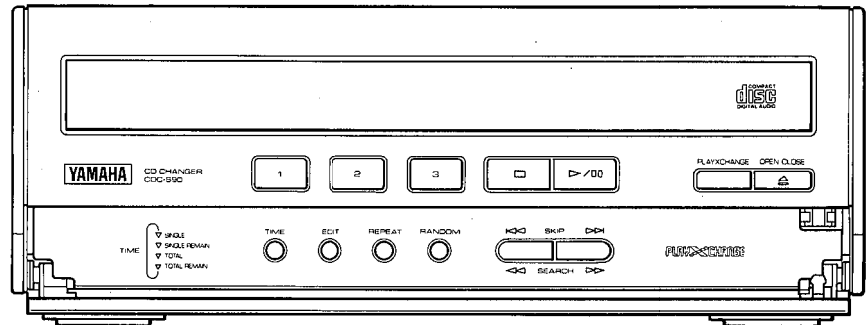


# CD CHANGER CDC-S90

## SERVICE MANUAL

CDC-S90 is the CD changer for COMPACT SYSTEM CC-70S/W or CC-90.



### IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

**IMPORTANT:** The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

**IMPORTANT:** Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

CDC-S90

### CONTENTS

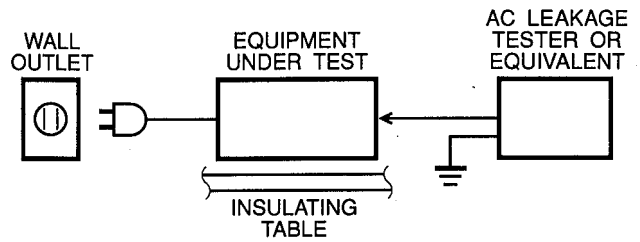
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100466

**YAMAHA**  
YAMAHA CORPORATION  
P.O.Box1,Hamamatsu,Japan  
3.2K-823 Printed in Japan '93.9

## ■ TO SERVICE PERSONNEL

1. Critical Components Information.  
Components having special characteristics are marked and must be replaced with parts having specifications equal to those originally installed.
2. Leakage Current Measurement (For 120V Models Only).  
When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.
  - Meter impedance should be equivalent to 1500 ohm shunted by 0.15 $\mu$ F.
  - Leakage current must not exceed 0.5mA.
  - Be sure to test for leakage with the AC plug in both polarities.



**CAUTION:** USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

### PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing.

1. Laser Diode Properties
  - Material : GaAlAs
  - Wavelength : 780 nm
  - Emission Duration : Continuous
  - Laser Output : max. 44.6  $\mu$ W\*
2. When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

\* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

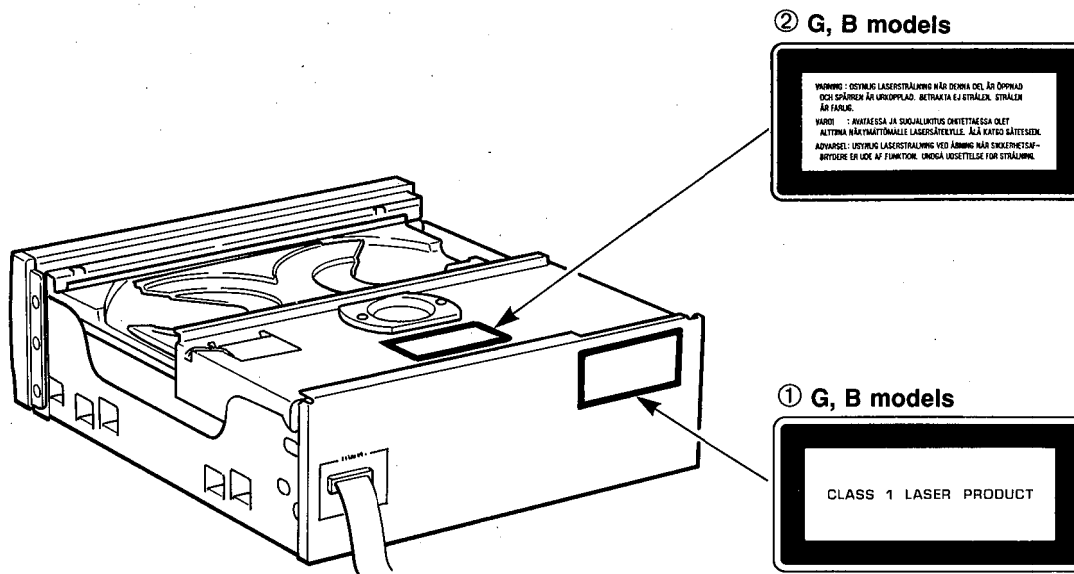
## WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

**DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!**

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.



**English**

① THIS LABEL (SEE POSITION SHOWN IN THE ILLUSTRATION) INFORMS THE USER THAT THE APPARATUS CONTAINS A LASER COMPONENT.

② THIS LABEL (SEE POSITION SHOWN IN THE ILLUSTRATION) WARNS THAT ANY FURTHER PROCEDURE WILL BRING THE USER INTO EXPOSURE WITH THE LASER BEAM.

CAUTION : USE OF CONTROLS, ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN, MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

**Swedish**

① DENNA MÄRKNING (SE FIGUR) UPPLYSER OM ATT DET I APPARATEN INGÅR EN LASERKOMPONENT AV TYP KLASS 1.

② VARNINGSMÄRKNING (SE FIGUR) FÖR STRÅLNING. INGREPP I APPARATEN BÖR ENDAST FÖRETAGAS AV FACKMAN MED KÄNNEDOM OM LASER. APPARATEN INNEHÅLLER EN LASERKOMPONENT SOM AVGER STRÅLNING ÖVERSTIGANDE GRÄNSEN FÖR LASERKLASS 1.

VARNING : OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD: BETRÄKTA EJ STRÅLEN.

**Danish**

① DETTE MÆRKAT ER ANBRAGT SOM VIST I ILLUSTRATIONEN FOR AT ADVARE BRUGEREN OM AT APPARATET INDEHOLDER EN LASERKOMPONENT.

② DETTE MÆRKAT OM LASEREN ER ANBRAGT PÅ APPARATET SOM EN OPLYSNING OM AT APPARATET INDEHOLDER ET LASERKOMPONENT.

ADVARSEL : INDGREG BOR KUN FORETAGES AF EN FAGMAND DA DER ER RISIKO FOR RADIOAKTIV STRÅLING.

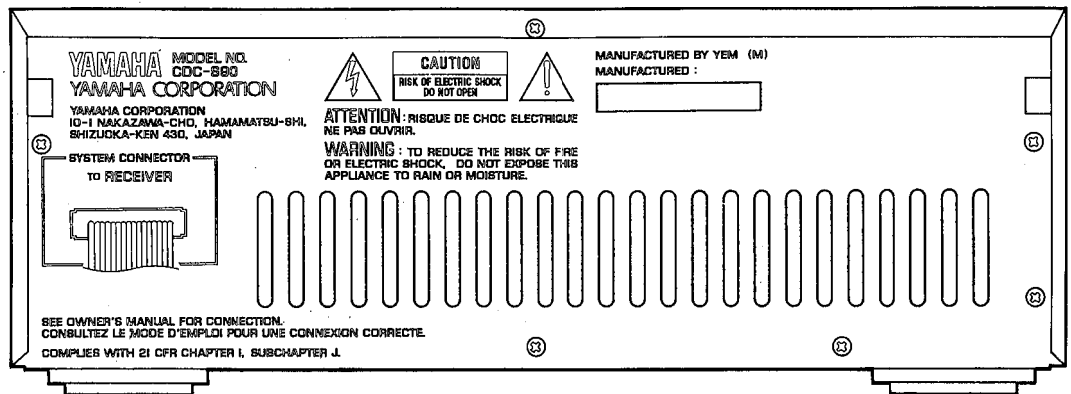
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.

**Finnish**

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

CDC-S90

## REAR PANEL



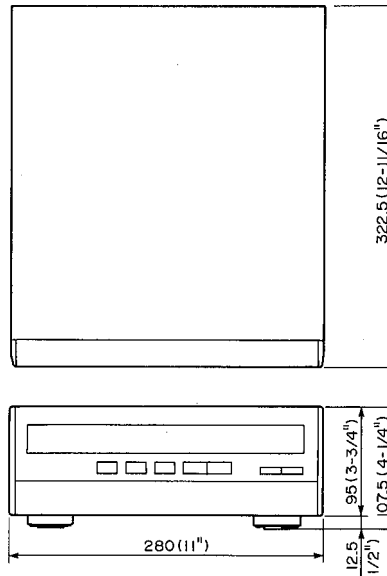
## SPECIFICATIONS

Type .....	3 Disc Carousel Auto-changer
Signal Readout .....	Non-contact, 3-beam semi-conductor laser pick-up
D/A Converter .....	1 bit DAC
Filter .....	8-time oversampling 18-bit digital filter
Wow & Flutter .....	Unmeasurable
Power Source .....	AC supplies from RECEIVER unit
Dimensions (W x H x D) .....	280 x 107.5 x 322.5 mm (11" x 4-1/4" x 12-11/16")
Weight .....	3.8kg (8 lbs 6 oz)

\* Specifications subject to change without notice.

U .....	USA model	B .....	British model
C .....	Canadian model	G .....	European model
A .....	Australian model	R .....	General model

### DIMENSIONS



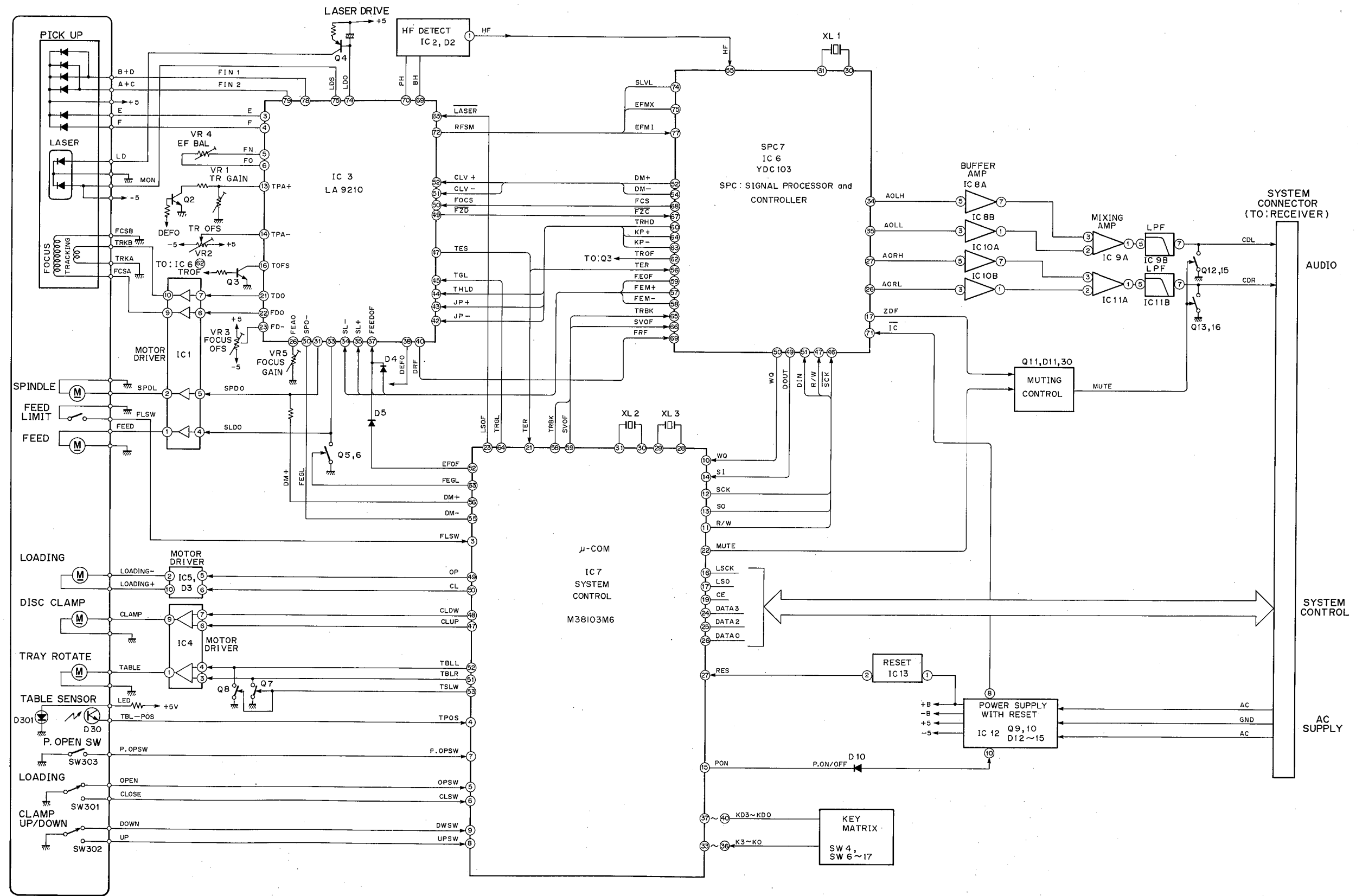
Unit : mm (inch)

## INTERNAL VIEW



- ① CM-1 UNIT
- ② CLAMPER UNIT
- ③ SUB P.C.B. ASS'Y (2)
- ④ TRAY UNIT
- ⑤ MAIN P.C.B. ASS'Y (1)

■ BLOCK DIAGRAM



## DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)

### 1. Removal of Top Cover

Remove 4 screws (1) and 1 screw (2) in Fig. 1.

### 2. Removal of Tray Unit

- Take out the Tray Unit.
- Turn the stopper/tray (3) counterclockwise by 90 degrees to pull it out in Fig. 1.
- Remove the Tray Unit.

### 3. Removal of Panel Unit

- Remove 4 screws (4) and 2 screws (5) in Fig. 1.
- Remove 2 hooks and then pull the Panel Unit in Fig. 1.

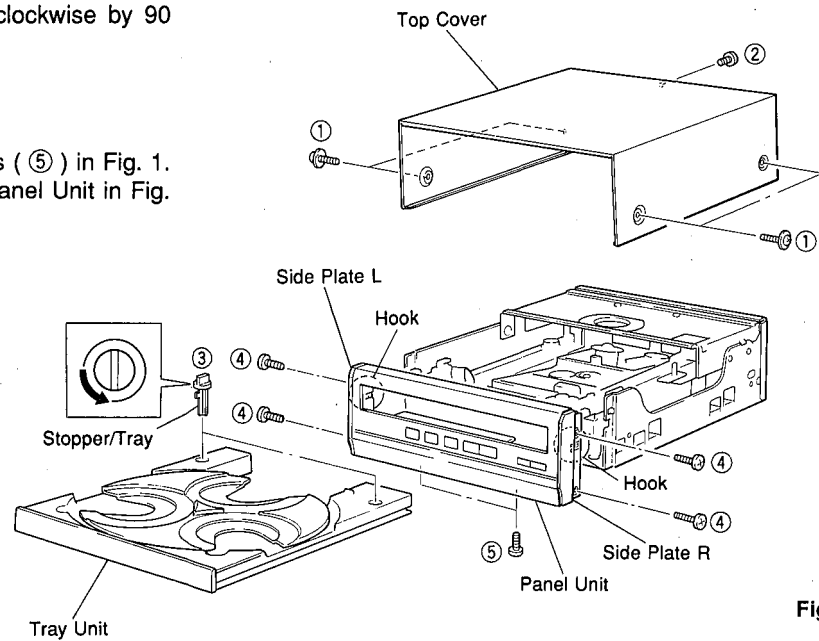


Fig. 1

### 4. Removal of CM-1 Unit

- Remove 4 screws (6) and 2 screws (7), and then remove the Clamper Unit in Fig. 2.
- Remove 4 screws (8) and then remove the CM-1 Unit in Fig. 2.

