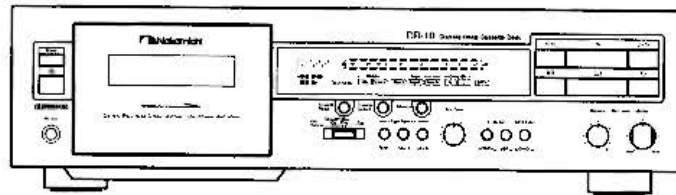


Service Manual

Discrete Head Cassette Deck

DR-10



 Nakamichi

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Specifications

Schematic Diagram (See attached sheet.)

1. GENERAL

1.1. Product Code

A139

1.2. Destinations

Black: USA, CAN, EP, UK, AUS, DA, JPN

Champagne Gold (CG):


OTR, CH, TW, HK, KR

Abbreviation

AUS — Australia	CAN — Canada
CH — China	DA — South America
EP — Europe	HK — Hong Kong
JPN — Japan	KR — Korea
OTR — Other	TW — Taiwan
USA — U.S.A.	UK — United Kingdom

1.3. 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.

1.4. Voltage Selector

The voltage selector is installed on the Rear Panel of the DR-10 (OTR, DA, TW). The voltage selector can select either 110-127V or 220-240V at customer's disposal.

1.5. Package Ass'y and Accessory Ass'y

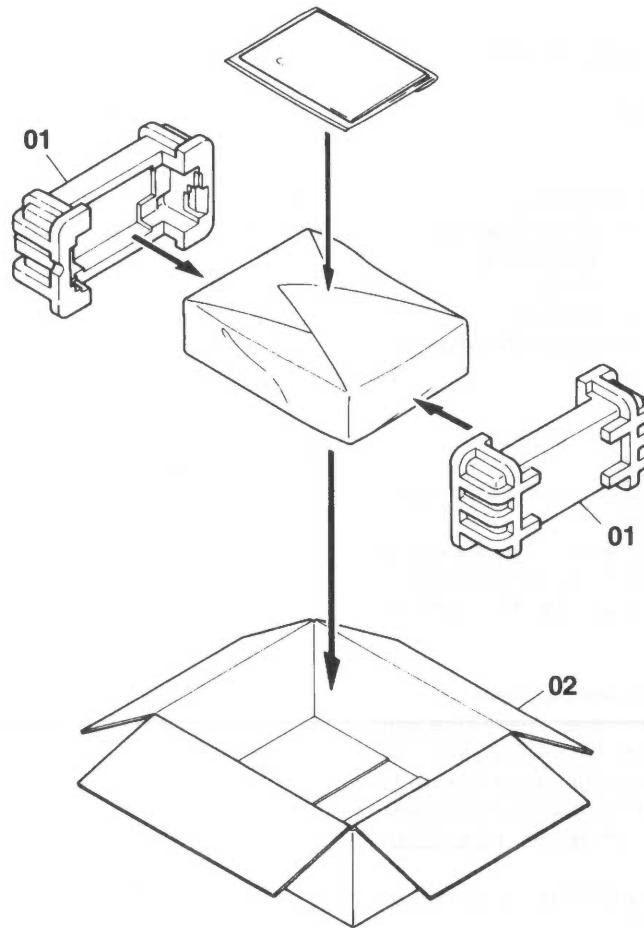


Fig. 1.1

Schematic Ref. No.	Part No.	Description	Q'ty
—	—	Package Ass'y	
01	0F04728A	Packing	2
02	0F05444B	Carton Box	1
—	0F04458A	Soft Sheet	1

Schematic Ref. No.	Part No.	Description	Q'ty
—	—	Accessory Ass'y	
—	0D07139A	Owner's Manual (English)	1
—	0D07180A	Owner's Manual (French)	1
—	0D07181A	Owner's Manual (German)	1
—	0D07138A	Owner's Manual (Japanese)	1
—	0D06431A	Pin-Pin Cord	2

2. REMOVAL PROCEDURES

2.1. Head Mount Base Ass'y

2.1.1. Removing the Head Mount Base Ass'y

Refer to Fig. 2.1.

- (1) Remove the Mechanism Ass'y.
- (2) Remove screws F01 (2 pcs.) and detach F02 (Head Mount Cover). Refer to Fig. 2.1.
- (3) Remove screws F03 (2 pcs.), straighten F04, and detach F05 (Head Mount Base Ass'y).

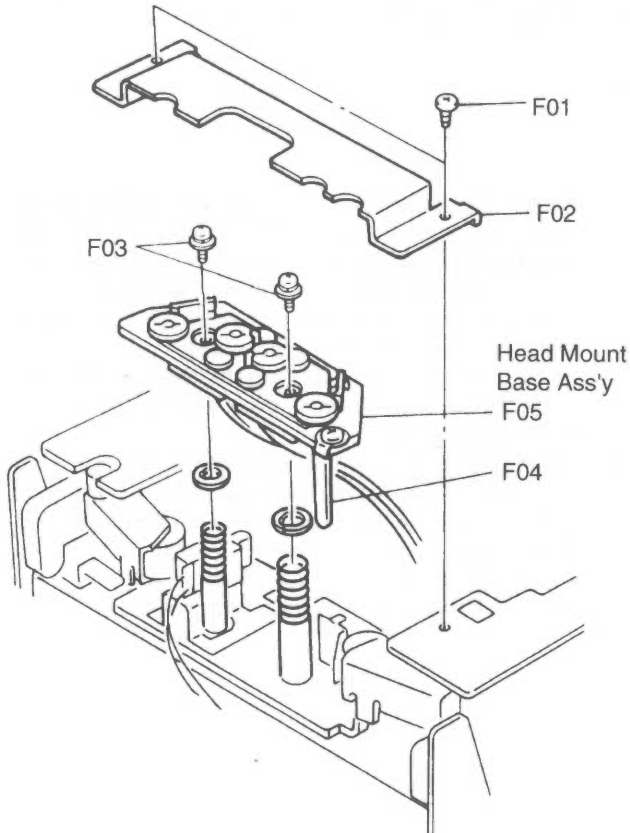


Fig. 2.1

2.1.2. Installing the Head Mount Base Ass'y

When installing the Head Base Ass'y, follow the next steps.

- (1) Insert the Plate Washers into the grooves of the shafts by hand. Refer to Fig. 2.2.
- (2) Insert F05 (Head Mount Base Ass'y) and fasten screws F03 (2 pcs.).
- (3) Push the Plate Washers with a blade of the screwdriver so that the Plate Washers come off the grooves. Refer to Fig. 2.3.
- (4) Attach F02 (Head Mount Cover) with screws F01 (2 pcs.)

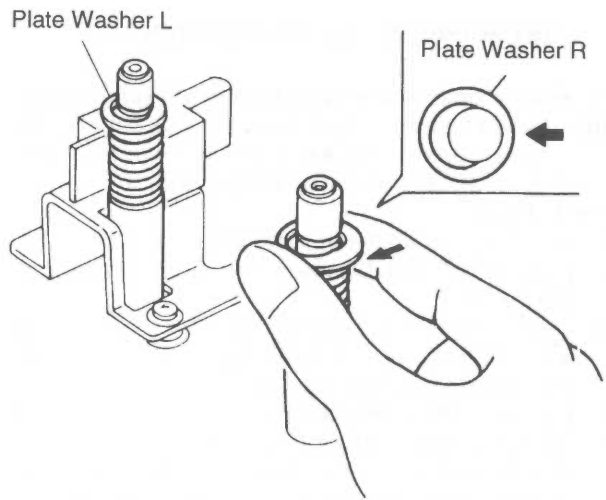


Fig. 2.2

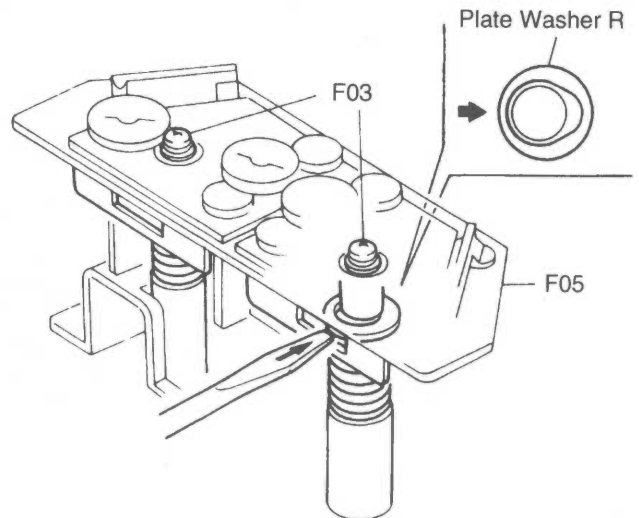


Fig. 2.3

3. TEST TAPES AND GAUGES

- | | |
|--|---|
| (1) 400 Hz Level Tape (DA09005C) | (9) Reference EXII Tape (DA09168A) |
| (2) 1kHz Track Alignment Tape (DA09007C) | (10) Reference SX Tape (DA09167A) |
| (3) 10 kHz PB Frequency Response Tape (DA09003C) | (11) Reference ZX Tape (DA09166A) |
| (4) 15 kHz PB Frequency Response Tape (DA09002C) | (12) EH Tilt Check Gauge S (DA09088A) |
| (5) 20 kHz PB Frequency Response Tape (DA09001C) | (13) Stroke Check Gauge S (DA09090A) |
| (6) 15 kHz Azimuth Tape (DA09004C) | (14) Tape Guide Height Check Gauge S (DA09091A) |
| (7) 3 kHz Speed and Wow/Flutter Tape (DA09006D) | (15) Tilt Check Gauge S (DA09039C) |
| (8) Tape Travelling Cassette (DA09071A) | (16) Torque Gauge FWD (DA09082A) |

4. MECHANICAL ADJUSTMENTS

4.1. Record Head and Playback Head Tilt Adjustment

Note: Before adjusting items 4.1 to 4.5, pull out the Cassette Case Cover Ass'y and remove the Head Mount Cover by loosening two screws.

Refer to Fig. 4.1.

- (1) Remove the pad lifter from the playback head.
- (2) Load a Tilt Check Gauge S (DA09039C) in the cassette deck.
- (3) Clip the grounding terminal of the Tilt Check Gauge with one end of the cord with clip, and the chassis of the cassette deck with the other end.
- (4) Remove both of the Height Gears.
- (5) 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 to away from the heads, then return them to the original place to be in contact with record head and playback head surfaces after Play mode is securely locked.
- (6) Beacon Playback Head "Lower" will light on when height adjustment screw (PH) turned counterclockwise but playback Head "Upper" when clockwise. Adjust so that both "Upper" and "Lower" will light on even when you move the slide knob away from the heads and then return it to the original place.
- (7) Same procedures will apply to the Beacons Record Head "Upper" and "Lower", except for the height adjustment screw (RH).
- (8) Set the cassette deck in Stop mode and fit both of the serrated Height Gears. Then set the cassette deck again in Play mode and insure all of the 4 Beacons are illuminating. If not, (4) through (7) will have to be repeated till satisfactory results are obtained.
- (9) Mount the pad lifter on the playback head.

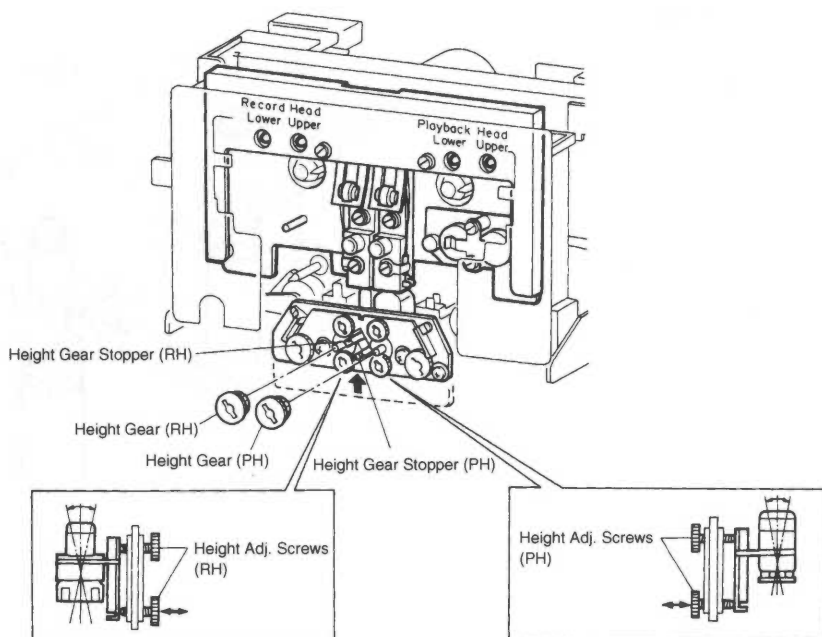


Fig. 4.1

4.2. Head Base Stroke Check

Remove the Cover Plate Ass'y.

Refer to Fig. 4.2.

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

- (1) Load a Stroke Check Gauge S (DA09090A) in the cassette deck.
- (2) Move Record Head Indicator and Playback Head Indicator to the direction of arrow mark "A" with your finger tip and then set the cassette deck in Play mode.

- (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.

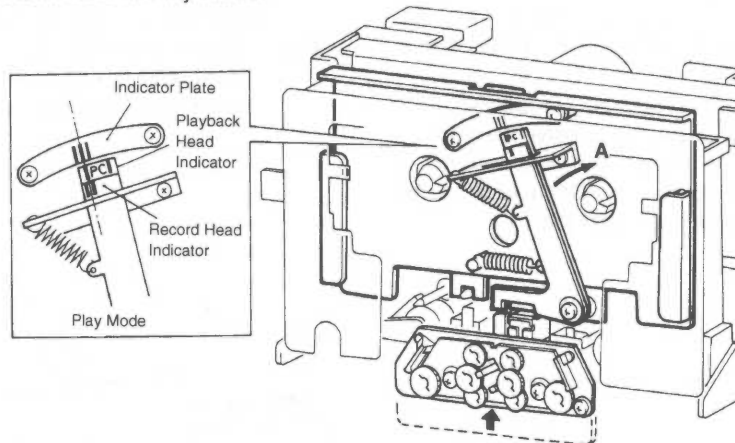


Fig. 4.2

4.3. Erase Head Stroke Adjustment and Tape Guide Height Check

Remove the Cover Plate Ass'y and the Head Mount Base Ass'y.

Refer to Fig. 4.3.

(1) Erase Head Stroke Adjustment

- (a) Load a Tape Guide Height Check Gauge S (DA09091A) 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 erase head with erase head plate.
- (d) After completion of adjustment, screw A shall be locked with lock tight paint.

- (b) Set the cassette deck in Play mode.
- (c) Slide the Take-up Tape Guide Check Bar down against 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.

(2) Supply Tape Guide Height Adjustment

- (a) Load a Tape Guide Height Check Gauge S (DA09091A) in the cassette deck.
- (b) Set the cassette deck in Play mode.
- (c) Slide the Supply Tape Guide Check Bar down against the supply tape guide, and check to insure that the Supply Tape Guide Check Bar is accepted by the supply tape guide. If not, adjust the supply tape guide height by turning screw B.

(3) Take-up Tape Guide Height Check

- (a) Load a Tape Guide Height Check Gauge S (DA09091A) in the cassette deck.

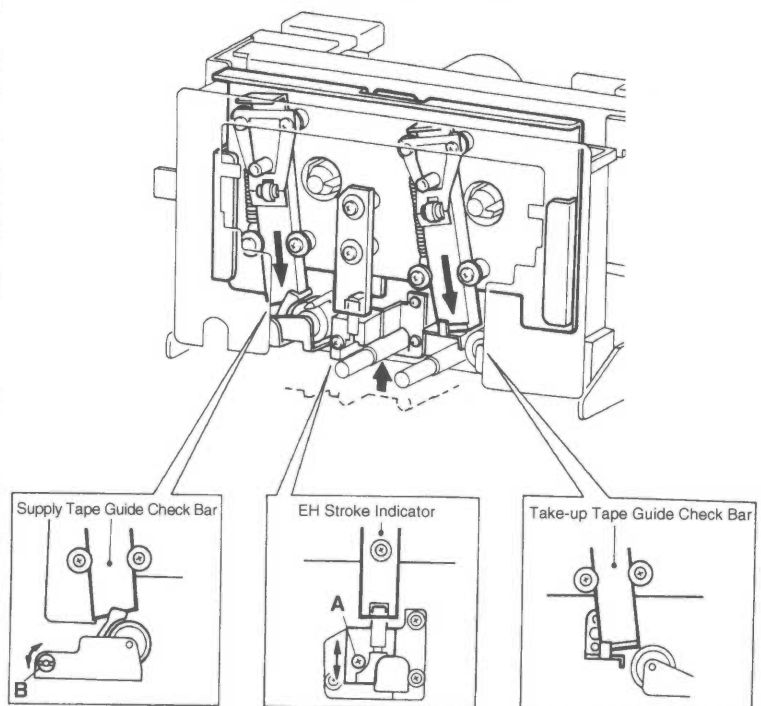


Fig. 4.3

4.4. Erase Head Height and Tilt Adjustment

Refer to Fig. 4.4.

- (1) Remove the Cassette Case Cover Ass'y, Cover Plate Ass'y, and Head Mount Base Ass'y.
- (2) Load an EH Tilt Check Gauge S (DA09088A) 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 two horizontal lines on the mirror will become superposed on the line (in different color) of the erase head, and check to insure whether the first Beacon is illuminating.
- (5) Turn Screw "Tilt" counterclockwise (or clockwise) to light on the second Beacon. Excessive turning will cause the first Beacon to light off. Adjustments of 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 on 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 on the mirror corresponds to that on the erase head. If not, (4) through (7) will have to 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.

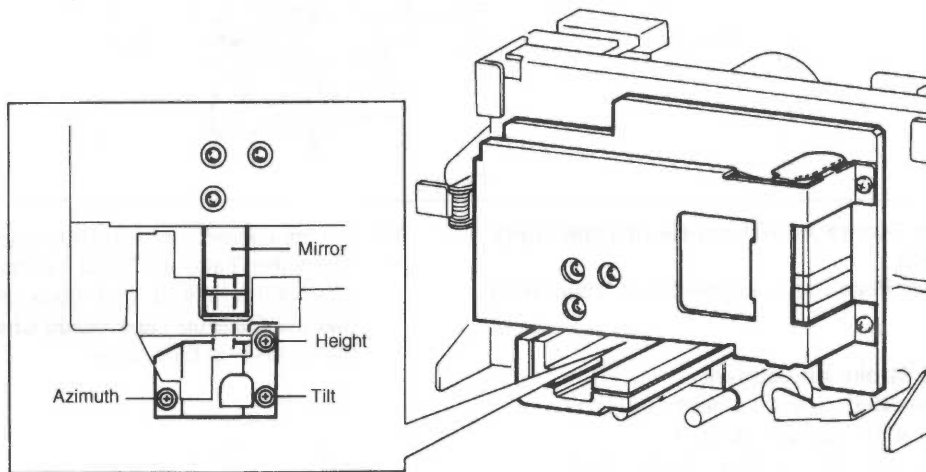


Fig. 4.4

4.5. Playback Head and Record Head Height Adjustment and Azimuth Alignment

Refer to Fig. 4.5.

