

# Service Manual

Dolby NR-Equipped  
Stereo Double Cassette Deck

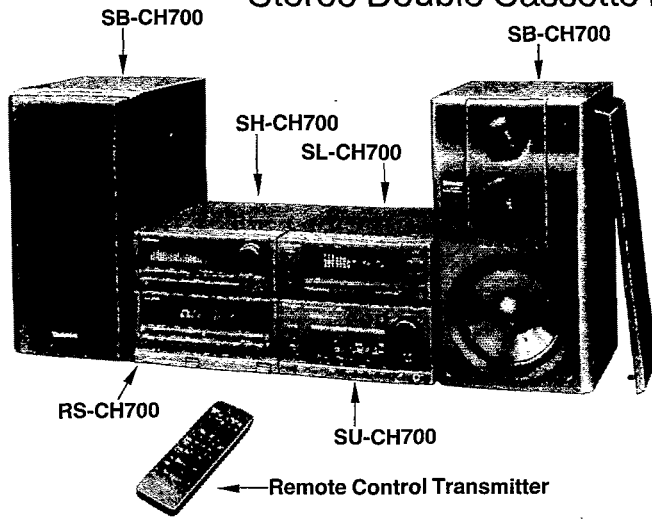
Cassette Deck

## RS-CH700

Colour

\* **DOLBY B-C NR HX PRO**

(K) ..... Black Type



**Area**

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

**System: SC-CH700**

**RS-TR165 MECHANISM SERIES (AR300)**

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

### SPECIFICATIONS

**Deck system:** Compact cassette stereo  
**Tape speed:** 4.8 cm/sec.  
**Bias frequency:** 80 kHz  
**Heads:**  
 (DECK 2) REC/PLAY; Permalloy head  
 Erasing; Double-gap ferrite head  
 (DECK 1) PLAY; Permalloy head  
**Motors:**  
 (DECK 2); DC servo motor  
 (DECK 1); DC servo motor  
**Wow and flutter:** 0.1% (WRMS)  
**Fast Forward and Rewind Time:** Approx. 110 seconds with C-60 cassette tape  
**Frequency response (CCRT ON):**  
**Normal;** 20~17000 Hz  
 30~15000 Hz (DIN)  
**CrO<sub>2</sub>;** 20~18000 Hz  
 30~17000 Hz (DIN)  
**METAL;** 20~20000 Hz  
 30~19000 Hz (DIN)

**S/N (CrO<sub>2</sub>):**  
**DOLBY B NR on;** 66 dB (CCIR)  
**DOLBY C NR on;** 74 dB (CCIR)  
**DOLBY off;** 56 dB (A WTD, signal level: MOL)

**GENERAL**  
**Dimensions (W×H×D):** 215×110×279 mm  
**Weight:** 2.8 kg

**Notes:**  
 1. Specifications are subject to change without notice.  
 2. Weight and dimensions shown are approximate.

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

System	Tuner/CD player	Sound Processor	Power Amplifier	Cassette Deck	Speakers
SC-CH700	SL-CH700	SH-CH700	SU-CH700	RS-CH700	*SB-CH700

Continental Europe, Great Britain, Germany and Italy areas ..... Made in PAES

# Technics

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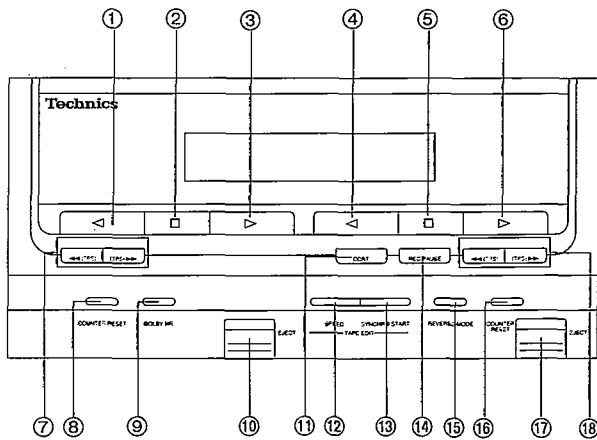
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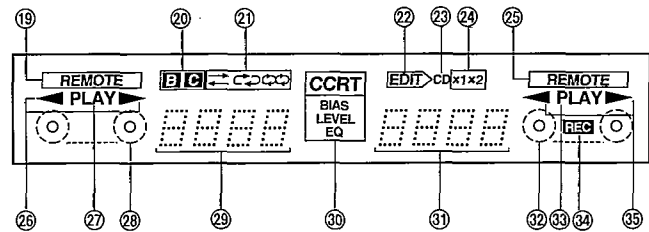
## NOTES:

Refer to the service manual for Model No. SU-CH700, Order No. AD9202022C8 for information on ACCESSORIES, CONNECTIONS and PACKAGING.

## LOCATION OF CONTROL



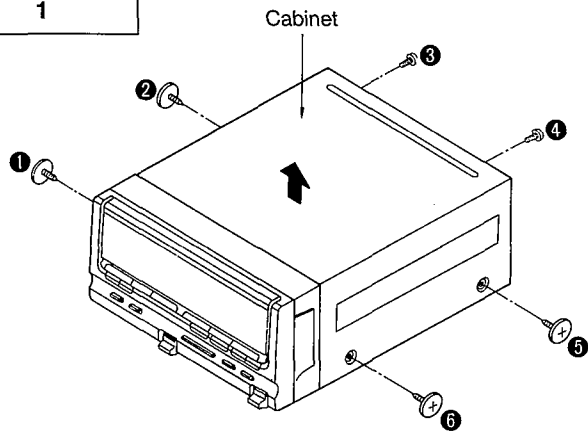
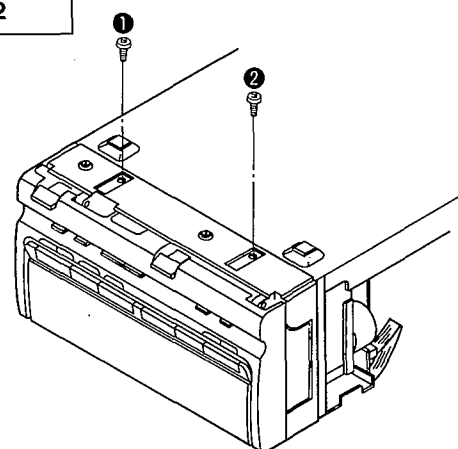
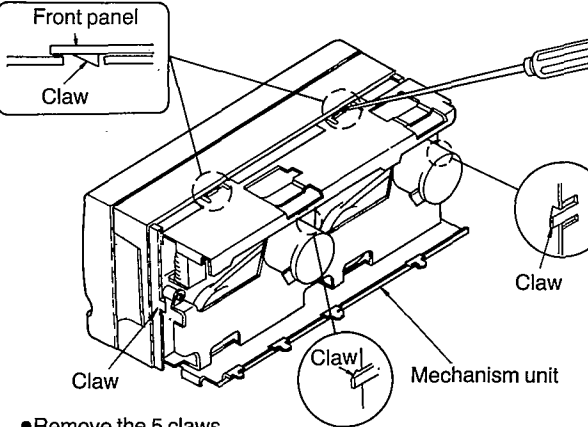
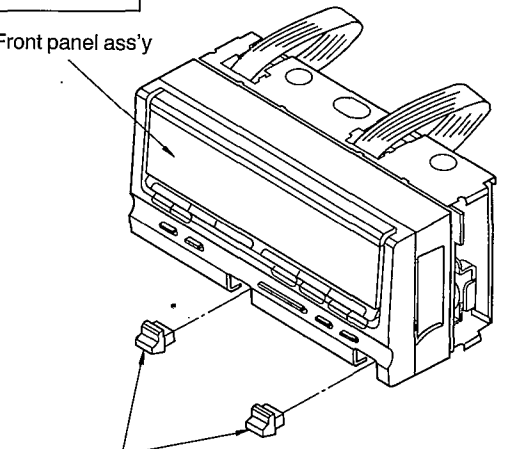
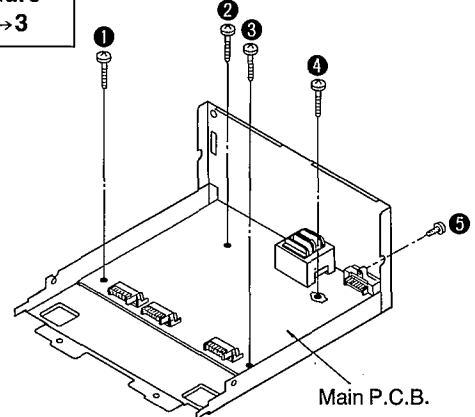
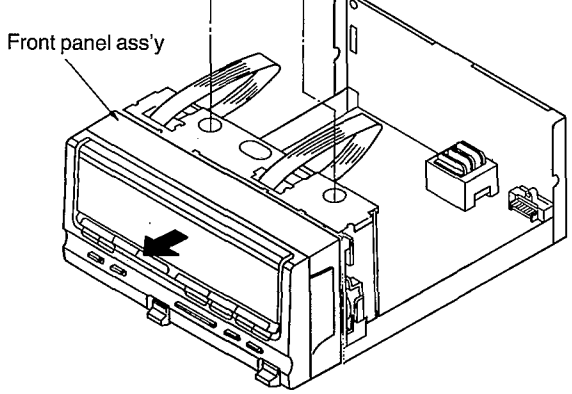
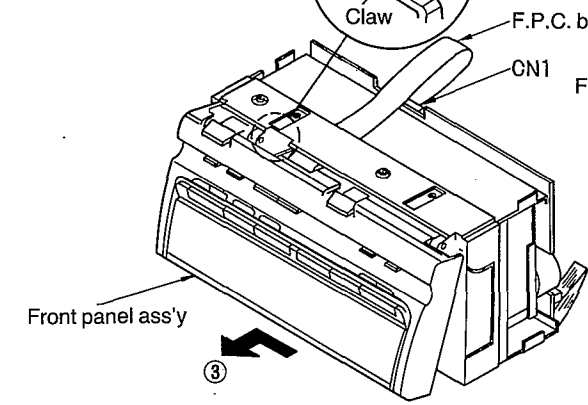
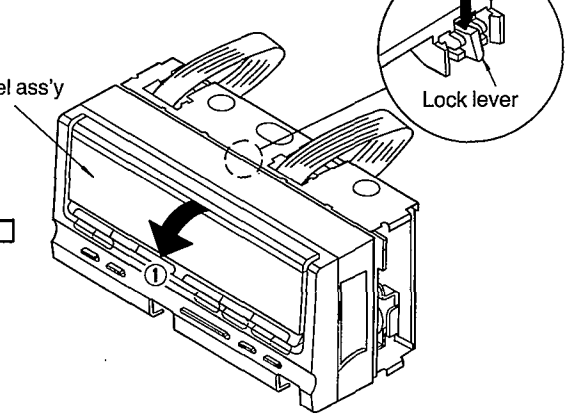
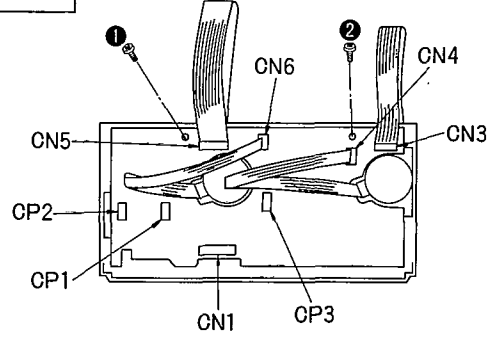
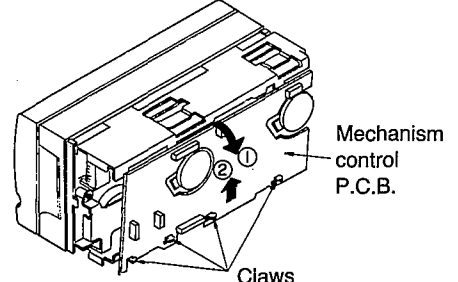
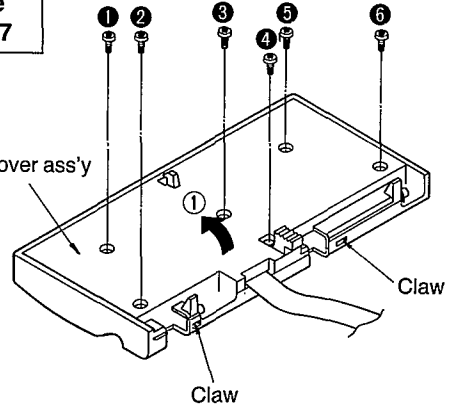
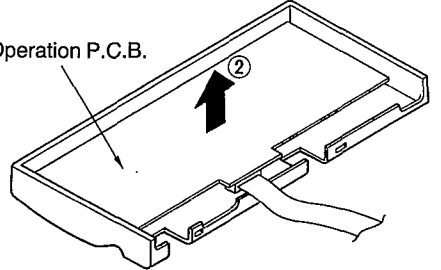
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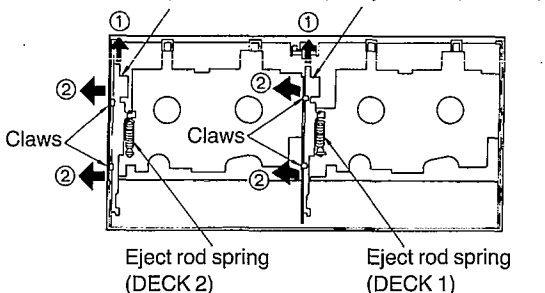
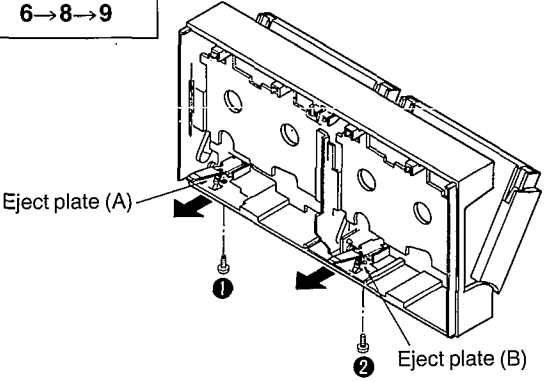
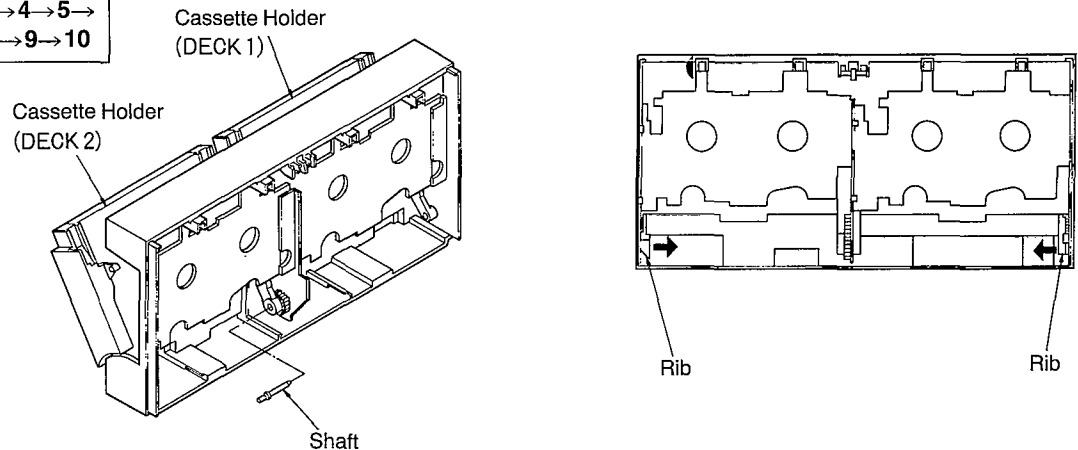
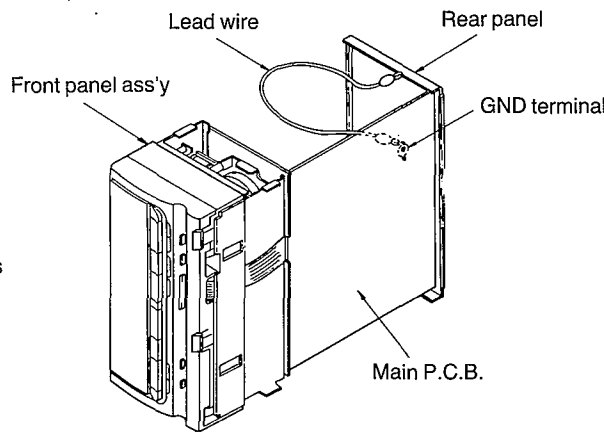


