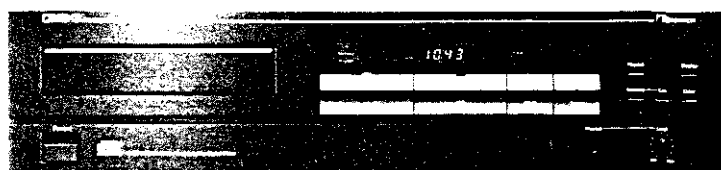




Service Manual

Nakamichi OMS-3 OMS-3A OMS-3E OMS-30

Compact Disc Player



CONTENTS

1. GENERAL	3
2. REMOVAL PROCEDURES	4
2.1 TOP COVER ASS'Y AND BOTTOM COVER ASS'Y	4
2.2 SERVO P.C.B. ASS'Y	4
2.3 FRONT PANEL ASS'Y	4
2.4 CONTROL & DISPLAY P.C.B. ASS'Y	4
2.5 MAIN P.C.B. ASS'Y AND DISC MECHANISM ASS'Y	4
2.6 CHUCK ARM ASS'Y AND DISC TRAY ASS'Y	5
2.7 LASER PICKUP ASS'Y	5
2.8 DISC MOTOR	5
3. ADJUSTMENT PROCEDURES	6
3.1 INSTRUMENTS AND GAUGE	6
3.2 PARTS LOCATION FOR ADJUSTMENT	6
3.3 LASER POWER CHECK	7
3.4 VCO ADJUSTMENT ON MAIN P.C.B. ASS'Y	7
3.5 ADJUSTMENT OF SERVO P.C.B. ASS'Y	8
3.6 DISTORTION ADJUSTMENT	9
3.7 OPERATION CHECK	10
4. MECHANISM ASS'Y AND PARTS LIST	11
4.1 SYNTHESIS	11
4.2 CHASSIS ASS'Y	12
4.3 FRONT PANEL ASS'Y	13
4.4 TOP COVER ASS'Y	13
4.5 BOTTOM COVER ASS'Y	13
4.6 DISC MECHANISM ASS'Y	14
4.7 LOADING GEAR ASS'Y	15
4.8 CHUCK ARM ASS'Y	15
5. MOUNTING DIAGRAMS AND PARTS LIST	16
5.1 MAIN P.C.B. ASS'Y	16
5.2 SERVO P.C.B. ASS'Y	18
5.3 CONTROL AND DISPLAY P.C.B. ASS'Y	20
5.4 HEADPHONE AMP. P.C.B. ASS'Y	21
5.5 TERMINAL P.C.B. ASS'Y	21
5.6 PHOTO TRANSISTOR P.C.B. ASS'Y	21
5.7 PHOTO DIODE P.C.B. ASS'Y	21
6. IC BLOCK DIAGRAMS	22
7. SCHEMATIC DIAGRAM	31
8. WIRING DIAGRAM	32
9. BLOCK DIAGRAM	33
10. SPECIFICATIONS	34

1. GENERAL

1.1 PACKING MATERIALS and OWNER'S MANUAL

The OMS-3/3A/3E/30 is equipped with the Remote Control Unit RM-3CD.

The Remote Control Unit RM-3CD will be supplied per unit as for space parts.

<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
0C81618A	Carton Box OMS-3	1
0C81614A	Carton Box OMS-3A	1
0C81619A	Carton Box OMS-3E	1
0C81620A	Carton Box OMS-30	1
0D04640B	Owner's Manual (English)	1
0D04642A	Owner's Manual (Japanese)	1
0D04641A	Owner's Manual (English/German/French)	1
CA80520A	Remote Control Unit	1

1.2 WARNING

1.2.1 IN SERVICE MANUAL

This unit uses an invisible semiconductor laser to pick up the digital signal on the disc. Since the laser can take the signal without contact, there's no anxiety of rubbing down the disc and the Pickup Ass'y.

But you must treat the laser with the greatest of care. In servicing, please pay attention to the following.

- 1) Avoid direct exposure to beam.
Laser can be radiated when the interlocks fail or are defeated.
- 2) Do not break up the Laser Pickup Ass'y.
- 3) Referred to in item 2.7 Laser Pickup Ass'y on page 5.

1.2.2 LASER SPECIFICATION

The laser provided in the unit is GaAlAs semiconductor laser. The theory of the laser emitting is the same as the light emitting of LEDs. The difference is that the laser has only one wavelength and is coherent.

One of the characteristics of laser diodes is that the threshold level can be changed accordance with the surrounding temperature. To correct this characteristic, the laser diode used in this unit provides a monitor photo diode and controls the output power level of the laser to be constant.

The Laser Pickup Ass'y consists of a laser diode, 6-split photodiode, object lens, beam splitter and coils. The object lens moves forward or back by the focus servo coil and also moves left or right by the tracking servo coil. The laser passes through the prisms and the lenses and is emitted through the object lens. The power of it is decreased to 0.3mW passing through these optical instruments. The laser reflected by the disc passes through the optical instruments again and detected by the 6-split photo diode.

1.2.3 CAUTION

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 the chassis to either side of the power cord is less than 240k ohms, the unit is defective.

WARNING – DO NOT return the unit to the customer until the problem is located and corrected.

1.2.4 Main P.C.B

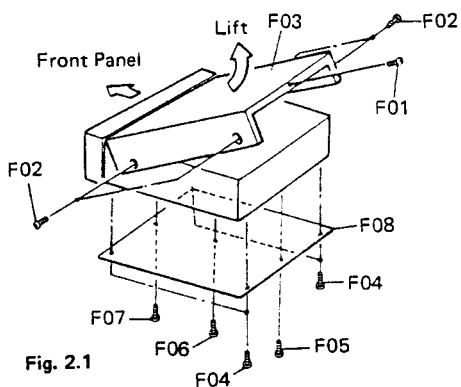
The Main P.C.B. Ass'y C230, C231, C501 – C509, C510, C520, C351, C353, C215, are attached with Sony Bond SC12N.

After replacing any of these components, be certain to apply them with Sony Bond SC12N.

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y and Bottom Cover Ass'y

- (1) Refer to Fig. 2.1.
- (2) Remove F01 and F02, then lift and remove F03 (Top Cover Ass'y).
- (3) Remove F04, F05, F06 and F07, then lift and remove F08 (Bottom Cover Ass'y).



2.2. Servo P.C.B. Ass'y

- (1) Refer to Fig. 2.2 and Fig. 2.3.
- (2) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referred to in item 2.1.
- (3) Remove F01 and F02 (P.C.B. Support) and five connectors (CN-101, CN-102, CN-103, CN-202 and CN-203), then F03 (Servo P.C.B. Ass'y).

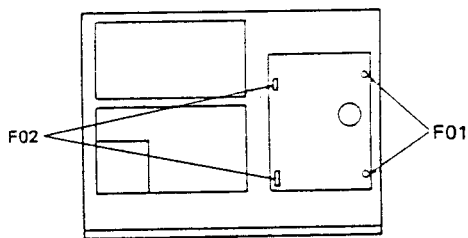


Fig. 2.2

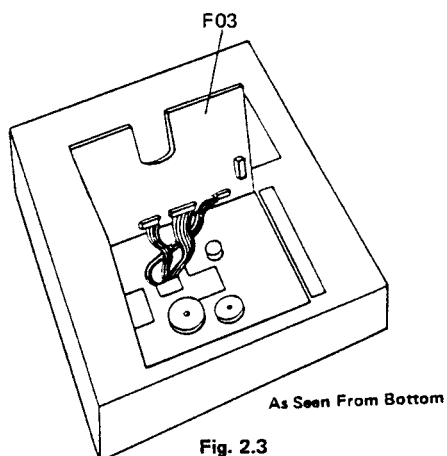


Fig. 2.3

2.3. Front Panel Ass'y

- (1) Refer to Fig. 2.4 and Fig. 2.5.
- (2) Remove the Top Cover Ass'y and the Bottom Cover Ass'y referred to in item 2.1.
- (3) Eject the Disc Tray Ass'y and remove F01 (Disc Drawer Cover) by pressing it down with your fingers.
- (4) Remove F02 and F03, then release the latches located on both sides of the Chassis.
- (5) Remove two connectors (CN-401 and CN-402), then F04 (Front Panel Ass'y).

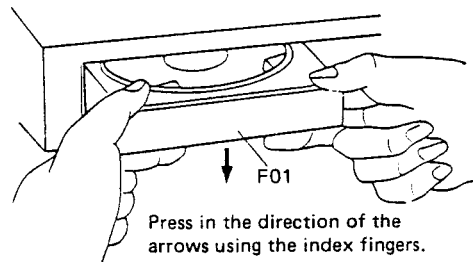


Fig. 2.4

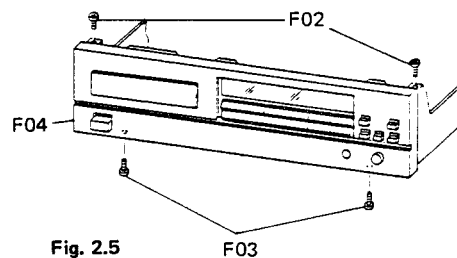


Fig. 2.5

2.4. Control & Display P.C.B. Ass'y

- (1) Refer to Fig. 2.6.
- (2) Remove the Front Panel Ass'y referred to in item 2.3.
- (3) Remove F01, then release the latches located on the Front Panel Ass'y, then F02 (Control & Display P.C.B. Ass'y).

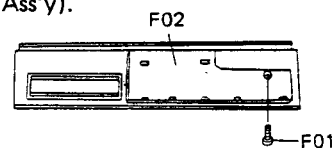


Fig. 2.6

2.5. Main P.C.B. Ass'y and Disc Mechanism Ass'y

- (1) Refer to Fig. 2.7.
- (2) Remove the Front Panel Ass'y referred to in item 2.3.
- (3) Remove F03, F05, F06 and F07, then F08 (Main P.C.B. Ass'y).
- (4) Remove F09, then F10 (Disc Mechanism Ass'y).

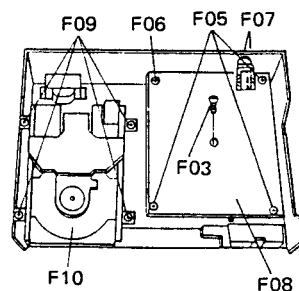


Fig. 2.7

2.6. Chuck Arm Ass'y and Disc Tray Ass'y

- (1) Refer to Fig. 2.8.
- (2) Remove the Front Panel Ass'y referred to in item 2.3.
- (3) Remove F01, then F02 (Chuck Arm Plate), F03 (Chuck Arm Spring), F04 and F05 then F06 (Chuck Arm Ass'y).
- (4) Remove F07 and F08, then F09 (Disc Drawer Guide L), F10 (Disc Drawer Guide R), then F11 (Disc Tray Ass'y).

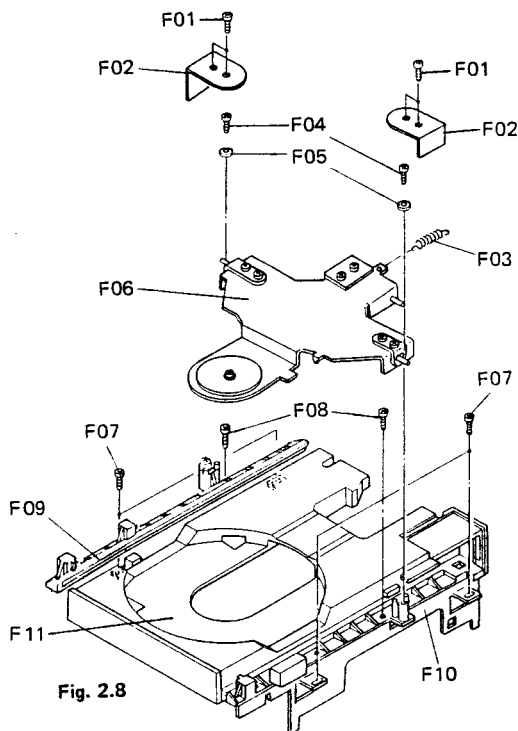


Fig. 2.8

2.7. Laser Pickup Ass'y

- (1) Refer to Fig. 2.9.
- (2) Remove the Disc Tray Ass'y referred to in item 2.6.
- (3) Remove the three connectors (CN-101, CN-102 and CN-103) from the Servo P.C.B. Ass'y.
- (4) Remove F01, then F02 (Laser Pickup Ass'y) along with F03 (Pickup Guide Rail).

NOTE: IF IT IS NOT CERTAIN THAT THE LASER PICK-UP ASS'Y IS DEFECTIVE, DO NOT REMOVE THE THREE CONNECTORS (CN-101, CN-102 and CN-103). IF YOU REMOVE THESE THREE CONNECTORS, THE LASER DIODE OF THE LASER PICKUP ASS'Y WILL BE DAMAGED.

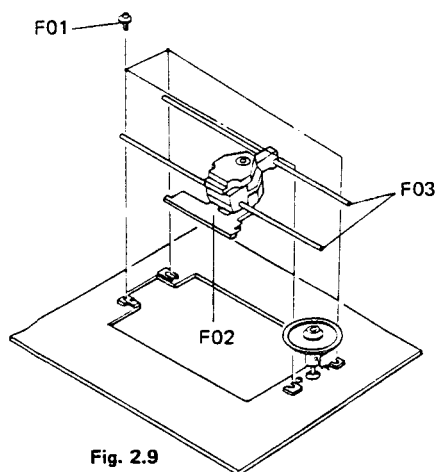


Fig. 2.9

Installing a new Laser Pickup Ass'y

- (1) When installing a new Laser Pickup Ass'y you must connect its three connectors (CN-101, CN-102 and CN-103) to the Servo P.C.B. Ass'y first.
- (2) Then using a grounded tip soldering iron only, remove the short-circuiting solder in the area of the dotted circle as shown in Fig. 2.10; this small P.C.B. which is incorporated with the Laser Pickup Ass'y.

CAUTION: IF THE SHORT-CIRCUITING SOLDER IS REMOVED BEFORE THE THREE CONNECTORS (CN-101, CN-102 and CN-103) ARE CONNECTED, DAMAGE TO THE LASER DIODE OF THE LASER PICKUP ASS'Y COULD OCCUR IN A MATTER OF SECONDS, CAUSING FAILURE OF THE NEW LASER PICKUP ASS'Y.

NOTE: THE LASER PICKUP ASS'Y STOCKED ASSPARE PART, MUST BE SHORTED TO DOTTED CIRCLE OF THE SMALL P.C.B. WHICH IS INCORPORATED WITH THE LASER PICKUP ASS'Y AS SHOWN IN Fig. 2.10.

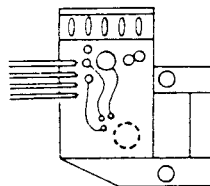


Fig. 2.10

2.8. Disc Motor

- (1) Refer to Fig. 2.11.
- (2) Remove Disc Tray Ass'y referred to in item 2.6.
- (3) Remove F01, then pull up F02 (Turntable B Ass'y)
- (4) Remove F03, then F04 (Disc Motor).

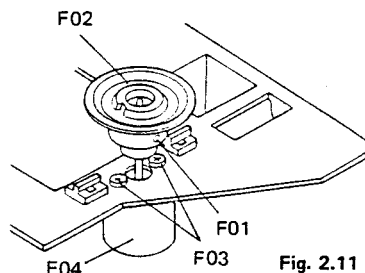


Fig. 2.11

RE-ASSEMBLY OF THE DISC MOTOR:

- (1) Refer to Fig. 2.12.
- (2) When re-assembling the Disc Motor, adjust the height of the turntable using the Turntable Adjustment Gauge (0C82258A).

