

Service Manual

Cassette Deck

RS-BX701

Stereo Cassette Deck

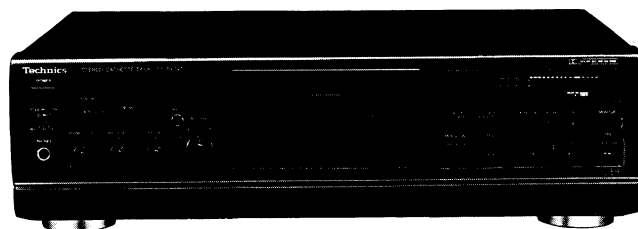


Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(E)	Europe.	(K)
(EB)	Great Britain.	
(EG)	Germany and Italy.	



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- Please file and use this manual together with the service manual for Model No. RS-BX646, Order No. AD9305159C2.
- Use this manual together with the service manual for Model No. RS-BX646, Order No. AD9305159C2.

Note: This simplified service manual is provided to indicate the main difference between the original model No. RS-BX646 (E).

CHANGES

■ CHANGE IN REPLACEMENT PARTS LIST (on pages 47, 48, 51~54.)

- Notes:**
- Mentioned in this parts list is only those different from Model No. RS-BX646 (E). All other parts are the same as for RS-BX646 (E).
 - Important safety notice:
Components identified by $\triangle$ 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.

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	RS-BX646 (E)	➡ RS-BX701 (E, EB, EG)		
INTEGRATED CIRCUIT(S)				
IC1	AN7384N	AN7384N-SG	ELECTRIC VOLUME	
DIODE(S)				
D301, 302	MTZJ9R1CTA	MTZJ8R2CTA	DIODE	
D614	MTZJ8R2CTA	MA4043M	DIODE	⚠
D624	MA165	MA4043M	DIODE	⚠

Technics

Ref. No.	Change of Part No.		Part Name & Description	Remarks
	RS-BX646 (E)	➡ RS-BX701 (E, EB, EG)		
VARIABLE RESISTOR(S)				
VR703	—	EVJ02KF02B53	BIAS ADJ. CONTROL	Addition
COMPONENT COMBINATION(S)				
Z503	SVDGP1S53	—	PHOTO COUPLER	Deletion
CONNECTOR(S) AND SOCKET(S)				
CN504	REX0508	—	CONNECTOR ASS'Y (3P)	Deletion
CP504	RJP3G17ZA	—	CONNECTOR (3P)	Deletion
GND PART(S)				
E1	SNE1004-1	SNE1004-2	GND PART(S)	
RESISTORS				
R27, 28	ERDS2TJ274	ERDS2TJ563	1/4W 56kΩ	
R61, 62	ERDS2TJ471	ERDS2TJ222	1/4W 2.2kΩ	
R610	ERDS2TJ102	ERDS2TJ151	1/4W 150Ω	
CAPACITORS				
C610	ECEA1AU471	RCE1AM471BV	10V 470μF	
C618-621	ECEA1AU471	RCE1AM471BV	10V 470μF	
CABINET AND CHASSIS				
1	RHD30035-K	RHD30035-K1	SCREW	
23	RFKNBX747ECK	RYF0283-K	CASSETTE HOLDER ASS'Y	
23-1	—	RUS757ZA	SPRING, TAPE PRESSURE	Addition
24	RMB0286	—	SWITCH LEVER SPRING	Deletion
25	RMC0038	—	STABILIZER SPRING	Deletion
26	RML0308	—	DETECTION LEVER	Deletion
27	RMQ0371	—	STABILIZER	Deletion
28	RMQ0407	—	ANGLE	Deletion
29	XTB3+6J	—	SCREW	Deletion
30	XTW2+5L	—	SCREW	Deletion
32	XTW3+8J	—	SCREW	Deletion
34	RGR0169A-A1	RGR0169A-F	REAR PANEL	(E, EG)
		RGR0169A-G		(EB)
40	RFKGBX646E-K	RFKGSBX701EK	FRONT PANEL ASS'Y	
47	RGW0175-K	RGW0175-2K	KNOB, H.P. LEVEL/BIAS/BALANCE	
48	RGW0177-K	RGW0177A-K	KNOB, REC LEVEL	
MECHANISM PARTS				
129	RHG3032ZA	RMG0102-1	RUBBER CUSHION	
136	RDG0030	RDG0221	MAIN GEAR	
PACKING MATERIAL				
P1	RPG1621	RPG2094	PACKING CASE	(E, EG)
		RPG2095		(EB)
P4	XZB52X60A01Z	SPP723	PROTECTION COVER (THIS UNIT)	
P5	XZB24X34C04	XZB25X34C03Y	PROTECTION BAG (F.B. ACC.)	
ACCESSORIES				
A1	RFKSBX747E-K	RFKSSBX701E	INSTRUCTION MANUAL ASS'Y	(E)
		RFKSSBX701EG		(EG)
		RQT2527-B		(EB)

■ WRITING TO EEPROM

This unit holds recording bias and equalization data in its EEPROM, allowing playback gain and overall gain to be automatically adjusted inside the ROM. When the ROM malfunctions and requires replacement, be sure follow the instruction below.

When the head is replaced, follow steps 8 and 9 in the writing to the EEPROM procedure. (When the head is replaced, both playback gain and overall gain change and the default data must be rewritten to the EEPROM.)

Measurement Condition

- Recording level control; Maximum
- Timer switch; Off
- Recording balance control; Center
- Headphones volume control; Maximum
- Test Mode terminals; Short Circuit
- Bias control; Center
- Dolby NR switch; Off
- ATC switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$)
- Power switch; Off

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- AF oscillator
- ATT (Attenuator)
- Resistor (600Ω)

Note: Before writing data to the ROM, be sure to set the AF oscillator output level to 0dB (1 kHz)=1V.

Test tape

- Overall gain adjustment
- Normal reference blank tape; QZZCRV2
- CrO₂ reference blank tape; QZZCRX1
- Metal reference blank tape; QZZCRZ5

Note: Step 1 to step 7 only has to be done after exchange of the EEPROM.

