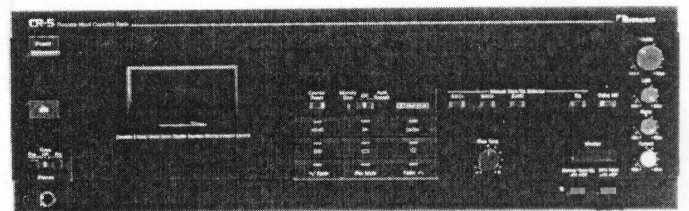


# Service Manual

# Nakamichi

# CR-5 CR-5A CR-5E

Discrete 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 CR-5. This voltage selector can select either 120 V or 220-240 V at customer's disposal.

### 1.2. Packing Materials and Owner's Manuals

Part No.	Description	Q'ty
0F03900A	Packing	2
0F03927A	Carton Box CR-5A	1
0F03902A	Carton Box CR-5E	1
0F03925A	Carton Box CR-50	1
0F03899A	Carton Box CR-5	1
0M03884A	Voltage Label 120V CR-5 (Canada)	2
0M03457A	Voltage Label 240V CR-5 (Australia) & CR-5E (UK)	2
0D04561B	Owner's Manual CR-7E/CR-5E, CR-7/CR-5 (English/German/French)	1
0D04562B	Owner's Manual CR-70/CR-50 (Japanese)	1
0D04563B	Owner's Manual CR-7A/CR-5A, CR-7/CR-5 (English)	1

## 2. TEST TAPES AND GAUGES

- |  |   |
|--|---|
| (1) 400 Hz Level Tape (DA09005B)                 | (10) Reference SX Tape (DA09025B)               |
| (2) 1 kHz Track Alignment Tape (DA09007B)        | (11) Reference SX-E Tape (DA09086A)             |
| (3) 10 kHz PB Frequency Response Tape (DA09003B) | (12) Reference ZX Tape (DA09037B)               |
| (4) 15 kHz PB Frequency Response Tape (DA09002B) | (13) EH Tilt Check Gauge S (DA09088A)           |
| (5) 20 kHz PB Frequency Response Tape (DA09001B) | (14) Stroke Check Gauge S (DA09090A)            |
| (6) 15 kHz Azimuth Alignment Tape (DA09004B)     | (15) Tape Guide Height Check Gauge S (DA09091A) |
| (7) 3 kHz Speed and Wow/Flutter Tape (DA09006C)  | (16) Tilt Check Gauge (DA09039B)                |
| (8) Tape Travelling Cassette Tape (DA09071A)     | (17) Torque Gauge FWD (DA09082A)                |
| (9) Reference EXII Tape (DA09066B)               |   |

## 3. MECHANICAL ADJUSTMENTS

### 3.1. Record Head and Playback Head Tilt Adjustment

Remove the Cover Plate Ass'y by loosening two screws. Refer to Fig. 3.1.

- (1) Remove the pad lifter from the playback head.
- (2) Load a Tilt Check Gauge in the cassette deck.
- (3) Remove both of the Height Gears (PH and RH).
- (4) Set the cassette deck in Play mode. Check to insure whether the Beacons Playback Head "Upper" or "Lower" and Record Head "Upper" or "Lower" are illuminating. In order not to give damages onto the head surfaces, push both of slide knobs of the Gauge away from the heads, then return them to their original places to be in contact with the record head and the playback head surfaces after Play mode is securely locked.
- (5) The Beacon Playback Head "Lower" will light up when the height adjustment screw (PH) is turned counterclockwise but the Playback Head "Upper" when clockwise. Adjust so that both "Upper" and "Lower" will light up even when you move the slide knob away from the head and then return it to the original place.
- (6) The same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (RH).

- (7) Set the cassette deck in Stop mode and fit both of the serrated Height Gears. Then set the cassette deck in Play mode again and insure all of the 4 Beacons are illuminating. If not, (5) and (6) will have to be repeated till satisfactory results are obtained.
- (8) Mount the pad lifter on the playback head.

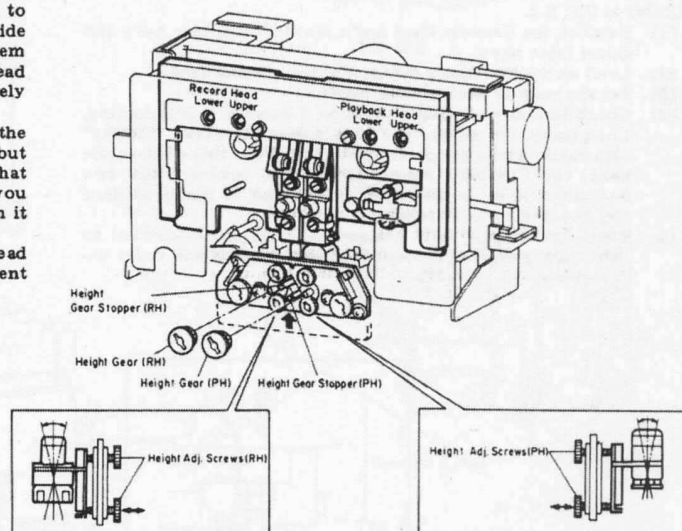


Fig. 3.1

### 3.2. Head Base Stroke Check

Remove the Cover Plate Ass'y. Refer to Fig. 3.2.

Note: Before you conduct this adjustment, adjust with a "Tilt Check Gauge" to insure freedom from tilt on the playback head and record head.

- (1) Load a Stroke Check Gauge S in the cassette deck.
- (2) Move the Record Head Indicator and the Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the cassette deck in Play mode. Then slowly release the Indicators and make sure that each of the Indicators is in contact with the record and the playback heads.
- (3) Check to insure whether the line "P" on the Playback Head Indicator meets the central line on the Indicator Plate.
- (4) Check to insure whether the line "P" on the Playback Head Indicator locates between the 2 lines on the Record Head Indicator, thus check can be made on record head stroke.

### 3.3. Erase Head Stroke Adjustment and Tape Guide Height Check

Remove the Head Mount Base Ass'y and the Cover Plate Ass'y. Refer to Fig. 3.3.

#### (1) Erase Head Stroke Adjustment

- (a) Load a Tape Guide Height Check Gauge S in the cassette deck.
- (b) Set the cassette deck in Play mode, thus check can be made on erase head stroke through the EH Stroke Indicator.
- (c) Check to insure whether the erase head surface is aligned with red line on the EH Stroke Indicator. If not, adjust the erase head stroke by loosening screw A that assembles the erase head with erase head plate.
- (d) After completion of the adjustment, screw A shall be locked with lock tight paint.

#### (2) Supply Tape Guide Height Check

- (a) Load a Tape Guide Height Check Gauge S in the cassette deck.
- (b) Set the cassette deck in Play mode.
- (c) Slide the Supply Tape Guide Check Bar down onto the supply tape guide, and check to insure that the Supply Tape Guide Check Bar is accepted by the supply tape guide.

#### (3) Take-up Tape Guide Height Check

- (a) Load a Tape Guide Height Check Gauge S in the cassette deck.
- (b) Set the cassette deck in Play mode.
- (c) Slide the Take-up Tape Guide Check Bar down onto the take-up tape guide, and check to insure that the Take-up Tape Guide Check Bar is accepted by the take-up tape guide.

### 3.4. Erase Head Height and Tilt Adjustment

Refer to Fig. 3.4.

- (1) Remove the Cassette Case Ass'y, Head Mount Base Ass'y and Cover Plate Ass'y.
- (2) Load an EH Tilt Check Gauge S in the cassette deck.
- (3) Set the cassette deck in Stop mode.
- (4) Check to insure whether one of the 3 Beacons is illuminating. Look down the mirror and slowly turn the Screw "Height" counterclockwise (or clockwise) so that the line of the erase head (in different color) is located between the two horizontal lines on the mirror and check to insure whether the first Beacon is illuminating.
- (5) Turn the Screw "Tilt" counterclockwise (or clockwise) to light up the second Beacon. Excessive turning will cause the first Beacon to light off.

Adjustment of the Screw "Tilt" will therefore be conducted till both of the first and the second Beacons illuminate.

- (6) Turn Screw "Azimuth" counterclockwise (or clockwise) to light up the third Beacon. Excessive turning will cause either the first or the second Beacon to light off, and therefore adjust Screw "Azimuth" until all of the 3 Beacons illuminate.
- (7) Check to insure whether the horizontal line of the erase head is located between two lines on the mirror. If not, (4) through (6) will be repeated till satisfactory results are obtained.
- (8) After completion of adjustment, 3 pcs. of screws shall be locked with lock tight paint.

Note: Before use of this gauge, check to insure freedom from dust or dirt, or overflow in the groove of the erase head surface.

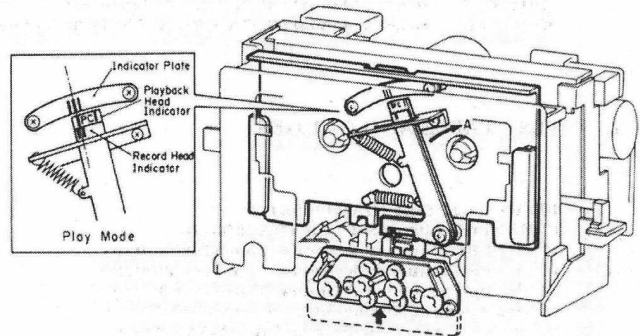


Fig. 3.2

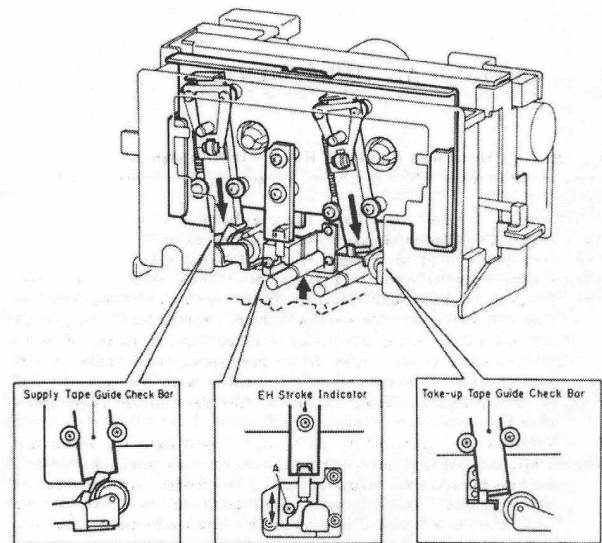


Fig. 3.3

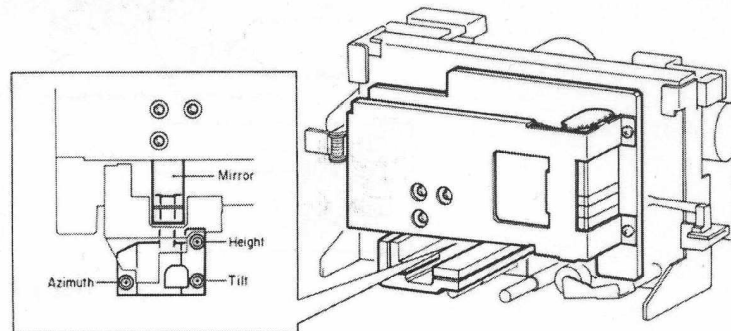


Fig. 3.4

### 3.5. Playback Head and Record Head Height Adjustment and Azimuth Alignment

Refer to Fig. 3.5.

- (1) Playback Head Height Adjustment and Azimuth Alignment
  - (a) Set the Monitor switch to Tape and connect a VTVM to the Output Jacks.
  - (b) Load a 1 kHz Track Alignment Tape and set the cassette deck in Play mode.
  - (c) Turn the PH Height Gear until the outputs of both channels become minimum.
  - (d) Load a 15 kHz Azimuth Tape and set the cassette deck in Play mode.
  - (e) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
  - (f) Repeat above steps (b) through (e) one or two times to obtain optimum performance.
- (2) Record Head Height Adjustment and Azimuth Alignment
  - (a) Set the cassette deck in Stop mode.
  - (b) Set the Monitor switch to Tape and Eq. switch to 70  $\mu$ s.
  - (c) Load a reference ZX tape and connect a VTVM to Output Jacks.
  - (d) Feed in 400 Hz (0 dBV) to the Input Jacks.
  - (e) Set the cassette deck in Record and Play mode and turn the RH Height Gear until the outputs of both channels become maximum.
  - (f) Feed in 15 kHz (-20 dBV) to the Input Jacks and turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
  - (g) Repeat (d) through (f) one or two times to obtain optimum performance.

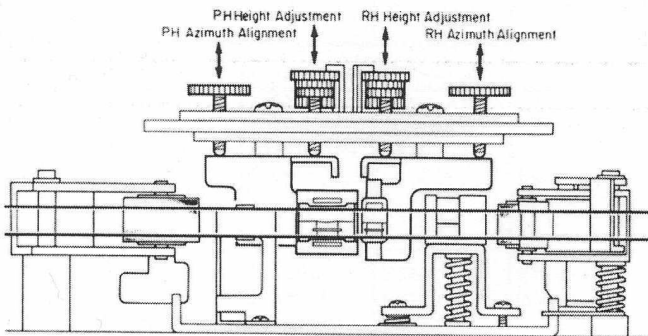


Fig. 3.5

### 3.6. Tape Travelling Check

Load and play back a Tape Travelling Cassette and check the followings:

- (1) Tape is in contact with heads sufficiently.
- (2) Tape waving is small on the heads and pressure rollers.
- (3) Tape is free from waving or slippage from the tape guide.

### 3.7. Eject Damper Adjustment

Refer to Fig. 3.6. Load a cassette tape and with opening and closing the Cassette Case, adjust the speed of damper action by the Damper Adjustment Screw.

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

- (1) In order to warm-up the cassette deck, load a C-60 cassette tape and play it back.
- (2) After more than four minutes, load a Torque Gauge FWD and set the cassette deck in Play mode.
- (3) Adjust VR601 on the Logic P.C.B. Ass'y to obtain exactly 50 g-cm on the torque gauge.

### 3.9. Tape Speed Adjustment

Refer to Fig. 3.7.

- (1) Connect a frequency counter to the Output Jack.
- (2) Load a 3 kHz Speed and Wow/Flutter Tape and play it back.
- (3) Adjust VR101 on the Motor P.C.B. Ass'y to obtain 3,000 Hz  $\pm$ 15 Hz on the frequency counter.  
CCW: Motor runs fast.  
CW: Motor runs slowly.

### 3.10. Lubrication

The tape transport mechanism is of a lubrication-free type. However, when the following parts are replaced with new ones, apply the specified lubricant.

- (1) Molykote  $\text{\textcircled{R}}$  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 (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  $\text{\textcircled{R}}$  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 Sakumacho, Chiyoda-ku, Tokyo, Japan
- (c) Diamond Oil (EP-56)  
Mitsubishi Oil Co., Ltd., 1-2-4 Toranomom, Minato-ku, Tokyo, Japan
- (d) Anderol 456  
Tokyo Kokusai Oil Co., Ltd., 3-3-5 Hatchobori, Chuo-ku, Tokyo, Japan

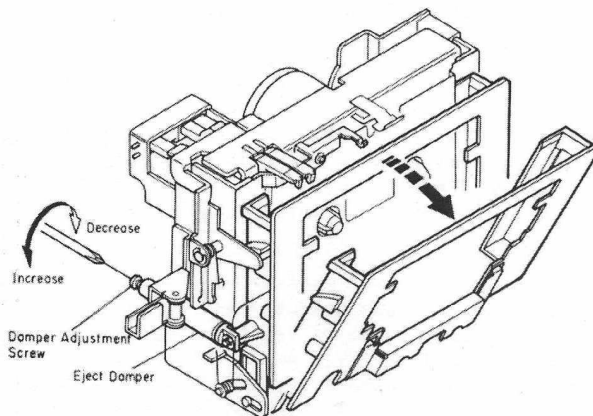


Fig. 3.6

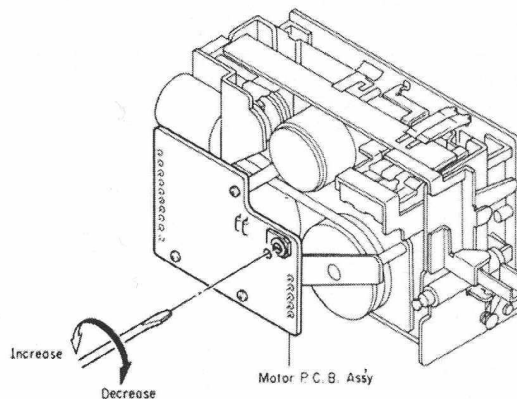


Fig. 3.7

4. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

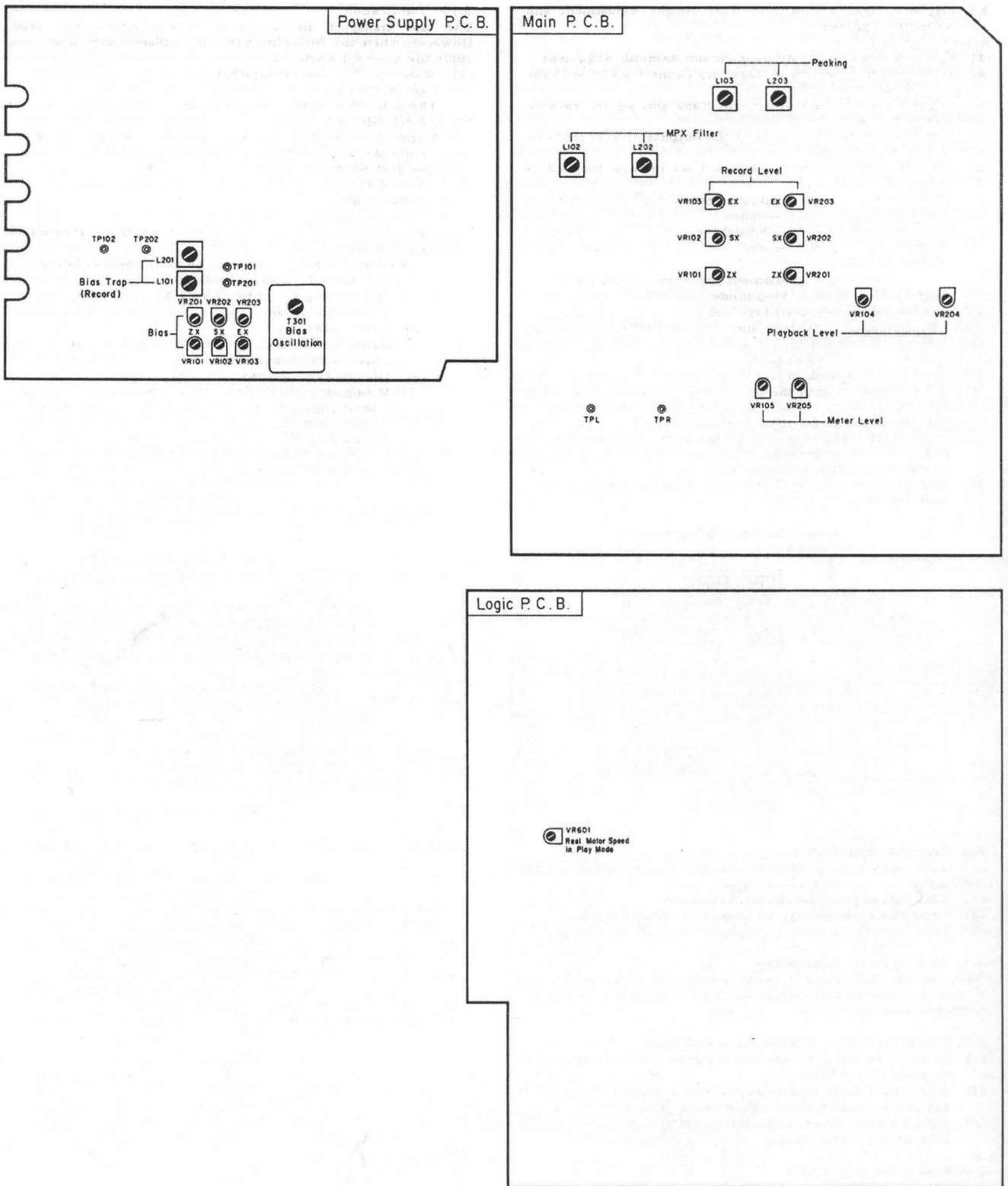


Fig. 4

## 5. ELECTRICAL ADJUSTMENTS

- Notes: 1. Electrical adjustment should be performed after mechanical adjustment is completed.  
 2. Before adjustment, set the Bias Tune control on the Front Panel to the mechanical center position.

