

# Service Manual

## Nakamichi Cassette Deck 2



CONTENTS

1.	General	1
2.	Removal Procedures	3
2. 1.	Top Cover Ass'y	3
2. 2.	Cassette Case Cover Ass'y	3
2. 3.	Mechanism Ass'y	3
2. 4.	Front Panel Ass'y	4
2. 5.	Main P.C.B. Ass'y	4
2. 6.	Power Supply & Logic P.C.B. Ass'y	4
2. 7.	Control Switch & Display P.C.B. Ass'y	5
3.	Test Tapes and Gauges	5
4.	Mechanical Adjustments	5
4. 1.	Tape Guide Height Check for Record/Playback Head and Erase Head	5
4. 2.	Head Base Stroke Check	5
4. 3.	Record/Playback Head Azimuth Alignment and Height Check	6
4. 4.	Pressure Adjustment of Pressure Roller	6
4. 5.	Tape Travelling Check	6
4. 6.	Eject Damper Adjustment	6
4. 7.	Reel Motor Speed Adjustment in Play Mode	6
4. 8.	Tape Speed Adjustment	6
4. 9.	Lubrication	7
5.	Parts Location for Electrical Adjustment	8
6.	Electrical Adjustments	11
7.	Mechanism Ass'y and Parts List	11
7. 1.	Synthesis	12
7. 2.	Front Panel Ass'y (A01)	12
7. 3.	Front Chassis Ass'y (A02)	13
7. 4.	Chassis Ass'y (A03)	14
7. 5.	Mechanism Ass'y (A04)	16
8.	Mounting Diagrams and Parts List	15
8. 1.	Main P.C.B. Ass'y	17
8. 2.	Power Supply & Logic P.C.B. Ass'y	18
8. 3.	Timer Switch P.C.B. Ass'y	18
8. 4.	Headphone P.C.B. Ass'y	19
8. 5.	Pin Jack P.C.B. Ass'y	19
8. 6.	Shut-off P.C.B. Ass'y	19
8. 7.	Control Switch & Display P.C.B. Ass'y	20
9.	Schematic Diagrams	20
9. 1.	IC Block Diagrams	23
9. 2.	Schematic Diagrams	25
10.	Wiring Diagram	26
11.	Block Diagrams	26
11. 1.	Amplifier Section	27
11. 2.	Mechanism Control Section	28
12.	Timing Charts and Eq. Amp. Frequency Response	28
12. 1.	Timing Charts	29
12. 2.	Eq. Amp. Frequency Response	30
13.	Specifications	

1. GENERAL

1.1. Production No.

Production No.: A327

1.2. Destinations

USA, CAN, EP, UK, AUS, SAU, OTR, JPN

Abbreviation

USA — U.S.A.	AUS — Australia
CAN — Canada	SAU — Saudi Arabia
EP — Europe	OTR — Other
UK — United Kingdom	JPN — Japan

1.3. Parts Supply

(1) Unstocked Parts


Parts marked with "★" at the head of part No. are not stocked. So, it takes time to supply the parts after we receive your order.

(2) Unsupplied Parts

Parts without part Nos. (indicated as "—" in the parts list) are not supplied.

1.4. CAUTIONS/WARNINGS

(1) Product Safety Notice

Parts marked with the symbol  in the schematic diagram 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.

(2) Leakage Current Check/Resistance Check

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.

1.5. Voltage Selector

Voltage selector is installed on the Rear Panel of the Nakamichi Cassette Deck 2 (Other & Saudi Arabia). The voltage selector can select either 110 V/127 V or 220 V/240 V at customer's disposal.

1.6. Package Ass'y and Accessory Ass'y

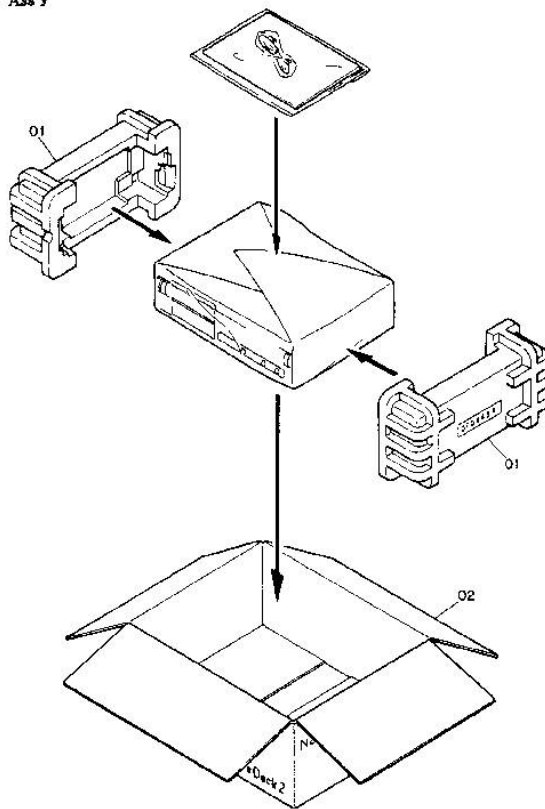


Fig. 1

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty
01	0F04434A	Package Ass'y	2		DA04397A	Accessory Ass'y (USA, CAN)	1
					DA04399A	Accessory Ass'y (EP)	1
02	0F04456A	Packing Carton Box	1		DA04406A	Accessory Ass'y (UK)	1
					DA04398A	Accessory Ass'y (AUS, SAU, OTR)	1
					DA04396A	Accessory Ass'y (JPN)	1
					OD06116A	Owner's Manual (English/French/Germany)	1
					OD06115A	Owner's Manual (Japanese)	1
					DA04388A	Pin-Pln Cord Ass'y	2

## 2. REMOVAL PROCEDURES

### 2.1. Top Cover Ass'y

Refer to Fig. 2.1.

- (1) Loosen screws F01 (2 pcs.) and F02 (4 pcs.), and remove F03 (Top Cover Ass'y).

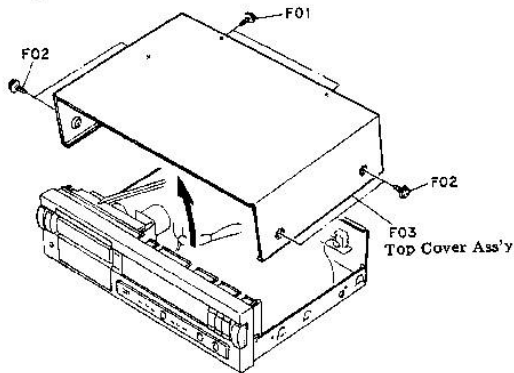


Fig. 2.1

### 2.2. Cassette Case Cover Ass'y

Refer to Fig. 2.2.

- (1) Press the Eject Knob Ass'y to open F01 (Cassette Case Cover Ass'y).
- (2) Pull F01 (Cassette Case Cover Ass'y) upward.

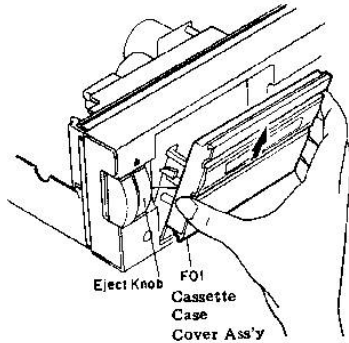


Fig. 2.2

### 2.3. Mechanism Ass'y

Refer to Fig. 2.3.

- (1) Remove the Top Cover Ass'y referring to item 2.1.
- (2) Remove the Cassette Case Cover Ass'y referring to item 2.2.
- (3) Loosen screws F01 (3 pcs.) and F02 (1 pce.).
- (4) Disconnect connectors (CN-4, CN-5, CN-6, CN-14 and CN-15).
- (5) Remove F03 (Mechanism Ass'y) in the direction of the arrow.

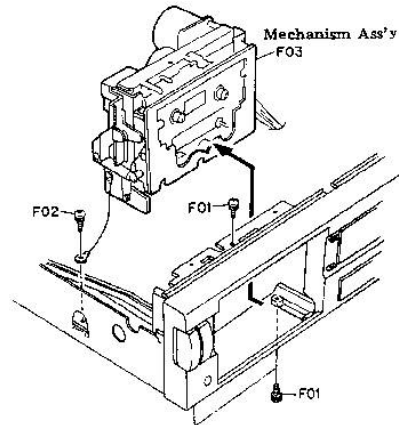


Fig. 2.3

### 2.4. Front Panel Ass'y

Refer to Figs. 2.4.1 and 2.4.2.

- (1) Remove the Top Cover Ass'y referring to item 2.1.
- (2) Loosen screws F03 (2 pcs.), F02 (1 pce.) and F08 (2 pcs.). See Fig. 2.4.1.
- (3) Press claws A (3 pcs.) downward to unhook them.
- (4) Disconnect a connector (CN-9) and remove F04 (Front Panel Ass'y). See Fig. 2.4.2.

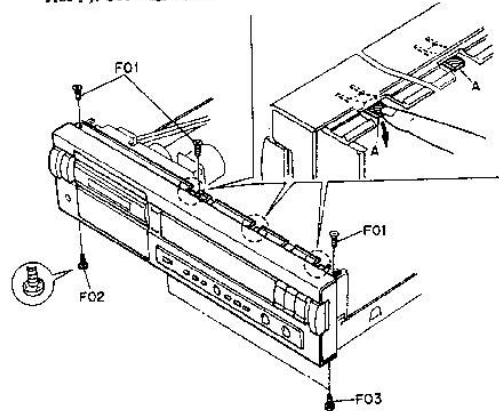


Fig. 2.4.1

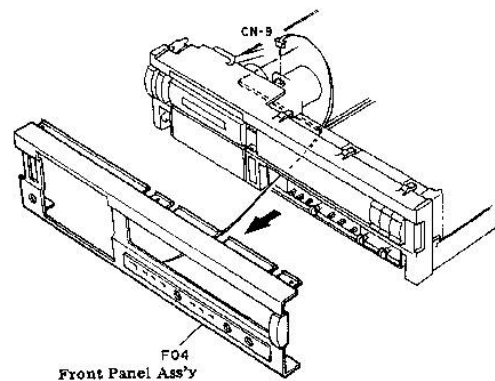


Fig. 2.4.2

### 2.5. Main P.C.B. Ass'y

Refer to Figs. 2.5.1 and 2.5.2.

- (1) Remove the Front Panel Ass'y referring to item 2.4.
- (2) Loosen screws F01 (4 pcs.), F02 (1 pce.) and F03 (2 pcs.). See Fig. 2.5.1.
- (3) Slide out F04 (Front Chassis Ass'y & Main P.C.B. Ass'y) forward.
- (4) Loosen screws F05 (2 pcs.) and F06 (2 pcs.), and remove F07 (Shield Plate). See Fig. 2.5.2.
- (5) Loosen screws F08 (2 pcs.) and remove F09 (Main P.C.B. Ass'y).

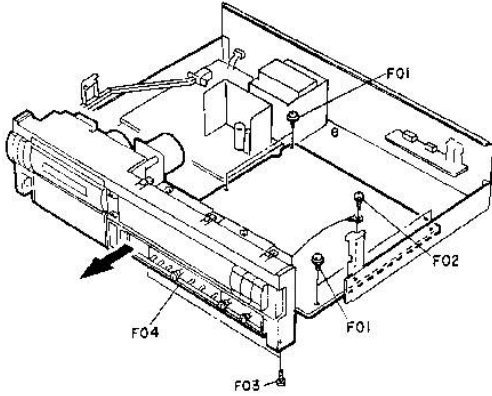


Fig. 2.5.1

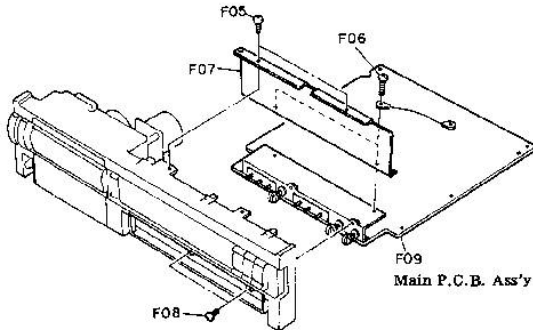


Fig. 2.5.2

### 2.6. Power Supply & Logic P.C.B. Ass'y

Refer to Fig. 2.6.

Caution: Unplug the power cord from the AC outlet.

- (1) Remove the Top Cover Ass'y referring to item 2.1.
- (2) Push F01 (Power Switch Joint) rearward (in the direction (A)).
- (3) Pull F01 (Power Switch Joint) forward (in the direction (B)) and lift it in the direction (C) to disengage F01 (Power Switch Joint) from the Power Switch.
- (4) Remove F01 (Power Switch Joint).
- (5) Loosen screws F02 (1 pce.), F03 (3 pcs.) and F04 (1 pce.), and remove F05 (Power Supply & Logic P.C.B. Ass'y).

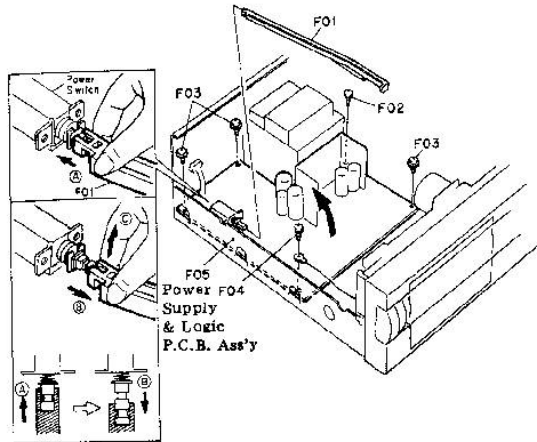


Fig. 2.6

### 2.7. Control Switch & Display P.C.B. Ass'y

Refer to Fig. 2.7.

- (1) Remove the Front Panel Ass'y referring to item 2.4.
- (2) Loosen screws F01 (2 pcs.) and F02 (2 pcs.), and remove F03 (Shield Plate).
- (3) Loosen screws F04 (2 pcs.), unhook claws (5 pcs.), and remove F05 (Control Switch & Display P.C.B. Ass'y).

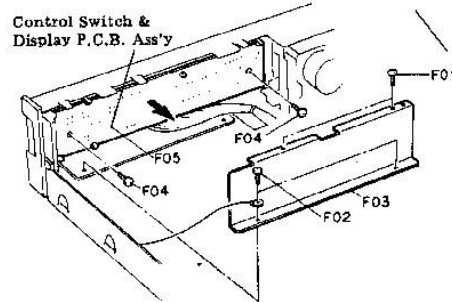


Fig. 2.7

### 3. TEST TAPES AND GAUGES

- (1) 400 Hz Level Tape (DA09005B)
- (2) 1 kHz Track Alignment Tape (DA09007B)
- (3) 10 kHz PB Frequency Response Tape (DA09003B)
- (4) 15 kHz PB Frequency Response Tape (DA09002B)
- (5) 20 kHz PB Frequency Response Tape (DA09001B)
- (6) 15 kHz Azimuth Tape (DA09004B)
- (7) 3 kHz Speed and Wow/Flutter Tape (DA09008C)
- (8) Tape Travelling Cassette (DA09071A)
- (9) Reference EX II Tape (DA09111A)
- (10) Reference SX Tape (DA09110A)
- (11) Reference ZX Tape (DA09109A)
- (12) Head Alignment Gauge (DA09092B)
- (13) Torque Gauge FWD (DA09082A)

### 4. MECHANICAL ADJUSTMENTS

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

With use of a Head Alignment Gauge (DA09092B), 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 Head Alignment Gauge (DA09092B). Refer to Fig. 4.1.

- (1) Record/Playback Head Tape Guide Height
  - (a) Load the base of the Head Alignment Gauge (DA09092B) carefully and set the cassette deck in Play mode.
  - (b) Place the small block of the Head Alignment Gauge (DA09092B) 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 Head Alignment Gauge (DA09092B) carefully and set the cassette deck in Play mode.
  - (b) Place the small block of the Head Alignment Gauge (DA09092B) 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.

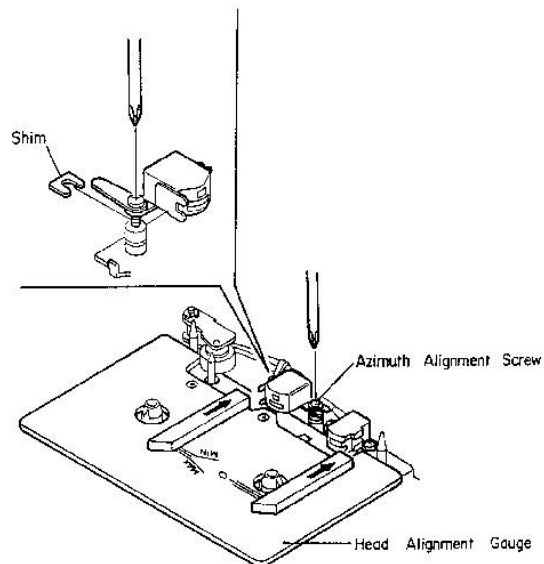


Fig. 4.1

#### 4.2. Head Base Stroke Check

Refer to Fig. 4.2.

- (1) Load the base of the Head Alignment Gauge (DA09092B) 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 Head Alignment Gauge (DA09092B) 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 Fig. 4.2.

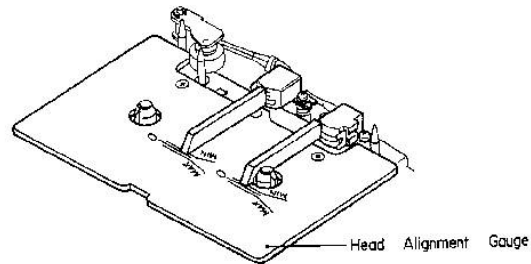


Fig. 4.2

#### 4.3. Record/Playback Head Azimuth Alignment and Height Check

Refer to Fig. 4.1.

- (1) Contact an AC voltmeter to the Output Jacks.
- (2) Load a 15 kHz Azimuth Tape (DA09004B) and 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) and set the cassette deck in Play mode.
- (5) Check to insure that the readings of both channels on the AC voltmeter 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.

**4.4. Pressure Adjustment of Pressure Roller**  
Refer to Fig. 4.3.

- (1) In Play mode, measure the Pressure of the Pressure Roller against the capstan and check whether the pressure is in a range of  $360 \pm 40$  g.
- (2) If pressure is out of the range, correct it by changing the installation point of the Pressure Roller Spring.