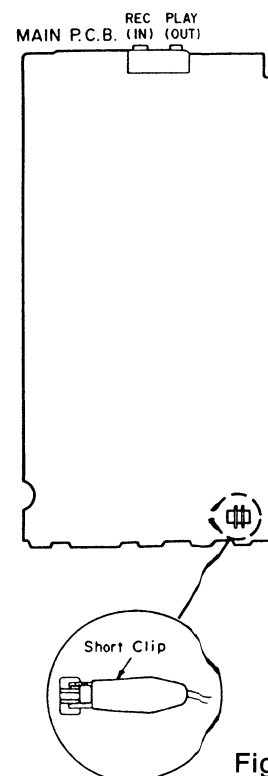
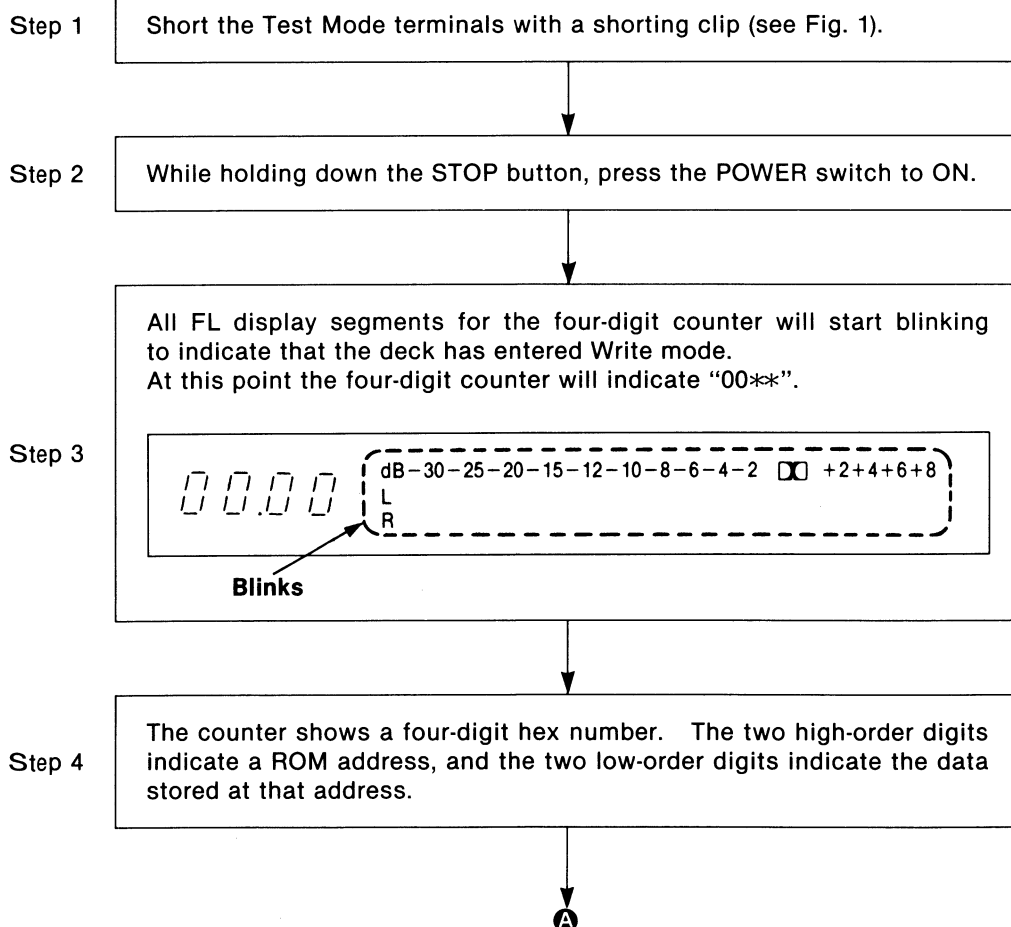


Fig. 1

Notes:

- The test mode terminals on main P.C.B. should be shorted with a short clip as shown above figure.
- After the adjustment items disconnect the short clip.

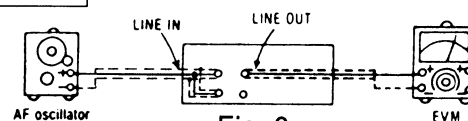
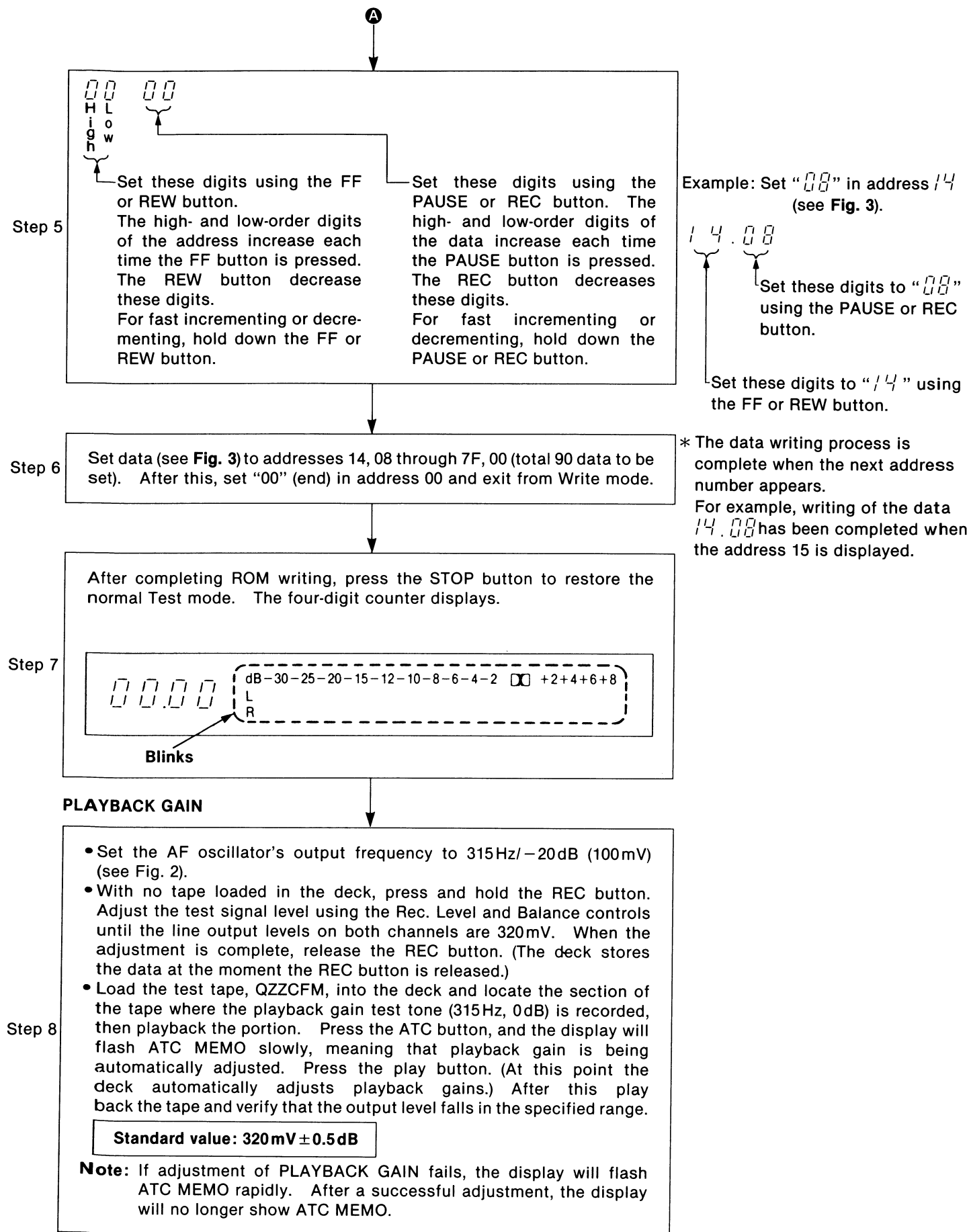