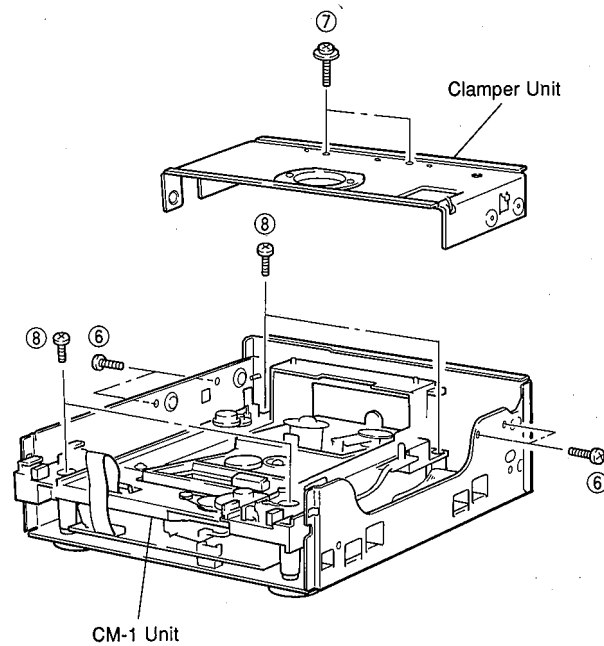
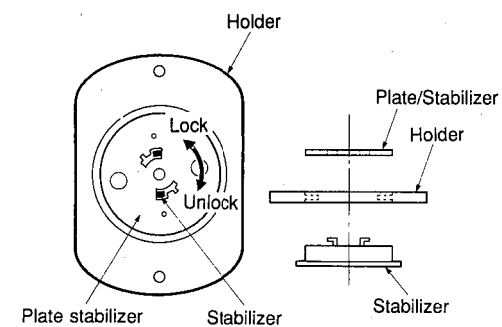


Fig. 2

### ● Operation Check Procedure (with electricity charged)

- Disassembly
  - Remove the top cover.
  - Remove the clamper unit.
  - Remove the stabilizer from the clamper unit.



Turn the Plate/Stabilizer clockwise by 30° while holding the Stabilizer, and the Plate/Stabilizer will come off. Remove the Stabilizer from the Holder.

- Clamp the disc by using the stabilizer.
- Set to the TEST mode and check for any faulty conditions.

### 5. Removal of Pick-up Head

- Remove 2 screws (9) and then remove the PU Unit Ass'y in Fig. 3.

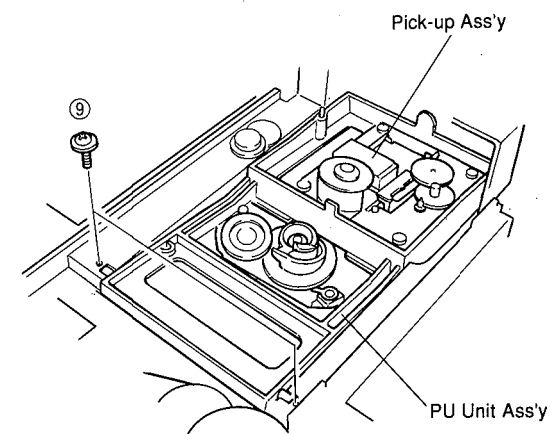


Fig. 3

- Pull out 4 Pins (10) and then remove the PU Mechanism Unit in Fig. 4.

\* The Pick-up Head can be replaced without removing the PU Mechanism Unit.

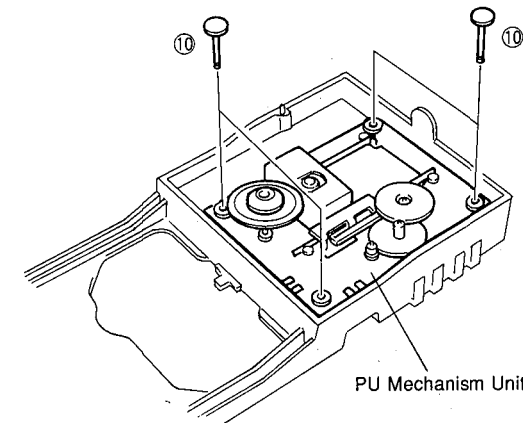


Fig. 4

- Remove 4 screws (11) and then remove the Pick-up Head in Fig. 5.

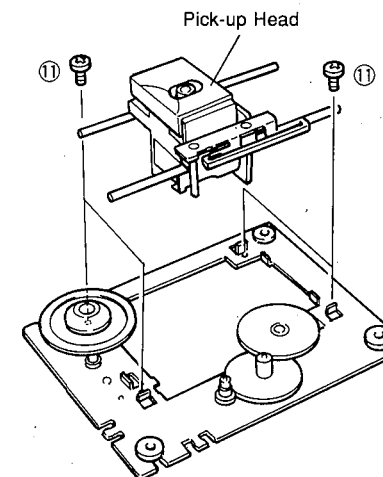
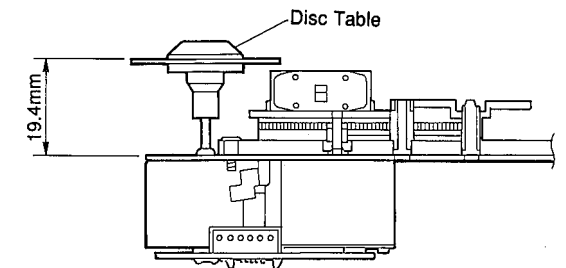
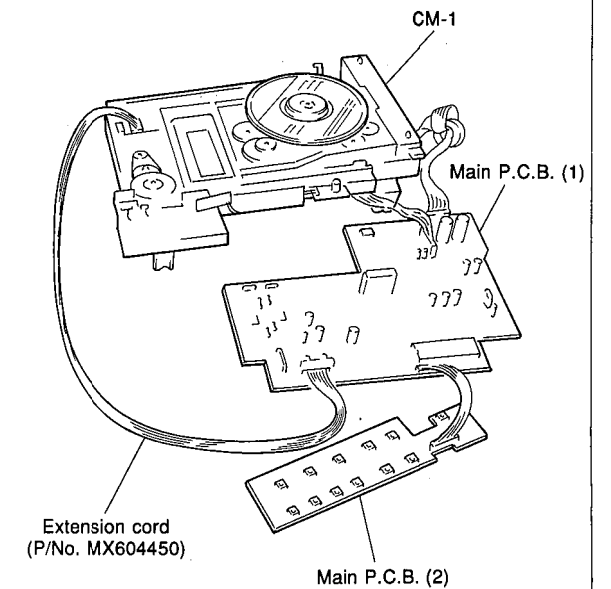


Fig. 5



### ● Main P.C.B. Check

When checking the main P.C.B., remove the CM-1 unit and the main P.C.B. from the chassis and use an extension cord (12p  $\ell=700$ ).



## ■ TEST MODE

The TEST MODE is brought about when CD is switched on while holding **PLAY** and **STOP** switches. When combined with the RX- and selected as a source on it, the DISPLAY shall fully light. (The TEST MODE is brought about by the same way above CD without connecting to the RX- as far as the equivalent power supply is connected.)

Each switch operates as the following on each MODE.

The MODE shall be set up by DISC **1** to **3** switches after the push of **EDIT** switch.

SW	MODE 1	MODE 2	MODE 3
<b>EDIT</b>	bring about TEST-MODE setting		
<b>OPEN/CLOSE</b>	open/close the tray	turn the disc table one step left	rotate the disc motor
<b>PLAYEXCHANGE</b>	clamp up/down	turn the disc table one step right	retard the disc motor
<b>STOP</b>	controls for the tray and the disc table and clamping stop, LASER off, STOP command for the servo system		
<b>PLAY/PAUSE</b>	PLAY command with TRACKING-SERVO and FEED-SERVO on muting off, VCO low		
<b>▶▶</b>	feed forward (outer direction)	+10 track-kick	TBLL → H
<b>◀◀</b>	feed backward (inner direction)	-10 track-kick	TBLR → H
<b>(DISC) 1</b>	ADJ. MODE 1 : clamp down LASER on, VCO high, TRACKING-SERVO and FEED-SERVO off		
<b>(DISC) 2</b>	ADJ. MODE 2 : clamp down LASER off, TRACKING-SERVO on, FEED-SERVO off		
<b>(DISC) 3</b>	ADJ. MODE 3 : clamp up LASER on, TRACKING-SERVO and FEED-SERVO off, PLAY MUTE on		
<b>RANDOM</b>	ADJ. MODE 4 : clamp up LASER on, VCO low, TRACKING-SERVO and FEED-SERVO on, PLAY		
<b>TIME</b>	escape from TEST MODE → normal operation		
<b>REPEAT</b>	LASER on, FOCUS-SEARCH	start TEST REPEAT (Do not use this function as it is not for servicing.)	TSLW → H/L alternate

### ● WARNING

When transporting the unit which has been serviced, the tray must be closed and the P.U. unit must be clamped up on CDC. (These are automatically achieved by turning off the **POWER** switch of RX- when CD is connected with the RX-.)

## ■ ERROR MESSAGES

ERROR MESSAGE can be obtained on the DISPLAY by pushing **STOP** and **PLAY** switches simultaneously when CD has stopped (sometimes with the tray open) by an accident.

INDICATION	CONTENTS OF ERROR
<b>94</b>	CLOSE switch does not operate when the tray is closed.
<b>A5</b>	OPEN switch does not operate when the tray is opened.
<b>x9</b>	(CLAMP) UP switch does not operate when the P.U. UNIT is clamped up.
<b>xA</b>	(CLAMP) DOWN switch does not operate when the P.U. UNIT is clamped down.
<b>b6</b>	The position of the disc tray is not detected correctly on the disc change.
<b>x7</b>	The inner limit-switch does not operate when the P.U. is moved to inner side.
<b>x8</b>	CD fails in recovery from the focus-out. 5 times : normal operation
<b>73</b>	CD fails in picking up the data from the disc though the disc motor rotates.
<b>x1</b>	CD fails in picking up the data from the disc while playing, pausing, or searching.
<b>x0</b>	CD fails in picking up the data from the disc after the search process.

**x** : The state of CD's microcomputer where some accident happened.

↓

**0** : PLAY

**3** : SEARCH (fast forward or backward)

**4** : PAUSE

**5** : SEARCH (beginning-search)

**8** : STOP

**b** : DISC CHANGE

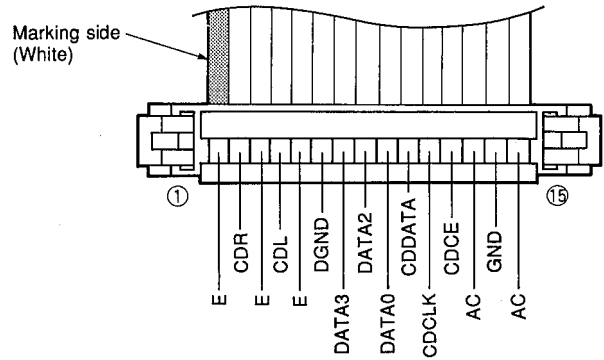
**9** : CLOSE

**A** : OPEN

## ADJUSTMENTS

This unit operates on the power supplied through the RECEIVER (RX-S70 or CTX-S90) of the system (CC-70 or CC-90).

When taking measurements, connect it to the RX-S70 or apply AC 8V (or DC 11V) to No. 13 pin (AC) of the system connector and AC 8V (or DC 11V) to No. 15 pin (AC).



### Necessary items

#### Measuring instruments

- Oscilloscope : x 1  
(Band width of 50MHz or more,  
2 ch type with X-Y position)
- DC voltmeter (DCVM) : x 1
- Frequency counter (FC) : x 1
- Low frequency oscillator : x 1

#### Test disc

- SONY YEDS-18 (P/No. TX911730),  
A-BEX TCD-782 (P/No. TX913350)  
or Philips 5 : x 1

#### Tools

- Screwdriver  
(For Pre-set Potentiometer adjustment) : x 1

#### Extension cord (12P $\ell=700$ )

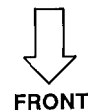
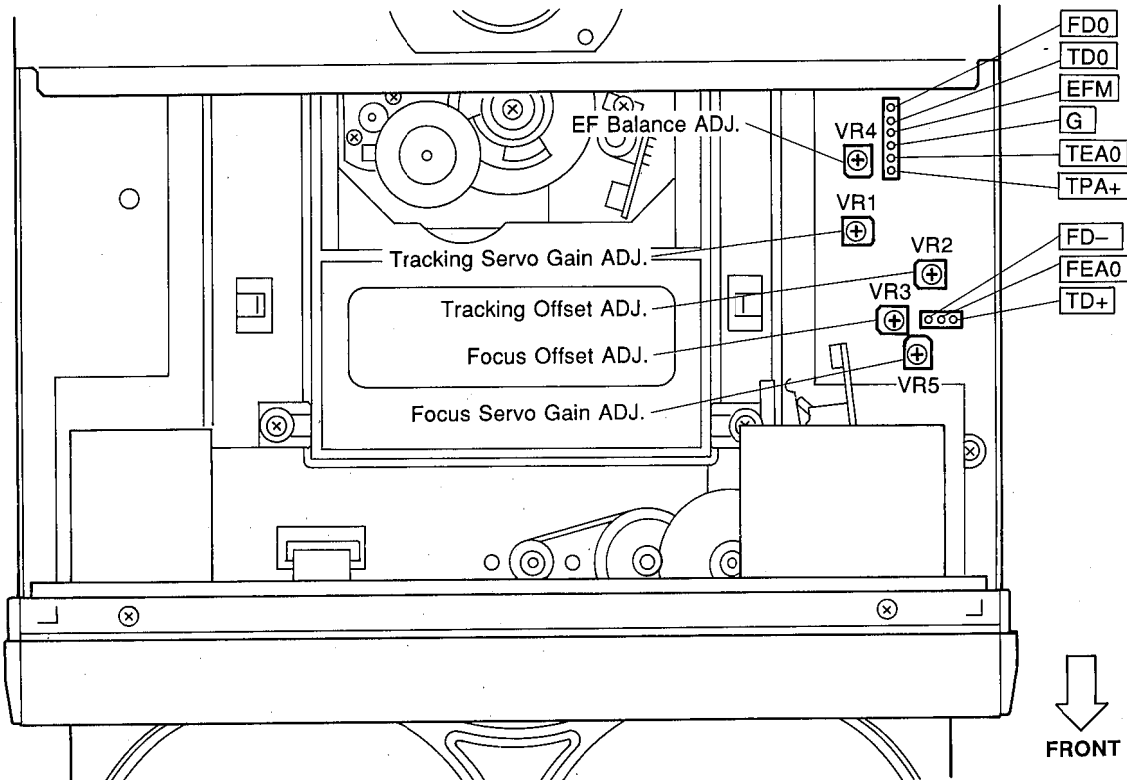
- (P/No. MX604450) : x 1

### Before Adjustment

Carry out following adjustments in order as numbered.

- 1) Confirmation of focus search
- 2) Confirmation of disc clamber operation
- 3) Focus offset adjustment
- 4) Tracking offset adjustment
- 5) EF balance adjustment
- 6) Focus servo gain adjustment
- 7) Tracking servo gain adjustment
- 8) Confirmation jitter
- 9) Confirmation of focus offset
- 10) Confirmation of tracking offset
- 11) Confirmation of EF balance

### TEST POINT



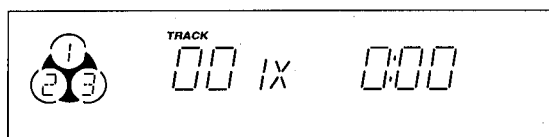


### Starting Test Mode

Connect to the AC power supply, while holding both the PLAY and STOP switches. If RX-S70 is combined and CD is selected on it, the DISPLAY (of RX) continues to fully light during the switch-hold, followed by the display as shown below.

\* Refer to the TEST MODE drawing as to details of switch-operations.

\* When the REPEAT switch is pushed to excite FOCUS start, it sometimes takes a few seconds before FOCUS is locked. Therefore, avoid pushing the PLAY switch too quickly.

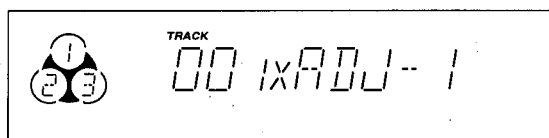


**NOTE** : To cancel the TEST mode, turn OFF the power switch or press the TIME key.

### Adjustment Mode

There are Steps 1 to 4 of the adjustment mode. Use the DISC Keys (1 to 3) and RANDOM key to select the desired step.

Content of Adjustment Mode		Panel key
<b>Step 1 (ADJ-1)</b>	STOP Focus offset adjustment	DISC 1
<b>Step 2 (ADJ-2)</b>	Tracking offset adjustment	DISC 2
<b>Step 3 (ADJ-3)</b>	EF balance adjustment	DISC 3
<b>Step 4 (ADJ-4)</b>	Confirmation of jitter Focus servo gain adjustment Tracking servo gain adjustment	RANDOM



#### 1 Confirmation of Focus Search

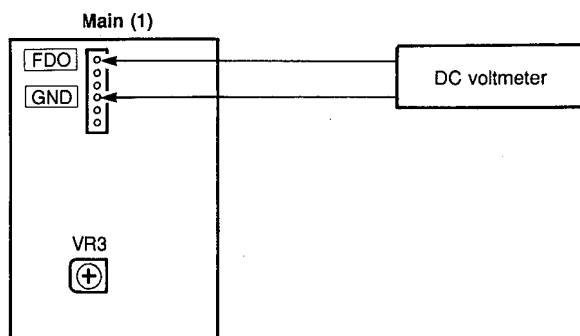
- ① Do not load the disc.
- ② Set to the TEST mode.
- ③ Press the REPEAT key.
- ④ Check to make sure that the laser diode of the optical pick-up head emits light and the objective lens moves smoothly from the lowest point to the highest point.
- ⑤ Press the STOP key.

