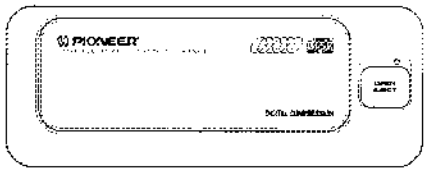
PIONEER
The Art of Entertainment

Service Manual



ORDER NO.
CRT1472

UNIVERSAL MULTI-CD SYSTEM

CDX-FM38 UC

COMPACT disc DIGITAL AUDIO

NOTE :

• Refer to the service manual CDX-M30/UC (CRT1463) for finding circuit and mechanism description which are not shown in this manual.

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SPECIFICATIONS

CD Player unit

System ..... Compact disc audio system
Usable discs ..... Compact Disc
Signal format ..... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Power source ..... 14.4 V DC (10.8 – 15.6 V allowable)
Max. current consumption ..... 0.9 A
Weight ..... 3.0 kg (6.6 lbs.)
Dimensions ..... 200 (W) × 75 (H) × 295 (D) mm
[7-7/8 (W) × 3 (H) × 11-5/8 (D) in.]

Audio

Frequency characteristics ..... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio ..... 97 dB (1 kHz) (IHF-A network)
Dynamic range ..... 94 dB (1 kHz)
Output level ..... 500 mV (1 kHz, 0 dB)
Number of channels ..... 2 (stereo)

FM Modulator unit

Usable frequency ..... 89.1 MHz, 89.5 MHz
Power source ..... 14.4 V DC (10.8 – 15.6 V allowable)
Max. current consumption ..... 250 mA
Weight ..... 450 g (1 lbs.)
Dimensions ..... 140 (W) × 30 (H) × 90 (D) mm
[5-1/2 (W) × 1-1/8 (H) × 3-1/2 (D) in.]

Display unit

Weight ..... 140 g (0.3 lbs.)
Dimensions ..... 105 (W) × 35 (H) × 16 (D) mm
[4-1/8 (W) × 1-3/8 (H) × 5/8 (D) in.]

Remote Controller unit

Power source ..... Batteries (UM-3/AA/R6) Two
Weight (including batteries) ..... 90 g (0.2 lbs.)
Dimensions ..... 60 (W) × 112 (H) × 18.5 (D) mm
[2-3/8 (W) × 4-3/8 (H) × 3/4 (D) in.]

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FS MAY 1992 Printed in Japan

- **CD Player Service Precautions**

1. Since these screws protects the mechanism during transport, be sure to affix it when it is transported for repair, etc.
2. For pickup unit handling, please refer to "Disassembly" During replacement, handling precautions shall be taken to prevent an electrostatic discharge (protection by a short pin).
3. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.

1. SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

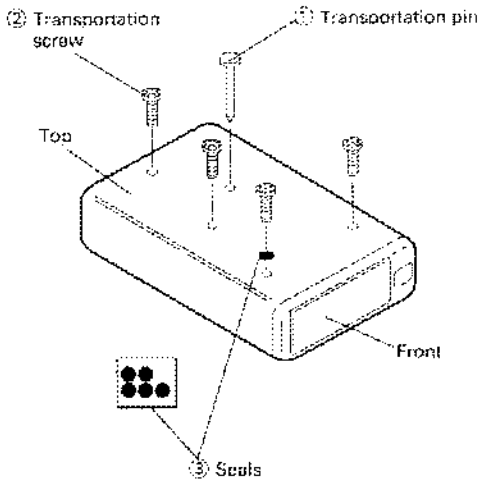
WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

2. TRANSPORTATION SCREWS

Removal of Screws

Be sure to remove transportation screws (red) ① and ② in this order and cover the screw holes with seals ③ before mounting the set. Peel off adhesive tape to remove the transportation pin ①. **The removed screws (red) and the pin will be required if you transport the player again later. Keep them in the bag for keeping transportation screws.**



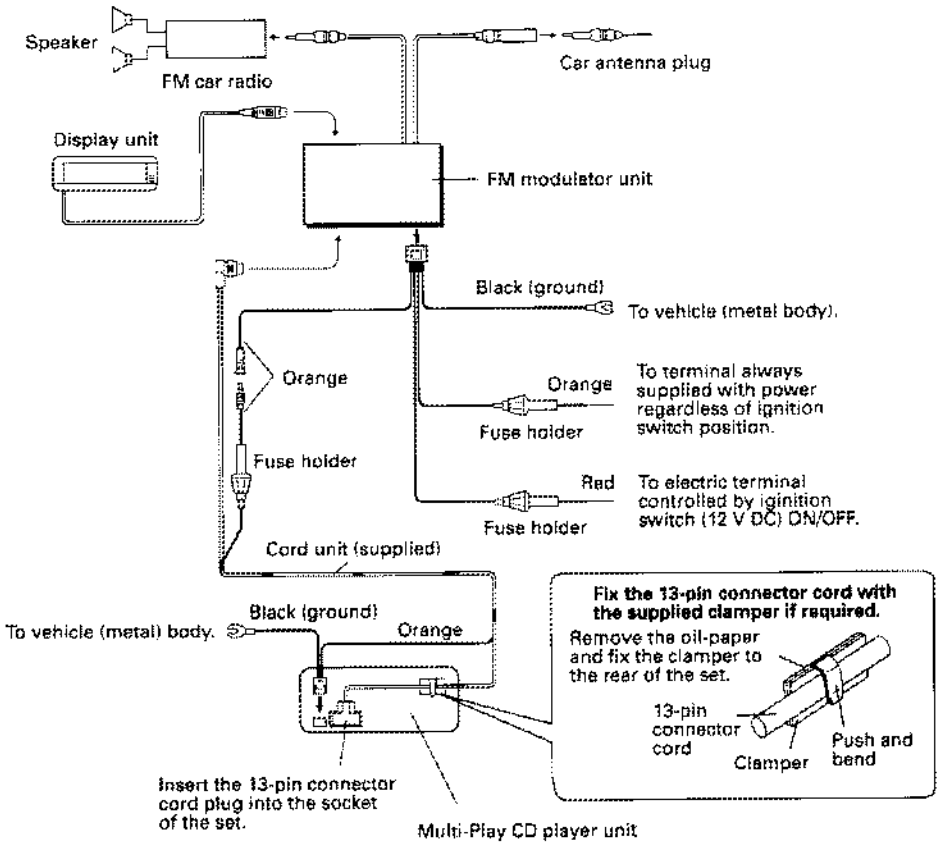
Reinstallation of Screws

Be sure to reinstall the transportation screws (red) in the procedure described below before re-transporting the set. Incorrect order of reinstallation or use of different screws may cause the set to fail.

1. Let the set operate the beginning of a disc and stop operation within 10 seconds thereafter before removing the set.
2. Remove the magazine and then the set.
3. Reinstall the transportation screws in the reverse order (② and ①) of removal. Fasten the transportation pin ① with adhesive tape.

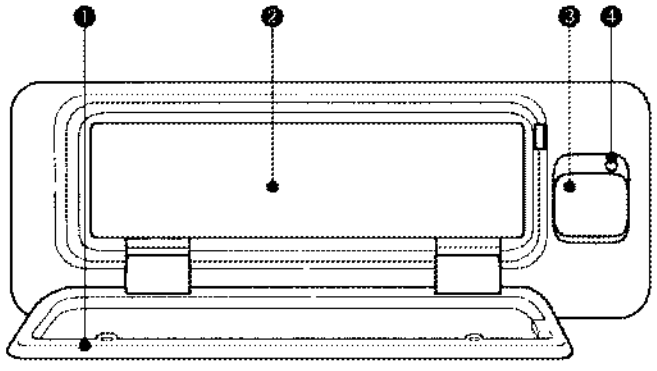
- Before screwing in the transportation screws, position the player vertically.

3. CONNECTION THE UNITS



4. GENERAL GUIDE

Multi-play CD Player Unit (Changer Assy)



❶ Door

Be sure never to leave the door open.

❷ Compact disc magazine slot

❸ Door open/eject button

Press this button to open the door ❶ and eject the magazine.

❹ Clear button

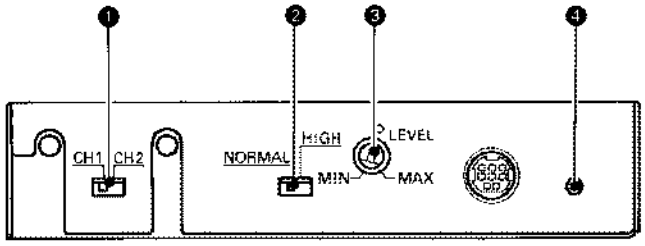
After connecting everything up, press the clear button with the tip of a pencil. If the power will not come on, or if the compact disc player does not operate when the button on the control unit is pressed, or if the control unit display is incorrect, press this button with the tip of a pencil to restore normal operation. **Always press the clear button on the FM modulator unit, too, after pressing this button.**

The Magazine Type Multi-Play CD players with CDCD mark and the Magazines with the same mark are compatible for 5-inch (12 cm) discs.

Precautions when using 8-cm (3-inch) CDs

- **The magazine supplied with this CD player is for 12-cm (5-inch) CDs only. Do not put 8-cm (3-inch) CDs in the magazine, even with adapters, as they may cause a failure.**
- **To play 8-cm CDs, use the optional JD-M308 magazine, which holds six 8-cm CDs. The JD-M108 magazine for six 8-cm CDs cannot be used with this player.**

FM Modulator Unit (Control Assy)



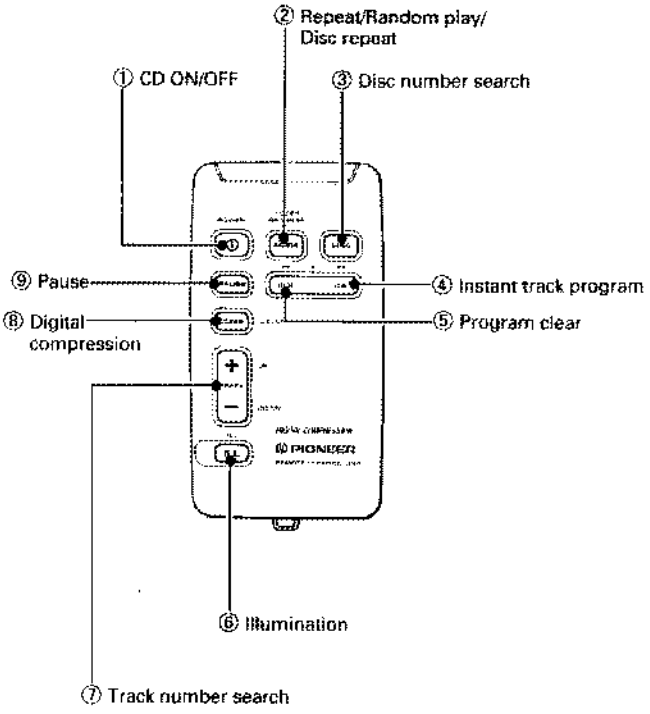
❶ Modulating frequencies selector
The channel selector determines the FM frequency used to play discs via your radio. Normally, set the selector to CH1 (89.1 MHz). If a strong station breaks in on this frequency, set the switch to CH2 (89.5 MHz).

❷ Pre-emphasis correction switch
Normally, set the high-frequency correction switch to NORMAL. If you set it to HIGH, high-frequency sounds will emphasized a little; however, if this causes distortion (it depends on your radio), set the switch back to NORMAL.

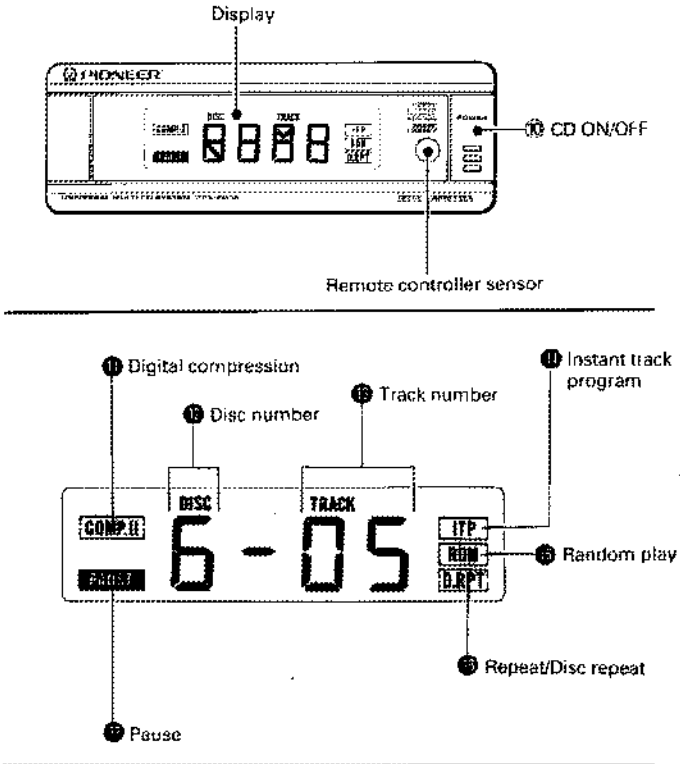
❸ Source level adjuster
Normally, set the source level adjuster to the position indicated by a dot (•). If, when you play discs, the volume is low compared with that for FM, turn the control clockwise. If the volume is high, and there is distortion, turn the control counterclockwise.

❹ Clear button
After connecting everything up, press the clear button with the tip of a pencil. If the power does not switch on, or if the CD player does not operate, when the button on the control unit is pressed, or if the control unit display is incorrect, press this button with the tip of a pencil to restore normal operation. Always press the clear button on the multi-play CD player unit, too, after pressing this button.

Remote controller (Control Assy)



Display unit



5. DISASSEMBLY

● Case

1. Unfasten six Screws A and then remove the upper case.
2. Unfasten four Screws B and then remove the lower case.

● Grille Assy

1. Unlock four catches and dismount the grille assembly.

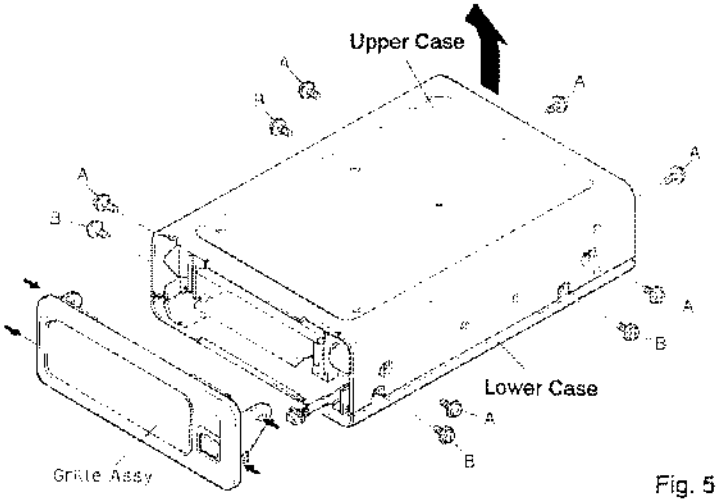


Fig. 5

● Chassis L, R

1. Unfasten four screws.
2. Disconnect two connectors and remove the sub chassis.
3. Remove the damper holder.
4. Remove the spring.
5. Remove chassis L.
6. Remove chassis R.

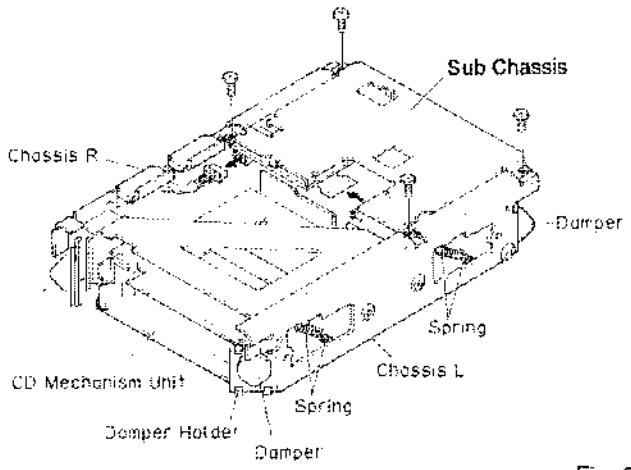


Fig. 6

● **CN351**

Before disconnecting the CN351 connector (PU unit connector), attach a short pin as illustrated.

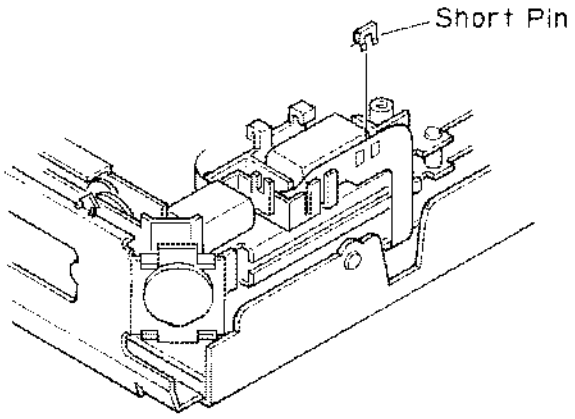


Fig. 7

6. BLOCK DIAGRAM

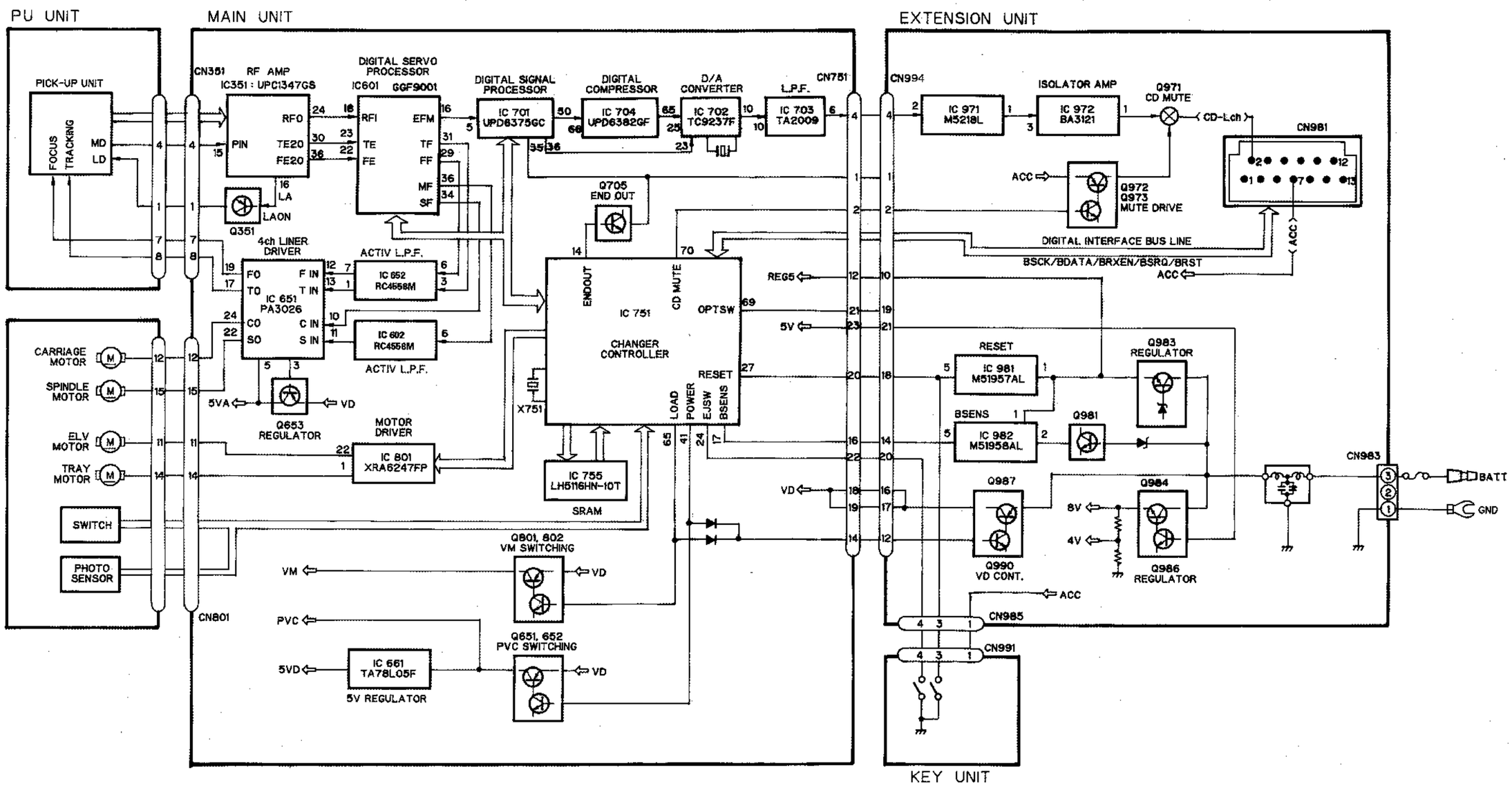


Fig. 8

7. ADJUSTMENT (Changer Assy)

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential,therefore,is connected to REFOUT(approx. 2.5V) instead of GND.

If REFOUT and GND are connected to each other by mistake during adjustments,not only will it be impossible to measure the potential correctly,but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this,take special note of the following.

Do not connect the negative probe of the measuring equipment to REFOUT and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFOUT with the channel 2 negative probe connected to GND.

And since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.

If by accident REFOUT comes in contact with GND,immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON,let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the unit's software are rendered inoperative in test mode,be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.
- When loading and unloading discs during adjustment procedures,always wait for the disc to be properly clamped or ejected before pressing the another key. Otherwise, there is risk of the actuator being destroyed.
- Turn power off when pressing the button ⏭ or the button ⏮ key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

2)Test mode

The model CDX-FM38 is adjusted in a combination with the multiple CD control head (FH-M75, etc.).Each regulator key should be operated at the head.With the FH-M75 taken up for reference,a description will be given below concerning how to enter into the test mode,including key operations. The key in the adjustment text is also one of the FH-M75 keys.

- How to enter into the test mode

  While pressing keys 4 and 6 at a time, press the back-up ON or clear button ON the FH-M75.

- Resetting the test mode

  Press the clear button ON the FH-M75. Subsequently press the clear button ON the CDX-FM38. Or turn off the CDX-FM38 and the FH-M75, back-up and wait for about one minute.

