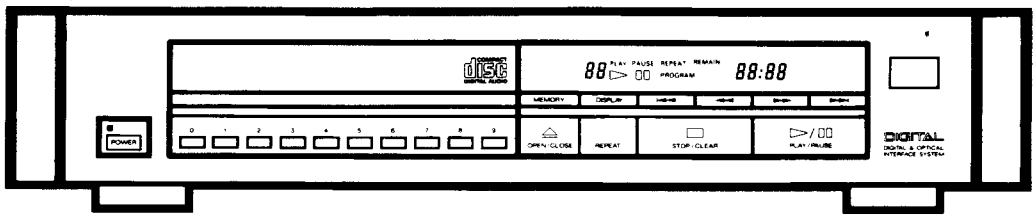
AKAI SERVICE MANUAL



COMPACT DISC PLAYER
MODEL CD-M939

COMPACT disc DIGITAL AUDIO

I. SPECIFICATIONS

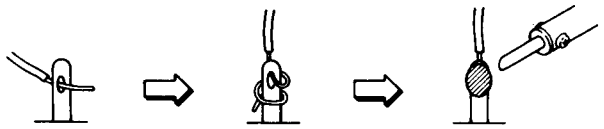
Type	Optical
Pick-up system	3 beam semi-conductor laser
Wow & Flutter	Below measurable limits
Output level/Impedance (Digital)	0.5Vp-p/75 ohms
Power requirements	120V, 60 Hz for USA & Canada 220V, 50 Hz for Europe except UK 240V, 50 Hz for UK & Australia 110V/120V/220V/240V, 50 Hz/60 Hz convertible for other country
Dimensions	385(W) × 74(H) × 330(D) mm (15.2 × 2.9 × 13.0 inches)
Weight	4.5 kg (9.9 lbs)

* For improvement purposes, specifications and design are subject change without notice.

★ SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVIDING

1. Parts identified by the ⚠ symbols parts are critical for safety. Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.
   These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note. especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 M ohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be headphone jacks line-in-out jacks etc. more than 2.2 M ohms (ground terminals, microphone jacks).

★ INFORMATION

SYMBOL FOR PRIMARY DESTINATION

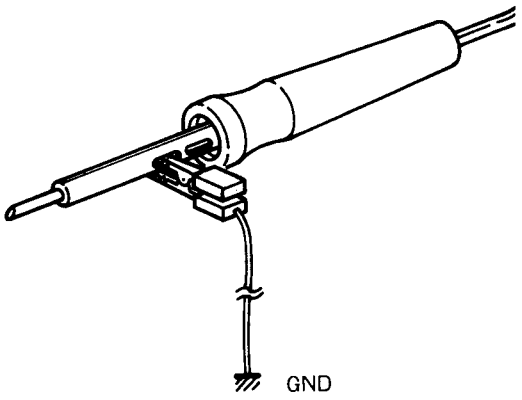
Alphabet indicates the destination of the units as listed below.

Symbols	Principal Destinations
[A]	USA
[B]	UK
[C]	Canada
[E]	Europe (except UK)
[J]	Japan
[S]	Australia
[V]	W. Germany only
[U]	Universal Area
[Y*]	Custom version

PRECAUTIONS IN REPAIRING

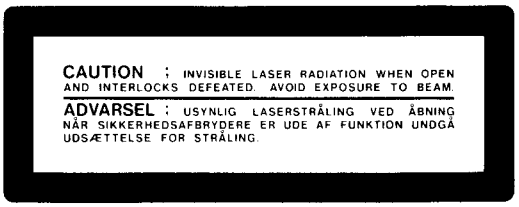
When repairing or adjusting the unit, please note the following points.

1. Do not put excessive pressure on the mechanical part (operation part), including the pick-up block, as extremely high mechanical precision is required in these parts.
2. When the base is removed for repair or adjustment, make sure that there are no metal objects in the narrow gap between the P.C. board or the mecha parts and the base.
3. The Micro-Computer (M50752 – 401 SP) and the CD signal processing ICs (M51564P and M50421P) can be damaged by static electricity or leakage from a soldering iron during repairing.
   While soldering, please take the precautions against leakage as in the illustration.
4. Do not loosen any screws in the pick-up block.
   When handling the pick-up block, please refer to the points to NOTE when replacing the pick-up block.
5. Keep safety from hazardous invisible Laser Radiation. DO NOT watch the Laser Beam (Objective Lens) directly.
6. Models for the same countries, Laser Warning Labels are affixed on the unit and inside of the unit, as shown below. Read it carefully for your safety, when repairing or adjusting the unit.



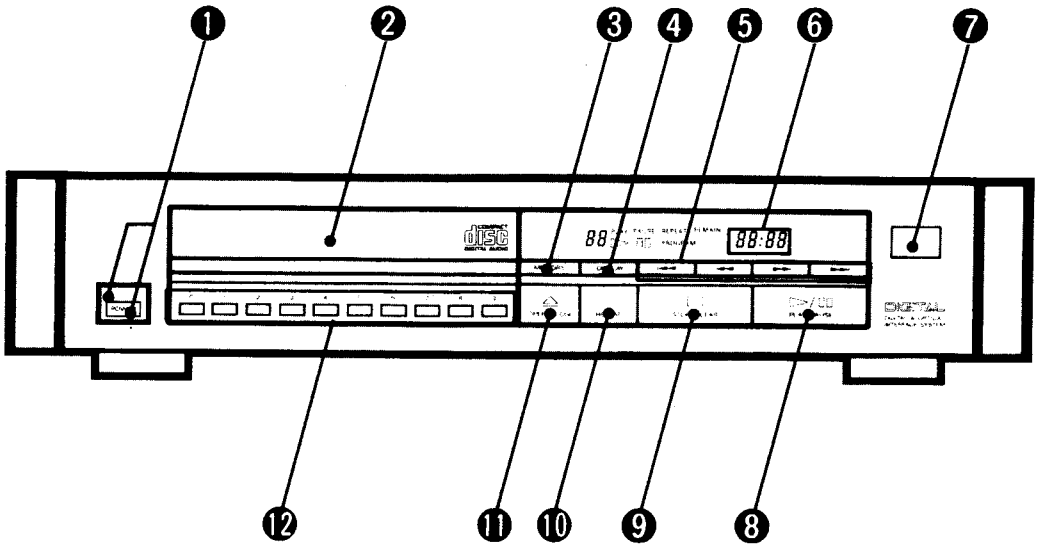
[DENMARK and U.K]

A Label affixed on the unit



A1 A Label affixed inside of the unit

I. CONTROLS



1 POWER Switch and Indicator
To turn the Akai CD player ON and OFF.

2 Disc drawer
Holds a compact disc.

3 MEMORY button
To memorize programs for random program playback. See page 11.

4 DISPLAY button
To choose the display mode, individual time, or remaining time mode display. See page 10.

5 SEARCH ⏮ , ◀◀ , ▶▶ , ⏭ buttons
Use these buttons for skip and manual search operation. See page 9.

6 FL (Fluorescent) Display
Shows what mode the Akai CD player is in. See page 10.

7 Remote control window.
Keep clean for proper remote control operation.

8 PLAY/PAUSE ▷/▯▯ button
To start playback and to temporarily stop playback. See page 8.

9 STOP/CLEAR □ button
To clear a program or REPEAT play, or to STOP regular play back. See page 8.

10 REPEAT button
To replay a single selection or the entire disc. See page 12.

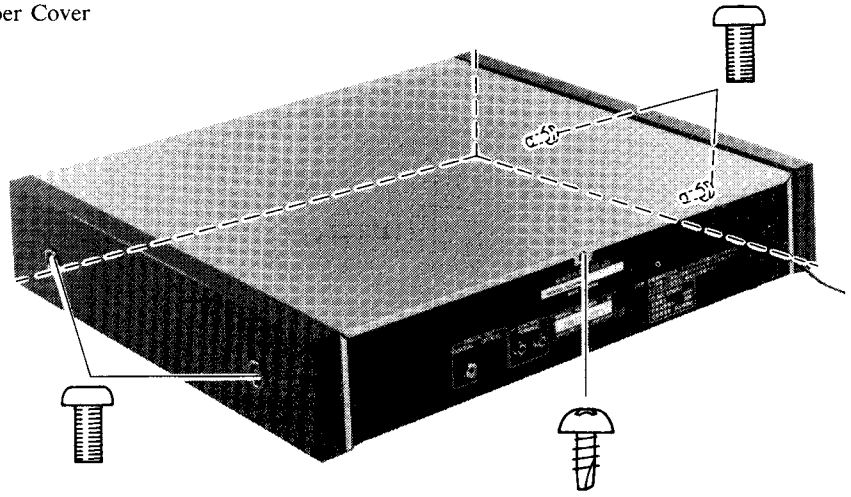
11 OPEN/CLOSE ⏏ button
To load and eject compact discs, to stop compact disc playback and to cancel all the memorized programs. See page 5.

12 Numeric buttons (0 to 9)
Used for direct search and playback of a selection. Also used for programming during random program playback. See page 10 and 11.

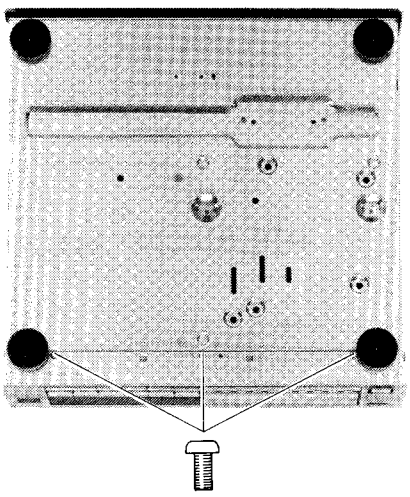
II. DISASSEMBLY

In case of trouble, etc, necessitating dismantling, please dismantle in the order shown in the photographs.
Reassemble in reverse order.

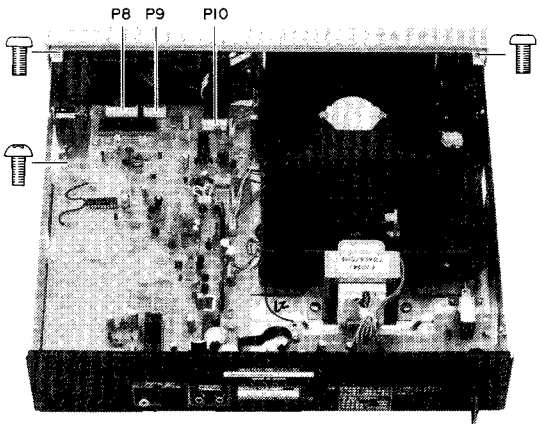
1. Removal of Upper Cover



2. Removal of Front Pannel



3.



* Before remove the Front panel, disconnect the connectors P7, P8, P9 and P10. (while disconnecting the wire from the connector, press upper side of connector.)

III. PRINCIPAL PARTS LOCATION

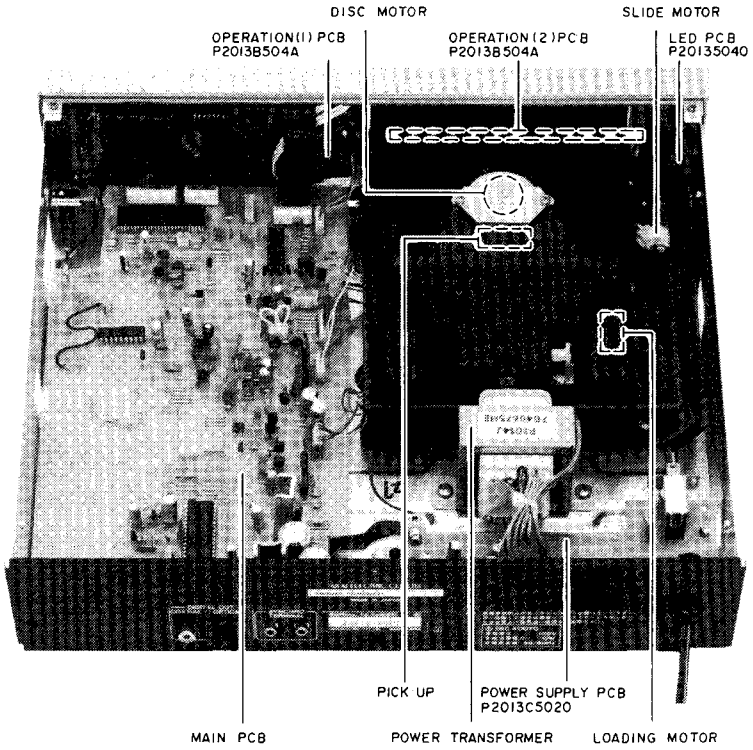


Fig. 3-1

IV. REPLACEMENT OF PICK-UP BLOCK

4-1. REMOVAL OF THE MECHANICAL BLOCK

① While power is on, set the disc tray to open condition by press the OPEN/CLOSE button, then turn off the power.
② Disconnect the connectors P1, P2, P4 and P11 on the MAIN PCB.
③ Remove the screws Ⓐ, Ⓑ and Ⓒ. (Refer to Fig. 4-1)
④ Press the disc tray and set the disc tray to close condition.
⑤ Remove the FRONT PANEL.
(Refer to I. DISASSEMBLY)
⑥ Remove the MECHANICAL BLOCK from the main chassis.