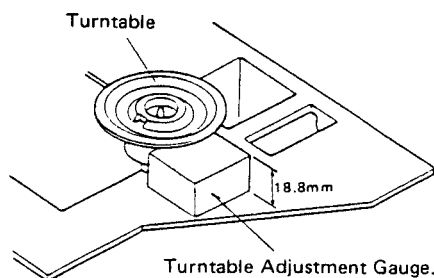
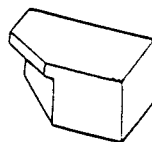


Fig. 2.12

3. ADJUSTMENT PROCEDURES

3.1 Meters and Gauge

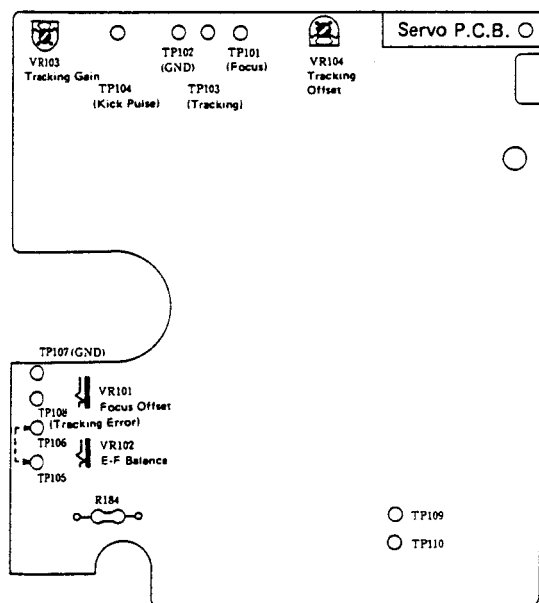
- (1) Oscilloscope (15 MHz or more)
- (2) AC Voltmeter
- (3) DC Voltmeter
- (4) Optical Power Meter
- (5) Phillips Test Sample Disc 5/5A
- (6) Sony Test C.D. Type III (YEDS-7)
- (7) Frequency counter
- (8) Distortion Meter
- (9) Turntable Adjustment Gauge (Fig. 3.1)



Turntable Adjustment Gauge (0C82258A)

Fig. 3.1

3.2 Parts Location for Adjustment



NOTE: The above Semi-fixed VR positions are for initial presetting.

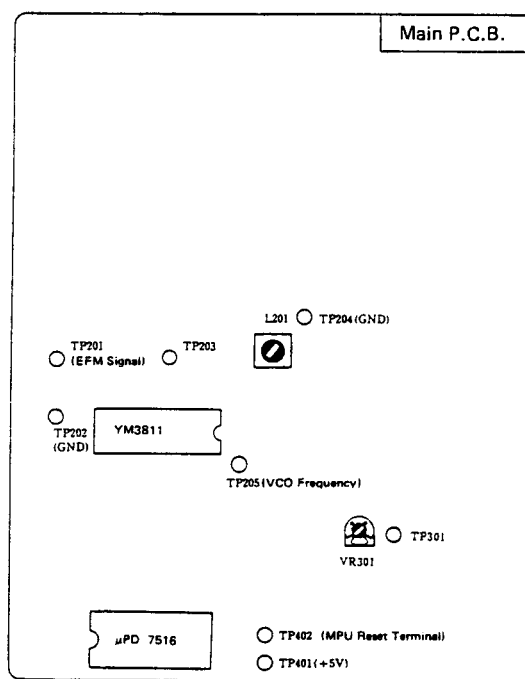


Fig. 3.2

3.3 Laser Pickup Laser Power Check

- (1) Remove the Top Cover Ass'y referred to in item 2.1 on page 4.
- (2) Short-circuit TP105 and TP106 located on the Servo P.C.B. Ass'y.
- (3) Place the optical power meter against the pickup (Fig. 3.3), and check that the laser power is between 0.15mW and 0.4mW.

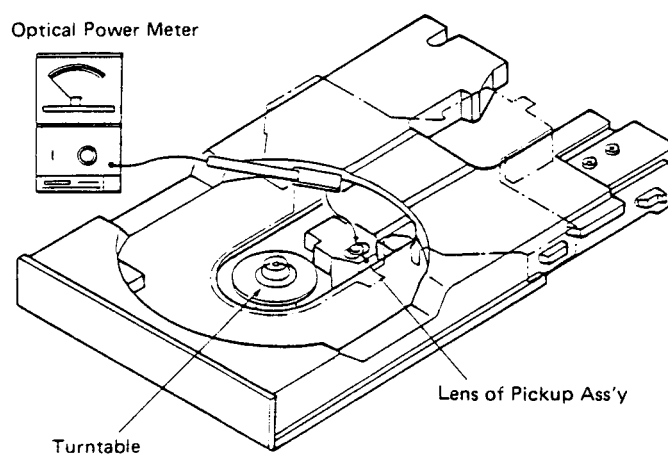


Fig. 3.3

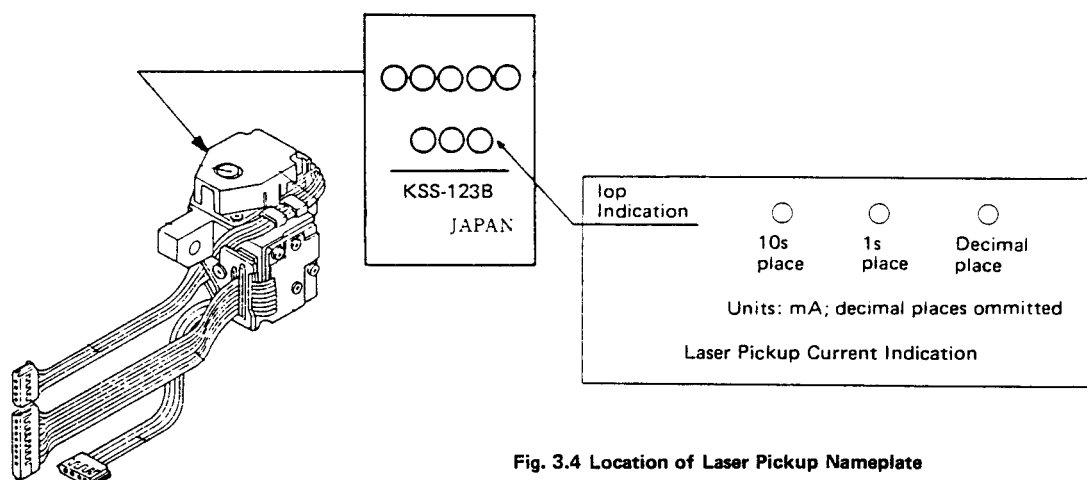


Fig. 3.4 Location of Laser Pickup Nameplate

3.4 Adjustment of VCO on Main P.C.B. Ass'y

3.4.1 VCO Frequency Adjustment (OMS-4 is No signal.)

- (1) Connect the frequency counter to TP205 (VCO Frequency) and TP204 (GND).
- (2) Remove CN-203 connector cord, turn the power switch on, and short-circuit TP201 and TP202.
- (3) Rotate the L201 core and adjust so that the frequency counter shows a value of 4.322MHz.
- (4) After adjusting, turn the power off and connect the CN-203 connector cord.

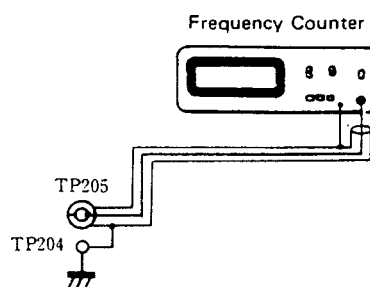


Fig. 3.5

3.5 Adjustment of Servo P.C.B. Ass'y

3.5-1 Setting of initial position of the semi-fixed volume

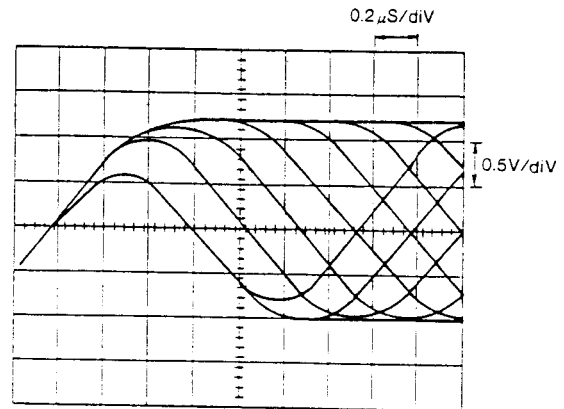
Before adjusting, preset all semi-fixed volumes are their mechanical center (VR101, 102, 103, 104).

3.5.2 Tracking Offset Adjustment

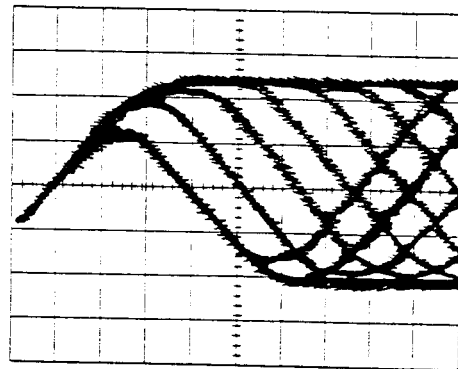
- (1) Rotate VR103 fully clockwise.
- (2) Short circuit TP105 and TP106, and without inserting a disc adjust VR104 so that the voltage of TP103 (Tracking Coil Output) and TP102 (GND) is $0 \pm 5\text{mV}$.
- (3) Disconnect TP105 and TP106, then preset VR103 to mechanical center.

3.5.3 Focus Offset Adjustment

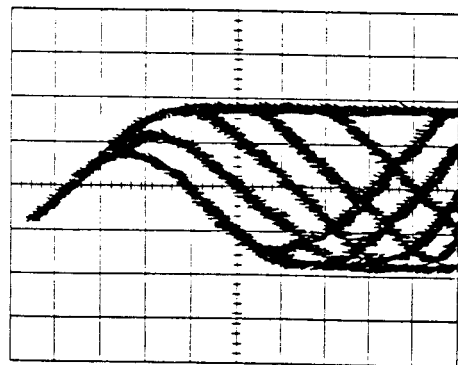
- (1) Connect a DC voltmeter across R184 (120Ω) on Servo P.C.B. Ass'y.
- (2) Short circuit TP105 and TP106 (Laser Power On) on Servo P.C.B. Ass'y.
- (3) Turn the power switch on, and calculate the current from voltage on both ends of R184, and check that the difference compared to the laser pickup indication (Fig. 3.6) is within $\pm 10\%$ for the negative side. Next turn the power switch off and disconnect the AC voltmeter.
- (4) Turn the power back on, set the Philips Test Sample 5 test disc, and observe the TP201 output waveform (EFM signal).
- (5) Adjust the VR101 so that the EFM signal level becomes high and the waveform becomes distinct, so that the lines are not thick (Fig. 3.6).



Focus Offset VR (VR101) Adjustment



Focus Offset VR (VR101) at Maximum
(Level is high but waveform is unclear)



Focus Offset VR (VR101) at Minimum
(Level is low and waveform is unclear)

Fig. 3.6 Focus Offset VR EFM Signal Waveforms

3.5.4 E-F Balance Adjustment (Supplementary Beam Balance Adjustment)

- (1) Turn the power off and use a $10k\Omega$ resistor to short TP105 and TP106.
- (2) Connect the oscilloscope between TP201 (EFM signal) and TP202 (GND), and also between TP108 (Tracking Error) and TP107 (GND).
- (3) Turn the power switch, load the Philips Test Sample 5 test disc and playback from the first selection.
- (4) Connect TP402 (MPU Reset Terminal) and TP401 (+5V) on the Main P.C.B. Ass'y.
(As the microprocessor is in the Reset mode, the LED does not light)
- (5) Rotate VR103 (Tracking) fully clockwise.
 - a) Oscilloscope Ranges
 - b) Voltage Range (AC): CH1 ... 1V
CH2 ... 2V
 - c) (Set trigger on CH2)
 - d) Sweep Range: 1mS
- (6) Observe the tracking error waveforms (Fig. 3.7) and adjust VR102 so that the GND line is positioned at exactly half the waveform P-P value.
- (7) Turn the power switch off, disconnect the oscilloscope, TP401 (+5V) and TP402 (MPU Reset terminal), and set VR103 to the mechanical center.

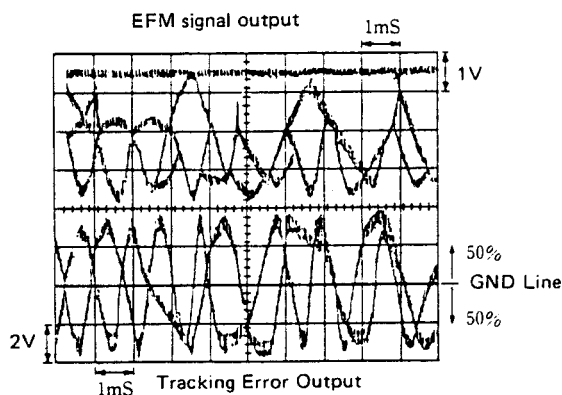


Fig. 3.7

3.6 DISTORTION ADJUSTMENT

(Adjust after the Servo P.C.B. adjustment has been completed) Play the 20th selection on the Sony Type III test disc (1KHz - 60 dB). Connect the L.P.F. (20 kHz) to the AC voltmeter and the distortion meter.

Adjust the VR301 so that distortion in the 3% range is as low as possible.

- > Dynamic range is greater than 91 dB.
- < Check to make sure that distortion is below 0.0085%.

3.5.5 Tracking Gain Adjustment

- (1) Load the Philips Test Sample 5 test disc (non-scratched), observe the noise voltage on the voltmeter, and adjust VR103 so that the noise voltage on TP103 (Tracking) and TP102 (GND) is $0.26V_{RMS} \pm 0.01V$ (Fig. 3.8).

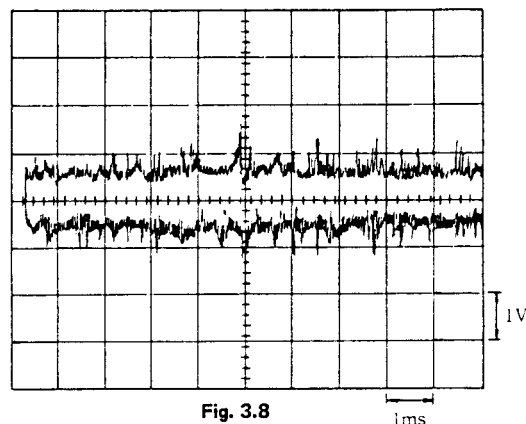


Fig. 3.8

3.5.6 Lens Kick Gain Check

- (1) Connect TP201 (EFM signal) and TP202 (GND) to CH1 on the oscilloscope, and TP104 (lens kick pulse) and TP102 (GND) to CH2.
- (2) Insert the Philips Test Sample 5 test disc and check the size of the TP201 (EFM signal) output waveform (Fig. 3.9).
- (3) Pause at selection 10 on the Philips Test Sample 5 test disc.

Oscilloscope Range:
Voltage Range (AC): CH1 ... 1V
CH2 ... 2V
Sweep Range: 0.2ms

Set a trigger on the leading edge of the TP104 waveform on CH2 (Lens Kick) and observe the TP201 waveform (Fig. 3.10).

