

### 3-2. REPLACEMENT OF THE PICK UP BLOCK

#### [ PRECAUTION BEFORE REMOVING THE PICK UP BLOCK ]

When disconnecting or connecting the connectors P1 and P2, make sure that the P.C board (on the PICK UP BLOCK) has been short circuited as shown in Fig. 3-2. Do not turn the electricity "ON" while the P.C board is short circuited.

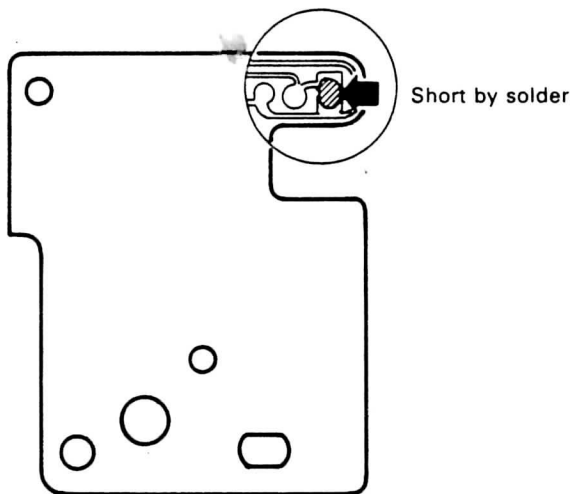
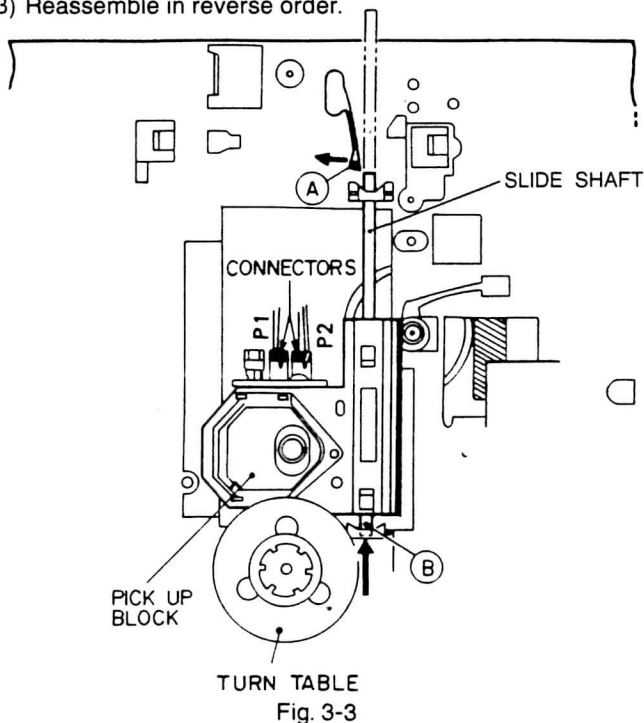


Fig. 3-2

- 1) Disconnect the connectors P1 and P2 on the PICK UP BLOCK.
- 2) Push the ⑥ part of the pick up block SLIDE SHAFT and pull it in the arrowed direction to remove the PICK UP BLOCK.
- 3) Reassemble in reverse order.



### 3-3. REPLACEMENT OF THE SPINDLE MOTOR

- 1) Turn the ① GEAR HOLDER LEVER counter-clockwise (Fig. 3-4), then pull out the SLIDE GEAR.
- 2) Keep the PICK UP BLOCK away from the SPINDLE MOTOR (↑ direction as shown in Fig. 3-5).
- 3) Remove the two SPINDLE MOTOR fixation screws through the hole on the TURN TABLE (Fig. 3-5), then remove the SPINDLE MOTOR.
- 4) Reassemble in reverse order.

