Nakamichi

Service Manual

Nakamichi
BX-100
BX-100E

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-100.
This voltage selector can select either 120 V or 220-240 V at customer's disposal.

1.2. Packing Materials and Owner's Manual

Part No.	Description	Q'ty
0F03736A	Carton Box BX-100 (Silver)	1
0F03750A	Carton Box BX-100E (Silver)	1
0F03737A	Carton Box BX-100 (Black)	1
0F03751A	Carton Box BX-100E (Black)	1
0F03674B	Packing	2
0D04311A	Owner's Manual (BX-100 (U.S.A., Canada & Australia) & BX-100E (UK))	1
0D04317A	Owner's Manual (BX-100 (Others) & BX-100E (220V Class 2))	1

1.3. Serial Number

The BX-100 has two versions, Silver and Black.
In the service manual, serial numbers of these versions are identified as follows:

Silver version: A318xxxxx
Black version: A319xxxxx

However, the actual serial number on the serial number plate of the BX-100 is indicated as A318.9xxxxx.
The serial number begins with A318.901001.

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 μm (0C80048A), 60 μm (0C80038A), or 100 μm (0C80039A)) 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.

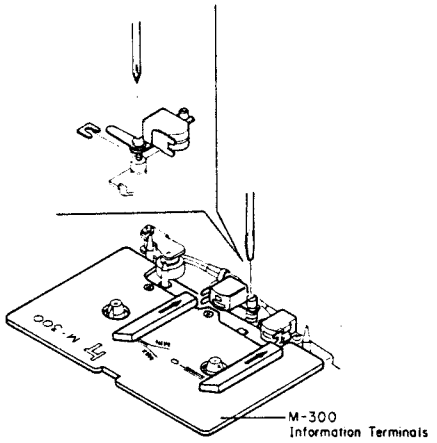


Fig. 2.1

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.

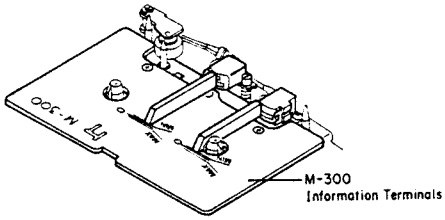


Fig. 2.2

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 (DA09004B), 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 (DA09007B), 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.

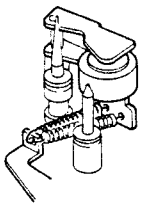


Fig. 2.3

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 ±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 (DA09027B), 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.

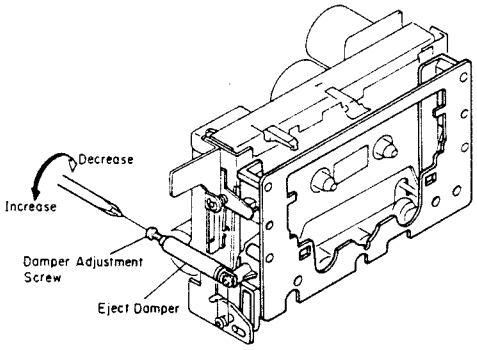


Fig. 2.4

2.7. Reel Motor Speed Adjustment in Play Mode

(1) To warm-up the cassette deck, load a C-60 cassette tape and set the cassette deck in Play mode.
(2) After more than four minutes, load a torque meter TW-211 (made by Sony) and set the cassette deck in Play mode.
(3) Adjust VR601 on the Main P.C.B. Ass'y to obtain exactly 50 g-cm on the torque meter.

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 (DA09006C) 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 Toranomon, Minato-ku, Tokyo, Japan
    (d) Anderol 456
        Toyo Kokusai Oil Co., Ltd., 3-3-5 Hatchobori, Chuo-ku, Tokyo, Japan

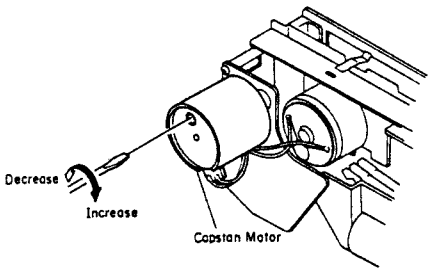


Fig. 2.5

3. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

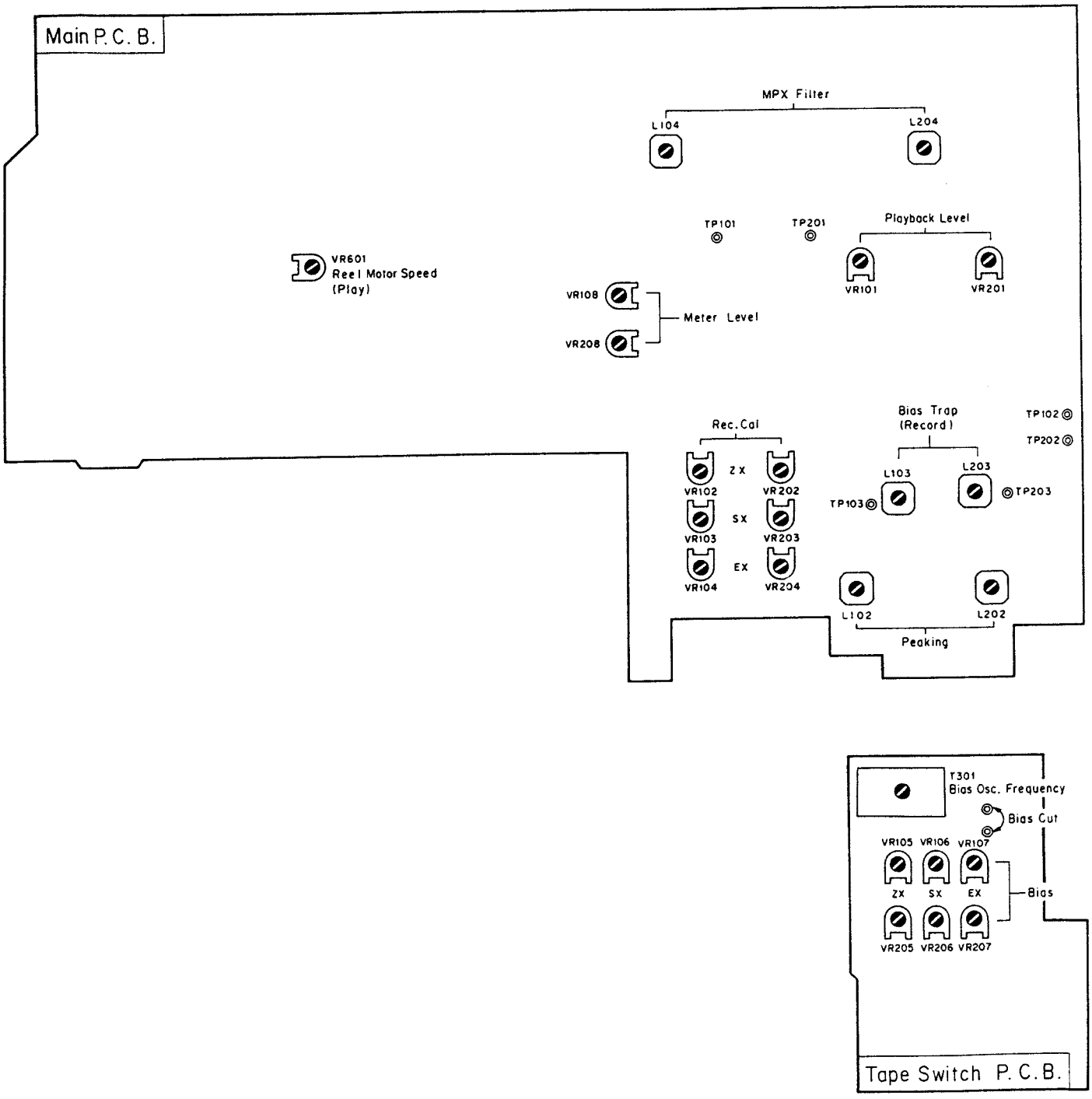


Fig. 3

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	ADJUST-MENT	REMARKS
1	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006C)	Frequency Counter to Output Jacks	Playback Eq. SW — 70 μs	Tape Speed Adjustment Volume	Adjust the volume incorporated in the capstan motor to obtain 3 kHz ±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	1. Feed in 400 Hz, then adjust the Input Level control to obtain 90 mV —0.8 dB on the VTVM. 2. Adjust VR108 (VR208) so that the 0 dB segment of the level meter starts illuminating. 3. Adjust the Input Level control to obtain 90 mV on the VTVM, then decrease the generator output level by 20 dB. 4. Check to insure that the segment for —20 dB illuminates.
3	MPX Filter Adjustment	400 Hz and 19 kHz ±100 Hz to Input Jacks	VTVM to Output Jacks	Record, Pause	Main P.C.B. L104,L204	1. Feed in 400 Hz and adjust the Input Level control to obtain 0 dB (500 mV) on the VTVM. 2. Feed in 19 kHz, then adjust L104 (L204) to obtain minimum reading on the VTVM (minimum reading will be less than —30 dB).
4	Record/ Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004B)	VTVM to Output Jacks	Playback Eq. SW — 70 μs 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 (DA09005B)	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 (DA09005B) 10 kHz PB Frequency Response Tape (DA09003B) 15 kHz PB Frequency Response Tape (DA09002B) 20 kHz PB Frequency Response Tape (DA09001B)	VTVM to Output Jacks	Same as above	Main P.C.B. R110,R210 R195,R295	1. Load a 400 Hz level tape and play it back. 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. 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. If not, short R110 (R210) or R195 (R295) to obtain satisfactory results. 10 kHz (—20 dB) —2 dB to +2 dB 15 kHz (—20 dB) —2 dB to +3 dB 20 kHz (—20 dB) —2 dB to +4 dB Refer to the "Playback Frequency Response Adjustment" in item 4.2 for the detailed description. 4. Conduct step 4 "Record/Playback Head Azimuth Alignment".
7	Bias Oscillation Frequency and Erase Current Adjustment		Frequency Counter to TP102 on Main P.C.B. and VTVM across the additional 0.1 Ω resistor	Record, Pause Tape SW — ZX Eq. SW — 70 μs Dolby NR SW — OFF	Main P.C.B. T301 R318,R350	1. Adjust T301 to obtain 105 kHz on the frequency counter. 2. Connect an additional 0.1 Ω resistor in series to the Erase Head, then connect a VTVM across it. 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. 4. After completion of the erase current adjustment, re-check the bias oscillation frequency. 5. Remove the additional 0.1 Ω resistor.
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	1. Short both Bias Stop test pins with a clip to stop the bias oscillation. 2. Adjust L102 (L202) to obtain peak reading at 21 kHz on the VTVM. 3. Remove the clip from the test pins.
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	ADJUST-MENT	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 μs (ZX/SX) 120 μs (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-100 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 ±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 μs (ZX/SX) 120 μs (EX) Dolby NR SW — OFF	Main P.C.B. L102,L202	1. Set the BX-100 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 ±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 μs 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	ADJUST-MENT	REMARKS
14	Erasure Measure-ment	100 Hz to Input Jacks	100 Hz Band Pass Filter and VTVM to Output Jacks	Record and Playback Tape SW — ZX Eq. SW — 70 μs 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. Rewind the tape, set the Input Level control to minimum, and then record again. 4. Rewind the tape, play it back, and then measure the difference between 2 and 3.
15	Signal to Noise Ratio Measure-ment	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 μs Dolby NR SW — ON		1. Set the Dolby NR switch to ON. 2. Feed in 400 Hz, then record, rewind and play it back. 3. Adjust the Input Level control to obtain 3% total harmonic distortion in Playback mode. 4. Set the Input Level control to minimum then record again. 5. After rewound, play back and check the output level difference between 3 and 4. Note: The filter of IHF-A curve shall be used in the measurements.
16	Total Harmonic Distortion Measure-ment	400 Hz to Input Jacks	VTVM and Distortion Meter to Output Jacks	Record and Playback Tape SW — ZX/SX/EX Eq. SW — 70 μs (ZX/SX) 120 μs (EX) Dolby NR SW — OFF		1. Adjust the Input Level control to obtain 0 dB on the VTVM. 2. Record, rewind and play it back. 3. 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
17	Wow/ Flutter Measure-ment	3 kHz Speed and Wow/ Flutter Tape (DA09006C)	Wow/Flutter Meter to Output Jacks	Playback Eq. SW — 70 μs		Play back and read the wow/flutter meter.

4.2. Playback Frequency Response Adjustment

Figs. 4.1 and 4.2 show the playback amp. circuit for adjustment and the playback equalization curve.

This adjustment will be required if playback level is not sufficient during playing back a 20 kHz PB frequency response tape.

The peaking portion of the equalization curve compensates the gap loss of the playback head. Peaking level is varied by the short circuit of R110 (R210) or R195 (R295).

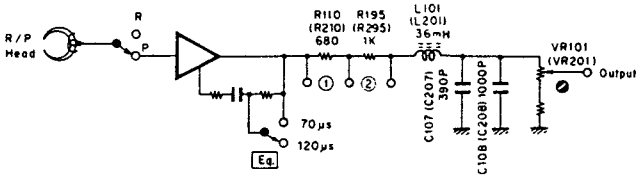


Fig. 4.1

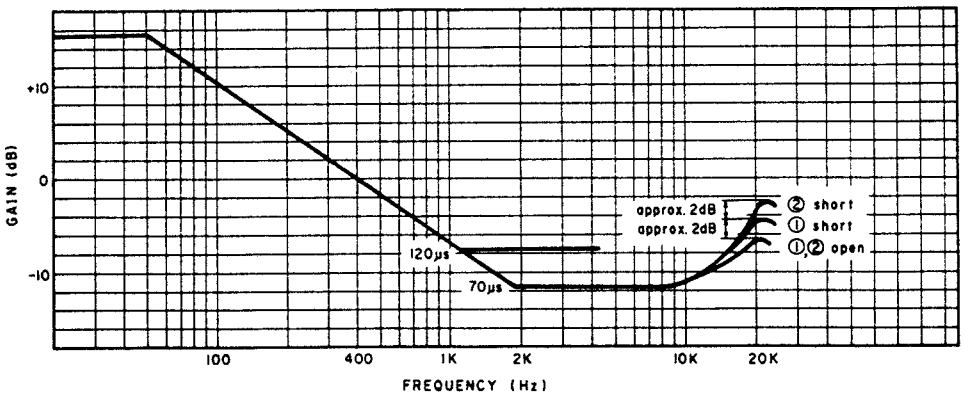


Fig. 4.2

4.3. Dolby NR Circuit Check

Dolby NR circuit incorporates a Dolby NR IC (μA7300PC) 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

(1) 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.