Fig. 2

INITIAL SETTING UP FOR OVERALL GAIN AND OVERALL FREQUENCY RESPONSE

B

Step 9

- Load a Normal blank test tape (QZZCRV2) into the deck under test. Press the ATC button, then the REC button. The display will flash ATC MEMO slowly. (At this point the deck automatically adjusts the overall gain and frequency response.)
 - After the above setting, the overall gain for selection of CrO₂ and Metal tape will be automatically set by the ROM and stored in the ROM.
- Note:** If adjustment of OVERALL GAIN or OVERALL FREQUENCY RESPONSE fails, the display will flash ATC MEMO rapidly. After a successful adjustment, the display will no longer show ATC MEMO.

Step 10

Remove the shorting clip from the Test Mode terminals. The FL display will stop blinking.

• EEPROM MAP

Low \ High	0	1	2	3	4	5	6	7
0	00	—	60	8E	94	—	—	—
1	—	—	83	94	9A	—	—	—
2	—	—	34	1E	1A	—	—	—
3	—	—	6F	7F	8E	—	—	—
4	—	08	C0	BF	B8	60	8E	9D
5	—	20	7C	74	6F	83	98	9D
6	—	12	60	8E	9D	44	1E	1A
7	—	07	83	98	9D	64	6A	79
8	—	FB	44	1E	1A	C0	BF	BC
9	—	F5	5A	62	73	—	—	—
A	—	5E	C0	BF	BC	26	30	80
B	—	99	88	87	88	7C	7D	7D
C	—	50	8C	8C	94	70	6B	6B
D	—	7C	0F	0E	0D	83	83	83
E	—	4B	95	96	97	—	FF	01
F	—	51	0E	0D	0D	—	—	00

Fig. 3

Note: At an address with no data value indicated (e.g. 01 → —), the ROM operates normally irrespective of the kind of the data supplied.

■ MEASUREMENTS AND ADJUSTMENTS

Measurement Condition

- Recording level control; Maximum
- Timer switch; Off
- Recording balance control; Center
- Headphones volume control; Maximum
- Bias control; Center

- Dolby NR switch; Off
- ATC switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$)

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter

- AF oscillator
- ATT (Attenuator)
- Resistor (600Ω)

Note: Before adjustment, be sure to set the AF oscillator output level to 0dB (1kHz) = 1V

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

- Overall gain adjustment and Overall frequency response, AC bias trap adjustment and HX PRO adjustment.

Normal reference blank tape; QZZCRV2

CrO₂ reference blank tape; QZZCRX1

Metal reference blank tape; QZZCRZ5

• Adjustment Points

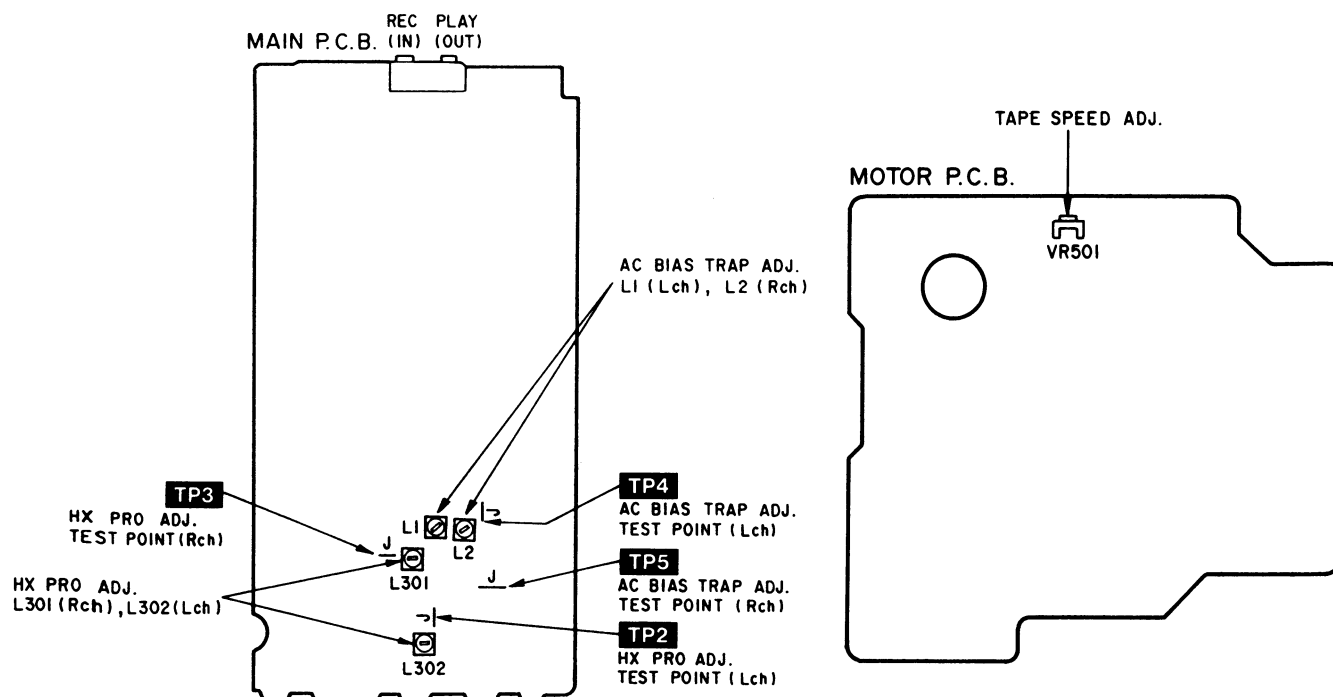
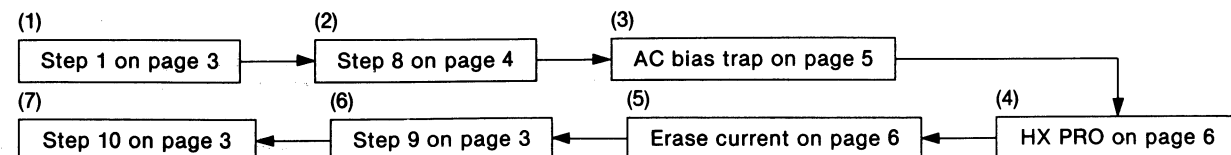


Fig. 4

HEAD REPLACEMENT

When replacing the R/P head or E head, adjust the head azimuth (erase head with small screw stop does not need adjustment) then start the EEPROM adjustment in the following sequence.