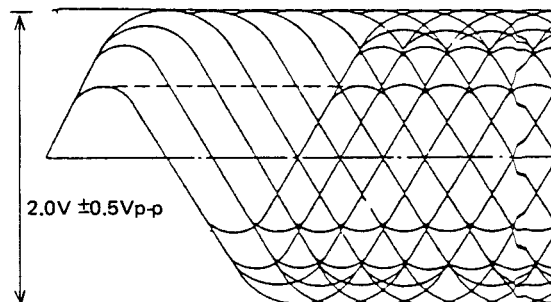


Fig. 3.9 EFM Signal

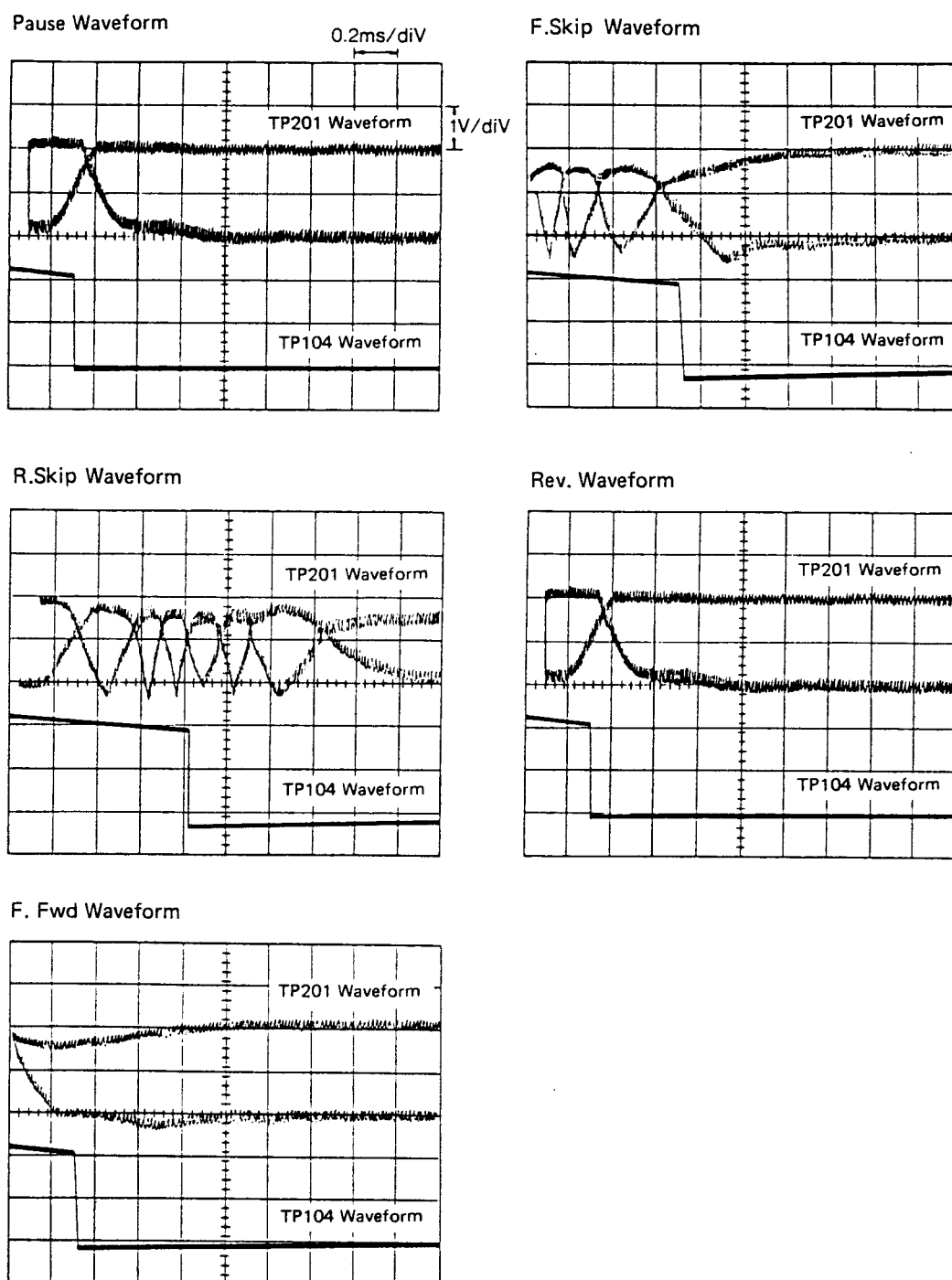


Fig. 3.10 EFM Signal Waveforms Upon Track Jump

3.7 Operation Check

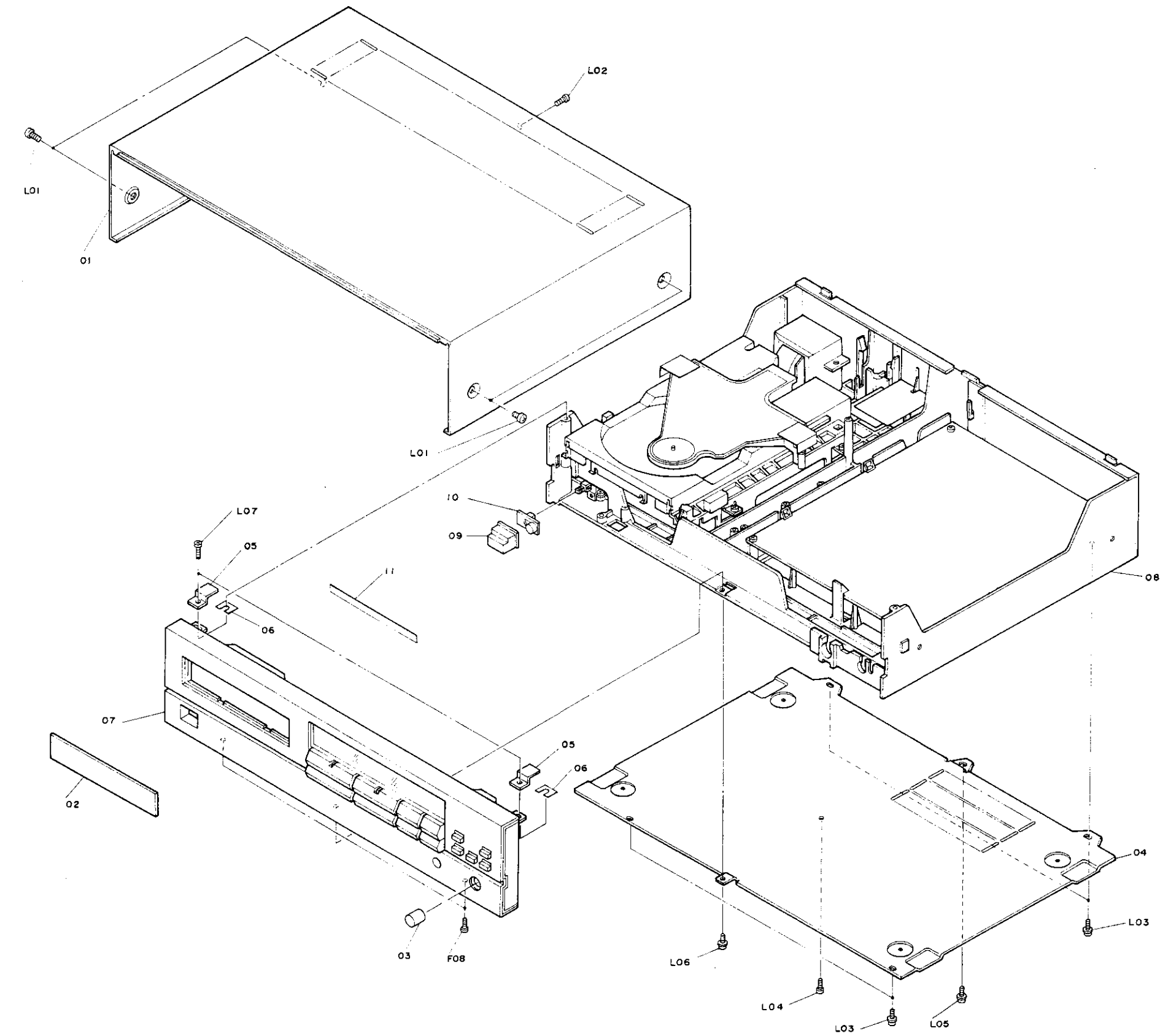
3.7.1 Playability

Use the Philips Test 5A (scratched) test disc, play the following portions and make sure no tracks are jumped.

- (1) Wedge (Interruption)
Selection 6 0'00" – 0'30"
- (2) Black Spot (Black Dot)
Selection 12 1'10" – Selection 13 0'30"
- (3) Fingerprint
Selection 19 0'00" – 0'30"

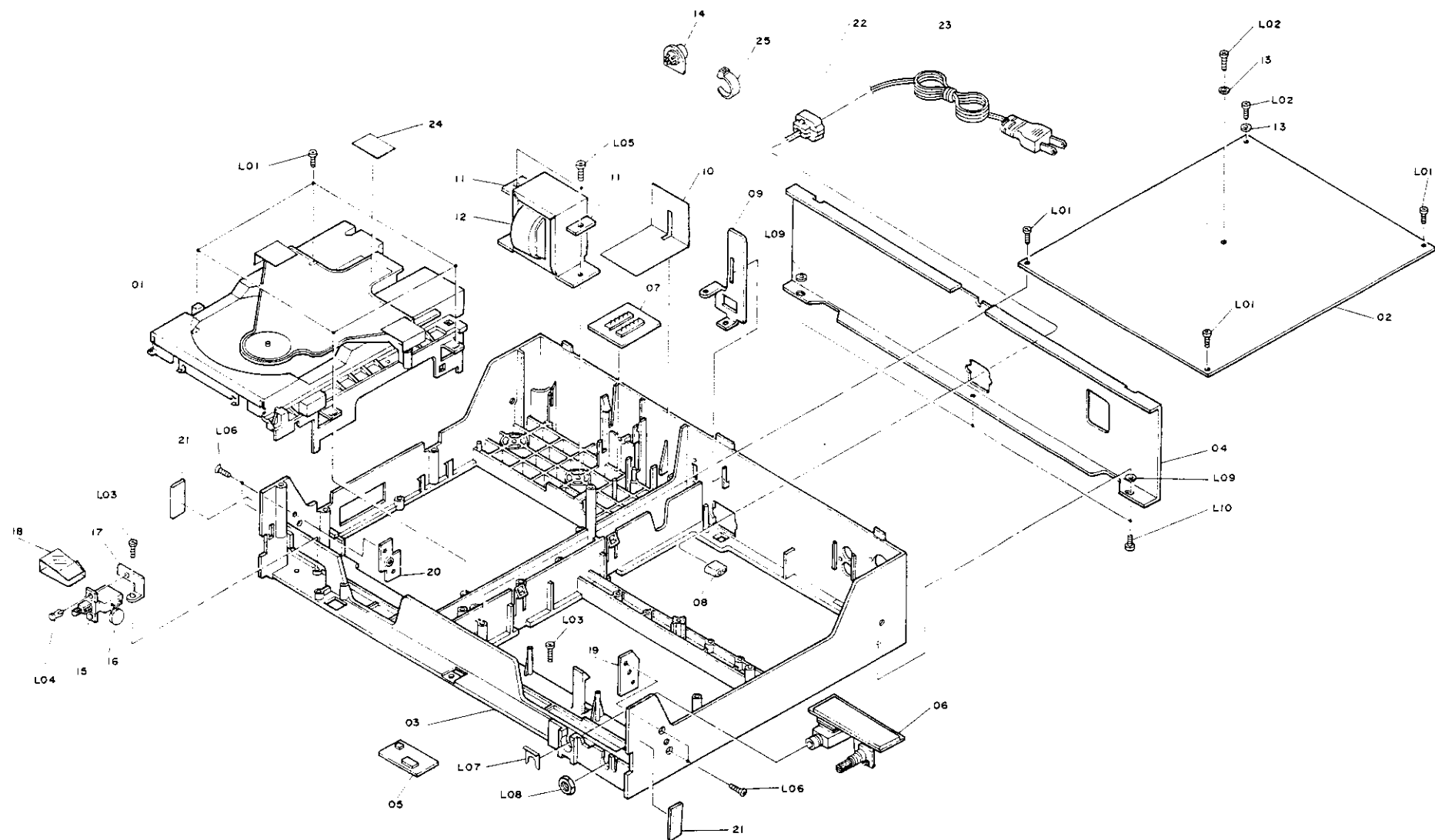
4. MECHANISM ASS'Y AND PARTS LIST

4.1. Synthesis



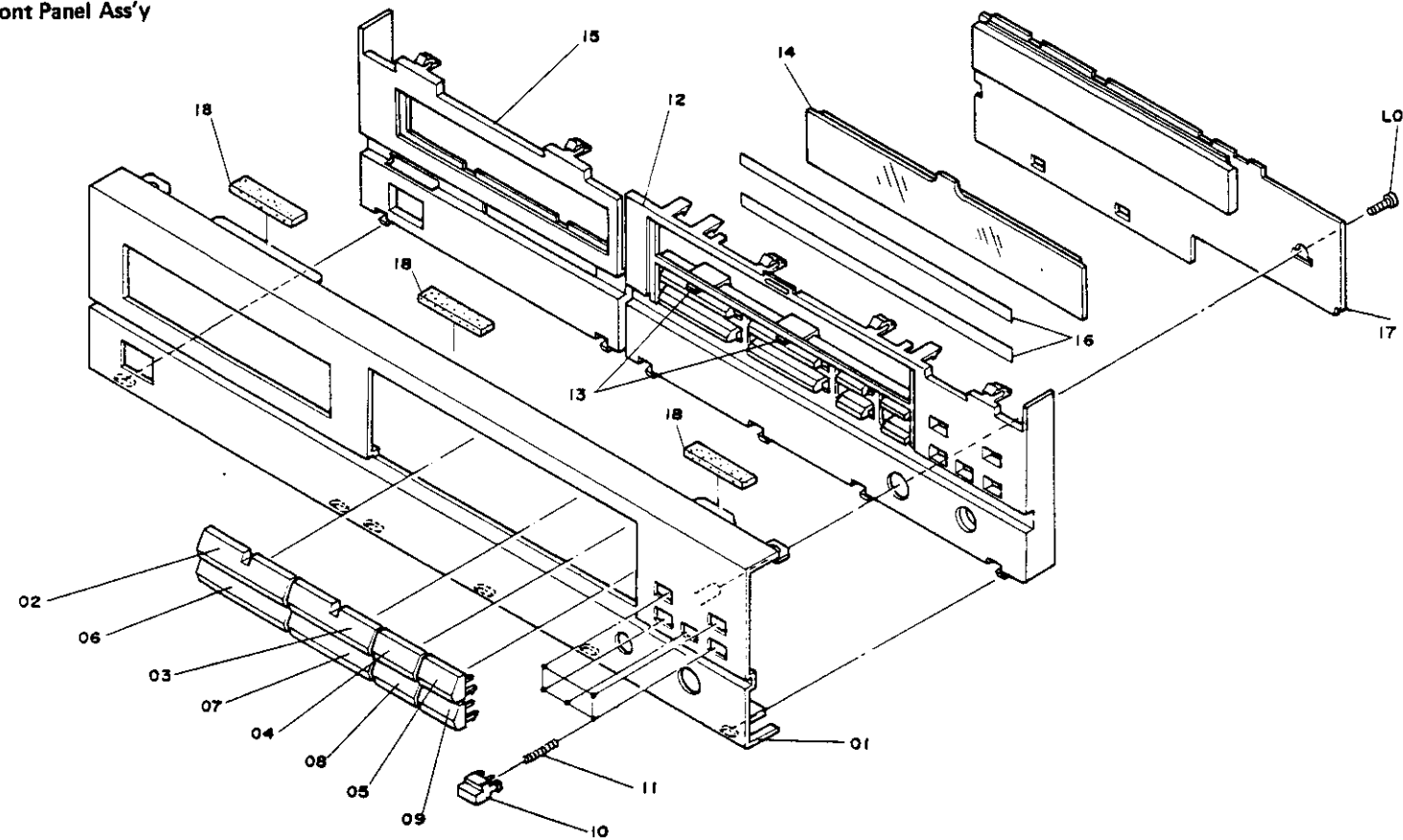
Schematic Ref. No.	Part No.	Description	Q'ty
01	CA80511A	Synthesis	1
	(0C81483A)	Top Cover Ass'y	(1)
	(0C81582A)	Top Cover	(1)
	(0C81598A)	Vibration Isolating Sheet A	(2)
	(0C81652A)	Top Cover Cushion	(1)
	(0C82350A)	Cushion	(2)
	(0C82352A)	Vibration Isolating Sheet B	(1)
	(0M04377B)	Rubber Cushion	(1)
	0C81803A	Caution Label	1
	0C80398A	Disc Tray Cover	1
	0C80512A	Volume Knob Ass'y	1
	(0C81561A)	Bottom Cover Ass'y	(1)
	(0C81479A)	Bottom Cover	(4)
	(0M04377B)	Leg	(1)
	(0M04810A)	Caution Label	(1)
		Shipping Screw Caution Label	1
05	0C82351A	Top Cover Support	2
06	0C81651A	Front Panel Spacer	2
07	CA80517A	Front Panel Ass'y OMS-3	1
	CA80434A	Front Panel Ass'y OMS-3A	1
	CA80518A	Front Panel Ass'y OMS-3E	1
	CA80513A	Front Panel Ass'y OMS-30	1
	CA80530A	Chassis Ass'y OMS-3A	1
08	CA80531A	Chassis Ass'y OMS-3E	1
	CA80532A	Chassis Ass'y OMS-30	1
	CA80533A	Chassis Ass'y OMS-3(Canada)	1
	CA80534A	Chassis Ass'y OMS-3(Australia)	1
	CA80535A	Chassis Ass'y OMS-3(Other)	1
09	0C81515A	Power Switch Knob	1
10	0C81505A	Power Switch Joint	1
11	0C81594A	Adhesive Tape 3×30	1
—	0M04813A	UL Approval Label	1
—	0M05608A	Manufacturing Periodic Seal	1
—	0M04113A	LA Approval Label	1
—	—	CSA Approval Label	1
—	0M04434B	EP Approval Label	1
—	0M04814A	Pass Label	1
—	0M04816A	Serial Number Seal	1
L01	0C81642A	BT4×12⌀Washer-Faced with washer (Black zinc)	4
L02	0C81623A	BT3×18⌀Pan Projected (Black)	1
L03	0E03388A	BT3×12⌀Binding with washer	4
L04	0E00888A	BT3×12⌀Binding	1
L05	0E03391A	BT3×8⌀Binding Projected	1
L06	0E03365A	BT3×8⌀Binding Projected (Black Chromate)	1
L07	0E03399A	BT3×12⌀Countersunk	2
L08	0E00921A	BT3×8⌀Binding (Black Chromate)	2