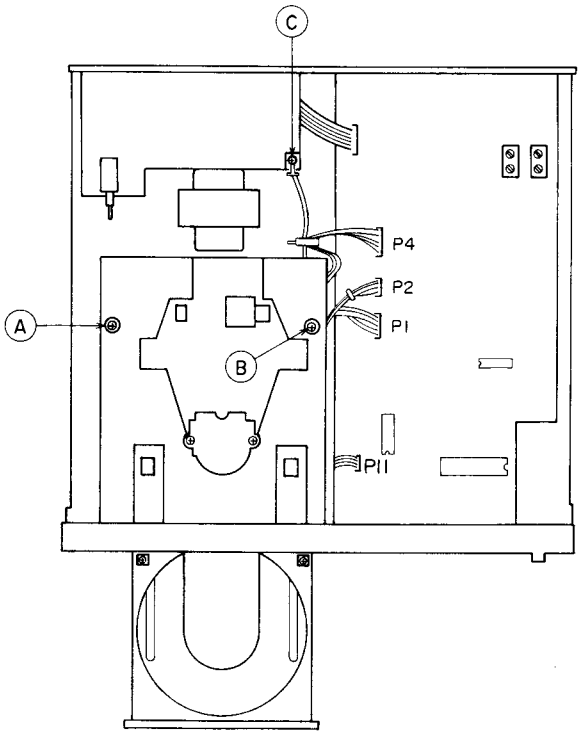


Fig. 4-1

4-2. REMOVAL OF THE PICK-UP BLOCK

1) Remove the E ring Ⓓ, then remove the gear Ⓔ.
2) Remove the screws Ⓗ, Ⓘ, Ⓙ and Ⓚ which fixed guide shaft.
3) Disconnect the connectors (6 pin and 9 pin connectors) on the pick-up block, then remove the pick-up block.
4) Remove the pick-up fixing screws Ⓛ, Ⓜ and Ⓝ.

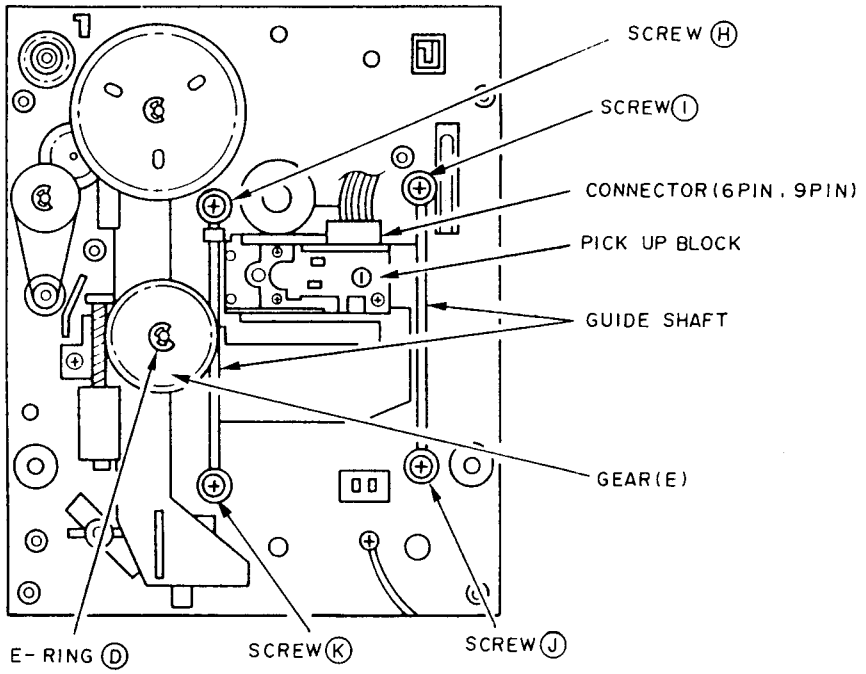


Fig. 4-2

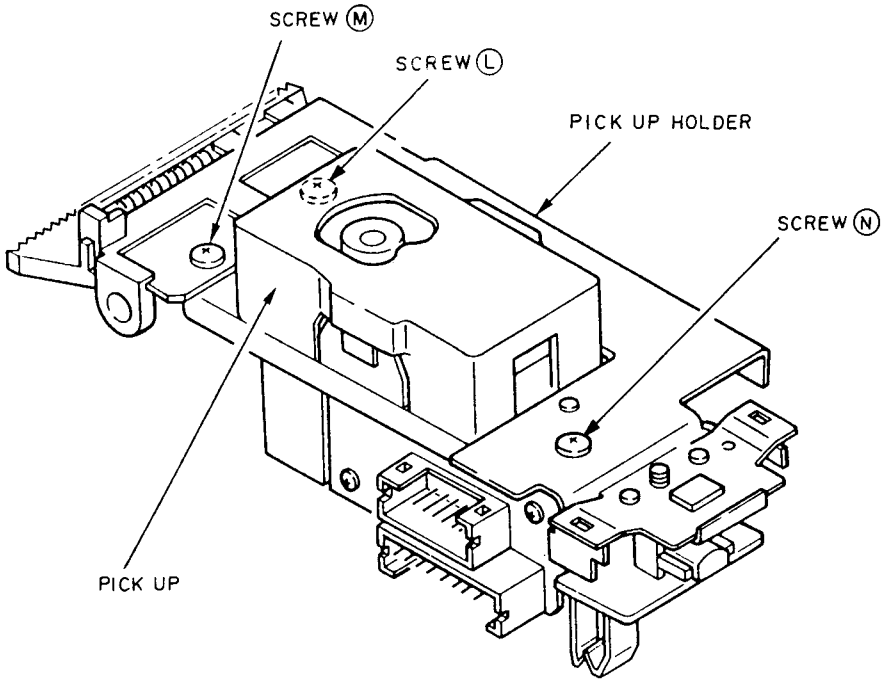


Fig. 4-3

4-3. ADJUSTMENT OF THE PICK-UP BLOCK WHILE SERVICING

4-3-1. Pick-up Inclination Adjustment

Fine inclination adjustment in the jitter direction is necessary after replacing the pick-up. Adjustment is performed by rotating the Jitter Direction Inclination Adjustment Screw. (Refer to Fig. 4-4)

1) Connect the oscilloscope between P5 pin ① (HF signal) and GND.
2) Set the unit in the TEST MODE 4.

   NOTE: "How to make test Mode" has been written in VII. ELECTRICAL ADJUSTMENT (SERVO).
3) Press the (FF) or (FR) Buttons so that the Jitter Direction Adjustment Screw may situate to the middle of the Inclination Adjustment Hole.
4) Confirm that the HF signal (Eye-Pattern) shown in Fig. 4-5.
5) Turn right and left the Jitter Direction Adjustment Screw (Fig. 4-4) with the hexagonal driver (2.4 mm) until the HF Signal pattern change from (A) to (B) in Fig. 4-6.
6) After adjustment confirm that the HF signal level is within the range indicated below.
   Check that HF signal pattern is clear as shown in Fig. 4-6 B.

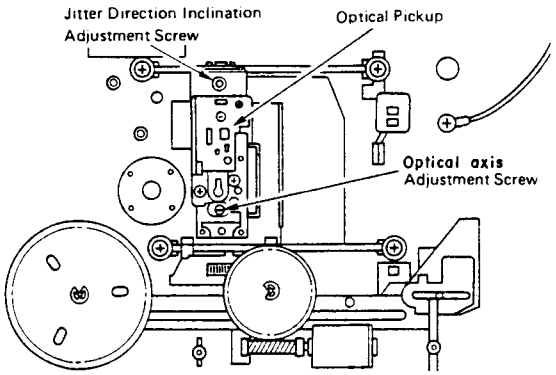


Fig. 4-4

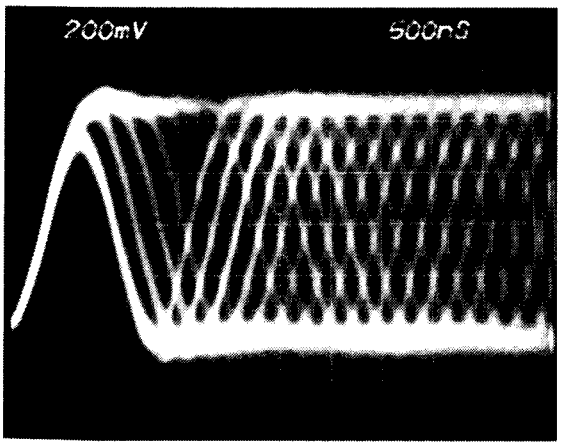
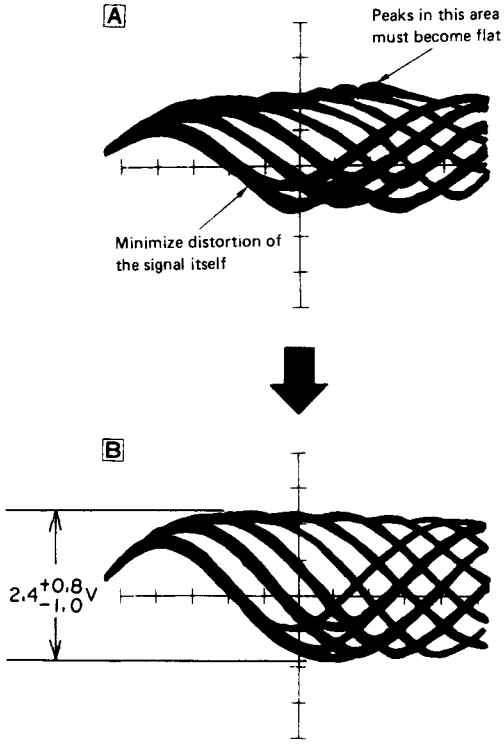


Fig. 4-5



(A): HF Signal before jitter direction adjustment
(B): HF Signal after jitter direction adjustment

Fig. 4-6

4-3-2. ADJUSTMENT OF THE FOCUS OFF-SET

When indication of the Frequency Counter is not decrease than 120 Hz in the VII. ELECTRICAL ADJUSTMENT (SERVO) step 2 FOCUS SERVO OFF-SET adjustment.

Put the washer 0.2 mm (Parts No. ZW-259650) between pick-up and pick-up holder as shown in Fig. 4-7.

After this adjustment all the adjustments in VII. ELECTRICAL ADJUSTMENT (SERVO) are necessary.

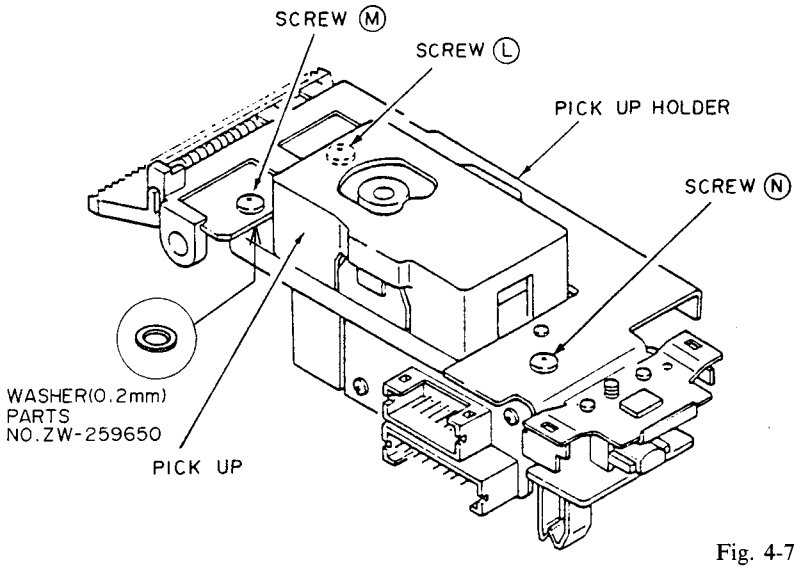


Fig. 4-7

4-3-3. APC (Automatic Power Control)

This circuit is to keep the constant laser power of the pick-up, semi-fixed resister VR 1 on the pick-up block is adjusted at the factory according to each character of the pick-up, consequently, "DO NOT TOUCH THIS VR 1".

V. REPLACEMENT OF SPINDLE MOTOR

5-1. REMOVE AND ASSEMBLY SPINDLE

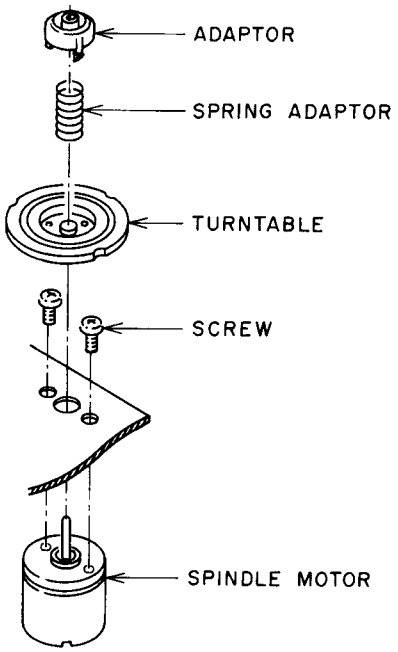


Fig. 5-1

1) Pull out the turntable, Spring adaptor and Adaptor.
2) Remove the two Screws.
3) Unsolder two Spindle Motor wires.
4) Solder two wires to the new Spindle Motor.
5) Put the new Spindle Motor on the chassis with two screws.
6) Press-in the turn table on to the Motor shaft.
   Adjust the turntable so that the hight of the turntable from chassis become 6.6 ± 0.1 mm (Fig. 5-2).

