

Service Manual

Cassette Deck



RS-DV170

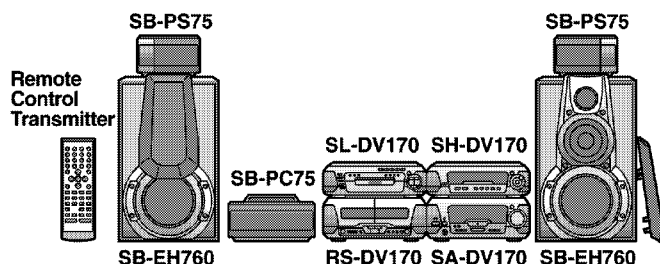
AR-2 Mechanism series

Colour

(S).....Silver Type

Area

(EG).....Europe.



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

Dolby noise reduction manufactured under license from Dolby Laboratories.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

System	SC-DV170
Sound Processor	SH-DV170
Tuner/Amplifier	SA-DV170
DVD Changer	SL-DV170
Cassette Deck	RS-DV170
Front Speakers*	SB-EH760
Center Speaker*	SB-PC75
Surround Speakers*	SB-PS75

* : Made in Spain.

Specifications

Deck system: Stereo cassette deck
Track system: 4 track, 2 channel
Recording system: AC bias
Bias frequency: 100 kHz
Erasing system: AC erase
Heads:
Deck 1
 (Playback head); Permalloy head
Deck 2
 (Recording/Playback head); Permalloy head
 (Erasing head); Double gap ferrite head
Motors:
Deck 1, 2 Capstan drive; DC servo motor
Tape speed: 4.8 cm/sec.
Wow and flutter: 0.16 % (WRMS)
Fast forward and rewind times: Approx. 110 seconds with C-60 cassette tape

Frequency response (Dolby NR off):

TYPE I (NORMAL); 20 Hz – 16 kHz (DIN)
TYPE II (HIGH); 20 Hz – 16 kHz (DIN)
TYPE IV (METAL); 20 Hz – 16 kHz (DIN)

S/N (Signal level = max recording level, TYPE II type tape):

NR off; 56 dB (A weighted)
Dolby B NR on; 66 dB (A weighted)

Input sensitivity and impedance:

REC (IN); 150 mV/ 23 kΩ

Output voltage and impedance:

PLAY (OUT); 280 mV/ 360 Ω

General

Dimensions (W×H×D): 294×118.5×281 mm

Mass: 2.1 kg

Notes: Specifications are subject to change without notice.
 Mass and dimensions are approximate.

WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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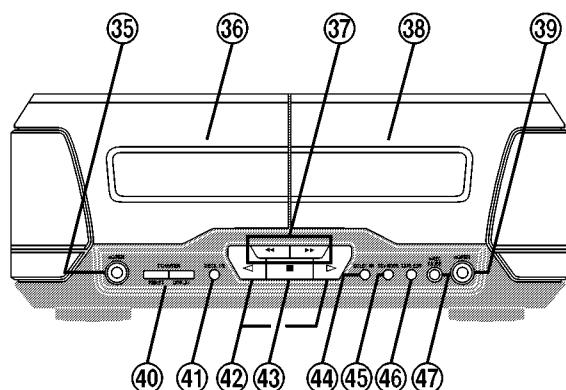
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1 Note

Refer to the service manual for Model No. SA-DV170 (Order No. AD0005112C2) for information on Accessories and Packaging.

2 Location of Controls

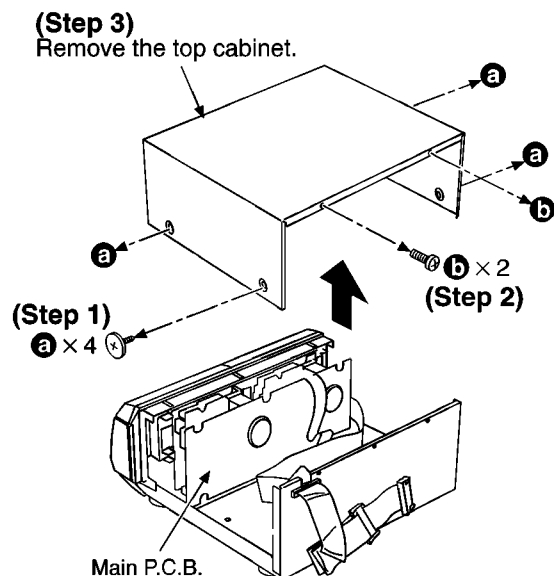


- ③⑤ Deck 1 cassette holder open button (▲ OPEN)
- ③⑥ Deck 1 cassette holder
- ③⑦ Fastforward/rewind buttons (◀◀, ▶▶)
- ③⑧ Deck 2 cassette holder
- ③⑨ Deck 2 cassette holder open button (▲ OPEN)
- ④① Counter reset, display buttons (COUNTER, RESET, DISPLAY)
- ④② Deck 1/deck 2 select button (DECK 1/2)
- ④③ Playback buttons and indicators (◀, ▶)
The colour of the indicators depends on the operation taking place.
If stopped, fast-forwarding or rewinding: orange
If playing or recording: green
While carrying out TPS or recording is on standby: flashes green
- ④④ Stop button (■)
- ④⑤ Dolby noise reduction button (DOLBY NR)
- ④⑥ Reverse mode button (REV MODE)
- ④⑦ Tape edit button (TAPE EDIT)
- ④⑧ Record pause button (● REC PAUSE)

3 Operation Checks and Component Replacement Procedures

- This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
- For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

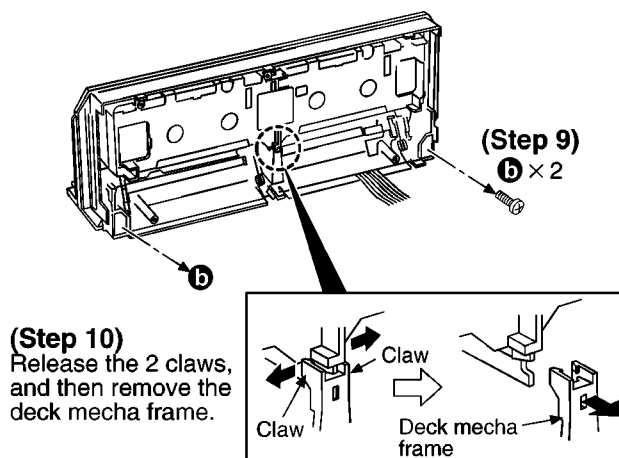
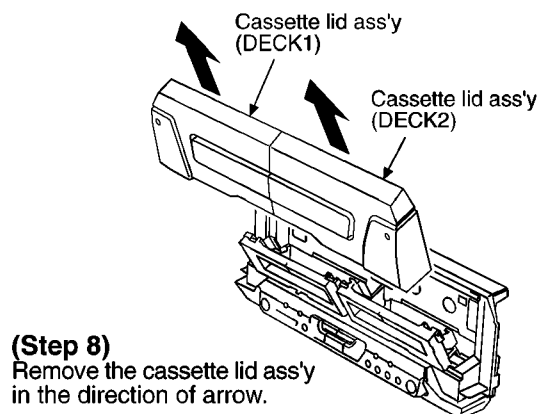
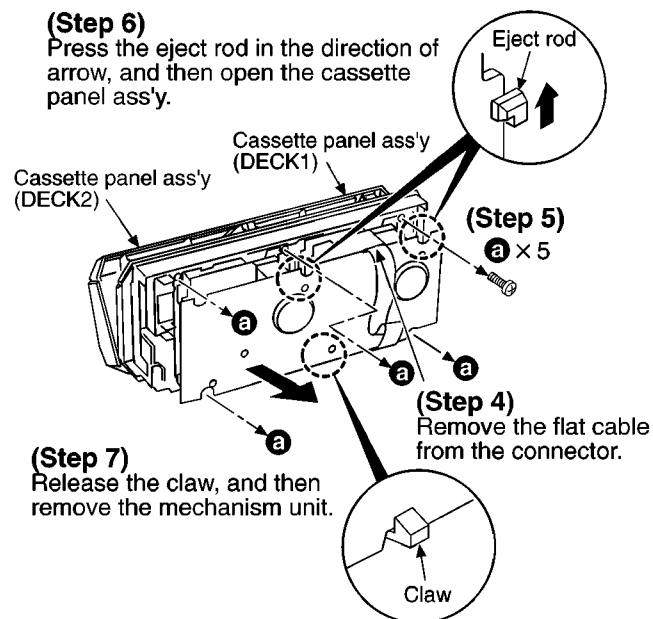
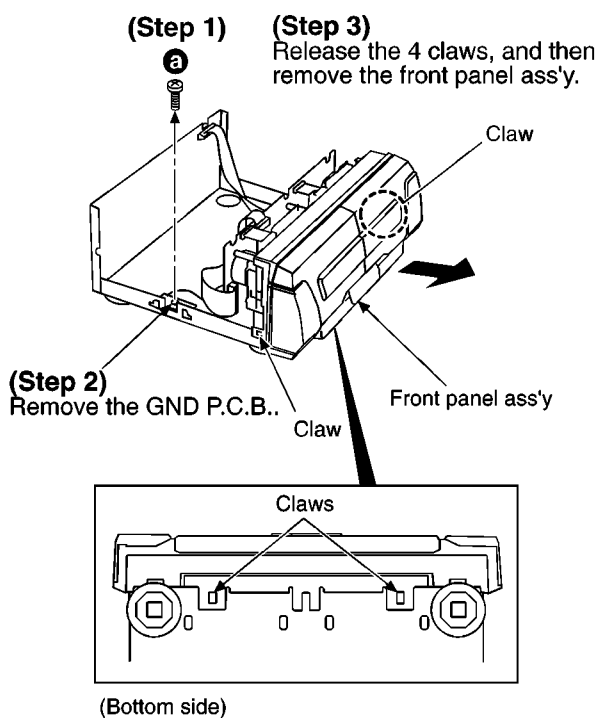
3.1. Checking for the main P.C.B.

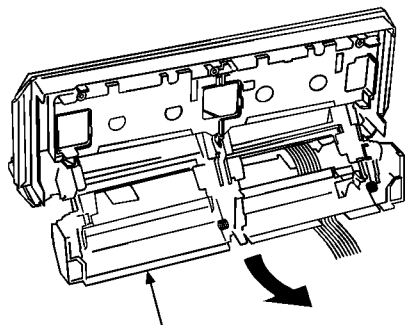


- Check the main P.C.B. as shown above.

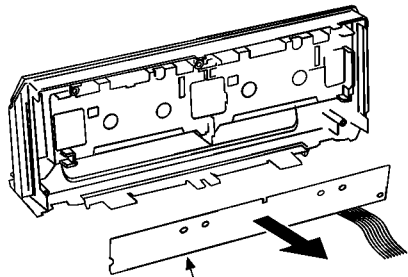
3.2. Checking for the operation P.C.B.

- Follow the (Step 1) - (Step 3) of item 3.1.



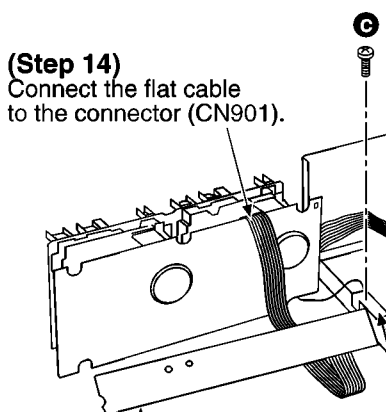


(Step 11)
Remove the deck mecha frame
in the direction of arrow.



(Step 12)
Remove the operation P.C.B..

• Check the operation P.C.B. as shown below.

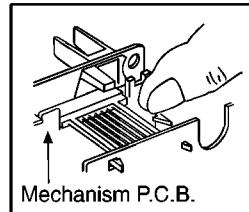


(Step 14)
Connect the flat cable
to the connector (CN901).

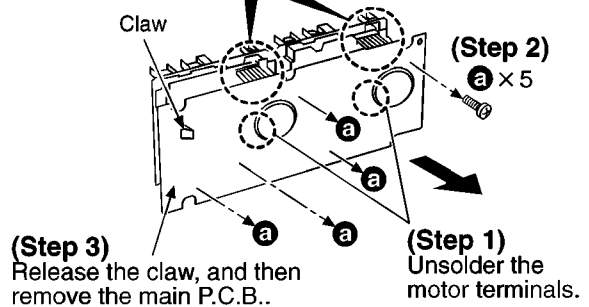
(Step 13)
Install the GND P.C.B. to
the bottom chassis, and
then tighten screw (C).

3.3. Replacement for the motor ass'y, capstan belt and winding belt

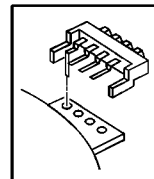
- Follow the (Step 1) - (Step 3) of item 3.1.
- Follow the (Step 1) - (Step 7) of item 3.2.



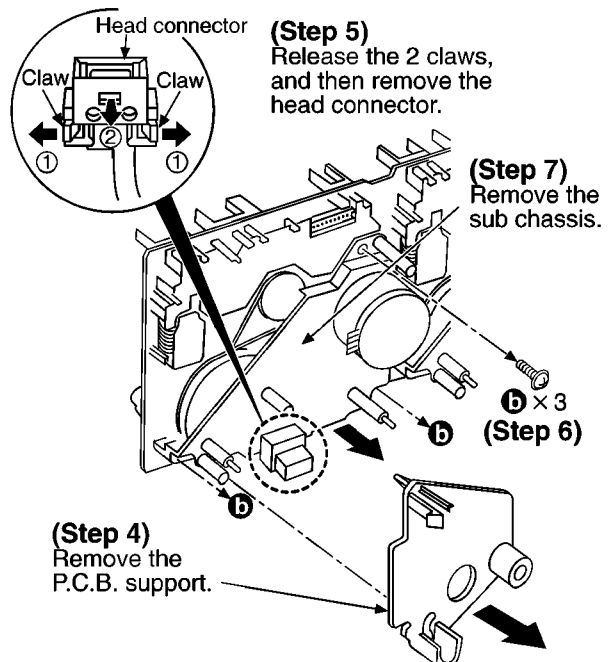
NOTE:
When removing the main P.C.B.,
remove it with holding the
mechanism P.C.B..

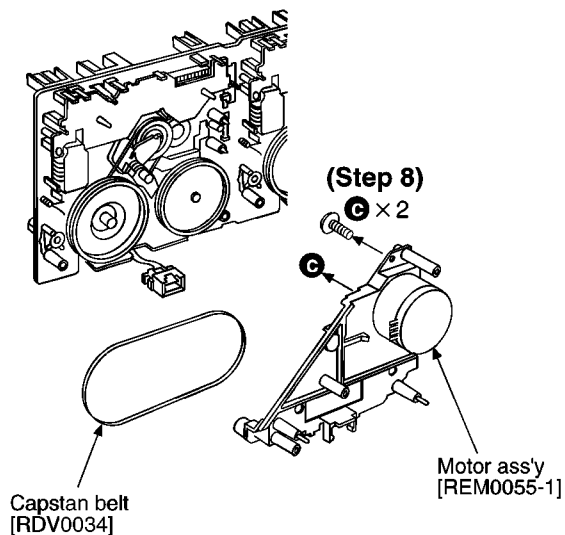


NOTE:
Handle the connector with
care so that the shape of
terminals different from others.

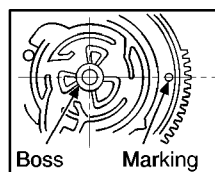


※ The illustration below shows DECK2 mechanism.
For DECK1 mechanism, perform the same
procedure as DECK2.