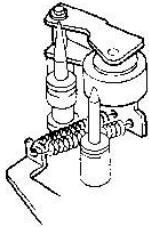


Fig. 4.3

**4.5. Tape Travelling Check**

Load a Tape Travelling Cassette (DA09071A) and set the cassette deck in Play mode to check the followings:

- (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.

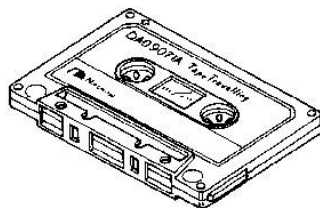


Fig. 4.4

**4.6. Eject Damper Adjustment**

Refer to Fig. 4.5. 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 action by the Damper Adjustment Screw.

- CCW: Damper moves fast.  
CW: Damper moves slowly.

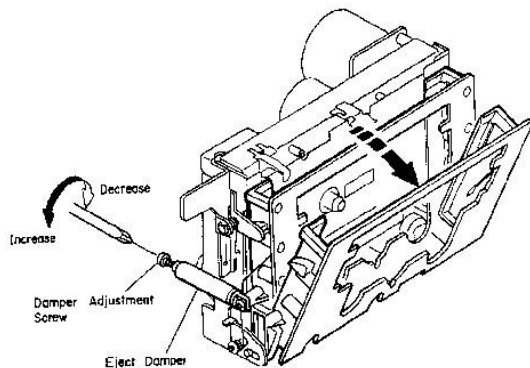


Fig. 4.5

**4.7. Reel Motor Speed Adjustment in Play Mode**

- (1) Load a Torque Gauge FWD (DA09082A) and set the cassette deck in Play mode.
- (2) After 5 to 10 seconds, adjust VR501 on the Power Supply & Logic P.C.B. Ass'y to obtain exactly 45 g-cm on the torque gauge.
- (3) Check that the back tension is in a range of 1.5 to 5 g-cm.

**4.8. Tape Speed Adjustment**

Refer to Fig. 4.6.

- (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.

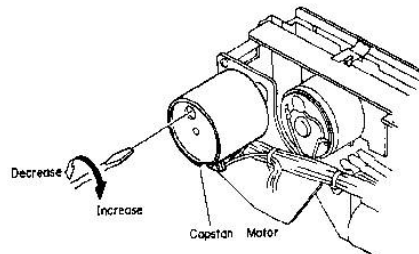


Fig. 4.6

**4.9. Lubrication**

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

- (1) Molykote (R) 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 (EP-56)  
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 (R) Grease (X5-6020)  
Dowcoming Co., Ltd., 1-16-1 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, Chuoh-ku, Tokyo, Japan

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENTS

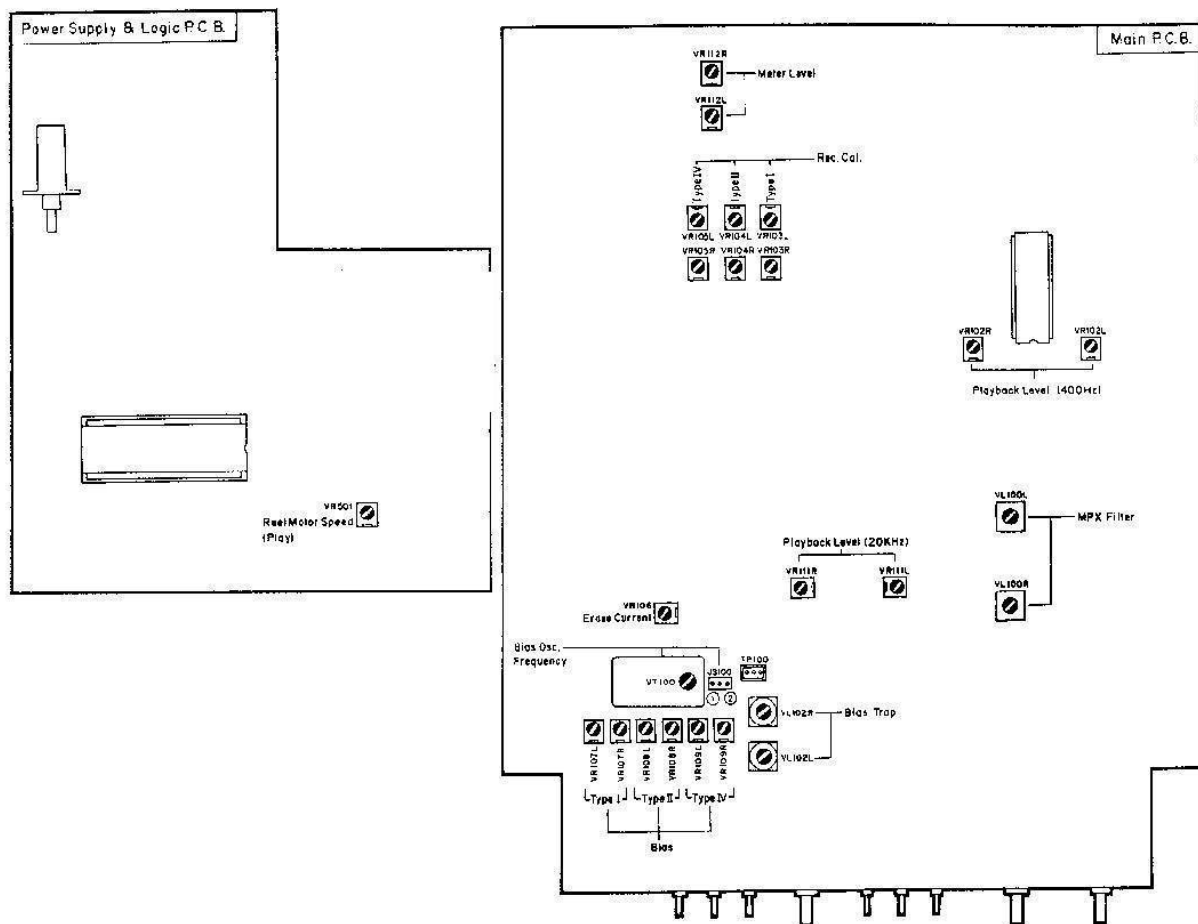
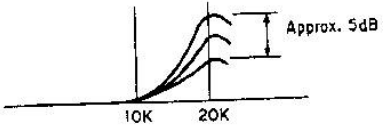
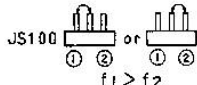



Fig. 5



6. ELECTRICAL ADJUSTMENTS

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Preliminary Step			Balance - Center Bias Tune - Center Tape - Type IV MPX Filter - OFF Dolby NR - OFF		Set the Cassette Deck 2 as shown in MODE.
2	Reel Motor Speed Adjustment (Play)	Torque Gauge FWD (DA09082A)		Playback	Power Supply & Logic P.C.B. VR501	1. Play back a Torque Gauge FWD and adjust VR501 to obtain 45 g-cm on the torque gauge. 2. Check that the deviation of the torque value is within $\pm 5$ g-cm of the center value.
3	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006C)	Frequency Counter to Output Jacks	Playback Tape - Type IV	Tape Speed Adj. Volume (Capstan Motor)	Adjust the volume incorporated in the capstan motor to obtain 3 kHz $\pm 15$ Hz on the frequency counter.
4	Meter Level Calibration	400 Hz to Input Jacks	AC Voltmeter to Output Jacks	Record, Pause	Main P.C.B. VR112L VR112R	1. Feed in 400 Hz and adjust the Rec Level control to obtain 500 mV $-0.5$ dB on the AC voltmeter. 2. Adjust VR112L (VR112R) so that the 0 dB segment of the level meter starts illuminating.
5	MPX Filter Adjustment	19 kHz $\pm 100$ Hz to Input Jacks	AC Voltmeter to Output Jacks	Record, Pause MPX - OFF/ON	Main P.C.B. VL100L VL100R	1. Adjust the Rec Level control to obtain 500 mV (0 dB) on the AC voltmeter. 2. Set the MPX Filter switch to ON and adjust VL100L (VL100R) to obtain minimum reading on the AC voltmeter (minimum reading will be less than $-30$ dB).
6	Record/Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004B)	AC Voltmeter to Output Jacks	Playback Dolby NR - OFF MPX - OFF Tape - Type IV	Record/Playback Head Azimuth Alignment Screw	Adjust the Record/Playback Head Azimuth Alignment Screw to obtain maximum readings for both channels on the AC voltmeter.
7	Playback Level Calibration	400 Hz Level Tape (DA09005B)	AC Voltmeter to Output Jacks	Same as above	Main P.C.B. VR102L VR102R	Adjust VR102L (VR102R) to obtain 500 mV on the AC voltmeter.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
8	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)	AC Voltmeter to Output Jacks	Playback Dolby NR - OFF MPX - OFF Tape - Type IV	Main P.C.B. VR111L VR111R	<ol style="list-style-type: none"> <li>Load a 400 Hz level tape, play it back, and read the playback level.</li> <li>Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and play them back. Adjust the record/playback head azimuth to obtain maximum readings for both channels on the AC voltmeter with each tape. Check that the playback levels are as follows with respect to the level for 400 Hz level tape. 10 kHz: -20 dB -2 to +2 dB 15 kHz: -20 dB -2 to +3 dB 20 kHz: -20 dB -2 to +4 dB If the level at 20 kHz is out of the range, adjust VR111L (VR111R) to obtain satisfactory results. VR111L (VR111R) compensates the playback frequency response at 20 kHz as shown below:</li> </ol>  <ol style="list-style-type: none"> <li>Conduct step 6 "Record/Playback Head Azimuth Alignment".</li> </ol>
9	Bias Oscillation Frequency and Erase Current Adjustment	None	Frequency Counter between terminals 1 and 2 of CN15 on Main P.C.B. and AC Voltmeter across the additional 0.1 ohm resistor	Record, Pause Tape - Type I Dolby NR - OFF MPX - OFF	Main P.C.B. VI100 JS100 VR106	<ol style="list-style-type: none"> <li>Connect an additional 0.1 ohm resistor in series to the Erase Head and connect the AC voltmeter across it.</li> <li>Adjust VI100 to obtain 105 kHz <math>\pm</math> 1 kHz on the frequency counter. If bias oscillation frequency is above 106 kHz, short-circuit JS100 with a jumper wire as shown left and re-adjust VI100 again.</li> <li>Adjust VR106 to obtain 20 mV (200 mA) on the AC voltmeter.</li> <li>After completion of the erase current adjustment, re-check the bias oscillation frequency.</li> <li>Remove the additional 0.1 ohm resistor.</li> </ol>
		[Serial No.: A32705801]		[Serial Nos.: A32701001-05800]		
						
10	Bias Trap Adjustment (Record Amp.)	None (remove input signals)	AC Voltmeter between pins 1 (Lch) and 2 (GND) or 3 (Rch) and 2 (GND) of TP100 on Main P.C.B.	Same as above	Main P.C.B. VL102L VL102R	Adjust VL102L (VL102R) to obtain minimum reading on the AC voltmeter.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
11	Record Level Calibration and Recording Bias Current Adjustment	400 Hz (0 dB) 18 kHz (-20 dB) to Input Jacks	AC Voltmeter and Distortion Meter to Output Jacks	Record and Playback Tape - Type IV/II/ I Dolby NR - OFF/C MPX - OFF	Main P.C.B. (Level) Type IV VR105L VR105R Type II VR104L VR104R Type I VR103L VR103R  (Bias) Type IV VR109L VR109R Type II VR108L VR108R Type I VR107L VR107R	Adjustment should be made in the order of ZX, SX and EX tapes.  1. Set the cassette deck in Record/Pause mode. 2. Feed in 400 Hz and adjust the Rec Level control to obtain 500 mV (0 dB) on the AC voltmeter. 3. Load a reference ZX tape, reference SX tape and reference EXII tape. 4. Set the Dolby NR switch to OFF. 5. Feed in 400 Hz (0 dB) and record, rewind, and play it back. Adjust VR105L (VR105R) for ZX tape, VR104L (VR104R) for SX tape and VR103L (VR103R) for EXII tape so that the played back output levels are 500 mV (0 dB) on the AC voltmeter. 6. Set the Dolby NR switch to C. 7. Feed in 18 kHz (-20 dB) and record, rewind, and play it back. Adjust VR109L (VR109R) for ZX tape, VR108L (VR108R) for SX tape and VR107L (VR107R) for EXII tape so that the played back output levels are 50 mV (-20 dB) on the AC voltmeter. 8. Repeat above 4 to 8 two or three times. 9. Set the Dolby NR switch to OFF. 10. Feed in 400 Hz (0 dB) and record, rewind, and play it back. Check to insure that the total harmonic distortion is less than 1.2% for ZX and EXII tapes and 1.6% for SX tape. If the total harmonic distortion exceeds the specified value, re-adjust VR111L (VR111R) in Step 8 "Playback Frequency Response Adjustment", and repeat above steps till satisfactory results are obtained.

## 7. MECHANISM ASS'Y AND PARTS LIST

### 7.1. Synthesis

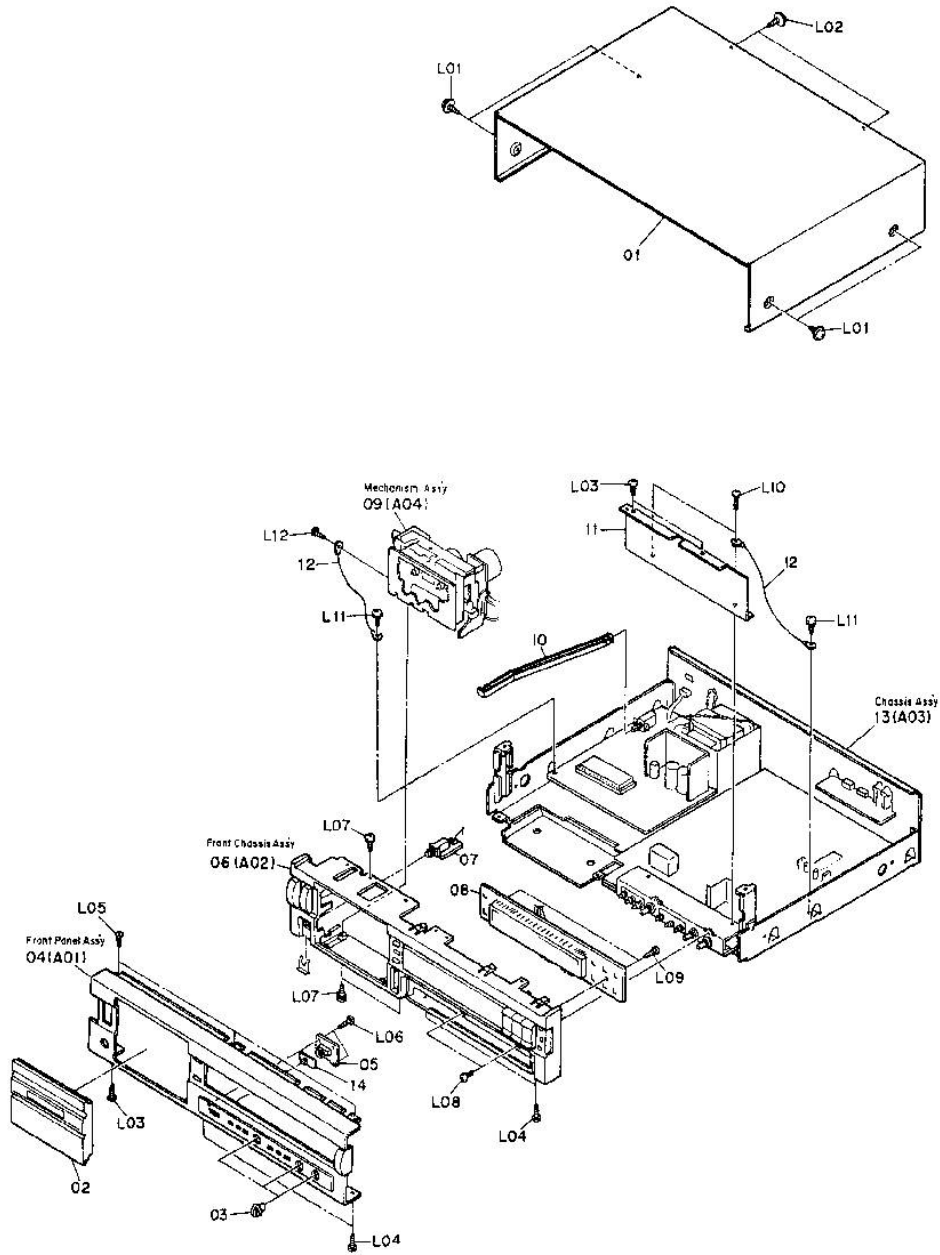


Fig. 7.1

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Qty
<b>7.1. Synthesis</b>			
		<b>Synthesis</b>	
01	0H05710A	Top Cover	1
02	* HA05935A	Cassette Case Cover Ass'y	1
03	0H05711A	Volume Knob	3
04	* HA05930A	Front Panel Ass'y	1
05	* BA07947A	Timer Switch P.C.B. Ass'y	1
06	—	Front Chassis Ass'y	1
07	* BA07960A	Headphone P.C.B. Ass'y	1
08	* BA07945A	Control Switch & Display P.C.B. Ass'y	1
09	* CA09049A	Mechanism Ass'y	1
10	0J06253A	Power Switch Joint	1
11	0J06259A	Shield Plate	1
12	0B83916A	Mechanism GND Wire Ass'y	2
13	—	Chassis Ass'y	1
14	0H05824A	Slide Knob	1
L01	0E03032A	BT4x8 @ Binding Washer Faced (Black Chromate)	1
L02	0E03632A	BT3x8 @ Binding Washer Faced (Black Chromate)	1
L03	0E03366A	BT3x8 @ Binding (Black Chromate)	1
L04	0E00921A	BT3x8 @ Binding (Black Chromate)	1
L05	0E03054A	BT3x8 @ Countersunk	1
L06	0E00860A	BT3x6 @ Binding	1
L07	0E03212A	BT2.6x6 @ Binding with Toothed Lock Washer	1
L08	0E00896A	M3x6 @ Binding	1
L09	0E00868A	BT3x8 @ Binding (Black Chromate)	1
L10	0E03551A	M3x8 @ Binding Projected	1
L11	0E03157A	BT3x6 @ Binding with Washer	1
L12	0E00859A	BT2.6x6 @ Binding	1
<b>7.2. Front Panel Ass'y (A01)</b>			
A01	HA05930A	Front Panel Ass'y	1
01	0H05714A	Dummy Cap	1
02	0J06253A	Push Knob Spring	6
03	0H05818A	Push Knob	6
L01	0E00855A	BT2x6 @ Binding	6
<b>7.3. Front Chassis Ass'y (A02)</b>			
A02	—	Front Chassis Ass'y	1
01	0H05723A	Power Switch Button	1
02	0C09392A	Power Switch Spring	1
03	HA05929A	Eject Knob Ass'y	1
04	0J06252A	Eject Spring	1
05	0H05716A	Control Knob A	2
06	0H05825A	Tact Knob	2

