

# Service Manual

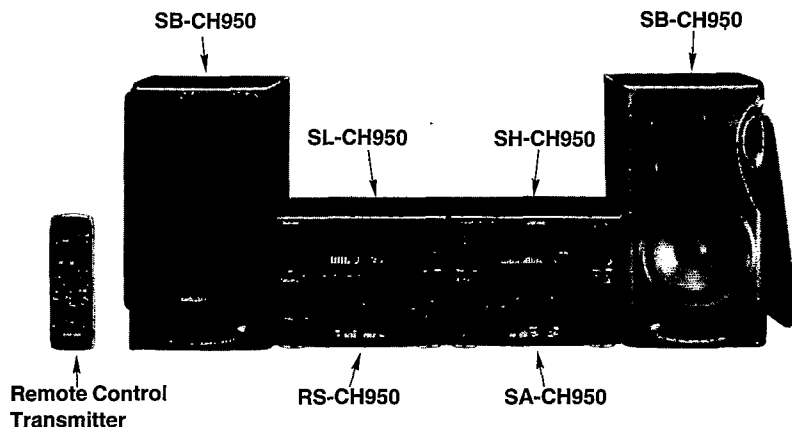
Cassette Deck  DOLBY B-C NR HX PRO

Cassette Deck

## RS-CH950

Colour

(K) ..... Black Type



Area

Suffix for Model No.	Area	Colour
(E)	Europe, Asia, Latin America, Middle Near East, Africa and Oceania	(K)

System: SC-CH950

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

### ■ RS-TR165 MECHANISM SERIES (AR300)

### SPECIFICATIONS

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Recording system	AC bias
Erasing system	AC erase
Tape speed	4.8 cm/sec. (1 7/8 ips)
Bias frequency	80 kHz
Heads	
DECK 1 (playback)	Permalloy head
DECK 2 (record/playback) (erasure)	Permalloy head Double gap ferrite head
Motors	DC servo motor
Wow and flutter	0.1% (WRMS)
Fast forward and rewind time	Approx. 110 seconds with C-60 cassette tape
Frequency response (When Dolby NR OFF, CCRT ON)	
NORMAL	20 Hz–17 kHz 30 Hz–15 kHz (DIN)
CrO <sub>2</sub>	20 Hz–18 kHz 30 Hz–17 kHz (DIN)
METAL	20 Hz–20 kHz 30 Hz–19 kHz (DIN)

#### S/N (CrO<sub>2</sub> type tape)


Dolby NR off	56 dB (A-WTD)
Dolby B NR on	66 dB (CCIR)
Dolby C NR on	74 dB (CCIR)

#### ■ General

Dimensions (W×H×D)	270×119×262 mm
Weight	3.3 kg

#### Notes:

- Specifications are subject to change without notice.
- Weight and dimensions shown are approximate.

\*Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen. "DOLBY", the double-D symbol  and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

System	Sound processor	Tuner amplifier	Compact disc player	Cassette deck	Speakers
SC-CH950	SH-CH950	SA-CH950	SL-CH950	RS-CH950	*SB-CH950

\*Europe...Made in PAES

# Technics

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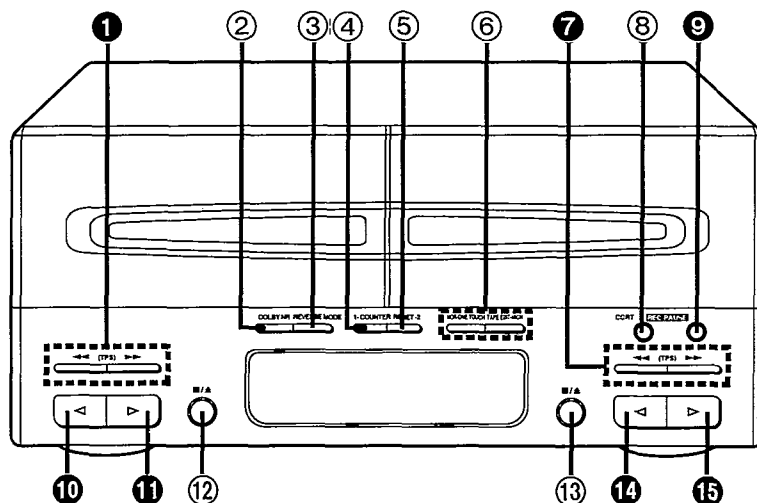
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### NOTE:

Refer to the service manual for Model No. SA-CH950 (Order No. AD9211380C8) for information on "ACCESSORIES", "STACKING THE COMPONENTS", "CONNECTIONS" and "PACKAGING".

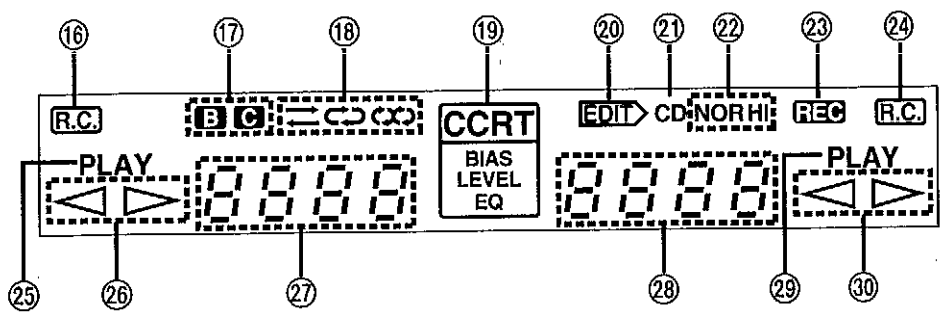
## LOCATION OF CONTROLS



The functions indicated by the numbers with black background (for example ❶) can also be activated from the remote control.

- ❶ **Deck 1 fast-forward/rewind/tape program sensor (TPS) buttons**  
[◀◀ (TPS) ▶▶]  
Press to advance or rewind the tape, or to quickly search for the beginning of a program while the tape is being played.
- ❷ **Dolby noise reduction button (DOLBY NR)**  
Press to reduce hissing noise on the tape. This system has both the Dolby B-type and Dolby C-type noise reduction.
- ❸ **Reverse mode select button and indicators (REVERSE MODE)**  
Press to select the reverse mode (for playback and recording).
- ❹ **Deck 1 counter reset button (COUNTER RESET 1)**  
Press to reset the tape counter indicator to "0000".
- ❺ **Deck 2 counter reset button (COUNTER RESET 2)**
- ❻ **One-touch tape edit buttons (NOR, HIGH)**  
Press to start the tape-to-tape recording.
- ❼ **Deck 2 fast-forward/rewind/tape program sensor (TPS) buttons** [◀◀ (TPS) ▶▶]
- ❽ **CCRT (computer control record tuning) button (CCRT)**  
Press to adjust the recording level, equalizer and bias before recording.
- ❾ **Record pause button ( REC PAUSE )**  
Press to put deck 2 into the record standby mode.
- ❿ **Deck 1 reverse-side playback button (◀)**  
Press to start the playback in the reverse direction.
- ⓫ **Deck 1 forward-side playback button (▶)**  
Press to start the playback in the forward direction.
- ⓬ **Deck 1 stop/cassette holder open button (■/▲)**  
Press to stop the tape or open the cassette holder.
- ⓭ **Deck 2 stop/cassette holder open button (■/▲)**
- ⓮ **Deck 2 reverse-side playback button (◀)**  
Press to start the playback or recording in the forward direction.
- ⓯ **Deck 2 forward-side playback button (▶)**  
Press to start the playback or recording in the reverse direction.

● Display Section



- 16 Deck 1 remote indicator ( R.C )  
Lights to show that you can operate deck 1 with remote control.
- 17 Dolby noise reduction indicators ( B, C )  
Lights to show the type of Dolby noise reduction you select.
- 18 Reverse mode indicators ( ←, →, ↔ )  
Lights to show the reverse mode you select.
- 19 CCRT indicator ( CCRT, BIAS, LEVEL, EQ )  
Lights when CCRT function is activated.
- 20 Edit indicator ( EDIT )  
Lights when you are editing CD or making a tape-to-tape recording.
- 21 CD indicator ( CD )  
Lights together with the edit indicator when you are editing CD.
- 22 Tape edit indicators ( NOR, HI )  
Lights together with the edit indicator when you are making a tape-to-tape recording.
- 23 Recording indicator ( REC )  
Lights when in the recording or recording standby mode.
- 24 Deck 2 remote indicator ( R.C )  
Lights to show that you can operate deck 2 with remote control.
- 25 Deck 1 play indicator ( PLAY )  
Lights when you play the cassette tape. Flashes when you quickly search for the beginning of a program while the tape is being played (TPS).
- 26 Deck 1 tape travel direction indicator ( ◀, ▶ )  
Lights to show the direction of the tape travel.
- 27 Deck 1 tape counter  
Shows the amount of tape movement.
- 28 Deck 2 tape counter  
Shows the amount of tape movement.
- 29 Deck 2 play indicator ( PLAY )  
Lights when you play or record the cassette tape. Flashes when you quickly search for the beginning of a program while the tape is being played (TPS), or while in the recording standby mode.
- 30 Deck 2 tape travel direction indicator ( ◀, ▶ )  
Lights to show the direction of the tape travel.

■ DISASSEMBLY INSTRUCTIONS

**"ATTENTION SERVICER"**  
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

<p><b>Ref. No. 1</b> <b>Removal of the Cabinet</b></p> <p><b>Procedure 1</b></p> <p>1. Remove the 6 screws (1-6). 2. Remove the cabinet in the direction of arrow.</p>	<p><b>Ref. No. 2</b> <b>Removal of the Cassette Lid Ass'y (DECK 1 and DECK 2)</b></p> <p><b>Procedure 1-2</b></p> <p>1. Turn the drive gear in the direction of arrow, and open the cassette holder (B) ass'y. 2. Remove the cassette lid ass'y in the direction of arrow.</p>
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<p><b>Ref. No. 3</b> <b>Removal of the Front Grill Ass'y</b></p> <p><b>Procedure 1-3</b></p> <p>1. Remove the 4 screws (1-4).</p> <p>2. Remove the 2 connectors (CP1, CP2). 3. Remove the 6 flat cables (CN1, CN2, CN3, CN4, CN6A/B, CN7A/B). 4. Remove the FPC P.C.B. (CN5A). 5. Remove the front grill ass'y in the direction of arrow.</p> <p><b>■ Removal of the Flat cable and F.P.C.</b></p> <ul style="list-style-type: none"> <li>● Push the top of the connector and then pull out the flat cable. (CN1, CN3)</li> <li>1. Lift up the connector. 2. Pull out the flat cable. (CN2, CN4, CN6A/B, CN7A/B)</li> <li>● Lift up the top of the connector and pull out the F.P.C..</li> </ul>	<p><b>Ref. No. 5</b> <b>Removal of the mechanism Unit (DECK 1 and DECK 2)</b></p> <p><b>Procedure 1-3-4-5</b></p> <p>● Remove the 4 screws (1-4).</p>
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<p><b>Ref. No. 4</b> <b>Removal of the Loading Unit (DECK 1 and DECK 2)</b></p> <p><b>Procedure 1-3-4</b></p> <p>(* This removal procedure describes for DECK 2. For DECK 1, perform the same procedure.)</p> <p>1. Turn the drive gear in the direction of arrow ①, and then open the cassette lid ass'y.</p> <p>2. Remove the connector (CN8AA). 3. Remove the 2 screws (1, 2). 4. Release the loading unit from the rib, and then remove it in the direction of arrow ②.</p>	<p><b>Ref. No. 6</b> <b>Removal of the Mechanism Angle Ass'y</b></p> <p><b>Procedure 1-3-4-5-6</b></p> <p>● Remove the 2 screws (1, 2).</p>
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<p><b>Ref. No. 7</b> <b>Removal of the Cassette Holder (B) Ass'y (DECK 1 and DECK 2)</b></p> <p><b>Procedure 1-3-4-5-6-7</b></p> <p>● Release the ribs of the cassette holder (B) ass'y in the direction of arrow.</p>	<p><b>Ref. No. 8</b> <b>Removal of the Operation P.C.B.</b></p> <p><b>Procedure 1-3-4-5-6-7-8</b></p> <p>1. Remove the 2 fix pieces. 2. Release the 4 claws, and then open the front panel/front sub grill in the direction of arrow ①.</p> <p>3. Remove the front panel/front sub grill in the direction of arrow ②.</p>
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**Ref. No. 9**      **Removal of the Loading Motor P.C.B. (DECK 1 and DECK 2)**