### 5.1. Adjustment Instructions

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape	Frequency Counter to Output Jacks	Playback Eq. - 70 $\mu$ s	Motor P.C.B. VR101	Adjust VR101 to obtain 3 kHz $\pm$ 15 Hz on the frequency counter.
2	Meter Level Calibration	400 Hz to Input Jacks	VTVM to TPL, TPR on Main P.C.B.	Monitor - Source	Main P.C.B. VR105 VR205	1. Feed in 400 Hz and adjust the Input Level controls to obtain 350 mV -0.6 dB on the VTVM. 2. Adjust VR105 (VR205) so that the 0 dB segment on the level meter starts illuminating.
3	MPX Filter Adjustment	19 kHz to Input Jacks	VTVM to Output Jacks	Monitor - Source MPX - OFF/ON	Main P.C.B. L102 L202	1. Set the Output Level control to max. 2. Adjust Input Level controls to obtain 0 dBV (1 V) on the VTVM. 3. Set the MPX Filter switch to ON and adjust L102 (L202) to obtain minimum reading on the VTVM. (The minimum reading will be less than -30 dBV.)
4	Playback Head Track Alignment	1 kHz Track Alignment Tape	VTVM to Output Jacks	Playback Monitor - Tape Eq. - 70 $\mu$ s Dolby NR - OFF	PH Height Gear	Adjust the PH Height Gear to obtain the minimum readings on the VTVM for both channels. Refer to "Playback Head Height Adjustment" in item 3.5.
5	Playback Head Azimuth Alignment	15 kHz Azimuth Tape	VTVM to Output Jacks	Playback Monitor - Tape Eq. - 70 $\mu$ s Dolby NR - OFF	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain maximum readings on the VTVM for both channels. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 3.5.  Note: Repeat steps 4 and 5 one or two times to obtain optimum performance.
6	Playback Level Calibration	400Hz Level Tape	VTVM to TPL, TPR on Main P.C.B.	Same as above	Main P.C.B. VR104 VR204	1. Set the Output Level control to max. 2. Adjust VR104 (VR204) to obtain 350 mV on the VTVM.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
7	Playback Frequency Response Adjustment	400Hz Level Tape 10 kHz PB Frequency Response Tape 15 kHz PB Frequency Response Tape 20 kHz PB Frequency Response Tape	VTVM to Output Jacks	Playback Monitor - Tape Eq. - 70 $\mu$ s Dolby NR - OFF	Main P.C.B. R143 R144 R243 R244	<ol style="list-style-type: none"> <li>1. Load a 400 Hz level tape and play it back. Adjust the Output Level control to a certain level (0 dBV for example).</li> <li>2. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to obtain maximum levels on the VTVM with each tape. Short R143 (R243) or R144 (R244) to obtain the following levels against the level for 400Hz level tape. 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 "Playback Frequency Response Adjustment" in item 5.2.</li> <li>3. Conduct step 5 "Playback Head Azimuth Alignment".</li> </ol>
8	Bias Oscillation Frequency and Erase Current Adjustment		VTVM across the additional 0.1 ohm resistor and Frequency Counter between terminals 1 and 2 of CN-33 on Power Supply P.C.B.	Rec, Pause Monitor - Source Tape - ZX Eq. - 70 $\mu$ s	Power Supply P.C.B. T301 R303 R304	<ol style="list-style-type: none"> <li>1. Connect an additional 0.1 ohm resistor in series to the Erase Head and connect a VTVM across the resistor.</li> <li>2. Adjust T301 to obtain 105 kHz on the frequency counter.</li> <li>3. Check the erase current by the VTVM. Erase current will be within the range of 310 mA to 400 mA (typically approx. 350 mA). If erase current is not sufficient, increase it by shorting either R303 or R304.</li> <li>4. After completion of the erase current adjustment, re-check the bias oscillation frequency.</li> <li>5. Remove the additional 0.1 ohm resistor.</li> </ol>
9	Record Amplifier Equalizer Adjustment	23 kHz (-20 dBV) to Input Jacks	VTVM to TP101, TP201 on Power Supply P.C.B.	Same as above	Main P.C.B. L103 L203	<ol style="list-style-type: none"> <li>1. Remove the bias-cut-jumper on the dip side of the Power Supply P.C.B. Ass'y.</li> <li>2. Adjust L103 (L203) to obtain approx. 16 dB at 23 kHz on the VTVM.</li> <li>3. Re-solder the bias-cut-jumper.</li> </ol>
10	Bias Trap Adjustment (Record Amp.)	Remove Input Signals	VTVM to TP102, TP202 on Power Supply P.C.B.	Same as above	Power Supply P.C.B. L101 L201	Adjust L101 (L201) to obtain minimum reading on the VTVM.
11	Record Head Height Adjustment	400 Hz (0 dBV) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor - Tape Tape - ZX Eq. - 70 $\mu$ s Dolby NR - OFF	RH Height Gear	<ol style="list-style-type: none"> <li>1. Load a reference ZX tape, and record and play it back.</li> <li>2. Adjust the RH Height Gear to obtain maximum readings for both channels on the VTVM. Refer to "Record Head Height Adjustment and Azimuth Alignment" in item 3.5.</li> </ol>



STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
12	Record Head Azimuth Alignment	15 kHz (-20 dBV) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor - Tape - ZX Eq. - 70 $\mu$ s Dolby NR - OFF	Record Head Azimuth Alignment Screw	Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings for both channels on the VTVM. Refer to "Record Head Height Adjustment and Azimuth Alignment in item 3.5. Note: Repeat steps 11 and 12 one or two times to obtain optimum performance.
13	Record Level Calibration and Recording Bias Current Adjustment	400 Hz and 15 kHz (-20 dBV) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor - Source/ Tape - ZX/SX/EX Eq. - 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX)	Main P.C.B. (Level) ZX: VR101 VR201 SX: VR102 VR202 EX: VR103 VR203 Power Supply P.C.B. (Bias) ZX: VR101 VR201 SX: VR102 VR202 EX: VR103 VR203	Adjustment should be made in the order of ZX, SX and EX. 1. Set the Monitor switch to Source. 2. Feed in 400 Hz, and set the Input Level controls to obtain 0 dBV (1 V) on the VTVM. 3. Set the Monitor switch to Tape. 4. Load a reference ZX tape, reference SX or SX-E (for European models) tape and reference EXII tape. 5. Set Record Cal. VR 101 (VR201) for ZX, VR102 (VR202) for SX and VR103 (VR203) for EXII tape to their center position. 6. Adjust Bias VR101 (VR201) for ZX, VR102 (VR202) for SX and VR103 (VR203) for EXII tape to obtain maximum readings on the VTVM. 7. Feed in 15 kHz (-20 dBV) and adjust Bias VR101 (VR201), VR102 (VR202) and VR103 (VR203) to obtain the same readings as source monitor levels on the VTVM. 8. Feed in 400 Hz (0 dBV) and adjust Record Cal. VR101 (VR201), VR102 (VR202) and VR103 (VR203) to obtain 0 dBV (1 V) on the VTVM. 9. Repeat above 7 and 8 one or two times to obtain optimum performance.
14	Overall Frequency Response Adjustment	400 Hz (0 dBV) and 20 Hz to 20 kHz (-20 dBV) to Input Jacks	VTVM to Output Jacks	Record, Playback Monitor - Source/ Tape - ZX/SX/EX Eq. - 70 $\mu$ s (ZX/SX) 120 $\mu$ s (EX) Dolby NR - OFF	Main P.C.B. L103, L203	1. Set the Monitor switch to Source. 2. Feed in 400 Hz and adjust the Input Level controls to obtain -20 dBV on the VTVM. 3. Set the Monitor switch to Tape, then record and play it back. 4. Feed in 20 Hz to 20 kHz and check to insure whether the output levels are within -20 dBV +3 dB. 5. If above is not sufficient, adjust L103 (L203) to obtain approx. -20 dBV on the VTVM. 6. Conduct step 13 "Record Level Calibration and Recording Bias Current Adjustment". 7. If above is not sufficient, precise re-adjustment of step 7 "playback Frequency Response", replacement of Playback Head or Record Head, check on item 3.6 "Tape Travelling Check" will be required.

**5.2. Playback Frequency Response Adjustment**

Figs. 5.1 and 5.2 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 either R143 (R243) or R144 (R244) on the Main P.C.B. Ass'y.

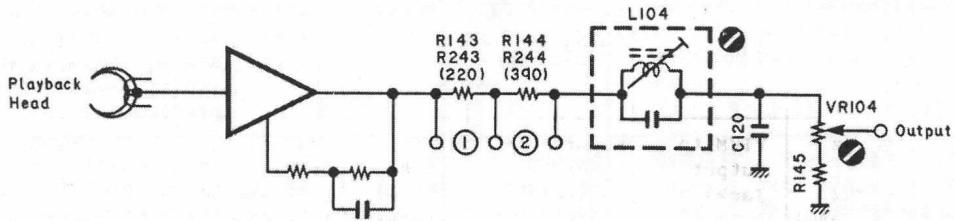


Fig. 5.1

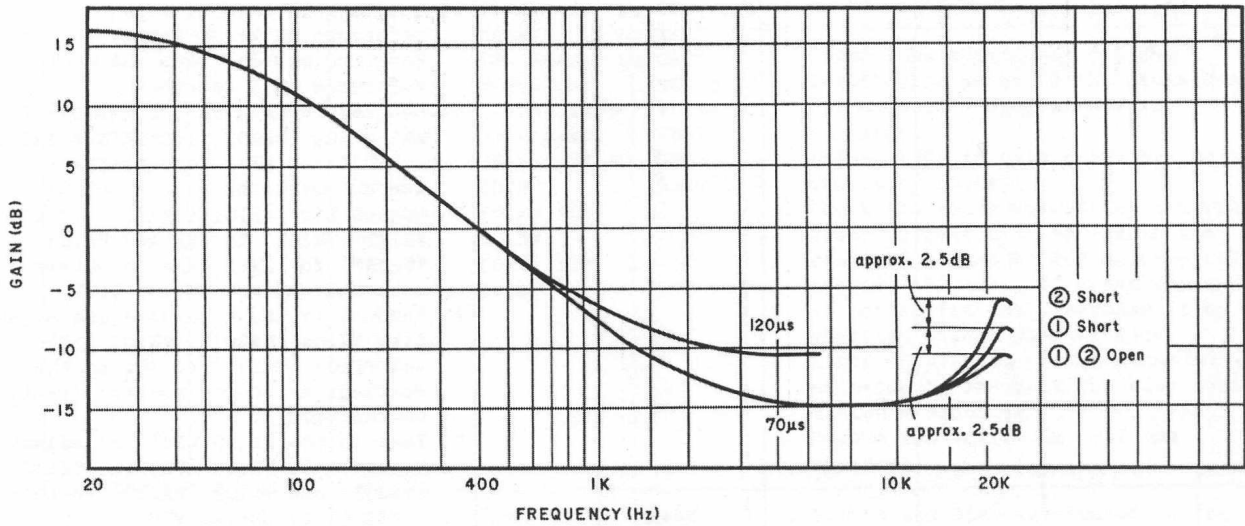


Fig. 5.2

## 6. MECHANISM ASS'Y AND PARTS LIST

### 6.1. Synthesis

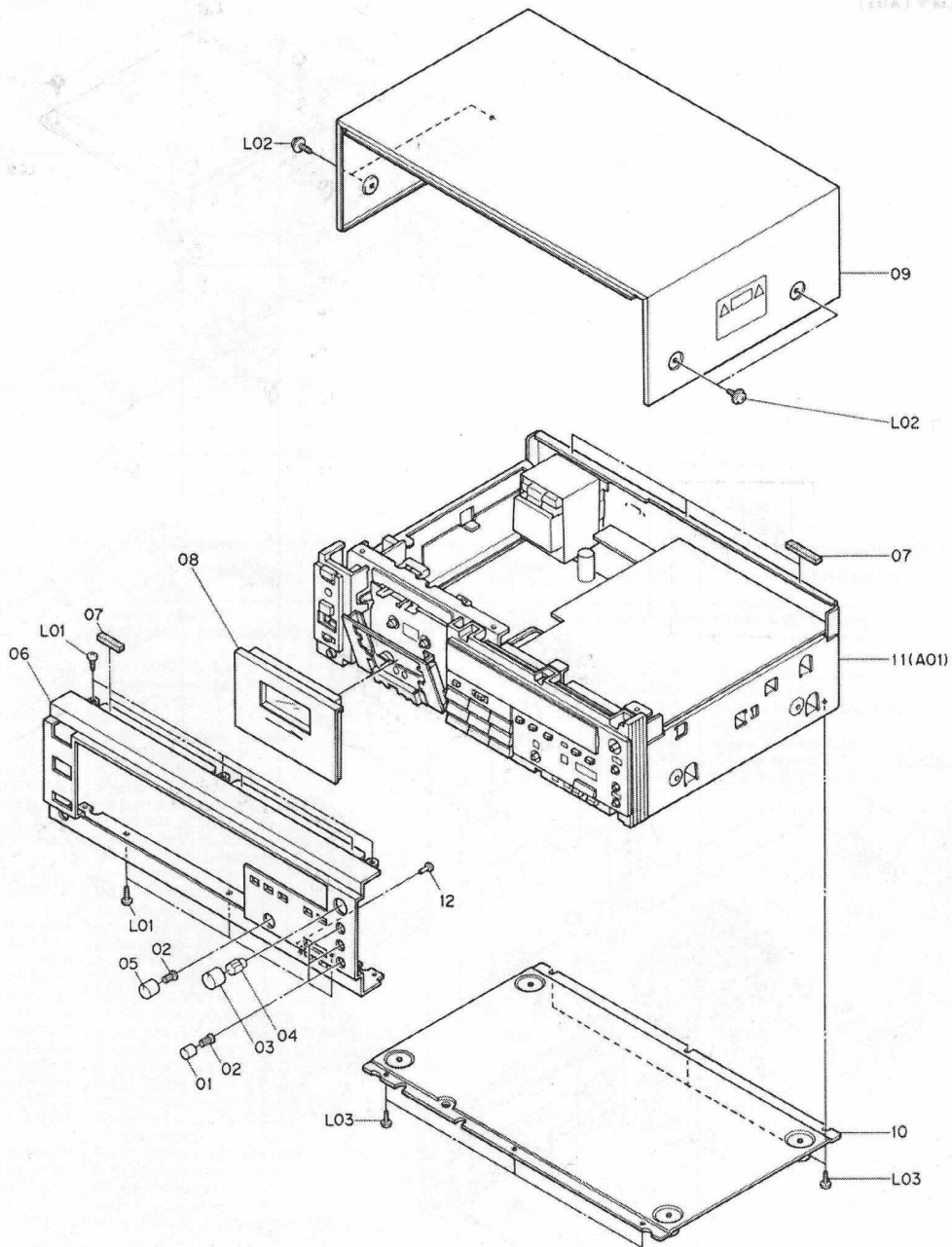


Fig. 6.1

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	
		<b>Synthesis</b> Serial No.: A12901001 -			(OH04725A)	Top Cover	(1)	
					(OM04377B)	Caution Label	(1)	
					(OJ04753A)	Vibration Isolating Rubber	(1)	
					JA04164A	Bottom Cover Ass'y (Consisting of the followings)	1	
01	OH04342A	Volume Knob (S)	3	10	(OJ05076A)	Bottom Cover	(1)	
02	OH03737A	Volume Knob Base (S)	4		(OJ03564A)	Leg T-S	(4)	
03	OH04716A	Volume Knob (L)	1		(OM04377B)	Caution Label	(1)	
04	OH03739A	Volume Knob Base	1		(OE00865A)	BT3x10 @ Binding	(4)	
05	OH04343A	Volume Knob (M)	1	11	-	Chassis Ass'y	1	
06	OH04748A	Front Panel CR-5	1	12	OH04767B	Lens	1	
	OH04796A	Front Panel CR-5A	1		OJ05158A	Top Cover Cushion B	2	
	OH04749A	Front Panel CR-5E	1		OE00921A	BT3x8 @ Binding (Black Chromate)	6	
	OH04791A	Front Panel CR-50	1		L01	OE00921A	BT3x8 @ Binding (Black Chromate)	6
07	OJ04550A	Top Cover Cushion A	6	L02	OE03032A	BT4x8 @ Pan Washer-faced (Black Chromate)	4	
08	HA04910A	Cassette Case Cover Ass'y	1	L03	OE00868A	BT3x8 @ Binding	6	
09	HA04894A	Top Cover Ass'y (Consisting of the followings)	1					