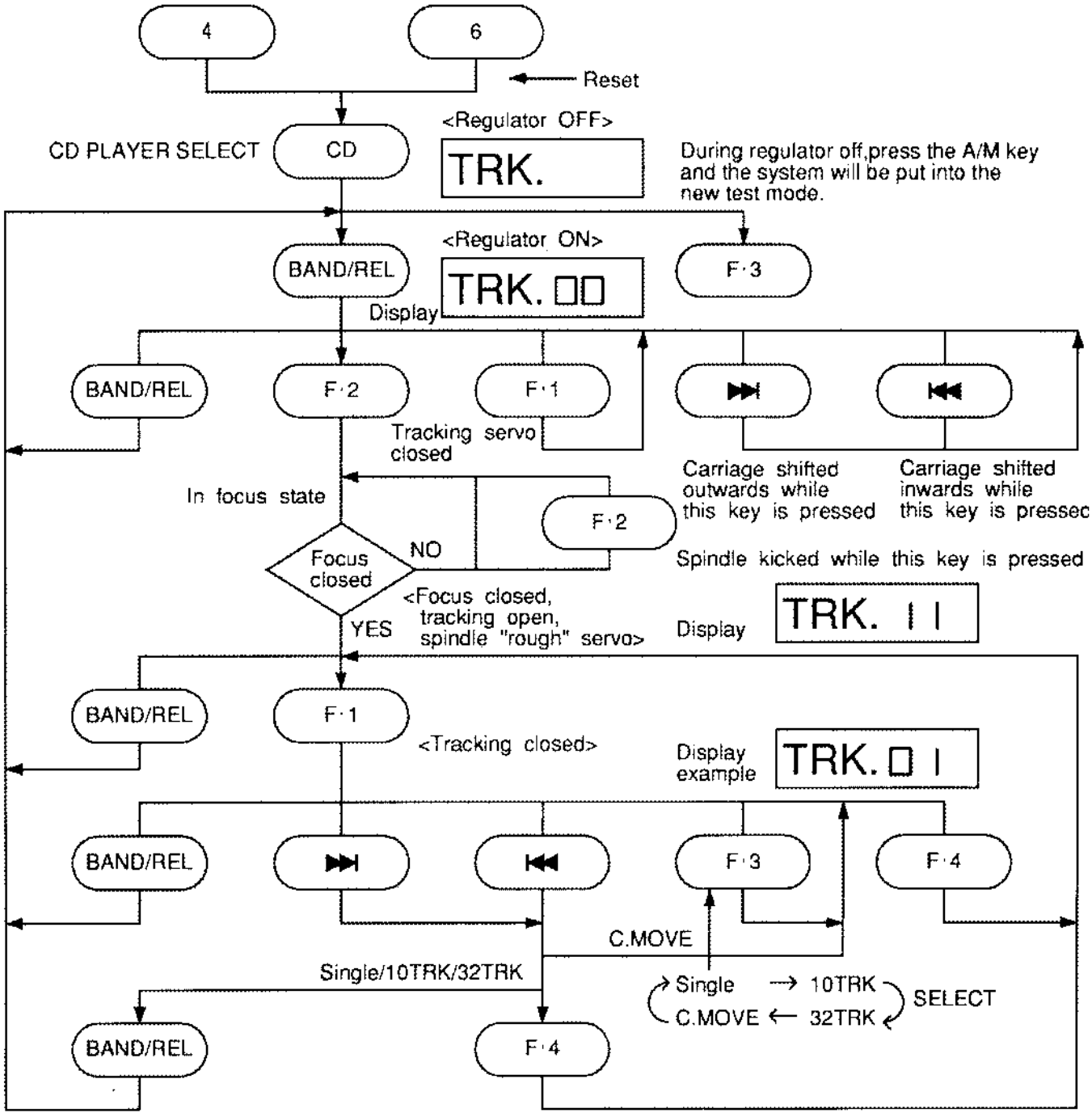
- Role to be played by each key in the test mode

  A function key permits you to select the CD multi-player,single CD player,deck,TV or tuner.

Key	Function
BAND/REL	RegulatorON/OFF
⏭	FWD Kick
⏮	REV Kick
EJECT	EJECT
F•3	Jump mode
F•1	Tracking close
F•4	Tracking open
F•2	Focus close
CD	CD ON/OFF

- SINGLE/10TRK/32TRK will continue to operate even after the key is released.Tracking closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is off.

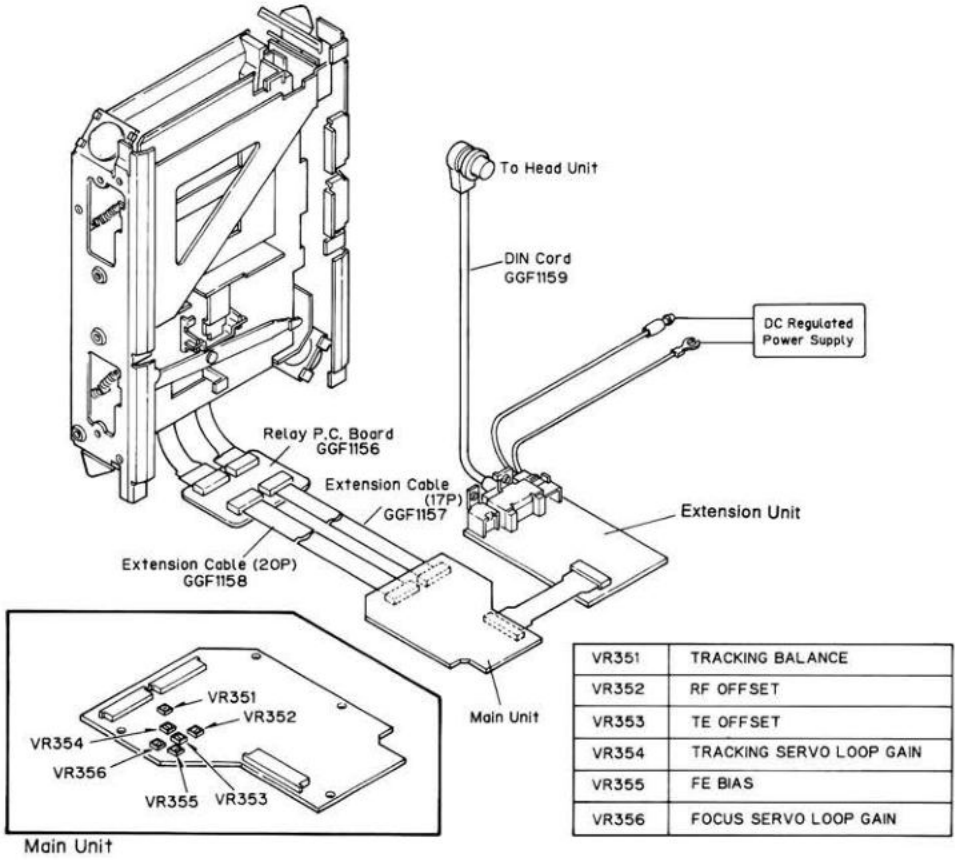
● Flow Chart


4
6
Reset
<Regulator OFF>
CD PLAYER SELECT
CD
TRK.
During regulator off,press the A/M key and the system will be put into the new test mode.
<Regulator ON>
BAND/REL
TRK. □□
F·3
Display
BAND/REL
F·2
F·1
Tracking servo closed
Carriage shifted outwards while this key is pressed
Carriage shifted inwards while this key is pressec
In focus state
F·2
Spindle kicked while this key is pressed
Focus closed
NO
YES
<Focus closed, tracking open, spindle "rough" servo>
Display
TRK. 1 1
BAND/REL
F·1
<Tracking closed>
Display example
TRK. □ 1
BAND/REL
F·3
F·4
C.MOVE
Single/10TRK/32TRK
Single → 10TRK
C.MOVE ← 32TRK
SELECT
BAND/REL
F·4

● Measuring Equipment and Jigs

Adjustment	• Measuring equipment&jigs
Grating Adjustment	• Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF-133),AC millivoltmeter • SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
Tangential Skew Check	•Oscilloscope,screwdriver •SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 • Relay P.C.Board:GGF1156
Grating Adjustment	• Oscilloscope,clock driver,two low-pass filters • SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
FE Bias Adjustment	Oscilloscope,volume adjustment driver SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
RF Offset Adjustment	Oscilloscope,volume adjustment driver SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
TE Offset Adjustment-1	DC voltmeter or oscilloscope,volume adjustment driver • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
Tracking Balance Adjustment-1	Oscilloscope,volume adjustment driver SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
Focus Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065),Oscilloscope, dual meter milli-voltmeter,volume adiustment driver SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
Tracking Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065),Oscilloscope, dual meter milli-voltmeter,volume adjustment driver SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
TE Offset Adjustment-2	DC voltmeter,volume adjustment driver • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156
Tracking Balance Adjustment-2	Oscilloscope,volume adjustment driver SONY TYPE 4 (or TYPE 3) • Extension Cable:GGF1157,GGF1158 • DIN Cord:GGF1159 •Relay P.C.Board:GGF1156

• Adjustment Points and Test Point



VR351	TRACKING BALANCE
VR352	RF OFFSET
VR353	TE OFFSET
VR354	TRACKING SERVO LOOP GAIN
VR355	FE BIAS
VR356	FOCUS SERVO LOOP GAIN

Fig. 9-1

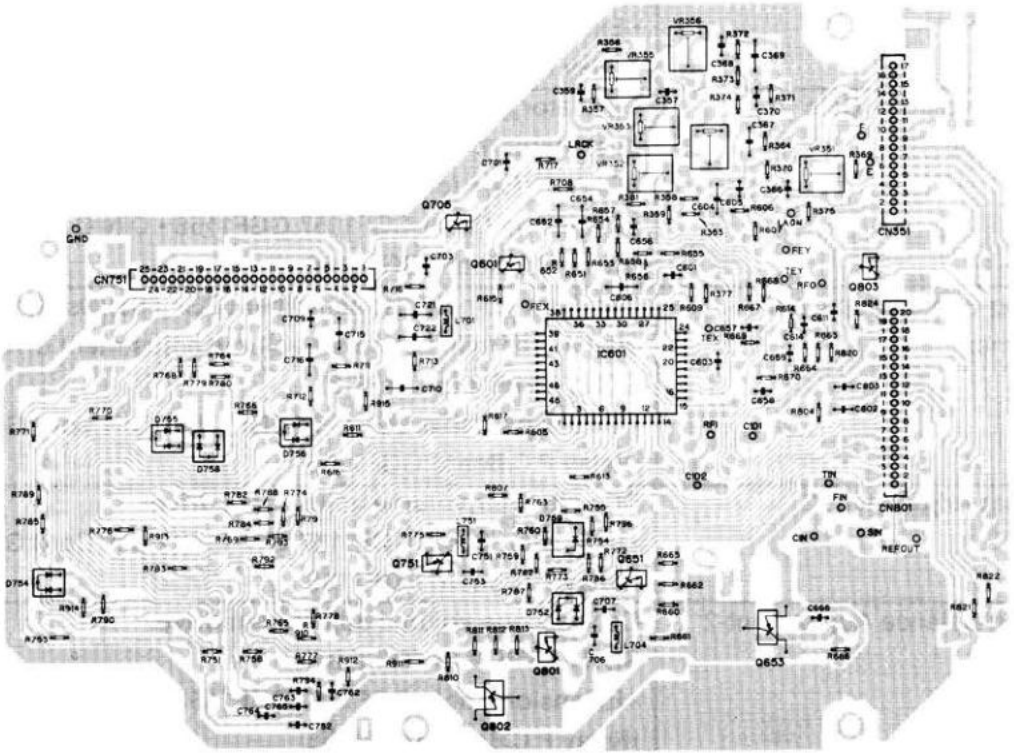


Fig.9-2

7.1 Grating Adjustment (Rough adjustment)

- Purpose: The grating may need adjustment in a replaced pick-up unit.
- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF-133),AC millivoltmeter
• Measuring point	• TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• Pick-up grating adjustment hole

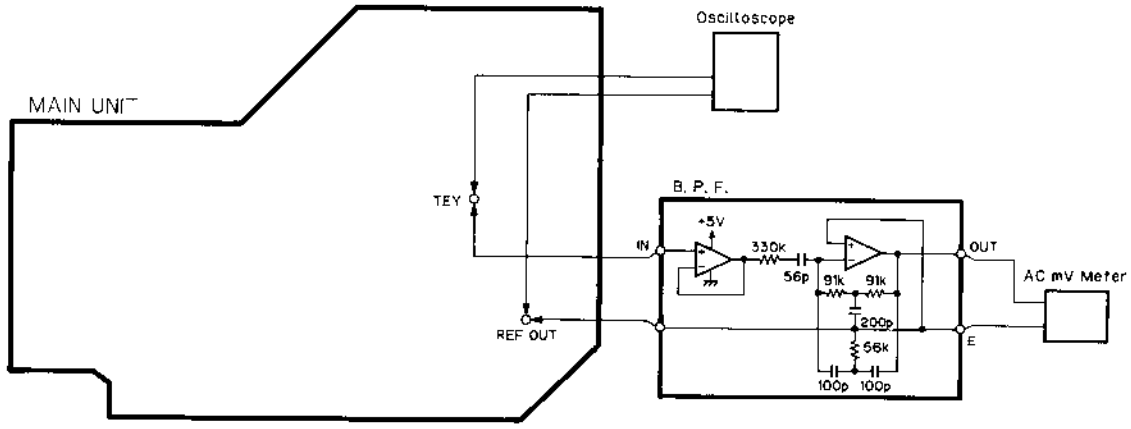
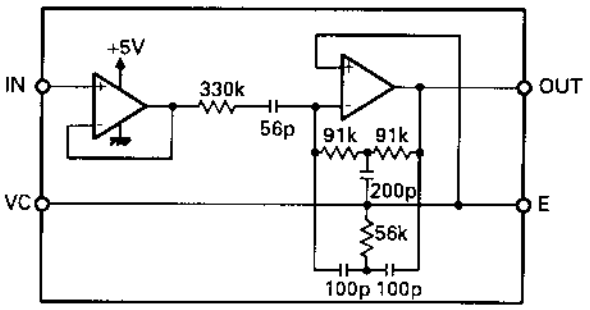


Fig.10

Adjustment Procedure

1. In the test mode,set a test desc-loaded magazine and select the tray with a test disc.
2. Switch regulator ON.
3. Using the ⏭ or ⏮ key,move the pick-up to about the center of the test disc.
4. Press the **F•2** key to close focus.
5. While monitoring the TEY filter output by AC milli-voltmeter,turn the grating adjustment hole slowly. The AC voltage increases and decreases while turning the screw. Search for the minimum voltage level. (This corresponds to the position where the grating is on a track,and is referred to as the null point.)
6. Then while monitoring TEY by oscilloscope,turn the driver slowly clockwise from the null point (as seen from under the pick-up) until the first waveform peak amplitude is reached.

B.P.F (GGF-133)



7.2 Tangential Skew Check

- Purpose: To check whether tangential skew has been misaligned or not when replacing the pick-up unit.
- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,screwdriver
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• Pick-up tangential adjustment screw

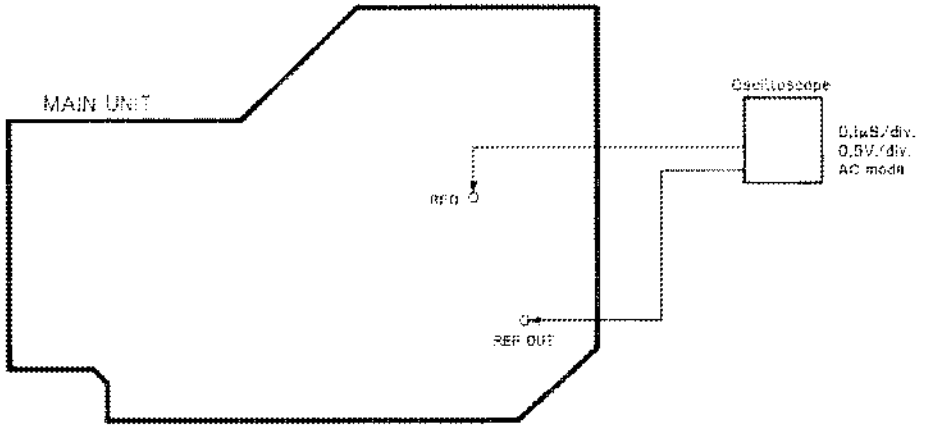


Fig.11

Adjustment Procedure

1. Play tune TNO 12 in normal mode.(TYPE 3:TNO 14)
2. Adjust the tangential adjustment screw so that the RF wave-form will have a level maximized and an eye pattern clearly viewed. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates,and take the midway point as the adjustment point. As a general guide,look for an overall clear wave-form,and one of the diamond shapes in the eye pattern. The diamond shapes should appear in fine lines at the point of optimum adjustment. Take care not to knock the pick-up with the screwdriver at this stage. (This kind of accident can result in loss of focus.) (See Fig.12,13)
3. Apply "screw-lock" to the tangential adjustment screw.
4. After adjusting tangential skew,also adjust the grating.

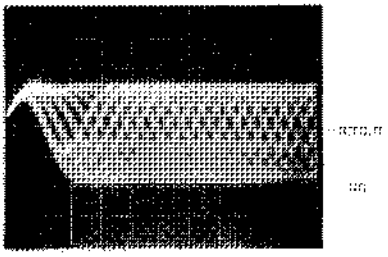


Fig. 12

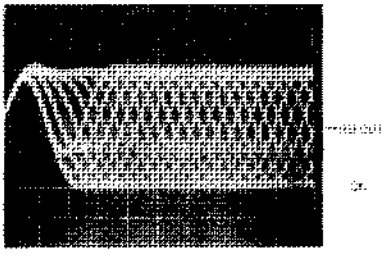


Fig. 13

7.3 Grating Adjustment (Fine adjustment)

- Purpose: The grating may need adjustment in a replaced pick-up unit.
- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,clock driver,two low-pass filters
• Measuring point	• E LPF output,F LPF output
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• Pick-up grating adjustment hole

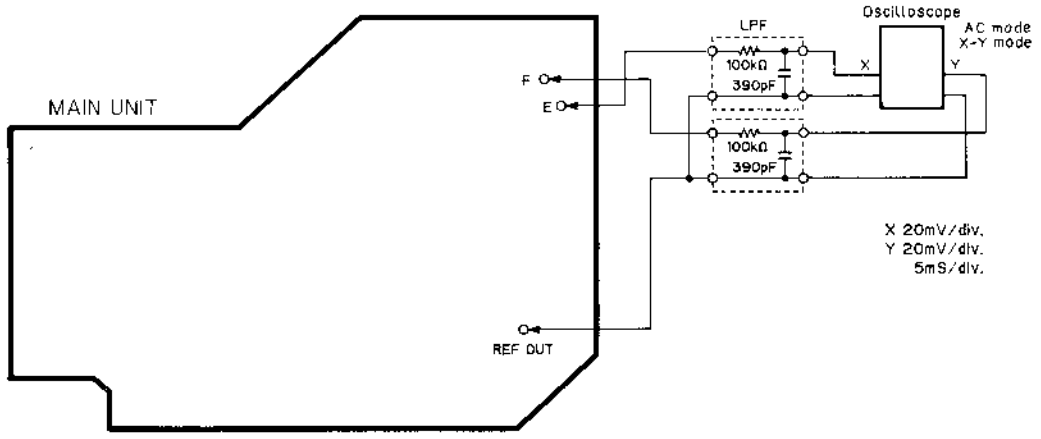


Fig.14

Adjustment Procedure

1. Connect a low-pass filter as shown in the above diagram.
2. Switch regulator ON in test mode,and load a disc.
3. Using the ⏭ or ⏮ key,move the pick-up to about the center of the test disc.
4. Press the **F•2** key to close focus.
5. Using the driver,adjust the Lissajous figure to a single line (or as close as possible).
6. Switch regulator OFF and remove the filters.

TEY waveform 5ms/div, 500mV/div

Nul Point

Lissajous figure (AC input)
Horizontal axis E 20mV/div
Vertial axis F 20mV/div

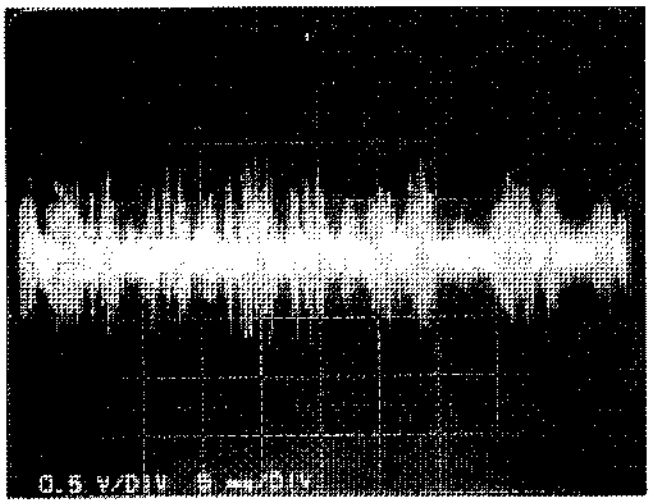


Fig. 15

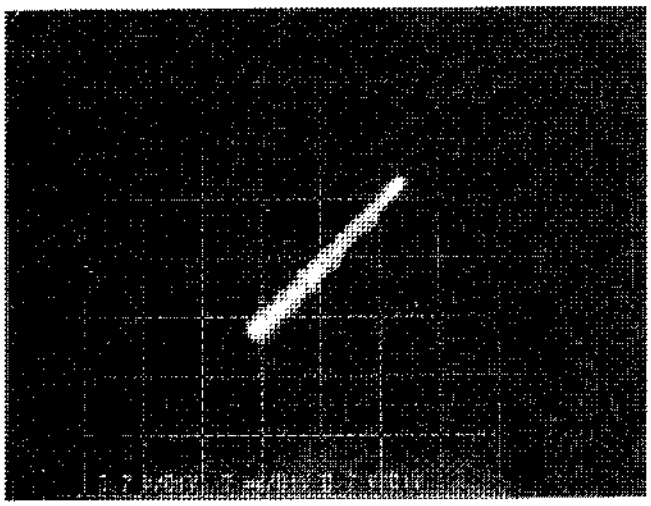


Fig. 16

"Rough" adjustment

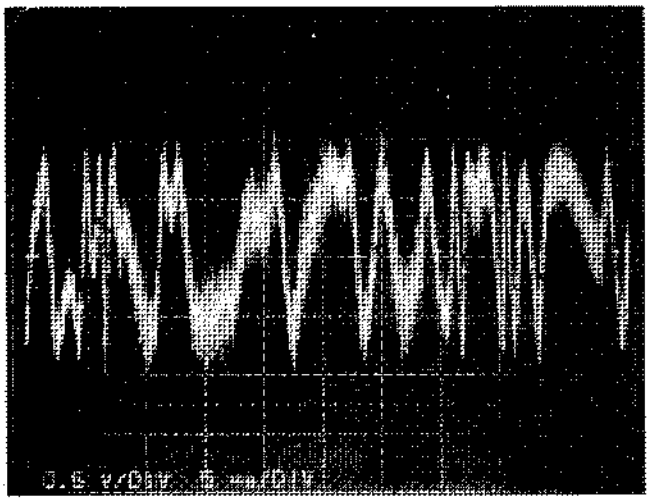


Fig. 17

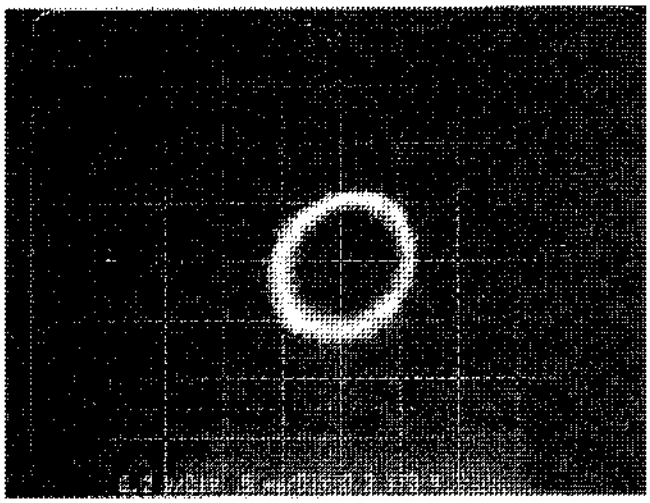


Fig. 18

Final adjustment

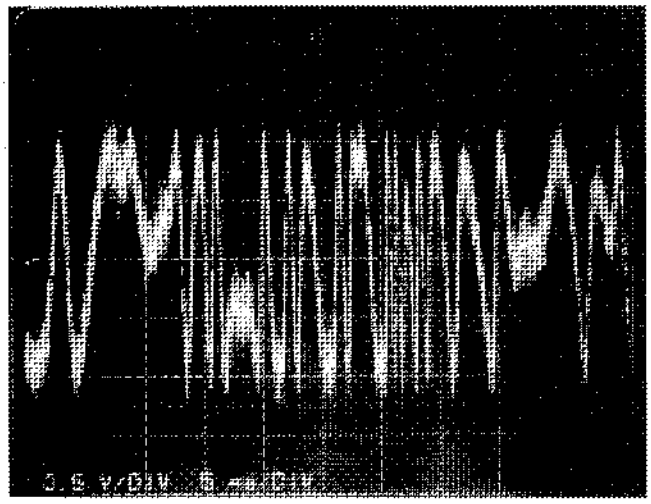


Fig. 19

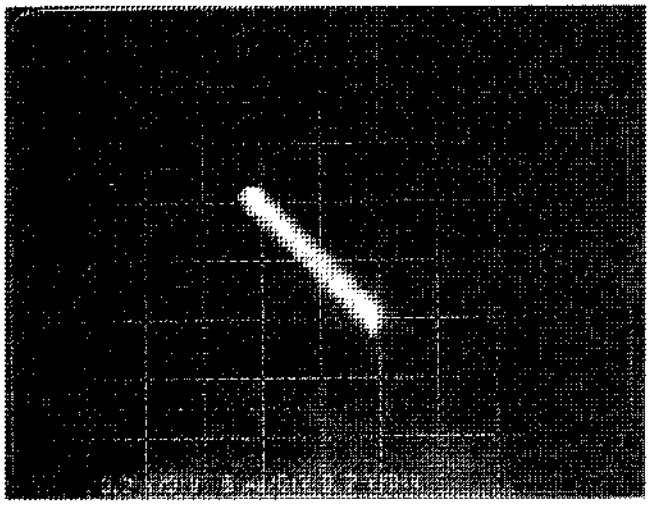


Fig. 20

7.4 FE Bias Adjustment

- Purpose: To adjust the focus servo bias to an optimum value.
- Maladjustment symptoms: Focus closing difficulty,poor playability.