(1) Playback Head Height Adjustment and Azimuth Alignment

- (a) Press the monitor button to select TAPE indication.
- (b) Connect an AC voltmeter to the Output Jacks.
- (c) Load a 1 kHz Track Alignment Tape (DA09007C) and set the cassette deck in Play mode.
- (d) Turn the PH Height Gear until the outputs of both channels become minimum.
- (e) Load a 15 kHz Azimuth Tape (DA09004C) and set the cassette deck in Play mode.
- (f) Turn the PH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (g) Repeat above steps (c) through (f) two or three times to obtain optimum performance.

(2) Record Head Height Adjustment and Azimuth Alignment

- (a) Connect an AC voltmeter to the Output Jacks.
- (b) Press the Monitor button to select TAPE indication.
- (c) Press the Type IV button.
- (d) Load a reference ZX tape.
- (e) Feed in 400 Hz (0 dB) to the Input Jacks.
- (f) Set the cassette deck in Record and Play mode and turn the RH Height Gear until the outputs of both channels become maximum.
- (g) Feed in 15 kHz (-20 dB) to the Input Jacks and turn the RH Azimuth Alignment Screw until the outputs of both channels become maximum.
- (h) Repeat (e) to (g) two or three times to obtain optimum performance.

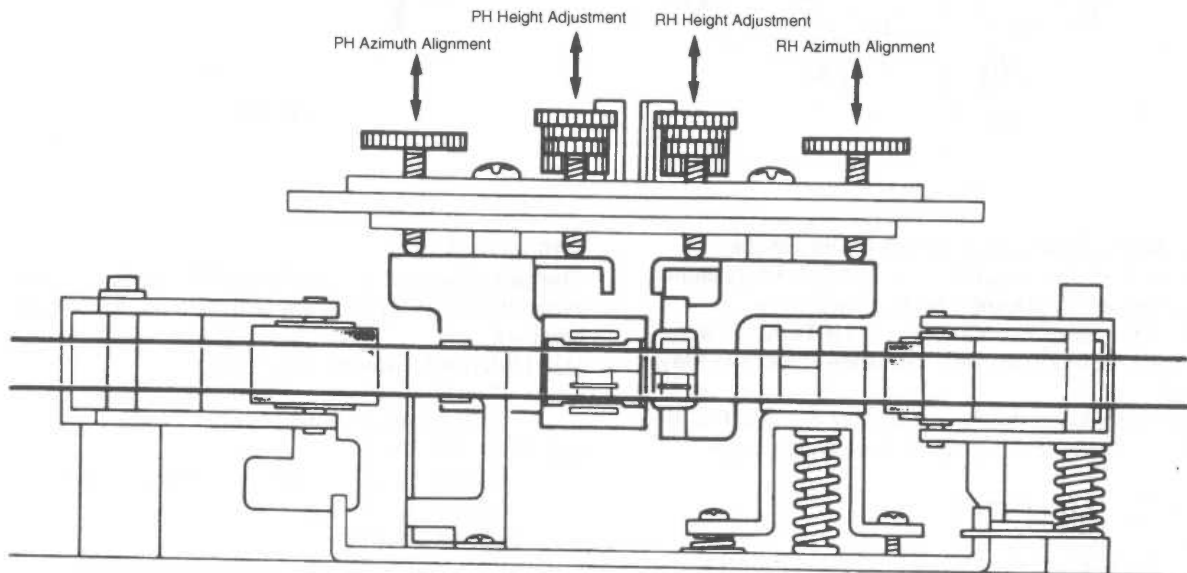


Fig. 4.5

4.6. Tape Travelling Check

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

- (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 guides.

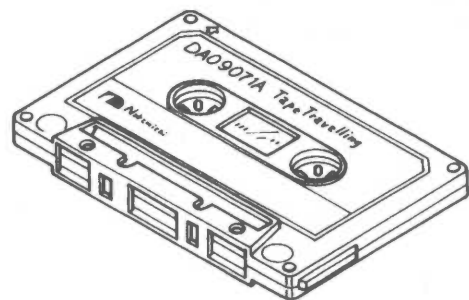


Fig. 4.6

4.7. Eject Damper Adjustment

Refer to Fig. 4.7.

Load a cassette tape, and while opening the Cassette Case by pressing the Eject button and closing it by hand, adjust the speed of damper action by the Adjustment Screw.

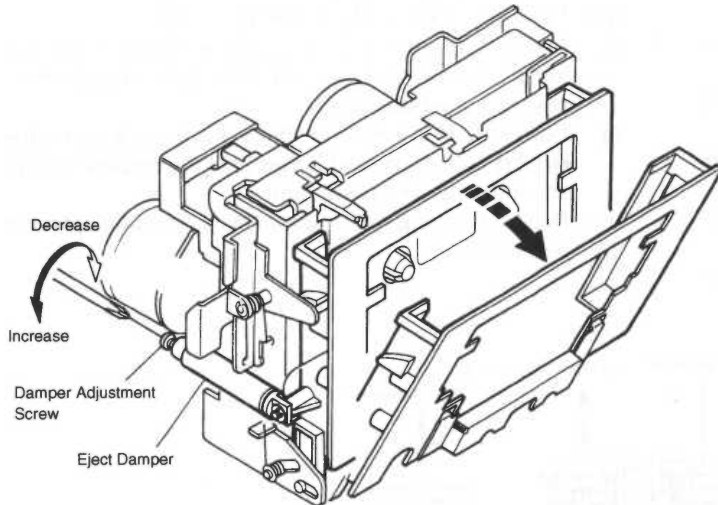


Fig. 4.7

4.8. Reel Motor Speed Adjustment in Play Mode

- (1) To warm-up the cassette deck, load a C-60 cassette tape and set the cassette deck in Play mode.
- (2) After more than four minutes, load a Torque Gauge FWD (DA09082A) and set the cassette deck in Play mode.
- (3) Adjust VR501 on the Power Supply & Logic P.C.B. Ass'y to obtain 45 ± 1 g-cm on the torque gauge.

4.9. Tape Speed Adjustment

Refer to Fig. 4.8.

- (1) Connect a frequency counter to the Output Jacks.
- (2) Load a 3 kHz Speed and Wow/Flutter Tape (DA09006D) 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.

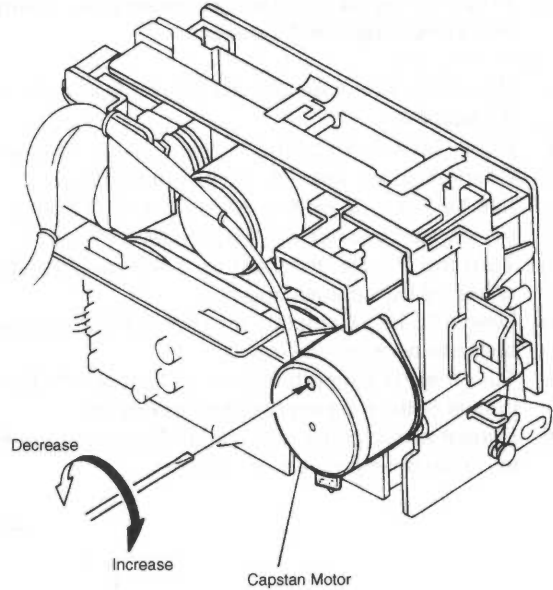


Fig. 4.8

4.10. Lubrication

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

- (1) Molykote® Grease (X5-6020)
Cam Motor Pulley
Thrust portion on the Capstan Shaft
- (2) FLOIL GB-TS-1
Washer between Reel Hub Ass'y and Back Tension Spring
- (3) Diamond Oil (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® Grease (X5-6020)
Dowcorning Co., Ltd., 1-15-1 Nishishinbashi,
Minato-ku, Tokyo, Japan
- (b) FLOIL GB-TS-1
Kanto Chemicals Co., Ltd., 2-7 Kanda Sakuma-
cho, Chiyoda-ku, Tokyo, Japan
- (c) Diamond Oil (EP-56)
Mitsubishi Oil Co., Ltd., 1-2-4 Tornomon,
Minato-ku, Tokyo, Japan
- (d) Anderol 456
Toyo Kokusai Oil Co., Ltd., 3-3-5 Hatchobori,
Chuo-ku, Tokyo, Japan

5. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

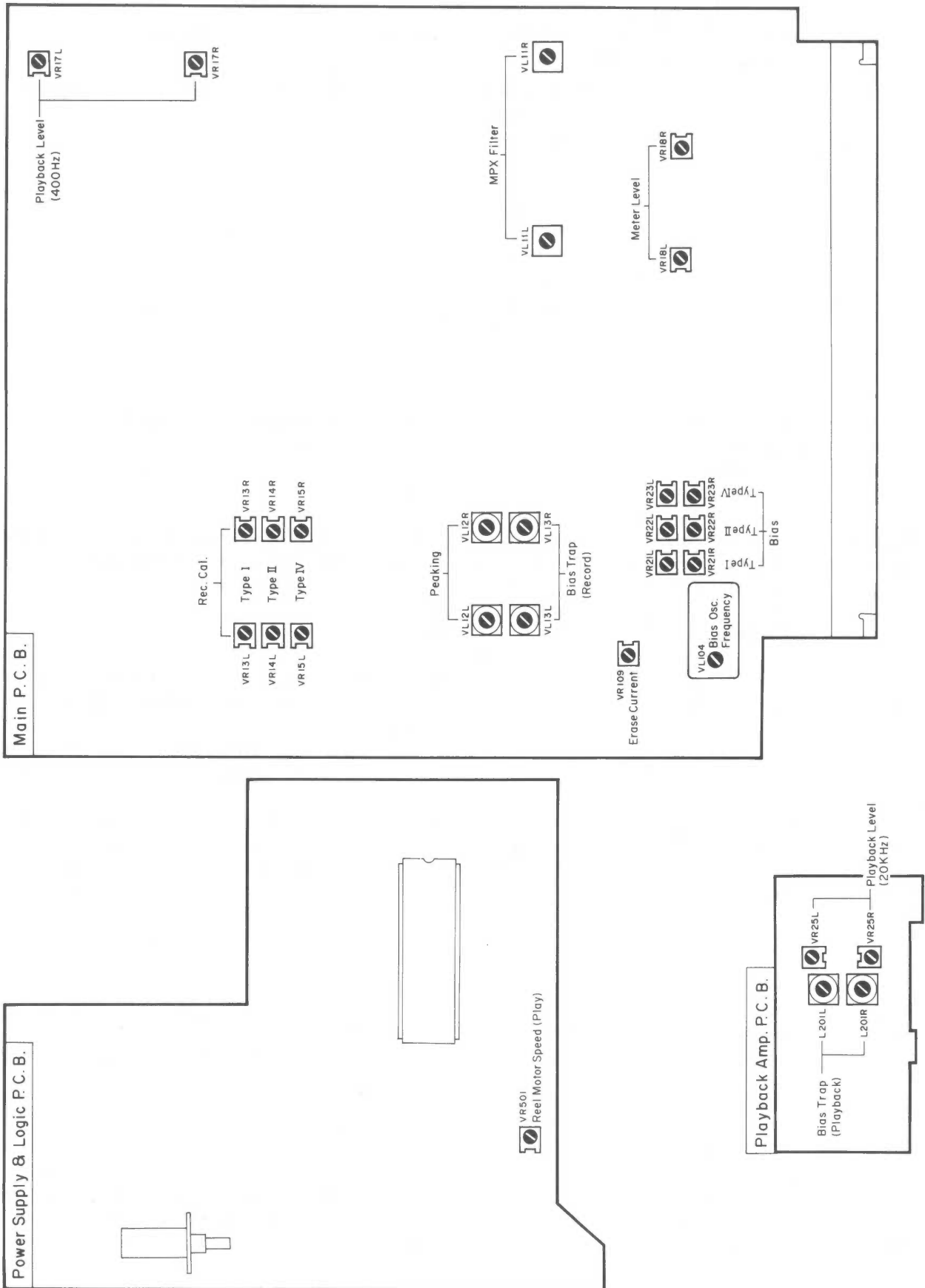
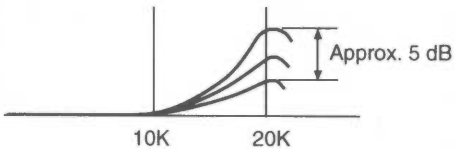


Fig. 5

6. ELECTRICAL ADJUSTMENTS

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Preliminary Step			Output Level — Max. Balance — Center Bias Tune — Center Monitor — Tape Tape — IV MPX Filter — OFF Dolby NR — OFF		Set the Cassette Deck as shown in MODE .
2	Reel Motor Speed Adjustment (Play)	Torque Gauge FWD (DA09082A)		Playback	Power Supply & Logic P.C.B. VR501	Adjust VR501 to obtain 45 ±1 g-cm on the torque gauge.
3	Tape Speed Adjustment	3 kHz Speed and Wow/Flutter Tape (DA09006D)	Frequency Counter to Output Jacks	Playback Monitor — Tape Tape — I	Tape Speed Adj. Volume (Capstan Motor)	Adjust the volume incorporated in the Capstan Motor Ass'y to obtain 3 kHz ±15 Hz on the frequency counter.
4	Meter Level Calibration	400 Hz to Input Jacks	AC Voltmeter to Output Jacks	Monitor — Source	Main P.C.B. VR18L VR18R	1. Feed in 400 Hz and adjust the Record Level control to obtain 500 mV -2 dB on the AC voltmeter. 2. Adjust VR18L (VR18R) so that the 0 dB segment on the level meter starts illuminating.
5	MPX Filter Adjustment	19 kHz ±100 Hz to Input Jacks	AC Voltmeter to Output Jacks	Monitor — Source MPX — OFF/ON	Main P.C.B. VL11L VL11R	1. Adjust the Input Level control to obtain 500 mV (0 dB) on the AC voltmeter. 2. Set the MPX Filter switch to ON and adjust VL11L (VL11R) to obtain minimum reading on the AC voltmeter. (The minimum reading will be less than -30 dB.)
6	Playback Head Track Alignment	1 kHz Track Alignment Tape (DA09007C)	AC Voltmeter to Output Jacks	Playback Monitor — Tape Tape — IV Dolby NR — OFF	PH Height Gear	Adjust the PH Height Gear to obtain the minimum readings on the AC voltmeter for both channels. Refer to "Playback Head Height Adjustment" in item 4.5.
7	Playback Head Azimuth Alignment	15 kHz Azimuth Tape (DA09004C)	AC Voltmeter to Output Jacks	Same as above	Playback Head Azimuth Alignment Screw	Adjust the Playback Head Azimuth Alignment Screw to obtain maximum readings on the AC voltmeter for both channels. Refer to "Playback Head Height Adjustment and Azimuth Alignment" in item 4.5. Note: Repeat Steps 6 and 7 two or three times to obtain optimum performance.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
8	Playback Level Calibration	400 Hz Level Tape (DA09005C)	AC Voltmeter to Output Jacks	Playback Monitor — Tape — IV Dolby NR — OFF	Main P.C.B. VR17L VR17R	Adjust VR17L (VR17R) to obtain 500 mV on the AC voltmeter.
9	Playback Frequency Response Adjustment	400 Hz Level Tape (DA09005C) 10 kHz PB Frequency Response Tape (DA09003C) 15 kHz PB Frequency Response Tape (DA09002C) 20 kHz PB Frequency Response Tape (DA09001C)	AC Voltmeter to Output Jacks	Same as above	Playback Amp. P.C.B. VR25L VR25R	<ol style="list-style-type: none"> Load a 400 Hz level tape, play it back, and read the playback level on the AC voltmeter. Load 10 kHz, 15 kHz and 20 kHz PB frequency response tapes and adjust the playback head azimuth to obtain maximum levels 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 dB to +2 dB 15 kHz: -20 dB -2 dB to +3 dB 20 kHz: -20 dB -2 dB to +4 dB If the levels are out of the ranges, play back the 20 kHz PB frequency response tape and adjust VR25L (VR25R) to obtain -20 dB +1.0 dB. VR25L (VR25R) compensates the playback frequency response at 20 kHz as shown below:  Conduct Step 7 "Playback Head Azimuth Alignment".
10	Bias Oscillation Frequency and Erase Current Adjustment	None	AC Voltmeter across the additional 0.1 ohm resistor and Frequency Counter between terminals 1 and 2 of CN-102 (i.e., across Erase Head) on Main P.C.B.	Record, Playback Monitor — Source Tape — IV Dolby NR — OFF	Main P.C.B. VL104 VR109	<ol style="list-style-type: none"> Connect an additional 0.1 ohm resistor in series to the Erase Head and connect the AC voltmeter across the resistor. Record and playback a reference ZX tape. Adjust VL104 to obtain 105 ± 1 kHz on the frequency counter. Check the erase current by the AC voltmeter. Erase current will be within the range of 310 mA to 380 mA (typically approx. 350 mA). If erase current is less than 310 mA, adjust VR109 to obtain satisfactory results. If erase current is adjusted with VR109, recheck the bias oscillation frequency. Remove the additional 0.1 ohm resistor.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
11	Bias Trap Adjustment (Record Amp.)	Remove input signals	AC Voltmeter between emitter of Q111L/R and GND on Main P.C.B.	Record, Playback Monitor — Source Tape — IV Dolby NR — OFF	Main P.C.B. VL13L VL13R	1. Load a cassette <u>without tape inside</u> . 2. Adjust VL13L (VL13R) to obtain minimum reading on the AC voltmeter.
12	Record Head Height Adjustment	400 Hz (0 dB) to Input Jacks	AC Voltmeter to Output Jacks	Record, Playback Monitor — Tape Tape — II Dolby NR — OFF	RH Height Gear	1. Load a reference SX tape, and record and play it back. 2. Adjust the RH Height Gear to obtain maximum readings for both channels on the AC voltmeter. Refer to "Record Head Height Adjustment and Azimuth Alignment" in item 4.5.
13	Record Head Azimuth Alignment	15 kHz (-20 dB) to Input Jacks	AC Voltmeter to Output Jacks	Same as above	Record Head Azimuth Alignment Screw	Adjust the Record Head Azimuth Alignment Screw to obtain maximum readings for both channels on the AC voltmeter. Refer to "Record Head Height Adjustment and Azimuth Alignment" in item 4.5. Note: Repeat steps 12 and 13 two or three times to obtain optimum performance.
14	Bias Trap Adjustment (Playback Amp.)	None	AC Voltmeter to Output Jacks	Record, Playback Monitor — Tape Tape — IV Dolby NR — OFF	Playback Amp. L201L L201R	1. Load a cassette <u>without tape inside</u> . 2. Adjust L201L (L201R) to obtain minimum reading on the AC voltmeter.
15	Record Level Calibration and Recording Bias Current Adjustment	400 Hz (0 dB), 20 kHz (-20 dB) and 10 kHz/20 kHz (-20 dB) to Input Jacks	AC Voltmeter to Output Jacks	Record, Playback Monitor — Source/ Tape — I/II/III Dolby NR — OFF/B/C	Main P.C.B. (Level) IV: VR15L VR15R II: VR14L VR14R I: VR13L VR13R (Bias) IV: VR23L VR23R II: VR22L VR22R I: VR21L VR21R	Adjustment should be made in the order of tape type IV, II, and I. 1. Set the Monitor switch to Source and Dolby NR switch to OFF. 2. Feed in 400 Hz, and set the Input Level control to obtain 0 dB (500 mV) on the AC voltmeter. 3. Set the Monitor switch to tape. 4. Load a reference ZX tape, reference SX tape and reference EXII tape. 5. Feed in 400 Hz (0 dB), record and play them back, and adjust the following semi-fixed volumes to obtain 0 dB on the AC voltmeter. ZX tape (IV): VR15L, VR15R SX tape (II): VR14L, VR14R EXII tape (I): VR13L, VR13R 6. Set the Dolby NR Switch to C. (to be continued)