4.2. Chassis Ass'y

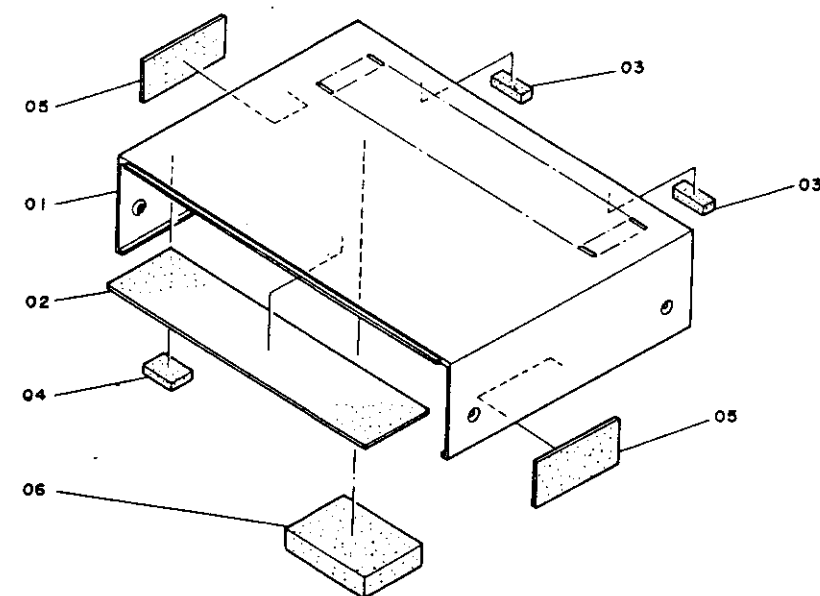


Schematic Ref. No.	Part No.	Description	Q'ty
	CA80530A	Chassis Ass'y OMS-3A	
	CA80531A	Chassis Ass'y OMS-3E	
	CA80532A	Chassis Ass'y OMS-30	
	CA80533A	Chassis Ass'y OMS-3(Canada)	
	CA80534A	Chassis Ass'y OMS-3(Australia)	
	CA80535A	Chassis Ass'y OMS-3(Others)	
01	CA80436A	Disc Mechanism Ass'y	1
02	CA80417A	Main P. C. B. Ass'y	1
03	0C81482A	Chassis	1
04	0C81578A	Rear Panel OMS-3	1
	0C81568A	Rear Panel OMS-3A	1
	0C81577A	Rear Panel OMS-3E	1
	0C81579A	Rear Panel OMS-30	1
	0C81578A	Rear Panel OMS-3(Others)	1
05	CA80514A	Search P. C. B. Ass'y	1
06	CA80419A	Headphone Amp. P. C. B. Ass'y	1
07	CA80421A	Terminal P. C. B. Ass'y	1
08	0C81880A	Ferrite Core	1
09	0C81580A	Bushing Holder	1
10	0C81583A	Terminal P. C. B. Insulator	1
	(OMS-3A & OMS-3(Canada))		
11	0C81655A	Transformer Reinforce Plate	2
12	0C82251A	Power Transformer	1
	(OMS-3A & OMS-3(Canada))		
	0C82265A	Power Transformer	1
	(OMS-3E & OMS-3(Australia))		
	0C82264A	Power Transformer(OMS-30)	1
	0C82266A	Power Transformer(OMS-3(Others))	1
13	0C81655A	Ground Plate	2
14	0C82355A	Voltage Selector(OMS-3(Others))	1
15	0C81890A	Power Switch	1
16	0C82353A	CC 4700pF 400V (M)	1
17	0C81539A	Power Switch Holder	1
18	0C81600A	Power Switch Insulator(OMS-3E)	1
19	0C81564A	Top Cover Holder R	1
20	0C81563A	Top Cover Holder L	1
21	0C82357A	Cushion	2
22	0C81472A	Cord Bushing	1
23	0C82300A	Power Cord(OMS-3(Canada))	1
	0C82303A	Power Cord(OMS-3E)	1
	0C82301A	Power Cord(OMS-30)	1
	0C82356A	Power Cord(OMS-3(Australia))	1
	0C82302A	Power Cord(OMS-3(Others))	1
24	0M04611A	US Laser Caution Label	1
25	0C81471A	Insu-Lock L=94mm	5
—	0C81922A	4P Connector Cord	1
—	CA80425A	Chassis Wire A's'y	1
L01	0E03157A	BT3×8ΦBinding with Washer	4
L02	0E03391A	BT3×8ΦBinding Projected	2
L03	0E00868A	BT3×8ΦBinding	2
L04	0C81625A	Plastic Rivet	1
L05	0E00924A	BT4×16ΦBinding	2
L06	0C82416A	M3×8ΦCountersunk	4
L07	—	Snap Plate	1
L08	—	Volume Nut	1
L09	0C81630A	Washer 3mm Fibcr	2
L10	0E00921A	BT3×8ΦBinding (Black Chromate)	2

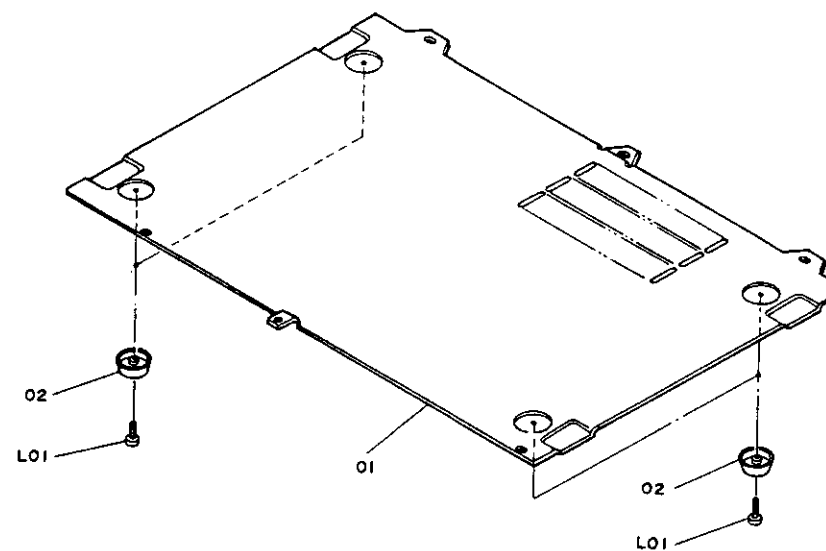
4.3. Front Panel Ass'y



4.4. Top Cover Ass'y

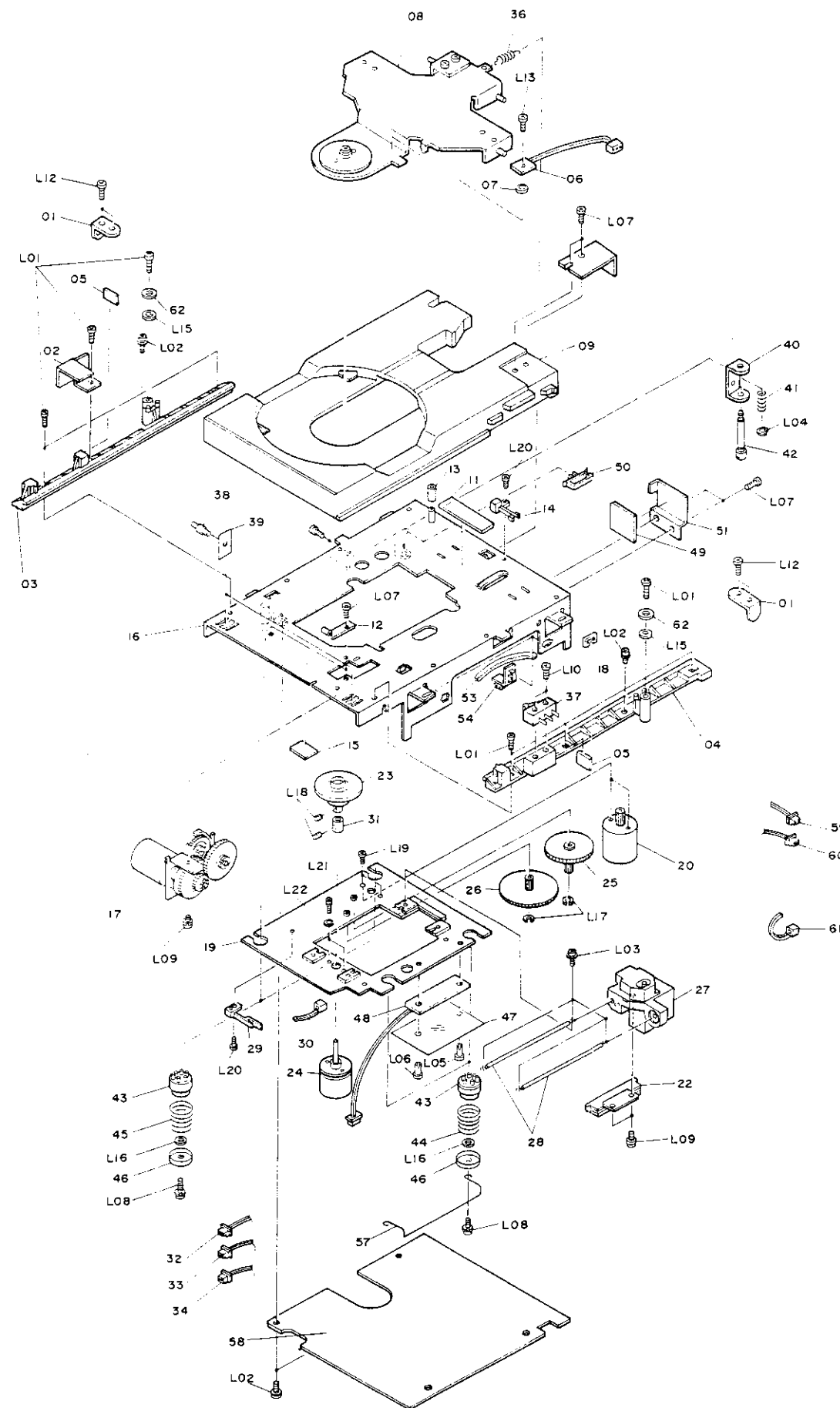


4.5. Bottom Cover Ass'y



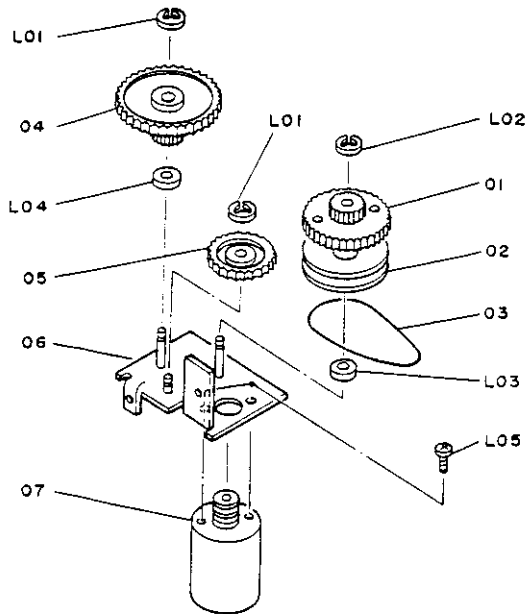
Schematic Ref. No.	Part. No.	Description	Q'ty
01	CA80517A	Front Panel Ass'y OMS-3	1
	CA80434A	Front Panel Ass'y OMS-3A	1
	CA80516A	Front Panel Ass'y OMS-3E	1
	CA80513A	Front Panel Ass'y OMS-30	1
	0C81608A	Front Panel OMS-3	1
	0C81604A	Front Panel OMS-3A	1
	0C81609A	Front Panel OMS-3E	1
	0C81610A	Front Panel OMS-30	1
	0C81506A	Play Button	1
	0C81507A	Pause Button	1
	0C81510A	R. Skip Button	1
	0C81511A	F. Skip Button	1
	0C81508A	Eject Button	1
	0C81509A	Stop Button	1
	0C81512A	Rev. Button	1
	0C81513A	F. Fwd. Button	1
	0C81514A	Push Button	5
	0C81567A	Button Spring	5
L01	0C81502A	Front Escutcheon R	1
	0C81503A	LED Filter	2
	0C81602A	Acrylic Cover	1
	0C81504A	Front Escutcheon L	1
	0C82354A	Adhesive Tape	2
	CA80420A	Control & Display P.C.B. Ass'y	1
	0C81597A	Top Cover Cushion F	3
	0E00888A	BT3x8 Binding	1
01	CA80511A	Top Cover Ass'y	1
	0C81483A	Top Cover	1
	0C81582A	BS Damper A	1
	0C81598A	Top Cover Cushion R	2
	0C81652A	Cushion	1
	0C82350A	BS Damper B	2
	0C82352A	Rubber Cushion	1
01	CA80512A	Bottom Cover Ass'y	1
	0C81561A	Bottom Cover	1
	0C81479A	Leg	4
	0E00888A	BT3x12 Binding	4

4.6. Disc Mechanism Ass'y

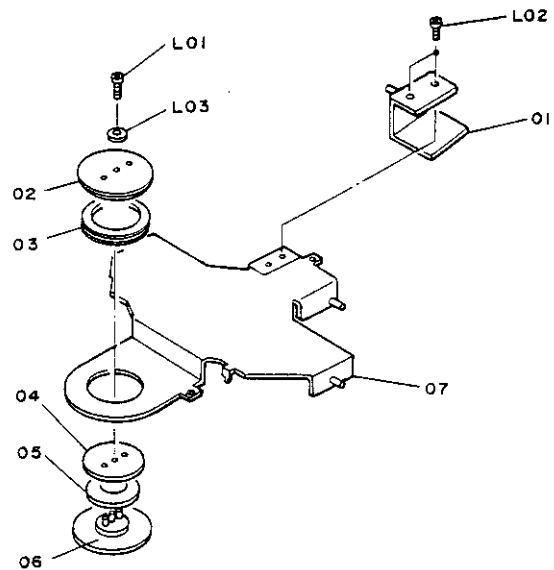


Schematic Ref. No.	Part No.	Description	Q'ty
	CA80436A	Disc Mechanism Ass'y	
01	OC81560A	Chuck Arm Plate	1
02	OC82346A	Disc Tray Guide Plate	1
03	OC81493A	Disc Drawer Guide L	1
04	OC81494A	Disc Drawer Guide R	1
05	OC81589A	Stopper Rubber	2
06	CA80422A	Photo Transistor P. C. B. Ass'y	1
07	OC82349A	Collar	1
08	CA80428A	Chuck Arm Ass'y	1
09	CA80395A	Disk Tray Ass'y	1
10	OC82348A	Disk Tray Plate	1
11	OC81591A	Chuck Cushion	1
12	OC81542A	Disk Support Stopper	2
13	OC81585A	Stopper Cushion	1
14	OC81887A	Leaf Switch MSW1275	1
15	OC81592A	Vibration Isolating Sheet	1
16	CA80399A	Disk Mechanism Chassis Ass'y	1
17	CA80393A	Loading Gear Ass'y	1
18	OC81474A	Wire Clasper	2
19	CA80401A	Sub Chassis B Ass'y	1
20	CA80521A	Feed Motor Ass'y	1
22	CA80391A	Feed Rack Ass'y	1
23	CA80400A	Turntable B Ass'y	1
24	OC81938A	Disc Motor RF-310	1
25	OC81497A	Feed Gear A	1
26	OC81498A	Feed Gear B	1
27	OC81936A	Laser Pickup Ass'y KSS-121B	1
28	OC81535A	Pickup Rail	2
29	OC81888A	Leaf Switch	1
30	OC81660A	Wire Clasper	1
31	OC81558A	Collar	1
32	OC81912A	2P Connector N	1
33	OC81921A	2P Connector Q	1
34	OC81913A	2P Connector E	1
36	OC81557A	Chuck Arm Spring	1
37	OC81886A	Microswitch SS-5GL13	1
38	CA80392A	Roller Ass'y	4
39	OC81543A	Roller Stopper	2
40	OC81544A	Shipping Screw Holder	1
41	OC81538A	Shipping Screw Spring	1
42	OC81545A	Shipping Screw	1
43	OC81536A	Cushion	4
44	OC81536A	Cushion Spring A	4
45	OC81540A	Cushion Spring B	4
46	OC81537A	Cushion Holder	4
47	OC81585A	Insulator	1
48	CA80515A	Photo Diode P. C. B. Ass'y	1
49	OC81588A	Magnet Rubber	1
50	OC82413A	Wire Clasper	1
51	OC82414A	Disc Tray Lock Plate	1
53	OC81475A	Free Bushing 100mm	1
54	OC81473A	P. C. B. Support	2
57	OC81559A	Guide Spring	1
58	CA80405A	Servo P. C. B. Ass'y	1
59	OC81914A	2P Connector G	1
60	OC81915A	2P Connector H	1
61	OC81471A	Insu-Lock L=94mm	6
62	OC82387A	Collar	2
L01	OE00868A	BT3 x 8 Binding	8
L02	OE03157A	BT3 x 8 Binding With Washer	4
L03	OC81646A	BT2.6 x 8 Binding With Washer	6
L04	OE00134A	E-Ring 4mm	1
L05	OC81662A	Plastic Rivet	1
L06	OC81656A	Plastic Rivet 3 x 8	1
L07	OE03393A	ST2.6 x 8 Binding	4
L08	OE03416A	M2.6 x 5 Pan (2A)	6
L09	OC81622A	M2.6 x 4 Pan (2A)	2
L10	OC81945A	M2 x 12 Pan	2
L11	OC81624A	Washer	2
L12	OE00792A	BT2.6 x 6 Pan	6
L13	OE00121A	M2.6 x 6 Pan	1
L14	OC81948A	Washer 3mm Spring	1
L15	OC82386A	Washer 6 x 11 x 1.0(Rubber)	2
L16	OE00071A	Washer 3mm Fiber	4
L17	OC81629A	Washer Plastics 2.6 x 4.8 x 0.5(Cut)	2
L18	OC81639A	M2 x 3 Hex Socket Head	2
L19	OC81640A	M2 x 11.5(4) Cylinder Head	2
L20	OC81940A	M2 x 6 Pan	2
L21	OC81944A	BT2 x 8 Pan	2
L22	OC81947A	Washer 2mm Spring	2