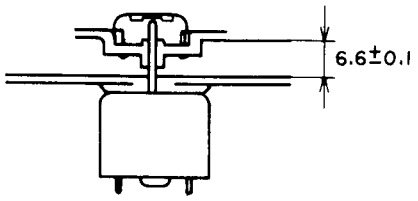


Fig. 5-2

VI. HOW TO INSTALL OF THE LOADING MECHANISM

1. Set the Disc Tray in a loading condition.
2. Set the gear (B) on the shaft (G).
   When the gear (B) is set properly, fit the Hole of the gear (B) to the hole of the CHASSIS. (Fig. 6-1)
3. Press the Lever-outsert to fully direction (D).
   (Fig. 6-1)
4. Set the gear (C) on the shaft (H).
   When the gear (C) is set properly, fit the MARK (E) to the MARK (F). (Fig. 6-1)
5. Set the gear (A) on the shaft (I).
   When the gear (A) is set properly, fit the Hole of the gear (A) to the Hole of the CHASSIS. (Fig. 6-1)

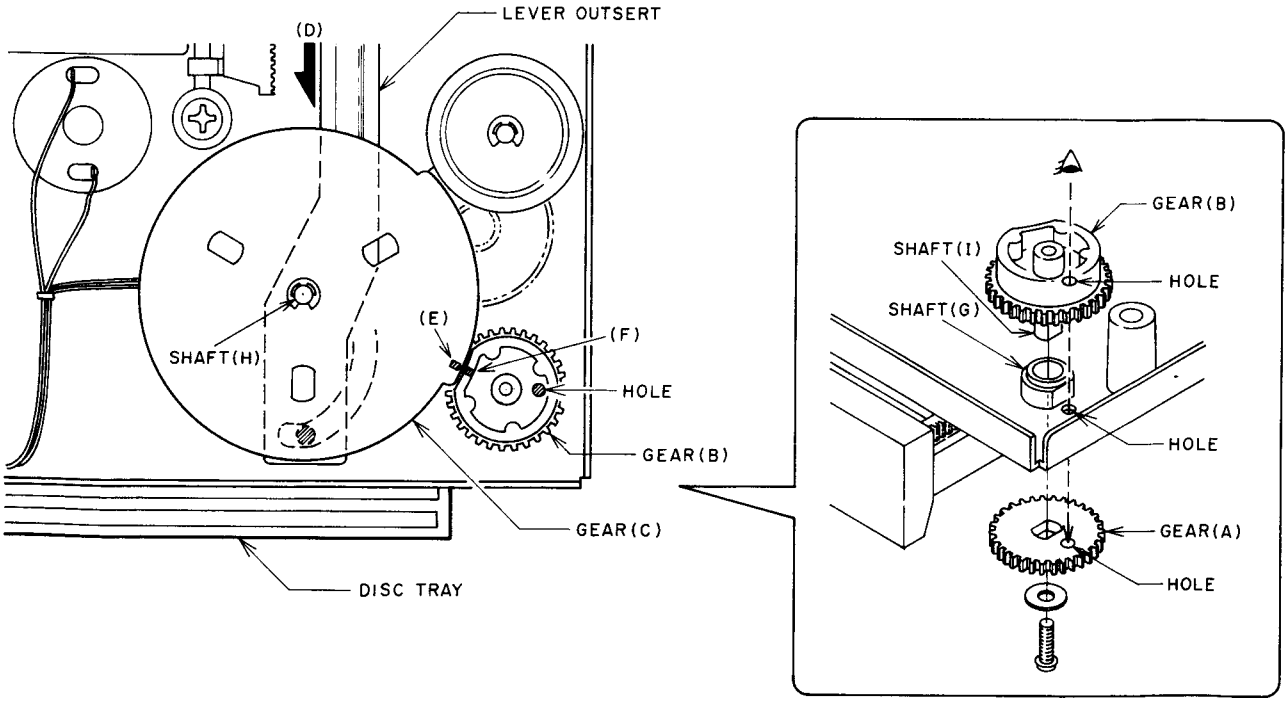
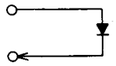


Fig. 6-1

VII. ELECTRICAL ADJUSTMENT (SERVO)

ABOUT THE TEST MODE

* This test mode use for the adjustment or check.
* Short the pin 1 and 2 of the connector P12 and turn on the power. Indication of the display on the front panel is "0 TEST" when set to the test mode.
* Operation key on the front panel does not accept while in the test mode.
* When release from the test mode, turn the power off.
* When change the test mode NO., short the pins of the connecter P13 as shown below.



TEST MODE OPERATION DISPLAY AND FUNCTION

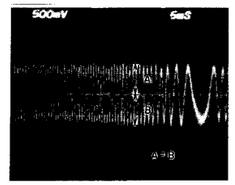
OPERATION	TEST MODE DISPLAY	FUNCTION
ON → Pin ⑥ – Pin ③ – Pin ⑥ – Pin ③ – Pin ⑥ – Pin ③ – Pin ⑥ – Pin ① (Pin ② – Pin ⑥)	0 TE:S 7	* Laser diode "OFF" * All servo "OFF" * Short pin ⑥→②. Brake mode from disc motor is rotating
	1 TE:S 7	* Laser diode "ON"
	2 TE:S 7	* Focus servo "ON"
	3 TE:S 7	* Only when focus servo is normal condition Disc motor rotate Audio mute release
	4 TE:S 7	* Track servo "ON" * Slide servo "ON"
Pin ⑤ – Pin ③	———	* Pick up move to FF direction
Pin ⑤ – Pin ②	———	* Pick up move to FR direction
Pin ④ – Pin ①	———	* Open and close of disc tray

NO.	ADJUSTMENT ITEM
1.	TEST DISC
2.	TEST MODE NO.
3.	TEST POINT & INSTRUMENT
4.	ADJUSTMENT PART
5.	RESOLT & REMARKS

ADJ. PART　　TEST POINT

3 E-F BALANCE

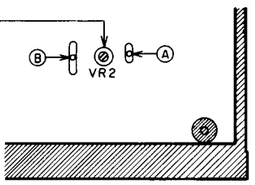
1. TEST DISC TYPE III (AT-711881)
2. Test mode 3
3. Connect an oscilloscope to pin ② of connector P5.
4. VR2
5. A = B (DC Range)



4 OPTICAL AXIS

1. TEST DISC TYPE III (AT-711881)
2. Test mode 3
3. Connect an oscilloscope to pin ② of connector P5.
4. Adjustment screw A
5. Adjust screw A so that the waveform level on the oscilloscope is maximum.

* Before adjustment, move the pick-up so that coinside the adjustment window and adjustment screw A as shown below.



FRONT

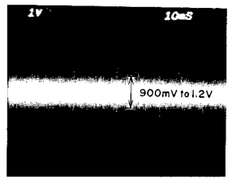
* If the eye pattern is not clear, repeat step 2 FOCUS SERVO OFF-SET adjustment.

1 TRACKING SERVO OFF-SET

1. -----
2. Test mode 1
3. Connect an oscilloscope between pin ② of connector P5 and GND
4. VR2
5. 0 ± 5mV (DC Range)

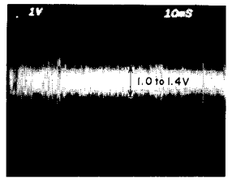
6 FOCUS SERVO GAIN

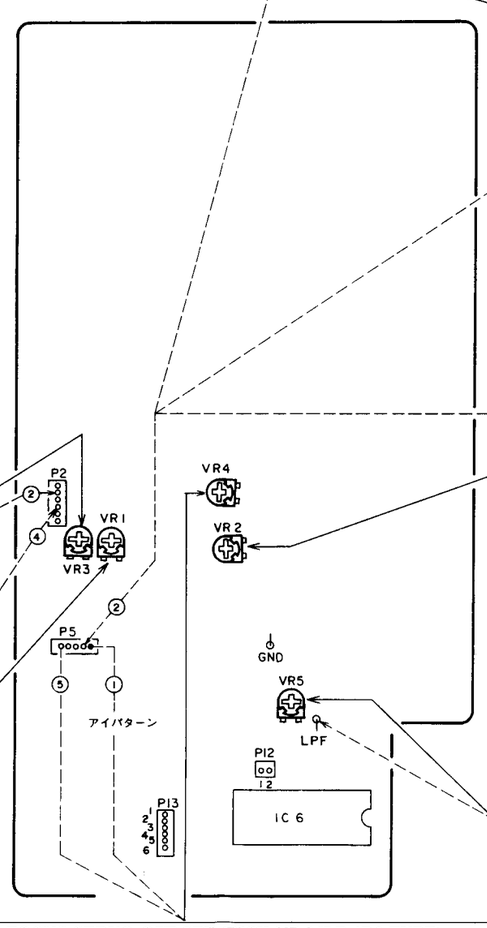
1. TEST DISC TYPE III (AT-711881)
2. Test mode 4
3. Connect an oscilloscope to pin ② of connector P2.
4. VR3
5. 1.0 to 1.4V p-p.



5 TRACKING SERVO GAIN

1. TEST DISC TYPE III (AT-711881)
2. Test mode 4
3. Connect an oscilloscope to pin ④ of connector P2.
4. VR1
5. 0.9 to 1.2V p-p.

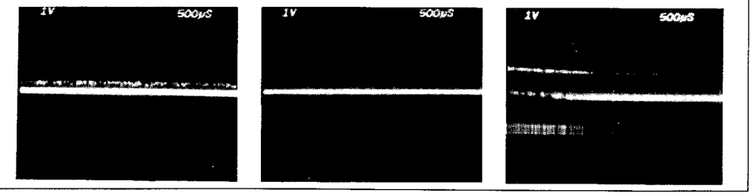




7 PLL FREQUENCY

1. TEST DISC TYPE III (AT-711881)
2. Test mode 4
3. Connect an oscilloscope and a digital DC voltmeter between test pin LPF and GND.
4. VR5
5. Slightly turn the VR5 to counterclockwise so that the noise appear as in Fig A, then turn the VR5 to clockwise and measure with adigital voltmeter at the point noise disappear. (voltage A) Then slightly turn the VR5 to clockwise so that the noise appear as in Fig. B, then turn the VR5 to counterclockwise and mesure with a digital voltmeter at the point noise disappear. (voltage B)

Set the VR5 at the point of A + B/2 V with the digital voltmeter.



2 FOCUS SERVO OFF-SET (PICK UP MLP-4D2 TYPE)

(PICK UP MLP-4F TYPE)

1. TEST TYPE III. (AT-711881)
2. Test mode 2 and 0.
3. Connect an oscilloscope (DC range) between pin 3 of P5 and GND.
4. VR4.
5. Measure the DC voltage at test mode 2, then set to test mode 0, and adjust VR4 so that the DC voltage at test mode 0 is equal as the DC voltage at test mode 2.

(PICK UP MLP-4D2 TYPE)

1. TEST DISC TYPE III (AT-711881)
2. Test mode 4
3. Connect a frequency counter between pin ⑤ of connector P5 and GND, and connect an oscilloscope between pin ① of connector P5 and GND.
4. VR4
5. Turn the VR4 within the ± 20° from the center so that the indicated frequency on the frequency counter is minimum. (should be less than 120Hz)

Note: * Use the disc without scratches.
* If the minimum point is out of ± 20° from the center of VR4, refer to the 4-3-1 ADJUSTMENT OF THE FOCUS OFF-SET.
* Confirm that the eye pattern on the oscilloscope is clear

VIII. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering.
   If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

2. HEAD BASE BLOCK

REF. NO.	PART NO.	DESCRIPTION
2-1x	BH-T2023A320A	HEAD BASE BLOCK
2-2	HP-H2206A010A	HEAD R/P PR4-8FU C
2-3	ZS-477876	PAN20×03STL CMT
2-4	ZS-536488	BID20×08STL CMT
2-5	ZG-402895	SP CS ANGLE ADJUST

- SP (Service Parts) Classification
- A small "x" indicates that this part is not shown in the Photo or Illustration.
- This number corresponds with the individual parts index number in that figure.
- This number corresponds with the Figure Number.

b) PC Board

6. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
6-IC1	EI-324536	IC HD14049BP
6-IC2	EI-336801	IC MB8841-564M
6-C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
6-C1B	EC-350949	C MMY V 223M 250DC [J]
6-C1C	EC-338397	C MMY V 223M 125AC [C,A]
6-X1	EI-318384	OSC X'TAL NC-18C

- Symbols for primary destination
  [A]: AAL(U.S.A.) [S]: SAA(Australia)
  [B]: BEAB(England) [U]: U/T(Universal Area)
  [C]: CSA(Canada) [V]: VDE(W. Germany)
  [E]: CEE(Europe) [Y]: Custom Version
  [J]: JPN(Japan)
- SP (Service Parts) Classification
- These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

WARNING

⚠ (*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ (*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT.

