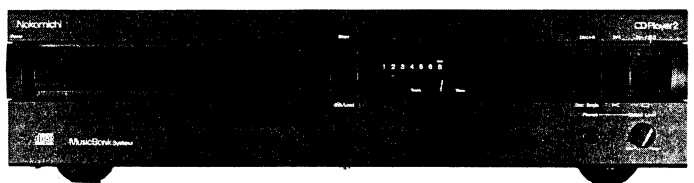


Service Manual

Nakamichi CDP 2



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1. GENERAL

1.1. Production No.
Production No.: V315

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, omskifttere og øvrige kontrolknapper, 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.

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

● LASER DIODE PROPERTIES

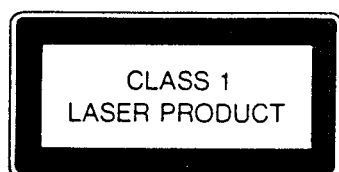
GaAlAs double hetero laser diode

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



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

Service Information

Nakamichi

Model CD Player 2/CD Player 3
Serial No. from -

No. OOD-SI-3126 (1/2)
Date 24 May 1991

Subject Corrections on Part Number Errors

1. Introduction

This Service Information is prepared to give corrections on part number errors.

2. Correction

2.1. Contents of correction

The following corrections apply to the parts list on page 22 of the Service Manual.

No.	Ref. No.	Wrong	Correct
1	PI1	BA07901A Center Detector P.C.B. Ass'y 0B10364A Photo Reflector	BA07901A Center Detector P.C.B. Ass'y 0B10364A Photo <u>Interrupter</u>
2	PI1	BA07902A Disc Count P.C.B. Ass'y 0B10364A Photo Reflector	BA07902A Disc Count P.C.B. Ass'y 0B10364A Photo <u>Interrupter</u>
3	PI1	BA08006A Center Area Detector P.C.B. Ass'y 0B10167A Photo Interrupter	BA08006A Center Area Detector P.C.B. Ass'y <u>0B10373A</u> Photo Interrupter
4	S1	BA07904A Home Position Switch P.C.B. Ass'y 0B70172A Push Switch	BA07904A Home Position Switch P.C.B. Ass'y <u>0B70173A</u> Push Switch
5	S1	BA07905A Eject Switch P.C.B. Ass'y 0B70172A Push Switch	BA07905A Eject Switch P.C.B. Ass'y <u>0B70173A</u> Push Switch
6	S1	BA07906A Pickup Down Switch P.C.B. Ass'y 0B70173A Push Switch	BA07906A Pickup Down Switch P.C.B. Ass'y <u>0B70172A</u> Push Switch
7	S1	BA07907A Store Switch P.C.B. Ass'y 0B70173A Push Switch	BA07907A Store Switch P.C.B. Ass'y <u>0B70172A</u> Push Switch

(Please turn over.)

2.2. Corrected parts list

Please apply this parts list to page 22 of the Service Manual.
(8.5 to 8.11 are corrected. 8.12 to 8.14 are not changed.)

★: 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 Interrupter		OB70173A	Push Switch		OB70172A	
	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 Interrupter		OB60818A	Eject Switch P.C.B. Push Switch		OB80309A	Lead Wire 26 S1 BRN
OB10364A		OB70173A		4P Connector Ass'y	OB80308A		8.13. Loading Motor P.C.B. Ass'y	
8.7. Center Area Detector P.C.B. Ass'y			8.10. Pickup Down Switch P.C.B. Ass'y			CN1	★ BA07909A	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		OB60845A	Loading Motor P.C.B. 2P Connector Ass'y
	OB60857A	Center Area Detector P.C.B. Photo Interrupter		OB60819A	Pickup Down Switch P.C.B. Push Switch		OB84269A	
	OB10373A	Photo Interrupter		OB70172A	Lead Wire 26 YEL	8.14. Stocker Motor P.C.B. Ass'y		
	OB84355A	3P Connector Ass'y (1)		OB80304A	Lead Wire 26 ORN	★ BA07910A	Stocker Motor P.C.B. Ass'y	
				OB80305A		OB60820A	Stocker Motor P.C.B.	

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 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

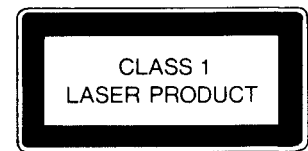
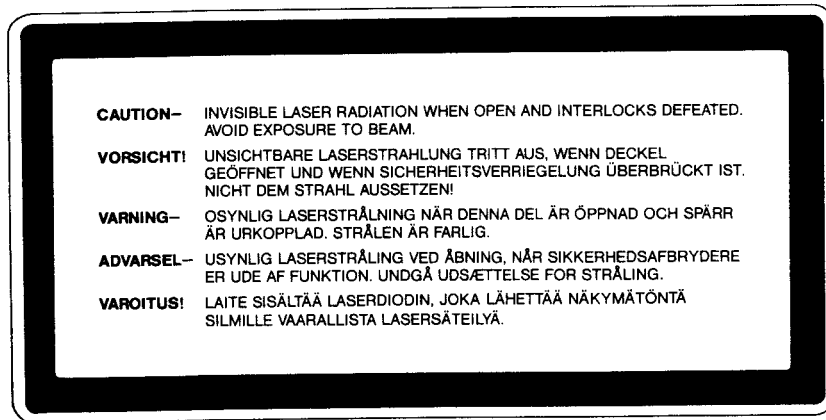
Laser Output: 44.6 μ W Max.

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

Wavelength: 780 nm

Emission Duration: Continuous

- 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 2 (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 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.

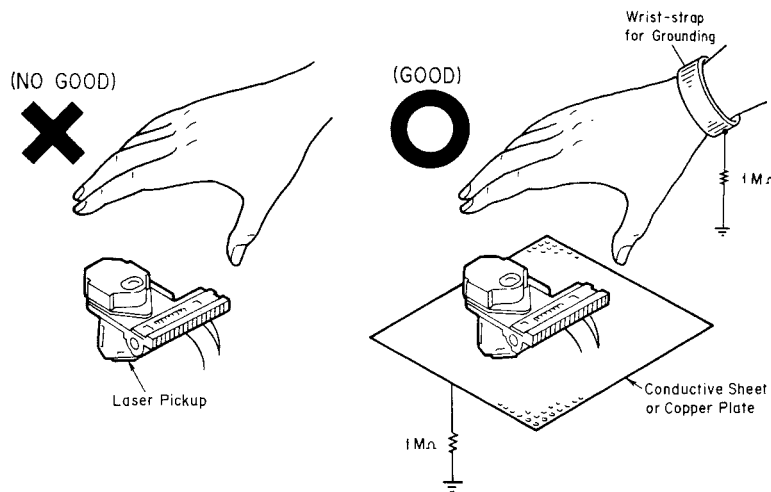
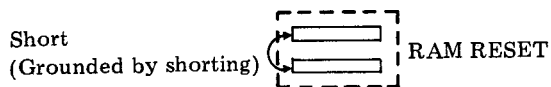


Fig. 1.1

1.8. Sticker Operation Check Function at Power ON

A series of sticker 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 sticker 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 sticker 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 sticker operation, the unit returns to normal condition.

1.9. Package Ass'y and Accessory Ass'y

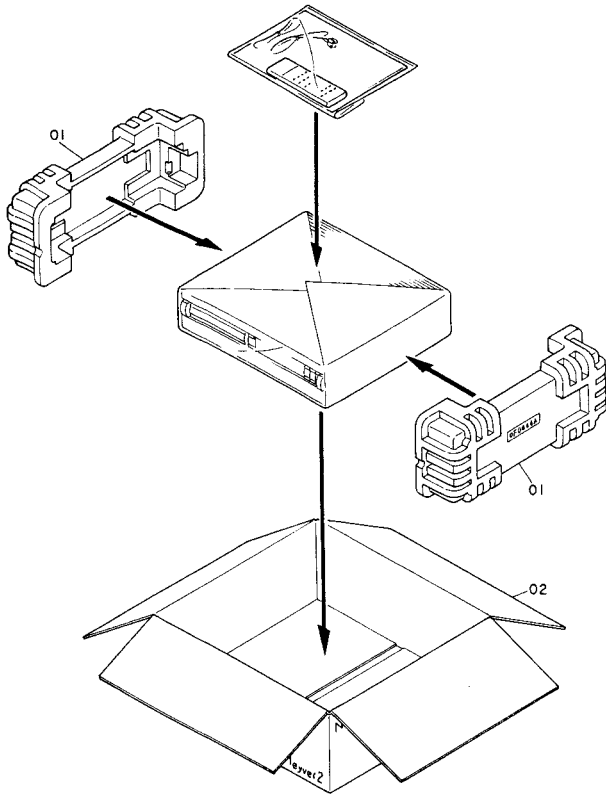


Fig. 1.2

Schematic Ref. No.	Part No.	Description	Q'ty
	—	Package Ass'y	
01	0F04445A	Packing	2
02	0F04447A	Carton Box	1
	DA04384A	Accessroy Ass'y (USA, CAN)	1
	DA04385A	Accessroy Ass'y (EP)	1
	DA04386A	Accessroy Ass'y (UK)	1
	DA04394A	Accessroy Ass'y (AUS, SAU, OTR)	1
	DA04383A	Accessroy Ass'y (JPN)	1
	0B90462A	Battery UM4	2
	0D06106A	Owner's Manual(English/German/French)	1
	0D06107A	Owner's Manual (Japanese)	1
	DA04373A	Remote Control Unit	1
	DA04388A	Pin-Pin Cord Ass'y	1
	DA04433A	Mini 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.

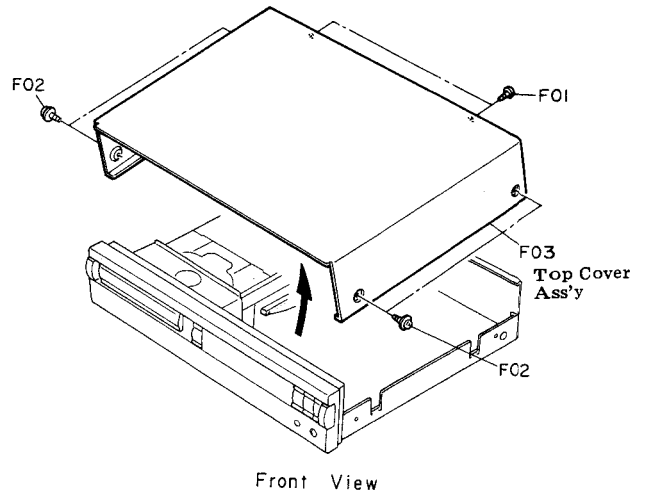


Fig. 2.1

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.

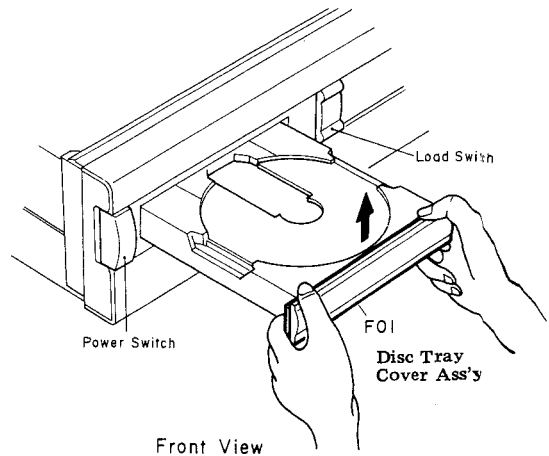


Fig. 2.2

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).

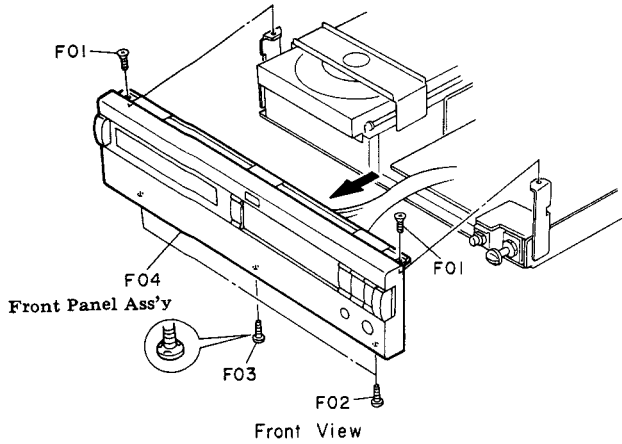


Fig. 2.3

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 (1 pce.), and remove F03 (Digital Output P.C.B. Ass'y).
- (3) Loosen screws F04 (1 pce.) and F05 (5 pcs.), and remove F06 (Main P.C.B. Ass'y).

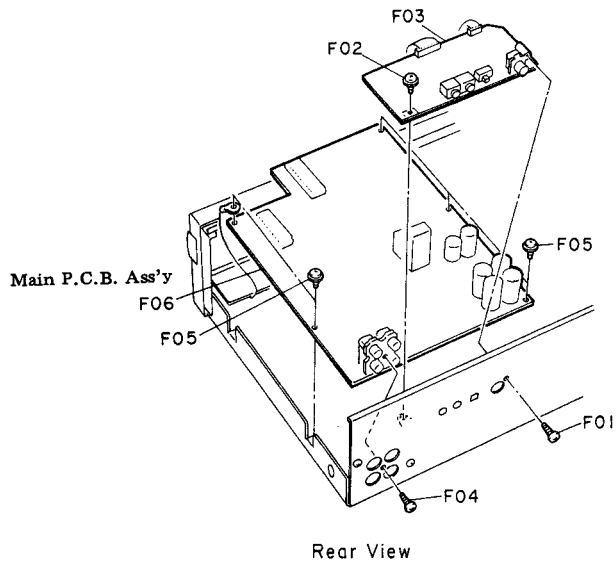


Fig. 2.4

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).

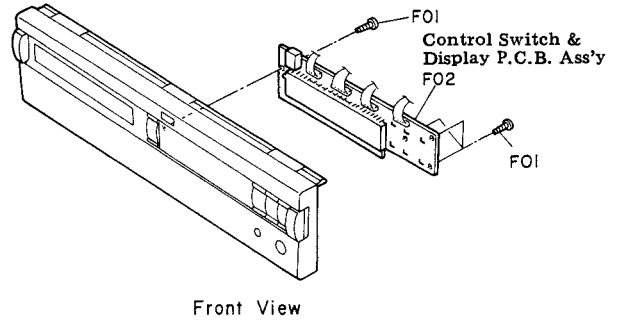


Fig. 2.5

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-101, CN-103, CN-104, CN-106, 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).

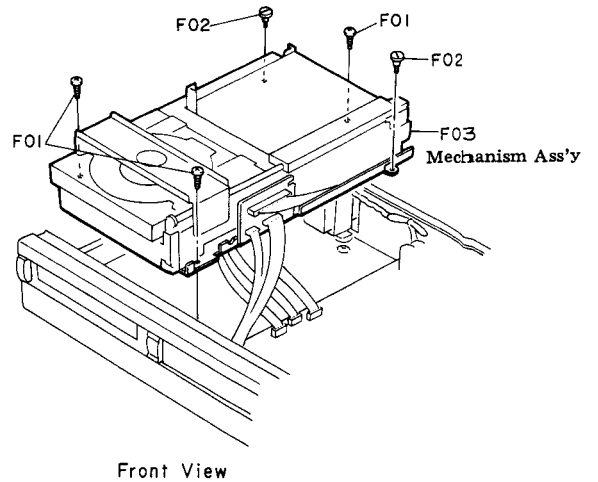


Fig. 2.6

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.

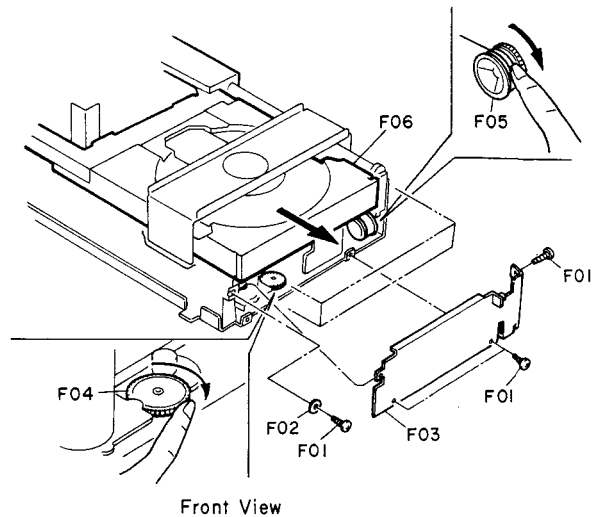


Fig. 2.7.1

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.

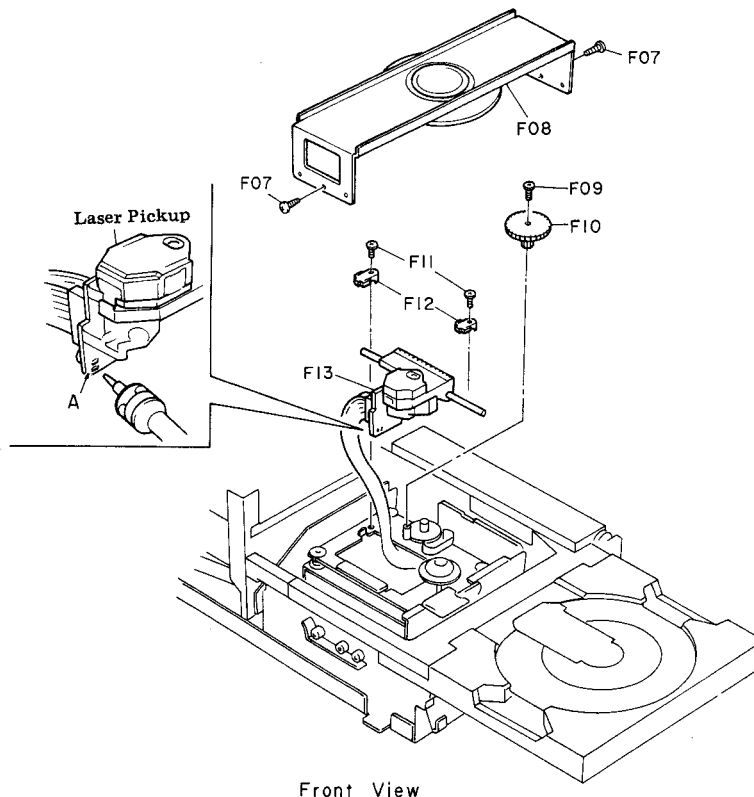


Fig. 2.7.2

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.

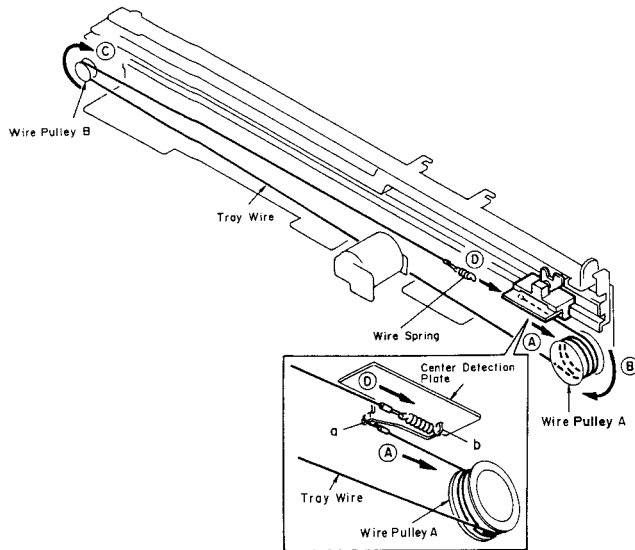


Fig. 3.1

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)

