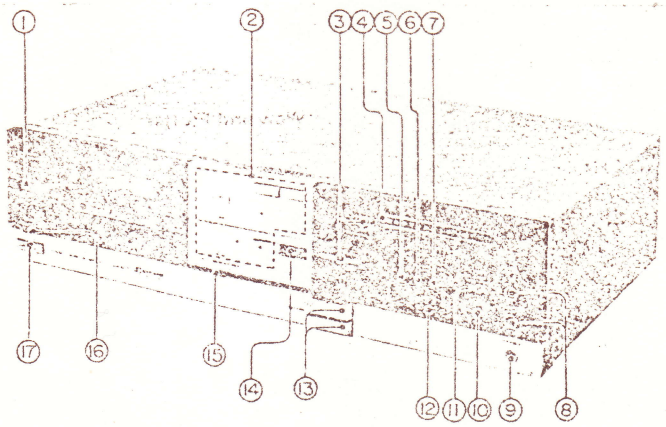
D-E7

(U,C,FS,BS,AU,W)



KEY TO ILLUSTRATIONS

1. CASSETTE EJECT BUTTON
2. OPERATION BUTTONS
3. TAPE COUNTER/RESET BUTTON
4. PEAK LEVEL INDICATOR
5. DOLBY NR SWITCH
6. DOLBY NR B/C SWITCH
7. MULTIPLEX (MPX) SWITCH
8. MICROPHONE JACKS
9. HEADPHONE JACK
10. OUTPUT LEVEL CONTROL KNOB
11. MONITOR SWITCH
12. TAPE SELECTOR SWITCH
13. RECORDING LEVEL CONTROL KNOBS
14. REC MUTE BUTTON
15. AUTO/MEMORY REW SWITCH
16. TIMER SWITCH
17. POWER SWITCH

FEATURES

1. 3-Head System for Metal Tape
2. Built-In Dolby NR B/C Circuit
3. Feather-Touch Switches Controlled by Integrated Computer Logic Circuit
4. Automatic Cue, Automatic Rewind and Automatic Repeat Playback in Accordance with Preset Rewind Data Read Out from Computer Memory
5. Automatic REC MUTE to Produce Four Second Blank Tape Portion at a Touch
6. Tape Standby Mechanism
7. Tape Counter Automatic Reset Mechanism
8. Remote Control Jack
9. Timer Switch and Tape Selector Switch Indicators

SPECIFICATIONS

Track System:	4 track 2 channel stereo
Tape:	Cassette tape
Tape Speed:	4.75 cm/s
Recording system and Bias Frequency:	AC bias, 85 kHz
Erasing System:	AC erase
Erase Ratio:	65 dB (at 1 kHz) or more
Frequency Response:	NOR-I: 20 Hz to 18 kHz, 30 Hz to 17 kHz (±3 dB)*
	CrO_2-II: 20 Hz to 20 kHz, 30 Hz to 18 kHz (±3 dB)*
	METAL-IV: 20 Hz to 21 kHz, 30 Hz to 19 kHz (±3 dB)*
Signal to Noise Ratio:	Dolby B NR ON: 69 dB* Dolby C NR ON: 75 dB* Dolby NR OFF; 61 dB* (A weighted, Reference 3% T.H.D.)
Inpum Sensitivity and Impedance:	Microphone: 0.3 mV (Suitable microphone impedance 300 ohms to 5 kohms) Line in: 30 mV, 50 kohms or more
Wow and Flutter:	0.038% (WRMS) 0.1%*
Output level and Impedance:	Line out: 500 mV (Suitable Load Impedance 50 kohms or more) Headphone: 80 mV (Suitable Load Impedance 8 ohms to 2 kohms)
Distortion:	0.8% (1 kHz, 160 nWb/m)
Crosstalk:	60 dB (at 1 kHz) or more
Power Supply:	AC 120V, 60 Hz for U.S.A. ~ 240V, 50 Hz for U.K. and Australia
Power Consumption:	22W for U.S.A. 25W for U.K. and Australia
Dimensions:	435(W) x 110(H) x 272(D) mm
Weight:	4.6 kg

* According to DIN 45 500

Specifications are subject to change without notice for performance improvement.