**Procedure**  
1→3→9

1. Unsolder the loading motor terminals (4 points).  
2. Remove the 2 connectors (CN8A/CN8AA).  
3. Remove the 2 screws (①, ②).  
4. Release the 4 claws.

**Ref. No. 10**      **Removal of the Drive Gear and Clutch Gear Assy (DECK 1 and DECK 2)**

**Procedure**  
1→3→4→10

1. Remove the 2 washers.  
2. Remove the drive gear and the clutch gear ass'y in the direction of arrow.

**Ref. No. 11**      **Removal of the Loading Motor Ass'y (DECK 1 and DECK 2)**

**Procedure**  
1→3→4→9→10→11

1. Remove the 2 screws (①, ②).  
2. Remove the loading motor ass'y in the direction of arrow.

**Ref. No. 12**      **Removal of the Eject Rod and Leaf Switch Lever (DECK 1 and DECK 2)**

**Procedure**  
1→3→4→10→12

■ **Removal of the Eject Rod**  
● Release the claw (A), and remove the eject rod in the direction of arrow.

■ **Removal of the Leaf Switch Lever**  
● Release the claw (B), and remove the leaf switch lever in the direction of arrow.

**Ref. No. 13**      **Removal of the Cassette Holder Angle and Cassette Holder (A)/(B) Ass'y (DECK 1 and DECK 2)**

**Procedure**  
1→3→4→5→6→7→13

1. Release the 2 ribs of cassette holder (B) ass'y in the direction of arrow ①.

2. Release the 2 ribs of cassette holder (A) ass'y in the direction of arrow ②.

**Ref. No. 14**      **Removal of the Switch P.C.B. (DECK 1 and DECK 2)**

**Procedure**  
1→3→4→5→6→7→13→14

● Release the claw.

**Ref. No. 15**      **Removal of the Main P.C.B.**

**Procedure**  
1→3→15

● Remove the 6 screws (①~⑥).

**Ref. No. 16**      **How to check the Main P.C.B.**

**Procedure**  
1→16

1. Remove the 4 screws (①~④).  
2. Remove the front grill ass'y in the direction of arrow.

3. Remove the 5 screws (⑤~⑨).

**Ref. No. 17**      **How to check the Operation P.C.B.**

**Procedure**  
1→2→17

4. Remove the 2 screws (⑩, ⑪).

5. When checking the soldered surfaces of main P.C.B., perform as shown above.

**Ref. No. 17**      **How to check the Operation P.C.B.**

**Procedure**  
1→2→17

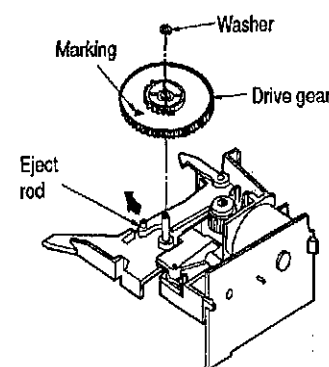
1. Remove the 2 fix pieces.

2. Release the 4 claws with screwdriver, and remove the front panel/front grill in the direction of arrow ①.

3. Remove the front panel/front grill in the direction of arrow ②.

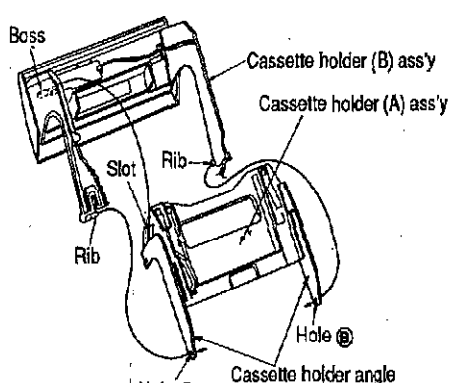
4. When checking the soldered surfaces of operation P.C.B. and replacing the parts, do as shown above.

### ■ Installing of Drive Gear



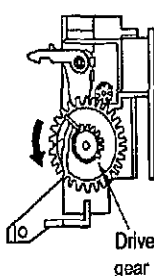
1. Locate the eject rod in the direction of arrow.
2. Place the drive gear so that the marking of drive gear is indicated as shown left.

### ■ Installing of Cassette Holder Angle and Cassette Holder (B) Ass'y



1. Align the boss of cassette holder (B) ass'y to the slot of cassette holder (A) ass'y.
2. Insert the 2 ribs of cassette holder (B) ass'y into the 2 holes ①, ② of cassette holder angle.

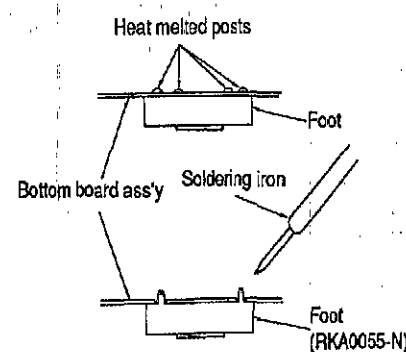
### ■ Installing of Loading Unit



1. Rotate the drive gear fully in the direction of arrow.

### ■ Replacement of the Foot

1. Remove the 4 heat melted posts on the bottom board ass'y with a pair of nippers or similar tool.
2. To replace the foot (RKA0055-N) on the bottom board ass'y, melt the 4 posts with a soldering iron.



## ■ MEASUREMENTS AND ADJUSTMENTS

●The RS-CH950 is designed to operate on the power supplied from the SA-CH950 Tuner Amplifier. When using the RS-CH950 with the SA-CH950, short the following test points to each other:

TP603 to TP604, and TP605 to TP606 (see Fig. 1).

●To operate the RS-CH950 alone for testing or servicing, without having power supplied from the SA-CH950, use the following method:

1. Short TP603 to TP604, and TP605 to TP606.
2. Apply 10 V AC power between TP601 and GND, and TP602 and GND.

After testing or servicing, be sure to remove the shorting jumpers between TP603—TP604 and TP605—TP606.

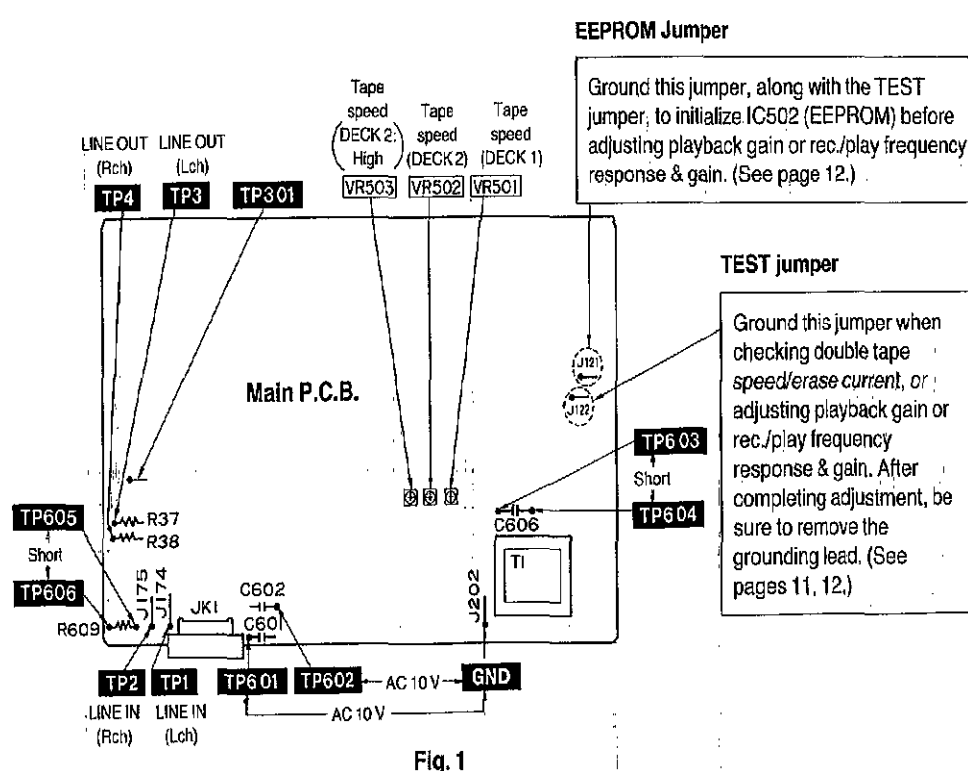


Fig. 1

#### Measurement Condition

- Reverse-mode selector switch:
- One touch tape edit switch: NORMAL
- Dolby NR switch: OFF
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature 20±5°C (68±9°F)

#### Measuring instrument

- EVM (Electronic Voltmeter)
- AF oscillator
- Digital frequency counter

#### Test tape

- Head azimuth adjustment (8 kHz, -20 dB): QZZCFM
- Tape speed adjustment (3 kHz, -10 dB): QZZCWAT
- Playback frequency response (315 Hz, 12.5 kHz, 10 kHz, 8 kHz, 4 kHz, 1 kHz, 250 Hz, 125 Hz, 63 Hz, -20 dB): QZZCFM

- Playback gain adjustment (315 Hz, 0 dB): QZZCFM

#### HEAD AZIMUTH ADJUSTMENT (DECK 1/2)

1. Playback the azimuth adjustment portion (8 kHz, -20 dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the R-CH is maximized.
2. Perform the same adjustment in the play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

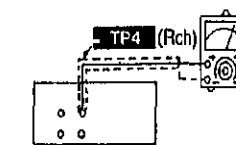


Fig. 2

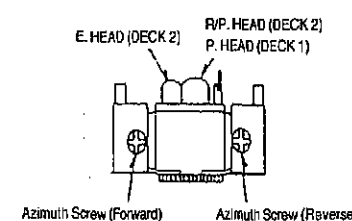


Fig. 3

#### TAPE SPEED ADJUSTMENT (DECK 1/2)

##### Normal speed

1. Playback the middle portion of the test tape (QZZCWAT).
2. Adjust Deck 1=VR501 and Deck 2=VR502 so that the output is within the standard value.