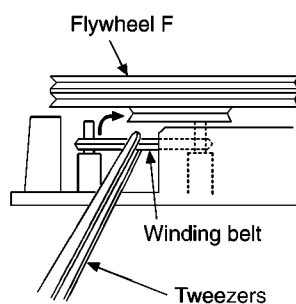
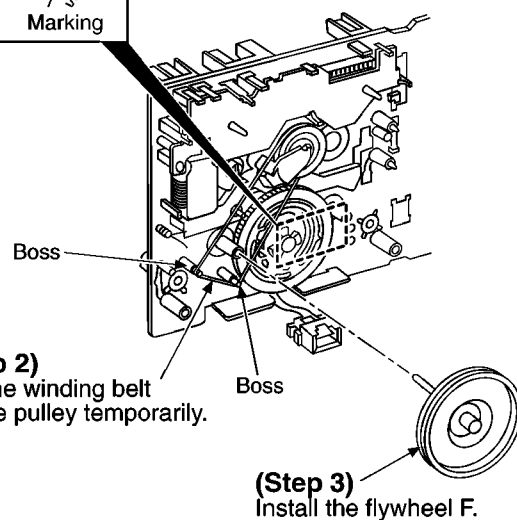




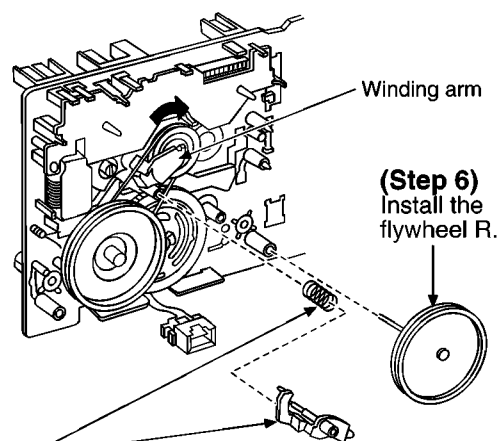
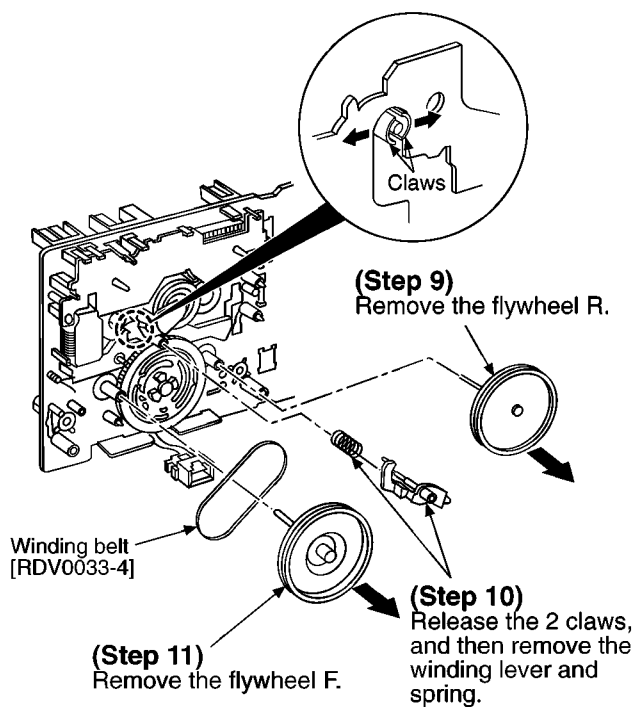
Installation of the belt



(Step 1)
The boss and marking should be positioned horizontally.

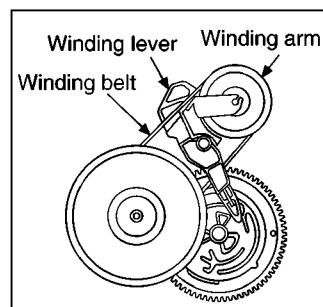


(Step 4)
Put the winding belt on the flywheel F.



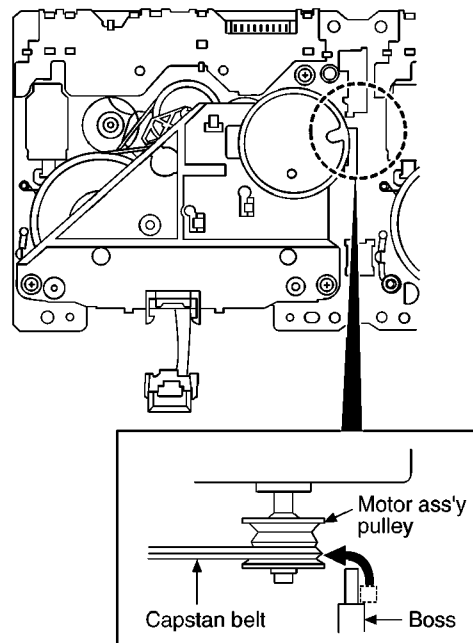
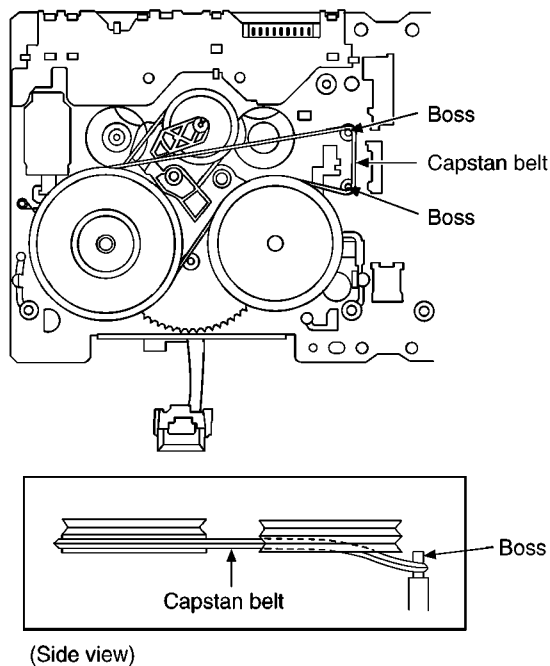
(Step 5)
Install the winding lever and spring while pressing the winding arm in the direction of arrow.
(The winding lever must be inserted completely and latched with claws.)

NOTE:
The winding lever should be positioned as shown right.



(Step 7)

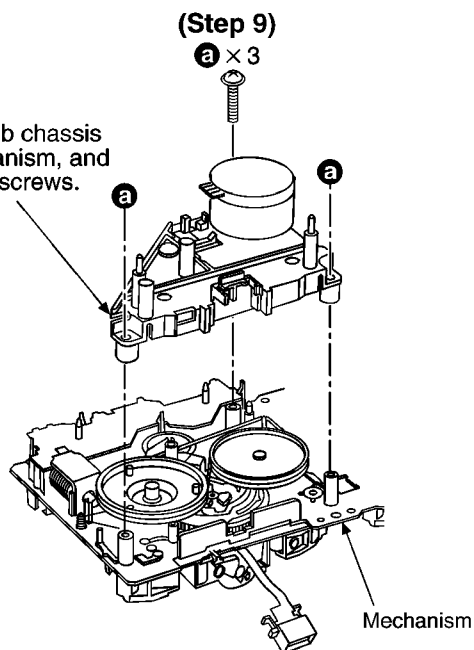
Put the capstan belt temporarily as shown below.

**(Step 10)**

Put the capstan belt on the motor ass'y pulley.

(Step 8)

Install the sub chassis to the mechanism, and then tighten screws.



3.4. Replacement for the components parts on the mechanism P.C.B.

- Follow the (Step 1) - (Step 3) of item 3.1.
- Follow the (Step 1) - (Step 7) of item 3.2.
- Follow the (Step 1) - (Step 4) of item 3.3.

(Step 1)

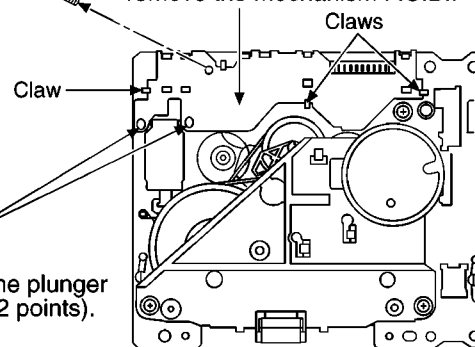
a

(Step 3)

Release the 3 claws, and then remove the mechanism P.C.B..

(Step 2)

Unsolder the plunger terminals (2 points).



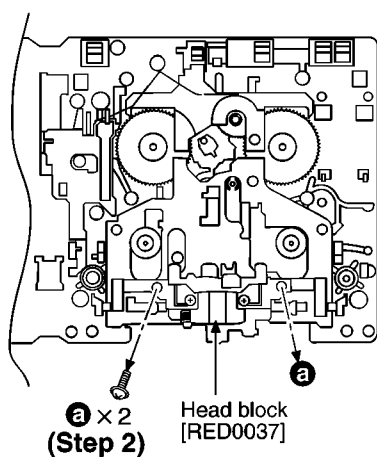
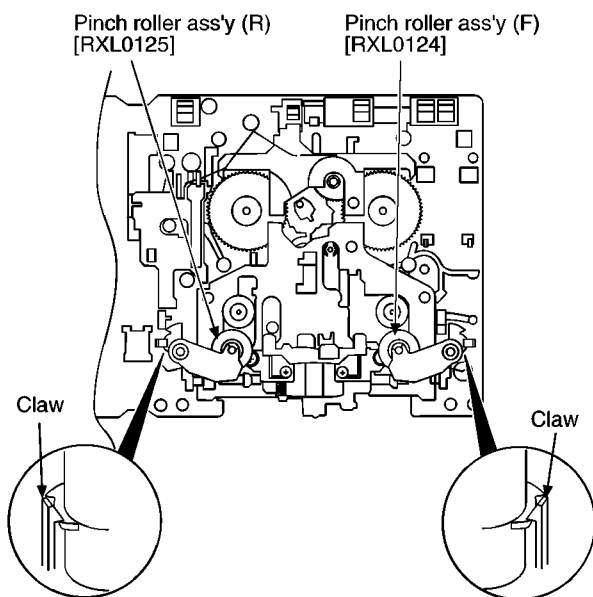
3.5. Replacement for the pinch roller ass'y and head block

- Follow the (Step 1) - (Step 3) of item 3.1.
- Follow the (Step 1) - (Step 7) of item 3.2.
- Follow the (Step 1) - (Step 5) of item 3.3.

※ The mechanism as shown below is for DECK2.
For the one of DECK1, perform the same procedures.

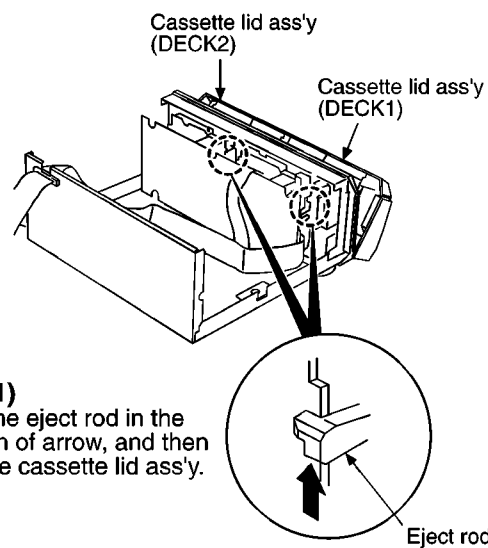
(Step 1)

Release the 2 claws, and then remove the pinch roller (R), (F).



3.6. Replacement for the cassette lid ass'y

- Follow the (Step 1) - (Step 3) of item 3.1.



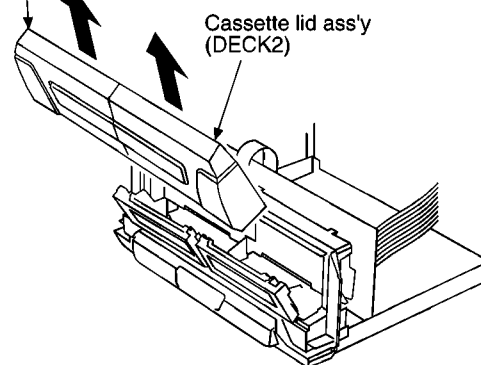
(Step 1)

Press the eject rod in the direction of arrow, and then open the cassette lid ass'y.

Cassette lid ass'y (DECK1)

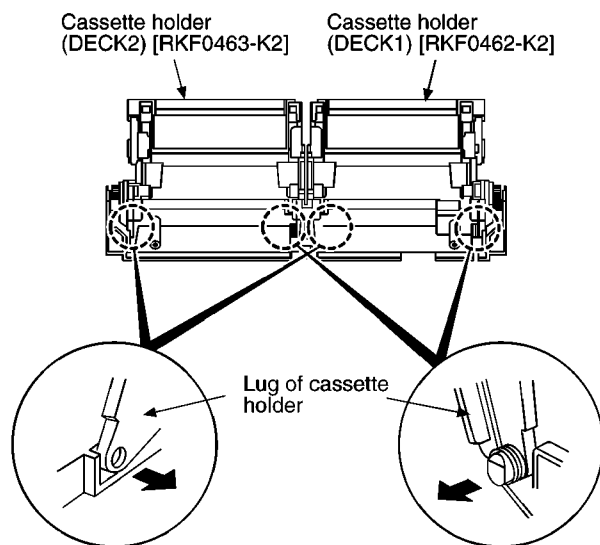
(Step 2)

Remove the cassette lid ass'y in the direction of arrow.



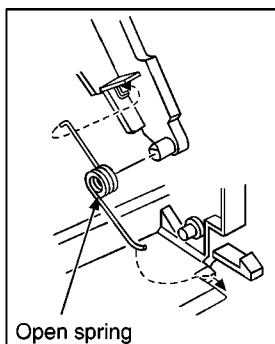
3.7. Replacement for the cassette holder

- Follow the **(Step 1)** - **(Step 3)** of item 3.1.
- Follow the **(Step 1)** - **(Step 11)** of item 3.2.



- Release the lug of cassette holder in the direction of arrow.

■ Open spring installation



4 To Supply Power Source

This unit is designed to operate on power supplied from system connected.

When a component requires service, use the system connections to supply power source.

For system connections, refer to Fig. 4-1.

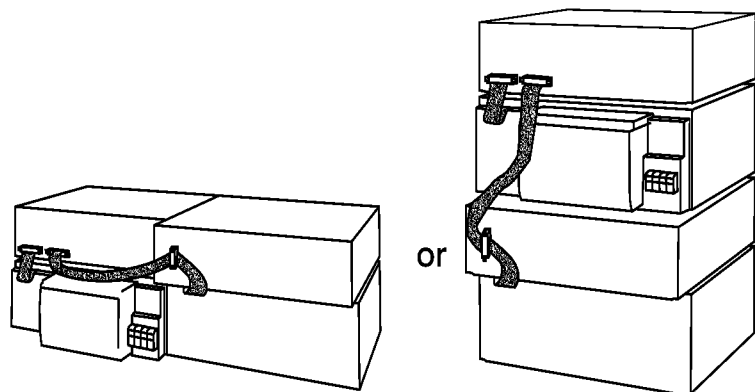


Fig. 4-1.

5 Service Mode Function of Cassette Mechanism

This unit is equipped with a service mode function of cassette mechanism, so that if the unit operates incorrectly, the fault displayed using an error code on the FL display of the Tuner/Amplifier (SA-DV170). The system control IC and FL display are part of the Tuner/Amplifier so make sure the system has been connected properly before using this function. Use this function during maintenance to check faults of items below.

5.1. Cassette tape to be prepared

- Metal tape:** Recorded music tape with only one erasure prevention tab intact.
(use middle portion of tape)
- Normal tape:** Recorded music tape with both erasure prevention tabs intact.
- CrO2 tape:** Recorded music tape with both erasure prevention tabs intact.
(use middle portion of tape)

5.2. Selecting service mode

1. Turn on the power to the unit.
2. Make sure that no tape is inserted in the cassette deck.
(Service mode cannot be selected with a tape inserted in the cassette deck.)
3. Press the DOLBY NR button for about 2 seconds, and keep pressing it, also press the STOP button for about 2 seconds. Refer to Fig. 5-1. (The symbol "T" is displayed on the tuner/amplifier. It indicates the service mode has been activated.)