STEREO CASSETTE TAPE DECK

ADJUSTMENTS

Adjustment Points

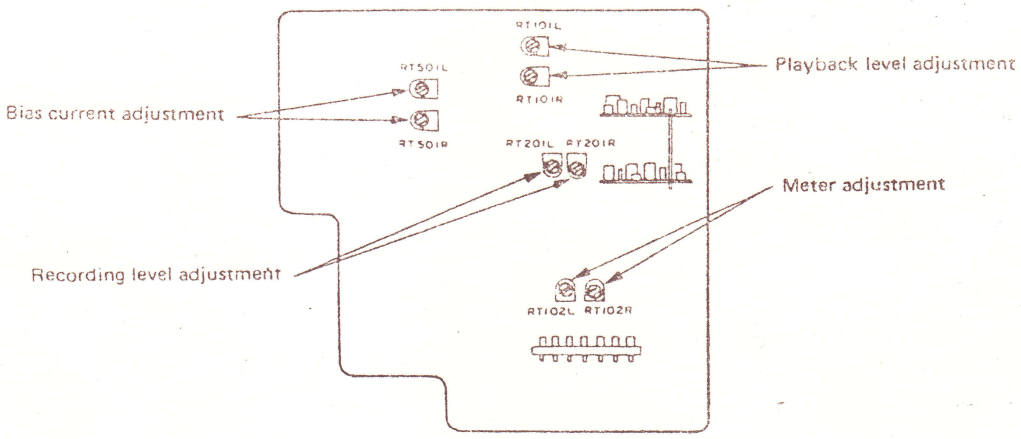


Fig. 11

Measuring Equipment

1. Low-frequency oscillator
2. Electronic voltmeter
3. Attenuator
4. Frequency counter

Jig, Test Tapes and Check Tape

1. Head adjustment jig
2. Dolby tape (400 Hz)
3. Azimuth correction tape (10 kHz)
4. Tape speed adjustment tape (3,000 Hz)
5. Mirror tape (tape transport check)
6. Normal tape (UD tape)
7. Chrome tape (EX tape)
8. Lo-D metal tape (C-46)

Control and Switch Positions

Set the switches and controls to the following levels.

Recording level adjustment (RV201)	MAX
Output level adjustment (RV101)	MAX
Dolby NR switch (S301)	OFF
Tape selector switch (S202 ~ S204)	Note 1
MPX switch (S201)	OFF
Monitor switch (S303)	TAPE

Note 1 The tape selector switch is set to a proper position in accordance with the magnetic tape to be used as follows.

Cassette Tape	Tape selector switch (S202 ~ S204)
No tape is used	NOR-I
Test tape	NOR-I
Normal tape	NOR-I
Chrome tape	CrO_2-II
HITACHI METAL tape	METAL-IV

Adjustments must be performed after the cassette cover is removed and the magnetic heads, pinch roller and capstan are cleaned with alcohol, according to the following procedure.

1. Tape Speed Adjustment

Input	Adjustment value	Adjustment point
Tape speed adjustment tape	3,000 $^{+30}_{-10}$ Hz	Semi-fixed volume inside of the motor

Adjustment Procedure

Connect the frequency counter to LINE OUT, and playback a test tape after the unit has been operated for 20 minutes or more. Adjust the tape speed at an intermediate portion of the tape.

2. Azimuth Adjustment of Recording/Playback Head

Input	Adjustment value	Adjustment point
Azimuth correction tape	Maximum output	Azimuth adjustment screw

Adjustment Procedure

(1) Adjust the front/rear position of the head (only after the head support has been removed). Adjust the height and orientation of the head using the head adjustment jig.

(2) Connect an electronic voltmeter to LINE OUT and playback the test tape.
When the maximum values for the right and left channels are different, use the maximum value of the left (L) channel as the reference. At the same time, be sure to check that the difference between the maximum values for the two channels is within 2 dB. If the difference is large, readjust the azimuth of the head.