Standard value: 3000±15 Hz (NORMAL speed)

##### High speed [Set the unit to forward (FWD) mode.]

3. Short-circuit the TEST jumper (J122).
4. Press the one touch tape edit (High) button. This will set the high speed mode.
5. Playback the middle portion on the test tape (QZZCWAT).
6. At that time, check if the output from DECK 1 is within the standard value.

Standard value: 6000±600 Hz (HIGH speed)

7. Adjust VR503 so that the output frequency of DECK 2 is within ±30 Hz for the value of the output frequency of DECK 1.

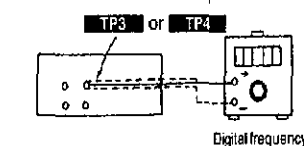


Fig. 4

#### ERASE CURRENT CONFIRMATION (DECK 2)

1. Short-circuit the TEST jumper (J122).
2. Press the REC PAUSE button.
3. Check if the output at this time between the erase current confirmation point TP301 and GND (chassis) (the output on both edges of R301) is within the standard value.

Standard value: 210 mA±25 mA

4. Disconnect the TEST jumper (J122) from the frame ground.

Note: The test tape is not required when confirming the erase current.

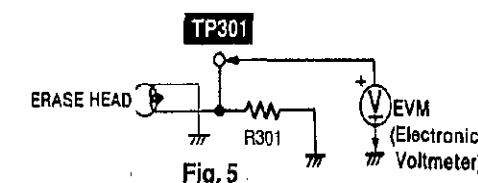
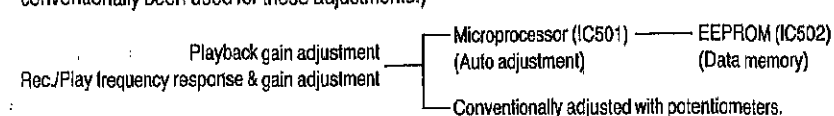


Fig. 5

### The RS-CH950 can automatically adjust playback gain and rec./play frequency response & gain.

#### ●Automatic adjustment of playback gain and rec./play frequency response & gain

A microprocessor (IC501) used within the RS-CH950 automatically adjusts its playback gain and rec./play frequency response & gain (factory adjustment) and stores adjustment data to an EEPROM chip (IC502). (Potentiometers have conventionally been used for these adjustments.)

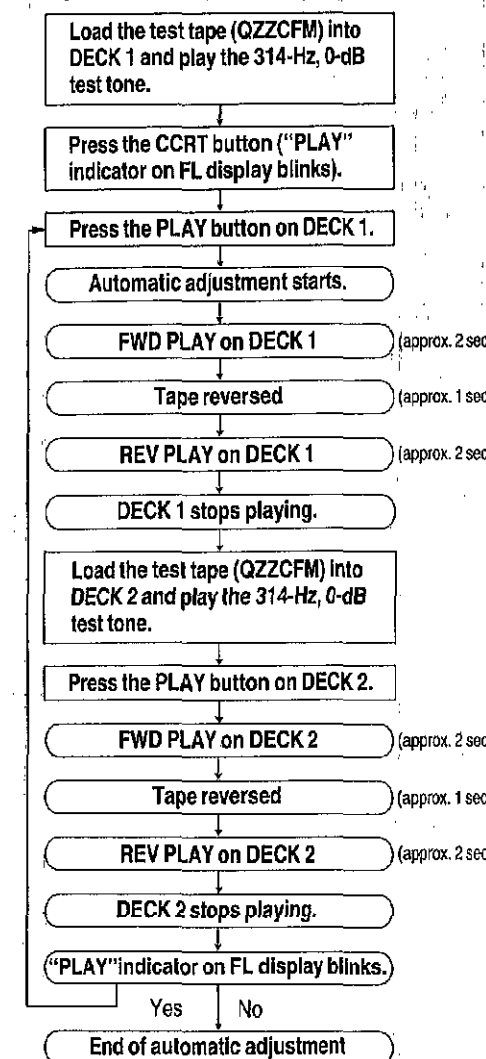


If the EEPROM chip (IC502) or any of the head AF signal line components is replaced for servicing, the unit requires re-adjustment. (Refer to page 12.)

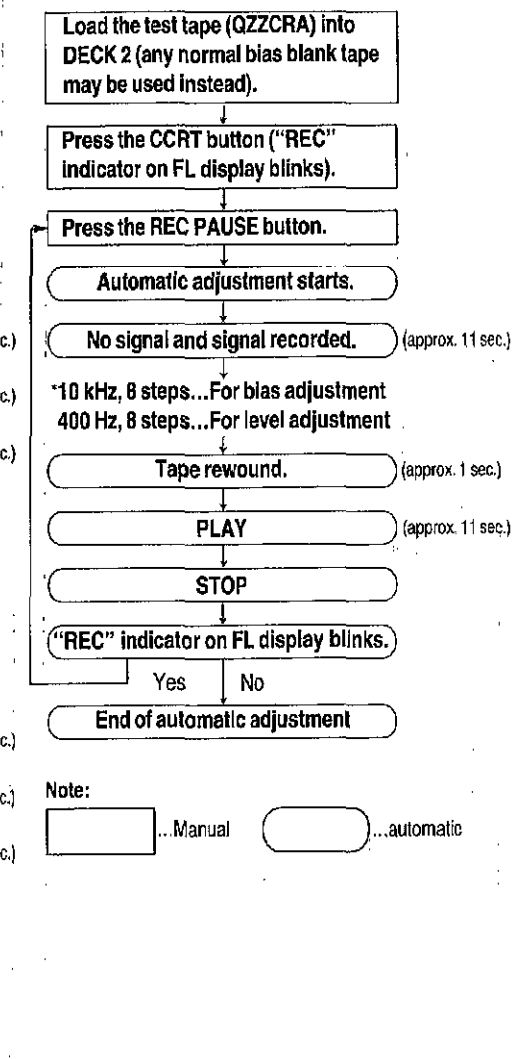
#### ●Preparations for Adjustment

1. Connect an AF oscillator to the line inputs, TP1 (L channel) and TP2 (R channel) (see Fig. 1).
2. Connect an AC voltmeter to the line outputs, TP3 (L channel) and TP4 (R channel) (see Fig. 1).
3. Make sure that the power is turned off, and then ground the EEPROM jumper (J121) and TEST jumper (J122) on the Main P.C.B. to the frame ground.
4. Turn on the power (see page 10).
5. Apply a test tone signal (315 Hz, -8 dB) from the AF oscillator to the line inputs (TP1 for channel L, TP2 for channel R). The EEPROM (IC502) is initialized and the FL display shows blinking letters "RC" and "PCRT".
6. Make sure that no tape is loaded in DECK 1 or DECK 2. While pressing and holding the REC PAUSE button, adjust the AF oscillator output level until the signal level at the line outputs (TP3 for L channel, TP4 for R channel) is 400 mV. After setting the AF oscillator output level, keep holding down the REC PAUSE button for approx. 5 sec.
7. Release the REC PAUSE button.
8. Disconnect EEPROM jumper (J121) from the frame ground.

#### ●Playback Gain Adjustment



#### ●Rec./Play Frequency Response & Gain Adjustment



#### ●Post Auto-adjustment Checks

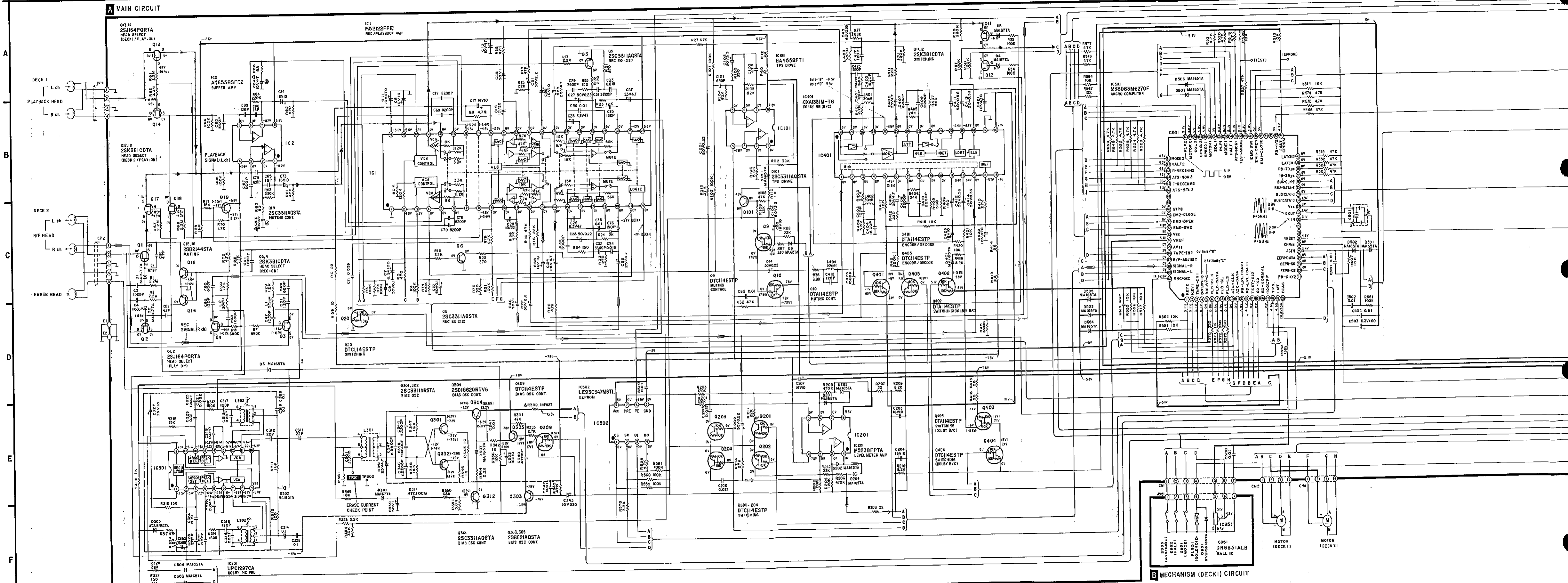
1. Press the CCRT button.
2. CCRT indicator appears on the FL display.
3. Make sure that the FL display shows the following information:

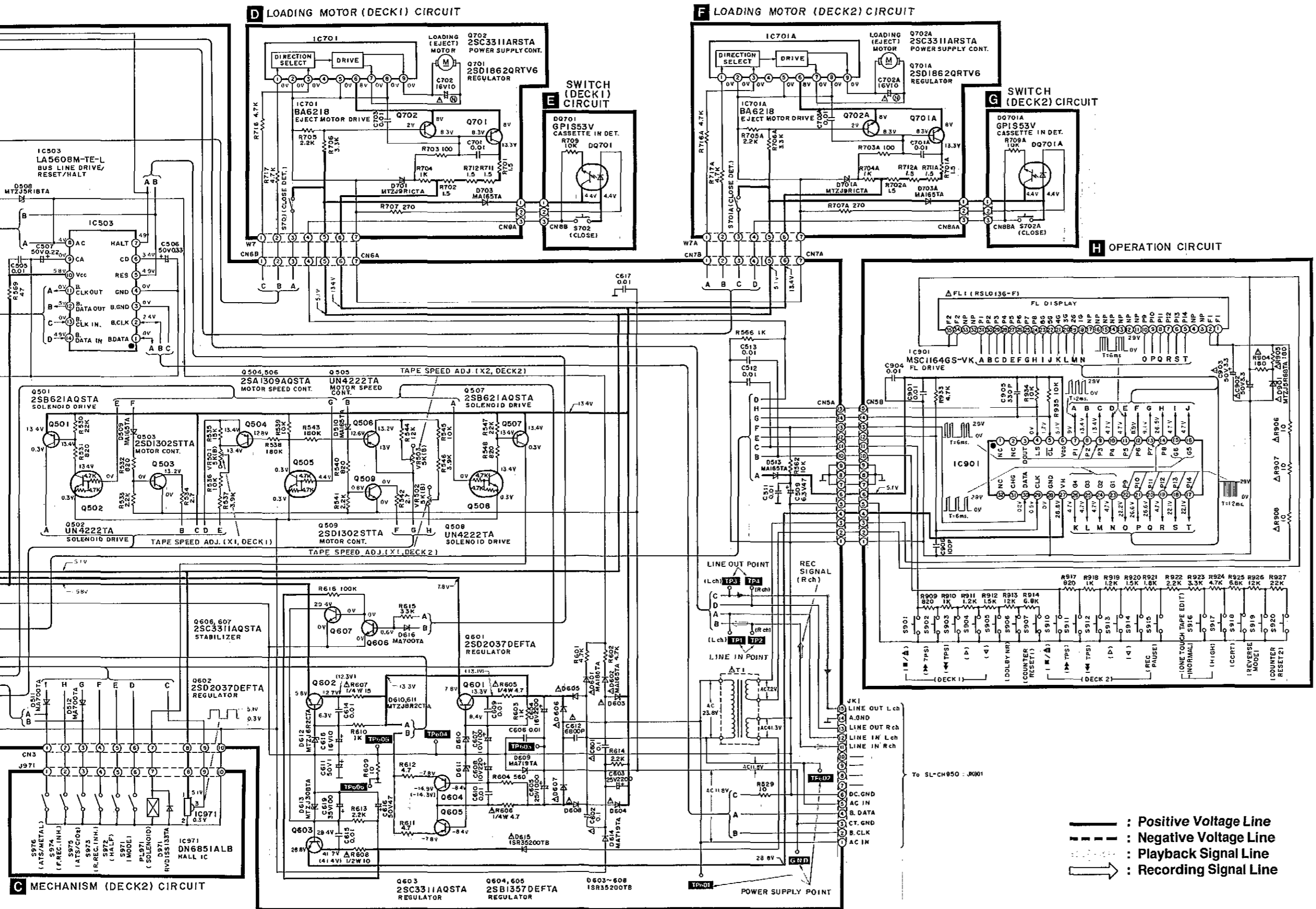
	PLAY indicator on DECK 1	PLAY indicator on DECK 2	REC indicator on DECK 2
OK	Off	Off	Off
NG (readjustment required)	"PLAY" indicator blinks.	"PLAY" indicator blinks.	"REC" indicator blinks.

4. Disconnect TEST jumper (J122) from the frame ground.

SCHEMATIC DIAGRAM (Parts list on pages 28-31)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20





Notes:

- S701 : DECK 1 Cassette holder close detect switch.
- S701A : DECK 2 Cassette holder close detect switch.
- S702 : DECK 1 Cassette holder close switch.
- S702A : DECK 2 Cassette holder close switch.
- S901 : DECK 1 stop/cassette holder open switch. (■/▲)
- S902 : DECK 1 fast-forward/tape program sensor (TPS) switch. (TPS ►►)
- S903 : DECK 1 rewind/tape program sensor (TPS) switch. (◄◄ TPS)
- S904 : DECK 1 forward-side playback switch. (>)
- S905 : DECK 1 reverse-side playback switch. (<)
- S906 : Dolby noise reduction switch. (DOLBY NR)
- S907 : DECK 1 counter reset switch. (COUNTER RESET 1)
- S910 : DECK 2 stop/cassette holder open switch. (■/▲)
- S911 : DECK 2 fast-forward/tape program sensor (TPS) switch. (TPS ►►)
- S912 : DECK 2 rewind/tape program sensor (TPS) switch. (◄◄ TPS)
- S913 : DECK 2 forward-side playback switch. (>)
- S914 : DECK 2 reverse-side playback switch. (<)
- S915 : Record pause switch. (REC PAUSE)
- S916 : One-touch tape edit switch. (NORMAL)
- S917 : One-touch tape edit switch. (HIGH)
- S918 : CCRT (computer control record tuning) switch. (CCRT)
- S919 : Reverse mode select switch. (REVERSE MODE)
- S920 : DECK 2 counter reset switch. (COUNTER RESET 2)
- S951 : DECK 1 mode detect switch.
- S952 : DECK 1 half detect switch.
- S953 : DECK 1 CrO<sub>2</sub> tape detect switch.
- S971 : DECK 2 mode detect switch.
- S972 : DECK 2 half detect switch.
- S973 : DECK 2 reverse-side record prevention tab detect switch.
- S974 : DECK 2 forward-side record prevention tab detect switch.
- S975 : DECK 2 CrO<sub>2</sub> tape detect switch.
- S976 : DECK 2 METAL tape detect switch.

Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

No mark...Playback ( )...Recording

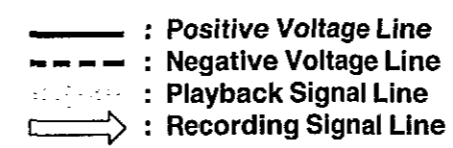
Important safety notice:  
Components identified by  $\Delta$  mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

This schematic diagram may be modified at any time with the development of new technology.

- Caution!
- IC and LSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.
  - Cover the parts boxes made of plastics with aluminum foil.
  - Ground the soldering iron.
  - Put a conductive mat on the work table.
  - Do not touch the legs of IC or LSI with the fingers directly.

The supply part number is described alone in the replacement parts list.

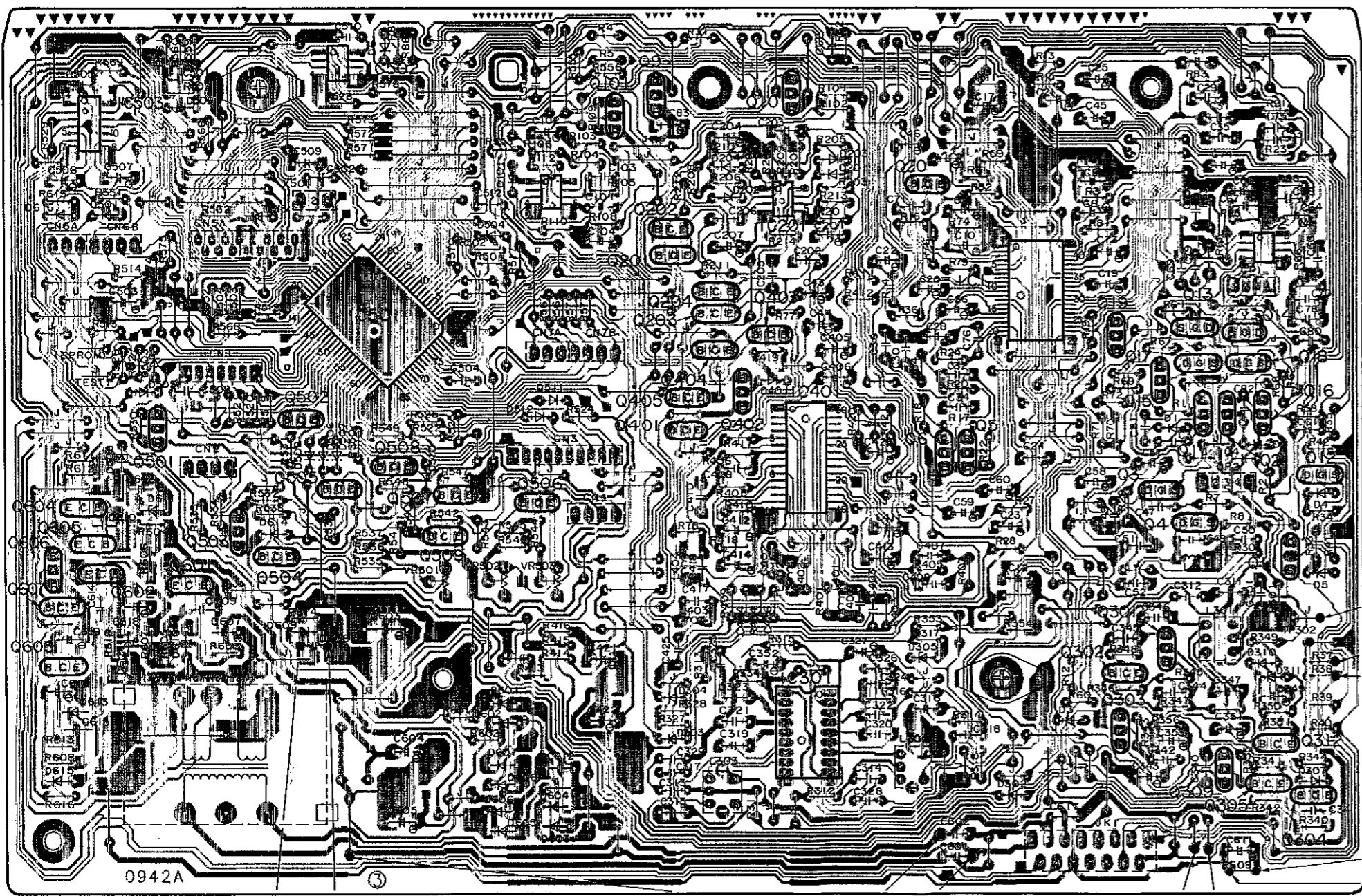
Ref. No.	Production Parts No.	Supply Parts No.
IC101	BA4558FT1	SVIBA4558F
IC201	M5238FPTA	SVIM5238FP
DQ701/701A	GP1S53V	SVDGP1S53



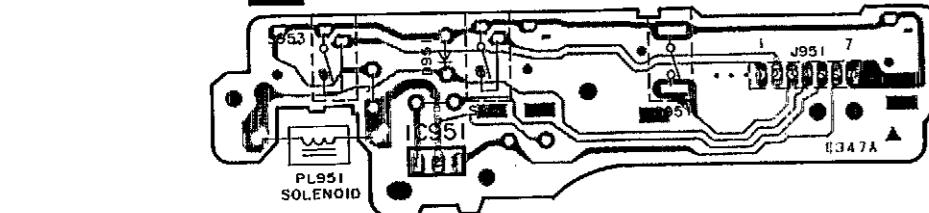
PRINTED CIRCUIT BOARD DIAGRAM

This circuit board diagram may be modified at any time with the development of new technology.