(2) Remove the VTVM from TP101 (TP201) and reconnect it to the negative side of C141 (C241).

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

5. MECHANISM ASS'Y AND PARTS LIST

5.1. Synthesis

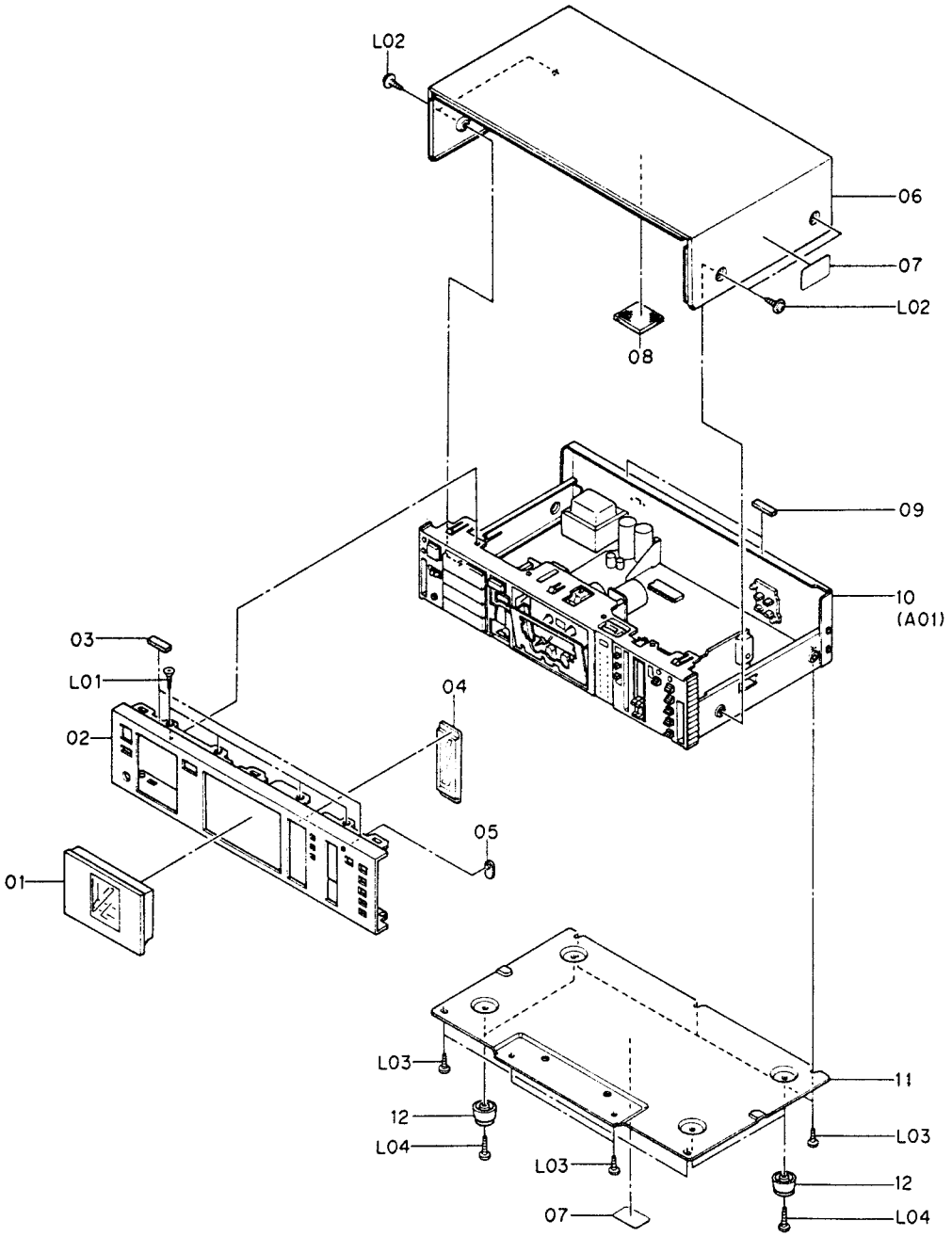


Fig. 5.1

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis Serial No.: A31801001 - (Silver)				Synthesis Serial No.: A31901001 - (Black)	
01	HA04494A	Cassette Case Cover Ass'y	1	01	HA04495A	Cassette Case Cover Ass'y	1
02	0H04263A	Front Panel BX-100	1	02	0H04264A	Front Panel BX-100	1
	0H04358A	Front Panel BX-100E	1		0H04359A	Front Panel BX-100E	1
03	0J04628A	Top Cover Cushion (Front)	2	03	0J04628A	Top Cover Cushion (Front)	2
04	0H04306A	Meter Cover	1	04	0H04306A	Meter Cover	1
05	0H04240A	Control Lens	1	05	0H04240A	Control Lens	1
06	0H04155B	Top Cover	1	06	0H04156B	Top Cover	1
07	0M04377A	Caution Label	1	07	0M04377A	Caution Label	1
08	0J04630A	Top Cover Rubber	1	08	0J04630A	Top Cover Rubber	1
09	0J04629A	Top Cover Cushion (Rear)	1	09	0J04629A	Top Cover Cushion (Rear)	1
10	—	Synthesis Mechanism Ass'y	1	10	—	Synthesis Mechanism Ass'y	1
11	0J04762A	Bottom Cover	1	11	0J04762A	Bottom Cover	1
12	0J03564A	Leg T-H	4	12	0J03564A	Leg T-H	4
L01	0E03054A	BT 3x8 ⊕ Countersunk	4	L01	0E03054A	BT 3x8 ⊕ Countersunk	4
L02	0E03033A	BT 4x8 ⊕ Pan Washer-Faced	4	L02	0E03033A	BT 4x8 ⊕ Pan Washer-Faced	4
L03	0E00868A	BT 3x8 ⊕ Binding	7	L03	0E00868A	BT 3x8 ⊕ Binding	7
L04	0E00865A	BT 3x10 ⊕ Binding	4	L04	0E00865A	BT 3x10 ⊕ Binding	4

5.2. Synthesis Mechanism Ass'y (A01)

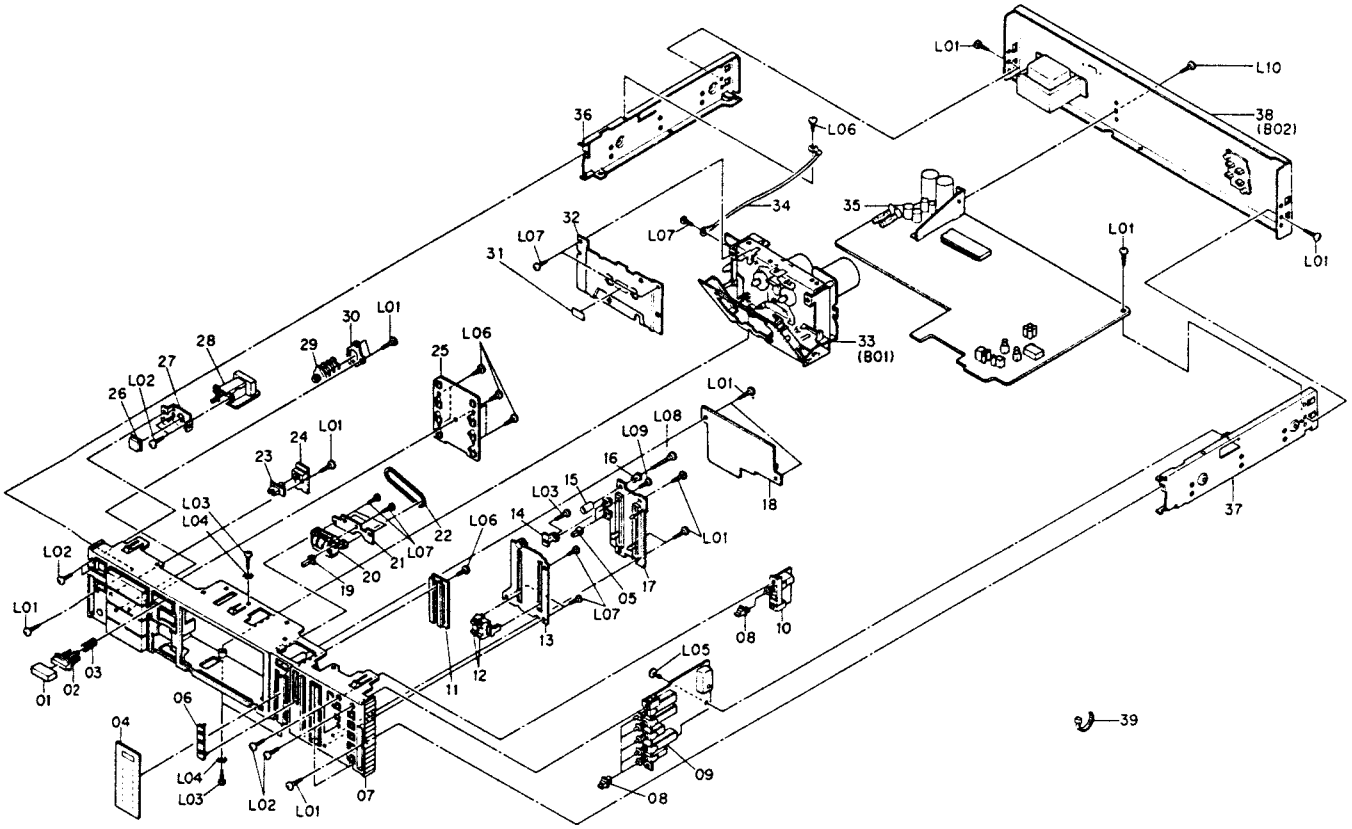


Fig. 5.2

Schematic Ref. No.	Part No.	Description	Q'ty
A01		Synthesis Mechanism Ass'y Serial No.: A31801001 - (Silver)	1
01	0H04270A	Eject Button	1
02	0J04766A	Button Joint	1
03	0J04765A	Spring	1
04	0H04277A	Meter Scale	1
05	0H04272A	Memory Switch Knob	2
06	0H04276A	Counter Escutcheon	1
07	HA04522A	Front Chassis Sub Ass'y	1
08	0H04288A	Push Switch Button	5
09	BA05073A	Tape Switch P.C.B. Ass'y	1
10	BA05076A	Dolby NR Switch P.C.B. Ass'y	1
11	BA05089A	Indicator P.C.B. Ass'y	1
12	0H04289A	Volume Knob	2
13	0H04283A	Volume Plate	1
14	0J04767A	Memory Switch Holder	1
15	0J04703A	P.C.B. Spacer A	1
16	0J04704A	P.C.B. Spacer B	1
17	BA05075A	Volume P.C.B. Ass'y	1
18	BA05074A	Indicator P.C.B. Ass'y	1
19	0H04274A	Counter Knob	1
20	0C08602A	Tape Counter	1
21	0J04764A	Counter Holder	1
22	0C08604A	Counter Belt	1
23	0H04309A	Slide Switch Knob	1
24	BA05078A	Timer Switch P.C.B. Ass'y	1
25	BA05077A	Control Switch P.C.B. Ass'y	1
26	0H04290A	Power Switch Button	1
27	0J04763A	Power Switch Holder	1
28	BA04823A	Power Switch P.C.B. Ass'y (BX-100 (U.S.A. & Canada))	1
	BA04824A	Power Switch P.C.B. Ass'y (BX-100 (Australia & Others) & BX-100E)	1
29	0B08511A	Headphone Jack	1
30	0J04611A	Headphone Plate	1
31	0M04196A	Cassette Label	1
32	0H04154B	Cover Plate	1
33	CA08498A	Mechanism Ass'y	1
34	BA05131A	Earth Wire	1
35	BA05063A	Main P.C.B. Ass'y	1
36	0J04603E	Side Chassis (L)	1
37	0J04773A	Side Chassis (R)	1
38	HA04499A	Rear Panel Ass'y BX-100 (U.S.A. & Canada)	1
	HA04502A	Rear Panel Ass'y BX-100 (Australia)	1
	HA04501A	Rear Panel Ass'y BX-100 (Others)	1
	HA04498A	Rear Panel Ass'y BX-100E (UK)	1
	HA04503A	Rear Panel Ass'y BX-100E (220V Class 2)	1
39	0B08515A	Insu-lock	1
—	0B82116B	Ribbon Cable 2P (160mm)	2
—	0B82117B	Ribbon Cable 2P (220mm)	3
—	0B82118B	Ribbon Cable 2P (300mm)	2
—	0B82121B	Ribbon Cable 3P (330mm)	1
—	0B82122B	Ribbon Cable 3P (360mm)	1
—	0B82124B	Ribbon Cable 3P (410mm)	1
—	0B82125B	Ribbon Cable 4P (300mm)	2
—	0B82126B	Ribbon Cable 4P (360mm)	1
—	0B82129B	Ribbon Cable 6P (280mm)	1
—	0B82220A	Ribbon Cable 3P (160mm)	1
—	0B82219A	P-D Connector Ass'y	1
L01	0E00868A	BT 3x8 ⊕ Binding	15
L02	0E00766A	M3x8 ⊕ Binding	6
L03	0E03074A	BT 2.6x8 ⊕ Binding	3
L04	0E00233A	Washer 2.6mm Toothed Lock	2
L05	0B08583A	Plastic Rivet	1
L06	0E00857A	BT 3x6 ⊕ Binding	7
L07	0E00859A	BT 2.6x6 ⊕ Binding	10
L08	0E00835A	BT 3x25 ⊕ Pan	1
L09	0E03070A	M2.6x6 ⊕ Binding	1
L10	0E03028A	BT 3x8 ⊕ Binding (Nickel)	1

