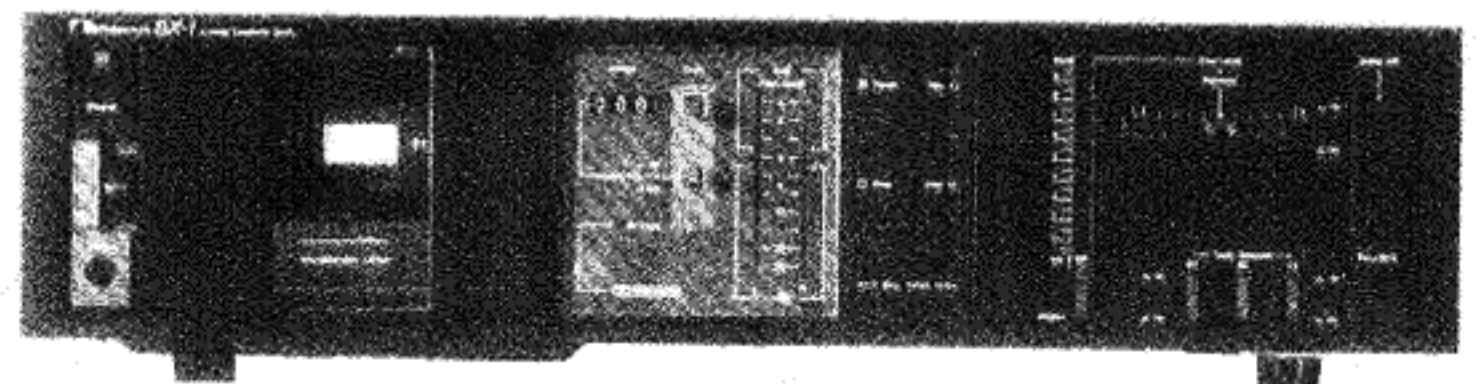




# Service Manual

# Nakamichi BX-1

2 Head Cassette Deck



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## 1. GENERAL

### 1.1. Voltage Selector

Voltage selector is installed on the rear panel for Other version of the Nakamichi BX-1. This voltage selector can select either 120 V or 220-240 V at customer's disposal.

### 1.2. Parts List for Carton and Packing

<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
0F03681C	Carton	1
0F03674A	Packing	2

### 1.3. Serial Number

The BX-1 has two versions, Silver and Black.

In the service manual, serial numbers of these versions are identified as follows:

Silver Version: A314xxxxx

Black Version: A315xxxxx

However, the actual serial number on the serial number plate of the BX-1 is indicated as A314.5xxxxx. The serial number begins with A314.501001.

## 2. MECHANICAL ADJUSTMENTS

### 2.1. Tape Guide Height Check for Record/Playback Head and Erase Head

With use of an M-300 produced by Information Terminals, tape guide height check for the Record/Playback and Erase Heads shall be made, wherein a small block shall be pushed straight down to the base while in use of the M-300. Refer to Fig. 2.1.

#### (1) Record/Playback Head Tape Guide Height

- (a) Load the base of the M-300 carefully, then set the cassette deck in Play mode.
- (b) Place the small block of the M-300 on the base.
- (c) Slide the small block against the tape guide of the Record/Playback Head, and check to insure that the block is accepted by the tape guide.
- (d) If not, loosen the screw and insert a shim (either 30  $\mu\text{m}$  (OC80048A), 60  $\mu\text{m}$  (OC80038A), or 100  $\mu\text{m}$  (OC80039A)) to raise the Record/Playback Head, then tighten and apply a quantity of lock tight paint to the screw.

#### (2) Erase Head Tape Guide Height

- (a) Load the base of the M-300 carefully, then set the cassette deck in Play mode.
- (b) Place the small block of the M-300 on the base.
- (c) Slide the small block against the tape guide of the Erase Head, and check whether the block is accepted by the tape guide.

### 2.2. Head Base Stroke Check

Refer to Fig. 2.2.

- (1) Load the base of the M-300 carefully, then push the base toward the Record/Playback Head to eliminate the clearance between the reference pin and the base.
- (2) Set the cassette deck in Play mode.
- (3) Place the small block of the M-300 on the base.
- (4) Contact the small block with the Record/Playback Head surface and the Erase Head surface, and check whether the end of the small block is located within the specified tolerance as shown in the figure.

### 2.3. Record/Playback Azimuth Alignment and Height Check

Refer to Fig. 2.1.

- (1) Connect a VTVM to the Output Jacks.
- (2) Load a 15 kHz Azimuth Tape (DA09004A), then set the cassette deck in Play mode.
- (3) Turn the Azimuth Alignment Screw until the outputs of both channels become maximum.
- (4) Load a 1 kHz Track Alignment Tape (DA09007A), then set the cassette deck in Play mode.
- (5) Check to insure that the readings of both channels on the VTVM are below -25 dB.  
If not, replacement of the Record/Playback Head will be required.
- (6) Apply a quantity of lock tight paint to the Azimuth Alignment Screw.

### 2.4. Pressure Adjustment of Pressure Roller

Refer to Fig. 2.3.

- (1) In Play mode, measure the torque of the Pressure Roller and check whether the torque is in a range of  $320 \pm 50$  g-cm.
- (2) If torque is out of the range, correct it by changing the installation point of the Pressure Roller Spring.

### 2.5. Tape Travelling Check

Load the Tape Travelling Cassette (DA09027A), then set the cassette deck in Play mode and check the following:

- (1) After more than 2 seconds, the fluctuation of the tape travelling on the Record/Playback Head is small.
- (2) Tape is in contact with the head sufficiently.
- (3) Tape waving is small on the heads and pressure roller.

### 2.6. Eject Damper Adjustment

Refer to Fig. 2.4. Load a cassette tape, and with opening the Cassette Case by pressing the Eject button and closing it by hand, adjust the speed of damper movement by the Adjustment Screw.

CCW: Damper moves fast.

CW: Damper moves slowly.

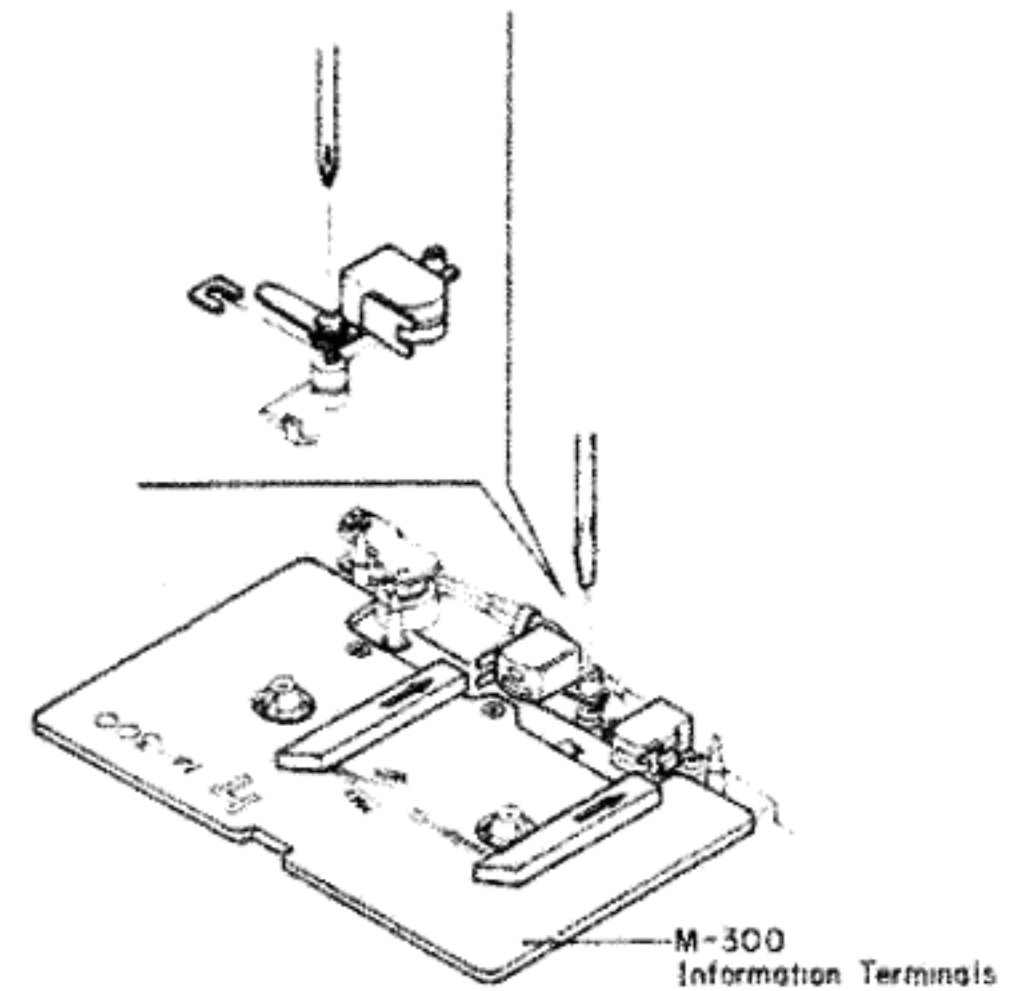


Fig. 2.1

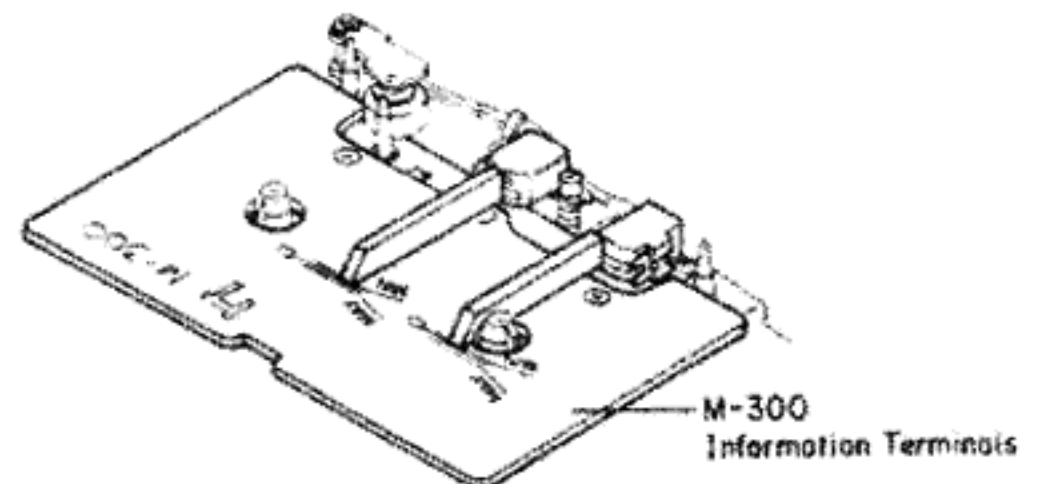


Fig. 2.2

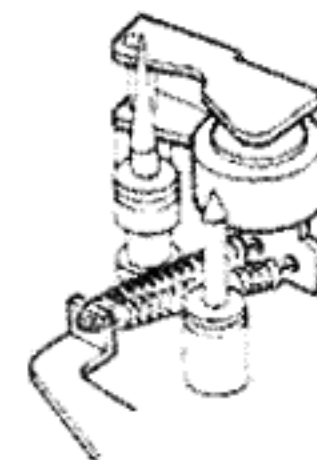


Fig. 2.3

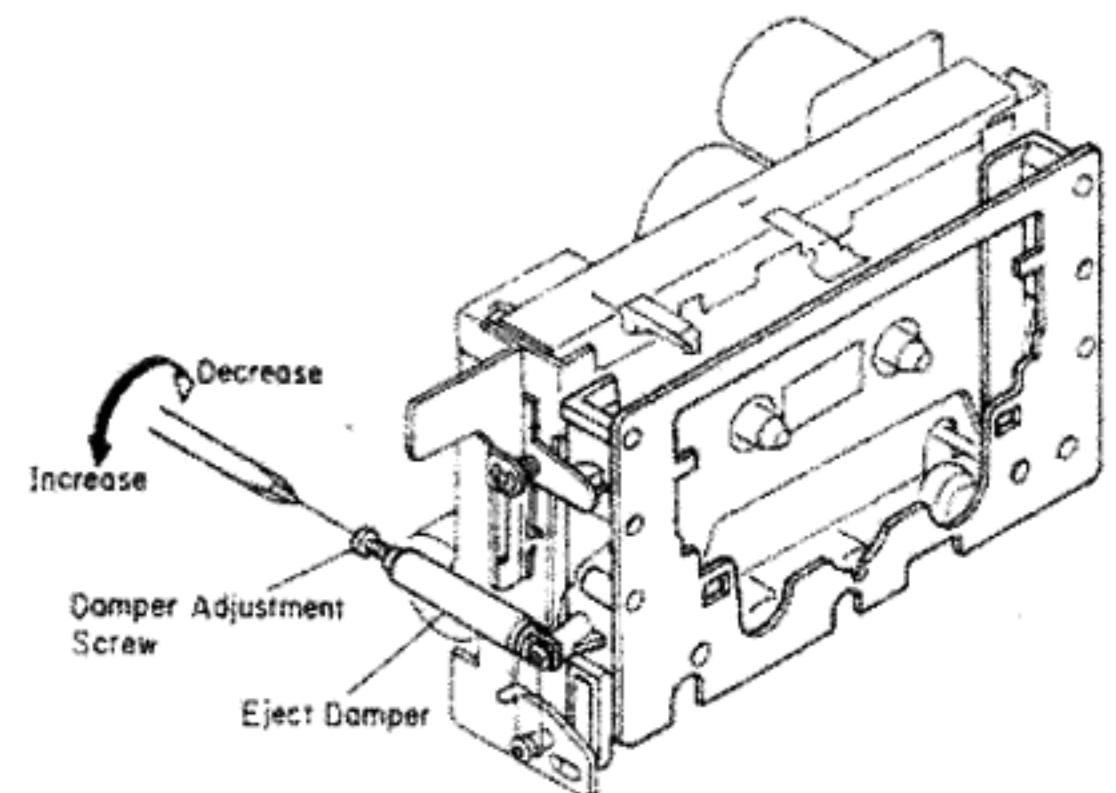


Fig. 2.4

### 2.7. Reel Motor Speed Adjustment in Play Mode

- (1) Connect a DC Voltmeter across the Reel Motor terminals.
- (2) Load a C-60 cassette tape, then set the cassette deck in Play mode.
- (3) Adjust VR601 on the Main P.C.B. Ass'y to obtain approx. 3 V on the DC Voltmeter at the beginning of the tape.
- (4) Load a Torque Meter TW-2111 (made by Sony) and check that the torque is  $50 \pm 10$  g-cm.

### 2.8. Tape Speed Adjustment

Refer to Fig. 2.5.

- (1) Connect a frequency counter to the Output Jacks.
- (2) Load a 3 kHz Speed and Wow/Flutter Tape (DA09006B) and Play it back.
- (3) Adjust the Tape Speed Adjustment Volume incorporated in the Capstan Motor to obtain 3,000 Hz on the frequency counter.  
 CCW: Motor drives slowly.  
 CW: Motor drives fast.

### 2.9. Lubrication

The tape transport is of a lubrication-free type mechanism. When the following parts are replaced, apply the specified lubricant.

- (1) Molykote® Grease (X5-6020)  
 Cam Motor Pulley  
 Thrust portion on the Capstan Shaft
- (2) FLOIL GB-TS-1  
 Washer between Reel Hub Ass'y and Back Tension Spring
- (3) Diamond Oil (EP56)  
 Reel Hub Shaft
- (4) Anderol 456  
 Capstan Shaft

Note: We suggest that you use the above specified lubricant or equivalent type.