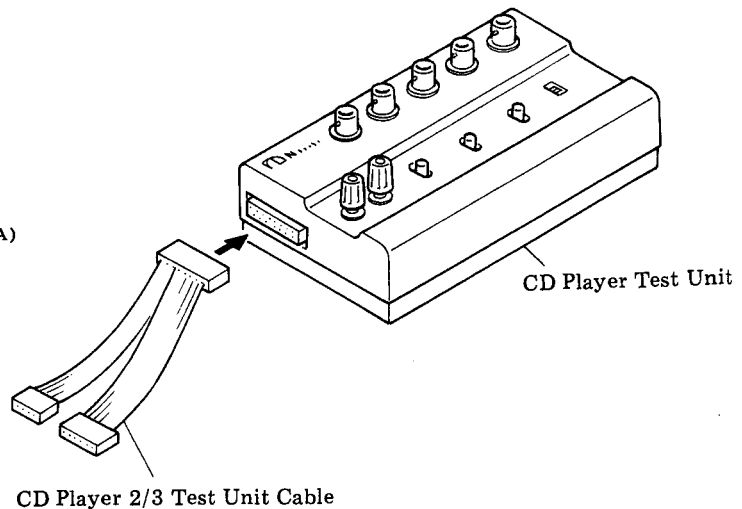


Fig. 4.1 Test Unit

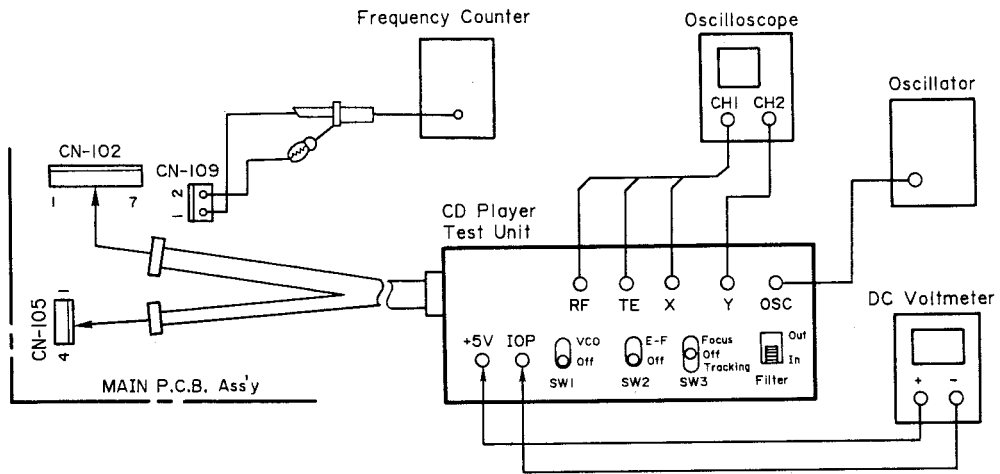


Fig. 4.2 Test Unit Connecting Diagram

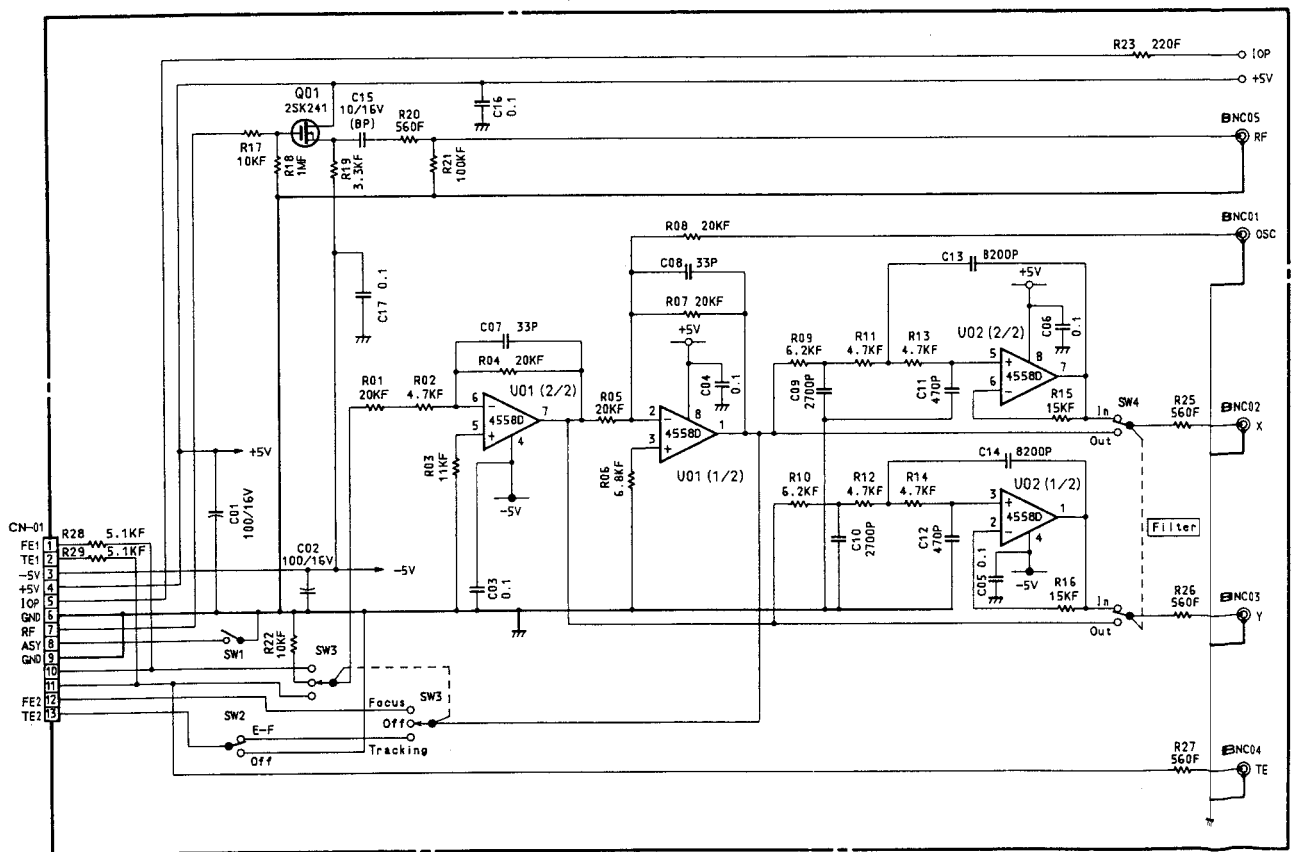


Fig. 4.3 Test Unit Circuit Diagram

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

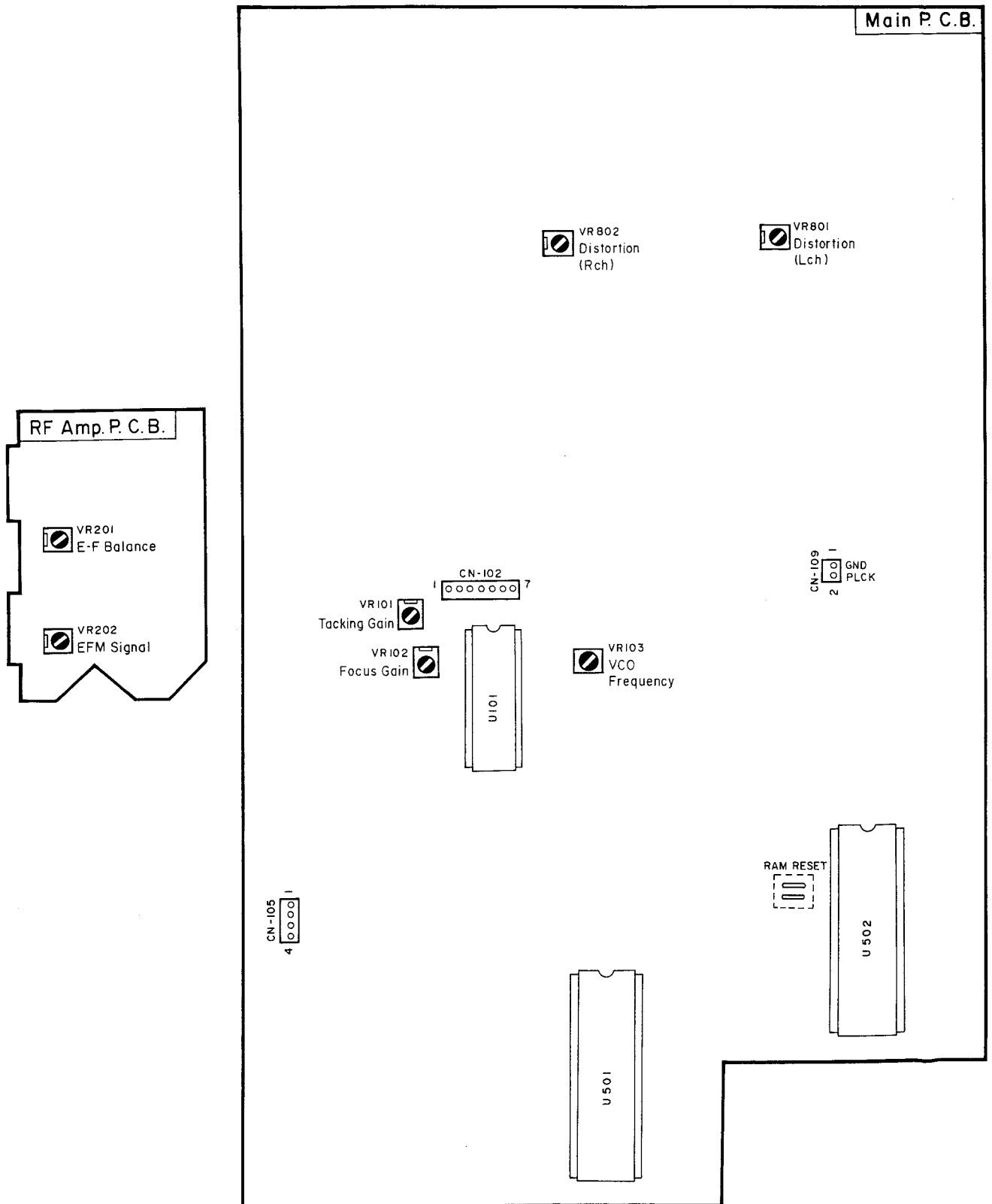
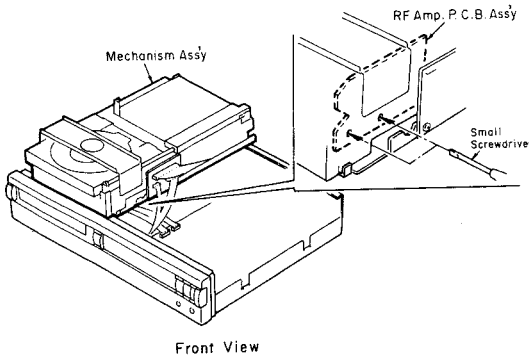
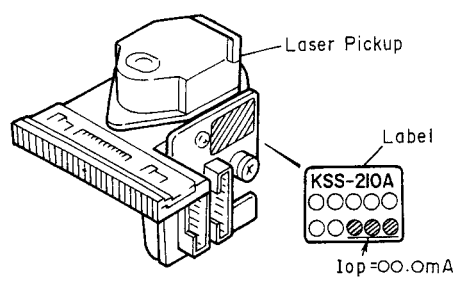
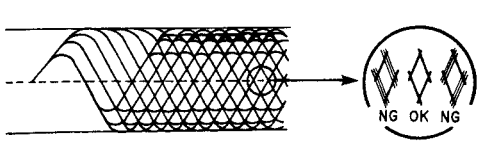
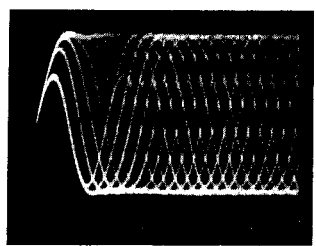
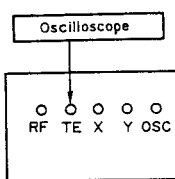
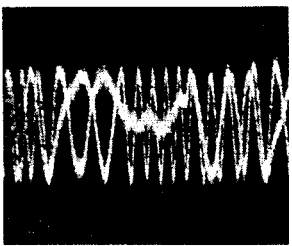
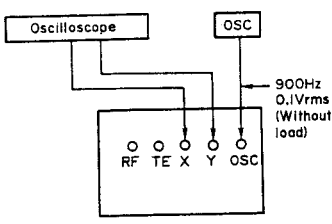
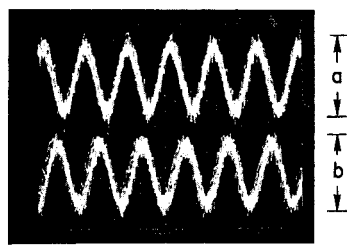
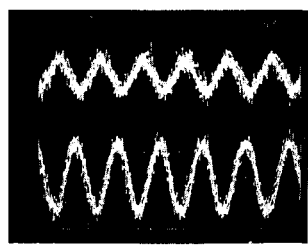
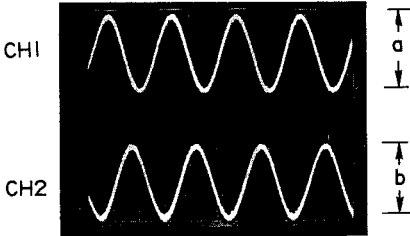
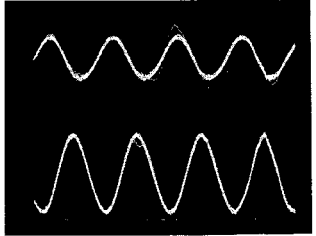
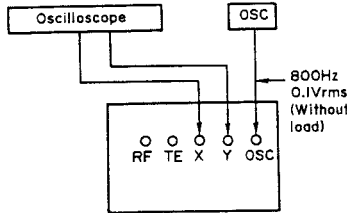


Fig. 5

6. ELECTRICAL ADJUSTMENTS

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 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>
					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	<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</p> <p>CH2</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> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Good waveforms</p>  <p>a=b</p> </div> <div style="text-align: center;"> <p>NG waveforms</p>  </div> </div> <div style="margin-top: 10px;"> <p>Connecting Diagram</p>  </div> <div style="margin-top: 10px;"> <p>Oscilloscope Setting:</p> <p>CH1, CH2: 0.2 V/div, DC Mode Time: 0.5 ms/div Mode: Auto, ALT Trigger: CH1</p> </div>					
8	Distortion Adjustment	Sony YEDS-7 (Type 3)	Distortion Meter to Output Jack	Main P.C.B. VR801(L) VR802(R)	<ol style="list-style-type: none"> 1. Play back the 14th program (1kHz, 0dB) of the test disc. 2. Adjust VR801 (Lch) and VR802 (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 800 μm 17th program o Simulated fingerprint 19th program

7. MECHANISM ASS'Y AND PARTS LIST

7.1. Synthesis

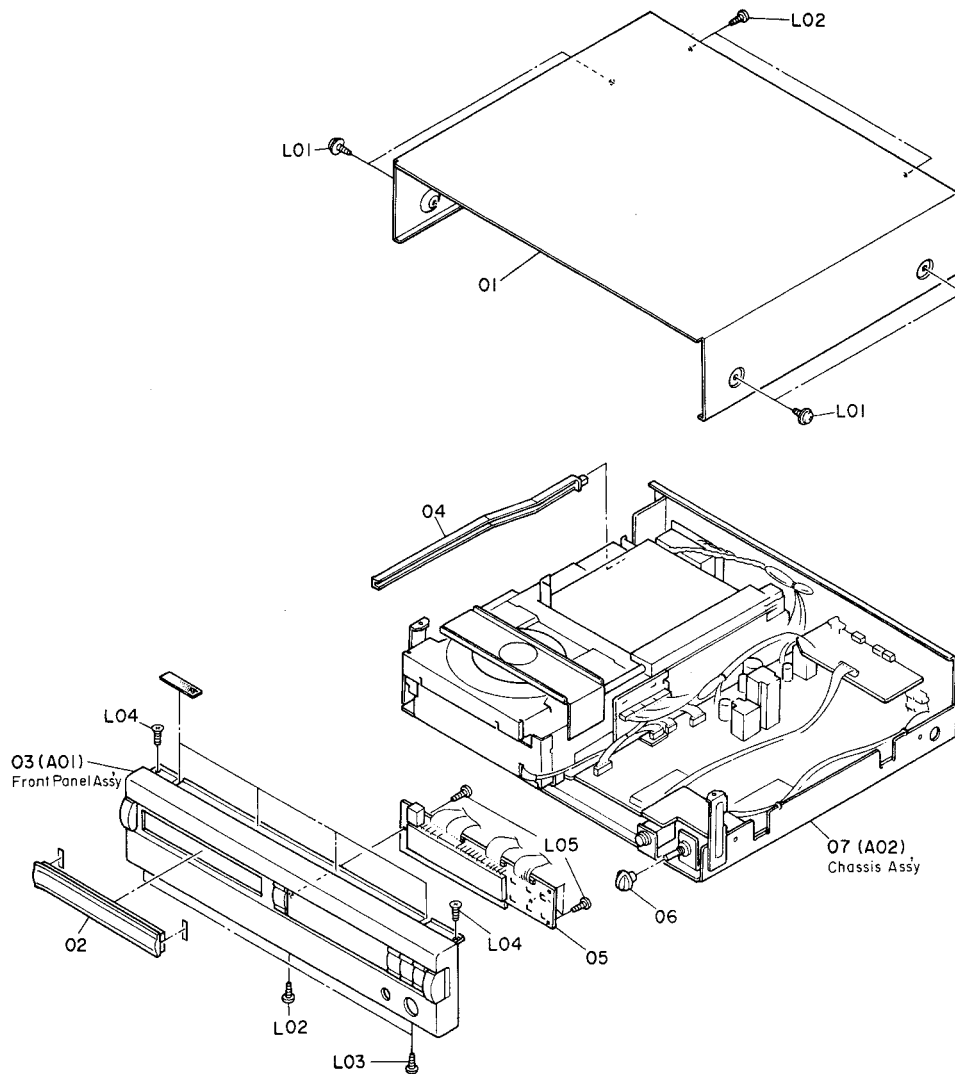


Fig. 7.1

*: Unstock parts.

7.2. Front Panel Ass'y (A01)

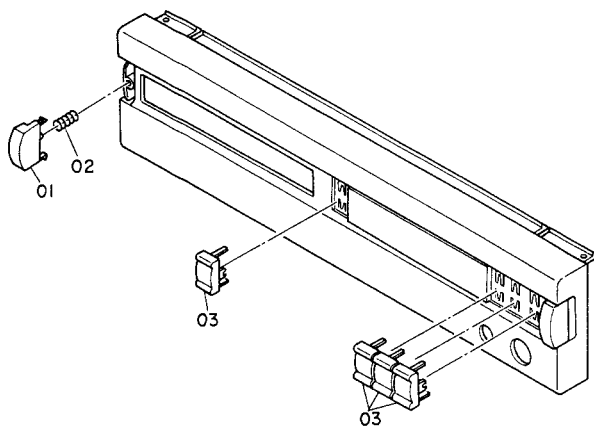


Fig. 7.2

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	* HA05904A	Front Panel Ass'y	1
04	0J06230B	Power Switch Joint	1
05	* BA07928A	Control Switch & Display P.C.B. Ass'y	1
06	0H05820A	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	* HA05904A	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)

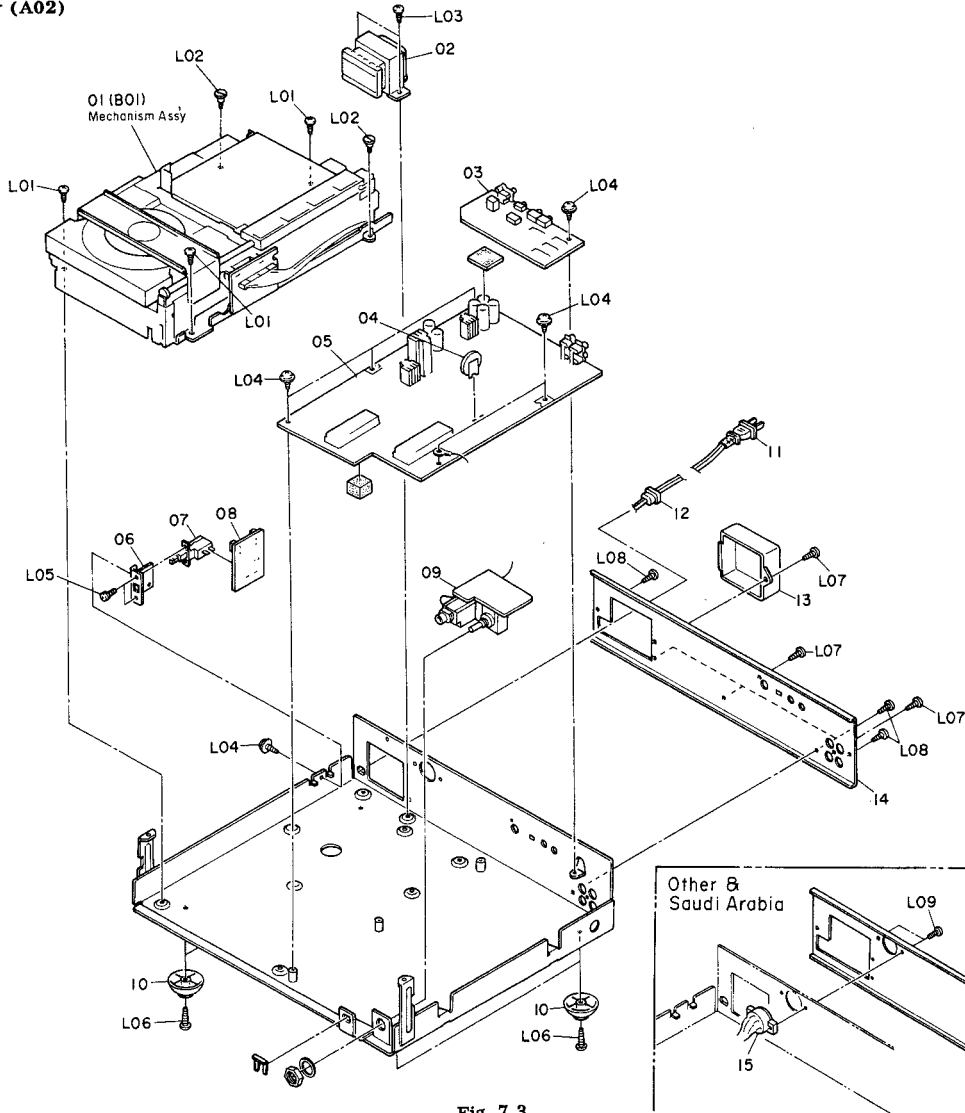


Fig. 7.3

★: Unstock parts.