6.2. Chassis Ass'y (A01)

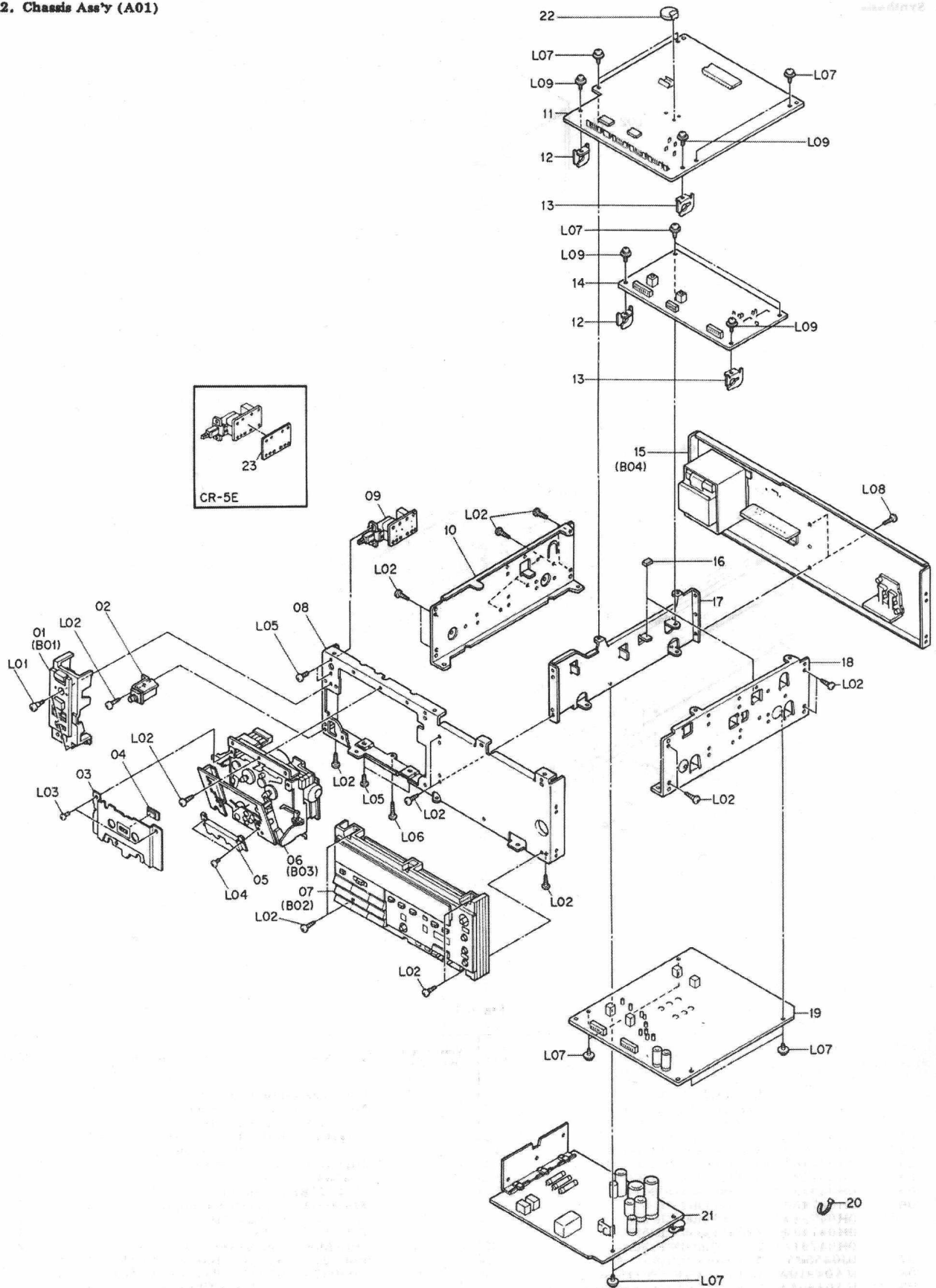


Fig. 6.2

6.3. Side Mold L Ass'y (B01)

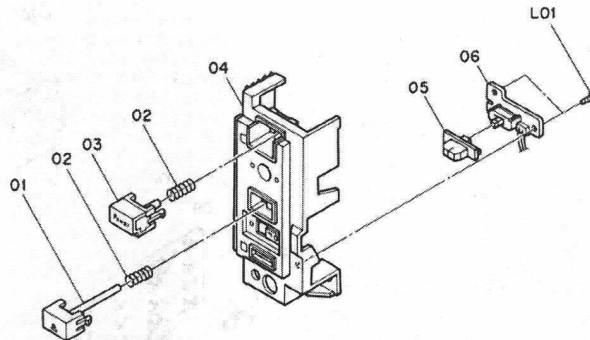


Fig. 6.3

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A01	—	Chassis Ass'y Serial No.: A12901001 -	1	B01	HA04904A	Side Mold L Ass'y Serial No.: A12901001 -	1
01	HA04904A	Side Mold L Ass'y	1	01	HA04909C	Eject Button Ass'y	1
02	BA05866A	Headphone Jack P.C.B. Ass'y	1	02	OJ05084A	Eject Spring	2
03	OH04726B	Cover Plate	1	03	HA04908A	Power Switch Button	1
04	OH04722C	Lens	1	04	OH04740B	Side Mold L	1
05	OH04415B	Head Mounting Cover	1	05	OH04745A	Slide Switch Knob	1
06	CA08764A	Mechanism Ass'y	1	06	BA05867A	Timer Switch P.C.B. Ass'y	1
07	HA04903A	Side Mold R Ass'y	1	L01	OE00859A	BT2.6x6 @ Binding	2
08	OJ05072A	Front Chassis	1				
09	BA05879A	Power Switch P.C.B. Ass'y CR-5 (Canada) & CR-5A	1				
	BA06071A	Power Switch P.C.B. Ass'y CR-5 (Australia & Others) & CR-5E (UK)	1				
	BA05880A	Power Switch P.C.B. Ass'y CR-5E (Europe)	1				
	BA05878A	Power Switch P.C.B. Ass'y CR-50	1				
10	OJ05073A	Side Chassis L	1				
11	BA05864A	Logic P.C.B. Ass'y	1				
12	OJ05080A	P.C.B. Holder L	2				
13	OJ05081A	P.C.B. Holder R	2				
14	BA05877A	Dolby NR P.C.B. Ass'y	1				
15	HA04973A	Rear Panel Ass'y CR-5 (Canada)	1				
	HA04901A	Rear Panel Ass'y CR-5 (Australia)	1				
	HA04900A	Rear Panel Ass'y CR-5 (Others)	1				
	HA04898A	Rear Panel Ass'y CR-5A	1				
	HA04897A	Rear Panel Ass'y CR-5E (UK)	1				
	HA04902A	Rear Panel Ass'y CR-5E (Europe)	1				
	HA04899A	Rear Panel Ass'y CR-50	1				
16	OJ05115A	P.C.B. Cushion	2				
17	OJ05075B	Center Chassis	1				
18	OJ05074A	Side Chassis R	1				
19	BA05863A	Main P.C.B. Ass'y CR-5, CR-5A & CR-50	1				
	BA05863A-E	Main P.C.B. Ass'y CR-5E	1				
20	OB08515A	Insu-Lock	19				
21	BA05871A	Power Supply P.C.B. Ass'y CR-5 (Canada & Others) & CR-5A	1				
	BA05872A	Power Supply P.C.B. Ass'y CR-5 (Australia) & CR-5E	1				
	BA05870A	Power Supply P.C.B. Ass'y CR-50	1				
22	OB90141A	Lithium Battery CR2032-FT	1				
23	OJ05107C	Insulator (CR-5E)	1				
L01	OE03135B	M3x8 @ Binding	2				
L02	OE00868A	BT3x8 @ Binding	21				
L03	OE00939A	BT 2.6x4 @ Pan (Black Chromate)	2				
L04	OE03202A	M2.6x3 @ Binding (Black Chromate)	2				
L05	OE00896A	M3x6 @ Binding	4				
L06	OE00865A	BT 3x10 @ Binding	1				
L07	OE03157A	BT3x8 @ Binding with Washer	12				
L08	OE00921A	BT3x8 @ Binding (Black Chromate)	2				
L09	OE00606A	M3x6 @ Pan (3A)	4				

6.4. Side Mold R Ass'y (B02)

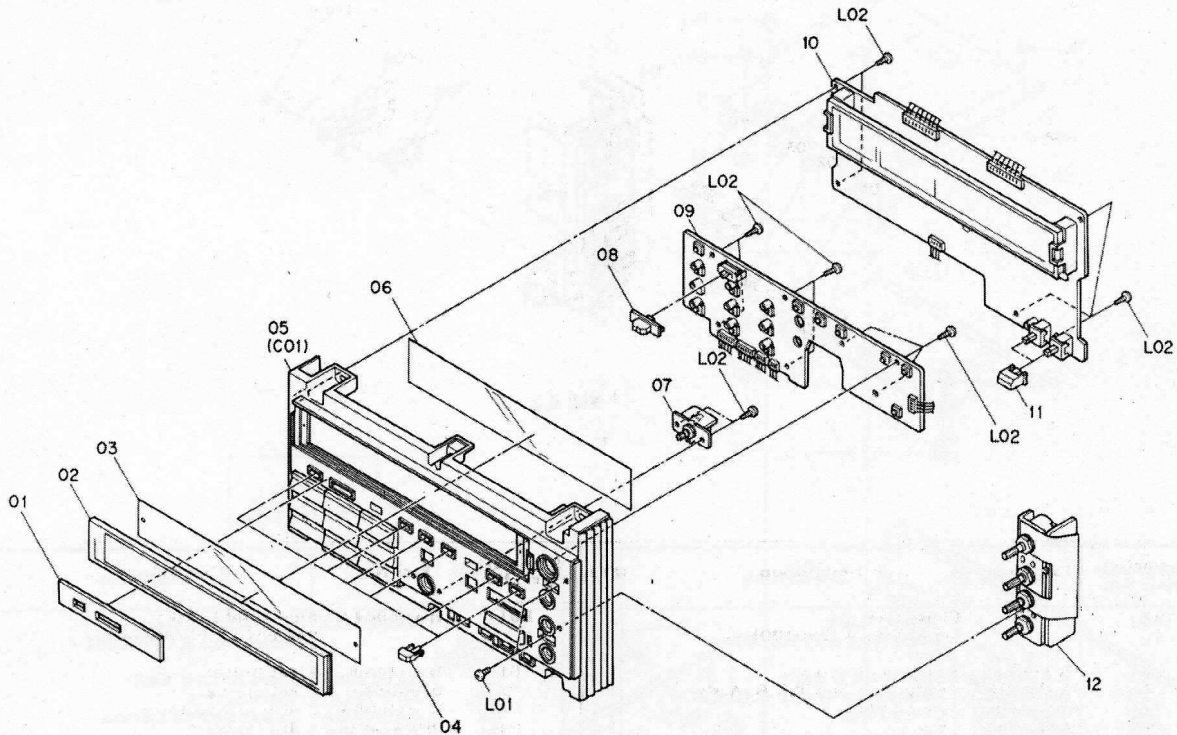


Fig. 6.4

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
<b>B02</b>	<b>HA04903A</b>	<b>Side Mold R Ass'y</b> Serial No.: A12901001 -	<b>1</b>	<b>B03</b>	<b>CA08764A</b>	<b>Mechanism Ass'y</b> Serial No.: A12901001 -	<b>1</b>
01	OH04747A	Front Plate	1	01	OC81322A	Eject Lever Holder	1
02	OH04711C	Display Lens	1	02	OC81321A	Eject Lever B	1
03	OJ05066B	Display Filter B	1	03	OC81323A	Eject Lever B Spring	1
04	OH04736A	Push Button (S)	6	04	OC80020A	Eject Lever A Spring	1
05	HA04905A	Side Mold R Sub Ass'y	1	05	OC81329A	Eject Lever A	1
06	OJ05065A	Display Filter A	1	06	CA80006A	Pneumatic Damper Ass'y	1
07	BA05865A	Bias Volume P.C.B. Ass'y	1	07	OC80019A	Eject Spring	1
08	OH04745A	Slide Switch Knob	1	08	OC80018B	Cassette Case Holder L	1
09	BA05876A	Control Switch P.C.B. Ass'y	1	09	OC80617A	Back Tension Arm Spring	1
10	BA05874A	Display P.C.B. Ass'y	1	10	OC80618A	Back Tension Arm Collar	1
11	OH04738A	Push Switch Button (L)	2	11	OC80619A	Back Tension Arm	1
12	BA05868A	Volume P.C.B. Ass'y	1	12	OC80620A	Back Tension Pulley	1
L01	OE00896A	M3x6 $\Phi$ Binding	2	13	OC80621A	Back Tension Belt	1
L02	OE00857A	BT3x6 $\Phi$ Binding	14	14	OC80013A	Lock Lever Spring	1
				15	OC80014A	Lock Lever Collar	1
				16	OC80015A	Lock Lever	1
				17	OC80615A	Pressure Roller Plate	1
				18	CA80203A	Supply Pressure Roller Ass'y	1
				19	OC80616A	Supply Pressure Roller Spring	1
				20	CA80202A	Supply Reel Hub Ass'y	1
				21	OC80612A	Spring Holder	2
				22	OC80614A	Supply Reel Hub Spring	1
				23	CA80200A	Cassette Case Ass'y	1
				24	OC08762A	Head Height Adjustment Gear	2
				25	OC08761A	Head Height Adjustment Screw	4
				26	OC08763A	Azimuth Alignment Screw	2
				27	OC80605A	Wire Clamper	1
				28	CA08637A	Head Mount Base Sub Ass'y	1
				29	CA08659B	R-3L Record Head Ass'y	1
				30	OC08776A	Head Plate Spring (L)	1
				31	OC81313A	4P-H Connector R	1
				32	OC81326A	Lamp Holder	1
				33	OC81327A	Lamp	1
				34	OC81402A	Rubber Cap	1
				35	OC80003A	Head Base Hold Plate	1
				36	OC80004A	Steel Ball 3mm	1
				37	GA02201A	E-4F Erase Head	1
				38	OC81314A	2P-H Connector E	1
				39	OC08768A	E.H. Hold Plate	1
				40	OC08889A	E.H. Hold Plate Tapering Spring	2

6.5. Mechanism Assy (303)

Schematic Ref. No.	Part No.	Description	Qty
41	OC08886A	E.H. Hold Plate Spring	1
42	OC800077	Reel Hub	1
43	CA080658B	P2H-8-Plate Head Assy	3
44	OC081312A	Head Plate Spring R	1
45	OC081312A	4P-H Connector P	1
46	OC088771A	Tape Guide Plate	1
47	CA08638A	Head Base Sub Assy	1
48	OC80611A	Head Base Spring	1
49	CA80201A	Take-up Reel Hub Assy	1
50	OC80613A	Take-up Reel Hub Spring	1
51	OC81324A	Mechanism Holder A	1
52	CA80005A	Take-up Pressure Roller Assy	1
53	OC80609A	Cassette Case Spring	1
54	OC80610A	Switch Hold Plate	1
55	OC80622A	Switch Hold Plate	1
56	OC80628A	Leak Switch	1
57	OC81310A	Switch Collar C	2
58	OC81312A	Metal Lever Spring	1
59	OC81312A	Metal Lever	1
60	OC80017A	Reel Hub Per Lever	1
61	OC81316A	Mechanism Chassis	1
62	OC80022A	Cassette Hold Spring	1
63	OC81325A	Mechanism Holder B	1
64	CA80011A	Shut-off P.C.B. Assy	1
65	CA80204A	Brake Assy	1
66	OC80628A	Brake Spring B	1
67	OC80630A	Brake Arm Collar	1
68	OC80629A	Brake Arm	1
69	OC80030A	Reel Motor Holder	1
70	OC80635B	Reel Pulley	1
71	CA80205A	D.D. Motor Assy	1
72	OC80206A	Capstan Belt	1
73	OC80634A	Capstan Gear	1
74	OC81416A	Control Motor Holder	1
75	OC80027A	Control Motor Assy	1
76	CA800077A	Control Motor Assy	1
77	OC80017A	Concave Motor Assy	1
78	OC80012A	Cassette Case Holder R	1
79	OC80010D	Eject Sensor	1
80	OC80037A	Instr-Lock	3
81	OC81317A	TP-H Connector	1
82	OC81318A	gp-H Connector	1
83	OC81416A	Thrust Bushing	1
84	OC81416A	Thrust Spring B	1
85	OE08229A	PT2.5x6 @ Pan	14
L01	OE00181A	E-Ring 3mm	4
L02	OE08235A	Washer 2x5x0.25 (Plastics)	4
L03	OE08235A	CS Stopper Ring 2.4mm	1
L04	OE08052A	M2x5 @ Pan (2A)	4
L05	OE08043A	Washer 1.8x3.8x0.5	2
L06	OE08226A	Washer 2.1x4.5x0.1	4
L07	OE08226A	M2x3 Cup Point	1
L08	OE08222A	E-Ring 2mm	3
L09	OE08049A	Washer 1.8x3.2x0.5	2
L10	OE08049A	M2x3 @ Binding	2
L11	OE00027A	Washer 2mm (Springs)	2
L12	OE00027A	Washer 2mm (Springs)	2
L13	OE00117A	M2.6x4 @ Binding	5
L14	OE000866A	Plate Washer L	2
L15	OC08774A	Plate Washer R	1
L16	OC08773A	PT3x4 @ Pan	1
L17	OC08228A	M1.7x7 @ Pan	1
L18	OE08222A	Washer 1.8x3.8x0.3	1
L19	OE08232A	M2x3 @ Pan	1
L20	OE08232A	M2x3.2 @ Truss	1
L21	OE08035A	Washer 2.7x8x0.5	2
L22	OE08221A	M2x30 @ Pan	2
L23	OE00698A	E-Ring 2.5mm	2
L24	OE08041A	PT2.5x4 @ Pan	1
L25	OE08238A	Washer 2.6x8x1	1
L26	OE08290A	ST2.6x12 @ Pan	1
L27	OE08252A	Washer 1.8x3.8x0.3 (Plastics)	1
L28	OE08252A	Nut H6.6 @ Binding	1
L29	OE08045A	Nut H6.6 @ Binding	1
L30	OE00691A	M2x3 @ Pan	2
L31	OE00691A	M2x3 @ Pan	1
L32	OE00691A	M2x3 @ Pan	1
L33	OE00691A	M2x3 @ Pan	2
L34	OE03044A	PT2.5x20 @ Pan	1

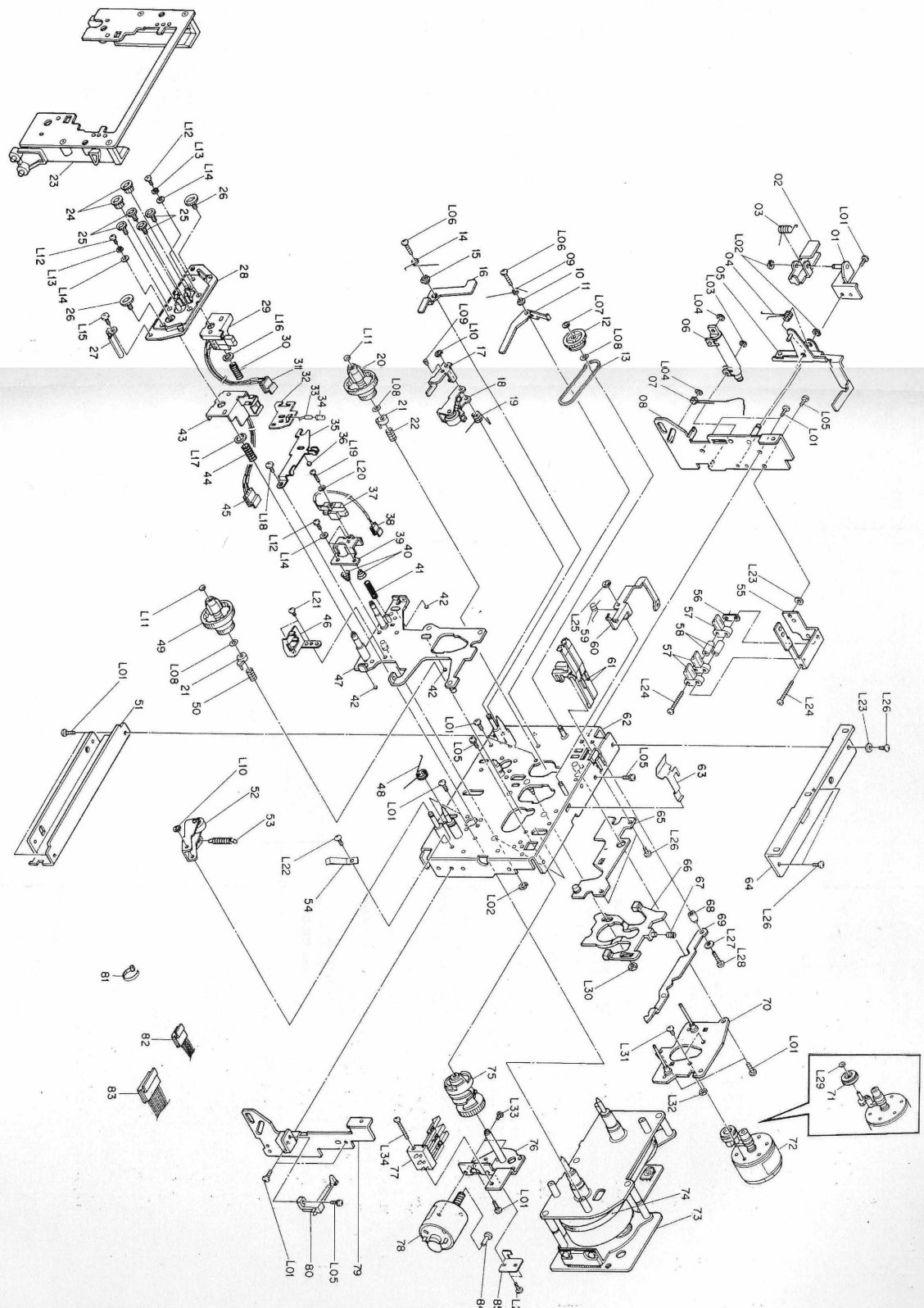
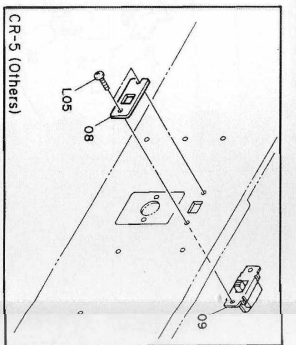