The company dealing in the above lubricant is as follows:

- (a) Molykote® Grease (X5-6020)  
 Dowcorning Co., Ltd., 1-15-1 Nishishinbashi, Minato-ku, Tokyo, Japan
- (b) FLOIL GB-TS-1  
 Kanto Chemicals Co., Ltd., 2-7 Kanda Sakuma-cho, Chiyoda-ku, Tokyo, Japan
- (c) Diamond Oil (EP-56)  
 Mitsubishi Oil Co., Ltd., 1-2-4 Toranomom, Minato-ku, Tokyo, Japan
- (d) Anderol 456  
 Toyo Kokusai Oil Co., Ltd., 3-3-5 Hatchobori, Chuo-ku, Tokyo, Japan

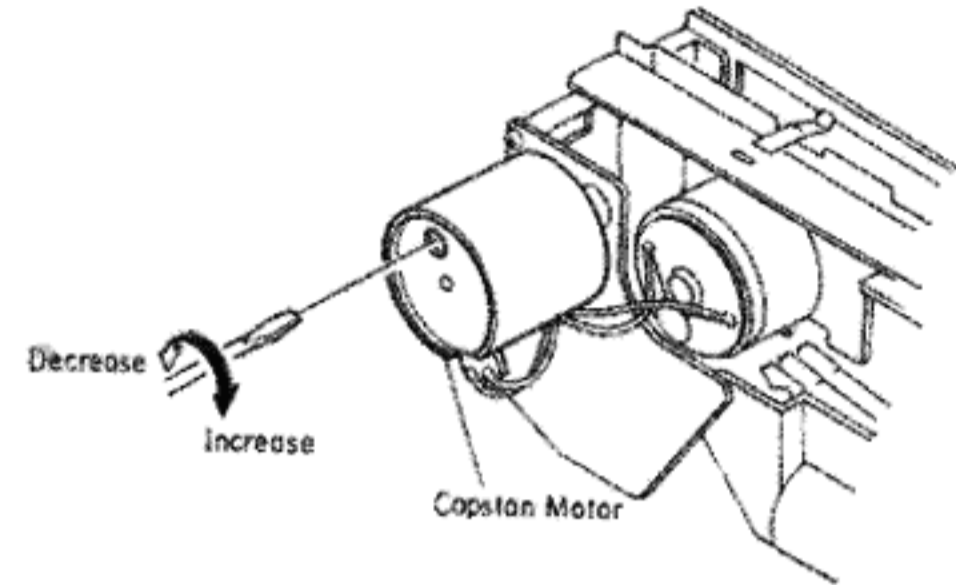


Fig. 2.5

## 3. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

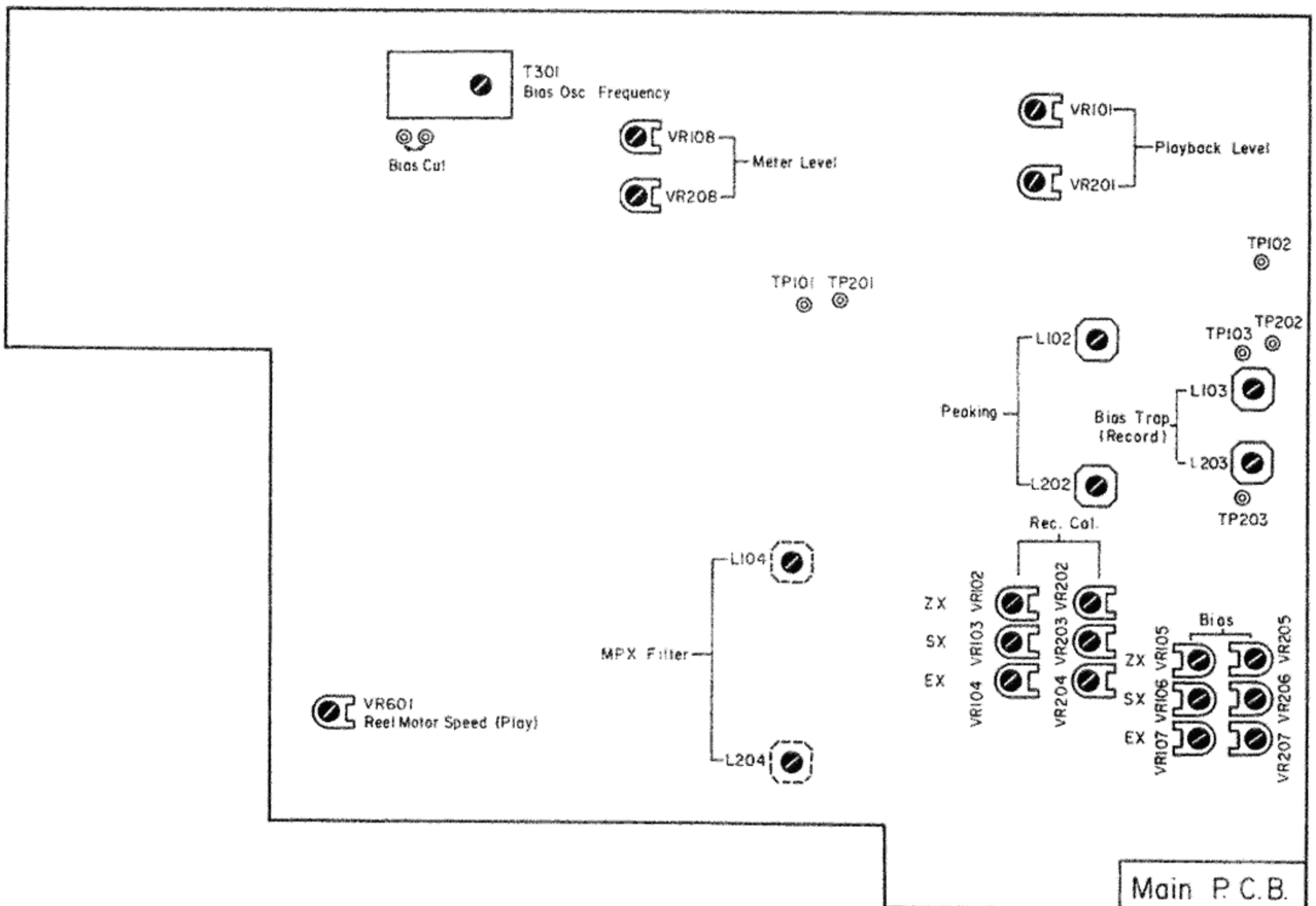


Fig. 3

#### 4. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

Note: Electrical adjustment should be performed after mechanical adjustment is completed.

##### 4.1. Adjustment and Measurement Instructions

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006B)	Frequency Counter to Output Jacks	Playback Eq. SW — 70 $\mu$ s	Tape Speed Adjustment Volume	Adjust the volume incorporated in the capstan motor to obtain 3 kHz $\pm$ 0.5% on the frequency counter.
2	Meter Level Calibration	400 Hz to Input Jacks	VTVM to TP101, TP201 on Main P.C.B.	Record, Pause	Main P.C.B. VR108,VR208	<ol style="list-style-type: none"> <li>1. Feed in 400 Hz, then adjust the Input Level control to obtain 90 mV <math>-0.9</math> dB on the VTVM.</li> <li>2. Adjust VR108 (VR208) so that the 0 dB segment of the level meter starts illuminating.</li> <li>3. Adjust the Input Level control to obtain 90 mV on the VTVM, then decrease the generator output level by 20 dB.</li> <li>4. Check to insure that the segment for <math>-20</math> dB illuminates.</li> </ol>
3	MPX Filter Adjustment	400 Hz and 19 kHz $\pm$ 100 Hz to Input Jacks	VTVM to Output Jacks	Record, Pause	Main P.C.B. L104,L204	<ol style="list-style-type: none"> <li>1. Feed in 400 Hz and adjust the Input Level control to obtain 0 dB (500 mV) on the VTVM.</li> <li>2. Feed in 19 kHz, then adjust L104 (L204) to obtain minimum reading on the VTVM (minimum reading will be less than <math>-30</math> dB).</li> </ol>
4	Record/Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004A)	VTVM to Output Jacks	Playback Eq. SW — 70 $\mu$ s Dolby NR SW — OFF	Record/Playback Head Azimuth Alignment Screw	Adjust the Record/Playback Head Azimuth Alignment Screw to obtain maximum readings of both channels on the VTVM.
5	Playback Level Calibration	400 Hz Level Tape (DA09005A)	VTVM to TP101, TP201 on Main P.C.B.	Same as above	Main P.C.B. VR101,VR201	Adjust VR101 (VR201) to obtain 90 mV on the VTVM.
6	Playback Frequency Response Adjustment	400 Hz Level Tape (DA09005A) 10 kHz PB Frequency Response Tape (DA09003A) 15 kHz PB Frequency Response Tape (DA09002A) 20 kHz PB Frequency Response Tape (DA09001A)	VTVM to Output Jacks	Same as above		<ol style="list-style-type: none"> <li>1. Load a 400 Hz level tape and play it back.</li> <li>2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the record/playback head azimuth to obtain maximum levels on the VTVM with each tape.</li> <li>3. Read the maximum levels with each tape and check to insure that the levels against the 400 Hz level tape are within the following ranges, 10 kHz (<math>-20</math> dB) <math>-2</math> dB to <math>+2</math> dB 15 kHz (<math>-20</math> dB) <math>-2</math> dB to <math>+3</math> dB 20 kHz (<math>-20</math> dB) <math>-2</math> dB to <math>+4</math> dB Note: If the playback level of 15 kHz PB frequency response tape exceeds the above mentioned level, remove C107 (C207) 150 pF in the playback eq. amp. circuit of the Main P.C.B. Ass'y.</li> <li>4. Conduct step 4 "Record/Playback Head Azimuth Alignment".</li> </ol>
7	Bias Oscillation Frequency and Erase Current Adjustment		Frequency Counter to TP102 on Main P.C.B. and VTVM across the additional 0.1 $\Omega$ resistor	Record, Pause Tape SW — ZX Eq. SW — 70 $\mu$ s Dolby NR SW — OFF	Main P.C.B. T301 R318,R350	<ol style="list-style-type: none"> <li>1. Adjust T301 to obtain 105 kHz on the frequency counter.</li> <li>2. Connect an additional 0.1 <math>\Omega</math> resistor in series to the Erase Head, then connect a VTVM across it.</li> <li>3. Check the erase current by the VTVM. Erase current will be in a range of 145 mA to 185 mA (typically approx. 165 mA). If erase current is not sufficient, increase it by shorting R318 or R350.</li> <li>4. After completion of the erase current adjustment, re-check the bias oscillation frequency.</li> <li>5. Remove the additional 0.1 <math>\Omega</math> resistor.</li> </ol>
8	Record Amplifier Equalizer Adjustment	21 kHz ( $-20$ dB) to Input Jacks	VTVM to TP102, TP202 on Main P.C.B.	Same as above	Main P.C.B. L102,L202	<ol style="list-style-type: none"> <li>1. Short both Bias Stop test pins with a clip to stop the bias oscillation.</li> <li>2. Adjust L102 (L202) to obtain peak reading at 21 kHz on the VTVM.</li> <li>3. Remove the clip from the test pins.</li> </ol>
9	Bias Trap Adjustment (Record Amp.)	Remove input signals	VTVM to TP103, TP203 on Main P.C.B.	Same as above	Main P.C.B. L103,L203	Adjust L103 (L203) to obtain maximum reading on the VTVM.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
10	Record Level Calibration and Recording Bias Current Adjustment	400 Hz (0 dB), 400 Hz (-20 dB), 10 kHz (-20 dB) and 17 kHz (-20 dB) to Input Jacks	VTVM to TP102, TP202 on Main P.C.B. and VTVM and Distortion Meter to Output Jacks	Record and Playback Tape SW - ZX/SX/EX Eq. SW - 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR SW - OFF/ON	Main P.C.B. (Level) ZX: VR102, VR202 SX: VR103, VR203 EX: VR104, VR204  (Bias) ZX: VR105, VR205 SX: VR106, VR206 EX: VR107, VR207	Adjustment should be made in the order of ZX, SX and EX.  1. Set the Dolby NR switch to OFF. 2. Connect a VTVM to output Jacks. 3. Set the BX-1 in Record/Pause mode. 4. Feed in 400 Hz, then adjust the Input Level control to obtain 500 mV (0 dB) on the VTVM. 5. Load a reference ZX tape (DA09037A), reference SX tape (DA09025A) and reference EXII tape (DA09066A). 6. Adjust Record Cal. VR102 (VR202) for ZX, VR103 (VR203) for SX and VR104 (VR204) for EXII to center positions. 7. Connect the VTVM to TP102 (TP202) on the Main P.C.B. Ass'y. Adjust Bias VR105 (VR205) for ZX, VR106 (VR206) for SX and VR107 (VR207) for EXII to obtain the following bias current in Record/Pause mode (the VTVM is connected across a 10-ohm resistor). ZX: approx. 1 mA SX: approx. 0.5 mA EXII: approx. 0.3 mA 8. Connect the VTVM to the Output Jacks. 9. Feed in 400 Hz (-20 dB) and 17 kHz (-20 dB), then record, rewind and play them back. Adjust Bias VR105 (VR205) for ZX, VR106 (VR206) for SX and VR107 (VR207) for EXII to obtain the same playback levels at 400 Hz (-20 dB) and 17 kHz (-20 dB) on the VTVM. 10. Feed in 400 Hz (0 dB), then record, rewind and play it back. Adjust Record Cal. VR102 (VR202) for ZX, VR103 (VR203) for SX and VR104 (VR204) for EXII to obtain 0 dB on the VTVM. 11. Repeat above 9 and 10 two or three times to obtain optimum performance. 12. Set the Dolby NR switch to ON. 13. Feed in 400 Hz (-20 dB), 10 kHz (-20 dB) and 17 kHz (-20 dB), then record, rewind and play them back. Check to insure that the playback levels are within $\pm 2$ dB against the levels in Dolby NR OFF. 14. Check to insure whether the total harmonic distortion is less than 1.0% for ZX and EXII tapes and 1.2% for SX tape. 15. If above is not sufficient, repeat 9 to 14 till satisfactory results are obtained.
11	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz to 17 kHz (-20 dB) to Input Jacks	VTVM to Output Jacks	Record and Playback Tape SW - ZX/SX/EX Eq. SW - 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR SW - OFF	Main P.C.B. L102, L202	1. Set the BX-1 in Record/Pause mode. 2. Feed in 400 Hz, then set the Input Level control to obtain 0 dB (500 mV) on the VTVM. 3. Decrease the generator output control by 20 dB. 4. Feed in 20 Hz to 17 kHz (-20 dB) and record, rewind and play them back, then check to insure whether the output levels are within -20 dB $\pm 4$ dB. 5. If above is not sufficient, adjust L102 (L202) to obtain approx. -20 dB on the VTVM, then conduct step 10 "Record Level Calibration and Recording Bias Current Adjustment". 6. If above is not sufficient, precise re-adjustment of step 6 "Playback Frequency Response", replacement of Record/Playback Head or check on item 2.5 "Tape Travelling Check" will be required.
12	Crosstalk Measurement	1 kHz to Input Jacks	1 kHz Band Pass Filter and VTVM to Output Jacks	Record and Playback Tape SW - ZX Eq. SW - 70 $\mu$ s Dolby NR SW - OFF		1. Erase the tape with bulk eraser. 2. Adjust the Input Level control to obtain 0 dB on the VTVM, and record the signals on the reference ZX tape (DA09037A). 3. Turn the cassette tape the other way round and play it back. 4. Measure the difference between 2 and 3.
13	Channel Separation Measurement	1 kHz to Input Jacks	Same as above	Same as above		1. Erase the tape with bulk eraser. 2. Adjust the Input Level control to obtain 0 dB on the VTVM, and set the Balance control to the extreme left (right). 3. Record, rewind and play it back, then measure the R ch (L ch) level.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
14	Erasure Measurement	100 Hz to Input Jacks	100 Hz Band Pass Filter and VTVM to Output Jacks	Record and Playback Tape SW — ZX Eq. SW — 70 $\mu$ s Dolby NR SW — OFF		<ol style="list-style-type: none"> <li>Erase the tape with bulk eraser.</li> <li>Adjust the Input Level control to obtain 0 dB on the VTVM, and record the signals on the reference ZX tape (DA09037A).</li> <li>Rewind the tape, set the Input Level control to minimum, and then record again.</li> <li>Rewind the tape, play it back, and then measure the difference between 2 and 3.</li> </ol>
15	Signal to Noise Ratio Measurement	400 Hz to Input Jacks	IHF-A Curve, Filter, VTVM and Distortion Meter to Output Jacks	Record and Playback Tape SW — ZX Eq. SW — 70 $\mu$ s Dolby NR SW — ON		<ol style="list-style-type: none"> <li>Set the Dolby NR switch to ON.</li> <li>Feed in 400 Hz, then record, rewind and play it back.</li> <li>Adjust the Input Level control to obtain 3% total harmonic distortion in Playback mode.</li> <li>Set the Input Level control to minimum then record again.</li> <li>After rewind, play back and check the output level difference between 3 and 4.</li> </ol> <p>Note: The filter of IHF-A curve shall be used in the measurements.</p>
16	Total Harmonic Distortion Measurement	400 Hz to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record and Playback Tape SW — ZX/SX/EX Eq. SW — 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR SW — OFF		<ol style="list-style-type: none"> <li>Adjust the Input Level control to obtain 0 dB on the VTVM.</li> <li>Record, rewind and play it back.</li> <li>Read the distortion meter and check to insure that the distortion is as follows: EXII . . . . . 1.0% or less SX . . . . . 1.2% or less ZX . . . . . 1.0% or less</li> </ol>
17	Wow/Flutter Measurement	3 kHz Speed and Wow/Flutter Tape (DA09006B)	Wow/Flutter Meter to Output Jacks	Playback Eq. SW — 70 $\mu$ s		Play back and read the wow/flutter meter.

#### 4.2. Check on Dolby NR Circuit

Dolby NR circuit incorporates a Dolby NR IC ( $\mu$ A7300PC) which has no adjustment point.

Perform the following checks and make sure that the IC operates accurately i.e., frequency response through IC is accurate.

Signal Source: 1.4 kHz to Input Jacks  
Output Connection: VTVM to TP101 (TP201) and negative side of C141 (C241) on the Main P.C.B.  
Mode: Record/Pause

- Connect a VTVM to TP101 (TP201) on the Main P.C.B. Ass'y. Feed in 1.4 kHz and adjust the Input level control so that the VTVM may read 90 mV (0 dB) at each test point. Level meter will indicate 0 dB.
- Remove the VTVM from TP101 (TP201) and reconnect it to the negative side of C141 (C241).
- Decrease the input level (0 dB) by 20 dB or 30 dB. Check to insure that the level at negative side of C141 (C241) corresponds to the following with the Dolby NR switch ON and OFF.