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
7.3. Chassis Ass'y (A02)							
A02	—	Chassis Ass'y	1	12	0B08348A 0B05241A 0B08219B 0B90280A	Power Cord (UK) Power Cord (AUS) Power Cord (SAU, OTR, JPN) Cord Bushing (USA, CAN, EP, UK, AU)	1 1 1 1
01	★ CA09004A	Mechanism Ass'y	1	13	0B90283A	Cord Bushing (SAU, OTR, JPN)	1
02	★ 0B50170B	Power Transformer 120V (USA, CAN)	1	14	0H05810B 0H05804C	Transformer Cover Rear Plate (USA, CAN, EP, UK, AU, JPN)	1 1
	★ 0B50173B	Power Transformer 230V/240V (EP, UK, AUS)	1	15	0H05805C	Rear Plate (SAU, OTR)	1
	★ 0B50172B	Power Transformer 110V-240V (SAU, OTR)	1	L01	0B81771A	Voltage Selector (SAU, OTR)	1
	★ 0B50171B	Power Transformer 100V (JPN)	1	L02	0E00857A	BT3x6 ⊕ Binding	
03	★ BA07932A	Digital Output P.C.B. Ass'y	1	L03	0E03635A	BT3x6 ⊕ Binding	
04	★ 0B92048A	Lithium Battery [B501]	1	L04	0E03434A	BT4x6 ⊕ Binding	
05	★ BA07925A	Main P.C.B. Ass'y	1	L05	0E03157A	BT3x8 ⊕ Binding with Washer	
06	★ 0J06231A	Power Switch Holder	1	L06	0E00612A	M3x6 ⊕ Pan (2A)	
07	★ 0B71013A	Power Switch	1	L07	0E03012A	BT3x12 ⊕ Binding (Black Chromate)	
08	★ BA07930A	Power Switch P.C.B. Ass'y (USA, CAN, SAU, OTR)	1	L08	0E00921A	BT3x8 ⊕ Binding (Black Chromate)	
	★ BA08019A	Power Switch P.C.B. Ass'y (EP, UK, AUS)	1	L09	0E00860A	BT3x6 ⊕ Binding (Black Chromate)	
	★ BA07931A	Power Switch P.C.B. Ass'y (JPN)	1	L09	0E00985A	M3x6 ⊕ Binding (Black Chromate) (SAU, OTR)	
09	★ BA07929A	Headphone P.C.B. Ass'y	1				
10	★ HA05833A	Leg Ass'y	4				
11	★ 0B08504A	Power Cord (USA, CAN)	1				
	★ 0B08093U	Power Cord (EP)	1				

7.4. Mechanism Ass'y (B01)

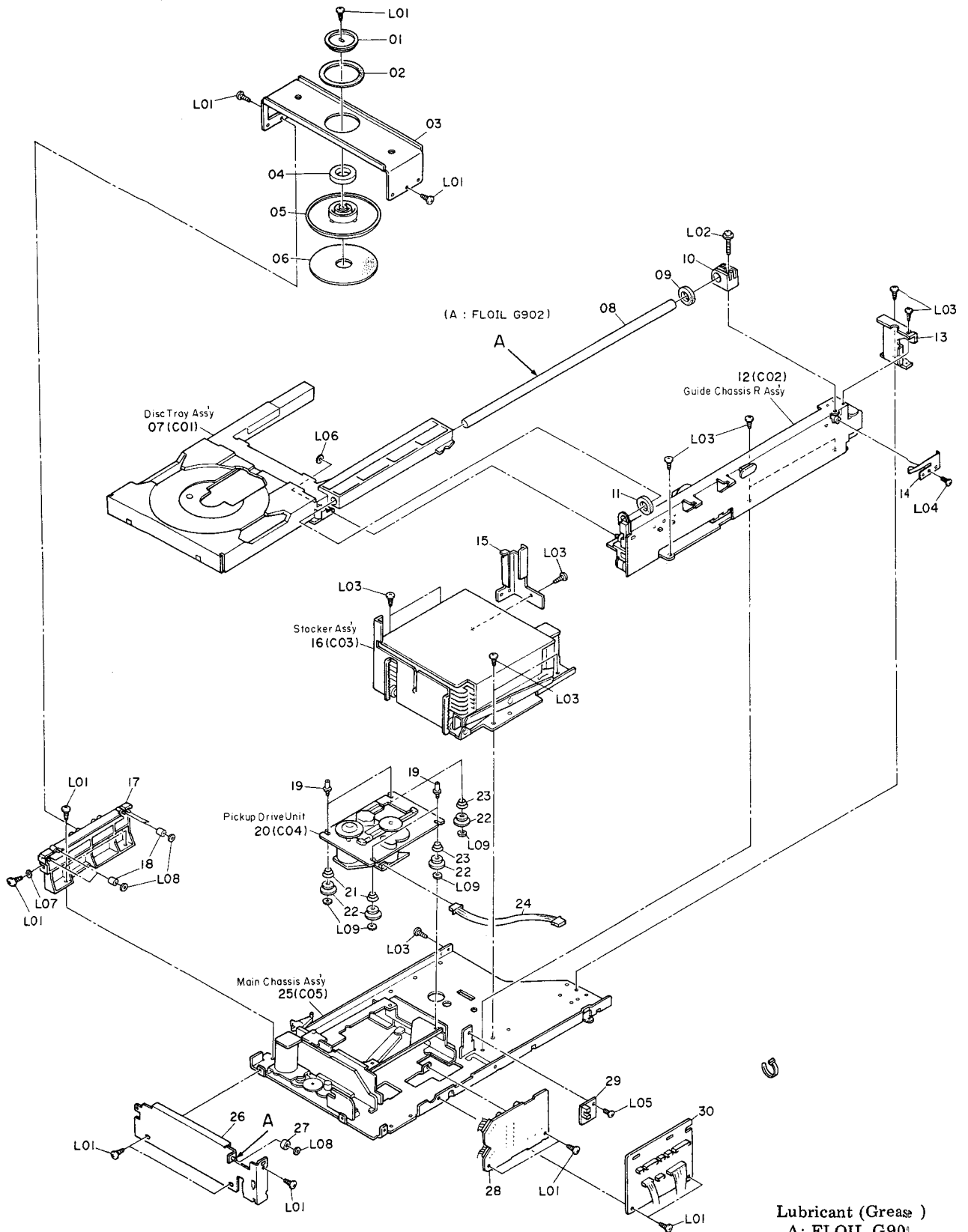


Fig. 7.4

*: 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	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)

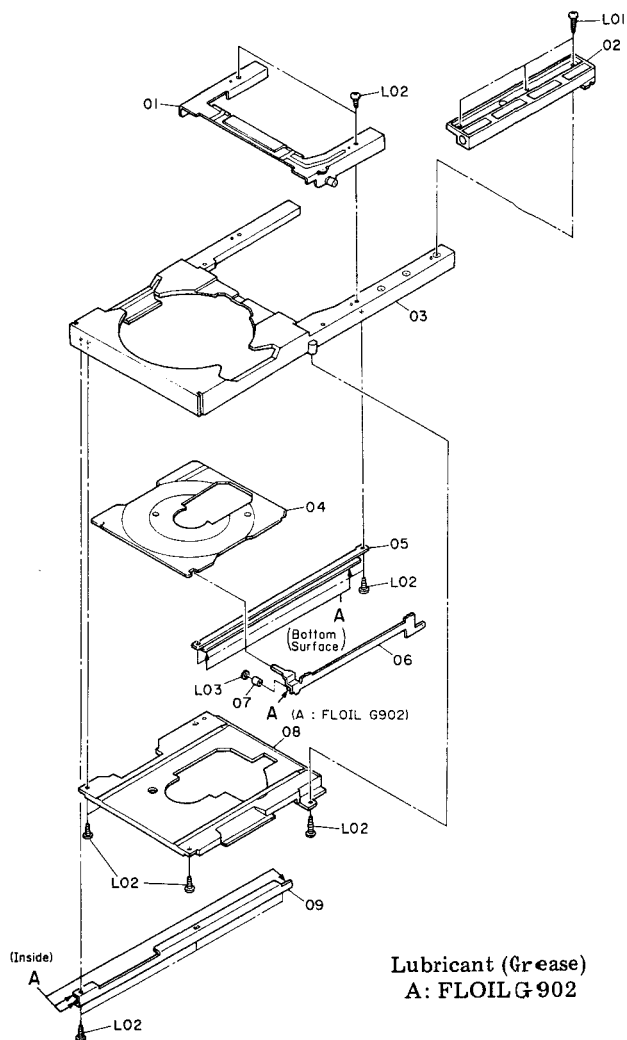
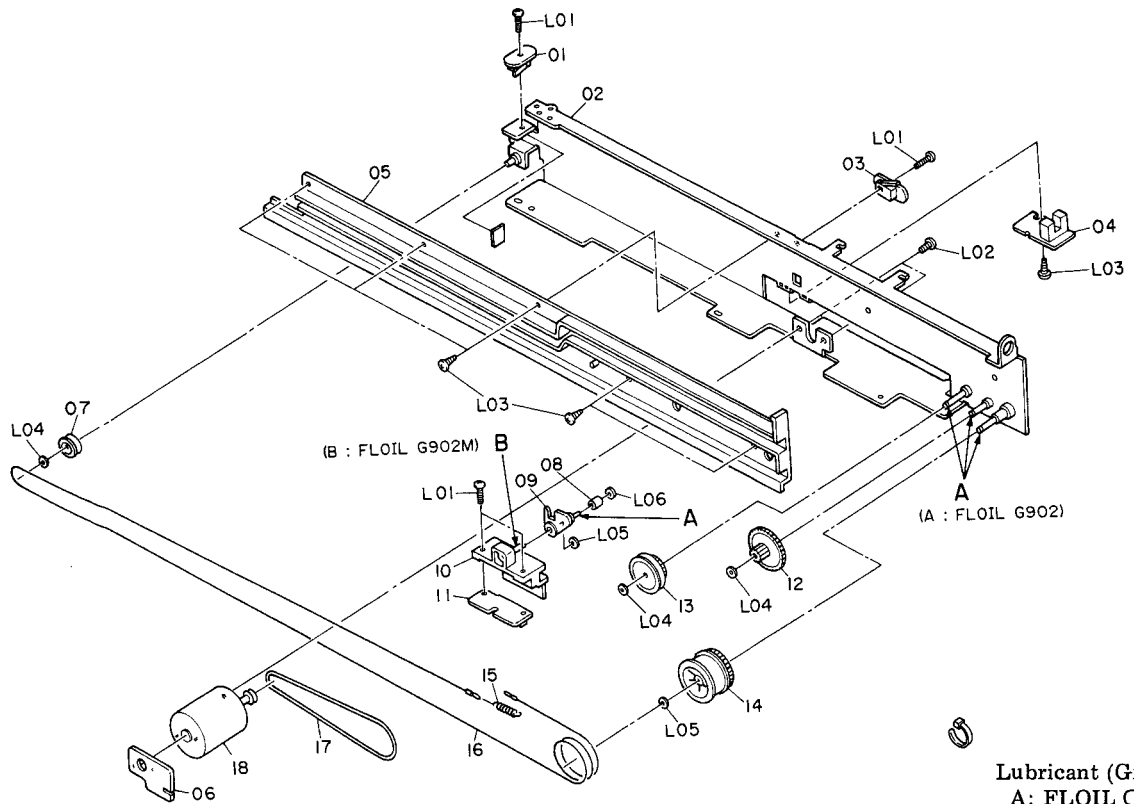


Fig. 7.5

7.6. Guide Chassis R Ass'y (C02)



Lubricant (Grease)
 A: FLOIL G902
 B: FLOIL G902M

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 1.6x3.5x.25	
L05	OE03609A	Washer 2.1x4x0.25	
L06	OE03608A	Washer 1.2x3x0.25	

7.7. Stocker Ass'y (C03)

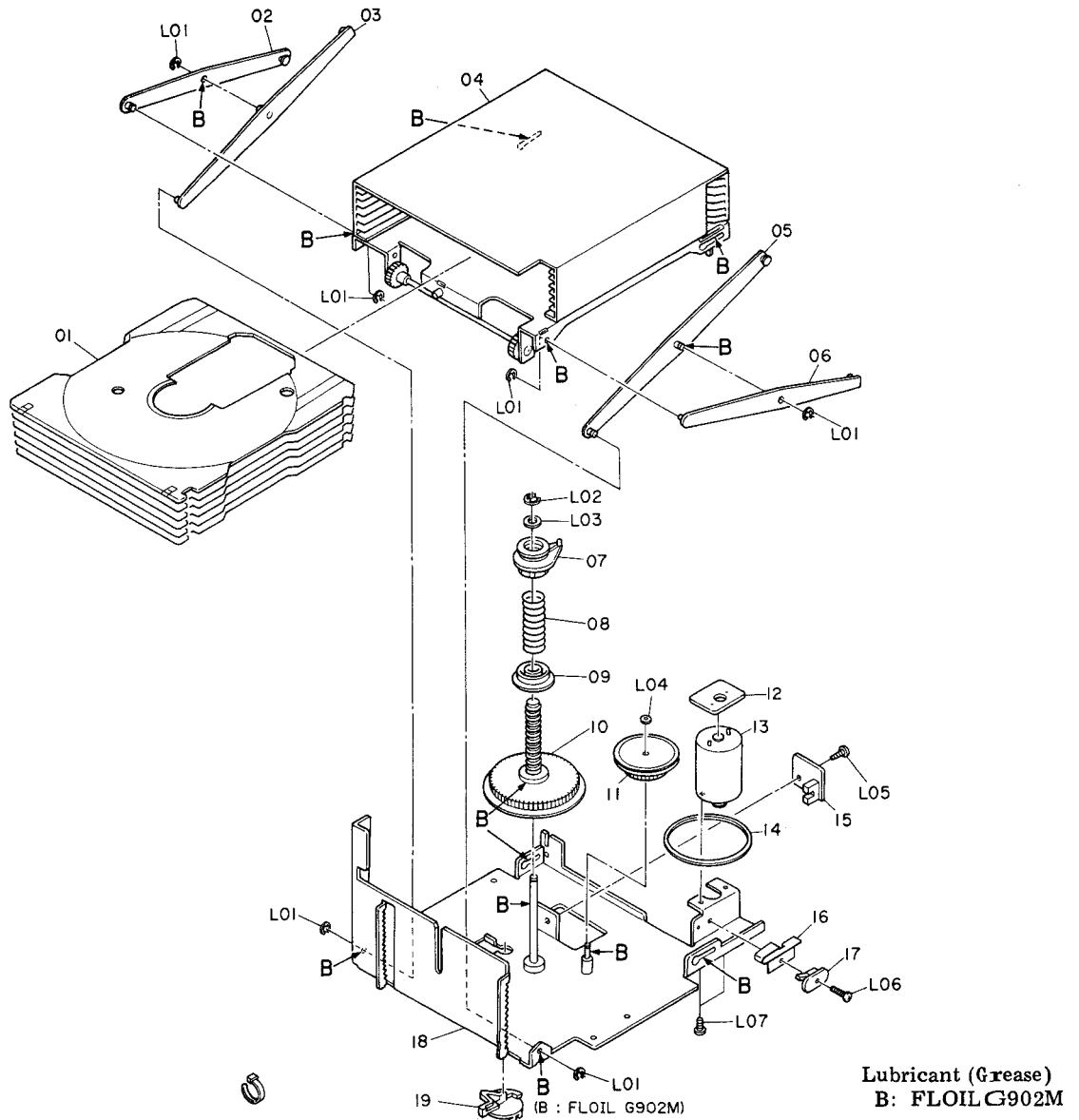


Fig. 7.7

★: 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	OC09564A	Home Position Switch Spring	1
				17	★ BA07904A	Home Position Switch P.C.B. Ass'y	1
				18	CA09025A	Stocker Chassis Ass'y	1
				19	OC09432D	Elevator Lock Pin	1
C03	—	Stocker Ass'y	1	L01	OE00698A	E-Ring 2.5mm	1
01	OC09481F	Carriage	6	L02	OE00181A	E-Ring 3mm	1
02	CA08993B	Link Out-L Ass'y	1	L03	OC09435B	Washer 4x10.5x0.5	1
03	CA09023B	Link In-L Ass'y	1	L04	OE03181A	Washer 1.6x3.5x25	1
04	CA09020A	Stocker Box Ass'y	1	L05	OE00866A	BT 2.6x4 @ Binding	1
05	CA09022B	Link In-R Ass'y	1	L06	OE03614A	M2x7 @ Binding	1
06	CA08994B	Link Out-R Ass'y	1	L07	OE03419A	M3x3 @ Binding	1
07	OC09431B	Elevator Nut	1				
08	OC09501C	Elevator Spring	1				
09	OC09430B	Elevator Washer	1				
10	CA09024A	Elevator Screw Ass'y	1				
11	OC09434A	Elevator Pulley	1				
12	★ BA07910A	Stocker Motor P.C.B. Ass'y	1				
13	CA09018A	Stocker Motor Ass'y	1				
14	OC09499A	Stocker Belt	1				

7.8. Pickup Drive Unit (C04)

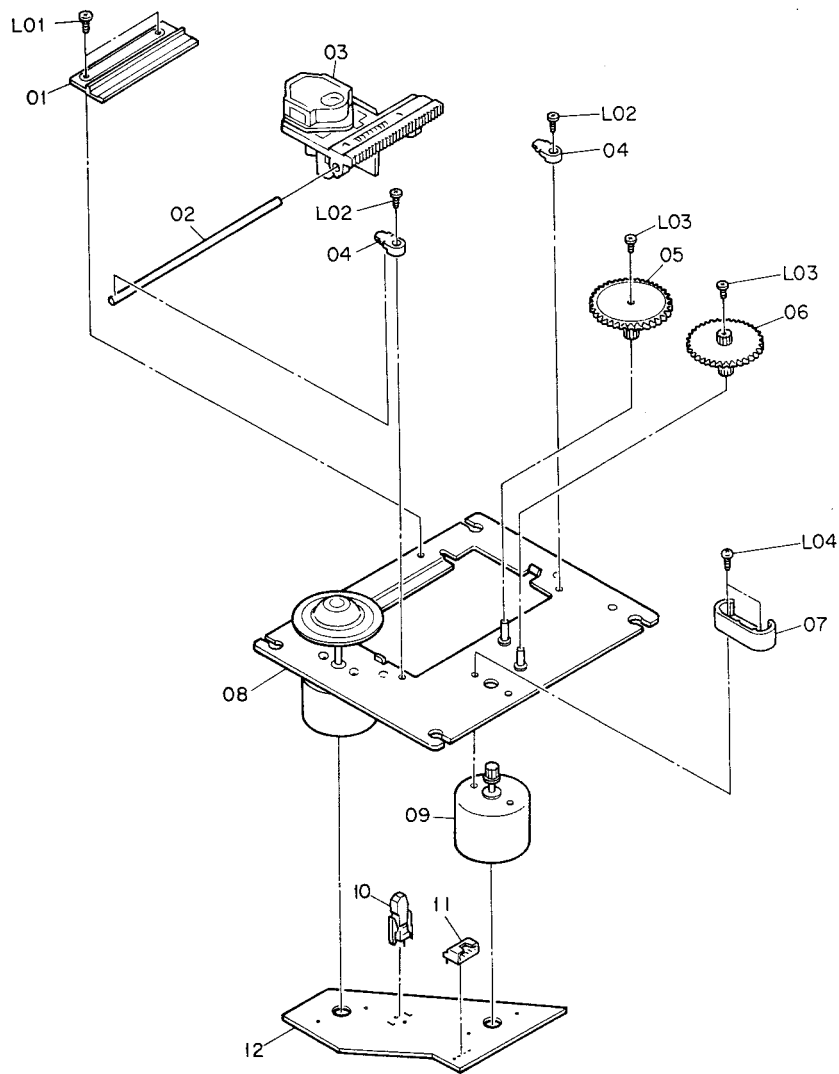


Fig. 7.8

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)

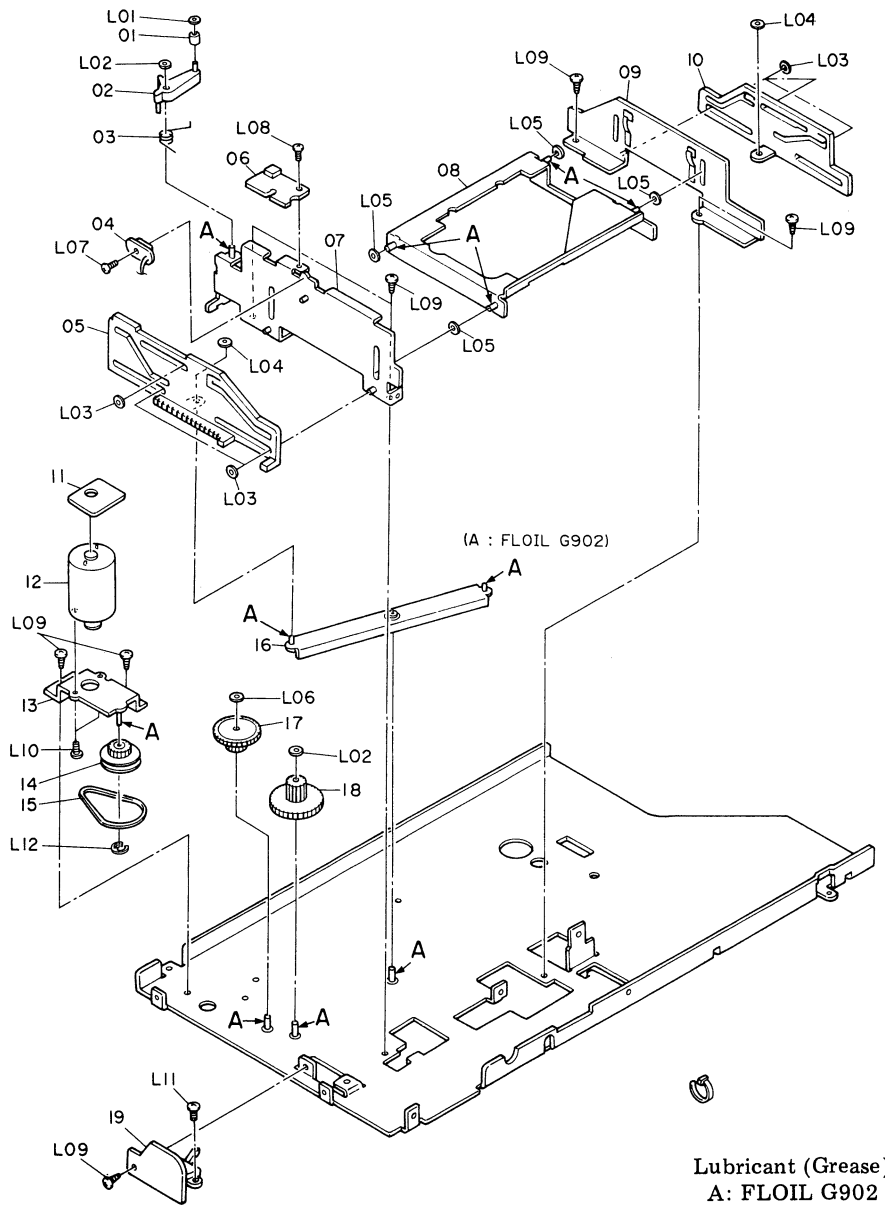


Fig. 7.9

★: 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
				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
C05	—	Main Chassis Ass'y	1	L01	0E03608A	Washer 1.2x3x0.25	
01	0C09466B	Tray Roller B	1	L02	0E03609A	Washer 2.1x4x0.25	
02	CA09011B	Lock Arm Sub Ass'y	1	L03	0E03613A	Washer 2.1x5x0.25	
03	0C09396B	Torsion Spring	1	L04	0E03616A	Washer 2.6x5x0.25	
04	★ BA07906A	Pickup Down Switch P.C.B. Ass'y	1	L05	0E03207A	Washer 3.1x6x0.25	
05	0C09398B	Slide Cam A	1	L06	0E03181A	Washer 1.6x3.5x25	
06	★ BA07911A	Disc Sensor P.C.B. Ass'y	1	L07	0E03614A	M2x7 ⊕ Binding	
07	CA09009B	Holder A Sub Ass'y	1	L08	0E03529A	M2x4 ⊕ Binding	
08	CA09014C	Base Ass'y	1	L09	0E00869A	BT2.6x4 ⊕ Binding	
09	CA09013B	Holder B Sub Ass'y	1	L10	0E03419A	M3x3 ⊕ Binding	
10	0C09399A	Slide Cam B	1	L11	0E00866A	M2.6x4 ⊕ Binding	
11	★ BA07908A	Clamp Motor P.C.B. Ass'y	1	L12	0E00042A	E-Ring 1.5mm	
12	CA09018A	Clamp Motor Ass'y	1				
13	CA09016A	Bracket Ass'y	1				
14	0C09406B	Pulley Gear	1				