Schematic Ref. No.	Part No.	Description	Q'ty
A01		Synthesis Mechanism Ass'y Serial No.: A31901001 - (Black)	1
01	0H04269A	Eject Button	1
02	0J04766A	Button Joint	1
03	0J04765A	Spring	1
04	0H04277A	Meter Scale	1
05	0H04271A	Memory Switch Knob	2
06	0H04275A	Counter Escutcheon	1
07	HA04523A	Front Chassis Sub Ass'y	1
08	0H04248A	Push Switch Button	5
09	BA05073A	Tape Switch P.C.B. Ass'y	1
10	BA05076A	Dolby NR Switch P.C.B. Ass'y	1
11	BA05089A	Indicator P.C.B. Ass'y	1
12	0H04247A	Volume Knob	2
13	0H04283A	Volume Plate	1
14	0J04767A	Memory Switch Holder	1
15	0J04703A	P.C.B. Spacer A	1
16	0J04704A	P.C.B. Spacer B	1
17	BA05075A	Volume P.C.B. Ass'y	1
18	BA05074A	Indicator P.C.B. Ass'y	1
19	0H04273A	Counter Knob	1
20	0C08602A	Tape Counter	1
21	0J04764A	Counter Holder	1
22	0C08604A	Counter Belt	1
23	0H04242A	Slide Switch Knob	1
24	BA05078A	Timer Switch P.C.B. Ass'y	1
25	BA05077A	Control Switch P.C.B. Ass'y	1
26	0H04243A	Power Switch Button	1
27	0J04763A	Power Switch Holder	1
28	BA04823A	Power Switch P.C.B. Ass'y (BX-100 (U.S.A. & Canada))	1
	BA04824A	Power Switch P.C.B. Ass'y (BX-100 (Australia & Others) & BX-100E)	1
29	0B08511A	Headphone Jack	1
30	0J04611A	Headphone Plate	1
31	0M04196A	Cassette Label	1
32	0H04154B	Cover Plate	1
33	CA08498A	Mechanism Ass'y	1
34	BA05131A	Earth Wire	1
35	BA05063A	Main P.C.B. Ass'y	1
36	0J04603E	Side Chassis (L)	1
37	0J04773A	Side Chassis (R)	1
38	HA04505A	Rear Panel Ass'y BX-100 (U.S.A. & Canada)	1
	HA04508A	Rear Panel Ass'y BX-100 (Australia)	1
	HA04507A	Rear Panel Ass'y BX-100 (Others)	1
	HA04504A	Rear Panel Ass'y BX-100E (UK)	1
	HA04509A	Rear Panel Ass'y BX-100E (220V Class 2)	1
39	0B08515A	Insu-lock	1
—	0B82116B	Ribbon Cable 2P (160mm)	2
—	0B82117B	Ribbon Cable 2P (220mm)	3
—	0B82118B	Ribbon Cable 2P (300mm)	2
—	0B82121B	Ribbon Cable 3P (330mm)	1
—	0B82122B	Ribbon Cable 3P (360mm)	1
—	0B82124B	Ribbon Cable 3P (410mm)	1
—	0B82125B	Ribbon Cable 4P (300mm)	2
—	0B82126B	Ribbon Cable 4P (360mm)	1
—	0B82129B	Ribbon Cable 6P (280mm)	1
—	0B82220A	Ribbon Cable 3P (160mm)	1
—	0B82219A	P-D Connector Ass'y	1
L01	0E00868A	BT 3x8 ⊕ Binding	15
L02	0E00766A	M3x8 ⊕ Binding	6
L03	0E03074A	BT 2.6x8 ⊕ Binding	3
L04	0E00233A	Washer 2.6mm Toothed Lock	2
L05	0B08583A	Plastic Rivet	1
L06	0E00857A	BT 3x6 ⊕ Binding	7
L07	0E00859A	BT 2.6x6 ⊕ Binding	10
L08	0E00835A	BT 3x25 ⊕ Pan	1
L09	0E03070A	M2.6x6 ⊕ Binding	1
L10	0E00921A	BT 3x8 ⊕ Binding (Black Chromate)	1

5.3. Mechanism Ass'y (B01)

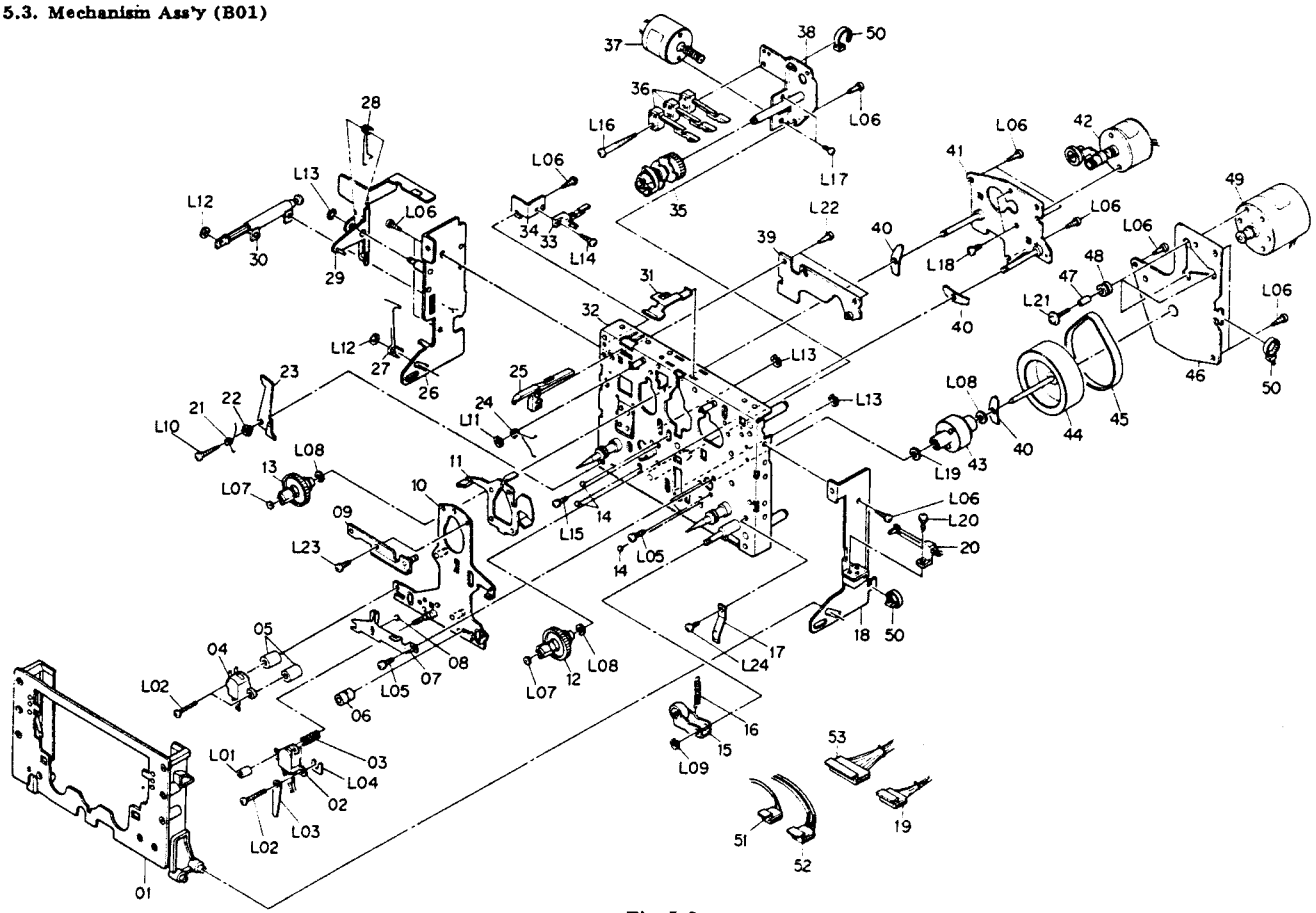


Fig. 5.3

5.4. Rear Panel Ass'y (B02)

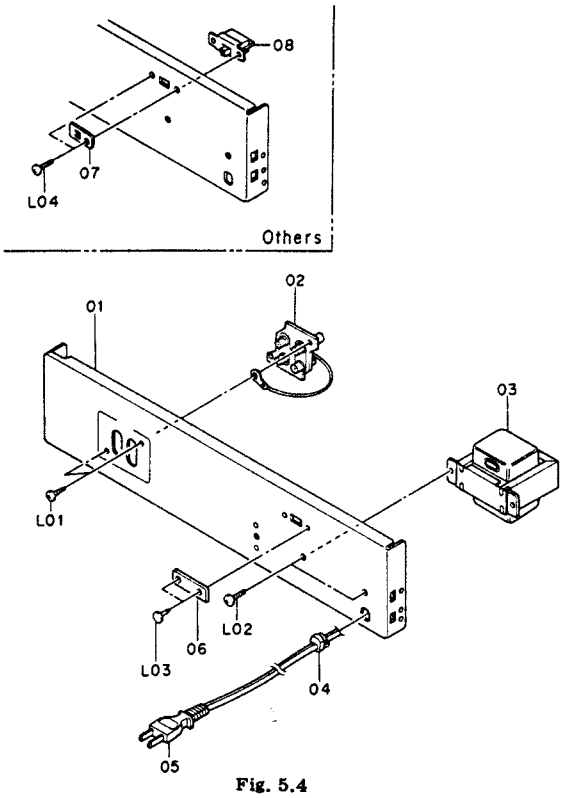


Fig. 5.4

Schematic Ref. No.	Part No.	Description	Q'ty
B01	CA08498A	Mechanism Ass'y Serial No.: A318.901001 -	1
01	CA80001A	Cassette Case Ass'y	1
02	0G01371A	Record/Playback Head RP-2G	1
03	0C80001A	Azimuth Adjust Spring	1
04	0G01365A	Erase Head E-2D	1
05	0C80044A	Erase Head Collar	2
06	0C80045A	Record/Playback Head Collar	1
07	0C80003A	Head Base Hold Plate	1
08	0C80004A	Steel Ball 30	1
09	0C80005A	Reinforce Plate	1
10	0C80006A	Head Base	1
11	CA80002A	Brake Ass'y	1
12	CA80003B	Take-up Reel Hub Ass'y	1
13	CA80004B	Supply Reel Hub Ass'y	1
14	0C80007A	Steel Ball 20	3
15	CA80005A	Pressure Roller Ass'y	1
16	0C80008A	Pressure Roller Spring	1
17	0C80009A	Cassette Case Spring	1
18	0C80010B	Cassette Case Holder R	1
19	0C80043A	5P-H Connector	1
20	0C80012A	Eject Sensor	1
21	0C80013A	Lock Lever Spring	1
22	0C80014A	Lock Lever Collar	1
23	0C80015B	Lock Lever	1
24	0C80016A	Brake Spring	1
25	0C80017A	Record Protector Lever	1
26	0C80018A	Cassette Case Holder L	1
27	0C80019B	Eject Spring	1
28	0C80020A	Eject Lever Spring	1
29	0C80021A	Eject Lever	1
30	CA80006A	Pneumatic Damper Ass'y	1
31	0C80022B	Cassette Hold Spring	1
32	0C80023A	Mechanism Chassis	1
33	0C80024A	Record Protector	1
34	0C80025A	Record Protector Holder	1
35	0C80026A	Cam	1
36	0C80027A	Mode Switch	3
37	CA80007A	Control Motor Ass'y	1
38	0C80028A	Control Motor Holder	1
39	CA80011A	Shut-off P.C.B. Ass'y	1
40	0C80029A	Back Tension Spring	3
41	0C80030A	Reel Motor Holder	1
42	CA80008B	Reel Motor Ass'y	1
43	0C80031A	Capstan Flange	1
44	0C80033A	Flywheel	1
45	0C80034A	Capstan Belt	1
46	CA80009A	Flywheel Holder Ass'y	1
47	0C80035A	Sleeve	3
48	0C80036A	Floating Rubber	3
49	CA80010A	Capstan Motor Ass'y	1
50	0C80037A	Insu-Lock	3
51	0C80040A	2P-H Connector	1
52	0C80041A	4P-H Connector	1
53	0C80042A	9P-H Connector	1
L01	0C80046A	Azimuth Adjust Screw	1
L02	0E03038A	M2x12 ⊕ Binding	3
L03	0E03053A	Wire Holder	1
L04	0C80048A	Shim 0.03T	(1)
	0C80038A	Shim 0.06T	(1)
	0C80039A	Shim 0.1T	(1)
L05	0E03046A	M2.6x6 ⊕ Pan (2A)	3
L06	0E03042A	FT M2.5x5 ⊕ Pan	12
L07	0E03049A	Washer 1.8mm FT	2
L08	0E03050A	Washer 3.1mm FT	3
L09	0E00222A	E-Ring 2mm	1
L10	0E03043A	FT M2.5x10 ⊕ Pan	1
L11	0E00698A	E-Ring 2.5mm	1
L12	0E03052A	Stopper Ring 2.4mm	2
L13	0E00181A	E-Ring 3mm	3
L14	0E03048A	FT M2.6x6 ⊕ Pan	1
L15	0E03036A	M2x4 ⊕ Pan (2A)	1
L16	0E03044A	FT M2.5x20 ⊕ Pan	1
L17	0E00691A	M2x3 ⊕ Pan	2
L18	0E03045A	M2.6x3 ⊕ Binding	2
L19	0E03051A	Capstan Washer	1
L20	0E03037A	M2x5 ⊕ Pan (2A)	1
L21	0E03047A	M2.6x9 ⊕ Pan	3
L22	0E03041A	FT M2.5x4 ⊕ Pan	2
L23	0E03040A	FT M2.5x3.5 ⊕ Pan	1
L24	0E03035A	M2x3.2 ⊕ Truss	1

Schematic Ref. No.	Part No.	Description	Q'ty
B02	HA04499A	Rear Panel Ass'y BX-100 (U.S.A. & Canada)	1
	HA04501A	Rear Panel Ass'y BX-100 (Others)	1
	HA04502A	Rear Panel Ass'y BX-100 (Australia)	1
	HA04498A	Rear Panel Ass'y BX-100E (UK)	1
	HA04503A	Rear Panel Ass'y BX-100E (220V Class 2) Serial No.: A31801001 - (Silver)	1
01	0H04298A	Rear Panel BX-100	1
	0H04362A	Rear Panel BX-100E	1
02	0B81001A	4P Pin Jack	1
03	0B50017A	Power Transformer (BX-100 (U.S.A. & Canada))	1
	0B50009A	Power Transformer (BX-100 (Australia) & BX-100E)	1
	0B50010B	Power Transformer (BX-100 (Others))	1
04	0B08037U	Cord Bushing 4P-4 (BX-100)	1
	0B08351A	Cord Bushing 4K-4 (BX-100E (UK))	1
05	0B08533A	Power Cord (BX-100 (U.S.A., Canada & Others))	1
	0B08348A	Power Cord (BX-100E (UK))	1
	0B08093U	Power Cord (BX-100E (220V Class 2))	1
	0B05241A	Power Cord (BX-100 (Australia))	1
06	0J04622B	Switch Cover Gray (BX-100 (U.S.A., Canada & Australia) & (BX-100E)	1
07	0M04407A	Voltage Selector Lock Plate Gray (BX-100 (Others))	1
08	0B07092U	Voltage Selector (BX-100 (Others))	1
L01	0E03028A	BT 3x8 ⊕ Binding (Nickel)	2
L02	0E03024A	BT 4x8 ⊕ Binding	2
L03	0B08583A	Plastic Rivet	2
L04	0E03031A	M3x8 ⊕ Binding (Nickel)	2
B02	HA04505A	Rear Panel Ass'y BX-100 (U.S.A. & Canada)	1
	HA04507A	Rear Panel Ass'y BX-100 (Others)	1
	HA04508A	Rear Panel Ass'y BX-100 (Australia)	1
	HA04504A	Rear Panel Ass'y BX-100E (UK))	1
	HA04509A	Rear Panel Ass'y BX-100E (220V Class 2) Serial No.: A31901001 - (Black)	1
01	0H04299A	Rear Panel BX-100	1
	HA04363A	Rear Panel BX-100E	1
02	0B81001A	4P Pin Jack	1
03	0B50017A	Power Transformer (BX-100 (U.S.A. & Canada))	1
	0B50009A	Power Transformer (BX-100 (Australia) & BX-100E)	1
	0B50010B	Power Transformer (BX-100 (Others))	1
04	0B08037U	Cord Bushing 4P-4 (BX-100 & BX-100E (220V Class))	1
	0B08351A	Cord Bushing 4K-4 (BX-100E (UK))	1
05	0B08533A	Power Cord (BX-100 (U.S.A., Canada & Others))	1
	0B08348A	Power Cord (BX-100E (UK))	1
	0B08093U	Power Cord (BX-100E (220V Class 2))	1
	0B05241A	Power Cord (BX-100 (Australia))	1
06	0J04601B	Switch Cover Black (BX-100 (U.S.A., Canada & Australia) & BX-100E)	1
07	0J03948A	Voltage Selector Lock Plate Black (BX-100 (Others))	1
L01	0E00921A	BT 3x8 ⊕ Binding (Black Chromate)	2
L02	0E00915A	BT 4x8 ⊕ Binding (Black Chromate)	2
L03	0B08583A	Plastic Rivet	2
L04	0E00818A	M3x8 ⊕ Binding (Black Chromate)	2

6. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
3. Following transistors are interchangeable with each other.
   a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
   b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
4. 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, CM — Film Capacitor, C — Mica Capacitor

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

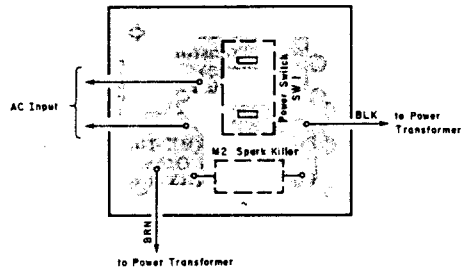


Fig. 6.1

6.2. Shut-off P.C.B. Ass'y

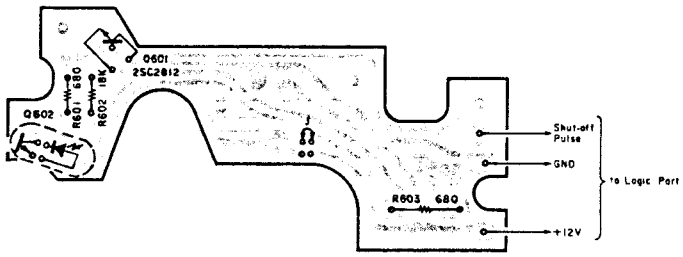


Fig. 6.2

6.3. Control Switch P.C.B. Ass'y

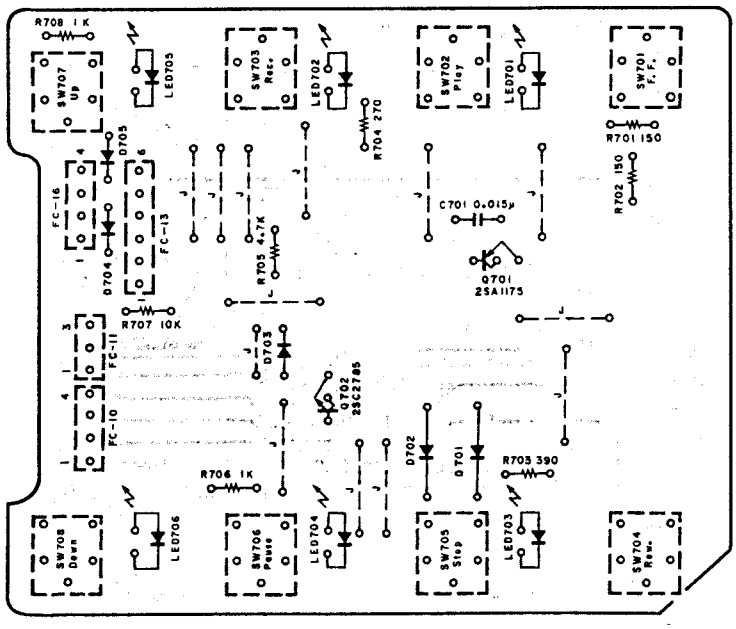


Fig. 6.3

Schematic Ref. No.	Part No.	Description
	BA04823A	Power Switch P.C.B. Ass'y (BX-100 (U.S.A. & Canada)
	BA04824A	Power Switch P.C.B. Ass'y (BX-100 (Australia & Others) & BX-100E)
	0B02573D	Power Switch P.C.B.
SW1	0B70002A	Power Switch
M2	0B08342A	Spark Killer (BX-100 (U.S.A. & Canada))
M2	0B08955A	Spark Killer (BX-100 (Australia & Others) & BX-100E)
	0E00752A	Eyelet 2x3 (2)
	0B08359A	Spark Killer Cover (BX-100 (Australia & Others) & BX-100E)
	0J04763A	Power Switch Holder (1)
	0E00612A	M3x6 ⊕ Pan (2A) (2)
	CA80011A	Shut-off P.C.B. Ass'y
	0C80047A	Shut-off P.C.B.
Q601	0B06388A	TR 2SC2812
Q602	0B06389A	Photo Reflector NJL5141
R601,603	0B09840A	RK 680 Leadless
R602	0B09841A	RK 18K Leadless
	BA05077A	Control Switch P.C.B. Ass'y
	0B60036B	Control Switch P.C.B.
Q701	0B06455A	TR 2SA1175
Q702	0B06456A	TR 2SC2785
LED701 703,704	0B06334A	LED TLG124A GRN
LED702 705,706	0B06333A	LED TLR124A RED
D701,702	0B06181A	SiD 1SS53
D703,704 705	0B06398A	SiD 1SS176
R701,702	0B09657A	RK 150 1/6W J
R703	0B09667A	RK 390 1/6W J
R704	0B09663A	RK 270 1/6W J
R705	0B09693A	RK 4.7K 1/6W J
R706,708	0B09677A	RK 1K 1/6W J
R707	0B09701A	RK 10K 1/6W J
C701	0B05557A	CM 0.015μ 50V J
SW701-708	0B70004A	Touch Switch 4.3mm
	0J04744A	LED Reflector (6)
	BA05078A	Timer Switch P.C.B. Ass'y
	0B60037B	Timer Switch P.C.B.
R709	0B09687A	RK 2.7K 1/6W J
SW601	0B07437A	Slide Switch 2-3
	0B81011A	Dip Mate 4P (1)

6.4. Timer Switch P.C.B. Ass'y

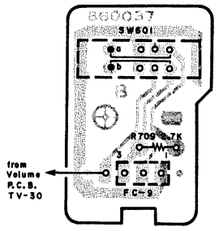


Fig. 6.4

6.5. Volume P.C.B. Ass'y

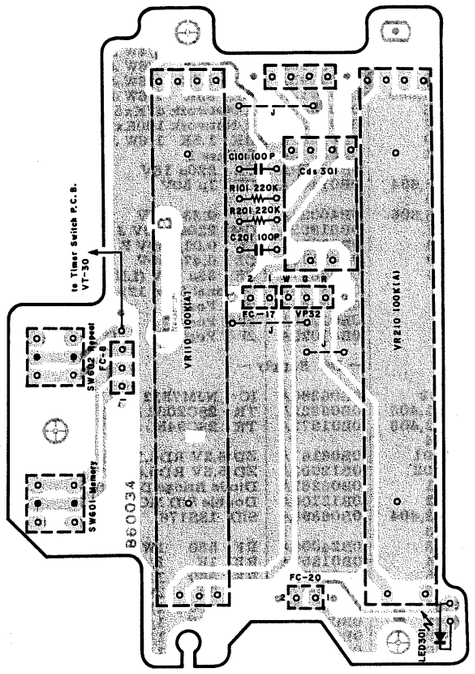


Fig. 6.5

6.6. Dolby NR P.C.B. Ass'y

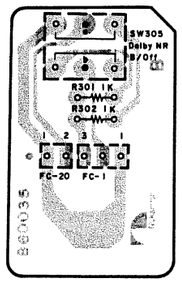


Fig. 6.6

6.7. Tape Switch P.C.B. Ass'y

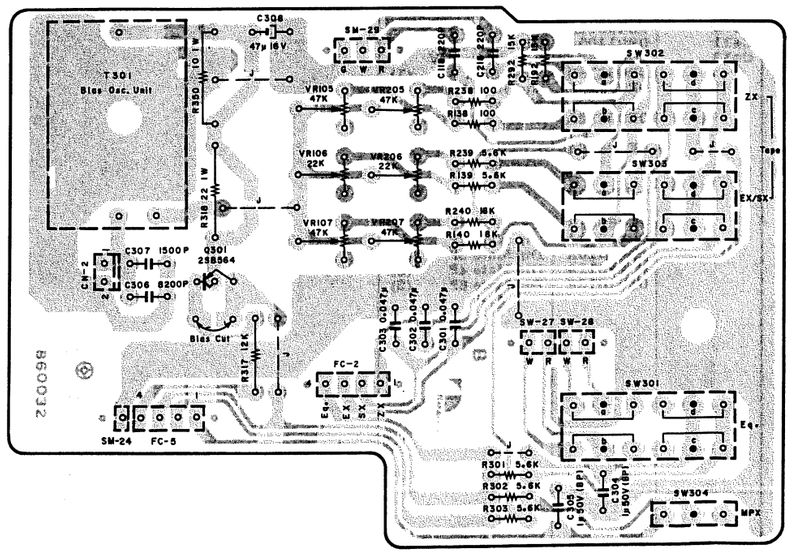


Fig. 6.7

6.8. Indicator P.C.B. Ass'y

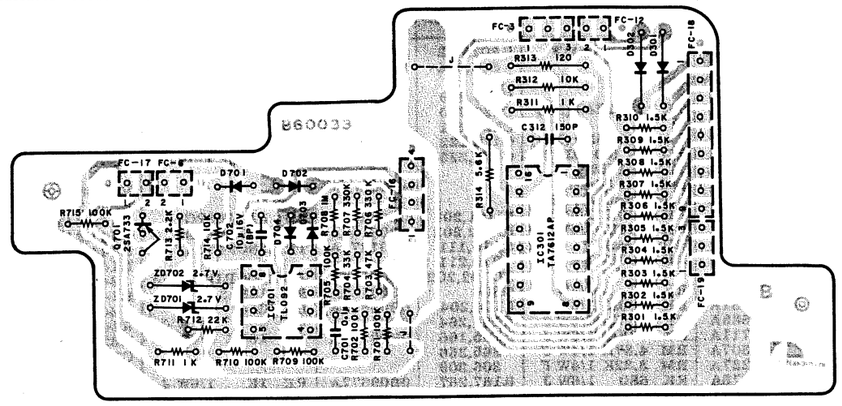


Fig. 6.8

Schematic Ref. No.	Part No.	Description
	BA05075A	**Volume P.C.B. Ass'y**
	0B60034B	Volume P.C.B.
VR110,210	0B31002A	Slide Volume 100K (A)
LED301	0B06333A	LED TLR124A RED
R101,201	0B09733A	RK 220K 1/6W J
C101,201	0B09282A	CC 100P 50V K
SW601,602	0B07462A	Push Switch
Cds301	0B06325B	Photocoupler MCD7214F
	0B81002A	Dip Mate 2P (1)
	0B81011A	Dip Mate 4P (2)
	0B81012A	Dip Mate 5P (1)
	BA05076A	**Dolby NR Switch P.C.B. Ass'y**
	0B60035B	Dolby NR Switch P.C.B.
R301,302	0B09677A	RK 1K 1/6W J
SW305	0B70008A	Push Switch
	0B81012A	Dip Mate 5P (1)
	0J04768A	Earth Plate A (1)
	BA05073A	**Tape Switch P.C.B. Ass'y**
	0B60032B	Tape Switch P.C.B.
Q301	0B06332A	TR 2SB564M
T301	0B06688C	Bias Osc. Unit
VR105,107 205,207	0B32010A	Semi-fixed VR 47K
VR106,206	0B32009A	Semi-fixed VR 22K
R138,238	0B09653A	RK 100 1/6W J
R139,239 301,302 303	0B09695A	RK 5.6K 1/6W J
R140,240	0B09707A	RK 18K 1/6W J
R192,292	0B09705A	RK 15K 1/6W J
R317	0B09263A	RK 12K 1/4W J
R318	0B09831A	RF 22 1W J
R350	0B09837A	RF 10 1W J
C118,218	0B09283A	CC 220P 50V K
C301,302 303	0B05796A	CM 0.047μ 50V J
C304,305	0B09187A	CE 1μ 50V (BP)
C306	0B09828A	CP 8200P 100V J
C307	0B41229A	CP 1500P 100V J
C308	0B01403A	CE 47μ 16V
SW301-304	0B70005A	Push Switch (1)
	0B81010A	Dip Mate 3P (1)
	0B81011A	Dip Mate 4P (2)
	0B81012A	Dip Mate 5P (1)
	0B81051A	2P-S Post (1)
	0J04768A	Earth Plate A (1)

Schematic Ref. No.	Part No.	Description
	BA05074A	**Indicator P.C.B. Ass'y**
	0B60033B	Indicator P.C.B.
IC301	0B06369A	IC TA7612AP
IC701	0B11031A	IC TL092
Q701	0B06013A	TR 2SA733 (P,Q)
ZD701,702	0B06191A	ZD 2.7V RD2.7E
D301,302	0B06181A	SiD 1SS53
D701,702 703,704	0B06398A	SiD 1SS176
R301-310	0B09681A	RK 1.5K 1/6W J
R311	0B01857A	RK 1K 1/4W J
R312	0B01888A	RK 10K 1/4W J
R313	0B09797A	RK 120 1/4W J
R314	0B01887A	RK 5.6K 1/4W J
R701,702 705,709 710,715	0B09725A	RK 100K 1/6W J
R703	0B09717A	RK 47K 1/6W J
R704	0B09713A	RK 33K 1/6W J
R706,707	0B09737A	RK 330K 1/6W J
R708	0B09749A	RK 1M 1/6W J
R711	0B09677A	RK 1K 1/6W J
R712	0B09709A	RK 22K 1/6W J
R713	0B09685A	RK 2.2K 1/6W J
R714	0B09701A	RK 10K 1/6W J
C312	0B09281A	CC 150P 50V K
C701	0B09868A	CF 0.1μ 50V J
C702	0B09163A	CE 10μ 16V (BP)
FC18,19	0B02356A	JP Connector 12P (1)
	0B81011A	Dip Mate 4P (2)
	0B81012A	Dip Mate 5P (1)