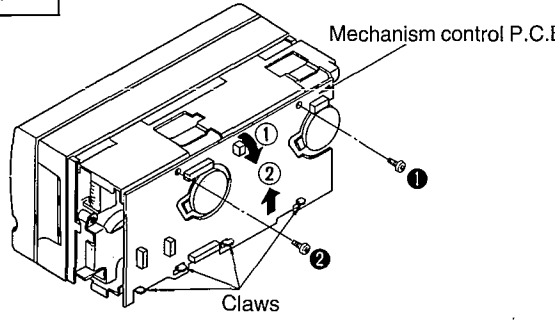
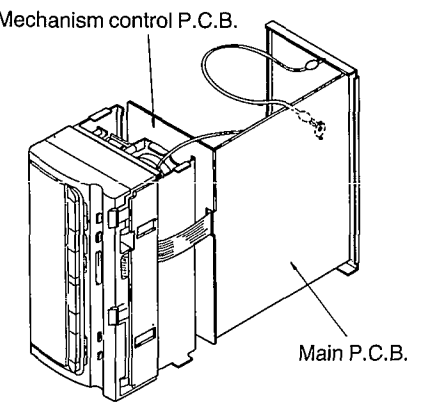
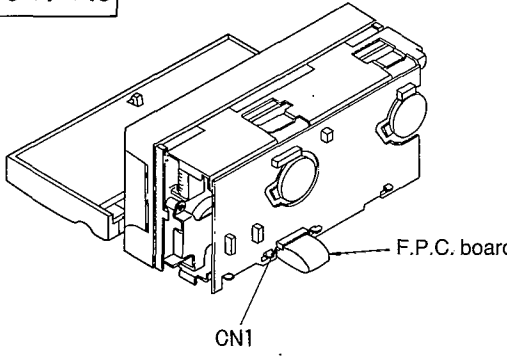
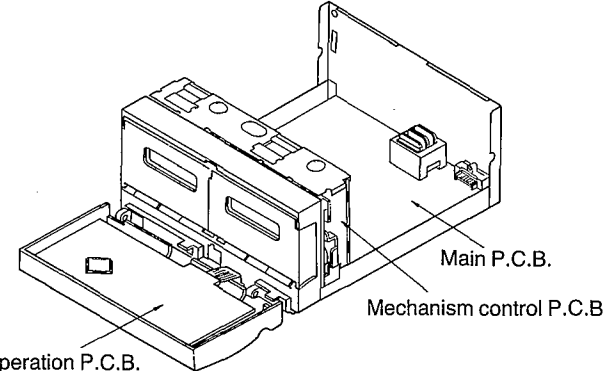
- ① Deck 1 reverse side playback button (◀)
- ② Deck 1 stop button (□)
- ③ Deck 1 forward side playback button (▶)
- ④ Deck 2 reverse side playback button (◀)
- ⑤ Deck 2 stop button (□)
- ⑥ Deck 2 forward side playback button (▶)
- ⑦ Deck 1 Fast-forward/rewind/tape program sensor buttons [◀◀ (TPS), (TPS) ▶▶]
- ⑧ Deck 1 counter reset button (COUNTER RESET)
- ⑨ Dolby noise reduction button (DOLBY NR)
- ⑩ Deck 1 cassette eject button (EJECT)
- ⑪ CCRT (computer control record tuning) button (CCRT)
- ⑫ Edit speed select button (SPEED)
- ⑬ Synchro start button (SYNCHRO START)
- ⑭ Record/record standby button (REC PAUSE)
- ⑮ Reverse mode select button (REVERSE MODE)
- ⑯ Deck 2 counter reset button (COUNTER RESET)
- ⑰ Deck 2 cassette eject button (EJECT)
- ⑱ Deck 2 Fast-forward/rewind/tape program sensor buttons [◀◀ (TPS), (TPS) ▶▶]

- ⑲ Deck 1 remote indicator (REMOTE)
- ⑳ Dolby noise reduction indicators (B, C)
- ㉑ Reverse mode indicators (↔, ↻, ⌂)
- ㉒ Edit indicator (EDIT)
- ㉓ CD edit indicator (CD)
- ㉔ Edit speed indicators (×1, ×2)
- ㉕ Deck 2 remote indicator (REMOTE)
- ㉖ Deck 1 tape travel direction indicators (◀, ▶)
- ㉗ Deck 1 playback indicator (PLAY)
- ㉘ Deck 1 tape indicator
- ㉙ Deck 1 tape counter
- ㉚ CCRT indicator
- ㉛ Deck 2 tape counter
- ㉜ Deck 2 tape indicator
- ㉝ Deck 2 playback indicator (PLAY)
- ㉞ Recording indicator (REC)
- ㉟ Deck 2 tape travel direction indicators (◀, ▶)

## DISASSEMBLY INSTRUCTIONS

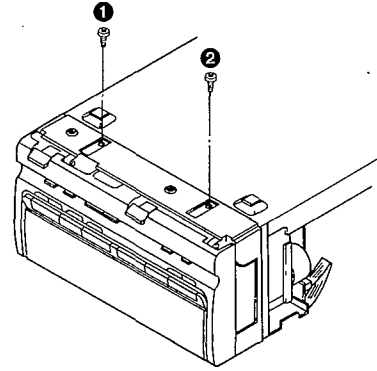
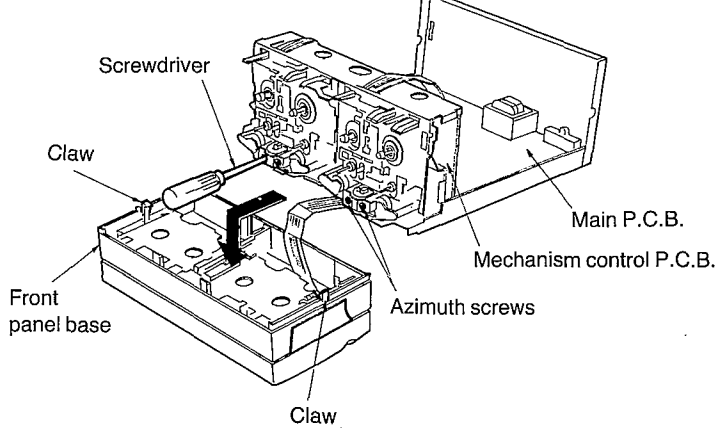
Ref. No. 1	Removal of the Cabinet	Ref. No. 2	Removal of the Front Panel Ass'y	Ref. No. 5	Removal of the Mechanism Unit	Ref. No. 6	Removal of the Front Panel Ass'y
Procedure 1	 <p>●Remove the 6 screws (1~6).</p>	Procedure 1→2	 <p>1. Remove the 2 screws (1, 2).</p>	Procedure 1→2→4→5	 <p>●Remove the 5 claws.</p>	Procedure 1→2→6	 <p>1. Pull out the 2 eject buttons.</p>
Ref. No. 3	Removal of the Main P.C.B.	Ref. No. 4	Removal of the Mechanism Control P.C.B.	Ref. No. 7	Removal of the Operation P.C.B.	Ref. No. 6	Removal of the Front Panel Ass'y
Procedure 1→2→3	 <p>●Remove the 5 screws (1~5).</p>	Procedure 1→2→3	 <p>2. Remove the 2 screws (3, 4). 3. Remove the front panel ass'y in the direction of the arrow.</p>	Procedure 1→2→6→7	 <p>3. Remove the F.P.C. board (CN1). 4. Push the claw in the direction of the arrow ②, and then remove the Front panel ass'y in the direction of the arrow ③.</p>	Procedure 1→2→6	 <p>2. Push the Lock lever in the direction of the arrow ①, and then open the Front panel ass'y.</p>
Ref. No. 4	Removal of the Mechanism Control P.C.B.	Ref. No. 5	Removal of the Mechanism Control P.C.B.	Ref. No. 7	Removal of the Operation P.C.B.	Ref. No. 6	Removal of the Front Panel Ass'y
Procedure 1→2→4	 <p>1. Remove the 3 connectors (CP1, CP2, CP3). 2. Remove the 4 flat cables (CN3, CN4, CN5, CN6). 3. Remove the F.P.C. board (CN1). 4. Remove the 2 screws (1, 2).</p>	Procedure 1→2→3	 <p>1. Lift up the connector. 2. Pull out the flat cable. (CN4, CN6) 3. Lift the top of the connector and then pull out the F.P.C. board. (CN1)</p> <p>5. Move the Mechanism P.C.B. in the direction of the arrows ① and ②, and then remove the claws.</p>	Procedure 1→2→6→7	 <p>1. Remove the 6 screws (1~6). 2. Remove the 2 claws. 3. Remove the Front panel cover ass'y in the direction of the arrow ①.</p>	Procedure 1→2→6	 <p>4. Remove the Operation P.C.B. in the direction of the arrow ②.</p>

<b>Ref. No.</b> 8	<b>Removal of the Eject Rod (DECK 1 and DECK 2)</b>	<b>Ref. No.</b> 9	<b>Removal of the Eject plate (A) and Eject plate (B)</b>
<b>Procedure</b> 1→2→4→5→ 6→8  <ol style="list-style-type: none"> <li>1. Push the Eject rod in the direction of the arrow ①.</li> <li>2. Remove the spring.</li> <li>3. Push the 2 claws in the direction of the arrow ②, and then remove the Eject rod.</li> </ol>		<b>Procedure</b> 1→2→4→5→ 6→8→9  <ol style="list-style-type: none"> <li>1. Remove the 2 screws (①, ②).</li> <li>2. Remove the Eject plate (A) or Eject plate (B)</li> </ol>	
<b>Ref. No.</b> 10	<b>Removal of the Cassette Holder (DECK 1 and DECK 2)</b>	<b>Ref. No.</b> 11 <b>Check of the Main P.C.B.</b>	
<b>Procedure</b> 1→2→4→5→ 6→8→9→10  <ol style="list-style-type: none"> <li>1. Pull out the shaft.</li> <li>2. Push the Rib in the direction of the arrow.</li> </ol>		<b>Procedure</b> 1→2→3→11  <ol style="list-style-type: none"> <li>1. Reinstall the front panel ass'y to the Main P.C.B.</li> <li>2. Reinstall the Rear Panel to the Main P.C.B.</li> <li>3. Connect the wire between Main P.C.B. (Ground) and Rear Panel.</li> <li>4. When checking the soldered surface of the Main P.C.B., do as shown in the Figure.</li> </ol>	