1. RECOMMENDED SPARE PARTS

Ref. No.	Part No.	Description
1	BB-P2016A290B	NEW 4 MECHA BLK CD-M712 [FORMER]
2	BM-371552	MOTOR RD-050Y-10240 [M901 LOADING MOTOR]
3	BM-376851	MOTOR RF-310T-11400 31.5MM SHAFT [M902 DISC MOTOR]
4	BO-374151	PICK UP MLP-4D2 [FORMER]
5	BO-372165	PICK UP MLP-4F [NEW]
6	*BT-374172	TRANS POW P2014(B,S) [B] [T901]
7	*BT-374171	TRANS POW P2014(E.V) [E,V] [T901]
8	BT-368261	TRANS PULSE TC-1027-04
9	ED-370976	D LED SLB-22PW3 [POWER]
10	ED-360409	D PHOTO PN323B
11	ED-361055	D SILICON DS135E-UB1
12	ED-301911	D SILICON H DS448
13	ED-344280	D SILICON H GMA-01-FY2 F05
14	ED-306724	D SILICON S5277B 100/1.0A
15	*ED-372125	D SILICON 11DF1 100/1.0A
16	*ED-346620	D ZENER H HZ27 2
17	ED-331198	D ZENER H HZ3 A1
18	*ED-338333	D ZENER H HZ5 B2
19	ED-346532	D ZENER H HZ7L A3
20	EH-380185J	FILTER EMI ZBF503S-01
21	EI-371091	IC CXD1075P
22	EI-371544	IC M5M4416P-15
23	EI-371082	IC M50421P
24	EI-372196	IC M50752-402SP
25	EI-375360	IC M50763-464SP CUSTOM
26	EI-371079	IC M51564P
27	EI-371570	IC M54544L
28	EI-371554	IC STA341M
29	EI-371579	IC S8054ALB
30	*EI-315243	IC TA78005AP
31	*EI-362977	IC TA79005P
32	EI-360040	IC TC74HCU04P
33	EI-367271	IC UPC1490HA
34	EI-348409	OSC CE CSB400P 0.400000MHZ
35	EI-374176	OSC X'TAL AT-51 16.9344MHZ
36	EM-374177	IND FL 7-BT-83GK
37	*ER-366452	R FUSE H RF25SJ 1/4W 4R7J
38	ES-371577	SW LEAF MSW-1353NBKP [SW912 CLOSE SW]
39	ES-368075	SW LEAF MSW-17600MVCO [SW911 INNER SW]
40	ES-368077	SW MICRO MQS-1BAN [SW913 OPEN SW]
41	*ES-371104	SW PUSH SDDLD1082A 01-1 [POWER SW]
42	ES-362883	SW TACT SKHHLM
43	ES-360576	SW TACT SKHHPM
44	ET-371075	TR DTA124XS
45	ET-354094	TR DTC144WS
46	ET-308472	TR 2SA1115 E,F,G F05
47	ET-379668J	TR 2SA1392 S,T F05
48	ET-372199	TR 2SA1515 R
49	ET-308141	TR 2SC2603 G F05
50	ET-338410	TR 2SC2878 A,B
51	ET-372197	TR 2SC3377 R
52	MB-202578	BELT GUM

2. MECHA BLOCK

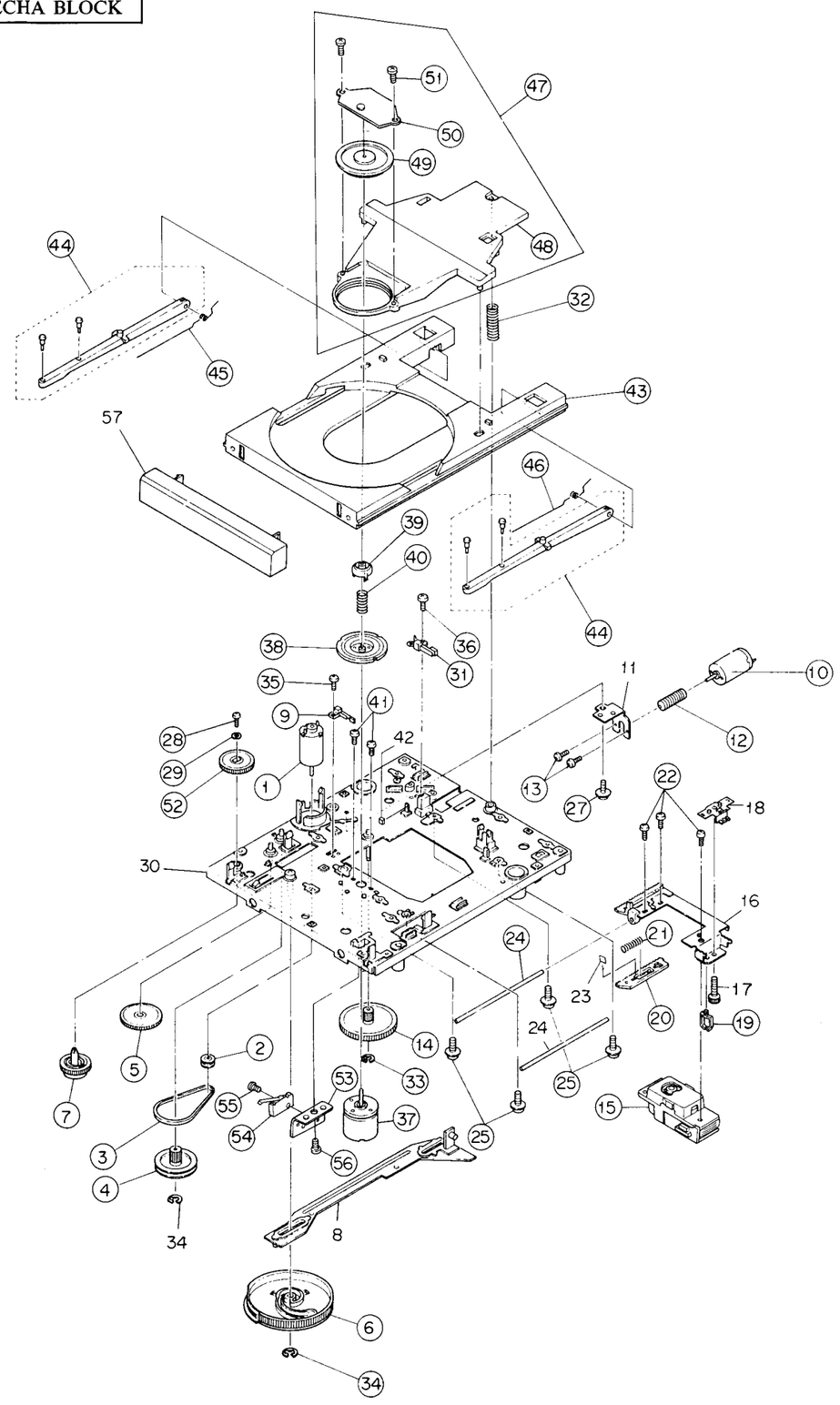
Ref. No.	Part No.	Description
1	BM-371552	MOTOR RD-050Y-10240 [M901 LOADING MOTOR]
2	MR-202576	PULLEY A
3	MB-202578	BELT GUM
4	MR-202579	PULLEY B
5	MZ-202580	GEAR D
6	MZ-202581	GEAR C
7	MZ-202582H05	GEAR B
9	ES-368075	SW LEAF MSW-17600MVCO [SW911 INNER SW]
10	BM-371552	MOTOR RD-050Y-10240 [M903 SLIDE MOTOR]
12	MZ-202426	WORM GEAR
13	ZS-365329	PAN20X03STL BDY PS3
14	MZ-202405	GEAR S
15A	BO-374151	PICK UP MLP-4D2 [FORMER]
15B	BO-372165	PICK UP MLP-4F [NEW]
20	MZ-202514	RACK SLIDE B
21	ZG-202515	SP RACK
22	ZS-419782	BID26X05STL CMT
25	ZS-297641	T2BID30X08STL CMT PW100
26	ZW-259650	PW30X050X020PBR
27	ZS-315511	ST PAN30X06STL CMT CUP
28	ZS-283353	T2BID20X08STL CMT
29	ZW-429120	PW23X090X050STL CMT
31	ES-371577	SW LEAF MSW-1353NBKP [SW912 CLOSE SW]
32	ZG-202570H03	SP CLAMP
33	ZW-329299	RING E200SUP CMT
34	ZW-410051	RETAINING RING E250SUP CMT
35	ZS-365353	PAN17X04STL BDY PS3
36	ZS-370834	BID26X05STL BDY
37	BM-376851	MOTOR RF-310T-11400 31.5MM SHAFT [M902 DISC MOTOR]
38	MZ-202572	TURN TABLE CD
39	MZ-202573H03	ADAPTOR
40	ZG-202574H02	SP ADAPTOR
41	ZS-367463	PAN20X025STL CMT
43	SC-202557H07	DISC TRAY
44	BZ-P2016A240A	NEW DISC HOLDER BLK CD-A405
45	ZG-203098	SP HOLDER L
46	ZG-203099	SP HOLDER R
47	BZ-P2016A250A	NEW DISC CLAMPER BLK CD-A405
51	ZS-367436	PT BID30X05STL CMT
52	MZ-202575H04	GEAR A
54	ES-368077	SW MICRO MQS-1BAN [SW913 OPEN SW]
55	ZS-368088	PAN17X06STL BDY PS3
56	ZS-371013	ST BID30X05STL BDY
57-B	BD-B374165B	PANEL TRAY PART CD-M939-B
57-G	BD-B374165A	PANEL TRAY PART CD-M939-G

NOTE
B - Black
G - Gold

3. P.C BOARD BLOCK

Ref. No.	Part No.	Description
1A	BA-P2014A030A	:PC MAIN BLK: CD-M939 [FORMER]
1B	BA-P2014A030D	PC MAIN BLK CD-M939(F) [NEW]

MECHA BLOCK



4. MAIN P.C BOARD

Ref. No.	Part No.	Description
D1	ED-344280	D SILICON H GMA-01-FY2 F05
D2	ED-361055	D SILICON DS135E-UB1
D3	ED-361055	D SILICON DS135E-UB1
D4	ED-361055	D SILICON DS135E-UB1
D5	*ED-301911	D SILICON H DS448
D6	*ED-301911	D SILICON H DS448
D7	*ED-301911	D SILICON H DS448
D8	*ED-301911	D SILICON H DS448
D9	ED-344280	D SILICON H GMA-01-FY2 F05
D10	ED-344280	D SILICON H GMA-01-FY2 F05
D11	ED-301911	D SILICON H DS448
D12	ED-301911	D SILICON H DS448
D14	ED-346532	D ZENER H HZ7L A3
D15	ED-344280	D SILICON H GMA-01-FY2 F05
D17	ED-344280	D SILICON H GMA-01-FY2 F05
D18	ED-344280	D SILICON H GMA-01-FY2 F05
D19	ED-344280	D SILICON H GMA-01-FY2 F05
D20	ED-344280	D SILICON H GMA-01-FY2 F05
D21	ED-338333	D ZENER H HZ5 B2
D22	ED-331198	D ZENER H HZ3 A1
FL2	EH-380185J	FILTER EMI ZBF503S-01
FR1	*ER-366452	R FUSE H RF25SJ 1/4W 4R7J
IC1	EI-371079	IC M51564P
IC2	EI-371554	IC STA341M
IC3	EI-371082	IC M50421P
IC4	EI-371544	IC M5M4416P-15
IC5	EI-375360	IC M50763-464SP CUSTOM
IC6	EI-372196	IC M50752-402SP
IC7	EI-371570	IC M54544L
IC8	EI-371579	IC S8054ALB
IC9	*EI-315243	IC TA78005AP
IC10	*EI-362977	IC TA79005P
IC15	EI-371091	IC CXD1075P
IC16	EI-360040	IC TC74HCU04P
J2	EJ-372185	PHONE J 3P HSJ0857-01-320
J3	EJ-372185	PHONE J 3P HSJ0857-01-320
J4	EJ-374175	PIN J JPJ2048-01-060 1P
L1	EO-345924	COIL FIX 1 LAL03KH 680K
L2	EO-345931	COIL FIX 1 LAL03KH 221K
L4	EO-345931	COIL FIX 1 LAL03KH 221K
L5	EO-345922	COIL FIX 1 LAL03KH 470K
L6	EO-345902	COIL FIX 1 LAL03KH 1R0M
P1	EJ-374191	SOCKET OPTICAL T0TX172
PT1	BT-368261	TRANS PULSE TC-1027-04
TR1	ET-372197	TR 2SC3377 R
TR2	ET-372199	TR 2SA1515 R
TR3	ET-372197	TR 2SC3377 R
TR4	ET-372199	TR 2SA1515 R
TR5	ET-308141	TR 2SC2603 G F05
TR6	ET-308141	TR 2SC2603 G F05
TR7	ET-308141	TR 2SC2603 G F05
TR8	ET-371075	TR DTA124XS
TR9	ET-371075	TR DTA124XS
TR10	ET-371075	TR DTA124XS
TR11	ET-371075	TR DTA124XS
TR12	ET-308141	TR 2SC2603 G F05
TR14	ET-379668J	TR 2SA1392 S,T F05
TR16	ET-308472	TR 2SA1115 E,F,G F05
TR19	ET-308141	TR 2SC2603 G F05
TR20	ET-308141	TR 2SC2603 G F05
TR21	ET-338410	TR 2SC2878 A,B
TR22	ET-354094	TR DTC144WS
TR23	ET-354094	TR DTC144WS
TR24	ET-308141	TR 2SC2603 G F05
TR25	ET-308472	TR 2SA1115 E,F,G F05
TR26	ET-308141	TR 2SC2603 G F05
VR1	EV-356577	R S-FIX H RH0615C 0.10W 103
VR2	EV-356577	R S-FIX H RH0615C 0.10W 103
VR3	EV-356577	R S-FIX H RH0615C 0.10W 103
VR4	EV-356577	R S-FIX H RH0615C 0.10W 103
VR5	EV-357619	R S-FIX H RH0615C 0.10W 104
X2	EI-374176	OSC X'TAL AT-51 16.9344MHZ
X3	EI-348409	OSC CE CSB400P 0.400000MHZ

5. POWER SUPPLY P.C BOARD

Ref. No.	Part No.	Description
C12	*EC-338496	C CE V FZ 472P 400AC
D1	*ED-372125	D SILICON 11DF1 100/1.0A
D2	*ED-372125	D SILICON 11DF1 100/1.0A
D3	*ED-372125	D SILICON 11DF1 100/1.0A
D4	*ED-372125	D SILICON 11DF1 100/1.0A
D5	ED-306724	D SILICON S5277B 100/1.0A
D6	ED-306724	D SILICON S5277B 100/1.0A
D7	ED-306724	D SILICON S5277B 100/1.0A
D8	ED-306724	D SILICON S5277B 100/1.0A
D9	*ED-346620	D ZENER H HZ27 2
D10	*ED-338333	D ZENER H HZ5 B2
SW1	*ES-371104	SW PUSH SDDLD1082A 01-1 [POWER SW]

