OC09527A	Stabilizer Magnet	1
05	OC09485D	Stabilizer Base	1
06	OC09490F	Stabilizer Base Felt	1
07	—	Disc Tray Ass'y	1
08	OC09445A	Tray Guide Shaft	1
09	OC09475A	Stopping Washer (Rear)	1
10	OC09447A	Tray Shaft Holder	1
11	OC09562A	Stopping Washer (Front)	1
12	—	Guide Chassis R Ass'y	1
13	OC09415A	Support Plate	1
14	CA09045A	Tray Lock Plate Ass'y	1
15	OC09563B	Stocker Guide 2	1
16	—	Stocker Ass'y	1
17	CA09040A	Guide Chassis L Sub Ass'y	1
18	OC09466B	Tray Roller B	4
19	OC09489B	Damper Stud	4
20	—	Pickup Drive Unit	1
21	OC09484A	Damper Spring 0.55	2
22	OC09488A	Damper	4
23	OC09483A	Damper Spring 0.45	2
24	OB84262A	4P Connector Ass'y	1
25	—	Main Chassis Ass'y	1
26	CA09055A	Blind Plate Sub Ass'y	1
27	OC09571A	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	OE03610A	BT2.6x6 @ Binding (Black Chromate)	1
L02	OE03618A	BT2.6x18 @ Pan (3A) (Black Chromate)	1
L03	OE00869A	BT2.6x4 @ Binding	1
L04	OE03638A	PT2x6 @ Binding	1
L05	OE00945A	M2.6x4 @ Binding (Black Chromate)	1
L06	OE03609A	Washer 2.1x4x0.25	1
L07	OE03636A	Washer 2.6mm (Black Chromate)	1
L08	OE03608A	Washer 1.2x3x0.25	1
L09	OE03619A	Washer 7.3x6.5x0.3	1
7.5. Disc Tray Ass'y (C01)			
C01	—	Disc Tray Ass'y	1
01	CA09061A	Tray Holder Ass'y	1
02	OC09443E	Tray Guide R	1
03	CA09034A	Tray Sub Ass'y	1
04	OC09422G	Carriage S	1
05	OC09446A	Carriage Guide	1
06	CA09036A	Carriage Plate Sub Ass'y	1
07	OC09466B	Tray Roller B	1
08	OC09439D	Tray Chassis	1
09	OC09442C	Tray Guide L	1
L01	OE03657A	PT2.6x10 @ Binding (Black Chromate)	1
L02	OE03656A	PT2.6x8 @ Binding (Black Chromate)	1
L03	OE03608A	Washer 1.2x3x0.25	1

7.5. Disc Tray Ass'y (C01)

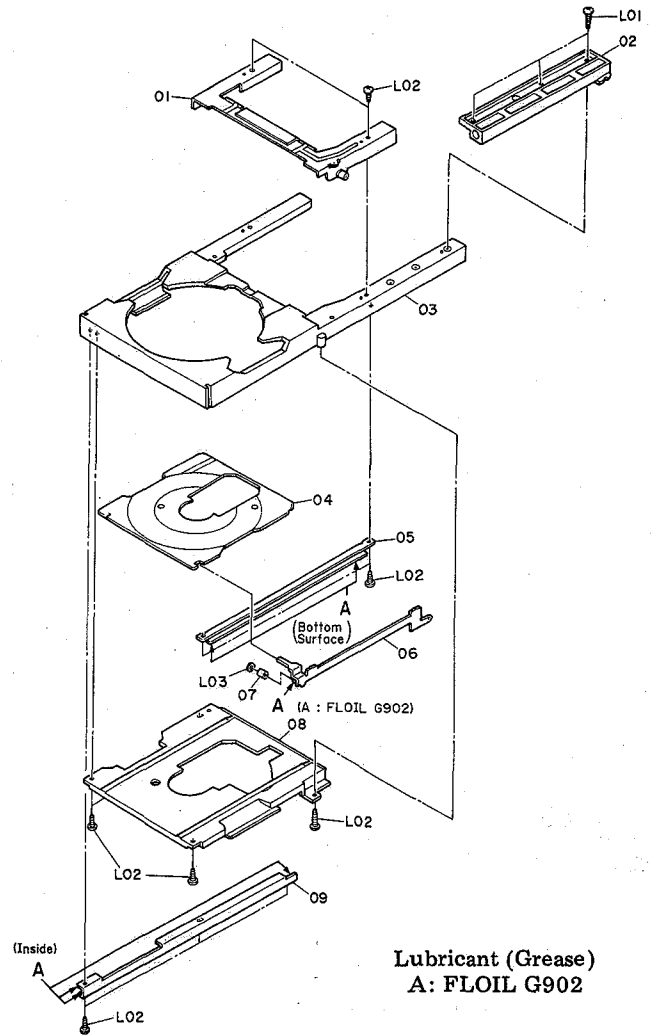


Fig. 7.5

7.6. Guide Chassis R Ass'y (C02)

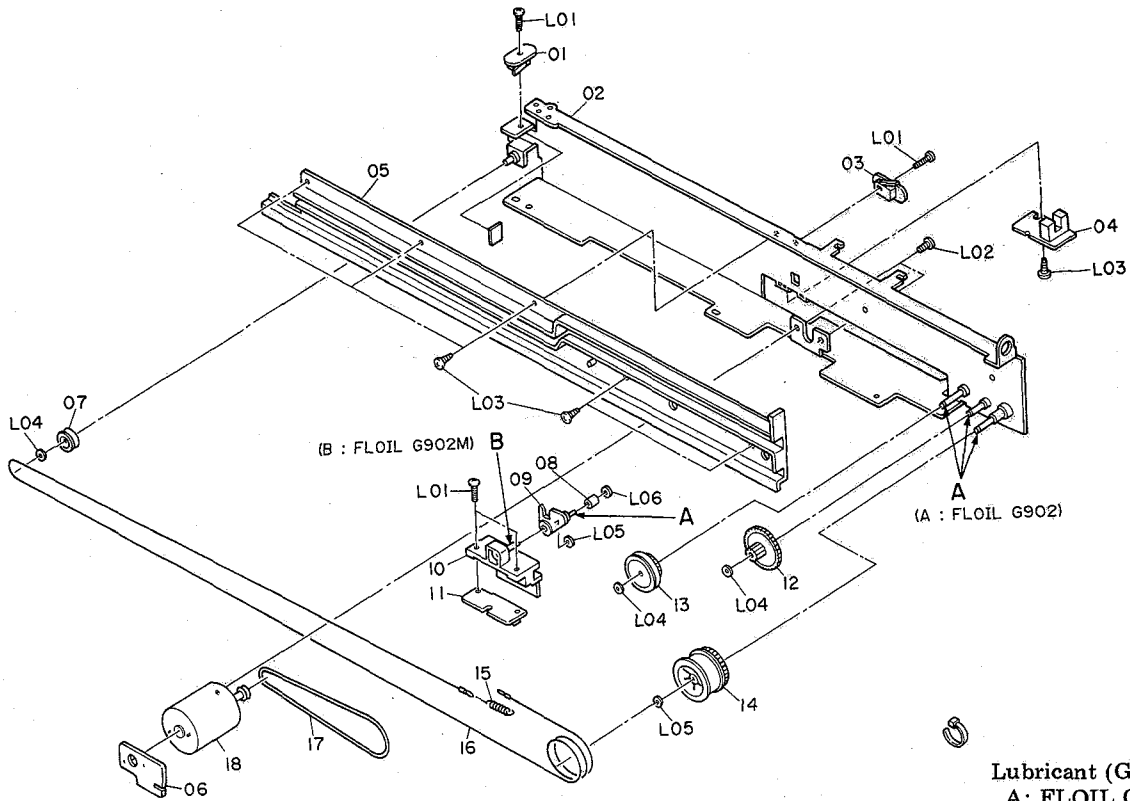


Fig. 7.6

*: Unstock parts.

Schematic Ref. No.	Part No.	Description	Qty
7.6. Guide Chassis R Ass'y (C02)			
C02	—	Guide Chassis 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	OC09454B	Shuttle Guide	1
06	* BA07909A	Loading Motor P.C.B. Ass'y	1
07	OC09465A	Wire Pulley B	1
08	OC09478A	Tray Roller	1
09	CA09030A	Shuttle Arm Ass'y	1
10	CA08996B	Shuttle Sub Ass'y	1
11	OC09469B	Center Detection Plate	1
12	OC09470A	Tray Idler Gear	1
13	OC09461A	Tray Pulley Gear	1
14	OC09463A	Wire Pulley A	1
15	OC09468B	Wire Spring	1
16	OC09467A	Tray Wire	1
17	OC09460A	Tray Belt	1
18	CA09032A	Loading Motor Ass'y	1
L01	OE03614A	M2x7 ⊕ Binding	
L02	OE03419A	M3x3 ⊕ Binding	
L03	OE03610A	BT2.6x6 ⊕ Binding	
L04	OE03181A	Washer 1.6x3.5x25	
L05	OE03609A	Washer 2.1x4x0.25	
L06	OE03608A	Washer 1.2x3x0.25	

7.7. Stocker Ass'y (C03)

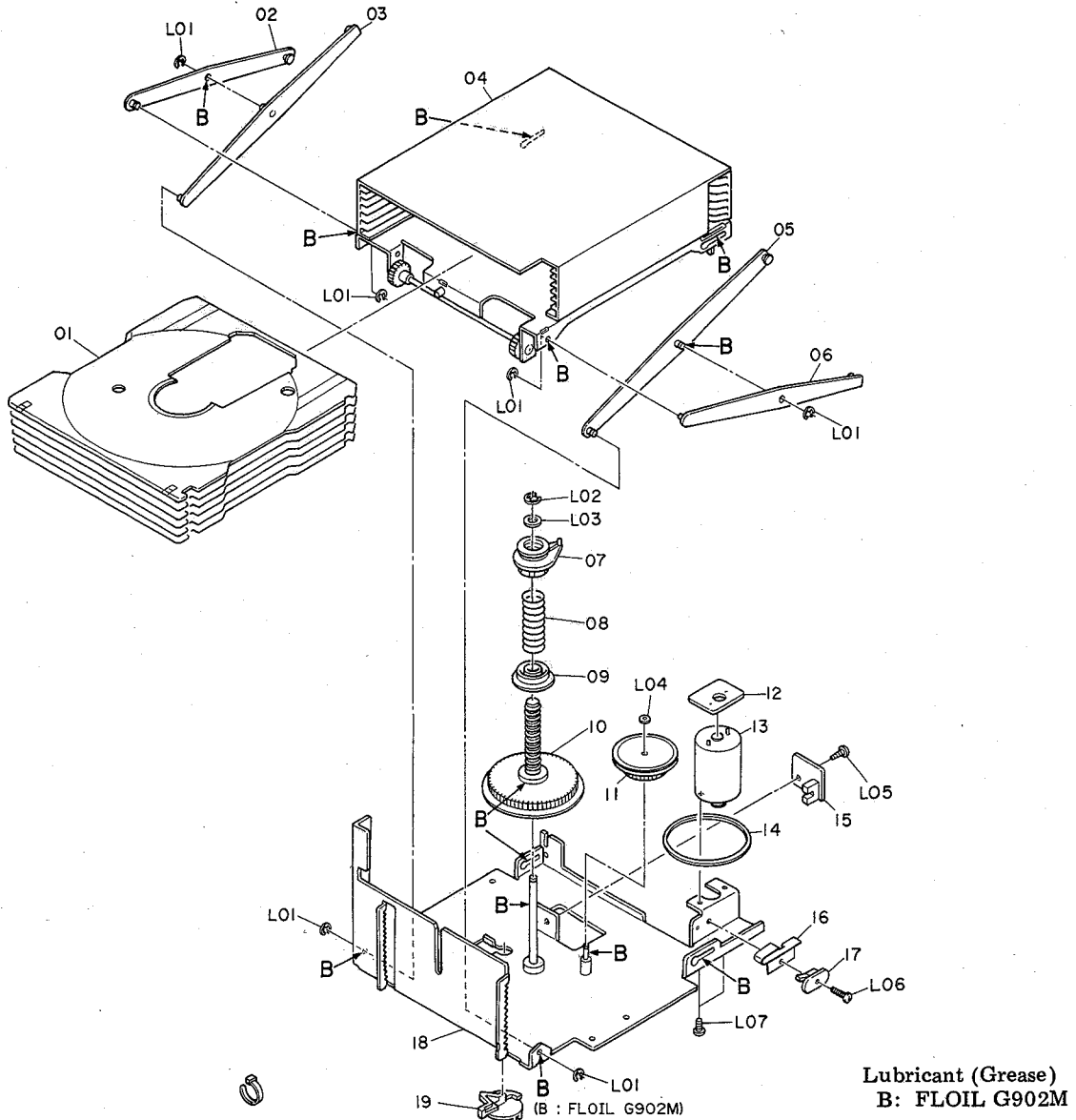


Fig. 7.7

*: Unstock parts.

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	
7.7. Stocker Ass'y (C03)				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
C03	—	Stocker Ass'y	1	L01		0E00698A	E-Ring 2.5mm	
01	0C09481F	Carriage	6	L02		0E00181A	E-Ring 3mm	
02	CA08993B	Link Out-L Ass'y	1	L03		0C09435B	Washer 4x10.5x0.5	
03	CA09023B	Link In-L Ass'y	1	L04		0E03181A	Washer 1.6x3.5x25	
04	CA09020A	Stocker Box Ass'y	1	L05		0E00866A	BT2.6x4 @ Binding	
05	CA09022B	Link In-R Ass'y	1	L06		0E03614A	M2x7 @ Binding	
06	CA08994B	Link Out-R Ass'y	1	L07		0E03419A	M3x3 @ Binding	
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					