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

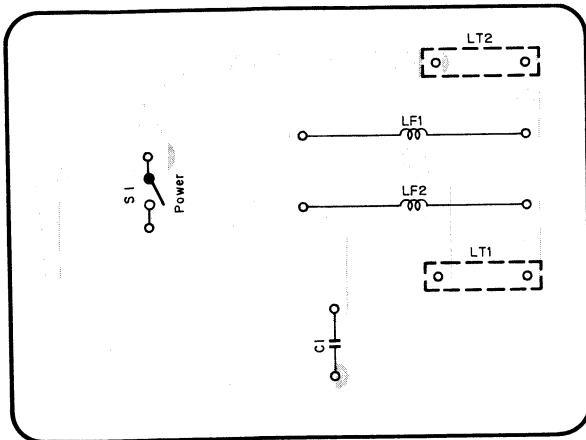


Fig. 8.1

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

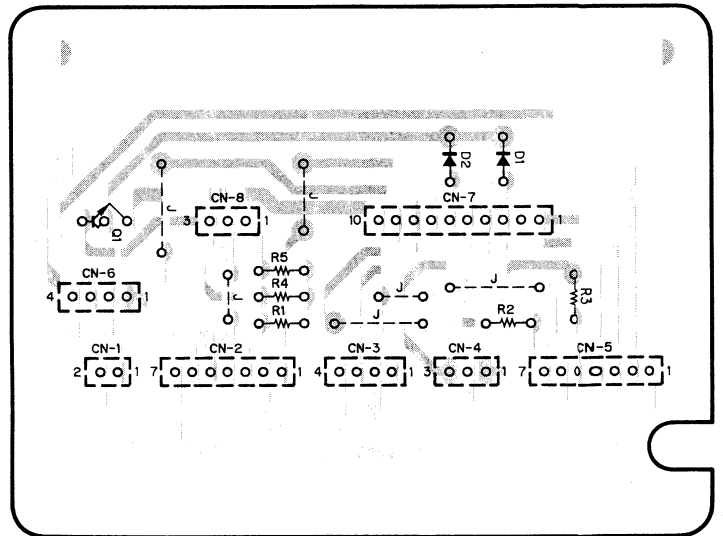


Fig. 8.2

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

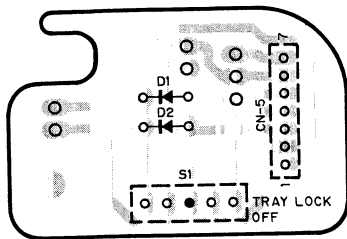


Fig. 8.3

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

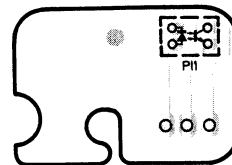


Fig. 8.4

*: 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		
	* BA07930A	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
	* BA08019A	Power Switch P.C.B. Ass'y (EP, UK, AUS)	Q1	0B60814C	Relay A P.C.B. TR DTC114ES	D1,2	0B60815B	Relay B P.C.B. SiD 1SS176
	* BA07931A	Power Switch P.C.B. Ass'y (JPN)	D1,2	0B06398A	SiD 1SS176	S1	0B06398A	SiD 1SS176
	0B60828A	Power Switch P.C.B. Inductor 15μH	R1,2	0B09665A	RK 330 1/6W J		0B70171A	Position Sensor Switch
LF1,2	0B51352A	CC 4700P 400V (USA, CAN, EP, UK, AUS, OTR, SAU)	R3	0B09663A	RK 270 1/6W J	CN5	0B84272A	7P Connector Ass'y
C1	0B41825A	CC 4700P 250V (JPN)	R4	0B09709A	RK 22K 1/6W J	8.4. Disc Sensor P.C.B. Ass'y		
	0B41826A	Wrapping Terminal 2P (USA, CAN, EP, UK, SAU)	R5	0B09665A	RK 330 1/6W J		* BA07911A	Disc Sensor P.C.B. Ass'y
LT1	0B84275A	Wrapping Terminal 2P	CN1	0B84278A	2P-T Post		0B60817A	Disc Sensor P.C.B. Photo Reflector
	0B84275A	Wrapping Terminal 2P (USA, CAN, OTR, SAU, JPN)	CN2	0B84293A	7P-T Post	PI1	0B10363A	Photo Reflector
	0B84380A	Wrapping Terminal 3P (EP, UK, AUS)	CN3	0B84284A	4P-T Post		0B84339A	Ribbon Cable 3P (1)
			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			

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

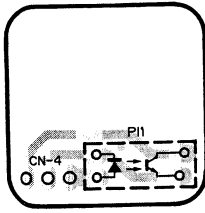


Fig. 8.5

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

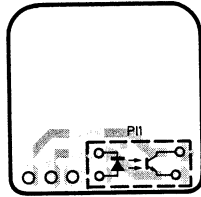


Fig. 8.6

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

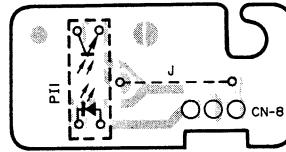


Fig. 8.7

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

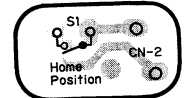


Fig. 8.8

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

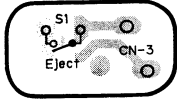


Fig. 8.9

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

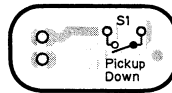


Fig. 8.10

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

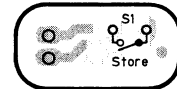


Fig. 8.11

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

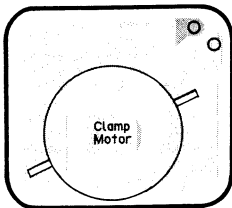


Fig. 8.12

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

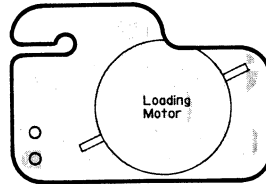


Fig. 8.13

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

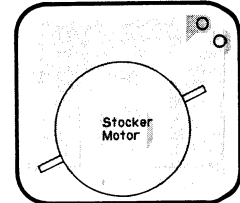


Fig. 8.14

*: 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	
	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.		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
	OB84273A			OB84270A	4P Connector Ass'y	8.13. Loading Motor P.C.B. Ass'y		
8.7. Center Area Detector P.C.B. Ass'y			8.10. Pickup Down Switch P.C.B. Ass'y				* BA07909A	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	OB60845A	Loading Motor P.C.B.
	OB60857A	Center Area Detector P.C.B.		OB60819A	Pickup Down Switch P.C.B.		OB84269A	2P Connector Ass'y
	OB10167A	Photo Interrupter		OB70173A	Push Switch		8.14. Stocker Motor P.C.B. Ass'y	
	OB84355A	3P Connector Ass'y (1)		OB80304A	Lead Wire 26 YEL		* BA07910A	Stocker Motor P.C.B. Ass'y
				OB80305A	Lead Wire 26 ORN		OB60820A	Stocker Motor P.C.B.

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

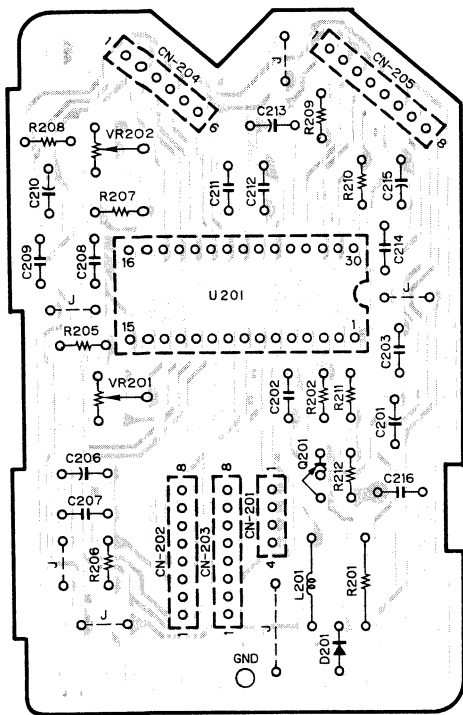


Fig. 8.15

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

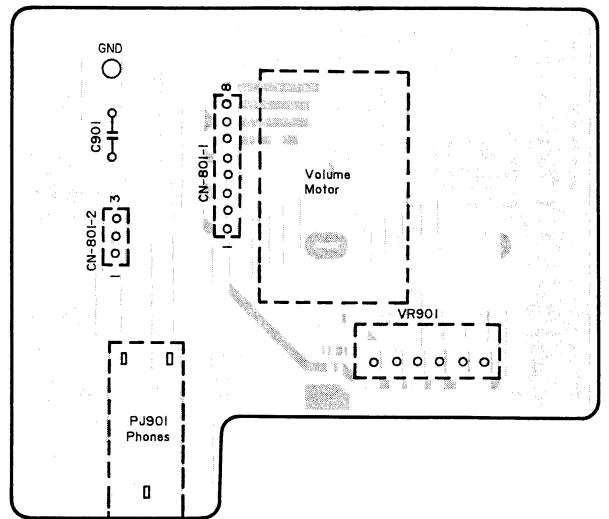


Fig. 8.16

8.17. Digital Output P.C.B. Ass'y

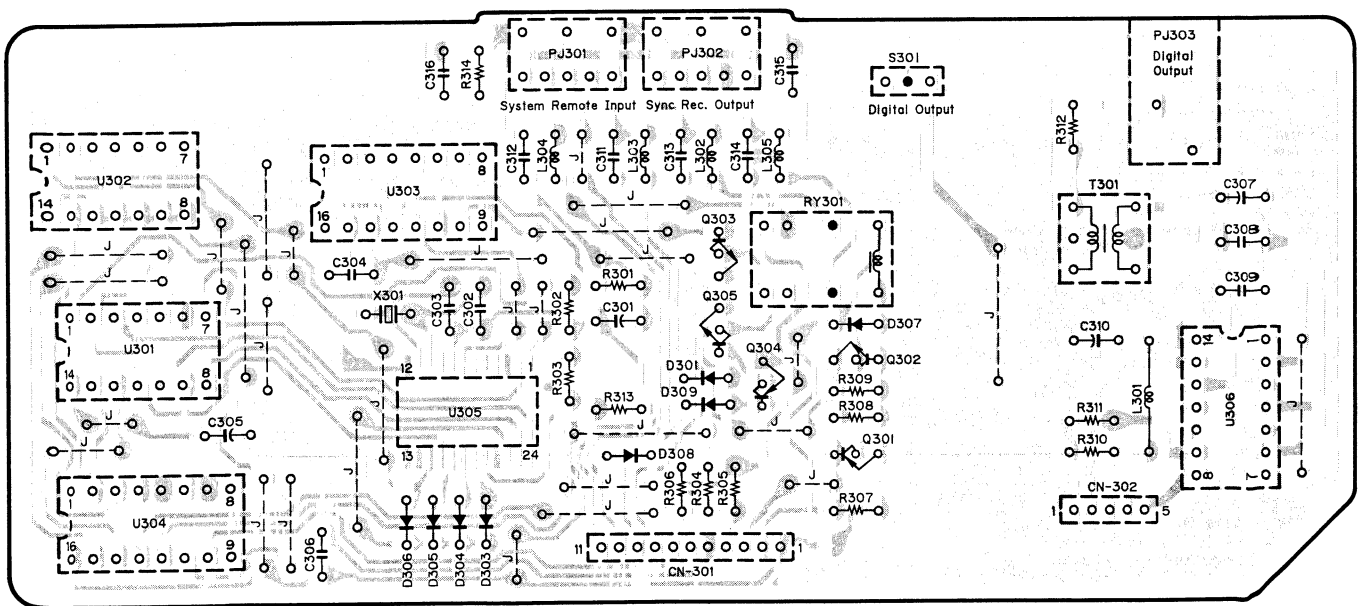


Fig. 8.17

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

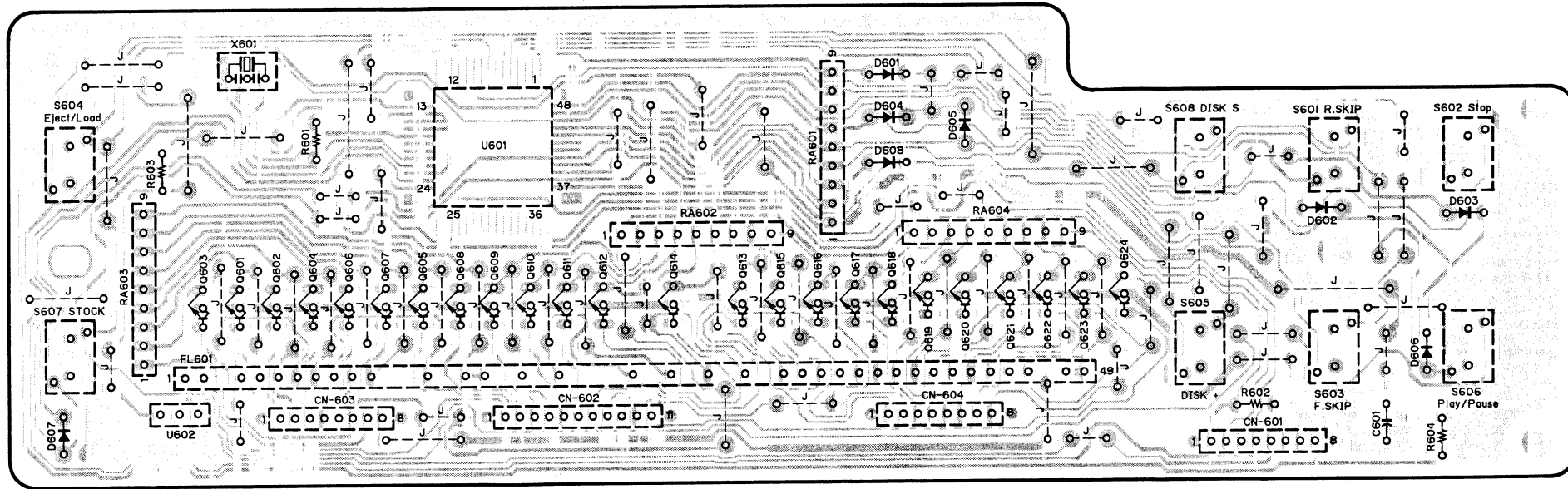


Fig. 8.18

*: 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
8.15. RF Amp. P.C.B. Ass'y			8.16. Headphone P.C.B. Ass'y			R311	OB09701A	RK 10K 1/6W J	8.18. Control Switch & Display P.C.B. Ass'y		
	* BA07898A	RF Amp. P.C.B. Ass'y		* BA07929A	Headphone P.C.B. Ass'y	R312	OB09650A	RK 75 1/6W J		* BA07928A	Control Switch & Display P.C.B. Ass'y
U201	OB60813C	RF Amp. P.C.B. IC CXA1081S	C901	OB60827B	Headphone P.C.B. CC 0.1μ 50V Z	R313	OB09661A	RK 220 1/6W J		OB60826B	Control Switch & Display P.C.B. IC LC6522H-4377
Q201	OB10097A	TR 2SA952	VR901	OB47117A	Motor VR 10Kx2	R314	OB09637A	RK 22 1/6W J	U601	OB11810A	Remote Control Receiver
D201	OB06398A	SiD 1SS176	PJ901	OB84327A	Headphone Jack	C301	OB40077A	CE 47μ 16V	U602	OB19017A	Remote Control Receiver
L201	OB51114A	Micro Coil 10μH	CN801	OB84260A	11P Connector Ass'y	C302,303	OB41974A	CC 100P 50V J	Q601,602	OB10030A	TR 2SC1740S
VR201	OB32194A	Semi VR 20K	CN110	OB84268A	2P Connector Ass'y	C304	OB47113A	CC 330P 50V K	Q603,604	OB10030A	TR 2SC1740S
VR202	OB32193A	Semi VR 10K		OB80325A	Ground Wire with Earth Lug (1)	C305	OB40074A	CE 10μ 16V	Q605,606	OB10030A	TR 2SC1740S
R201	OB05579A	RK 22 1/4W J	8.17. Digital Output P.C.B. Ass'y			C306	OB47117A	CC 0.1μ 50V Z	Q607,608	OB10030A	TR 2SC1740S
R202	OB09707A	RK 18K 1/6W J		* BA07932A	Digital Output P.C.B. Ass'y	C307	OB40089A	CE 33μ 25V	Q609,610	OB10030A	TR 2SC1740S
R205	OB09709A	RK 22K 1/6W J	U301,302	OB06169A	IC TC4066BP	C308	OB41944A	CC 1000P 50V K	Q611,612	OB10030A	TR 2SC1740S
R206	OB09677A	RK 1K 1/6W J	U303	OB11493A	IC TC4538BP	C309	OB47117A	CC 0.1μ 50V Z	Q613,614	OB10030A	TR 2SC1740S
R207,208	OB09705A	RK 15K 1/6W J	U304	OB11583A	IC TC4028BP	C310	OB40078A	CE 100μ 16V	Q615,616	OB10030A	TR 2SC1740S
R209	OB09725A	RK 100K 1/6W J	U306	OB11568A	IC TC74HCU04AP	C311,312	OB47113A	CC 330P 50V K	Q617,618	OB10030A	TR 2SC1740S
R210	OB09701A	RK 10K 1/6W J	Q301	OB10058A	TR DTA114ES	C313,314	OB47113A	CC 330P 50V K	Q619,620	OB10030A	TR 2SC1740S
R211	OB09693A	RK 4.7K 1/6W J	Q302	OB06100A	TR 2SC945	C315,316	OB47117A	CC 0.1μ 50V Z	Q621,622	OB10030A	TR 2SC1740S
R212	OB09686A	RK 2.4K 1/6W J	Q303	OB10068A	TR DTC114ES	RY301	OB90449A	Relay G5A-234P	Q623,624	OB10030A	TR 2SC1740S
C201	OB40698A	CE 100μ 16V	Q304	OB10053A	TR DTA144ES	S301	OB70165A	Slide Switch	D601,602	OB06398A	SiD 1SS176
C202	OB41944A	CC 1000P 50V K	Q305	OB10068A	TR DTC114ES	PJ301,302	OB84028A	Streo Mini Jack	D603,604	OB06398A	SiD 1SS176
C203	OB41521A	CML 3300P 50V J	D303,304	OB06398A	SiD 1SS176	PJ303	OB84351A	1P Mount Pin Jack	D605,606	OB06398A	SiD 1SS176
C206	OB40175A	CE 3.3μ 50V	D305,306	OB06398A	SiD 1SS176	CN301	OB84353A	11P Connector	D607,608	OB06398A	SiD 1SS176
C207	OB47137A	CC 0.047μ 25V Z	D307,308	OB06398A	SiD 1SS176	CN302	OB84352A	5P Connector	X601	OB92033A	X'tal 4.0MHz
C208	OB41294A	CML 0.047μ 50V J	D309,310	OB06398A	SiD 1SS176		0J05898B	Earth Plate (1)	RA601	OB21090A	R Network 4.7Kx8
C209	OB47137A	CC 0.047μ 25V Z	X301	OB92049A	X'tal 455KHz				RA602,603	OB21091A	R Network 47Kx8
C210	OB40160A	CE 33μ 10V	T301	OB51351A	Pulse Transformer				RA604	OB21091A	R Network 47Kx8
C211	OB41522A	CML 4700P 50V J	L301	OB51369A	Micro Coil 10μH				R601	OB09749A	RK 1M 1/6W J
C212	OB41525A	CML 0.015μ 50V J	L302,303	OB51311A	Micro Coil 100μH				R602,603	OB09717A	RK 47K 1/6W J
C213	OB40268A	CE 0.47μ 50V	L304,305	OB51311A	Micro Coil 100μH				R604	OB09717A	RK 47K 1/6W J
C214	OB47137A	CC 0.047μ 25V Z	R301	OB09665A	RK 330K 1/6W J				J109	OB20528A	RK 0 1/6W
C215	OB40160A	CE 33μ 10V	R302	OB09725A	RK 100K 1/6W J				J209-231	OB20528A	RK 0 1/6W
C216	OB41708A	CC 22P 50V J	R303	OB09733A	RK 220K 1/6W J				J58	OB20528A	RK 0 1/6W
CN201	OB84263B	4P Connector Ass'y	R304,305	OB09701A	RK 10K 1/6W J				C601	OB40052A	CE 470μ 6.3V
CN202	OB84255A	8P Connector Ass'y	R306,307	OB09701A	RK 10K 1/6W J				S601,602	OB70161A	Tact Switch
CN203	OB84254A	8P Connector Ass'y	R308	OB09685A	RK 2.2K 1/6W J				S603,604	OB70161A	Tact Switch
CN204	OB84264B	6P Connector Ass'y	R309,310	OB09701A	RK 10K 1/6W J				S605,606	OB70161A	Tact Switch
CN205	OB84265A	8P Connector Ass'y							S607,608	OB70161A	Tact Switch
	0J05898B	Earth Plate (1)							CN601	OB84256C	8P Connector
									CN602	OB84259C	11P Connector
									CN603	OB84258B	8P Connector
									CN604	OB84257B	8P Connector
									FL601	OB90444A	FL Display FIP11HM8
										0J06259A	Shield Plate (2)

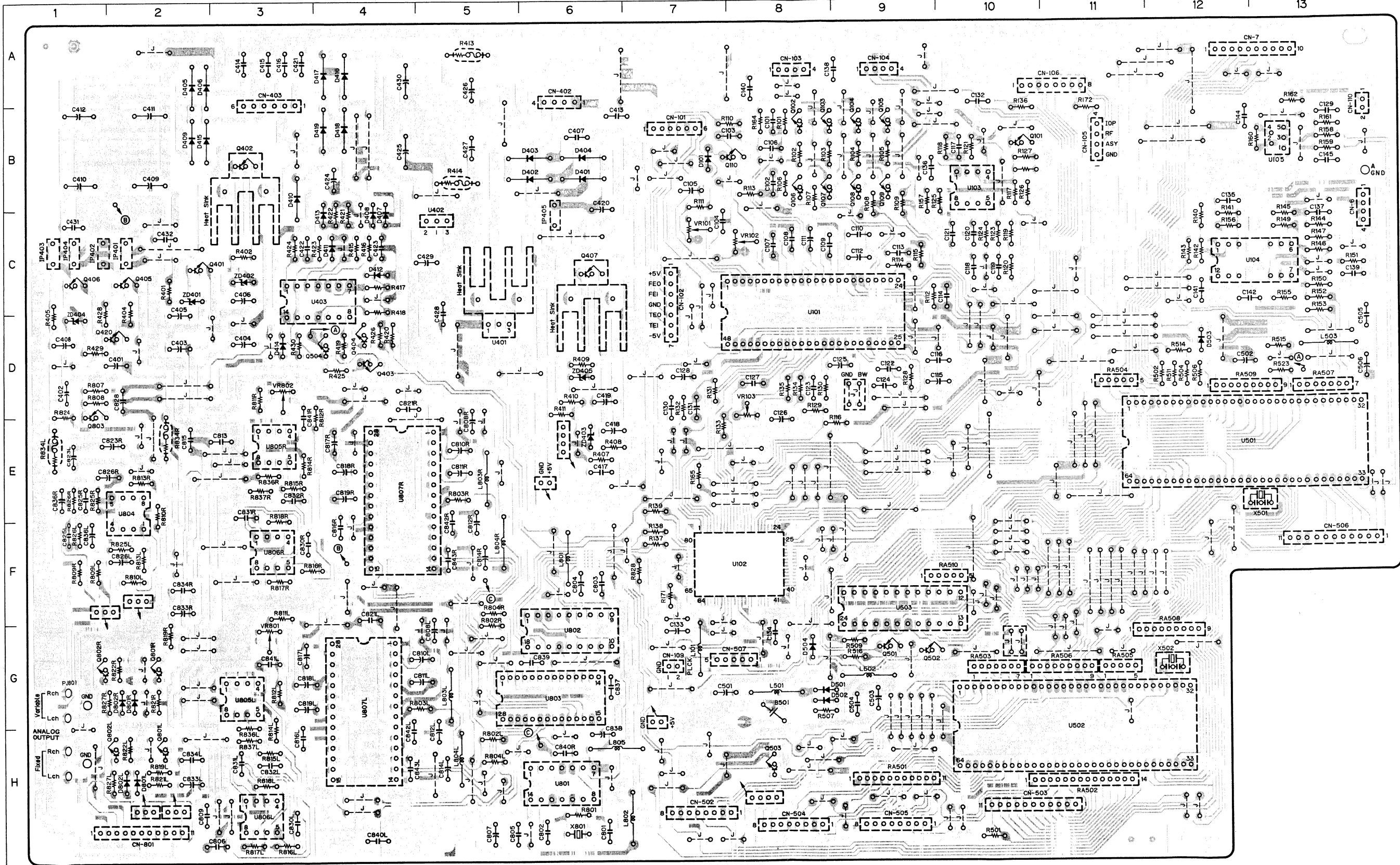


Fig. 8.19

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.