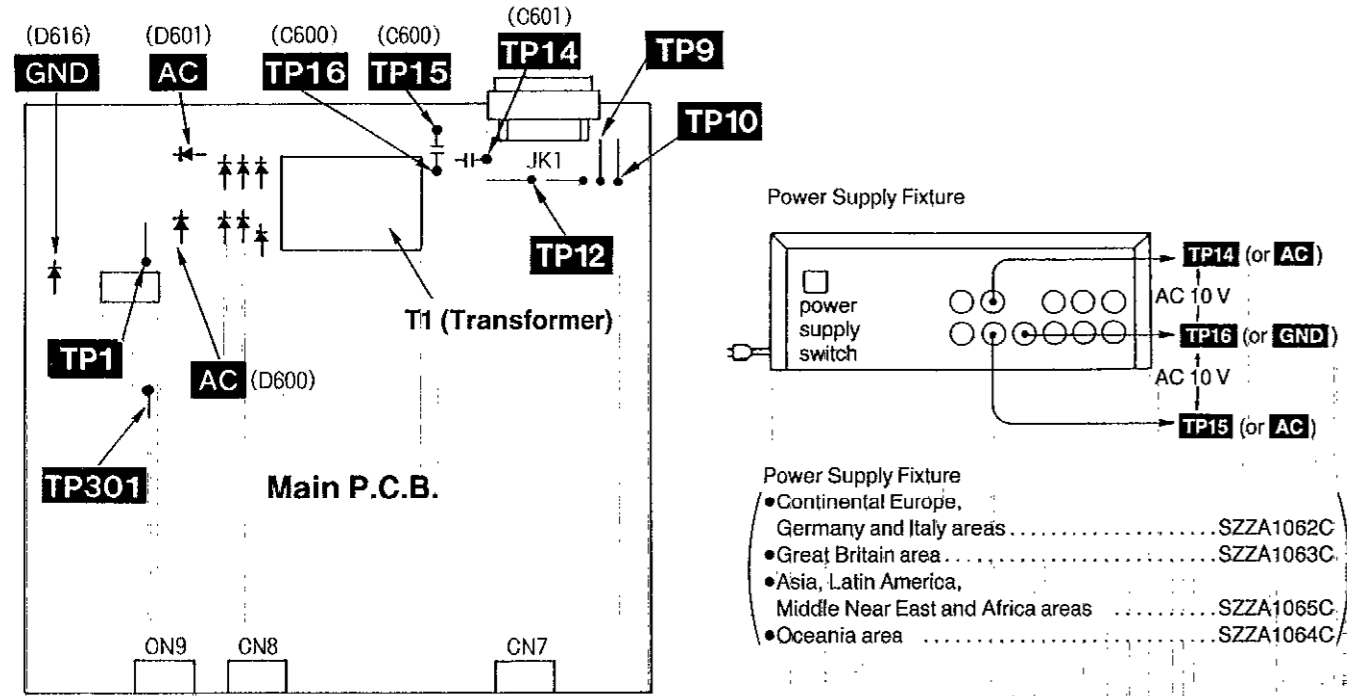
<b>Ref. No.</b> 12	<b>Check of the Mechanism Control P.C.B.</b>	<b>Ref. No.</b> 13 <b>Check of the Operation P.C.B.</b>	
<b>Procedure</b> 1→2→3→ 11→12  <ol style="list-style-type: none"> <li>1. Remove the 2 screws (①, ②).</li> <li>2. Move the Mechanism control P.C.B. in the direction of the arrows ① and ②, and then remove the claws.</li> </ol>		 <ol style="list-style-type: none"> <li>3. Reinstall the Mechanism control P.C.B. to the Main P.C.B.</li> <li>4. When checking the soldered surface of the Mechanism control P.C.B., do as shown in the Figure above.</li> </ol>	
<b>Ref. No.</b> 13		<b>Check of the Operation P.C.B.</b>	
<b>Procedure</b> 1→2→6→7→13  <ol style="list-style-type: none"> <li>1. Connect the F.P.C. board (CN1).</li> </ol> <p><b>Note:</b> Make sure not to damage the F.P.C. board.</p>		 <ol style="list-style-type: none"> <li>2. Reinstall the Mechanism control P.C.B. to the Main P.C.B.</li> <li>3. When checking the soldered surface of the Operation P.C.B., do as shown in the Figure above.</li> </ol>	

## MEASUREMENTS AND ADJUSTMENTS

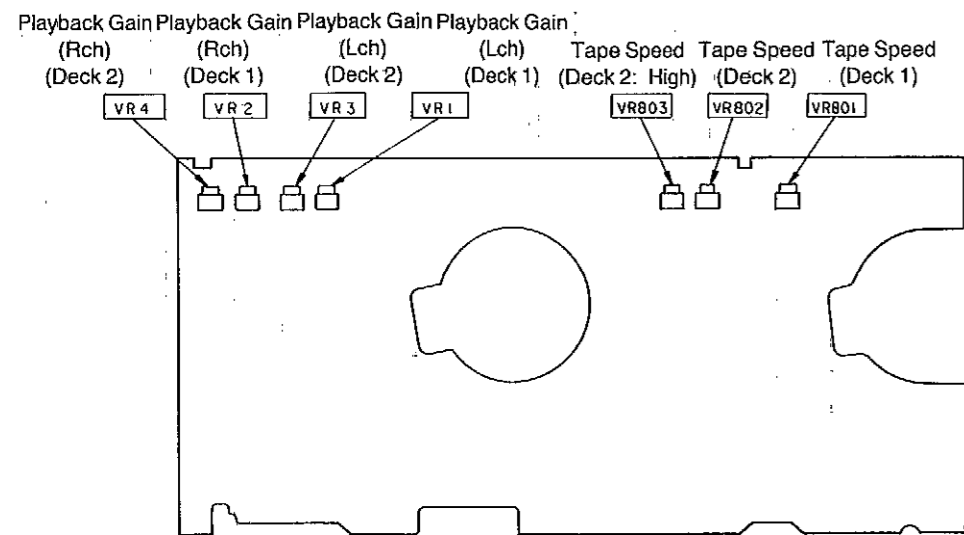
### How to Adjust Head Azimuth

 <ol style="list-style-type: none"> <li>1. Remove the cabinet (see Ref. No. 1 of the disassembly instructions).</li> <li>2. Remove the 2 screws (①, ②).</li> </ol>	 <ol style="list-style-type: none"> <li>3. Remove the front panel base in the direction of the arrow and then remove the claws.</li> <li>4. Adjust the azimuth screws as shown in the figure.</li> </ol>
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This tape deck (RS-CH700) is powered by the amplifier (SU-CH700).  
 To adjust or check operations on the tape deck as a separate unit, follow the instructions below.  
 • Apply a power supply voltage of AC 10 V connect to TP14 (or AC D601), TP15 (or AC D600) and TP16 (or GND).  
 • How to CONNECT



• Adjustment Points



- Measurement Condition**
- Rec. level control; Maximum
  - Timer switch; Off
  - Reverse-mode selector switch; →
  - Edit-recording tape-speed selector; X1
- Measuring Instrument**
- EVM (Electronic Voltmeter)
  - Oscilloscope
  - Digital frequency counter
  - AF oscillator

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

- 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)
- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)
- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment  
 Normal reference blank tape; QZZCRA  
 CrO<sub>2</sub> reference blank tape; QZZCRX  
 Metal reference blank tape; QZZCRZ

HEAD AZIMUTH ADJUSTMENT (DECK 1/2)

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.  
 Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.
2. Perform the same adjustment in the play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

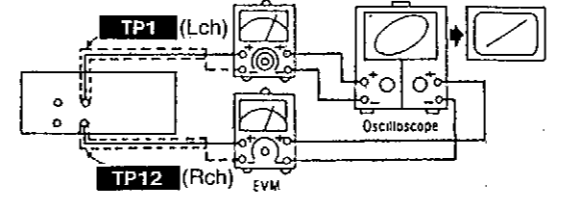


Fig. 1

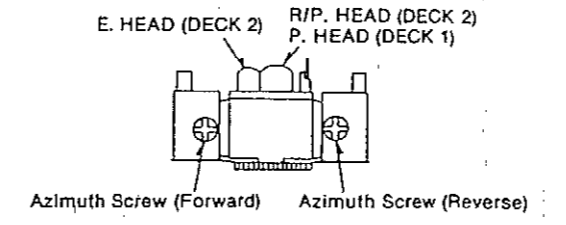


Fig. 2

TAPE SPEED ADJUSTMENT (DECK 1/2)

- Normal speed**
1. Shift the edit-recording tape-speed selector to "NORMAL".
  2. Playback the middle portion of the test tape (QZZCWAT).
  3. Adjust Deck 1=VR801 and Deck 2=VR802 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.]**
4. Push the edit speed button (X2). 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±630 Hz (HIGH speed)

7. Adjust VR803 so that the output frequency of DECK 2 is within ±30 Hz of the value of the output frequency of DECK 1.

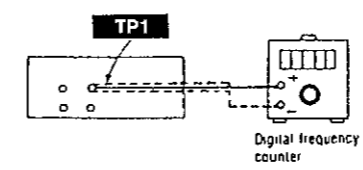


Fig. 3

PLAYBACK GAIN ADJUSTMENT (DECK 1/2)

1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust Deck 2=VR3 (L-CH), [VR4 (R-CH)] and Deck 1=VR1 (L-CH) [VR2 (R-CH)] so that the output is within the standard value.

Standard value: 400 mV±0.5 dB

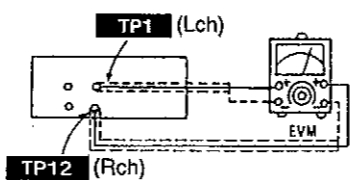


Fig. 4

PLAYBACK FREQUENCY RESPONSE (DECK 1/2)

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assure that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

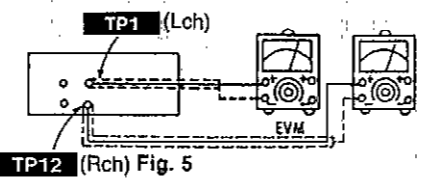


Fig. 5

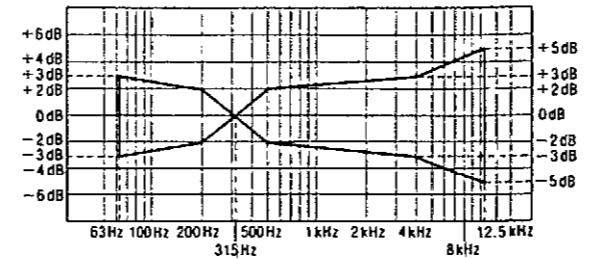


Fig. 6

ERASE CURRENT CONFIRMATION (DECK 2)

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Check if the output at this time between the erase current confirmation point TP301 and GND (chassis) (the output on both edges of R327) is within the standard value.

Standard value: 220 mA±15 mA (Metal)

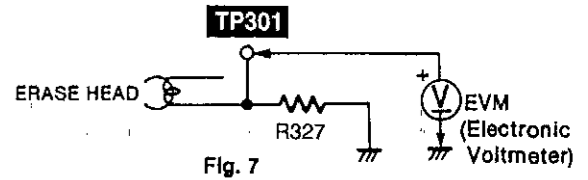


Fig. 7

OVERALL FREQUENCY RESPONSE (DECK 2)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1 kHz, -36 dB and 10 kHz, -36 dB) through an attenuator.
3. Record the frequency sweep.
4. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1 kHz).
5. Repeat steps 2~6 above using the CrO<sub>2</sub> tape (QZZCRX) and the Metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
6. Assure that the level is within the range shown in Fig. 9.

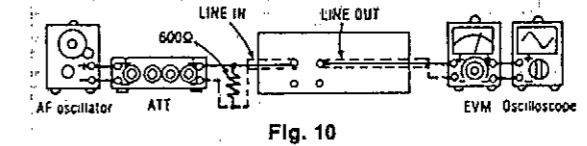


Fig. 10

Normal Overall frequency response chart (NR OUT)

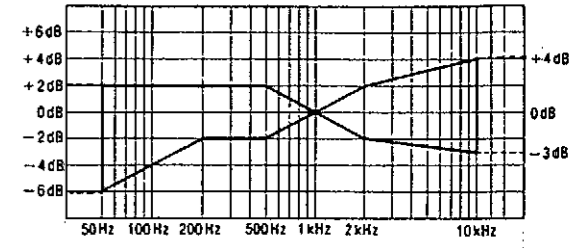


Fig. 8

CrO<sub>2</sub> Metal Overall frequency response chart (NR OUT)

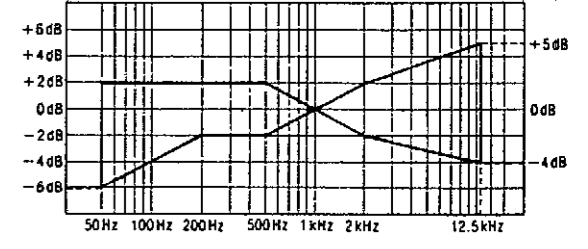


Fig. 9

OVERALL GAIN ADJUSTMENT (DECK 2)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1kHz, -19 dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.