7.8. Pickup Drive Unit (C04)

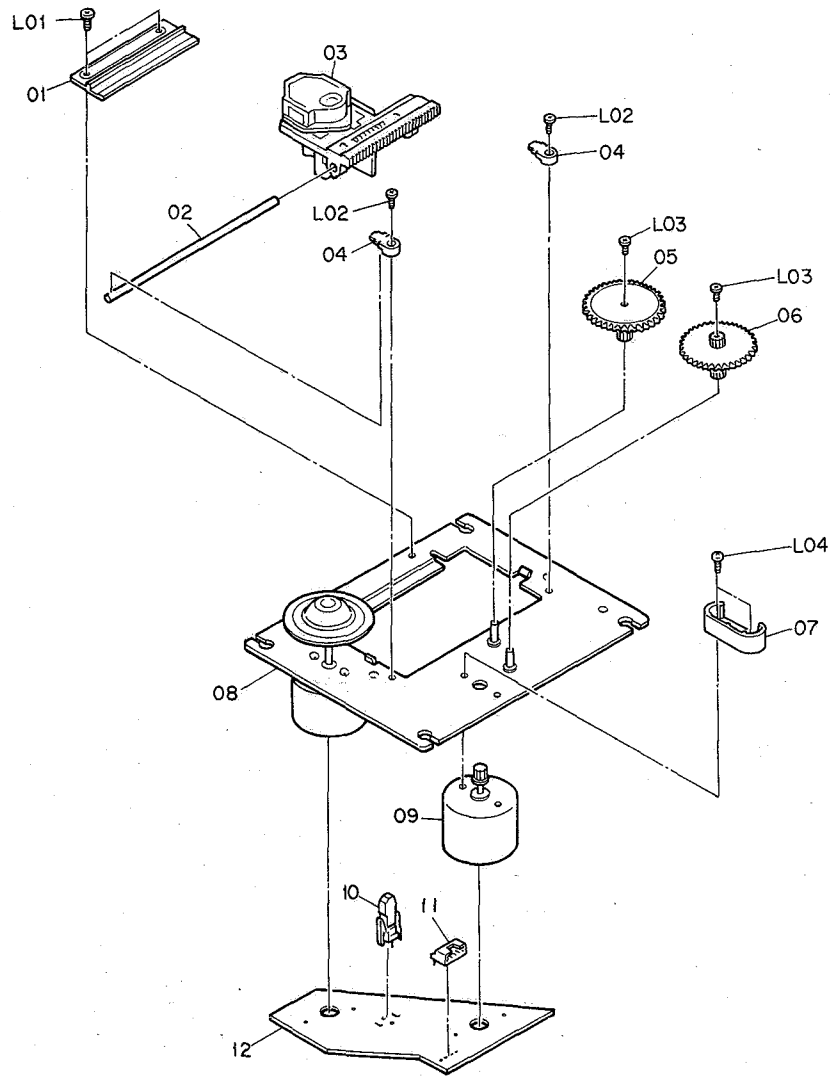
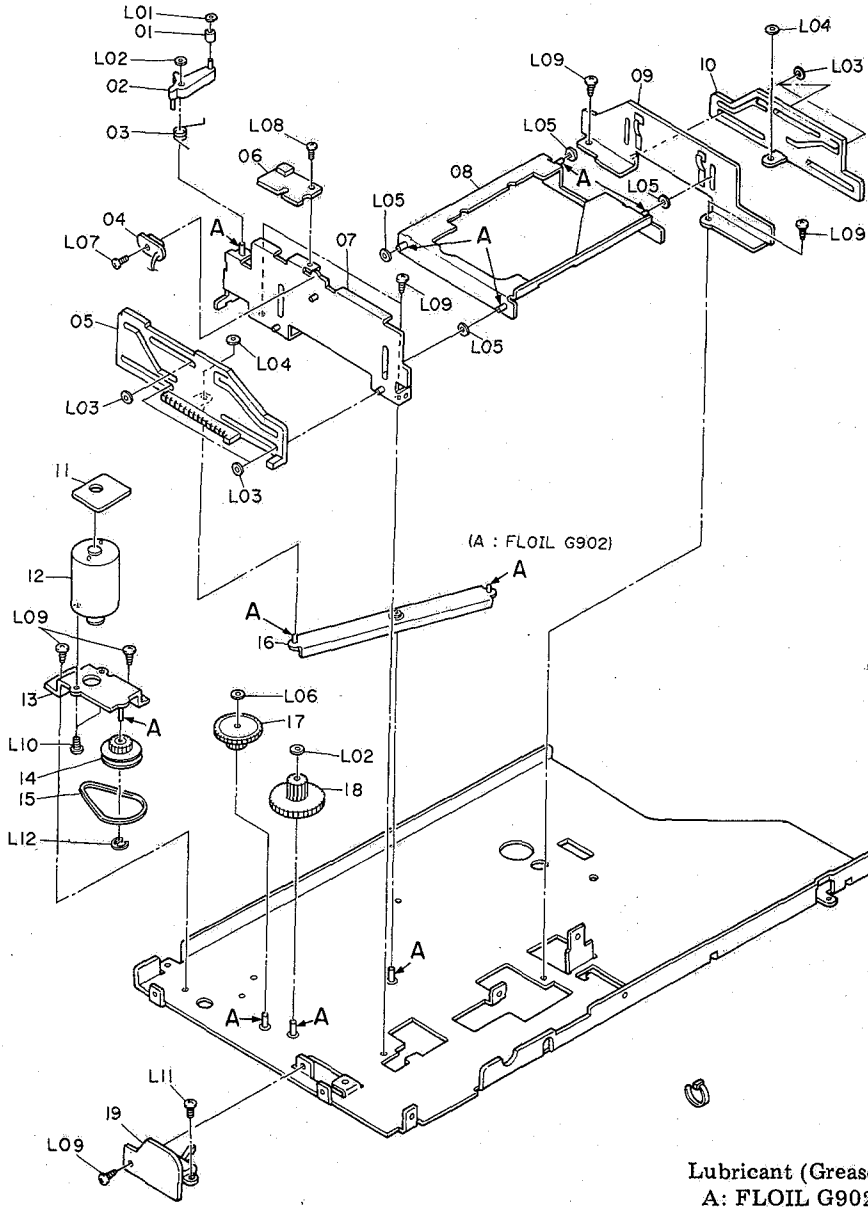


Fig. 7.8

Schematic Ref. No.	Part No.	Description	Qty
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)



Lubricant (Grease)
A: FLOIL G902

Fig. 7.9

★: Unstock parts.

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
7.9. Main Chassis Ass'y (C05)				15	0C09476A	Clamp Motor Belt	1
C05	—	Main Chassis Ass'y	1	16	CA09007A	Link Lever Ass'y	1
01	0C09466B	Tray Roller B	1	17	0C09407A	Idler Gear	1
02	CA09011B	Lock Arm Sub Ass'y	1	18	0C09408A	Slide Cam Gear	1
03	0C09396B	Torsion Spring	1	19	★ BA07900A	Relay B P.C.B. Ass'y	1
04	★ BA07906A	Pickup Down Switch P.C.B. Ass'y	1	L01	0E03608A	Washer 1.2x3x0.25	
05	0C09398B	Slide Cam A	1	L02	0E03609A	Washer 2.1x4x0.25	
06	★ BA07911A	Disc Sensor P.C.B. Ass'y	1	L03	0E03613A	Washer 2.1x5x0.25	
07	CA09009B	Holder A Sub Ass'y	1	L04	0E03616A	Washer 2.6x5x0.25	
08	CA09014C	Base Ass'y	1	L05	0E03207A	Washer 3.1x6x0.25	
09	CA09013B	Holder B Sub Ass'y	1	L06	0E03181A	Washer 1.6x3.5x0.25	
10	0C09399A	Slide Cam B	1	L07	0E03614A	M2x7 @ Binding	
11	★ BA07908A	Clamp Motor P.C.B. Ass'y	1	L08	0E03529A	M2x4 @ Binding	
12	CA09018A	Clamp Motor Ass'y	1	L09	0E00869A	BT2.6x4 @ Binding	
13	CA09016A	Bracket Ass'y	1	L10	0E03419A	M3x3 @ Binding	
14	0C09406B	Pulley Gear	1	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

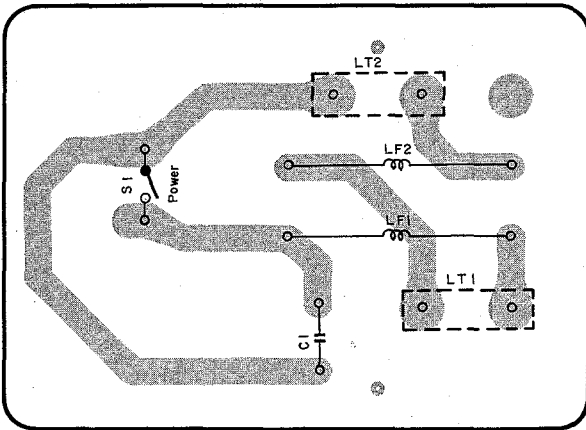


Fig. 8.1

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

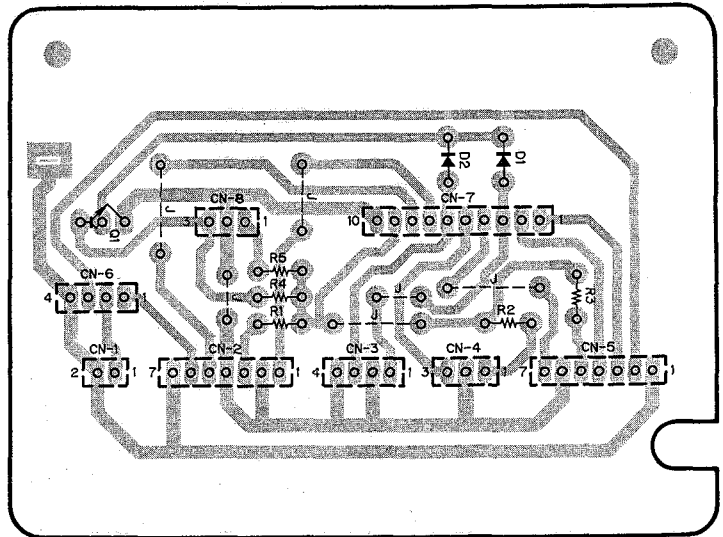


Fig. 8.2

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

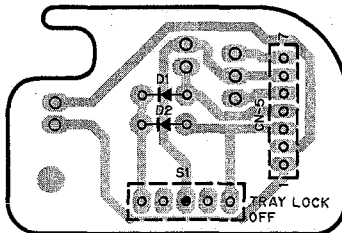


Fig. 8.3

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

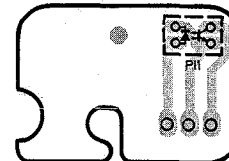


Fig. 8.4

*: Unstock parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
8.1. Power Switch P.C.B. Ass'y			8.2. Relay A P.C.B. Ass'y			8.3. Relay B P.C.B. Ass'y		
	* BA07918A	Power Switch P.C.B. Ass'y (USA, CAN, OTR, SAU)		* BA07899A	Relay A P.C.B. Ass'y		* BA07900A	Relay B P.C.B. Ass'y
	* BA08017A	Power Switch P.C.B. Ass'y (EP, UK, AUS)	Q1	OB60814C	Relay A P.C.B.	D1, 2	OB60815B	Relay B P.C.B.
	* BA07919A	Power Switch P.C.B. Ass'y (JPN)	D1, 2	OB10068A	TR DTC114ES	S1	OB06398A	SiD 1SS176
LF1, 2	OB60824B	Power Switch P.C.B. Inductor 15μH	R1, 2	OB09665A	RK 330 1/6W J	CN5	OB70171A	Position Sensor Switch
C1	OB51352A	CC 4700P 400V (USA, CAN, EP, UK, AUS, OTR, SAU)	R3	OB09663A	RK 270 1/6W J		OB84272A	7P Connector Ass'y
	OB41825A	CC 4700P 250V (JPN)	R4	OB09709A	RK 22K 1/6W J			
LT1	OB41826A	Wrapping Terminal 2P	R5	OB09665A	RK 330 1/6W J			
LT2	OB84275A	Wrapping Terminal 2P (USA, CAN, OTR, SAU, JPN)	CN1	OB84278A	2P-T Post			
	OB84380A	Wrapping Terminal 3P (EP, UK AUS)	CN2	OB84293A	7P-T Post			
			CN3	OB84284A	4P-T Post			
			CN4	OB84279A	3P-T Post			
			CN5	OB84291A	7P-T Post			
			CN6	OB84266A	4P Connector Ass'y	PI1	* BA07911A	Disc Sensor P.C.B. Ass'y
			CN7	OB84267A	10P Connector Ass'y		OB60817A	Disc Sensor P.C.B.
			CN8	OB84281A	3P-T Post		OB10363A	Photo Reflector
							OB84339A	Ribbon Cable 3P (1)

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

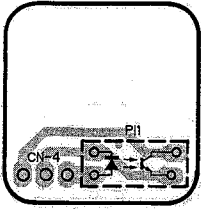


Fig. 8.5

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

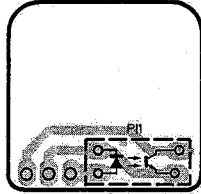


Fig. 8.6

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

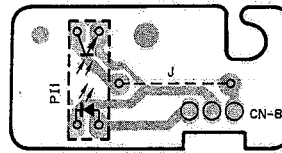


Fig. 8.7

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

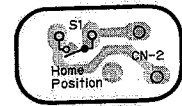


Fig. 8.8

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

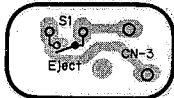


Fig. 8.9

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

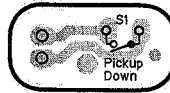


Fig. 8.10

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

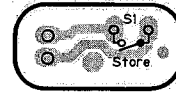


Fig. 8.11

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

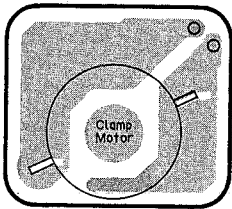


Fig. 8.12

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

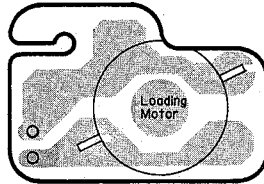


Fig. 8.13

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

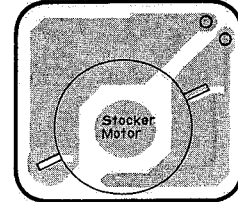


Fig. 8.14

*: Unstock parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
8.5. Center Detector P.C.B. Ass'y			8.8. Home Position Switch P.C.B. Ass'y			8.11. Store Switch P.C.B. Ass'y		
PI1 CN4	* BA07901A	Center Detector P.C.B. Ass'y	S1 CN2	* BA07904A	Home Position Switch P.C.B. Ass'y	S1	* BA07907A	Store Switch P.C.B. Ass'y
	OB60816B	Center Detector P.C.B.		OB60818A	Home Position Switch P.C.B. Push Switch		OB60819A	Store Switch P.C.B. Push Switch
	OB10364A	Photo Reflector		OB70172A	Push Switch	OB70173A	Push Switch	
	OB84273A	3P Connector Ass'y		OB84271A	7P Connector Ass'y	8.12. Clamp Motor P.C.B. Ass'y		
8.6. Disc Count P.C.B. Ass'y			8.9. Eject Switch P.C.B. Ass'y			*	BA07908A	Clamp Motor P.C.B. Ass'y
PI1	* BA07902A	Disc Count P.C.B. Ass'y	S1 CN3	* BA07905A	Eject Switch P.C.B. Ass'y		OB60820A	Clamp Motor P.C.B. Lead Wire 26 S1 RED
	OB60816B	Disc Count P.C.B. Photo Reflector		OB60818A	Eject Switch P.C.B. Push Switch		OB80309A	Lead Wire 26 S1 BRN
	OB10364A	Photo Reflector		OB70172A	Push Switch	OB80308A	Lead Wire 26 S1 BRN	
8.7. Center Area Detector P.C.B. Ass'y			8.10. Pickup Down Switch P.C.B. Ass'y			8.13. Loading Motor P.C.B. Ass'y		
PI1 CN8	* BA08006A	Center Area Detector P.C.B. Ass'y	S1	* BA07906A	Pickup Down Switch P.C.B. Ass'y	CN1	* BA07909A	Loading Motor P.C.B. Ass'y
	OB60857A	Center Area Detector P.C.B.		OB60819A	Pickup Down Switch P.C.B.		OB60845A	Loading Motor P.C.B. 2P Connector Ass'y
	OB10167A	Photo Interrupter		OB70173A	Push Switch	OB84269A	2P Connector Ass'y	
	OB84355A	3P Connector Ass'y (1)		OB80304A	Lead Wire 26 YEL	8.14. Stocker Motor P.C.B. Ass'y		
							* BA07910A	Stocker Motor P.C.B. Ass'y
							OB60820A	Stocker Motor P.C.B.

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

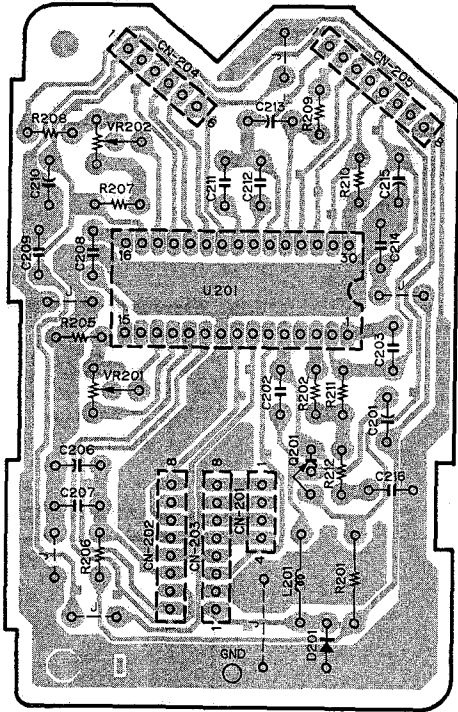


Fig. 8.15

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

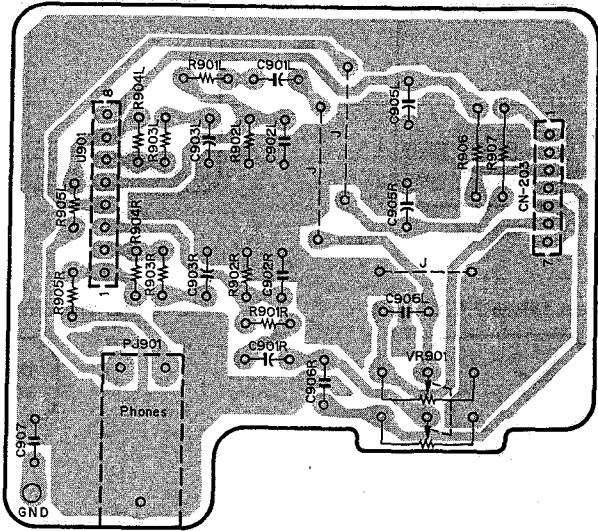


Fig. 8.16

*: 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
U201	OB60813C	RF Amp. P.C.B. IC CXA1081S	U901	OB11857A	Headphone Amp. IC NJM4556S
Q201	OB11818A	TR 2SA952	VR901	OB30124A	Volume 50Kx2
D201	OB06398A	SiD 1SS176	R901L,R	OB09677A	RK 1K 1/6W J
L201	OB51114A	Micro Coil 10μH	R902L,R	OB09717A	RK 47K 1/6W J
VR201	OB32194A	Semi VR 20K	R903L,R	OB09677A	RK 1K 1/6W J
VR202	OB32193A	Semi VR 10K	R904L,R	OB09695A	RK 5.6K 1/6W J
R201	OB05579A	RK 22 1/4W J	R905L,R	OB20528A	RK 75 1/6W J
R202	OB09707A	RK 18K 1/6W J	R906,907	OB24270A	Fuse Resistor 27
R205	OB09709A	RK 22K 1/6W J	C901L,R	OB40087A	CE 10μ 25V
R206	OB09677A	RK 1K 1/6W J	C902L,R	OB41209A	CPP 220P 100V J
R207,208	OB09705A	RK 15K 1/6W J	C903L,R	OB40087A	CE 10μ 25V
R209	OB09725A	RK 100K 1/6W J	C905L,R	OB40079A	CE 220μ 16V
R210	OB09701A	RK 10K 1/6W J	C906L,R	OB41201A	CPP 100P 100V J
R211	OB09693A	RK 4.7K 1/6W J	C907	OB47117A	CC 0.1μ 50V Z
R212	OB09686A	RK 2.4K 1/6W J	P901	OB84327A	Headphone Jack
C201	OB40698A	CE 100μ 16V	CN203	OB84261A	7P Connector Ass'y
C202	OB41944A	CC 1000P 50V K			
C203	OB41521A	CML 3300P 50V J			
C206	OB40175A	CE 3.3μ 50V			
C207	OB47137A	CC 0.047μ 25V Z			
C208	OB41294A	CML 0.047μ 50V J			
C209	OB47137A	CC 0.047μ 25V Z			
C210	OB40160A	CE 33μ 10V			
C211	OB41522A	CML 4700P 50V J			
C212	OB41525A	CML 0.015μ 50V J			
C213	OB40268A	CE 0.47μ 50V			
C214	OB47137A	CC 0.047μ 25V Z			
C215	OB40160A	CE 33μ 10V			
C216	OB41708A	CC 22P 50V J			
CN201	OB84263B	4P Connector Ass'y			
CN202	OB84255A	8P Connector Ass'y			
CN203	OB84254A	8P Connector Ass'y			
CN204	OB84264B	6P Connector Ass'y			
CN205	OB84265A	8P Connector Ass'y			
	OJ05898B	Earth Plate (1)			