(The adjustment is necessary because the playback gain, the overall gain, and the overall frequency response are changed by the head replacement.)

HEAD AZIMUTH ADJUSTMENT

Caution:

- Please replace both azimuth adjustment screws (QH1361A) and springs (QBC1278A) used for to new ones simultaneously when readjusting the head azimuth. (See Fig. 6.) Even if you wish to readjust the head azimuth without replacing the screws and springs, a fine adjustment can not be done because of the screw-locking bond adhered to the azimuth screw and spring.
- Please remove the screw-locking bond left on the head base when replacing the azimuth screw.
- If you wish to readjust the head azimuth, be sure to adjust with adhering the cassette tape closely to the mechanism by pushing the center of cassette tape with your finger. (Shown in Fig. 7.)

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the output of the R-CH are maximized. (See Fig. 5)
2. After the adjustment, apply screwlock to the azimuth adjusting screw. (See Fig. 8)

When the head azimuth is adjusted after head replacement, follow the Writing to the EEPROM procedure on page 4 and 5 (steps 8 and 9).

(When the head is replaced, both playback gain and overall gain change and the default data must be rewritten to the EEPROM.)

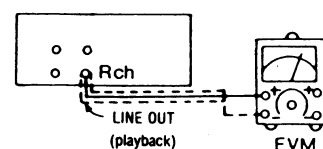


Fig. 5

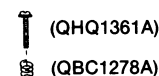


Fig. 6

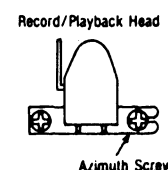


Fig. 8

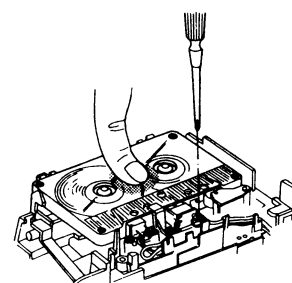


Fig. 7

TAPE SPEED ADJUSTMENT

Normal speed (Standard Value: 3000 ± 45 Hz)

1. Playback the middle portion of the test tape (QZZCWAT).
2. Adjust VR501 for the output value.

Adjustment target: 3000 ± 15 Hz

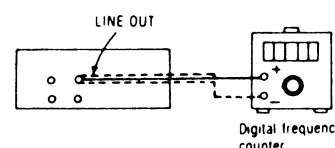


Fig. 9

PLAYBACK GAIN MEASUREMENTS

1. Load the test tape (QZZCFM) into the deck and locate the part where the playback gain test tone (315Hz, 0dB) is recorded. After this, play back the tape and verify that the output level falls in the specified range.

Standard value: 320mV ± 0.5dB

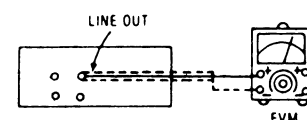


Fig. 10

AC BIAS TRAP ADJUSTMENT

1. Insert the Metal blank test tape (QZZCRZ5) and set the unit to the Record mode.
2. Adjust L1 (L-CH) [L2 (R-CH)] so that the output voltage between TP4 (L-CH) [TP5 (R-CH)] and GND so that the output is the minimum value.

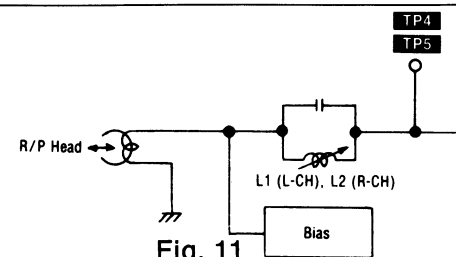


Fig. 11

HX PRO ADJUSTMENT

1. Insert the Metal blank tape (QZZCRZ5) and set the unit to the Record Pause mode.
2. Connect a DC voltmeter across TP2 (L-CH) and GND, TP3 (R-CH) and GND.
3. Adjust L301 (L-CH) and L302 (R-CH) so that the output is the minimum value.

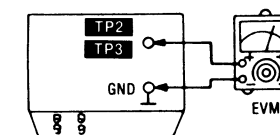


Fig. 12

PLAYBACK FREQUENCY RESPONSE

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. 15 for both L-CH and R-CH.

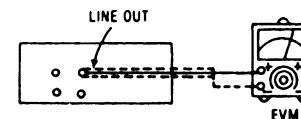


Fig. 13

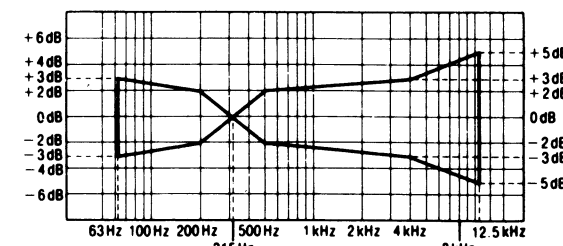


Fig. 14

ERASE CURRENT ADJUSTMENT

1. With no tape loaded in the deck, press the Record button.
2. Check if the output at this time between the erase current confirmation point TP1 and GND (chassis) is within the standard value.

Standard value: 190 ± 20 mA (Metal)...EVM Reading: 190 ± 20 mV

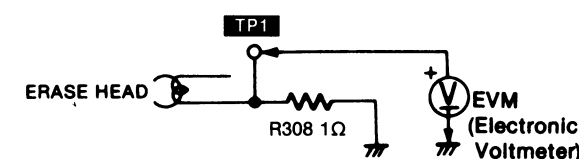


Fig. 15

CONFIRMATION OF THE OVERALL GAIN AND OVERALL FREQUENCY RESPONSE

1. In the Record Pause mode, load a normal blank tape (QZZCRV2) into the deck, and apply the reference input signal (1kHz, -24dB) to the Rec. input. Adjust the output to 320mV with the attenuator, and start recording.
2. While playing back the reference signal just recorded, verify that the output level falls in the following range.