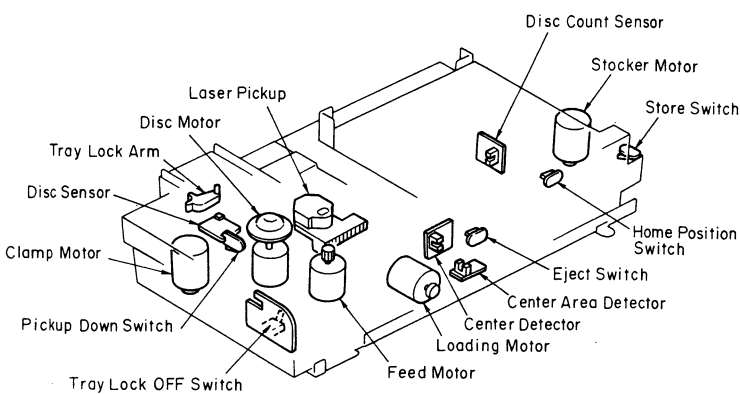


Fig. 9.1.1 Electrical Parts Location in the Mechanism Ass'y

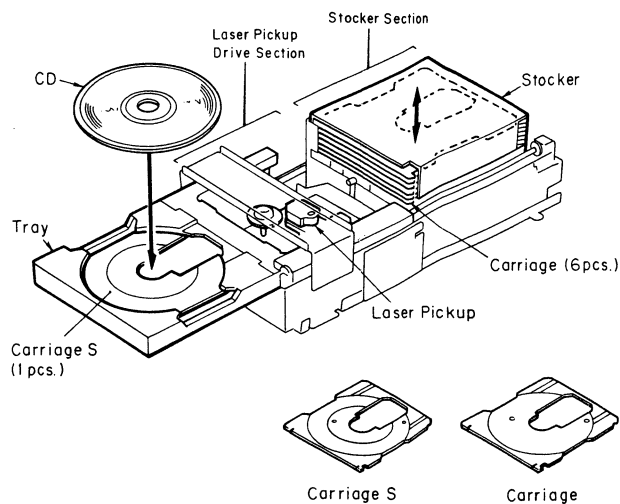


Fig. 9.1.2

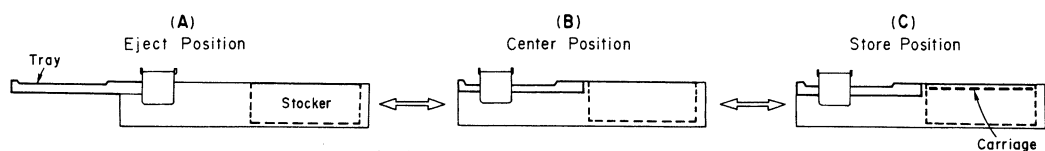


Fig. 9.1.3 Operational Positions

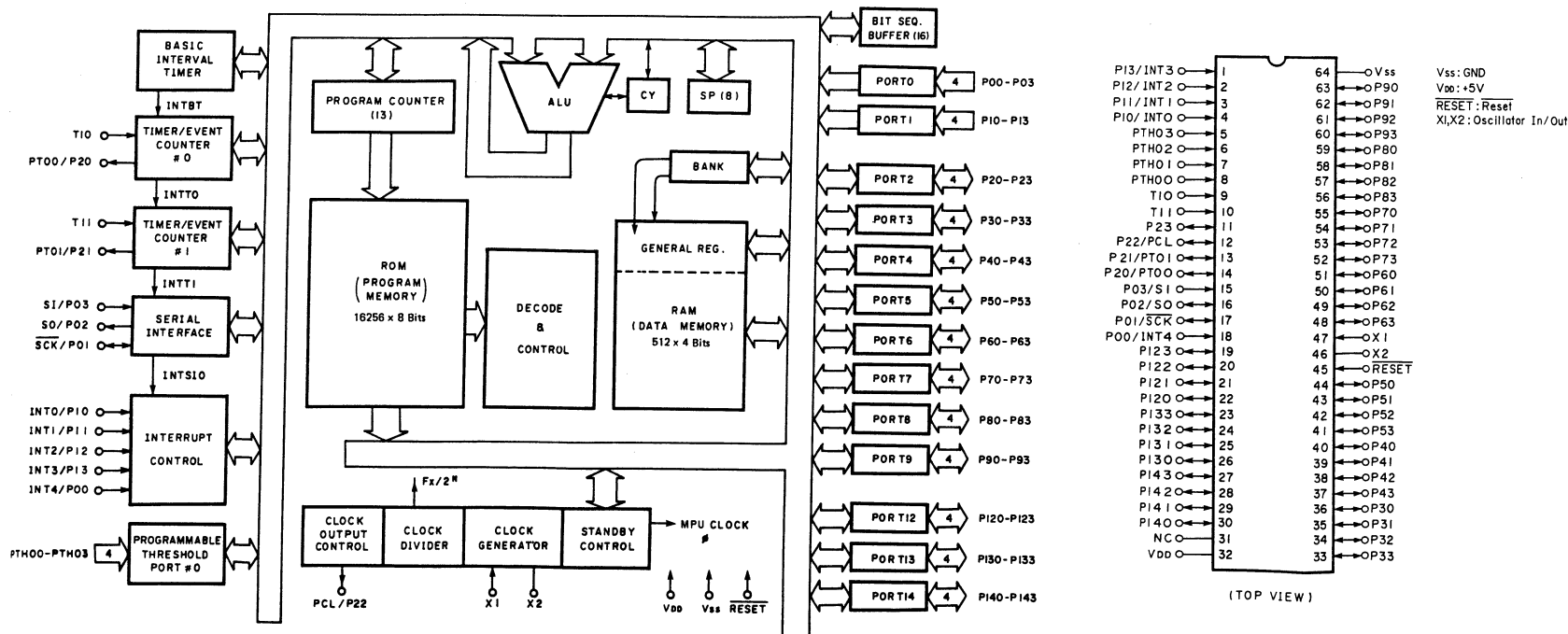
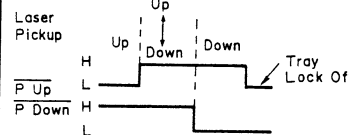
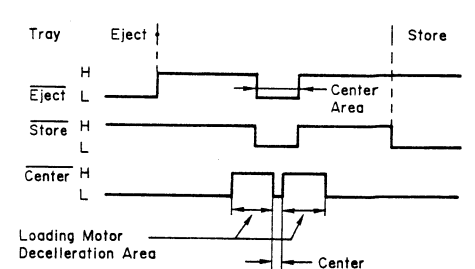


Fig. 9.1.4 Mechanism Controller μPD75116CW (U501)

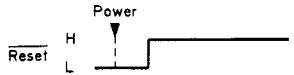
U501 μPD75116CW (Mechanism Controller)

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 stocker. 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 stocker position (1, 2, 3, 4, 5, 6, or S).	—
11	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	VR Up	O	Volume motor drive signal. Output level increases when "H".	L
34	VR Down	O	Volume motor drive signal. Output level decreases when "H".	L
35	—	I	—	—
36	$\overline{\text{DET ARS}}$	I	Standby OK signal sent from the cassette deck connected. Active "L". This input is used for synchro recording.	—
37	$\overline{\text{SYNC}}$	O	Synchro recording mode signal. Becomes "L" while in synchro recording.	H
38	C	O	Synchro recording command signals for the cassette deck.	H
39	B	O		
40	A	O		
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	—		
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	$\overline{\text{R/W}}$	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			
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 "L".	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.	—

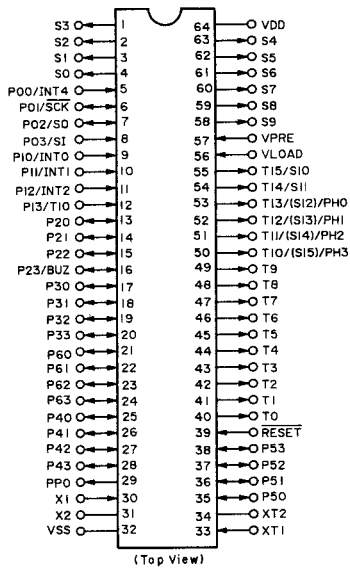
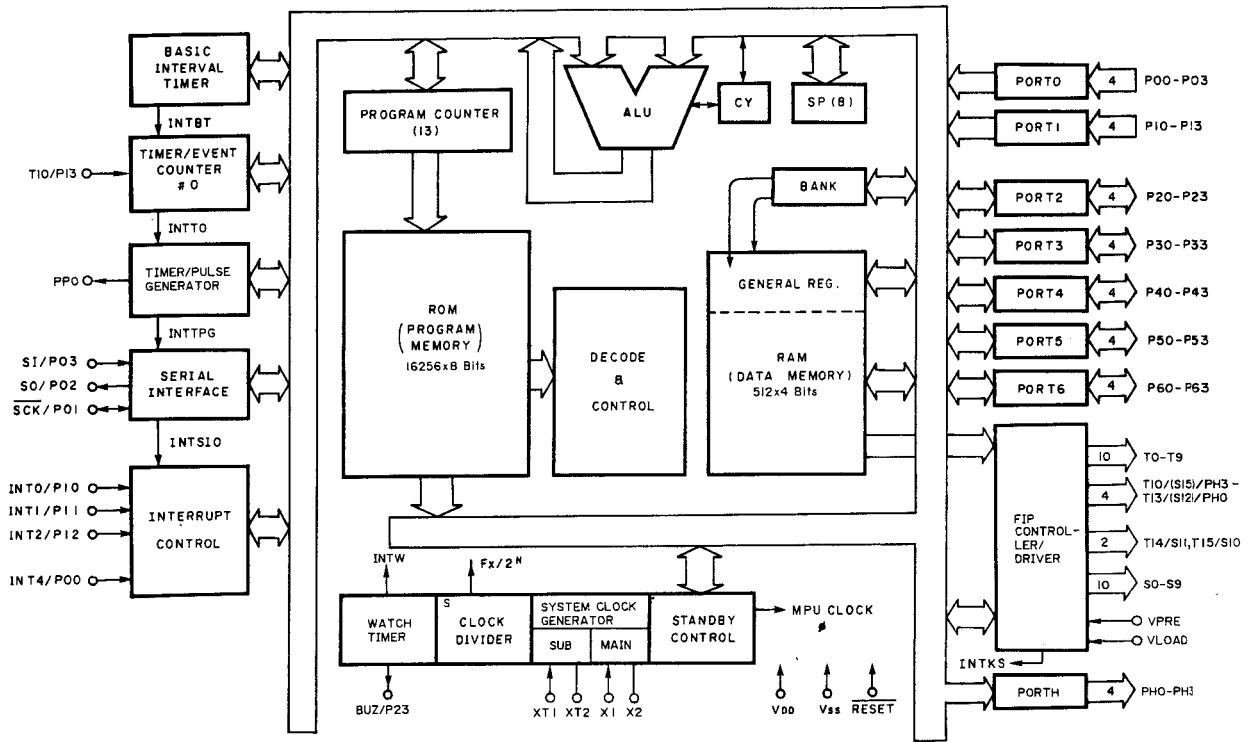


Fig. 9.1.5 System Controller μ PD75216ACW (U502)

U601 LC6522H (Key Matrix Controller)

Pin No.	Signal Name	I/O	Function
2	SC0	O	Output signals to the key matrix circuit.
3	SC1		
4	SC2		
5	SC3		
7	SC4		
9	SC6		
11	SG RET	I	Remote control receiver output is returned when System Remote Input jack is not used.
17	OSC1	—	4.00MHz X'tal is connected.
20	OSC2		
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	CCL	O	Pulses are output at power ON for reading the custom code of 16 bits through bus B0 to B7.
38	CCH		
40	B0	I	Input bus for reading front panel key data from the key matrix circuit, or for reading custom code at power ON.
41	B1		
44	B2		
45	B3		
46	B4		
47	B5		
48	B6		
1	B7		
16	VSS	—	GND
39	VDD	—	Supplied with +5V.

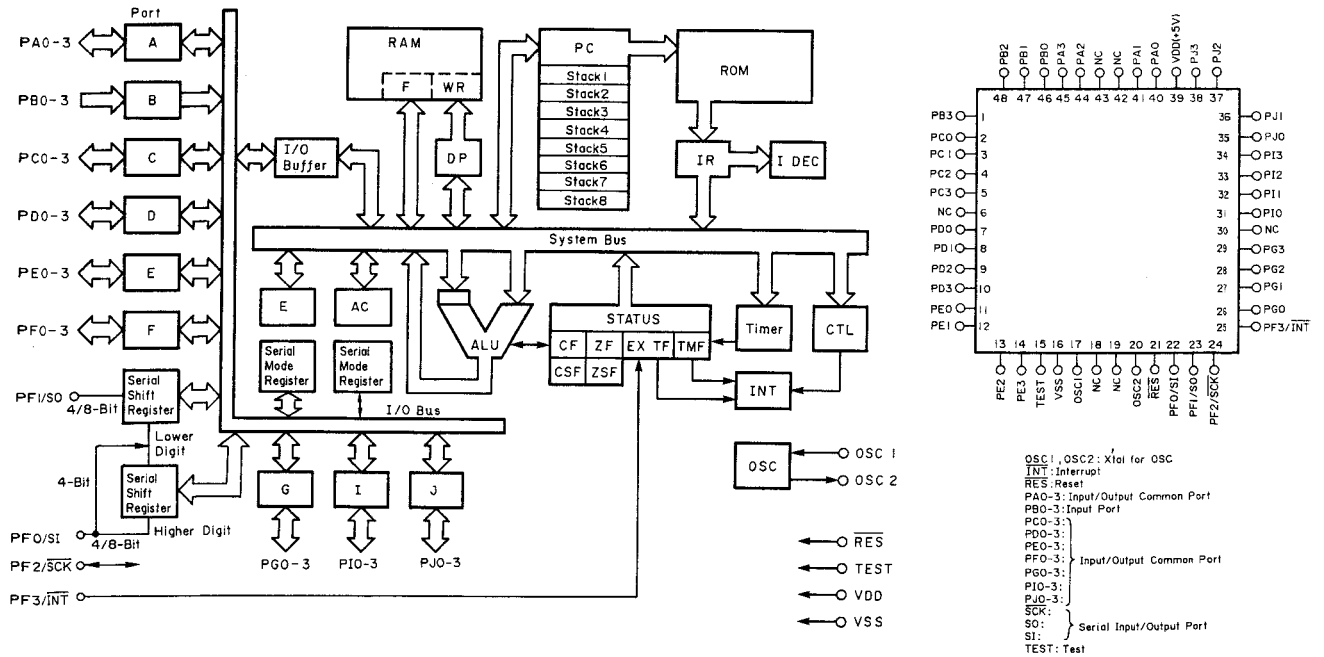


Fig. 9.1.6 Key Matrix Controller LC6522H (U601)

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.

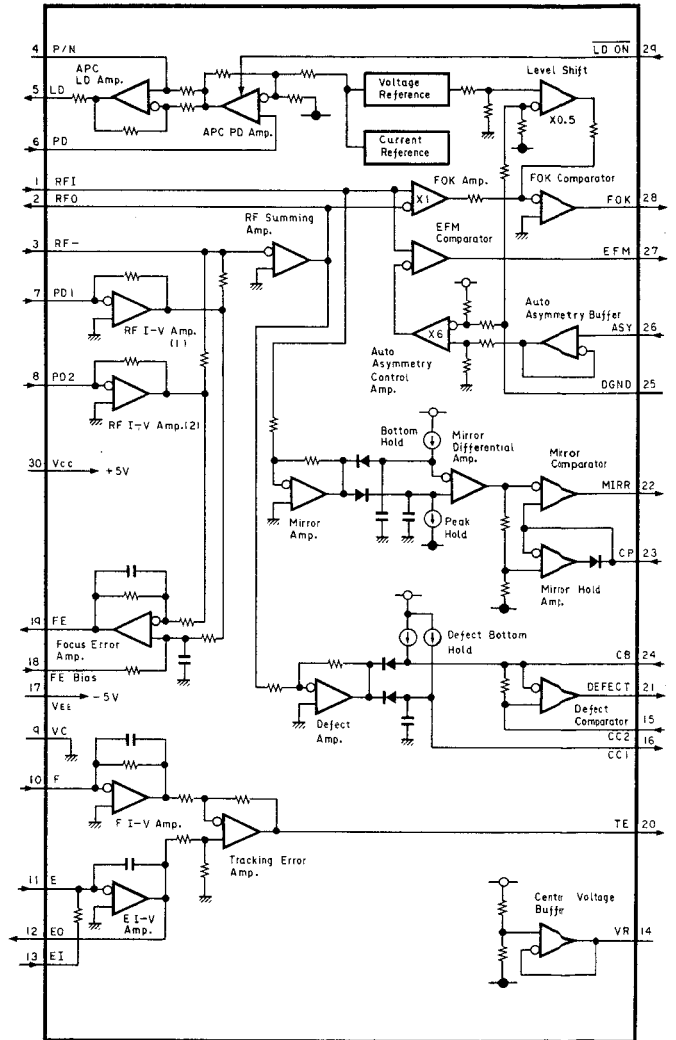


Fig. 9.1.7 RF Amp. CXA1081S (U201)

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.)

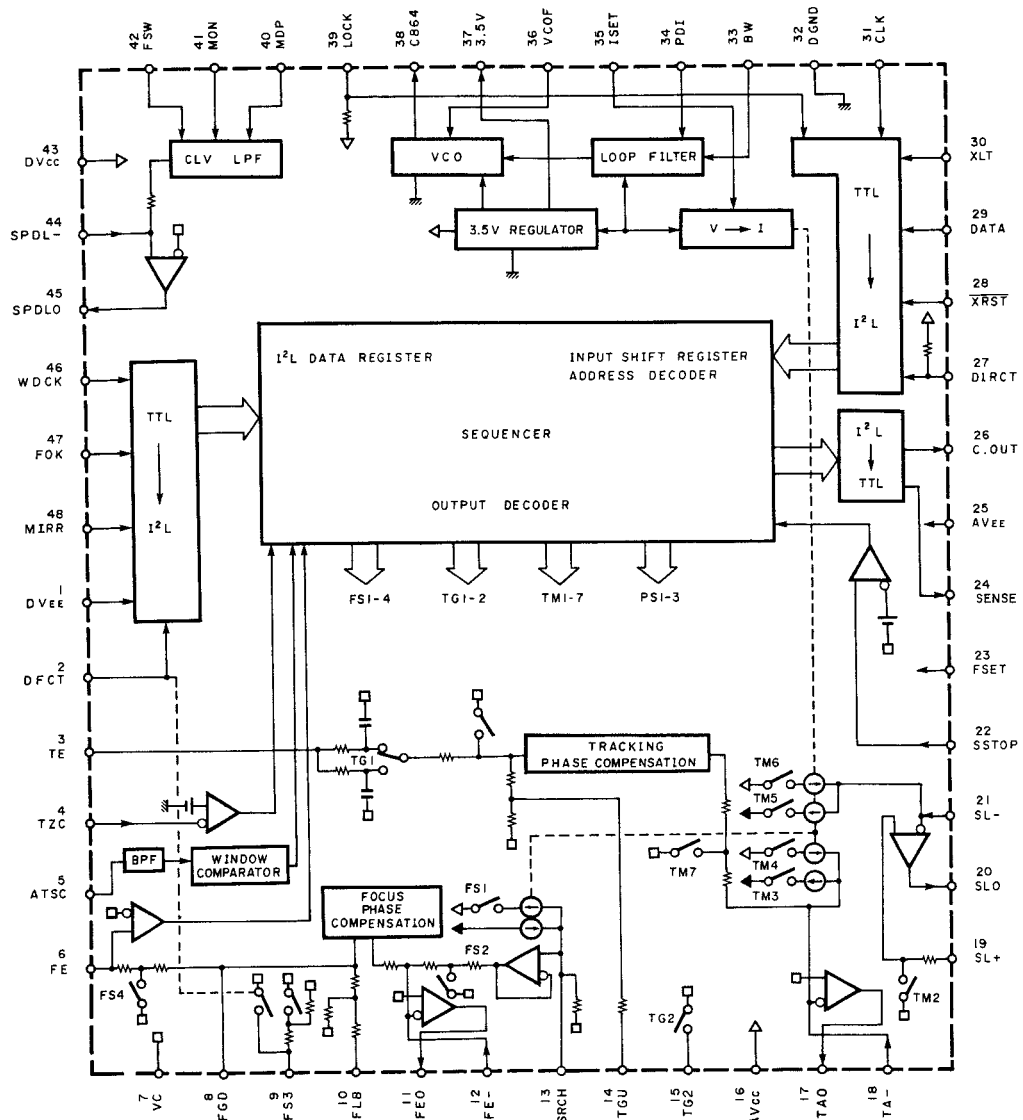


Fig. 9.1.8 Servo Signal Processor CXA1082BS (U102)

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.