Input Level at TP101 (TP201)	Level at negative side of C141 (C241)	
	Dolby NR OFF	Dolby NR B-Type
9 mV	0 dB	+3.2 dB $\pm$ 1.5 dB
2.85 mV	0 dB	+8.2 dB $\pm$ 1.5 dB

# 5. MECHANISM ASS'Y AND PARTS LIST

## 5.1. Synthesis

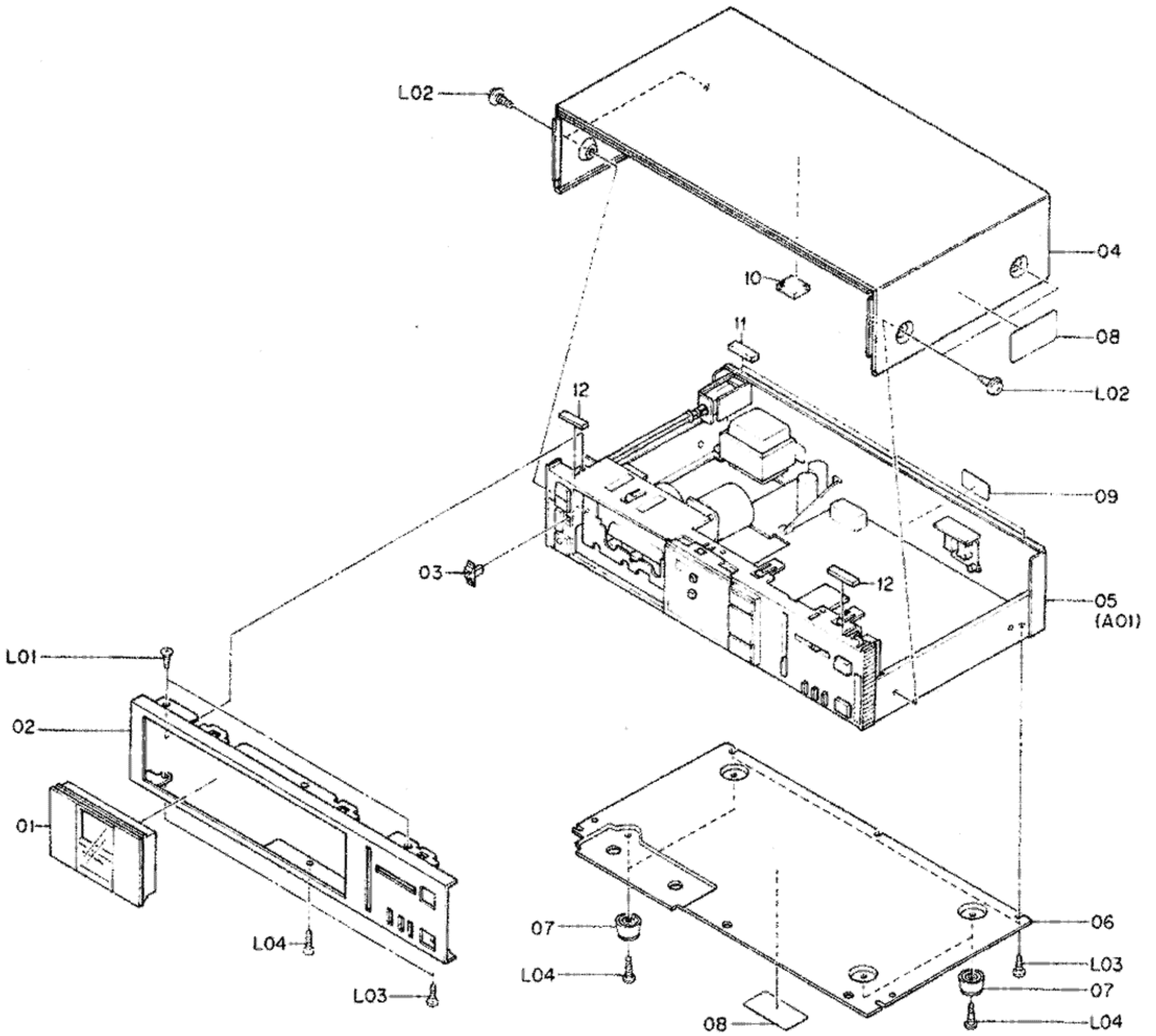


Fig. 5.1



Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
	HA04330A	Synthesis (UK)	1		HA04336A	Synthesis (UK)	1
	HA04331A	Synthesis (U.S.A. & Canada)	1		HA04337A	Synthesis (U.S.A. & Canada)	1
	HA04332A	Synthesis (Japan)	1		HA04338A	Synthesis (Japan)	1
	HA04333A	Synthesis (Others)	1		HA04339A	Synthesis (Others)	1
	HA04334A	Synthesis (Australia)	1		HA04340A	Synthesis (Australia)	1
	HA04335A	Synthesis (220V Class 2) Serial No.: A31401001 - (Silver)	1		HA04341A	Synthesis (220V Class 2) Serial No.: A31501001 - (Black)	1
01	HA04362A	Cassette Case Cover Ass'y	1	01	HA04363A	Cassette Case Cover Ass'y	1
02	OH04131B	Front Panel	1	02	OH04132B	Front Panel	1
03	OH04107A	Slide Switch Knob	1	03	OH04108A	Slide Switch Knob	1
04	OH04155B	Top Cover	1	04	OH04156B	Top Cover	1
05	JA03945B	Synthesis Mechanism Ass'y (UK)	1	05	JA03951B	Synthesis Mechanism Ass'y (UK)	1
	JA03946B	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1		JA03952B	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1
	JA03947B	Synthesis Mechanism Ass'y (Japan)	1		JA03953B	Synthesis Mechanism Ass'y (Japan)	1
	JA03948B	Synthesis Mechanism Ass'y (Others)	1		JA03954B	Synthesis Mechanism Ass'y (Others)	1
	JA03949B	Synthesis Mechanism Ass'y (Australia)	1		JA03955B	Synthesis Mechanism Ass'y (Australia)	1
	JA03950B	Synthesis Mechanism Ass'y (220V Class 2)	1		JA03956B	Synthesis Mechanism Ass'y (220V Class 2)	1
06	OJ04605B	Bottom Cover	1	06	OJ04605B	Bottom Cover	1
07	OJ03564A	Leg T-H	4	07	OJ03564A	Leg T-H	4
08	OM04377A	Caution Label	2	08	OM04377A	Caution Label	2
09	OM03551B	Pass Label B	1	09	OM03551B	Pass Label B	1
10	OJ04630A	Rubber	1	10	OJ04630A	Rubber	1
11	OJ04629A	Top Cover Cushion B	2	11	OJ04629A	Top Cover Cushion B	2
12	OJ04628A	Top Cover Cushion A	2	12	OJ04628A	Top Cover Cushion A	2
L01	OE03054A	BT 3x8 @ Countersunk	2	L01	OE03054A	BT 3x8 @ Countersunk	2
L02	OE03033A	BT 4x8 @ Pan Washer Faced (Nickel)	4	L02	OE03032A	BT 4x8 @ Pan Washer Faced (Black Chromate)	4
L03	OE00857A	BT 3x6 @ Binding	5	L03	OE00857A	BT 3x6 @ Binding	5
L04	OE00865A	BT 3x10 @ Binding	5	L04	OE00865A	BT 3x10 @ Binding	5
--	OM03796A	Voltage Label 220V (220V Class 2)	1	--	OM03796A	Voltage Label 220V (220V Class 2)	1
--	OM03797A	Voltage Label 240V (UK & Australia)	1	--	OM03797A	Voltage Label 240V (UK & Australia)	1
--	OM03844B	Cord Label (UK)	1	--	OM03844A	Cord Label (UK)	1
--	OM04395A	Serial Number Plate	1	--	OM04395A	Serial Number Plate	1
--	OM04113A	LA Label (U.S.A. & Canada)	1	--	OM04113A	LA Label (U.S.A. & Canada)	1
--	OM04293A	Voltage Seal (Others)	1	--	OM04293A	Voltage Seal (Others)	1
--	OM04185A	FSZ Mark Label (220V Class 2)	1	--	OM04185A	FSZ Mark Label (220V Class 2)	1

5.2. Synthesis Mechanism Ass'y (A01)

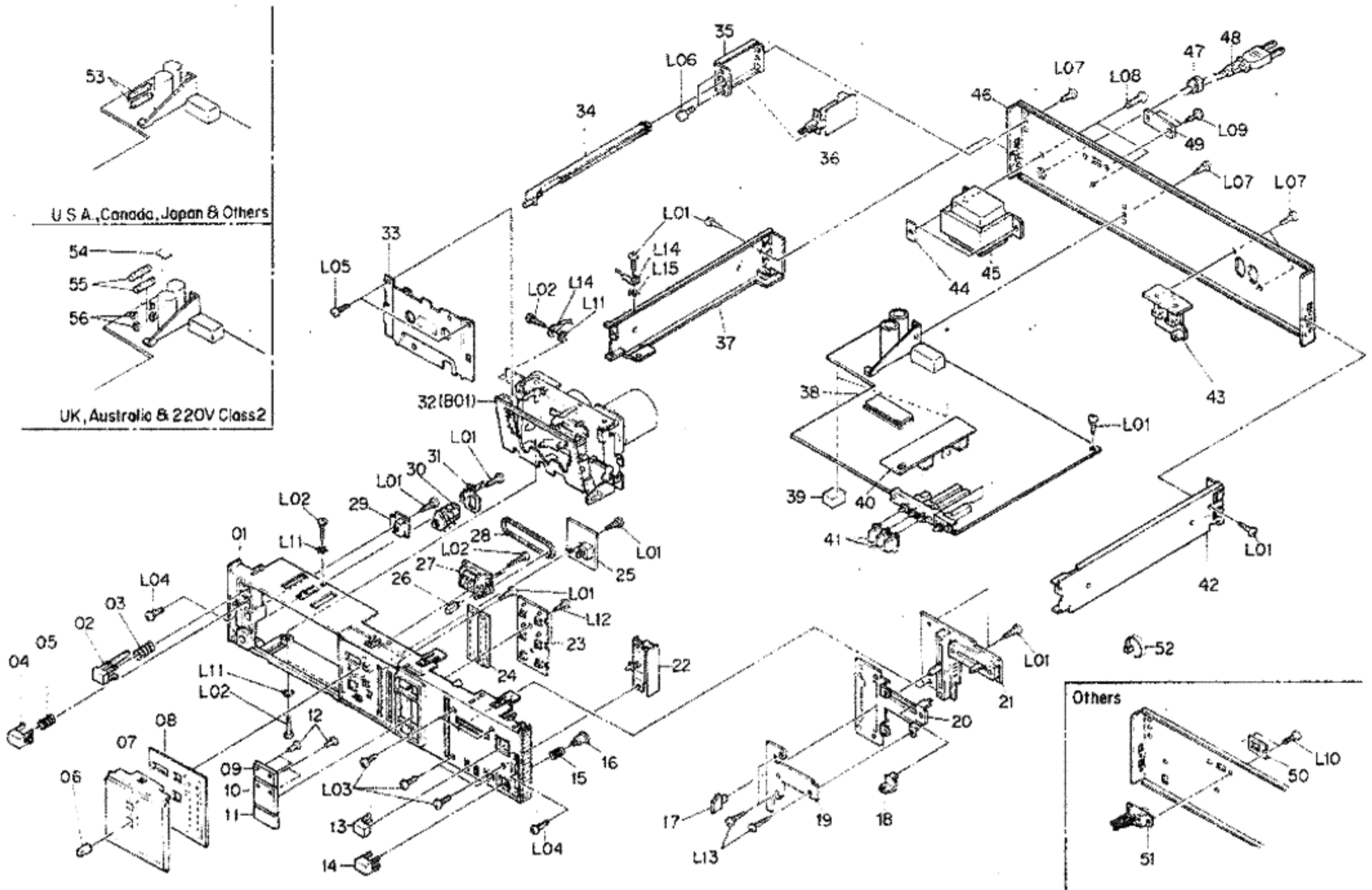


Fig. 5.2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A01	JA03945B	Synthesis Mechanism Ass'y (UK)	1	25	BA04791A	Memory Switch P.C.B. Ass'y	1
	JA03946B	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1	26	0H04128A	Counter Reset Button	1
	JA03947B	Synthesis Mechanism Ass'y (Japan)	1	27	0C08344A	Tape Counter	1
	JA03948B	Synthesis Mechanism Ass'y (Others)	1	28	0C08343A	Counter Belt	1
	JA03949B	Synthesis Mechanism Ass'y (Australia)	1	29	BA04795A	Timer Switch P.C.B. Ass'y	1
	JA03950B	Synthesis Mechanism Ass'y (220V Class 2) Serial No.: A31401001 - (Silver)	1	30	0B08511A	Headphone Jack	1
01	0H04135A	Front Chassis	1	31	0J04611A	Headphone Plate	1
02	0H04129A	Eject Button	1	32	CA08399A	Mechanism Ass'y	1
03	0J04607A	Eject Spring	1	33	HA04390A	Cover Plate Ass'y	1
04	0H04125A	Power Switch Button	1	34	0J04604B	Power Switch Joint	1
05	0J04608A	Power Switch Spring	1	35	0J04076A	Power Switch Holder	1
06	0H04127A	Memory Switch Button	1	36	BA04823A	Power Switch P.C.B. Ass'y (U.S.A. & Canada)	1
07	0H04111B	Meter Cover	1		BA04824A	Power Switch P.C.B. Ass'y (UK, Australia, 220V Class 2 & Others)	1
08	0H04109A	Meter Scale	1		BA04825A	Power Switch P.C.B. Ass'y (Japan)	1
09	0H04143A	Control Button A	1	37	0J04603D	Side Chassis L	1
10	0H04116A	Control Button B	1	38	BA04854A	Main P.C.B. Ass'y	1
11	0H04118A	Control Button C	1	39	0J04581A	Main P.C.B. Cushion	2
12	0H04120A	Lens	4	40	BA04853A	MPX P.C.B. Ass'y	1
13	0H04123A	Dolby NR Switch Button	1	41	0H04101A	Function Knob	3
14	0H04121A	Eq. Switch Button	1	42	0J04602D	Side Chassis R	1
15	0J04610A	Eq. Switch Spring	1	43	BA04794A	Pin Jack P.C.B. Ass'y	1
16	0J04606A	Button Joint	1	44	0C01162B	Bolt Receptacle Plate	2
17	0H04105A	Master Volume Knob	1	45	0B06698A	Power Transformer (U.S.A. & Canada)	1
18	0H04103A	Balance Volume Knob	1		0B06697B	Power Transformer (Japan)	1
19	0H04113A	Volume Plate	1		0B06699A	Power Transformer (UK, Australia & 220V Class 2)	1
20	0H04618A	Volume Shield Plate	1	46	0B06700B	Power Transformer (Others)	1
21	BA04793A	Volume P.C.B. Ass'y	1	47	0H04150B	Rear Panel	1
22	BA04796A	Dolby NR Switch P.C.B. Ass'y	1		0B08351A	Cord Bushing 4K-4 (UK)	1
23	BA04792A	Control Switch P.C.B. Ass'y	1		0B08037U	Cord Bushing (U.S.A., Canada, Japan, Others, Australia & 220V Class 2)	1
24	0B06378A	Display Unit	1				

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
48	OB08348A	Power Cord (UK)	1	10	OH04117A	Control Button B	1
	OB08533A	Power Cord (U.S.A., Canada & Others)	1	11	OH04119A	Control Button C	1
	OB08219B	Power Cord (Japan)	1	12	OH04120A	Lens	4
	OB05241A	Power Cord (Australia)	1	13	OH04124A	Dolby NR Switch Button	1
	OB08093U	Power Cord (220V Class 2)	1	14	OH04122A	Eq. Switch Button	1
49	OJ04622B	Switch Cover (UK, U.S.A., Canada, Japan, Australia & 220V Class 2)	1	15	OJ04610A	Eq. Switch Spring	1
50	OM04407A	Voltage Selector Lock Plate (Others)	1	16	OJ04606A	Button Joint	1
51	OB07092U	Voltage Selector (Others)	1	17	OH04106A	Master Volume Knob	1
52	OB08515A	Insu-Lock	10	18	OH04104A	Balance Volume Knob	1
53	OB08525A	Fuse 2A 250V (U.S.A., Canada & Others)	2	19	OH04114A	Volume Plate	1
	OB08854A	Fuse 2A 250V (Japan)	2	20	OH04618A	Volume Shield Plate	1
54	OM04131B	Fuse Label 1A 250V (UK, Australia & 220V Class 2)	1	21	BA04793A	Volume P.C.B. Ass'y	1
55	OB08347U	Fuse 1A 250V (UK, Australia & 220V Class 2)	2	22	BA04796A	Dolby NR Switch P.C.B. Ass'y	1
56	OB08349A	Fuse Clip (UK, Australia & 220V Class 2)	4	23	BA04792A	Control Switch P.C.B. Ass'y	1
—	OF01071A	Free-up Belt (UK, Australia & 220V Class 2)	1	24	OB06378A	Display Unit	1
—	OM03954A	Fuse Caution Label (U.S.A. & Canada)	1	25	BA04791A	Memory Switch P.C.B. Ass'y	1
L01	OE00857A	BT 3x6 ⊕ Binding	11	26	OH04128A	Counter Reset Button	1
L02	OE00954A	BT 2.6x8 ⊕ Binding	6	27	OC08344A	Tape Counter	1
L03	OE00509A	M3x6 ⊕ Pan	5	28	OC08343A	Counter Belt	1
L04	OE00868A	BT 3x8 ⊕ Binding	2	29	BA04795A	Timer Switch P.C.B. Ass'y	1
L05	OE00824A	BT 2.6x6 ⊕ Binding (Black Chromate)	2	30	OB08511A	Headphone Jack	1
L06	OE00612A	M3x6 ⊕ Pan (2A)	2	31	OJ04611A	Headphone Plate	1
L07	OE03028A	BT 3x8 ⊕ Binding (Nickel)	4	32	CA08399A	Mechanism Ass'y	1
L08	OE03034A	M4x8 ⊕ Binding (Nickel)	2	33	HA04390A	Cover Plate Ass'y	1
L09	OE08583A	Plastic Rivet	2	34	OJ04604B	Power Switch Joint	1
*L10	OE03031A	M3x8 ⊕ Binding (Nickel)	2	35	OJ04076A	Power Switch Holder	1
L11	OE00233A	Washer 2.6mm Toothed Lock	4	36	BA04823A	Power Switch P.C.B. Ass'y (U.S.A. & Canada)	1
L12	OE00862A	BT 3x6 ⊕ Pan	2		BA04824A	Power Switch P.C.B. Ass'y (UK, Australia, 220V Class 2 & Others)	1
L13	OE00714A	M2.6x6 ⊕ Binding (Bronze)	3		BA04825A	Power Switch P.C.B. Ass'y (Japan)	1
L14	OE00037A	Earth Lug B-5	2	37	OJ04603D	Side Chassis L	1
L15	OE00172A	Washer 3mm Toothed Lock	1	38	BA04854A	Main P.C.B. Ass'y	1
—	OB02247A	PD Wire (Pin Jack — Volume)	2	39	OJ04581A	Main P.C.B. Cushion	2
—	OB02248A	PD Wire (Pin Jack — Main)	1	40	BA04853A	MPX P.C.B. Ass'y	1
—	OB02256A	PD Wire (Main — Headphone)	1	41	OH04102A	Function Knob	3
—	OB02292B	PD Wire (Pin Jack — Chassis)	1	42	OJ04602D	Side Chassis R	1
—	OB02293A	PD Wire (Main — Volume)	1	43	BA04794A	Pin Jack P.C.B. Ass'y	1
—	OB02294A	PD Wire (Main — Volume)	1	44	OC01162B	Bolt Receptacle Plate	2
—	OB02296A	PD Wire (Main — MPX)	1	45	OB06698A	Power Transformer (U.S.A. & Canada)	1
—	OB02297A	PD Wire (Dolby NR Switch — MPX)	1		OB06697B	Power Transformer (Japan)	1
—	OB05273A	2P Flat Cable FC7 (Dolby NR Switch — Memory Switch)	1		OB06699A	Power Transformer (UK, Australia & 220V Class 2)	1
—	OB05275A	4P Flat Cable FC5 (Main — Timer Switch)	1	46	OB06700B	Power Transformer (Others)	1
—	OB05276A	4P Flat Cable FC2 (Main — Control Switch)	1	47	OH04151B	Rear Panel	1
—	OB05297A	5P Flat Cable FC4 (Main — Control Switch)	1		OB08351A	Cord Bushing 4K-4 (UK)	1
—	OB05290A	4P Flat Cable FC3 (Main — Control Switch)	1		OB08037U	Cord Bushing (U.S.A., Canada, Japan, Others, Australia & 220V Class 2)	1
—	OB05291A	2P Flat Cable FC8,9 (Main — Memory Switch, Counter)	2	48	OB08348A	Power Cord (UK)	1
—	OB05292A	12P Flat Cable FC1 (Main — Display Unit)	1		OB08533A	Power Cord (U.S.A., Canada & Others)	1
—	OB05298A	3P Flat Cable FC6 (main — Dolby NR Switch)	1		OB08219B	Power Cord (Japan)	1
		*: Depends on the versions.			OB05241A	Power Cord (Australia)	1
					OB08093U	Power Cord (220V Class 2)	1
					OJ04601B	Switch Cover (UK, U.S.A., Canada, Japan, Australia & 220V Class 2)	1
A01	JA03951B	Synthesis Mechanism Ass'y (UK)	1	50	OM03948A	Voltage Selector Lock Plate (Others)	1
	JA03952B	Synthesis Mechanism Ass'y (U.S.A. & Canada)	1	51	OB07092U	Voltage Selector (Others)	1
	JA03953B	Synthesis Mechanism Ass'y (Japan)	1	52	OB08515A	Insu-Lock	10
	JA03954B	Synthesis Mechanism Ass'y (Others)	1	53	OB08525A	Fuse 2A 250V (U.S.A., Canada & Others)	2
	JA03955B	Synthesis Mechanism Ass'y (Australia)	1		OB08854A	Fuse 2A 250V (Japan)	2
	JA03956B	Synthesis Mechanism Ass'y (220V Class 2) Serial No.: A31501001 - (Black)	1	54	OM04131A	Fuse Label 1A 250V (UK, Australia & 220V Class 2)	1
01	OH04136A	Front Chassis	1	55	OB08347U	Fuse 1A 250V (UK, Australia & 220V Class 2)	2
02	OH04130A	Eject Button	1	56	OB08349A	Fuse Clip (UK, Australia & 220V Class 2)	4
03	OJ04607A	Eject Spring	1	—	OF01071A	Free-up Belt (UK, Australia & 220V Class 2)	1
04	OH04126A	Power Switch Button	1	—	OM03954A	Fuse Caution Label (U.S.A. & Canada)	1
05	OJ04608A	Power Switch Spring	1	L01	OE00857A	BT 3x6 ⊕ Binding	11
06	OH04127A	Memory Switch Button	1	L02	OE00954A	BT 2.6x8 ⊕ Binding	6
07	OH04111B	Meter Cover	1	L03	OE00509A	M3x6 ⊕ Pan	5
08	OH04109A	Meter Scale	1	L04	OE00868A	BT 3x8 ⊕ Binding	2
09	OH04144A	Control Button A	1	L05	OE00824A	BT 2.6x6 ⊕ Binding (Black Chromate)	2
				L06	OE00612A	M3x6 ⊕ Pan (2A)	2
				L07	OE00921A	BT 3x8 ⊕ Binding (Black Chromate)	4
				L08	OE03058A	M4x8 ⊕ Binding (Black Chromate)	2
				L09	OE08583A	Plastic Rivet	2
				*L10	OE00818A	M3x8 ⊕ Binding (Bronze)	2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
L11	OE00233A	Washer 2.6mm Toothed Lock	4	—	OB05276A	4P Flat Cable FC2 (Main — Control Switch)	1
L12	OE00862A	BT 3x6 @ Pan	2	—	OB05297A	5P Flat Cable FC4 (Main — Control Switch)	1
L13	OE00714A	M2.6x6 @ Binding (Bronze)	3	—	OB05290A	4P Flat Cable FC3 (Main — Control Switch)	1
L14	OE00037A	Earth Lug B-5	2	—	OB05291A	2P Flat Cable FC8,9 (Main — Memory Switch, Counter)	2
L15	OE00172A	Washer 3mm Toothed Lock	1	—	OB05292A	12P Flat Cable FC1 (Main — Display Unit)	1
—	OB02247A	PD Wire (Pin Jack — Volume)	2	—	OB05298A	3P Flat Cable FC6 (main — Dolby NR Switch)	1
—	OB02248A	PD Wire (Pin Jack — Main)	1				
—	OB02256A	PD Wire (Main — Headphone)	1				
—	OB02292B	PD Wire (Pin Jack — Chassis)	1				
—	OB02293A	PD Wire (Main — Volume)	1				
—	OB02294A	PD Wire (Main — Volume)	1				
—	OB02296A	PD Wire (Main — MPX)	1				
—	OB02297A	PD Wire (Dolby NR Switch — MPX)	1				
—	OB05273A	2P Flat Cable FC7 (Dolby NR Switch — Memory Switch)	1				
—	OB05275A	4P Flat Cable FC5 (Main — Timer Switch)	1				