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

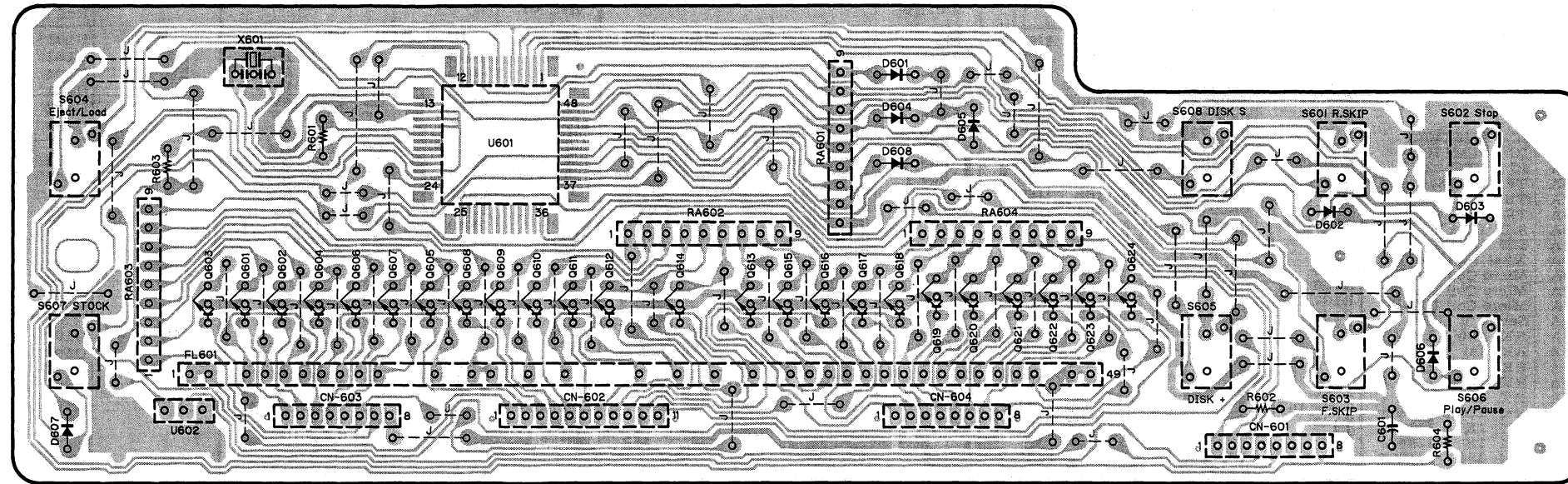


Fig. 8.17

*: 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	OB06398A	SiD 1SS176
			X601	OB92033A	X'tal 4.0MHz
	* BA07916A	Control Switch & Display P.C.B. Ass'y	RA601	OB21090A	R Network 4.7Kx8
			RA602,603	OB21091A	R Network 47Kx8
			RA604	OB21091A	R Network 47Kx8
	OB60822B	Control Switch & Display P.C.B.	R601	OB09749A	RK 1M 1/6W J
U601	OB11810A	IC LC6522H-4377	R602,603	OB09717A	RK 47K 1/6W J
U602	OB19017A	Remote Control Receiver Unit	R604	OB09717A	RK 47K 1/6W J
			J109	OB20528A	RK 0 1/6W
			J209-231	OB20528A	RK 0 1/6W
			J58	OB20528A	RK 0 1/6W
Q601,602	OB10030A	TR 2SC1740S	C601	OB40052A	CE 470μ 6.3V
Q603,604	OB10030A	TR 2SC1740S	S601,602	OB70161A	Tact Switch
Q605,606	OB10030A	TR 2SC1740S	S603,604	OB70161A	Tact Switch
Q607,608	OB10030A	TR 2SC1740S	S605,606	OB70161A	Tact Switch
Q609,610	OB10030A	TR 2SC1740S	S607,608	OB70161A	Tact Switch
Q611,612	OB10030A	TR 2SC1740S	CN601	OB84256B	8P Connector
Q613,614	OB10030A	TR 2SC1740S	CN602	OB84259B	11P Connector
Q615,616	OB10030A	TR 2SC1740S	CN603	OB84258B	8P Connector
Q617,618	OB10030A	TR 2SC1740S	CN604	OB84257B	8P Connector
Q619,620	OB10030A	TR 2SC1740S	FL601	OB90444A	FL Display
Q621,622	OB10030A	TR 2SC1740S			FIP11HM8
Q623,624	OB10030A	TR 2SC1740S			Shield Plate (1)
D601,602	OB06398A	SiD 1SS176		0J06259A	
D603,604	OB06398A	SiD 1SS176			
D605,606	OB06398A	SiD 1SS176			

*: Unstock parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	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	OB11835A	IC SM5840CP	R110,111	OB09701A	RK 10K 1/6W J	L503	OB51369A	Micro Coil 10μH	R429,430	OB20525A	RK 510 1/6W J
U802	OB11850A	IC PC1700P	R113	OB09689A	RK 3.3K 1/6W J	RA501	OB21083A	R Network 4.7Kx6	R440	OB09703A	RK 12K 1/6W J
U803	OB11873A	IC NE5532N	R114	OB09725A	RK 100K 1/6W J	RA502	OB21086A	R Network 10Kx8	R441	OB09702A	RK 11K 1/6W J
Q801L,R	OB06299A	TR 2SC2878	R115	OB09742A	RK 510K 1/6W J	RA503	OB21084A	R Network 10Kx4	R442	OB09677A	RK 1K 1/6W J
Q802L,R	OB06299A	TR 2SC2878	R116	OB25387A	RM 100K 1/4W F	RA504	OB21086A	R Network 10Kx8	C401,402	OB40079A	CE 220μ 16V
Q803	OB06180A	TR 2SA970	R118	OB09725A	RK 100K 1/6W J	RA505	OB21086A	R Network 10Kx8	C403,404	OB40064A	CE 220μ 10V
D801L,R	OB06398A	SiD 1SS176	R119	OB09735A	RK 270K 1/6W J	RA506	OB21084A	R Network 10Kx4	C405,406	OB40064A	CE 220μ 10V
D802L,R	OB06398A	SiD 1SS176	R120	OB09713A	RK 33K 1/6W J	RA507	OB21085A	R Network 10Kx6	C408	OB40079A	CE 220μ 16V
X801	OB92039A	X'tal 16.9344MHz	R128	OB09677A	RK 1K 1/6W J	RA508	OB21088A	R Network 47Kx10	C409,410	OB40096A	CE 2200μ 25V
L801,802	OB51369A	Micro Coil 10μH	R129	OB25387A	RM 100K 1/4W F	RA509	OB21089A	R Network 47Kx13	C411,412	OB40096A	CE 2200μ 25V
L803	OB51369A	Micro Coil 10μH	R130	OB09701A	RK 10K 1/6W J	RA510	OB21084A	R Network 10Kx4	C417	OB41553A	CC 0.01μ 25V Z
L804,805	OB51311A	Micro Coil 100μH	R131	OB09708A	RK 20K 1/6W J	R501	OB09717A	RK 47K 1/6W J	C418	OB40120A	CE 100μ 50V
VR801,802	OB32196A	Semi VR 100k	R132	OB09749A	RK 1M 1/6W J	R502	OB09717A	RK 47K 1/6W J	C419	OB40112A	CE 1μ 50V
R801	OB09653A	RK 100 1/6W J	R133	OB09725A	RK 100K 1/6W J	R504	OB09713A	RK 33K 1/6W J	C420	OB40133A	CE 330μ 63V
R802	OB09749A	RK 1M 1/6W J	R134	OB09727A	RK 120K 1/6W J	R506	OB09717A	RK 47K 1/6W J	C426,427	OB40082A	CE 1000μ 16V
R803	OB09725A	RK 100K 1/6W J	R135	OB25666A	RM 3.6K 1/4W F	R507	OB09697A	RK 6.8K 1/6W J	C428	OB47117A	CC 0.1μ 50V Z
R804	OB09731A	RK 180K 1/6W J	R136	OB09701A	RK 10K 1/6W J	R509	OB09701A	RK 10K 1/6W J	C429	OB40112A	CE 1μ 50V
R805	OB09677A	RK 1K 1/6W J	R137,138	OB09653A	RK 100 1/6W J	R516	OB09677A	RK 1K 1/6W J	C430	OB40085A	CE 4700μ 16V
R806	OB09731A	RK 180K 1/6W J	R139	OB09653A	RK 100 1/6W J	R517	OB09701A	RK 10K 1/6W J	C431	OB40082A	CE 1000μ 16V
R807,808	OB09677A	RK 1K 1/6W J	R140	OB09729A	RK 150K 1/6W J	R520,521	OB09701A	RK 10K 1/6W J	C436	OB40082A	CE 1000μ 16V
R809	OB09677A	RK 1K 1/6W J	R141	OB09621A	RK 4.7 1/6W J	R522	OB09701A	RK 10K 1/6W J	C437	OB41300A	CML 0.15μ 50V J
R810L,R	OB25149A	RM 332 1/4W F	R142,143	OB09725A	RK 100K 1/6W J	R523	OB09701A	RK 10K 1/6W J	C438	OB41823A	CML 0.01μ 50V J
R819L,R	OB25149A	RM 332 1/4W F	R144	OB09731A	RK 180K 1/6W J	C501	OB40078A	CE 100μ 16V	C439,440	OB41944A	CC 1000P 50V K
R820L,R	OB09725A	RK 100K 1/6W J	R145	OB09621A	RK 4.7 1/6W J	C504,505	OB40078A	CE 100μ 16V	C441,442	OB41944A	CC 1000P 50V K
R821L,R	OB09709A	RK 22K 1/6W J	R146,147	OB09725A	RK 100K 1/6W J	C506	OB40078A	CE 100μ 16V	C443,444	OB41944A	CC 1000P 50V K
R830	OB09701A	RK 10K 1/6W J	R149	OB09731A	RK 180K 1/6W J	C507,508	OB47117A	CC 0.1μ 50V Z	CN402	OB84315A	4P-T Post
R831L,R	OB25231A	RM 2.37K 1/4W F	R150	OB09729A	RK 150K 1/6W J	JW501	OB82085B	Ribbon Cable 4P 250	CN403	OB84317A	6P-T Post
R832L,R	OB25231A	RM 2.37K 1/4W F	R151	OB09621A	RK 4.7 1/6W J	JW502	OB82330A	Ribbon Cable 4P 320		OB90448A	Heat Sink (2)
R833L,R	OB09709A	RK 22K 1/6W J	R152,153	OB09725A	RK 100K 1/6W J	CN502	OB81465A	8P-T Post			
R834	OB09701A	RK 10K 1/6W J	R155,156	OB09729A	RK 150K 1/6W J	CN503	OB84086A	11P-T Post			
R835	OB09637A	RK 22 1/6W J	R157	OB09737A	RK 330K 1/6W J	CN504	OB84296A	8P-T Post			
C801,802	OB41878A	CC 56P 50V J	R170	OB09653A	RK 100 1/6W J	CN505	OB84296A	8P-T Post			
C803	OB47117A	CC 0.1μ 50V Z	R171,172	OB09677A	RK 1K 1/6W J	CN7	OB84085A	10P-T Post			
C804	OB40087A	CE 10μ 25V	C101	OB41885A	CC 220P 50V J						
C805,806	OB40115A	CE 4.7μ 50V	C102	OB41823A	CML 0.01μ 50V J						
C810,811	OB40115A	CE 4.7μ 50V	C103,104	OB41278A	CML 2200P 50V J						
C812,813	OB40115A	CE 4.7μ 50V	C105	OB40074A	CE 10μ 16V						
C814,815	OB40115A	CE 4.7μ 50V	C106	OB41283A	CML 5600P 50V J	U401	OB11753A	IC NJM7805FA			
C819L,R	OB40566A	CE 10μ 25V (LN)	C107	OB41288A	CML 0.1μ 50V	U402	OB11754A	IC NJM7905FA			
C820L,R	OB41225A	CPP 1000P 100V J	C108	OB41294A	CML 0.047μ 50V J	U403	OB11611A	IC TC4584BF			
C830,831	OB41215A	CPP 3900P 100V J	C109	OB41298A	CML 0.1μ 50V J	IP401,402	OB11371A	IC Protector ICP-N5			
C832L,R	OB41129A	CPP 1500P 100V G	C110	OB47117A	CC 0.1μ 50V Z	IP403,404	OB11371A	IC Protector ICP-N5			
C833L,R	OB41221A	CPP 680P 100V J	C111	OB40115A	CE 4.7μ 50V	IP405	OB11371A	IC Protector ICP-N5			
C834L,R	OB41298A	CML 0.1μ 50V J	C112	OB40076A	CE 33μ 16V	Q401	OB10371A	TR 2SD1785			
C836	OB40087A	CE 10μ 25V	C113	OB41823A	CML 0.01μ 50V J	Q402	OB10370A	TR 2SB1258			
C837	OB47117A	CC 0.1μ 50V Z	C115	OB40076A	CE 33μ 16V	Q405	OB10371A	TR 2SD1785			
C838	OB47113A	CC 330P 50V K	C116	OB47117A	CC 0.1μ 50V Z	Q406	OB10370A	TR 2SB1258			
C839	OB47117A	CC 0.1μ 50V Z	C118	OB09163A	CE 10μ 16V (BP)	Q409	OB10370A	TR 2SB1258			
C840	OB47113A	CC 330P 50V K	C119	OB41298A	CML 0.1μ 50V J	Q410,411	OB06100A	TR 2SC945			
PJ801	OB84226A	Pin Jack 2P	C122	OB47117A	CC 0.1μ 50V Z	ZD40	OB06142A	TR 2SC2240 (BL)			
PJ802	OB84028A	Stereo Mini Jack	C123	OB41974A	CC 100P 50V J	ZD401,402	OB12153A	ZD			
CN801	OB81464A	7P-T Post	C124	OB41944A	CC 1000P 50V K	ZD404	OB12171A	ZD 6.2V B2			
	OB80324A	GND Jumper Wire	C125	OB40112A	CE 1μ 50V	ZD405	OB12201A	ZD 11V B2			
	OB80325A	GND Jumper Wire	C126	OB40078A	CE 100μ 16V	ZD406	OB12165A	ZD 30V B2			
		GND Jumper Wire	C127	OB41274A	CML 1000P 50V J						
		(1)	C128	OB40074A	CE 10 V						
		(1)	C130	OB41292A	CML 0.033μ 50V J						
			C131	OB40111A	CE 0.47μ 50V						
			C132	OB41823A	CML 0.01μ 50V J	D407,408	OB06398A	SiD 1SS176			
			C133	OB40078A	CE 100μ 16V	D410	OB12362A	SiD S5566B			
			C134,135	OB47117A	CC 0.1μ 50V Z	D411,412	OB06398A	SiD 1SS176			
			C137	OB47117A	CC 0.1μ 50V Z	D413	OB06398A	SiD 1SS176			
			C139	OB47117A	CC 0.1μ 50V Z	D420,421	OB12362A	SiD S5566B			
			C141,142	OB47117A	CC 0.1μ 50V Z	D422,423	OB12362A	SiD S5566B			
			C145,146	OB47117A	CC 0.1μ 50V Z	D424,425	OB12362A	SiD S5566B			
			CN102	OB02244A	7P-T Post	D426,427	OB12362A	SiD S5566B			
			CN104	OB84282A	4P-T Post	D428,429	OB12362A	SiD S5566B			
			CN105	OB02242A	4P-T Post	D430,431	OB12362A	SiD S5566B			
			CN109	OB02233A	2P-T Post	D432	OB06398A	SiD 1SS176			
			CN201	OB81461A	4P-T Post	R407	OB09689A	RK 3.3K 1/6W J			
			CN204	OB81463A	6P-T Post	R408	OB09701A	RK 10K 1/6W J			
			CN205	OB81465A	8P-T Post	R409	OB09709A	RK 22K 1/6W J			
			CN6	OB84283A	8P-T Post	R410,411	OB09653A	RK 100 1/6W J			
						R413,414	OB24274A	Fuse Resistor 2.2			
						R415	OB09749A	RK 1M 1/6W J			
						R416	OB09701A	RK 10K 1/6W J			
						R417	OB09749A	RK 1M 1/6W J			
						R418	OB09701A	RK 10K 1/6W J			
						R419	OB09717A	RK 47K 1/6W J			
						R420	OB09693A	RK 4.7K 1/6W J			
						R421	OB09701A	RK 10K 1/6W J			
						R422	OB09701A	RK 10K 1/6W J			
						R423	OB09749A	RK 1M 1/6W J			
						R424	OB09701A	RK 10K 1/6W J			
						R425	OB09717A	RK 47K 1/6W J			
						R426	OB09693A	RK 4.7K 1/6W J			
						R427,428	OB20525A	RK 510 1/6W J			