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
						<p>7. Feed in 20 kHz (-20 dB) and adjust Bias VR23L (VR23R), VR22L (VR22R) and VR21L (VR21R) to obtain the same readings as source monitor levels on the AC voltmeter.</p> <p>8. Repeat above 5 to 7 two or three times to obtain optimum performance.</p> <p>9. Feed in 10 kHz and 20 kHz (-20 dB), record and play them back, and check whether the playback levels are within the following ranges. With Dolby NR OFF: -20 dB \pm3 dB Level difference between Dolby NR OFF and B: \pm2 dB Level difference between Dolby NR OFF and C: \pm3 dB</p> <p>10. Check that the total harmonic distortion is less than 0.8% for ZX and EXII tapes and 1.0% for SX tape. If satisfactory results are not obtained, readjust VR25L (VR25R) referring to Step 9 "Playback Frequency Response Adjustment" and repeat above steps.</p>
16	Overall Frequency Response Adjustment	400 Hz (0 dB) and 20 Hz to 20 kHz (-20 dB) to Input Jacks	AC Voltmeter to Output Jacks	Record, Playback Monitor — Source/ Tape Tape — I/II/IV Dolby NR — OFF	Main P.C.B. VL12L VL12R	<p>1. Set the Monitor switch to Source.</p> <p>2. Feed in 400 Hz and adjust the Input Level control to obtain -20 dB on the AC voltmeter.</p> <p>3. Set the Monitor switch to Tape.</p> <p>4. Feed in 20 Hz to 20 kHz (-20 dB) and check to insure whether the output levels are -20 dB \pm3 dB.</p> <p>5. If above is not sufficient, adjust L12L (L12R) to obtain approx. -20 dB at 20 kHz.</p> <p>6. Conduct step 15 "Record Level Calibration and Recording Bias Current Adjustment".</p> <p>7. If above is not sufficient, precise readjustment of step 9 "Playback Frequency Response Adjustment", replacement of Playback Head or Record Head, and check on item 4.6 "Tape Travelling Check" will be required.</p>

7. MECHANISM ASS'Y AND PARTS LIST

7.1 Synthesis

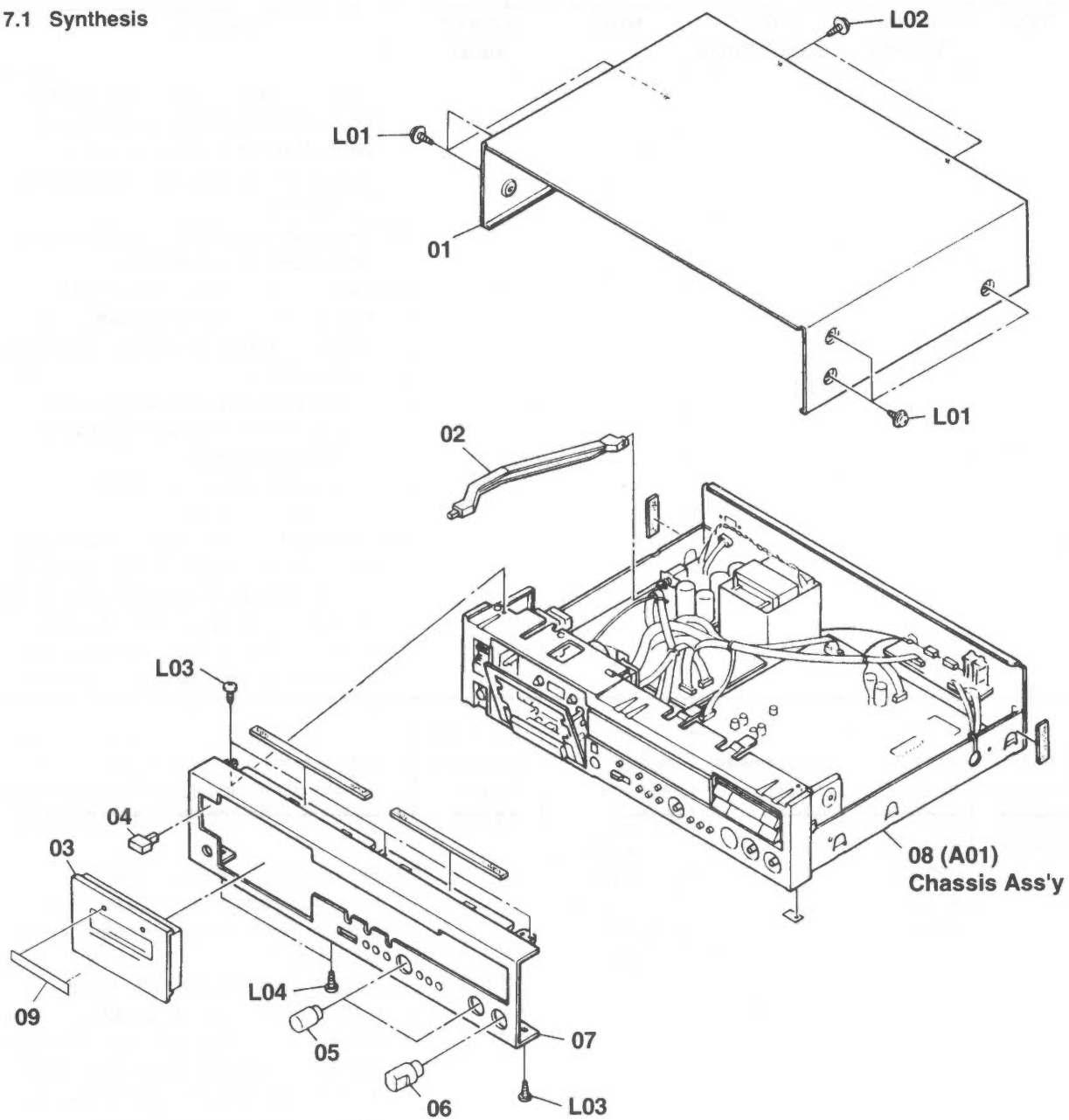


Fig. 7.1

7.1. Synthesis

Schematic Ref. No.	Part No.	Description	Q'ty
	—	Synthesis	
01	0H06423A	Top Cover DC (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0H08244A	Top Cover CG (CH, OTR, HK, TW, KR)	1
02	0J07037C	Power Switch Joint	1
03	HG07863A	Cassette Case Cover Ass'y BK (USA, CAN, JPN, DA, EP, UK, AUS)	1
	HG07864A	Cassette Case Cover Ass'y CG (CH, OTR, HK, TW, KR)	1
04	0H06418A	Power Knob (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0H08252A	Power Knob CG (CH, OTR, HK, KR, TW)	1
05	HG06502A	VR Knob Ass'y CDR (USA, CAN, JPN, DA, EP, UK, AUS)	2
	HG07851A	VR Knob Ass'y CG (CH, OTR, HK, TW, KR)	2
06	HG06503A	VR Knob Ass'y DR (USA, CAN, JPN, DA, EP, UK, AUS)	1
	HG07852A	MVR Knob Ass'y CG (CH, OTR, HK, TW, KR)	1
07	0H08262B	Front Panel BK (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0H08245B	Front Panel CG (CH, OTR, HK, TW, KR)	1
08	—	Chassis Ass'y	1
09	2H00138A	Logo Plate BK (USA, CAN, JPN, DA, EP, UK, AUS)	1
	2H00139A	Logo Plate CG (CH, OTR, HK, TW, KR)	1
L01	0E03032A	BT4x8 + Pan Washer Faced (Black) (USA, CAN, JPN, DA, EP, UK, AUS)	
	0E04146A	BT4x8 + Pan Flange (CH, OTR, HK, TW, KR)	
L02	0E03632A	BT3x8 + Binding With Washer (Black) (USA, CAN, JPN, DA, EP, UK, AUS)	
	0E04147A	BT3x8 + Binding (CH, OTR, HK, TW, KR)	
L03	0E00921A	BT3x8 + Binding (Black)	
L04	0E03366A	BT3x8 + Binding Projected (Black)	

7.2. Chassis Ass'y (A01)

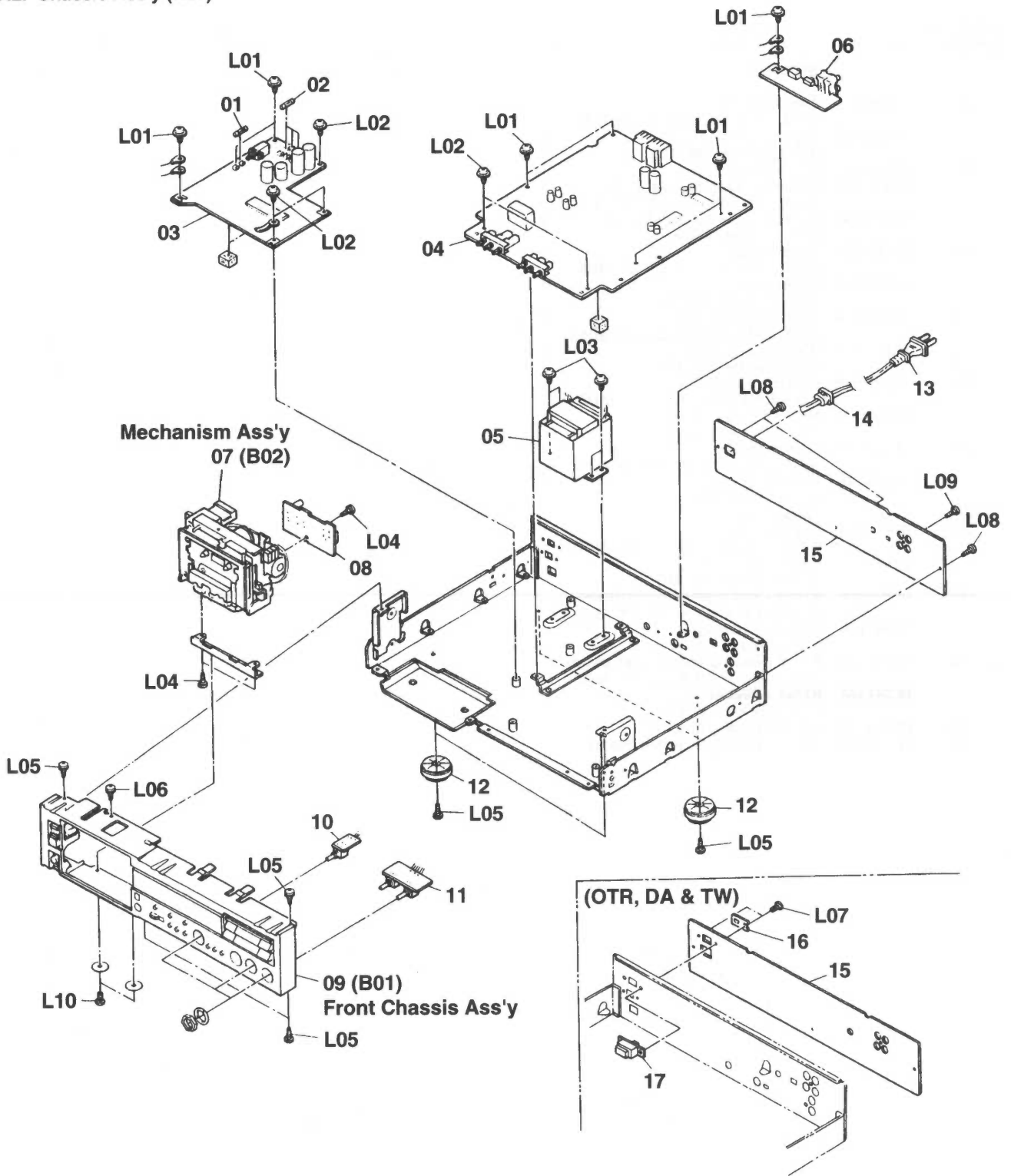


Fig. 7.2

7.3. Front Chassis Ass'y (B01)

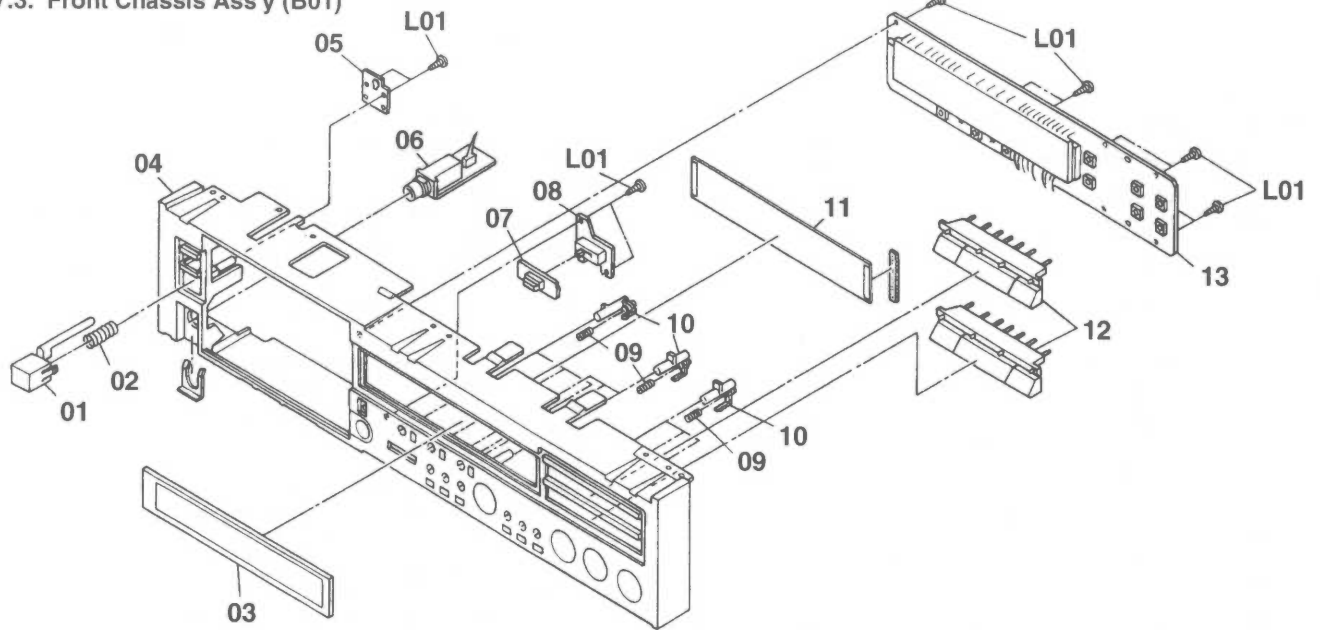


Fig. 7.3

7.2. Chassis Ass'y (A01)

Schematic Ref. No.	Part No.	Description	Q'ty
A01	—	Chassis Ass'y	1
01	0B90493A	Fuse 500mA [F404] (USA, CAN, JPN)	1
	0B08505A	Fuse F500mA [F404] (EP, UK, AUS, OTR, DA, CH, HK, KR, TW)	1
02	0B90375A	Fuse 1.6A [F401-403] (USA, CAN, JPN)	3
	0B90382A	Fuse T1.25A [F401-403] (EP, UK, AUS, OTR, DA, CH, HK, KR, TW)	3
03	BA08853A	Power Supply & Logic P.C.B. Ass'y (Except JPN)	1
	BA08851A	Power Supply & Logic P.C.B. Ass'y (JPN)	1
04	BA08849A	Main P.C.B. Ass'y	1
05	0B50183A	Power Transformer 120V (USA, CAN)	1
	0B50182A	Power Transformer 230V (EP, UK, AUS, CH, HK, KR)	1
	0B50181A	Power Transformer 115-230V (OTR, DA, TW)	1
	0B50180A	Power Transformer 100V (JPN)	1
06	BA08381A	Pin Jack P.C.B. Ass'y	1
07	CG09201B	Mechanism Ass'y	1
08	BA08477A	Playback Amp. P.C.B. Ass'y	1
09	—	Front Chassis Ass'y	1
10	BA08836A	Bias Volume P.C.B. Ass'y	1
11	BA08837A	Input Volume P.C.B. Ass'y	1
12	0H06472A	Leg	4
13	0B90205B	Power Cord (USA, CAN)	1
	0B84973A	Power Cord (EP)	1
	0B84976A	Power Cord (UK, HK)	1
	0B05241A	Power Cord (AUS)	1
	0B08533A	Power Cord (OTR, DA, TW)	1
	0B08219B	Power Cord (JPN)	1
	0B84977A	Power Cord (CH)	1
	0B85287A	Power Cord (KR)	1
14	0B90280A	Cord Bushing (USA, CAN, EP, UK, AUS, CH, HK, KR)	1
	0B90283A	Cord Bushing (OTR, JAN, DA, TW)	1
15	0H08331A	Rear Panel (USA, CAN, EP, UK, AUS, HK, CH, JPN)	1
	0H08332A	Rear Panel (OTR, DA, TW)	1
16	0M05611A	Voltage Lock Plate (OTR, DA, TW)	1
17	0B07092U	Voltage Selector (OTR, DA, TW)	1
L01	0E03157A	BT3x8 + Binding With Washer	
L02	0E00607A	M3x8 + Pan (3A)	
L03	0E03592A	BT4x6 + Binding Washer Faced (Black)	

Schematic Ref. No.	Part No.	Description	Q'ty
L04	0E03435A	M2.6x6 + Binding With Toothed Lock	
L05	0E00921A	BT3x8 + Binding (Black)	
L06	0E03212A	BT2.6x6 + Binding Toothed Lock	
L07	0E00985A	M3x6 + Binding (Black) (DA, OTR, TW)	
L08	0E00860A	BT3x6 + Binding (Black)	
L09	0E03749A	PT3x8 + Binding (Black)	
L10	0E00800A	ST3x6 + Binding	