Standard value: 0.4V±0.5 dB

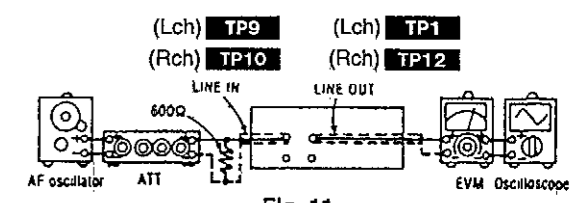
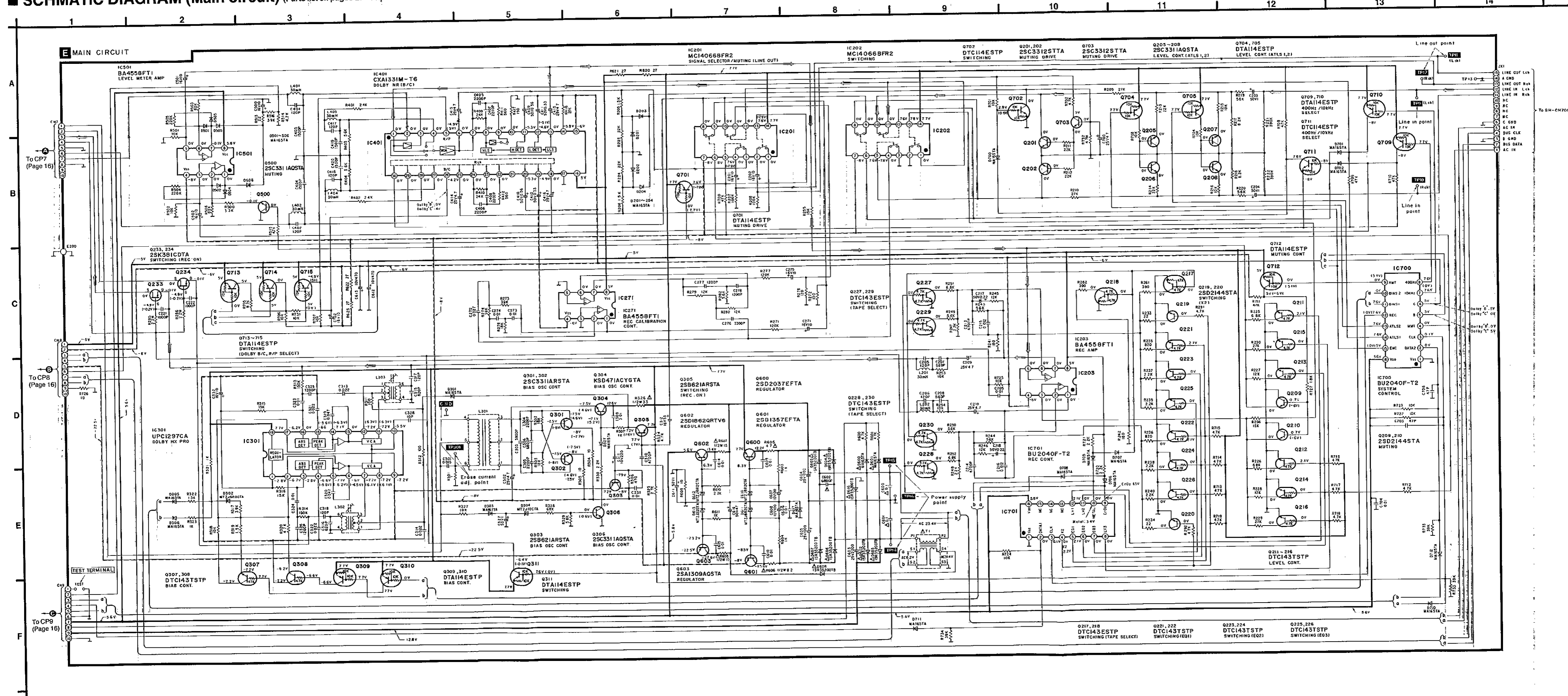


Fig. 11

SCHMATIC DIAGRAM (Main circuit) (Parts list on pages 27~30.)



SCHEMATIC DIAGRAM (Mechanism/Operation circuit) (Parts list on pages 27-30.)

- Notes:
- S910 : STOP Switch (DECK 1).
  - S911 : FF Switch (DECK 1).
  - S912 : REW Switch (DECK 1).
  - S913 : FWD. PLAY Switch (DECK 1).
  - S914 : REV. PLAY Switch (DECK 1).
  - S918 : Dolby NR Switch.
  - S919 : Counter Reset Switch (DECK 1).
  - S920 : STOP Switch (DECK 2).
  - S921 : FF Switch (DECK 2).
  - S922 : REW Switch (DECK 2).
  - S923 : FWD. PLAY Switch (DECK 2).
  - S924 : REV. PLAY Switch (DECK 2).
  - S925 : REC Pause Switch.
  - S927 : Synchro Start Switch.
  - S928 : Speed Switch (x1, x2).
  - S929 : CCRT Switch.
  - S930 : Counter Reset Switch (DECK 2).
  - S931 : Reverse Mode Select Switch.
  - S971 : Mode Detect Switch (DECK 1).
  - S972 : Hall Detect Switch (DECK 1).
  - S973 : CrO<sub>2</sub>METAL Tape Detect Switch (DECK 1).
  - S971A : Mode Detect Switch (DECK 2).
  - S972A : Hall Detect Switch (DECK 2).
  - S973A : Reverse Side Record Prevention Detect Switch (DECK 2).
  - S974A : Forward Side Record Prevention Detect Switch (DECK 2).
  - S975A : CrO<sub>2</sub> Tape Detect Switch (DECK 2).
  - S976A : METAL Tape Detect Switch (DECK 2).

•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.

- Positive Voltage Line
- - - Negative Voltage Line
- ▬ Playback Signal Line
- ▬ Recording Signal Line

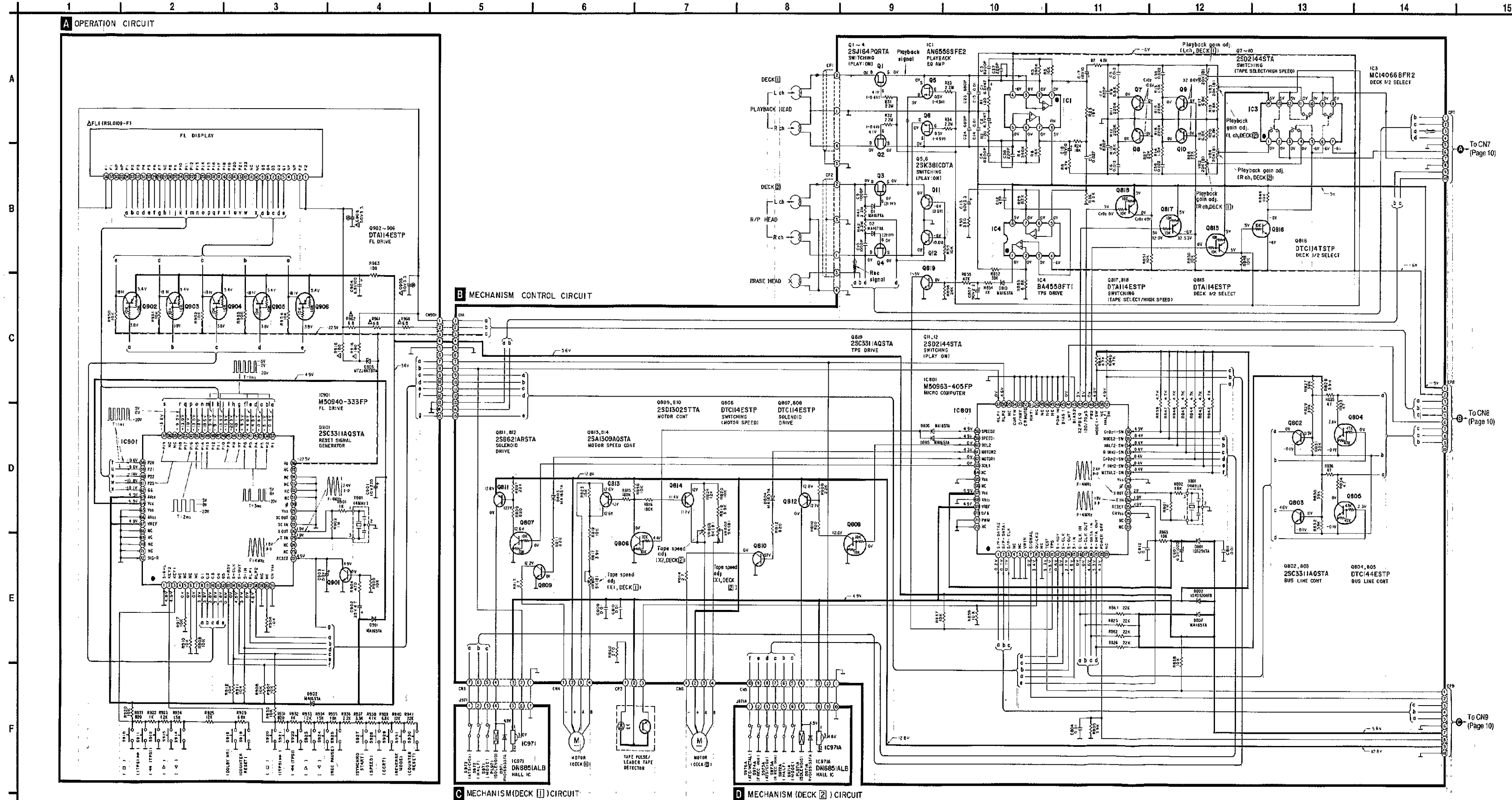
No mark...Playback ( )...Recording

•Important safety notice:  
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.  
•The supply part number is described alone in the replacement parts list.

Ref. No.	Production Parts No.	Supply Parts No.
IC4		
IC203	BA4558FT1	SV1BA4558F
IC271		
IC501		

•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.



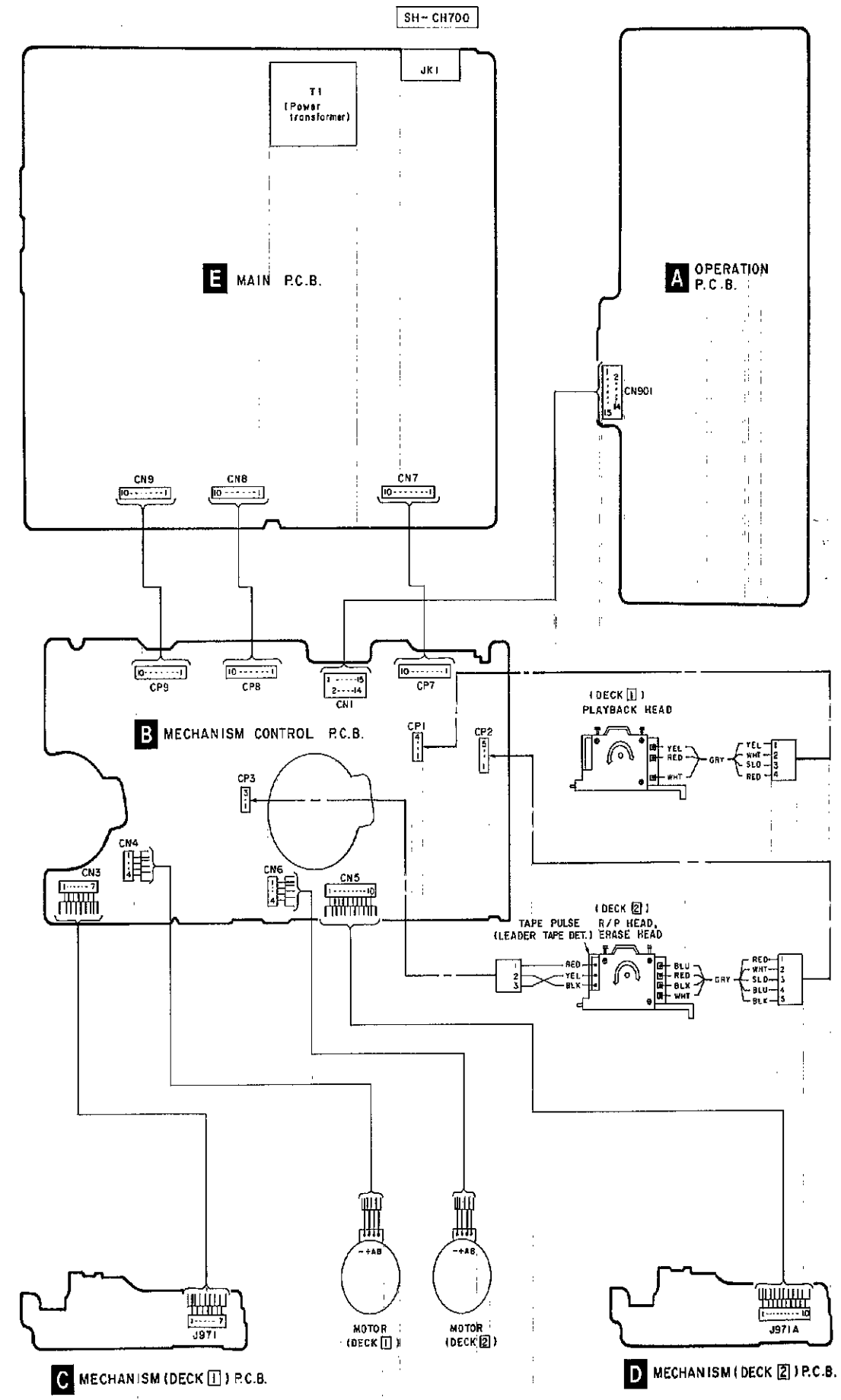
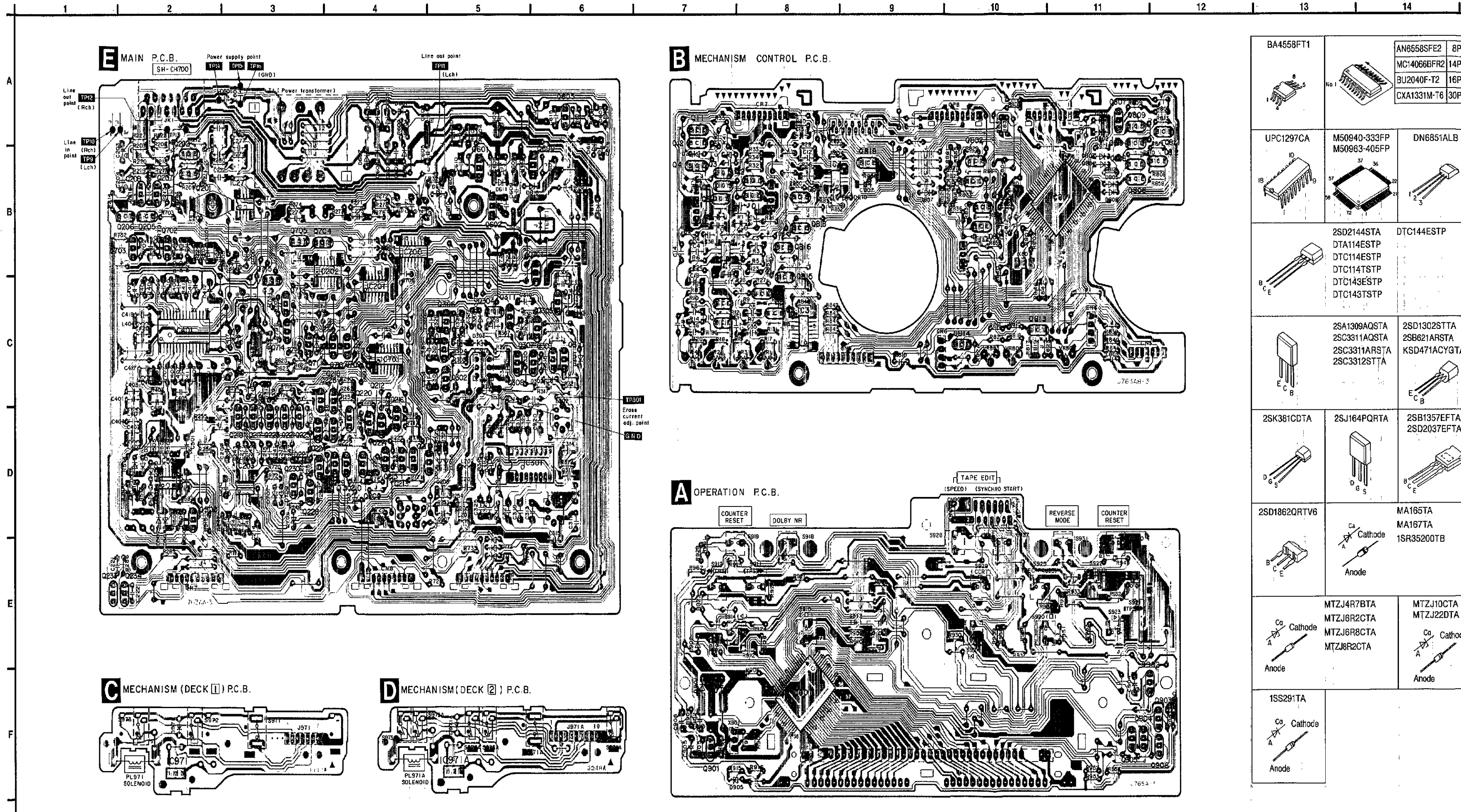
To CN7 (Page 10)