### 5.3. Mechanism Ass'y (B01)

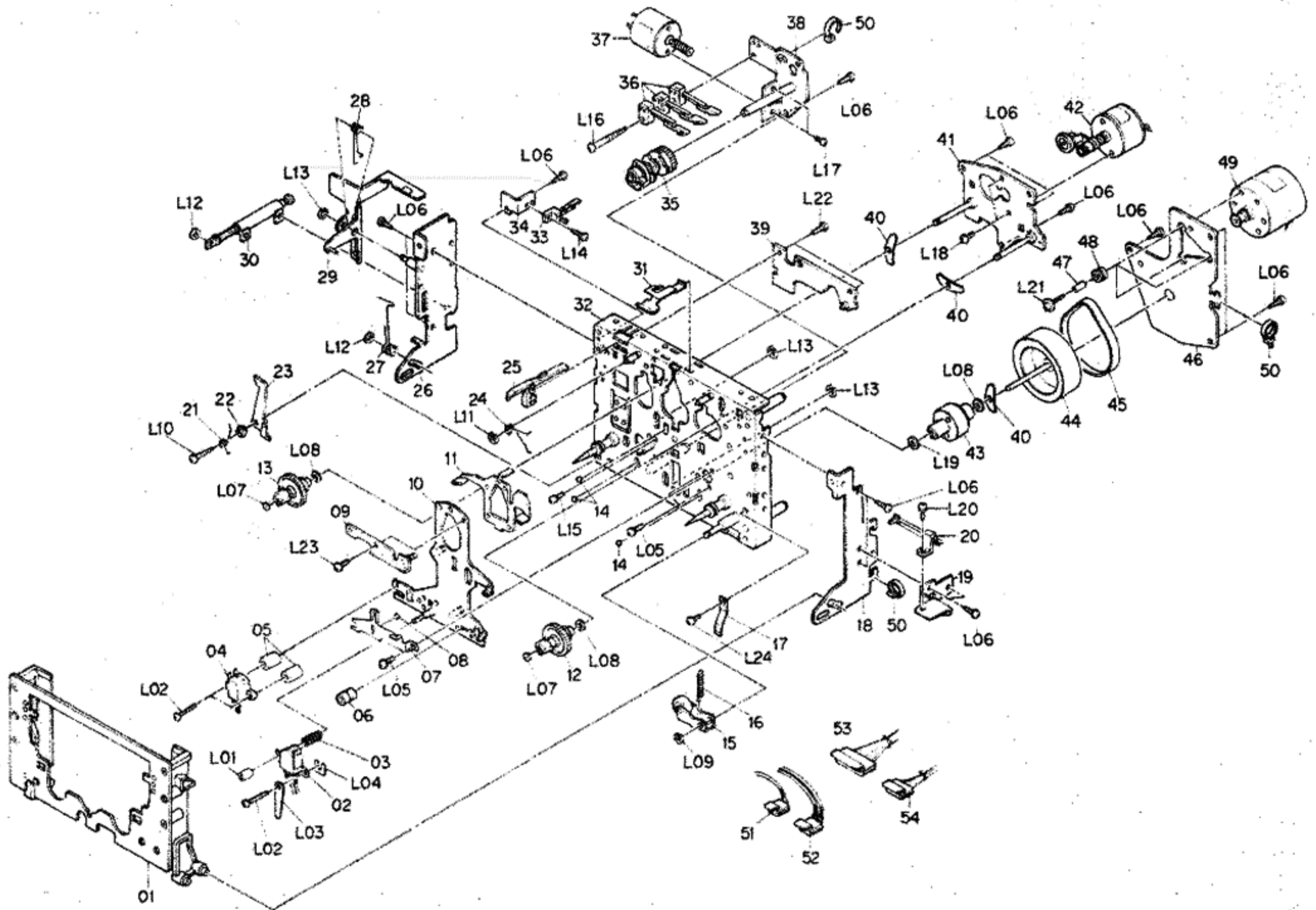


Fig. 5.3

Schematic Ref. No.	Part No.	Description	Qty
B01	CA08399A	Mechanism Ass'y Serial No.: A314.501001 -	1
01	CA80001A	Cassette Case Ass'y	1
02	OG01371A	Record/Playback Head RP-2G	1
03	OC80001A	Azimuth Adjust Spring	1
04	OG01365A	Erase Head E-2D	1
05	OC80044A	Erase Head Collar	2
06	OC80045A	Record/Playback Head Collar	1
07	OC80003A	Head Base Hold Plate	1
08	OC80004A	Steel Ball 30	1
09	OC80005A	Reinforce Plate	1
10	OC80006A	Head Base	1
11	CA80002A	Brake Ass'y	1
12	CA80003A	Take-up Reel Hub Ass'y	1
13	CA80004A	Supply Reel Hub Ass'y	1
14	OC80007A	Steel Ball 20	3
15	CA80005A	Pressure Roller Ass'y	1
16	OC80008A	Pressure Roller Spring	1
17	OC80009A	Cassette Case Spring	1
18	OC80010A	Cassette Case Holder R	1
19	OC80011A	Eject Sensor Holder	1
20	OC80012A	Eject Sensor	1
21	OC80013A	Lock Lever Spring	1
22	OC80014A	Lock Lever Collar	1
23	OC80015A	Lock Lever	1
24	OC80016A	Brake Spring	1
25	OC80017A	Record Protector Lever	1
26	OC80018A	Cassette Case Holder L	1
27	OC80019A	Eject Spring	1
28	OC80020A	Eject Lever Spring	1
29	OC80021A	Eject Lever	1
30	CA80006A	Pneumatic Damper Ass'y	1
31	OC80022A	Cassette Hold Spring	1
32	OC80023A	Mechanism Chassis	1
33	OC80024A	Record Protector	1
34	OC80025A	Record Protector Holder	1
35	OC80026A	Cam	1
36	OC80027A	Mode Switch	3
37	CA80007A	Control Motor Ass'y	1
38	OC80028A	Control Motor Holder	1
39	CA80011A	Shut-off P.C.B. Ass'y	1
40	OC80029A	Back Tension Spring	3
41	OC80030A	Reel Motor Holder	1
42	CA80008A	Reel Motor Ass'y	1
43	OC80031A	Capstan Flange	1
44	OC80033A	Flywheel	1
45	OC80034A	Capstan Belt	1
46	CA80009A	Flywheel Holder Ass'y	1
47	OC80035A	Sleeve	3
48	OC80036A	Floating Rubber	3
49	CA80010A	Capstan Motor Ass'y	1
50	OC80037A	Insu-Lock	3
51	OC80040A	2P-H Connector	1
52	OC80041A	4P-H Connector	1
53	OC80042A	9P-H Connector	1
54	OC80043A	5P-H Connector	1
L01	OC80046A	Azimuth Adjust Screw	1
L02	OE03038A	M2x12 ⊕ Binding	3
L03	OE03053A	Wire Holder	1
L04	OC80048A	Shim 0.03T	(1)
	OC80038A	Shim 0.06T	(1)
	OC80039A	Shim 0.1T	(1)
L05	OE03046A	M2.6x6 ⊕ Pan (2A)	3
L06	OE03042A	FT M2.5x5 ⊕ Pan	14
L07	OE03049A	Washer 1.8mm FT	2
L08	OE03050A	Washer 3.1mm FT	3
L09	OE00222A	E-Ring 2mm	1
L10	OE03043A	FT M2.5x10 ⊕ Pan	1
L11	OE00698A	E-Ring 2.5mm	1
L12	OE03052A	Stopper Ring 2.4mm	2
L13	OE00181A	E-Ring 3mm	3
L14	OE03048A	FT M2.6x6 ⊕ Pan	1
L15	OE03036A	M2x4 ⊕ Pan (2A)	1
L16	OE03044A	FT M2.5x20 ⊕ Pan	1
L17	OE00691A	M2x3 ⊕ Pan	2
L18	OE03045A	M2.6x3 ⊕ Binding	2
L19	OE03051A	Capstan Washer	1
L20	OE03037A	M2x5 ⊕ Pan (2A)	1
L21	OE03047A	M2.6x9 ⊕ Pan	3
L22	OE03041A	FT M2.5x4 ⊕ Pan	2
L23	OE03040A	FT M2.5x3.5 ⊕ Pan	1
L24	OE03035A	M2x3.2 ⊕ Truss	1

## 6. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.

2. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.

3. Abbreviation for part name:

TR — Transistor, SiD — Silicon Diode, GD — Germanium Diode, ZD — Zener Diode

RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor, RC — Cement Resistor,

RW — Wire Wound Resistor

CE — Electrolytic Capacitor, CM — Mylar Capacitor, CC — Ceramic Capacitor, CP — PP Capacitor,

CT — Tantalum Capacitor, C — Mica Capacitor

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
SW1	BA04823A	Power Switch P.C.B. Ass'y (U.S.A., Canada & Others)	Q601 Q602 LED601, 602,604 LED603 D605 R601 R602,603 R604 R607 C601 SW601-606	BA04792A	Control Switch P.C.B. Ass'y
	BA04824A	Power Switch P.C.B. Ass'y (UK, Australia & 220V Class 2)		OB02557A	Control Switch P.C.B.
	BA04825A	Power Switch P.C.B. Ass'y (Japan)		OB01872A	TR 2SC945 (L)
	OB02573A	Power Switch P.C.B.		OB06013A	TR 2SA733
	OB07406A	Power Switch (Japan)		OB06334A	LED GRN TLR124A
	OB07407A	Power Switch (U.S.A., Canada & Others)		OB06333A	LED RED TLR124A
	OB07408A	Power Switch (UK, Australia & 220V Class 2)		OB01909A	SiD 1S1555
	OB08363A	Spark Killer (Japan)		OB05645A	RK 270 1/4W J
	OB08342A	Spark Killer (U.S.A., Canada & Others)		OB05795A	RK 150 1/4W J
	OB08955A	Spark Killer (UK, Australia & 220V Class 2)		OB05691A	RK 390 1/4W J
M2	OE00752A	Eyelet 2x3 (3)	OB01846A	RK 4.7K 1/4W J	
			OB05557A	CM 0.015μ 50V J	
	BA04794A	Pin Jack P.C.B. Ass'y	OB07438A	Switch EVQ-QSR05K	
	OB02558A	Pin Jack P.C.B.	CA80011A	Shut-off P.C.B. Ass'y	
	OB02246A	4P Pin Jack (1)	OC80047A	Shut-off P.C.B.	
VR301 VR302	BA04793A	Volume P.C.B. Ass'y	OB06388A	TR 2SC2812	
	OB02559A	Volume P.C.B.	OB06389A	Photo Reflector NJL5141	
	OB07431A	VR 100K (A) x 2	OB09840A	RK 680 Leadless	
	OB07433A	VR 100K (MN)	OB09841A	RK 18K Leadless	
	OJ04618A	VR Shield Plate (1)			
	OE00509A	M3x6 ⊕ Pan (2)			
R301,302 SW301	BA04796A	Dolby NR Switch P.C.B. Ass'y			
	OB02561A	Dolby NR Switch P.C.B.			
	OB01857A	RK 1K 1/4W J			
	OB07439A	Push Switch			
	OJ04615A	Shield Plate (1)			
Q101,102 201,202 L101,201 R101,102 201,202 R103,104 203,204 R301,302 C101,201 C102,202 C301	BA04853A	MPX P.C.B. Ass'y			
	OB02574A	MPX P.C.B.			
	OB01872A	TR 2SC945 (L)			
	OB06690A	L-C Block			
	OB05615A	RK 22K 1/4W J			
	OB05671A	RK 2.2M 1/4W J			
	OB01889A	RK 100K 1/4W J			
	OB09189A	CM 2700P 50V J			
	OB05687A	CM 1200P 50V J			
	OB05681A	CM 0.01μ 50V J			
SW601	BA04795A	Timer Switch P.C.B. Ass'y			
	OB02560A	Timer Switch P.C.B.			
	OB07437A	Slide Switch			
LED301 SW601	BA04791A	Memory Switch P.C.B. Ass'y			
	OB02556A	Memory Switch P.C.B.			
	OB06333A	LED RED TLR124A			
	OB07429A	Push Switch			