4.7. Loading Gear Ass'y



4.8. Chuck Arm Ass'y



Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
	CA80428A	Loading Gear Ass'y					
01	0C81491A	Loading Gear A	1	04	0C81534A	Chuck Yoke	1
02	0C81477A	Loading Pulley	1	05	0C81481A	Ring Magnet B	1
03	0C81478A	Loading Belt	1	06	0C81501A	Magnet Holder B	1
04	0C81484A	Loading Gear B	1	07	CA80403A	Chuck Arm Base Ass'y	1
05	0C81485A	Loading Gear C	1	L01	0E03124A	BT2 × 5 ⊕ Pan	1
06	CA80397A	Loading Gear Holder Ass'y	1	L02	0E03393A	ST2.6 × 8 ⊕ Binding	2
07	CA80523A	Loading Motor Ass'y	1	L03	0C81946A	Washer 2.2 × 5 × 0.3	1
L01	0E00181A	E-Ring 3mm	2				
L02	0C81638A	Washer Plastics 4.1 × 6.5 × 0.5 (Cut)	1				
L03	0E03393A	Washer FT 6.2 × 0.13	1				
L04	0C82342A	Washer Plastics 4.1 × 7 × 0.5	1				
L05	0E00822A	M3 × 5 ⊕ Pan (2A)	2				
	CA80428A	Chuck Arm Ass'y					
01	CA80402A	Chuck Base Ass'y	1				
02	0C81496A	Chuck B	1				
03	0C81590A	Chuck Rubber	1				

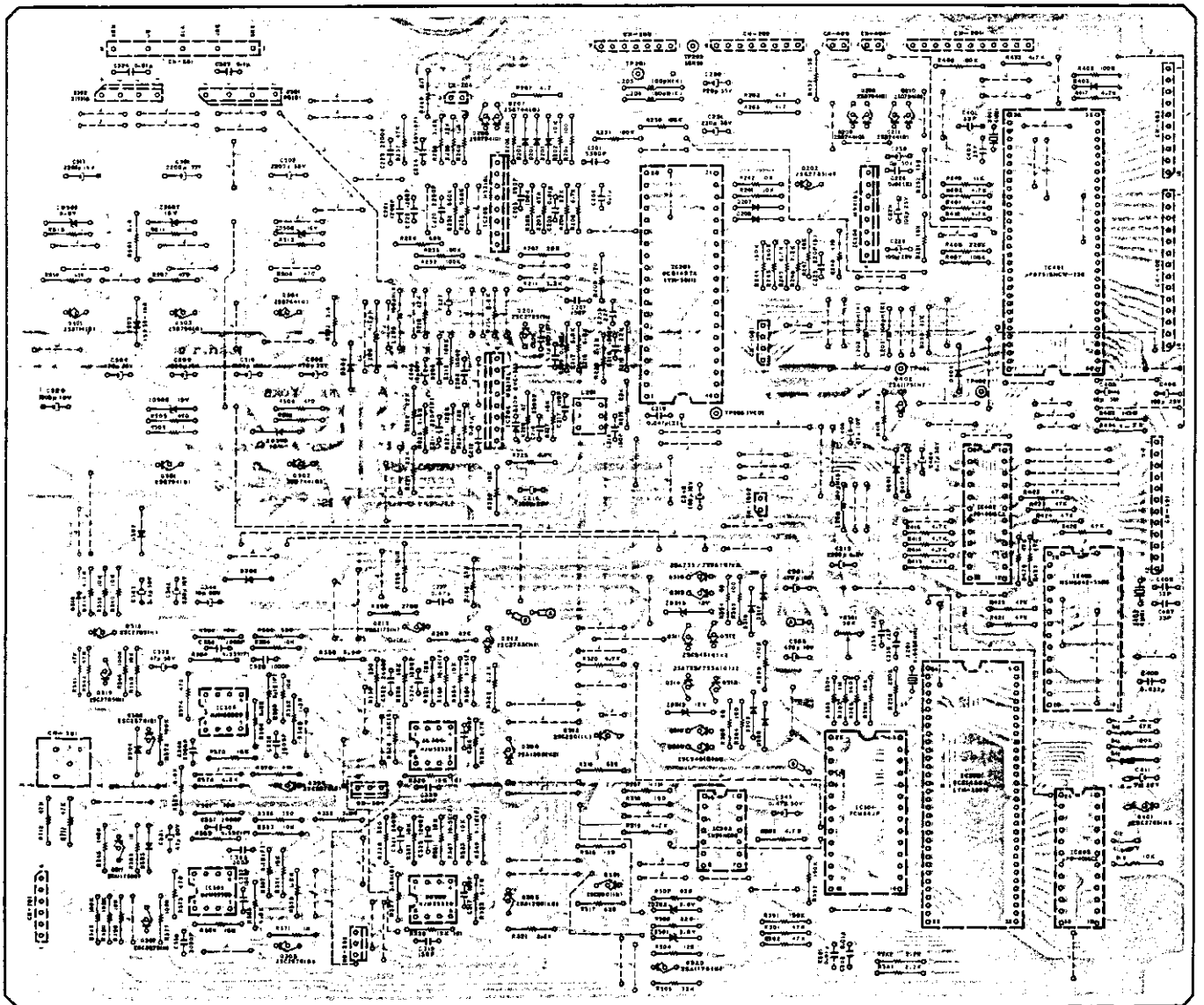
5. MOUNTING DIAGRAMS AND PARTS LIST

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

Notes:

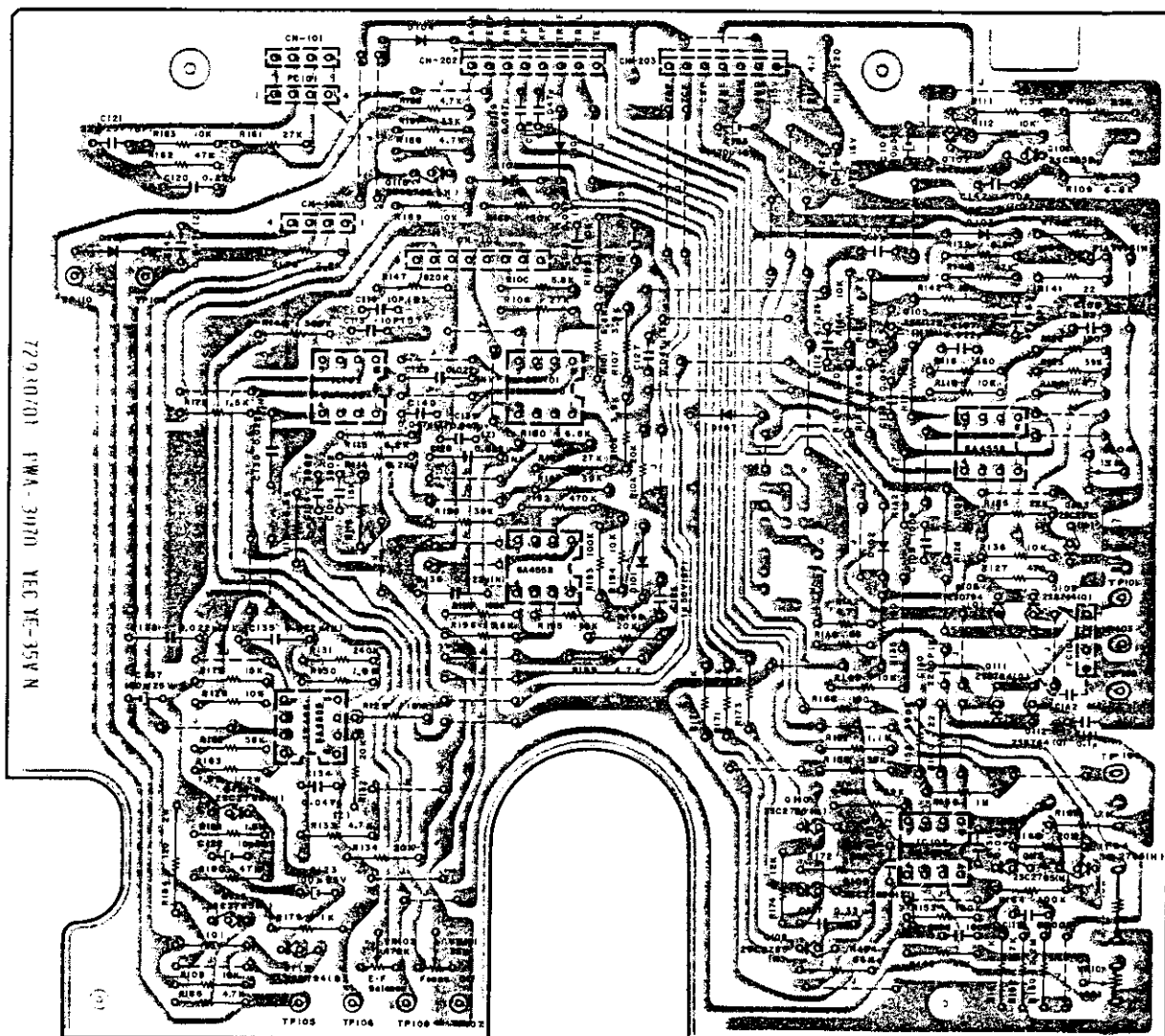
1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1S2473 unless otherwise specified.
3. Abbreviation for part name:

TR – Transistor, SiD – Silicon Diode, Varicap – Variable Capacitance Diode
RK – Carbon Resistor, RM – Metal Film Resistor, RF – Fail Safe Type Resistor
CE – Electrolytic Capacitor, CM – Mylar Capacitor, CC – Ceramic Capacitor,
CT- Tantalum Capacitor, C- Mica Capacitor
CF – Film Capacitor
CSP – Polystyrene Capacitor
CMM – Metallized Mylar Capacitor



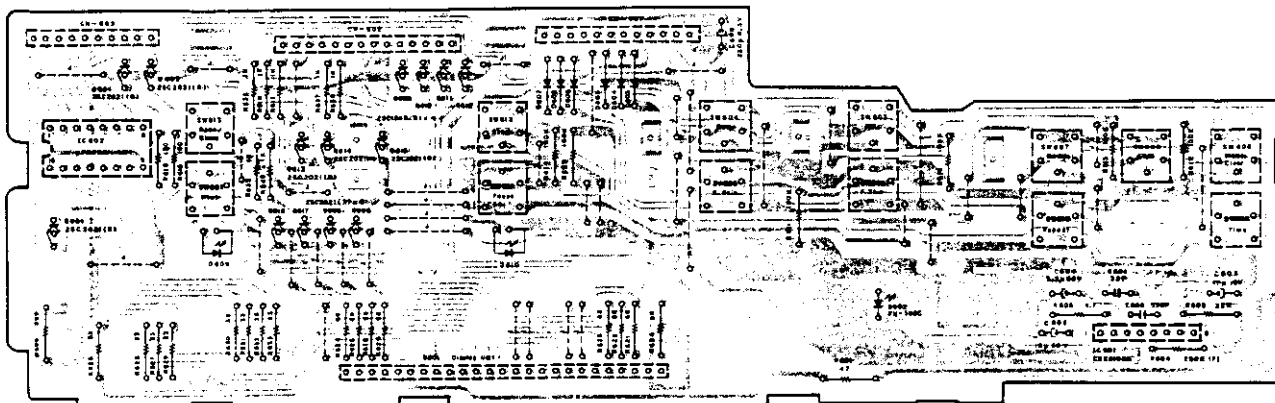
Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	CA80418A	Main P. C. B. Ass'y	R208, 207	OB09509A	RK 20K 1/4W J	C204, 238	OB40289A	CE 10U 50V
IC201	OC81457A	IC 0C81457A	R208	OB01846A	RK 4.7 1/4W J	344, 403		
IC202	OC81458A	IC 0C81458A	R209, 248	OB05576A	RK 470 1/4W J	C205, 224	OB09157A	CE 1U 50V(BP)
IC203	OC81709A	IC UPD4016CX	373, 374			C206	OB01780A	CM 0.1μ 50V J
IC204, 205	OC81695A	IC M5218L	R210, 218	OB05615A	RK 22K 1/4W J	C207, 218	OB41743A	CC 150P 50V J
206			219, 221			C208	OB05653A	CM 1500P 50V J
IC301	OC82291A	IC PCM54JP	222			C209, 409	OB05582A	CM 0.022U 50V J
IC302	OC81693A	IC SN74HC00N	R211, 223	OB01681A	RK 3.3K 1/4W J	C218	OB05550A	CM 1000P 50V J
IC303, 304	OB11278A	IC NIM5532D	239			C211, 225	OB41775A	C 220P 50V K
305, 306			R214, 216	OB01682A	RK 6.8K 1/4W J	C216, 228	OB01272A	CE 100UF 25V
IC401	OC81705A	IC UPD7516HCW	217, 365			229, 406		
IC402	OC81709A	IC UPD4016CX	366, 375			C217	OB41742A	CC 100P 50V J
IC403	OC81702A	IC MSM584235RS	376			C219	OB09387A	CC 0.047U 50V Z
Q201, 202	OC81667A	S-TR 2SC2785(H)	R220, 246	OB05622A	RK 2.2K 1/4W J	C220, 223	OB01802A	CM 22009P 50V J
212, 318			321, 322			C221, 222	OB05687A	CM 1200P 50V J
319, 401			3A1, 3A2			C224	OB40054A	CE 2200U 6.3V
Q206, 208	OC81676A	S-TR 2SC794(Q)	R225	OB05621A	RK 120K 1/4W J	C228	OB09290A	CC 0.01U 50V Z
210, 501			R226	OB01706A	RK 47 1/4W J	C230, 231	OB05831A	CE 220U 35V
503, 505			R229, 245	OB01846A	RK 4.7K 1/4W J	C235, 236	OB41736A	CC 22P 50V J
Q207, 209	OC81664A	S-TR 2SC744(Q)	303, 319			C237	OB41178A	CM 0.47U 50V J
211, 502			320, 323			C239	OB09279A	CC 22P 50V J
504			324, 401			C240	OB40078A	CE 100U 10V
Q213, 317	OC81666A	S-TR 2SA1175(H)	402, 404			C317, 318	OB41761A	C 100P 100V J
320, 402			412, 414			C319, 320	OB41754A	CSP 150P 160V J
Q301, 302	OC81674A	S-TR 2SC2901(L)	415, 416			C321, 322	OB41234A	CP 2400P 100V J
Q303, 304	OC82368A	S-TR 2SA1206K2	417, 433			C323, 324	OB41227A	CP 1200P 100V J
Q305, 306	OB06299A	S-TR 2SC2878(B)	516			C325, 326	OB41225A	CP 1000P 100V J
307, 308			R230, 390	OB05640A	RK 180K 1/4W J	C327, 328	OB41231A	CP 1800P 100V J
Q309, 310	OB06251A	S-TR 2SC945/945A	R233, 236	OB05784A	RK 560K 1/4W J	C331, 332	OB40448A	CE 47U 50V(LN)
311, 312			386			C337, 338	OB41232A	CP 2000P 100V J
Q313, 314	OB06013A	S-TR 2SA733	R234, 247	OB05692A	RK 68K 1/4W J	C339, 340	OB41236A	CP 3000P 100V J
315, 316			R240	OC81712A	RF 1.5 1/4W J	C342	OB40109A	CE 220U 16V
D201, 202	OB12248A	Si-D 1S2473	R243	OB20400A	RK 380K 1/4W J	C343	OB40028A	CE 3.3U 50V
203, 204			R244, 246	OB05626A	RK 150K 1/4W J	C345	OB40111A	CE 0.47U 50V
207, 208			391, 392			C351, 353	OB40437A	CE 470μ 16V
303, 304			R249, 250	OB09334A	RK 11K 1/4W J	C401, 402	OB41740A	CC 33P 50V J
306, 307			R251, 252	OB01683A	RK 15K 1/4W J	C404, 411	OB40201A	CE 4.7U 50V
308, 309			R254, 305	OB05509A	RK 33K 1/4W J	C405, 412	OB01403A	CE 47 10V
310, 311			R255	OB05620A	RK 270K 1/4W J	C501, 502	OB40109A	CE 2200U 35V
401, 403			R257, 371	OB05778A	RK 1M 1/4W J	C503	OB40083A	CE 2200U 16V
404, 405			372, 387			C504, 505	OC82363A	CE 470U 35V(LN)
510			R258, 408	OB05625A	RK 220K 1/4W J	C509, 510	OC40082A	CE 1000U 16V
D209	OC81677A	Varistor Cap SVC-333	R260, 261	OB24087A	R-Fuse 4.7	C520	OB05852A	CE 1000U 10V
ZD301, 302	OC81687A	ZD RD-3 EB1A	262, 263			C523	OB41298A	CF 0.1U 50V
ZD312, 313	OB12174A	ZD RD-12 JB2	R304	OB09262A	RK 12K 1/4W J	C524	OB41732A	CC 0.01U 50V
D501	OB06183A	Si-D RB151	R306, 307	OC81716A	RK 820	L201	OC81882A	VCO Coil
O502	OC81681A	Si-D S1VB10	R315, 316	OB05795A	RK 1500000 1/4W J	L202, 203	OC82332A	Filter Coil 100μH K
O503, 504	OB12365A	Si-D1SR35-100	R317, 318	OB09882A	RK 620 1/4W J	204, 205		
ZD505, 506	OB12179A	ZD RD-15 JB1	R325, 328	OC82365A	RK 15K 1/4W J	RB301, 302	OC82367A	R-Block 3P
ZD507, 508	OB12182A	ZD RD-16 EB1	R327, 328	OC82366A	RK 3.6K 1/4W J	L208, 209	OC82364A	Filter Coil 47μH K
ZD509	OB12151A	ZD RD-5.6 EB3	R329, 330	OB05577A	RK 330 1/4W J	P301	OC81895A	2P Pin Jack
CX201	OC81884A	XTAL 8.8436MHz	355, 356			L206, R××	OB09321A	RF 4.7 1/4W J
CX401, 402	OC81883A	Ceramic Resonator 4MHz	R335, 336	OB05675A	RK 3.9K 1/4W J	TP201, 205	OC81897A	Terminal CHP-01
VR301	OC81788A	Seni-fixed resistor 100K	R347, 348	OB25293A	RM 10.5K 1/4W J			
R201, 351	OB01679A	RK 100 1/4W J	R349, 350	OB09795A	RM 5.5K 1/4W J			
352, 353			357, 358					
354, 361			R359, 360	OB05623A	RM 1.2K 1/4W J			
362, 364			R363, 364	OB25289A	RM 9.53K 1/4W J			
365, 3A0			R369, 370	OB20399A	RK 16K 1/4W J			
410, 430			R383	OB01857A	RK 1K 1/4W J			
R202, 227	OB01888A	RK 10K 1/4W J	R388	OB05827A	RK 330K 1/4W J			
228, 241			R393, 394	OB01704A	RK 68 1/4W J			
242, 331			R395	OB01684A	RK 470K 1/4W J			
332, 333			R421, 422	OB05641A	RK 47K 1/4W J			
334, 337			423, 424					
338, 339			425, 426					
340, 390			427, 428					
399			430					
R203	OB05641A	RK 47K 1/4W J	R432	OB05698A	RK 1.5K 1/4W J			
301, 302			R501, 502	OB24132A	RF 5.6 1/4W J			
341, 342			R505, 506	OB24130A	RF 470 1/4W J			
R204, 253	OB05688A	RK 82K 1/4W J	507, 508					
R205, 215	OB01889A	RK 100K 1/4W J	R509, 510	OB05695A	RK 1 1/4W J			
232, 232			511, 512					
235, 343			515					
344, 345			R514	OB24133A	RF 1.5K 1/4W J			
377, 378			C201, 214	OB01914A	CM 33009 50V J			
405, 406			C202, 212	OB055681A	CM 0.01U 50V J			
407, 434			301, 302					
			C203	OB41738A	CC 390P 50V J			