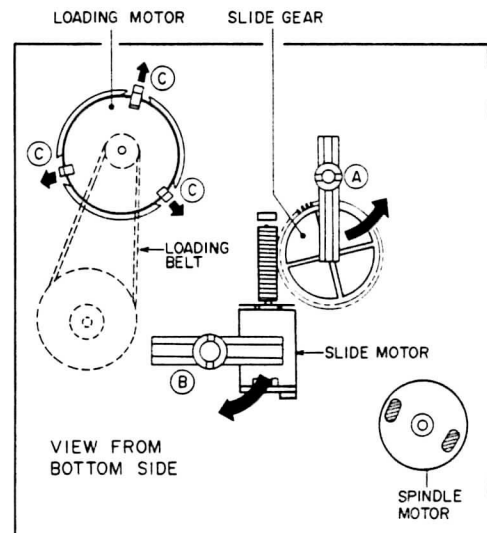


Fig. 3-4

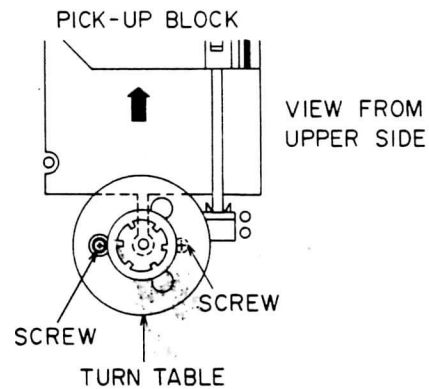


Fig. 3-5

### 3-4. REPLACEMENT OF THE LOADING MOTOR

- 1) Remove the LOADING BELT, then remove the LOADING MOTOR while releasing the ③ hooks (Fig. 3-4).
- 2) To reassemble, push in the LOADING MOTOR and replace the LOADING BELT.

### 3-5. REPLACEMENT OF THE SLIDE MOTOR

- 1) Turn the ② SLIDE MOTOR HOLD LEVER (Fig. 3-4) clockwise, then pull out the SLIDE MOTOR.
- 2) Reassemble in reverse order.

## V. REPLACEMENT OF SPINDLE MOTOR

### 5-1. REMOVE AND ASSEMBLY SPINDLE

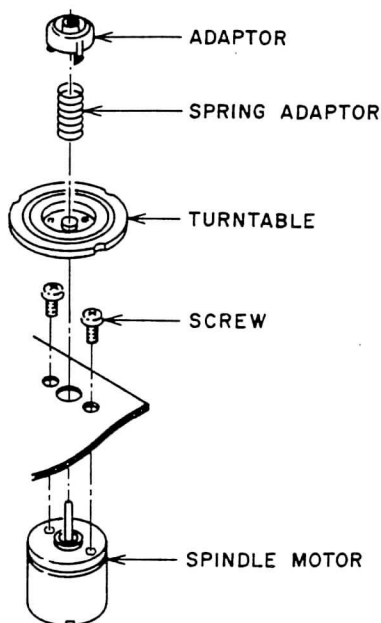


Fig. 5-1

- 1) Pull out the turntable, Spring adaptor and Adaptor.
- 2) Remove 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 height of the turntable from chassis become  $6.6 \pm 0.1$  mm (Fig. 5-2).