• Measuring equipment / jigs	• Oscilloscope,volume adjustment driver
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR355(FEB)

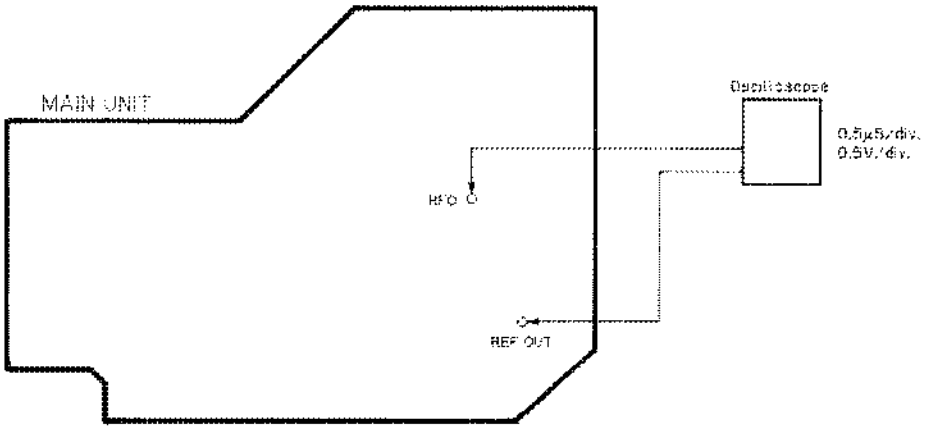


Fig.21

Adjustment Procedure

1. Play tune TNO 12 in normal mode.(TYPE 3:TNO 14)
2. Observe RFO in respect to REFOUT in the oscilloscope,and adjust VR355(FEB) to obtain maximum RF and optimum eye pattern. (See Fig.22,23)

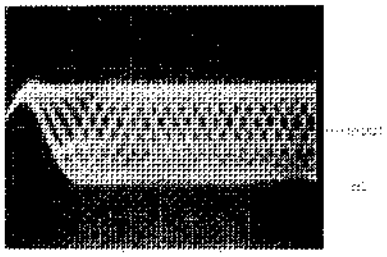


Fig. 22

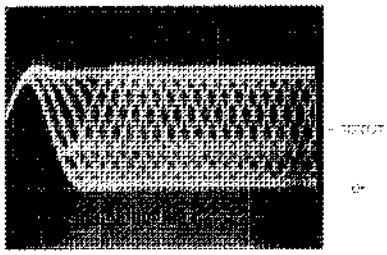


Fig. 23

7.5 RF Offset Adjustment

- Purpose: To adjust the RF amplifier offset to a suitable value.
- Maladjustment symptoms: Focus closure fails readily.

• Measuring equipment / jigs	• Oscilloscope,volume adjustment driver
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR352(RFO)

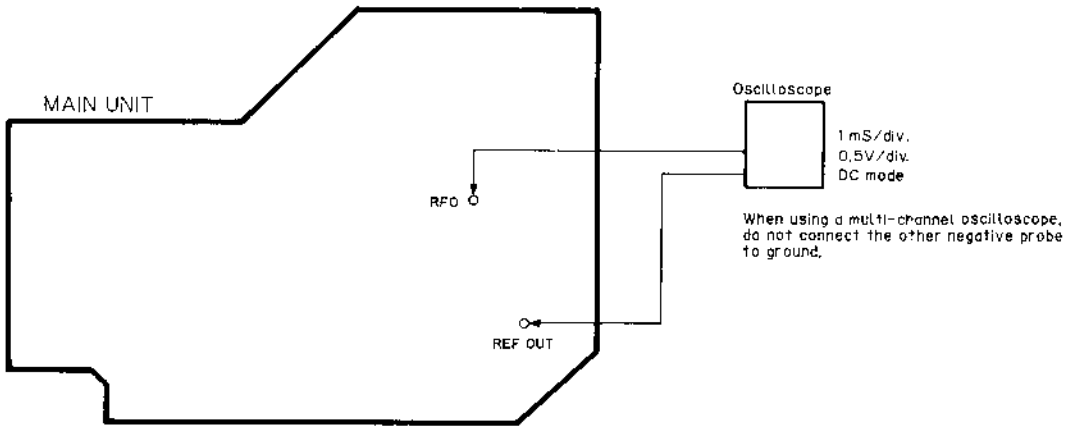
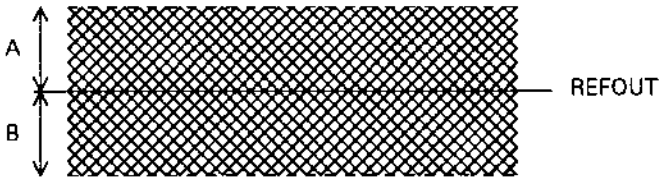


Fig.24

Adjustment Procedure

1. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)
2. Use VR352 to adjust the RFO waveform so that REFOUT appears at the center. (A-B must not exceed 100 mV.)



7.6 TE Offset Adjustment-1

- Purpose: To adjust the electrical offset of the tracking servo to zero.
- Maladjustment symptoms: Search times too long,carriage run-away.

• Measuring equipment / jigs	• DC voltmeter or oscilloscope,volume adjustment driver
• Measuring point	• TEY
• Test disc and setting	• Empty magazine • Test mode
• Adjustment position	• VR353(TEO)

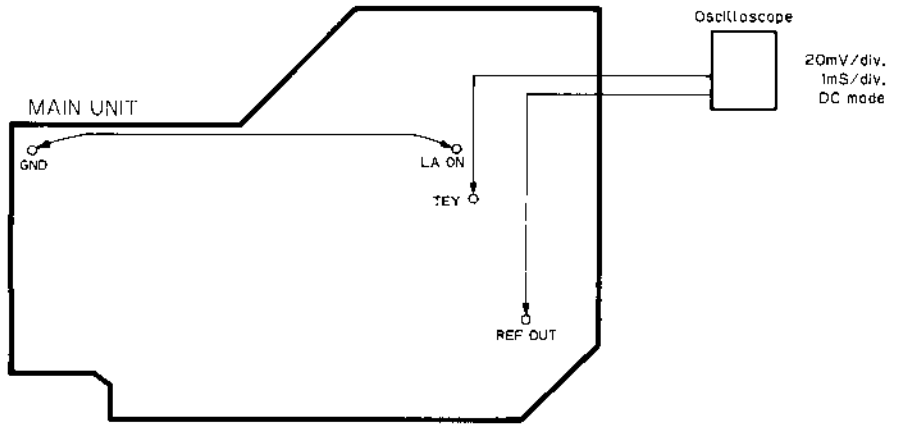


Fig.25

Adjustment Procedure

1. Connect LAON to GND.
2. Switch regulator ON while in test mode.
3. Using VR353(TEO),adjust the TEY output DC voltage in reference to REFOUT to a value of 0±25mV.
4. Switch regulator OFF.
5. Remove LAON to GND.

7.7 Tracking Balance Adjustment-1

- Purpose: To adjust the tracking servo offset to zero.
- Maladjustment symptoms: Search times too long,poor playability,carriage run-away.

• Measuring equipment / jigs	• Oscilloscope,volume adjustment driver
• Measuring point	• TEY (Tracking error signal)
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• VR351(T.BAL)

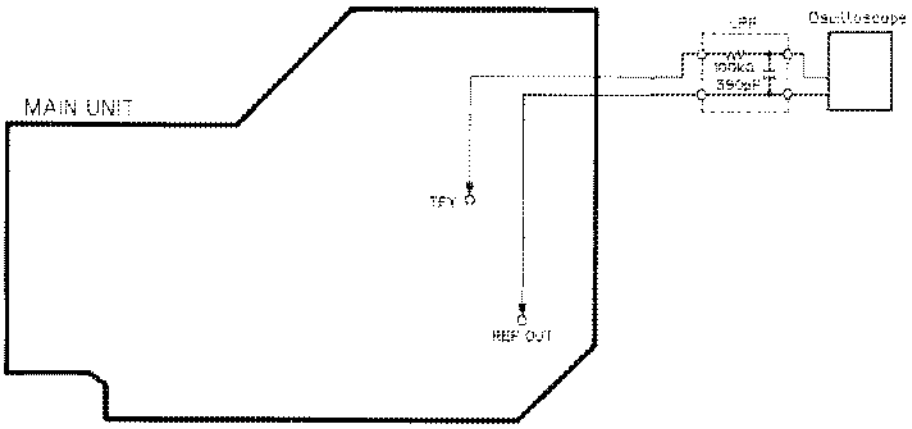


Fig.26

Adjustment Procedure

1. After checking that regulator is OFF,connect the low-pass filter as shown in the diagram.
2. Set the test disc (SONY TYPE 4). Switch regulator ON.
3. Using the ⏭ or ⏮ key,move the pick-up to about the center of the signal surface.
4. Press the F•2 key to close focus.
5. Using an oscilloscope,observe the TEY signal in respect to REFOUT.
   Then adjust VR351(T.BAL) to set the positive and negative amplitudes to the same levels.(See Fig.27-29)
6. Switch the power OFF.

Fig. 27

Fig. 28

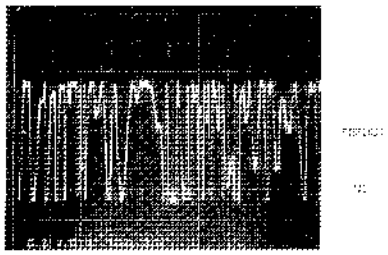


Fig. 29

7.8 Focus Servo Loop Gain Adjustment

- Purpose: To adjust the focus servo loop gain to an optimum value.
- Maladjustment symptoms: Poor playability,reduced resistance to vibration,focus closure fails readily.

• Measuring equipment / jigs	• Oscillator,gain adjustment filter (GGF-065),dual meter milli-voltmeter,oscilloscope,volume adjustment driver
• Measuring point	• FEX,FEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR356(FG)

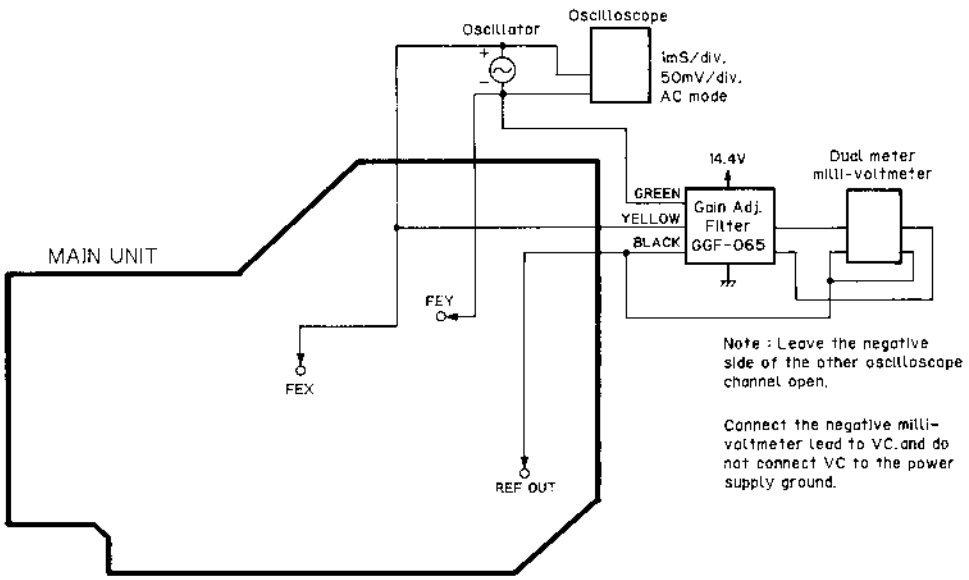


Fig.30

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)
3. Set the oscillator to 1kHz,and observe the FEX/FEY output in the oscilloscope. Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.
4. Adjust VR356(FG) to obtain a milli-voltmeter difference of 0±0.5dB.

7.9 Tracking Servo Loop Gain Adjustment

- Purpose: To adjust the tracking servo loop gain to an optimum value.
- Maladjustment symptoms: Poor playability,reduced resistance to vibration.

• Measuring equipment / jigs	• Oscillator,gain adjustment filter (GGF-065),dual meter milli- voltmeter,oscilloscope,volume adjustment driver
• Measuring point	• TEX,TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR354(TG)

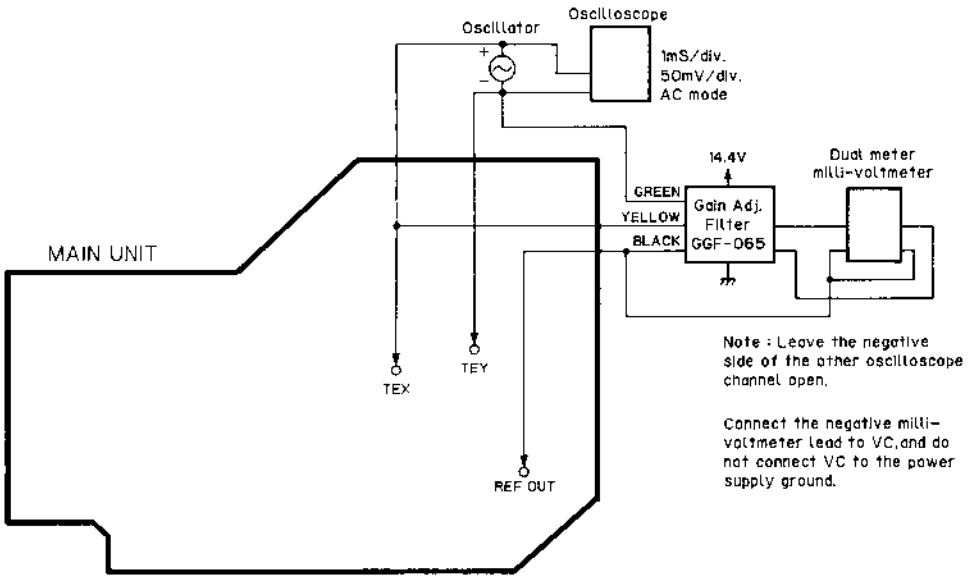


Fig.31

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.
2. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)
3. Set the oscillator to 1.4kHz,and observe the TEX/TEY output in the oscilloscope. Adjust the oscillator output to obtain a TEX/TEY output of 300mVp-p.
4. Adjust VR354(TG) to obtain a milli-voltmeter difference of 0±0.5dB.

7.10 TE Offset Adjustment-2

- Purpose: To adjust the electrical offset of the tracking servo to zero.
- Maladjustment symptoms: Search times too long,carriage run-away.

• Measuring equipment / jigs	• DC voltmeter,volume adjustment driver
• Measuring point	• TEY
• Test disc and setting	• No Disc • Test mode
• Adjustment position	• VR353

Adjustment Procedure

Same as for TE offset adjustment-1,but with the DC voltage of the TEY output adjusted to 0±50mV.
The purpose of this additional adjustment is to correct any deviations generated when carrying out the tracking balance and tracking servo loop gain adjustments after completing TE offset adjustment-1.

7.11 Tracking Balance Adjustment-2

- Purpose: To adjust the tracking servo offset to zero.
- Maladjustment symptoms: Search times too long,poor playability,carriage run-away.

• Measuring equipment / jigs	• Oscilloscope,volume adjustment driver
• Measuring point	• TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• VR351

Adjustment Procedure

Steps 1 thru 5 same as tracking balance adjustment-1.

6. Check that the level difference between the positive and negative amplitudes of the TEY signal is within 5% (See Fig.27-29). If greater than 5%,adjust with VR351.
7. If further adjustment was necessary in step 6,repeat TE offset adjustment-2.

8. ADJUSTMENT (Control Assy)

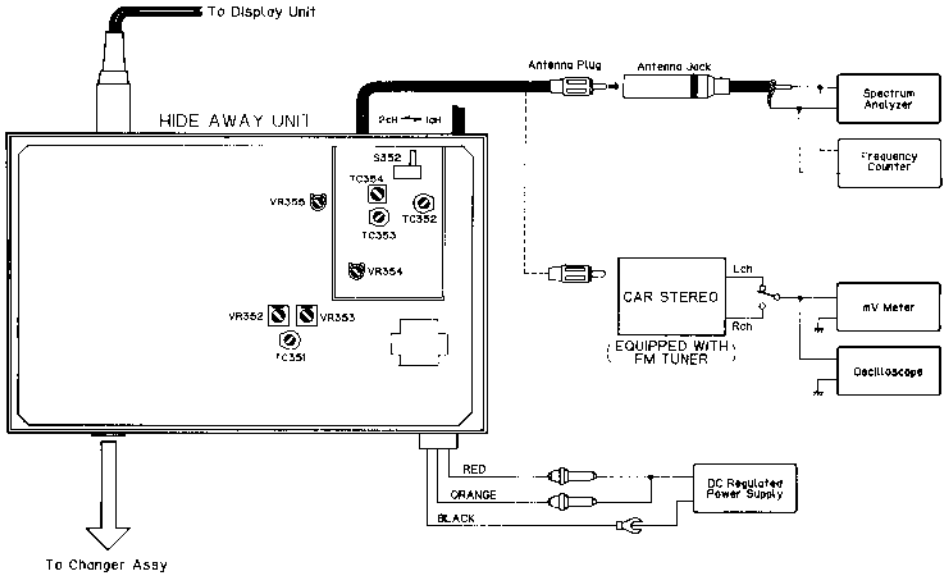


Fig. 32

1 c h　A D J U S T M E N T (S351:NORMAL, LEVEL VOLUME:MINIMUM, S352:1ch)

Adjustment		Adjusting Point	Adjustment Method (Switch Position)
Frequency	No signal from changer assy	TC352	Spectrum Analyzer or Frequency Counter:89.1MHz
DC offset	No signal from changer assy	VR352	Spectrum Analyzer:Leakage of 38kHz signal becomes minimum
Pilot level	No signal from changer assy	VR353	Spectrum Analyzer: PILOT=10%(±7.5kHz)
Modulation	1kHz 0dB 500mV from changer assy	VR355	Spectrum Analyzer: Modulation=50%(±37.5kHz)

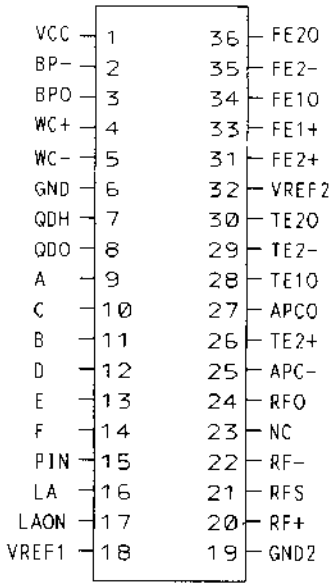
2 c h　A D J U S T M E N T (S351:NORMAL, LEVEL VOLUME:MINIMUM, S352:2ch)

Adjustment		Adjusting Point	Adjustment Method (Switch Position)
Frequency	No signal from changer assy	TC353	Spectrum Analyzer or Frequency Counter:89.5MHz
Modulation	1kHz 0dB 500mV from changer assy	TC354	Spectrum Analyzer: Modulation=50%(±37.5kHz)

Adjustment		Adjusting Point	Adjustment Method (Switch Position)
RF output	No signal from changer assy	VR354	Spectrum Analyzer: 75±5dBμV (S352:1CH and 2CH)
Separation	1kHz 0dB 500mV Lch from changer assy	TC351	Signal leakage to the R-channel(crosstalk) becomes minimum.