6. OPERATION (1) P.C BOARD

Ref. No.	Part No.	Description
IN1	EM-374177	IND FL 7-BT-83GK
TS1	ES-360576	SW TACT SKHHPM
TS2	ES-360576	SW TACT SKHHPM
TS3	ES-360576	SW TACT SKHHPM
TS4	ES-360576	SW TACT SKHHPM
TS5	ES-360576	SW TACT SKHHPM
TS6	ES-360576	SW TACT SKHHPM
TS7	ES-360576	SW TACT SKHHPM
TS8	ES-360576	SW TACT SKHHPM
TS9	ES-360576	SW TACT SKHHPM
TS10	ES-360576	SW TACT SKHHPM
1	SZ-372107	CUSHION FLD

7. OPERATION (2) P.C BOARD

Ref. No.	Part No.	Description
TS11	ES-362883	SW TACT SKHHLM
TS12	ES-362883	SW TACT SKHHLM
TS13	ES-362883	SW TACT SKHHLM
TS14	ES-362883	SW TACT SKHHLM
TS15	ES-362883	SW TACT SKHHLM
TS16	ES-362883	SW TACT SKHHLM
TS17	ES-362883	SW TACT SKHHLM
TS18	ES-362883	SW TACT SKHHLM
TS19	ES-362883	SW TACT SKHHLM
TS20	ES-362883	SW TACT SKHHLM

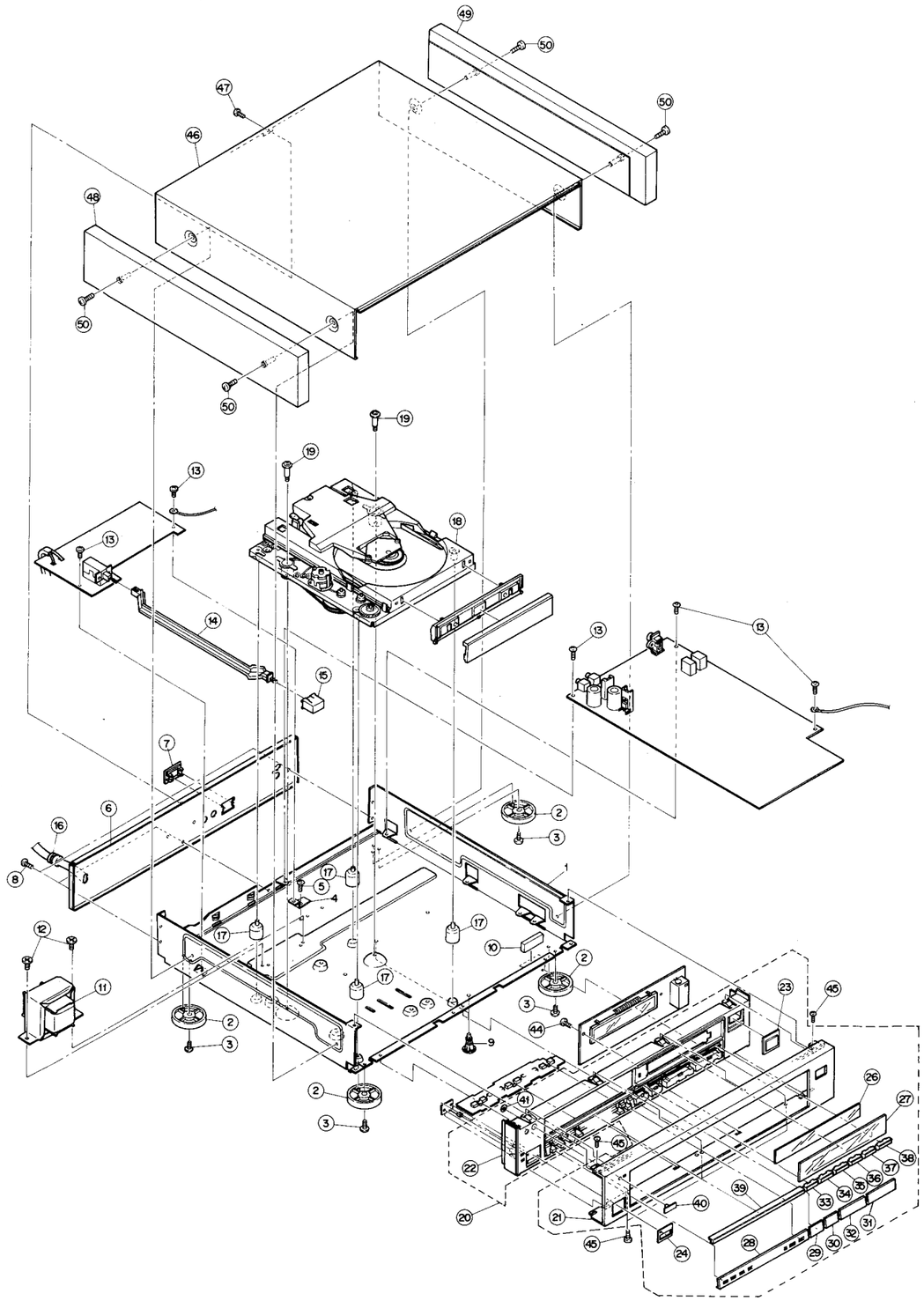
8. SENSOR P.C BOARD

Ref. No.	Part No.	Description
D1	ED-360409	D PHOTO PN323B
IC1	EI-367271	IC UPC1490HA

9. LED P.C BOARD

Ref. No.	Part No.	Description
D201	ED-370976	D LED SLB-22PW3 [POWER]

FINAL ASSEMBLY BLOCK



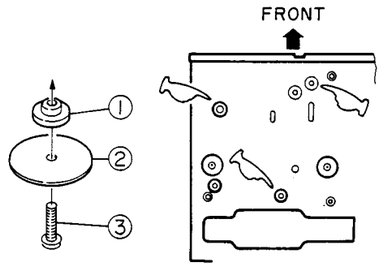
10. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
2	SA-376945J	FOOT(2) PART
3	ZS-351186	ST BR30X08STL CMT C080
5	ZS-353355	CT BR30X06STL BZN PROJECTION
6A	SP-378533J1	PANEL REAR CD-M939(E) [E]
6B	SP-378534J1	PANEL REAR CD-M939(V) [V]
6C	SP-378535J1	PANEL REAR CD-M939(B) [B]
7	SE-375348	ESCUTCHEON
8	ZS-308673	T2PAN30X20STL NI3 GUIDE
11A	*BT-374171	TRANS POW P2014(E,V) [E,V] [T901]
11B	*BT-374172	TRANS POW P2014(B,S) [B] [T901]
12	ZS-313796	ST BID40X06STL CMT
13	ZS-336351	T2BR30X08STL NI3
14	MZ-370925	JOINT POWER
15-B	SK-370688B-A	KNOB POWER(B)
15-G	SK-370688A-A	KNOB POWER (G)
16A	*EW-363672	AC CORD 200 0364 LCFL B070 A EV [E,V]
16B	*EW-363684	AC CORD 200 LCFL B070 A B [B]
17	SZ-370924	CUSHION RUBBER
18A	BB-P2016A290B	NEW 4 MECHA BLK CD-M712 [FORMER]
18B	BB-P2016A290A	NEW 4 MECHA BLK CD-A405 [NEW]
19	ZS-202631	SCREW-METAL
20-B	BD-P2014A050A	PANEL FRONT BLK CD-M939-B [INCL. 21 TO 41]
20-G	BD-P2014A050B	PANEL FRONT BLK CD-M939-G
25	SZ-361424	PLATE REMOCON
40-B	SM-370750C	NAME PLATE AKAI B2
40-G	SM-370750B-A	NAME PLATE AKAI-G
41	ZW-653163	RING CS 280STL PKR
42	MT-321129	WIRE BAND B-60
43	MZ-553948	WIRE BAND F-100
44	ZS-310984	PT BR30X08STL CMT
45	ZS-326789	ST PAN30X06STL BNI
46-B	SP-370929B	COVER UPPER B
46-G	SP-370929A	COVER UPPER G
47	ZS-308846	T2BR30X08STL BZN PROJECTION
48	SP-371172	SIDE BOARD (L)
49	SP-371173	SIDE BOARD (R)
50	ZS-365678	SCREW SLIDE TYPE W/WASHER(J)

NOTE
B - Black
G - Gold

11. ACCESARY

Ref. No.	Part No.	Description
1	ZW-202681	WASHER
2	ZZ-302850	LABEL WASHER
3	ZS-331875	PT BR30X12STL CMT
4	ZZ-374173	CORD *P2014
5	EW-355829	CORD W/PLUG 3.5 PIN-PIN



Remove the three pick-up locking screws from the bottom of the CD player before attempting to use it.

Save these screws and reinsert them when transporting the CD player over long distances.

INDEX

ABBREVIATIONS (COMPACT DISC)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A-D	Analog to Digital (Convertor)	Mb	Mega Bits
ADC	Analog to Digital (Convertor)	MDA	Modulation
BCD	Binary Code Decimal	MFM	Modified Frequency Modulation
BPI	Bits per Inch	MM	Mono-stable Multivibrator
CD	Compact Disc	M : FM	Modified Modified Frequency Modulation
CIRC	Cross Interieaving & Reed Solomon Coding	MOD 2	Module 2 (Addition)
CLV	Constant Linear Velocity	MP	Microprocessor
CP	Clock Pulses	MSB	Most Significant Bit
CRCC	Cyclic Redundancy Check Codes	NA	Numerical Aperture
D Level	Decision Level	NRZ	Non Return to Zero
D-A	Digital to Analog (Convertor)	NRZ-I	Non Return to Zero Inverted
DAC	Digital to Analog (Convertor)	P	Parity Data
DAD	Digital Audio Disk	RAM	Pulse Amplitude Modulation
DEM	Dynamic Element Matching	PCM	Pulse Code Modulation
DPD	Differential Phase Detection	PD	Phase Detector
DSV	Digital Sum Value	PE	PHASE Encode
EFM	Eight to Fourteen Modulation	PLL	Phase Locked Loop
EX-OR	EXclusive OR	PNM	Pulse Number Modulation
FIC	Flux Changes per Inch	PPM	Pulse Phase Modulation
FIR	Finite Impulse Response	PWM	Pulse Width Modulation
FP	Front Pulse	Q	Parity Data
FPG	Front Pulse Gate	$R.R_1.R_2$. etc	Data for Right Channel
f	Frequency of Sampling	RAM	Random Access Memory
GF	Galois Field	RPG	Rear Pulse Gate
H & V (Parity)	Horizontal & Vertical	SCOOP	Self Coupled Optical Pick-up
IIR	Infinte Impulse Response	S & H	Sample & Hold
kb	Kilo Bits	S/N	Signal to Noise Ratio
$L.L_1.L_2$. etc	Data for Left Channel	SSG	Standerd Signal Generator
LPF	Low Pass Filter	SYS CON	SYStem CONtrol
LSB	Least Significant Bit		

AKAI ELECTRIC CO., LTD.
12-14, 2-Chome, Higashi-Kojiya, Ohta-ku, Tokyo, Japan
TEL: Tokyo (742) 5111 CABLE: HIFIAKAI TOKYO TELEX: J26261
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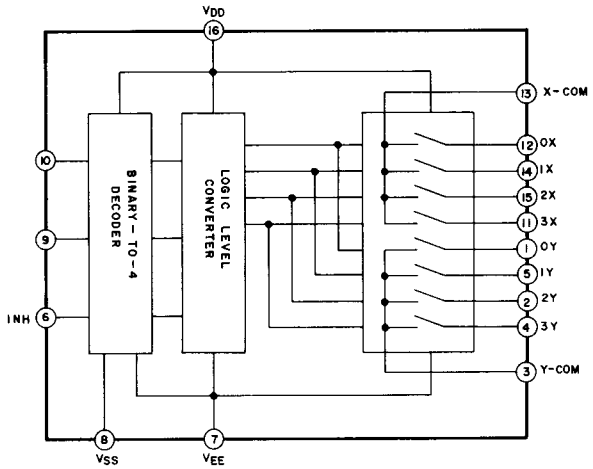
350 Printed in Japan