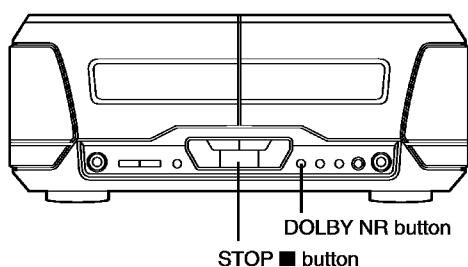


Fig. 5-1.

5.3. Deck 1 mechanism check

1. Press the Deck 1/deck 2 select button to change the flashing Deck 2 indicator to Deck 1. Refer to Fig. 5-2.
(No change required if Deck 1 indicator already flashing.)
2. Press the Deck 1 cassette holder open button to open the Deck 1 cassette holder. Refer to Fig. 5-2.
3. Insert a CrO2 tape into the Deck 1 and close the cassette holder.
4. Press the Fast forward button. Refer to Fig. 5-2.
(Tape fast forwards for about 2 seconds then stops.)
5. Press the PLAY button. Refer to Fig. 5-2.
(After TPS operation and check, the tape stops.)
6. Open the Deck 1 cassette holder and replace the tape with a normal tape.
7. Close the Deck 1 cassette holder.
8. Press the Record pause button. Refer to Fig. 5-2.
(No record operation.)
9. Press the STOP button. Refer to Fig. 5-2. A mechanism error code is displayed. Refer to Table 5-1. Each time the STOP button is pressed, the fault items are displayed in sequence.

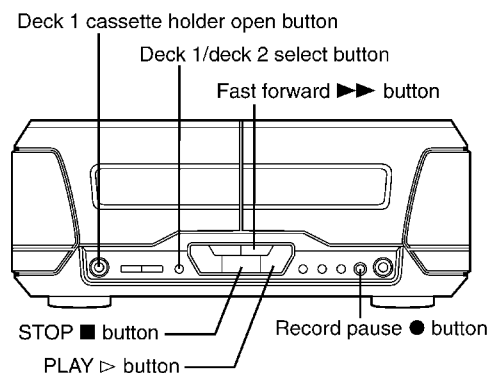


Fig. 5-2.

FL display	Symptom	Cause
H01	Cassette deck does not operate correctly.	Faulty cassette deck mechanism mode detection switch (Deck 1: S951, Deck 2: S971) and plunger. (Check and replace)
H02	Unit does not record, or the unit goes into recording mode even when the erasure prevention tabs have been removed from the cassette.	Faulty erasure prevention tabs detection switch (S974, S975) or short-circuit. (Check and replace)
H03	Tape does not play, even when the tape deck play button is pressed. The motor operates when the tape deck play button is pressed, even when no cassette is loaded in the deck.	Faulty tape detection switch (Deck 1: S952, Deck 2: S972) or short-circuit. (Check and replace)
H06	Cassette deck does not detect CrO ₂ tape.	Faulty CrO ₂ tape detect switch (Deck 1: S953, Deck 2: S973). (Check and replace)
H07	Cassette deck does not detect Metal tape.	Faulty Metal tape detect switch (S976). (Check and replace)
F01	When the tape play button is pressed, tape advances only slightly and then stops.	Reel pulse error (Faulty Hall IC). (Check and replace)
F02	TPS (tape program search) does not work.	Faulty TPS signal detection or faulty plunger control. (Check and replace mechanism control IC)

Table 5-1.

5.4. Deck 2 mechanism check

1. Press the Deck 1/deck 2 select button to change the flashing Deck 1 indicator to Deck 2. Refer to Fig. 5-3.
2. Press the Deck 2 cassette holder open button to open the Deck 2 cassette holder. Refer to Fig. 5-3.
3. Insert a metal tape into the Deck 2 with an intact erasure prevention tab on the right side.
4. Close the Deck 2 cassette holder.
5. Press the Fast forward button. Refer to Fig. 5-3.
(Tape fast forwards for about 2 seconds then stops.)
6. Open the Deck 2 cassette holder and turn over the metal tape. (intact erasure prevention tab on the left side.)
7. Close the Deck 2 cassette holder.
8. Press the Rewind button. Refer to Fig. 5-3.
(Tape rewinds for about 2 seconds then stops.)
9. Open the Deck 2 cassette holder and replace the metal tape with a CrO₂ tape.
10. Close the Deck 2 cassette holder.
11. Press the PLAY button. Refer to Fig. 5-3.
(After TPS operation and check, the tape stops.)
12. Open the Deck 2 cassette holder and replace the CrO₂ tape with a normal tape.
13. Close the Deck 2 cassette holder.
14. Press the Record pause button. Refer to Fig. 5-3.
(No record operation.)
15. Press the STOP button. Refer to Fig. 5-3. A mechanism error code is displayed. Refer to Table 5-1. Each time the STOP button is pressed, the fault items are displayed in sequence.

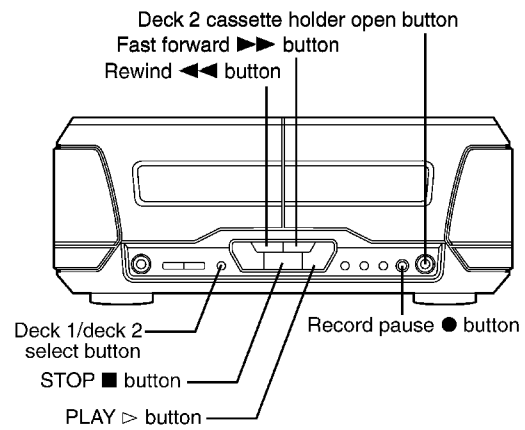


Fig. 5-3.

5.5. Exiting service mode

1. Press the STOP button for more than 5 seconds (Diagnostic contents stored in memory for both Deck 1 and 2 are erased.)
2. Remove the cassette tape from the cassette holder.
3. Turn off the unit.

6 Schematic Diagram Notes

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

Notes:

S900:	Stop switch (■)
S901:	Deck 2 cassette holder open switch (▲ OPEN)
S903:	Tape edit switch (TAPE EDIT)
S904:	Record pause switch (● REC PAUSE)
S905:	Dolby noise reduction switch (DOLBY NR)
S906:	Fast forward switch (►►)
S907:	Forward side playback switch (►)
S909:	Reverse side playback switch (◄)
S910:	Rewind switch (◄◄)
S911:	Reverse mode switch (REV MODE)
S912:	Deck 1/deck 2 select switch (DECK 1/2)
S913:	Counter display switch (COUNTER DISPLAY)
S914:	Counter reset switch (COUNTER RESET)
S915:	Deck 1 cassette holder open switch (▲ OPEN)
S951:	Deck 1 mode detect switch
S952:	Deck 1 half detect switch
S953:	Deck 1 CrO2 tape detect switch
S971:	Deck 2 mode detect switch
S972:	Deck 2 half detect switch
S973:	Deck 2 CrO2 tape detect switch
S974:	Deck 2 reverse side record prevention tab detect switch
S975:	Deck 2 forward side record prevention tab detect switch
S976:	Deck 2 METAL tape detect switch
VR101:	Deck 1 playback gain adjustment VR (R ch)
VR102:	Deck 2 playback gain adjustment VR (L ch)
VR103:	Deck 2 playback gain adjustment VR (R ch)
VR104:	Deck 1 playback gain adjustment VR (L ch)
VR801:	Deck 1 tape speed adjustment VR (normal)
VR803:	Deck 2 tape speed adjustment VR (normal)

- 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 △ 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 supply part number is described alone in the replacement parts.

• Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

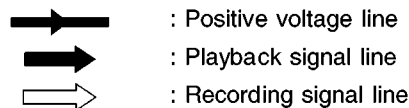
Cover the parts boxes made of plastics with aluminum foil.

Ground the soldering iron.

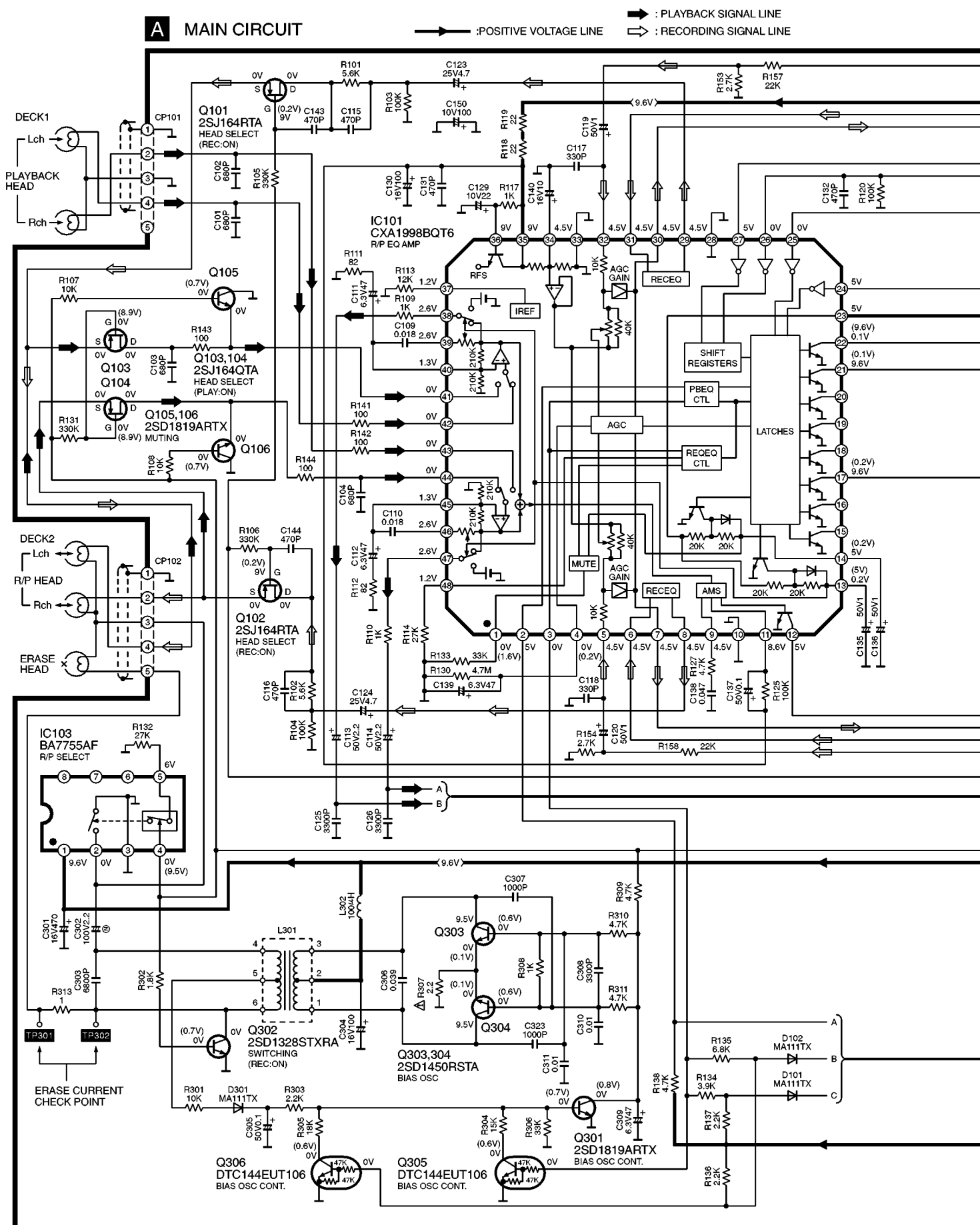
Put a conductive mat on the work table.

Do not touch the legs of IC or LSI with the fingers directly.