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 to 57	MD1 MD2 MD3	I	Mode select input. (MD1="L", MD2="L" or "H", MD3="H") ● Digital output ON or 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 to 69	DA07 DA08	O	(Not used.)
70	$\overline{\text{PLCK}}$	O	One-half frequency of VCO is output.
71 to 72	DA10 DA11	O	(Not used.)
73	VDD2	I	+5 V is supplied.
74 to 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 U802 (Digital Filter). (4.1 kHz)

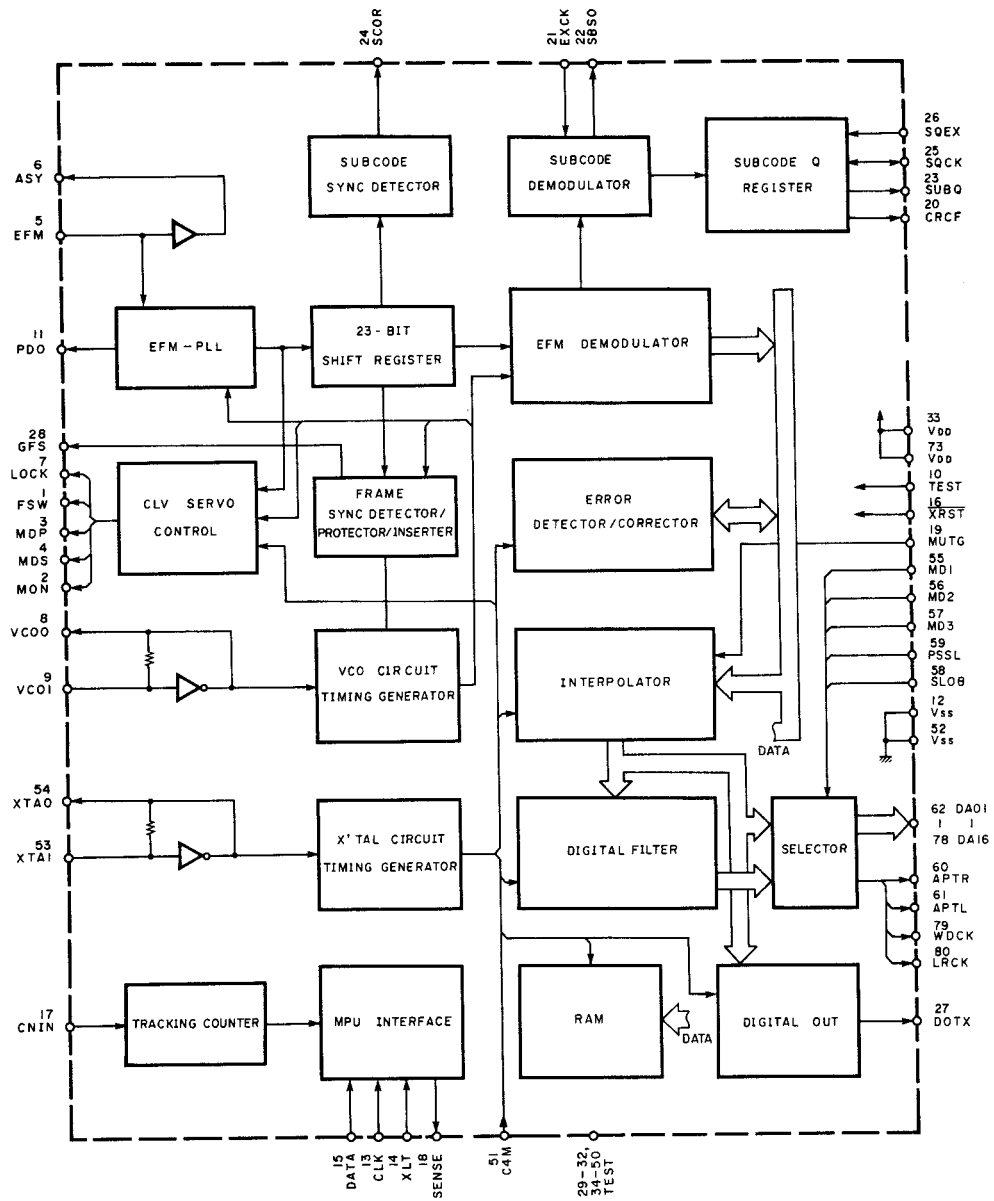


Fig. 9.1.9 Digital Signal Processor CXD1167QZ (U102)

U802 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	O	
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	Deglintch 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.

U803 MB623403 (EL 20-Bit Processor)

Pin No.	Signal Name	I/O	Function
1	NC	—	—
2	MUTE	I	Fixed to "L". So mute function is disabled.
3	B18	I	Fixed to "H".
4	B20	I	Fixed to "L". Since 18-bit D/A converters are used in the next stage, "B18" is fixed to "H" and "B20" is fixed to "L".
5	COB	I	Fixed to "L". Output data to the D/A converter is of 2's complement.
6	PSE	I	Fixed to "L". Phase of output data to the D/A converter is not reversed.
7	VSS1	—	GND
8	FS384	I	Main clock input. 384 fs
9	BCI	I	Bit clock input.
10	WCK	I	Word clock input.
11	DIL	I	Lch audio data input (2's complement).
12	DIR	I	Rch audio data input (2's complement).
13	NC	—	—
14	VDD	—	Supplied with +5V.
15	NC	—	—
16	NC	—	—
17	LSR	O	1 LSB output (Rch).
18	DLR	O	Rch data output (lower bits).
19	DHR	O	Rch data output (higher bits).
20	BCO	O	Bit clock for output data.
21	VSS2	—	GND
22	LEN	O	Latch enable signal for output data.
23	LSL	O	1 LSB output (Lch).
24	DLL	O	Lch data output (lower bits).
25	DHL	O	Lch data output (higher bits).
26	NC	—	—
27	NC	—	—
28	VDD	—	Supplied with +5V.

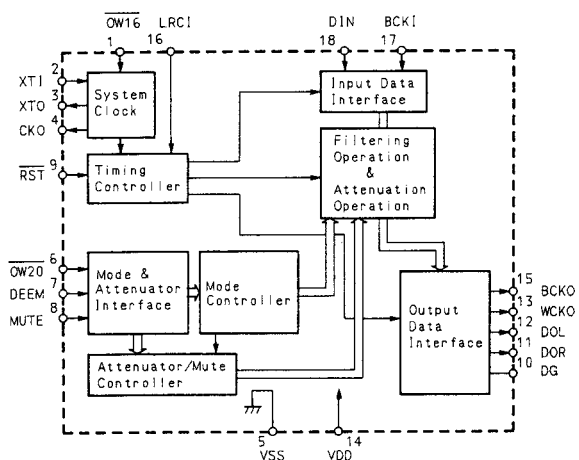


Fig. 9.1.10 Digital Filter SM5840CP (U802)

U807L,R 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	V out (Rch).
20	S.JR	-	Summing junction (Rch).
21	ANA.GR	-	Analog common (Rch).
22	I.OUT R O	O	I out (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.

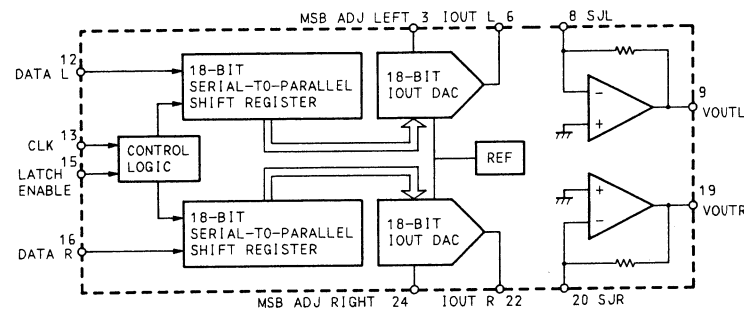


Fig. 9.1.11 18-Bit Dual D/A Converter PCM1700P (U807L,R)

U305 μ PD6122G (Remote Control Data Transmitter)

Pin No.	Signal Name	I/O	Function
1 to 6	KI2 to KI7	I	Key input terminals.
7	REM	O	Remote control data output.
8	VDD	-	Approx. +3V is supplied.
9	SEL	I	Fixed to "H".
10, 11	OSC2, OSC1	O, I	455kHz crystal is connected.
12	VSS	-	GND
13	LMP	O	Lamp output. (Not used.)
14 to 21	KIO7 to KIO0	O	Key I/O input terminals.
22	CCS	I	Custom code select input.
23, 24	KI0, KI1	I	Key input terminals.

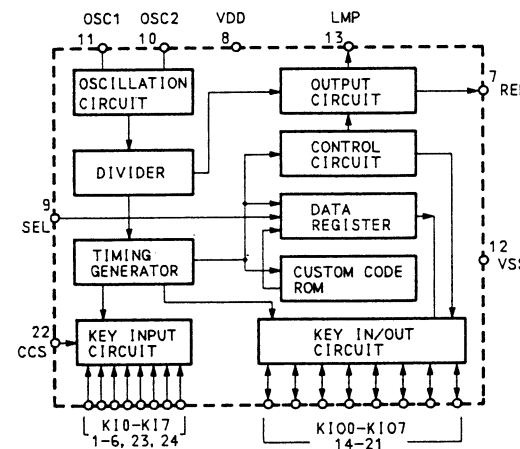


Fig. 9.1.12 Remote Control Data Transmitter μ PD6122G (U305)

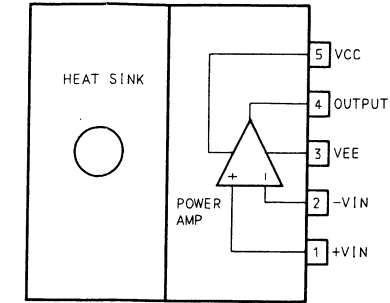


Fig. 9.1.13 Power Amp. LA6501

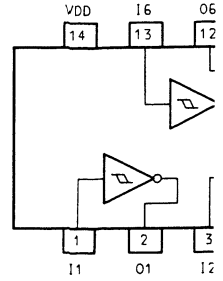


Fig. 9.1.17

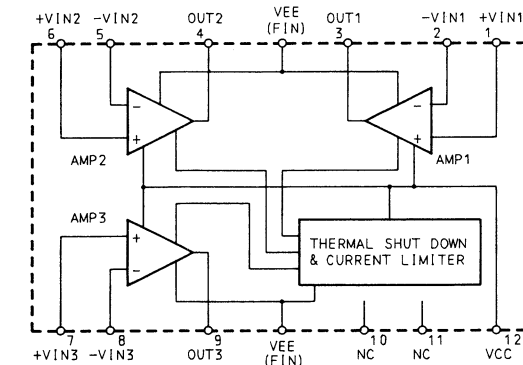


Fig. 9.1.14 Power Amp. LA6520

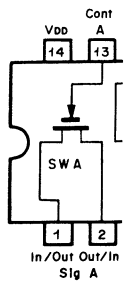


Fig. 9.1.18

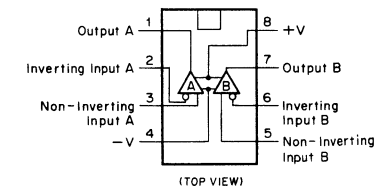


Fig. 9.1.15 Operational Amp. NJM4556D, NJM4558D, NE5532

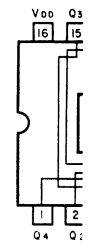


Fig. 9.1

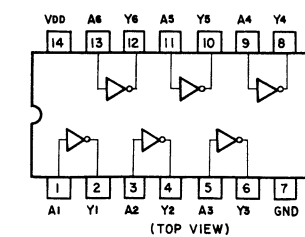


Fig. 9.1.16 Inverter IC TC74HCU04AP

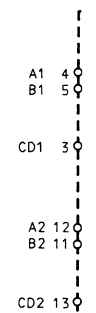


Fig. 9.1.20 O

U305 μ PD6122G (Remote Control Data Transmitter)

Pin No.	Signal Name	I/O	Function
1 to 6	KI2 to KI7	I	Key input terminals.
7	REM	O	Remote control data output.
8	VDD	—	Approx. +3V is supplied.
9	SEL	I	Fixed to "H".
10	OSC2	O	455kHz crystal is connected.
11	OSC1	I	
12	VSS	—	GND
13	LMP	O	Lamp output. (Not used.)
14 to 21	KIO7 to KIO0	O	Key I/O input terminals.
22	CCS	I	Custom code select input.
23	KI0	I	Key input terminals.
24	KI1	I	

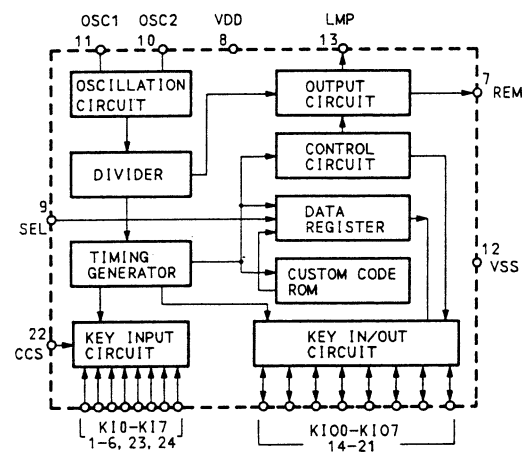


Fig. 9.1.12 Remote Control Data Transmitter μ PD6122G (U305)