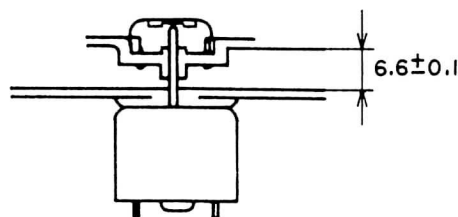


Fig. 5-2

## 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)

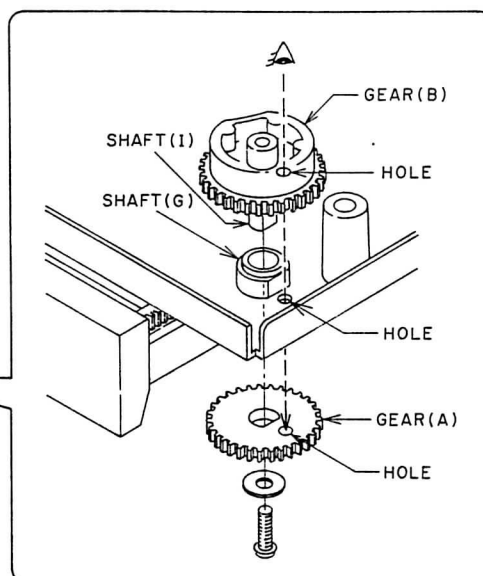
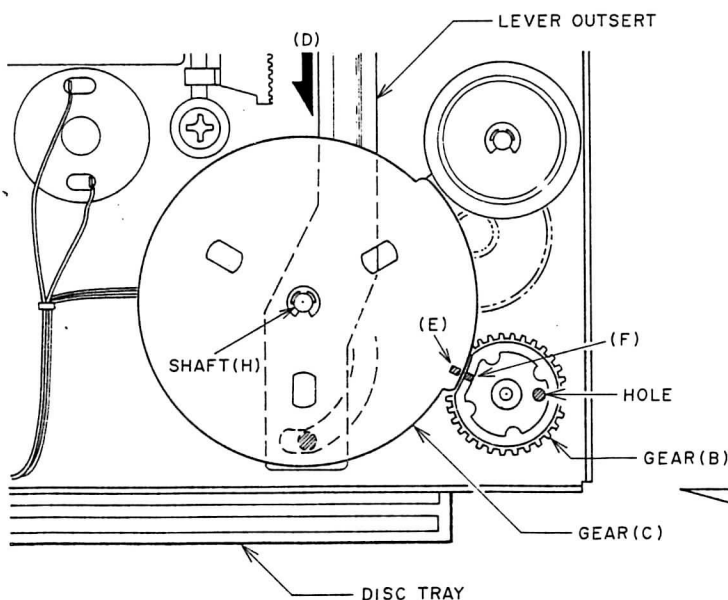


Fig. 6-1

## VII. ADJUSTMENT

### 7-1. ADJUSTMENT WHEN CHANGING THE PICK-UP

#### 7-1-1. 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. (Fig. 7-1)

- 1) Connect the oscilloscope between J202 pin ③ (HF signal) and GND.
- 2) Set the unit in the **TEST MODE 4**.  
**NOTE:** "How to make test Mode" has been written in the Servo Adjustment Procedure.
- 3) Press the (FF)/(RF) Buttons so that the Jitter Direction Adjustment Screw may situate to the middle of the Inclination Adjustment Hole. (Fig. 1-1)
- 4) Confirm that the HF signal (Eye-Pattern) shown in Fig. 7-2.
- 5) Turn right and left the Jitter Direction Adjustment Screw (Fig. 7-1) with the hexagonal driver (2.4 mm) until the HF Signal pattern change from (A) to (B) in Fig. 7-3.
- 6) After adjustment confirm that the HF signal level is within the range indicated below.  
Check that the HF signal pattern is clear as shown in Fig. 7-3 **B**.