7.3. Front Chassis Ass'y (B01)

Schematic Ref. No.	Part No.	Description	Q'ty
B01	—	Front Chassis Ass'y	1
01	0H06432B	Eject Knob D (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0H08250A	Eject Knob CG (CH, OTR, HK, TW, KR)	1
02	0J07048B	Eject Knob Spring	1
03	HA06566D	Display Lens Ass'y	1
04	0H06430C	Front Chassis (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0H08249A	Front Chassis CG (CH, OTR, HK, TW, KR)	1
05	0J07077A	Eject Holder (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0J08350A	Eject Holder CG (CH, OTR, HK, TW, KR)	1
06	BA10035A	Headphone P.C.B. Ass'y	1
07	0H06436B	Slide Knob D (USA, CAN, JPN, DA, EP, UK, AUS)	1
	0H08246A	Slide Knob CG (CH, OTR, HK, TW, KR)	1
08	BA08841A	Timer Switch P.C.B. Ass'y	1
09	0J06253A	Push Knob Spring	9
10	0H06447B	Push Knob (USA, CAN, JPN, DA, EP, UK, AUS)	9
	0H08251A	Push Knob CG (CH, OTR, HK, TW, KR)	9
11	HA06569C	Filter DR Ass'y	1
12	0H06426B	Control Knob 3CD (USA, CAN, JPN, DA, EP, UK, AUS)	2
	0H08248A	Control Knob CG (CH, OTR, HK, TW, KR)	2
13	BA08855A	Front P.C.B. Ass'y	1
L01	0E00868A	BT3x8 + Binding	

7.4. Mechanism Ass'y (B02)

Schematic				Schematic			
Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
B02	CG09201B	Mechanism Ass'y	1	75	0C82702A	Capstan Belt	1
				76	0C82718A	Thrust Plate	2
				77	0C82726A	Floating Rubber	3
01	0C85309A	Eject Arm	1	78	CA81988B	Capstan Motor Ass'y	1
02	0C85310A	Eject Arm Spring	1	79	0C85320A	Flywheel Holder	1
03	CA80006A	Pneumatic Damper Ass'y	1	80	0C81417A	Cam Gear B	1
04	0C82720A	Eject Lever Spring	1	81	0C81418A	Control Motor Holder	1
05	0C85414A	Eject Lever	1	82	0C81416A	Thrust Spring B	1
06	0C85301A	Cassette Case Holder L	1	83	0C80027A	Mode Switch	3
07	0C80019B	Eject Spring	1	84	0C81415A	Warm Thrust Bush	1
08	0C80620A	Back Tension Arm Pulley	1	85	CA81646A	Control Motor Ass'y 30	1
09	0C80621A	Back Tension Arm Belt	1	86	0C86111A	Mechanism GND Ass'y	1
10	0C80617A	Back Tension Arm Spring	1	87	CA81673A	5P Connector Ass'y	1
11	0C80618A	Back Tension Arm Collar	1	88	CA81672A	9P Connector Ass'y	1
12	0C80619A	Back Tension Arm	1	L01	0E00698A	E-Ring 2.5mm	1
13	0C85425A	Lock Lever Spring	1	L02	0E00181A	E-Ring 3mm	1
14	0C85426A	Lock Lever Collar	1	L03	0E00222A	E-Ring 2mm	1
15	0C85427A	Lock Lever	1	L04	0E00866A	M2.6x4 + Binding	1
16	CA80726A	Supply Reel Hub Ass'y	1	L05	0N00218A	Washer 2.6x4.7x0.2	1
17	0C80612A	Spring Holder	2	L06	0E03052A	CS Stopper 2.4mm	1
18	0C80614A	Supply Reel Hub Spring	1	L07	0E03042A	FT2.5x5 + Pan	1
19	0C81421A	Supply Pressure Roller Arm Adjustment Nut	1	L08	0E03667A	ST2.5x8 + Pan	1
20	CA80366A	Supply Pressure Roller Arm Ass'y	1	L09	0E03202A	M2.6x3 + Binding (Black)	1
21	0C81420A	Supply Pressure Roller Arm Spring	1	L10	0E03437A	FT2.5x3.5 + Pan (Black)	1
22	0C81422A	Supply Pressure Roller Arm Track Spring	1	L11	0E03654A	M2x4 + Pan (3A)	1
23	0H04415C	Head Mount Cover	1	L12	0E03509A	Washer 1.3x3.4x0.5	1
24	CA80200B	Cassette Case Ass'y	1	L13	0E03232A	M1.7x7 + Pan	1
25	CA81949A	Cover Plate Ass'y	1	L14	0E03222A	Washer 1.8x3.8x0.3	1
26	0C08762A	Head Height Adjustment Gear	2	L15	0E03655A	M2x5 + Pan (2A)	1
27	0C08761A	Head Height Adjustment Screw	4	L16	0E03234A	M2x3 + Pan	1
28	0C08763A	Azimuth Alignment Screw	1	L17	0E03228A	FT3x4 + Pan	1
29	CA08637A	Head Mount Base Sub Ass'y	1	L18	0E03236A	M2x5 + Pan (2A)	1
30	CA08659C	R-3L Record Head Ass'y	1	L19	0E03231A	M2x30 + Pan	1
31	0C08776A	Head Plate Spring L	1	L20	0E03041A	FT2.5x4 + Pan	1
32	CA81676A	RH 4P Connector Ass'y	1	L21	0E03233A	Washer 2.6x8x1	1
33	0C80605A	Wire Clamper	1	L22	0E03230A	ST2.6x12 + Pan	1
34	0C80610A	Cassette Case Spring	1	L23	0E03045A	M2.6x3 + Binding	1
35	0C80010D	Cassette Case Holder R	1	L24	0E03226A	Washer 2.1x4.5x0.1	1
36	0C80012A	Sensor Switch	1	L25	0C82725A	M2.6x9 Washer Faced	1
37	CA08658C	P2H-3L Playback Head Ass'y	1	L26	0E00691A	M2x3 + Pan	1
38	0C08775A	Head Plate Spring R	1	L27	0E03044A	FT2.5x20 + Pan	1
39	CA81675A	PH 4P Connector Ass'y	1	L28	0E03653A	Washer 1.6x4x0.25	1
40	CA81674A	EH 2P Connector Ass'y	1	L29	0E03508A	Washer 1.7x6x0.25	1
41	GA02201A	E-4F Erase Head	1	L30	0E03035A	M2x3.2 + Truss	1
42	0C08768A	E.H. Hold Plate	1	L31	0E03235A	Washer 2x5x0.25	1
43	0C08889A	E.H. Hold Plate Tapering Spring	2	L32	0E03225A	Washer 1.8x3.8x0.5	1
44	0C08886A	E.H. Hold Plate Spring	1	L33	0E03194A	Washer 2.1mm	1
45	0C82710A	Head Base Hold Plate	1	L34	0C85423A	S. Thrust Spring Washer	1
46	0C80004A	Steel Ball 3mm	1	L35	0E03049A	Washer 1.8x3.2x0.5	1
47	0C08771A	Tape Guide Plate	1	L36	0C08774A	Plate Washer L	1
48	CA80365A	Head Base Ass'y	1	L37	0C08773A	Plate Washer R	1
49	0C80007A	Steel Ball 2mm	3	L38	0E03227A	Washer 2.7x5x0.5	1
50	CA80725A	Take-up Reel Hub Ass'y	1	L39	0E03237A	Nut Hex. M2.6	1
51	0C80613A	Take-up Reel Hub Spring	1	L40	0E00694A	Nut M2	1
52	CA80368A	Take-up Pressure Roller Arm Ass'y	1	L41	0C82716A	Capstan Washer S	1
53	0C81423A	Take-up Pressure Roller Arm Spring	1	L42	0C82717A	Capstan Washer T	1
54	0C85429A	Switch Hold Plate	1	L43	0N00217A	Washer 2.6x7x0.13	1
55	0C80623A	Switch Plate	2	L44	0N00219A	Washer 4.1x6.1x0.2	1
56	0C80624A	Switch Collar A	2				
57	0C80626A	Leaf Switch	1				
58	0C80625A	Switch Collar B	2				
59	0C80017B	Record Protector Lever	1				
60	0C80022B	Cassette Hold Spring	1				
61	CA80736A	Mechanism Chassis Ass'y	1				
62	CA80011B	Shut-off P.C.B. Ass'y	1				
63	CA80204A	Brake Ass'y	1				
64	0C80628A	Brake Spring B	1				
65	0C80630A	Brake Arm Collar	1				
66	0C80629A	Brake Arm	1				
67	0C82724A	Reel Motor Holder	1				
68	CA81699B	Reel Motor Ass'y	1				
69	0C83380A	Idle Gear	1				
70	2C00006A	Supply Capstan Flange	1				
71	2C00005A	Take-up Capstan Flange	1				
72	0C80428A	Hold Spring	2				
73	0C82699A	Supply Flywheel	1				
74	0C82698A	Take-up Flywheel	1				

7.4. Mechanism Ass'y (B02)

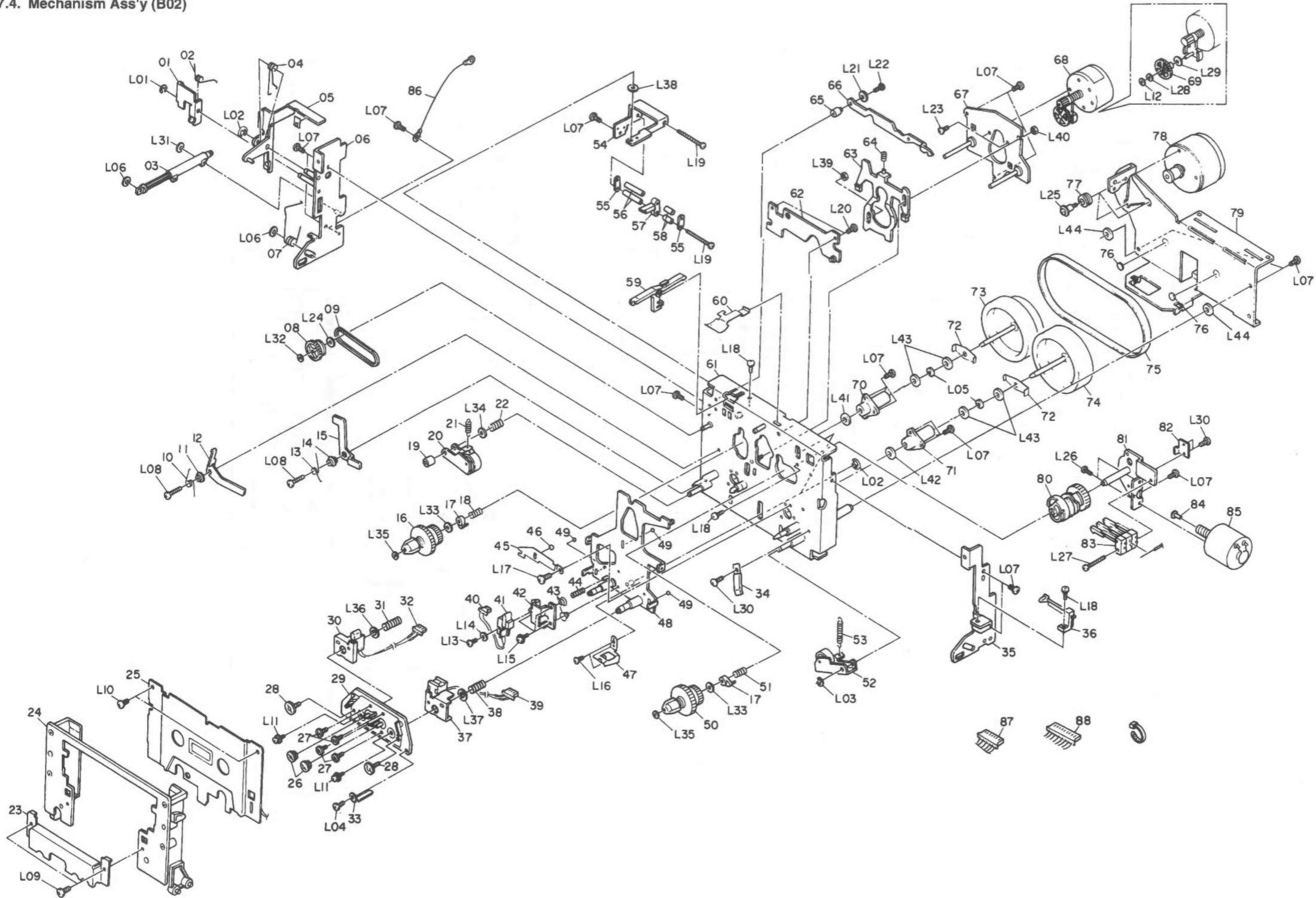


Fig. 7.4

8. MOUNTING DIAGRAMS AND PARTS LIST

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

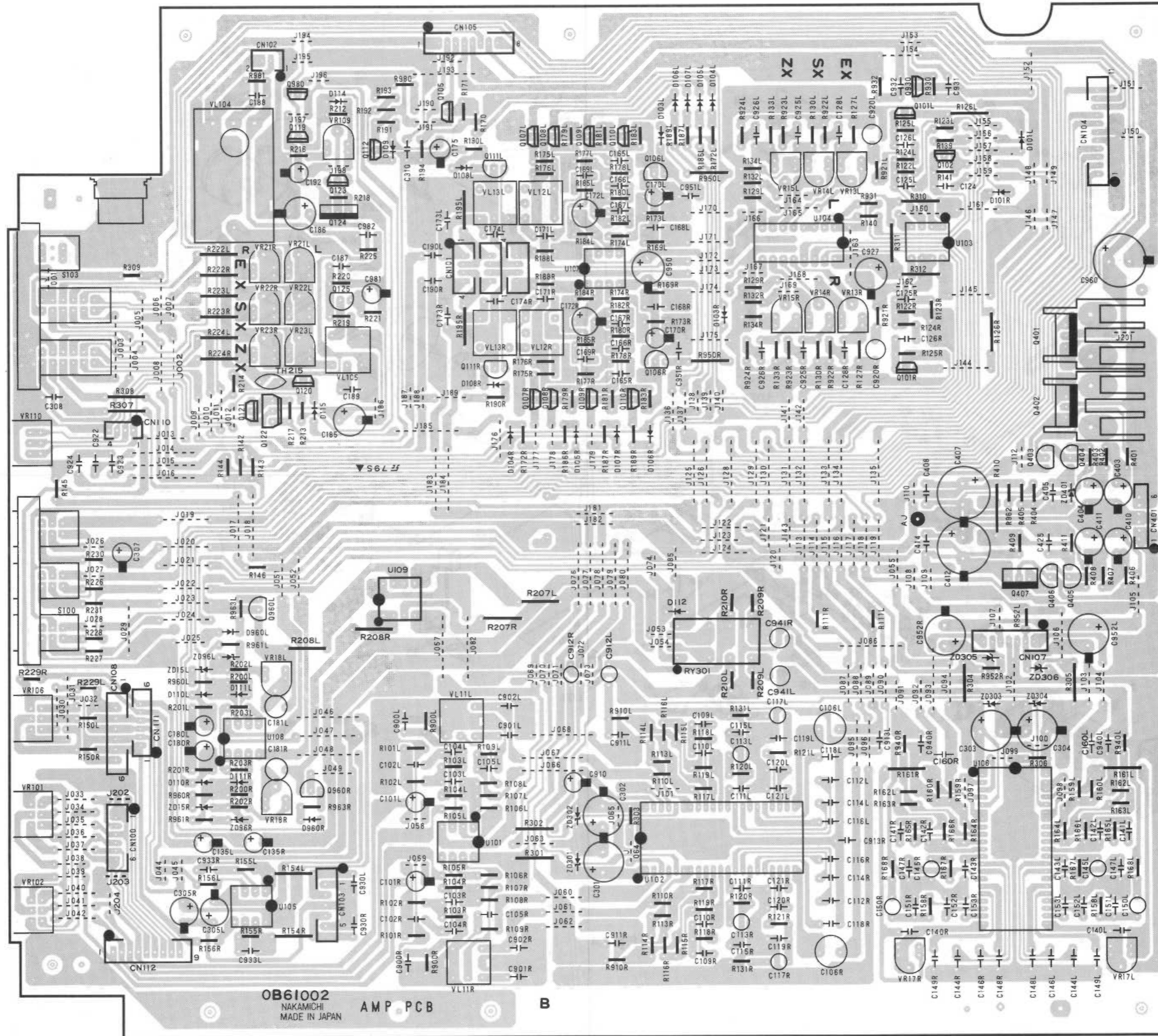
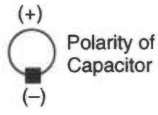


Fig. 8.1

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



Fig. 8.3

8.4. Input Volume P.C.B. Ass'y

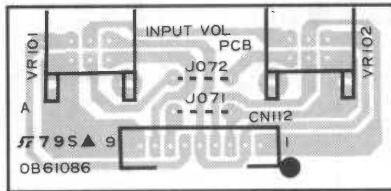


Fig. 8.4

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

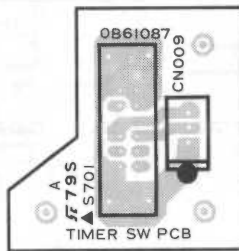


Fig. 8.5

8.6. Headphone P.C.B. Ass'y

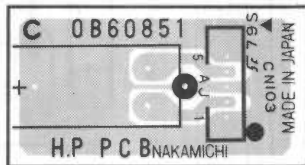


Fig. 8.6

8.7. Front P.C.B. Ass'y

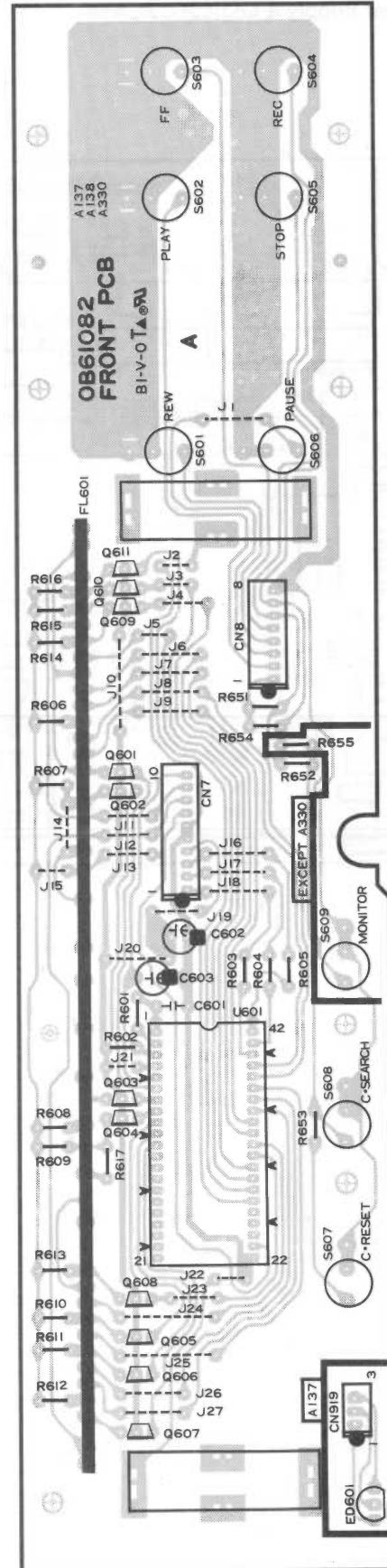


Fig. 8.7

NOTES: 1. Abbreviations

TR – Transistor, SID – Silicon Diode, ZD – Zener Diode, Varicap – Variable Capacitance Diode
 RK – Carbon Resistor, RM – Metal Film Resistor, RF – Fail Safe Type Resistor,
 RC – Cement Resistor, CE – Electrolytic Capacitor, CML – Mylar Capacitor,
 CC – Ceramic Capacitor, CPP – PP Capacitor, CMM – Metalized Mylar Capacitor,
 CSP – Polystyrene Capacitor, C – Mica Capacitor, CT – Tantalum Capacitor