To CN8 (Page 10)

To CN9 (Page 10)

PRINTED CIRCUIT BOARDS

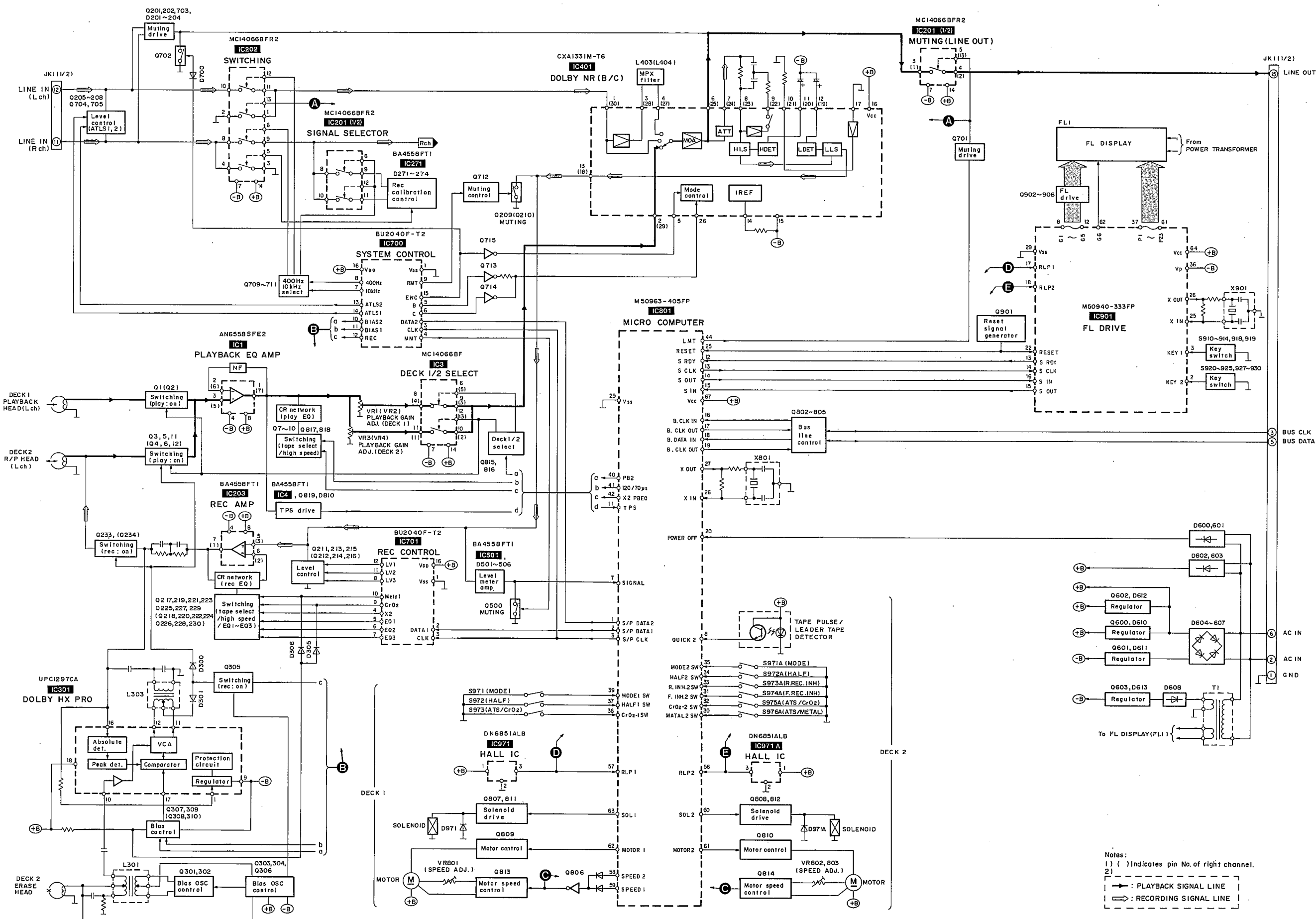
WIRING CONNECTION DIAGRAM



BA4558FT1	AN6568SF2 8Pin MC14066BFR2 14Pin BU2040F-T2 16Pin CXA1331M-T6 30Pin
UPC1297CA	M50940-333FP M50963-405FP
2SD2144STA DTA114ESTP DTC114ESTP DTC114TSTP DTC143ESTP DTC143TSTP	DN6851ALB
2SA1309AQSTA 2SC311AQSTA 2SC3311ARSTA 2SC3312STTA	2SD1302STTA 2SB621ARSTA KSD471ACYGTA
2SK381CDTA	2SJ164PQRTA
2SD1862QRTV6	2SB1357EFTA 2SD2037EFTA
MTZJ4R7BTA MTZJ6R2CTA MTZJ6R8CTA MTZJ6R2CTA	MA165TA MA167TA 1SR35200TB
MTZJ10CTA MTZJ22DTA	
ISS291TA	



■ BLOCK DIAGRAM



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

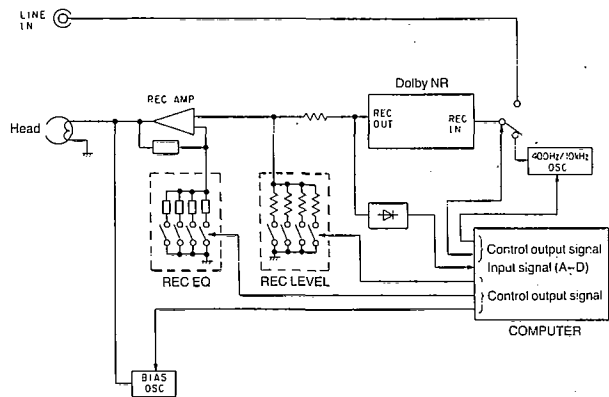
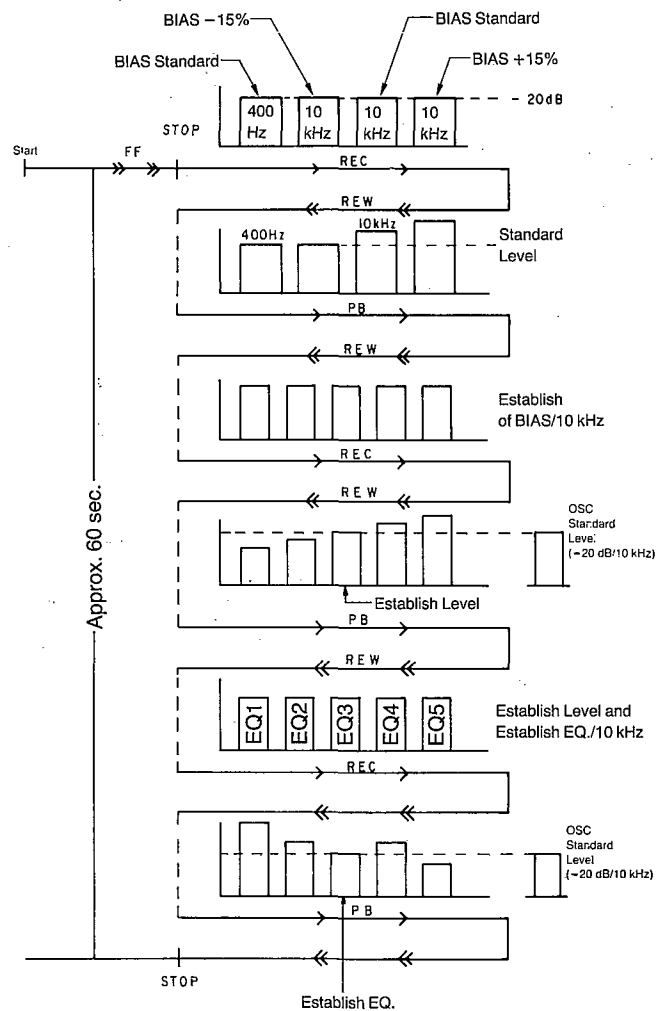
# COMPUTER CONTROL RECORDING SYSTEM (CCRT)

## INTRODUCTION

The frequency characteristics of cassette tapes are various since the recording characteristics are diverse. The CCRT system function allows you to set the optimum recording bias and recording level (sensitivity), and equalizes the high frequency characteristics for optimum recording to suit the characteristics of the tape to be recorded.

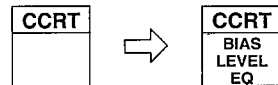
When the CCRT button is pressed while the tape travel is in a stopped state, this unit will automatically perform the following operations.

- The fast forward operation advances the leader tape and then stops.
- 400 Hz and 10 kHz signals (OSC signals) are recorded at a level of -20 dB. At this time, the recording bias of only the 10 kHz signal is changed  $\pm 15\%$  for recording at three levels: low bias, standard bias, and high bias.
- The tape is rewound to the position for the start of recording and the mode is changed to the playback mode.
- The levels of the 400 Hz signal (recorded at standard bias) and the 10 kHz signal (recorded at three bias levels) are compared and the value of the level which is closest is used to set the constant of the recording bias circuit to the optimum recording bias level.
- The tape is rewound once again to the start of the magnetic tape.
- The 400 Hz signal (OSC signal) is recorded at five recording levels at the optimum recording bias level (within the range of the -20 dB  $\pm 3$  dB level).
- The tape is rewound to the position for the start of recording and the mode is changed to the playback mode.
- The 400 Hz signal which was recorded at five recording levels is compared with the OSC reference signal (-20 dB, 400 Hz), and the value of the level which is closest to the reference signal is used to set the constant of the recording level circuit to the optimum recording level.
- The tape is rewound once again to the start of the magnetic tape.
- The 10 kHz signal is recorded at five levels of recording equalizer characteristics (high range) at the optimum recording bias level and the optimum recording level.
- The tape is rewound to the position for the start of recording and the mode is changed to the playback mode.
- The signal which was recorded at five levels is compared with the 10 kHz OSC reference signal, and the value of the level which is closest to the reference signal is used to set the constant of the recording equalizer circuit to the optimum recording equalizer characteristic.
- This completes the tuning operation, and the tape is rewound to the start of the magnetic tape.