(3) When alignment of the azimuth is at an extreme position, readjust the azimuth using the head adjustment jig.

3. Adjustments of Reproduction Gain (LINE OUT gain) and Meter

(1) Adjustment of Reproduction Gain

Input	Adjustment value	Adjustment point
Dolby reference tape	520 mV ±0.2 dB	RT101L, R

Adjustment Procedure

Connect the electronic voltmeter to LINE OUT, playback the Dolby tape, and adjust so that the electronic voltmeter reads the adjustment value.

(2) Adjustment of Meter

1) Connect the low-frequency oscillator to LINE IN through an attenuator, and set the unit in the recording mode.
2) Set the monitor switch to the SOURCE position and apply a signal of 400 Hz to LINE IN. Adjust the meter using the attenuator so that the output voltage appeared at LINE OUT is 520 mV −0.5 dB.
3) Adjust RT102L and R so that the 0 dB point of the meter corresponds to a transient point from OFF to ON.

4. Adjustment of Bias Oscillation Frequency

(1) Set the tape selector switch to the METAL position, and insert a measuring probe in the terminals of an erase head connector HP1.
(2) Adjust L501 so that the oscillation frequency is 85 kHz ±0.5 kHz.

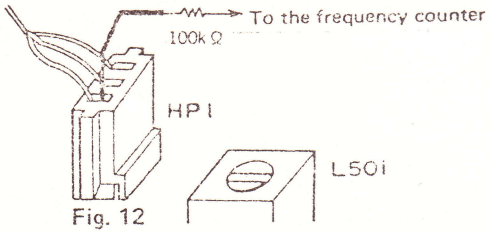


Fig. 12

5. Dolby NR operation check

• Dolby B type

(1) Record using metal tape (ME C46) at 5 kHz, −40 dB with respect to the Dolby level. Continuously record with "Dolby OFF" and "Dolby B".
(2) Play back with "Dolby OFF" and check that the output difference between "Dolby OFF" and Dolby B" is approx. 10 dB.

• Dolby C type

(1) Record using metal tape (ME C46) at 1 kHz. −40 dB with respect to the Dolby level. Continuously record with "Dolby OFF" and "Dolby C".
(2) Playback with "Dolby OFF" and check that the output difference between "Dolby OFF" and "Dolby C" is approx. 16 dB.

6. Coarse Adjustment of Recording Level

Input	Adjustment value	Adjustment point
1.2 kHz	520 mV −10 dB	RT201L, R

Adjustment Procedure

Connect the low-frequency oscillator to LINE IN and apply a signal of 1.2 kHz so as to initiate the recording mode. Then, set the monitor switch to the SOURCE position and adjust the output from the low-frequency oscillator so that the voltmeter reads 520 mV −10 dB at the output terminal. Then, set the monitor switch to the TAPE position and adjust RT201L and R so that the output voltage is 520 mV −10 dB.

7. Fine Adjustment of Bias Current & Adjustment of Recording Level

Record at the following recording levels using the types of tapes indicated to adjust and check the playback levels.

Order	Tape	Tape selector switch	Recording level			Playback level		Adjustment procedure
			Frequency (Hz)	Level	Adjustment point	Level	Adjustment location	
1	Normal tape	NOR	1.2k/12k	520mV −23dB	ATT	within +1dB	RT501L, R	(1)
2	Normal tape	NOR	1.2k	520mV −10dB	ATT	within ±0.5dB	RT201L, R	(2)
3	Normal tape	NOR	1.2k/12k	520mV −23dB	ATT	within +1.0dB	Check	(1)
4	Chrome tape	CrO_2	1.2k/12k	520mV −23dB	ATT	within ±3dB	Check	(1)
5	HITACHI METAL tape	METAL	1.2k/12k	520mV −23dB	ATT	within ±3dB	Check	(1)

Adjustment Procedure

(1) Fine Adjustment of Bias Current

1) Connect the low-frequency oscillator to LINE IN through the attenuator and the electronic voltmeter to LINE OUT. Apply a signal of 1.2 kHz to LINE IN to initiate the recording mode. Then, set the monitor switch to the SOURCE position to adjust the output from the low-frequency oscillator so that the voltmeter reads 520 mV −10 dB at LINE OUT. Adjust the attenuator so that the electronic voltmeter reads 520 mV −23 dB.