AKAI MODEL CD-M939

SCHEMATIC DIAGRAM AND PC BOARDS

M4052BP MULTIPLEXER



TRUTH TABLE

CONTROL INPUTS			"ON" CHANNEL
INHIBIT	B	A	
L	L	L	0X, 0Y
L	L	H	1X, 1Y
L	H	L	2X, 2Y
L	H	H	3X, 3Y
H	*	*	NONE

* DON'T CARE

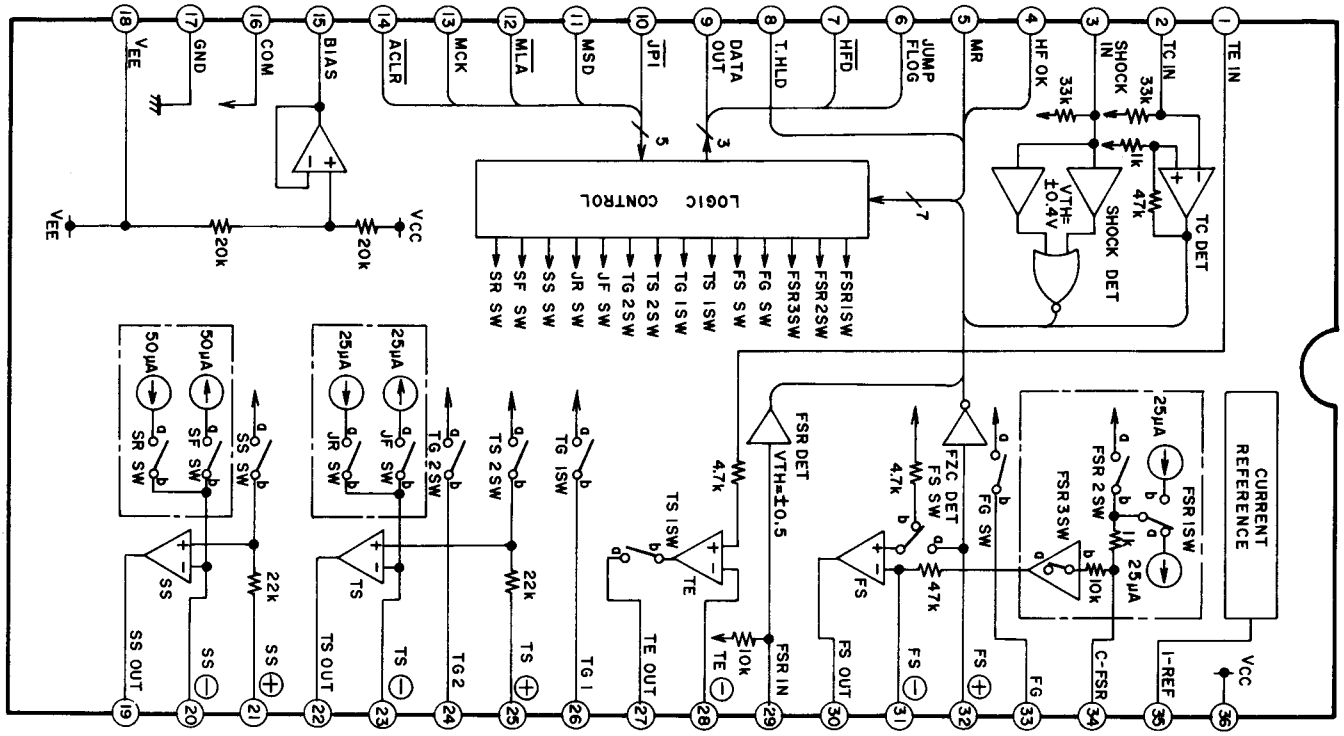
M50421P(SIGNAL PROCESSOR)

PIN NO.	NAME	INPUT/ OUTPUT	FUNCTION	PIN NO.	NAME	INPUT/ OUTPUT	FUNCTION
1	DDSCK	O	Delayed DSCK. LRCK Latch clock	34	SBCS	O	Sub Code Sch output
3	EMP	O	Enphasis Code output	35	SBCR	O	Sub Code Rch output
4	PWM1	O	Power Disc Motor PWM output 1	36	SBCQ	O	Sub Code Qch output
5	PWM2	O	Power Disc Motor PWM output 2	37	SBCP	O	Sub Code Pch output
6	TEST	I	Test Mode Select input	38	RAS	O	Row Address Stroke output
7	DASEL	I	D/A Interface control input	40	RDB2	I/O	External memory address input output 2
8	DFPAS	I	Degital Filter control input	42	RDB1	I/O	External memory address input output 1
9	IINH	I	Interporation forbidden mode select input	43	RDB4	I/O	External memory address input output 4
10	MSD	I	Micro computer interface serial data input	44	CAS	O	Column Address Stroke signal output
11	MCK	I	Microcomputer interface shift lock input	45	RDB3	I/O	External memory address input output 3
12	MLA	I	Microcomputer interface Data latch clock input	46	WE	O	Right enable signal output
				48	RAD1	O	External memory address output 1
13	ACLR	I	Micro computer interface Resister clear input	49	RAD2	O	External memory address output 2
				50	RAD3	O	External memory address output 3
14	HFD	I	Reproducing short signal input	51	RAD7	O	External memory address output 7
15	HF	I	Reproducing signal input	52	RAD4	O	External memory address output 4
16	IBEE	I	Detection/PLL reference current input	53	RAD5	O	External memory address output 5
17	TLC	O	Slice level control output	54	RAD6	O	External memory address output 6
18	LPF	I/O	PLL loop filter connect	55	RAD0	O	External memory address output 0
19	SYCLK	O	Frame Sync. statu outputs	56	VDD1	I	Power
20	VDD2	I	Analog Power	57	EST2	O	Error status 2
22	DRD	O	Law Disc rotate status output	58	EST1	O	Error status 1
23	EFFK	O	EFM Frame clock output	59	C846	O	Clock output 8.4672MHz
24	SCOR	O	Sub Code Sync. signal output.	60	C423	O	Clock output 4.2336MHz
25	CRCF	O	Sub Code Q CR check output	61	C16MI	I	1/2 divider input
26	SCCK	I	Shift clock (sub code serial output) input	62	C8M0	O	1/2 divider
27	SCOE2	I	Sub code parallel output P~Sch enable input	63	XI	I	Xtal oscillator input
				64	X0	O	Xtal oscillator output
28	SCOE1	I	Sub code parallel output T~Wch enable input	65	VSS1	I	GND
				66	DOFK	O	OSC Frame clock output 7.35KHz
29	Vss2	I	GND	67	DO	O	D/A converter serial
30	SBCW	O	Sub Code Wch output	69	WDCK	O	D/A converter word clock
31	SBCV	O	Sub Code Vch output	70	LRCK	O	D/A converter left, right clock
32	SBCU	O	Sub Code Uch output	72	DSCK	O	D/A converter shift clock
33	SBCT	O	Sub Code Tch output				

M50752-402SP SYSTEM CONTROL (MICRO COMPUTER)

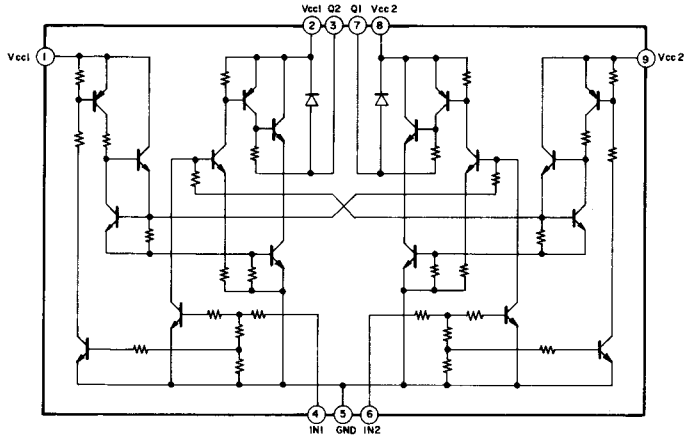
PIN NO.	SYMBOL	I/O	DISCRIPTION
1	OPEN	O	LOADING MOTOR OPEN
2	CLOSE	O	LOADING MOTOR CLOSE
3	$\overline{JPI}$	O	1 TRACK JUMP CONTROL SIGNAL OUTPUT
4	MSD	O	MICRO COMPUTER SERIAL DATA TRANSFER CLOCK
5	MCK	O	MICRO COMPUTER SERIAL DATA TRANSFER
6	$\overline{MLA}$	O	MICRO COMPUTER SERIAL DATA LATCH
7	MUTE	–	NOT USED
8	$\overline{ACK}$	–	NOT USED
9	NC	–	NOT USED
10	DATA IN	I	INTERNAL STATUS INPUT
11	SYCLK	I	FRAME SYNC. STATUS INPUT
12	DRD	I	LAW DISC ROTATE STATUS INPUT
13	SCOR	I	SUB CODE SYNC. SIGNAL INPUT
14	CRCF	I	SUB CODE QCR CHECK INPUT
15	SUBQ	I	SUB CODE Q SIGNAL INPUT
16	KD4	–	
17	$\overline{TEST}$	I	TEST MODE SELECT INPUT
18	$\overline{STB}$	–	
19	$\overline{EFFK}$	I	EFM FRAME CLOCK INPUT
20	NC	–	NOT USED
21	CNVSS	–	GND
22	$\overline{RESET}$	I	RESET
23	XIN	I	XTAL OSCILLATOR INPUT
24	XOUT F	–	NOT USED
25	XOUT S	–	NOT USED
26	VSS	–	GND
27	XCIN	I	XTAL OSCILLATOR INPUT
28	XCOUT	–	NOT USED
29	KD3	I	KEY INPUT
30	KD2	I	
31	KD1	I	
32	KD0	I	
33	ϕ	–	NOT USED
34	VP	–	–27V
35	LD ON	O	LASER CONTROL SIGNAL OUT
36	G7	O	DISPLAY SIGNAL OUT
37	G6	O	
38	G5	O	
39	G4	O	
40	G3	O	DISPLAY SIGNAL OUT/KEY OUT
41	G2	O	
42	G1	O	
43	i	O	DISPLAY SIGNAL OUT
44	g	O	
45	f	O	
46	e	O	
47	d	O	
48	c	O	
49	b	O	
50	a	O	
51	VCC	–	+5V
52	VCC	–	

M51564P(PICK UP SERVO)



Pin No.	NAME	Function Block	Input/Output	Function
1	TE IN	Pre. Amp input	I	Tracking error signal input
2	TC IN	Pre. Amp input	I	Track cross signal input
3	SHOCK IN	Pre. Amp input	I	SHOCK detection circuit input
4	HF OK	Pre. Amp input	I	HFOK signal input
5	MR	Pre. Amp input	I	Disc mirror detection signal input
6	JUMP HAG	Micro computer I/O	O	TS OFF·JFJR·BRAKE output (JUMP Mode)
7	HFD	Micro computer I/O	O	MR input = "1" and Track servo loop off HFD = "1"
8	T·HLD	TRACK SERVO	I	TS 1 SW dilect control
9	DATA OUT	Micro computer input	O	Internal status output
10	JP1	Micro computer input	I	1 track jump control signal input
11	MSD	Micro computer input	I	Micro computer serial data transfer clock
12	MLA	Micro computer input	I	Micro computer serial data latch
13	MCK	Micro computer input	I	Micro computer serial data transfer
14	ACLR	Micro computer input	I	Internal register flip-flop all clear
15	BIAS	Power	O	Vcc/2 Bias power output
16	COM	Power	I	COMMON ± Power → GND, one level power → BIAS
17	GND	Power	I	GND pin
18	VEE	Power	I	Minus power, one level power → GND
19	SS OUT	SLIDE SERVO	O	Operational amplifier SS output
20	SS	SLIDE SERVO	I	Operational amplifier SS invert input
21	SS	SLIDE SERVO	I	Operational amplifier SS non-invert input
22	TS OUT	TRACK SERVO	O	Operational amplifier TA output
23	TS	TRACK SERVO	I	Operational amplifier TA invert input
24	TG 2	TRACK SERVO	—	Track gain change switch TG 2 output
25	TS	TRACK SERVO	I	Operational amplifier TA non-invert input
26	TG 1	TRACK SERVO	—	Track gain change switch TG 1 output
27	TE OUT	TRACK SERVO	O	Operational amplifier TE output
28	TE	TRACK SERVO	I	Operational amplifier TE invert input
29	FSR IN	FOCUS SERVO	I	Focus research voltage level detector input
30	FS OUT	FOCUS SERVO	O	Operational amplifier FA output
31	FS	FOCUS SERVO	I	Operational amplifier FA invert input
32	FS	FOCUS SERVO	I	Operational amplifier FA non-invert input
33	FG	FOCUS SERVO	—	Focus gain change switch FG output
34	C·FSR	FOCUS SERVO	—	Focus search wave form time constant condenser
35	I-REF	FOCUS SERVO	I	Connect current setup resistor
36	VCC	Power	I	PLUS power

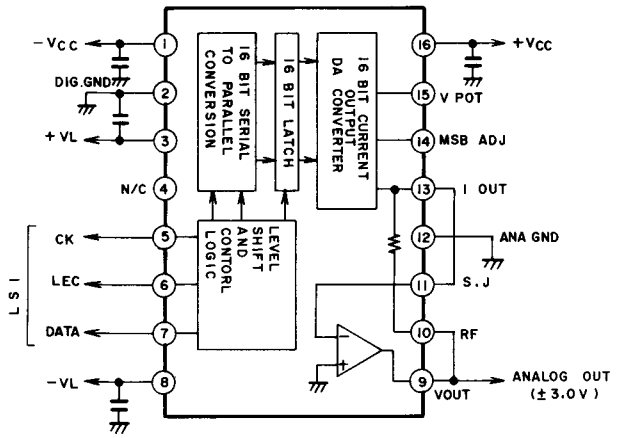
M54544L LOADING DRIVE



TRUTH TABLE

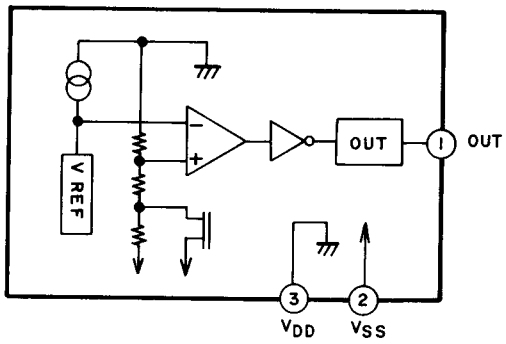
INPUT		OUTPUT		REMARKS
1	2	1	2	
0	0	"OFF" state	"OFF" state	–
1	0	1	0	NORMAL ROTATE
0	1	0	1	RIVERSE ROTATE
1	1	0	0	BRAKE