7.2. Front Panel Ass'y (A01)

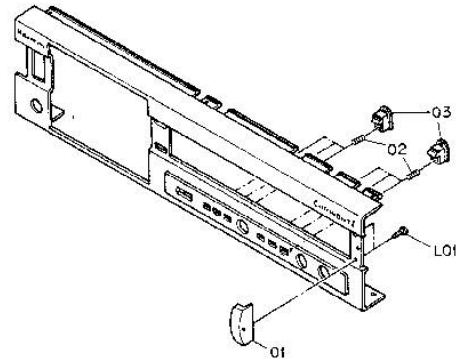


Fig. 7.2

7.3. Front Chassis Ass'y (A02)

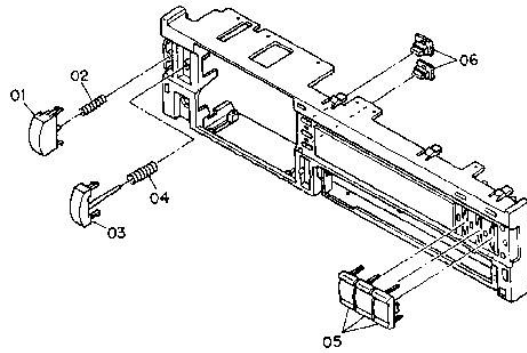


Fig. 7.3

7.4. Chassis Ass'y (A03)

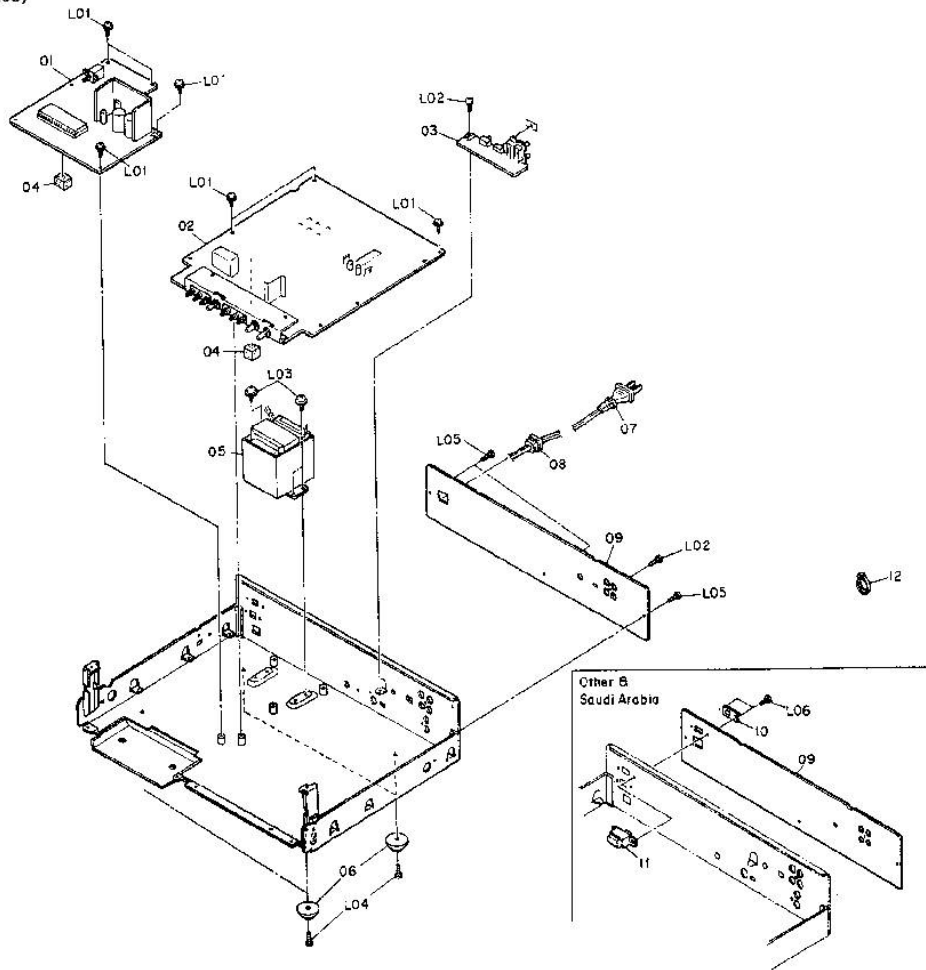


Fig. 7.4

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty
7.4. Chassis Ass'y				08	0B90280A	Cord Bushing (USA, CAN, EP, AUS)	1
A03	—	Chassis Ass'y	1	08	0B90283A	Cord Bushing (UK, SAU, OTR, JPN)	1
01	* BA07944A	Power Supply & Logic P.C.B. Ass'y (USA, CAN, EP, UK, AUS, SAU, OTR)	1	09	0H05830A	Rear Panel (USA, CAN, EP, UK, AUS, JPN)	1
01	* BA07961A	Power Supply & Logic P.C.B. Ass'y (JPN)	1	10	0H05847A	Rear Panel (SAU, OTR)	1
02	* BA07959A	Main P.C.B. Ass'y	1	11	0M05611A	Voltage Lock Plate (OTR, SAU)	1
03	* BA07946A	Pin Jack P.C.B. Ass'y	1	11	0B07092U	Voltage Selector Switch (SAU, OTR)	1
04	0J06267A	P.C.B. Cushion	5	12	0B90019A	Insu-Lock	2
05	0B50176A	Power Transformer 120V (USA, CAN)	1	L01	0E03157A	BT3x3 ⌀ Binding With Washer	
	0B50178A	Power Transformer 230V (EP, UK, AUS)	1	L02	0E03366A	BT3x3 ⌀ Binding Projected (Black Chromate)	
	0B50177A	Power Transformer (SAU, OTR)	1	L03	0E03592A	BT4x6 ⌀ Binding Washer Faced (Black Chromate)	
	0B50175A	Power Transformer 100V (JPN)	1	L04	0E03012A	BT3x12 ⌀ Binding (Black Chromate)	
06	HA05833A	Leg Ass'y	4	L05	0E00860A	BT3x6 ⌀ Binding (Black Chromate)	
07	0B08504A	Power Cord (USA, CAN)	1	L06	0E00985A	M3x6 ⌀ Binding (Black Chromate) (SAU, OTR)	
	0B08093U	Power Cord (EP)	1				
	0B08348A	Power Cord (UK)	1				
	0B05241A	Power Cord (AUS)	1				
	0B08219B	Power Cord (JPN)	1				
	0B08533A	Power Cord (SAU, OTR)	1				

7.5. Mechanism Assy (A04)

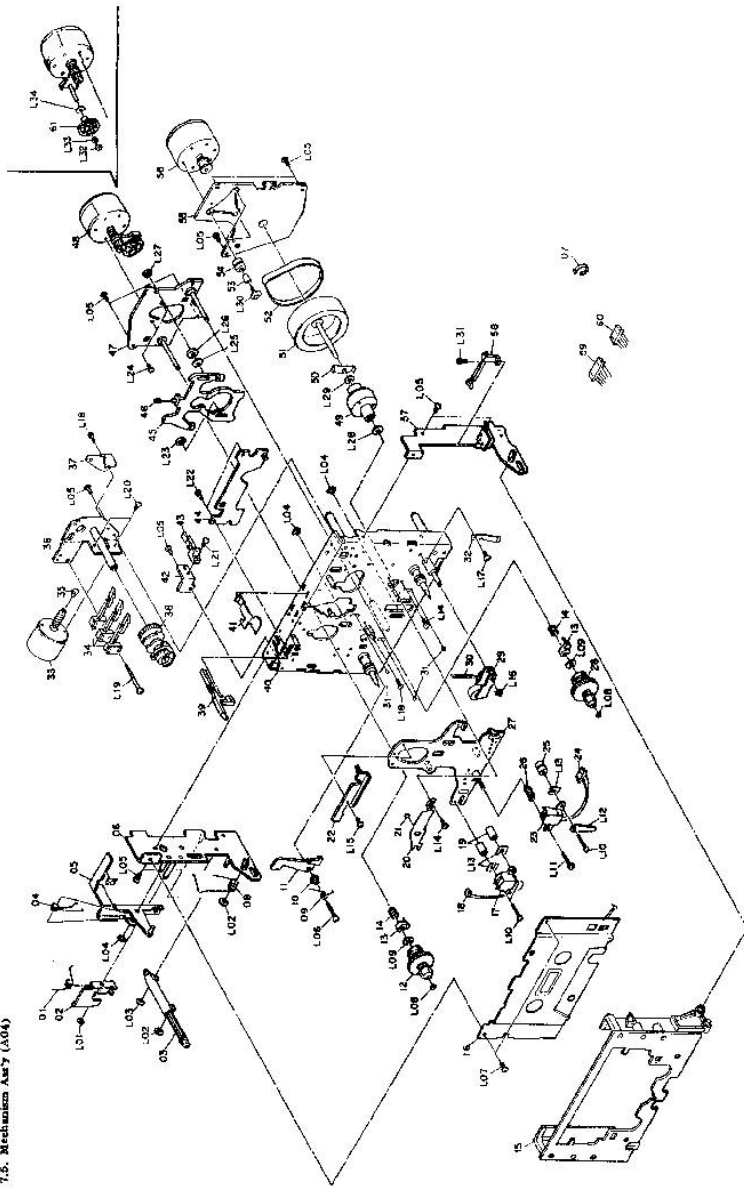
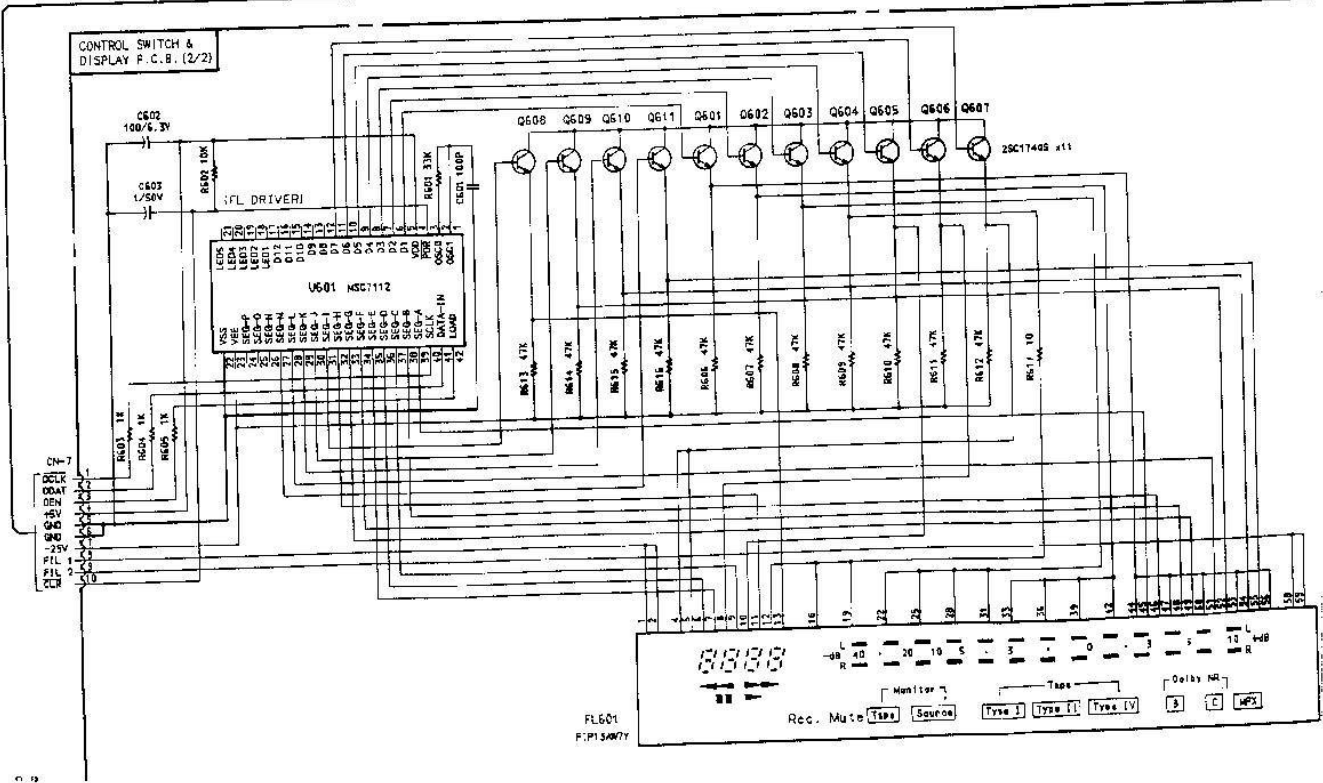
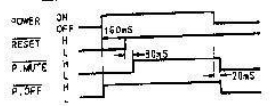
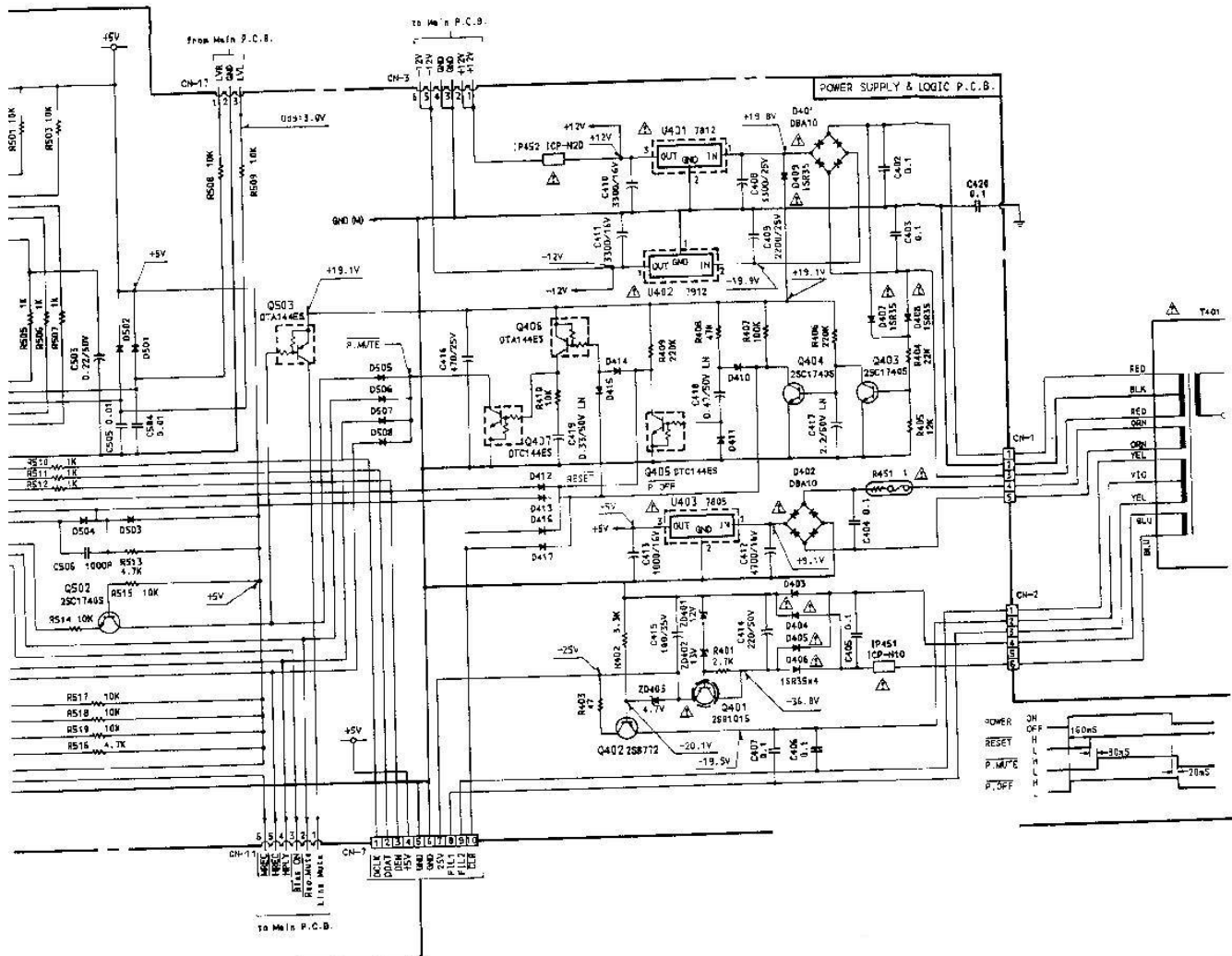


FIG. 7.5

\* Unassembled parts.