2) Set the monitor switch to the TAPE position to alternately apply signals of 1.2 kHz and 12 kHz from the low-frequency oscillator. Adjust RT501L and R so that a difference between the two outputs falls within +1 dB.

- Only the chrome and metal tapes should be used for this check. However, if the playback level deviates from ±3 dB, readjust the recording and playback levels using the normal tape.

(2) Adjustment of Recording Level

1) Connect the low-frequency oscillator to LINE IN and apply a signal of 1.2 kHz to initiate the recording mode. Set the monitor switch to the SOURCE position to adjust the output from the low-frequency oscillator so that the voltmeter reads 520 mV −10 dB at LINE OUT.

2) Set the monitor switch to the TAPE position and adjust RT201L and R so that the electronic voltmeter reads 520 mV −10 dB at LINE OUT.

8. Check and Adjustment of Cassette Chassis Section

No.	Check Item	Reference value	Remarks
1	Pinch-roller compressive force	330 ~ 420 g	Note 1.
2	Tape driving force	over 120 g	Note 2. Clean the heads, pinch roller and capstan with alcohol
3	Take-up torque	35 ~ 65 g-cm	
4	FF torque	75 ~ 110 g-cm	
5	REW torque	75 ~ 110 g-cm	
6	Supply back-tension	2.5 ~ 4 g-cm	Note 2. Initiate playback mode
7	Take-up back-tension	1.7 ~ 5 g-cm	Note 3. Initiate playback mode
8	Supply braking torque	50 ~ 100 g-cm	Note 4. Initiate stop mode
9	Take-up braking torque	50 ~ 100 g-cm	Note 4. Initiate stop mode
10	Head plate restoration force	over 200 g	Note 5. Initiate stop mode
11	Allowable locking force	over 300 g	Note 6. Initiate playback mode
12	Pad urging force	15 ~ 25 g	Note 7.