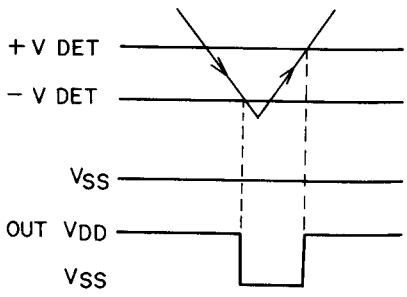
PCM-56PJ 16 BIT D/A CONVERTER



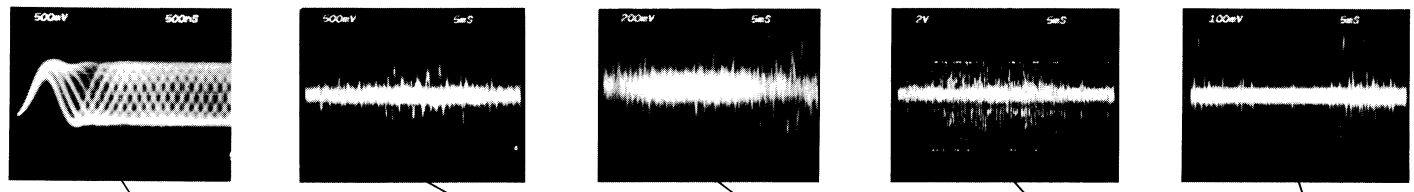
PIN NO.	FUNCTION		PIN NO.	FUNCTION	
1	-Vcc	ANALOG ⊖ B	16	+Vcc	ANALOG ⊕ B
2	DIG GND	DEGITAL GND	15	VPOT	POTENTIAL METER
3	+VL	LOGIC ⊕ B	14	MSB ADJ	MSB ADJUSTMENT
4	N C	NO CONNECTION	13	Iout	I OUT
5	CK	CLOCK IN	12	ANA GND	ANALOG GND
6	LEC	LATCH ENABLE CONTROL IN	11	S.J	SUMMING JUNCTION
7	DATA	DATA IN	10	RF	FB REGISTER
8	-VL	LOGIC ⊖ B	9	Vout	V OUT

S8054ALB VOLTAGE DETECTOR





CD-M939



PICK UP MLP-D2

FOCUS SERVO COIL

TRACKING SERVO COIL

LP

PD

LASER DIODE DRIVE

Q1,2,3

BALANCE

VR2

E F

21 20 19

E

F

A 22

C 1

B 2

D 23

A

C

B

D

I/V

I/V

I/V

I/V

I/V

TRACK ERROR AMP

FOCUS ERROR AMP

EFM SIGNAL AMP (HF AMP)

SWITCH

EFM DETECT AMPLIT

MIRROR DETECT

13

18

17

4

9

10

TRACKING ERROR SIGNAL

FOCUS ERROR SIGNAL

HF SIGNAL

FOCUS OK SIGNAL

DETECTION SIGNAL

M51563P
OPTICAL DIRECT AMP

TRACKING SERVO OFF-SET

+5V

VR2

-5V

IC1 M51564P

TRACKING SERVO GAIN

VR1

TE IN 1

TC IN 2

3

HFOK 4

MR 5

6

HFD 7

8

9

10

11

12

13

14

15

16

17

18

TC DET

FZC DET

FSR DET

LOGIC CONTROL

FA

TE

TA

SS

36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19

FA ⊕

FA OUT

TA OUT

SS ⊕

SS ⊖

SS OUT

VR3

TR22

+5V

HFOK:H

+5V

TR19,20

IC7
M54544L

LOADING MOTOR

M

M901

LOADING MOTOR CONTROL

SYNCHRO TERMINAL

TR5

IC 6
M50752-402SP

1 OPEN
2 CLOSE
3 JPI
4 DATA
5 CLOCK
6 LATCH
7 SYNCHRO SIGNAL
8 ACK
9 NC
10 DATA IN
11 SYCLK
12 DRD
13 SCOR
14 CRCF
15 SBCQ
16 KD4
17 TEST
18 INT 2
19 INT 1
20 NC
21 CN VSS
22 RESET
23 X IN
24 NC
25 NC
26 VSS

VSS 52
VSS 51
a 50
b 49
c 48
d 47
e 46
f 45
g 44
i 43
1 G 42
2 G 41
3 G 40
4 G 39
5 G 38
6 G 37
7 G 36
LDON 35
VP 34
NC 33
KD 0 32
KD 1 31
KD 2 30
KD 3 29
NC 28
XCIN 27

LASER DIODE DRIVE ON

TR12

-5V

IC 8
S8054ALB

+5V

RESET

SET UP CIRCUIT

+5V

TR8

TR9

TR10

TR11

IC5 M50763-463SP

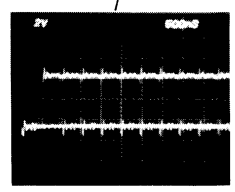
1 KEY OUT
2 KEY OUT
3 DO
4 GND
5 D2
6 ACK
7 INT 2
8 NC
9 NC
10 KEY IN
11 KD 4
12 NC
13 KD 0
14 KD 1
15 KD 2

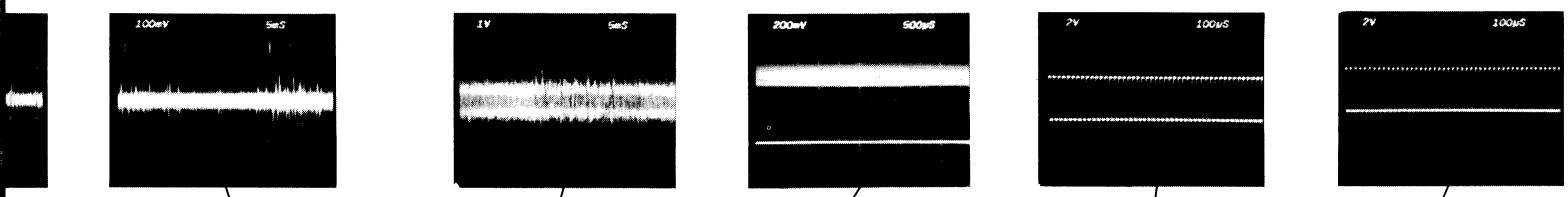
VDD 30
KEY OUT 29
KEY OUT 28
CN VSS 27
VSS 26
KEY IN 25
KEY IN 24
KEY IN 23
KEY IN 22
SENS 21
X IN 20
X OUT 19
RESET 18
NC 17
KD 3 16

X 3

MECHA BLOCK
SW911, 912, 913

INNER SW
CLOSE SW
OPEN SW





IC1 M51564P

TC DET

FOCUS SERVO OFF-SET VR4

HFD : H

TR22

FOCUS SERVO GAIN VR3

FZC DET

FSR DET

LOGIC CONTROL

FA

FA OUT

TE

TA

TA OUT

SS

SS OUT

MUTE

TR21

IC2 STA341M

SLIDE MOTOR M903

DISC MOTOR M902

DISC MOTOR DRIVE TR1, 2, 3, 4

IC4 M5M4416P-15

64k D RAM

PLL FREQUENCY VR5

IC3 M50421P

VCO

IREF

HFD

HF

SLICE LEVEL CONTROL

PLL

SYNC DETECT PROTECTION

EFM DEMOD.

CIRC DEMOD.

COMPENSATION

DO

REFERENCE OSC

TIMING CONTROL

EFM TIMING CONTROL

SUB CODE DEMOD.

DIGITAL FILTER

DD CSK

SBCQ

SCCK

LRCK

PWM2

PWMI

XI

CLV SERVO CONTROL

D-CRC EMPHASIS

MI-COM INTERFACE

EFFK

ACLR

EMP

SYCLK

CRCF

DRD

MCK

MIA

ACLR

C16MI

SCOR

SBCQ

HFOK : H

TR19, 20

TR23

TR6 INV

IC8 S8054ALB

RESET

X2 16.9344MHz

IC16 2/6

TIMING GENERATOR

U BIT CONTROLLER

C BIT CONTROLLER

SIRI/PARA SHIFTER

MSB/LSB FIRST SELECTER

BUFFER

PARA/SIRI SHIFTER

SHIFTER

BI-PHASE MODULATOR

SHIFT REGISTER

CH BLOCK COUNTER

IC15 CXD1075P

R134

TR24

SYNCHRO : ON

IC16 74HCU04P

IC16 1/6

IC16 3/6

IC16 4/6

IC16 5/6

IC16 6/6

DRIVER

PT1

DIGITAL OUT (OPTICAL)

DIGITAL OUT (COAXIAL)

IC5 M50763-463SP

KEY OUT
KEY OUT
DO
GND
D2
ACK
INT 2
NC
NC
KEY IN
KD 4
NC
KD 0
KD 1
KD 2
VDD
KEY OUT
KEY OUT
CN VSS
VSS
KEY IN
KEY IN
KEY IN
KEY IN
SENS
X IN
X OUT
RESET
NC
KD 3

X3

OPERATION KEY TS1 to 20

REMOTE CONTROL SENSOR µPC1490HA

IN1 7-BT-83GK

TR7, 16 POWER ON/OFF DETECT

+8V
+6V
+5V
-8V
-6V
-5V

TR13, DI3 REG

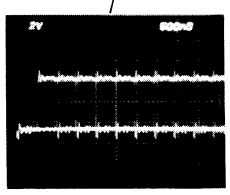
TR14, DI4 REG

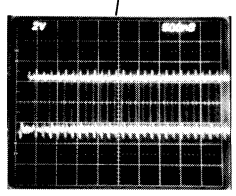
IC9 TA78005AP

IC10 TA79005P

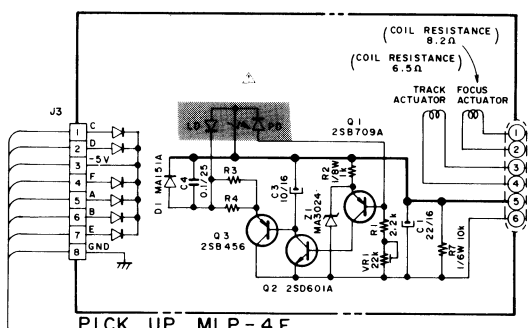
DI1,2,3,4

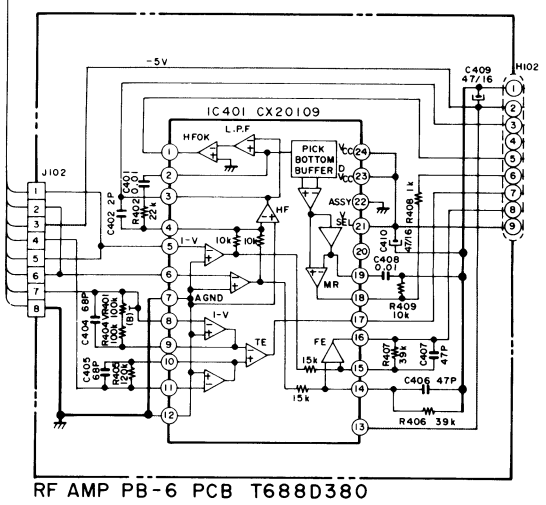
T901 POWER TRANS FORMER

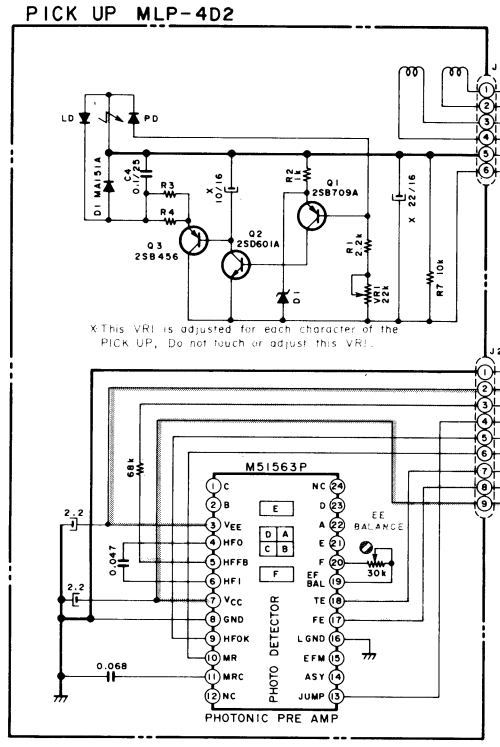




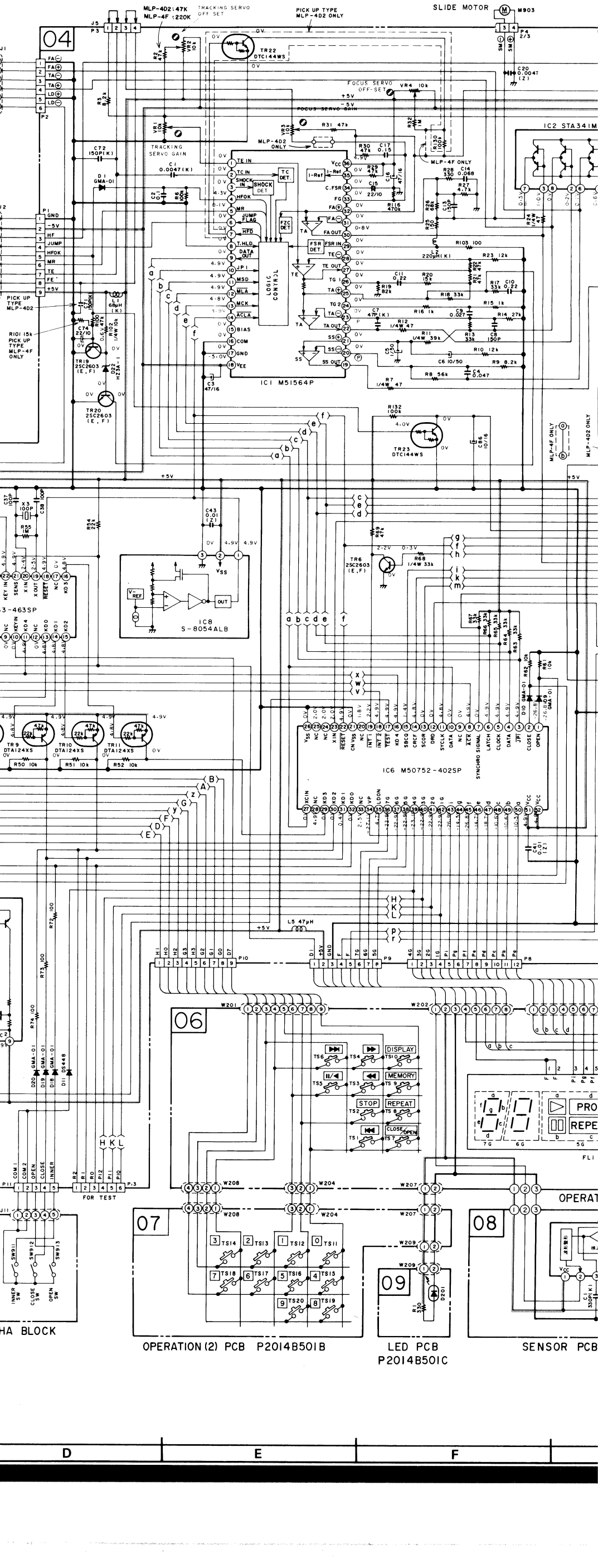
CD-M939 BLOCK DIAGRAM NO. 870105B2







NOTE
There are two of PICK UP one is the MLP-4D2 other is the MLP-4F They are not interchangeable.