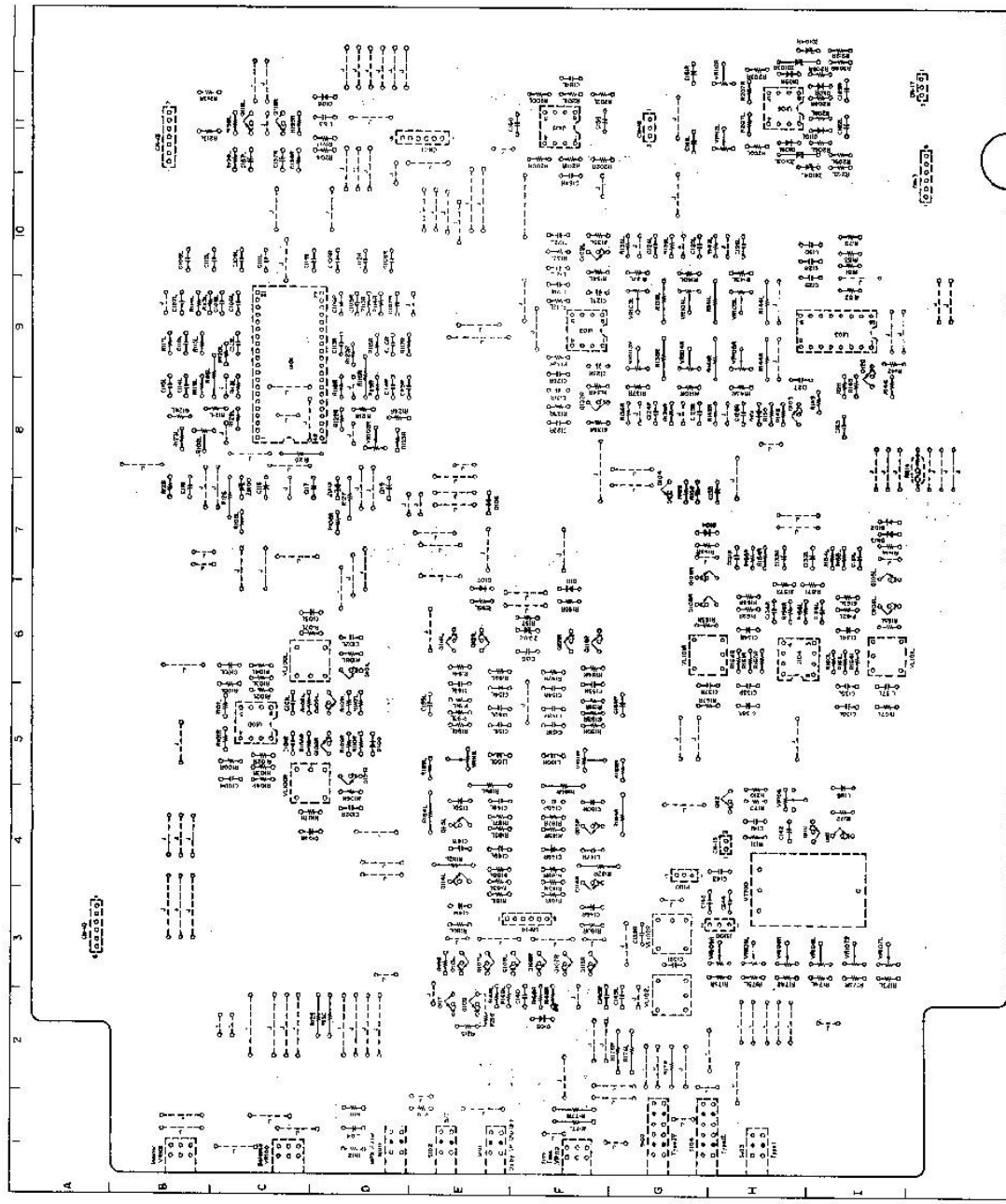
Schematic Ref. No.	Part No.	Description	QTY
A04	CA09049A	Mechanism Assy	1
01	0C85310A	Elect Arm Spring	1
02	0C85309A	Elect Arm	1
03	CA09006A	Danger Assy	1
04	0C85411A	Elect Lever A	1
05	0C85414A	Elect Lever B	1
06	0C85301A	Cassette Case Holder L	1
07	0C85302A	Cassette Case Holder R	1
08	0C850018B	Spool Spring	1
09	0C850013A	Tack Lever Spring	1
10	0C85115A	Tack Lever Collar	1
11	0C85075A	Take-up Reel Rub Assy	1
12	CA090725A	Spring Holder	1
13	0C850412A	Spring Holder	1
14	CA090021A	Cassette Case Assy	1
15	CA090021A	Cassette Case Assy	1
16	CA090021A	Cassette Case Assy	1
17	CA090021A	Cassette Case Assy	1
18	CA090021A	Cassette Case Assy	1
19	CA090021A	Cassette Case Assy	1
20	CA090021A	Cassette Case Assy	1
21	CA090021A	Cassette Case Assy	1
22	CA090021A	Cassette Case Assy	1
23	CA090021A	Cassette Case Assy	1
24	CA090021A	Cassette Case Assy	1
25	CA090021A	Cassette Case Assy	1
26	CA090021A	Cassette Case Assy	1
27	CA090021A	Cassette Case Assy	1
28	CA090021A	Cassette Case Assy	1
29	CA090021A	Cassette Case Assy	1
30	CA090021A	Cassette Case Assy	1
31	CA090021A	Cassette Case Assy	1
32	CA090021A	Cassette Case Assy	1
33	CA090021A	Cassette Case Assy	1
34	CA090021A	Cassette Case Assy	1
35	CA090021A	Cassette Case Assy	1
36	CA090021A	Cassette Case Assy	1
37	CA090021A	Cassette Case Assy	1
38	CA090021A	Cassette Case Assy	1
39	CA090021A	Cassette Case Assy	1
40	CA090021A	Cassette Case Assy	1
41	CA090021A	Cassette Case Assy	1
42	CA090021A	Cassette Case Assy	1
43	CA090021A	Cassette Case Assy	1
44	CA090021A	Cassette Case Assy	1
45	CA090021A	Cassette Case Assy	1
46	CA090021A	Cassette Case Assy	1
47	CA090021A	Cassette Case Assy	1
48	CA090021A	Cassette Case Assy	1
49	CA090021A	Cassette Case Assy	1
50	CA090021A	Cassette Case Assy	1
51	CA090021A	Cassette Case Assy	1
52	CA090021A	Cassette Case Assy	1
53	CA090021A	Cassette Case Assy	1
54	CA090021A	Cassette Case Assy	1
55	CA090021A	Cassette Case Assy	1
56	CA090021A	Cassette Case Assy	1
57	CA090021A	Cassette Case Assy	1
58	CA090021A	Cassette Case Assy	1
59	CA090021A	Cassette Case Assy	1
60	CA090021A	Cassette Case Assy	1
L01	0F060598A	C-Ring 2.5mm	1
L02	0F060592A	CS Stopper 2.5mm	1
L03	0F060592A	CS Stopper 2.5mm	1
L04	0F060592A	CS Stopper 2.5mm	1
L05	0F060592A	CS Stopper 2.5mm	1
L06	0F060592A	CS Stopper 2.5mm	1
L07	0F060592A	CS Stopper 2.5mm	1
L08	0F060592A	CS Stopper 2.5mm	1
L09	0F060592A	CS Stopper 2.5mm	1
L10	0F060592A	CS Stopper 2.5mm	1
L11	0F060592A	CS Stopper 2.5mm	1
L12	0F060592A	CS Stopper 2.5mm	1
L13	0F060592A	CS Stopper 2.5mm	1
L14	0F060592A	CS Stopper 2.5mm	1
L15	0F060592A	CS Stopper 2.5mm	1
L16	0F060592A	CS Stopper 2.5mm	1
L17	0F060592A	CS Stopper 2.5mm	1
L18	0F060592A	CS Stopper 2.5mm	1
L19	0F060592A	CS Stopper 2.5mm	1
L20	0F060592A	CS Stopper 2.5mm	1
L21	0F060592A	CS Stopper 2.5mm	1
L22	0F060592A	CS Stopper 2.5mm	1

Schematic Ref. No.	Part No.	Description	QTY
L23	0E03237A	Nut Hex. M2.6	1
L24	0E03045A	M2.6x2.0 Blinding	1
L25	0C85410A	Brake Washer B	1
L26	0C85411A	Brake Washer A	1
L27	0E030684A	Nut Hex. M2	1
L28	0E03051A	Washer 2.5x7x0.8	1
L29	0E03051A	Washer 2.5x7x0.8	1
L30	0E03057A	M2.6x9.0 Pan. A.0.0.3x0.3	1
L31	0E03087A	M2.6x9.0 Pan (2A)	1
L32	0E03059A	Washer 1.3x4.0x0.5	1
L33	0E03059A	Washer 1.3x4.0x0.5	1
L34	0E03058A	Washer 1.7x6x0.25	1





8. MOUNTING DIAGRAMS AND PARTS LIST



8.1. Main P.C.B. Assy

- Notes:
1. Mounting diagram shows a dip side view of the printed circuit board.
  2. Diode is 1S593, 1S1553, or 18S176 unless otherwise specified.
  3. Abbreviation for part name:  
 TR - Transistor, SID - Silicon Diode,  
 ZD - Zener Diode, Varicap - Variable Capacitance Diode  
 RK - Carbon Resistor, RM - Metal Film Resistor, RF - Full Size Type Resistor,  
 RC - Cement Resistor  
 CE - Electrolytic Capacitor, CML - Mylar Capacitor, CMC - Ceramic Capacitor, CPP - PP Capacitor, CMM - Metalized Mylar Capacitor, CSP - Polystyrene Capacitor, C - Mica Capacitor, CT - Tantalum Capacitor

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
U100	C-6	Q116L	F-4
U101	C-9	Q116R	F-4
U102	F-9	Q116L	F-8
U103	F-9	Q116R	F-8
U104	F-11	Q115L	C-11
U105	H-11	Q115R	C-11
Q106L	D-5	Q120	L-8
Q106R	D-5	Q121L	F-8
Q107L	D-6	Q121R	F-8
Q107R	D-6	ZD160	C-7
Q108L	F-10	ZD161	D-7
Q108R	F-10	ZD162	F-4
Q109	F-8	ZD163L	H-11
Q110	C-4	ZD163R	H-11
Q111	F-7	ZD164L	H-11
Q112	G-7	ZD164R	H-11
Q113L	L-6	D100	D-3
Q113R	L-6	D101	H-9
Q114L	F-2	D102	F-7
Q114R	F-2	D103	F-7
Q115L	F-3	D104	G-7
Q115R	F-3	D105	F-2
Q116	L-4	D106	F-4
Q117	L-4	D107	F-4
Q118	H-4	D108	D-11
Q119L	E-2	D109L	H-11
Q119R	E-2	D110L	H-11
Q120L	E-4	D111L	C-11
Q120R	E-4	D111R	F-8

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
<b>8.1. Main P.C.B. Ass'y</b>								
	* BA07959A	Main P.C.B. Ass'y	R124L.R	OB09707A	RK 18K 1/6W J	C102L.R	OB41275A	CML 1200P 50V J
U100	OB06146A	IC NJM4558DD	R125	OB25398A	RM 130K 1/4W F	C103L.R	OB40756A	CE 1 $\mu$ 50V (LN)
U101	OB11363A	IC CX20188	R126,127	OB24272A	RF 68 1/4W J	C104	OB40115A	CE 4.7 $\mu$ 50V
U102	OB06146A	IC NJM4558DD	R128	OB09709A	RK 22K 1/6W J	C106L.R	OB41143A	CML 0.01 $\mu$ 50V J
U103	OB11027A	IC TC9145P	R129,130	OB09701A	RK 10K 1/6W J	C106L.R	OB41285A	CPP 5600P 100V G
U104	OB06387A	IC NJM2043DD	R131	OB09689A	RK 3.3K 1/6W J	C107L.R	OB41295A	CML 0.06 $\mu$ 50V J
U105	OB06370A	IC NJM4556D	R132L.R	OB09705A	RK 15K 1/6W J	C108L.R	OB41298A	CML 0.068 $\mu$ 50V J
U106	OB06124A	IC NJM4558D	R133L.R	OB09749A	RK 1M 1/6W J	C109L.R	OB41302A	CML 0.22 $\mu$ 50V J
Q100L.R	OB10033A	TR 2SC1740S	R134L.R	OB09701A	RK 10K 1/6W J	C110L.R	OB41288A	CML 0.015 $\mu$ 50V J
Q101L.R	OB10033A	TR 2SC1740S	R135L.R	OB09709A	RK 22K 1/6W J	C111L.R	OB41309A	CML 0.15 $\mu$ 50V J
Q102L.R	OB10033A	TR 2SC1740S	R136L.R	OB09709A	RK 22K 1/6W J	C112L.R	OB41306A	CML 0.47 $\mu$ 50V J
Q103	OB10029A	TR 2SA933S	R137L.R	OB09693A	RK 4.7K 1/6W J	C113L.R	OB41139A	CPP 3900P 100V G
Q104	OB10053A	TR DTA144ES	R138L.R	OB09680A	RK 1.3K 1/6W J	C114L.R	OB41133A	CPP 2200P 100V G
Q105L.R	OB10067A	TR DTC143TS	R139L.R	OB09705A	RK 15K 1/6W J	C115L.R	OB41133A	CPP 2200P 100V G
Q106L.R	OB10033A	TR 2SC1740S	R140L.R	OB09692A	RK 4.3K 1/6W J	C116,117	OB40092A	CE 220 $\mu$ 25V
Q107L.R	OB06142A	TR 2SC2240 (BL)	R141L.R	OB09682A	RK 1.6K 1/6W J	C118	OB40115A	CE 4.7 $\mu$ 50V
Q108L.R	OB06142A	TR 2SC2240 (BL)	R142L.R	OB09706A	RK 16K 1/6W J	C119	OB40090A	CE 4.7 $\mu$ 25V
Q109	OB10102A	TR 2SA1320	R143L.R	OB09701A	RK 10K 1/6W J	C120L.R	OB41277A	CML 1800P 50V J
Q110	OB10033A	TR 2SC1740S	R144L.R	OB09684A	RK 2K 1/6W J	C121L.R	OB41394A	CPP 220P 50V J
Q111	OB06069A	TR 2SB564	R145	OB09717A	RK 4.7K 1/6W J	C122L.R	OB41282A	CML 4700P 50V J
Q112	OB10053A	TR DTA144ES	R146	OB09685A	RK 2.2K 1/6W J	C123L.R	OB40487A	CE 10 $\mu$ 25V
Q113L.R	OB10067A	TR DTC143TS	R147	OB09695A	RK 5.6K 1/6W J	C124L.R	OB41280A	CML 3300P 50V J
Q114L.R	OB06142A	TR 2SC2240 (BL)	R148,149	OB09725A	RK 100K 1/6W J	C125L.R	OB41276A	CML 1500P 50V J
Q115L.R	OB06142A	TR 2SC2240 (BL)	R150	OB09717A	RK 4.7K 1/6W J	C126L.R	OB41277A	CML 1800P 50V J
Q116L.R	OB10033A	TR 2SC1740S	R151,152	OB09733A	RK 220K 1/6W J	C127	OB41298A	CML 0.1 $\mu$ 50V J
Q117	OB10053A	TR DTA144ES	R153	OB09733A	RK 27K 1/6W J	C128,129	OB41286A	CML 0.01 $\mu$ 50V J
Q118L.R	OB10067A	TR DTC143TS	R154L.R	OB09711A	RK 56K 1/6W J	C130	OB41286A	CML 0.01 $\mu$ 50V J
Q119L.R	OB06142A	TR 2SC2240 (BL)	R155L.R	OB09719A	RK 1K 1/6W J	C131L.R	OB41281A	CML 3900P 50V J
Q120	OB10053A	TR DTA144ES	R156L.R	OB09677A	RK 15K 1/6W J	C132L.R	OB40112A	CE 1 $\mu$ 50V
Q121L.R	OB10067A	TR DTC143TS	R157L.R	OB09677A	RK 470K 1/6W J	C133	OB40112A	CE 1 $\mu$ 50V
ZD100,101	OB12168A	ZD 10V	R158	OB09701A	RK 10K 1/6W J	C134L.R	OB40756A	CE 1 $\mu$ 50V (LN)
ZD102	OB12168A	ZD 10V	R159	OB09725A	RK 100K 1/6W J	C135L.R	OB41294A	CML 0.047 $\mu$ 50V J
ZD103L.R	OB12273A	RD10JSB2	R160L.R	OB09735A	RK 270K 1/6W J	C136L.R	OB41278A	CML 2200P 50V J
ZD104L.R	OB12289A	RD3.3EB1	R161L.R	OB09719A	RK 56K 1/6W J	C137L.R	OB41283A	CML 5600P 50V J
D100,101	OB06398A	SID 1SS176	R162L.R	OB09689A	RK 3.3K 1/6W J	C138L.R	OB40487A	CE 10 $\mu$ 25V
D102,103	OB06398A	SID 1SS176	R163L.R	OB09691A	RK 3.9K 1/6W J	C139L.R	OB41709A	CC 47P 50V J
D104,105	OB06398A	SID 1SS176	R164L.R	OB09671A	RK 560 1/6W J	C140	OB41974A	CC 100P 50V J
D106,107	OB06398A	SID 1SS176	R165L.R	OB09643A	RK 47 1/6W J	C141,142	OB40112A	CF 1 $\mu$ 50V
D108	OB06398A	SID 1SS176	R166L.R	OB09705A	RK 15K 1/6W J	C143	OB41432A	CPP 8200P 50V J
D109L.R	OB06398A	SID 1SS176	R167L.R	OB09697A	RK 6.8K 1/6W J	C144	OB41414A	CPP 1500P 50V J
D110L.R	OB06398A	SID 1SS176	R168L.R	OB09697A	RK 5.6K 1/6W J	C145L.R	OB41974A	CC 100P 50V J
D111	OB06398B	SID 1SS176	R169L.R	OB09695A	RK 5.6K 1/6W J	C146L.R	OB40732A	CE 22 $\mu$ 25V (LN)
VT100	OB51360B	BIAS OSC BO-1	R170	OB09695A	RK 4.7K 1/6W J	C147L.R	OB41394A	CPP 220P 50V J
VL100L.R	OB06690A	L-C Block	R171	OB09708A	RK 20K 1/6W J	C148L.R	OB41289A	CML 0.018 $\mu$ 50V J
VL101L.R	OB51361A	Rec. Peaking Coil	R172	OB09701A	RK 10K 1/6W J	C149L.R	OB40723A	CE 47 $\mu$ 16V (LN)
VL102L.R	OB06696A	L-C Block	R173L.R	OB09705A	RK 15K 1/6W J	C150L.R	OB40114A	CE 3.3 $\mu$ 50V J
L100L.R	OB03919C	Inductor 36mH	R174L.R	OB09696A	RK 6.6K 1/6W J	C151L.R	OB41274A	CML 1000P 50V J
VR100	OB30128A	VR 100KMN	R175L.R	OB09653A	RK 100 1/6W J	C152L.R	OB41400A	CPP 390P 50V J
VR101	OB30126A	VR 100Kax2	R176L.R	OB01683A	RM 15K 1/4W F	C153L.R	OB41284A	CML 6800P 50V J
VR102L.R	OB32192A	Semi VR 5K	R177L.R	OB01888A	RK 10K 1/4W J	C154L.R	OB41402A	CPP 470P 50V J
VR103L.R	OB32192A	Semi VR 5K	R178	OB09684A	RK 2K 1/6W J	C155L.R	OB40758A	CE 22 $\mu$ 50V (LN)
VR104L.R	OB32192A	Semi VR 5K	R179	OB09710A	RK 24K 1/6W J	C156	OB40078A	CE 100 $\mu$ 16V
VR105L.R	OB32193A	Semi VR 10K	R180L.R	OB09629A	RK 10 1/6W J	C157L.R	OB40114A	CE 3.3 $\mu$ 50V
VR106	OB32193A	Semi VR 10K	R181L.R	OB09629A	RK 470K 1/6W J	C158	OB41420A	CPP 2700P 50V J
VR107L.R	OB32194A	Semi VR 20K	R182L.R	OB09741A	RK 100K 1/4W J			Serial No.: A32705801 -
VR108L.R	OB32194A	Semi VR 20K	R183L.R	OB09651A	RK 82 1/6W J	C159,160	OB40078A	CE 100 $\mu$ 16V
VR109L.R	OB32194A	Semi VR 20K	R184L.R	OB09330A	RK 100K 1/4W J	C161L.R	OB40758A	CE 2.2 $\mu$ 50V (LN)
VR110	OB30127A	VR 100Kax2	R185L.R	OB09731A	RK 180K 1/6W J	C162L.R	OB40758A	CE 2.2 $\mu$ 50V (LN)
VR111L.R	OB32191A	Semi VR 2K	R186L.R	OB25287A	RM 9.09K 1/4W F	C163	OB40114A	CE 3.3 $\mu$ 50V J
VR112L.R	OB32192A	Semi VR 5K	R187L.R	OB09711A	RK 27K 1/6W J	C164L.R	OB41386A	CPP 100P 50V J
R100L.R	OB09653A	RK 100 1/6W J	R188L.R	OB09685A	RK 2.2K 1/6W J	C165	OB41298A	CML 0.1 $\mu$ 50V J
R101L.R	OB09725A	RK 100K 1/6W J	R189L.R	OB09655A	RK 120 1/6W F	C166	OB40092A	CE 220 $\mu$ 25V
R102L.R	OB25291A	RM 10K 1/4W F	R190L.R	OB25301A	RM 12.7K 1/4W F	S100	OB70177A	Push Switch
R103L.R	OB25260A	RM 4.75K 1/4W F	R191L.R	OB25293A	RM 10.5K 1/4W F	S101	OB70177A	Push Switch
R104L.R	OB25236A	RM 2.67K 1/4W F	R192L.R	OB09749A	RK 1M 1/6W J	S102	OB70177A	Push Switch
R105L.R	OB09749A	RK 1M 1/6W J	R193L.R	OB09716A	RK 43K 1/6W J	S103	OB70176A	Push Switch
R106L.R	OB09749A	RK 1M 1/6W J	R194L.R	OB09716A	RK 43K 1/6W J	S104	OB70176A	Push Switch
R107L.R	OB25280A	RM 7.68K 1/4W F	R195L.R	OB09709A	RK 22K 1/6W J	S105	OB70176A	Push Switch
R108L.R	OB09709A	RK 22K 1/6W J	R196	OB09725A	RK 100K 1/6W J	S105	OB84359A	Header 3P
R109L.R	OB09689A	RK 3.3K 1/6W J	R197	OB09677A	RK 1K 1/6W J	JS100		Serial No.: A32705801 -
R110L.R	OB09689A	RK 3.3K 1/6W J	R198L.R	OB09717A	RK 47K 1/6W J			Header 2P
R111,112	OB09683A	RK 1.8K 1/6W J	R199L.R	OB09685A	RK 2.2K 1/6W J			Serial Nos.: A32701001 - 05800
R113L.R	OB09673A	RK 680 1/6W J	R200L.R	OB09718A	RK 51K 1/6W J			6P-T Post
R114L.R	OB09760A	RK 9.1K 1/6W J	R201L.R	OB09725A	RK 100K 1/6W J			6P-T Post
R115L.R	OB09698A	RK 7.5K 1/6W J	R202L.R	OB09637A	RK 22 1/6W J	CN3	OB84288A	6P-T Post
R116L.R	OB25324A	RM 22.1K 1/4W F	R203	OB09677A	RK 1K 1/6W J	CN10	OB81463A	6P-T Post
R117L.R	OB25244A	RM 3.24K 1/4W F	R204	OB09725A	RK 100K 1/6W J	CN11	OB84289A	6P-T Post
R118L.R	OB25251A	RM 3.83K 1/4W F	R205L.R	OB09677A	RK 1K 1/6W J	CN13	OB81464A	7P-T Post
R119L.R	OB25171A	RM 562 1/4W F	R206L.R	OB09749A	RK 1M 1/6W J	CN14	OB81462A	6P-T Post
R120L.R	OB09749A	RK 1M 1/6W J	R207L.R	OB09677A	RK 1K 1/6W J	CN15	OB81459A	2P-T Post
R121L.R	OB25287A	RM 1K 1/4W F	R208L.R	OB09741A	RK 470K 1/6W J	CN16	OB81460A	3P-T Post
R122L.R	OB25195A	RM 1K 1/4W F	R209L.R	OB09696A	RK 6.2K 1/6W J	CN17	OB84280A	3P-T Post
R123L.R	OB09681A	RK 1.5K 1/6W J	R210	OB09701A	RK 10K 1/6W J	CN17	OB81460A	3P-T Post
			R211	OB09725A	RK 100K 1/6W J	TP100	OB81460A	3P-T Post
			R212L.R	OB09682A	RK 1.6K 1/6W J			BT3x8 @ Binding (2)
			R213L.R	OB09653A	RK 100 1/6W J			Volume Holder (1)
			R214	OB24023A	Fuse Resistor 1			Main Shield (1)
			R215,216	OB09717A	RK 47K 1/6W J			
			C100L.R	OB40756A	CE 1 $\mu$ 50V (LN)			
			C101L.R	OB41279A	CML 2700P 50V J			