2. Description of capacitor: 10 16V = 10µ 16V

3. Parts marked with * show chip parts.

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

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA08849A	Main P.C.B. Ass'y				CN001	OB84282A	4P T-Post
				— Rec. Amp. —				— Rec. Eq. Amp. —
			U107	OB06387A	IC NJM2043DD	U103	OB06146A	IC NJM4558DD
		— Input Amp. —	Q105	OB10053A	TR DTA144ES	U104	OB11027A	IC TC9145P
U101	OB06146A	IC NJM4558DD	Q106L,R	OB06299A	TR 2SC2878	Q101L,R	OB10033A	TR 2SC1740S (S)
VL11L,R	OB51373A	L-C Block (MPX)	Q107L,R	OB10033A	TR 2SC1740S (S)	Q102	OB10029A	TR 2SA933S (S)
R101L,R	OB09733A	RK 220K 1/4W J	Q108L,R	OB10033A	TR 2SC1740S (S)	Q930	OB10029A	TR 2SA933S (S)
R102L,R	OB09709A	RK 22K 1/4W J	Q109L,R	OB10033A	TR 2SC1740S (S)	D101L,R	OB12249A	SiD 1SS133
R103L,R	OB09709A	RK 22K 1/4W J	Q110L,R	OB10033A	TR 2SC1740S (S)	VR13L,R	OB32193A	Semi VR 10K
R104L,R	OB09701A	RK 10K 1/4W J	Q111L,R	OB06299A	TR 2SC2878	VR14L,R	OB32193A	Semi VR 10K
R105L,R	OB09677A	RK 1K 1/4W J	Q112	OB10029A	TR 2SA933S (S)	VR15L,R	OB32194A	Semi VR 20K
R106L,R	OB09677A	RK 1K 1/4W J	D103L,R	OB12249A	SiD 1SS133	R111L,R	OB09733A	RK 220K 1/4W J
R107L,R	OB25236A	RM 2.67K 1/4W F	D104L,R	OB12249A	SiD 1SS133	R122L,R	OB09705A	RK 15K 1/4W J
R108L,R	OB25236A	RM 2.67K 1/4W F	D105L,R	OB12249A	SiD 1SS133	R123L,R	OB09703A	RK 12K 1/4W J
R109L,R	OB25267A	RM 5.62K 1/4W F	D106L,R	OB12249A	SiD 1SS133	R124L,R	OB25276A	RM 6.98K 1/4W F
R900L,R	OB09715A	RK 39K 1/6W J	D107L,R	OB12249A	SiD 1SS133	R125L,R	OB09749A	RK 1M 1/4W J
C101L,R	OB40778A	CE 10 25V	D108L,R	OB12249A	SiD 1SS133	R126L,R	OB09701A	RK 10K 1/4W J
C102L,R	OB41978A	CC 68P 50V J	D109	OB12249A	SiD 1SS133	R127L,R	OB09701A	RK 10K 1/4W J
C103L,R	OB41883A	CC 150P 50V J	VL12L,R	OB51374A	Coil 15.8mH	R129L,R	OB09693A	RK 4.7K 1/4W J
C104L,R	OB41978A	CC 68P 50V J	VL13L,R	OB51370A	Trap Coil 1.05mH	R130L,R	OB09697A	RK 6.8K 1/4W J
C105L,R	OB01802A	CML 2200P 50V J	R169L,R	OB09711A	RK 27K 1/4W J	R132L,R	OB09689A	RK 3.3K 1/4W J
C900L,R	OB47215A	CC 330P 50V J	R170	OB09701A	RK 10K 1/4W J	R133L,R	OB09701A	RK 10K 1/4W J
C901L,R	OB09189A	CML 2700P 50V J	R171	OB09725A	RK 100K 1/4W J	R134L,R	OB09701A	RK 10K 1/4W J
C902L,R	OB01804A	CML 3900P 50V J	R172L,R	OB09709A	RK 22K 1/4W J	R139	OB09717A	RK 47K 1/4W J
CN112	OB84084A	9P T-Post	R173L,R	OB09733A	RK 220K 1/4W J	R140,141	OB09725A	RK 100K 1/4W J
			R174L,R	OB25195A	RM 1K 1/4W F	R142,143	OB09733A	RK 220K 1/4W J
			R175L,R	OB09685A	RK 2.2K 1/4W J	R144	OB09733A	RK 220K 1/4W J
			R176L,R	OB09677A	RK 1K 1/4W J	R145,146	OB09693A	RK 4.7K 1/4W J
			R177L,R	OB25252A	RM 3.92K 1/4W F	R310	OB09693A	RK 4.7K 1/4W J
			R178L,R	OB09694A	RK 5.1K 1/4W J	R311	OB09701A	RK 10K 1/4W J
			R179L,R	OB09741A	RK 470K 1/4W J	R312	OB09693A	RK 4.7K 1/4W J
U102	OB11363A	IC CX20188	R180L,R	OB09693A	RK 4.7K 1/4W J	R921L,R	OB09705A	RK 15K 1/4W J
ZD301,302	OB12695A	ZD 10V MA4100(N)	R181L,R	OB09741A	RK 470K 1/4W J	R922L,R	OB09694A	RK 5.1K 1/4W J
R110L,R	OB25267A	RM 5.62K 1/4W F	R182L,R	OB09695A	RK 5.6K 1/4W J	R923L,R	OB09701A	RK 10K 1/4W J
R113L,R	OB25195A	RM 1K 1/4W F	R183L,R	OB09741A	RK 470K 1/4W J	R924L,R	OB09701A	RK 10K 1/4W J
R114L,R	OB25304A	RM 13.7K 1/4W F	R184L,R	OB09733A	RK 220K 1/4W J	R930,931	OB09725A	RK 100K 1/4W J
R115L,R	OB25251A	RM 3.83K 1/4W F	R185L,R	OB25365A	RM 59.0K 1/4W F	R932	OB09717A	RK 47K 1/4W J
R116L,R	OB25244A	RM 3.24K 1/4W F	R186L,R	OB09709A	RK 22K 1/4W J	C124	OB41971A	CC 0.1 50V Z
R117L,R	OB09749A	RK 1M 1/4W J	R187L,R	OB09709A	RK 22K 1/4W J	C125L,R	OB09993A	CML 820P 50V J
R118L,R	OB25171A	RM 562 1/4W F	R188L,R	OB22644A	RM 1.54K 1/4W F	C126L,R	OB05681A	CML 0.01 50V J
R119L,R	OB25324A	RM 22.1K 1/4W F	R189L,R	OB09709A	RK 22K 1/4W J	C128L,R	OB09045A	CML 0.027 50V J
R120L,R	OB09698A	RK 7.5K 1/4W J	R190L,R	OB09695A	RK 5.6K 1/4W J	C920L,R	OB40474A	CE 47 16V (BP)
R121L,R	OB09673A	RK 680 1/4W J	R191	OB09717A	RK 47K 1/4W J	C922,923	OB41971A	CC 0.1 50V Z
R131L,R	OB09700A	RK 9.1K 1/4W J	R192	OB09701A	RK 10K 1/4W J	C924	OB41971A	CC 0.1 50V Z
R301,302	OB09508A	RF 56 1/4W J	R193	OB09721A	RK 68K 1/4W J	C925L,R	OB09045A	CML 0.027 50V J
R303	OB25398A	RM 130K 1/4W F	R194	OB09701A	RK 10K 1/4W J	C926L,R	OB05659A	CML 5600P 50V J
R910L,R	OB25099A	RM 100 1/4W F	R195L,R	OB09629A	RK 10 1/4W J	C927	OB40799A	CE 100 35V
C106L,R	OB40474A	CE 47 16V (BP)	R950L,R	OB09701A	RK 10K 1/4W J	C931,932	OB41971A	CC 0.1 50V Z
C109L,R	OB41133A	CPP 2200P 100V G	C165L,R	OB41133A	CPP 2200P 100V G			
C110L,R	OB41133A	CPP 2200P 100V G	C166L,R	OB41278A	CML 2200P 50V J			
C111L,R	OB41139A	CPP 3900P 100V G	C167L,R	OB05582A	CML 0.022 50V J			
C112L,R	OB41306A	CML 0.47 50V J	C168L,R	OB09045A	CML 0.027 50V J			
C113L,R	OB40817A	CE 1 50V (BP)	C169L,R	OB05682A	CML 0.068 50V J	U106	OB11363A	IC CX20188
C114L,R	OB41300A	CML 0.15 50V J	C170L,R	OB40557A	CE 1 50V	ZD303,304	OB12695A	ZD 10V MA4100 (N)
C115L,R	OB41288A	CML 0.015 50V J	C171L,R	OB01914A	CML 3300P 50V J	VR17L,R	OB32192A	Semi VR 5K
C116L,R	OB41302A	CML 0.22 50V J	C172L,R	OB40559A	CE 47 16V	R158L,R	OB09673A	RK 680 1/4W J
C117L,R	OB40817A	CE 1 50V (BP)	C173L,R	OB09322A	CPP 330P 100V J	R159L,R	OB09725A	RK 100K 1/4W J
C118L,R	OB41296A	CML 0.068 50V J	C174L,R	OB09834A	CPP 2200P 100V J	R160L,R	OB25195A	RM 1K 1/4W F
C119L,R	OB41295A	CML 0.056 50V J	C175	OB40778A	CE 10 25V	R161L,R	OB09420A	RM 2.2K 1/4W F
C120L,R	OB41143A	CPP 5600P 100V G	C310	OB05550A	CML 1000P 50V J	R162L,R	OB25244A	RM 3.24K 1/4W F
C121L,R	OB05681A	CML 0.01 50V J	C950	OB40798A	CE 330 35V	R163L,R	OB25251A	RM 3.83K 1/4W F
C301,302	OB40608A	CE 470 16V	C951L,R	OB05550A	CML 1000P 50V J	R164L,R	OB09749A	RK 1M 1/4W J
C910	OB40778A	CE 10 25V	CN101	OB81461A	4P T-Post	R165L,R	OB25171A	RM 562 1/4W F
C911L,R	OB09989A	CC 120P 50V J						
C913L,R	OB09989A	CC 120P 50V J						

Schematic Ref. No.	Part No.	Description
R166L,R	0B25324A	RM 22.1K 1/4W F
R167L,R	0B09698A	RK 7.5K 1/4W J
R168L,R	0B09700A	RK 9.1K 1/4W J
R304,305	0B09508A	RF 56 1/4W J
R306	0B25398A	RM 130K 1/4W F
R940L,R	0B25099A	RM 100 1/4W F
C140L,R	0B09989A	CC 120P 50V J
C141L,R	0B41133A	CPP 2200P 100V G
C142L,R	0B41133A	CPP 2200P 100V G
C143L,R	0B41139A	CPP 3900P 100V G
C144L,R	0B41306A	CML 0.47 50V J
C145L,R	0B40817A	CE 1 50V (BP)
C146L,R	0B41300A	CML 0.15 50V J
C147L,R	0B41288A	CML 0.015 50V J
C148L,R	0B41302A	CML 0.22 50V J
C149L,R	0B41296A	CML 0.068 50V J
C150L,R	0B40817A	CE 1 50V (BP)
C151L,R	0B41295A	CML 0.056 50V J
C152L,R	0B41143A	CPP 5600P 100V G
C153L,R	0B05681A	CML 0.01 50V J
C160L,R	0B41201A	CPP 100P 100V J
C303,304	0B40608A	CE 470 16V
C940L,R	0B09989A	CC 120P 50V J

— Headphone Amp. —

U105	0B11365A	IC M5216
R150L,R	0B25661A	RM 2.2K 1/4W F
R154L,R	0B09049A	RF 22 1/4W J
R155L,R	0B09717A	RK 47K 1/4W J
R156L,R	0B09717A	RK 47K 1/4W J
R229L,R	0B09717A	RK 47K1/6W J
C135L,R	0B40778A	CE 10 25V
C305L,R	0B40800A	CE 100 25V
C930L,R	0B01804A	CML 3900P 50V J
C933L,R	0B41978A	CC 68P 50V J
CN103	0B81637A	5P T-Post

— Power Supply —

Q401,402	0B06452A	TR 2SD1406
Q403,404	0B06142A	TR 2SC2240
Q405,406	0B10050A	TR 2SA970
Q407	0B06451A	TR 2SB1015
ZD401	0B12705A	ZD 5.1V MA4051N-M
R401,402	0B09685A	RK 2.2K 1/4W J
R403	0B09677A	RK 1K 1/4W J
R404	0B25667A	RM 3.9K 1/4W F
R405	0B25669A	RM 4.7K 1/4W F
R406,407	0B09685A	RK 2.2K 1/4W J
R408	0B09677A	RK 1K 1/4W J
R409	0B22570A	RM 12K 1/4W F
R410	0B25308A	RM 15K 1/4W F
R411	0B09669A	RK 470 1/4W J
R962	0B09682A	RK 1.6K 1/4W J
C403,404	0B40800A	CE 100 25V
C405	0B41971A	CC 0.1 50V Z
C407	0B40705A	CE 3300 16V
C408	0B41971A	CC 0.1 50V Z
C410,411	0B40800A	CE 100 25V
C412	0B40361A	CE 2200 16V
C414	0B41971A	CC 0.1 50V Z
C425	0B41971A	CC 0.1 50V Z
	0B90448A	Heat Sink (2)

— Tape/Source Switch —

U109	0B06124A	IC NJM4558D
D112	0B12249A	SiD 1SS133
R207L,R	0B09725A	RK 100K 1/4W J
R208L,R	0B09677A	RK 1K 1/4W J
R209L,R	0B09701A	RK 10K 1/4W J
R210L,R	0B09701A	RK 10K 1/4W J
C912L,R	0B40610A	CE 10 25V (BP)

Schematic Ref. No.	Part No.	Description
C941L,R	0B40610A	CE 10 25V (BP)
RY301	0B90279A	DS Relay 24V

— Bias Osc. —

Q119	0B10055A	TR DTA124ES
Q120	0B10070A	TR DTC143ES
Q121	0B10033A	TR 2SC1740S (S)
Q122	0B06069A	TR 2SB564
Q123	0B10033A	TR 2SC1740S (S)
Q124	0B06451A	TR 2SB1015
Q125	0B10222A	TR 2SC2705 (Y)
Q980	0B10053A	TR DTA144ES
ZD305,306	0B12695A	ZD 10V MA4100
D114,115	0B12249A	SiD 1SS133
VL104	0B51047A	Bias Osc.
VL105	0B51372A	Osc. Tune
TH215	0B19006A	Thermistor 3.3K
VR109	0B32192A	Semi VR 5K
R212,213	0B09665A	RK 330 1/4W J
R214	0B09701A	RK 10K 1/4W J
R216	0B09703A	RK 12K 1/4W J
R217	0B09653A	RK 100 1/4W J
R218	0B09701A	RK 10K 1/4W J
R219	0B09725A	RK 100K 1/4W J
R220	0B09701A	RK 10K 1/4W J
R221	0B09617A	RK 3.3 1/4W J
R225	0B09701A	RK 10K 1/4W J
R952L,R	0B09648A	RK 62 1/4W J
R980	0B09717A	RK 47K 1/4W J
R981	0B09693A	RK 4.7K 1/4W J
C185,186	0B40800A	CE 100 25V
C187	0B09993A	CML 820P 50V J
C188	0B41255A	CPP 0.018 100V J
C189	0B41261A	CPP 0.033 100V J
C192	0B40778A	CE 10 25V
C952L,R	0B40608A	CE 470 16V
C981	0B40115A	CE 4.7 50V
C982	0B09270A	CPP 470P 100V J
CN102	0B81459A	2P T-Post
CN110	0B81461A	4P T-Post

— Bias Adj. —

VR21L,R	0B32195A	Semi VR 50K
VR22L,R	0B32194A	Semi VR 20K
VR23L,R	0B32193A	Semi VR 10K
R222L,R	0B09705A	RK 15K 1/4W J
R223L,R	0B09697A	RK 6.8K 1/4W J
R224L,R	0B09653A	RK 100 1/4W J

— Meter Amp. —

U108	0B06124A	IC NJM4558D
Q960L,R	0B06299A	TR 2SC2878
ZD15L,R	0B12714A	ZD 3.3V RD3.3ESB1
ZD96L,R	0B12289A	ZD 5.1V MTZ5.1C
D110L,R	0B12249A	SiD 1SS133
D111L,R	0B12249A	SiD 1SS133
D960L,R	0B12249A	SiD 1SS133
VR18L,R	0B32192A	Semi VR 5K
R200L,R	0B09749A	RK 1M 1/4W J
R201L,R	0B09741A	RK 470K 1/4W J
R202L,R	0B09677A	RK 1K 1/4W J
R203L,R	0B09677A	RK 1K 1/4W J
R960L,R	0B09696A	RK 6.2K 1/4W J
R961L,R	0B09682A	RK 1.6K 1/4W J
R963L,R	0B09701A	RK 10K 1/4W J
C180L,R	0B40257A	CE 3.3 50V (LN)
C181L,R	0B40817A	CE 1 50V (BP)
C960	0B40608A	CE 470 16V

Schematic Ref. No.	Part No.	Description
— Push Switch —		
R226	0B09701A	RK 10K 1/4W J
R227	0B09685A	RK 2.2K 1/4W J
R228	0B09709A	RK 22K 1/4W J
R230,231	0B09701A	RK 10K 1/4W J
R307	0B09711A	RK 27K 1/4W J
R308,309	0B09725A	RK 100K 1/4W J
C190L,R	0B09270A	CPP 470P 100V J
C307	0B40559A	CE 47 16V
C308	0B41971A	CC 0.1 50V Z
S100	0B70177A	Push Switch MPX-DOLBY
S103	0B70176A	Push Switch TAPE

— Miscellaneous —

CN100	0B83926A	6P H-Connector Ass'y 330
CN104	0B83932A	11P H-Connector Ass'y 250
CN105	0B83931B	8P H-Connector Ass'y 150
CN107	0B83928A	7P H-Connector Ass'y 410
CN108	0B83925A	6P H-Connector Ass'y 360
CN401	0B83930B	6P H-Connector Ass'y 270
AJ	0B83924A	PD Connector