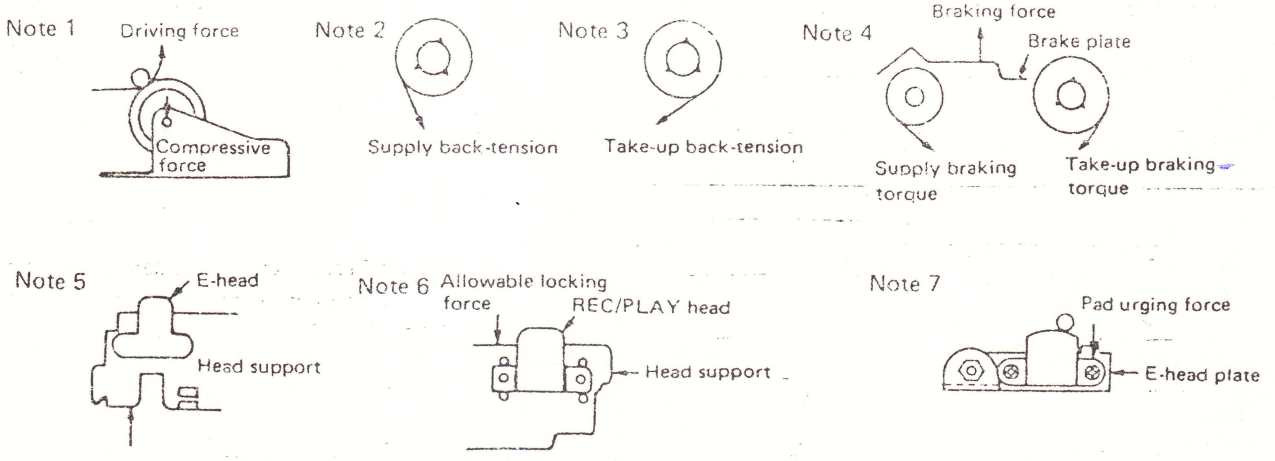
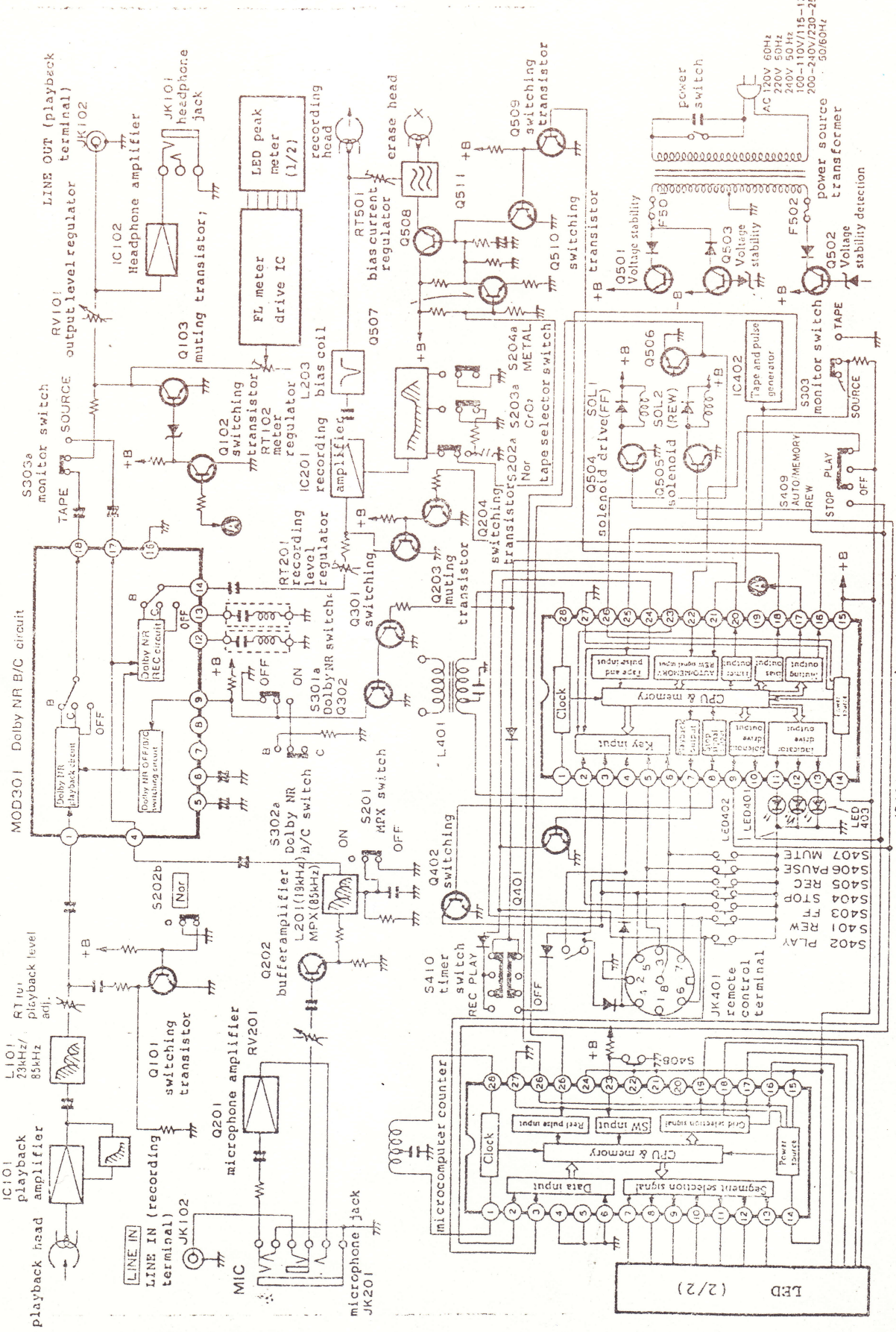