8.2. Power Supply & Logic P.C.B. Ass'y

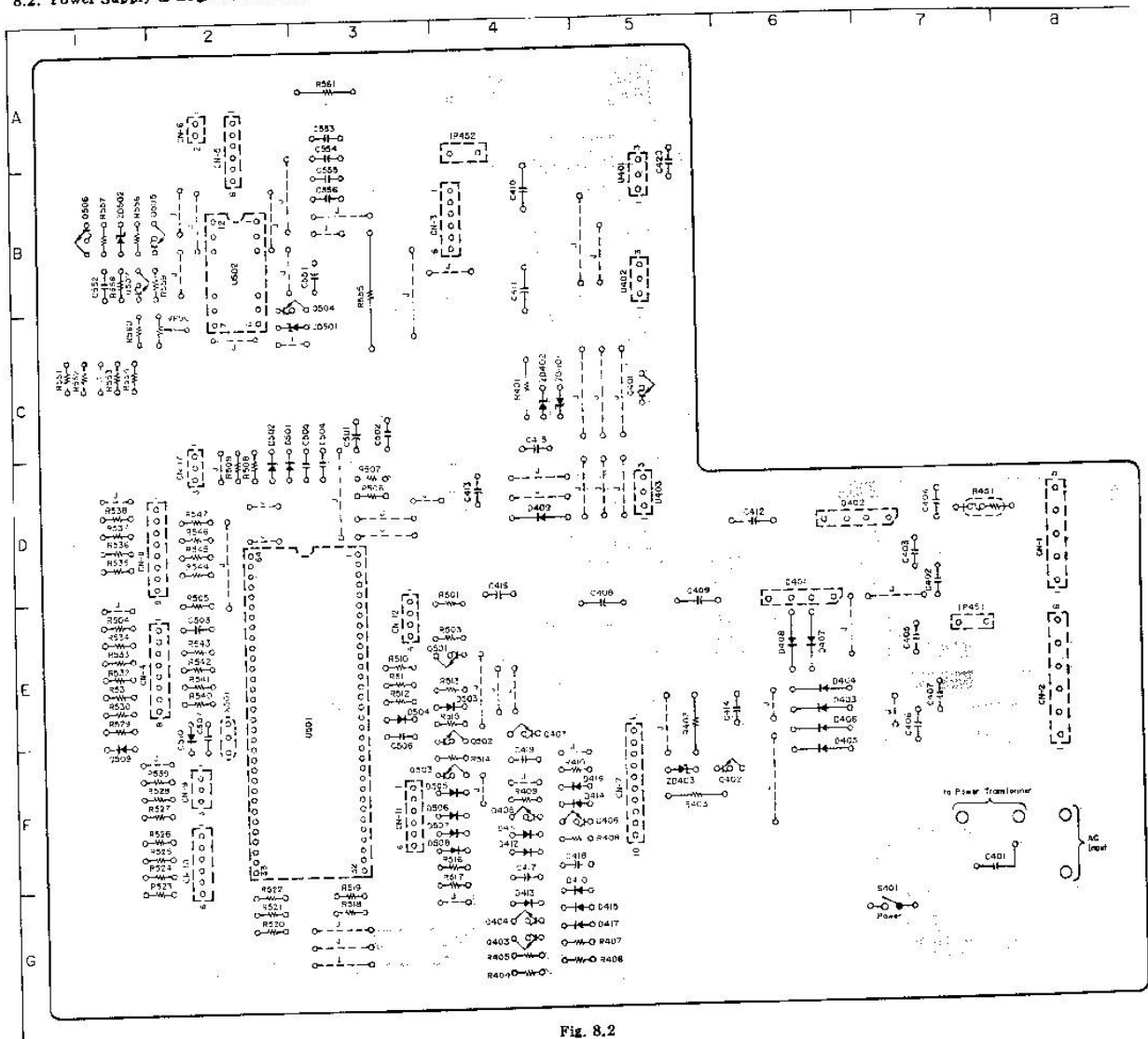


Fig. 8.2

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
U401	B-5	Q505	B-2	D411	F-4
U402	B-5	Q506	B-1	D412	F-4
U403	D-5	Q507	B-1	D413	G-4
U501	E-3	ZD401	C-4	D414	F-4
U502	B-2	ZD402	C-4	D415	G-4
IP451	E-7	ZD403	F-5	D416	F-4
IP452	A-4	ZD501	C-3	D417	G-4
Q401	C-5	ZD502	B-1	D501	D-2
Q402	F-6	D401	E-6	D502	D-2
Q403	G-4	D402	E-6	D503	E-4
Q404	G-4	D403	E-6	D504	E-3
Q405	F-4	D404	E-6	D505	F-4
Q406	F-4	D405	F-6	D506	F-4
Q407	E-4	D406	E-6	D507	F-4
Q501	E-4	D407	E-6	D508	F-4
Q502	E-4	D408	E-6	D509	F-1
Q503	F-4	D409	D-4	D510	E-2
Q504	B-3	D410	G-4		



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

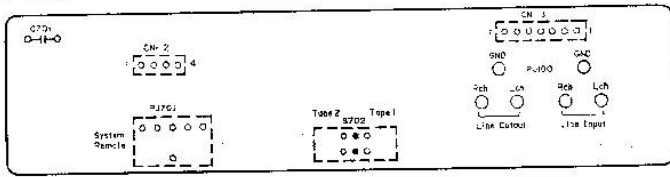


Fig. 8.5

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

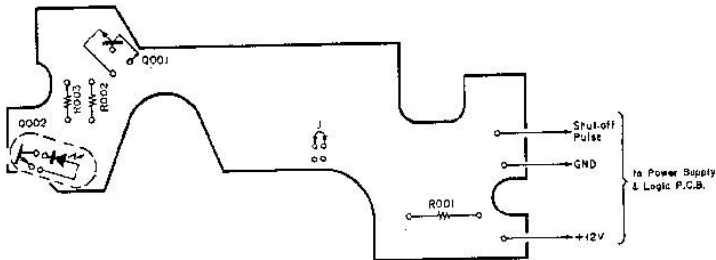


Fig. 8.6

8.7. Control Switch & Display P.C.B. Ass'y

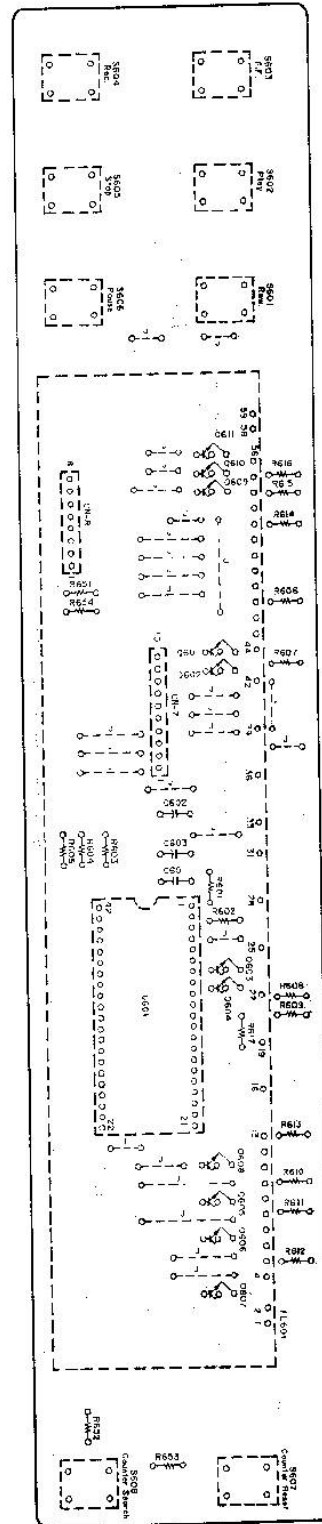


Fig. 8.7

\*: Unstocked parts.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
8.5. Pin Jack P.C.B. Ass'y			8.7. Control Switch & Display P.C.B. Ass'y		
	* BA07946A	Pin Jack P.C.B. Ass'y		* BA07945A	Control Switch & Display P.C.B. Ass'y
C701	OB60836B	Pin Jack P.C.B.	U601	OB11860A	Control Switch & Display P.C.B.
S702	OB41553A	CC 0.01μ	Q601,602	OB10030A	IC MSC7112-01SS
PJ100	OB70178A	Slide Switch 2-2	Q603,604	OB10030A	TR 2SC1740S
FJ701	OB84324A	Pin Jack 4P	Q605,606	OB10030A	TR 2SC1740S
CN12	OB84028A	Stereo Mini	Q607,608	OB10030A	TR 2SC1740S
CN13	OB81461A	4P-T Post	Q609,610	OB10030A	TR 2SC1740S
	OB83903A	7P Connector Ass'y	Q611	OB10030A	TR 2SC1740S
	OE03355A	Earth Plate (1)	R601	OB09713A	RK 33K 1/6W J
8.6. Shut-off P.C.B. Ass'y			R602	OB09701A	RK 10K 1/6W J
	* CA80011B	Shut-off P.C.B. Ass'y	R603,604	OB09677A	RK 1K 1/6W J
Q001	OC80047A	Shut-off P.C.B.	R605	OB09677A	RK 1K 1/6W J
Q002	OB06388A	TR 2SC2812	R606,607	OB09717A	RK 47K 1/6W J
	OB06389A	Photo Reflector	R608	OB09717A	RK 47K 1/6W J
		NJL5141	R609,610	OB09717A	RK 47K 1/6W J
R001	OC81330A	RM 750	R611,612	OB09717A	RK 47K 1/6W J
R002	OB09841A	RK 15K	R613,614	OB09717A	RK 47K 1/6W J
R003	OB09840A	RK 680	R615,616	OB09717A	RK 47K 1/6W J
			R617	OB09629A	RK 10 1/6W J
			R651	OB09701A	RK 10K 1/6W J
			R652	OB09693A	RK 4.7K 1/6W J
			R653	OB09705A	RK 15K 1/6W J
			R654	OB09701A	RK 10K 1/6W J
			C601	OB41974A	CC 100P 50V J
			C602	OB40158A	CE 100μ 6.3V
			C603	OB40173A	CE 1μ 50V
			S601,602	OB70161A	Tact Switch
			S603,604	OB70161A	Tact Switch
			S605,606	OB70161A	Tact Switch
			S607,608	OB70161A	Tact Switch
			CN7	OB83897A	10P Connector Ass'y
			CN8	OB83898A	8P Connector Ass'y
			FL601	OB90461A	FL Display
				OJ06219C	FL Cushion (2)
				OJ06238A	FL Stopper (2)

## 9. SCHEMATIC DIAGRAMS

### 9.1. IC Block Diagrams

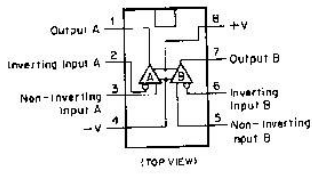
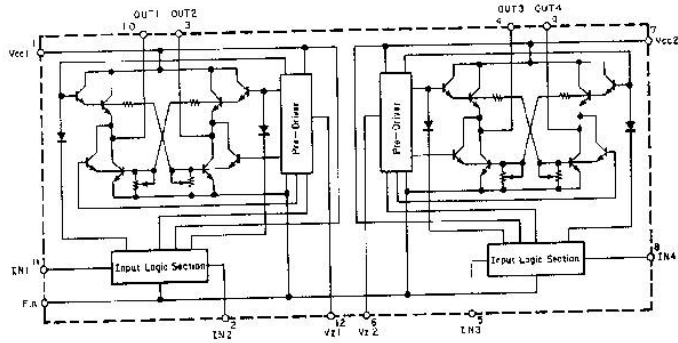


Fig. 9.1.1 Operational Amp. IC 4558D, 4558DD, 4556D, 2043DD



INPUT		OUTPUT		OPERATION
IN1/3	IN2/4	OUT1/3	OUT2/4	
0	0	0	0	Braking
1	0	0	1	Forward (Reverse)
0	1	1	0	Reverse (Forward)
1	1	0	0	Stopping