6.1. Power Switch P.C.B. Ass'y

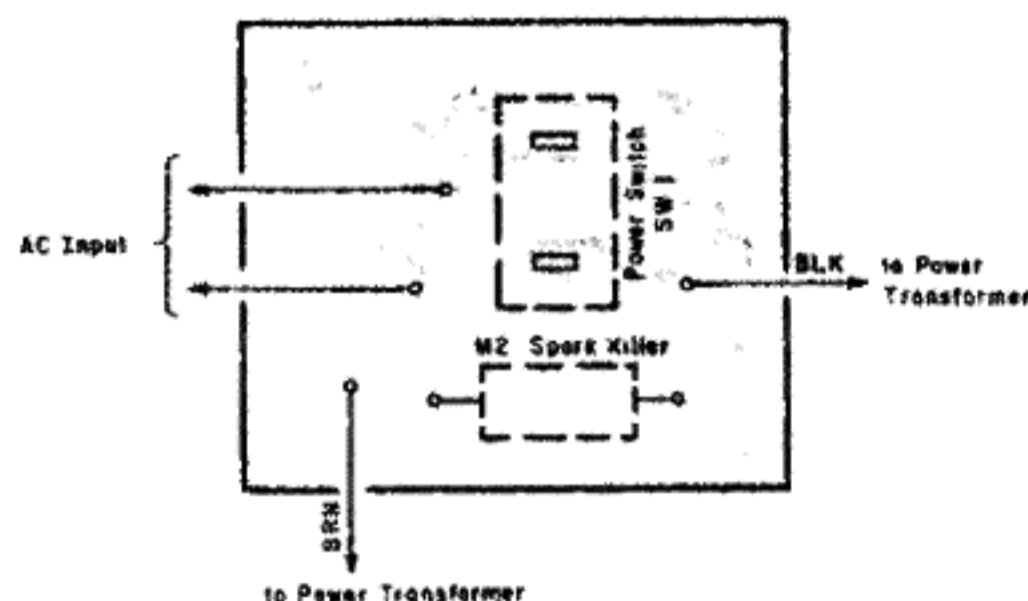


Fig. 6.1

6.2. Pin Jack P.C.B. Ass'y

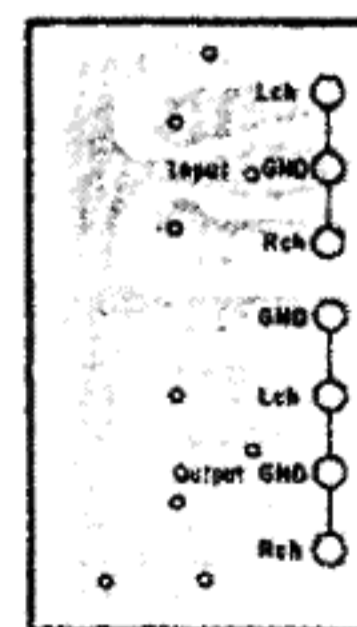


Fig. 6.2



Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA04790A	Main P.C.B. Ass'y			— DC Supply —			
		— Rec. Level —						
VR102,202	OB07418A	Semi-fixed VR 20K	IC401	OB06380A	IC RC7812	C136,236	OB01389A	CE 4.7μ 16V
VR103,104	OB07417A	Semi-fixed VR 10K	Q401,402	OB01872A	TR 2SC945 (L)	C137,237	OB05583A	CM 0.033μ 50V J
203,204			ZD401	OB06167A	ZD 6.2V RD6.2EB3	C138,238	OB01780A	CM 0.1μ 50V J
R127,227	OB01683A	RK 15K 1/4W J	D401	OB06282A	Diode Bridge DBA10	C139,239	OB09327A	CE 0.33μ 50V (LN)
R128,228	OB09577A	RM 7.15K 1/4W F	D402,403	OB01909A	SiD 1S1555	C141,241	OB01412A	CE 10μ 16V
R129,131	OB01856A	RK 8.2K 1/4W J	R401	OB09883A	RF 560 1W J	311		
229,231			R402	OB01889A	RK 100K 1/4W J	C142,242	OB01400A	CE 100μ 16V
R130,132	OB01888A	RK 10K 1/4W J	R403	OB05560A	RK 18K 1/4W J	C143,243	OB05884A	CE 470μ 10V
135,137			R404	OB01887A	RK 5.6K 1/4W J	C162,262	OB05652A	CM 4700P 50V J
230,232			R405	OB01857A	RK 1K 1/4W J	C163,263	OB09279A	CC 22P 50V J
235,237			C401,402	OB09292A	CC 0.1μ 50V Z			— Meter Amp. —
R133,136	OB05629A	RK 2.7K 1/4W J	C403	OB09799A	CE 4700μ 25V	IC306	OB06369A	IC TA7612AP
233,236			C404	OB01401A	CE 470μ 25V	Q105,106	OB01872A	TR 2SC945 (L)
C119,121	OB05571A	CM 680P 50V J	C405	OB09798A	CE 6800μ 16V	107,205		
219,221			C406	OB01392A	CE 470μ 16V	206,207		
C120,220	OB05843A	CM 0.012μ 50V J	C407	OB09251A	CE 33μ 25V	ZD101,201	OB06384A	ZD 5.5V XZ055
C122,222	OB05687A	CM 1200P 50V J		OB08676A	Heat Sink (1)	D101,102	OB01909A	SiD 1S1555
C123,223	OB09189A	CM 2700P 50V J		OE00507A	Nut Hex. M3 (1)	103,201		
		— Rec. Eq. Amp. —		OE00612A	M3x6 ⊕ Pan (2A)	202,203		
				OE00857A	BT 3x6 ⊕ Binding (2)	305		
IC303	OB06146A	IC RC4558DD			— Bias Osc. —	VR108,208	OB07425A	Semi-fixed VR 100K
Q104,204	OB06299A	TR 2SC2878				R141,241	OB05509A	RK 33K 1/4W J
L102,202	OB00068A	Trap Coil 10.5mH				R142,145	OB01889A	RK 100K 1/4W J
L103,203	OB06696A	L-C Block TF10	Q304	OB06332A	TR 2SB564 (M)	146,242		
VR105,107	OB07419A	Semi-fixed VR 50K	T301	OB06688A	Bias Osc. Unit	245,246		
205,207			R317	OB09263A	RK 12K 1/4W J	R143,243	OB05784A	RK 560K 1/4W J
VR106,206	OB07418A	Semi-fixed VR 20K	R318	OB09831A	RF 22 1W J	R144,244	OB05626A	RK 150K 1/4W J
R113,213	OB05743A	RK 27K 1/4W J	R350	OB09837A	RF 10 1W J	R147,148	OB05508A	RK 56K 1/4W J
R114,214	OB01888A	RK 10K 1/4W J	C305	OB01403A	CE 47μ 16V	247,248		
R115,215	OB01889A	RK 100K 1/4W J	C306	OB09838A	CP 9100P 100V J	R149,249	OB05615A	RK 22K 1/4W J
R116,117	OB05640A	RK 180K 1/4W J	CN2	OB02233A	2P-T Post	R320	OB05936A	RK 10 1/4W J
119,216					— Mute —	R332-341	OB05505A	RK 1.5K 1/4W J
217,219								(10)
R118,218	OB01857A	RK 1K 1/4W J	IC301	OB06381A	IC μPD4011BC	R342	OB01887A	RK 5.6K 1/4W J
R120,220	OB05675A	RK 3.9K 1/4W J	Q301	OB06332A	TR 2SB564 (M)	R343	OB01857A	RK 1K 1/4W J
R121,221	OB05577A	RK 330 1/4W J	Q302	OB01872A	TR 2SC945 (L)	R344	OB09797A	RK 120 1/4W J
R122,222	OB05575A	RK 560 1/4W J	Q303	OB06155A	TR 2SA733 (P)	R345	OB01888A	RK 10K 1/4W J
R123,223	OB01854A	RK 39K 1/4W J	D301,302	OB01909A	SiD 1S1555	C124,224	OB09570A	CE 0.15μ 50V (LN)
R125,225	OB01682A	RK 6.8K 1/4W J	303,304			C125,225	OB09148A	CE 10μ 25V (LN)
R126,226	OB05936A	RK 10 1/4W J	R301,308	OB05509A	RK 33K 1/4W J	C308	OB01400A	CE 100μ 16V
R138,238	OB01679A	RK 100 1/4W J	311			C312	OB09281A	CC 150P 50V K
R139,239	OB01887A	RK 5.6K 1/4W J	R302,312	OB05626A	RK 150K 1/4W J			— Headphone/Line Amp. —
R140,240	OB05560A	RK 18K 1/4W J	322			IC302	OB06370A	IC RC4556D
R192,292	OB01683A	RK 15K 1/4W J	R303,306	OB01889A	RK 100K 1/4W J	Q108,109	OB06299A	TR 2SC2878
C110,210	OB01804A	CM 3900P 50V J	307,309			208,209		
C111,211	OB01405A	CE 1μ 50V	310,315			R150,153	OB01889A	RK 100K 1/4W J
C112,212	OB01862A	CE 22μ 16V	R304,313	OB01888A	RK 10K 1/4W J	250,253		
C113,213	OB01403A	CE 47μ 16V	314,321			R151,251	OB01682A	RK 6.8K 1/4W J
C114,214	OB05659A	CM 5600P 50V J	R305	OB05627A	RK 330K 1/4W J	R152,156	OB01857A	RK 1K 1/4W J
C115,215	OB05652A	CM 4700P 50V J	R316	OB05776A	RK 1M 1/4W J	161,252		
C116,216	OB01412A	CE 10μ 16V	C301,304	OB01405A	CE 1μ 50V	256,261		
C117,217	OB05682A	CM 0.068μ 50V J	C302,303	OB09327A	CE 0.33μ 50V (LN)	R157,257	OB09314A	RK 5.1K 1/4W J
C118,218	OB09283A	CC 220P 50V K	RL301	OB07420A	Relay 12V	R158,258	OB05743A	RK 27K 1/4W J
C150,250	OB09393A	CC 68P 50V J			— Dolby NR —	R159,259	OB05640A	RK 180K 1/4W J
C161,261	OB09281A	CC 150P 50V K				R160,260	OB01713A	RK 33 1/4W J
		— PB Eq. Amp. —				R162,262	OB05622A	RK 2.2K 1/4W J
Q101,102	OB06142A	TR 2SC2240 (BL)	IC101,201	OB06200A	IC μA7300PC	R163,263	OB05615A	RK 22K 1/4W J
201,202			IC102,202	OB06379A	IC LC4066B	R345,346	OB05626A	RK 150K 1/4W J
Q103,203	OB01872A	TR 2SC945 (L)	D306	OB01909A	SiD 1S1555	C126,226	OB01405A	CE 1μ 50V
ZD301	OB06233A	ZD 10V RD10EB3	R164,264	OB01706A	RK 47 1/4W J	C128,228	OB01403A	CE 47μ 16V
L101,201	OB03919B	Inductor 36mH	R165,166	OB01889A	RK 100K 1/4W J	C129,229	OB01400A	CE 100μ 16V
VR101,201	OB07418A	Semi-fixed VR 20K	175,265			313		
R101,201	OB01684A	RK 470K 1/4W J	266,275			C130,230	OB01412A	CE 10μ 16V
R102,202	OB09330A	RK 100K 1/4W J	R167,267	OB01857A	RK 1K 1/4W J			— Logic —
		(Noiseless)	R168,268	OB05694A	RK 9.1K 1/4W J	IC601	OB06367A	IC TMP4315BP-1811
R103,203	OB01889A	RK 100K 1/4W J	R169,269	OB05629A	RK 2.7K 1/4W J	IC602	OB06214A	IC μPD4071BC
R104,204	OB01706A	RK 47 1/4W J	R170,270	OB01887A	RK 5.6K 1/4W J	Q601,618	OB06066A	TR 2SD471 (L,M)
R105,205	OB05640A	RK 180K 1/4W J	R171,271	OB09317A	RM 3.3K 1/4W F	Q602,603	OB06371A	TR 2SD1286
R106,206	OB05622A	RK 2.2K 1/4W J	R172,272	OB05641A	RK 47K 1/4W J	Q604,605	OB01872A	TR 2SC945 (L)
R107,207	OB05743A	RK 27K 1/4W J	R173,273	OB09271A	RK 6.2K 1/4W J	619,623		
R108,208	OB09830A	RM 4.87K 1/4W F	R174,176	OB05620A	RK 270K 1/4W J	624,625		
R109,209	OB09829A	RM 3.32K 1/4W F	274,276			Q606,607	OB06372A	TR 2SA953
R110,210	OB05577A	RK 330 1/4W J	R177,277	OB09826A	RK 3K 1/4W J	612,613		
R111,211	OB01887A	RK 5.6K 1/4W J	R178,278	OB01888A	RK 10K 1/4W J	Q608,609	OB06322A	TR 2SC2002
R112,212	OB09263A	RK 12K 1/4W J	331			614,615		
R319	OB01857A	RK 1K 1/4W J	R179,279	OB01846A	RK 4.7K 1/4W J	620,621		
C102,202	OB09137A	CE 22μ 25V (LN)	R350,351	OB05508A	RK 56K 1/4W J	Q610,611	OB06013A	TR 2SA733
C103,203	OB09283A	CC 220P 50V K	C131,132	OB09332A	CE 2.2μ 50V (LN)	616,617		
C104,204	OB01836A	CE 47μ 10V	231,232			ZD601	OB06268A	ZD 5.6V RD5.6EB3
C105,205	OB01863A	CE 3.3μ 50V	C133,140	OB09223A	CE 1μ 50V (LN)	D601-614	OB01909A	SiD 1S1555 (15)
C106,206	OB05832A	CM 0.018μ 50V J	233,240			617,618		
C107,207	OB09281A	CC 150P 50V K	C134,234	OB09240A	CP 0.033μ 100V G	L601	OB06689A	L-C Block BLK
C108,208	OB05687A	CM 1200P 50V J	C135,235	OB01862A	CE 22μ 16V			
C307	OB01400A	CE 100μ 16V						
CNI	OB02242A	4P-T Post						



6.10. Main P.C.B. Assy

Schematic Ref. No.	Part No.	Description
VR601	OB07421A	Semi-fixed VR 300
R601	OB09803A	R Network 47Kx5
R602	OB09824A	R Network 100Kx3
R603,612	OB01846A	RK 4.7K 1/4W J
614,649		
R604,605	OB01888A	RK 10K 1/4W J
606,629		
R607,608	OB05625A	RK 220K 1/4W J
R609,643	OB05629A	RK 2.7K 1/4W J
R610,611	OB05509A	RK 33K 1/4W J
648		
R613	OB01683A	RK 15K 1/4W J
R615	OB05577A	RK 330 1/4W J
R616,617	OB01857A	RK 1K 1/4W J
618,619		
631		
R620,621	OB01684A	RK 470K 1/4W J
624,625		
R622,623	OB01933A	RK 220 1/4W J
R626,627	OB01679A	RK 100 1/4W J
R628	OB09304A	RK 3.3 1/4W J
R630	OB05698A	RK 1.5K 1/4W J
R632	OB09831A	RF 22 1W J
R633	OB05560A	RK 18K 1/4W J
R634	OB01854A	RK 39K 1/4W J
R635	OB05743A	RK 27K 1/4W J
R636	OB09882A	RK 620 1/4W J
R637	OB01887A	RK 5.6K 1/4W J
R638	OB05645A	RK 270 1/4W J
R639	OB09832A	RF 27 1W J
R640	OB05575A	RK 560 1/4W J
R641	OB09217A	RF 5.6 1/4W J
R642,644	OB01889A	RK 100K 1/4W J
R645	OB05627A	RK 330K 1/4W J
R647	OB05508A	RK 56K 1/4W J
R650	OB01856A	RK 8.2K 1/4W J
R651	OB06706A	RW 3.5
C601	OB01398A	CE 220µ 16V
C602	OB09817A	CE 33µ 10V (LN)
C603,605	OB01405A	CE 1µ 50V
C607	OB01802A	CM 2200P 50V J
CN3	OB02243A	5P-T Post
CN4	OB02245A	9P-T Post
- Miscellaneous -		
OB02255B	Main P.C.B.	(1)
OB02249A	PD Wire	(1)
OB02250A	PD Wire	(1)
OB02251A	PD Wire	(1)
OB02254A	PD Wire	(1)
OJ04613A	Shield Plate M	(1)
OE00509A	M3x6 ⊕ Pan	(3)
OB07435A	Push Switch	(1)
OB07436A	Push Switch	(1)