5.2. Servo P.C.B. Ass'y



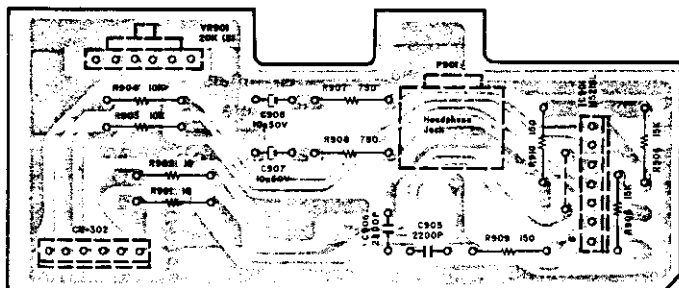
Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	CA80405A	Servo P. C. B. Ass'y			
IC101	OB11277A	IC BA4580-D	R145	OB05621A	RK 120K 1/4W J
IC102, 103	OB11266A	IC BA4558	R147	OB09320A	RK 820K 1/4W J
104, 105			R150	OB05671A	RK 2.2M 1/4W J
108			R152	OB05629A	RK 2.7K 1/4W J
Q101, 102	OC81671A	S TR 2SC535B	R154	OB05692A	RK 68K 1/4W J
Q103, 108	OC81667A	S TR 2SC2785 H	R156	OB05776A	RK 1M 1/4W J
109, 110			R157	OB05661A	RK 1.1M 1/4W J
113, 114			R159	OB05676A	RK 390K 1/4W J
116, 118			R176	OB05622A	RK 2.2K 1/4W J
118			R179	OB01857A	RK 1K 1/4W J
Q104, 105	OC81666A	S TR 2SA1175 H	R183	OB05698A	RK 1.5K 1/4W J
Q106, 111	OC81676A	S TR 2SD794 Q	R184	OC81717A	RM 120 1/4W J
117			R187	OB05509A	RK 33K 1/4W J
Q107, 112	OC81664A	S TR 2SB744 Q	R192	OB01684A	RK 470K 1/4W J
D101, 102	OB12248A	SI-D 1S2473	R196	OB01887A	RK 5.6K 1/4W J
103, 104			C101, 123	OB01272A	CE 100UF 25V
105, 108			1A0		
107, 108A			C102, 131	OB09387A	CC 0.047UF 50V Z
VR101	OC81789A	Semi VR 33K	132, 133		
VR102	OC81790A	Semi VR 470K	134		
VR103	OC81791A	Semi VR 100K	C103, 1A1	OB01780A	CM 0.1UF 50V J
VR104	OC81787A	Semi VR 33K	C104, 122	OB40289A	CE 10UF 50V
W202	OC81919A	8P Connector Cord	C105, 106	OB41738A	CC 390PF 50V J
W203	OC81918A	7P Connector Cord	C107	OB05582A	CM 0.022UF 50V J
R1A1, 1A2	OB09671A	RK 4.7 1/4W J	C113, 114	OB09277A	CC 10PF 50V D
L101	OC81880A	Coil 10μH (K)	C115	OB05814A	CM 8200PF 50V J
R10A, 198	OB09509A	RK 20K 1/4W J	C116	OB41735A	CC 100PF 50V J
1A0	OB01704A	RK 68 1/4W J	C119	OB05796A	CM 0.047UF 50V J
R101, 109	OB01682A	RK 6.8K 1/4W J	C128, 129	OC81836A	CC 0.022UF 16V N
10C, 10D			130, 135		
139			136, 138		
R102, 108	OB01888A	RK 10K 1/4W J			
112, 119					
R105, 106	OB05743A	RK 27K 1/4W J			
161					
R107, 108	OB05675A	RK 3.9K 1/4W J			
R110	OB05577A	RK 3.30 1/4W J			
R111, 175	OB05698A	RK 1.5K 1/4W J			
181					
R113	OB01933A	RK 220 1/4W J			
R114, 115	OB09271A	RK 6.2K 1/4W J			
R116, 177	OB01683A	RK 15K 1/4W J			
R117	OB01681A	RK 3.3K 1/4W J			
R118, 146	OB05575A	RK 560 1/4W J			
R121	OB01679A	RK 100 1/4W J			
R122, 197	OB05626A	RK 150K 1/4W J			
R123, 155	OB01854A	RK 39K 1/4W J			
158, 190					
191					
R124, 133	OB01846A	RK 4.7K 1/4W J			
137, 185					
186, 188					
199					
R125	OB05615A	RK 22K 1/4W J			
R126, 193	OB01889A	RK 100K 1/4W J			
R127	OB05576A	RK 470 1/4W J			
R129	OB05560A	RK 18K 1/4W J			
R130	OB09565A	RK 1.6K 1/4W J			
R131	OB09483A	RK 240K 1/4W J			
R132, 134	OB09509A	RK 20K 1/4W J			
166, 167					
R135, 153	OB01889A	RK 100K 1/4W J			
164, 168					
169					
R136, 142	OB01888A	RK 10K 1/4W J			
144, 149					
163, 165					
170, 171					
173, 178					
189, 194					
195					
R138	OB05668A	RK 82K 1/4W J			
R140, 148	OB05641A	RK 47K 1/4W J			
151, 162					
180					
R141, 160	OB05579A	RK 22K 1/4W J			
R143, 172	OB05508A	RK 56K 1/4W J			
182					

5.3 Control & Display P.C.B. Ass'y

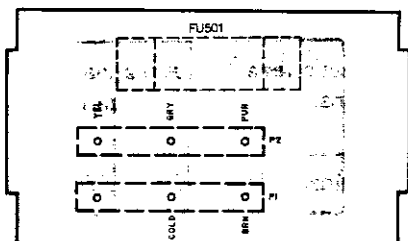


Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	CA80420A	Control & Display P. C. B. Ass'y			
IC601	OC82287A	IC C×20108A	R619, 620	OB01704A	RK 68 1/4W J
IC602	OC82286A	IC LPA79C	621, 622		
Q601, 603	OC81668A	S-TR 2SC2021 R	623, 624		
604, 605			625, 634		
606, 613			R626, 627	OB01713A	RK 33 1/4W J
614, 615			628, 629		
616, 617			630, 631		
D603, 604	OB12248A	Si-D 1S2473	632, 633		
605, 606			C601	OB41187A	CC 39PF 50V J
607, 608			C603	OB40441A	CE 47UF 10V
Q609, 610	OC82293A	S-TR 2SC1545B	C604	OB01863A	CE 3.3UF 50V
611, 612			C605	OB40289A	CE 10UF 50V
D601	OB08183A	LED Unit N2	C606	OB41737A	CC 330PF 50V J
D602	OC81679A	PT PH-302C	C608	OB40444A	CE 220UF 6.3V
D609, 610	OC81663A	LED (GRE) S	A022	OC81566A	Shield Case A
R601	OB01706A	RK 47 1/4W J	A023	OC81571A	Shield Case B
R603	OB05615A	RK 22K 1/4W J	A024	OC81596A	Spacer
R604	OB09472A	RM 220K 1/4W F	S601, 602	OC81885A	Tact SW
R605	OB09671A	RK 4.7K 1/4W J	603, 604		
R606	OB05575A	RK 560 1/4W J	605, 606		
R609, 610	OB01889A	RK 100K 1/4W J	607, 608		
611, 612			609, 610		
613, 614			611, 612		
R615, 616	OB05795A	RK 150 1/4W J	613		
R617, 618	OB01857A	RK 1K 1/4W J	S***	OC81580A	Shield Board
636, 637			S***	OC82361A	Shield Case C
638, 639			S***	OC82362A	Shields Board(A)
640					

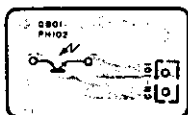
5.4. Headphone Amp P.C.B. Ass'y



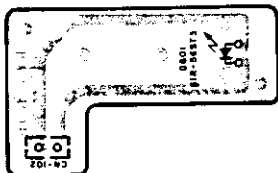
5.5. Terminal P.C.B. Ass'y



5.6. Photo Transistor P.C.B. Ass'y



5.7. Photo Diode P.C.B. Ass'y



Schematic Ref. No.	Part No.	Description
	CA80419A	Headphone P. C. B. Ass'y
R703, 704	0B01888A	RK 10K
R705, 706	0B09924A	RK 750
R707, 708	0B01883A	RK 15K
R709, 710	0B05795A	RK 150
R711, 712	0B05641A	RK 47K
C705, 706	0B41233A	CP 2200P 100V
C707, 708	0B40289A	CE 10U 50V
P702	0C81891A	Head Phone Jack
VR701	0C81786A	Volume 20K(B)
	CA80416A	Terminal P. C. B. Ass'y
	CA80416A	Terminal P. C. B. Ass'y
FU501	0C81902A	3P Terminal ②
	—	Terminal P. C. B.
	0C82415A	Fuse 630mA 250V (OMS-3E)
	0C82412A	Fuse 1A 250V (OMS-3/3A/30)
	CA80422A	Photo Transistor P. C. B. Ass'y
TR801	0C81880A	Photo TR PH-102
	0C81915A	2P Connector Cord
	—	Photo Transistor P. C. B.
	CA80515A	Photo Diode P. C. B. Ass'y
D801	0C82337A	LED SIR-56ST3
	0C81926A	2P Post
	—	Photo Diode P. C. B.

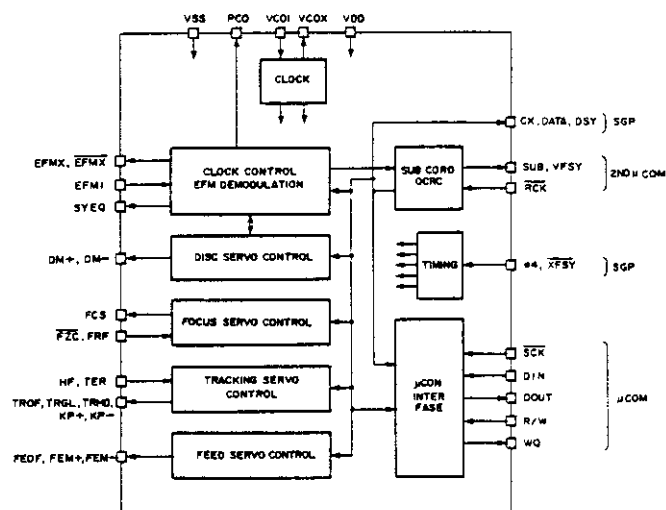
6. IC BLOCK DIAGRAM

IC201 Terminal Functions

Terminal number	Terminal code	I/O	Outline of functions
1	VDD	I	+5V power supply terminal
2 3	VCOX VCOI	0 I	The LC resonance circuit is connected between these terminals. These terminals are used for the VCO clock oscillation (average 8.6436MHz).
4	PCO	0	This is the VCO clock control output terminal. This sets the VCO clock oscillation circuit so that the frequency increases when the average DC voltage between these terminals is high.
5 20	VCC VSS	I I	These are the grounding terminals.
6 7	EFMX EFMX	0 0	Connect to the EFM signal slice level control circuit. This is the amplification-limited EFM signal output terminal. $8 > 7$. The gain of $7 > 6$ is 15.
8	EFMI	I	EFMI signal (1 – 2 VPP) into this terminal
9	SYEQ	0	This is the monitor output terminal that gives a "H" level signal when the synchronization signal of the EFM signal and the synchronization signal of the internal counter correspond.
10 11	DM + DM -	0 0	These are the DISC Motor output terminals, connected to the disc motor driver circuit. It is not possible for both terminals to register "H" simultaneously.
12	FCS	0	This is the focusing output terminal.
13	FZC	I +	Based on the focus error signal, an "L" signal will be input when the focus point is reached.
14	FRF	I	An "H" signal will be entered into this terminal when reflected light is received.
15	HF	I	The EFM envelope signal (amplitude logic level) is entered into this terminal.
16	TER	I	The tracking error signal (amplitude logic level) is entered into this terminal.
17	TEST	I +	This test terminal is to be grounded, and contains pull-up resistors.
34	TCL	I +	This test terminal is ungrounded, and contains pull-up resistors.
18	TROF	0	This is the output terminal that switches off the tracking signal of the tracking servo circuit.
19	TRGL	0	This output terminal minimizes the gain of the tracking servo circuit.
20	TRHD	0	This output terminal holds the tracking error signal of the tracking servo circuit while KP+ or KP- (see below) are being output.
22 23	KP + KP -	0 0	These output terminals are for the track kick function, and are connected to the tracking servo circuit.
24	FEOF	0	This output terminal is used to switch off the input signal of the feed servo circuit.
25 26	FEM + FEM -	0 0	This request output terminal is connected to MPU, and requests that connected to the feed servo circuit.
27	WQ	0	This request output terminal is connected to MPU, and requests that data be sent from SVC > MPU.