● ICs

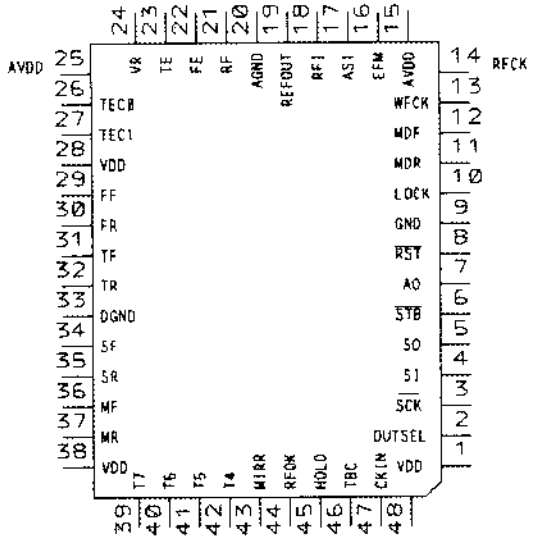
IC351 : UPC1347GS



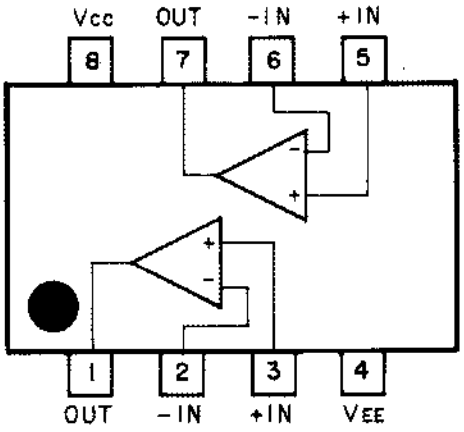
● Pin Functions (UPC1347GS)

Pin No	Pin Name	I/O	Function and Operation
1	VCC		
2	BP-	Input	Vibration detect amplifier 1 inverter input
3	BPO	Output	Vibration detect amplifier 1 output
4	WC+	Input	Window comparator non-inverting input
5	WC-	Input	Window comparator inverter input
6	GND		GND
7	QDH	Input	Vibration detect amplifier 3 non-inverting input
8	QDO	Output	Vibration detect amplifier 3 output
9	A	Input	A signal input
10	C	Input	C signal input
11	B	Input	B signal input
12	D	Input	D signal input
13	E	Input	E signal input
14	F	Input	F signal input
15	PIN	Input	APC circuit PD amplifier input
16	LA	Output	APC circuit LD amplifier output
17	LAON		Laser diode ON/OFF switching
18	VREF1		Reference voltage
19	GND2		GND
20	RF+	Input	RF amplifier non-inverting input
21	RFS	Output	RF summing virtual output
22	RF-	Input	RF amplifier inverter input
23	NC		
24	RFO	Output	RF amplifier output
25	APC-	Input	APC circuit PD amplifier inverter input
26	TE2+	Input	Tracking error amplifier 2 non-inverting input
27	APCO	Output	APC circuit PD amplifier output
28	TE1O	Output	Tracking error amplifier 1 output
29	TE2-	Input	Tracking error amplifier 2 inverter input
30	TE2O	Output	Tracking error amplifier 2 output
31	VREF2		Reference voltage
32	FE2+	Input	Focus error amplifier 2 non-inverting input
33	FE1+	Input	Focus error amplifier 1 non-inverting input
34	FE1O	Output	Focus error amplifier 1 output
35	FE2-	Input	Focus error amplifier 2 inverter input
36	FE2O	Output	Focus error amplifier 2 output

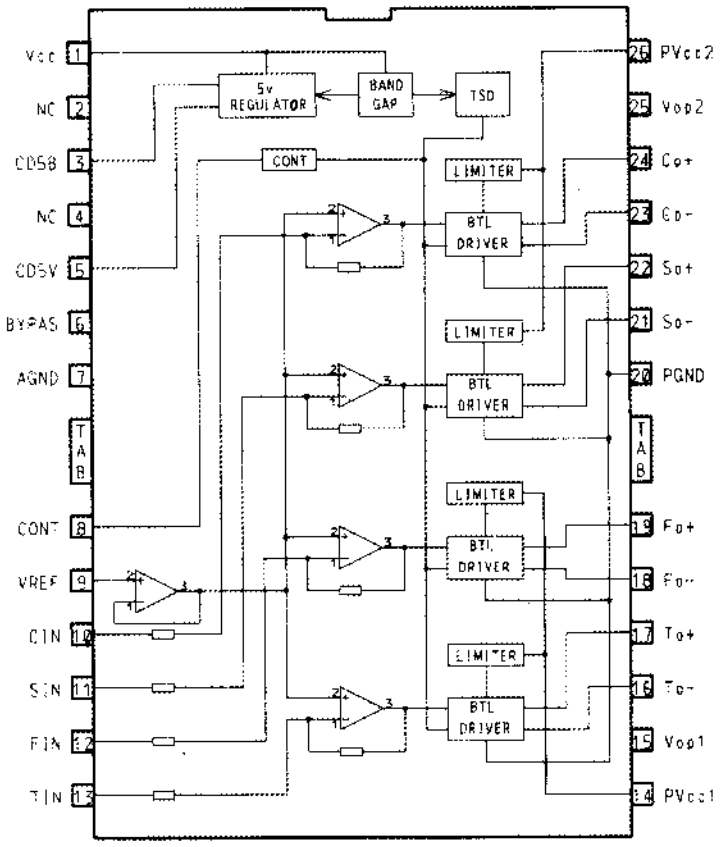
IC601 : GGF9001



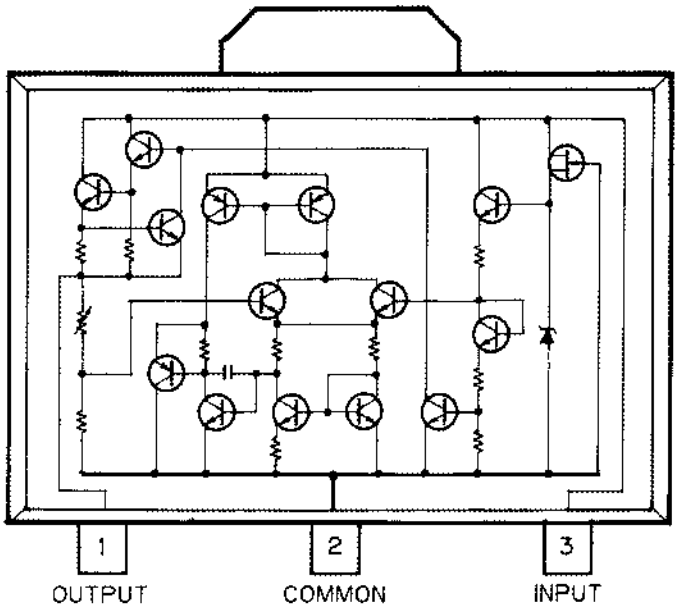
IC602, 652 : RC4558M



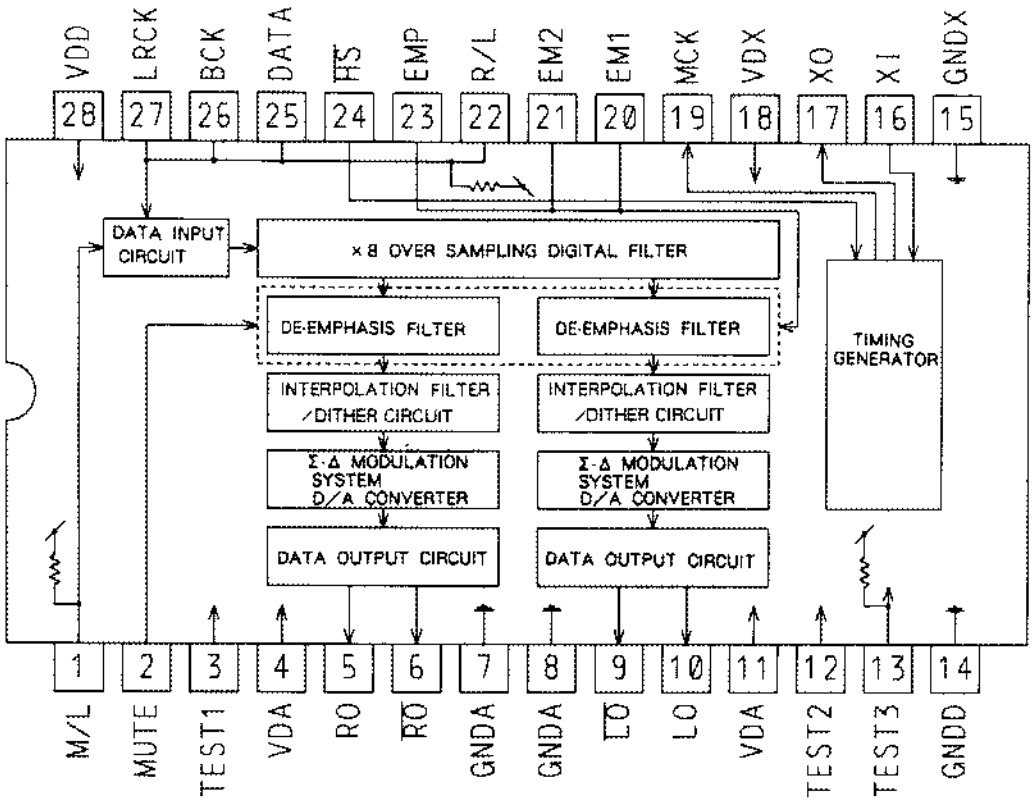
IC651 : PA3026



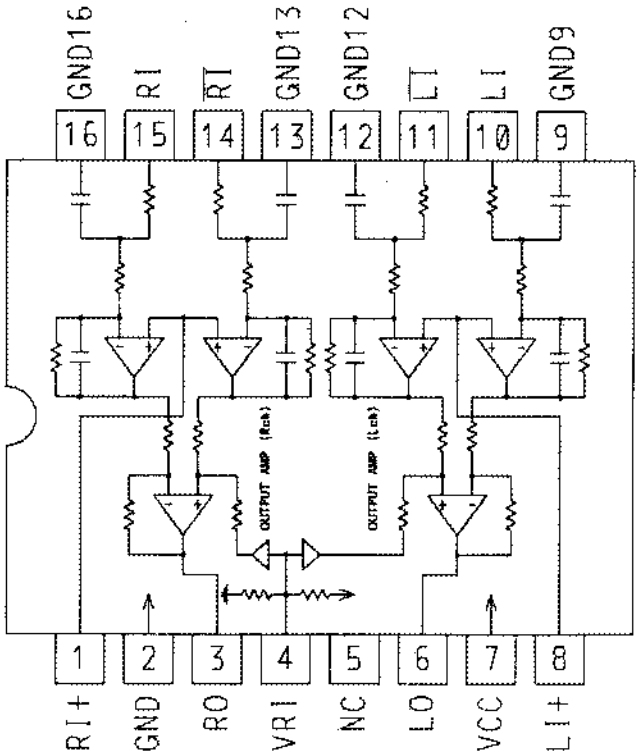
IC661 : TA78L05F



IC702 : TC9237F



IC703 : TA2009F



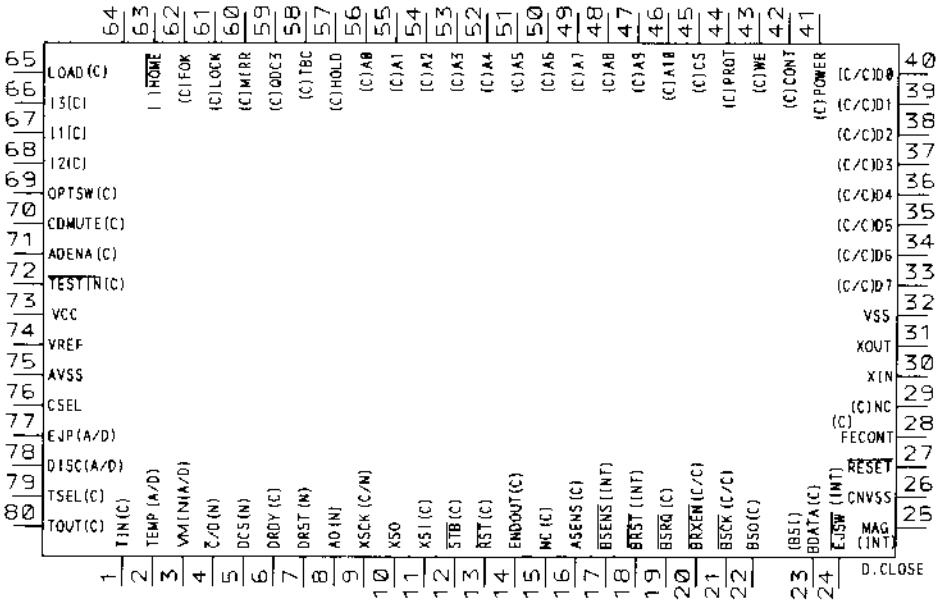
• Pin Functions (PD5196A)

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	TIN	Input		Disc position detector switch
2	TEMP			Temperature detector
3	VMIN			Mechanism power supply detector input
4	C/D	Output	NM	Command/data appointment output
5	DCS	Output	NM	Chip select output
6	DRDY	Input		Ready input
7	DRST	Output	NM	Reset output
8	A0	Output	NM	LSI data control signal
9	XSCK	Input/ Output		LSI clock input/output
10	XSO	Output	NM	LSI data output
11	XSI	Input	NM	LSI data input
12	STB	Output	C	LSI strobe output
13	RST	Output	C	Reset output pin
14	ENDOUT	Output	C	Digital output enable signal
15,16	NC			
17	BSENS	Input		Back up power sense input pin
18	BRST	Input		Bus communication reset input pin
19	BSRQ	Output	C	Bus communication service request output pin
20	BRXEN	Input/ Output	C	Bus communication reception enable input pin
21	BSCK	Input/ Output	C	Bus serial clock input/output
22	BSO	Output	C	Serial data output pin
23	BSI	Input		Bus serial data input
24	EJSW	Input		Eject signal input
25	MAG	Input		Magazine lock switch
26	CNVSS			GND
27	RESET	Input		Reset input
28	FECNT	Output	C	DEFECT port
29	NC			Not used
30	XIN	Input		Crystal oscillating element connection pin
31	XOUT	Output	C	Crystal oscillating element connection pin
32	VSS			GND
33−40	D7-D0	Input/ Output		External RAM data line
41	POWER	Output	C	CD +5V control
42	CONT	Output	C	Servo driver power supply control
43	WE	Output	C	External RAM write enable
44	PROT	Output	C	External RAM output enable
45	CS	Output	C	External RAM chip select
46-56	A10-A0	Output	C	External RAM address line
57	HOLD	Output	C	Hold control output
58	TBC	Output	C	Tracking bank switching output
59	NC			Not used
60	MIRR	Input		Mirror detector input
61	LOCK	Input		Spindle lock detector input
62	FOK	Input		FOK signal input
63	HOME	Input		Home position detector input
64	NC			Not used

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
65	LOAD	Output	C	Mechanism power supply control
66-68	I2-I0	Output	C	Motor driver control
69	OPTSW	Input		Digital output ON/OFF input
70	CDMUTE	Output	C	CD mute output
71	ADENA	Output	C	A/D reference voltage output
72	$\overline{\text{TESTIN}}$	Input		Test program mode input
73	VCC			Back up 5V
74	VREF	Input		A/D reference voltage input
75	AVSS			A/D GND
76	CSEL			Compression select
77	EJP			Eject position switch
78	DISK	Input		Disc detector input
79	TSEL	Input		Tray position detector photosensor
80	TOUTS	Input		Tray position detector switch

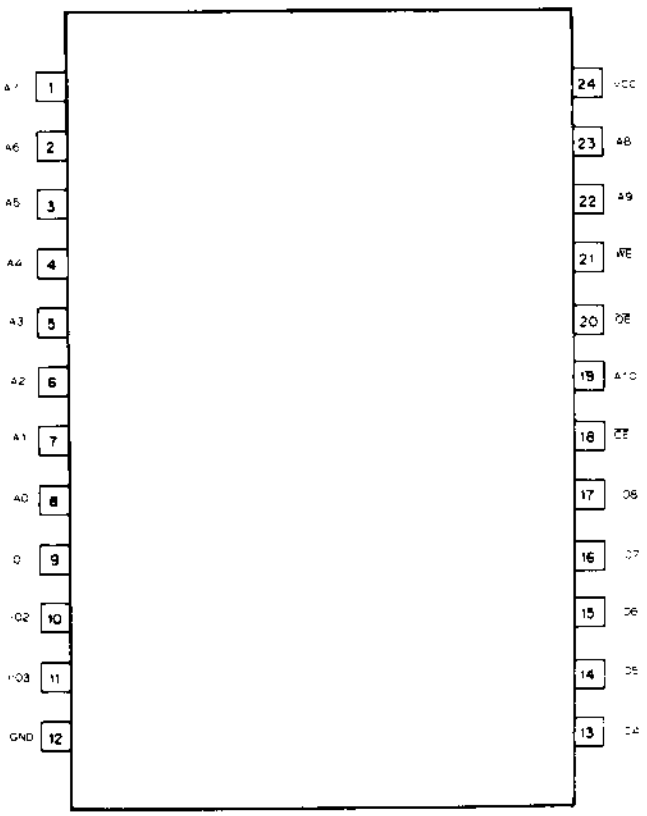
I/O Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

***IC 751 : PD5196A**

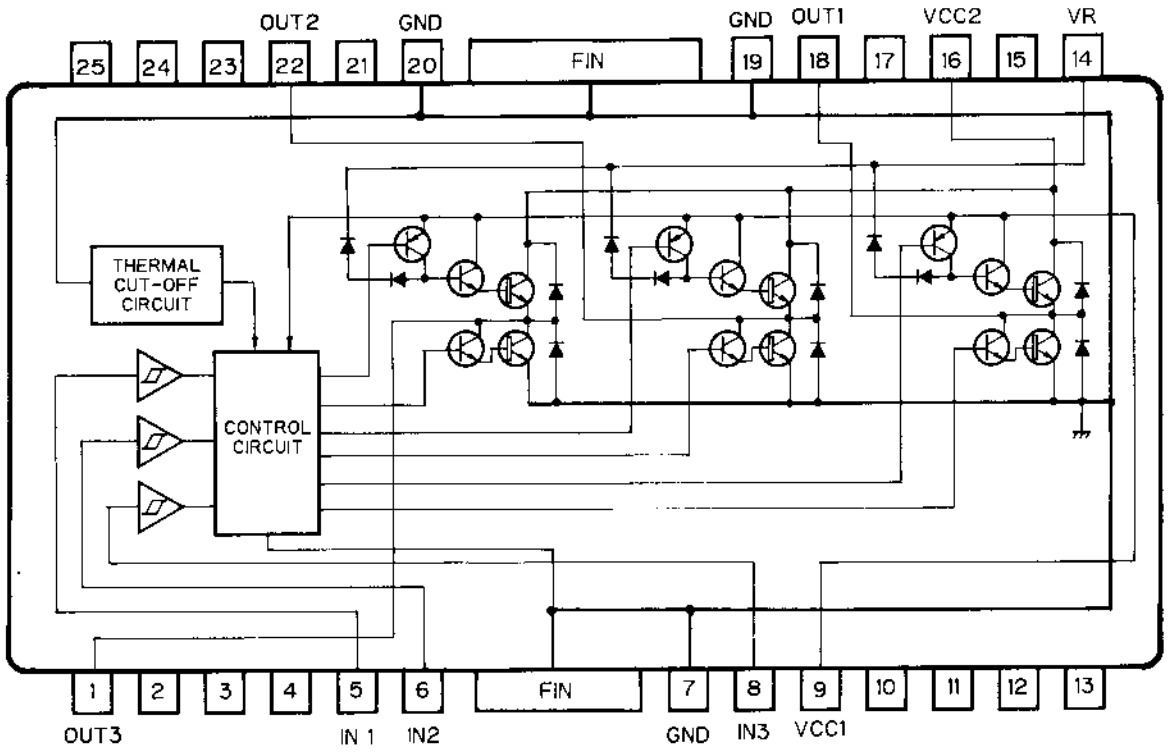


*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

IC755 : LH5116HN-10T



IC801 : XRA6247FP

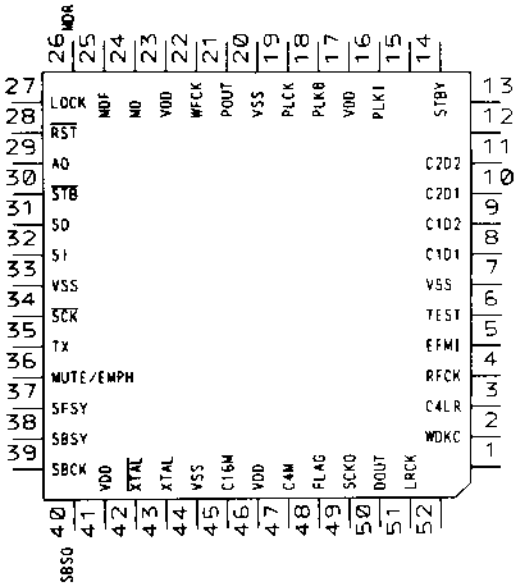


• Pin Functions (UPD6375GC)

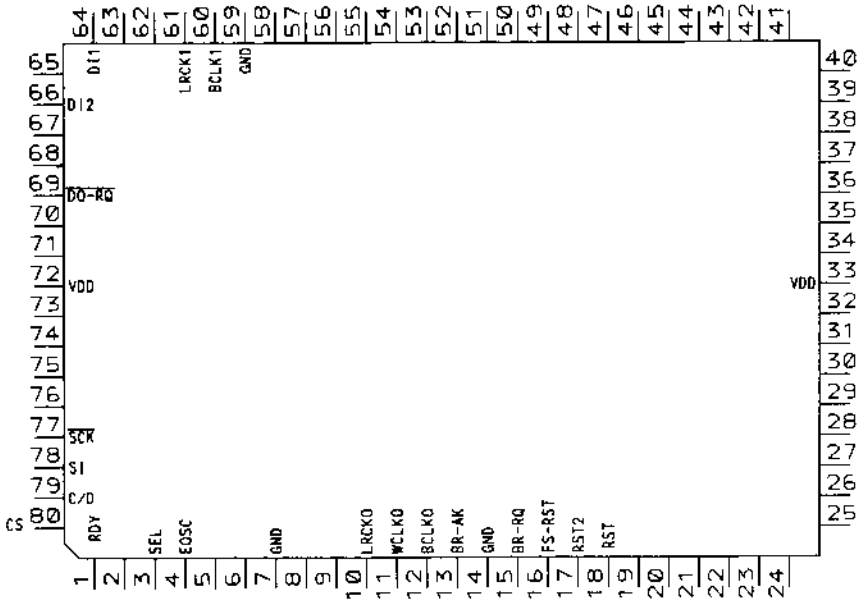
Pin No	Pin Name	I/O	Function and Operation
1	NC		
2	WDCK	Output	Output terminal for signal having double the frequency of LRCK
3	C4LR	Output	Output terminal for signal having four the frequency of LRCK
4	RFCK	Output	Oscillation clock divider signal, output terminal for signal giving one-frame synchronization
5	EFMI	Input	EFM signal input terminal
6	TEST		TEST
7	VSS		GND
8	C1D1	Output	Output terminal indicating C1 error correction status
9	C1D2	Output	
10	C2D1	Output	Output terminal indicating C2 error correction status
11	C2D2	Output	
12, 13	NC		
14	STBY	Input	Standby input terminal. STBY=H stops clock oscillation
15	NC		
16	PLK1	Output	VCO output terminal for use in analog PLL selection
17	VDD		VDD
18	PLK8	Input	VCO clock input terminal for use in analog PLL selection
19	PLCK	Output	Bit clock monitor terminal
20	VSS		GND
21	POUT	Output	Output terminal for phase comparison between EFM signal and bit clock
22	WFCK	Output	Signal issuring one-frame period (approximately 7.35kHz) by bit clock dividing signal
23	VDD		5 V
24	MD	Output	Signal indicating spindle motor CLV servo control output status
25	MDF	Output	Spindle motor CLV servo control positive direction output terminal
26	MDR	Output	Spindle motor CLV servo control negative direction output terminal
27	LOCK	Output	Becomes "H" when the synchronization signal and frame counter output coincide at EFM demodulator
28	$\overline{RST}$	Input	Reset signal input terminal
29	AO	Input	Control signal distinguishing data from microcomputer
30	STB	Input	Signal latching within this LSI the serial data fetched from SI terminal
31	SO		Serial data input terminal
32	SI	Input	Input terminal fro data from microcomputer
33	VSS		GND
34	$\overline{SCK}$	Input	Clock input terminal for serial data input
35	TX	Output	Digital audio interface data output terminal
36	MUTE/EMPH	Output	Output terminal for mute command decoding signal or sub-Q command pre-emphasis data
37	SFSY	Output	Signal indicating subcode one-frame synchronization
38	SBSY	Output	Signal indicating head of subcode block
39	SBCK	Input	Subcode data read clock input terminal
40	SBSO	Output	Subcode data output terminal
41	VDD		5 V
42	XTAI	Output	Oscillation continuation terminal
43	XTAL	Input	Oscillation continuation terminal

Pin No	Pin Name	I/O	Function and Operation
44	VSS		GND
45	C16M	Output	Oscillation clock output terminal
46	VDD		5 V
47	C4M	Output	1/4 cycle output terminal for oscillation clock signals
48	FLAG	Output	Flag signal indicating that the current audio data output consists of incorrectable data
49	SCKO	Output	Clock output terminal for audio serial data
50	DOUT	Output	Serial audio data output terminal
51	LRCK	Output	Signal distinguishing between left and right channel DOUT terminal output
52	NC		