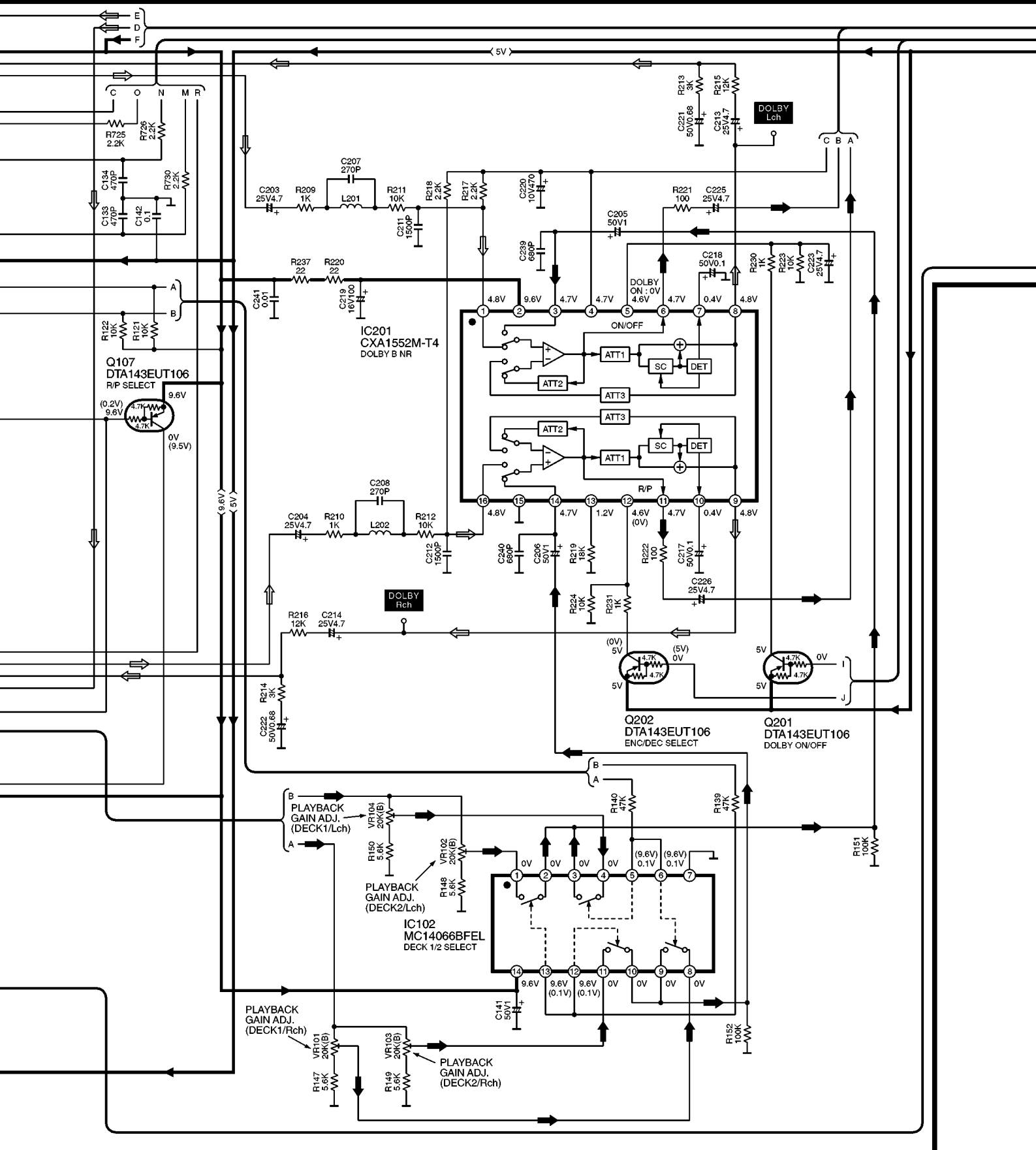
- Voltage and signal line



7 Schematic Diagram

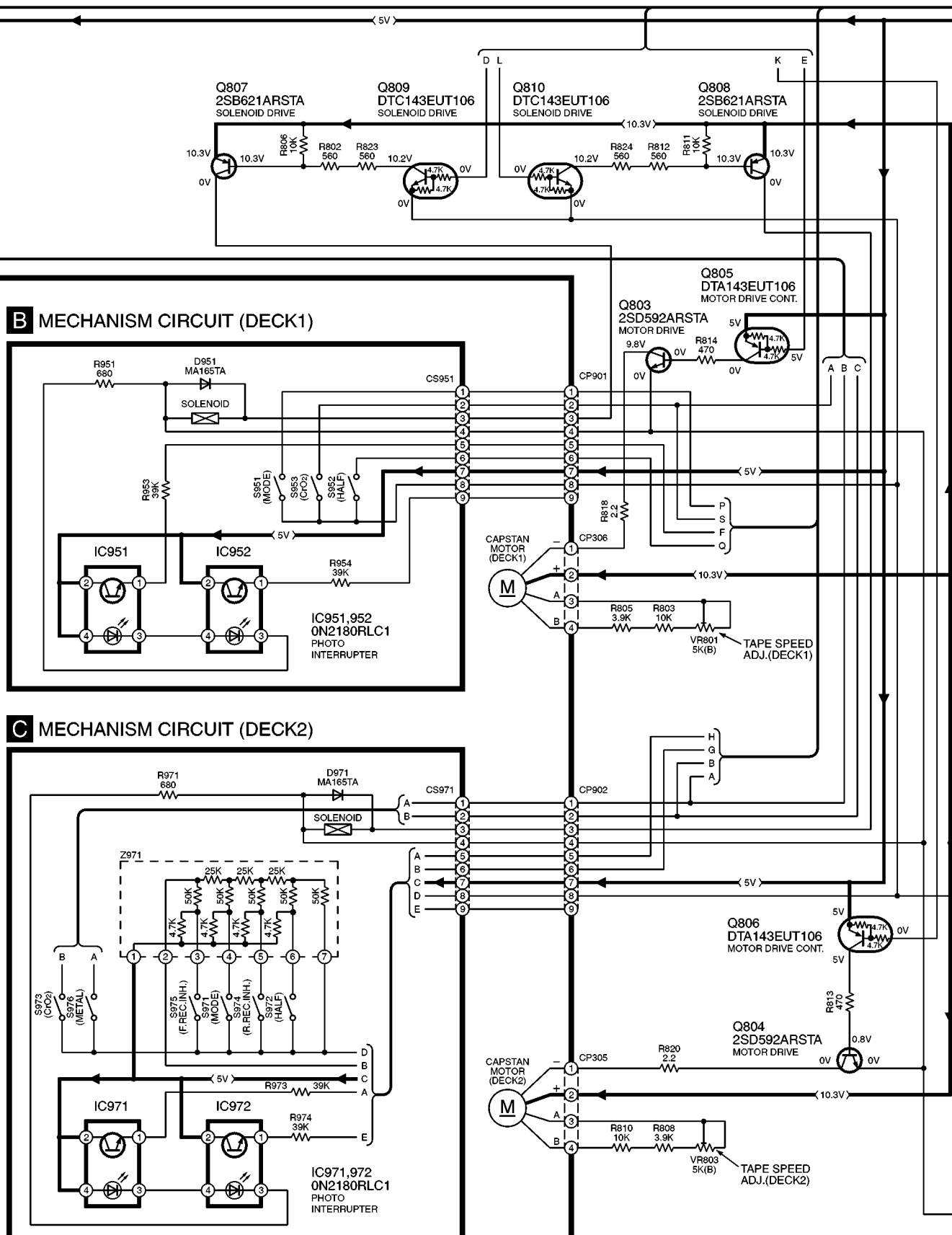


 : POSITIVE VOLTAGE LINE
  : PLAYBACK SIGNAL LINE
 : POSITIVE VOLTAGE LINE
  : RECORDING SIGNAL LINE

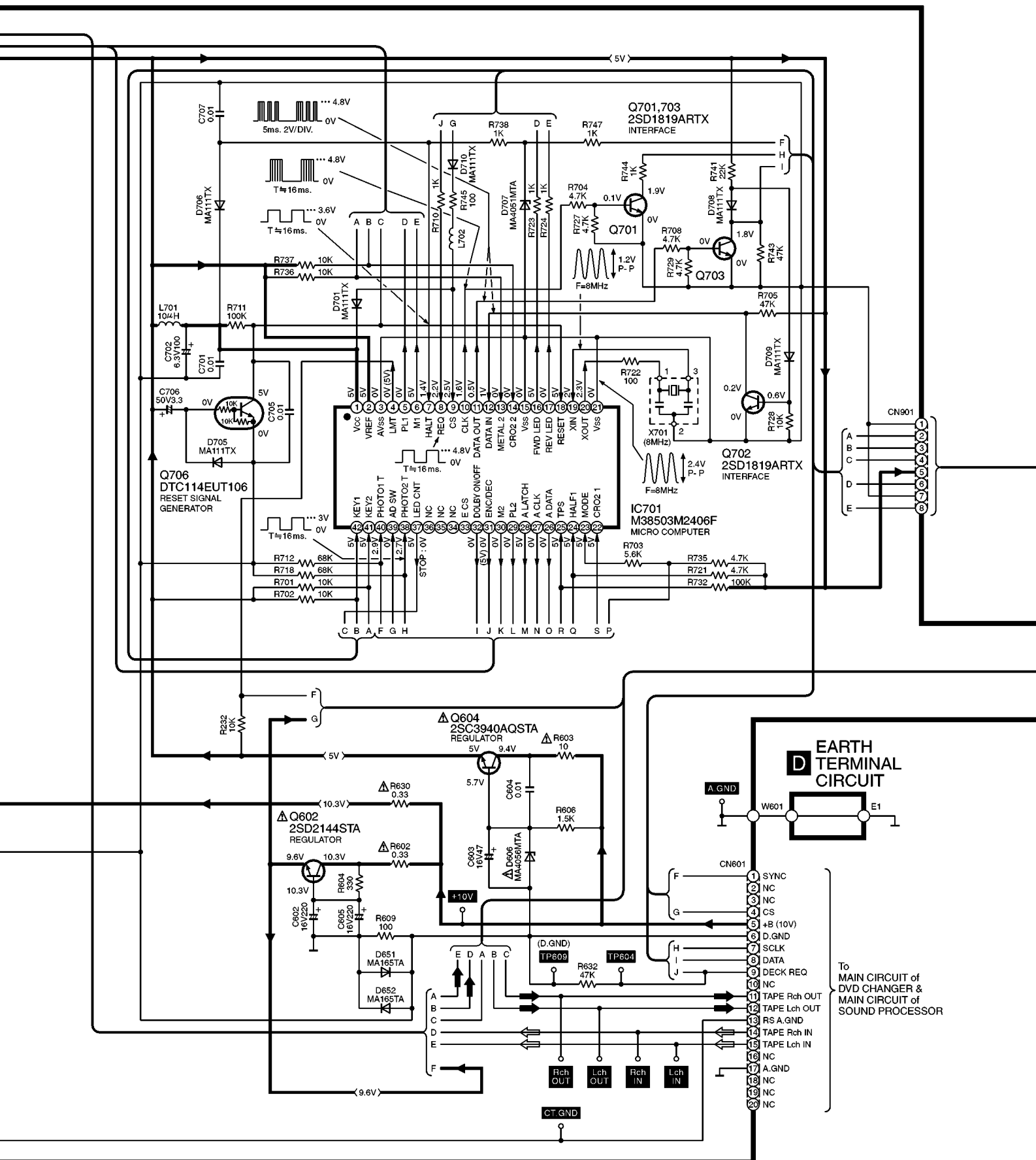


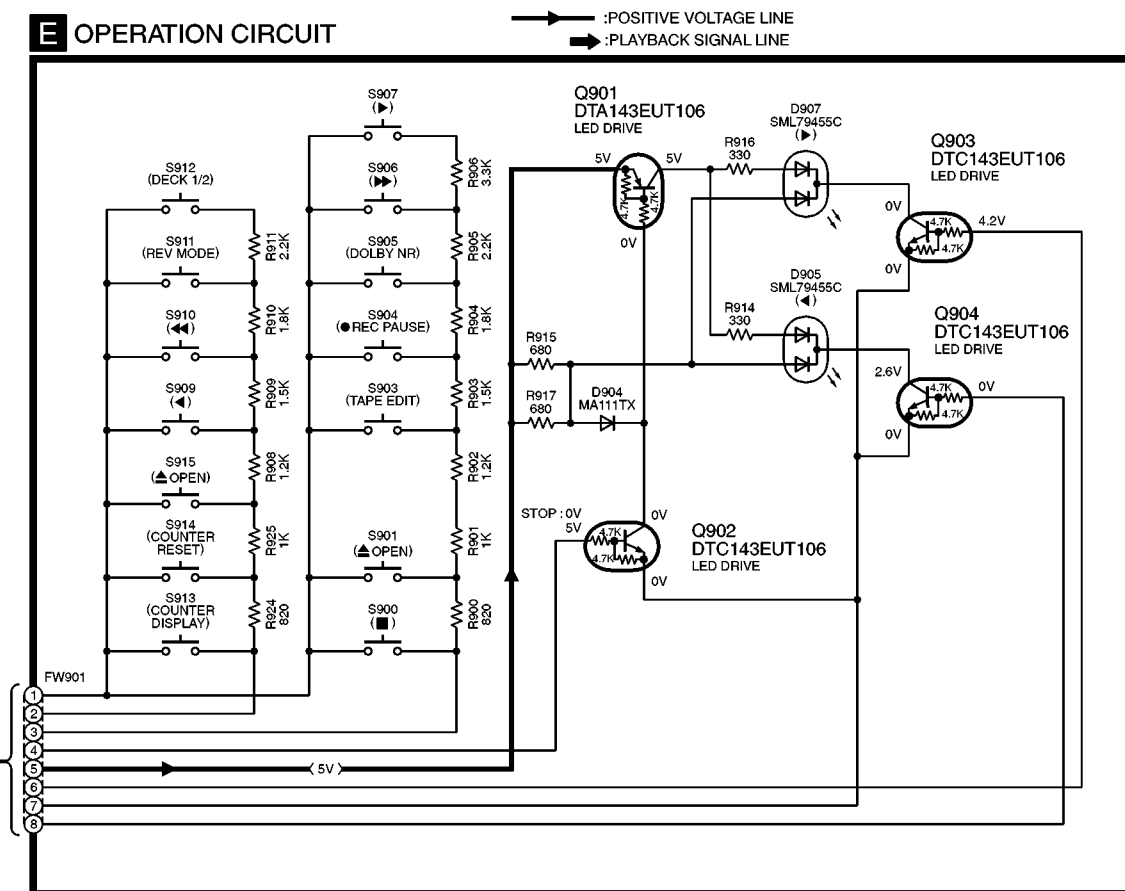
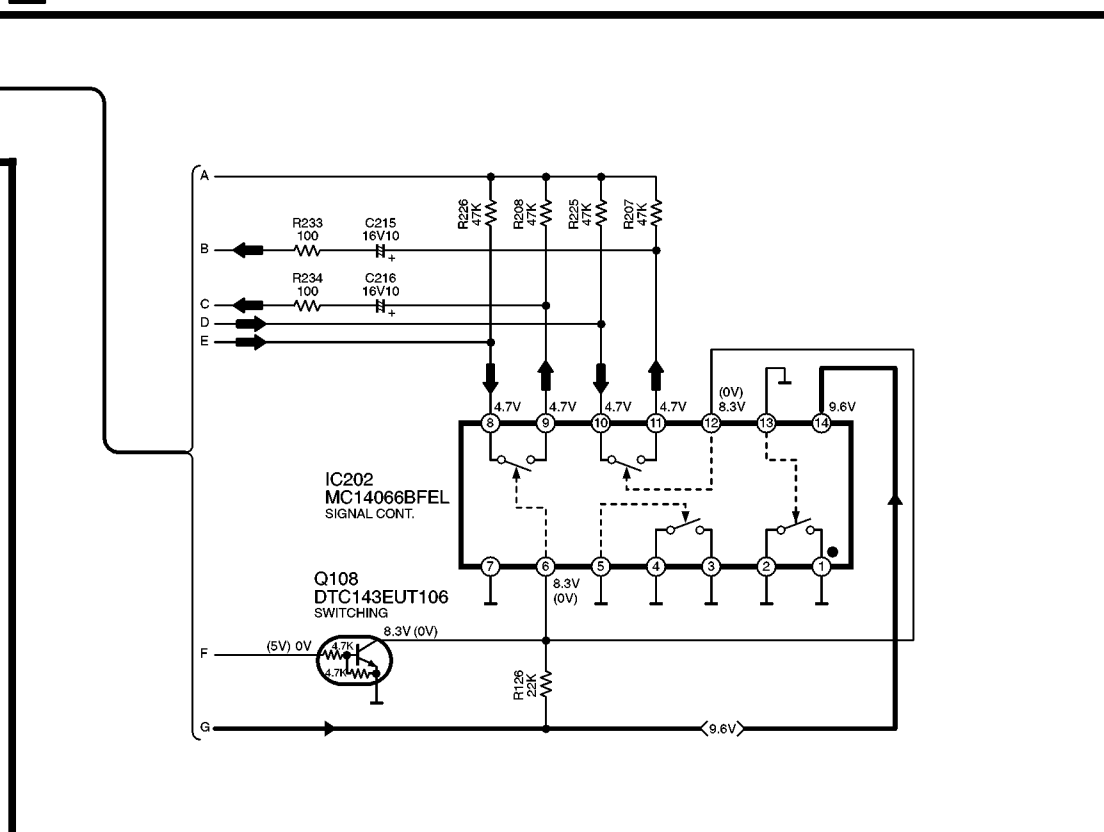
A MAIN CIRCUIT