## Operation Procedure

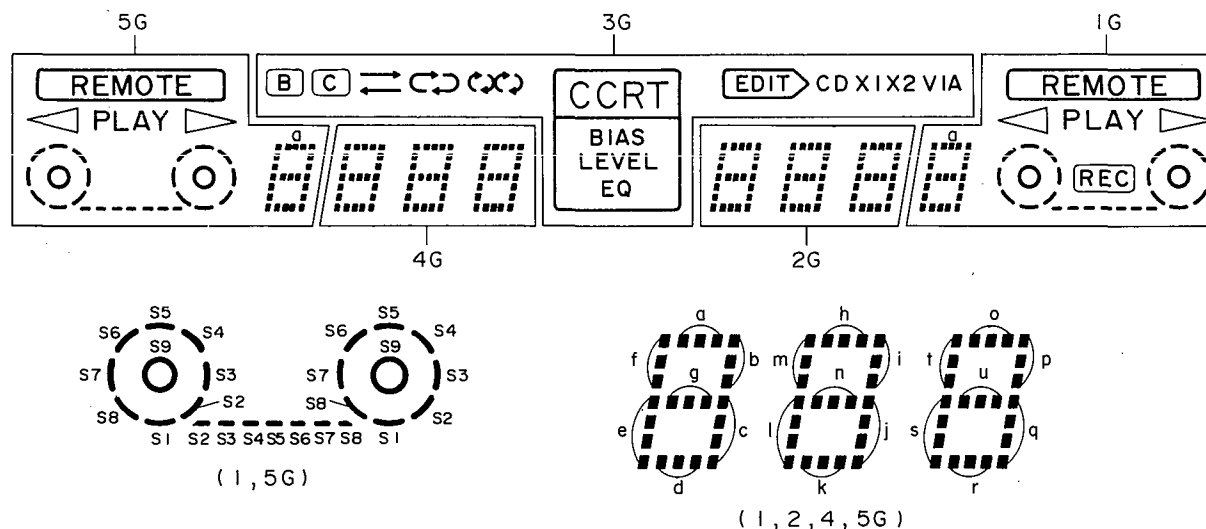
- Load the tape to be recorded into the Deck 2 side.
- Select the Dolby NR and the reverse mode desired.
- Press the CCRT button to set to the CCRT mode. (The "CCRT" indication in the FL meter will light up.)
- After approximately 60 seconds, the display will change as shown below to indicate that the settings have been completed.



- Set to the recording standby mode, select the source from which you wish to record, and begin recording.

# DESCRIPTION OF PANEL (FL1 RSL0109-F)

## Grid assignment



## Pin connection

Pin No.	3	3	3	3	3	3	3	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	8	7	6	5	4	3	2	1				
Connection	F	F	N	N	P	P	P	P	P	N	P	P	P	P	P	P	P	P	P	P	P	N	N	5	4	3	2	1	N	N	F	F					
	1	1	P	P	1	2	3	4	5	6	7	C	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	C	C	G	G	G	G	P	P	2	2

## Anode connection

	5G	4G	3G	2G	1G
P1	a	a	B	a	a
P2	b	b	C	b	b
P3	c	c	-	c	c
P4	d	d	↔	d	d
P5	e	e	↻	e	e
P6	f	f	↻	f	f
P7	g	g	-	g	g
P8	S5	h	CCRT	h	S5
P9	S6	i	BIAS	i	S6
P10	S9	j	LEVEL	j	S9
P11	S8	k	EQ	k	S8
P12	S3	l	-	l	S3
P13	S4	m	-	m	S4
P14	S7	n	-	n	S7
P15	S2	-	-	-	S2
P16	S1	o	EDIT	o	S1
P17	REMOTE	p	CD	p	REMOTE
P18	◀	q	X1	q	◀
P19	PLAY	r	X2	r	PLAY
P20	▶	s	VIA	s	▶
P21	-	t	-	t	REC
P22	-	u	-	u	-

## FUNCTIONS OF IC TERMINALS

### ●IC801 (M50963-405FP)

Pin No.	Terminal name	I/O	Function
1 2	S/P-DATA 2 S/P-DATA 1	O	Serial data signal output
3	S/P-CLK	O	Serial clock signal output
4~6	—	—	Not used (connect to GND)
7	ATLS	I	REC/PLAYBACK detection signal input
8	QUICK 2	I	Leader tape detector signal input (DECK 2)
9	QUICK 1	—	Not used (connect to GND)
10	TEST	I	Test terminal
11	MSP	I	TPS signal input
12 13 14 15	S-RDY S-CLK S-OUT S-IN	I O O I	Serial data and serial clock signal input/output
16 17 18 19	B-CLK IN B-CLK OUT B-DATA IN B-DATA OUT	I O I O	Data bass signal input/output
20	POWER OFF	I	Power off detector signal input
21~ 23	NC	—	Not used
24	CN V <sub>ss</sub>	I	Connect to GND
25	RESET	I	Reset signal input
26 27	X IN X OUT	I O	Ceramic oscillator connection terminal (4 MHz)
28	—	—	Not used
29	V <sub>ss</sub>	I	GND
30	MATAL-2 SW	I	Metal tape position detector signal input (DECK 2)
31	F. INH2-SW	I	Forward side record prevention tad detection signal input (DECK 2)
32	NOR 2-SW	I	Normal tape position detector signal input (DECK 2)
33	R. INH 2-SW	I	Reverse side record prevention tad detection signal input (DECK 2)
34	HALF 2-SW	I	DECK 2 cassette half detection signal input
35	MODE 2-SW	I	DECK 2 operation mode signal input
36	NOR 1-SW	I	Normal tape position detector signal input (DECK 1)

Pin No.	Terminal name	I/O	Function
37	HALF 1-SW	I	DECK 1 cassette half detection signal input
38	NC	—	Not used
39	MODE 1-SW	I	DECK 1 operation mode signal input
40	PB 2	O	Playback AMP control signal (selectore of input/output control signal) output
41	120/70 $\mu$ S	O	Playback E.Q. AMP control signal output
42	X2 EQ	O	Playback E. Q AMP control signal output
43	NC	—	Not used (connect to GND)
44	LMT	O	Line out muting control signal output
45~ 54	—	—	Not used (connect to GND)
55	NC	—	Not used (open)
56	RLP 2	I	DECK 2 rotation pulse signal input of reel table
57	RLP 1	I	DECK 1 rotation pulse signal input of reel table
58	SPEED 2	O	DECK 2 tape speed control signal output
59	SPEED 1	O	DECK 1 tape speed control signal output
60	SOL 2	O	Plunger control signal output
61	MOTOR 2	O	DECK 2 motor control signal output
62	MOTOR 1	O	DECK 2 motor control signal output
63	SOL 1	O	Plunger control signal output
64	NC	—	Not used (open)
65	V <sub>ss</sub>	I	Ground
66	NC	—	Not used (open)
67	V <sub>cc</sub>	I	Power Supply
68	AV <sub>ss</sub>	—	Not used (connect to GND)
69	VREF	—	Reference voltage input
70	D-A	—	Not used (open)
71, 72	RWM —	—	Not used (connect to GND)

### ●IC901 (M50940-333FP)

Pin No.	Terminal name	I/O	Function
1	SIS-L	I	S-Meter signal input
2	KEY 2	I	DECK 2 key control signal input
3	KEY 1	I	DECK 1 key control signal input
4	NC	—	Not used (open)
5~7	—	—	Not used (connect to GND)
8~12	G6~G2	O	FL grid signal output
13 14 15 16	S-PDY S-CLK S-OUT S-IN	O I O I	Serial data and serial clock signal input/output
17	RLP 1	I	DECK 1 rotation pulse signal input of reel table
18	RLP 2	I	DECK 2 rotation pulse signal input of reel table
19	AC OFF	I	Not used (open)
20 21	— CN V <sub>ss</sub>	— I	Connect to GND
22	RESET	I	Reset signal input
23, 24	NC	—	Not used (open)
25 26	X IN X OUT	I O	Ceramic oscillator connection terminal (4 MHz)
27	XC IN	I	Not used (connect to GND)
28	XC OUT	O	Not used (open)
29	V <sub>ss</sub>	I	Ground
30	(NC)	—	Not used (open)
31~ 34	—	—	Not used (connect to GND)
35	NC	—	Not used (open)
36	VP	I	Pull down voltage input
37~ 54	P1~P18	O	FL Anode signal output
55, 56	NC	—	Not used (open)

Pin No.	Terminal name	I/O	Function
57~ 61	P19~P23	O	FL Anode signal output
62	G1	O	FL Grid signal output
63	AV <sub>cc</sub>	I	A/D of Power supply terminal
64	V <sub>cc</sub>	I	Power supply terminal
65	V <sub>ss</sub>	I	Ground
66	AV <sub>ss</sub>	I	A/D of ground terminal
67	VREF	I	A/D of reference voltage input
68~ 71	—	—	Not used (connect to GND)
72	SIS-R	I	S-Meter signal input

## REPLACEMENT PARTS LIST

Notes : \* Important safety notice:  
 Components identified by  $\Delta$  mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.  
 \* 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)					
IC1	AN6558SFE2	I. C, PLAYBACK EQ. AMP.		Q701	DTA114ESTP	TRANSISTOR	
IC3	MC14066BFR2	I. C, DECK 1/2 SELECT		Q702	DTC114ESTP	TRANSISTOR	
IC4	SV1BA4558F	I. C, TPS DRIVE		Q703	2SC3312STTA	TRANSISTOR	
IC201	MC14066BFR2	I. C, SIGNAL SELECTOR		Q704, 705	DTA114ESTP	TRANSISTOR	
IC202	MC14066BFR2	I. C, SWITCHING		Q709, 710	DTA114ESTP	TRANSISTOR	
IC203	SV1BA4558F	I. C, REC AMP.		Q711	DTC114ESTP	TRANSISTOR	
IC271	SV1BA4558F	I. C, REC CALIBRATION CONT.		Q712-715	DTA114ESTP	TRANSISTOR	
IC301	UPC1297CA	I. C, DOLBY HX PRO		Q802, 803	2SC3311A-Q	TRANSISTOR	
IC401	CXA1331M-T6	I. C, DOLBY NR(B/C)		Q804, 805	DTC144ESTP	TRANSISTOR	
IC501	SV1BA4558F	I. C, LEVEL METER AMP.		Q806-808	DTC114ESTP	TRANSISTOR	
IC700	BU2040F-T2	I. C, SYSTEM CONTROL		Q809, 810	2SD1302STTA	TRANSISTOR	
IC701	BU2040F-T2	I. C, REC CONTROL		Q811, 812	2SB621A-R	TRANSISTOR	
IC801	M50963-405FP	I. C, MICRO COMPUTER		Q813, 814	2SA1309A-R	TRANSISTOR	
IC901	M50940-333FP	I. C, FL DRIVE		Q815	DTA114ESTP	TRANSISTOR	
IC971	DN6851ALB	I. C, HALL (DECK1)		Q816	DTC114TSTP	TRANSISTOR	
IC971A	DN6851ALB	I. C, HALL (DECK2)		Q817, 818	DTA114ESTP	TRANSISTOR	
		TRANSISTOR(S)		Q819	2SC3311A-Q	TRANSISTOR	
				Q901	2SC3311A-Q	TRANSISTOR	
				Q902-906	DTA114ESTP	TRANSISTOR	
						DIODE(S)	
Q1-4	2SJ164PQRTA	TRANSISTOR		D1, 2	MA167	DIODE	
Q5, 6	2SK381BCDTA	TRANSISTOR		D201-204	MA165	DIODE	
Q7-9	2SD2144S	TRANSISTOR		D301	MA165	DIODE	
Q10-12	2SD2144S	TRANSISTOR		D302	MTZJ6R8CTA	DIODE	
Q201, 202	2SC3312STTA	TRANSISTOR		D303	MA167	DIODE	
Q205-208	2SC3311A-Q	TRANSISTOR		D304	MTZJ10CTA	DIODE	
Q209, 210	2SD2144S	TRANSISTOR		D305-307	MA165	DIODE	
Q211-216	DTC143TSTP	TRANSISTOR		D501-506	MA165	DIODE	
Q217, 218	DTC143ESTP	TRANSISTOR		D600, 601	MA165	DIODE	$\Delta$
Q219, 220	2SD2144S	TRANSISTOR		D602-608	1SR35200TB	DIODE	$\Delta$
Q221-226	DTC143TSTP	TRANSISTOR		D610, 611	MTZJ8R2CTA	DIODE	
Q227-230	DTC143ESTP	TRANSISTOR		D612	MTZJ6R2CTA	DIODE	
Q233, 234	2SK381BCDTA	TRANSISTOR		D613	MTZJ22DTA	DIODE	
Q301, 302	2SC3311ARSTA	TRANSISTOR		D616	1SR35200TB	DIODE	$\Delta$
Q303	2SB621A-R	TRANSISTOR		D617	MA165	DIODE	
Q304	KSD471ACYGTA	TRANSISTOR		D700-702	MA165	DIODE	
Q305	2SB621A-R	TRANSISTOR		D705-708	MA165	DIODE	
Q306	2SC3311A-Q	TRANSISTOR		D710-712	MA165	DIODE	
Q307, 308	DTC143TSTP	TRANSISTOR		D801	1SS291TA	DIODE	
Q309-311	DTA114ESTP	TRANSISTOR		D802	1SR35200TB	DIODE	
Q500	2SC3311A-Q	TRANSISTOR		D803-807	MA165	DIODE	
Q600	2SD2037EFTA	TRANSISTOR		D810	MA165	DIODE	
Q601	2SB1357EFTA	TRANSISTOR		D901, 902	MA165	DIODE	
Q602	2SD1862QRTV6	TRANSISTOR		D905	MTZJ4R7BTA	DIODE	
Q603	2SA1309A-R	TRANSISTOR		D971	RVD1SS133TA	DIODE	