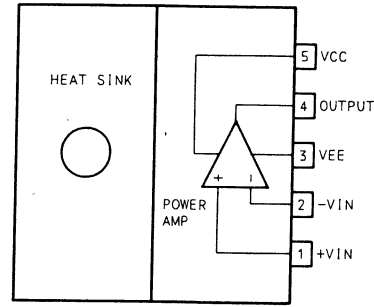


Fig. 9.1.13 Power Amp. LA6501

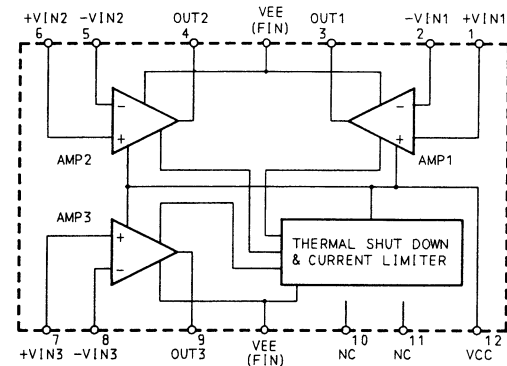


Fig. 9.1.14 Power Amp. LA6520

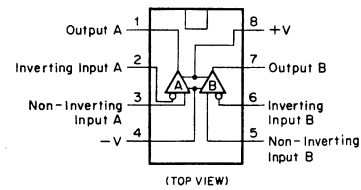


Fig. 9.1.15 Operational Amp. NJM4556D, NJM4558D, NE5532

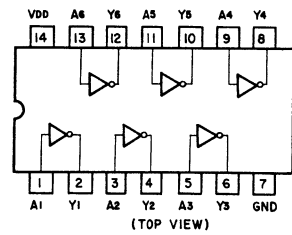


Fig. 9.1.16 Inverter IC TC74HCU04AP

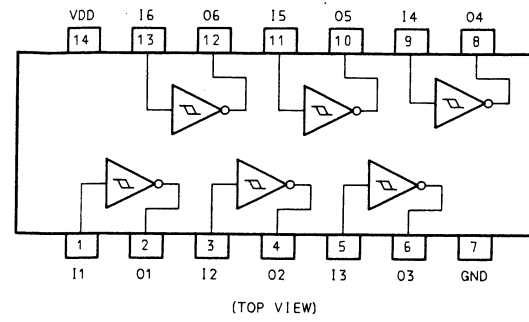


Fig. 9.1.17 Schmitt Trigger TC4584BP

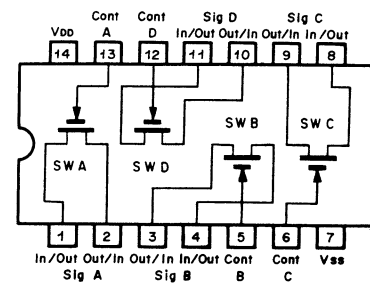


Fig. 9.1.18 Analog Switch TC4066BP

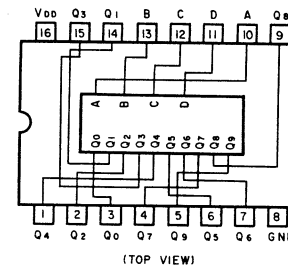


Fig. 9.1.19 Decoder TC4028BP

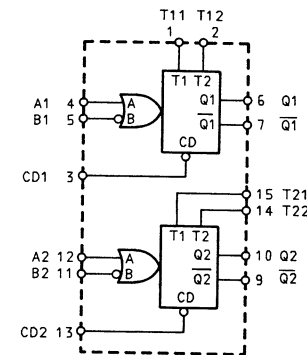


Fig. 9.1.20 One-shot Multi-vibrator TC4538BP

9.2. Schematic Diagrams

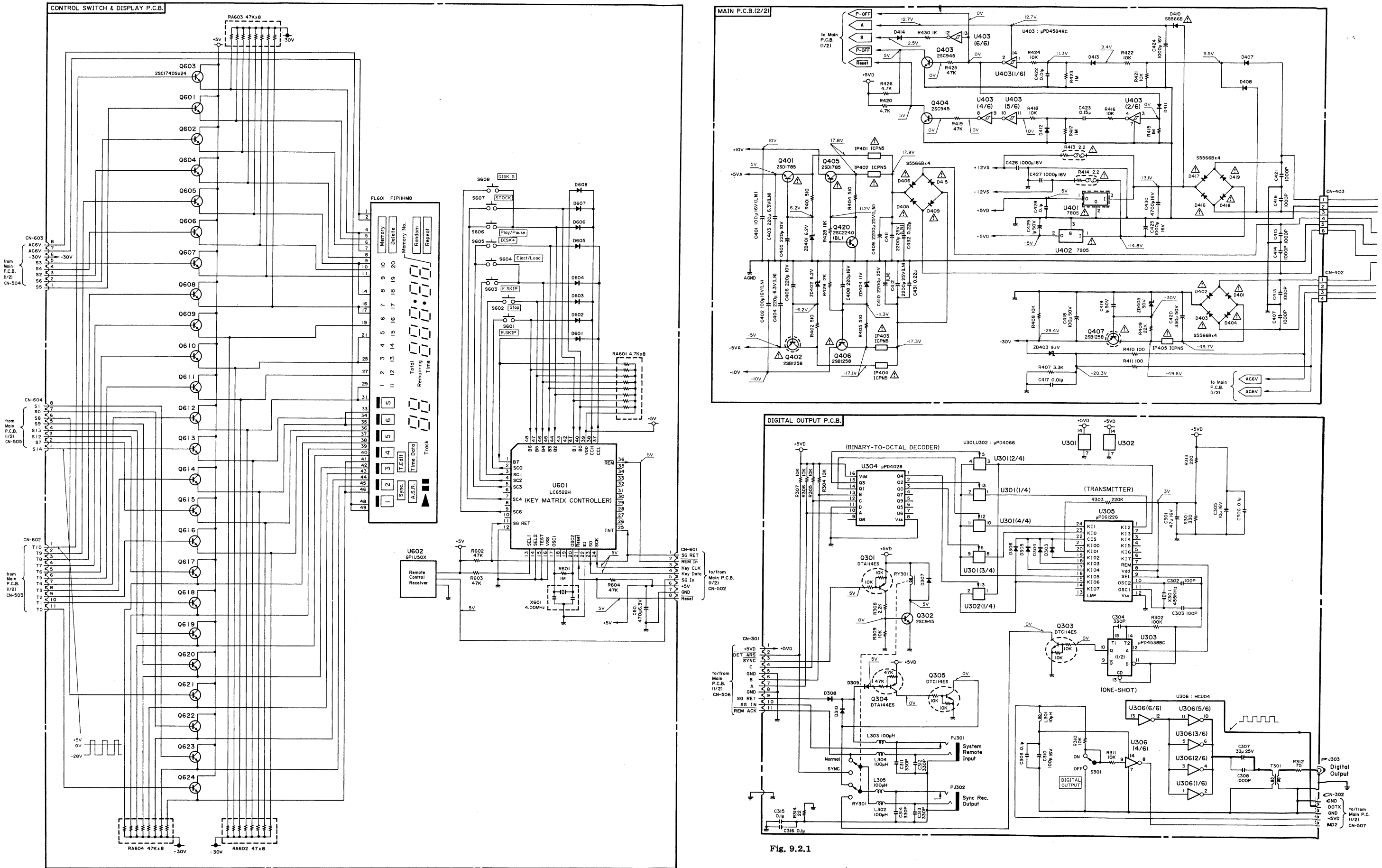


Fig. 9.2.1

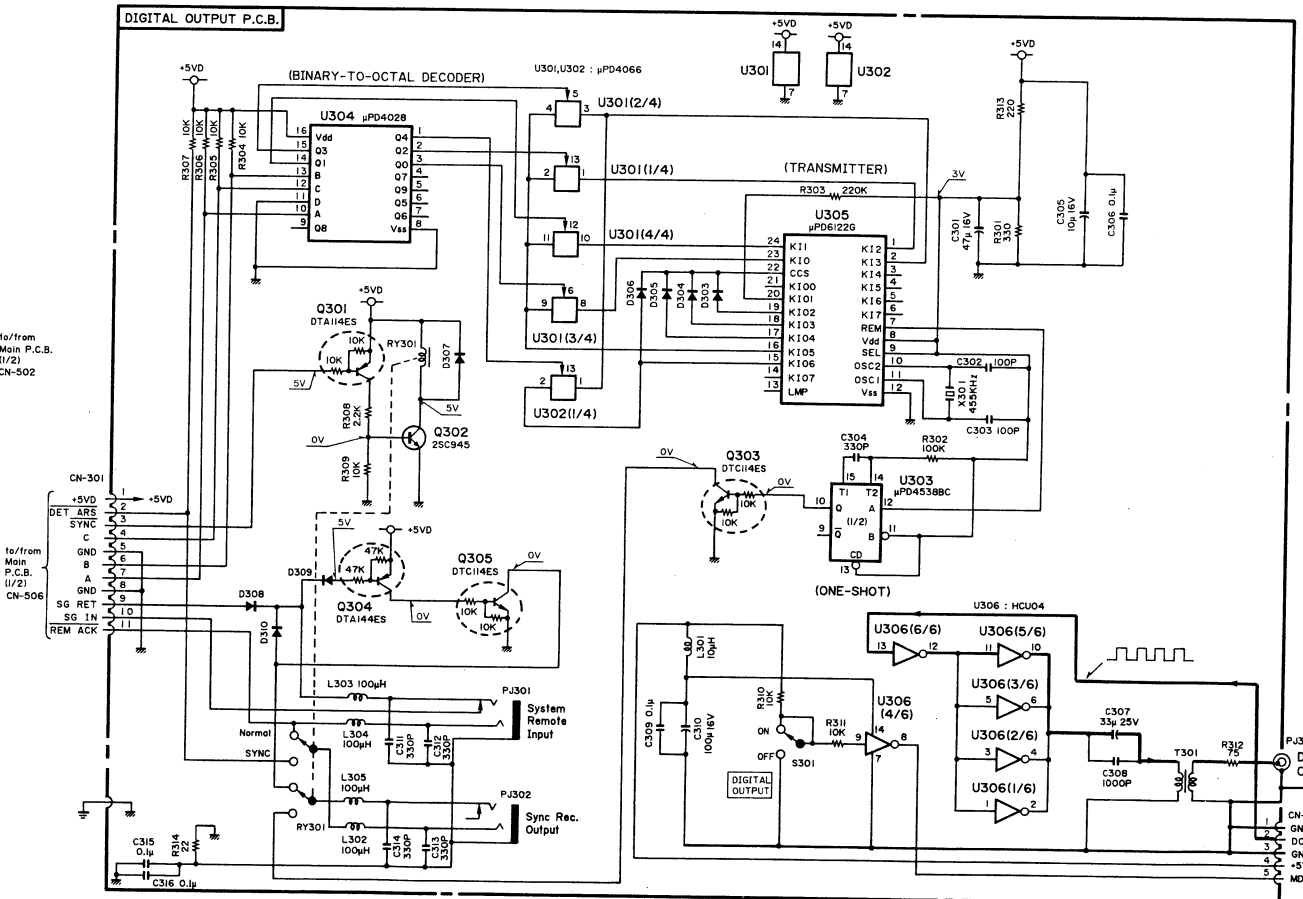
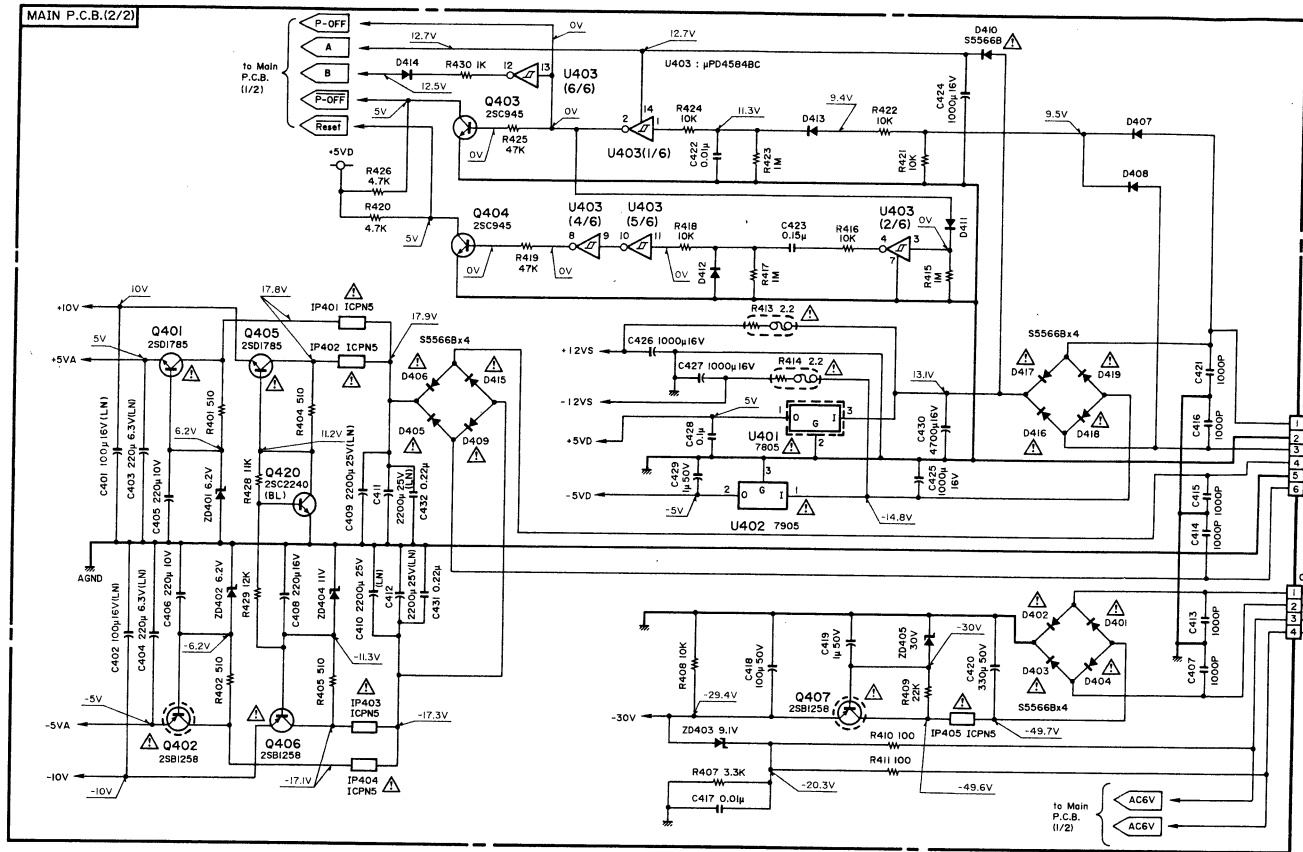
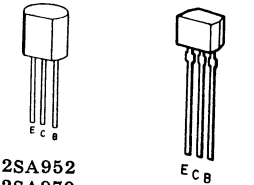
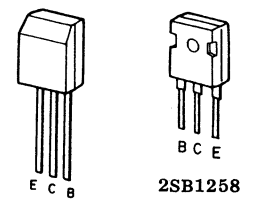


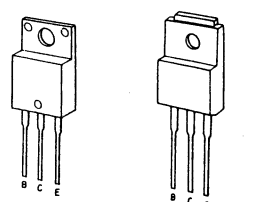
Fig. 9.2.1



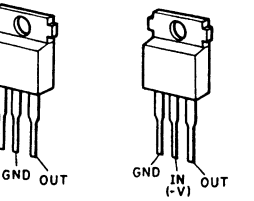
2SA952
2SA970
2SC945
2SC2240
2SC2878



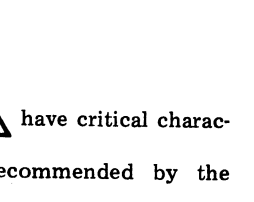
2SC1740S
DTA114ES
DTA144ES
DTC114ES
DTC144ES



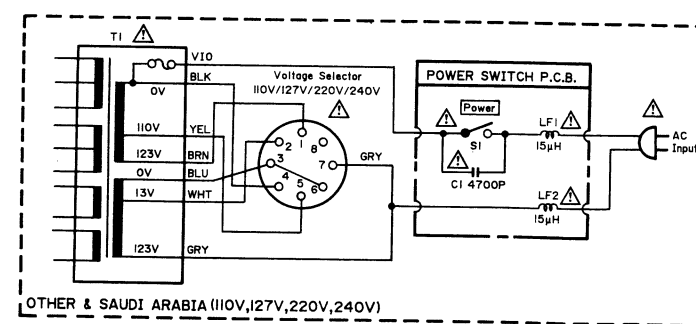
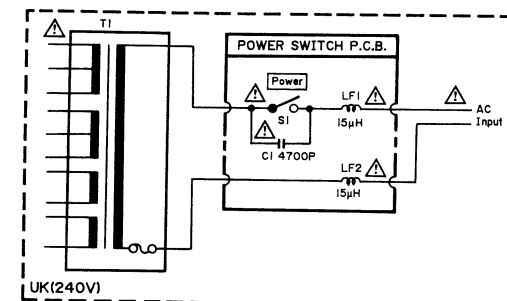
2SB1258
2SB564
2SD471




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.

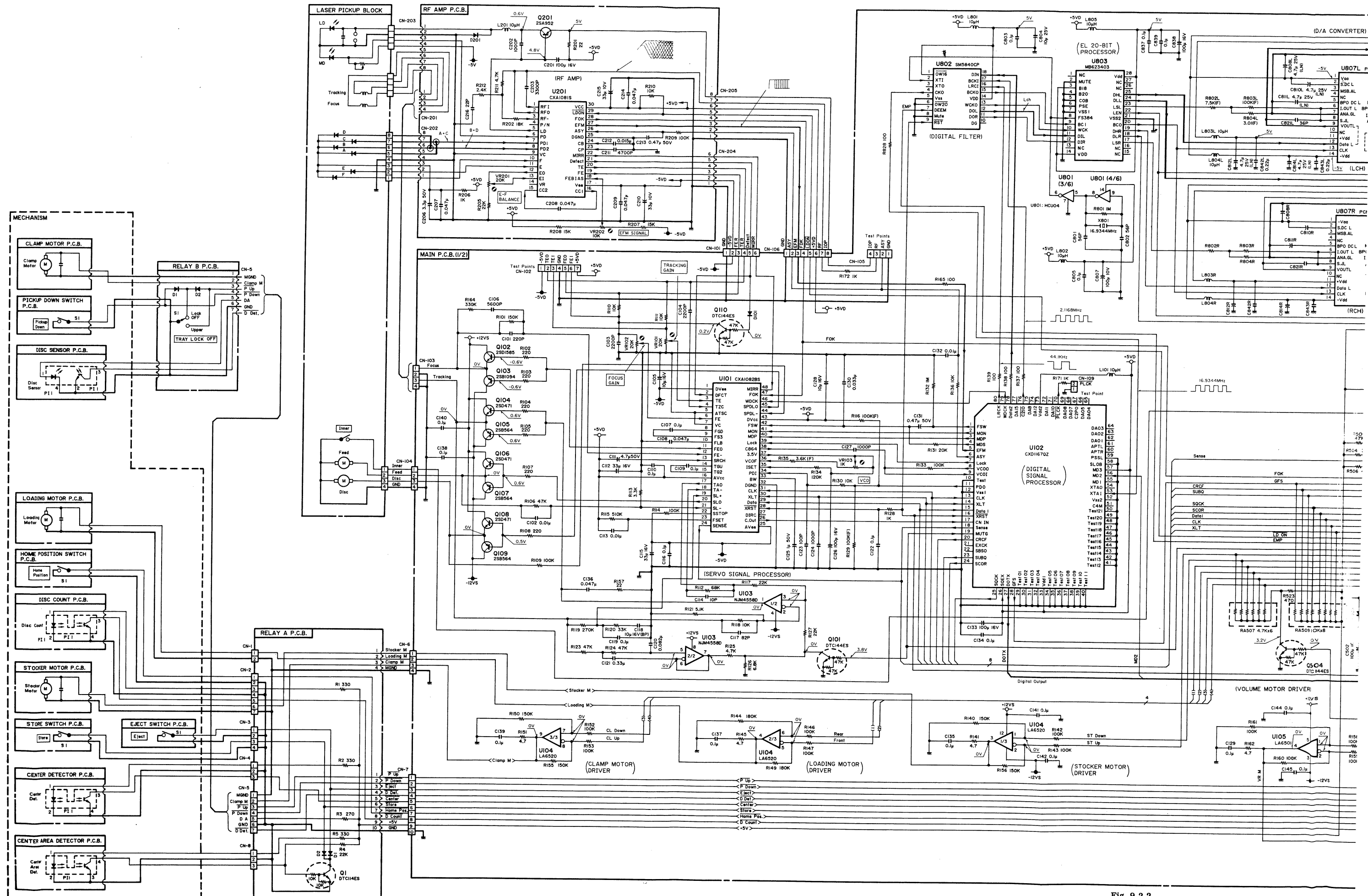


Fig. 9.2.2

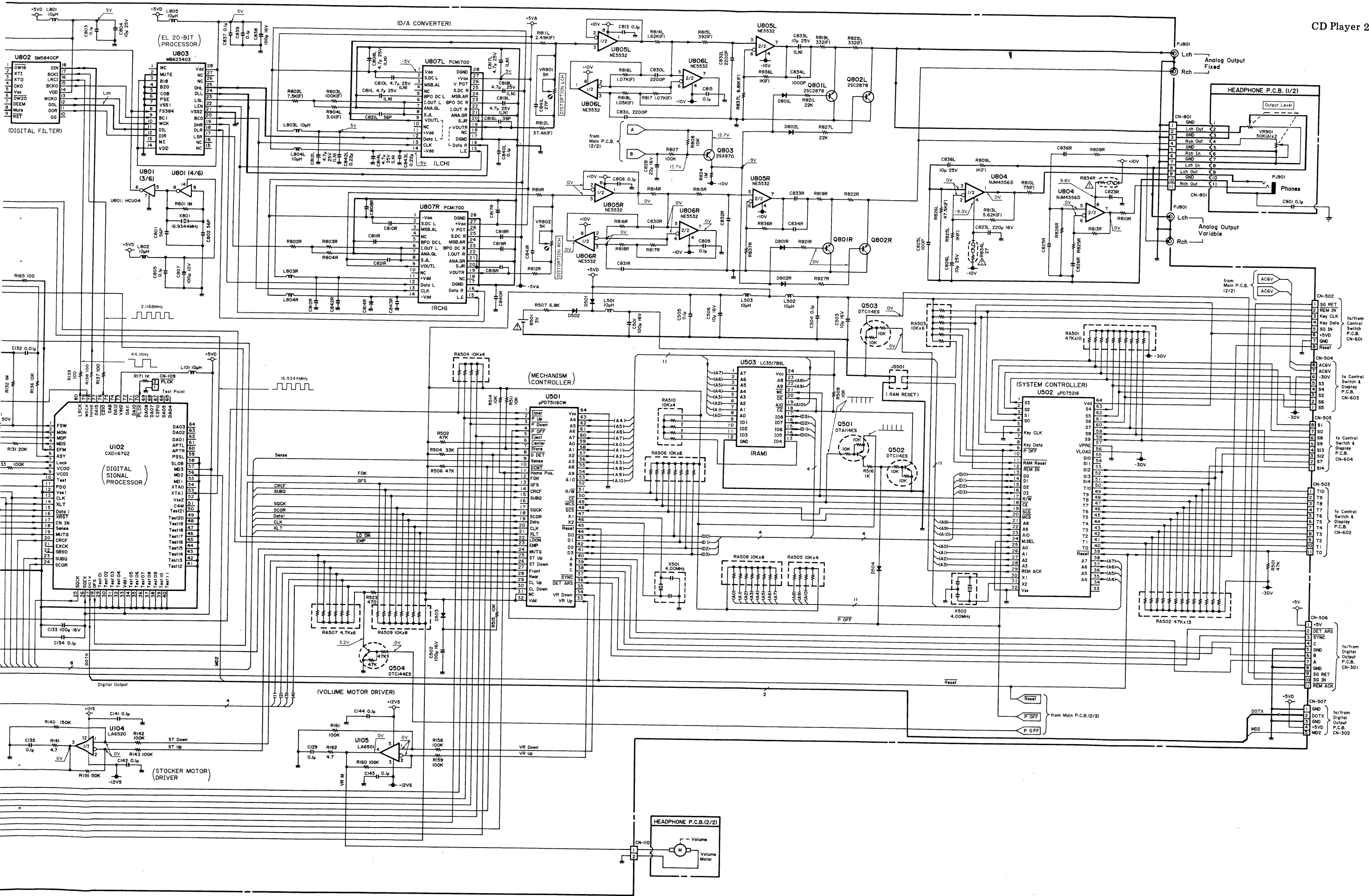
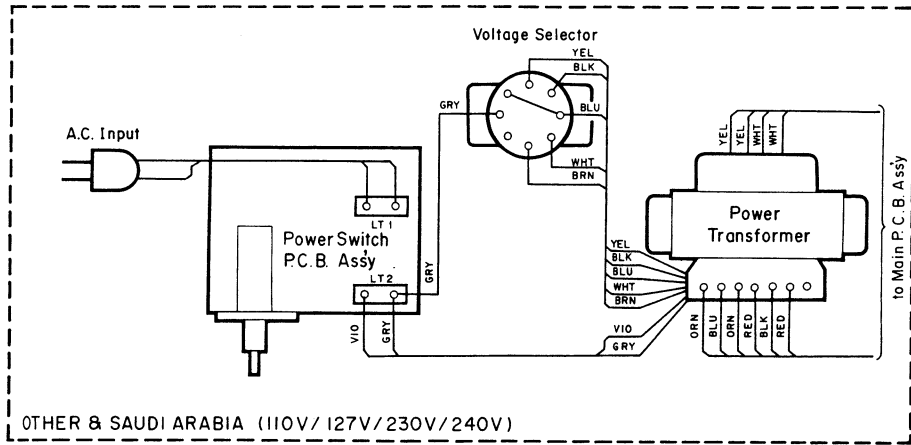
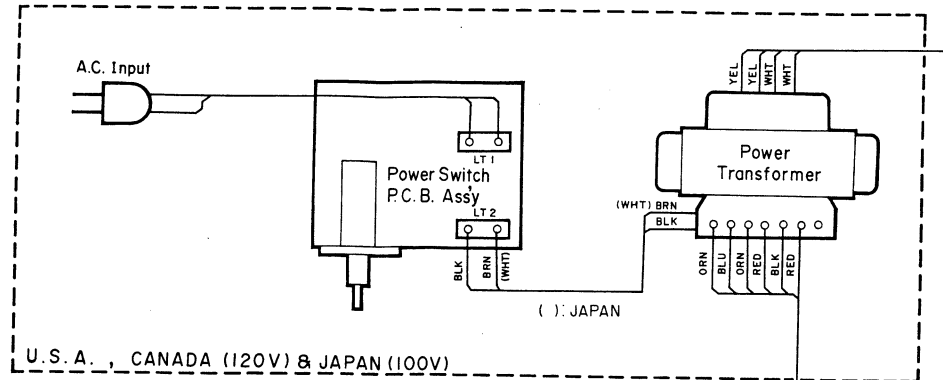
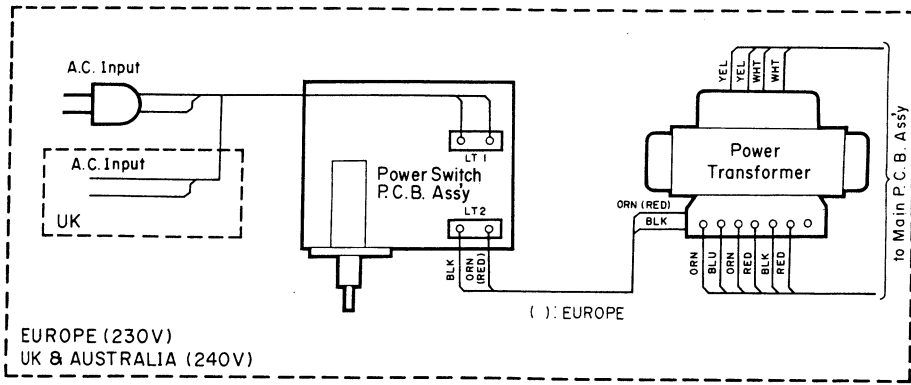


Fig. 9.2.2

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 ().