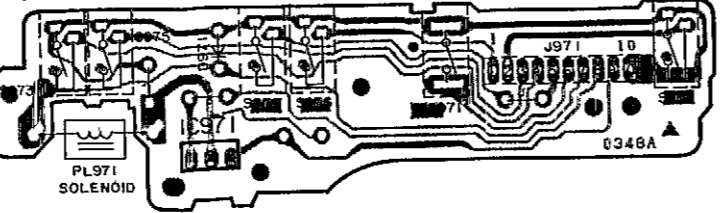
**A** MAIN P.C.B. (REP1487A-M)



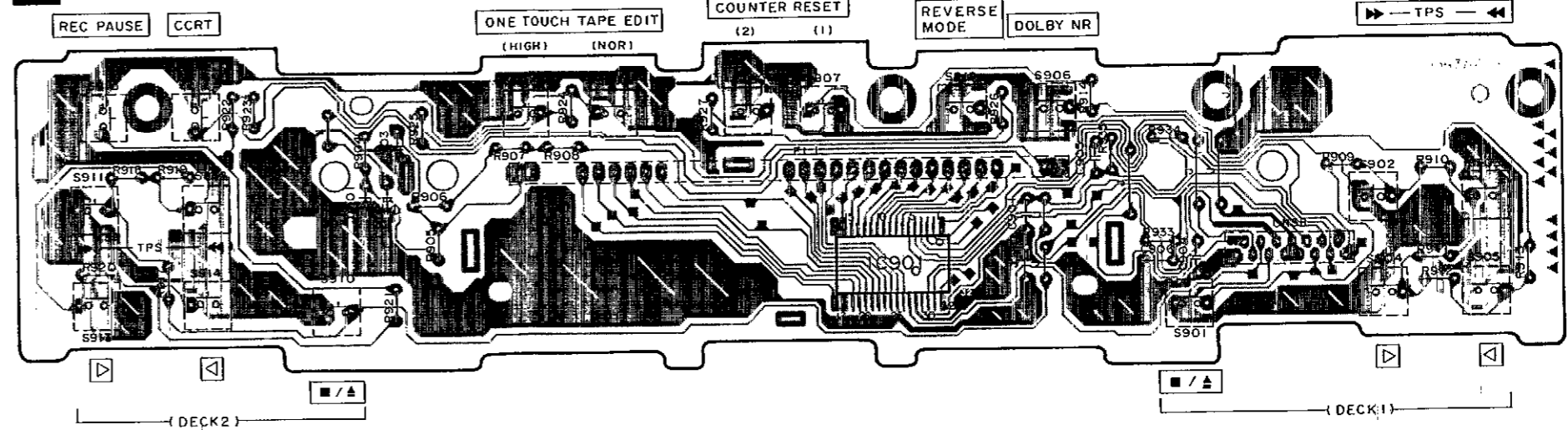
**B** MECHANISM (DECK1) P.C.B. (REP0531)



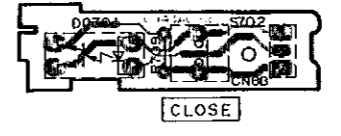
**C** MECHANISM (DECK2) P.C.B. (REP0532)



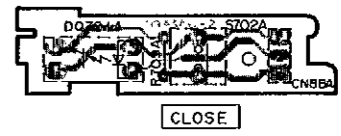
**H** OPERATION P.C.B. (REP1488A-S)



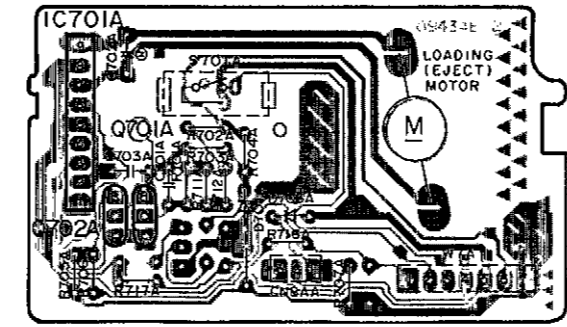
**E** SWITCH (DECK1) P.C.B. (REP1564A-S)



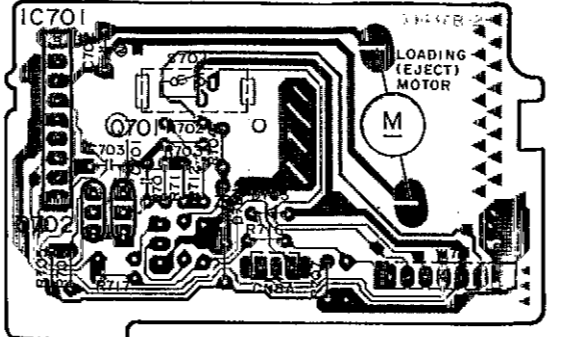
**G** SWITCH (DECK2) P.C.B. (REP1564A-S)



**F** LOADING MOTOR (DECK2) P.C.B. (REP1564A-S)



**D** LOADING MOTOR (DECK1) P.C.B. (REP1564A-S)

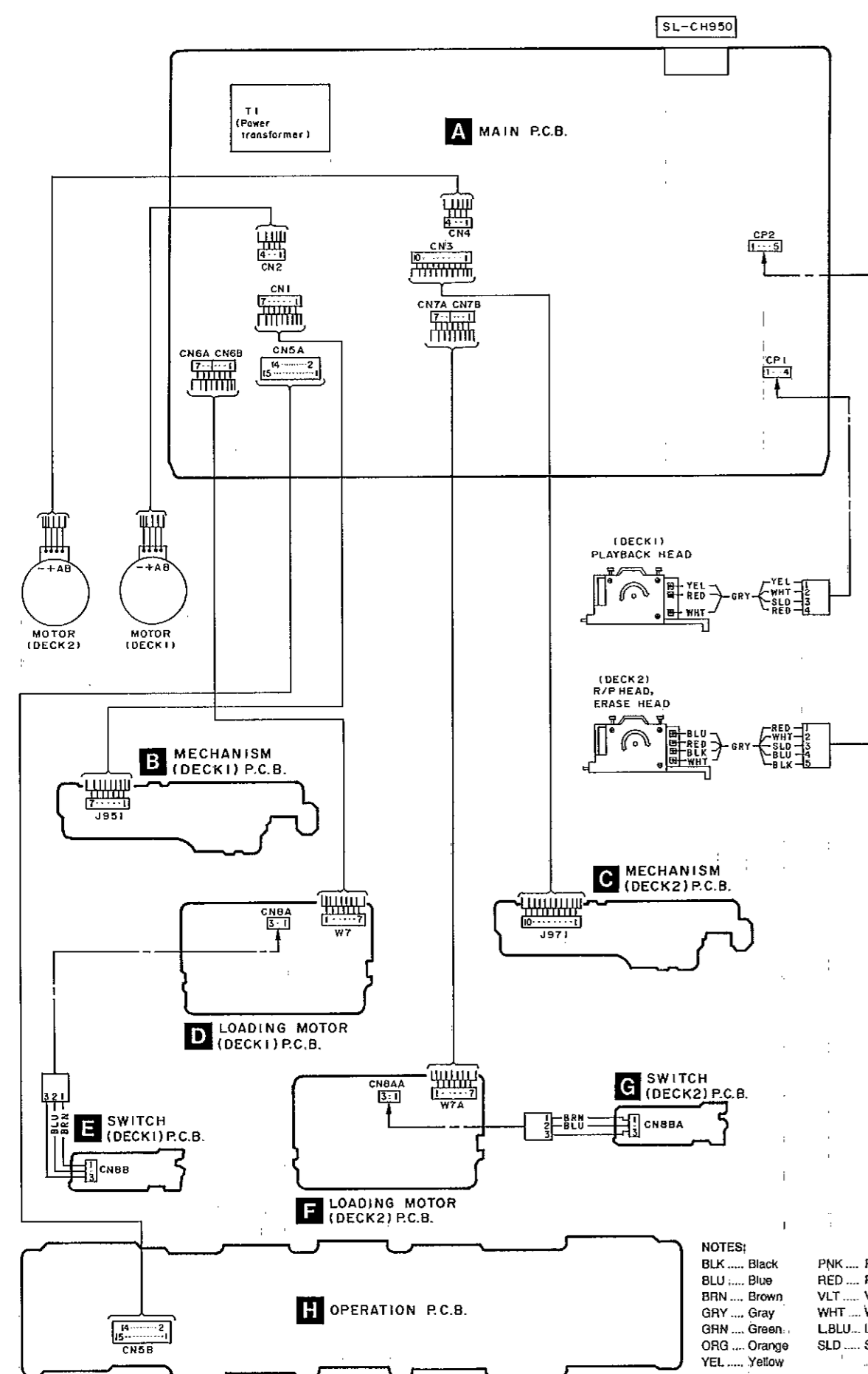


Terminal guide of IC's, transistors and diodes

BA4558FT1	AN6558SFE2 8Pin LE93CS47M6TL 8Pin M5238FPTA 8Pin LA5608M-TE-L 14Pin	CXA1331M-T6 30Pin M52122FPE1 40Pin	MSC1164GS-VK	UPC1297CA
BA6218	M38063M6270F	DN6851ALB	2SB621AQSTA 2SD1302STTA	DTA114ESTP DTC114ESTP
	2SA1309AQSTA 2SC3311AQSTA 2SC3311ARSTA 2SD2144STA UN4222TA	2SB1357DEFTA 2SD2037DEFTA	2SK381CDTA	2SD1862QRTV6 2SJ164PQRTA
	MA165TA MA167TA MA700TA MA719TA 1SR35200TB RVD1SS133TA	MTZJ5R1BTA MTZJ5R6BTA MTZJ6R2CTA MTZJ6R8CTA MTZJ8R2CTA MTZJ9R1CTA MTZJ10CTA MTZJ30BTA		