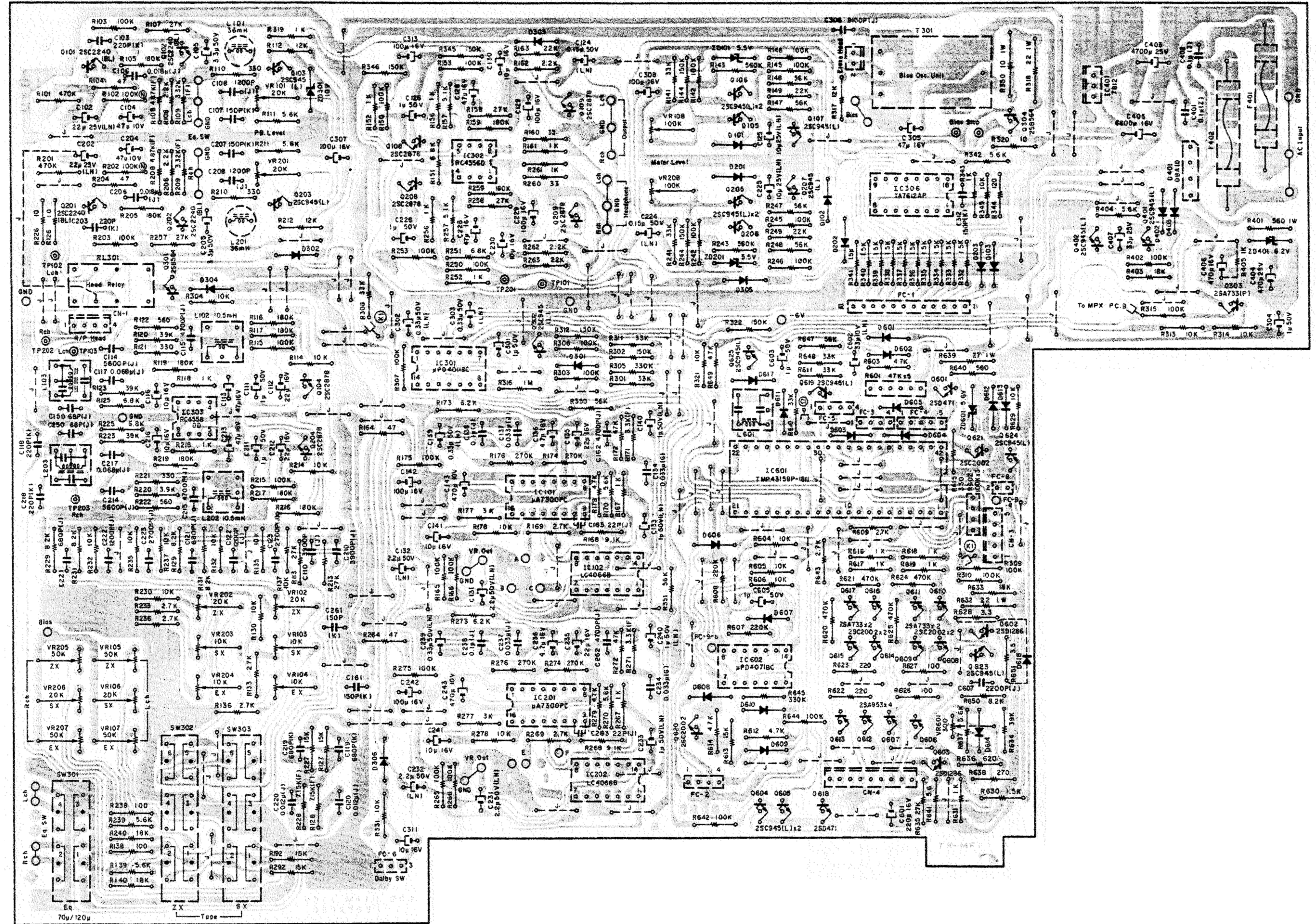


Fig. 6.10.1 2nd Version

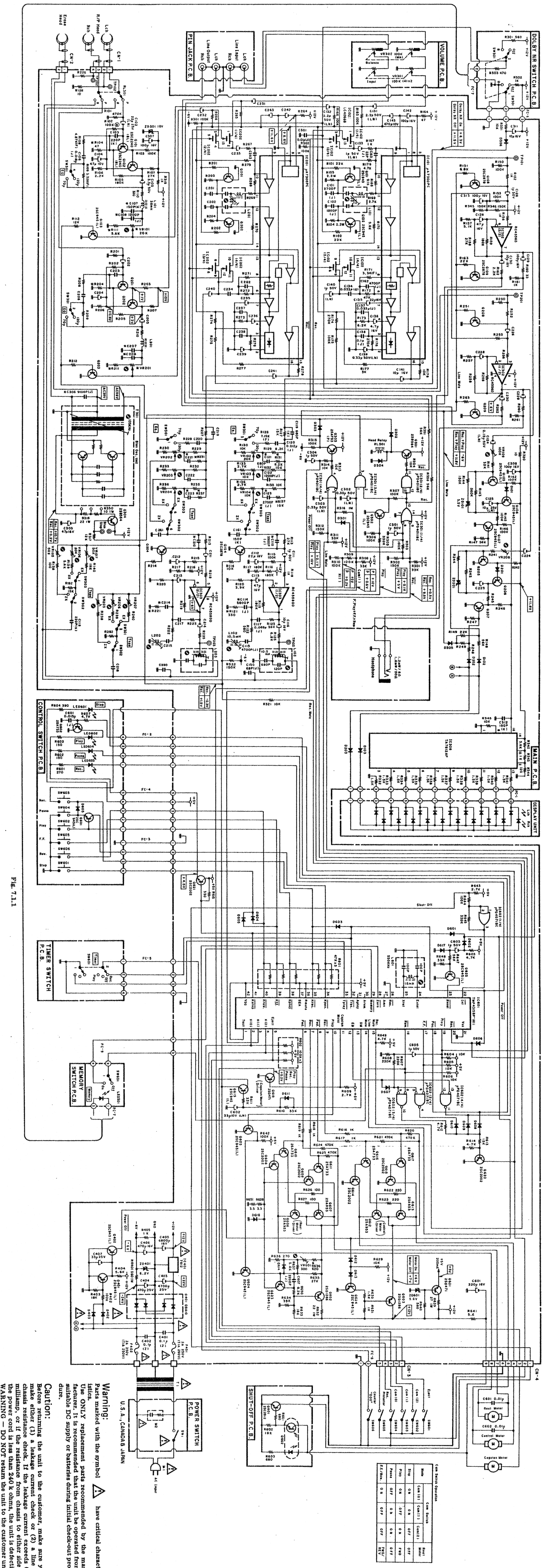


Fig. 7.1.1

CAM SWITCH OPERATIONS			
Mode	Cam Switch	Cam 1	Cam 2
100	ON	ON	OFF
PH	ON	OFF	ON
FM	OFF	ON	ON
FM/AM	ON	OFF	REV

- Notes: 1. Diode is 1SS53, 1S953, or 1S1555 unless otherwise specified.  
 2. Resistor and capacitor marked with \* show special value.

**Warning:** Parts marked with the symbol have critical characteristics. Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedure.

**Caution:** Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamper, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective. **WARNING — DO NOT** return the unit to the customer until

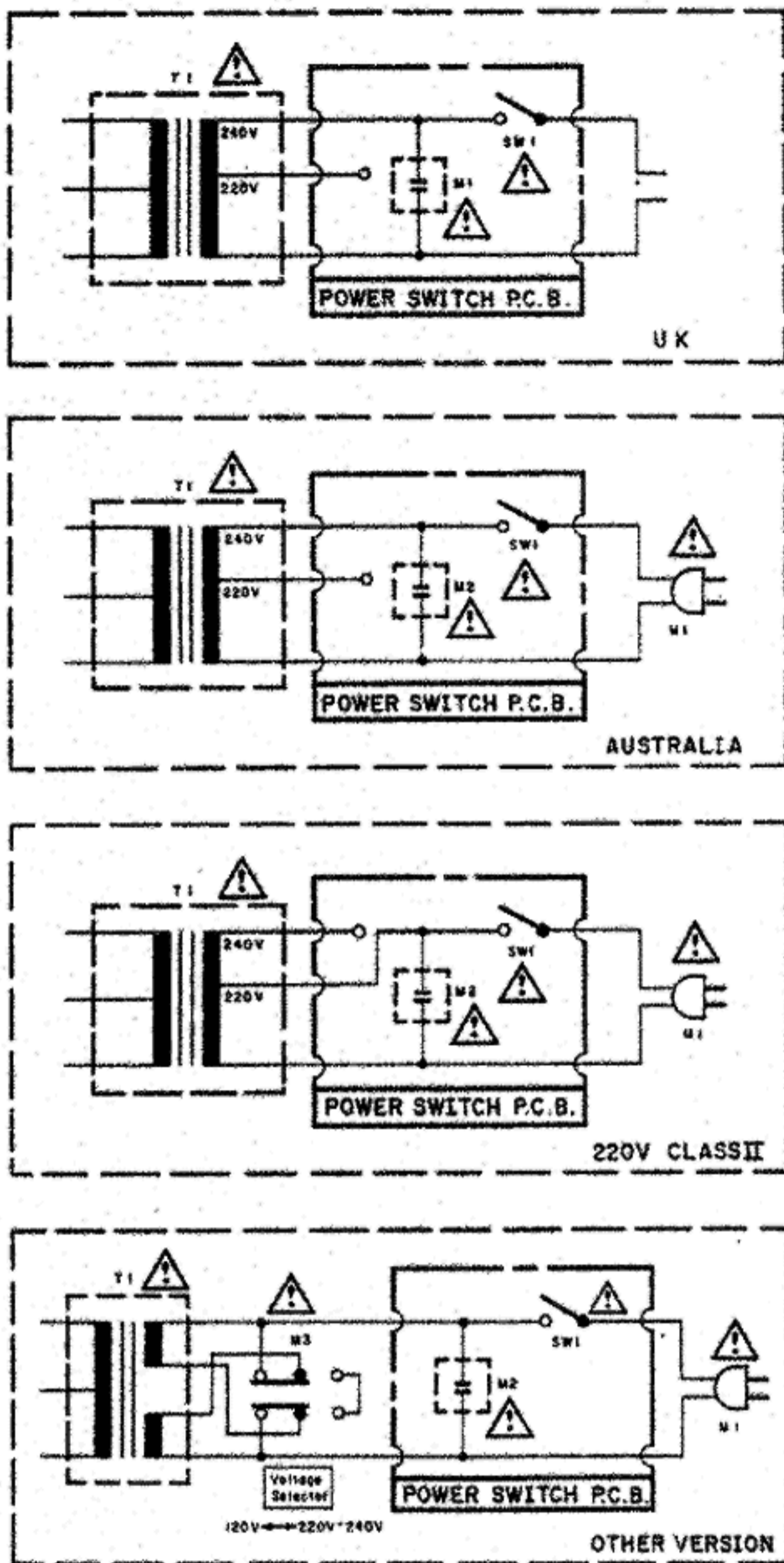


Fig. 7.1.2

## 7.2. Attention to Servicemen

### (1) Parts Replacement

Following parts shall be replaced with the specified ones. Refer to the parts list.

- (a) Power Supply Circuit
  - Power Cord
  - Power Transformer: T1
  - Fuses: F401, 402
- (b) Power Switch P.C.B. Ass'y
  - Power Switch: SW1
  - Spark Killer: M2
- (c) Main P.C.B. Ass'y
  - Power Transistors: Q301, 304, 601, 602, 603, 606, 607, 608, 609, 612, 613, 614, 615, 618, 620, 621
  - Diode Bridge: D401
  - Relay: RL301
  - Fail Safe Type Resistors: R318, 350, 401, 632, 639, 641
  - Wire Wound Resistor: R651

### (2) Insulation Check

Before returning the repaired BX-1 to a customer, check to insure that the exposed part is accurately insulated from the AC line by measuring the leakage current or the insulation resistance between them.

## 7.3. IC Block Diagrams

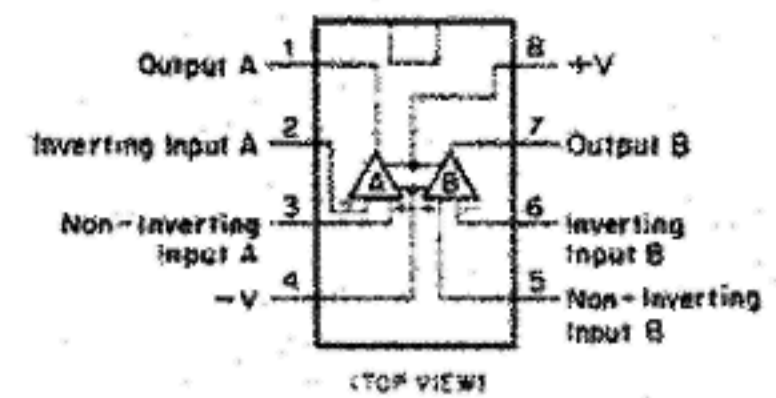


Fig. 7.3.1 Operational Amp. IC 4558, 4556

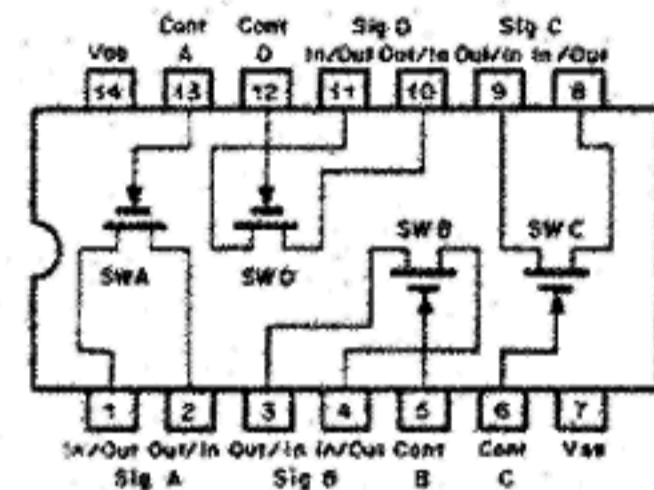


Fig. 7.3.2 Bilateral Switch C-MOS IC LC4066B

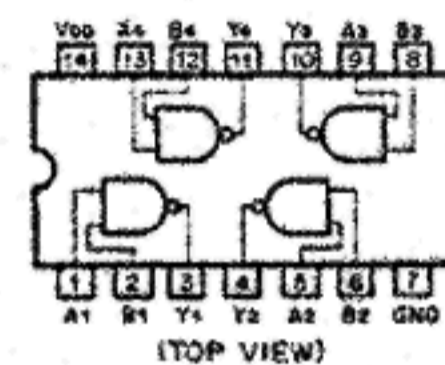


Fig. 7.3.3 NAND Gate C-MOS IC μPD4011BC

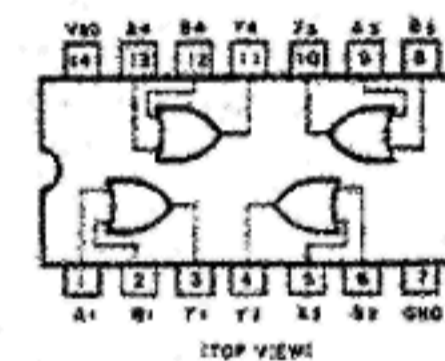


Fig. 7.3.4 OR Gate C-MOS IC μPD4071BC

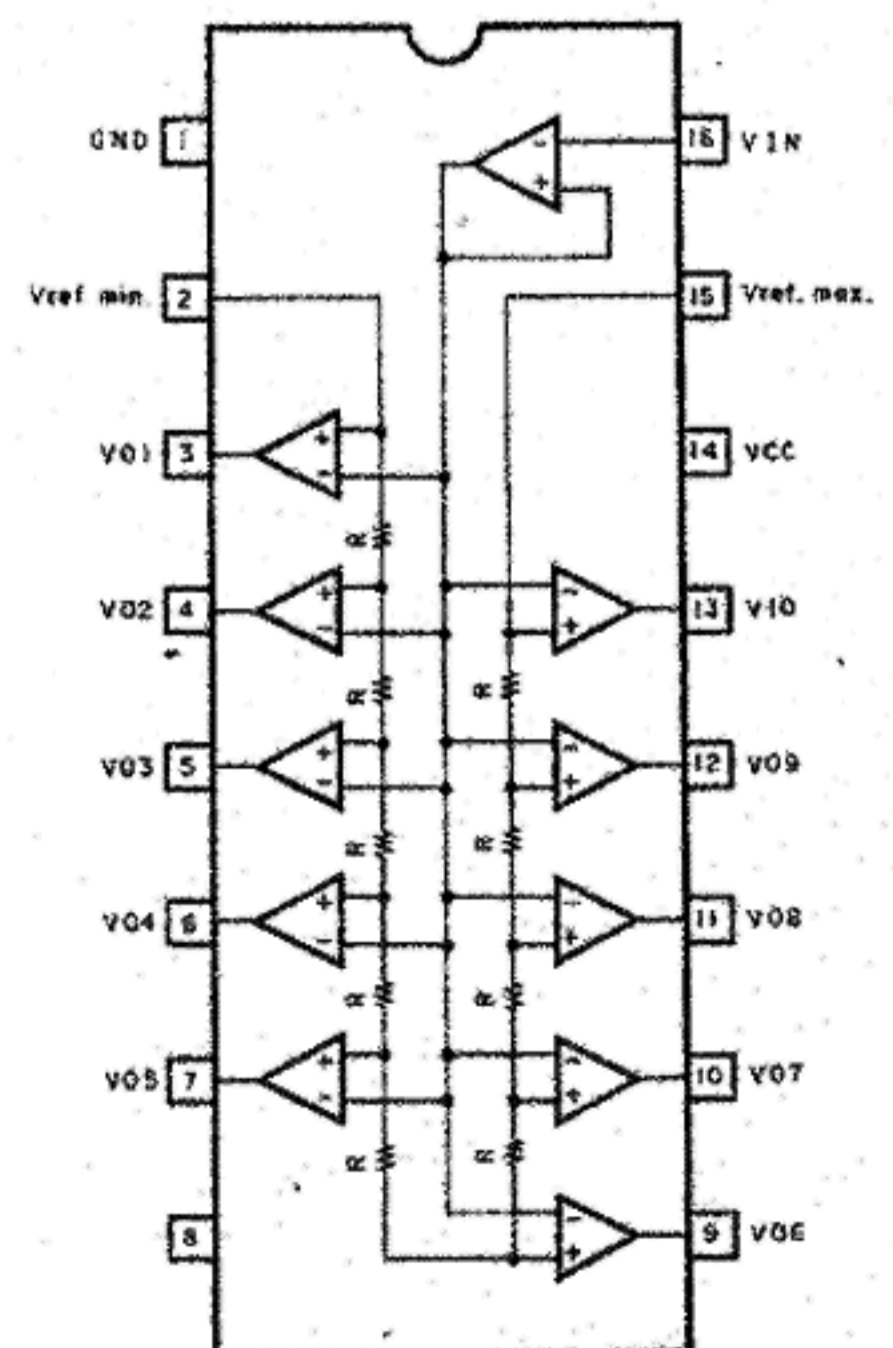
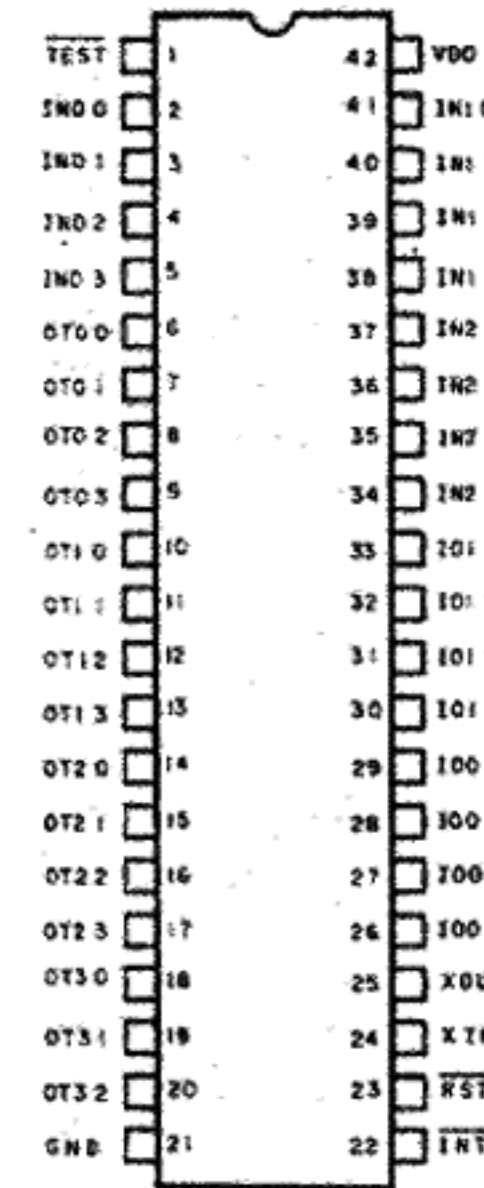
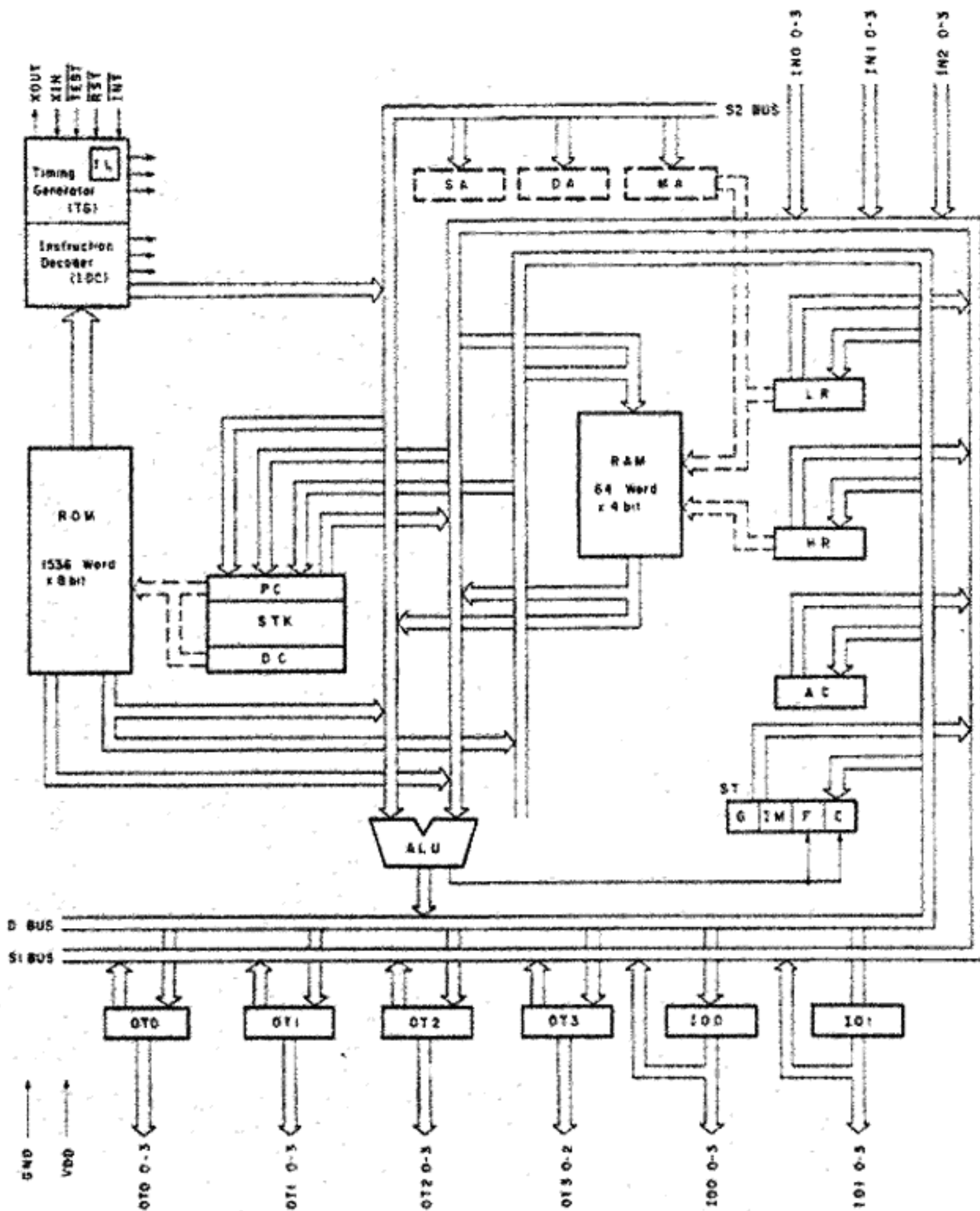