#### 2 Confirmation of Disc Clamper Operation

- ① Set to the TEST mode.
- ② Press the PLAYXCHANGE key.
- ③ Check to make sure that the disc clamper is raised or lowered smoothly.

#### 3 Focus Offset Adjustment

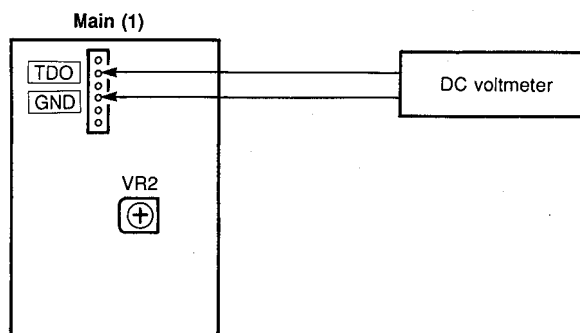
See page 9 for TP locations & potentiometers.



- ① Do not load the disc.
- ② Set to the TEST mode.
- ③ Press the DISC 1 key to adjustment mode Step 1.
- ④ Measure the voltage at test point **FDO** and adjust the VR3 so that the following rating will be satisfied.  
 $V_{FDO} = 0V \pm 100mV(DC)$

#### 4 Tracking Offset Adjustment

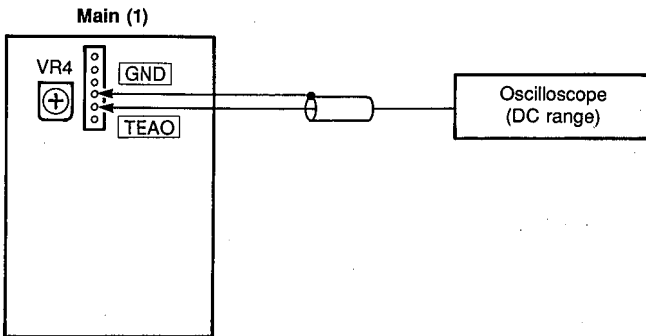
See page 9 for TP locations & potentiometers.



- ① Do not load the disc.
- ② Set to the TEST mode.
- ③ Press the DISC 2 key to adjustment mode Step 2.
- ④ Measure the voltage at the test point **TDO** and adjust VR2 so that the following rating will be satisfied.  
 $V_{TDO} = 0V \pm 50mV(DC)$

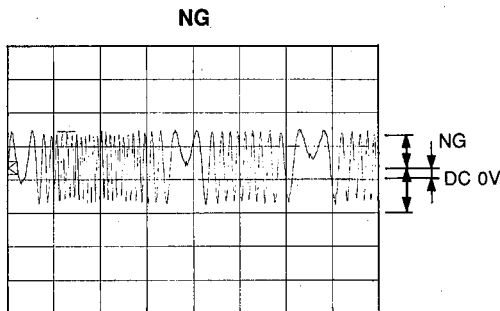
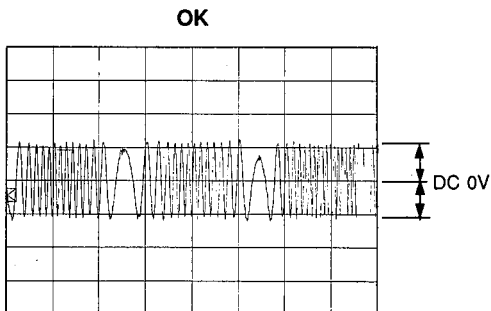
**5 EF Balance Adjustment**

See page 9 for TP locations & potentiometers.



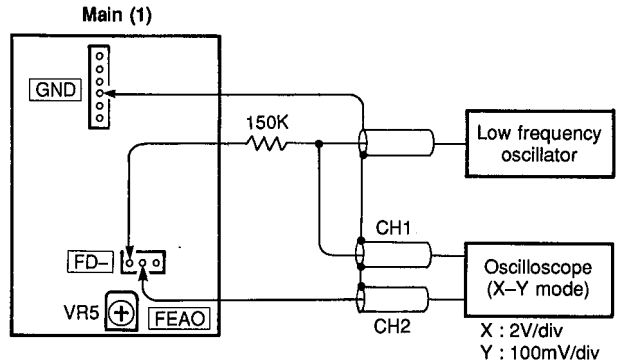
- ① Connect an oscilloscope to the test point **TEAO**.  
\* Make sure to use a 10 : 1 probe.
- ② Set to the TEST mode.
- ③ Load the test disc.
- ④ Press the DISC 3 key to adjustment mode Step 3.
- ⑤ Adjust VR4 so that the waveform at the test point **TEAO** has the same amplitude on both upper and lower sides of DC0V position.

Rating : DC offset = 0V±50mV



**6 Focus Servo Gain Adjustment**

See page 9 for TP locations & potentiometers.



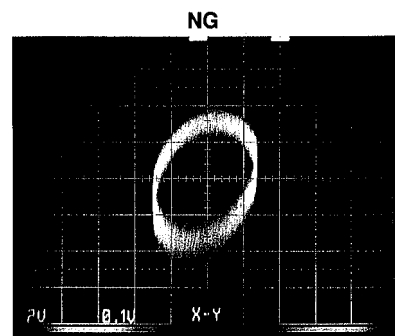
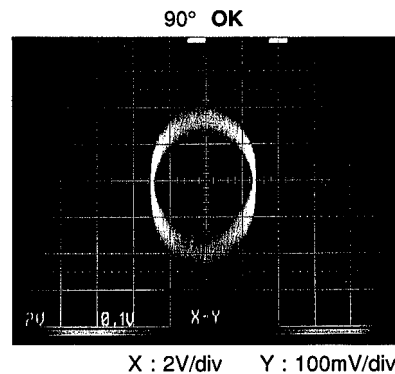
- ① Connect an oscilloscope and a low frequency oscillator to the test points **FD-** and **FEAO** as shown above.
- ② Set to the TEST mode.
- ③ Load the test disc.
- ④ Press the RANDOM key to adjustment mode Step 4.
- ⑤ Apply a sine wave as in Table A to the test point **FD-** through a 150kΩ resistance.

The frequency varies depending on the test disc.

Test Disc	Signal
TCD-782	660Hz, 2Vrms
YEDS-18	670Hz, 2Vrms
Philips 5	650Hz, 2Vrms

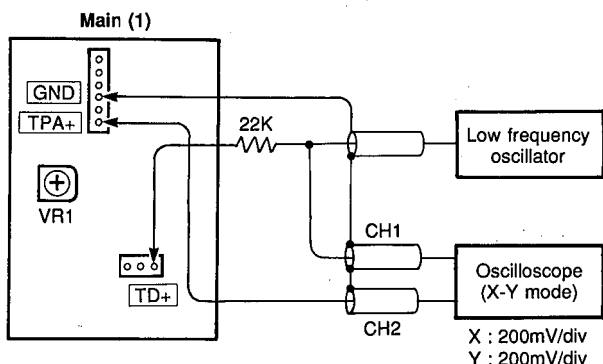
Table A

- ⑥ Adjust VR5 so that the phase difference between the waveform at the test point **FD-** and that at the **FEAO** becomes 90 degrees.



### 7 Tracking Servo Gain Adjustment

See page 9 for TP locations & potentiometers.



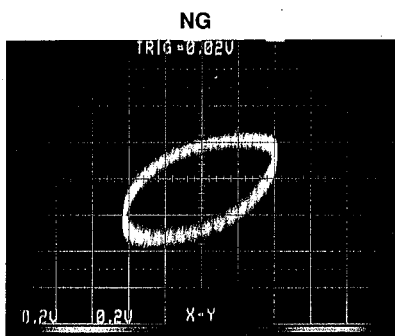
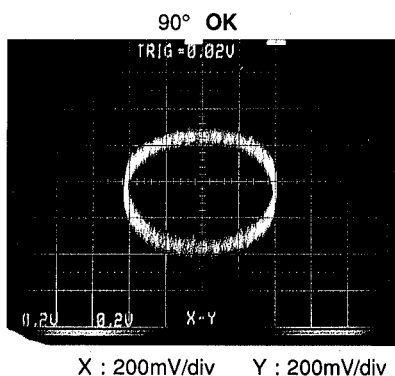
- ① Connect the oscilloscope and a low frequency oscillator to the test points **TD+** and **TPA+**.
- ② Set to the TEST mode.
- ③ Load the test disc.
- ④ Press the RANDOM key to adjustment mode Step 4.
- ⑤ Apply a sine wave to the test point **TD+** as in Table B through a 22kΩ resistance.

The frequency varies depending on the test disc.

Test Disc	Signal
TCD-782 (Lot No. T7098DA or T90808)	670Hz, 300mVrms
TCD-782 (Lot No. 00101A)	630Hz, 300mVrms
YEDS-18	600Hz, 300mVrms
Philips 5	640Hz, 300mVrms

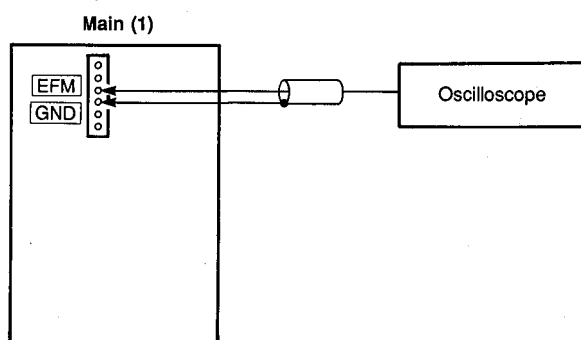
Table B

- ⑥ Adjust VR1 so that the phase difference between the waveform at the test point **TD+** and that at the **TPA+** is 90 degrees.



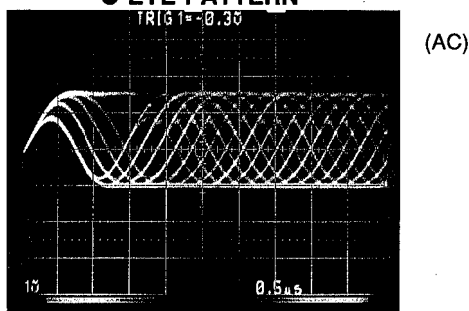
### 8 Confirmation of Jitter

See page 9 for TP locations.



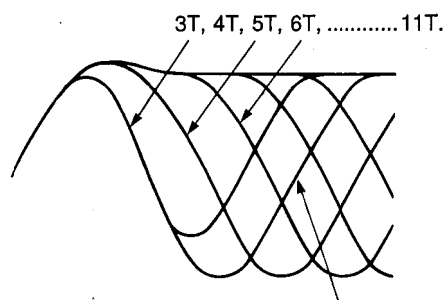
- ① Connect an oscilloscope to the test point **EFM**.
- ② Set to the TEST mode.
- ③ Load the test disc.
- ④ Press the RANDOM key to adjustment mode Step 4.
- ⑤ Check to make sure that a clear waveform (eye pattern) is obtained at the test point **EFM**.

#### ● EYE PATTERN



V : 100mV/div (10 : 1 probe) H : 0.5µsec/div

#### Waveforms 3T—11T.

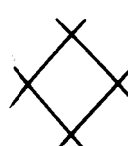


This portion is referred to as the eye pattern.

An abnormal eye pattern has less distinct lines and smaller amplitude than that of a good waveform.

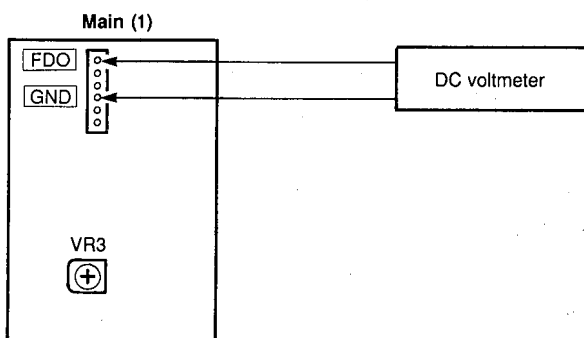
Good waveform

Abnormal waveform



**9 Confirmation of Focus Offset**

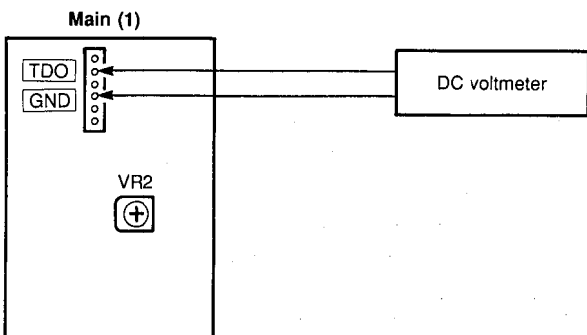
See page 9 for TP locations & potentiometers.



- ① Do not load the disc.
- ② Set to the TEST mode.
- ③ Press the DISC 1 key to adjustment mode Step 1. (disc tray open)
- ④ Measure the voltage at the test point **FDO** and check if the following rating is satisfied.  
Rating :  $V_{FDO} = 0V \pm 100mV(DC)$
- ⑤ If the measured voltage does not satisfy the rating, adjust VR3.

**10 Confirmation of Tracking Offset**

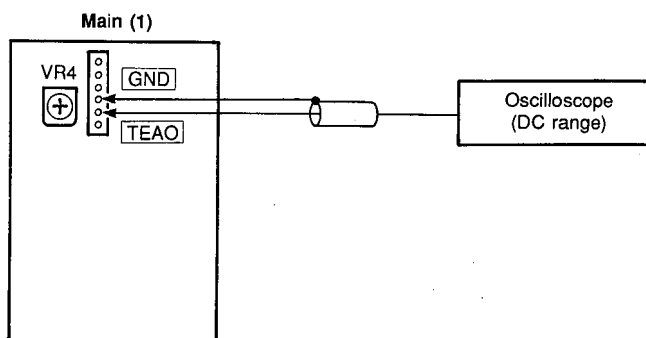
See page 10 for TP locations & potentiometers.



- ① Do not load the disc.
- ② Set to the TEST mode.
- ③ Press the DISC 2 key to adjustment mode Step 2.
- ④ Measure the voltage at the test point **TDO** and check if the following rating is satisfied.  
Rating :  $V_{TDO} = 0V \pm 50mV(DC)$
- ⑤ If the measured voltage does not satisfy the rating, adjust VR2.

**11 Confirmation of EF Balance**

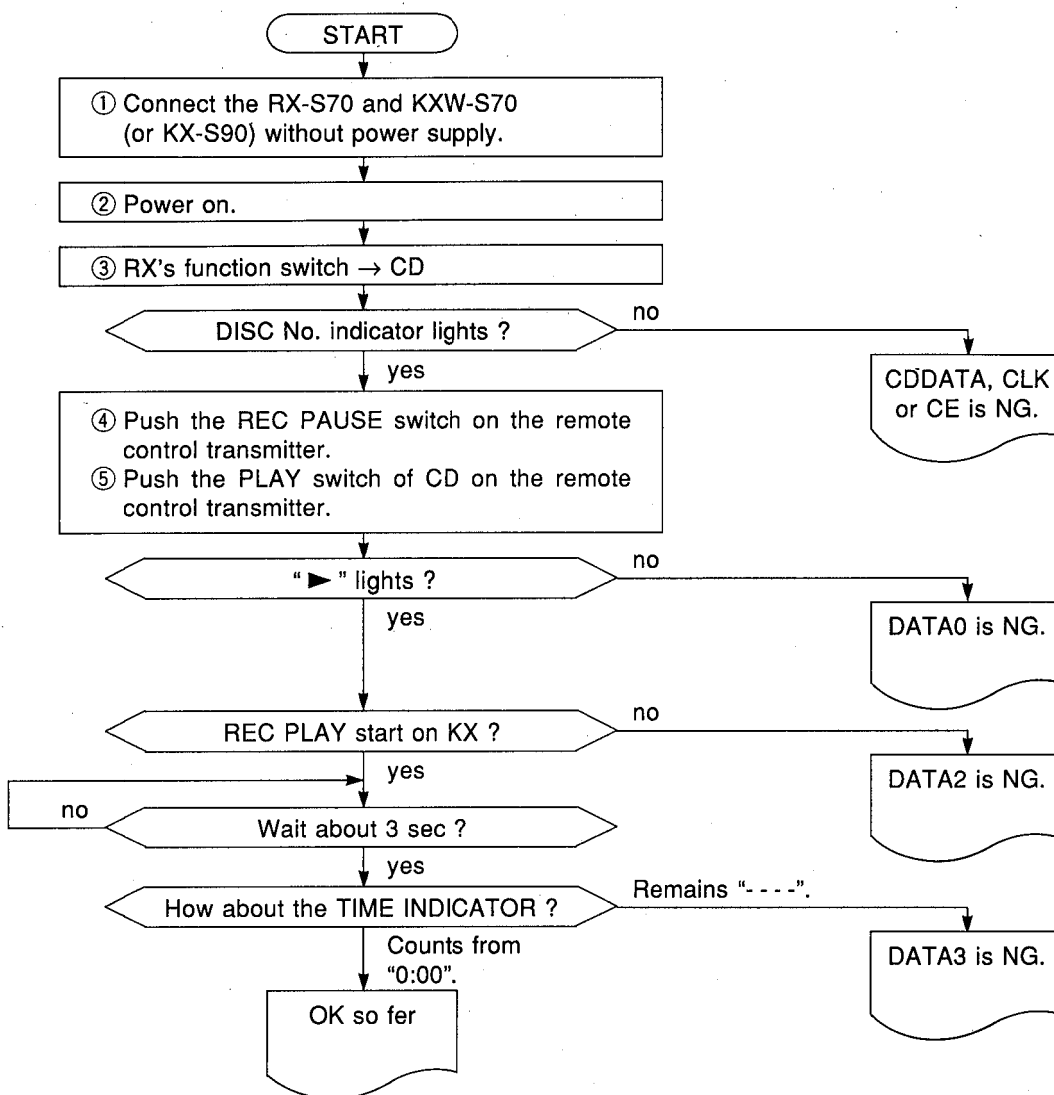
See page 9 for TP locations & potentiometers.