Fig. 9.1.2 Motor Driver IC LB1649

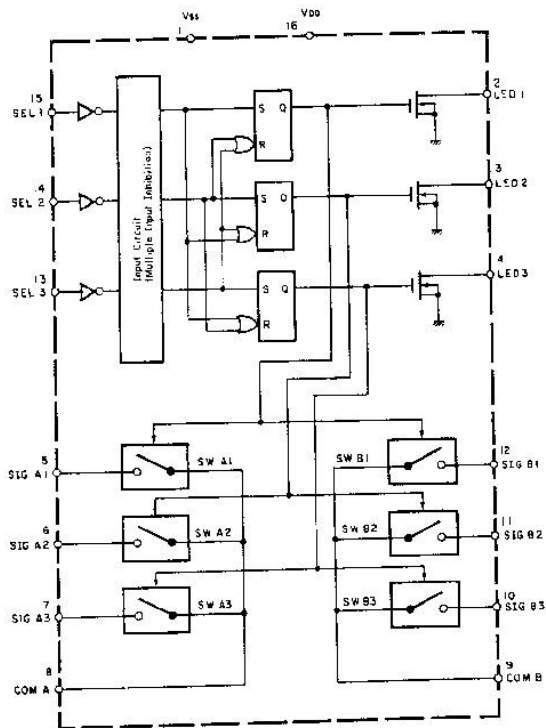
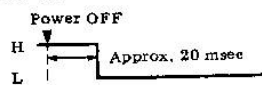
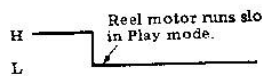
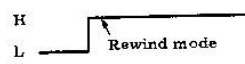
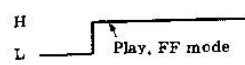
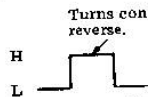
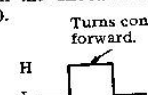
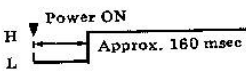


Fig. 9.1.3 Analog Switch Selector TC9145P

U501  $\mu$ PD75106CW (Microprocessing Unit (MPU))

Pin No.	Signal Name	In/Out	Function
1	—	I	Not used. Connected to GND.
2	—	I	Not used. Connected to GND.
3	REM	I	Remote control receiver signal input.
4	RELP	I	Reel motor pulse input. Pulse train is input while take-up reel hub is rotating, i.e., tape is running.
5	LVR	I	Rch input for level meter. Input level is A/D-converted in this IC and the converted result is transferred to the Display Control IC (U601) via pin 13 (DDAT).
6	LVL	I	Lch input for level meter. The function is the same as above LVR (Rch).
7	KS1	I	Record switch input. "L" when pressed.
8	KSO	I	Stop/Counter Search/Counter Reset switch input. Stop switch ON: 0 V Counter Search switch ON: 1.6 V Counter Reset switch ON: 3.3 V
9	MREM	I	System remote mode signal input. "L": "Tape 1" is selected. "H": "Tape 2" is selected.
10	HD2/3	I	Connected to GND.
11	—	O	Not used. (Open)
12	DCLK	O	Clock for serial data DDAT at pin 13.
13	DDAT	O	Serial data for Display Control IC (U601), which includes display data and control information.
14	DEN	O	Enable signal to Display Control IC (U601). Active "H".
15	—	I	Not used. Connected to GND.
16	—	I	Not used. Connected to GND.
17	—	I	Not used. Connected to GND.
18	POFF	I	Power OFF signal input. Becomes "L" when power is turned OFF. 
19	LMUT	O	Line mute signal output. Active "L".
20	RMUT	O	Record mute signal output. Active "L". Record mute is released only in Record/Play mode.
21	BIAS	O	Bias ON/OFF signal output. "L": Bias ON.
22	—	O	Not used. (Open)
23	—	O	Not used. (Open)
24	—	O	Not used. (Open)
25	HPLY	O	Record/Playback head select signal output. "L": Playback mode. "H": Record mode.
26	HREC	O	Record/Playback head select signal output. L: Record mode. "L": Playback mode
27	RMSP	O	Reel motor speed select signal output. Becomes "L" in play mode. 

Pin No.	Signal Name	In/Out	Function															
28	—	O	Not used. (Open)															
29	RMR	O	Reel motor drive control signal output. Becomes "H" in Rewind mode. 															
30	RMF	O	Reel motor drive control signal output. Becomes "H" in Play or Fast Forward mode. 															
31	NC	—	No connection.															
32	VDD	—	Supplied with +5 V.															
33	—	O	Not used. (Open)															
34	—	O	Not used. (Open)															
35	ASMR	O	Control motor reverse drive signal output. Becomes "H" when turning the control motor reverse (in the direction of Play-Pause-Stop-FF/REW). Turns control motor reverse. 															
36	ASMF	O	Control motor forward drive signal output. Becomes "H" when turning the control motor forward (in the direction of FF/REW-Stop-Pause-Play). Turns control motor forward. 															
37	TAP B	I	Tape type select signal input. <table border="1" data-bbox="1031 1060 1291 1165"> <thead> <tr> <th>Type</th> <th>TAP A</th> <th>TAP B</th> </tr> </thead> <tbody> <tr> <td>Type I</td> <td>H</td> <td>H</td> </tr> <tr> <td>Type II</td> <td>L</td> <td>H</td> </tr> <tr> <td>Type IV</td> <td>H/L</td> <td>L</td> </tr> </tbody> </table>	Type	TAP A	TAP B	Type I	H	H	Type II	L	H	Type IV	H/L	L			
Type	TAP A	TAP B																
Type I	H	H																
Type II	L	H																
Type IV	H/L	L																
38	TAP A	I																
39	B/C	I	Dolby NR mode select signal input. <table border="1" data-bbox="1031 1218 1323 1323"> <thead> <tr> <th>Mode</th> <th>DLBY</th> <th>B/C</th> </tr> </thead> <tbody> <tr> <td>Dolby NR OFF</td> <td>H</td> <td>H/L</td> </tr> <tr> <td>Dolby NR B</td> <td>L</td> <td>H</td> </tr> <tr> <td>Dolby NR C</td> <td>L</td> <td>L</td> </tr> </tbody> </table>	Mode	DLBY	B/C	Dolby NR OFF	H	H/L	Dolby NR B	L	H	Dolby NR C	L	L			
Mode	DLBY	B/C																
Dolby NR OFF	H	H/L																
Dolby NR B	L	H																
Dolby NR C	L	L																
40	DLBY	I																
41	MPX	I	MPX filter switch signal input. "L": MPX Filter ON, "H"=OFF															
42	TIM B	I	Repeat/Timer switch signal input. <table border="1" data-bbox="1031 1428 1323 1554"> <thead> <tr> <th>Mode</th> <th>TIM A</th> <th>TIM B</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>H</td> <td>H</td> </tr> <tr> <td>Auto Repeat</td> <td>L</td> <td>H</td> </tr> <tr> <td>Timer Play</td> <td>H</td> <td>L</td> </tr> <tr> <td>Timer Record</td> <td>L</td> <td>L</td> </tr> </tbody> </table>	Mode	TIM A	TIM B	OFF	H	H	Auto Repeat	L	H	Timer Play	H	L	Timer Record	L	L
Mode	TIM A	TIM B																
OFF	H	H																
Auto Repeat	L	H																
Timer Play	H	L																
Timer Record	L	L																
43	TIM A	I																
44	REC PRO	I	Record protect switch signal input. "H": Recording is allowed.															
45	RESET	I	System reset signal input. Active "L". 															

Pin No.	Signal Name	In/Out	Function
46	X2	-	4 MHz crystal is connected.
47	X1	-	Not used. (Open)
48	MREG	O	Record mode signal output. Active "L".
49	MPLY	O	Play mode signal output. Active "L".
50	MSTP	O	Stop mode signal output. Active "L".
51	MREM	O	System remote control signal output.
52	MREX	O	Not used. (Open)
53	EAC	I	Chassis in switch signal input. Becomes "1" while the Chassis Cover is open.
54	CAM2	I	Cam switch signal input. Mode of the mechanism can be sensed according to states of CAM0, CAM1 and CAM2.
55	CAM0	I	FF switch signal input. "L" when pressed.
56	CAM1	I	REW switch signal input. "L" when pressed.
57	STOP	I	Pause switch signal input. "L" when pressed.
58	PLAY	I	Play switch signal input. "L" when pressed.
59	VSS	-	Grounded.

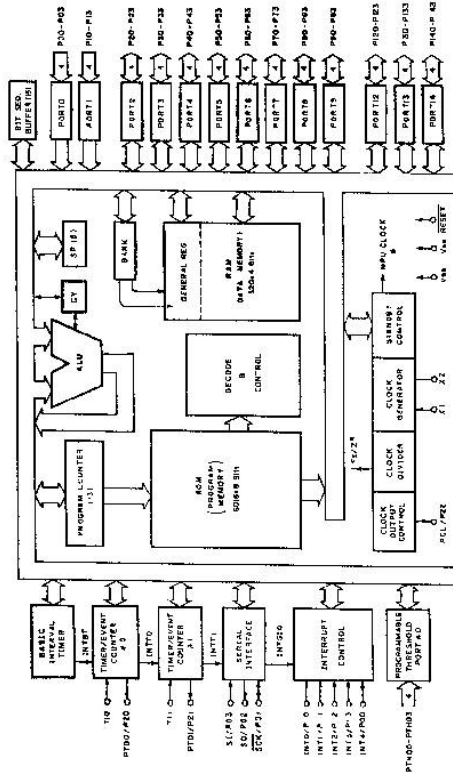


Fig. 9.1.4 Microprocessing Unit (MPU) (PDT5166CW)

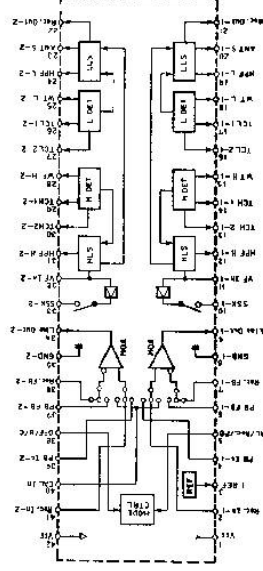


Fig. 9.1.5 Dolby NR IC CX30188

Pin No.	Signal Name	Function
1	Vcc	Positive power supply input terminal.
2,41	Rec. In	Record input terminal.
3	I Ref.	Reference current input terminal.
4,39	FB In	FB signal input terminal.
5	CAL/Rec./PA	Calibration/Repeating/Playback select terminal.
6,37	FB FB	Playback signal feedback terminal.
7,36	Rec. FB	Record signal feedback terminal.
8,35	GND	GND terminal.
9,34	Line Out	Line signal (decoded signal) output terminal.
10,33	SSK	Spectral skewing switch terminal.
11,32	VF In	Encodes circuit input terminal.
12,31	HFF H	HLS high-pass filter terminal.
13,30	TCL 2	HLS detector time constant determinant terminal 2.

U601 M8C7112 (Display Controller)

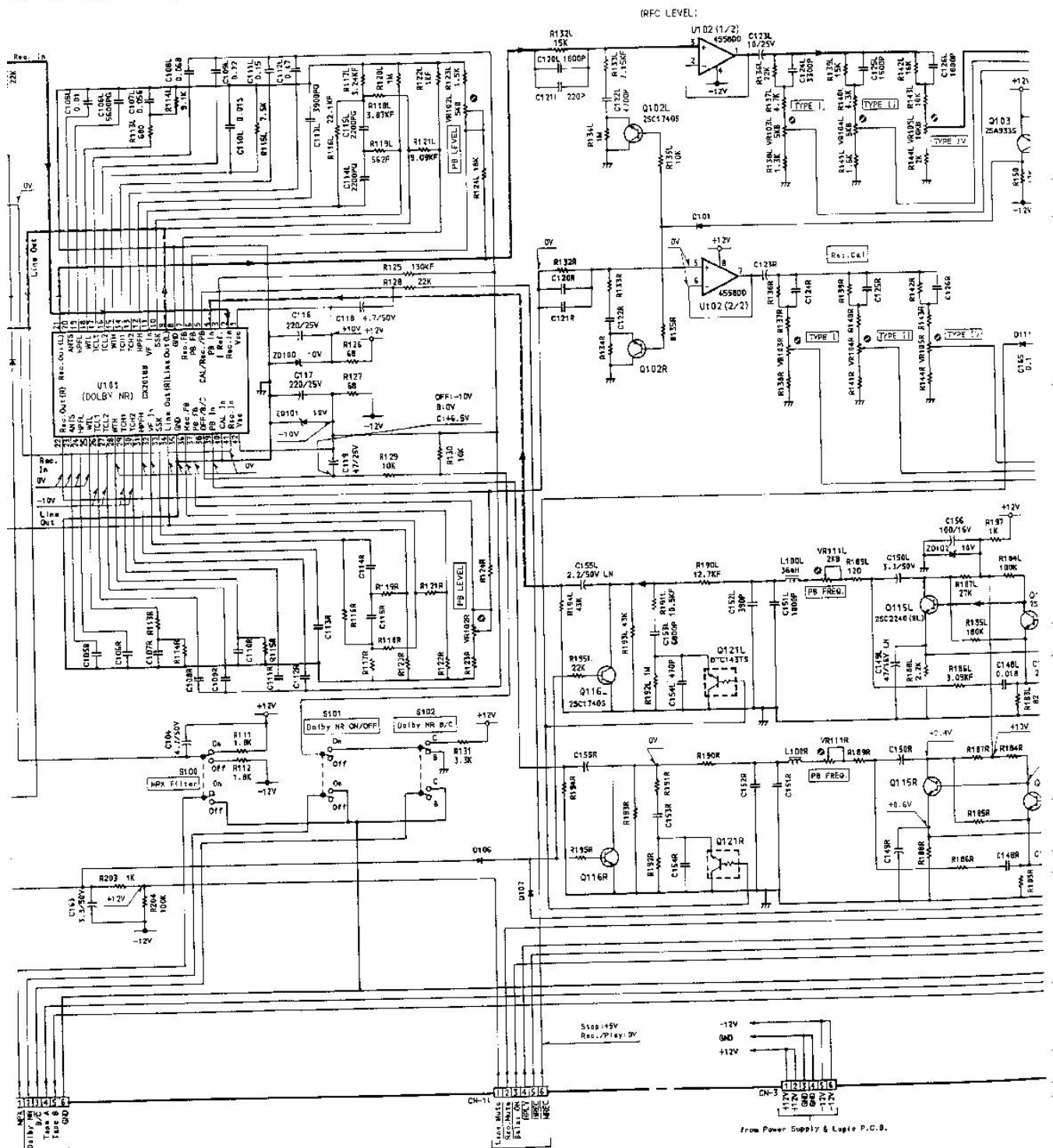
Pin No.	Signal Name	In/Out	Function
1	OSC1	I	An RC circuit is connected for making an oscillation circuit.
2	OSC0	O	Reset signal input at power ON. The IC is reset when "1".
3	FOR	I	Supplied with +5 V.
4	VDD	-	FL tube grid drive output.
5	D1	O	OS-D12 are not used.)
6	D2	O	Not used. (Open)
7	LED1	O	Not used. (Open)
8	LED2	O	Not used. (Open)
9	LED3	O	Not used. (Open)
10	VSS	-	Grounded.

Pin No.	Signal Name	Function
14,29	TCL 1	HLS detector time constant determinant terminal 1.
15,28	WT H	HLS weighting terminal.
16,27	TCL 2	HLS detector time constant determinant terminal 2.
17,26	TCL 1	HLS detector time constant determinant terminal 1.
18,25	WT L	HLS weighting terminal.
19,24	HFF L	HLS high-pass filter terminal.
20,23	AWT S	Anti-stuttering terminal.
21,22	Rec. Out	Record signal (encoded signal) output terminal.
38	OPF/B/C	Dolby NR OPF/B-type/C-type select terminal.
40	CAL In	Calibration input terminal. Not used.
42	V <sub>EE</sub>	Negative power supply input terminal.

Pin No.	Signal Name	In/Out	Function
23	V <sub>EE</sub>	-	Supplied with -25 V.
24	SEG F	O	FL tube anode drive output. Active "H". (SEG F - SEG H are not used.)
25	SEG A	O	Shift clock input for internal shift register. Shifts the data at pin 41 (DATAN) at every rising edge.
40	SCLK	I	Control & display serial data sent from the mechanism control MPU (U501, M53 Sirc).
41	DATAN	I	Data latch pulse. The data is latched to the internal register at the falling edge.
42	LOAD	I	







Supply & Logic P.C.B.

From Power Supply & Logic P.C.B.

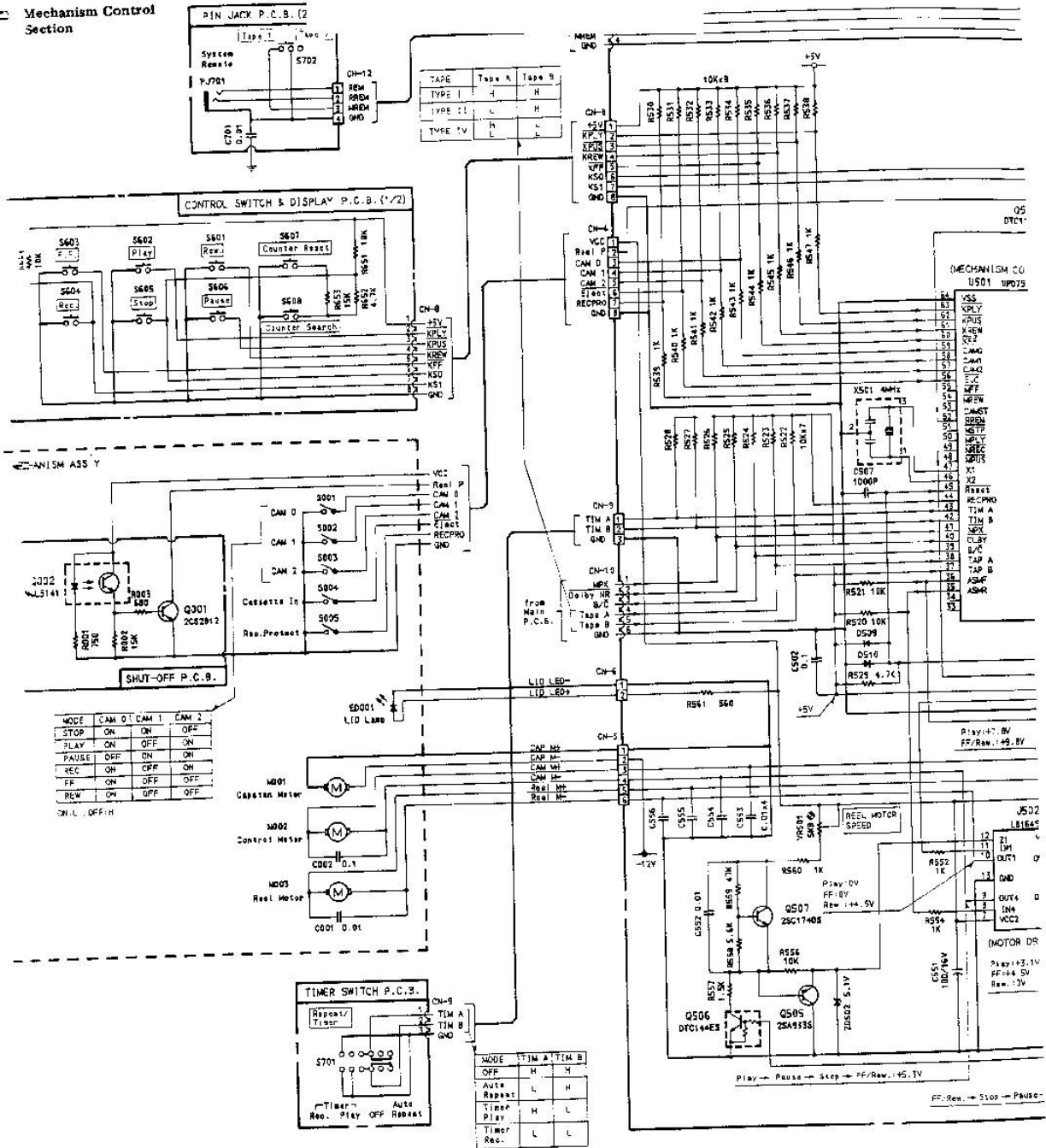
From Power Supply & Logic P.C.B.