Fig. 7.3.5 Level Meter Driver TA7612AP



IN0 0 - 3: Input Port IN0  
 IN1 0 - 3: Input Port IN1  
 IN2 0 - 3: Input Port IN2  
 OT0 0 - 3: Output Port OT0  
 OT1 0 - 3: Output Port OT1  
 OT2 0 - 3: Output Port OT2  
 OT3 0 - 2: Output Port OT3  
 IO0 0 - 3: Bidirectional Port IO0  
 IO1 0 - 3: Bidirectional Port IO1  
 RST: Reset  
 INT: Interrupt  
 XIN, XOUT: Clock Terminals

Fig. 7.3.6 4-Bit Micro-processor TMP4315BP-1811

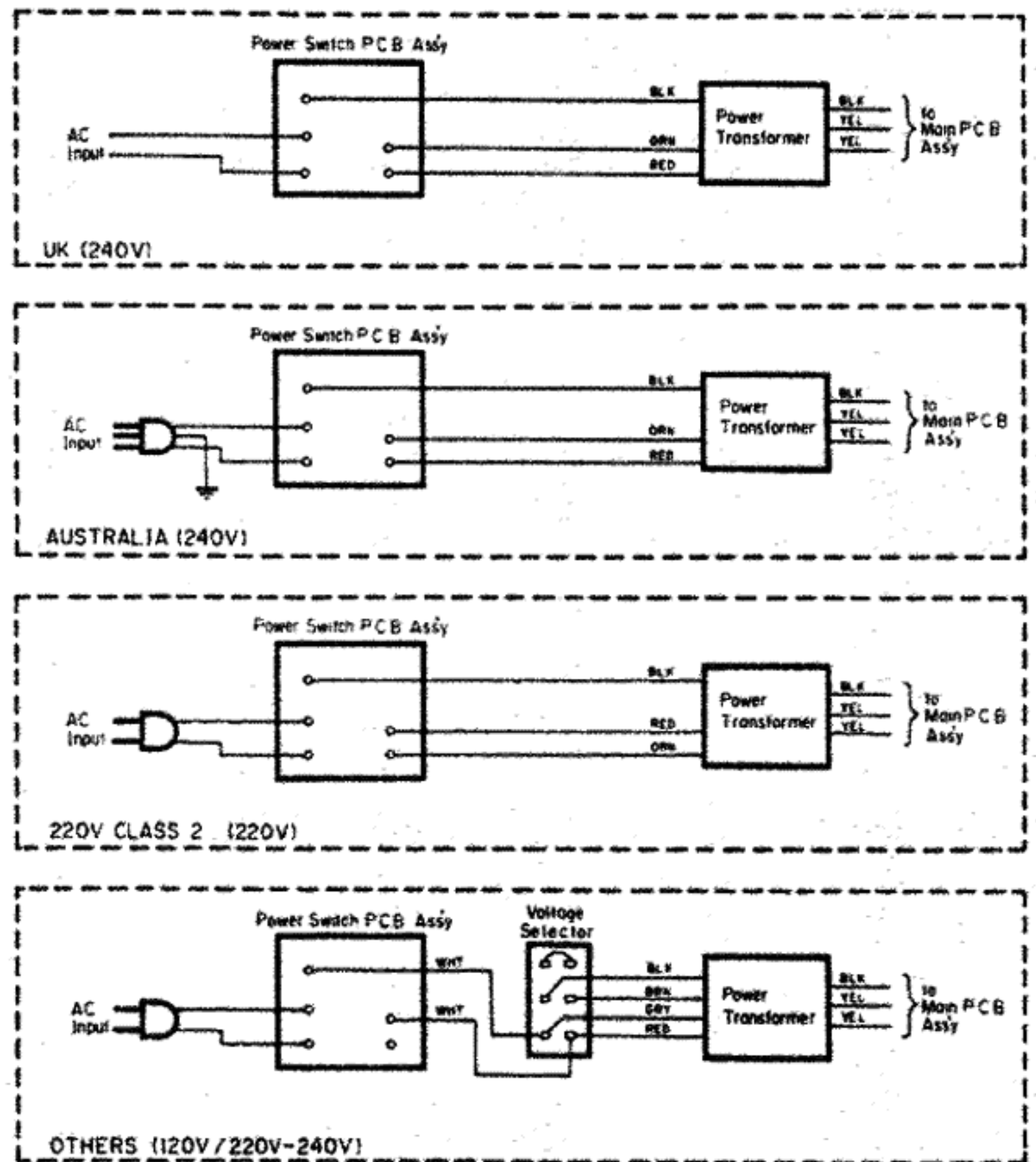


Fig. 8.1

Notes: 1. Table of wire colors

- BLK - Black
- BRN - Brown
- RED - Red
- ORN - Orange
- YEL - Yellow
- GRN - Green
- BLU - Blue
- VIO - Violet
- GRY - Gray
- WHT - White