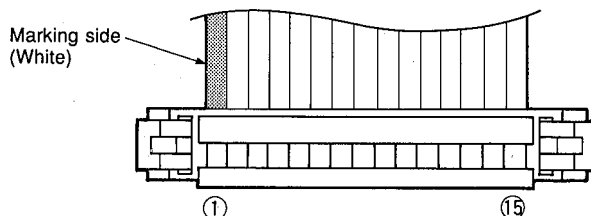
- ① Connect an oscilloscope to the test point **TEAO**.  
\* Make sure to use a 10 : 1 probe.
- ② Set to the TEST mode.
- ③ Load the test disc.
- ④ Press the DISC 3 key to adjustment mode Step 3.
- ⑤ Check the waveform at the test point **TEAO** for the same amplitude on both upper and lower sides of the DC 0V position.  
Rating : DC offset =  $0V \pm 50mV$
- ⑥ If the rating is not satisfied, adjust VR4.

**NOTE :** To cancel the TEST mode, turn OFF the power switch or press the TIME key.

## SYSTEM CONNECTOR CHECK (SYSTEM CONTROL, LCD)



## SYSTEM CONNECTOR

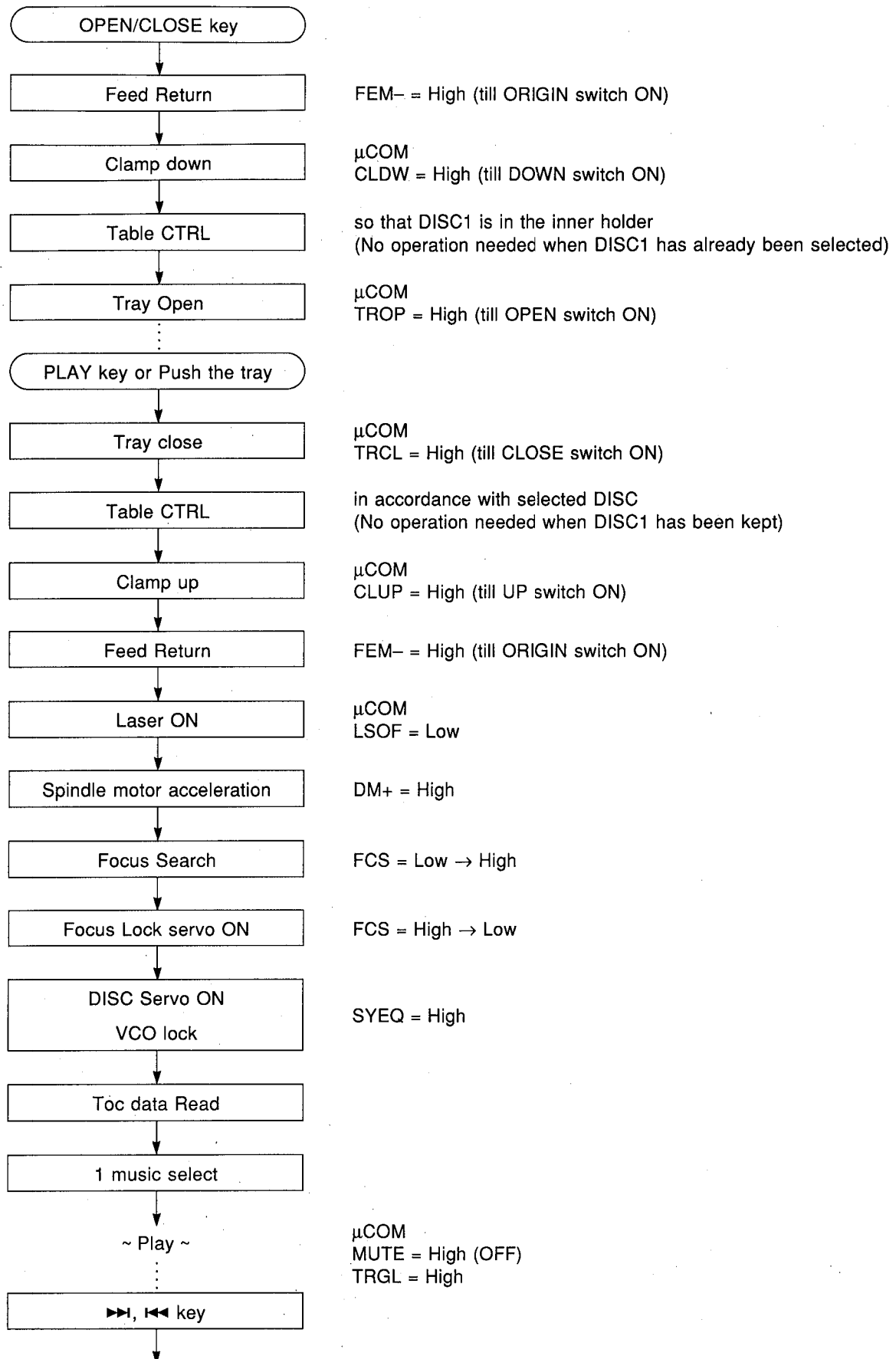


No.	NAME	FUNCTION
1	E	GND
2	CDR	LINE OUT (Rch)
3	E	GND
4	CDL	LINE OUT (Lch)
5	E	GND
6	DGND	DIGITAL GND
7	DATA3	SYSTEM CONTROL 3
8	DATA2	SYSTEM CONTROL 2

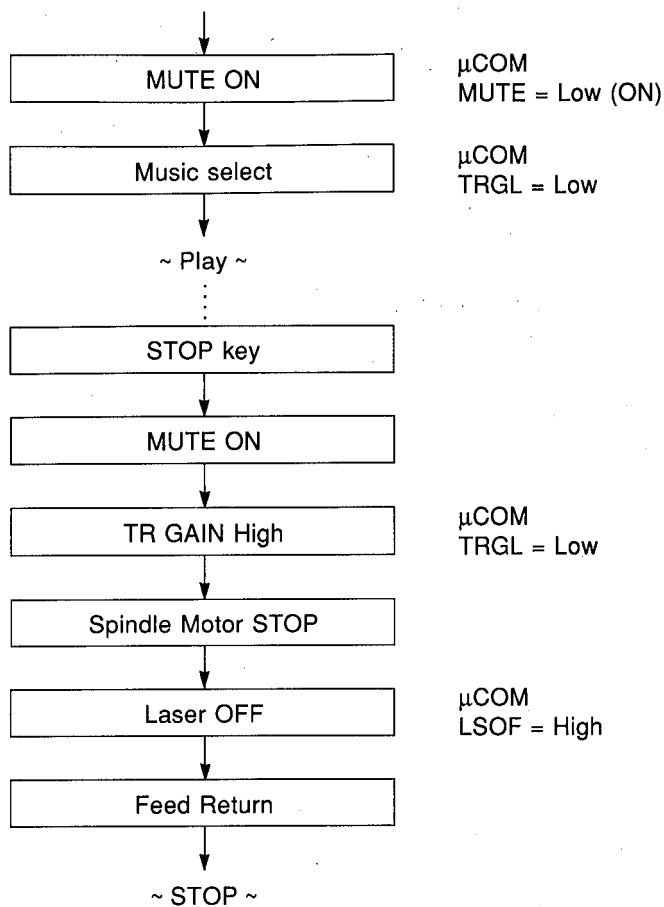
No.	NAME	FUNCTION
9	DATA0	SYSTEM CONTROL 0
10	CDDATA	CD SERIAL DATA
11	CDCLK	CD SERIAL CLOCK
12	CDCE	CD CHIP ENABLE
13	AC	AC IN
14	GND	
15	AC	

CDC-S90

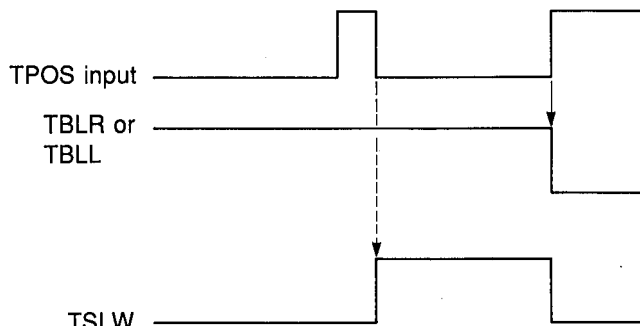
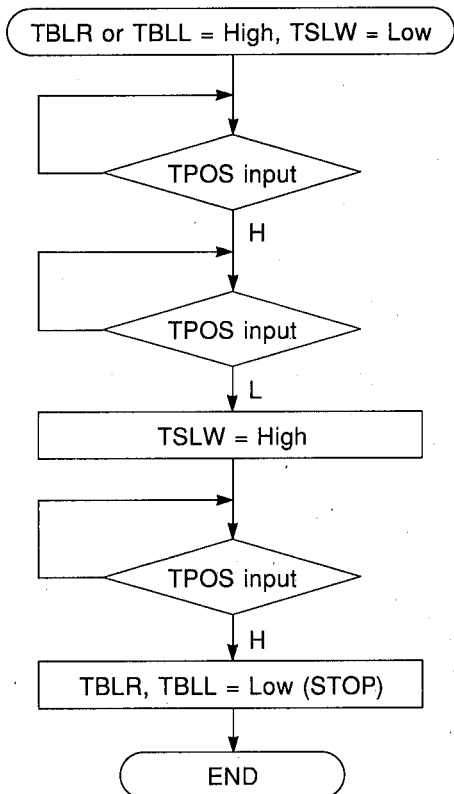
## ■ STANDARD OPERATION CHART



CDC-S90

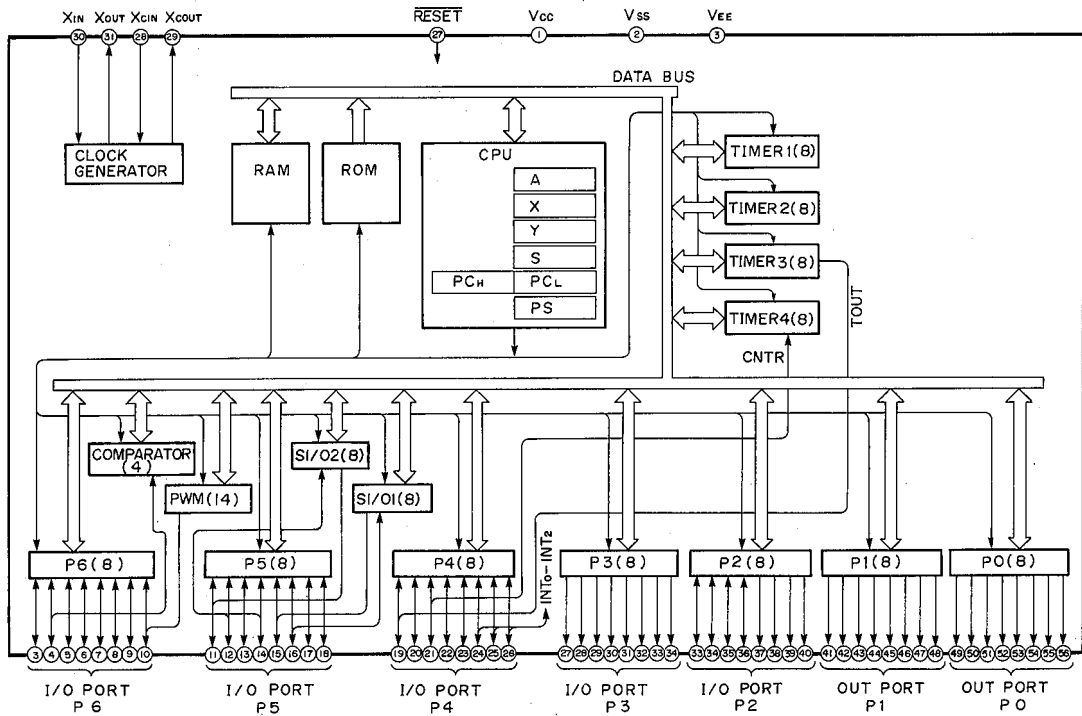
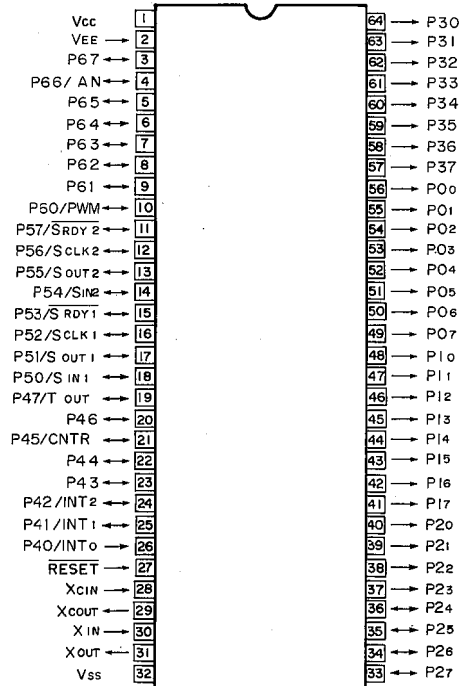


● Table control



IC DATA

IC7 : M38103M6  
8 bit  $\mu$ -COM



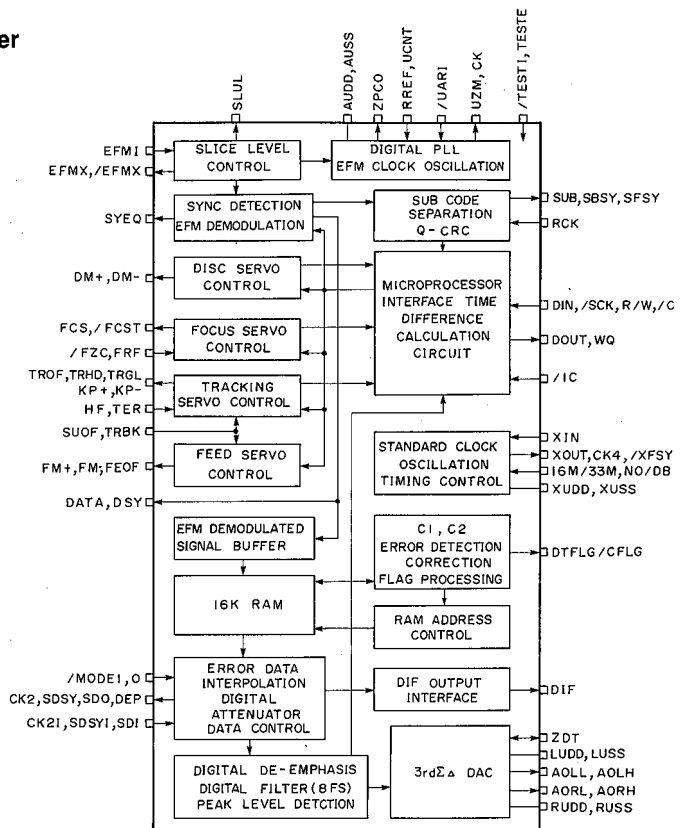
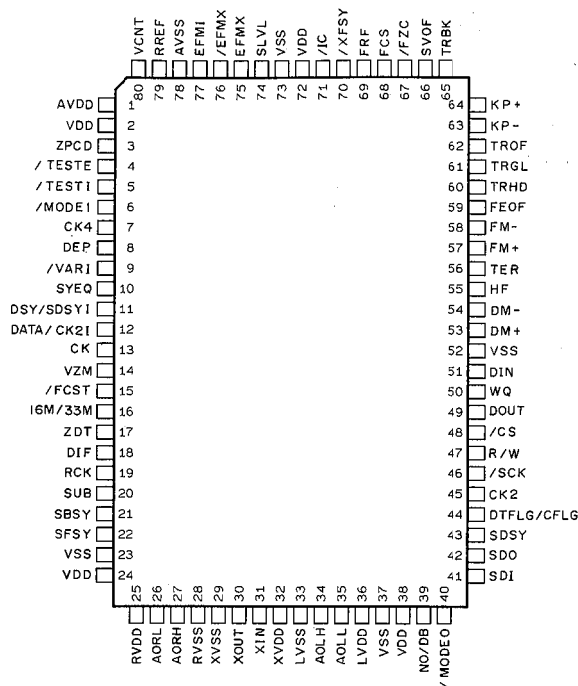
Pin No.	Port No.	Name	Function
1	Vcc	VCC	
2	Vee	VEE	P0, P1, P20~P23, P3 Pull-down power
3	P67	FLSW	FEED ORIGIN SW ORIGIN : L
4	P66	TPOS	TABLE position detect
5	P65	OPSW	Tray OPEN SW OPEN : L
6	P64	CLSW	Tray CLOSE SW CLOSE : L
7	P63	POSW	Tray Intermediate SW ON : L
8	P62	UPSW	Chucking UP SW UP : L
9	P61	DWSW	Chucking DOWN SW DOWN : L