→ : POSITIVE VOLTAGE LINE

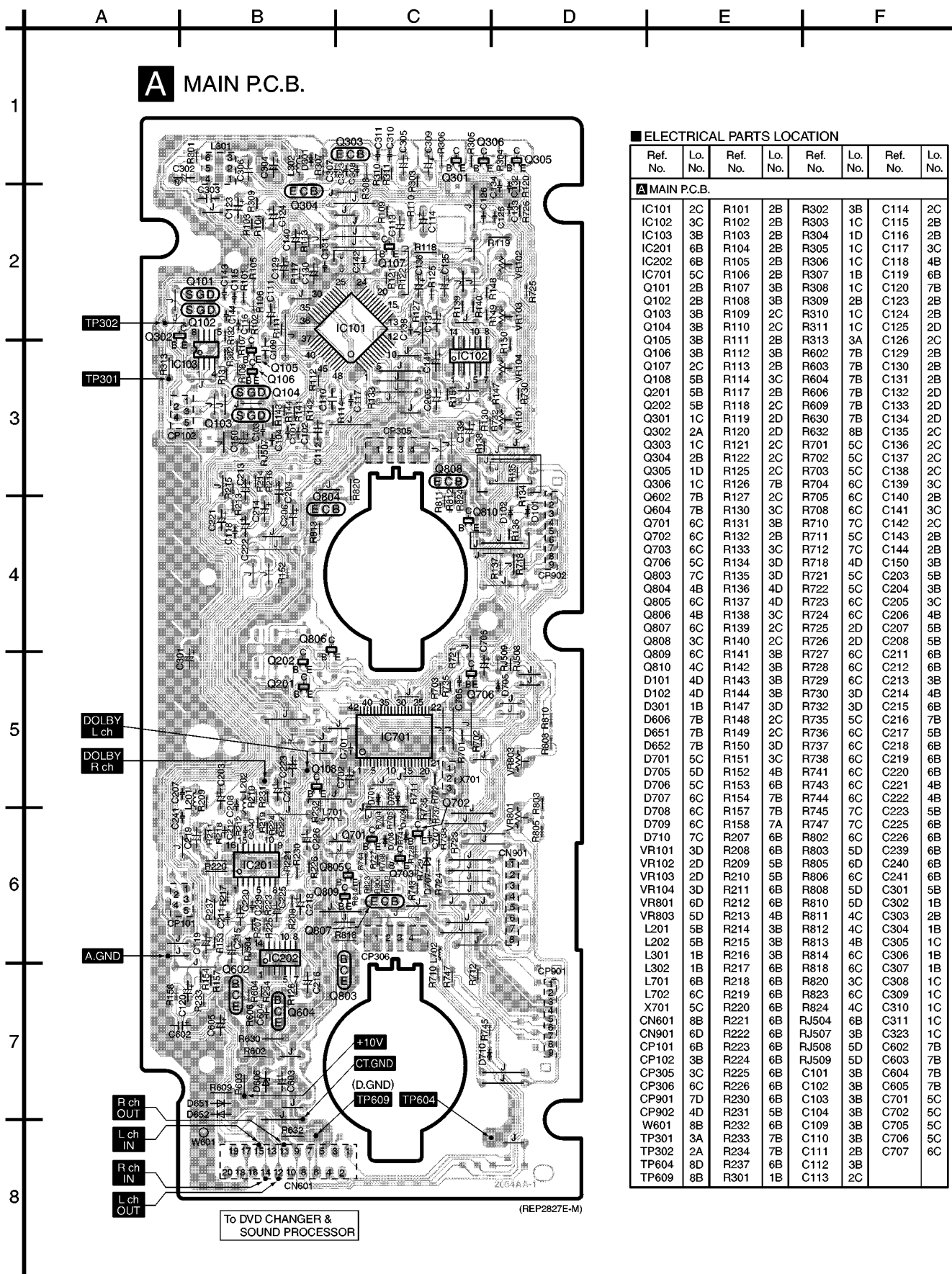


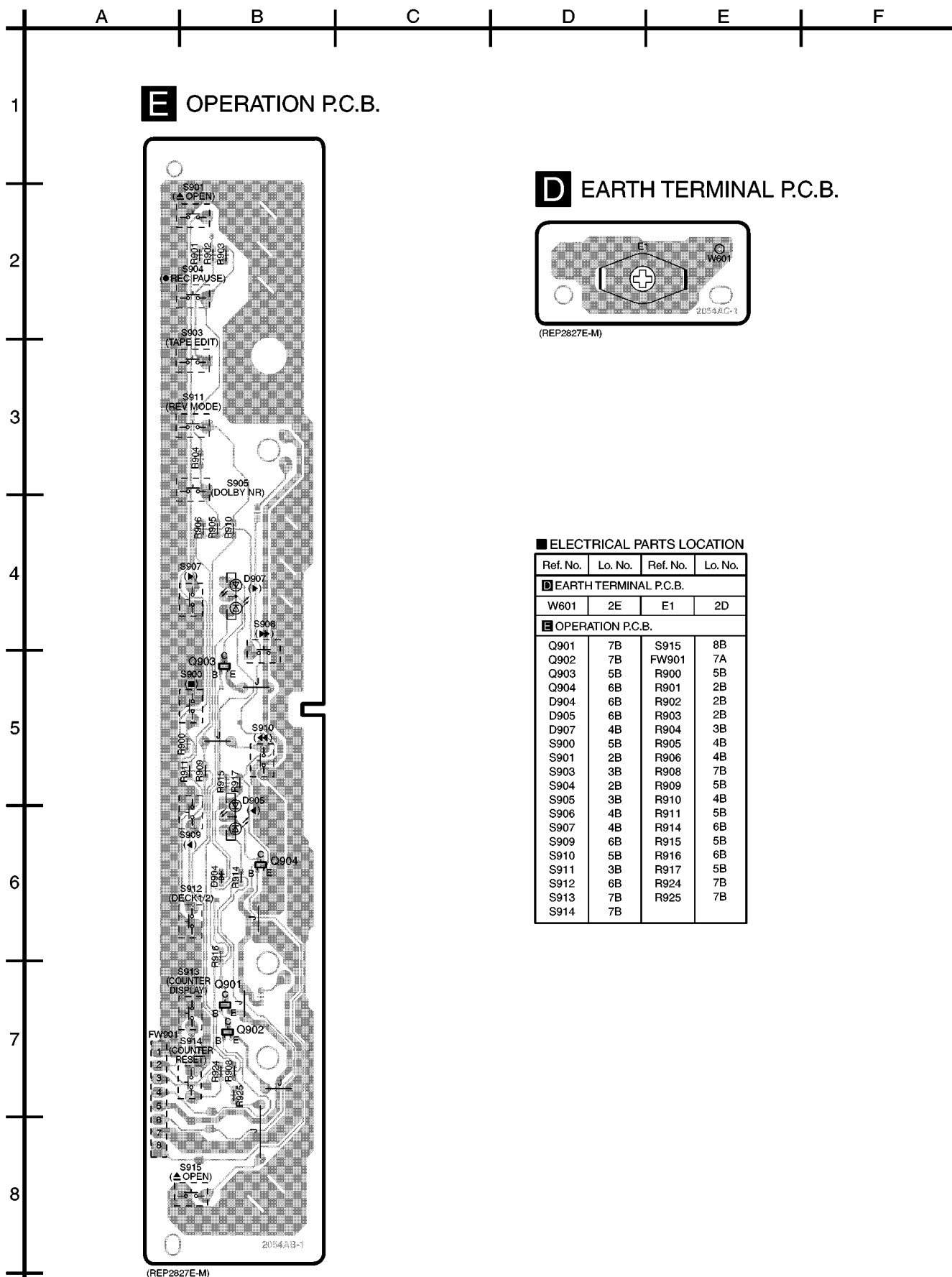
 : POSITIVE VOLTAGE LINE
 : PLAYBACK SIGNAL LINE
 : RECORDING SIGNAL LINE



E OPERATION CIRCUIT**A** MAIN CIRCUIT

8 Printed Circuit Board Diagram

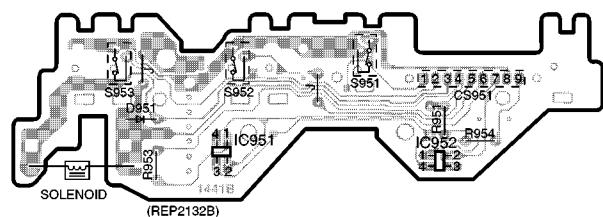




ELECTRICAL PARTS LOCATION

Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.	Ref. No.	Lo. No.
B MECHANISM P.C.B. (DECK 1)															
IC951	3B	D951	3A	S952	3B	S953	3A	CS951	3C	R951	3C	R953	3A	R954	3C
IC952	3C	S951	3B												
C MECHANISM P.C.B. (DECK 2)															
IC971	3E	D971	3D	S971	3E	S973	3D	S975	3F	CS971	3F	R973	3D	R974	3F
IC972	3F	Z971	3E	S972	3E	S974	3D	S976	3E	R971	3F				

B MECHANISM P.C.B. (DECK1)

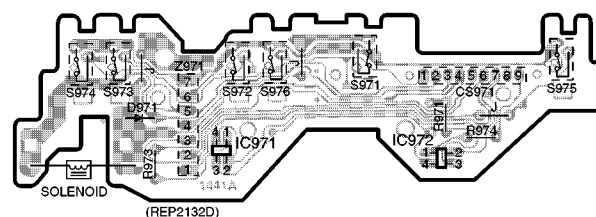


Note for IC951 and IC952 replacement

- Two different types (old or new) parts are mounted on P.C.B. as for IC951 and 952.
- When servicing, care to replace the parts due to those shape.
- Replacement procedures

	Parts No.	Direction	Remarks
Old	0N2180RLC	Mount the parts on given position. (Printed pattern on P.C.B.)	Refer to the figure below.
New	0N2180RLC1 [≈]	For IC951: Mount the parts so the cut corner is located upper right. For IC952: Mount the parts so the cut corner is located lower right.	

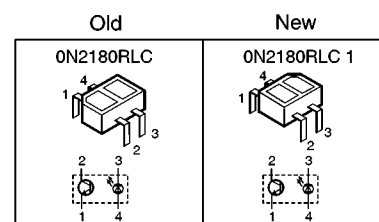
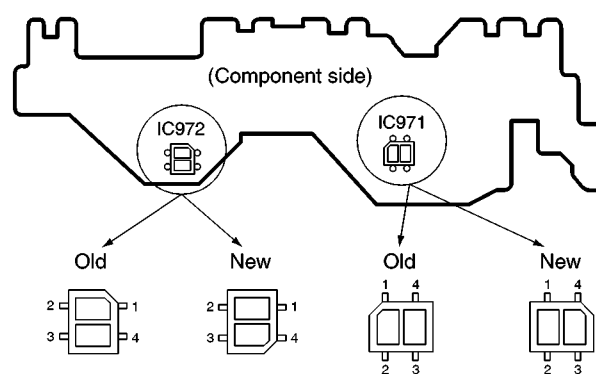
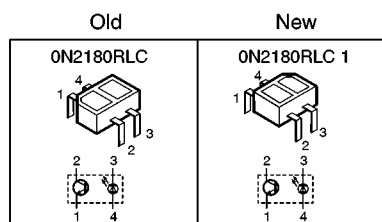
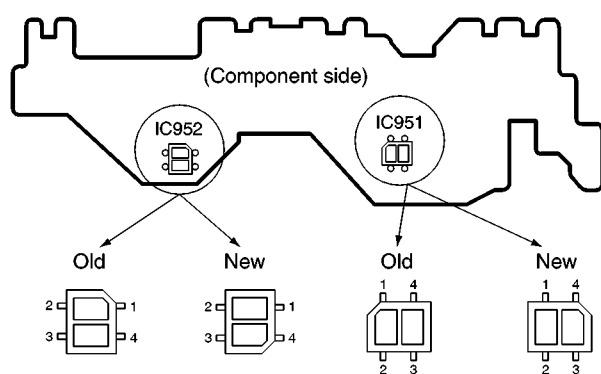
C MECHANISM P.C.B. (DECK2)



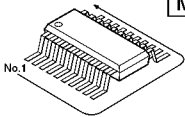
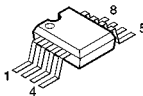
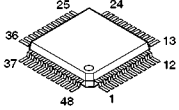
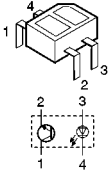
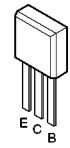
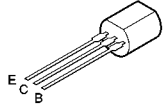
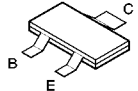
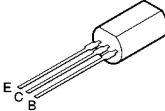
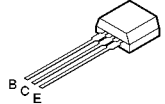
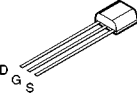
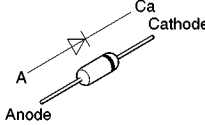
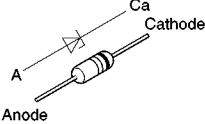
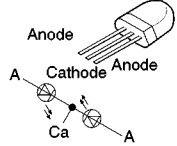
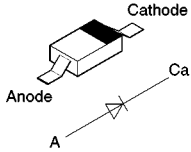
Note for IC971 and IC972 replacement

- Two different types (old or new) parts are mounted on P.C.B. as for IC971 and 972.
- When servicing, care to replace the parts due to those shape.
- Replacement procedures

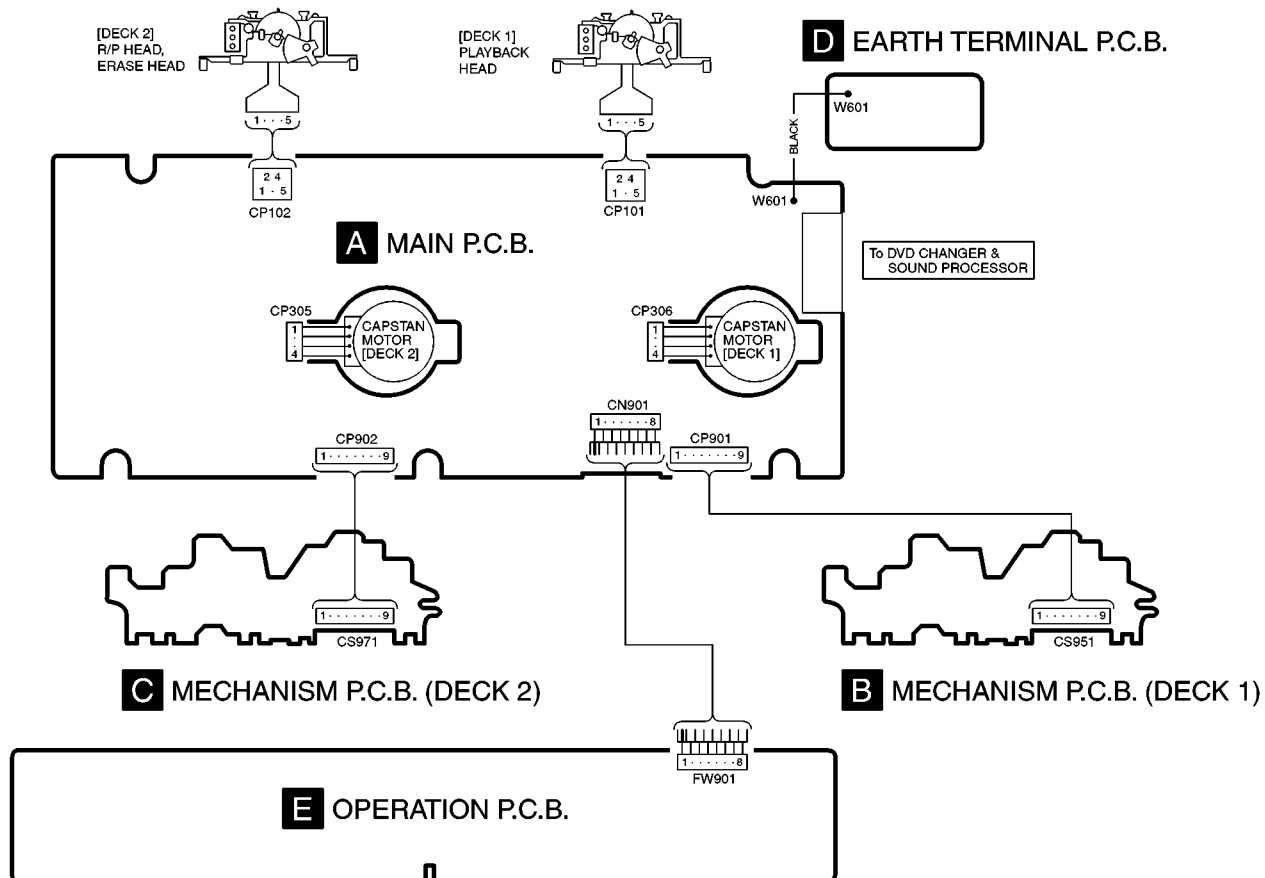
	Parts No.	Direction	Remarks
Old	0N2180RLC	Mount the parts on given position. (Printed pattern on P.C.B.)	Refer to the figure below.
New	0N2180RLC1 [≈]	For IC971: Mount the parts so the cut corner is located upper right. For IC972: Mount the parts so the cut corner is located lower right.	