• 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	

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

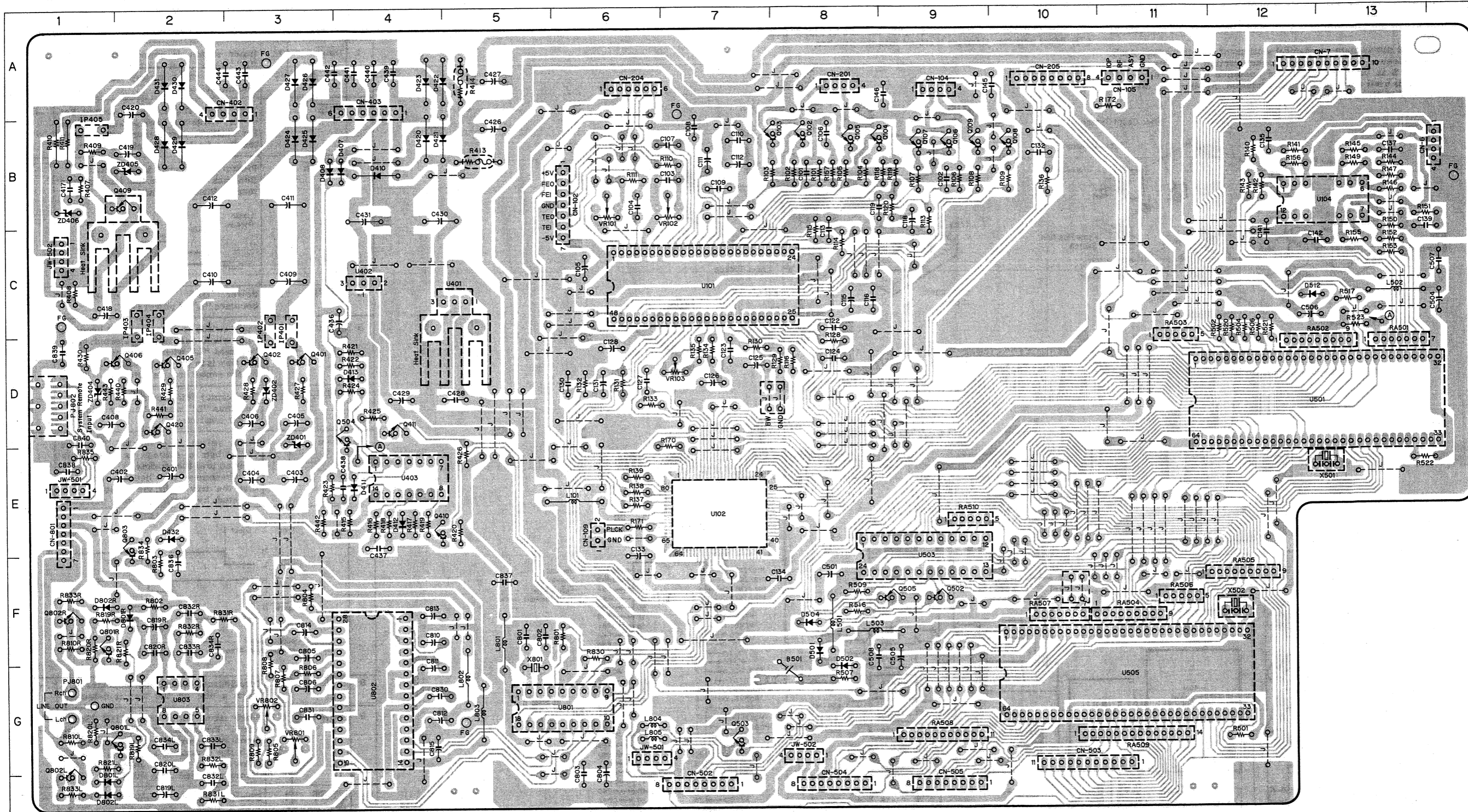


Fig. 8.18

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, Stoker 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.

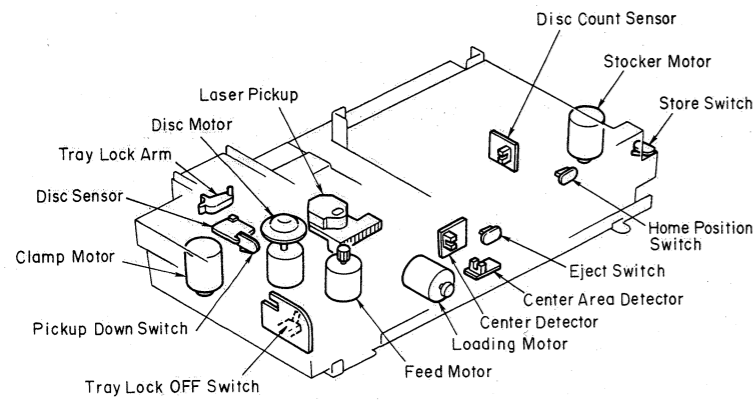


Fig. 9.1.1 Electrical Parts Location in the Mechanism Ass'y

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

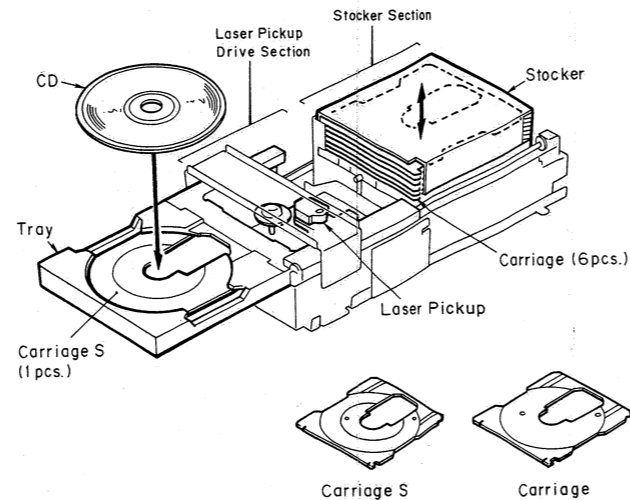


Fig. 9.1.2

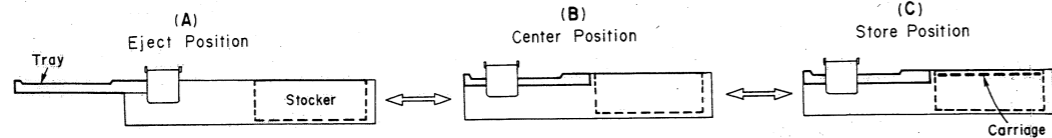


Fig. 9.1.3 Operational Positions

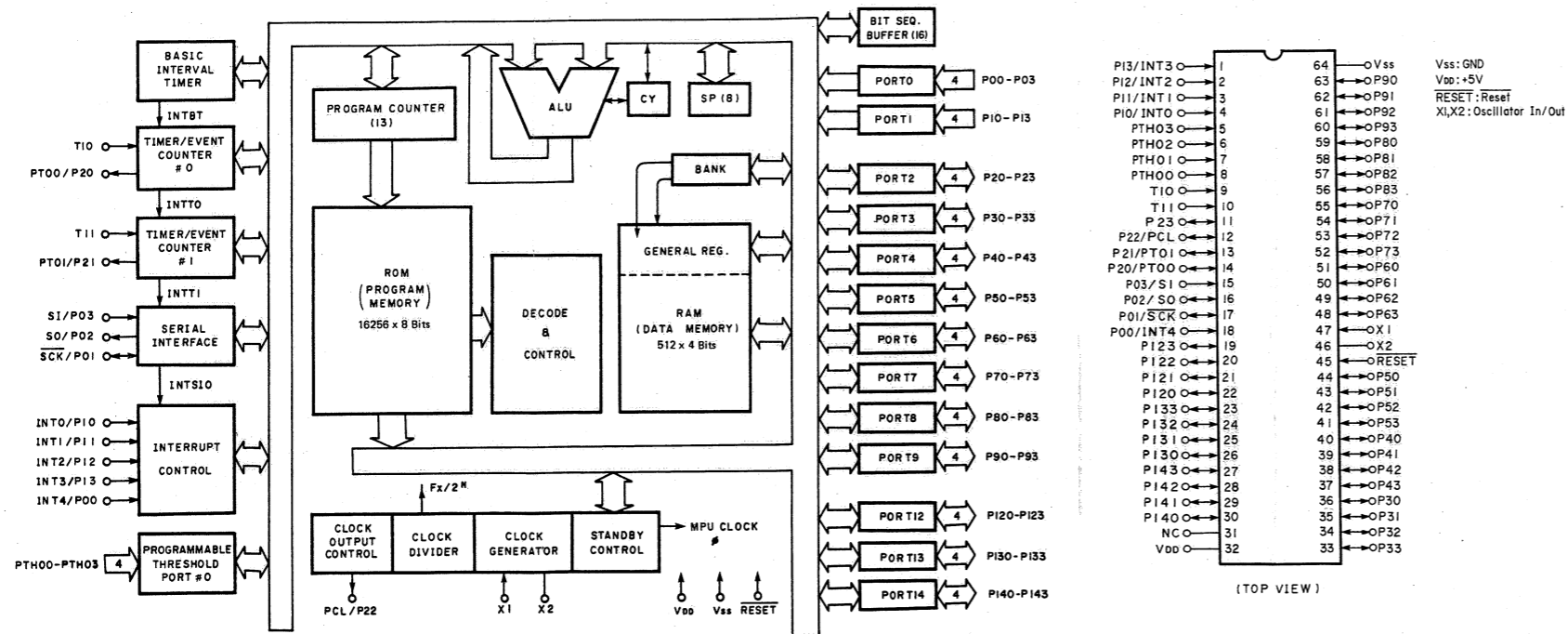
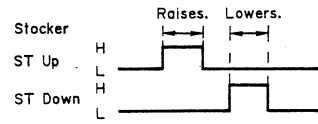
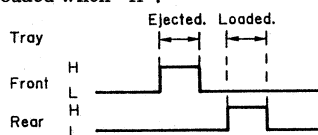
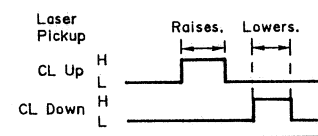
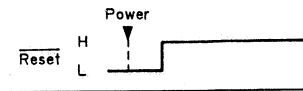


Fig. 9.1.4 Mechanism Controller μPD75116CW (U501)

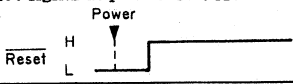
U501 μPD75116CW (Mechanism Controller)

Pin No.	Signal Name	I/O	Function	Initial Setting
1	Inner	I	Inner switch is connected. Becomes "L" when Inner switch is ON, i.e., when the laser pickup reaches the innermost position.	—
2	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	P Down	I	Pickup Down switch is connected. Becomes "L" when the laser pickup reaches the Down position.	—
4	P OFF	I	Power OFF signal. Immediately becomes "L" at power OFF.	—
5	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	Center	I	Tray center detection signal. Becomes "L" when the tray is in the center position.	—
7	Store	I	Store switch is connected. Becomes "L" when a carriage is completely inserted into the stoker. Also becomes "L" when the condition that the tray is in the center area is detected by the center area detector.	—
8	D DET	I	Disc Sensor is connected. Becomes "L" when a disc on the tray is detected.	—
9	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	D CNT	I	Disc Count Sensor is connected. Used to detect the stoker position (1, 2, 3, 4, 5, 6, or S).	—
11	Home Pos.	I	Home Position switch is connected. Becomes "L" when the stoker 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	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	—	O	Not used.	—
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	Reset	I	Reset signal at power ON. Active "L". 	—
46	X2	—	4MHz crystal is connected.	—
47	X1	—	4MHz crystal is connected.	—
48	SCS	I	Set to "L" while U502 (System Controller) is selecting RAM (U503).	—
49	MCS	O	Outputs "L" when this IC (Mechanism Controller) selects RAM (U503).	H
50	CE	O	RAM (U503) enable signal. Active "L".	H
51	R/W	O	Read/write control signal for RAM (U503). "L": Write, "H": Read	H
52	—	—	—	—
53	A10	I/O	Address bus for RAM (U503).	IN
54	A9			
55	A8			
56	A3			
57	A2			
58	A1			
59	A0			
60	A7	I/O	Address bus for RAM (U503).	IN
61	A6			
62	A5			
63	A4			
64	VSS	—	GND	—

U502 μ PD75216 (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	$\overline{\text{R/W}}$	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 to 23	A8 to 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 to 31	X1 to X2	—	4MHz crystal is connected.	—
32	VSS	—	GND	—
33 to 34	—	—	—	—
35 to 38	A4 to A7	I/O	Address bus for RAM (U503).	IN
39	Reset	I	Reset signal at power ON. Active "L". 	—
40 to 50	T0 to T10	O	FL display digit drive signals. Active "H".	—
51 to 53	S14 to S12	O	FL display segment drive signals.	—

Pin No.	Signal Name	I/O	Function	Initial Setting
54 to 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.	—

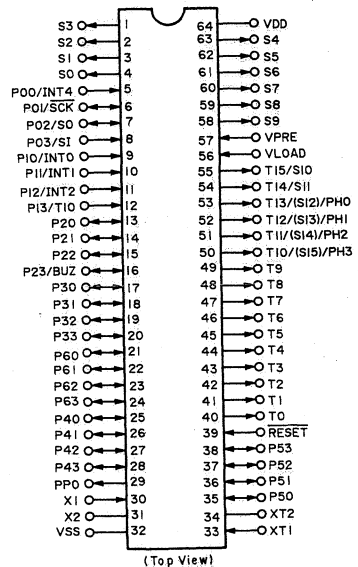
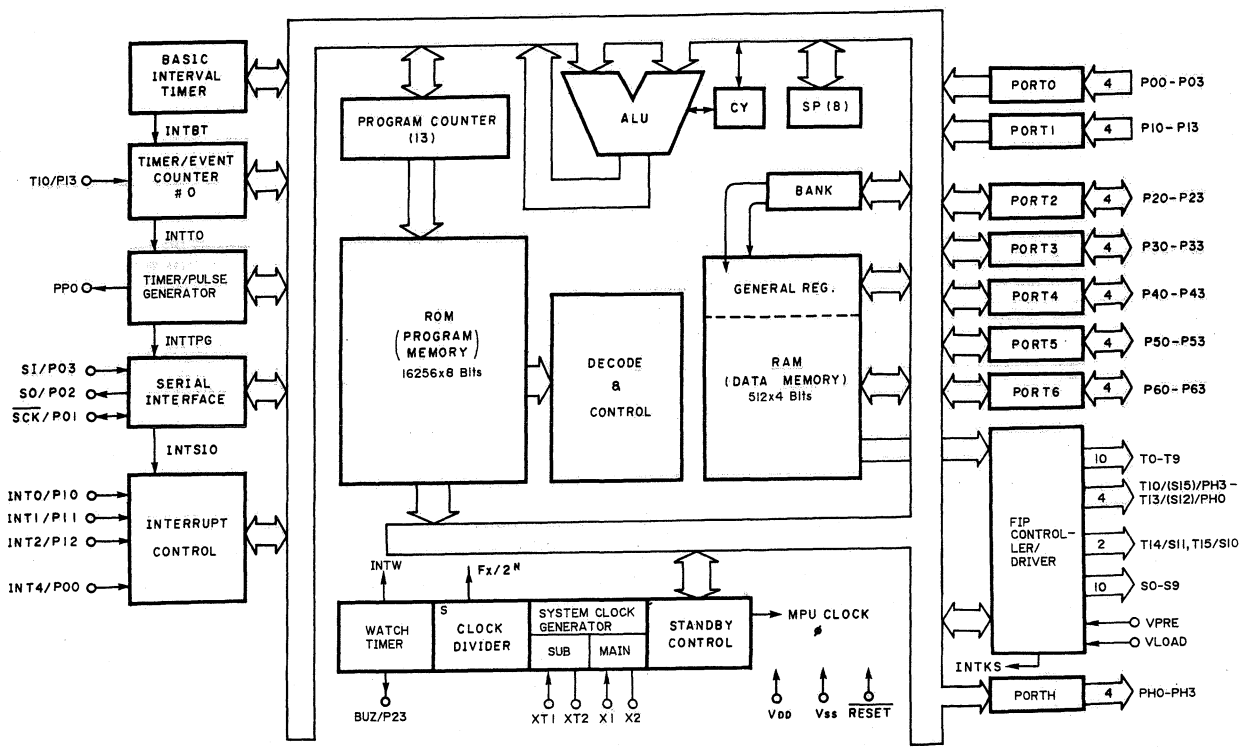


Fig. 9.1.5 System Controller μPD75216ACW (U502)

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	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).