INPUT		OUTPUT		REMARKS
IN_1	IN_2	$\overline{O}_1$	$\overline{O}_2$	
L	L	"OFF" state	"OFF" state	STOP
H	L	H	L	FWD
L	H	L	H	REW
H	H	L	L	BLAKE

B (POWER SUPPLY) LINE

SIGNAL LINE

TRACKING SERVO SIGNAL LINE

FOCUS SERVO SIGNAL LINE

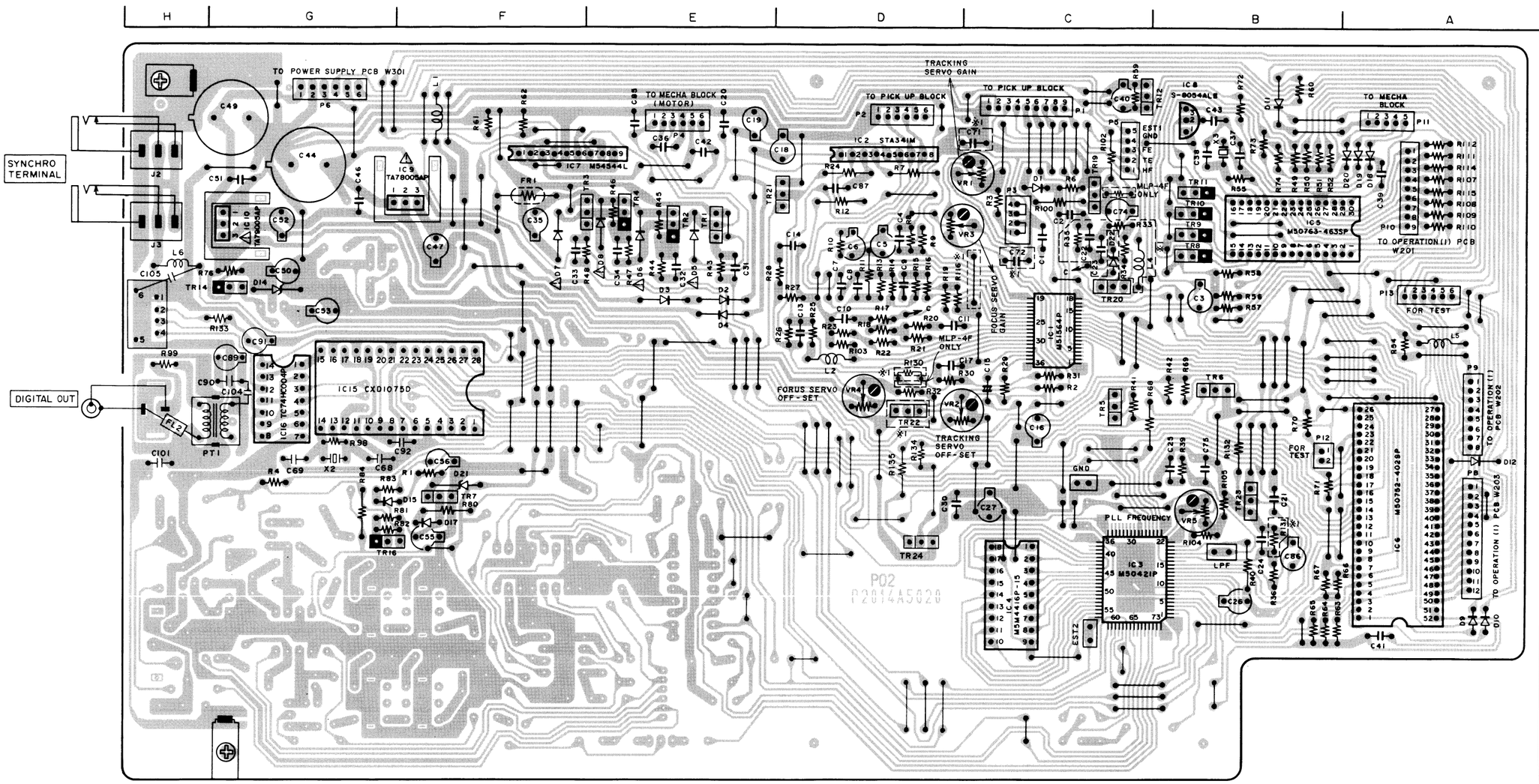
INDICATED VOLTAGES ARE MEASURED BETWEEN GND BY DIGITAL DC VOLTMETER

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)
POWER TRANSFORMER IS DIFFERENT ACCORDING TO AREA

WARNING: ⚠ AND ▒▒ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ ET ▒▒ ILS INDIQUENT LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT

CD-M939
SCHEMATIC DIAGRAM
NO. 870106B
4



※1 [ ] : WHEN USING THE PICK UP TYPE MLP-4D2 ONLY.

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

B — PNP TRANSISTOR

B — NPN TRANSISTOR

D G S — FET

E C B
2SA1115
2SC2603
DTC144WS

B C E
DTA124XS

B C E
2SC3383
2SC2878
2SC3377
2SA1515

E C B
2SA1248
2SC3116

LOCATION OF COMPONENT

IC

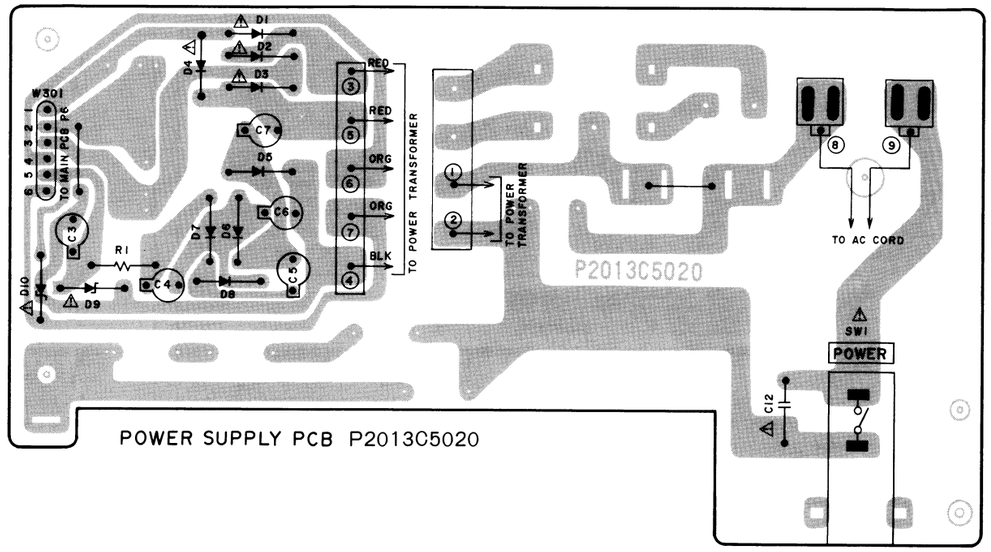
IC 1 ---------C2
IC 2 ---------D1
IC 3 ---------C3
IC 4 ---------C3
IC 5 ---------B1
IC 6 ---------A3
IC 7 ---------F1
IC 8 ---------B1
IC 9 ---------F1
IC10 ---------G1
IC11 ---------E3
IC12 ---------F3
IC13 ---------F4
IC14 ---------G3

TRANSISTOR

TR 1 ---------E1
TR 2 ---------E1
TR 3 ---------E1
TR 4 ---------E1
TR 5 ---------C2
TR 6 ---------B2
TR 7 ---------F3
TR 8 ---------B2
TR 9 ---------B1
TR10 ---------B1
TR11 ---------B1
TR12 ---------B1
TR13 ---------G2
TR14 ---------G2
TR15 ---------E4
TR16 ---------G3
TR17 ---------G3
TR17b ---------G4
TR18 ---------H3
TR18b ---------G3
TR19 ---------C1
TR20 ---------C2
TR21 ---------D1
TR22 ---------D2
TR23 ---------B3
TR25 ---------G2
TR26 ---------G2

CONNECTOR

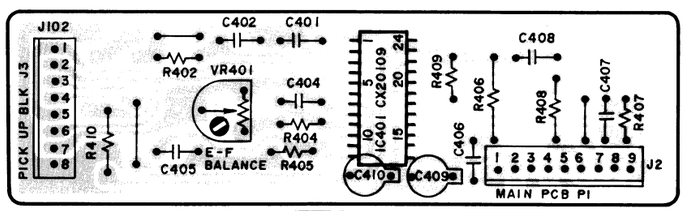
P 1 ---------C1
P 2 ---------D1
P 3 ---------C1
P 4 ---------E1
P 5 ---------C1
P 6 ---------G1
P 7 ---------E4
P 8 ---------A3
P 9 ---------A2
P10 ---------A1
P11 ---------A1
P12 ---------B3
P13 ---------A2



POWER SUPPLY PCB P2013C5020

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

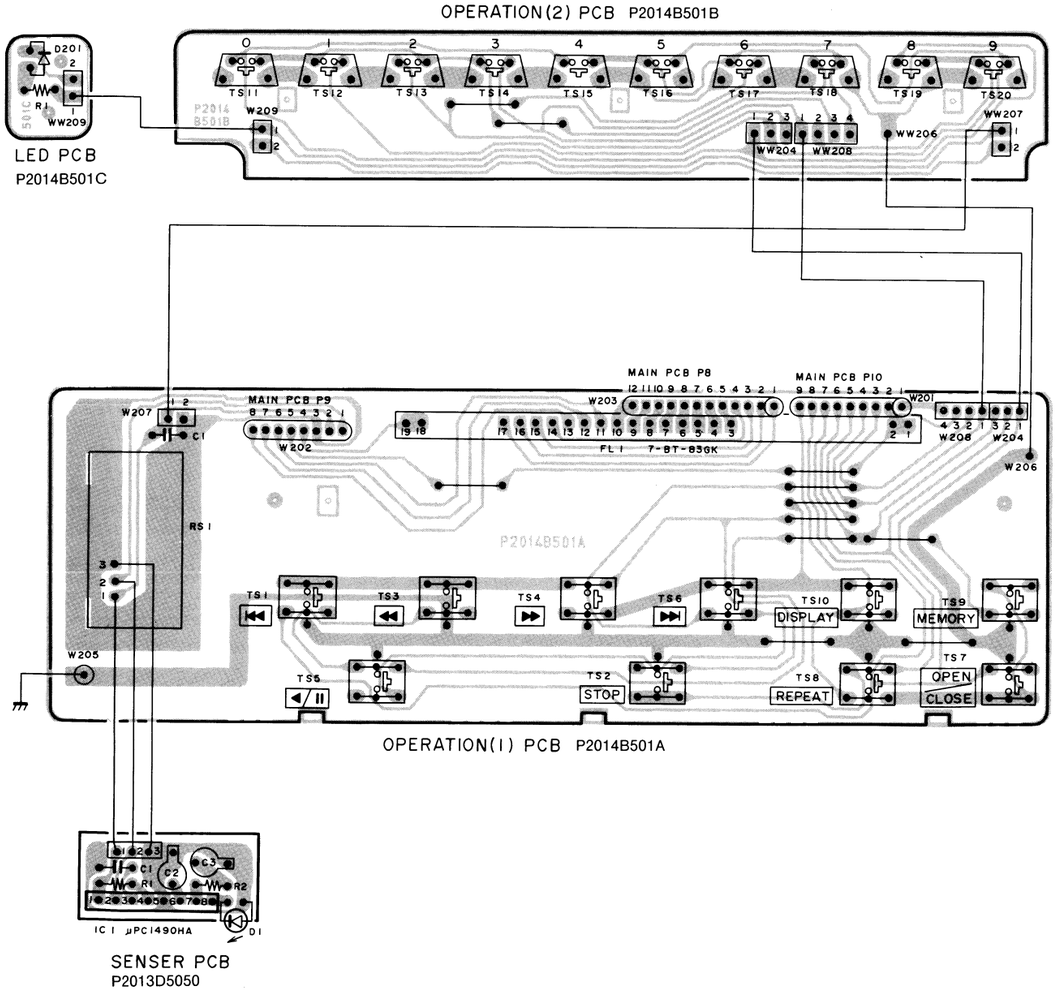
AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT



RF-AMP PCB

(PICK UP TYPE MLP-4F ONLY)

OPERATION(2) PCB P2014B501B



OPERATION(1) PCB P2014B501A

SENSER PCB

P2013D5050