Terminal number	Terminal code	I/O	Outline of functions
28	R/W	0	This output terminal is connected to MPU, and is used for the switching of the data transmission mode. When R/W = "L", data is transmitted from SVC > MPU, and when R/W = "H", data is transmitted from MPU > SVC.
29	DOUT	0	This data output terminal is connected to MPU. When R/W = "L", data can be transmitted from SVC > MPU according to the SCK clock input.
30	DIN	1	This data input terminal is connected to MPU. When R/W = "H", data is transmitted from MPU > SVC according to the SC key clock input.
31	SCK	1	Connected to MPU, this terminal is for the clock input, required for data transmission.
32	XFSY	1	This is the frame synchronization signal (7.35kHz) input terminal, connected to the SCG output.
33	$\phi 4$	1	This is the crystal clock (4.321MHz) input terminal, connected to the SGP output.
35	RCX	1 +	Connected to MPU, this terminal is for the clock input, required for the subcode transmission. It is disconnected when not being used.
36	VFSY	0	This is the VCO frame synchronization signal (average 7.35kHz) output terminal, connected to MPU. Detecting the change form "H" > "L", this can be used as a request signal, requesting that the subcode be transmitted from SVC > MPU.
37	SUB	0	This is the subcode output terminal, connected MPU. The subcode can be transmitted from SVC > MPU according to the RCK clock input.
38	DSY	0	This is the synchronization signal output terminal for the serial signals (see below), connected to the SGP input.
39	DATA	0	This is the serial signal output terminal for the 8 bit EFM demodulation signals and the 5 bit control signals, connected to the SGP input.
40	CK	0	This is the VCO clock (average 4.3218MHz) output terminal, connected to the SGP input.

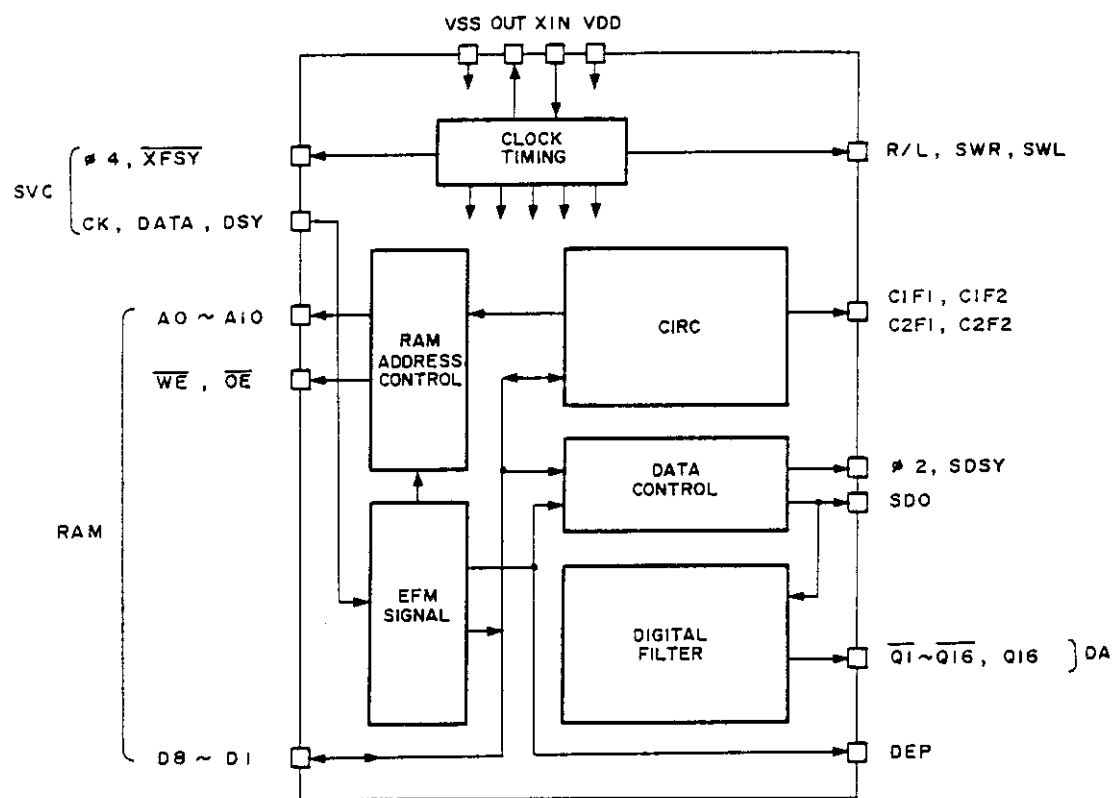
IC MOS YM3811
IC201



4. IC202 Terminal Functions

Terminal number	Terminal code	I/O	Outline of functions
1 17	VSS VSS	I I	These are the grounding terminals.
2 3 7 8	TEST 1 TEST 2 TEST 3 TCL	I + I + I + I +	These test terminals are ungrounded, and contain pull-up resistors.
4	CK	I	This is the VCO clock (average 4.3218MHz) input terminal, connected to the SVC output.
5	DATA	I	This is the serial signal input terminal for the 8 bit EFM demodulation signals and the 5 bit control signals, connected to the SVC output.
6	DSY	I	This is the synchronization signal input terminal for the serial signals (see above), connected to the SVC output.
9	$\phi 4$	O	This is the crystal clock (4.3218MHz) output terminal, connected to the SVC input.
10	XFSY	I/O	This is the frame synchronization signals (7.35kHz) output terminal, connected to the SVC input. (During test operations, the synchronization can be resynchronized by setting this terminal to the "L level".)
11 12 13 14 15 16 18 19 20 21 24	A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10	O O O O O O O O O O O	These are the address output terminals, connected to the RAM address terminals.
22	$\overline{WE}$	O	This is connected to the RAM WE terminal. When a "L level" signal is registered, the RAM will be set to the WRITE mode.
23	$\overline{OE}$	O	This is connected to the RAM OE terminal. When a "L level" signal is registered, the RAM will be set to the READ mode.
25 26 27 28 29 30 31 32	D8 D7 D6 D5 D4 D3 D2 D1	I/O I/O I/O I/O I/O I/O I/O I/O	These are connected to the RAM data terminals. The output mode is set when the cycle at the data input terminal is $\overline{WE} = "L"$, and the input mode is set when the cycle is $\overline{WE} = "H"$.
33	DEP	O	This is the output terminal for the audio frequency characteristics switching signals of the audio filter. The emphasis will be required when "H" is registered.

Terminal number	Terminal code	I/O	Outline of functions
34	$\overline{Q1}$	0	Connected to the DAC input, the parallel signals are output by way of the internal digital filter from these terminals. The output is in alternation from the left and right channels. The output rate for each channel is 88.2kHz. Connect either Q16 or ($\overline{Q16}$), according to the DAC to be used.
35	$\overline{Q2}$	0	
36	$\overline{Q3}$	0	
37	$\overline{Q4}$	0	
38	$\overline{Q5}$	0	
39	$\overline{Q6}$	0	
40	$\overline{Q7}$	0	
41	$\overline{Q8}$	0	
42	$\overline{Q9}$	0	
43	$\overline{Q10}$	0	
44	$\overline{Q11}$	0	
45	$\overline{Q12}$	0	
46	$\overline{Q13}$	0	
47	$\overline{Q14}$	0	
48	$\overline{Q15}$	0	
49	$\overline{Q16}$	0	
50	Q16	0	
51	$\phi 2$	0	This is the crystal clock (2.1609MHz) output.
52	SDO	I/O	This is the serial signal output for the DAC. Using a $\phi 2$ clock beat rate, the signals are output from LSB in the order of L channel 24 bit – R channel 25 bit.
53	SDSY	0	This is the synchronization signal output for the above serial signals. The level is "H" for L channel and "L" for R channel.
56	TEST	I+	This test terminal contains pull-up resistors, and is normally disconnected. Using an "L" signal, it is also possible to input serial signals with the same format as the above serial signals from the SDO terminal into the digital filter.
54	C1F1	0	This monitor output terminal depicts the C1 and C2 error correction operation mode.
55	C1F2	0	
57	C2F1	0	
58	C2F2	0	
59	R/L	0	This is the output terminal for the channel allocation signal of the DAC analog output. "H" is for the R channel, and "L" is for the L channel.
60	SWR	0	This is the deglitch signal for the respective channels of the DAC analog output.
61	SWL	0	
62	VDD	I	This is the +5V power supply terminal.
63	XIN	I	A crystal oscillator is connected between these terminals, which are used for the crystal clock (8.6436MHz) oscillation.
64	XOUT	0	

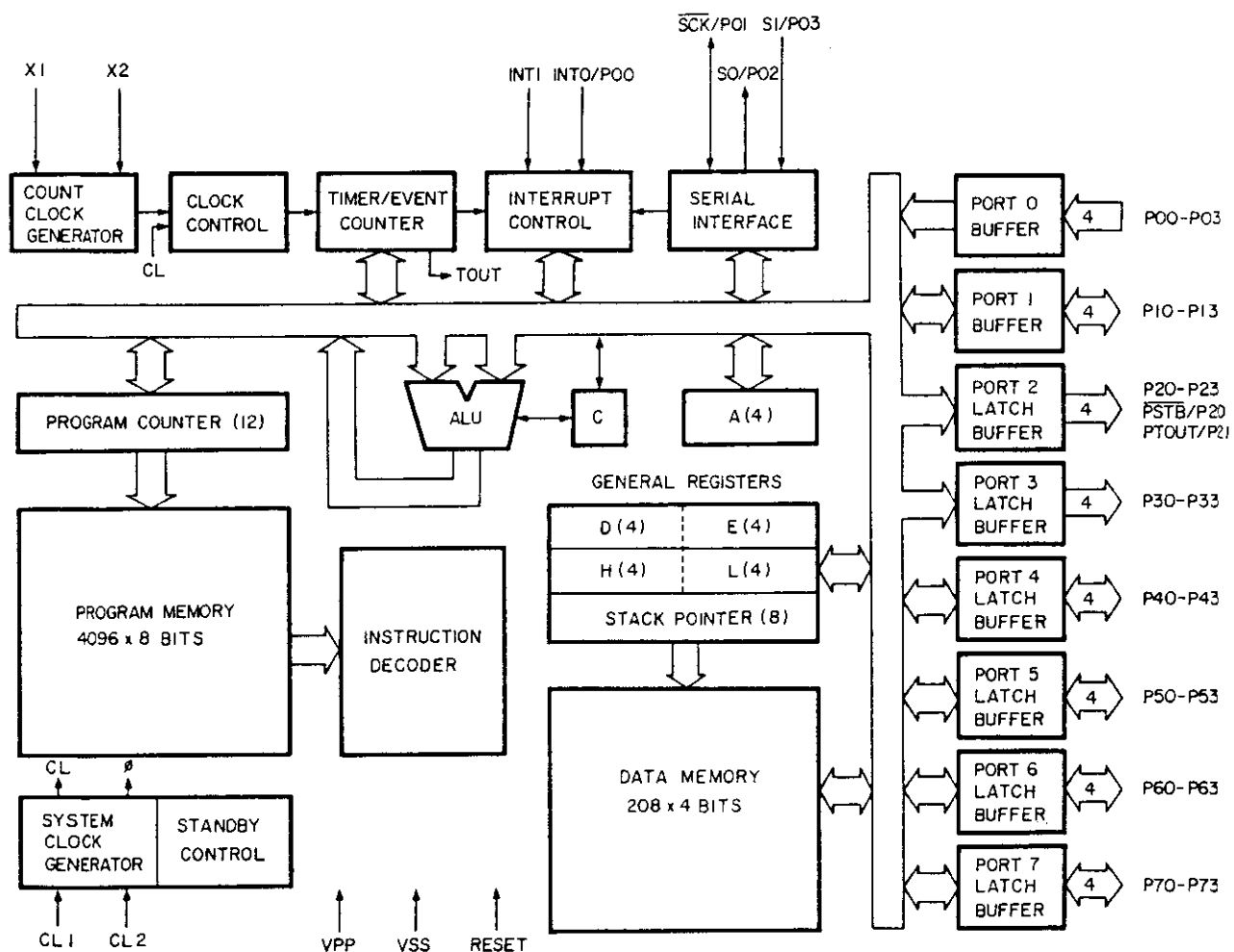


IC MOS YM-2601F

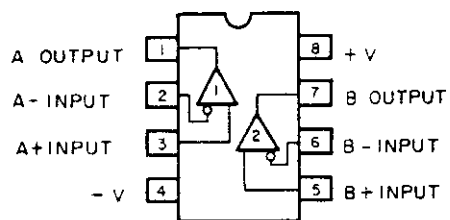
IC401 ICμPD7516HCW-256

PIN	Port Name	Cord	Function	I/O	Active Level	RESET
1	P20	ADD8	External RAM address	O	H	L
2	P21	WE	External RAM line signal	O	L	H
3	P22	R/W	3531 R/W	O	H	L
4	P23	D-OSG	Tray opening driving	O	H	L
5	RESET					
6	PPO	Non used				
7	NC					
8	P00	WQ	3531 read request	I	H	*
9	SCK	SCK	3531 serial clock	O	L	H
10	SO	DIN	3531 Data in	O	H	L
11	SI	D OUT	3531 Data out	I	H	*
12	P60	KI 4	Key input port	I	H	*
13	P61	IR	Remote control data	I	H	*
14	P62	LA-ON	Laser ON	O	H	L
15	P63	DISC	Disc detection	I	H	*
16	P50	DATA 0	External RAM address remote control data input	I/O	H	*
17	P51	DATA 1	External RAM address remote control data input	I/O	H	*
18	P52	DATA 2	External RAM address remote control data input	I/O	H	*
19	P53	DATA 3	External RAM address remote control data input	I/O	H	*
20	P10	KI 0	Key input port	I	H	*
21	P11	KI 1	Key input port	I	H	*
22	P12	KI 2	Key input port	I	H	*
23	P13	KI 3	Key input port	I	H	*
24	NC					
25	P40	ADD 0	External RAM address remote control data input	I/O	H	*
26	P41	ADD 1	External RAM address remote control data input	I/O	H	*
27	P42	ADD 2	External RAM address remote control data input	I/O	H	*
28	P43	ADD 3	External RAM address remote control data input	I/O	H	*
29	EVENT	Non used				
30	X2					
31	X1					
32	Vss					

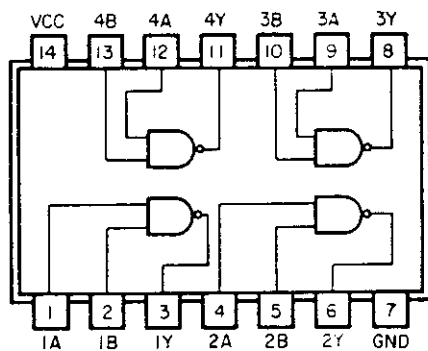
Pin	Port Name	Code	Function	I/O	Active Level	RESET
33	S7	Ph	Segment h	O	H	L
34	S6	Pg	Segment g	O	H	L
35	S5	Pf	Segment f	O	H	L
36	S4	Pe	Segment e	O	H	L
37	S3	Pd	Segment d	O	H	L
38	S2	Pc	Segment c	O	H	L
39	S1	Pb	Segment b	O	H	L
40	S0	Pa	Segment a	O	H	L
41	T15/S15	PAUSE LED	Pause LED static	O	H	L
42	T14/S14	PLAY LED	Play LED static	O	H	L
43	T13/S13	DISC LED	Disc LED static	O	H	L
44	T12/S12	STANDBY LED	Standby LED static	O	H	L
45	T11/S11	D-CSG	Tray closing driving	O	H	L
46	T10/S10	RECEIVE LED	Remote control code reception	O	H	L
47	T9/S9	T9	Index display 10	O	H	L
48	T8/S8	T8	Index display 1	O	H	L
49	T7	T7	Track display 10	O	H	L
50	T6	T6	Track display 1	O	H	L
51	T5	T5	Mode display A	O	H	L
52	T4	T4	Mode display A	O	H	L
53	T3	T3	Time display minute 10	O	H	L
54	T2	T2	Time display minute 1	O	H	L
55	T1	T1	Time display seconds 10	O	H	L
56	T0	T0	Time display seconds 1	O	H	L
57	V LOAD					
58	V PRE					
59	P30	ADD 4	External RAM address	O	H	*
60	P31	ADD 5	External RAM address	O	H	*
61	P32	ADD 6	External RAM address	O	H	*
62	P33	ADD 7	External RAM address	O	H	*
63	INT 1	OPEN/CLOSE	OPEN/CLOSE key	I		*
64	VDD					