Pin No.	Signal Name	I/O	Function
25	INT	I	Same as SG RET (pin 11).
36	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.

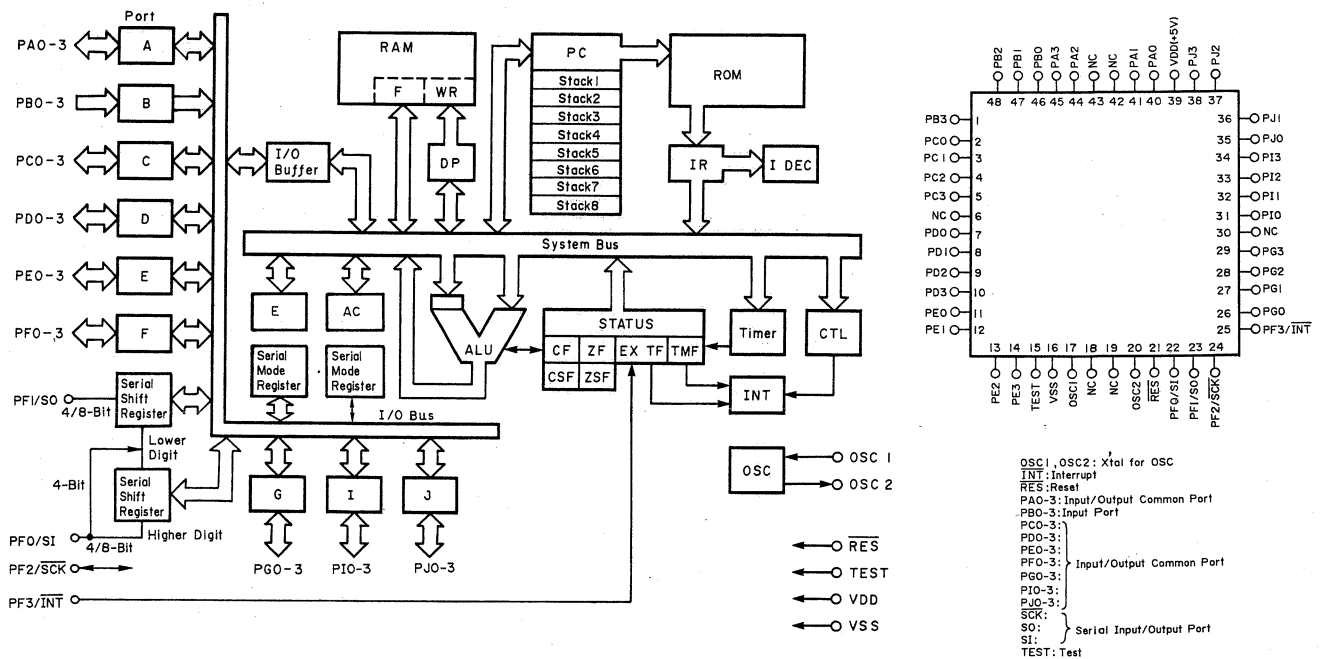


Fig. 9.1.6 Key Matrix Controller LC6522H (U601)

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	LD ON	I	Laser diode ON/OFF input. Active "L".
30	VCC	I	+5 V is supplied.

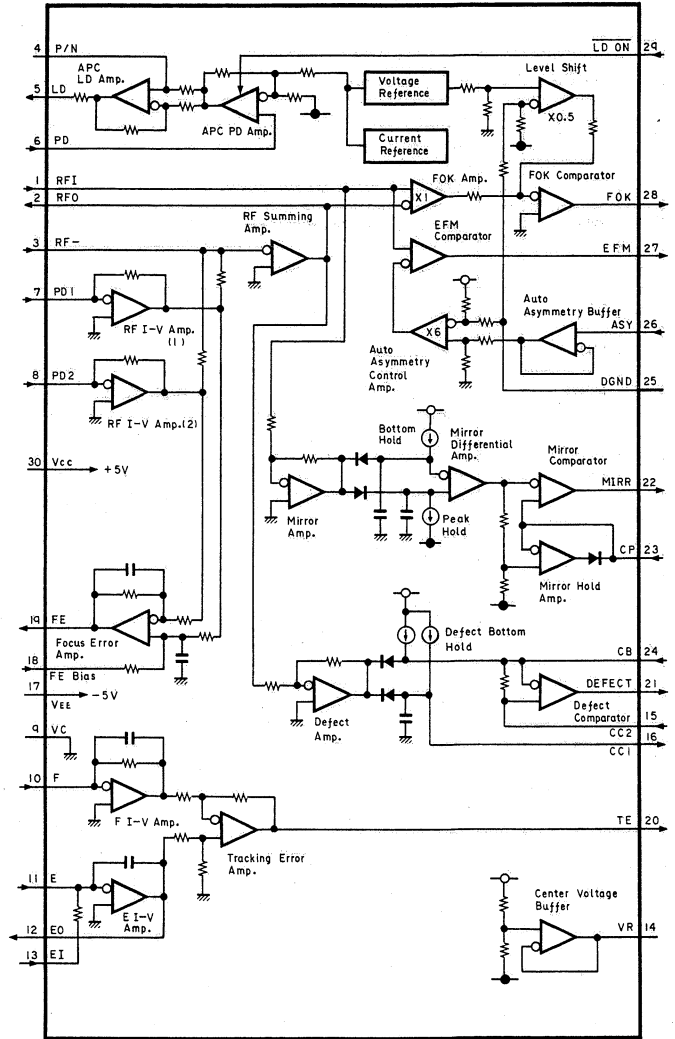


Fig. 9.1.7 RF Amp. CXA1081S (U201)

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	TGU	I	Capacitor connecting pins for changing over the tracking gain at high frequency.
15	TG2	O	
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 f_c 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).

Pin No.	Signal Name	I/O	Function
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.)

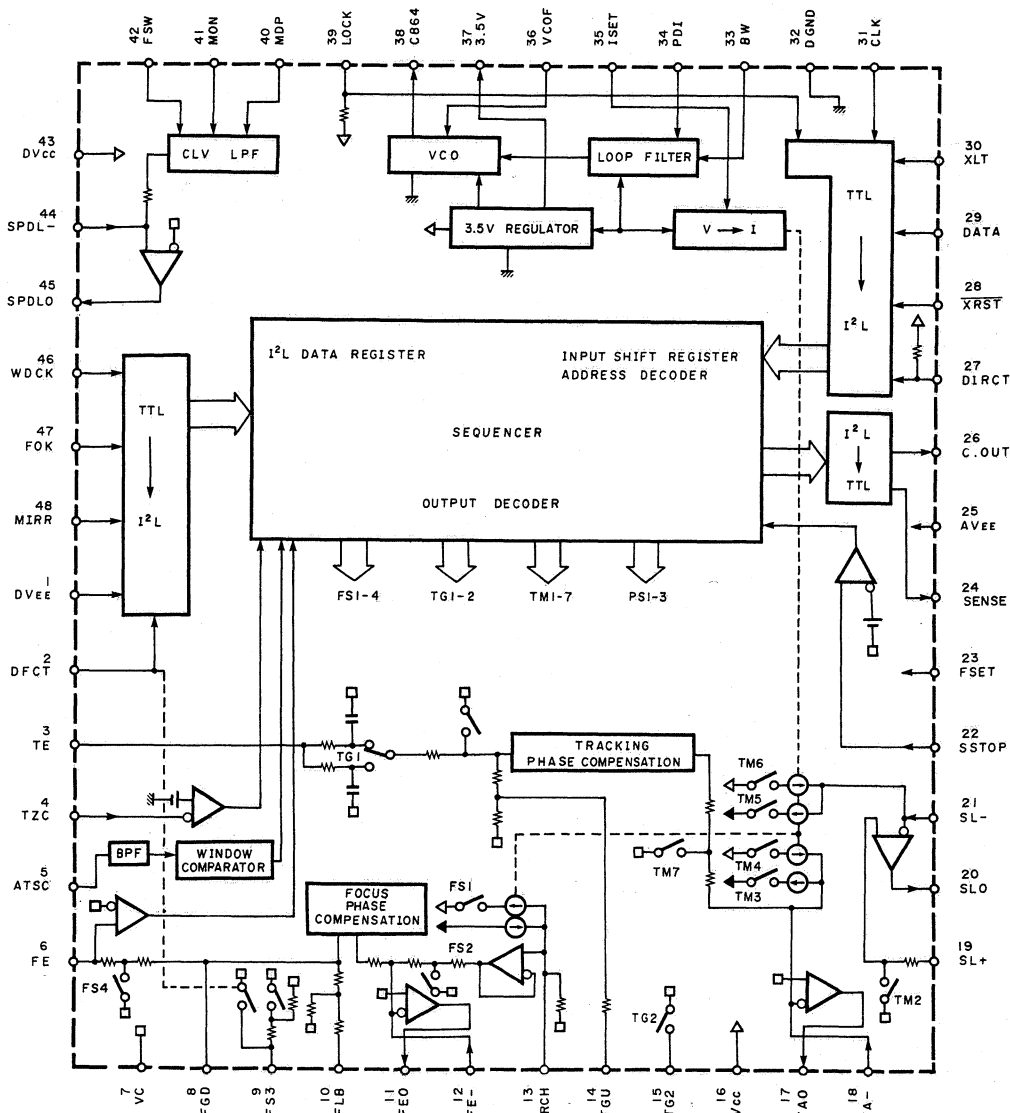


Fig. 9.1.8 Servo Signal Processor CXA1082BS (U102)

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.)

Pin No.	Signal Name	I/O	Function
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	Aperture compensation control output. “H” for R channel. (Not used.)
61	APTL	O	Aperture 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	$\overline{\text{FLCK}}$	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	$\overline{\text{C2I0}}$	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)

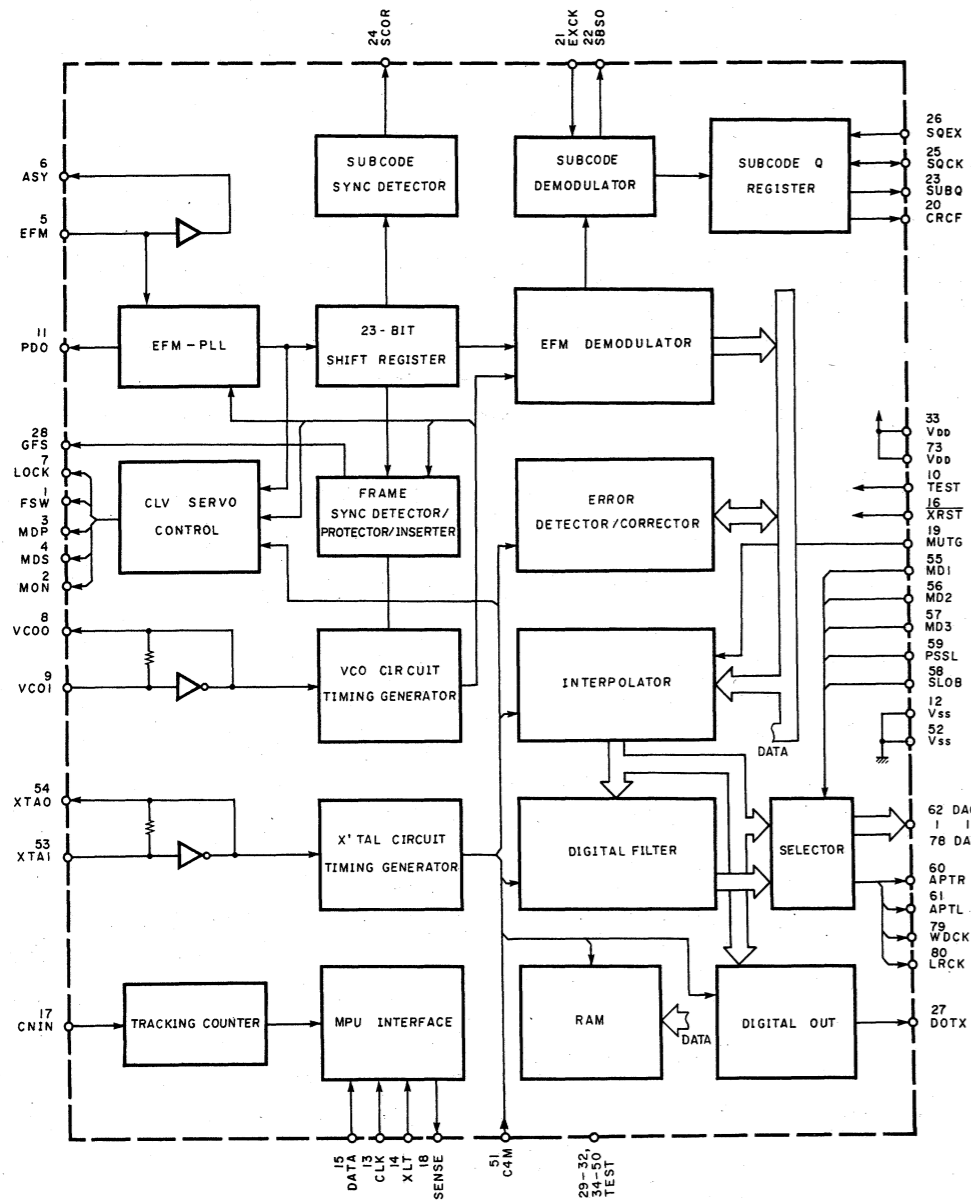


Fig. 9.1.9 Digital Signal Processor CXD1167QZ (U102)

U801 SM5840CP (Digital Filter)

Pin No.	Signal Name	I/O	Function
1	OW16	I	Frequency select input. Fixed to "H" for selecting 384 fs.
2	XTI	I	X'tal (16.9344 MHz) is connected.
3	XTO	I	X'tal (16.9344 MHz) is connected.
4	CKO	O	System clock output. (16.9344 MHz)
5	VSS	-	Grounded.
6	OW20	I	Not used.
7	DEEM	I	De-emphasis information signal input.
8	MUTE	I	Not used.
9	RST	I	System reset input. Active "L".
10	DG	O	Degitch 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.

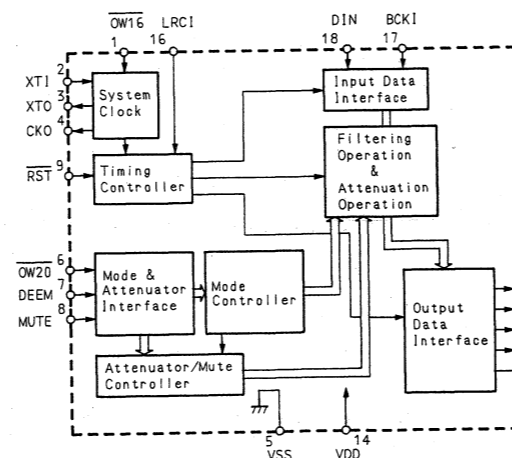


Fig. 9.1.10 Digital Filter SM5840CP (U801)

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	VOU 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	Function
15	L.E	I	L.E input.
16	DATA R	I	Data input (Rch).
17	DGND	-	Digital common.
18	NC	-	-
19	VOU R	O	Vout (Rch).
20	S.JR	-	Summing junction (Rch).
21	ANA.GR	-	Analog common (Rch).
22	I.OUT R	O	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.