9 Type Illustration of ICs, Transistors and Diodes

<table><tr><td>CXA1552M-T4</td><td>16PIN</td></tr><tr><td>MC14066BFEL</td><td>14PIN</td></tr><tr><td>M38503M2406F</td><td>42PIN</td></tr></table>	CXA1552M-T4	16PIN	MC14066BFEL	14PIN	M38503M2406F	42PIN	 BA7755AF	 CXA1998BQT6	 0N2180RLC1	 2SD1450RSTA
CXA1552M-T4	16PIN									
MC14066BFEL	14PIN									
M38503M2406F	42PIN									
 2SB621ARSTA 2SD592ARSTA	 2SD1819ARTX 2SD1328STXRA DTA143EUT106 DTC114EUT106 DTC143EUT106 DTC144EUT106	 2SC3940AQSTA	 2SD2144STA	 2SJ164QTA 2SJ164RTA						
 MA165TA	 MA4051MTA MA4056MTA	 SML79455C	 MA111TX							

10 Wiring Connection Diagram



11 Terminal Function of ICs

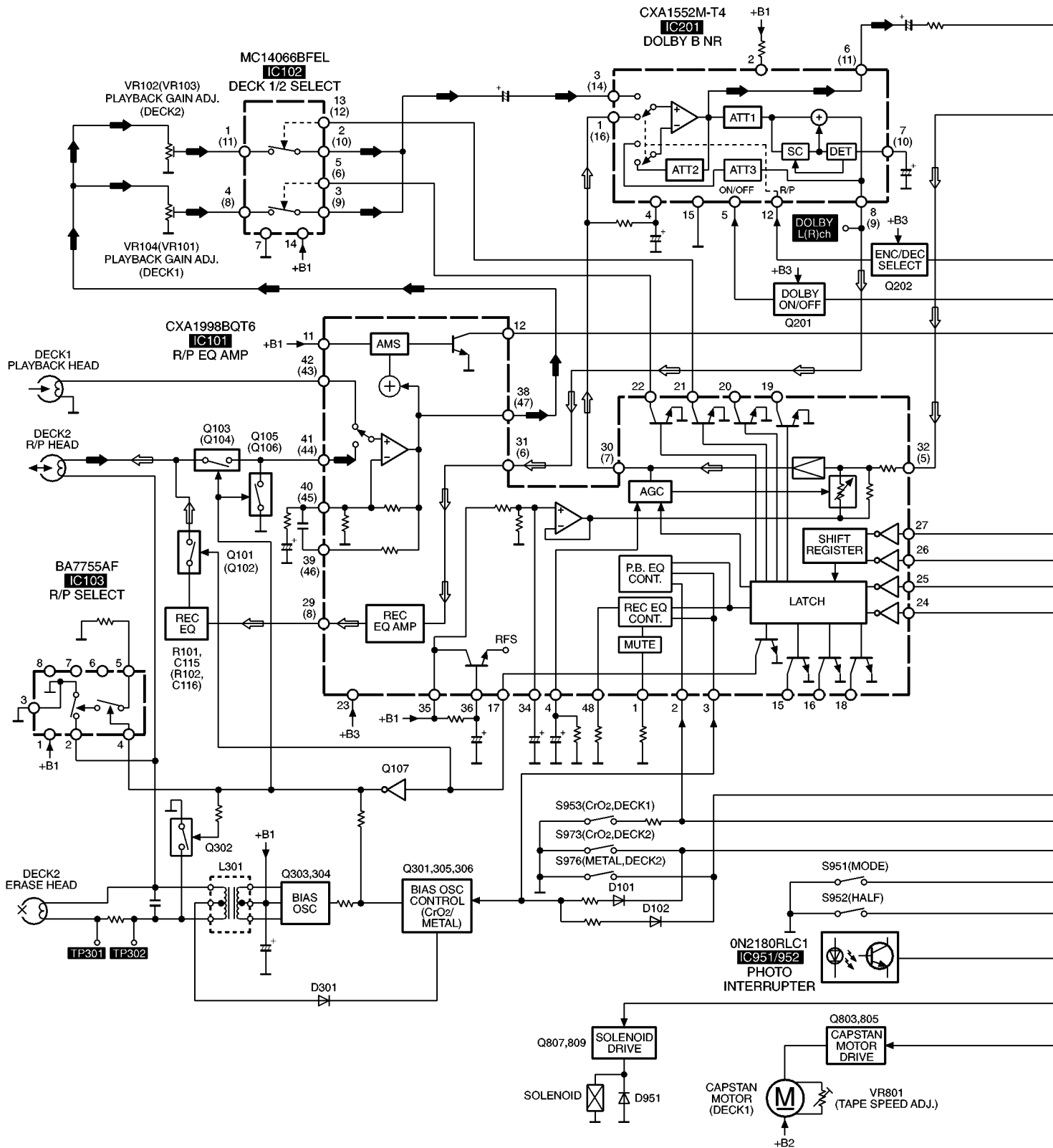
11.1. IC701 (M38503M2406F): Micro Computer

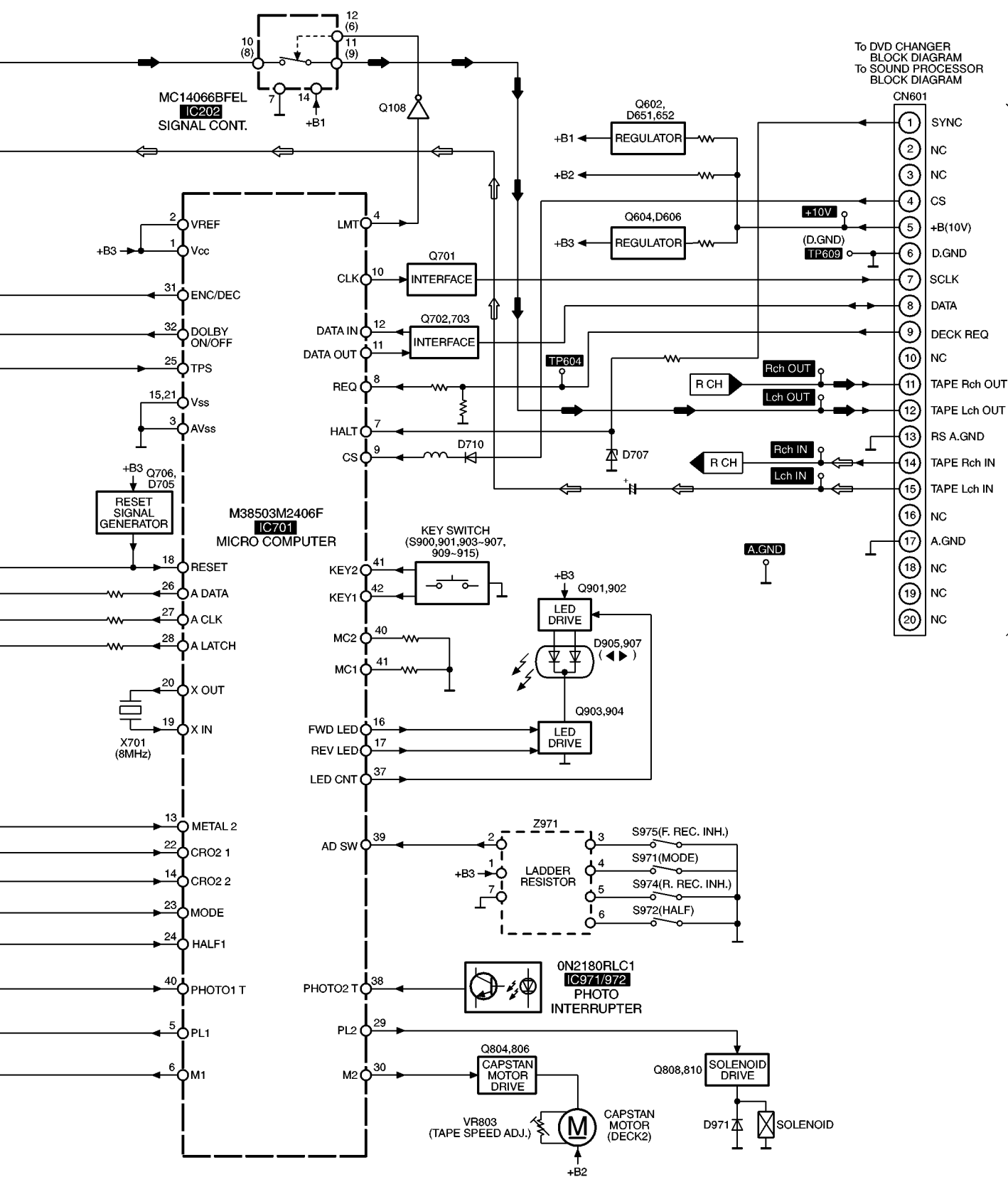
Pin No.	Terminal Name	I/O	Function
1	V _{cc}	I	Power supply terminal
2	VREF	I	Reference voltage input
3	AV _{ss}	-	GND terminal
4	LMT	O	Muting control signal output
5	PL1	O	Deck 1 solenoid control signal output
6	M1	O	Deck 1 motor drive signal output
7	HALT	I	Power failure detect signal input
8	REQ	I	Serial communication request signal input
9	CS	I	Serial communication complete signal input
10	CLK	O	Serial communication clock signal output
11	DATA OUT	O	Serial communication data signal output
12	DATA IN	I	Serial communication data signal input
13	METAL 2	I	Deck 2 tape detect switch signal (METAL) input
14	CrO2 2	I	Deck 2 tape detect switch signal (CrO2) input
15	V _{ss}	-	GND terminal
16	FWD LED	O	LED drive control signal (FWD) output
17	REV LED	O	LED drive control signal (REV) output
18	RESET	I	Reset signal input
19	XIN	I	Clock signal input (8 MHz)
20	XOUT	O	Clock signal output (8 MHz)
21	V _{ss}	-	GND terminal
22	CrO2 1	I	Deck 1 tape detect switch signal (CrO2) input
23	MODE	I	Deck 1 mechanism switch signal (MODE) input
24	HALF1	I	Deck 1 mechanism switch signal (Half) input
25	TPS	I	TPS signal input
26	A DATA	O	Serial data signal output for IC 101
27	A CLK	O	Serial clock signal output for IC 101
28	A LATCH	O	Serial latch signal output for IC 101
29	PL2	O	Deck 2 solenoid control signal output
30	M2	O	Deck 2 motor drive signal output
31	ENC/DEC	O	Dolby NR record/playback mode select signal output
32	DOLBY ON/OFF	O	Dolby NR ON/OFF control signal output
33	E CS	-	EEPROM chip select signal output (Not used, open)
34 36	NC	-	Not used, open
37	LED CNT	O	LED color control signal output
38	PHOTO2T	I	Deck 2 reel pulse detect signal input
39	AD SW	I	Deck 2 mechanism switch signal input (Half, Mode, F REC INH., R REC INH.)
40	PHOTO1T	I	Deck 1 reel pulse detect signal input
41	KEY2	I	Operation key signal input
42	KEY1	I	Operation key signal input

12 Block Diagram

NOTES

- →: PLAYBACK SIGNAL LINE
- ⇨: RECORDING SIGNAL LINE
- () indicates pin No. Right channel.





13 Measurements and Adjustments

Note:

This unit RS-DV170 is designed to operate on power supplied from system connected.

13.1. Measurement condition

- Dolby NR switch is OFF
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Temperature is 20 ± 5 °C

13.2. Measurement instrument and special tool

- Electronic Voltmeter
- Frequency Counter
- AF Oscillator
- Test tape
 - Head azimuth adjustment (12.5 kHz, -0.5 dB): QZZCAER
 - Tape speed adjustment (3 kHz, -10 dB): QZZCWAS
 - Recording/playback frequency response adjustment, playback gain adjustment: QZZCLA
(315 Hz/0dB, 315 Hz/-20 dB, 12.5 kHz~63 Hz/-20 dB)
 - QZZCRA4 (Normal blank tape)
 - QZZCRX2 (CrO2 blank tape)
 - QZZCRZ6 (Metal blank tape)

13.3. Head azimuth adjustment (Deck 1/2)

1. Connect the measuring instrument as shown in Fig. 13-1.
2. Replace azimuth screws for both forward and reverse directions after removing the screw-locking bond left on the head base. (Supply part No. of azimuth screw: **RHD17015**)
3. Playback the azimuth adjustment portion (12.5 kHz, -0.5 dB) of test tape (QZZCAER). Adjust the azimuth screw until the outputs of the L/R ch are maximized. Refer to Fig. 13-2. Make sure that the difference in the peak level between the left and right channels does not exceed 0.5 dB.

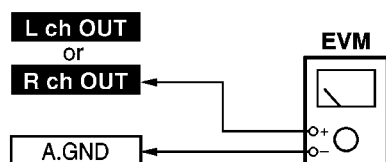


Fig. 13-1.

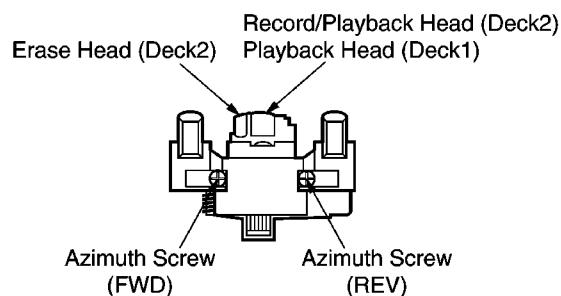


Fig. 13-2.

13.4. Tape speed adjustment (Deck 1/2)

Note:

When connecting the unit to other system components for test, short the section between the test point **TP604** and **TP609** and turn on the entire system. (The unit is set to the TEST mode, and either Deck 1 or Deck 2 indicator will blink.)

Normal speed (Standard value: 3000 ± 45 Hz)

1. Connect the measuring instrument as shown in Fig. 13-3.
2. Playback the middle portion of test tape. (QZZCWAS)
3. Adjust **VR801** (Deck 1) and **VR803** (Deck 2) for output value shown below. (For adjustment point, refer to Fig. 13-11.)

Adjustment target: 3000 ± 15 Hz (Normal speed)

Standard value: 3000 ± 45 Hz (Normal speed)

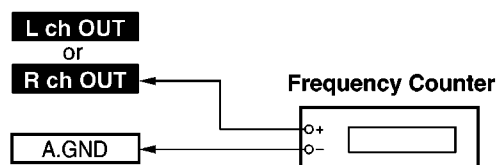


Fig. 13-3.

Note:

When the unit is finished for adjusting, disconnect the short section between **TP604** and **TP609**.

13.5. Playback gain adjustment (Deck 1/2)

1. Connect the measuring instrument as shown in Fig. 13-4.
2. Find the start of the 315 Hz/0 dB section of test tape (QZZCLA), insert the tape into Deck 1 and 2, and play it back (FWD).
3. Adjust Deck 2: **VR102** (L ch) [**VR103** (R ch)] and Deck 1: **VR104** (L ch) [**VR101** (R ch)] so that the output is within the standard value shown below. (For adjustment point, refer to Fig. 13-11.)

Standard value: 265 mV ~ 300 mV

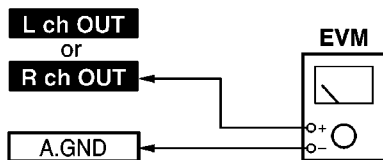


Fig. 13-4.

13.6. Erase current confirmation (Deck 2)

1. Connect the measuring instrument as shown in Fig. 13-5.
2. Insert the blank tape into Deck 2, and press the Record pause button.
3. Check if the output at this time between the erase current confirmation point **TP301** and **TP302** (the output on both edged of R313) is within the standard value shown below. (For the erase current confirmation point, refer to Fig. 13-11.)

	Standard Value	EVM reading
Normal tape:	85 ± 25 mA	(85 ± 25 mV)
CrO2 tape:	150 ± 25 mA	(150 ± 25 mV)
Metal tape:	185 ± 25 mA	(185 ± 25 mV)

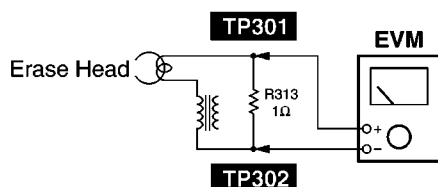


Fig. 13-5.

Note:

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

13.7. Playback frequency response check (Deck 1/2)

1. Connect the measuring instrument as shown in Fig. 13-6.
2. Playback the 315 Hz/-20 dB and 12.5 kHz to 63 Hz/-20 dB sections of test tape (QZZCLA) and then, using the 315 Hz/-20 dB playback output as a reference (0 dB).
3. Confirm the playback frequency response is within the range shown in Fig. 13-7.