Fig. 9.2.1

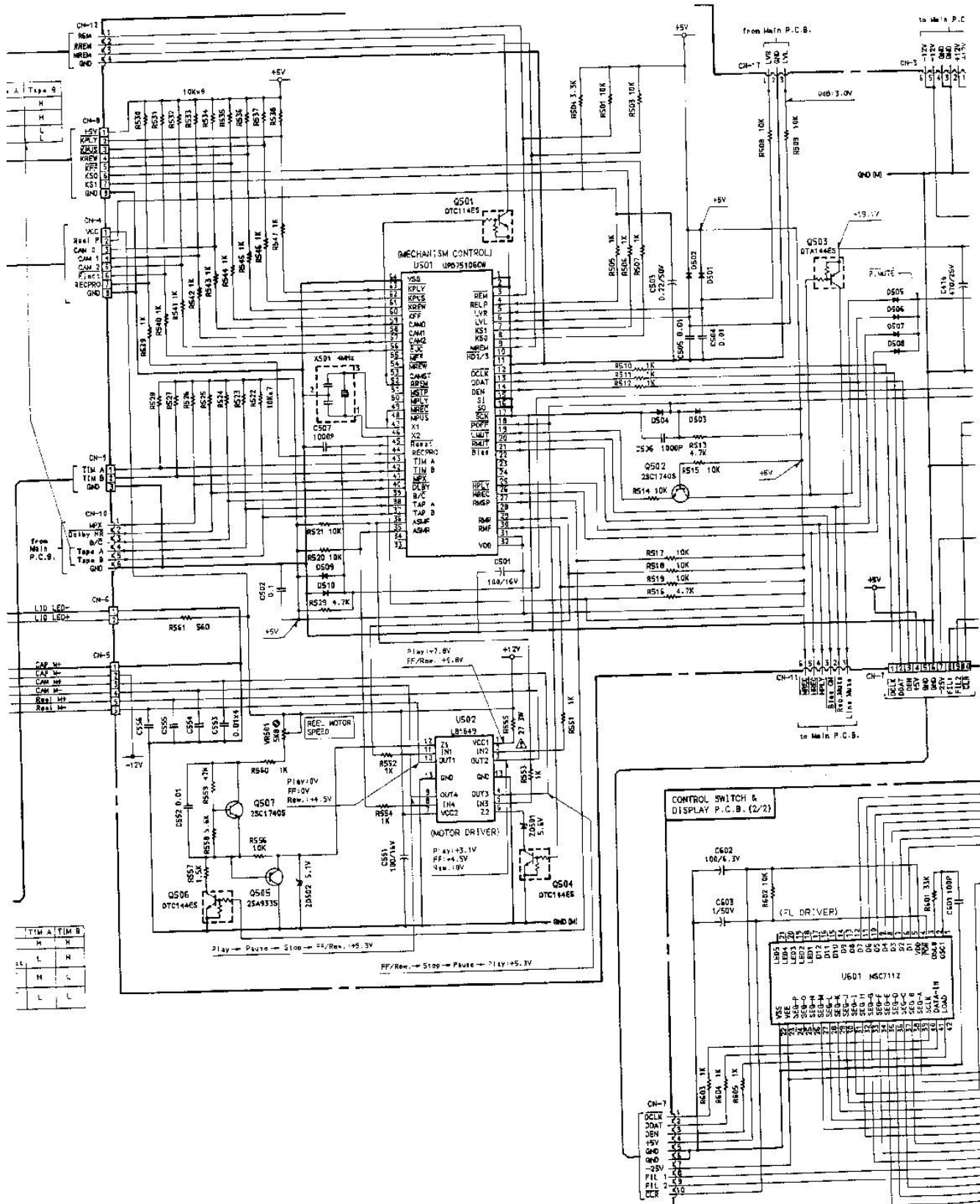




**Mechanism Control Section**



- Notes:**
1. Diode is 1S853, 1S1555, or 1S8176 unless otherwise specified.
  2. Description of the electrolytic capacitor:  
100/16V = 100μ 16V




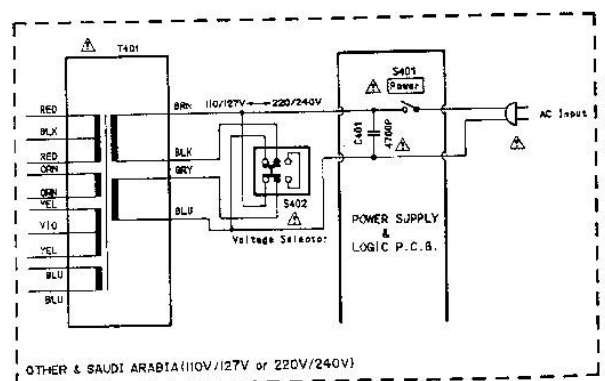
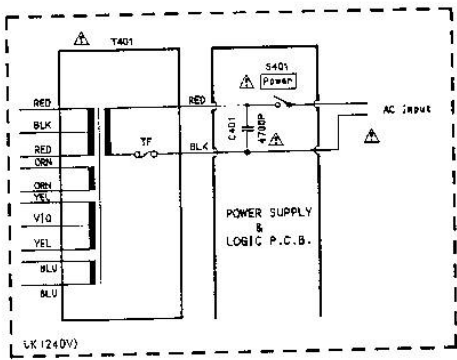
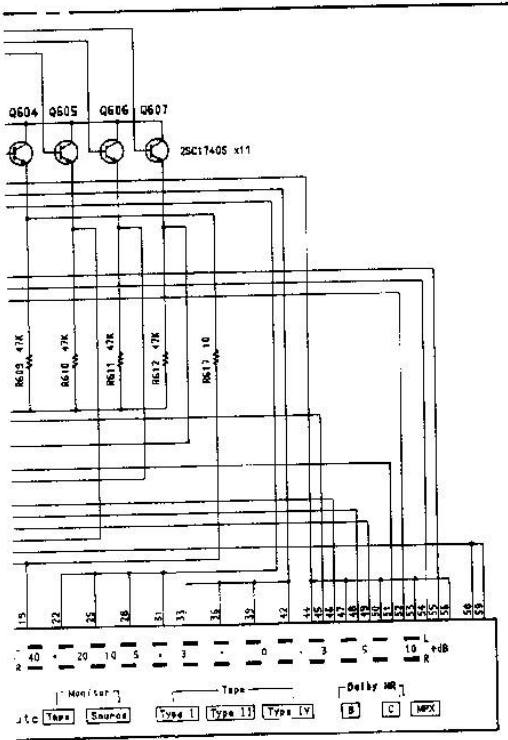
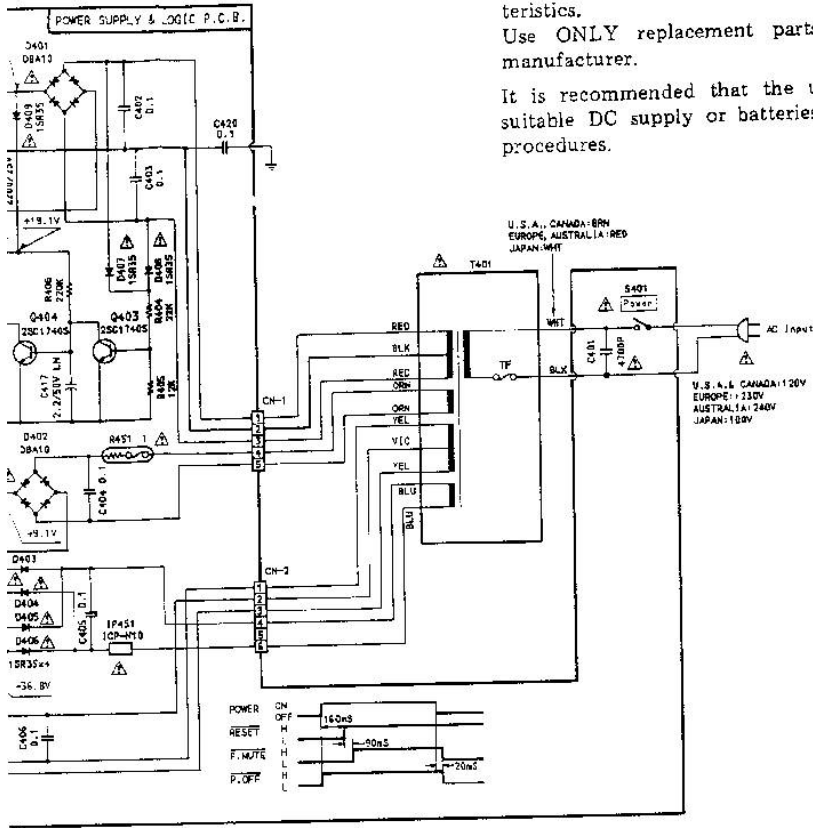
A I Tape 8

H	H
H	H
L	L

TIM A TIM B

H	H
L	L
H	L
L	L

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.



# 10. WIRING DIAGRAM

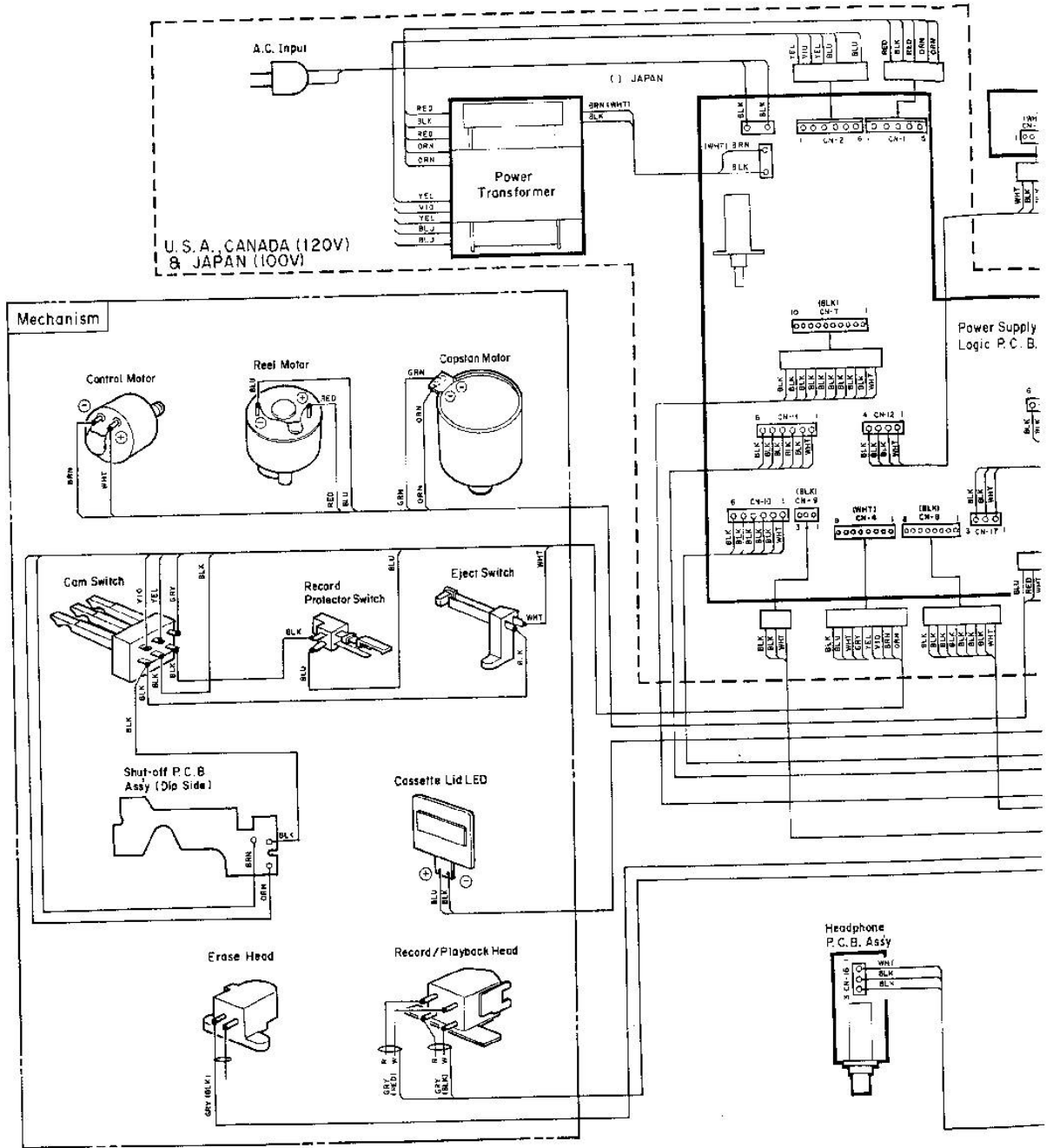


Fig. 10.1

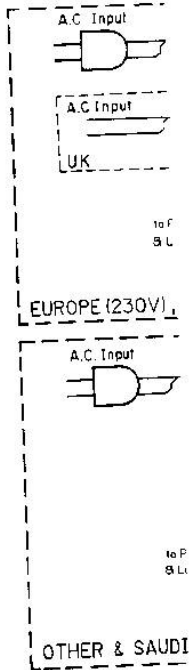
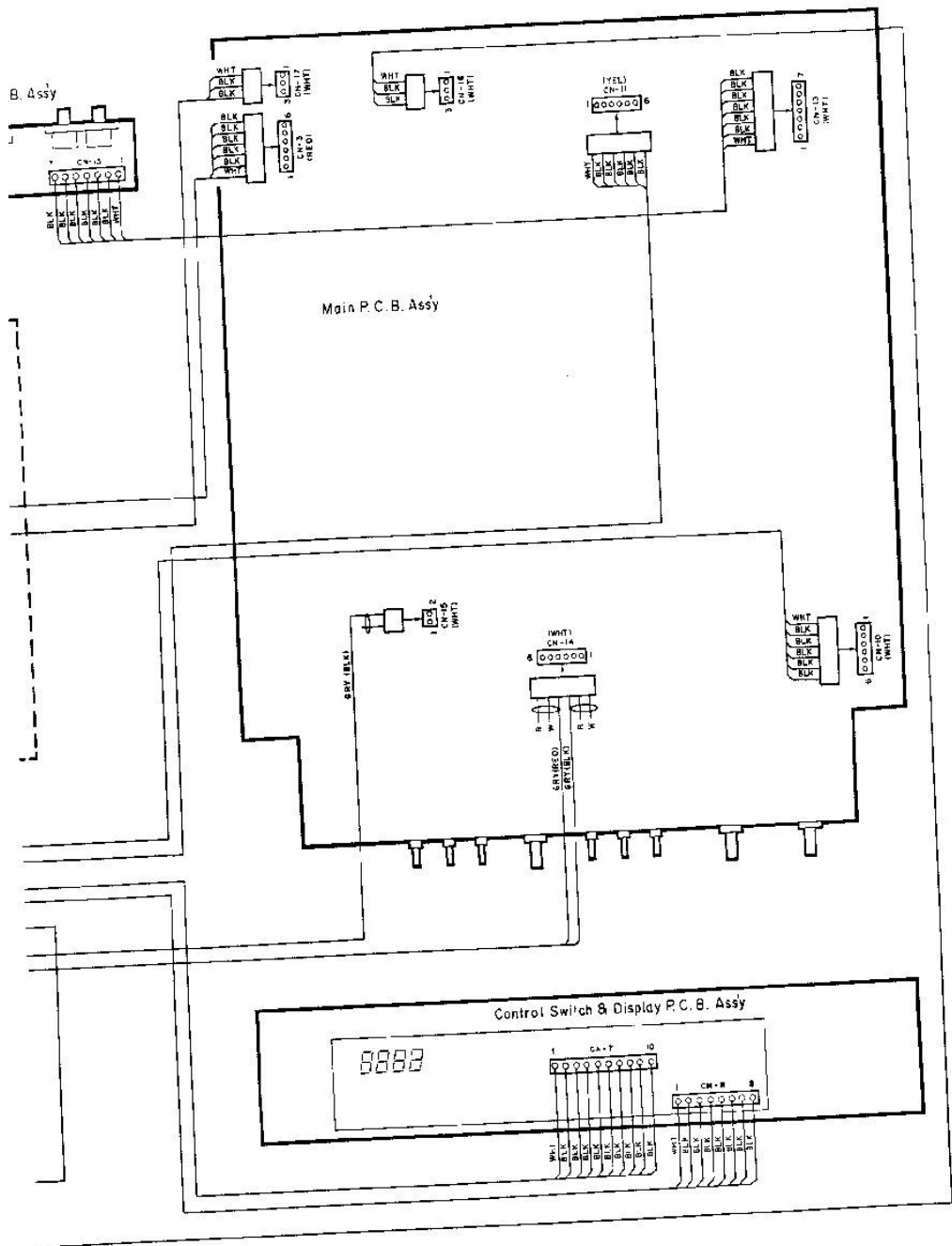
Notes: 1. Table of wire colors