CDC-S90



Pin No.	Port No.	Name	Function	
10	P60	WQ	SPC REQUEST	ACT : H
11	P57	R/W	Read/Write SPC	ACT : H
12	P56	SCK	Serial clock to SPC	ACT : L
13	P55	SO	Serial OUT to SPC	ACT : L
14	P54	SI	Serial IN from SPC	ACT : L
15	P53	PON	Power supply CTRL	ON : H
16	P52	LSCK	Serial clock to LCD DRIVER	ACT : L
17	P51	LSO	Serial OUT to LCD DRIVER	ACT : L
18	P50	(NC)		
19	P47	CE	CHIP ENABLE LCD DRIVER	ACT : H
20	P46	(NC)		
21	P45	TCNT	Track count	
22	P44	MUTE	LINE MUTE	OFF : H
23	P43	LSOF	Laser OFF	OFF : H
24	P42	DAT2	SYSTEM DATA OUT	
25	P41	DAT3	SYSTEM DATA from DECK	
26	P40	DAT0	SYSTEM DATA from RECEIVER	
27	RESET	RESET		
28	XCI	(NC)		
29	XCO	(NC)		
30	XIN	CLOCK		
31	XOUT			
32	VSS	GND		
33	P27	K3	KEY INPUT3	
34	P26	K2	KEY INPUT2	
35	P25	K1	KEY INPUT1	
36	P24	K0	KEY INPUT0	
37	P23	KD3	KEY SCAN DIGIT3	
38	P22	KD2	KEY SCAN DIGIT2	
39	P21	KD1	KEY SCAN DIGIT1	
40	P20	KD0	KEY SCAN DIGIT0	
41	P17	(NC)		
42	P16	(NC)		
43	P15	(NC)		
44	P14	(NC)		
45	P13	(NC)		
46	P12	(NC)		
47	P11	CLUP	Chucking UP	ACT : H
48	P10	CLDW	Chucking DOWN	ACT : H
49	P07	TROP	TRAY CLOSE	ACT : H
50	P06	TRCL	TRAY OPEN	ACT : H
51	P05	TBLR	TABLE Clockwise revolution	ACT : H
52	P04	TBLL	TABLE Counterclockwise revolution	ACT : H
53	P03	TSLW	TABLE Revolution Deceleration	SLOW : H
54	P02	VCOL	VCO Gain CTRL	LOW : H
55	P01	DM-	DISC MOTOR Deceleration	ACT : H
56	P00	DM+	DISC MOTOR Acceleration	ACT : H
57	P37	(NC)		
58	P36	TRBK	TRK Brake	ON : H
59	P35	SVOF	TRK Servo OFF	OFF : H
60	P34	(NC)		
61	P33	(NC)		
62	P32	FEOF	FEED Servo OFF	OFF : H
63	P31	FEGL	FEED Gain CTRL	LOW : H
64	P30	TRGL	TRK Gain CTRL	LOW : H

IC6 : YDC103  
Signal Processor & Controller for Compact Disc Player



Pin No.	Pin Name	I/O	Function
1	AVDD	A	5V power supply (PLL section)
2	VDD		5V power supply (LOGIC section)
3	ZPC0	O	Phase comparison output for digital PLL drive clock generator
4	/TEST E	I+	LSI test terminal (No connection should be made)
5	/TEST I	I+	LSI test terminal (No connection should be made)
6	/MODE 1	I+	Sound output mode setting 1
7	CK4	O	Clock output (4.2336MHz)
8	DEP	O	De-emphasis control output
9	/VARI	I+	Variable speed playback select ('L' : variable speed playback)
10	SYEQ	O	Synchronous equal signal output
11	DSY/SDSYI	I/O	EFM modulation signal, synchronous signal / L/R clock input when in DSP mode
12	DATA/CK2I	I/O	EFM modulation signal data signal / bit clock input when in DSP mode
13	CK	OD	EFM playback clock output
14	VZM	OD	Digital PLL drive clock output, driving into 3 or 6 output
15	/FCST	OD	Focus search start signal output
16	16M/33M	I+	Master clock select ('H' : 16.9344MHz, 'L' : 33.8688MHz)
17	ZDT	I+/O	DAC zero detect mute enable / sound zero detect output
18	DIF	O	Digital audio interface signal output
19	RCK	I-	Sub-code interface Read clock
20	SUB	OD	Sub-code interface Sub-code data
21	SBSY	OD	Sub-code interface Block synchronous signal
22	SFSY	OD	Sub-code interface Frame synchronous signal
23	VSS		Ground (Logic section)
24	VDD		5V power supply (Noise shaper section)
25	RVDD	A	5V power supply (DAC Rch section)
26	AORL	OA	DAC stream output (Rch L)
27	AORH	OA	DAC stream output (Rch H)

CDC-S90

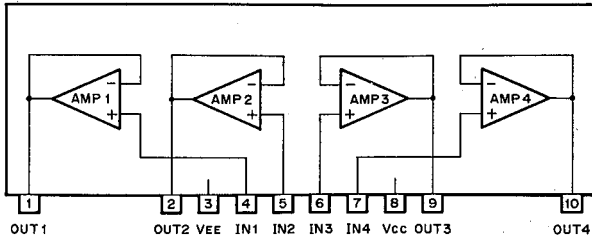
Pin No.	Pin Name	I/O	Function
28	RVSS	A	Ground (DAC Rch section)
29	XVSS		Ground (Crystal oscillator section)
30	XOUT	O	Crystal oscillator connection terminal
31	XIN	I	Crystal oscillator connection terminal (16.9344MHz or 33.8688MHz)
32	XVDD		5V power supply (Crystal oscillator section)
33	LVSS	A	Ground (DAC Lch section)
34	AOLH	OA	DAC stream output (Lch H)
35	AOLL	OA	DAC stream output (Lch L)
36	LVDD	A	5V power supply (DAC Lch section)
37	VSS		Ground (Noise shaper section)
38	VDD		5V power supply (Logic section)
39	NO/DB	I+	Normal/double speed playback select
40	/MODE0	I+	Sound output mode setting 0
41	SDI	I	DAC digital data input
42	SDO	O	Audio data output Serial data
43	SDSY	O	Audio data output L/R clock
44	DTFLG/CFLG	O	Audio data output Error flag
45	CK2	O	Audio data output Bit clock
46	/SCK	I	Microprocessor interface Serial clock
47	R/W	I	Microprocessor interface R/W identifying signal
48	/CS	I+	Microprocessor interface Chip select
49	DOUT	OT	Microprocessor interface Data output
50	WQ	O	Microprocessor interface Data read request signal
51	DIN	I	Microprocessor interface Data input
52	VSS		Ground (Logic section)
53	DM+	O	Disc motor control signal (acceleration)
54	DM-	O	Disc motor control signal (deceleration)
55	HF	IS	Mirror signal input
56	TER	IS	Tracking error signal input
57	FM+	O	Feed control signal (outward)
58	FM-	O	Feed control signal (inward)
59	FEOF	O	Feed servo OFF signal
60	TRHD	O	Tracking hold signal
61	TRGL	O	Tracking gain lowering signal
62	TROF	O	Tracking servo OFF signal
63	KP-	O	Kick pulse signal (inward)
64	KP+	O	Kick pulse signal (outward)
65	TRBK	I	Force tracking brake signal
66	SVOF	I	Focus servo OFF signal
67	/FZC	I+	Focus error zero cross signal input
68	FCS	O	Focus start signal
69	FRF	I	Focus reflection signal
70	/XFSY	OD+	Crystal frame synchronous signal (7.35kHz)
71	/IC	IS+	Initial clear input
72	VDD		5V power supply (Logic section)
73	VSS		Ground (Logic section)
74	SLVL	OA	EFM slice level voltage output
75	EFMX	OA	EFM duty detect output (positive phase)
76	/EFMX	OA	EFM duty detect output (negative phase)
77	EFMI	IA	EFM signal input
78	AVSS	A	Ground (PLL section)
79	RREF	IA	Digital PLL drive clock generator Constant current resistor connecting terminal
80	VCNT	IA	Digital PLL drive clock generator Control terminal

Note 1) Symbols in I/O

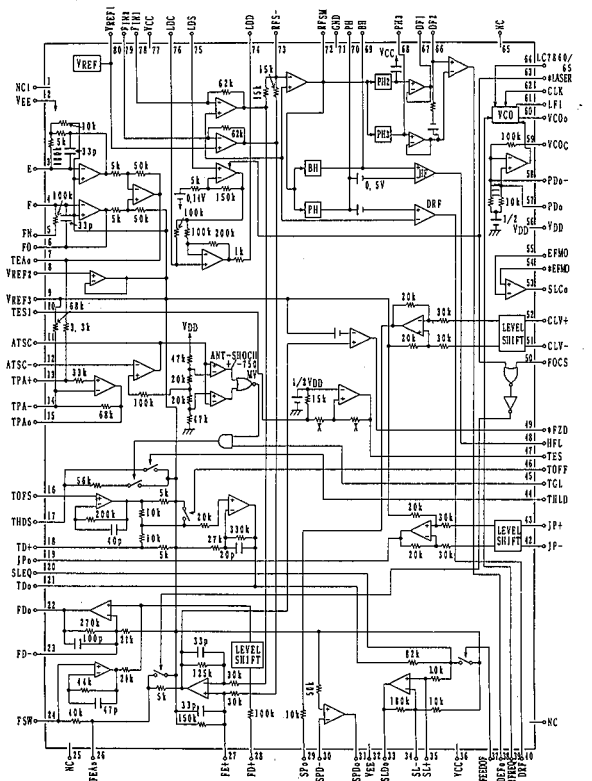
+ : Pull up, - : Pull down, D : Open Drain, T : 3-State, S : Schmitt Trigger, A : Analog Terminal

IC BLOCK

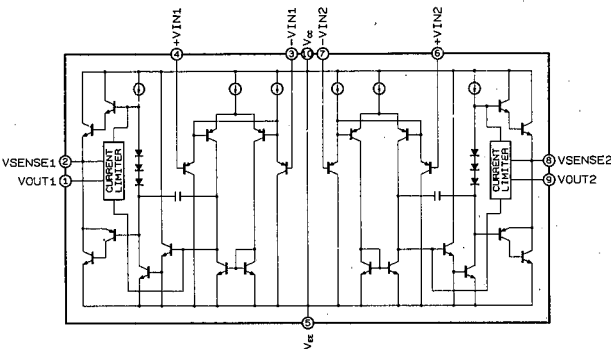
IC1 : LA6524  
4-Channel Power Driver



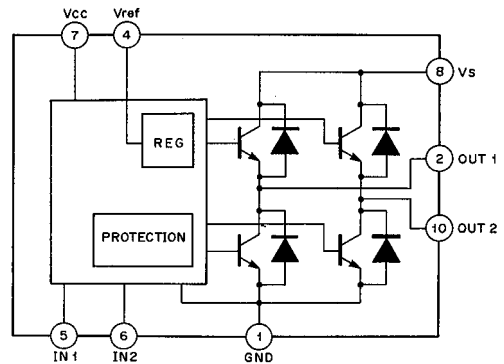
IC3 : LA9210M  
RF-Amp & Servo Controller



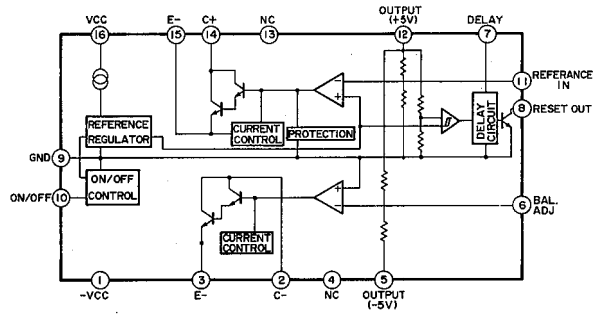
IC4 : LA6515  
Dual Power Operation Amp



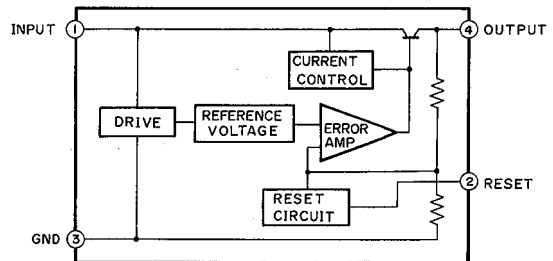
IC5 : TA7291P  
Full Bridge Motor Driver



IC12 : M5290P  
Constant-Voltage Tracking  
Supply with Reset



IC13 : μPC2253H  
+5V Regulator with Reset



Other ICs

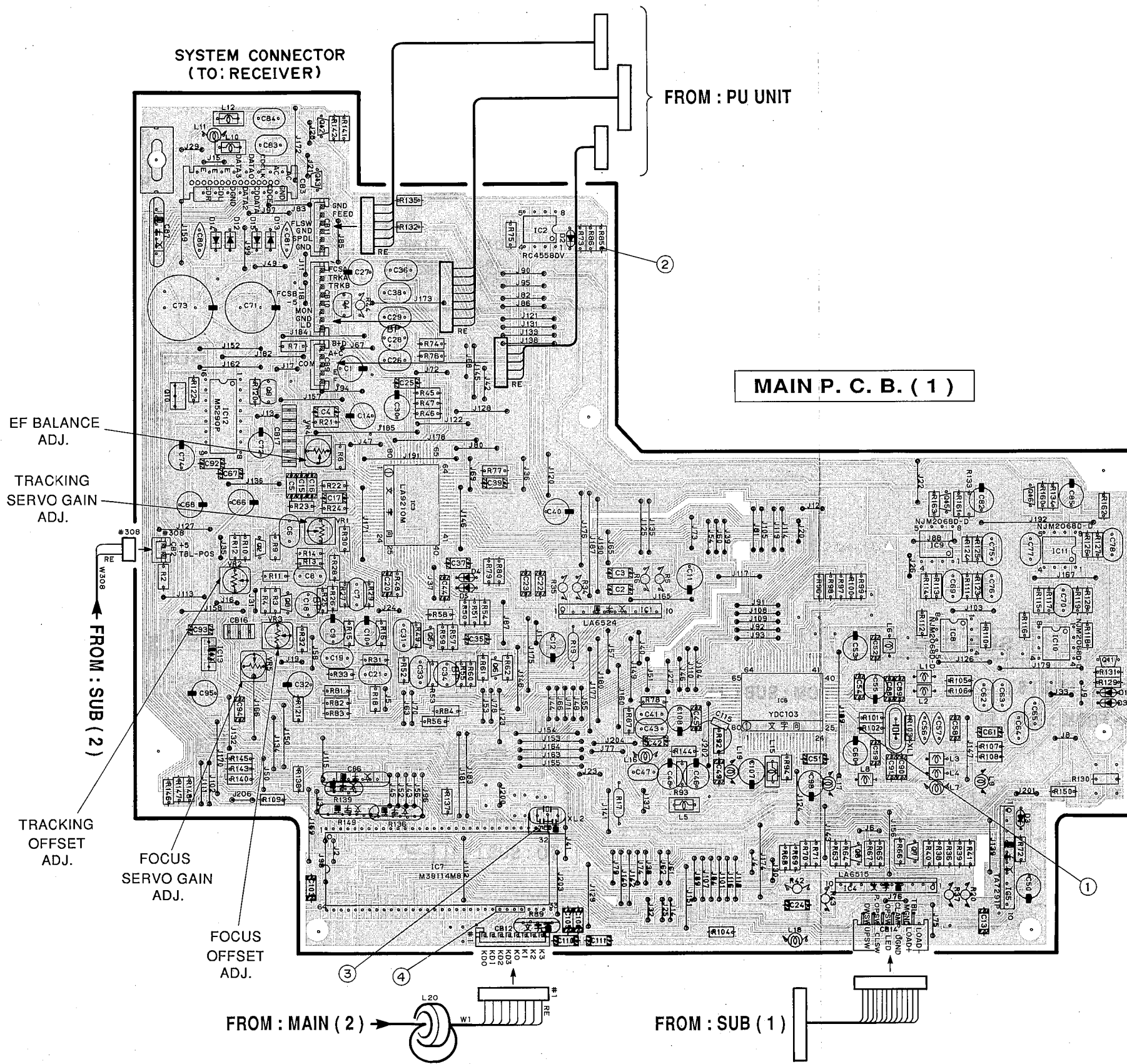
- IC6 : YDC 103  
→ See P. 19
- IC7 : M38103M6  
→ See P. 17