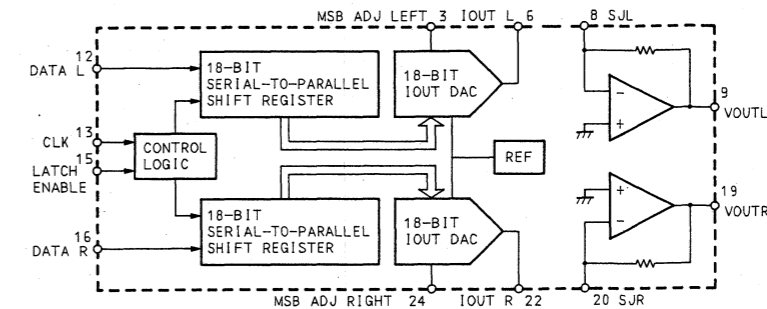


Fig. 9.1.11 18-Bit Dual D/A Converter PCM1700P (U802)

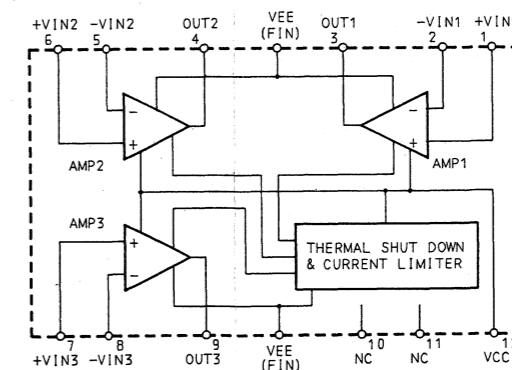
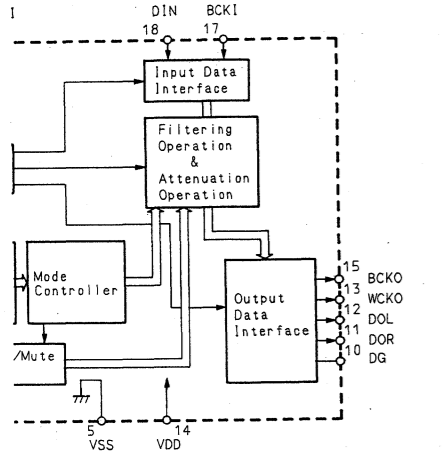


Fig. 9.1.12 Power Amp. LA6520

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".
Degitch 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	O	I out (Lch).
7	ANA.GL	—	Analog common (Lch).
8	S.JL		Summing junction (Lch).
9	VOU T L O	O	V out (Lch).
10	NC	—	—
11	+VDD	—	Supplied with +5V.
12	DATA L I	I	Data input (Lch).
13	CLK	I	Clock input.
14	-VDD	—	Supplied with -5V.

Pin No.	Signal Name	I/O	Function
15	L.E	I	L.E input.
16	DATA R I	I	Data input (Rch).
17	DGND	—	Digital common.
18	NC	—	—
19	VOU T R O	O	Vout (Rch).
20	S.JR		Summing junction (Rch).
21	ANA.GR	—	Analog common (Rch).
22	I.OU T R	O	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.

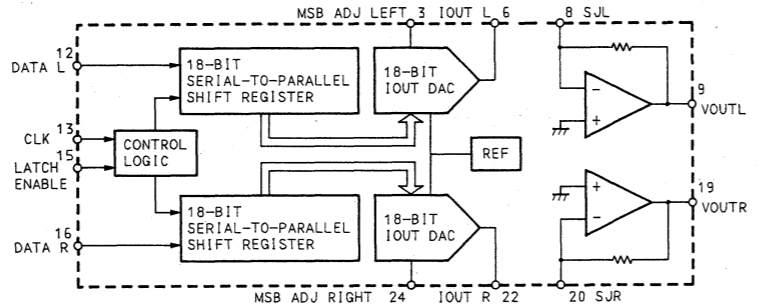


Fig. 9.1.11 18-Bit Dual D/A Converter PCM1700P (U802)

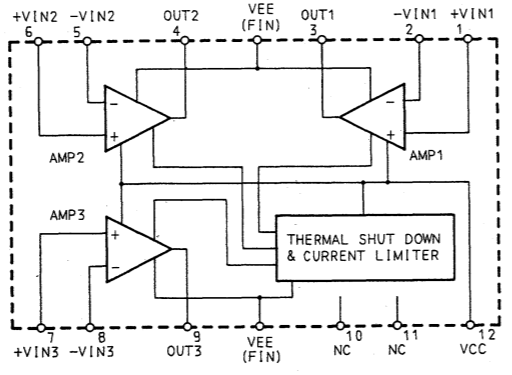


Fig. 9.1.12 Power Amp. LA6520

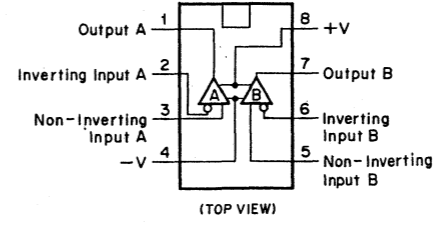


Fig. 9.1.3 Operational Amp. NE5532

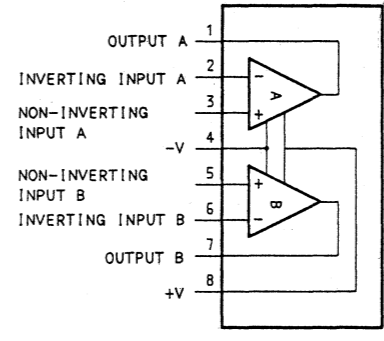


Fig. 9.1.14 Operational Amp. NJM4556S

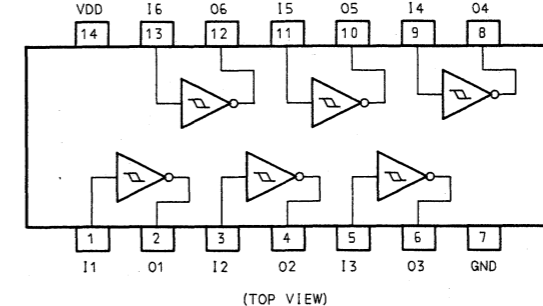


Fig. 9.1.15 Schmitt Trigger TC4584BP

9.2. Schematic Diagrams

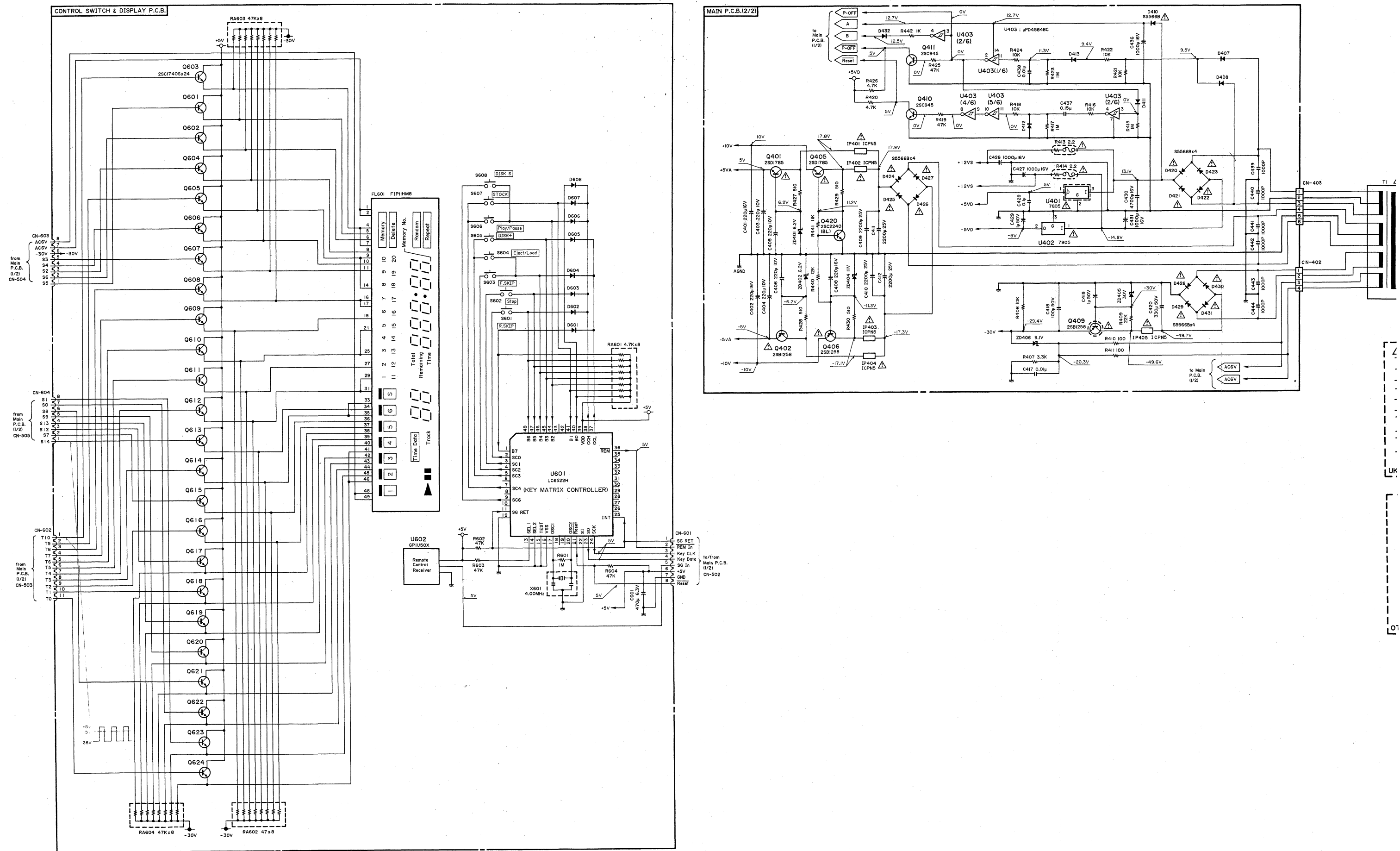


Fig. 9.2.1

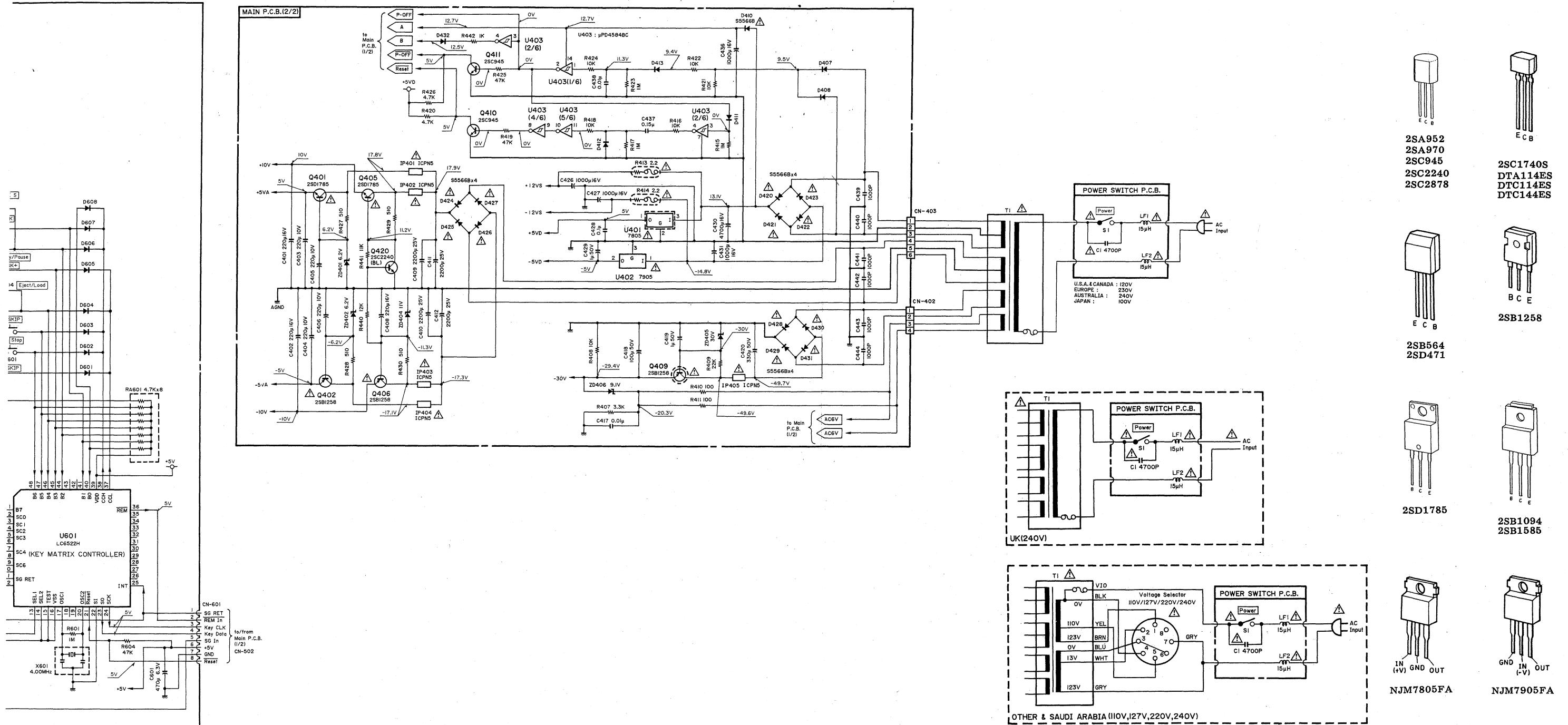



Fig. 9.2.1

- 2SA952
- 2SA970
- 2SC945
- 2SC2240
- 2SC2878
- 2SC1740S
- DTA114ES
- DTC114ES
- DTC144ES
- 2SB1258
- 2SB564
- 2SD471
- 2SD1785
- 2SB1094
- 2SB1585
- 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.