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

Schematic Ref. No.	Part No.	Description
BA08853A		Power Supply & Logic P.C.B. Ass'y (Except JPN)
BA08851A		Power Supply & Logic P.C.B. Ass'y (JPN)

— Power Supply —

U401	0B11753A	IC NJM7805FA
Q403,404	0B10033A	TR 2SC1740S (S)
Q405	0B10033A	TR 2SC1740S (S)
Q406	0B10058A	TR DTA114ES
Q407	0B10033A	TR 2SC1740S (S)
Q409	0B10015A	TR 2SA1020
ZD401	0B12708A	ZD 24V MA4240N-H
ZD402	0B12707A	ZD 4.7V MA4047N
D401,402	0B12836A	SiD 1SR35-400A
D403,404	0B12836A	SiD 1SR35-400A
D405,406	0B12836A	SiD 1SR35-400A
D409,410	0B12249A	SiD 1SS133
D411,412	0B12249A	SiD 1SS133
D420,421	0B12836A	SiD 1SR35-400A
D422,423	0B12836A	SiD 1SR35-400A
D430,431	0B12836A	SiD 1SR35-400A
R404	0B09709A	RK 22K 1/4W J
R405	0B09703A	RK 12K 1/4W J
R406	0B09701A	RK 10K 1/4W J
R407,408	0B09693A	RK 4.7K 1/4W J
R409	0B09719A	RK 56K 1/4W J
R410	0B09713A	RK 33K 1/4W J
R411,412	0B09693A	RK 4.7K 1/4W J
R413	0B09719A	RK 56K 1/4W J
R414	0B09713A	RK 33K 1/4W J
R419	0B09685A	RK 2.2K 1/4W J
R421	0B09701A	RK 10K 1/4W J
R422,423	0B09653A	RK 100 1/4W J
C401	0B41825A	CC 4700P AC400V (Except JPN)

Schematic Ref. No.	Part No.	Description
	OB41826A	CC 4700P AC250 (JPN)
C402	OB40801A	CE 6800 25V
C409	OB40363A	CE 2200 25V
C410	OB40630A	CE 22 10V (LN)
C411,412	OB40255A	CE 1 50V (LN)
C416	OB40362A	CE 6800 16V
C417	OB41298A	CML 0.1 50V J
C419	OB40067A	CE 470 10V
C420	OB41298A	CML 0.1 50V J
C421	OB40798A	CE 330 35V
C422	OB40120A	CE 100 50V
C423	OB40100A	CE 10 35V
C424	OB40802A	CE 1000 35V
C451,452	OB41298A	CML 0.1 50V J
C473	OB40801A	CE 68000 25V
S401	OB71012A	Power Switch 1P TV-4
CN401	OB81463A	6P T-Post
CN402	OB81574A	7P T-Post
	OB08349B	Fuse Clip (8)
	OJ06668A	Earth Lug for P.C.B.-4
	OB84275A	Wrapping Terminal 1P (2)

— Motor Driver —

U502	OB11368A	IC LB1649
Q502	OB10062A	TR DTC144ES
Q503	OB10029A	TR 2SA933S (S)
Q504	OB10062A	TR DTC144ES
Q505	OB10033A	TR 2SC1740S (S)
Q509	OB06066A	TR 2SD471
Q510	OB10368A	TR DTC144TS
ZD501	OB12153A	ZD 6.2V JS B2
ZD502	OB12288A	ZD 5.1V MTZ5.1B
D413,414	OB12249A	SiD 1SS133
D503,504	OB12249A	SiD 1SS133
D505,506	OB12249A	SiD 1SS133
VR501	OB32192A	Semi VR 5K
R551,552	OB01857A	RK 1K 1/4W J
R553,554	OB09677A	RK 1K 1/4W J
R555	OB24361A	R Fuse 27 1W J
R556	OB09701A	RK 10K 1/4W J
R557	OB09681A	RK 1.5K 1/4W J
R558	OB09695A	RK 5.6K 1/4W J
R559	OB09717A	RK 47K 1/4W J
R560	OB09677A	RK 1K 1/4W J
R561	OB09669A	RK 470 1/4W J
R564	OB09217A	RF 5.6 1/4W J
R574	OB09684A	RK 2K 1/4W J
R575	OB09725A	RK 100K 1/4W J
C551	OB40078A	CE 100 16V
C552	OB41286A	CML 0.01 50V J
C553,554	OB41298A	CML 0.1 50V J
C555,556	OB41298A	CML 0.1 50V J
C562	OB40079A	CE 220 16V
CN005	OB84084A	9P T-Post
CN006	OB84278A	2P T-Post

— MPU —

U501	OB11884A	IC UPD75106CW
Q501	OB10068A	TR DTC114ES
Q506,507	OB10029A	TR 2SA933S (S)
Q508	OB10029A	TR 2SA933S (S)
ZD510	OB12695A	ZD 10V MA4100(N)
D501,502	OB12249A	SiD 1SS133
D511	OB12249A	SiD 1SS133
X501	OB92045A	Crystal 4.0MHZ
RA501	OB21101A	R Network 10Kx3
RA502	OB21102A	R Network 10Kx6
RA503	OB21101A	R Network 10Kx3
RA504	OB21101A	R Network 10Kx3
RA506	OB21102A	R Network 10Kx6
R501	OB09689A	RK 3.3K 1/4W J
R502,503	OB09701A	RK 10K 1/4W J

Schematic Ref. No.	Part No.	Description
R504,505	OB09701A	RK 10K 1/4W J
R506	OB09701A	RK 10K 1/4W J
R532,533	OB09677A	RK 1K 1/4W J
R534,535	OB09677A	RK 1K 1/4W J
R536,537	OB09677A	RK 1K 1/4W J
R538,539	OB09677A	RK 1K 1/4W J
R540	OB09677A	RK 1K 1/4W J
R550	OB09701A	RK 10K 1/4W J
R571	OB09677A	RK 1K 1/4W J
R572,573	OB09701A	RK 10K 1/4W J
R910,911	OB09709A	RK 22K 1/4W J
R912,913	OB09725A	RK 100K 1/4W J
R914	OB09701A	RK 10K 1/4W J
R917,918	OB09725A	RK 100K 1/4W J
R919	OB09721A	RK 68K 1/4W J
R920	OB09669A	RK 470 1/4W J
R921	OB09725A	RK 100K 1/4W J
R922	OB09701A	RK 10K 1/4W J
C501	OB40077A	CE 47 16V
C502	OB41298A	CML 0.1 50V J
C503	OB41302A	CML 0.22 50V J
C504,505	OB41286A	CML 0.01 50V J
C506,507	OB41274A	CML 1000P 50V J
C508	OB41944A	CC 1000P 50V K
C510	OB40756A	CE 1 50V (LN)
C530,531	OB41290A	CML 0.022 50V J
CN004	OB81462A	5P T-Post
CN007	OB84302A	10P T-Post
CN008	OB84296A	8P T-Post
CN009	OB84281A	3P T-Post
CN104	OB84305A	11P T-Post
CN105	OB81465A	8P T-Post
CN516	OB84286A	5P T-Post

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

Schematic Ref. No.	Part No.	Description
	BA08836A	Bias Volume P.C.B. Ass'y
VR110	OB30159A	VR 10KBx2
CN110	OB85202A	4P Connector Ass'y

8.4. Input Volume P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BA08837A	Input Volume P.C.B. Ass'y
VR101	OB30156A	VR 100KMN C.C
VR102	OB30157A	VR 100Kx2
CN112	OB85203A	9P Connector Ass'y

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

Schematic Ref. No.	Part No.	Description
	BA08841A	Timer Switch P.C.B. Ass'y
S701	OB70175A	Slide Switch 2-4
CN009	OB83936A	3P H-Connector Ass'y

8.6. Headphone P.C.B. Ass'y

Schematic Ref. No.	Part No.	Description
	BA10035A	Headphone P.C.B. Ass'y
PJ101	OB85264A	Headphone Jack Gold
CN103	OB83929A	5P H-Connector Ass'y
AJ	OB83924A	PD Connector Ass'y

8.7. Front P.C.B Ass'y

Schematic Ref. No.	Part No.	Description
	BA08855A	Front P.C.B. Ass'y
U601	OB11860A	IC MSC7112-01
Q601,602	OB10030A	TR 2SC1740S (S)
Q603,604	OB10030A	TR 2SC1740S (S)
Q605,606	OB10030A	TR 2SC1740S (S)
Q607,608	OB10030A	TR 2SC1740S (S)
Q609,610	OB10030A	TR 2SC1740S (S)
Q611	OB10030A	TR 2SC1740S (S)
R601	OB09713A	RK 33K 1/4W J
R602	OB09701A	RK 10K 1/4W J
R603,604	OB09677A	RK 1K 1/4W J
R605	OB09677A	RK 1K 1/4W J
R606,607	OB09717A	RK 47K 1/4W J
R608,609	OB09717A	RK 47K 1/4W J
R610,611	OB09717A	RK 47K 1/4W J
R612,613	OB09717A	RK 47K 1/4W J
R614,615	OB09717A	RK 47K 1/4W J
R616	OB09717A	RK 47K 1/4W J
R617	OB09629A	RK 10 1/4W J
R651	OB09701A	RK 10K 1/4W J
R652	OB09693A	RK 4.7K 1/4W J
R653	OB09705A	RK 15K 1/4W J
R654	OB09701A	RK 10K 1/4W J
R655	OB09693A	RK 4.7K 1/4W J
C601	OB41681A	CC 100P 50V J
C602	OB40158A	CE 100 6.3V
C603	OB40173A	CE 1 50V J
S601,602	OB70214A	Tact Switch
S603,604	OB70214A	Tact Switch
S605,606	OB70214A	Tact Switch
S607,608	OB70214A	Tact Switch
S609	OB70214A	Tact Switch
CN7	OB85205A	10P H-Connector Ass'y
CN8	OB85206A	8P H-Connector Ass'y
FL601	OB90461A	FL Display FIP13BW7Y
	OJ07086A	FL Cushion
	OJ06238A	FL Stopper

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

Schematic Ref. No.	Part No.	Description
	BA08381A	Pin Jack P.C.B. Ass'y
Q103L,R	OB06299A	TR 2SC2878
D102L,R	OB12249A	SID 1SS133
R152L,R	OB09693A	RK 4.7 1/4W J
C190	OB05550A	CML 1000P 50V J
C191	OB41971A	CC 0.1 50V Z
S501	OB70178A	Slide Switch 2-2
HP501	OB84028A	Stereo Mini Jack
PJ100	OB84334A	4P Pin Jack
CN516	OB83927A	5P H-Connector Ass'y
	OJ06668A	Earth Lug for P.C.B.

8.9. Playback Amp P.C.B. Ass'y

Schematic

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	BA08477A	Playback Amp P.C.B. Ass'y
Q201L,R	0B10383A	TR 2SK369 (GR)
Q202L,R	0B10050A	TR 2SA970 (BL)
Q203L,R	0B06142A	TR 2SC2240 (BL)
Q204L,R	0B10033A	TR 2SC1740S (S)
D201L,R	0B12249A	SID SID 1SS133
L201L,R	0B51375A	PB Trap Coil
VR25L,R	0B32190A	Semi VR 1KB
R250L,R	0B09725A	RK 100K 1/4W J
R251L,R	0B25074A	RM 54.6 1/4W F
R252L,R	0B25235A	RM 2.61 1/4W F
R253L,R	0B25401A	RM 140K 1/4W F
R254L,R	0B09673A	RK 680 1/4W J
R255L,R	0B09721A	RK 68K 1/4W J
R256L,R	0B25672A	RM 6.2K 1/4W F
R257L,R	0B09665A	RK 330 1/4W J
R258L,R	0B09709A	RK 22K 1/4W J
R259L,R	0B09697A	RK 6.8K 1/4W J
R260L,R	0B25292A	RM 10.2K 1/4W F
R261L,R	0B09741A	RK 470K 1/4W J
R262L,R	0B09701A	RK 10K 1/4W F
R263L,R	0B25279A	RM 7.5K 1/4W F
C201L,R	0B47124A	CC 150P 50V K
C202L,R	0B05582A	CML 0.022 50V J
C203L,R	0B41975A	CC 10P 50V D
C204L,R	0B40707A	CE 330 10V
C205L,R	0B40778A	CE 10 25V
C206L,R	0B40700A	CE 220 6.3V
C208L,R	0B05530A	CML 6800P 50V J
C209L,R	0B01804A	CML 3900P 50V J
C210L,R	0B47027A	CML 470P 50V J
C250L,R	0B47126A	CC 220P 50V K
C260L,R	0B41708A	CC 22P 50V J
CN107	0B81464A	7P T-Post
CN109	0B81461A	4P T-Post

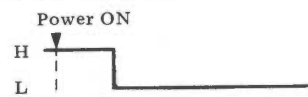
8.10. Shut-off P.C.B. Ass'y

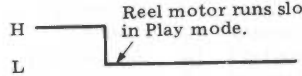
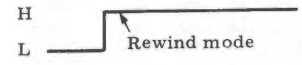
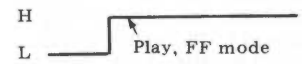


Schematic

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	CA80011B	Shut-off P.C.B. Ass'y
Q001	0B06388A	TR 2SC2812
Q002	0B06389A	Photo Reflector NJL5141
R001	0C81330A	RM 750
R002	0B09841A	RM 15K
R003	0B09840A	RM 680

9. IC BLOCK DIAGRAMS

U501 μ PD75106CW (Microprocessing Unit (MPU))

Pin No.	Signal Name	In/Out	Function
1	—	I	Not used. Connected to GND.
2	AZCT	I	Playback azimuth control center detect switch is connected. Becomes "H" when the Playback Azimuth control on the Front Panel is set to the center position. (Not used.)
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/Monitor switch input. Record switch ON: 0 V Monitor switch ON: 1.6 V
8	KS0	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	HD $\bar{2}/3$	I	Fixed to "H".
11	—	O	Not used.
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. Power ON 
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	Source signal output. Active "L".
26	HREC	O	Tape signal output. Active "L".

Pin No.	Signal Name	In/Out	Function												
27	RMSP	O	Reel motor speed select signal output. Becomes "L" in play mode. 												
28	—	O	Not used.												
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	AZRD	O	Off center position indication signal of the Playback Azimuth control. Drives red LED in Rec./Play or Rec./Pause mode. (Not used.)												
34	AZGR	O	Center position indication signal of the Playback Azimuth control. Drives Green LED in Playback mode. (Not used.) <table border="1" data-bbox="1003 1018 1403 1123"> <thead> <tr> <th>Mode</th> <th>Center</th> <th>Out of Center</th> </tr> </thead> <tbody> <tr> <td>Play</td> <td>Green</td> <td>—</td> </tr> <tr> <td>Rec./Play Rec./Pause</td> <td>Green</td> <td>Red</td> </tr> </tbody> </table>	Mode	Center	Out of Center	Play	Green	—	Rec./Play Rec./Pause	Green	Red			
Mode	Center	Out of Center													
Play	Green	—													
Rec./Play Rec./Pause	Green	Red													
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="1042 1564 1348 1680"> <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/ \bar{C}	I	Dolby NR mode select signal input. <table border="1" data-bbox="1027 1732 1372 1848"> <thead> <tr> <th>Mode</th> <th>$\bar{D}LBY$</th> <th>B/\bar{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	$\bar{D}LBY$	B/ \bar{C}	Dolby NR OFF	H	H/L	Dolby NR B	L	H	Dolby NR C	L	L
Mode	$\bar{D}LBY$	B/ \bar{C}													
Dolby NR OFF	H	H/L													
Dolby NR B	L	H													
Dolby NR C	L	L													
40	DOLBY NR	I													
41	MPX	I	MPX filter switch signal input. "L": MPX Filter ON, "H"=OFF												

Pin No.	Signal Name	In/Out	Function															
42 43	TIM B TIM A	I	Repeat/Timer switch signal input. <table border="1" style="margin-left: 20px;"> <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																
44	REC PRO	I	Record protect switch signal input. "H": Recording is allowed.															
45	RESET	I	System reset signal input. Active "L". <div style="margin-left: 20px;"> <p>Power ON</p> </div>															
46 47	X2 X1	I	4 MHz oscillator is connected.															
48 49 50 51	—	O	Not used. (Open)															
52	RREM	O	System remote return signal output.															
53 54 55	—	O	Not used. (Open)															
56	EJC	I	Cassette In switch signal input. Becomes "L" while the Cassette Cover Ass'y is open.															
57 58 59	CAM2 CAM1 CAM0	I	Cam switch signal input. Mode of the mechanism can be sensed according to states of CAM0, CAM1 and CAM2.															
60	KFF	I	FF switch signal input. "L" when pressed.															
61	KREW	I	REW switch signal input. "L" when pressed.															
62	KPUS	I	Pause switch signal input. "L" when pressed.															
63	KPLY	I	Play switch signal input. "L" when pressed.															
64	VSS	—	Grounded.															