Schematic Ref. No.	Part No.	Description
	BA05063A	Main P.C.B. Ass'y
	— PB Eq. Amp. —	
Q101,102 201,202	0B06142A	TR 2SC2240 (BL)
Q103,203	0B01872A	TR 2SC945L (P,Q)
ZD301	0B12009A	ZD 10V RD10JB2T
D301	0B01909A	SiD 1S1555
L101,201	0B03919B	Inductor 36mH
VR101,201	0B32009A	Semi-fixed VR 22K
R101,201	0B09741A	RK 470K 1/6W J
R102,202	0B09330A	RK 100K 1/4W J (Noiseless)
R103,203 308	0B01889A	RK 100K 1/4W J
R104,204	0B01706A	RK 47 1/4W J
R105,205	0B09731A	RK 180K 1/6W J
R106,206	0B09685A	RK 2.2K 1/6W J
R107,207	0B09711A	RK 27K 1/6W J
R108,208	0B22307A	RM 4.87K 1/4W F
R109,209	0B22287A	RM 3.32K 1/4W F
R110,210	0B09673A	RK 680 1/6W J
R111,211	0B01887A	RK 5.6K 1/4W J
R112,212	0B09703A	RK 12K 1/6W J
R195,295	0B09677A	RK 1K 1/6W J
R319	0B01857A	RK 1K 1/4W J
C102,202	0B09137A	CE 22μ 25V (LN)
C103,203	0B09283A	CC 220P 50V K
C104,204	0B01403A	CE 47μ 16V
C105,205	0B01863A	CE 3.3μ 50V
C106,206	0B05832A	CM 0.018μ 50V J
C107,207	0B41002A	CP 390P 100V J
C108,208	0B05550A	CM 1000P 50V J
C304	0B09868A	CF 0.1μ 50V J
C307	0B01400A	CE 100μ 16V
RL301	0B90011A	DS Relay
CN1	0B02242A	4P-T Post
	— Rec. Eq. Amp. —	
IC303	0B06387A	IC 2043DD
Q104,204	0B06299A	TR 2SC2878
L102,202	0B00068A	Trap Coil 10.5mH
L103,203	0B06696A	L-C Block
R113,213	0B09711A	RK 27K 1/6W J
R114,214	0B09701A	RK 10K 1/6W J
R115,116 117,215 216,217	0B09725A	RK 100K 1/6W J
R118,218	0B09677A	RK 1K 1/6W J
R119,219	0B09731A	RK 180K 1/6W J
R120,220	0B09691A	RK 3.9K 1/6W J
R121,221	0B09665A	RK 330 1/6W J
R122,222	0B09669A	RK 470 1/6W J
R123,223	0B09715A	RK 39K 1/6W J
R125,225	0B09697A	RK 6.8K 1/6W J
R126,226	0B05936A	RK 10 1/4W J
R185,285	0B01684A	RK 470K 1/4W J
C110,210	0B01804A	CM 3900P 50V J
C111,211	0B40178A	CE 0.47μ 50V
C112,212	0B01862A	CE 22μ 16V
C114,214	0B05659A	CM 5600P 50V J
C115,215	0B41186A	CM 5100P 50V J
C116,216	0B01412A	CE 10μ 16V
C117,217	0B09866A	CF 0.068μ 50V J
C150,250	0B09280A	CC 47P 50V J
C151,251	0B09187A	CE 1μ 50V (BP)
C164,264	0B09815A	CE 47μ 6.3V
	— Rec. Level —	
IC305	0B11027A	IC TC9145P
Q112,212	0B01872A	TR 2SC945L (P,Q)
VR102,202	0B32009A	Semi-fixed VR 22K
VR103,104 203,204	0B32008A	Semi-fixed VR 10K
R127,227	0B09705A	RK 15K 1/6W J
R128,228	0B22327A	RM 7.15K 1/4W F
R129,229	0B09699A	RK 8.2K 1/6W J
R130,230	0B01888A	RK 10K 1/4W J
R131,231	0B09707A	RK 18K 1/6W J
R132,135 137,232 235,237	0B09701A	RK 10K 1/6W J
R133,136 233,236	0B05629A	RK 2.7K 1/4W J
R184,284	0B09709A	RK 22K 1/6W J

Schematic Ref. No.	Part No.	Description
R301,302 303,304 305	0B09725A	RK 100K 1/6W J
C119,219	0B05571A	CM 680P 50V J
C120,220	0B05843A	CM 0.012μ 50V J
C121,221	0B05659A	CM 5600P 50V J
C122,222	0B09993A	CM 820P 50V J
C123,223	0B01913A	CM 1800P 50V J
	— Dolby NR —	
IC101,201	0B06200A	IC μA7300PC
IC102,202	0B06144A	IC μPD4066BC
Q110,111 210,211 ZD102,202	0B01872A	TR 2SC945L (P,Q)
D306	0B06167A	ZD 6.2V RD6.2EB3
L104,204	0B06181A	SiD 1SS53
R164,264	0B06690A	L-C Block
R165,166 265,266 306,309	0B05923A	RF 47 1/6W J
R167,267	0B09725A	RK 100K 1/6W J
R168,268	0B09677A	RK 1K 1/6W J
R169,269	0B09700A	RK 9.1K 1/6W J
R170,270	0B05629A	RK 2.7K 1/4W J
R171,271	0B09695A	RK 5.6K 1/6W J
R172,272	0B22286A	RM 3.3K 1/4W F
R173,273	0B09717A	RK 47K 1/6W J
R174,274	0B09696A	RK 6.2K 1/6W J
R175,275	0B05620A	RK 270K 1/4W J
R176,276	0B05625A	RK 220K 1/4W J
R177,277	0B09735A	RK 270K 1/6W J
R178,278 331	0B09688A	RK 3K 1/6W J
R179,279	0B09701A	RK 10K 1/6W J
R180,181 280,281	0B09693A	RK 4.7K 1/6W J
R182,183 282,283	0B05671A	RK 2.2M 1/4W J
R702,802	0B09709A	RK 22K 1/6W J
C131,132 231,232	0B01679A	RK 100 1/4W J
C133,140 233,240	0B09332A	CE 2.2μ 50V (LN)
C134,234	0B09223A	CE 1μ 50V (LN)
C135,235	0B09240A	CP 0.033μ 100V G
C136,236	0B01862A	CE 22μ 16V
C137,237	0B01402A	CE 4.7μ 16V
C138,238	0B05583A	CM 0.033μ 50V J
C139,239	0B01780A	CM 0.1μ 50V J
C141,241 311	0B09327A	CE 0.33μ 50V (LN)
C142,242	0B01412A	CE 10μ 16V
C143,243	0B01400A	CE 100μ 16V
C144,244	0B05884A	CE 470μ 10V
C145,245	0B09189A	CM 2700P 50V J
C162,262	0B05687A	CM 1200P 50V J
C163,263	0B05652A	CM 4700P 50V J
	0B09279A	CC 22P 50V K
	— Headphone/Line Amp. —	
IC302	0B06370A	IC 4556D
Q108,109 208,209	0B06299A	TR 2SC2878
R150,153 250,253	0B09725A	RK 100K 1/6W J
R151,251	0B09697A	RK 6.8K 1/6W J
R152,156 161,252 256,261	0B09677A	RK 1K 1/6W J
R157,257	0B09694A	RK 5.1K 1/6W J
R158,258	0B09711A	RK 27K 1/6W J
R159,259	0B09731A	RK 180K 1/6W J
R160,260	0B09641A	RK 33 1/6W J
R162,262	0B09685A	RK 2.2K 1/6W J
R163,263 701,802	0B09709A	RK 22K 1/6W J
R345,346	0B09729A	RK 150K 1/6W J
C126,226	0B01405A	CE 1μ 50V
C128,228	0B01403A	CE 47μ 16V
C129,229 313	0B01400A	CE 100μ 16V
C130,230	0B01412A	CE 10μ 16V

Schematic Ref. No.	Part No.	Description
	— Meter Amp. —	
Q105,106 107,205 206,207	0B01872A	TR 2SC945L (P,Q)
ZD101,201	0B12101A	ZD 5V 5C-1
D101,201	0B06398A	SiD 1SS176
D102,202 303	0B06181A	SiD 1SS53
VR108,208	0B32011A	Semi-fixed VR 100K
R141,241	0B09713A	RK 33K 1/6W J
R142,242	0B01889A	RK 100K 1/4W J
R143,243	0B09743A	RK 560K 1/6W J
R144,244	0B09729A	RK 150K 1/6W J
R145,146 245,246	0B09725A	RK 100K 1/6W J
R147,148 247,248	0B09719A	RK 56K 1/6W J
R149,249	0B09709A	RK 22K 1/6W J
R320	0B09216A	RF 10 1/4W J
C124,224	0B09570A	CE 0.15μ 50V (LN)
C125,225	0B09148A	CE 10μ 25V (LN)
C308	0B01400A	CE 100μ 16V
	— Logic —	
IC601	0B06178A	IC μPD4011BC
IC602	0B06214A	IC μPD4071BC
IC603	0B11020A	IC TMP4315BP-1814
Q601	0B06332A	TR 2SB564M
Q602,604 606,621 623,625	0B01872A	TR 2SC945L (P,Q)
Q607,624	0B10021A	TR 2SD1164 (K,L)
Q603,605 616,617 618,619	0B06013A	TR 2SA733 (P,Q)
Q607,624	0B06371A	TR 2SD1286
Q608,609 610,611	0B06372A	TR 2SA953 (K,L)
Q612,613 614,615	0B06322A	TR 2SC2002 (K,L)
Q620	0B06066A	TR 2SD471 (L,M)
Q622	0B10023A	TR 2SC2002 (K)
D601,603 606,607 608,612 613 615-618	0B06398A	SiD 1SS176
D602	0B12100A	Double SiD MC921
D604,609 610,611	0B06181A	SiD 1SS53
L601	0B06689A	L-C Block
VR601	0B32007A	Semi-fixed VR 470
R601	0B09749A	RK 1M 1/6W J
R602,604 613,616 617,618 619,651	0B09725A	RK 100K 1/6W J
R603,606 611,660	0B09701A	RK 10K 1/6W J
R605	0B09617A	RK 3.3 1/4W J
R607,608 615	0B05509A	RK 33K 1/4W J
R609,610	0B09729A	RK 150K 1/6W J
R612	0B09217A	RF 5.6 1/4W J
R614,644	0B09737A	RK 330K 1/6W J
R620	0B09711A	RK 27K 1/6W J
R621	0B09695A	RK 5.6K 1/6W J
R622	0B09663A	RK 270 1/6W J
R623	0B09672A	RK 620 1/6W J
R624	0B01854A	RK 39K 1/4W J
R625	0B09699A	RK 8.2K 1/6W J
R626	0B06706A	Coil 3.5
R627,628	0B01679A	RK 100 1/4W J
R629,630	0B01933A	RK 220 1/4W J
R631	0B24007A	RF 22 2W J
R632	0B09707A	RK 18K 1/6W J
R633,636 637,640	0B09741A	RK 470K 1/6W J
R634,635 638,639 658	0B09677A	RK 1K 1/6W J
R641,650	0B01889A	RK 100K 1/4W J
R643	0B01846A	RK 4.7K 1/4W J
R645,646	0B09733A	RK 220K 1/6W J

Schematic Ref. No.	Part No.	Description
R648,649	0B05629A	RK 2.7K 1/4W J
R652	0B09705A	RK 15K 1/6W J
R653	0B09693A	RK 4.7K 1/6W J
R654,655	0B09713A	RK 33K 1/6W J
R656	0B09803A	R-Network 47Kx5
R657	0B09824A	R-Network 100Kx5
R659	0B09681A	RK 1.5K 1/6W J
R661	0B24023A	R Fuse 1
C601	0B40079A	CE 220μ 16V
C602,604 610	0B01405A	CE 1μ 50V
C603,606	0B40024A	CE 0.33μ 50V
C607	0B01802A	CM 2200P 50V J
C608	0B09290A	CC 0.01μ 50V Z
C609	0B40178A	CE 0.47μ 50V
C611	0B09817A	CE 33μ 10V (LN)
TF1	0B08715A	Thermal Fuse 129
CN3	0B02245A	9P-T Post
CN4	0B02243A	5P-T Post
	0B81025A	2P-T Post (1)
	— DC Supply —	
IC402	0B06380A	IC NJM7812
Q401,405	0B06322A	TR 2SC2002 (K,L)
Q402,403 404	0B01872A	TR 2SC945L (P,Q)
ZD401	0B06167A	ZD 6.2V RD6.2EB3
ZD402	0B12003A	ZD 5.6V RD5.6JB2T
D401	0B06282A	Diode Bridge DBA10
D402	0B12100A	Double SiD MC921
D403,404 406	0B06398A	SiD 1SS176
R403	0B24006A	RF 560 1W J
R404	0B01857A	RK 1K 1/4W J
R405	0B09671A	RK 560 1/6W J
R406	0B24007A	RF 22 2W J
R407	0B09725A	RK 100K 1/6W J
R408	0B09707A	RK 18K 1/6W J
R409	0B09695A	RK 5.6K 1/6W J
R410	0B09665A	RK 330 1/6W J
R411	0B09693A	RK 4.7K 1/6W J
R413	0B09713A	RK 33K 1/6W J
R414	0B09719A	RK 56K 1/6W J
C402	0B40151A	CE 1000μ 25V
C403	0B01392A	CE 470μ 16V
C404	0B01403A	CE 47μ 16V
C405,406	0B09292A	CC 0.1μ 50V Z
C407	0B09799A	CE 4700μ 25V
C408	0B09798A	CE 6800μ 16V
C409	0B40011A	CE 33μ 16V
C411	0B01405A	CE 1μ 50V
C412	0B01398A	CE 220μ 16V
	0B08676B	Heat Sink (1)
	0E00507A	Nut Hex. M3 (Chromate) (1)
	0E00612A	M3x6 ⊕Pan (2A) (1)
	0E00857A	BT 3x6 ⊕Binding (Chromate) (2)
	— Miscellaneous —	
	0B86031B	Main P.C.B.
	0B81002A	Dip Mate 2P (7)
	0B81010A	Dip Mate 3P (6)
	0B81011A	Dip Mate 4P (3)
	0B81013A	Dip Mate 6P (2)