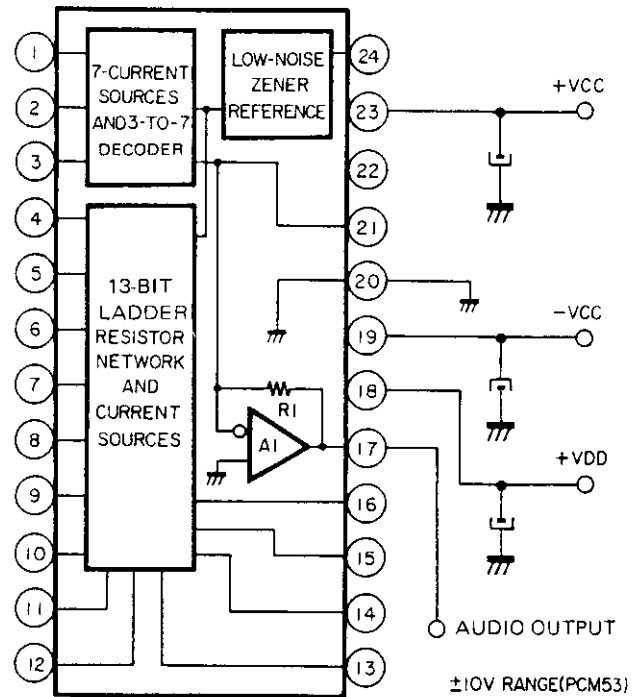
Micro-processor UPD7516CW-256



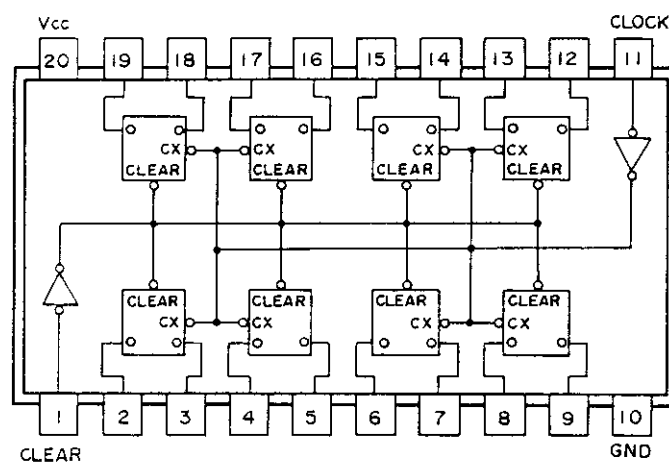
**Operational Amp.
IC M5220L, NJM4560D,
BA4558
M5218L**



NAND GATE MOS IC SN74HCOON

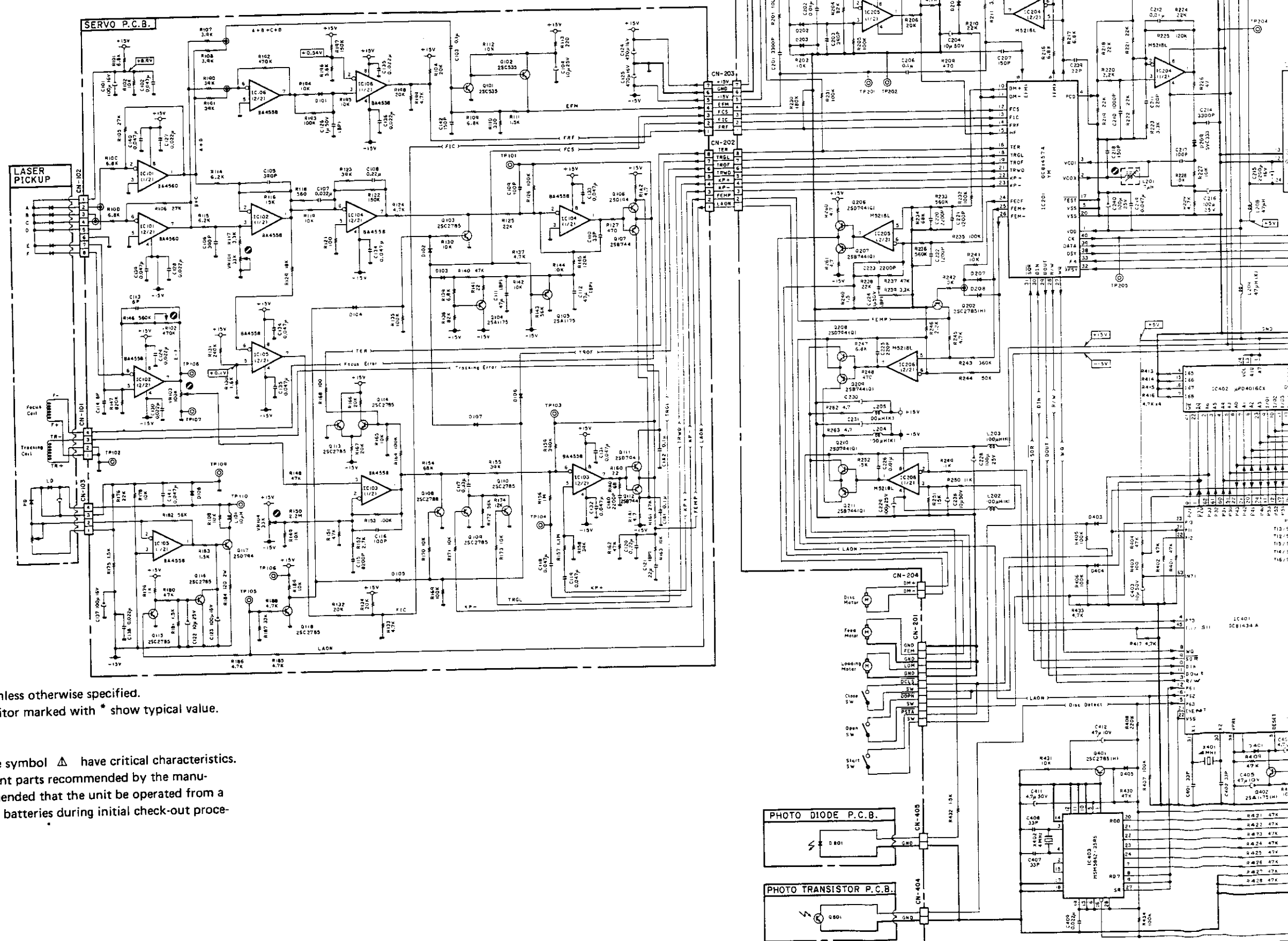


IC PCM54JP



74HC273

7. SCHEMATIC DIAGRAM

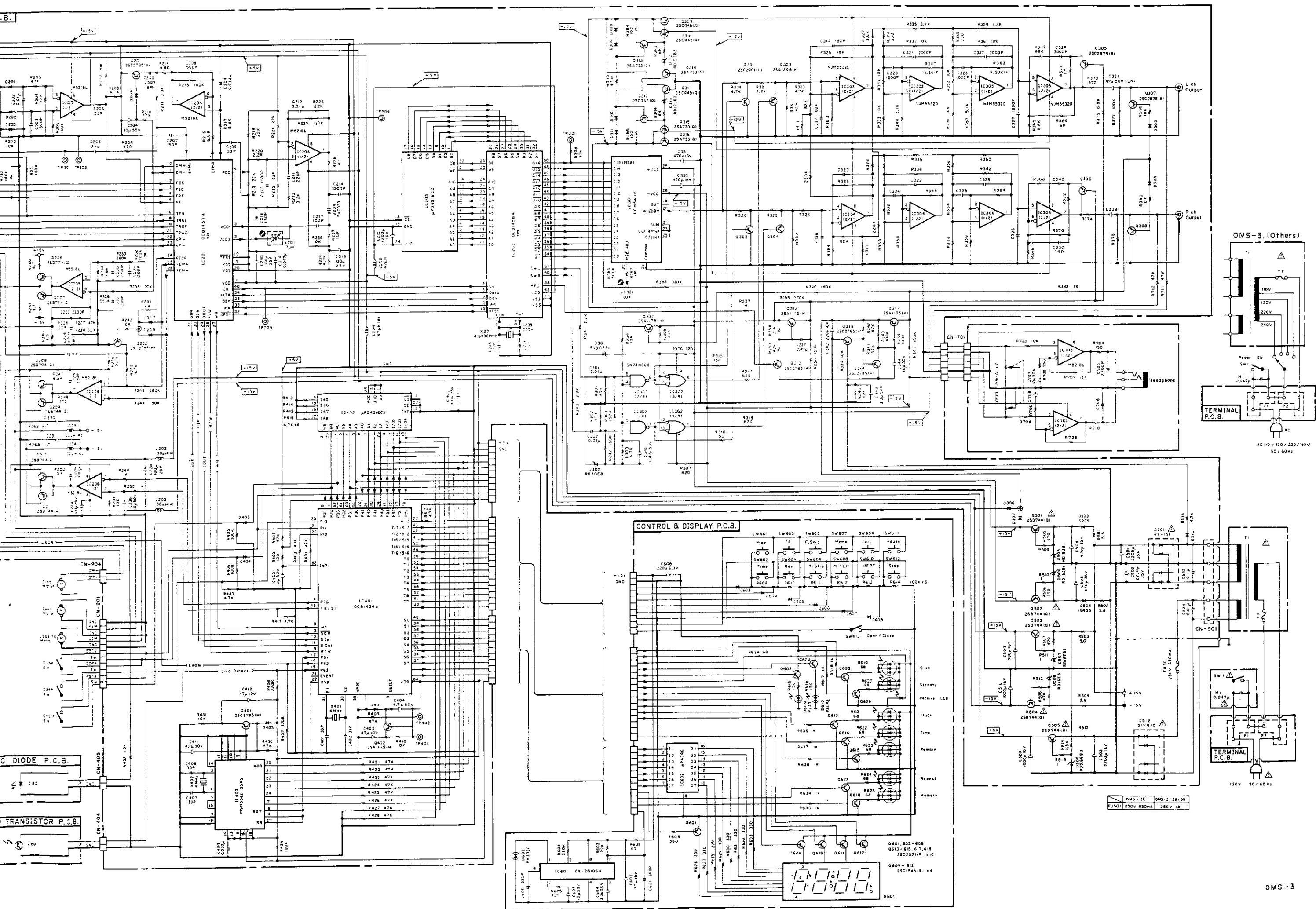


Notes:

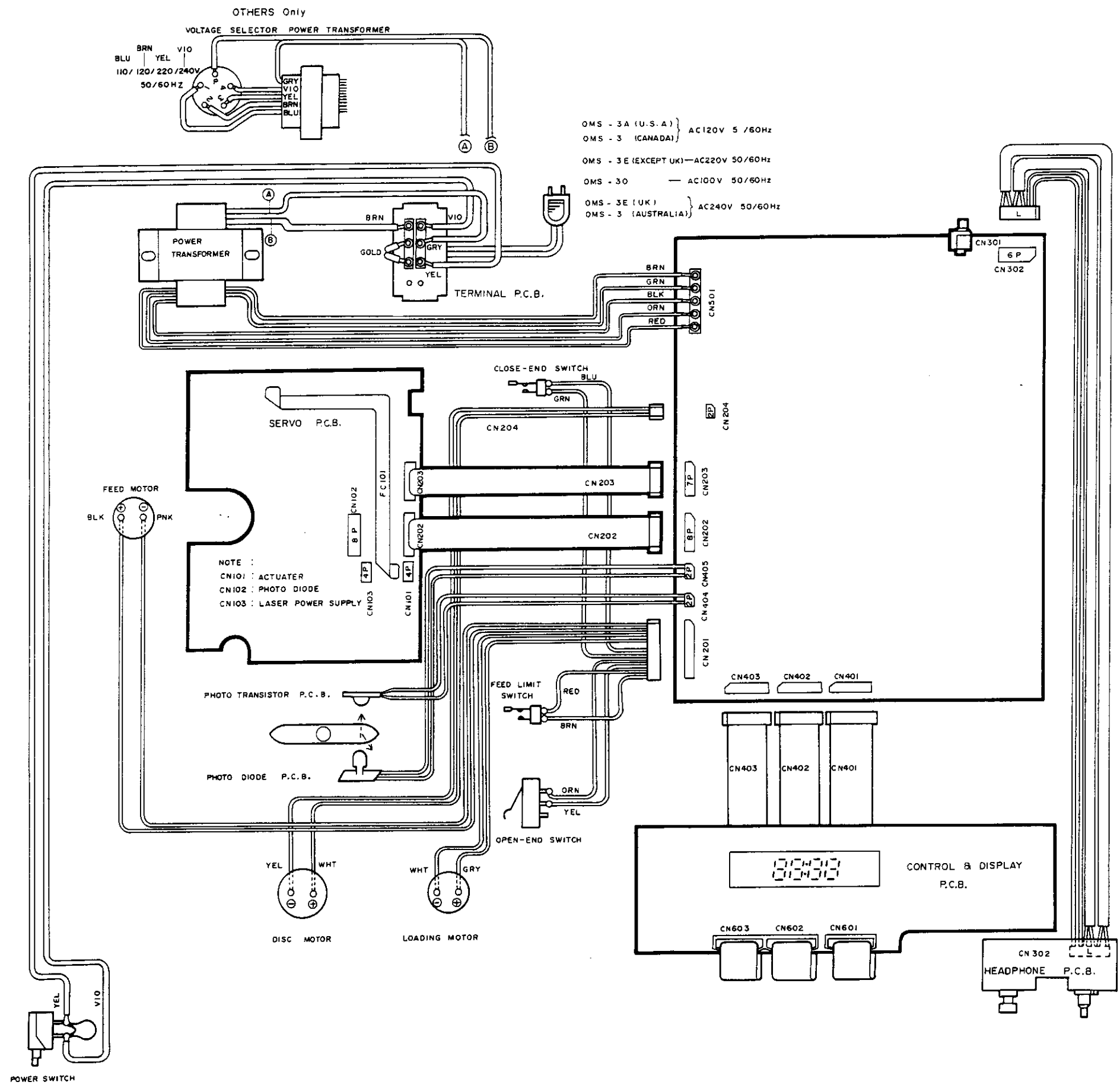
- Notes:
1. Diode is 1S2473 unless otherwise specified.
 2. Resistor and capacitor marked with * show typical value.

Warning:

Parts marked with the symbol Δ 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 procedure.



8. WIRING DIAGRAM



- Notes:
1. Table of wire colors
BRN — Brown
RED — Red
ORN — Orange
YEL — Yellow
GRN — Green
BLU — Blue
VIO — Violet
GRY — Gray
WHT — White
BLK — Black
 2. Component side view of the P.C.B. is illustrated unless otherwise specified.
 3. Wire tube color is shown in ().

10. SPECIFICATIONS

■ Main Unit

System	Compact Disc digital audio
Signal Readout	Optical (semiconductor laser)
Error Correction	CIRC principle
Number of Channels	2 channels, stereo
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 97 dB (IHF A-WTD)
Dynamic Range	Better than 92 dB
Total Harmonic Distortion	0.006 % (1 kHz)
Total Harmonic Distortion + Noise (1 kHz)	0.007%
Channel Separation	Better than 90 dB
Output (Line 1 kHz 0 dB)	2.5V/600 Ω
(Headphone 1 kHz, 0 dB)	Approx. 35 mW into 40 Ω
Power Requirements	120, 220, 240 or 110 – 120/220 – 240 V AC, 50/60 Hz (According to country of sale)
Power Consumption	40 W max.
Dimensions	430 (W) x 100 (H) x 322 (D) mm 16-15/16 (W) x 3-15/16 (H) x 12-11/16 (D) inches
Approximate Weight	6.6 kg, 14 lbs., 9 oz.

■ Remote Control Unit (RM3CD)

Principle	Infrared Pulse system
Power Supply	3 V DC (1.5 V x 2)
Dimensions	50 (W) x 19 (H) x 162 (D) mm 2 (W) x 3/4 (H) x 6-3/8 (D) inches
Approximate Weight	100 g, 3-1/2 oz (including batteries)

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