Fig. 13

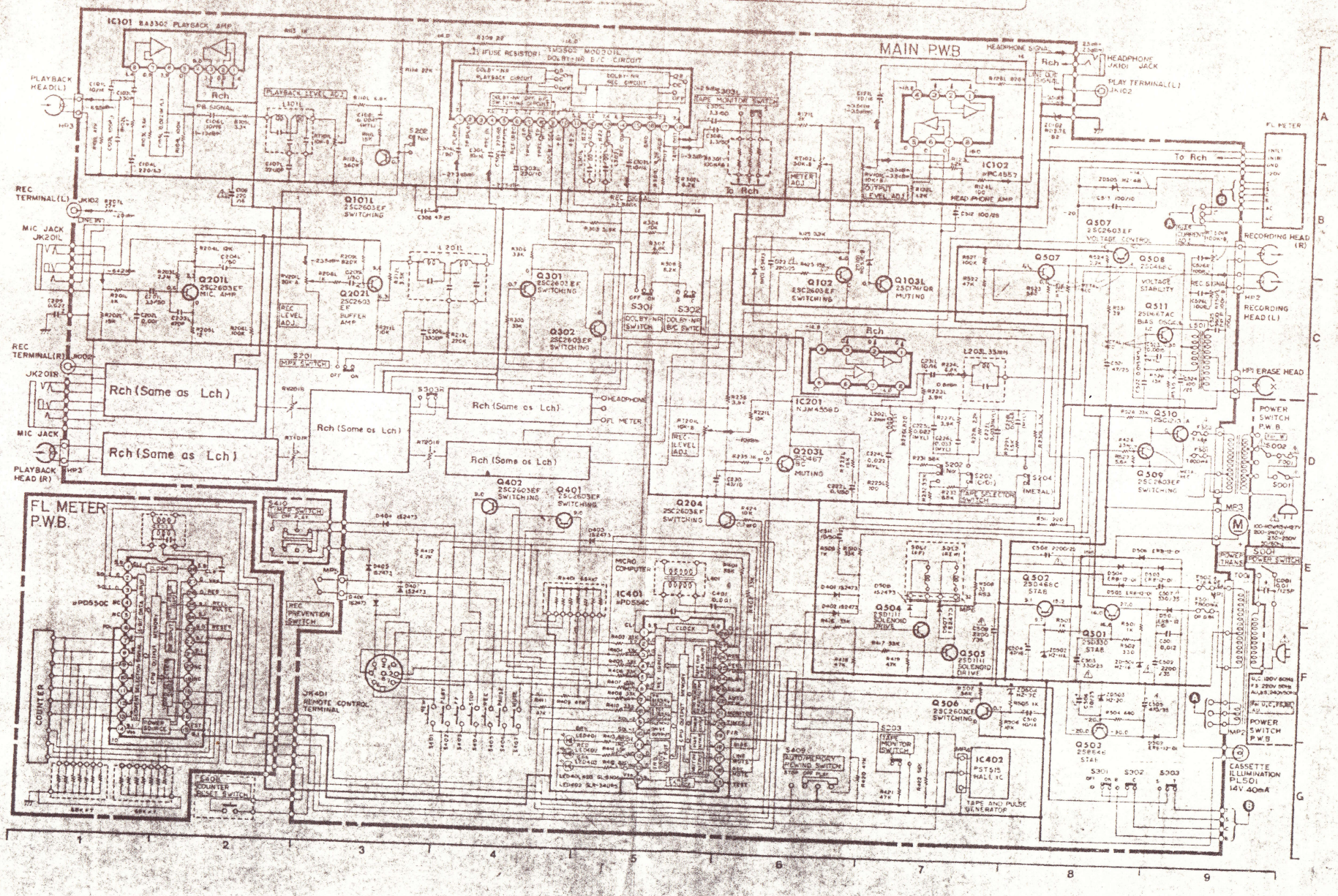
WIRING DIAGRAM



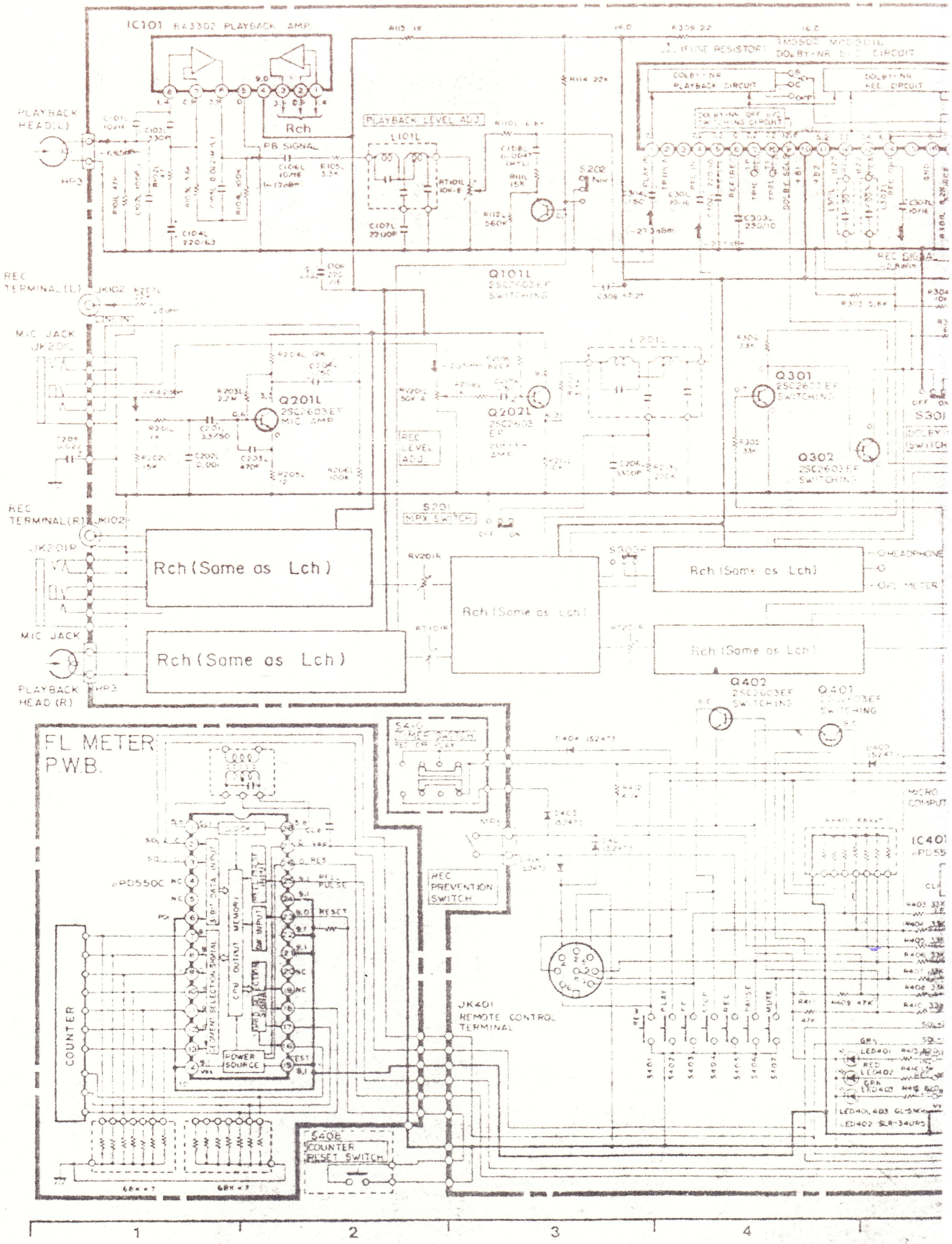
CIRCUIT DIAGRAM

CAUTION
Use the electrolytic capacitors with explosion-proof valve when the diameter of them is more than 10 mmϕ.