6.9. Main P.C.B. Ass'y

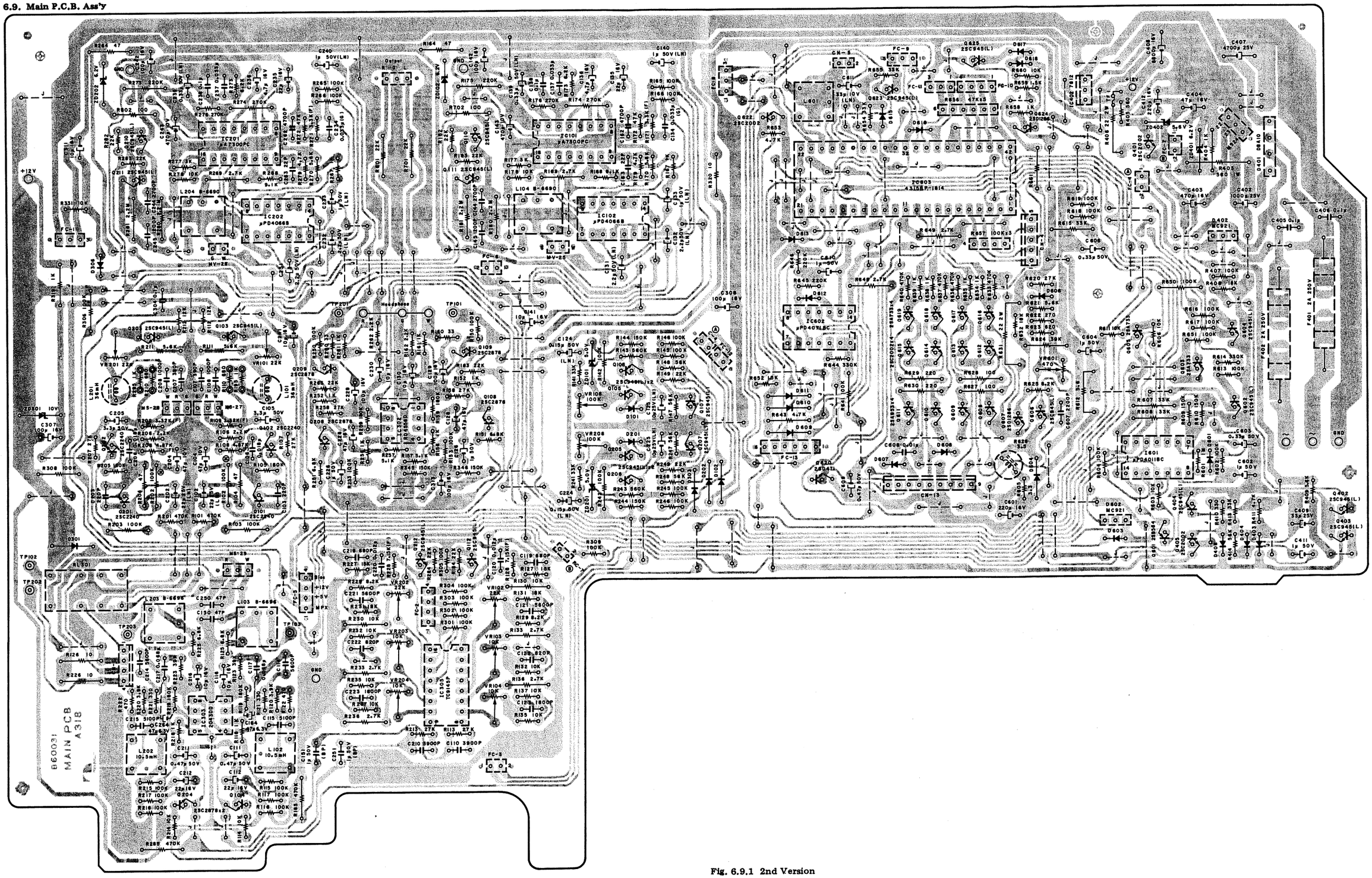


Fig. 6.9.1 2nd Version

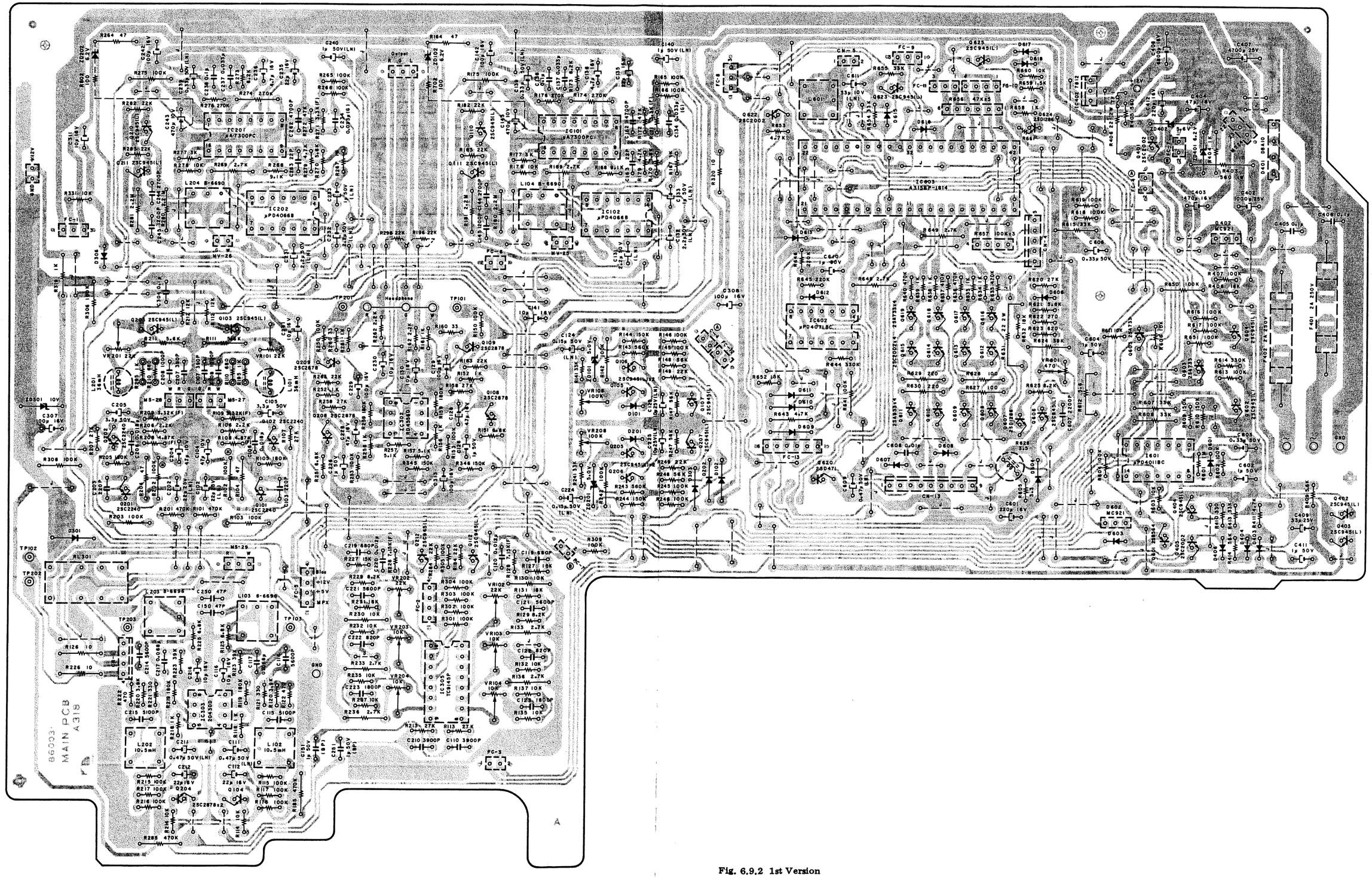


Fig. 6.9.2 1st Version

7. SCHEMATIC DIAGRAMS

7.1. Attention to Servicemen

(1) Caution

(a) If a part is in need of removing (or replacing) for service, it should be remounted (or replaced with specified parts) by the same methods as before after servicing.

(b) The appliance should be used only specified parts for preventing a risk of fire and electric shock and maintaining the characteristics.

(c) Before returning the repaired appliance to a customer, check to insure that the exposed part is accurately insulated from the Power Supply by measuring the leakage current or the insulation resistance between them.

(2) 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) Tape Switch P.C.B. Ass'y
Power Transistor: Q301
Fail Safe Type Resistor: R318, 350

(d) Main P.C.B. Ass'y
Regulator IC: IC402
Power Transistors: Q601, 607, 620, 624
Diode Bridge: D401
Fail Safe Type Resistors: R164, 264, 320, 403, 406, 612, 631
Thermal Fuse: TF1