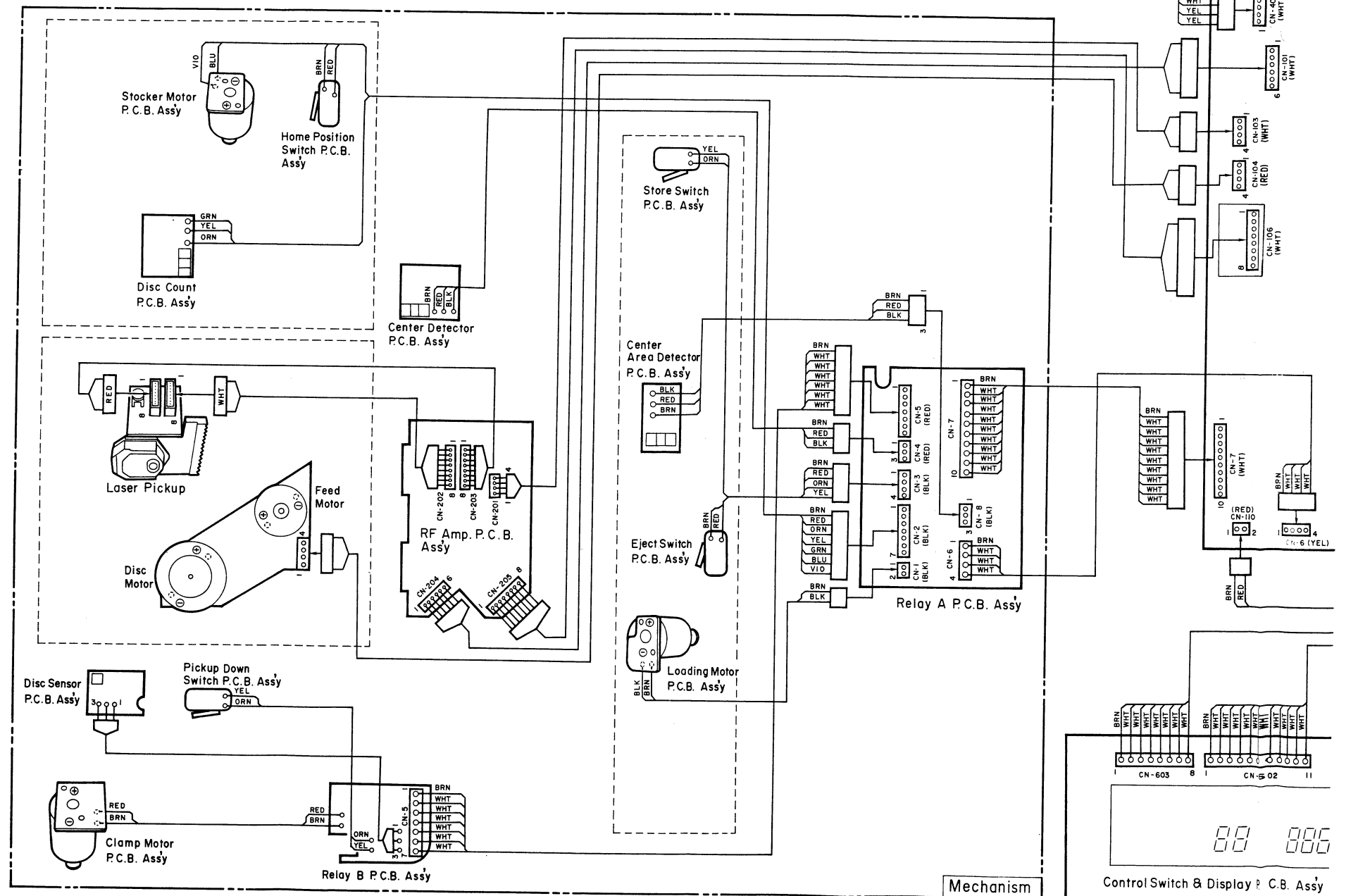


Fig. 10

Mechanism

Control Switch & Display P.C.B. Assy

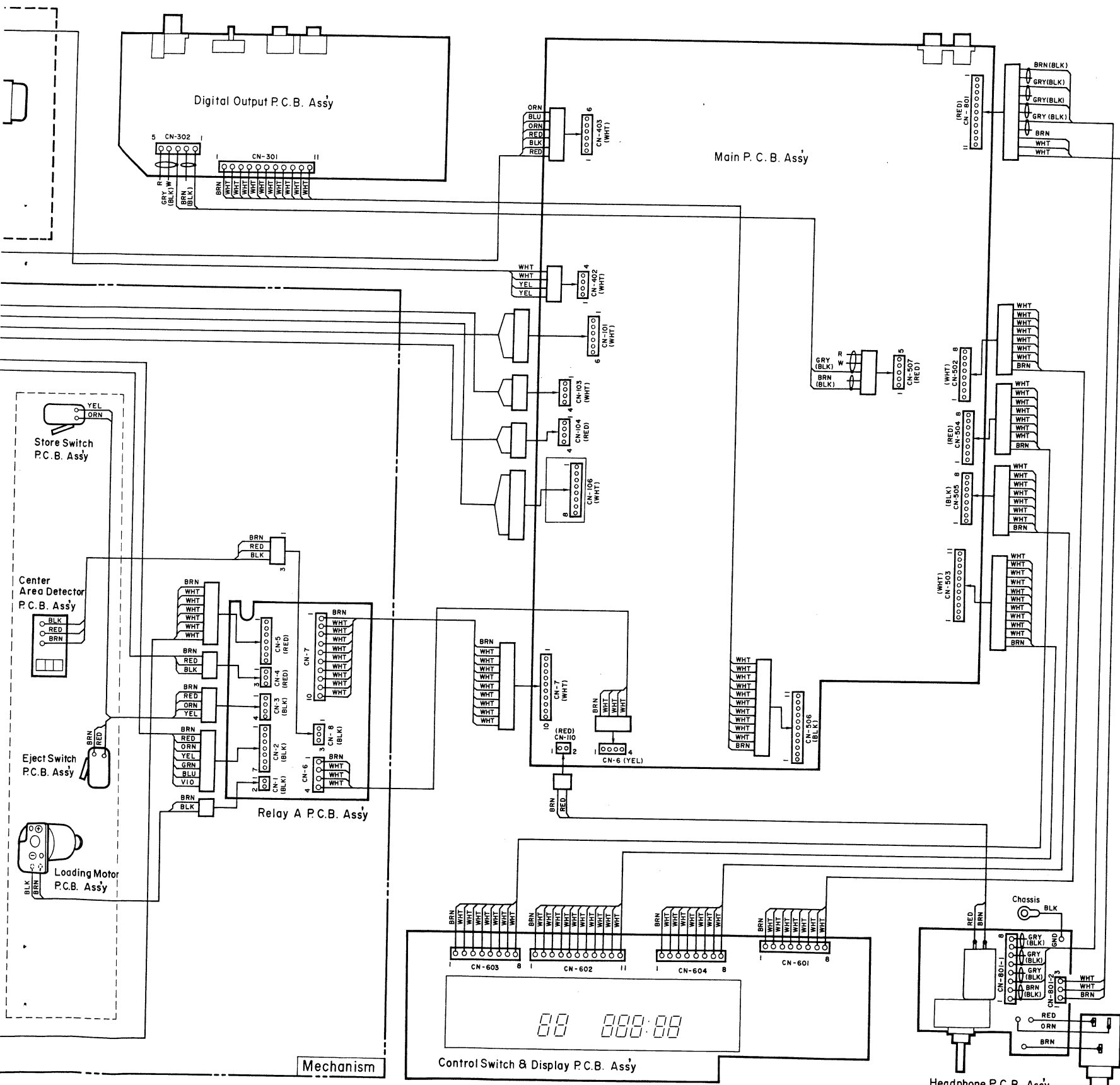


Fig. 10

11. BLOCK DIAGRAM

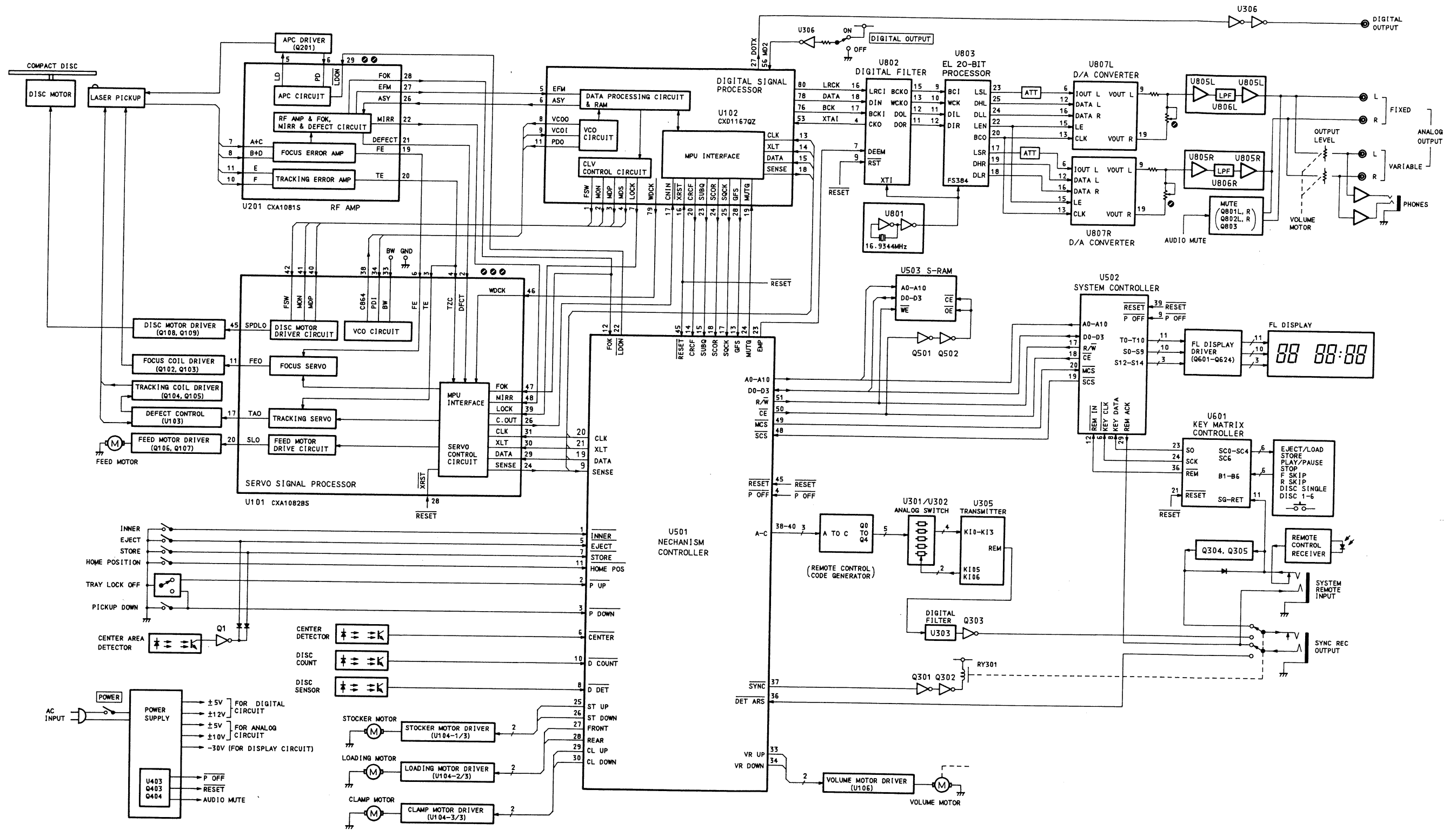
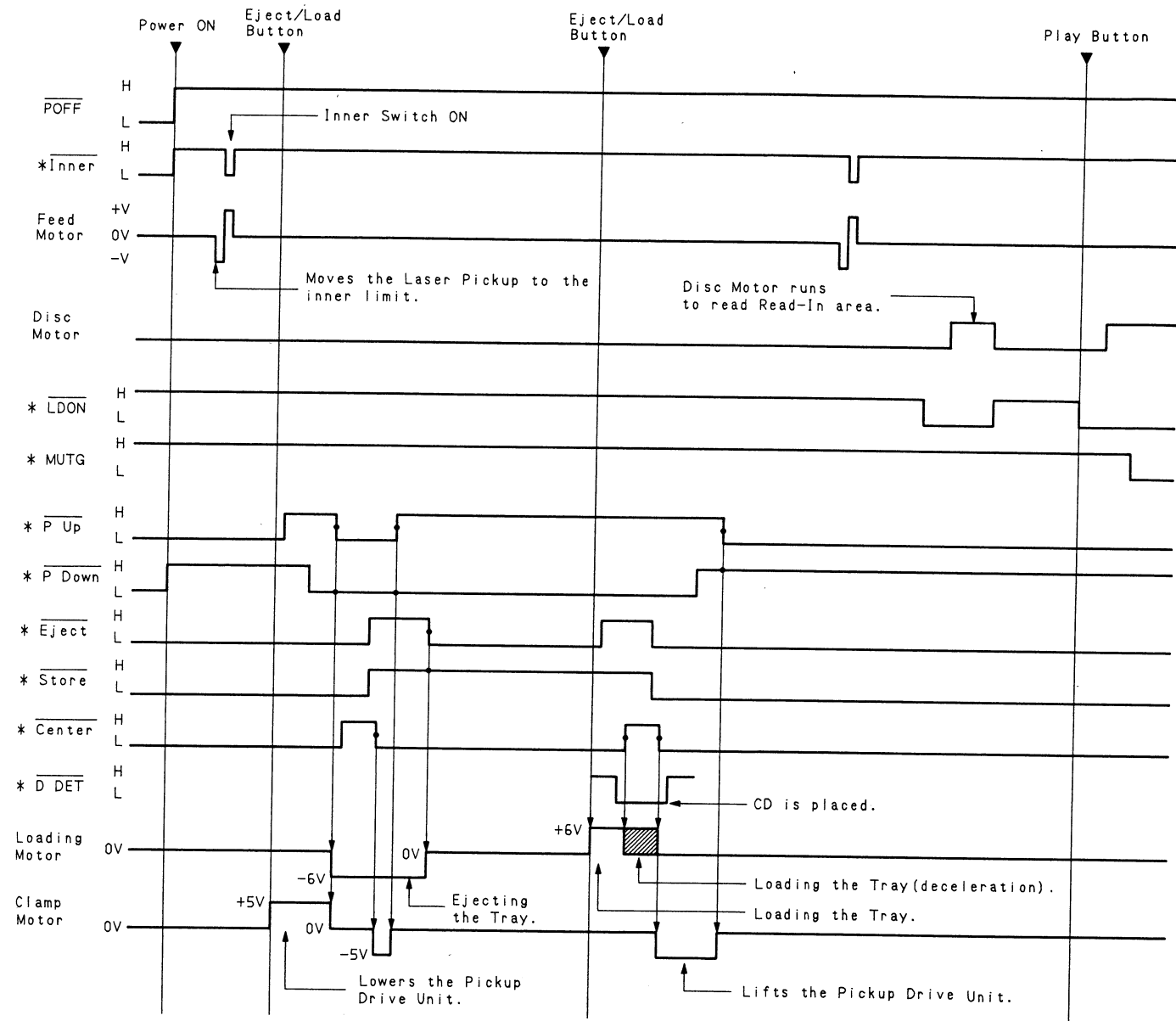


Fig. 11

12. TIMING CHART

(1) Operational Timing Chart



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

Fig. 12.1

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

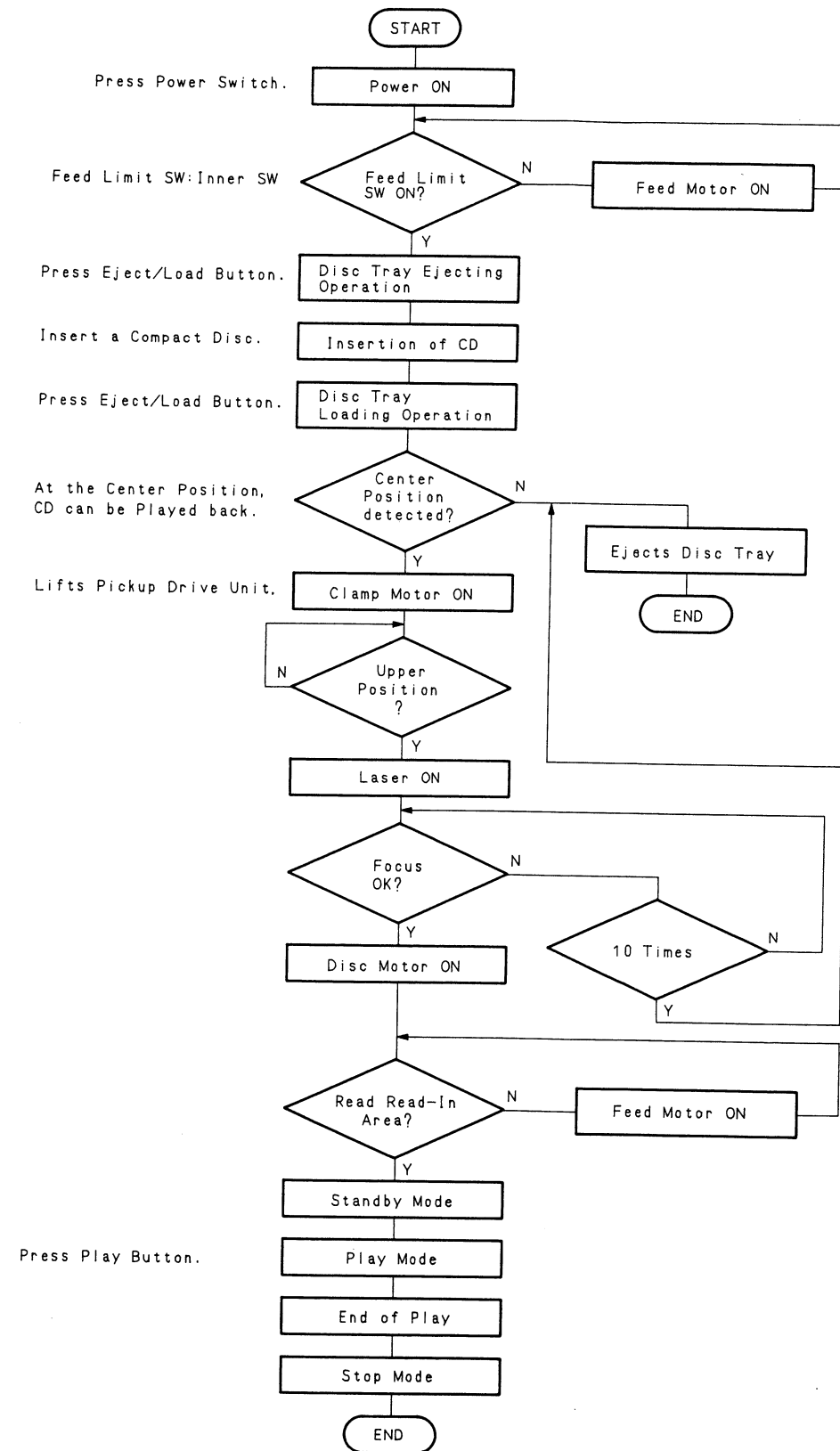


Fig. 12.2

(3) Multiple-Disc Operation (Loading Discs)

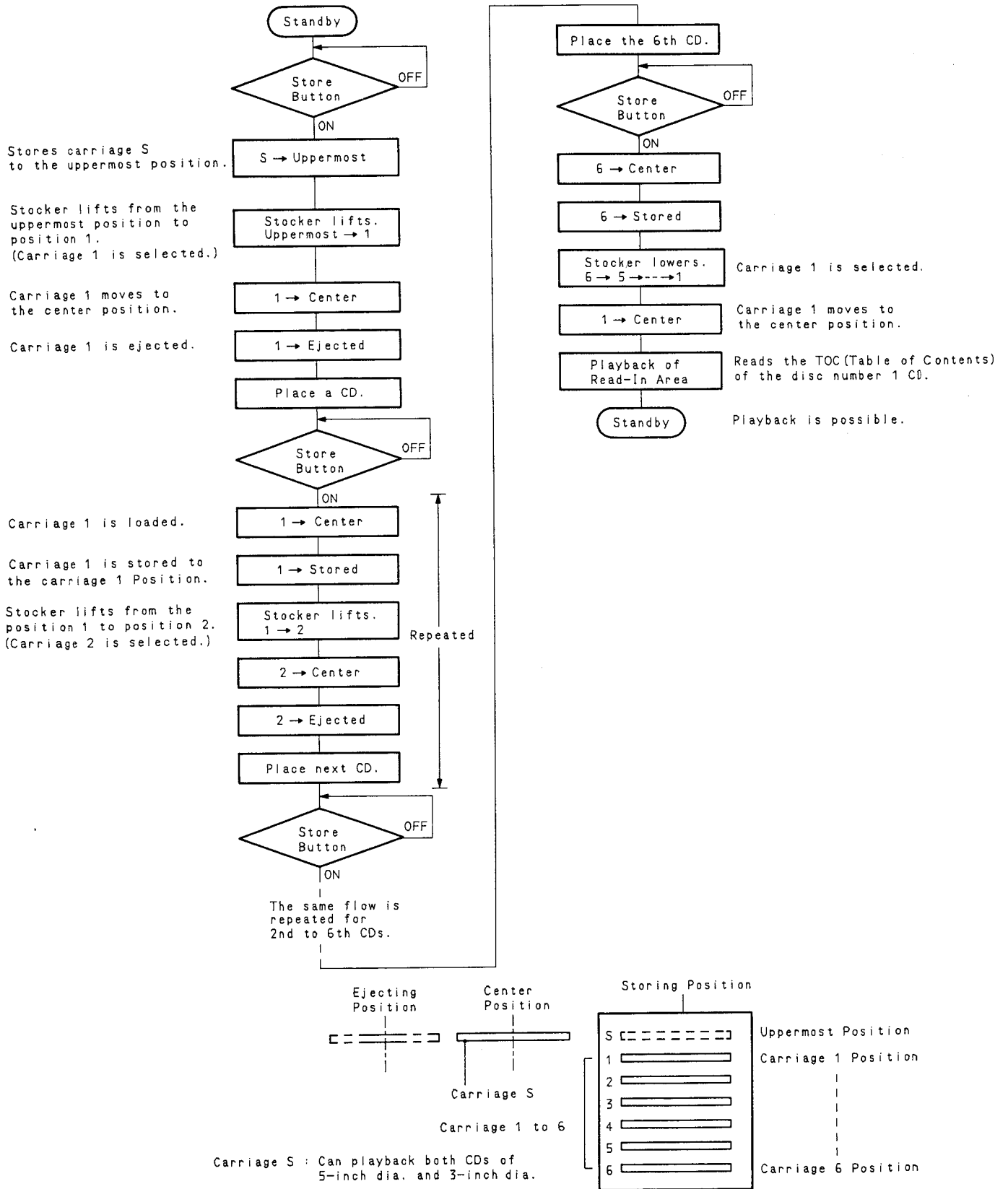


Fig. 12.3

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	20-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	Better than 105 dB (IHF A-WTD)
Dynamic Range	Better than 100 dB
Total Harmonic Distortion	0.0035% (1 kHz)
Total Harmonic Distortion + Noise	0.004% (1 kHz)
Channel Separation	Better than 100 dB
Output (1 kHz, 0 dB)	
Line	2.0 V/600 ohms (Fixed) 2.0 V/600 ohms (Variable, Output Level Max.)
Headphones	60 mW into 40 ohms (Output 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	8.0 kg/17 lbs. 10 oz.

● Remote Control Unit

Principle	Infrared pulse system
Power Supply	3 VDC (1.5 V x 2)
Dimensions*	60 (W) x 18 (H) x 180 (D) mm 2-3/8 (W) x 11/16 (H) x 7-1/16 (D) inches
Approximate Weight	130 g/5 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.