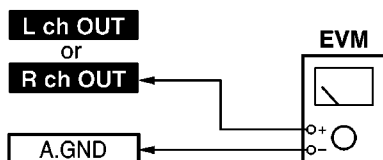


Fig. 13-6.

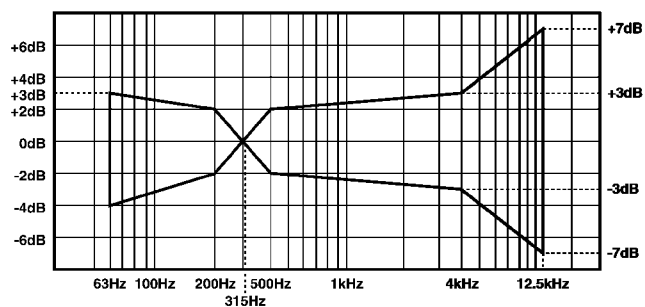


Fig. 13-7.

13.8. Recording/playback frequency response and gain check (Deck 2)

13.8.1. Normal tape check

1. Connect the measuring instrument as shown in Fig. 13-8.
2. Insert a Normal type blank tape (QZZCRA4) into Deck 2.
3. Record signals at 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 10 kHz and 12.5 kHz (28 mV).
4. Set the playback frequency of recorded signals at 1 kHz as a reference response (0 dB).
5. Playback the recorded signal to confirm that the output is within the range of the overall frequency response shown in Fig. 13-9.

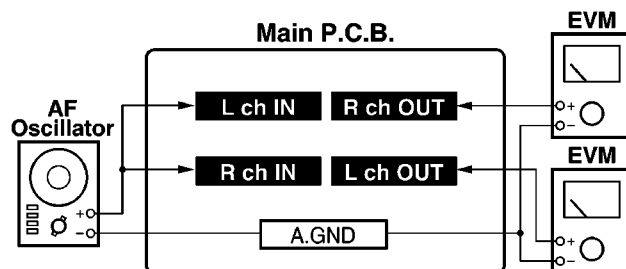


Fig. 13-8.

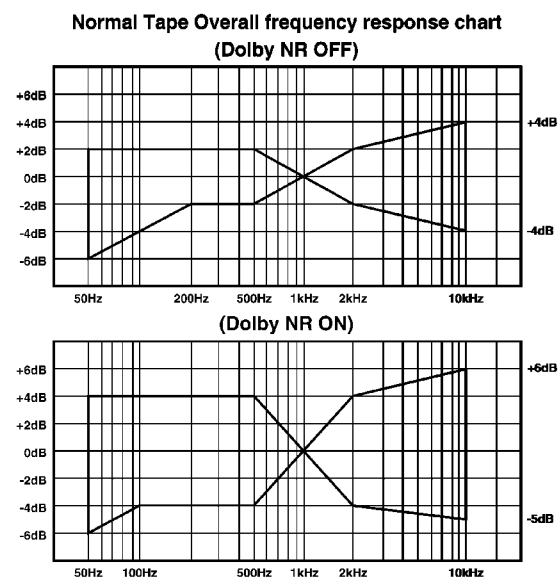


Fig. 13-9.

13.8.2. CrO2/Metal tape check

1. Connect the measuring instrument as shown in Fig. 13-8.
2. Insert a CrO2/Metal tape into Deck 2.
3. Record signals at 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 2 kHz, 10 kHz and 12.5 kHz (28 mV).
4. Set the playback frequency of recorded signals at 1 kHz as a reference response (0 dB).
5. Playback the recorded signal to confirm that the output is within the range of the overall frequency response shown in Fig. 13-10.

CrO2 and Metal Tape Overall frequency response chart
(Dolby NR OFF)

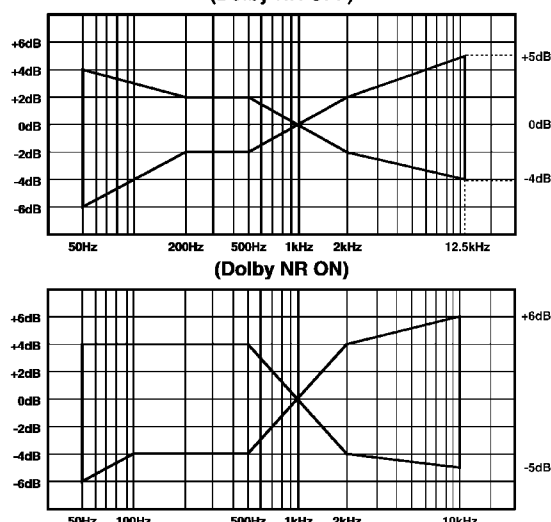


Fig. 13-10.

13.9. Adjustment point and test point

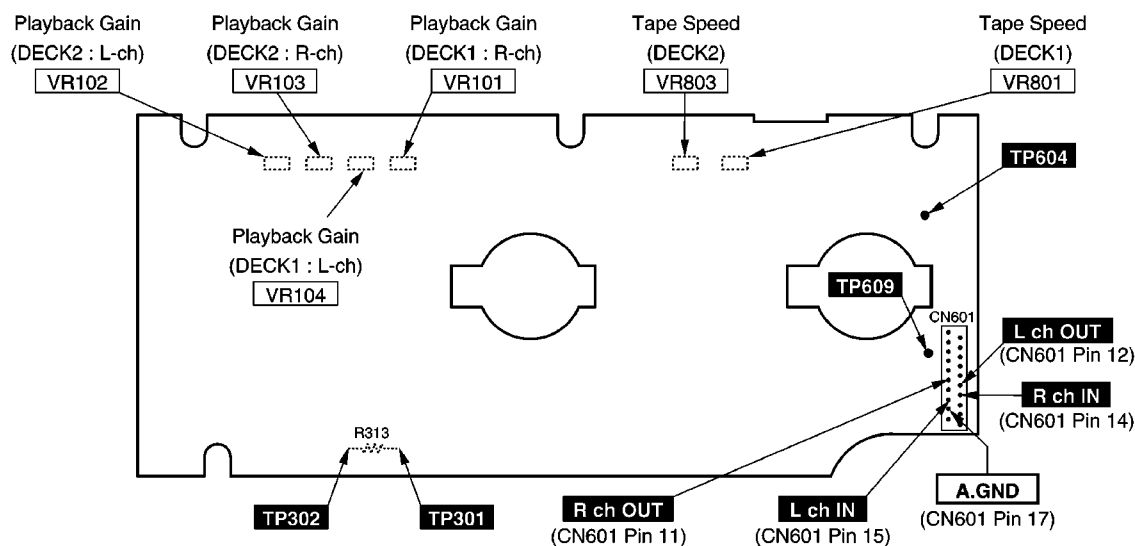


Fig. 13-11.

14 Checking Procedure for Self-operation of Cassette Mechanism Ass'y

· This procedure describes simple methods independent of mechanism controller or governor circuit.

14.1. Operation Check Providing with Cassette Tape

1. Push up the EJECT lever with rubber band. (Refer to Fig. 14-2.)
2. Apply DC 5V to the MOTOR. (MOTOR will be rotated) (Refer to Fig. 14-1.)
3. Provide the cassette tape with mechanism ass'y.
4. Apply DC 9V to the plunger, and then operate it by switching power ON/OFF. (Power: +PL, -PL) (Refer to Fig. 14-1.)
 - a. **FWD PLAY** : Supply power to the plunger momentarily. (Duration: approx. 50msec.)
 - b. **FWD FF** : At FWD PLAY mode, supply power to the plunger momentarily. (Duration: approx. 50msec.)
 - c. **STOP** : At FWD FF mode, supply power to the plunger momentarily. (Duration: approx. 50msec.)
 - d. **REV PLAY** : At STOP mode, supply power to the plunger for ordinary duration. (Duration: approx. 200msec.)
 - e. **REV REW** : At REV PLAY mode, supply power to the plunger momentarily. (Duration: approx. 50msec.)
 - f. **STOP** : At REV REW mode, supply power to the plunger momentarily. (Duration: approx. 50msec.)

Repeat the above operation to FWD PLAY mode.

Note: Incorrect duration for power supply may be operated to other mode.

14.1.1. Connection Diagram Between the Mechanism Ass'y and Power Supply (MOTOR and Plunger)

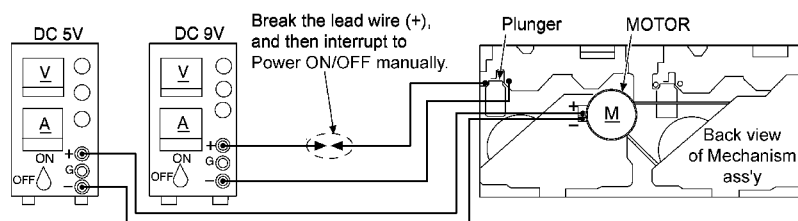


Fig. 14-1.

14.1.2. Detail View of EJECT Lever (EJECT lever fixed by rubber band, Plunger rib operation)

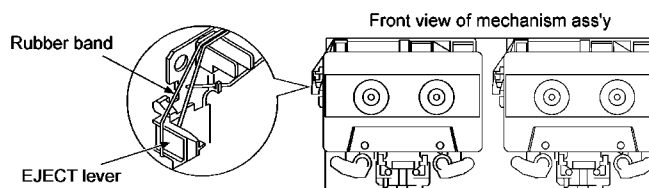


Fig. 14-2.

14.2. Operation Check Not Provided with Cassette Tape

1. Push up the EJECT lever with rubber band. (Refer to Fig. 14-2.)
2. Apply DC 5V to the MOTOR. (MOTOR will be rotated)
3. Lift up the plunger rib of mechanism ass'y with the tip of minus screwdriver, and then operate it same as power supply duration. (Refer to Fig. 14-3.)

Note: Operation order is same as the "Operation Check Providing with Cassette Tape" item 4. above.

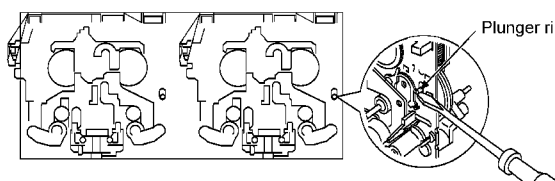


Fig. 14-3.

15 Replacement Parts List

Notes:

- Important safety notice:

Components identified by Δ 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 manufacture's specified parts shown in the parts list.

- The marking [RTL] indicates that Retention Time is Limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependent on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.
- All parts are supplied by MESA.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKM0392-1S	CABINET	1	
2	RHD30007-S	SCREW	4	
3	XTBS3+10JFZ1	SCREW	2	
4	RMG0161	RUBBER	1	
5	RKA0105-K	RUBBER	4	
6	RKA0106-N	FOOT RING	4	
7	RMN0539	CONNECTOR HOLDER	1	
8	RDG0129-1	DAMPER GEAR	2	
9	REX0989	WIRE ASS'Y	1	
10	RGB0025-A	TECHNICS BADGE	1	
11	RGK1131-1S	ORNAMENT (L)	1	
12	RGK1132-1S	ORNAMENT (R)	1	
13	RGL0441-Q	PANEL LIGHT (PAIR)	1	
14	RJR0113-1	CONNECTOR, MOTOR	2	
15	RKF0462-K2	CASSETTE HOLDER (L)	1	
16	RKF0463-K2	CASSETTE HOLDER (R)	1	
17	RKF0587C-1S	CASSETTE LID (L)	1	
18	RKF0588-1S	CASSETTE LID (R)	1	
19	RKW0577-Q	CASSETTE WINDOW (L)	1	
20	RKW0578-Q	CASSETTE WINDOW (R)	1	
21	RMB0474	SPRING	2	
22	RMQ0577A-3	FRAME	1	
23	RUS757ZA	SPRING	4	
24	RYP0913A-1S	FRONT PANEL	1	
25	XTBS26+8J	SCREW	7	
26	XTB3+10JFZ	SCREW	5	
27	XTBS3+8JFZ1	SCREW	3	
101	RED0037	HEAD BLOCK (R/P)	1	
101-1	RHD17015	SCREW	2	
102	RED0038	HEAD BLOCK (P.B)	1	
102-1	RHD17015	SCREW	2	
103	RDG0300	REEL TABLE ASS'Y	4	
104	RDG0301	GEAR	2	
105	RDK0026	GEAR	2	
107	RDV0033-4	BELT1	2	
108	RDV0034	BELT2	2	
110	RUW147ZA	SPRING	2	
111	RMB0400	SPRING	4	
112	RMB0403	SPRING	2	
113	RMB0404	SPRING	2	
114	RMB0406	SPRING	2	
115	RMB0408	SPRING	2	
116	RML0370-J	LEVER	2	
117	RML0371	LEVER	2	
118	RML0372	LEVER	2	
119	RML0374	LEVER	2	
120	RMM0131	ROD	2	