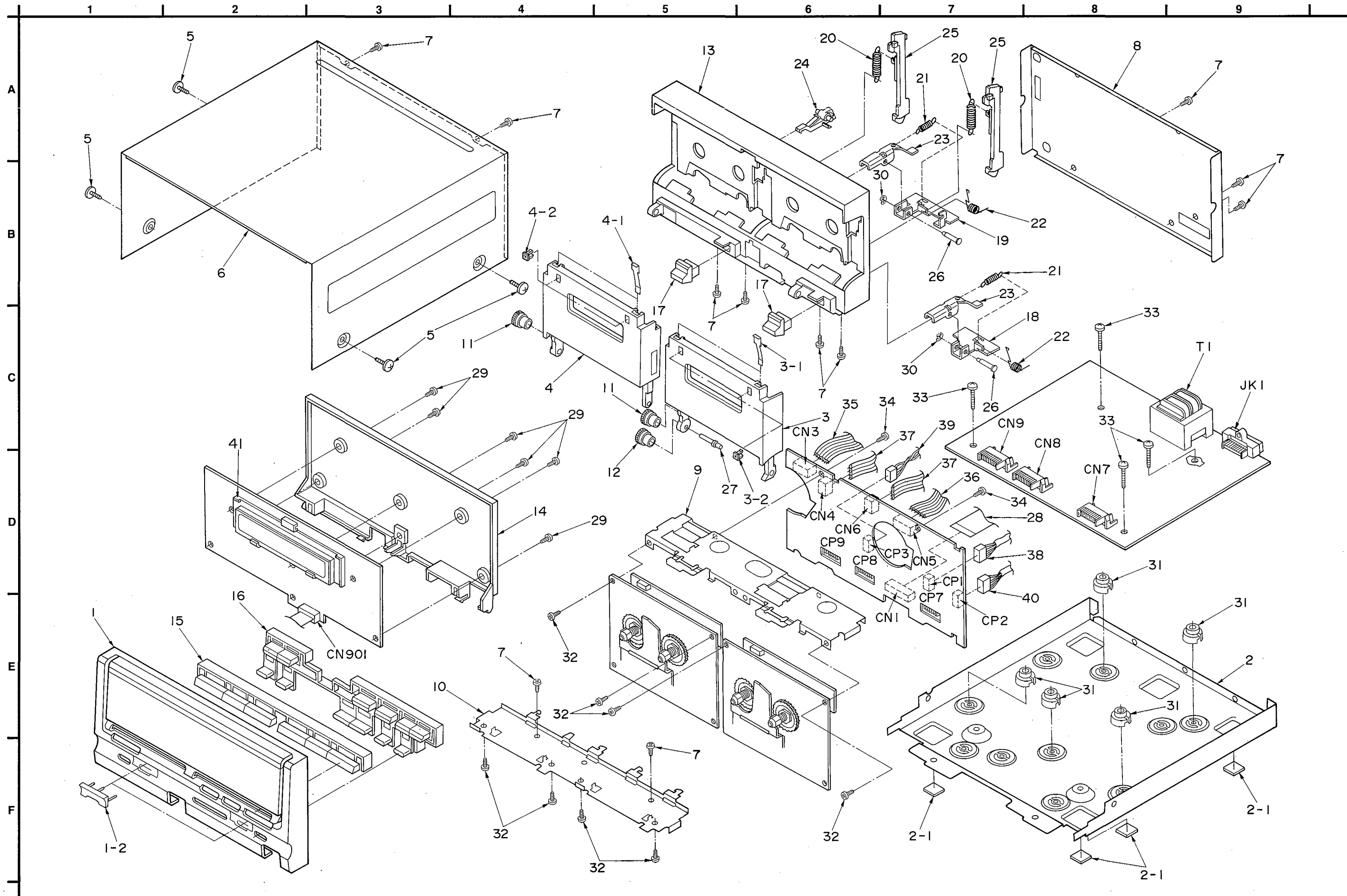
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
D971A	RVD1SS133TA	DIODE		S973A	RSH1A90YB-U	S. W, R. REC. INH (DECK2)	
		VARIABLE RESISTOR(S)		S974A	RSH1A90YB-U	S. W, F. REC. INH (DECK2)	
				S975A	RSH1A90YB-U	S. W, ATS/CR02 (DECK2)	
				S976A	RSH1A90YB-U	S. W, ATS/METAL (DECK2)	
VRI-4	EVNDCAA03B24	V. R. P. B. GAIN ADJ.				CONNECTOR(S)	
VR801-803	EVNDCAA03B53	V. R. TAPE SPEED ADJ.					
		COIL(S)		CN1	RJS15Q82A	SOCKET (15P)	
				CN3	RJS7T42A	SOCKET (7P)	
L201, 202	SLQX303-1KT	COIL		CN4	RJS1A6604	SOCKET (4P)	
L301	SL09B4-K	COIL		CN5	SJSD1005	CONNECTOR (10P)	
L302, 303	SL09B1-Z	COIL		CN6	RJS1A6604	SOCKET (4P)	
L401-404	SLQX303-1KT	COIL		CN7-9	RJU003K010M1	SOCKET (10P)	
		TRANSFORMER(S)		CN901	RJS15Q92A	SOCKET (15P)	
				CP1	SJTD413	CONNECTOR (4P)	
T1	RTP114G002	TRANSFORMER	$\Delta$	CP2	RJP5G182A	CONNECTOR (5P)	
		OSCILLATOR(S)		CP3	SJTD313	CONNECTOR (3P)	
X801	EF0GC4004A4	OSCILLATOR		CP7-9	RJT003K10VM	CONNECTOR (10P)	
X901	EF0GC4004A4	OSCILLATOR				EARTH TERMINAL	
		DISPLAY		E200	SNE1004-1	GND PLATE	
						JACK(S)	
FL1	RSL0109-F	DISPLAY	$\Delta$	JK1	RJT055K015-1	CONNECTOR (15P)	
		SWITCH(ES)		J971	RJS7T72A	SOCKET (7P)	
				J971A	RJS10T72A	SOCKET (10P)	
S910	EVQ21405R	S. W, STOP (DECK1)					
S911	EVQ21405R	S. W, TPS (FF) (DECK1)					
S912	EVQ21405R	S. W, TPS (REW) (DECK1)					
S913	EVQ21405R	S. W, PLAY (FWD) (DECK1)					
S914	EVQ21405R	S. W, PLAY (REV) (DECK1)					
S918	EVQ21405R	S. W, DOLBY NR					
S919	EVQ21405R	S. W, COUNTER RESET (DECK1)					
S920	EVQ21405R	S. W, STOP (DECK2)					
S921	EVQ21405R	S. W, TPS (FF) (DECK2)					
S922	EVQ21405R	S. W, TPS (REW) (DECK2)					
S923	EVQ21405R	S. W, PLAY (FWD) (DECK2)					
S924	EVQ21405R	S. W, PLAY (REV) (DECK2)					
S925	EVQ21405R	S. W, REC PAUSE					
S927	EVQ21405R	S. W, SYNCHRO START					
S928	EVQ21405R	S. W, SPEED					
S929	EVQ21405R	S. W, CCRT					
S930	EVQ21405R	S. W, COUNTER RESET (DECK2)					
S931	EVQ21405R	S. W, REVERSE MODE					
S971	RSH1A89Z	S. W, MODE (DECK1)					
S971A	RSH1A89Z	S. W, MODE (DECK2)					
S972	RSH1A90YB-U	S. W, HALF (DECK1)					
S972A	RSH1A90YB-U	S. W, HALF (DECK2)					
S973	RSH1A90YB-U	S. W, ATS/CR02 (DECK1)					

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., Values & Remarks. Contains resistor values for various components like R1, R3, R5, etc., with values such as 1/4W 120, 1/4W 390K, etc.

Table with columns: Ref. No., Part No., Values & Remarks. Contains capacitor values for various components like C275, C276, C277, etc., with values such as 16V 10U, 50V 3300P, etc.

■ CABINET PARTS LOCATION

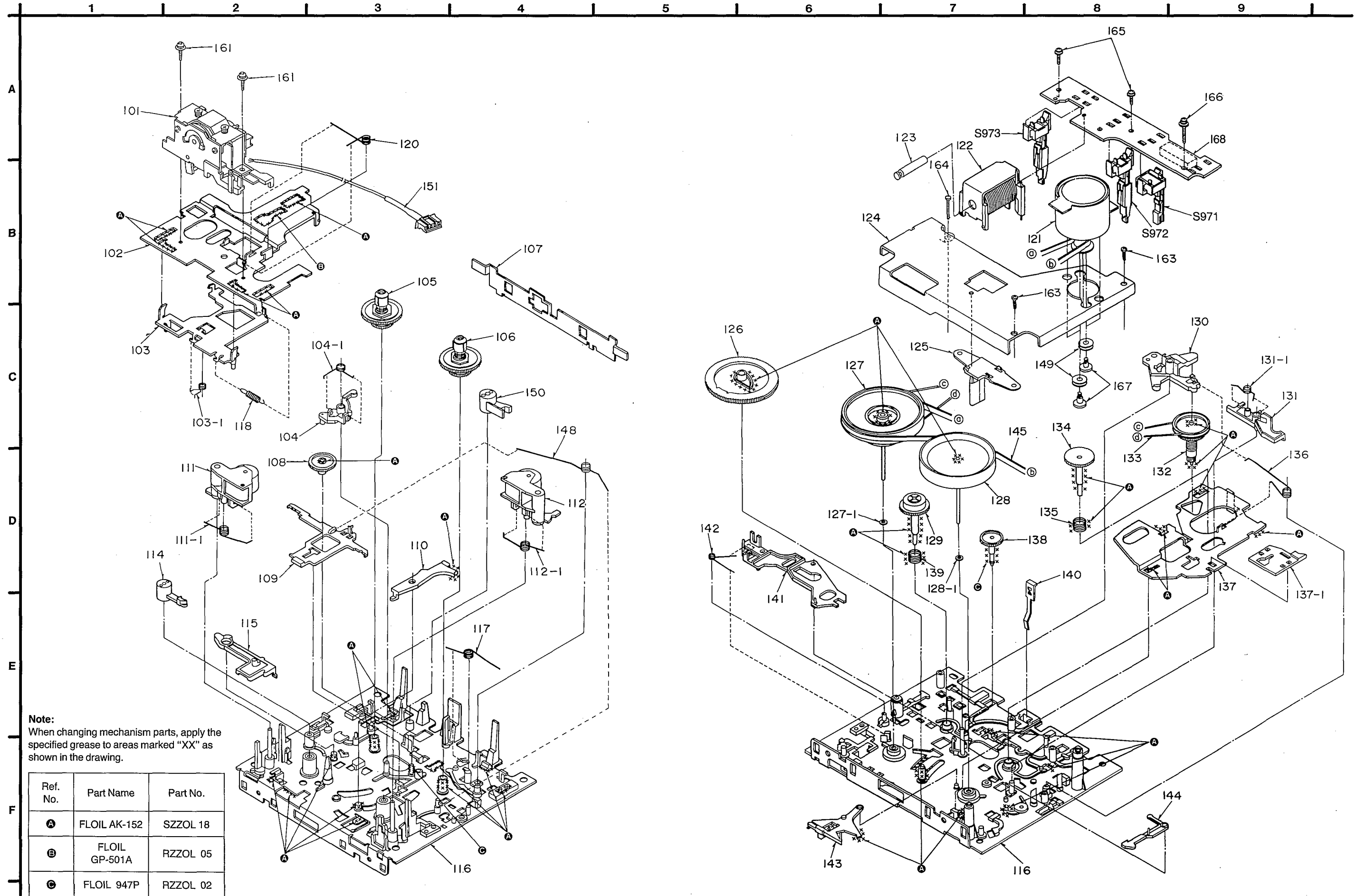


Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS					
1	RFKGSCH700EA	FRONT PANEL ASS'Y					
1-1	RFKGSCH700EB	FL PANEL ASS'Y					
1-2	RGK0430-K	ORNAMENT					
2	RFKJSCH700NK	BOTTOM BOARD ASS'Y					
2-1	RKA0043	FOOT					
3	RFKLSCH700BK	CASSETTE LID(R) ASS'Y					
3-1	QBP2006A	SPRING					
3-2	RMRO485	ORNAMENT					
4	RFKLSCH700AK	CASSETTE LID(L) ASS'Y					
4-1	QBP2006A	SPRING					
4-2	RMRO485	ORNAMENT					
5	RHD30007	SCREW					
6	RKMO105-K	CABINET					
7	XTBS3+8JFZ1	SCREW					
8	RGRO131A-C1	REAR PANEL					
9	RMA0520	MECHANISM ANGLE (UPPER)					
10	RMA0521	MECHANISM ANGLE (LOWER)					
11	RDG0167	GEAR					
12	RDG0168	GEAR					
13	RGPO198-1K1	FRONT PANEL BASE					
14	RGPO199-K3	FRONT PANEL COVER					
15	RGU0659-K	BUTTON, OPERATION (A)					
16	RGU0660-K	BUTTON, OPERATION (B)					
17	RGU0661-K	BUTTON, EJECT					
18	RMA0440	EJECT ANGLE (A)					
19	RMA0441	EJECT ANGLE (B)					
20	RMB0141-1	SPRING					
21	RMB0160	SPRING					
22	RMB0193	SPRING					
23	RML0221	EJECT LEVER					
24	RML0222	PANEL LEVER					
25	RMM0061-1	EJECT ROD					
26	RMS0242	EJECT SHAFT					
27	RMS0310	HOLDER SHAFT					
28	RWJ5215220C1	FLEXIBLE CABLE (15P)					
29	XTB3+10JFZ	SCREW					
30	XJC2FT	E-RING					
31	SHE170-2	P. C. B. SPACER					
32	XTB26+6F	SCREW					
33	XTB3+12JFZ	SCREW					
34	XTB3+8JFZ	SCREW					
35	RWJ5707210QQ	FLAT CABLE (7P) (W3)					
36	RWJ5710200QQ	FLAT CABLE (10P) (W5)					
37	RWJ1804200QQ	FLAT CABLE (4P) (W4, W6)					
38	REX0132	FLAT CABLE (4P)					
39	REX0145	FLAT CABLE (10P)					
40	REX0172	FLAT CABLE (5P)					
41	RMNO150	FL HOLDER					