IC701 : UPD6375GC



***IC 704 : UPD6382GF**



• **Pin Functions (UPD6382GF)**

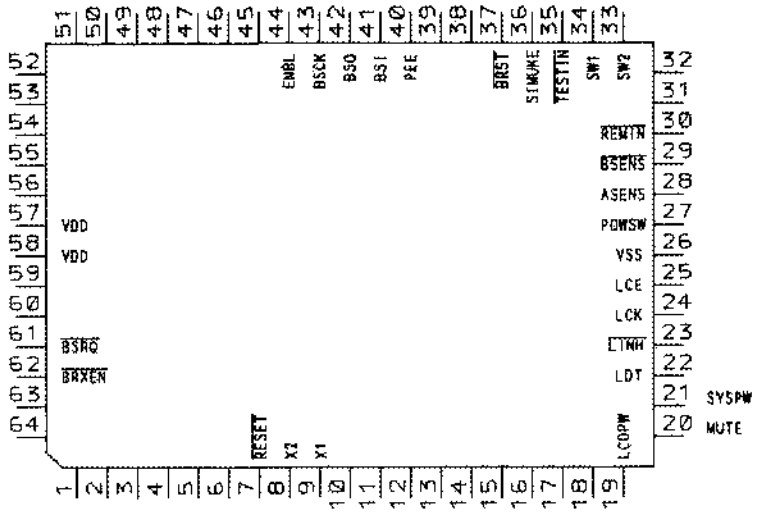
Pin	Pin name	I/O	Function
1	RDY	output	Ready output
2	FSMASK	input	PC-RST mask input
3	SEL	input	Clock select input
4	EOSC	input	External clock input
5	XO	output	X'tal output
6	XI	input	X'tal input
7	GND		
8	XFsO	output	
9	$\overline{\text{TEST1}}$	input	Test input
10	LRCKO	output	LR clock output
11	WCLKO	output	Word clock output
12	BCLKO	output	Bit clock output
13	$\overline{\text{BR-AK}}$	output	Break acknowledge output
14	GND		
15	$\overline{\text{BR-RQ}}$	input	Break request input
16	$\overline{\text{Fs-RST}}$	input	Fs reset input
17	$\overline{\text{RST2}}$	input	Reset2 input
18	$\overline{\text{RST}}$	input	Reset input
19-32	A0-A13	output	External RAM address output
33	GND		
34-36	A14-A16	output	External RAM address output
37	$\overline{\text{RAS/RST}}$	output	External RAM row address strobe/reset output
38	$\overline{\text{CAS/CE}}$	output	External RAM column address strobe/chip select output
39	$\overline{\text{WE}}$	output	External RAM write enable output
40-55	I/O1-I/O16	input/ output	External RAM data input/output
56	GND		
57-59	MD0-MD2	input	External RAM select signal
60,62	BCLK1,2	input	Bit clock input1,2
61,63	LRCK1,2	input	LR clock input1,2
64,66	DI1,2	input	Audio signal serial input
65	DO1	output	Audio signal serial output
67,68	DO2,3	output	Audio signal serial output
69	$\overline{\text{DO-RQ}}$	input	Data output request input
70	$\overline{\text{GF}}$	output	General flag output
71	$\overline{\text{OVF}}$	output	Overflow output
72	VDD		
73	$\overline{\text{TEST0}}$	input	Test terminal 0
74	XSEL	input	X'tal select input
75	SETRDY	output	Data set ready terminal
76	SO	output	Serial data output
77	$\overline{\text{SCK}}$	input	Serial data clock input
78	SI	input	Serial data input
79	$\overline{\text{C/D}}$	input	Command/data input appointment intment
80	$\overline{\text{CS}}$	input	Chip select input

• **Pin Functions (PD4392A)**

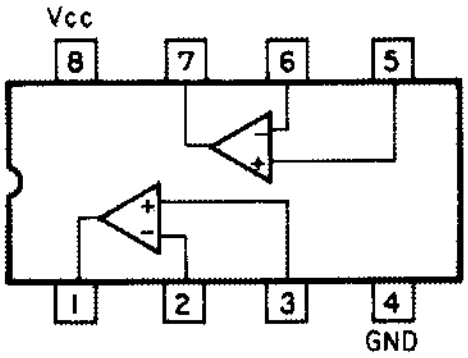
Pin	Pin name	I/O	Output Format	Function
1-6	NC			Non connect
7	$\overline{\text{RESET}}$			Reset
8	X2			X'tal
9	X1			X'tal
10-18	NC			Non connect
19	LCDPW	output	C	LCD power supply control
20	MUTE	output	C	Mute output
21	SYSPW	output	C	System power output
22	LDT	output	C	LCD driver data output
23	$\overline{\text{LINH}}$	output	C	LCD driver reset output
24	LCK	output	C	LCD driver serial clock output
25	LCE	output	C	LCD driver latch output
26	VSS			
27	POWSW	input		Power key input
28	$\overline{\text{ASENS}}$	input		ACC sense input
29	$\overline{\text{BSENS}}$	input		Back-up sense input
30	$\overline{\text{REMIN}}$	input		Remote control input
31,32	NC			Connect to VSS
33	SW2	input		Compression function detect input
34	SW1	input		ITP function detect input
35	TESTIN	input		Test program input
36	SIMUKE	input		Model sense input
37	$\overline{\text{BRST}}$	output	C	Reset output
38,39	NC			Non connect
40	PEE		C	Non connect
41	BSI	input		Communication data input
42	BSO	output	C	Communication data output
43	BSCK	input/ output	C	Communication serial clock input/output
44-56	NC			Non connect
57,58	VDD			
59,60	NC			Non connect
61	$\overline{\text{BSRQ}}$	input		Communication requst input
62	BRXEN	input/ output	C	Communication reception enable input
63,64	NC			Non connect

Output Format	Meaning
C	C-MOS

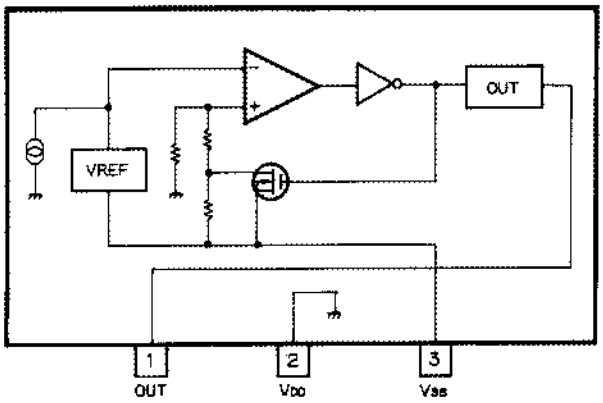
*IC 101 : PD4392A



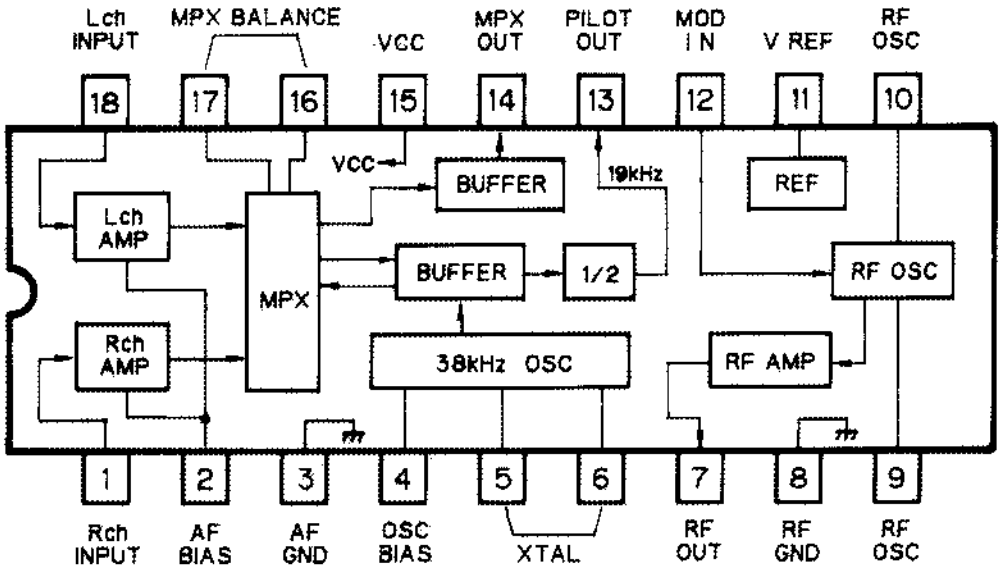
UPC4570G



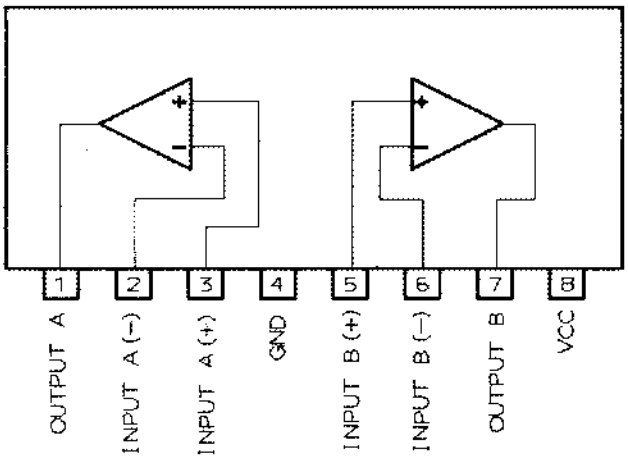
S-8053ANO



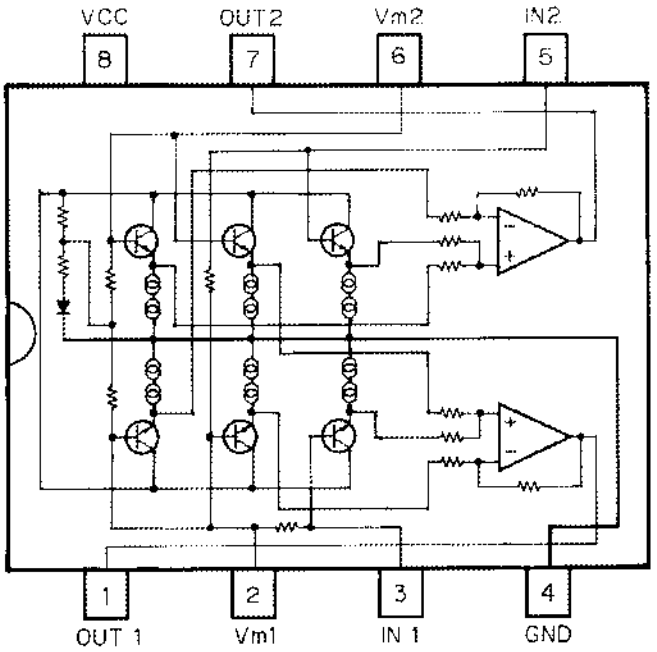
BA1404F



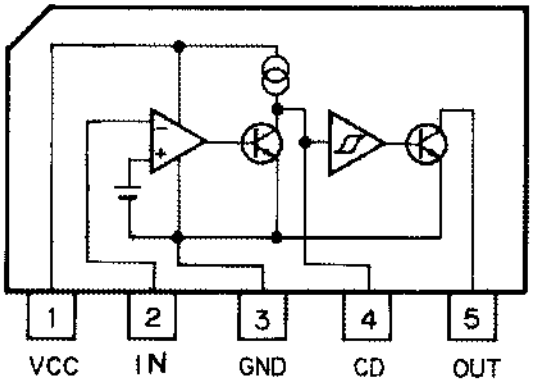
IC971 : M5218AL



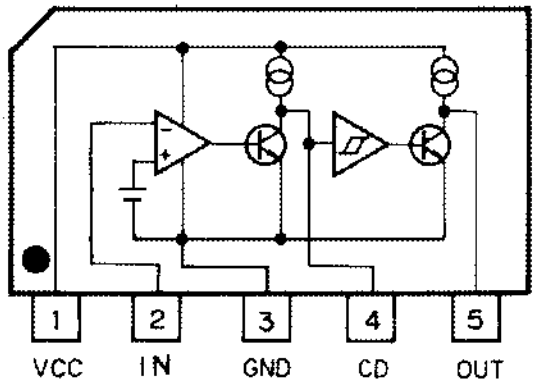
IC972 : BA3121



IC981 : M51957AL



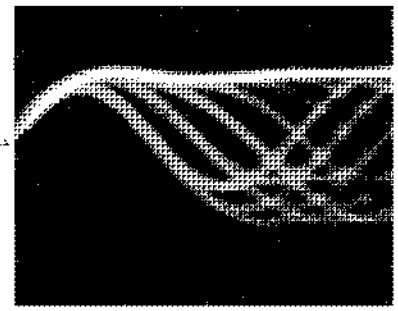
IC982 : M51958AL



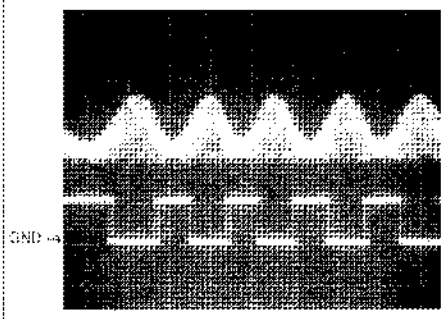
Note: 1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFOUT: 2.5V

• Wave Forms

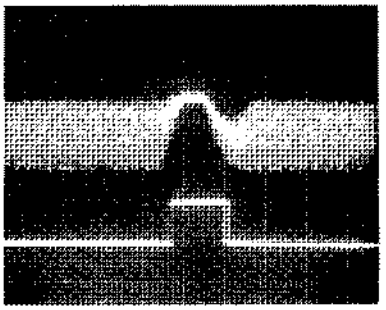
① RFO 0.5V/div. 0.2μs/div.
Normal mode: play



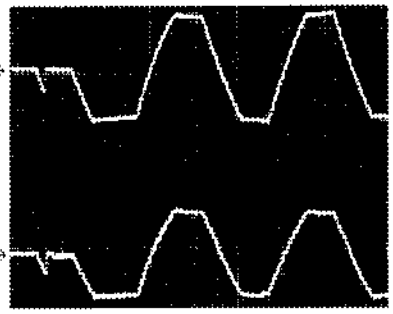
① CH1: RFO 1V/div. 0.5ms/div
② CH2: MIRR 5V/div.
Test mode: Tracking open



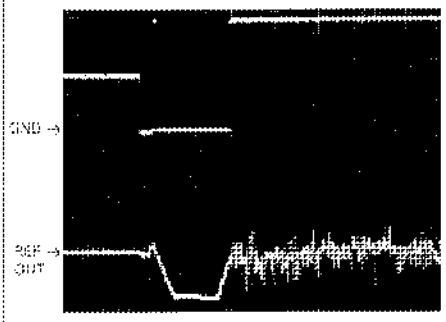
① CH1: RFO 1V/div 0.5ms/div
② CH2: MIRR 5V/div.
Normal mode: The defect part passes 800μm.



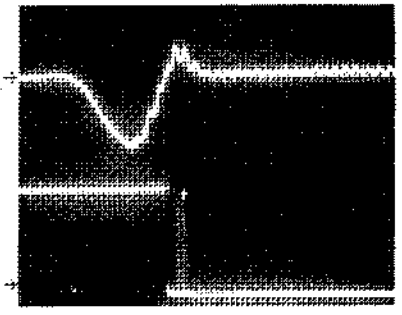
③ CH1: FIN 1V/div. 0.5s/div.
④ CH2: FOUT+ 2V/div.
Test mode. Connect the FEX to REFOUT.
Focus search is performed



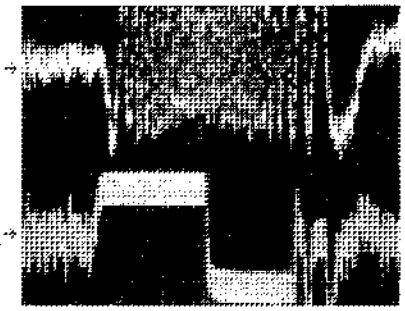
⑤ CH1: FOK 2V/div. 0.5s/div.
④ CH2: FIN 0.5V/div.
Normal mode: Focus close



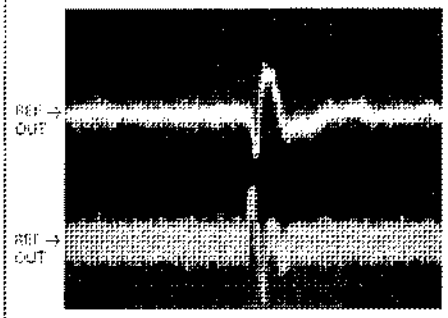
⑥ CH1: FEY 1V/div. 2ms/div.
⑦ CH2: XSO 2V/div.
Normal mode: Focus close
(The lens moves DOWN → UP)



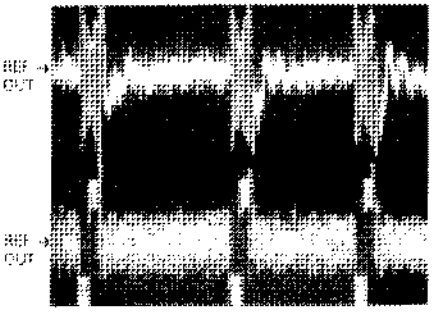
⑧ CH1: TEY 0.5V/div. 0.5ms/div.
⑨ CH2: TIN 0.5V/div
Normal mode: Brake wave from when track search is performed.



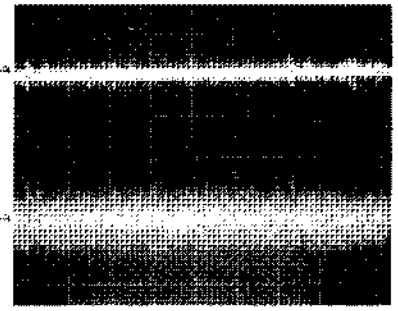
⑧ CH1: TEY 1V/div. 1ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: single jump



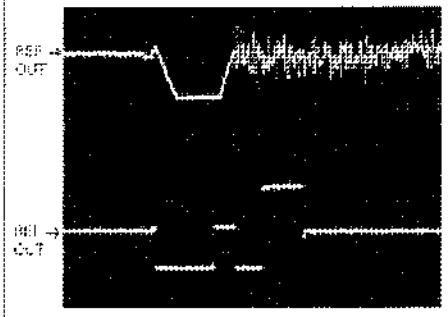
⑧ CH1: TEY 0.5V/div. 5ms/div.
⑨ CH2: TIN 0.5V/div.
Normal mode: Track search
(32 track jump)



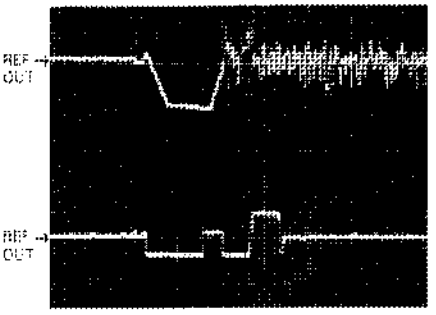
⑥ CH1: FEY 0.2V/div. 20ms/div.
③ CH2: FIN 0.5V/div.
Normal mode: Play



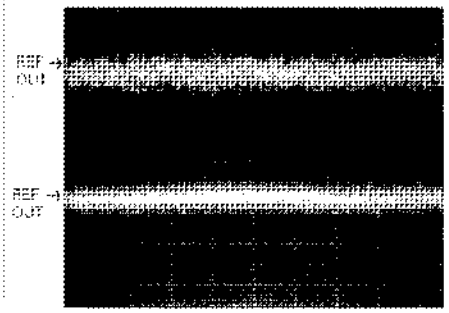
⑧ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus search
(12cm disc)



⑧ CH1: FIN 0.5V/div. 0.5s/div.
⑩ CH2: SIN 1V/div.
Normal mode: Focus search
(8cm disc)

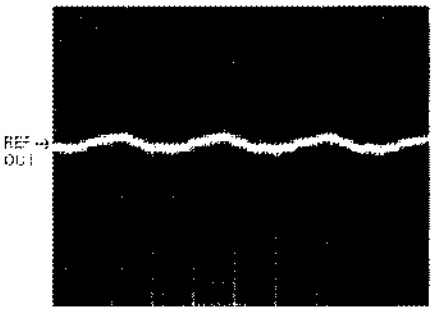


⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 20ms/div.
Normal mode: Play

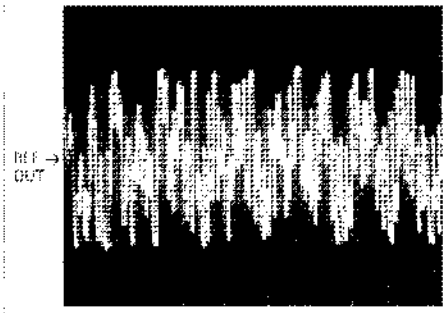


⑧ CH1: TEY 1V/div. 5ms/div.
㉓ CH2: CIN
Normal mode: Search

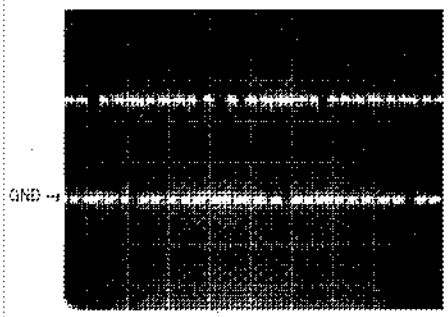
⑩ SIN 0.5V/div. 50ms/div.
Normal mode: Play (12cm disc)



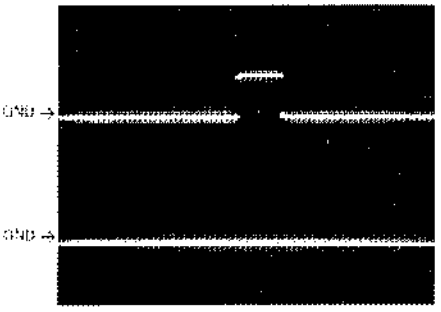
⑩ SIN 0.5V/div. 10ms/div.
Search (12cm disc)



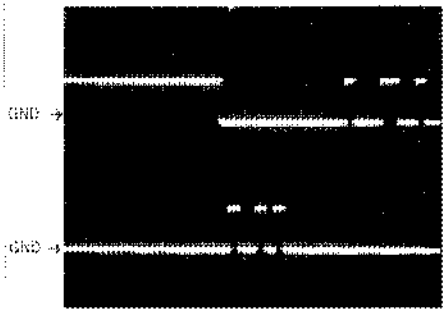
⑪ EFM 2V/div. 5µs/div.
Play



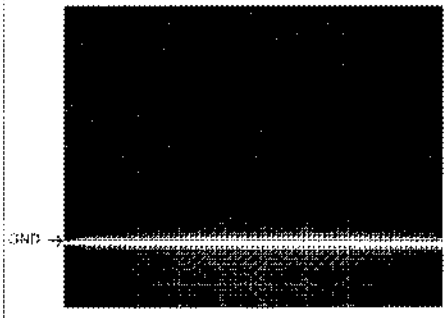
⑫ CH1: MDF 5V/div.
⑬ CH2: MDR 5V/div. 2ms/div.
Play



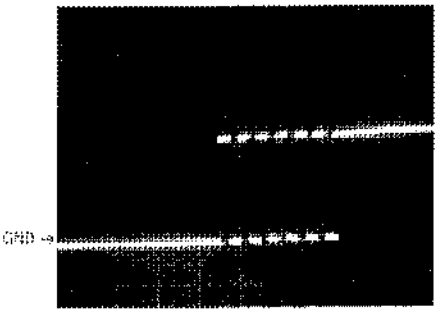
⑫ CH1: MDF 5V/div
⑬ CH2: MDR 5V/div. 10ms/div.
Search



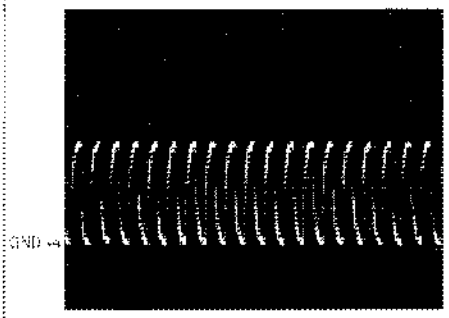
⑭ FLAG 2V/div. 0.1ms/div.
Play



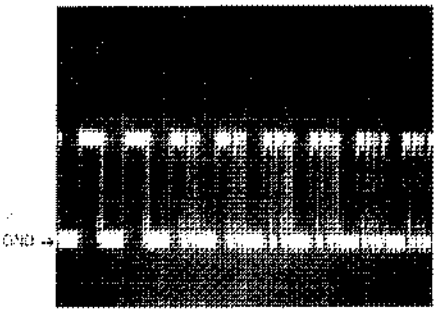
⑭ FLAG 2V/div. 0.1ms/div.
Search



⑯ SCKO 2V/div. 1µs/div.
Play

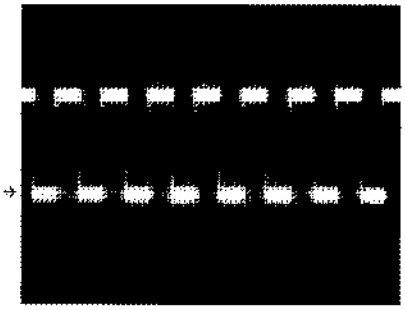


⑰ Dout 2v/div. 10µs/div.
Play



⑱ LRCK 2V/div. 20μs/div.