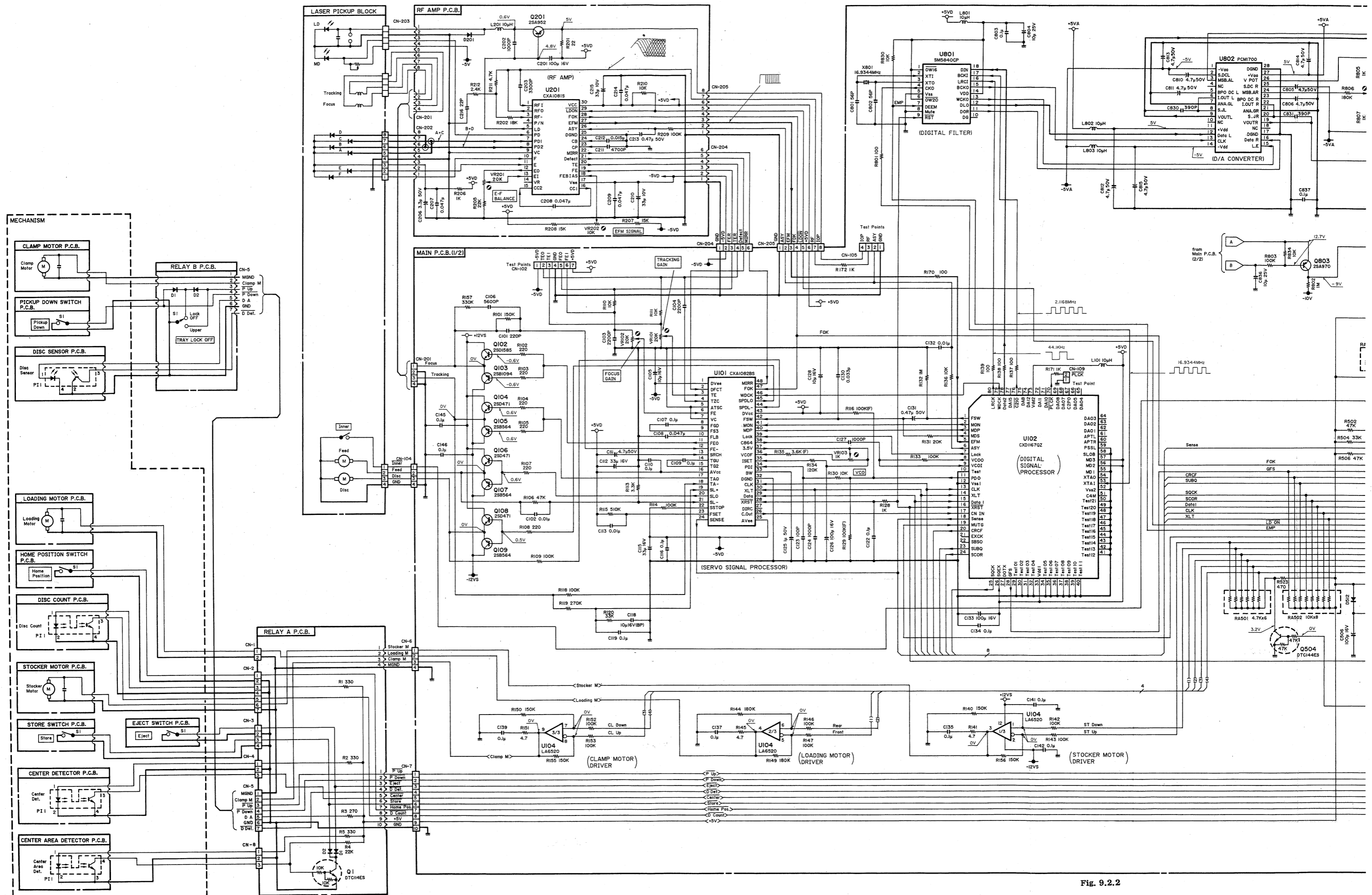


Fig. 9.2.2

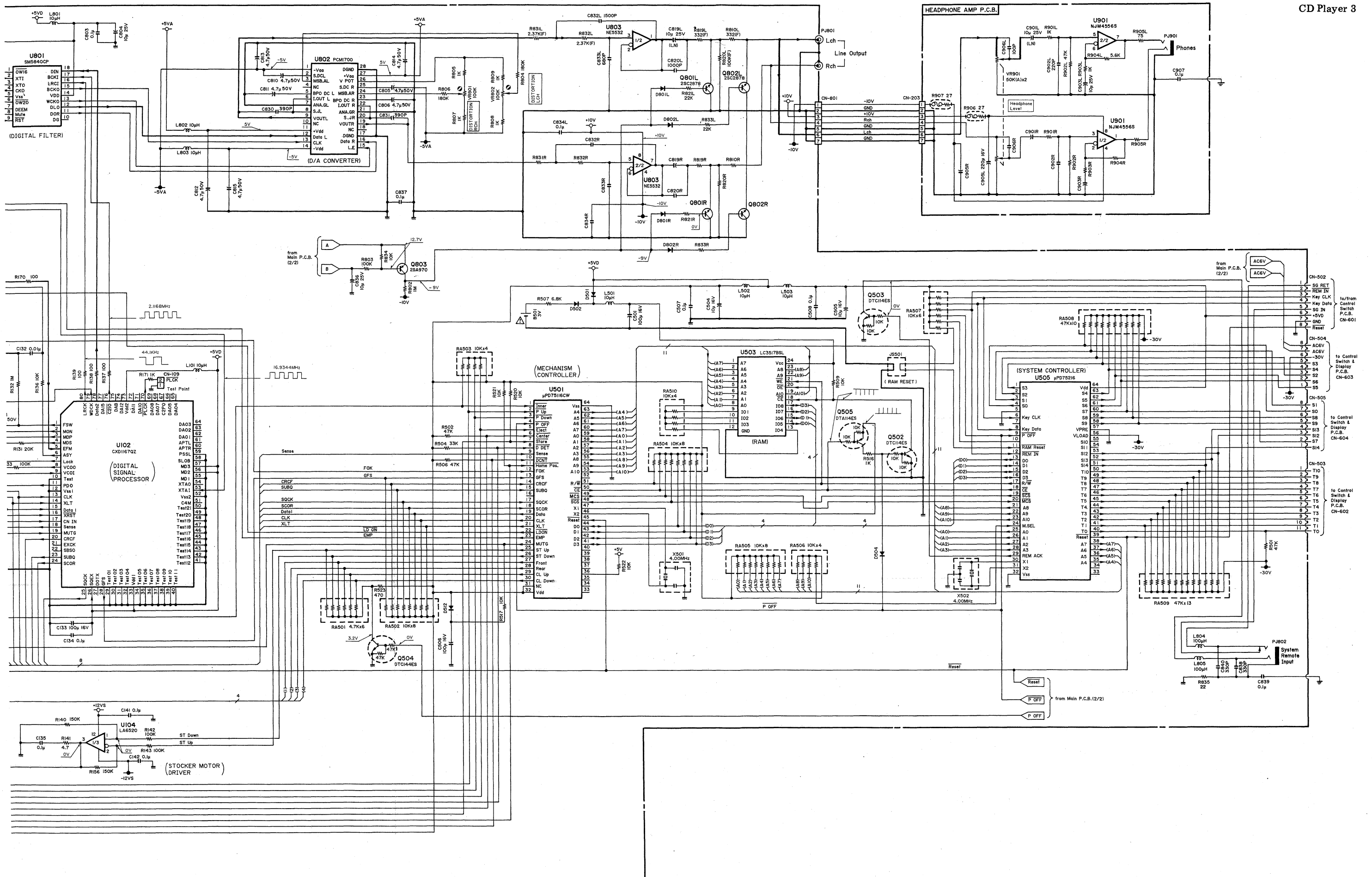
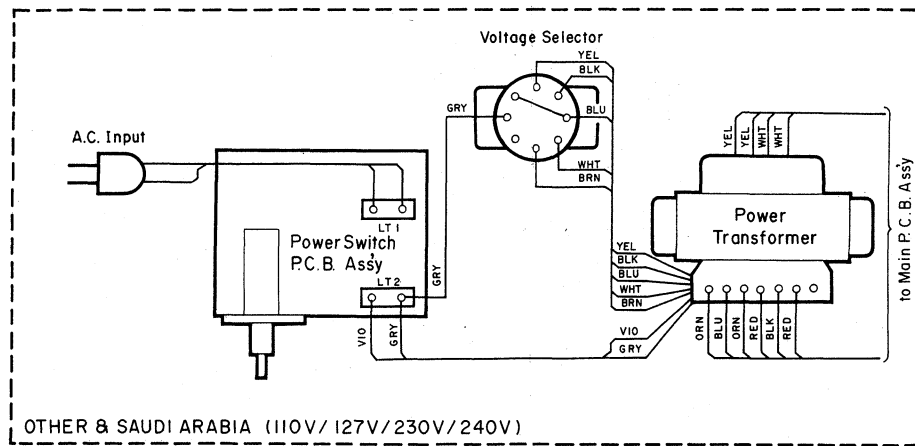
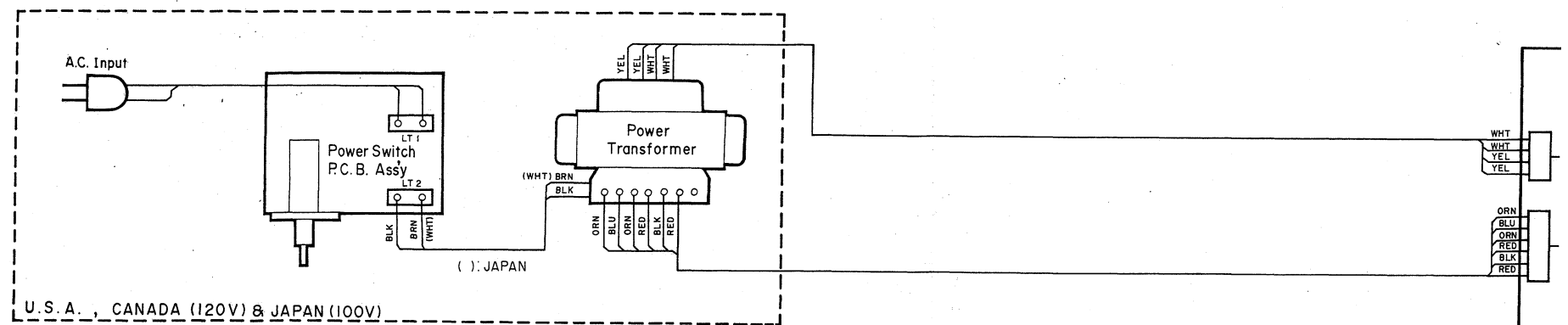
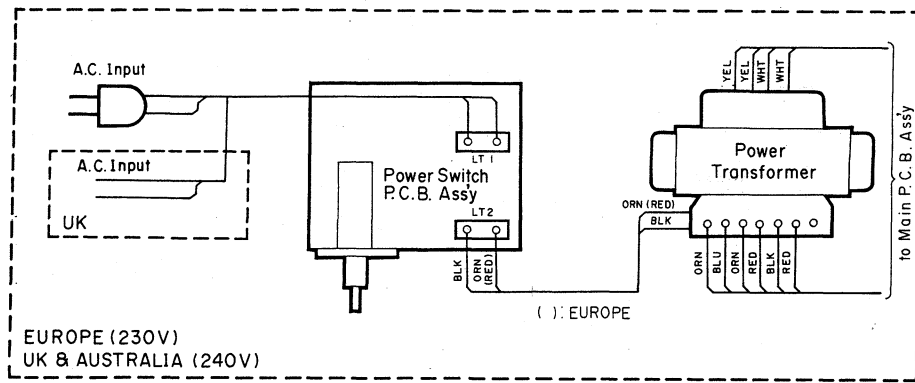


Fig. 9.2.2

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 ().