Fig. 6.5

6.6. Rear Panel Assy (B04)



Schematic Ref. No.	Part No.	Description	Qty
B04	HA04973A	Rear Panel Assy CR-5 (Canada)	1
	HA04901A	Rear Panel Assy CR-5 (Australia)	1
	HA04898A	Rear Panel Assy CR-5 (Others)	1
	HA04897A	Rear Panel Assy CR-5A (UK)	1
	HA04892A	Rear Panel Assy CR-5E (Europe)	1
	HA04899A	Rear Panel Assy CR-50 Serial No.: A12901001.	1
	0H04724D	Rear Panel CR-5	1
	0H04733C	Rear Panel CR-5A	1
	0H04733D	Rear Panel CR-5E	1
	BA05875A	Pin Jack P.C.B. Assy	1
BA05869A	Remote Socket P.C.B. Assy	1	
0B50057A	Power Transformer CR-5 & CR-5A	1	
0B50058A	Power Transformer CR-5 (Australia) & CR-5E	1	
0B50069A	Power Transformer CR-50 (Others)	1	
0B08356A	Power Transformer CR-50 (Canada) & CR-5E (UK) & CR-5A	1	
0B08351A	CR-5E (UK) & CR-5A Cord Bushing C CR-5 (Australia & Others), CR-5E (Europe)	1	
0B08037U	Cord Bushing C CR-5 (Australia & CR-50)	1	
0B08504A	Power Cord CR-5 (Canada) & CR-5A	1	
0B05241A	Power Cord CR-5 (Australia)	1	
0B08382A	Power Cord CR-5 (Others)	1	
0B08383A	Power Cord CR-5E (UK)	1	
0B08048A	Power Cord CR-5E (Europe)	1	
0B08219B	Power Cord CR-50	1	
0J04601B	Switch Cover CR-5 (Canada & Australia), CR-5A & CR-5E	1	
0M03948A	Voltage Selector CR-5 (Others)	1	
0B07092U	Free-up Belt CR-5 (Australia) & CR-5E (UK)	1	
0F01071A	CR-5E (UK)	1	
0E00948A	BT3x10 @ Binding (Black Chromake)	2	
0E00915A	BP 4x8 @ Binding (Black Chromake)	4	
0E03827A	M2, M3 @ Binding (Black Chromake)	2	
0B08583A	Plastic Rivet (except CR-5 (Others))	2	
0E00818A	M3x8 @ Binding (except CR-5 (Others))	2	
C01	HA04906A	Side Mold R Sub Assy Serial No.: A12901001.	1
	0H04724B	Fader Button (Down)	1
	0H04731B	Fader Button (Up)	1
	0H04732B	Pause Button	1
	0H04728B	Stop Button	1
	0H04733B	Record Button	1
	0H04730B	Rewind Button	1
	0H04727B	Play Button	1
	0H04729B	FF Button	1
	0H04746A	Control Button Lens	9
	0H04739C	Side Mold R	1
	0H04744A	Monitor Fan	1
0E03828A	BT3x8 @ Fan	2	

6.7. Side Mold R Sub Assy (C01)

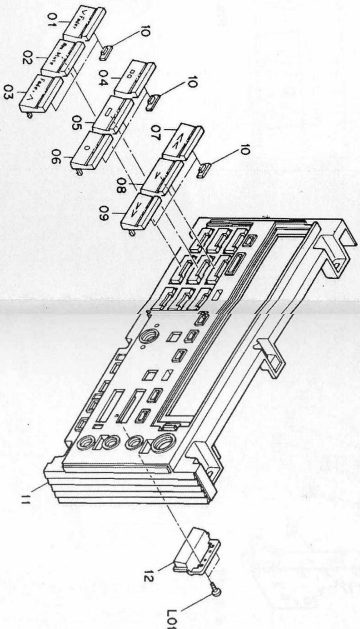
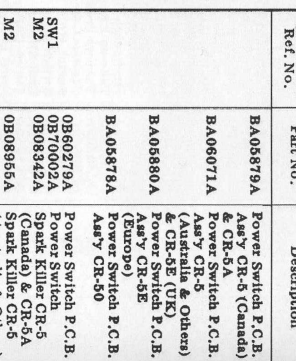


FIG. 6.6

FIG. 6.7

6.6. Rear Panel Assy (B04)



Schematic Ref. No.	Part No.	Description
B04	BA05879A	Power Switch P.C.B. Assy CR-5 (Canada)
	BA06071A	Power Switch P.C.B. Assy CR-5 (Australia & Others) & CR-5E (UK)
C01	BA05880A	Power Switch P.C.B. Assy CR-5E (Europe)
	BA05878A	Power Switch P.C.B. Assy CR-50
SW1	0B60279A	Power Switch P.C.B. Power Switch
	0B08342A	Spark Killer CR-5 (Canada) & CR-5A
M2	0B08965A	Spark Killer CR-5 (Australia & Others), CR-5E (UK) & CR-50
	0B08445A	Spark Killer CR-5E (Europe)
M2	0B90059A	Spark Killer Cover (Europe)
	0E00752A	CR-5E (Europe) (1) Eyelid 2x3
Q601	CA90011A	Shut-off P.C.B. Assy
	0C80047A	Shut-off P.C.B. TR 25C2812
Q602	0B06388A	Photoreductor N1L5141
	0B09840A	RK 680 Leadless RM 16K Leadless RM 760
R601	0B09841A	Pin Jack P.C.B. Assy
	0C81330A	Pin Jack P.C.B.
R602	0B60278A	3P-H Connector
	0B82657A	3P-T Post (Red)
CN25	0B81477A	4P Pin Jack
	BA06082A	Earth Lug Assy (1)
CN29	BA05866A	Headphone Jack P.C.B. Assy
	0B60271B	Headphone Jack P.C.B.
CN-30	0B82532A	3P-H Connector
	0B81478A	Headphone Jack (1)
CN4	0J05077A	Headphone Jack Holder
	0J05092A	Snap Plate (1)
CN4	BA05869A	DIN Jack P.C.B. Assy
	0B60274B	DIN Jack P.C.B. 7P-H Socket
CN4	0B82659A	8P DIN Socket
	0B81479A	DIN Bracket
CN31	0E005078A	BT3x8 @ Binding (2)
	0E00868A	
VR301	BA05865A	Bias Volume P.C.B. Assy
	0B60270B	Bias Volume P.C.B. VR 100V
CN31	0B30010A	VK (AX2)
	0B82533A	3P-H Connector Plate
SW620	BA05867A	Timer Switch P.C.B. Assy
	0B60272B	Timer Switch P.C.B. Side Switch
CN6	0B07437A	3P-H Connector
	0B82611A	

FIG. 6.6

FIG. 6.7



## 7. MOUNTING DIAGRAMS AND PARTS LIST

- Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.  
 2. Diode is 1S553, 1S1555, or 1S8176 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, RW — Wire Wound Resistor  
 CE — Electrolytic Capacitor, CM — Mylar Capacitor, CC — Ceramic Capacitor, CP — PP Capacitor,  
 CT — Tantalum Capacitor, CF — Film Capacitor, C — Mica Capacitor

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

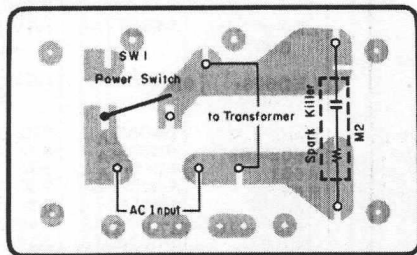


Fig. 7.1

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

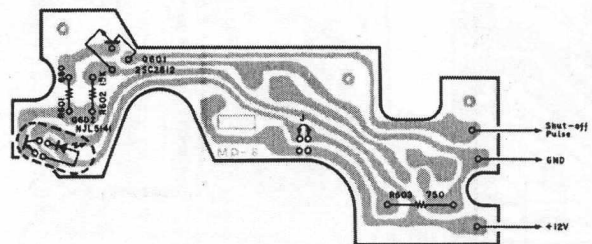


Fig. 7.2

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

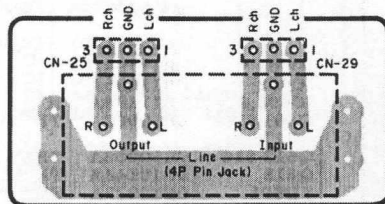


Fig. 7.3

7.4. Headphone Jack P.C.B. Ass'y

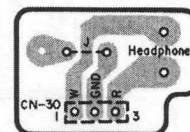


Fig. 7.4

7.5. Remote Socket P.C.B. Ass'y

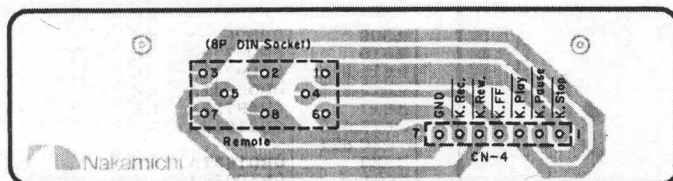


Fig. 7.5

7.6. Bias Volume P.C.B. Ass'y

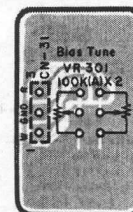


Fig. 7.6

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

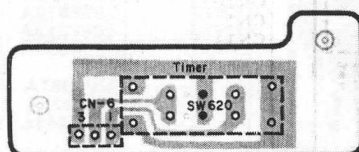


Fig. 7.7

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

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

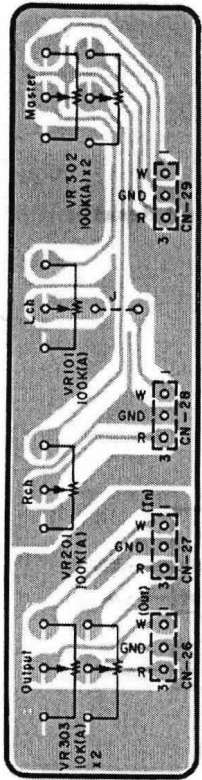


Fig. 7.8

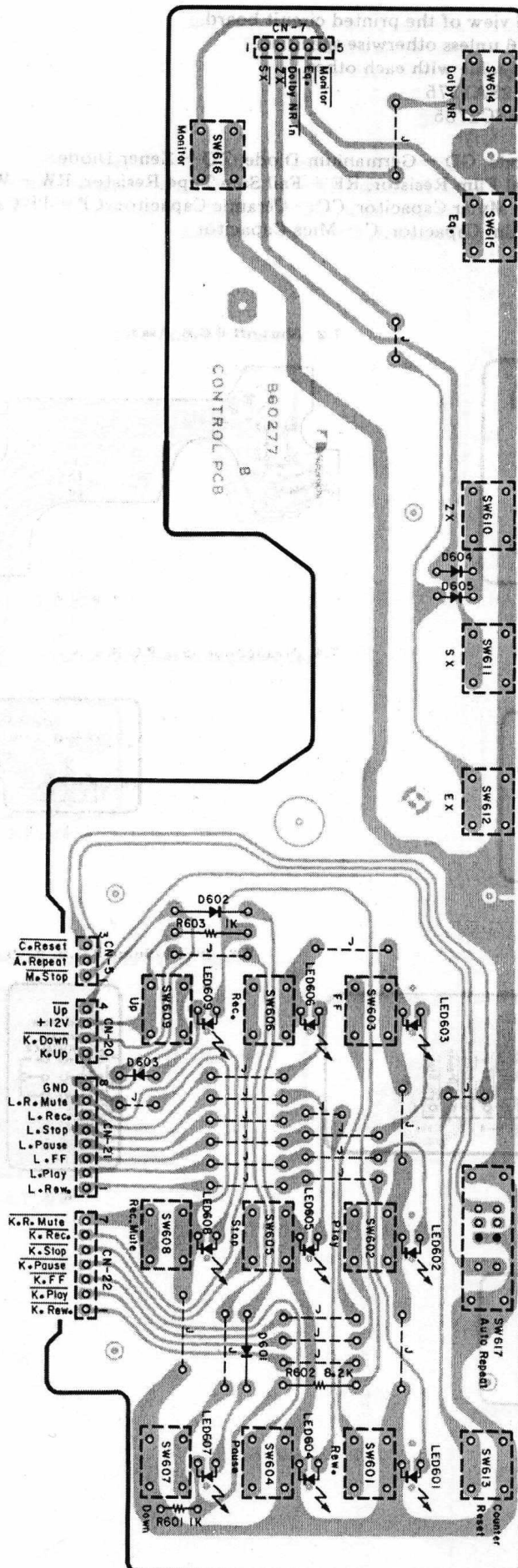


Fig. 7.9

Schematic Ref. No.	Part No.	Description
	<b>BA05868A</b>	<b>Volume P.C.B. Ass'y</b>
VR101,201	OB60273B	Volume P.C.B.
VR302	OB30050A	VR 100K (A)
VR303	OB30049A	VR 100K (A)x2
CN26	OB30051A	VR 10K (A)x2
CN27	OB82528A	3P-H Connector
CN28	OB82529A	3P Connector
CN29	OB82530A	3P-H Connector
	OB82531A	3P-H Connector
	OJ05068A	Volume Holder (1)
	OJ05113A	Shield Plate (1)
	<b>BA05876A</b>	<b>Control Switch P.C.B. Ass'y</b>
	OB60277B	Control Switch P.C.B.
LED601-605	OB12274A	LED (Green) SLR-34MG3 (5)
LED606-609	OB12275A	LED (Red) SLR-34VR3 (4)
D601,602	OB06181A	SiD 1SS53
D603-605	OB06398A	SiD 1SS176 (3)
R601	OB09677A	RK 1K 1/6W J
R602	OB01856A	RK 8.2K 1/4W J
R603	OB01857A	RK 1K 1/4W J
SW601-616	OB70062A	Tact Switch
SW617	OB07437A	Slide Switch
CN5	OB82510A	3P-H Connector
CN7	OB82512A	5P-H Connector
CN20	OB82523A	4P-H Connector
CN21	OB82524A	8P-H Connector
CN22	OB82525A	7P-H Connector
	OJ05067A	LED Holder (9)
	<b>BA05874A</b>	<b>Display P.C.B. Ass'y</b>
IC601	OB60276C	Display P.C.B.
IC602	OB11194A	IC LC7550
IC603,604	OB11195A	IC L78N09
Q601-611	OB11193A	IC LB1240
617	OB10062A	TR DTC144ES (12)
Q612-616	OB10053A	TR DTA144ES (5)
Q618	OB10144A	TR 2SB963 (L,K)
ZD601	OB12272A	ZD 10V MTZ10B T-77
LED601	OB12354A	LED (Red) SLR-34VR5
D601	OB06398A	SiD 1SS176
D602	OB06109A	SiD GP08B
R605	OB24021A	RF 68 1W J
R606	OB09669A	RK 470 1/6W J
R607,608	OB09741A	RK 470K 1/6W J
R609	OB09693A	RK 4.7K 1/6W J
R610	OB09719A	RK 56K 1/6W J
R611,616	OB09717A	RK 47K 1/6W J
R612-615	OB05641A	RK 47K 1/4W J
R617	OB09725A	RK 100K 1/6W J
R618,619	OB21018A	R-Network 47Kx12
620,621		
R622	OB01857A	RK 1K 1/4W J
C601	OB40036A	CE 47μ 25V
C602	OB40009A	CE 10μ 16V
C603,604	OB40012A	CE 47μ 16V
C608	OB05550A	CM 1000P 50V J
TF601	OB08715A	Thermal Fuse 129°C
SW601,602	OB70014A	Push Switch
CN8	OB82513A	5P-H Connector
CN10	OB82515A	2P-H Connector
CN13	OB82518A	12P-H Connector
CN14	OB82519A	11P-H Connector
	OE00857A	BT3x6 ⊕ Binding (2)
	OJ05067A	LED Holder (1)
	OJ05071A	Indicator Holder (2)
	OB90143A	FL Indicator (1)