# PRINTED CIRCUIT BOARD (Foil side)

① to ④ : TEST POINT WAVEFORMS (See Page 26)

### Semiconductor Location

Ref. No.	Location
IC 1	E4
IC 2	E2
IC 3	E3
IC 4	F5
IC 5	G5
IC 6	F4
IC 7	E5
IC 8	G4
IC 9	G3
IC 10	G4
IC 11	G3
IC 12	D3
IC 13	D4
Q 2	D3
Q 3	D4
Q 4	D2
Q 5	E4
Q 6	E4
Q 7	G5
Q 8	F5
Q 9	D3
Q 10	C3
Q 11	G4
Q 12	D2
Q 13	D2
Q 15	G3
Q 16	G3



1

2

3

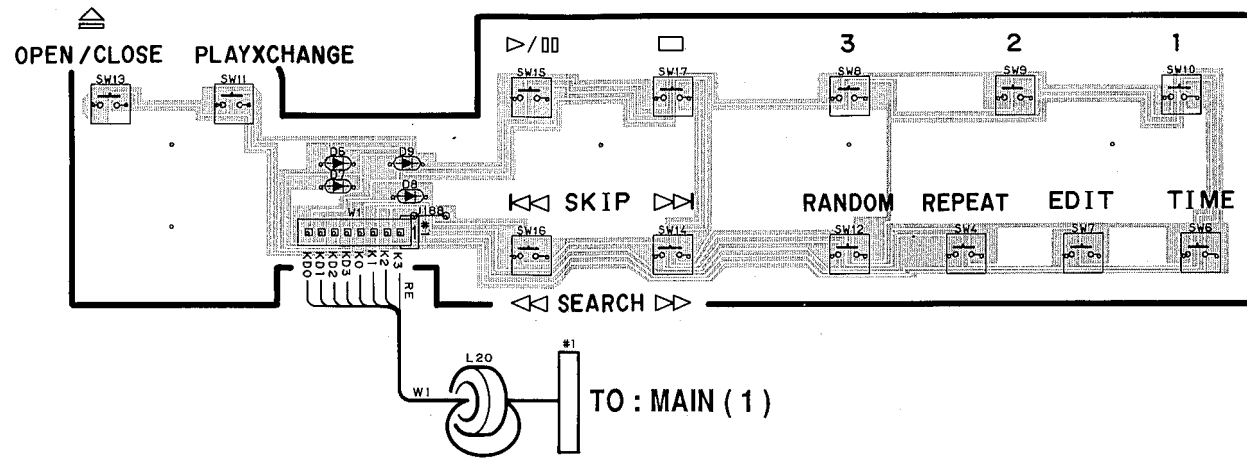
4

5

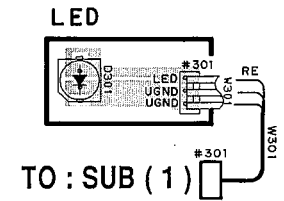
6

PRINTED CIRCUIT BOARD (Foil side)

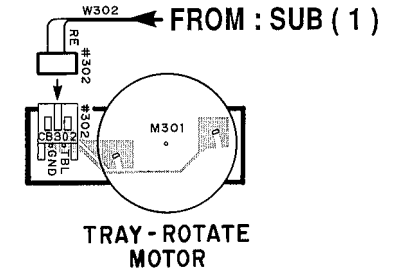
MAIN P. C. B. ( 2 )



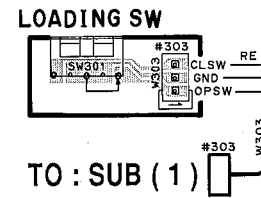
SUB P. C. B. ( 3 )



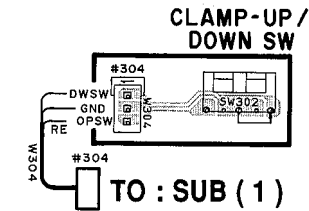
SUB P. C. B. ( 4 )



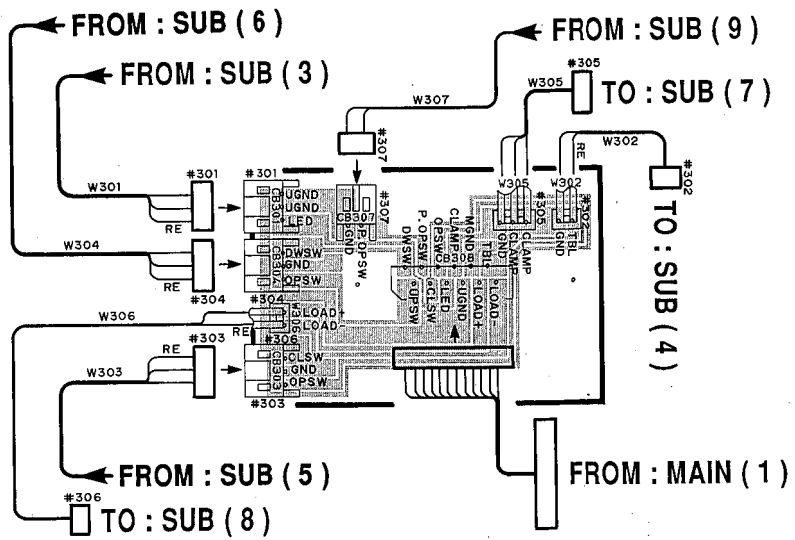
SUB P. C. B. ( 5 )



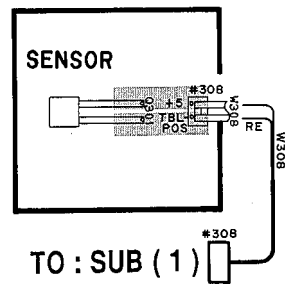
SUB P. C. B. ( 6 )



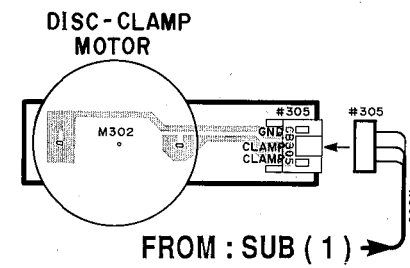
SUB P. C. B. ( 1 )



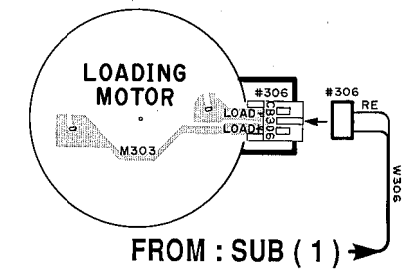
SUB P. C. B. ( 2 )



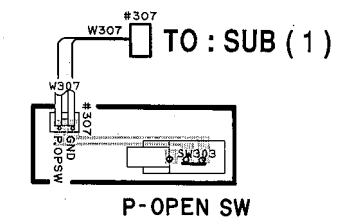
SUB P. C. B. ( 7 )



SUB P. C. B. ( 8 )

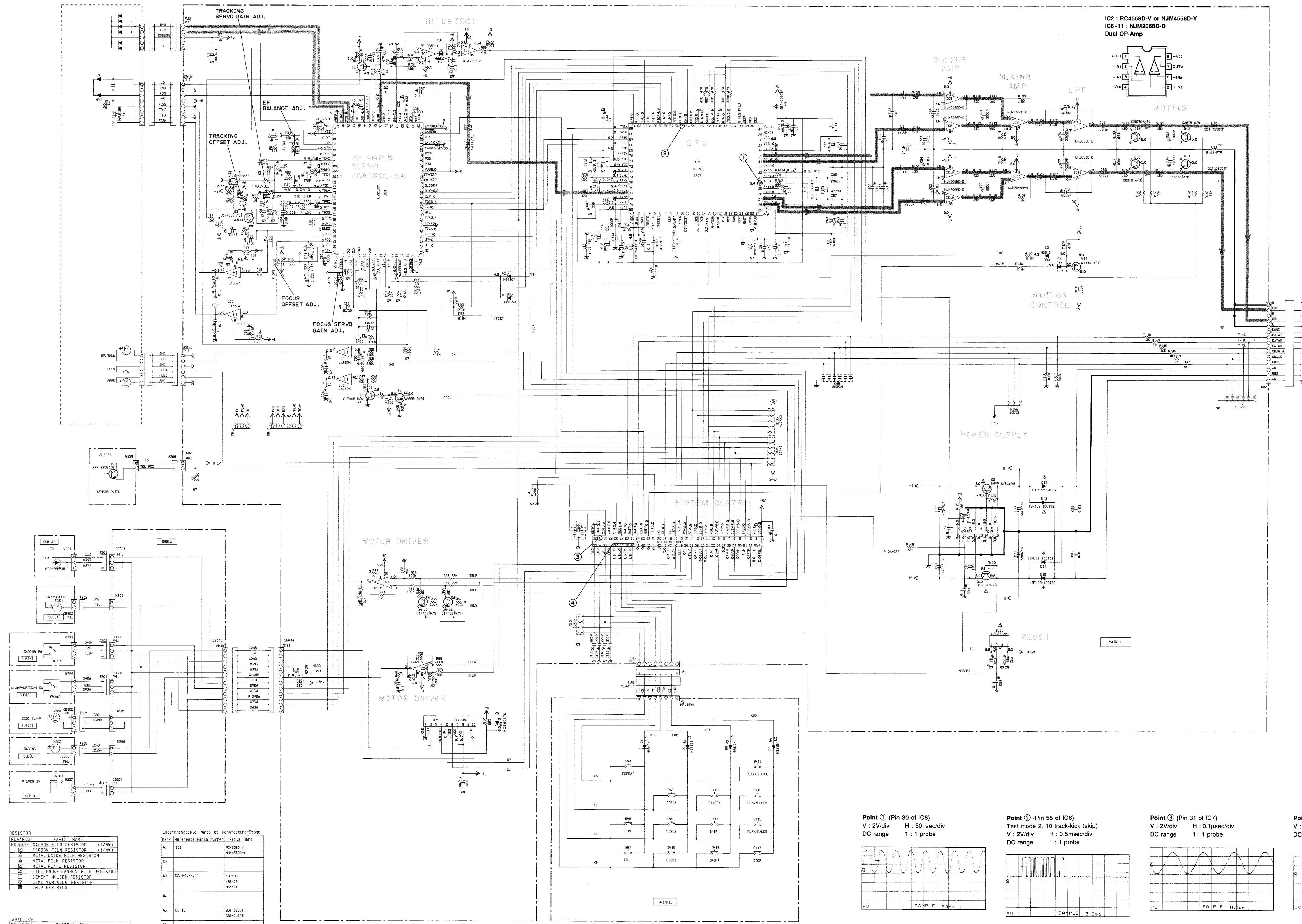


SUB P. C. B. ( 9 )

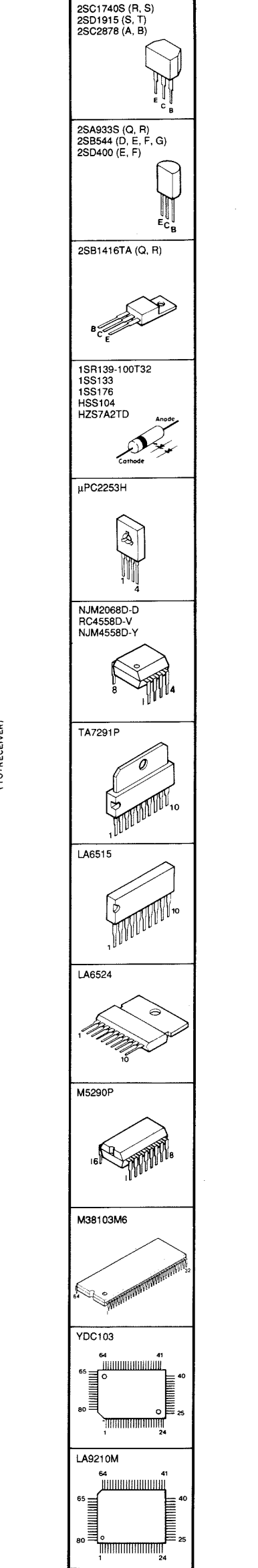




SCHEMATIC DIAGRAM



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

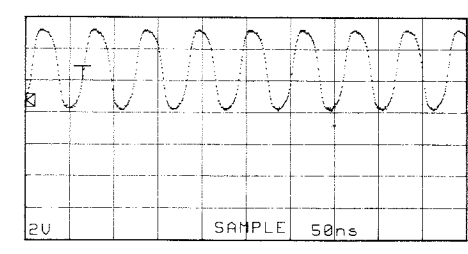


REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (1/4W)
1/2	CARBON FILM RESISTOR (1/2W)
Δ	METAL OXIDE FILM RESISTOR
□	METAL FILM RESISTOR
■	METAL PLATE RESISTOR
□	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOUNTED RESISTOR
□	SEMICONDUCTIVE RESISTOR
■	CHIP RESISTOR

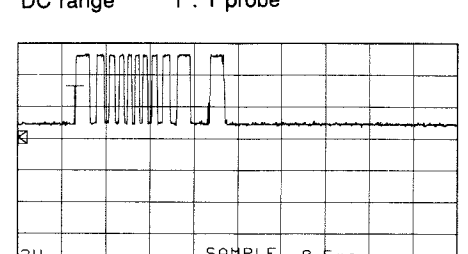
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
□	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
●	AXIAL LEAD CERAMIC CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
○	SEMICONDUCTIVE CERAMIC CAPACITOR

Mark	Reference Parts Number	Parts Name
K1	IC2	RC4558D-V
K2		NJM4558D-Y
K3	DS-4-9-11-30	1SS133
		HSS104
K4		HSS104
K5	LS-15	SBT-0800T
		SBT-0800T

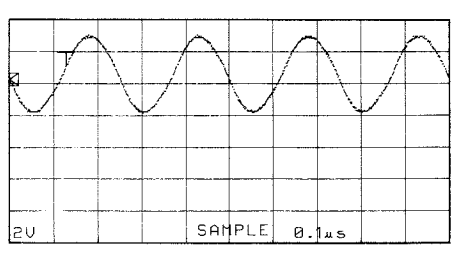
Point ① (Pin 30 of IC6)  
 V : 2V/div H : 50nsec/div  
 DC range 1 : 1 probe



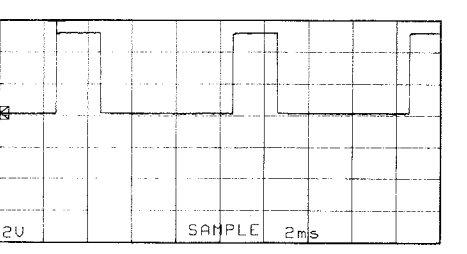
Point ② (Pin 55 of IC6)  
 Test mode 2, 10 track-kick (skip)  
 V : 2V/div H : 0.5msec/div  
 DC range 1 : 1 probe



Point ③ (Pin 31 of IC7)  
 V : 2V/div H : 0.1msec/div  
 DC range 1 : 1 probe



Point ④ (Pin 37 to 40 of IC7)  
 V : 2V/div H : 2msec/div  
 DC range 1 : 1 probe



All voltage are measured with a 10MΩ/DC electric volt meter.  
 Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.  
 Schematic diagram is subject to change without notice.

# PARTS LIST

## ELECTRICAL PARTS

### WARNING

Components having special characteristics are marked  $\triangle$  and must be replaced with parts having specifications equal to those originally installed.

- Carbon resistors (1/6W or 1/4W) are not included in the ELECTRICAL PARTS List. For the parts No. of the carbon resistors, refer to last page.

### ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS :

C.A.EL.CHP	: CHIP ALUMI. ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED, INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR, RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN, TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.WW	: WIRE WOUND RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TITE SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR, BASE PIN	SCR.CUP	: CUP TITE SCREW
CN.CANNON	: CONNECTOR, CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR, DIN	SCR.TR	: SCREW, TRANSISTOR
CN.FLAT	: CONNECTOR, FLAT CABLE	SUPRT.PCB	: SUPPORT, P.C.B.
CN.POST	: CONNECTOR, BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL, AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL, FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL, FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL, FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'y
FLTR.LC.RF	: LC FILTER, EMI	TUNER.AM	: TUNER PACK, AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK, FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-END TUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER, TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

Note) Those parts marked with "#" are not included in the P.C.B. ass'y.