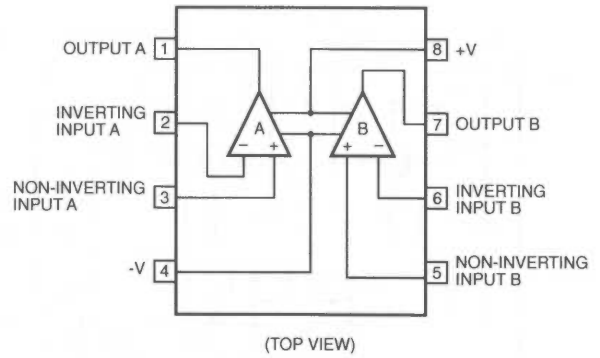


Fig. 9.1 Operational Amp. NJM4558, NJM2043, M5216

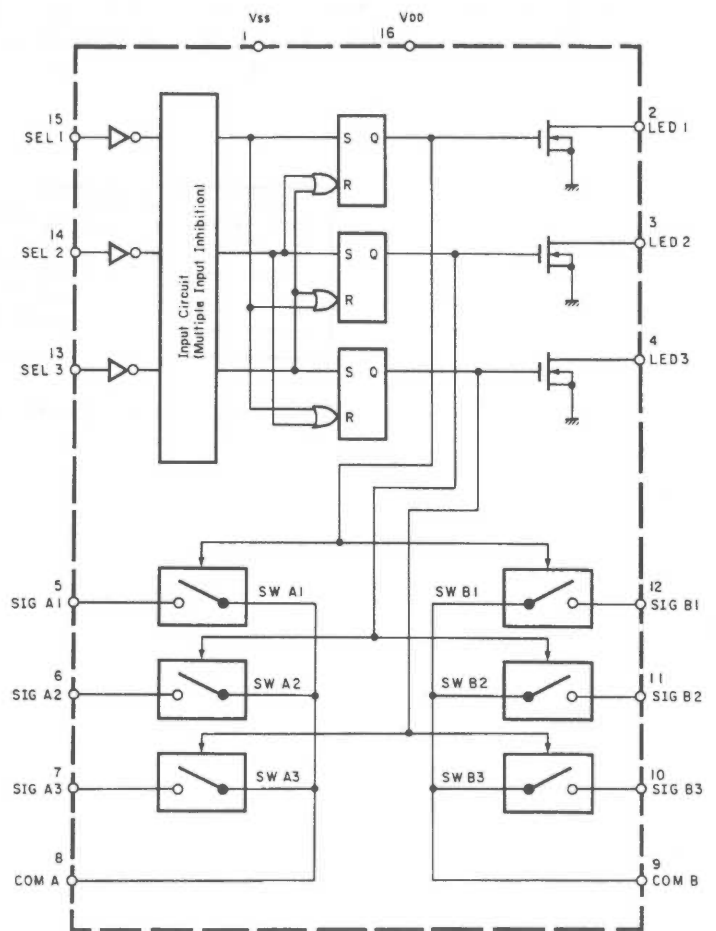
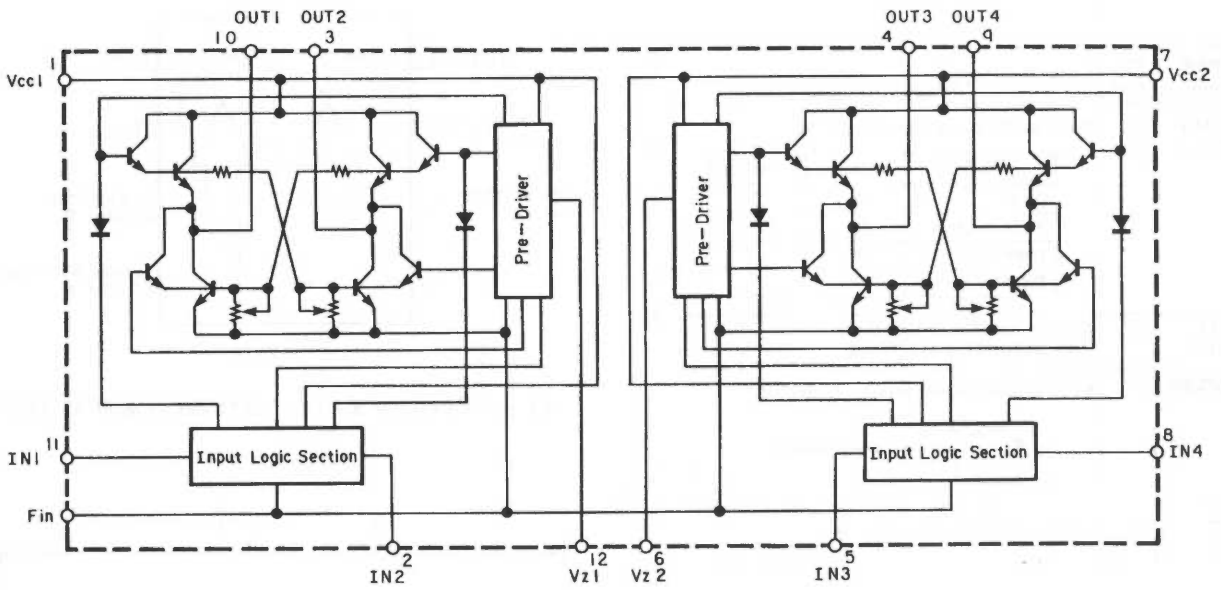


Fig. 9.2 Analog Switch Selector TC9145P (U104)



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

Fig. 9.3 Motor Driver IC LB1649 (U502)

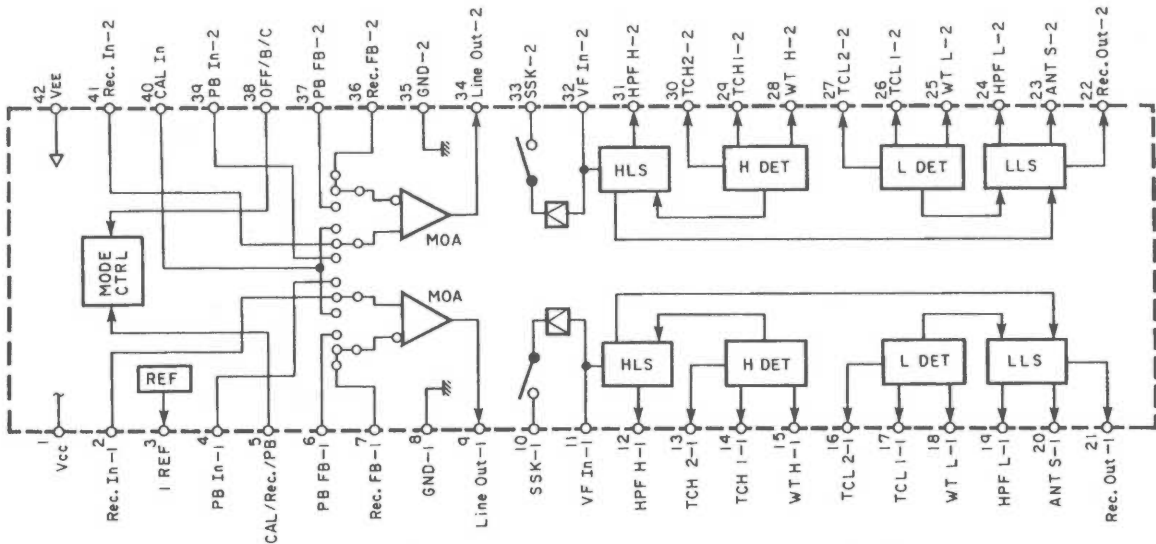


Fig. 9.4 Dolby NR IC CX20188 (U102, U106)

U102/U106 CX20188 (Dolby NR IC)

Pin No.	Signal Name	Function
1	Vcc	Positive power supply input terminal.
2,41	Rec. In	Record signal input terminal.
3	I Ref.	Reference current input terminal.
4,39	PB In	PB signal input terminal.
5	CAL/Rec./PB	Calibration/Recording/Playback select terminal.
6,37	PB 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	Encode circuit input terminal.
12,31	HPF H	HLS high-pass filter terminal.
13,30	TCH 2	HLS detector time constant determination terminal 2.

Pin No.	Signal Name	Function
14,29	TCH 1	HLS detector time constant determination terminal 1.
15,28	WT H	HLS weighting terminal.
16,27	TCL 2	LLS detector time constant determination terminal 2.
17,26	TCL 1	LLS detector time constant determination terminal 1.
18,25	WT L	LLS weighting terminal.
19,24	HPF L	LLS high-pass filter terminal.
20,23	ANT S	Anti-saturation terminal.
21,22	Rec. Out	Record signal (encoded signal) output terminal.
38	OFF/B/C	Dolby NR OFF/B-type/C-type select terminal.
40	CAL In	Calibration input terminal. Not used.
42	VEE	Negative power supply input terminal.

U601 MSC7112 (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	
3	POR	I	Reset signal input at power ON. The IC is reset when "L".
4	VDD	-	Supplied with +5 V.
5 to 16	D1 to D12	O	FL tube grid drive output. (D8-D12 are not used.)
17 to 21	LED1 to LED5	O	Not used. (Open)
22	VSS	-	Grounded.

Pin No.	Signal Name	In/Out	Function
23	VEE	-	Supplied with approx. -25 V.
24 to 39	SEGP to SEG A	O	FL tube anode drive output. Active "H". (SEGP-SEGN are not used.)
40	SCLK	I	Shift clock input for internal shift register. Shifts the data at pin 41 (DATAIN) at every rising edge.
41	DATAIN	I	Control & display serial data sent from the mechanism control MPU (U501). MSB first.
42	LOAD	I	Data latch pulse. The data is latched to the internal register at the falling edge.