7.2. IC Block Diagrams

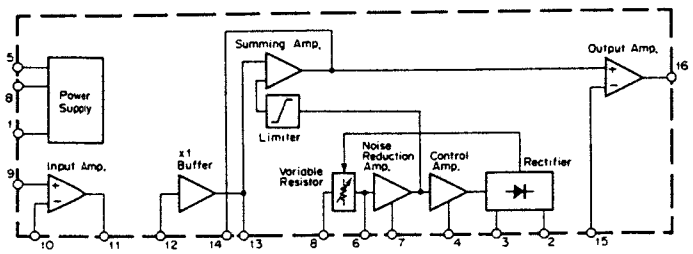


Fig. 7.2.1 Dolby NR IC μA7300PC

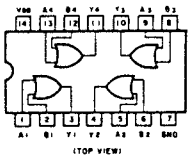


Fig. 7.2.2 OR Gate C-MOS IC μPD4071BC

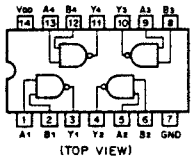


Fig. 7.2.3 NAND Gate C-MOS IC μPD4011BC

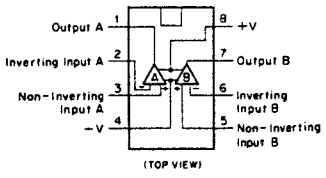


Fig. 7.2.4 Operational Amp. IC4556D, 2043DD, TL092

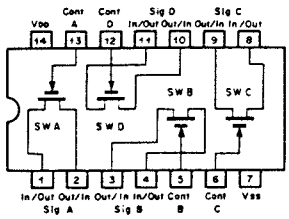


Fig. 7.2.5 Bilateral Switch C-MOS IC μPD4066BC

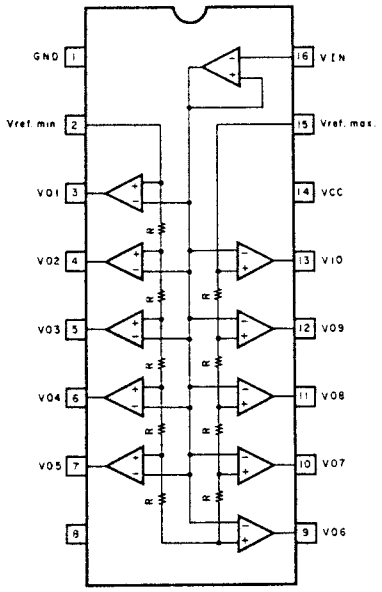


Fig. 7.2.6 Level Meter Driver TA7612AP

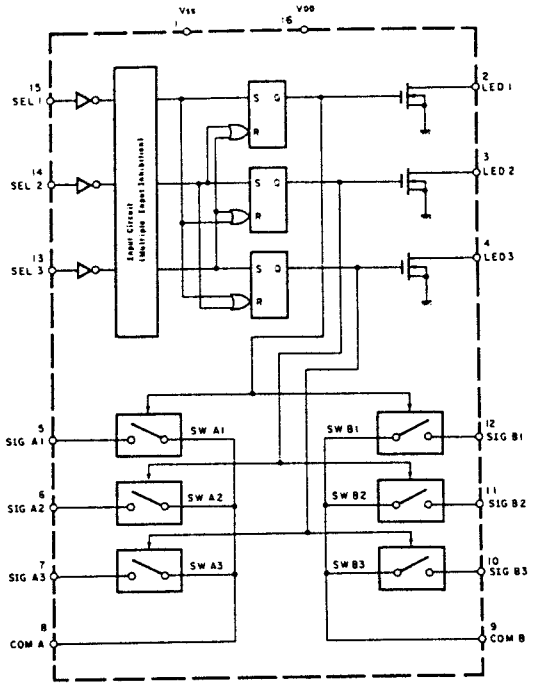


Fig. 7.2.7 Analog Switch Selector TC9145P

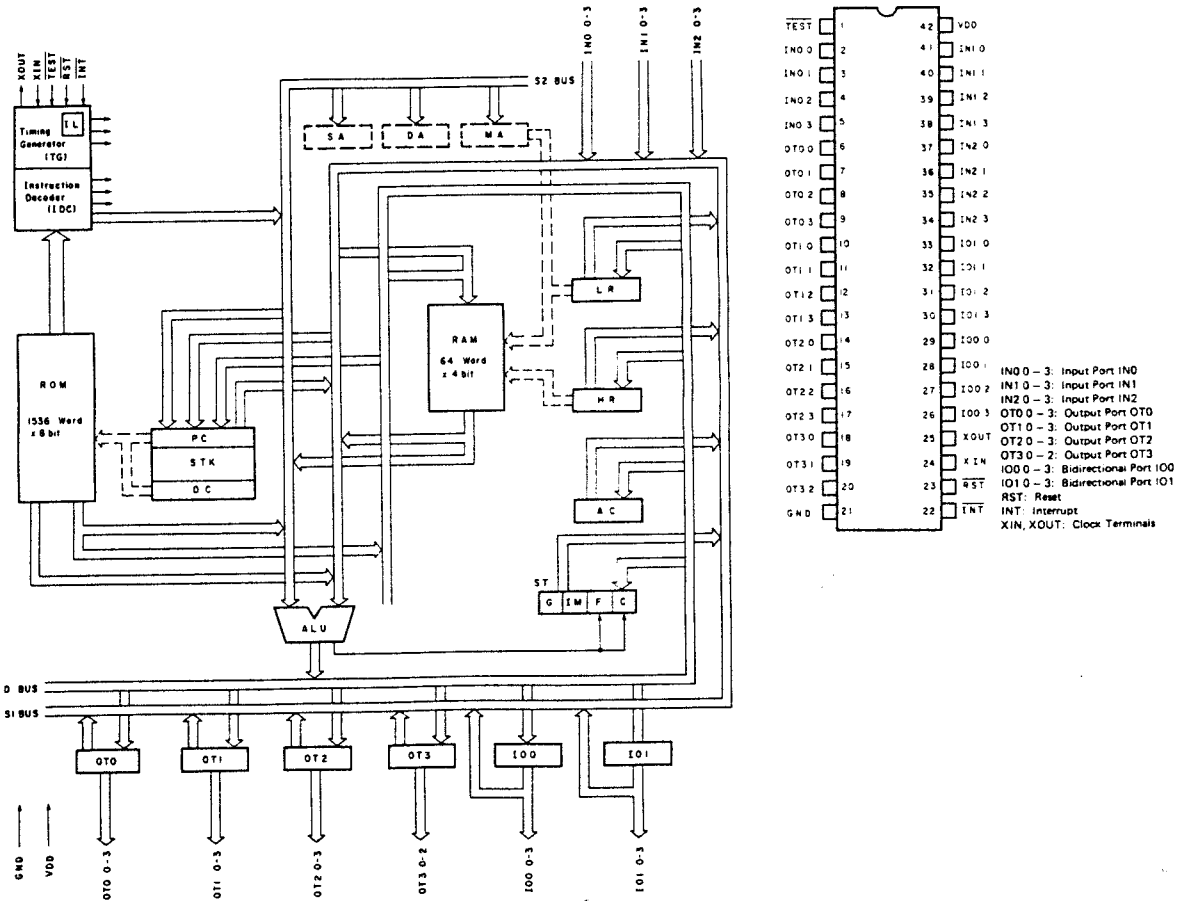


Fig. 7.2.8 4-Bit Micro-processor TMP4315BP-1814

7.3. Schematic Diagram

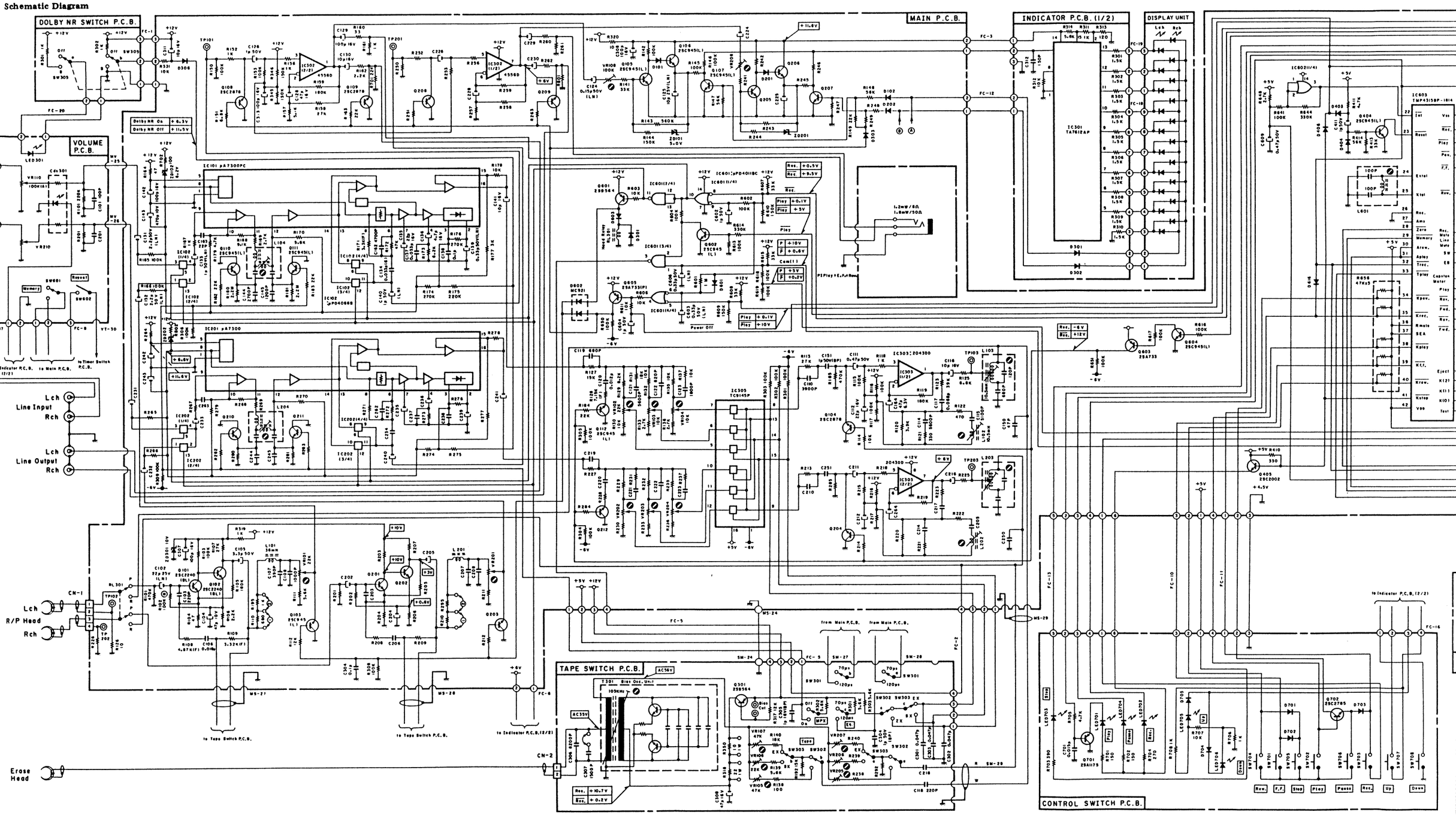


Fig. 7.3

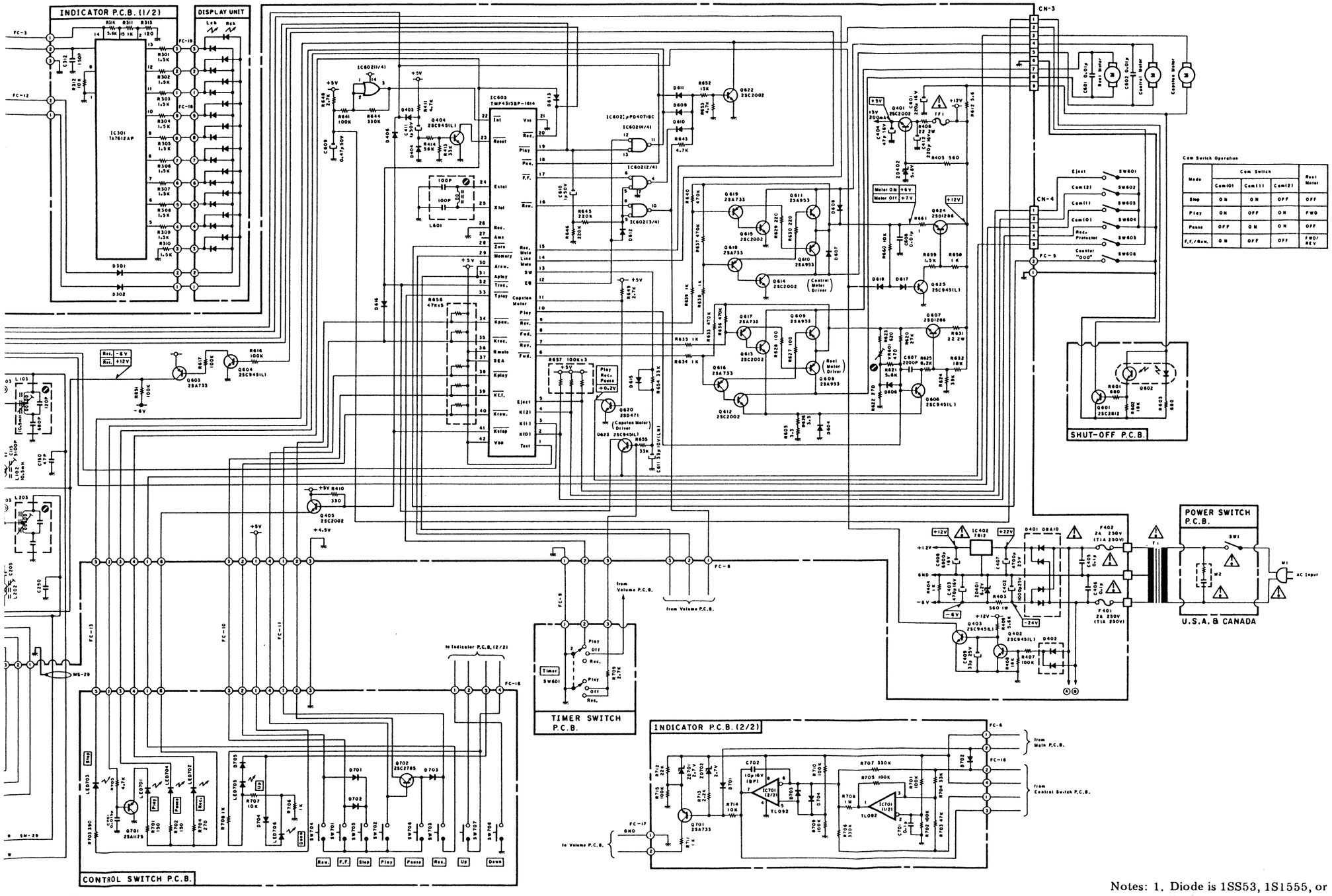


Fig. 7.3

WARNING:

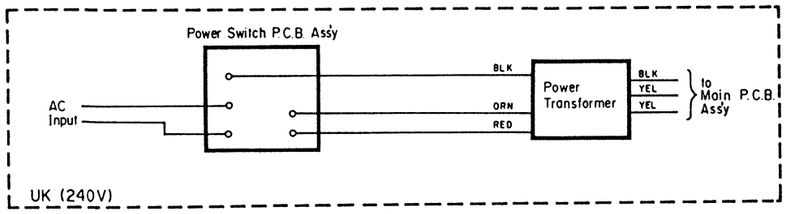
Parts marked with the symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

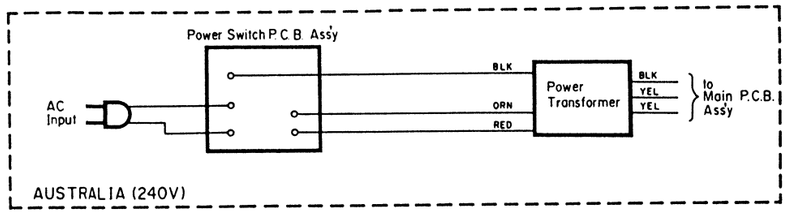
CAUTION:

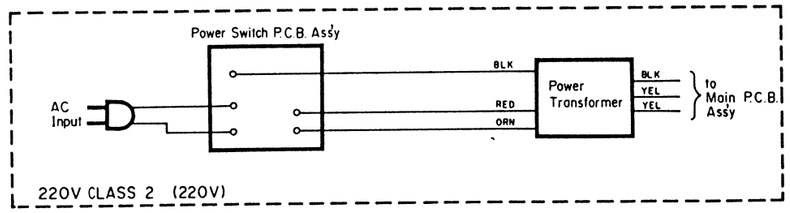
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.
WARNING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

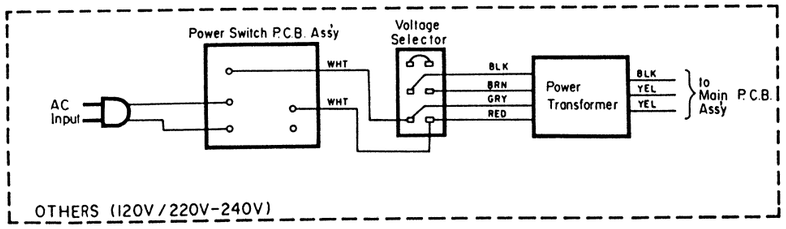
Notes: 1. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
2. Resistor and capacitor marked with * show typical value.
3. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
4. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.