**MAIN P. C. B.**

Schm Ref.	PART NO.	Description
*	VQ350400	P.C.B. MAIN
CB2	VD004500	CN.BS.PIN 2P
* CB3	VL498500	CN 15P
CB9	VD004800	CN.BS.PIN 5P
CB10	VD005100	CN.BS.PIN 8P
CB11	VD004900	CN.BS.PIN 6P
CB12	VD005100	CN.BS.PIN 8P
CB14	VN066500	CN.BS.PIN 12P
CB16	VE015900	TERM 3P IMSA-1068-03A
CB17	VE028500	TERM 6P IMSA-1068-06A
C1	VF760000	C.EL 100uF 10V
C2	VJ599100	C.CE.TUBLR 0.1uF 50V
C3	VJ599100	C.CE.TUBLR 0.1uF 50V
C4	VG278100	C.CE.TUBLR 120pF 50V
C5	VF467300	C.CE.TUBLR 0.01uF 16V
C6	UA653240	C.MYLAR 2400pF 50V
C7	UA654390	C.MYLAR 0.039uF 50V
C8	UA654150	C.MYLAR 0.015uF 50V
C9	UM397330	C.EL 33uF 16V
C10	VJ839100	C.EL 1uF 50V
C11	VF964800	C.EL 100uF 16V
C12	VF964800	C.EL 100uF 16V
C13	VJ599100	C.CE.TUBLR 0.1uF 50V
C14	VF760000	C.EL 100uF 10V
C15	VF467300	C.CE.TUBLR 0.01uF 16V
C16	VF466900	C.CE.TUBLR 470pF 50V
C17	VF467300	C.CE.TUBLR 0.01uF 16V
* C18	VQ535500	C.EL 0.47uF 50V
C19	UA655270	C.MYLAR 0.27uF 50V
C20	VG278400	C.CE.TUBLR 220pF 50V
C21	UA654330	C.MYLAR 0.033uF 50V
C22	VJ599100	C.CE.TUBLR 0.1uF 50V
C23	VJ599100	C.CE.TUBLR 0.1uF 50V
C24	VJ599100	C.CE.TUBLR 0.1uF 50V
C25	VG277900	C.CE.TUBLR 82pF 50V
C26	UA653100	C.MYLAR 1000pF 50V
C27	VJ837200	C.EL 47uF 16V
C28	VE040000	C.EL 10uF 25V
C29	UA654330	C.MYLAR 0.033uF 50V
C30	VF760000	C.EL 100uF 10V
C31	UA655180	C.MYLAR 0.18uF 50V
C32	UM417100	C.EL 10uF 50V
C33	UA653330	C.MYLAR 3300pF 50V
* C34	VG722100	C.EL 1uF 50V
C35	VG279900	C.CE.TUBLR 6800pF 16V
C36	UA655100	C.MYLAR 0.1uF 50V
C37	VJ599100	C.CE.TUBLR 0.1uF 50V
C38	UA654330	C.MYLAR 0.033uF 50V
C39	VF467100	C.CE.TUBLR 4700pF 16V
C40	VJ839000	C.EL 0.47uF 50V
C41	UA654470	C.MYLAR 0.047uF 50V
C42	VG276600	C.CE.TUBLR 22pF 50V
C43	UA654470	C.MYLAR 0.047uF 50V

\* New Parts

Schm Ref.	PART NO.	Description
C44	VJ599100	C.CE.TUBLR 0.1uF 50V
C45	VJ599100	C.CE.TUBLR 0.1uF 50V
C46	UM417100	C.EL 10uF 50V
C47	UA653100	C.MYLAR 1000pF 50V
C48	VF760000	C.EL 100uF 10V
C49	VJ599100	C.CE.TUBLR 0.1uF 50V
C50	VF964800	C.EL 100uF 16V
C51	VJ599100	C.CE.TUBLR 0.1uF 50V
C52	VJ599100	C.CE.TUBLR 0.1uF 50V
C53	VF760000	C.EL 100uF 10V
C54	VJ599100	C.CE.TUBLR 0.1uF 50V
C55	UJ628470	C.EL 470uF 10V
C56	VA761400	C.CE 47pF 50V
C57	VA761400	C.CE 47pF 50V
C58	VJ599100	C.CE.TUBLR 0.1uF 50V
C59	VJ599100	C.CE.TUBLR 0.1uF 50V
C60	UJ628470	C.EL 470uF 10V
C61	VJ599100	C.CE.TUBLR 0.1uF 50V
C62	UA654100	C.MYLAR 0.01uF 50V
C63	UA654100	C.MYLAR 0.01uF 50V
C64	UA654100	C.MYLAR 0.01uF 50V
C65	UA654100	C.MYLAR 0.01uF 50V
C66	UJ628470	C.EL 470uF 10V
C67	VJ599100	C.CE.TUBLR 0.1uF 50V
C68	UJ628470	C.EL 470uF 10V
C69	UA653220	C.MYLAR 2200pF 50V
C70	UA653220	C.MYLAR 2200pF 50V
C71	VG288100	C.EL 2200uF 16V
C72	VJ839000	C.EL 0.47uF 50V
C73	VG288200	C.EL 3300uF 16V
C74	VJ839100	C.EL 1uF 50V
C75	UA653560	C.MYLAR 5600pF 50V
C76	UA653220	C.MYLAR 2200pF 50V
C77	UA653220	C.MYLAR 2200pF 50V
C78	UA653560	C.MYLAR 5600pF 50V
C80	UG444100	C.CE 0.01uF 50V
C81	UG444100	C.CE 0.01uF 50V
C82	UM407220	C.EL 22uF 25V
C83	UA653100	C.MYLAR 1000pF 50V
C84	UA653100	C.MYLAR 1000pF 50V
C85	UM407220	C.EL 22uF 25V
C86	VH483900	C.CE.ARRAY 100pF 50V
C87	VH483900	C.CE.ARRAY 100pF 50V
C88	VF466600	C.CE.TUBLR 10pF 50V
C89	VF466600	C.CE.TUBLR 10pF 50V
C90	VF466600	C.CE.TUBLR 10pF 50V
C91	VF466600	C.CE.TUBLR 10pF 50V
C92	VJ599100	C.CE.TUBLR 0.1uF 50V
C93	VJ599100	C.CE.TUBLR 0.1uF 50V
C94	VJ599100	C.CE.TUBLR 0.1uF 50V
C95	VJ837200	C.EL 47uF 16V
C98	VF760000	C.EL 100uF 10V
C103	VJ599100	C.CE.TUBLR 0.1uF 50V

\* New Parts

CDC-S90

MAIN P. C. B.

SUB P. C. B.

Schm Ref.	PART NO.	Description
C105	VG278400	C.CE.TUBLR 220pF 50V
C106	VG278400	C.CE.TUBLR 220pF 50V
C107	UJ628470	C.EL 470uF 10V
C108	VF760000	C.EL 100uF 10V
C110	VG278400	C.CE.TUBLR 220pF 50V
C111	VG278400	C.CE.TUBLR 220pF 50V
C115	VJ599100	C.CE.TUBLR 0.1uF 50V
D2	VD631600	DIODE 1SS133,176,HSS104
D3	VM974500	DIODE.ZENR HZS6C2TD 6.0V
D4	VD631600	DIODE 1SS133,176,HSS104
D5	VD631600	DIODE 1SS133,176,HSS104
D6	VD631600	DIODE 1SS133,176,HSS104
D7	VD631600	DIODE 1SS133,176,HSS104
D8	VD631600	DIODE 1SS133,176,HSS104
D9	VD631600	DIODE 1SS133,176,HSS104
D11	VD631600	DIODE 1SS133,176,HSS104
△ D12	VH770800	DIODE 1SR139-100
△ D13	VH770800	DIODE 1SR139-100
△ D14	VH770800	DIODE 1SR139-100
△ D15	VH770800	DIODE 1SR139-100
D30	VD631600	DIODE 1SS133,176,HSS104
IC1	XJ740B00	IC LA6524
IC2	iG028400	IC NJM4558DY
IC3	XJ742A00	IC LA9210
IC4	Xi250A00	IC LA6515
IC5	XK583A00	IC TA7291P
IC6	XL834A00	IC YDC103
IC7	XM672A00	IC M38103M6-126SP
IC8	XA987001	IC NJM2068D-D
IC9	XA987001	IC NJM2068D-D
IC10	XA987001	IC NJM2068D-D
IC11	XA987001	IC NJM2068D-D
IC12	XD201A00	IC M5290P
△ IC13	XM660A00	IC uPC2253H
L1	Vi546100	COIL 220uH
L2	Vi546100	COIL 220uH
L3	Vi546100	COIL 220uH
L4	Vi546100	COIL 220uH
L5	VF968800	COIL 60uH
* L6	Vi545800	COIL 120uH
* L7	VE795500	FER.BEAD B-01-RTF
* L8	Vi545800	COIL 120uH
L9	VE795500	FER.BEAD B-01-RTF
L10	VF968800	COIL 60uH
L11	VE795500	FER.BEAD B-01-RTF
L12	VF968800	COIL 60uH
L15	VF968800	COIL 60uH
L16	VE795500	FER.BEAD B-01-RTF
L17	VE795500	FER.BEAD B-01-RTF
L18	VE795500	FER.BEAD B-01-RTF
L19	VE795500	FER.BEAD B-01-RTF
L20	Vi491100	FER.CORE BP53RB19012080M
Q2	iC174020	TR 2SC1740S R,S

\* New Parts

Schm Ref.	PART NO.	Description
Q3	iC174020	TR 2SC1740S R,S
Q4	iB054430	TR 2SB544 D,E,F,G
Q5	iC174020	TR 2SC1740S R,S
Q6	iA093320	TR 2SA933S Q,R
Q7	iC174020	TR 2SC1740S R,S
Q8	iC174020	TR 2SC1740S R,S
△ Q9	iD040040	TR 2SD400
△ Q10	VH481100	TR 2SB1416TA Q,R
Q11	iA093320	TR 2SA933S Q,R
Q12	iC287820	TR 2SC2878 A,B
Q13	iC287820	TR 2SC2878 A,B
Q15	iC287820	TR 2SC2878 A,B
Q16	iC287820	TR 2SC2878 A,B
R5	HV454100	R.CAR.FP 10Ω 1/4W
R6	HV454100	R.CAR.FP 10Ω 1/4W
△ R17	VH293400	F.FUS 2.2Ω 1/6W
△ R19	VH293400	F.FUS 2.2Ω 1/6W
R20	HV454100	R.CAR.FP 10Ω 1/4W
R34	HV454100	R.CAR.FP 10Ω 1/4W
R35	HV454100	R.CAR.FP 10Ω 1/4W
R37	HV453220	R.CAR.FP 2.2Ω 1/4W
R42	HV454100	R.CAR.FP 10Ω 1/4W
R43	HV453220	R.CAR.FP 2.2Ω 1/4W
R44	HV454100	R.CAR.FP 10Ω 1/4W
R89	VQ379500	R.ARRAY 10KΩx4
R136	VQ365600	R.ARRAY 4.7KΩx5
R139	VQ379400	R.ARRAY 10KΩx3
R149	VQ379600	R.ARRAY 10KΩx6
SW4	VG392900	SW.TACT SKHVAA
SW6	VG392900	SW.TACT SKHVAA
SW7	VG392900	SW.TACT SKHVAA
SW8	VG392900	SW.TACT SKHVAA
SW9	VG392900	SW.TACT SKHVAA
SW10	VG392900	SW.TACT SKHVAA
SW11	VG392900	SW.TACT SKHVAA
SW12	VG392900	SW.TACT SKHVAA
SW13	VG392900	SW.TACT SKHVAA
SW14	VG392900	SW.TACT SKHVAA
SW15	VG392900	SW.TACT SKHVAA
SW16	VG392900	SW.TACT SKHVAA
SW17	VG392900	SW.TACT SKHVAA
VR1	VJ693600	VR.TRIM B10KΩ
VR2	VJ694000	VR.TRIM B47KΩ
VR3	VJ694000	VR.TRIM B47KΩ
VR4	VJ693600	VR.TRIM B10KΩ
VR5	VJ693700	VR.TRIM B15KΩ
XL1	VJ719800	RSNR.CRYS 16.9344MHz
XL2	VB759100	RSNR.CE 4MHz
	BB069510	GND.MTL No.6951
	VA119100	HEAT.SINK
	VM988600	RADIATOR
	EN340030	SCR.BOD.HD 3x6 FCRM3-BL

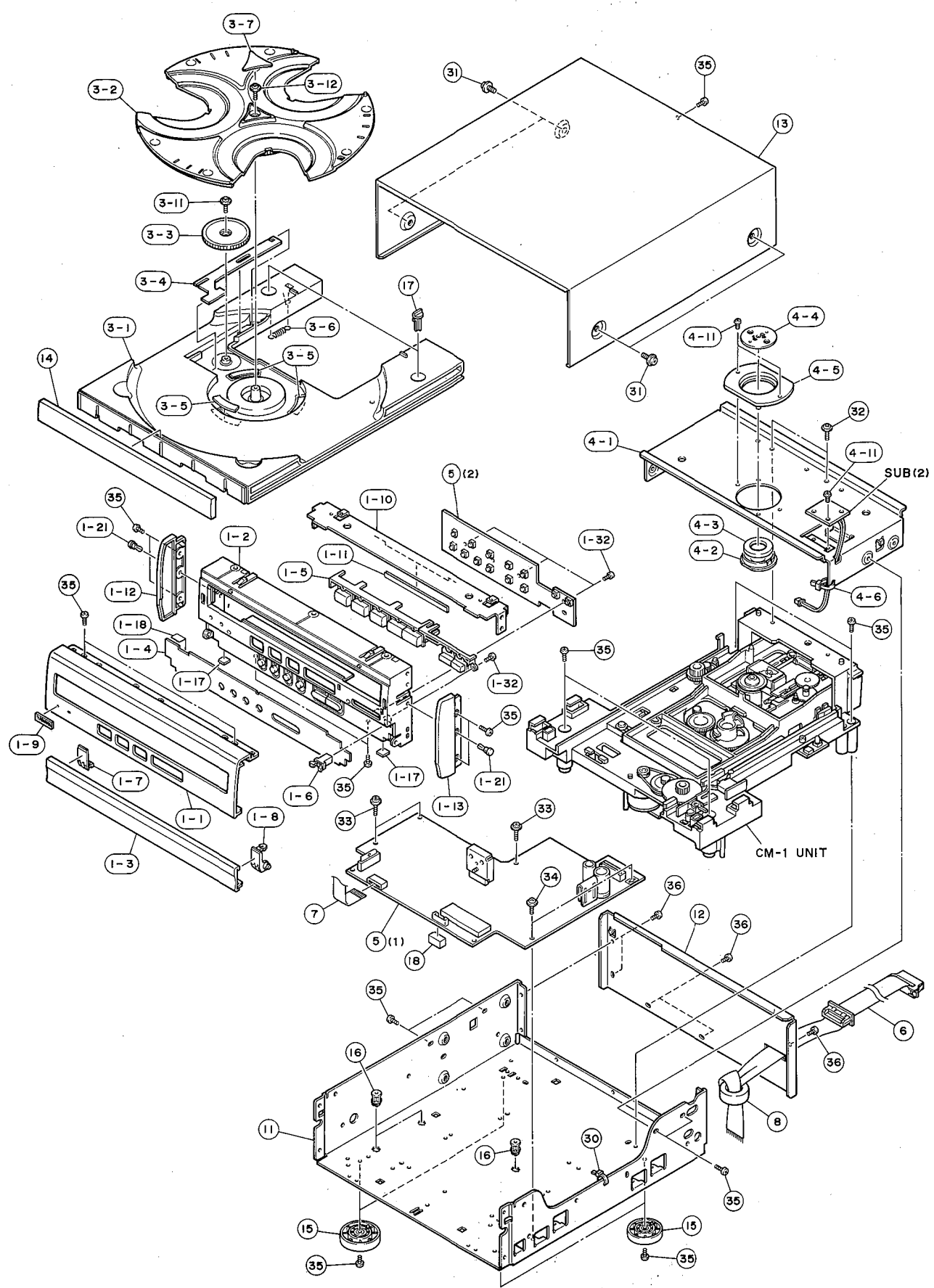
\* New Parts

Schm Ref.	PART NO.	Description
* CB301	VQ350500	P.C.B. SUB
CB301	VB858200	CN.BS.PIN 3P
CB302	VB858100	CN.POST 2P
CB303	VB858200	CN.BS.PIN 3P
CB304	VB858200	CN.BS.PIN 3P
CB305	VB858200	CN.BS.PIN 3P
CB306	VB858100	CN.POST 2P
CB307	VB858100	CN.POST 2P
* CB308	VQ047300	CN 12P
D301	VG700100	LED.INFRD SIR-56SB3H
Q301	VJ544100	PHOTO TR. RPM-22DB106
SW301	Vi294000	SW.LEVER SSCF21
SW302	Vi294000	SW.LEVER SSCF21
* SW303	VQ245300	SW.LEVER SSCTA1-N-P