7.10. Display P.C.B. Ass'y

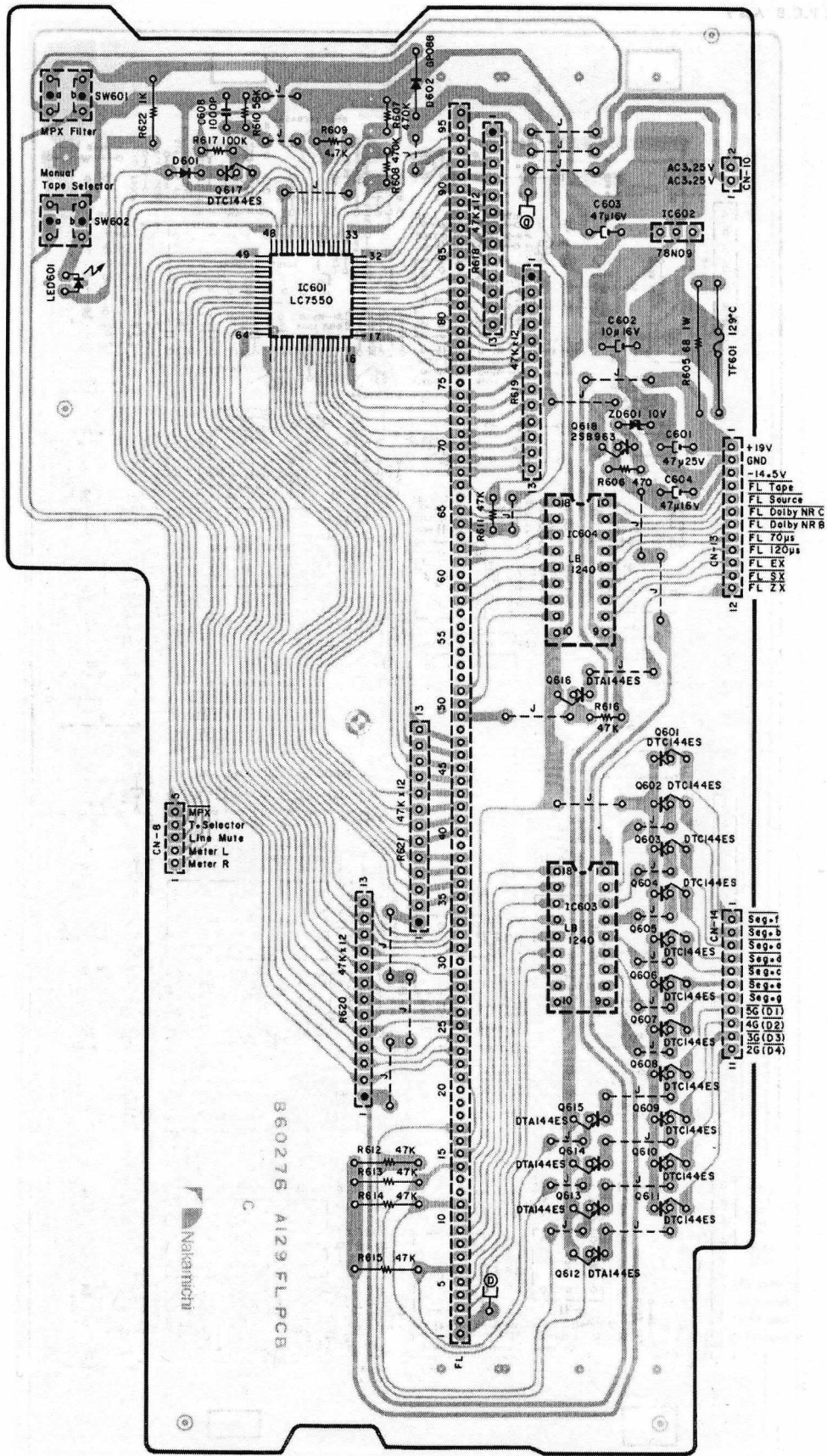


Fig. 7.10

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

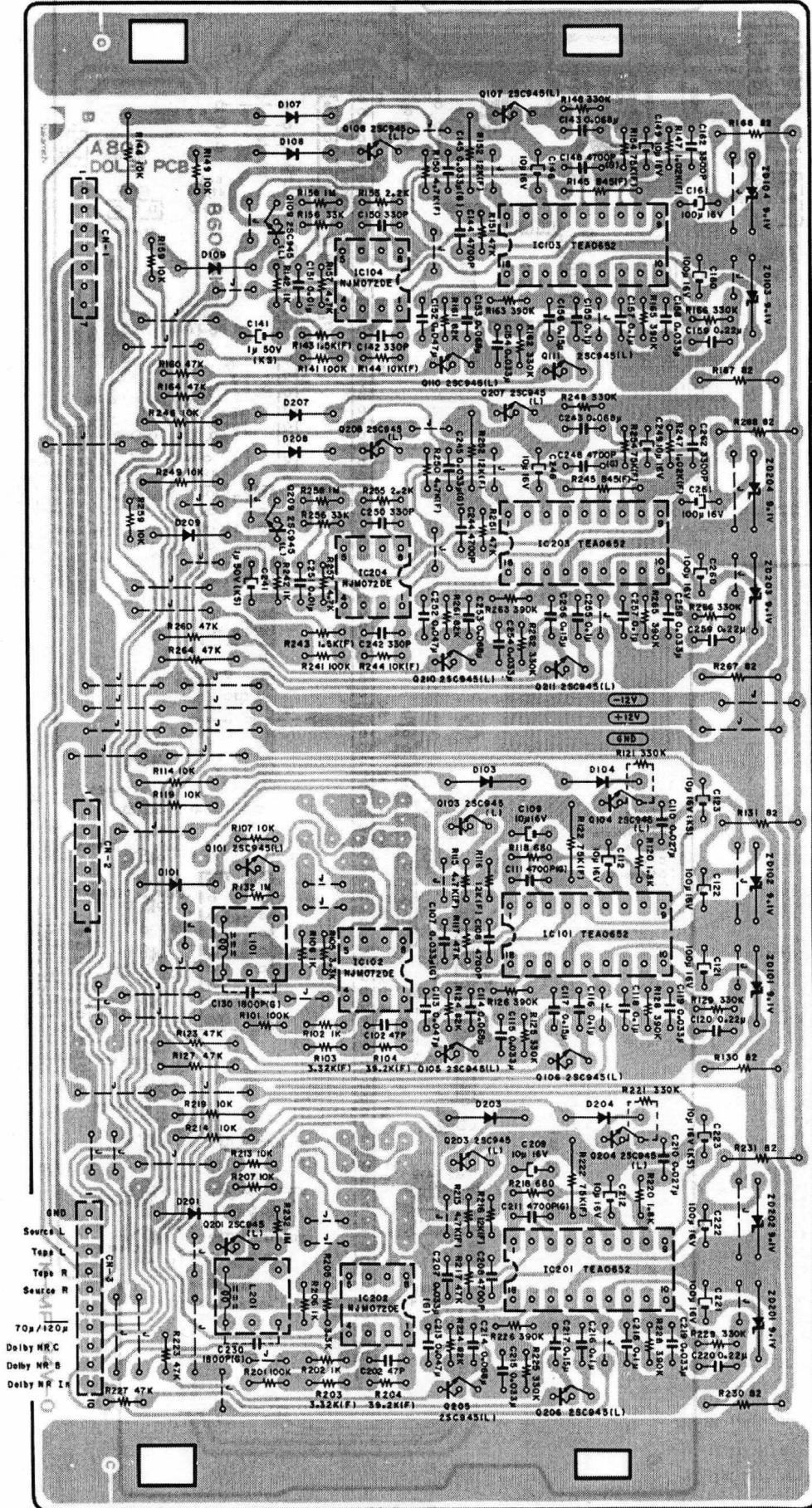


Fig. 7.11

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	<b>BA05877A</b>	<b>Dolby NR P.C.B. Ass'y</b>	R152,252	OB09796A	RM 12K 1/4W F
	<b>- Encoder -</b>		R154,254	OB22443A	RM 75K 1/6W F
IC101,201	OB06382A	IC TEA0652	R155,255	OB09685A	RK 2.2K 1/6W J
IC102,202	OB11005A	IC NJM072DE	R156,256	OB09713A	RK 33K 1/6W J
Q101,103	OB01872A	TR 2SC945L (P,Q)	R157,257	OB09693A	RK 4.7K 1/6W J
104,105			R158,258	OB09749A	RK 1M 1/6W J
106,201			R161,261	OB09723A	RK 82K 1/6W J
203,204			R163,165	OB09739A	RK 390K 1/6W J
205,206			263,265		
ZD101,102	OB06232A	ZD 9.1V RD9.1EB2	R167,168	OB24024A	RF 82 1/6W J
201,202			267,268		
D101,103	OB06181A	SiD 1SS53	R260,264	OB05641A	RK 47K 1/4W J
104,201			C141,241	OB09814A	CE 1μ 50V (KS)
203,204			C142,150	OB09822A	CF 330P 100V J
L101,201	OB51225A	L-C Block	242,250		
R101,201	OB09725A	RK 100K 1/6W J	C143,153	OB09866A	CF 0.068μ 50V J
R102,106	OB09677A	RK 1K 1/6W J	243,253		
202,206			C144,244	OB05652A	CM 4700F 50V J
R103,203	OB22287A	RM 3.32K 1/6W F	C145,245	OB09240A	CP 0.033μ 100V G
R104,204	OB22410A	RM 39.2K 1/6W F	C146,149	OB01412A	CE 10μ 16V
R105,205	OB09689A	RK 3.3K 1/6W J	246,249		
R107,207	OB09701A	RK 10K 1/6W J	C148,248	OB09191A	CP 4700F 100V G
R114,119	OB01888A	RK 10K 1/4W J	C151,251	OB05681A	CM 0.01μ 50V J
214,219			C152,252	OB09864A	CF 0.047μ 50V J
R115,215	OB22305A	RM 4.7K 1/6W F	C154,158	OB09862A	CF 0.033μ 50V J
R116,216	OB22351A	RM 12K 1/6W F	254,258		
R117,217	OB09717A	RK 47K 1/6W J	C155,157	OB09868A	CF 0.1μ 50V J
223,227			255,257		
R118,218	OB09673A	RK 680 1/6W J	C156,256	OB09870A	CF 0.15μ 50V J
R120,220	OB09683A	RK 1.8K 1/6W J	C159,259	OB09872A	CF 0.22μ 50V J
R121,125	OB09737A	RK 330K 1/6W J	C160,161	OB01400A	CE 100μ 16V
129,221			260,261		
225,229			C162,262	OB01914A	CM 3300F 50V J
R122,222	OB09562A	RM 75K 1/4W F		<b>- Miscellaneous -</b>	
R123,127	OB05641A	RK 47K 1/4W J	CN1	OB60061B	Dolby NR P.C.B.
R124,224	OB09723A	RK 82K 1/6W J	CN2	OB82506A	7P-H Connector
R126,128	OB09739A	RK 390K 1/6W J	CN3	OB82507A	6P-H Connector
226,228				OB82508A	10P-H Connector
R130,131	OB24024A	RF 82 1/6W J			
230,231					
R132,232	OB09749A	RK 1M 1/6W J			
C102,202	OB09242A	C 47P 50V J			
C107,207	OB09240A	CP 0.033μ 100V G			
C108,208	OB05652A	CM 4700F 50V J			
C109,112	OB01412A	CE 10μ 16V			
209,212					
C110,210	OB09045A	CM 0.027μ 50V J			
C111,211	OB09191A	CP 4700F 100V G			
C113,213	OB09864A	CF 0.047μ 50V J			
C114,214	OB09866A	CF 0.068μ 50V J			
C115,119	OB09862A	CF 0.033μ 50V J			
215,219					
C116,118	OB09868A	CF 0.1μ 50V J			
216,218					
C117,217	OB09870A	CF 0.15μ 50V J			
C120,220	OB09872A	CF 0.22μ 50V J			
C121,122	OB01400A	CE 100μ 16V			
221,222					
C123,223	OB09816A	CE 10μ 16V (KS)			
C130,230	OB09409A	CP 1800P 100V G			
	<b>- Decoder -</b>				
IC103,203	OB06382A	IC TEA0652			
IC104,204	OB11005A	IC NJM072DE			
Q107,111	OB01872A	TR 2SC945L (P,Q)			
207,211		(10)			
ZD103,104	OB06232A	ZD 9.1V RD9.1EB2			
203,204					
D107,109	OB06181A	SiD 1SS53 (6)			
207,209					
R141,241	OB09725A	RK 100K 1/6W J			
R142,242	OB09677A	RK 1K 1/6W J			
R143,243	OB22247A	RM 1.5K 1/6W F			
R144,244	OB09929A	RM 10K 1/6W F			
R145,245	OB22549A	RM 845 1/4W F			
R146,246	OB01888A	RK 10K 1/4W J			
249					
R147,247	OB22230A	RM 1.02K 1/6W F			
R148,162	OB09737A	RK 330K 1/6W J			
166,248					
262,266					
R149,159	OB09701A	RK 10K 1/6W J			
259					
R150,250	OB22305A	RM 4.7K 1/6W F			
R151,160	OB09717A	RK 47K 1/6W J			
164,251					

7.12. Power Supply P.C.B. Assy

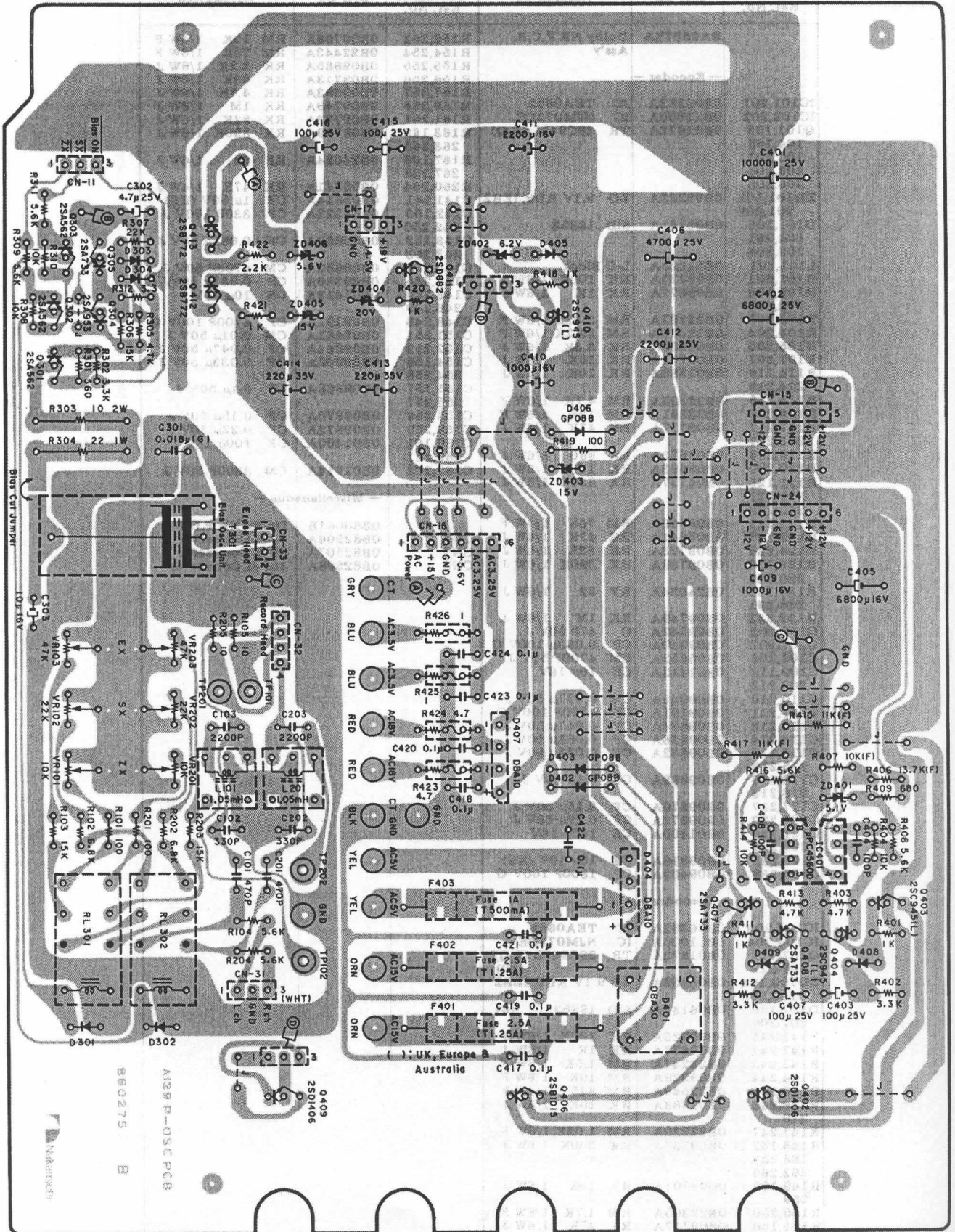


Fig. 7.12

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA05871A	Power Supply P.C.B. Ass'y CR-5 (Canada & Others) & CR-5A	CN11	OB82516A	3P-H Connector
			CN15	OB81012A	Dip Mate 5P
			CN15	OB82520A	5P-H Connector
			CN16,24	OB81013A	Dip Mate 6P
			CN16	OB82521A	6P-H Connector
			CN17	OB82522A	3P-H Connector
			CN24	OB82526A	6P-H Connector
			CN31	OB81227A	3P-T Post (White)
			CN32	OB02242A	4P-T Post
			CN33	OB02233A	2P-T Post
			F401,402	OB08962A	Fuse 2.5A
			F403	OB08374A	Fuse 1A
				OB90005A	Insu-Lock 204mm
				OB82093B	3P Ribbon Cable(1)
				OE00037A	Earth Lug B-5 (1)
				OE00507A	Nut Hex. M3 (2)
				OE00510A	M3x8 @ Pan (2A)
				OE00868A	BT3x8 @ Binding (2)
					(5)
				OJ04485A	Heat Sink B (1)
				OJ05079A	Heat Sink (1)
				BA05872A	Power Supply P.C.B. Ass'y CR-5 (Australia) & CR-5E
					Contents is the same as BA05871A except for the following parts:
			F401,402	OB02240A	Fuse T1.25A 250V
			F403	OB08457A	Fuse T500mA 250V
				OB08349B	Fuse Clip (6)
				OM04100B	Fuse Label 500mA (1)
				OM04736A	Fuse Label 1.25Ax2 (1)
				BA05870A	Power Supply P.C.B. Ass'y CR-50
					Contents is the same as BA05871A except for the following parts:
			F401,402	OB08961A	Fuse 2.5A
			F403	OB08686A	Fuse 1A
IC401	OB60275B	Power Supply P.C.B. IC $\mu$ PC4560D			
Q301,302	OB06217A	TR 2SA562 (O,Y)			
303	OB01426A				
Q304	OB06372A	TR 2SA953 (K,L)			
Q305,407	OB06013A	TR 2SA733 (P,Q)			
408					
Q402,409	OB06452A	TR 2SD1406 (Y)			
Q403,404	OB01872A	TR 2SC945L (P,Q)			
410					
Q406	OB06451A	TR 2SB1015 (Y)			
Q411	OB06316A	TR 2SD882 (F,Q)			
Q412,413	OB06303A	TR 2SB772 (P,Q)			
ZD401	OB12147A	ZD 5.1V			
		RD5.1JS-T1B2			
ZD402	OB12153A	ZD 6.2V			
		RD6.2JS-T1B2			
ZD403,405	OB12321A	ZD 15V MTZ15C			
ZD404	OB12330A	ZD 20V MTZ20C			
ZD406	OB12150A	ZD 5.6V			
		RD5.6JS-T1B2			
D301,302	OB06398A	SID 1SS176			
303,304					
405,408					
409					
D401	OB06283A	Diode Bridge DBA30			
D402,403	OB06109A	SID GPO8B			
406					
D404,407	OB06282A	Diode Bridge DBA10	F401,402	OB02240A	Fuse T1.25A 250V
L101,201	OB06705A	Trap Coil 1.05mH	F403	OB08457A	Fuse T500mA 250V
T301	OB51407A	Bias Osc. Unit		OB08349B	Fuse Clip (6)
VR101,201	OB32061A	Semi VR 10K		OM04100B	Fuse Label 500mA (1)
VR102,202	OB32062A	Semi VR 22K			
VR103,203	OB32064A	Semi VR 47K		OM04736A	Fuse Label 1.25Ax2 (1)
R101,201	OB09653A	RK 100 1/6W J			
R102,202	OB09697A	RK 6.8K 1/6W J			
R103,203	OB09705A	RK 15K 1/6W J			
306					
R104,204	OB09695A	RK 5.6K 1/6W J			
309,311					
408,416					
R105,205	OB09629A	RK 10 1/6W J			
R301	OB09671A	RK 560 1/6W J			
R302,402	OB09689A	RK 3.3K 1/6W J			
412					
R303	OB09936A	RF 10 2W J			
R304	OB09831A	RF 22 1W J			
R305,403	OB09693A	RK 4.7K 1/6W J			
413					
R307	OB09709A	RK 22K 1/6W J			
R308,310	OB09701A	RK 10K 1/6W J			
404,414					
R312	OB09617A	RK 3.3 1/6W J			
R401,411	OB09677A	RK 1K 1/6W J			
418,420					
421					
R406	OB22357A	RM 13.7K 1/6W F			
R407	OB22343A	RM 10K 1/6W F			
R409	OB09673A	RK 680 1/6W J			
R410,417	OB09504A	RM 11K 1/4W F			
R419	OB09215A	RF 100 1/4W J			
R422	OB09685A	RK 2.2K 1/6W J			
R423,424	OB24087A	R-Fuse 4.7			
R425,426	OB24023A	R-Fuse 1			
C101,201	OB09270A	CP 470P 100V J			
C102,202	OB09322A	CP 330P 100V J			
C103,203	OB09834A	CP 2200P 100V J			
C301	OB09584A	CP 0.018 $\mu$ 100V G			
C302	OB01402A	CE 4.7 $\mu$ 25V			
C303	OB01412A	CE 10 $\mu$ 16V			
C401	OB40365A	CE 10000 $\mu$ 25V			
C402	OB40364A	CE 6800 $\mu$ 25V			
C403,407	OB01272A	CE 100 $\mu$ 25V			
415,416					
C404,408	OB41386A	CP 100P 50V J			
C405	OB40362A	CE 6800 $\mu$ 16V			
C406	OB40197A	CE 4700 $\mu$ 25V			
C409,410	OB40360A	CE 1000 $\mu$ 16V			
C411	OB40361A	CE 2200 $\mu$ 16V			
C412	OB40363A	CE 2200 $\mu$ 25V			
C413,414	OB05831A	CE 220 $\mu$ 35V			
C417-424	OB09292A	CC 0.1 $\mu$ 50V Z (8)			
RL301,302	OB90142A	Relay MR62-12SR			
CN11,17	OB81010A	Dip Mate 3P			