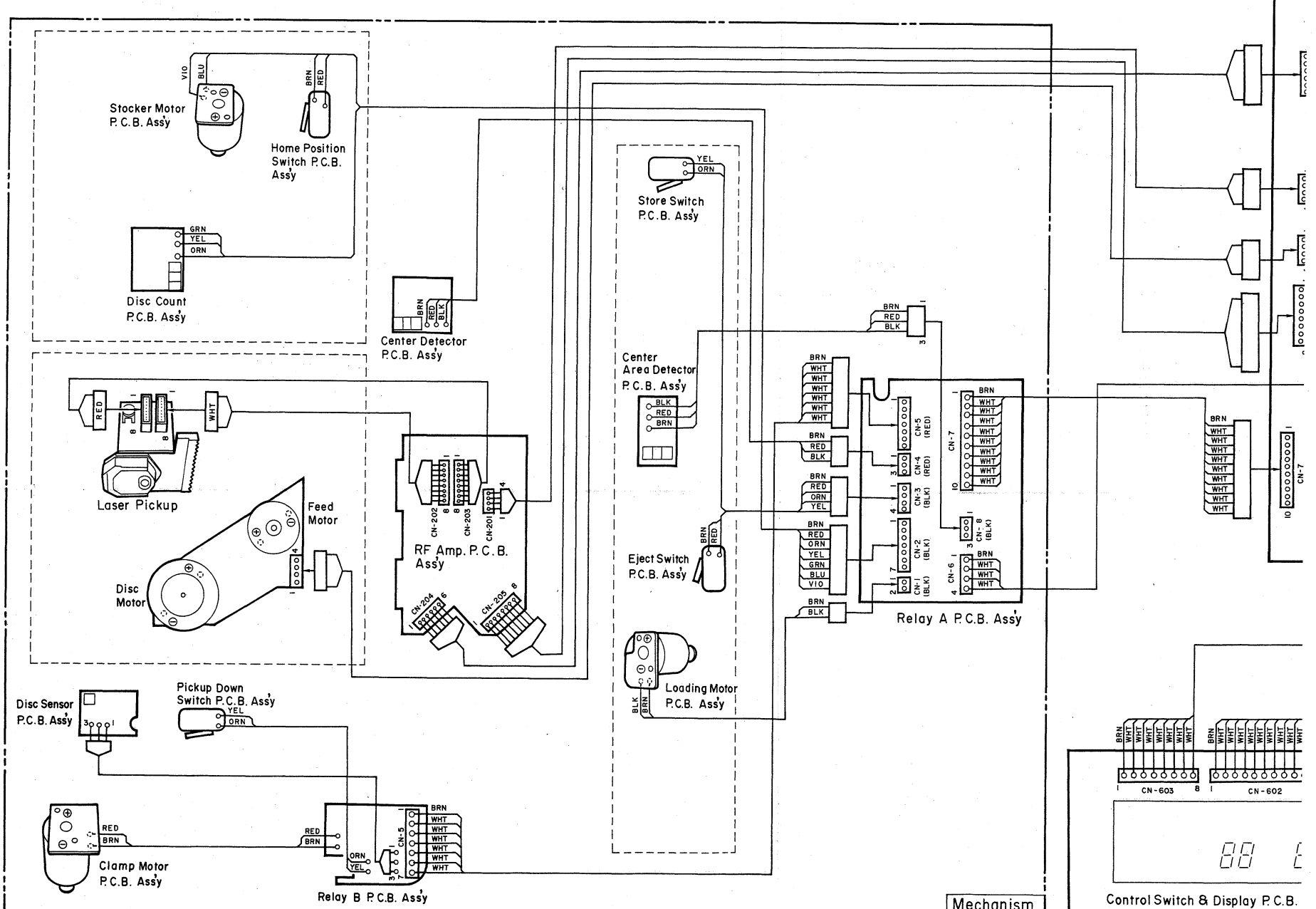


Fig. 10

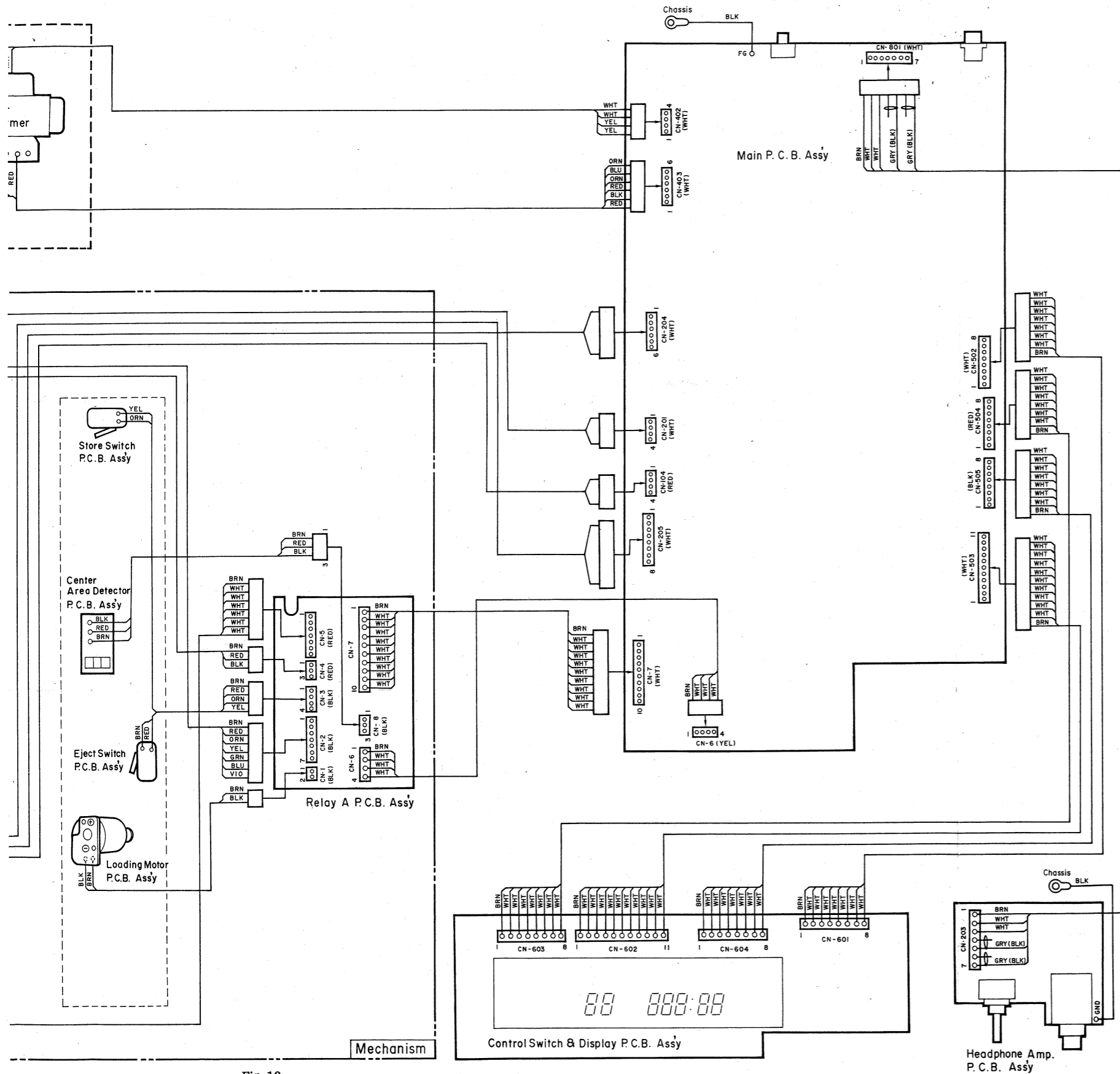


Fig. 10

11. TIMING CHART

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

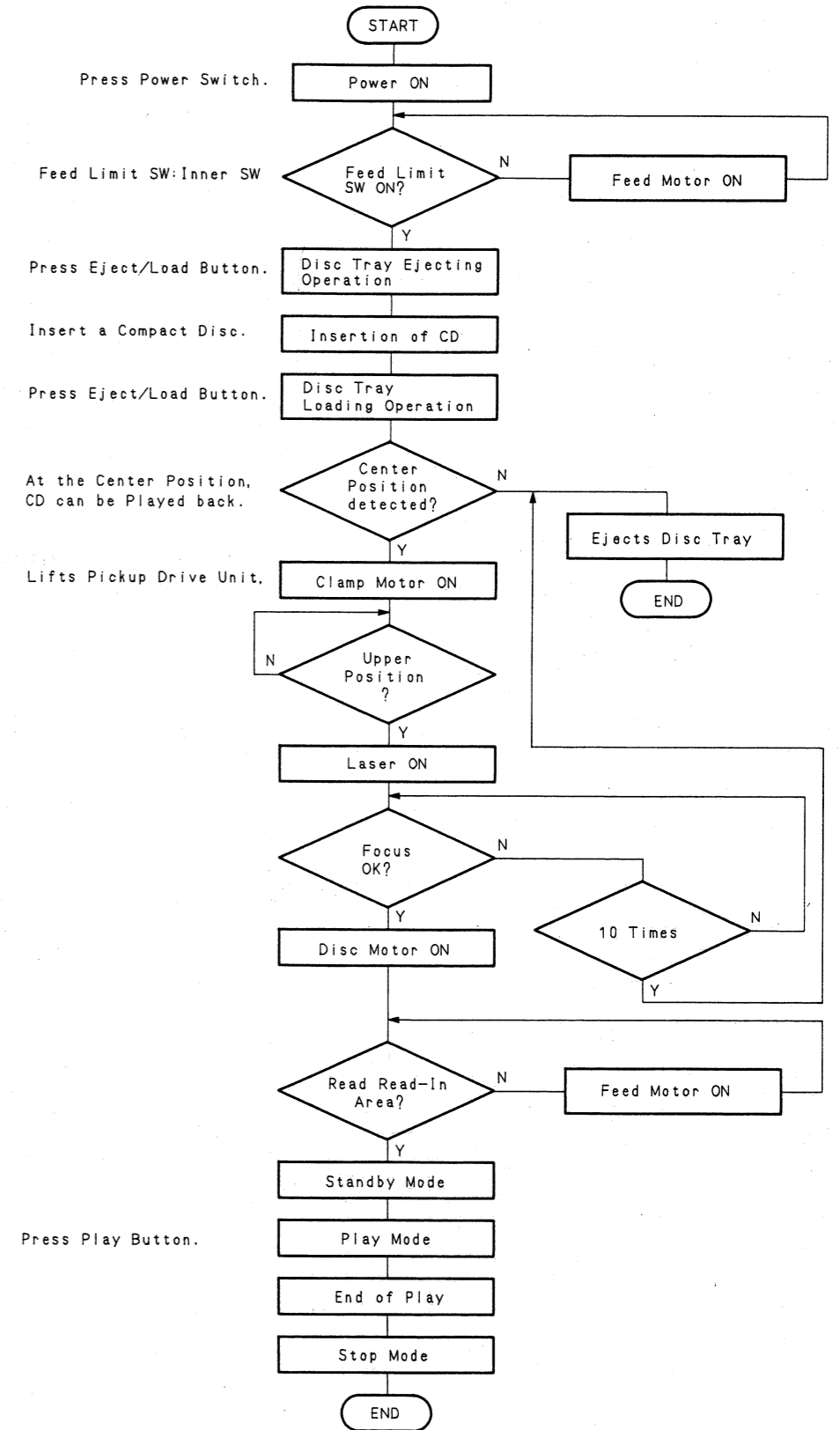
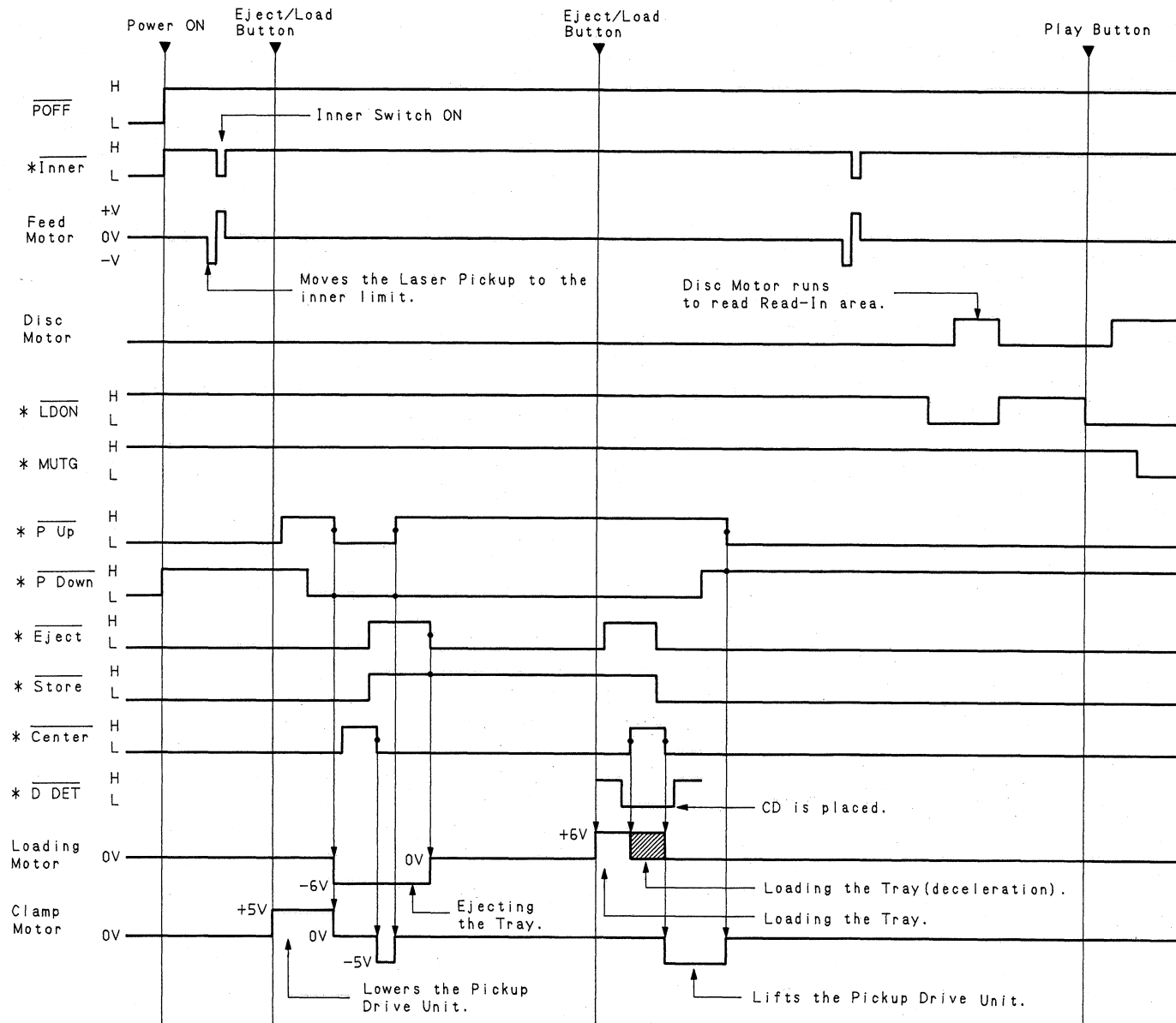


Fig. 11.1

(2) Operational Timing Chart



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

Fig. 11.2

(3) Multiple-Disc Operation (Loading Discs)

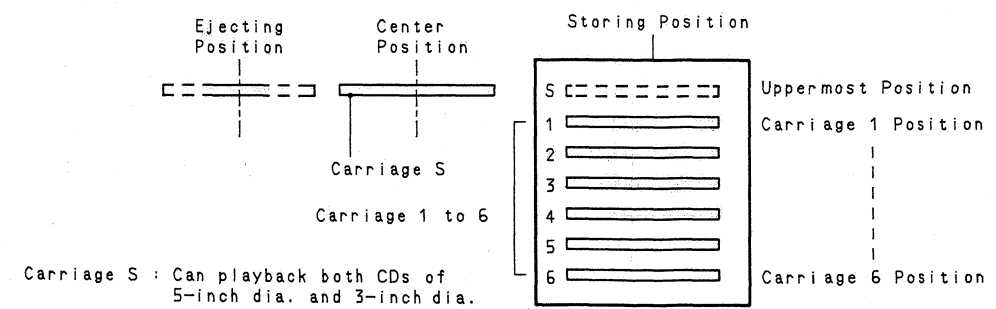
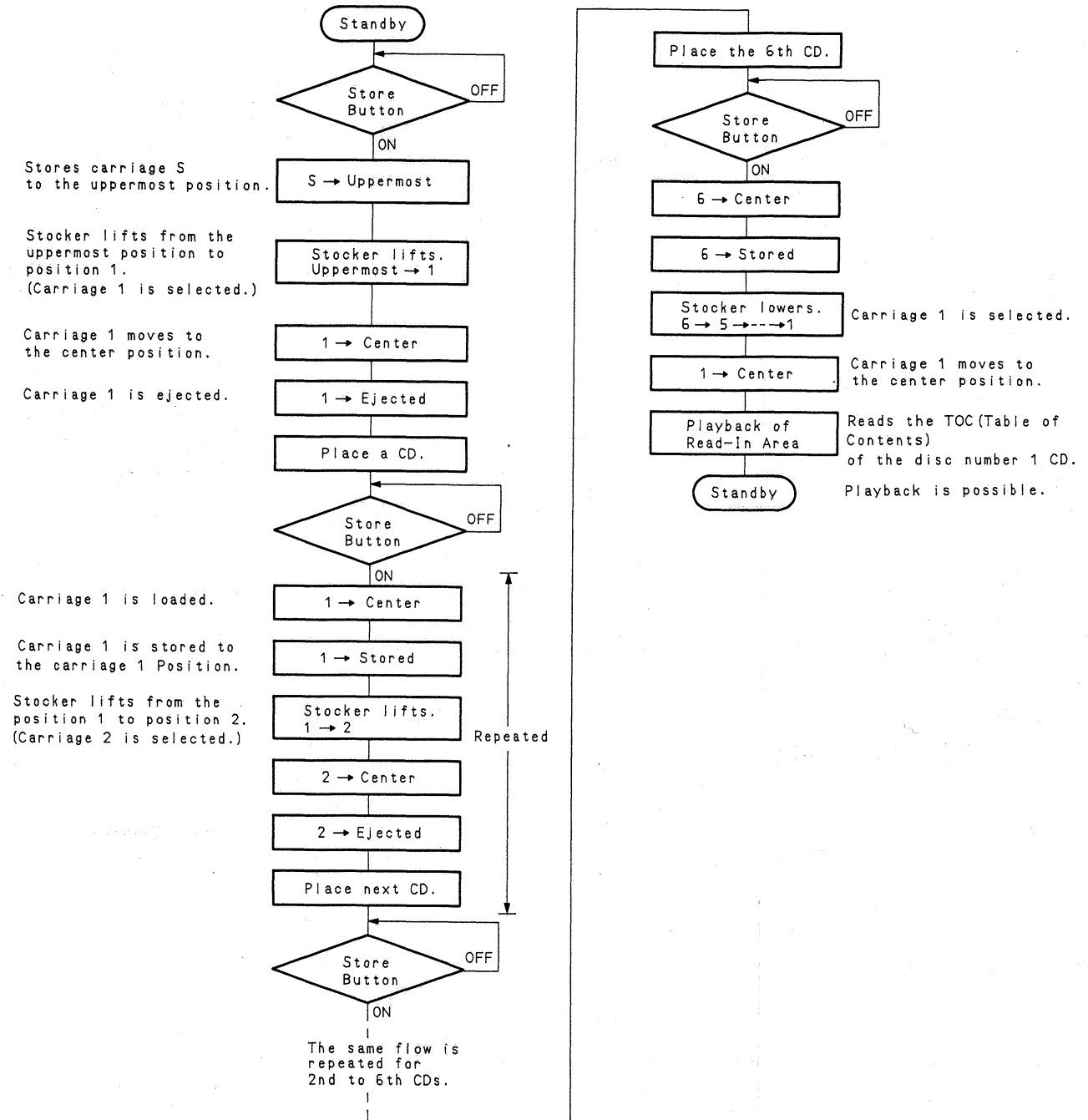


Fig. 11.3

12. BLOCK DIAGRAM

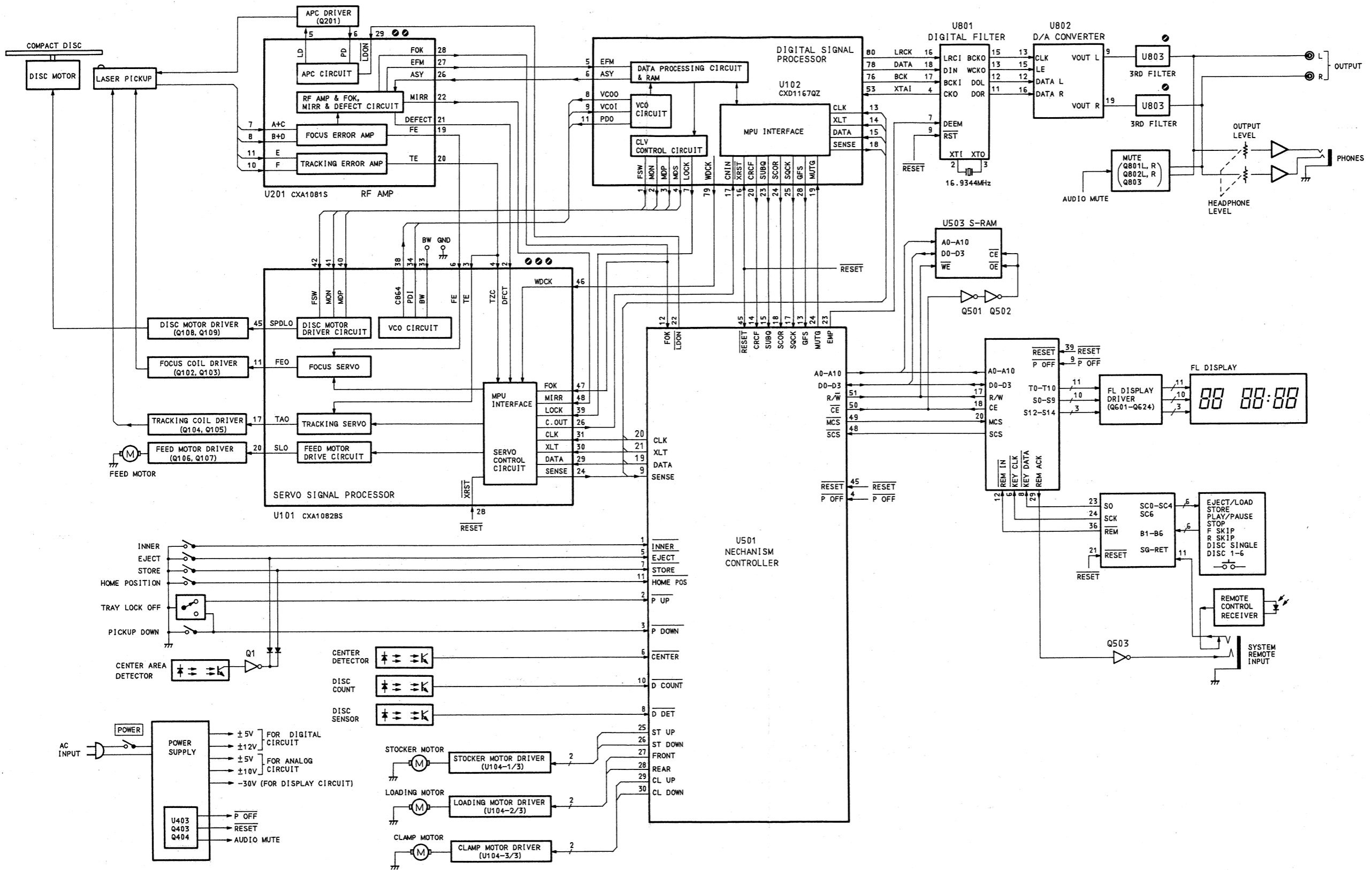


Fig. 12

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 \pm 0.5 dB
Signal to Noise Ratio	Better than 105 dB
(IHF A-WTD)	
Dynamic Range	Better than 98 dB
Total Harmonic Distortion	0.0035%
(1 kHz)	
Total Harmonic Distortion + Noise	0.004%
(1 kHz)	
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	120 g/4 oz.
(including batteries)	

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

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