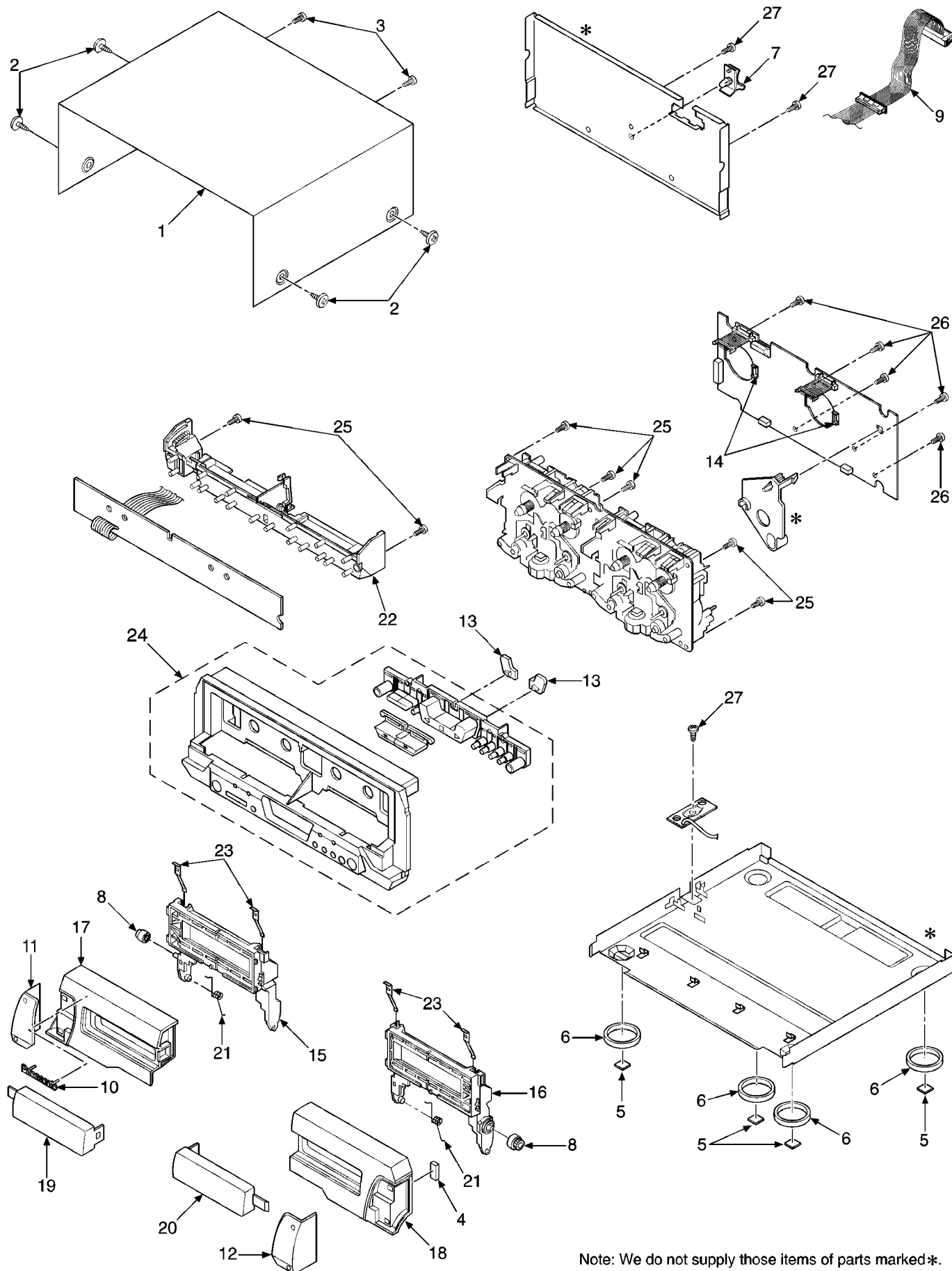
Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
121	RMM0133	ROD	2	
122	RMQ0519	REEL CAP	4	
123	RMS0398-1	SHAFT	2	
124	RSJ0003	PLUNGER ASS'Y	2	
125	RUS609ZC	SPRING	2	
126	RXF0049	FLY WHEEL ASS'Y	2	
127	RXF0050	FLY WHEEL ASS'Y	2	
128	RXG0040	GEAR	4	
129	RMK0283	SUB CHASSIS	1	
130	RXL0124	PINCH ROLLER ASS'Y	2	
130-1	RMB0401	SPRING	2	
131	RXL0125	PINCH ROLLER ASS'Y	2	
131-1	RMB0402	SPRING	2	
132	RXL0126	ARM GEAR	2	
133	RXQ0412	CHASSIS ASS'Y	2	
133-1	RMB0405	SPRING	2	
134	REM0055-1	MOTOR ASS'Y	2	
135	RHD26022	SCREW	4	
136	XTW2+5L	SCREW	4	
137	XTW26+10S	SCREW	6	
138	XYC2+JF17	SCREW	2	
140	RFKJSCH770EK	MAIN CHASSIS ASS'Y	1	
C101-04	ECUV1H681KEN	50V 680P	4	
C109,10	ECQB1H183JF3	50V 0.018U	2	
C111,12	ECEA0JKS470	6.3V 47UF	2	
C113,14	ECEA1HKS2R2	50V 2.2U	2	
C115,16	ECUV1H471KEN	50V 470P	2	
C117,18	ECUV1H331KEN	50V 330P	2	
C119,20	ECEA1HKS010	50V 1U	2	
C123,24	ECEA1EKS4R7	25V 4.7U	2	
C125,26	ECUV1H332KEN	50V 3300P	2	
C129	ECEA1AKS220	10V 22U	1	
C130	ECEA1CKS101	16V 100U	1	
C131-34	ECUV1H471KEN	50V 470P	4	
C135	ECA1HAK010XI	50V 1U	1	
C136	ECEA1HKS010	50V 1U	1	
C137	ECEA1HKS0R1	50V 0.1U	1	
C138	ECUV1E473KEN	25V 0.047U	1	
C139	ECEA0JKS470	6.3V 47U	1	
C140	ECEA1CKS100	16V 10U	1	
C141	ECEA1HKS010	50V 1U	1	
C142	ECUVNE104ZFN	25V 0.1U	1	
C143,44	ECUV1H471KEN	50V 470P	2	
C150	RCE1AKA101BG	10V 100U	1	
C203,04	ECEA1EKS4R7	25V 4.7U	2	
C205,06	ECEA1HKS010	50V 1U	2	
C207,08	ECUV1H271KEN	50V 270P	2	
C211,12	ECUV1H152KEN	50V 1500P	2	
C213,14	ECEA1EKS4R7	25V 4.7U	2	
C215,16	ECEA1CKS100	16V 10U	2	
C217,18	ECEA1HKS0R1	50V 0.1U	2	
C219	ECEA1CKS101	16V 100U	1	
C220	RCE1ARC471BG	10V 470U	1	
C221,22	ECEA1HKAR68B	50V 0.68U	2	
C223	ECEA1EKS4R7	25V 4.7U	1	
C225,26	ECEA1EKS4R7	25V 4.7U	2	
C239,40	ECUV1H681KEN	50V 680P	2	
C241	ECUV1H103KEN	50V 0.01U	1	
C301	ECA1CM471	16V 470U	1	
C302	ECEA2AN2R2S	100V 2.2U	1	
C303	ECQP2E682JZT	250V 6800P	1	
C304	ECEA1CKS101	16V 100U	1	
C305	ECEA1HKS0R1	50V 0.1U	1	
C306	ECQB1H393JF3	50V 0.039U	1	
C307	ECUV1H102KEN	50V 1000P	1	
C308	ECUV1H332KEN	50V 3300P	1	
C309	ECEA0JKS470	6.3V 47U	1	
C310,11	ECUV1H103KEN	50V 0.01U	2	
C323	ECUV1H102KEN	50V 1000P	1	
C602	ECA1CM221	16V 220U	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C603	RCE1CKA470BG	16V 47U	1	
C604	ECUV1E103ZFN	25V 0.01U	1	
C605	ECA1CM221	16V 220U	1	
C701	ECUV1H103KBN	50V 0.01U	1	
C702	ECEA0JKS101	6.3V 100U	1	
C705	ECUV1E103ZFN	25V 0.01U	1	
C706	RCE1HKA3R3BG	50V 3.3U	1	
C707	ECUV1E103ZFN	25V 0.01U	1	
CN601	RJS2A5520-1	CONNECTOR (20P)	1	
CN901	RJS8T6ZA	CONNECTOR (8P)	1	
CP101,02	RJS1A6805	CONNECTOR (5P)	2	
CP901,02	RJT071K09A	CONNECTOR (9P)	2	
CS951	RJU071H09M	CONNECTOR (9P)	1	
CS971	RJU071H09M	CONNECTOR (9P)	1	
D101,02	MA111TX	DIODE	2	
D301	MA111TX	DIODE	1	
D606	MA4056M	DIODE	1	△
D651,52	MA165	DIODE	2	
D701	MA111TX	DIODE	1	
D705,06	MA111TX	DIODE	2	
D707	MA4051M	DIODE	1	
D708-10	MA111TX	DIODE	3	
D904	MA111TX	DIODE	1	
D905	SML79455C	LED	1	
D907	SML79455C	LED	1	
D951	MA165	DIODE	1	
D971	MA165	DIODE	1	
IC101	CKA1998BQT6	IC	1	
IC102	MC14066BFEL	IC	1	
IC103	BA7755AF	IC	1	
IC201	CKA1552M-T4	IC	1	
IC202	MC14066BFEL	IC	1	
IC701	M38503M2406F	IC	1	
IC951,52	0N2180RLC1	IC	2	
IC971,72	0N2180RLC1	IC	2	
L201,02	ELELN103KA	COIL	2	
L301	RL08B006-K	COIL	1	
L302	RLQZB101KT-D	COIL	1	
L701	RLQA100JT1-Y	COIL	1	
L702	RLBN102V-Y	COIL	1	
PCB1	REP2827E-M	MAIN P.C.B.	1	[RTL]
Q101,02	2SJ164RTA	TRANSISTOR	2	
Q103,04	2SJ164QTA	TRANSISTOR	2	
Q105,06	2SD1819ARTX	TRANSISTOR	2	
Q107	DTA143EUT106	TRANSISTOR	1	
Q108	DTC143EUT106	TRANSISTOR	1	
Q201,02	DTA143EUT106	TRANSISTOR	2	
Q301	2SD1819ARTX	TRANSISTOR	1	
Q302	2SD1328STXRA	TRANSISTOR	1	
Q303,04	2SD1450S	TRANSISTOR	2	
Q305,06	DTC144EUT106	TRANSISTOR	2	
Q602	2SC3327A	TRANSISTOR	1	△
Q604	2SC3940AQSTA	TRANSISTOR	1	△
Q701-03	2SD1819ARTX	TRANSISTOR	3	
Q706	DTC114EUT106	TRANSISTOR	1	
Q803,04	2SD592AR	TRANSISTOR	2	
Q805,06	DTA143EUT106	TRANSISTOR	2	
Q807,08	2SB621A-R	TRANSISTOR	2	
Q809,10	DTC143EUT106	TRANSISTOR	2	
Q901	DTA143EUT106	TRANSISTOR	1	
Q902-04	DTC143EUT106	TRANSISTOR	3	
R101,02	ERJ6GEYJ562V	1/10W 5.6K	2	
R103,04	ERJ6GEYJ104V	1/10W 100K	2	
R105,06	ERJ6GEYJ334V	1/10W 330K	2	
R107,08	ERJ6GEYJ103V	1/10W 10K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R109,10	ERJ6GEYJ102V	1/10W 1K	2	
R111	ERJ6GEYJ820V	1/10W 82	1	
R112	ERJ8GEYJ820V	1/8W 82	1	
R113	ERJ6GEYJ123V	1/10W 12K	1	
R114	ERJ6GEYJ273V	1/10W 27K	1	
R117	ERJ6GEYJ102V	1/10W 1K	1	
R118,19	ERDS2FJ220	1/4W 22	2	
R120	ERJ6GEYJ104V	1/10W 100K	1	
R121,22	ERJ6GEYJ103V	1/10W 10K	2	
R125	ERJ6GEYJ104V	1/10W 100K	1	
R126	ERJ6GEYJ223V	1/10W 22K	1	
R127	ERJ6GEYJ472V	1/10W 4.7K	1	
R130	ERJ6GEYJ475V	1/10W 4.7M	1	
R131	ERJ6GEYJ334V	1/10W 330K	1	
R132	ERJ6GEYJ273V	1/10W 27K	1	
R133	ERJ6GEYJ333V	1/10W 33K	1	
R134	ERJ6GEYJ392V	1/10W 3.9K	1	
R135	ERJ6GEYJ682V	1/10W 6.8K	1	
R136,37	ERJ6GEYJ222V	1/10W 2.2K	2	
R138	ERJ6GEYJ472V	1/10W 4.7K	1	
R139,40	ERJ6GEYJ473V	1/10W 47K	2	
R141	ERJ8GEYJ101V	1/8W 100	1	
R142	ERJ6GEYJ101V	1/10W 100	1	
R143	ERDS2FJ101	1/4W 100	1	
R144	ERJ6GEYJ101V	1/10W 100	1	
R147-50	ERJ6GEYJ562V	1/10W 5.6K	4	
R151,52	ERJ6GEYJ104V	1/10W 100K	2	
R153,54	ERJ6GEYJ272V	1/10W 2.7K	2	
R157,58	ERJ6GEYJ223V	1/10W 22K	2	
R207,08	ERJ6GEYJ473V	1/10W 47K	2	
R209,10	ERJ6GEYJ102V	1/10W 1K	2	
R211,12	ERJ6GEYJ103V	1/10W 10K	2	
R213,14	ERJ6GEYJ302V	1/10W 3K	2	
R215,16	ERJ6GEYJ123V	1/10W 12K	2	
R217,18	ERJ6GEYJ222V	1/10W 2.2K	2	
R219	ERJ6GEYJ183V	1/10W 18K	1	
R220	ERDS2FJ220	1/4W 22	1	
R221,22	ERJ6GEYJ101V	1/10W 100	2	
R223,24	ERJ6GEYJ103V	1/10W 10K	2	
R225,26	ERJ6GEYJ473V	1/10W 47K	2	
R230,31	ERJ6GEYJ102V	1/10W 1K	2	
R232	ERJ6GEYJ103V	1/10W 10K	1	
R233,34	ERJ6GEYJ101V	1/10W 100	2	
R237	ERDS2FJ220	1/4W 22	1	
R301	ERJ6GEYJ103V	1/10W 10K	1	
R302	ERJ6GEYJ182V	1/10W 1.8K	1	
R303	ERJ6GEYJ222V	1/10W 2.2K	1	
R304	ERJ6GEYJ153V	1/10W 15K	1	
R305	ERJ6GEYJ183V	1/10W 18K	1	
R306	ERJ6GEYJ333V	1/10W 33K	1	
R307	ERDS1FJ2R2	2.2	1	△
R308	ERJ6GEYJ102V	1/10W 1K	1	
R309-11	ERJ6GEYJ472V	1/10W 4.7K	3	
R313	ERDS2FJ1R0	1/4W 1	1	
R602	ERQ16NKR33E	0.33	1	△
R603	ERD2FCG100	10	1	△
R604	ERJ6GEYJ331V	1/10W 330	1	
R606	ERJ6GEYJ152V	1/10W 1.5K	1	
R609	ERDS2FJ101	1/4W 100	1	
R630	ERQ16NKR33E	0.33	1	△
R632	ERDS2FJ473	1/4W 47K	1	
R701,02	ERJ6GEYJ103V	1/10W 10K	2	
R703	ERJ6GEYJ562V	1/10W 5.6K	1	
R704	ERJ6GEYJ472V	1/10W 4.7K	1	
R705	ERJ6GEYJ473V	1/10W 47K	1	
R708	ERJ6GEYJ472V	1/10W 4.7K	1	
R710	ERJ6GEYJ102V	1/10W 1K	1	
R711	ERJ6GEYJ104V	1/10W 100K	1	
R712	ERJ8GEYJ683V	1/8W 68K	1	
R718	ERJ8GEYJ683V	1/8W 68K	1	
R721	ERJ6GEYJ472V	1/10W 4.7K	1	
R722	ERJ6GEYJ101V	1/10W 100	1	
R723,24	ERJ6GEYJ102V	1/10W 1K	2	
R725,26	ERJ6GEYJ222V	1/10W 2.2K	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R727	ERJ6GEYJ472V	1/10W 4.7K	1	
R728	ERJ6GEYJ103V	1/10W 10K	1	
R729	ERJ6GEYJ472V	1/10W 4.7K	1	
R730	ERJ6GEYJ222V	1/10W 2.2K	1	
R732	ERJ6GEYJ104V	1/10W 100K	1	
R735	ERJ6GEYJ472V	1/10W 4.7K	1	
R736	ERJ6GEYJ103V	1/10W 10K	1	
R737	ERJ8GEYJ103V	1/8W 10K	1	
R738	ERJ6GEYJ102V	1/10W 1K	1	
R741	ERJ6GEYJ223V	1/10W 22K	1	
R743	ERJ6GEYJ473V	1/10W 47K	1	
R744	ERJ6GEYJ102V	1/10W 1K	1	
R745	ERJ6GEYJ101V	1/10W 100	1	
R747	ERJ8GEYJ102V	1/8W 1K	1	
R802	ERJ6GEYJ561V	1/10W 560	1	
R803	ERJ6GEYJ103V	1/10W 10K	1	
R805	ERJ6GEYJ392V	1/10W 3.9K	1	
R806	ERJ6GEYJ103V	1/10W 10K	1	
R808	ERJ6GEYJ392V	1/10W 3.9K	1	
R810,11	ERJ6GEYJ103V	1/10W 10K	2	
R812	ERJ6GEYJ561V	1/10W 560	1	
R813,14	ERJ6GEYJ471V	1/10W 470	2	
R818	ERDS2FJ2R2	1/4W 2.2	1	
R820	ERDS2FJ2R2	1/4W 2.2	1	
R823, 24	ERJ6GEYJ561V	1/10W 560	2	
R900	ERJ6GEYJ821V	1/10W 820	1	
R901	ERJ6GEYJ102V	1/10W 1K	1	
R902	ERJ6GEYJ122V	1/10W 1.2K	1	
R903	ERJ6GEYJ152V	1/10W 1.5K	1	
R904	ERJ6GEYJ182V	1/10W 1.8K	1	
R905	ERJ6GEYJ222V	1/10W 2.2K	1	
R906	ERJ6GEYJ332V	1/10W 3.3K	1	
R908	ERJ6GEYJ122V	1/10W 1.2K	1	

16 Cabinet Parts Location



17 Mechanism Parts Location