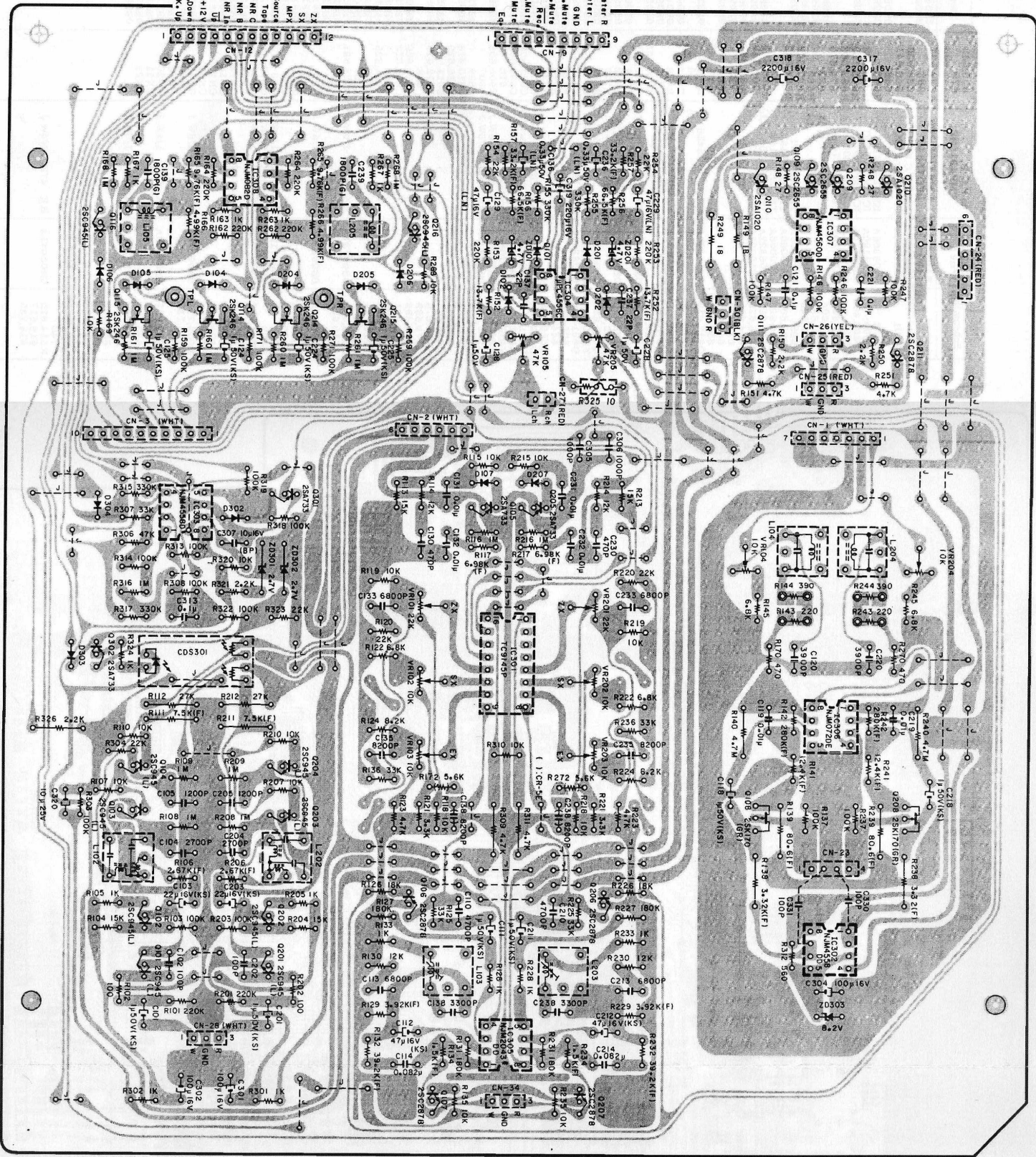


Fig. 7.13



## 8. SCHEMATIC DIAGRAMS

### 8.1. IC Block Diagrams

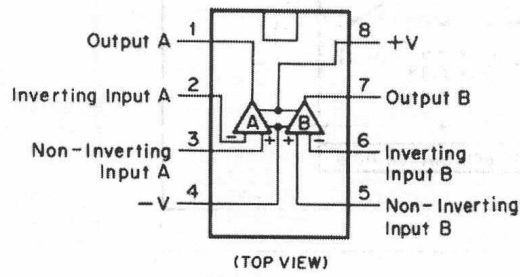


Fig. 8.1.1 Operational Amp. IC 4558D, 4558DD, 4556C 4560D, 2043DD, 072DE, 082D

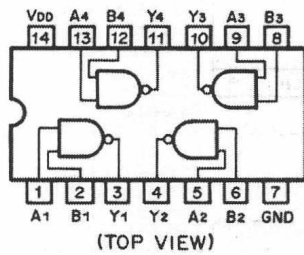


Fig. 8.1.2 NAND Gate C-MOS IC  $\mu$ PD4011BC

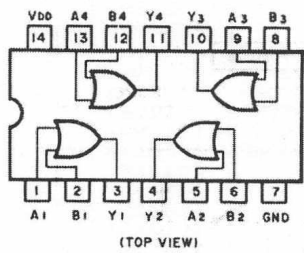


Fig. 8.1.3 OR Gate C-MOS IC  $\mu$ PD4071BC

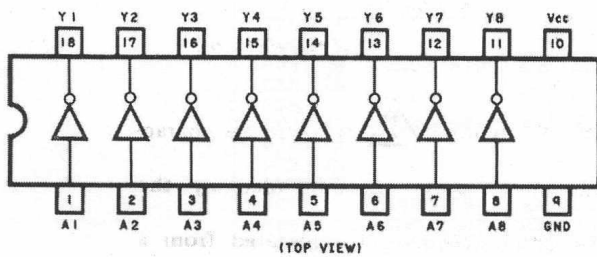


Fig. 8.1.4 FL Display Tube Driver LB1240

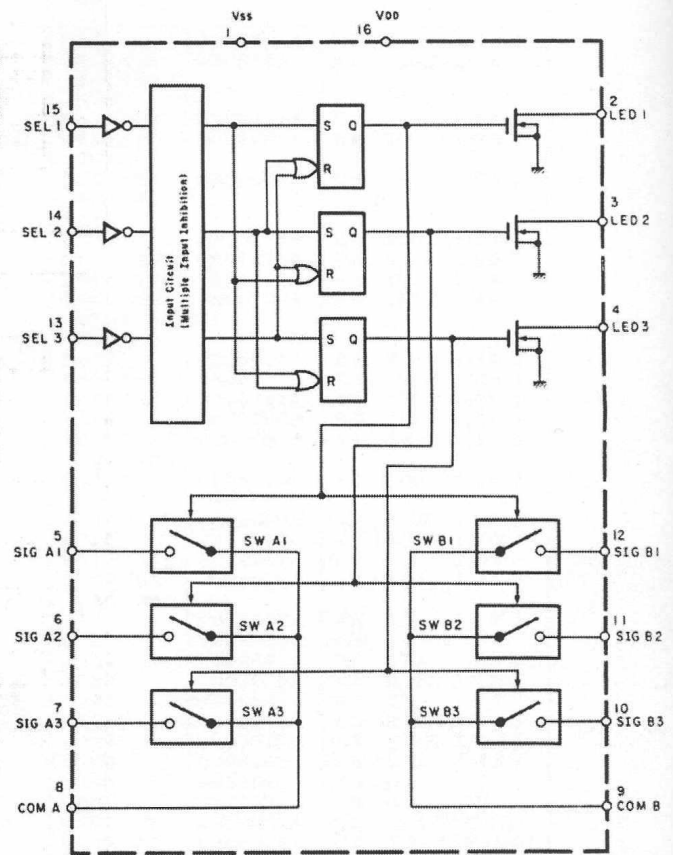


Fig. 8.1.5 Analog Switch Selector TC9145P

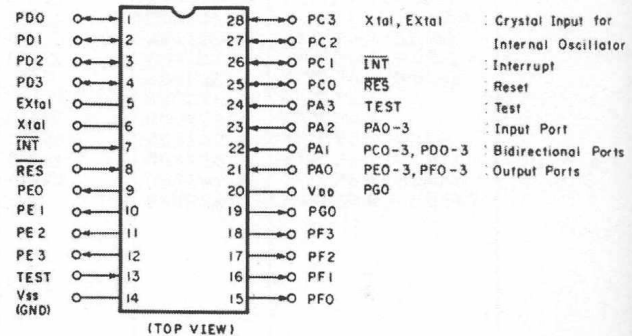
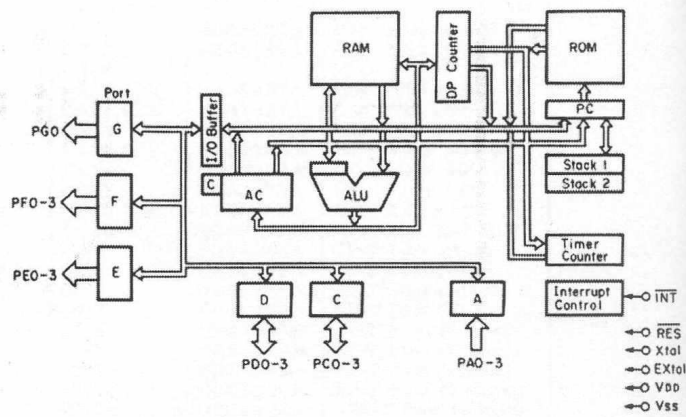
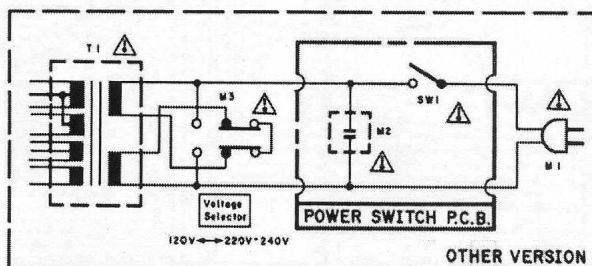
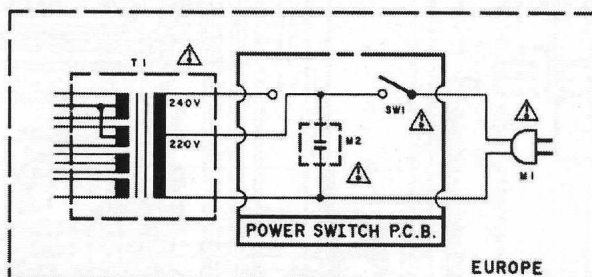
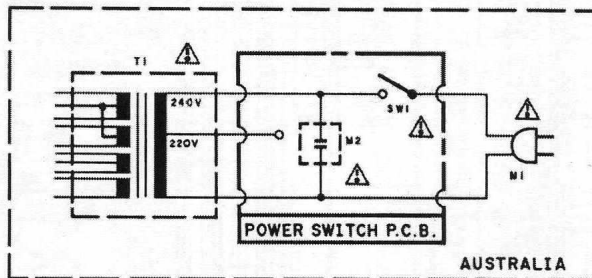
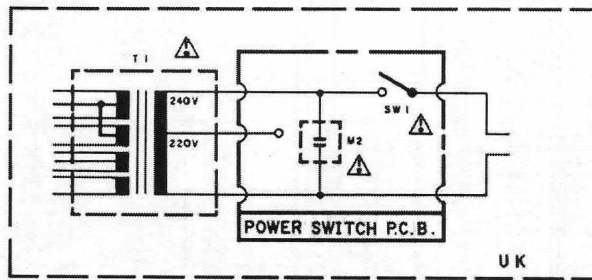



Fig. 8.1.6 4-Bit Micro-processor LM6416E-106



**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.

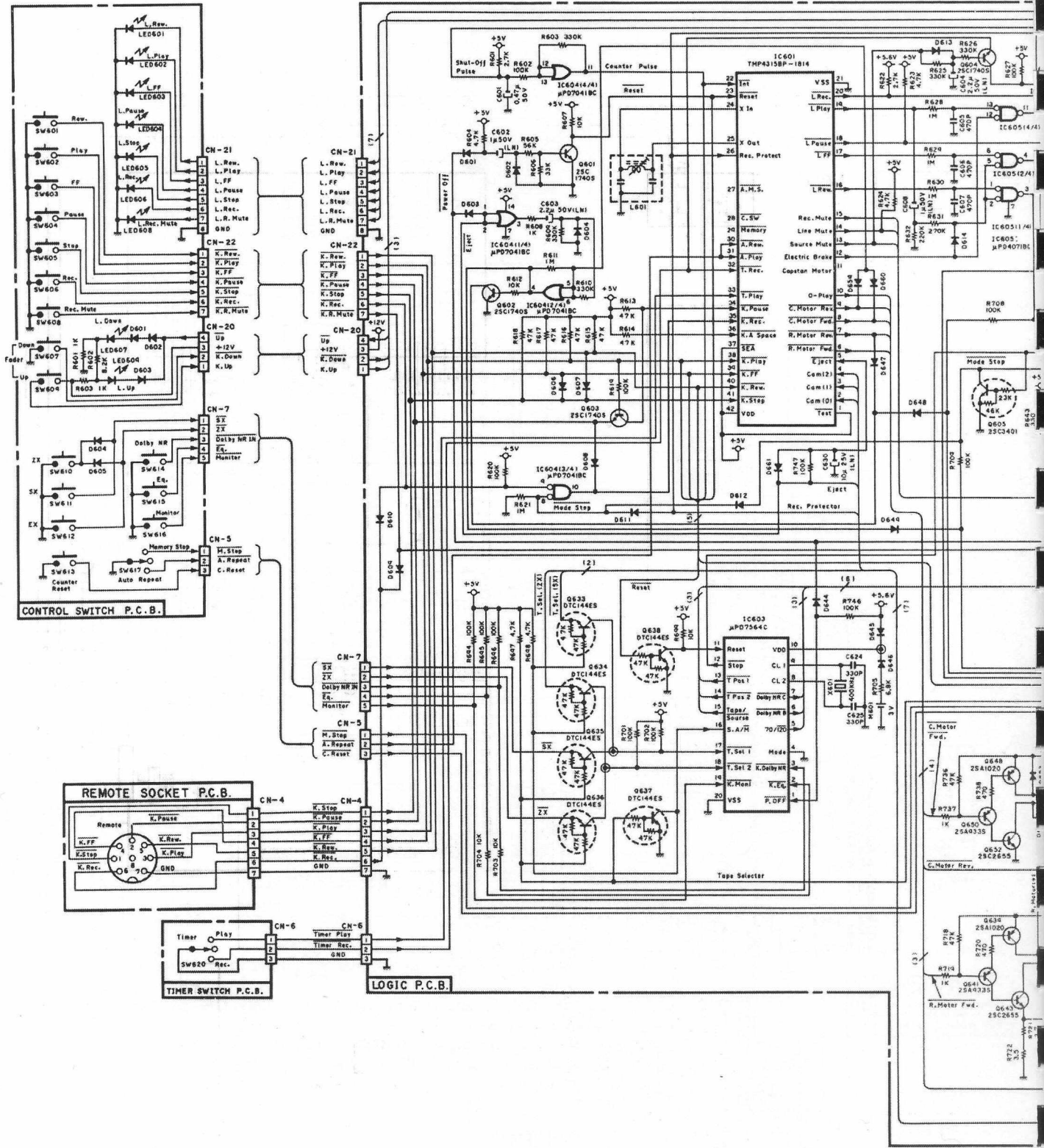
**CAUTION:**

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. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.  
 3. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.

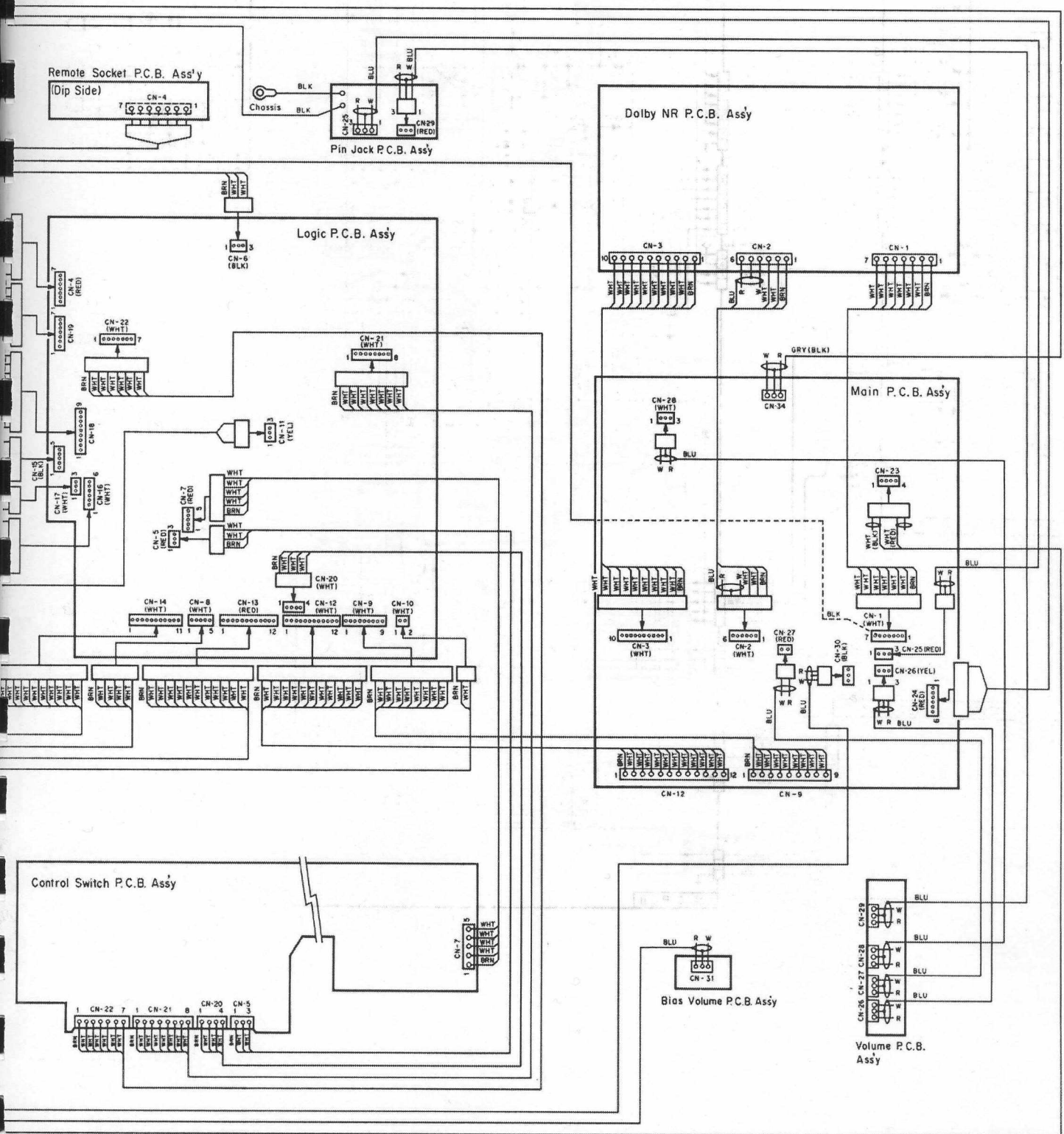
8.2.2. Mechanism Control Section



	Eject	Rec. Protect	Tape Selector
ON	Cassette Case Open	Protected	E X
OFF	Cassette Case Closed	Not Protected	S X, Z, I

Cam Switch Operation

Mode	Cam (0)	Cam (1)	Cam (2)
Stop	ON	ON	OFF
Play	ON	OFF	ON
Pause	OFF	ON	ON
F.F./Rev.	ON	OFF	OFF