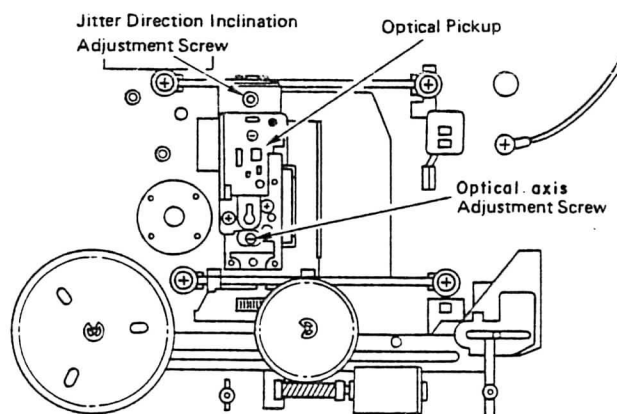


Fig. 7-1

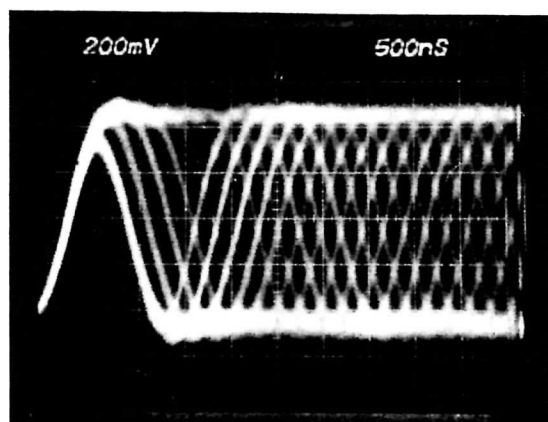


Fig. 7-2

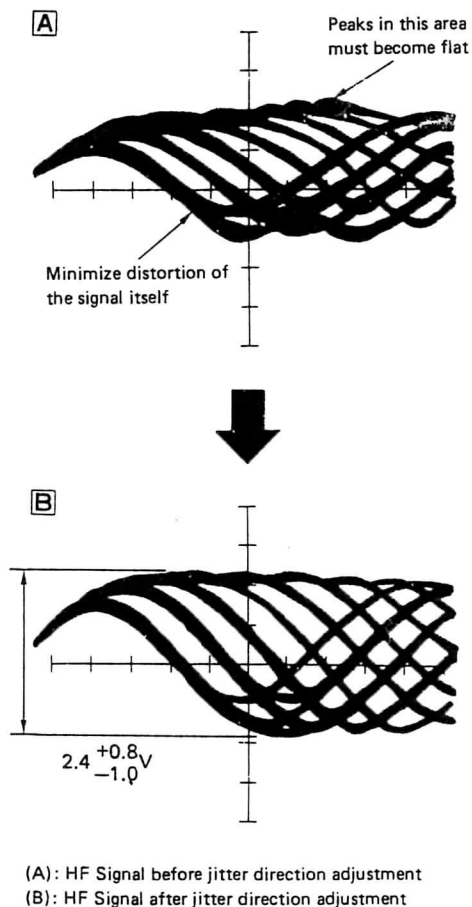


Fig. 7-3

### 7-1-2. Optical Axis Adjustment

If the mechanical eccentricity is large when fixing the pick-up tracking errors become large.

This is turn interferes with the tracking servo, so optical axis adjustment is necessary.

- 1) Set the unit in **TEST MODE 3**.
- 2) Press the (FF)/(RF) Button so that the optical axis adjustment screw situate to the middle of the optical axis adjustment hall. (Fig. 1-1, Fig. 6-1)
- 3) Connect the oscilloscope between J202 pin ② and GND.
- 4) Adjust the optical axis adjustment screw so that T.E (Truck Error) signal becomes maximum. (Fig. 7-4)

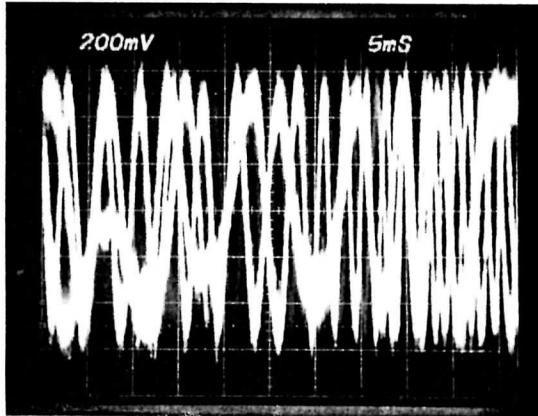


Fig. 7-4

### 7-1-3. Readjustment of E-F Balance

When the pick-up is changed, E-F balance adjustment must be performed. Refer to 7-2 Servo adjustment.

### 7-1-4. APC (Automatic Power Control) Circuitry

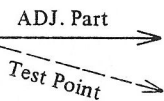
This is a servo circuit to maintain the LD (Laser Diode) power of the pick-up. The LD power can be adjusted by the VR1 by the pick-up block. However appropriate adjustment for individual characteristics has already been made so, DO NOT touch this.

#### NOTE:

It is required to adjust Servo control circuit when pick-up is replaced. Adjust the circuit according to the (7-2) Servo adjustment.