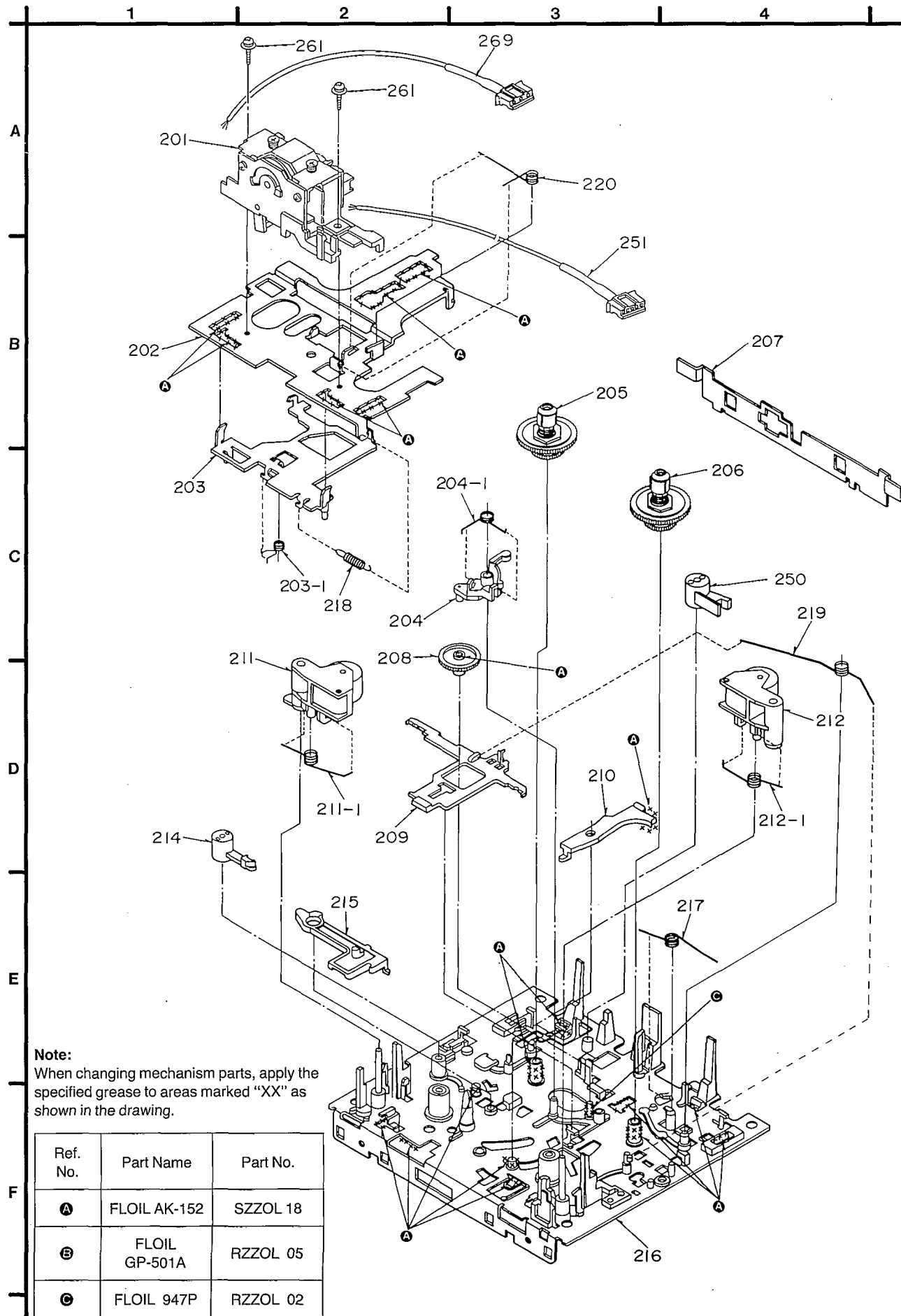
Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS LIST		144	RUB509ZA	LEVER	
(DECK1)				145	RDV108ZA	CAPSTAN BELT	
101	RXQ0051-1	HEAD BLOCK(PLAY)		148	RUW144ZA	SPRING	
102	RUA793ZF	HEAD BASE		149	RHG3032ZA	RUBBER CUSHION	
103	RZLAR300A	ROD		150	RNL180ZB	DAMPER ARM	
103-1	RUW143ZA	SPRING		151	REX0132	LEAD WIRE(4P)	
104	IUB0089ZA	ARM		161	XTW2+6L	SCREW	
104-1	RUW148ZA	SPRING		163	XTN26+7J	SCREW	
105	1DM0018ZB	REEL TABLE (R)		164	RHE5203ZA	SCREW	
106	1DM0017ZB	REEL TABLE (F)		165	XTW2+8S	SCREW	
107	RML0069-1	LEVER		166	XYC2+JF16	SCREW	
108	RDG5772ZC	GEAR		167	RHD26002	SCREW	
109	RUB508ZB	BRACKET ROD		168	RJST77ZA	SOCKET(7P)	
110	RUB506ZB	LEVER					
111	IUB0088ZB	ARM (R)					
111-1	RUW141ZA	SPRING					
112	IUB0087ZB	ARM (F)					
112-1	RUW140ZC	SPRING					
114	RNL1ZD	DAMPER ARM					
115	RUB503ZD	MAIN LEVER					
116	RFKRRSCH9N	CHASSIS ASS'Y					
117	RUW142ZA	SPRING					
118	RUD105ZA	SPRING					
120	RUW139ZA	SPRING					
121	RFKPRSCH9N	DC MOTOR ASS'Y					
122	IUE0015ZB	PLUNGER					
123	RUB428ZE	MOVING IRON CORE					
124	RMA0101	ANGLE					
125	RMD5014ZC	ANGLE					
126	RDG5927ZG	MAIN GEAR					
127	1DW0037ZB	FLYWHEEL (F)					
127-1	RNW139ZA	WASHER					
128	1DW0038ZB	FLYWHEEL (R)					
128-1	RNW138ZA	WASHER					
129	1DG0006ZB	REEL TABLE GEAR					
130	RUB513ZD	ARM					
131	IUB0091ZA	LEVER					
131-1	RUW146ZA	SPRING					
132	1DR0011ZB	MAIN PULLEY					
133	RDV90ZB	BELT					
134	RDG5769ZA	REEL TABLE GEAR					
135	RUQ111ZB	SPRING					
136	RUW145ZA	SPRING					
137	IUB0090ZA	ROD					
137-1	RUB512ZB	ROD					
138	RDG5773ZB	GEAR					
139	RUQ112ZA	SPRING					
140	RUS609ZC	TAPE PRESSURE SPRING					
141	RUB514ZC	LEVER					
142	RUW147ZA	SPRING					
143	RUB515ZA	LEVER					



MECHANISM PARTS LOCATION • DECK 1

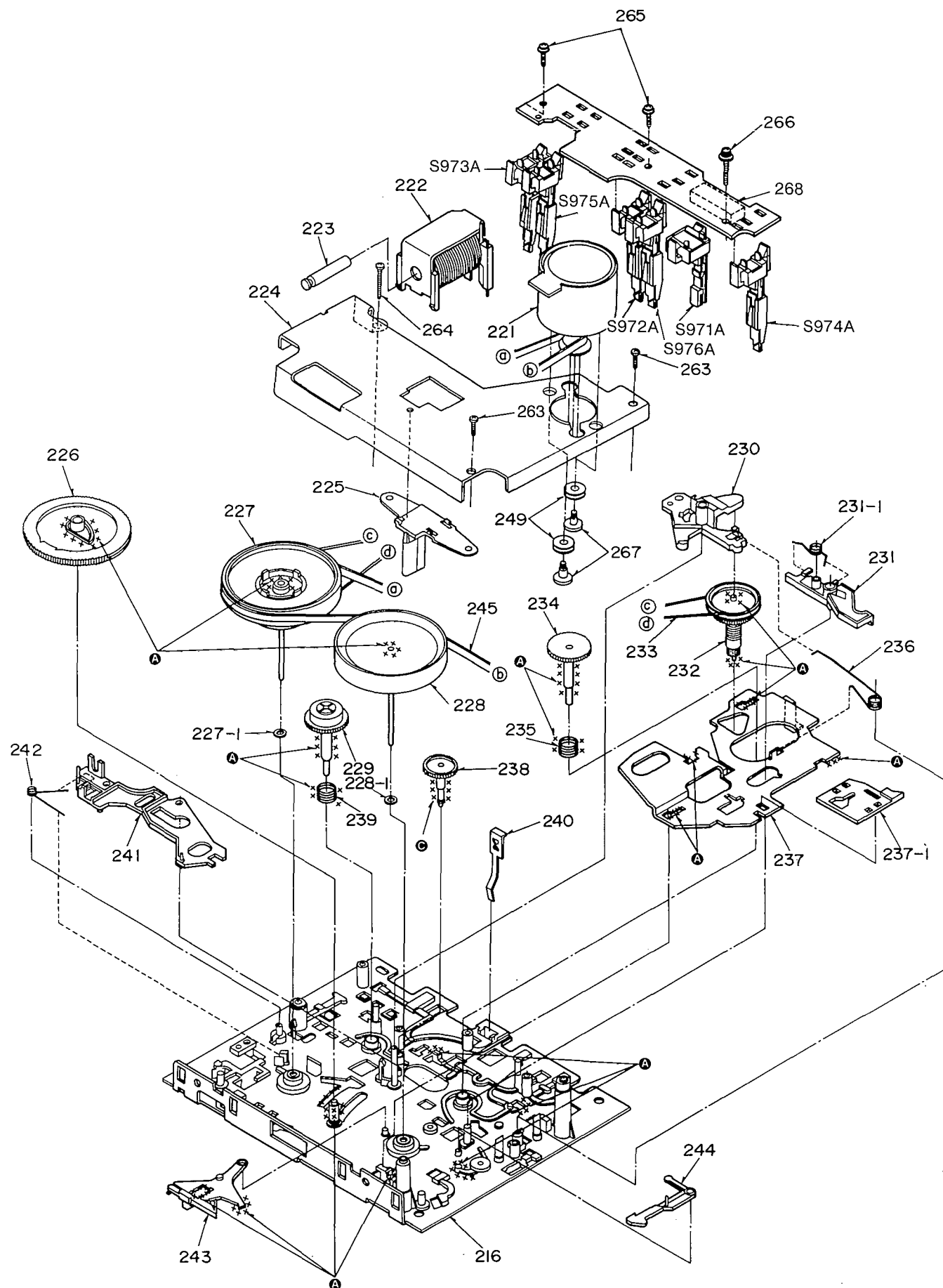


MECHANISM PARTS LOCATION • DECK 2



**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	SZZOL 18
B	FLOIL GP-501A	RZZOL 05
C	FLOIL 947P	RZZOL 02



Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS LIST		243	RUB515ZA	LEVER	
(DECK2)				244	RUB509ZA	LEVER	
201	RXQ0161	HEAD BLOCK(REC/PLAYBACK)		245	RDV108ZA	CAPSTAN BELT	
202	RJA793ZF	HEAD BASE		249	RHG3032ZA	RUBBER CUSHION	
203	RZLAR300A	ROD		250	RNL180ZB	DAMPER ARM	
203-1	RUW143ZA	SPRING		251	REX017Z	LEAD WIRE (5P)	
204	IUB0089ZA	ARM		261	XTW2+6L	SCREW	
204-1	RUW148ZA	SPRING		263	XTN26+7J	SCREW	
205	1DM0018ZB	REEL TABLE (R)		264	RHE5203ZA	SCREW	
206	1DM0017ZB	REEL TABLE (F)		265	XTW2+8S	SCREW	
207	RML0069-1	LEVER		266	XYC2+JF16	SCREW	
208	RDG5772ZC	GEAR		267	RHD2600Z	SCREW	
209	RUB508ZB	BRACKET ROD		268	RJS10T7ZA	SOCKET (10P)	
210	RUB506ZB	LEVER		269	REX0145	LEAD WIRE ASS'Y	
211	IUB0088ZB	ARM (R)					
211-1	RUW141ZA	SPRING					
212	IUB0087ZB	ARM (F)					
212-1	RUW140ZC	SPRING					
214	RNL1ZD	DAMPER ARM					
215	RUB503ZD	MAIN LEVER					
216	RFKRRSCH9N	CHASSIS ASS'Y					
217	RUW142ZA	SPRING					
218	RUD105ZA	SPRING					
219	RUW144ZA	SPRING					
220	RUW139ZA	SPRING					
221	RFM133ZA	DC MOTOR					
222	IUE0015ZB	PLUNGER					
223	RUB428ZE	MOVING IRON CORE					
224	RMA0101	ANGLE					
225	RMD5014ZC	ANGLE					
226	RDG5927ZG	MAIN GEAR					
227	1DW0037ZB	FLYWHEEL (F)					
227-1	RNW139ZA	WASHER					
228	1DW0038ZB	FLYWHEEL (R)					
228-1	RNW138ZA	WASHER					
229	1DG0006ZB	REEL TABLE GEAR					
230	RUB513ZD	ARM					
231	IUB0091ZA	LEVER					
231-1	RUW146ZA	SPRING					
232	1DR0011ZB	MAIN PULLEY					
233	RDV90ZB	BELT					
234	RDG5769ZA	REEL TABLE GEAR					
235	RUQ111ZB	SPRING					
236	RJW145ZA	SPRING					
237	IUB0090ZA	ROD					
237-1	RUB512ZB	ROD					
238	RDG5773ZB	GEAR					
239	RUQ112ZA	SPRING					
240	RUS609ZC	TAPE PRESSURE SPRING					
241	RUB514ZC	LEVER					
242	RJW147ZA	SPRING					

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