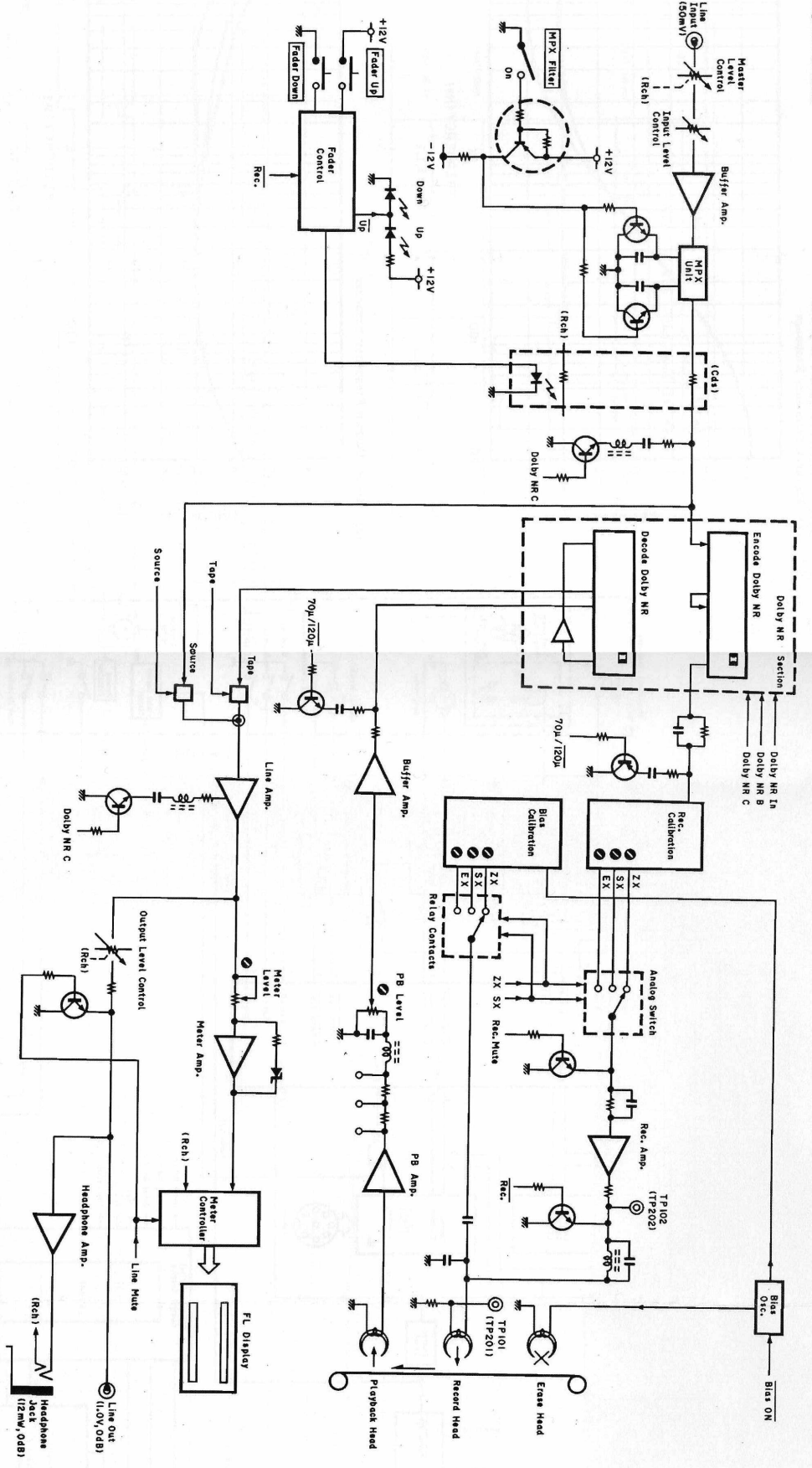


Fig. 10.1

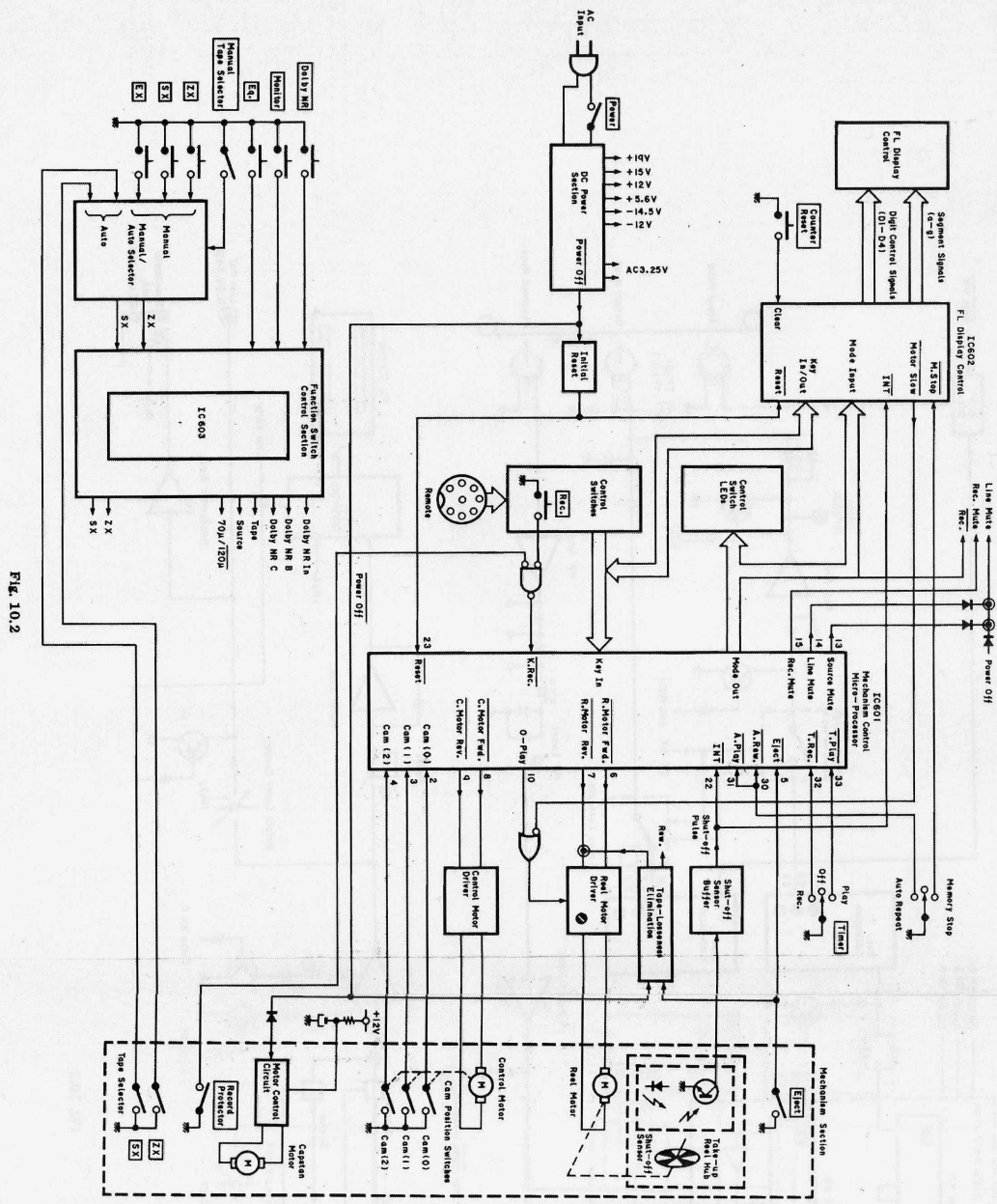


FIG. 10.2

11. TIMING CHART AND EQ. AMP. FREQUENCY RESPONSE

11.1. Eq. Amp. Frequency Response

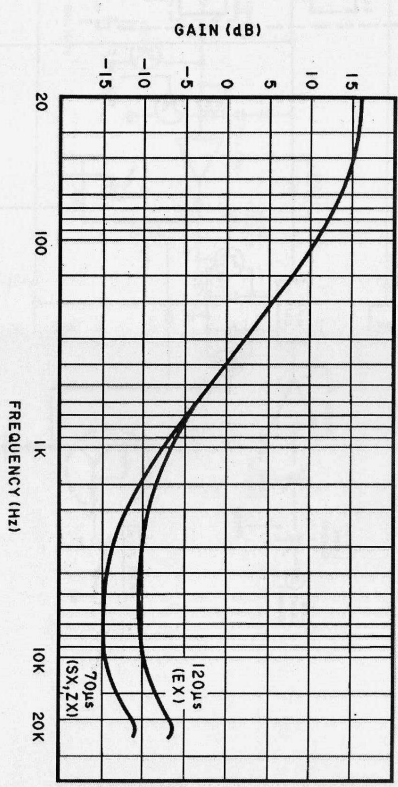


FIG. 11.1.1

(2) Record Current Frequency Response

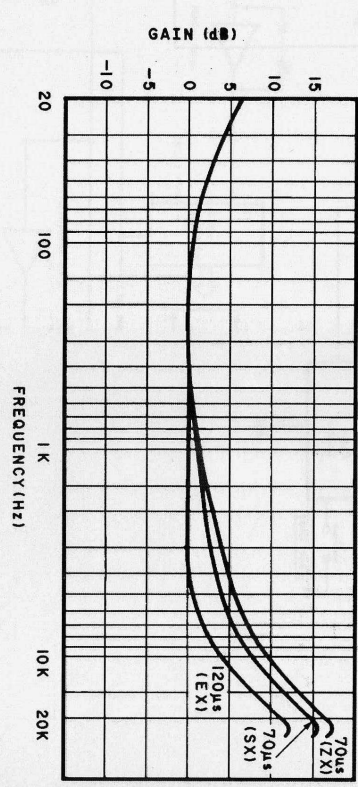


FIG. 11.1.2



**11.2. Timing Chart**  
**(1) Overall Timing Chart**

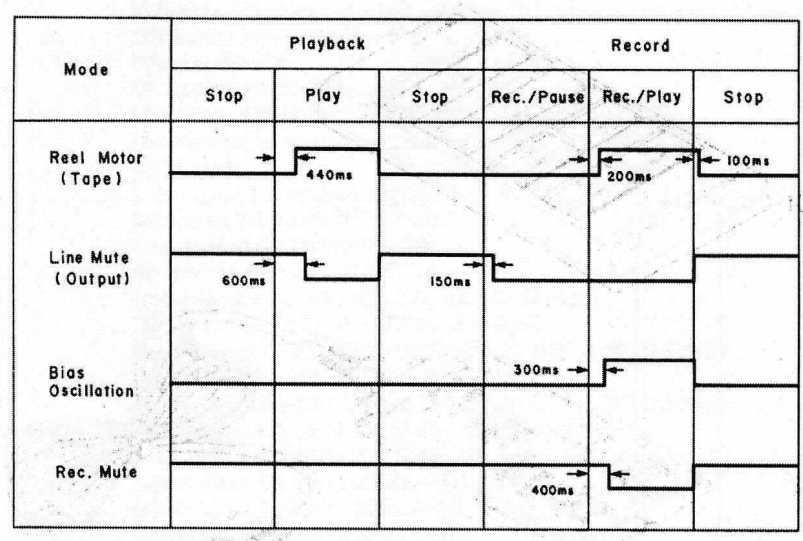


Fig. 11.2.1

**(2) Mechanism Control Timing Chart**

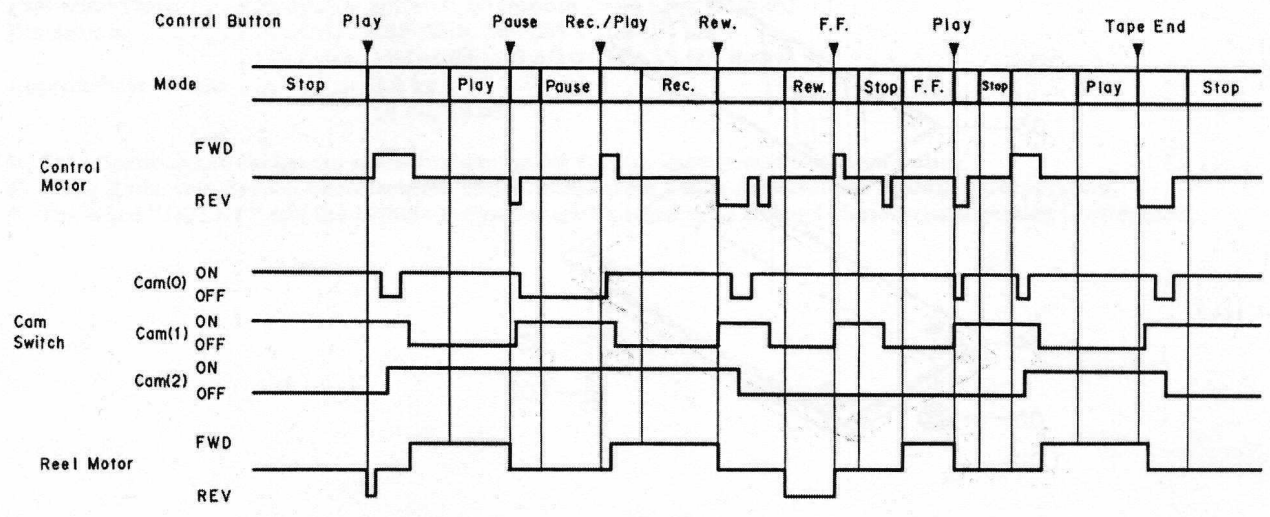


Fig. 11.2.2

12. REMOTE CONTROL UNIT RM-5 (Option)

(1) Mechanism Ass'y and Parts List

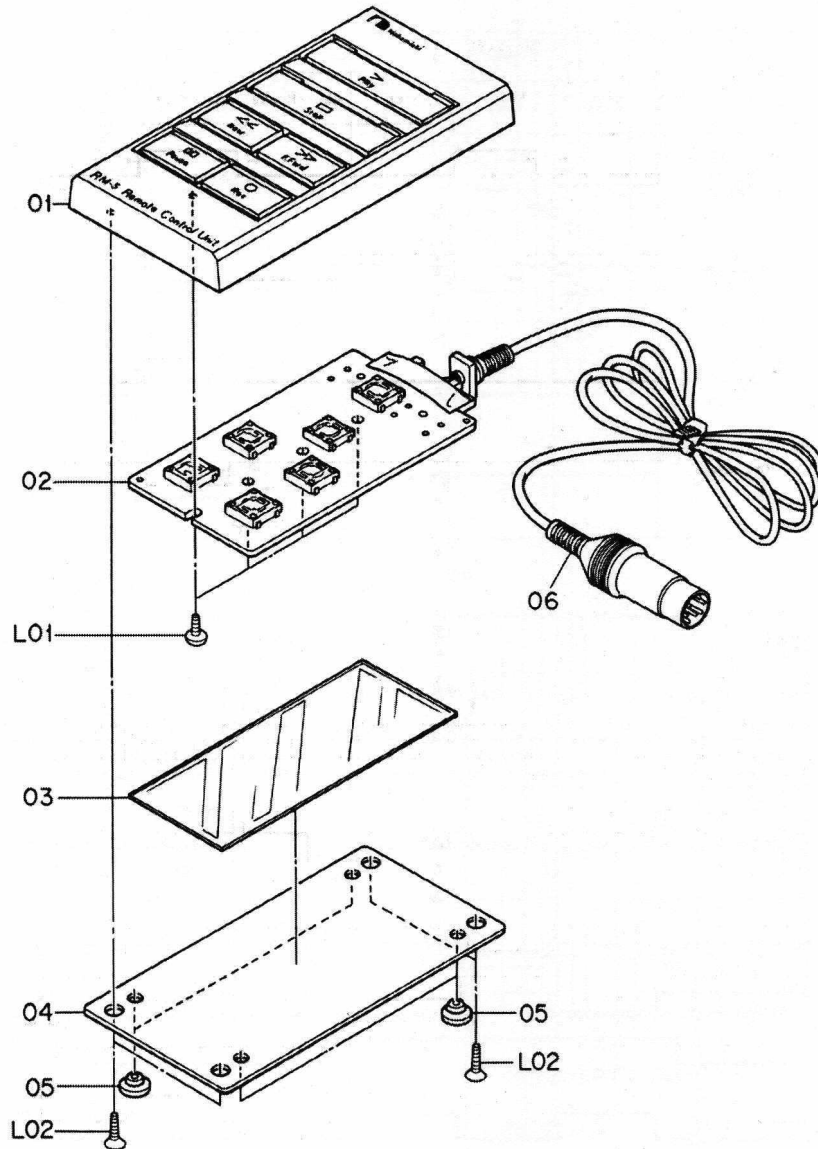


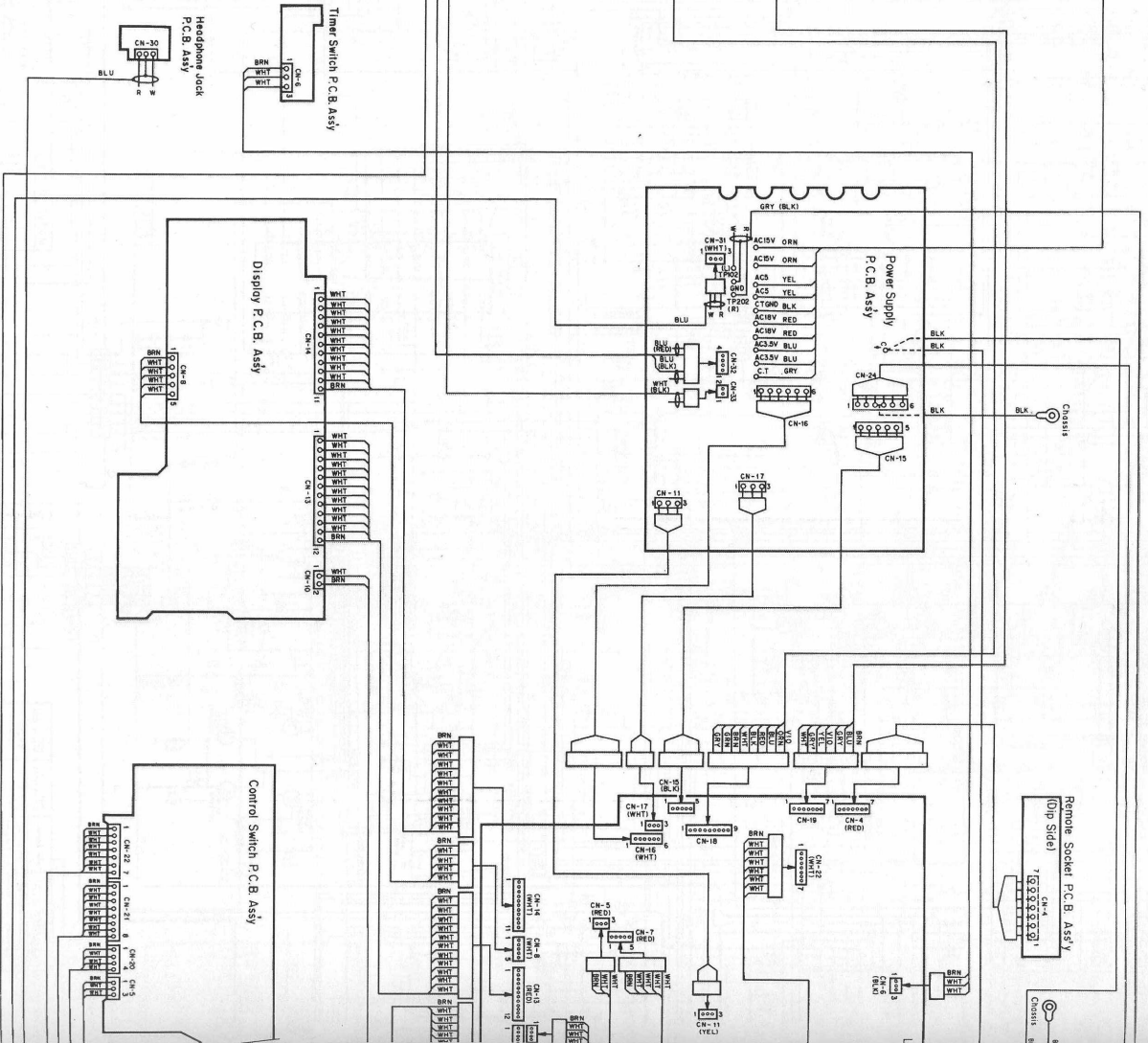
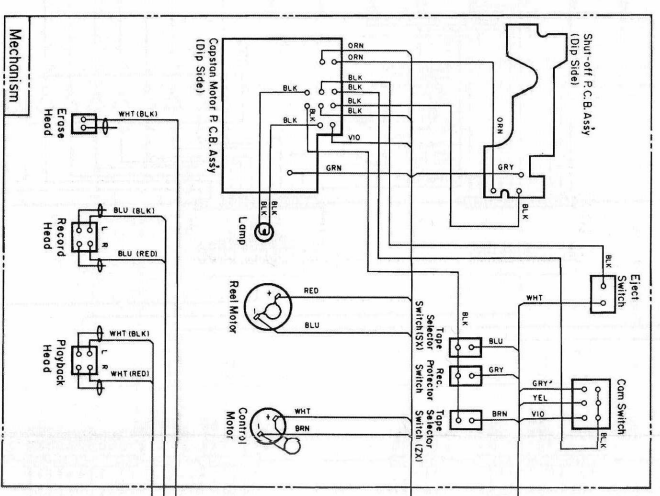
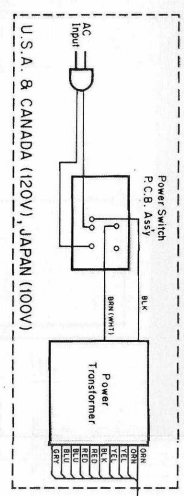
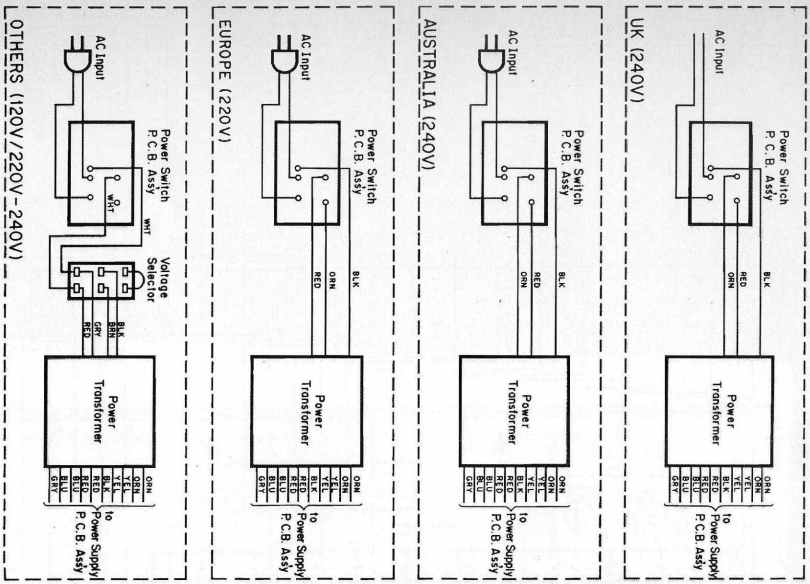
Fig. 12

Schematic Ref. No.	Part No.	Description	Qty
	<b>HA04955A</b>	<b>Remote Control Unit RM-5</b>	
01	OH04225B	Upper Case	1
02	BA05971A	Remote P.C.B. Ass'y (Consisting of the followings)	1
	(OB60001A)	Remote P.C.B.	(1)
	(OB07354A)	Push Switch	(6)
03	OJ04700A	Insulator	1
04	OH04226A	Bottom Cover	1
05	OH03920A	Leg	4
06	BA04959A	8-Pin Cord Ass'y	1
L01	OE00857A	BT3x6 @ Binding	4
L02	OE03115A	BT3x8 @ Countersunk (Black Chromate)	4

### 13. SPECIFICATIONS

Track Configuration	4 tracks/2-channel stereo
Heads	3 (erase head x 1, record head x 1, playback head x 1)
Motors	<Tape Transport> FG servo brushless, slotless, coreless DD motor (capstan drive) x 1 DC motor (reel drive) x 1 <Mechanism> DC motor (cam drive) x 1
Power Source	100, 120, 120/220-240, 220 or 240 V AC, 50/60 Hz (According to country of sale)
Power Consumption	45 W max.
Tape Speed	1-7/8 ips. (4.8 cm/sec.) $\pm 0.5\%$
Wow and Flutter	Less than $\pm 0.048\%$ WTD Peak Less than 0.027% WTD RMS
Frequency Response	20 Hz—20,000 Hz $\pm 3$ dB (recording level -20 dB, ZX, SX, EXII tape)
Signal to Noise Ratio	Dolby C-Type NR on <70 $\mu$ s, ZX tape> Better than 72 dB (400 Hz, 3% THD, IHF A-WTD RMS) Dolby B-Type NR on <70 $\mu$ s, ZX tape> Better than 66 dB (400 Hz, 3% THD, IHF A-WTD RMS)
Total Harmonic Distortion	Less than 0.8% (400 Hz, 0 dB, ZX tape) Less than 1.0% (400 Hz, 0 dB, SX, EXII tape)
Erasure	Better than 60 dB (100 Hz, +10 dB)
Separation	Better than 37 dB (1 kHz, 0 dB)
Crosstalk	Better than 60 dB (1 kHz, 0 dB)
Bias Frequency	105 kHz
Input (Line)	50 mV/40 kohms
Output (Line)	1.0 V (400 Hz, 0 dB, output level control at max.) 2.2 kohms
(Headphones)	12 mW into 8 ohms (400 Hz, 0 dB, output level control at max.)
Fast-Wind Time	Approx. 80 seconds (with C-60 cassette)
Dimensions	435 (W) x 135 (H) x 306 (D) mm 17-1/8 (W) x 5-5/16 (H) x 12 (D) inches
Approximate Weight	8.5 kg 18 lb., 12 oz.