8. WIRING DIAGRAM









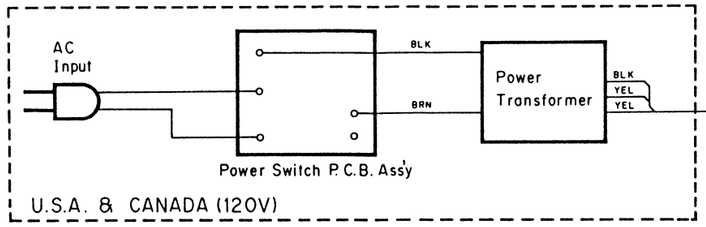


Fig. 8

Notes: 1. Table of wire colors

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

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

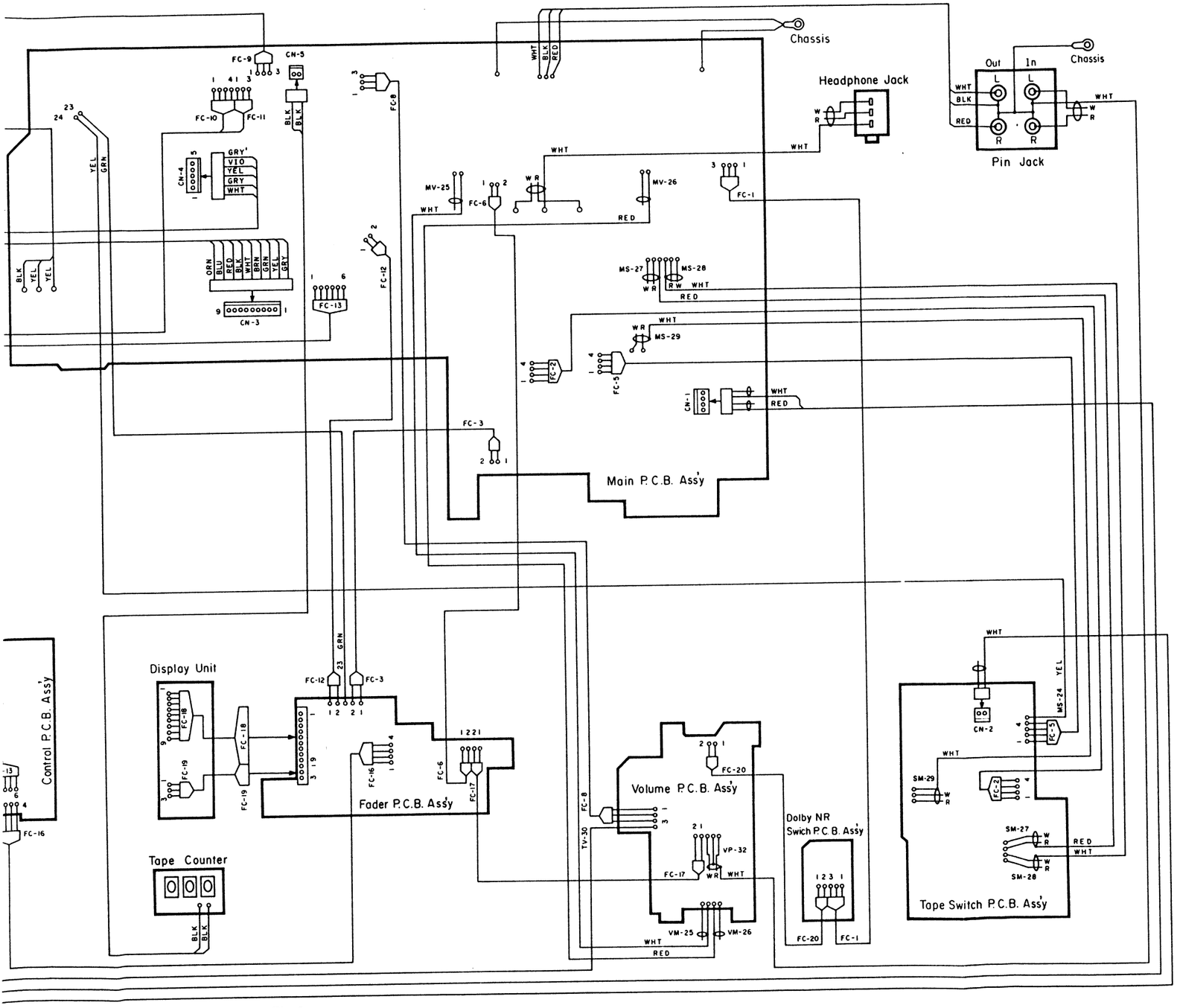

Chassis
Headphone Jack
Out
In
Chassis
Pin Jack
Main P.C.B. Assy
Display Unit
Fader P.C.B. Assy
Volume P.C.B. Assy
Dolby NR Swich P.C.B. Assy
Tape Switch P.C.B. Assy
Tape Counter
Control P.C.B. Assy
CN-1
CN-2
CN-3
CN-4
CN-5
FC-1
FC-2
FC-3
FC-5
FC-6
FC-8
FC-9
FC-10
FC-11
FC-12
FC-13
FC-16
FC-17
FC-18
FC-19
FC-20
MV-25
MV-26
MS-27
MS-28
MS-29
VM-25
VM-26
VP-32
SM-27
SM-28
SM-29
MS-24
TV-30
WHT
RED
BLK
YEL
GRN
GRY
VIO
ORN
BLU
BRN

Fig. 8

9. BLOCK DIAGRAMS

9.1. Amplifier Section

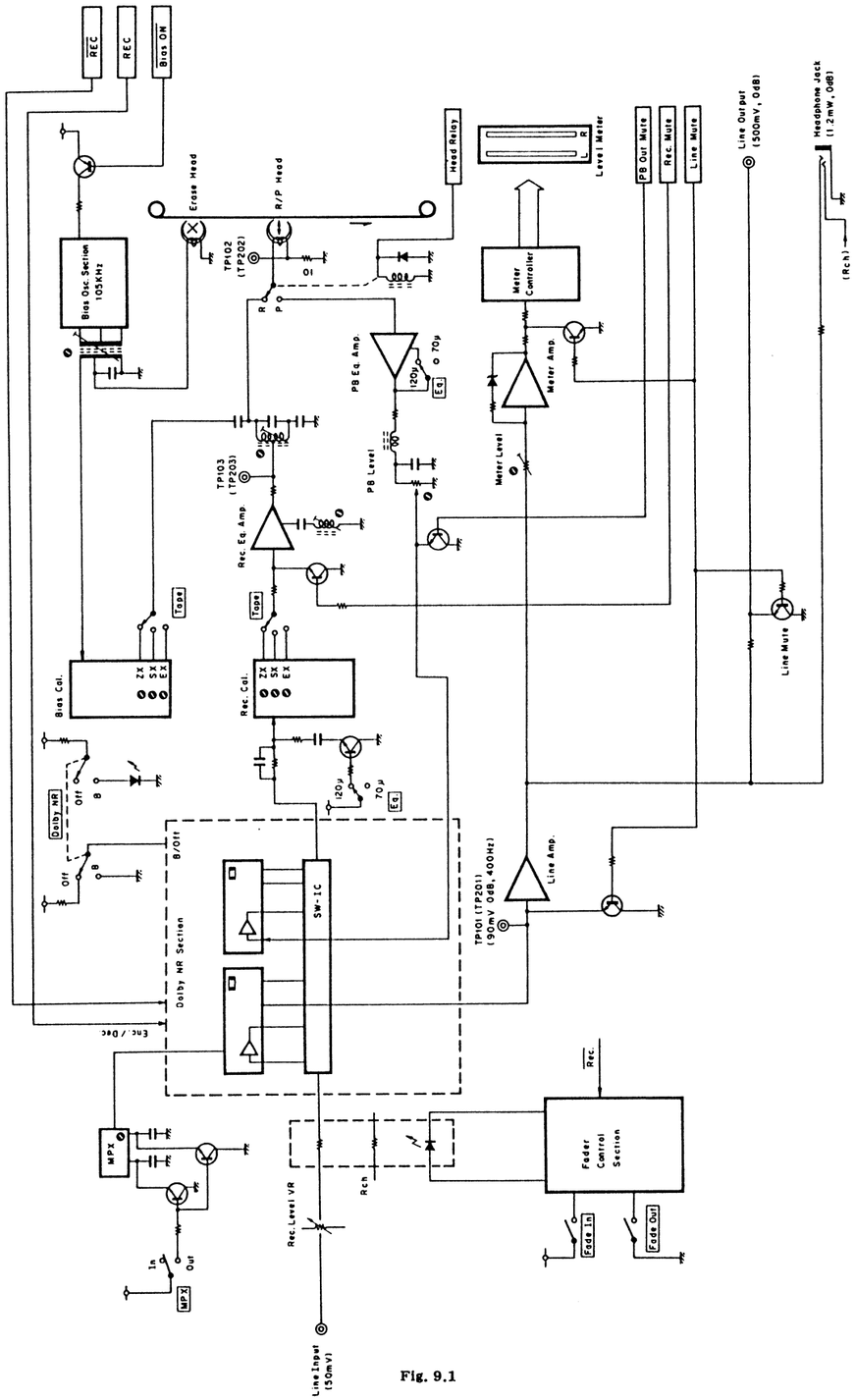


Fig. 9.1

9.2. Mechanism Control Section

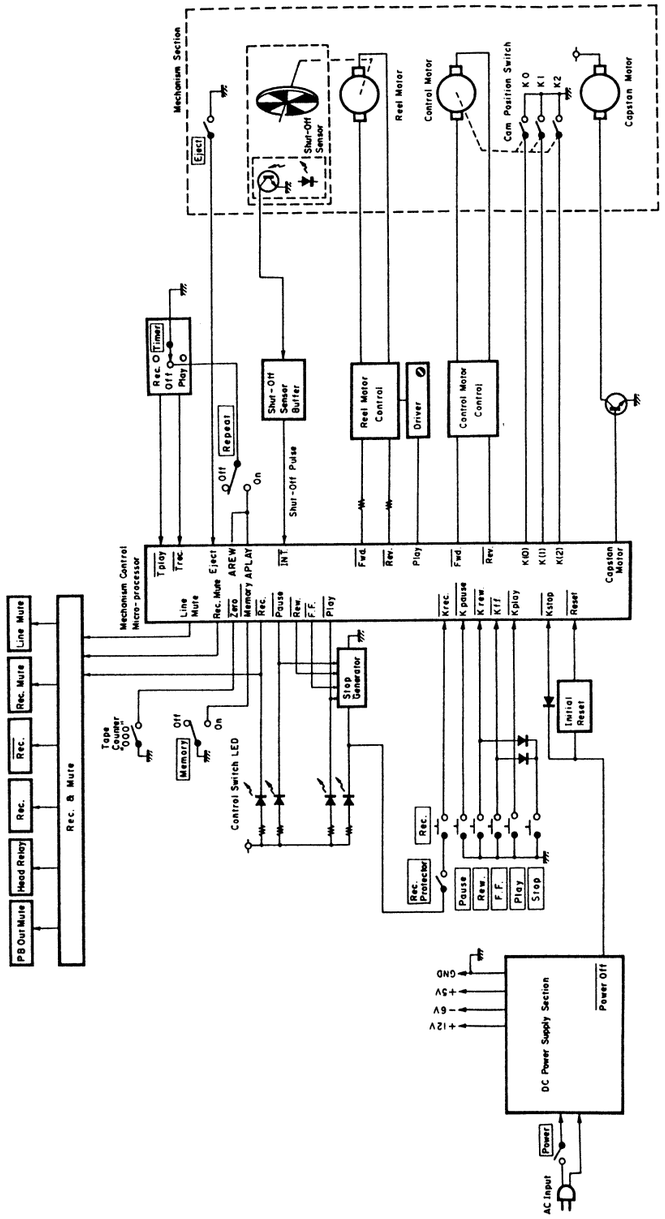


Fig. 9.2

10. TIMING CHART AND EQ. AMP. FREQUENCY RESPONSE

10.1. Timing Chart

(1) Overall Timing Chart

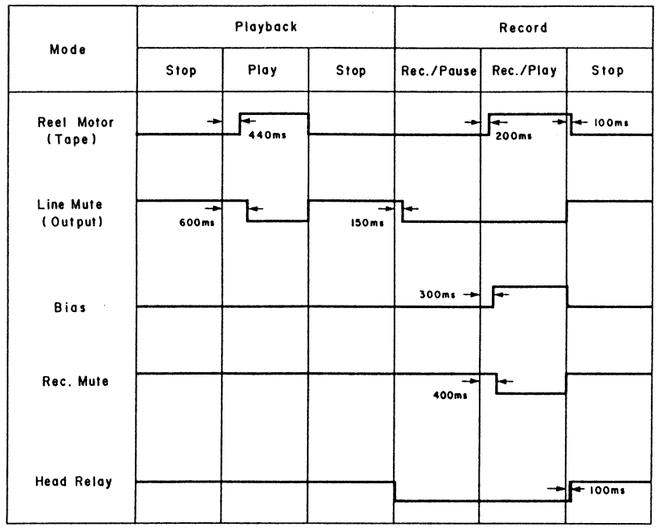


Fig. 10.1.1

(2) Mechanism Control Timing Chart

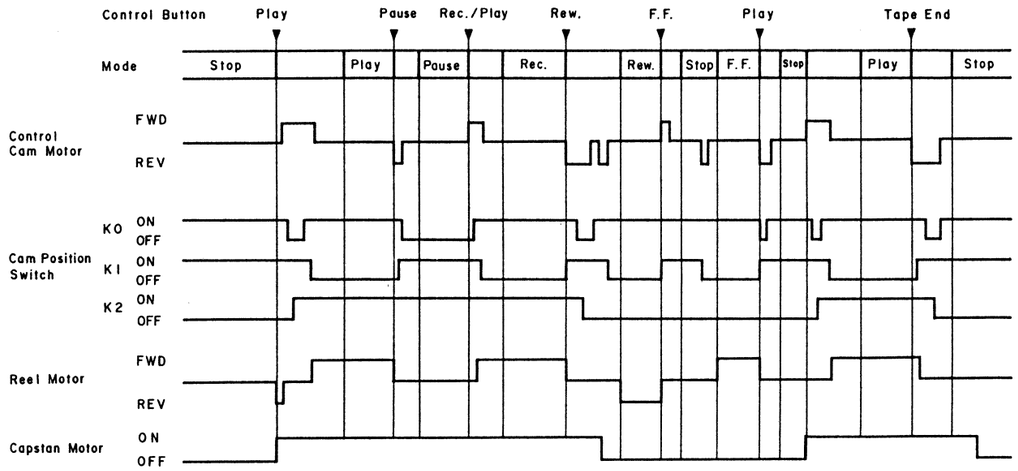


Fig. 10.1.2

10.2. Eq. Amp. Frequency Response

(1) Playback Frequency Response

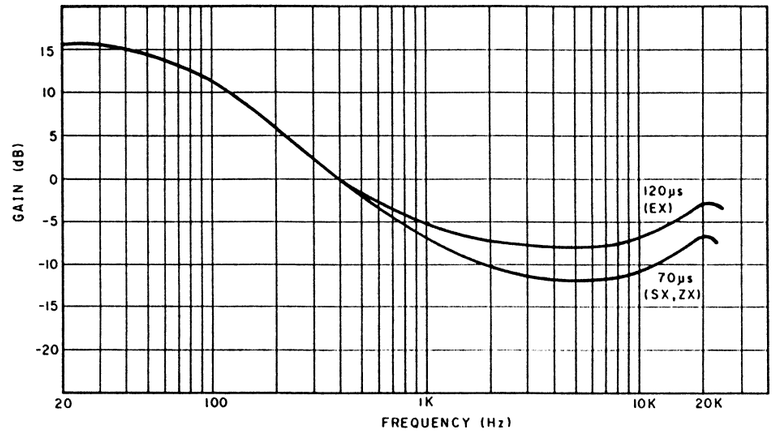


Fig. 10.2.1

(2) Record Current Frequency Response

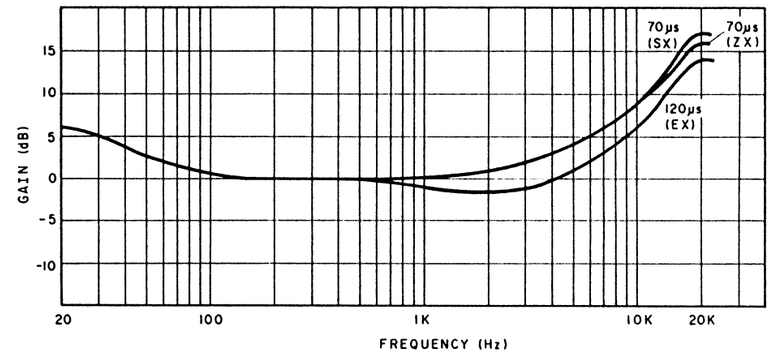


Fig. 10.2.2

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 240V AC; 50/60 Hz (According to country of sale)
Power Consumption	23 W max.
Tape Speed	1-7/8 ips. (4.8 cm/sec.) ±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	Dolby B-Type NR on <70 μs, ZX tape> Better than 62 dB (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 kΩ
Output (Line)	0.5 V (400 Hz, 0 dB) 2.2 kΩ
(Headphones)	1.2 mW (400 Hz, 0 dB) 8 Ω load
Fast-Winding Time	Approx. 85 seconds (with C-60 cassette)
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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