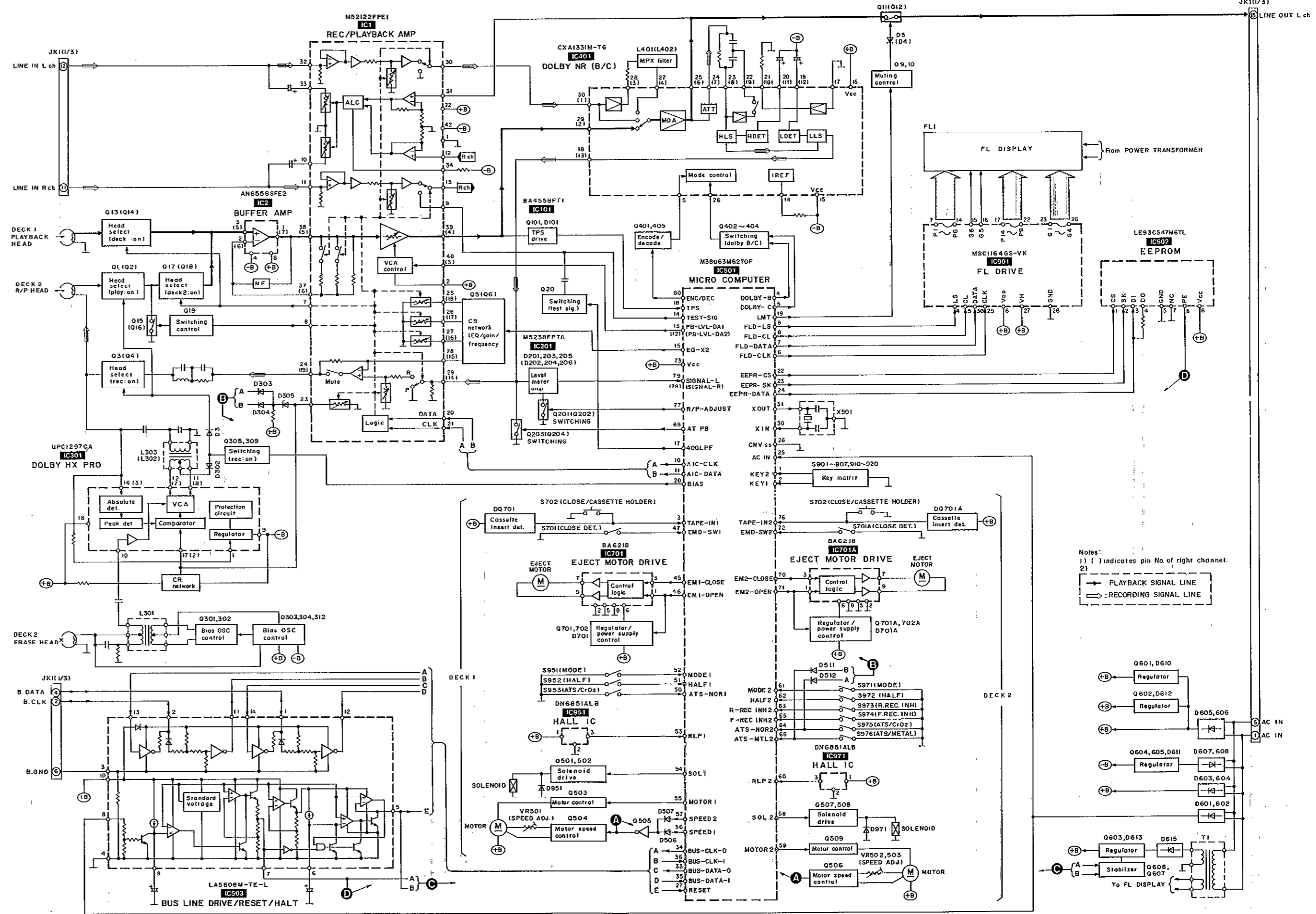


■ WIRING CONNECTION DIAGRAM



NOTES:  
 BLK .... Black  
 BLU .... Blue  
 BRN .... Brown  
 GRN .... Green  
 ORG .... Orange  
 YEL .... Yellow  
 PNK .... Pink  
 RED .... Red  
 VLT .... Violet  
 WHT .... White  
 LBLU ... Light Blue  
 SLD .... Shield Wire

■ BLOCK DIAGRAM



Notes:  
 1) ( ) indicates pin No. of right channel.  
 2) — PLAYBACK SIGNAL LINE  
 — RECORDING SIGNAL LINE

## FUNCTION OF IC TERMINALS

### ●IC501 (M38063M6270F)

Pin No.	Terminal Name	I/O	Function
1	KEY2	I	DECK2 operation key signal
2	KEY1	I	DECK1 operation key signal
3	TAPE-IN1	I	EJECT key and Tape Sense signal for DECK1
4	DOLBY-B	O	Dolby B on/off signal ("H"=ON)
5	DOLBY-C	O	Dolby C on/off signal ("H"=ON)
6	FLD-CLK	O	FL display driver clock
7	FLD-DATA	O	FL display data to driver
8	FLD-CL	O	FL display driver clear signal
9	FLD-LS	O	FL display driver latch signal
10	AIC-CLK	O	Rec./play audio IC clock
11	AIC-DATA	O	Audio data for rec./play audio IC
12	PB-LVL (DA2)	O	R channel playback level control signal
13	PB-LVL (DA1)	O	L channel playback level control signal
14	TEST-SIG	O	Test tone signal (400 Hz/10 kHz)
15	EQ-x2	O	Rec. amplifier equalization (x1/x2) selection signal ("H"=x2)
16	EQ-NORMAL	O	Rec. equalizer compensation signal for normal bias tapes Not used
17	400LPF	O	400-Hz test tone filter in/out control
18	TPS	I	Program exist sense signal used during TPS operation ("L"=present)
19	LMT	O	Line out muting signal (active Low)
20	BIAS	O	Rec. bias on/off control ("H"=ON)
21	PB-x1/x2	O	Normal/double speed selection ("L"=double speed)
22	EEPR-CS	O	EEPROM chip select signal
23	EEPR-SK	O	EEPROM clock
24	EEPR-DATA	I/O	EEPROM data I/O
25	AC IN	I	Power off sense signal
26	CNV <sub>ss</sub>	GND	Pulled down to V <sub>ss</sub> .
27	RESET	I	Microprocessor reset signal (active Low)
28	—	—	Not used
29	—	—	Not used

Pin No.	Terminal Name	I/O	Function
30	X IN	I	Microprocessor clock input
31	X OUT	O	Microprocessor clock output
32	V <sub>ss</sub>	GND	GND
33	BUS-DATA-O	O	Bus signal inputs/outputs
34	BUS-CLK-O	O	
35	BUS-DATA-I	I	
36	BUS-CLK-I	I	
37	PB-35 $\mu$ s	—	Not used
38	PB-70 $\mu$ s	—	Not used
39	LATCH1	—	Not used
40	LATCH2	—	Not used
41	TEST-EPROM	I	EEPROM initialization signal (active Low)
42	PB-1/2	—	Not used
43	—	—	Not used
44	—	—	Not used
45	EM1-CLOSE	O	DECK1 eject motor (close) control (active High)
46	EM1-OPEN	O	DECK1 eject motor (open) control (active High)
47	EMD-SW1	I	DECK1 eject mode switch signal (active Low)
48	—	—	Not used
49	TEST-MODE	I	Test mode on/off control ("L"=ON)
50	ATS-NOR1	I	DECK1 tape position (NORMAL) sense switch signal (active Low)
51	HALF1	I	DECK1 tape sense switch signal (active Low)
52	MODE1	I	DECK1 mechanism mode switch signal (active Low)
53	RLP1	I	DECK1 reel rotation sense pulse
54	SOL1	O	DECK1 plunger on/off signal ("H"=ON)
55	MOTOR1	O	DECK motor on/off control ("H"=ON)
56	SPEED1	O	DECK1 motor speed control ("H"=x1)
57	SPEED2	O	DECK2 motor speed control ("H"=x1)

Pin No.	Terminal Name	I/O	Function
58	SOL2	O	DECK2 plunger on/off signal ("H"=ON)
59	MOTOR2	O	DECK2 motor on/off control ("H"=ON)
60	RLP2	I	DECK2 reel rotation sense pulse
61	MODE2	I	DECK2 mechanism mode switch signal (active Low)
62	HALF2	I	DECK2 tape sense switch signal (active Low)
63	R-RECINH2	I	DECK2 erasure prevention switch signal for reverse side (active Low)
64	ATS-NOR2	I	DECK2 tape position (NORMAL) sense switch signal (active Low)
65	F-RECINH2	I	DECK2 erasure prevention switch signal for forward side (active Low)
66	ATS-MTL2	I	DECK2 tape position (METAL) sense switch signal (active Low)
67	—	—	Not used
68	—	—	Not used
69	ATPB	O	Switching signal for playback level adjustment (active High)
70	EM2-CLOSE	O	DECK2 eject motor (close) control (active High)
71	EM2-OPEN	O	DECK2 eject motor (open) control (active High)
72	EMD-SW2	I	DECK2 eject mode switch signal (active Low)
73	V <sub>cc</sub>	I	Microprocessor power supply (+5 V)
74	VREF	I	Reference voltage for A/D converter (+5 V)
75	AV <sub>ss</sub>	—	GND for A/D input
76	TAPE-IN2	I	DECK2 EJECT key and tape sense signal
77	R/P-ADJUST	O	Adjustment mode (including CCRT) selection signal (active High)
78	SIGNAL-R	I	Not used (pulled down to V <sub>ss</sub> through resistor)
79	SIGNAL-L	I	Not used (pulled down to V <sub>ss</sub> through resistor)
80	ENC/DEC	O	Dolby IC encoding/decoding select signal ("H"=encoding)

### ●IC901 (MSC1164GS-VK)

Pin No.	Terminal Name	I/O	Function
1	NC	—	—
2	NC	—	—
3	DOUT	—	—
4	LS	I	Latch strobe
5	CL	I	Clear input with internal pull-up resistor
6	V <sub>cc</sub>	—	Logic power supply
7	P1	O	FL display drive lines
14	P8		
15	G6	O	FL display grid drive line
16	G5		
17	P14	O	FL display drive lines
22	P9		
23	G1	O	FL display grid drive lines
26	G4		
27	VH	—	FL driver power supply
28	GND	—	GND
29	CLK	I	Clock input
30	DATA	I	Data input
31	CHG	I	Test input (not used)
32	NC	—	—