Standard value: 320mV ± 0.5dB

Normal Overall frequency response chart (NR OUT)

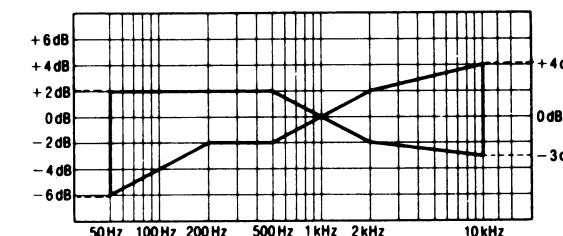


Fig. 17

CrO₂ Metal Overall frequency response chart (NR OUT)

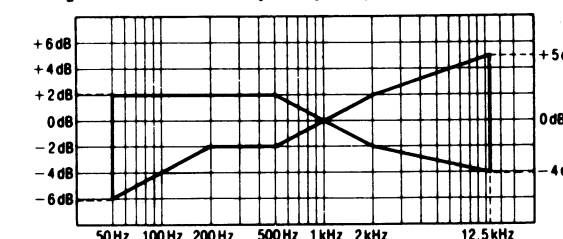


Fig. 18

3. Afterward, apply a signal (frequency at the measured point in the range from 50Hz to 10kHz), whose level is 20dB lower than the reference signal level (1kHz, -24dB=approx. 63mV), to the Rec. input. Then start recording with a normal blank tape (QZZCRX1).
4. Play back the test signals just recorded and verify that the levels at the test frequencies fall in the ranges specified in Fig. 17 with respect to the reference signal level.
5. Repeat steps 3 and 4 above for CrO₂ blank test tape (QZZCRX1) and Metal blank test tape (QZZCRZ5), in these cases raising the upper end of the test signal frequency range to 12.5kHz. Verify that the signal levels at the test frequencies fall in the ranges specified in Fig. 18 with respect to the reference signal level.

Steps 1 through 2 above are concerned with overall gain; steps 3 through 5 pertain to overall frequency response.

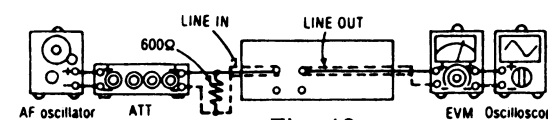
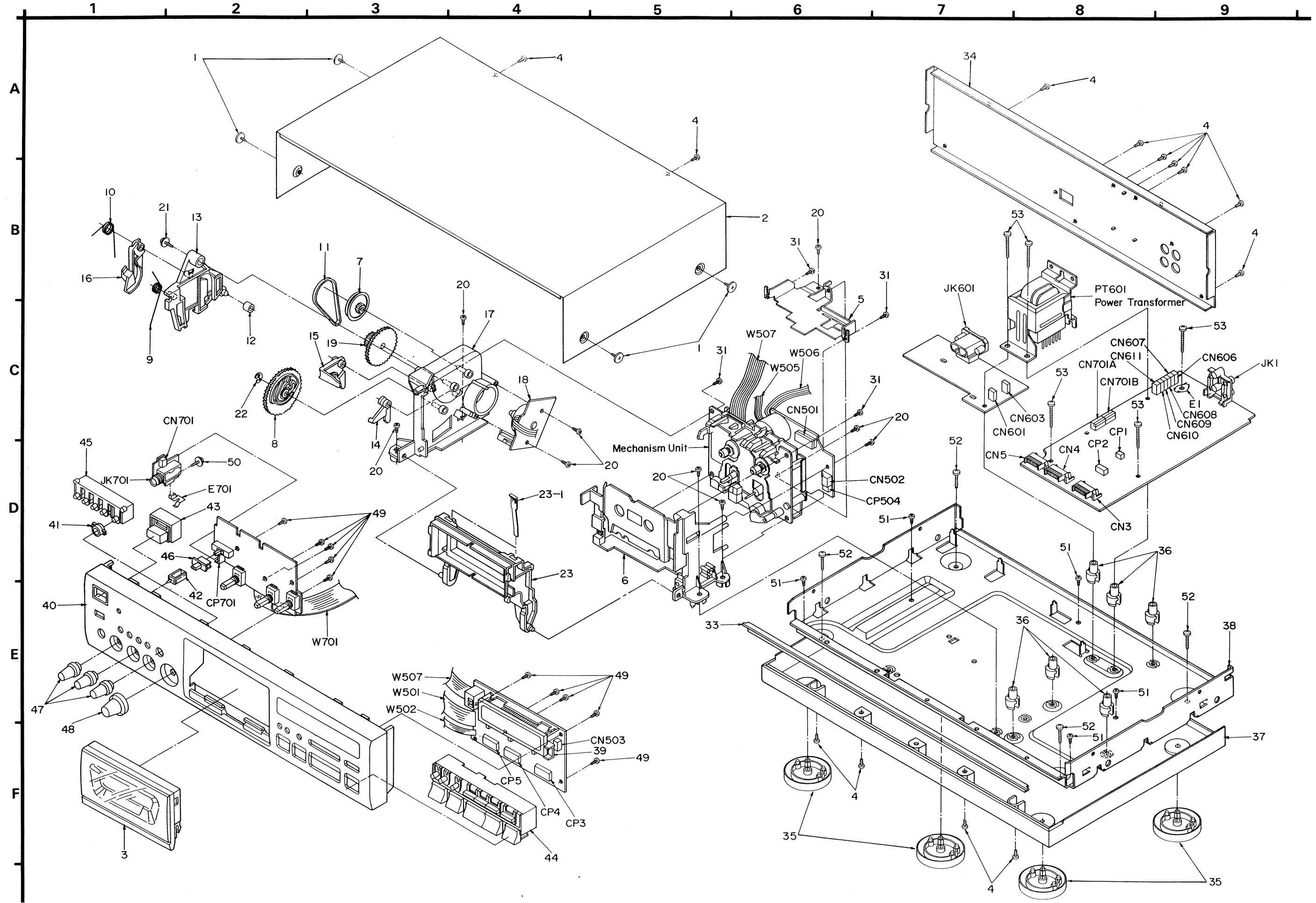
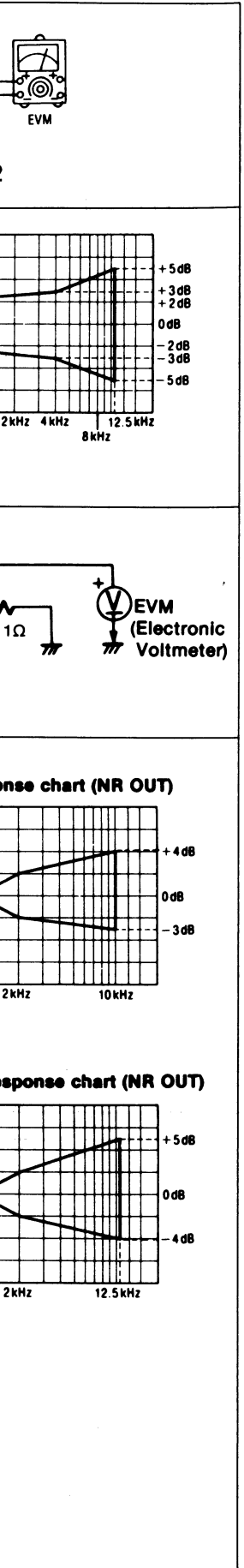