7-2. SERVO ADJUSTMENT

STEP	ADJUSTMENT ITEM
1.	Test Disc
2.	Mode
3.	Test Point & Adj. Part
4.	Result & Remarks



3 E-F BALANCE

1. SONY Type-III (AT-711881)  
2. Test mode 3  
3. Connect the Oscilloscope between J202 Pin 2 and GND. VR401(PICKUP MLP-4C TYPE), E-F BALANCE VR (PICKUP MLP-4D2 TYPE)  
4. 0 ± 10 mV (DC range)  
• Use the following filter as shown illustration.

5 TRACKING SERVO CONTROL GAIN

1. SONY Type-III  
2. Test mode 4  
3. Connect the Oscilloscope between J101 Pin 4 and GND. VR104.  
4. 900 mV to 1.2 Vp-p

How to set the Test mode.

1. Short-circuit J304 and Power switch on.  
2. Confirm that FL Display is 0 and TEST.  
3. When Power switch off, reset the Test mode.

MODE	OPERATION KEY	FL DISPLAY	FUNCTION
TEST MODE 0	Power on or Stop	0 7E57	Laser Diode; OFF All servo controls; OFF
TEST MODE 1	1st press	1 7E57	Laser Diode; ON
TEST MODE 2	2nd press	2 7E57	Focus servo control; ON
TEST MODE 3	3rd press	3 7E57	Focus servo control; ON Disc motor; ON
TEST MODE 4	FS button press	4 7E57	Tracking servo control; ON Slide motor; ON

1 TRACKING OFF-SET

1. SONY Type-III (AT-711881)  
2. Test mode 1  
3. Connect the Oscilloscope between J202 Pin 2 and GND. VR101.  
4. 0 ± 5 mV (DC Range)

4 OPTICAL AXIS ADJUSTMENT

1. SONY Type-III (AT-711881)  
2. Connect the Oscilloscope between J202 Pin 2 and GND. Adjustment screw A.  
4. Maximum point of the waveform.  
• Before this adjustment, reset Test mode and move the Pick-up Block by [▶▶] button till the adjustment screw A appeared from the adjustment hole.

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

1. SONY Type-III (AT-711881)  
2. Test mode 2, Test mode 0  
3. Connect the Oscilloscope between J202 Pin 3 and GND. VR102.  
4. Measure voltage at Test mode 2, then set Test mode 0, adjust VR102 so that the voltage equal Test mode 2. (DC Range)

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

1. SONY Type-III (AT-711881)  
2. Test mode 4  
3. Connect the Oscilloscope between J202 Pin 1 and GND. Connect the Frequency Counter between J202 Pin 5 and GND. VR102  
4. Minimum reading by the counter DISPLAY (Less than 120Hz)  
\*Use the good condition LISC.  
\*VR102: adjust with in ± 20°  
\*Confirm that the Eye-Pattern is Clear.

7 IRFF ADJUSTMENT

1. SONY Type-III  
2. Test mode 4  
3. Connect the Oscilloscope between LPF test Pin and and GND. Digital voltmeter, VR105.  
4. Slowly turn the VR105 to counterclockwise so that the noise appeared as in Fig. a, then turn the VR105 to clockwise and measure with the Digital voltmeter at the point noise disappeared. (Voltage A) Slowly turn the VR105 to clockwise so that the noise appeared as in Fig. b, then turn the VR105 to counterclockwise and measure with the Digital voltmeter at the point noise disappeared. (Voltage B)  
Set the VR105 so that the voltage is at  $\frac{A+B}{2}$  (V).