## REPLACEMENT PARTS LIST

Notes: \*Important safety notice:  
 Components identified by  $\Delta$  mark have special characteristics important for safety.  
 Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.  
 When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.  
 The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)  
 Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		Q507	ZSB621AQSTA	TRANSISTOR	
				Q508	UN4222	TRANSISTOR	
				Q509	ZSD1302STA	TRANSISTOR	
				Q601, 602	ZSD2037DEFTA	TRANSISTOR	
				Q603	ZSC3311A-Q	TRANSISTOR	
				Q604, 605	ZSB1357DEFTA	TRANSISTOR	
				Q606, 607	ZSC3311A-Q	TRANSISTOR	
				Q701	ZSD1862QRTV6	TRANSISTOR	
				Q701A	ZSD1862QRTV6	TRANSISTOR	
				Q702	ZSC3311ARSTA	TRANSISTOR	
				Q702A	ZSC3311ARSTA	TRANSISTOR	
						DIODE(S)	
				D1, 2	MA167	DIODE	
				D3	MA165	DIODE	
				D4, 5	MA167	DIODE	
				D6	MA165	DIODE	
				D101	MA165	DIODE	
				D201-204	MA165	DIODE	
				D302-304	MA165	DIODE	
				D305	MTZJ6R8CTA	DIODE	
				D307	MA165	DIODE	
				D310	MA167	DIODE	
				D311	MTZJ10CTA	DIODE	
				D401	MA165	DIODE	
				D501-507	MA165	DIODE	
				D508	MTZJ5R1BTA	DIODE	
				D509, 510	MA165	DIODE	
				D511, 512	MA700TA	DIODE	
				D513	MA165	DIODE	
				Q101	ZSC3311A-Q	TRANSISTOR	
				Q201-204	DTC114ESTP	TRANSISTOR	$\Delta$
				Q301, 302	ZSC3311ARSTA	TRANSISTOR	$\Delta$
				Q303	ZSB621AQSTA	TRANSISTOR	
				Q304	ZSD1862QRTV6	TRANSISTOR	
				Q305	ZSB621AQSTA	TRANSISTOR	
				Q309	DTC114ESTP	TRANSISTOR	
				Q312	ZSC3311A-Q	TRANSISTOR	
				Q401-403	DTC114ESTP	TRANSISTOR	
				Q404, 405	DTC114ESTP	TRANSISTOR	
				Q501	ZSB621AQSTA	TRANSISTOR	
				Q502	UN4222	TRANSISTOR	
				Q503	ZSD1302STA	TRANSISTOR	
				Q504	ZSA1309A-R	TRANSISTOR	
				Q505	UN4222	TRANSISTOR	
				Q506	ZSA1309A-R	TRANSISTOR	
				D901	MTZJ5R8BTA	DIODE	$\Delta$
				D951	RVD1SS133TA	DIODE	
				D971	RVD1SS133TA	DIODE	

RS-CH950 RS-CH950

Notes : \* Capacity values are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F) \* Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM) , 1M=1,000K(OHM)

Table with columns: Ref. No., Part No., Part Name & Description, Remarks. Includes components like resistors, capacitors, and connectors.

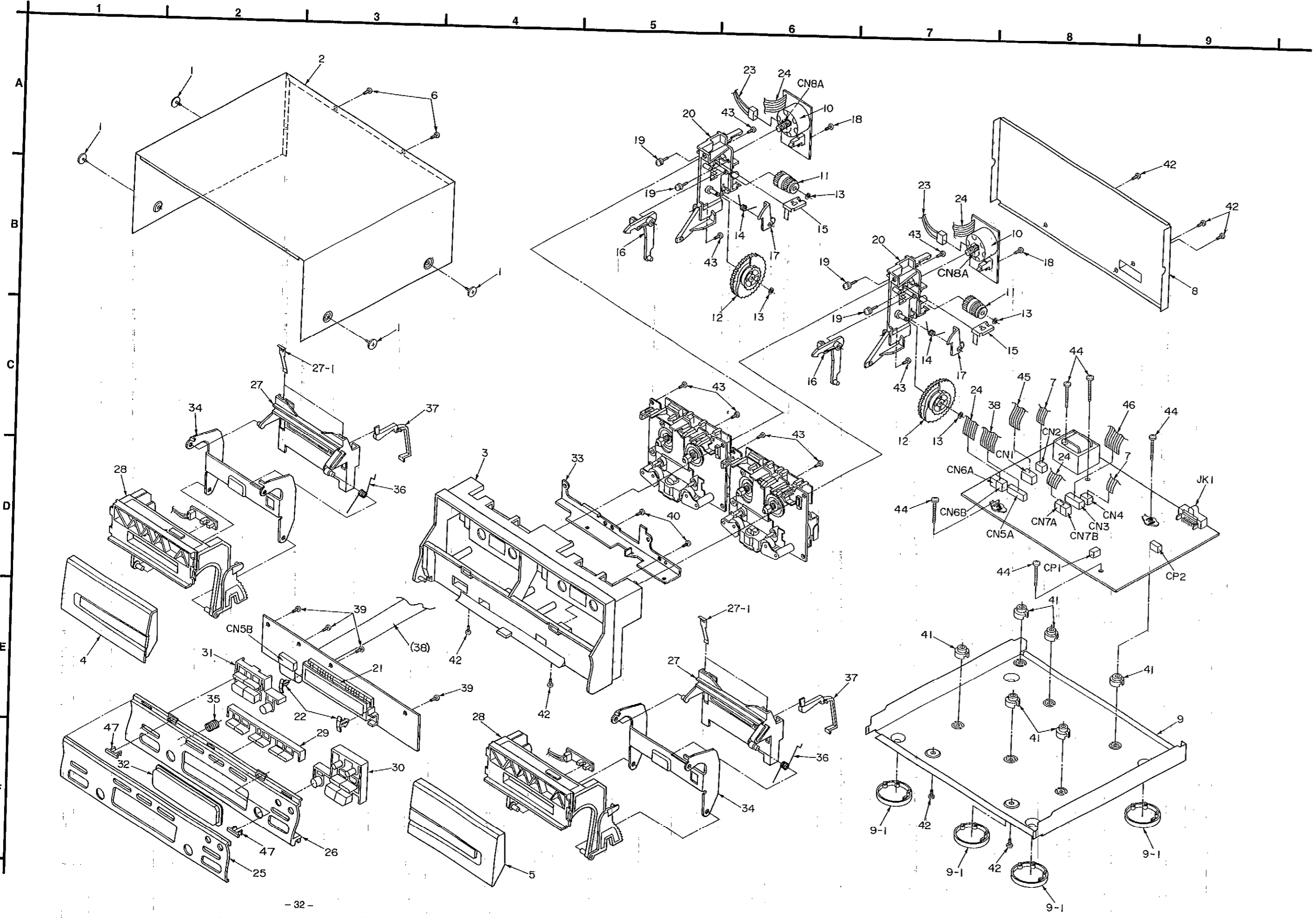
Main component list table with columns: Ref. No., Part No., Values & Remarks. Lists various electronic components and their specifications.

Table with columns: Ref. No., Part No., Values & Remarks. Lists various electronic components and their specifications, including capacitors and resistors.