- Specifications and design are subject to change for further improvement without notice.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
- The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories Licensing Corporation.



Notes: 1. Table of wire colors

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

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

FIG. 9

Fig. 8.1.7 Level Meter Controller LC7550

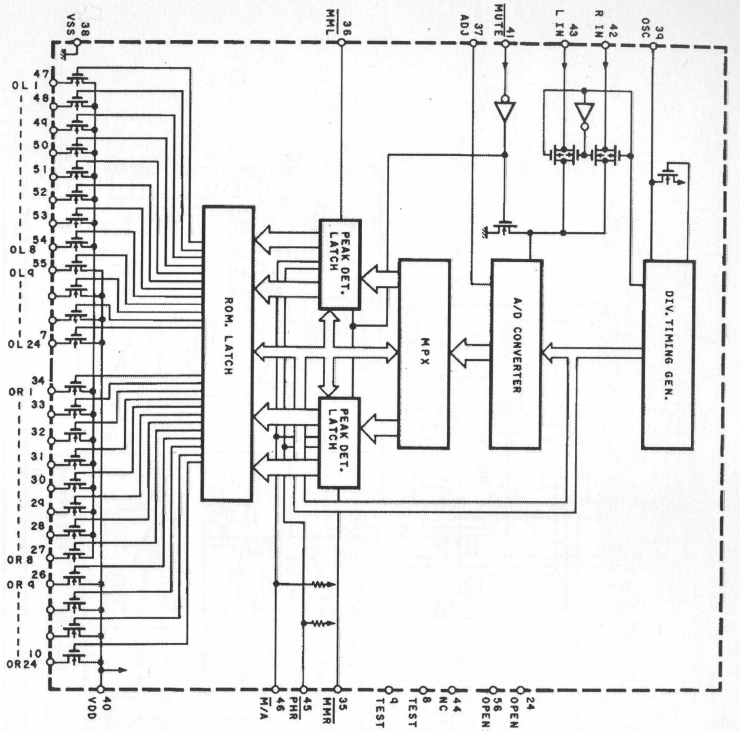
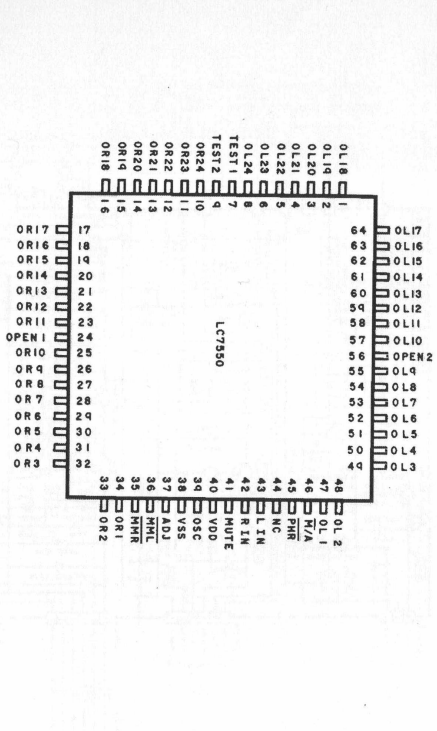
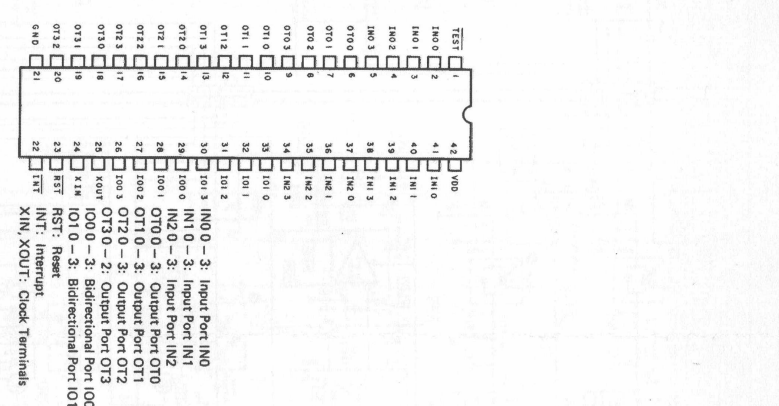
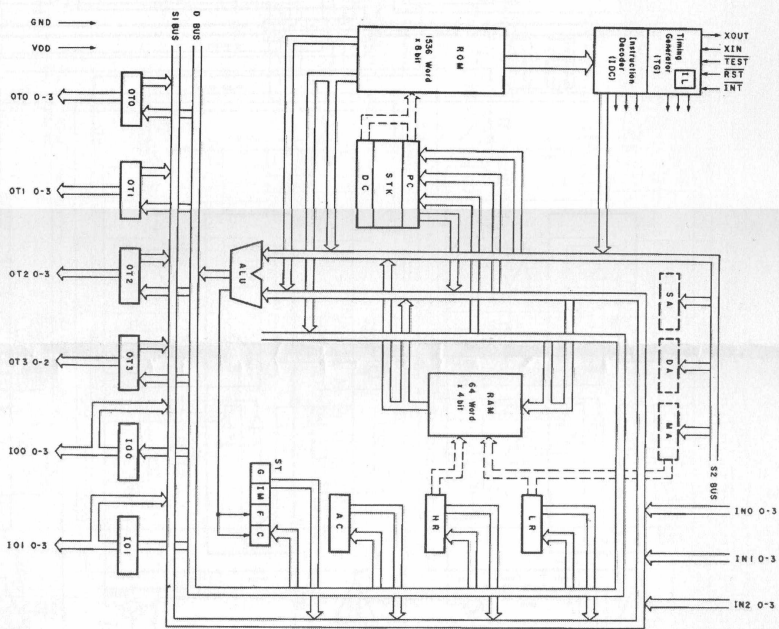
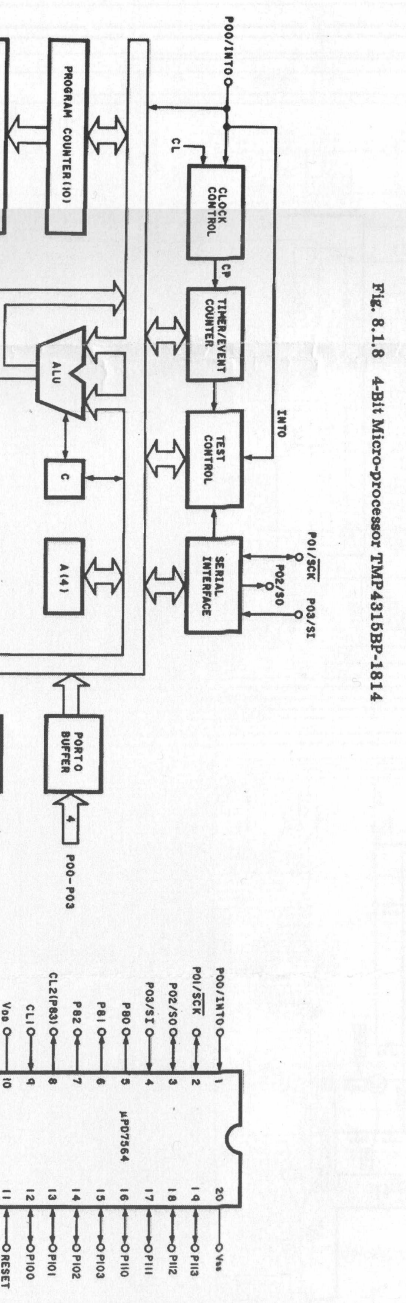


Fig. 8.1.8 4-Bit Micro-processor TMP4315BP-1814



TEST 1-10  
 IN0-3: Input Port IN0  
 IN0-3: Input Port IN1  
 IN2-3: Input Port IN2  
 OT0-3: Output Port OT0  
 OT0-3: Output Port OT1  
 OT2-3: Output Port OT2  
 OT3-3: Output Port OT3  
 IO0-3: Bidirectional Port IO0  
 IO1-3: Bidirectional Port IO1  
 RST: Reset  
 INT: Interrupt  
 XIN, XOUT: Clock Terminals

Fig. 8.1.9 4-Bit Micro-processor  $\mu$ PD7564C



RESET : Reset  
 CL, CL2 : Crystal Input  
 INT0 : Interrupt  
 SCR : Serial Data Clock  
 S0 : Serial Data Output  
 S1 : Serial Data Input  
 P00-03 : Input/Bidirectional Port  
 P80-83 : Output Port  
 P100-103, P110-113 : Bidirectional Ports

Fig. 8.1.9 4-Bit Micro-processor  $\mu$ PD7564C

8.2.1. Schematic Diagrams  
8.2.1.1. Amplifier Section

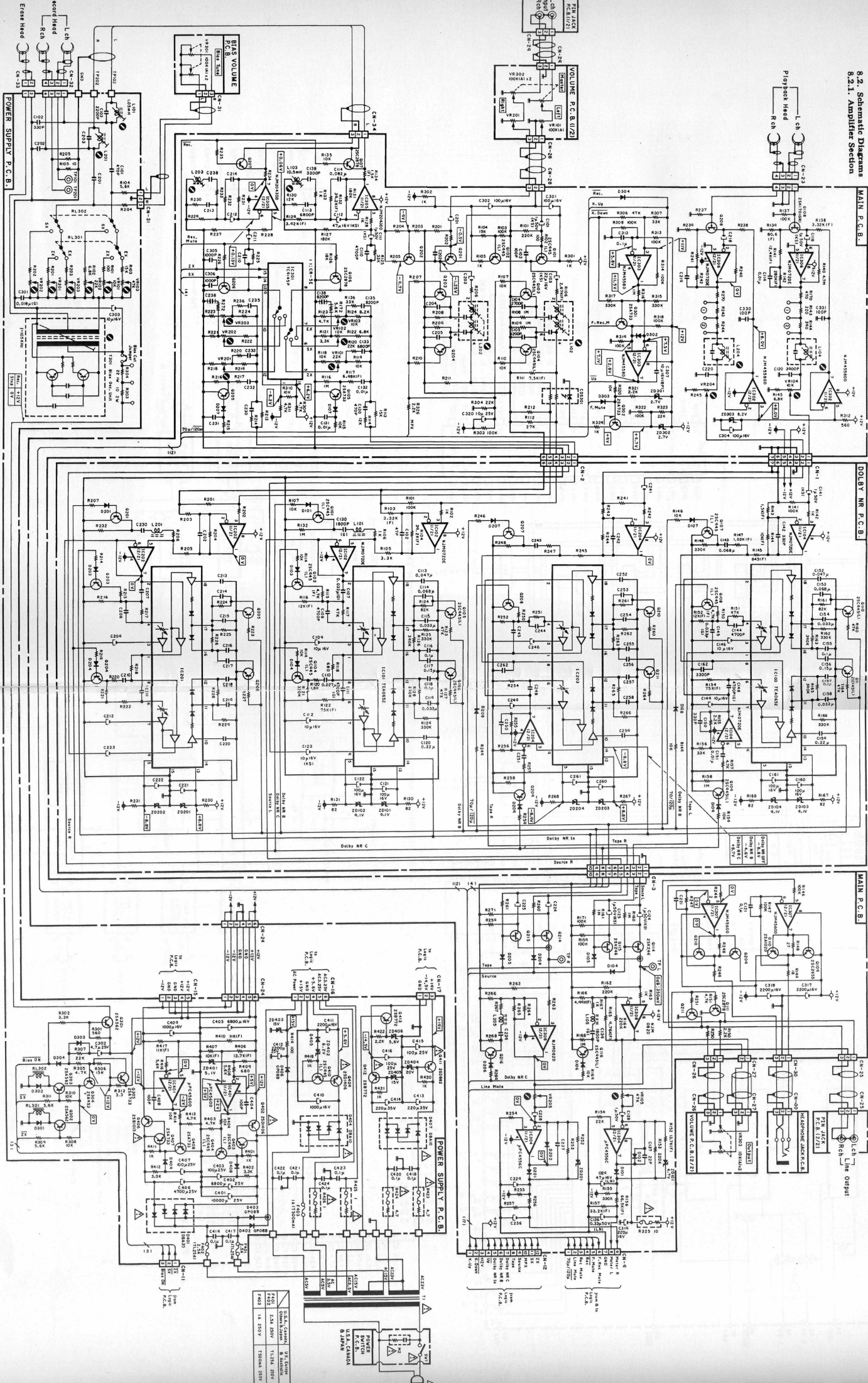


FIG. 8.2.1

IC101	IC102	IC103	IC104	IC105	IC106	IC107	IC108	IC109	IC110	IC111	IC112	IC113	IC114	IC115	IC116	IC117	IC118	IC119	IC120	IC121	IC122	IC123	IC124	IC125	IC126	IC127	IC128	IC129	IC130	IC131	IC132	IC133	IC134	IC135	IC136	IC137	IC138	IC139	IC140	IC141	IC142	IC143	IC144	IC145	IC146	IC147	IC148	IC149	IC150	IC151	IC152	IC153	IC154	IC155	IC156	IC157	IC158	IC159	IC160	IC161	IC162	IC163	IC164	IC165	IC166	IC167	IC168	IC169	IC170	IC171	IC172	IC173	IC174	IC175	IC176	IC177	IC178	IC179	IC180	IC181	IC182	IC183	IC184	IC185	IC186	IC187	IC188	IC189	IC190	IC191	IC192	IC193	IC194	IC195	IC196	IC197	IC198	IC199	IC200
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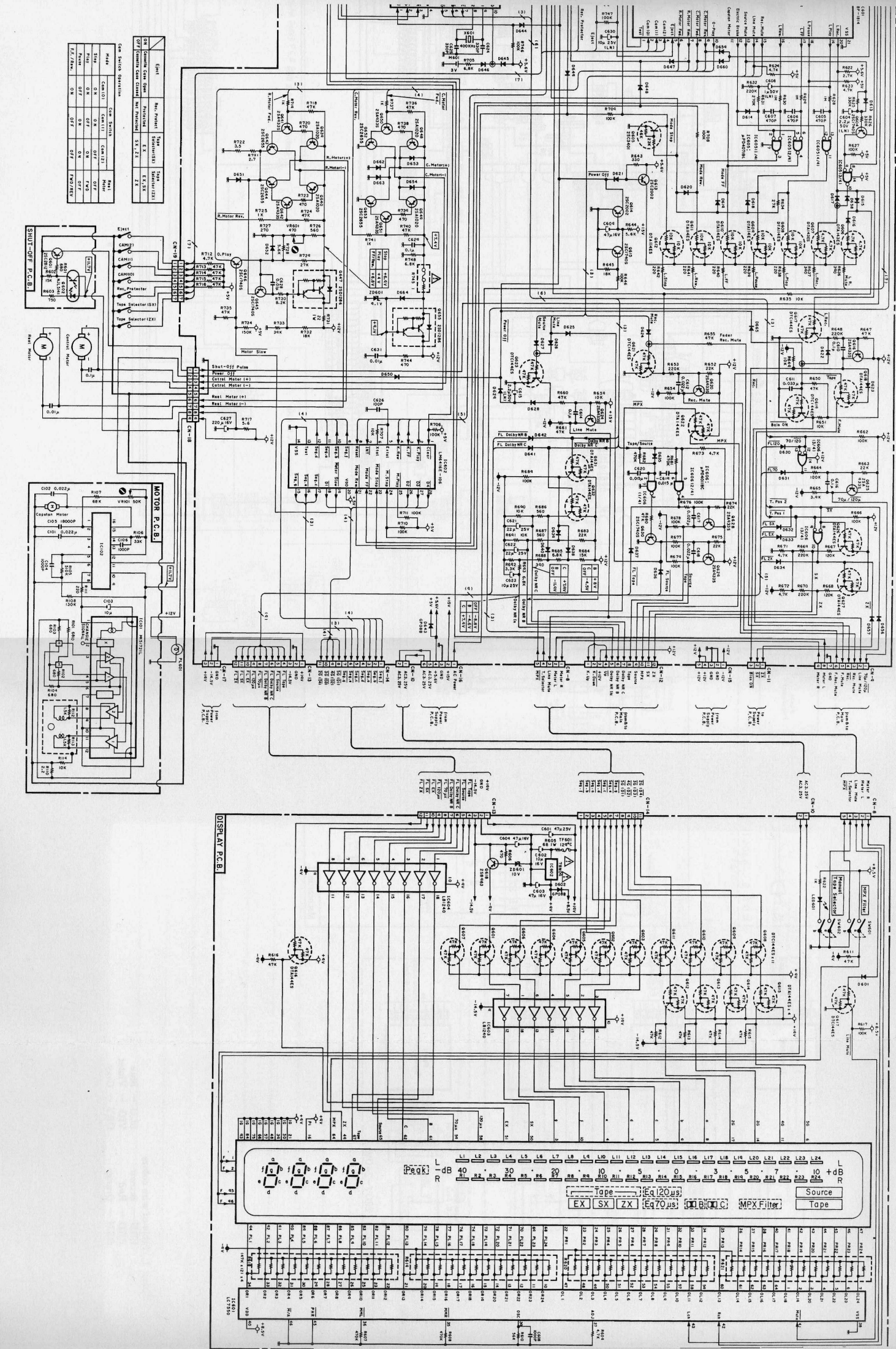


FIG. 8.2.2

# Service Manual

# Nakamichi CR-5, CR-5A, CR-5E

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