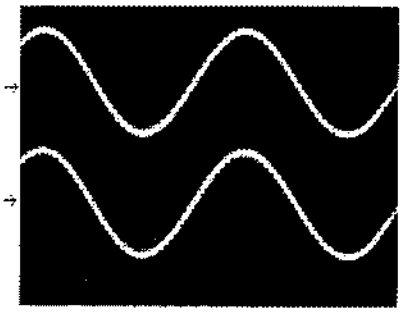
Play



㉑ CH1: L 1V/div. 0.2ms/div.

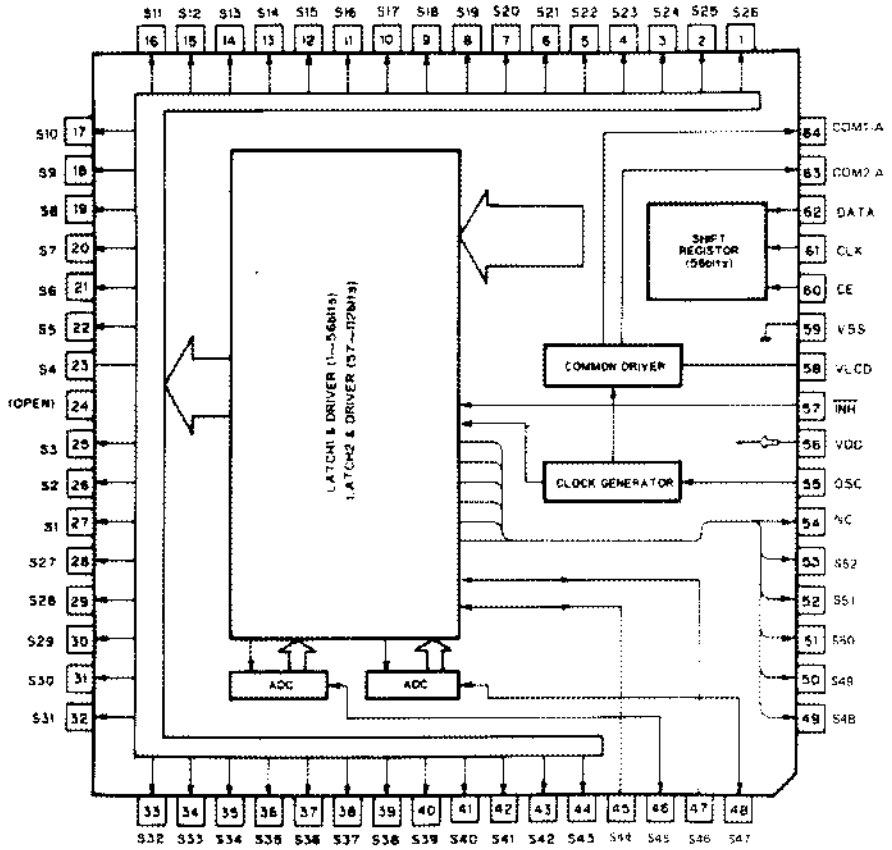
㉒ CH2: R 1V/div.

Play (1kHz)



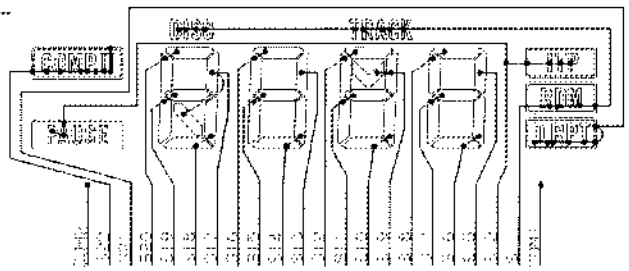
*LC7582A

*IC's marked by * are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

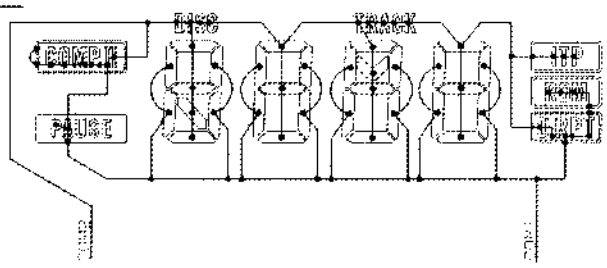


●LCD : CZA3192

SEGMENT



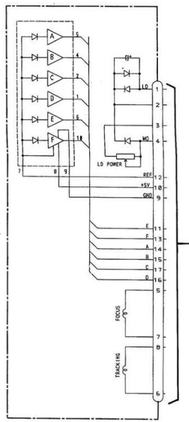
COMMON



9. CONNECTION DIAGRAM (1)

- Changer Assy

PU UNIT



MAIN UNIT

IC, Q ADJ: IC755 | IC703 IC751 | IC702 | Q705 Q802 Q601 Q751 IC661 IC704 Q801 | IC701 | Q651 IC601 Q652 | IC351 IC652 Q653 IC602 | IC651 IC801 Q351

VR355 VR353 VR356 VR352 VR354 | VR351

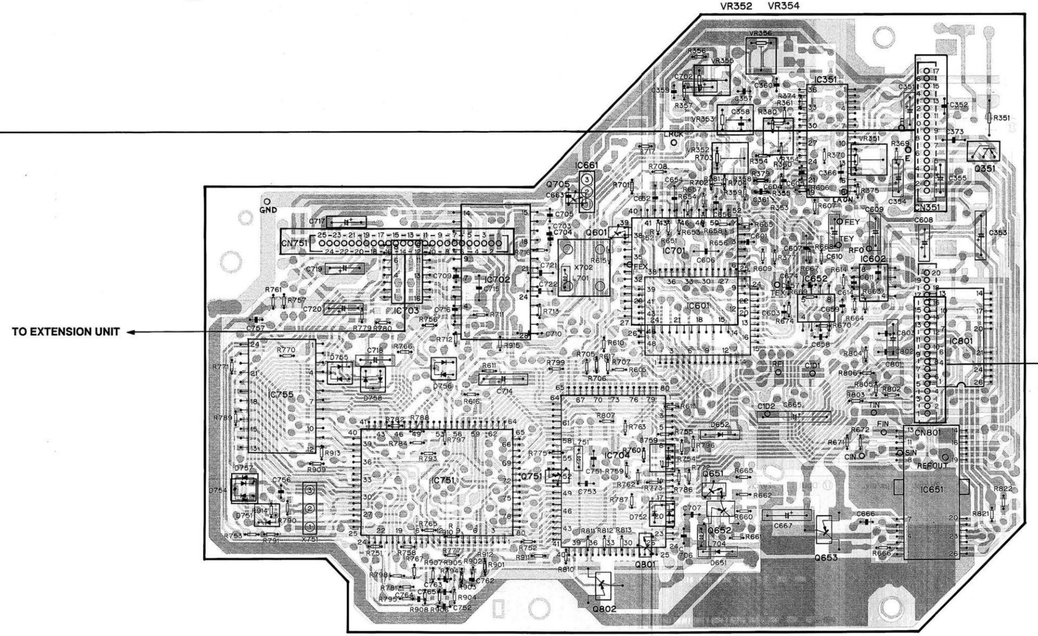
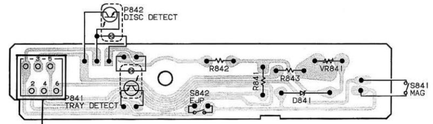