**■ CABINET PARTS LOCATION**

RS-CH950

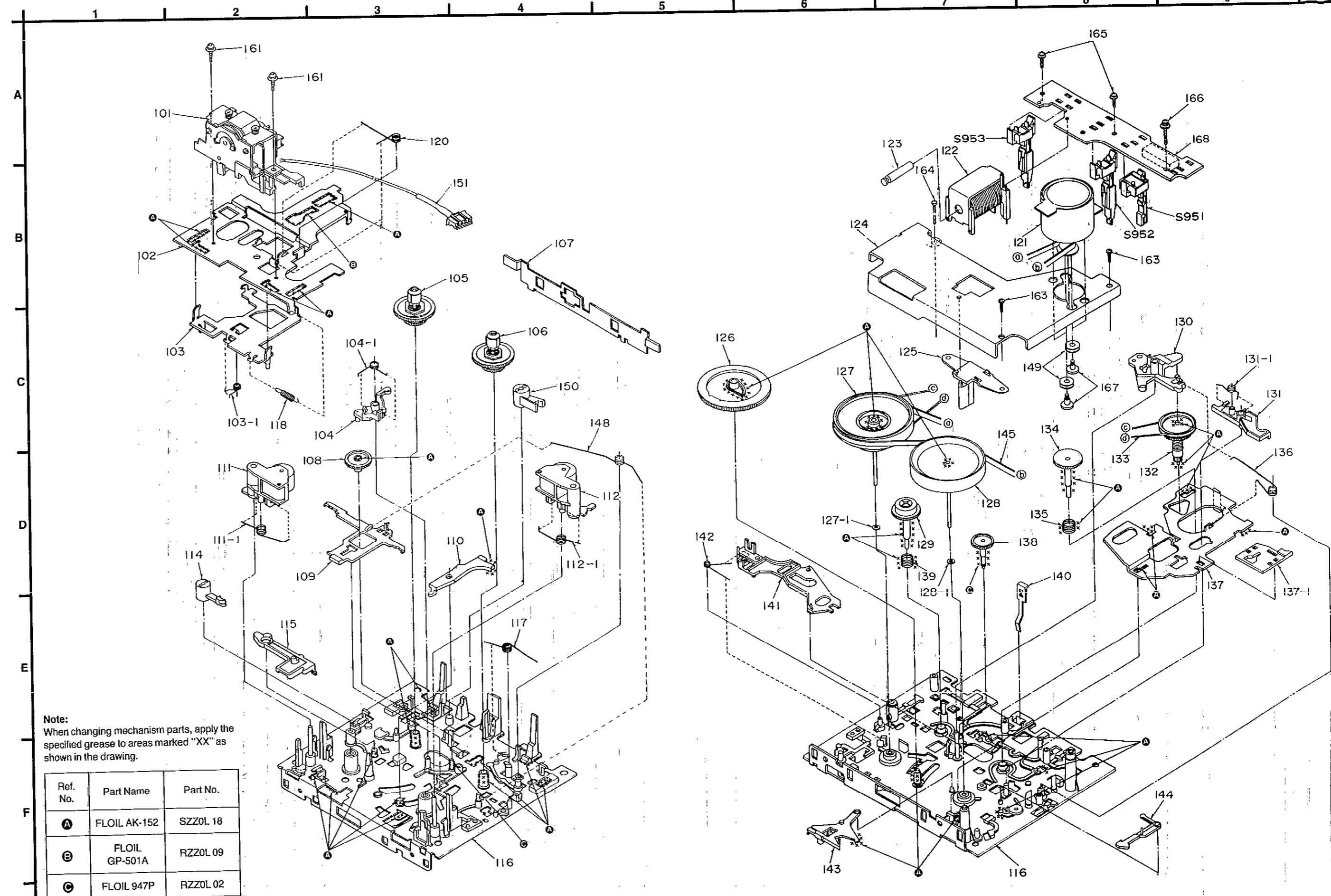
RS-CH950



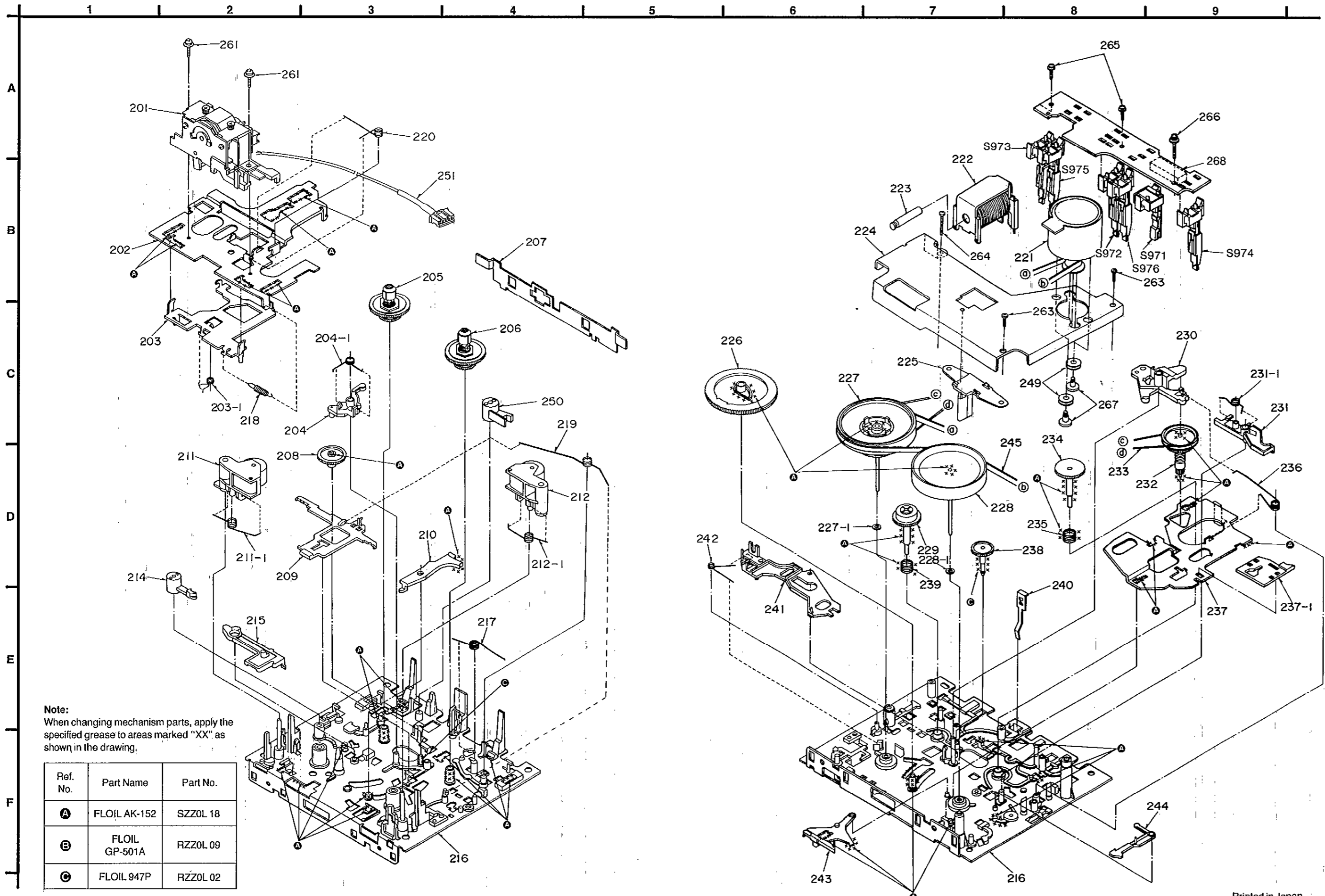
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS				MECHANISM PARTS	
						DECK1 (PLAYBACK)	
1	RID30007	SCREW		101	RX00051-1	HEAD ASS'Y (P. B)	
2	RMD202-1K	CABINET		102	RJA7932F	CHASSIS	
3	RFKGSC950NK	FRONT GRILL ASS'Y		103	RZLAR300	ROD ASS'Y	
4	RYFO193C-K	CASSETTE LID (DECK1)		103-1	RJW1437A	SPRING	
5	RYFO194-K	CASSETTE LID (DECK2)		104	IUB00892A	ARM ASS'Y	
6	XTBS3+8JFZ1	SCREW		104-1	RJW1482A	SPRING	
7	RWJ1004200DX	FLAT CABLE (4P)		105	IDM00182A	REEL TABLE (R) ASS'Y	
8	RGR0147A-G	REAR PANEL		106	IDM00172A	REEL TABLE (F) ASS'Y	
9	RFKJHC950PP	BOTTOM BOARD ASS'Y		107	RML0069-1	LEVER	
9-1	RKA0055-N	FOOT		108	RDG57722C	GEAR	
10	RFKPSC950NK	LOADING MOTOR ASS'Y		109	RUB5082B	LEVER	
11	RFKNSCH950CK	CLUTCH GEAR ASS'Y		110	RUB5067B	LEVER	
12	RDG0219	DRIVE GEAR		111	IUB00882A	PINCH ROLLER (R) ASS'Y	
13	RHW21018	WASHER		111-1	RJW1412A	SPRING	
14	RMD0286	SPRING		112	IUB00872A	PINCH ROLLER (F) ASS'Y	
15	RMC0194	SPRING PLATE		112-1	RJW1402C	SPRING	
16	RML0279	EJECT LEVER		114	RNL12D	ARM	
17	RML0280	SWITCH LEVER		115	RUB5032D	LEVER	
18	XTB3+8JFZ	SCREW		116	RFKRSC950N	CHASSIS ASS'Y	
19	XYN26+05	SCREW		117	RJW1422A	SPRING	
20	RFKJSC950AK	LOADING CHASSIS ASS'Y		118	RJD1052A	SPRING	
21	RMD193	FL HOLDER		120	RJW1392A	SPRING	
22	RMD195	FL SPACER		121	RFM1332A	MOTOR ASS'Y	
23	REN0466-2	LEAD CABLE (3P)		122	IUE00152A	PLUNGER	
24	REZ0530-1	FLAT CABLE (7P)		123	RJB4282E	SHAFT	
25	RG00090-K	FRONT PANEL		124	RMA0101-1	PLATE	
26	RGD480-K	FRONT SUB PANEL		125	RMD50142C	SPACER	
27	RFKNSCH950AK	CASSETTE HOLDER (A) ASS'Y		126	RDG59272G	GEAR	
27-1	RUS7572A	SPRING		127	IDM00372A	FLY WHEEL (F) ASS'Y	
28	RFKNSCH950BK	CASSETTE HOLDER (B) ASS'Y		127-1	RHW1392A	WASHER	
29	RGU0792-K	BUTTON, DOLBY NR etc.		128	IDM00382A	FLY WHEEL (R) ASS'Y	
30	RGU0793-K	BUTTON, PLAY (DECK2) etc.		128-1	RHW1382A	WASHER	
31	RGU0794-K	BUTTON, PLAY (DECK1) etc.		129	IDG00062A	GEAR ASS'Y	
32	RKW0237-V	FL PANEL		130	RUB5132D	LEVER	
33	RFKNSCH950DK	MECHANISM ANGLE ASS'Y		131	IUB00912A	LEVER ASS'Y	
34	RMA0609	ANGLE		131-1	RJW1462A	SPRING	
35	RMB0276	EARTH SPRING		132	IDR00112A	PULLEY ASS'Y	
36	RMB0285	SPRING		133	RDV902B	BELT	
37	RML0281	LEVER		134	RDG57692A	GEAR	
38	RWJ5415220EE	FLEXIBLE CABLE (15P)		135	RJQ1112B	SPRING	
39	XTBS26+8J	SCREW		136	RJW1452A	SPRING	
40	XTB3+10JFZ	SCREW		137	IUB00902A	ROD ASS'Y	
41	SHE185-2	P. C. B. SPACER		137-1	RUB5122B	ROD	
42	XTBS3+8JFZ1	SCREW		138	RDG57732B	GEAR	
43	XTB3+10JFZ	SCREW		139	RJQ1122A	SPRING	
44	XTB3+16JFZ	SCREW		140	RJUS092C	SPRING	
45	RWJ5707210XX	FLAT CABLE (7P)		141	RUB5142C	LEVER	
46	RWJ5710200XX	FLAT CABLE (10P)		142	RJW1472A	SPRING	
47	RMR0621-K	FIXTURE					

MECHANISM PARTS LOCATION • DECK 1

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
143	RUB515ZA	LEVER		230	RUB513ZD	LEVER	
144	RUB509ZA	LEVER		231	IUB0091ZA	LEVER ASS'Y	
145	RDV108ZA	BELT		231-1	RJW146ZA	SPRING	
148	RJW144ZA	SPRING		232	1DR0011ZA	PULLEY ASS'Y	
149	RMC0102-1	RUBBER		233	RDV90ZB	BELT	
150	RNL180ZB	LEVER		234	RDC5769ZA	GEAR	
151	REX013Z	CABLE ASS'Y		235	RJQ111ZB	SPRING	
161	XTW2+6L	SCREW		236	RJW145ZA	SPRING	
163	XTN26+7J	SCREW		237	IUB0090ZA	ROD ASS'Y	
164	RHE5203ZA	SCREW		237-1	RUB512ZB	ROD	
165	XTW2+8S	SCREW		238	RDC5773ZB	GEAR	
166	XYC2+JF16	SCREW		239	RJQ112ZA	SPRING	
167	RHD2600Z	SCREW		240	RJS609ZC	SPRING	
168	RJS777ZA	CONNECTOR (7P)		241	RUB514ZC	LEVER	
		MECHANISM PARTS		242	RJW147ZA	SPRING	
		DECK2 (REC./PLAYBACK)		243	RUB515ZA	LEVER	
				244	RUB509ZA	LEVER	
				245	RDV108ZA	BELT	
201	REX007-2	HEAD ASS'Y (P.B)		249	RMC0102-1	RUBBER	
202	RJA793ZF	CHASSIS		250	RNL180ZB	LEVER	
203	RZLAR300	ROD ASS'Y		251	REX017Z	CABLE ASS'Y	
203-1	RJW143ZA	SPRING		261	XTW2+6L	SCREW	
204	IUB0089ZA	ARM ASS'Y		263	XTN26+7J	SCREW	
204-1	RJW148ZA	SPRING		264	RHE5203ZA	SCREW	
205	1DM0018ZA	REEL TABLE (R) ASS'Y		265	XTW2+8S	SCREW	
206	1DM0017ZA	REEL TABLE (F) ASS'Y		266	XYC2+JF16	SCREW	
207	RML0069-1	LEVER		267	RHD2600Z	SCREW	
208	RDC5772ZC	GEAR		268	RJS1077ZA	CONNECTOR (7P)	
209	RUB508ZB	LEVER					
210	RJB506ZB	LEVER					
211	IUB0088ZA	PINCH ROLLER (R) ASS'Y					
211-1	RJW141ZA	SPRING					
212	IUB0087ZA	PINCH ROLLER (F) ASS'Y					
212-1	RJW140ZC	SPRING					
214	RNL12Z	ARM					
215	RUB503ZD	LEVER					
216	RFKRRSCH9N	CHASSIS ASS'Y					
217	RJW142ZA	SPRING					
218	RJD105ZA	SPRING					
219	RJW144ZA	SPRING					
220	RJW139ZA	SPRING					
221	REW133ZA	MOTOR ASS'Y					
222	IUE0015ZA	PLUNGER ASS'Y					
223	RJB428ZE	SHAFT					
224	RMA0101-1	PLATE					
225	RMD5014ZC	SPACER					
226	RDC5927ZC	GEAR					
227	1DM0037ZA	FLY WHEEL (F) ASS'Y					
227-1	RJW139ZA	WASHER					
228	1DM0038ZA	FLY WHEEL (R) ASS'Y					
228-1	RJW138ZA	WASHER					
229	1DG0006ZA	GEAR ASS'Y					



MECHANISM PARTS LOCATION • DECK 2



Note:  
When changing mechanism parts, apply the specified grease to areas marked "XX" as shown in the drawing.

Ref. No.	Part Name	Part No.
A	FLOIL AK-152	SZZ0L 18
B	FLOIL GP-501A	RZZ0L 09
C	FLOIL 947P	RZZ0L 02