* : Axial lead cylindrical ceramic capacitor.



CIRCUIT DIAGRAM



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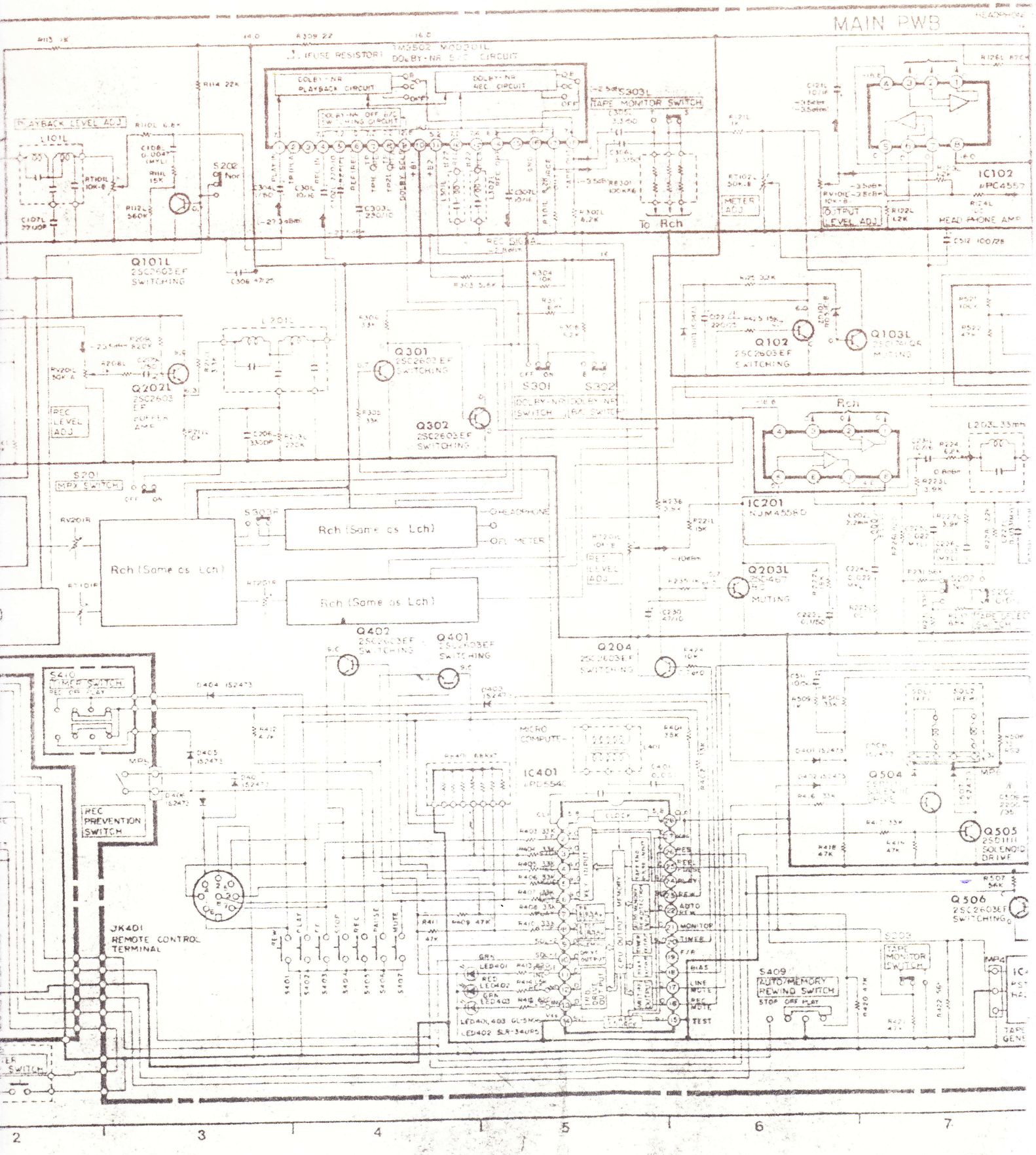

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