PHOTO P.C. BOARD



MECHANISM P.C. BOARD

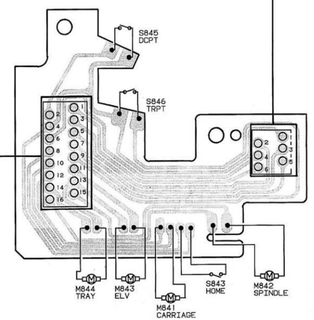


Fig. 33

10. SCHEMATIC CIRCUIT DIAGRAM (1)

● Changer Assy

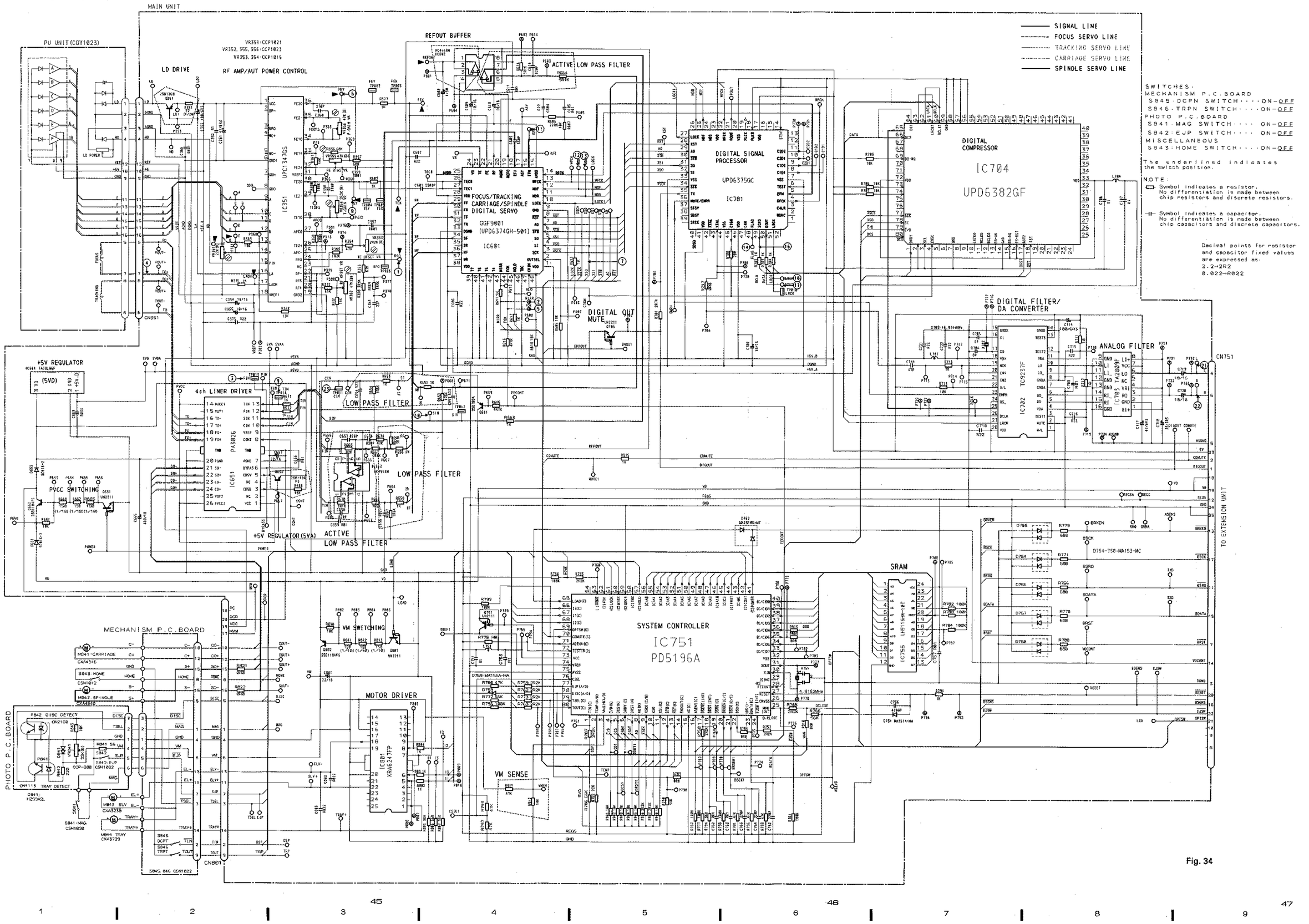


Fig. 34

11. CONNECTION DIAGRAM (2)

● Changer Assy

KEY UNIT

EXTENSION UNIT

IC, Q IC981 Q992 IC982 Q987 Q981 Q991 IC971 Q989 Q990 Q988 Q983 IC972 Q985 Q986 Q984 Q970 Q971 Q972 Q973

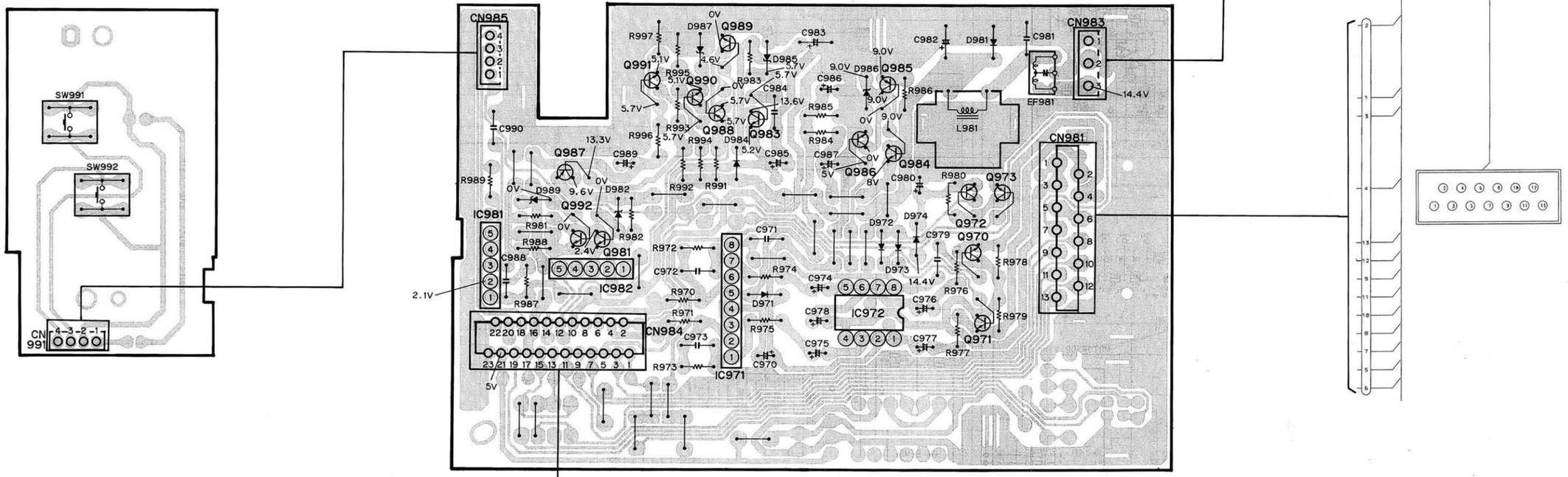


Fig. 35

12. SCHEMATIC CIRCUIT DIAGRAM (2)

● Changer Assy

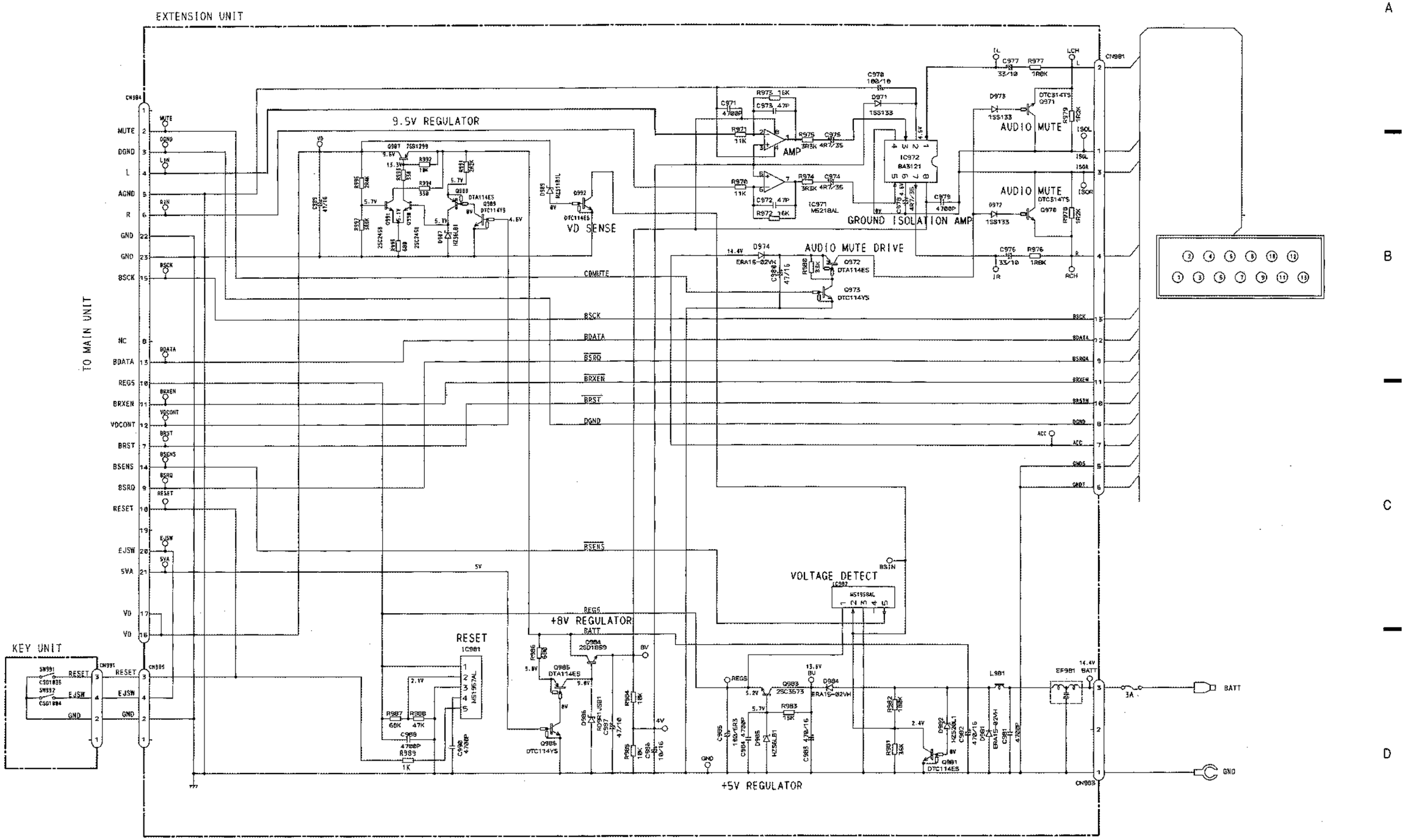


Fig. 36

13. SCHEMATIC CIRCUIT DIAGRAM (3)

● Control Assy

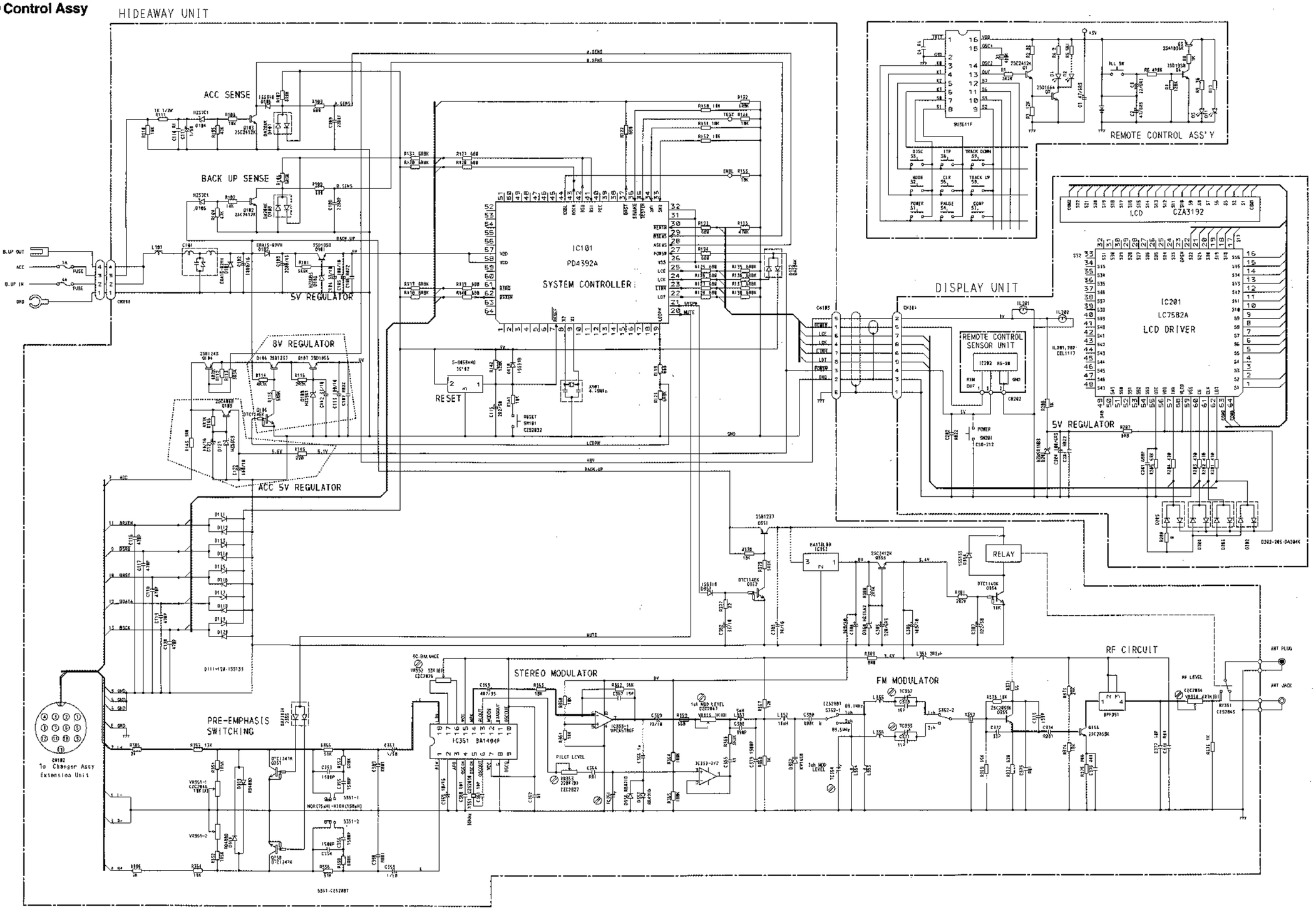


Fig. 37

14. CONNECTION DIAGRAM (3)

● Control Assy

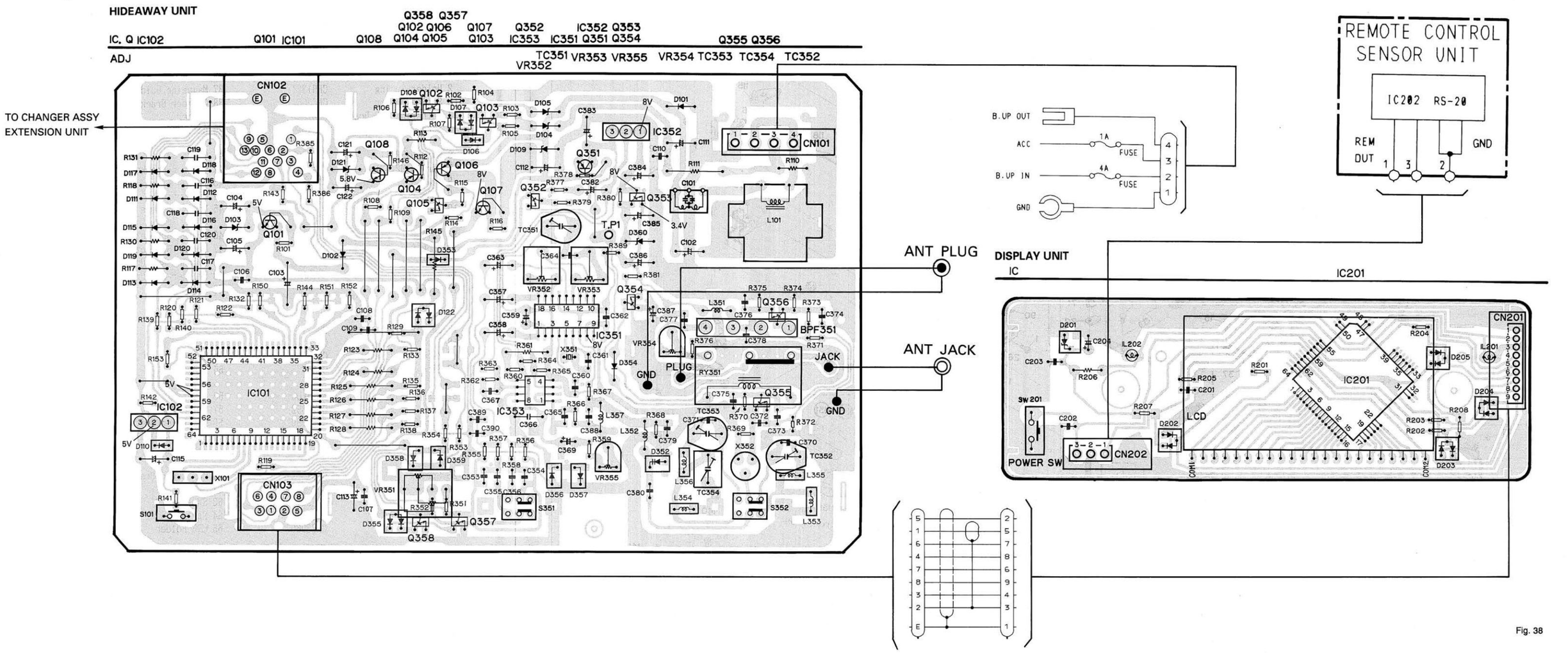


Fig. 38

15. CD MECHANISM UNIT EXPLODED VIEW

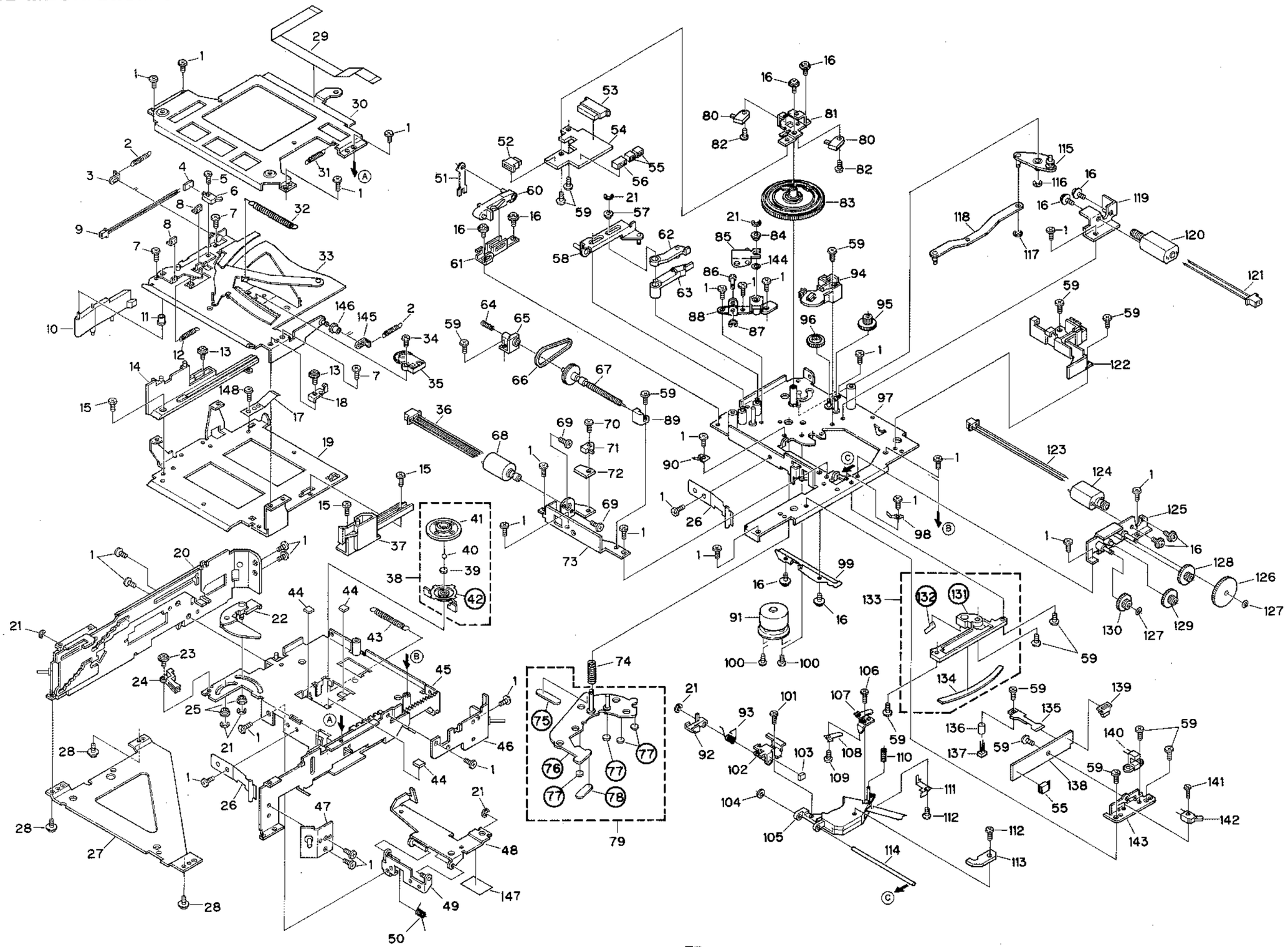


Fig. 39

NOTES:

- *Parts marked by "✱" or "✱" are generally unavailable because they are not in our Master Spare Parts List.*
- *Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

● Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Screw	BMZ26P030FMC		36	Connector	CDE3466
	2	Holder Spring	CBH1324		37	Magazine Guide	CNV2734
	3	Spring Holder	CNC3054		38	Clamper Bracket Assy	CXA4039
	4	Gathering P.C.Board	CNX1840		39	Spacer	CNM1787
	5	Screw(M1.7×5.5)	CBA1070		40	Ball	CNR1079
	6	Switch(S841)	CSN1020		41	Guide	CNV2739
	7	Spring(M2×3)	CBA1152	*	42	Clamper Bracket Unit	CXA3237
	8	Clamper	CNV2722		43	Spring	CBH1436
	9	Connector	CDE2701		44	Cushion	CNM2555
	10	Lock Arm	CNV3215		45	Lower Chassis Unit	CXA4372
	11	Roller	CLA2034		46	Damper Bracket Unit	CXA4381
	12	Lock Spring	CBH1320		47	Damper Bracket Unit	CXA4376
	13	Screw	CBA1075		48	Clamper Arm Unit	CXA4958
	14	Magazine Guide	CNV2369		49	Clamper Arm Bracket Unit	CXA4378
	15	Screw(M2×3)	CBA1077		50	Clamp Spring	CBH1321
	16	Screw	PMS20P025FMC		51	Lever	CNC3038
	17	Spring	CBL1145		52	Plug(6P)	CKS1526
	18	Spring Bracket	CNC4323		53	Plug	CKS1536
	19	Magazine Holder	CNC4287		54	Gathering P.C.Board	CNX1778
	20	Side Frame Unit	CXA4373		55	Plug(2P)	CKS1049
	21	Washer	YE15FUC		56	Plug(4P)	CKS1051
	22	Arm	CNV2352		57	Collar	CLA1846
	23	Screw(M2×5)	CBA1080		58	Cam Lever Unit	CXA4012
	24	Arm Guide	CNV2372		59	Screw(M2.6×5)	CBA1180
	25	Roller	CLA1846		60	Cam Arm	CNV2736
	26	Spring	CBL1134		61	Cam Lever Bracket	CNC3682
	27	Lower Frame	CNC3456		62	SW Arm	CNV2964
	28	Screw	PMS20P030FMC		63	SW Arm	CNV2959
	29	Connector	CDE3464		64	Spring	CBH1104
	30	Upper Frame	CNC3960		65	CRG Holder	CNV2961
	31	Spring	CBH1466		66	Belt	CNT1053
	32	EJ Spring	CBH1402		67	Screw Unit	CXA2375
	33	Magazine Holder Unit	CXA4729		68	Motor Unit(M841)	CXA4316
	34	Screw(M1.7×5.5)	CBA1070		69	Screw	CBA-098
	35	Damper Unit	CXA3242		70	Screw(M2×6)	CBA1004

Mark	No.	Description	Part No.
	71	Switch(S843)	CSN1012
	72	P.C.Board	CNP2803
	73	CRG Bracket	CNC3961
	74	Disc UP Spring	CBH1442
*	75	Sheet	CNM3241
*	76	Disc-up Guide Unit	CXA4377
*	77	Sheet	CNM3178
*	78	Sheet	CNM3241
	79	Disc-up Guide Assy	CXA4384
	80	Switch(S845,846)	CSN1022
	81	Cam Gear Bracket	CNC3964
	82	Screw(M2×5)	CBA1054
	83	Cam Gear	CNV2963
	84	Collar	CLA1977
	85	Disc UP Arm Unit	CXA4382
	86	Shaft	CLA1962
	87	Washer	YE20FUC
	88	Disc-up Bracket Unit	CXA4375
	89	CRG Holder	CNV2965
	90	Spring	CBL1135
	91	Motor Unit(M842)	CXA4540
	92	Rack	CNV2972
	93	Spring	CBH1432
	94	Guide	CNV2971
	95	Wheel	CNV2359
	96	Gear	CNV2360
	97	Main Chassis Unit	CXA4371
	98	Spring	CBL1133
	99	Cover	CNC3968
	100	Screw	HBA-258
	101	Screw(M2×3)	CBA1062
	102	CRG Holder Unit	CXA4379
	103	Spacer	CNT1052
	104	Cushion	CNV1863
	105	PU Unit	CGY1023
	106	Screw	JGZ20P070FNI
	107	Holder	CNC4073
	108	Spring	CBL1138
	109	Screw	JFZ14P016FNI
	110	Spring	CBH1430
	111	Holder Unit	CXA4675
	112	Screw	JFZ17P030FNI
	113	Weight	CNC4116
	114	Shaft	CLA1197
	115	Arm Unit	CXA3995
	116	Washer	YE20FUC
	117	Washer	YE25FUC
	118	Lever Unit	CXA3542
	119	TRY Bracket	CNC3963
	120	TRAY Motor Unit(M844)	CXA3729
	121	Connector	CDE3151
	122	Guide	CNV2958
	123	Connector	CDE3150
	124	Motor Unit(M843 ELV)	CXA3238
	125	ELV Bracket Unit	CXA4380
	126	Gear	CNV2962
	127	Washer	CBF1038
	128	Gear	CNV2363
	129	Gear	CNV2371
	130	Gear	CNV2364
*	131	Disc Guide	CNV2966
*	132	Sheet	CNM3179
	133	Disc Guide Assy	CXA4383
	134	Sheet	CNM2553
	135	P.C.Board	CNP2806
	136	Spacer	CNV2365
	137	Photo-interrupter(P842)	ON2160
	138	Gathering P.C.Board	CNX1780
	139	Plug(4P)	CKS1526
	140	Photo-interrupter(P841)	ON1113
	141	Screw(M1.7×6)	CBA1163
	142	Switch(S842 EJP)	CSH1022
	143	TSEL Bracket	CNC4072
	144	Washer	CBE1027
	145	Spring Holder	CNC3054
	146	Roller	CLA2036
	147	Spacer	CNM3340
	148	Screw	CBA1076

16. CABINET EXPLODED VIEW

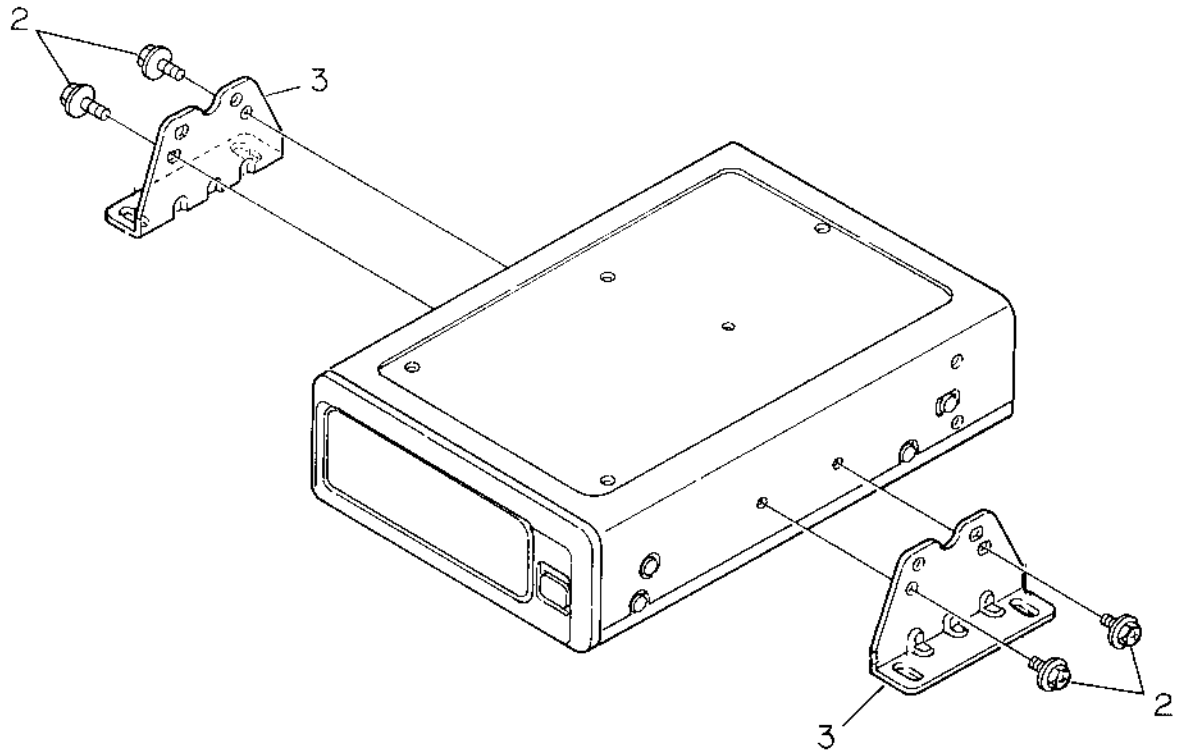


Fig. 40

Mark No.	Description	Part No.
1	·····	
2	Screw	HMF40P080FZK
3	Angle	CNB1634

17. CHASSIS EXPLODED VIEW

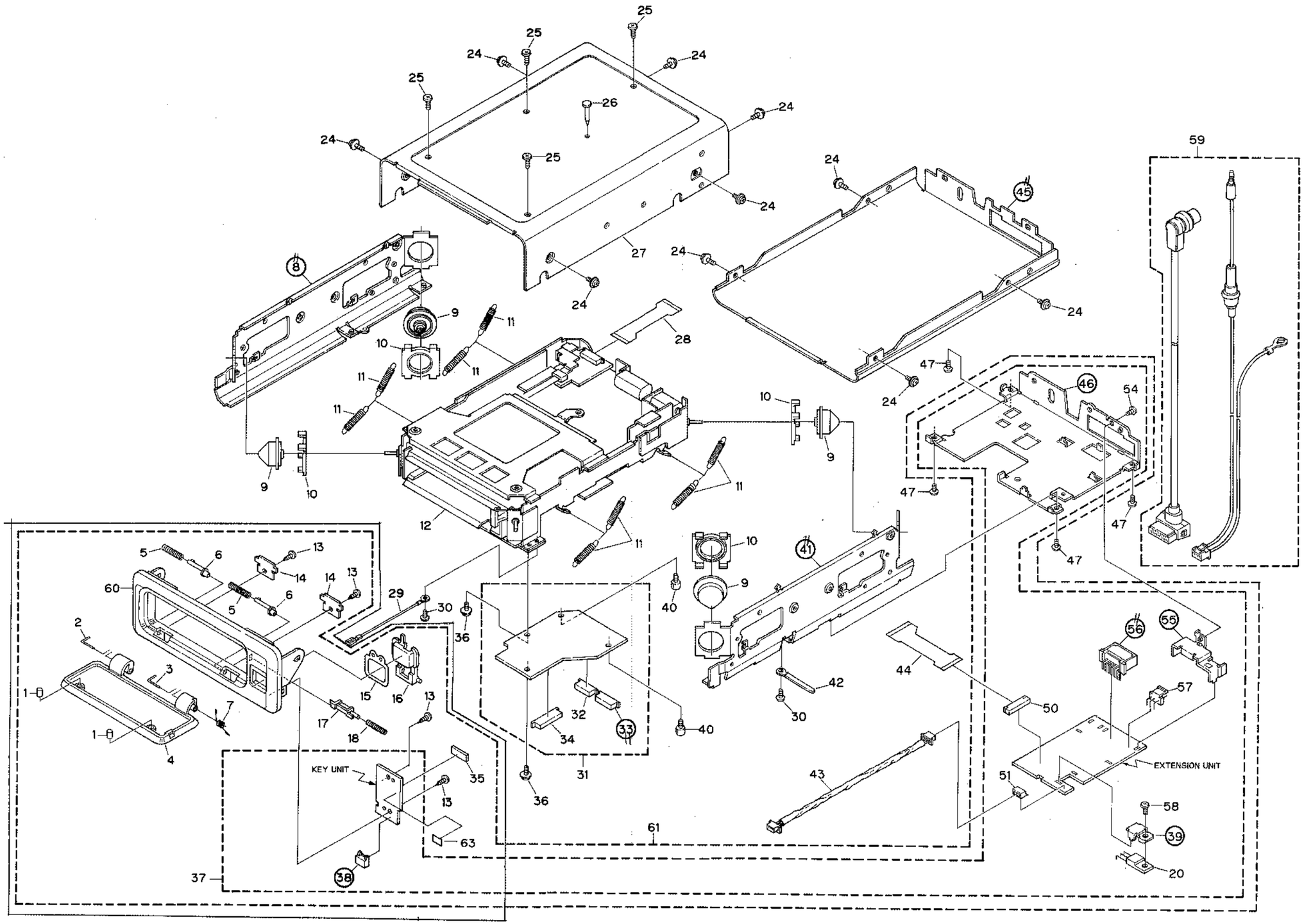


Fig. 41

● Parts List

Mark	No.	Description	Part No.
	1	Cushion	CNM2488
	2	Shaft	CLA1949
	3	Shaft	CLA2038
	4	Door	CAT1490
	5	Spring	CBH1428
	6	Stopper	CNV2905
	7	Spring	CBH1426
✱	8	Chassis L	CNC3846 (SI-C48138)
	9	Damper	CNV3219
	10	Damper Holder	CNV2894
	11	Spring	CBH1379
◉	12	CD Mechanism Unit	CXK2600
	13	Screw (M2.6×8)	CBA1161
	14	Spring Holder	CNC3972
	15	Spacer	CNM3211
	16	Button (OPEN, EJECT)	CAC3153
	17	Lever	CNV2903
	18	Spring	CBH1427
	19	·····	
	20	Transistor (Q987)	2SB1299
	21-23	·····	
	24	Screw	PMS30P040FZK
	25	Screw (Transportation)	BMZ40P080FRD
	26	Pin (Transportation)	CLA1969
	27	Upper Case	CNB1614
	28	P.C.Board	CNP3042
	29	Connector	CDE2949
	30	Screw	BMZ26P040FMC
◉	31	Main Unit	CWX1487
	32	Connector	CKS1958
*	33	Connector	CKS1955 (SI-C47028)
	34	Connector	CKS2271
	35	Spacer	CNM3339
	36	Screw	PMS26P050FMC
◉	37	Extension Unit	CWX1456
*	38	Plug (4P)	CKS1634
*	39	TR Bracket	CNC3993
	40	Screw	CBA1181
✱	41	Chassis R	CNC3845 (SI-C48138)
	42	Clamper	HEF-102
	43	Connector (4P)	CDE3671
	44	P.C.Board	CNP2717
*	45	Lower Case	CNB1568 (SI-C47093)
*	46	Sub Chassis	CNC3995
	47	Screw	BMZ30P040FMC
	48	·····	
	49	·····	
	50	Connector (23P)	CKS2226
	51	Plug (4P)	CKS1051
	52	·····	
	53	·····	
	54	Screw	BMZ30P040FZK
*	55	Connector Bracket	CNC3847
*	56	Connector	CKS2101 (SI-C47032)
	57	Plug	CKS2372
	58	Screw (M2.6×8)	CBA1186
	59	Cord Assy	CDE3723
	60	Grille	CNS2518
	61	Grille Assy	CXA4912
	62	·····	
	63	Cushion	CNM3328
	64	Grille Assy	CXX1080 (SI-C47092)

18. CONTROL ASSY EXPLODED VIEW

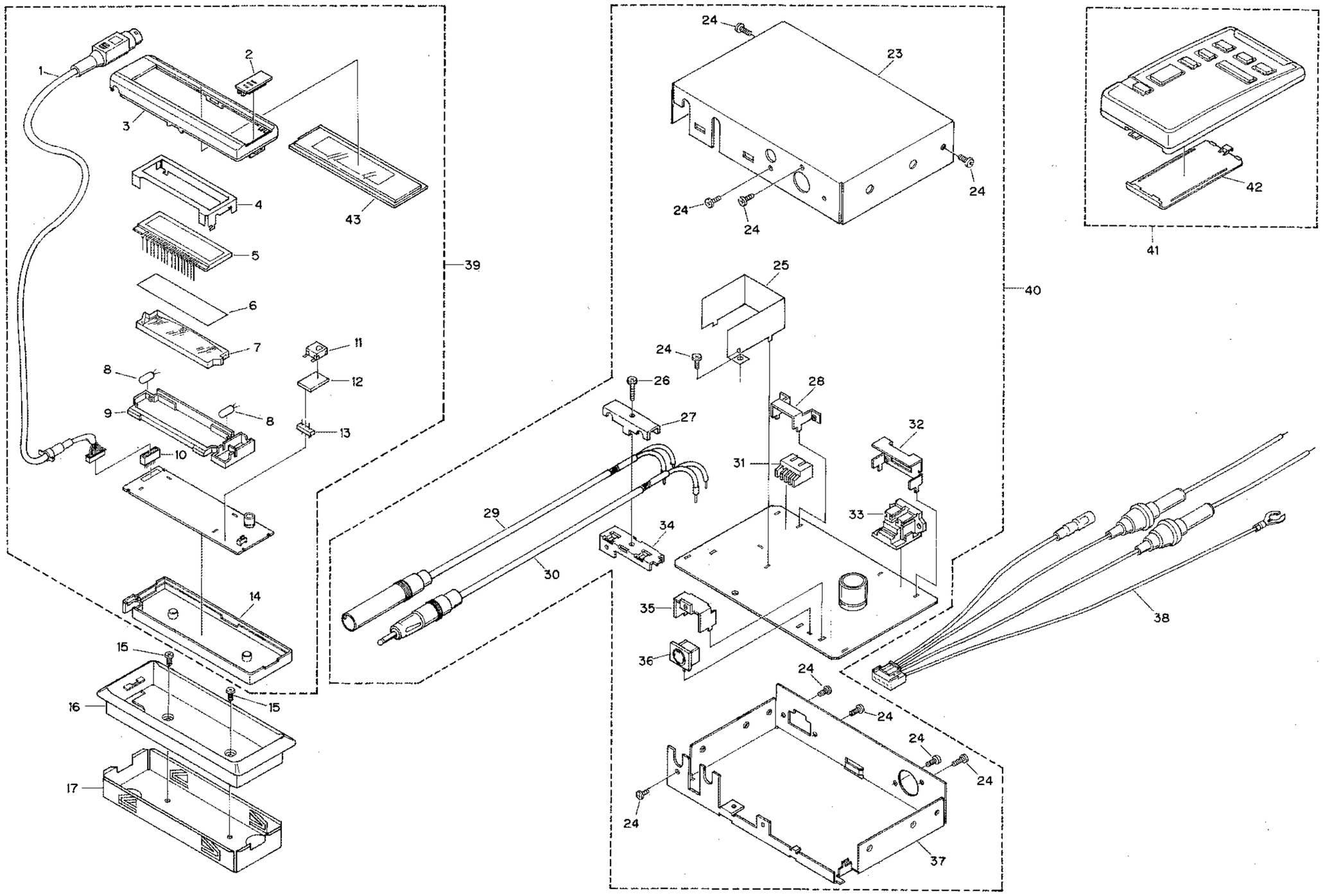


Fig. 42

● **Parts List**

Mark	No.	Description	Part No.
	1	Remote Control Cord Assy	CZD3197
	2	Button	CZA3191
	3	Grille	CZN6136
	4	Cover	CZN6143
	5	LCD	CZA3192
	6	Plate	CZN6155
	7	Lens	CZN6152
	8	Lamp(IL201,202)	CEL1117
*	9	Holder	CZN6139
	10	Plug	CZK2039
	11	IC(IC202)	RS-20
*	12	Gathering P.C.Board	CZN6162
	13	Plug	CZK2041
	14	Case	CZN6137
	15	Screw	PMS30P050FZK
	16	Case	CZN6140
	17	Bracket	CZN6144
	18-22	·····	
	23	Case	CZN6151
	24	Screw	BMZ30P050FMC
*	25	Shield Plate	CZN6145
	26	Screw	PMA30P100FMC
*	27	Bracket	CZN6158
*	28	Bracket	CZN6159
	29	Antenna Cable Jack	CZD3199
	30	Antenna Cable Plug	CZD3198
	31	Plug	CZK2040
*	32	Bracket	CZN6022
	33	Connector	CKS1868
*	34	Bracket	CZN6163
*	35	Bracket	CZN6149
	36	Connector	CZK2038
*	37	Chassis	CZN6150
	38	Power Supply Cord Assy	CZD3201
◉	39	Display Unit	CWM3124
◉	40	Hideaway Unit	CWM3126
	41	Remote Control Assy	CXA4840
	42	Battery Cover	CNS2515
	43	Plate	CZN6138