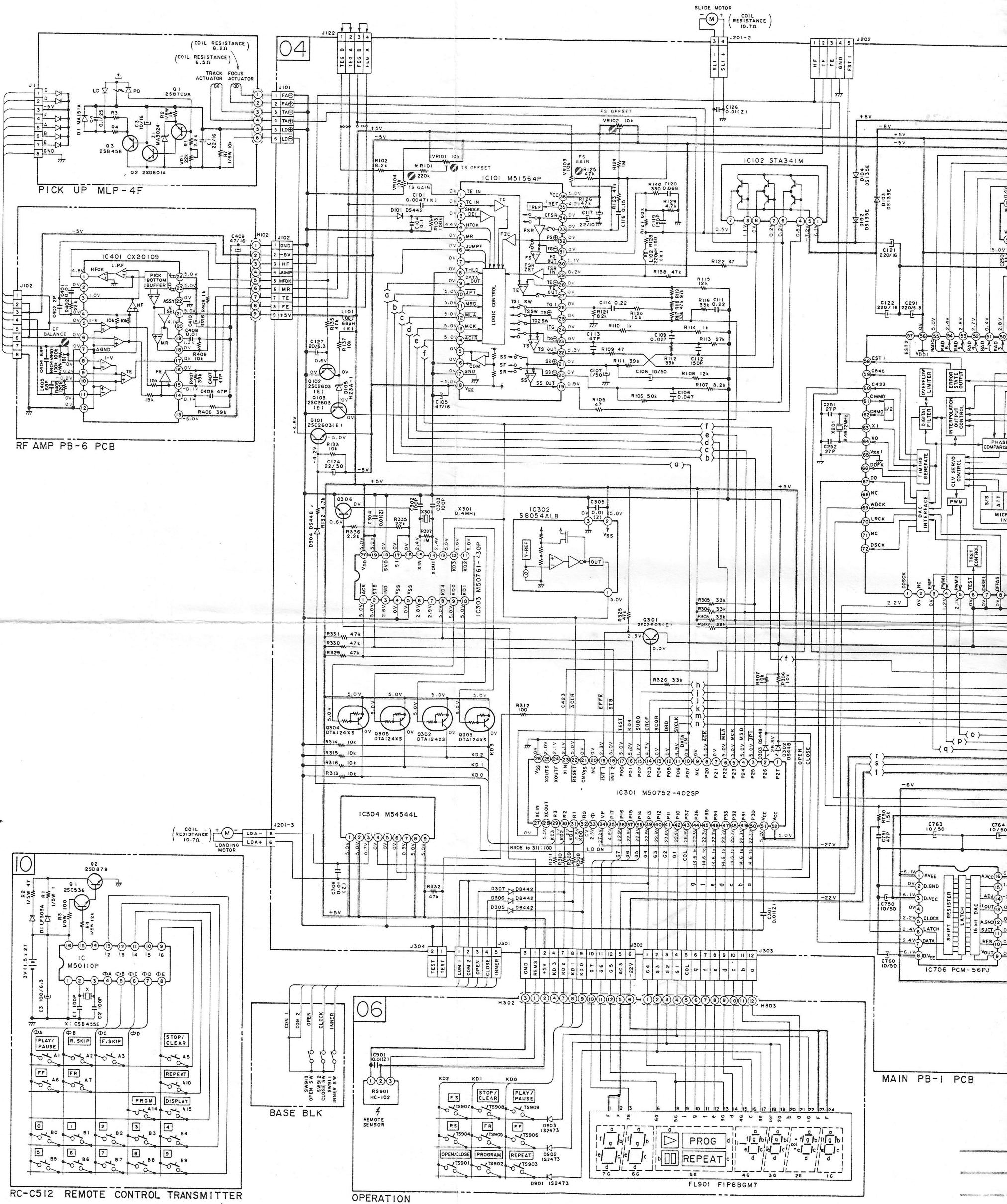
6 FOCUS SERVO CONTROL GAIN

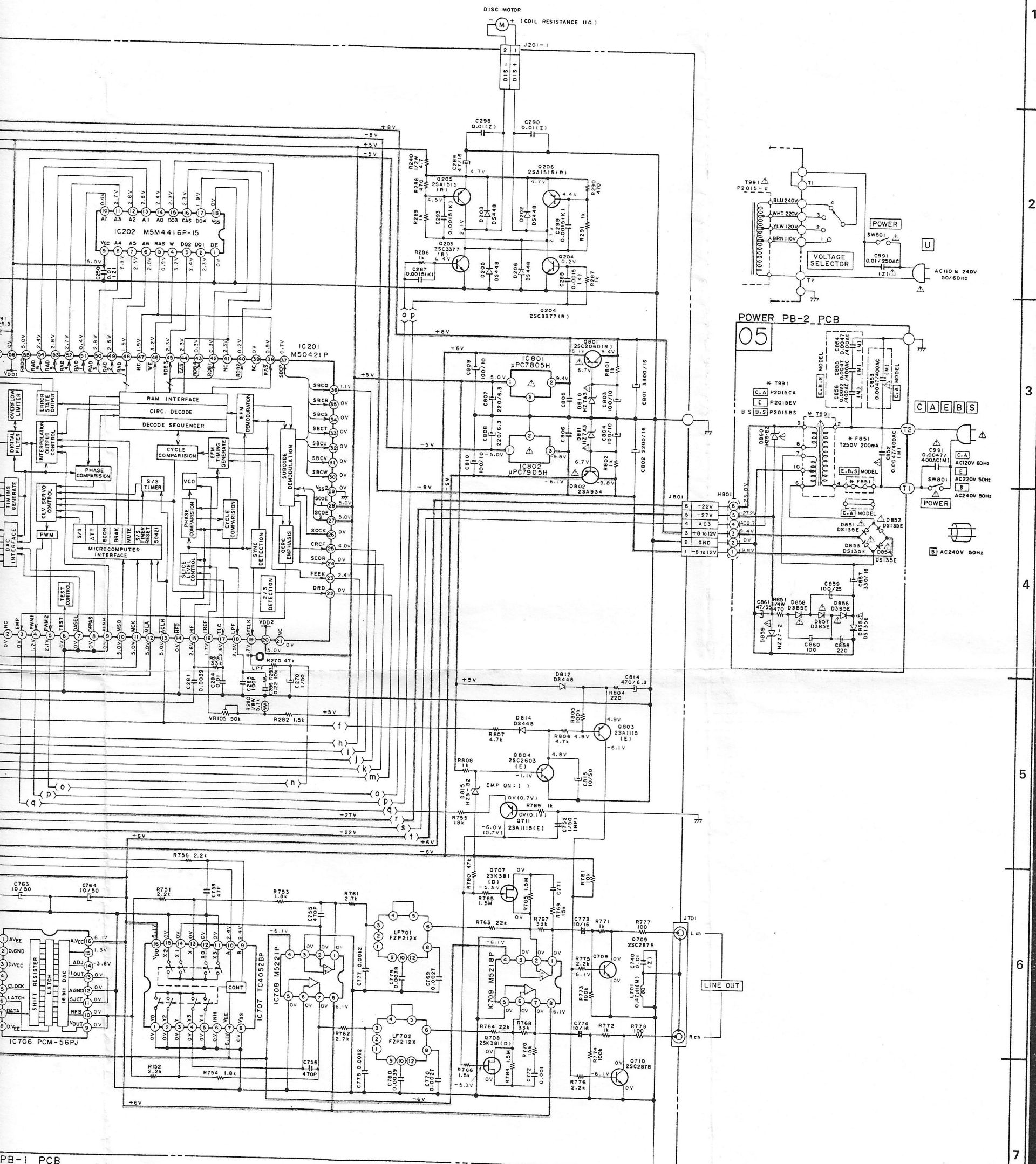
1. SONY Type-III  
2. Test mode 4  
3. Connect the Oscilloscope between J101 Pin 2 and GND.  
4. 1.0 to 1.4 Vp-p

\* If the eye pattern wave forms are not clear, adjust VR102 and screw B so that the eye pattern wave forms are at their clearest.



CD-M512





INDICATED VOLTAGES ARE MEASURED AT PLAY MODE.

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

NOTES:  
 UNLESS OTHERWISE SPECIFIED,  
 ALL RESISTORS IN OHMS 1/6W(J)  
 ALL CAPACITORS IN μF 50 WV(J)  
 (FS) = FAIL SAFE RESISTORS

CD-M512  
 SCHEMATIC DIAGRAM  
 No. 870726A