Fig. 16

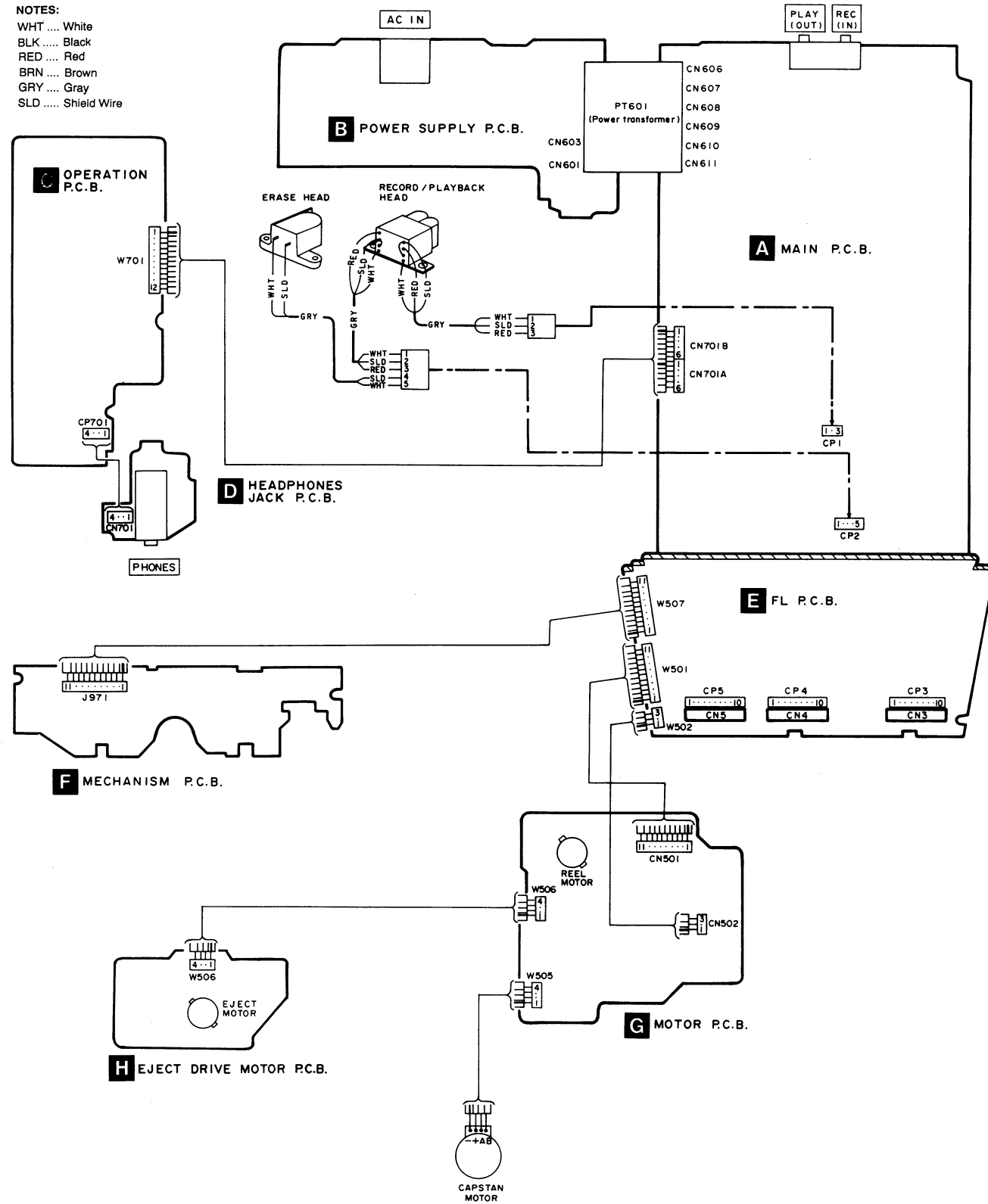
CABINET PARTS LOCATION



WIRING CONNECTION DIAGRAM

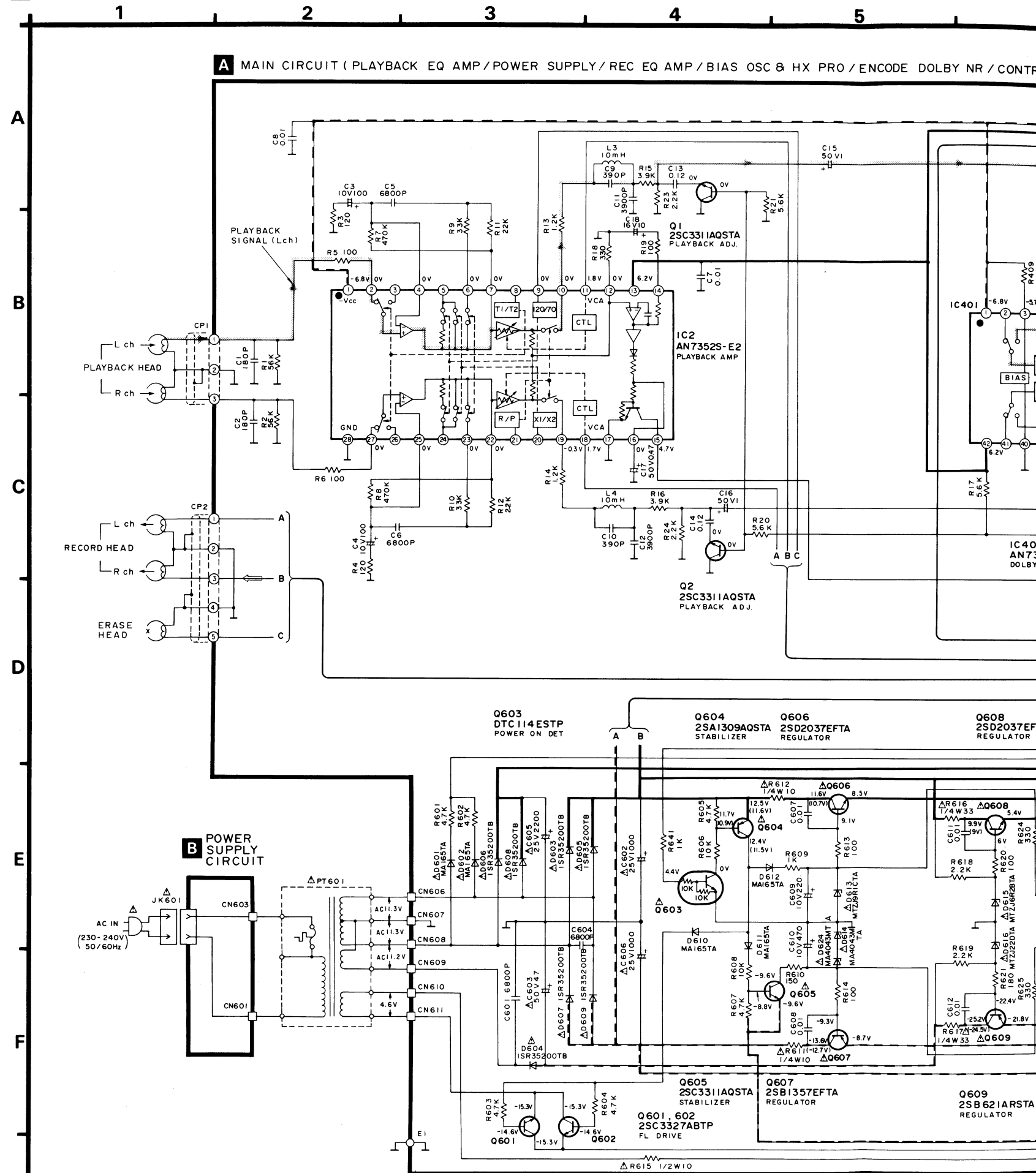
NOTES:

WHT White
BLK Black
RED Red
BRN Brown
GRY Gray
SLD Shield Wire

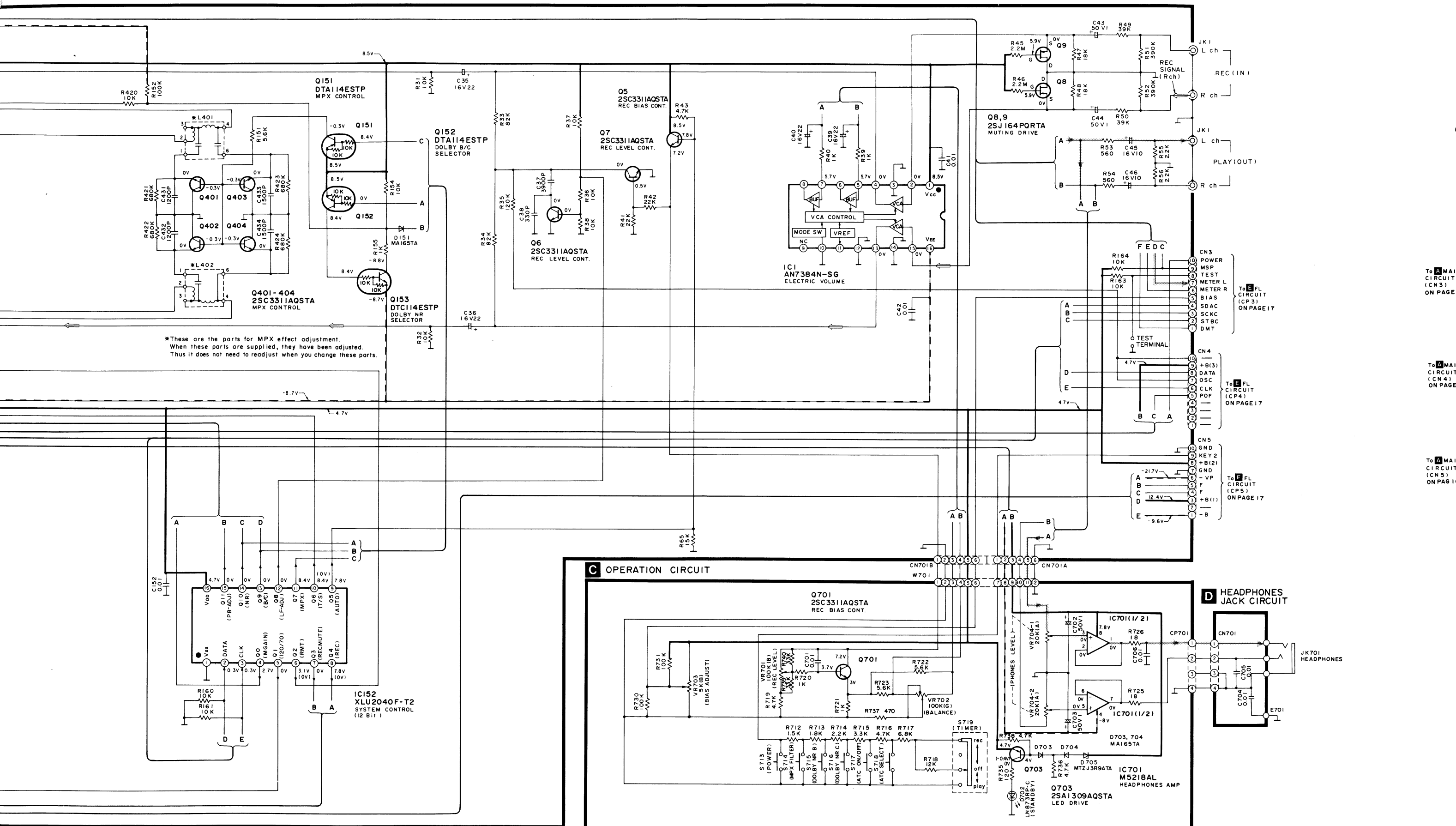


SCHEMATIC DIAGRAM

Note: This schematic diagram may be modified at any time with development of new technology