10. BLOCK DIAGRAMS

10.1. Amplifier Section

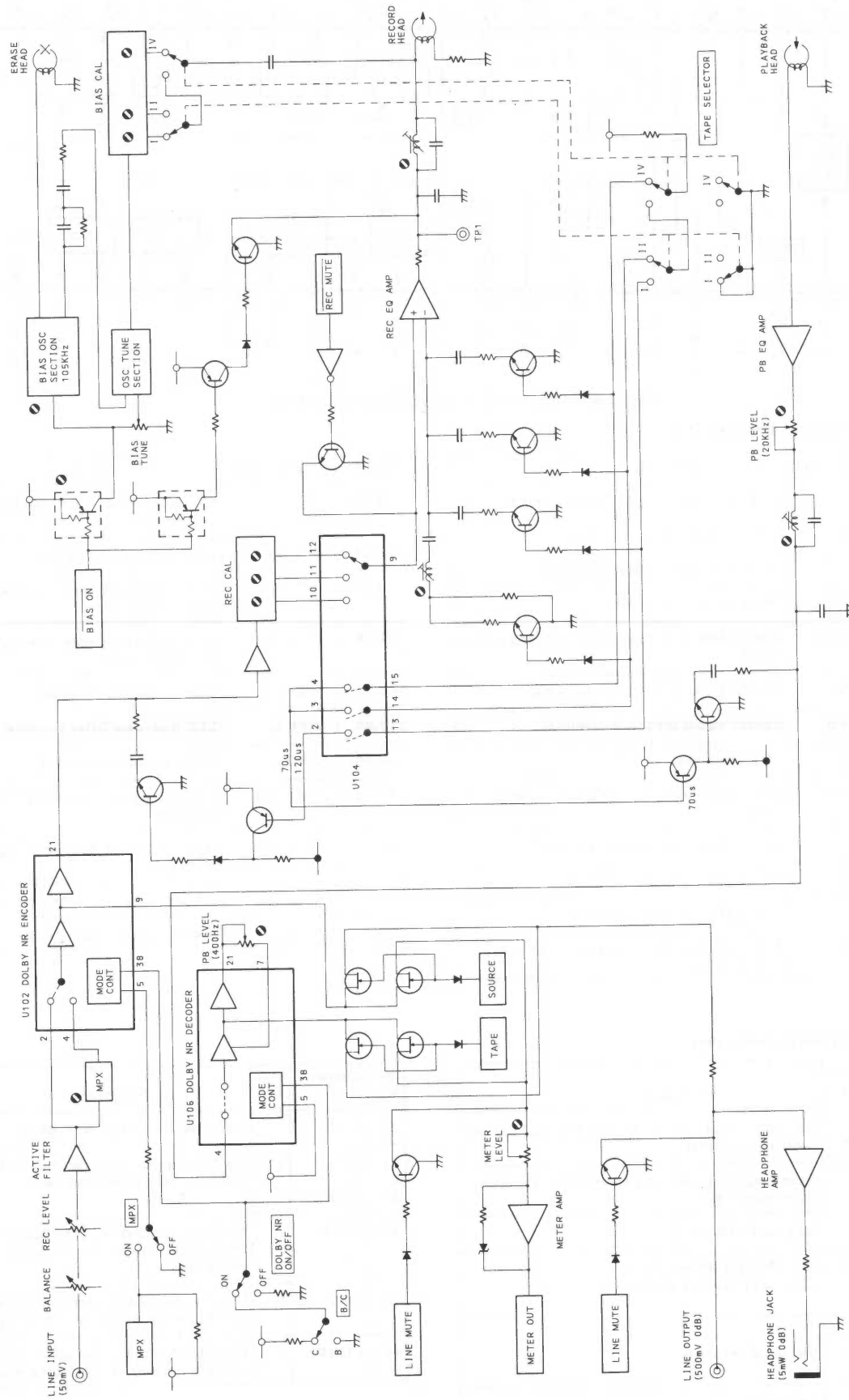


Fig. 10.1

10.2. Mechanism Control Section

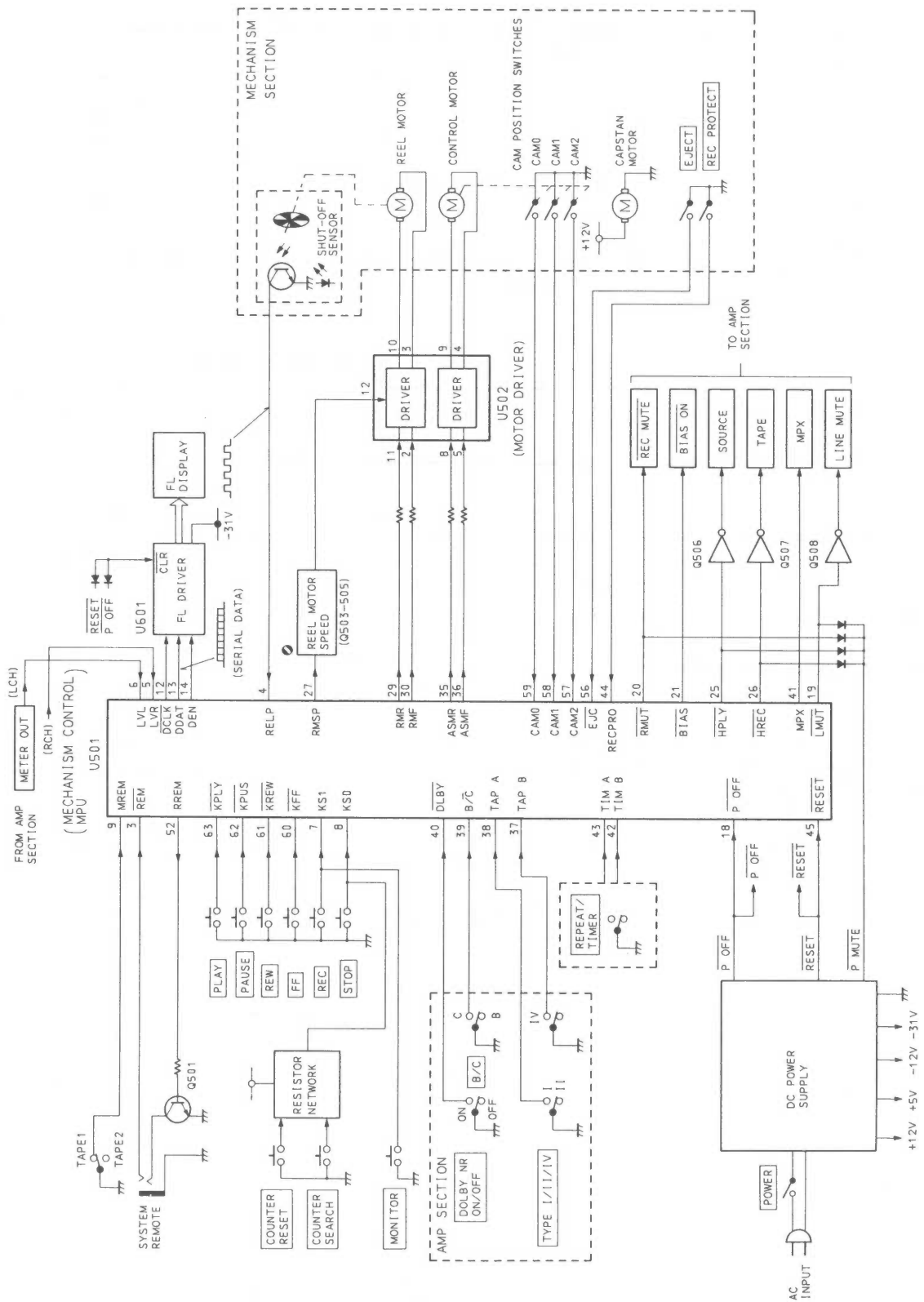


Fig. 10.2

11. TIMING CHARTS AND EQ. FREQUENCY RESPONSE

11.1. Timing Charts

(1) Overall Timing Chart

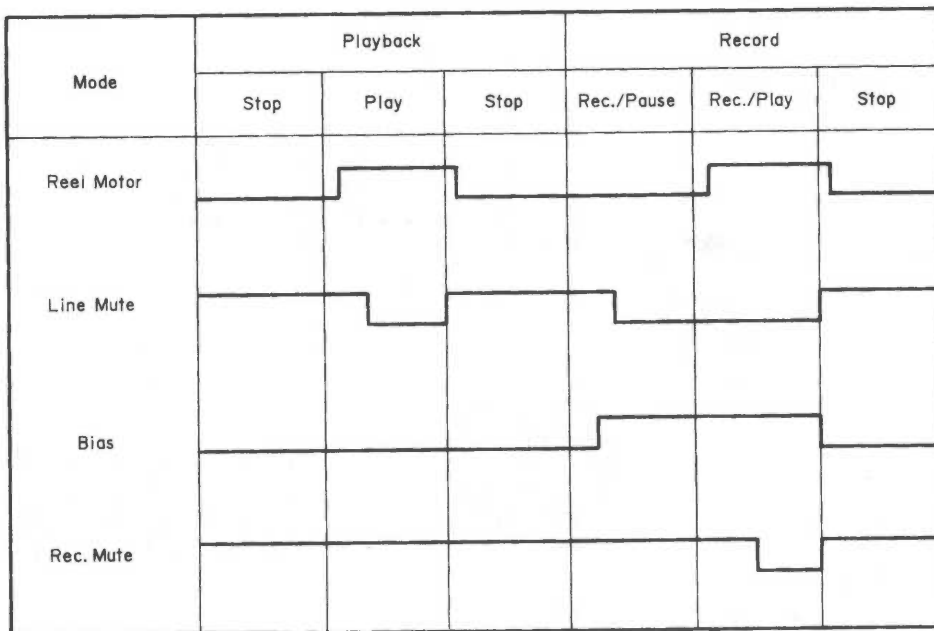


Fig. 11.1.1

(2) Mechanism Control Timing Chart

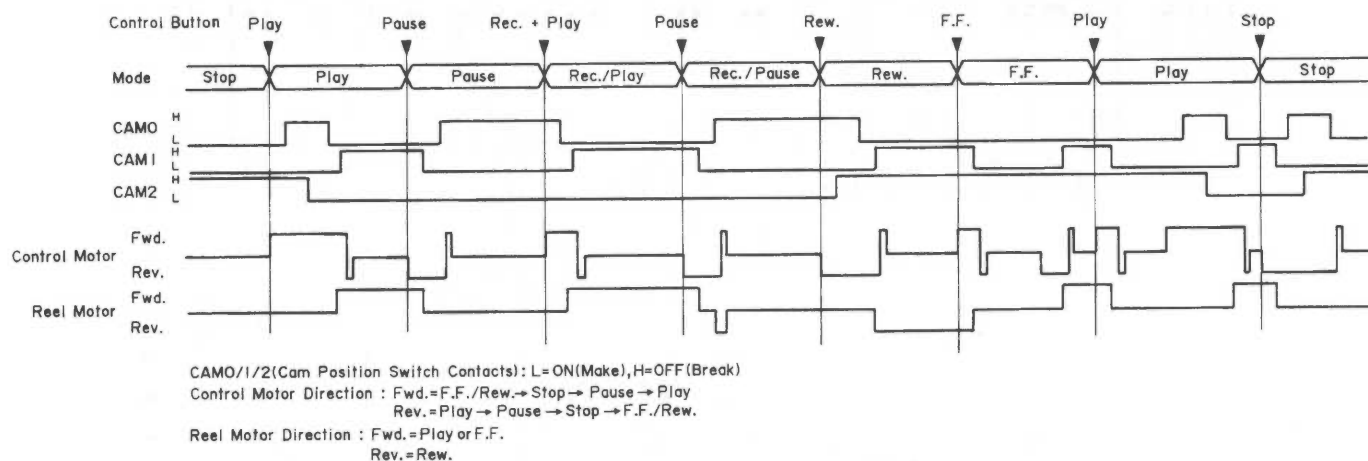


Fig. 11.1.2

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

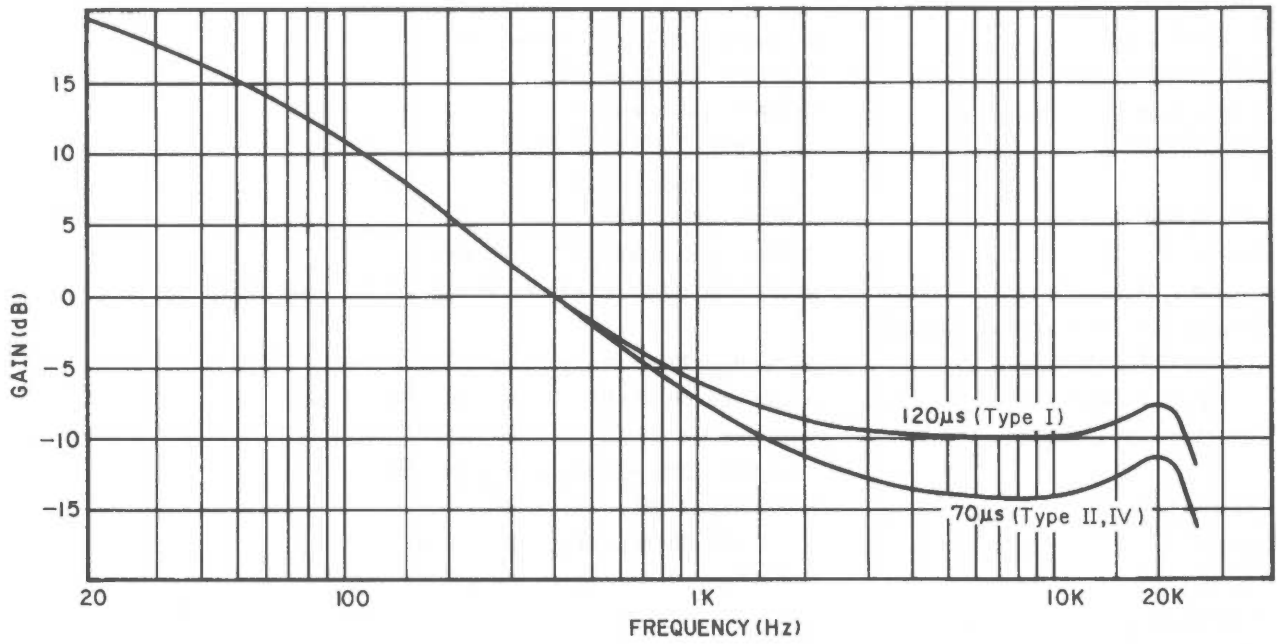


Fig. 11.2.1

(2) Record Current Frequency Response

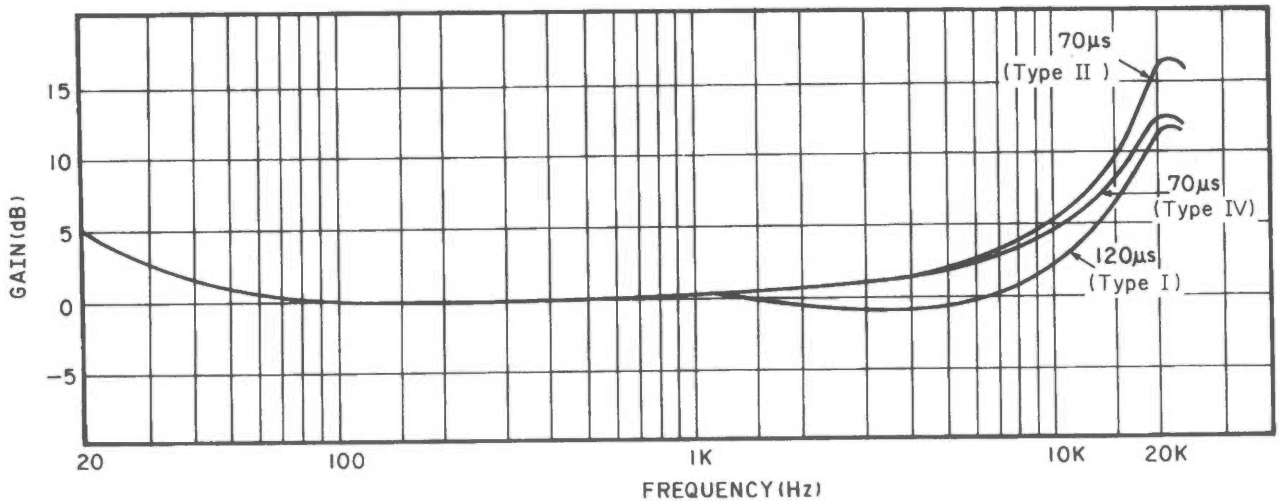


Fig. 11.2.2

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	DC servo motor (capstan drive) x 1 DC motor (reel drive) x 1
Mechanism	DC motor (cam drive) x 1
Wow-and-Flutter	Less than $\pm 0.06\%$ WTD Peak Less than 0.035% WTD RMS
Tape Speed	1-7/8 ips. (4.8 cm/sec.) $\pm 0.5\%$
Fast-Wind Time	Approx. 95 seconds (with C-60 cassette)
Frequency Response	20 - 21,000 Hz ± 3 dB (recording level -20 dB, Type I/II/IV)
Signal-to-Noise Ratio (70 μ s, Type V)	
Dolby C Type NR On	Better than 72 dB (400 Hz, 3% THD, IHF A-WTD RMS)
Dolby B Type NR On	Better than 66 dB (400 Hz, 3% THD, A-WTD RMS)
Total Harmonic Distortion	Less than 0.8% (400 Hz, 0 dB, Type IV) Less than 1.0% (400 Hz, 0 dB, Type I/II)
Channel Separation	Better than 37 dB (1 kHz, 0 dB)
Crosstalk	Better than 60 dB (1 kHz, 0 dB)
Erasure	Better than 60 dB (100 Hz, ± 10 dB)
Bias Frequency	105 kHz
Input	
Line	50 mV/40 kohms
Output	
Line	0.5 V/2.2 kohms (400 Hz, 0 dB)
Headphones	5.0 mW/8 ohms (400 Hz, 0 dB)
Power Source	120, 230, 240 V or 110-127/220-240 VAC, 50/60 Hz
Power Consumption	26 W max.
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.

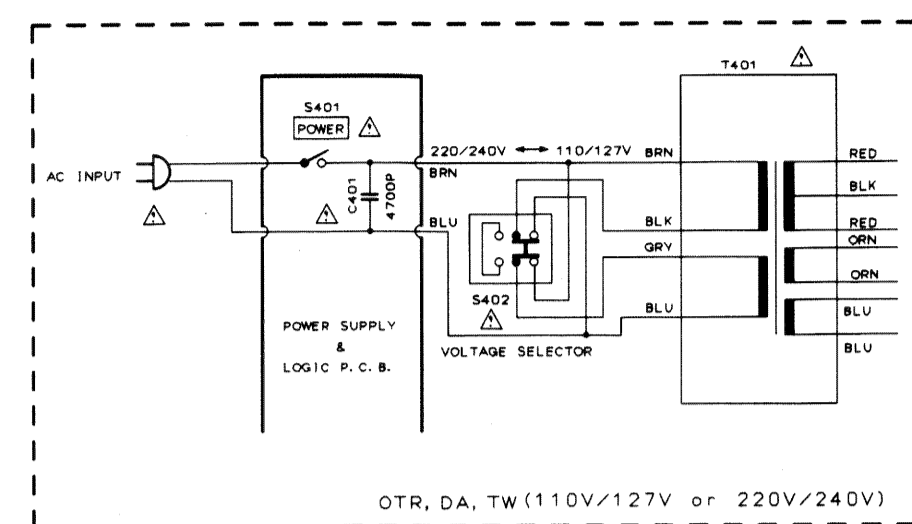
* Dimensions do not include protruding parts. Height is the panel height.

- Specifications and design are subject to change for further improvement without notice.
- Manufactured under license from Dolby Laboratories.
- "DOLBY" and the double-D symbol are trademarks of Dolby Laboratories.

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Nakamichi Canada	276 S.W. Marine Drive, Vancouver, B.C. V5X 2R4, Canada Phone: 1 (604) 324-7535 Fax: 1 (604) 324-7919
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Nakamichi Europe	Berkshire House, 56, Herschel Street, Slough, Berkshire SL1 1PY, England Phone: 44 (1753) 577 345 Fax: 44 (1753) 550 211

Mechanism Control Section

NOTE: Description of electrolytic capacitor: 100/16V = 100µ 16V



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.

- 25A933S 25A970
25C1740S 25C1930
DFA124ES 25C2240
DFA144ES 25C2878
25C270S
25B564
25C2812
25B1015
25D1406
7805
25K246
25K369

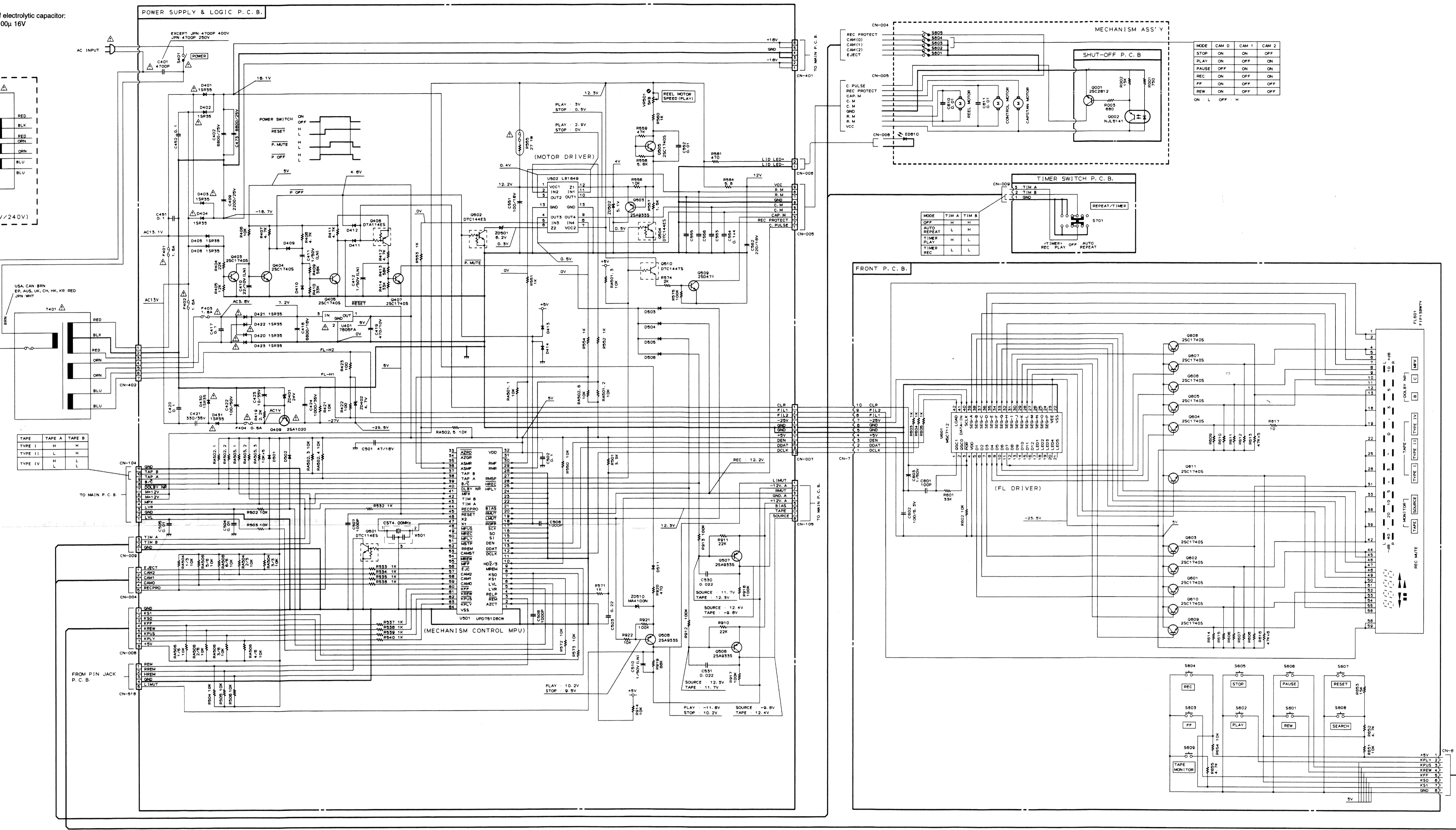
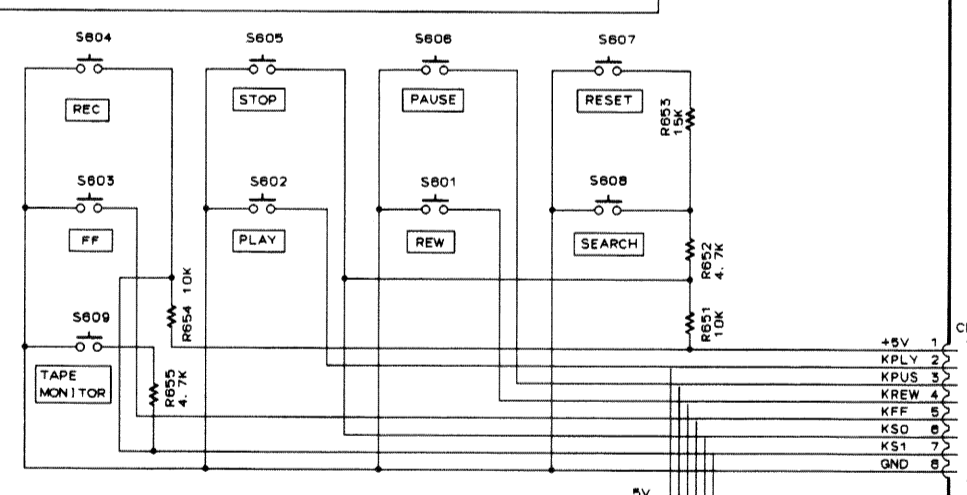
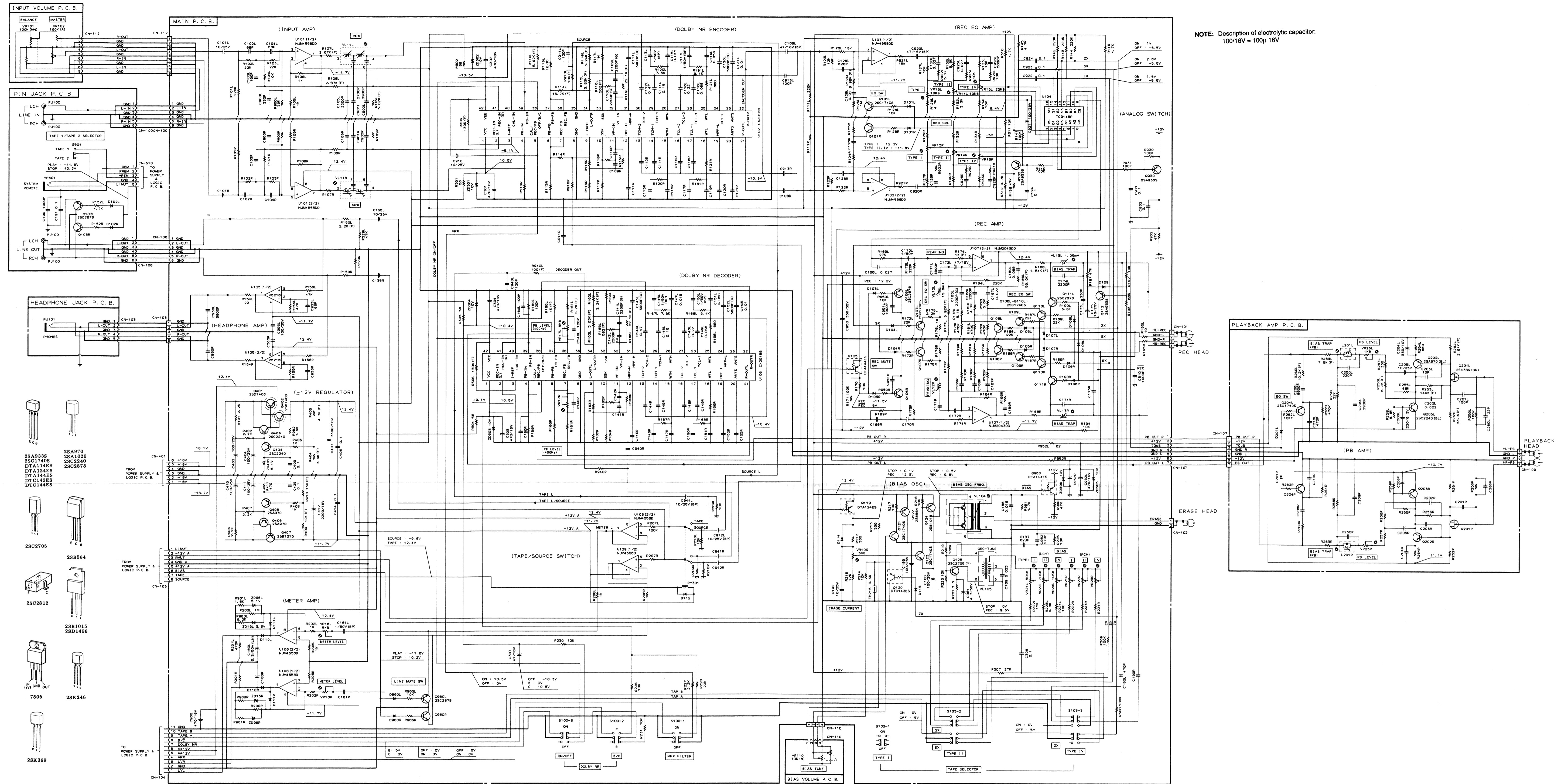


Table with 4 columns: MODE, CAM 0, CAM 1, CAM 2. Rows include STOP, PLAY, PAUSE, FF, REW, ON/OFF states.

Table with 4 columns: MODE, TIM A, TIM B. Rows include OFF, AUTO, REPEAT, PLAY, TIMER, REW, ON/OFF states.



Amplifier Section



NOTE: Description of electrolytic capacitor:
100/16V = 100µ 16V