2. Component side view of the P.C.B. is illustrated unless otherwise specified.

8. WIRING DIAGRAM

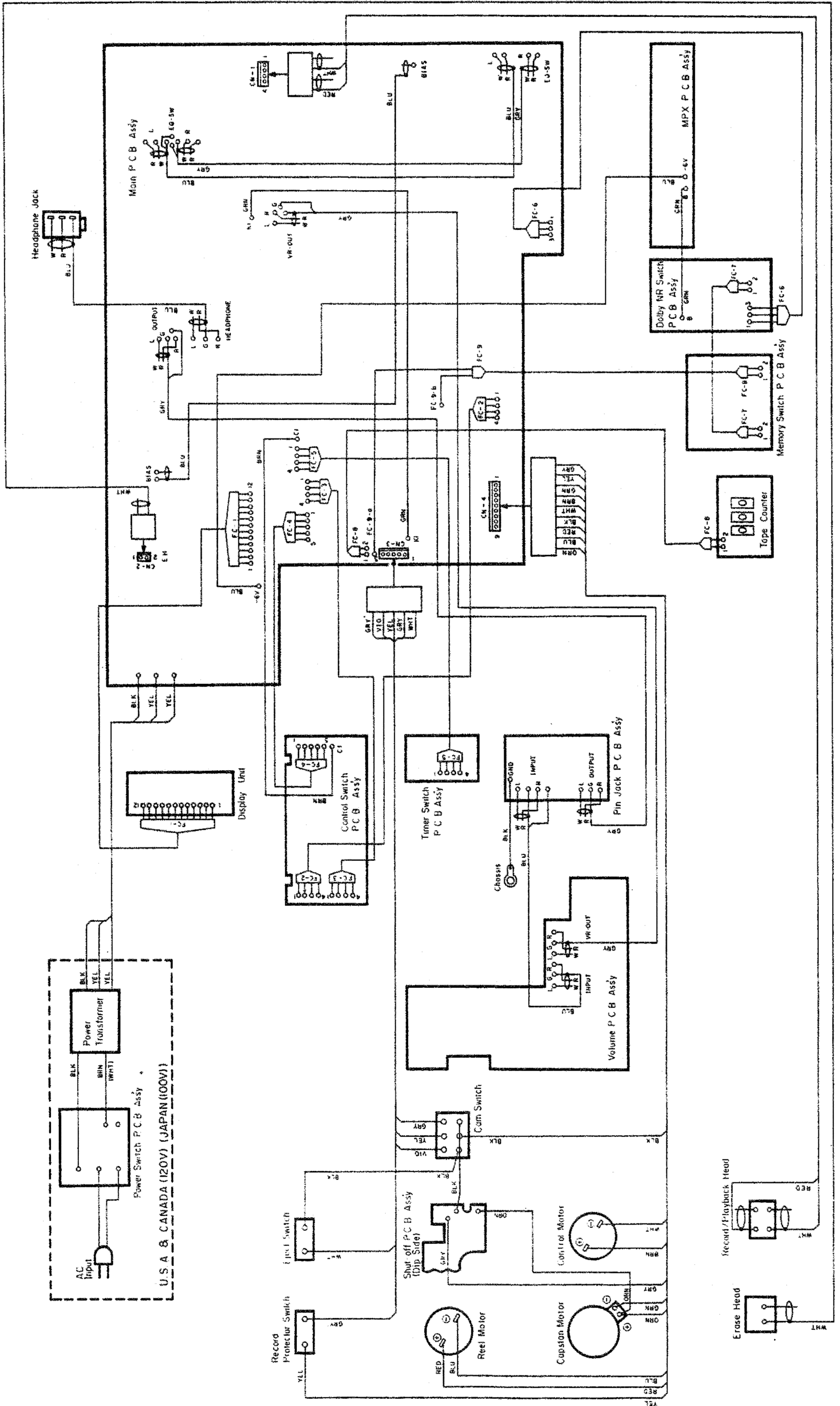


Fig. 8.2

## 9. TIMING CHART AND EQ. AMP. FREQUENCY RESPONSE

### 9.1. Timing Chart

#### (1) Overall Timing Chart

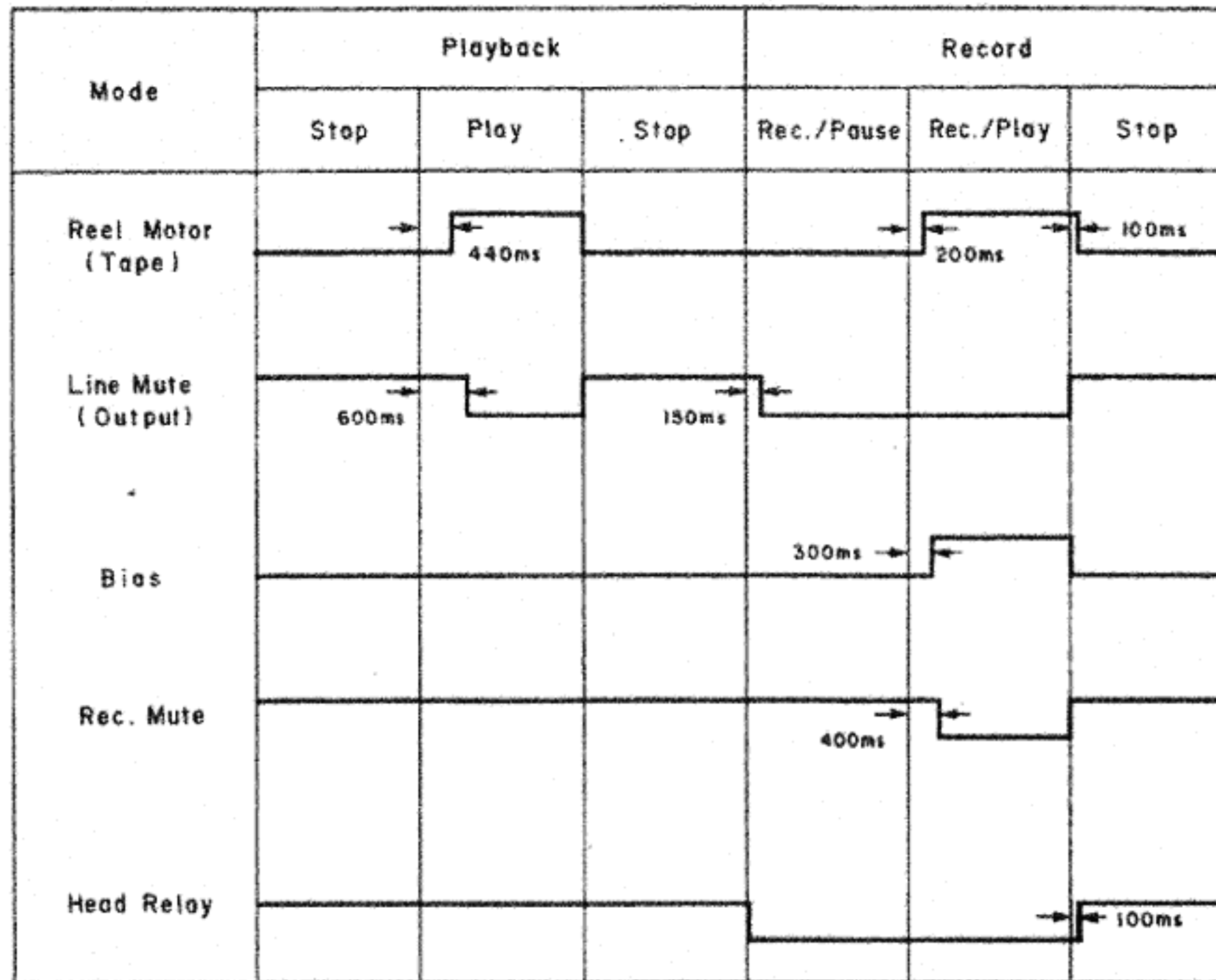


Fig. 9.1.1

#### (2) Mechanism Control Timing Chart

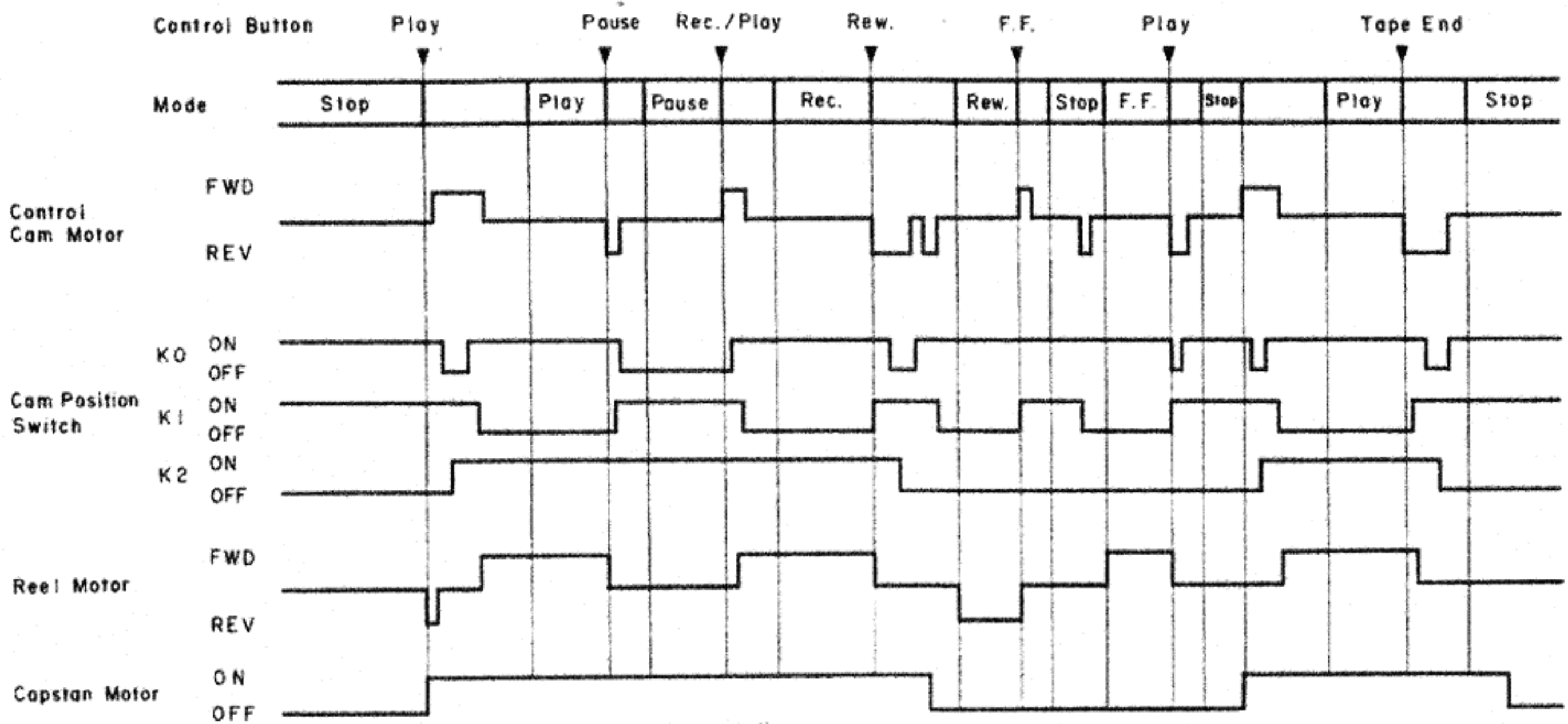


Fig. 9.1.2

**9.2. Eq. Amp. Frequency Response**  
**(1) Playback Frequency Response**

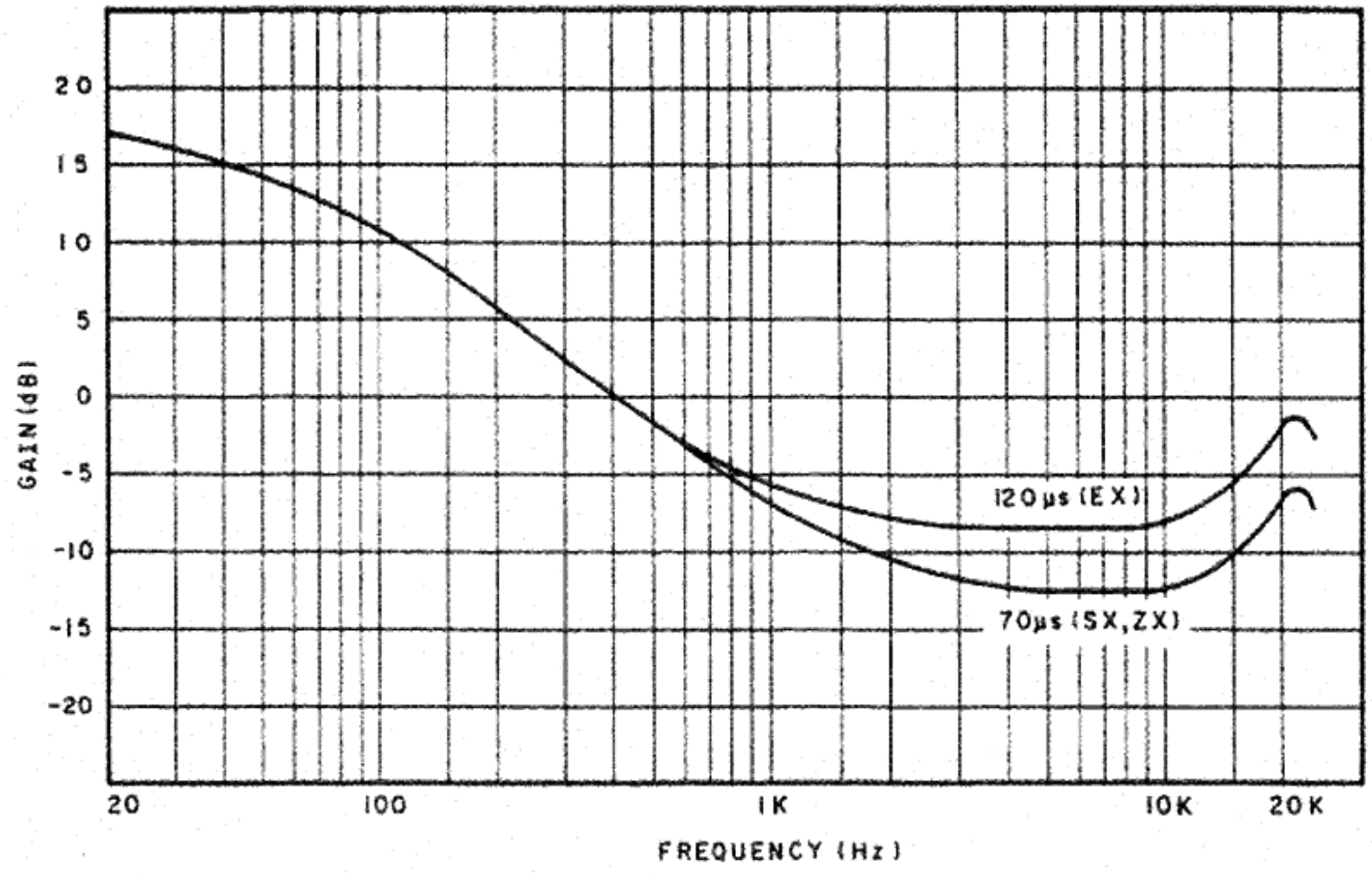


Fig. 9.2.1

**(2) Record Current Frequency Response**

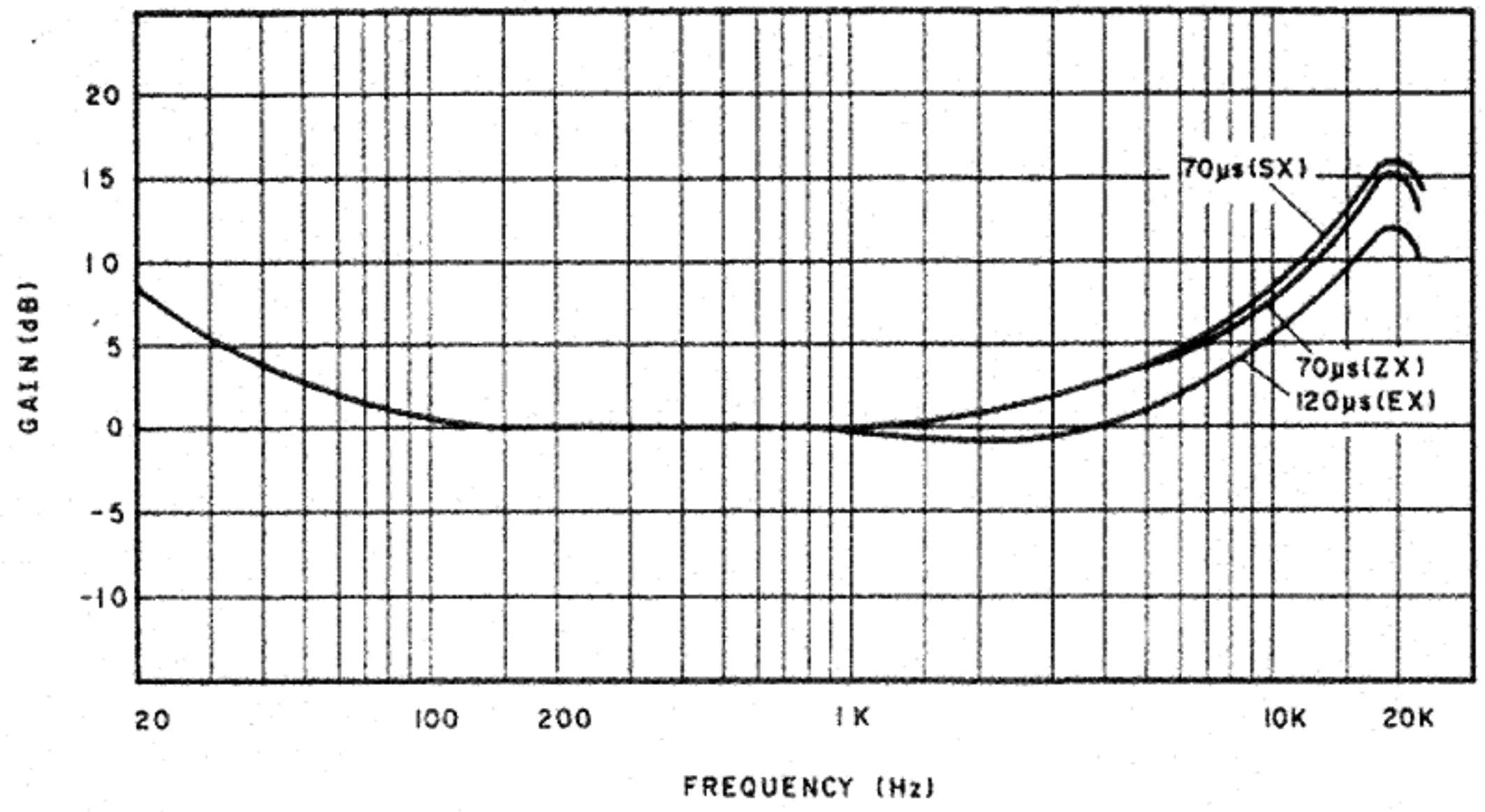


Fig. 9.2.2

# 10. BLOCK DIAGRAMS

## 10.1. Amplifier Section

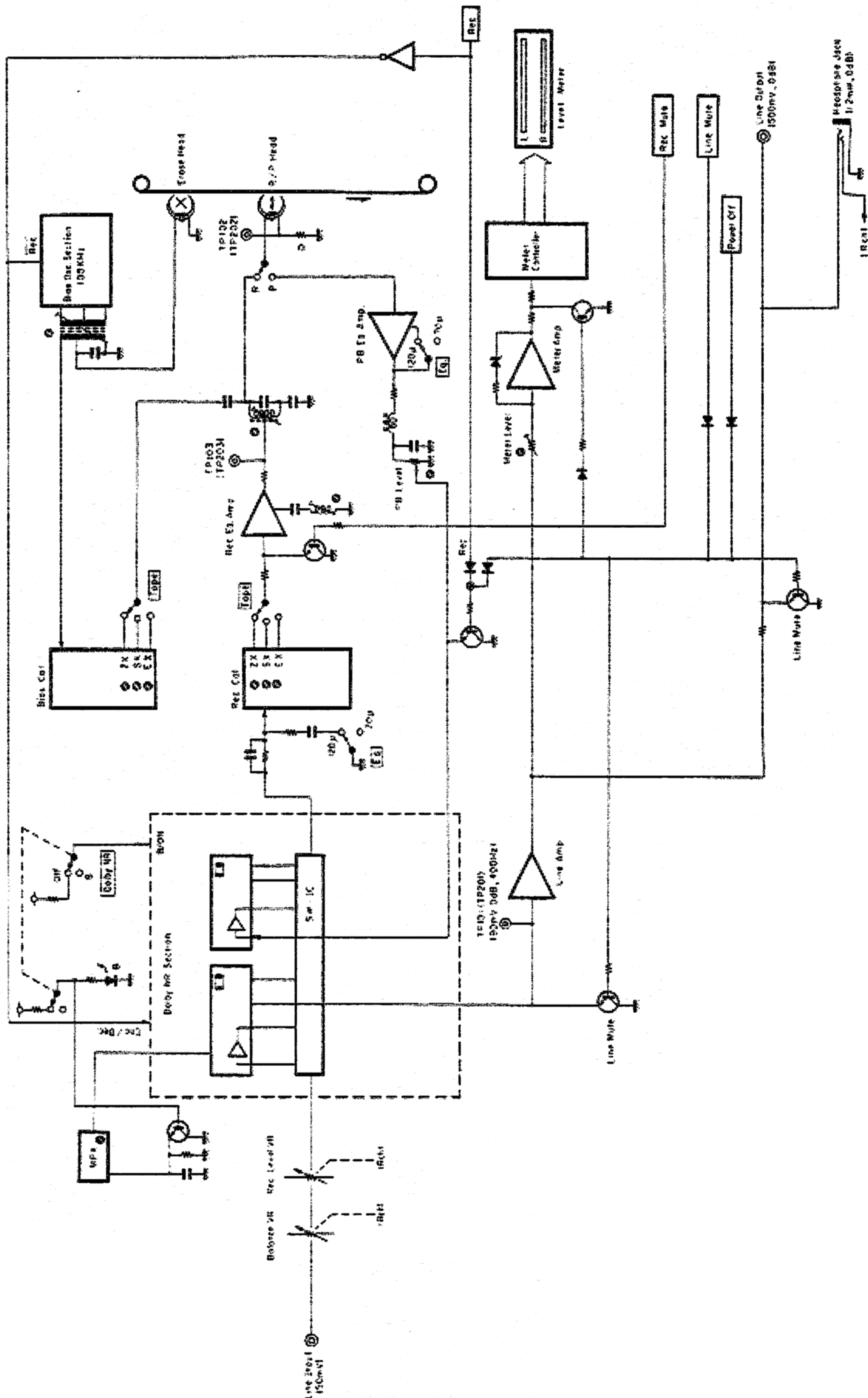


Fig. 10.1



10.2. Mechanism Control Section

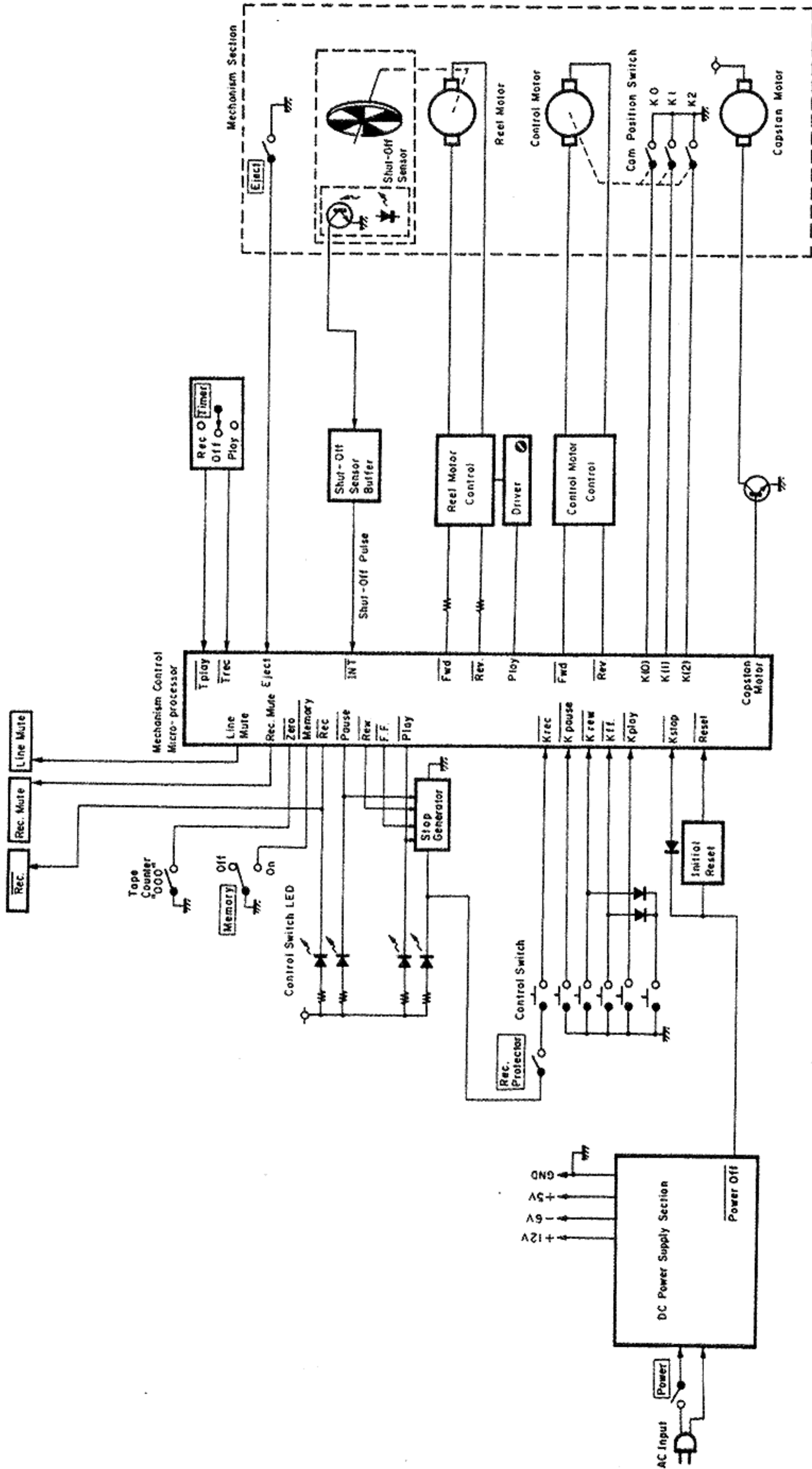


Fig. 10.2

## 11. SPECIFICATIONS

Track Configuration . . . . .	4 Tracks/2-Channel Stereo
Heads . . . . .	2 (Erase Head x 1, Record/Playback Head x 1)
Motors (Tape Transport) . . . . .	DC Servo Motor (Capstan Drive) x 1 DC Motor (Reel Drive) x 1
Power Source . . . . .	100, 120, 120/220-240, 220 or 240 V AC; 50/60 Hz (According to country of sale)
Power Consumption . . . . .	23 W max.
Tape Speed . . . . .	1-7/8 ips (4.8 cm/sec) $\pm 0.5\%$
Wow and Flutter . . . . .	Less than 0.11% Wtd peak Less than 0.06% Wtd rms
Frequency Response . . . . .	20 Hz—20,000 Hz (recording level -20 dB)
Signal to Noise Ratio . . . . .	Better than 62 dB (Dolby B-Type NR on, 70 $\mu$ s, ZX tape, 400 Hz, 3% THD, IHF A-Wtd rms)
Total Harmonic Distortion . . . . .	Less than 1.0% (400 Hz, 0 dB, ZX, EXII tape) Less than 1.2% (400 Hz, 0 dB, SX tape)
Erasure . . . . .	Better than 60 dB (100 Hz, 0 dB)
Separation . . . . .	Better than 36 dB (1 kHz, 0 dB)
Crosstalk . . . . .	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency . . . . .	105 kHz
Input (Line) . . . . .	50 mV, 30 k ohms
Output (Line) . . . . .	0.5 V (400 Hz, 0 dB) 2.2 k ohms
(Headphones) . . . . .	1.2 mW (400 Hz, 0 dB) 8-ohm load
Dimensions . . . . .	430 (W) x 110 (H) x 250 (D) millimeters 16-15/16 (W) x 4-5/16 (H) x 9-7/8 (D) inches
Approximate Weight . . . . .	5.5 kg 12 lb. 2 oz

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