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

2. Component side view of the P.C.B. is illustrated unless otherwise specified.
3. Wire tube color is shown in ( ).







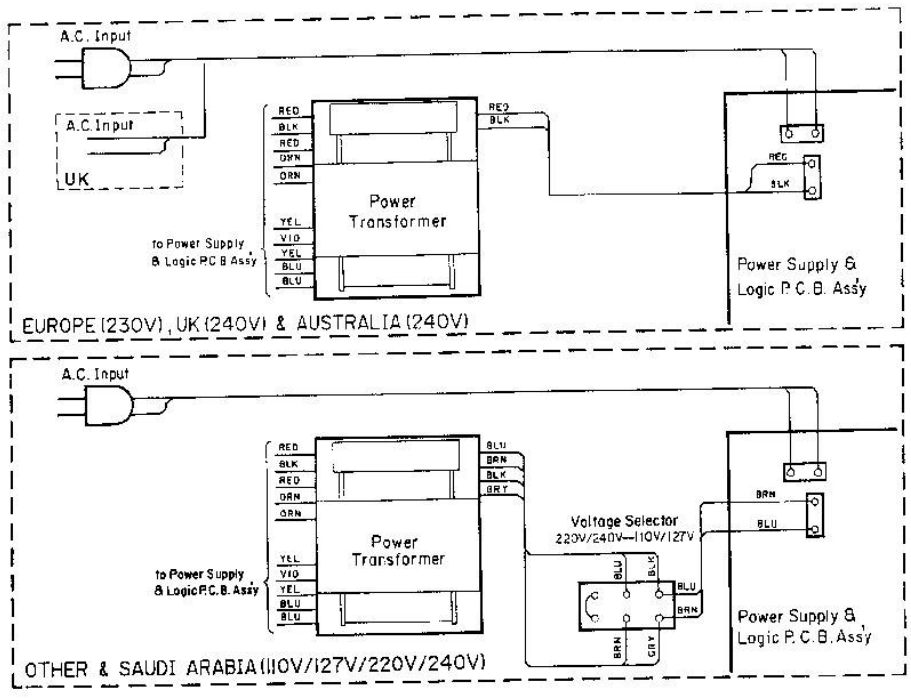


Fig. 10.2

# 11. BLOCK DIAGRAMS

## 11.1. Amplifier Section

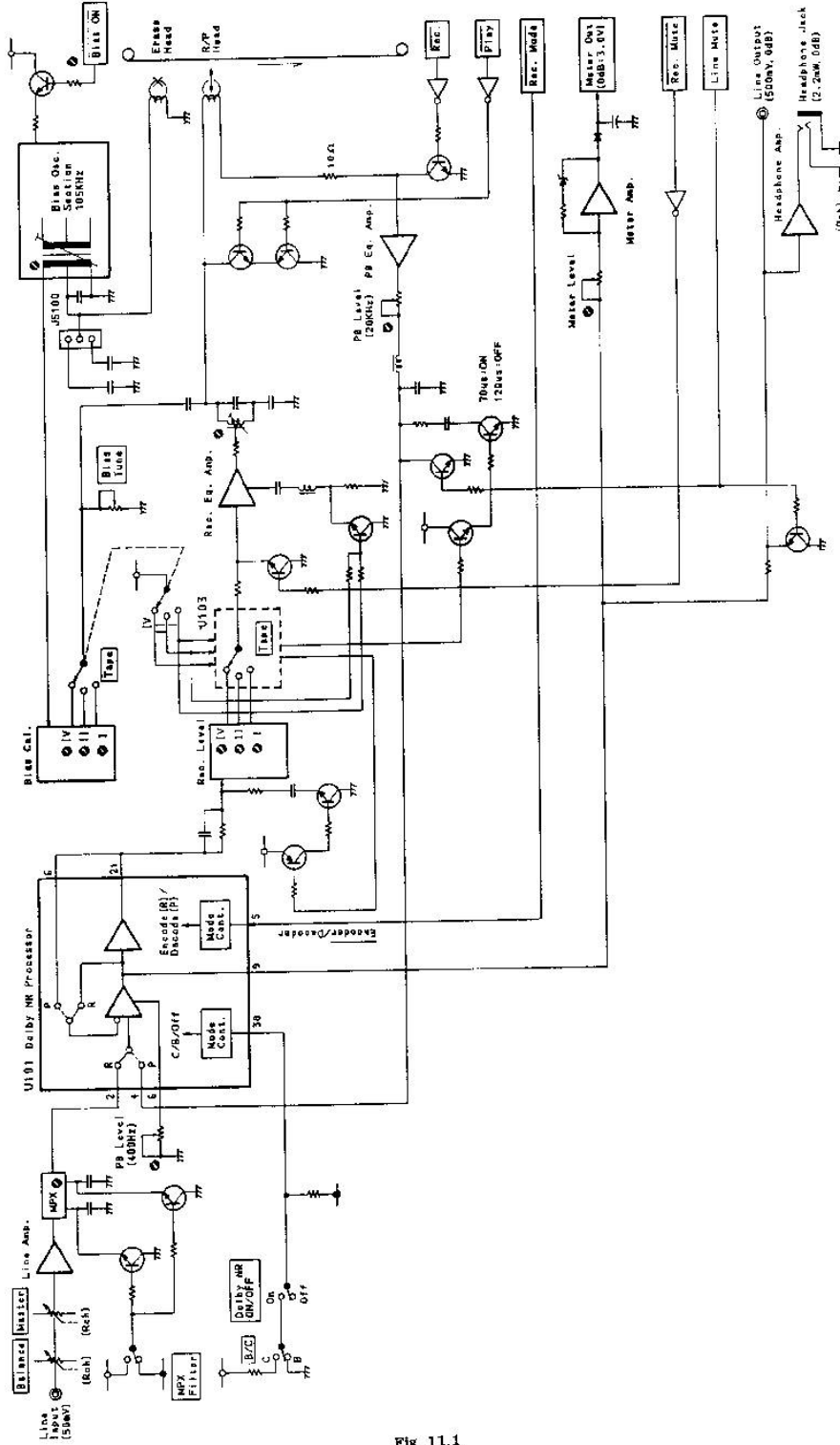


Fig. 11.1

11.2. Mechanism Control Section

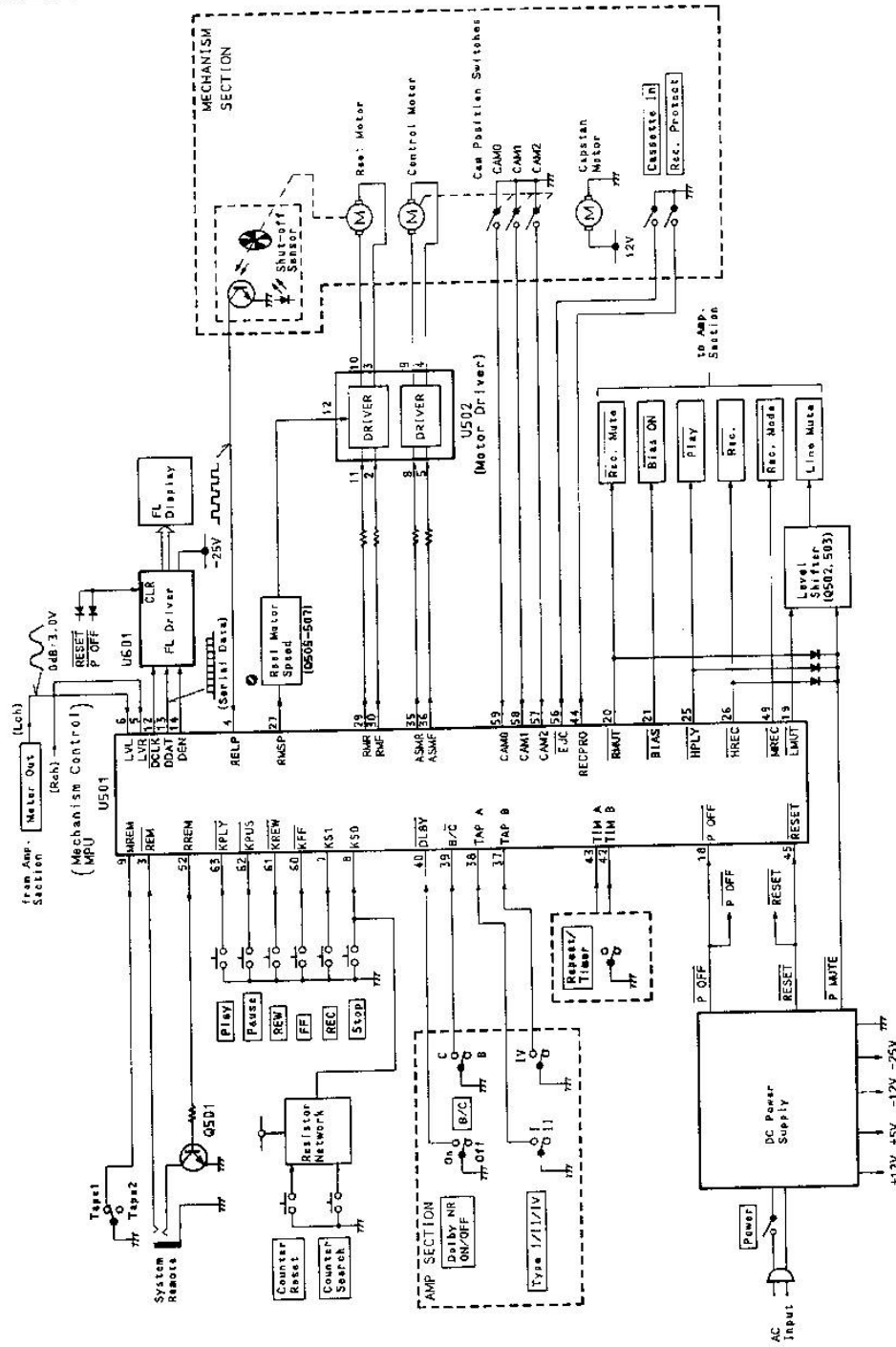


Fig. 11.2

## 12. TIMING CHARTS AND EQ. AMP. FREQUENCY RESPONSE

### 12.1. Timing Charts (1) Overall Timing Chart

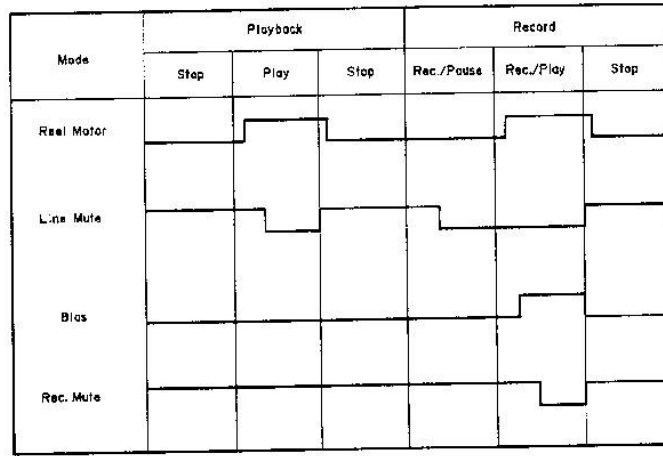


Fig. 12.1.1

### (2) Mechanism Control Timing Chart

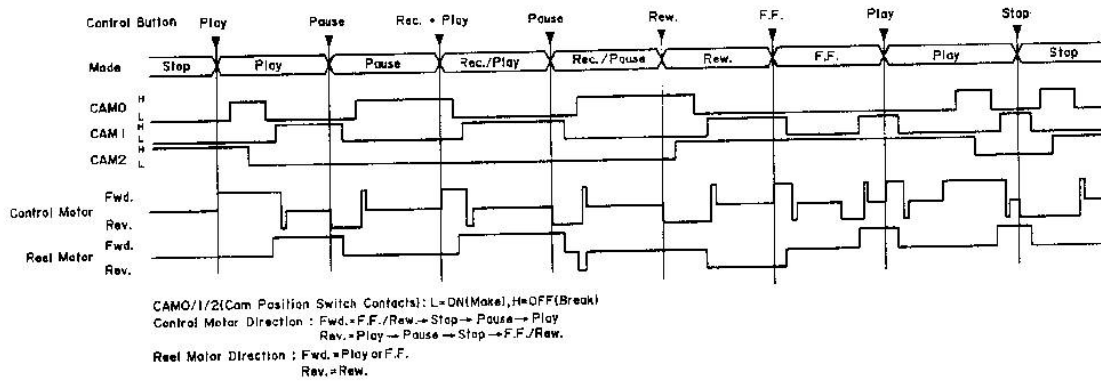


Fig. 12.1.2

12.2. Eq. Amp. Frequency Response  
(1) Playback Frequency Response

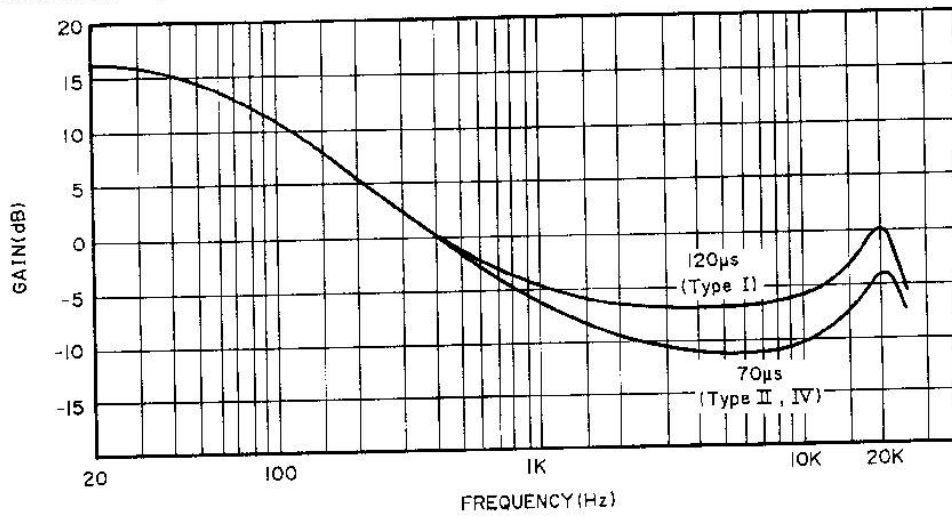


Fig. 12.2.1

(2) Record Current Frequency Response

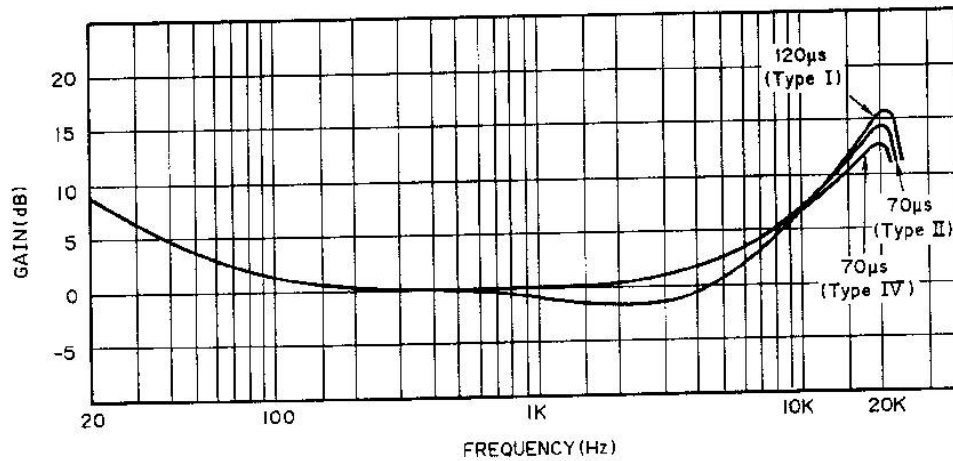


Fig. 12.2.2

### 13. SPECIFICATIONS

Track Configuration	4 tracks/2-channel stereo
Heads	2 (erase head x 1, record/playback x 1)
Motors	
<Tape Transport>	DC servo motor (capstan drive) x 1 DC motor (reel drive) x 1
<Mechanism>	DC motor (cam drive) x 1
Power Source	120, 220, 240 or 110/127/220/240 V, 50/60 Hz
Power Consumption	25 W max.
Tape Speed	1-7/8 ips. (4.8 cm/sec.) $\pm 0.5\%$
Wow and Flutter	less than $\pm 0.11\%$ WTD Peak less than 0.06% WTD RMS
Frequency Response	20-20,000 Hz $\pm 3$ dB
Signal to Noise Ratio	
Dolby C-Type NR On	Better than 70 dB (400 Hz, 3% THD, IHF A-WTD RMS)
<70 $\mu$ s, Type IV>	
Dolby B-Type NR On	Better than 64 dB (400 Hz, 3% THD, IHF A-WTD RMS)
<70 $\mu$ s, Type IV>	
Total Harmonic Distortion	Less than 1.2% <400 Hz, 0 dB Type I/IV> Less than 1.6% <400 Hz, 0 dB, Type II>
Erasure	Better than 60 dB (100 Hz, +10 dB)
Channel Separation	Better than 36 dB (1 kHz, 0 dB)
Crosstalk	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency	105 Hz
Input (Line)	50 mV/40 k $\Omega$
Output	
Line	0.6 V (400 Hz, 0 dB)
Headphones	2.2 mW/8 $\Omega$ (400 Hz, 0 dB)
Fast-Wind Time	Approx. 95 seconds (with C-60 cassette)
Dimensions*	430 (W) x 100 (H) x 320 (D) mm 16-15/16 (W) x 3-15/16 (H) x 12-5/8 (D) inches
Approximate Weight	5.4 kg/11 lbs. 14 oz.

- \*: Dimensions do not include protruding parts. Height is the panel height.
- Specifications and Design are subject to change for further improvement without notice.
  - Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
  - "DOLBY" and the double-D symbol  $\square$  are trademarks of Dolby Laboratories Licensing Corporation.