19. MAGAZINE (PXA1356) EXPLODED VIEW

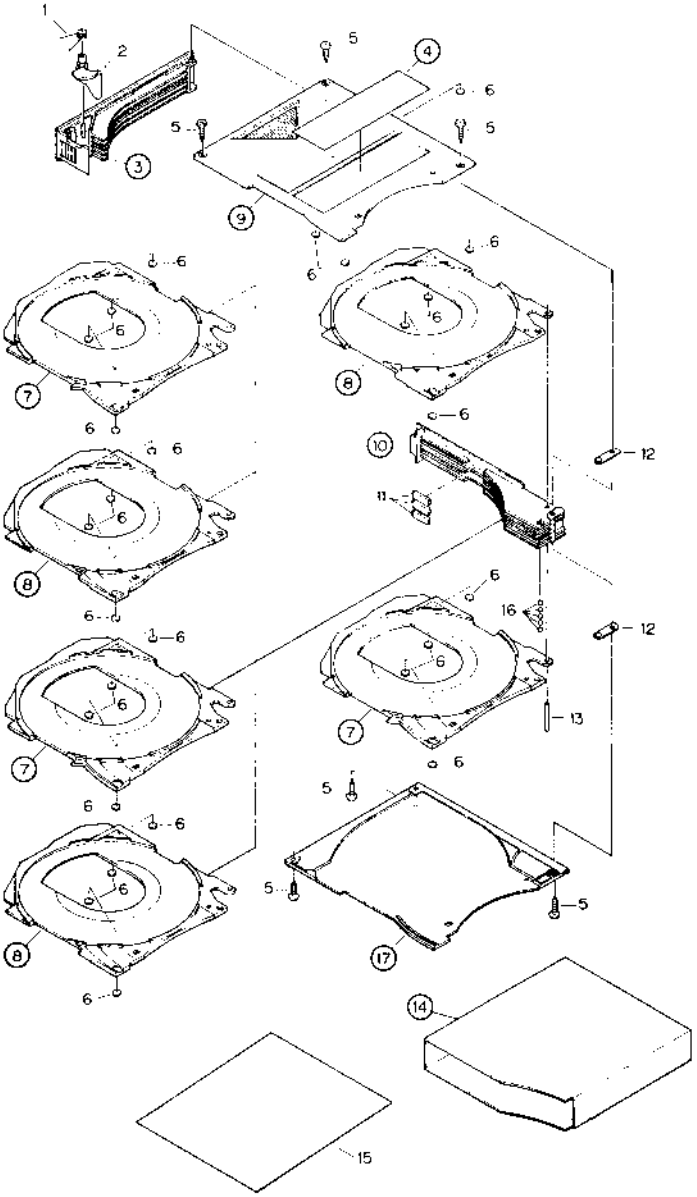


Fig. 43

● **Parts List**

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Spring M	PBH1067	11	Cushion Rubber	PNM1011
2	Lever	PNW1386	12	Spring	PBK-085
* 3	Case F	PNW1799	13	Shaft	PLB-281
* 4	Caution Label	PRW1139	*14	PP Case	PHN1031
5	Screw	BPZ20P080FZK	15	Label	PRW1197
6	Cushion	PED-049	16	Ball	PBP-005
* 7	Tray A	PNW1935	*17	Case B	PNW1596
* 8	Tray B	PNW1936			
* 9	Case T	PNW1126			
*10	Case L	PNW1800			

20. PACKING METHOD

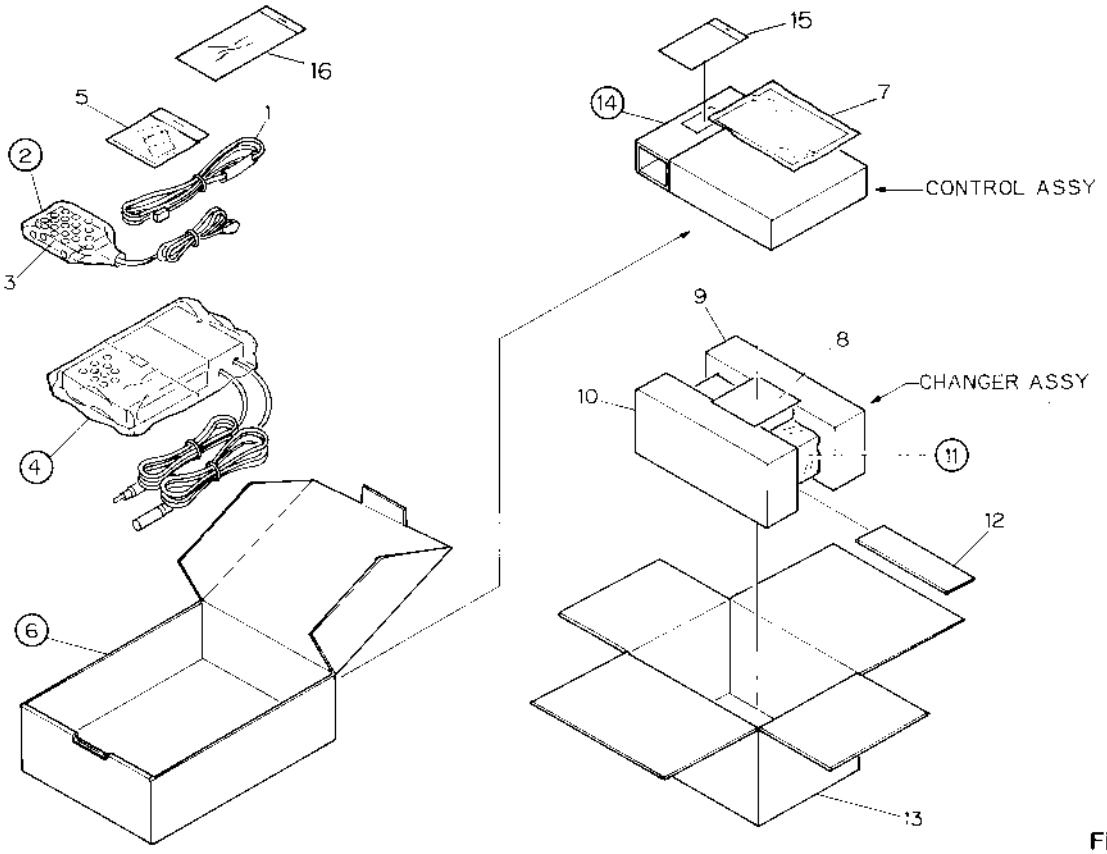


Fig. 44

● Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Cord Assy	CZD3201		12-4	Strap	CNP-111
*	2	Cover	CEG1062		12-5	Screw Assy	CEA1563
	3	Air Cushioned Bag	CZE2046		12-5-1	Screw for Strap(×1)	CBA-028
*	4	Polyethylene Bag	CZE2073		12-5-2	Screw(×5)	CBA1069
	5-1	Fastener(×2)	CNM1716		12-5-3	Screw(×4)	HMB60P500FZK
	5-2	Fastener(×1)	CZE2061		12-5-4	Screw(×4)	HMP40P080FZK
	5-3	Fastener(×1)	CZE2062		12-5-5	Nut(×1)	NP40FMC
*	6	Carton	CZH6001		12-5-6	Nut(×1)	NP50FMC
*	7-1	Card	ARY1048		12-5-7	Nut(×4)	NR60FZK
*	7-2	Cushion(×2)	CNM2647		12-5-8	Screw(×1)	PMB50Y160FMC
	7-3	Owner's Manual (English,French)	CRD1596		12-5-9	Washer(×1)	WS40FMC
				*	12-5-10	Polyethylene Bag	E36-615
	7-5	Polyethylene Bag	CEG1116	*	12-6	Polyethylene Bag	E36-622
	8	Magazine	PXA1356	*	12-7	Clamper	CBF1010
	9	Styrofoam	CHP1312	*	12-8	Battery	CEX1019
	10	Styrofoam	CHP1313		12-9	Fastener(×1)	CNM3470
	11-1	Cover	CEG1091		12-10	Fastener(×1)	CNM3471
	11-2	Caution Card	CRP1098		13	Carton	CHG2229
	11-3	Sheal	CNM2887	*	14	Spacer	CHW1161
*	11-4	Caution Card	CRP1090		15	Remote Control Assy	CXA4840
*	11-5	Polyethylene Bag (Screw)	CEG1099		16-1	Case	CZN6140
					16-2	Bracket	CZN6144
	12	Accessory Assy	CEA1725		16-3	Screw(×2)	PMS30P050FZK
	12-1	Cord Assy	CDE3723				
	12-2	Angle(×2)	CNB1634				

21. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/□S□□□J, RS1/□□S□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

CHANGER ASSY

Unit Number :
Unit Name :Extension Unit

MISCELLANEOUS

======Circuit Symbol & No.	Part Name======	Part No.
IC 971		M5218AL
IC 972		BA3121
IC 981		M51957AL
IC 982		M51958AL
Q 970 971		DTC314TS
Q 972 985 988		DTA114ES
Q 973 986 989		DTC114YS
Q 981 992		DTC114ES
Q 983		2SC3673
Q 984		2SD1859
Q 987		2SB1299
Q 990 991		2SC2458
D 971 972 973		1SS133
D 974 981 984		ERA15-02VH
D 982		HZS20L
D 985 987		HZS6LB1
D 986		RD9R1JSB1
D 989		HZS11B1L
L 981	Choke Coil	CTH1047
EF 981		CCG1006

RESISTORS

R 970 971	RD1/4PS113JL
R 972 973	RD1/4PS163JL
R 974 975	RD1/4PS332JL
R 976 977	RD1/4PS182JL
R 978 979	RD1/4PS122JL
R 980	RD1/4PS333JL
R 981	RD1/4PS363JL
R 982	RD1/4PS184JL
R 983	RD1/4PS153JL
R 984 985 992	RD1/4PS103JL
R 986 995	RD1/4PS681JL
R 987	RD1/4PS683JL
R 988	RD1/4PS473JL
R 989	RD1/4PS102JL
R 991	RD1/4PS222JL
R 993 994	RD1/4PS331JL
R 996	RD1/4PS242JL
R 997	RD1/4PS362JL

CAPACITORS

C 970	CEA101M10LL
C 971 979 981 984 988	CKCYB472K50
C 972 973	CCCCH470J50
C 974 975	CEA4R7M35LL
C 976 977	CEA330M10LL
C 978	CEA4R7M35LL
C 980 989	CEA470M16LL
C 982 983	CCH1080
C 985	CEA101M6R3LL
C 986	CEA100M16LL
C 987	CEA470M10LL
C 990	CKCYB472K50

Unit Number :
Unit Name :Key Unit

SW991	Switch(Reset)	CSG1035
SW992	Switch(Eject)	CSG1004

Unit Number :
Unit Name :Main Unit

MISCELLANEOUS

IC 351		UPC1347GS
IC 601	(UPD6374GH-501)	GGF9001
IC 602 652		RC4558M
IC 651		PA3026
IC 661		TA78L05F
IC 701		UPD6375GC
IC 702		TC9237F
IC 703		TA2009F
IC 704		UPD6382GF
IC 751		PD5196A
IC 755		LH5116HN-10T
IC 801		XRA6247FP
Q 351		2SB1260
Q 601		2SB709A
Q 651 705 801		UN2211
Q 652		2SB1184F5
Q 653 802		2SB1184F5
Q 751		UN2111
D 651		SC016-2
D 652		SC016-2
D 751		MA151A-MA
D 752		MA151WK-MT
D 754 755 756 758		MA153-MC
D 757		MA153-MC
D 759		MA151A-MA
L 701 751	Inductor	CTF1138
L 704	Inductor	CTF1138
X 702	Crystal Resonator	CSS1067
X 751		CSS1084
VR 351	Semi-fixed	CCP1021
VR 352 355	Semi-fixed 47kΩ(B)	CCP1023
VR 353 354	Semi-fixed 2.2kΩ(B)	CCP1015
VR 356	Semi-fixed 47kΩ(B)	CCP1023
	Checker Tip	CKF1025

Circuit Symbol & No.	Part Name	Part No.
RESISTORS		
R 351		RS1/2S220J
R 353		RS1/16S623J
R 354 781 795		RS1/16S473J
R 355		RS1/16S122J
R 356 357		RS1/16S683J
R 358 359		RS1/16S332J
R 360		RS1/16S684J
R 361		RS1/16S153J
R 369 605 607 661 666 713 775 810		RS1/16S103J
R 370		RS1/16S133J
R 372 615 616		RS1/16S472J
R 375 377 609 611 613 651 653 658 663		RS1/16S102J
R 379		RS1/16S513J
R 380		RS1/16S104J
R 381		RS1/16S133J
R 606		RS1/16S224J
R 610 901 902 903 904 905		RS1/16S103J
R 614 664 670		RS1/16S912J
R 617 915		RS1/16S102J
R 652 654 657		RS1/16S162J
R 655		RS1/16S332J
R 656		RS1/16S0R0J
R 660 662 665		RS1/10S151J
R 667		RS1/16S104J
R 668		RS1/16S752J
R 669		RS1/16S823J
R 671 672 702 703 704 791 802 803		RS1/16S102J
R 674		RS1/16S473J
R 701		RS1/16S272J
R 705 706 707		RS1/16S103J
R 708		RS1/16S201J
R 711 712		RS1/16S100J
R 716 804		RS1/16S102J
R 717 751 789 821 822 910 913		RS1/16S0R0J
R 752		RS1/16S223J
R 753 760 797 911		RS1/16S473J
R 754 777 782 784 788 796		RS1/16S104J
R 755 758 759 762 763 765 773 787		RS1/16S222J
R 756		RS1/16S681J
R 757		RS1/16S222J
R 761 767 798 799		RS1/16S104J
R 766 772 786 790 794 807		RS1/16S563J
R 770 771 779 780		RS1/16S681J
R 792		RS1/16S101J
R 793		RS1/16S473J
R 805 806		RS1/16S563J
R 811 812 813		RS1/10S151J
R 906 907		RS1/16S222J
R 908		RS1/16S103J
R 909		RS1/16S0R0J
R 912		RS1/16S103J
CAPACITORS		
C 351 717		CEV470M6R3
C 352		CKSQYB104K25
C 353 714		CEV101M6R3
C 354 355 609 610 702		CEV100M16
C 357 359 366		CKSRYB102K50
C 358		CCSRCH331J50
C 360		CCSRCH271J50
C 361		CCSRCH220J50
C 373 607		CKSYB224K25
C 601		CKSRYB222K50
C 603		CCSRCH331J50
C 604 606 652 654 710 715 716 721 722		CKSYB224K25
C 605 611 659 666 709 762 763		CKSRYB103K25
C 608		CEV010M50
C 614 657 658		CKSRYB821K50

Circuit Symbol & No.	Part Name	Part No.
C 656		CKSQYB273K25
C 663		CKSQYB333K25
C 665		CCH1120
C 667		CSZST220M16
C 674		CKSRYB821K50
C 703		CCSRCH470J50
C 704 705		CCSRCH080D50
C 706 707		CKSQYB104K25
C 718		CEV330M6R3
C 719 720		CEV100M16
C 751 753		CKSQYB104K25
C 752 764 765		CCSRCH221J50
C 756		CKSRYB472K50
C 757		CKSRYB103K25
C 801		CEV220M16
C 802 803		CKSQYB223K25
Unit Number :		
Unit Name : Mechanism P.C.Board		
S 843	Switch(Home)	CSN1012
S 845 846	Switch(DCPT,TRPT)	CSN1022
M 841	Motor Unit(Carriage)	CXA4316
M 842	Motor Unit(Spindle)	CXA4540
M 843	Motor Unit(ELV)	CXA3238
M 844	TRAY Motor Unit	CXA3729
Unit Number :		
Unit Name : Photo P.C.Board		
D 841		HZS9A2L
VR 841	Semi-fixed 22kΩ(B)	CCP-380
S 841	Switch(MAG)	CSN1020
S 842	Switch(EJP)	CSH1022
P 841	Photo-Interrupter	∅N1113
P 842	Photo-Interrupter	∅N2160
R 841		RD1/4PS560JL
R 842		RD1/4PS221JL
R 843		RD1/4PS103JL
Miscellaneous Parts List		
PU Unit		CGY1023
CONTROL ASSY		
Unit Number :		
Unit Name : Display Unit		
MISCELLANEOUS		
IC 201		LC7582A
IC 202	Remote Sensor	RS-20
D 201		HZM5R1NB3
D 202 203 204 205		DA204K
S 201	Switch	CSG-212
IL 201 202	Lamp	CEL1117
	LCD	CZA3192
RESISTORS		
R 201 202 203 204		RS1/10S471J
R 205		RS1/10S513J
R 206		RD1/4PS102JL
R 207		RS1/8S0R0J
CAPACITORS		
C 201		CKSQYB681K50
C 202 203		CKSQYB223K50
C 204		CEA101M6R3LS

Circuit Symbol & No.	Part Name	Part No.
Unit Number :		
Unit Name : Hideaway Unit		
MISCELLANEOUS		
IC 101		PD4392A
IC 102		S-8053ANO
IC 351		BA1404F
IC 352		HA178L08
IC 353		UPC4570G
Q 101		2SD1858
Q 102 103 353		2SC2412K
Q 104		2SB1243
Q 105 352		DTC114EK
Q 106 351		2SB1237
Q 107		2SD1855
Q 108		2SC4038
Q 353		2SC2412K
Q 354		DTC114GK
Q 355 356		2SC2059K
Q 357 358		DTC124TK
D 101 102		ERA15-02VH
D 103		HZS6B3
D 104 105		HZS7C1
D 106 110 353		1SS318
D 107 108 122		DA204K
D 109		HZS9B1
D 111 112 113 114 115 116 117 118 119 120		1SS133
D 121		HZS6C3
D 352		KV1450
D 354		1SS133
D 355		DAP202K
D 356 357		RB421D
D 358 359		RB400D
D 360		HZS5A2
L 101	Choke Coil	CTH1016
L 351	Ferri-Inductor	LAU2R2M
L 352	Inductor	LAU100K
L 353	Inductor	ELJ-NAR68K
L 354	Inductor	ELJ-NAR47K
L 355 356	Inductor	ELJ-NA2R7J
L 357	Inductor	CZT2004
TC 351		CZC2031
TC 352 353		CZC2033
TC 354		CZC2045
X 101		CZS2035
X 351		CZS2030
X 352		CZS2033
BPF351		CZT2002
RY 351	Relay	CZS2043
S 101	Switch	CZS2032
S 351 352	Switch	CZS2007
VR 351	Volume 10kΩ(A)	CZC2046
VR 352	Volume 33kΩ(B)	CZC2026
VR 353	Volume 220kΩ(B)	CZC2027
VR 354	Volume 4R7kΩ(B)	CZC2034
VR 355	Semi-fixed 1kΩ(B)	CZC2047
RESISTORS		
R 101		RS1/10S562J
R 112 114 146		RS1/10S472J
R 102 103 141 144 150 151 152 153 357 358		RS1/10S103J
R 104 105		RS1/10S473J
R 106 107 129 132 135 136 137 138		RS1/10S682J
R 108 109 119 120 121 122 139 140		RS1/10S681J
R 110 361		RD1/4PS103JL
R 111		RD1/2PS102JL
R 113		RD1/4PS332JL
R 115 379		RS1/10S562J
R 116 381		RS1/10S222J
R 117 118 130 131		RD1/4PS682JL
R 123 124 125 126 127 128		RD1/4PS681JL
R 133		RS1/10S474J
R 142		RS1/10S124J
R 143		RS1/10S1R0J
R 145		RD1/4PS221JL
R 351 352		RS1/10S152J
R 353 354		RS1/10S133J
R 355 356		RS1/10S513J
R 359		RS1/10S561J
R 360 370 378		RS1/10S103J
R 362		RS1/10S363J
R 363		RS1/10S103J
R 364 365		RS1/10S104J
R 366		RS1/10S332J
R 367		RS1/10S123J
R 368 376		RS1/10S102J
R 369		RS1/10S153J
R 371		RS1/10S560J
R 372		RS1/10S621J
R 373		RS1/10S243J
R 374		RS1/10S183J
R 375		RS1/10S101J
R 377		RS1/10S220J
R 380		RS1/10S272J
R 385 386		RS1/10S202J
R 389		RS1/10S0R0J
CAPACITORS		
C 101		CZC2010
C 102	1000μF/16V	CZC2014
C 103	2200μF/16V	CZC2013
C 104 112 382		CEA330M10L2
C 105 113 122 384 386		CEA101M10L2
C 106 107		CKSQYB223K50
C 108 109		CKSQYB222K50
C 110 362 365		CKSQYB104K25
C 111 357 358		CEA1R0M50L2
C 115		CEA2R2M50L2
C 116 117 118 119 120		CKPYB471K50L
C 121 383		CEA100M16L2
C 351 352		CKSQYB392K50
C 374 380 389 390		CKSQYB102K50
C 353 354 355 356		CKSQYB152K50
C 359		CEA100M16LL
C 360 364 375 376 378		CKSQYB103K50
C 361 377		CCSQCH100D50
C 363		CEA4R7M35L2
C 367		CCSQCH150J50
C 369		CEA220M10LL
C 370		CCSQUJ150J50
C 371		CCSQUJ110J50
C 372		CCSQUJ330J50
C 373		CCSQUJ151J50
C 379		CKSQYB152K50
C 385		CEA221M6R3L2
C 387		CEAR22M50LL
C 388		CKSQYB391K50