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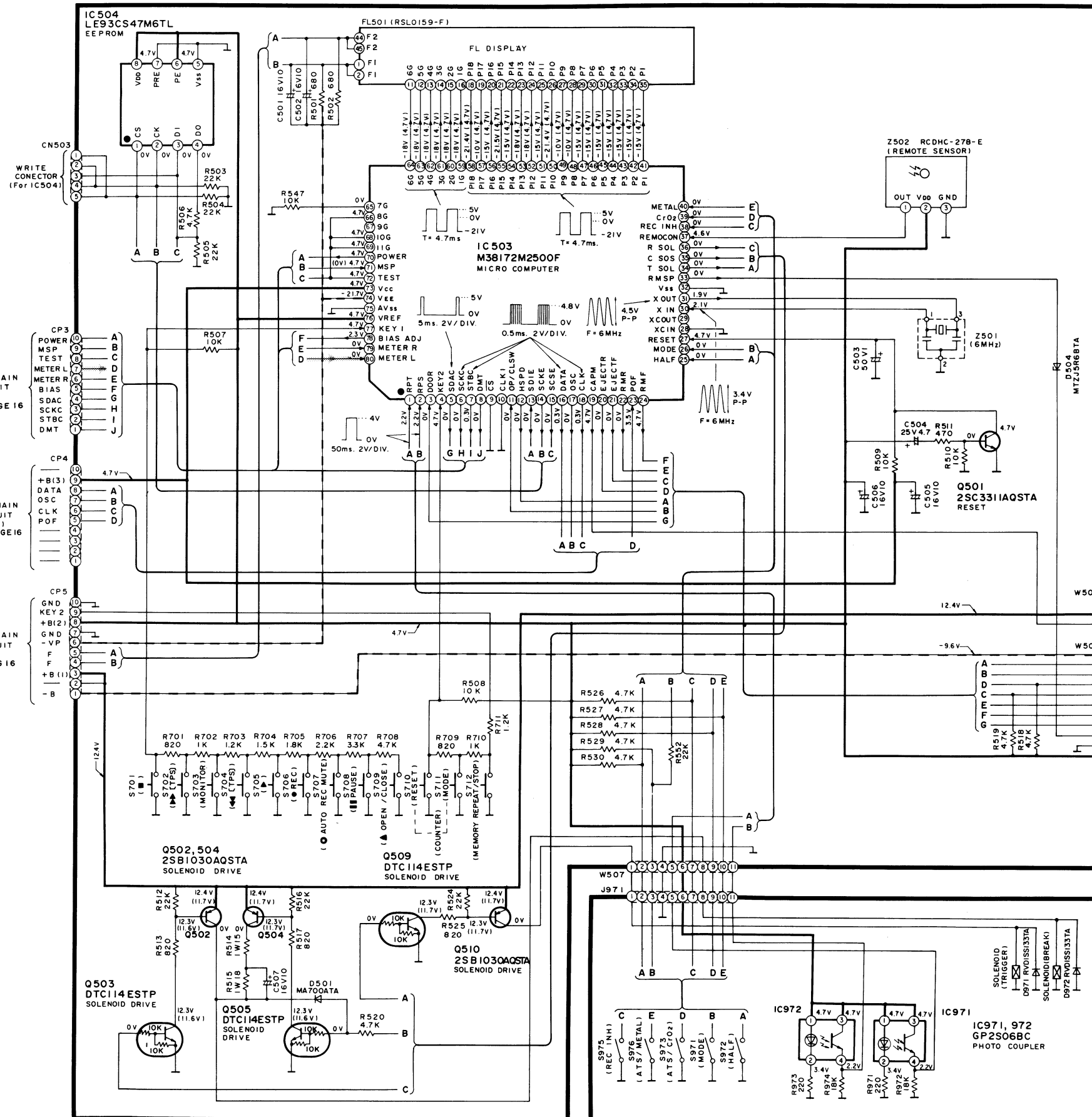
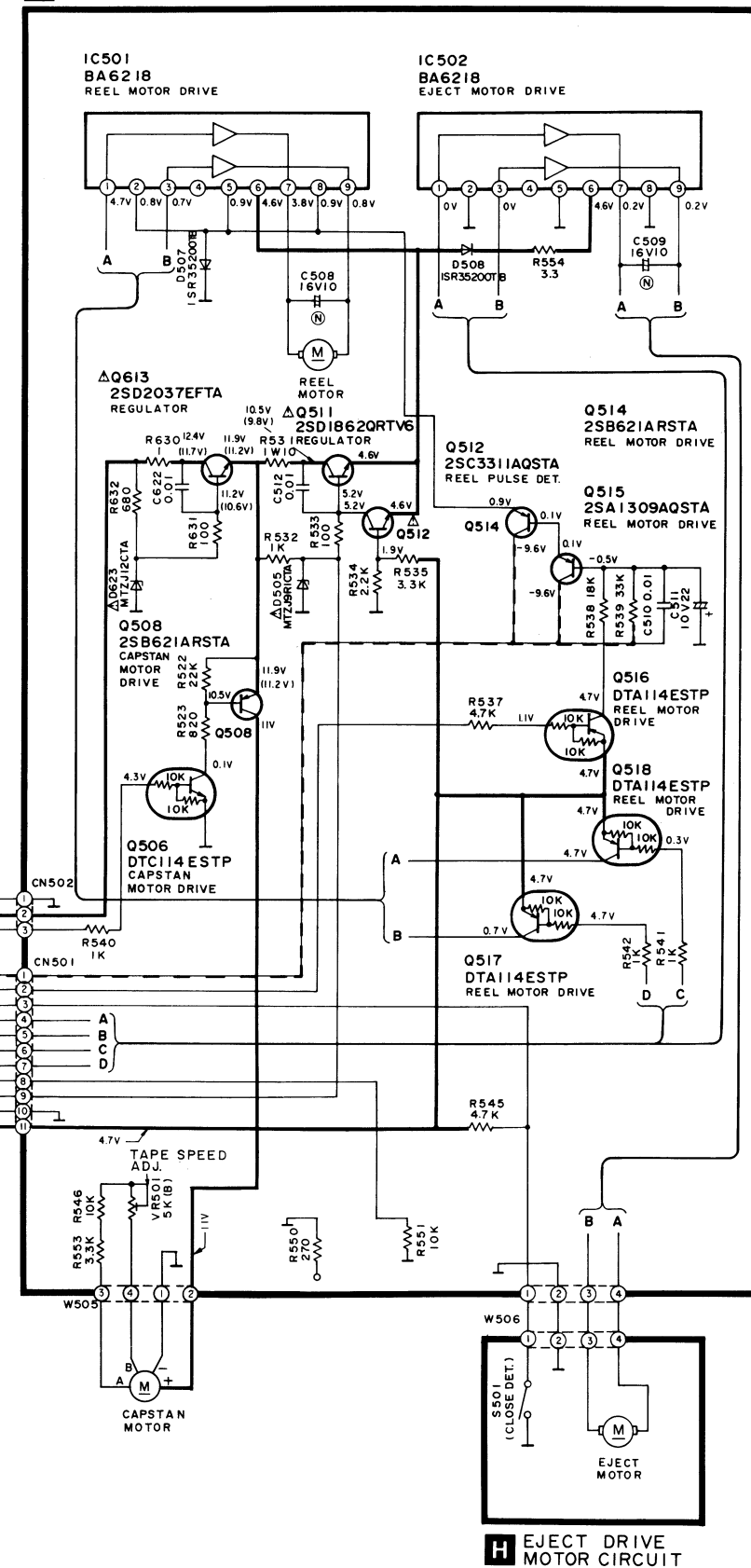
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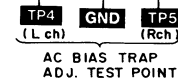
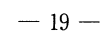
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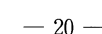
E FL CIRCUIT**G** MOTOR CIRCUIT**F** MECHANISM CIRCUIT

IC971, 972 GP2S06BC PHOTO COUPLER

D

**F**

E



G