\* New Parts

CDC-S90

EXPLODED VIEW



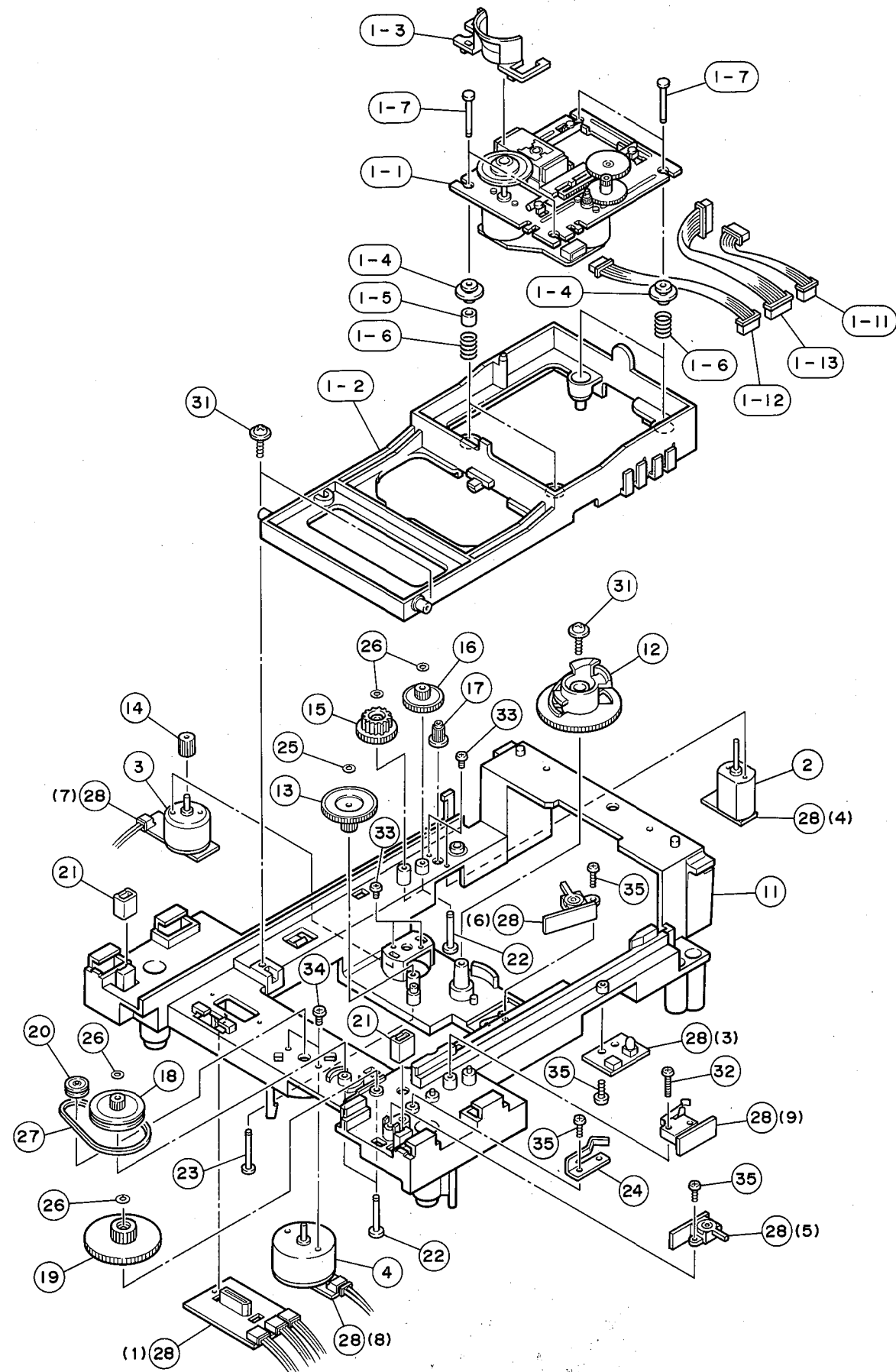
MECHANICAL PARTS Note ) Ø : Diameter

Ref. No.	PART NO.	Description	Remarks	Markets
* 1- 1	VP985900	FRONT PANEL		
* 1- 2	VP985600	SUB PANEL		
* 1- 3	VP983200	LID PANEL		
* 1- 4	VP985800	PLATE, SP		
* 1- 5	VP985700	BUTTON, OP		
* 1- 6	VQ518800	LATCH	No.4U44	
* 1- 7	VP984600	HINGE L		
* 1- 8	VP984700	HINGE R		
1- 9	VQ058200	EMBLEM	22x6.5	YAMAHA
* 1-10	VQ103800	FRAME, STOPPER		
* 1-11	VQ103900	PAD	15x245	
* 1-12	VP984200	PLATE, SIDE L		
* 1-13	VP984300	PLATE, SIDE R		
* 1-17	VQ597200	CUSHION, LID		
* 1-18	VQ786400	TAPE, GROUND	FM8100	
* 1-21	VQ368600	PUSH RIVET	P3555-B	
1-32	EX600310	BIND HEAD P-TITE SCREW	3x8	FCRM3-BL
* 3- 1	VP628700	TRAY		
* 3- 2	VP628800	TABLE		
* 3- 3	VP628000	GEAR, RT1		
* 3- 4	VP629000	LEVER, RT		
* 3- 5	VP628900	CUSHION, TABLE		
* 3- 6	VP629200	SPRING, D4E	TE	
* 3- 7	VP892700	SHEET, TABLE		
3-11	VA775100	BW HEAD P-TITE SCREW	3x8-10	FCRM3-BL
* 3-12	EX602620	BW HEAD P-TITE SCREW	3x12-10	ZMC2-Y
* 4- 1	VP629100	FRAME	STAB.	
4- 2	VL782500	STABILIZER		
4- 3	Vi493400	MAGNET		
4- 4	VJ106100	PLATE, STABILIZER		
4- 5	VL382300	HOLDER	STABILIZER	
4- 6	CB069250	BINDING TIE	BK-1	
4-11	EP600760	BIND HEAD S-TITE SCREW	3x6	FCRM3-BL
5	VQ350400	P.C.B. ASS'y, MAIN		
* 6	VQ369900	REAR CONNECTOR ASS'y	15P 690mm	
* 7	VQ389400	CONNECTOR, FLAT CABLE	12P 130mm	
8	VB933800	FERRITE CORE	BP53RB310190NOA	
* 11	VP982700	CHASSIS		
* 12	VP994300	REAR PANEL		
* 13	VP981900	TOP COVER		
* 14	VP662900	LID	T	
* 15	VP984800	LEG	Ø41xH12.5	
16	CB652990	SUPPORT, P.C.B.	No.5420	
17	VG414400	STOPPER	TRAY	
* 18	VQ390100	DAMPER	8x8x15	
30	CB069250	BINDING TIE	BK-1	
31	EX601150	BW HEAD S-TITE SCREW	4x8-10	FNM3-BL TI
* 32	EX602620	BW HEAD P-TITE SCREW	3x12-10	ZMC2-Y
33	VQ400000	BW HEAD P-TITE SCREW	3x14-8	FCRM3-BL
34	EX600700	BW HEAD TAPPING SCREW	3x8	FCM3-CU
35	Ei330086	BIND HEAD B-TITE SCREW	3x8	FCRM3-BL
36	EN301010	BIND HEAD BONDING TAP. SCREW	3x8	FCRM3-BL

\* New Parts

1  
2  
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**EXPLODED VIEW (CM-1 Unit)**

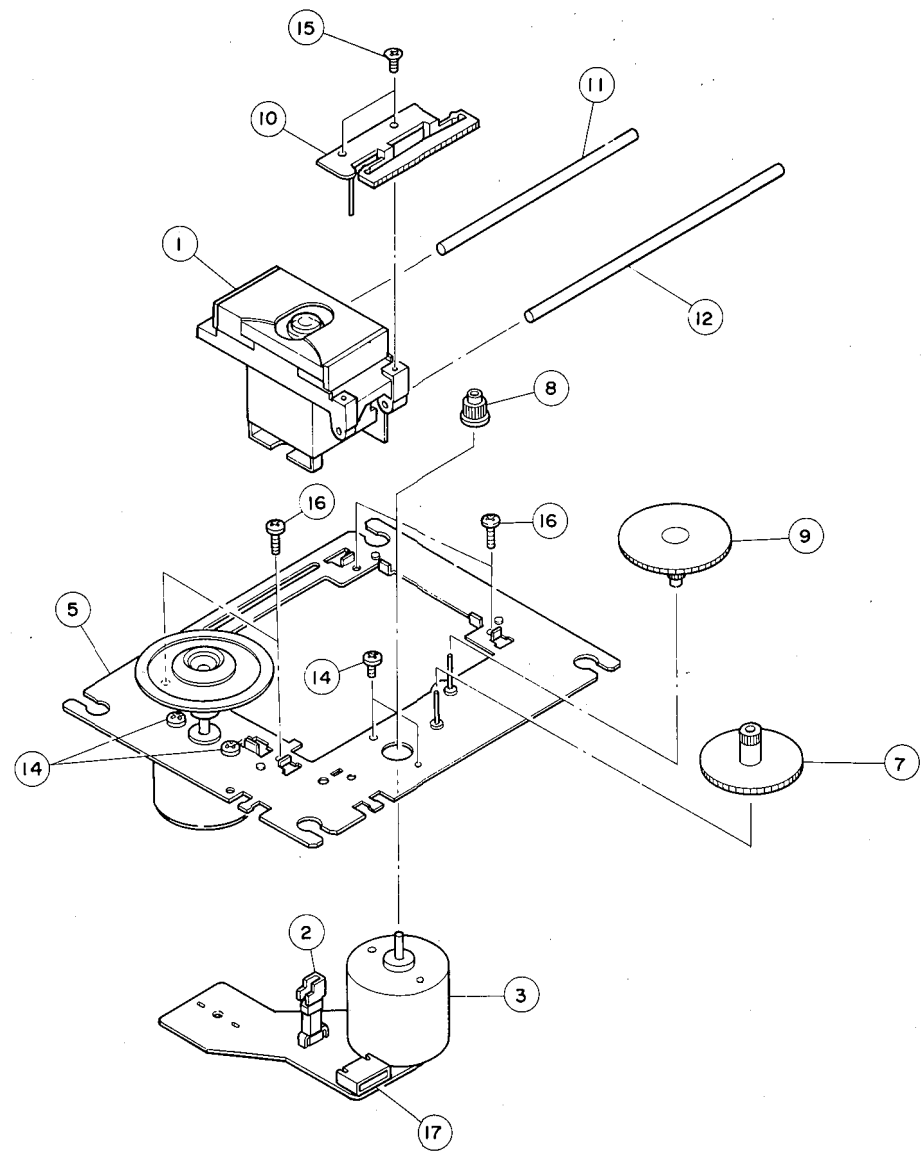


**MECHANICAL PARTS (CM-1 Unit)** Note ) Ø : Diameter

Ref. No.	PART NO.	Description	Remarks	Markets
1- 1	VM444300	PU MECHA. UNIT	CD90V1YA	
1- 2	VL242100	HOLDER	PU	
* 1- 3	VP660500	BARRIER	PU	
1- 4	VJ635200	DAMPER	BUSH	
1- 5	VJ635300	CUSHION, DAMPER		
* 1- 6	VQ386500	SPRING		
1- 7	VJ143700	PIN		
* 1-11	VQ380000	CONNECTOR ASS'y	5P 240mm	
* 1-12	VQ380100	CONNECTOR ASS'y	6P 110mm	
* 1-13	VQ380200	CONNECTOR ASS'y	8P 240mm	
2	VL138500	MOTOR	DC FF-130SH-11340	
3	VM444100	MOTOR	RF-320CH-12400	
4	VM444200	MOTOR	RF-500TB-14415	
* 11	VP628600	CHASSIS, CM		
12	VL241900	CAM, CM		
* 13	VP627800	GEAR, CAM		
* 14	VP627900	GEAR, CL		
* 15	VP628100	GEAR, RT2		
* 16	VP628200	GEAR, RT3		
17	VJ598300	GEAR, PULLEY		
18	VJ612900	GEAR, PULLEY		
19	VJ613000	GEAR	LO/CM	
20	VG254500	PULLEY	S	
21	VJ354100	DAMPER	TRAY	
22	Vi239100	PIN	Ø3	
23	VJ143700	PIN		
24	VL782800	LEVER		
25	VM672200	CUT WASHER	1.5x4x0.25	
26	Vi907700	CUT WASHER	2.2x5x0.25	
27	VB820600	BELT, V		
* 28	VQ350500	P.C.B. ASS'y, SUB		
* 31	EX602620	BW HEAD P-TITE SCREW	3x12-10 ZMC2-Y	
32	VC469500	BIND HEAD P-TITE SCREW	2x10 FCRM3-BL	
33	ED320046	BIND HEAD SCREW	2x4 ZMC2-BL	
34	ED326056	BIND HEAD SCREW	2.6x5 ZMC2-BL	
35	EX601590	BIND HEAD P-TITE SCREW	2.6x8 FCRM3-BL	

\* New Parts

EXPLODED VIEW (PU Mecha. Unit)



Ref. No.	PART NO.	Description	Remarks	Markets
	VM444300	PU MECHA. UNIT	CD90V1YA	
1	PX601520	PICK UP ASS'y	SF-91P	1EA0A41A03100
2	KX603540	LIMIT SWITCH		1EA4S13A00800
3	JX601050	MOTOR		1EA4M10A02100
5	NX611200	CHASSIS ASS'y		1EA0311A02900
7	CX618680	GEAR, MIDDLE		1EA2511A06300
8	CX618690	GEAR, MOTOR		1EA2511A06400
9	CX618700	GEAR, POWER		1EA2511A06500
10	AX615020	PLATE, RACK		1EA2731A01400
11	AX615030	GUIDE BAR		1EA2362A00400
12	AX615040	GUIDE BAR		1EA2362A00500
14	EX602300	PAN HEAD SCREW	1.7x2.5 ZMC2-Y	SE3PN172R5SE
15	EB020056	FLAT HEAD SCREW	2x5 ZMC2-Y	SE1FN205R0SE
16	EX602310	SPECIAL SCREW		SFXEA01800
17	LX606800	CONNECTOR	6P	42369750000

\* New Parts

Parts List for Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	10 kΩ	HF45 7100	HF45 7100
1.8 Ω	HJ35 3180	*	11 kΩ	HF45 7110	HF45 7110
2.2 Ω	HJ35 3220	HF85 3220	12 kΩ	HJ35 7120	HF85 7120
3.3 Ω	HJ35 3330	HF85 3330	13 kΩ	HF45 7130	HF45 7130
4.7 Ω	HJ35 3470	HF85 3470	15 kΩ	HF45 7150	HF45 7150
5.6 Ω	HJ35 3560	HF85 3560	18 kΩ	HF45 7180	HF45 7180
10 Ω	HF45 4100	HF45 4100	22 kΩ	HF45 7220	HF45 7220
15 Ω	HJ35 4150	HF85 4150	24 kΩ	HF45 7240	HF45 7240
22 Ω	HF45 4220	HF45 4220	27 kΩ	HJ35 7270	HF85 7270
27 Ω	HJ35 4270	HF85 4270	30 kΩ	HF45 7300	HF45 7300
33 Ω	HF45 4330	HF45 4330	33 kΩ	HF45 7330	HF45 7330
39 Ω	HJ35 4470	HF85 4390	36 kΩ	HF45 7360	HF45 7360
47 Ω	HF45 4470	HF45 4470	39 kΩ	HF45 7390	HF45 7390
56 Ω	HF45 4560	HF45 4560	47 kΩ	HF45 7470	HF45 7470
68 Ω	HF45 4680	HF45 4680	51 kΩ	HF45 7510	HF45 7510
75 Ω	HF45 4750	HF45 4750	56 kΩ	HF45 7560	HF45 7560
82 Ω	HF45 4820	HF45 4820	62 kΩ	HF45 7620	HF45 7620
91 Ω	HF45 4910	HF45 4910	68 kΩ	HF45 7680	HF45 7680
100 Ω	HF45 5100	HF45 5100	82 kΩ	HF45 7820	HF45 7820
110 Ω	HJ35 5110	HF85 5110	91 kΩ	HF45 7910	HF45 7910
120 Ω	HF45 5120	HF45 5120	100 kΩ	HF45 8100	HF45 8100
150 Ω	HF45 5150	HF45 5150	110 kΩ	HF45 8110	HF45 8110
160 Ω	HJ35 5160	*	120 kΩ	HF45 8120	HF45 8120
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	*
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	*
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			

